Delinea

Privilege Manager

Documentation ⊛ 11.3.x

Delinea

Table of Contents

Privilege Manager is an endpoint least privilege and application control solution for Windows, macOS, and Unix/Linux, capable of supporting enterprises and fast-growing organizations at scale. Mitigate malware and modern security threats from exploiting applications by removing local administrative rights from endpoints. The two major components are Local Security and Application Control.

Using Privilege Manager , administrators can automatically discover local administrator privileges and enforce the principle of least privilege through policy-driven actions. Those policy-driven actions include

- blocking, elevating, monitoring, allowing
- application quarantine, sandbox, and isolation,
- application privilege elevation, and
- endpoint monitoring

All this is seamless for users, reduce IT/desktop support workload, and support compliance obligations.

Privilege Manager does not require Secret Server or any other Delinea product to run. Secret Server's vaulting and workflow capabilities can be extended to privileged endpoint accounts when the two products are used together.

The typical Privilege Manager user is part of an IT team that is tasked with implementing and overseeing a company's security business requirements and framework. In the Privilege Manager product this role is known as the Privilege Manager Administrator. Although there are a few other kinds of Privilege Manager user roles that may use Privilege Manager now and then for minor tasks, the Privilege Manager Administrator is the main user of Privilege Manager .

It is useful (although not necessary) for Privilege Manager Administrators to be familiar with the basics of IT administration, such as the Group Policy feature from Microsoft.

Feature Overview

For those organizations leveraging Active Directory (AD) and/or Azure AD as their identity authentication and authorization service, deploying a least privilege program that works seamlessly with AD is absolutely critical. Privilege Manager integrates with AD so administrators can synchronize Domain Objects such as computers, OUs, and security groups from AD with their application control policies. Privilege Manager can leverage the user, group and privilege associations managed by Active Directory in its policy deployment and ensure unauthorized changes to AD made by endpoint users, such as adding a user to a local administrator account, can be blocked automatically and in real time.

The Privilege Manager Agents are a critical component of Delinea's application control, giving you the ability to evaluate the health and status in real time. Privilege Manager provides pre-configured and fully customizable reporting on the status of agents and endpoint operating systems. In the Privilege Manager reporting dashboard, you can drill into reports based on any dimension and easily export report data to other reporting applications or Excel.

The most powerful applications installed on endpoints are those that require administrator credentials or root privileges to run. Privilege Manager discovers all applications that run on endpoints through its Learning Mode, giving you a precise snapshot of how these applications are used before you implement any changes. You can set up Discovery policies to target any new application action that requires administrator or root access, so no privileged action goes unnoticed.

Non-Domain Endpoint Support: Privilege Manager provides management and application control support for endpoints even if they are not associated with your organizational network. Because it utilizes agents, it can manage endpoints outside the network, such as those used by vendors, contractors, and partners, with the same dexterity and precision control as those within the network.

Rotate local account passwords on endpoints based on a pre-defined, fully customizable schedule, ensuring that password best practices are followed.

Privilege Manager can record all executable events on managed endpoints so you can review, search, and analyze these logs in a unified manner without leaving the console.

Child processes are those that execute from within a file such as a PDF and are frequently how malware executes on an endpoint. Privilege Manager allows you to prohibit execution of Child Processes to ensure unknown executables are restricted on your organization's network.

Privilege Manager 's ability to quickly generate fully customized reports and schedule the execution and delivery of these reports is essential to maintaining a real-time understanding of every aspect of your least privilege program.

Review and manage local groups, including Group membership. This powerful capability prevents Group membership changes from being made on an endpoint, as all changes must be made via the Privilege Manager console.

This policy type requires that people provide a justification for why they need to run an application before elevating with administrator privileges. User Justification refers to the policy action. Since Conditions and Actions are independent, this action can be applied to any condition.

Enforce least privilege through policies for application control. You'll start with access to a broad library of out-of-the-box policies, all of which are completely customizable. Layered policies create the parameters that dictate precisely how privileges are accessed across your network. They define what actions people can run, and where. When policy conditions are met, Privilege Manager automatically applies an action (e.g. blocking, monitoring, application elevation, etc.) on one or multiple assets.

Web server clustering provides both high availability and load balancing by allowing multiple web servers to run Privilege Manager software. A clustered environment is key in disaster recovery scenarios as you can automatically failover to a separate web server with no downtime. Additionally, performance can be improved through load balancing by having multiple servers processing requests simultaneously.

Privilege Manager can automatically revoke all local administrative privileges on endpoints so you can adhere to a least privilege policy. With application-level privilege elevation, user-level privileges are not required and people can still access all the systems they need.

You can manage all local users on all endpoints across your organization, including the automatic rotation of local user password(s), all from a central console.

The ability to audit and review the activity of local users and groups is essential to retroactively identify problematic activity and reduce risk. Privilege Manager lets you swiftly review and search across all User and Group activity associated with privilege escalation on every managed endpoint.

The Privilege Manager mobile app for iOS and Android lets you manage endpoints, configure policies, process approvals, and receive event alerts via a mobile device so you can learn of requests and address issues quickly.

Privilege Manager integrates with reputation checking software like VirusTotal to provide application analysis in real time. This unique feature allows for reputation analysis of any unknown applications in order to mitigate risk of endpoint attacks from ransomware, zero-day attacks, drive-by downloads, and other unknown malicious software. With Privilege Manager , all applications that meet a general condition (i.e. executed from a specific directory or directories, file names, types, or any applications that are disassociated with existing policies) can be sent to VirusTotal for a reputation check and analysis.

Successful application control demands that you have a complete, real-time understanding of the status and activity of all endpoints. Privilege Manager provides a unified reporting dashboard so you can quickly evaluate the status of endpoints, review activity logs and event data, and access a broad library of reports. Responsive and fully configurable, Privilege Manager 's dashboard reporting enables you to quickly drill down into reports across any dimension (time, geo-region, OS, status…) to evaluate activities and trends. From the dashboard you can also set up automated alerts to stay informed of potential problems.

Many organizations choose to protect their Privilege Manager web server by restricting it from direct outbound internet access. To secure your environment according to best practices, it is not enough to simply set your server offline because Privilege Manager still will communicate directly to agents across your network that DO have direct internet access, therefore attackers can potentially use the connection between your endpoint agent and Privilege Manager to breach your web server. To prevent this direct connection between agent endpoints and your Privilege Manager web server, Privilege Managers allows for the setup of a Reverse Proxy machine with limited permissions. A properly configured Reverse Proxy will act as a buffer between Privilege Manager agents and the Privilege Manager server to limit server exposure.

Sandboxing quarantines applications so they are not allowed to execute, or only allowed to execute in a limited way so they don't touch any system folders or underlying OS configurations. Privilege Manager supports sandboxing for applications that are not known, to ensure they do not negatively impact productivity or introduce threats to the endpoint or network.

Many organizations leverage ticketing systems to streamline their support workflow and like to view and report on all support requests within a single system. Privilege Manager can be fully integrated into ServiceNow, so support requests and IT responses can be managed, tracked, and reported via the ticketing system itself.

For those organizations utilizing the Symantec Endpoint Protection or Symantec Endpoint Protection Cloud solution for allow listing and reputation, Privilege Manager can utilize the SEP allow list and reputation engine to inform and prescribe its provision of application control capabilities across endpoints.

You can integrate your least privilege and application control program with a SIEM tool or other cyber security reporting and analytics services and tools. Privilege Manager can push out SysLog messages on a fully configurable schedule to any application or service that accepts the SysLog format.

Privilege Manager can integrate with Microsoft System Center Configuration Manager and scan SCCM software delivery “packages” for applications that can be allow listed by Privilege Manager .

Privilege Manager supports allowing trusted applications, blocking to deny known malicious applications based on attributes, file hash, location, or certificates, and monitoring to prevent unknown applications from running. Monitoring provides a system for discovering the unknowns and adding an action that hinges on a reputation check. Distinct from allowing applications to run with default user level privileges, an elevation policy applies admin credentials to specified applications. This type of policy is often paired, so that employees can perform trusted tasks that require administrator credentials to complete, like installing a trusted application (Adobe) or device (printer), without involving IT support.

By only elevating application privileges based upon specific policies and criteria, Privilege Manager ensures people don't use Microsoft's UAC capabilities to grant a dangerous or unknown application administrative rights under any circumstance.

Privilege Manager identifies all local accounts on agent-installed endpoints and flags those with local admin rights, including hidden or hardcoded admin privileges. A single, comprehensive view makes management easy.

Least Privilege Explained

Least Privilege is a security-driven management philosophy that models a system where all employees are given the minimum level of access rights necessary to carry out their job functions on endpoint machines. This is to protect each machine from malicious applications, rogue employees, or attackers. Privileged local admin or root accounts on endpoints give unfettered access to the entire endpoint and can potentially be used to access other computers, domain resources, and critical servers unless a least privilege security model is implemented. But implementing Least Privilege can be difficult for IT teams to enforce because there are plenty of daily, trusted activities that employees must perform that require access to privileged credentials.

Privilege Manager 's toolset is two-fold. First, Local Security discovers all accounts that exist on endpoints and allows Privilege Manager Administrators to control the exact membership of every local group. This will ensure the correct admin and root accounts are permanently set. Additionally, credentials will be controlled by enforcing password rotation on those accounts.

Second, Application Control allows Privilege Manager administrators to manage application activity on endpoint machines. Applications that require admin rights or root access can be automatically elevated, allowed applications are allow listed, and malicious applications are blocked.

In other words, tailoring a robust, role-based Application Control system is key to keeping your organization's employees working both securely and effectively, without notable disruptions. But managing local administrator and root accounts through Local Security is arguably the fastest way to lock down your network from malicious endpoint attacks that exploit administrator access.

Every implementation looks different when configuring Privilege Manager to work best for your organization. The key is to know your goal and be smart about getting there. The Getting Started section will walk you through beginning configurations for both Local Security and Application Control.

User Interface Updates

Discover the newly revamped and uniquely designed Privilege Manager user interface!

Refer to The Privilege Manager UI for an overview of the main UI components.

The upgrades enhance the user experience, provide an improved workflow, and promote ease of use.

Purposefully arranged, each page contains functional and/or aesthetic modifications. The contemporary design and layout facilitate the ability to perform least privilege actions, leveraging a more straightforward approach.

- From a neatly structured left navigation pane organized by computer group
  - to feature-rich graphs, sophisticated charts, and razor-sharp images . . .
- From easily accessible application, group, and user policies
  - to a Create Policy wizard that provides complete guidance . . .
- From Save buttons, Search and Filter options, and Context menus – each prevalent throughout the application
  - to commonly accessed pages such as Client System Settings, File Inventory, and Policy Events now available in the application forefront . . .
- From a publicly accessible API that allows you to invoke bulk operations specific to policies, filters, and actions
  - to a smartly refined application with a "you" focus . . .

This all-inclusive application promotes a customer-first approach, simplifying the workflow process.

The Privilege Manager enhancements extend themselves to a more intuitive user experience. While the application remains sturdy and dependable, the upgrades enable you to create and manage least privilege projects with greater efficiency and ease.

To preview the user interface enhancements, please view this video.

> **Note**: Switching between the new and old UIs post upgrade is not available.

Glossary

Action - An action is not required in a policy. A policy can be designed, for example, to simply listen for specific application activity, and provide auditing information back to Privilege Manager . However, to apply controls to a process (executable), one defines an action in the policy.

Some common actions include:

- Adjust process rights,
- Add administrative rights,
- Remove administrative rights,
- Deny application execution,
- Require user justification – user provides a reason why they need to run the application,
- Application warning,
- Bypass UAC prompt,
- Require workflow approval – user needs approval to run an application, etc.

Agent - An agent is installed on every endpoint in your network and will 1) Receive and apply defined policies to govern application/process execution on the endpoint, 2) Execute tasks on the endpoint and feed audit and inventory data back to Privilege Manager .

Agent BaseUrl - The agent must be set to communicate directly with Privilege Manager . There exists a registry entry that is set upon agent installation – this registry key is called BaseUrl.

Agent Registration – The Privilege Manager agent completes a registration process when it initially contacts Privilege Manager following installation, but also at regular configurable intervals. So, registration occurs regularly.

Arellia – Arellia was the original name for Privilege Manager . Because of this, many file paths and back end notations include the term Arellia or AMS instead of Privilege Manager or TMS.

Computer Groups – (also called Resource Targets) Specified sets of computers that meet certain criteria (e.g. type of operating system, location of the computer, etc) that are targeted by certain policies and scheduled tasks.

Condition – Policy Conditions contain one or more filters that defines what a policy is 'listening' for. If the condition is satisfied in a policy, then an action is applied.

Config Feeds – Config Feeds can be found on the ADMIN page access from the Privilege Manager main page. Configuration feeds allow Delinea to deliver new components to Privilege Manager . Simply click through the options in the Config Feeds page starting with the Select Items button and download anything appropriate. Once the item is downloaded, it is immediately available in Privilege Manager .

Dashboard – Dashboard is the term for Privilege Manager 's landing page, or Home screen.

Event – Any notable file data on your network that is targeted by Privilege Manager is called an Event.

Discovery – Discovery is a term used by Delinea for any information that is scanned or “found” on a network and imported or used by our products.

Least Privilege – Least Privilege is a security strategy organized around best practices. When effectively implemented, an organization's employees can navigate their network system with the lowest level of privileges. Higher credentials are flexibly (and often automatically) granted or denied based on users and the tasks being performed. This dynamic strategy significantly reduces the threat of security breaches across an organization without interfering with daily operations.

Filter – The Policy Condition lists one or more filters. A filter is defined to identify many things about an executable or process, or 'situation' when an executable or process is initiated.

Common Filters include:

- File specifications,
- Network location,
- Directory location,

- Application reputation,
- Application digital certificate,
- Time of day, User context (what AD security group a user belongs),
- Download source,
- Drive type,
- File owner,
- Internet Zone,
- Security Catalogs, etc.

Inclusion Filter/Exclusion Filter – When a filter is placed in the Inclusion Filters or Exclusion Filters under the Conditions tab of a policy definition, it can be used to explicitly include or exclude what is defined in the filter with respect to a policy. (I.e. Exclusion: apply this policy only if the user is NOT an administrator; Inclusion: apply this policy only if the computer is on the company network; Inclusion: apply this policy only to applications signed by a specific company's digital certificate, etc.).

Persona - Personas manage sets of privileges that are assigned to users on specific Windows computers or Computer Groups. A Persona includes a set of pre-defined filters and provide an easy way to assign policies based on Computer Groups and users. Filter parameters in a Persona are limited and specifically designed to be applied to Windows administrative users.

Policy – A set of conditions (Filters) that, when met, will apply an action to managed resources (target computers).

- **Blocking** – Type of policies that will deny an application from running based on a determined set of criteria.
- **Catch-All** Policy – A Catch-All policy is a type of Learning Mode policy that will gather information about any unknown events that happen in your network.
- **Elevation Policy** – An Elevation Policy will allow specified applications to run with administrator credentials.
- **Monitoring** – Monitoring is a dynamic method of managing applications that might not be included on a safelist or blocklist. Instead of trying to anticipate every executable users will run, you can apply a flexible policy that includes actions or reputation checking for unknown applications.
- **Non-Blocking** – Types of policies that will allow applications to run according to normal user credentials. This is often considered a neutral policy to specify trusted applications.

Policy Priority – Policies are evaluated in a certain order for each application that runs. If one policy blocks an application and ends execution before a second policy that was intended to elevate privileges, then only the block will occur. It is important to have an awareness of all policies that are defined and the order in which they are called by the agent.

RDP Monitor – Discontinued with version 10.6. The RDP Monitor is used to configure the Enhanced Session Monitoring feature in Secret Server. It is found in Privilege Manage because this feature uses the agent architecture defined by Privilege Manager , however this feature typically is not used in a Privilege Manager PoC.

Reputation Engine – Privilege Manager can call upon a reputation engine (e.g. VirusTotal) in real-time to check an application's public reputation. One can create a reputation checking policy in Privilege Manager through Monitoring policies. This type of policy can take application information and send it to the engine in real-time and act on the application based on the returned reputation. For example, if the reputation engine returns a BAD grade, the application can be denied. It is recommended to apply this type of policy to specific directories where new or unknown applications might reside – like the Downloads, TEMP, or Desktop directory.

Resource Targets – (also called Computer Groups) Specified sets of computers that meet certain criteria (e.g. type of operating system, location of the computer, etc) that are targeted by certain policies and scheduled tasks.

Scheduled Tasks — A Privilege Manager policy may be defined to be applied based on a schedule. These items run using the Task Scheduler on each endpoint, and are only accessible by Privilege Manager administrators.

 # # – Secret Server is a second Delinea product that many IT teams use to securely manage privileged accounts and passwords in an organization. Privilege Manager and Secret Server are separate products but often used together for a holistic approach to network security. The two products are highly integrated and some of the features cross between products. For example, the Secret Server license page houses Privilege Manager licenses.

Send Policy Feedback – Send Policy Feedback is a setting that can be enabled for any policy that sends information to Privilege Manager . This is used in Learning Mode Policies and often valuable during testing, configuration, or auditing projects.

Thycotic – Thycotic was a previous company name. To ensure backwards compatibility, some file paths and back end notations include the term Thycotic.

TMS – TMS is shorthand for Thycotic Management Server. It is an umbrella term for our base application layer that Privilege Manager runs on top of.

VirusTotal – The VirusTotal reputation service is supported by Privilege Manager as a reputation engine. A free VirusTotal API key will need to be obtained to use VirusTotal in Privilege Manager . Note that the free API has limits and may not be appropriate for a production environment that functions with over four requests per minute.

Platforms

Although Privilege Manager provided feature parity across all supported operating system, there are best practices and some functional areas that differ and are detailed in this section's topics.

For platform specific details, refer to:

- macOS
- Windows
- Unix/Linux

On macOS endpoints, best practices around preference panes and user file and folder access varies from how these areas are managed on other operating system endpoints.

Changes introduced with Catalina and completed with Big Sur required a new approach from Privilege Manager.

The following topics provide details on platform specific information:

- macOS Extensions
- Sudo Plugin
- Secure Token
- Best Practices Preference Panes
- macOS Gatekeeper Best Practices

Best Practices Preference Panes

This best practices section pertains to all macOS versions from **El Capitan** to (and including) **Big Sur**.

Delinea supports elevation without having to enter admin credentials for these preference panes:

- Date & Time
- Energy Saver
- Network

Other preference panes should not be used in elevation policies based on the nature of their function within the system. They can be elevated, but for certain actions, admin credentials may still be required. Changing those preference panes' settings should really be done by administrators only and not standard users, as designed by Apple®.

All macOS preference panes can be used in deny policies.

This section contains macOS specific user interface topics.

- Configuration Profiles
- Best Practices System Preferences
- Best Practices Printer Installs
- Date & Time Preference Pane
- Energy Saver Preference Pane
- Network Preference Pane
- Preference Pane macOS

Getting Started with macOS

Refer to the following topics for prerequisites that allow for an environment-wide macOS deployment:

- System Extensions: Using an MDM Profile for your Agent
- Allow Notifications: Manage Privilege Manager Notifications on macOS
- Approvals: macOS Approval Process
- Agent Installation Overview: Installing macOS Agents
- Unattended Agent Install: Using an Unattended Install Method
- Deployment via Jamf: Setting up a Jamf Integration

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Best Practices System Preferences

On macOS systems, users (Admin and Standard) can customize the System Preferences based on their macOS role scope. Details about macOS-based customizations via System Preferences can be found at https://support.apple.com/guide/mac-help/change-system-preferences-mh15217/mac.

With Privilege Manager, you can implement policies that provide application control to deny execution of all preference panes. Run as root policies are only supported and recommended for management of the following preference panes:

- Battery – Big Sur and later – Laptop hardware devices
- Date & Time
- Energy Saver – Desktop hardware devices
- Network

The following rules apply for policy managed preference panes:

- If there is no policy for a given preference pane, the authorization aligns with its system default.
- A preference pane's default authorization is restored when an associated policy is disabled/deleted.
- Managed preference pane defaults are restored during an uninstall.

  Note: For preference panes that display the **padlock** icon, if you click its padlock to close, you must enter admin credentials to unlock. Based on the way macOS caches preference pane authorizations, if standard users click the **padlock** icon, they must close and reopen System Preferences for the system to re-perform the policy evaluation.

Error Behavior of Preference Panes

When a particular preference pane opens in the System Preferences application, the XPC bundles for that preference pane open. The XPC bundles remain open until the System Preferences application closes completely.

This behavior can result in failed policy evaluations. Opening a preference pane that previously has been opened and evaluated without closing the System Preferences application following the initial opening, results in the policy evaluation not triggering again for that preference pane because the XPC bundle remains open.

For example, if you have a policy that requires approval of Date & Time preference pane changes (and the notification dialog is canceled and Date & Time is re-opened), the notification dialog is not presented to the user again. Instead, a sheet dialog indicates that the preference pane cannot be loaded. To re-trigger policy evaluation, System Preferences must be closed then reopened.

User-Based Behavior of Preference Panes

Standard User

Without an active policy, preference panes appear locked, and standard users are unable to make changes. The exception is the Date & Time preference pane. Standard users are allowed to edit the clock appearance. Any changes here are specific to the user's session and can be modified without clicking the locked **padlock** icon, despite the message implication next to the icon.

With an active policy, depending on its action, the following occurs:

- **Deny Execute** | **Deny Execute Message** | **Application Denied** – The system presents users with a dialog indicating they are denied running the preference pane. Depending on the usage of the Deny Execute Message versus the Application Denied Message coupled with the macOS version, each may appear twice.
- **Application Justification** – The system presents users with the justification dialog. Once users enter a justification and click Continue, the system enables all controls on the pane and saves changes. When users click Cancel, macOS displays an error sheet in System Preferences indicating there was an error loading the preference pane.
- **Application Warning** – The system presents users with the warning dialog. When users click Cancel, macOS displays an error sheet in System Preferences indicating there was an error loading the preference pane. When users click Continue, the system enables all controls on the pane and saves changes.
- **Application Approval Request** – The system presents users with the approval dialog. When users click Cancel, macOS displays an error

sheet in System Preferences indicating there was an error loading the preference pane. Once users enter a reason and click Continue, the system displays the dialog for waiting for approval. If users click Cancel in the waiting dialog, macOS displays an error sheet in System Preferences indicating there was an error loading the preference pane. Depending on the Approval action (Allow or Deny), the following action occurs:

- **Allow** – The system enables all controls on the pane and saves changes.
- **Deny** – macOS displays an error sheet in System Preferences indicating there was an error loading the preference pane.

The following preference panes require admin credentials to make changes and should not be managed with a run as root policy that triggers a user dialog for justification or approvals:

- Parental Controls
- Printers & Scanners
- Security & Privacy
- Sharing
- Time Machine
- Users & Groups

Admin User

Local admin users should not be managed by any policies requiring user interaction when the policy is triggered. For macOS endpoints, the only policy type would be one that demotes administrative rights for a particular preference pane by simply denying access.

Energy Saver and Battery Preference Panes

Beginning with Big Sur, macOS introduced a new preference pane for managing energy-related system preferences for laptop hardware devices. Prior to Big Sur, the Energy Saver preference pane was used for desktop and laptop hardware devices. Additionally, Monterey introduced a new Energy Saver preference pane different from Big Sur and earlier.

The following table shows how the Energy Saver and Battery preference panes are applicable to macOS and the hardware platform:

Energy Saver

Catalina and earlier	Desktop, Laptop	Yes
Big Sur and later	Desktop	Yes
Big Sur and later	Laptop	No

Battery

Catalina and earlier	Desktop, Laptop	No
Big Sur and later	Desktop	No
Big Sur and later	Laptop	Yes

Privilege Manager supports both preference panes with the following filters:

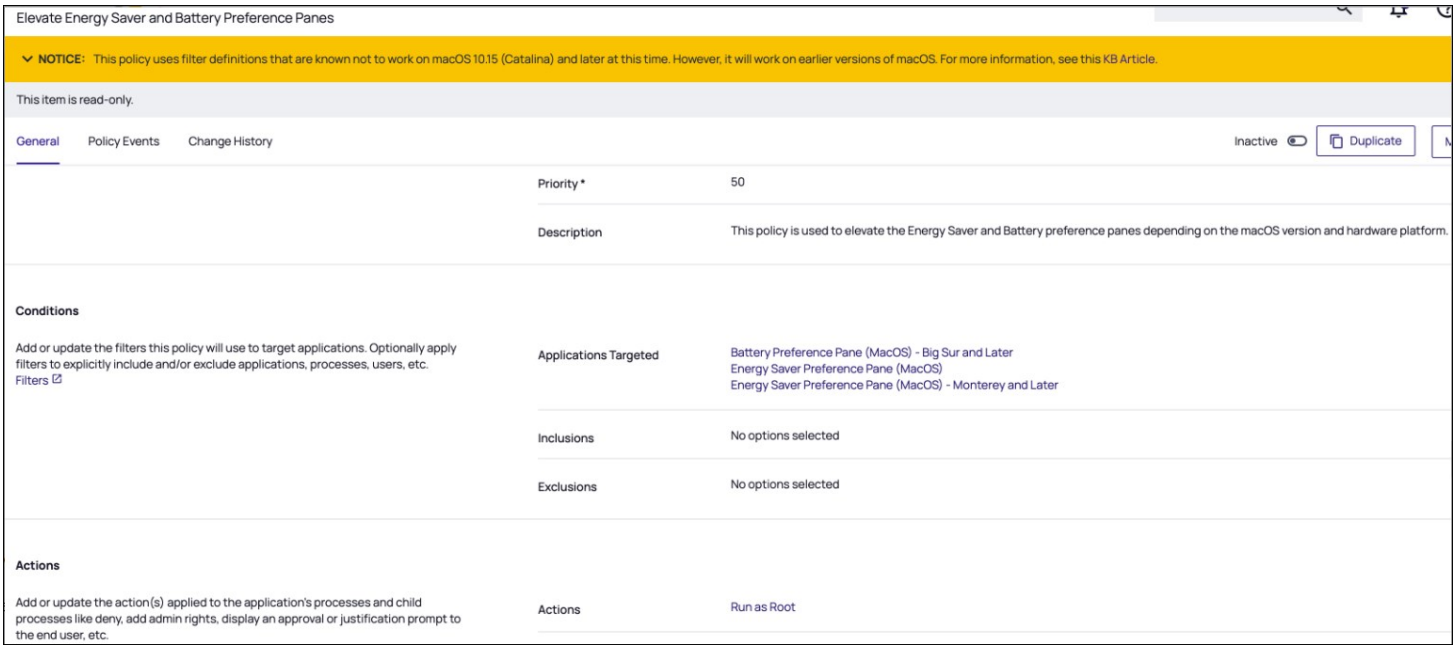
- Battery Preference Pane (MacOS) – Big Sur and later
- Energy Saver Preference Pane (MacOS)

- Energy Saver Preference Pane (MacOS) – Monterey and later

  Note: Support for the Battery and New Monterey Energy Saver preference panes is available in the latest Privilege Manager 11.2 agent and later.

The following default policy is also available for direct use. Alternatively, you can duplicate the policy, using it as a template to include an Advanced Message action:

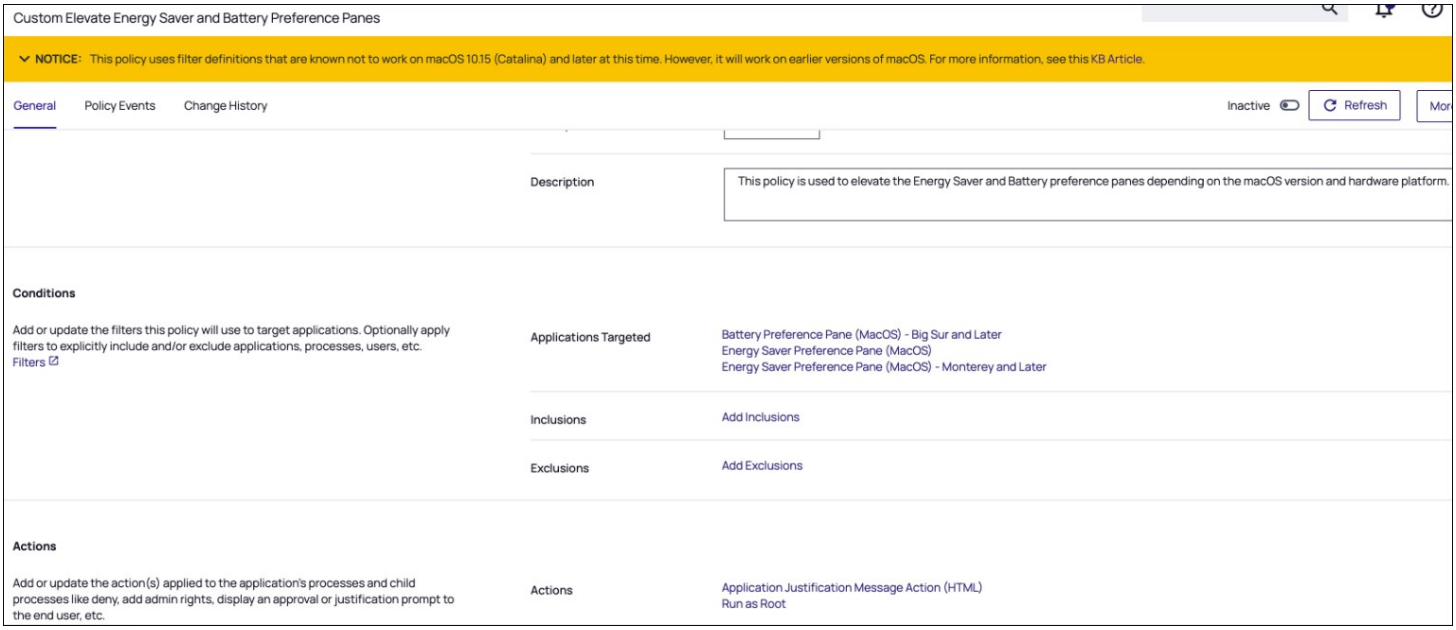
- Elevate Energy Saver and Battery Preference Panes



The policy is configured to elevate without user interaction for the above Battery and Energy Saver preference pane filters such that it is applicable to all macOS versions.

> **Note**: If you have an existing policy that targets Energy Saver and you have macOS Monterey endpoints, you must modify the policy to include the **Energy Saver Preference Pane (MacOS) - Monterey and Later** filter. In addition, you must update the Privilege Manager agent on your macOS Monterey endpoints to the latest version.

The following is an example of a policy that leverages the above filters and includes the Application Justification Message Action (HTML) advanced message action:

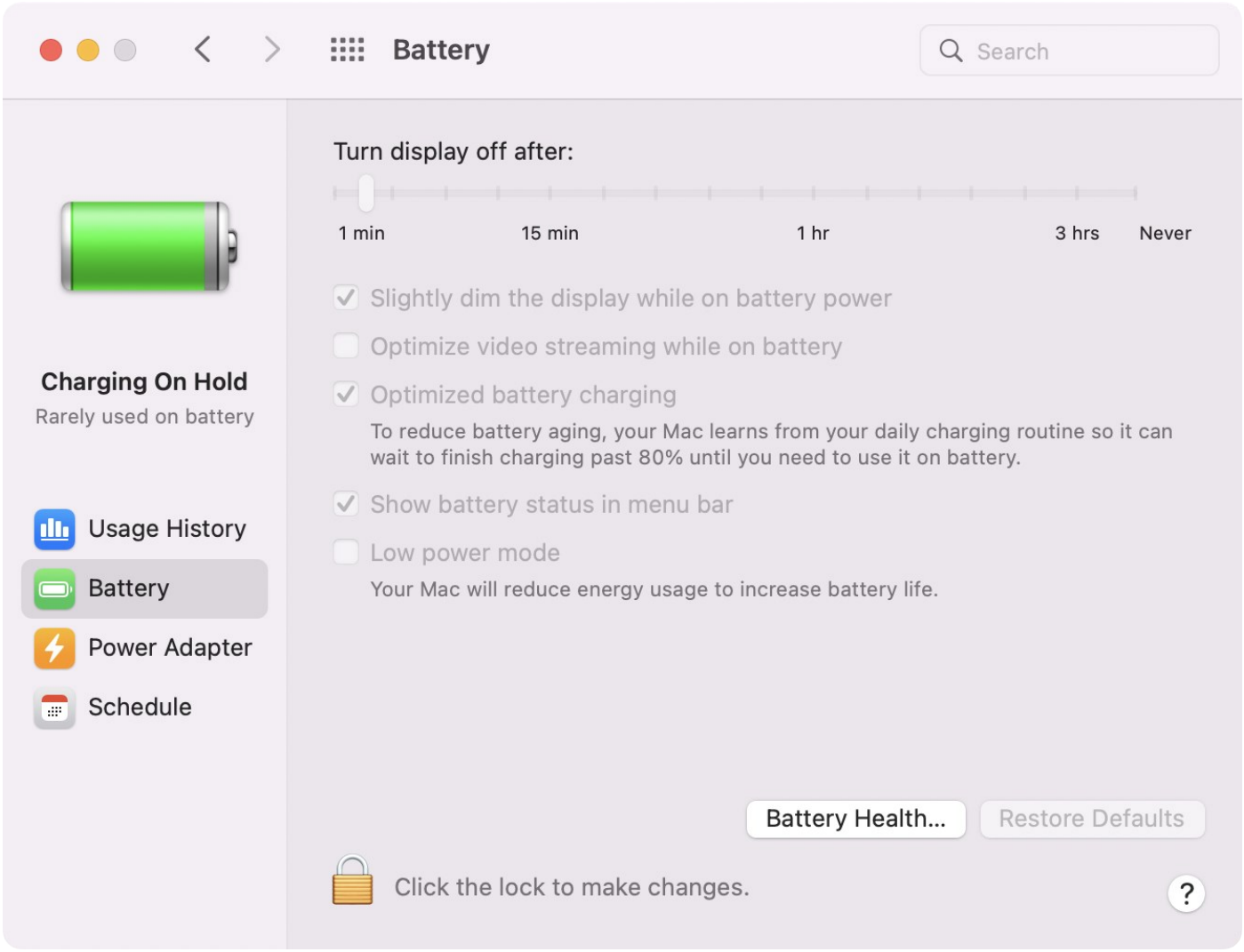

Custom Elevate Energy Saver and Battery Preference Panes
NOTICE: This policy uses filter definitions that are known not to work on macOS 10.15 (Catalina) and later at this time. However, it will work on earlier versions of macOS. For more information, see this KB Article.
General
Policy Events
Change History
Inactive
Refresh
Description
This policy is used to elevate the Energy Saver and Battery preference panes depending on the macOS version and hardware platform.
Conditions
Add or update the filters this policy will use to target applications. Optionally apply filters to explicitly include and/or exclude applications, processes, users, etc.
Filters
Applications Targeted
Battery Preference Pane (MacOS) - Big Sur and Later
Energy Saver Preference Pane (MacOS)
Energy Saver Preference Pane (MacOS) - Monterey and Later
Inclusions
Add Inclusions
Exclusions
Add Exclusions
Actions
Add or update the action(s) applied to the application's processes and child processes like deny, add admin rights, display an approval or justification prompt to the end user, etc.
Actions
Application Justification Message Action (HTML)
Run as Root

Battery Preference Pane

Standard User - System Defaults

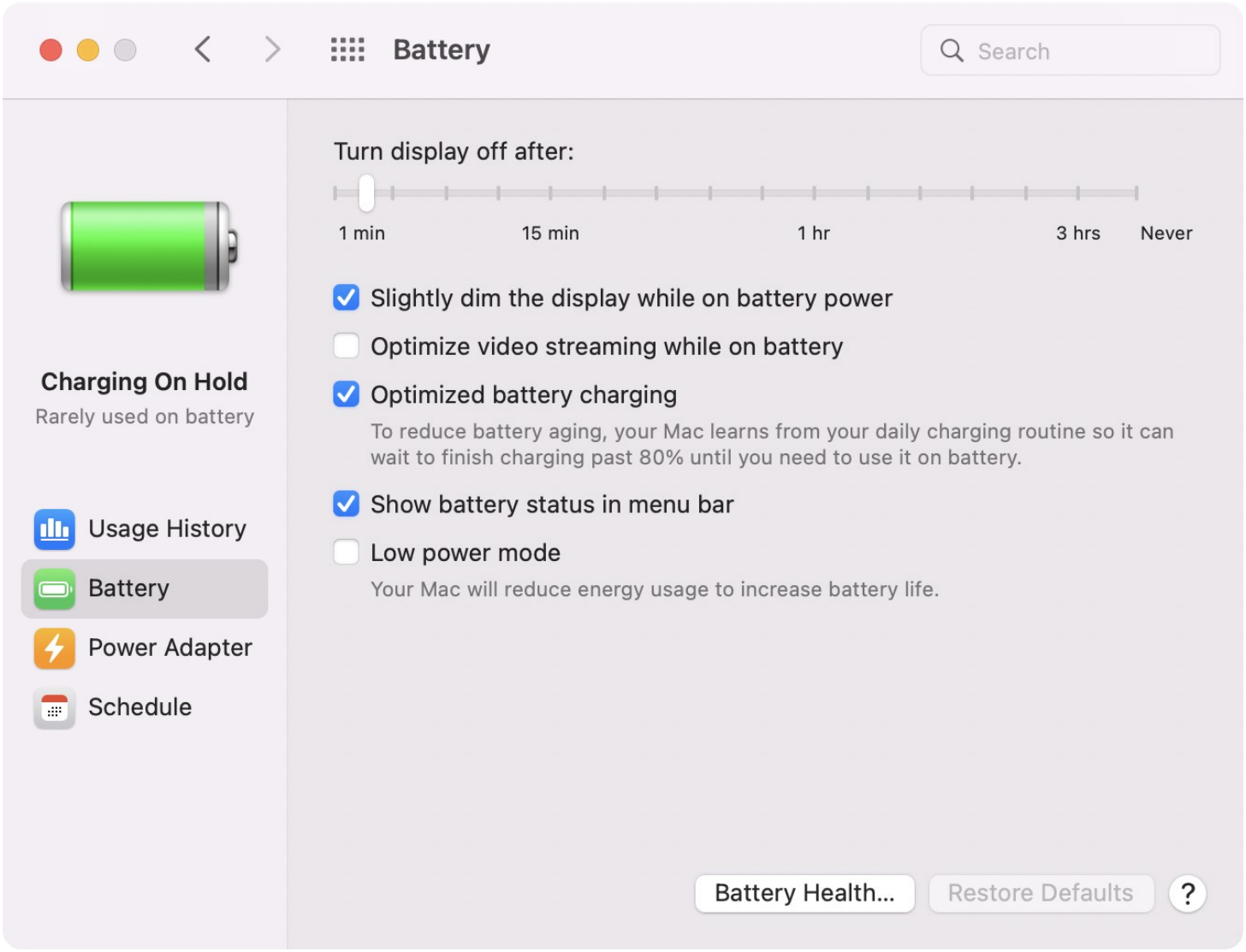
For standard users when Battery is not managed by a policy,

- all controls are disabled and the padlock icon is closed.
- clicking on the padlock icon results in a prompt, asking for administrator credentials.



Admin User – System Defaults

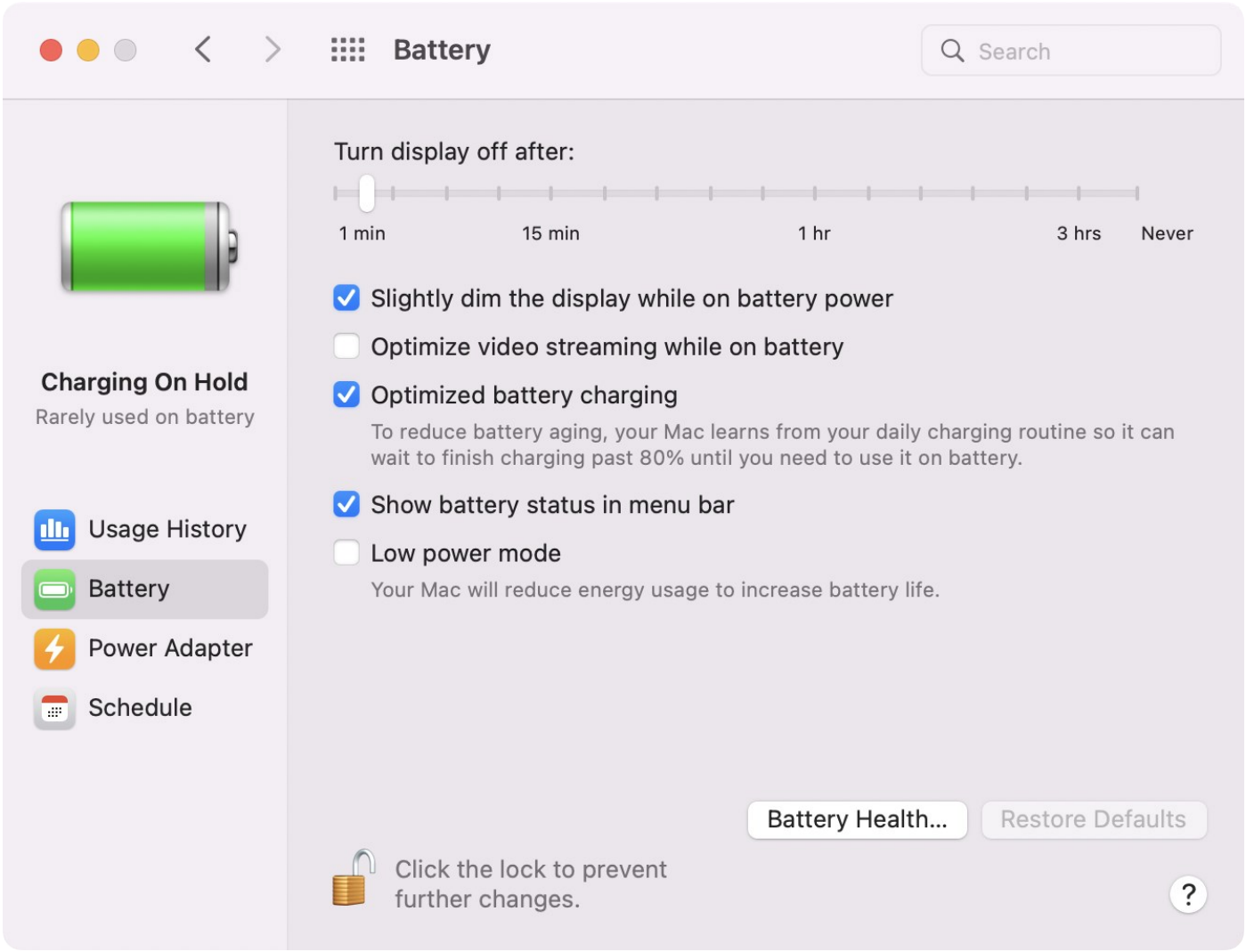
For admin users, the Battery pane does not have a padlock.



Admin and Standard User - Managed by Policy

For admin and standard users when Battery is managed by a policy to run as root,

- all controls are enabled.
- the padlock icon is not present for admin users and unlocked for standard users.



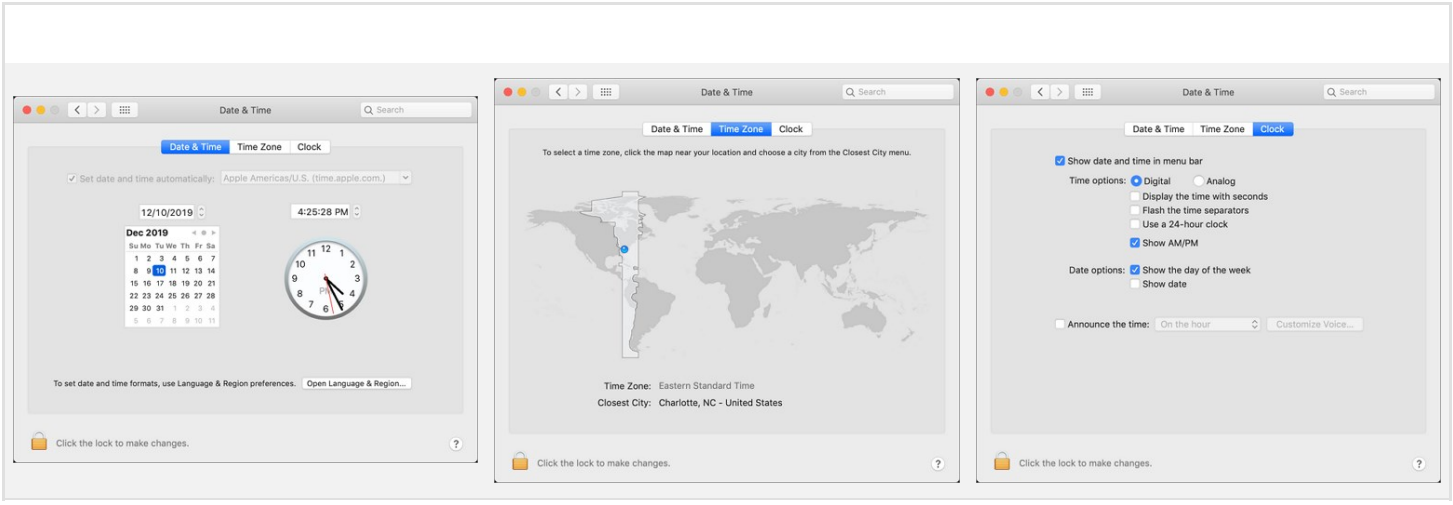
If the policy includes an advanced message action, the admin and standard user will be prompted accordingly.

Date & Time Preference Pane

Standard User - System Defaults

For standard users when Date & Time is not managed by a policy,

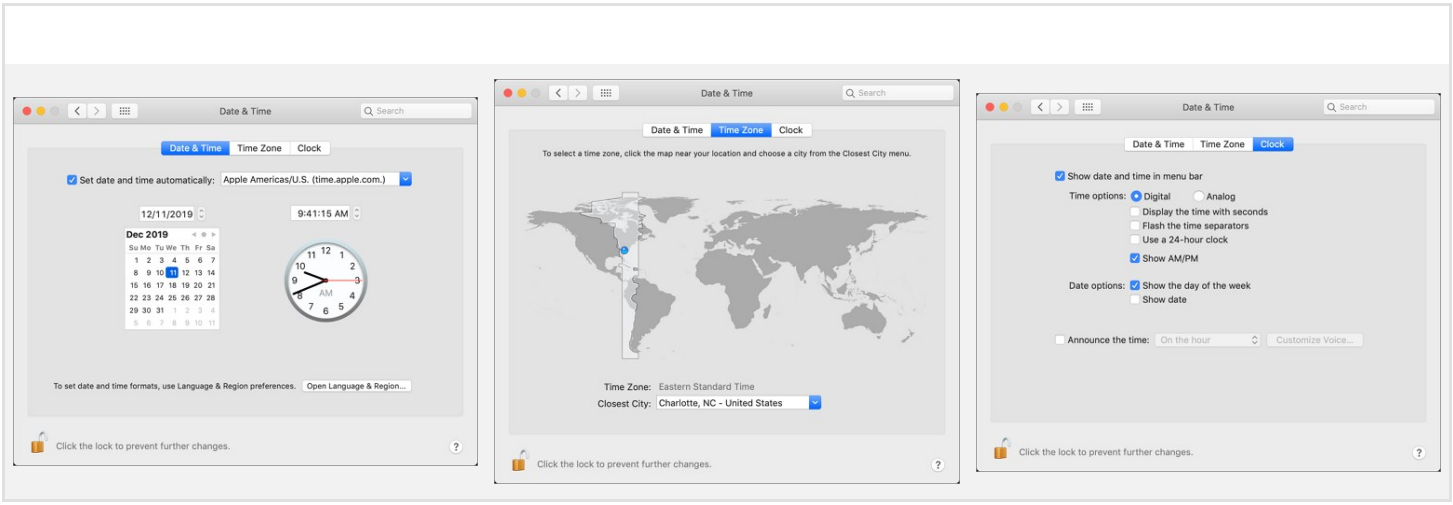
- all controls on the Date & Time tab are disabled and the padlock icon is closed.
- all controls on the Time Zone tab are disabled amd the padlock icon is closed.
- all controls on the Clock tab are enabled and changeable by the user. These are user specific settings.
- Clicking on the padlock icon results in a prompt, asking for administrator credentials.



Standard User - Managed by Policy

For standard users when Date & Time is managed by a policy to run as root,

- all controls on the Date & Time tab are enabled and changes are saved.
- all controls on the Time Zone tab are enabled and changes are saved.
- all controls on the Clock tab are enabled and changeable by the user. These are user specific settings.
- The padlock icon is unlocked.



Refer to this video demonstration.

Local Administrator User - Not Managed by a Policy

For local admin users, the padlock icon appears locked, by clicking on it a prompt is triggered to enter admin credentials. Once those admin credentials are entered, the padlock icon is unlocked and changes can be made.

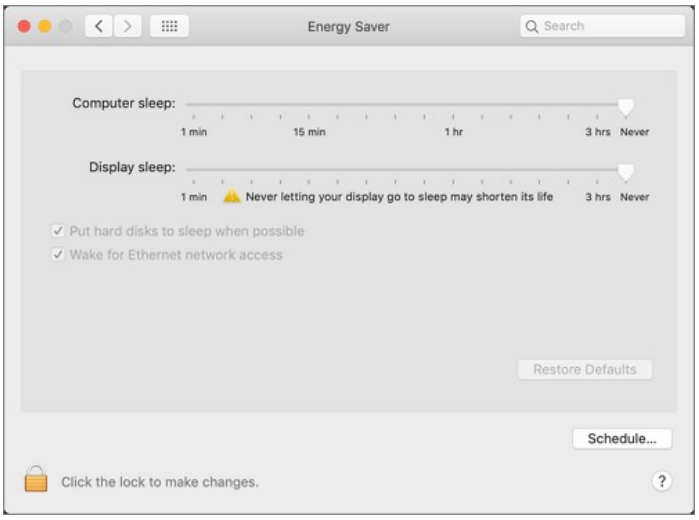
Using a policy to run as root is not necessary for local admin users.

Energy Saver Preference Pane

Standard User - System Defaults

For standard users when Energy Saver is not managed by a policy,

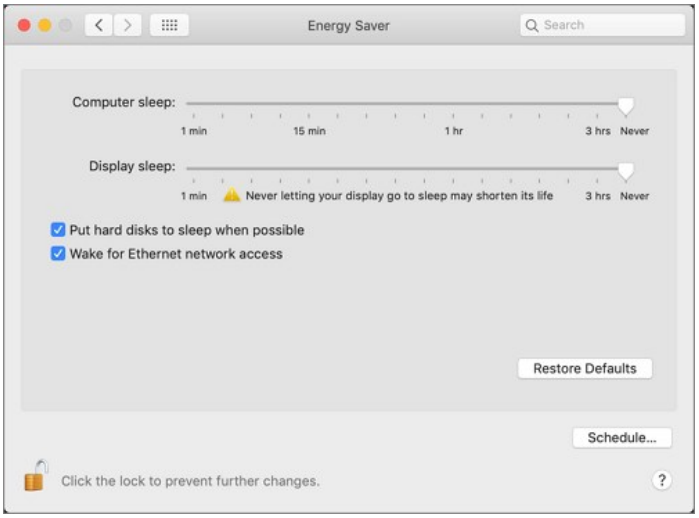
- all controls are disabled and the padlock icon is closed.
- Clicking the Schedule… button shows a panel with disabled controls.
- Clicking on the padlock icon results in a prompt, asking for administrator credentials.



Standard User - Managed by Policy

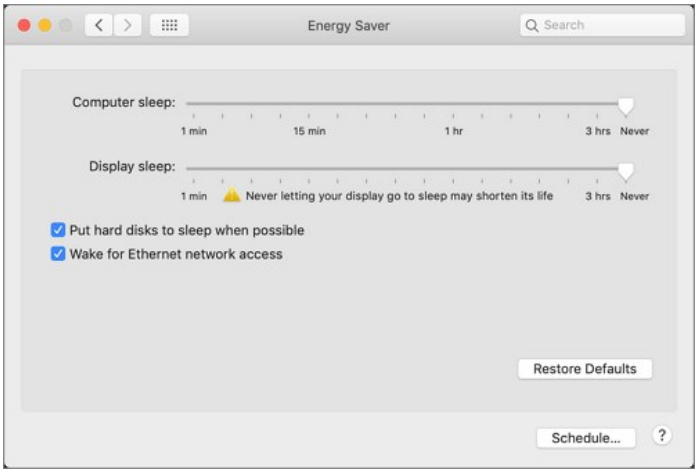
For standard users when Energy Saver is managed by a policy to run as root,

- all controls are enabled and changes are saved.
- Clicking the Schedule… button shows a panel with enabled controls. Any changes are saved.
- The padlock icon is unlocked.



Local Administrator User - Not Managed by a Policy

For local admin users, the Energy Saver pane does not have a padlock and all controls are enabled and changeable. Any changes are saved.



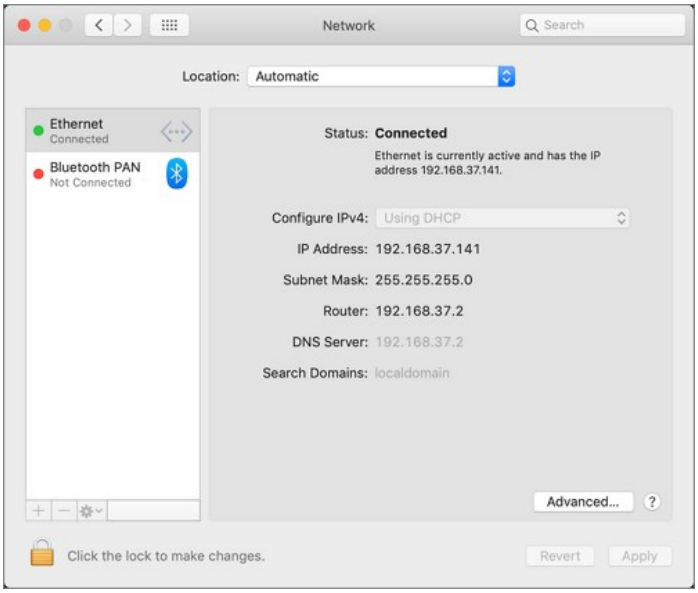
Using a policy to run as root is not necessary for local admin users.

Network Preference Pane

Standard User - System Defaults

For standard users when Network is not managed by a policy,

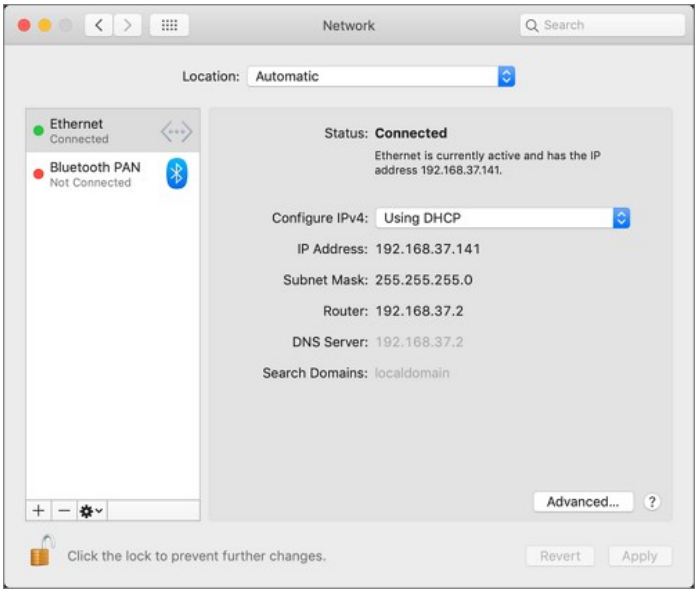
- all controls except for Location and Advanced are disabled and the padlock icon is closed.
- Clicking the Advanced… button opens a sheet depending on the network interface selected. Based on the selected interface, some elements may be enabled.
- Clicking on the padlock icon results in a prompt, asking for administrator credentials.



Standard User - Managed by Policy

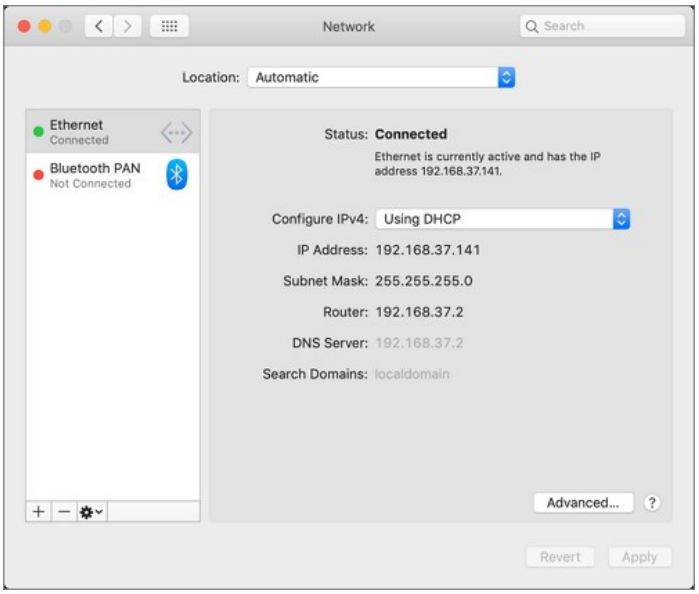
For standard users when Network is managed by a policy to run as root,

- all controls are enabled and changes are saved.
- Clicking the Advanced… button opens a sheet depending on the network interface selected. Based on the selected interface, elements are enabled.
- The padlock icon is unlocked.



Local Administrator User - Not Managed by a Policy

For local admin users, the Network pane does not have a padlock and all controls are enabled and changeable. Any changes are saved.



Using a policy to run as root is not necessary for local admin users.

Delinea

Best Practices Printer Installs

To install and manage printers via the Printers and Scanners preference pane, standard users on macOS should be added as members of the **lpadmin** group. Refer to this example video.

On macOS, adding a printer can happen in three ways. Two of those can be allowed through an elevation policy enabling a user to add a printer via

- an .app installation file directly or
- a .pkg driver installation directly.

The third option is where the Printers and Scanners preference pane is used to manually add a printer based on existing printer drivers. Refer to the link below for more information.

Under the first scenario, the application that is performing the install and configuration of the printer may prompt for admin credentials. If this is the case, you may need a policy that allows the application or applications provider by the printer vendor.

Refer to https://support.apple.com/guide/mac-help/add-a-printer-on-mac-mh14004/10.15/mac/10.15 for the latest printer setup information from Apple.

Introduced with Catalina and fully implemented with Big Sur, Apple announced the deprecation of kernel extensions and replaced them with system extensions. The macOS agent implements a system extension and it is the core of policy enforcement.

You can read more about system extensions on Apple's website.

Legacy Kernel Extensions (KEXT)

The legacy and now deprecated flavor of the macOS agent is composed of several components and at the core of it are the KEXT and ThycoticACSvc daemon. They work together to enforce policy.

Effect on Privilege Manager Customers by Apple Deprecating Kernel Extensions in macOS

In 2019, Apple announced the deprecation of kernel extensions (KEXTS) in a future OS upgrade and that System Extensions should be used instead. Beginning in macOS 10.15.4, the use of kernel extensions will trigger a notification that software using this type of extension includes a deprecated API and an alternative should be provided by the vendor.

How Does This Affect Privilege Manager ?

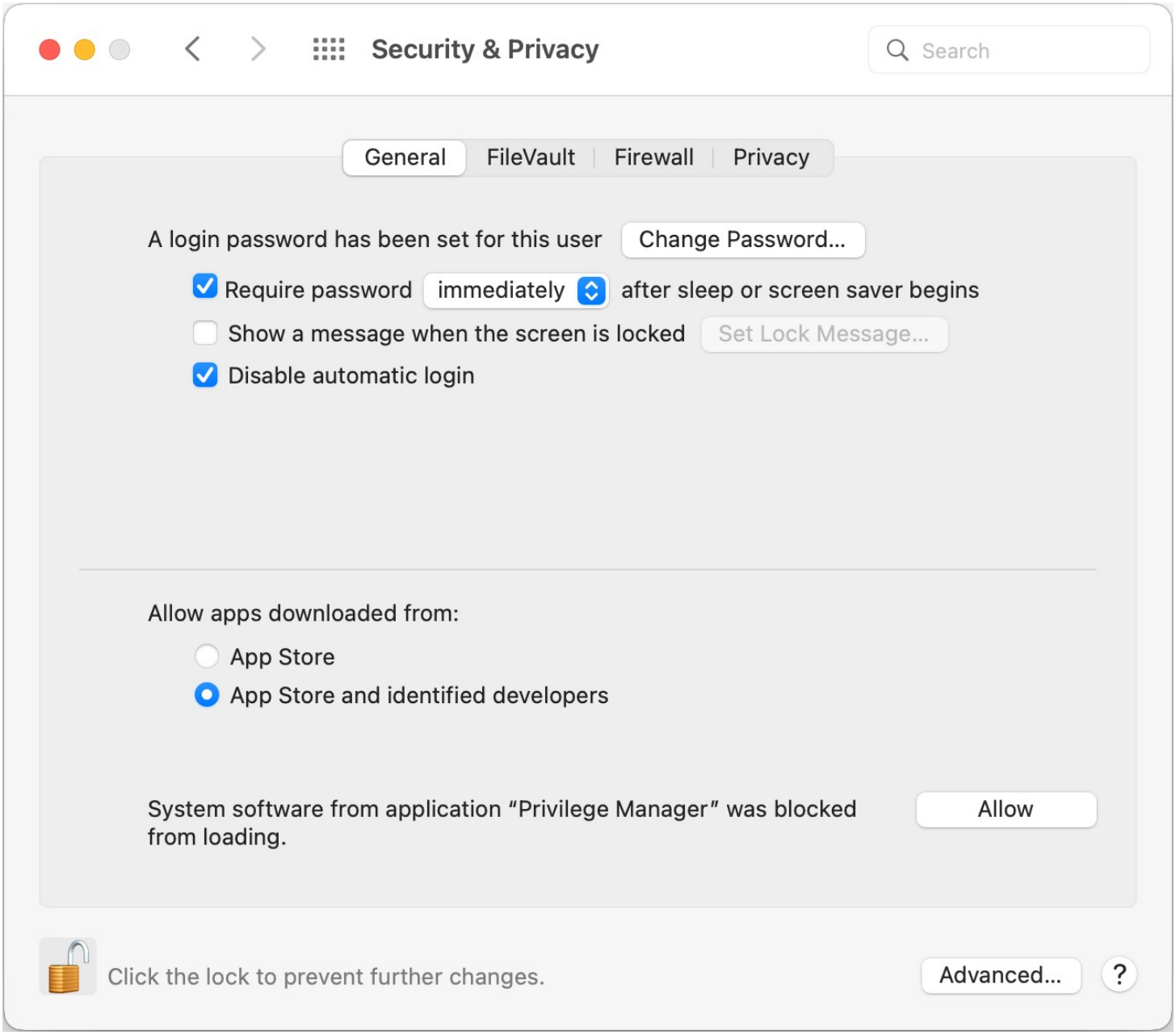
All new macOS agent functionality is implemented with a system extension for policy enforcement. The KEXT-based macOS agent will continue to function on supported versions of macOS up to and including Catalina. However, no new feature functionality will be made available. To take advantage of new features, you should upgrade to the latest version of Privilege Manager that supports your endpoints.

Using a Privacy Preference Policy Control Configuration Profile Payload

Privacy Preference Policy Control (PPPC) configuration profile payload allow for enterprises to manage and ease, through Mobile Device Management (MDM), the installation process of products that leverage KEXTs and SYSEXs for their end-users. When properly configured, this eliminates the need for the user to deal with all of the dialogs below.

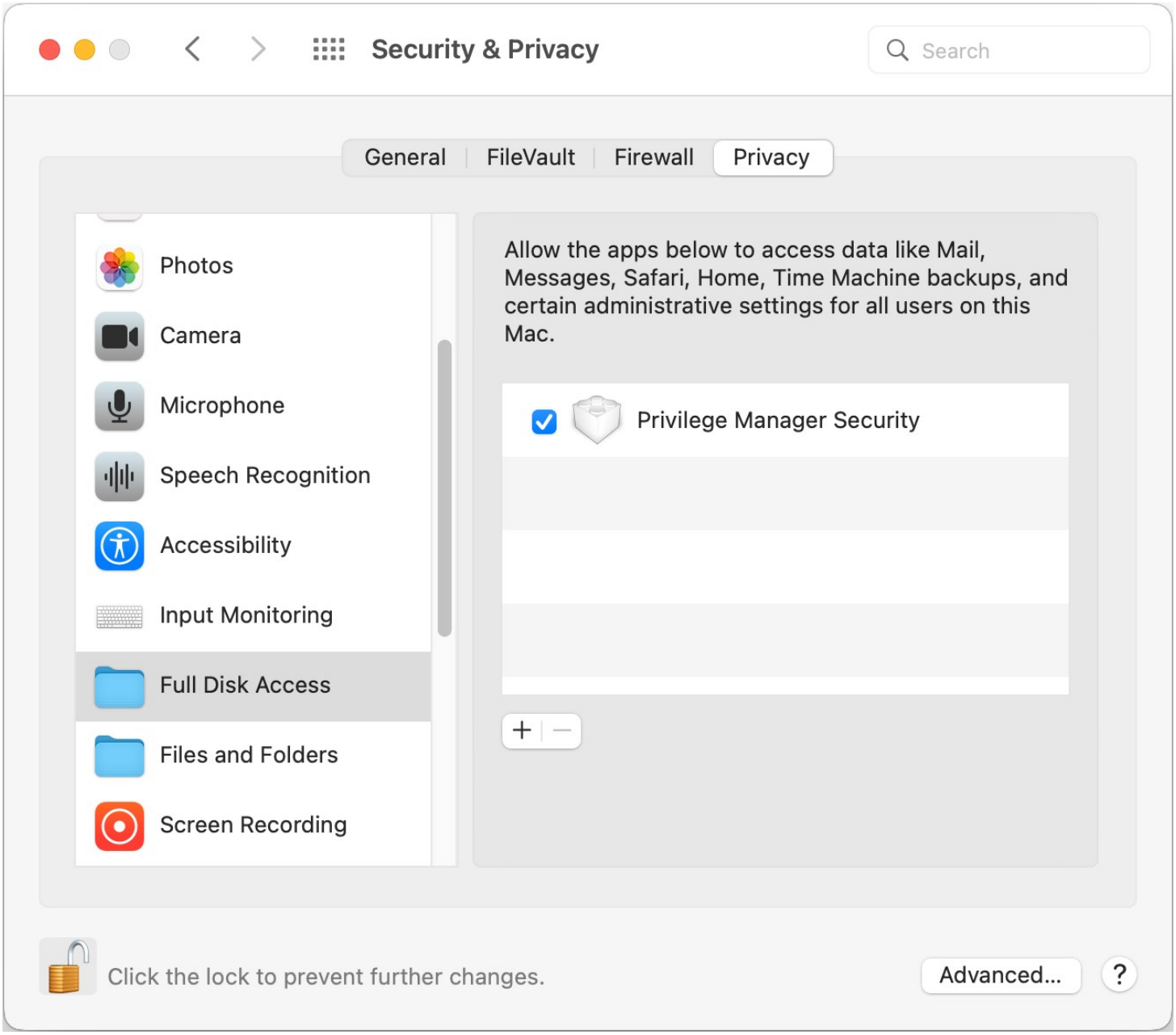
Delinea can provide the necessary configuration payloads that can be loaded into or leveraged with your MDM solution.

Allow System Extension

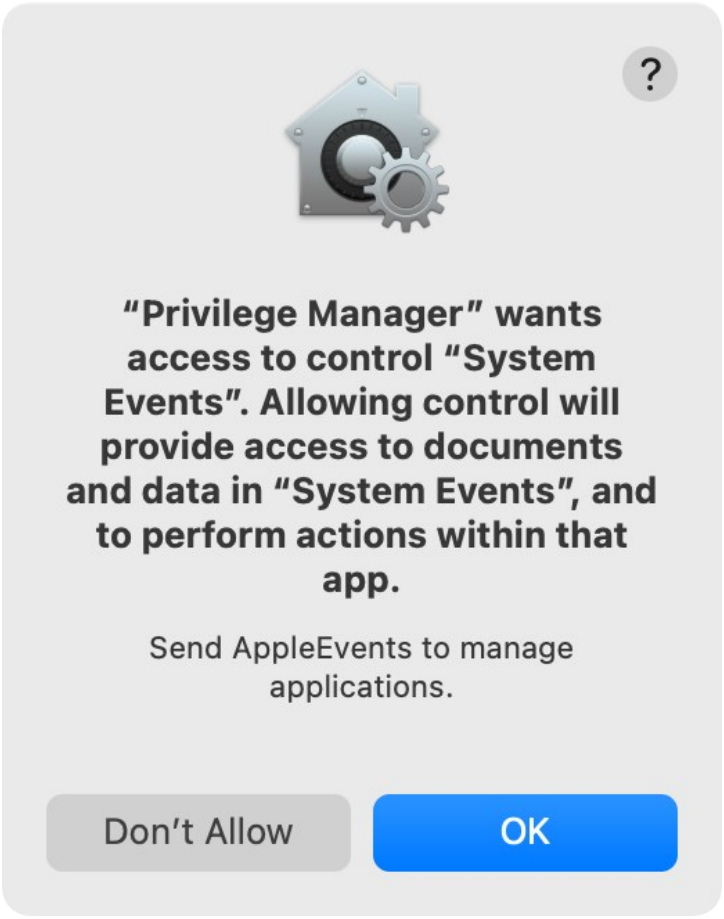


If you're not delivering a PPPC configuration profile via MDM to manage this, users will need to give Privilege Manager Security Full Disk Access.

Full Disk Access

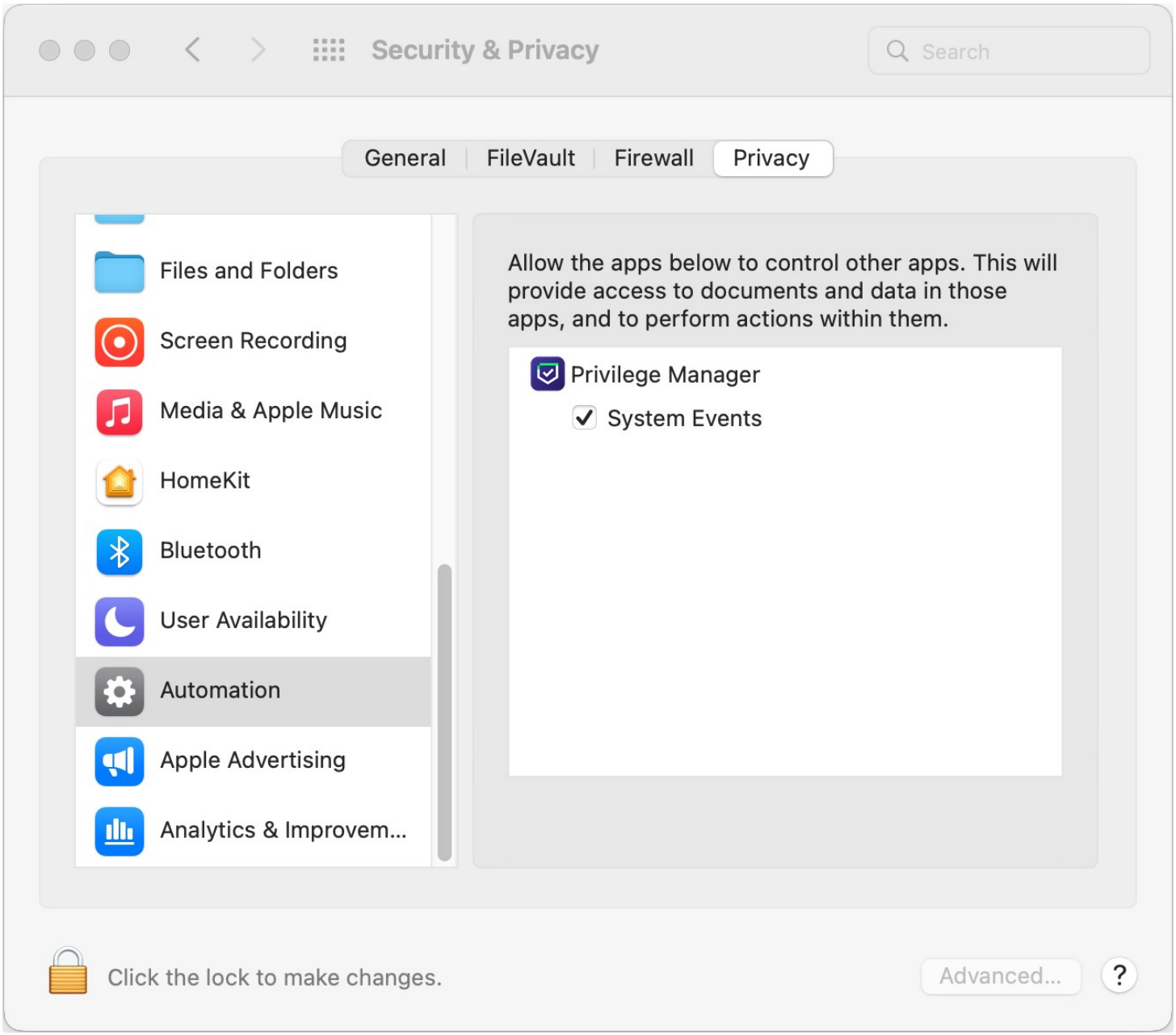


Allow System Events



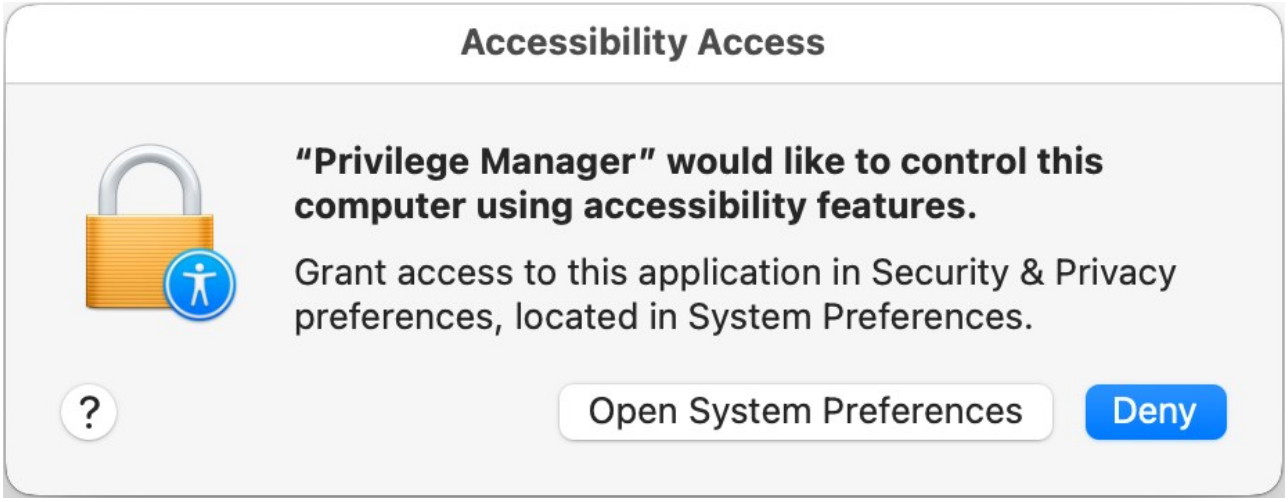
Clicking **OK** enables Privilege Manager to send AppleEvents to manage application windows. This setting can be found in **System Preferences** | **Security & Privacy** | **Privacy** | **Automation**.

Delinea

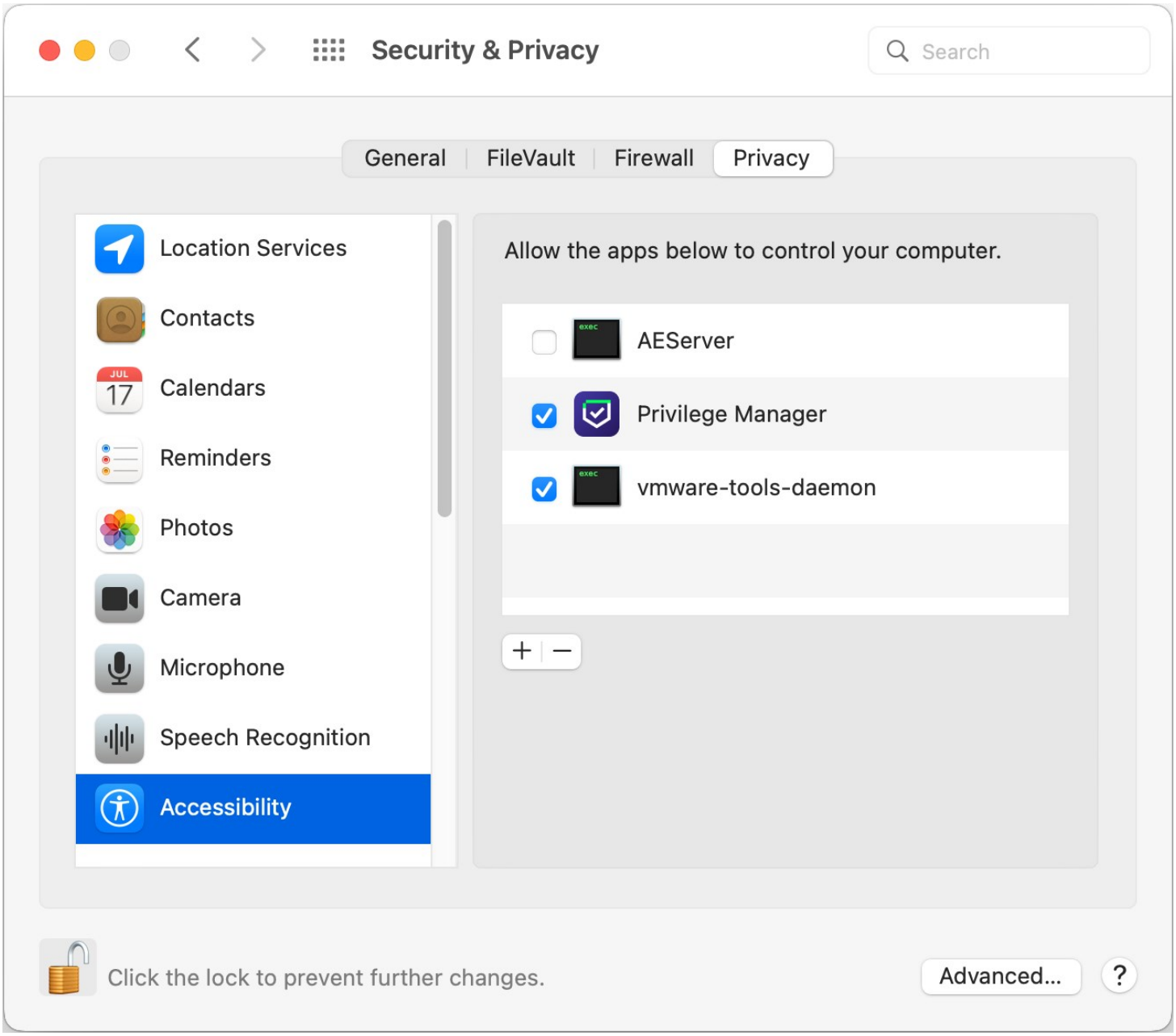


Accessibility

Delinea


Accessibility Access
"Privilege Manager" would like to control this computer using accessibility features.
Grant access to this application in Security & Privacy preferences, located in System Preferences.
?
Open System Preferences
Deny

Delinea


Security & Privacy
Search
General
FileVault
Firewall
Privacy
Location Services
Contacts
Calendars
Reminders
Photos
Camera
Microphone
Speech Recognition
Accessibility
Allow the apps below to control your computer.
AEServer
Privilege Manager
vmware-tools-daemon
Click the lock to prevent further changes.
Advanced...
?

Secure Token is a macOS High Sierra or later account attribute, that is required to be added to a user account before that account can be enabled for FileVault on an encrypted Apple File System (APFS) volume. To help make sure that at least one account has a Secure Token attribute associated with it, a Secure Token attribute is automatically added to the first account to log into the OS login window on a particular Mac. Once an account has a Secure Token associated with it, it can create other accounts which will in turn automatically be granted their own Secure Token.

In order for Privilege Manager to support Secure Token during account creation and for password management, a local account with Secure Token enabled must created on each macOS endpoint. The credentials for this account must be set as the Secure Token Management Credential.

When the Secure Token Management Credential is configured in the MacOS Agent Configuration, Privilege Manager will use this credential to create a local account on each macOS endpoint. The resulting managed local account will be used during account provisioning and password management to ensure that managed accounts are Secure Token enabled.

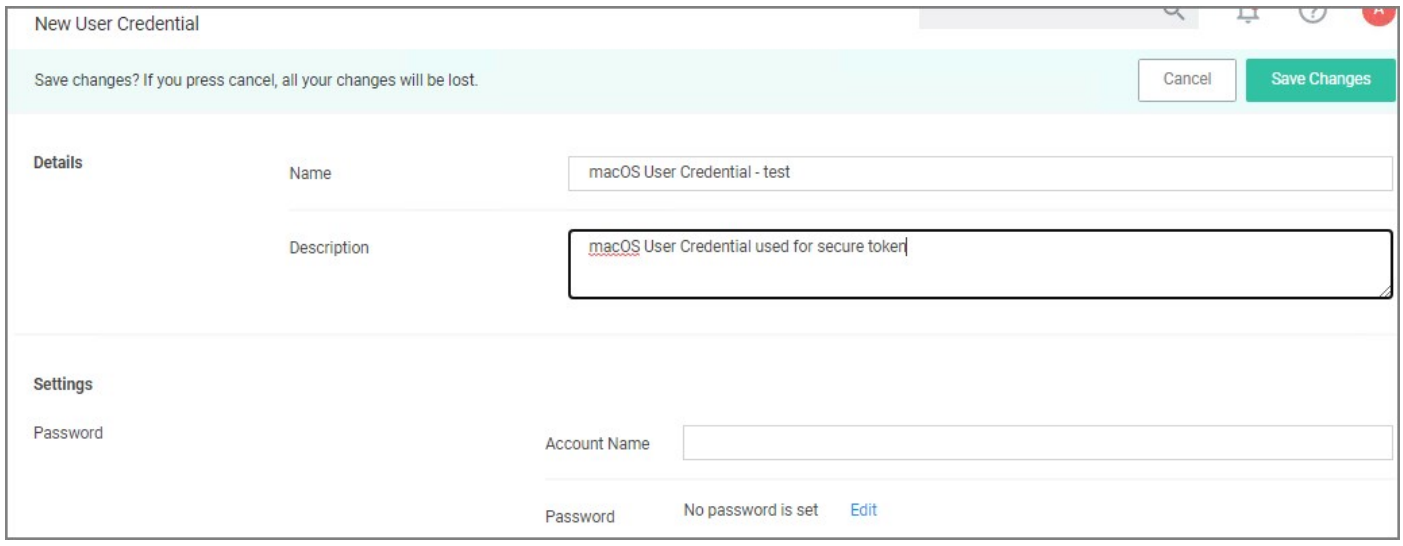
If the Secure Token Management Credential is removed in the MacOS Agent Configuration, the agent will use the non-Secure Token enabled method of password management and any new users created/managed will not be Secure Token enabled. Any existing users that are Secure Token enabled will fail to have their password managed because without a Secure Token Management Credential macOS will not allow the agent to manage the password of a Secure Token enabled user.

> **Note**: The agent will ignore attempts to manage the service account. This includes provisioning and password management of the service account via LSS. You should not modify the service account, this includes changing its local password. Doing so may invalidate its configuration and cause the agent to fail password management.

Agent Configuration

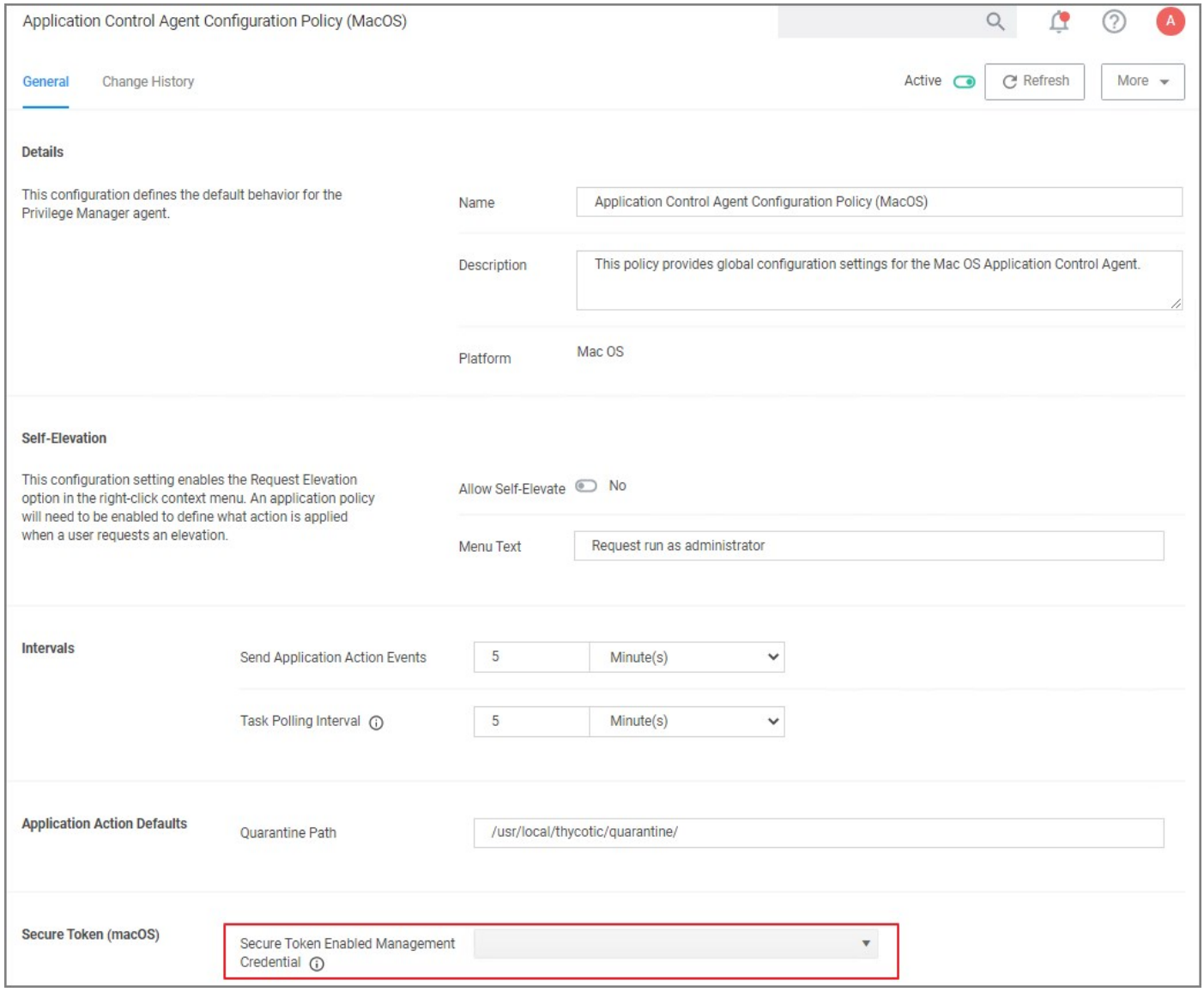
To use the secure token with macOS Agents, the user credential needs to be established and linked to the macOS Agent configuration.

1. Navigate to **Admin | Configuration**, select the **Credentials** tab.
2. Click **Create**.



3. Under Details enter a Name and Description.
4. Under Settings enter the **Account Name** and **Password** for the macOS user account with Secure Token access.
5. Click **Save Changes**.

6. Navigate to your macOS computer group and select **Agent Configuration**.



7. In the **Secure Token Enabled Management Credential** field enter the macOS user credential you created in **step 2**.
8. Click **Save Changes**.

Apple's Endpoint Security framework prevents Privilege Manager from performing process elevation of command-line binaries like done in the past. Privilege Manager 's previous KEXT support for command line filtering in order to block, elevate, restrict, or allow commands is being replaced with a sudo plugin for Apple's newer OS versions starting with Catalina and newer.

Going forward, the sudo plugin supports a modular framework that allows third-party policy evaluation to govern whether a command is allowed to run. This architecture allows Privilege Manager to extend sudo functionality without replacing it and without introducing too much change to established workflows.

For **existing customers**, if privileged commands are already running via sudo and a Privilege Manager policy to elevate it, then there is nothing that needs to be changed. However, if some commands are elevated, specifically via policy and filters, those need to be re-evaluated and modified to utilize sudo to perform those commands.

Refer to the macOS Application Approval Process via Sudo Plugin topic. This topic explains the workflow for an approval policy elevating applications executed from a specific folder location.

Sudo Plugin Installation

In support of Big Sur and system extensions, the macOS agent install also installs the macOS sudo plugin at /usr/local/libexec/sudo. The plugin is owned by root and its configuration is located at /etc/sudo.conf.

The macOS Gatekeeper technology can prevent newly downloaded applications and scripts from running, unless downloaded from the App Store or identified as coming from a trusted developer.

Privilege Manager cannot get around these OS specific security protections; however deploying a script that developers use or need to run frequently is possible via the MDM process (and JAMF rollout).

Refer to details as documented by Apple regarding bypassing Gatekeeper via MDM: Gatekeeper and runtime protection in macOS

On Unix/Linux endpoints, best practices around application control varies from how these areas are managed on other operating system endpoints.

Platform specific topics covered:

- Unix/Linux Privilege Manager Sudo Plugin

  Note: Linux/Unix user and group management is not enabled. The Unix/Linux agent allows administrators to get lists and details of local users, groups, and membership.

Privilege Manager 's Unix/Linux endpoint agent installation also installs a sudo plugin.

When the agent performs the registration process the Delinea sudo plugin is inserted into the sudo configuration and the sudoers file will stop being processed on the agent. Meaning only Privilege Manager Policies are allowed to be processed. By default all sudo commands will now be blocked unless a Privilege Manager policy allows it's execution.

Sudo Plugin Installation

The agent install also installs the sudo plugin at /opt/thycotic/lib64. The plugin is owned by root and its configuration is located at /etc/sudo.conf.

Once Privilege Manager is added to a companies infrastructure, it discovers all accounts that exist on endpoints and allows Privilege Manager Administrators to control the exact membership of every local group via its Local Security features. This ensures the correct admin and root accounts are permanently set. Additionally, credentials will be controlled by enforcing password rotation on those accounts.

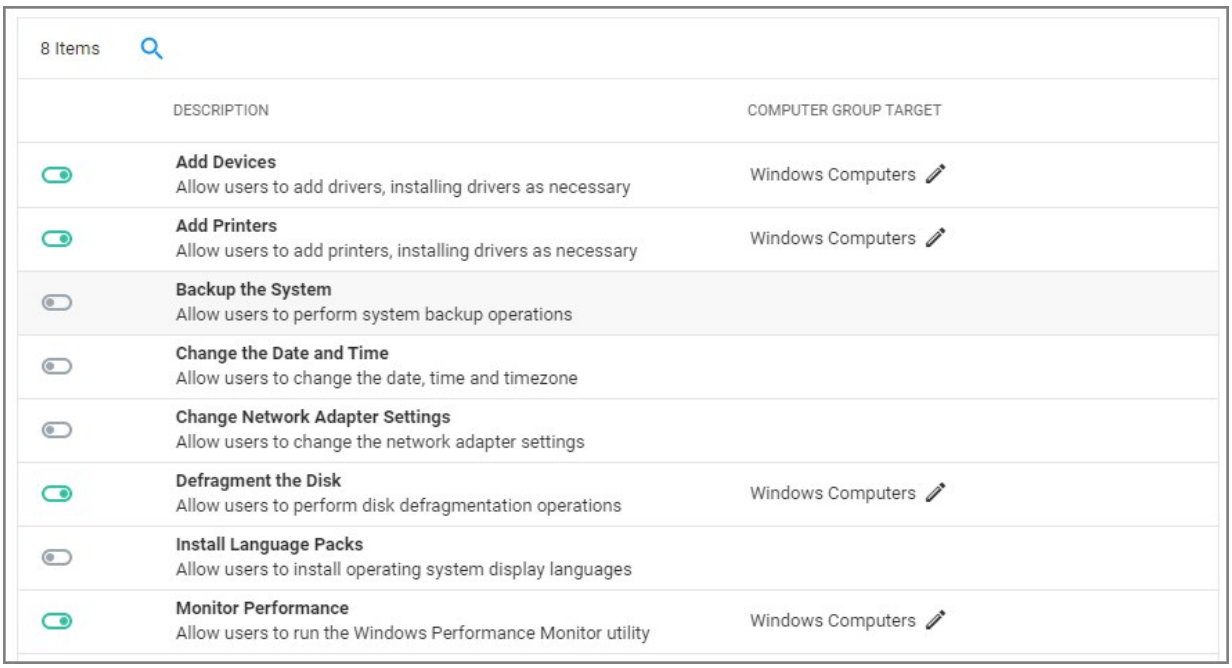
Privilege Manager 's Application Control allows administrators to manage application activity on endpoint machines. Applications that require admin rights or root access can be automatically elevated, allowed applications are allow listed, and malicious applications are blocked.

Specific to the Windows Operating systems are the management of:

- Client System Settings
- Adjust Process Rights Action

The Client System Settings are common settings for standard Windows endpoint systems ranging from allowing installation of drivers to printers. These settings are deployed to Agents the same as any Policy.

By default each setting targets the default "Windows Computers" Computer Group.



Changes to client system settings do not take effect until Policies have been cached and deployed to the agent. Review the agent status reports to see which agents have which Policies.

Add Devices

If active, users on Windows endpoints are allowed to add and install device drivers.

Add Printers

If active, users on Windows endpoints are allowed to add and install printer drivers.

Backup the Systems

If active, users on Windows endpoints are allowed to perform system backup operations.

Change the Date and Time

If active, users on Windows endpoints are allowed to change date, time, and timezone settings.

Change Network Adapter Settings

If active, users on Windows endpoints are allowed to change network adapter settings.

On Windows 7 endpoints with **Change Network Adapter Settings** active, do NOT enable high integrity when using the Administrative Rights action in policies.

Defragment the Disk

If active, users on Windows endpoints are allowed to perform disk defragmentation operations.

Install Language Packs

If active, users on Windows endpoints are allowed to install operating system display language packs.

Monitor Performance

If active, users on Windows endpoints are allowed to run the Windows Performance Monitor Utility.

The Privilege Manager UI

The Privilege Manager user interface, also referred to as the console, is launched in a browser. (While in the user interface, click **Privilege Manager** in the left navigation panel to return to the user interface Home page.)

The URL to launch the user interface has the following form:

https://[server-domain]/TMS/PrivilegeManager

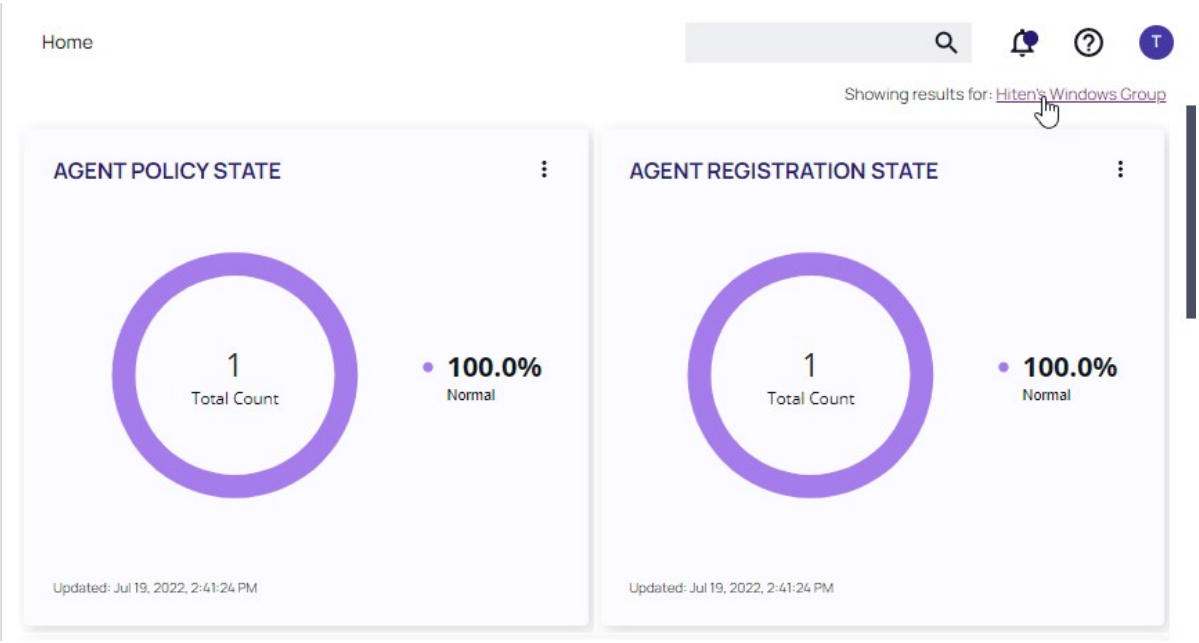
Where:

- server-domain, indicates the customer specific domain name, for example
    - https://mydomain.com/TMS/PrivilegeManager for On-premises installations and
    - https://myassignedname.privilegemanagercloud.com/Tms for Cloud instances.

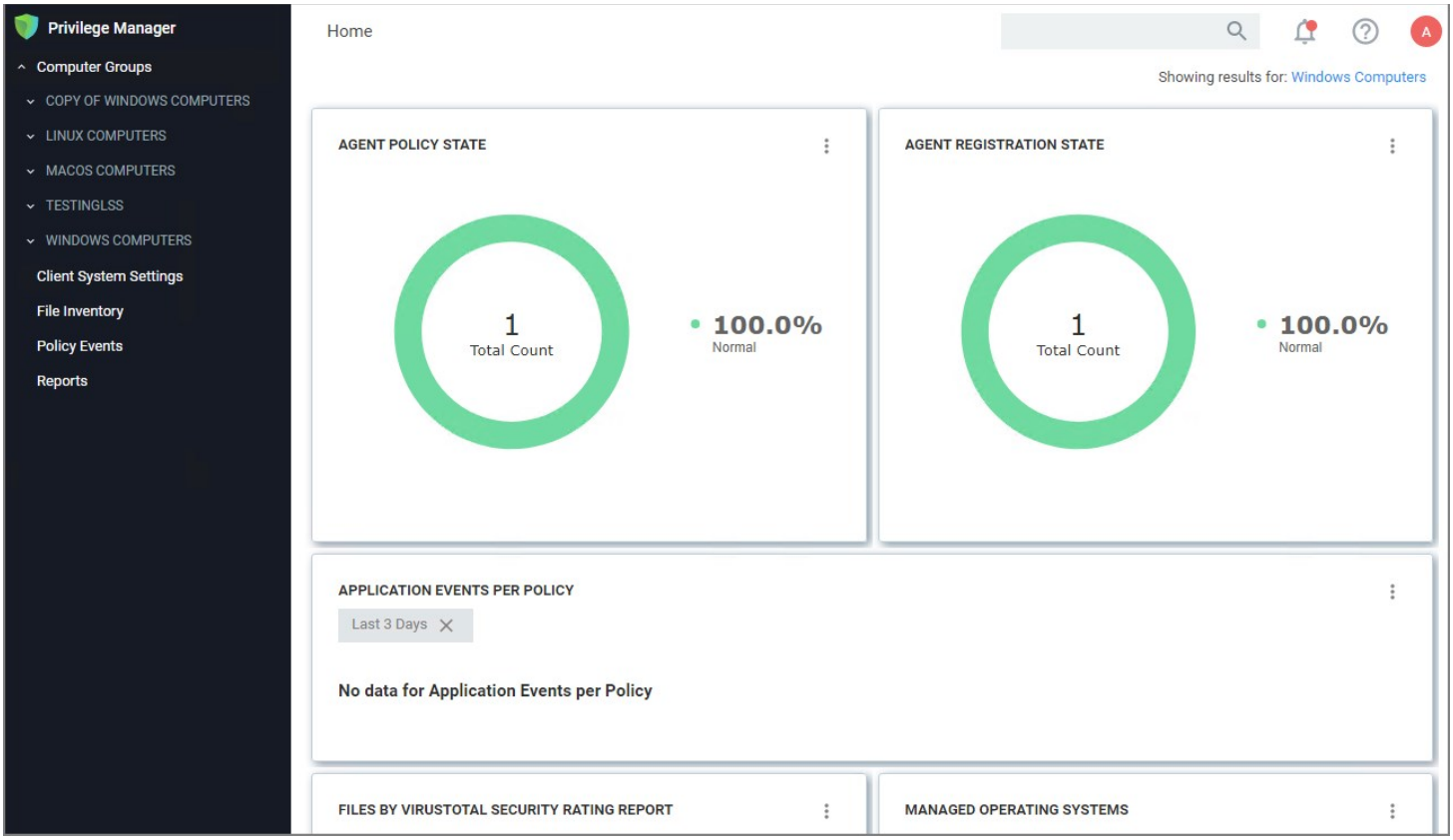
The User Interface (UI) seen by all Privilege Manager roles is the same (whether Administrator or other). However, most of the interface is enabled only when you login in as a Privilege Manager Administrator; the other roles are able to perform very few activities.

The screenshot below shows the Privilege Manager home page, with the main page scrollable. Dashboard elements are displayed for a selected computer group.

To update the display to another computer group, select that group in the **Showing results for** drop-down.



Note: **AGENT POLICY STATE** displays counts for agents in the currently selected computer group, and does not directly relate to overall license usage. Therefore, this tile should not be used for a 1:1 comparison with the Utilization Summary in the Product Licenses report.



The home page includes actionable dashboard elements as well as the gateway to the two major components of Privilege Manager , Local Security and Application Control. These are available from their respective tiles.

Much of the text and other content on the page is clickable. The link under it will help you drill down to more detail. (Although some links, here and on other UI pages, are shown in blue, you should not assume that the absence of blue font implies there is no link. The best way to discover links is to hover over the content to find out if it is clickable.)

The set of three little vertical dots, in the upper right corner of each tile, provide options to manipulate the tile.

The **?** seen near the right corner of the main menu bar, is used throughout the UI to provide help messages or other access to guidance.

Many aspects Privilege Manager can be customized. The gauges displayed on the home page of the Privilege Manager console and at many other pages can be remove and others can be added. The same with the Reports Options on the Reports page.

What is a Gauge?

Gauges are used in Privilege Manager to display the results of periodic configuration checks of the server and endpoints. Gauges allow reports and graphs to keep historical trend data, and speed up access in the console.

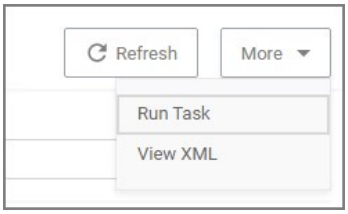
Privilege Manager currently has gauges published to track when an agent last communicated with the server, agents that have received all of their policies, agents that have a random password set, etc.

You can click the following gauges to drill down for more information:

- Agent Policy State
- Agent Registration State
- Application Event Counts by Publisher
- Application Events Per Policy
- Event Summary
- Files by VirusTotal Security Rating Report
- Managed Operating Systems
- Pending Approval
- Top Applications
- Top Applications Needing Elevation
- Top Applications Not Elevated or Denied
- Top Denied Applications
- Top Users
- Top Users Attempting to Run Denied Applications

In Privilege Manager , navigation and controls are aligned with Delinea's standard user experience. The main navigation menu is situated along the left side of your browser window and controls on each page are standardized.

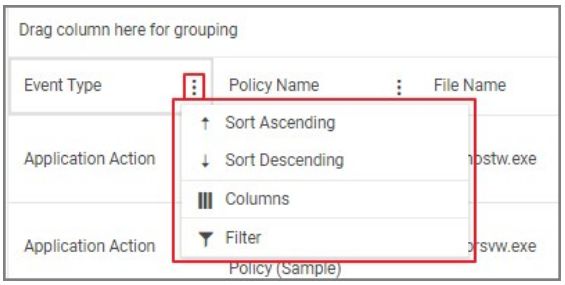
The button for a **page refresh** and the **More** drop-down options are available at the top-right of your page.



Whenever you are in editing mode on a page, you will find a **Save Changes** or **Cancel** banner at the top of your page.

Breadcrumb navigation is provided at the top left of your page.

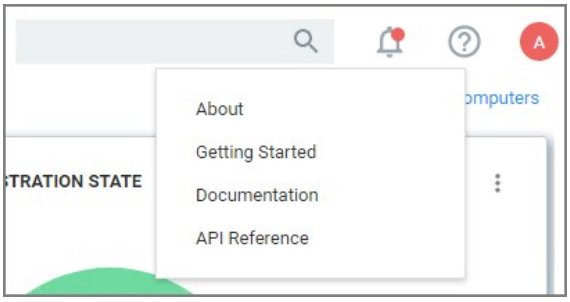
Table column sorting and filtering is available via the ellipsis on each table column:



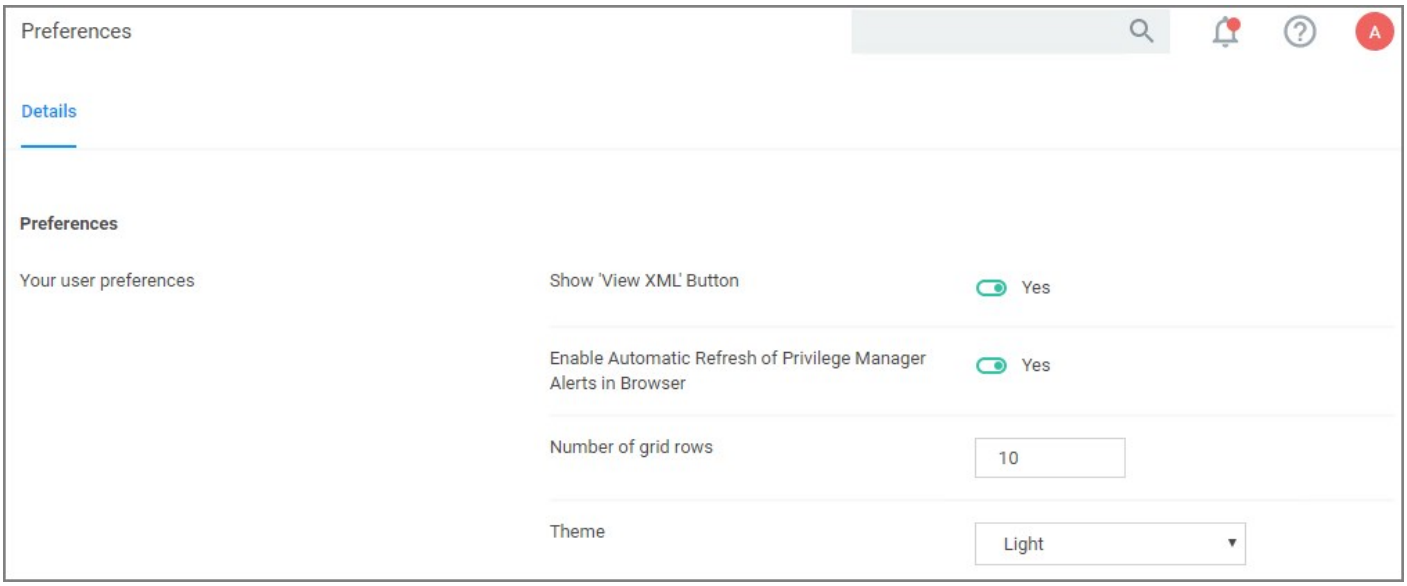
Search, Notification, Help, User Menus

Next to the search menu is the Notification/Alerts icon. Click the icon to Manage Approvals and to view Notifications.

The help menu provides access to About, Getting Started, Documentation, and the API Reference.



The user icon provides access to information about the system name, Preferences, and it has the Logout button.



Controls to enable or disable a setting are unified across the user interface via on/off type switches. Users' preferences, such as number of grid rows and color theme can be specified, and will be applied throughout the console once edited and saved.

Pin to Navigation Tree

When computer groups are created, they can be pinned to the navigation tree on the left. Click the bookmark type icon next to the computer group name or on the Computer Groups page to toggle if a group is shown in the side menu.

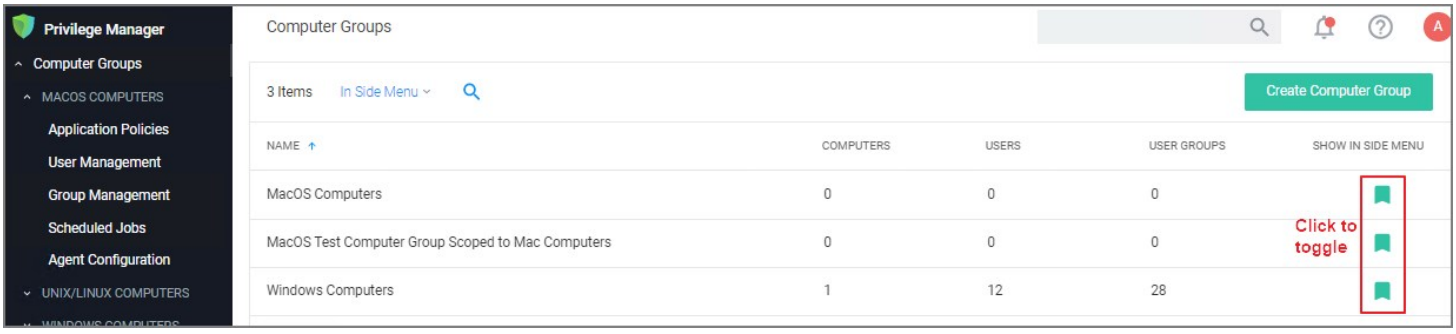
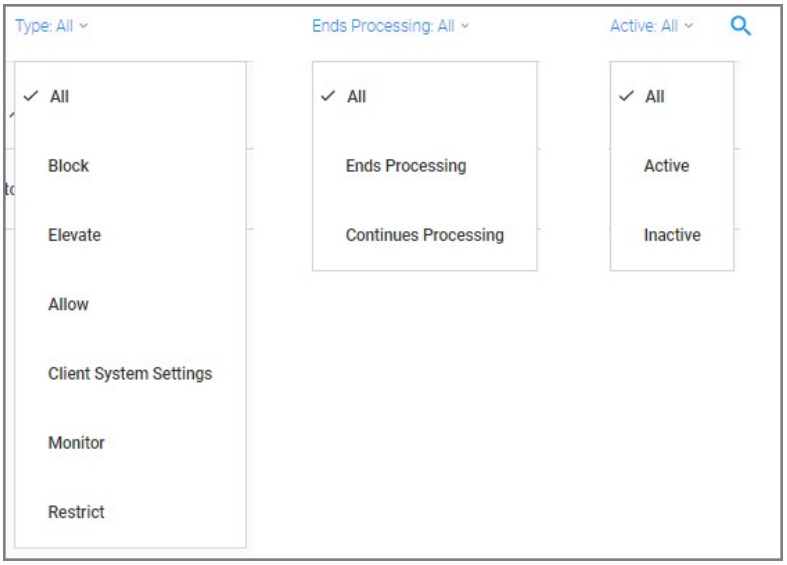
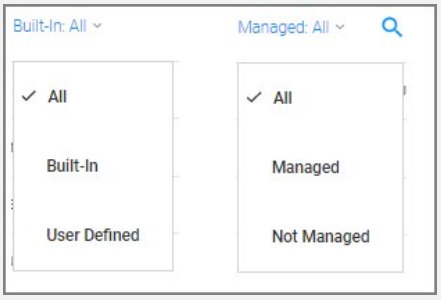


Table Grid Contents

On any table grid, the user has an option to filter on what is displayed in the grid.

Computer Groups	
Application Policies	
User Management	
Group Management	Same options as for User Management
Scheduled Jobs	All, Active, Inactive

Switches

The UI offers many areas where items or states can be switched from off to on or inactive to active and vice versa.

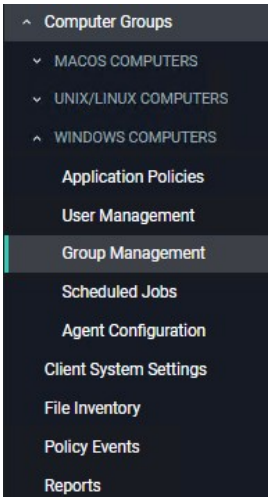
Main Menu

The main navigation menu on the left is organized into

- Computer Groups
- Client System Settings
- File Inventory
- Policy Events
- Reports
- Admin

Chevrons

A menu item with a chevron indicates the menu can be opened or closed, depending on chevron direction. For example, in the image below the chevron pointing down for macOS computers indicates the item is collapsed.



The chevron pointing up for Windows computers indicates the item is expanded.

Computer Groups

The listed computer groups all have subitems organized by

- Application Policies
- User Management
- Group Management
- Scheduled Jobs
- Agent Configuration

Admin Menu

The Admin menu provides access to **Tools**, like

- Disclose Password
- Manage Approvals
- Offline Approvals

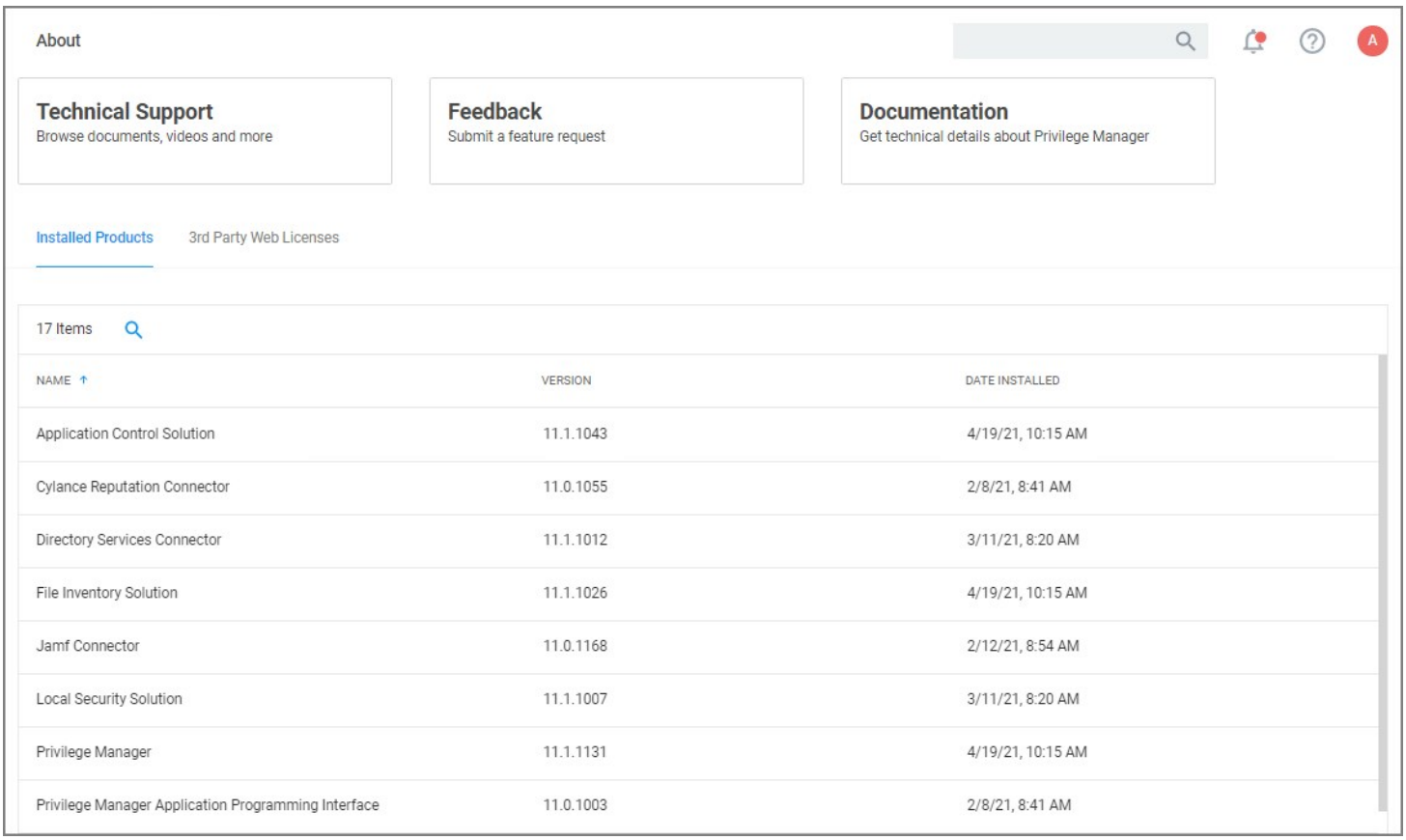
The other available **Admin** subitems are:

- Actions
- Agents
- Config Feeds
- Configuration
- Diagnostics
- File Upload
- Filters
- Folders
- Import Items
- Licenses
- Personas
- Resources
- Security
- Secret Server - only available if integrated via Foreign Systems
- Server Logs
- Setup - only available for On-premises instances

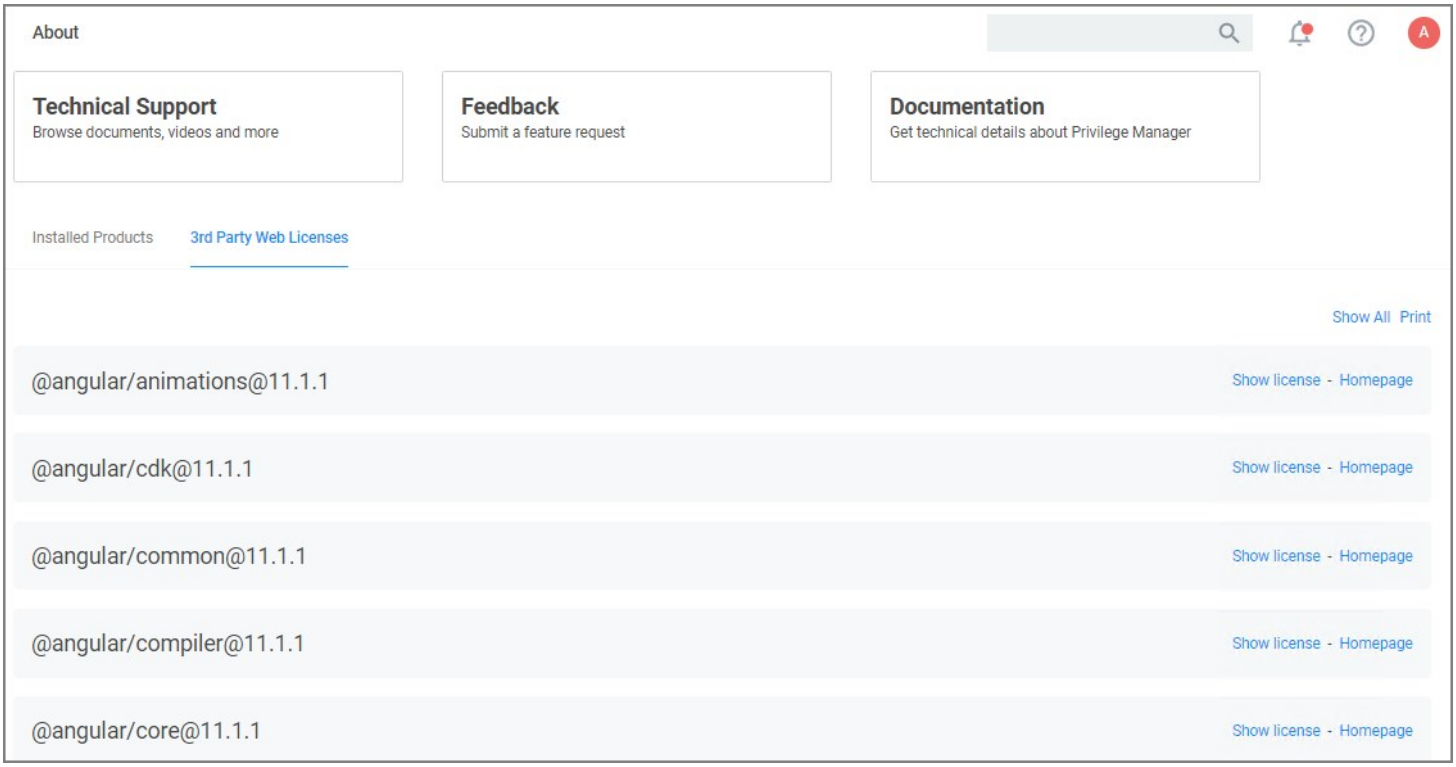
The About page provides navigation options to external sources such as the

- Support Portal
- Feedback
- Documentation

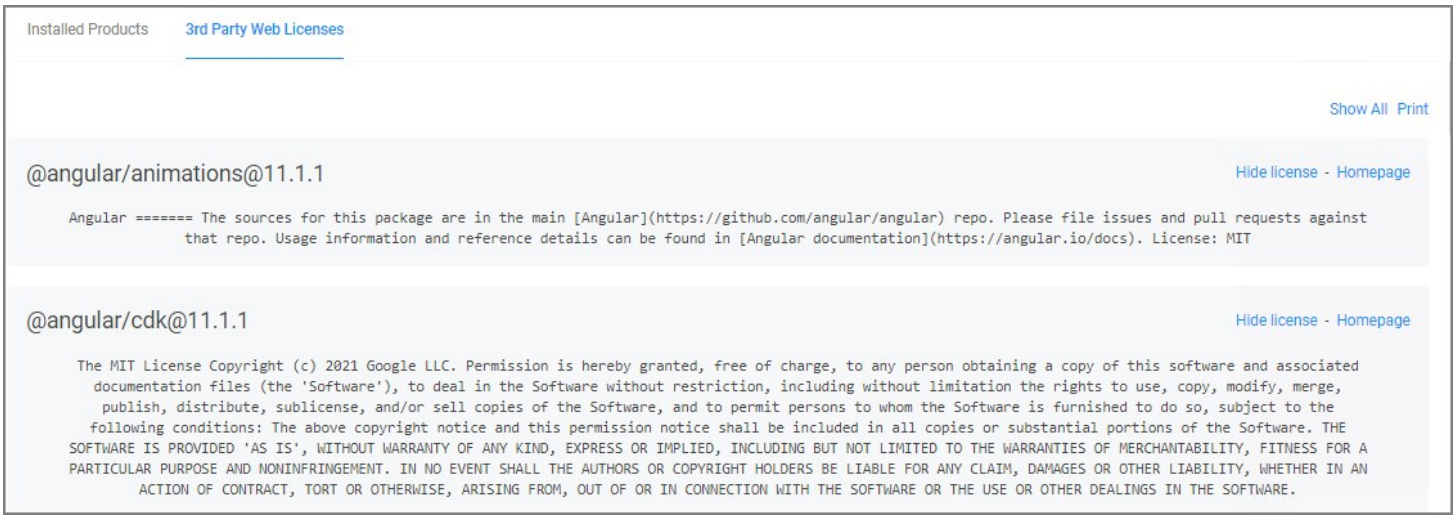
It further lists your currently installed Privilege Manager products:



Under the **3rd Party Web Licenses** tab, you can review the 3rd party web licenses used by Privilege Manager :



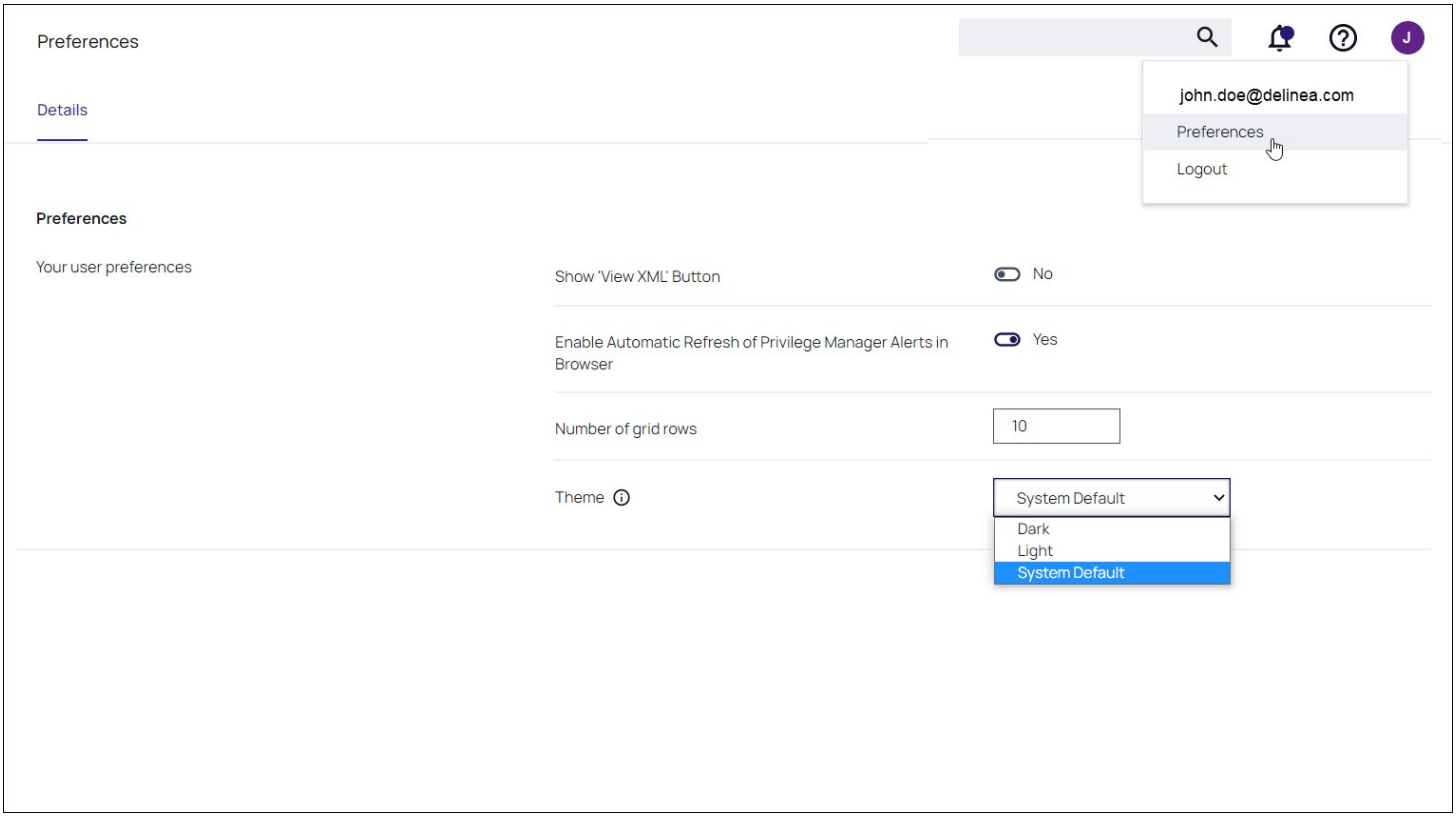
Use **Show All** to view details for all the licenses:



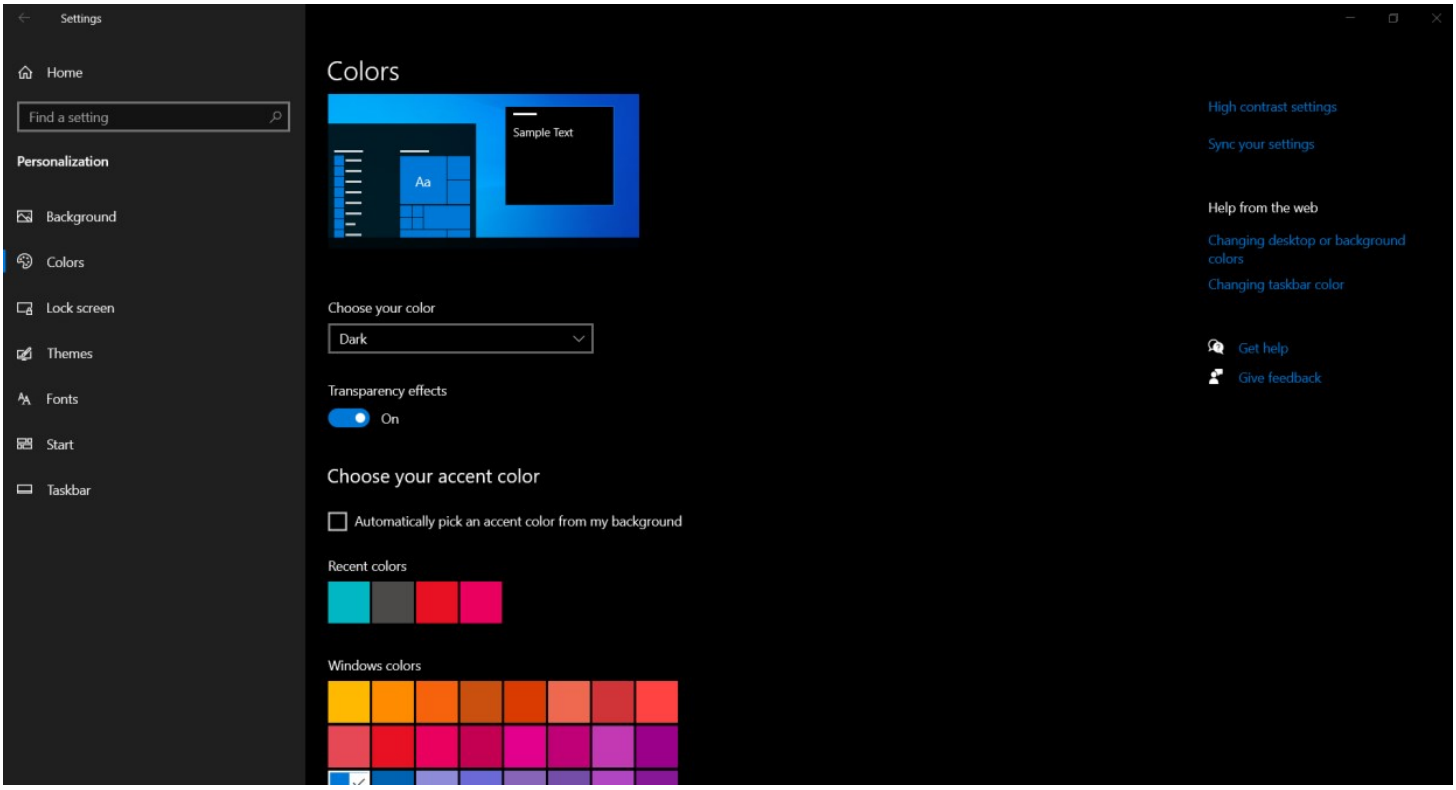
The Print option allows you to print a text file containing all 3rd party licenses and their details.

The Privilege Manager **Preferences** page includes a new option in the **Theme** drop-down list box: **System Default**.

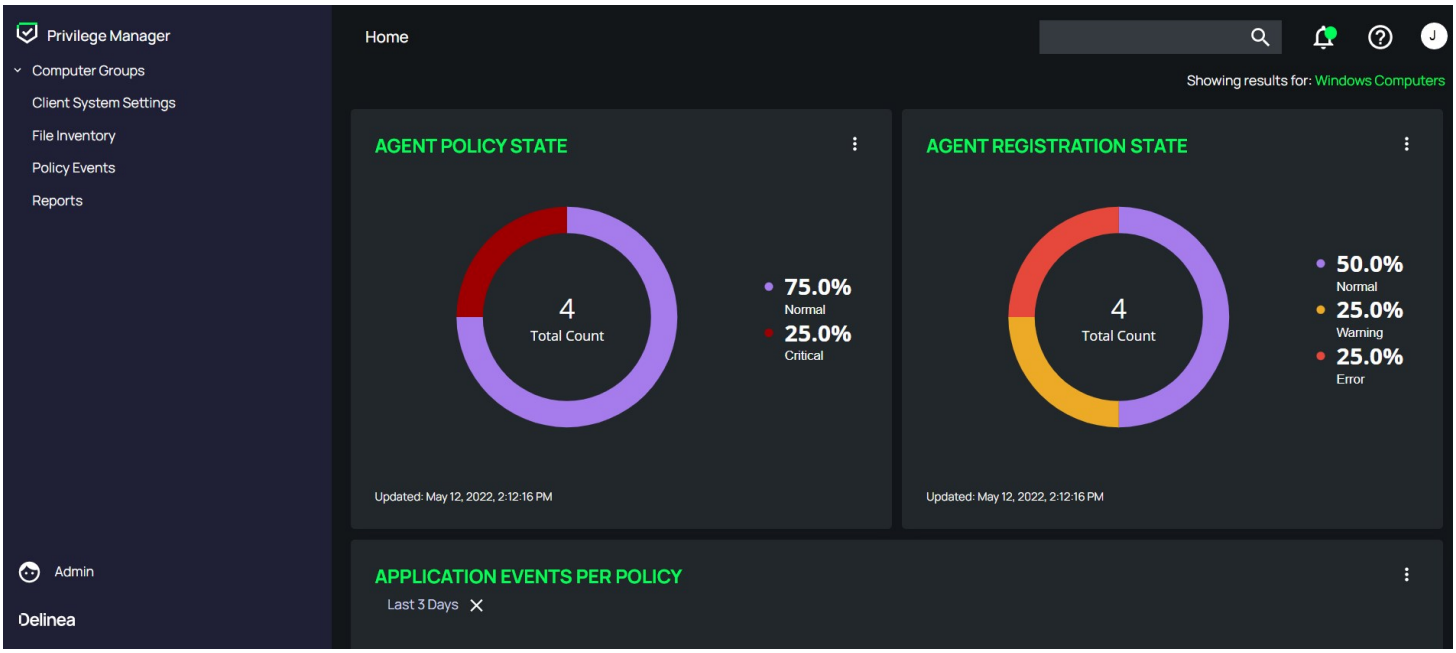
As its name implies, **System Default** ensures that the personalized colors you designate via the **Settings** page on your local machine dictate the Privilege Manager color theme.



1. From a Windows machine, for example, navigate to **Settings**.
2. Select **Personalization**.
3. Click **Colors**.
4. From the **Choose your color** drop-down list box, select **Dark**.



The system applies this color theme to Privilege Manager.



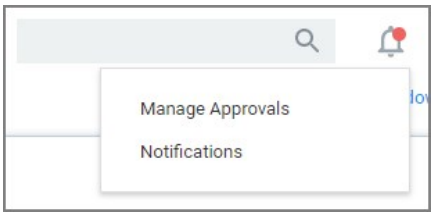
Delinea


Privilege Manager
Computer Groups
Client System Settings
File Inventory
Policy Events
Reports
Admin
Delinea
Home
Showing results for: Windows Computers
FILES BY VIRUSTOTAL SECURITY RATING REPORT
9
Total Count
88.9%
Clean
11.1%
Unknown
Updated: May 12, 2022, 2:14:04 PM
MANAGED OPERATING SYSTEMS
2500
2000
1500
1000
500
0
7 7 15 0 1 14 1957 1839 1261 585 601 604 1 630 7 640 2 1252 654
Count
Updated: May 12, 2022, 2:15:02 PM

Notifications can be accessed via the icon next to the search bar in the top right corner of the Privilege Manager console.

The notification icon displays an indicator when alerts are pending, such as:

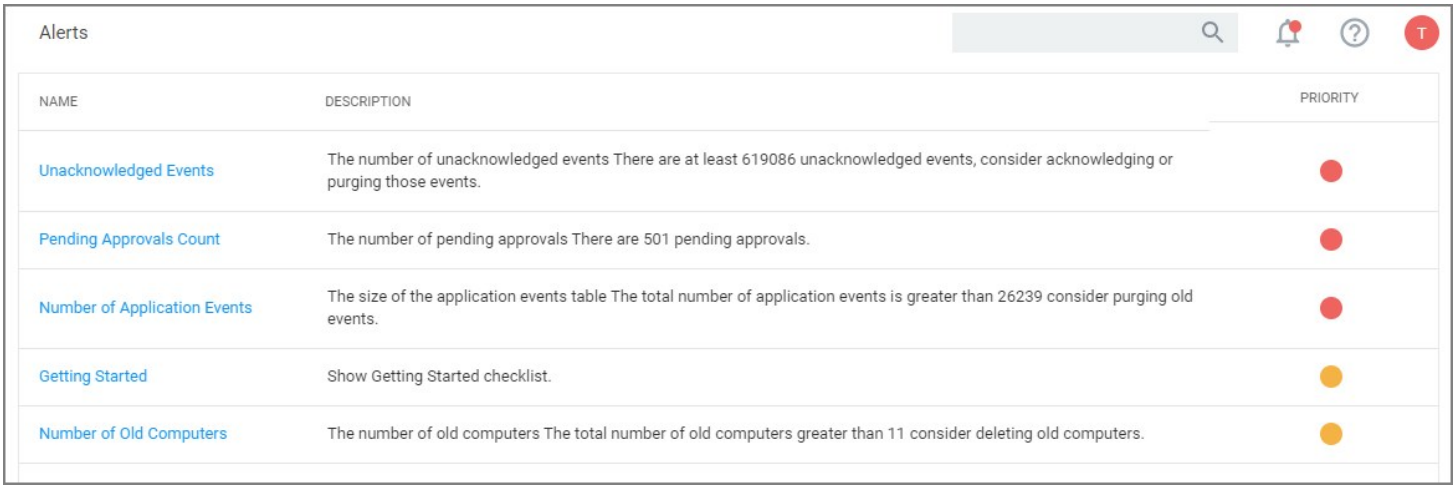
- Manage Approvals
- Notifications



For macOS endpoints on Catalina or later, Administrators might want to follow Best Practices: Manage Privilege Manager Notifications on macOS

To access Alerts, click the icon and select Notifications from the menu options.

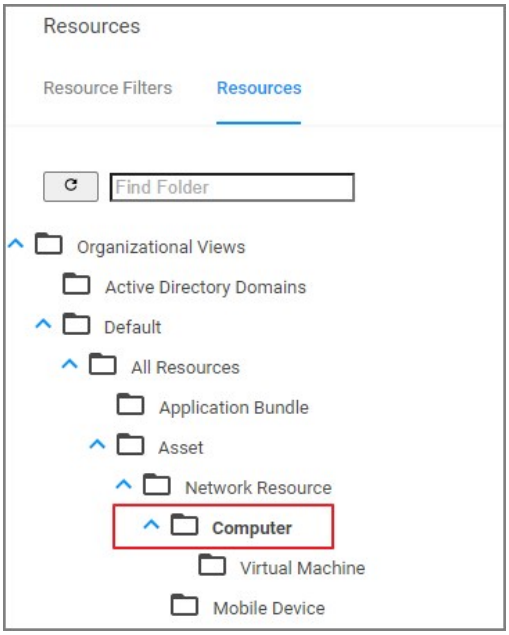
Alerts are listed by priority and category such as Unacknowledged Events, Pending Approvals Count, Number of Application Events, Install Agents, etc.



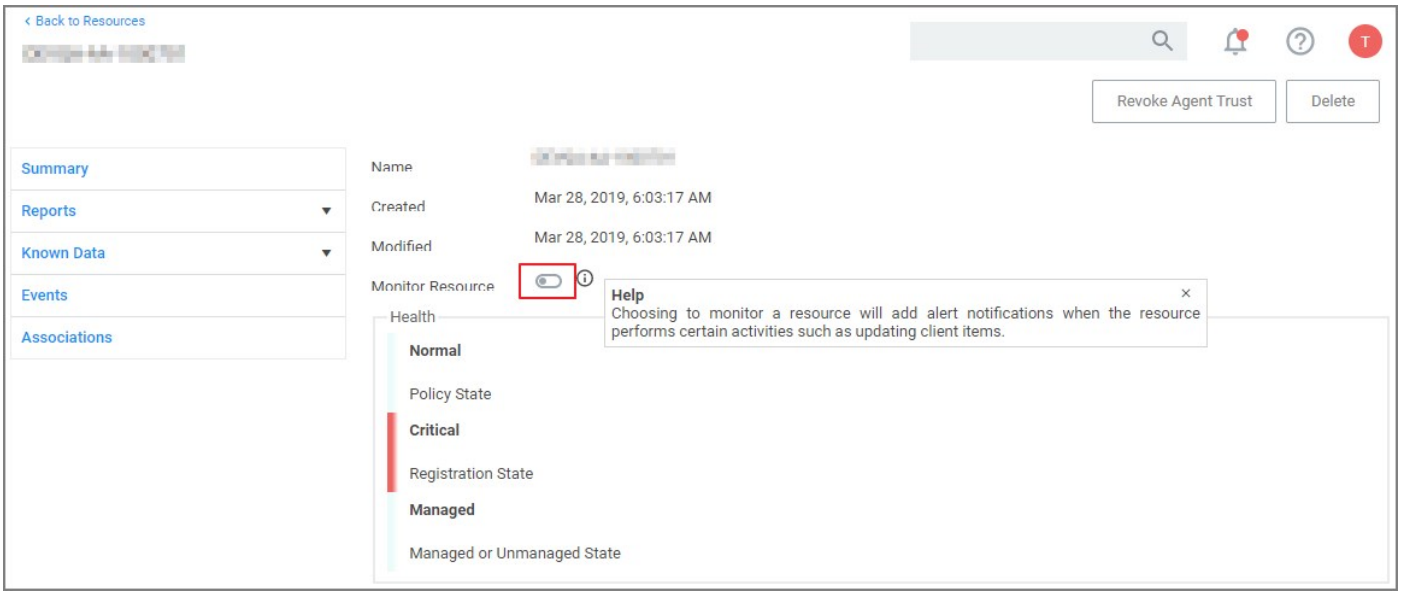
Endpoint Specific Alerts

Alert Notifications can also be triggered for a specific endpoint agent, if the computer resource was configured for monitoring.

1. Navigate to **Admin I Resources**.
2. On the **Resources** tab, open the **Computers** folder.

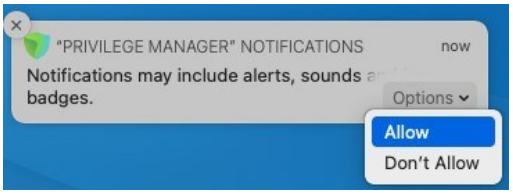


3. From the list select the endpoint you with to monitor and open the Resource Explorer for that endpoint.
4. Set the **Monitor Resource** switch to active.



Once monitoring is enabled, alert notifications for the agent end point are available. These type of alerts inform about the agent registration, resource discovery, and update retrieval times.

As of macOS Catalina, Apple provided the ability to manage notification settings in macOS by using Configuration Profiles. The benefit of managing this setting is that you as the administrator have complete control over the desired state of that configuration on the endpoint. You want the user to be able to see the notifications that Privilege Manager sends out. If the setting is not managed the user may miss something important, if they previously clicked **Don't Allow**.

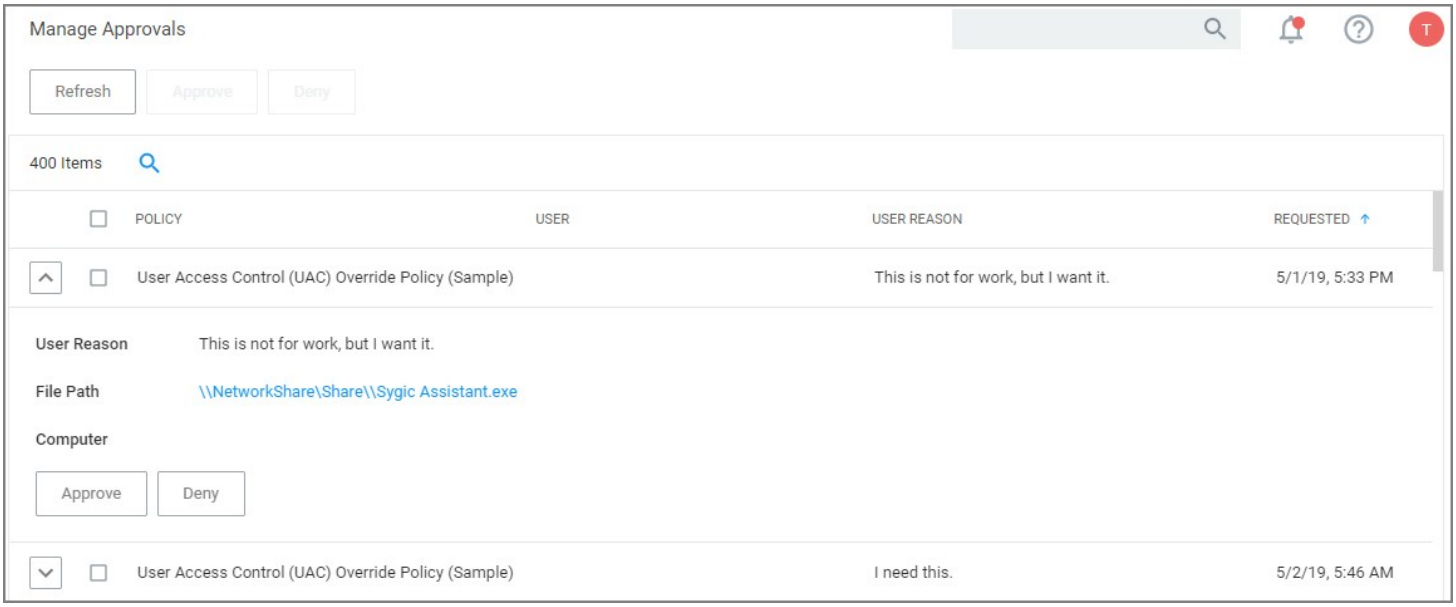


This example XML snippet can be used and is based on the following property values. Depending on your chosen MDM provider, the example snippet might need editing.

- **AlertType** : 1 (Temporary Banner)
- **BadgesEnabled :** true (Enables the badge to be displayed for Privilege Manager)
- **BundleIdentifier** : com.thycotic.privilegemanagergui
- **CriticalAlertEnabled** : true (Enables critical alerts that can ignore the Do Not Disturb feature)
- **ShowInLockScreen :** false (For privacy concerns it is recommended to not show in lock screen)
- **ShowInNotificationCenter** : true (Enables notifications in the notification center for this app)
- **SoundsEnabled** : true (enables sounds for this app)

The Manage Approvals page can be accessed in two ways, via:

- the Alerts icon and selecting Manage Approvals or
- **Admin | Manage Approvals** menu selection.



Use the expand/collapse icon (up/down chevron) to view and approve or deny requests.

Getting Started

The steps for Getting Started vary, depending on whether you are implementing a cloud or on-premise instance of Privilege Manager.

Depending on your installation refer to either:

- Getting Started - Cloud
- Getting Started - On-Premise

The following features and options are different from On-premises or previous Privilege Manager Cloud (10.7.x) releases:

- The ServiceNow connector is automatically installed for all new cloud instances.
- The SMTP server is automatically configured during the cloud instance setup.
- The setup is managed by Delinea and installations, upgrades, and repairs are unavailable to the customer directly, this includes setup, add/remove feature options, and connection options to existing Secret Server. Upgrade notices and banners are removed with upgrades being handled by Delinea during maintenance periods.
- All license key management is done via Delinea and license keys are not visible on the licensing page. There are presently no options for customers to add additional licenses directly.

The following features and options are **not** available in Privilege Manager Cloud:

- Server-side Powershell scripts not signed by Delinea are not allowed. Custom server-side work can be done via Professional Services engagements.

All other features and functionality of Privilege Manager On-premises and Cloud are the same unless otherwise specified.

The following topics provide a guided path through the on-premise (on-prem) installation and setup steps that are part of the initial stand-up of an on-premises Privilege Manager deployment. For cloud specific getting started instructions refer to Getting Started Overview - Cloud.

Preliminary Configuration

Refer to these topics to learn more about the initial installation and setup steps:

1. System Requirements
2. Antivirus Exclusions
3. Privilege Manager Installation
4. Agents Installation
    - Setting the Server Address for Privilege Manager Agents, if the address provided during the agent installation requires updates.
5. Login
6. Licenses

Note: If you are targeting macOS based endpoints, refer to Getting Started with macOS.

Rollout Recommendation

Familiarize yourself with the Least Privilege concept. Delinea recommends a phased roll-out between the Application Control and Local Security, for example:

1. Application Control: Set up learning mode policies on a group of test endpoints to learn about applications running on your endpoint machines (Event Discovery)
2. Local Security: Begin managing your local user accounts (only) and defining local group membership (Local Security | Manage Local Users)
3. Application Control: Tailor your policies so that they won't disrupt employee work (Creating Policies) but will block known malicious applications (Creating Policies | Example: Quarantine Specified Malware). Implement these basic policies across agents in production
4. Application Control: Continue to tailor policies according to employee roles. Create a "Request Access" system for any unknown applications. (Creating Policies (Workflow))
5. Local Security: Once a workflow has been established between employees and the Privilege Manager Helpdesk, begin managing all local privileged accounts (ex: local admins) on endpoints. (Local Security | Details Tab)

Local Security

Refer to the Local Security documentation pages to learn more about:

- Create & Manage Computer Groups, Local Groups, and Users

Application Control

Refer to the Application Control documentation pages to learn more about:

- Application Control - Policy & Config Overview / Collecting File Data
- Sending Policies to Endpoints - View Deployment Status / Update Using Powershell / Agent Event Log Viewer
- Event Discovery - Learning Mode Policies & Examples / View Policy Results
- Creating Policies - Allowlisting, Denylisting, Quarantine, Elevation, Greylisting, & Reputation Checking Examples
- Policy Priority Overview & Example

Integrations

Refer to the Integration documentation pages to learn more about:

- Integration & Foreign Systems

Reports & Troubleshooting

Refer to these documentation pages to learn more about:

- Reports
- Troubleshooting

Catalogs & Reference Guides

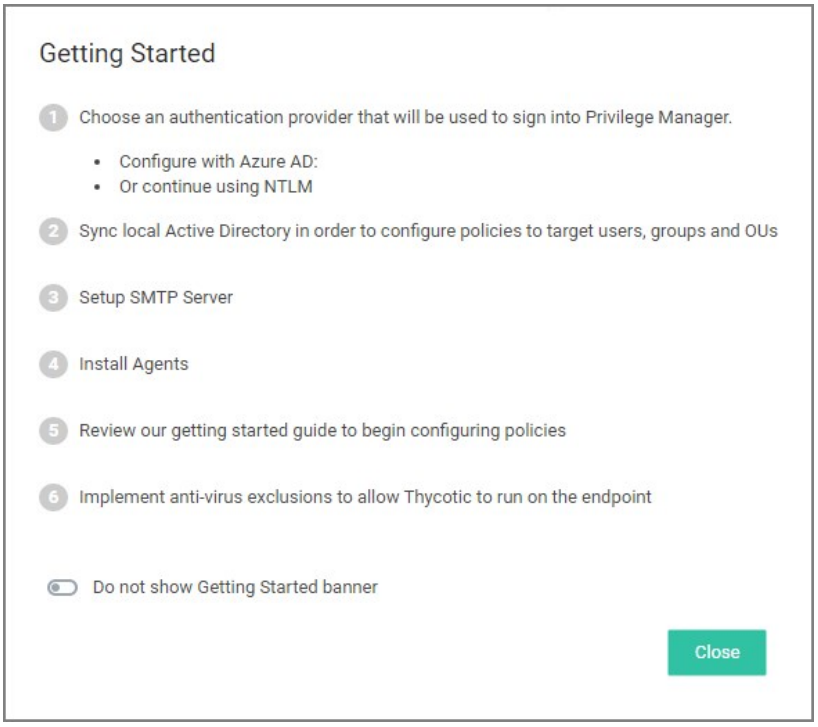
Refer to these documentation pages to learn more about:

- Policies Catalog
- Filters Catalog
- Actions Catalog
- Privilege Manager Glossary

This guide will walk you through an initial configuration of your on-oremise instance.

Getting Started Screen

Access the Getting Started screen by selecting the **Getting Started** from the Help icon. Follow the guided steps on the Getting Started screen. Start with step 1 to allow other users to access Privilege Manager and make sure all steps are completed or reviewed before continuing.



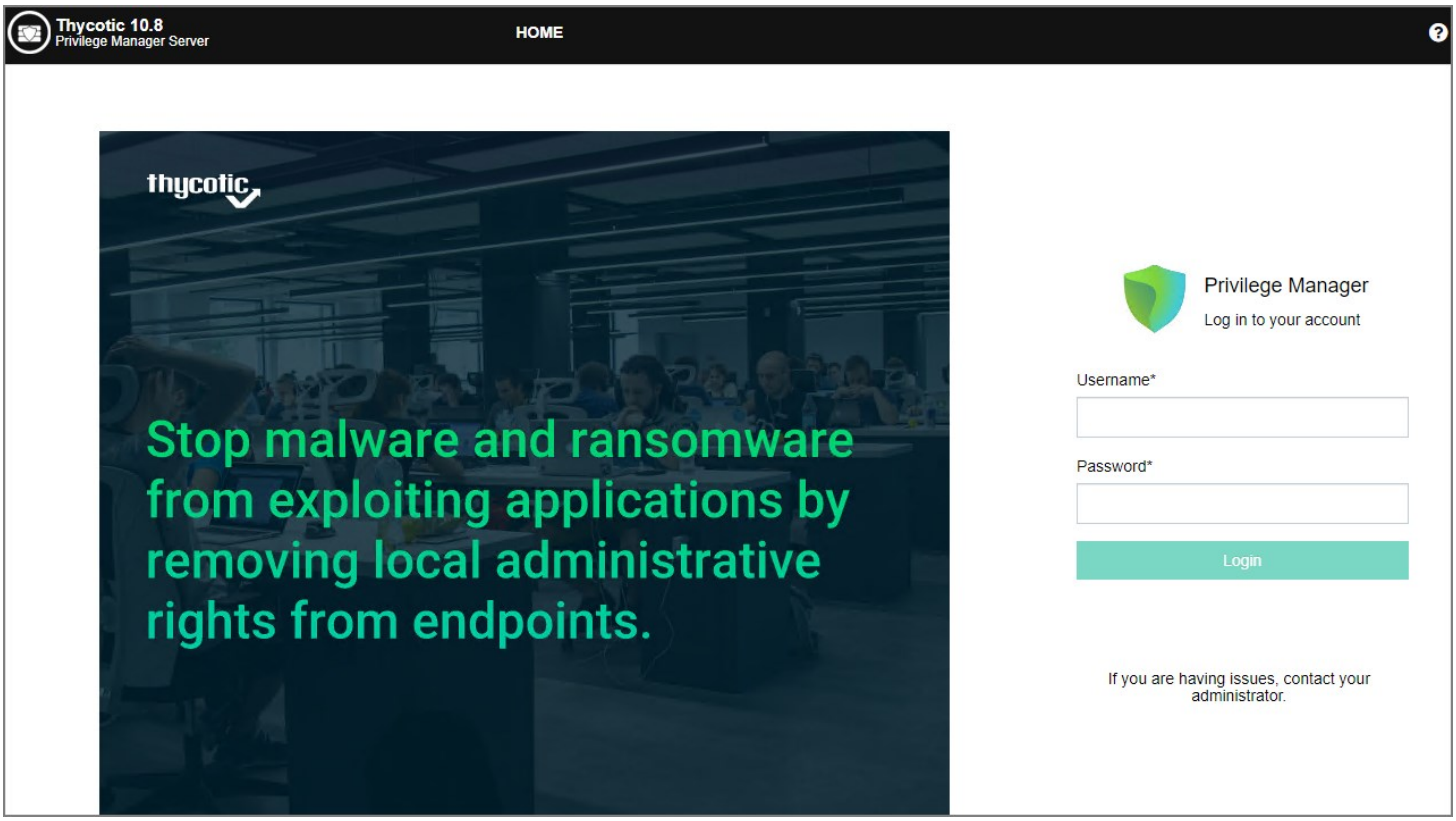
Using the credentials configured in the Create User section of the on-premises installation, validate that you can login to Privilege Manager and view the home screen.

The login URL for an on-premises Privilege Manager instance has this form:

https://[server-domain]/TMS/PrivilegeManager

> **Note**: On combined Secret Server/Privilege Manager installations you are initially logged in through Secret Server. If this is the case, you can find Privilege Manager by navigating to **Tools | Privilege Manager**.

The initial login for on-prem happens via NTLM:



After logging in the Privilege Manager Setup Home page opens.

Use the Privilege Manager link to login to the product. If you need to add or update product features, such as connectors for foreign systems, use the **Add / Update Product Features** link.

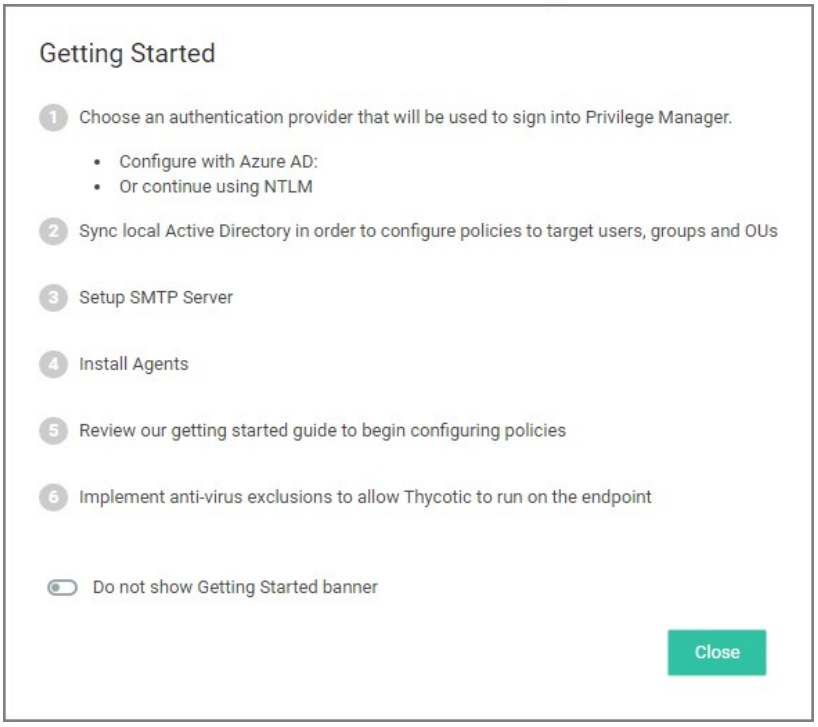
The **Setup a Secret Server Foreign System** link can be used to set-up an integration with Secret Server. This will also allow you to use Secret Server as an authentication provider. Also refer to Setting up Integration between Privilege Manager and Secret Server

Getting Started Banner

At initial login the Getting Started Banner displays with help tips and next steps:

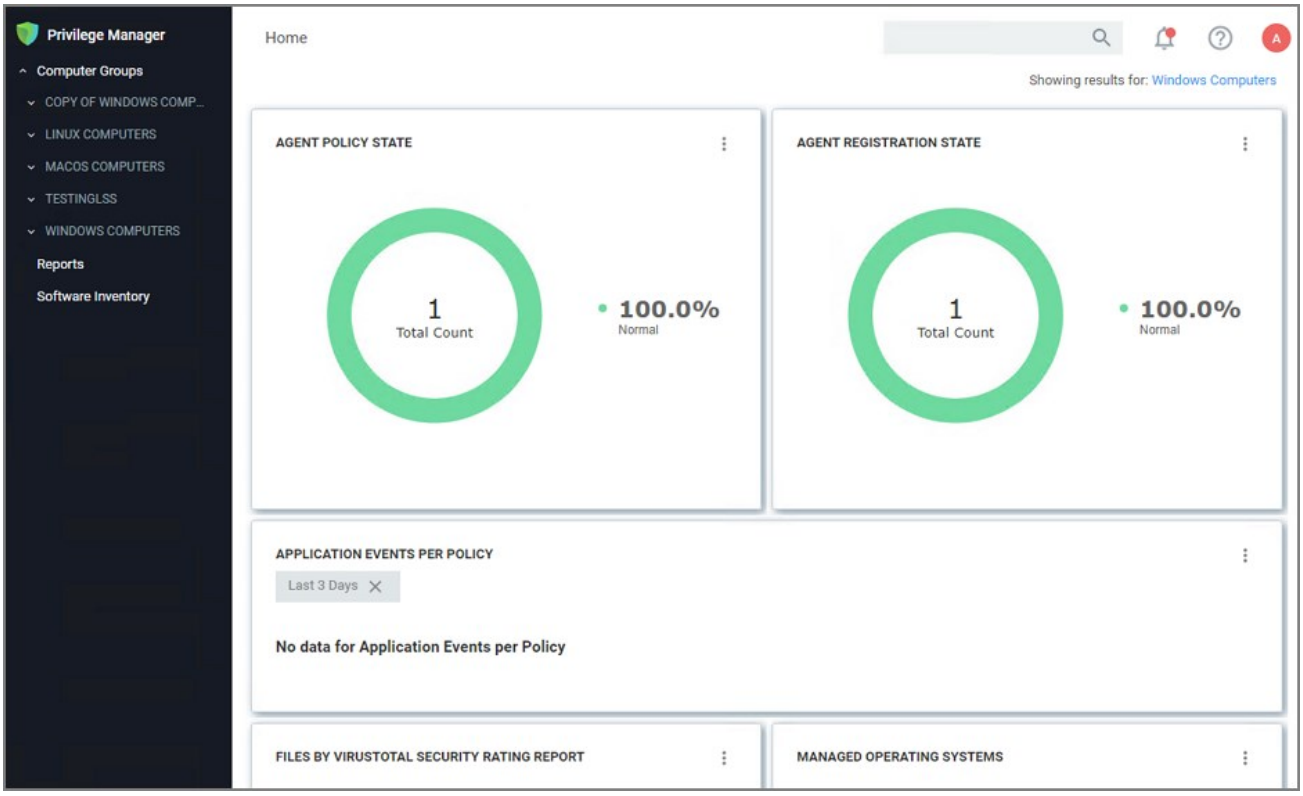
- Choose an authentication provider that will be used going forward to sign in to Privilege Manager .
- Setup the SMTP Server.
- Install Agents.
- Review the documentation to begin configuring policies.
- Implement anti-virus exclusions to allow Delinea to run on the endpoint.

You may choose to not show the Getting Started Banner on subsequent logins.



Home

The Home screen of Privilege Manager can be found by clicking Home in the top banner of any page inside of Privilege Manager . From this dashboard you can jump into either Application Control or Local Security, depending on what you want to do. You also will be given different snapshots of various important information about your environment. Once you have agents installed and policies setup, you'll have a lot going on from the Home Dashboard:


Privilege Manager
Computer Groups
COPY OF WINDOWS COMP...
LINUX COMPUTERS
MACOS COMPUTERS
TESTINGLSS
WINDOWS COMPUTERS
Reports
Software Inventory
Home
Showing results for: Windows Computers
AGENT POLICY STATE
1
Total Count
100.0%
Normal
AGENT REGISTRATION STATE
1
Total Count
100.0%
Normal
APPLICATION EVENTS PER POLICY
Last 3 Days
No data for Application Events per Policy
FILES BY VIRUSTOTAL SECURITY RATING REPORT
MANAGED OPERATING SYSTEMS

The following topics provide a guided path through the instance setup and subsequent initial sign-in steps of a cloud Privilege Manager instance.

- Initial Setup
- Cloud Getting Started Guide
- Cloud Login
- Agents Installation
    - Setting the Server Address for Privilege Manager Agents, if the address provided during the agent installation requires updates.

  Note: If you are targeting macOS based endpoints, refer to Getting Started with macOS.

Rollout Recommendation

Familiarize yourself with the Least Privilege concept. Delinea recommends a phased roll-out between the Application Control and Local Security, for example:

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Reports & Troubleshooting

Refer to these documentation pages to learn more about:

- Reports
- Troubleshooting

Catalogs & Reference Guides

Refer to these documentation pages to learn more about:

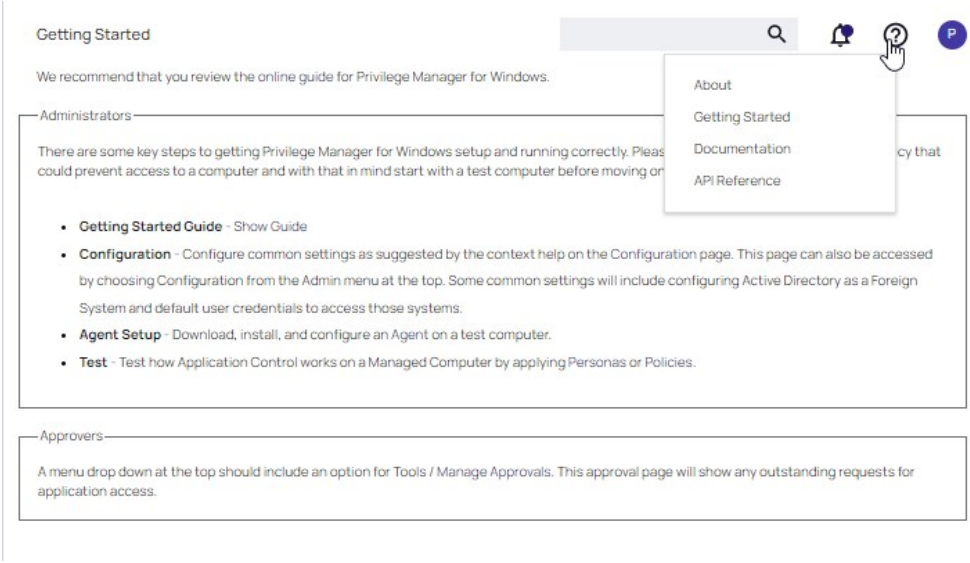
- Policies Catalog
- Filters Catalog
- Actions Catalog
- Privilege Manager Glossary

Privilege Manager Cloud is a scalable cloud platform, where all backend services, databases, and redundancy are securely managed by Delinea and hosted on the Microsoft Azure platform. Customers do not have direct access to the databases or application file system.

This guide will walk you through an initial configuration of your cloud instance.

Getting Started Screen

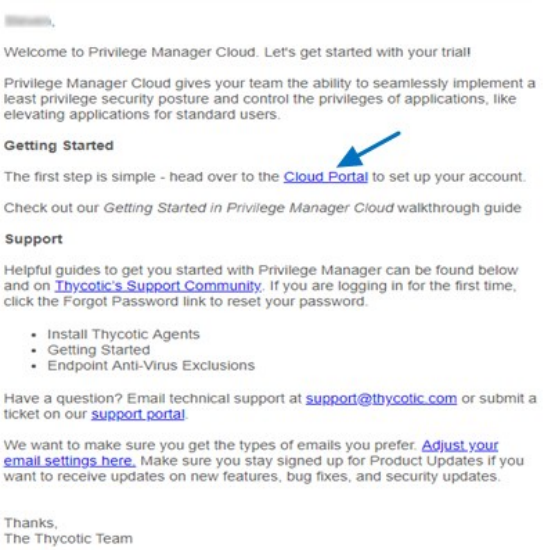
Access the Getting Started screen by selecting the **Getting Started** from the Help icon. Follow the guided steps on the Getting Started screen. Start with step 1 to allow other users to access Privilege Manager and make sure all steps are completed or reviewed before continuing.



Initial Setup - Cloud

After you've signed up for a Privilege Manager Cloud trial, you will receive 2 emails. The first one is from Customer Support and will ask you to create a password to log into the customer support portal.

The second email you will receive is from Delinea Sales titled Privilege Manager Cloud Trial. This email directs you to the **Cloud Portal** to begin your instance setup.



[redacted],

Welcome to Privilege Manager Cloud. Let's get started with your trial!

Privilege Manager Cloud gives your team the ability to seamlessly implement a least privilege security posture and control the privileges of applications, like elevating applications for standard users.

Getting Started

The first step is simple - head over to the Cloud Portal to set up your account.

Check out our *Getting Started in Privilege Manager Cloud* walkthrough guide

Support

Helpful guides to get you started with Privilege Manager can be found below and on Thycotic's Support Community. If you are logging in for the first time, click the Forgot Password link to reset your password.

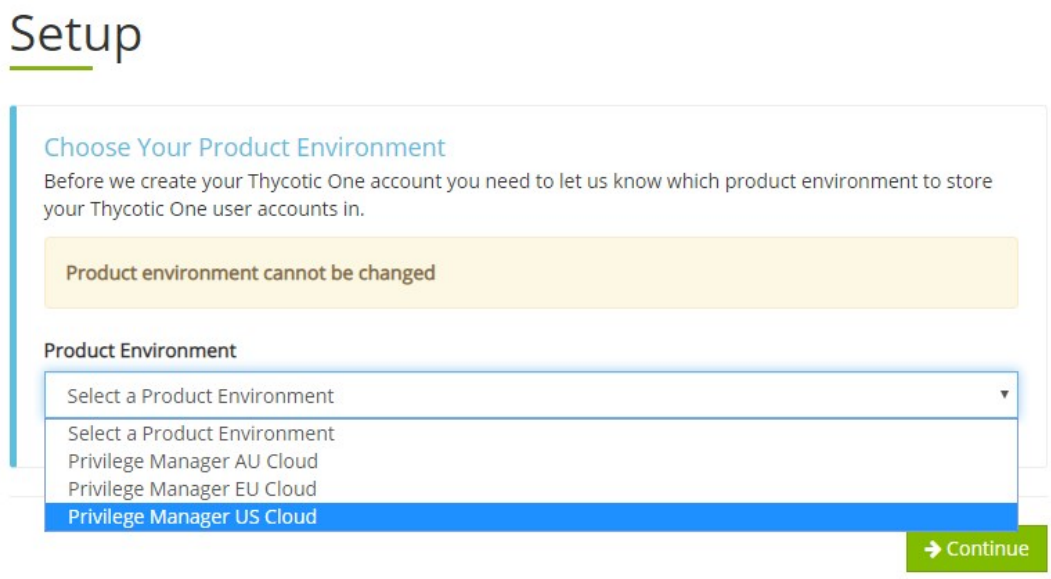
- Install Thycotic Agents
- Getting Started
- Endpoint Anti-Virus Exclusions

Have a question? Email technical support at support@thycotic.com or submit a ticket on our support portal.

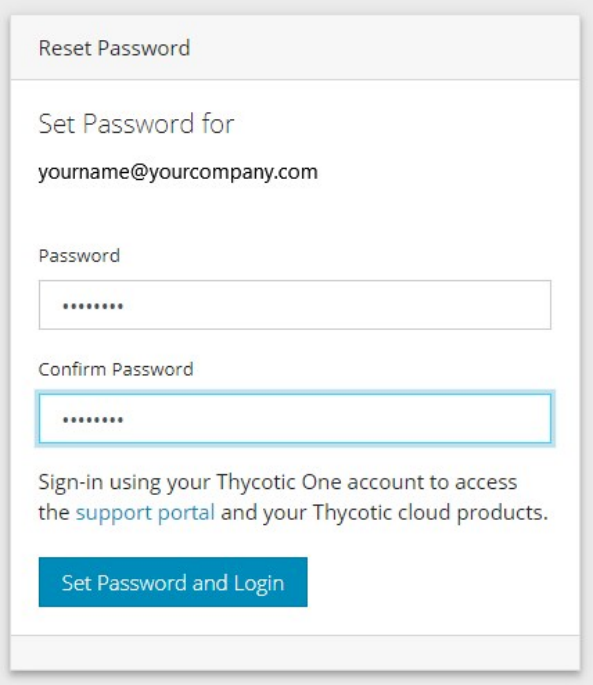
We want to make sure you get the types of emails you prefer. Adjust your email settings here. Make sure you stay signed up for Product Updates if you want to receive updates on new features, bug fixes, and security updates.

Thanks,
The Thycotic Team

Select the Cloud Portal link. On the Setup page, choose your Cloud Environment location from the dropdown menu. Then click **Continue**.

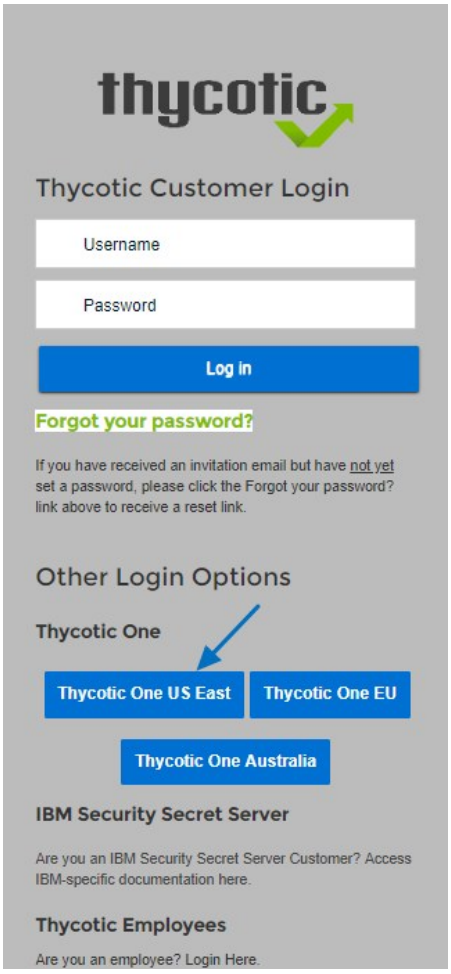


You will be directed to the **Thycotic One** portal to create the password for your first user account with Administrator credentials. This account will be assigned to the email address you entered to request the trial. After confirming the password, click **Set Password and Login**.

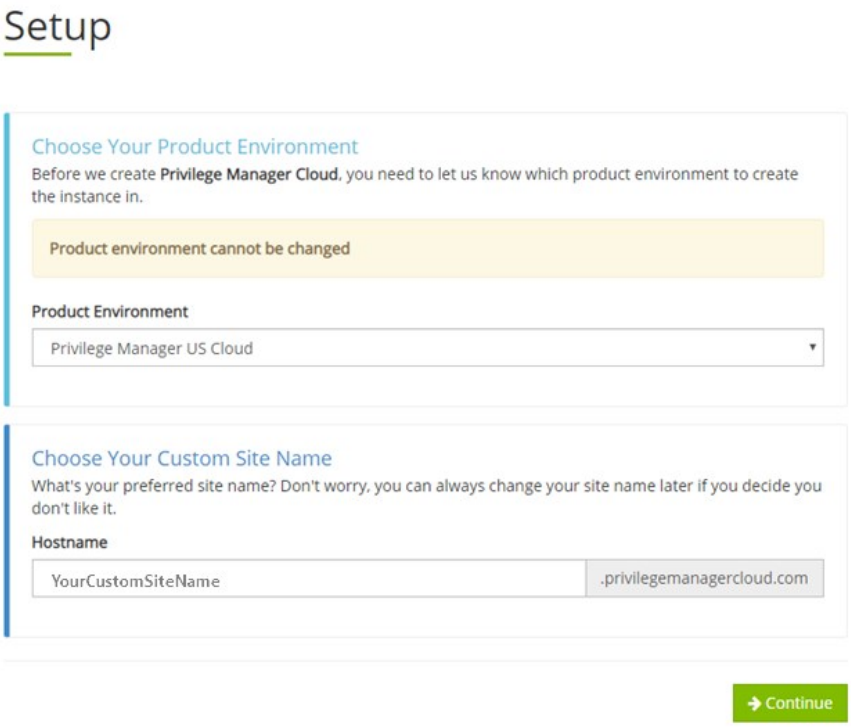


Important: Delinea recommends that you store the password in a secured physical location such as a safe or locked file cabinet. You can reset the password using an email reset, but **if this password is forgotten or you no longer have access to the email account, Delinea will not be able to reset this password.**

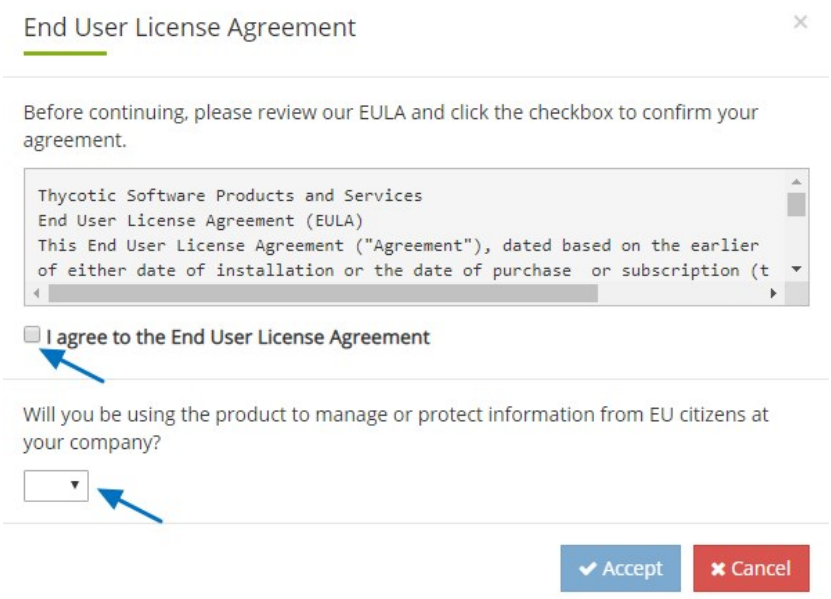
On the Delinea Login page, click the blue button that corresponds to your new Cloud's Thycotic One location (chosen above).



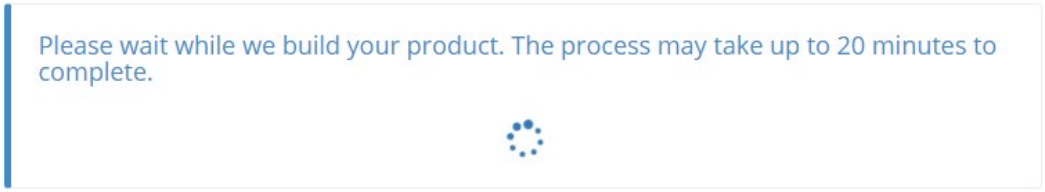
Next, on the Setup page choose the location of your cloud environment and enter the **Name** for your subdomain. Do not use special characters or spaces.



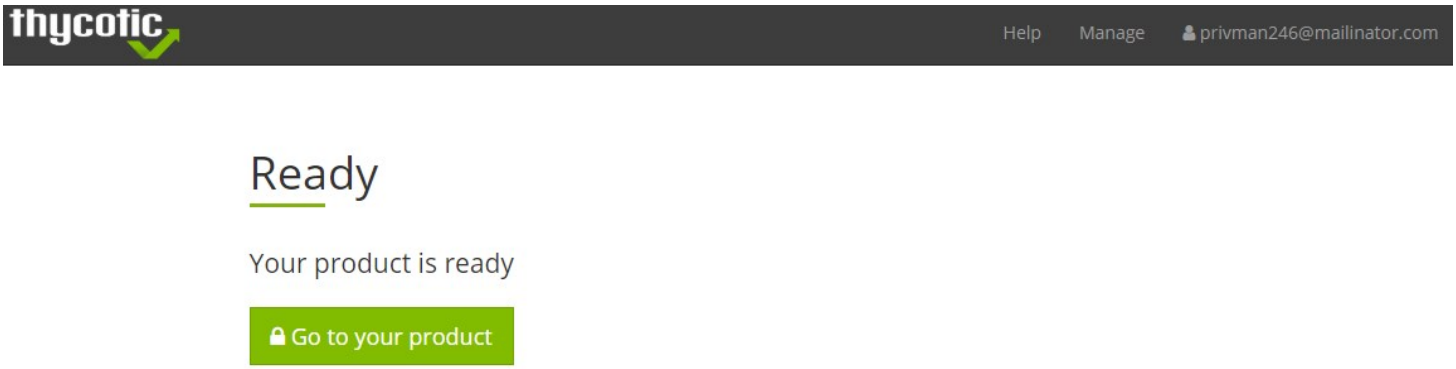
Read the End User License Agreement and click the box to signify agreement. From the dropdown, select Yes or No to signify your organization's oversight of EU information. Click **Accept**.



It will take approximately **20 minutes** for your new Privilege Manager Cloud to spin up.

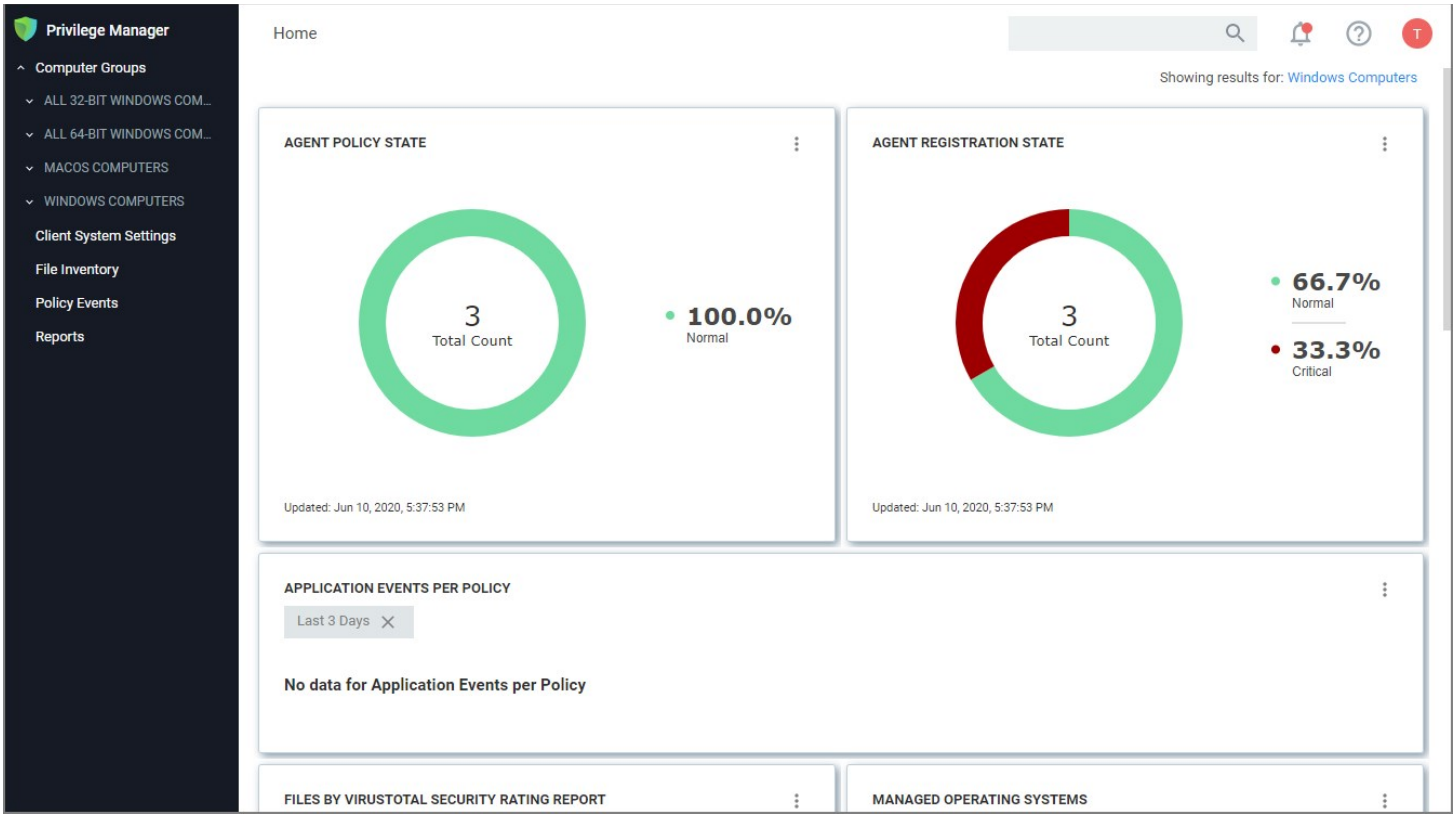


When complete, click **Go to your Privilege Manager Cloud** instance and **Login with Thycotic One**.



You will be automatically redirected to your new Privilege Manager Home page.

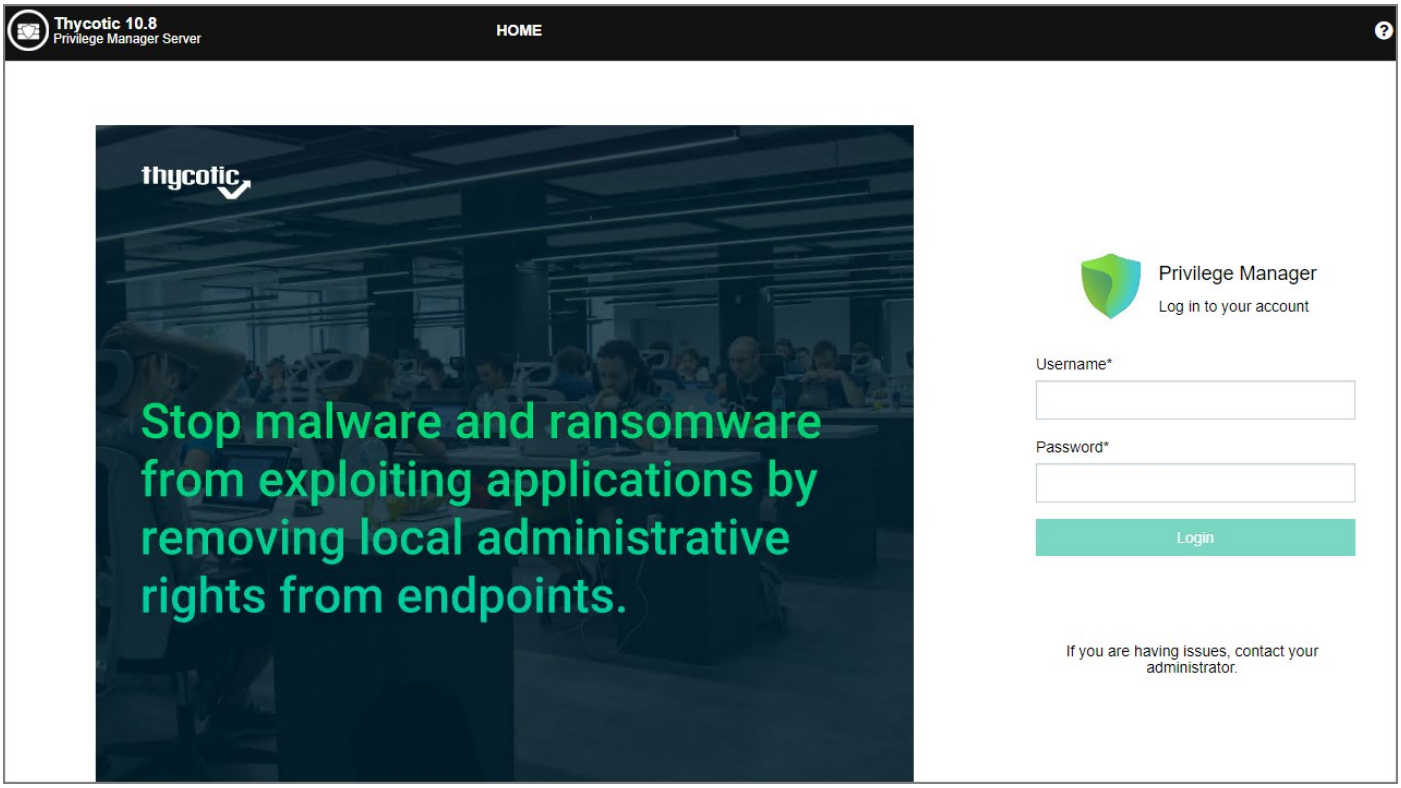
Delinea


Privilege Manager
Computer Groups
ALL 32-BIT WINDOWS COM...
ALL 64-BIT WINDOWS COM...
MACOS COMPUTERS
WINDOWS COMPUTERS
Client System Settings
File Inventory
Policy Events
Reports
Home
Showing results for: Windows Computers
AGENT POLICY STATE
3
Total Count
100.0%
Normal
Updated: Jun 10, 2020, 5:37:53 PM
AGENT REGISTRATION STATE
3
Total Count
66.7%
Normal
33.3%
Critical
Updated: Jun 10, 2020, 5:37:53 PM
APPLICATION EVENTS PER POLICY
Last 3 Days
No data for Application Events per Policy
FILES BY VIRUSTOTAL SECURITY RATING REPORT
MANAGED OPERATING SYSTEMS

To login to a Privilege Manager Cloud instance, use the URL and credentials provided to you. The URL is in the format of:

https://myassignedname.privilegemanagercloud.com/Tms

1. Navigate to your assigned login URL.

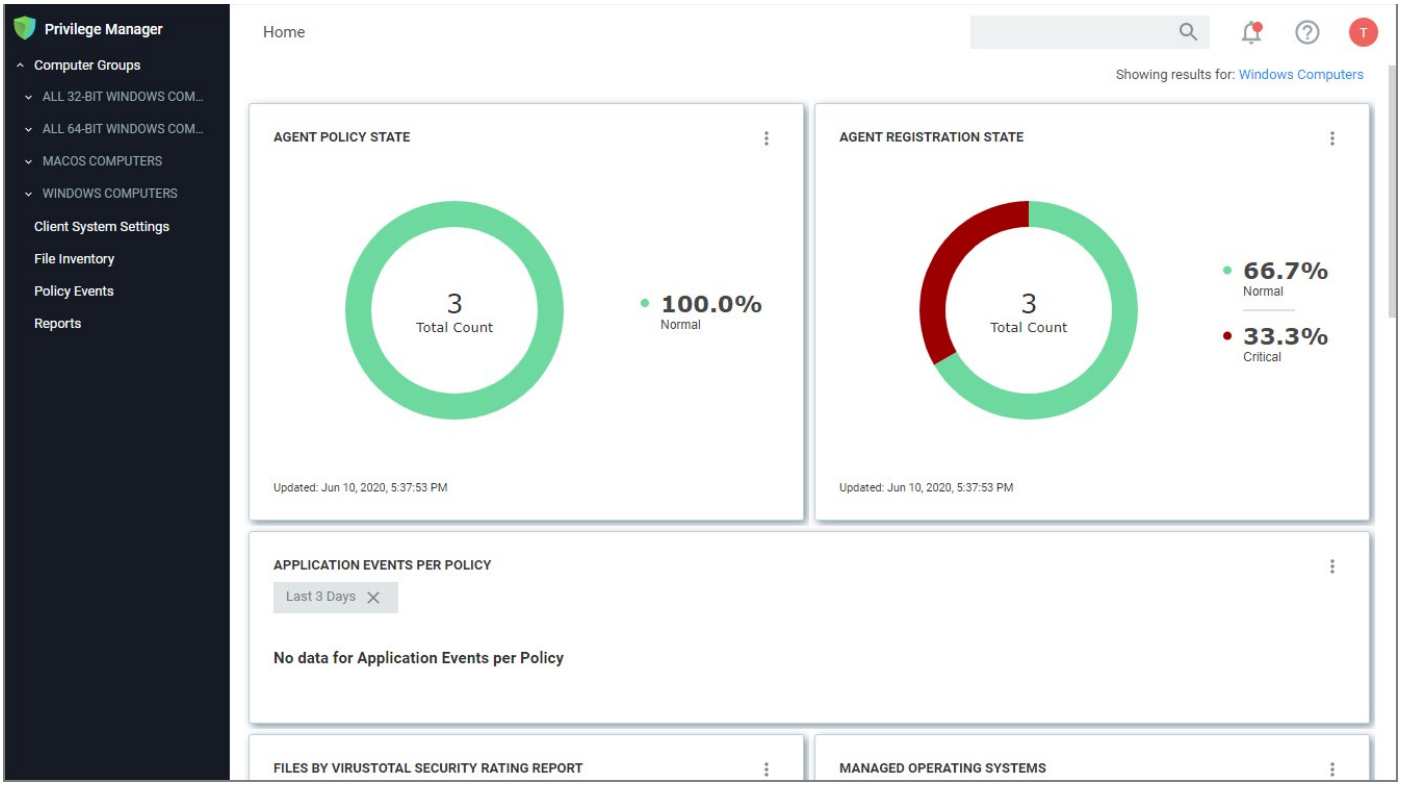


   Depending on the authentication provider setup, users are presented with different login choices.

2. Click the Login button. This usually opens the Sign In dialog:

   1. Enter your username or Email address and click **Next**.
   2. Enter your password and click **Login**.

   The Privilege Manager Cloud console home page opens:



Note: To import and synchronize Azure Active Directory Groups and Users, refer to the following topic: Setting Up Azure Active Directory Integration in Privilege Manager .

To add Thycotic One Users manually refer to the following topic: How to Add Thycotic One Users Manually. That topic does also cover how to create Standard and API Client users.

Licensing

Licensing for Privilege Manager Cloud customers is managed via Delinea.

To install new Privilege Manager licenses, it will depend on whether you chose to

a. perform a standalone install, or

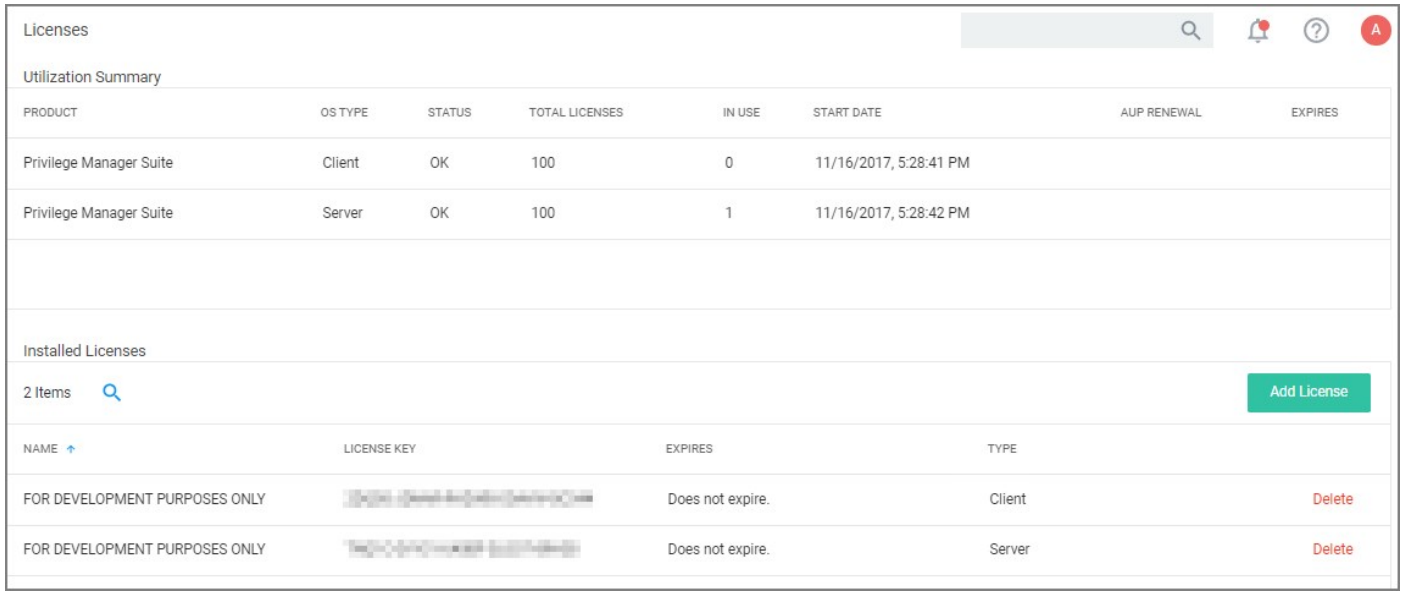
b. install Secret Server in tandem with Privilege Manager .

Note: Online activation is not required for Privilege Manager licenses.

Steps for Standalone Privilege Manager Installation

To install licenses without Secret Server:

1. Navigate to **Admin I Licenses** or **click** the Product Licenses Installed link in the top banner.



2. On the Privilege Manager Licenses page, click **Add License**, then either

   - enter your License Name(s) and Key(s) one at a time:

or

- use the **Add license certificate instead** option.

3. Click **Add**.

Steps for Combined Secret Server + Privilege Manager Installation

To install licenses with Secret Server on the same server as Privilege Manager , you will need to install licenses through the Secret Server UI and then import the new licenses into Privilege Manager .

1. To access Secret Server's licensing page, either click the Secret Server link listed in the banner at the top of the Secret Server Licenses page or in Secret Server navigate to **Admin I Setup – Licenses**.
2. On Secret Server's License page, select Install New License.
3. Enter your License Names and Keys individually or through the Bulk Entry Mode.
4. Click Save or Add Multiple Licenses to save the License Keys. Installing these licenses in Secret Server will automatically import the licenses into Privilege Manager .
5. Navigate back to the Privilege Manager License page to verify under: **Tools I Privilege Manager I Admin I Privilege Manager–Licenses**.

   Note: If your license keys do not appear or you have too many keys listed, click the import task link and then run task to reset.

If you previously had evaluation licenses and recently purchased, you will need to install your new license keys for production via the same steps as above. Normal trial licenses offer 50 endpoint agents and expire 30 days after issue.

When your Privilege Manager licenses expire or have exceeded the licensed count, Privilege Manager will stop processing new inventory and application control events. Endpoints will continue to enforce policies.

In your Installed Licenses list use the **Delete** option to remove expired or old licenses that are not in use anymore.

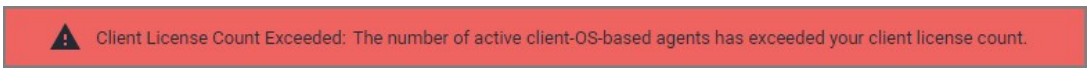
- **Client License**: This license provides coverage for endpoints that are workstations, such as Windows 10, windows 7, macOS or Unix/Linux endpoints, etc.
- **Server License**: This license provides coverage for endpoints that are server machines, Windows Server 2019, Windows 2016, etc.
- **Support License**: Without having a support license you will not be able to complete upgrades and will not be able to receive support or maintenance.

License Expired or Exceeded License Count

The Server will stop accepting data sent from agents that are in violation of the licensing based on operating system license counts. New endpoints will register, but will not be recorded, which means the endpoint:

- Will not get added to the resource targets and will not collect application or user inventories
- No password changes will occur, etc.
- Policies will run on the endpoint, but the server will completely discard the data, and it won't be stored.
- Tasks will not run – all automation will stop and event Discovery will not inventory users or applications, new endpoints won't be discoverable.

An exceeded license count is indicated with a warning banner.

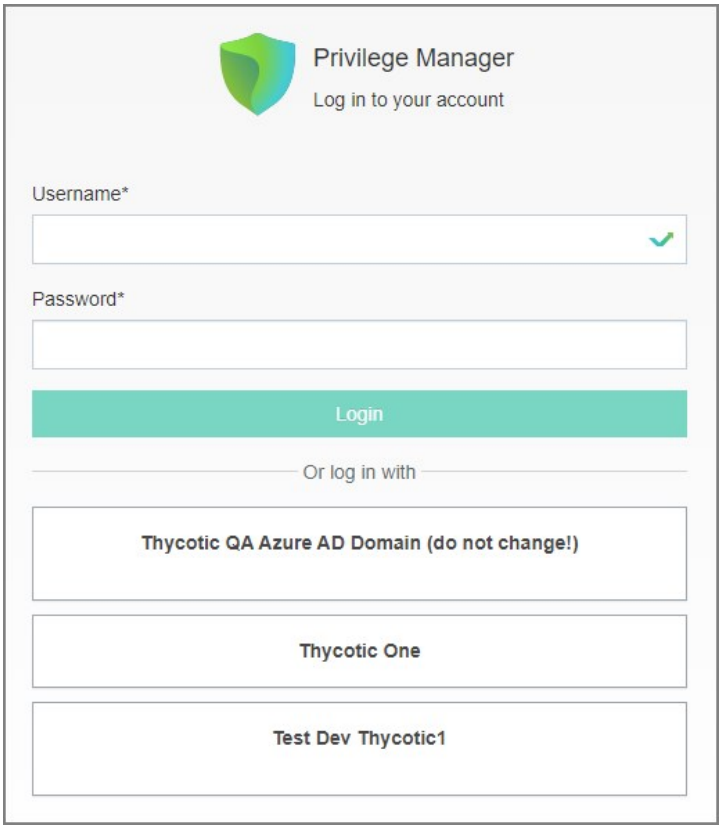


If you need to reset licenses for your Privilege Manager instance refer to the Reset Licensing topic.

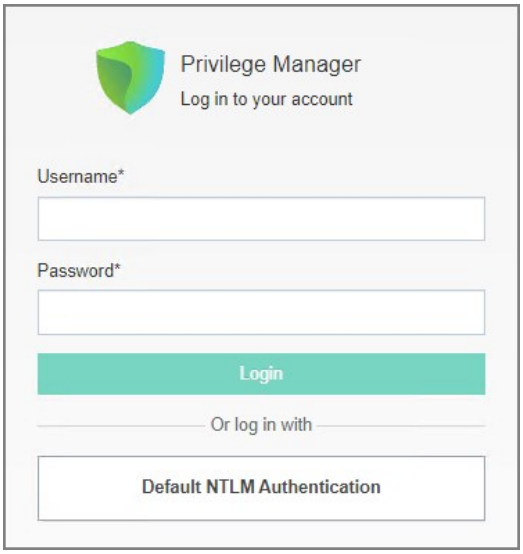
Login and Logout Scenarios

Based on authentication provider configured and used, the login and logout prompts and scenarios differ.

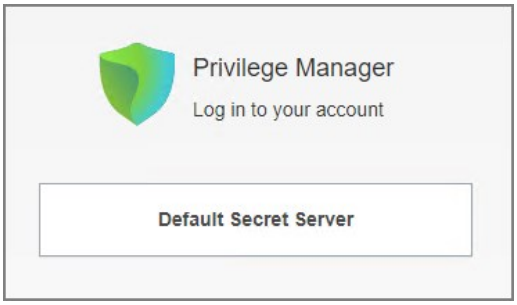
Sample images with various login options set up.



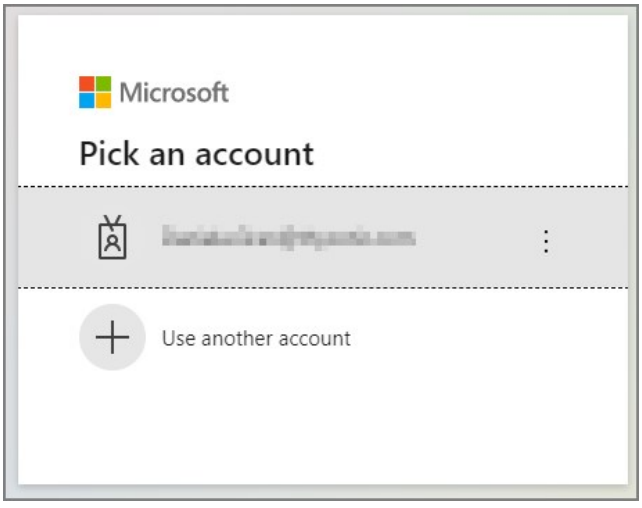
Basic login (Standard Out-Of-Box)



Basic login (Secret Server)

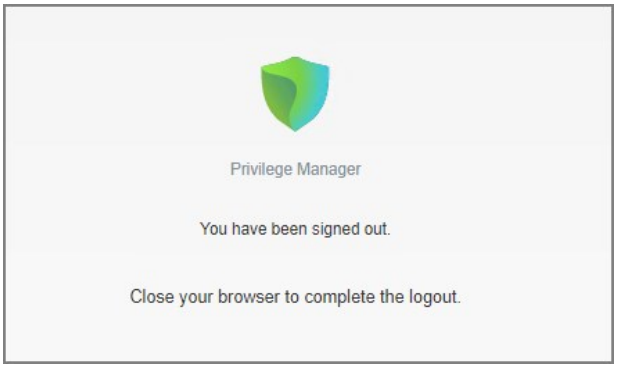


Azure AD



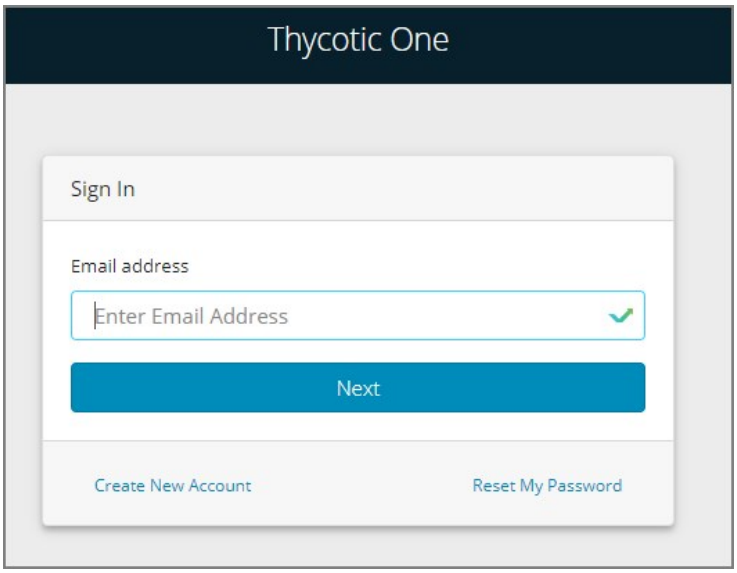
Basic with NTLM

After the logout completes, and the tokens are cleared, the user is presented with a prompt to close the browser.



Azure AD

After the logout completes, and the user tokens are cleared, the user is redirected to the Thycotic One login modal.



Delinea Policy Framework (TPF) Deployment

This topic outlines a refined policy set and deployment methodology for Delinea Privilege Manager . The approach has several key aims, which are highlighted below:

- Take the best practices learned from thousands of successful implementations and make them available to all customers.
- Provide reduced time to value, with a policy set that can be enabled in seconds.
- Simplify and reduce the overhead of day-to-day management of endpoint privilege and application management.

The biggest risk when implementing Endpoint Privilege Management (EPM) solutions like Delinea Privilege Manager is impacting user productivity. As an example, where a user's admin rights are removed on a Monday and they come into work on a Tuesday to discover that applications they need to run to perform their core job function cannot run or are missing functionality without administrative privileges. This approach mitigates that risk by ensuring that during the initial stages of a deployment users are provided with flexible 'on demand' elevation to run applications with elevated privileges where required.

This means that admin rights can be removed without the need for lengthy discovery phases meaning customers get more value from the solution from the point of implementation.

One Size Does Not Fit All

Different users and communities of users require very different application sets and privilege levels in their endpoint environment. The Delinea policy approach allows customers to define users or groups of users into a high, medium, or low privilege filter based on Active Directory group membership or by targeting individual users. A high-level summary of the out of the box user experience is provided below.

- **High Privilege**: Provides users with a 'Pseudo Admin' experience, any application can be elevated on demand by right-clicking and selecting run as administrator. This policy set is typically aimed at the most technical users such as Developers and IT administrators.
- **Medium Privilege**: Provides users with a highly flexible experience where most applications can be elevated on-demand. High risk applications such as scripting engines require approval for elevated execution. This policy set is typically aimed at technical users.
- **Low Privilege**: Provides a highly secure application environment where users are unable to run any application with elevation without approval. This policy set is typically aimed at non-technical users who do not regularly need to install new applications.

The out of the box user experience can be changed in a few clicks by replacing messaging. Customizable messages can be used to change the effective privilege levels at any point from a warning message to a justification or approval workflow.

Application Control

The approach also utilizes an intelligent approach to application allow-listing that leverages the core security concept of trusted file ownership.

Applications with trusted ownership (owned by Local System, Trusted Installer, Administrators by default) that are commonly found in the enterprise environment, will be allowed to execute out of the box. Applications that don't match against the allow list will hit a catch-all policy. The catch-all policy starts with a 'soft' audit approach, which allows customers to monitor unknown applications and refine allow listing before hardening the catch-all to an appropriate level for different user communities.

The following section provides a high-level overview of the policies included in the TPF policy set.

5	THY - Malware Protection Policy	Catches any unsigned and untrusted application that runs as a child process of high-risk applications such as Microsoft Office applications, email clients and browsers.

6	THY - LOLBAS Attack Protection	Protects vulnerable applications from being exploited using 'Living off the Land Binaries and Scripts' attack vectors.
11	THY - GLOBAL - Blocked Applications	Targets explicitly defined applications and denies execution with a visible message. All applications matching this policy are audited.
12	THY - GLOBAL: Silently Elevated Applications	This policy targets explicitly defined executable applications and elevates the application with no visible messaging.
13	THY - GLOBAL: Silently Elevated Installers	This policy targets explicitly defined Microsoft Installers and elevates silently.
14	THY - GLOBAL - Allow List (Explicit)	This policy targets explicitly defined applications that are approved for non-elevated execution.
21	THY - HIGH PRIVILEGE - Silently Elevated Applications	This policy targets explicitly defined executable applications for high privilege users and elevates the application with no visible messaging.
22	THY - HIGH PRIVILEGE - Silently Elevated Installers	This policy targets explicitly defined Microsoft Installers for high privilege users and elevates the application with no visible messaging.
23	THY: HIGH PRIVILEGE: High Risk Applications	This policy targets a list of powerful, high risk applications. Users will be prompted for justification when elevating these applications. All applications matching this policy are audited.
24	THY - HIGH PRIVILEGE - High Risk Windows Settings	This policy targets high risk windows settings areas and presents a justification message which needs to be completed before execution is possible. All applications matching this policy are audited.
25	THY - HIGH PRIVILEGE - UAC Replacement (Signed Applications)	Targets any signed application that generates a User Account Control (UAC) dialogue. A warning message is displayed prior to elevated execution. All applications matching this policy are audited.
26	THY - HIGH PRIVILEGE - UAC replacement (Unsigned Applications)	Targets any unsigned application that generates a User Account Control (UAC) dialogue. A warning message is displayed prior to elevated execution. All applications matching this policy are audited.
27	THY - HIGH PRIVILEGE - Allow List (Trusted Owners)	This policy will allow applications with a trusted owner or that are explicitly defined to run with standard user rights, no messaging is displayed.
28	THY: HIGH PRIVILEGE - Catchall	This policy targets any application that has not matched against a previous policy for users defined within the High Privilege filter. This policy should not be enabled without High Privilege - Allow List also being enabled, doing so will generate large amounts of feedback data.
31	THY - MEDIUM PRIVILEGE - Silently Elevated Applications	This policy elevates targeted applications for users defined within the Medium Privilege Filter.

32	THY - MEDIUM PRIVILEGE - Silently Elevated Installers	This policy elevates targeted installers for users defined within thee Medium Privilege filter with no messaging displayed.
33	THY - MEDIUM PRIVILEGE - High Risk Applications	This policy targets high risk applications and presents an approval workflow prior to elevated execution.
34	THY - MEDIUM PRIVILEGE - High Risk Windows Settings	This policy targets high risk windows settings areas and presents an approval workflow prior to elevated execution. All applications matching this policy are audited.
35	THY - MEDIUM PRIVILEGE - UAC Replacement (Signed Applications)	Targets any signed application that generates a User Account Control (UAC) dialogue. A warning message is displayed prior to elevated execution. All applications matching this policy are audited.
36	THY - MEDIUM PRIVILEGE - UAC replacement (Unsigned Applications)	Targets any unsigned application that generates a User Account Control (UAC) dialogue. A warning message is displayed prior to elevated execution.
37	THY - MEDIUM PRIVILEGE - Allow List (Trusted Owners)	This policy will allow applications with a trusted owner or that are explicitly defined to run with standard user rights, no messaging is displayed.
38	THY - MEDIUM PRIVILEGE - Catchall	This policy targets any application that has not matched against a previous policy for users defined within the High Privilege filter. This policy should not be enabled without High Privilege - Allow List also being enabled, doing so will generate large amounts of feedback data.
41	THY - LOW PRIVILEGE - High Risk Applications	This policy targets high risk applications and presents an approval workflow prior to elevated execution.
42	THY - LOW PRIVILEGE - High Risk Windows Settings	This policy targets high risk windows settings areas and presents an approval workflow prior to elevated execution. All applications matching this policy are audited.
43	THY - LOW PRIVILEGE - UAC Replacement (Signed Applications)	This policy targets any application that generates a UAC prompt and has a valid digital certificate. Elevated execution requires approval.
44	THY - LOW PRIVILEGE - UAC replacement (Unsigned Applications)	Targets any application that generates a UAC prompt and does not have a valid digital certificate. Elevated execution requires approval.
45	THY - LOW PRIVILEGE - Allow list (Trusted Owners)	Targets any application that is owned by a trusted owner or explicitly defined applications and allows non-elevated execution with no visible messaging.
46	THY - LOW PRIVILEGE - Catchall	Targets any application that has not been matched against a higher priority policy. This policy allows on-elevated execution with no visible messaging. All applications matching this policy are audited.

Download the latest version of the Thycotic Policy Framework (TPF) from the Config Feeds. Once installed, the policy set is available in the

Thycotic Policy Framework folder, usually at https://[yourprivilegemangerinstance]/TMS/PrivilegeManager/#/folders/all/dfa7db45-f75c-4e31-be53-6281b1d4ce39].

In addition to installing the config feed with the policy set and following the general initial setup, the following configuration should be performed:

Set up Active Directory / Azure AD integration for administrative console access and policy targeting.

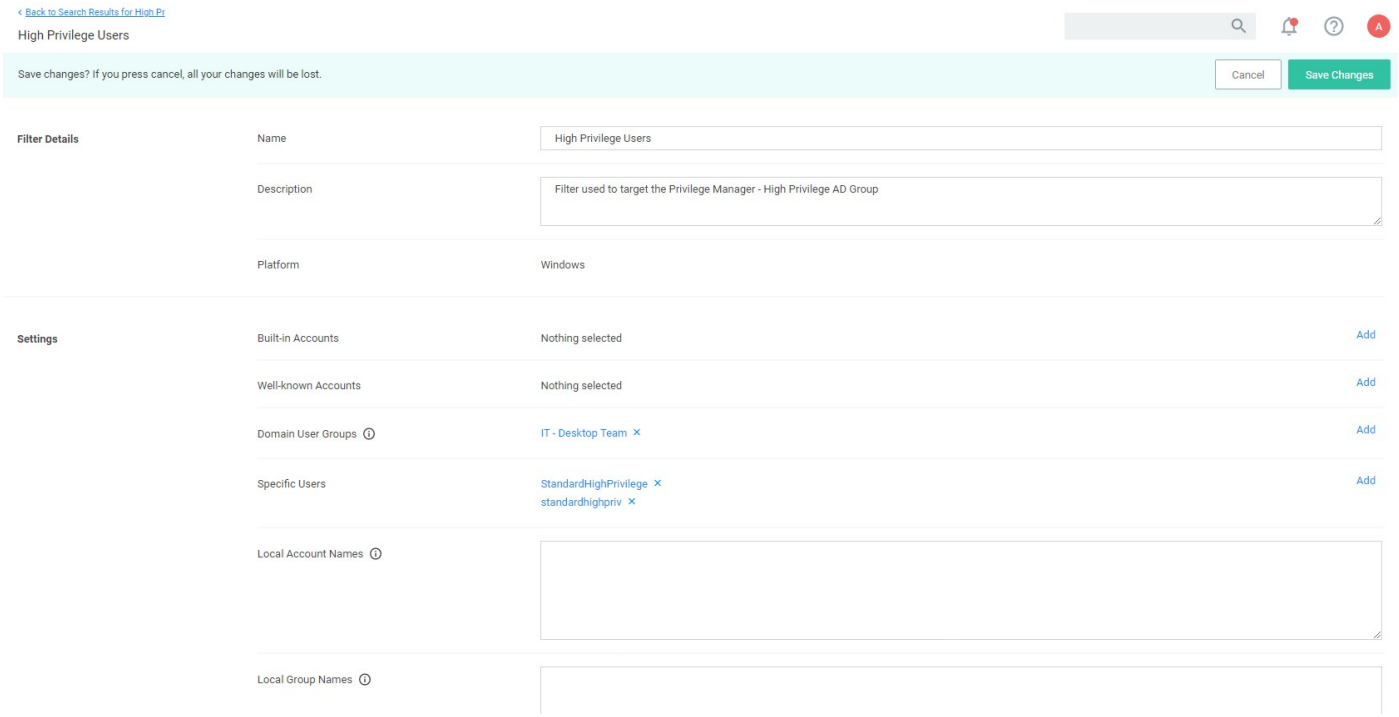
To allow users to authenticate with the Privilege Manager administrative console using their AD or Azure AD identity you should configure the AD or Azure AD integration. This can also be used to target TPF policies to specific users or security groups.

Build User Context Filters and or Resource Targets for Policy Targeting

Privilege Manager policies can be targeted at the user and or computer level. To target policies to specific users or security groups User Context filters can be created. The TPF set comes with three out of the box user context filters for High, Medium and Low Privilege Users.

Adding Users to High, Medium, or Low Privilege User Context Filters

1. In the Privilege Manager console search for **High Privilege Users** or select the **High Privilege Users filter** from any of the high privilege policies.
2. Search for and add local or domain users or Active Directory Security Groups to the filter:



3. Click **Save Changes**.

Privilege Manager also provides the ability to build resource targets, which are groups of computers that policies can target.

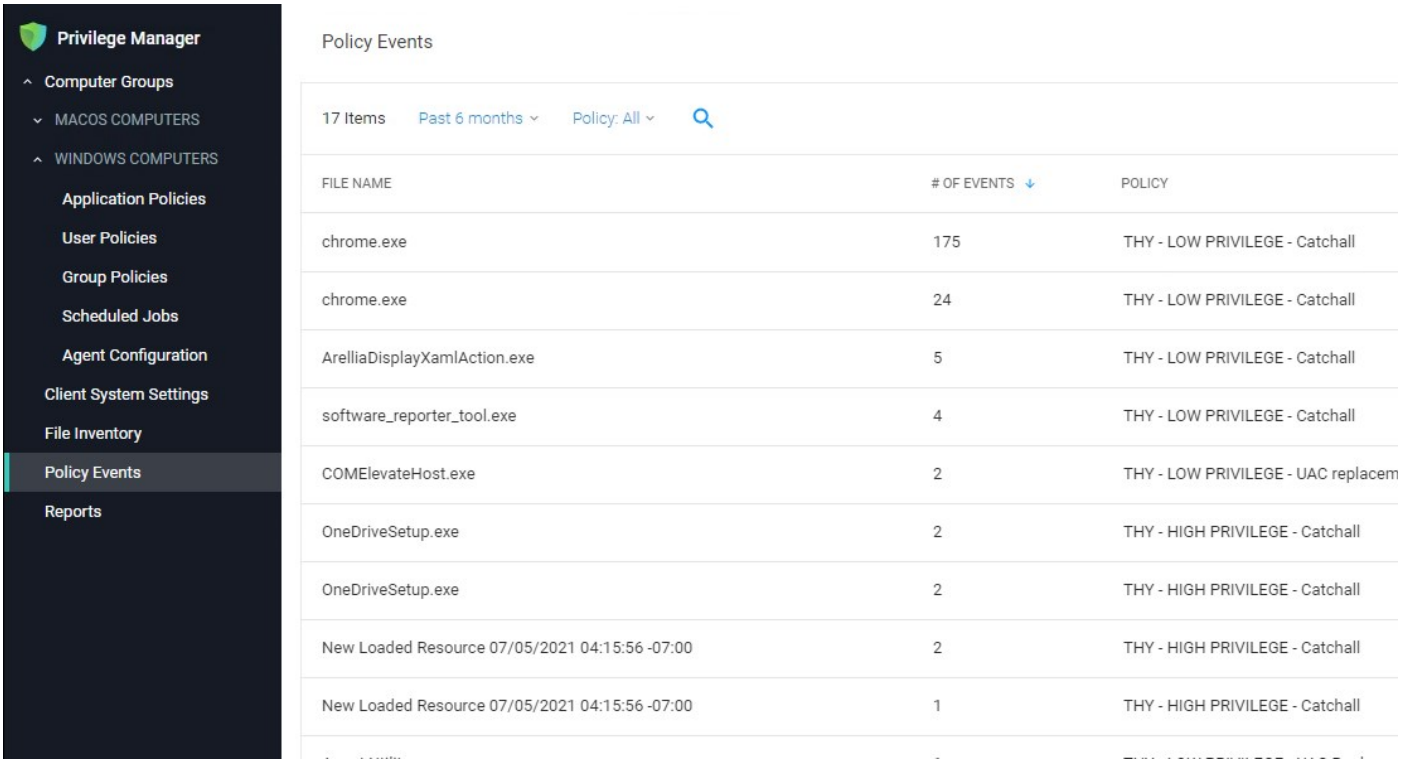
Before deploying any policies, you should add any known applications to relevant policies. For example, if you are aware of corporately approved applications that are used by all users which require admin rights, you can add application filters to the THY: GLOBAL: Allow List (Explicit) policy.

There are a number of ways application targets can be created:

- Manually by creating a blank win32 filter and targeting specific application metadata fields.
- By uploading an application file.
- Waiting for the TPF policies to generate application audit events and creating filters directly from the event.

Policy Refinement after Deployment

1. On a regular basis (as frequently as possible during the initial stages of the deployment) open the **Policy Events Report**:



2. From the left-hand menu, select **Policy Events**.
3. The report should default to sorting by the **# of events field**.
4. For each application in the list, review and decide how you want to handle the application. There are a number of options to consider:
    - Add to Global: Silently Elevated Applications or Installers to allow silent, elevated execution for **all users**.
    - Add to High/medium: Silently Elevated Applications or Installers to allow silent, elevated execution for users within the scope of the chosen policy.
    - Add to restricted applications to allow execution with approval workflow.
    - Do Nothing (User will continue to receive UAC replacement messaging, which will likely be hardened).
    - Add to Global: Block List.

        Note: The key consideration in making this decision, is the number of users executing the application and the number of times they are executing it. The higher these numbers the more impactful gating the application with an approval workflow would be.
5. Once number of new applications hitting UAC replacement plateaus, add more users to scope OR harden UAC replacement.

6. If application Control is required, review applications hitting catch-all, review and perform one of the following actions:
    1. Add to High/Medium/Low Allow List.
    2. Add to Global - Block List.
    3. Do nothing (Application will be gated with approval workflow when catch-all is hardened).
    4. Once number of unknown applications hitting the catch-all plateaus, add more users to scope AND/OR harden catch-all.

Q1. Why is there no user context filter for Low Privileged Users?

A: This is by design, as the Low Flexibility policy set does not have any user context inclusion filters it will apply to any user that is not in the scope of the High or Medium flexibility policies. Effectively the Low Privilege policy set functions as a catch-all policy set and avoids the risk that user is not included in a filter and has no policies applied.

Q2. Why are there no silent elevation policies for low privilege users?

A: It is highly unlikely that applications need to be elevated for low privilege users without being elevated for all users. Typically, any application requiring elevation for low privilege users can be targeted in the global elevation policies.

Q3. Why is the catch-all policy configured to allow unknown applications to run?

A: Any policy set that attempted to block or gate unknown applications at the point of deployment would be highly disruptive to users and/or generate high volumes of approval requests to support teams. Catch-all policies are intended to quickly collect audit data that can be used to refine allow listing before being hardened.

Installation and Upgrades

This sections contains all you need to know about installation and upgrading Privilege Manager and all its components.

The following topics are available:

- System Requirements
- Recommended Anti Virus Exclusions
- Software Downloads
- Installation - recommended installation procedure
    - Manual Installation Instructions
    - Item Encryption
- Agent Installation
    - Windows Agents
        - Bundled Agent Installer - Windows
        - Individual Agent Installers for Privilege Manager :
            - 64-bit Windows Operating Systems
            - 32-bit Windows Operating Systems
            - Directory Services Agent to support Local AD Synchronization with Cloud Instances
        - Bundled Core and Directory Services Agents
        - Uninstall via Command Line
        - Agent Hardening
    - macOS Agent Installer - 10.11 or Newer
        - macOS ThycoticManagementAgent
        - macOS Agent Hardening
    - Unix/Linux Agent Installer
        - Installing on CentOS/RedHat/Oracle Linux
        - Installing on Ubuntu
- Upgrades
    - Online Upgrades (recommended)
    - Offline Upgrades
    - Offline Upgrades - Combined Installations
    - Upgrading from Arellia Management Server 8.2 to Privilege Manager 10.4 and up
    - Best Practices for Upgrades
- Package Hash Verification

Privilege Manager System Requirements

These are requirement for an on-premises integration.

> **Note**: Verify that the .NET version between the Privilege Manager and Database Server in use are matching, especially if installed on different Windows Server versions.

4 CPU Cores	4 CPU Cores
8 GB RAM	16 GB RAM
40 GB Disk Space	150 GB Disk Space
Windows Server 2012 R2 or newer	Windows Server 2012 R2 or newer
IIS 7 or newer	SQL Server 2012 or newer
.NET 4.6.1 or newer	
Powershell 3.0 or newer	

> **Note**: Environments with over 25,000 Endpoints require a scoping call with a Delinea engineer.

8 CPU Cores	8 CPU Cores
32 GB RAM	64 GB RAM
40 GB Disk Space	500 GB Disk Space
Windows Server 2016 or newer	Windows Server 2016 or newer
IIS 7 or newer	SQL Server 2012 or newer
.NET 4.6.1 or newer	
Powershell 5.0 or newer	

For details refer to the Agent specific system requirements as provided under these topics:

- macOS Endpoint System Requirements
- Unix/Linux Endpoint System Requirements
- Windows Endpoint System Requirements

- RAM, CPU, and Disk Space - negligible

- System Requirements apply to both physical and virtual machines.
- For best performance, we recommend using dedicated (clean) servers for Delinea products.
- PowerShell must be allowed to execute and cannot be blocked on the server or the endpoint by other products.
- If .NET and/or IIS features are not already installed on the web server, the Delinea Installer will add and configure them automatically.
- If SQL is not already installed on a database server, the Delinea Installer can setup SQL Express on the web server, however SQL Express is intended for Trials and Sandbox environments ONLY. Though Delinea will support SQL Express, users will likely experience performance issues due to the memory and product limitations. If experiencing performance issues while using SQL Express, it is highly recommended to upgrade to SQL Server prior to contacting Delinea Support.
- A link to Microsoft documentation on the use and limitations of SQL Express can be found at: https://docs.microsoft.com/en-us/sql/sql-server/editions-and-components-of-sql-server-2017
- Web Servers that are NOT supported: Small Business Server (SBS), The Essentials Edition, Domain Controllers, Sharepoint Servers.

- **Outbound (port 443 - HTTPS)**: This is the default access port through which the agent connects to the server. You may specify a different port based on your environment.
- **Inbound (port 5593)**: The is the default and only port that the agent listens on. This port is not required and you can block port 5593. If you block the port, the agents pull updates from the server based on a set schedule.
- **SQL (port 1433)**: This is the default SQL DB port. The SQL port can be customized.

Anti Virus Exclusions

For Privilege Manager users, we recommend several antivirus exclusions to maintain application performance and integrity. These guidelines apply to both real time and on-demand antivirus scanning.

Exclude these directories from your antivirus filters to ensure Privilege Manager processes will not be blocked (or for a more granular approach to these exclusions, see the Client Item Database and Privilege Manager Application Control Agent Services sections at the end of this article):

```
%ProgramData%\Arellia\
%ProgramData%\Application Data\Arellia
%ProgramFiles%\Thycotic\
```

Exclude the following antivirus programs for Privilege Manager 's web server, also sometimes TMS:

Temporary ASP.NET Files

Exclude the following directory to prevent degradation in performance and possible unexpected restarts of the Tms and TmsWorker IIS application pools:

```
%SYSTEMROOT%\Microsoft.NET\Framework64\v4.0.30319\Temporary ASP.NET Files
```

Exclude the following database files.

SQL Server Data Files

These files contain data and typically have the following extensions:

- .mdf - primary data filegroups
- .ndf - secondary data filegroups
- .ldf - transaction log filegroups

SQL Server Backup Files

These files contain the backup files and typically have the following extensions:

- .bak - database backup files
- .trn - transaction log backup files

By default, the directories that contain the Data and Backup files are located under `C:\Program Files\Microsoft SQL Server\MSSQL11.MSSQLSERVER\MSSQL`.

SQL profiler trace files

These files contain SQL Profiler Trace log data and can be contained in any folder.

They usually have the file extension .trc.

Exclude the following for managed endpoints.

Request Run As Administrator Registry Key

Privilege Manager Application Control installs a context menu item that allows executables to be "Request Run as Administrator."

This context menu is added under the following registry key which some antivirus programs incorrectly flag as malware:

HKLM\SOFTWARE\Classes\exefile\Shell

Client Item Database

These directories contain the Delinea Agent client item database and should be excluded from antivirus to prevent corruption:

- %ProgramData%\Arellia\ClientItems
- %ProgramData%\Application Data\Arellia

If required, you can further limit this exclusion to all files with the .db and .db-* extensions under this location.

Privilege Manager Application Control Agent Service

Some antivirus products require that the Privilege Manager Application Control service be excluded from tamper protection rules because Application Control manipulates other applications which antivirus products may mistake as malicious.

C:\Program Files\Thycotic\Agents\ApplicationControl\ArelliaACSvc.exe

Software Downloads

This page provides links to Delinea Privilege Manager product and agents software downloads.

11.3.0	Combined Secret Server and Privilege Manager Installer - Authentication required!
	Privilege Manager Application Files - Authentication required!

Windows Endpoints

11.3.7585	Bundled Privilege Manager Agent Installer - Windows
11.3.7585	Core Thycotic Agent (x64)
11.3.7585	Core Thycotic Agent (x86)
11.3.7585	Application Control Agent (x64) [*1]
11.3.7585	Application Control Agent (x86) [*1]
11.3.7585	Local Security Solution Agent (x64)
11.3.7585	Local Security Solution Agent (x86)
11.3.7585	Bundled Privilege Manager Core and Directory Services Agent - Windows
11.3.7602	Directory Services Agent (x64)

- [1]: Do not update to version 11, if endpoint runs Windows 10 version 1507.

macOS Endpoints

11.3.3.1	Privilege Manager macOS Agent	Catalina and later using System Extensions (Apple silicon & Intel)
10.8.27	Privilege Manager macOS Agent	Catalina and previous using Kernel Extensions (Intel)

Note: Privilege Manager no longer supports Unix/Linux. While you can download the agent, there will be no additional agent updates.

Prerequisites

ASP.NET Website

Privilege Manager is installed as an ASP.NET website. The setup.exe file will set up the website with the correct permissions and create the settings in IIS.

SQL Server Database

Delinea products require an instance of SQL Server for the database backend and an instance of SQL Server Express will be installed by the setup.exe file, if missing. However, it is strongly recommended to not use SQL Server Express for production environments. SQL Server Express edition is intended for Sandbox and trial environments, Delinea recommends purchasing SQL licensing for use in production environments.

A SQL account is required. If that account has the db_creator role, the installer can create the database during the installation. Alternatively, if the blank database was manually created before running the installer, the SQL account will require db_owner of the database. If using Windows authentication with the database, the SQL account will be the app pool service account.

Administrative Access

Throughout the installation process, you will be required to be an administrator to perform most actions. Please ensure that you are logged onto your system with a Windows account that has administrative rights before beginning your install.

Additional Recommendations

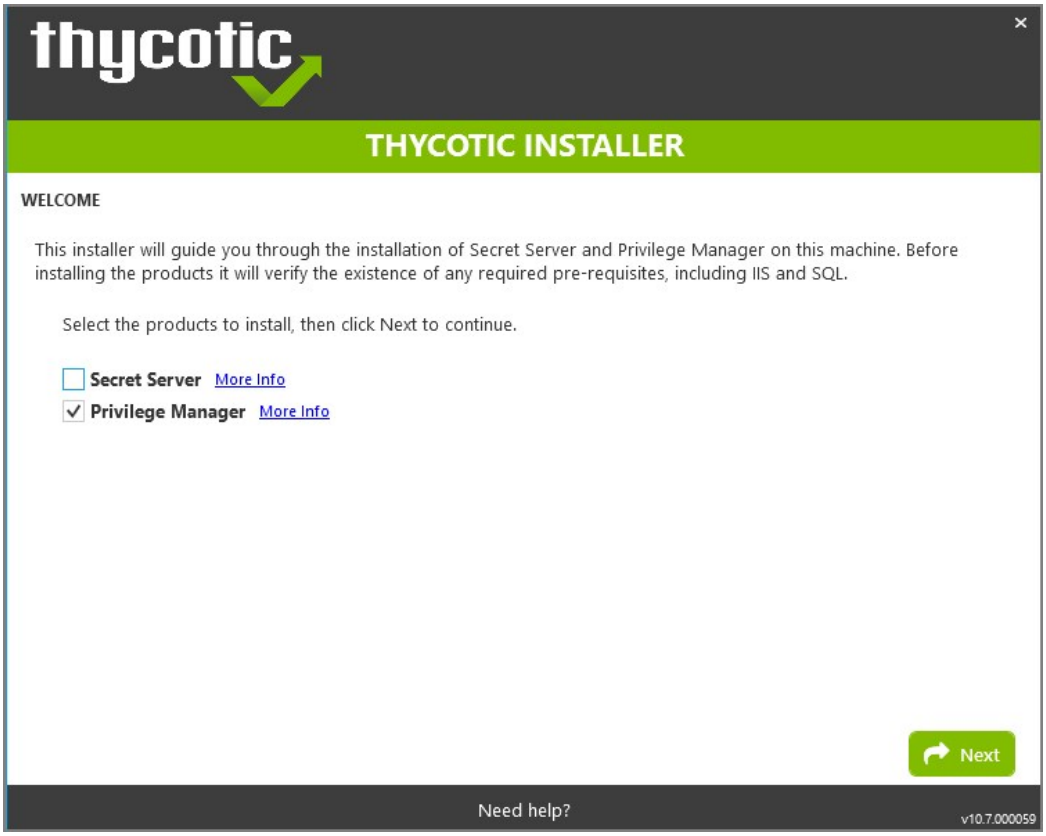
1. Use an SSL certificate for Privilege Manager .
2. Run Microsoft Update on your server to make sure all components are up to date.

Download the Latest Version of PM Installer

The latest version of Privilege Manager is available for download under the Software Downloads topic. It is recommended to run the downloaded setup.exe file as an administrator.

Running the Installer

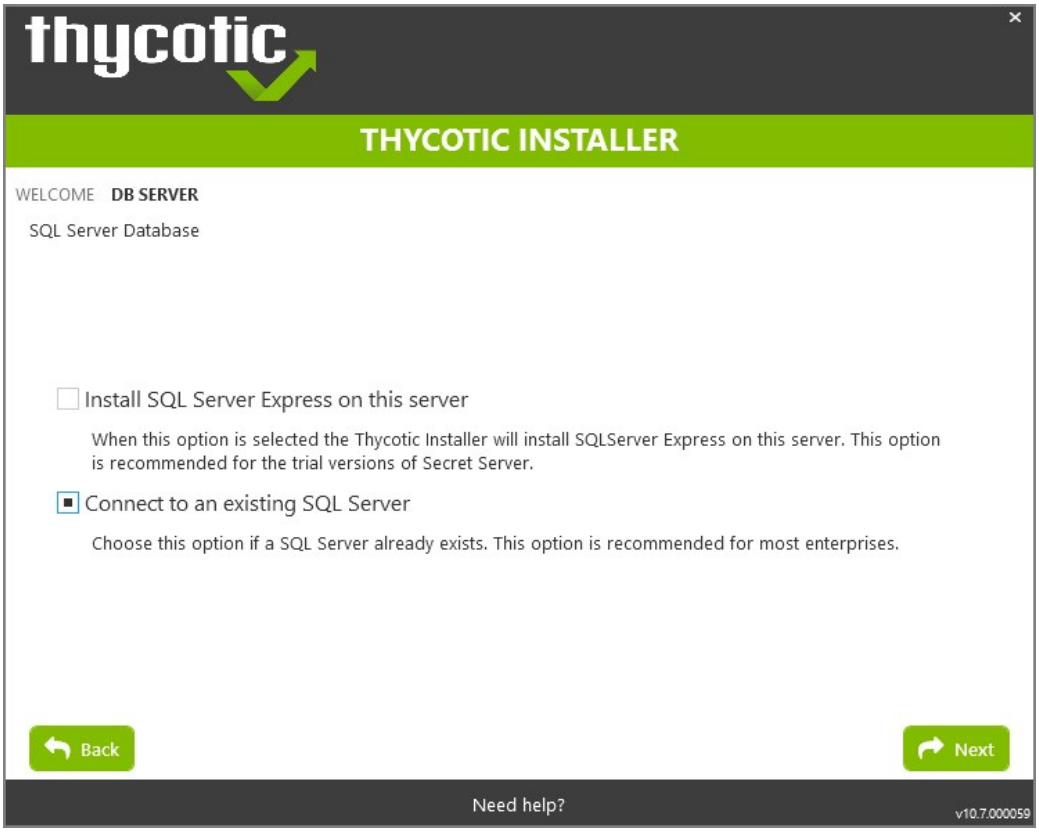
1. Double-click the downloaded setup.exe to run the installer. The installer opens on the **Welcome** tab:



2. Verify that the Privilege Manager box is checked.

   Note: Privilege Manager as a standalone product comes with three roles Administrator, Basic User, and Help Desk User roles. Please refer to Application Roles.

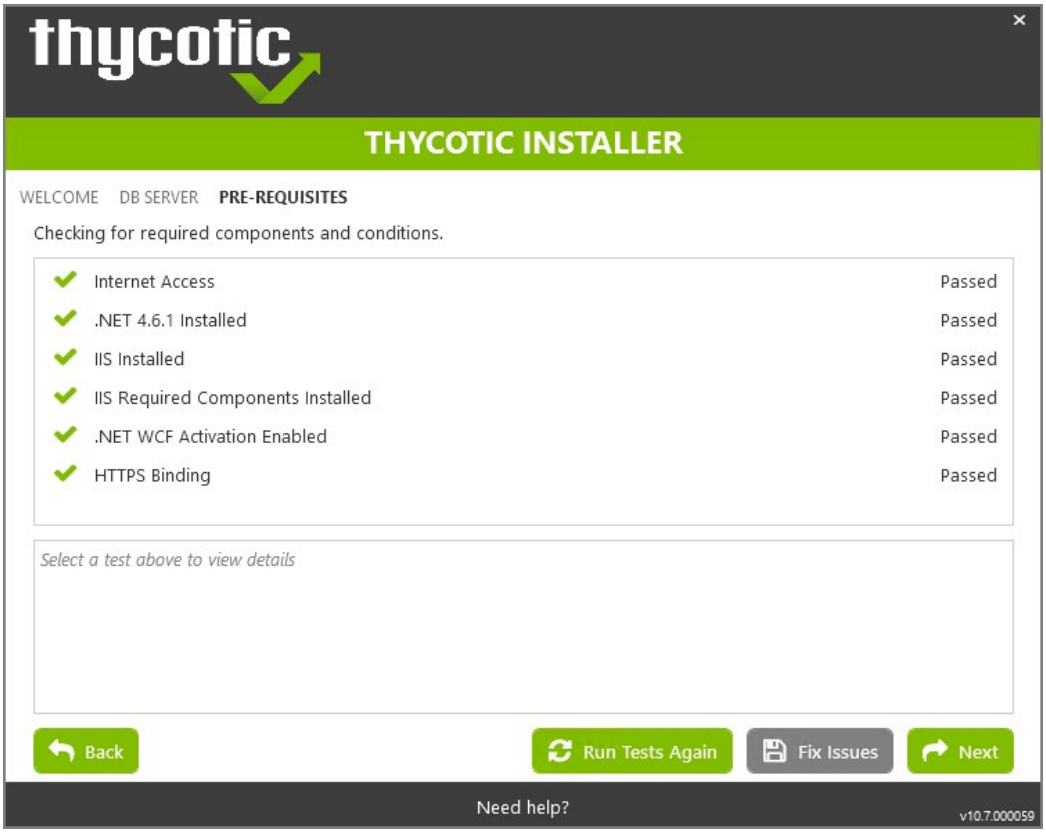
3. On the **Database** tab you can choose to either install SQL Express or connect to an existing SQL Server. SQL Express requires a internet access for the installer to download the installation package for SQL Express.



Note: For production environments Delinea recommends installing a licensed edition of SQL before installing Delinea products. The Express edition is only recommended for trial and sandbox environments.

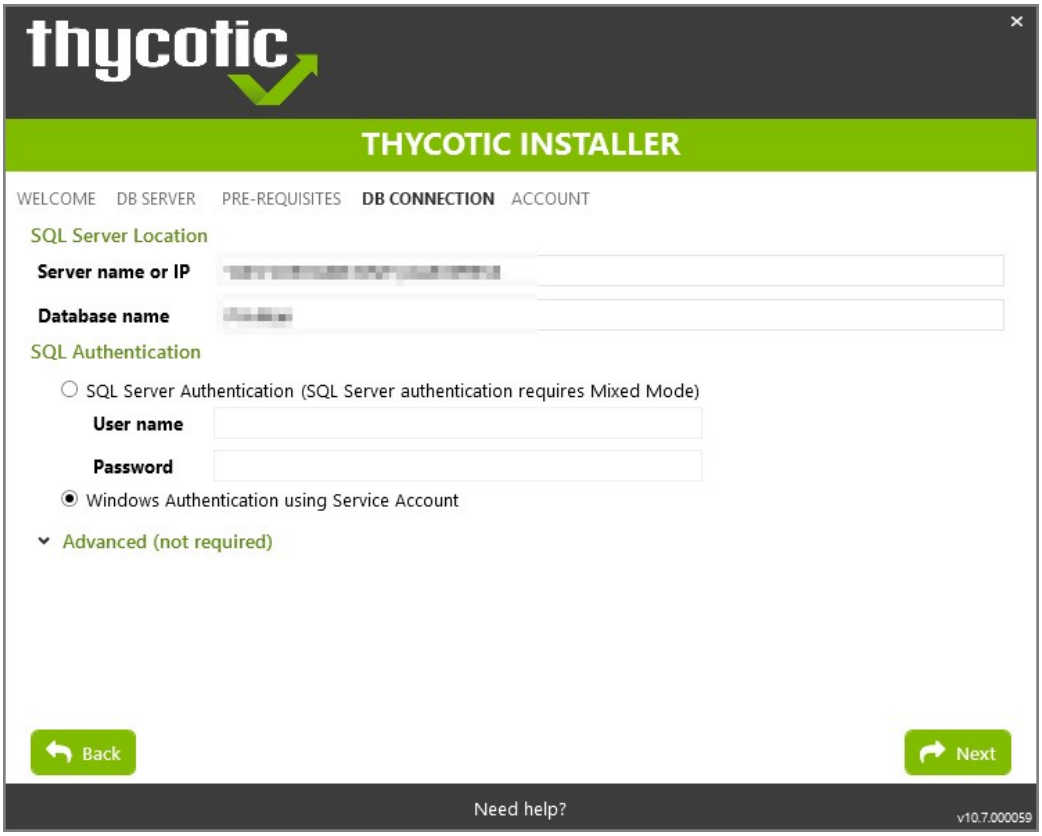
- If Internet access is not available a link to download SQL Server Express will be presented to the user. At that point, they are expected to install SQL Server Express and then restart the installer.
- If Internet Access is available SQL Server Express will be installed.
- After SQL is installed select Connect to an existing SQL Server.

4. The **Pre-Requisites** tab makes sure everything that is required to install Privilege Manager is setup correctly. Everything on this page can be installed outside of the installer, but if not, the installer will install and configure them for the user. Think of this page as the non-Delinea configuration. If there are issues with this page it is very likely that the Internet will be able to help as these are not installation features that are specific to Delinea. Click Fix Issues to automatically install the necessary pre-requisites. When Successful, click Next.



5. If you chose the "Connect to an existing SQL Server" option on the Database page, the **Database Connection** tab will now prompt you for the connection information that Privilege Manager will use. The Test Connection button must be run successfully before installation can continue. Once connection is established, click **Next**.

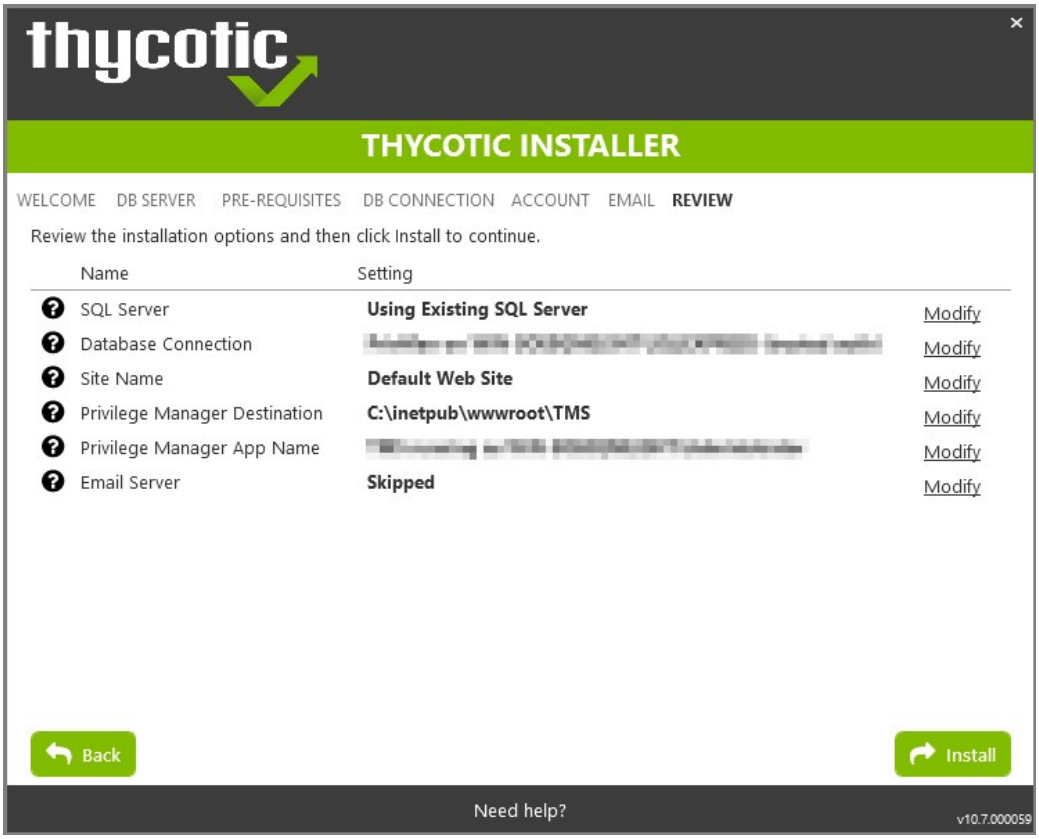
   Note: If you are not using a default InstanceName on the SQL Server for the Privilege Manager database, provide the SQLServerName\InstanceName for **ServerName or IP**.


thycotic
THYCOTIC INSTALLER
WELCOME
DB SERVER
PRE-REQUISITES
DB CONNECTION
ACCOUNT
SQL Server Location
Server name or IP
Database name
SQL Authentication
SQL Server Authentication (SQL Server authentication requires Mixed Mode)
User name
Password
Windows Authentication using Service Account
Advanced (not required)
Back
Next
Need help?
v10.7.000059

1. If you choose SQL Server Authentication, next the Account tab will prompt for the server location where your SQL database is currently installed. Provide the Server Name or IP address for your Database server and Authenticate with Administrator SQL credentials. If your Secret Server database does not yet exist when you click "Test Connection" the Installer will create it. When the connection has been tested successfully, click Next.

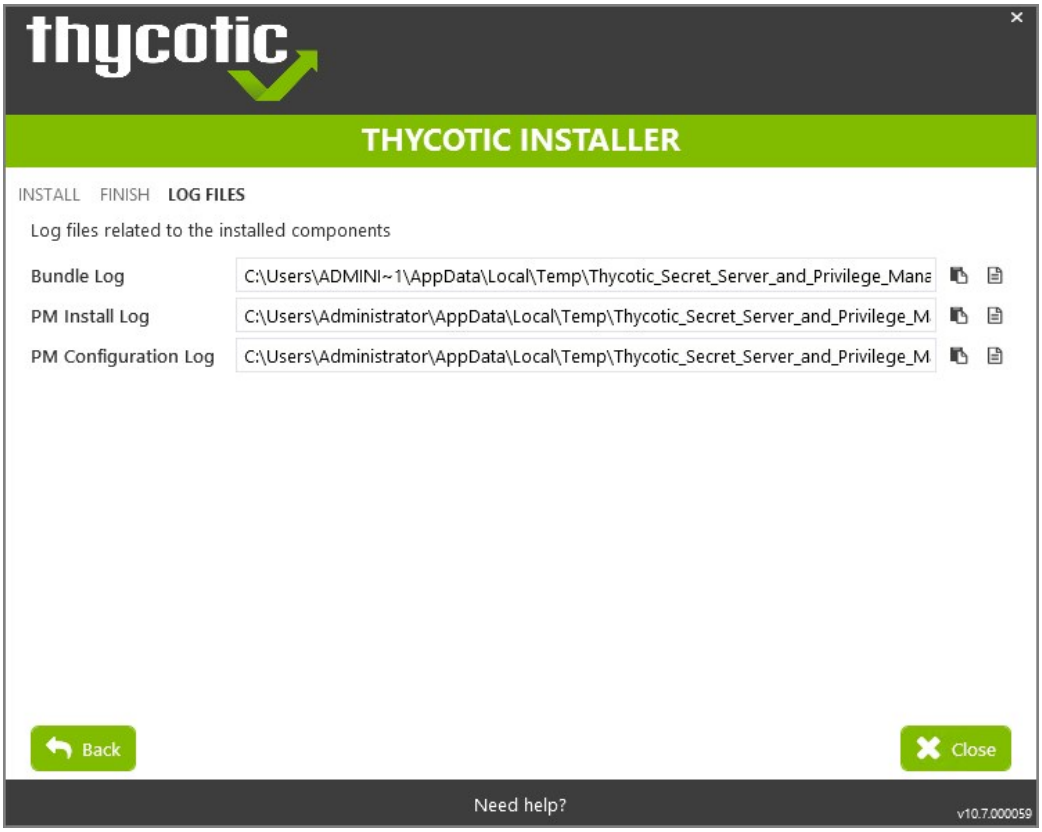
6. The **Email Server** tab opens, here the connection information for the email server can be entered. This is also optional and can be skipped to be configured later in the application by clicking Skip Email. This page will configure email for Privilege Manager .

7. On the **Review** tab, most settings are defaulted for a user and they can choose to modify settings at this step. Certain validations will occur on these settings before the install can begin. Click Install to proceed.

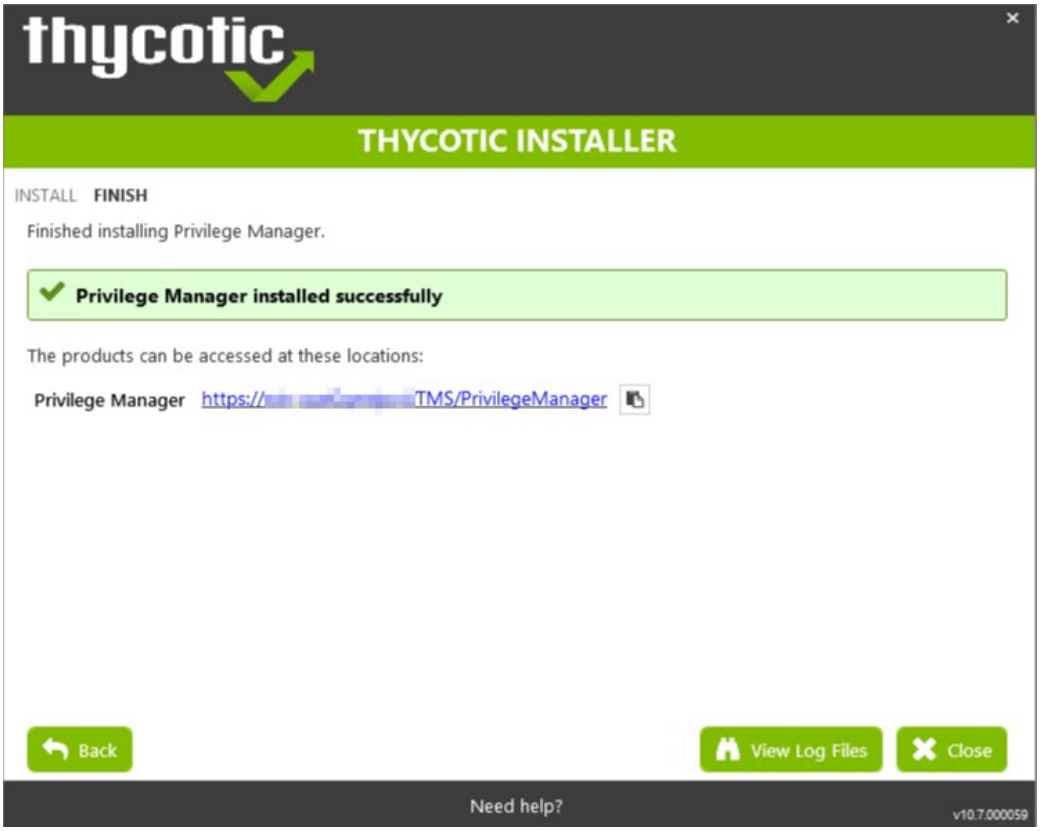


8. The Install page will show the status from log files as Secret Server and/or Privilege Manager are installed. Installs vary depending on your environment, most installs last between 20-60 minutes.

9. The **Log Files** tab is available after the applications are installed. The installer provides the link to open a web browser to the product login page. At this point, everything is installed and ready for you to begin using your new Delinea product. If the installation failed or you wish you view the logs from the installation you can click the View Log Files button.



10. On the **Finish** tab, when the install has successfully completed, click the provided Privilege Manager URL to navigate directly to your setup landing page or open a browser and navigate to where your Privilege Manager is located, for example: http://localhost/TMS/PrivilegeManager.



Note: Delinea recommends to create a back-up copy of the Privilege Manager web application folder after installation or upgrades.

Installing Connectors or the API

Privilege Manager installs the core packages. Once your instance is up and running, use Setup to add connectors for foreign systems or the **Privilege Manager Application Programming Interface**.

Refer to Upgrades for details about how to access Setup and use the **Add / Upgrade Privilege Manager Features** option.

Clustering

To install ## in a cluster, follow the steps above to install the application on the primary server. Then follow the Migration Steps to copy the web files to the secondary server and configure the secondary site. Then follow the steps for any additional servers in the cluster.

If you need to manually install Privilege Manager on a system and you already have an existing server installation, refer to the installation instructions described under the High Availability Set-up for Privilege Manager . Otherwise follow the steps below.

> **Note**: Delinea recommends to always use the setup.exe installer to verify that your system meets the pre-requisites.

Download Privilege Manager Application Files

Make sure you have the prerequisites (IIS, .NET Framework, and SQL Server) installed before following the steps listed below.

After clicking the download link on the Software Downloads page, you will be able to download a .zip file that contains both Privilege Manager and Privilege Manager files.

Zip File Extraction Tool

You will also need to install a zip application like winzip or 7-zip to extract files for this install. 7-zip is used in the instructions below and can be downloaded for free here.

Manual Installation (no setup.exe)

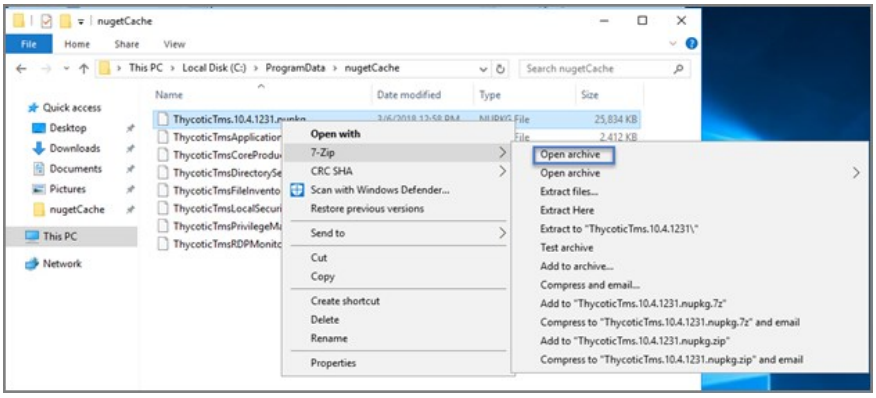
Clicking the download link above will take you to a portal page where you can choose to download a .zip file that contains the application files. Use this .zip file for the instructions below. Privilege Manger can be installed in a few different ways, as a:

- Virtual Directory
- Website

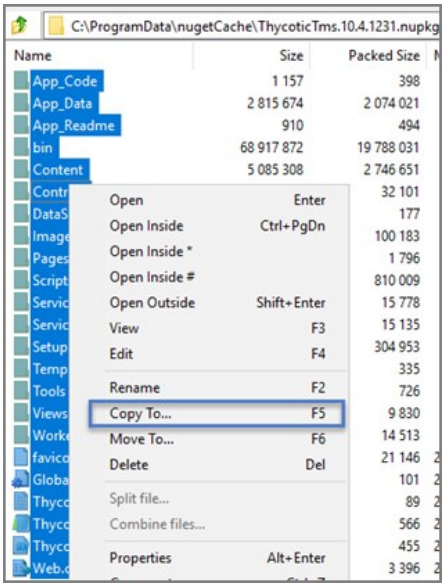
Installing as a Virtual Directory

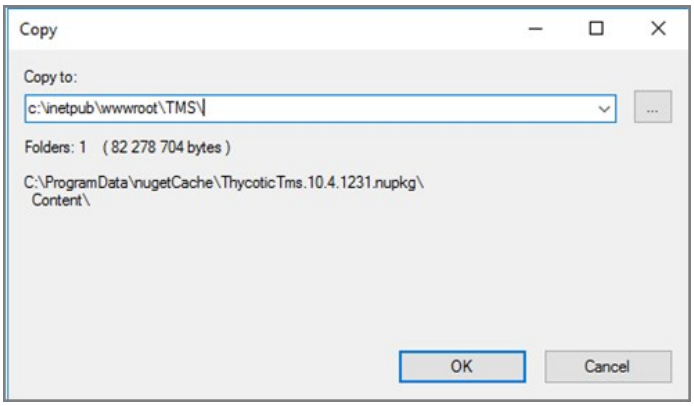
1. Extract the contents of the .zip file and select the nugetCache folder. Move the contents of that folder to a temporary location like C:\ProgramData\ (Recommended)
2. Create a folder called TMS in the location C:\inetpub\wwwroot\
3. Navigate back to C:\ProgramData\nugetCache\ and using any zip application (ex: 7-zip, winzip, winrar, etc), open ThycoticTms.xx.x.xxxx.nupkg

   To do this with 7-zip: right-click ThycoticTms.xx.x.xxxx.nupkg | 7-zip | Open Archive.

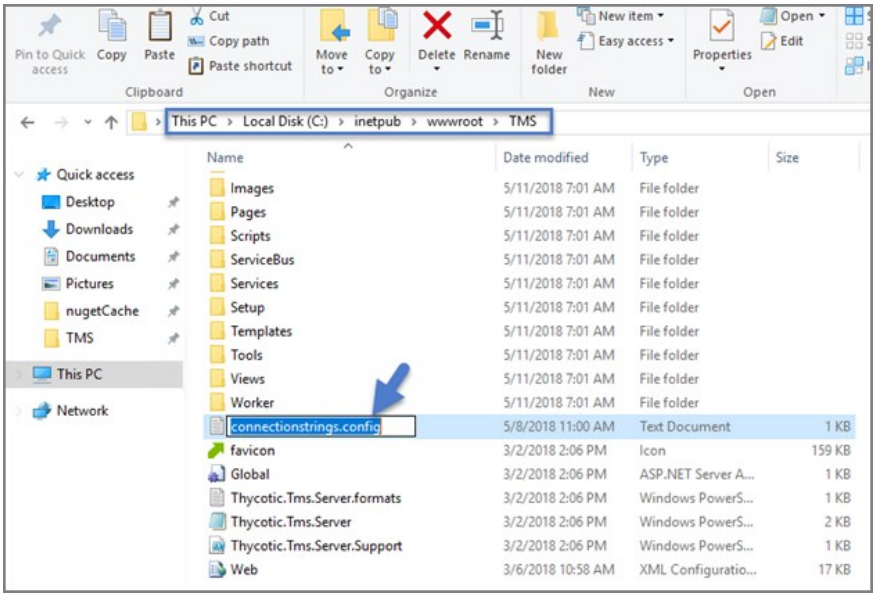


4. Open the Content directory and ctrl-A to select all of its contents. Copy these to the location C:\inetpub\wwwroot\TMS\





5. In C:\inetpub\wwwroot\TMS\ where you have extracted the TMS Site files, create a new file right-click **New I Text Document** called connectionstrings.config



6. Next, decide what mode you want to use to access your SQL database and follow the corresponding steps:
    - **Mixed Mode/"Integrated Security=False"** (for easiest configuration): Mixed Mode is required if you intend on using a SQL Server account to authenticate Privilege Manager to your SQL Server instance. If you are doing an evaluation and using the Privilege Manager setup.exe installer, we recommend using Mixed Mode with a SQL authentication account. This option will also require you to set a password for the SQL Server system administrator (sa) account. See the Integrated Security=False section below to use Mixed Mode.
    - **Windows Authentication Mode/"Integrated Security=True"** (recommended for best security): This will prevent SQL Server account authentication and requires a Windows Service account to run the Privilege Manager website. This will also require additional configuration in IIS once Privilege Manager is installed. Follow the steps under the Integrated Security=True section below to use Windows Authentication.

Integrated Security=False

Open in Notepad the connectionstrings.config file created in step 5 and copy in the following text; replacing the SQL Server Name, Database Name, User Name, and Password (highlighted in bold below) with values for your environment. Save changes.

```
<connectionStrings>
        <add name="ApplicationServerWorkflowInstanceStoreConnectionString"
          connectionString="Data Source=SQLServerAddress;Initial Catalog=DatabaseName;Integrated Security=False;User ID=myUserName;Password=myPassword;Application
Name='Arellia Management Server - WF'" />
        <add name="AmsConnectionString"
           connectionString="Data Source=SQLServerAddress;Initial Catalog=DatabaseName;Integrated Security=False;User ID=myUserName;Password=myPassword;Application
Name='Arellia Management Server'" />
        </connectionStrings>
```

Integrated Security=True

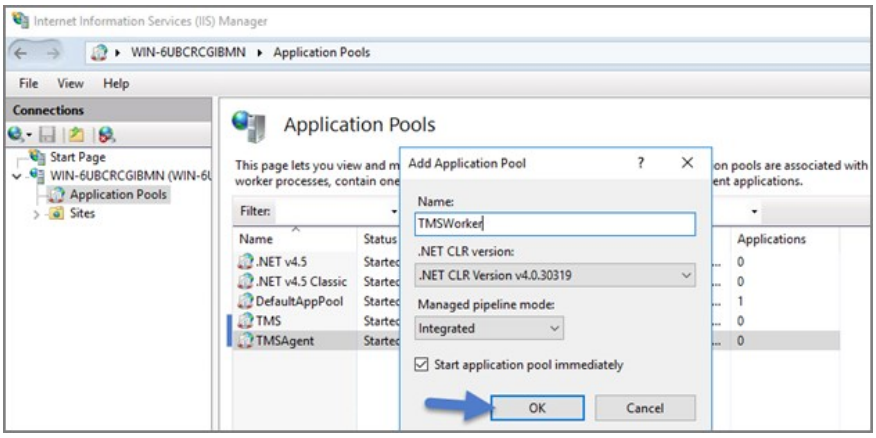
If you choose to set Integrated Security to True, you will need to ensure that the application pool service accounts have access to the database server in a later step.

Open in Notepad the connectionstrings.config file created in step 54 and copy in the following text; replacing the SQL Server Name and Database Name (highlighted in bold below) with values for your environment. Save changes.

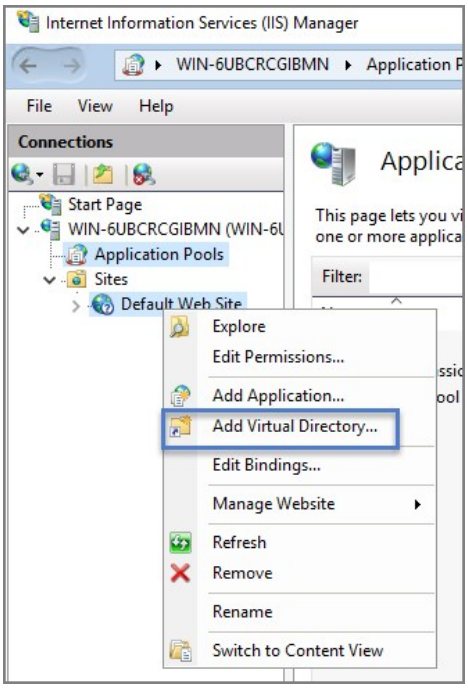
```
<connectionStrings>
        <add name="ApplicationServerWorkflowInstanceStoreConnectionString"
          connectionString="Data Source= SQLServerAddress;Initial Catalog= DatabaseName;Integrated Security=True;Application Name='Arellia Management Server - WF'" />
        <add name="AmsConnectionString"
          connectionString="Data Source= SQLServerAddress;Initial Catalog= DatabaseName;Integrated Security=True;Application Name='Arellia Management Server'" />
        </connectionStrings>
```

Continue: Installing as a Virtual Directory

1. Open Internet Information Services Manager (InetMgr.exe).
2. Under your local server, right-click Application Pools and select **Add Application Pool...**. Add three new application pools. Name one TMS, name another TMSAgent, and name the third TMSWorker.

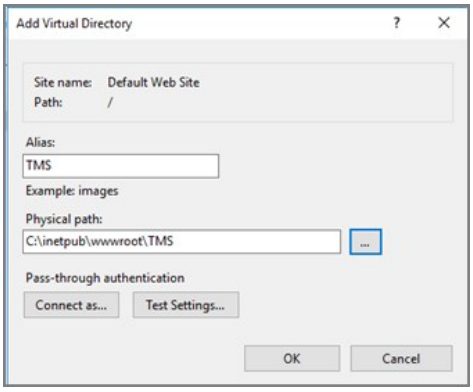


3. When creating your connection string, if you selected Integrated Security=True in step 6, change the Identity for your application pools to a service account that has DBOwner rights on the SQL database & make sure that the Identity for the three app pools have Modify rights to the folder that you put the Privilege Manager files into. To setup the service account correctly and set folder permissions and the Identities for these app pools, follow all of the steps in Using a Service Account to run the IIS App pool now.
4. Right-click Default Web Site in IIS and select Add Virtual Directory...

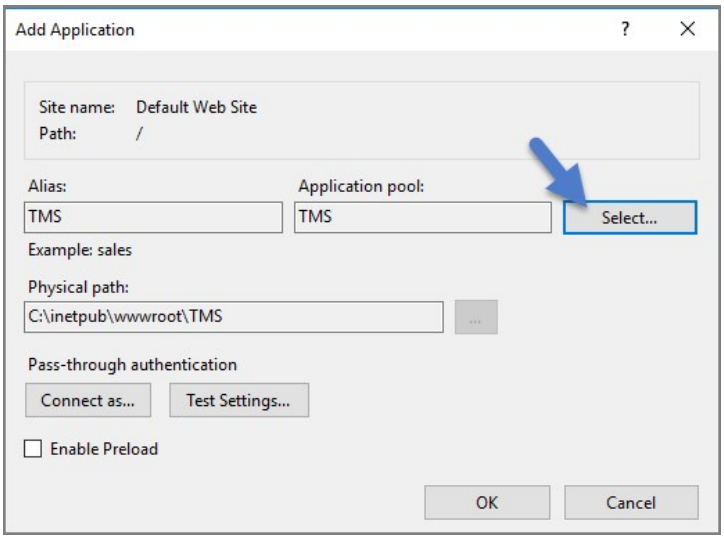


5. Select an alias for your Privilege Manager . The alias is what will be appended to the website. For instance, "TMS" in http://myserver/TMS.
6. Next, enter the physical directory where you unzipped Privilege Manager C:\inetpub\wwwroot\TMS\.

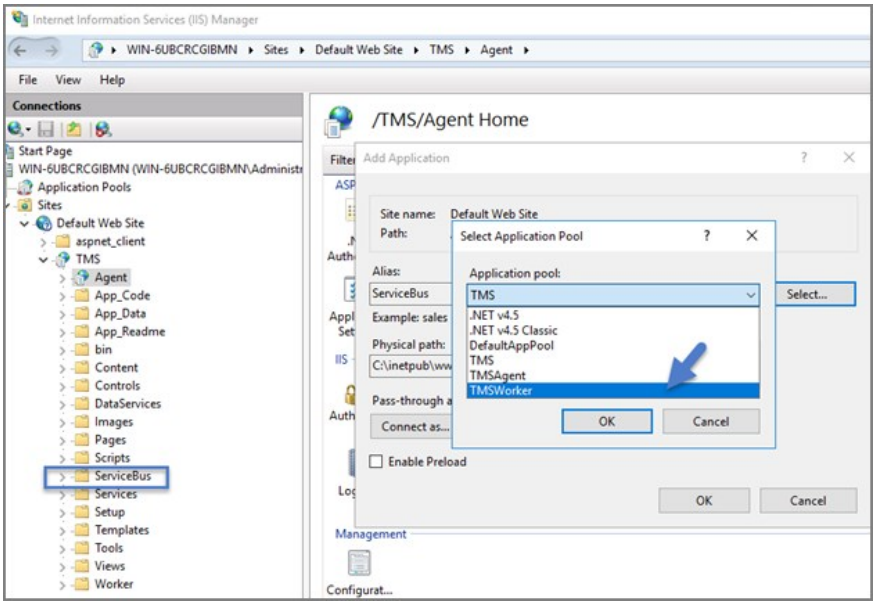
7. Click **OK**.



8. In the tree, right-click the new virtual directory and select **Convert to Application**.
9. Set the Application Pool to the one called TMS. Click **OK**.



10. In the virtual directory expand the new TMS site, right click the Agent Subfolder and select **Convert to Application**.
11. Set the Application Pool to the one called TMSAgent and click **OK**.
12. Next, in the virtual directory navigate to the ServiceBus Subfolder. Right-click and select **Convert to Application**.
13. Set the Application Pool to the one called TMSWorker. Click **OK**.

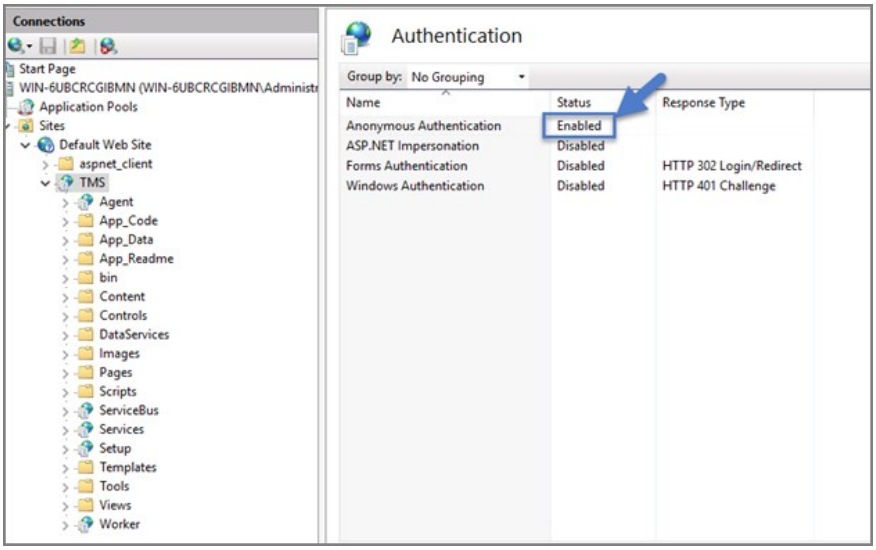


14. In the virtual directory select the Services Subfolder, right-click the new virtual directory and select **Convert to Application**. Ensure that the Application Pool is set to the one called TMS. Click **OK**.

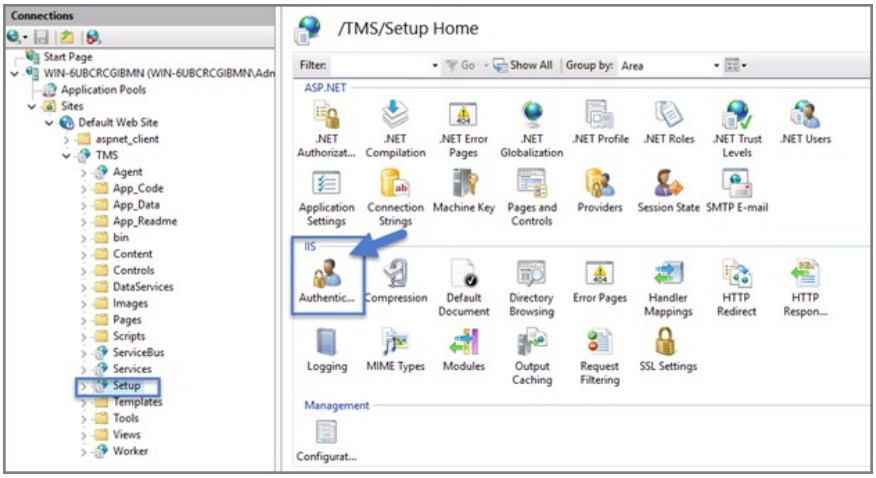
15. In the virtual directory select the Setup Subfolder, right-click the new virtual directory and select **Convert to Application**. Ensure that the Application Pool is set to the one called TMS. Click **OK**.

16. In the virtual directory select the Worker Subfolder, right-click the new virtual directory and select **Convert to Application**. Set the Application Pool to the one called TMSWorker. Click **OK**.

17. Select your TMS virtual directory, double click **Authentication** in the features pane and make sure that only *Anonymous Authentication* is set to **Enabled**. Everything else should be set to disabled.

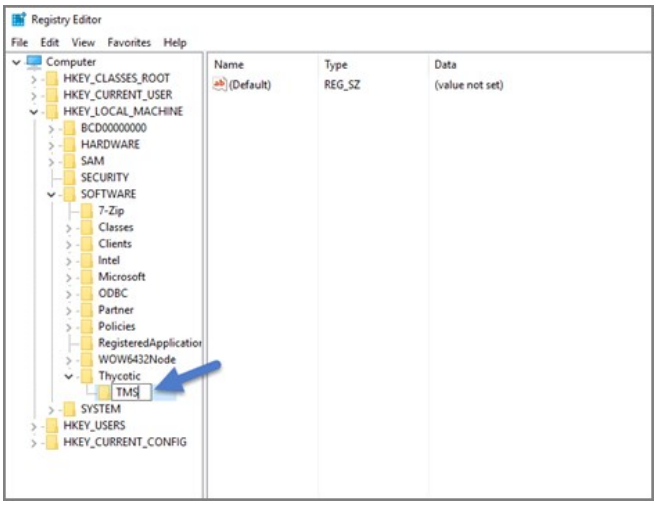


18. Select the Setup directory, double click **Authentication** in the features pane and make sure that Anonymous Authentication and Windows Authentication are both set to **Enabled** and everything else is disabled.

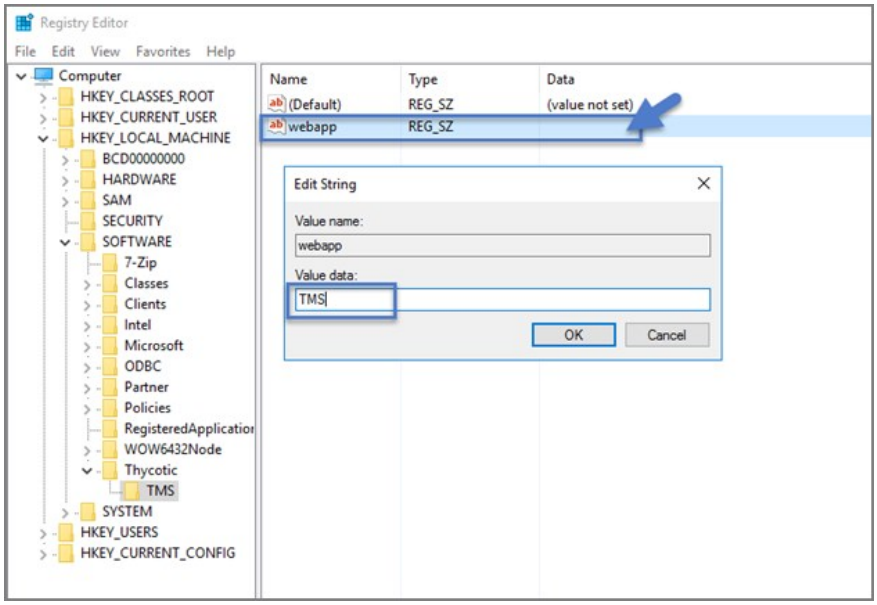


19. Select the Worker, double click **Authentication** in the features pane and make sure that Anonymous Authentication and Windows Authentication are both set to **Enabled** and everything else is disabled.

20. In **Regedit.exe**, create a new Registry key (HKEY_LOCAL-MACHINE\ right-click on **Software I New I Key**, name the new key Thycotic. Next right-click on **Thycotic I New I Key**, name the new key TMS.



1. Create a new string value in the TMS folder right-click **TMS I New I String Value** with a name of webapp and a value of TMS (double click to assign value)



2. Create a 2nd new string value with a name of website and a value of the url to the root of the site you will be using (ex: "testlab" for a website of https://testlab/TMS)
3. Create a new string value with a name of Webdir and a value of the path you put your Privilege Manager files in (i.e. C:\inetpub\wwwroot\TMS\)

21. Ensure that the Privilege Manager folder has the proper permissions by checking that the account running the application pool in IIS has Modify permissions on the folder where Privilege Manager is installed. (i.e. C:\inetpub\wwwroot\ right-click **TMS | Properties | Security** tab, if the service account created in Using a Service Account to run the IIS App pool is not listed, Edit… | Add… | find account via Check Names | **OK**. Click on the account, check **Modify | Apply**.)
22. If your server does not have internet access you will need to ensure that your **solutionCenter** is configured for the directory that you deposited the nupkg files into.
    1. Go to the directory where you have installed the TMS site (i.e. C:\inetpub\wwwroot\TMS)
    2. Open the **web.config** file with Notepad and find the line

       <add key="nuget:source:SolutionCentre" value="http://tmsnuget.thycotic.com"" /

    3. Replace the value with the directory from step 1 (usually c:\ProgramData\NugetCache\). Save changes.

Note: Make sure if using a local path to include the final slash.

Privilege Manager is now ready to be configured. Continue with Completing Privilege Manager Installation from Website.

Installing as a Website

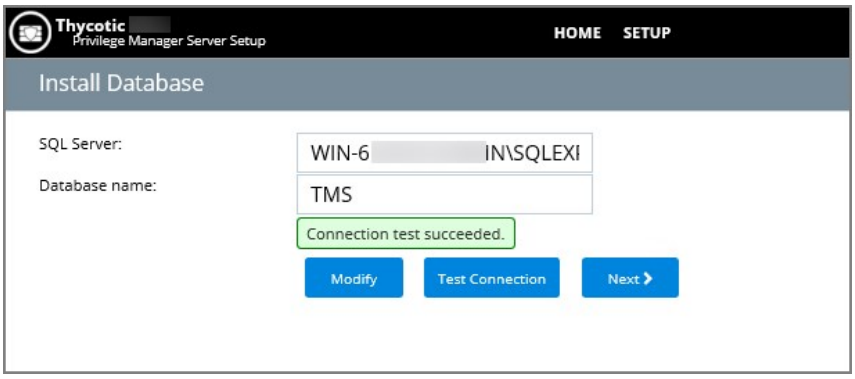
1. In IIS, right-click **Sites** and select **Add Website…**.
2. Enter a Site name.
3. Click **Select…** and choose the application pool you created in the Manual Installation section from the drop-down menu. Click **OK**.

4. Click the **…** beside the Physical path field and select the directory containing the unzipped Privilege Manager files (for example, C:\inetpub\wwwroot\TMS). Click **OK**.
5. At the bottom of the Add Website window click **OK** to save your settings.

Completing Privilege Manager Installation from Website

Privilege Manager is now ready to complete installation. Open a browser and navigate to where your Privilege Manager Setup is located, for example: https://localhost/TMS/Setup. It will request windows credentials which must be the credentials for a local administrator on the web server.

The site will detect that is does not have the proper database configuration and walk you through installing the initial database objects.



After this initial step you will be presented with a list of Privilege Manager features you can choose to install.

1. Select **Add/Remove Product Features**.
2. Select Application Control and Privilege Manager . This will automatically also select any prerequisites they require.

   Each feature is delivered as a NuGet Package, the package will unzip, add files to the Privilege Manger website, and update the database with its required objects. Installing the database and features may take several minutes.
3. Click ___Show Install Log___ to reveal installation progress.

Once all features have been installed Privilege Manager is ready to use! Refer to the Getting Started section for setup and configuration advice.

> **Note**: Delinea recommends to create a back-up copy of the Privilege Manager web application folder after installation or upgrades.

With version 10.5 and up, encryption of items no longer requires app pool permissions on the machine's certificate store.

What this means for Privilege Manager

New installations of Privilege Manager will no longer require that the application pool user has to have permission to access the certificate stores. Previously this permission was required in order to encrypt and decrypt items in the database.

Existing installs of Privilege Manager (10.4 and earlier) should not remove this permission and should not remove old certificates as they will still need them to decrypt old items which predate this change. Both the web setup page and the installers will create a local **encryption.config** file in the TMS directory to hold the keys to the key stored in the database. This file is highly sensitive and should be regarded with caution.

Agents are required on endpoint machines to carry out policies created in Privilege Manager . This section offers direct downloads and descriptions for all available agents.

Delinea Agents can be deployed in various ways, via:

- software management systems,
- GPO,
- cloned (gold) images, and
- manually.

Instructions and links for agent installers are grouped as follows:

- Windows Agents
  - Bundled Agent Installer - Windows
  - Individual Agent Installers for Privilege Manager :
    - 64-bit Windows Operating Systems
    - 32-bit Windows Operating Systems
  - Directory Services Agent to support Local AD Synchronization with Cloud Instances
  - Bundled Core and Directory Services Agents
- macOS Agent Installer - 10.11 or Newer
- Unix/Linux Agent Installer
  - Installing on CentOS/RedHat/Oracle Linux
  - Installing on Ubuntu

For details about Delinea Agent System Requirements, see the information provided for each agent OS introduction topic.

Installing macOS Agents

The macOS agent package (PKG) installer and uninstall script is delivered as a DMG. You can use the installer directly on individual endpoints for testing or for production environments.

Starting with Privilege Manager v11, the agent implements a system extension (SYSEX) to support macOS versions Catalina and higher. If you need to support older versions of macOS that do not support system extensions, refer to the 10.8.2 documentation for installation instruction for the **KEXT** based agent.

For details about differences regarding KEXT and SYSEX versions, refer to macOS Extensions.

Refer to the Software Downloads for the current versions available.

Agent Components

The agent is made up of several components:

- Privilege Manager.app
- System Extension
- Preference Pane
- sudo Plugin
- Service Agent

MacOS Agent System Requirements

10.8 and earlier	10.11 - 10.15	N	Y
11.0 and later	10.15 and later	Y	N

Installing macOS Agents

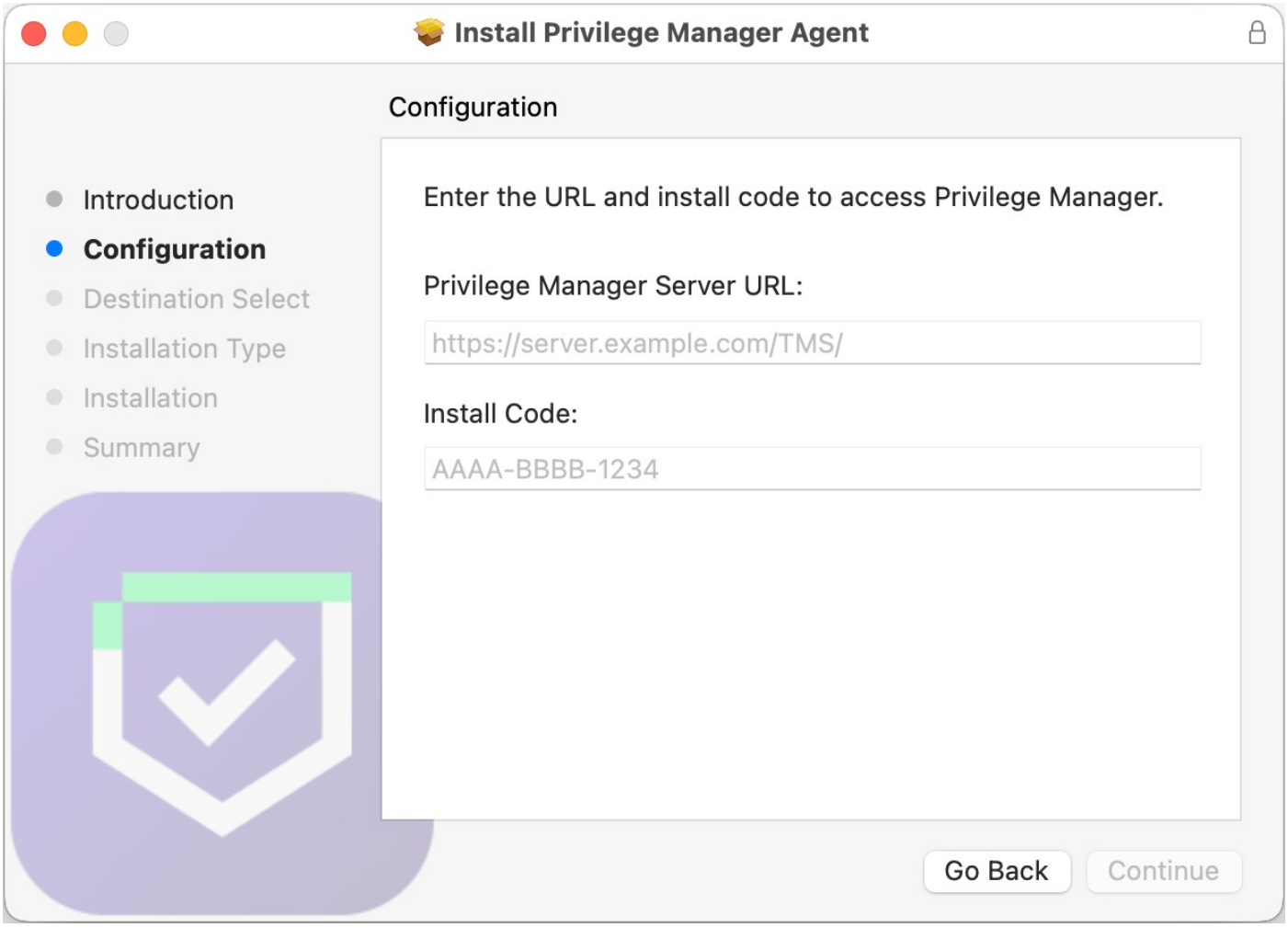
> **Note**: Examples below are using version placeholders instead of the actual install package versions. If you copy the example, make sure to switch n.n.nnnn with the actual version numbers as listed on the Software Downloads page.
>
> **Note**: If you enter the wrong install code or you need to update an install code for whatever reason, rerun the package installer to provide the correct/new install code. The Install Code field can be left blank when using versions lower than 10.5.

Directly

You can use the macOS agent installer directly on individual endpoints for testing or production environments.

To install the agent software on a single endpoint, follow these steps:

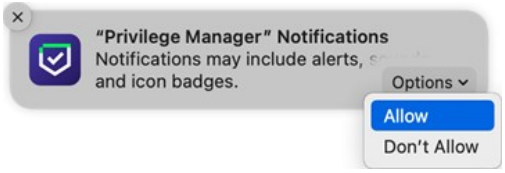
1. Go to Software Downloads - macOS Endpoints to download the Privilege Manager macOS Agent.
2. Mount the DMG and run the PKG installer on the computer you want to manage.
3. During the installation process,
    1. Enter the Privilege Manager Server URL.
    2. Enter the install code.



If you are not using Mobile Device Management (MDM) to manage allowed system extensions, you will see the following dialogs.

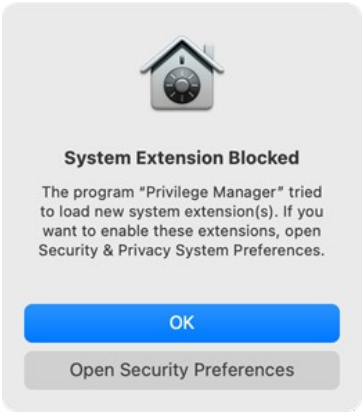
Notifications Approval

When presented with the Privilege Manager Notifications dialog, click **Options** | **Allow**. This will ensure that you are notified via Notification Center when an approval request is allowed or denied.



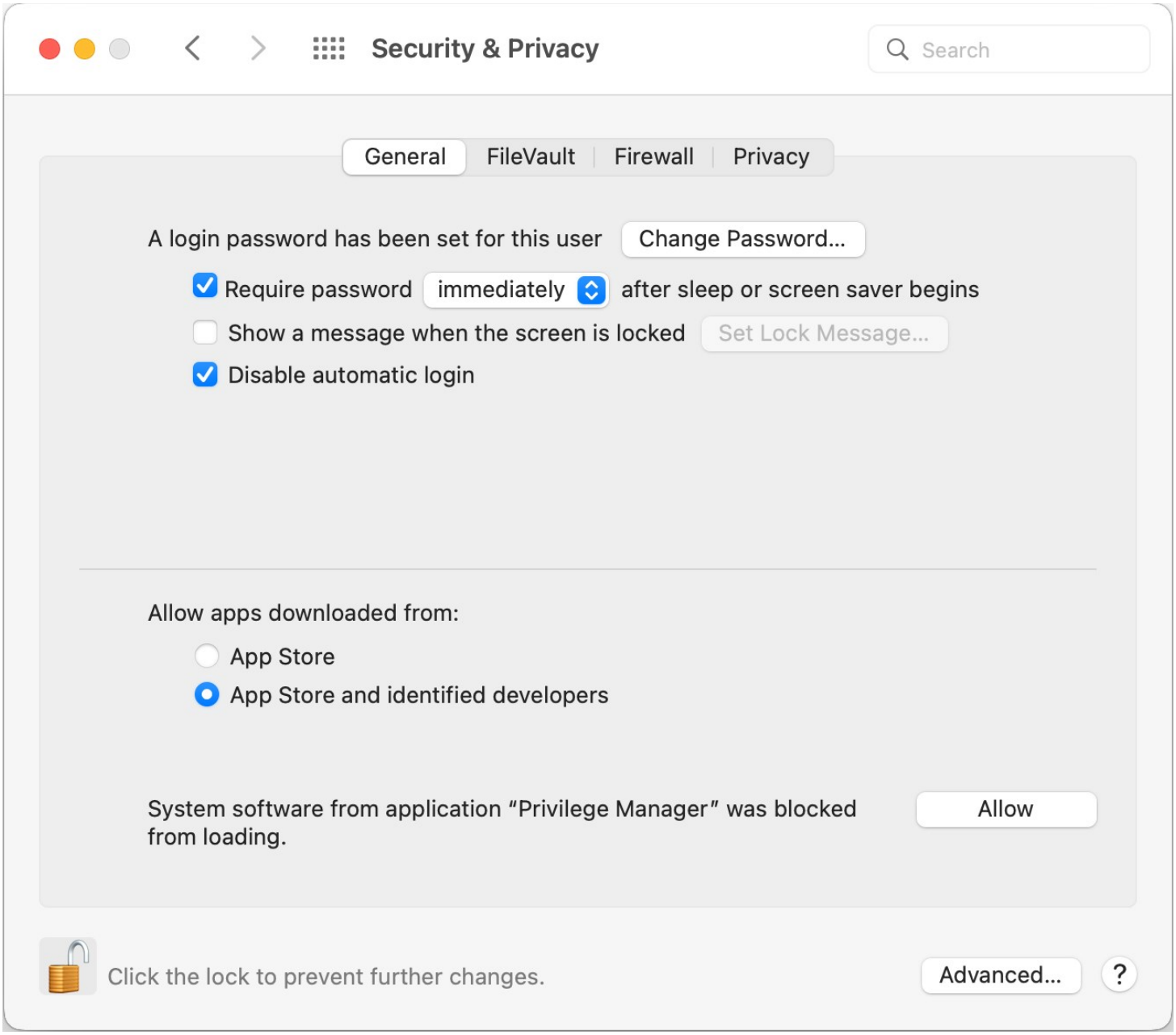
System Extension Blocked

When the installation completes, macOS will present the following dialog, prompting you to acknowledge that Privilege Manager tried to load a new system extension. Click **Open Security Preferences** to allow the system extension.

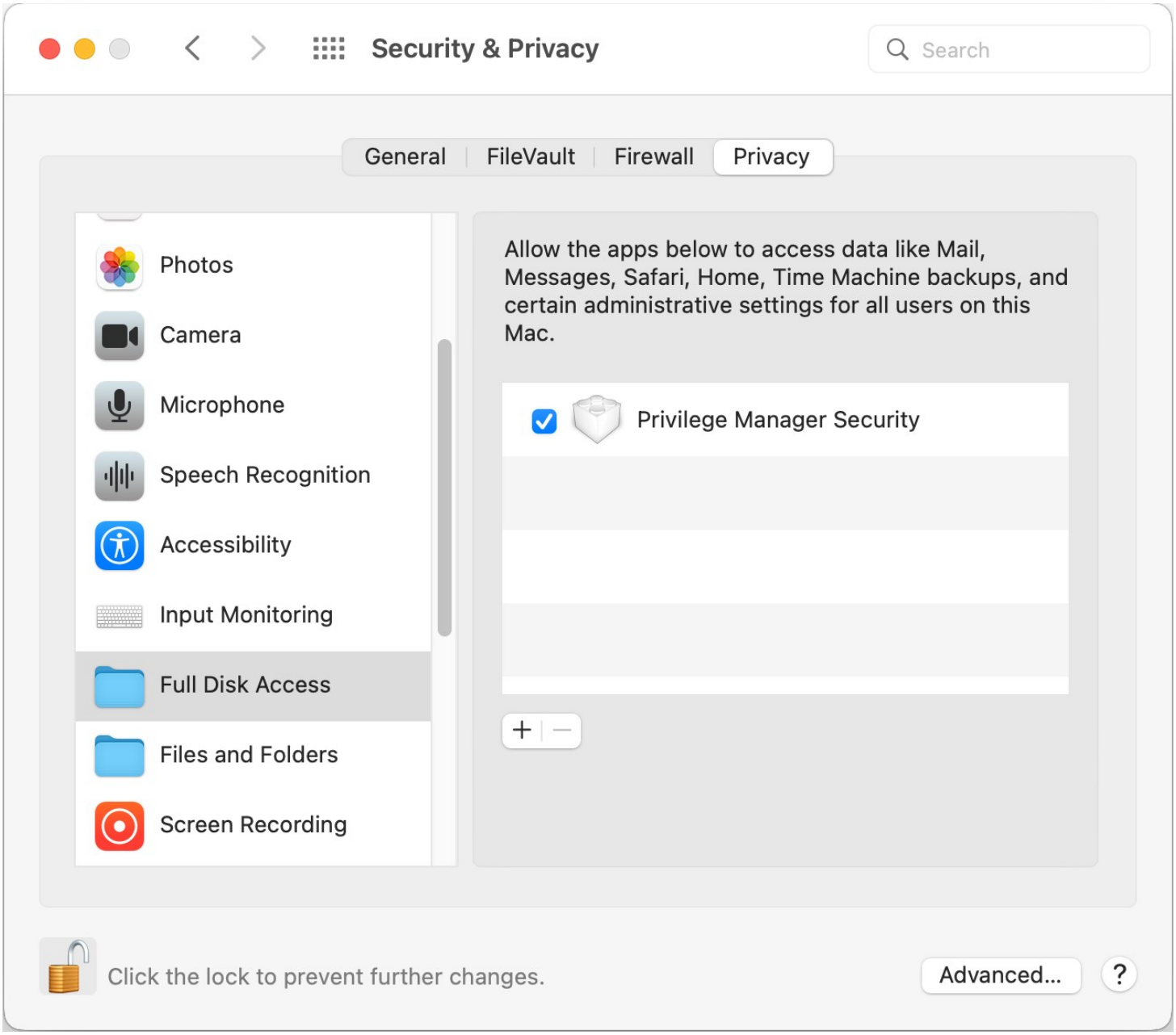


If you click **OK**, you will need to open **System Preferences** | **Security & Privacy** | **General** to allow the system extension.

To allow the system extension, click the padlock in the bottom left to ender admin credentials and then click **Allow**.



Click the **Privacy** tab and use the scrollbar to select **Full Disk Access**, then select **Privilege Manager Security**.



The system extension is now properly configured to enforce policy.

Using an Unattended Install Method

After downloading the latest bundled macOS Agent package onto one of your macOS endpoints, extract the DelineaManagementAgent-n-n-nnnn.pkg installer from inside the DMG and upload it to your MDM's distribution point.

Create a policy to include the newly uploaded pkg and include the below script to run before the pkg installation replacing the tmsBaseUrl and installCode as required.

Refer to this video demonstration.

Note: Replace the version placeholders with the real package file version numbers.

```
#!/bin/bash
# Privilege Manager  macOS configuration script to be used with a "vanilla" download of the agent.
# This script should be used as a pre-install payload following the installation of the PKG.
# Replace the tmsBaseUrl with your own server url i.e "https://your.privman.com/TMS"
# Replace installCode with your own details.

/bin/mkdir -p /Library/Application\ Support/Delinea/Agent/

/bin/cat << EOF > /Library/Application\ Support/Delinea/Agent/agentconfig.json
{
    "tmsBaseUrl": "",
    "installCode": "",
    "loginProcessingDelayS": 30
}
EOF
```

Note: It will take 15-30 minutes for newly installed agents to register in Privilege Manager . See the agent registration information in the Terminal Commands topic to speed the process up.

Uninstalling an Agent

When you need to uninstall the macOS agent, mount the DMG and use the **Uninstall.sh** script:

```
sudo /Volumes/DelineaManagementAgent-n.n.nnnn/Uninstall.sh
```

Where n.n.nnnn needs to be replaced with the actual version number of the agent you wish to uninstall.

Verification

Running pkgutil --files com.delinea.agent should report the following:

```
No receipt for 'com.delinea.agent' found at '/'.
```

Installing Unix/Linux Agents

This section provides information that guides you through the Privilege Manager Unix/Linux agent installation steps.

Once you have downloaded the latest version of the installer you will need to securely copy it onto your host. You will need to perform the installation as root or a user with root sudo permissions.

Prerequisites

The agent should have a resolvable hostname set. If the agent has a default hostname of localhost.localdomain, the pmagent service will not function as expected.

Note: Updating the agent hostname post installation will require a reinitialization of the agent configuration.

Unix/Linux Agent System Requirements

CentOS 7.x, 8.x	100Mb - 2mb in each of /lib64 /etc/pam.d /usr/lib64/security and /etc	2Gb	For the Identity Bridge component to function correctly **SELinux** currently needs to be disabled on the host.
RedHat Linux 7.x, 8.x	100Mb - 2mb in each of /lib64 /etc/pam.d /usr/lib64/security and /etc	2Gb	For the Identity Bridge component to function correctly **SELinux** currently needs to be disabled on the host.
Oracle Linux, 7.x, 8.x	100Mb - 2mb in each of /lib64 /etc/pam.d /usr/lib64/security and /etc	2Gb	For the Identity Bridge component to function correctly **SELinux** currently needs to be disabled on the host.
Ubuntu 18.04, 20.04	100Mb - 2mb in each of /lib/x86_64-linux-gnu/security, /lib/x86_64-linux-gnu/ /etc/pam.d and /etc	2 Gb	

Installing on CentOS/RedHat/Oracle Linux

There are 2 methods for installing packages, **rpm** and **yum**, both methods are outlined below.

Delinea File Locations

Core installation location: /opt/thycotic

Other Delinea file locations: /lib64, /usr/lib64/security, /var/log, /etc

Other locations Delinea agent will modify system files: /etc, /etc/pam.d, /etc/ssh, /etc/authselect/

Disable Security-Enhanced Linux (SELinux)

Currently for the Privilege Manager Unix/Linux agent to correctly authenticate against Active Directory, Delinea requires that the SELinux functionality of the host machine be disabled.

The agent installer will detect if SELinux is set to Enforcing or Permissive and provide the following message at the end of the installation.

```
========================================================================
Please disable SELinux to allow the Identity Bridge to function properly
========================================================================
```

To disable the SELinux functionality you will need to perform the following:

1. Edit the /etc/selinux/config file
2. Set the SELINUX line to: disabled
    - Example: SELINUX=disabled
3. Reboot your host

If SELinux is disabled the message will not be displayed.

For CentOS, RedHat, and Oracle there are 2 methods for installing packages, rpm and yum, both methods are outlined below.

RPM

Performed as non root user with sudo permissions:

```
>> sudo rpm -i /root/Thycotic/pmagent_x86_64_vn.n.n.nn.rpm
```

Where, pmagent_x86_64_vn.n.n.nn.rpm is replaced with the actual software package and version that is being installed.

Below is the expected output of a successful installation

```
Created symlink from /etc/systemd/system/multi-user.target.wants/pmagent.service to /etc/systemd/system/pmagent.service.

Please start the pmagent service by running:
   /bin/systemctl start pmagent.service

This installation can be used as an agent for the Delinea Privilege Manager  agent.

If you are using this installation as a Delinea Privilege Manager  agent,
You must now register this agent with the Delinea Privilege Manager
using the command:
   /opt/thycotic/sbin/pmagent --register <host:port> <install code>

If you are using this installation as a Privilege Manager  Unix/Linux agent,
You need to join an Active Directory domain to start authenticating users
using the command:
   /opt/thycotic/sbin/pmagent --join
```

YUM

Performed as non root user with sudo permissions:

```
>> sudo yum install /root/Thycotic/pmagent_x86_64_vn.n.n.nn.rpm
```

Where, pmagent_x86_64_vn.n.n.rpm is replaced with the actual software package and version that is being installed.

Below is the expected output of a successful installation

```
Loaded plugins: fastestmirror, langpacks
Examining ./pmagent_x86_64_v1.2.0.186_centos7.rpm: pmagent-1.2.0.186-1.x86_64
Marking ./pmagent_x86_64_v1.2.0.186_centos7.rpm to be installed
Resolving Dependencies
--> Running transaction check
---> Package pmagent.x86_64 0:1.2.0.186-1 will be installed
--> Finished Dependency Resolution
base/7/x86_64                          | 3.6 kB  00:00:00
epel/x86_64/metalink                   |  19 kB  00:00:00
epel/x86_64                            | 4.7 kB  00:00:00
epel/x86_64/updateinfo                 | 1.0 MB  00:00:00
epel/x86_64/primary_db                 | 6.9 MB  00:00:01
extras/7/x86_64                        | 2.9 kB  00:00:00
updates/7/x86_64                       | 2.9 kB  00:00:00
updates/7/x86_64/primary_db            | 4.7 MB  00:00:01

Dependencies Resolved

================================================================================================
 Package           Arch         Version         Repository                          Size
================================================================================================
Installing:
 pmagent           x86_64       1.2.0.186-1     /pmagent_x86_64_v1.2.0.186_centos7      22 M

Transaction Summary
================================================================================================
Install  1 Package

Total size: 22 M
Installed size: 22 M
Is this ok [y/d/N]: y
Downloading packages:
Running transaction check
Running transaction test
Transaction test succeeded
Running transaction
Warning: RPMDB altered outside of yum.
  Installing : pmagent-1.2.0.186-1.x86_64                                   1/1
Created symlink from /etc/systemd/system/multi-user.target.wants/pmagent.service to /etc/systemd/system/pmagent.service.

Please start the pmagent service by running:
    /bin/systemctl start pmagent.service

This installation can be used as an agent for the Delinea Privilege Manager  agent.

If you are using this installation as a Delinea Privilege Manager  agent,
You must now register this agent with the Delinea Privilege Manager
using the command:
    /opt/thycotic/sbin/pmagent --register <host:port> <install code>

If you are using this installation as a Privilege Manager  Unix/Linux agent,
You need to join an Active Directory domain to start authenticating users
using the command:
    /opt/thycotic/sbin/pmagent --join

  Verifying  : pmagent-1.2.0.186-1.x86_64                                   1/1

Installed:
  pmagent.x86_64 0:1.2.0.186-1

Complete!
```

Post Installation

By default CentOS, RedHat, and Oracle do not start a newly installed package, therefore you will need to manually start the Delinea Agent.

Performed as non root user with sudo permissions:

```
>> sudo systemctl start pmagent.service
```

The pmagent service will be started automatically following a reboot of the host system.

Installing on Ubuntu

There are 2 methods for installing packages, DPKG and APT, both methods are outlined below.

Prerequisites

If the Ubuntu operating system is installed from either

- ubuntu-18.04-live-server-amd64.iso or
- ubuntu-20.04.1-live-server-amd64.iso

you will be required to update the operating system base files with the following command.

```
sudo apt-get update
```

It is recommended that your base operating system is always running the latest vendor recommended patches.

Delinea File Locations

Core installation location: /opt/thycotic

Other Delinea file locations: /lib/x86_64-linux-gnu/security, /lib/x86_64-linux-gnu/, /var/log, /etc

Other locations Delinea agent will modify system files: /etc, /etc/pam.d, /etc/ssh

DPKG

Performed as non root user with sudo permissions

```
>> sudo dpkg -i pmagent_x86_64_vn.n.n.nn_ubuntuXX.deb
```

Below is the expected output of a successful installation

```
Selecting previously unselected package pmagent.
(Reading database ... 344578 files and directories currently installed.)
Preparing to unpack pmagent_x86_64_v1.2.0.186_ubuntu18.deb ...
Unpacking pmagent (1.2.0.186) ...
Setting up pmagent (1.2.0.186) ...
Created symlink /etc/systemd/system/multi-user.target.wants/pmagent.service  /etc/systemd/system/pmagent.service.

Please start the pmagent service by running:
    /bin/systemctl start pmagent.service

This installation can be used as an agent for the Delinea Privilege Manager  agent.

If you are using this installation as a Delinea Privilege Manager  agent,
You must now register this agent with the Delinea Privilege Manager
using the command:
    /opt/thycotic/sbin/pmagent --register <host:port> <install code>

If you are using this installation as a Privilege Manager  Unix/Linux agent,
You need to join an Active Directory domain to start authenticating users
using the command:
    /opt/thycotic/sbin/pmagent --join
```

APT

Performed as non root user with sudo permissions

```
>> sudo apt install /root/Thycotic/pmagent_x86_64_vn.n.n.nn_ubuntuXX.deb
```

Below is the expected output of a successful installation

```
Reading package lists... Done
Building dependency tree
Reading state information... Done
Note, selecting 'pmagent' instead of './pmagent_x86_64_v1.2.0.186_ubuntu18.deb'
```

```
The following packages were automatically installed and are no longer required:
  efibootmgr libfwup1 libllvm9 linux-hwe-5.4-headers-5.4.0-42 linux-hwe-5.4-headers-5.4.0-47 linux-hwe-5.4-headers-5.4.0-48 linux-hwe-5.4-headers-5.4.0-51 linux-hwe-5.4-headers-
5.4.0-52
  linux-hwe-5.4-headers-5.4.0-53 linux-hwe-5.4-headers-5.4.0-56 linux-hwe-5.4-headers-5.4.0-58 linux-hwe-5.4-headers-5.4.0-59 linux-hwe-5.4-headers-5.4.0-60 tcpd
Use 'apt autoremove' to remove them.
The following NEW packages will be installed
  pmagent
0 to upgrade, 1 to newly install, 0 to remove and 6 not to upgrade.
Need to get 0 B/10.8 MB of archives.
After this operation, 34.3 MB of additional disk space will be used.
Get:1 /root/Thycotic/pmagent_x86_64_v1.2.0.186_ubuntu18.deb pmagent amd64 1.2.0.186 [10.8 MB]
Selecting previously unselected package pmagent.
(Reading database ... 344578 files and directories currently installed.)
Preparing to unpack .../pmagent_x86_64_v1.2.0.186_ubuntu18.deb ...
Unpacking pmagent (1.2.0.186) ...
Setting up pmagent (1.2.0.186) ...
Created symlink /etc/systemd/system/multi-user.target.wants/pmagent.service  /etc/systemd/system/pmagent.service.

Please start the pmagent service by running:
    /bin/systemctl start pmagent.service

This installation can be used as an agent for the Delinea Privilege Manager  agent.

If you are using this installation as a Delinea Privilege Manager  agent,
You must now register this agent with the Delinea Privilege Manager
using the command:
    /opt/thycotic/sbin/pmagent --register <host:port> <install code>

If you are using this installation as a Privilege Manager  Unix/Linux agent,
You need to join an Active Directory domain to start authenticating users
using the command:
    /opt/thycotic/sbin/pmagent --join
```

Post Installation

By default Ubuntu does not start a newly installed package, therefore you will need to manually start the Delinea Agent.

Performed as non root user with sudo permissions:

```
>> sudo systemctl start pmagent.service
```

The pmagent service will be started automatically following a reboot of the host system.

Installing Windows Agents

Agent System Requirements

For agents in an environment with a moderate policy configuration, the requirements for memory and disk space are as follows:

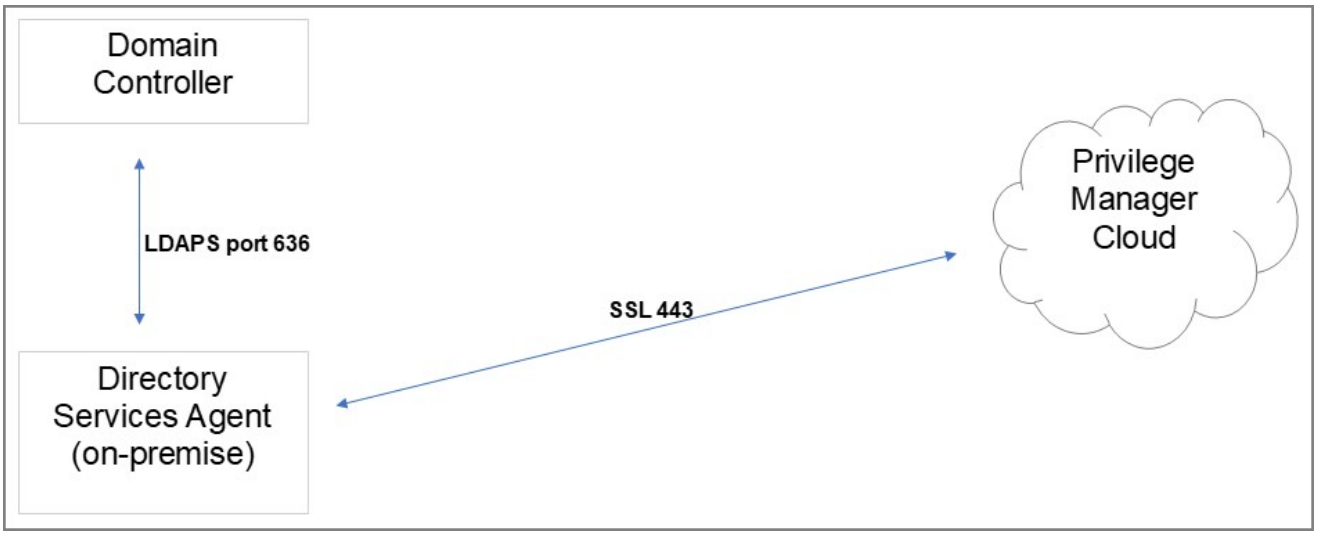
- Memory usage: 50Mb
- Disk usage:
  - Delinea base agent: 10MB
  - Application Control Solution: 9MB
  - Local Security Solution: 3MB
  - Security Analysis Solution: 13 MB
- Average CPU over a week: 3%
- Impact to boot time: Negligible

Directory Services Agent

The Directory Services Agent needs to be installed on a well resourced system running either

- Windows 10 or above
- Windows Server 2016 or above.
- Port requirements:
  - The agent needs to be able to communicate to the server on 443
  - AD Sync agent and Domain Controller over LDAPS

Note: The Directory Services Agent is available for x64-bit systems only.



Supported Windows Operating Systems (both 32- and 64-bit) on Systems Considered Endpoints:

- Desktops: Windows 7, Windows 8, Windows 8.1, Windows 10, Windows 11
- Servers: Windows Server 2008 R2 and newer
- **Disable** the GPO security option "System cryptography: Use **FIPS** compliant algorithms for encryption, hashing, and signing."

Bundled Install

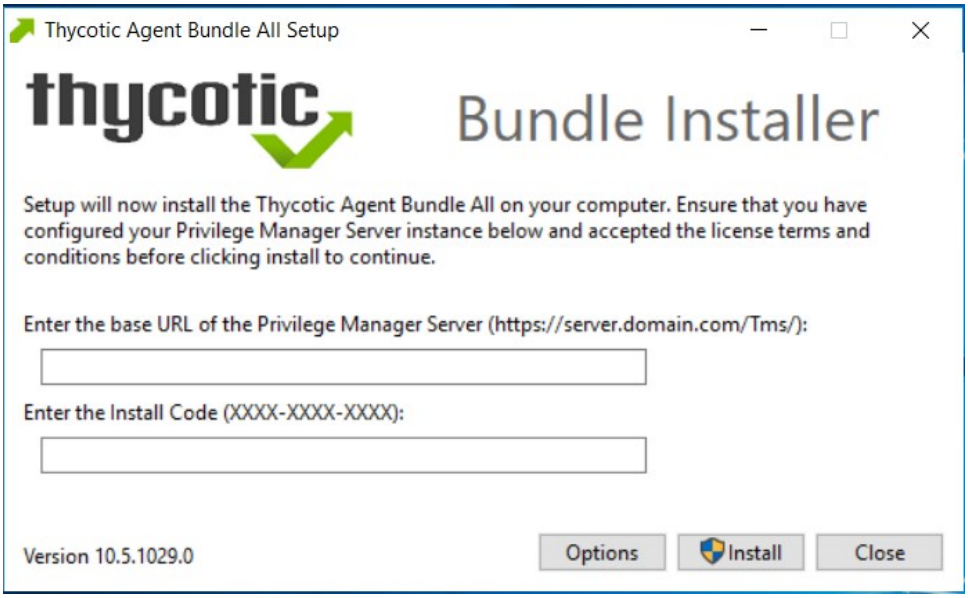
The bundled EXE installer is recommended when installing Privilege Manager on machines one at a time, for deployments through software delivery see the next section. This installer includes all Privilege Manager Agents for Windows machines (Core, ACS, LSS). You can use the bundled installer directly on individual endpoints for testing or for production environments in either 32-bit or 64-bit environments.

> **Important**: To ensure you have installed all prerequisite software on your managed computers **before** you install the Delinea agents, please see our System Requirements for Privilege Manager and Agent System Requirements.

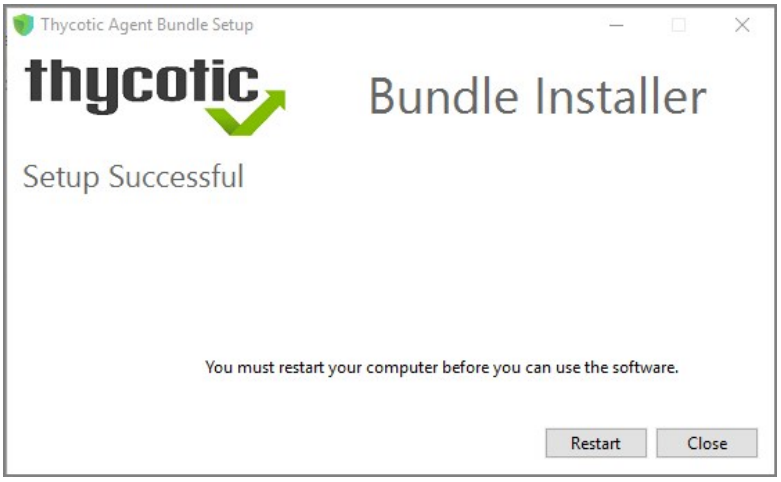
To install Delinea agents **on a single testing machine**, follow these steps:

1. Download the Bundled Agent Installer - Windows.
2. Run the Delinea Bundled Installer on the computer you want to manage.
3. During the setup process, enter the Privilege Manager Server URL (or AZ Service Bus Queue URL) and the Install Code when prompted.

   > **Note**: The Install Code field can be left blank when using versions lower than 10.5.



4. After the installation you will be prompted to restart your endpoint.



Note: It may take 15-30 minutes for agents to receive new policies, to speed this up navigate to **Admin | Configuration | General** and click **Run Policy Targeting Update**, then open the Agent Utility on the endpoint and click the **Register** button.

Note: The bundled installer does require a restart in order to ensure the agent is completely ready to use.

Rollout to Multiple Systems

To install Delinea agents **on multiple machines**, we recommend the following:

1. Download the Agent standalone MSI files based on specific systems.
2. Push them out through any software delivery system tool (e.g.: SCCM) using the recommended command lines.

Note: If you find that you've entered the wrong Privilege Manager Server address or want to change this setting, refer to the information under Setting the Privilege Manager Server Address.

Silent Install

If the Bundled Agent Installer is run with the /quiet option for a silent install, the bundled installer will not accept the installcode or baseurl via the commandline. You have to set those values post install for the agent to be able to register with the server.

- Agent Install Codes
- Setting the Privilege Manager Server Address

Windows Agents

Use the links below to download the agent installation software for Windows based endpoints.

There are three agents available for Windows endpoints:

- **Thycotic Agent**: The core agent is responsible for all reporting and monitoring communication on the endpoint. It can be considered the managing agent, while the Application Control and Local Security Agents are the worker agents.
- **Application Control Agent** (ACS): This agent is responsible for monitoring processes executing the Privilege Manager Application Control Functions on the endpoint.
- **Local Security Agent** (LSS): This agent is responsible for monitoring and executing Local Security functions.

Individual Agent Installers for Privilege Manager

Hardened Agents

If agent hardening was applied to user endpoints, the hardened agents need to be deleted via the sc delete {agent name} commandline command. This needs to be done under the context of the domain user prior to running the msi-based agent installation commands. When the agent is deleted successfully, a success message will be returned, for example:

```
C:\sc delete arelliaagent
[SC] DeleteService SUCCESS
C:\sc delete arelliaacsvc
[SC] DeleteService SUCCESS
```

> **Note**: If the hardened agents are being deleted via software delivery script, the script needs to be delivered under the context of the domain user.

64-bit Windows Operating Systems

Individual Windows agents are available in MSI format for easier bulk-rollout through software delivery tools. For installing individual agents, begin with the Core Delinea Agent.

Refer to the Software Downloads page for OS-specific downloads.

- **Core Thycotic Agent (x64)**
- **Application Control Agent (x64)**
- **Local Security Solution Agent (x64)**

Installation Command Lines

> **Note**: The Install Code field can be left blank when using versions lower than 10.5

- **Core Delinea Agent**

  msiexec.exe /i "ThycoticAgent_x64_11_3_7587.msi" /norestart AMSURL=https://SERVERNAME/TMS/ INSTALLCODE=XXXX1234ABCD REBOOT=ReallySuppress /qn

- **Application Control Agent**

  msiexec.exe /i "Thycotic_ApplicationControlAgent_x64_11_3_7587.msi" /norestart REBOOT=ReallySuppress /qn

- **Local Security Agent**

  msiexec.exe /i "Thycotic_LocalSecurityAgent_x64_11_3_7585.msi" /norestart REBOOT=ReallySuppress /qn

32-bit Windows Operating Systems

Individual Windows agents are available in MSI format for easier bulk-rollout through software delivery tools. For installing individual agents, begin with the Core Delinea Agent.

Refer to the Software Downloads page for OS-specific downloads.

- **Core Thycotic Agent (x86)**
- **Application Control Agent (x86)**
- **Local Security Solution Agent (x86)**

Installation Command Lines

Note: The Install Code field can be left blank when using versions lower than 10.5

- Core Delinea Agent

  msiexec.exe /i "ThycoticAgent_x86_11_3_7587.msi" /norestart AMSURL=https://SERVERNAME/TMS/ INSTALLCODE=XXXX1234ABCD REBOOT=ReallySuppress /qn

- Application Control Agent

  msiexec.exe /i "Thycotic_ApplicationControlAgent_x86_11_3_7587.msi" /norestart REBOOT=ReallySuppress /qn

- Local Security Agent

  msiexec.exe /i "Thycotic_LocalSecurityAgent_x86_11_3_7585.msi" /norestart REBOOT=ReallySuppress /qn

Directory Services Agent (AD)

This agent supports the Active Directory synchronization between Privilege Manager Cloud instances and local directory services. This agent only needs to be installed on one system to perform the synchronization task. The local agent can be deployed into an AD environment instead of requiring direct connectivity from the server to the domain controllers. You will be able to configure the product in either method (direct or agent-based).

The agent method requires that the Directory Services Agent is installed on one computer connected to a domain controller. Once installed, the agent receives the Active Directory Sync (Agent) scheduled task along with other parameters such as the credential used, which AD objects, etc. to perform a synchronization between a Cloud instance and local AD.

> **Note**: If the Directory Services Agent is installed on a system with an Application Control or a Local Security Agent, a license will be consumed. If a system has the Delinea Agent (Core Agent) and Directory Services Agent installed ONLY, no license is consumed.
>
> The Directory Services Agent for local AD synchronization with Privilege Manager Cloud instances is available for x64-bit systems only.
>
> If the Directory Services Agent produces error messages about failed application control policy processing in the agent log, those messages can be ignored.
>
> When upgrading Privilege Manager to a newer version, it is recommended to also upgrade the Directory Services Agent so they are both on the same version.

We recommend the following topics for details pertaining to the **Directory Services Agent** functionality:

- Active Directory Synchronization, to learn how to setup and run the synchronization task on the **Synchronization** tab of the **Active Directory Domain** foreign system.
- Agent System Requirements, to learn about the **Directory Services Agent** specific system requirements.

Prerequisites

The **Core Delinea Agent** needs to be installed on the system that receives the **Directory Services Agent** installation. The other agents aren't required, but can be installed on the same system without issues.

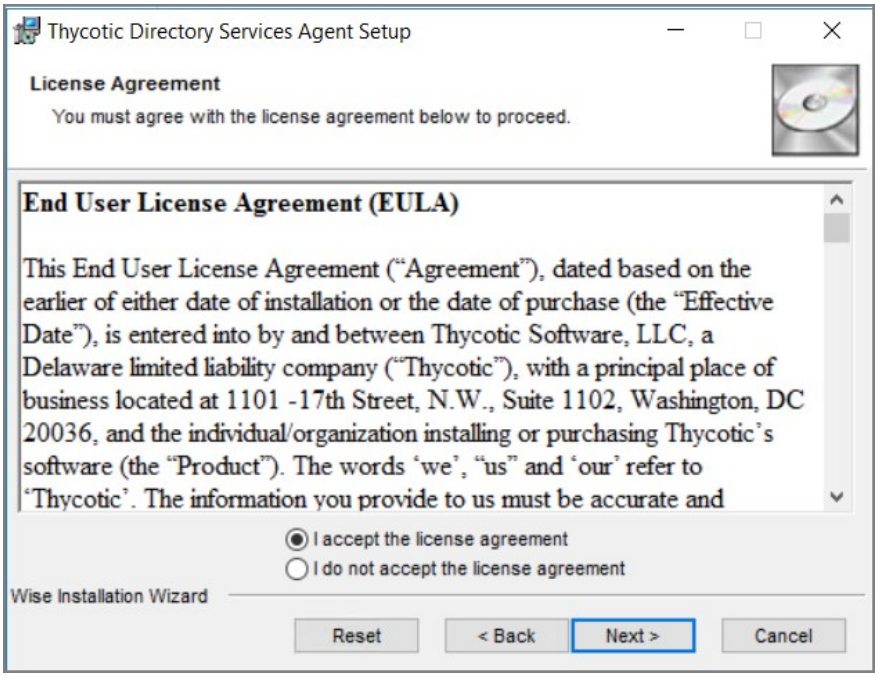
Directory Services Agent Installation

Download the latest version of the **Directory Services Agent** via the Software Downloads page.

1. Double-click the .msi file to start the installation wizard:

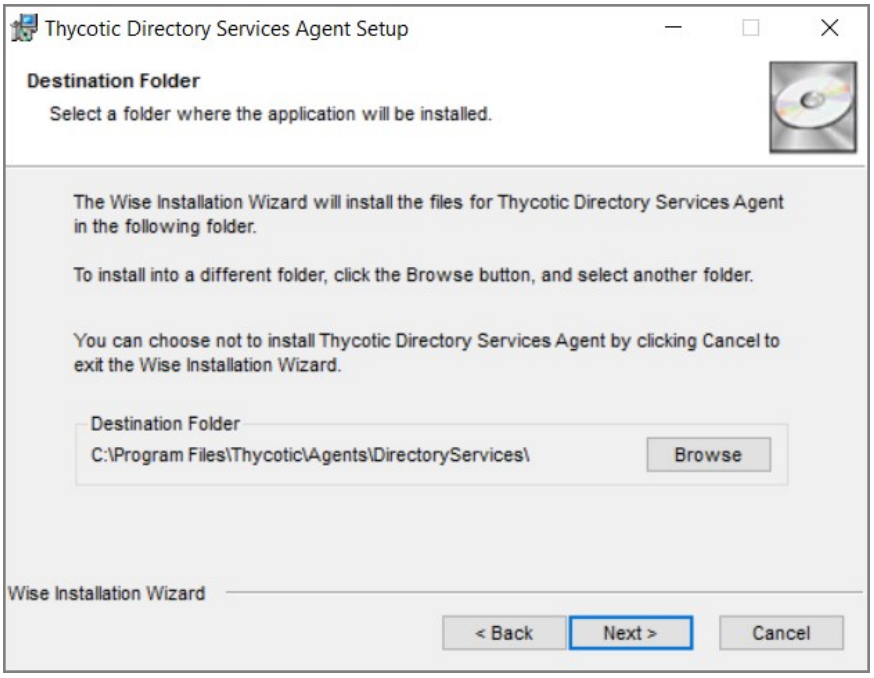
Close all other applications running on the system and click **Next**.

2. On the **EULA Agreement** screen, select **I accept the license agreement**.



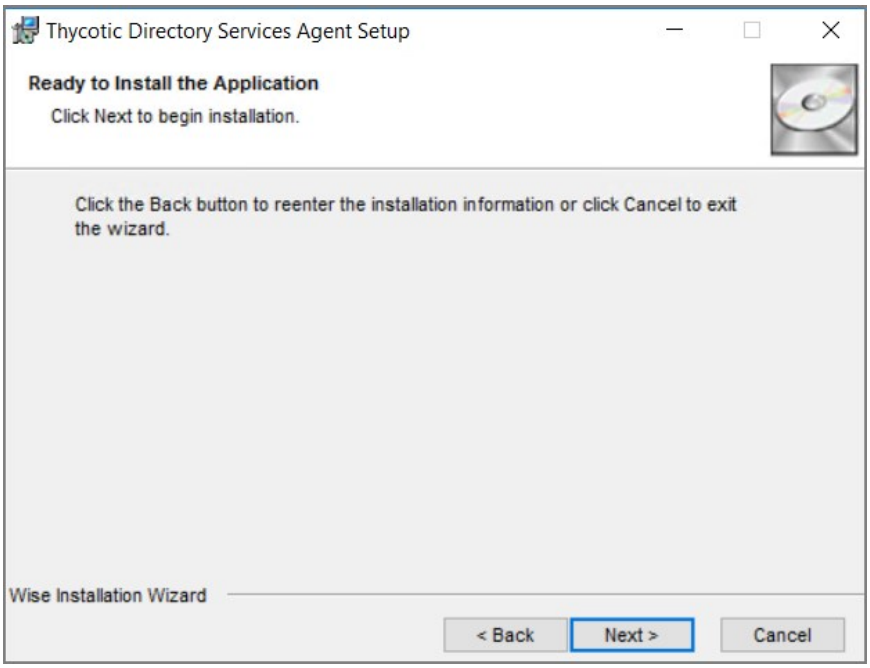
Click **Next**.

3. On the **Destination Folder** screen, keep the default installation destination or use **Browse** to select a different folder.



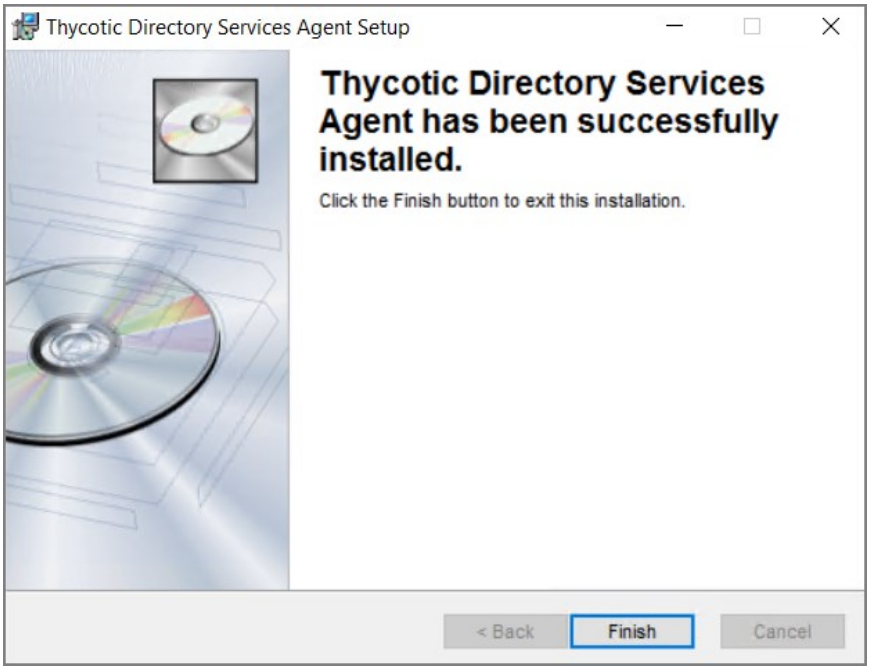
Click **Next**.

4. On the **Ready to install** screen, you have an option to go back to change your previous selection, otherwise click **Next** to proceed with the installation.



If you have any other Delinea Agents already installed on the system, the installer my prompt you to stop the services before you can proceed.

5. After a successful installation of the Directory Services Agent, you will see the following screen:



Click **Close**.

6. Restart any previously stopped agent services.

Bundled Core and Directory Services Agents

The **Thycotic Directory Services Installer** bundle delivers the Delinea Agent (Core Agent) and the Delinea Directory Services Agent in one package for installation on x64-bit systems.

We recommend to refer to the following topics before you proceed with the bundled installation:

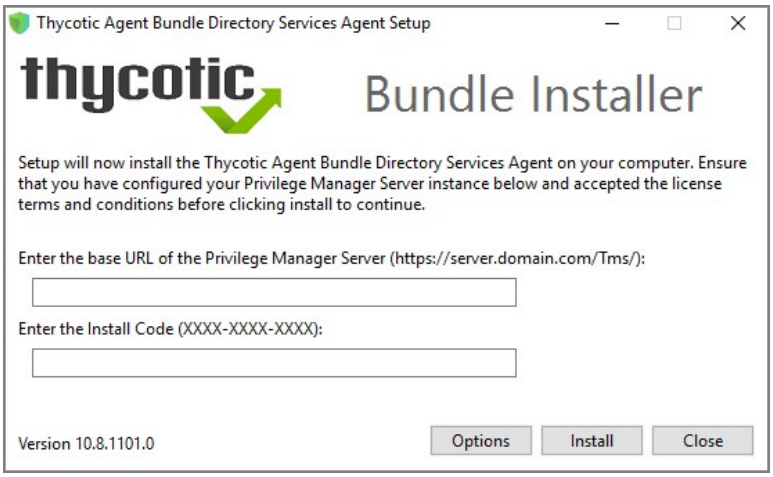
- Directory Services Agent (AD), to learn more about the **Directory Services Agent** itself.
- Active Directory Synchronization, to learn how to setup and run the synchronization task on the **Synchronization** tab of the **Active Directory Domain** foreign system.
- Agent System Requirements, to learn about the **Directory Services Agent** specific system requirements.

Installing the Delinea Directory Services Installer Bundle

To install this Delinea agents bundle **on a single machine**, follow these steps:

1. Download the Bundled Privilege Manager Core and Directory Services Agent - Windows.
2. Run the **ThycoticDirectoryServicesInstaller** on the computer you want to use for the active directory synchronization tasks.
3. During the setup process, enter the Privilege Manager Server URL (or AZ Service Bus Queue URL) and the Install Code when prompted.

   Note: The Install Code field can be left blank when using versions lower than 10.5.



4. Click **Close** after the installation completes.

   Note: It may take 15-30 minutes for agents to receive new policies, to speed this up navigate to **Admin I Configuration I General** and click **Run Policy Targeting Update**, then open the Agent Utility on the endpoint and click the **Register** button.

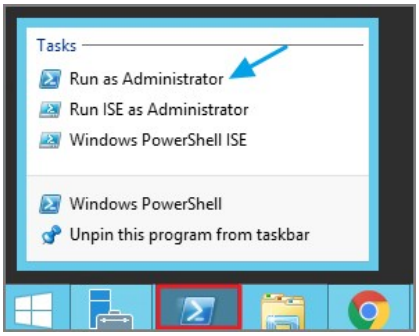
Agent Uninstall via Command Line

This topic explains how to uninstall the Agent through command line. If you're trying to uninstall an old agent in order to install a newer version of the agent, there is no need to do so. The installers will detect a previous version installed and uninstall the old version prior to installing the new agent.

> **Note**: For hardened agents refer to information under Windows Agents .

Manual Uninstall Steps

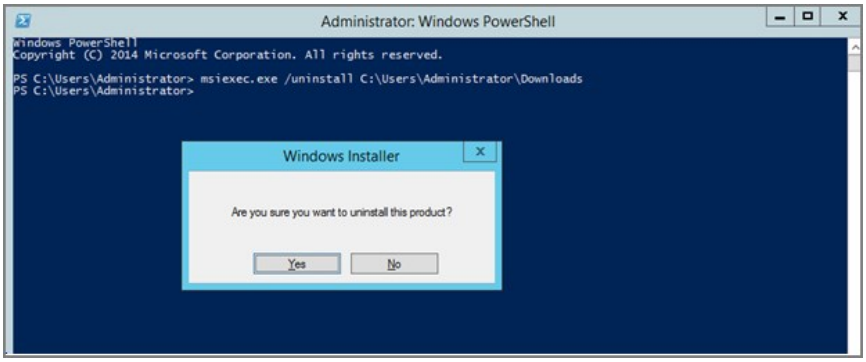
1. Navigate to the machine(s) where the agent is located.
2. Right-click on Windows Powershell and select **Run as Administrator**.



3. Run the following command:

```
msiexec.exe /x <path to the msi installer>\ThycoticAgent_x64_11_3_7587.msi
```

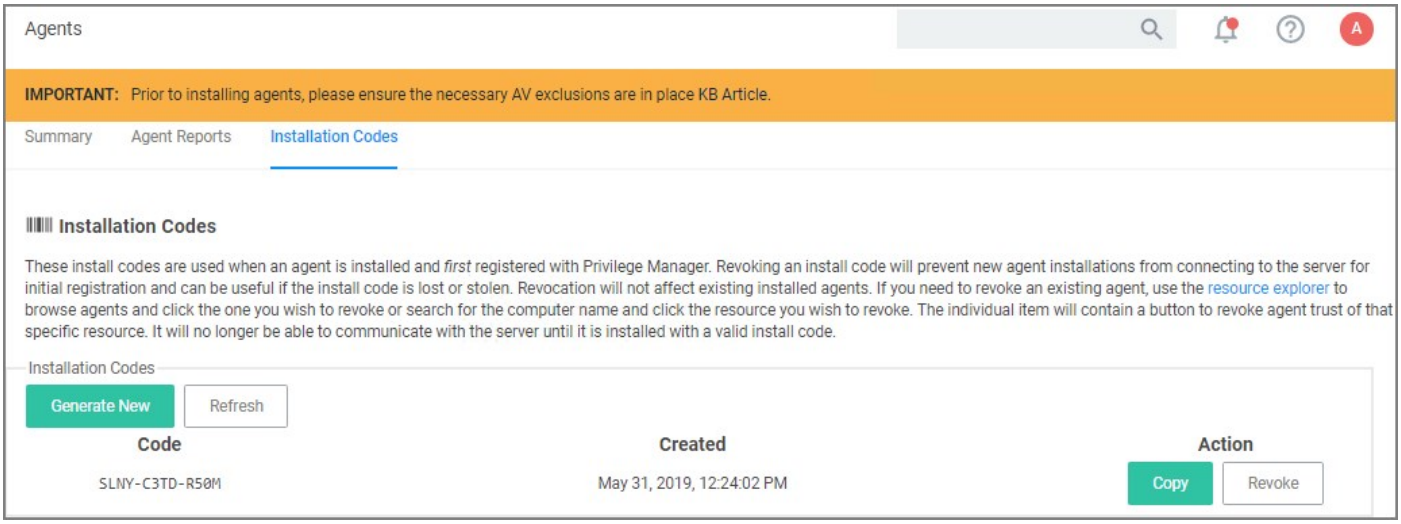
4. Select **Yes** on the Windows Installer prompt.



In version 10.5 and up, installation codes are required upon initial install to prove to the server that an agent install is authorized. Once an agent is installed, it deletes the install code and authenticates to the server via a certificate. See Agent Trust Revocation for certificate revocation.

The agent uses the install code to prove to the server that it is an authorized install. Once the agent is installed, the install code is deleted and the agent certificate is used to communicate with the server. The server needs either an install code or agent trust (a certificate) to accept communication from an agent. Multiple install codes can be created for bundling with different installers, if the last install code is revoked, a new one is generated automatically. Revoking an install code prevents new installations with that install code but does not affect previous installations since those agents now use their own certificates to authenticate.

1. Navigate to the agent settings under **Admin I Agents**.
2. On the Installation Codes tab you may Generate New codes, Refresh code information, Revoke, or Copy Codes to the clipboard to use in the installer.



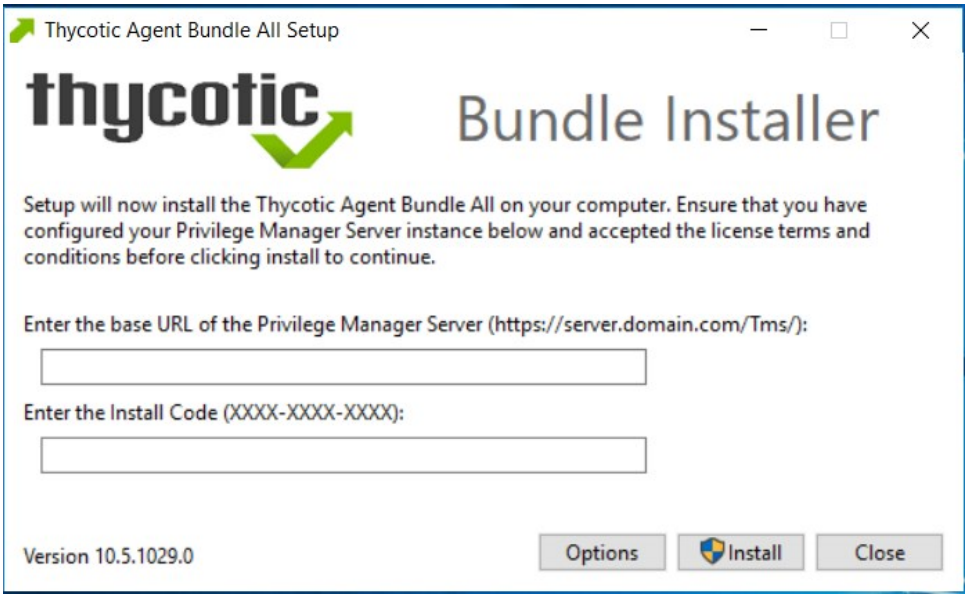
If deploying with msiexec, the following command shows an example for how to set the Install Code:

```
msiexec.exe /i ThycoticTmsSetup_x64.msi INSTALLCODE=1234XXXXABCD AMSURL=https://DOMAIN/Name/
```

Where:

- ThycoticTmsSetup_x64 is the install file used.
- INSTALLCODE is argument taking the install code value.
- AMSURL is the argument taking the base URL to the TMS installation.

If installing via a bundled installer, the install code is placed in the **Enter the Install Code** field (dashes in the install code are for readability and are optional).



Using the SetAMSServer.ps1 Script

If it becomes necessary to set the install code after the agent is installed, an install code can be set using a PowerShell script that must be run as an Administrator. This script, along with other useful agent scripts, will be located in the C:\Program Files\Thycotic\Powershell\Arellia.Agent folder on any machine with the Delinea agent installed and it is called **SetAMSServer.ps1**.

The script will request parameters, as follows:

- The first parameter the script will request is the URL of the server you wish to connect to; its value should be https://PrivilegeManagerURL/TMS/.
- The second parameter it will ask for is the install code.

Agents can be installed without an install code, but they will be unable to register with the server until an installcode is provided.

If older agents are used, the **Prevent Legacy Agent Registration (10.4 and older)** option might be checked in the **General** section under the **Admin | Configuration | Advanced** tab, which prevents older agents without install code from registering.

If an agent was previously installed and never revoked, the endpoint continues to have a valid certificate and a new agent can be installed with post-install registration.

- **Outbound (port 443 - HTTPS)**: This is the default access port through which the agent connects to the server. You may specify a different port based on your environment.
- **Inbound (port 5593)**: The is the default and only port that the agent listens on. This port is not required and you can block port 5593. If you block the port, the agents pull updates from the server based on a set schedule.
- **SQL (port 1433)**: This is the default SQL DB port. The SQL port can be customized.

The following upgrade topics are available:

- Online Upgrades (recommended)
- Offline Upgrades
- Offline Upgrades - Combined Installations
- Upgrading from Arellia Management Server 8.2 to Privilege Manager 10.4 and up
- Best Practices for Upgrades

Troubleshooting Failing Upgrades

Upgrades may fail when spanning multiple versions. If an upgrade fails, the following workaround is available:

- The newer Privilege Manager versions use spSaveItemComplete, which won't be present if the database failed to upgrade. The work-around is to import a dummy version of spSaveItemComplete, which will be replaced by the correct version once the database is upgraded.

  Note: If you are still running into upgrade issues, open a support ticket and schedule a support or professional services engagement session. Please plan accordingly, as support appointments may require advance scheduling up to five days.

Privilege Manager software updates are made available via NuGet server packages. The upgrade process can be performed via **Add/Upgrade Features** link in the Privilege Manager Setup page.

What's New in Privilege Manager 10.8

The 10.8 release of Privilege Manager introduces a new user interface, providing a redesigned user experience, simplifying many major areas and typical workflow processes when setting up application policies or local security.

To preview the enhancements made to the user interface, please view this video.

Switching between the new and old UI post upgrade is not available.

Setting up the NuGet Source

Once Privilege Manager is installed on a server, updates can be performed by pointing the web.config file to the product NuGet source.

1. Navigate to C:\inetpub\wwwroot\TMS\ and right-click the web.config file.
2. Select Edit from the drop-down.
3. Verify the following line with correct NuGet source is present:

   <add key="nuget:source:SolutionCentre" value="http://tmsnuget.thycotic.com/nuget/" />`

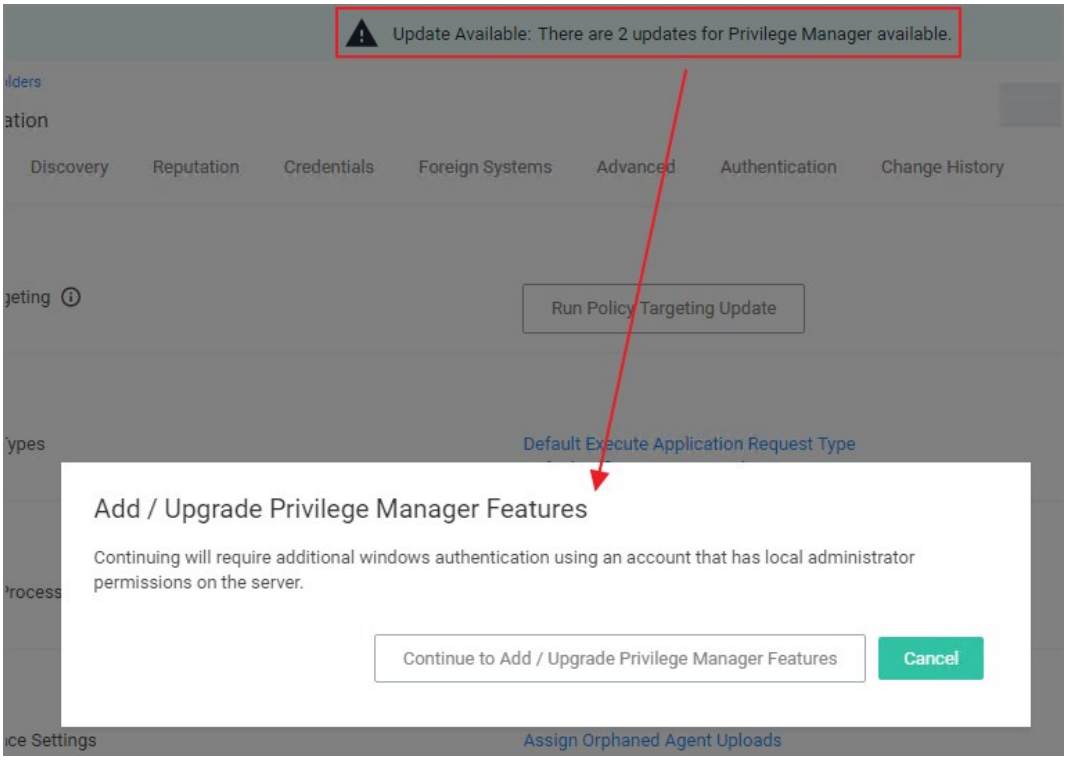
Updating Privilege Manager

> **Note**: Always make a backup of the Privilege Manager Database in SQL and the TMS web files before performing upgrades in a production environment. The default location of the web files on the Privilege Manager Server is C:\inetpub\wwwroot\TMS.
>
> On systems running Privilege Manager 10.5.1 or older with multiple Privilege Manager Server nodes, **stop** the TMS application pools on all secondary nodes before starting the upgrade. Restart the applications pools once the upgrade is completed. Newer Privilege Manager versions automatically initiate setup tasks when the primary node is being updated.

Primary Node

Privilege Manager provides an **Update Available** notification banner when updates are available. Users can also use the **Admin | Setup** menu to enter the check if an update is available.

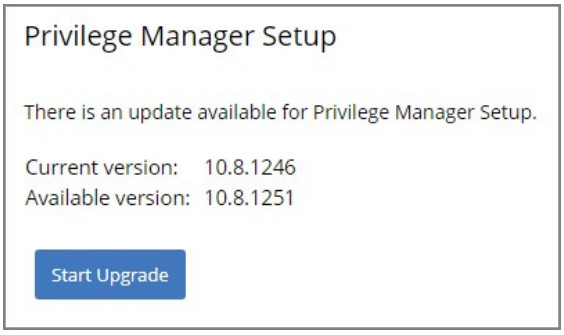
1. Click the link in the banner to trigger the **Add / Upgrade Privilege Manager Features** modal:



If you are not a local Administrator on the server, you will not be able to perform the upgrade. Based on your account role membership either click **Continue to Add / Upgrade Privilege Manager Features** or **Cancel** if your role permissions don't meet the requirement.

This starts the process to see if setup updates are available.

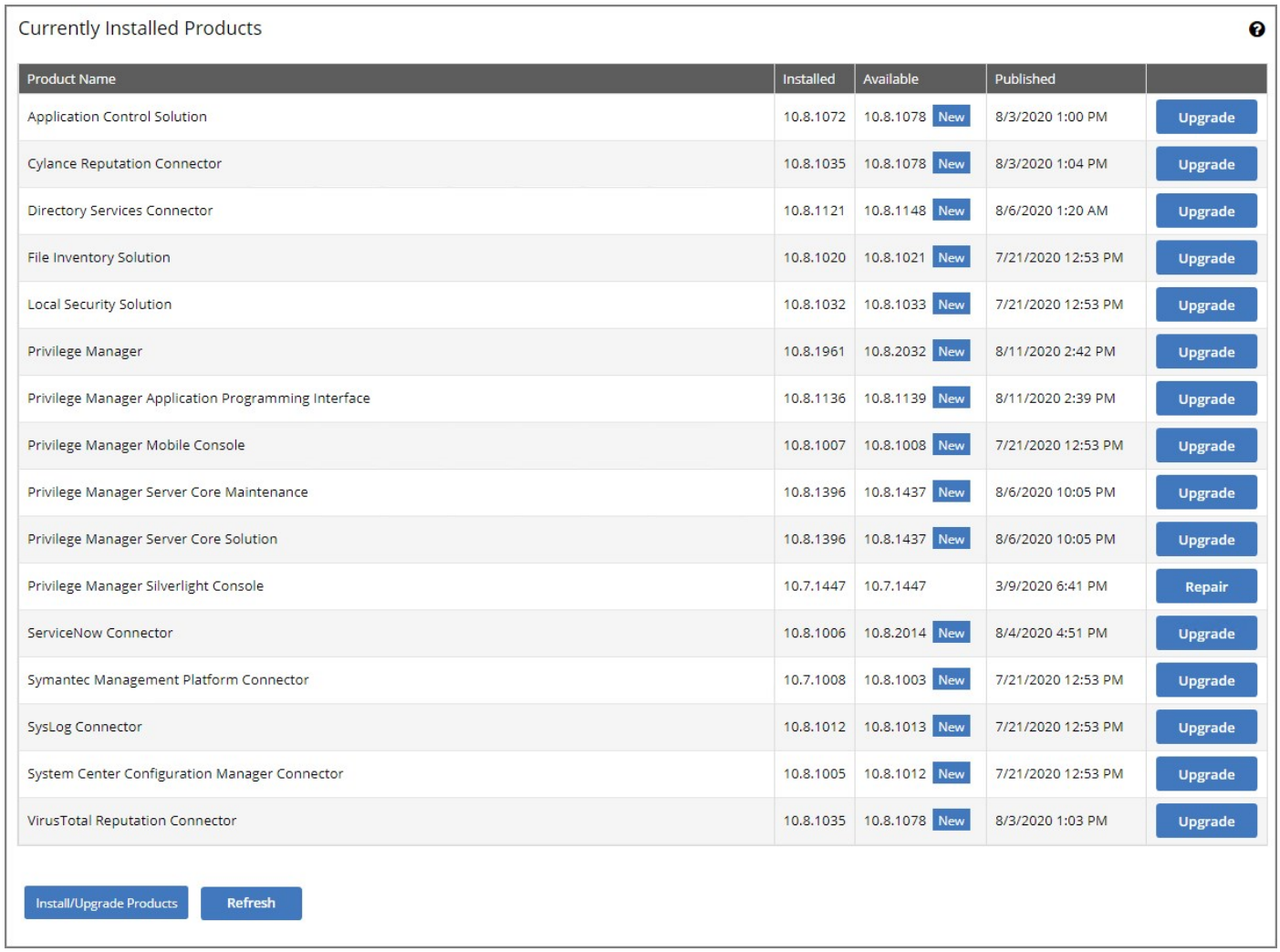
2. When updates are available, Privilege Manager will provide information about the current and available versions.



Click **Start Upgrade**.

3. A short *Install Complete* message is displayed before the setup process navigates to the **Currently Installed Products** page. The

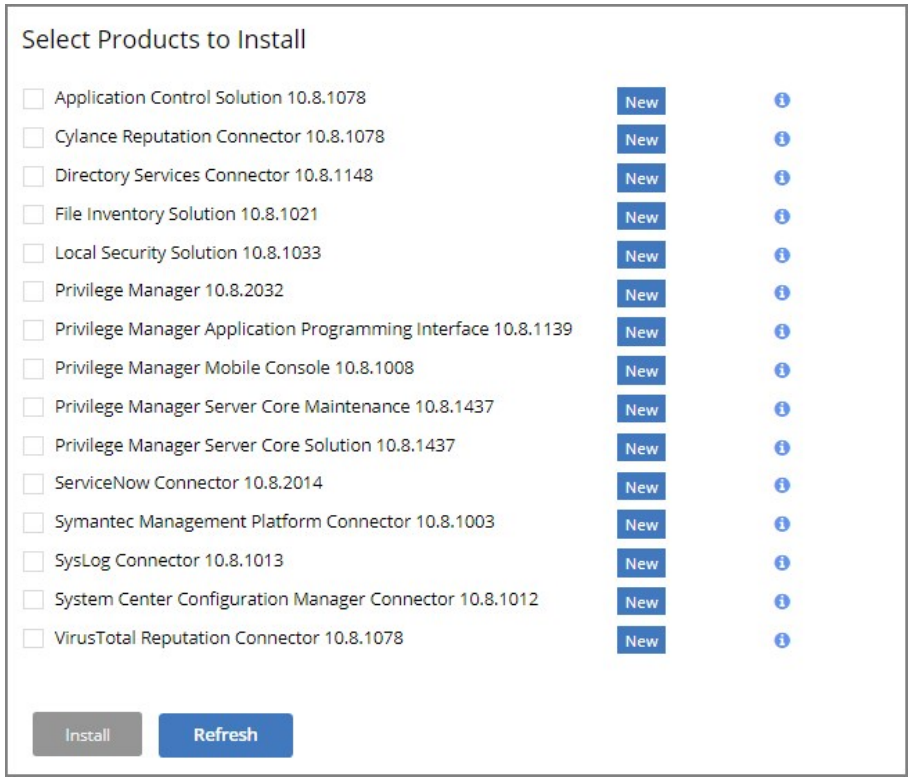
available product updates are listed by product name in alphabetical order.



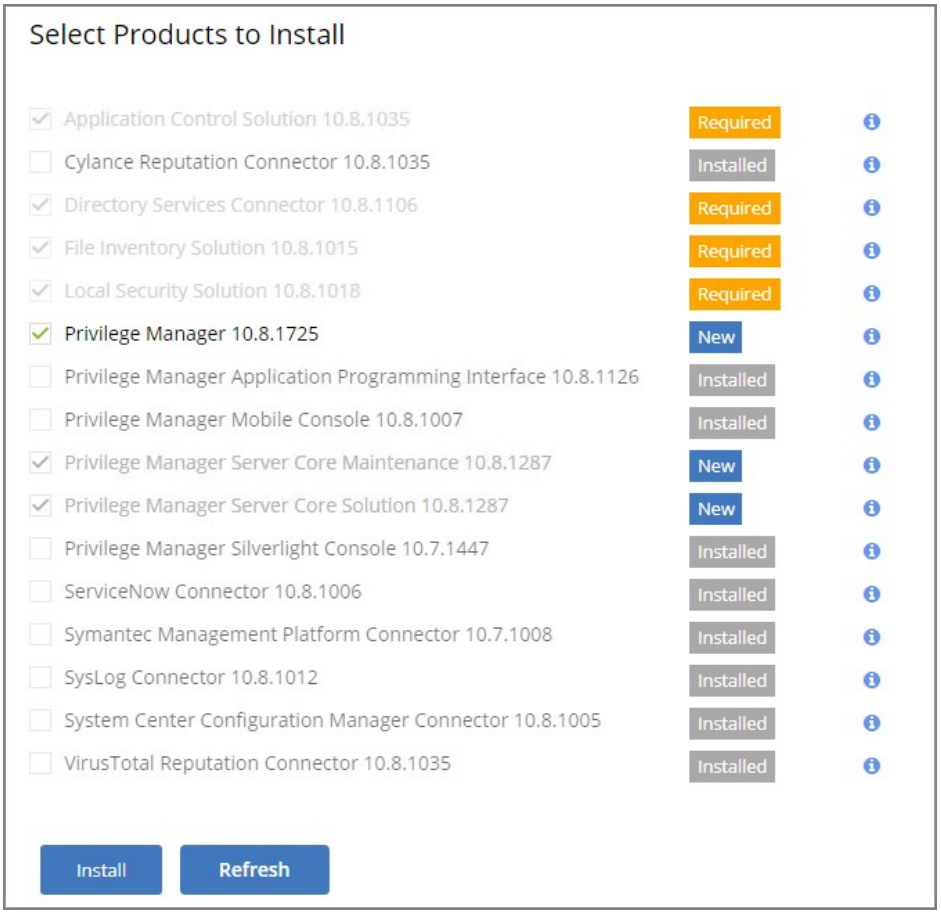
Use either of the following ways to upgrade your environment to the latest Privilege Manager version:

1. Click Upgrade next to individual packages, this will require to come back to the Installed Products page after each separate upgrade for most of the packages, **or**
2. Click **Install/Upgrade Products** at the bottom of the page.

    1. Select the products you want to install/upgrade.



By default the products available for upgrade are listed. If you want to see all products currently installed, click **Show installed products**.



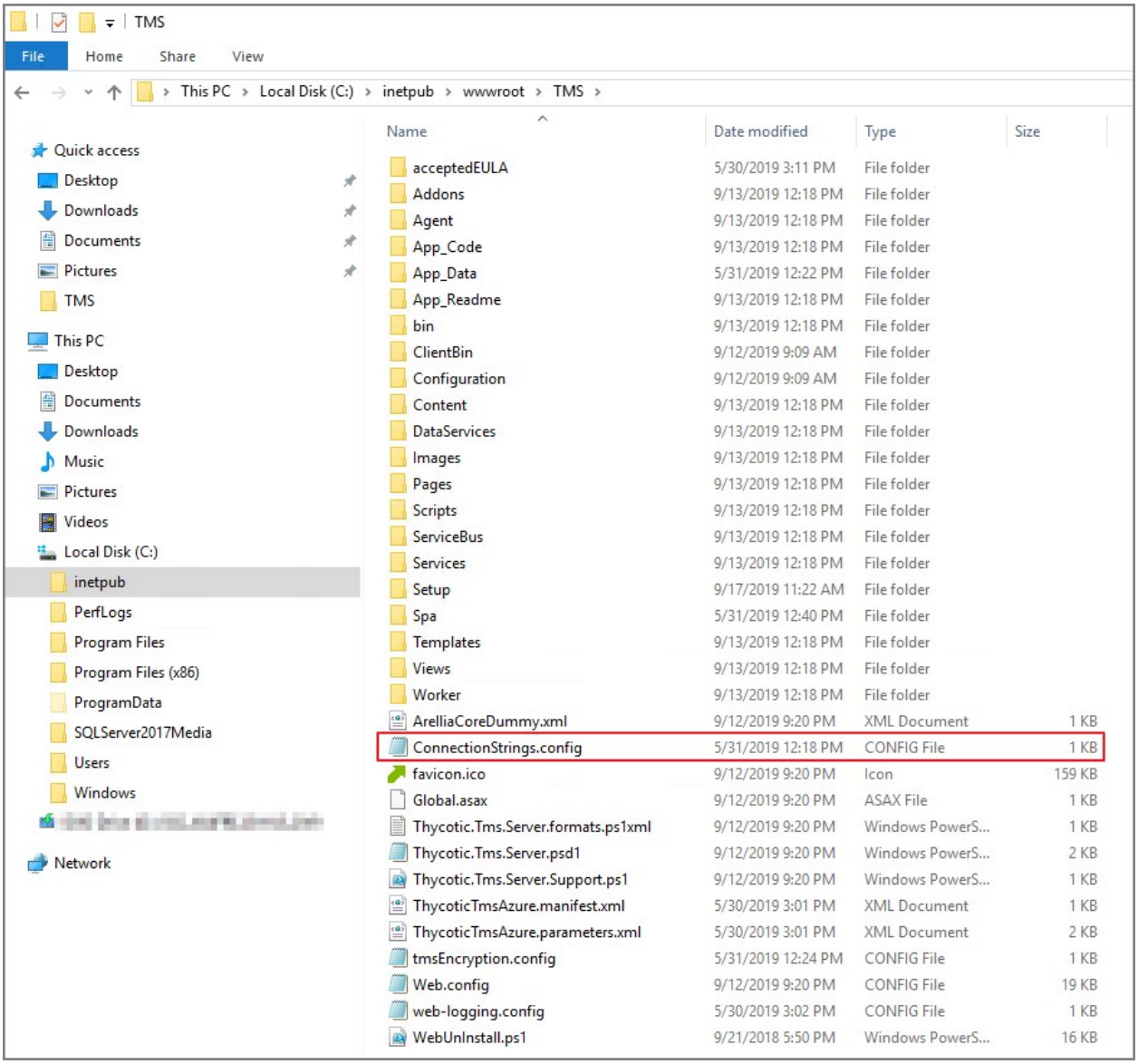
2. Click **Install**.

The installation/upgrade process starts and you can view the log while products are being installed.

Secondary Nodes

Note: This is only required on Privilege Manager servers being upgraded from versions prior to **10.5.1**.

1. On the upgraded primary node navigate to TMS web files. The default location is: C:\inetpub\wwwroot\TMS.
2. Copy the TMS folder, except for the ConnectionStrings.config file.



3. On your secondary node navigate to the same folder location, most likely C:\inetpub\wwwroot\TMS and paste the copied files.
4. Repeat the copy and paste for all other secondary Privilege Manager nodes in your environment.
5. Navigate to the IIS Manager and start all TMS Application pools on the secondary nodes.

Follow these steps to perform an offline upgrade for Privilege Manager. This article is ONLY applicable when upgrading from versions 10.2 and higher.

Note: Offline upgrades on **multiple** servers will need to be done manually.

1. Download the latest version for the Privilege Manager Application Files via Software Downloads.
2. Extract the zip file.
3. From the unzipped folder, copy the contents of the nugetCache folder to this location on the web server: C:\ProgramData\NugetCache\
4. Navigate to the TMS web folder (C:\inetpub\wwwroot\TMS\), right-click and open with, e.g. **Notepad > Run as Administrator** the **web.config** file.
    1. Update the "value" field of this item <add key="nuget:source:SolutionCentre" value="http://tmsnuget.thycotic.com/nuget/" /> to C:\ProgramData\NugetCache\, such as

        <add key="nuget:source:SolutionCentre" value="C:\ProgramData\NugetCache\" />

    2. Save the **web.config** file.
    3. Recycle the TMS app pools.
5. Navigate to https://<webserver>/TMS/Setup/ProductOptions/ShowProducts. This step will require windows authentication using an account that has local administrator permissions on the web server.
6. You should see new products available in the products list. Click the **Install/Upgrade Products** button.
7. Select the products you wish to upgrade or install, and follow the steps to finish the installation. If one of the products fails to install, please repeat these last two steps. You may encounter an issue with an error of "Version Store out of Memory" - this is transient and re-starting the upgrade will fix it. If you encounter any additional errors, please contact Delinea Technical Support for assistance.

Note: An upgrade or repair to the product may rewrite the web.config with default settings. Always double-check that the web.config has the correct SolutionCentre path whenever you perform a manual upgrade. Also, the version numbers available should match the highest versions available in the C:\ProgramData\NugetCache\ folder on the web server.

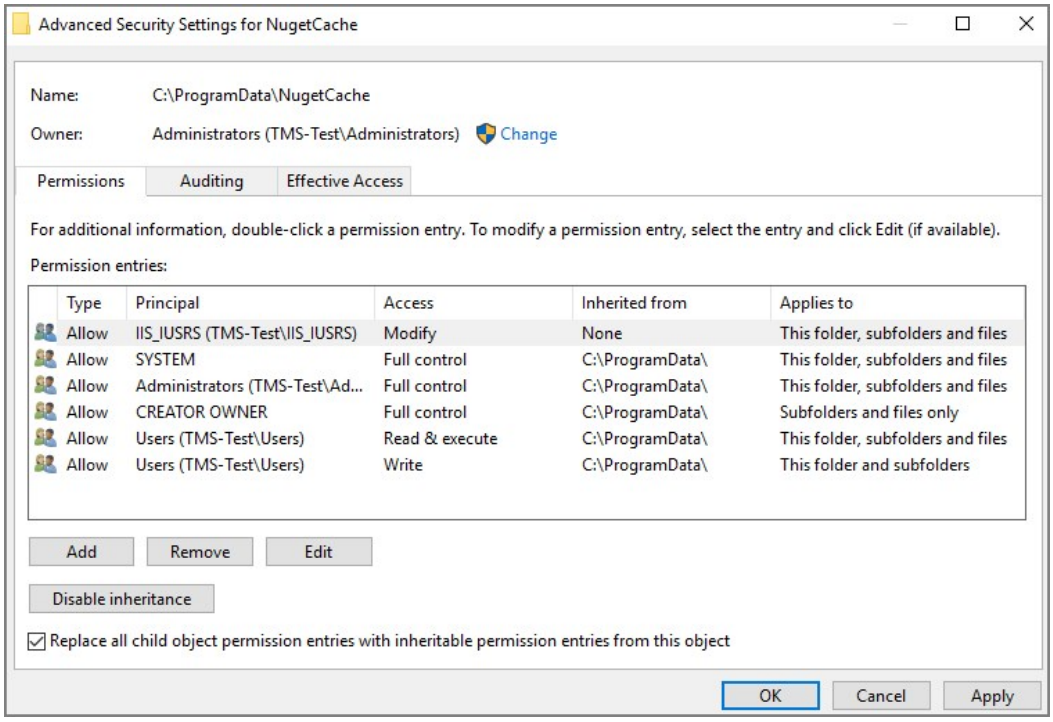
Delinea recommends to create a back-up copy of the Privilege Manager web application folder after installation or upgrades.

Follow these steps to perform an offline upgrade for Privilege Manager and Secret Server. This topic is ONLY applicable when upgrading from products that are versions 10.2 and higher.

> **Note**: Offline upgrades on **multiple** servers will need to be done manually. Also refer to the High Availability Setup topic for general best practices.

1. Download the zip files for your offline upgrade here. Copy/paste this zip file on your Privilege Manager Web server
2. Make a backup of the Secret Server and Privilege Manager web folders (Default path is C:\inetpub\wwwroot> SecretServer + TMS folders, copy/paste these into a backup folder)
3. Make a backup of the Database (In Secret Server navigate to Admin I Backup I Backup Now button)
4. On the web server, navigate to C:\ProgramData\NugetCache\ and delete all the files in the folder (*ProgramData folder may be hidden: View > check the Hidden items box to reveal)
5. Open Secret Server and navigate to: https://<YourSecretServerURL>/Setup/Upgrade
6. On the Secret Server Update page:
    1. Select **Advanced (not required)** to open the advanced options.
    2. Select **Choose File** and navigate to the location of the Privilege Manager Update zip package.
    3. Select **Upload Upgrade File**.
    4. When the new version is available select **Upgrade**.

       Check https://URL/TMS/Setup to see if an install is already in progress (this is usually seen when the TMS Upgrade portion of SS shows successful)
7. Accept the License. Then allow the Secret Server upgrade to complete. Note: The Upgrade TMS step may say it was successful, or it may say it wasn't. Please ignore this message and continue to follow the steps below:
8. Open the C:\ProgramData\ folder:
    1. Right-click on the NugetCache folder and select **Properties**.
    2. Click on the **Security** tab.
    3. Click the **Advanced** button.
    4. Check the **Replace all child object permission entries with inheritable permission entries from this object** checkbox



5. Click the **OK** and **Yes**.

9. Navigate to the TMS web folder (C:\inetpub\wwwroot\TMS\), right-click and open with, e.g. **Notepad > Run as Administrator** the **web.config** file.

    1. Update the "value" field of this item <add key="nuget:source:SolutionCentre" value="http://tmsnuget.thycotic.com/nuget/" /> to C:\ProgramData\NugetCache\, such as

        <add key="nuget:source:SolutionCentre" value="C:\ProgramData\NugetCache\" />

    2. Save the **web.config** file.

    3. Recycle the TMS app pools.

10. Navigate to https://<webserver>/TMS/Setup/ProductOptions/ShowProducts The TMS setup page requires authentication with a Windows account that is a Local Administrator of the Web Server.
11. You should see new products available in the products list. Click the **Install/Upgrade Products** button.
12. Select the products you wish to upgrade or install, and follow the steps to finish the installation. If one of the products fails to install, please repeat these last two steps. You may encounter an issue with an error of "Version Store out of Memory" - this is transient and re-starting the upgrade will fix it. If you encounter any additional errors, please contact Delinea Technical Support for assistance.

    Note: An upgrade or repair to the product may rewrite the web.config with default settings. Always double-check that the web.config has the correct SolutionCentre path whenever you perform a manual upgrade. Also, the version numbers available should match the highest versions available in the C:\ProgramData\NugetCache\ folder on the web server.

    Delinea recommends to create a back-up copy of the Privilege Manager web application folder after installation or upgrades.

Upgrading from our 8.2 version to Privilege Manager 10.4 and up can't be done from https://servername/Ams/Setup/. To upgrade, we recommend using the same database and removing the old application before installing the new version. This can be done automatically or manually.

Automatic Steps

1. Download http://tmsnuget.thycotic.com/Software/ThycoticTmsInstaller_10_0_1570.exe and run it on the web server where your existing Arellia Management Server 8.x version is installed.
2. Follow the prompts.
3. Once it completes, you'll access the server at https://servername/Tms/ instead of https://servername/Ams/.
4. Go to https://servername/Tms/Setup to install the latest 10.x version.
5. Open **IIS Manager** and go to **Sites** | **Ams** | **Agent** | **Uploads**.
6. Click on the **BITS Uploads** and change the notification URL from http://localhost/Ams/Services/BitsUpload.ashx to http://localhost/Tms/Services/BitsUpload.ashx.
7. Download and install and the latest agents. Please refer to the agent installation section the lastest agent installation.

> **Note**: Old agents will continue to work because of the redirect created during the install that sends traffic from https://servername/Ams/Agent to https://servername/Tms/Agent. When upgrading the agents, we recommend that you set the **AMSURL** to the new https://servername/Tms/ address.

Manual Steps

1. Remove the AMS website from the web server.
2. Download the latest bundled installer http://thycotic.com/products/secret-server/resources/download-secret-server/.
3. Follow the prompts to install Privilege Manager , setting the database connection to the existing database.
4. Download and deploy the latest agents that are available here.

> **Note**: Set the AMSURL to the new server address, https://servername/Tms/

DB Backup

Delinea recommends that Privilege Manager databases are backed-up prior to an upgrade. For details regarding SQL database backups, refer to the vendor documentation of your SQL database, such as Back Up and Restore of SQL Server Databases.

TMS Folder Backup

Other measures to take before any upgrade are to make a backup copy of your Privilege Manager TMS folder and all its contents.

1. On your Privilege Manager host system navigate to C:\inetpub\wwwroot\TMS (default installation location).
2. Create a backup copy of the TMS folder contents at another location on your system or network.

Repair Solution

When running into an error condition during an upgrade, try the repair option for the specific solution that errored out.

Also refer to Troubleshooting - Installation and Upgrade Issues.

Package Hash Verification

Privilege Manager verifies the SHA512 hash of downloaded packages during the install/update process. Installation of packages does not happen if a downloaded package hash does not match with the NuGet server information.

The following measures are implemented:

- Privilege Manager prevents zero byte files from passing hash validation.
- Through hash validation, Privilege Manager ensures any download or disk write failures (disk space issues, rights, etc) do not leave remnants of partially extracted packages on the system.
- Privilege Manager writes a warning into the logs and does not start an install/upgrade from the install pages unless it can validate the packages. It re-checks when the install is running, to accommodate other Privilege Manager servers in a multi-server environment, so that each server checks packages while doing its install.

Tempering or disk-write failures are logged, those can be due to skipped package validation, when the hash cannot be received from the NuGet server, or for offline updates or packages that are considered pre-release and not yet publicly available. Also, files shares can be setup, restricting a user's write access to prevent tempering of downloaded packages, which is a best practice for offline environments.

> **Note**: For offline package installs, Privilege Manager assumes the user has validated the package integrity. Refer to **Validating Package Integrity for Offline Upgrades** below.

Privilege Manager does not verify package integrity in offline scenarios without the following user action. Users need to either

- copy the package hash files along with the NuGet packages, or
- calculate the hash files themselves (see PowerShell examples below.

If a hash file isn't provided, integrity won't be validated and a warning will be logged.

Locally on your system, set the NuGet repository URL in the `web.config` file to the local repo address at `c:\ProgramData\NuGetCache`. Privilege Manager checks each file to see if there is a corresponding file with `.hash.json` extension. This json file contains the HashBase64 and HashAlgorithm property value pairs to verify integrity.

Example from `ThycoticTmsCoreProduct11.0.1035.nupkg.hash.json`:

```
{ "HashBase64": "CXs8cQ+65r6YWPpfylQVWdE4jHD3BhkJHlnWykAx1iItpcKmYhx6mkof/haChlu6aH8M+gYXUEN2ErH8wOPPlg==", "HashAlgorithm": "SHA512" }
```

Sample PowerShell script to calculate the hash for a package:

```
$fileName = 'C:\ProgramData\NugetCache\ThycoticTmsCoreProduct.11.0.1040.nupkg'

$content = [System.IO.File]::ReadAllBytes($fileName)

$sha = [System.Security.Cryptography.SHA512]::Create()
$hash = $sha.ComputeHash($content)
$sha.Dispose()

$hashBase64 = [System.Convert]::ToBase64String($hash)

$hashBase64
```

Sample PowerShell script to take the NuGet package path and write an updated hash file:

```
#
# Usage: UpdateNuGetHash.ps1 -NuGetFileName C:\ProgramData\NuGetCache\ThycoticTmsCoreProduct.11.0.1040.nupkg
#
param([Parameter(Mandatory=$true)][string]$NuGetFileName)

$content = [System.IO.File]::ReadAllBytes($NuGetFileName)
```

```
$sha = [System.Security.Cryptography.SHA512]::Create()
$hash = $sha.ComputeHash($content)
$sha.Dispose()

$hashBase64 = [System.Convert]::ToBase64String($hash)

$hashFileName = "$($NuGetFileName).hash.json"
$hashFileContent = "{ ""HashBase64"": ""$($hashBase64)"", ""HashAlgorithm"": ""SHA512"" }"

[System.IO.File]::WriteAllText($hashFileName, $hashFileContent, [System.Text.Encoding]::ASCII)

Write-Host "Updated hash file ""$($hashFileName)"" for nuget package ""$($NuGetFileName)""."
```

Customers can verify Signatures via detached signature verification, which requires three things:

- **FILE** - The original distributed file in which a signature file was derived
- **SIGNATURE** - The signature file derived from the distributed file ()
- **PUBKEY** - The public key file (cert) counterpart to the private key that was used to sign.

After issuing the following commands, a successful signature will result in **Verified OK**:

```
$ openssl base64 -d -in <SIGNATURE> -out /tmp/sign.sha256
$ openssl dgst -sha256 -verify <PUBKEY> -signature /tmp/sign.sha256 <FILE>

Verified OK
```

> **Note**: OpenSSL v1.0.1 (or newer) is a required dependency PMAUL package signature verification.

Privilege Manager Agents

The Privilege Manager Agents are a critical component of Delinea's application control and local security, giving you the ability to evaluate the health and status of endpoints in real time. Agents are required on endpoint machines to implement Privilege Manager policies.

Privilege Manager provides pre-configured and fully customizable reporting on the status of agents and endpoint operating systems. In the Privilege Manager reporting dashboard, you can drill into reports based on any dimension and easily export report data to other reporting applications or Excel.

Privilege Manager supports agents on:

- Windows
- macOS
- Unix/Linux

endpoint operating systems.

For information about installing agents, refer to Agent Installation to review agent system requirements and the specific agent installation procedures. This section of our document is a general agent information section, containing details about how to use/interact with agents and to provide information about the agent processes.

Windows Endpoints

To make sure that local Administrators do not tamper with Delinea agents running on their system, Privilege Manager Administrators can define users that can start and stop the Privilege Manager services running on endpoints, such as the Delinea Agent or Delinea Application Control. Refer to Agent Hardening.

macOS Endpoints

It is not currently possible to prevent a local administrator account on macOS from starting and stopping a background service like the Privilege Manager agent. Refer to macOS Agent Hardening for best practices.

When your agents are installed, you can verify the status of your Agents' health in terms of Registration State and Policy State from the Home page. You also can navigate to **Admin | Agents** for more information about installed agents.

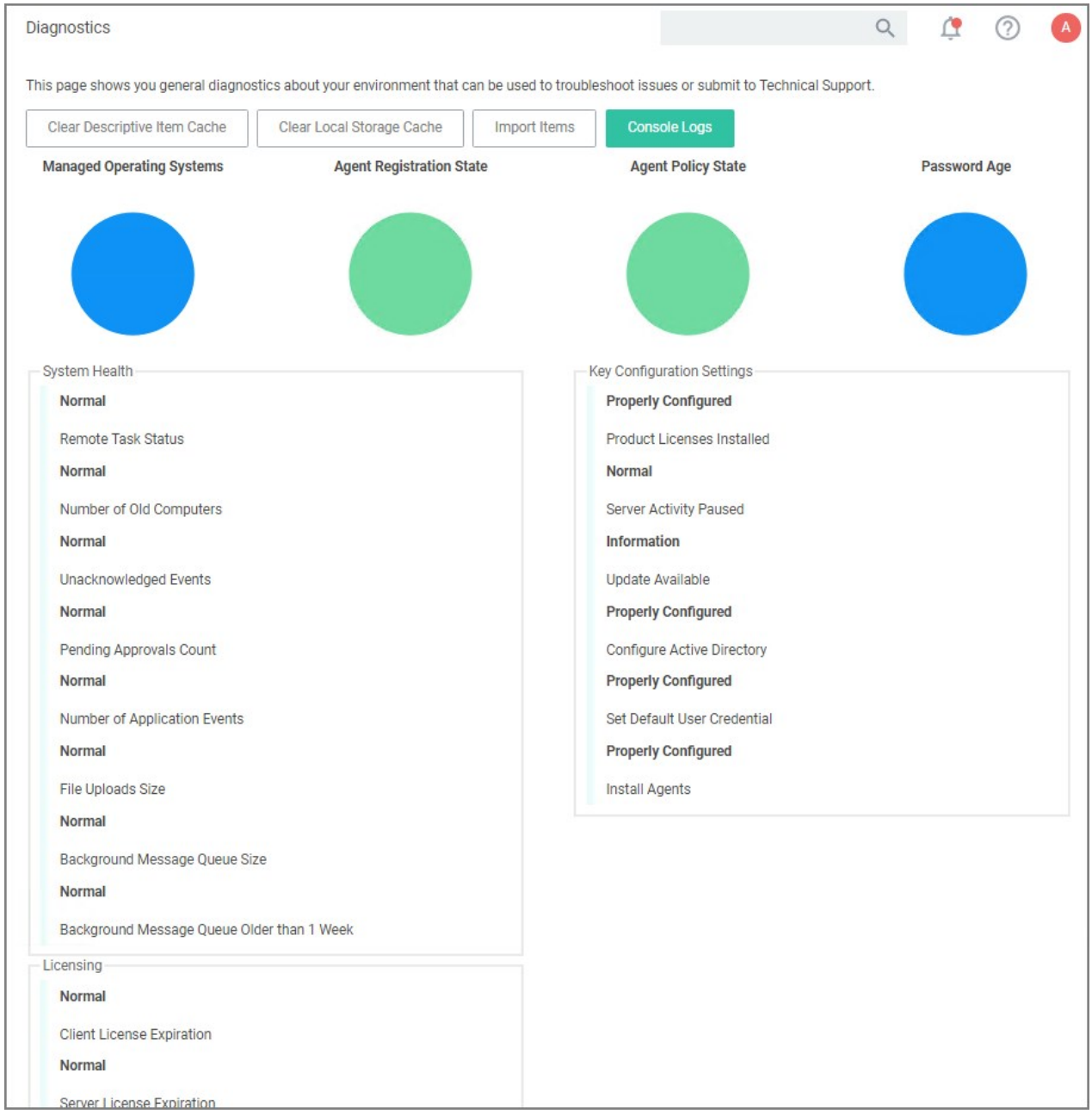
The Agent Health dials describe how many Managed Operating Systems you have as well as your Agent(s) Registration State and Policy State. If you click on the Agent Registration State dial, you will see a report on a list of machines (the "MonitoredResource" column) where each registered agent is installed.

Clicking the Agent Policy State dial from the Home dashboard brings you to a report that links all of your agent-registered machines with the Number of Policies Missing from each agent. This page will become invaluable once you have multiple policies running over different computer groups in your network.

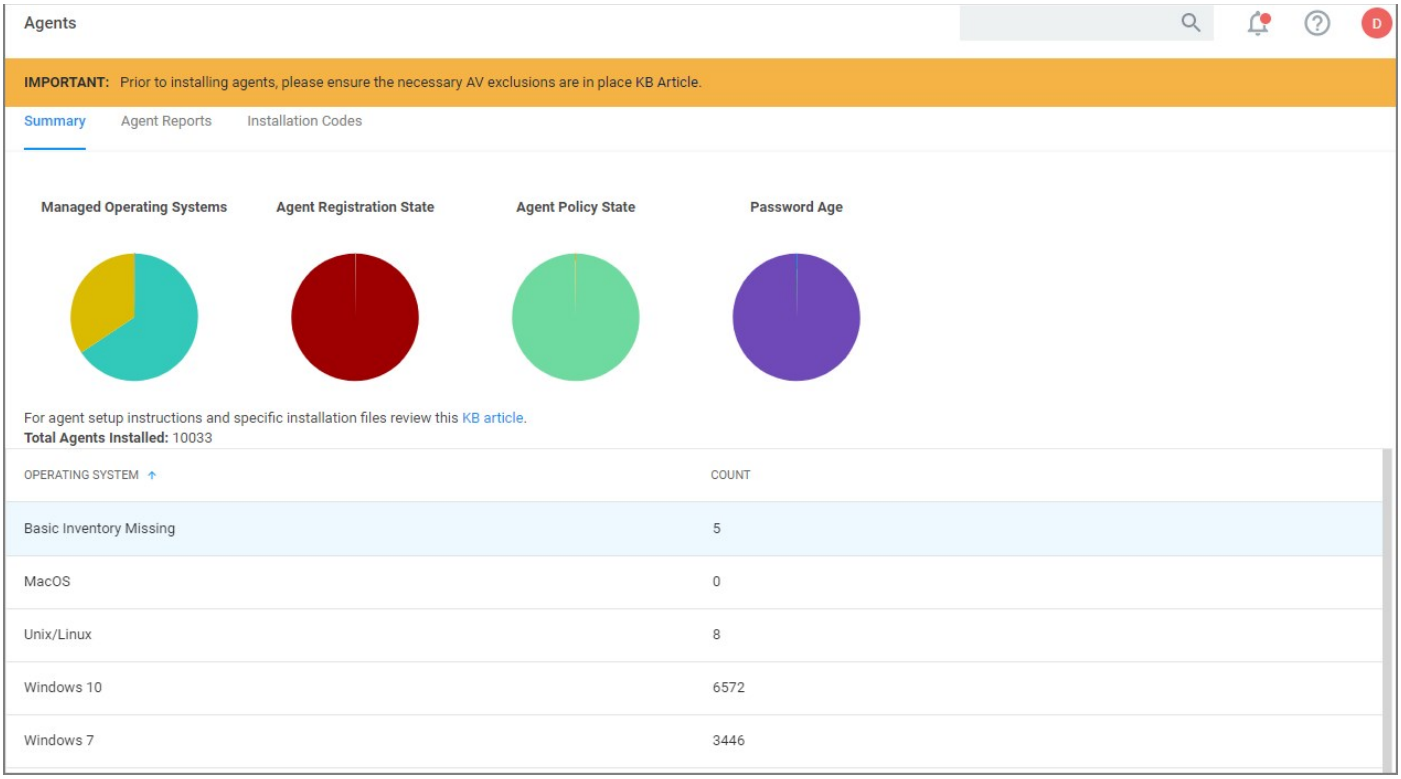
Agent Diagnostics

Once your agents are installed, verify that they have registered in Privilege Manager . Navigate to either:

- **Admin | Diagnostics** to access the **Diagnostics** page or

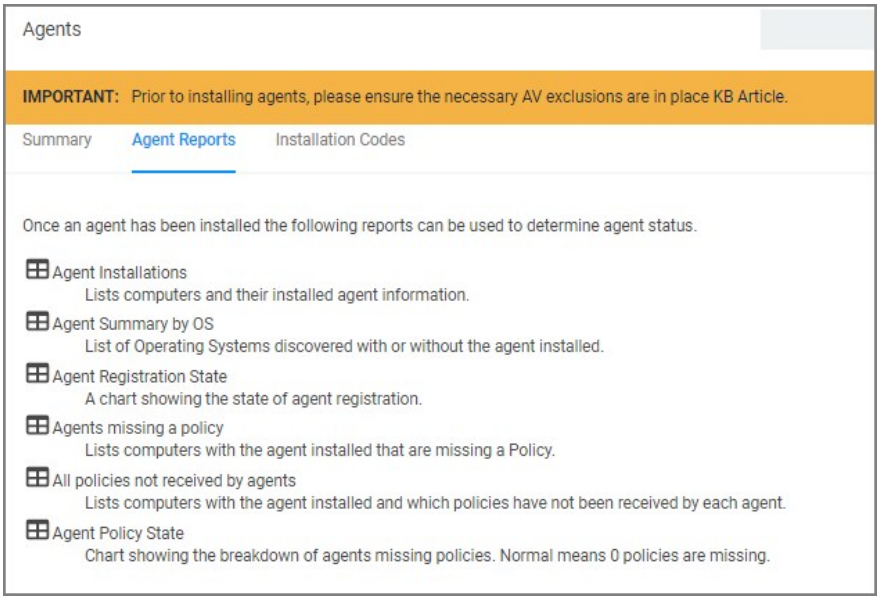


- **ADMIN I Agents** to view your agent details.



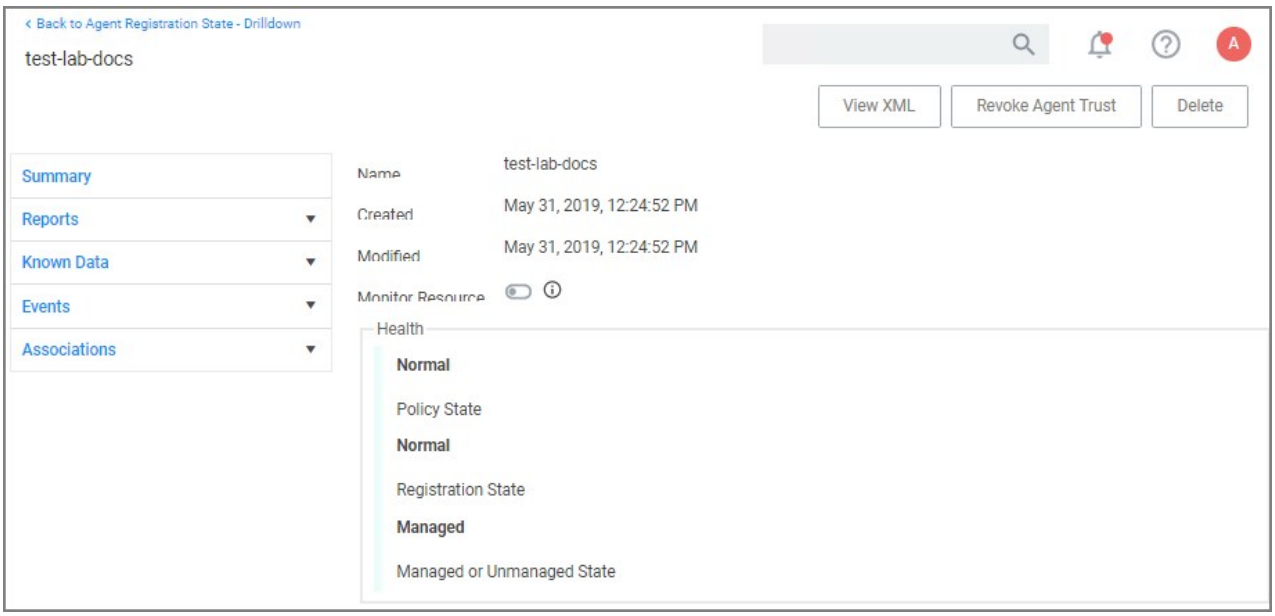
After the initial policies are received, future updates will be based on the task schedules set in Update Applicable Policies and Scheduled Registration policies. Ensure to select the correct policies based on Windows or Mac operating systems. To edit these schedules, navigate to your computer group and select **Scheduled Jobs**. The **Triggers** can be customized under the **Job Schedule** section.

On the agent details page you will see the quantity of agents registered and what operating system is running on registered endpoints. Registered endpoints can also be viewed in the report **Agent Installation Summary** by navigating to the **Agent Reports** tab.



From the the reports pages you can click into any of the **target machines** listed that have a Delinea agent installed. Pictured below is a view from

one of these resource pages where you can check the machine's System Health and configured policies.



The agent traffic is secured via SSL/TLS (1.2).

Starting with Privilege Manager version 10.8.2, the agent adds memory checks for all processes that are managed/elevated via Privilege Manager . Any processes not managed by Privilege Manager , should be checked for process hollowing through means of products like Windows Defender ATP.

This section of the Privilege Manager documentation covers information and step procedures pertaining to Privilege Manager agents **independent** of the endpoint operating system.

The following topics are available:

- Setting the Privilege Manager Server Address
- Connecting Agents to the Privilege Manager Server
- Agent Trust Revocation
- Uninstalling an Agent with Script
- How to prevent Backwards Compatibility for Agents v10.4 and earlier
- Configuring for a Test Environment
- VM Deployments
- Agent Tasks

Agents require a Privilege Manager Server to communicate with. The recommended way to set the URL address is during the installation of the Delinea Agent. If an Azure Service Bus or Reverse Proxy is used, the URL can point at the URL of those components.

The URL address can be changed post-install via the registry or PowerShell.

Setting the Privilege Manager Server (TMS) Address via PowerShell

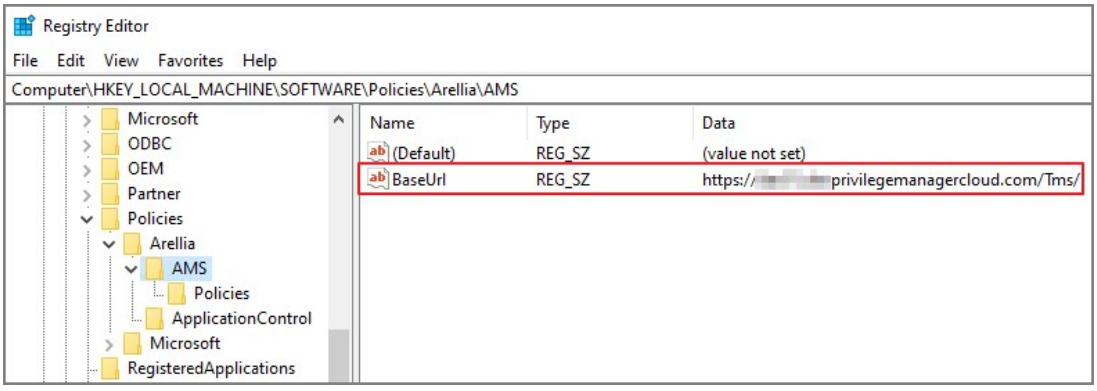
To set the Privilege Manager Server (TMS) address via PowerShell, run this command as Administrator:

```
C:\Program Files\Thycotic\Powershell\Arellia.Agent\SetAmsServer.ps1
```

The script will then ask you to type in the fully qualified domain name of the server.

Changing the Privilege Manager Server (TMS) Address via the Registry Editor

1. Open the Registry Editor (regedit)
2. Navigate to **HKEY_LOCAL_MACHINE | SOFTWARE | Policies | Arellia | AMS**.
3. Right click BaseUrl and select Modify.



4. In the Edit String dialog box, change the BaseURL to your TMS Address.
5. Close the registry.
6. Restart the Agent service.

Delinea

Privilege Manager agents are installed on endpoint machines to implement policies which are defined by the user (the Privilege Manager administrator) in the Privilege Manager console (the user interface of the Privilege Manager Server).

This article is about agent deployment to endpoints in Virtual Desktop Infrastructure (VDI) or other similar environments. It describes the different cases and options for deploying Privilege Manager agents to VDIs and discusses the pros and cons where relevant. It is expected to be read by a user who is the Privilege Manager administrator for the customer.

Installing the Privilege Manager agent is supported as part of a VDI image build. There are a few different ways to accomplish this, based on the (Privilege Manager) customer's environment and preferences. Discussion of the relevant issues and options is grouped in this article as follows:

Identifying Agents to The Console

The pertinent question here is: Do you (the user) plan to use (or are using) persistent virtual machines (VMs) or dynamic VMs? There are different implications for each of these, discussed below.

Persistent VMs

In a persistent VM, machines images are created, spun up, and then persist indefinitely. This case is fairly simple. We can treat these machines the same as we would physical machines except for concerns around the universally unique identifier (UUID), which will be discussed further on (in the section, "Multiple VMs Collapsed to a Single Resource").

Dynamic VMs

In a dynamic VM, a golden image is spun up each time a user requests it with their profile and it is then applied on top. This case is more complicated.

The major concern is agent spamming, which would happen as follows: the Privilege Manager console sees each new image as a new computer and rapidly runs through the customer's licenses, leaving a large number of orphan machines. There are a few different ways to deal with this situation, discussed in the sub-sections below.

Multiple VMs Collapsed to a Single Resource

The easiest way to support dynamic VMs is for you to collapse all of your VMs to a single computer resource on the console. This can be accomplished as follows:

1. Add a registry entry in HKLM\Software\Arellia\Agent called "AgentIdOverride."
2. Install the agent on a physical computer and allow it to register.
3. Next, in the Privilege Manager console:
    1. Navigate to Admin > Agents.
    2. Click on one of the charts to view a list of registered computers.
    3. Find the computer in the report and click on it. This will take you to the Resource View of that computer. The ID for this computer is the UUID displayed as the last part of the URL (after "/item/view/") in the browser address bar.
    4. Copy this ID value (the last part of the browser URL).
4. Place the copied ID value in the AgendIdOverride registry entry.

Alternatively, if you want multiple VDI images to which differing policy sets are applied, you could have different values. The rollup computers in the console could then be assigned to the appropriate resource targets.

The benefits of this approach are:

- It is by far the simplest to implement.
- It results in the fewest licensing issues.
- Moreover, because the resources are created ahead of time they can be inventoried and assigned to the appropriate resource targets. Consequently, a machine would get the appropriate policies as soon as it spins up with no need to wait for processes to run either on the

desktop or server.

The downside of this approach is:

- There would be some loss of fidelity in data on the console, specifically around which machine an event happened on. However, since virtual desktops are by nature transitory that may be less of a concern. Privilege Manager will still attach usernames to the event data so you will know "who" (the end user) if not necessarily "where" (the specific endpoint).

Pool of Values to Support Multiple VMs

If you wish to be more specific, the following technique could be used: create a pool of UUID values to be assigned to the AgentIDOverride and assign one from this pool when the machine spins up.

With this technique, as part of the VDI provisioning, Privilege Manager would trigger the basic inventory task to make sure that the server gets correct information on the machine name and details. You would want a pool of values rather than a random one to prevent spamming new agents. Reusing the values would keep that under control.

Managing Agent Trust and Certificates

This section discusses certificate management.

As of version 10.5, Privilege Manager validates agent certificates against the specific agent that was initially registered. There are two cases:

- All desktops using a single agentID: This case is fairly straightforward. A single certificate would be included as part of the desktop image which would match what was stored in the database for that ID and all of the communication would be accepted.
- A pool of IDs: In this case, there are two potential ways to do certificate management:
    - Method 1: Navigate to Admin > Configuration > Advanced; select the "Allow Agent Certificate Mismatch" option; turn on the option. (It is off by default.)
    - Method 2: Deploy the install code on machine imaging, as follows:
        - Add a registry entry in HKLM\Software\Arellia\Agent of type String and call it "InstallCode."
        - In the Privilege Manager console:
            - Navigate to Admin > Agents > "Installation Codes" tab.
            - Click "Copy" to copy the value displayed under Code.
        - Paste the copied value into the InstallCode registry entry.
        - Once this entry is set, then during the agent registration process, the agent sends this InstallCode up to the server along with whatever certificate it has. This overrides the database entry and allows that agent to communicate as long as it is up and running.

Minimizing Time Between VDI Deployment and Policy Enforcement

This section is about policy deployment.

In a non-VDI environment, when Privilege Manager deploys agents to desktops, there can be a significant delay between deployment and policy enforcement and it is not a concern because it is a one-time issue.

However, in the case of VDI, machines are created and recreated daily and this delay becomes a larger issue. In this case, you must make sure that the Client Items database, with the appropriate policies, is part of the initial desktop image. This file can be created in C:\ProgramData\Arellia\ClientItems and can be simply copied from a machine that has the agent deployed and all policies downloaded.

However, if any policy changes are made after image creation you would need to either update that file in the golden image or add a post-deployment step to run the Powershell script "C:\Program Files\Thycotic\Powershell\Arellia.Agent\UpdateClientItems.ps1" and trigger the virtual

desktop to download the latest policy items.

Licensing Concerns with Windows 10 Amazon Workspaces

This section discusses licensing concerns, specifically with Windows 10 Amazon Workspaces.

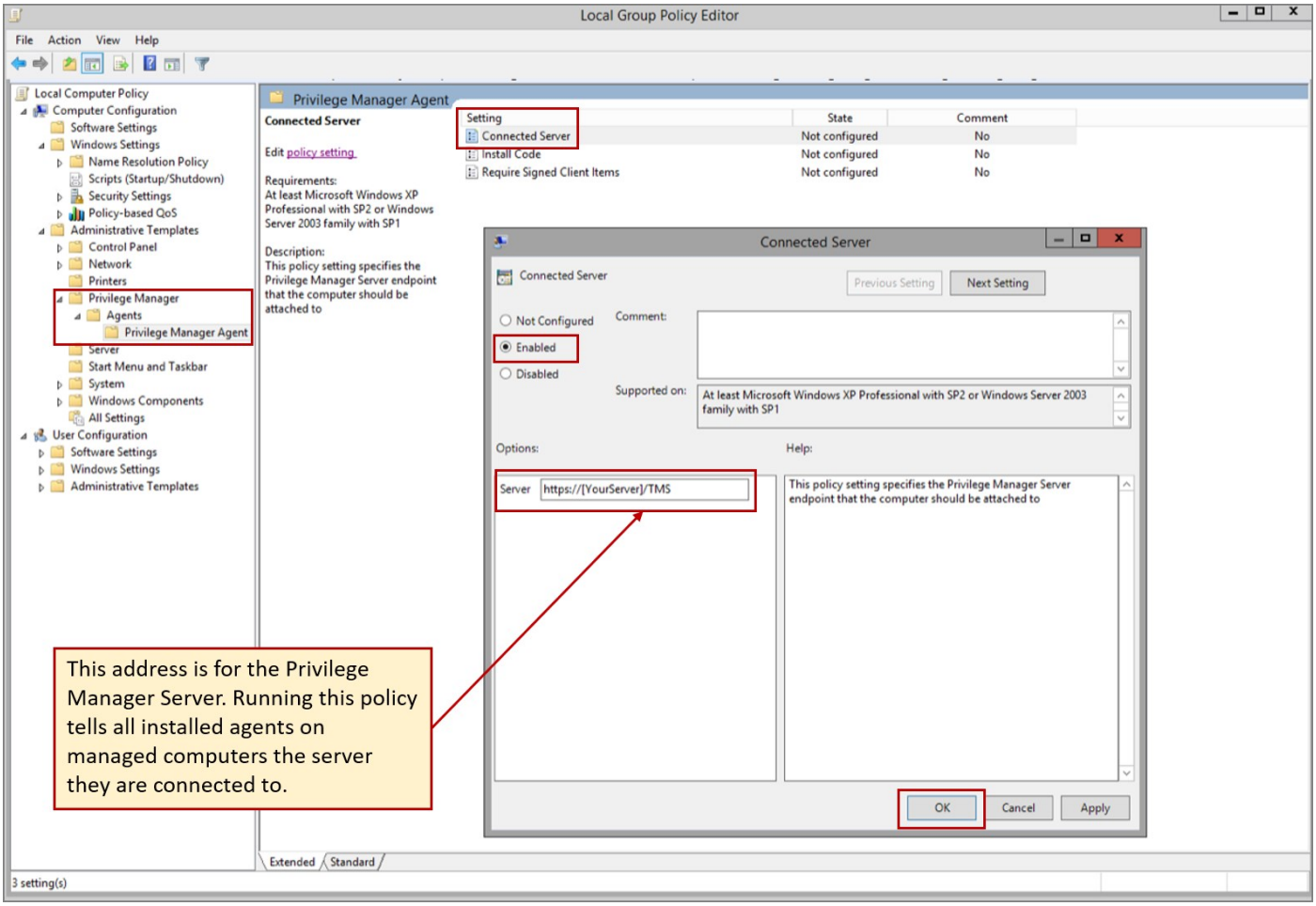
Although Amazon claims to offer a Windows 10 VDI environment, what they offer is not technically speaking Windows 10. Rather, what they provide is a Windows Server 2016 environment running what they call Windows 10 Experience.

This means that when Privilege Manager inventories it, the Privilege Manger agent believes that it is running on a server class OS. Therefore, from a licensing perspective, Amazon Workspaces need to be licensed as servers, rather than as clients.

Regardless of how you installed agents or rolled agents out to your network, Privilege Manager has a method to link those agents with Servers. Privilege Manager has templates (files) that enable you to point agents back to the Privilege Manager Server.

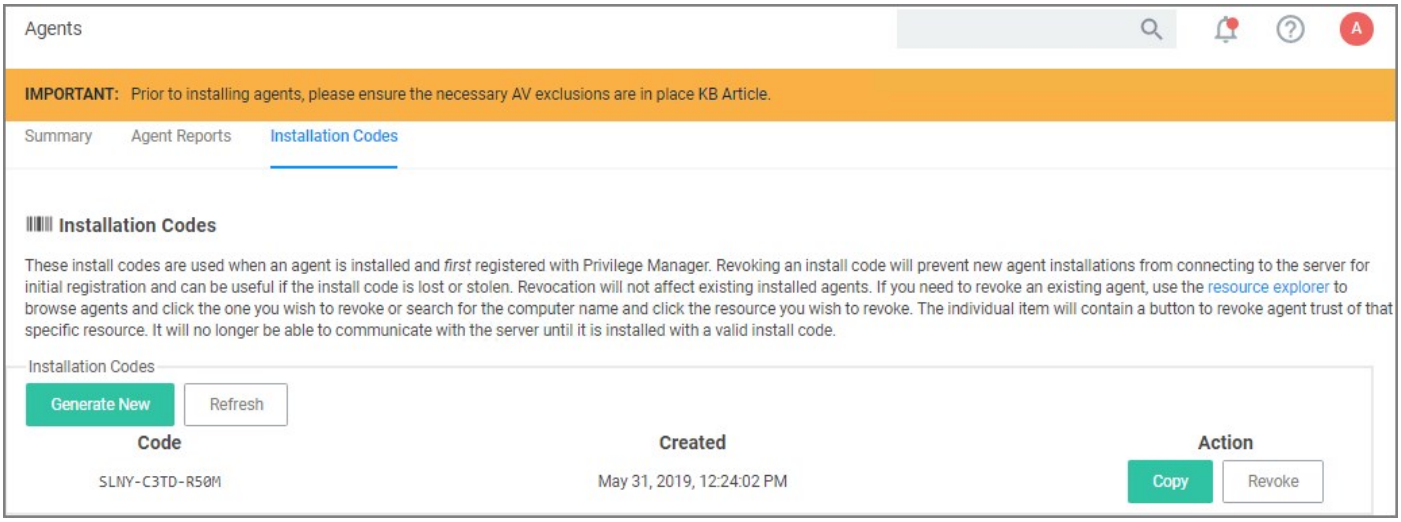
To perform this task, do the following steps:

1. Download the attached PrivilegeManagerAgent.admx and PrivilegeManagerAgent.adml zip folders and extract the corresponding files (one file from each zip folder).
2. Install the downloaded and extracted custom Privilege Manager Group Policy files either on a single machine or on a domain controller.
   - To install on a single machine:
     1. Copy PrivilegeManagerAgent.admx to %systemroot%\PolicyDefinitions
     2. Copy PrivilegeManagerAgent.adml to %systemroot%\PolicyDefinitions\en-US
   - To install on a Domain Controller effectively making the custom GPO available to all Domain Administrators:
     1. Copy PrivilegeManagerAgent.admx to %systemroot%\SYSVOL\domain\Policies\PolicyDefinitions
     2. Copy PrivilegeManagerAgent.adml to %systemroot%\SYSVOL\domain\Policies\PolicyDefinitions\en-US
3. From the Group Policy Management Editor, navigate to Policies.
4. Go to Administrative Templates > Privilege Manager > Agents > Privilege Manager Agent and click Connected Server.

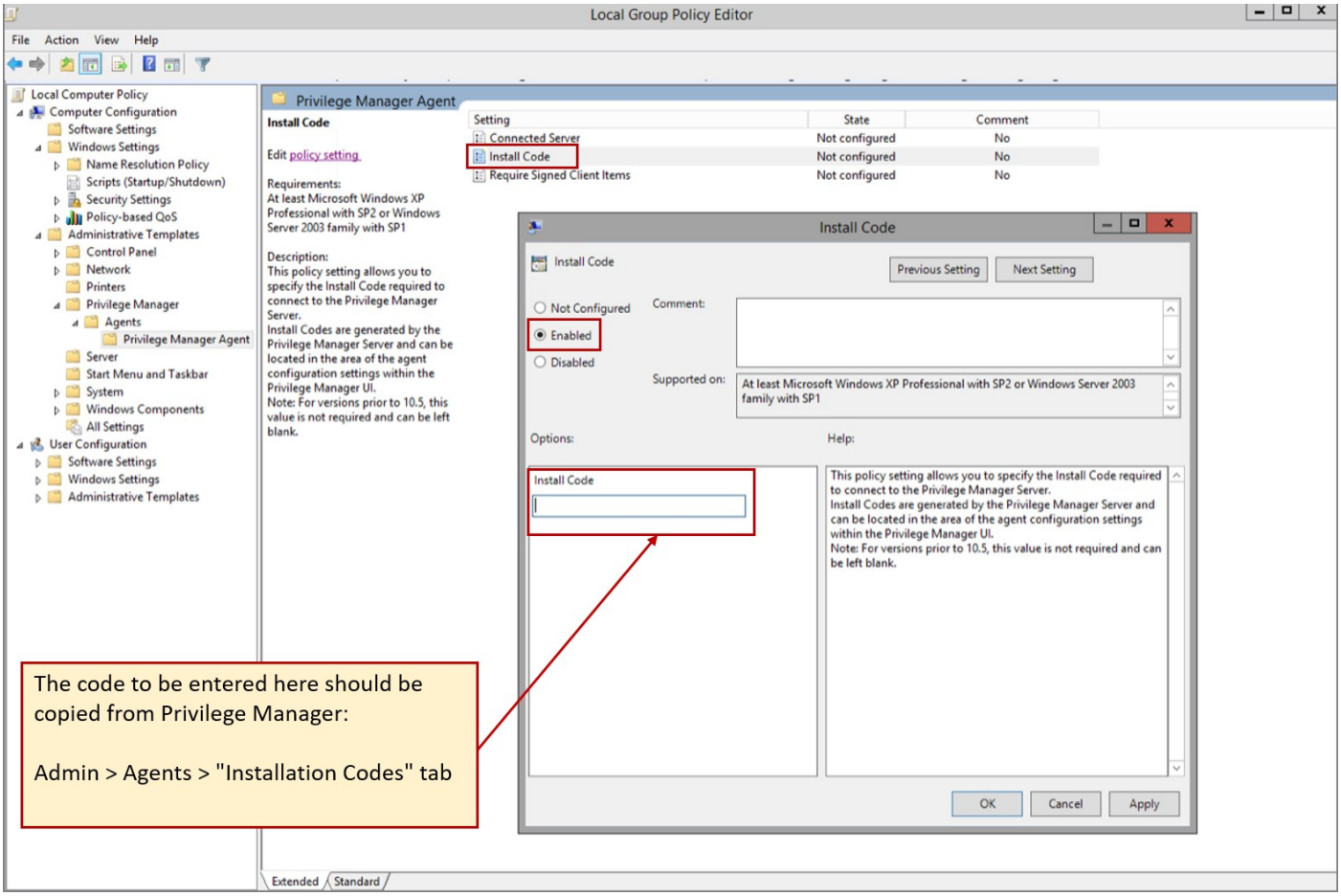


5. In the Connected Server window click **Enabled**.

6. In the Server field, **enter** the **URL** for your Privilege Manager Server, click **OK**.
7. Now you need to copy some data from Privilege Manager . In Privilege Manager , navigate to **Admin I Agents I Installation Codes** tab.



8. Copy the **Code** value by clicking **Copy**.
9. Switch back to the Group Policy Editor, in the Privilege Manager Agent window, click Install Code.



1. In the Install Code window, click **Enabled**.
2. In the Install Code field, paste the Code value you copied from Installation Codes tab in Privilege Manager .
3. Click **OK**.

10. Set the Client Item Signature Validation. By default, Privilege Manager validates only client items that have a signature present. If you want to require that all client items have a valid signature, then configure the group policy settings to enforce the **Require Signed Client Items** setting.

Un-Installing Old Templates

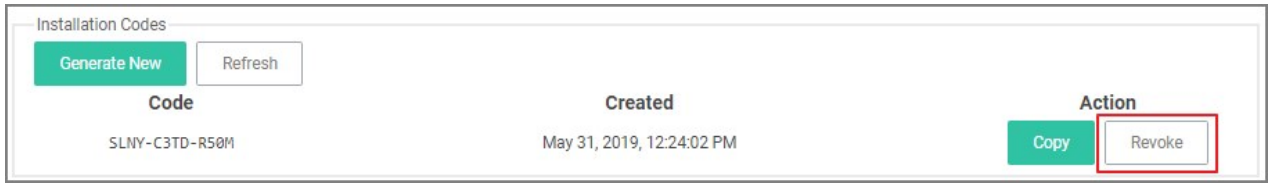
If you had previously downloaded and installed files which had the names "AMSAgent.admx" and "AMSAgent.adml", these should be removed. Do so as follows:

- To un-install from a single machine:
  1. Delete AMSAgent.admx from %systemroot%\PolicyDefinitions
  2. Delete AMSAgent.adml from %systemroot%\PolicyDefinitions\en-US
- To un-install from a Domain Controller:
  1. Delete AMSAgent.admx from %systemroot%\SYSVOL\domain\Policies\PolicyDefinitions
  2. Delete AMSAgent.adml from %systemroot%\SYSVOL\domain\Policies\PolicyDefinitions\en-US

With Privilege Manager 10.5 and up, you can revoke an agent trust relationship.

Revoking the Trust from the Server

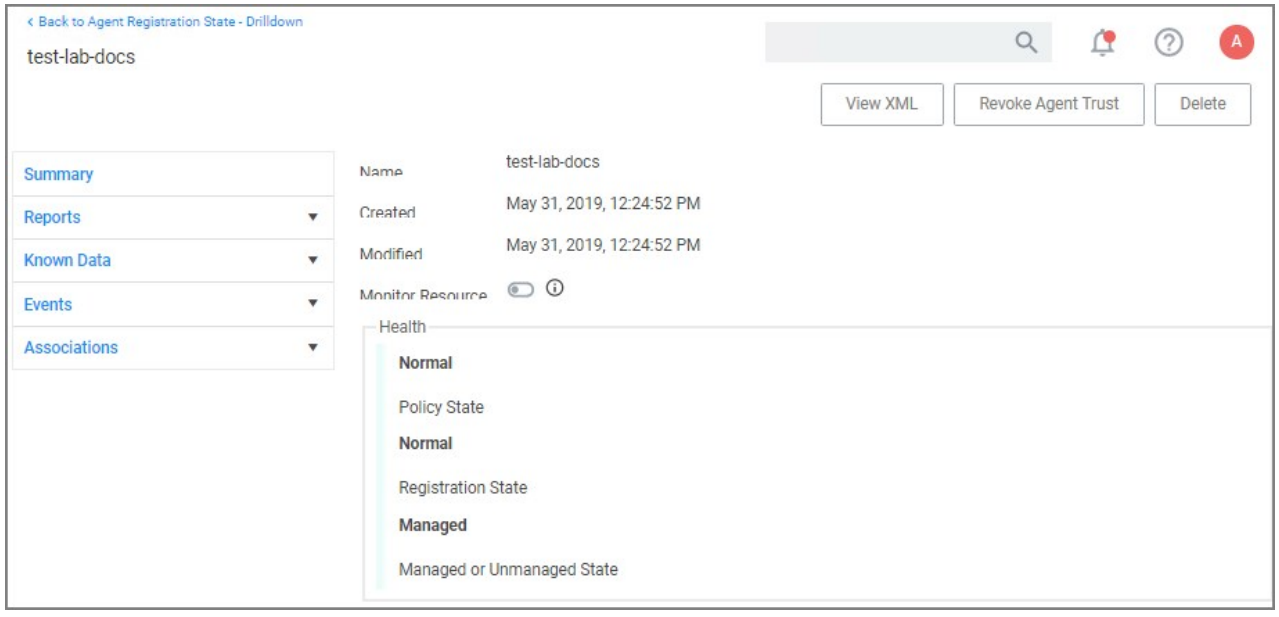
1. Navigate to the Agent Install Code's page and click **Remove Agent Trust**.



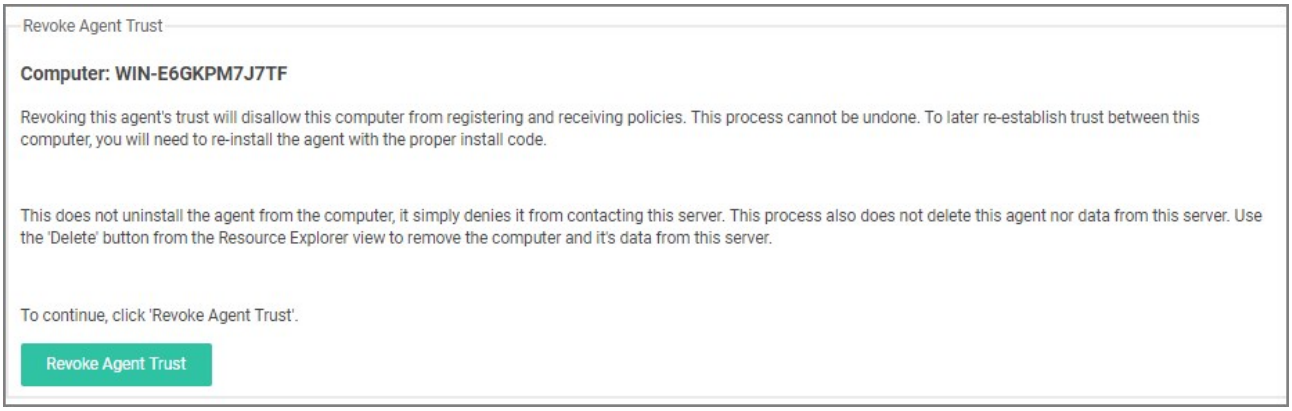
2. Click **OK** to confirm.

Revoking the Trust for the Computer Resource

1. Navigate to **Admin I Agents** to open the Agents Summary page.
2. Select an Operating System group from list.
3. On the Managed Computers by Operating System page, select one of the computer resources.



4. Click **Revoke Agent Trust**.



5. Confirm by clicking **Revoke Agent Trust**.

Message on the Revoke Agent Trust dialog:

"Revoking this agent's trust will disallow this computer from registering and receiving policies. This process cannot be undone. To later re-establish trust between this computer, you will need to re-install the agent with the proper install code.

This does not uninstall the agent from the computer, it simply denies it from contacting this server. This process also does not delete this agent nor its data from this server. Use the 'Delete' button from the Resource Explorer view to remove the computer and it's data from this server."

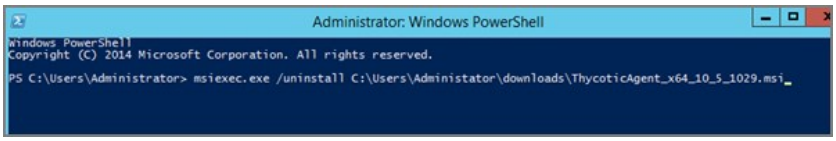
This topic covers uninstalling an agent when the endpoint is not going to be upgraded to a new version of Privilege Manager agents anymore.

If you're trying to uninstall an old agent in order to install a newer version of the agent, use the Upgrade Products/Feature link under the Setup page.

Using a PowerShell Script to Uninstall an Agent

1. Navigate to the machine(s) where the agent is located.
2. Right-click on **Windows Powershell** and **Run as administrator**.
3. Run the following command:

   ```
   msiexec.exe /x ThycoticAgent_x64_VERSION.msi /qn
   ```

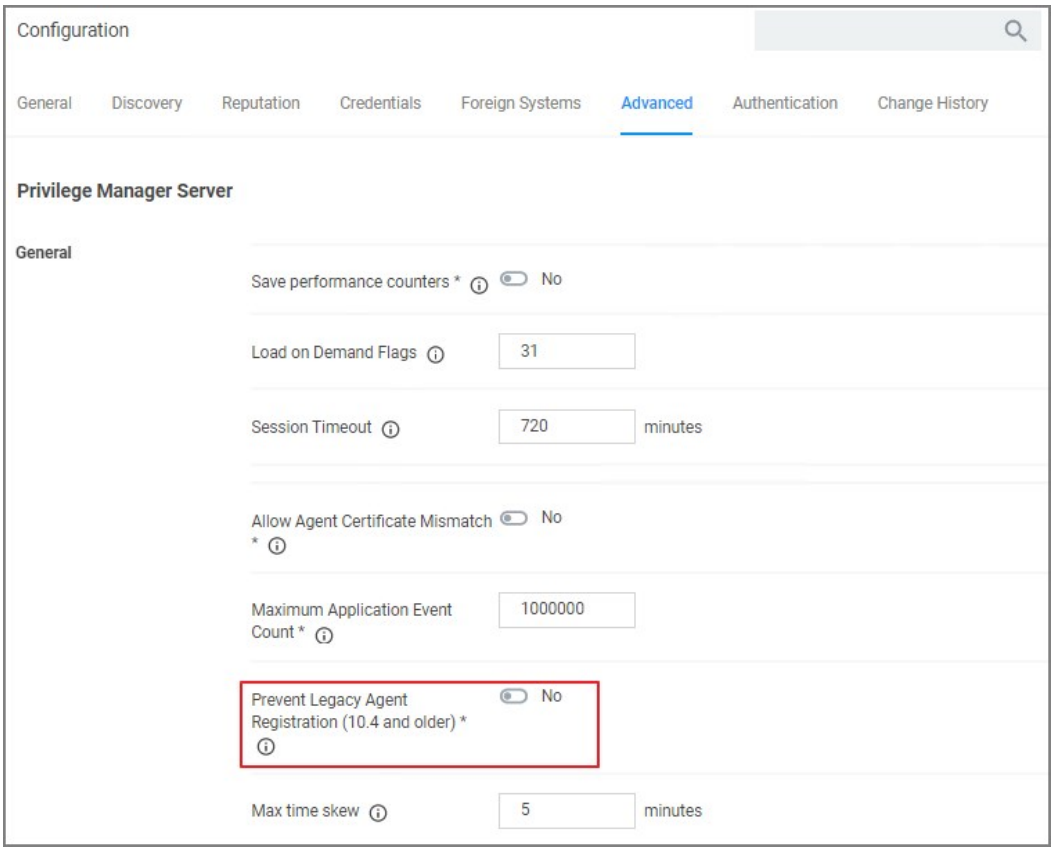
   

4. On the prompt, click **Yes**.

Starting in Privilege Manager version 10.5 and up, due to security updates you can now prevent services from using agents versions 10.4 and earlier from communicating with the Privilege Manager server.

Resolve

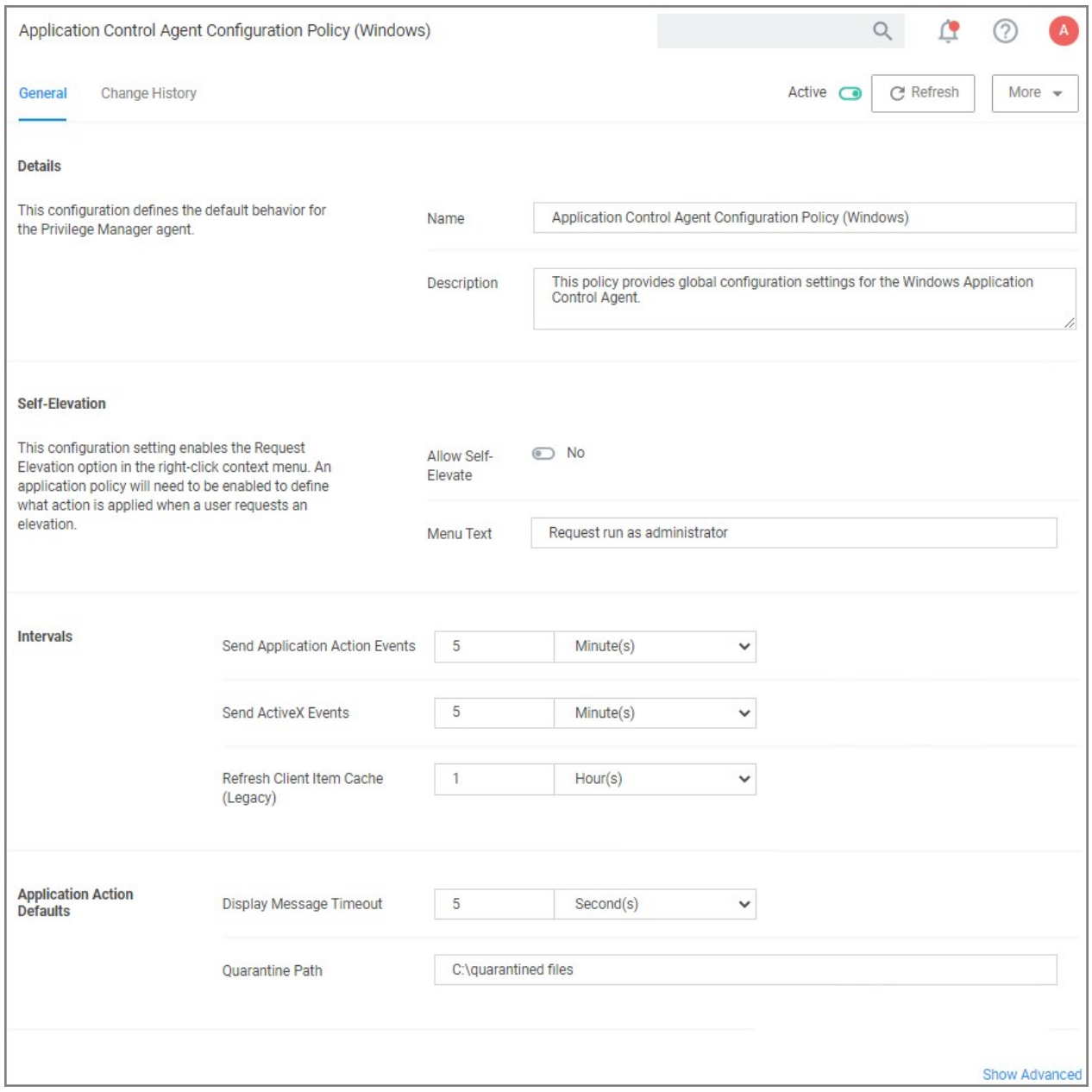
1. Launch Privilege Manager .
2. Navigate to **Admin** | **Configuration**.
3. Click the **Advanced** tab.
4. Set the **Prevent Legacy Agent Registration (10.4 and older)** to **Yes**.



5. Click **Save Changes**.

You need to set Privilege Manager Agent configuration options to readily test configuration changes in a test environment. The agent configurations outlined in this page allow for accelerated feedback when testing use cases.

1. Under your Computer Group select **Agent Configuration**.



2. Under Self-Elevation, set the Request Elevation option. For this an application policy needs to be enabled to define what action is applied when a user requests an elevation. Enter the text for the message in the text field.
3. Under Intervals, adjust the values to receive quicker turnarounds on any tests run on a test instance.
    1. Set Sent Application Action events every to 1 Minutes.

2. Set Send ActiveX events every 5 Minutes.
3. Set Refresh Client Items cache every 5 Minutes.

4. Set the **Application Action Defaults**, like the Display Message Timeout and Quarantine Path.
5. Keep the advanced settings as is (Delinea recommends to only change the advanced settings after consulting via Professional Service engagement.)
6. Click **Save Changes**.

Certain Privilege Manager tasks are directly related to agent processes and their operational loads.

Server side tasks, also known as Remote Client Scheduled Commands do not require a policy. Agent tasks require a policy. These types of tasks are with the exception of one, by default enabled and run on a scheduled basis. Most are read-only system tasks, that can be copied, renamed, and then customized.

The majority will run for the first time after system initialization.

Windows Remote Client Scheduled Commands

Restrict Account Permissions on Agent Services (Windows)	Instructs computers to only allow the specified users to start and stop the Delinea services.	n/a	No
Basic Inventory (Initial, Windows)	Instructs computers to report the Win32_ComputerSystem, Win32_ComputerSystemProduct and Win32_OperatingSystem WMI classes to the server.	daily	Yes
Basic Inventory (Windows)	Instructs computers to report the Win32_ComputerSystem, Win32_ComputerSystemProduct and Win32_OperatingSystem WMI classes to the server.	daily	Yes
Cleanup Agent Inventory Transfers (Windows)	Completes and cleans BITS transfers and temporary files used by the TMS Agent Inventory Helper.	daily	Yes
Cleanup sent Privilege Manager Events (Windows)	Purges Agent events that have been successfully transmitted from managed endpoints to reclaim disk space.	daily	Yes
Configure Privilege Manager Remove Programs	Configure the Privilege Manager Remove Programs behavior.	daily	Yes
Default File Inventory Policy (Windows)	The purpose of this policy is to inventory software programs running on the managed computer.	weekly	Yes
Deploy File Hash Exclusion Setting (Windows)	The purpose of this policy is to provide the ability to exclude certain file extensions from the hash process.	daily	No
Ensure UAC Override Setting (Windows)	Ensures that the UAC Override Registry Key is set.	daily	Yes
Local User Inventory Policy	The purpose of this policy is to inventory Local User account, groups and group membership on the client. This policy can also be used to inventory for specific account privileges.	weekly	Yes
Perform Resource Discovery (Windows)	Schedule on which agents will check with server to determine if any local resources require discovery.	daily	Yes
Retry errored TMS Events (Windows)	Scan Agent queue for any events that require retransmission.	daily	Yes

Scheduled Check Pending Client Tasks - Internet Clients (Windows)	Initiate a check for pending client tasks. Used by agents that are unable to receive an incoming connection from the server.	daily	Yes
Scheduled Registration - Internet Clients (Windows)	Initiate agent registration with server less frequently than internal clients.	daily	Yes
Scheduled Registration (Windows)	Initiate agent registration with server.	daily	Yes
Update Agent Commands (Windows)	Instructs Agent to update any agent commands if required.	daily	Yes
Update Applicable Policies - Internet Clients (Windows)	Instructs Agent to check with server for policy changes.	daily	Yes
Update Applicable Policies (Windows)	Instructs Agent to check with server for policy changes.	daily	Yes
Update Provisioned Resource Client Items (Windows)		daily	Yes
User Logon Inventory Policy	Updates user logon data on the given schedule.	weekly	Yes
Windows Service Inventory Policy	The purpose of this policy is to inventory Windows Services on the client.	weekly	Yes

MacOS Remote Client Scheduled Commands

Basic Inventory (Initial, Mac OS)	This scheduled task triggers the Agent to send Mac OS basic inventory.	daily	Yes
Basic Inventory (Mac OS)	This scheduled task triggers the Agent to send Mac OS basic inventory.	daily	Yes
Cleanup sent Privilege Manager Events (Mac OS)	Purges Agent events that have been successfully transmitted from managed endpoints to reclaim disk space.	daily	Yes
Default File Inventory Policy (MacOS)	The purpose of this policy is to inventory software programs running on the managed computer.	weekly	Yes
Ignore macOS Catalina software update (Mac OS)	The purpose of this policy is to provide a way in Privilege Manager to ignore macOS updates.	daily	no
Local User Inventory Policy (MacOS)	The purpose of this policy is to inventory Local User account, groups and group membership on the client. This policy can also be used to inventory for specific account privileges.	weekly	Yes
Perform Resource Discovery (Mac OS)]	Schedule on which agents will check with server to determine if any local resources require discovery.	daily	Yes

Reset ignored macOS software updates (Mac OS)	The purpose of this policy is to provide a way in Privilege Manager to reset ignored macOS updates.	daily	No
Retry errored TMS Events (Mac OS)	Scan Agent queue for any events that require retransmission.	daily	Yes
Scheduled Registration (Mac OS)	When this policy is triggered the Agent will attempt (or re-attempt) to register with the server.	daily	Yes
Update Agent Commands (Mac OS)	When this policy is triggered the Agent will update agent command items.	daily	Yes
Update Applicable Policies (Mac OS)	When this policy is triggered the Agent will check the server for updated policies.	daily	Yes
Update Provisioned Resource Client Items (MacOS)		daily	Yes

Unix/Linux Remote Client Scheduled Commands

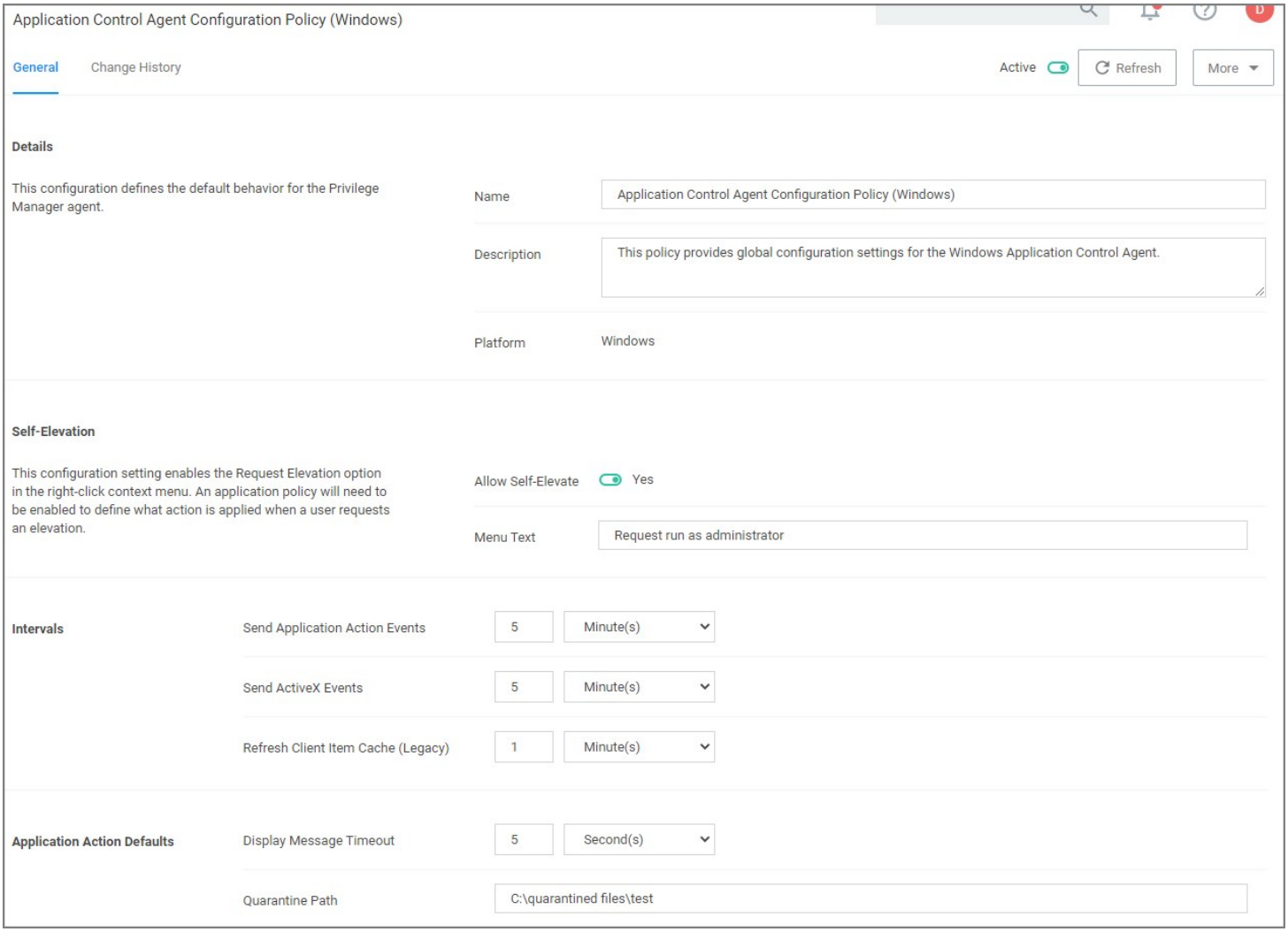
Basic Inventory (Initial, Unix/Linux)	This scheduled task triggers the Agent to send initial Unix/Linux basic inventory.	daily	Yes
Basic Inventory (Unix/Linux)	This scheduled task triggers the Agent to send Unix/Linux basic inventory.	daily	Yes
Remove Successful Agent Events (Unix/Linux)	This command will remove agent events that have been successfully uploaded to Privilege Manager .	daily	Yes
Scheduled Registration (Unix/Linux)	This agent-scheduled task refreshes registration data for the assigned agents.	daily	Yes
Update Applicable Policies (Unix/Linux)	This remote-scheduled command will update policies applicable to the assigned agents.	daily	Yes

This section of the Privilege Manager documentation covers information and step procedures pertaining to Privilege Manager agents installed on Windows systems.

The following topics are available:

Agent Configuration

Under each Windows Computer Group administrators can specify global application control agent settings for the specific Computer Group.



- Details: This section contains the policy details such as name, description, and platform information.
- Self-Elevation: This section provides a configuration option to enable the Request Elevation option in the right-click context menu. An application policy will need to be enabled to define what action is applied when a user requests an elevation. The menu text can be customized via the Menu Text field.
  - Default: Request run as administrator
- Intervals: This section provides a configuration option to customize the intervals at which the agent will send application action events, ActiveX events and refreshes the client item cache (this is a legacy items for agent version prior to 10.7.0).
  - Defaults:
    - Send Application Action Events: 5 Minutes
    - Sent ActiveX Events: 5 Minutes
    - Refresh Client Item Cache (Legacy): 1 Minute
- Application Action Defaults: This section provides the option to set the display message timeout and the quarantine path.
  - Defaults:
    - Display Message Timeout: 5 Seconds
    - Quarantine Path: C:\quarantined files\test

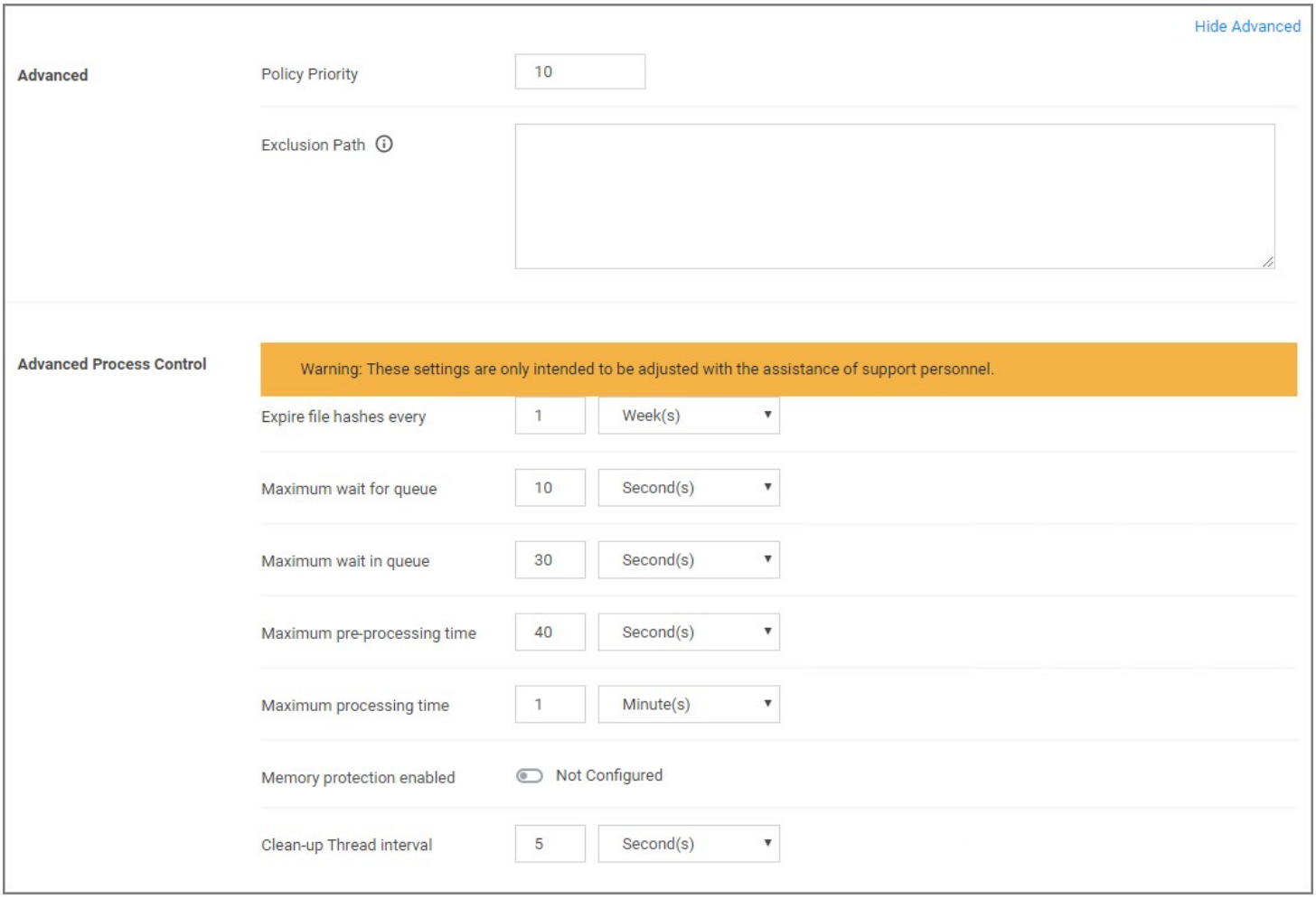
Advanced Settings

At the bottom of the page is a **Show Advanced** link.

Settings to configure:

- **Policy Priority**, this priority is specific to the Agent configuration policy.
- **Exclusion Path**, these are Global Application policy path exclusions. The setting takes the user path for each exclusion on a separate line.

Settings under **Advanced Process Control** should only be adjusted with assistance of support personnel and prior discussion of necessity for the environment.



Exclusion Path

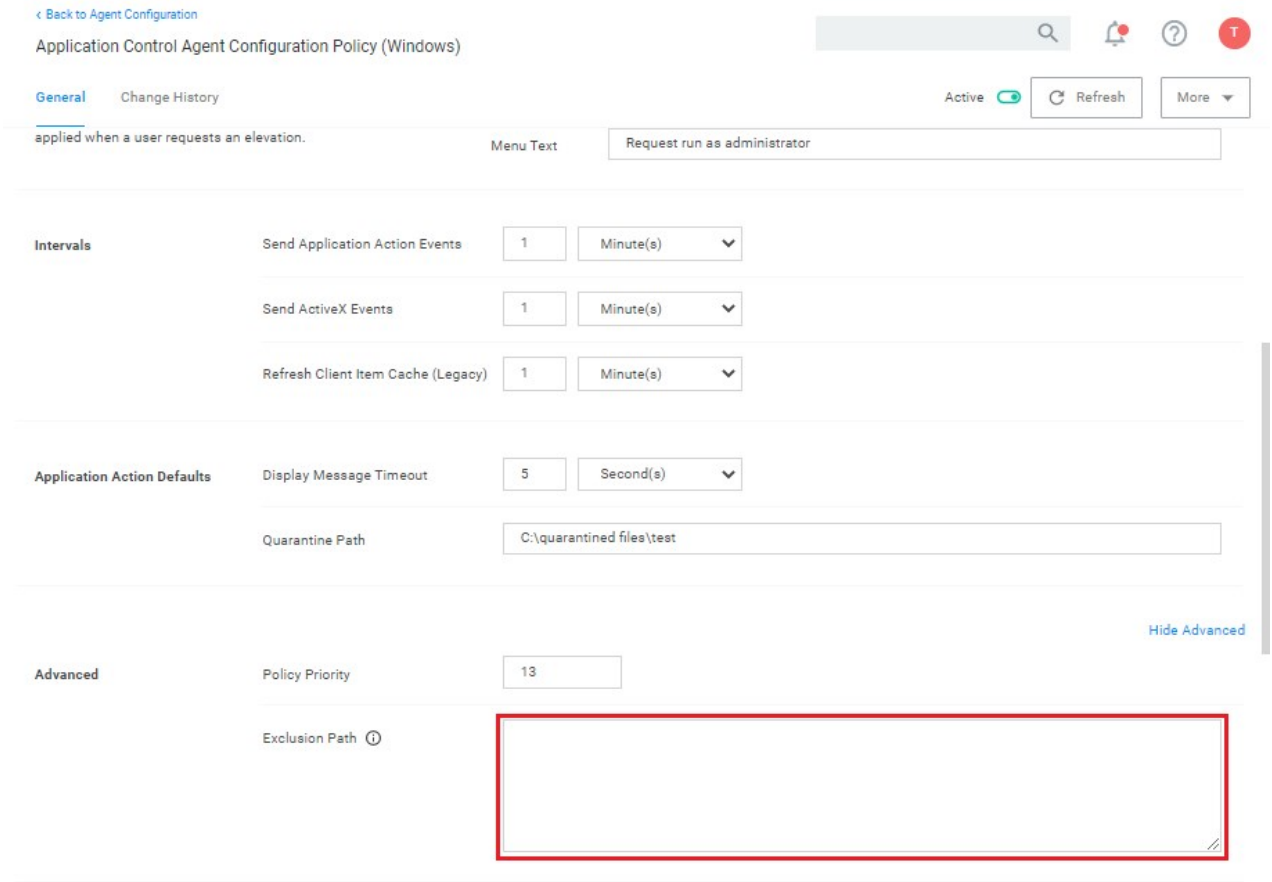
The Agent Configuration policy can be customized to exclude specified folder paths from all application control policy processing.

All application launched from the specified paths will no be processed via the Privilege Manager agent, which allows for minimal interruption and maximum performance.

Any log entries are executed asynchronously without any impact on processing.

To add exclusion paths to the Agent Configuration policy in the **General Settings**:

1. Navigate to your Computer Group and select **Agent Configuration**.
2. Select the **Application Control Agent Configuration Policy (Windows)** policy.
3. To access advanced settings, click **Show Advanced**.
4. In the **Exclusion Path** field, specify the path exclusions for the application control agent. Separate each path by a new line.

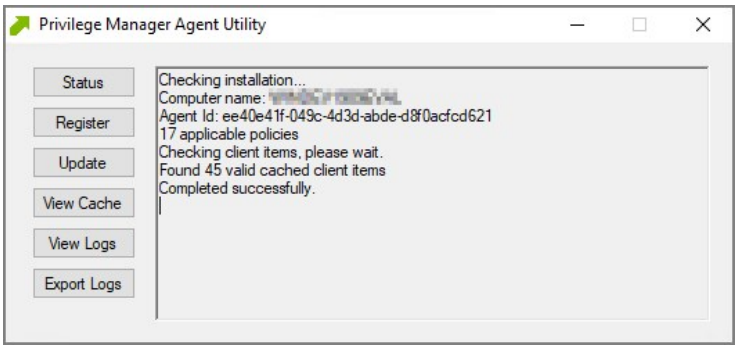


Verification

At the endpoint use the Agent Utility to make sure the policies are updated. Launch the application you specified in the exclusion, for out example *notepad.exe* and verify that the Agent Utility logs contain a message like this:

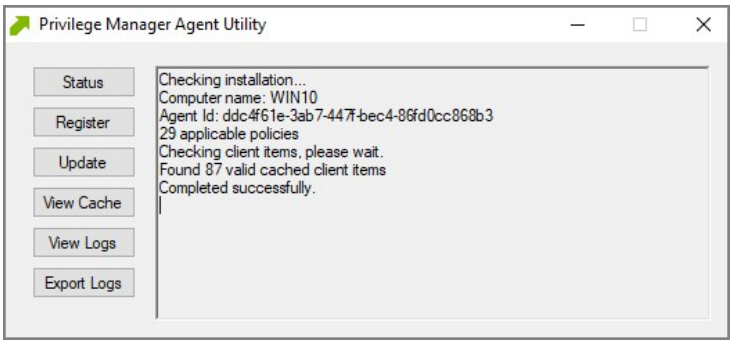
```
Ignoring process 11452 (C:\Windows\System32\notepad.exe) exclusion: c:\windows\system32\notepad.exe
```

Most endpoint troubleshooting will begin with the agent. There is an Agent Utility that is installed with the agent, used to troubleshoot issues from the endpoint. To open the utility, navigate to the C:\Program Files\Thycotic\Agents\Agent folder on the endpoint, and run the **Agent Utility.exe** application. That will launch the utility, and it will look like the screenshot below.



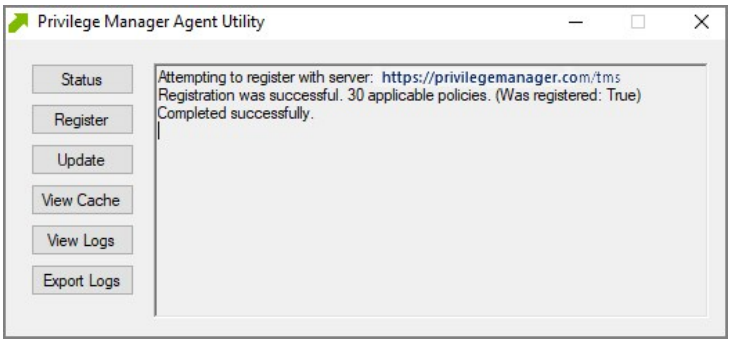
Status Button

The Status button will check that the endpoint can communicate with the server and will show you helpful information (such as the Agent ID and how many policies the machine has) and will validate the client items cache. It is also helpful in determining if there are any communication issues between the endpoint and the web server. Below is a screenshot of the information shown after clicking on the Status button.



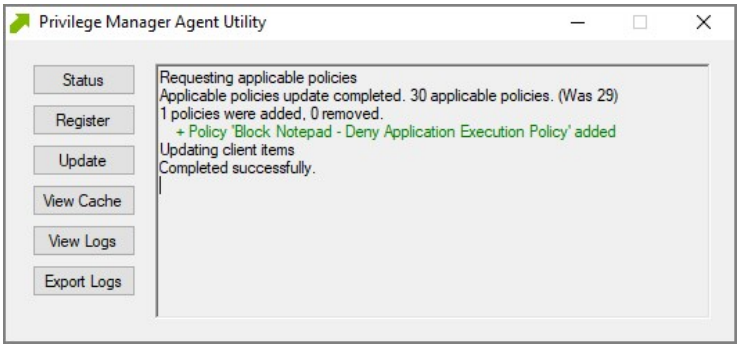
Register Button

The Register button will attempt to register the agent machine with the web console. It will show you the URL that the machine is using to communicate with the console. It will also give errors if there are issues with that communication. If you have just installed an agent on the machine, then it will also give information about the install code if there are any errors with that.



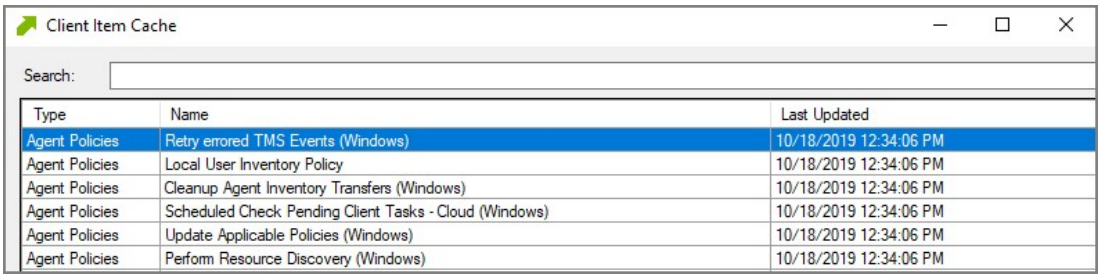
Update Button

The Update button will communicate back to the web server and update any new applicable policies or changes to current policies, filters, actions, etc. the endpoint already has on it.



View Cache Button

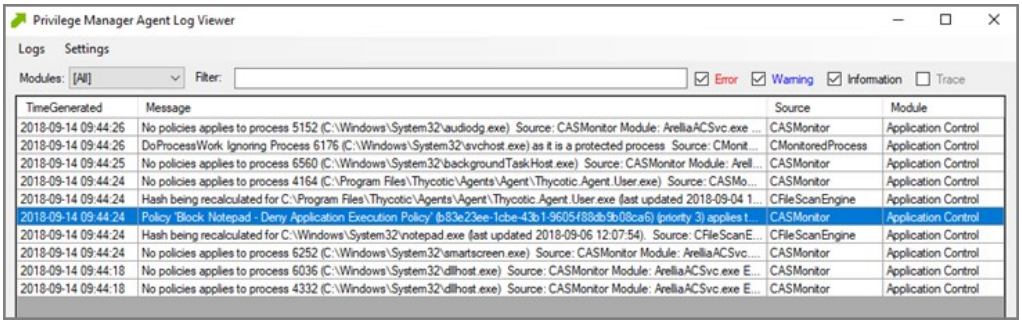
The View Cache button will open the Agent Cache Viewer in a separate window. It displays the Policies, Filters, and Actions the endpoint has cached currently.



Starting with Privilege Manager version 10.7 the Client Item Cache is list also searchable. Enter a search term into the search bar and just review items that contain that term.

View Logs

Clicking on the View Logs button will open the Agent Log Viewer in a separate window. The screenshot below shows what the log viewer looks like.



Export Logs Button

Clicking on the Export Logs button will allow you to save the agent logs so that you can send them to someone if needed. They will be saved in the .evtx format so they can be opened with Event Viewer in Windows. Anytime there are issues with policies on endpoints and you need additional assistance, you will need to collect the agent logs first to help with determining what is causing the issue.

Agents Troubleshooting

The following topics for agents troubleshooting are available in this section:

- Advanced Messages not working for child processes of Microsoft Edge
- Agent Registration Error Following an OS Upgrade
- Running updateclientitems.ps1 on an Agent triggers an error
- Client Item List Downloads

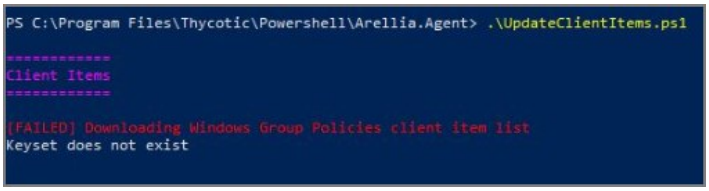
The following topics about Endpoint Troubleshooting are available:

- Endpoint Troubleshooting
- Catalina FileSystemWatcher Issue
- How to Recover an Unresponsive macOS Endpoint

Agent updateclientitems.ps1 Error

While running the updateclientitems.ps1 powershell script on a machine, you receive the following error:

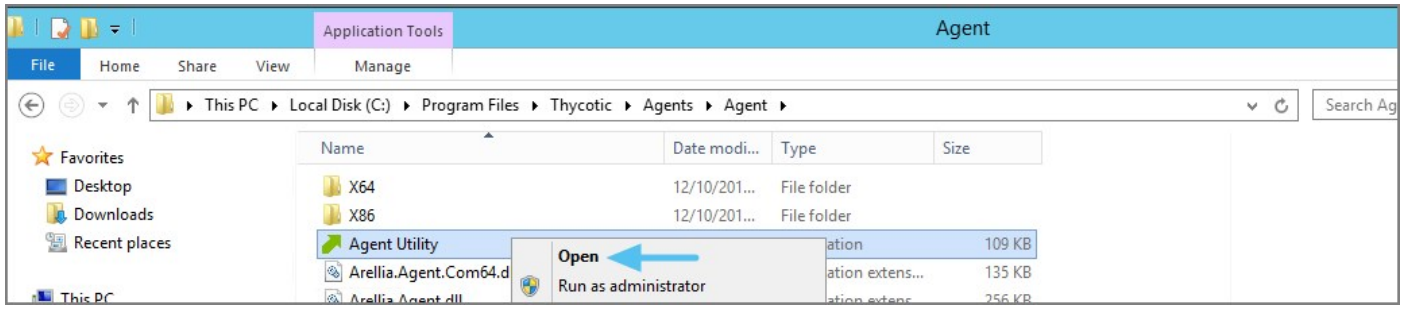
"KeySet does not exist"



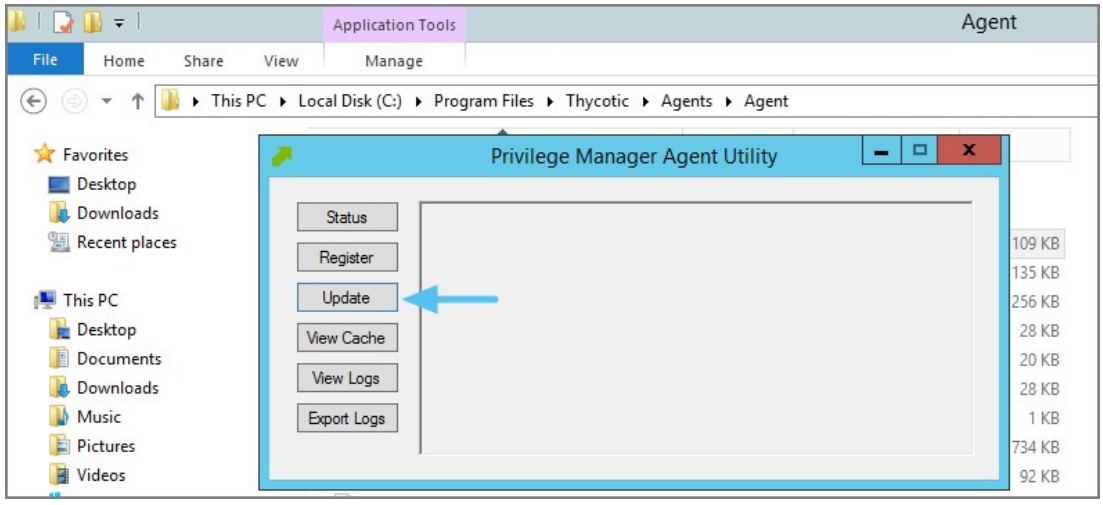
Note: The best practice to updating policies on machines would be to run the Agent Utility versus the PowerShell script. If you are still receiving the same error when using the Update button on the Agent Utility, open up a support case and include a screenshot of the error in the Agent Utility along with the agent logs.

1. Navigate to the Machine(s) where you want to update the policy and open the Agent Utility.

   C:\Program Files\Thycotic\Agents\Agent

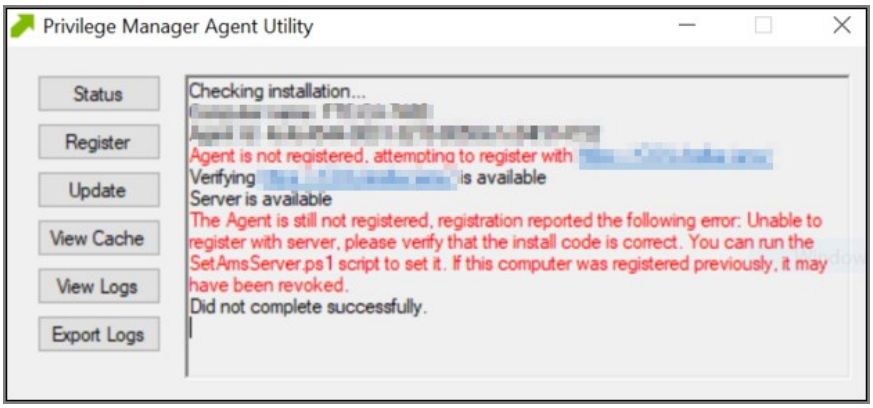


2. Select **Update**.



Agent Registration Issue

After upgrading, you encounter the following issue with the Agent utility after selecting "Register".



This can be caused by a Windows OS upgrade due to either a new version or build. The certificate changes and the agent will need to be re-configured for the new certificate.

Detailed Information

A. Uninstall and reinstall the agent on the machine.

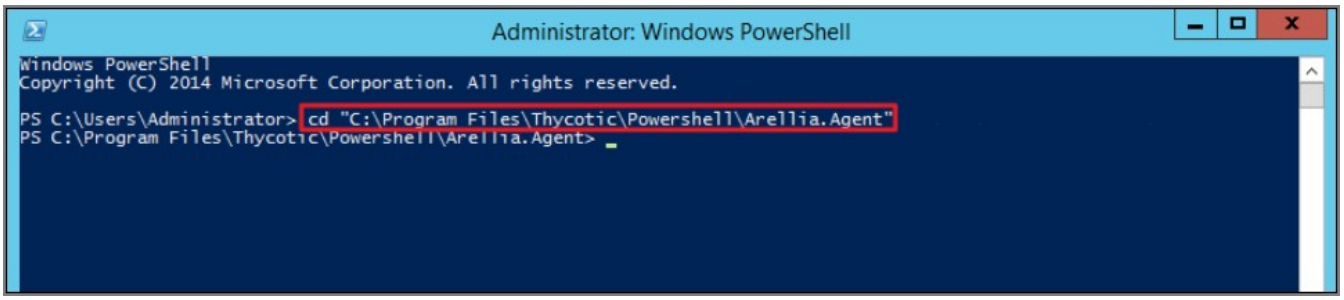
Or

B. Run the following PowerShell scripts to re-configure the agent.

Using a PowerShell Script

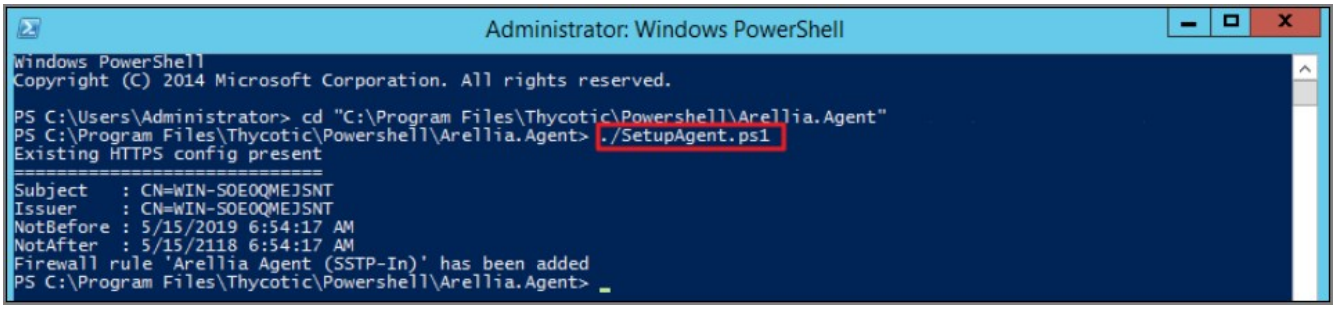
1. Right-click on **Windows Powershell** and **Run as Administrator**.
2. Enter in the following command:

   cd “C:\Program Files\Thycotic\Powershell\Arellia.Agent”

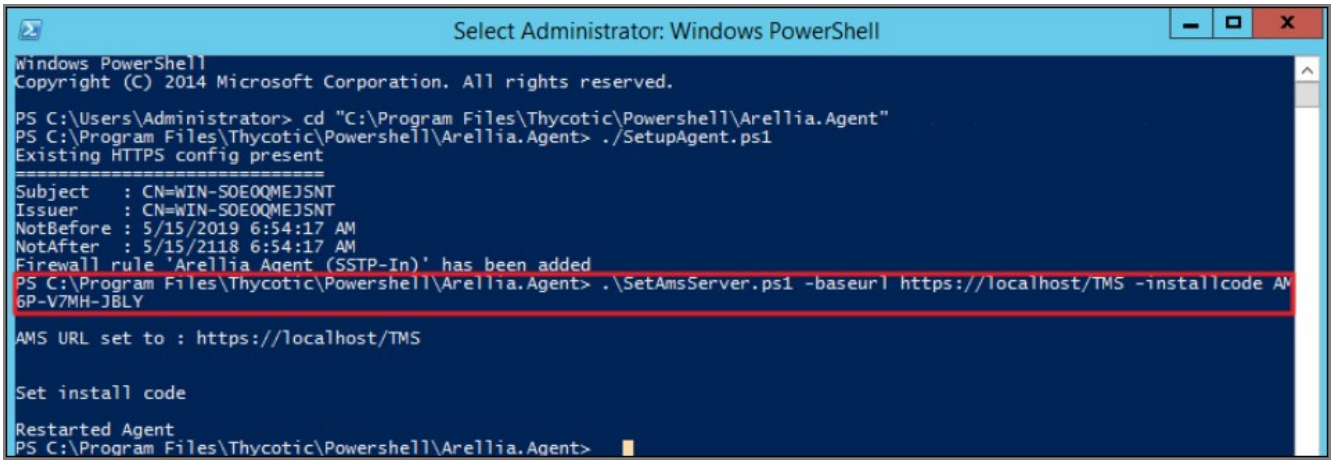
3. Enter in the following command:

   .\SetupAgent.ps1



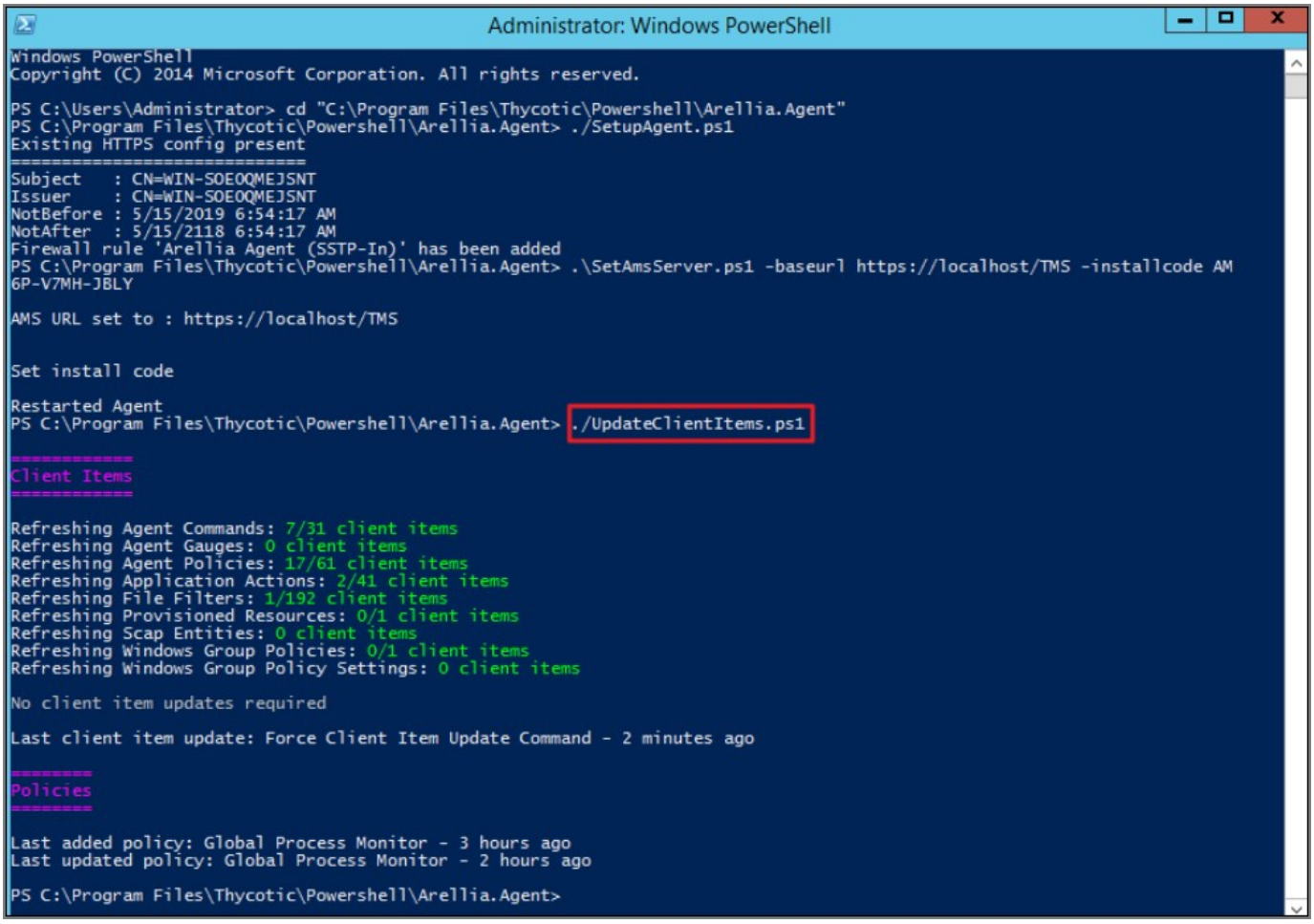
4. Enter in the following command:

   .\SetAmsServer.ps1 -baseurl https://servername/TMS -installcode ????-????-????



5. Enter in the following command:

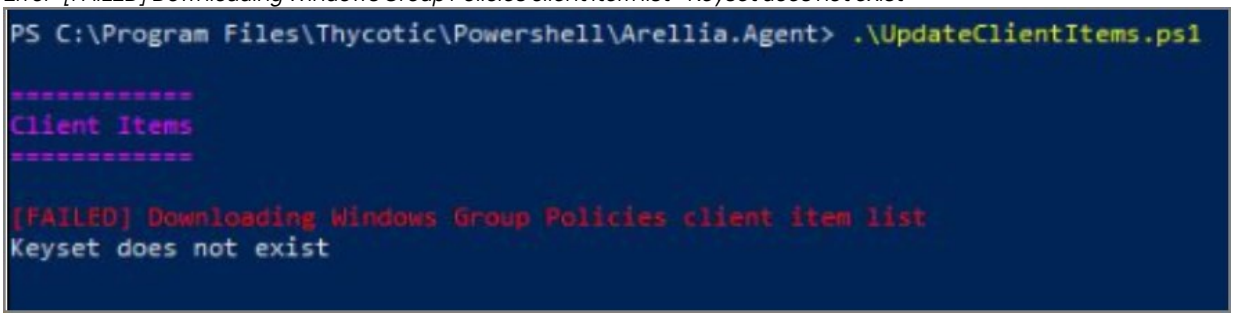
   .\UpdateClientItems.ps1


Administrator: Windows PowerShell
Windows PowerShell
Copyright (C) 2014 Microsoft Corporation. All rights reserved.
PS C:\Users\Administrator> cd "C:\Program Files\Thycotic\Powershell\Arellia.Agent"
PS C:\Program Files\Thycotic\Powershell\Arellia.Agent> ./SetupAgent.ps1
Existing HTTPS config present
Subject : CN=WIN-SOE0QMEJSNT
Issuer : CN=WIN-SOE0QMEJSNT
NotBefore : 5/15/2019 6:54:17 AM
NotAfter : 5/15/2118 6:54:17 AM
Firewall rule 'Arellia Agent (SSTP-In)' has been added
PS C:\Program Files\Thycotic\Powershell\Arellia.Agent> .\SetAmsServer.ps1 -baseurl https://localhost/TMS -installcode AM
6P-V7MH-JBLY
AMS URL set to : https://localhost/TMS
Set install code
Restarted Agent
PS C:\Program Files\Thycotic\Powershell\Arellia.Agent> ./UpdateClientItems.ps1
Client Items
Refreshing Agent Commands: 7/31 client items
Refreshing Agent Gauges: 0 client items
Refreshing Agent Policies: 17/61 client items
Refreshing Application Actions: 2/41 client items
Refreshing File Filters: 1/192 client items
Refreshing Provisioned Resources: 0/1 client items
Refreshing Scap Entities: 0 client items
Refreshing Windows Group Policies: 0/1 client items
Refreshing Windows Group Policy Settings: 0 client items
No client item updates required
Last client item update: Force Client Item Update Command - 2 minutes ago
Policies
Last added policy: Global Process Monitor - 3 hours ago
Last updated policy: Global Process Monitor - 2 hours ago
PS C:\Program Files\Thycotic\Powershell\Arellia.Agent>

Client Item List Downloads

When you run the UpdateClientItems.ps1 PowerShell script to update policies on a machine you see errors below:

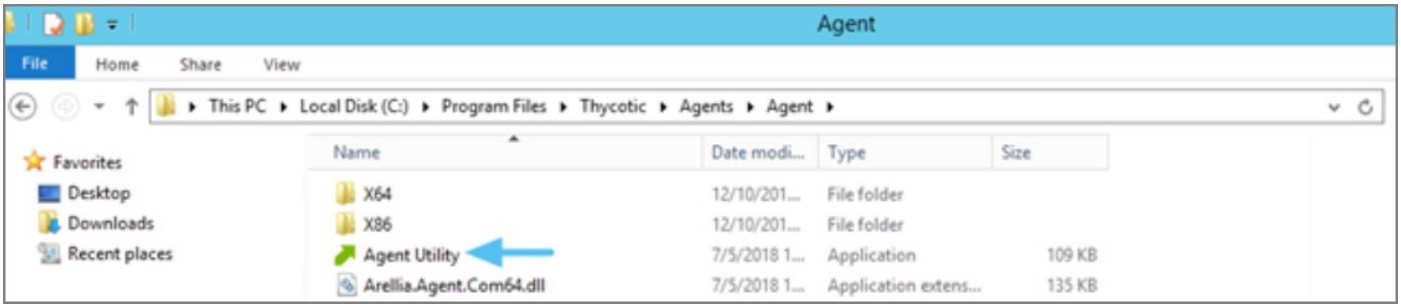
Error: [FAILED] Downloading Windows Group Policies client item list - Keyset does not exist

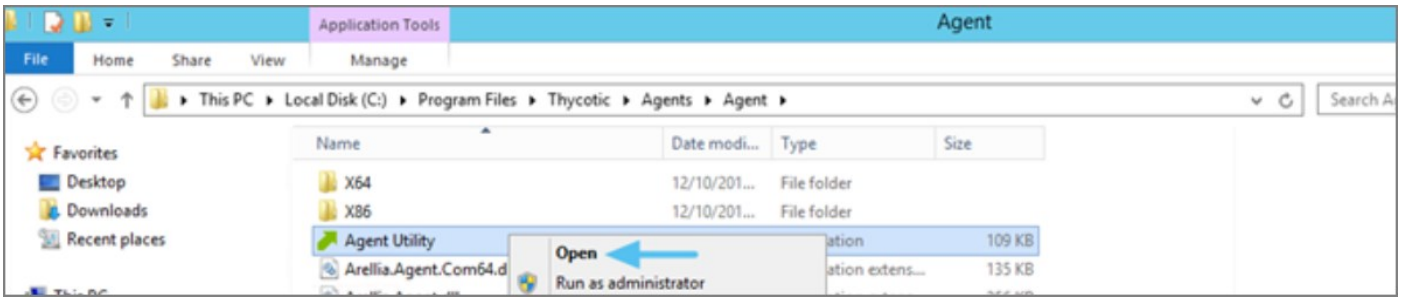


Note: This will only affect systems prior to Privilege Manager 10.7.

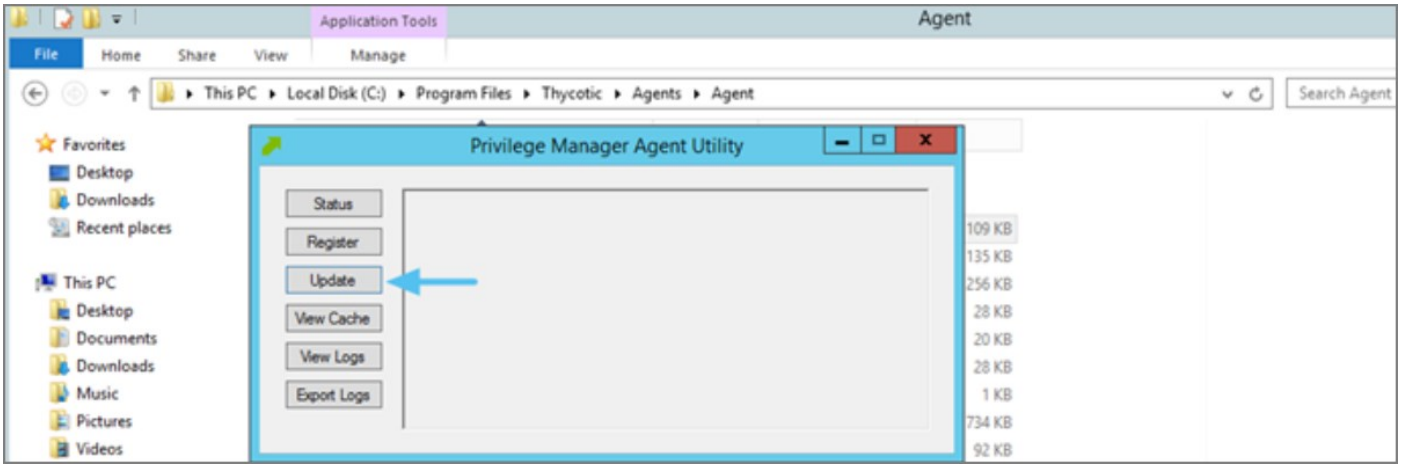
Resolve

1. Navigate to the Machine(s) where you want to update the policy.
2. Open the Agent Utility by going to C:\Program Files\Thycotic\Agents\Agent





3. Click **Update**.


Application Tools
Agent
File
Home
Share
View
Manage
This PC
Local Disk (C:)
Program Files
Thycotic
Agents
Agent
Search Agent
Favorites
Desktop
Downloads
Recent places
This PC
Desktop
Documents
Downloads
Music
Pictures
Videos
Privilege Manager Agent Utility
Status
Register
Update
View Cache
View Logs
Export Logs
109 KB
135 KB
256 KB
28 KB
20 KB
28 KB
1 KB
734 KB
92 KB

Advanced Messages not Working for Child Processes of Microsoft Edge

When opting to Run an application from Microsoft Edge on Windows 10 version 1803, Advanced Messages for application justification or approval are not honored.

Detailed Information

If an application control policy targets an application such as the Google Chrome installer, the approval or justification messages will prevent the process from continuing until the message prompt is completed. However, when choosing the "Run" option when downloading an application in Microsoft Edge, the process will be created under the browser_broker.exe service and in Windows 10 version 1803 the process continues and does not wait for the Privilege Manager message to be completed.

Other versions of Windows 10 and Microsoft Edge do not appear to have this issue.

Workaround

An application control policy can be created to block browser_broker.exe and prevent users from using the "Run" option in Microsoft Edge.

Alternatively, upgrading Windows 10 will also fix the issue.

Endpoint Issues

This topic is intended to assist users in troubleshooting issues (such as policies not yielding expected results) from an endpoint machine that has the Delinea agent installed on it.

Policy Troubleshooting

If there is an issue with policies not getting updated on the endpoint, or specific files or applications not being elevated or blocked, please use the information below to help determine what is causing the issue.

Policies Not Getting Updated

If policies are not getting updated on the endpoint, there could be a communication issue between the machine that has the agent installed on it and the web server. The best way to determine if there is a communication issue would be to open the Agent Utility on the endpoint as described in the previous section, and then do the following:

1. Click on the Status button and see if there are any errors shown.
2. Click on the Register button and check for errors shown there.
3. Click on the Update button and check for errors there as well.

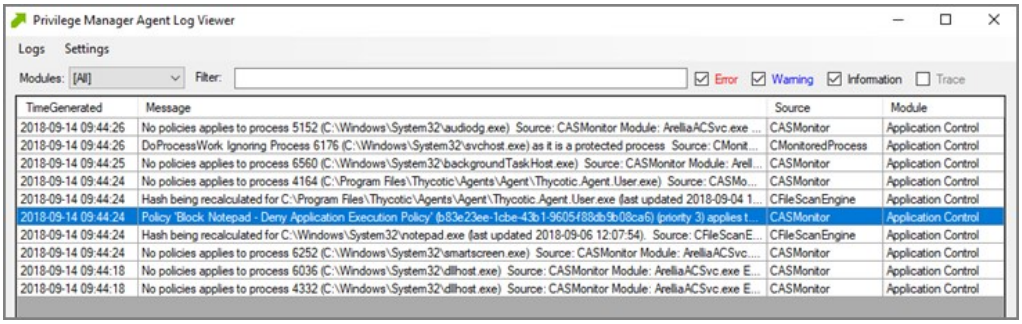
If there is an issue with the endpoint communicating with the web server, there will be errors displayed in red after clicking on those buttons.

Specific Files or Applications Not Being Elevated or Blocked

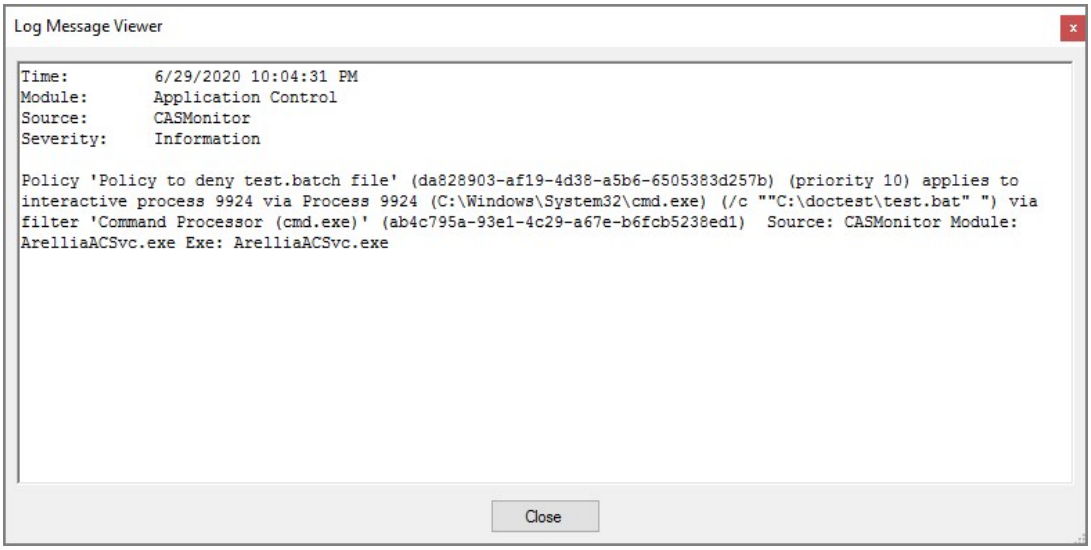
If specific files or applications are not being elevated or blocked properly, then you will need to look in the Agent Logs on the endpoint. You can open the logs by first opening the Agent Utility on the machine. Once that is open, click on the View Logs button to bring up the Agent Log Viewer.

The Agent Log Viewer is very helpful for troubleshooting issues with policies not applying correctly. In the log, you can see if a policy applied to a certain process, and if so, what policy applied to that process. You can also see if there was no policy that applied to that specific process.

For example, in the screenshot below of the Agent Log Viewer, you will see a policy called "Block Notepad - Deny Application Execution Policy" that has been applied to the endpoint.



The highlighted entry on the screenshot above shows that the "Block Notepad - Deny Application Execution Policy" was triggered when notepad was opened. Double-click on the log entry to see further details as shown below. This shows the exact process that met the criteria of the policy and shows the priority number of that policy. The policy priority is useful information if the application continues processing through multiple policies.



With this information, you know that the policy applied to the Notepad process correctly. If there were other policies that applied to that same process, you would see them in the log viewer as well. There are certain situations in which clients will apply multiple policies to the same process. When troubleshooting issues with certain files or applications, the log viewer is a valuable tool to use.

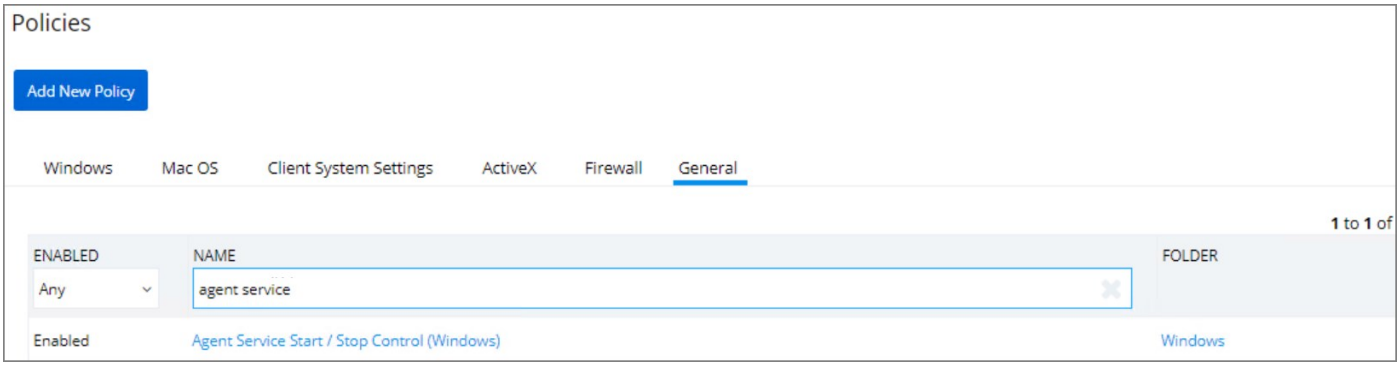
If there is no policy that applies to a certain process, the Agent Log Viewer shows you that as well. In the screenshot of the log viewer, presented above in this section, you can notice entries showing that there are some processes to which no policies apply.. Entries that begin with "No policies applies to process..." indicate that no policy was triggered when the application executed on the endpoint. If a client says that a specific file or application is not being blocked or elevated, then in the log viewer you can see what process is running when they launch the application and whether a policy is applying to that process.

If there are any Errors in the log viewer, they are shown in **Red**. Warnings are shown in **Blue**, and Informational messages are shown in Black.

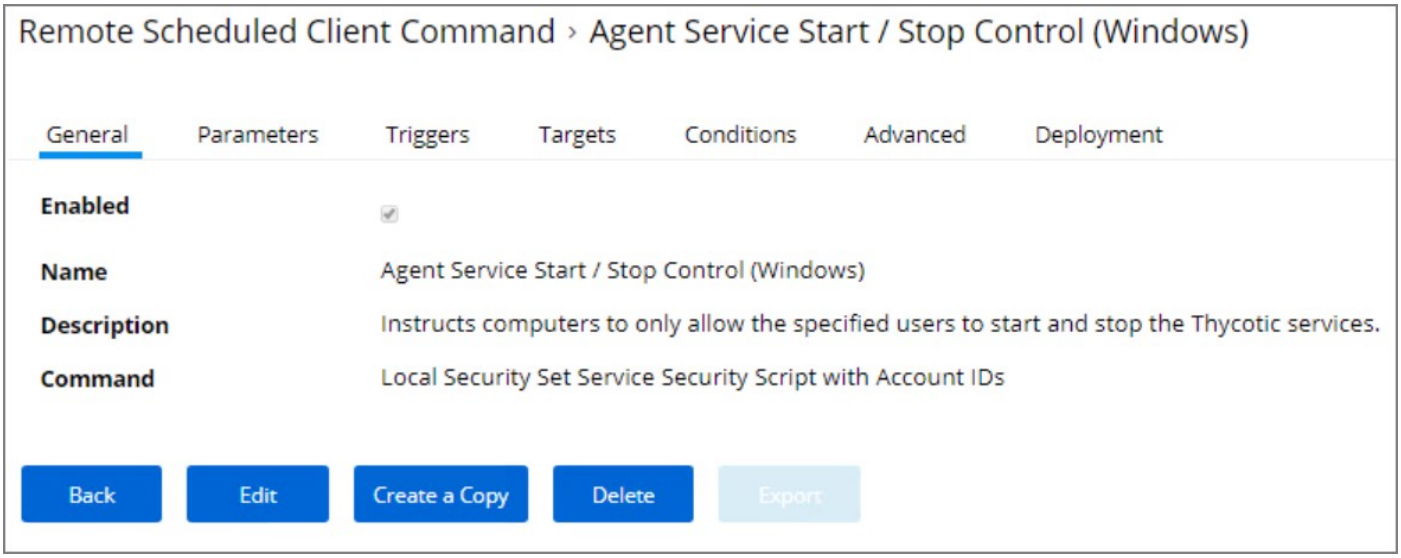
Users on Privilege Manager v10.7.1 or up should use the new policy named **Restrict Account Permissions on Agent Services (Windows)**. Refer to Agent Hardening 10.7.1 and up for details on the policy used starting with Privilege Manager v10.7.1.

Editing the Agent Service Start / Stop Control (Windows) Policy

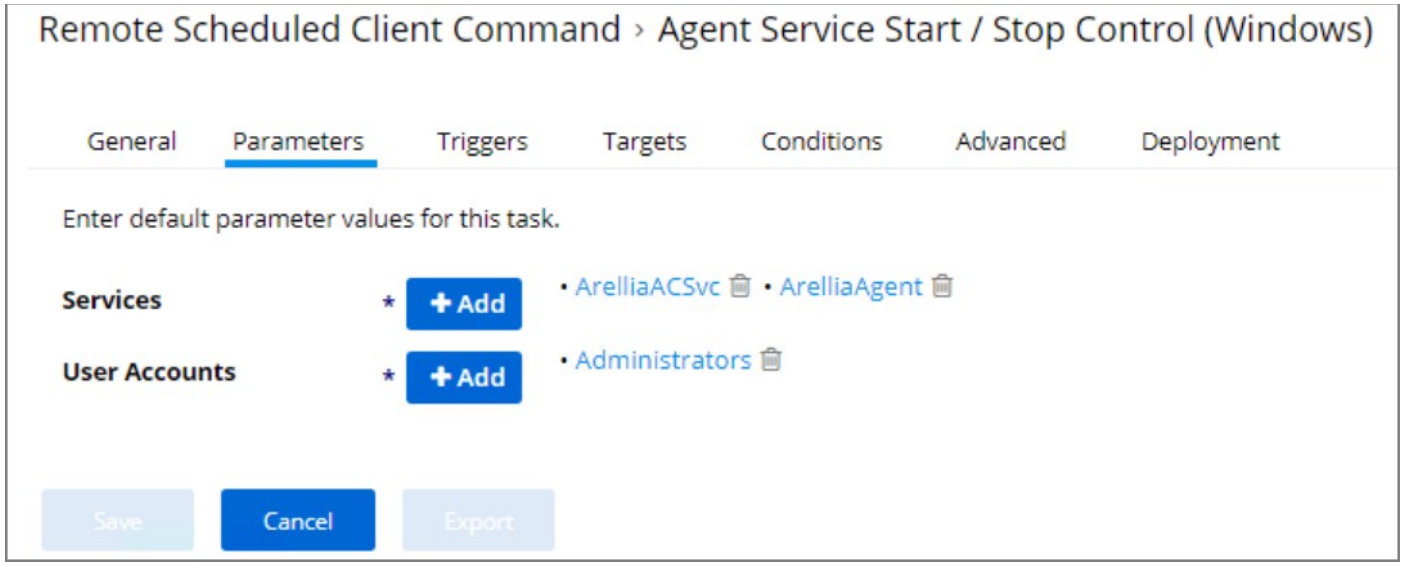
1. Navigate to **ADMIN | Policies**.
2. Click on the **General** Tab.
3. In the Name field enter **Agent Service Start / Stop Control**.



4. Click on the **Agent Service Start / Stop Control (Windows)** policy.



5. To customize the Agent Hardening policy navigate to the **Parameters tab**.
6. Click **Edit**.



7. Under **User Services** click the **+** button and use the search field to select the Services to be targeted by the task
8. Under **User Accounts** click the **+** button and use the search field to find the specific user account that has permissions to make changes to the Agent services.
9. Click **Save**.

   Note: If you require a rollback of the agent hardening due to upgrade issues, use the manual Restore Default Agent Permissions procedure following below.

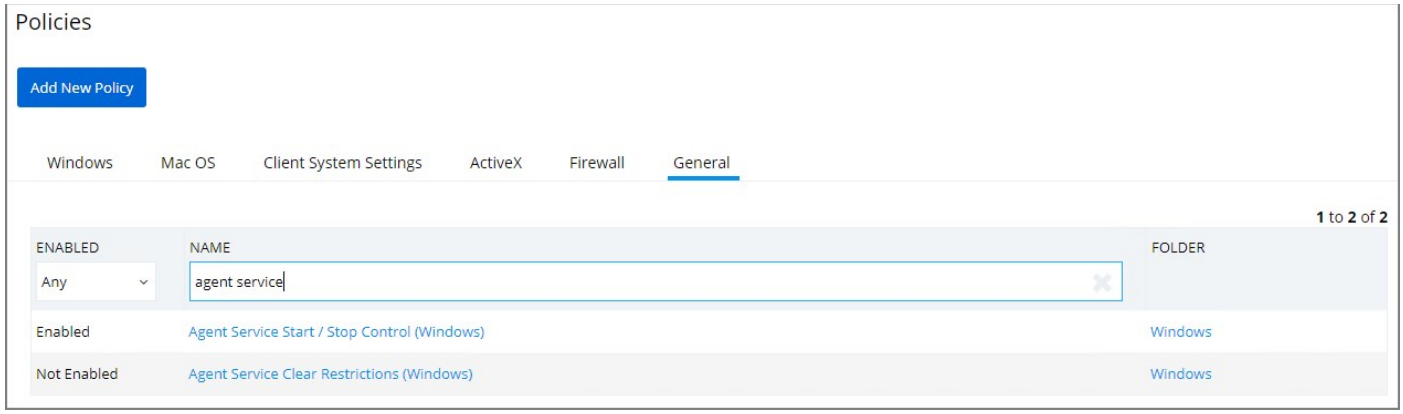
Restore Default Agent Permissions

If you need to rollback agent hardening on your endpoints, follow these steps to restore the default agent permissions:

1. Navigate to **ADMIN | Config Feeds**.
2. Expand **Privilege Manager Product Configuration Feeds**.
3. Expand **Thycotic Management Server Core**.
4. Install **Reset Agent Service Permissions**.

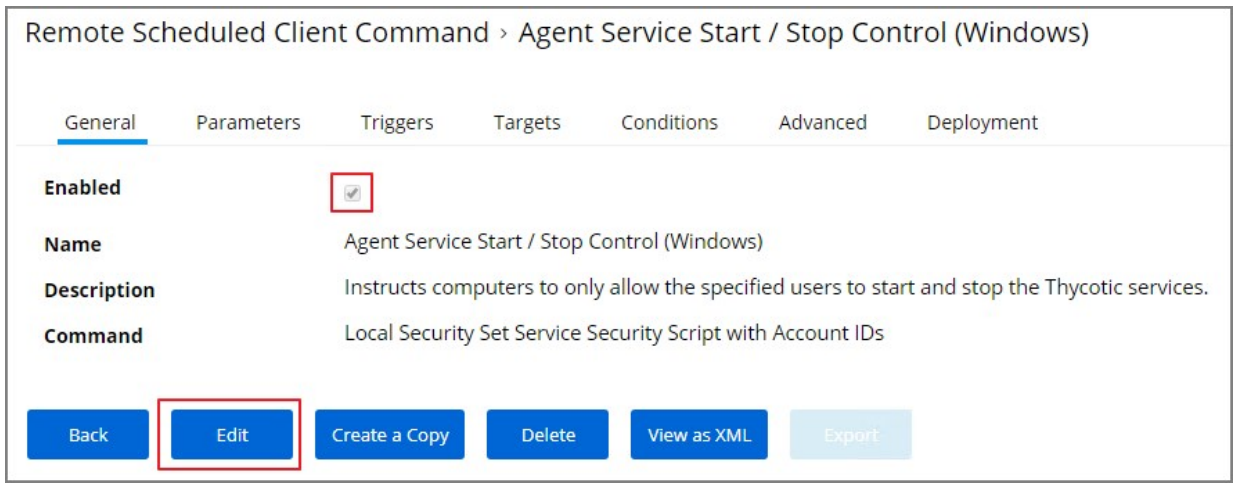
Following the Configuration Feed installation,

1. Navigate to **ADMIN | Policies** and select the General tab.
2. Search for the agent service policies and select to edit.



3. Disable the **Agent Service Start / Stop Control (Windows)** policy.

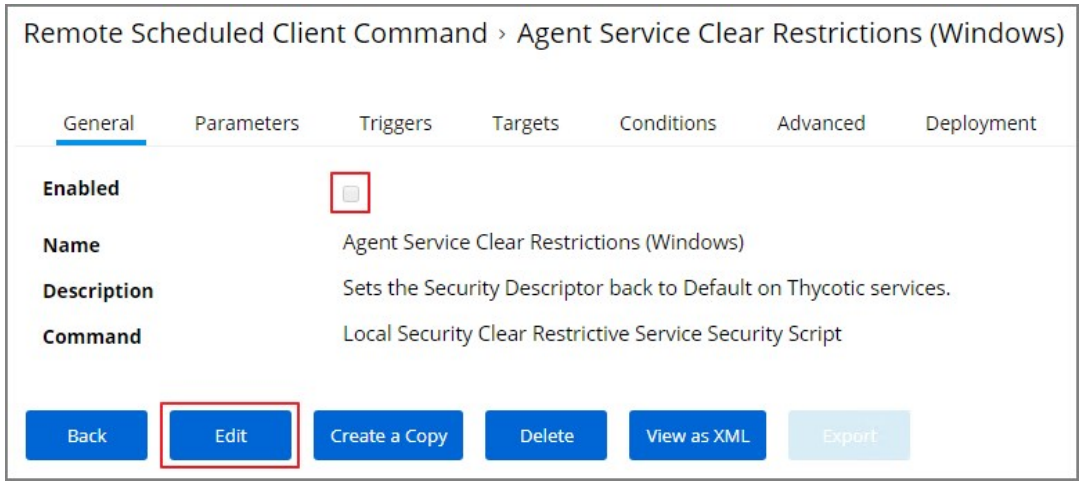
    1. Click **Edit**.
    2. Deselect **Enabled**.



    1. Click **Save**.

4. Enable the **Agent Service Clear Restrictions (Windows)** policy.

    1. Click **Edit**.
    2. Select **Enabled**.



1. On the Targets tab specify the computers that need to be targeted by this policy.
2. On the Triggers tab specify when to run and/or what events will trigger the policy to run.

5. Click **Save**.

Agent installations on endpoints can be secured, only allowing a specified user access to start or stop an agent service and denying any agent control access to a local Administrator or basic user account.

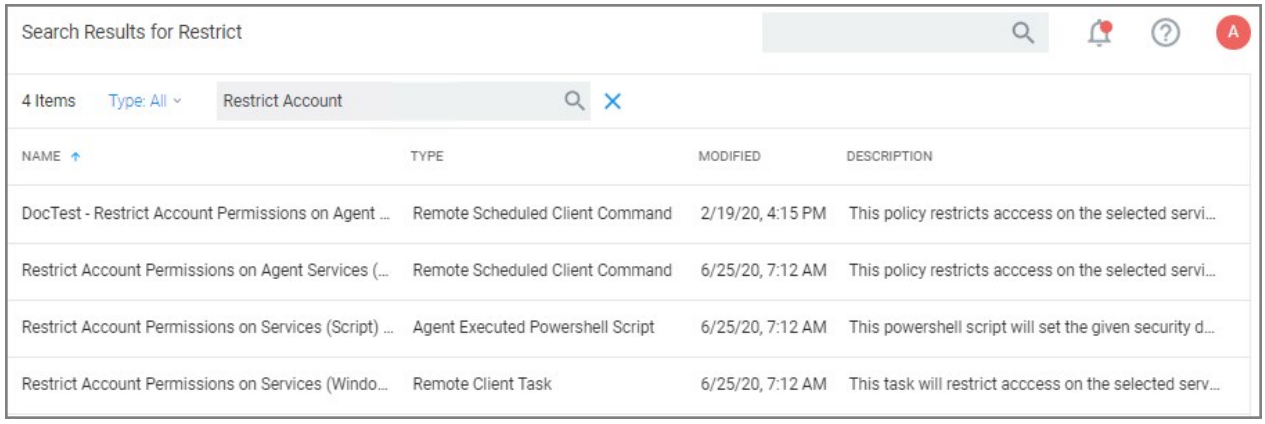
To make sure that local Administrators do not tamper with Delinea agents running on their system, Privilege Manager Administrators can define users that can start and stop the Privilege Manager services running on endpoints, such as the Delinea Agent or Delinea Application Control.

A user or group needs to be available in Privilege Manager to be selected while setting up the task. This user or group will have rights to start and stop agent services running on endpoints once the **Restrict Account Permissions on Agent Services (Windows)** policy is enabled.

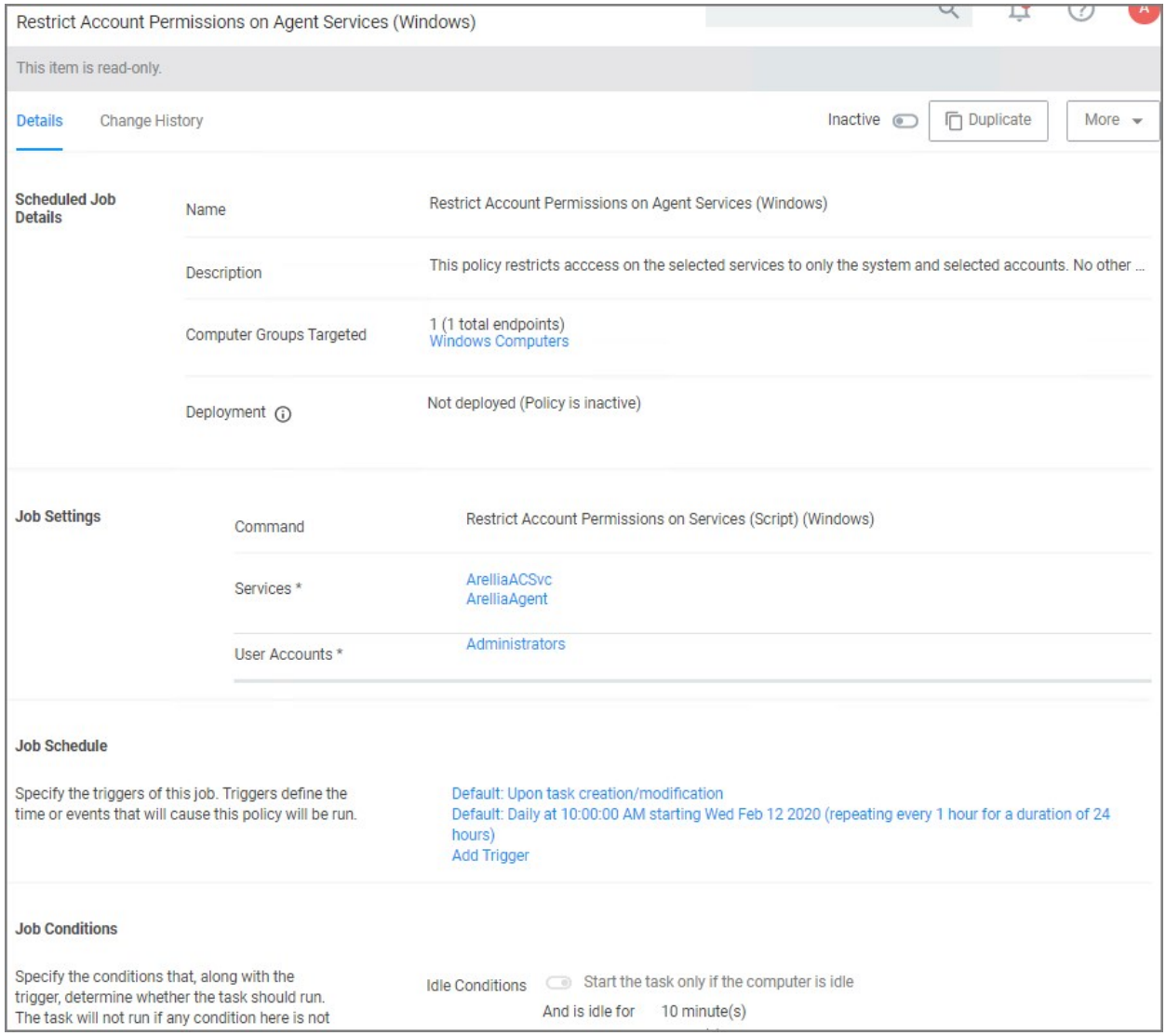
> **Note**: If you implemented Agent Hardening prior to 10.7.1, **disable** and **delete** the following policies:
>
> - Agent Service Start / Stop Control (Windows)
> - Agent Service Clear Restrictions (Windows)

Editing the Restrict Account Permissions on Agent Services (Windows) Policy

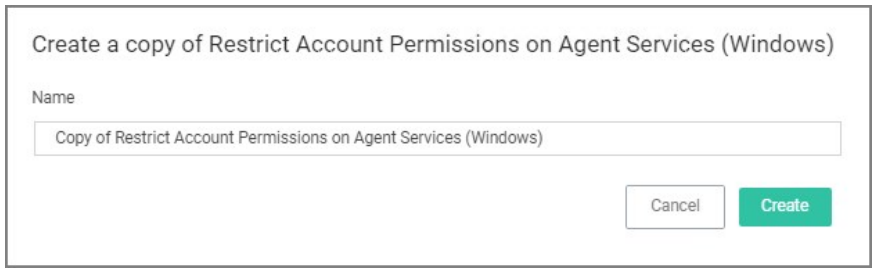
1. Under your Computer Group, select **Scheduled Jobs**.
2. Search for **Restrict Account**.



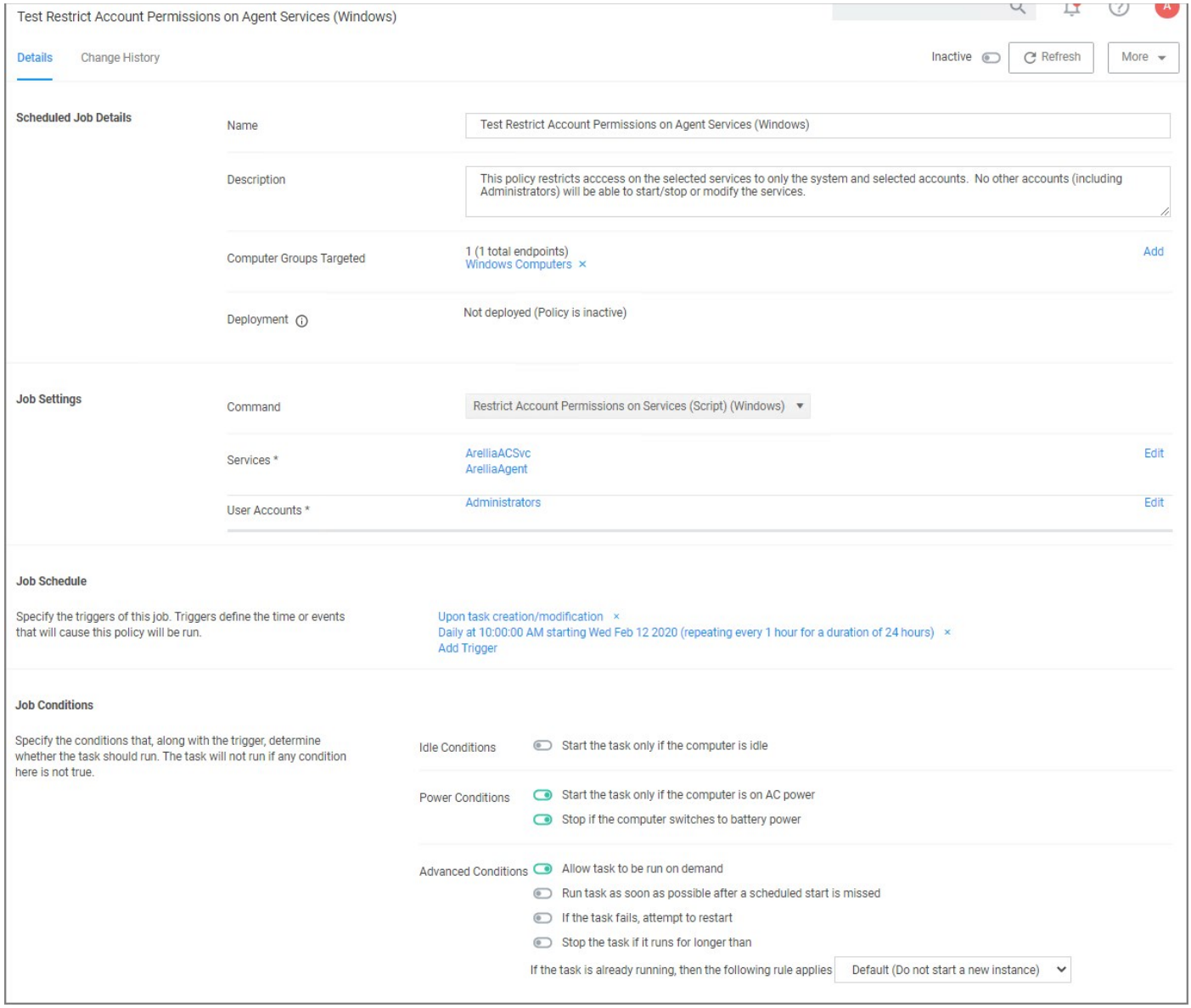
3. Click on the **Restrict Account Permissions on Agent Services (Windows)** policy.



4. To customize the policy click **Duplicate**.



5. Customize the name of the copied policy and click **Create**.



6. Customize the policy's
    - Scheduled Job Details.
    - Job Settings.
    - Job Schedule.
    - Job Conditions.
    1. Under **Services** the Arellia Application Control Service and Arellia Agent Service are present by default. Add any services you might also want to protect. Use the search field to find and specify other service names.
    2. For **User Accounts** use **Edit** and use the search field to find specific user accounts that have permissions to make changes to the specified services. Administrators are present by default, if you wish to limit to only a subset of users with administrative rights, create a group and update accordingly.
7. Click **Save Changes**.
8. Set the policy to **Active**.

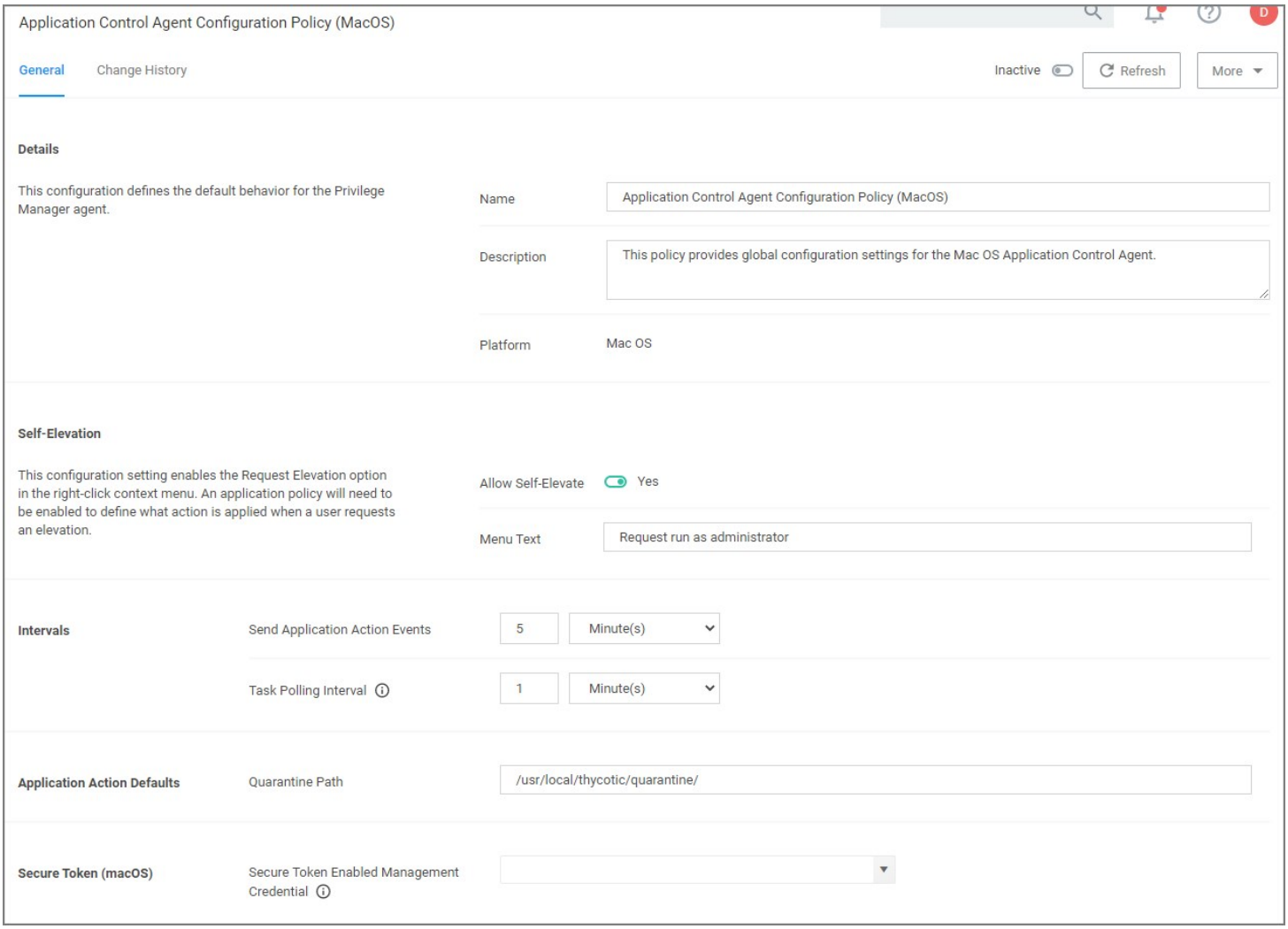
Note: If you wish to update a hardened agent, refer to information under the topic Windows Agents .

This section of the Privilege Manager documentation covers information and step procedures pertaining to Privilege Manager agents installed on macOS.

The following topics are available:

Agent Configuration

Under each macOS Computer Group, administrators can specify global application control agent settings for the specific Computer Group.



- Details: This section contains the policy details such as name, description, and platform information.
- Self-Elevation: This section provides a configuration option to enable the Allow Self-Elevation option.

  Note: Self-Elevation is deprecated and only supported on macOS v10.8 or earlier.

  An application policy will need to be enabled to define what action is applied when a user requests an elevation. The menu text can be customized via the Menu Text field.

  - Default: Request run as administrator
- Intervals: This section provides a configuration option to customize the intervals at which the agent will send application action events or how often a Mac OS Agent will callback to the server to see if any tasks have been requested of it.

  - Defaults:
    - Send Application Action Events: 5 Minutes
    - Task Polling Interval: 1 Minute

- Application Action Defaults: This section provides the option to set the quarantine path.
    - Defaults:
        - Quarantine Path: /usr/local/thycotic/quarantine/
- Secure Token (macOS): This section provides an option to specify a macOS admin account that is Secure Token enabled. This account must exist on all LSS managed macOS endpoints.

With the 10.8 release of Privilege Manager, Delinea introduced a UI based macOS Agent Utility implemented as a preference pane. The utility provides functionality previously only available via Terminal shell commands. The utility allows customers to easily troubleshoot by

- checking an endpoint status.
- view an endpoint cache.

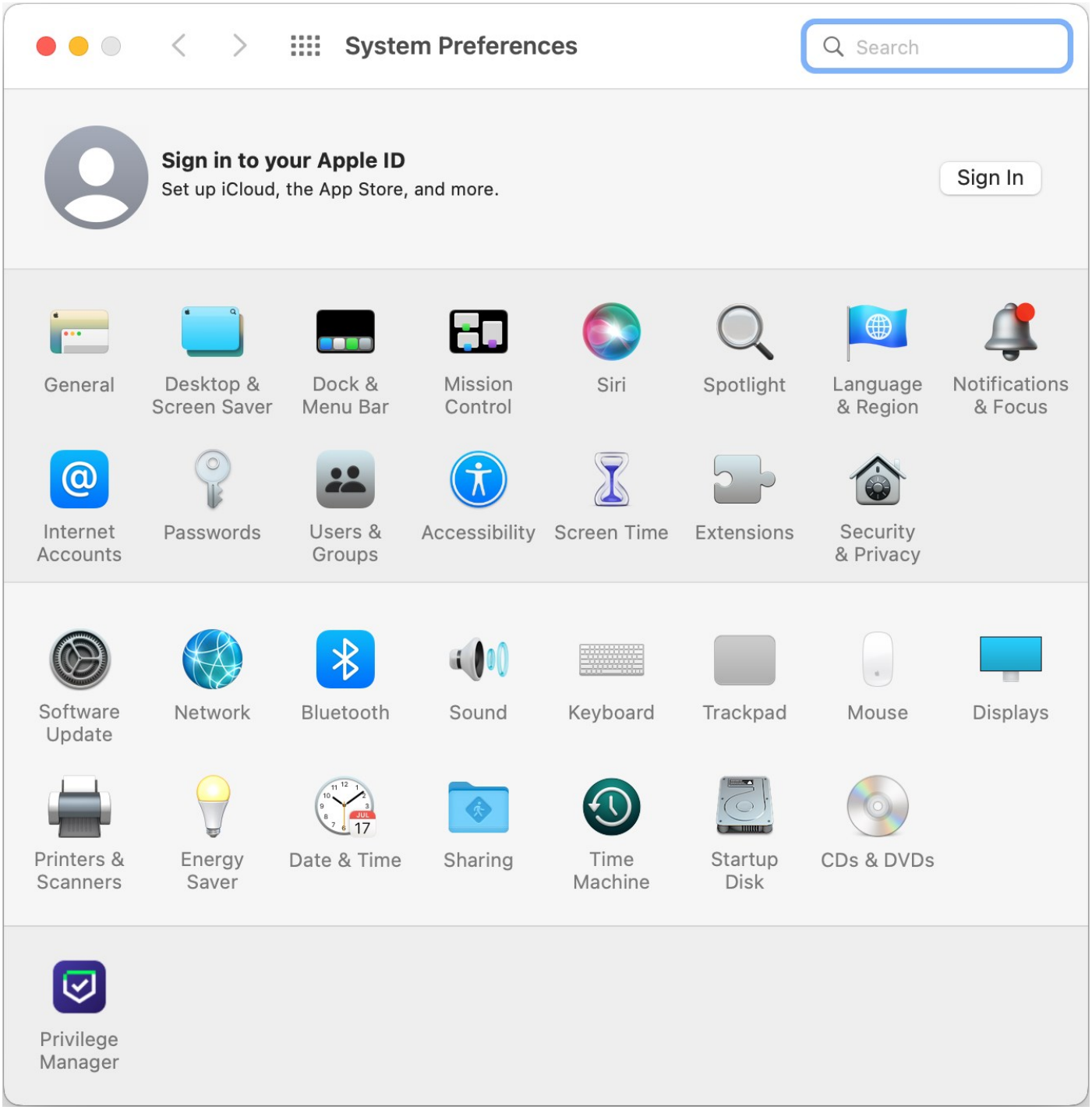
It also offers UI guided means to

- register the agent with the server.
- update the endpoint to retrieve latest policies.

Accessing the Agent Utility

To access the Privilege Manager macOS Agent Utility,

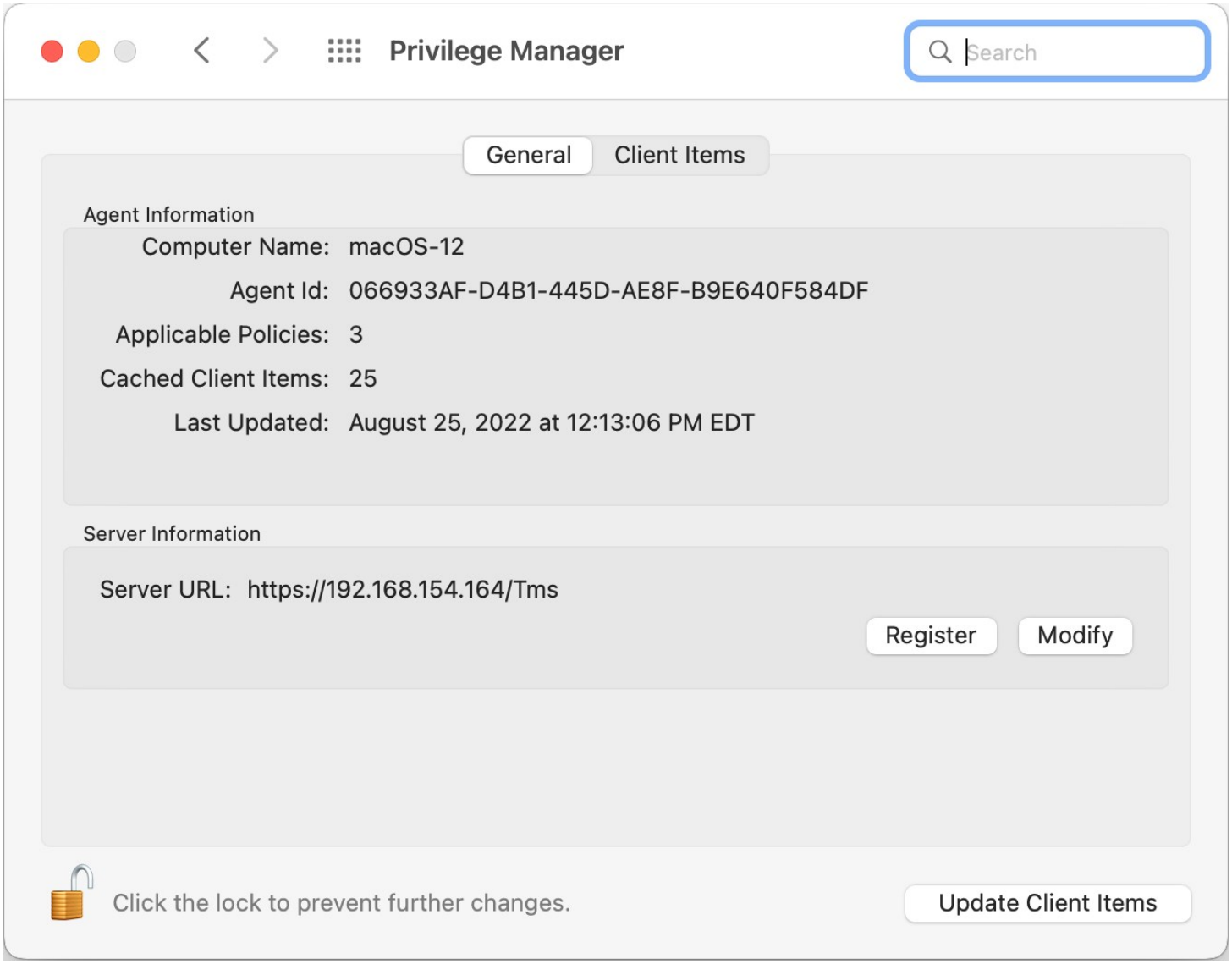
1. Open the System Preferences on your macOS endpoint.



2. Click **Privilege Manager** to open the preference pane.

General Tab

When a local admin user opens the utility, the controls to make changes are unlocked. For standard users they are locked, but can be unlocked by providing an administrator user name and password, just as possible with all other preference panes.



On the general tab the utility provides under **Agent Information** details like the Computer Name, Agent Id, the number of applicable policies and client items cached. It also provides the data/time stamp of the last update.

Under **Server Information** the Server URL for the current agent registration is listed. Here, administrator users can either Register a not yet registered agent, or modify an existing agent registration.

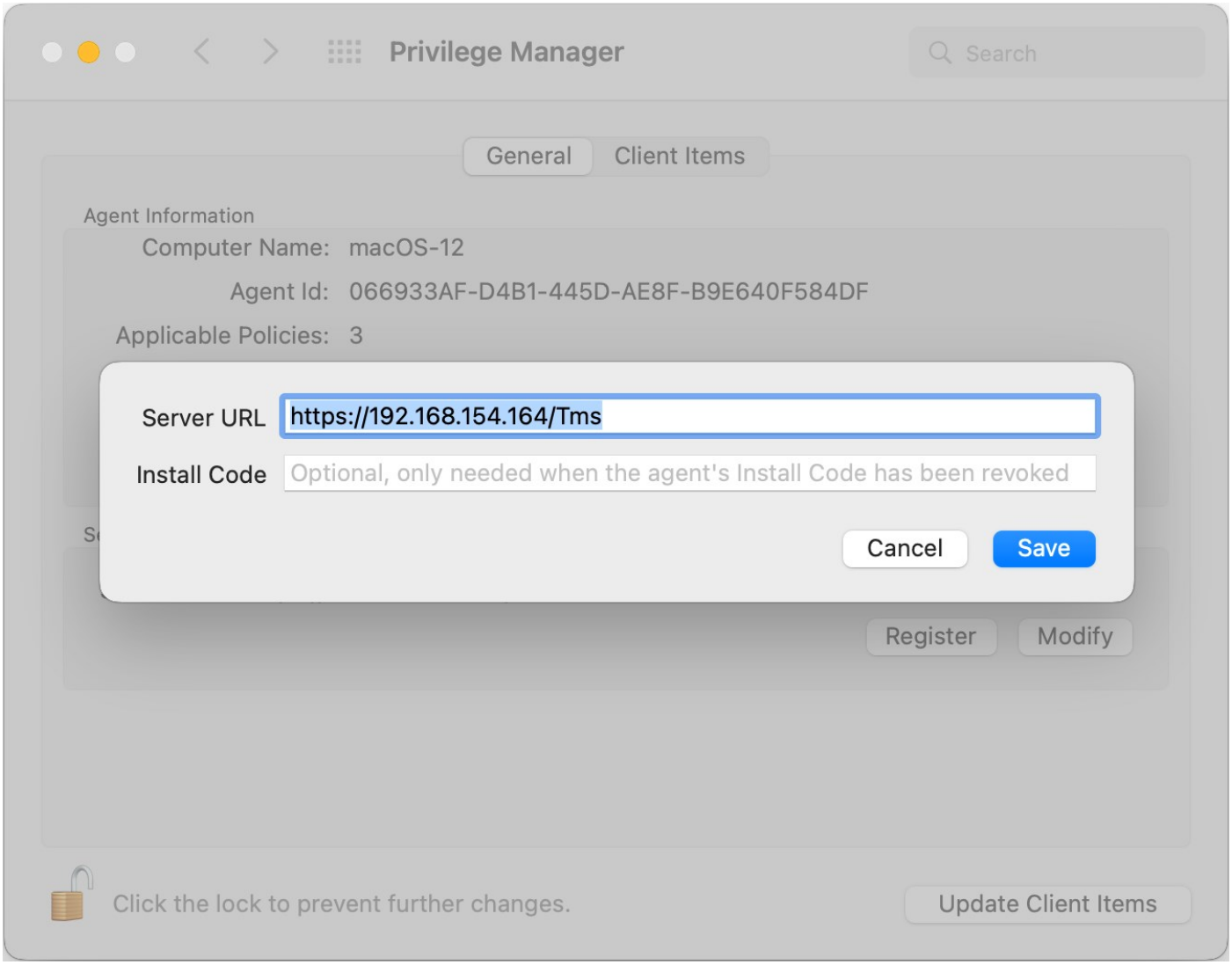
Use **Update Client Items** to trigger a client item update. When **Update Client Items** is clicked and if there are updates to applicable policies or policies are added to the endpoint, the last updated timestamp will change to reflect when the last client items change on the endpoint happened. The date/time stamp does not reflect when the last update client items command ran, the date/time stamp only updates when there was an actual change on the endpoint.

Registering/Modifying an Agent

To register an agent or to modify an existing agent registration via agent utility, follow these steps:

1. Open the Privilege Manager agent utility.

2. On the General tab under Server Information click Register or Modify.



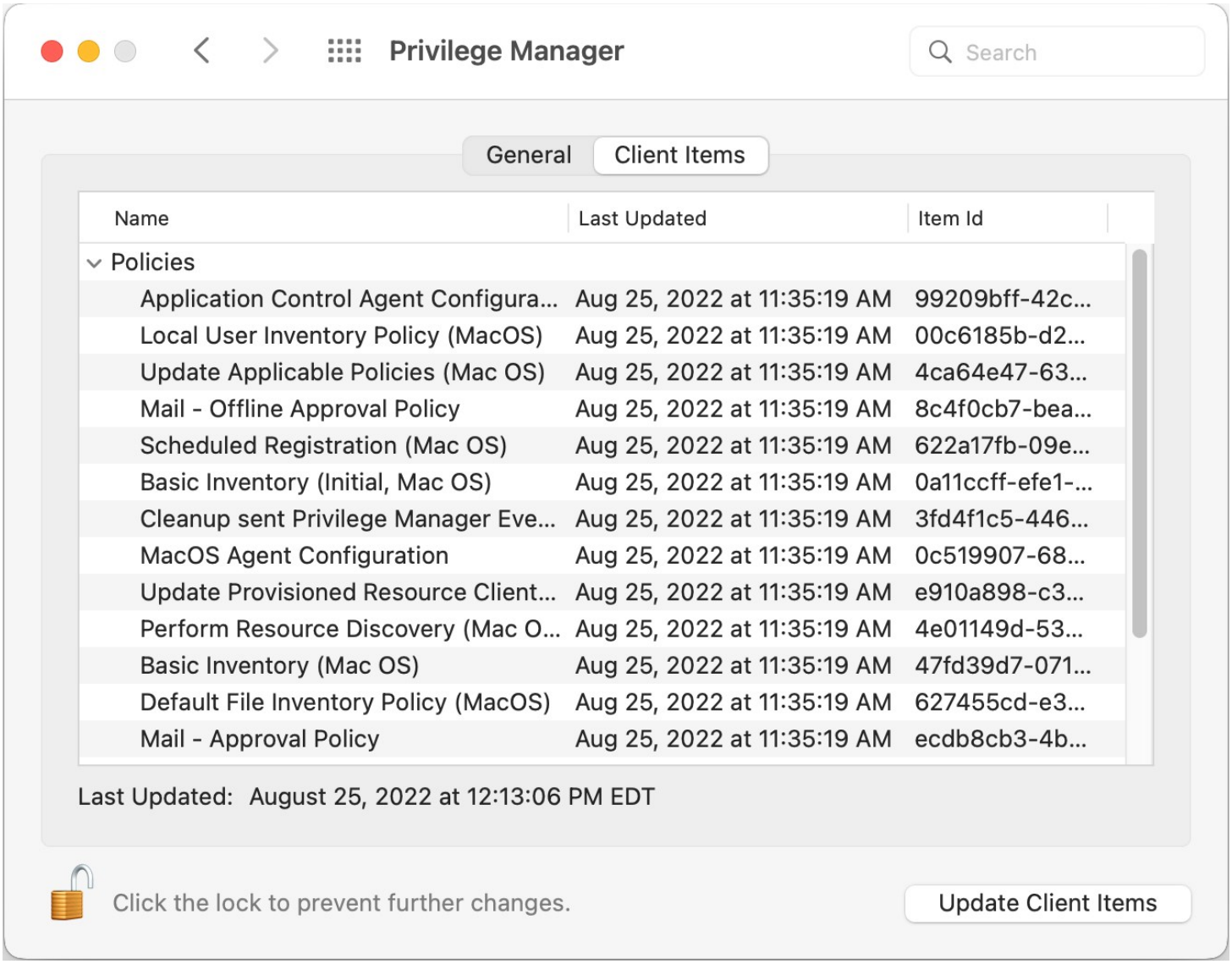
1. Enter the **Server URL** for the agent registration or modified registration.
2. If the agent has been installed without an install code or the agent's registration was revoked, provide an install code to register the agent.
3. Click **Save**.

Client Items Tab

The Client Items tab provides an overview of all client items on the endpoint. The client items are grouped into the following categories:

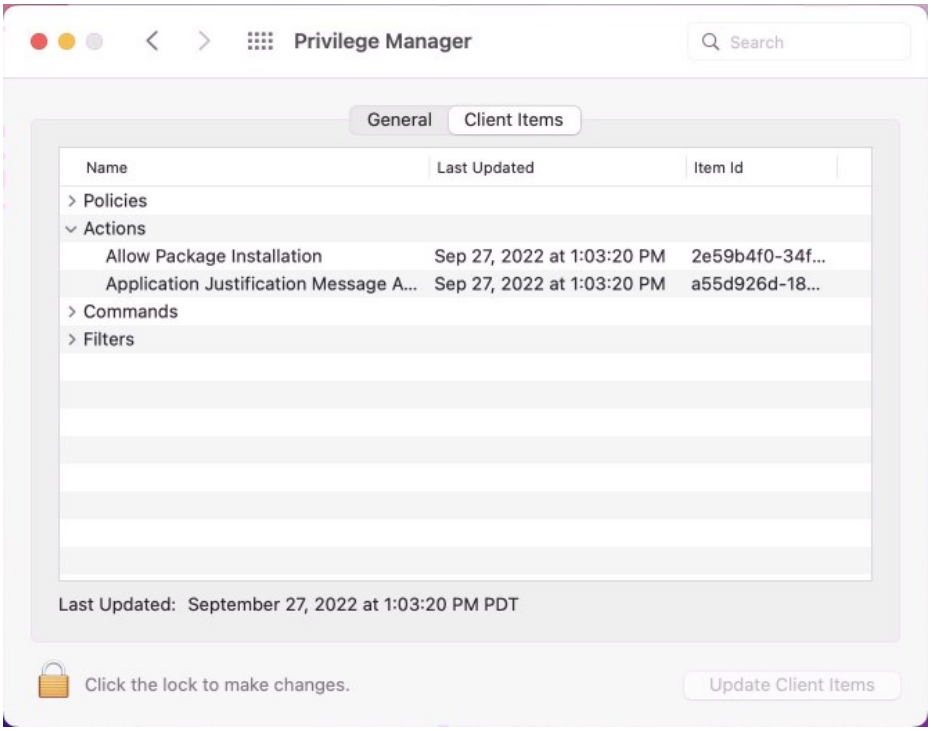
- Policies
- Actions
- Commands
- Filters
- Provisioned Resources

The following image shows the client items on the endpoint in an unlocked preference pane with policies expanded.



Use expand/collapse to better navigate through the list of applicable client items on the endpoint. The following image shows the client items on the endpoint in a locked preference pane with policies, commands, filters, and provisioned resources collapsed.

Delinea


Privilege Manager
Search
General
Client Items
Name
Last Updated
Item Id
Policies
Actions
Allow Package Installation
Sep 27, 2022 at 1:03:20 PM
2e59b4f0-34f...
Application Justification Message A...
Sep 27, 2022 at 1:03:20 PM
a55d926d-18...
Commands
Filters
Last Updated: September 27, 2022 at 1:03:20 PM PDT
Click the lock to make changes.
Update Client Items

It is not currently possible to prevent a local administrator account on macOS from starting and stopping a background service like the Privilege Manager agent. The generally accepted best practice is for the end user to log into a "standard" (non-administrative) account. This should not be a hardship in conjunction with Privilege Manager , once an appropriate but limited set of tools are enabled for the end user.

When the Privilege Manager agent is installed on a Mac endpoint, three processes run in the background. Two of these are macOS launch daemons that run as root, and the third is a macOS launch agent that runs in the current user's context. These processes are run by the launchd process, which will automatically relaunch them if they are terminated. Moving Privilege Manager to the Trash in an attempt to disable the functionality will not be allowed by the Finder while the processes are still running; bypassing this requires administrative privileges.

> **Note**: The term "launch agent" has a specific meaning in macOS, and is not related to the use of the word "agent" to describe the Privilege Manager endpoint software.

In addition, a sudo plugin is installed that connects the sudo command to the Privilege Manager policy engine. This modifies the default behavior of the sudo command.

Possible Areas of Concern

- An administrative user could use the launchctl command to disable the Privilege Manager processes (the launch daemons com.thycotic.acsd and the launch agent Privilege Manager).

  To mitigate, create a blocking policy for /bin/launchctl. This policy prevents a privileged user from unloading, removing, and/or stopping either of the above LaunchDaemons and LaunchAgents.

- The application bundle Privilege Manager.app could be deleted from the command line by an administrative user (possibly after first disabling the sudo plugin).

- The sudo plugin could be disabled by an administrative user by removing or renaming the file /etc/sudo.conf — this can be done from the Finder (i.e. even if the normal use of sudo is blocked by policies implemented through the plugin itself, or if the plugin fails to work normally due to other issues with PM).

- On most Unix systems the command su can be used to log into the root account (assuming one knows the root password), which gives complete access to the system. On macOS the root account is disabled by default, but can be enabled by an administrative user; see the Apple support document at https://support.apple.com/en-us/HT204012.

Refer to this video demonstration.

Locations of Privilege Manager Files

The Privilege Manager agent is implemented by files in the following locations:

- /Applications/Privilege Manager.app

  This application bundle contains the Privilege Manager launch agent and the com.thycotic.acsd launch daemon, which together implement the main functionality of the PM agent.

- /Library/Application Support/Delinea/Agent

  This folder contains configuration information and other data necessary for the PM agent.

- /Library/LaunchAgents/com.thycotic.acsgui.plist

  This file is used by the macOS launchd system service to start the Privilege Manager launch agent when the user logs in.

- /Library/SystemExtension

  In macOS Big Sur and later, the com.thycotic.acsd.systemextension system extension is automatically copied into this folder when Privilege

Manager is first installed. It will remain if Privilege Manager.app is deleted, but can be removed by an administrative user with the systemextensionctl command. This is currently only possible if SIP is disabled.

- /usr/local/delinea/agent

  This folder contains scripts for backwards compatibility with previous agent versions.

- /usr/local/libexec/sudo

  This folder contains the sudo plugin delinea_plugin.so that it integrates Privilege Manager with the sudo command.

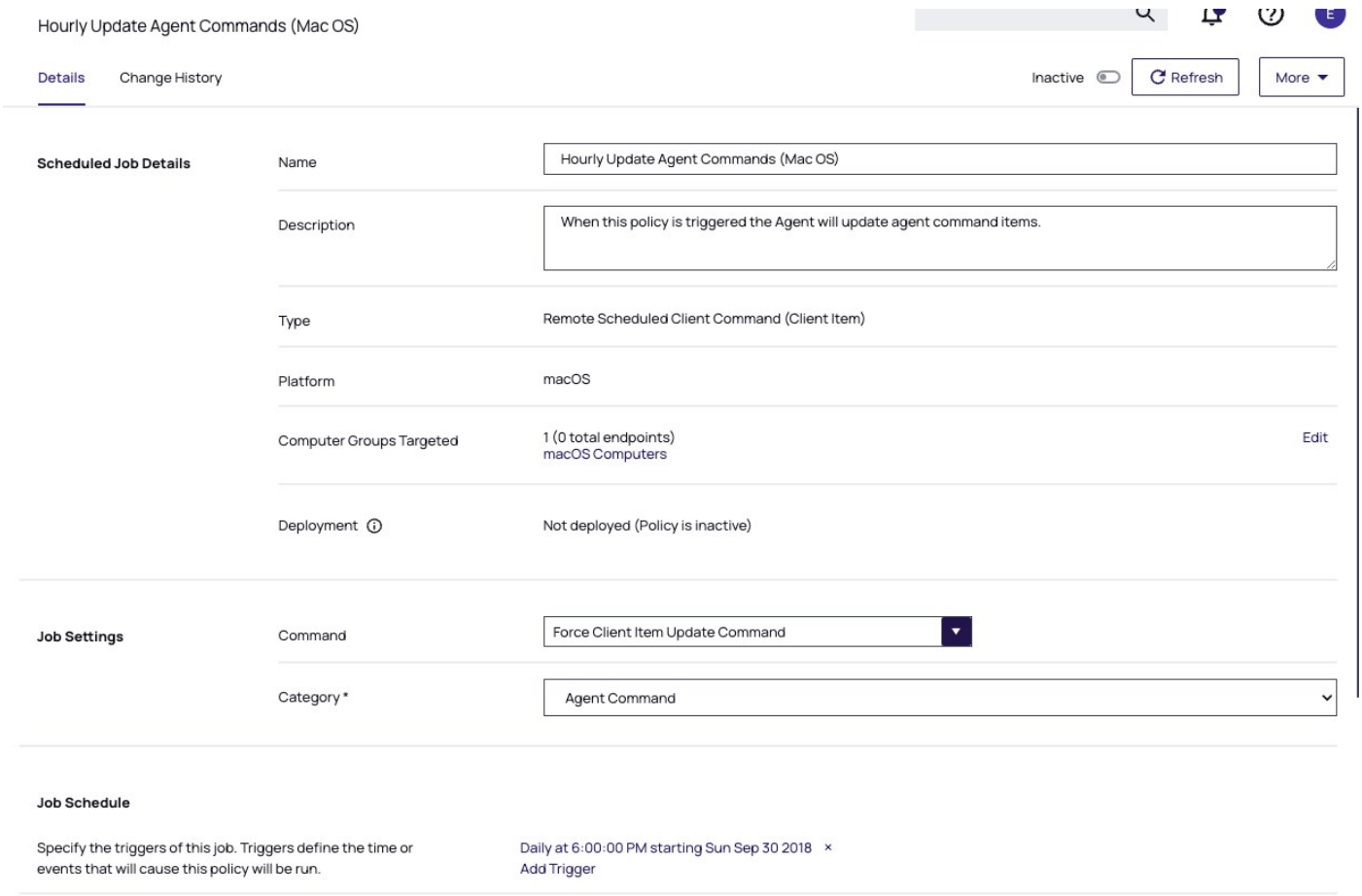
- /etc/sudo.conf

  This file is added by the Privilege Manager installer to configure the sudo command to use the Delinea sudo plugin delinea_plugin.so when it is run from the command line.

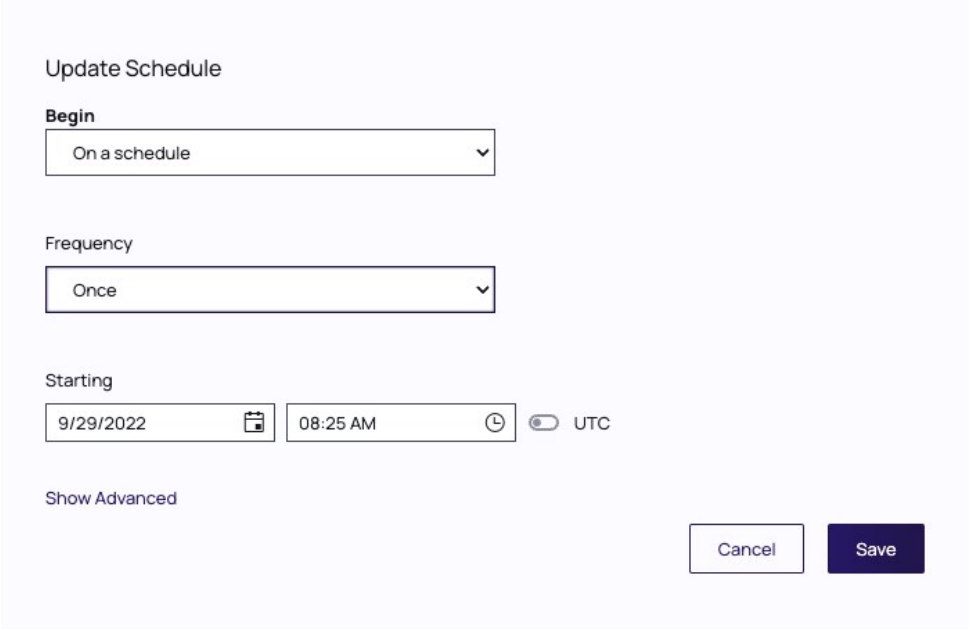
Agents receive new policies on a schedule which can be modified. By default this schedule runs daily at 8 pm.

To create a modified schedule, you have to duplicate the default Scheduled Job and customize the duplicate:

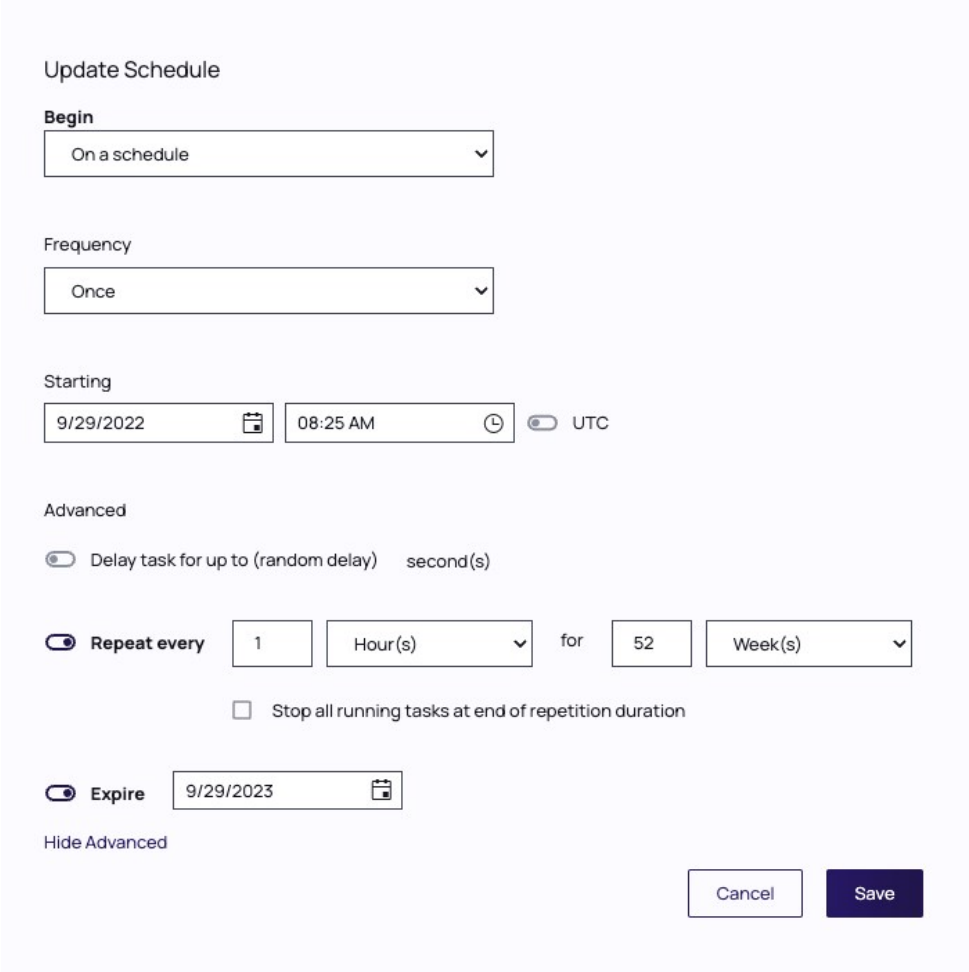
1. Under your macOS computer group, select **Scheduled Jobs**.
2. Search for and select **Update Agent Commands (Mac OS)**.
3. Click **Duplicate**.
4. Enter a name for this duplicated task that reflects its purpose. For example, if it is supposed to run hourly, reflect it in the name.
5. Click **Create**.



6. Under the Job Schedule section,
    1. Click on the **x** to remove the *Daily at 8:00:00 PM ...* schedule.

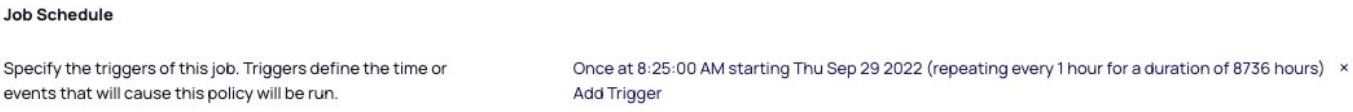


2. Click **Add Trigger**.
3. For the **Begin** drop-down, keep the **On a schedule** selection.
4. Maintain the **Once** selection at the **Frequency** drop-down.
5. Click **Advanced**.
6. Make the changes to run the task hourly and specify for how long. For this example we selected to run this task hourly for 52 weeks with an expiration date of one year from the starting date. Setting an expiration date is not required.



7. Click **Save**.

7. Click **Save Changes**.



In the Mac Terminal application you can perform the following commands directly to your Delinea macOS agent, using the pmagentctl utility.

To find this list, enter the following into Terminal:

pmagentctl

Commands returned for the pmagentctl Utility

Overview: PM Agent Control

Usage: pmagentctl < *subcommand* >

Options:

--version (show the version)

-h, --help (show help information)

Subcommands

agentid	Gets the Agent ID
dumpconfig	Gets Agent Configuration Data
register	Initiates an Agent registration (requires elevated privileges)
server	Set server URL and optional install code (requires elevated privileges)
isregistered	Gets the Agent registration status
updateclientitems	Update client items (requires elevated privileges)
listclientitems	List client items. By default, all categories of client items are included
runschedule	Policy ID to run (requires elevated privileges)
sendevents	Sends events (requires elevated privileges)
start	Starts the agent (requires elevated privileges)
stop	Stops the agent (requires elevated privileges)
restart	Restarts the agent (requires elevated privileges)

See pmagentctl help < *subcommand* > for detailed help.

Command Usage

To perform a command, insert the name of the above command that you need to perform into this command string:

pmagentctl < *InsertCommandHere* >

Note: The start, stop, and restart commands are required to be run via sudo. This will prompt for admin account password verification. The other commands that require elevated privileges can be run via sudo or credentials can be entered interactively.

For example, to register an agent immediately after updating the Privilege Manager server location, type:

sudo pmagentctl register

Legacy Path and Scripts

Previously, you would use the utility with a path like:

sudo /usr/local/thycotic/agent/agentUtil.sh < *InsertCommandHere* >

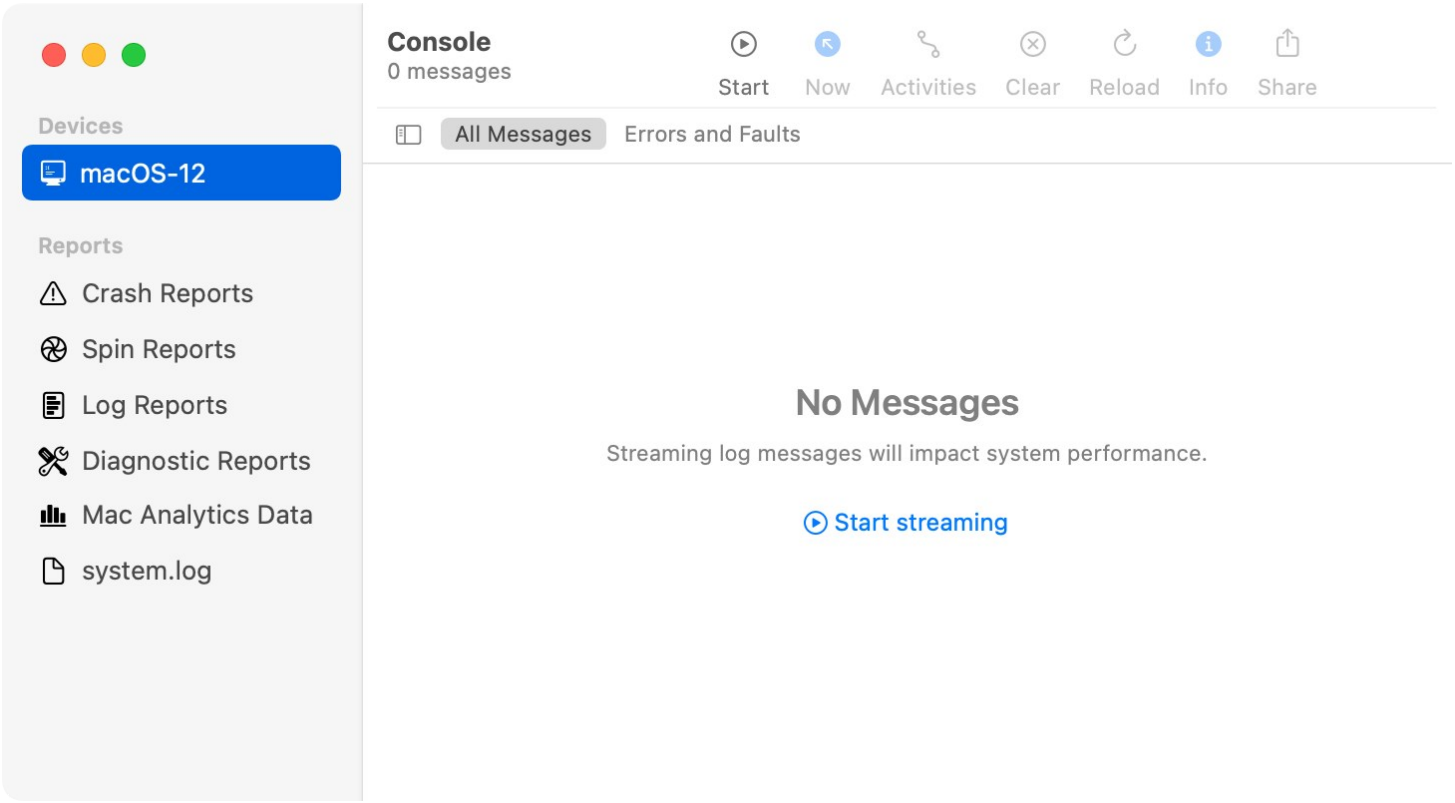
The legacy scripts are still available and can be used, but they are now located in:

/usr/local/delinea/

The /usr/local/thycotic/ directory is a symlink to the /usr/local/ delinea/ directory.

These legacy scripts are deprecated and will be removed in future releases, so using the pmagentctl utility when possible is recommended.

For troubleshooting your Mac agent, logs are found in the Mac Console application.



In the left menu from your Mac Console application, select your computer under **Devices**, then select **Start streaming** to view logs.

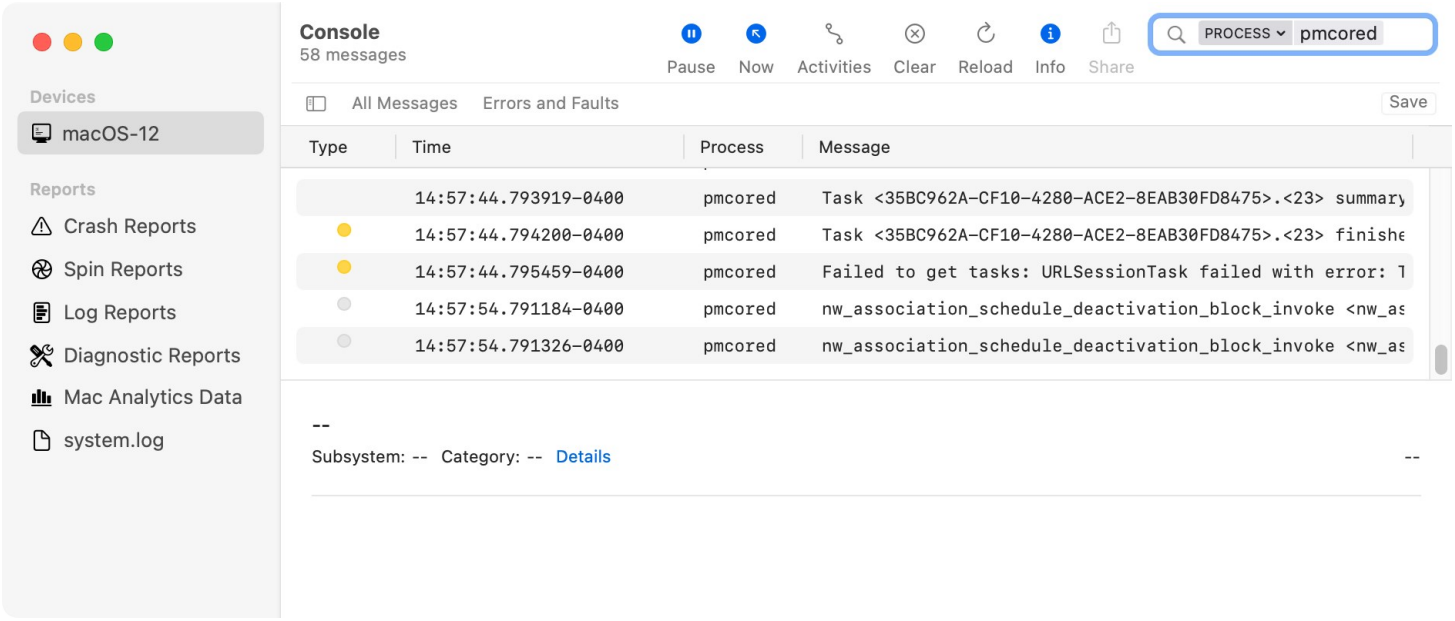
In the Console **Action** tab, choose to include information, debug messages, or both.

There are certain processes you can filter on to troubleshoot the agent. They are:

- pmcored
- pmeventuploaderd
- pmeventprocessord
- pmfileinventoryd
- pmlocalsecurityd

This is an example of filtering on the process "pmcored."

Delinea


Console
58 messages
Pause
Now
Activities
Clear
Reload
Info
Share
PROCESS
pmcored
Devices
macOS-12
Reports
Crash Reports
Spin Reports
Log Reports
Diagnostic Reports
Mac Analytics Data
system.log
All Messages
Errors and Faults
Save
Type
Time
Process
Message
14:57:44.793919-0400 pmcored Task <35BC962A-CF10-4280-ACE2-8EAB30FD8475>.<23> summary
14:57:44.794200-0400 pmcored Task <35BC962A-CF10-4280-ACE2-8EAB30FD8475>.<23> finishe
14:57:44.795459-0400 pmcored Failed to get tasks: URLSessionTask failed with error: 1
14:57:54.791184-0400 pmcored nw_association_schedule_deactivation_block_invoke <nw_as
14:57:54.791326-0400 pmcored nw_association_schedule_deactivation_block_invoke <nw_as
--
Subsystem: -- Category: -- Details
--

If you utilize an MDM solution, you can create configuration profiles to make management of the agent silent on macOS deployments. We recommend deploying the relevant SYSEX or KEXT profiles prior to the agent deployment.

It is recommended to use the System Extension version, as Apple has deprecated the use of Kernel Extensions. Refer to Software Downloads: macOS Endpoints.

System Extension (SYSEX)

I. System Extension Allow Payload

Inside your MDM, create a System Extension Allow profile based on the below information:

- Team Identifier: UJDHBB2D6Q
- Allowed System Extensions: com.thycotic.acsd

II. SYSEX Privacy Preferences Policy Control (PPPC) Full Disk Access Payload

Inside your MDM, create a PPPC profile based on below:

- Identifier: com.thycotic.acsd
- Identifier Type: Bundle ID
- Code Requirement:

anchor apple generic and identifier "com.thycotic.acsd" and (certificate leaf[field.1.2.840.113635.100.6.1.9] /* exists */ or certificate 1[field.1.2.840.113635.100.6.2.6] /* exists */ and certificate leaf[field.1.2.840.113635.100.6.1.13] /* exists */ and certificate leaf[subject.OU] = UJDHBB2D6Q)

- Service and Key Value: SystemPolicyAllFiles: Allow

III. (PPPC) Allow Notifications Payload

Refer to: Manage Privilege Manager Notifications on macOS.

IV. (PPPC) Allow AppleEvents and Accessibility Payload

Refer to the bottom of the page: macOS Approval Process.

Kernel Extension (KEXT)

Apple has deprecated the use of Kernel Extensions. The KEXT version is still available but macOS version dependent. Refer to Software Downloads: macOS Endpoints.

I. Kernel Extension Allow Payload

Inside your MDM, create a Kernel Extension Allow profile based on the below information:

- Team ID: UJDHBB2D6Q
- Kernel Extension Bundle ID: com.thycotic.ThycoticACS

II. KEXT Privacy Preferences Policy Control (PPPC) Full Disk Access Payload

Inside your MDM, create a PPPC profile based on below:

- Identifier: com.thycotic.ThycoticACS
- Identifier Type: Bundle ID
- Code Requirement:

anchor apple generic and identifier "com.thycotic.ThycoticACS" and (certificate leaf[field.1.2.840.113635.100.6.1.9] /* exists */ or certificate 1[field.1.2.840.113635.100.6.2.6] /* exists */ and certificate leaf[field.1.2.840.113635.100.6.1.13] /* exists */ and certificate leaf[subject.OU] = UJDHBB2D6Q)

- Service and Key Value: SystemPolicyAllFiles: Allow

Troubleshooting on macOS Endpoints

The following topics offer troubleshooting help for macOS endpoints and agents:

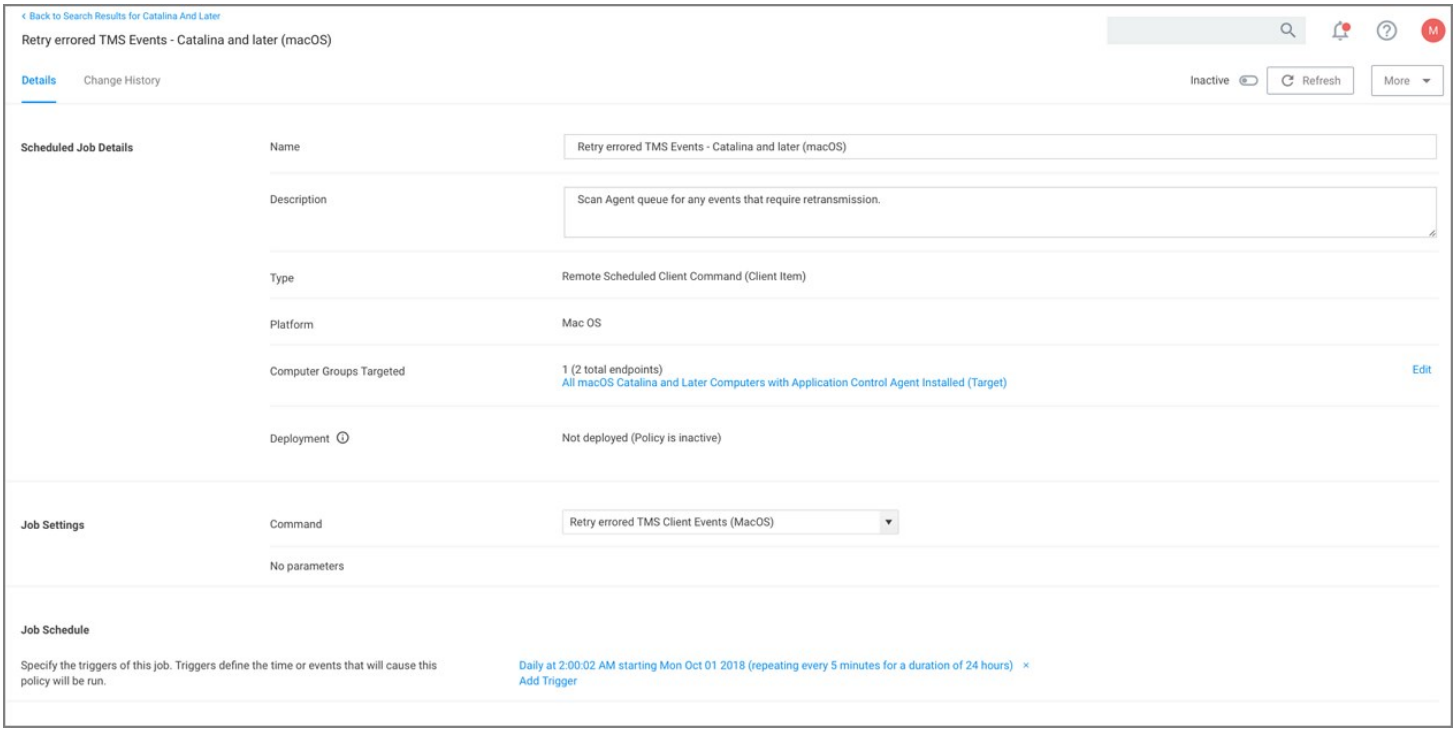
- macOS - FileSystemWatcher
- How to Recover an Unresponsive macOS Endpoint
- Sudo Command Timed Out

Catalina FileSystemWatcher Issue

> **Note**: This policy is only applicable with agents prior to Privilege Manager v11.2.0.

There is a known issue on macOS Catalina and later versions, preventing the agent from receiving notification of events that need to be sent to the server. To workaround this, the **Retry errored TMS Events - Catalina and later (macOS)** policy can be enabled to ensure all events get sent to the server.

The defaults for this new Remote Scheduled Client Command are as follows:



- Customize the schedule if necessary to best suit your particular implementation.
- The default resource targets required are specified by default as **All macOS Catalina and later Computers with Application Control Agent Installed (Target)**. The results of the computer group include any macOS Catalina computers that have the agent installed and are properly configured for Application Control.

Once the policy is enabled on an endpoint, the agent will perform the **Retry errored TMS Client Events (MacOS)** command and send any events that have not been sent.

Delinea

How to Recover an Unresponsive macOS Endpoint

In case a macOS endpoint ever becomes unresponsive due to conflicting policy configurations, the following steps allow a user to recover the endpoint without having to restore or rebuild the system.

> **Note**: Applies to all macOS versions on which the KEXT is supported.

1. Turn off the macOS system.
2. Hold down the +s keys and power the system back on. Keep holding those keys down until it shows that it is booting in single-user mode.
3. Follow the prompts to mount the root device as read-write. It will instruct you to enter the following:

   ```
   /sbin/fsck -fy
   /sbin/mount -uw /
   ```

4. Rename the kernel extension so that you can get back to a functioning macOS:

   ```
   cd /Library/Extensions
   mv ThycoticACS.kext ThycoticACS.kext.org
   exit
   ```

5. The system will restart.
6. Disable and/or delete policies that are causing the issue.
7. Update client items before renaming the kernel extension and having it start automatically. You can force client item updates by performing the following in Terminal.app:

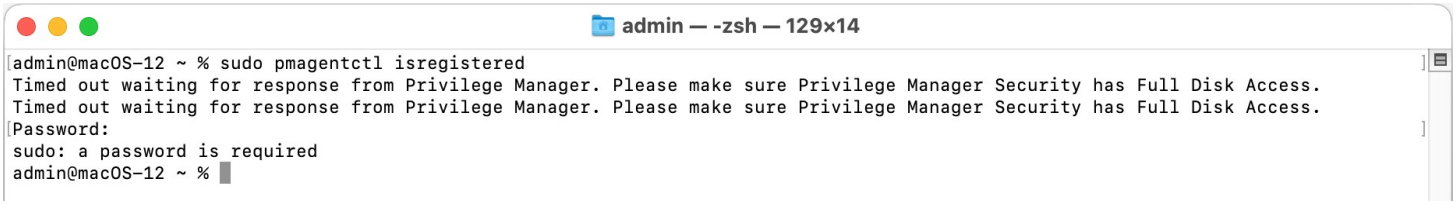
   ```
   sudo /usr/local/thycotic/agent/updateClientItems.sh
   ```

8. Restore the kernel extension in Terminal.app:

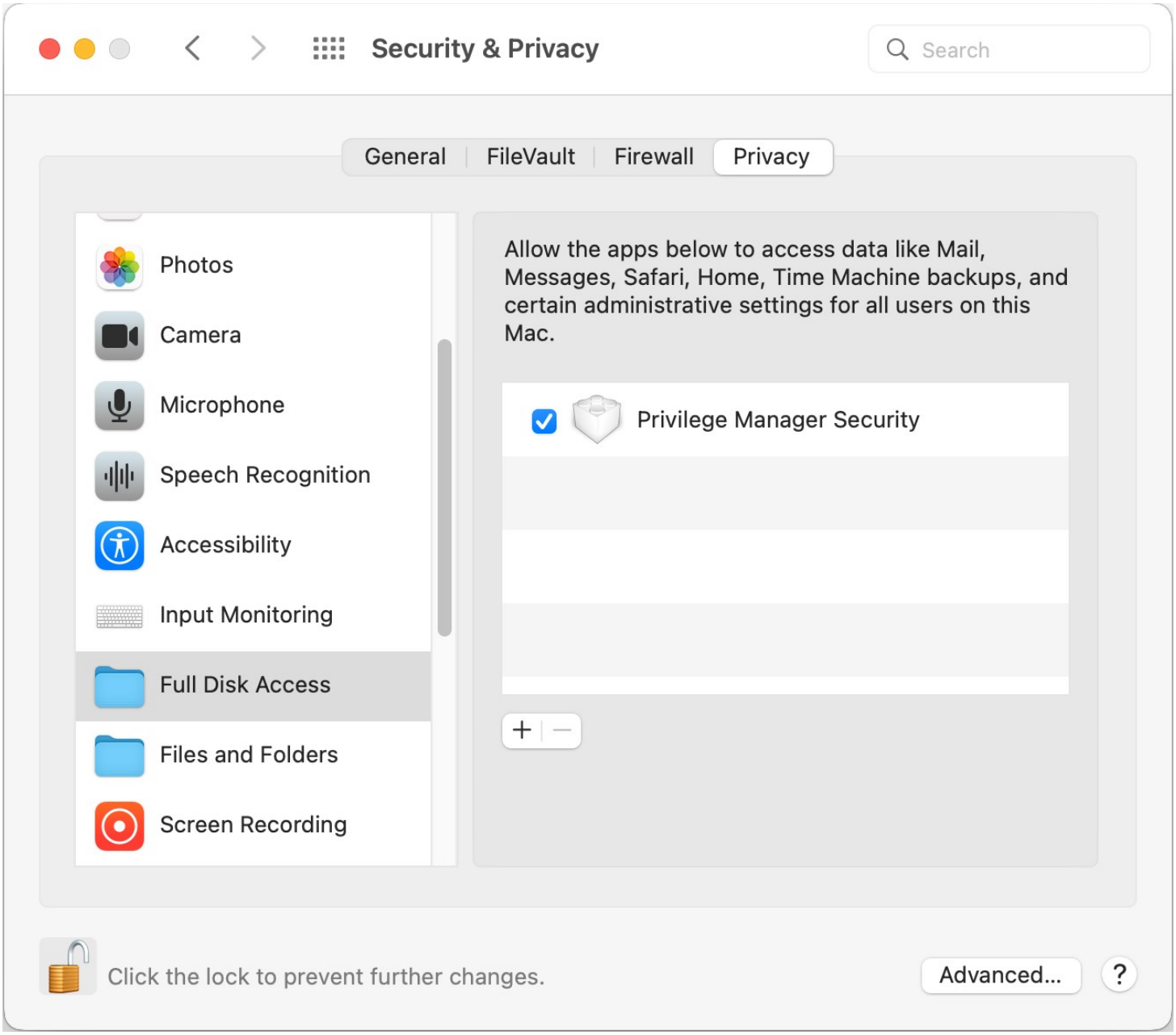
   ```
   cd /Library/Extensions
   sudo mv ThycoticACS.kext.org ThycoticACS.kext
   exit
   ```

Sudo Command Timed Out

The sudo plugin, which allows you to run commands elevated via the terminal, can experience a time out if the Privilege Manager agent hasn't been granted Full Disk Access. When the agent hasn't been granted Full Disk Access, you may see an error similar to:



To grant Full Disk Access to the Privilege Manager agent manually, go to **System Preferences > Security & Privacy > Privacy > Full Disk Access** and check the box next to **Privilege Manager Security.**



To grant Full Disk Access to the Privilege Manager agent via an MDM Profile, follow the instructions outlined here

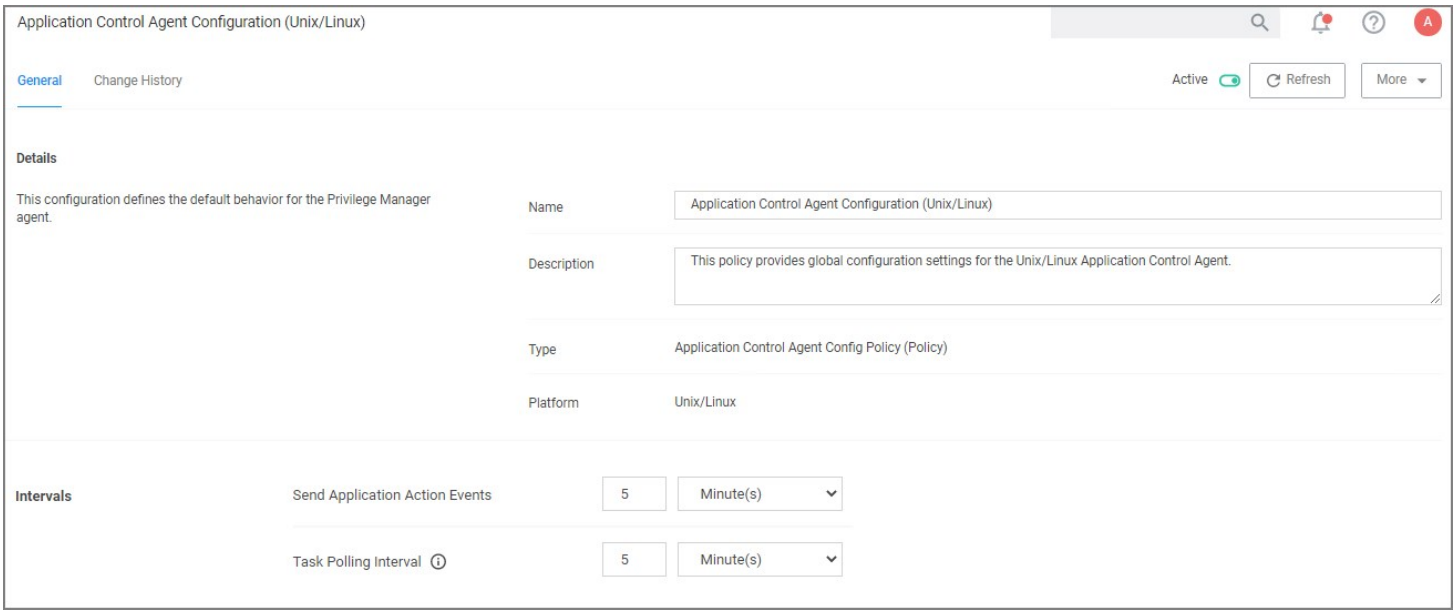
After the agent is given Full Disk Access, `sudo` commands should begin to evaluate successfully.

This section of the Privilege Manager documentation covers information and step procedures pertaining to Privilege Manager agents installed on Unix/Linux systems.

The following topics are available:

Agent Configuration

Under each Unix/Linux Computer Group administrators can specify global agent settings for the specific Computer Group.



- Details: This section contains the policy details such as name, description, and platform information.
- Intervals: This section provides a configuration option to customize the intervals at which the agent will send application action events and Task Polling.
    - Defaults:
        - Send Application Action Events: 5 Minutes
        - Task Polling Interval: 5 Minutes

The Agent keeps a local cache of files that are run though sudo. It keeps a hash of the file and will only run that file if the hash is correct. When a file hash changes, either by being added for the first time, or by updating using the --addfiletocache, a scheduled task will send this information to the Privilege Manager Server, and will appear in the agent's file inventory.

Sudo Default

The /usr/bin/sudo command will always be added to the local inventory, this cannot be deleted.

Adding to Inventory

Automatically (sudo/pmsh)

Any commands run via an accepting policy will add the file to the local file catalog, these are then synced to the server's file inventory, an Allow or Elevate policy needs to be in place.

pmsh

pmsh is an open source shell extension to the Privilege Manager agent functionality.

When the pmsh is invoked all commands apart from the built-in shell commands are passed via Privilege Manager 's policies stored on the local agent.

When the end user shell has been defined as pmsh, there is no need to prefix every command with sudo. This allows for seamless control/monitoring over all end user commands.

Example use case for implementing pmsh:

By creating a pass through Allow policy of all commands, a user is able to continue working on the agent as they normally are; However, the agent is adding commands to the file inventory and uploading those to the Privilege Manager server for auditing and built-out of a common list of commands executed.

Additional policies can be defined to Block or Elevate commands deemed appropriate by the administrators.

When the agent is registered with a Privilege Manager server, a /usr/bin/pmsh entry is added to the /etc/shells file

> **Note**: pmsh is based on the opensource pdksh shell.

Manually (addtofilecache)

You can add files to the local file catalog, these are then synced to the server's file inventory using the following command:

--addtofilecache

pmagent --privman --addfiletocache /usr/bin/id

pmagent --privman --addfiletocache /usr/bin/*

pmagent --privman --addfiletocache /usr/bin/wh*

Deleting from Inventory (deletefilecache)

You can remove files from the local file catalog using the following command, these are not synced to the server's file inventory using the following command:

--deletefilecache

pmagent --privman --deletefilecache

pmagent --privman --deletefilecache /usr/bin/id

pmagent --privman --deletefilecache /usr/bin/*

pmagent --privman --deletefilecache /usr/bin/wh*

Listing Inventory (listfilecache)

You can list the local file inventory using the following command:

--listfilecache

pmagent --privman --listfilecache

pmagent --privman --listfilecache /usr/bin/id

pmagent --privman --listfilecache /usr/bin/*

pmagent --privman --listfilecache /usr/bin/wh*

Pushing to Privilege Manager Server

There is a scheduled task that will run every 30 second to check for local changes. In the event one is detected, information is sent to the server:

To review the Agent task list: pmagent --list

task: pmagent_processevents

key: default

when: 2021-02-08 17:27:10

reoccurs: 30s

maxretries: forever

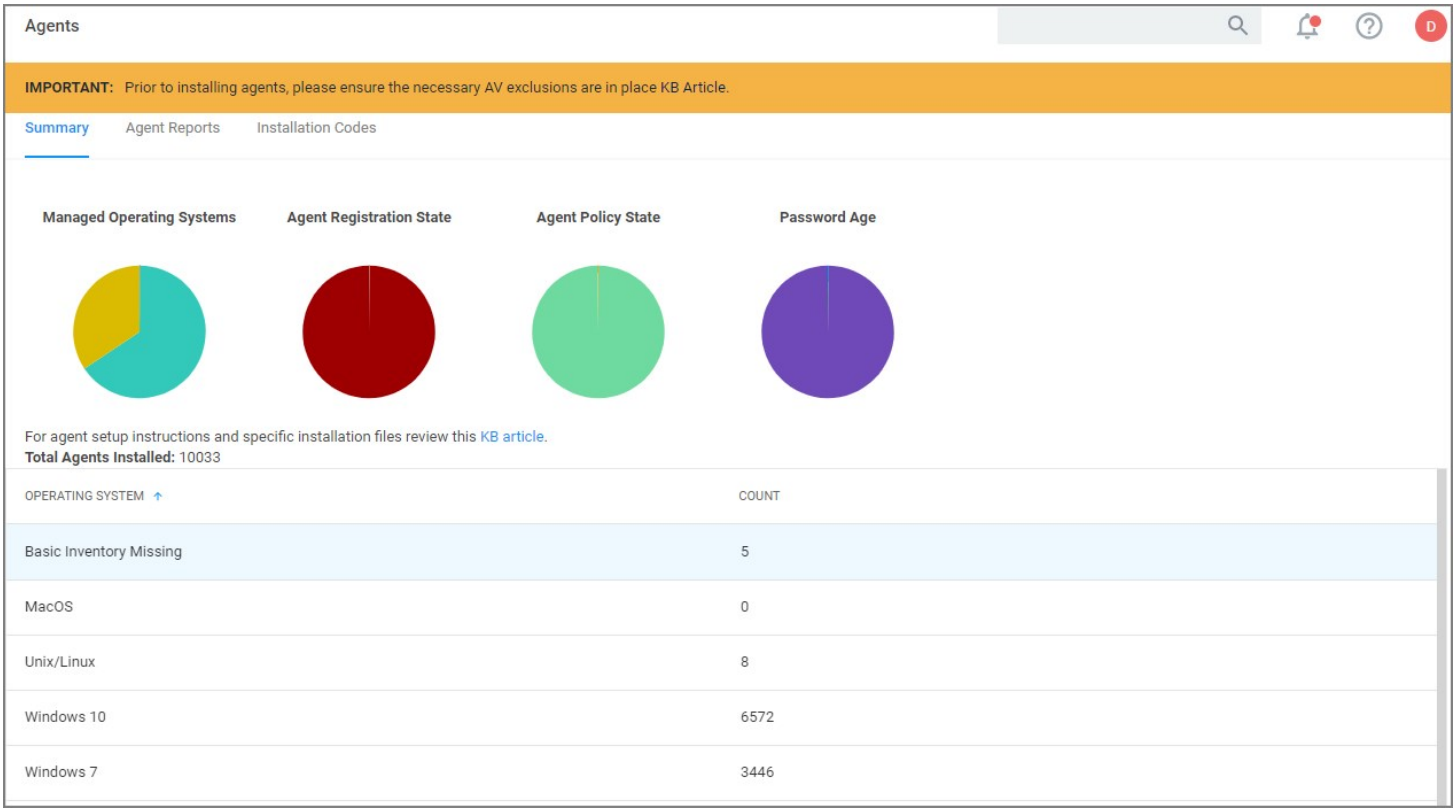
backoff: yes

attempts: 0

expires: 2262-04-12 00:47:16

last tried: never

To view agent registration and status information, navigate to **Admin | Agents**.



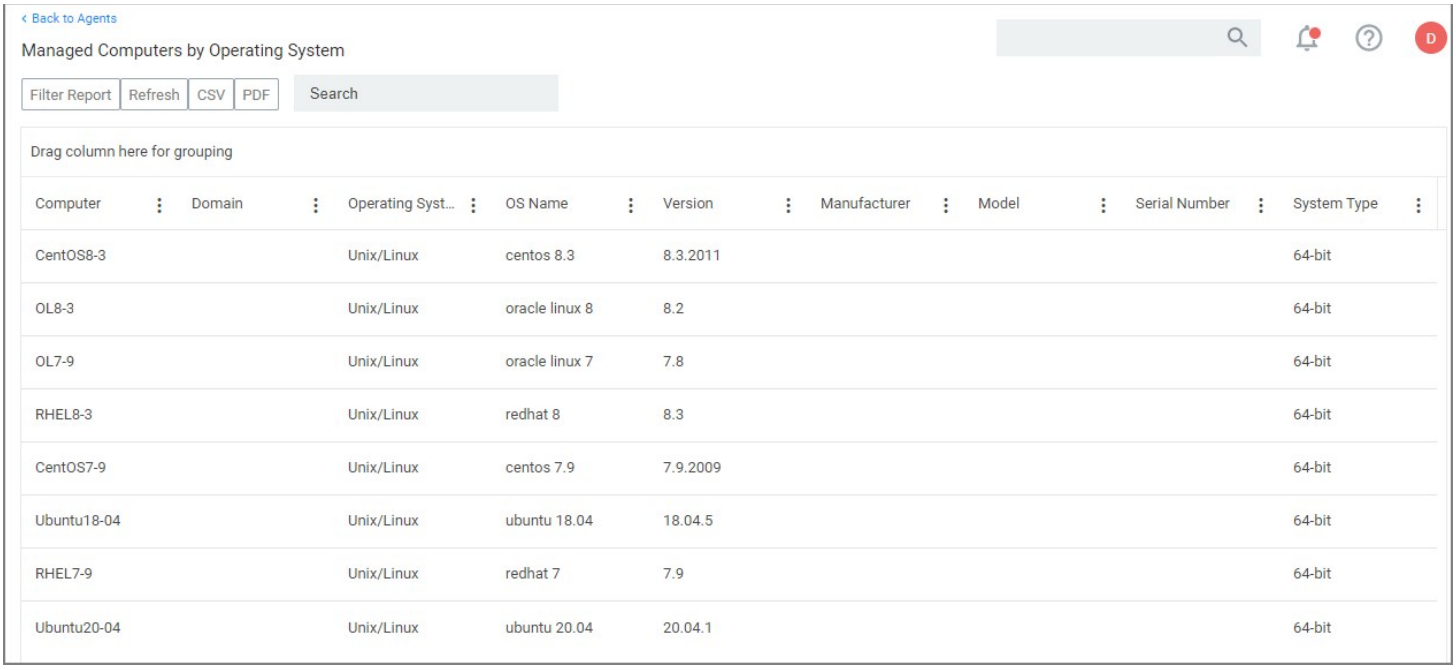
The **Summary** tab provides gauges for

- Managed Operating Systems
- Agent Registration State
- Agent Policy State
- Password Age

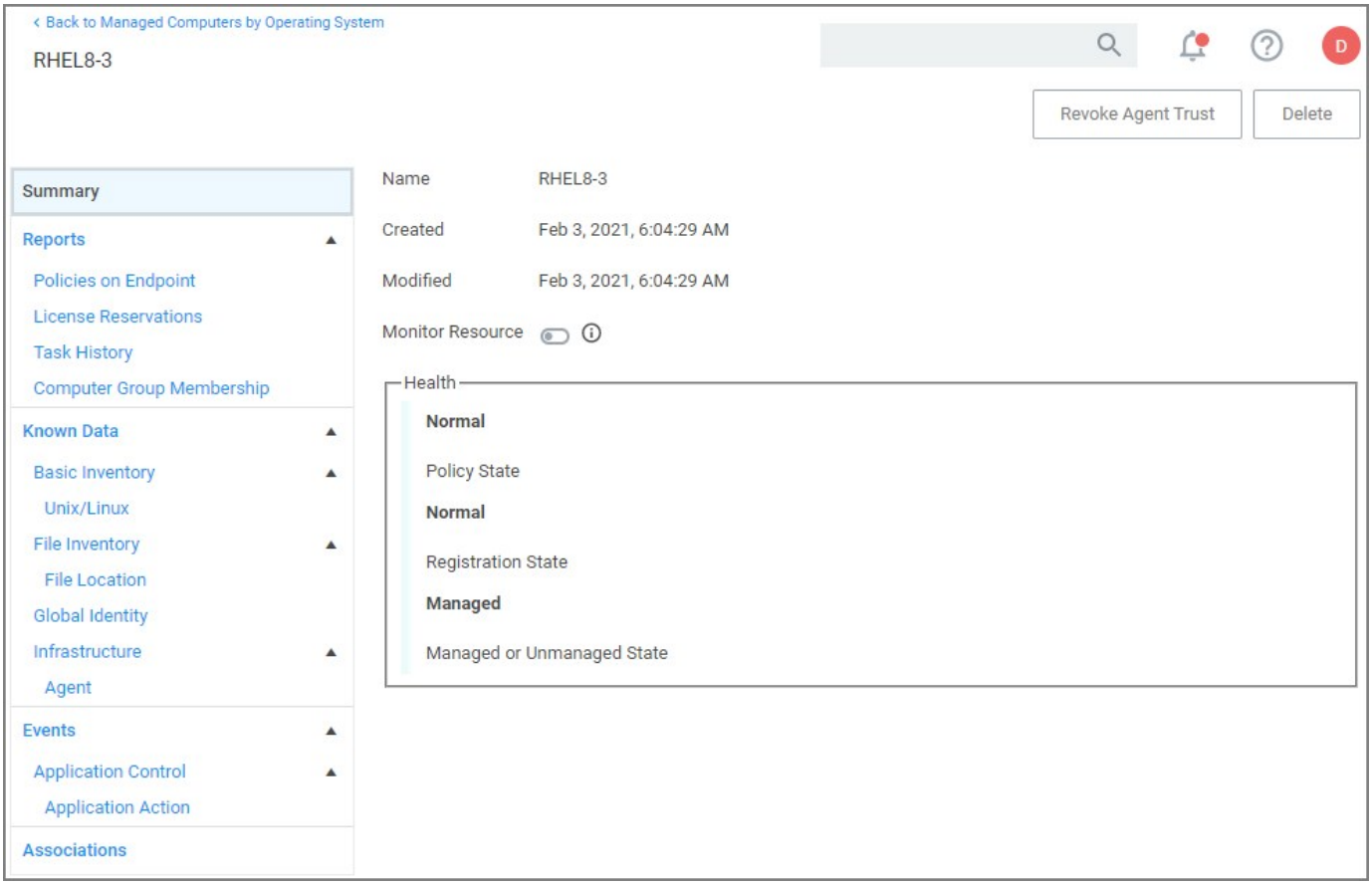
Clicking the gauges opens drilldown reports.

The table grid list all endpoint operating systems and the number of endpoints with that operating system. Selecting Unix/Linux shows the list of all agents registered with Privilege Manager , providing the

- Computer Name
- Operating System
- OS Name
- Version
- System Type



Clicking on a computer in the list, opens the resource page.



Registering the Agent

The pmagent service isn't required to be running for Privilege Manager policies to be executed, although for scheduled jobs to run successfully, the pmagent service need to be registered, for example:

```
pmagent --register -u https://192.168.248.201:443 -c WC5W-W2DD-ONLE
```

Where:

- -u xxxxxx is the PMServer address and port
- -c xxxxxx is the agent code

You can append command with a -V for extended output.

Once registered the following is inserted into the /etc/sudo.conf:

```
Plugin sudoers_policy /opt/thycotic/lib64/pmsudo_plugin.so
Path noexec /opt/thycotic/lib64/pmsudo_noexec.so
```

Once registered the following is inserted into the /etc/shells:

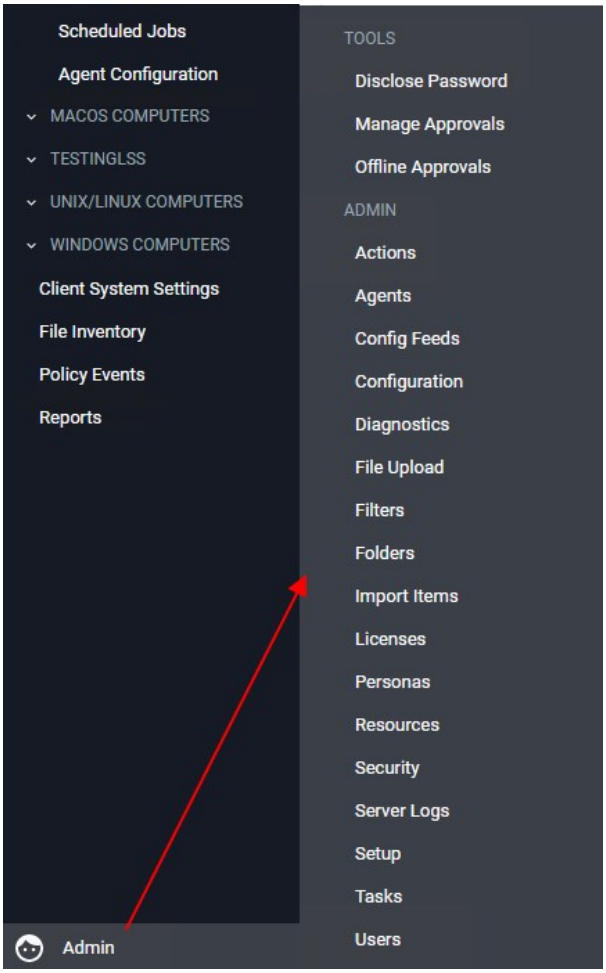
```
/usr/bin/pmsh
```

The Agent will also create a xxxxxx.thyorig and xxxxxx.thybak files of the original files modified.

- thyorig is a copy of the original file before we make any changes.
- thybak is a copy of the file taken before any additional changes made. This is being updated during agent upgrades.

Privilege Manager Administration

Access to many system administration tasks happens via the **Admin** menu at the bottom of the left navigation menu.



This section of the Privilege Manager documentation covers how to setup and configure resources listed under the Admin Menu. There are other common tasks an Administrator will do like create, edit, and delete policies, local groups and users, those are detailed further under their respective sections and are not addressed here under Admin procedures.

In Privilege Manager , taking action is the name of the Application Control game. Once you know how to accurately identify events via filters, the next crucial step in policy creation is to make stuff happen by applying specific actions to your filtered targets. This begs the question: what actions are possible to perform in Privilege Manager ?

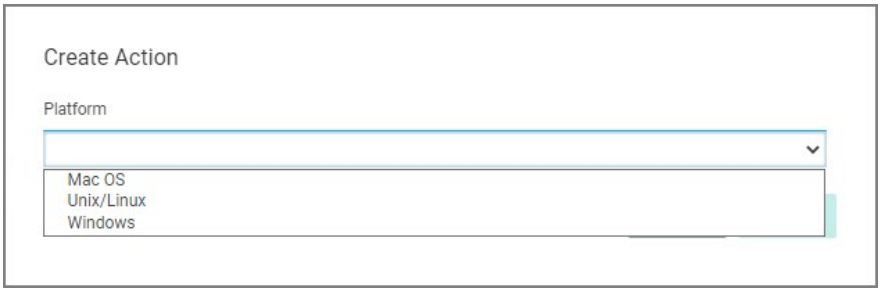
The most popular and well-known action categories in Application Control include:

- **Blocking Actions** - Blocking an application simply means: deny it, or prevent it from running.
- **Monitoring Actions** - This is a category of actions that can be applied to unknown applications that attempt to run. Sandboxing is another term often linked to monitoring, because you can create policies that link to reputation checking tools (like VirusTotal) to perform smart actions once an unknown file's reputation has been verified.
- **Elevation Actions** - Allowing an application to run (allow listing) is good and well for trusted programs, but many trusted applications also require a higher credential set than your end users normally have access to. The elevation action category will allow an application to run with elevated permissions so any user can, for example, install that trusted HP printer on your network without taking time out of a HelpDesk employee's day. Implementing elevation policies allow "Least Privilege" to be implemented by your organization, eliminating the need for local users to have full administrator access on their computer.
- **Workflow Actions** - Some actions explicitly enforce an organization's workflow system. The big example here is the "Request Access" action that will prompt a user for the reason they are trying to access an application for verification purposes and auditing.
- **Display Message Actions** - Display messages are paired with one of the action types listed above. Display Message Actions are customizable and serve to tell the end user what is happening and why.

For a more complete (and more specific) list of all out-of-the-box Privilege Manager actions and types of actions, see the List of Default Actions topic.

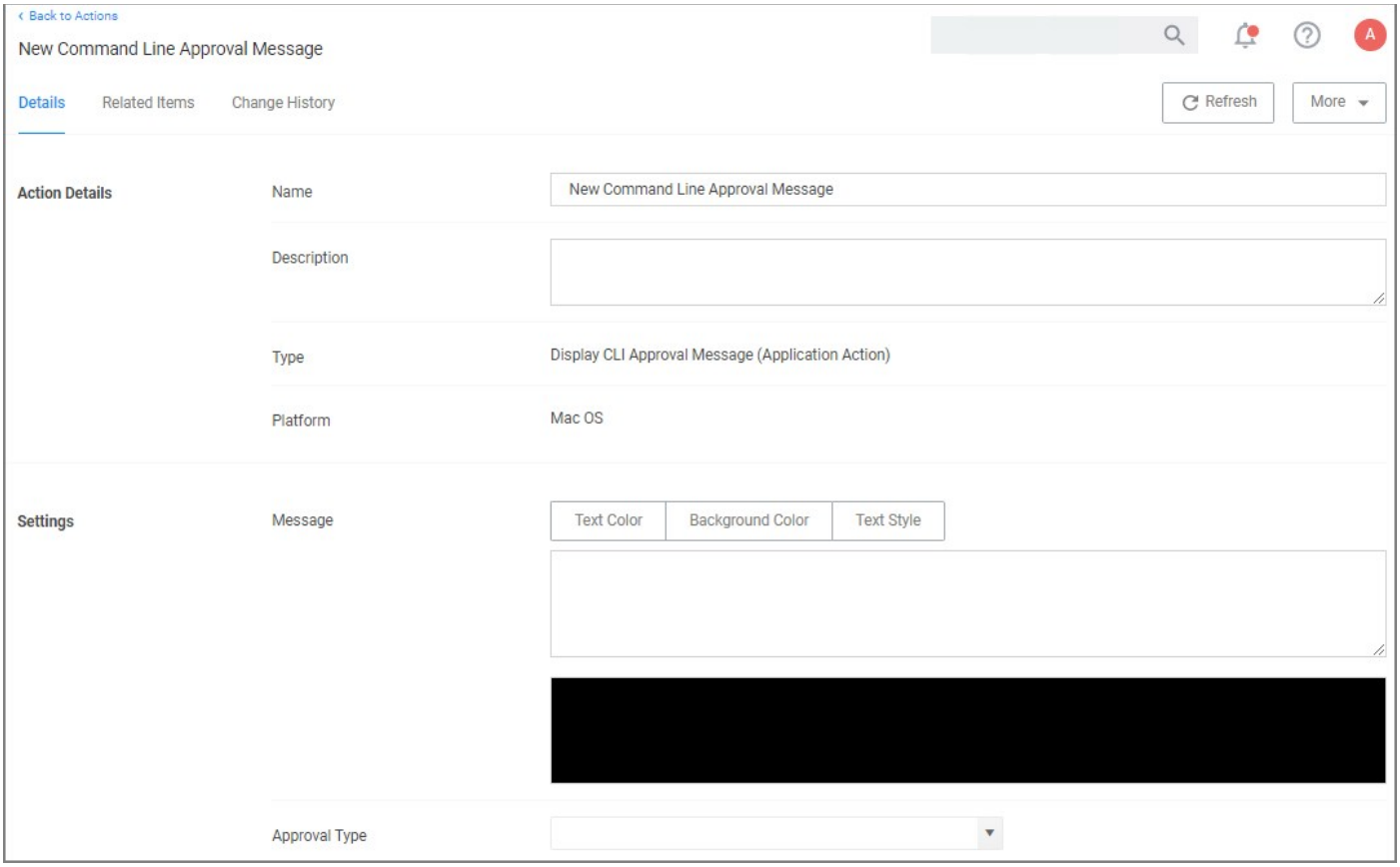
Creating a New Action Manually

1. Navigate to **Admin I Actions** in Privilege Manager and click **Create Action**.
2. From the **Platform** drop-down, select either Mac OS, Unix/Linux, or Windows.



3. From the **Type** drop-down, select the action type.
4. Name your new action and type a Description, then click **Create**.

   Editing options for actions depend on the type of action selected from the drop-down.



Using the Command Line Action Editor

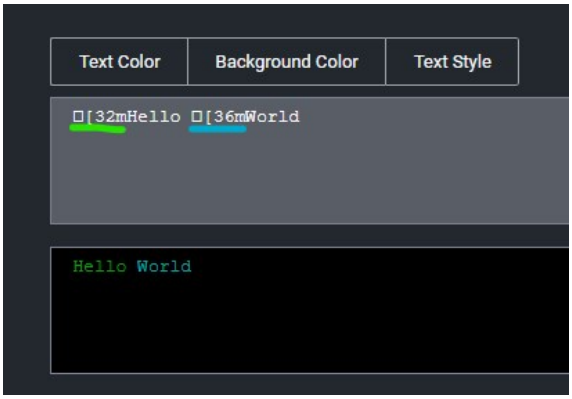
Command Line Action types have a built-in text editor to customize the user experience.

The administrator can customize the

- Text Color
- Background Color
- Text Style.

By default the background and foreground colors will be based on the user's terminal configuration settings. You can use **Text Style | Reset** to reset to defaults at any point.

The text color can be changed and any color/style customization applies to all text after the specific ANSI control character has been inserted.



Click here for a deep dive on ANSI control codes.

Windows Specific Actions

The following are Windows specific topics on actions:

- ActiveX Installer Action
- Application Classification Action
- Apply Application Compatibility Fix Action
- Deny File Access Action
- Deny Windows Hooking Action
- Encrypt Application Files Action
- Endpoint Group Member Approval Action
- Set Environment Variable Action
- Execute Application Action
- Group Member Approval Action
- Sandbox Action
- Set Process Security Descriptor Action
- Adjust Process Rights Action
- WYSIWYG Windows Action Message Editor

Adjust Process Rights Action

This topic explains the Adjust Process Rights Action and Unrestricted Tokens in Privilege Manager .

When elevating process rights with Application Control Solution (ACS) on Windows, there are times when the rights given by ACS appear to be insufficient. The process still doesn't work as it does when the user is logged in as Administrator, accepts the UAC box, or the process is run with the right-click Run As Administrator option. Sometimes an error is returned stating insufficient rights to access.

Microsoft with the release of Windows Vista introduced changes to security which included creating two tokens for users when they log in. For more information refer to the Microsoft Documentation on Restricted Tokes.

The lower privilege token is the one always used unless the user goes through UAC or other processes. ACS allows administrators to choose which token should be used to elevate certain processes. The lower privilege token, if it works, is the better option as it has fewer privileges and thus protects the system better. But if necessary, the higher-privilege token can be used by ACS when manipulating the process's security configuration.

The following are the Privilege Manager default Adjust Process Rights Actions. As with all actions delivered with Privilege Manager , these actions cannot be modified. They can be copied and then customized and as many actions as necessary can be created for a custom implementation:

- Add Administrative Rights
- Add Administrative Rights – Unrestricted
- Adjust Process Rights for Resource Monitor
- Remove Administrative Rights
- Remove Advanced Privileges Action

Each of those actions has by default Related Items associated, which need to be considered when customizing an action.

> **Note**: The **Suppress UAC Consent Dialog (Legacy)** action should only be used with Agent versions 10.4 and older.

Adjust Process Rights Action Settings Explained

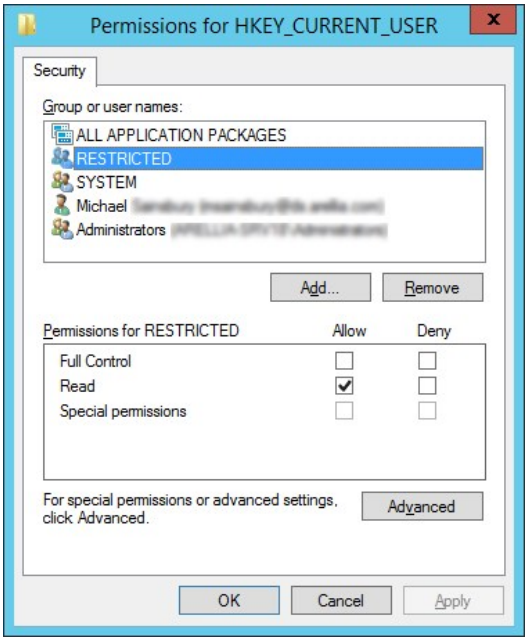
The application action elevates or restricts the permissions and/or privileges held by a process security token. By default, each process inherits the user's security token.

The four main areas to customize are:

- Selecting an **Action Type**, which can either Elevate Rights or Restrict Rights. When the adjustment is a rights restriction, there is an advanced feature that allows you to apply restricted Security Identifiers (SIDs), which further restricts access to securable objects. More about this under the What is a Restricted SID topic.
- Adding or Removing **Windows Privileges**, these come pre-populated with a set of default recommendations for each out of the box Action. To learn more about these Windows Privileges visit Microsoft's Documentation about User Rights Assignment.
- Adding or Removing **Build-in Roles**, these are the roles that provide file level access to a system and they are based on group membership.
- Adding or Removing **Well-known Accounts**, these are specifying the integrity levels at which processes can run. Also refer to Microsoft's Documentation about Mandatory Integrity Control.

What is a Restricted SID?

A restricted ID is an access token that modifies a user's access to securable objects and controls a user's ability to perform various system-related operations on the local computer.



When a restricted process or thread tries to access a securable object, the system performs two access checks, using the

- token's enabled SIDs, and
- the list of restricted SIDs.

Access is granted only if both access checks allow the requested access rights.

When to use restricted ID

Use a restricted SID to further restrict the applications in the sandbox, which you can use as another method of monitoring. In other words, this is a way to protect yourself against unknown applications if you don't want to implement a blocking policy.

The restricted SID will allow only Read access to the user registry but not to the local machine registry. Also, restricted processes do not have rights to open any network-based resource, such as file servers. As a result, the restricted SID will be able to do very little and apps may not work correctly under this model. Ultimately, apps in the sandbox that have restricted SID applied to them will be severely locked down.

Using Apply Restricted SID

When you select Restrict Rights and then Apply Restricted SID, you add the Restricted SID to the process. When evaluating security for any operation, when there is any Restricted SID specified then not only does the Security Descriptor need to allow access to the user, but explicitly to the Restricted SID.

How to Add Windows Permissions

Windows permissions are specific OS based permissions to perform actions, like changing system time or taking ownership of a files vs. accessing securable resources. To learn more about these Windows Privileges visit Microsoft's Documentation about User Rights Assignment.

How to Use Well-known Accounts

In this area you will most likely specify either of the following:

- High Mandatory Level
- Low Integrity Level
- Medium Integrity Level

- Medium Plus Integrity Level
- Restricted Code Well Known Group
- System Integrity Level
- Untrusted Mandatory Level

These integrity levels determine who else can use a specific process. Processes launched by a standard user are by default medium integrity. Any process that gets launched via an elevated policy has a high integrity level assigned by default.

Processes need to have level parity to be able to utilize each other. This means, if a process is running at a high integrity level and wants to inject code into another process, it can do so if that other process is running at high, medium, or low integrity levels, but it cannot inject code into system level processes. Processes that run at low integrity levels can be utilized by pretty much any other process, but they cannot reach out to other processes.

New processes are always created with the minimum of the user integrity and file integrity levels. This guarantees that a new process never executes with higher integrity than the executable file.

Example Scenario

In Privilege Manager we can use these Well-known Accounts to set or remove level integrity independent of or in combination with any assigned elevation or blocking policies.

For example, Adobe applications are generally part of elevation policies in an organization. As mentioned before an elevation policy defaults to a high integrity level. Due to Adobe interoperability requirements within their product suites and with processes launched by standard users, it requires medium integrity levels for all Adobe products.

Any elevation policy pertaining to Adobe products, needs an **Adjust Process Rights Action** that sets the **Well-known Accounts** setting to **Medium Integrity Level**.

Additional Options Explained

Under Additional Options customers can select to **Use User's Unrestricted Token** and **Disallow changes to the process rights after applying changes**.

The use of the unrestricted token option is another level of available customization beyond what can be enabled or disabled via the Adjust Process Rights Settings. Enabling this token presents the user with extra levels of access rights over the process. If changes to the process rights are disallowed, the user's unrestricted token is valid as long as the pertaining process is running.

For example if you have a standard user policy for a certain process to run at medium integrity level, but you want to enable more rights without fully elevating and granting the process a high integrity level, you can use the unrestricted access token to fine tune.

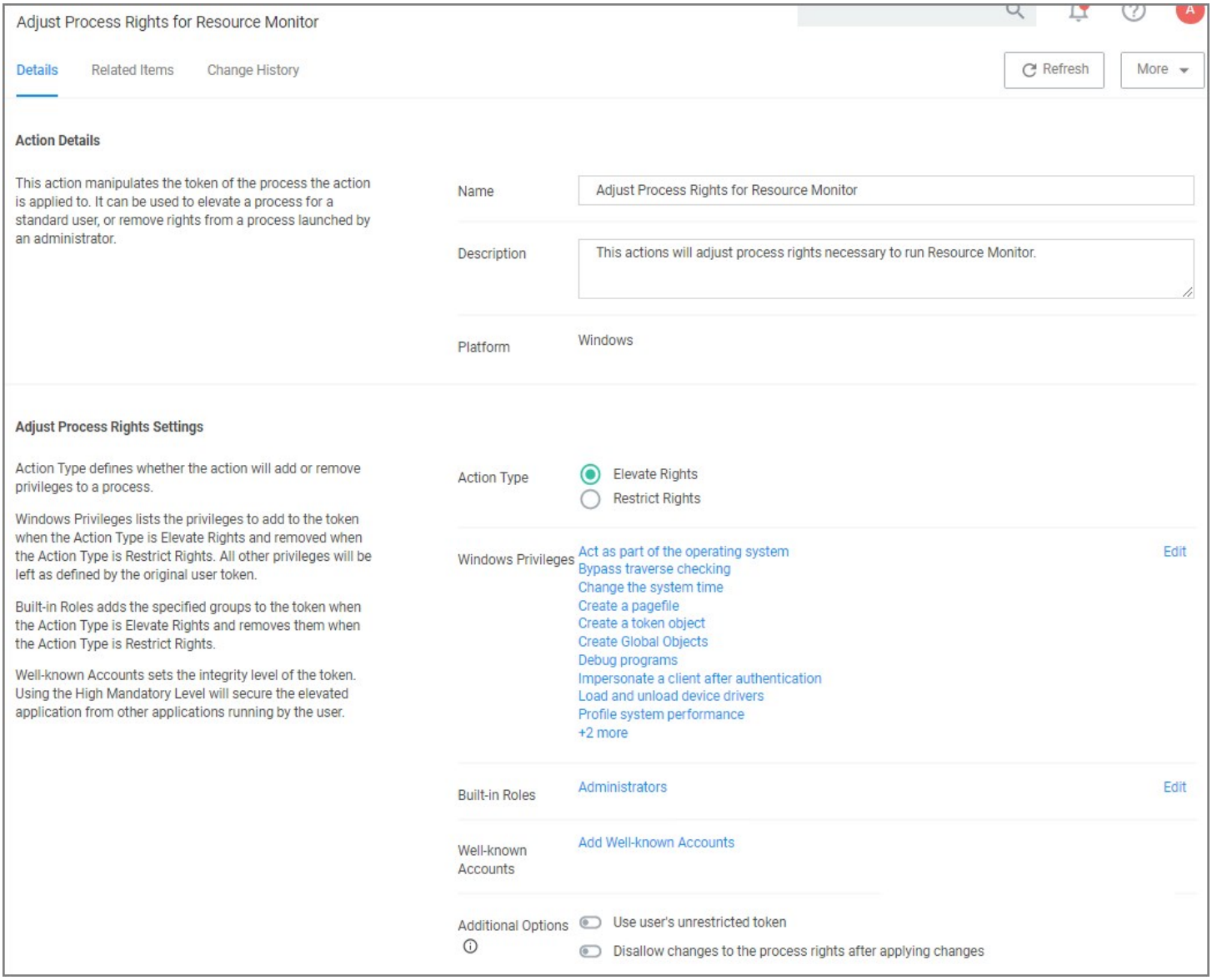
Enabling Unrestricted Token Use

To set the unrestricted token, follow these steps:

1. Select the action of type **Adjust Process Rights Action** that best fits your specific business need.
2. Create a copy of that action.
3. Select the **Use User's Unrestricted Token** checkbox on the copied action and save the action with a new name (for example "Unrestricted Token - Add Admin Rights").
4. Add the new action to new policies or change existing policies and remove the old action.
5. Add the new action and save the changes.
6. Then update the agent client policies.
7. The ACS agent must retrieve the details of the new action from the server via the ACS web service.
8. The change may take a few minutes to reach the client machine after the client policies have updated depending on how busy the server is.

Adjust Process Right for Resource Monitor

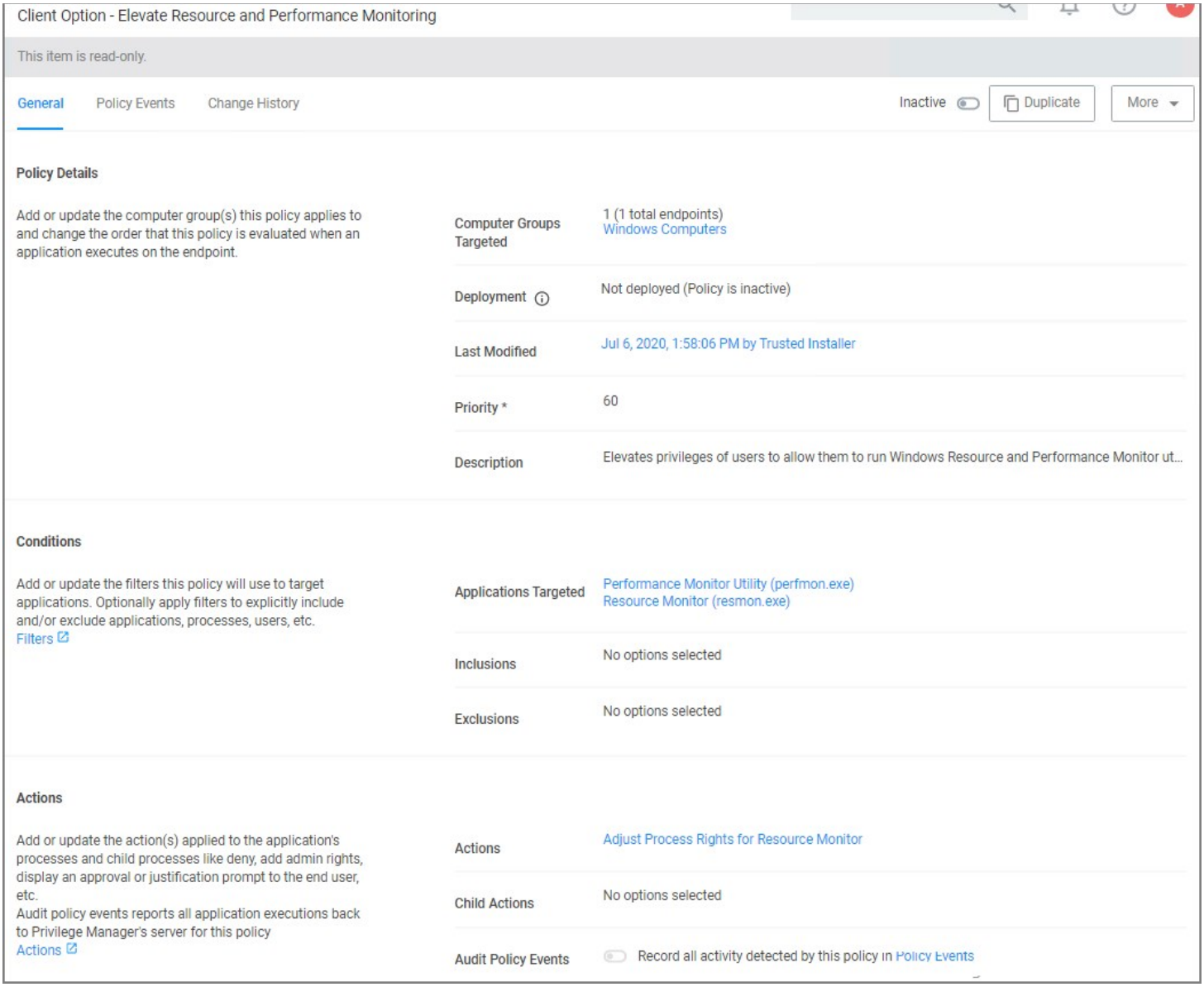
The following image shows the default action. To customize make a copy to change any of the default items.



Related Item - Policy

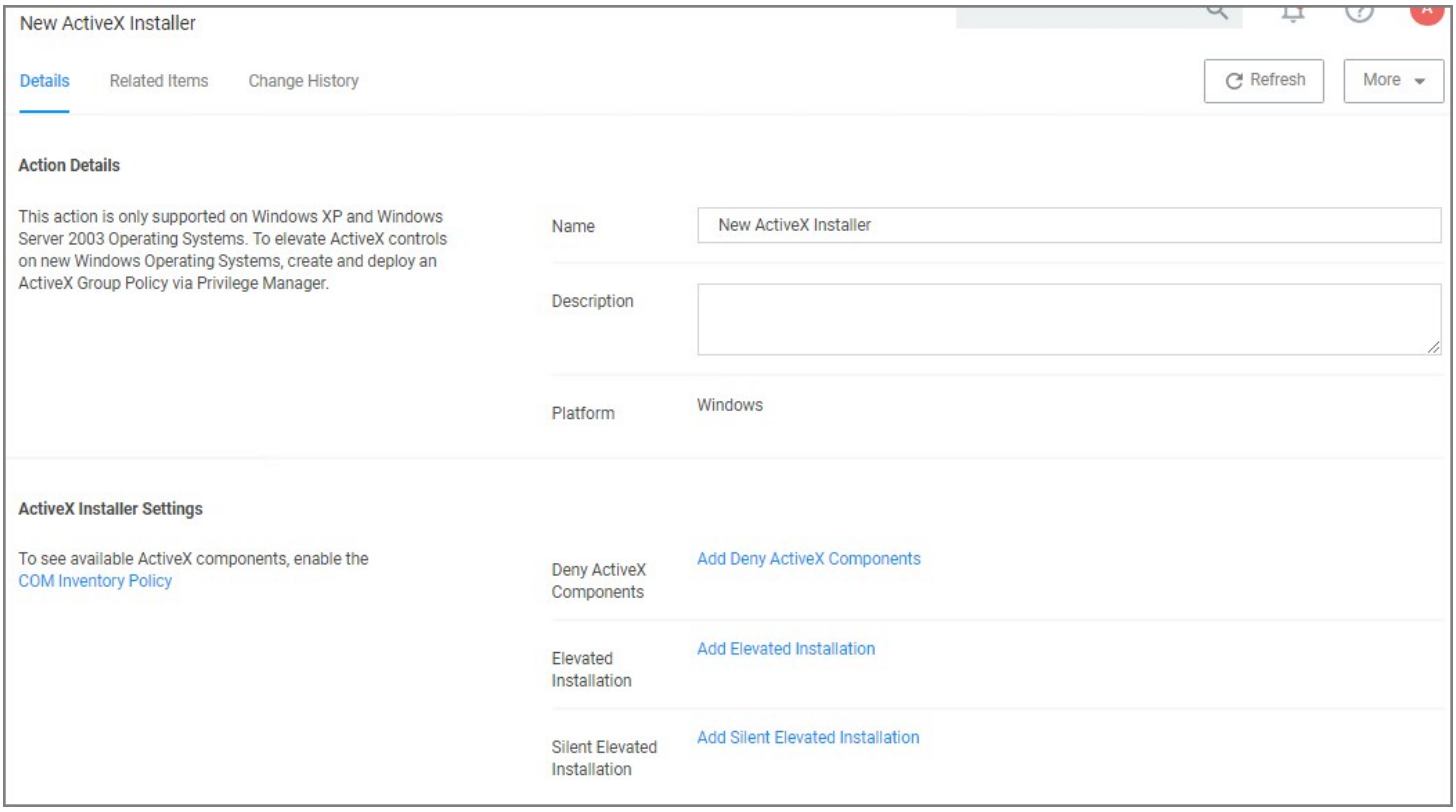
The following image shows the default related item policy for the above action. To customize make a copy to change any of the default items.

Delinea


Client Option - Elevate Resource and Performance Monitoring
This item is read-only.
General
Policy Events
Change History
Inactive
Duplicate
More
Policy Details
Add or update the computer group(s) this policy applies to and change the order that this policy is evaluated when an application executes on the endpoint.
Computer Groups Targeted
1 (1 total endpoints)
Windows Computers
Deployment
Not deployed (Policy is inactive)
Last Modified
Jul 6, 2020, 1:58:06 PM by Trusted Installer
Priority *
60
Description
Elevates privileges of users to allow them to run Windows Resource and Performance Monitor ut...
Conditions
Add or update the filters this policy will use to target applications. Optionally apply filters to explicitly include and/or exclude applications, processes, users, etc.
Filters
Applications Targeted
Performance Monitor Utility (perfmon.exe)
Resource Monitor (resmon.exe)
Inclusions
No options selected
Exclusions
No options selected
Actions
Add or update the action(s) applied to the application's processes and child processes like deny, add admin rights, display an approval or justification prompt to the end user, etc.
Audit policy events reports all application executions back to Privilege Manager's server for this policy
Actions
Actions
Adjust Process Rights for Resource Monitor
Child Actions
No options selected
Audit Policy Events
Record all activity detected by this policy in Policy Events

ActiveX Installer Action

This type of action is a specific use-case for older Windows systems (Windows XP and Windows Server 2003). The ActiveX installer action allows or denies an application to enable standard users to install approved ActiveX components. If you don't know what ActiveX means, you won't need to use this type of action.



Parameters

The following details can be set on the ActiveX action:

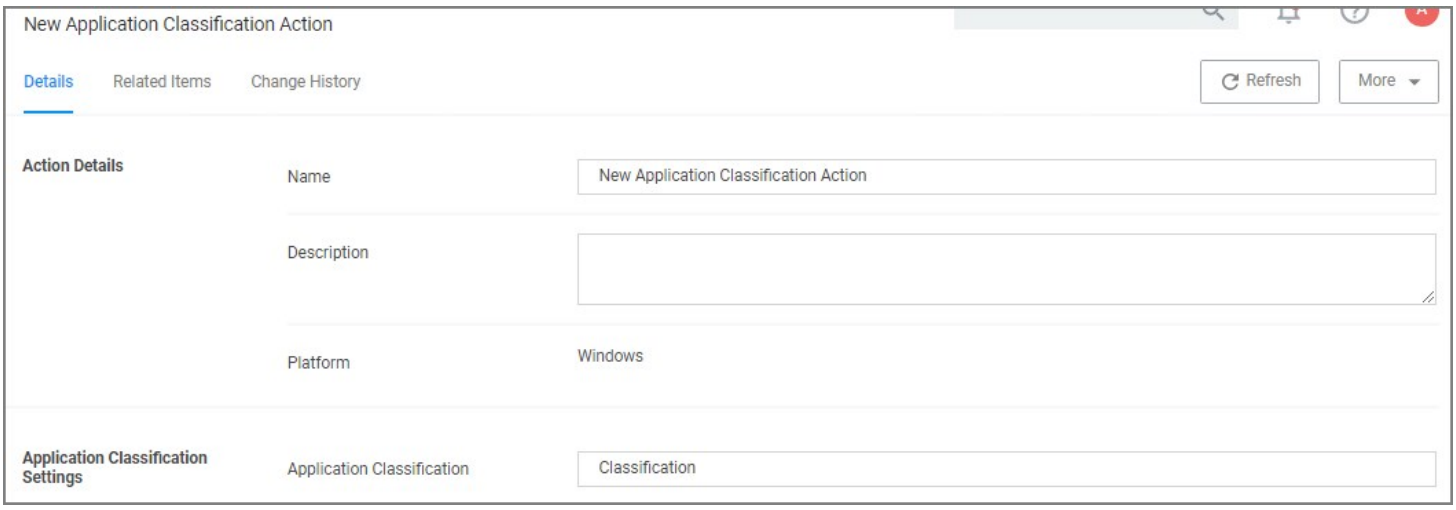
- Deny ActiveX Components, or
- Elevated Installation, or
- Silent Elevated Installation

For those actions for ActiveX, these parameters can be specified:

- Scope by Organization Group
- Search text
- Maximum rows returned
- Resources (use the column filter function to locate a resource and click **Add**)

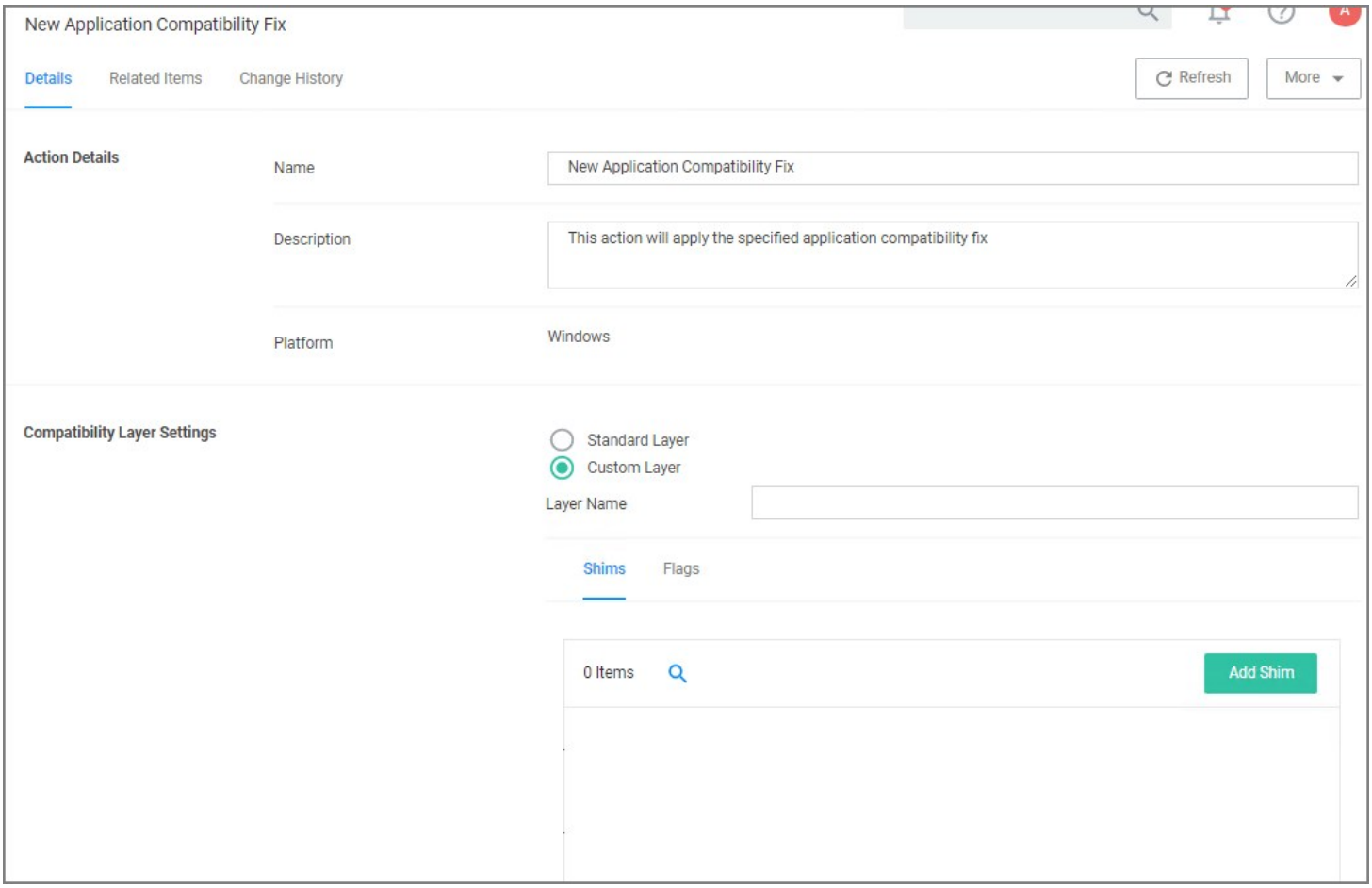
Application Classification Action

This type of action will restrict applications from modifying certain items and will enforce standard Windows ACLs when the targeted application accesses restricted files, folders, registry keys, or services on a computer.



Apply Application Compatibility Fix Action

This type of action will allow old applications that must be run via compatibility mode to execute without manual compatibility adjustments.



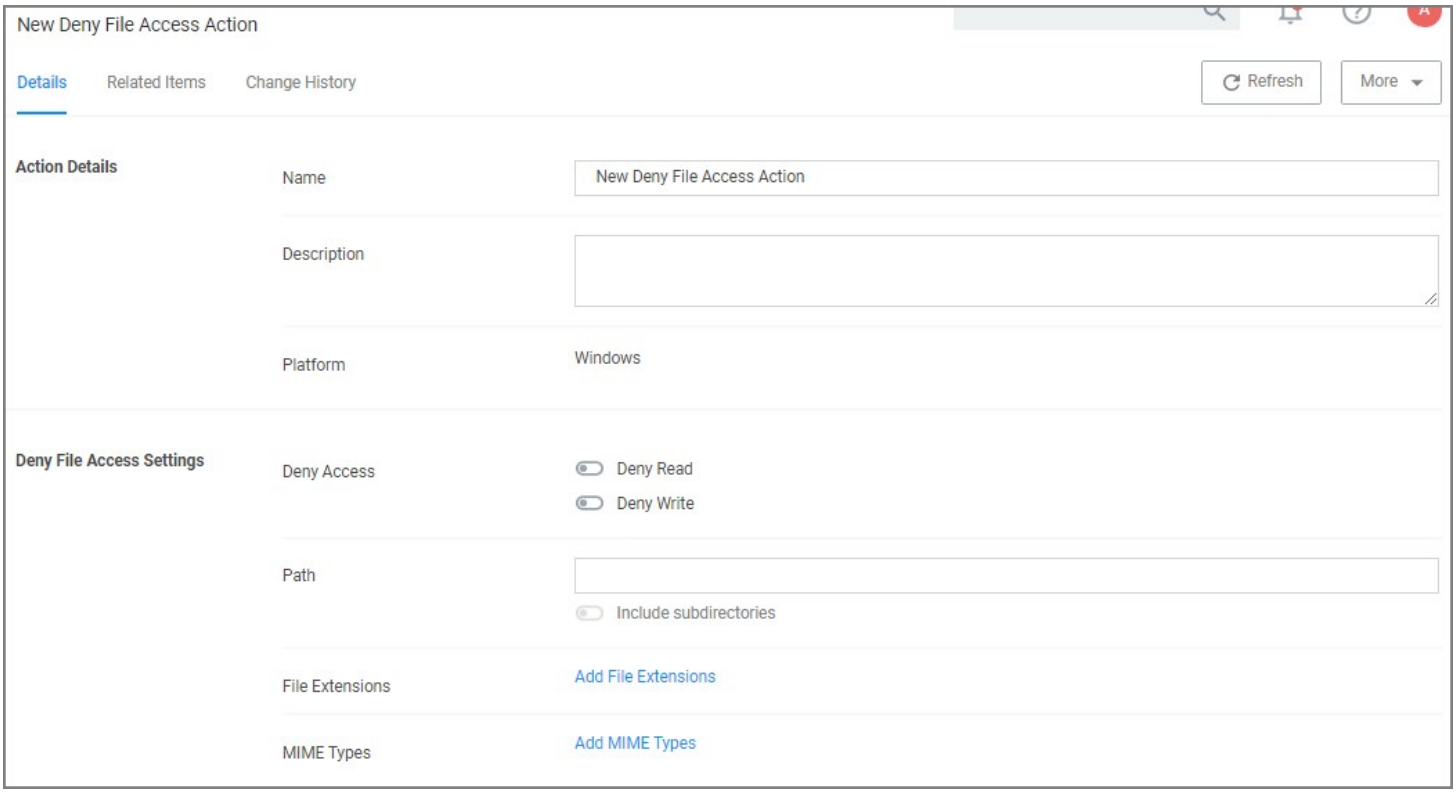
Parameters

The following Compatibility Layer Settings can be set on the Apply Application Compatibility Fix action:

- Custom vs. Standard Layer, which lets users select a layer either x86 and x64, x86 only, or x64 only.
- Shims
- Flags

Deny File Access Action

As the name suggests, this type of action will prevent applications from reading or writing (or both) to certain directories or to certain file types.



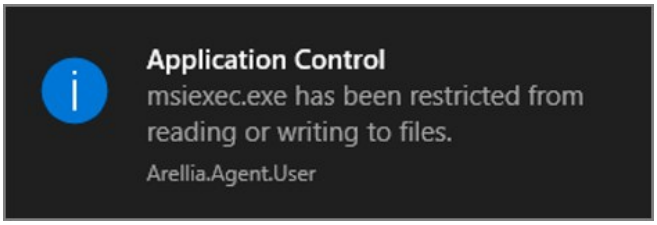
Parameters

The following Deny File Access Settings can be specified:

- Deny Access to read and/or write operations.
- Path and possibly subdirectory locations.
- Specific file extensions.
- MIME types.

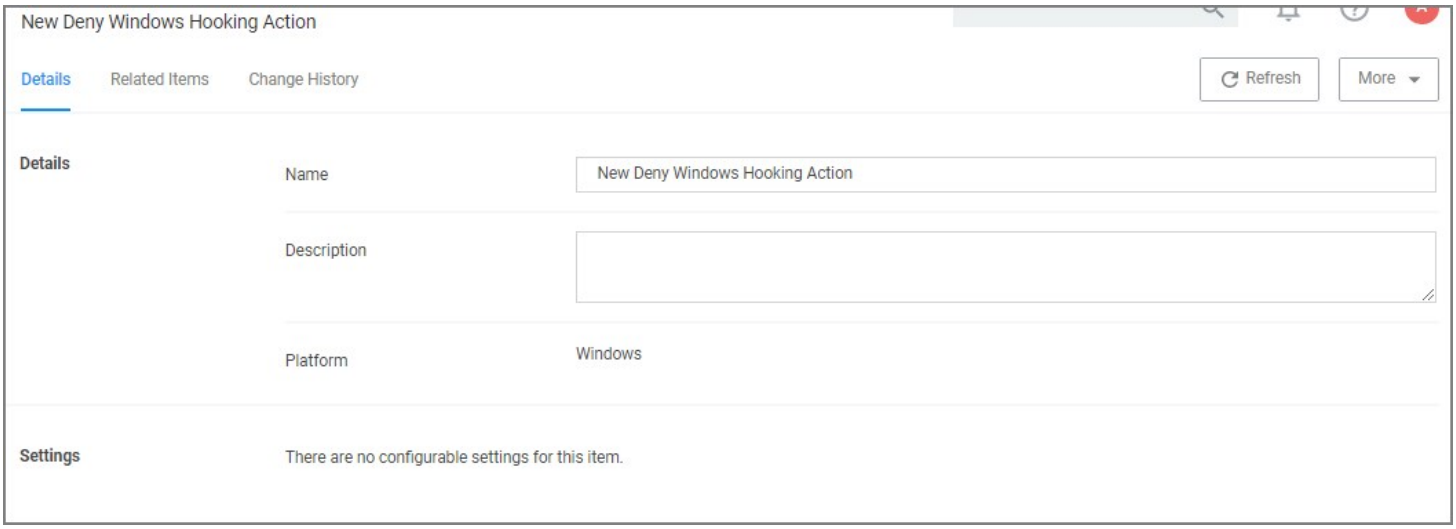
Deny Files Read and Write Access Message

This action displays a message to the user informing that an application will be restricted from certain file access. The Deny Read/Write Access to Microsoft Office Document Files Action needs to be used with this message.



Deny Windows Hooking Action

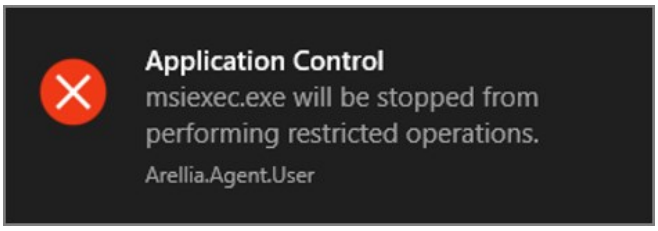
This type of action will limit specified applications from interacting in malicious ways with other applications.



This action does not have any configurable parameters.

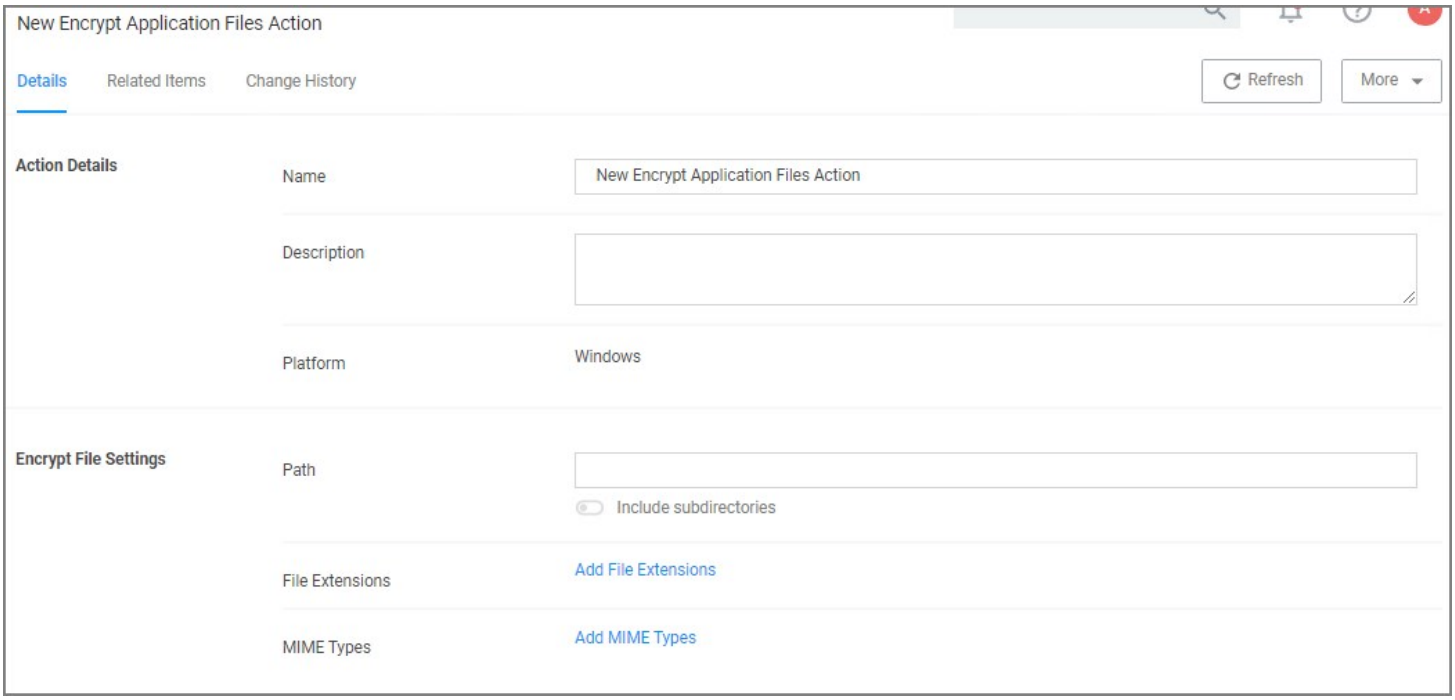
Windows Hooking Message

The action displays a message to the user informing them that an application will be stopped from interacting with other applications. The Deny Windows Hooking Action should be used with this message.



Encrypt Application Files Action

This type of action will force applications to use Microsoft encryption when saving a file.



Parameters

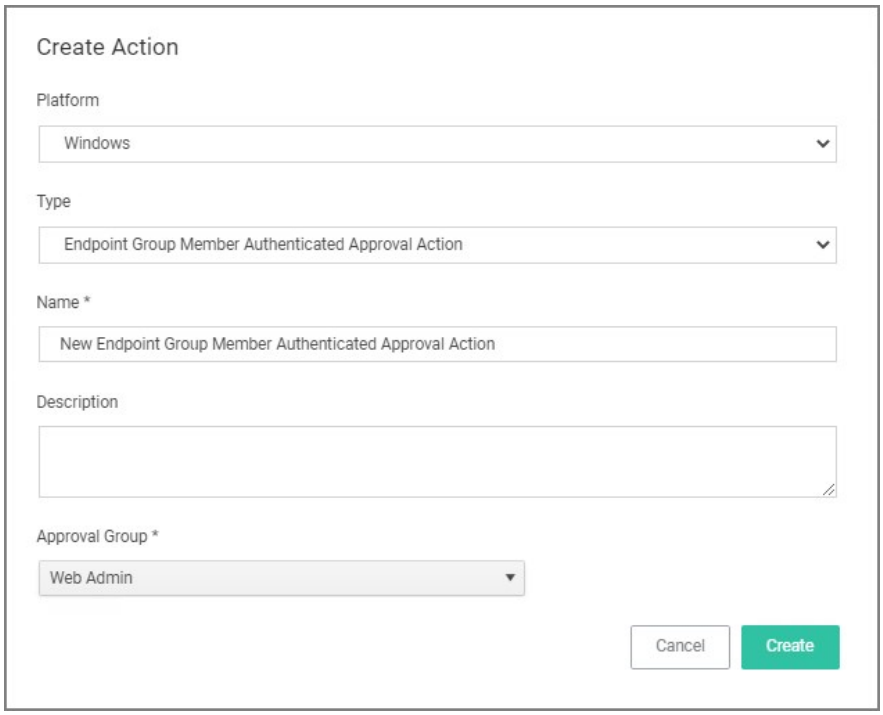
The following Encrypt Application Files Settings can be specified:

- Path and the option to include subdirectories.
- File Extensions.
- MIME Types.

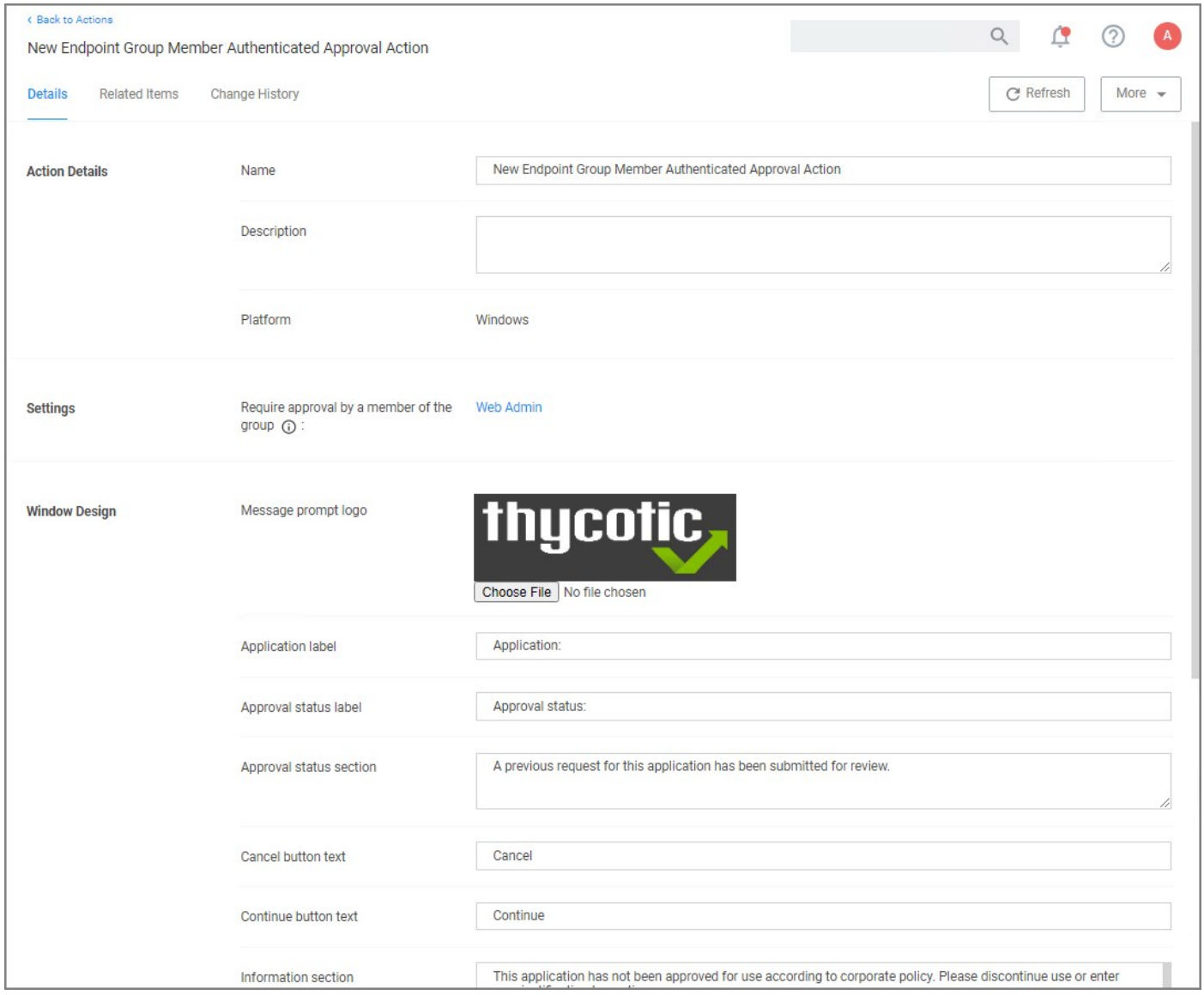
Endpoint Group Member Approval Action

This action can be used for *over the shoulder* approvals, whether systems are on- or offline. The supervisor approves access by authentication on the user's endpoint system.

1. Navigate to **Admin I Actions**.
2. Click **Create**.
    1. On the **Create Action** modal from the **Platform** drop-down select **Windows**.
    2. From **Type** drop-down select **Endpoint Group Member Authenticated Approval Action**.
    3. Enter a meaningful **Name** and **Description**.
    4. From the **Approval Group** drop-down, select the group membership of the approver.



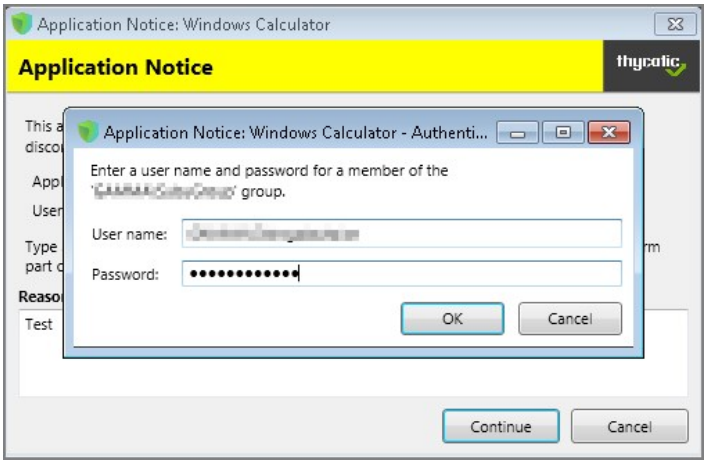
5. Click **Create**.



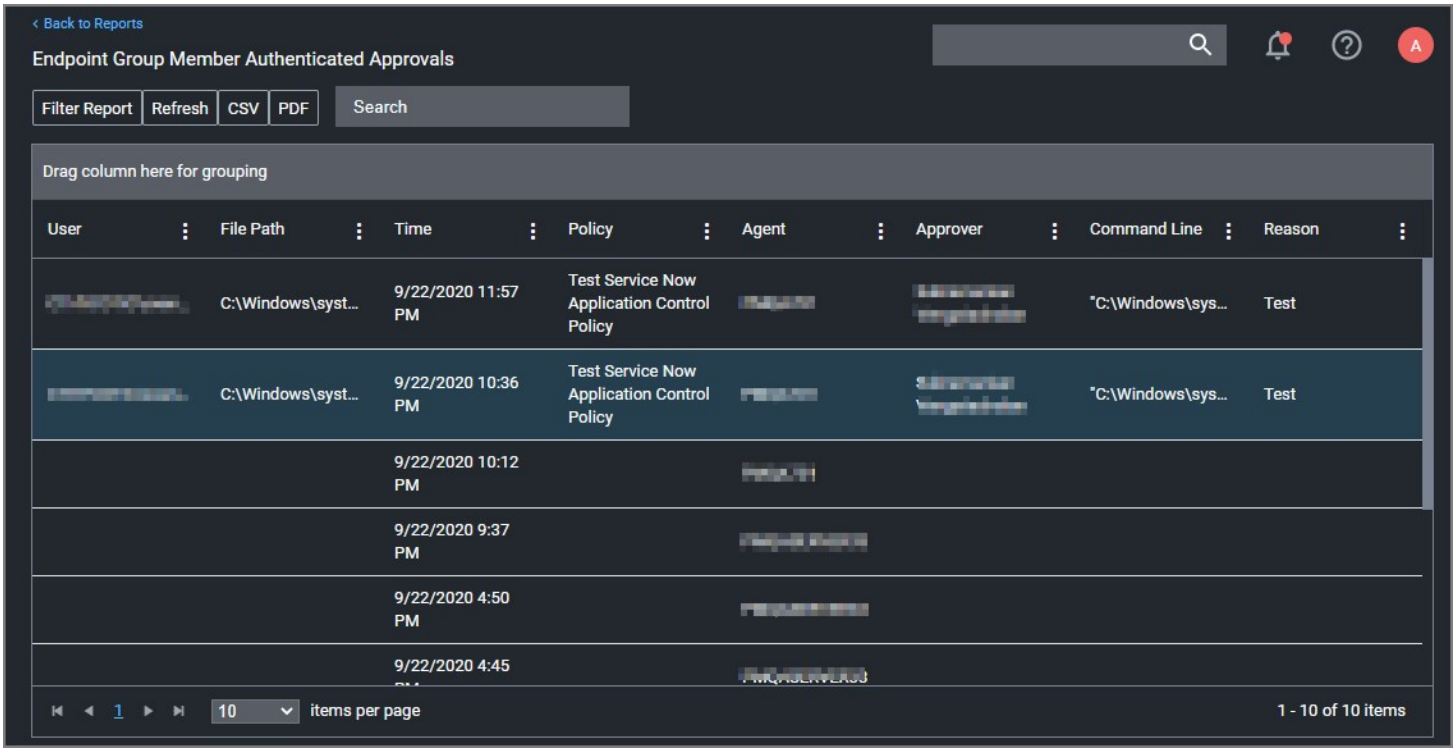
3. Under Settings verify the **Require approval by a member of the group:** contains the correct group. If you ever need to change it, come back to this page and click the group name to access the change modal.
4. Navigate to your computer group's **Application Policies**, click **Create Policy** or find an existing policy that you want to use for these approvals.
5. Under the **Actions** section, search for and add the action you previously created.
6. Click **Save Changes**.
7. Click the **i** next to **Deployment** and select **Resource and Collection Targeting Update** to immediately send the policy to your endpoint agents.

Policies also automatically update according to a schedule.

Sample Group Member approval notice with approval overlay:



Refer to the **Endpoint Group Member Authenticated Approvals** report to view a history of "over the shoulder" approvals:

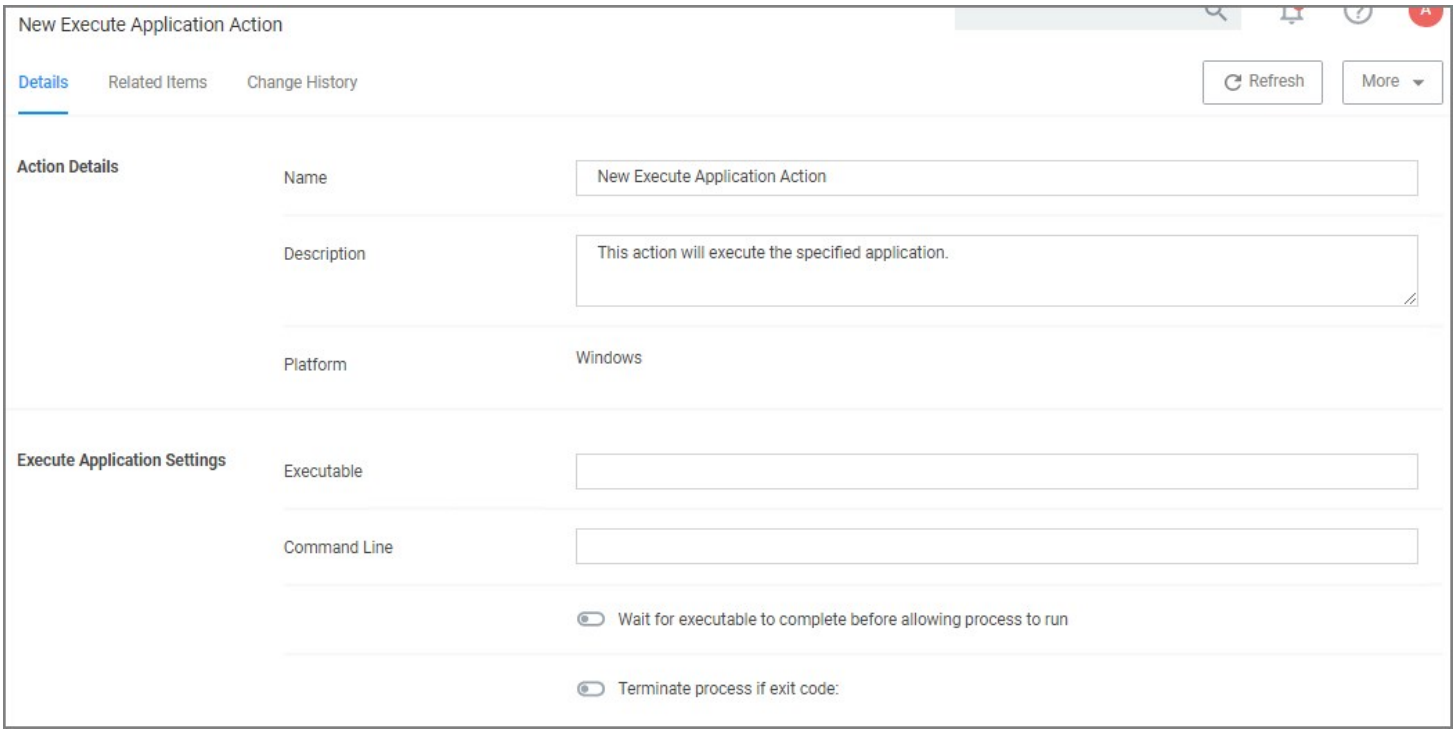


Related Topics

- Group Member Authenticated Message Action, which guides you through setting up approvals based on the group membership of the approver.
- Using an Endpoint Group Member Authenticated Message Action, which guides you through setting up *over the shoulder* approvals that can be used on- and offline with a ServiceNow system integration.

Execute Application Action

This type of action will execute another application and (optionally) wait on that process to complete before the original process can execute.



Parameters

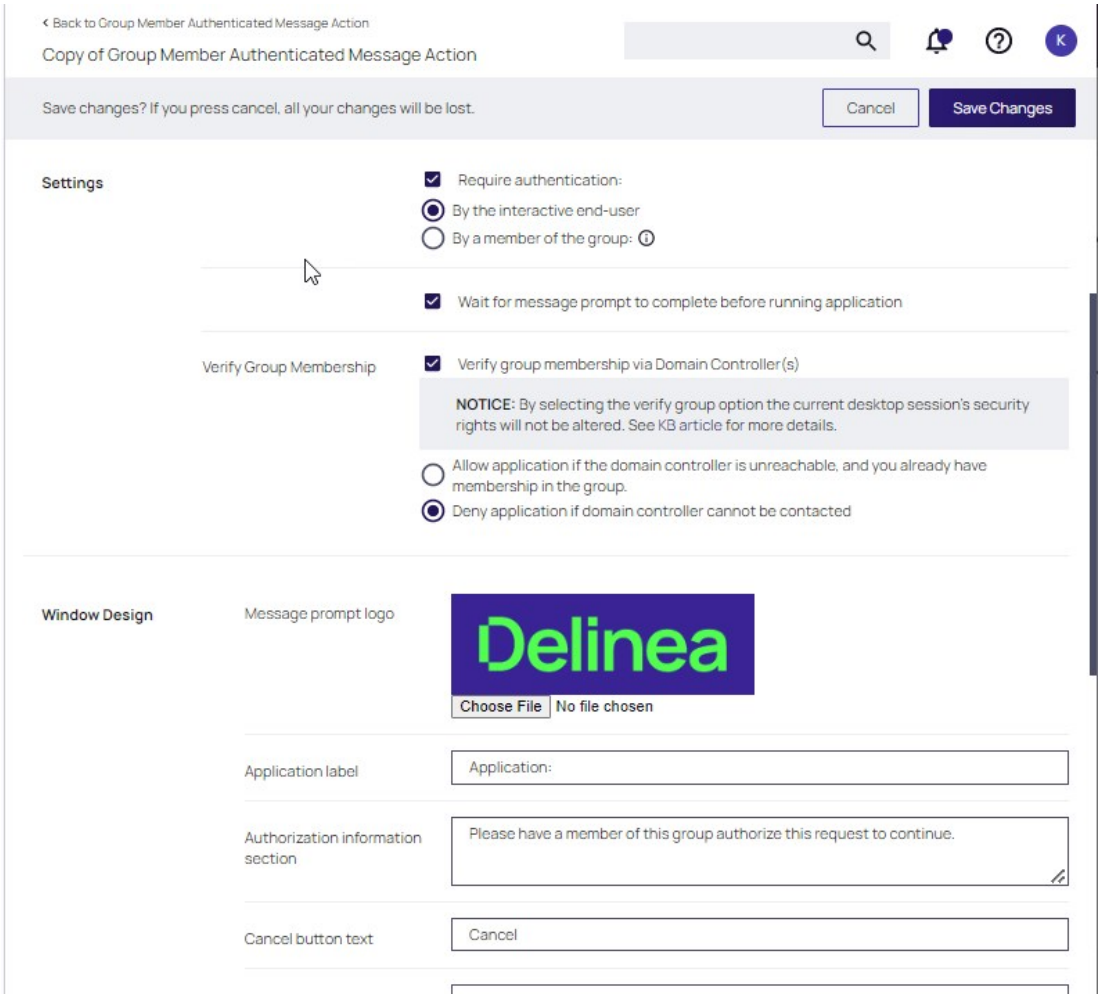
The following Execute Application Settings can be specified:

- an executable
- command line arguments

Group Member Approval Action

This action can be used for approvals that are based on a group membership authentication of the approver.

1. Navigate to **Admin I Actions**.
2. Search and select **Group Member Authenticated Message Action**.
3. Click **Duplicate**.
4. Name your new action and click **Create**.



5. Customize the Action based on your specific business requirements.
6. Verify the **By the member of the group:** is active and a group is listed below the button. If you ever need to change it, come back to this page and click the group name to access the change modal.
7. Determine the state of the **Verify group membership via Domain Controller(s)** check box.

   Note: This option relies on the ability of computers to contact their domain controllers in real time to authenticate users and refresh group memberships.

   If enabled, the Delinea agent will contact a domain controller to re-authenticate the user and refresh group memberships each time this

action is invoked. If a domain controller cannot be contacted, authentication will be controlled by the **Verify Group Membership** radio buttons.

If disabled, the Delinea Agent will use the group membership information that is present in the user's desktop session, which reflects the group memberships that were in effect when the user logged on to their desktop and may no longer be accurate.

8. Click **Save Changes**.
9. Navigate to your computer group's **Application Policies**, click **Create Policy** or find an existing policy that you want to use for these approvals.
10. Under the **Actions** section, search for and add the action you previously created.
11. Click **Save Changes**.
12. Click the **i** next to **Deployment** and select **Resource and Collection Targeting Update** to immediately send the policy to your endpoint agents.

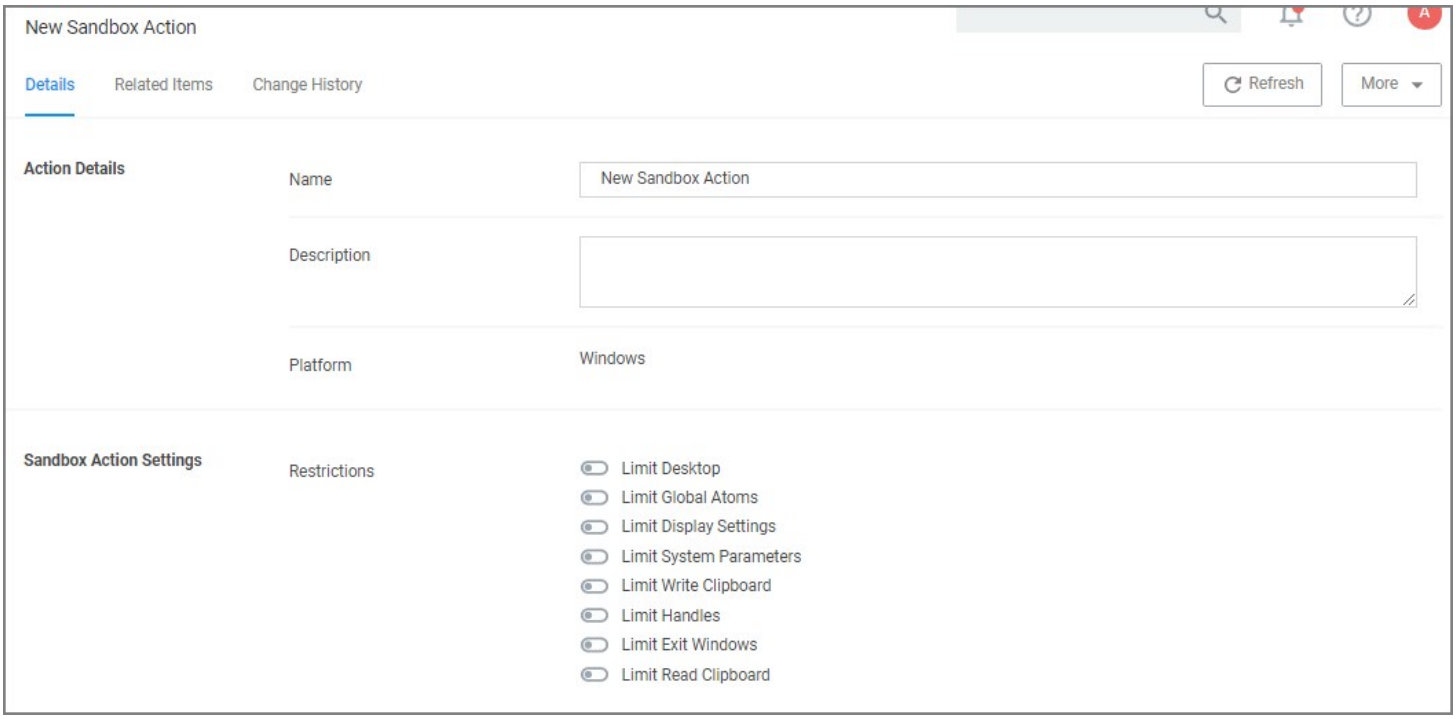
Policies also automatically update according to a schedule.

Related topics:

- Endpoint Group Member Authenticated Message Action, which guides you through setting up *over the shoulder* approvals that can be used on- and offline.
- Using an Endpoint Group Member Authenticated Message Action, which guides you through setting up *over the shoulder* approvals that can be used on- and offline with a ServiceNow system integration.

Sandbox Action

This type of action will limit the environments in which certain code can execute. The sandbox runs a process in a job object that limits its ability to interact with other processes, as well as limiting some specific types of interactions with the operating system.



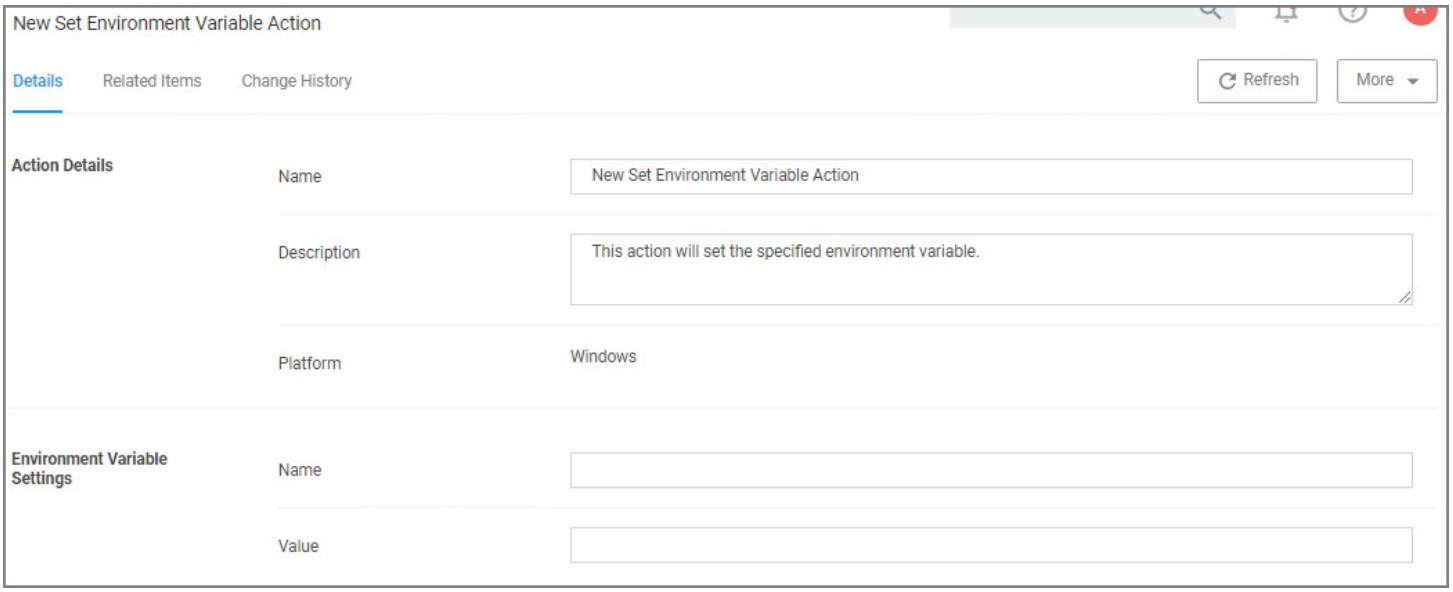
Parameter

The following Sandbox Action Settings can be enabled:

- Limit Desktop
- Limit Global Atoms
- Limit Display Settings
- Limit System Parameters
- Limit Write Clipboard
- Limit Handles
- Limit Exit Windows
- Limit Read Clipboard

Set Environment Variable Action

This type of action sets an environment variable for processes that could change the behavior of an application, or be caught by an Environment Variable filter in another policy.

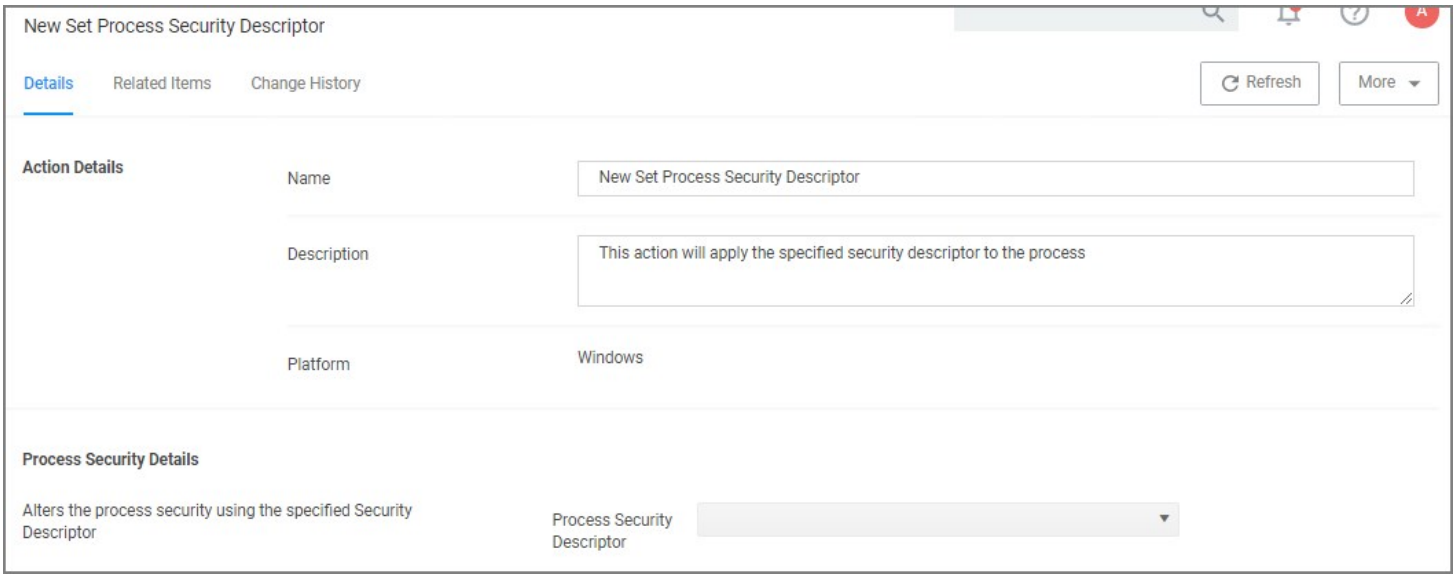


Parameters

The parameters for the Set Environment Variable action are setting the name and value of the environment variable.

Set Process Security Descriptor Action

Adjusting Process Security allows a process to be protected from most tampering by users. For example, adjusting process security can restrict who can stop a process from the task manager.



Parameters

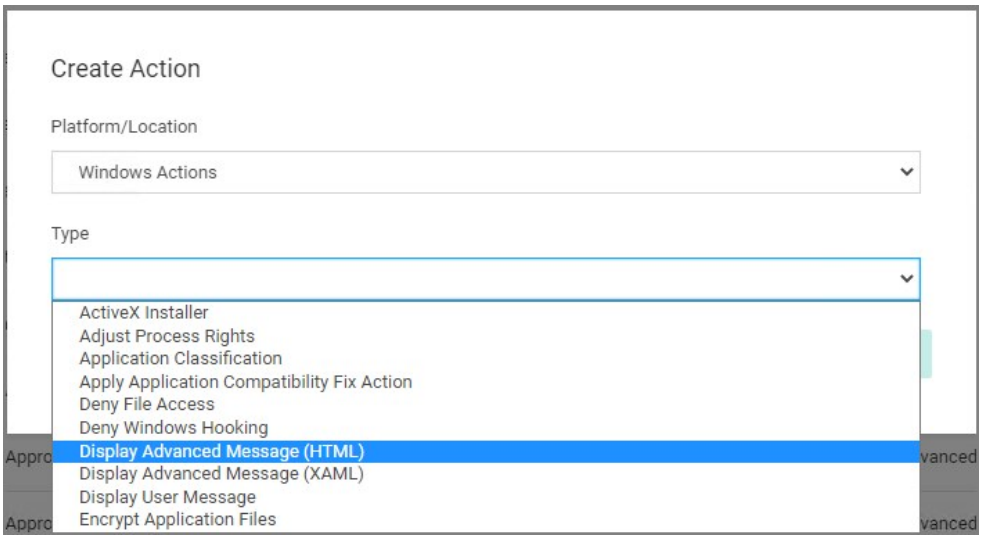
The parameters for the Set Process Security Descriptor action are done via resource selection from a list of available security descriptors.

WYSIWYG Display Advanced Message Action Editor

Windows based Display Advanced Message Action types are supported via WYSIWYG editor for user friendly editing of advanced message action text. Any HTML based message can be rendered by the Agent on the Windows endpoint.

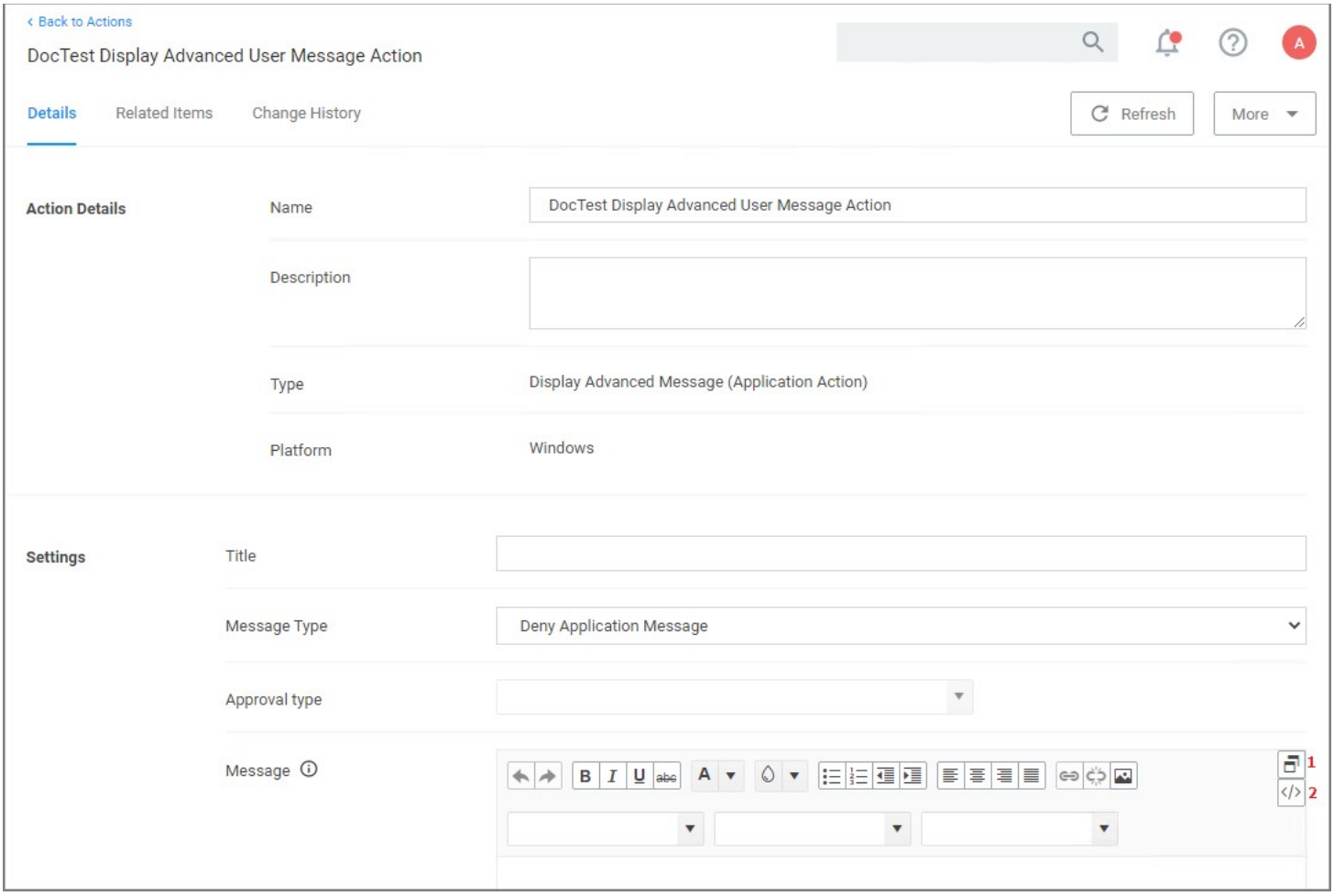
> **Note**: HTML based Advanced Message Actions require an Agent version 11.2.0 or newer.

When you create a new action, for Platform select Windows and from the Type drop-down select Display Advanced Message (HTML).



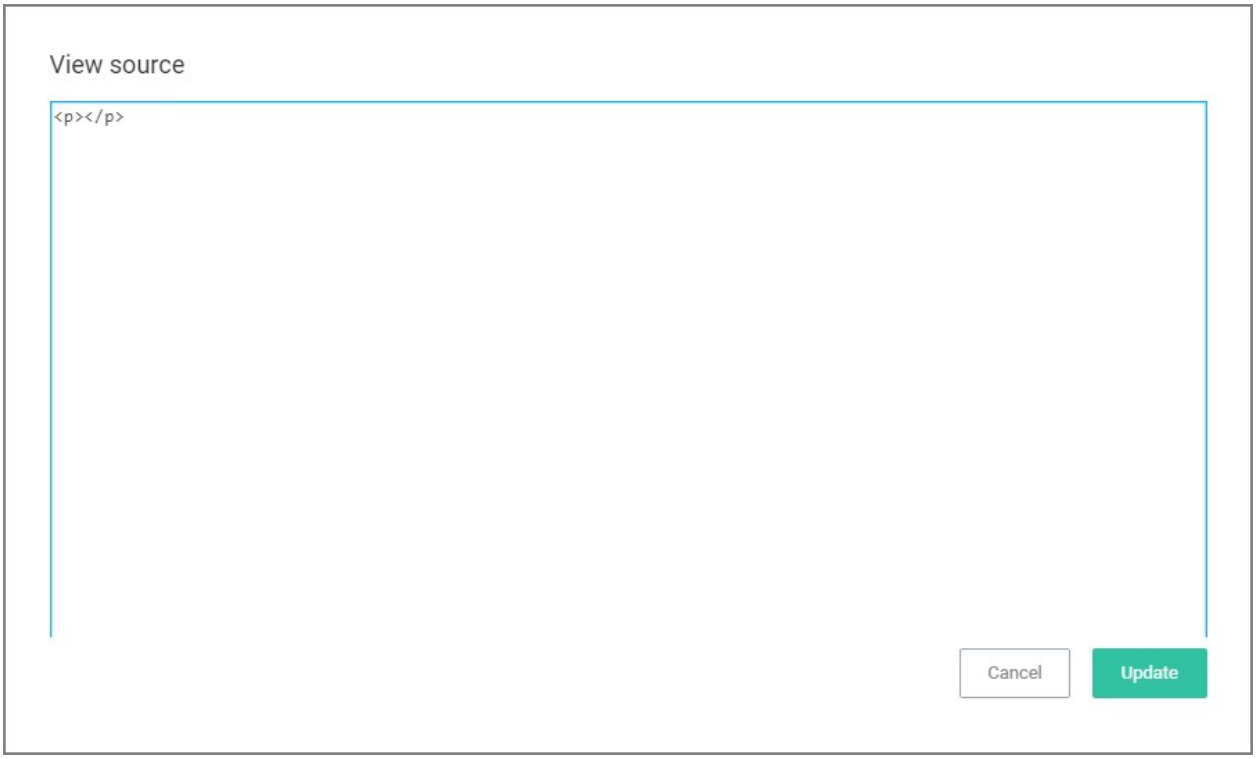
Under Settings, specify the following:

- **Title**, use a message title that indicates what type of action this is for your user on the endpoint.
- **Message Type**, select from the drop-down options:
  - Deny Application Message
  - Warning Message
  - Justification Application Usage
  - Deny Application with Justification
  - Approval Request Message
- **Approval type**, if this is an **Approval Request Message** type action, from the drop-down select if the message is a
  - Default Execute Application Request Type message action, or a
  - Default Offline Execute Application Request Type message action.
- **Message**, use the source view toggle and style/formatting elements to customize your message in HTML.



Where:

- [1] is the undock button, which allows you to edit the page in full-size view.
- [2] is the source toggle, which allows you to enter the HTML source for the message action.



Once you entered the text in the source editor, use the various style element options to format and style your message.

Edit any of the message elements for your users on your endpoints, except for the app-name and user-name variables. Those are system derived.

Any message action should be tested in light and dark mode before populating to endpoints.

> **Note**: You can upload a custom logo, the file size should be under 128 KB and the width should be 500 pixels or less with a maximum hight of 34 pixels.
>
> The logo that is uploaded should NOT be a high-resolution image. Consider that this image will be delivered to every endpoint with every message in which it is used. The smaller the image, the better, for sending the message to the endpoints and for the endpoint to load the message.

macOS Specific Actions

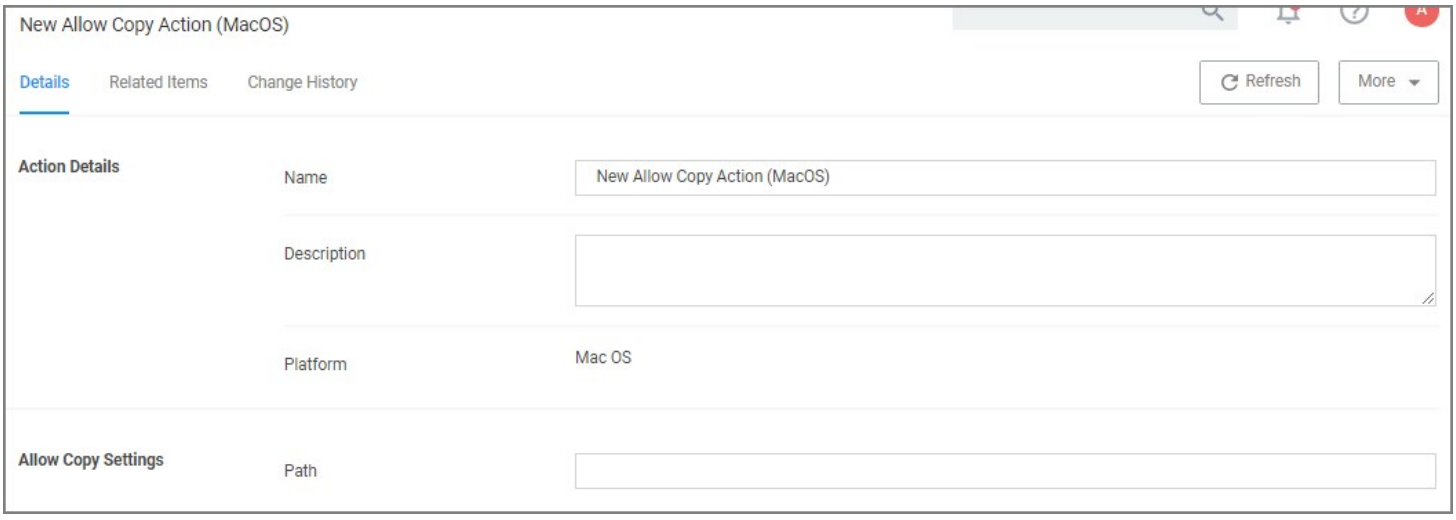
The following are macOS specific topics on actions:

- Allow Copy Action (MacOS)
- AuthorizationDB Right Actions
- Command Line Approval Message
- Command Line Justification Message Action
- Display Advanced User Message Action (MacOS)
- Just-in-Time Group Membership Action
- Run as User Action
- WYSIWYG MacOS Action Message Editor

Allow Copy Action (MacOS)

Important: This action will not work with v11.2+ macOS agents.

Action to allow copying of application on macOS systems.



Parameters

The following Allow Copy Action Settings can be specified:

- Path

AuthorizationDB Right Actions

Privilege Manager provides the following default AuthorizationDB Right actions:

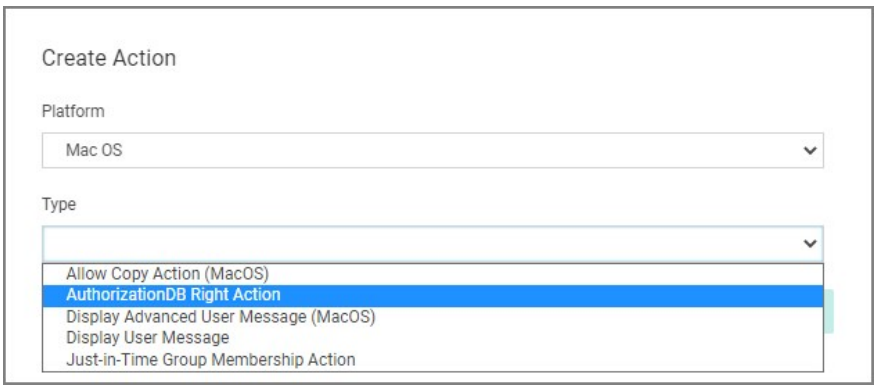
- Activity Monitor Kill Authorization Right (com.apple.activitymonitor.kill)
- Bless Helper Authorization Right (com.apple.ServiceManagement.blesshelper)
- Install Apple Software Authorization Right (system.install.apple-software)
- Modify System Keychain Authorization Right (system.keychain.modify)
- Xcode FLE Authorization Right (com.apple.dt.Xcode.LicenseAgreementXPCServiceRights)

Activity Monitor Kill Authorization Right (com.apple.activitymonitor.k...	This action grants the com.apple.activitymonitor.kill right in the auth...	AuthorizationDB Right Action
Bless Helper Authorization Right (com.apple.ServiceManagement.bl...	This action grants the com.apple.ServiceManagement.blesshelper r...	AuthorizationDB Right Action
Install Apple Software Authorization Right (system.install.apple-soft...	This action grants the system.install.apple-software right in the auth...	AuthorizationDB Right Action
Modify System Keychain Authorization Right (system.keychain.modi...	This action grants the system.keychain.modify right in the authoriza...	AuthorizationDB Right Action
XCode FLE Authorization Right (com.apple.dt.Xcode.LicenseAgreem...	This action grants the com.apple.dt.Xcode.LicenseAgreementXPCS...	AuthorizationDB Right Action

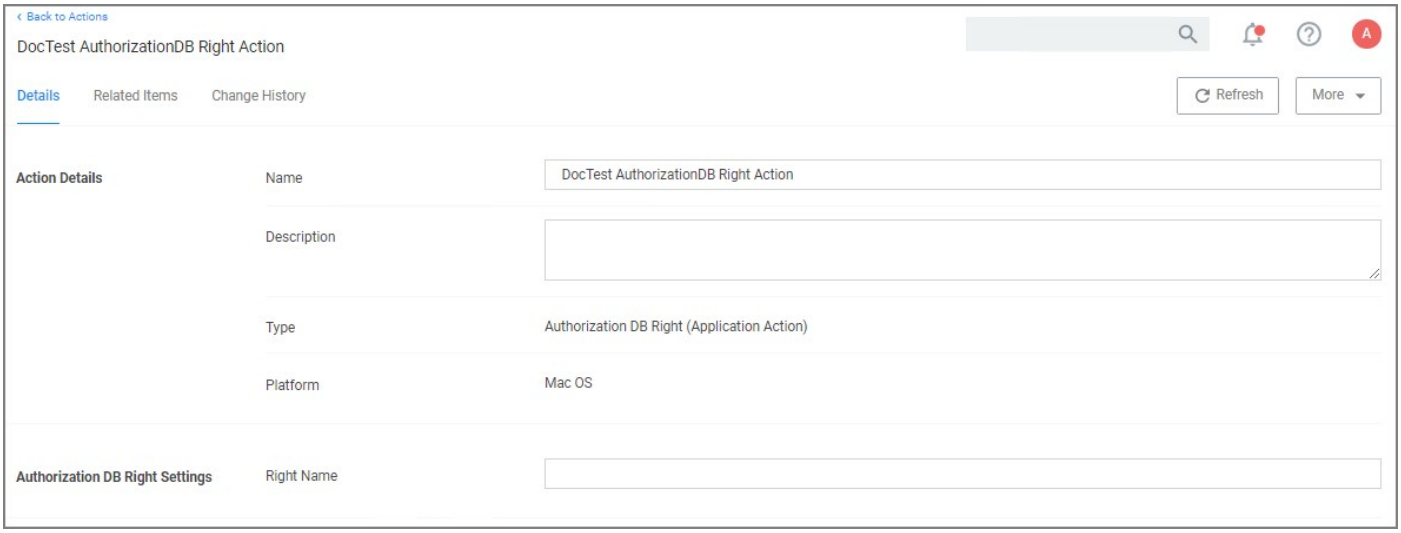
Privilege Manager AuthenticationDB actions should not be used with advanced message actions such as Approval, Deny, Justification, or Warning should not be used in conjunction with this action.

Creating a Custom AuthorizationDB Right Action

1. Navigate to **Admin | Actions**.
2. Click **Create Action**.
3. From the **Platform** drop-down select **Mac OS**.
4. From the **Type** drop-down select **AuthorizationDB Right Action**.



5. Enter a name, that allows you to easily identify the action for future use.
6. Click **Create**.



7. Under Authorization DB Right Settings in the **Right Name** field enter the desired authorization database right name.
8. Click **Save Changes**.

The action can now be added to existing macOS elevation policies or selected at policy creation following the use of **Modify Authorization Right** on the final create policy wizard page by selecting it from the **Right Name** drop-down.

Refer to the following examples:

- Elevating Xcode
- Elevating Modifying the Keychain
- Elevating Charles Proxy
- Elevating Activity Monitor

Command Line Approval Message Action

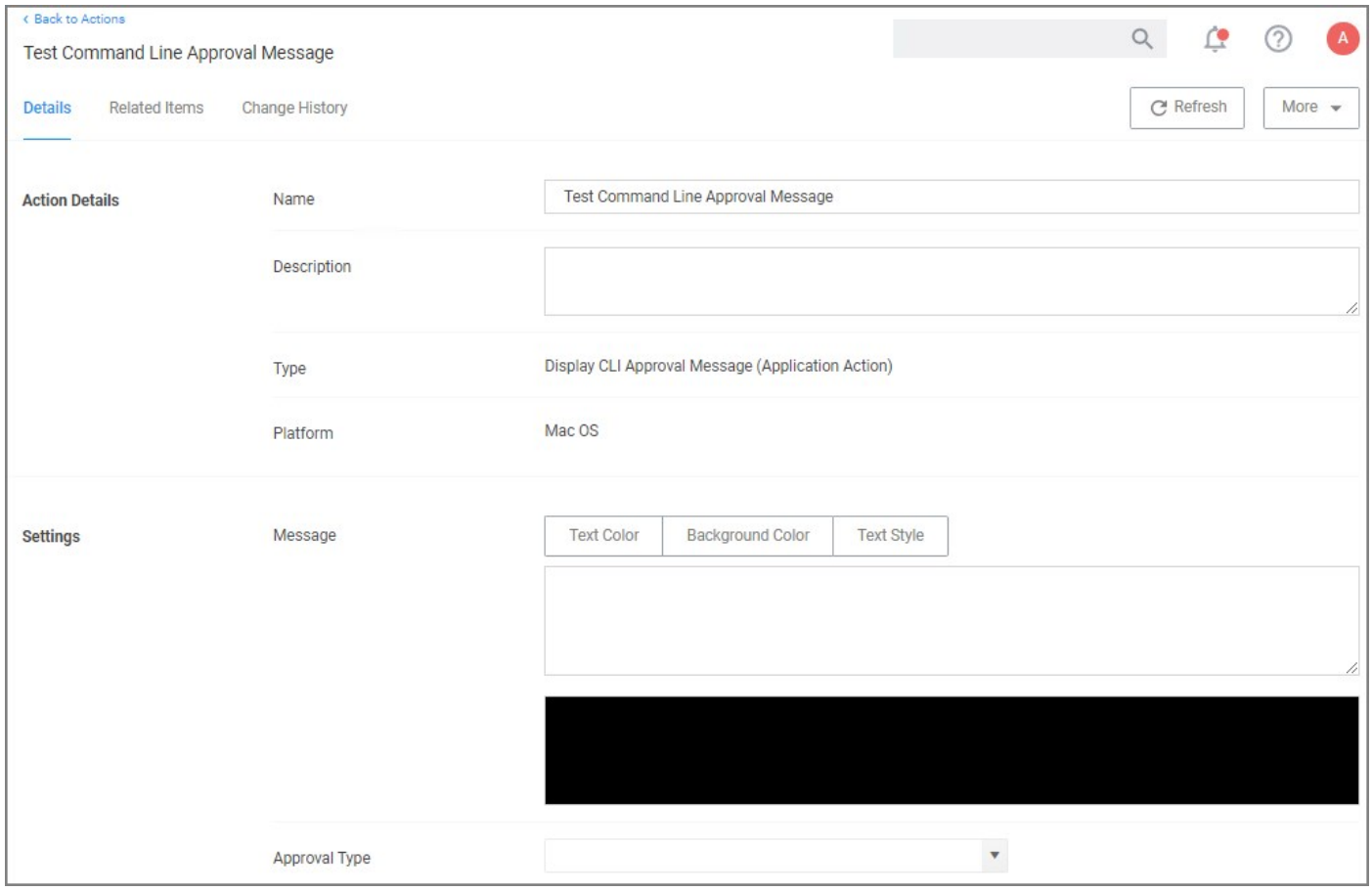
The Command Line Approval Message action allows administrators to prompt command line users on macOS endpoints for an approval request. The action displays text in the command line interface and prompts the user to enter text.

This action is specifically designed to work with the Delinea macOS sudo plugin and is only intended for commands that run under `sudo` based on the following use case:

- the user runs `sudo <command>`
- the user is prompted to supply a justification, which happens directly in the same terminal
- the command is then run with elevation

To create the message action,

1. Navigate to **Admin | Actions**.
2. Click **Create Action**.
3. For **Platform**, select **Mac OS**.
4. For **Type**, select **Command Line Approval Message**.
5. Enter a name and description.
6. Click **Create**.



7. Under **Settings** for:
    - **Message**, use the color tooling options and editor to add and customize your message prompt for the users.
    - **Approval Type**, from the drop-down select either
        - **Default Execute Application Request Type** or
        - **Default Offline Execute Application Request Type**.
8. Click **Save Changes**.

Refer to Using the Command Line Action Editor for information on how to use the editor.

> **Note**: The Command Line Approval Message action is the preferred message action to elevate commands and scripts run under `sudo` requiring approval.
>
> If there are networking issues, while a CLI approval is being used, the following error might be displayed in Terminal: *Error occurred in policy engine*. This is due to offline CLI approvals not being supported at this time.

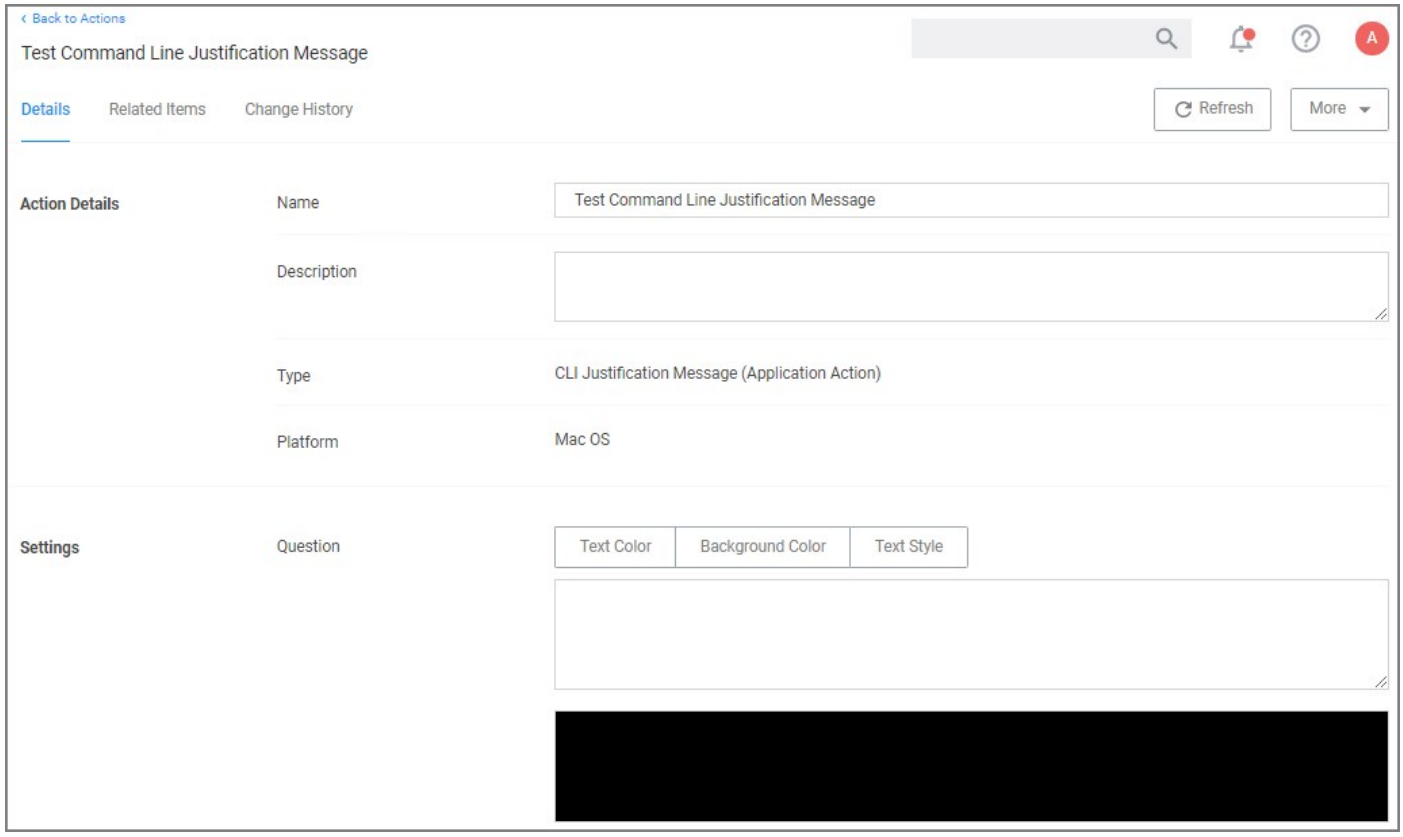
Command Line Justification Message Action

This message action prompts the user for a justification when using Terminal to execute commands and scripts under sudo. This action is specifically designed to work with the Delinea macOS sudo plugin and is only intended for commands that run under sudo based on the following use case:

- the user runs sudo <command>
- the user is prompted to supply a justification, which happens directly in the same terminal
- the command is then run with elevation

To create the message action,

1. Navigate to **Admin | Actions**.
2. Click **Create Action**.
3. For **Platform**, select **macOS**.
4. For **Type**, select **Command Line Justification Message**.
5. Enter a name and description.
6. Click **Create**.



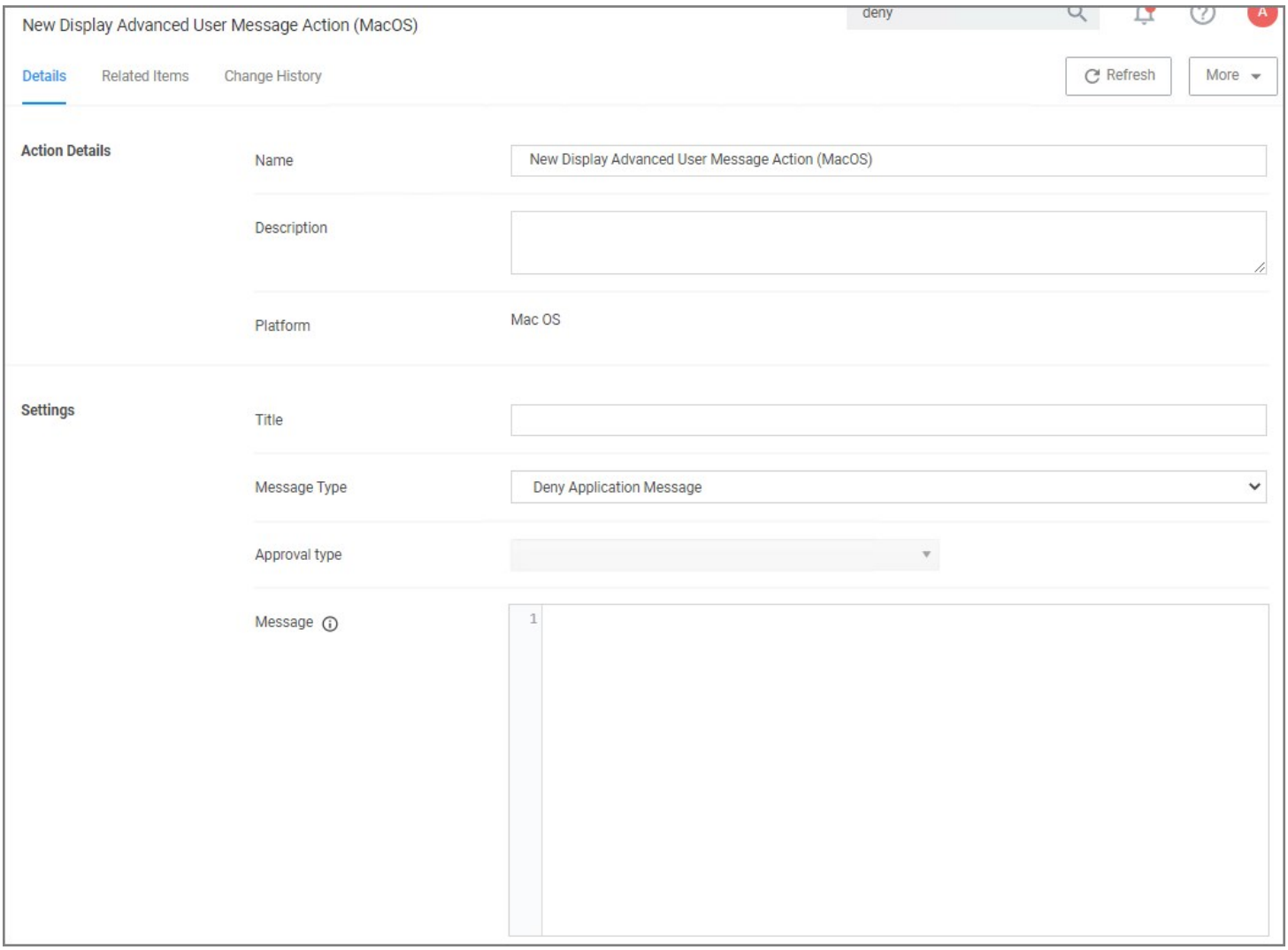
7. Under Settings, use the color tooling options and editor to add and customize your message prompt for the users.
8. Click **Save Changes**.

Refer to Using the Command Line Action Editor for information on how to use the editor.

Note: The Command Line Justification Message action is the preferred message action to elevate commands and scripts run under sudo.

Display Advanced User Message Action (MacOS)

Display messages are paired with another action type. They are customizable and serve to tell the end user what is happening and why. Advanced messages pop up in the middle of the screen, whereas Basic User messages appear as smaller pop-ups directly from the taskbar area.



Parameters

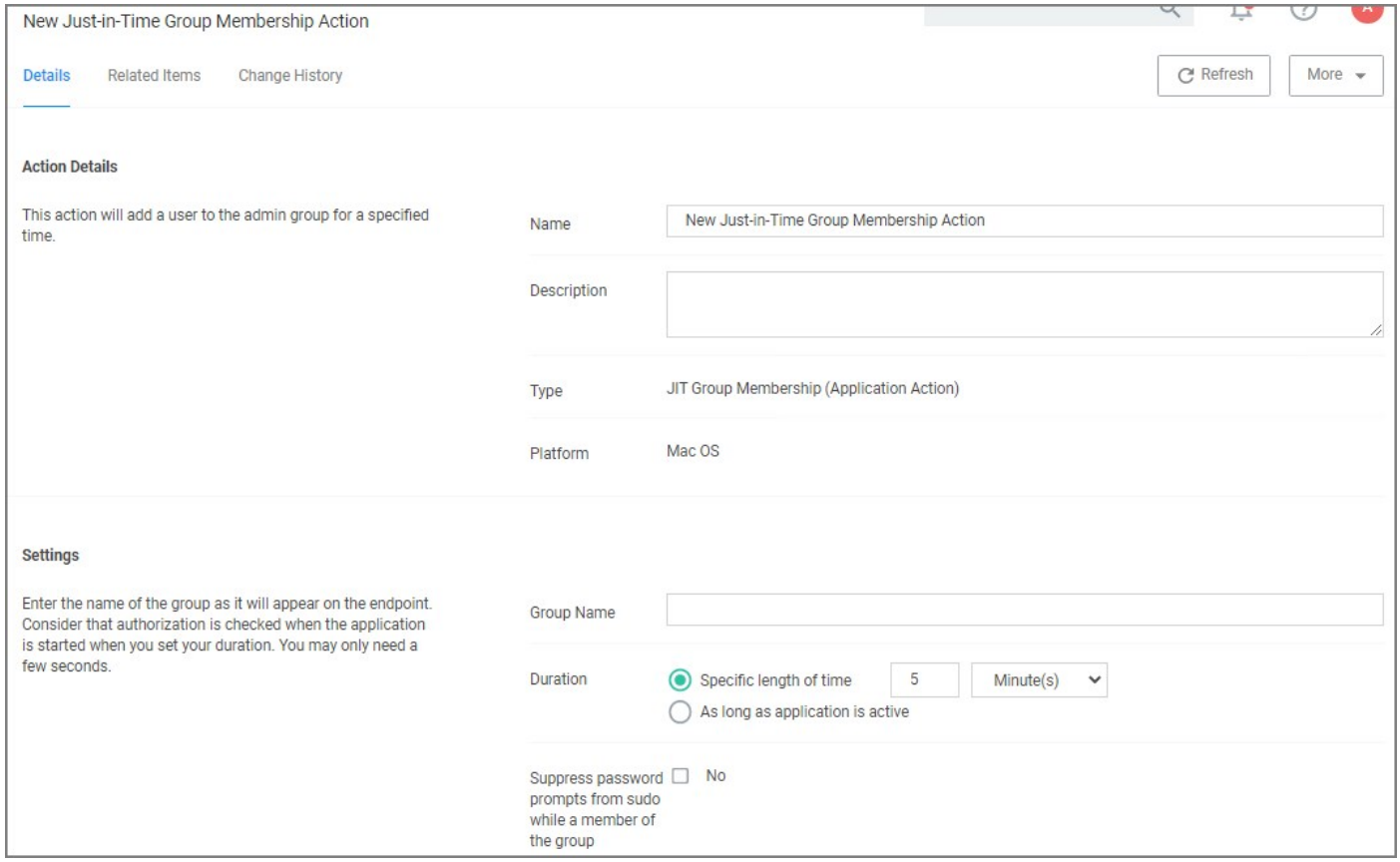
The following Display Advanced Message Settings can be specified:

- Title
- Message Type, such as
  - Deny Application Message
  - Warning Message
  - Justify Application Usage
  - Deny Application with Justification
  - Approval Request Message
- Message, which is the actual text of the message displayed to the user.

Just-in-Time Group Membership Action

This action will add a user to the specified group for a specified time. This action can then be added to a controlling policy to give Just-in-Time elevation to a user. The action is a read-only action by default. To customize this macOS action for your endpoints, use the **Duplicate** option.

1. Navigate to **Admin I Actions**.
2. Search for and select **Just-in-Time Group Membership** from the list of available macOS actions.
3. Click **Duplicate**.
4. Enter a name for your newly created action and click **Create**.



5. Under **Settings** specify
    1. the **Group Name** as created on the endpoint.
    2. the **Duration** either
        - set a specific length of time, here you need to consider that authorization is started when the application starts, or
        - use the default *as long as application is active*.
    3. enable the **Suppress password prompts from sudo while a member of the group** if the user should **not** be prompted for the standard user password while in the group.
6. Click **Save Changes**.

Note: The *Suppress password prompts from sudo while a member of the group* checkmark is intended for use with scripts that may execute multiple sudo commands, such as the Homebrew installer.

Refer to the topic macOS Homebrew Installer Support for details on the policy setup.

Run as User Action

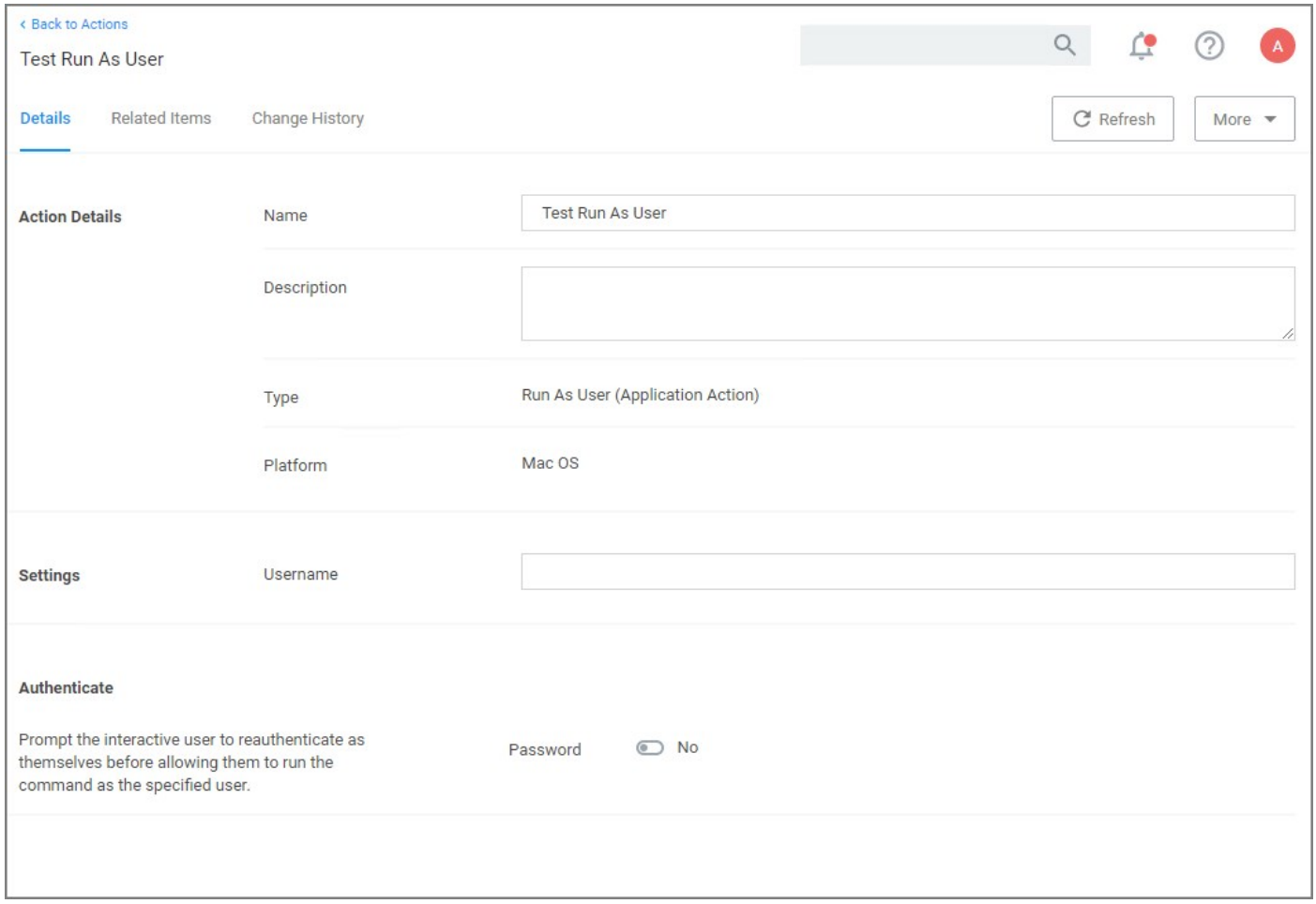
The action specifies the username of the account under which to run a command when invoked by 'sudo'.

For example, the /usr/bin/id command prints the current account's username. If a policy is created to match this command with an action that specifies a particular username, then entering "sudo id" will run the "id" command as that user and it will display that username.

The account must already exist on the endpoint, or sudo will display an error message and exit without running the command.

To create the message action,

1. Navigate to **Admin I Actions**.
2. Click **Create Action**.
3. For **Platform**, select **Mac OS**.
4. For **Type**, select **Run as User**.
5. Enter a name and description.
6. Click **Create**.



7. Under **Settings** for **Username**, specify as which user to run the command.

8. Under **Authenticate** you may change the switch to require a password. The default is to run the command as the specified user without prompting for a password.

   When the password prompt is enabled, sudo first prompts for the password of the **logged-in user** before running the command as the specified user. In addition, the action can specify a time interval during which the user will not be re-prompted for their password when running the command targeted by the policy that contains the action.

9. Click **Save Changes**.

Time Interval Retention

By default, sudo retains the user's authentication for 5 minutes, but different actions can have different intervals. Continuing the example above, if the user runs sudo -k followed by sudo id, which clears the sudo credential cache, the sudo plugin resets the interval for any Run as User action active for that user. sudo -k followed by sudo id will prompt the user for their password regardless of whether the specified interval has passed, and it will apply to any other command governed by a run-as-user policy.

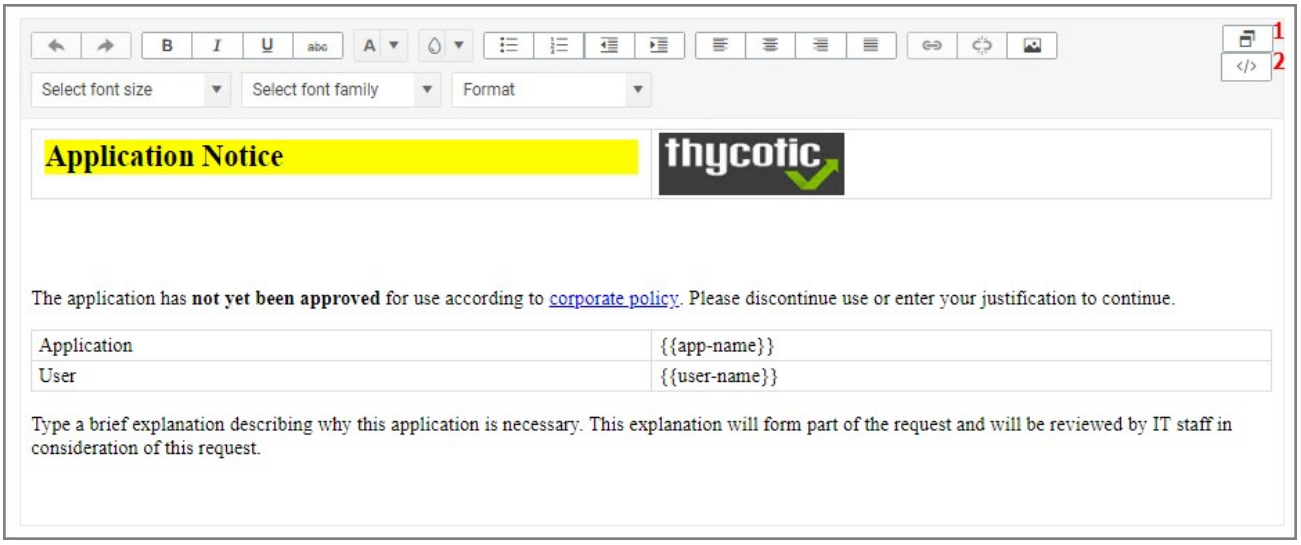
WYSIWYG MacOS Action Message Editor

All macOS based Display Advanced Message Action types are supported via an WYSIWYG editor for user friendly editing of advanced message action text. Any HTML based message can be rendered by the Agent on the macOS endpoint.

The editor is currently available for the following actions:

- Application Approval Request (with Offline Fallback) Message Action
- Application Approval Request (with ServiceNow Request Item Number) Message Action
- Application Approval Request Message Action
- Application Denied Message Action
- Application Justification Message Action
- Application Warning Message Action

Actions are read-only and a duplicate needs to be created before any customized message action can be created. Once you create a duplicate, you will see the following under **Settings | Message**:



Where:

- [1] is the undock button, which allows you to edit the page in full-size view.
- [2] is the source toggle, which allows you to edit the HTML source for the message action.

The editor comes with various style element options to further simplify the message editing process.

Edit any of the message elements for your users on your endpoints, except for the app-name and user-name variables. Those are system derived.

Any message action should be tested in light and dark mode before populating to endpoints.

> **Note**: You can upload a custom logo, the file size should be under 128 KB and the width should be 500 pixels or less with a maximum hight of 34 pixels.
>
> The logo that is uploaded should NOT be a high-resolution image. Consider that this image will be delivered to every endpoint with every message in which it is used. The smaller the image, the better, for sending the message to the endpoints and for the endpoint to load the message.

Message Actions

Messages are the most common application action used in Privilege Manager . These messages are presented for end users on their endpoints. There are two kinds of messages:

- Basic, these display as smaller pop-ups directly form the taskbar area. They display and fade automatically. From the Action Type drop-down these are the Display User Message actions for both Windows and macOS.
- Advanced, these messages display as a user dialog, requiring users to justify access to a certain application or to warn the user. Most of these messages require user interaction, but some can be set to fade in and out for the end user. From the Action Type drop down these are the Display Advanced Message for Windows and Display Advanced User Message (MacOS) for macOS endpoints.

  Note: To use the Windows based WYSIWYG advanced message actions that utilize the rich-text editor, the 11.2 based Application Control Agent needs to be installed.

Rich text or HTML based message editing is detailed for the specific message types under these topics:

- WYSIWYG macOS Action Message Editor
- WYSIWYG Display Advanced Message Action Editor

Both basic and advanced messages are useful for providing feedback to users that an application is being blocked, usage of the application is being logged, or any message that the end user should see.

Basic vs. Advanced Messages

Basic messages briefly pop up from the end user's task bar. They display like other Windows notifications, are shown on the screen, and then disappear without any user interaction required.

Basic messages do not include custom branding or logos. It is easiest to edit basic messages via Privilege Manager 's UI. However, the default message may suffice for some use. Basic messages only display a message. These messages do not perform an action. For example, the basic Deny Execute Message should be used in conjunction with the Deny Execute action.

Advanced messages display as a new dialog, typically in the center of the screen, and usually require an interactive action from the end user – entering a justification, enter credentials, waiting for approval, selecting a continue or cancel button, etc.

Advanced message actions are used for justification and approval policies. The 'Application Denied Notification Action' is the only default advanced message that does not require an interactive action from the end user. While this message has a cancel button to remove the message, this message will fade from the user's screen after a short period of time.

Advanced messages include branding, which can be customized. Some fields are recommended to edit in the XML instead of the UI. These details are expanded in the section on Customizing Advanced Messages.

Types of Advanced Message Actions

There are three categories of advanced messages:

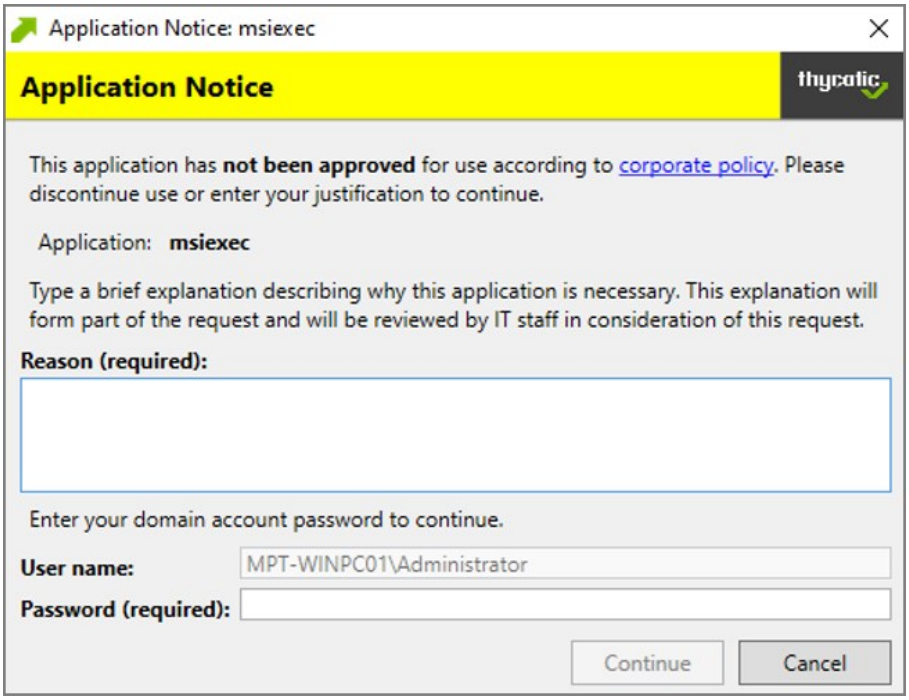
- Advanced Feedback Messages – require information from the end user.
- Approval Request Messages – require information from the end user and approval from the application support team.
- No Required Input Messages – display information to the end user, but do not require information from the end user. May require a button push to clear the message.

Advanced Feedback Messages

Advanced feedback messages require users to justify their need to use an application.

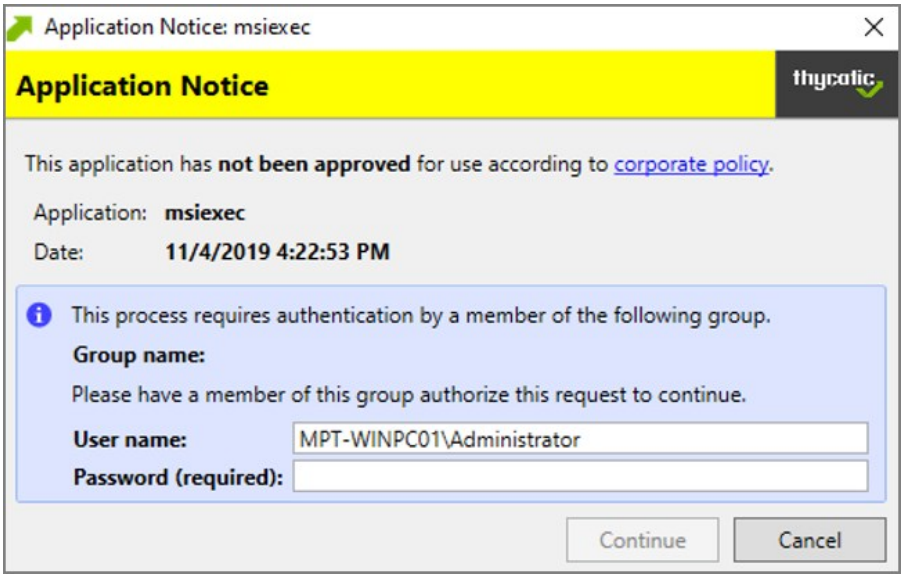
Authentication Justification Message Action

This action will display a customized message to the user, allowing for feedback and requiring authentication before running an application.



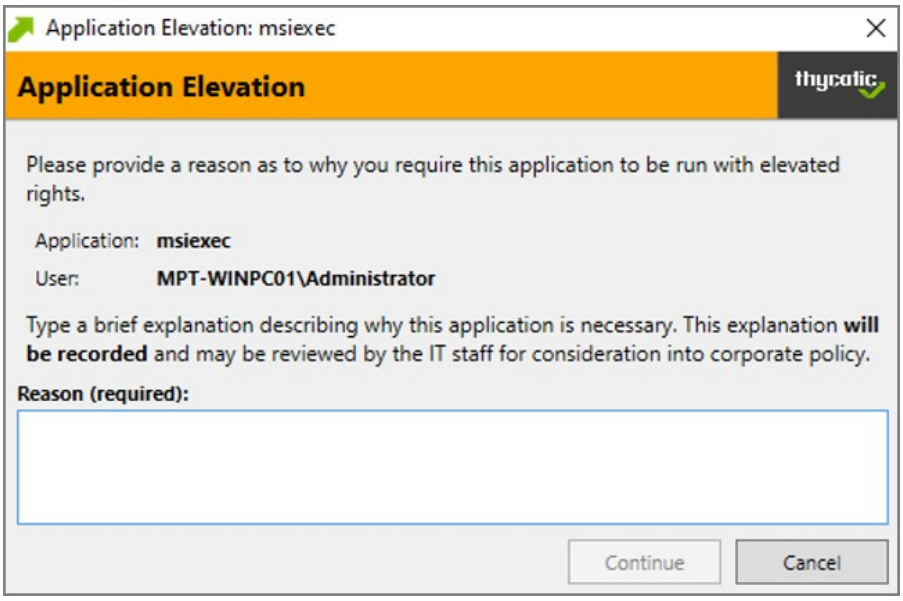
Group Member Authenticated Message Action

This action will display a customized message to the user and requires authentication by a member of the specified group if the end-user is not a member. This process is also known as an over-the-shoulder request, meaning that the end-user will have to get their boss or a member of a specific domain user group to approve the request.



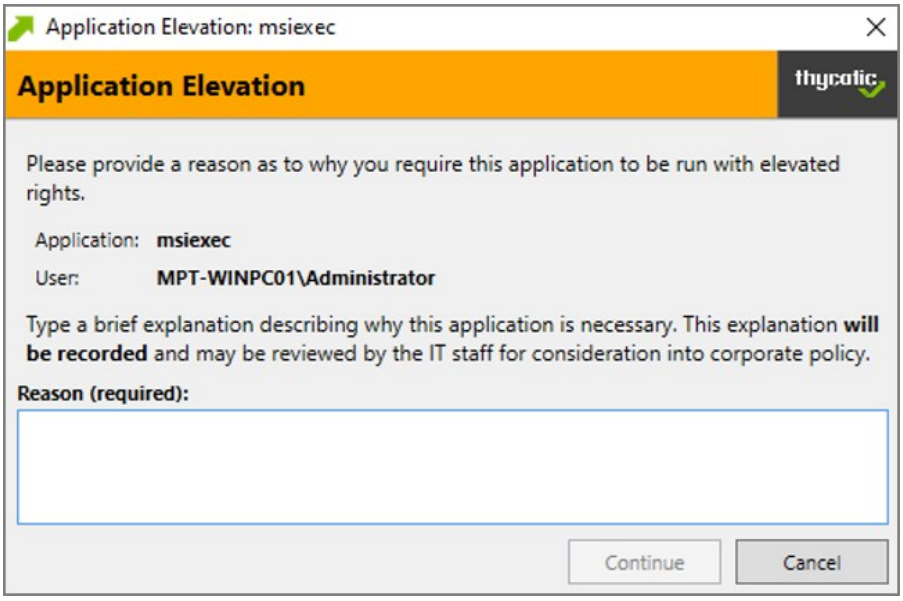
Justify Application Elevation Action

This action will display a justification prompt to the user before allowing the application to run. The Justify Application Elevation Action is to be used with the User Requested Run As Administrator filter in an application control policy. This action collects information from users and creates reports on the server for approval requests.



Justify Application Message Action

This action will display a justification prompt to the user before allowing the application to run. It is used to collect information from users and create reports on the server with reasons why a user was running an application that hasn't been approved or denied yet.

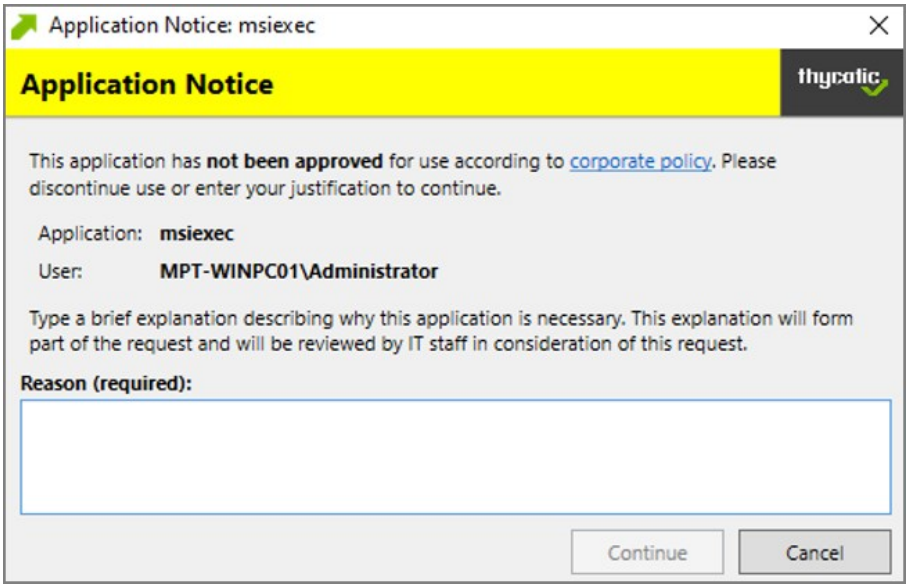


Approval Request Messages

The approval request messages are similar to the justification messages because they both gather feedback from end users and report it in the Privilege Manager console. Approval request messages also allow for end-users to see a waiting screen until their request has been either approved or denied.

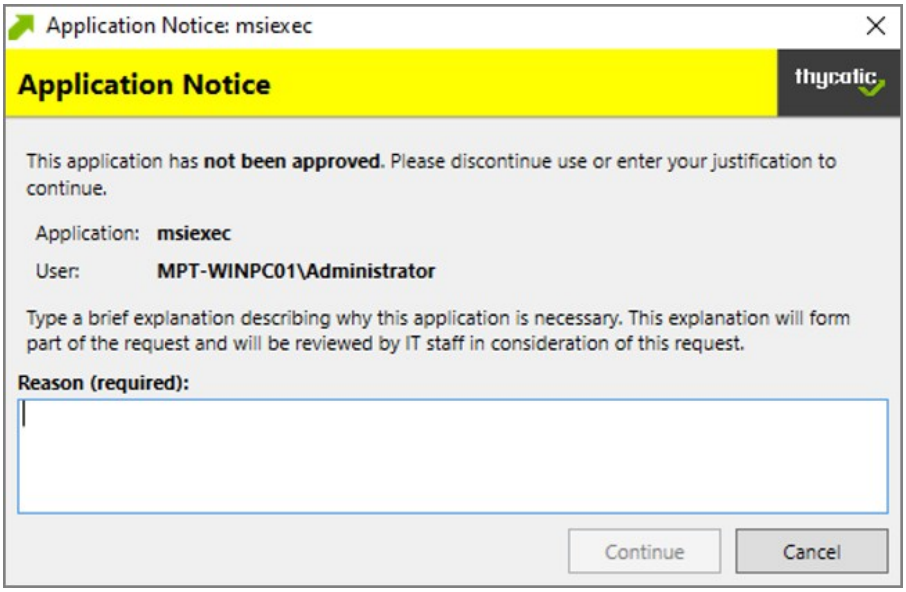
Approval Request Form Action

This action will display a customized message to the user, allowing for feedback and requiring authentication before running an application.

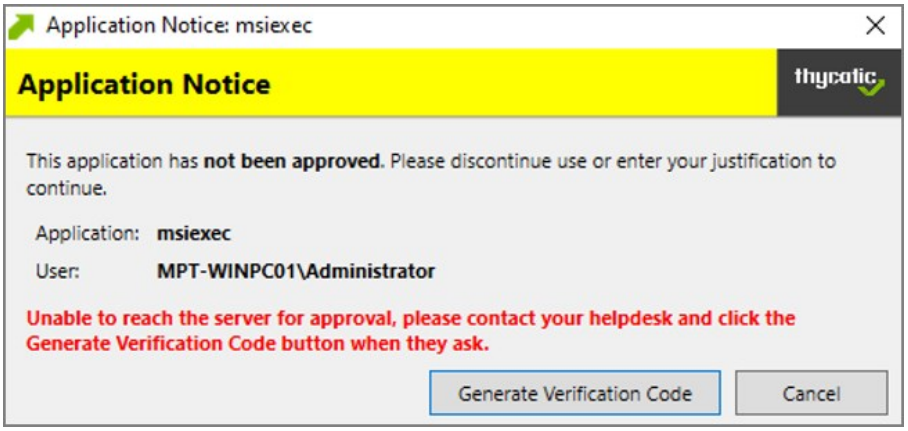


Approval Request (with Offline Fallback) Form Action

This action displays an approval request form before allowing the application to run. These messages will then show a waiting screen until the request is either approved or denied by the appropriate Privilege Manager user/admin. With this advanced message, the same dialogue box as the Approval Request Form Action will appear:



If the machine is offline or can't connect to Privilege Manager to upload the request, another dialogue box will then appear to prompt the end user to contact the helpdesk and generate a verification code:

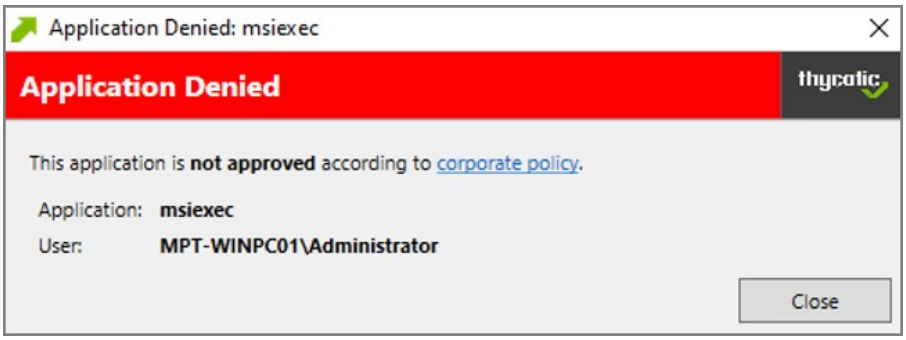


No Required Input Messages

No required input messages differ from the advanced feedback message actions because they do not require a justification to continue. End users need only acknowledge the displayed message. This feature requires that the Microsoft .Net Framework is installed on client machines.

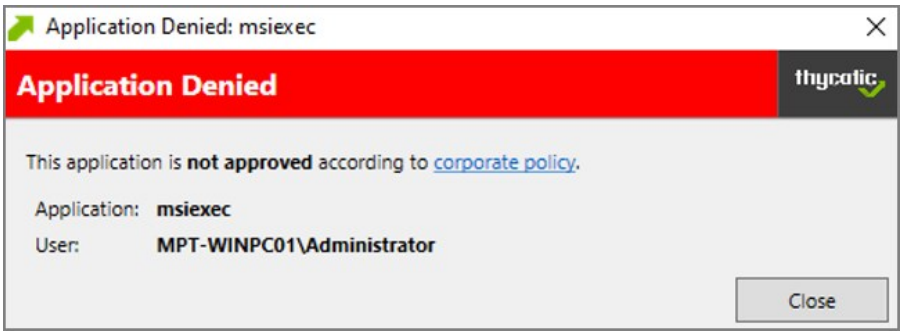
Application Denied Message Action

This action stops an application from being launched and will display a notification of denial to the user attempting to run a process controlled by a policy.



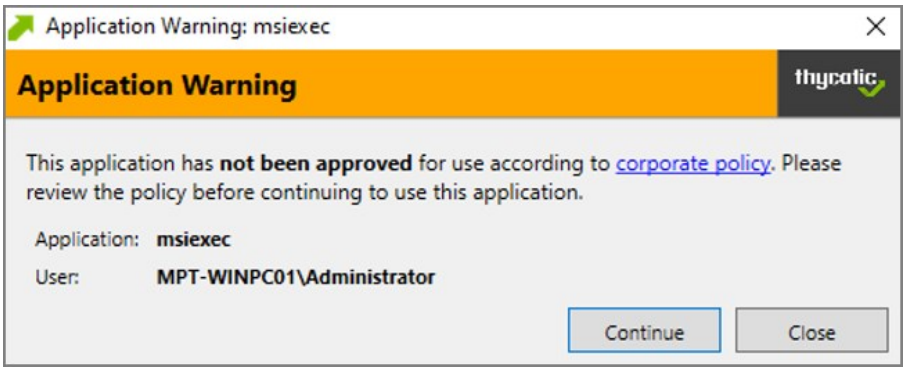
Application Denied Notification Action

This action will display a notification to the user that the process has been denied by a policy. The notification window fades in and out automatically and will close after a defined period of time.



Application Warning Message Action

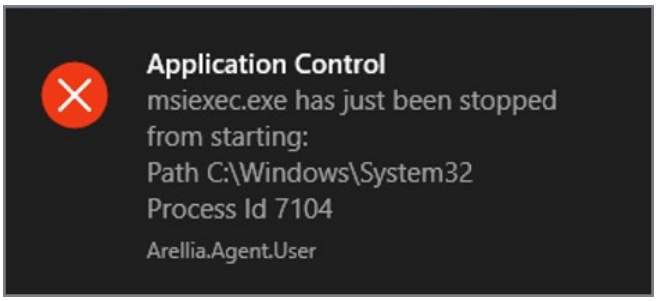
This action will display a warning to the user before allowing the application to run.



Types of Basic Messages

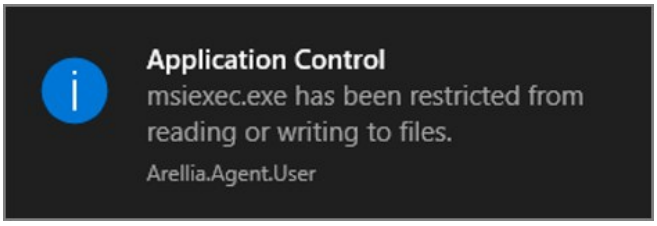
Deny Execute Message

This action displays a message to the user informing that an application has been denied execution. The Deny Execute Action needs to be used with this message.



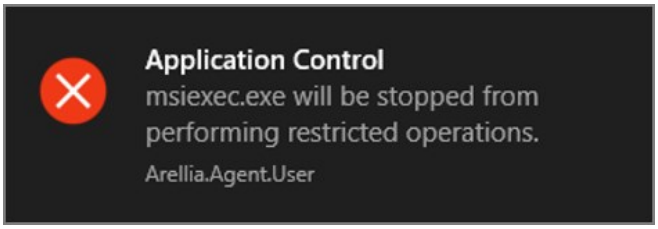
Deny Files Read and Write Access Message

This action displays a message to the user informing that an application will be restricted from certain file access. The Deny Read/Write Access to Microsoft Office Document Files Action needs to be used with this message.



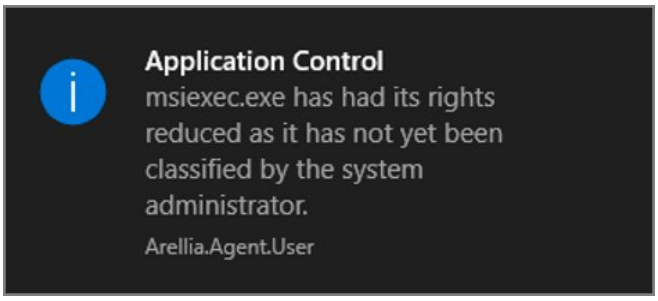
Windows Hooking Message

The action displays a message to the user informing them that an application will be stopped from interacting with other applications. The Deny Windows Hooking Action should be used with this message.



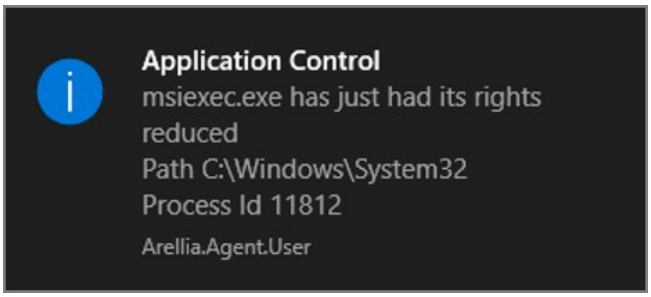
Limit Process Rights for New Applications Message

This action displays a message to the user informing that an application has had its rights reduced. The Remove Administrator Rights or Remove Advanced Privileges Action needs to be used with this message.



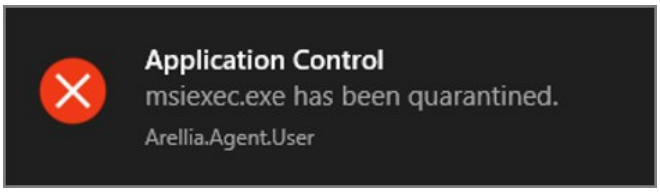
Remove Rights Message

This action displays a message to the user informing them of an associated action. The Remove Administrative Rights Action or Remove Advanced Privileges Action should be used with this message.



Quarantine Message

This action displays a message to the user informing that an application has been quarantined. The File Quarantine Action should be used with this message.

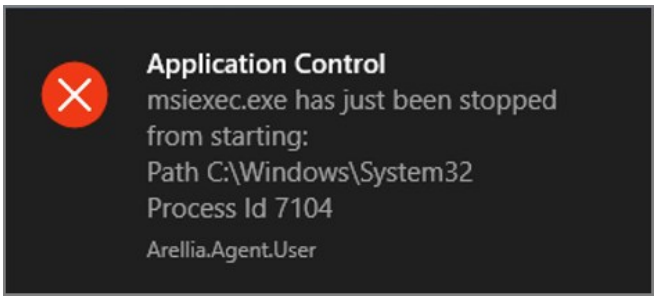


Deny Execute Action

This action stops specific application from executing. It is a default action without any configurable settings. It is a read-only item.

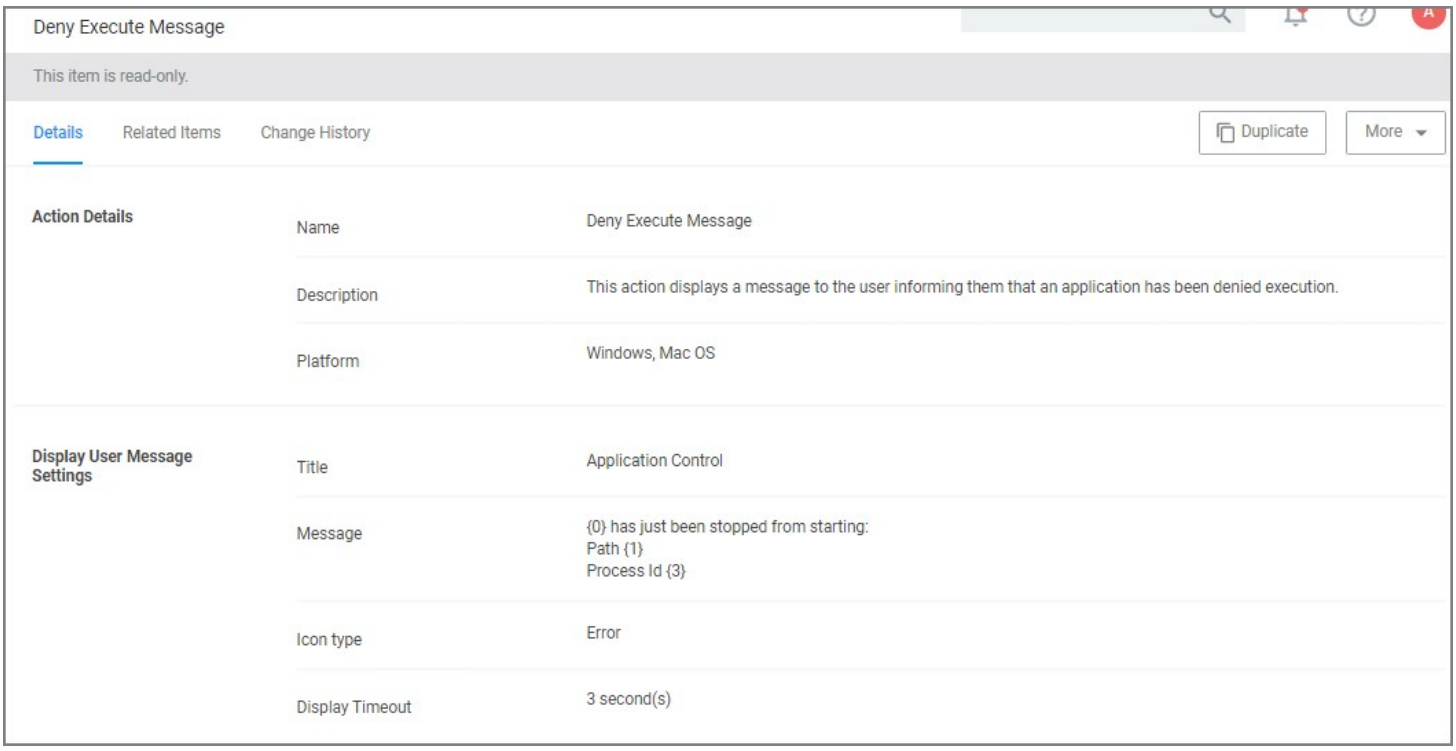
Deny Execute Message

This action displays a message to the user informing that an application has been denied execution. The Deny Execute Action needs to be used with this message.



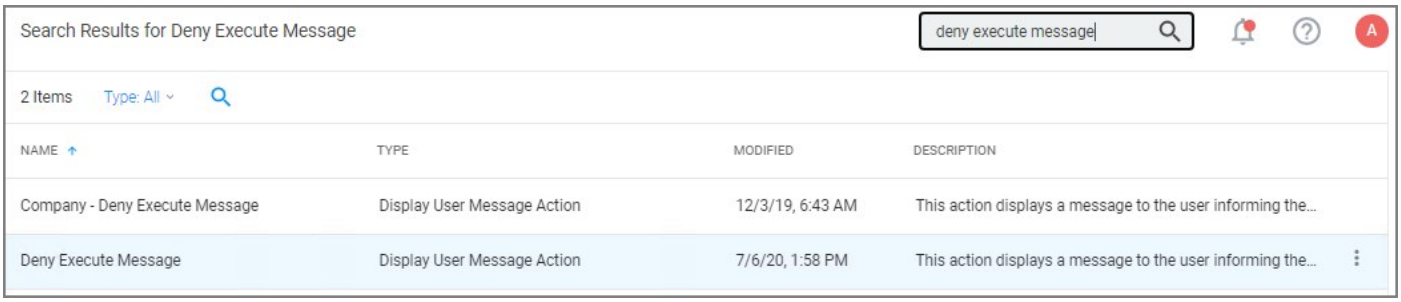
Deny Execute Message

The Deny Execute Message does not include company branding and is easy to edit in the Privilege Manager console. The default of this basic user message action is displayed like this:

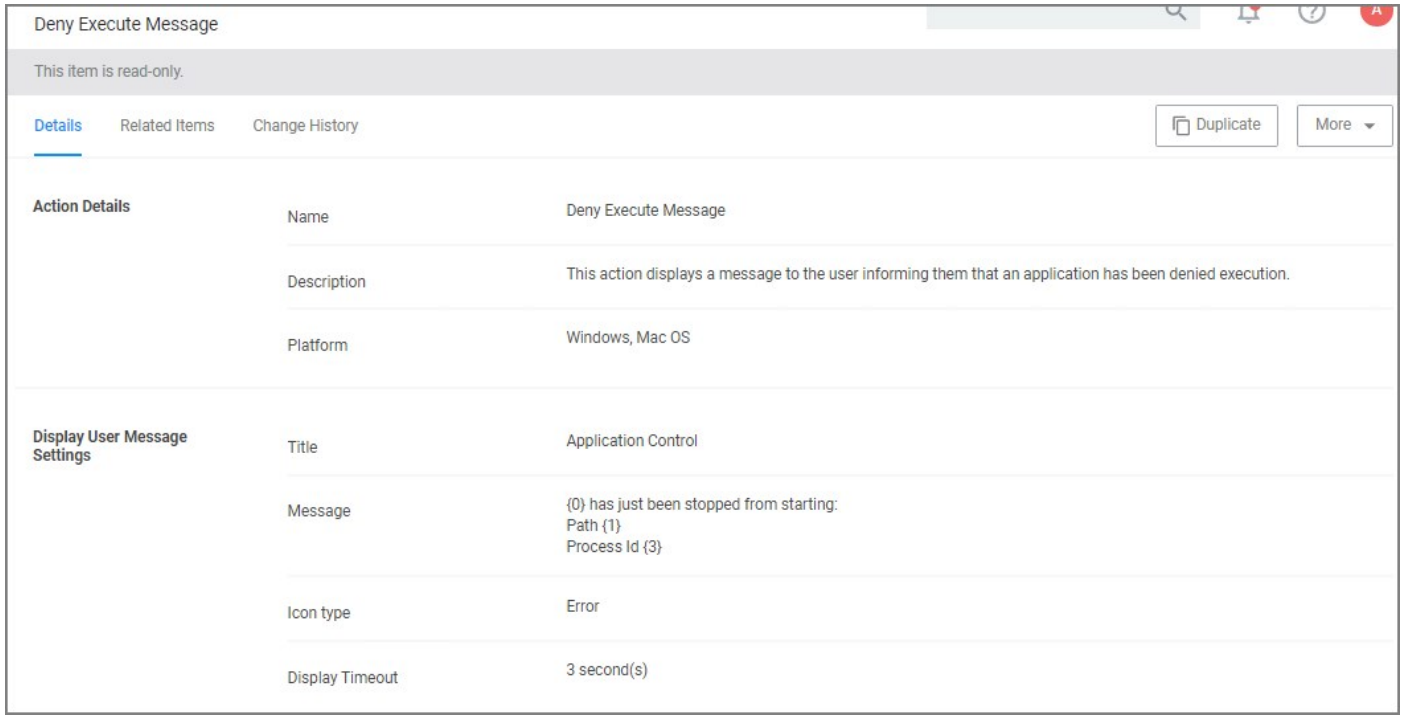


Customization

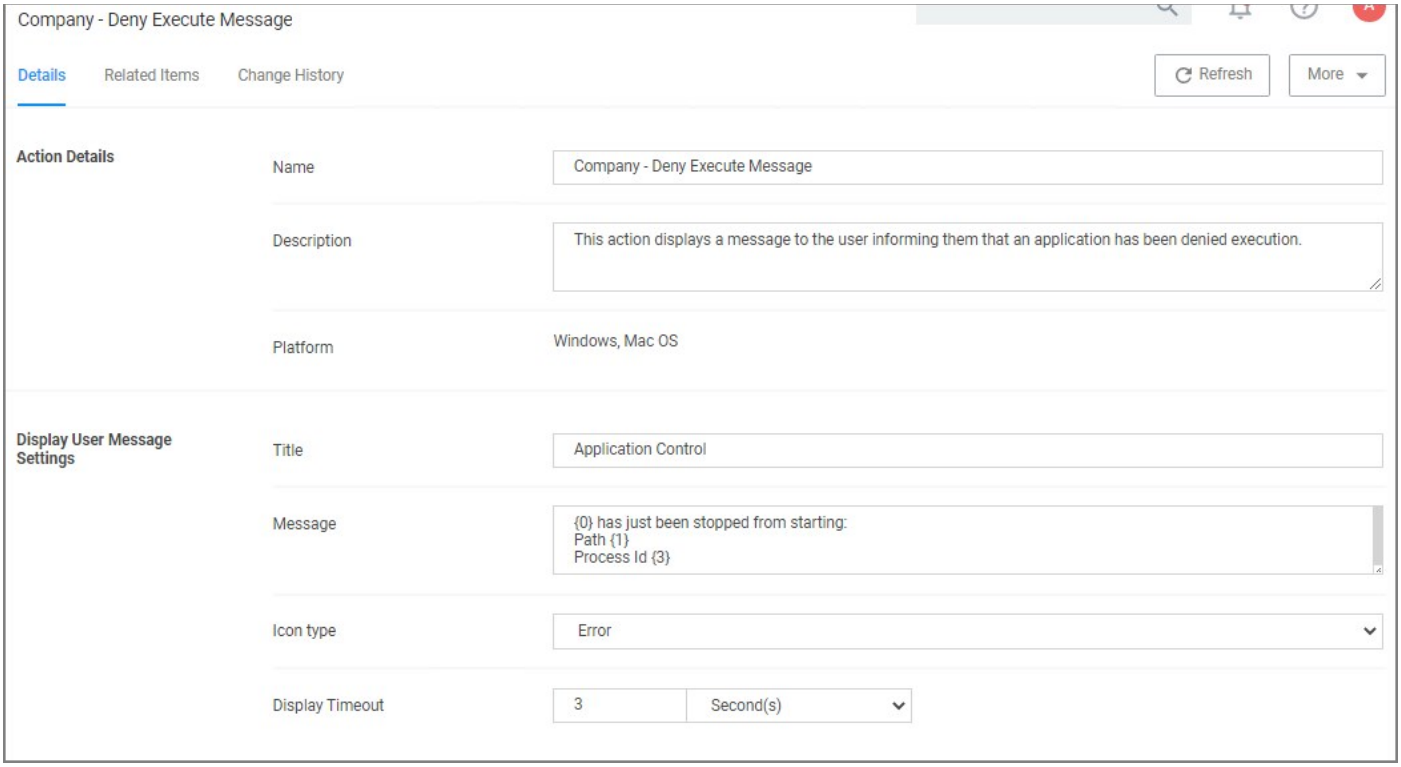
1. In Privilege Manager , search for the default message that will be customized. In this example, we search for the default **Deny Execute Message**.
2. Select the item from the search results.



3. This is a read-only action, to customize the default message, users need to click **Duplicate**.



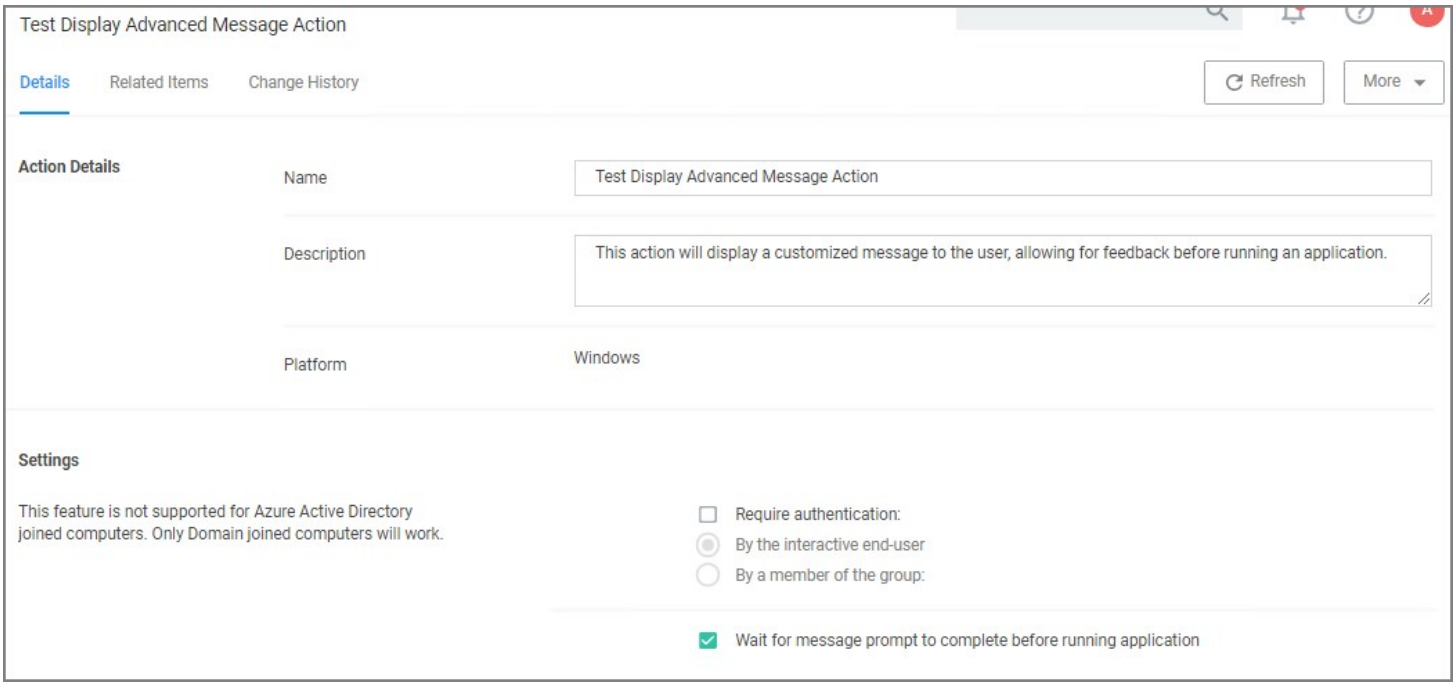
4. Enter a name for the new message action. It is recommended to use standard naming conventions with your custom items, e.g. beginning custom names with your company name is a great way to differentiate between the default items and your custom items.
5. Click **Create**.
6. Customize the Title and Message, use the Icon Type drop-down to specify the type, and set the Display Timeout.



7. Click **Save Changes**.

Display Advanced Message Action

Display messages are paired with another action type. They are customizable and serve to tell the end user what is happening and why. Advanced messages pop up in the middle of the screen, whereas Basic User messages appear as smaller pop-ups directly from the taskbar area.

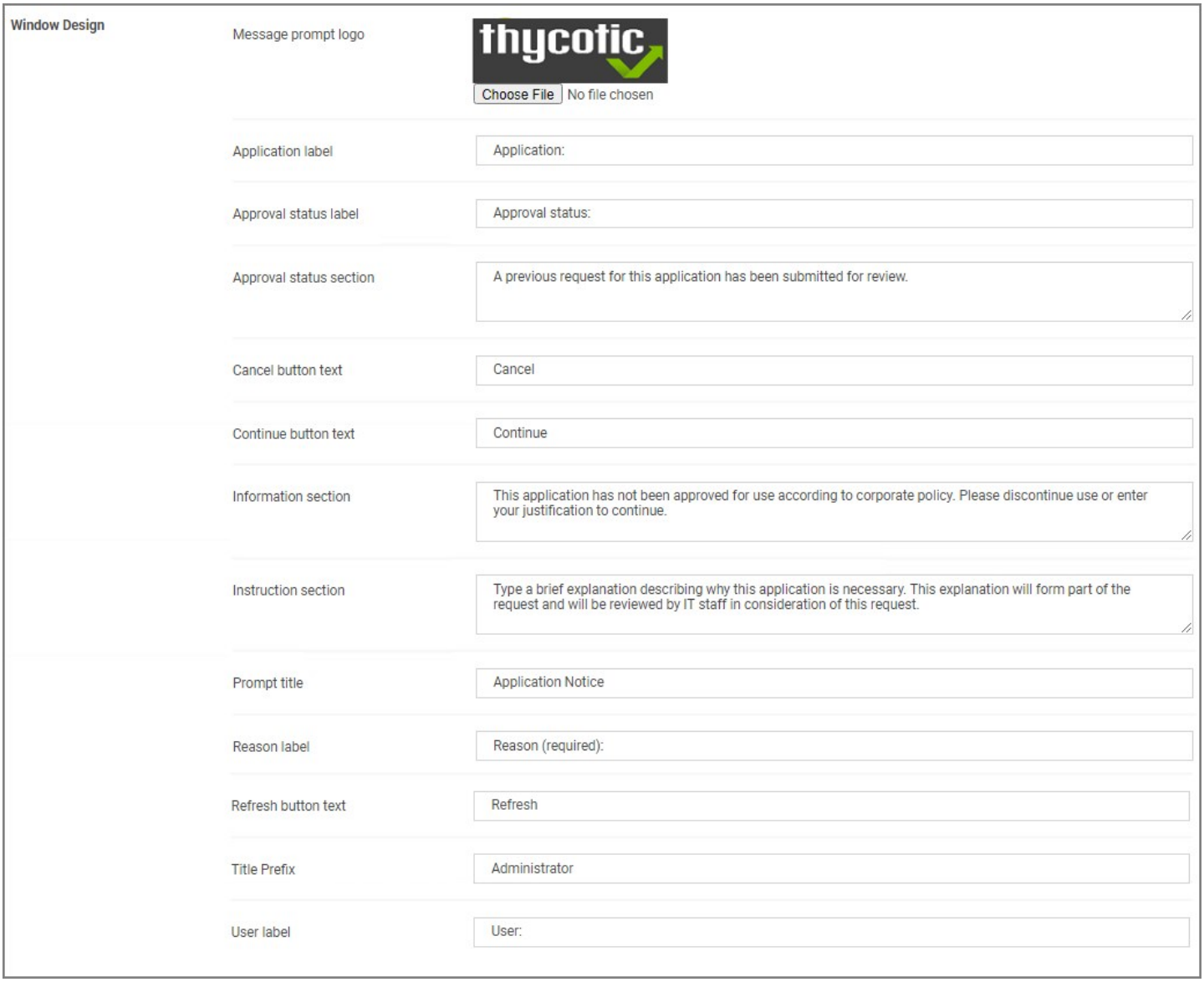


Parameters

The following Display Advanced Message Settings can be specified:

- Require authentication.
  - By the interactive end-user
  - By a member of the group
  - Wait for message prompt to complete before running application

Further the Window Design parameters can be set. Those settings include customization of company logo for branding, label, status, button, instruction, prompt, and reason texts just to name a view.

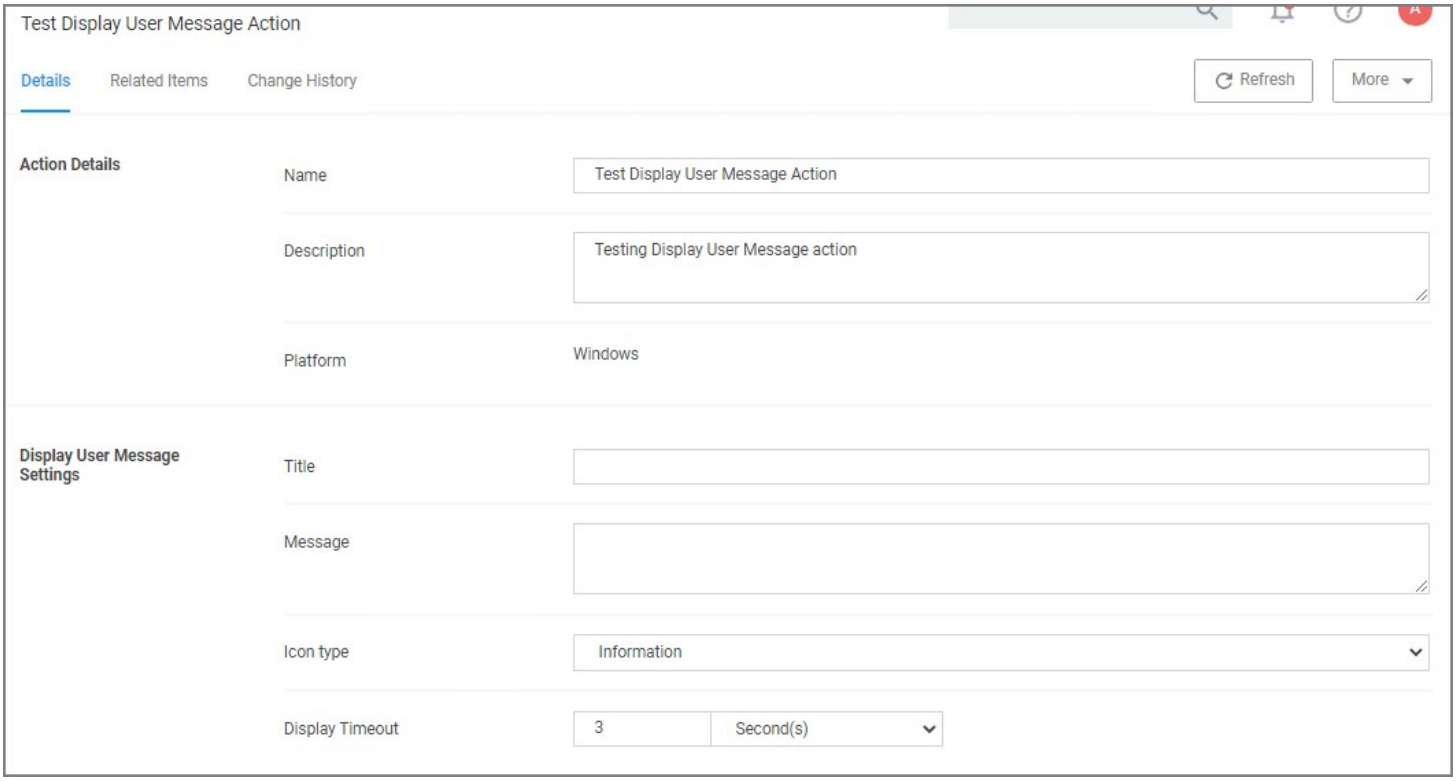


Examples

- Create Custom Notifications

Display User Message Action

Display messages are paired with another action type. They are customizable and serve to tell the end user what is happening and why. Advanced messages pop up in the middle of the screen, whereas Basic User messages appear as smaller pop-ups directly from the taskbar area.



This action is available for both Windows and macOS systems.

Parameters

The following Display User Message Settings can be specified:

- Title
- Message
- Icon type, which can be specified as Information, Warning, Error, Delinea, or Program.
- Display timeout setting, which can be specified in Seconds, Minutes, Hours, Days, or Weeks.

Examples

- Deny Execute Message

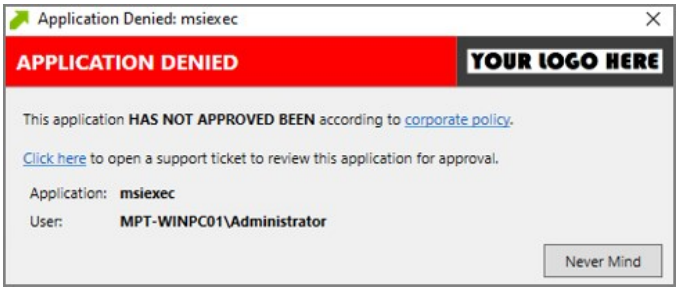
[priority]: # (3

Create Custom Notifications

The default Application Denied Notification Action can be edited/replaced by a customized notification action to better suite a specific customer need.

Example of Default Notification:

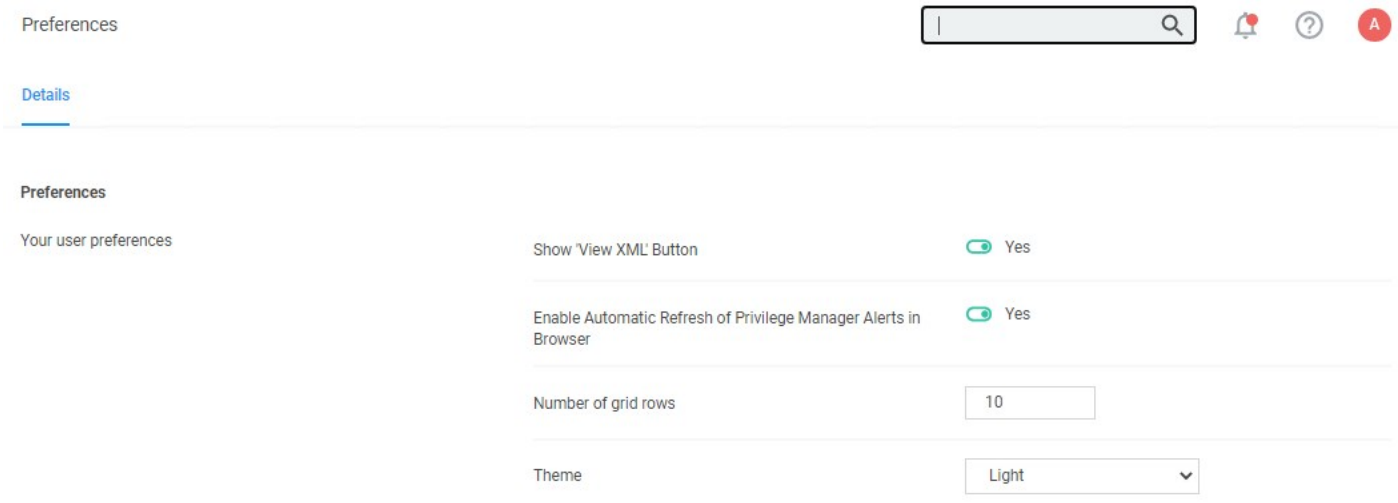
Example of Custom Notification:



Enable View as XML

To edit the message text the **View as XML** button has to be enabled in your console.

1. Navigate to and click your user icon, select **Preferences**.
2. Verify **Show 'View XML' Button** is set to **Yes**, if set to No change the switch.

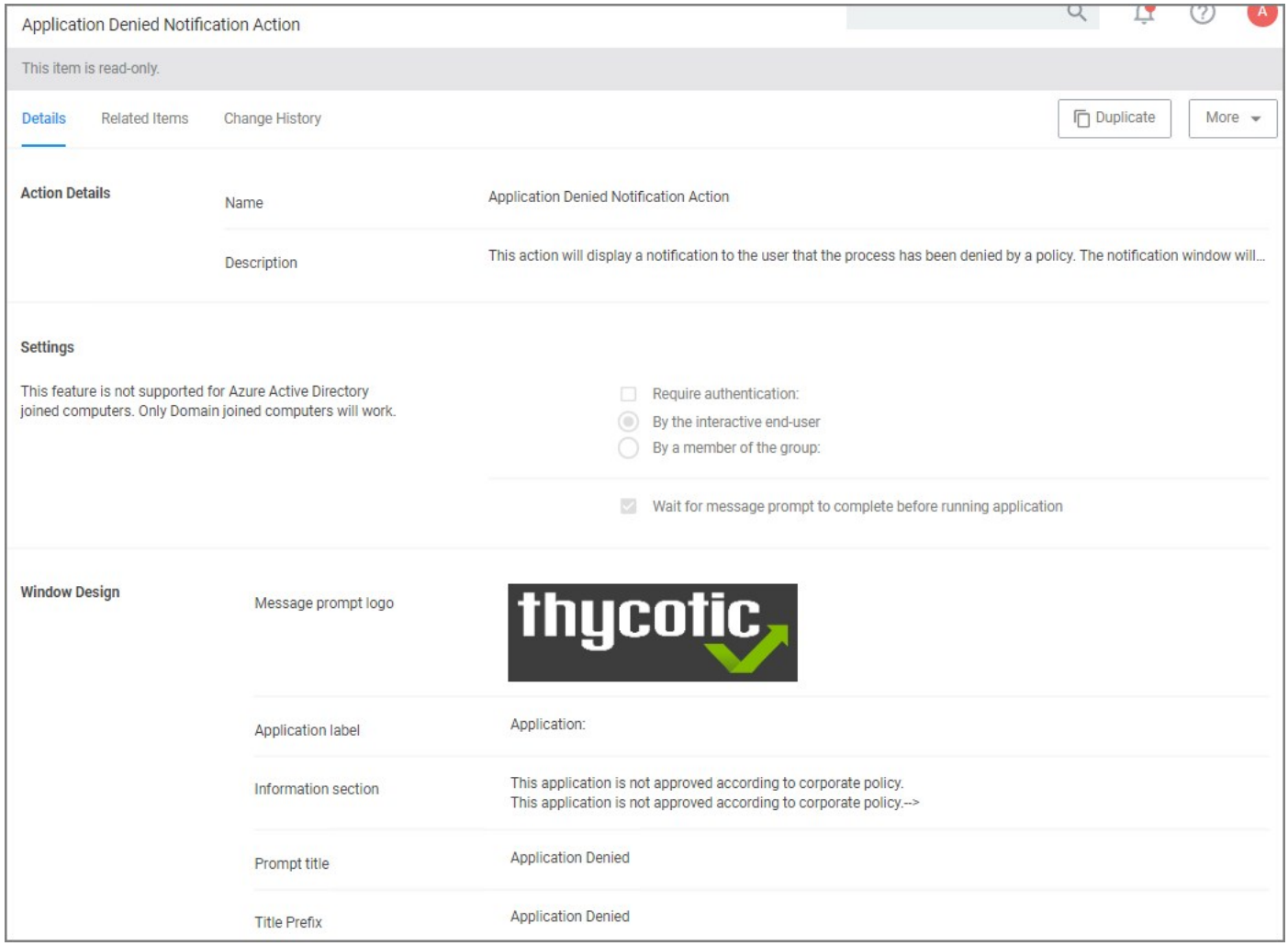


3. Click **Save Changes**.

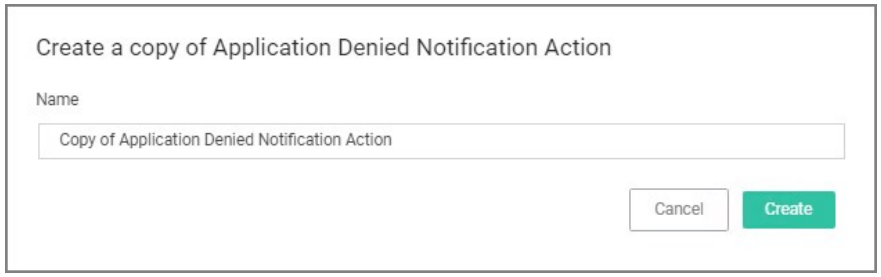
Customizing the Application Denied Notification Action

Default Actions shouldn't be edited directly, however Privilege Manager default items can be copied for customization purposes.

1. In the top Search box enter Application Denied Notification Action.
2. Click on the name of the Action **Application Denied Notification Action**.



3. Click **Duplicate**.
4. Enter a customized and meaningful name for the action. It is recommended to use standard naming conventions with your custom items. Beginning custom names with your company name is a great way to differentiate between the default items and your custom items.

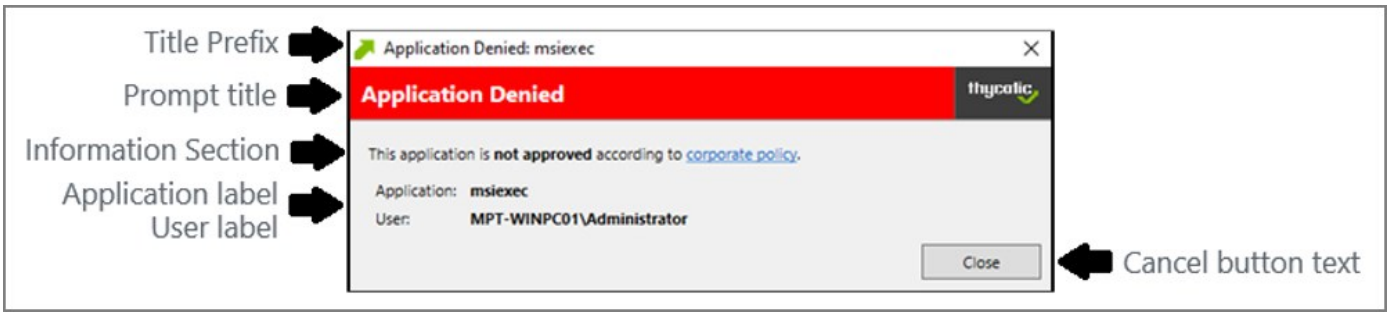


5. Click **Create**. Once you click Create, the new action page opens.
6. To upload a custom image file click **Choose File**. You can upload a custom logo, the file size should be under 128 KB and the width should be 500 pixels or less with a maximum hight of 34 pixels.

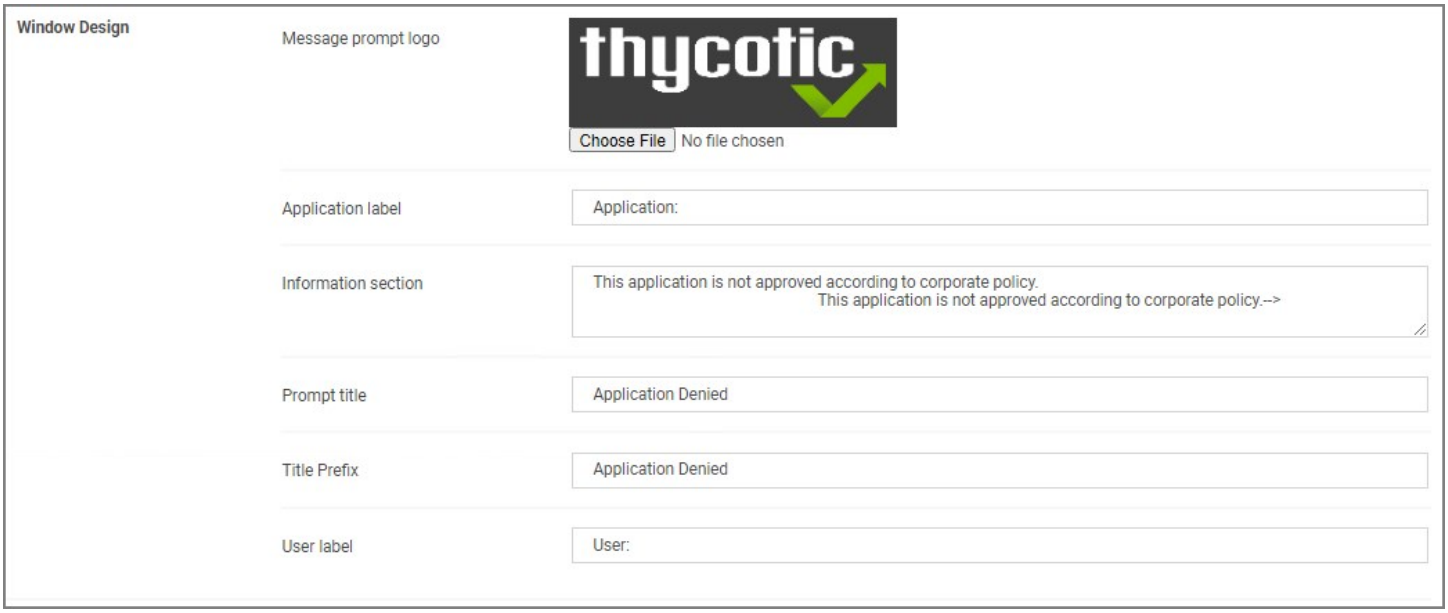
   The logo that is uploaded should NOT be a high-resolution image. This image will be delivered to every endpoint with every message in which it's used. The smaller the image, the better, for sending the message to the endpoints and for the endpoint to load the message.
7. Click **Save**.

Editing the Text in the UI

Privilege Manager makes it very easy to edit the text of a message. The fields are listed in alphabetical order on the item's view page. Compare each field to this overview image:



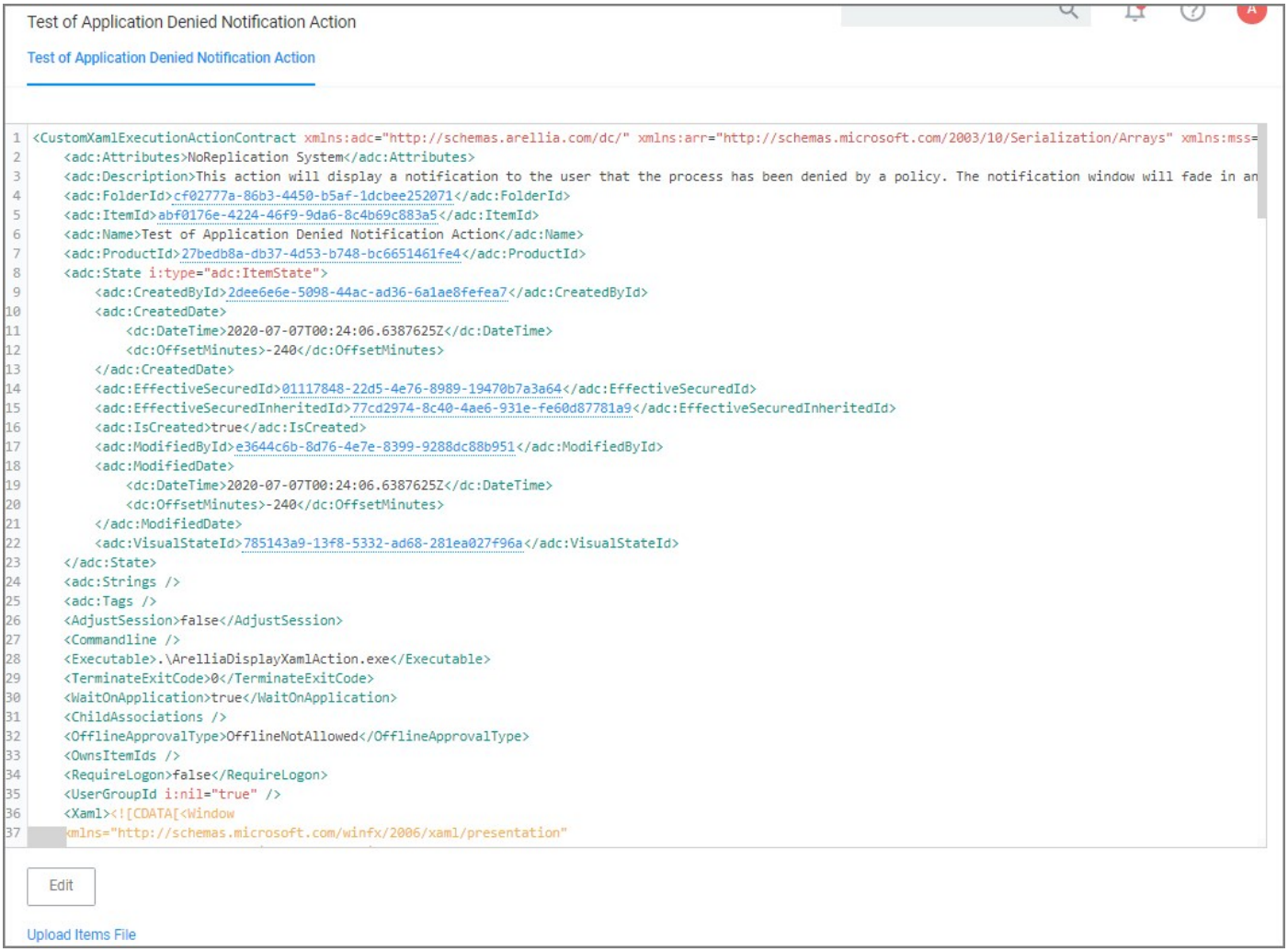
Most of the lines do not include individualized stylings per line. Editing the text in the UI will simply edit the text as required. The **Information Section** field includes html formatting for the hyperlink to the corporate policy. That hyperlink will be removed if the text is edited on the message's edit page.



Note: It is **NOT** recommended to edit the Information Section directly on the message's edit page. Instead, editing the Information Section via XML retains the html formatting for this line. If no changes are made to the Information Section, the html formatting is retained. All other fields can be changed except the Information Section and the html formatting for the Information Section is retained.

Editing the Text via XML

1. Select **More** an click **View as XML**.



2. Change the notification text in the XML viewer:

   Line 82 has the following:

   <Paragraph><Run>This application is </Run><Bold><Run>not approved</Run></Bold><Run> according to </Run><Hyperlink TargetName="_blank" NavigateUri="http://www.example.com/policy"><Run>corporate policy</Run></Hyperlink><Run>.</Run></Paragraph>

   Edit this space with the URL and the name of the Hyperlink you would like for your pop up Window.

   <Paragraph><Run>This application HAS NOT BEEN APPROVED according to </Run><Hyperlink TargetName="_blank" NavigateUri="http://www.example.com/policy"><Run>corporate policy.</Run><Run>Click here, </Run><Hyperlink TargetName="_blank" NavigateUri="http://www.thycotic.com/helpdesk"><Run>to open a support ticket for review this application for approval.</Run></Hyperlink><Run>.</Run></Paragraph>

3. Change the default timeout:

   If you wish to change the default time out for how long the Deny Notification stays up (default is 6 seconds), edit Line 299:

   <i:Interaction.Triggers>
   <i:EventTrigger EventName="Loaded">
   <adx:InvokeCommandWithDelayAction x:Name="CloseAction" Command="{BindingCloseCommand}" Delay="00:00:06" />
   </i:EventTrigger>
   </i:Interaction.Triggers>

   To change it to 15 seconds, edit this elements delay parameter to 15:

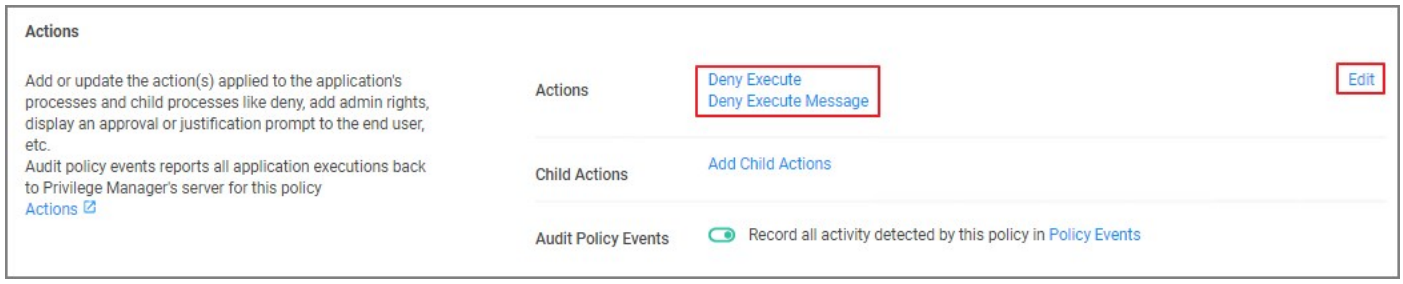
   <adx:InvokeCommandWithDelayAction x:Name="CloseAction" Command="{BindingCloseCommand}" Delay="00:00:15" />

4. Click **Import**. If you get an error, please address your changes. Errors are indicated with a red dot. Save any edits when resolving errors.

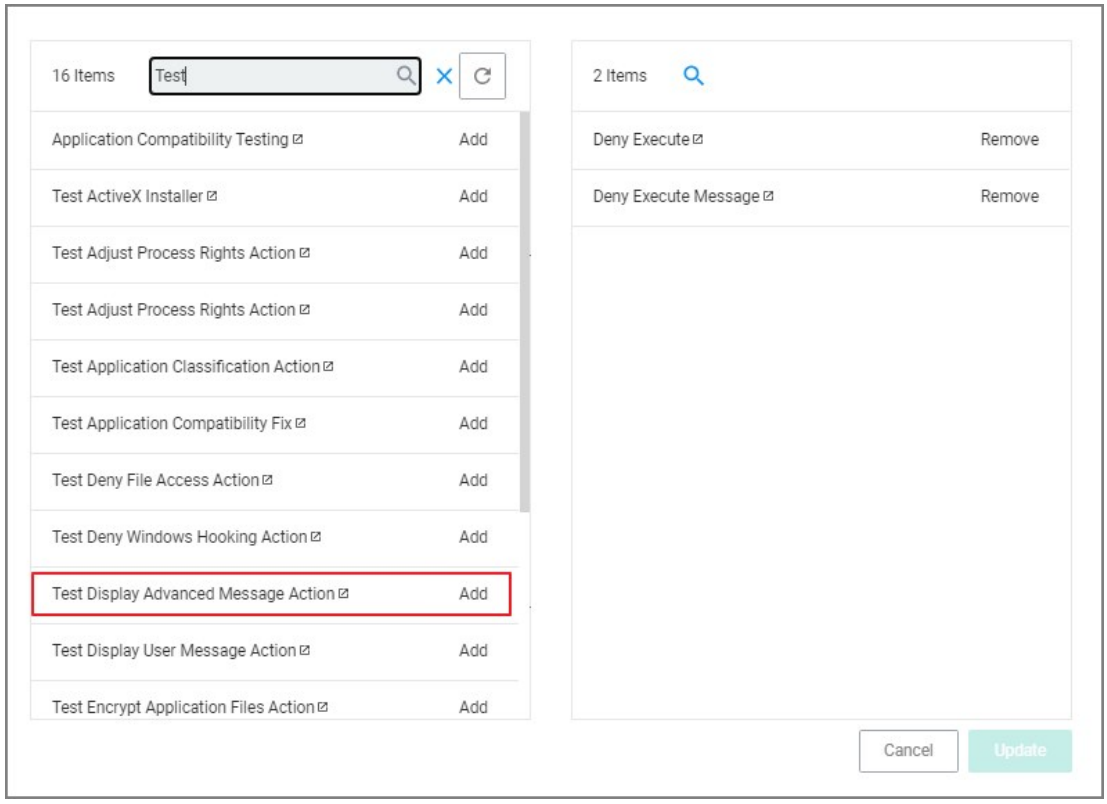
Updating the Policy with the new Action

After creating a custom notification action, the policy using the default notification needs to be updated.

1. Navigate to **Application Policies** and locate the policy that uses the notification you wish to update.
2. Go to the **Actions** section.

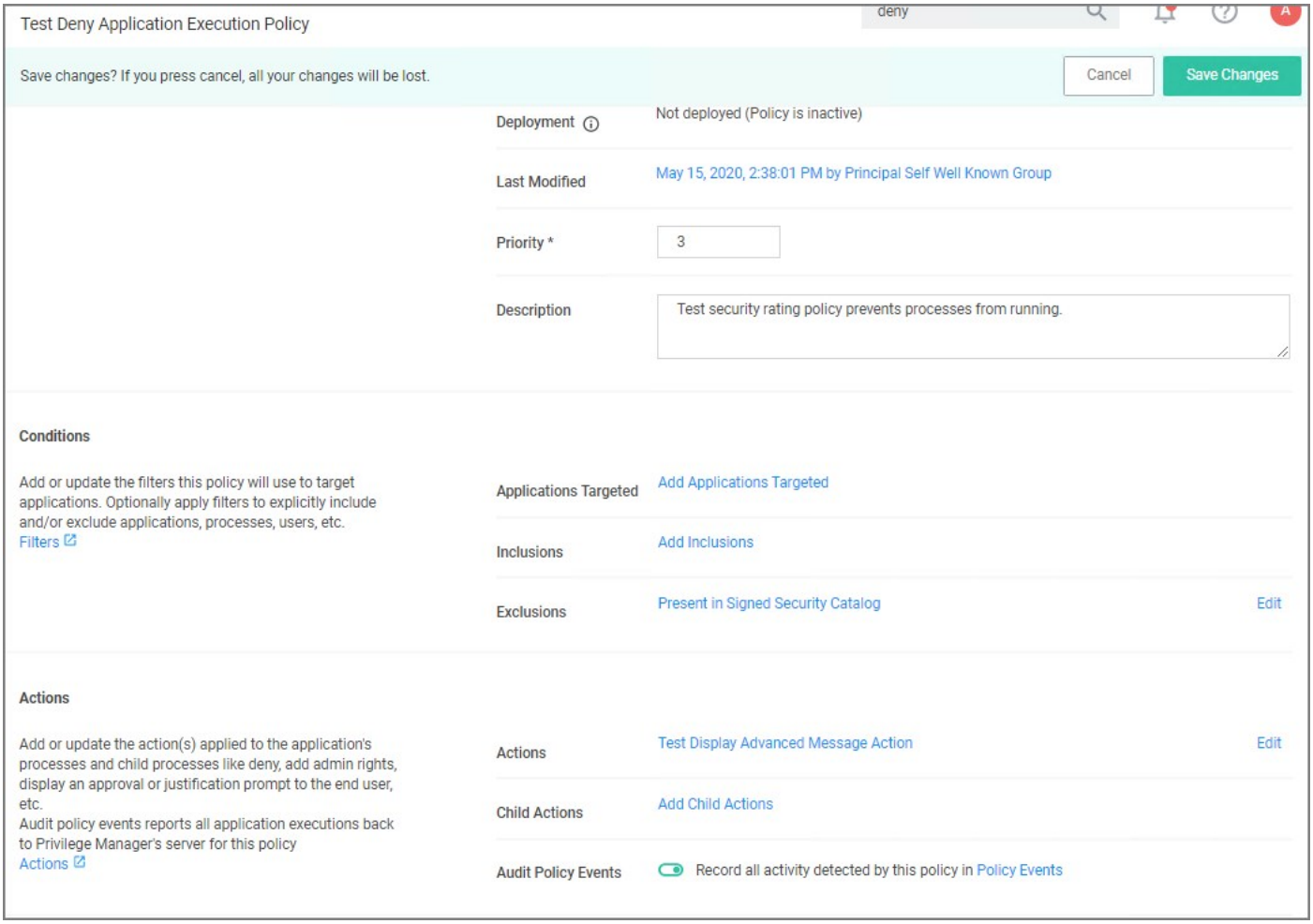


3. Click **Edit**.
4. Search for the action you just duplicated and modified.



1. Click **Add**, to add the action to the right pane of the dialog.
2. Click **Remove** for the old action used previously.

5. Click **Update**.



6. Click **Save Changes**.

Policy changes are automatically propagated to the endpoints. Note, that this might not be instantaneous based on the refresh cycle.

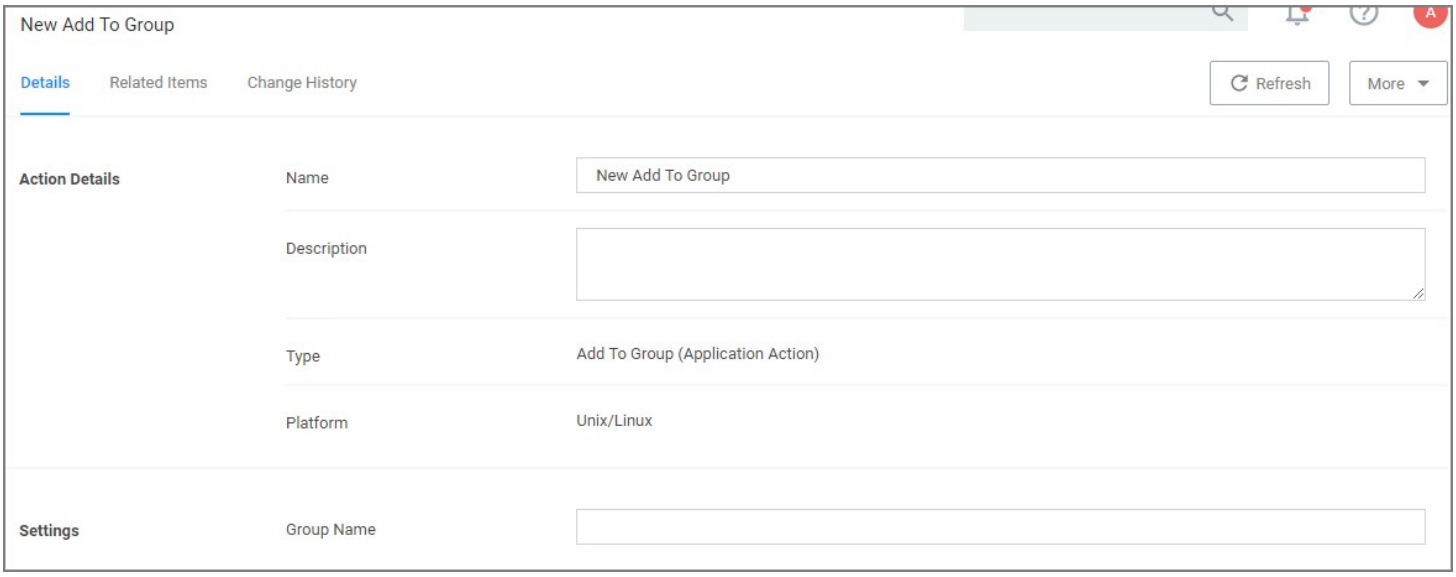
Unix/Linux Specific Actions

The following Unix/Linux specific action topics are available:

- Add to Group Action
- Adjust Environment Variable Action
- Command Line Justification Message
- Command Line Approval Message
- Display User Message Action
- Run As User Action

Add to Group Action

The Add to Group action provides group membership to the running process via policy for temporary access.

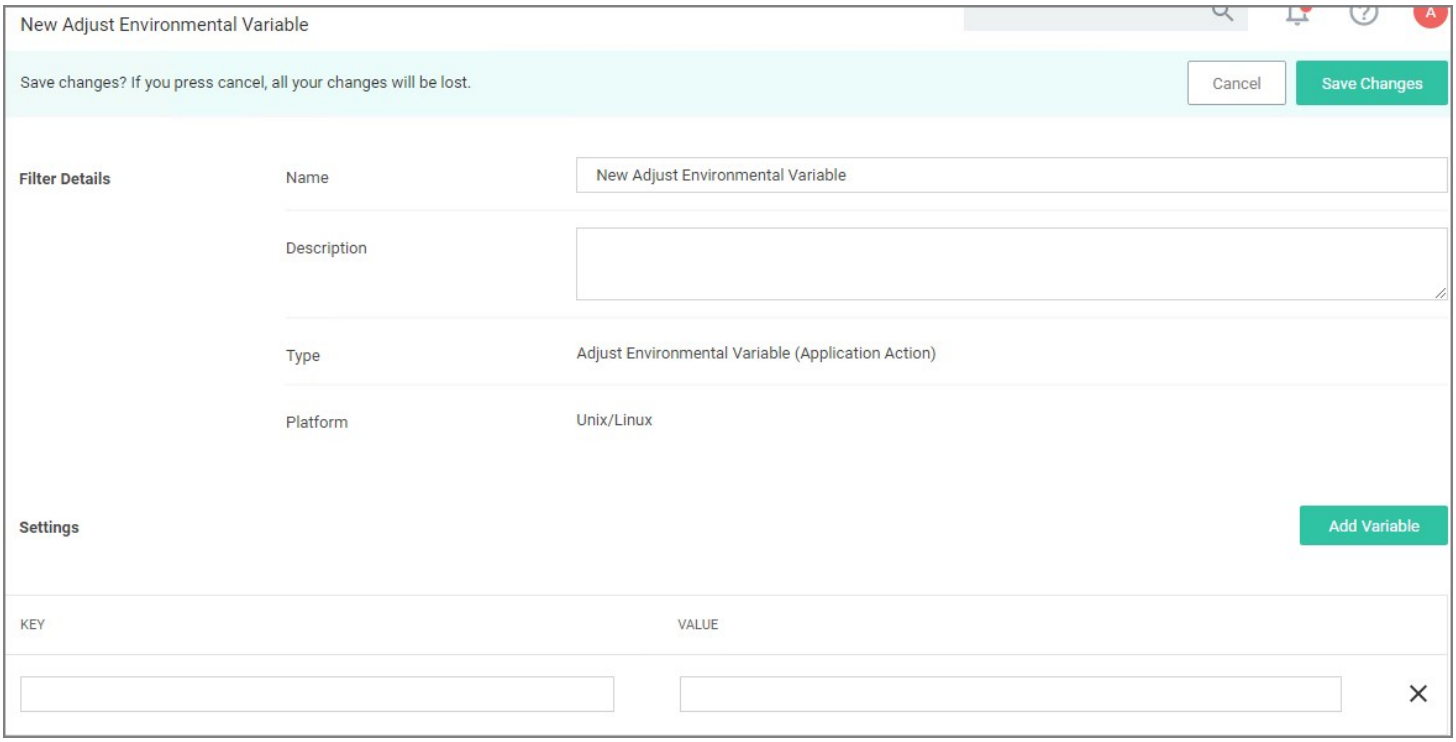


Settings

- Group Name: Specifies the Group Name for the temporary access.

Adjust Environment Variable Action

The Adjust Environment Variable action is used to customize environment variables on an endpoint.



Settings

- Add Variable: Administrators can add and/or edit one or more variable key:value combinations.

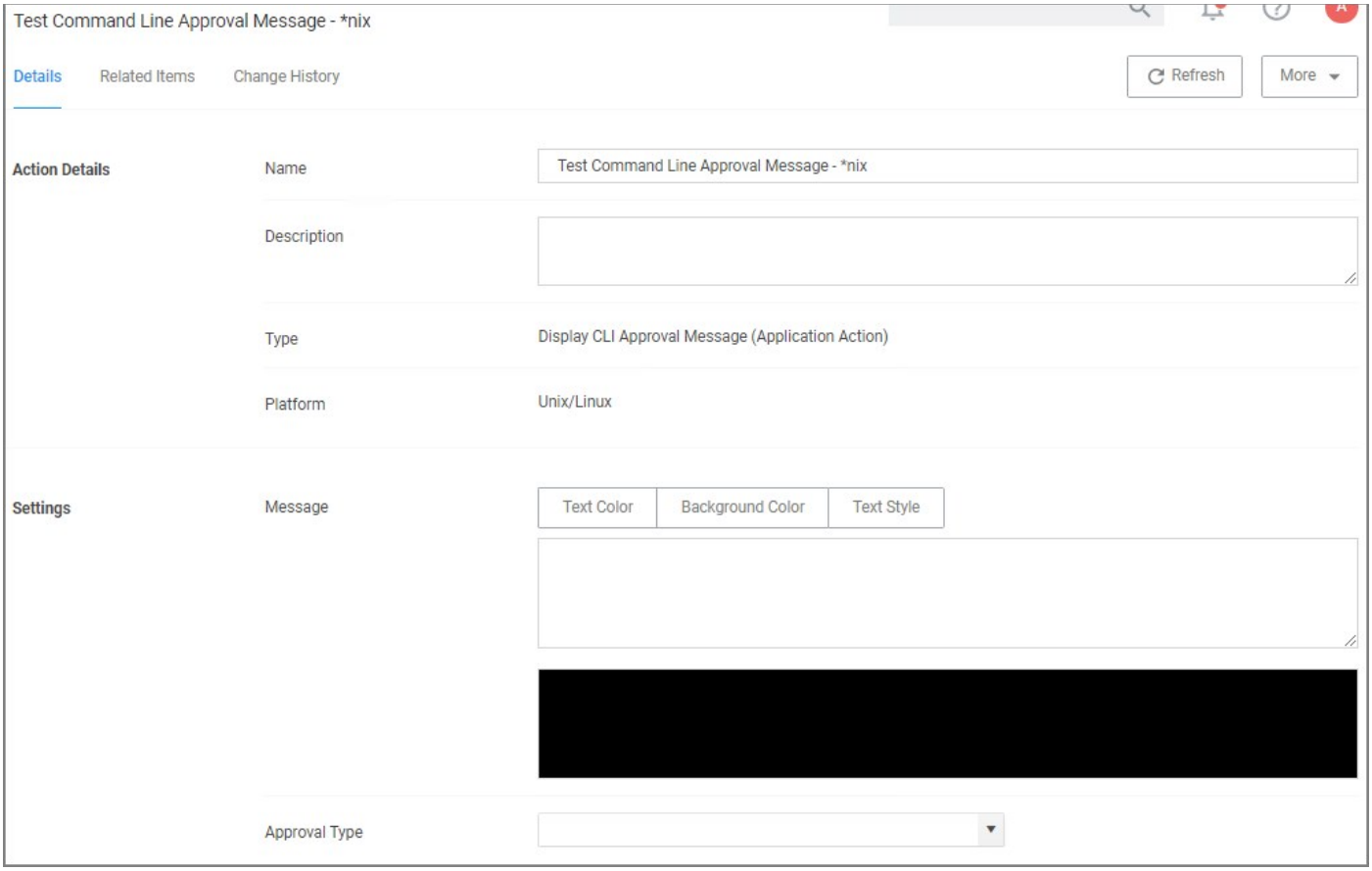
Command Line Approval Message Action

The Command Line Approval Message action allows administrators to prompt command line users on Unix/Linux endpoints for an approval request. The action displays text in the command line interface and prompts the user to enter text.

To create the message action,

1. Navigate to **Admin I Actions**.
2. Click **Create Action**.

3. For **Platform**, select **Unix/Linux**.
4. For **Type**, select **Command Line Approval Message**.
5. Enter a name and description.
6. Click **Create**.



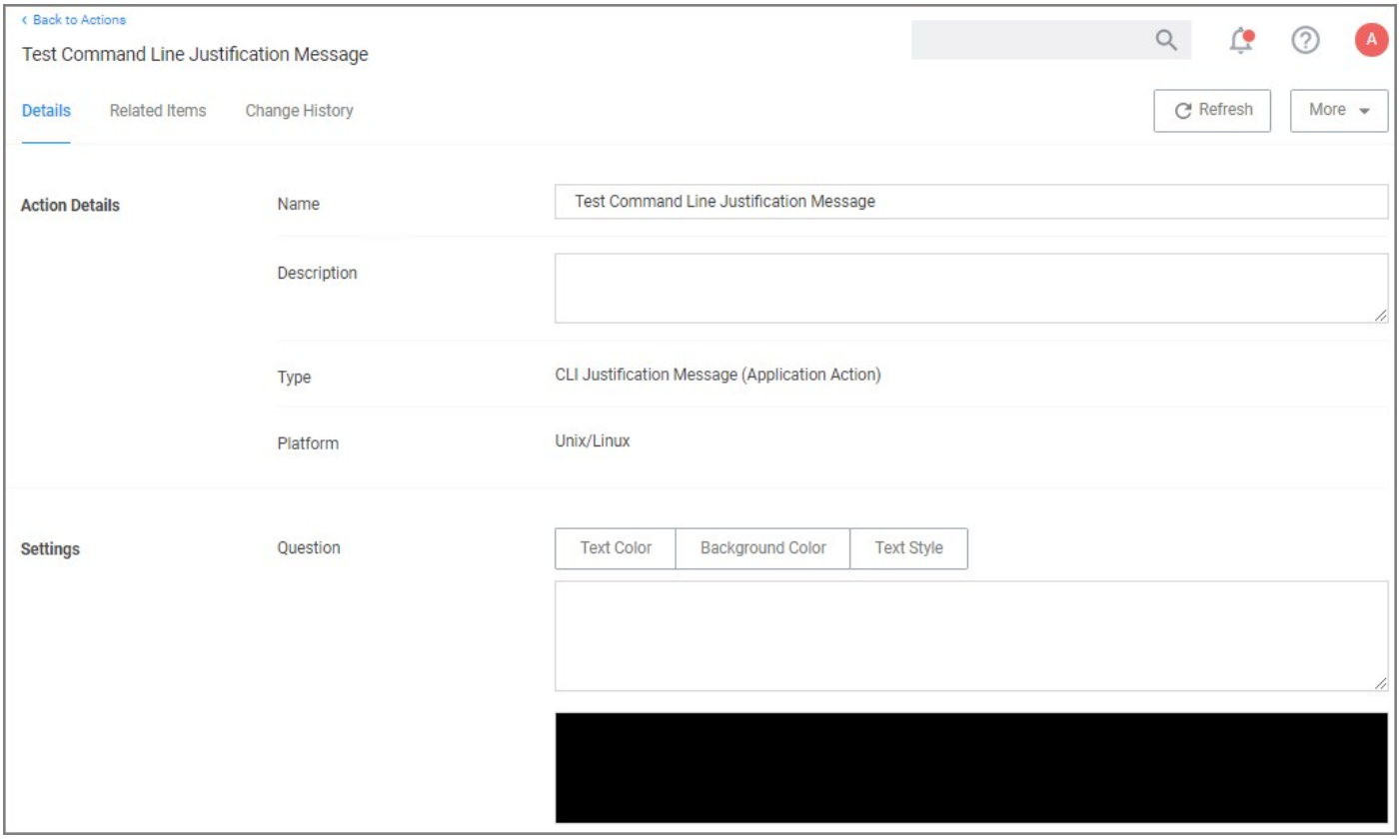
7. Under **Settings** for:
    - **Message**, use the color tooling options and editor to add and customize your message prompt for the users.
    - **Approval Type**, from the drop-down select either
        - **Default Execute Application Request Type** or
        - **Default Offline Execute Application Request Type**.
8. Click **Save Changes**.

Refer to Using the Command Line Action Editor for information on how to use the editor.

Command Line Justification Message Action

The Command Line Justification Message action can be used to provide a customized multi-line justification question to the user.

1. Navigate to **Admin I Actions**.
2. Click **Create Action**.
3. For **Platform**, select **Unix/Linux**.
4. For **Type**, select **Command Line Justification Message**.
5. Enter a name and description.
6. Click **Create**.

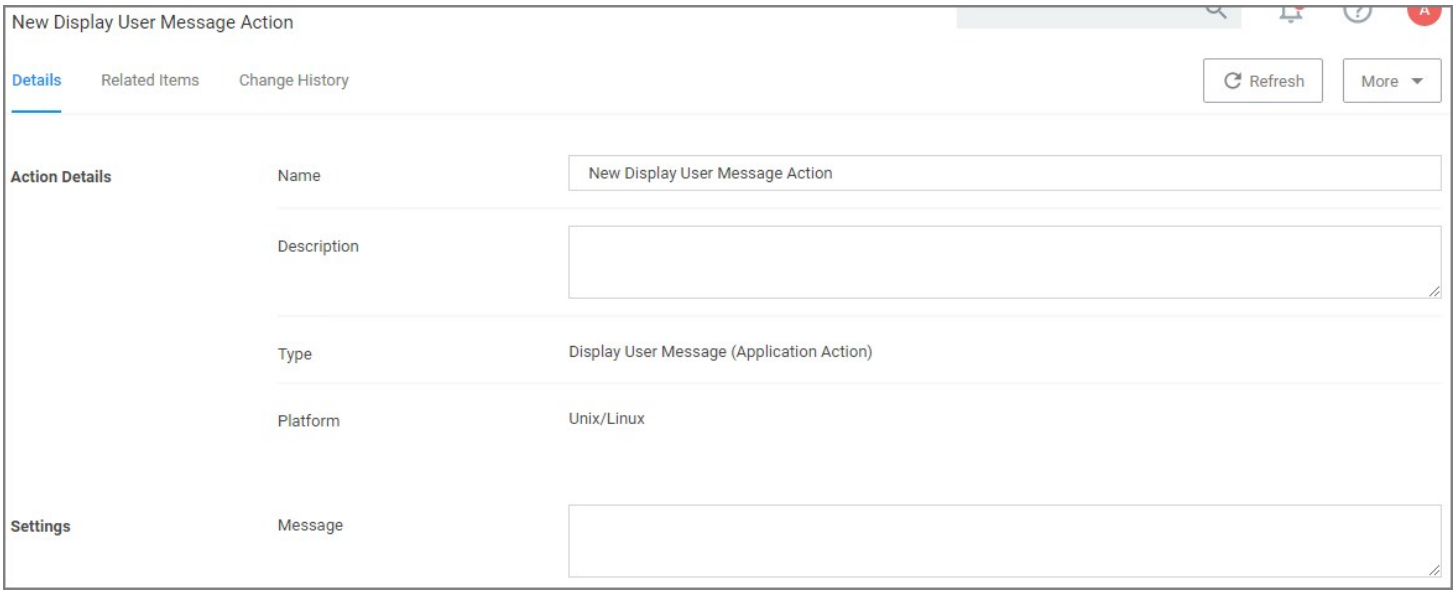


7. Under **Settings**, use the color tooling options and editor to add and customize your message prompt for the users.
8. Click **Save Changes**.

Refer to Using the Command Line Action Editor for information on how to use the editor.

Display User Message Action

The Display User Message action provides the option of a customized user message to be displayed to the user at an endpoint.

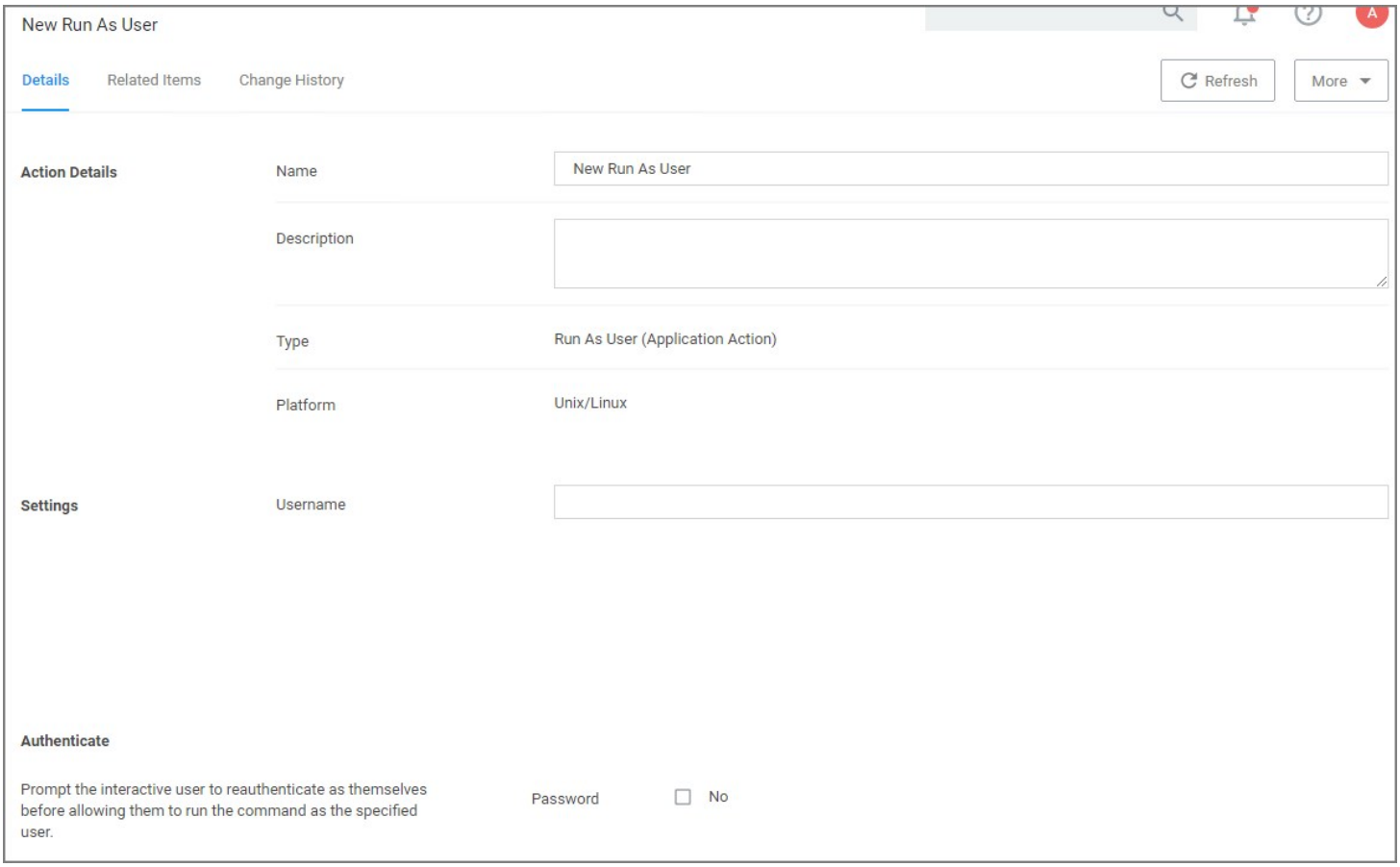


Settings

- Message: Multi-line text field for a customized message to be displayed at an endpoint.

Run as User Action

This actions allows a command a user runs on an endpoint to be treated as if a different user ran it.



Settings

- Username: This identifies the username under which to run the command at the endpoint.

Authenticate

By default, the system requires the user to authenticate themselves, before they are allowed to run a command as the specified user. This can be changed by setting the password prompt to off, and thus disabling the reauthentication.

Delinea

Action messages can be localized for user interaction on endpoints. For this to work, create a duplicate the **Approval Request Form Action** and then view and modify the XML of that duplicated item.

If you look at the xml example code below, you will the <axc:LocaleResourceCollection x:Key="LocaleResources"> element with one child <axc:LocaleResourceSet>. This child is the default language for the approval request, which is English.

To add a localization such as Spanish:

1. Copy the <axc:LocaleResourceSet> element block including the </ axc:LocaleResourceSet> element.
2. Paste it underneath </ axc:LocaleResourceSet>.
3. Add Language="es", as in <axc:LocaleResourceSet Language="es">.
4. Modify the elements with string values to the correct translation for that language.

For a list of valid language code values, refer to https://docs.microsoft.com/en-us/openspecs/office_standards/ms-oe376/6c085406-a698-4e12-9d4d-c3b0ee3dbc4a (the more specific language is used first, such as 'es-ES' for Spanish – Spain and then the broader 'es' will be used if a specific language translation is not found, the last resort is the invariant translation).

Example for Spanish

Open this link to access, copy, or download the example xml.

This topic describes the out-of-the-box actions that are available in Privilege Manager and can be used to make your policy configuration process easy.

Actions Catalog

Here is the complete list of Actions that come with Privilege Manager out-of-the-box, according to **OS** and category **type**:

macOS

Adjust Effective Process Rights Action	**Run as Root**	Adjust the process rights of the application to run as the root user (MacOS)
~~Allow Copy Action~~	**Allow Copy to Applications Directory**	**Note**: This action is deprecated and can only be used with macOS agents versions **prior to 11.2**. This action is used by policies that allow users to copy applications to the root Applications directory as standard users using Privilege Manager .app.
	Allow Package Installation	This action is used by policies that allow users to run the package installer elevated.
AuthorizationDB Right Action	**Activity Monitor Kill Authorization Right** (com.apple.activitymonitor.kill)	This action grants the com.apple.activitymonitor.kill right in the authorizationdb for the duration of an applicable process.
	Bless Helper Authorization Right (com.apple.ServiceManagement.blesshelper)	This action grants the com.apple.ServiceManagement.blesshelper right in the authorizationdb for the duration of an applicable process.
	Install Apple Software Authorization Right (system.install.apple-software)	This action grants the system.install.apple-software right in the authorizationdb for the duration of an applicable process.
	Modify System Keychain Authorization Right (system.keychain.modify)	This action grants the system.keychain.modify right in the authorizationdb for the duration of an applicable process.
	Xcode FLE Authorization Right (com.apple.dt.Xcode.LicenseAgreementXPCServiceRights)	This action grants the com.apple.dt.Xcode.LicenseAgreementXPCServiceRights right in the authorizationdb for the duration of an applicable process.
CLI Justification Message (Application Action)	**Command Line Justification Message**	Justification message to execute before allowing the process to continue.
Display Advanced Message Action	**Application Approval Request (with Offline Fallback) Message Action**	Application Approval Request Message Action for macOS.

	Application Approval Request (with ServiceNow Request Item Number) Message Action	This action will display an approval request form for ServiceNow integrations for approval before allowing application to run on macOS endpoints.
	Application Approval Request Message Action	Application Approval Request Message Action for macOS.
	Application Denied Message Action	This action will display a modal denial notification message to the user and prevent application execution on MacOS.
	Application Justification Message Action	Application Justification Message Action for macOS.
	Application Warning Message Action	Application Warning Message Action for macOS.
Just in Time Group Membership Action	**Just in Time Group Membership Action**	This action will add a user to a specified group for a specified time.
Display User Message Action	**Deny Execute Message**	This action displays a message to the user informing them that an application has been denied execution
Deny Execute Action	**Deny Execute**	This action stops specified applications from executing
Quarantine File Action	**File Quarantine**	This action can be used to quarantine a file by moving it to the default agent quarantine path

Windows

Adjust Process Rights Action	**Add Administrative Rights**	This action adds basic administrative rights needed to install and run specified applications
	Add Administrator Rights – Unrestricted	This action adds administrative rights at a higher integrity level for specified applications. Usually you will only need to use this type of action if an application or installer needs to create a global object, such as a service, or if system changes require unrestricted administrator rights
	Remove Administrator Rights	This action removes administrative rights for specified applications
	Remove Advanced Privileges Action	This action removes advanced privileges for specified applications from the process token
Application Verifier Action	**Application Compatibility Testing**	This action triggers application compatibility testing while the process runs and sends the results to the server
Create Children Processes as User	**De-elevate Child Processes**	Ensures that all child processes are created without administrator rights. Forces all new processes created by the targeted application to be launched by a de-elevated token.

Deny Execute Action	**Deny Execute**	This action stops specified applications from executing
Deny File Access Action	**Deny Read/Write Access to Microsoft Office Document Files**	This action can be used to deny read and write access to Microsoft Office documents
	Deny Write Access to Executable Files	This action can be used to deny write access to common executable files
Deny Windows Hooking Action	**Deny Windows Hooking**	This action limits specified applications from interacting in malicious ways with other applications
Display Advanced (Xaml) Windows Message	**Application Denied Message Action**	This action will display a modal denial notification message to the user and prevent application execution on Windows
	Application Denied Notification Action	This action will display a notification to the user that the process has been denied by a policy. The notification window will fade in and out and automatically close after a period of time
	Application Warning Message Action	Application Warning Message Action for Windows.
	Approval Request (with Offline Fallback) Form Action	This action will display an approval request form for approval before allowing application to run.
	Approval Request (with ServiceNow Request Item Number) Form Action	This action will display an approval request form for ServiceNow integrations for approval before allowing application to run.
	Approval Request Form Action	This action will display an approval request form for approval before allowing application to run
	Authenticated Justification Message Action	This action will display a customized message to the user, allowing for feedback and requiring authentication before running an application
	Group Member Authenticated Message Action	This action will display a customized message to the user and requires authentication by a member of the specified group if the end-user is not a member
	Justify Application Elevation Action	This action will display a justification prompt to the user before continuing to the process controlled by a policy
	Justify Application Message Action	This action will display a justification prompt to the user before continuing to the process controlled by a policy
	Mobile Approval Request Form Action	This action will display a approval request form for approval before allowing application to run.

Display User Message Action	**Deny Execute Message**	This action displays a message to the user informing them that an application has been denied execution
	Deny Files Read and Write Access Message	This action displays a message to the user informing them that an application will be restricted from certain file access
	Limit Process Rights for New Applications Message	This action displays a message to the user informing them that an application has had its rights reduced
	Quarantine Message	This action displays a message to the user informing them that an application has been quarantined
	Remove Rights Message	This action displays a message to the user informing them of an associated action
	SWV Global Layer User Message	This action displays a message to the user informing them that an application has been placed in SWV global layer
	SWV Isolation Layer User Message	This action displays a message to the user informing them that an application has been placed in SWV isolation layer
	Windows Hooking Message	This action displays a message to the user informing them that an application will be stopped from interacting with other applications
Encrypt Application Files	**Encrypt Common Application Documents**	This action can be used to automatically encrypt common application documents using Windows EFS.
	Encrypt Microsoft Office Documents	This action can be used to automatically encrypt Microsoft Office documents using Windows EFS.
Execute Application Action	**Immediate File Inventory**	This action will inventory the file being executed
GenericDetourAction	**Enable UAC Virtualization**	This action will turn on UAC virtualization for the target process.
Meter Application Action	**Meter Application Usage**	This action meters the usage of the specified applications
Quarantine File Action	**File Quarantine**	This action can be used to quarantine a file by moving it to the default agent quarantine path
Restrict File Dialogs	**Restrict File Dialogs**	This action prevents users from abusing the elevated rights of the application via the file open and save dialogs. This is a recommended action that customers should add to their elevation policies.
Set Environment Variable Action	**Suppress User Account Control Consent Dialog**	This action will prevent the UAC consent dialog from being displayed.

Set Process Security Descriptor Action	**Locked down Service Process Security Descriptor**	This action applies a restrictive security descriptor disallowing Administrators the right to terminate the process.
Apply SVS Layer Action	**Workspace Virtualization Global Layer**	This action places specified applications in a common Workspace Virtualization global layer
	Workspace Virtualization Isolation Layer	This action places specified applications in a common Workspace Virtualization isolation layer

Unix/Linux

Display User Message Action	**Deny Execute Message**	This action displays a message to the user informing them that an application has been denied execution
Deny Execute Action	**Deny Execute**	This action stops specified applications from executing

Configuration Feeds are extensions to Privilege Manager . They allow Delinea to deliver new components/items to Privilege Manager on demand. Simply click through the options in the **Config Feeds** page.

1. Navigate to **Admin I Config Feeds**.
2. Browse the available config feeds by expanding **Privilege Manager Product Configuration Feeds**.

Expand the available product areas to drill-down into the configuration feeds available under:

- Application Control Solution
- Local Security Solution
- Thycotic Management Server Core

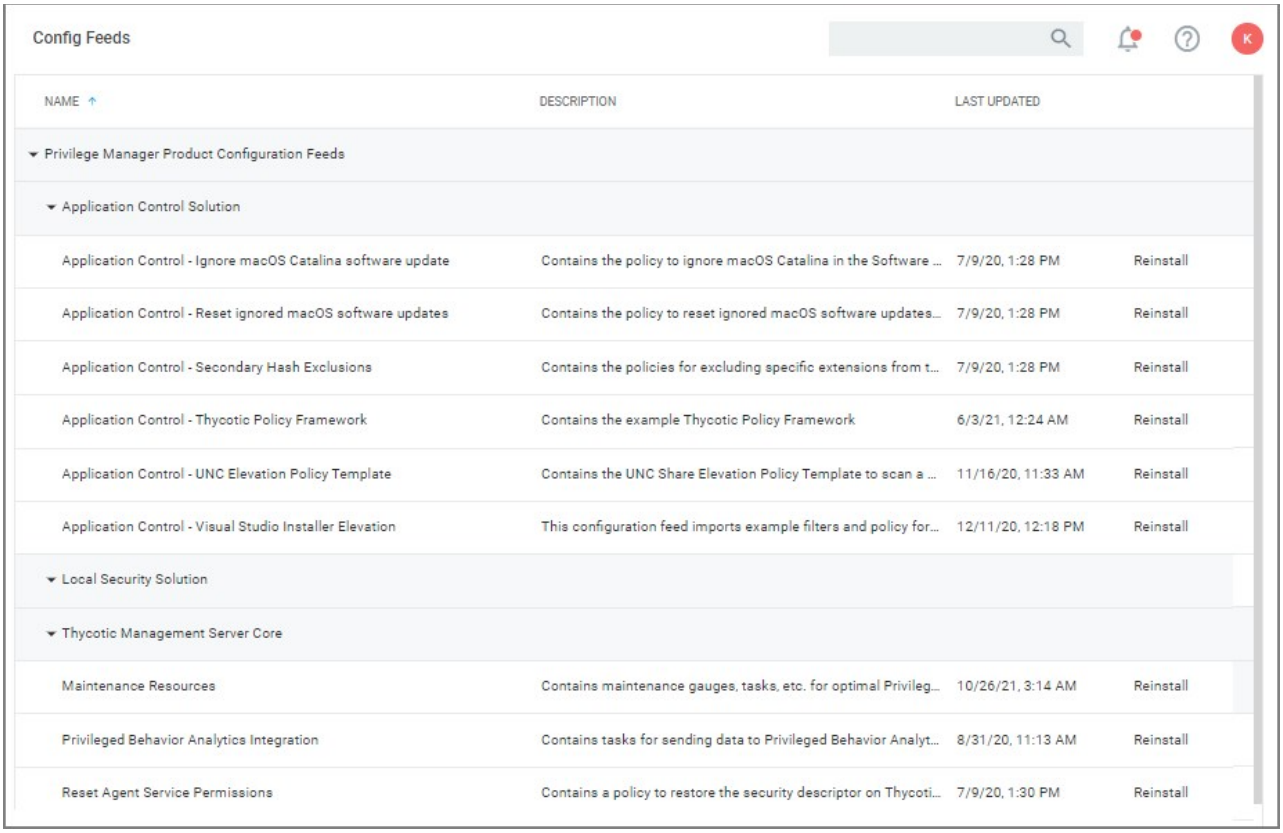
Application Control Solution	Ignoring macOS Updates	Contains the policy to ignore macOS Catalina in the Software Update preference pane. Only works with the KEXT agent and Catalina, not supported with SYSEX agent or on Big Sur and up.
	Reset ignored macOS Software Updates	Contains the policy to reset ignored macOS software updates in the Software Update preference pane.
	Secondary File Hash Exclusion Policy	Policy template to exclude non-executable files from the hash process.
	Thycotic Policy Framework	Contains the example Thycotic Policy Framework. Installs 28 quick start policies.
	UNC Elevation Policy Template	Contains the UNC Share Elevation Policy Template to scan a network share and automatically elevate MSI and EXE files.
	Visual Studio Installer Elevation	Contains example filters and a policy for elevating Visual Studio Installers. After the installation the policy needs to be activated. Note: For enhanced security, the policy should include a certificate filter when rolled out into a production environment.
Thycotic Management Server Core	Maintenance Resources	Contains maintenance gauges, tasks, etc. for optimal TMS performance.
	Privileged	

	Behavior Analytics Integration	Contains tasks for sending data to Privileged Behavior Analytics (PBA) - requires a SysLog Foreign System to be configured.
	Reset Agent Service Permissions	Contains a policy to restore the security descriptor on Delinea Services for Privilege Manager versions prior to v10.7.1.
	SQL CPU Usage Gauge	Contains a gauge and report to monitor SQL CPU usage.
	Windows Server and Desktop Filters	Contains Windows Server and Desktop Filters.
	Remove Active Directory Domain	Contains a task that deletes an Active Directory domain from the foreign systems tab, along with its child items.
	Merge Duplicate Active Directory Domains	Contains a task that merges duplicate Active Directory Domains, so that Organizational Units and their policies are correctly represented.
	Purge Old Unmanaged AD Computers	Contains a task that will delete unmanaged computers, imported from Active Directory, that have not been updated in 90 days by default.

Installation, Reinstallation, and Updates

There are three potential options for each of the Configuration Feeds.

- Install: This is the available option for new configuration feeds or when the configuration feed has not previously been installed on the Privilege Manager instance.
- Reinstall: This option is shown when the configuration feed has previously been installed on the Privilege Manager instance.
- Update: This option is shown when the configuration feed has previously been installed on the Privilege Manager instance and an update to the configuration feed is available.



Note: If items from a configuration feed are used and have been customized, any reinstallation or update will overwrite those customizations. Always rename modified items or save a copy to provide accidental overwriting.

The Configuration area in Privilege Manager allows users with Privilege Manager Administrator roles to setup new or change existing configurations for areas like user credentials, foreign systems integrations, or authentication. It lets administrators specify settings that control Privilege Manager Server and Console behavior via the Advanced tab.

The Change History tab under Configuration provides users an overview of changes made to configuration items.

When clicking the **?** to the top right, the Configuration page gives the user an overview of the Key Configuration settings and System Health.

The configuration page is tabulated and offers configuration or review options under the following tabs:

- General
- Discovery
- Reputation
- Credentials
- Foreign Systems
- Roles
- Advanced
- Authentication
- Change History

Advanced Tab

The Advanced tab lets you configure settings like:

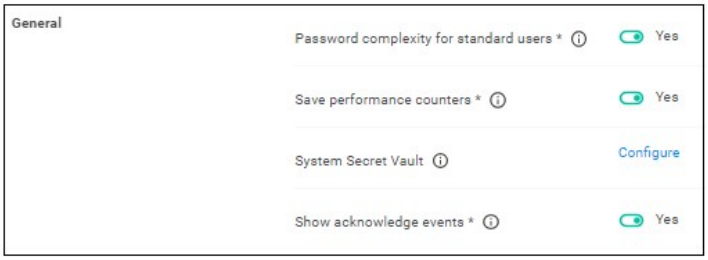
- General
- API Settings
- Timeout
- Agent
- Inventory
- Monitor
- Proxy
- ServiceBus

To edit any of the advanced settings, make changes and then click **Save Changes**.

Also refer to Security Algorithms.

General System Settings

Under the Privilege Manager Server category, the first section is General settings.



Your client id

This client id is used by **mobile devices** for authentication.

Your tenant id

This tenant id is used by mobile devices for authentication.

Password complexity for standard users

This setting is set to yes by default, meaning the password complexity rules are enforced when creating or editing a Privilege Manager user resource.

Refer to Password Complexity Enforcement for further details.

Save performance counters

If this setting is selected, the performance counter data will be recorded in the database. Also refer to Delete Old Performance Counter Events.

System Secret Vault

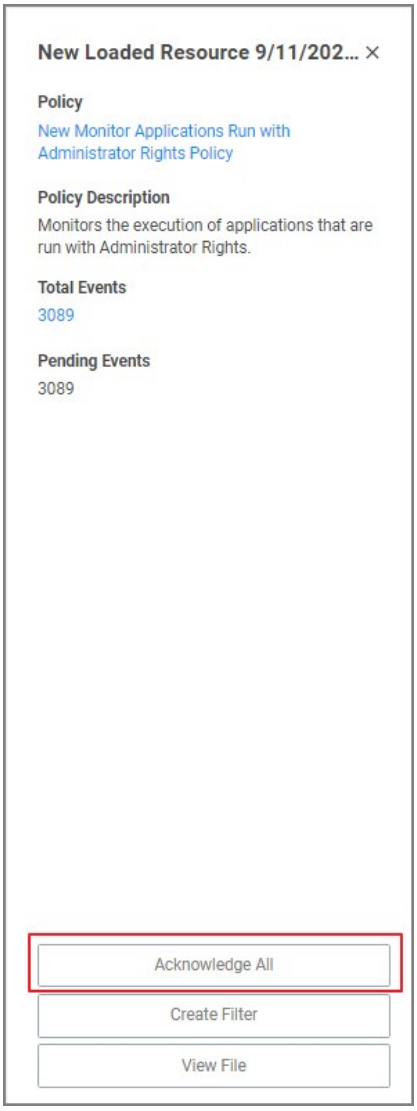
This link lets you configure the foreign system used to store secrets.

Show acknowledge events

If selected then the acknowledge events button will be visible in Policy Events.

1. Set the switch to Yes to enable the acknowledge events button.

Once you save the changes, you will see an Acknowledge All button on the Policy Events grid after selecting an unacknowledged event.



Maximum application event count

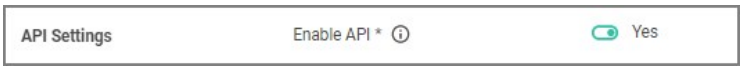
This setting specifies the Maximum number of application action events that will be kept in the database. The default setting is 1,000,000. Also refer to Purge Maintenance - Application Control Events.

API Settings

Enable API

Enabling this setting will allow authorized calls to the public facing application programming interface.

1. Set the switch to Yes to enable the API.



You will need to create an API Client User and assign a role to this user.

Timeout

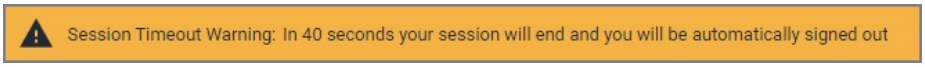
These settings specify the system timeout behaviors.

Session Timeout

This setting specifies the maximum time in **minutes** for a login session to be active without having to negotiate another token. The default is set to 720 Minutes (12 Hours).

Session Timeout Warning

Two minutes before the set session timeout window expires, Privilege Manager displays a yellow warning with countdown timer to inform users about the pending session timeout.



Inactivity Timeout

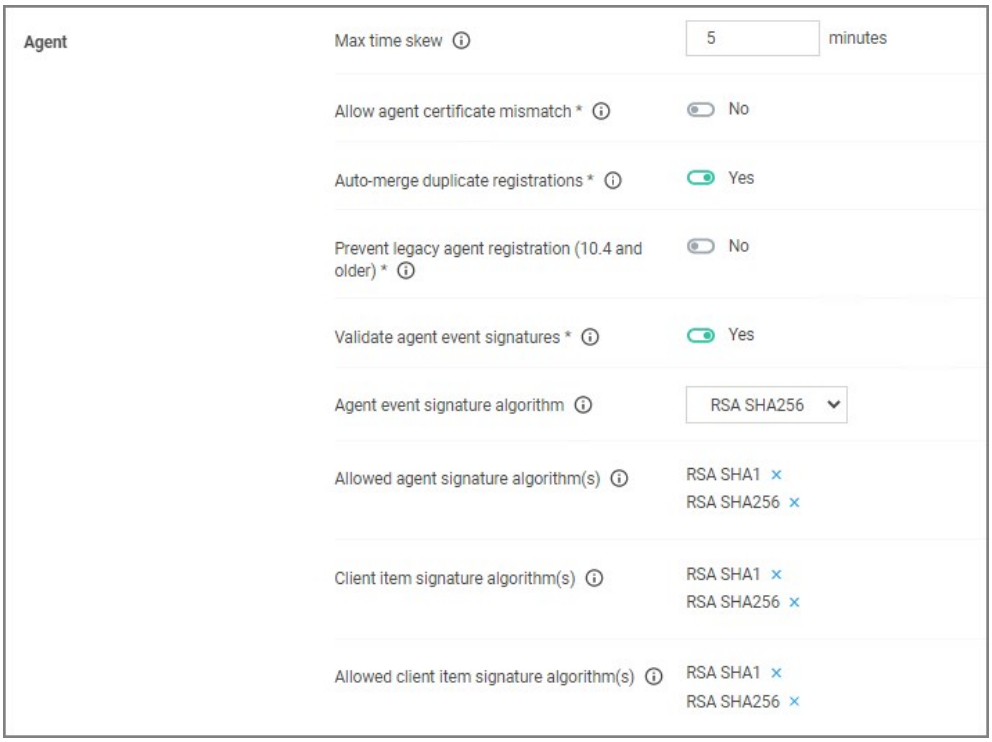
This settings specifies the maximum allowed time for inactivity when logged into the Privilege Manager console. The default is set to 30 Minutes. The session token remains active and does not need to be renegotiated when the inactivity timeout happens within the specified session timeout window.

Command Timeout

This settings specifies the SQL command timeout. The default is 180 Seconds.

Agent

Under the Agent section the agent related general configuration items can be specified.



Max time skew

This setting specifies the maximum time difference (in minutes) to allow client system clocks to be out of sync with the server.

Allow agent certificate mismatch

Enabling this setting, allows agents to communicate with the server even if there is a certificate mismatch.

Auto-merge duplicate registrations

By default this setting is enabled. The setting controls whether or not duplicate SIDs detected during agent registration are automatically merged.

Prevent legacy agent registration (v10.4 and older)

Enabling this setting prevents older agents (prior to v10.5) from registering, allowing only agents with valid agent Install Codes. Only enable this option if you are certain your managed computers have all been upgraded to v10.5 or newer agents.

Validate agent event signatures

By default enabled, this setting will verify the signature contained within agent events are sent to the server. Any events with invalid signatures are discarded.

Agent event signature algorithm

The default signature algorithm agents will use when sending events to the server. Agents 11.1 and newer will use this setting, older agents will use RSA SHA1.

Allowed agent signature algorithm(s)

This setting specifies the algorithm(s) the server should accept for agent event signatures. SHA1 should be left enabled if agents older than 11.1 are in the environment.

Client item signature algorithm

This setting specifies the algorithm(s) used to sign client items that are sent to agents. SHA1 should be left enabled if agents older than 11.1 are in the environment.

Allowed client item signature algorithm(s)

This setting specifies the algorithm(s) the agent should accept for client item signatures. Agents 11.1 and newer will use this setting, older agents will use RSA SHA1.

File Inventory Solution

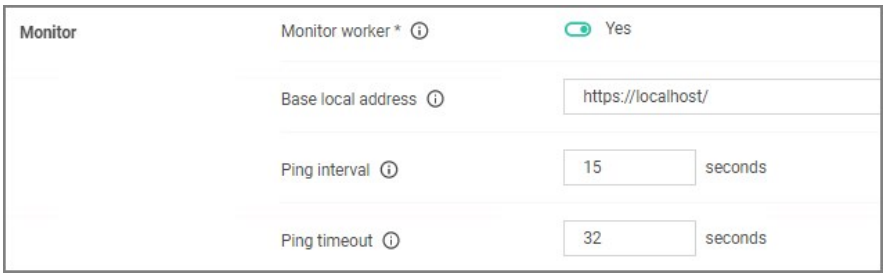
Under the File Inventory Solution the inventory hash algorithm(s) and file extensions used for inclusions and exclusions are specified.

- Inventory hash algorithm(s) are the default hash algorithms used for resource inventory. This setting will be used for server-based inventory, and also agent-based inventory unless overridden by agent configuration.
- ISO contents filters with default extensions of .exe, .cat, and .zip.
- MSI contents filters with default extensions of .exe, and .cat.
- Package contents filters with default extensions of .exe, .iso, .msi, .cat, .vhd, .vmdk, and .zip.
- VHD contents filters with default extensions of .exe, .cat, and .zip.
- ZIP contents filters with default extensions of .exe, .cat, . msi, and .zip.

1. To add inventory hash algorithms, click **Edit**. To remove them, click **x**.
2. To change any of the listed file extensions, add or remove extensions directly in the text fields.
3. Make sure to save any changes.

Monitor Settings

Under the Privilege Manager Server category, the second section is Monitor settings. The Monitor setting is designed to monitor the Worker Role to ensure it is healthy and active. When enabled, the process checks the health at each Ping Interval and waits until the Timeout value before considering it unhealthy.



Monitor worker

When this setting is enabled the health of the monitor process will be polled.

Base local address

This setting specifies the base URL of the Monitor process.

Ping interval

Specifies how often the server will attempt to contact the Monitor process to query its health. The default is set to 15 Seconds.

Ping timeout

Specifies how long the server process will wait to hear back from a ping request to the Monitor process. The default is set to 30 Seconds.

Proxy Settings

The proxy configuration settings are used when a reverse proxy is used with your Privilege Manager instance.

Use proxy server

If set, communications will be done via the proxy server specified.

Proxy server

This setting specifies the name or IP address of the proxy server.

Port

This setting specifies the port used for communications to the proxy server.

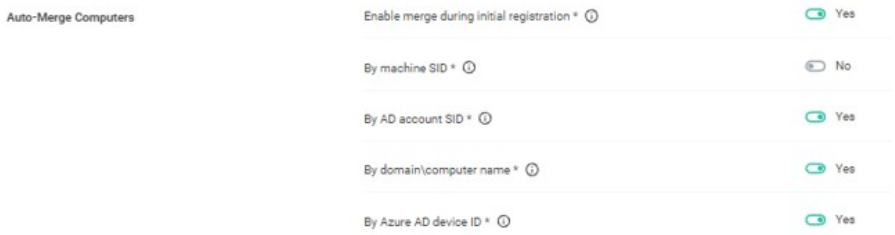
Proxy Server Credential

This link lets you configure the credential used to authenticate with the proxy server.

Auto-Merge Computers Configuration

The settings here allow users to choose how Computers, Domain Users and Domain Groups with duplicate ID's are dealt with during registration and when the 'Merge Duplicate Resources' task is run.

> **Note**: In order to resolve any issues with duplicate IDs, a user must run these tasks manually.



The **Enable merge during registration** setting will determine whether new computers will be merged into one, if they share attributes with any existing computers associated with the Privilege Manager console.

If this is set to **No**, new computers sharing any attributes will not be merged upon registration, causing a duplicate computer to be created. If it is set to **Yes**, the computer will be merged upon registration, based on the settings below:

By machine SID refers to the Domain SID. If this option is set to **Yes**, and if it is identified that the new computer shares the same Domain SID as any existing computers during computer registration, they will be merged together. If this is set to **No**, new computers with a duplicate Domain SID will be merged upon registration, causing a duplicate computer to be created.

> **Note**: If the **Merge Duplicate Resources** or **Merge Specific Resources** tasks are run, the setting here will be used to determine whether any existing Computers on the system with duplicate Domain SIDs will be merged.

By AD account SID refers to the Account SID. If this option is set to **Yes**, and if it is identified that the new computer shares the same Account SID as any existing computers during computer registration, they will be merged together. If this is set to **No**, new computers with a duplicate Account SIDs will be merged upon registration, causing a duplicate computer to be created.

> **Note**: If the **Merge Duplicate Resources** or **Merge Specific Resources** tasks are run, the setting here will be used to determine whether any existing Computers, Domain Users or Domain Groups on the system with duplicate Account SIDs will be merged.

By domain\computer name refers to the Account Name (e.g., domain\computer). If this option is set to **Yes**, and if it is identified that the new computer shares the same Account Name as any existing computers during computer registration, they will be merged together. If this is set to **No**, new computers with a duplicate Account Name will be merged upon registration, causing a duplicate computer to be created.

> **Note**: If the **Merge Duplicate Resources** or **Merge Specific Resources** tasks are run, the setting here will be used to determine whether any existing Computers, Domain Users or Domain Groups on the system with duplicate Account Names will be merged.

By Azure AD Device Id refers to the Device ID. If this option is set to **Yes**, and if it is identified that the new computer shares the same Device ID as any existing computers during computer registration, they will be merged together. If this is set to **No**, new computers with a duplicate Device ID will be merged upon registration, causing a duplicate computer to be created.

> **Note**: If the **Merge Duplicate Resources** or **Merge Specific Resources** tasks are run, the setting here will be used to determine whether any existing Computers on the system with duplicate Device IDs will be merged.

ServiceBus

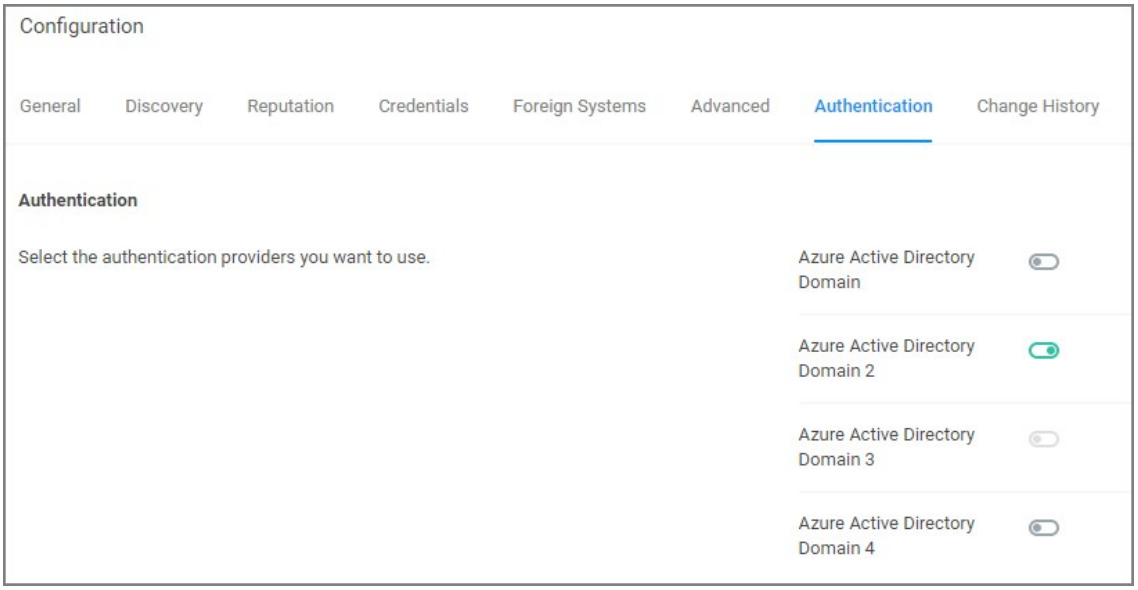
The ServiceBus configuration setting is used when you utilize a Service Bus with your Privilege Manager instance.

Connectivity Mode

This setting specifies the connectivity mode for Service Bus. The default is HTTPS, which is also recommended.

Authentication Tab

The Authentication tab is used for enabling the Authentication Providers used with Privilege Manager . Different authentication providers can be enabled based on configured Foreign Systems. The user logs in by selecting from one of these active authentication providers on the login page.



> **Note**: If you are trying to change your Authentication Provider specifically to NTLM, Privilege Manager runs a verification to make sure the local built-in Administrators Group is in the Privilege Manager Administrators Role.

Managing Auth Providers

After you've configured your SAML identity provider, configured users, and added users/groups to Privilege Manager roles, you should be ready to enable SAML as an auth provider.

Enable a SAML Identity Provider

1. Click the slider on the name of your SAML Identity Provider to enable it and save changes.

   NOTE: You can't disable the auth provider used for the current user. To ensure things are setup correctly, you're required to login with a different auth provider before disabling an existing one. You shouldn't rely on a single auth provider, it's best to have a backup in case of any unexpected foreign system issues.

Login

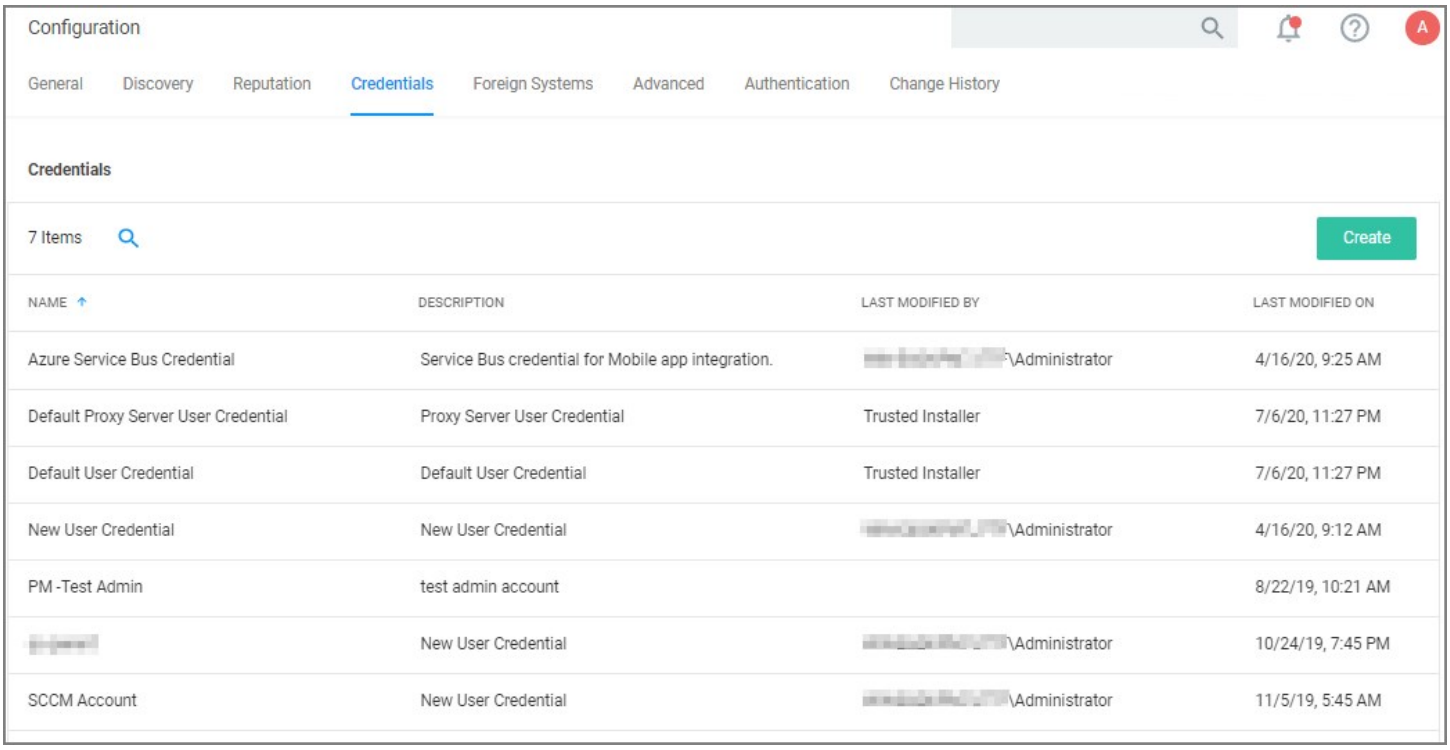
After you've saved auth provider changes, you can logout and test your setup.

1. Click the name of your SAML Identity Provider.
2. You'll be redirected to the configured provider, where you can sign in.

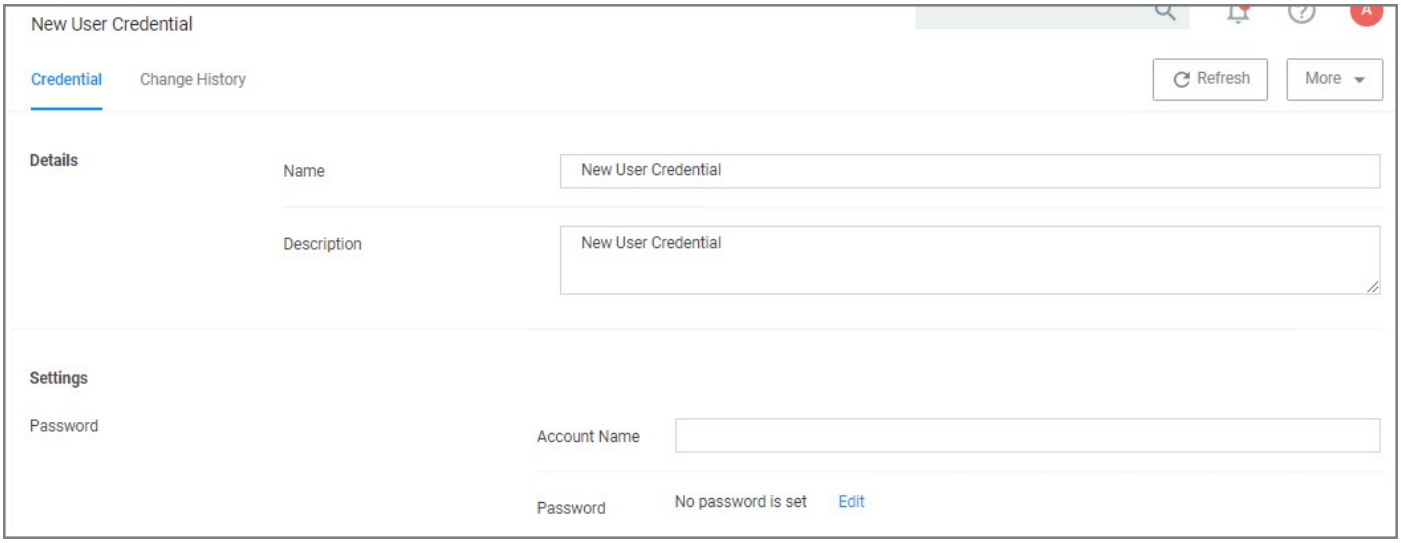
   NOTE: Make sure you're not already signed into the SAML Identity Provider. For example, if your provider is Okta and you've been using the Okta configuration UI, it will try to automatically use that user (and if you are not added to the application, it will fail). It's best to do this in a new Incognito/Private window, and or clear cookies and restart the browser before proceeding.

Credentials Tab

The Credentials tab lets you configure and add new credentials required for configured Foreign Systems.



1. Navigate to **Admin I Configuration** and select the **Credentials** tab.
2. Click **Create** to add a new credential.



User Credentials and Roles

As described for the Roles Tab, Privilege Manager comes with a set of default user roles. Those roles can be edited or new ones can be added to the system.

The role for the Privilege Manager Administrator gives permissions to manage all aspects of the Privilege Manager implementation. As a best practice, it is recommended to set-up roles that limit administrative access to tasks directly related with a users job role.

For integrations with Secret Server keep in mind that Privilege Manger has the ability to use Secret Server as its storage container for credentials. This includes credentials for connecting to integrated systems such as Service Now, as well as credentials for local accounts that are managed by Local Security in Privilege Manager . Customers can choose to integrate with Secret Server only (no Vault setup) or Secret Server and Vault. Either option requires Authentication Data setup for Foreign Systems in Privilege Manager . Refer to the Setting up Integration between Privilege Manager and Secret Server topic.

If you are integrating with Active Directory synchronization please refer to Active Directory Synchronization.

> **Note**: If you synced with Azure AD, and then added that user to the Privilege Manager Administrators Role, that Azure AD user has admin rights only, if Azure AD is used as the auth provider. If users login via Thycotic One, use **Admin | Users** to create a new user and then add that new user to the Privilege Manager Administrators Role, refer to How to Add Thycotic One Users Manually.

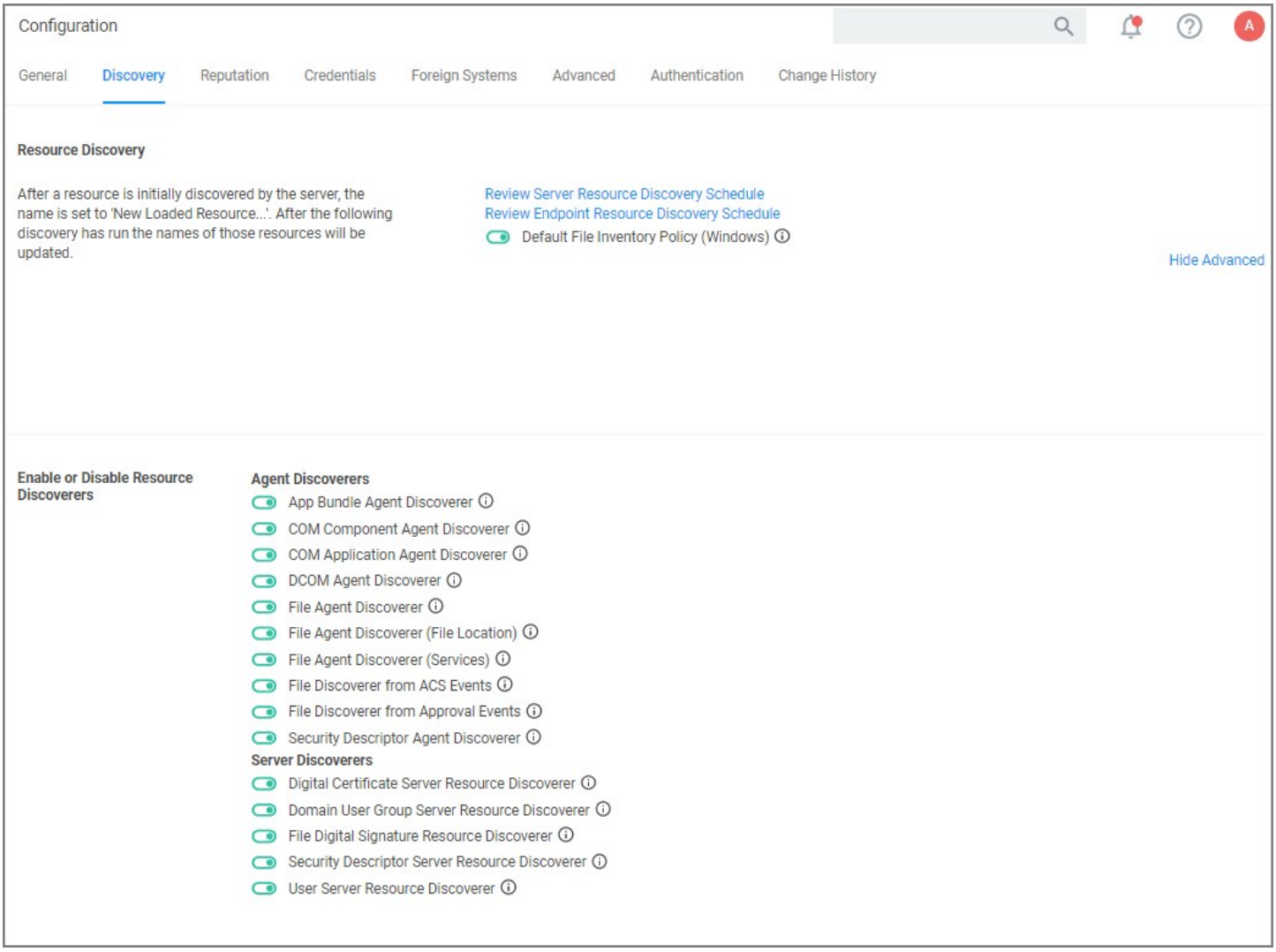
Create User during Installation

During the installation process the Create User page is where you enter information for the initial Privilege Manager Administrator user. Please remember these credentials as they are necessary to login to the web application after you complete the installation.

Discovery Tab

This tab is for resource discovery. After a resource is initially discovered by the server, the name is set to **New Loaded Resource...**. After discovery runs the names of those resources are updated.

Resource Discoverers are selectable under the **Advanced** section. Resource Discoverers are categorized by Agent and Server Discoverers. Most are selected by default and can be disabled via switch.



Refer to Best Practices in the Policy Events section for further details.

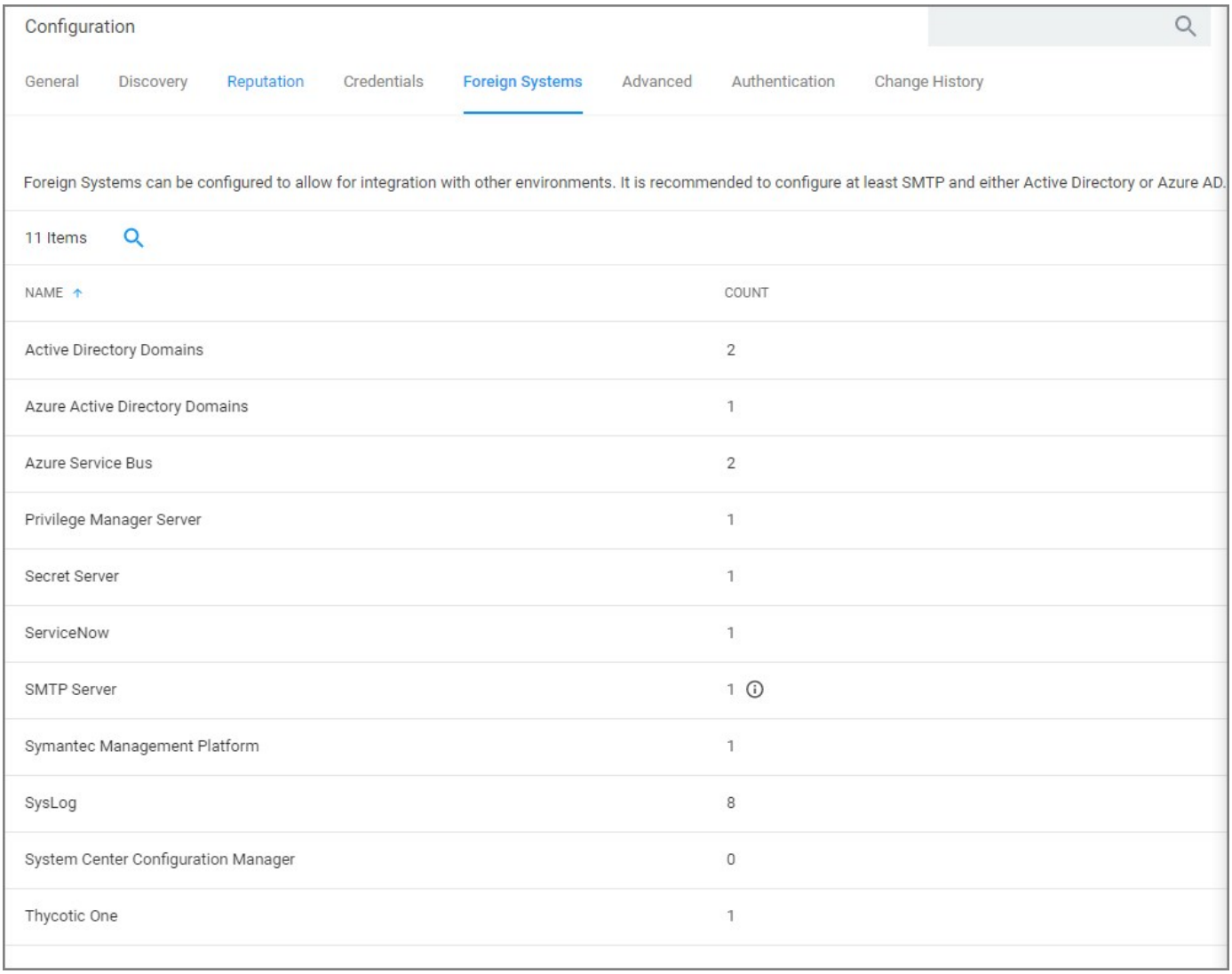
Foreign Systems

Foreign Systems in Privilege Manager are any systems for which a connections or an integration has to be set-up, providing a system URL (network address) and authentication information. Foreign Systems can be Delinea or third-party products and their basic integration set-up in Privilege Manager is alike.

Foreign Systems Tab

Foreign Systems can be configured to allow for integration with other environments. It is recommended to configure at least SMTP and either Active Directory or Azure AD.

In order to use Secret Server as the password vault please review Setting up Integration between Privilege Manager and Secret Server



Integrations

Delinea Foreign Systems

- Integration between Privilege Manager and Secret Server

- Integration between Privilege Manager and Privileged Behavior Analytics
- Thycotic One and Privilege Manager Cloud

AD Integration

- Setting Up Azure Active Directory Integration in Privilege Manager

Third-Party Foreign Systems Integration

- Setting up an SMTP Server Connection
- Setting up a Cylance Connection
- Setting up a ServiceNow Ticketing Connection
- ServiceNow Application
    - ServiceNow Application
    - Setting up a ServiceNow Webhook
- Setting up a ServiceNow Webhook Connection
- Setting up VirusTotal
- Setting up an SCCM Connection
- Setting up Syslog

Delinea Products Integrations

The following topics on integrating Privilege Manager with other Delinea products are available:

- Integration between Privilege Manager and Secret Server
- Integration between Privilege Manager and Privileged Behavior Analytics
- Thycotic One and Privilege Manager Cloud

Setting up Integration between Privilege Manager and Secret Server

Privilege Manager has the ability to use Secret Server as its storage container for credentials. This includes credentials for connecting to integrated systems such as Service Now, as well as credentials for local accounts that are managed by Local Security in Privilege Manager . Customers can choose to integrate with Secret Server only (no Vault setup) or Secret Server and Vault. Either option requires Authentication Data setup for Foreign Systems in Privilege Manager.

The Secret Server Vault integration for v10.7.1 and newer does not require Secret Server to be setup as the authentication provider. Any supported authentication provider can be used, independent from using Secret Server as a Password Vault.

In Secret Server, Privilege Manager credentials are stored as Secrets, and Privilege Manager uses the Secret Server REST API to communicate with Secret Server.

For this the proper license types need to be set-up, as Secret Server Express (free) does not support the integration with Privilege Manager .

Verify Web Services are Enabled in Secret Server

Documentation for Secret Server can be found at https://docs.delinea.com/online-help/products/secrets/current.

1. In Secret Server, verify Web Services are enabled. Webservices can be enabled at the **Administration** > **Configuration** in the **General** tab.

   Verify that under View Webservices the **Enable Webservices** option is reflecting **Yes**.

2. Navigate to **Admin | Users** and verify you have a user configured to be used for the credential setup in Privilege Manager . This can be a regular Secret Server user or a Secret Server Application account.

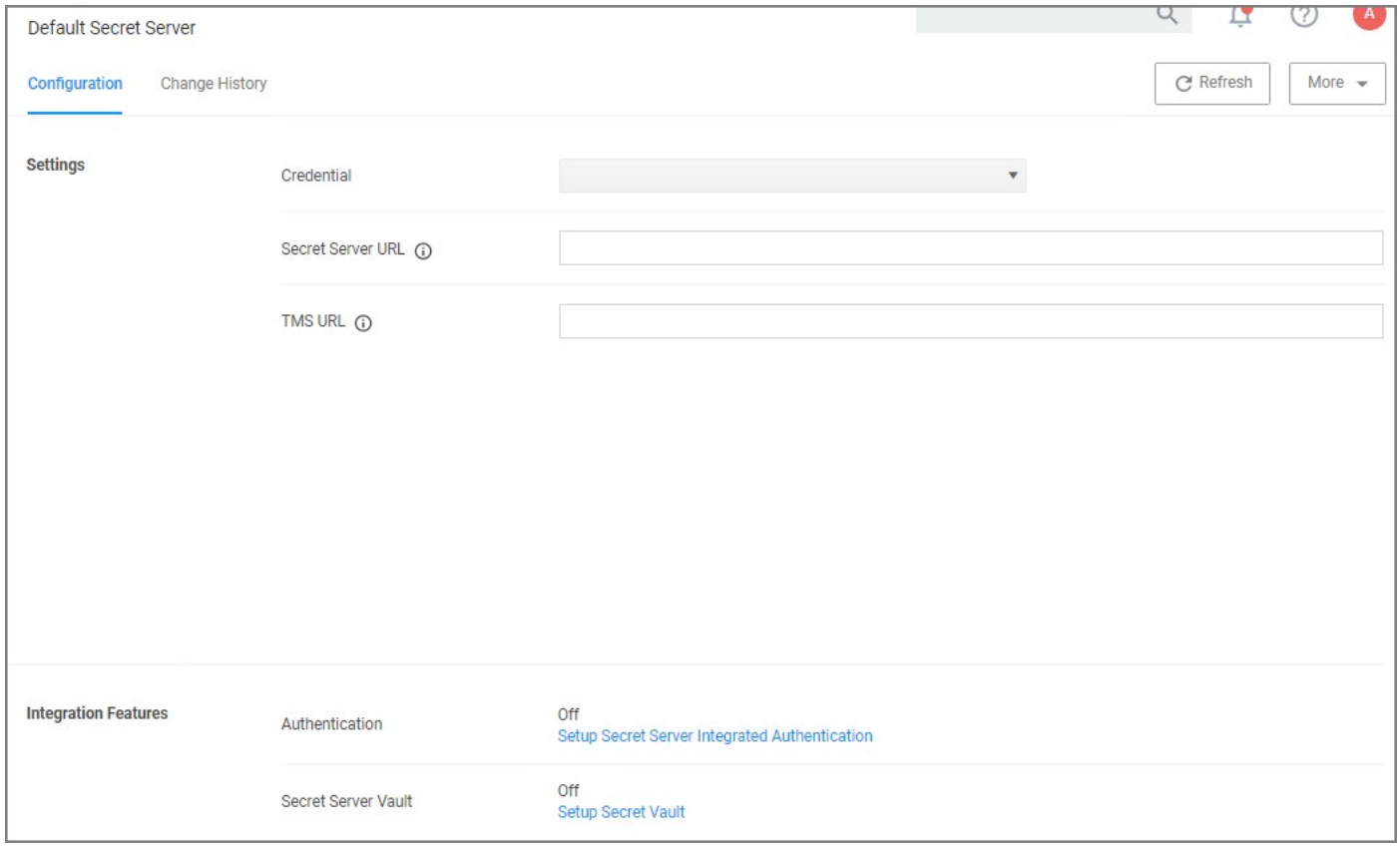
   Note: An Application account is recommended. The account needs to have a role with ALL of the following Secret Server permissions.

Add Secret
Administer Configuration
Administer Folders
Administer Licenses
Assign Secret Policy
Create Root Folders
Delete Secret
Edit Secret
Own Secret
View Secret

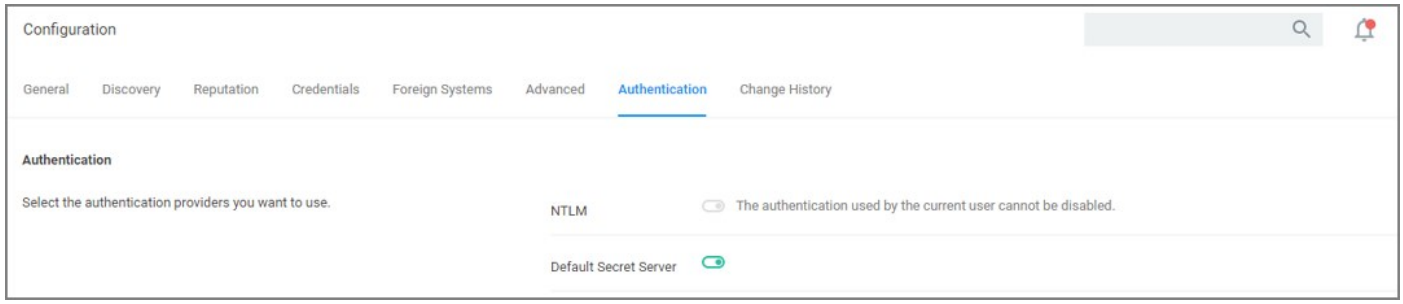
3. In your Privilege Manager instance, enter the credentials for that user at **Admin | Configuration | Credentials** . Create/Edit the default Secret Server credential account to specify which account will be used by Privilege Manager to connect to Secret Server. Depending on your setup, this can be the "Default User Credential" in Privilege Manager .

Setup Authentication Data in Privilege Manager

1. Navigate to **Admin | Configuration**.
2. Click the **Foreign Systems** tab.
3. Select **Secret Server** from the list.
4. In the Name column click on **Default Secret Server**.



5. Under Settings, update the following:
    1. **Credential**: This is a Secret Server user (preferably an application account). Refer to required permissions above.
    2. **Secret Server Url**: This is the url that end users use to access Secret Server. **HTTPS** is required. Also the validation on this field will reach out to Secret Server using the url provided. If it can't be reached, or if the Secret Server version is lower than v10.6, there will be a 404 not found validation error. The URL needs to be fully qualified ending with a /.
    3. **TMS Url**: This is the url to access TMS itself. It is the url that end users use to access Privilege Manager , minus the PrivilegeManager/ part at the end of the path. This URL also needs to be well formed and fully qualified ending with a /.
6. Click **Save**.
7. Scroll down to **Integration Features | Authentication** and enable Secret Server as the authentication provider by clicking the **Setup Secret Server Integrated Authentication** link.
8. Set the switch for Secret Server to enabled.

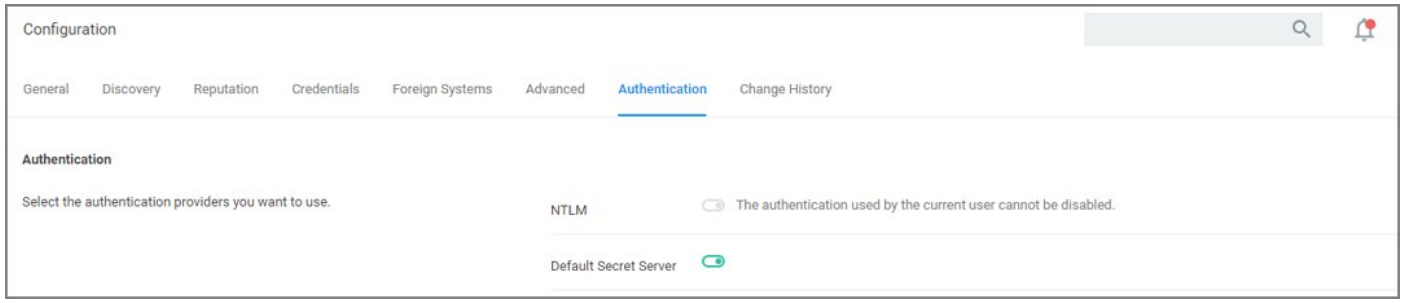


9. Click **Save Changes**.

After these steps the Secret Server Foreign System is ready for use. If you need to enable or disable features for this integration, the Integration Feature list is below the Settings area on the page. Follow any of the links to turn features on and off.

Configure Privilege Manager Credential Vault (optional)

1. Scroll down to **Integration Features | Secret Server Vault** and setup Secret Server as the vault by clicking the **Secret Server Vault** link.
2. Set the switch for the Vault to enabled.



On the Password Vault Settings configuration page:

1. Set the switch **Use Secret Server** in order to use Secret Server's vault to store credentials.
2. Enter the username and password for the account that will be used to access Secret Server.

   Note: These are the same credentials that will be stored as the Secret Server Default Credential (located at the **Admin | Configuration | Credentials** tab). If a user already has been entered here, the same account will be auto populated into the configuration page.

3. Back on the **Password Vault Settings** configuration page click **Save Changes**.

Password Migration

After the vault and authentication set-up, all passwords are migrated from Privilege Manager to Secret Server. This migration process may take time.

Important Notes

The migration will create a root folder in Secret Server named Privilege Manager Secrets. Do NOT delete this folder. The folder, by default only has the sync account user as an owner, with no other permissions. The permissions on this folder can be modified to allow helpdesk users or administrators access to the Secrets. Do NOT remove the sync account user's permissions from the folder.

If desired the folder can be moved or renamed within Secret Server.

Templates

There are two Templates that Privilege Manager uses to store Secrets in Secret Server. These templates must exist with the proper fields and be marked as active.

- **Password (Template Id: 2)**: The following fields need to exist on the template:
    - Username
    - Password

  Do NOT mark any other fields in that template as required!

- **Windows Account (Template Id: 6003)**: The following fields need to exist on the template:
    - Machine
    - Username
    - Password

  Do NOT mark any other fields in that template as required!

  Note: To troubleshoot or remove the integrated configuration, navigate to the **Admin | Configuration | Advanced** tab in Privilege Manager . Locate the **System Secret Vault** setting and click the **Select Resource** link. Here, a user can manually add and remove the Secret Server vault. If you choose to remove the Secret Server vault, a migration of passwords from Secret Server's vault to Privilege Manager automatically happens.

Integration between Privilege Manager and Privileged Behavior Analytics

Delinea's Privileged Behavior Analytics (PBA) SaaS product can be integrated with Privilege Manager cloud instances.

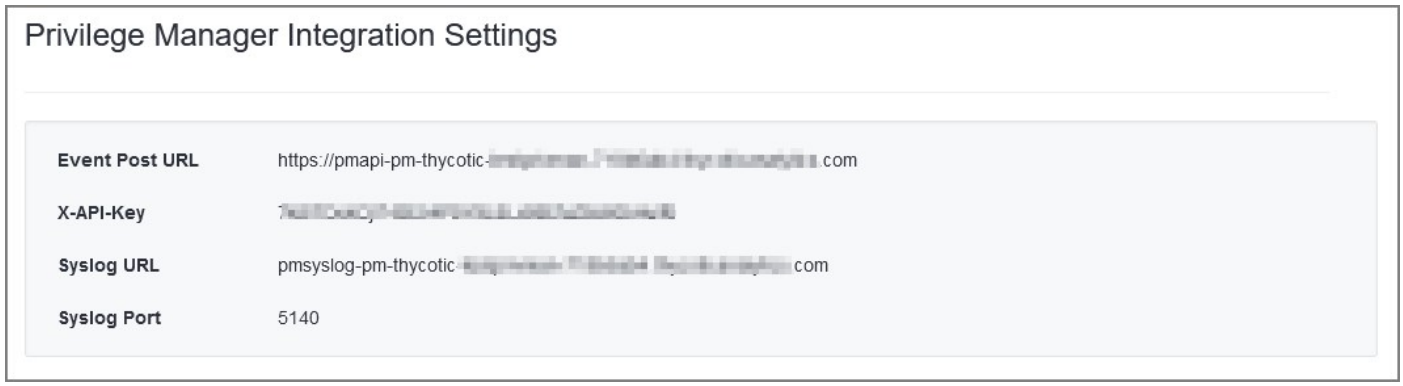
For the integration to work correctly independent of your Privilege Manager instance, you need to have a Delinea enabled PBA instance.

Refer to the PBA Documentation for details on features and functionality of PBA.

PBA System Settings Details

You will need to retrieve the PBA System Settings details required for setting up the integration in Privilege Manager .

1. Navigate to the **PBA Systems Settings** page (/system_settings/).



2. Use the Syslog URL and port information when setting up the **SysLog Foreign System** below. Use the Event Post Url and the X-API-Key when setting up the **Send Application Events to PBA** below.

Setting Up PBA Integration on Privilege Manager

Required PBA resources are provided via Privilege Manager Configuration Feeds.

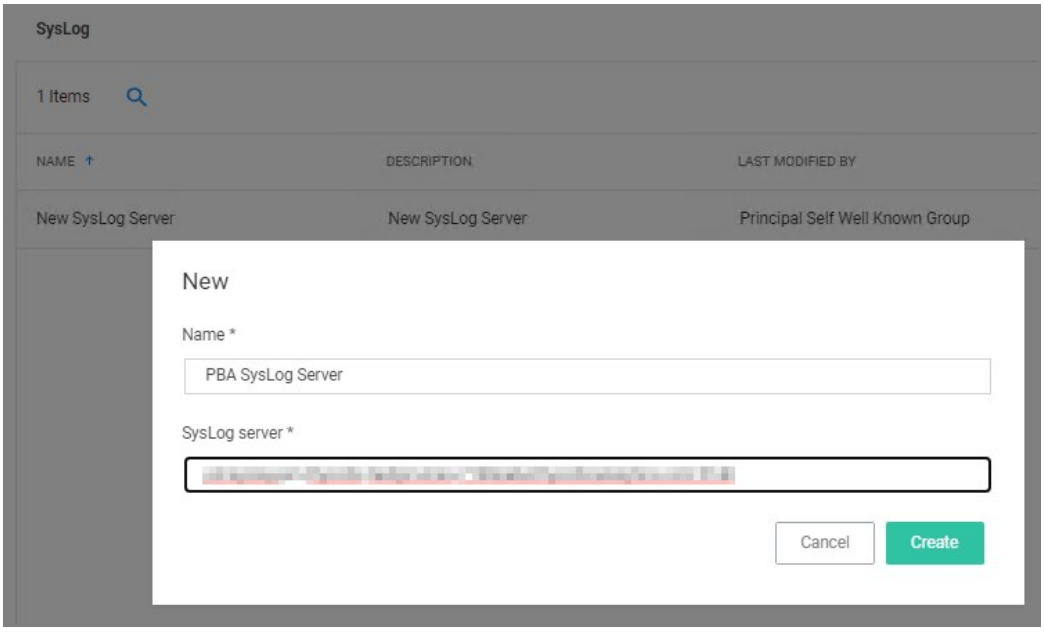
Downloading and Installing the PBA Config Feed

1. In you Privilege Manager console, navigate to **Admin | Config Feeds**.
2. Expand **Privilege Manager Product Configuration Feeds**.
3. Expand **Thycotic Management Server Core**.
4. Install **Privileged Behavior Analytics Integration**.

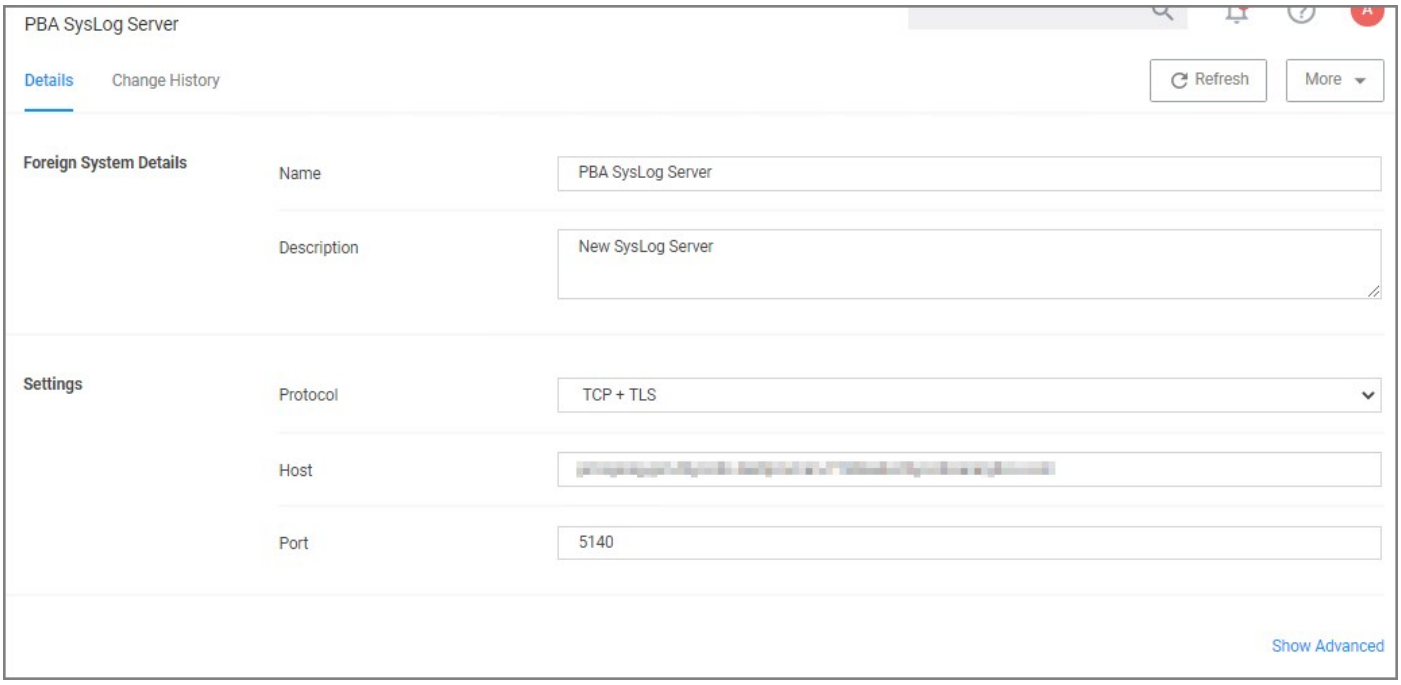
After the install, proceed to the Foreign Systems setup.

Setting up the PBA SysLog Foreign System

1. Navigate to **Admin | Config** and select **Foreign Systems**.
2. Select **SysLog**.
3. Click **Create**.
4. Enter a name and your SysLog server details.

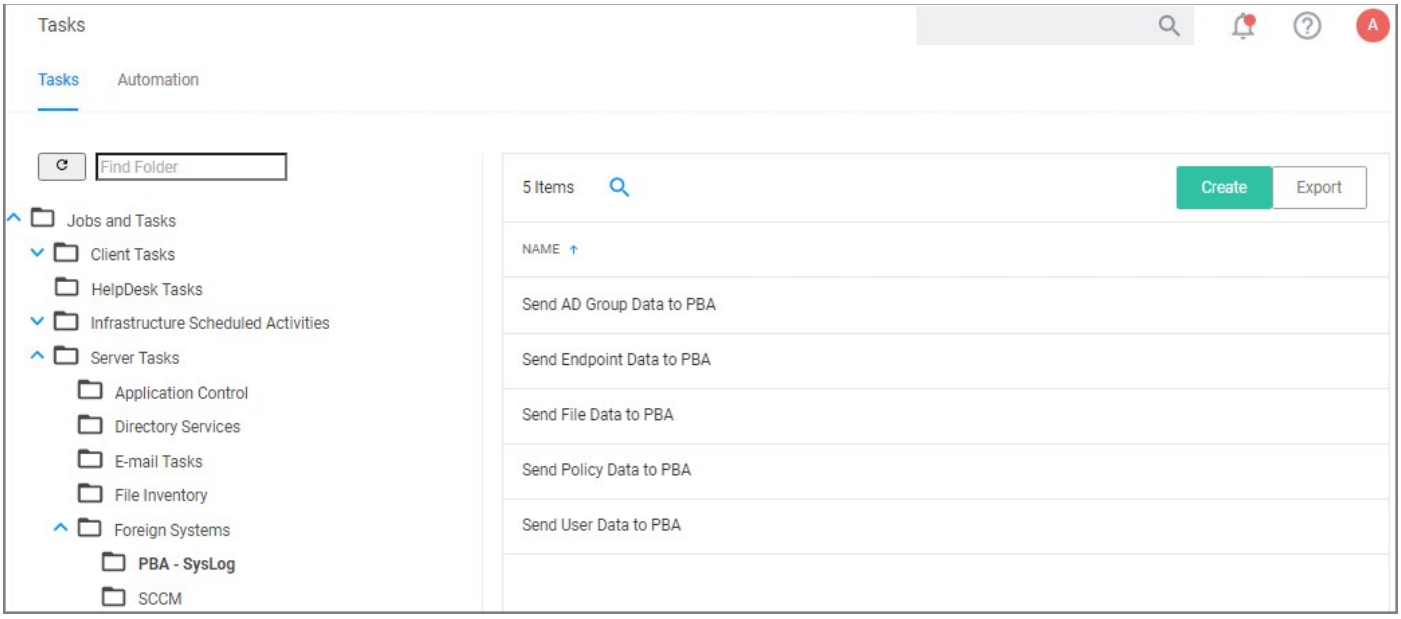


5. Click **Create**.
6. Verify that your Protocol, Host, and Port match your SysLog server details (SysLog URL and SysLog Port from the PBA System Settings details).

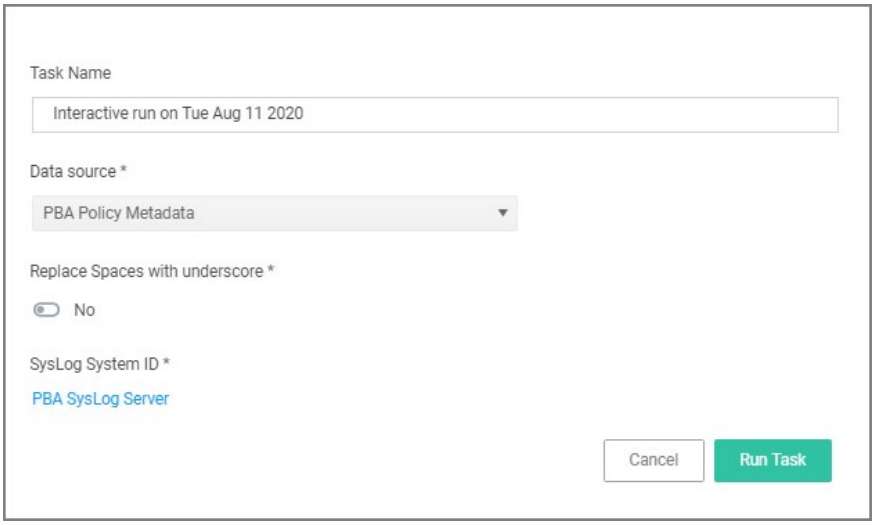


Using the PBA Send Tasks

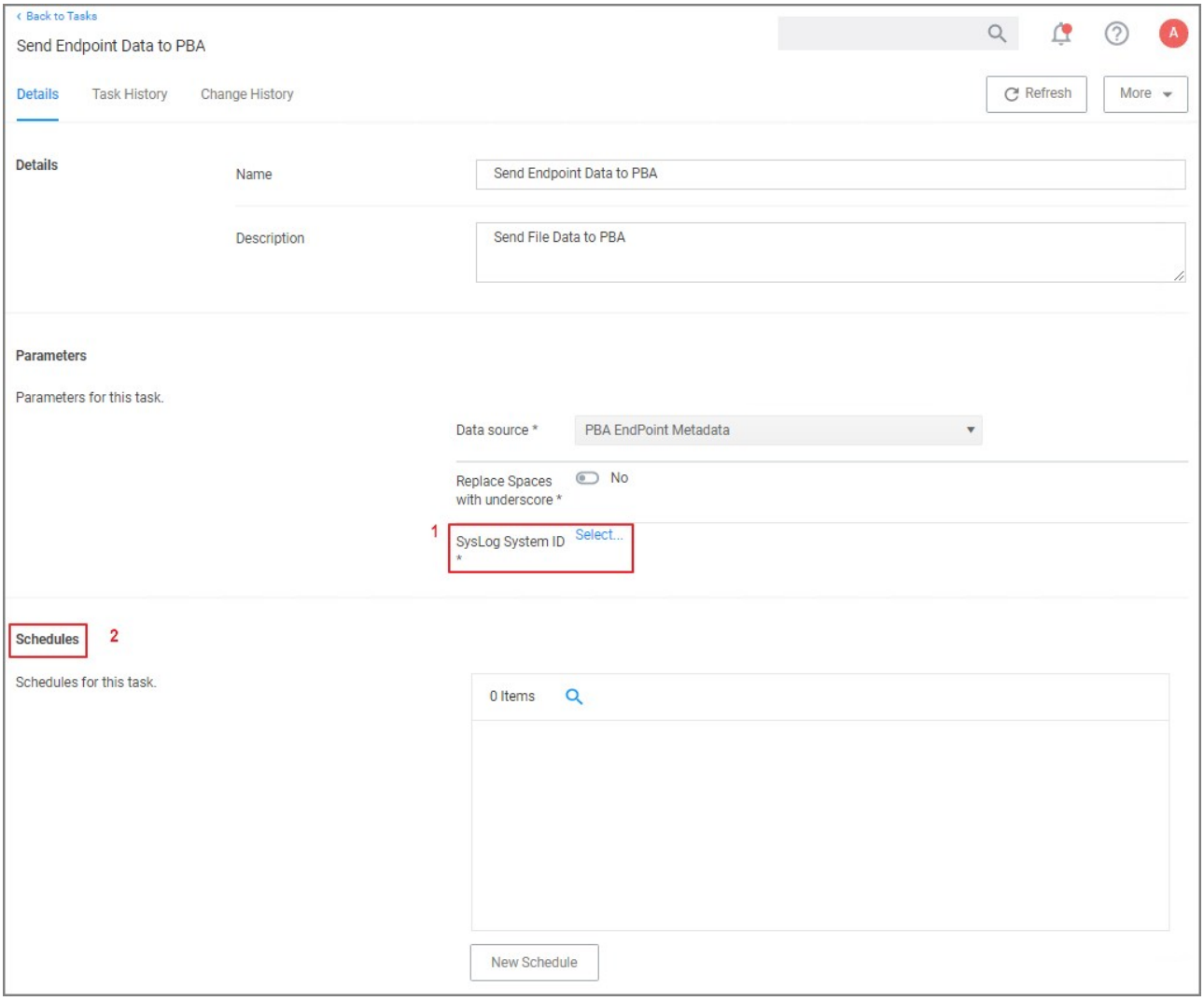
1. Navigate to **Admin | Tasks** and from the folder tree select **Server Tasks | Foreign Systems**.
2. Click **PBA - SysLog**.



3. For Privilege Manager to send data based on any of these task, the PBA SysLog server you created as a Foreign System above, needs to be added as the SysLog System ID. This can either be done
   - **On Demand** when running the task:
     1. Select a PBA Data Send tasks and click **Run**.
     2. Specify the SysLog System ID.



     3. Click **Run Task**.
   - **By setting up a schedule**:
     1. Select a PBA Data Send tasks and click **View**.
     2. Under **Parameters** specify the SysLog System ID.
     3. Define a **Schedule**, by clicking **New Schedule**



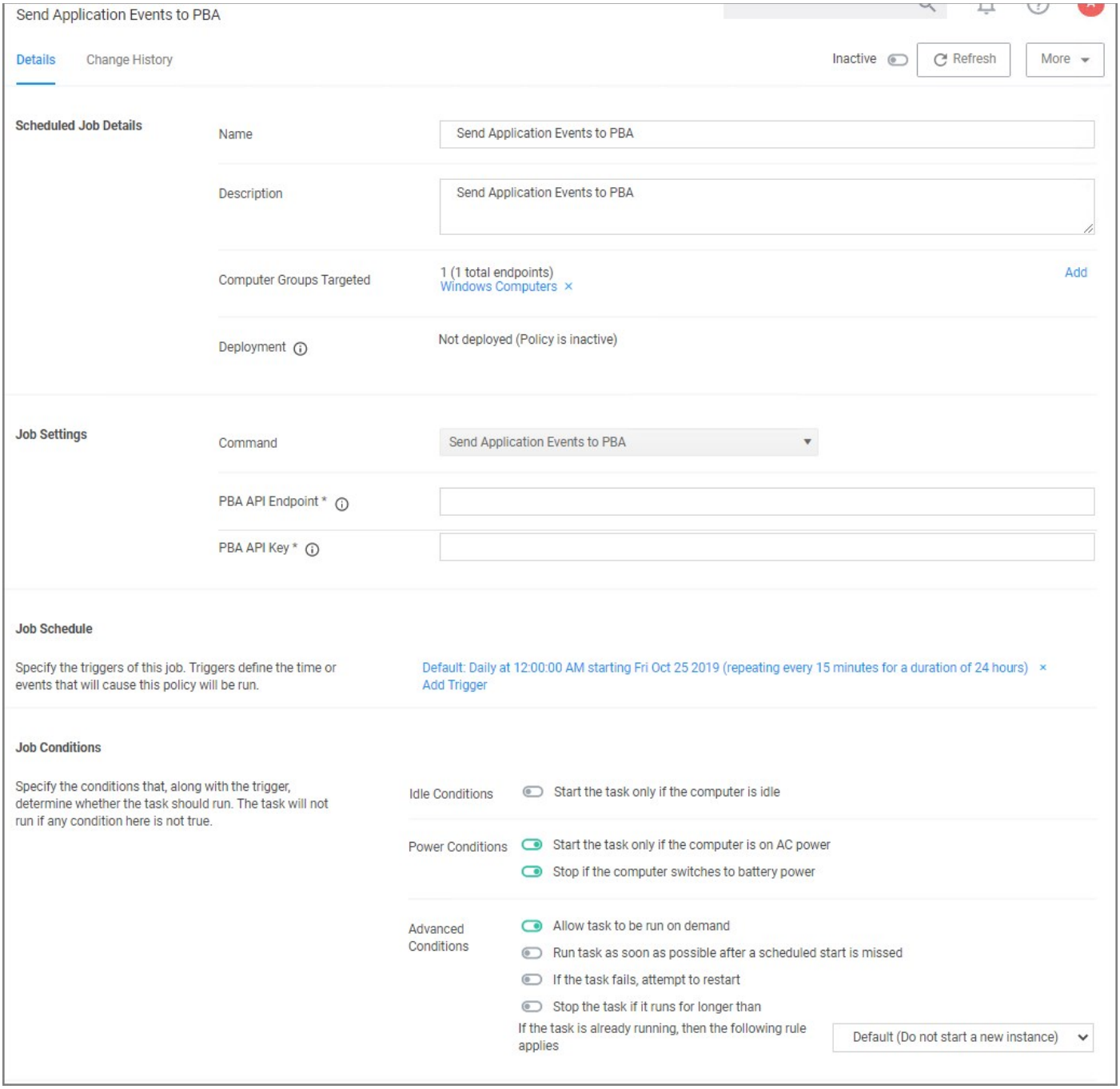
4. Click **Save Changes**.

Repeat for each of the data sets you want to use in PBA.

Enable Send Application Events to PBA

The config feeds installation also add a remote scheduled client command for PBA to Privilege Manager . The **Send Application Events to PBA** policy is by default disabled.

1. Under your computer Group navigate to **Scheduled Jobs**.
2. On the **Scheduled Jobs** page search for PBA and select **Send Application Events to PBA**.



- Under Job Settings enter the PBA **Event Post URL** and **X-API-Key** details from the PBA system settings information.
- Modify the Job Schedule if customization is required.
- Customize any of the Job Conditions to better fit your implementation.

3. Click **Save Changes**.
4. Set the **Inactive** switch to **Active**.
5. Next to Deployment click the **i** icon and select the **Resource and Collection Targeting Update** task to run.

Delinea

Thycotic One and Privilege Manager

Overview

Thycotic One is the single-sign-on provider for Delinea applications. With Thycotic One, one user account can be granted access to multiple Delinea products, such as Secret Server, Privilege Manager , ##, and Account Lifecycle Manager.

Thycotic One enables login integration using the OpenID Connect protocol, an industry standard single-sign-on method.

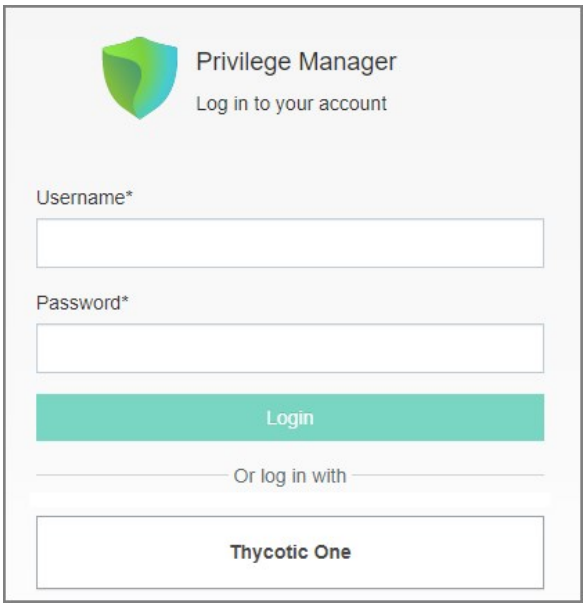
Thycotic One is the default identity provider in Privilege Manager Cloud (PMC). When you set up the cloud instance, it will already be configured and ready to use Thycotic One. The initial admin user will log in with their Thycotic One account, and optionally, all newly created Privilege Manager accounts can be synchronized with Thycotic One, so they can log in that way as well.

Logging in with Thycotic One

When Thycotic One integration is turned on, all Privilege Manager users can log in either with their local passwords or with Thycotic One. All Privilege Manager permissions and configuration will apply to that user regardless of how they logged in.

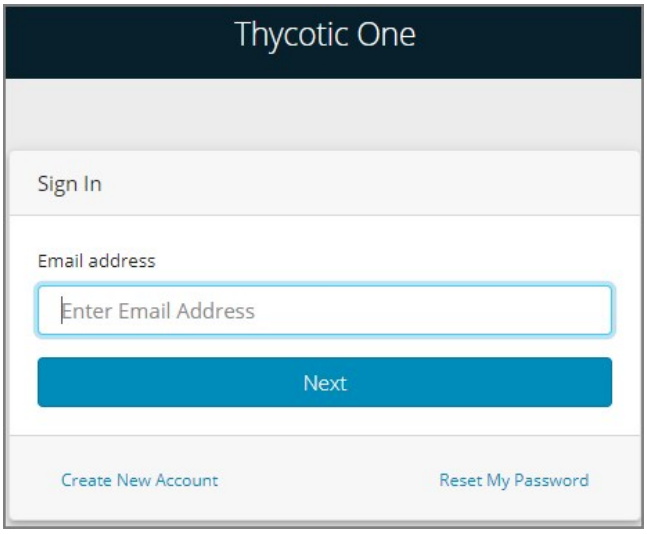
However, the local username and password and the Thycotic One username and password are not necessarily the same thing. In Thycotic One, you'll log in with your email address rather than your username, and the password you use may very well be different from the Privilege Manager password.

You'll see this on the login page:



Clicking **Local Login** will bypass Thycotic One and allow the user to log in with their local Privilege Manager password. Clicking **Thycotic One** will redirect the user to Thycotic One to authenticate. Once that is successfully done, the user will be redirected back to Privilege Manager .

After clicking **Thycotic One**, users will type their email address and password:



And then be redirected back to their dashboard in Privilege Manager .

Configuring Thycotic One as a Foreign System

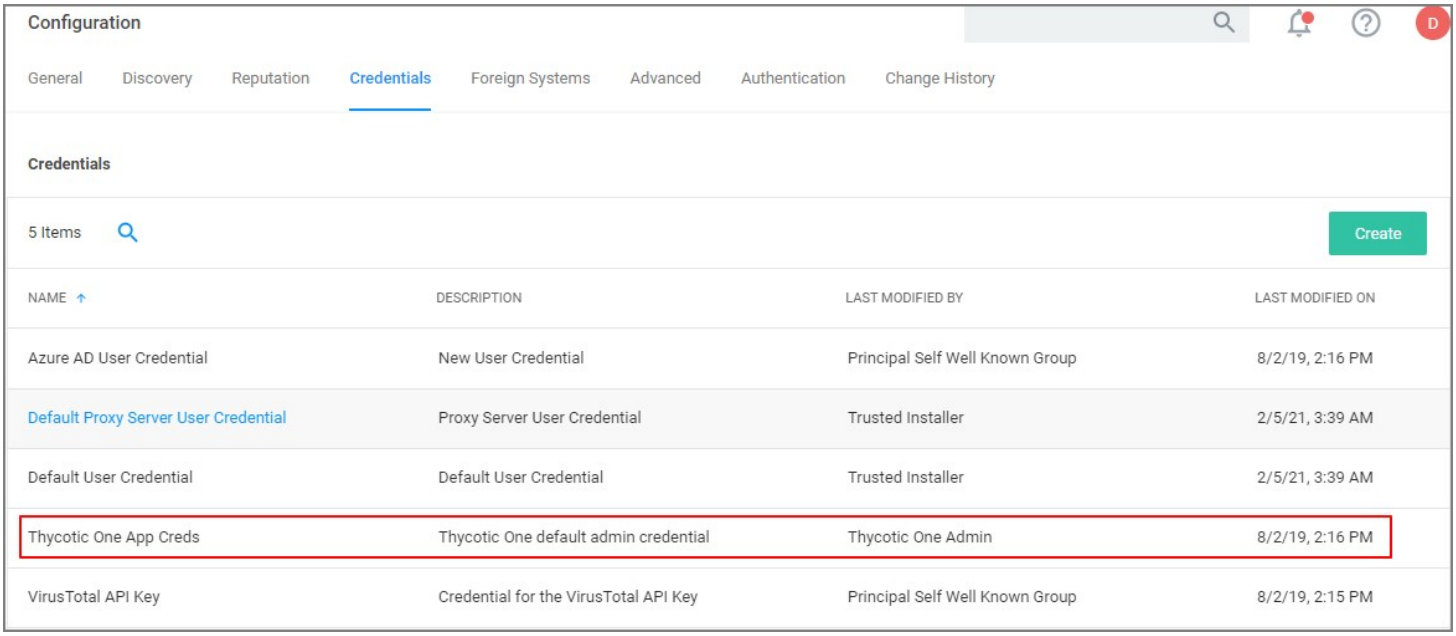
Thycotic One related configuration details can be accessed under **Admin I Configuration**. Two items can be customized:

- Credential: This credential is used by the Thycotic One Foreign System.
- The Thycotic One Foreign System.

Editing up the Credential

1. Navigate to **Admin I Configuration**.
2. Select **Credentials**.
3. Click **Create** to create a new credential to use with Thycotic One or edit details on the existing one. Make sure to provide the correct Thycotic One account name and password information.
4. Click **Save Changes**

Your Thycotic One credential is listed on the **Credentials** tab.

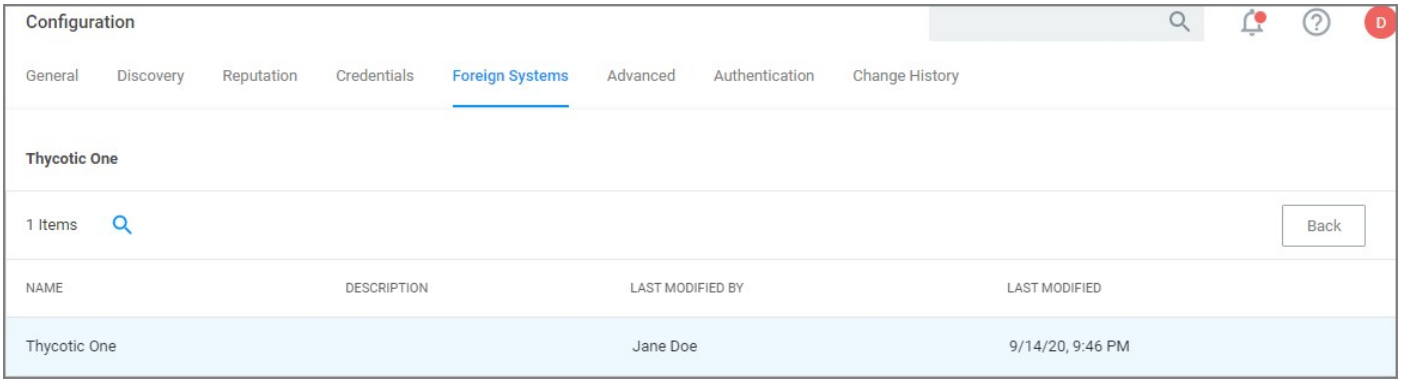


Editing the Foreign System

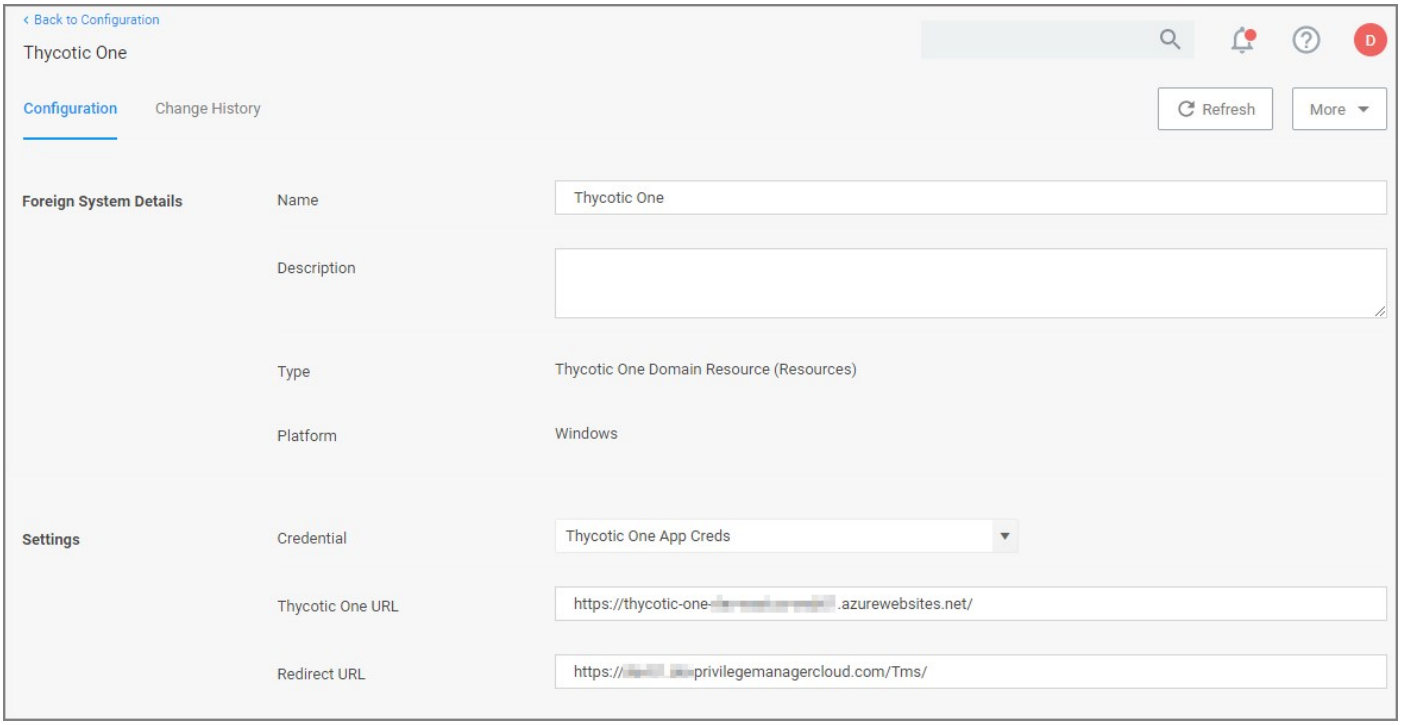
The Thycotic One Foreign System entry is auto-populated based on the information provided during the registration process as documented in the Cloud Quickstart Guide.

The following steps show how to access the foreign system for edits.

1. Navigate to **Admin I Configuration**.
2. Select **Foreign Systems**.
3. Select **Thycotic One**.



4. Customize the Name and Description.
5. Under **Settings** you may edit:
    1. **Credential**: This is the name of the credential that you created for Thycotic One based on the previous procedure.
    2. **Thycotic One URL**: This is the URL for Thycotic One that is based on the region selection during the setup process.
    3. **Redirect URL**: This is the URL to your specific Privilege Manager Cloud instance.


Back to Configuration
Thycotic One
Configuration
Change History
Refresh
More
Foreign System Details
Name
Thycotic One
Description
Type
Thycotic One Domain Resource (Resources)
Platform
Windows
Settings
Credential
Thycotic One App Creds
Thycotic One URL
https://thycotic-one-
.azurewebsites.net/
Redirect URL
https://
privilegemanagercloud.com/Tms/

Active Directory Integration

By adding an Active Directory Domain the system can synchronize users, groups, and computers. Once configured a directory synchronization task will need to be started to actually import AD information. Default User Credentials need to be created as well for the system to be able to connect.

The following topics are available in the Active Directory (AD) integration section:

- Setting Up Local Active Directory Synchronization
- Setting Up Azure Active Directory Integration in Privilege Manager - v10.6 and up

Active Directory Synchronization

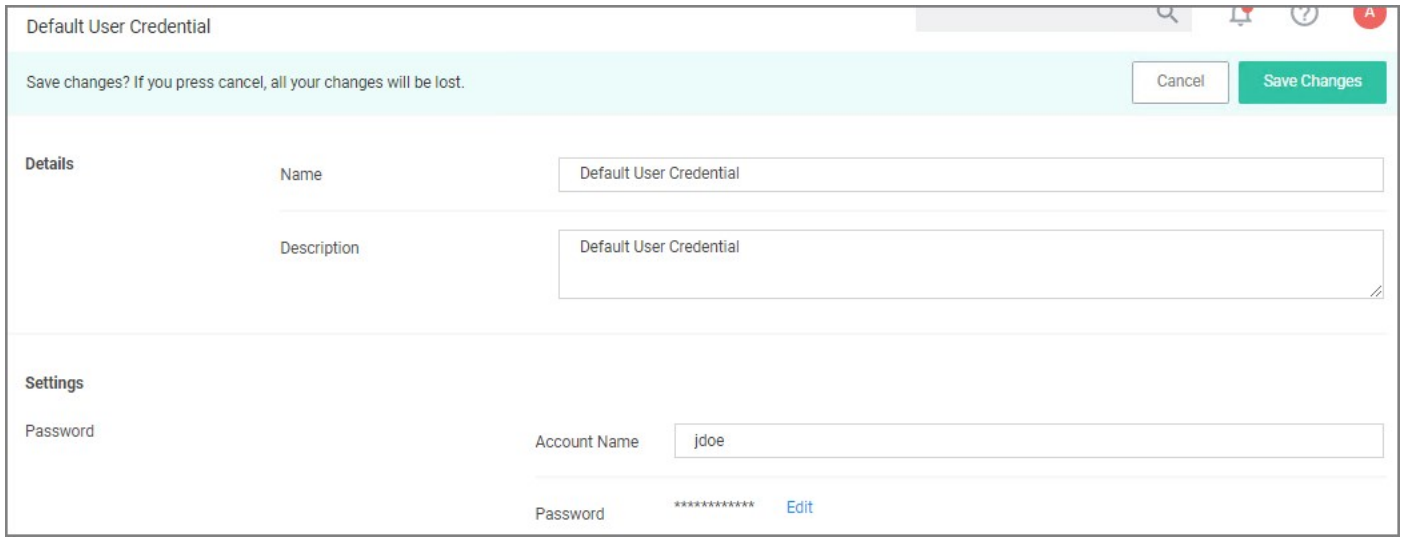
The following procedures show the steps necessary to set-up Active Directory synchronization in Privilege Manager .

If you already configured the AD Default User Credential skip to the Foreign Systems set-up procedure.

> **Note**: For local AD synchronization with Privilege Manager cloud the Directory Services Agent has to be installed. We recommend installing the Directory Services Agent on a system that already has the Delinea Agent (Core Agent) installed; however you may also use a domain connected system and newly install both the Core and Directory Services Agent by using the bundled installer.

Set-up AD Default User Credential

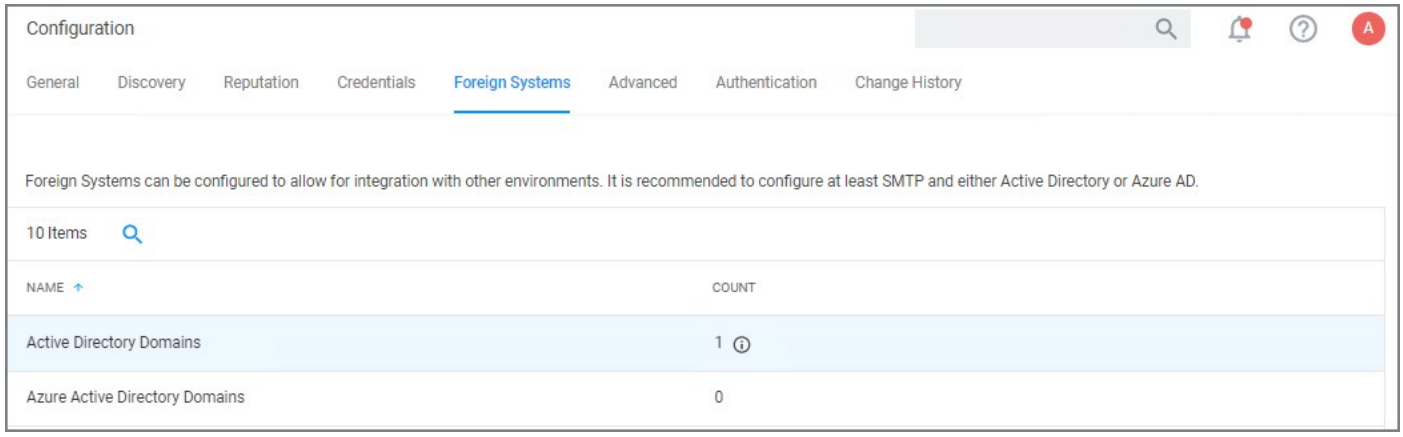
1. Select **Admin | Configuration**.
2. Select the **Credentials** tab.
3. Edit the **Default User Credential** or use **Create** to add a new user. Set a domain credential with an Account Name and Password that can read from the Active Directory domain(s).



4. Click **Save Changes** and continue with step 2 in the Foreign Systems set-up procedure.

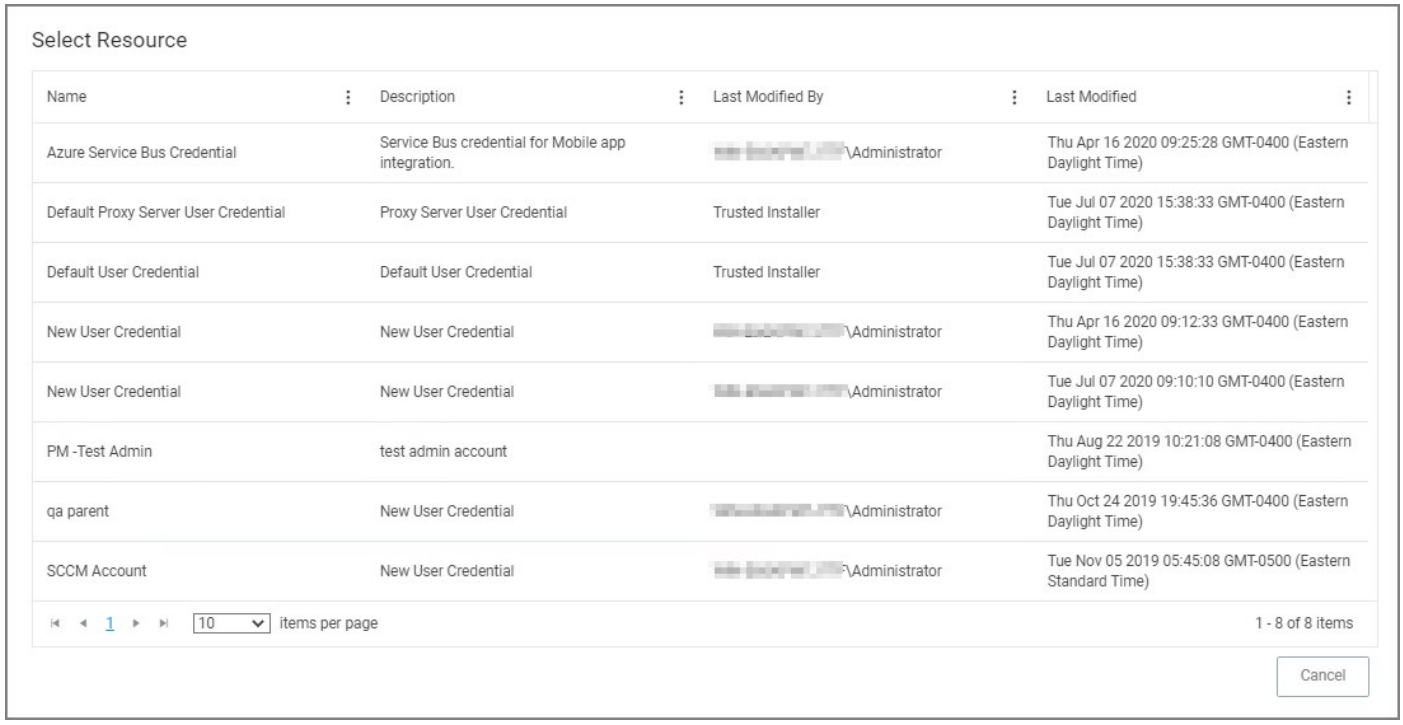
Setup Foreign Systems

1. Select **Admin | Configuration**.
2. Select the **Foreign Systems** tab.
3. Select Active Directory Domains.



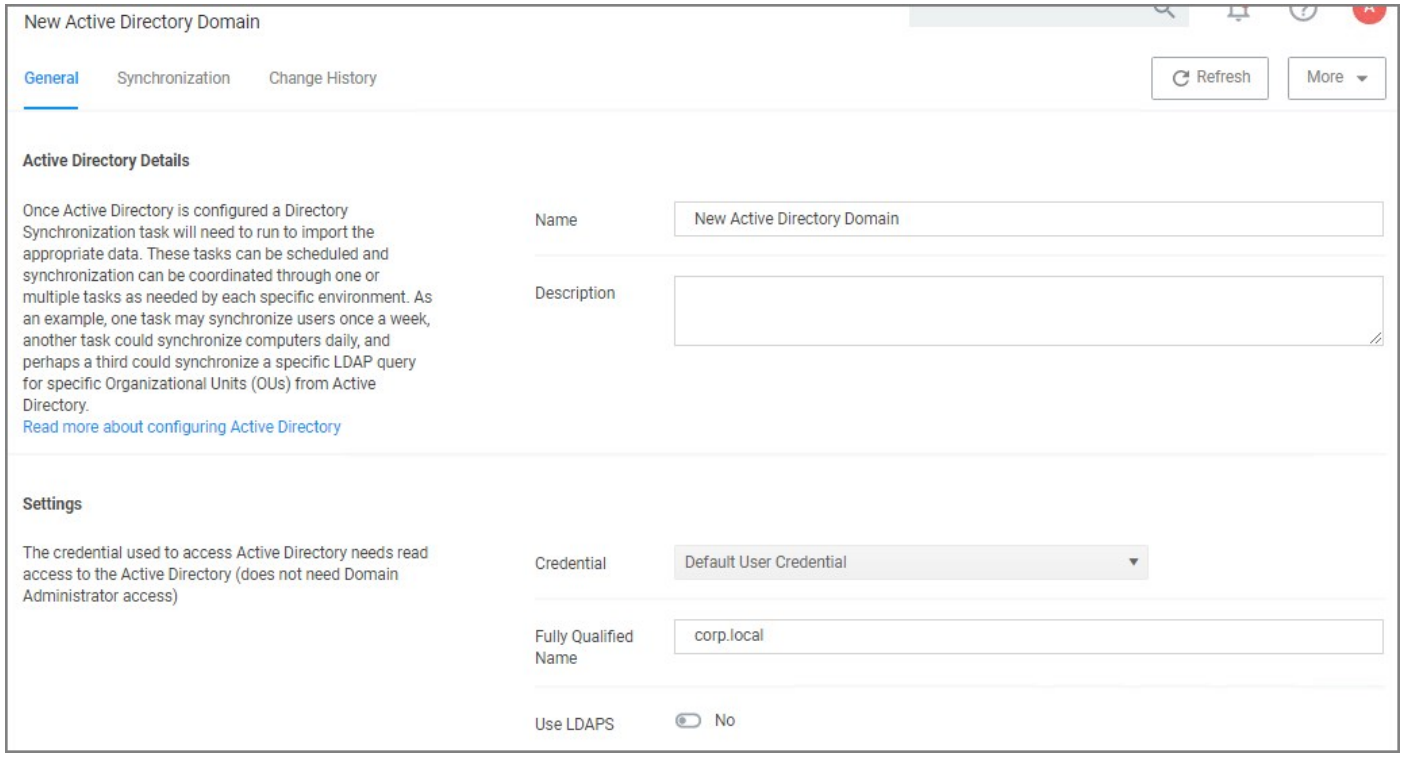
4. On the Active Directory Domains page, select **Create**.
5. Enter a fully qualified domain name and a friendly name.

6. Under the required Credential click **Select...**.

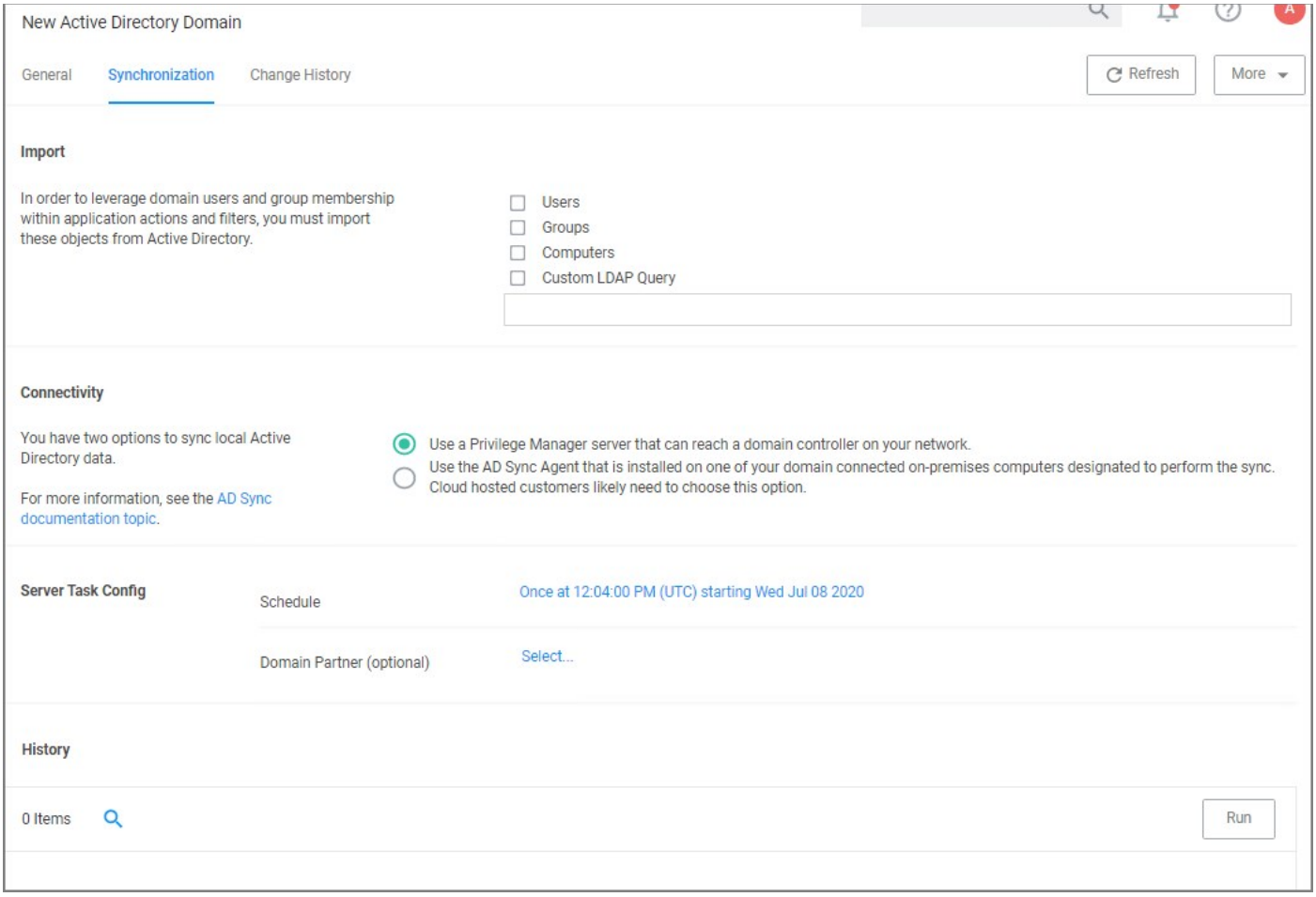


7. From the Resources page select a credential.

8. Click **Create**.



9. Verify the **URL** (Fully Qualified Name) is correct.
10. If the domain uses LDAPS, set the switch to enable.
11. Click **Save Changes**.
12. Once Active Directory is configured a Directory Synchronization task needs to run to import the appropriate data. Select the **Synchronization** tab.



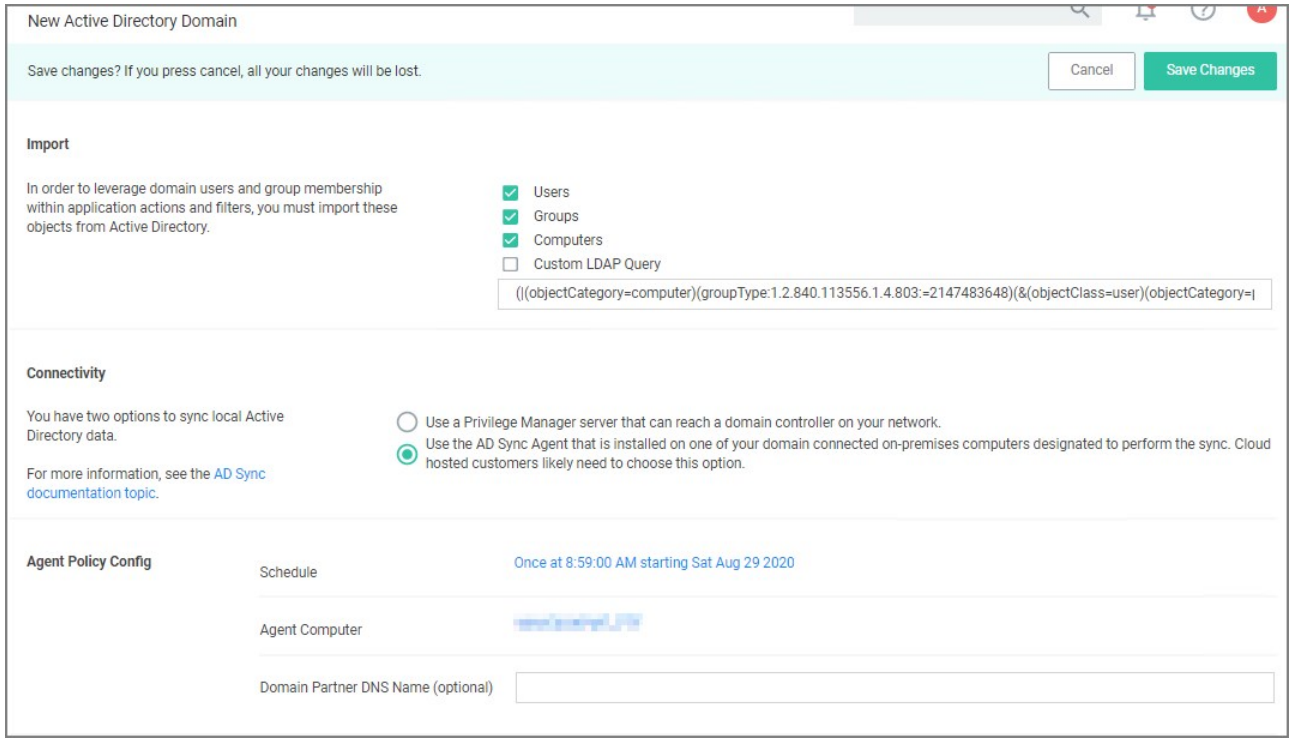
13. Select the task(s) you want to perform:

    1. Import:
        - Users
        - Groups
        - Computers
        - Custom LDAP Query
    2. Connectivity, via either

        - **Privilege Manager server** that can reach a domain controller on your network:

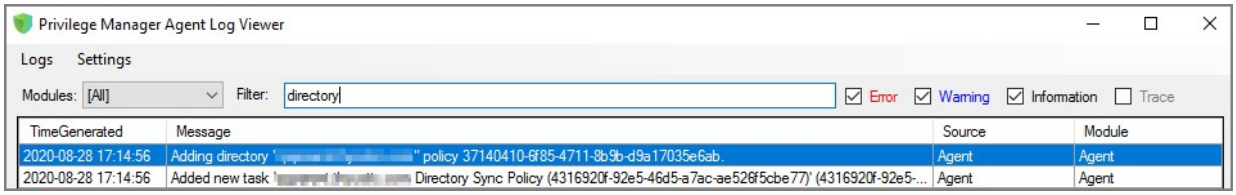
            1. Synchronization Task Config:
                - Schedule - Schedules help keeping your system in sync with your domain updates.
                - Domain Partner (optional)
            2. Click **Save Changes**.
            3. Click **Run**, to manually run the task on demand.

        - Directory Services Agent that is installed on one of your domain connected on-premises computers designated to perform the sync. Cloud hosted customers likely need to choose this option.



1. Under **Agent Policy Config**:
   - Schedule: Schedules help keeping your system in sync with your domain updates.
   - Agent Computer: Select the computer that has the Delinea Core and Directory Services Agents installed.
   - Domain Partner (optional)
2. Click **Save Changes**.

   By setting this up via Directory Services Agent, the directory policy and the Directory Sync Policy task are applied to the agent, which based on the task schedule kicks off the local active directory synchronization. You can verify this by checking your Agent logs.



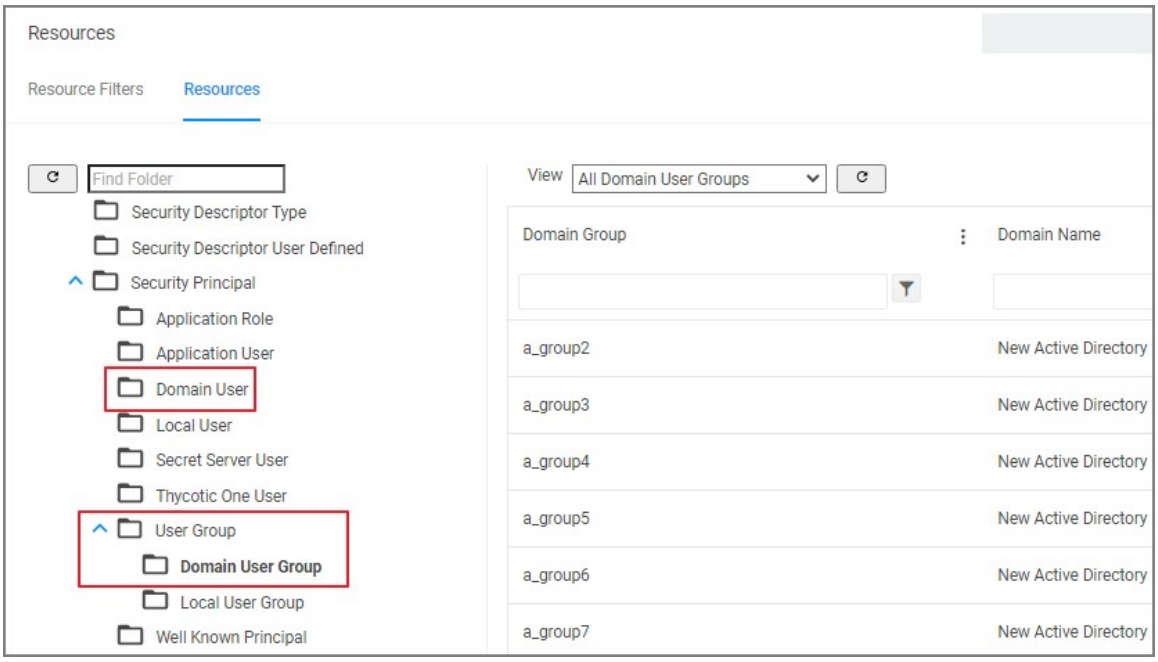
Tasks can be scheduled and synchronization can be coordinated through one or multiple tasks as needed by each specific environment. As an example, one task may synchronize users once a week, another task could synchronize computers daily, and perhaps a third could synchronize a specific LDAP query for a specific group from Active Directory.

Viewing Imported Users and Groups

You may verify and browse the users and groups that are expected to be imported from Active Directory.

1. In Privilege Manager , navigate to **Admin | Resources**.
2. Expand **Organizational Views**.

3. Expand **Default**.
4. Expand **All Resources**.
5. Expand **Security Principal**.
    1. Select **Domain User**. You should see a list that contains imported Active Directory users.
    2. Select **User Group**. You should see a list that contains imported Active Directory groups (other groups may exist in the list as well).



Setting Up Azure Active Directory Integration in Privilege Manager

> **Note**: If replacing an existing Azure Integration, ensure a new integration object is created (don't edit an old one). Delinea recommends recycling your Application Pools.

Setting up Azure AD integration with Privilege Manager requires steps in your Azure tenant and in Privilege Manager.

In Privilege Manager the Azure Active Directory Domain Foreign System requires the following from the Azure Portal:

- Tenant (this is the unique identifier of the Azure Active Directory instance)
- Application ID (an application registration in the directory instance)
- Client Secret (this is found in Certificates & Secrets in the Azure portal for the previously created application registration)

This documentation assumes that you are familiar with the Azure Portal and know how to navigate it in order to setup or retrieve the above information for configuration with your Privilege Manager instance.

Setting up Azure AD Integration in Privilege Manager requires these components independent of On-premises or Cloud:

- User Credential
- An Azure Active Directory Domain Foreign System
- Executing a Privilege Manager Task (Import Users and Groups)
- Creating a Scheduled Task to synchronize the users and groups on a regular basis

> **Note**: You do not need to have an active directory domain before you can sync with an Azure Active Directory. However, there are benefits for synchronizing on-premises Active Directory to Azure AD.

Prerequisites

Assign Azure user(s) to the **Privilege Manager Administrators** Role. In order for users to authenticate via Azure AD, they need to be members of various roles. There must be at least one member from your Azure Directory to be allowed to login via Azure AD before you can continue. We recommend adding yourself to ensure that you can login after the Authentication Provider is configured.

Setting up Azure AD with Privilege Manager

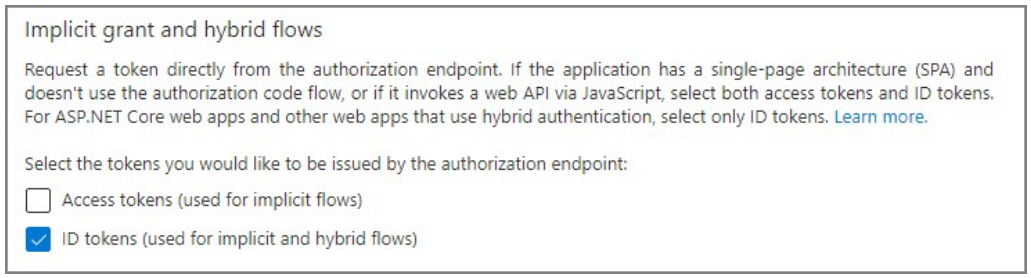
Steps in the Azure Portal

1. Navigate to your Azure Portal: https://portal.azure.com
2. In your Azure portal, navigate to and open **Azure Active Directory**.
3. Verify you are in the right tenant or use **Switch Tenant** to switch to another tenant in your organization.
4. Under **Create** select **App registration**.
5. Under **Register an application**, enter
    1. an application **Name**.
    2. select **Supported account types** based on your business requirements.
    3. specify the following Redirect URI values using the URI of your Privilege Manager server: https://myserver.example.com/TMS/

        > **Note**: This URI does not need to be a publicly visible address. It is only used in redirecting the browser back to the Privilege Manager web application after authentication. For Privilege Manager Cloud subscriptions, the URI should be pointed to the URI that was set up for you, for example: https://myassignedname.privilegemanagercloud.com/Tms/

    4. Click the **Register** button.
6. Navigate to your newly created application registration.

7. Enter these additional URIs in the Redirect URI field:
    - https://myserver.example.com/Tms/Account/Signout/
    - https://myserver.example.com/Tms/Account/SignoutCallback/
8. On the **Platform configurations** page under the **Implicit grant and hybrid flows** area, check the box labeled **ID tokens**.



9. Under **Manage**, select **API Permissions**.
10. Click the **+ Add a permission** option to add the Microsoft Graph API.
11. As permission type, select **Application permissions**.
12. Expand **Directory**, select **Directory.Read.All** and click **Add permissions**.

    Note: If you have upgraded from a previous version of Privilege Manager (and all servers that are using this Azure integration are now at version 11.2.1 or newer), you may remove any previously added Azure Active Directory Graph API rights. This is no longer needed.
13. Under **Manage**, select **Certificates & secrets**.
14. Click **+ New client secret**.
15. Add a **Description** and choose an **Expires** setting based on your business requirements.
16. Click **Add** to create the secret.
17. Use the **Copy to clipboard** icon to copy the newly created secret to the clipboard.

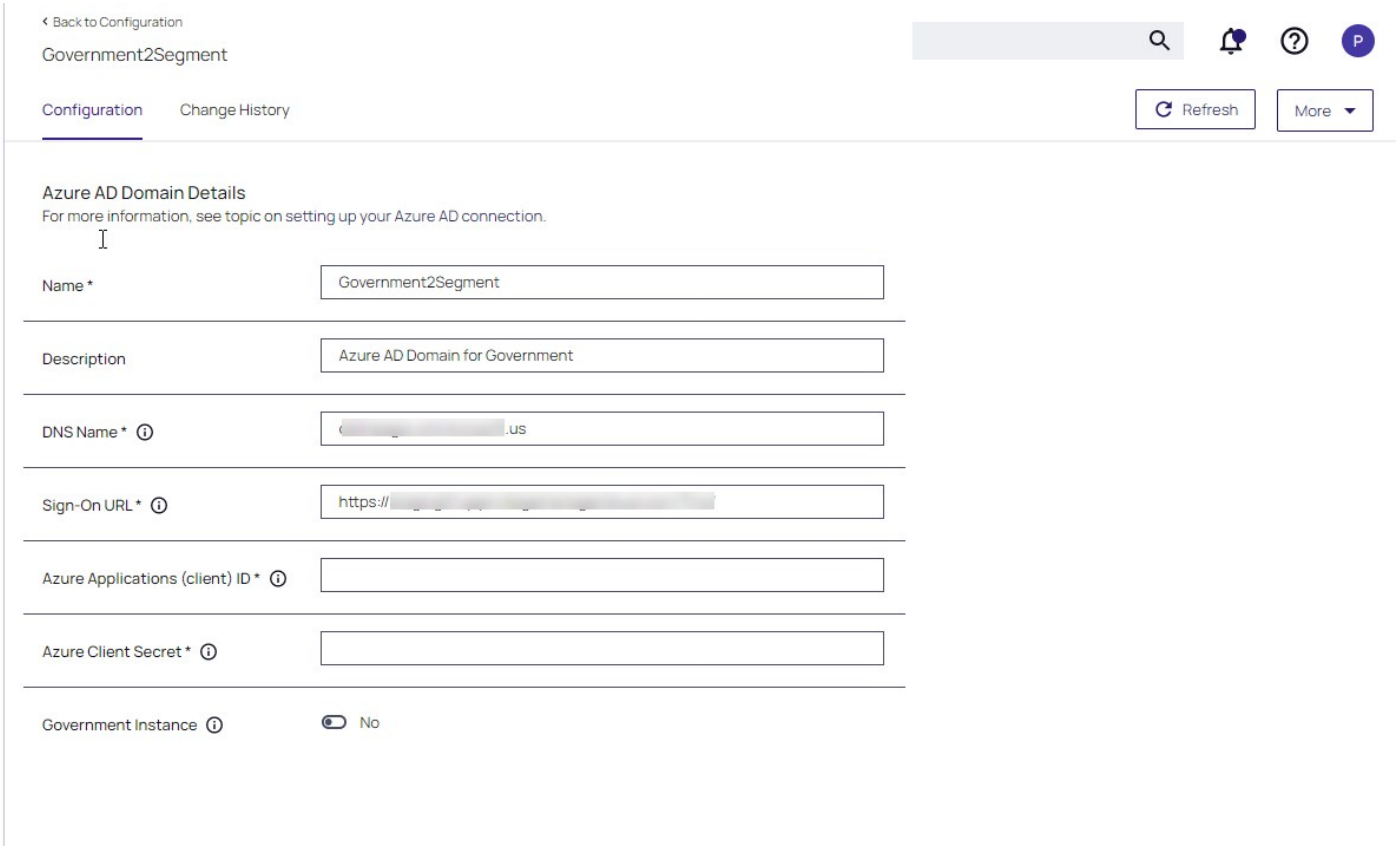
You will need the Application Id and the Client Secret you copied to the clipboard in Privilege Manager to complete the setup.

Steps in your Privilege Manager Instance

Set-up Foreign Systems

1. Select **Admin | Configuration**.
2. Select the **Foreign Systems** tab.
3. Select **Azure Active Directory Domains**.
4. Click **Create**.

5. Enter a Name, Description, and Domain, which is the DNS name of the Tenant from the Azure Portal identified at the beginning of this document.
6. Click the **Create**.



7. Verify the **Sign-on URL** is correct. This value should match what was specified in the Redirect URI option when setting up the Application Registration.
8. Enter the **Azure Application (client) ID**. This is the Application ID that was created when registering your application in the Azure Portal.
9. If the portal will be hosted in the US Government cloud, enable the **Government Instance** toggle.

10. Click **Save Changes**.
11. Continue to the Azure AD Authentication Provider section and click **Edit**.
12. Complete the three steps:
    1. Import Users & Groups from Azure AD. This process may take a few minutes to complete, depending on the size of the directory. Privilege Manager offers various different tasks for this import:
        - **Import Azure AD Resources**, imports ALL users and groups.
        - **Import Directory Computers**.
        - **Import Directory Sites**.
        - **Import Directory Users and Groups**.
        - **Import Directory OU**.
        - **Import Specific Azure AD Users and Groups**, imports only the specified users and/or groups.

        Refer to setup and scheduling of these tasks under the "Import Users and Groups via Privilege Manager Task" and "Create Scheduled Task for Users/Groups Synchronization" topics below.

        Also refer to the Server Tasks for details on the Directory Services tasks.
    2. Assign Azure user(s) to the Privilege Manager Administrators Role. In order for users to authenticate via Azure AD, they will need to be added as members of various roles. There must be at least one member from this Azure Directory allowed to login via Azure AD before you can continue. We recommend adding yourself to ensure that you can login after the Authentication Provider is configured.
    3. Set as Authentication Provider.
13. Click **Save Changes**.

Viewing Imported Users and Groups

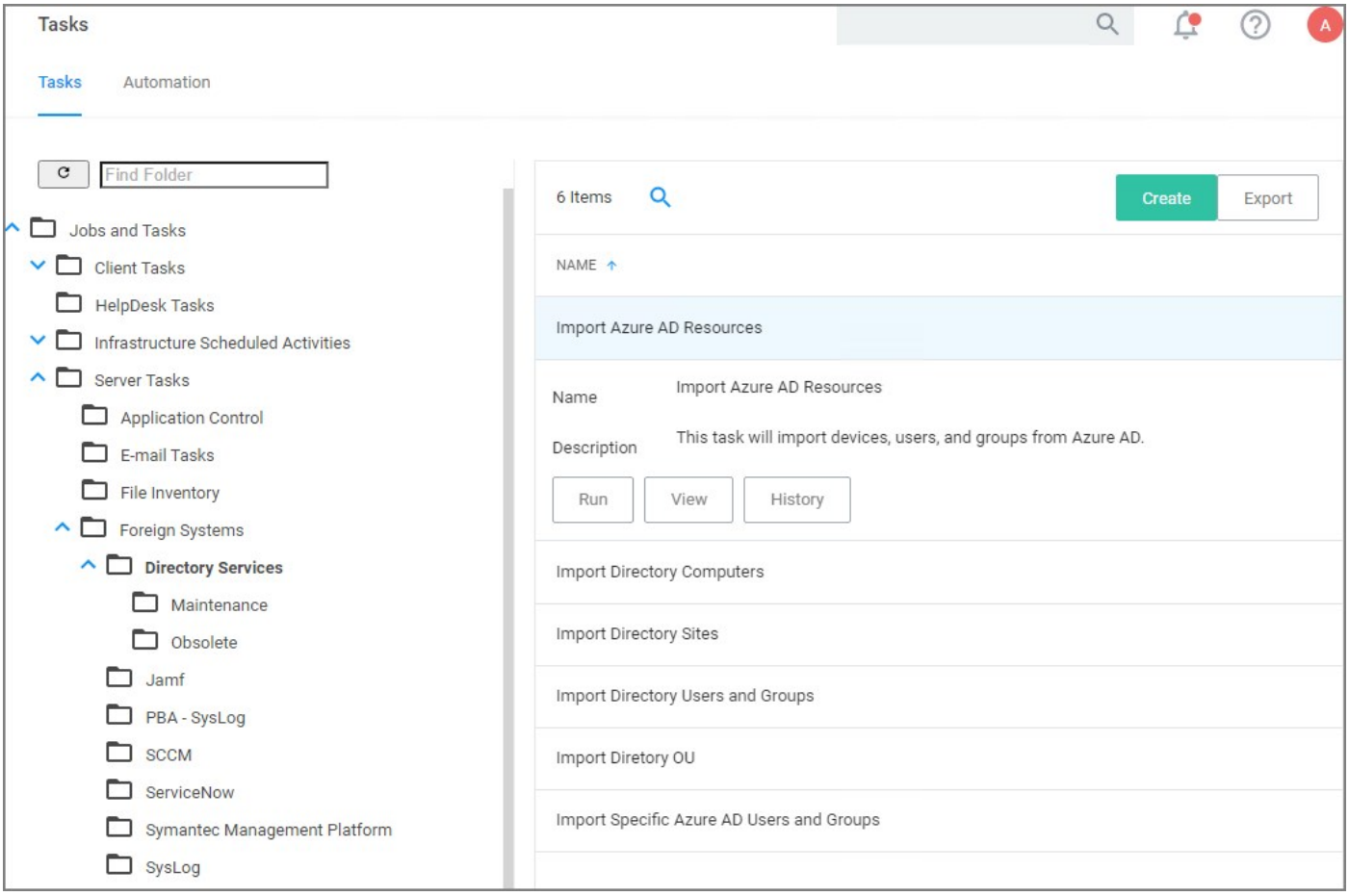
You may verify and browse the users and groups that are expected to be imported from Azure Active Directory.

1. In Privilege Manager , navigate to **Admin | Resources**.
2. Expand **Organizational Views**.
3. Expand **Default**.
4. Expand **All Resources**.
5. Expand **Security Principal**.
6. Select **Domain Users**. You should see a list that contains imported Azure AD users.
7. Select **User Group**. You should see a list that contains imported Azure AD groups (other groups may exist in the list as well).

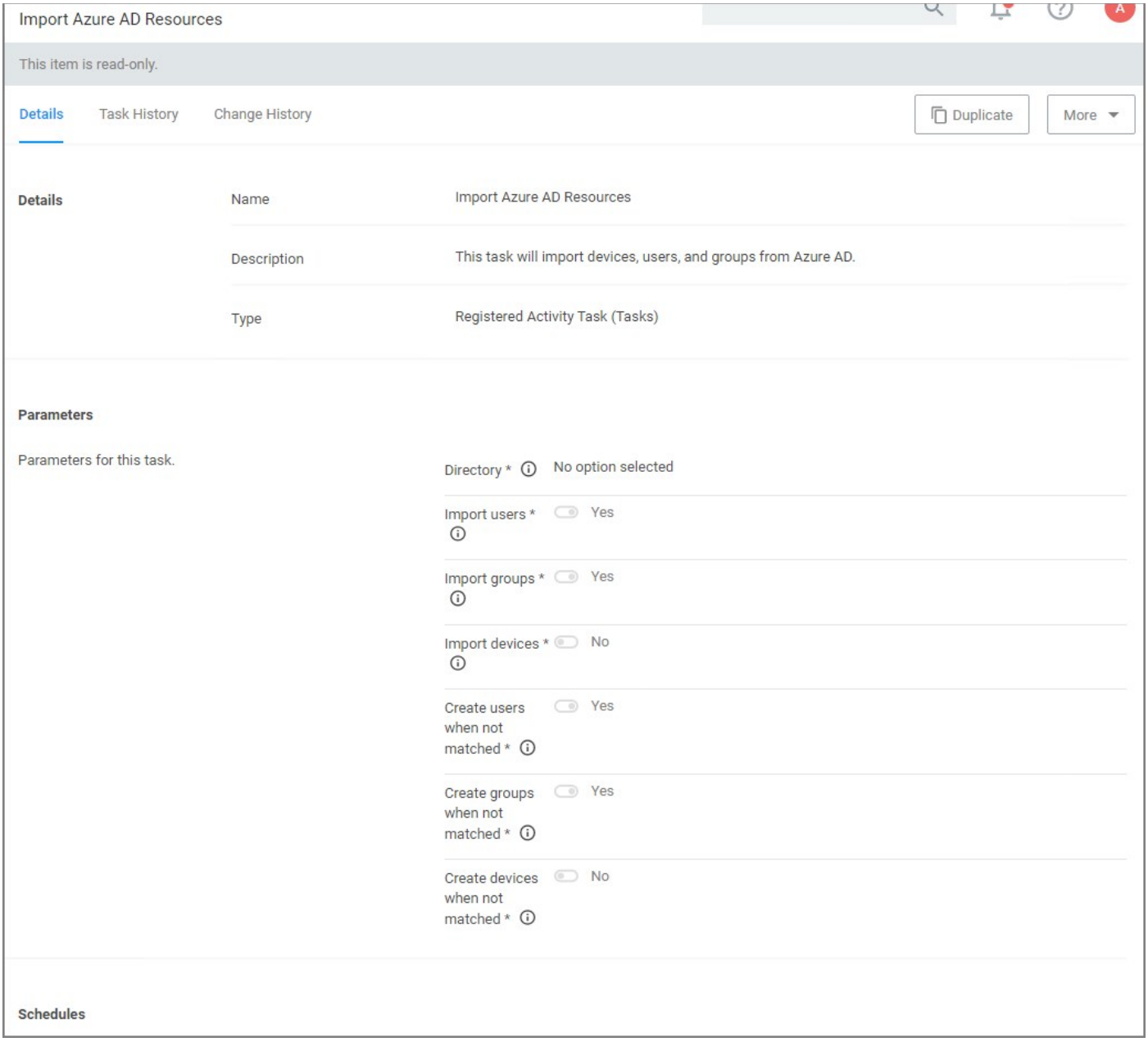
Import Users and Groups via Privilege Manager Task

This step was performed initially as part of setting up the Azure AD directory. To re-import users and groups, you can perform that operation again to pick up changes that may have occurred in the directory, such as new users that have been added or group membership changes. To run this manually:

1. Navigate to **Privilege Manager | Admin | Tasks**.
2. Expand **Jobs and Tasks**.
3. Expand **Server Tasks**.
4. Select **Directory Services**.



5. Click on **Import Azure AD Resources** to import devices, groups, and/or users based on a selected resource.
6. Click **Run**, then **Select Resource** and select from the available resources.



7. Select the Azure Active Directory Domain you previously created.

    1. Enable **Import Devices**.
    2. Enable **Import Groups**.
    3. Enable **Import Users**.

8. Click **Run Task**.

If you only want a subset of the directory to be imported, enable select and enable only the resources you wish to import at this point.

Create Scheduled Task for Users/Groups Synchronization

To schedule this operation to happen on a regular schedule:

1. Navigate to **Privilege Manager | Admin | Tasks**.
2. Expand **Jobs and Tasks**.
3. Expand **Server Tasks**.
4. Select **Directory Services**.
5. Click on **Import Azure AD Resources** to import devices, groups, and/or users based on a selected resource.
6. Click **View**.
7. In the Schedules tab, click **New Schedule** to create a new schedule.
    1. On the **Schedule** tab, define the desired schedule.
    2. On the **Parameters** tab, select the **Azure Active Directory** resource that you created earlier and make selections for importing devices, users, and groups.
8. Click **Save Changes**.

Delinea

Third-Party Foreign Systems Integration

Installing Foreign System Connectors

Foreign system connectors are not automatically installed on the Privilege Manager instances. These are the basic steps of installing a connector:

1. Open the Privilege Manager console.
2. Browse to https://YourInstanceName/TMS/Setup/.
3. On the **Currently Installed Products** page, Click **Install/Upgrade Products**.
4. Select the connectors you wish to install.
5. Click **Install**. Accept any End User License Agreement if prompted and monitor the installation process for error conditions.

Privilege Manager cloud instances have connectors pre-installed and available for configuration without the need to run through the connector install.

Delinea

Setting up a Cylance Integration

Cylance is an Artificial Intelligence Based Advanced Threat Prevention Solution for enterprise environments. Privilege Manager (v10.5+) integrates with Cylance to help you proactively act on any unknown applications that run in your environment to prevent potential malware attacks. The steps below walk through how to setup a Cylance Integration in Privilege Manager and then create an example policy to begin using Cylance intelligence in action across your environment.

Keep in mind that while the Cylance integration provides insight into threat analysis, ultimately you can use Privilege Manager policies to act or react in whatever way makes most sense to your organization.

Cylance Connector Installation Steps (On-prem only)

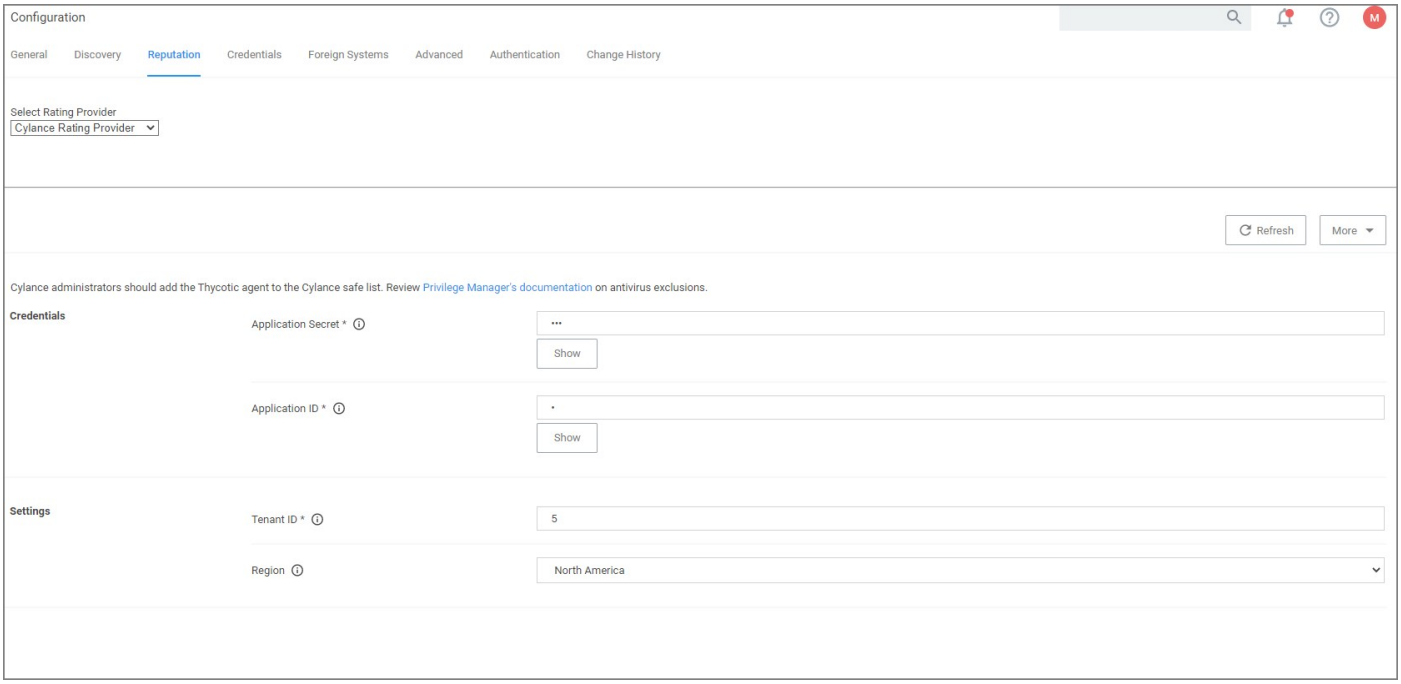
1. Open a browser on your Privilege Manager Web Server, browse to https://[YourInstanceName]/TMS/Setup/
2. On the Currently Installed Products screen, choose Install/Upgrade Products.
3. Select option Thycotic Cylance Reputation Connector.
4. Click on **Install** and Accept the End User License Agreement. You will see your Installation Progress. Click on "Show install Logs" link to check for any errors

   Note: If the installation of Cylance initially fails, redirect to https://[YourInstanceName]/TMS/Setup/ and click the Repair button next to the Cylance Product.

5. Once the Installation is successful, click on the **Home** button.

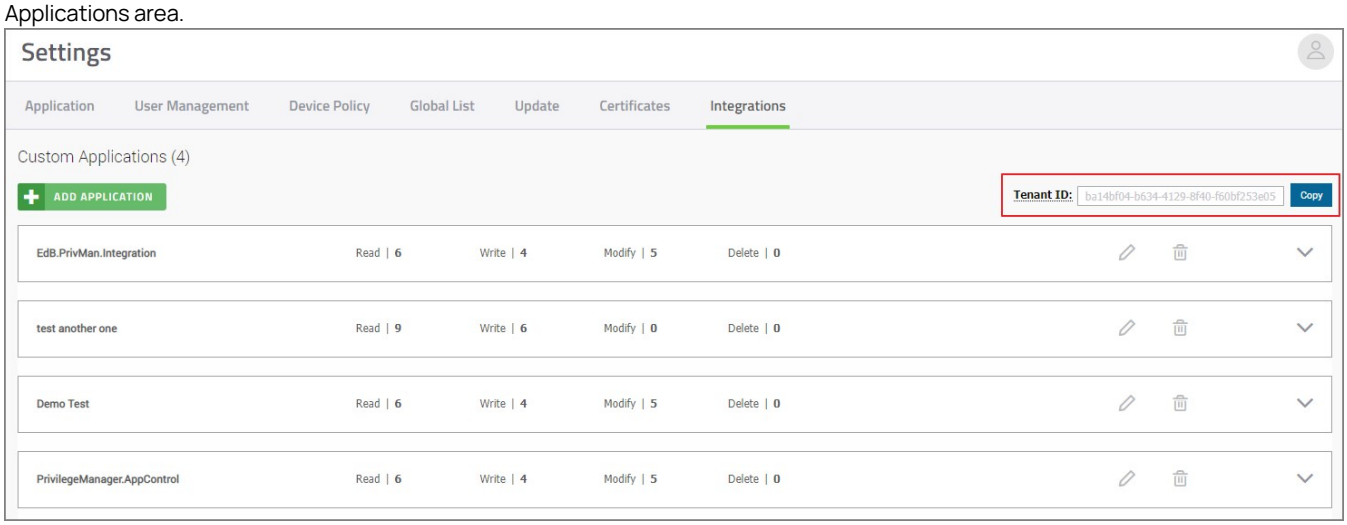
Configuring the Cylance Connector

1. Navigate to **Admin | Configuration** and select the **Reputation** tab.
2. From the Select Rating Provider drop-down, select **Cylance Rating Provider**.

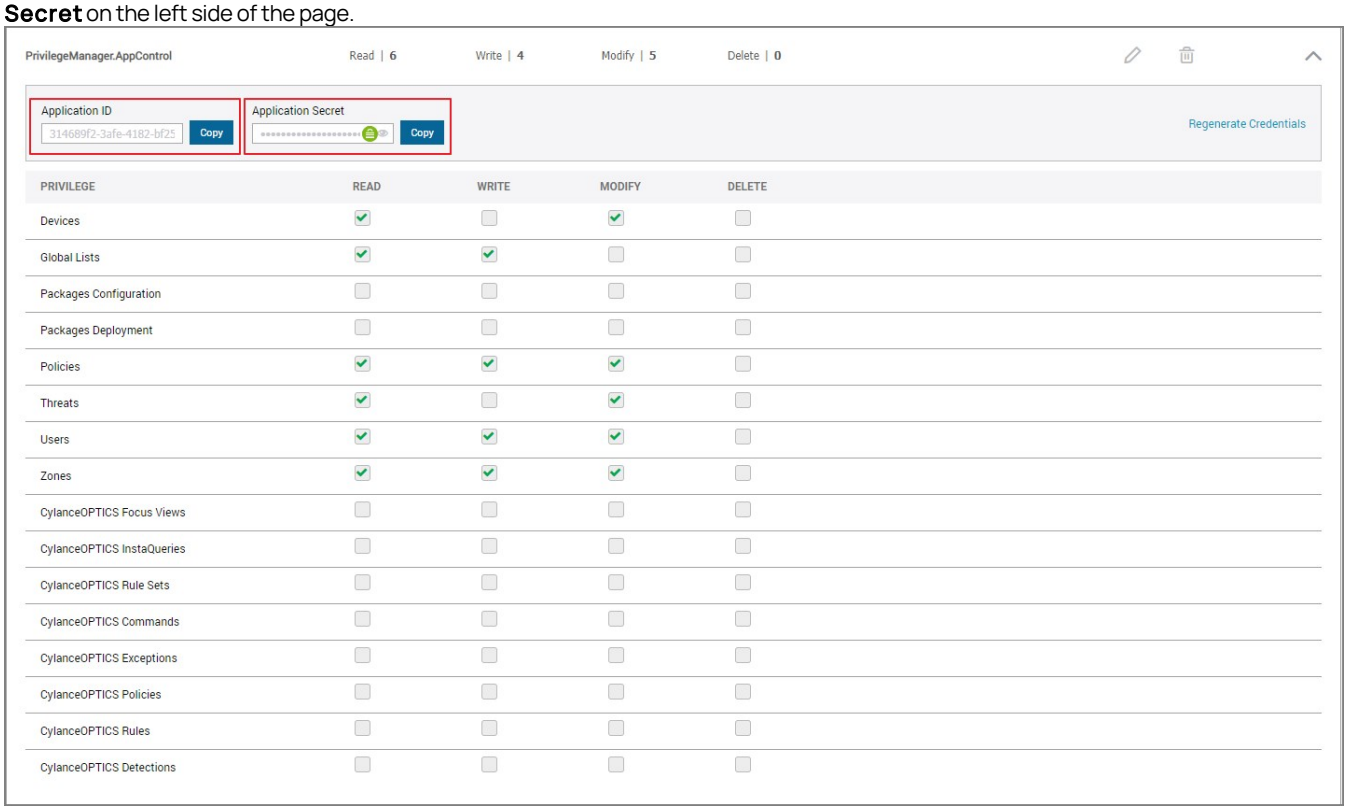


3. Enter the required **Credentials** and **Settings** details. These details can be found in your Cylance account (login at protect.cylance.com).

1. In our Cylance account, navigate to **Settings** and select **Integrations**. You find the **Tenant Id** on the right side of the Custom Applications area.



2. Select your Privilege Manager integration from the Custom Application list. You find the required **Application ID** and **Application Secret** on the left side of the page.

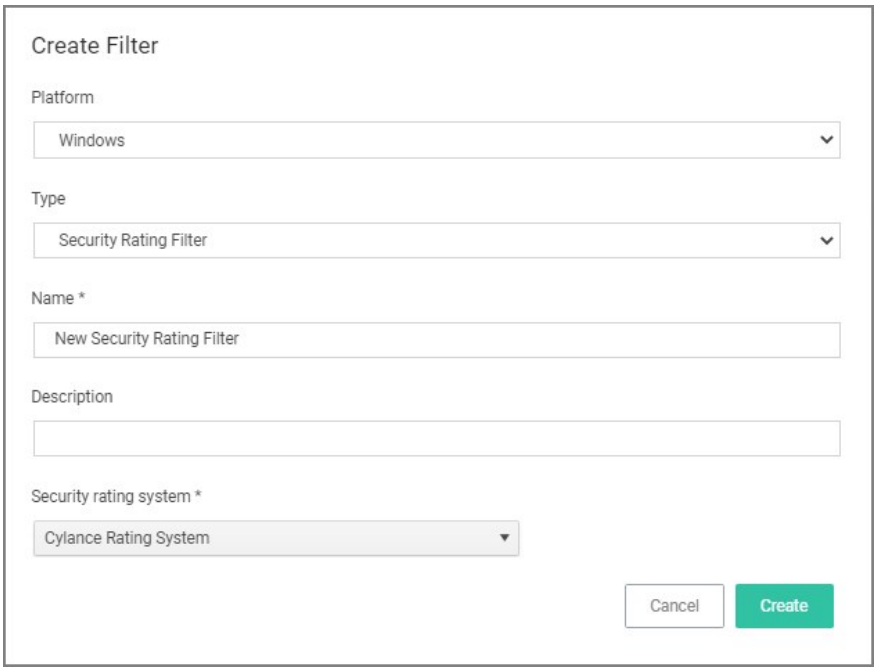


4. Once the Cylance details are entered in Privilege Manger, click **Save Changes**.

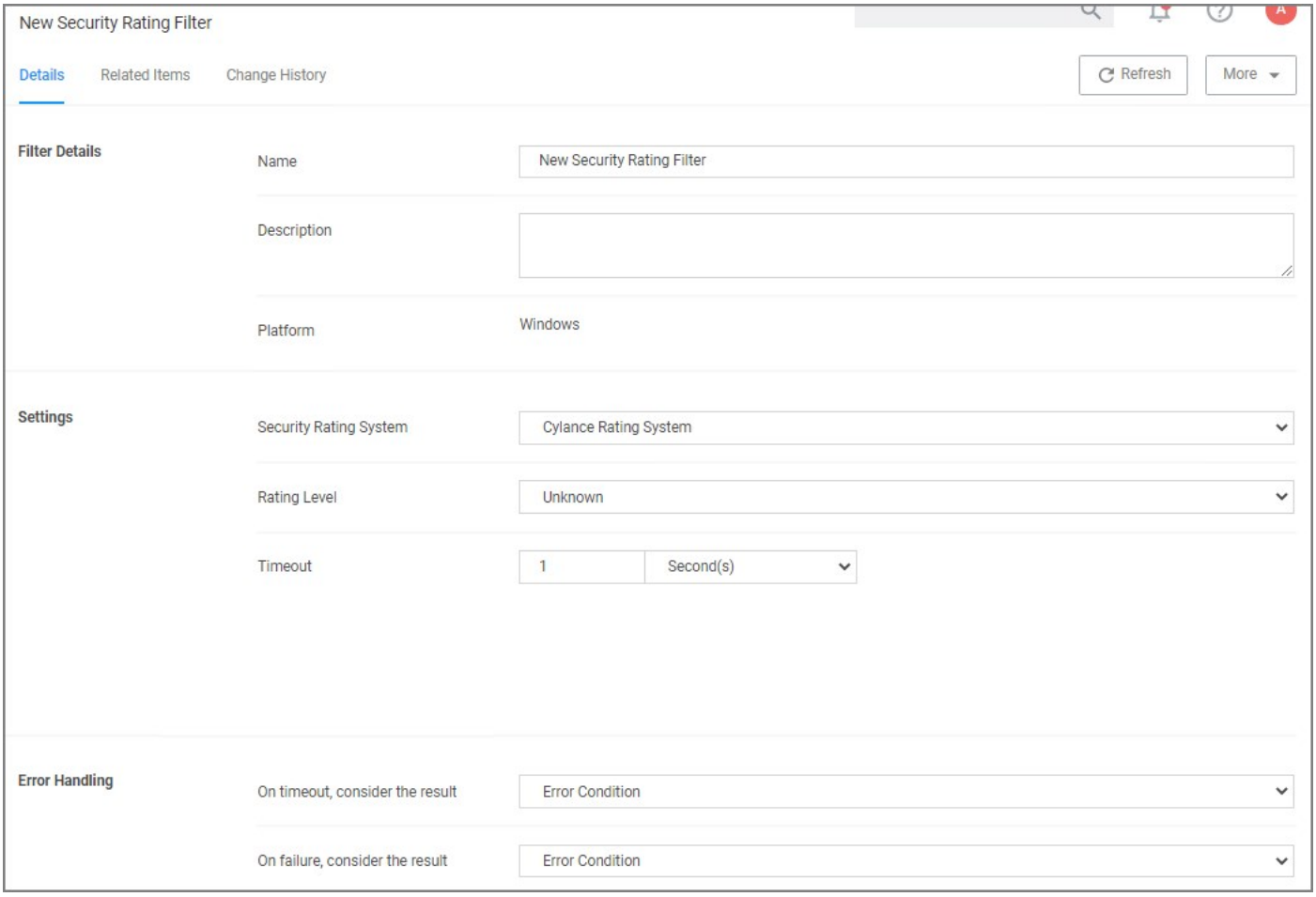
Create a Cylance Security Rating Filter

1. Navigate to **Admin I Filters**.
2. Click **Create Filter**.

3. From the **Platform** drop-down select either Windows or macOS.
4. From the **Filter Type** drop-down select **Security Rating Filter**.
5. Name the policy and add a Description.
6. From the **Security Rating System** drop-down, select **Cylance Rating System**.



7. Click **Create**.



8. Click **Create**.
9. Select the **Rating Level** you wish to apply. You can also specify a **Timeout** value and **Error Handling** conditions on timeout and/or on failure, the options are:
    - Matched
    - Not Matched
10. Click **Save Changes**.

Create a Cylance Policy

Use the Application Policies wizard to create a policy that uses the Cylance Security Rating filter created in the steps above.

Setting up a Jamf Integration

Privilege Manger integrates with Jamf PRO to allow users to:

- Import Smart and Static Computer Groups:
  - Computers
- Import installed applications on Jamf endpoints as discovered resources and create filters.
- Rollout Privilege Manager Agents on to Jamf Endpoints.

Install the Jamf Connector

For on-premises Privilege Manager instances the Jamf Connector must be installed before it can be setup in the console.

Create a Credential

Privilege Manager needs a username and password to access Jamf PRO. Create the credential in the Privilege Manager Console:

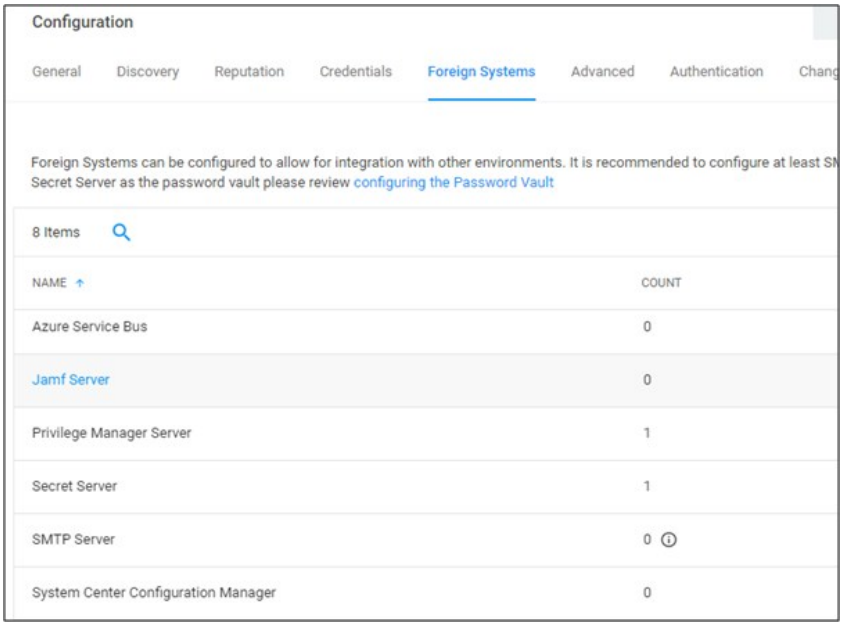
1. Navigate to **Admin | Configuration | Credentials**.
2. Click **Create**.
3. Enter the user credentials information for Jamf PRO server, click **Save Changes**.

Connecting to Jamf Server

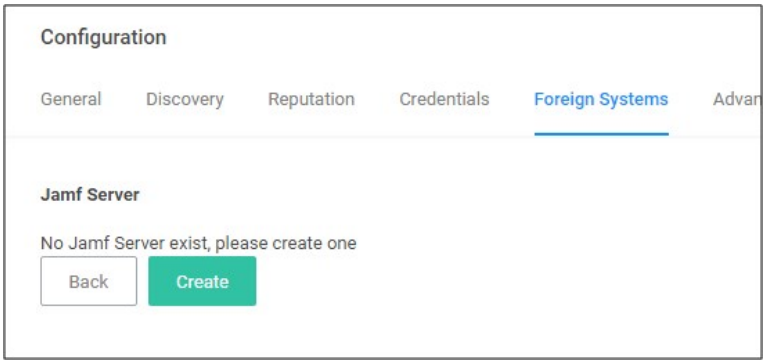
Before you can import data from Jamf PRO you need to setup a foreign systems connection in Privilege Manager for the Jamf integration.

1. Navigate to **Admin | Configuration | Foreign Systems**.
2. Select **Jamf server**. If this is not listed, make sure the connector is installed, refer to Installing Foreign System Connectors.

   Note: If you are a cloud customer and don't see Jamf in the list, contact Delinea support to have the connector added to your cloud instance. Once it is listed, continue with the next step.



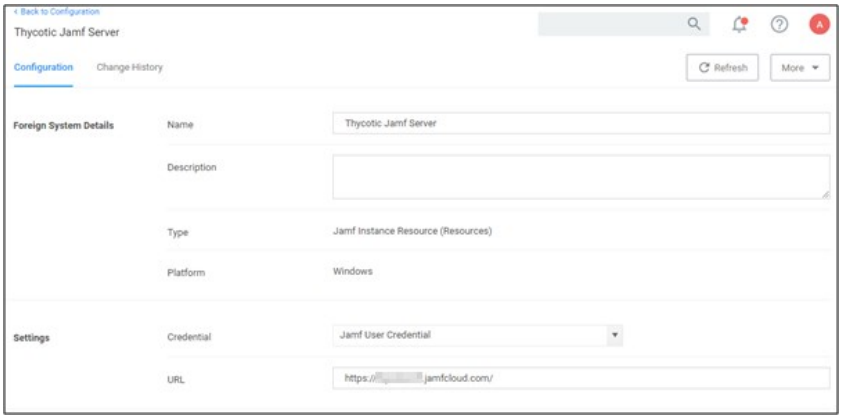
3. Click **Create**.



1. Enter the name of your **Jamf Server**.
2. Add your Jamf Server's credential. The Privilege Manager Default User Credential is populated by default and needs to be changed to the actual Jamf credential.
3. Enter the URL of your Jamf Server.

4. Click **Create**.

This is an example of the details page.



Tasks

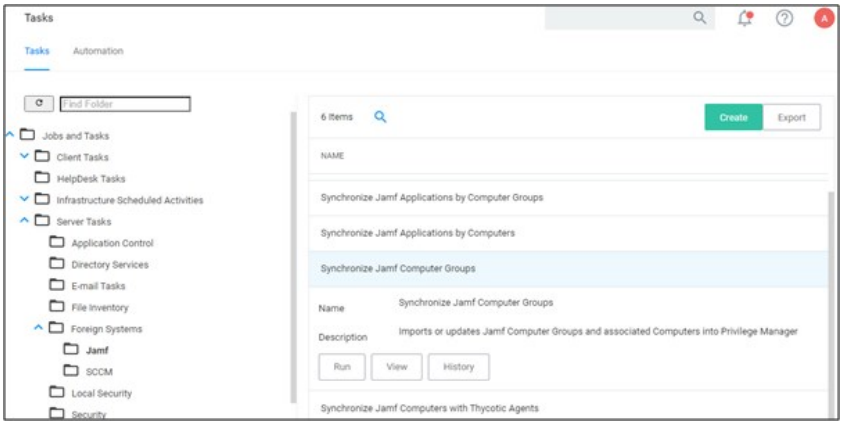
Below are the tasks created when the Jamf Server is installed.

1. Navigate to **Admin | Tasks**.
2. On the Tasks tab open the folder tree and select **Server Tasks | Foreign Systems | Jamf**.
    - Jamf Agent Rollout by Computers
    - Jamf Agent Rollout by Computer Groups
    - Synchronize Jamf Computer Applications by Computers
    - Synchronize Jamf Computer Applications by Computer Groups
    - Synchronize Jamf Computer Groups
    - Synchronize Jamf Computers with Delinea Agents

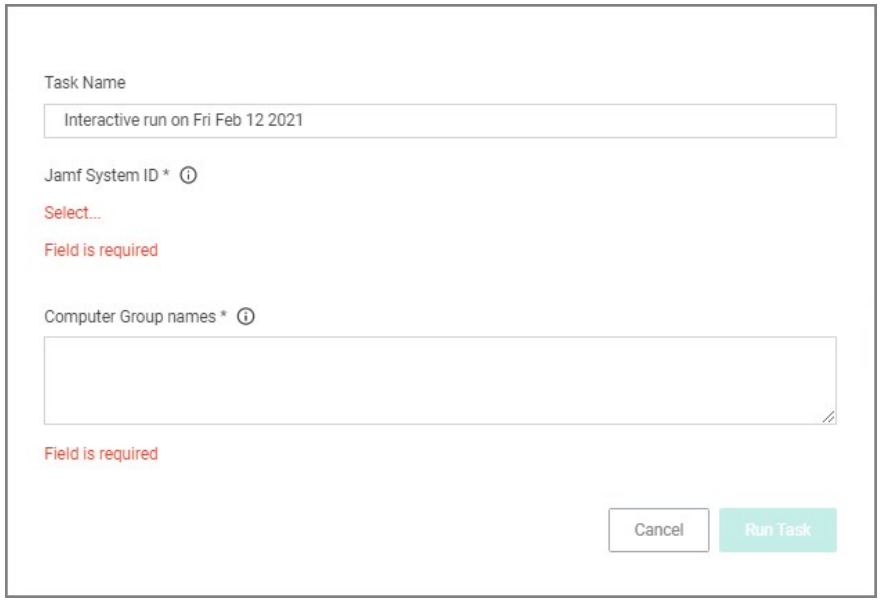
Synchronize Jamf Computer Groups

To import computer groups from the Jamf Server, the **Synchronize Jamf Computer Groups** task must run. This task also imports related computer resources.

1. Navigate to **Admin | More** and select **Tasks**.
2. On the Tasks tab open the folder tree and select **Server Tasks | Foreign Systems | Jamf**.
3. Click **Synchronize Jamf Computer Groups**.



4. Click **Run**.



5. Select your Jamf system via the **Select...** option. Enter the Jamf server name to narrow the search, or leave empty to search all.

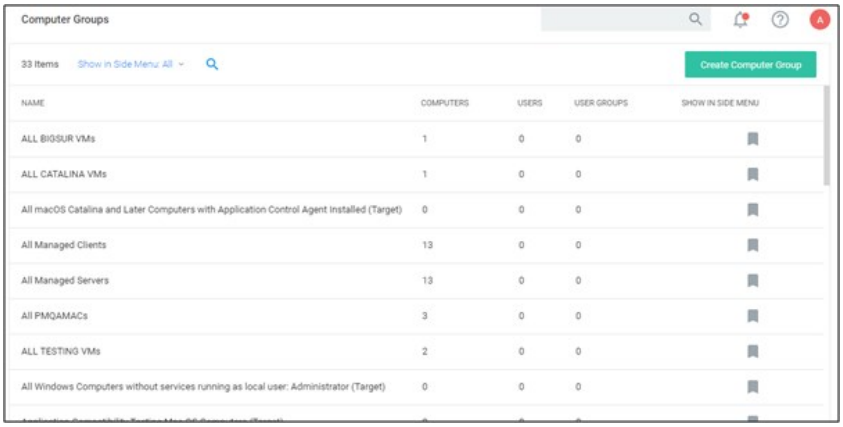
6. Under **Computer Group names**, type the names of the computer groups you want to import. These need to be exact name matches.
7. Click **Run Task**. The task executes and the task history is recorded.

Error codes are returned if the task fails due to loss of connectivity with Jamf, invalid credential or URL, and due to incorrect computer group names.

Example Results

After running the **Synchronize Jamf Computer Groups** task, you can view the results under Computer Groups.

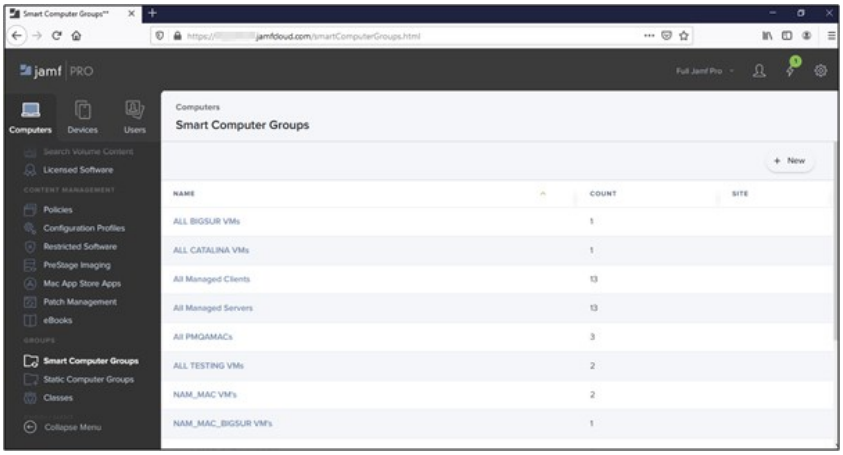
1. In the Privilege Manager console from the left navigation, select **Computer Groups**.
2. On the **Computer Groups** page, change your view to **All** to display all available computer groups.



Compare Jamf Server with Import

You can compare, if the imported computer groups correctly reflect the data on your Jamf Server.

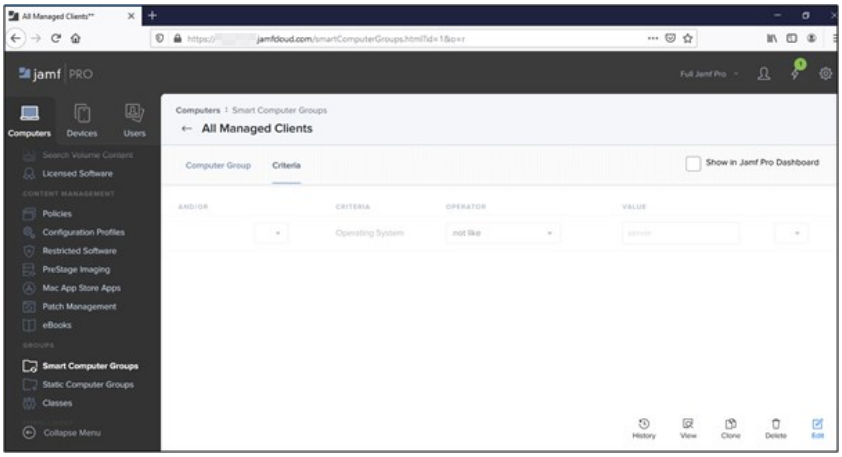
1. Login to Jamf PRO.
2. Navigate to **Computers | Smart Computer Groups** or **Static Computer Groups**



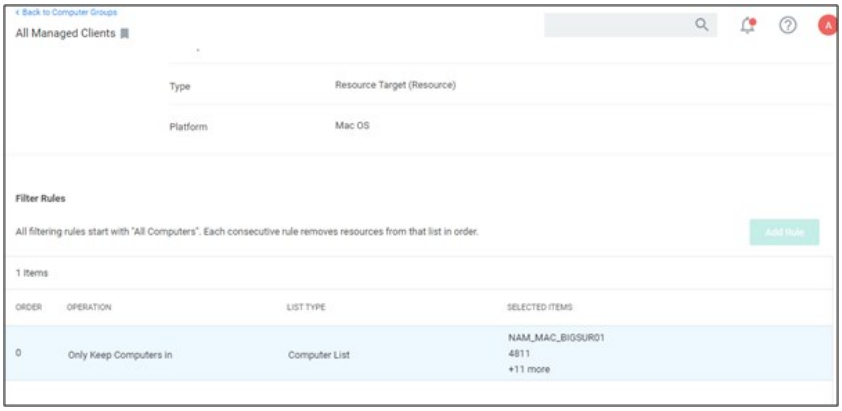
Note: All the Computers Groups imported into Privilege Manager contain a static list of Computers. Though they are query based in Jamf PRO.

For Example

A Group named “All Managed Clients” is query based and gives the result of computers that are not a server.



When this group is imported into Privilege Manager , it shows the list of computers as a result of the above query.



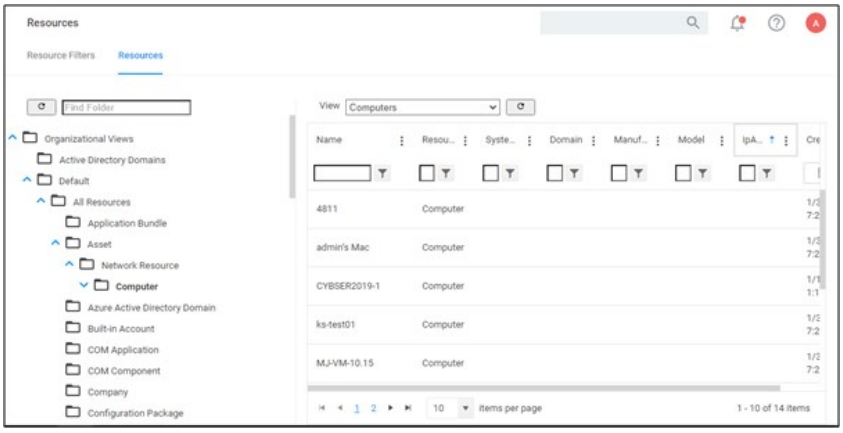
The list gets updated in Privilege Manager only, when the **Synchronize Jamf Computer Groups** task is manually run or based on a set schedule.

Resources in Privilege Manager

Only the computers that are imported via the synchronization task are available as a Resource in Privilege Manager .

To look at the computer resources that were imported,

1. Navigate to **Admin | Resources**.
2. Select the Resources tab.
3. In the folder tree, open **Organizational Views | Default | All Resources | Assets | Network Resource | Computer**.

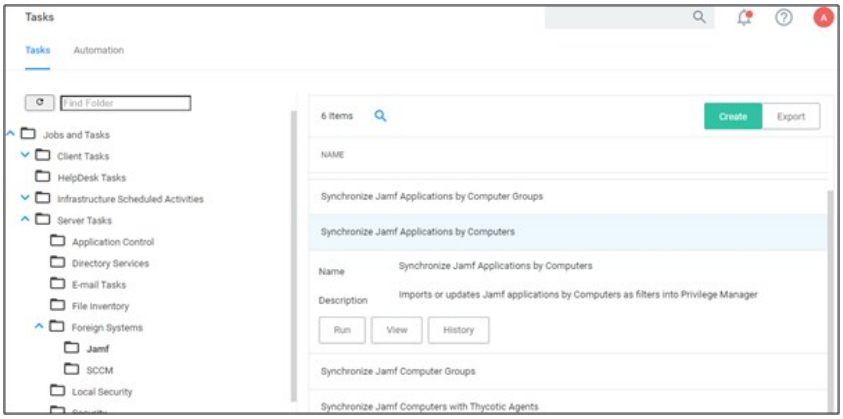


Select any of the synchronized Computer resources to view details on the basic inventory imported.

Synchronize Jamf Applications By Computers

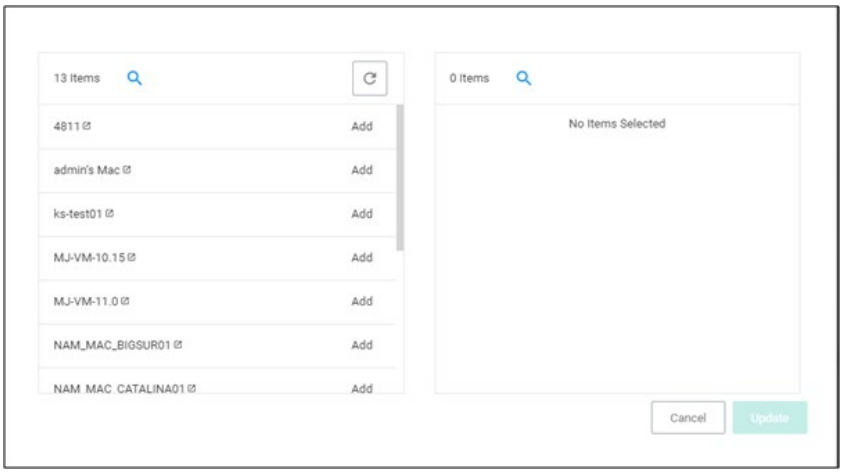
To import applications as filters, the **Synchronize Jamf Applications by Computers** must run. The task does NOT import file inventory into Privilege Manager .

1. Navigate to **Admin I Tasks**.
2. Open the folder tree and select **Server Tasks I Foreign Systems I Jamf**.
3. Click **Synchronize Jamf Applications by Computers**.



4. Click **Run**.

5. Select your Jamf system via the **Select...** option. Enter the Jamf server name to narrow the search, or leave empty to search all.



6. Click **Add Computers**, to add the computers from which to import applications.
7. Click **Run Task**. The task executes and the task history is recorded.

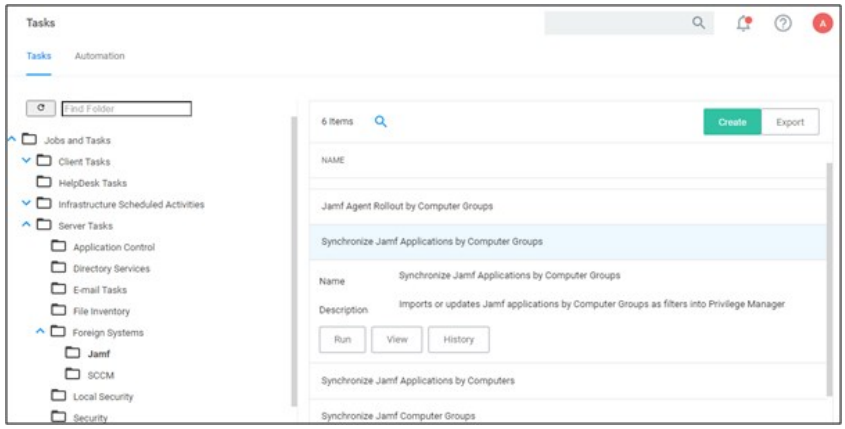
This imports all the applications as an **App Bundle Filter** into Privilege Manager .

Note: Make sure, you select specific Computers or the task imports applications from all computers.

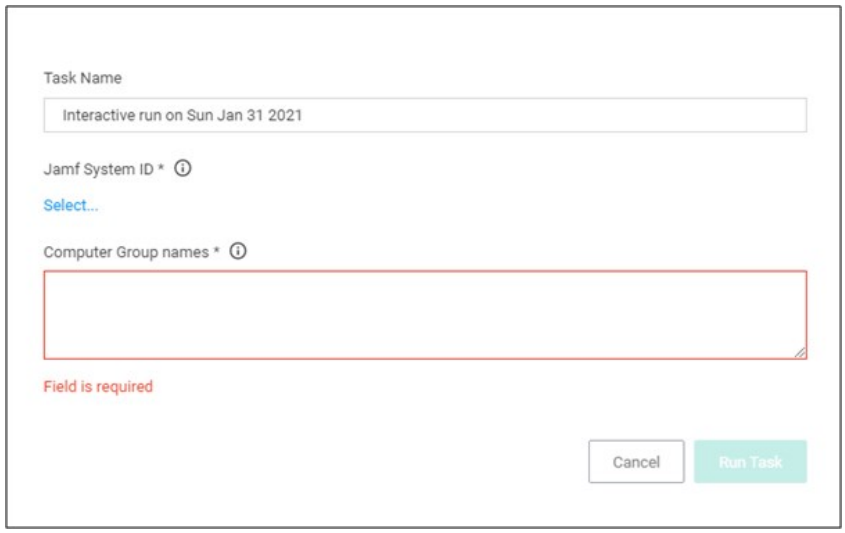
Synchronize Jamf Applications By Computer Groups

To import applications based on computer groups as filters, the **Synchronize Jamf Applications by Computer Groups** must run. The task does NOT import file inventory into Privilege Manager .

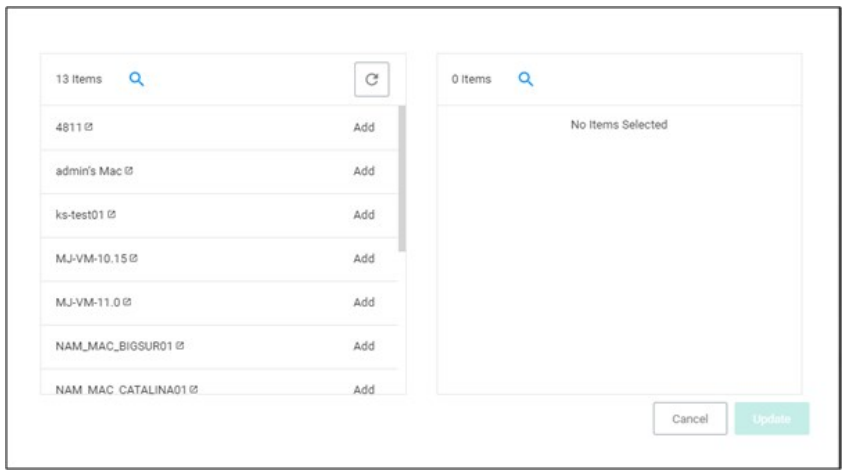
1. Navigate to **Admin | Tasks**.
2. Open the folder tree and select **Server Tasks | Foreign Systems | Jamf**.
3. Click **Synchronize Jamf Applications by Computer Groups**.



4. Click **Run**.



5. Select your Jamf system via the **Select...** option. Enter the Jamf server name to narrow the search, or leave empty to search all.



6. Under **Computer Group names**, type the names of the computer groups from which you want to import Applications. These need to be exact name matches.

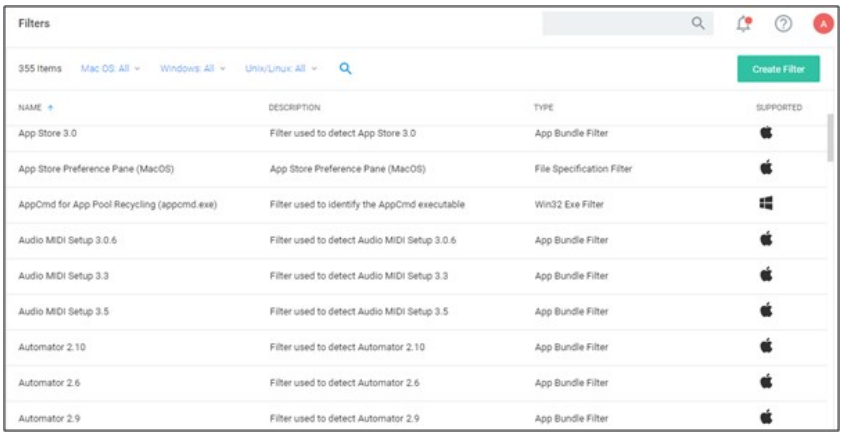
7. Click **Run Task**. The task executes and the task history is recorded.

This imports all the applications as an **App Bundle Filter** into Privilege Manager . This task will fail, if any computer group name is invalid.

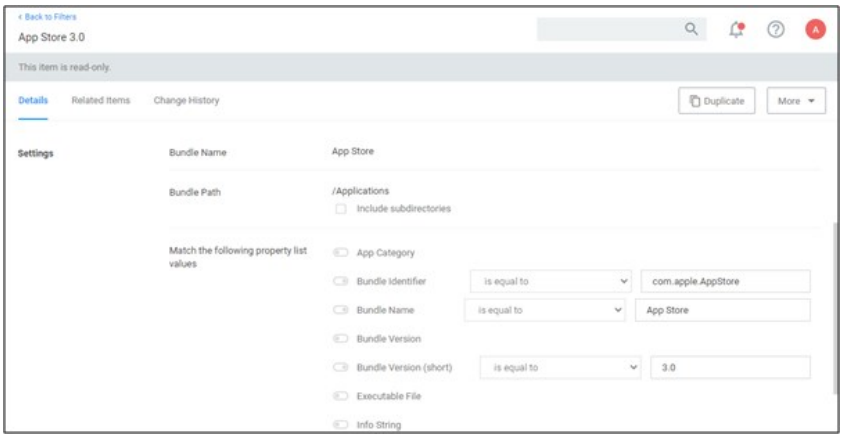
Sample Results of Application Sync

1. Navigate to **Admin I Filters**.

   The filters are named based of the application with its version.



2. Open any imported filters to see the details page.



The filters are created as a read-only filter. To customize the filters, use duplicate.

Jamf Agent Rollout By Computers

Use the Jamf Agent Rollout By Computers task to rollout Privilege Manager Agents on endpoint that are managed by Jamf.

Prerequisites

In Jamf PRO, setup required Configuration Profiles:

- Allow Profile
- PPPC Profile

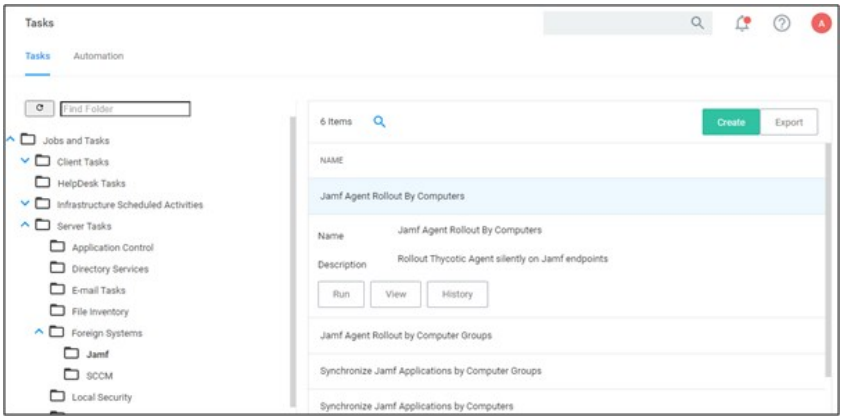
The profiles must be configured correctly considering the required KEXT and SYSEX extensions.

The profiles must be rolled out before the user initiates any of the **Jamf Agent Rollout** tasks for the corresponding Computers.

Jamf Agent Rollout By Computers

Use the **Jamf Agent Rollout By Computers** task to rollout agents by endpoint.

1. Navigate to **Admin ITasks**.
2. Open the folder tree and select **Server Tasks I Foreign Systems I Jamf**.
3. Select **Jamf Agent Rollout By Computers**.



4. Click **Run** and provide the required details:

5. Click **Run Task**.

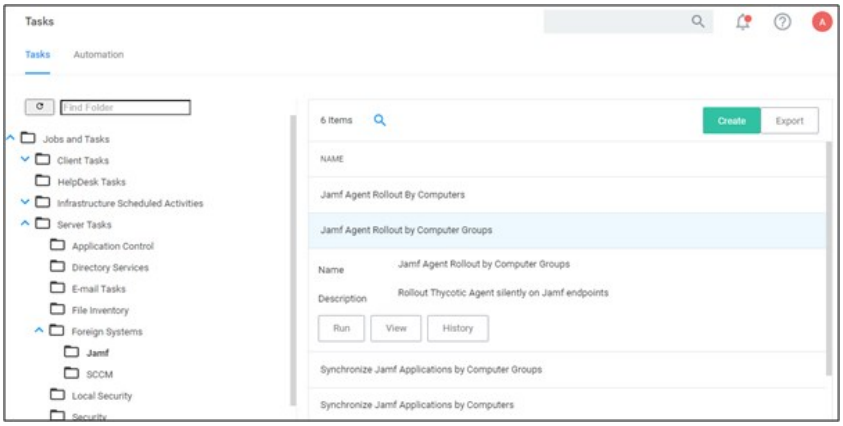
The task executes and the task history is recorded.

This tasks creates the required details like **scripts** and **policies** on the Jamf PRO instance. These are then initiated using the **Check-in** task in Jamf PRO to complete the installation of the Privilege Manager Agent. Once the agent is installed and registered, it communicates with the Privilege Manager server.

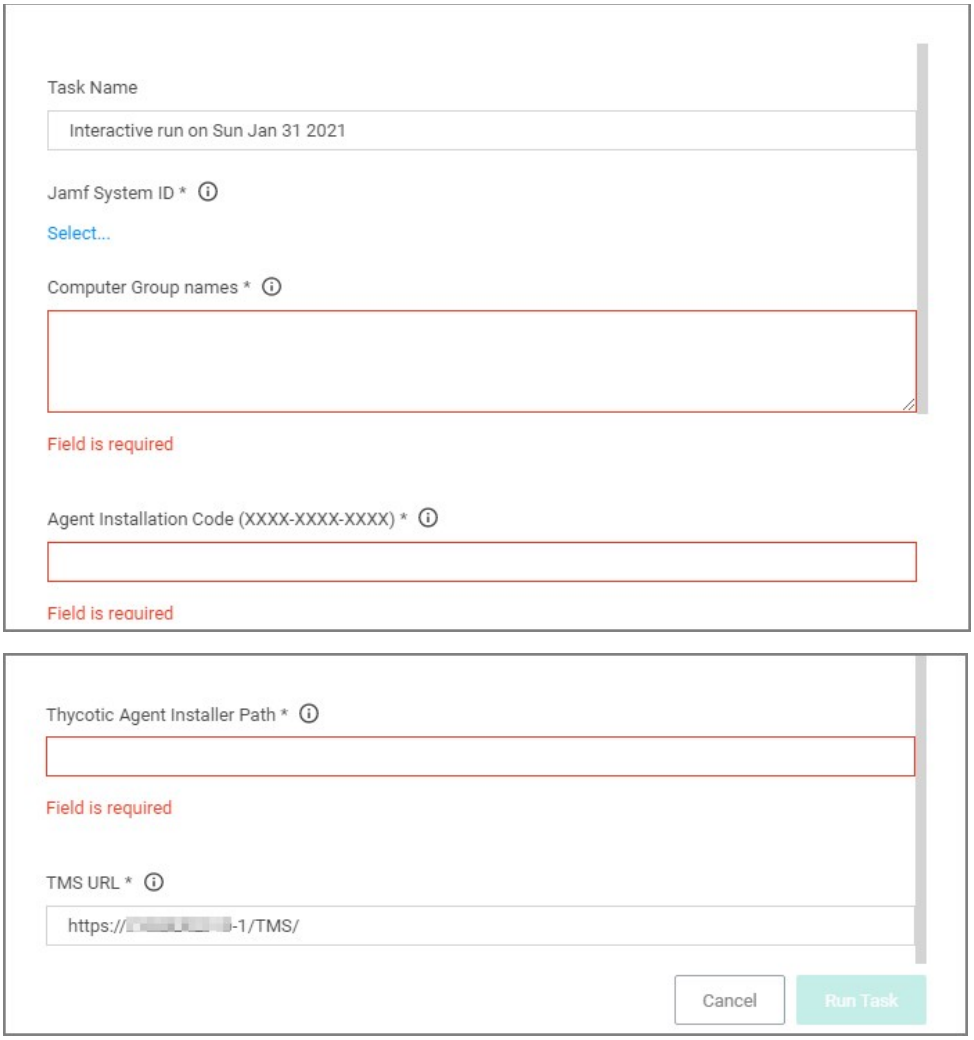
Jamf Agent Rollout By Computer Groups

Use the **Jamf Agent Rollout By Computer Groups** task to rollout agents by computer groups. The basic functionality of this task and the **Jamf Agent Rollout by Computers** task is the same, just under a different scope, computers vs. computer groups.

1. Navigate to **Admin ITasks**.
2. Open the folder tree and select **Server Tasks I Foreign Systems I Jamf**.
3. Select **Jamf Agent Rollout By Computer Groups**.



4. Click **Run** and provide the required details:



5. Click **Run Task**.

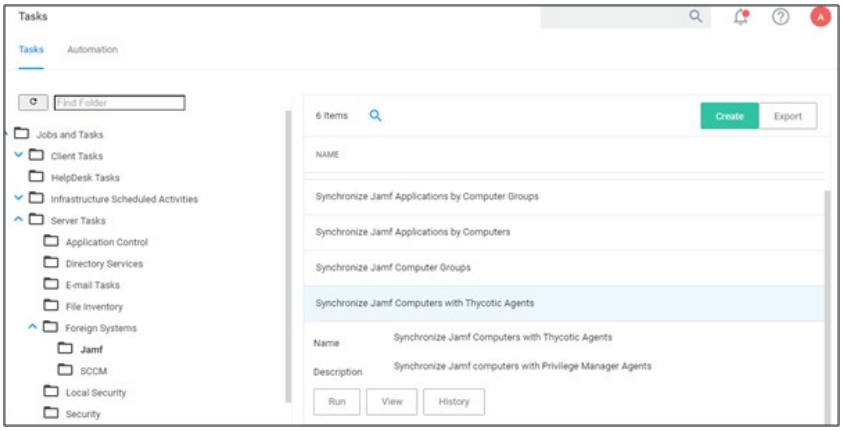
The task executes and the task history is recorded. This task will fail, if any computer group name is invalid.

This tasks creates the required details like **scripts** and **policies** on the Jamf PRO instance. These are then initiated using the **Check-in** task in Jamf PRO to complete the installation of the Privilege Manager Agent. Once the agent is installed and registered, it communicates with the Privilege Manager server.

Synchronize Jamf Computers with Delinea Agents

When a Privilege Manager Agent is rolled out on Jamf Endpoints, the agent rollout tasks create a duplicate computer resource with a different **itemId**. The **Synchronize Jamf Computers with Delinea Agents** task must be run to maintain unique computer resources in Privilege Manager .

1. Navigate to **Admin I Tasks**.
2. On the Tasks tab open the folder tree and select **Server Tasks I Foreign Systems I Jamf**.
3. Click **Synchronize Jamf Computers with Delinea Agents**.

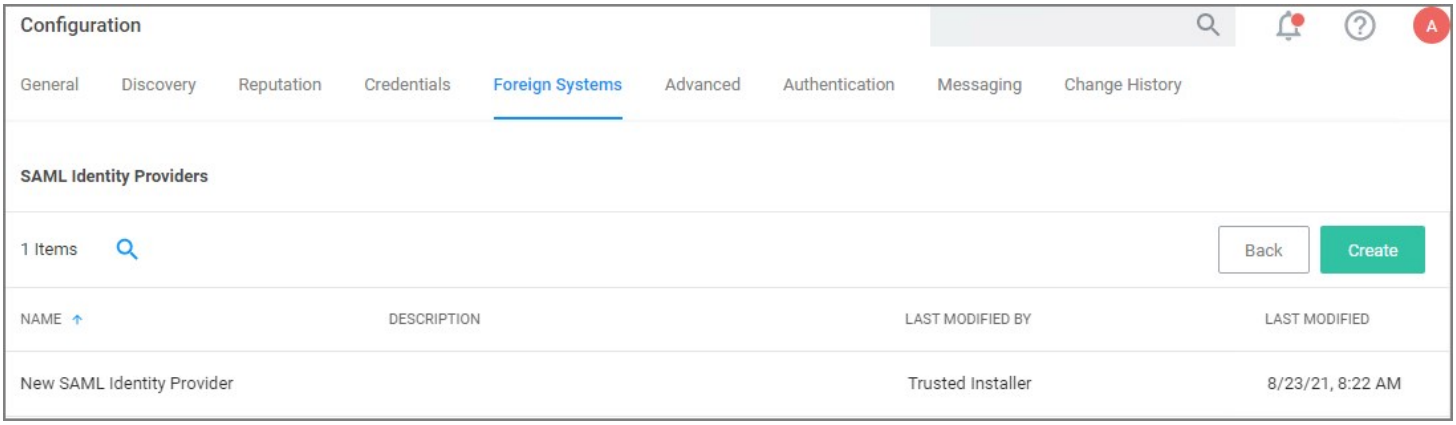


Search for any computer which is imported from Jamf and has the Privilege Manager Agent installed. One computer resource is displayed.

Setting up a SAML Integration

All SAML Foreign Systems integrations follow the same principle steps:

1. Set up the identity provider.
2. Enable authentication for the SAML identity provider or the configuration will fail. Refer to Managing Authentication Providers.
3. Use data from the identity provider setup for setting up the Privilege Manager Foreign Systems.



Multiple SAML providers can be created and utilized.

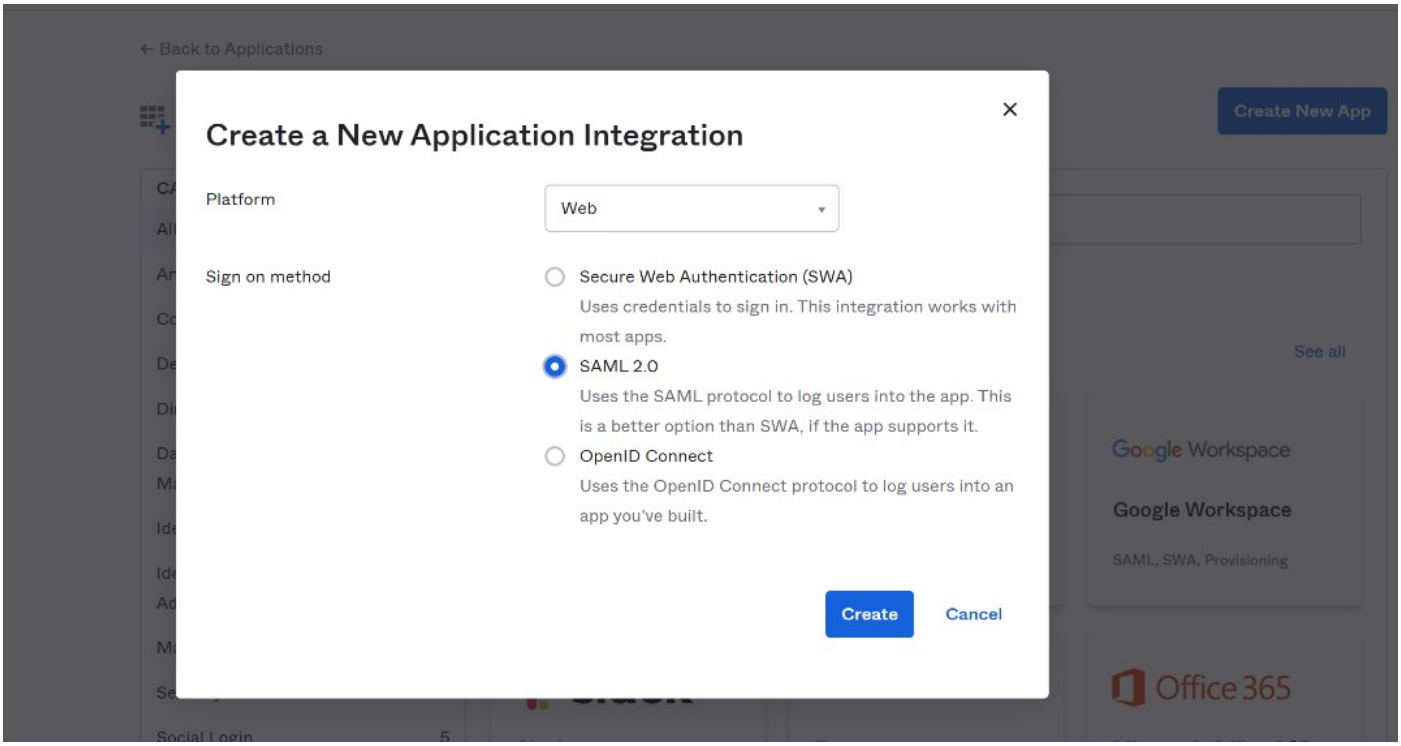
For the purpose of this procedure, we use Okta as the identity provider example.

Create a new Application

An application is a definition for integration with an external application (in this case, Privilege Manager).

In Okta, create a new application. Don't select one of the existing:

1. In the top right of the app page, click **Create New App**.
2. From the **Platform** drop-down, select **Web**.
3. From the **Sign on method** options, select **SAML 2.0**.



4. In the **App name** field provide an Application Name. Depending on your use case, provide an application logo and select App visibility settings.
5. Click **Next**›

Enter Application SAML Settings

On the next pages, you'll configure the SAML settings.

1. Enter the **Single sign on URL**. The **Single sign on URL** is the root Privilege Manager URL plus **saml2/acs**. For most systems this is https://servername/Tms/saml2/acs.
2. Enter the **Audience URI**, which can be anything as long as it matches what you put in Privilege Manager. The default value in Privilege Manager is PrivilegeManagerServiceProvider.
3. The **Default RelayState** can be left blank.
4. The **Name ID format** drop-down set to **Unspecified**.
5. From the **Application username** drop-down, select **Okta username**.

   The rest of the settings can be ignored.
6. Proceed via **Next**.
7. On the last page for the **Are you a customer or partner?** prompt, select **I'm an Okta customer adding an internal app**.
8. Click **Finish**.

View Setup Instructions

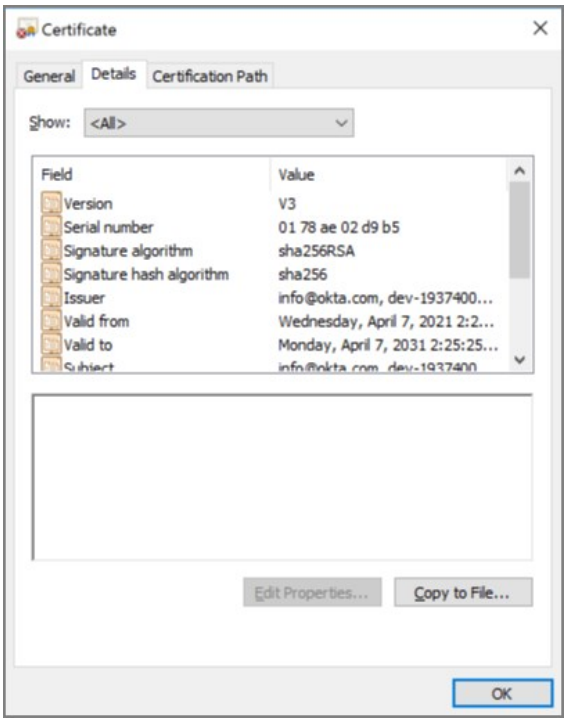
After the app is created, you'll want to click **View Setup Instructions** and leave the instructions open in the browser. You'll want to copy and

paste some of this info into Privilege Manager in the next section.

Save Certificate

Start with the certificate data.

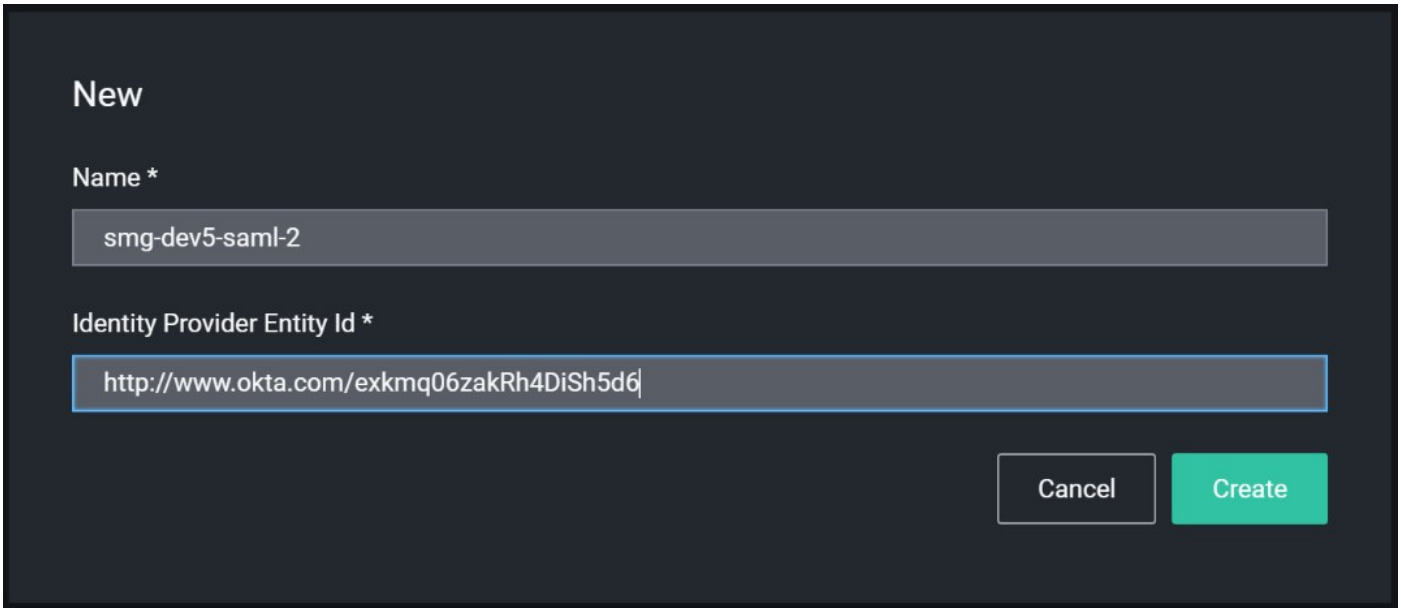
1. Click **Download certificate** and save the certificate as **.cer**. Okta will try to save it as .cert.
2. Once it's saved, you should be able to open and view the certificate in Windows:



Privilege Manager Foreign Systems Setup

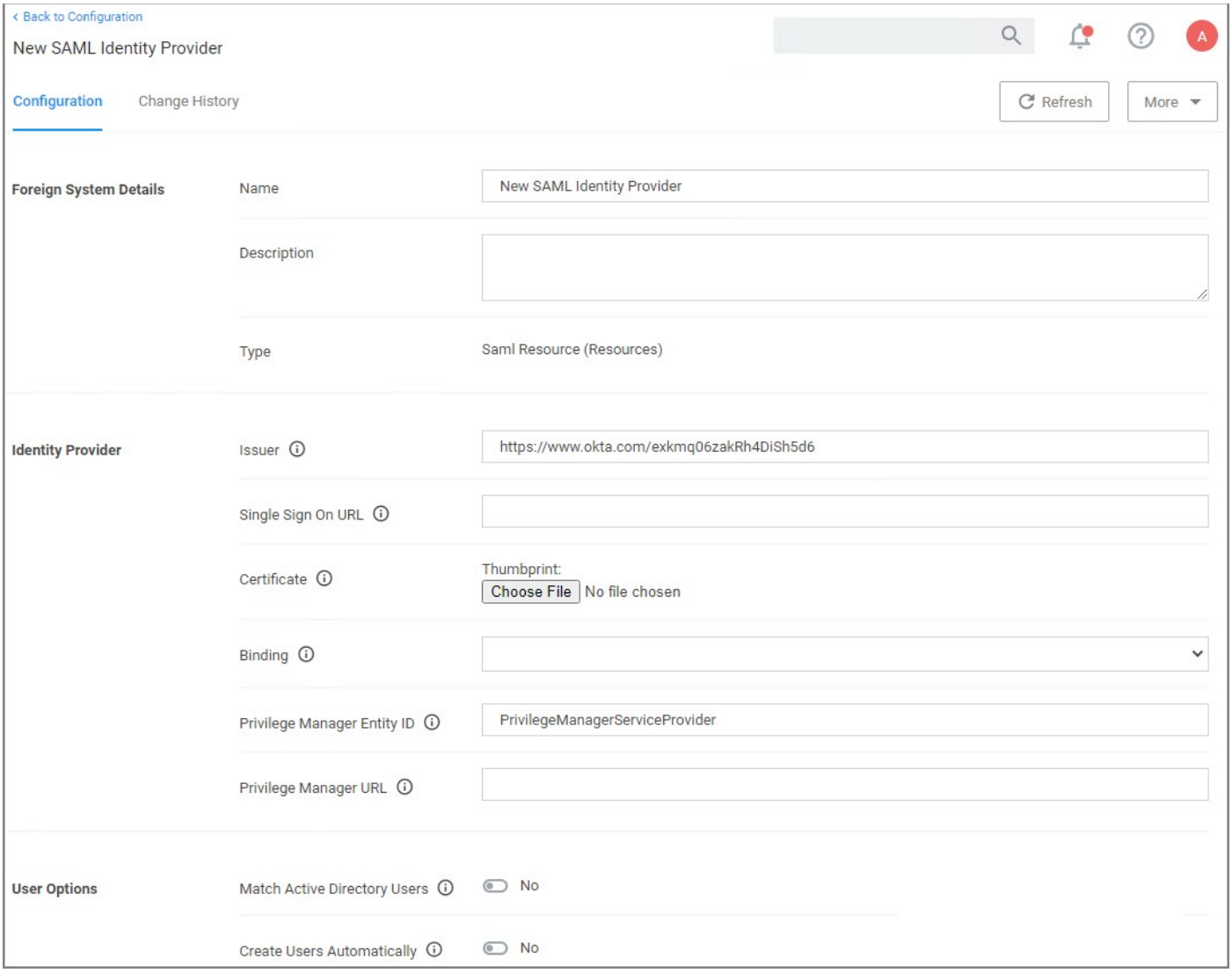
Create SAML Identity Provider

1. Navigate to **Admin | Configuration** and select **Foreign Systems**.
2. Click **SAML Identity Providers**.
3. Click **Create**.

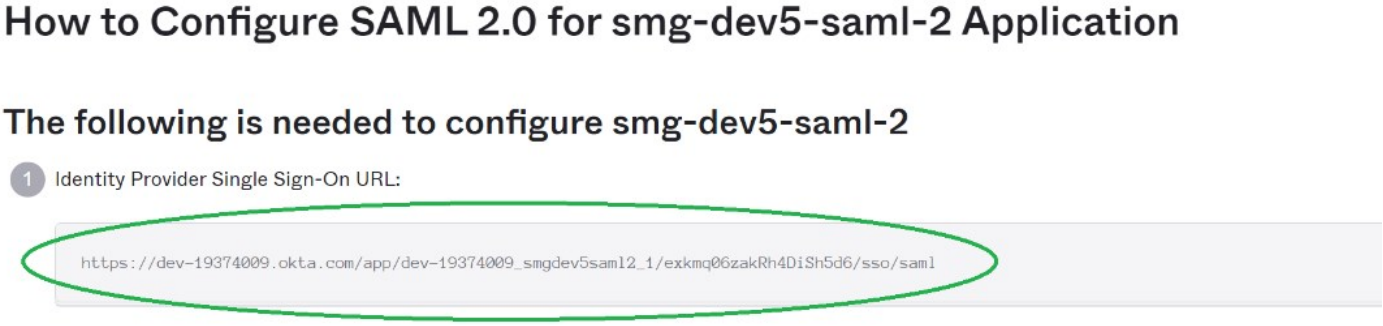


4. Enter a name for the Foreign System.
5. For **Identity Provider Entity Id**, enter the issuer name from the setup instructions. For example:

6. Click **Create**.



7. Under **Identity Provider I Single Sign On URL** enter the URL from the setup instructions.



8. Under **Certificate**, select the certificate you saved earlier.
9. From the **Binding** drop-down, select **HTTP Post**.

10. Under **Privilege Manager Entity ID** match what you entered in the app setup for Audience URI (SP Entity ID), for example *PrivilegeManagerServiceProvider*, if you went with the default suggestion.
11. Under **Privilege Manager URL**, enter your instance URL, for example https://myprivilegemanger/Tms/.
12. Click **Save Changes**.

    Note: After saving the identity provider, Privilege Manager shows the certificate thumbprint in the UI. It should match what Windows shows for the thumbprint on the certificate downloaded from Okta:

Configure User Options

Normally you need to create a new Federated user that matches an Okta username. But you can optionally have Privilege Manager match AD users by DOMAIN\username and/or create new Federated users automatically.

Match Active Directory Users

If you select this option, you must configure Okta to send users in the format DOMAIN\username or username@domaindnsname. You should import users (and groups if desired) from AD, and add the desired user(s) to one or more Privilege Manager Roles before attempting to sign in.

Create Users Automatically

When this option is selected, Privilege Manager will create a new Federated user whenever a username cannot be matched to an existing Federated user (or AD User if the option above is selected).

> **Note**: You'll still need to add the user to a Privilege Manager role before they'll have any meaningful access. Support for group/role assertions is planned for a future release.

Managing Users

Create New Okta Users

If you don't have any Okta users, you'll need to go to the Okta Directory section and add them.

Okta requires the usernames be in the format of an email address. These are the usernames your users are going to use when they log into Privilege Manager. You can configure Okta to send Privilege Manager a different username (like domain\username, or a short name like yoda).

Add Okta Users to Application

Before you can login, users must be assigned to the application in Okta.

1. Go to **Applications | Applications**.
2. Select your application.
3. Select **Assignments**.
4. Click assign and select one or more users.

> **Note**: After assigning a user, you can change the username to be whatever you want. Click the edit (pencil), and enter the username for your user (this only changes the username for this specific application).

Setup Active Directory Users

You can use Active Directory users that you've already imported into Privilege Manager.

NOTE: After you've imported from Active Directory, you still need to add the AD users (or AD groups) to Privilege Manager roles.

Match by DOMAIN\username

Ensure the username in Okta matches the Global Identity data for the user in Privilege Manager.

Match by username@dnsdomainname

Ensure the username in Okta matches the Global Identity UserId in Privilege Manager, and the domain name part of the username matches the DNS domain name of the domain in Privilege Manager. We don't import this directly from AD, so we have to get it from the Global Identity and AD foreign system data.

> **Note**: Refer to the Authentication Tab topic for details on managing authentication providers.

Using GSuite as a SAML Provider

When configuring GSuite as a SAML Provider the basic steps to set up the foreign system are the same as provided under the "Setting up a SAML Integration" topic. There are a couple of extra points to note that might not be intuitive enough when following the Google documentation for the SAML setup.

External References

- Google: https://support.google.com/a/answer/6087519

Clarification of Steps in GSuite

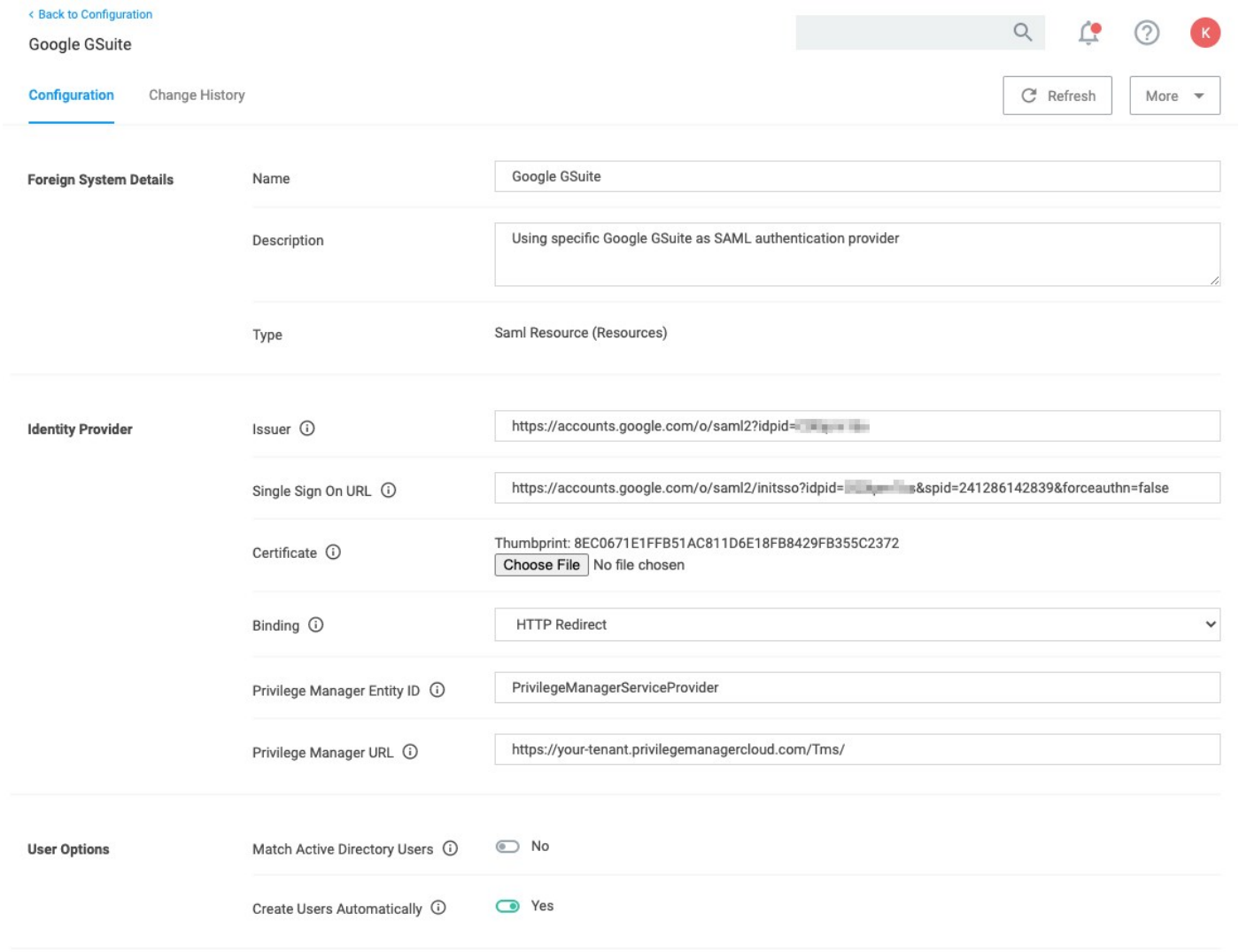
When you are following the recommended steps to create a custom SAML application in GSuite, you will be shown a number of fields that you will need to use when configuring Privilege Manager. GSuite provides a test via their **SAML apps > Test** dialog. On that page in combination with an option to **Download Metadata**, the data provided needs to be used to edit/complete the GSuite foreign systems setup in Privilege Manager. It might be best to keep the GSuite app configuration page and Privilege Manager Console open in two different browser Windows for easy retrieval of data.

1. Go to your G-Suite app that you have configured in your browser and view the details.
2. Your browser URL, which will be similar to this *https://admin.google.com/u/1/ac/apps/saml/241286142839*, contains your **AppID**, which is the number string at the end of the URL, 241286142839 from this example.

   Copy your **AppID** from your URL. It needs to be added on the foreign systems page.
3. From the download metadata page, copy your **Entity ID** and and download the Certificate. You will need to upload this certificate in Privilege Manager later.
4. For the **ACS URL** field, enter https://your-server.privilegemanagercloud.com/Tms/saml2/acs.
5. For the **Entity ID** field, enter PrivilegeManagerServiceProvider.
6. Leave the **Start URL** blank.
7. Check the **Signed** response box.
8. For the **Name ID Format** field, select **Email**.
9. For the **Name ID** field, select **Basic Information | Primary email**.

Steps in the Privilege Manager Console

1. In Privilege Manager, navigate to **Admin | Foreign Systems** and create a new SAML provider.
2. Enter values, for
    1. **Issuer**, enter the Entity ID that was provided from your GSuite custom app.
    2. **Single Sign On URL**, enter the browser URL containing the **AppID** string as as https://accounts.google.com/o/saml2/initsso?idpid=<idpid>&spid=<AppID>&forceauthn=false.
        1. Replace <AppID> with your **AppID** value from step 2 under "Clarification of Steps in GSuite".
        2. Replace <idpid> with your application's **Entity ID** from step 3.
    3. **Certificate**, upload the downloaded certificate via **Choose File**.
3. Verify the page contains all the required data, refer to this example:



Next Step - Authentication Provider

To enable this new SAML provider to be used from the **Login** page, visit the **Authentication** tab and select your GSuite Foreign System from the listed providers. Refer to Managing Auth Providers.

> **Note**: After saving or enabling authentication providers, you may notice a short delay of unresponsiveness in your browser as the Privilege Manager application pools restart automatically.

Setting up a Microsoft System Center Configuration Manager (SCCM) Integration

Privilege Manger integrates with Microsoft System Center Configuration Manager (SCCM) to allow the

- import of computers for use in computer groups and identifying systems that exist on the network, but don't have an endpoint agent installed yet.
- import of existing Device Collections from SCCM and use them for Privilege Manager computer groups.
- inventory of SCCM Software Packages to use the package contents in Privilege Manager Application Control policies.

Create a Credential

Privilege Manager needs a username and password to access SCCM. If you have not already created an appropriate user credential:

1. Navigate to **Admin | Configuration | Credentials**.
2. Click **Create**, to create user credentials to access SCCM.
3. After entering the user credentials information for SCCM, click **Save Changes**.

Connecting to SCCM

Before you can import data from SCCM you need to setup a foreign systems connection in Privilege Manager for the SCCM integration.

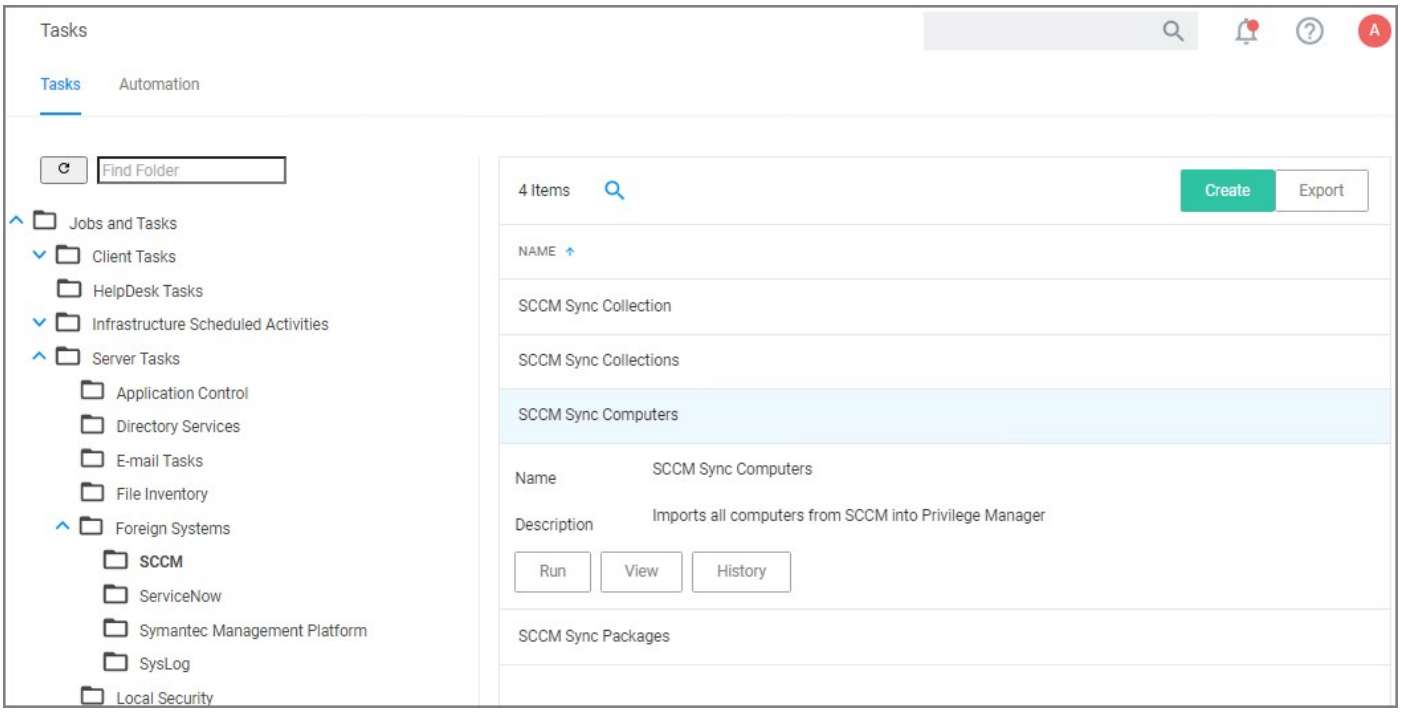
1. Navigate to **Admin | Configuration** and select the **Foreign Systems** tab.
2. Select **System Center Configuration Manager**. If this is not listed, make sure the connector is installed by verifying via the **Privilege Manager Add/Upgrade Features** page.
3. Click **Create**.

4. Enter the name of the SCCM Server and provide the **WMI Namespace of the SCCM Site**.
5. Click **Create**.
6. Under Settings from the **Credential** drop-down, select the SCCM account created in the previous procedure.
7. Click **Save Changes**.

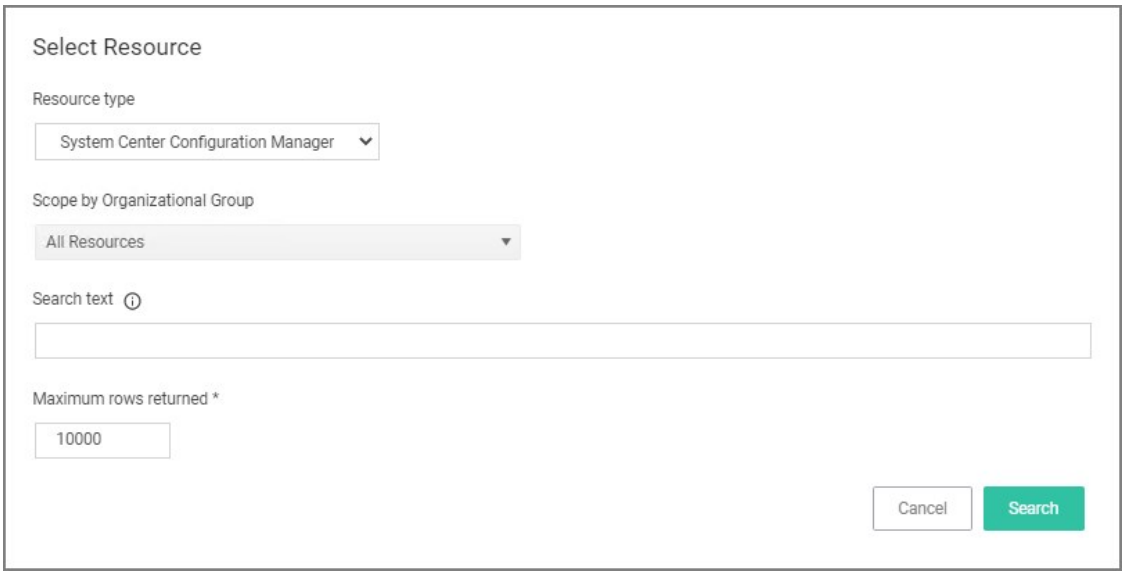
Import Computers

Before you can import collection data from SCCM, Privilege Manager needs to know about computers in your SCCM.

1. Navigate to **Admin | More** and select **Tasks**.
2. On the Tasks tab open the folder tree and select **Server Tasks | Foreign Systems | SCCM**.
3. Click **SCCM Sync Computers**.



4. Click **Run**.
5. Select your SCCM system via the **Select...** option.



1. Under Scope by Organizational Group type the name of your sccm system in the search text or use the search option.

6. Click **Run Task**.

Verify the Computers have been Imported (optional)

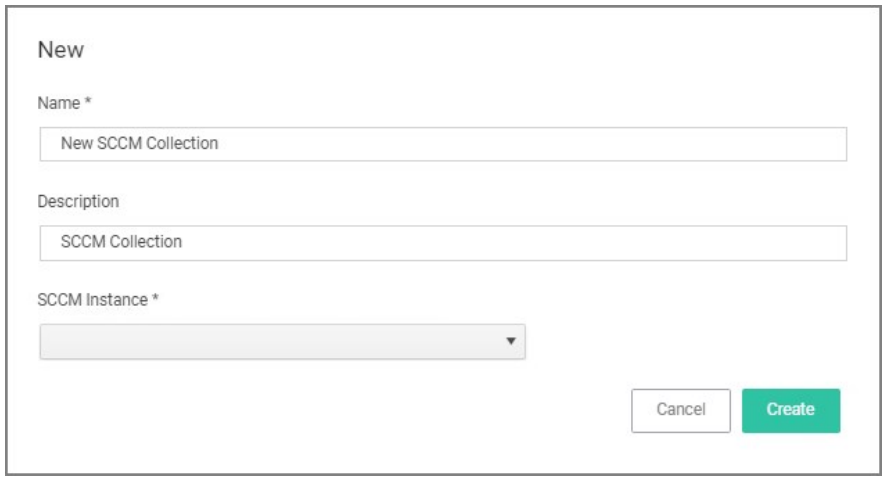
1. Navigate to **Admin I Resources**.

2. Open the **Resources** tab.
3. In the folder tree open **Organizational Views | Default | All Resources | Asset | Network Resource | Computer**.
4. Select a computer from that list.
5. Select the Known Data tab in the computer resource explorer view.
6. In the tree under **Foreign Systems**, you should have the Foreign System Id and SCCM Platform Id data.

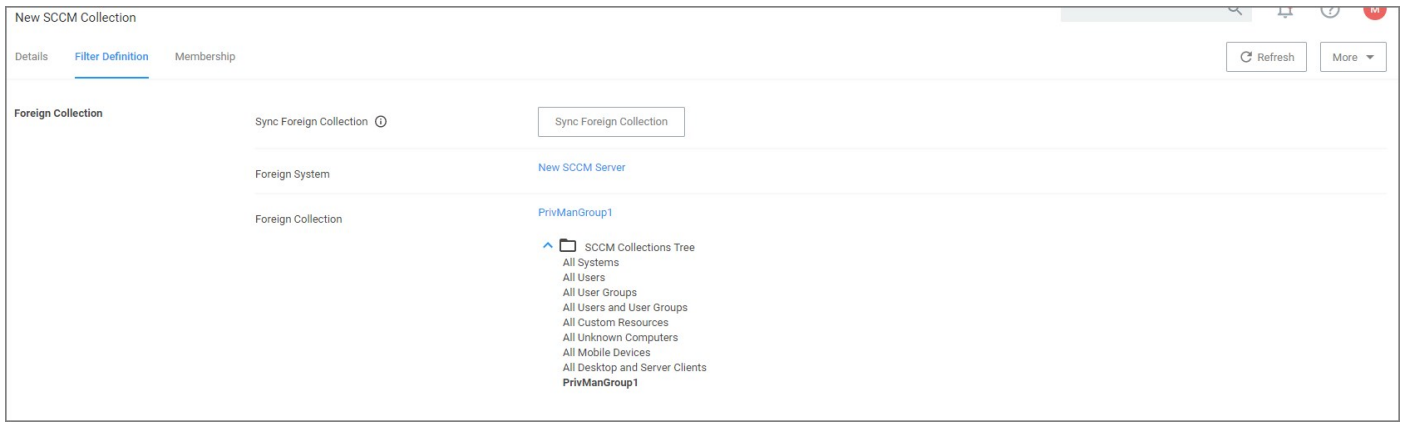
Create a Collection

After computers have been imported, you can create a collection to mirror an SCCM collection.

1. Navigate to **Admin | Resources**, open the **Resource Filters** tab.
2. In the folder tree under **Resource Filters** open **Collections | System Center Configuration Manager**.
3. Click **Create**
4. Enter a Name and Description, and specify the SCCM instance to connect to.



5. Click **Create**.
6. Select the Filter Definition tab and under **Foreign Collection** select the Collection target.



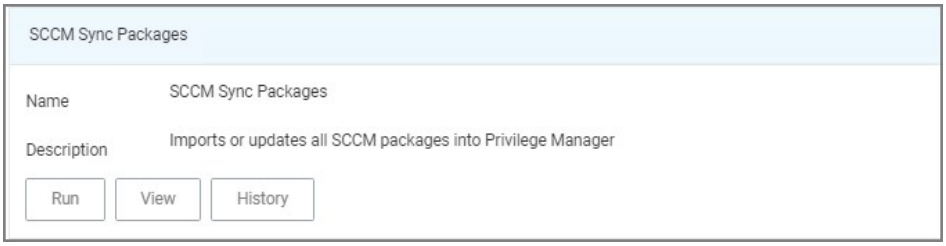
7. Click **Save Changes**.
8. Click the **Sync Foreign Collection** to update the membership immediately. The foreign collection update can also be scheduled by following the link in the help tip.

9. Select the Membership tab and then click the **Update Membership** tab to see the current membership of this collection.

Inventory Software Packages

Once the Foreign System has been created, an on-demand packages synchronization can be run and/or a regular synchronization schedule can be set-up via the following steps:

1. Navigate to **Admin | More** and select **Tasks**.
2. On the Tasks tab open the folder tree and select **Server Tasks | Foreign Systems | SCCM**.
3. Click **SCCM Sync Packages**.



4. Click **Run**.
5. Select your SCCM system via the **Select...** option.
    1. Under Scope by Organizational Group type the name of your sccm system in the search text or use the search option.

6. Click **Run Task**.

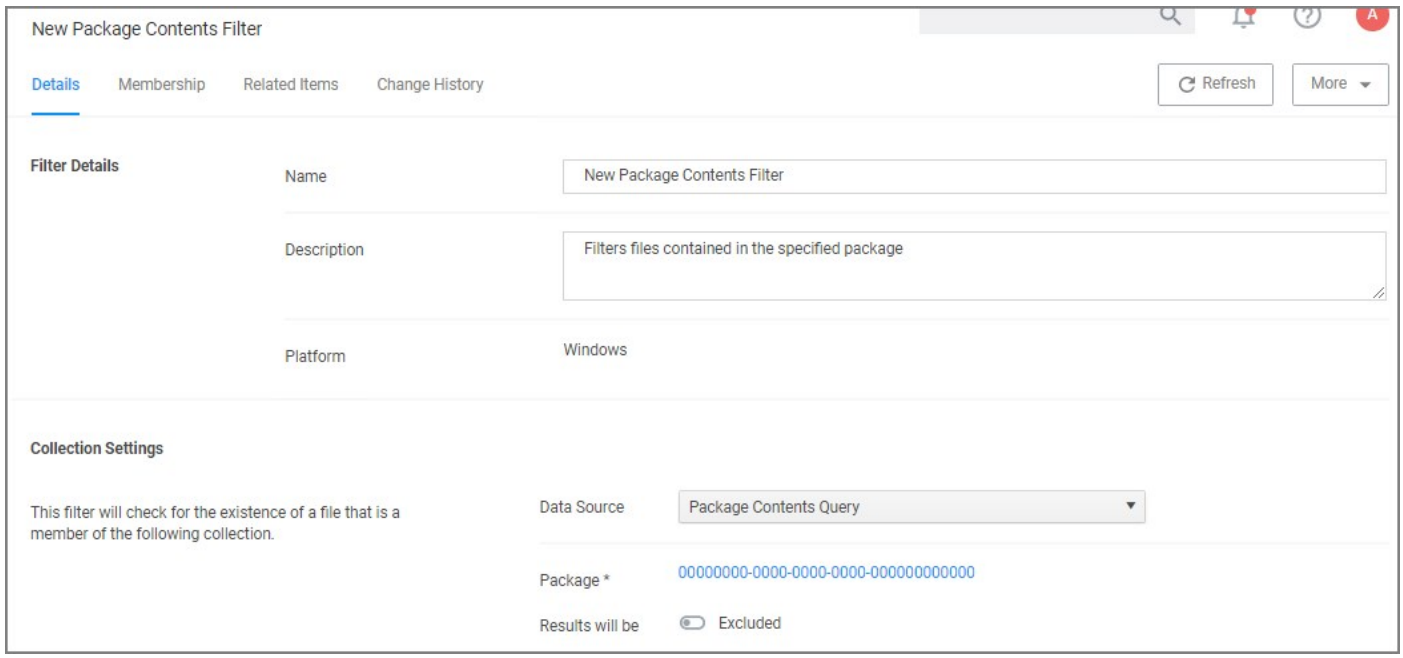
Alternatively the **SCCM Sync Packages** task can be scheduled to regularly repeat. When viewing the task, navigate to the Schedules tab and create a new schedule.

Create a SCCM Package Content Filter

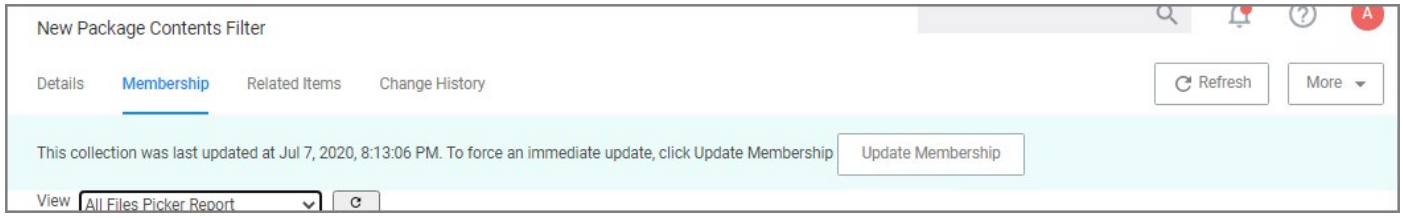
After the Package Synchronization completes the SCCM Packages can be used in application control policies via package content filters.

1. Navigate to **Admin | Filters**.
2. Click **Create Filter**.
3. From the Platform drop-down select Windows.
4. From the Filter Type drop-down scroll to Inventory Filters and select the **Package Contents Filter**.
5. Set the Name and Description of the filter.

6. Click **Create**.
7. Under **Collection Settings**
    1. from the **Data Source** drop-down select a resource.
    2. Click the package link to specify the SCCM that will be targeted.
    3. Set the switch **Results will be** to **Included**.



8. Navigate to the **Membership** tab.
9. If no items are listed in the membership table, click **Update Membership**.



   Running the sync package task, causes the server to inventory the package referenced in the filter. If you have multiple filters and packages, Delinea recommends to use the *Inventory Packages Referenced in Allowlists* task instead.

10. Click **Save Changes**.

This filter can then be referenced in Application Control policies.

Delinea

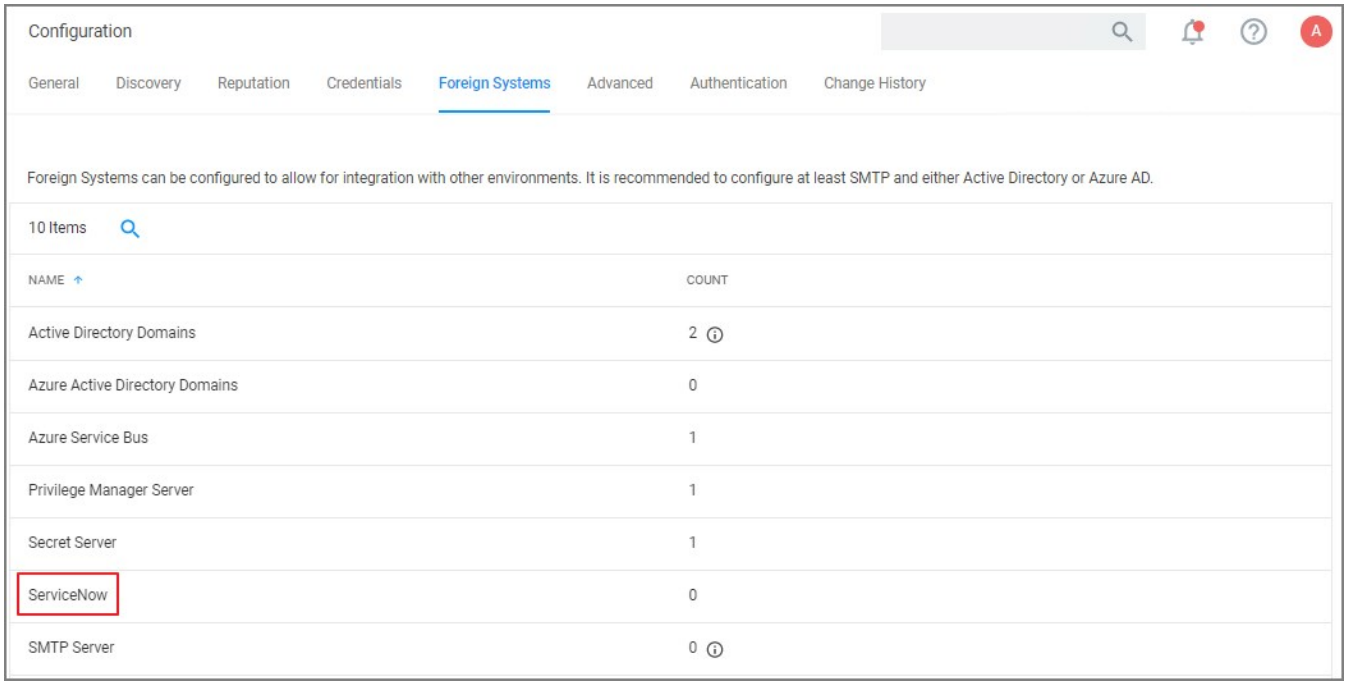
Setting up a ServiceNow Integration

Foreign System Configuration

Here are the steps to integrate Workflow between your ServiceNow Ticketing System and Privilege Manager .

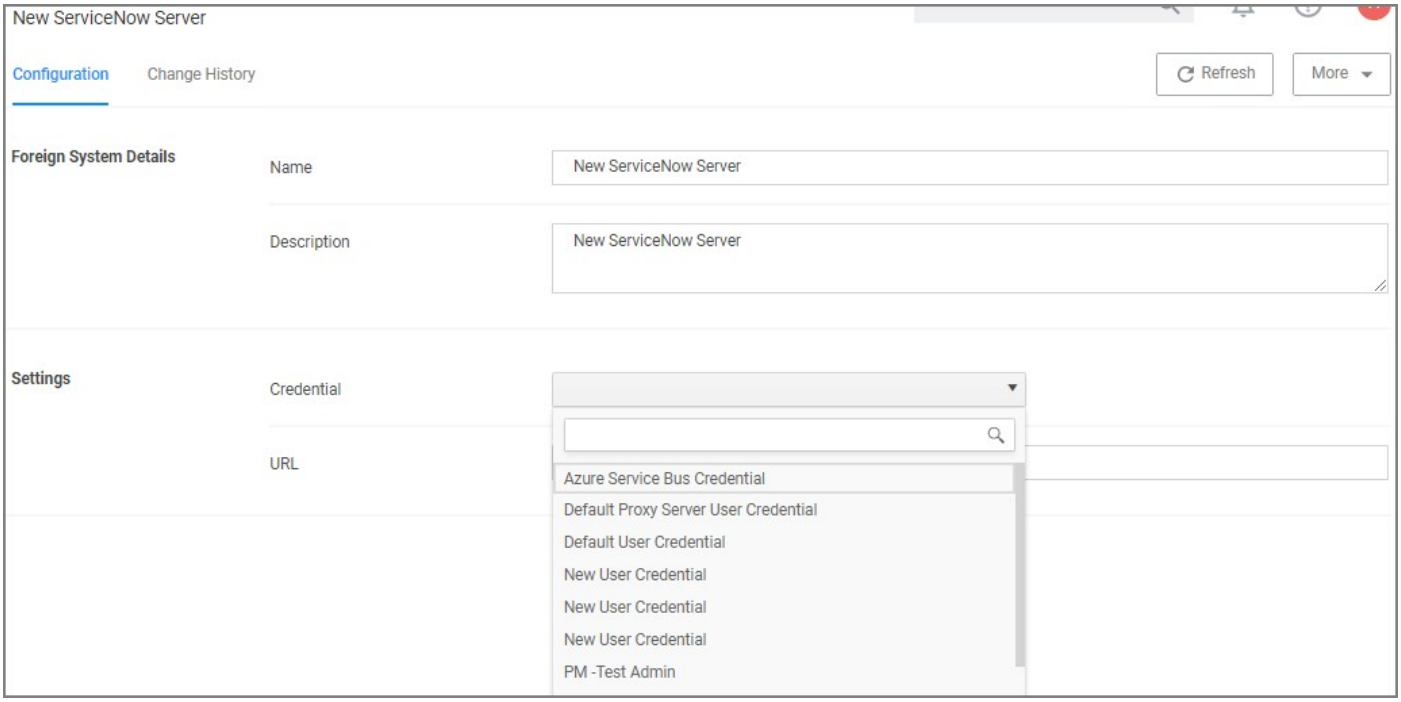
1. Verify which ServiceNow User account you will use for your integration with Privilege Manager . If you decide to create a new user account to manage your approval requests, make sure that it includes the required roles for your environment:
    - Web Service Admin (web_service_admin) and
    - Approval Admin (approval_admin).
    - For ServiceNow MID Server environments, the mid_server role permission also needs to be added to the account.
    - The task **Create ServiceNow Request Items** requires temporary **admin** credentials for the ServiceNow instance. Once those items are created, the user does not need admin access anymore.

    Refer to ServiceNow product documentation, specifically Base System Roles.
2. Verify that the ServiceNow connector is installed for your Privilege Manager Cloud instance:
    1. In the Privilege Manager console navigate to **Admin I Configuration** and select the **Foreign Systems** tab.
    2. If the connector is installed, **ServiceNow** is listed under Foreign System.



3. Select the **Credentials** tab.
4. Click **Create**.
5. Under Details, enter a Name and Description for your ServiceNow credentials.
6. Under Settings, enter the information from your ServiceNow User account that was referenced in step 1 above, click **Save Changes**.
7. Select the **Foreign Systems** tab.
8. Select the **ServiceNow** link from the list of foreign systems displayed.

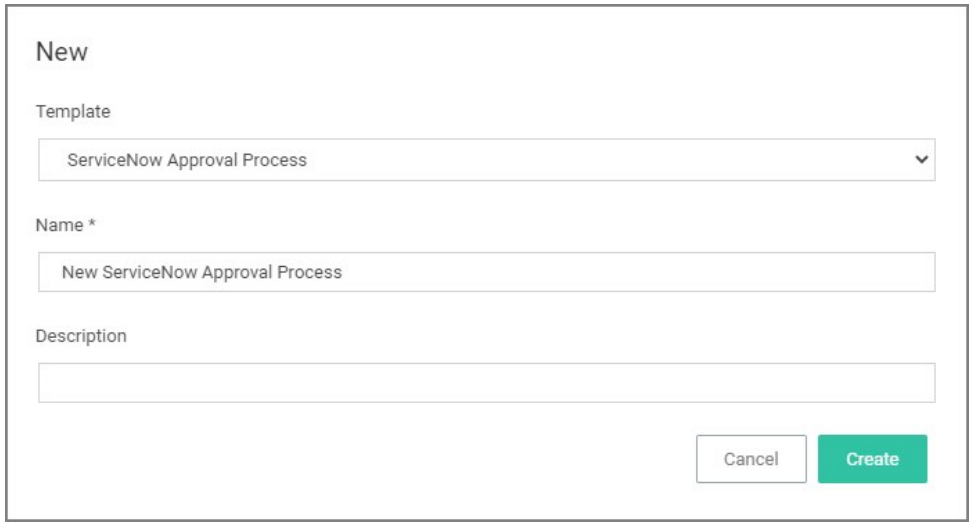
9. Click **Create**.
10. Enter a Name for your ServiceNow Server.
11. Enter the Base URL from your ServiceNow instance https://[InstanceName].service-now.com/.
12. Click **Create**.
13. Assign the credentials you created previously to link to your instance.



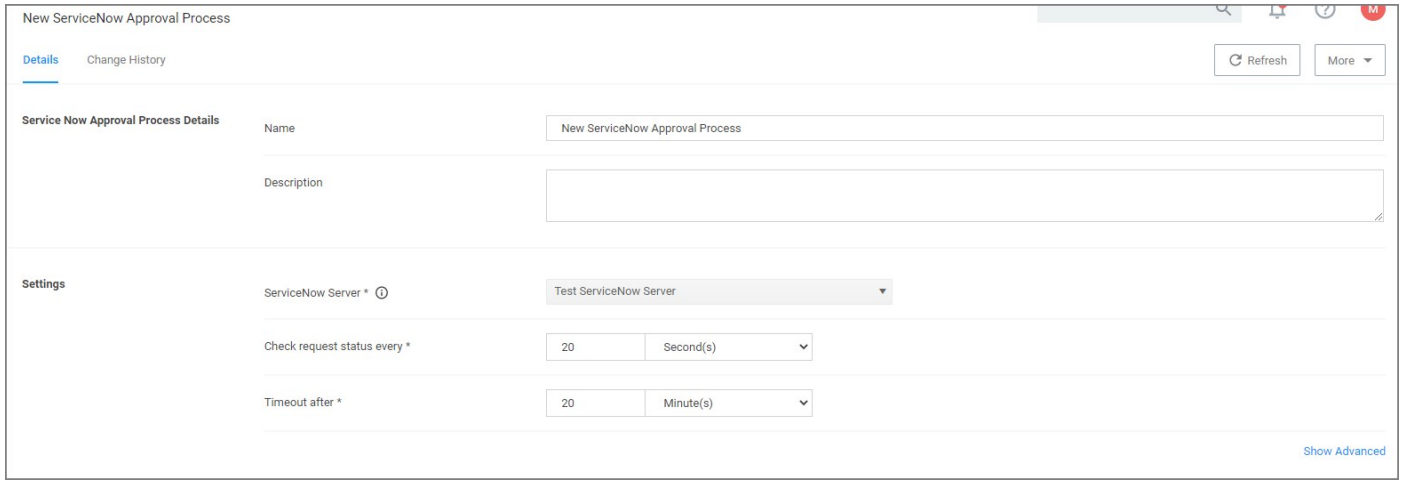
Define Policy and Actions

You need to create an action and attach it to a policy to manage what events you want sent to ServiceNow for approvals.

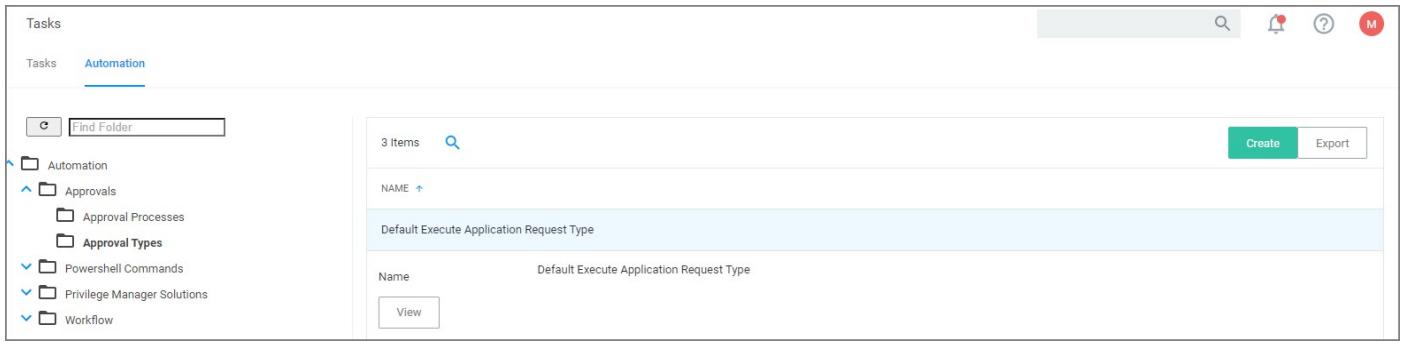
1. In the Privilege Manager console, navigate to **Admin | Tasks**.
2. Click the **Automation** tab.
3. In the tree, navigate to **Automation | Approvals | Approval Processes**, click **Create**.



4. Enter a name and description, click **Create**.

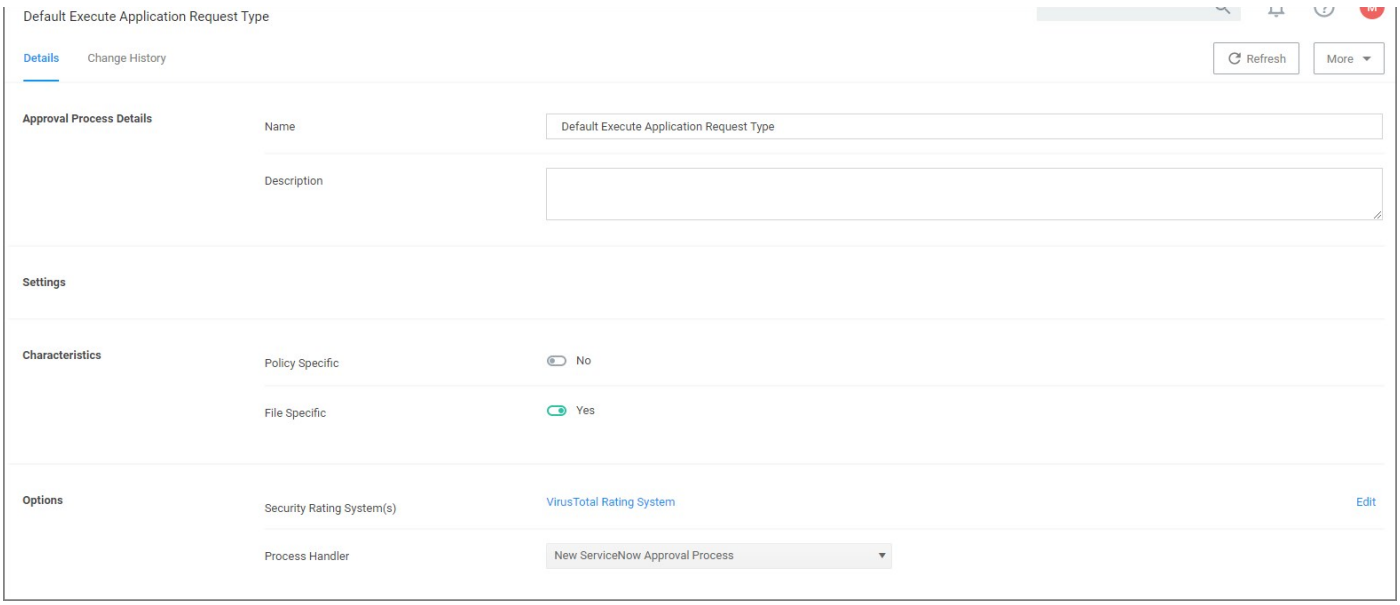


5. Under **Settings** specify your ServiceNow Server, click **Save Changes**.
6. Back in the Automation tree, select **Approval Types**, click **Default Execute Application Request Type**.



Duplicate and customize the Automation Task.

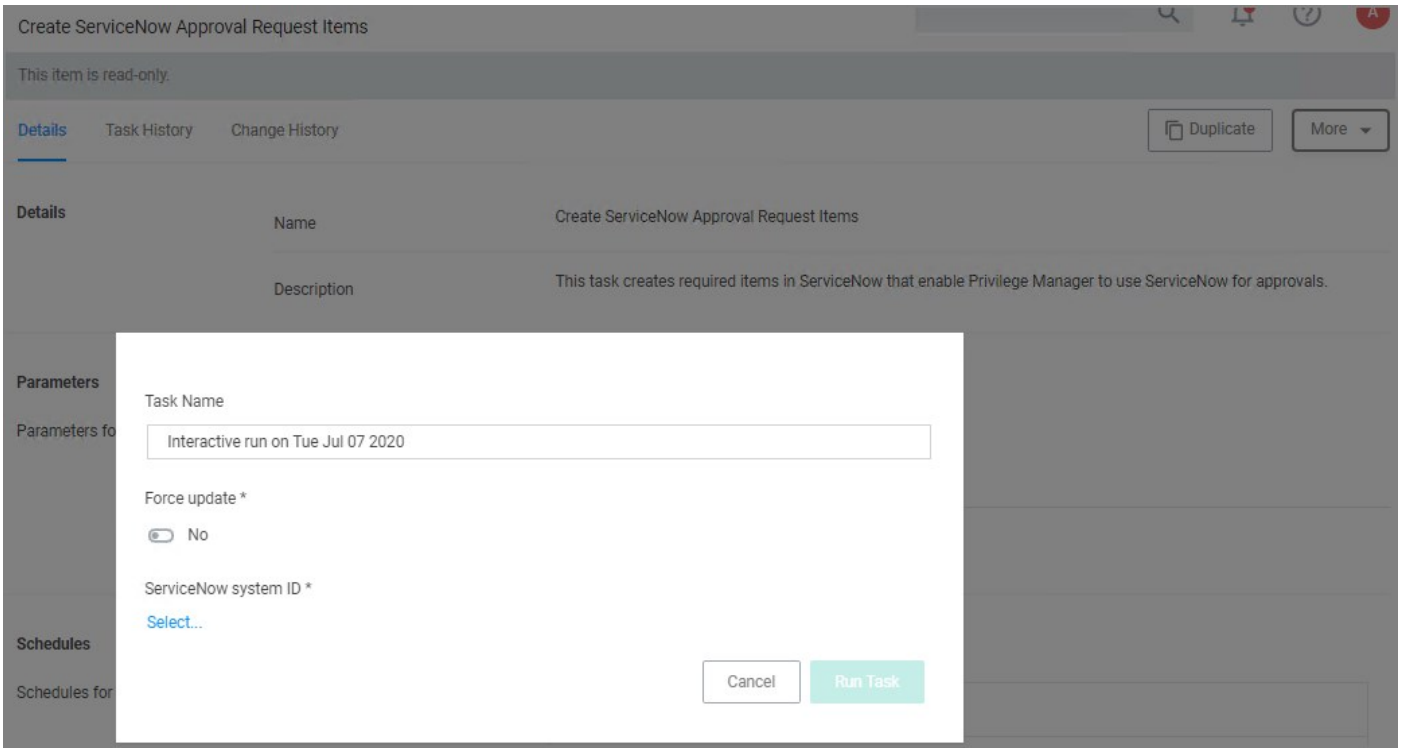
7. Select your **ServiceNow Approval Process**.



8. Click **Save Changes**.

Run the Create ServiceNow Approval Request Items Tasks

1. Next, in **Search** at the top of your Privilege Manager console, search for *Create ServiceNow Approval Request Items*.
2. In your search results, **click on this task** and then select from the **More** drop-down **Run Task**.



3. Under ServiceNow System ID, click **Select...** and select the resource and add the ServiceNow Server that you created as a Foreign System

earlier.

1. From the Scope by Organizational Group drop-down, select your resource.
2. Enter a Search text.
3. Click **Search**.
4. Select from the list of returned results.
5. Click **Select**.

4. Click **Run Task**.

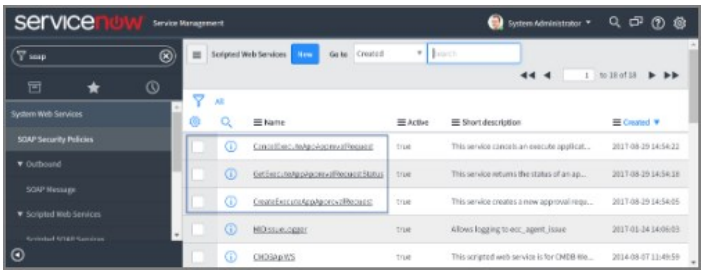
   Note: Clients with robust ServiceNow installations are welcome (and in fact encouraged) to alter their ServiceNow scripted web services for use with their own ServiceNow items and workflow rather than relying on this importing task.

   The task you just ran creates several new items in your ServiceNow dashboard.

ServiceNow Steps

Open ServiceNow and navigate to **Scripted Web Services | Scripted SOAP Services** to verify that these three new options are listed:

- CancelExecuteAppApprovalRequest,
- CreateExecuteAppApprovalRequest,
- GetExecuteAppApprovalRequestStatus

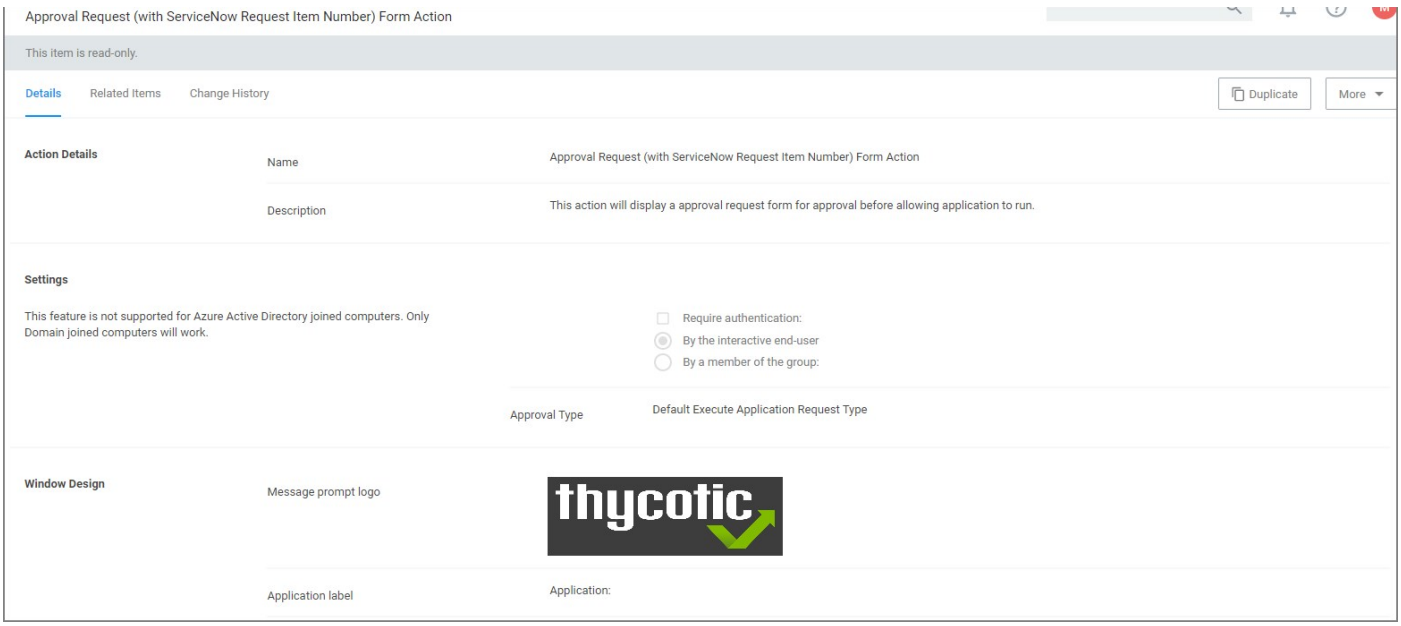


Now you've successfully defined a SOAP endpoint that Privilege Manager knows how to call to initiate a ServiceNow request for approval.

Defining Actions in the Privilege Manager Console

Using an Approval Request (with ServiceNow Request ItemNumber) Form Action

1. Navigate to **Admin | Actions**.
2. Search and select **Approval Request (with ServiceNow Request ItemNumber) Form Action**.



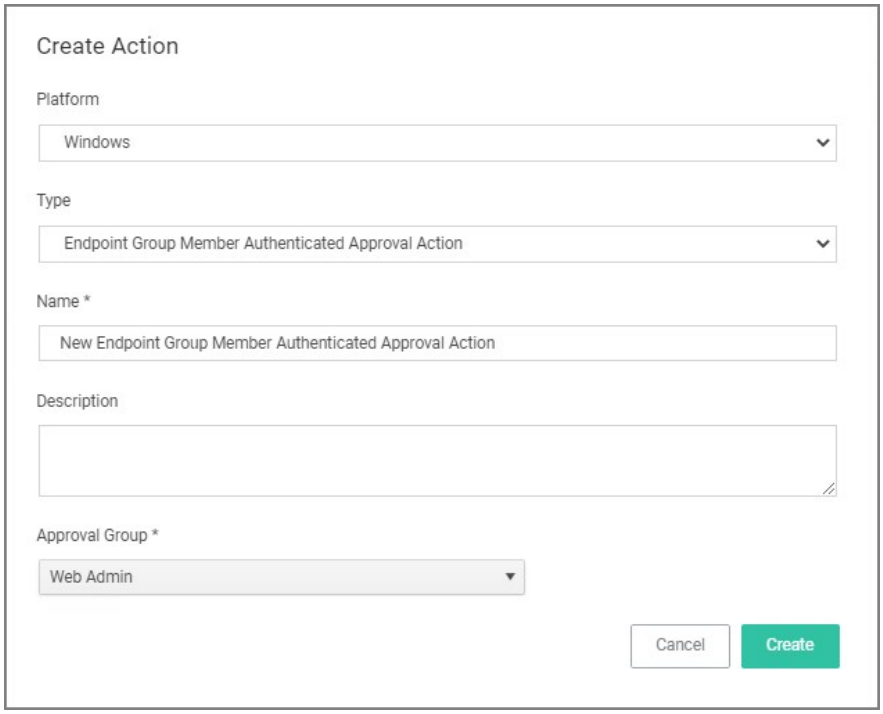
3. Click **Duplicate**.
4. Name your new action and click **Create**.
5. Customize the Action based on your specific business requirements.
6. Click **Save Changes**.
7. Navigate to your computer group's **Application Policies**, click **Create Policy** or find an existing policy that you want to use for ServiceNow Approvals.
8. Under the **Actions** section, search for and add the action you previously created, *ServiceNow Approval Request Form Action*.
9. Click **Save Changes**.
10. Click the **i** next to **Deployment** and select **Resource and Collection Targeting Update** to immediately send the policy to your endpoint agents.

Policies also automatically update according to a schedule.

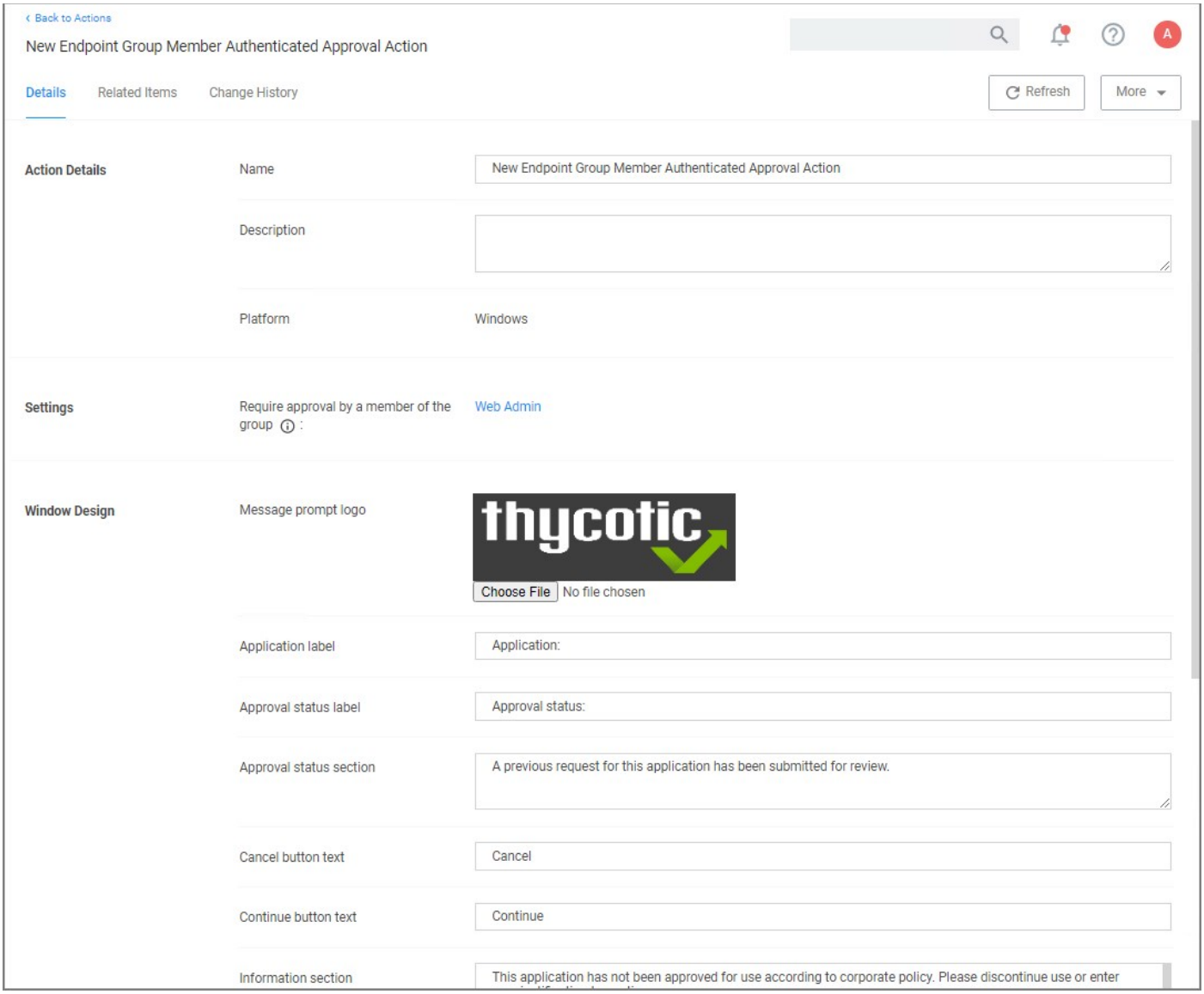
Using an Endpoint Group Member Authenticated Message Action

This action can be used for *over the shoulder* approvals whether systems are on- or offline. The supervisor approves access by authentication on the user's endpoint system.

1. Navigate to **Admin | Actions**.
2. Click **Create**.
    1. On the **Create Action** modal from the **Platform** drop-down select **Windows**.
    2. From **Type** drop-down select **Endpoint Group Member Authenticated Approval Action**.
    3. Enter a meaningful **Name** and **Description**.
    4. From the **Approval Group** drop-down, select the group membership of the approver.



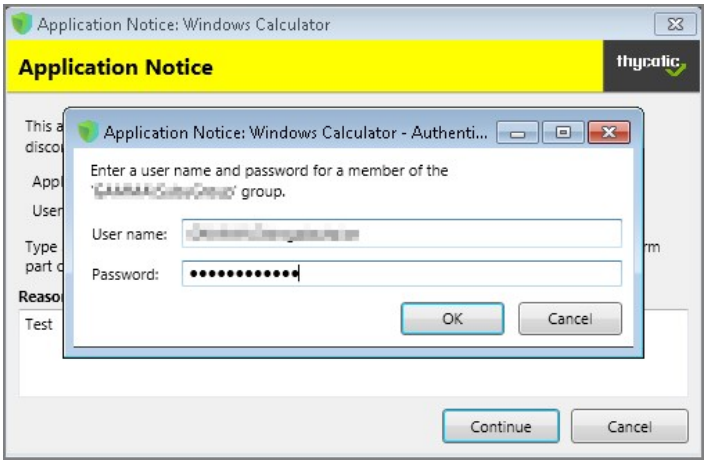
5. Click **Create**.



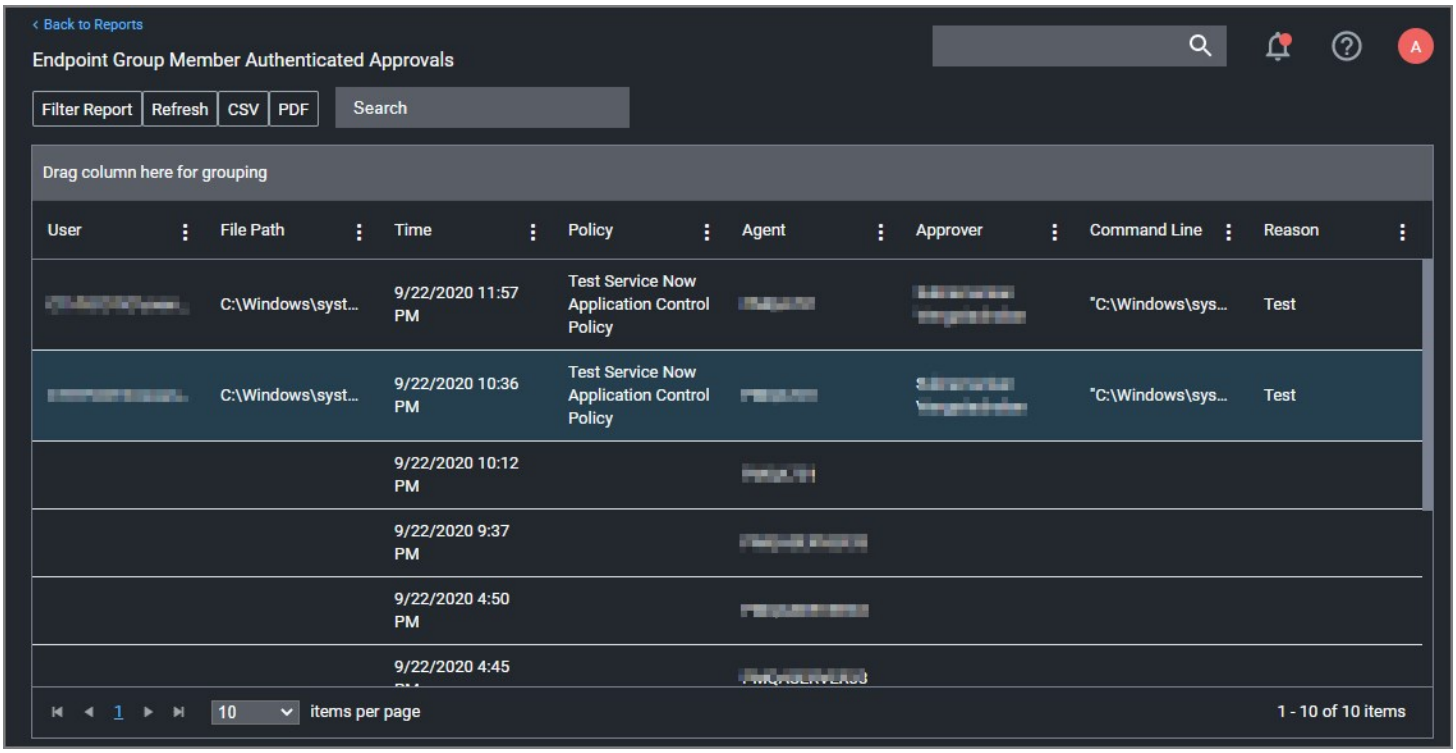
3. Under Settings verify the **Require approval by a member of the group:** contains the correct group. If you ever need to change it, come back to this page and click the group name to access the change modal.
4. Navigate to your computer group's **Application Policies**, click **Create Policy** or find an existing policy that you want to use for ServiceNow Approvals.
5. Under the **Actions** section, search for and add the action you previously created.
6. Click **Save Changes**.
7. Click the **i** next to **Deployment** and select **Resource and Collection Targeting Update** to immediately send the policy to your endpoint agents.

Policies also automatically update according to a schedule.

Sample Group Member approval notice with approval overlay:



Refer to the **Endpoint Group Member Authenticated Approvals** report In Privilege Manager or your ServiceNow instance to view a history of "over the shoulder" approvals:



Integration Workflow

Now that you have a policy attached to your ServiceNow integrated Action, the requests from your policy will be sent through ServiceNow for approval.

1. On your endpoint, perform the action that your policy targets for ServiceNow Approval. You will be prompted with a justification window to explain your request. To approve these requests, open your ServiceNow Dashboard.
2. Go to **My Requests** in ServiceNow and you will see your new requests.
3. Click Requested for details.
4. In the Request page you will be able to view details of what action is being requested, and you can Accept the action.
5. On your endpoint, the pending justification window will update to an Approved status, and the user will be able to access their requested

application.

Create Approval Request Items Task

Privilege Manager integrates with ServiceNow to manage approvals for user-requested application execution and elevation. For this integration to work there are several items that must be created in your ServiceNow instance. You can create these items manually or run the Create ServiceNow Approval Request Items task in Privilege Manager to create them automatically.

Most of the items created automatically by the Create ServiceNow Approval Request Items task are generic, and you are encouraged to replace these items with their own, and use your own workflows, forms, etc. This document describes what default items this task creates, and what is required for the integration to work so that you can adjust according to your own ServiceNow system.

How to create ServiceNow Approval Request Items Task

When you run the Create ServiceNow Approval Request Items task, Privilege Manager creates the necessary items in ServiceNow so that it can use ServiceNow to manage requests to approve execution or elevation of applications. This section describes each item and their functions:

Thycotic:

The task creates a service catalog category named "Delinea" within your ServiceNow UI.

Execute Application Request:

The task creates a service catalog item named "Execute Application Request" and associates it with the Delinea service catalog category.

Variables

PMApprovalId	The Privilege Manager internal identifier for the approval request
PMInitiatorId	The Privilege Manager internal identifier for the user that initiated the request
PMInitiatorName	The name of the user that initiated the request
PMPolicyId	The Privilege Manager internal identifier for the policy associated with the approval request
PMPolicyName	The name of the policy associated with the approval request
PMAgentId	The Privilege Manager internal identifier for the endpoint on which the request was initiated
PMAgentName	The name of the endpoint on which the request was initiated
PMProcessId	The Privilege Manager internal identifier for the process configuration item associated with the approval request
PMProcessName	The name of the process configuration item associated with the approval request
PMFilePath	The path to the application the user is attempting to run
PMUserReason	The reason given by the user requesting the approval

CreateExecuteAppApprovalRequest

The task creates a scripted SOAP service named "CreateExecuteAppApprovalRequest." When a user initiates an approval request, Privilege

Manager will call this service with input data about the request. The default script will create a new Execute Application Request service catalog item, fill out the variable data from the inputs, and submit the item. The service returns the ID of the item to Privilege Manager so that it can periodically check or update the status of the item.

Script Input

The task creates inputs with the same names as the Variables in Execute Application Request listed above

Script Output

The task creates an output named "PMRequestId." Privilege Manager looks for this output by name and records it so can be used in future service calls to check or update the request status.

GetExecuteAppApprovalRequestStatus

The task creates scripted SOAP service named "GetExecuteAppApprovalRequestStatus." When an approval is in progress, Privilege Manager will periodically call this service to determine if the request has been approved or rejected.

Script Input

The task creates an input named "PMGetRequestId." Privilege Manager supplies this input using the value from PMRequestId that was output from the CreateExecuteAppApprovalRequest service.

Script Output

PMApprovalStatus	Privilege Manager expects this service to return PMApprovalStatus with one of the following values:
	approved: The request has been approved
	rejected: The request has been rejected
	pending: The request is still pending approval or rejection
	invalid: PMGetRequestId is not a valid ID, or the approval request is in an otherwise invalid state and will be rejected by Privilege Manager .
PMComment	If there is a comment by the worker that approved or rejected the request, it can optionally be returned in the output named PMComment. If this output is present Privilege Manager will record it with the status of the request in its database

CancelExecuteAppApprovalRequest

The task creates a scripted SOAP service named "CancelExecuteAppApprovalRequest." If a request times out from within Privilege Manager , Privilege Manager will call this service to cancel the corresponding item in ServiceNow.

> **NOTE**: Privilege Manager expects this service to be defined in ServiceNow, but the product does not invoke this except when a request times out from Privilege Manager .

Inputs

PMCancelRequestId	Privilege Manager call this service with PMCancelRequestId set to the value from PMRequestId returned from the CreateExecuteAppApprovalRequest service.
PMCancelComment	Privilege Manager calls this service with PMCancelComment set to a comment about why the request is being canceled.

Outputs

The task creates the output named **TmsCancelResult**. Privilege Manager expects an output with this name, but currently ignores the value.

Required Integration Points

What Can Change vs. What Must Remain

Most of the ServiceNow back end can be changed to accommodate your own items and workflows. Privilege Manager only requires the three scripted SOAP web services described above. You are welcome to change the script within the services to do whatever is necessary for your environment.

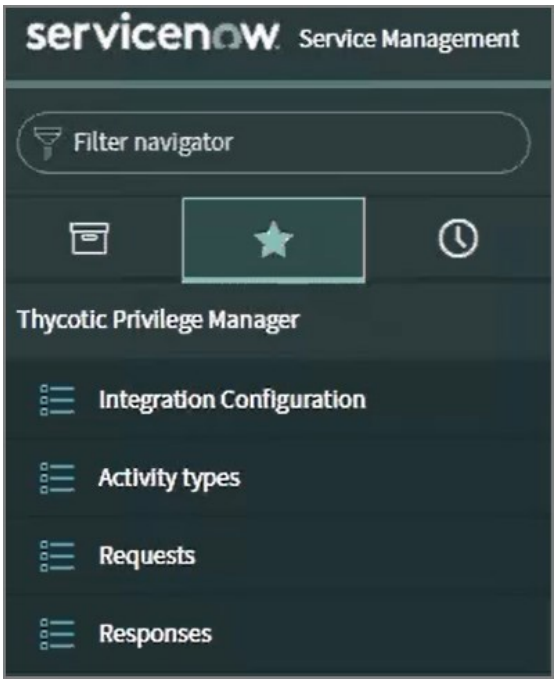
While the inputs that Privilege Manager sends to the services are fixed, once they reach ServiceNow you are free to do (or not do) what you want with the values.

Privilege Manager expects the outputs from the services as described above. PMRequestId is by default the ServiceNow sys_id of the requested service catalog item instance, but can be any string up to 256 characters used to identify the request. It's up to you to ensure that the status and cancel services can interpret that value.

You can change the names of the services if you update the names in the ServiceNow Approval Process configuration in Privilege Manager . You can also create multiple ServiceNow Approval Process items within Privilege Manager , and each can reference their own set of services.

ServiceNow Application

With Privilege Manager v11.1, a Delinea Privilege Manager ServiceNow application is available in the ServiceNow app store allowing approval workflow management.



Prerequisites

In ServiceNow:

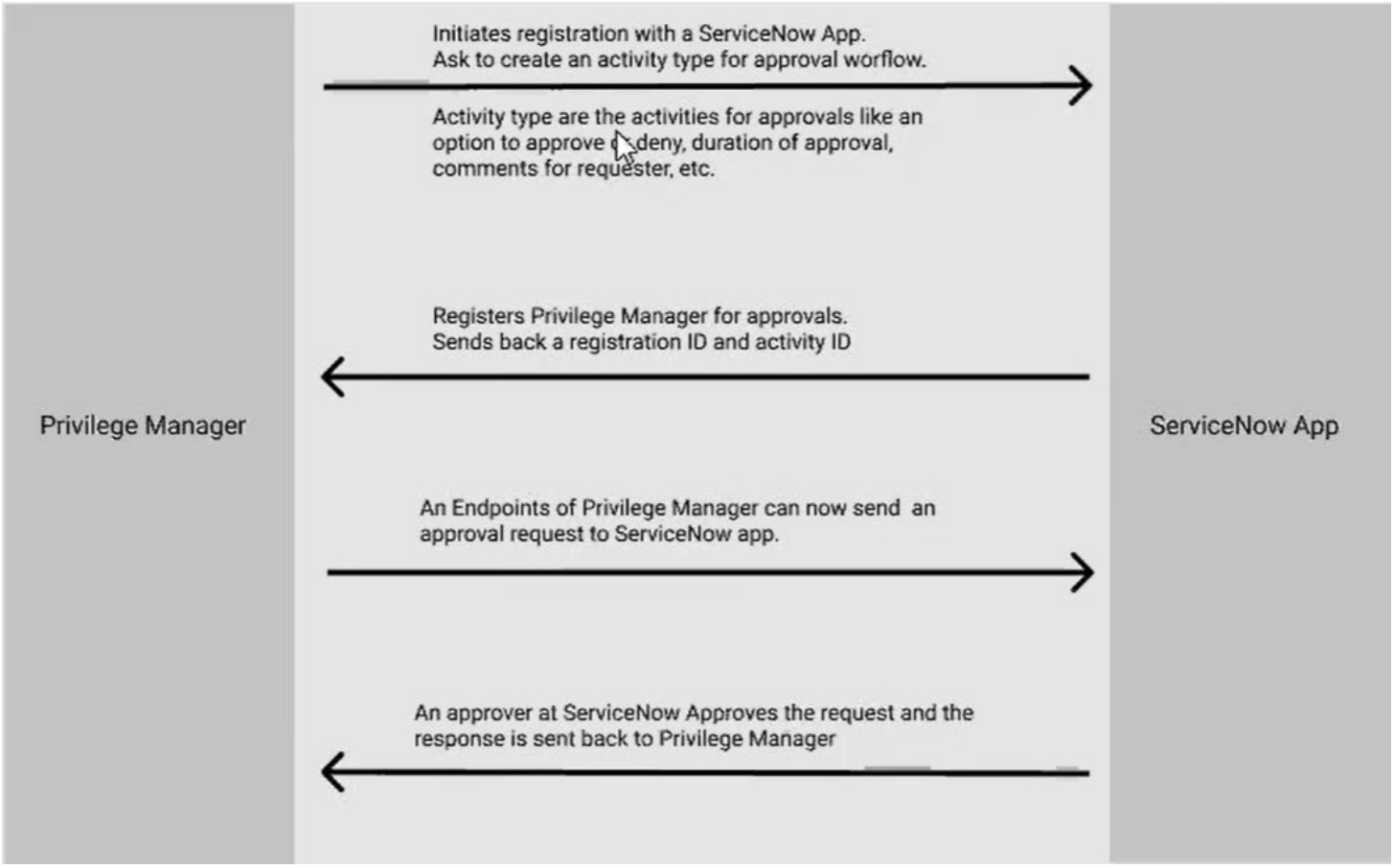
- A ServiceNow instance and general knowledge, familiarity with the ServiceNow product.
- Three role credentials:
  - a ServiceNow Instance administrator user.
  - an application administrator user.
  - an application approver user.

In the Privilege Manager console:

- Under **Admin | Configuration | Advanced**, set the **API Settings | API Enabled** switch to yes.
- An API Client User to use with the ServiceNow webhook configuration.
- A Foreign Systems configuration for the ServiceNow webhook configuration. Refer to ServiceNow Webhook Setup.

Approval Workflow between Privilege Manager and the ServiceNow Application

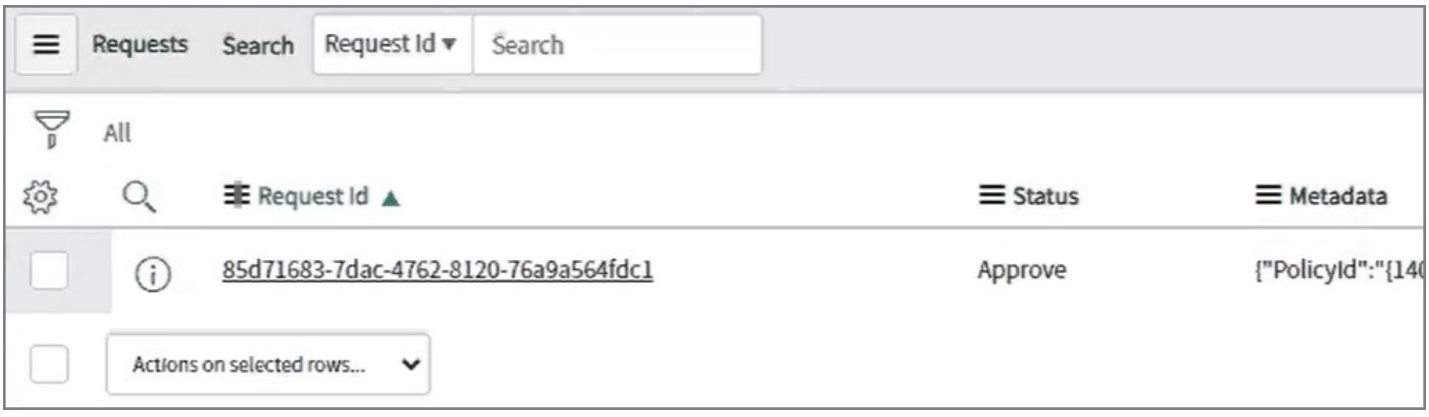
This Foreign Systems setup requires an active Webhook configuration.



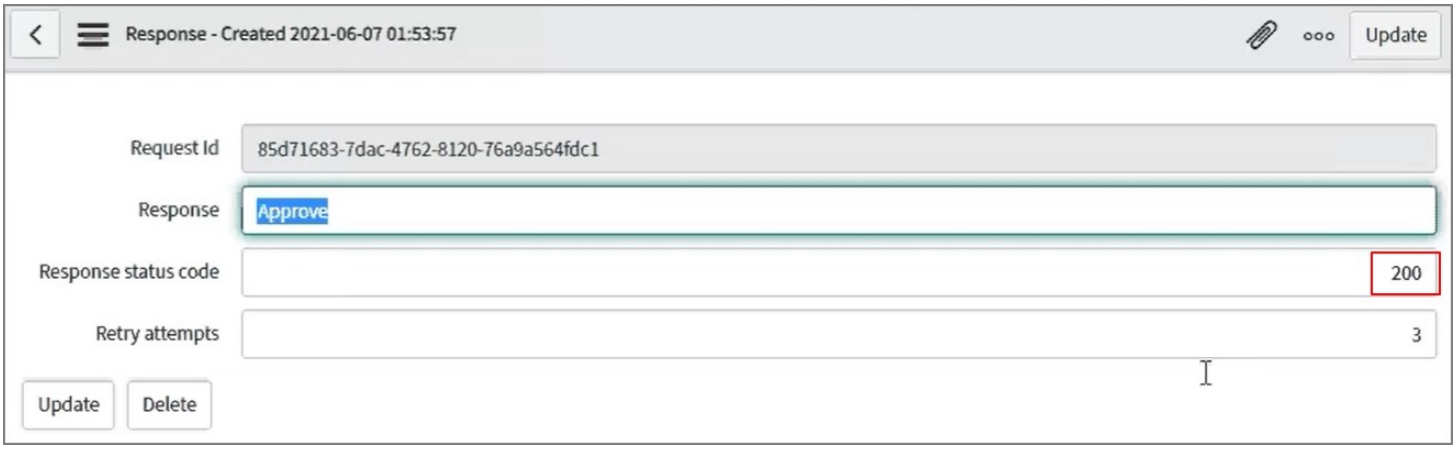
Request/Responses

All requests received are listed under the Request menu.

> **Note**: There is a new **Metadata** field in the ServiceNow approval request data named **InitiatorUserName** that will always be in the format DOMAIN\USERNAME. This is in addition to the **UserName** field that was intended to be a display name and can change depending how the user was created or updated. The behavior of **UserName** will not change, so if you require a consistent value, use **InitiatorUserName** instead.

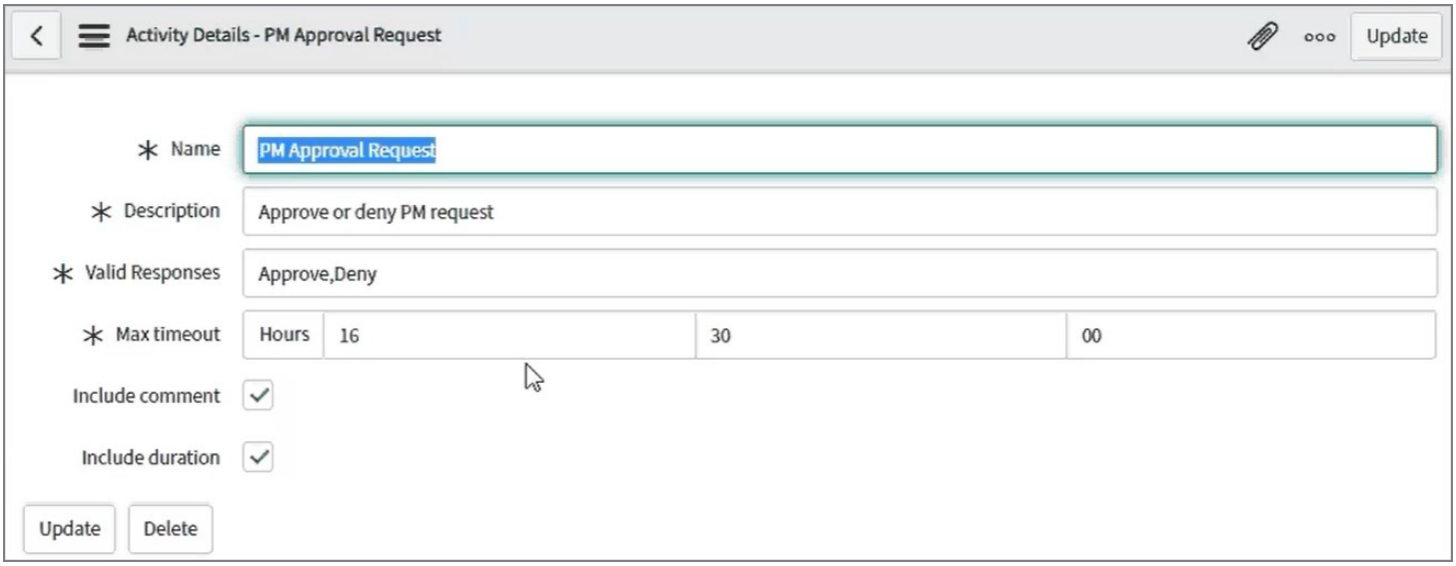


Users verify the status and status code by clicking on individual requests received.



Activity Setup

Activity Details can be configured with various process parameters, like max timeout values:



Setting up a ServiceNow Webhook Connection

Once you have your foreign system established in the Privilege Manager Console, you are ready to also enable Webhook configuration.

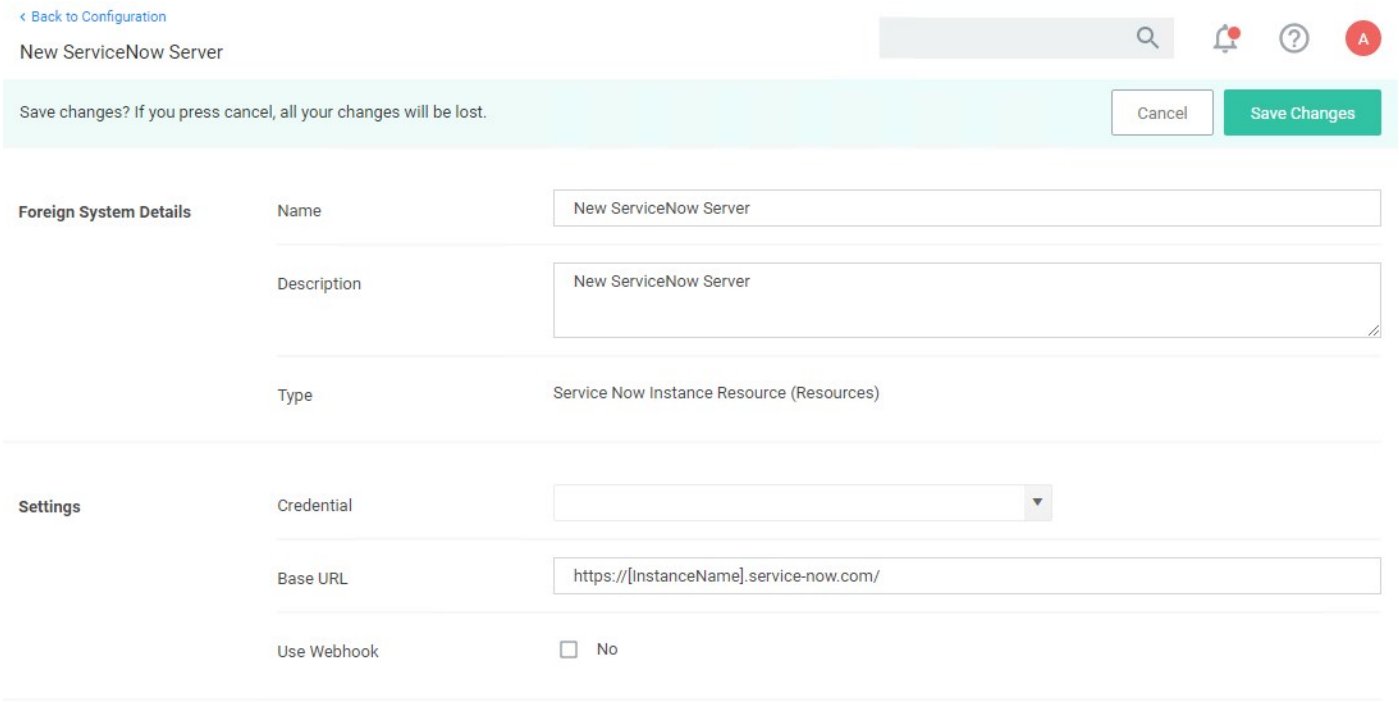
> **Note**: Webhook configuration requires an enabled API setting under **Admin | Configuration | Advanced**. Set the **API Settings | API Enabled** switch to yes.

Configuration an API Credential

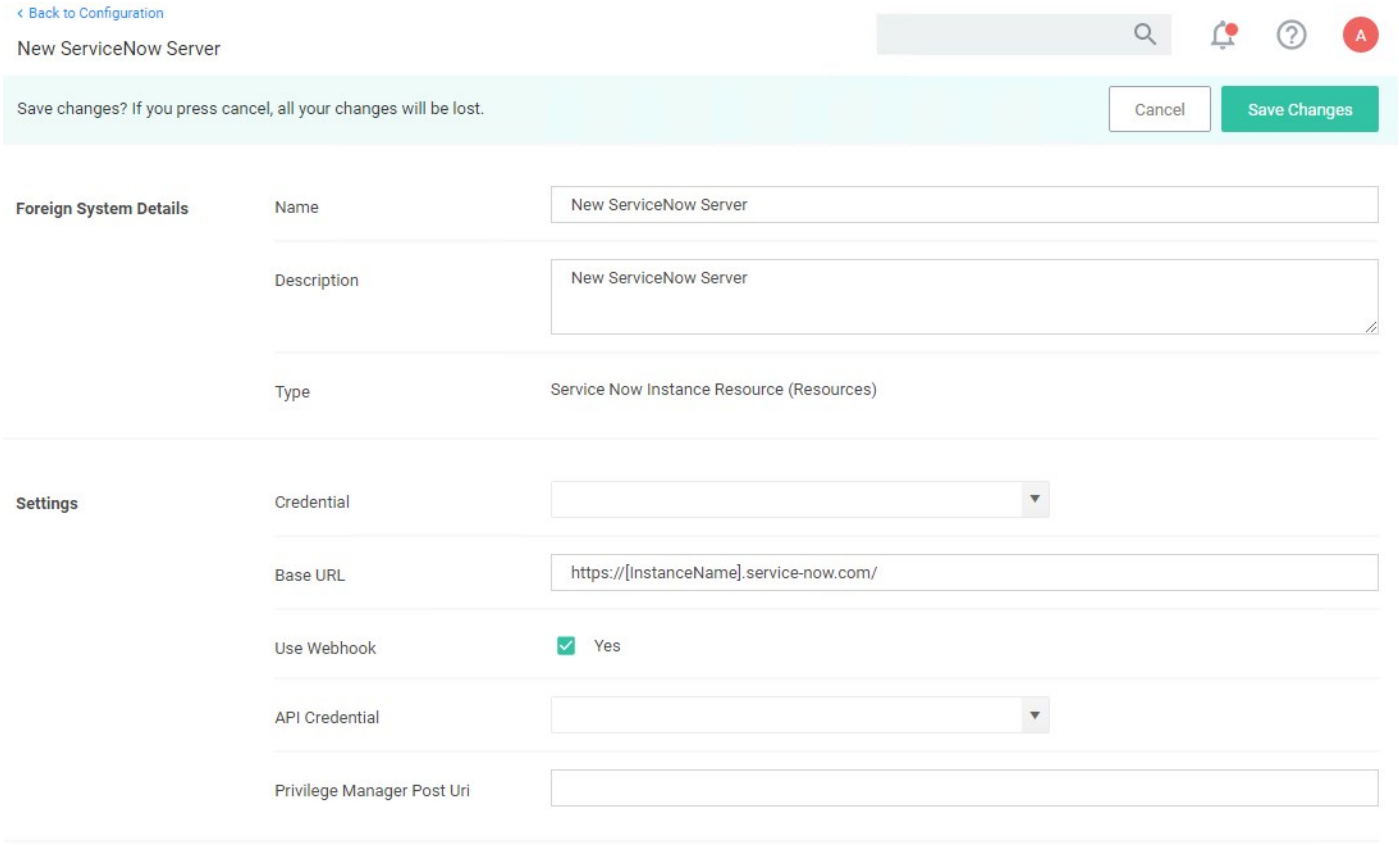
1. Navigate to **Admin | Configuration | Credentials**.
2. Click **Create** and create a webhook **API Credential** as a standard user.
    1. Create an **API Client User**. Refer to How to Manually Add API Client Users and Add Roles to Users. Copy the **Client Id** and **Secret** for the credential.
3. For **Account Name** enter the **Client Id**.
4. For **Password** enter the **Secret**.
5. Click **Save Changes**.

Configuring the Webhook

1. Navigate to your ServiceNow Foreign Systems configuration (**Admin | Configuration | Foreign Systems** and select the the ServiceNow foreign system from the list).



2. Select **Use Webhook**.

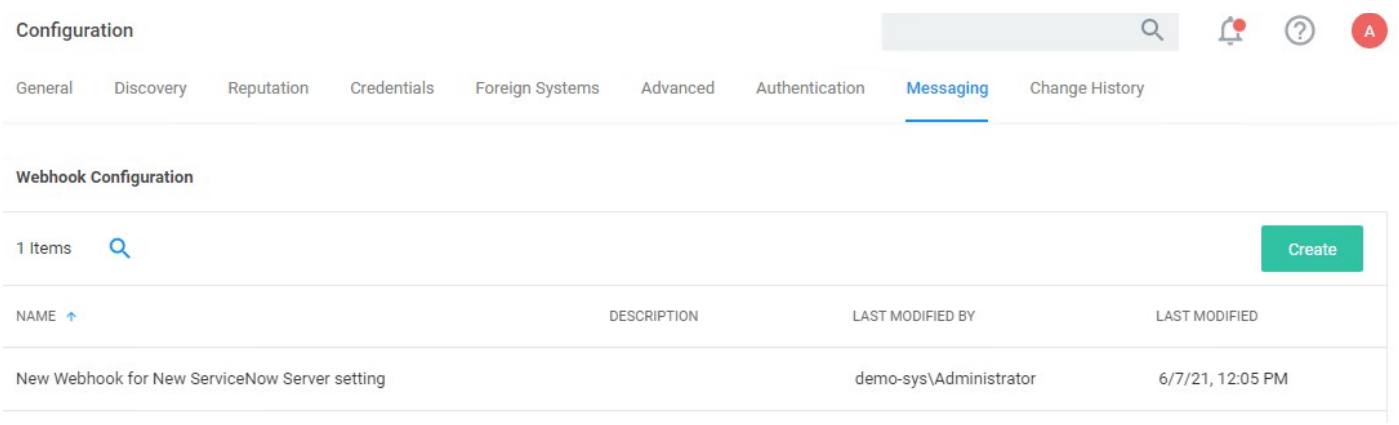


3. From the **Credential** drop-down, select the webhook credential you created above.
4. For **Privilege Manager Post Uri** save the API Endpoint, usually something like
   https://yourprivilegemanagerinstance.com/Tms/services/api/v1/approval/approve
5. Click **Save Changes**.

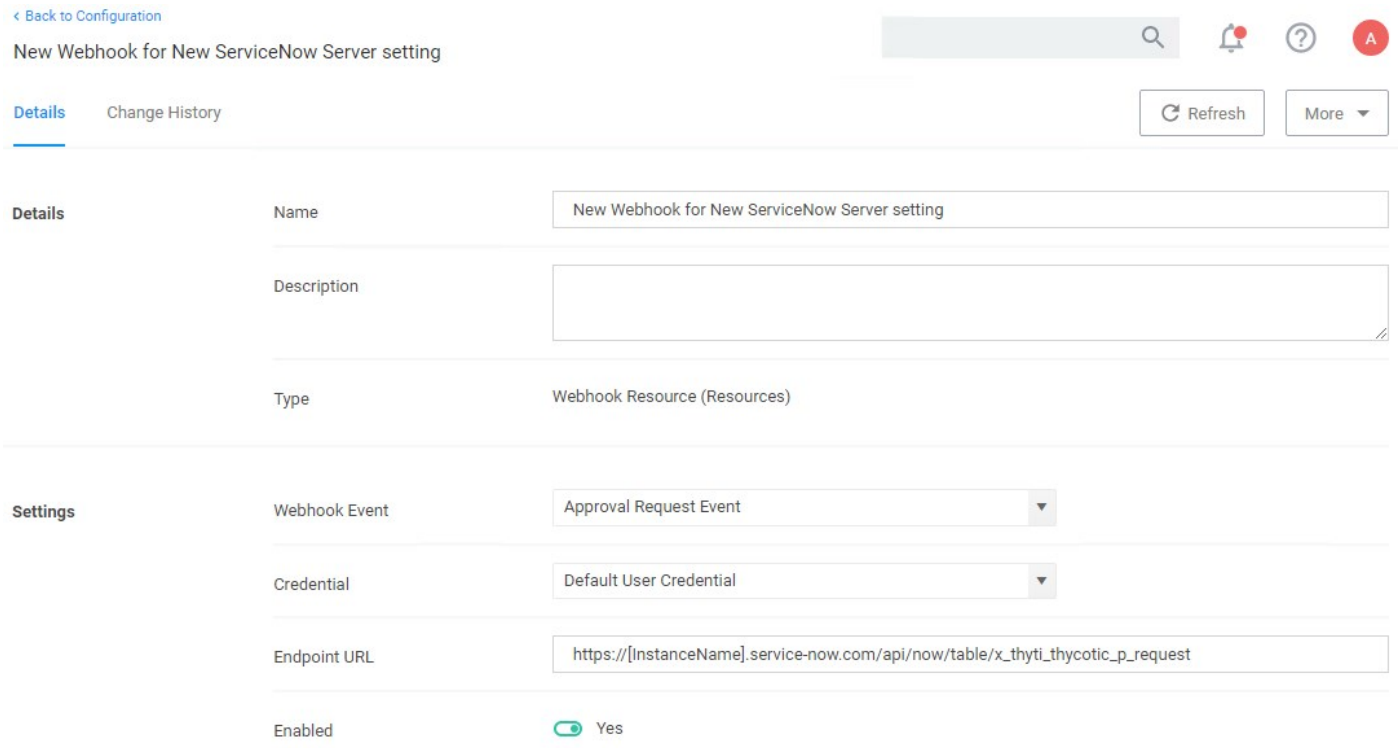
Once the foreign system is saved, a new webhook is created in the background and a server task is triggered to register the webhook with the ServiceNow App.

Verifying the Webhook Creation

1. Navigate to **Admin | Configuration**.
2. Select the **Messaging** tab.
3. Under **Webhook Configuration**, verify your webhook is listed.



4. From the list of configured webhooks, click on the one you just created.

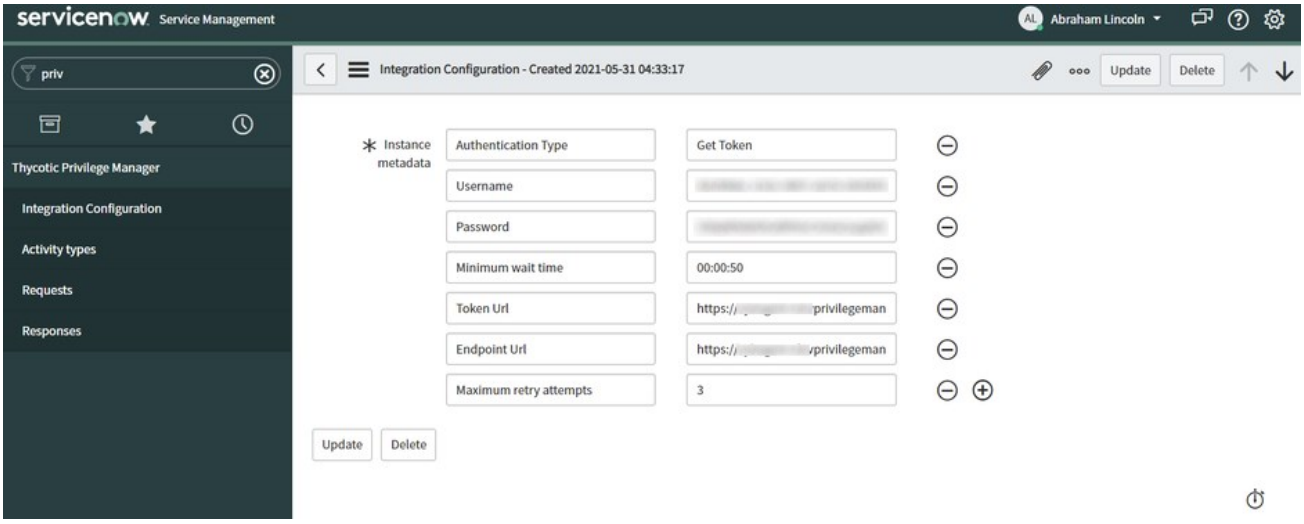


The default webhook event for ServiceNow foreign systems integrations is **Approval Request Event**.

Registration with ServiceNow App

The process takes place automatically when the ServiceNow instance is saved with the **Use Webhook** checkbox ticked. The registration returns an Instance Id (returned as **sys id** on a POST) that must be sent with each request.

The registration request body is visible in the ServiceNow instance on the Integration Configuration tab.



The supported **Activity Type** must be registered before a request of a specific request type can be sent. Activity registration will return ActivityType Id(returned as **sys id** on a POST).

The Activity type supports two valid responses:

- Approve
- Deny

Setting us a Symantec Management Platform (SMP) Integration

Privilege Manger integrates with the Symantec Management Platform (SMP) to allow the

- import of computers for use in computer groups and identifying systems that exist on the network, but don't have an endpoint agent installed yet.
- import of existing Resource Collections from SMP and use them for Privilege Manager policy targets.
- inventory of SMP Software Packages to use the package contents in Privilege Manager Application Control policies.

Create a Credential

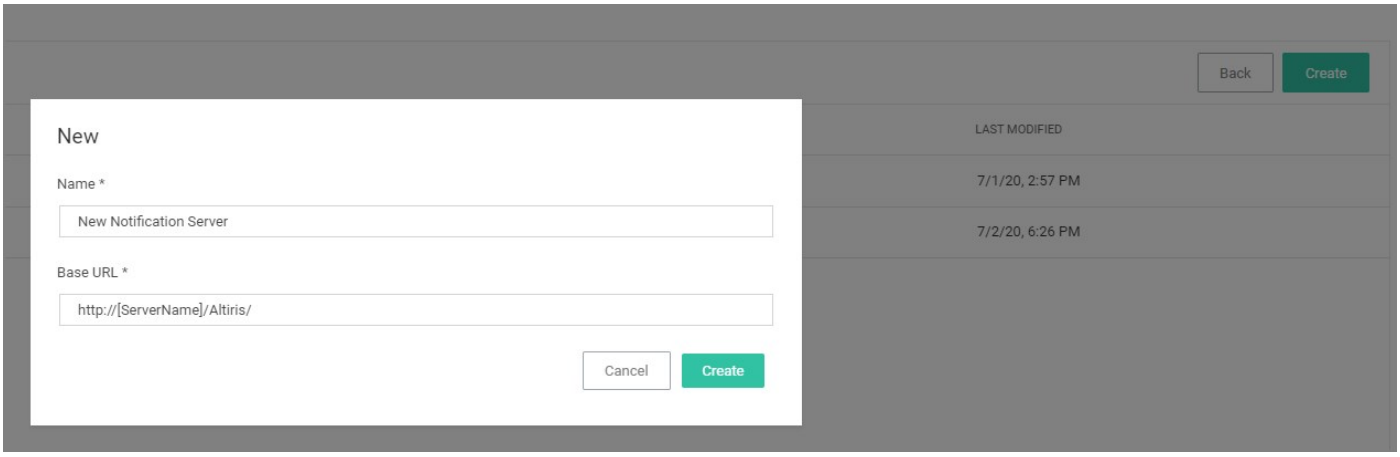
Privilege Manager needs a username and password to access SMP. If you have not already created an appropriate user credential:

1. Navigate to **Admin I Configuration I Credentials**.
2. Click **Create**, to create user credentials to access SMP.
3. After entering the user credentials information for SMP, click **Save Changes**.

Connecting to SMP

Before you can import data from SMP you need to setup a foreign systems connection in Privilege Manager for the SMP integration.

1. Navigate to **Admin I Configuration** and select the **Foreign Systems** tab.
2. Select **Symantec Management Platform**. If this is not listed, make sure the connector is installed by verifying via the Privilege Manager Add/Upgrade Features page.
3. Click **Create**.

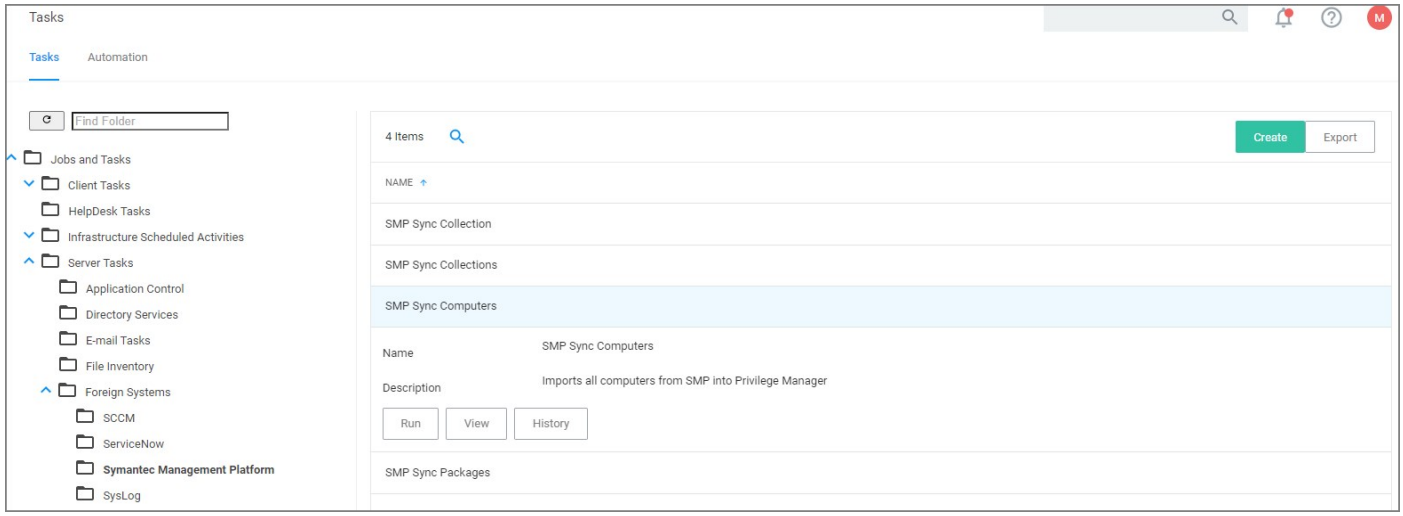


4. **Name** the Symantec Management Platform and provide the **URL of the Altiris console**.
5. Click **Create**.
6. Select the newly created SMP foreign system and click **Edit**.
7. Under Settings select the SMP user credential that you created in the previous procedure.
8. Click Save.

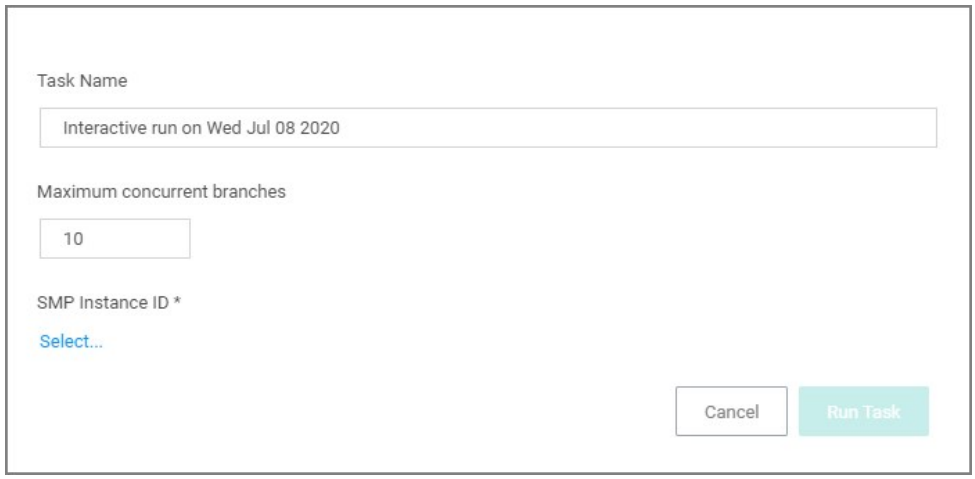
Import Computers

Before you can import collection data from SMP, Privilege Manager needs to know about computers in your SMP.

1. Navigate to **Admin | Tasks**.
2. On the Tasks tab open the folder tree and select **Server Tasks | Foreign Systems | Symantec Management Platform**.
3. Click **SMP Sync Computers**.



4. Click **Run**.
5. Select your SMP system via the **Select...** option.



6. Click **Run Task**.

Verify the Computers have been Imported (optional)

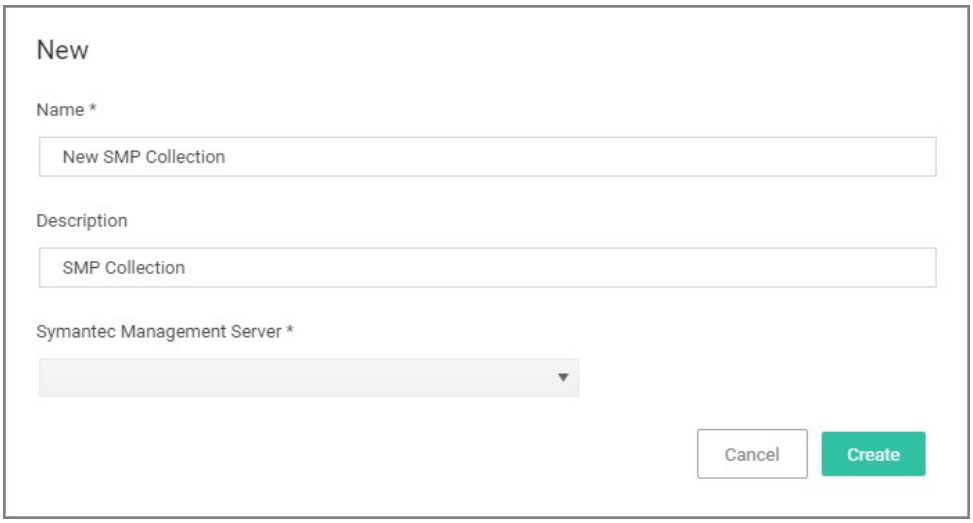
1. Navigate to **Admin | Resources**.
2. Open the **Resources** tab.
3. In the folder tree open **Organizational Views | Default | All Resources | Asset | Network Resource | Computer**.
4. Select a computer from that list.
5. Select the Known Data tab in the computer resource explorer view.

6. In the tree under **Foreign Systems**, you should have the Foreign System Id and SMP Platform Id data.

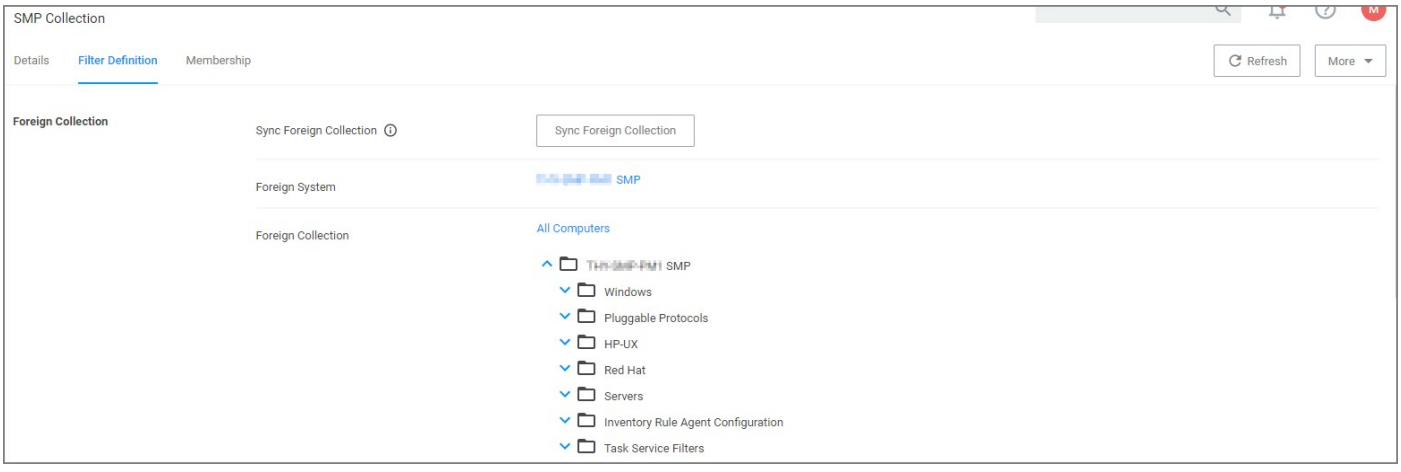
Create a Collection

After computers have been imported, you can create a collection to mirror an SMP collection.

1. Navigate to Resources, open the **Resource Filters** tab.
2. In the folder tree under **Resource Filters** open **Collections | Symantec Management Platform**.
3. Click **Create**
4. Enter a Name and Description, and specify the SMP instance to connect to.



5. Click **Create**.
6. Select the Filter Definition tab and under **Foreign Collection** select the Collection target.



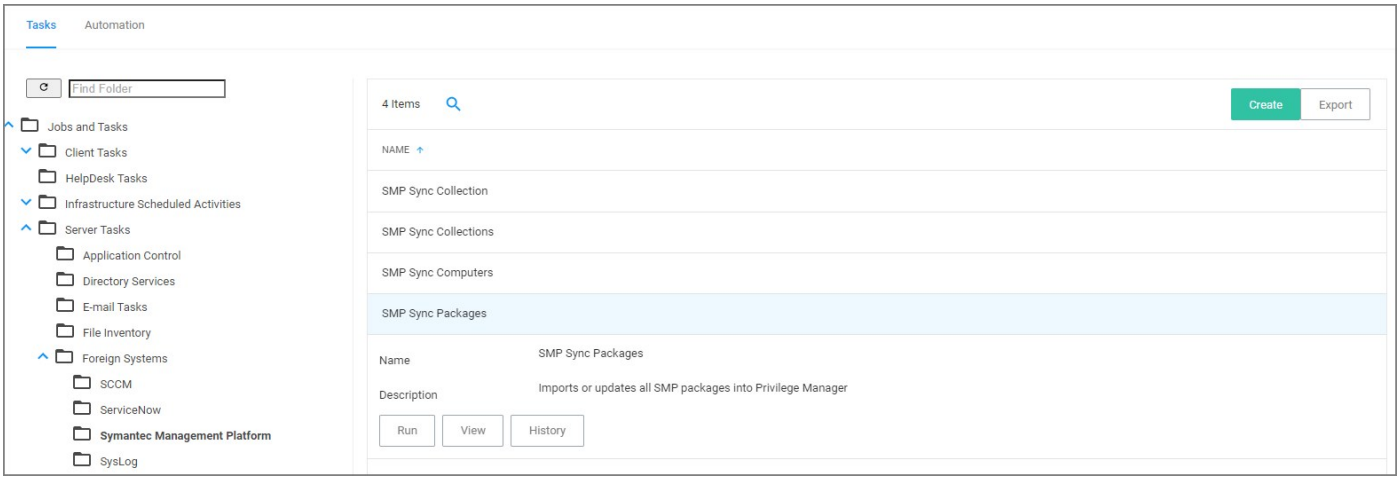
7. Click **Save Changes**.
8. Click the **Sync Foreign Collection** to update the membership immediately. The foreign collection update can also be scheduled by following the link in the help tip.

9. Select the Membership tab and then click the **Update Membership** tab to see the current membership of this collection.

Inventory Software Packages

Once the Foreign System has been created, an on-demand packages synchronization can be run and/or a regular synchronization schedule can be set-up via the following steps:

1. Navigate to **Admin | Tasks**.
2. On the Tasks tab open the folder tree and select **Server Tasks | Foreign Systems | Symantec Management Platform**.
3. Click **SMP Sync Packages**.



4. Click **Run**.
5. Select your SMP system via the **Select...** option.

6. Click **Run Task**.

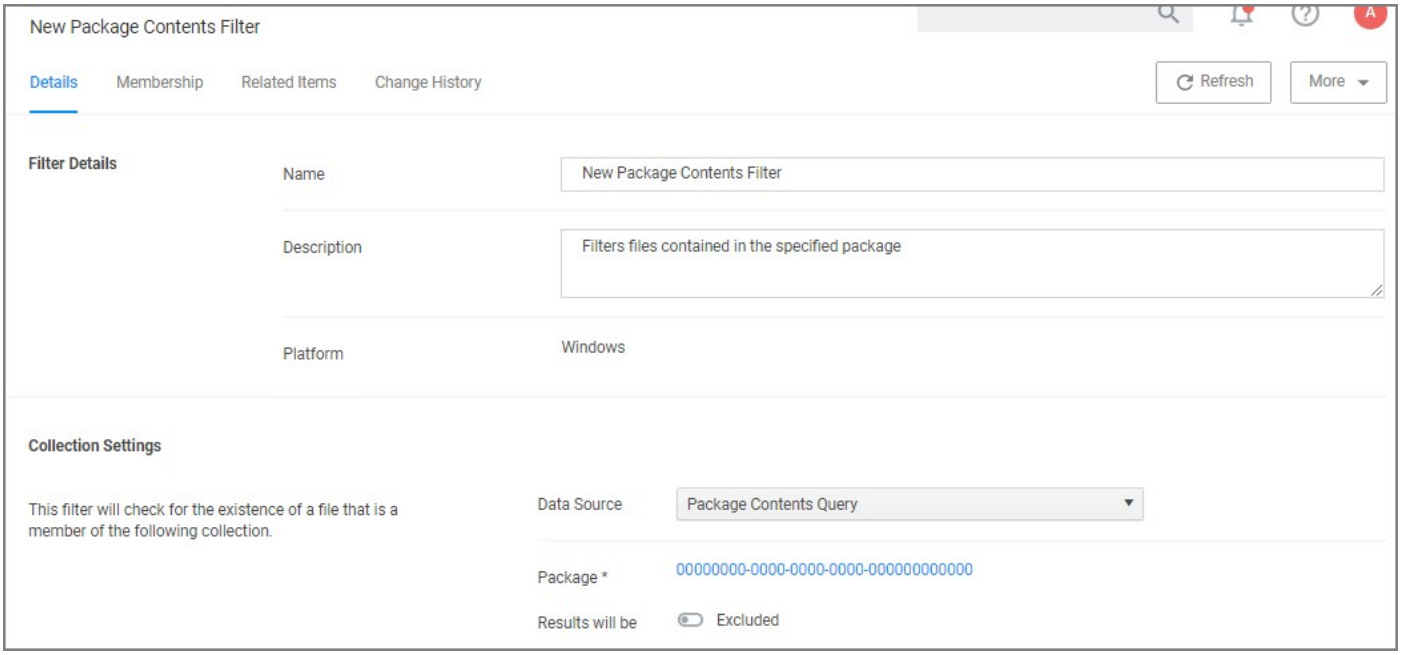
Alternatively the **SMP Sync Packages** task can be scheduled to regularly repeat. When viewing the task, navigate to the Schedules tab and create a new schedule.

Create a SMP Package Content Filter

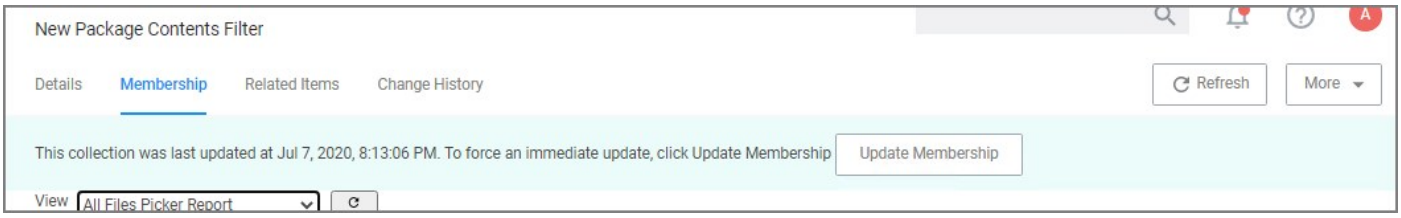
After the Package Synchronization completes the SMP Packages can be used in application control policies via package content filters.

1. Navigate to **Admin | Filters**.

2. Click the **Create Filter** button.
3. From the Platform drop-down select **Windows**.
4. From the Filter Type drop-down scroll to Inventory Filters and select the **Package Contents Filter**.
5. Set the Name and Description of the filter.
6. Click **Create**.
7. Next to Package, click **Select resource...**.
8. Select the package from SMP that will be targeted.
9. Set the switch **Results will be** to **Included**.



10. Navigate to the **Membership** tab.
11. If no items are listed in the membership table, click the **Sync Package** button.



Running the sync package task, causes the server to inventory the package referenced in the filter. If you have multiple filters and packages, Delinea recommends to use the *Inventory Packages Referenced in Allow Lists* task instead.

12. Click **Save Changes**.

This filter can then be referenced in Application Control policies.

Setting up an SMTP Connection

Simple Mail Transfer Protocol (SMTP) is the Internet standard for email transmission. Often organizations use an SMTP Server — or a server that is specifically dedicated to transmitting email messages via TCP Port 25 — and in order to send email alerts with Privilege Manager policies, you must ensure that your email server is connected to Privilege Manager .

SMTP in Cloud Environments

Starting with version 10.7.1 of Privilege Manager Cloud, the SMTP foreign system is automatically configured with the email server information as provided during the cloud instance set-up. The information can be added/changed following the initial set-up.

Configuring the SMTP Connection

To set up the connection, follow these steps:

1. Navigate to **Admin | Configuration | Foreign Systems** (tab).
2. Click SMTP Server, then **Create**.
3. Add the Name of your SMTP Server and the base Uri (ex: smtp://[hostname]:[port]), then **Create**.

Next, in order to begin email alert notifications for a policy, you will need to assign a Task for the job. The **Setting Up Email Alerts** information below is just one example of tasks that can be configured for automated email notifications.

Setting up Email Alerts

Email alerts can be created in **Admin | Tasks > Server Tasks > E-mail Tasks**, then **Create**.

Approval Requests

1. Navigate to **Admin | Tasks | Automation** tab, then expand **Approvals** and select **Approval Processes**.
2. In the center section you will see options including Manual Approval Process with E-mail Alerts (If this option does not exist, click **Create** to add it). Click this option and then **Edit**.
3. Enter the requested information.
    1. For the Start Activity, type Send E-mail for New Approval Task.
    2. For the SMTP Server, select the resource for the SMTP connection you created above.
4. Click **Save Changes**.

    Note: For cloud environments the SMTP server settings are pulled from an existing configuration and **can't** be edited via the parameters tab.

Setting up a SysLog Connection

Privilege Manager can push out SysLog formatted messages on a set schedule. Note that this does not happen immediately upon events occurring. Listed below are steps for configuration and task creation for scheduling the action of sending Discovery Event logs to a SysLog server.

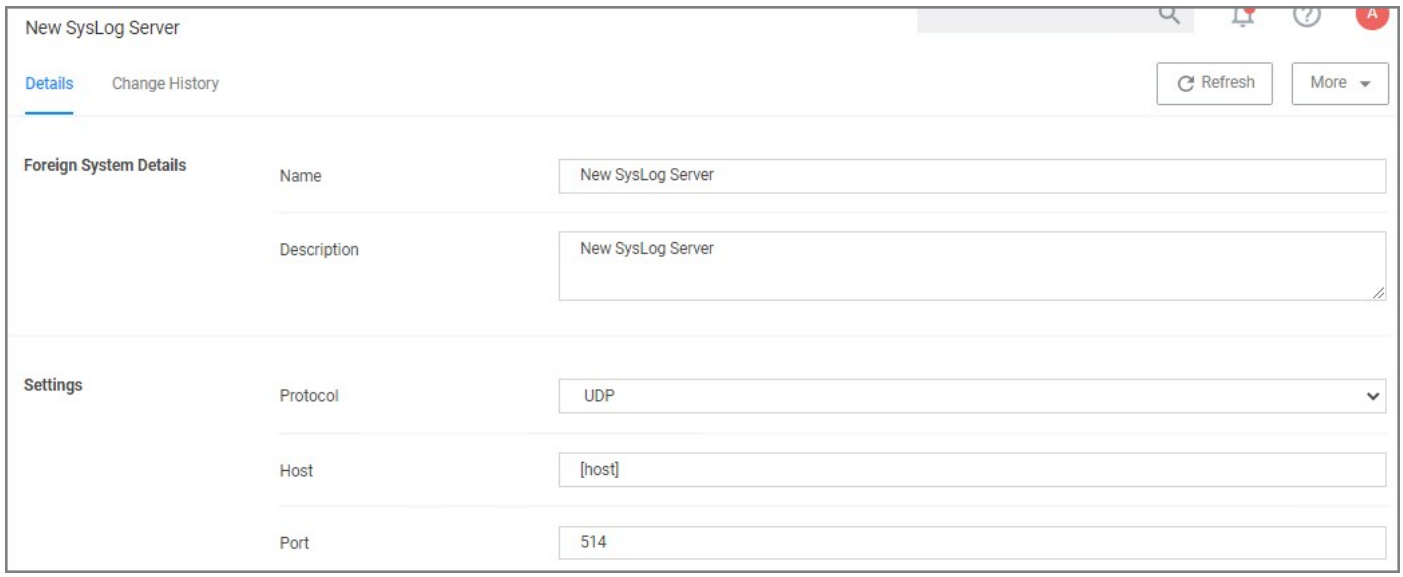
> **Note**: The Send policy feedback option needs to be enabled on all policies that are supposed to send SysLog formatted events.

Configuring SysLog Connection

To configure SysLog messages in Privilege Manager :

1. Navigate to **Admin I Configuration** and select the Foreign Systems tab.
2. Click on SysLog and **Create**. Set a Name and the SysLog Server Address (either tcp or udp). The default is udp on port 514.

3. Once the server is created, you can use **Edit** to change any of the configuration settings.

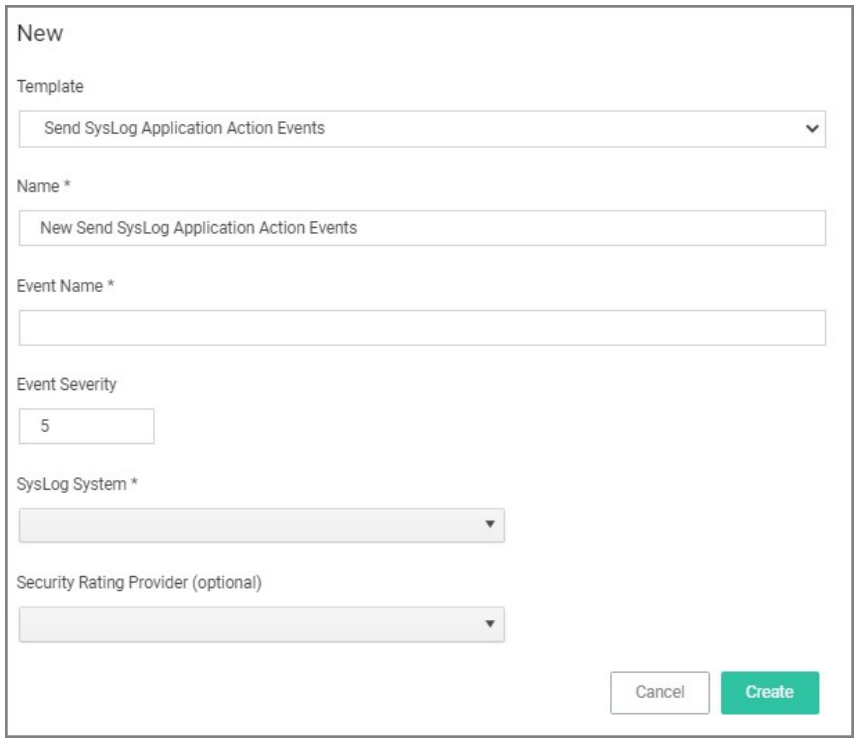


The protocol drop-down options are UDP, TCP, and HTTPS. HTTPS supports integrations with DEVO.

Setting up SysLog Server Tasks

1. After adding a new Syslog connection, to manually send logs to your Syslog Server go to **Admin I Tasks**.
2. Expand the **Server Tasks** folder, then **Foreign Systems**, select SysLog and click **Create**.

3. From the **Template** drop-down, for example select **Send SysLog Application Events**.
4. Add a Name for this task, an Event Name (e.g. "Privilege Manager Application Events"), and Event Severity.
5. From the *SysLog System* drop-down select your SysLog server foreign system (configured above).
6. Optionally also enter a **Security Ratings Provider**, depending on your other integrations.



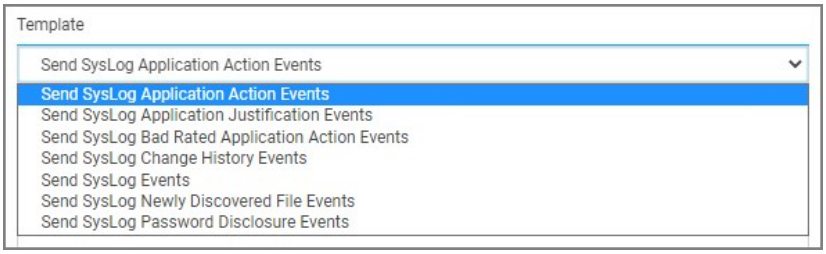
7. Click **Create**.

Once created, you'll be taken to the new Scheduled Task's page where you can run the task on demand and/or specify how often you want events received by Privilege Manager (i.e. all events viewed in Admin | Event Discovery) to be pushed out to the SysLog server. The schedule can be hourly, every 30 minutes, daily, or whatever time period is preferred.

After this task runs and successfully completes, verify that Event Discovery events appear in your SysLog system.

Template Options

The following template options are available:



- **Send SysLog Application Action Events** - Use this template to send application action events to your SysLog system. Application Action Events contain generic information about the application that run, which policy was triggered, the date/time stamp, computer, and

user for example.

- **Send SysLog Application Justification Events** - Use this template to send application justification events to your SysLog system. For example, if a user runs an application requiring a justification workflow.
- **Send SysLog Bad Rated Application Action Events** - Use this template to send an event to your SysLog system, when an application is being installed or executed, that is identified with a bad security rating.
- **Send SysLog Change History Events** - Use this template to send change history events to your SysLog system. When this task runs for the first time, it sends all change history to your SysLog server. On subsequent runs it only sends the delta of new change history events.
- **Send SysLog Events** - Use this template to send all SysLog events to your SysLog system. These events are based on the different options you selected on the SysLog server during setup.
- **Send SysLog Newly Discovered File Events** - Use this template to send newly discovered file events to your SysLog system. For this to produce any events the Default File Inventory Policy needs to be enabled and resource discovery schedules need to be customized.
- **Send SysLog Password Disclosure Events** - Use this template to send all password disclosure events to your SysLog system.

Data Sources

The following five data sources can be used with the respective templates above:

- **Application Control Justification Events** (7d6bdbf0-8f2a-4e9c-9c7e-fa6b75803c45)
- **Application Control Policy Feedback** (eeb7aaf6-f675-4586-a7e3-3eb54b59ba4d)
- **Recently Discovered Applications Query** (b875d3a6-433c-42cc-8332-05350343e498)
- **Local Security Password Disclosure Events** (13d6cf4d-0132-4401-88ab-80b55301c60c)
- **Application Control Policy Feedback Restricted to Security Level** (4eb4ec69-d7a9-4797-972a-41855d3e7799)

If custom data sources are used, they need to specify the following fields:

- externalId
- Facility
- Severity
- EventTime
- Host
- DeviceVendor
- DeviceProduct
- DeviceVersion
- Name
- CEFSeverity

Troubleshooting if SysLog Option is Missing under Foreign Systems

If you are a Privilege Manager Cloud customer, contact Delinea support to have it added to your instance.

On-premises customers, navigate to https://[YourOrganizationURL]/TMS/Setup/ProductOptions/SelectProducts and check the Delinea SysLog Connector option. Install the SysLog Connector and accept the License Terms and Conditions.

Delinea

Setting up a VirusTotal Connection

Privilege Manager can perform real-time reputation checks for any unknown applications by integrating with analysis tools like VirusTotal. This article shows how to set up the integration between Privilege Manager and VirusTotal and then create a monitoring policy in Privilege Manager for reputation checking.

VirusTotal API Key

As a first step the VirusTotal Ratings Provider has to be configured. For this,

1. Sign up for a Free VirusTotal account at https://www.virustotal.com/.
2. Sign in to VirusTotal and find your API key under your **Username | Settings | API Key**.

Install VirusTotal

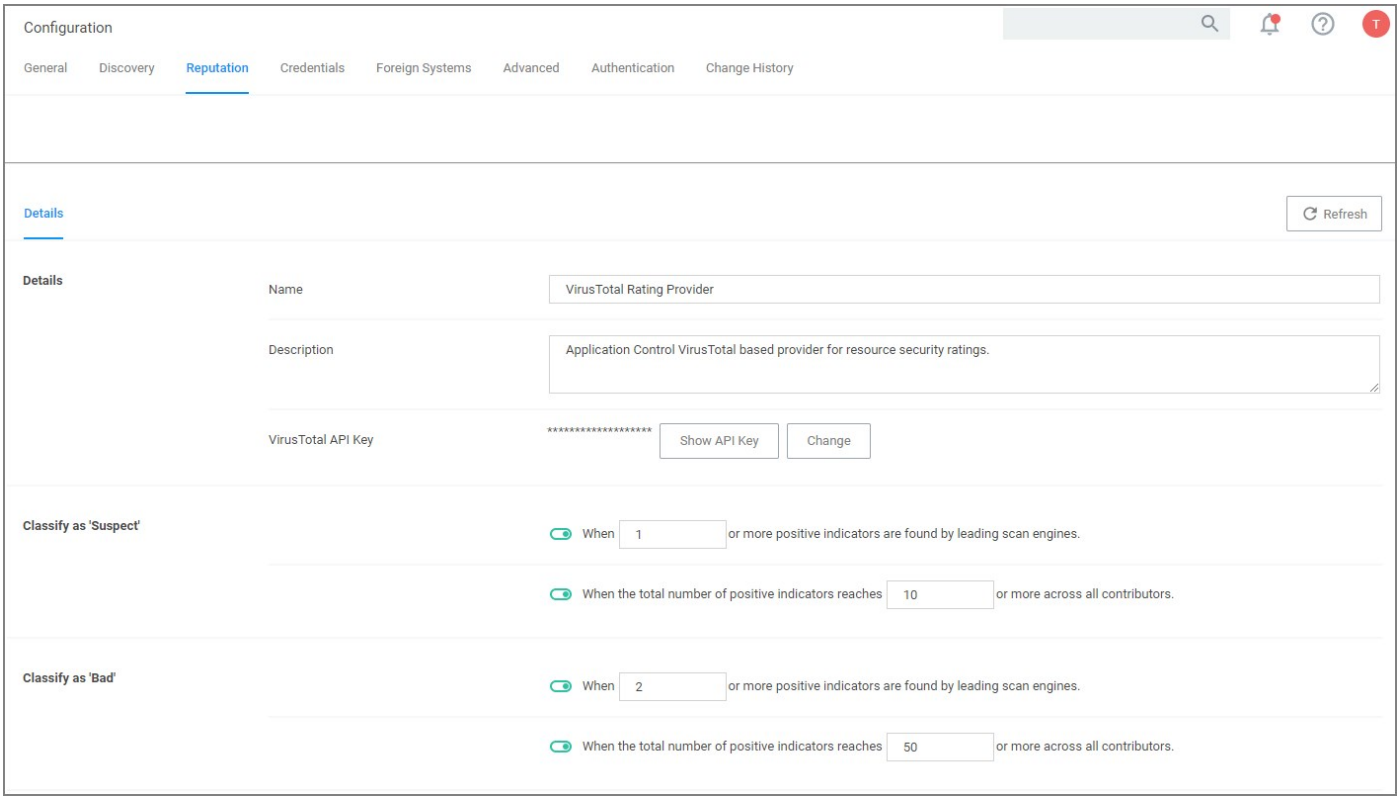
As a second step VirusTotal needs to be installed in Privilege Manager .

> **Note**: You need outbound access on your server for that installation.

1. Open a browser on your Privilege Manager Web Server.
2. Browse to https://YourInstanceName/TMS/Setup/.
3. On the Currently Installed Products screen, choose Install/Upgrade Products.
4. Check the Delinea VirusTotal Reputation Connector, click **Install**. Then **Accept** the End User License Agreement. You will see your Installation Progress.

   > **Note**: If the installation of VirusTotal initially fails, redirect to https://YourInstanceName/TMS/Setup/ and click the **Repair** button next to the VirusTotal Product.

5. Navigate to **Thycotic Privilege Manager | Admin | Configuration | Reputation** tab.
6. Select **VirusTotal Rating Provider** from the Select Rating Provider drop down menu.



7. Enter the **VirusTotal API Key**, click **Update**.
8. Enter information under Details and specify settings for Suspect and Bad classifications.
9. Click **Save Changes**.

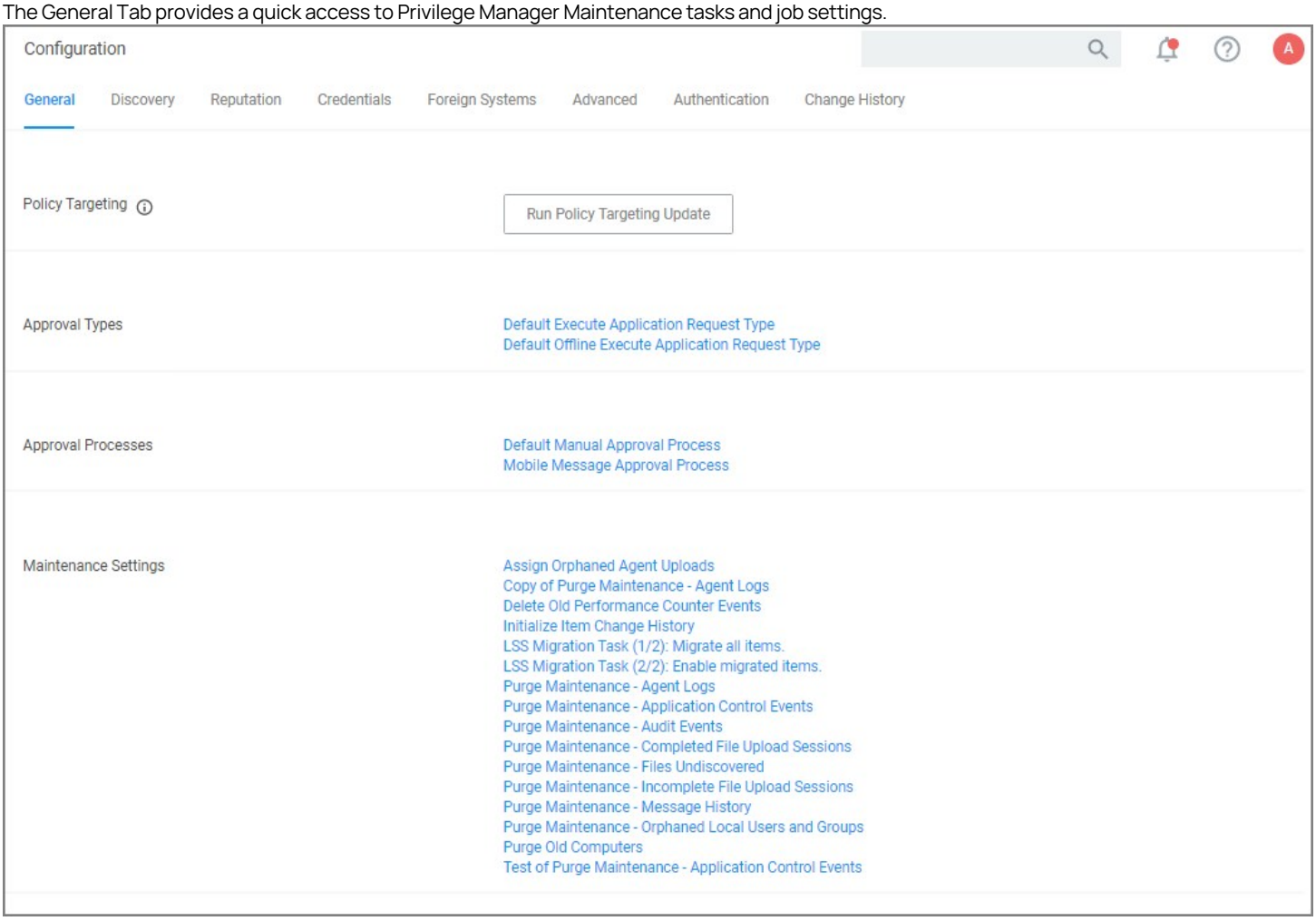
   Note: VirusTotal can be used without API Key. If the free version is used, reputation checks are limited to 4 per Minute. Delinea does not recommend this for a production environment.

For the implementation example below, we are creating two filters, using one default filter, and creating a policy. One filter is the standard Security Rating Filter the other filter controls, that we only send applications to VirusTotal for a reputation check that are in the user's Downloads and Temp directories.

Further details about creating a Security Rating Filter and other needed filters to work with reputation checking policies refer to the Reputation Checking topic.

General Tab

The General Tab provides a quick access to Privilege Manager Maintenance tasks and job settings.



Policy Targeting

The Policy Targeting Update automatically caches the list of policies applicable to each agent by updating the collections and resource targets.

Approval Types

For approval types can be specified as policy or file specific, a Security Rating System can be added, and a Process Handler can be entered. The following default approval types are available:

- Default Execute Application Request Type
- Default Offline Execute Application Request Type

Approval Processes

These are read-only items and by default Administrators are always allowed to approve any requests and an optionally activity can be started as part of the approval.

- Default Manual Approval Process
- Default Offline Approval Process

- Mobile Message Approval Process

Markdig.Syntax.Inlines.LinkInline

- Assign Orphaned Agent Uploads
- Delete Old Performance Counter Events
- Initialize Item Change History
- Purge Maintenance - Agent Logs
- Purge Maintenance - Application Events
- Purge Maintenance - Audit Events
- Purge Maintenance - Completed File Upload Sessions
- Purge Maintenance - Files Undiscovered
- Purge Maintenance - Incomplete File Upload Sessions
- Purge Maintenance - Message History
- Purge Old Computers

History Tab

The Change History tab is accessible via:

- **Admin | Configuration** – listing all changes made to Advanced, Authentication Provider, Foreign Systems, Discovery, and Reputation item configuration settings.
- **Admin | Policies** – listing all changes made to policies.
- Admin | More and then (for the default menu, might differ if customized)
  - **Filters** – listing all changes made to a specific filter.
  - **Actions** – listing all changes made to a specific action.
  - **Resources** – listing all changes made to a specific user editable resource. Meaning resources that are not user editable, like a file extension, do not have a history change tab.
  - **Tasks** – listing all changes made to a specific task.

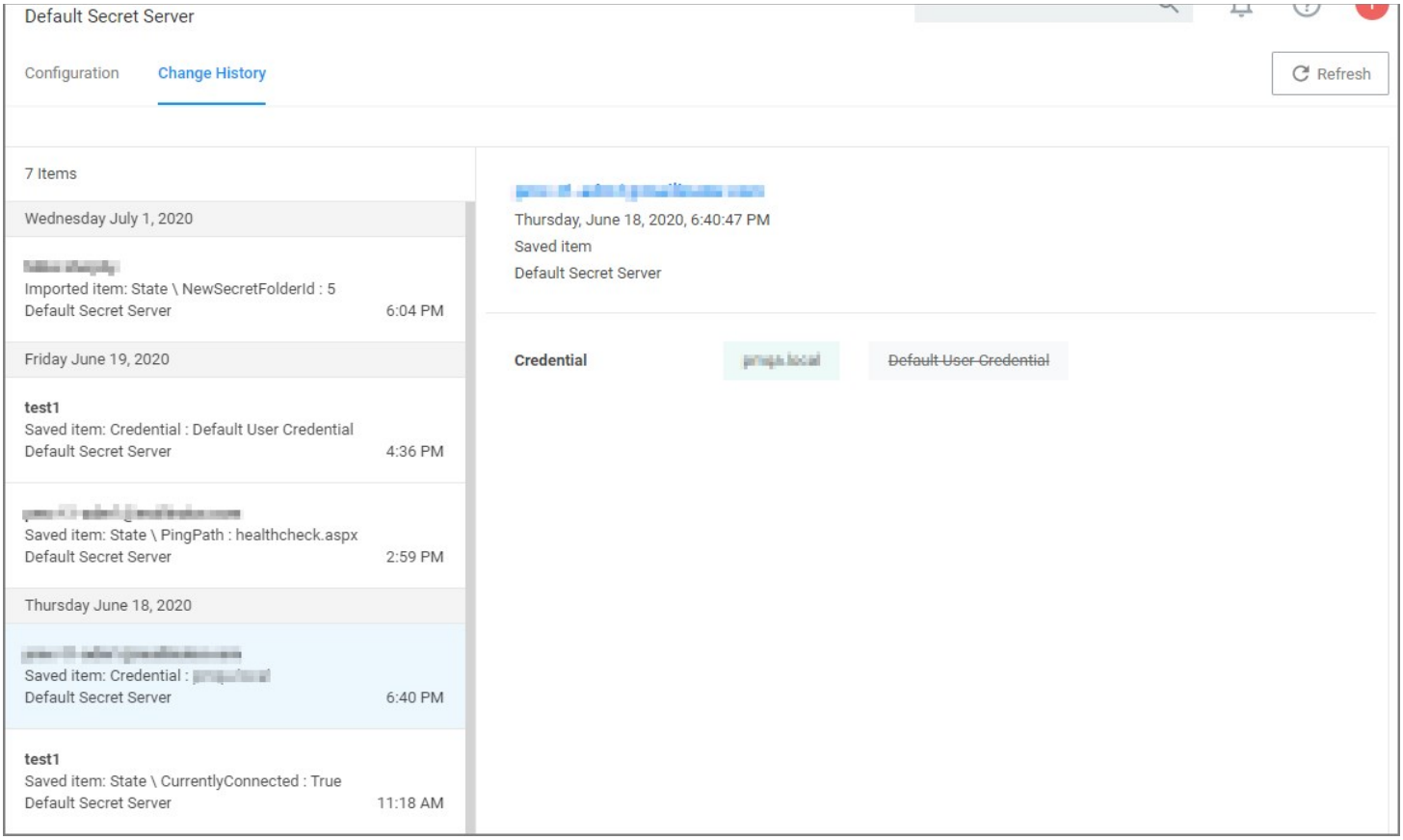
Once the tab is selected, it opens a two-column page. On the left all recorded changes are listed with the newest record on top. This left column data provides a summary of the changes:

- who made the change,
- what was changed,
- the type of change,
- item changed, and
- date/time of the change.

For any changes made to the Authentication Provider for Foreign Systems, like changing from NTLM to Azure Active Directory for example, the Change History provides details about the active and staged states with true and false indicators.

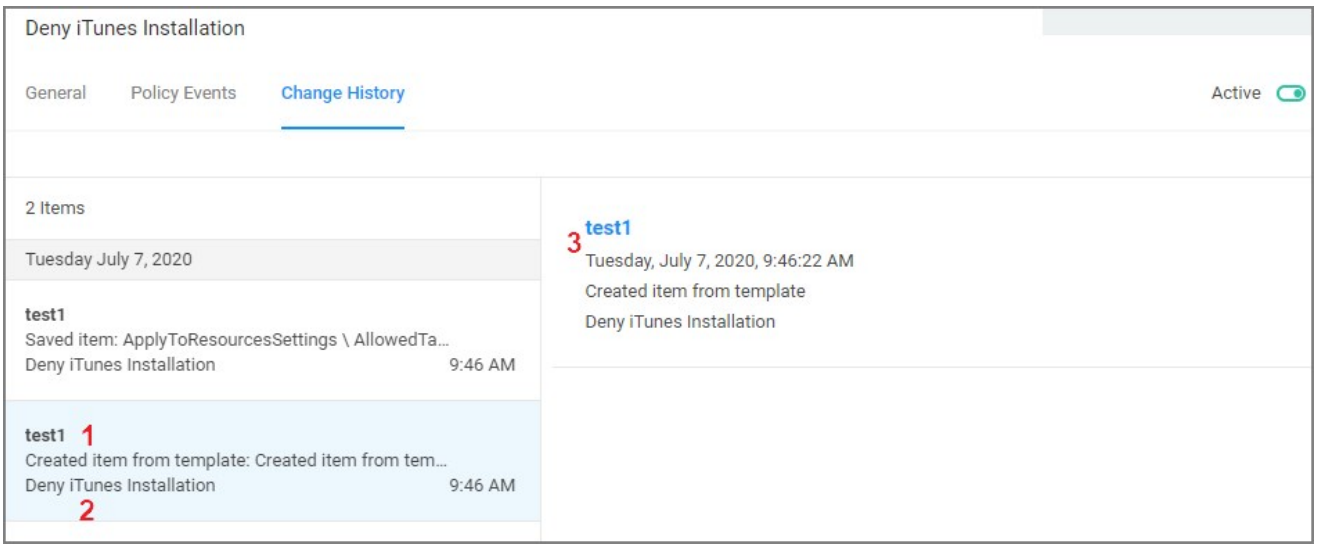
Looking at Details

The following image shows an example of the change history for a foreign system entry. The change shows that the foreign system was initially pointed at the local host URL, with a Credential and Client Secret pertaining to that localhost instance. An update was made to configure a real Secret Server instance URL with accompanying changes of Client Secret and Credential to be able to authenticate against that new URL.



Drilling Down

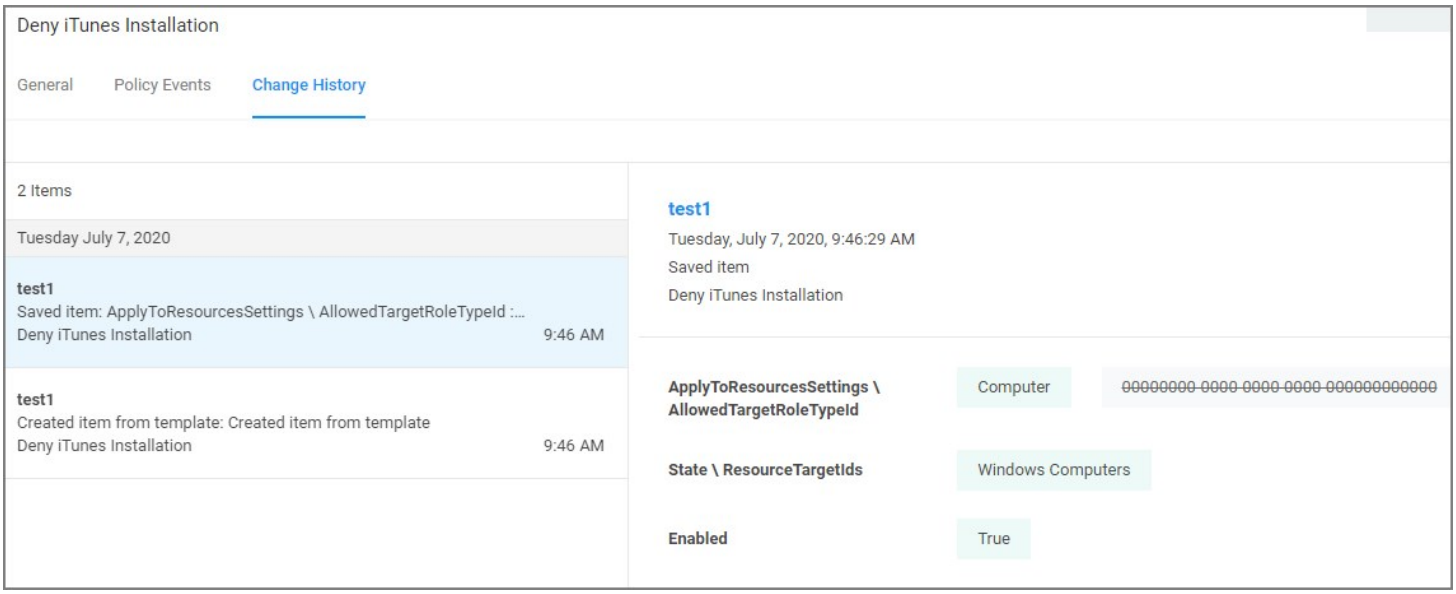
To look at details of any given change, select one of the change entries in the left column. For the example we created a policy to deny the installation of iTunes on Windows endpoints.



What we see:

1. Information about the system and user initiating the change, here *test1* and information about the type of change, here Created from template.
2. The name of the item that was created from template, the date and time when the change ocurred.
3. Details on the summary information from the left, such as a link to view the user details and what change was done to which item.

The next screen shows a state change due to the policy being saved. The State\ResourceTargetIds are being saved for the first time for this policy.

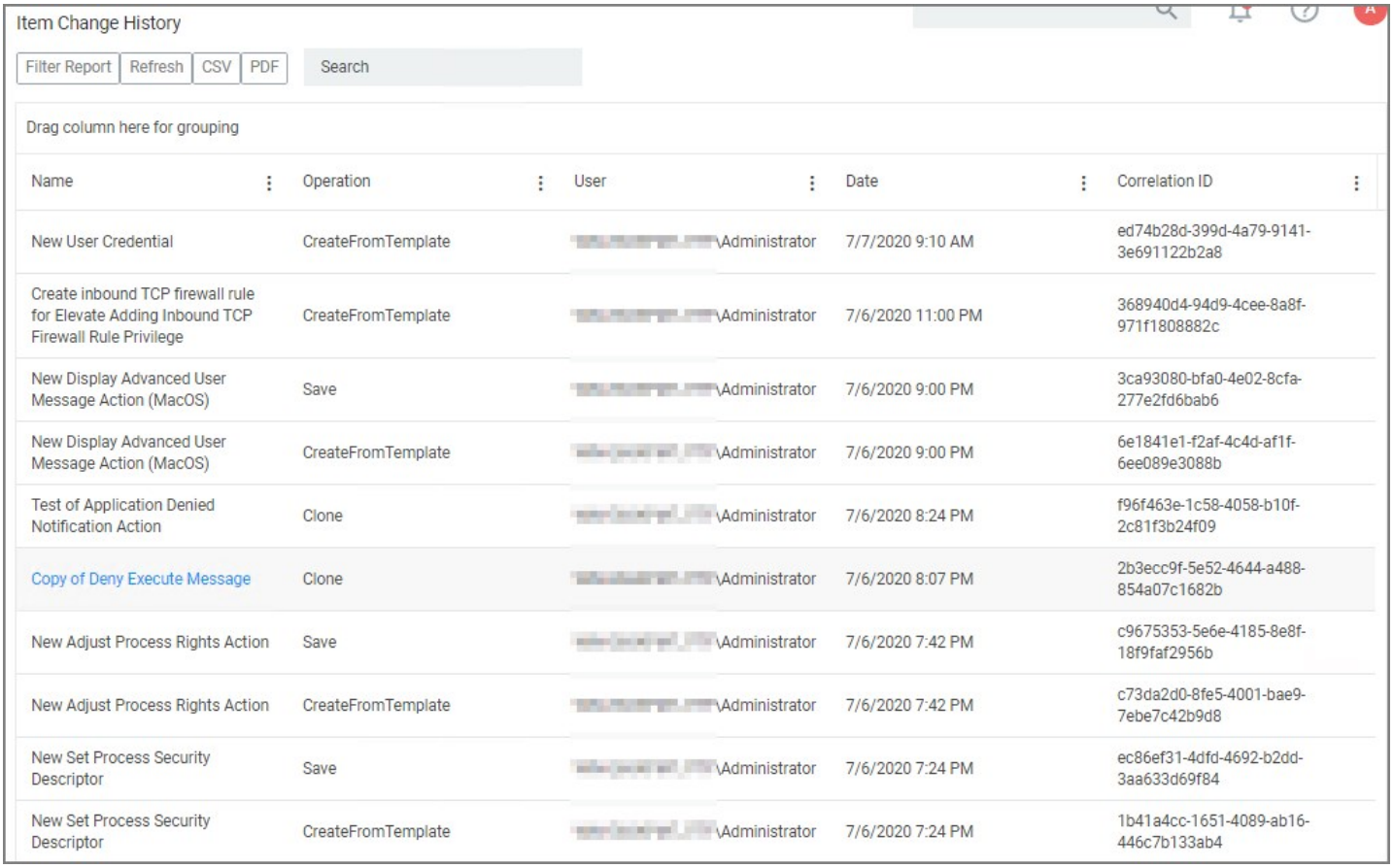


The last entry in the Change History list provides all the details about the change to the policy after initial creation and save.

Item Change History Report

The Item Change History Report is part of the **Diagnostic** group on the Reports page. You can also search for "change history" and the report will be listed on the search results page. Click the link to access the report.

The report lists the history of item changes.



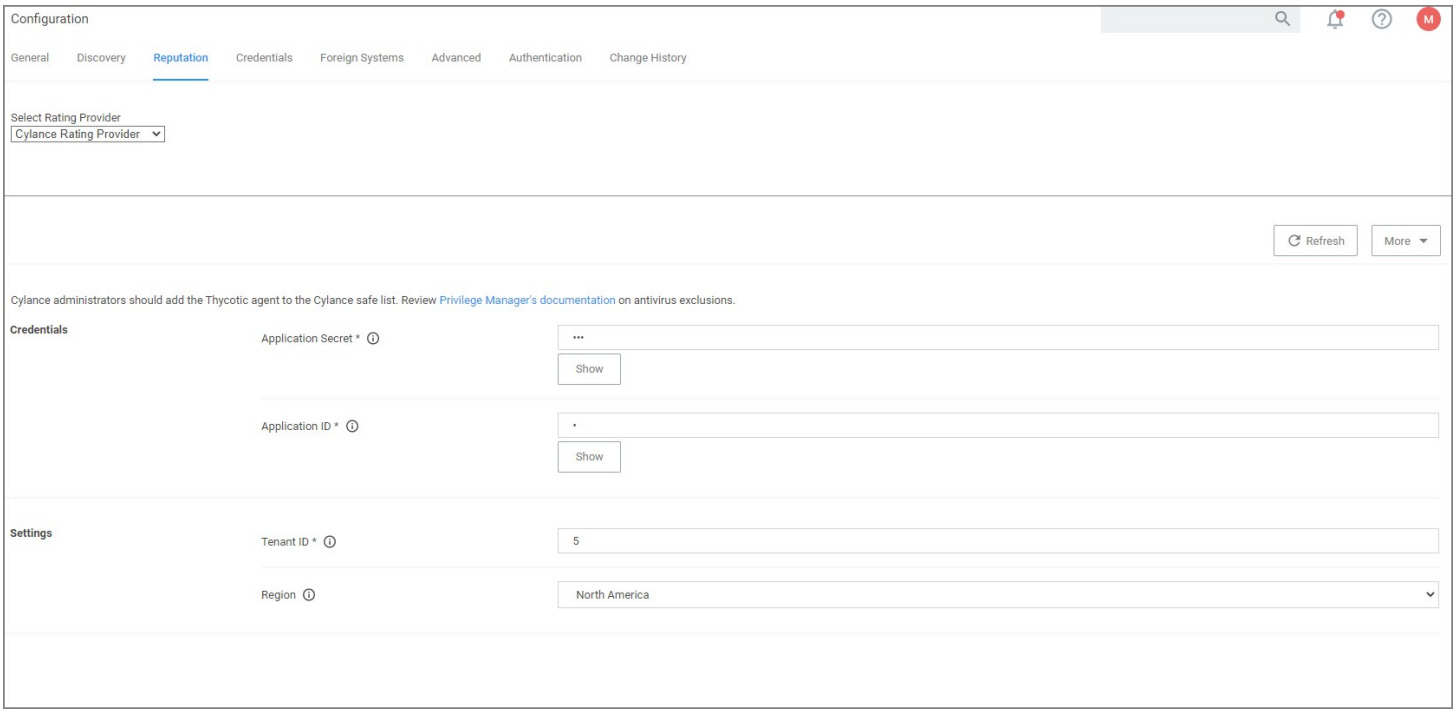
For further investigation, you can access the item that was changed by clicking the entries in the Name column.

Reputation Tab

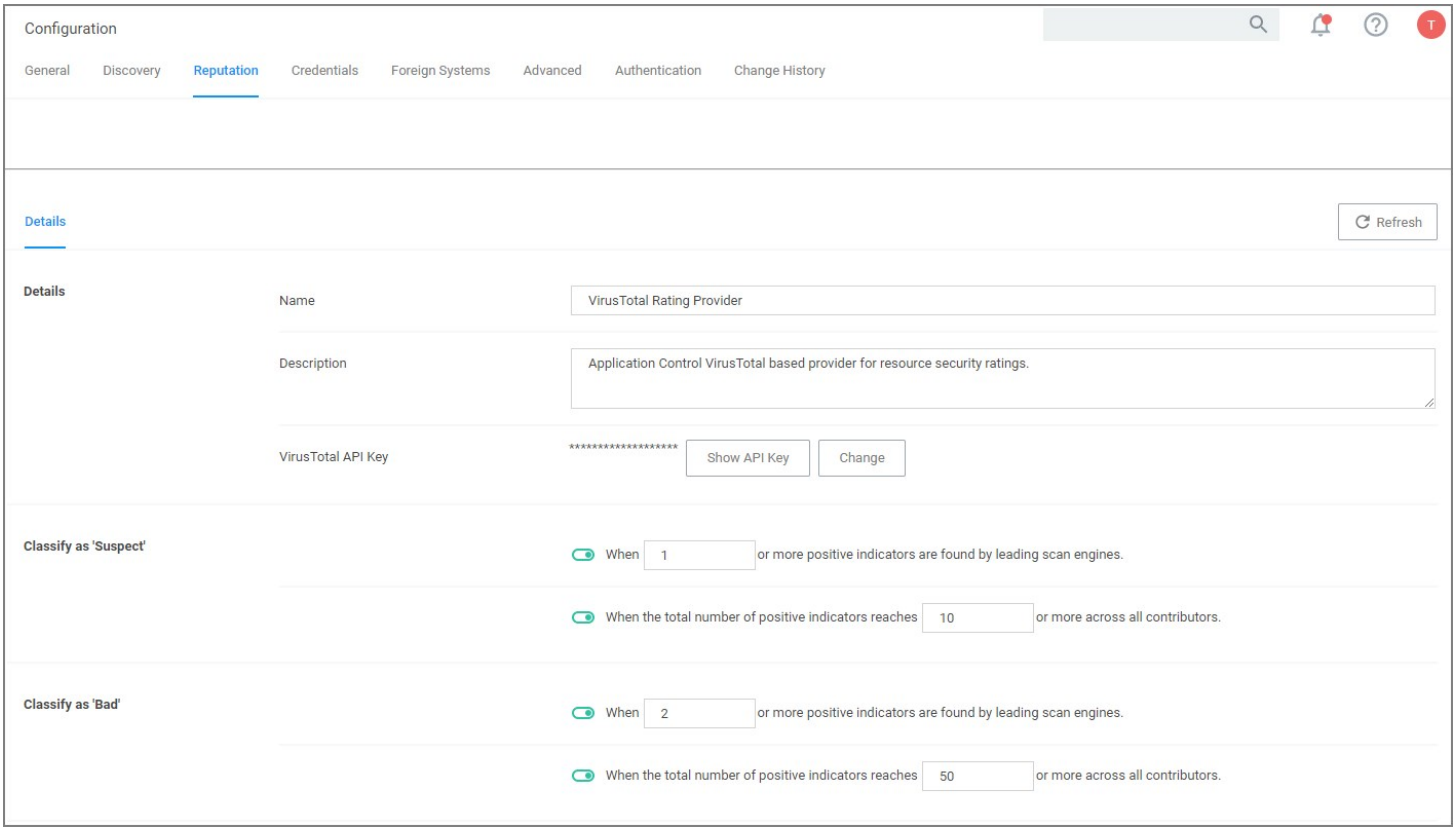
Here you select the Rating Provider from drop-down. Current options are Cylance and VirusTotal rating providers.

The configuration details required are different for the two rating providers as shown in the following sample images.

Cylance Rating Provider

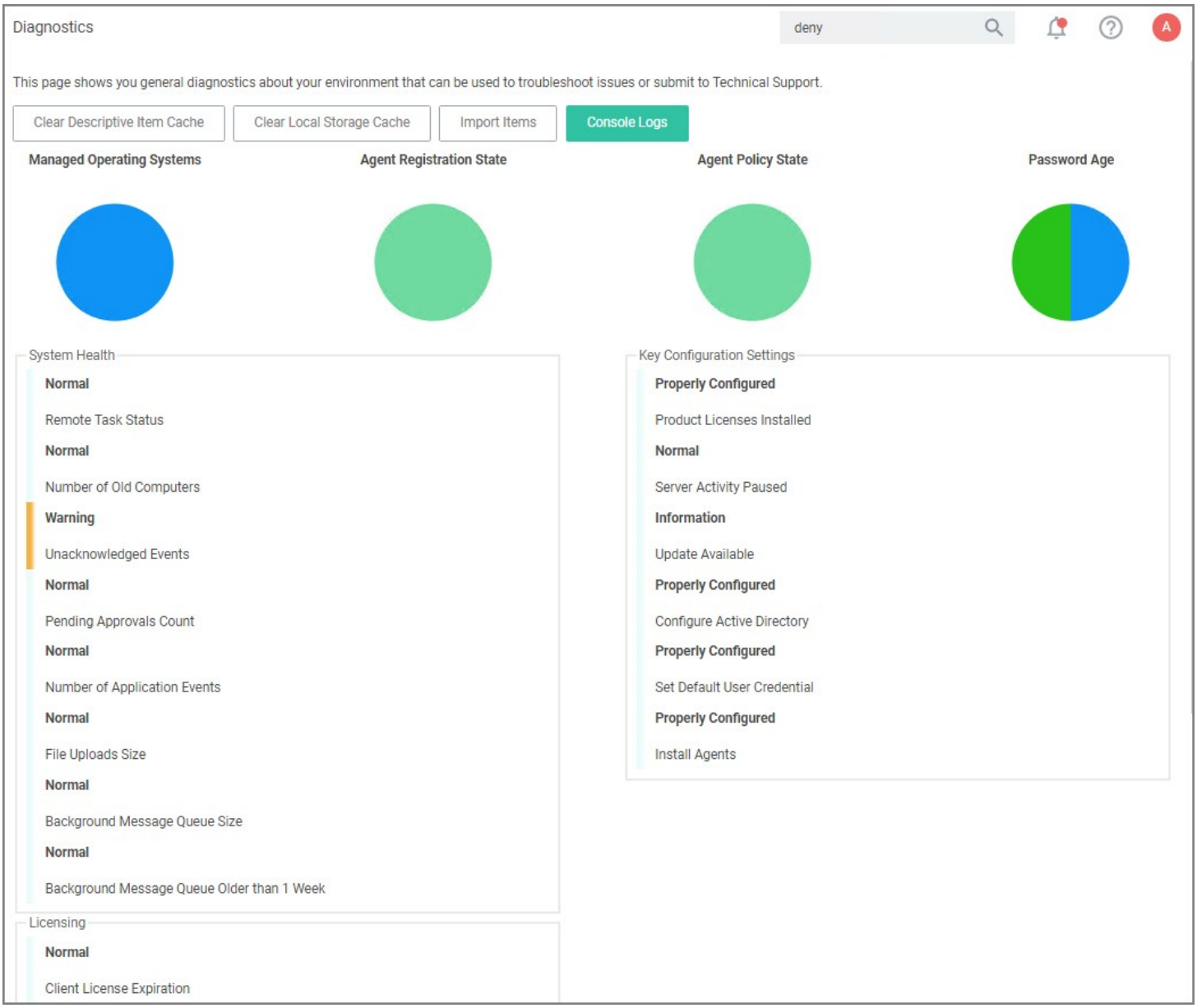


VirusTotal Rating Provider


Configuration
General
Discovery
Reputation
Credentials
Foreign Systems
Advanced
Authentication
Change History
Details
Refresh
Details
Name
VirusTotal Rating Provider
Description
Application Control VirusTotal based provider for resource security ratings.
VirusTotal API Key
****
Show API Key
Change
Classify as 'Suspect'
When 1 or more positive indicators are found by leading scan engines.
When the total number of positive indicators reaches 10 or more across all contributors.
Classify as 'Bad'
When 2 or more positive indicators are found by leading scan engines.
When the total number of positive indicators reaches 50 or more across all contributors.

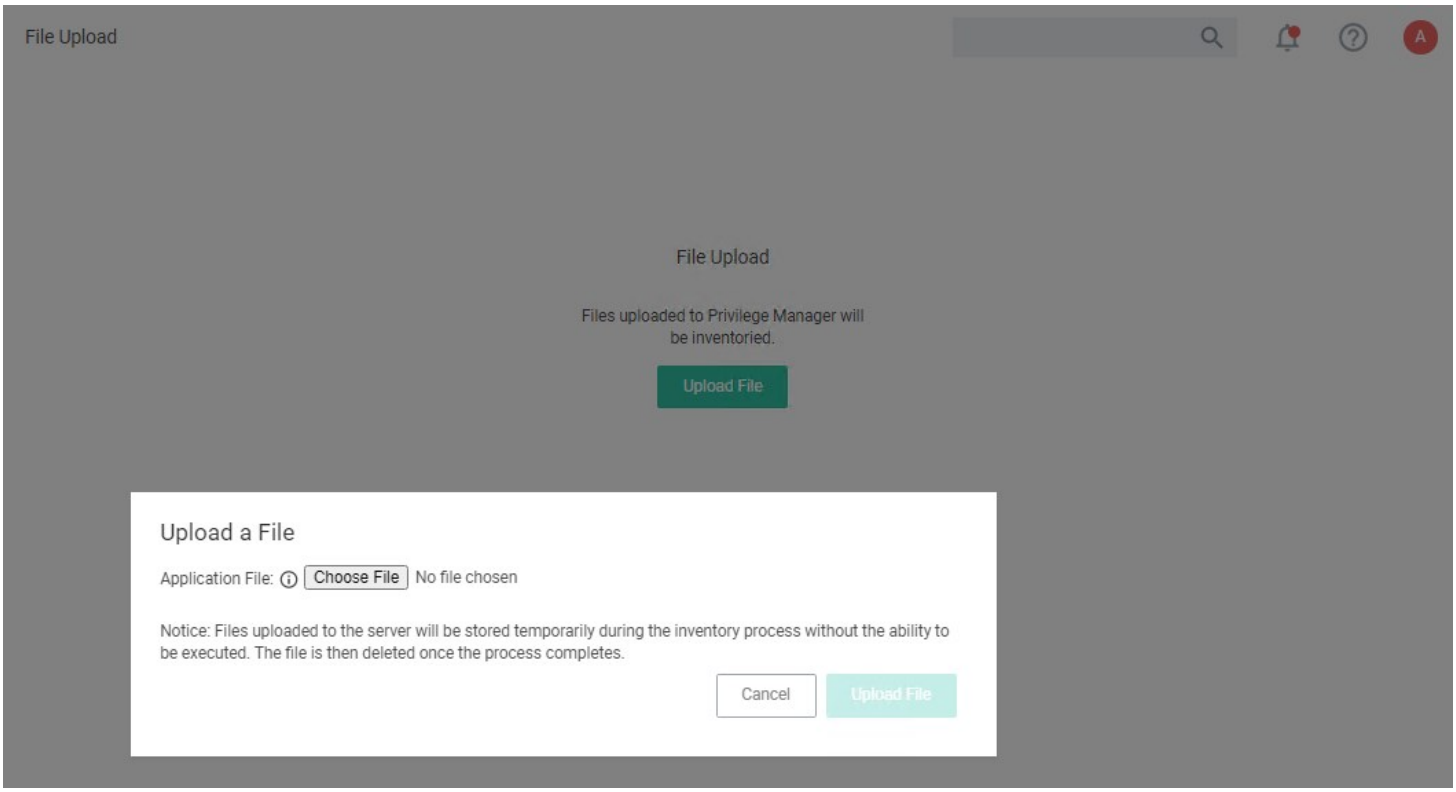
Navigate to the **Admin | Diagnostics** page to view more comprehensive system details. Select any of the gauges to drilldown into details.

The Diagnostics page is also the go-to stop for full system health. Go there to find Server Console Logs and other system level warnings or tips.



The Licensing area provides information about expired licenses, exceeded license counts, and limits for each operating system.

The File Upload options allows existing file uploads via the standard Choose File dialog.



The file upload functionality is available during imports of items, for diagnostics, and for inventory purposes.

In Privilege Manager , using a robust filtering system is the key to creating accurate and effective Policies.

A filter is made up of specific criteria that Privilege Manager uses to target important file data (or Events) that occur across your environment. You can think of Filters as the core identifiers in your Privilege Manager system. They are used to identify various levels of activity across your organization's computers, including processes (applications) that are launched on computers, who is executing an application, or the state of the computer that the process is being executed on.

An Event in Privilege Manager is any piece of file data or executable on a computer that is targeted by a policy.

There are different methods for Filter-creation and usage, but if you take the time to familiarize yourself with our out-of-the-box filters they can help make your policy-creation process easy. This article will provide details and descriptions for Windows Filters in Privilege Manager and how you can begin using out-of-the-box Filters, or create your own.

Types of Filters

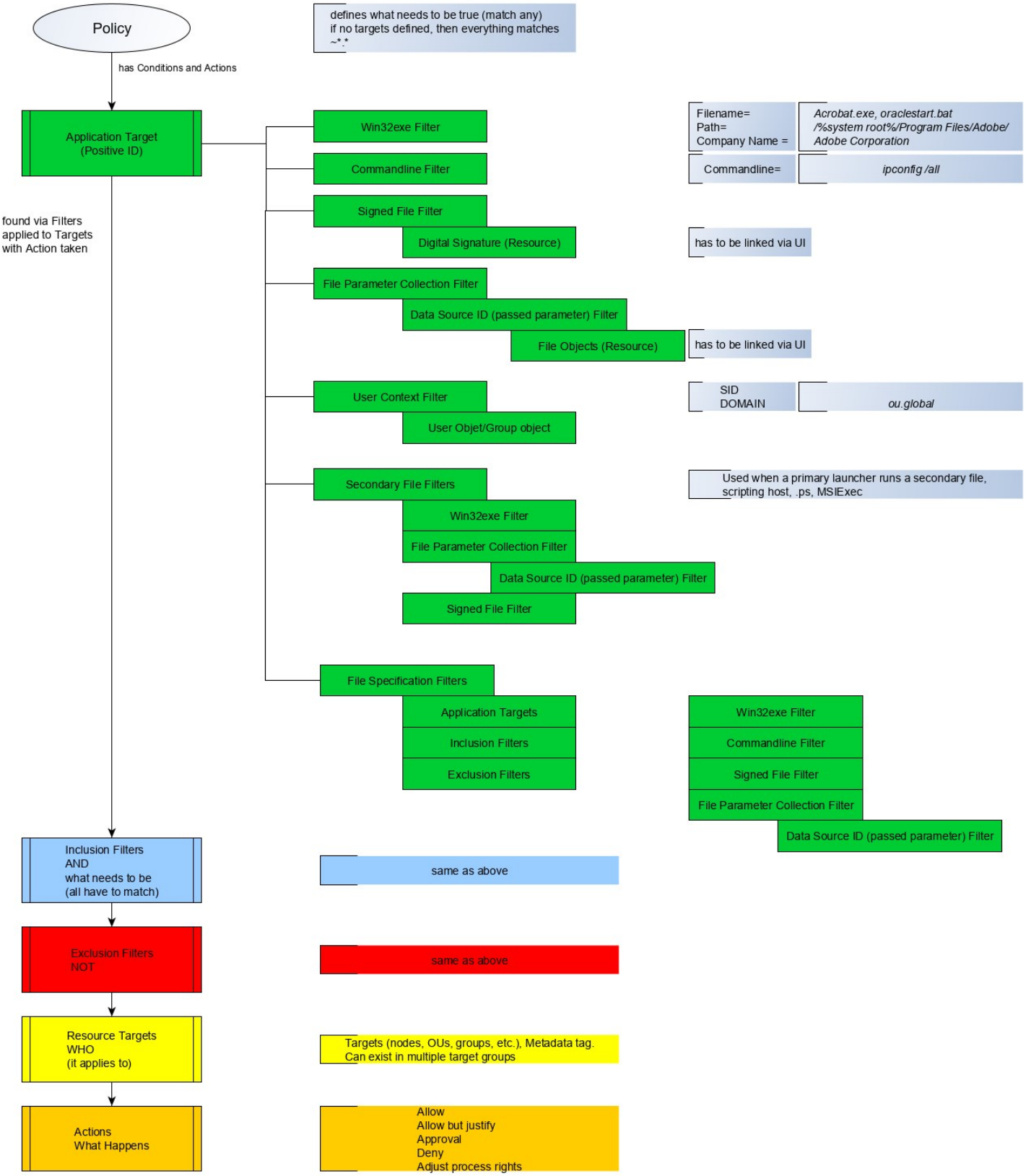
We recommend leveraging Privilege Manager 's out-of-the-box filters to get your policies up and running fast! For a complete list of out-of-the-box filters according to category type, review our Filters' Catalog for Privilege Manager here.

You can search your full list of available filters by navigating to **Admin I Filters** in Privilege Manager . If you already know what you want to target, simply try typing keywords in the search bar to check whether a filter exists that fits your target goal.

> **Note:** If using the default filters provided with Privilege Manager , always verify existing targeting information.

Review the Filters Catalog for Privilege Manager for details about all out-of-the-box filters shipped with the product.

Delinea


Policy
has Conditions and Actions
defines what needs to be true (match any)
if no targets defined, then everything matches
~*.*
Application Target
(Positive ID)
found via Filters
applied to Targets
with Action taken
Win32exe Filter
Filename=
Path=
Company Name =
Acrobat.exe, oraclestart.bat
/%system root%/Program Files/Adobe/
Adobe Corporation
Commandline Filter
Commandline=
ipconfig /all
Signed File Filter
Digital Signature (Resource)
has to be linked via UI
File Parameter Collection Filter
Data Source ID (passed parameter) Filter
File Objects (Resource)
has to be linked via UI
User Context Filter
SID
DOMAIN
ou.global
User Objet/Group object
Secondary File Filters
Used when a primary launcher runs a secondary file,
scripting host, .ps, MSIExec
Win32exe Filter
File Parameter Collection Filter
Data Source ID (passed parameter) Filter
Signed File Filter
File Specification Filters
Application Targets
Inclusion Filters
Exclusion Filters
Win32exe Filter
Commandline Filter
Signed File Filter
File Parameter Collection Filter
Data Source ID (passed parameter) Filter
Inclusion Filters
AND
what needs to be
(all have to match)
same as above
Exclusion Filters
NOT
same as above
Resource Targets
WHO
(it applies to)
Targets (nodes, OUs, groups, etc.), Metadata tag.
Can exist in multiple target groups
Actions
What Happens
Allow
Allow but justify
Approval
Deny
Adjust process rights

Create A Copy - How to Use Filter Templates

Out-of-the-Box filters are designed to be used as templates, meaning when you open these filters you will see a **Duplicate** option rather than the option to immediately Edit. These filter templates are protected to provide a jumping off point whenever creating new filters. They are formed by specific criteria that you can tailor according to your specific use case after copying.

Keep in mind that every filter in Privilege Manager - whether or not it is a template - can be leveraged by the Copying feature.

Creating a New Filter Manually

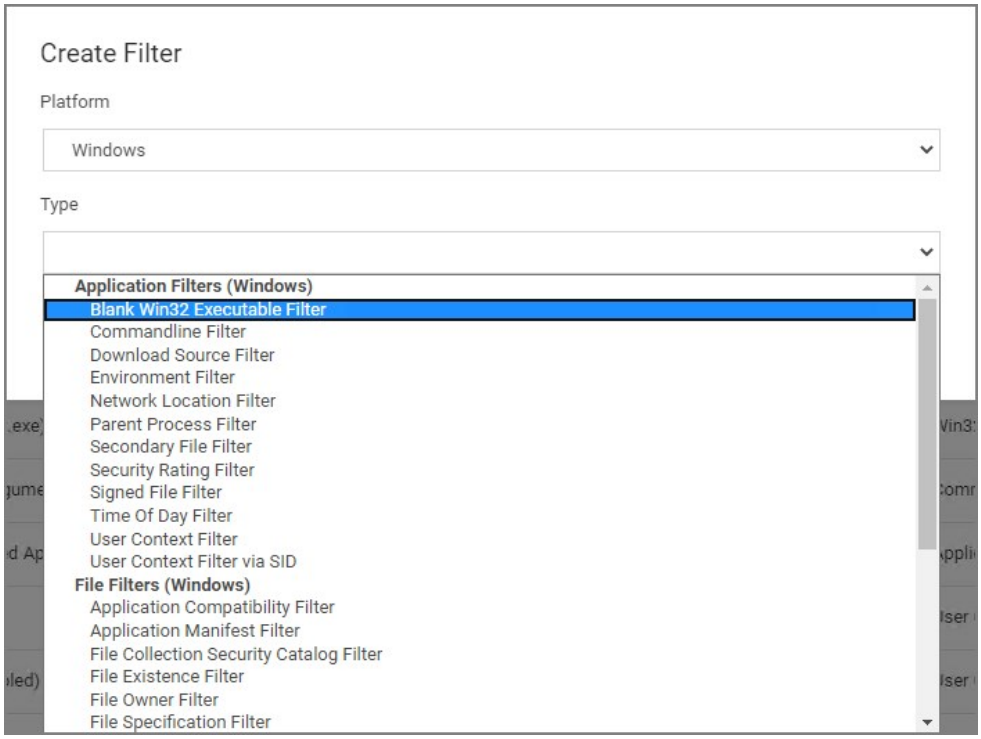
The following a basic steps to create a filter. Based on platform and type the end result shown in this example can be different.

1. In the Privilege Manager console, navigate to **Admin | Filters**.
2. Click **Create Filter**.
3. On the **Create Filter** modal,
    1. select a Platform from the drop-down.

    Options here are:

    - Windows
    - macOS
    - Unix/Linux

    2. select the Type from the drop-down.

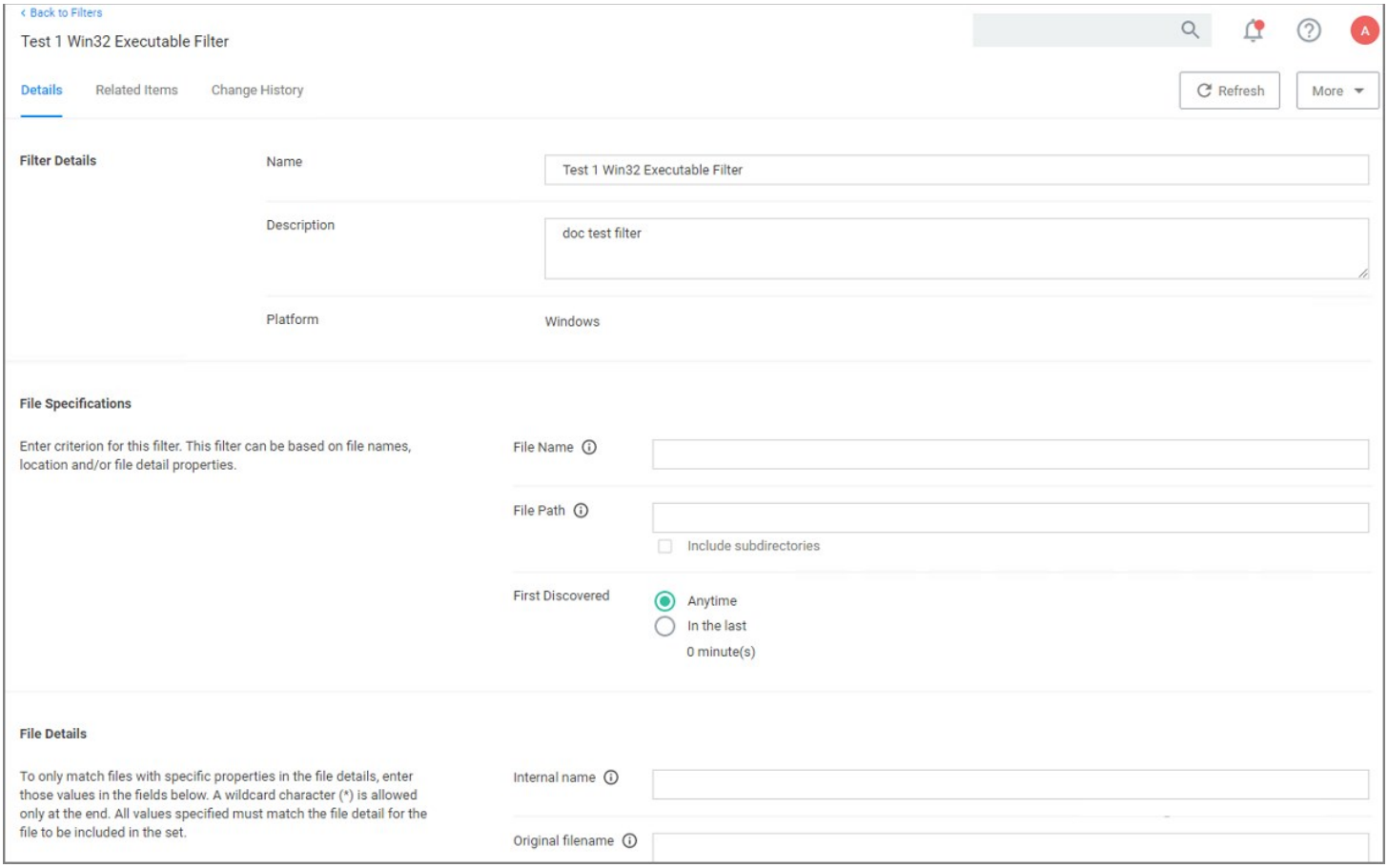


The Type depends on the platform selection.

3. enter a **Name** and **Description**.

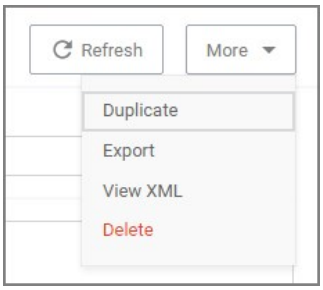
4. Click **Create**.

Once the filter is created, the new filter page open and information under the Details, File Specifications, and File Details sections can be edited. The Save and Cancel buttons appear once you make the first change on the page.



More Options Menu for Filters

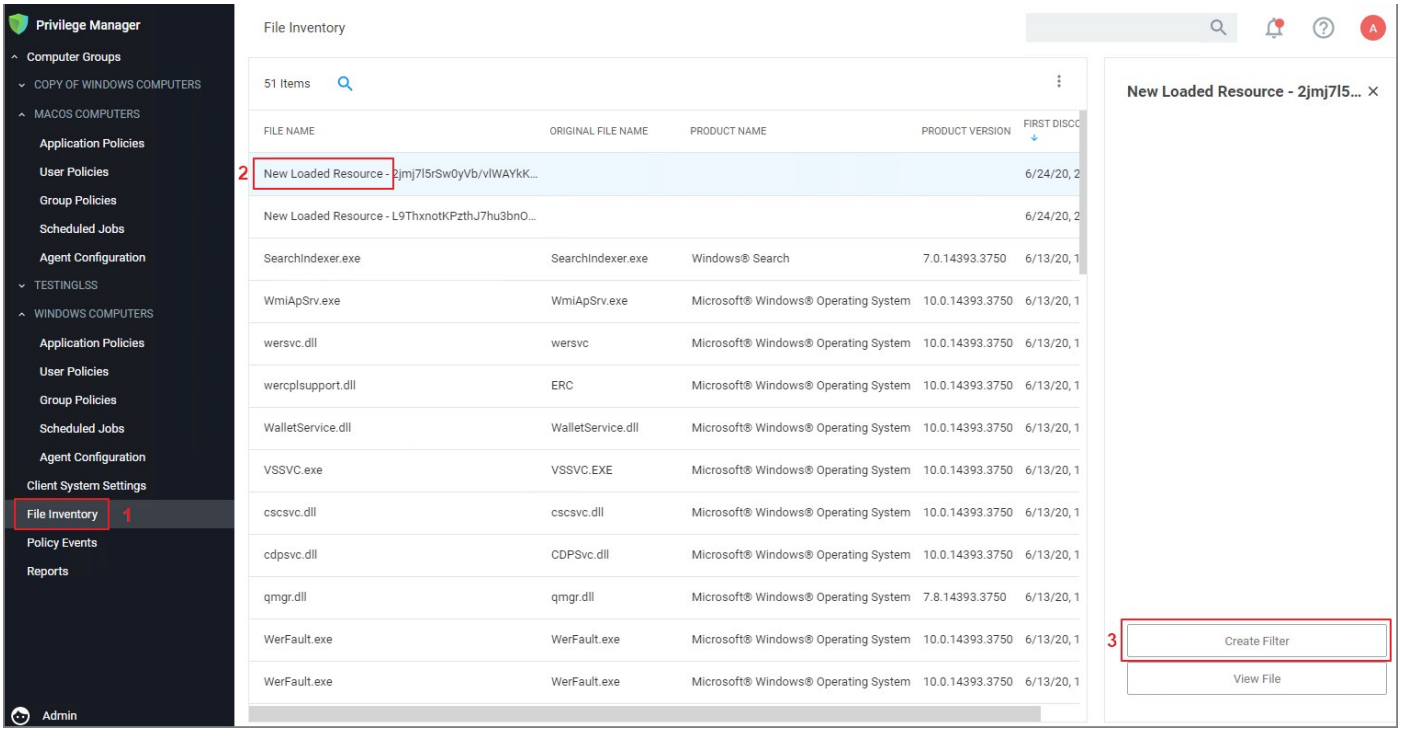
The **More** options menu offers users entry points to duplicate, export, view xml, and delete filters that are already on the system.



Creating New Filters using Event Discovery

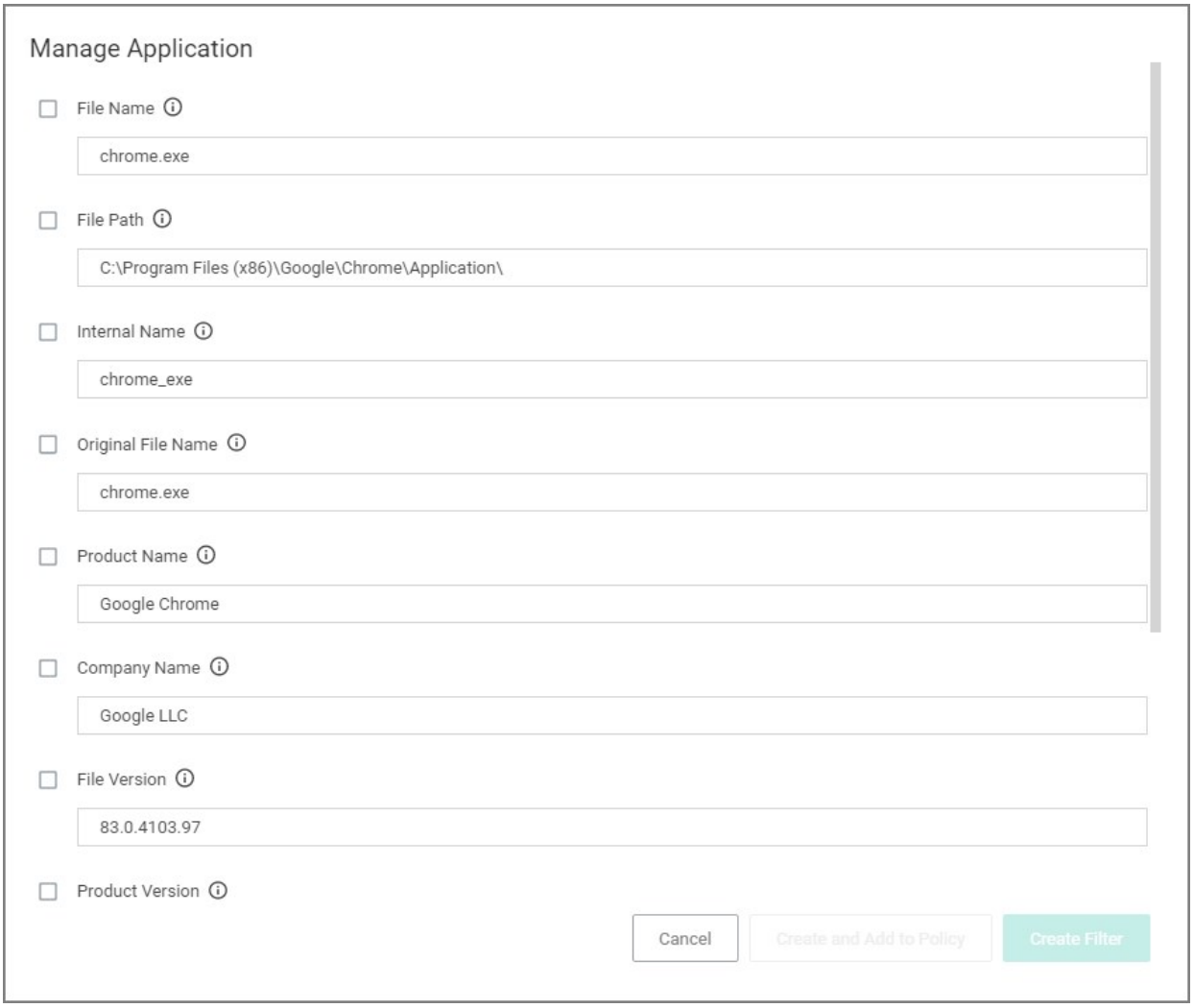
One way to begin creating new Filters that identify specific files or applications on your network is to set up a Learning Mode Policy and use the events pulled in by Privilege Manager from actions performed on a test machine. Refer to Event Discovery for more information on setting up a Learning Mode Policy.

1. In Privilege Manager , navigate to **File Inventory**.



2. Select a recognized event.
3. Click **Create Filter**.

This brings you to the **Manage Application** modal with the known identifiers needed for targeting this specific event auto-populated, for this example chrome.exe.



The modal has options to **Create and Add to Policy** or to just **Create Filter**.

> **Note**: If you are NOT directed to such a dialog, this means Privilege Manager doesn't have enough information to target this event yet. In these cases you may need to create Filters manually.

The dialog reveals the available list of building blocks, attributes, or criteria used for creating a filter. In other words, the following list of criteria are possible data fields that Privilege Manager can look and sift through for on any given event that your policies target for Windows machines. Note that criteria can vary depending on the type of filter you are creating:

- File Name
- Path
- Internal Name
- Original File Name
- File Version
- Product Name
- Product Version
- Company Name
- File Signature (File must be signed by)

You can choose which criteria to use by checking or un-checking any of the available check boxes on the dialog. If you are new to the filter creation

process, we recommend experimenting with these different identifiers in your test environment to ensure that you are using a comprehensive list of identifiers in your filter, enough to target the application or file intended but not too specific that variations to your target will fall through the filter's criteria hooks.

A Resource Target in Privilege Manager is a specified set of computers that meet certain criteria (e.g., type of operating system or location of the computers), meant to be used as targets for policies or scheduled tasks. To make a policy apply to a certain set of computers, you need a resource target comprising that set of computers and assign that resource target to the policy (or, to state it differently, assign the policy to the resource target).

There are several built-in resource targets (for example, "All 64-bit Windows Computers with Application Control Agent Installed") that can be used when defining policies so that users generally do not need to create custom resource targets. However, there are cases when the latter is needed and, toward that end, this article focuses on user defined resource targets.

This topic also briefly touches upon collections, a concept related to resource targets.

Resource targets are not the only kind of targets that can be assigned to policies; one could also assign an application filter to a policy to make the policy apply to the application file included in the filter.

User Defined Resource Targets

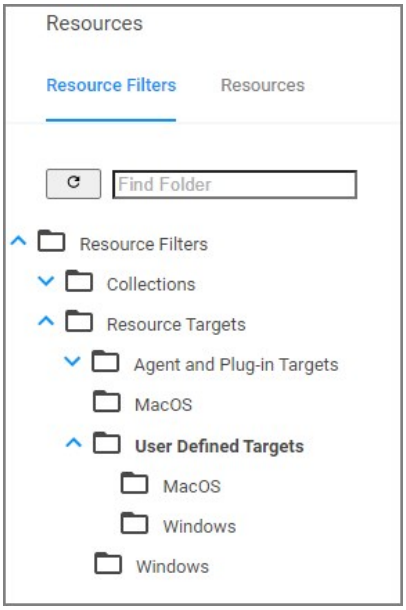
Targets are defined by starting with all known computers and then adding filters to narrow down the set (and after an initial narrowing down, if needed, expand it in some way).

You could create unique targets for all your policies, but if you want to create a target to be reused across multiple policies, it will be more practical to follow these steps.

Interface to View or Create/Modify User Defined Targets

In the Privilege Manager console, navigate to **Admin | Resources**. On the Resources page select the **Resource Filters** tab, then in the tree go to **Resource Filters | Resource Targets | User Defined Targets**, and select either MacOS or Windows.

If you already created user defined targets, you see them listed here and can modify any of them by clicking the name and then editing the definition.



Performance Considerations

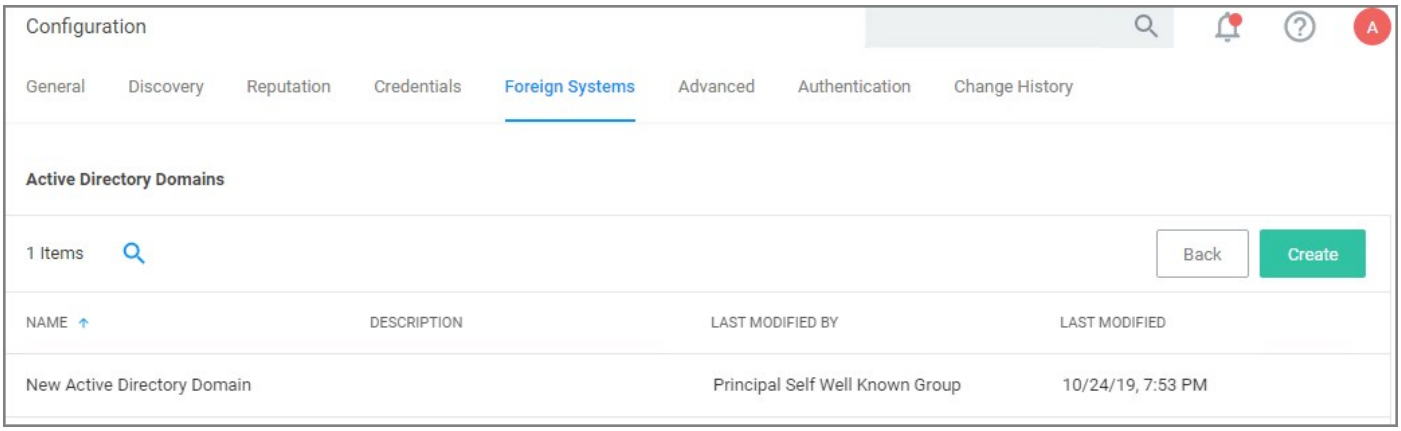
Resource Targets are reevaluated when the scheduled task "Collection and Resource Targeting Update" runs. This operation is expensive for

large numbers of computers. To keep performance high we suggest that you keep the overall number of targets to a minimum. Also note that targets with simpler definitions are generally less expensive.

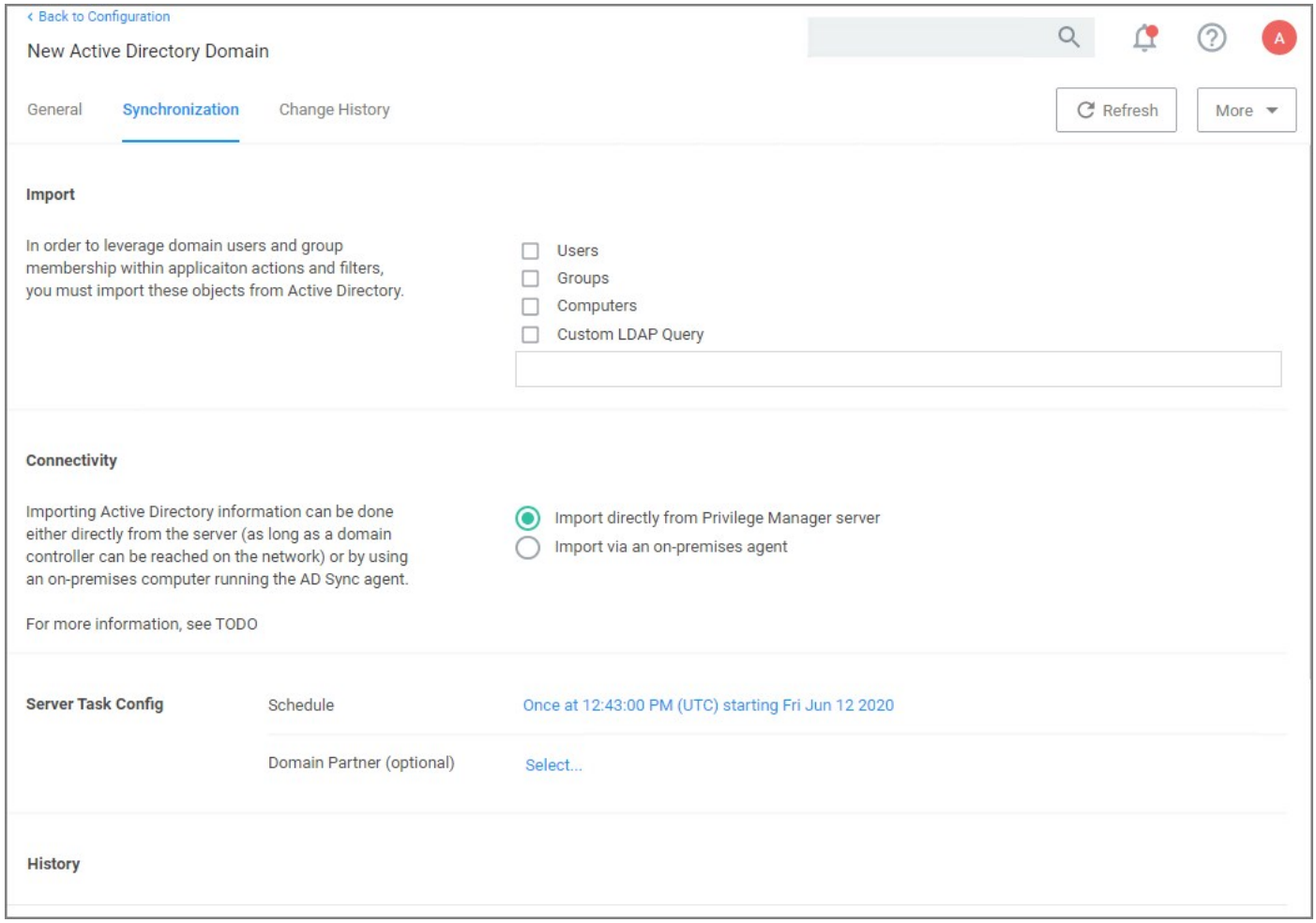
Active Directory as Related to Resource Targets

After you have created an Active Directory (AD) instance in Privilege Manager , you need to import computers (computer records, to be more precise).

1. Navigate to **Admin I Configuration I Foreign Systems**.

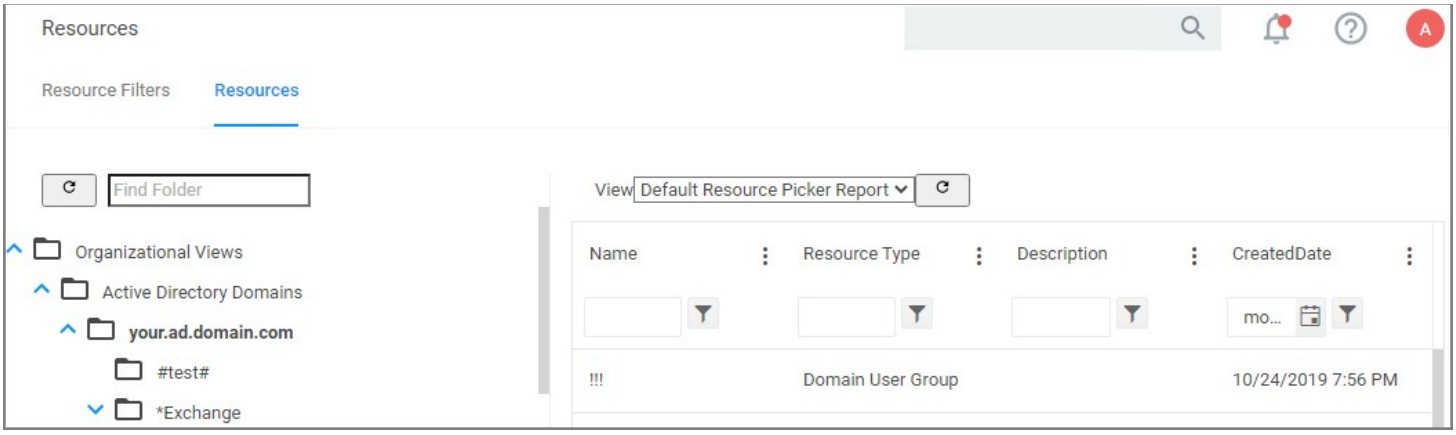


2. Select your AD instance and navigate to the **Synchronization** tab.



1. Under **Import** select which objects you want to import from your AD instance.
    - If you select Computers, the default import task also imports the Organization Units (OU) to which the computers belong.
    - If you select LDAP query, enter the query in the text field.
2. Under **Connectivity** select your import path. Import either directly from the server (as long as a domain controller can be reached on the network) or by using an on-premises computer running the AD Sync agent.
3. Click **Save**.

After the task completes, navigate to **Admin I Resources**, select the **Resource** tab. In the tree under **Organizational Views I Active Directory Domains I (your AD name)**, you should be able to see your OUs and computers.

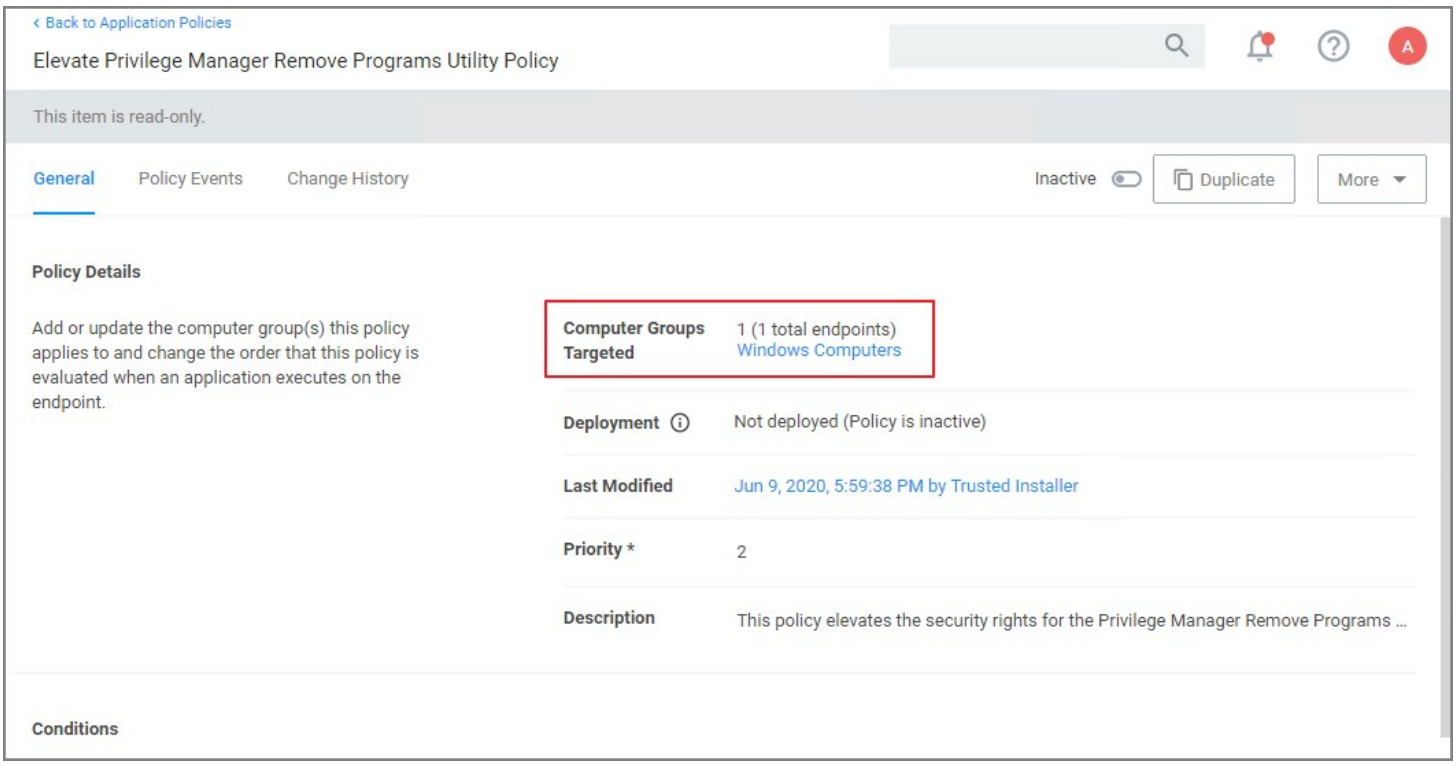


These OUs are what you can select using the "Group" option, for "List Type", when building a target.

> **Note**: Changes made in AD are not immediately reflected in Privilege Manager . Setup scheduled tasks to periodically import changes. The operation can be long-running for large domains, so be careful about the frequency with which you schedule the import.

Assigning Policies to Targets

To assign a policy to your target or better to add your target to a policy, find the policy on the Policies page and edit the **Policy Details**. Use the **Add** and **Edit** options to modify your policy.



Refer to the Policies section to review details about Policy Administration.

Collections

A collection is a predefined list of computers. A collection is often meant to act as a filter and hence is also sometimes referred to as a filter.

Collections are typically defined by an SQL query that returns a list of computer IDs or other resource IDs.

Built-in collections are available in Privilege Manager , for example, "All x64 Windows Computers" and "Domain Controllers."

User defined collections are possible but typically expected to be created by Privilege Manager professional services, on behalf of a user, rather than directly by a user. Users are encouraged to define custom targets using existing (built-in) collections, groups, and fixed lists rather than creating new collections.

When using RegEx in Filters instead of a single file name or file specification, make sure to verify the syntax and test your filter before using it in production.

Examples of program names with versions in file names:

(flashutil[a*zA*Z0*9\\.]+exe)

Winamp58_3660_beta_full_en*us

(winamp[a*zA*Z0*9\\.]+exe)

Wireshark*win64*2.6.6.exe

(wireshark*win64*[a*zA*Z0*9\\.]+exe)

This topic provides the Privilege Manager filters catalog for all out-of-the-box filters that are baked into Privilege Manager and can be used to make your policy configuration process easy.

Win32 Executable Filters

Add Hardware Utility (hdwwwiz.exe)	Filter used to identify the Device Pairing Wizard that appears when you click Add Device in Windows Vista and Windows 7
AOL Instant Messenger	Filter used to detect AOL Messenger
AppCmd for App Pool Recycling (appcmd.exe)	Filter used to identify the AppCmd executable
Backup and Restore Utility (sdcit.exe)	Filter used to identify the Windows Backup and Restore utility
Chrome	Filter used to detect Google Chrome web browsers
COM Elevation Host Utility (COMElevateHost.exe)	Filter to detect the COMElevateHost. This is used to detect when COM components are being elevated, such as the Network Adapter Properties
Command Processor (cmd.exe)	Filter used to identify the Windows command shell processor
Control Panel Utility (control.exe)	Filter used to identify the process used to launch Control Panel applets
Defragment GUI Utility (dfrgui.exe)	Filter used to identify the disk defragment utility within Windows
Device Pairing Wizard	Filter used to identity the Device Pairing Wizard that appears when you click Add Device in Windows Vista and Windows 7
Eudora	Filter used to detect Eudora email client
Firefox	Filter used to detect Firefox web browsers
Google Talk	Filter used to detect Google Talk
IIS Manager Executable Filter (inetmgr.exe)	Filter used to identify the IIS Manager executable
IIS Reset Executable Filter (iisreset.exe)	Filter used to identify the IIS Reset executable
Internet Explorer	Filter used to detect Internet Explorer web browsers
ISCSI Executable Filter (iscsicpl.exe)	Filter used to identify the ISCSI executable
iTunes	Filter used to detect iTunes

Library Loader Utility (rundll32.exe)	Filter used to identify the dynamic library loader utility used by Windows to launch various system configuration applets
Microsoft Installer File Filter	Filter used to detect the Microsoft Installer. This filter can be used in policies with secondary file filters targeting specific MSI files
Microsoft Management Console (mmc.exe)	Filter used to identify the Microsoft Management Console Utility
Microsoft Windows Media Player	Filter used to detect Windows Media Player
MS Access	Filter used to detect Microsoft Access
MS Excel	Filter used to detect Microsoft Excel
MS FrontPage	Filter used to detect Microsoft FrontPage
MS InfoPath	Filter used to detect Microsoft InfoPath
MS Lync	Filter used to detect Microsoft Lync
MS OIS	Filter used to identify the Office Picture Manager Image Viewer
MS Outlook	Filter used to detect Microsoft Outlook
MS Powerpoint	Filter used to detect Microsoft PowerPoint
MS PPTVIEW	Filter used to detect Microsoft PowerPoint Viewer
MS Publisher	Filter used to detect Microsoft Publisher
MS Visio	Filter used to detect Microsoft Visio
MS VPreview	Filter used to detect Microsoft VPreview
MS Word	Filter used to detect Microsoft Word
MSN Messenger	Filter used to detect MSN Messenger
NLB executable Filter (nlbmgr.exe)	Filter used to identify the NLB Manager executable
OODBC Executable Filter (odbcad32.exe)	Filter used to identify the OODBC executable
Opera	Filter used to detect the Opera Browser
Outlook Express	Filter used to detect Microsoft Outlook Express
Performance Monitor Utility (perfmon.exe)	Filter used to identify the Performance Monitor launcher stub utility within Windows
Powershell (powershell.exe)	Filter used to identify the Windows Powershell command processor

Printer Control Utility (printui.exe)	Filter used to identify the printer management applet launcher within Windows
QuickTime	Filter used to detect QuickTime
RealPlayer	Filter used to detect RealPlayer
Resource Monitor (resmon.exe)	Filter used to identify the Windows Resource Monitor application
Safari	Filter used to detect Apple Safari on Windows
Scripting Host (cscript.exe)	Filter used to identify the Windows Scripting Host command-line utility
Scripting Host (wscript.exe)	Filter used to identify the Windows Scripting Host commandline utility
Setup Display Languages Utility (lpksetup.exe)	Filter used to identify the Install/Uninstall of Display Languages setup utility for Windows
ShareX	This filter targets the ShareX application
Skype	Filter used to detect Skype
Trillian	Filter used to detect the Trillian application
User's Temp Directory Win32 Executable Filter	Filter used to target any executable (exe) in a user's temp directory
Win32 Executables Discovered in the Last Week	This filter is limited to applications discovered on the endpoint within the last week
Winamp	Filter used to detect Winamp application
Windows Firewall (netsh.exe)	Filter used to identify the Windows Firewall netsh.exe
Windows Messenger	Filter used to detect Windows Messenger
Yahoo! Messenger	Filter used to detect Yahoo Messenger

Commandline Filters

| Filter | Description | | ----- | ----- | | **Add Printer Commandline Arguments**| Filter used to identify the Add Printer UI applet | | **Azman.msc Commandline Filter for MMC Snap-in** | Filter used to detect Windows Authorization Manager | | **Backup and Restore Commandline Arguments**| Filter used to identify the Backup and Restore component, used as a commandline argument to a process | | **Certmgr.msc Commandline Filter for MMC Snap-in**| Filter used to detect Windows Certificate Manager | | **Ciadv.msc Commandline Filter for MMC Snap-in** | Filter used to detect Indexing Service Management | | **Compmgmt.msc Commandline Filter for MMC Snap-in** | Filter used to detect Windows Computer Management | | **Defragment Component (dfrg.msc)** | Filter used to detect the MMC Snap-in used to defragment disks in Windows XP| | **Devmgmt.msc Commandline Filter for MMC Snap-in**| Filter used to detect Device Manager | | **Dhcpmgmt.msc Commandline Filter for MMC Snap-in** | Filter used to detect DHCP Management | | **Diskmgmt.msc Commandline Filter for MMC Snap-in** | Filter used to detect Disk Management | | **Dnsmgmt.msc Commandline Filter for MMC Snap-in**| Filter used to detect DNS Management | | **Eventvwr.msc Commandline Filter for MMC Snap-in** | Filter used to detect Event Viewer| | **Fsmgmt.msc Commandline Filter for MMC Snap-in**| Filter used to detect Shared Folders Management| | **Fsrm.msc Commandline Filter for MMC Snap-in** | Filter used

to detect File Resource Manager | | **Gpedit.msc Commandline Filter for MMC Snap-in**| Filter used to detect Group Policy Editor | | **Hardware Wizard Applet** | Filter used to identify a commandline argument referring to the Control Panel applet used to add new hardware| | **Lusrmgr.msc Commandline Filter for MMC Snap-in**| Filter used to detect Local User and Group Management | | **Napclfcfg.msc Commandline Filter for MMC Snap-in** | Filter used to detect NAP Client Configuration | | **Network Adapter Elevate Attempt** | Filter used to detect when a user right-clicks on a network adapter and selects Properties | | **Ntmsmgr.msc Commandline Filter for MMC Snap-in**| Filter used to detect Removable Storage Manager| | **Performance Monitor Component (perfmon.msc)** | Filter used to detect Performance Monitor | | **Printmanagement.msc Commandline Filter for MMC Snap-in** | Filter used to detect Print Management | | **Recycle App Pool Commandline** | Filter used to identify the recycle command for application pools | | **Rsop.msc Commandline Filter for MMC Snap-in** | Filter used to detect Resultant Set of Policy| | **Secpol.msc Commandline Filter for MMC Snap-in**| Filter used to detect Local Security Settings Manager | | **Services.msc Commandline Filter for MMC Snap-in** | Filter used to detect Services Manager | | **Sqlservermanager12.msc Commandline Filter for MMC Snap-in** | Filter used to detect SQL Server Manager| | **System Control Panel Applet**| Filter used to identify a commandline argument referring to the Control Panel applet used to change the system time and date settings | | **Tpm.msc Commandline Filter for MMC Snap-in** | Filter used to detect Trusted Platform Module Management| | **Wbadmin.msc Commandline Filter for MMC Snap-in**| Filter used to detect Windows Server Backup | | **Wf.msc Commandline Filter for MMC Snap-in** | Filter used to detect Windows Firewall Management | | **Wmimgmt.msc Commandline Filter for MMC Snap-in**| Filter used to detect WMI Management |

Environment Filters

Manual Application Compatibility Setting	Detects whether an application is being run with manual override options
User Access Control Consent Dialog Detected	This filter will match when an application that requires User Access Control consent is launched
User Requested Run As Administrator	Detects whether a user has right-clicked on an application and used Delinea's custom 'Request Run as Administrator' option

Network Location Filters

Disconnected from Network	Filter used to detect when the computer is not attached to a network
Domain Network Location Filter	Filter used to detect when the computer is attached to a network classified as domain
Private Network Location Filter	Filter used to detect when the computer is attached to a network classified as private
Public Network Location Filter	Filter used to detect when the computer is attached to a network classified as public

Parent Process Filters

Thycotic Copy/Installer Helper Parent Process Filter	Filter used to detect when a user attempts to copy a file using the Privilege Manager copy helper

Secondary File Filters

Target MSI and Scripts executed from the User's Temp Directory	Filter used to target MSI and Scripts executed from the User's Temp Directory

Security Rating Filters

VirusTotal	This filter will target VirusTotal for Reputation Checking
VirusTotal-Bad Rating	This filter will target VirusTotal for Reputation Checking
VirusTotal-Clean Rating	This filter will target VirusTotal for Reputation Checking
VirusTotal-Suspect Rating	This filter will target VirusTotal for Reputation Checking

VirusTotal Filters based on configuring VirusTotal integration in Privilege Manager . For steps to do this, see our *VirusTotal Integration Guide here*

Time of Day Filters

Business Hours (8:30AM to 5:30PM)	This filter is limited to 8AM to 6PM weekdays
Business Hours (8AM to 6PM)	This filter is limited to 8AM to 6PM weekdays
Business Hours (9AM to 5PM)	This filter is limited to 9AM to 5PM weekdays
Weekends	This filter is limited to weekends

User Context Filters

Administrators	Detects when an application is running with elevated (administrator) permissions
Administrators (Include Disabled)	Detects when an application has an administrator user token

File Filters

Application Compatibility File Filters

Administrative Rights Required Application Compatibility Filter	This filter tests whether Windows has detected that this executable requires administrative rights
Generic Installer Detection Filter	This filter indicates that Windows has detected that an executable is an Application Setup

Highest Available Application Compatibility Filter	This filter tests whether Windows has detected that this executable required highest available rights
Specific Installer Detection Filter	This filter indicates that Windows has detected that an executable is an Application Setup
Specific Non Installer Detection Filter	This filter indicates that an executable has been flagged as not being an Application Setup

Manifest Filters

Require Administrator Rights Manifest Filter	This filter tests whether an executable is marked as requiring Administrative rights
Require Highest Available Rights Manifest Filter	This filter tests whether an executable is marked as requiring highest available rights
Manifest Present Filter	This filter tests whether an executable has a security manifest

File Owner Filters

System (Wheel) File Owner	Files that are owned by the Wheel Group (Unix)
System File Owner Filter	Filter used to detect files owned by the System account
Trusted Installer File Owner Filter	Filter used to detect files owned by the Trusted File Owner account

File Specification Filters

Any Package (MacOS)	Target .pkg and .mpkg files
App Store Preference Pane (MacOS)	Filter used to detect App Store Preference Pane in Mac
Common Executable Folders	Filter used to detect files in common executable directories, such as C:\Windows, C:\Program Files, and C:\Program Files(x86)
Date and Time Preference Pane (MacOS)	Date and Time Preference Pane (MacOS)
Default App Bundles File Specification Filter	The default filter for discovering app bundles on MacOS
Default File Specification (All executable types)	Specifies all executable file types in Windows and Program files
Default File Specification (MacOS)	The default filter for discovering executable files on MacOS

Default File Specification (Windows)	This specifies executables in Windows and Program files
Documents and Settings	Filter used to detect files in the Downloaded Program Files directory
Drivers	Filter used to detect files in the C:\Windows\System32\drivers directory
Energy Saver Preference Pane (MacOS)	Filter used to detect the Energy Saver Preference Pane in Mac
Executables in Windows Directories	This specifies executables in Windows directories
Executables in Windows Directories (All executable types)	Specifies all executable file types in Windows directories that are not present in a signed security catalog
Mac OS/Users/File Specification	The default filter for files in the /Users/directory on MacOS
Network Drive Filter	Specifies files present on network file systems
Optical Drive Filter (CD/DVD)	Specifies files present on optical drives (CD/DVD)
Parental Controls Preference Pane (MacOS)	Filter used to detect the Parental Controls Preference Pane in Mac
Printers and Scanners Preference Pane (MacOS)	Filter used to detect the Printers and Scanners Preference Pane in Mac
Program Data	Filter used to detect files in the C:\ProgramData\ directory
Program Files	Filter used to detect files in the C:\Program Files\ directory
Program Files (x64 on Win32)	Filter used to detect files in the C:\Program Files\ directory
Program Files (x86)	Filter used to detect files in the C:\Program Files(x86)\ directory
Removable Drive Filter	Filters files present on removable drives such as Floppy Drives and USB devices
Security and Privacy Preference Pane (MacOS)	Filter used to detect Security and Privacy Preference Pane in Mac
Sharing Preference Pane (MacOS)	Filter used to detect the Sharing Preference Pane in Mac
System Catalog Folder	Filter used to detect files in the CatRoot directory
System Preferences (MacOS)	Filter used to detect the System Preferences Preference Pane in Mac
Temporary ASP.NET 1.0 Files	Filter used to detect files in the .NET 1 Temp directory
Temporary ASP.NET 1.1 Files	Filter used to detect files in the .NET 1.1 Temp directory
Temporary ASP.NET 2.0 Files	Filter used to detect files in the .NET 2 Temp directory
Temporary Files	Filter used to detect files in the C:\Windows\Temp directory

Thycotic Copy/Installer Helper Application	Filter used to detect usage of the Privilege Manager copy helper
Time Machine Preference Pane (MacOS)	Filter used to detect the Time Machine Preference Pane in Mac
Uncommon Executables Folders	Filter used to detect files in the Uncommon directories
Users and Groups Preference Pane (MacOS)	Filter used to detect the Users and Groups Preference Pane in Mac
User's Directory Collection File Specification Filter	Used to target any file in the user's temp directory
User's Downloads Directory File Specification Filter	Used to target any file in the user's temp directory
User's Temp Directory File Specification Filter	Used to target any file in the user's temp directory
Windows Directory	Filter used to detect files in the C:\Windows directory
Windows Directory (Include Subdirectories)	Filter used to detect files in the C:\Windows\ directory
Windows Dll Cache	Filter used to detect files in the C:\Windows\System32\dllcache directory
Windows Side By Side	Filter used to detect files in the C:\Windows\WinSxS\ directory
Windows Software Distribution	Filter used to detect files in the Windows Software Distribution directory
Windows\System32	Filter used to detect files in the C:\Windows\System32 directory
Windows\System32 (Include Subdirectories)	Filter used to detect files in the C:\Windows\System32\ directory
Windows\SysWOW64	Filter used to detect files in the SysWOW64 directory
Windows\SysWOW64 (Include Subdirectories)	Filter used to detect files in the SysWOW64\ directory

Security Catalog Filters

Present in Signed Security Catalog	Filter used to detect Operating System Files and other trusted files dynamically on each system by using that machine's Signed Security Catalog. This filter does not need to be modified on the server

Miscellaneous Filters

App Bundle Filters

All Application Bundles Filter (MacOS)	Filter used to detect All Applications Bundles

Coff Header Filters

32-bit Executables	Filter used to detect files with the 32-bit executable machine type header set
All Executable Types	This filter includes all executable types
Commandline Executables	Filter used to detect files with the Windows console subsystem header set
GUI Executables	Filter used to detect files with the GUI header set
Native Executables	Filter used to detect files with the executable header set
Windows CE Executables	Filter used to detect files with the Windows CE Subtype header set
Program File Executables	Filter used to detect files with the executable or DLL header set
Posix Executables	Filter used to detect files with the POSIX header set
X64 Executables	Filter used to detect files with x64 machine type header set

File Parameter Collections

All Deny List Security Rated Applications	This collection contains all applications that have been denylisted by applying a security rating
All Executables Discovered in Last 2 Weeks	Filter used to detect files that have been discovered by the server in the past 2 weeks
All Executables Discovered in Last Day	Filter used to detect files that have been discovered by the server in the past day
All Executables Discovered in Last Week	Filter used to detect files that have been discovered by the server in the past week
All Executables Discovered in Last Month	Filter used to detect files that have been discovered by the server in the past month
All Greylist Security Rated Applications	This collection contains all applications that are being monitored.
All Unclassified Applications	This collection contains all applications that have not been classified by a security rating
All Allow Listed Security Rated Applications	This collection contains all applications that have been allowed by applying a security rating

Mach-O Header Filters

macOS DyLib	Identifies dynamic library (dylip) files according to their embedded Mach-O header (not specifically according to file name)
macOS Executables	Identifies files marked as executables according to their Mach-O header (not file mode changes via chmod)

Filter Types and Descriptions

There are different types of filters for different operating systems and applicable functional areas. When creating a new filter,

- the **Platform** drop-down offers a choice of macOS, Windows, and Unix/Linux.
    - Unix/Linux
    - Mac OS
    - Windows
- when Windows or macOS is selected as a platform, the **Filter Type** drop-down gives a list of options based on that platform selection:
    - Application Filters
    - File Filters
    - Inventory Filters

These are loose groupings that signify a few different approaches to the filtering method or targets.

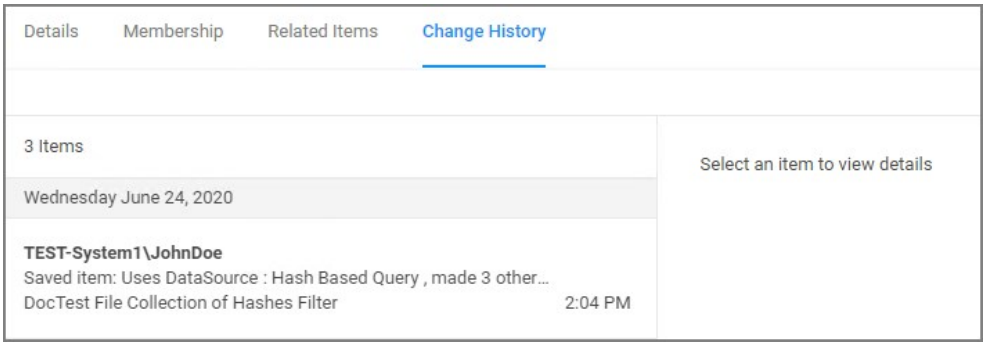
Common Filter Characteristics

Each filter has a Details area that contains the filter name, description, and platform association. These details are usually specified when you create the filter, either by choosing **Create Filter**, editing an existing filter, or duplicating an existing filter.

Those characteristics are used for searches or filtering and allow users to easily find existing filters.

Filter Change History

Each filter has a **Change History** tab, where audit information can be reviewed from the time the filter was created in the system.



Refer to Change History to learn more about drilling down into the change history of resources and the report.

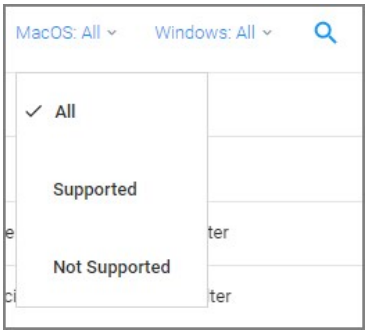
How to Search for Filters

All out-of-the-box filters can be searched, duplicated, and then customized to be used in policies.

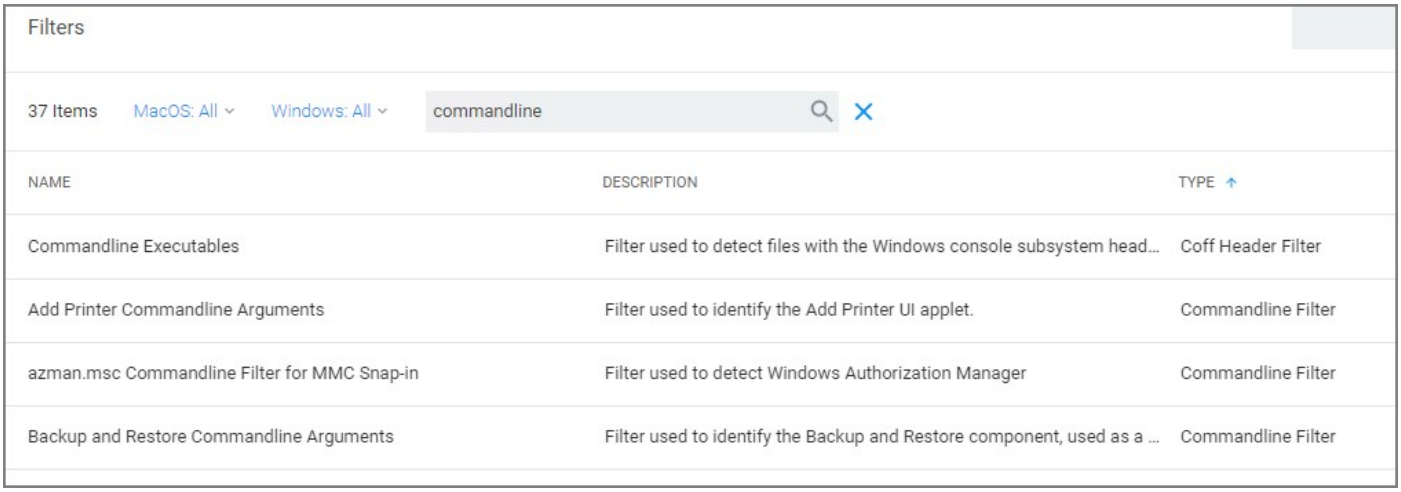
1. Navigate to **Admin I Filters**.

The list of all filters is sortable by Name (default), Description, Type, and OS Support.

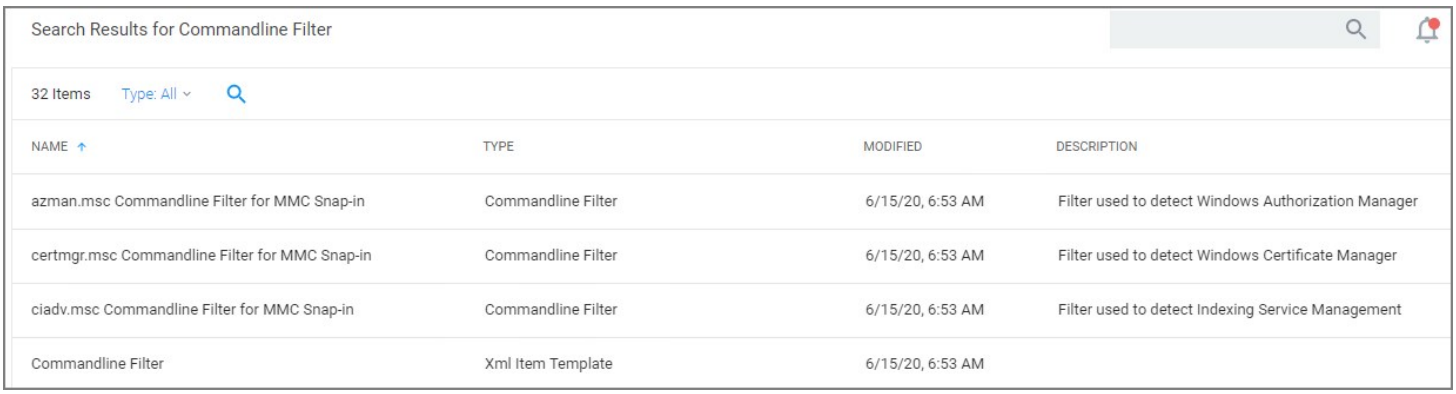
You may limit your list output, by changing from the default **All** or Supported selection for macOS or Windows to Not Supported.



2. Using the search option next to the OS drop-down, lets you search the list contents based on the column the contents is sorted by. So if your list is sorted by **Name**, but you are looking for all commandline filter types you have in the system, sort your list by **Type** first.
3. Then click **Search** and enter a search term, for this example *commandline*.



You can also use the search option on the top-right from any page of your Privilege Manager console and get the a list of commandline filters returned. If you use this search option, the search field does not retain your search term. The results are based on the search term matching the Name and/or Type, so the list will contain more items than searching based on column selection.



The columns returned for this search are sorted by Name (default), Type, Modified Date, and Description.

Delinea

Application Filters

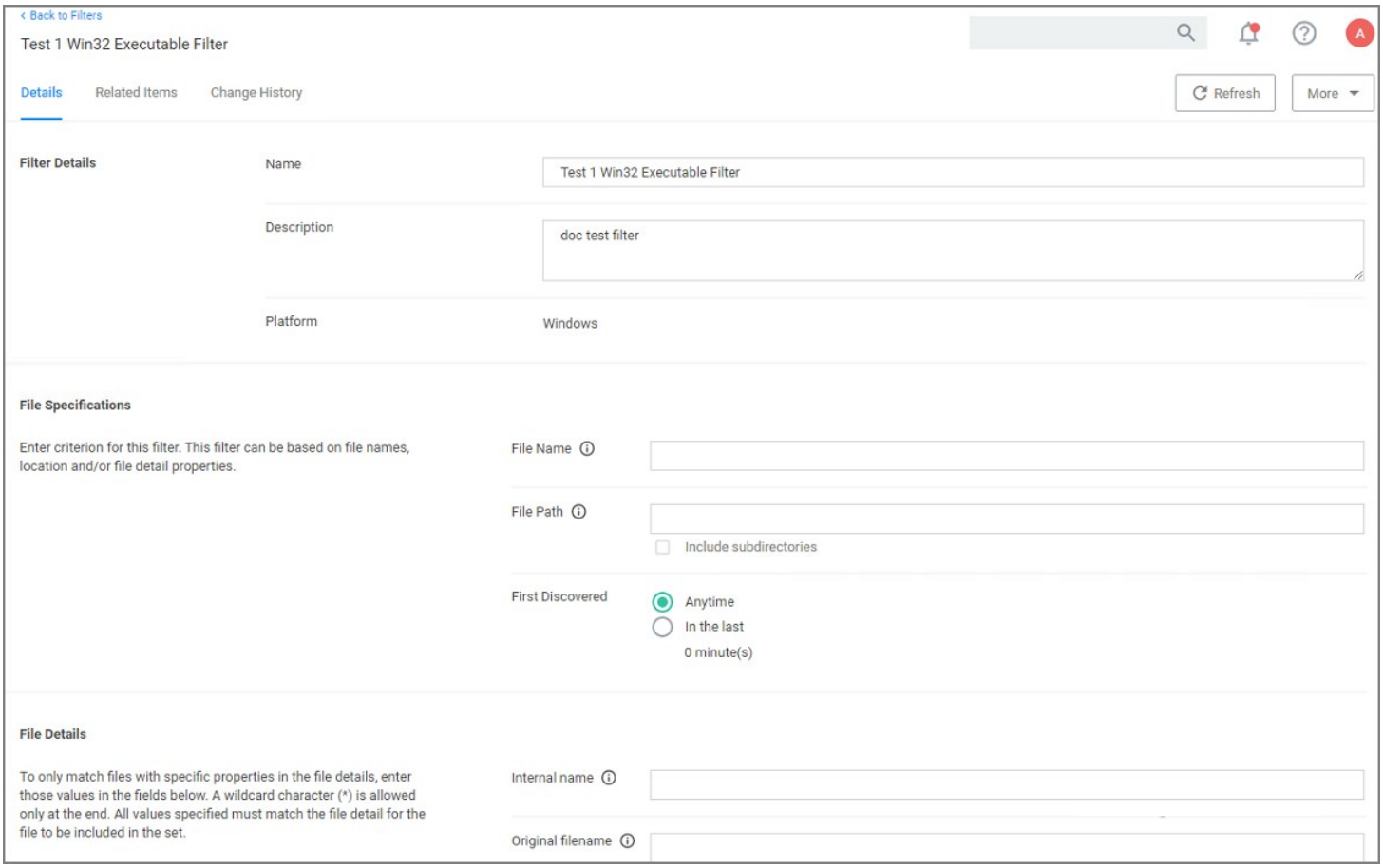
These generally target specific executables or things about the environment. These types of filters can be used to limit policies to a certain time of day, the parent process of an application, the security rating of an application, or the user or group running the process.

The following Application Filter type filter topics are available:

- Blank Wind32 Executable Filter
- Commandline Filter
- Download Source Filter
- Environment Filter
- Network Location Filter
- Parent Process Filter
- Secondary File Filter
- Security Rating Filter
- Signed File Filter
- Time Of Day Filter
- User Context Filter
- User Context Filter via SID

Blank Win32 Executable Filter

Identifies specific application files by specifications like name, path, and when first discovered.



Parameters

Win32 Executable filters have two sets of parameters:

- **File Specifications**, such as
  - File Name
  - File Path with option to include subdirectories
  - First Discovered, which can specified as "Anytime" or "In the last" either Minutes, Hours, Days, or Weeks.
- **File Details** (common attributes), such as
  - Internal name
  - Original filename
  - File version
  - Product name
  - Product version
  - Company name
  - Copyright (version 10.7 and up)

Examples

Used to target specific applications, for example allowing acrobat.exe or notepad++.msi to be used on endpoints.

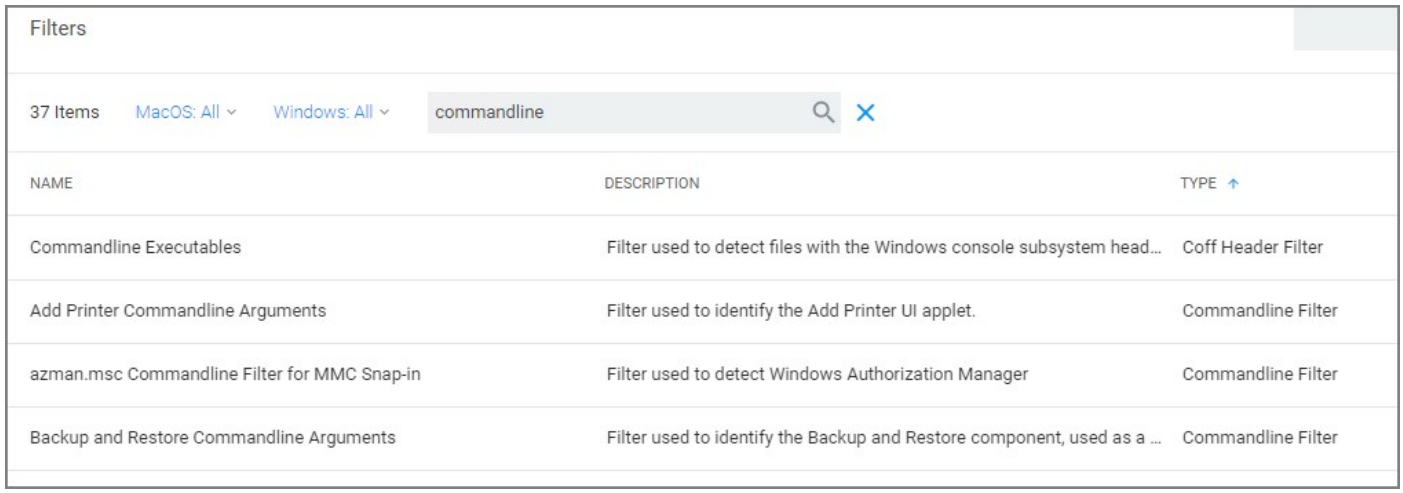
Commandline Filter

These filters will perform an exact, partial or regex match on the commandline of the process. Privilege Manager comes with default commandline filter types, which are all read-only, but can be copied to be customized.

This filter is available for both Windows and macOS systems.

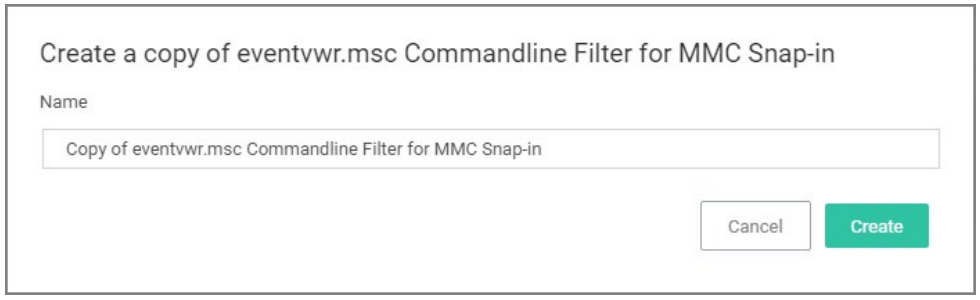
Search for Commandline Filters

1. Navigate to **Admin | Filters**.
2. In the search field for the **Type** column enter commandline.



3. Select a filter to view its details and/or use **Duplicate** to customize the filter.

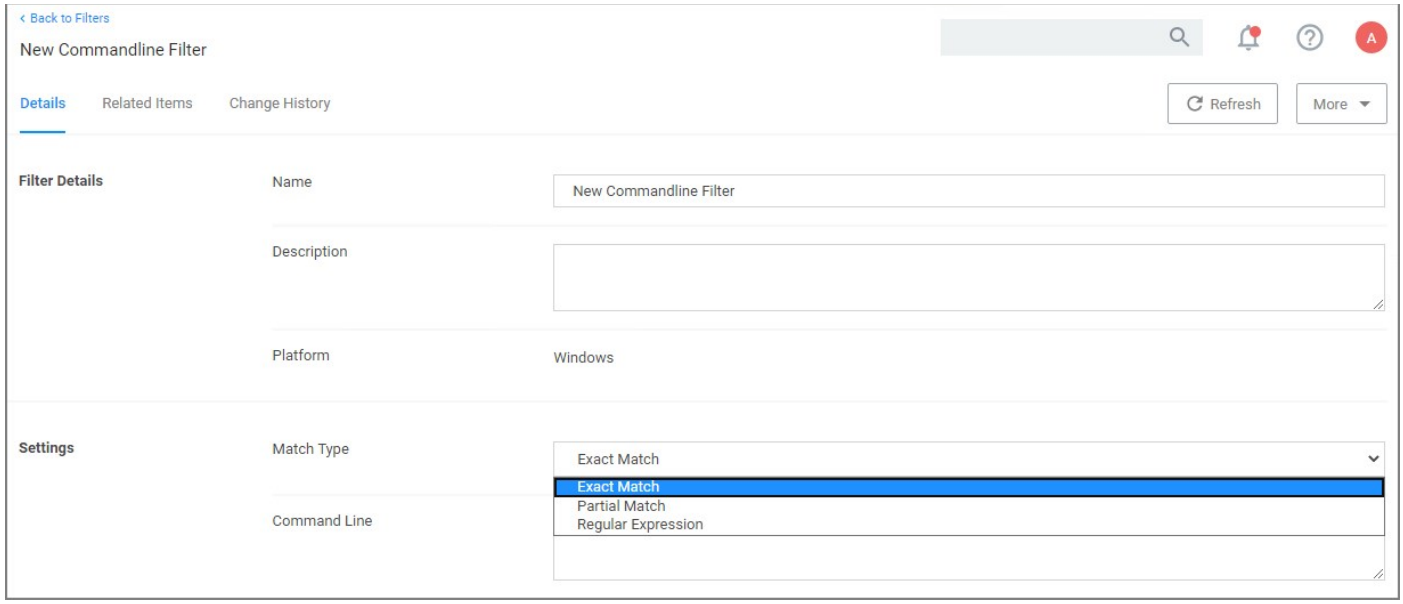
If you Duplicate (make a copy of an existing) filter, "rename" the filter and click **Create**.



Create a new Commandline Type Filter

1. Navigate to **Admin I Filters**.
2. Click **Create Filter**.
3. On the New Filter page, select the platform. For this example, select **Windows**.
4. From the **Filter Type** drop-down select **Commandline Filter**.
5. Enter a name and description and click **Create**.

6. Customize the newly created filter.



1. Under **Settings**,
    1. Set the **Match Type**. This can be either an exact or partial match or specified as a regular expression.
    2. Enter the commandline to match.

7. Click **Save Changes**.

Parameters

Commandline Filters have one section to set the parameters for the filter.

The **Match Type** gives you the options:

- Exact Match
- Partial Match
- Regular expression

Command Line:

- This is the section where you enter in the given command parameters to pull up the file or action.

Examples

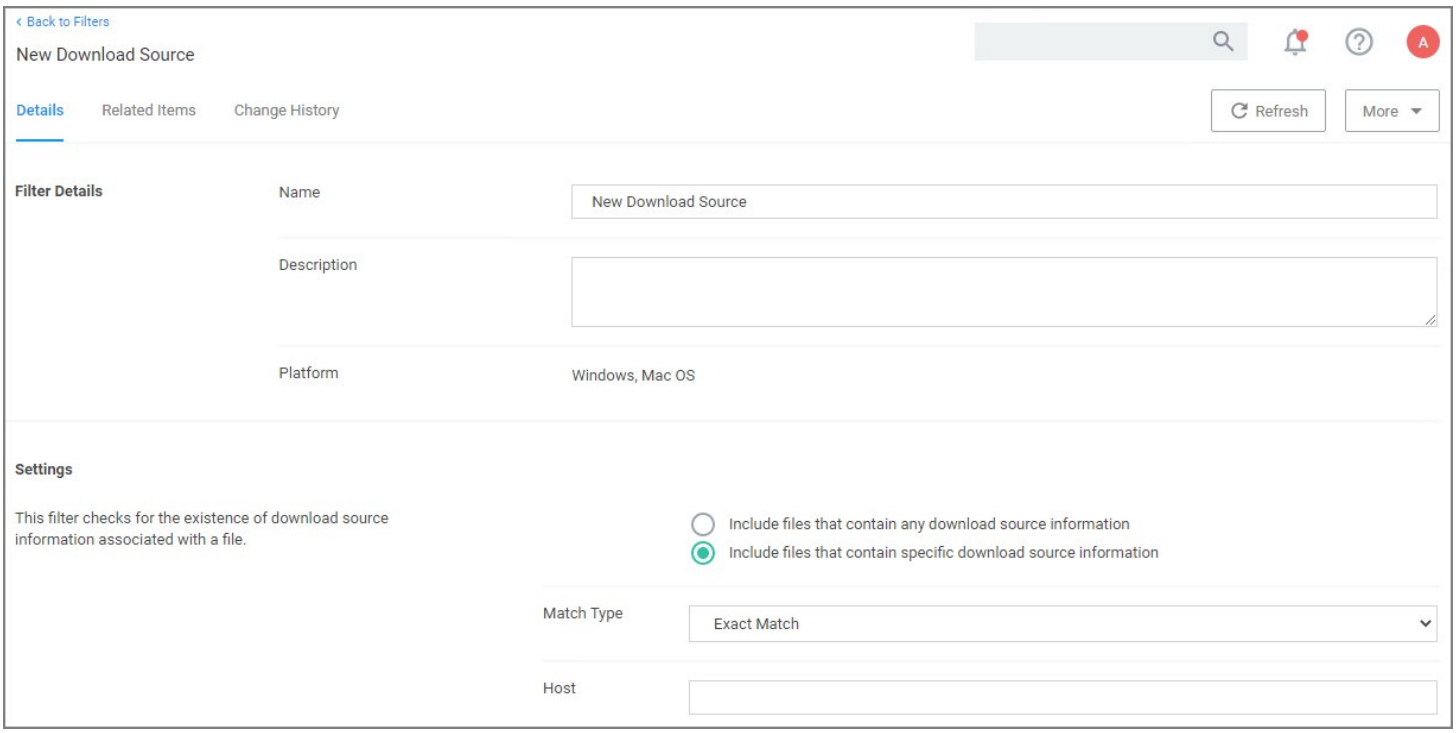
A commandline filter examines the commandline (excluding the primary executable) and applies a pattern match (Exact, Partial or Regular Expression).

For example allowing /FlushDNS as a command for IPConfig.

Download Source Filter

The filter checks where a file is being downloaded from. This filter allows you to identify specific download sources, and allows the ability to allow list sources you trust or block sources you don't. *No out-of-box filters exist in Privilege Manager for this type.*

This filter is available for both Windows and macOS systems.



Parameters

The filter checks for the existence of download source information associated with a file.

Settings:

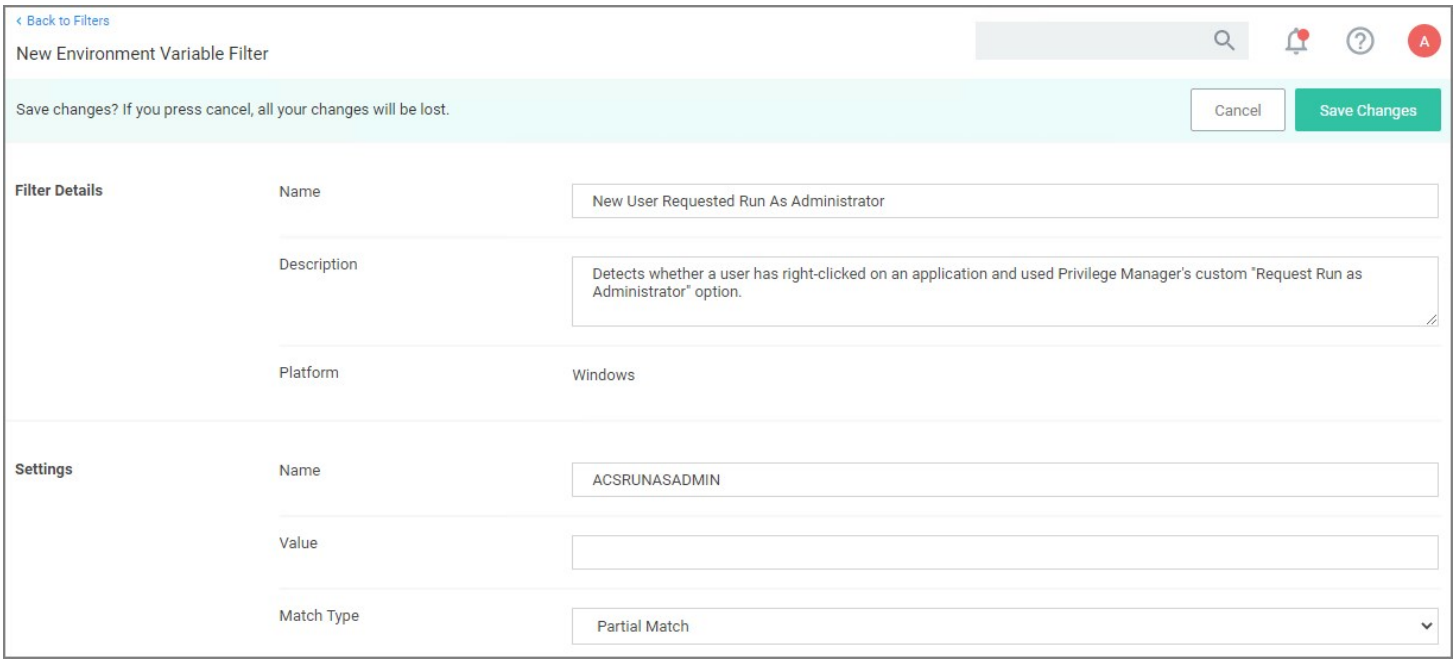
- Include files that contain any download source information
- Include files that contain specific download source information
- Match type
- Host

Examples

This filter would allow you to control what download sources should be allowed or blocked.

Environment Variable Filter

This type of filter can target environment variables of a process that is started.



Parameters

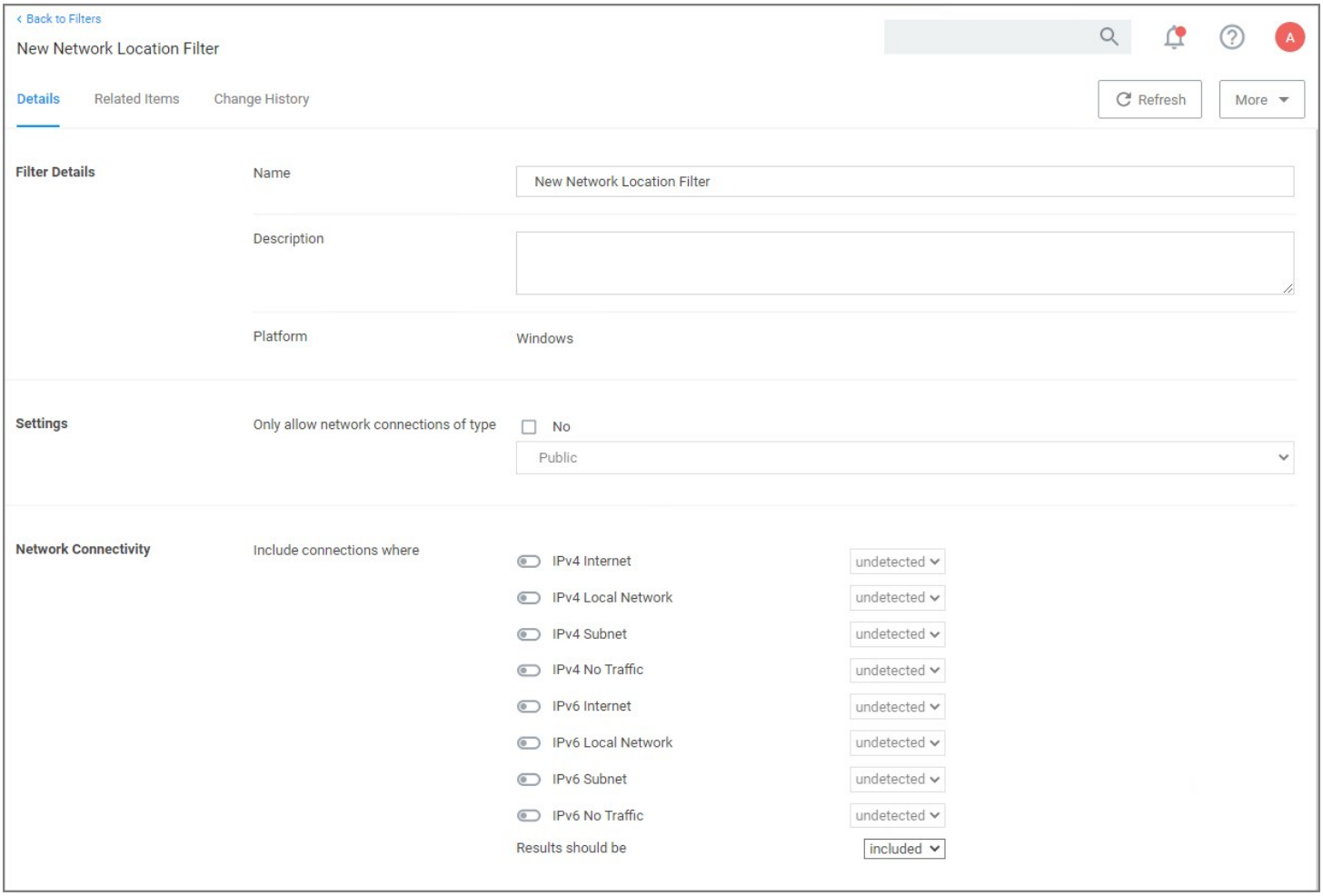
- Name
- Value
- Match Type:
  - Exact Match
  - Partial Match
  - Regular expression

Examples

A environment variable filter type detects whether a user has right clicked on an application and used Privilege Manager 's custom *Request Run as Administrator* option.

Network Location Filter

This type of filter identifies a computer's connection to specific networks like public, private, or unclassified networks.



Parameters

You can adjust the following setting options for Network Location filters:

- **Only allow network connections of type**:
  - Public
  - Private
  - Domain
- **Network Connectivity**:
  - IPv4 and IPv6 options for connectivity
- **Results should be**:
  - Included or excluded

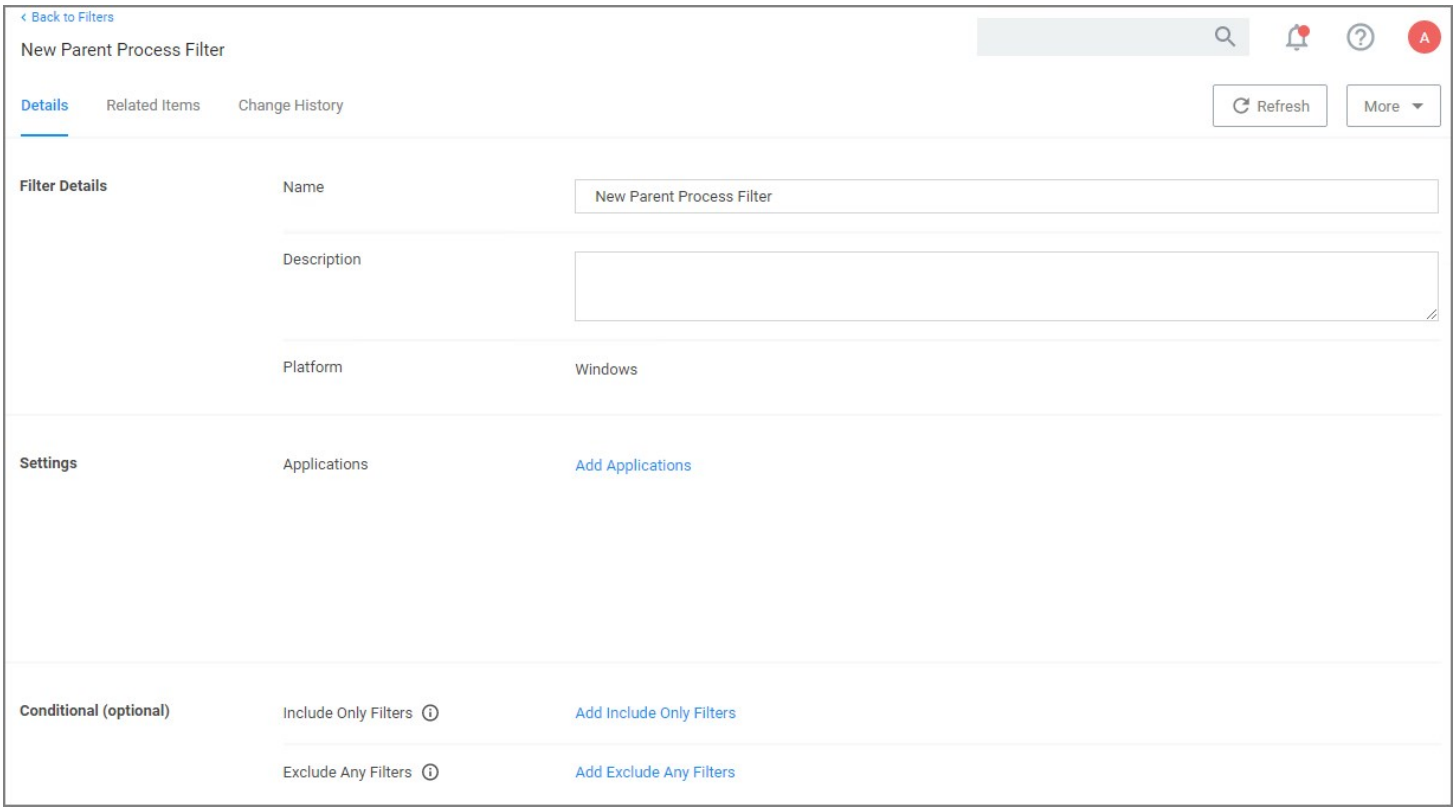
Examples

Some examples of this filter can be set to detect:

- when the computer is not attached to a network
- when the computer is attached to a network classified as public
- when the computer is attached to a network classified as domain

Parent Process Filter

This type of filter can identify parent processes of certain executables.



This filter is available for both Windows and macOS systems.

Parameters

- Applications
- Conditions
- Include only filters
- Exclude any filters

Examples

This filter is used to detect when a user attempts to copy a file using the Privilege Manager copy helper.

Using Secondary File Filters

This topic explains how to create policies for applications that trigger file executions. Implementing a policy to filter on a file type, which is used by another executable, is done by setting a **Secondary File Filter**. The Secondary File Filter is available for both Windows and macOS systems.

The following topics show the steps to create policies and include filters that enforce actions on endpoints when batch files, PowerShell scripts, or Microsoft Installer files execute. Any type of executer can be specified and policed this way.

In general, the steps are similar for the different file types to be policed.

Via File Inventory

- With Learning Mode enabled, you use the File Inventory to discover new resources.
- Select a discovered resource and use **Create Filter**.
- On the Manage Application modal select which specifications to match.
- Use **Create and Add to Policy** option.

Via Policy Wizard

- You create a controlling policy via the Wizard.
- On the **What do you want to target step?** you can select an existing filter, upload a file (recommended for .msi/.exe applications), or use an already inventoried file.
- Policy Wizard builds the policy and after you name and create it, you can further customize all the details. The Policy wizard automatically adds the correct application targets, inclusions an/or exclusions.

Examples

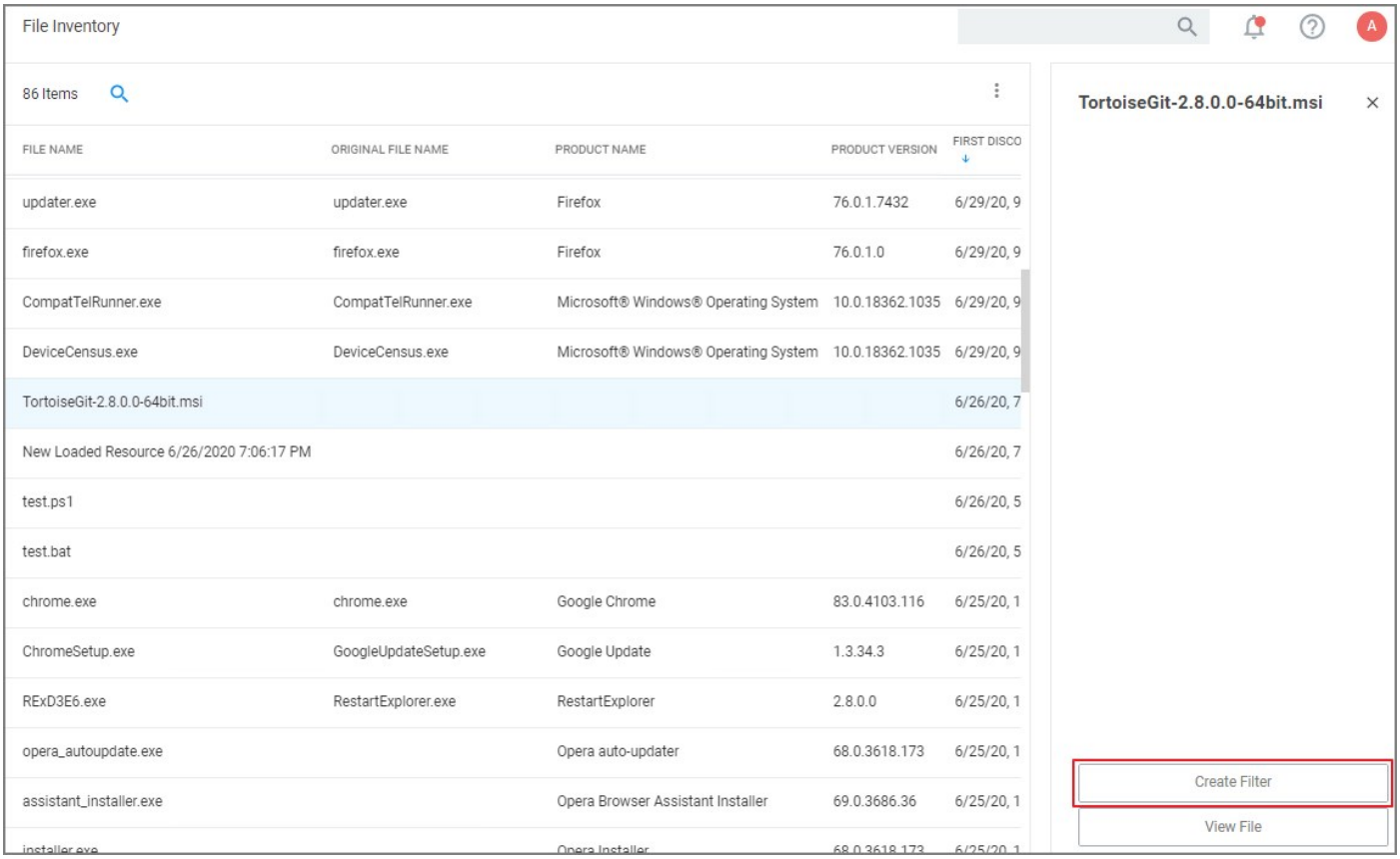
- Best Practices
- Targeting script file execution, like .bat and .ps1
- Targeting installer/executables execution, like .msi and .exe

Best Practice Using a Secondary File Filter

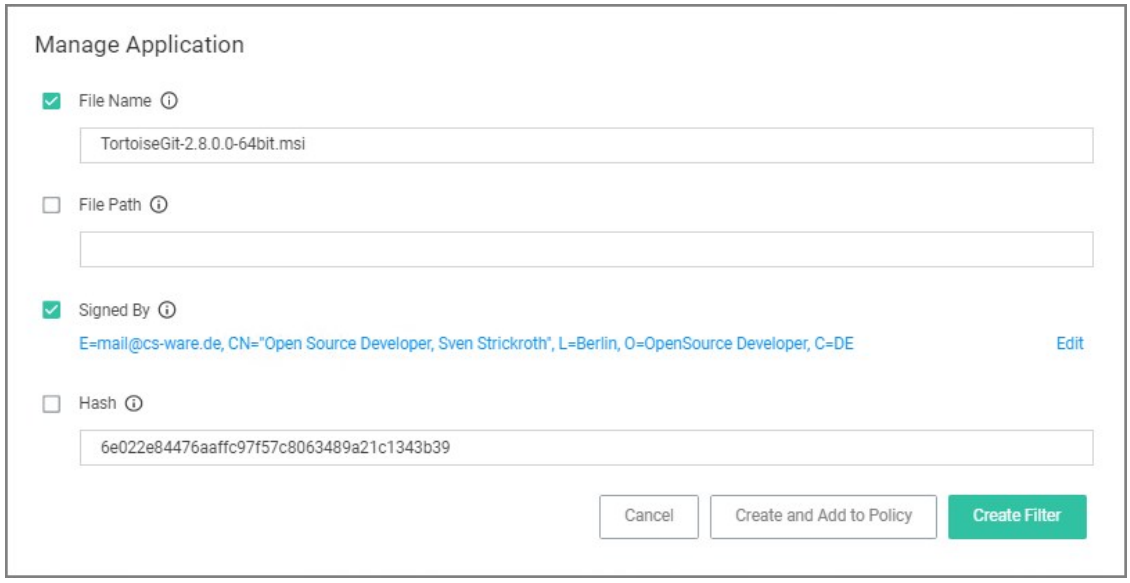
Using File Inventory

As a best practice you create an elevate policy with a priority of X (for example 85) to elevate or allow specific scripts or files to run. Then you add a policy with a priority of X+1 to deny any other execution of the command processor, PowerShell, or Microsoft installer files. For this example .msi is used.

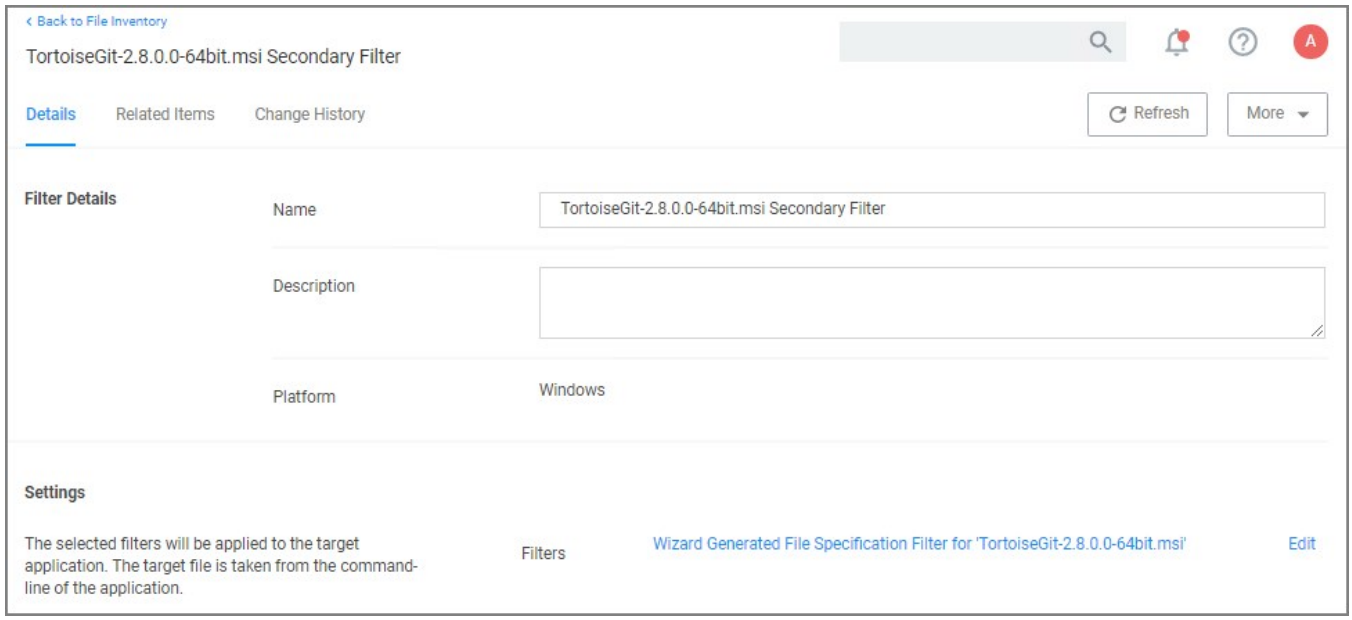
1. In the Privilege Manager Console under **Computer Groups** navigate to **File Inventory**.
2. From the list of discovered resources, we are selecting our example TortoiseGit.



3. Click **Create Filter**.
4. On the Manage Application page, check the **File Name** and **Signed By** checkboxes.



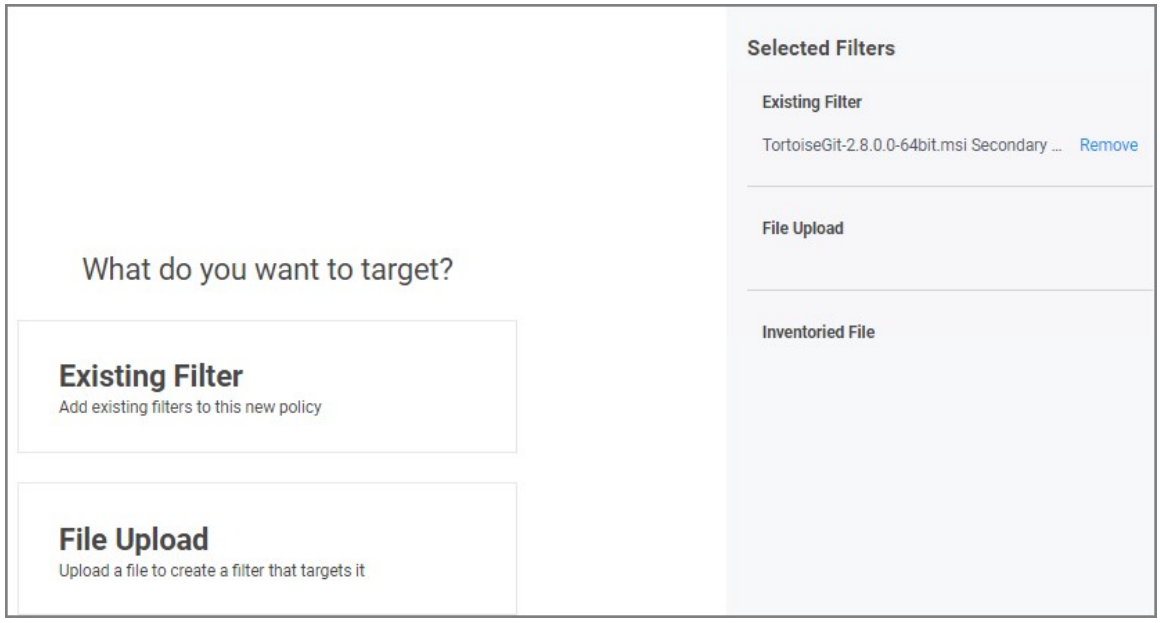
5. Click **Create Filter**.



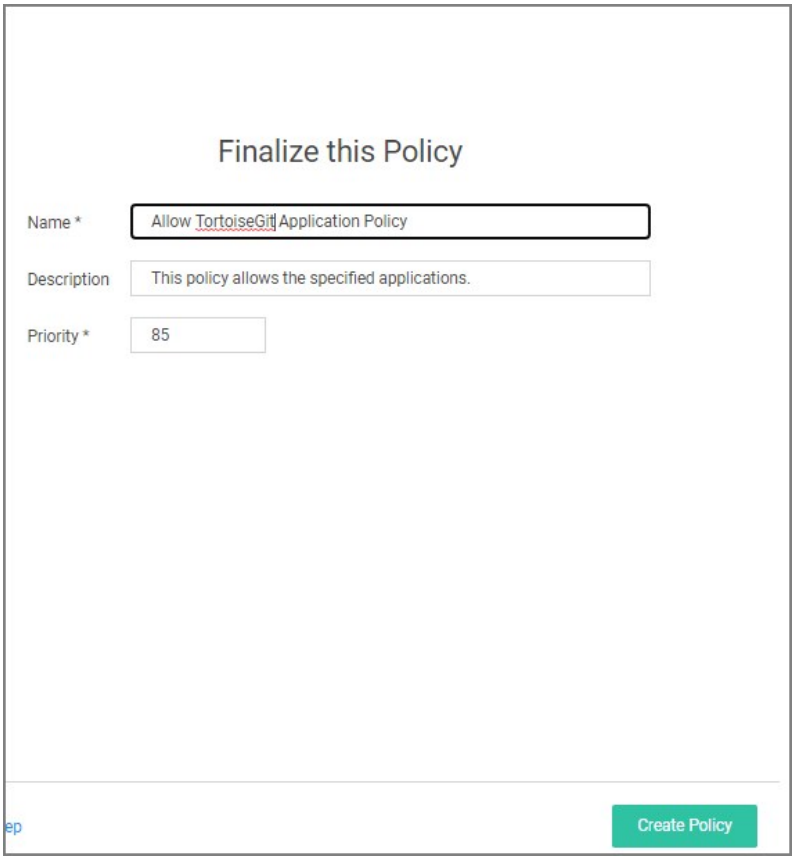
6. Navigate to **Computer Groups | Windows Computers**.
7. Select **Application Policies**.
8. Click **Create Policy**.
9. In the policy wizard select **Controlling**, click **Next Step**.
10. In the policy wizard select **Allow**, click **Next Step**.
11. In the policy wizard select **Specific Applications**, click **Next Step**.
12. In the policy wizard select **Existing Filter**, click **Next Step**.

1. Search for and add the secondary file filter created from the file inventory above.
2. Click **Update**.

13. On the policy wizard page that now lists the existing filter, click **Next Step**.

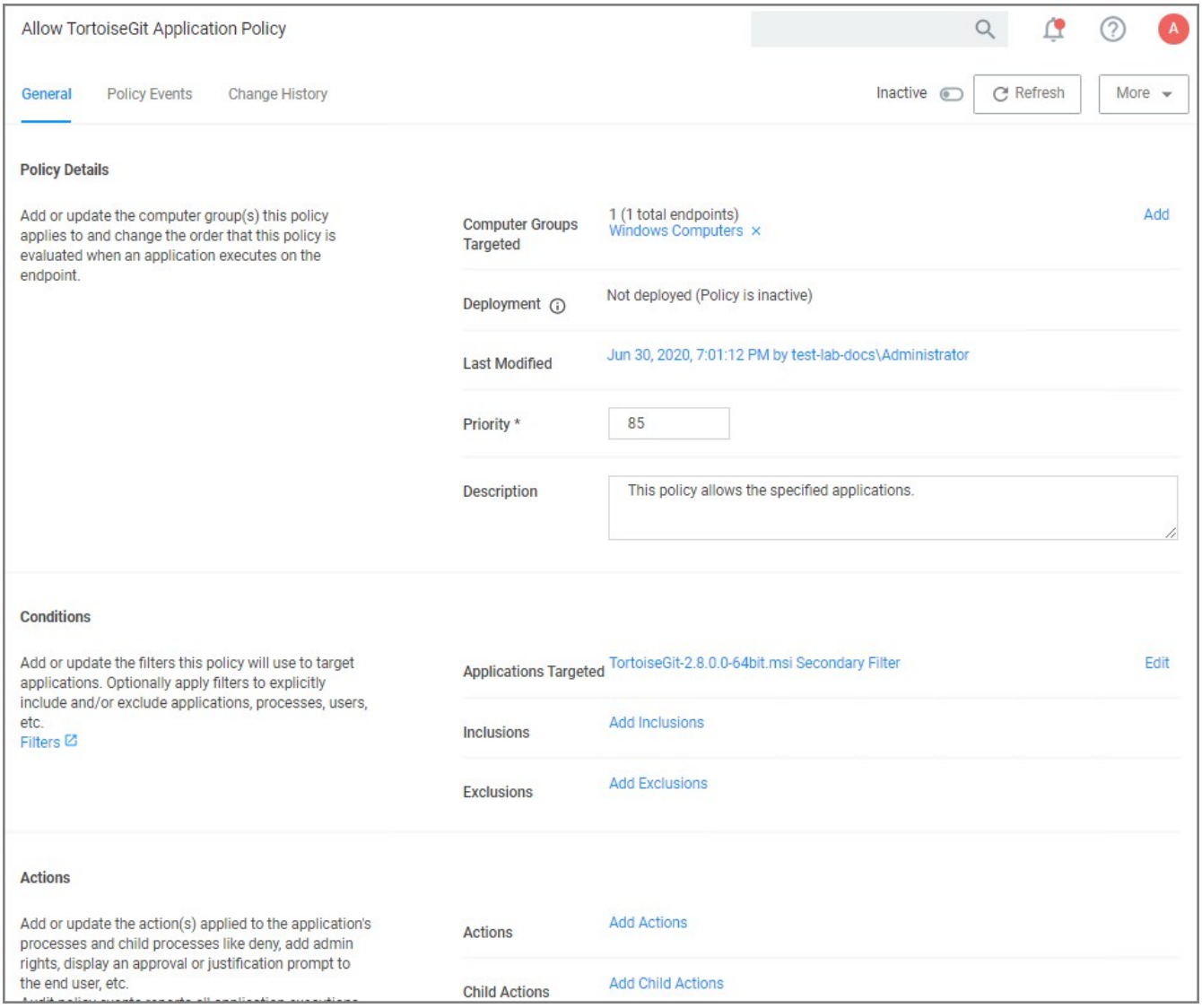


14. Name the policy and click **Create Policy**.



The policy wizard added based on the selected filter the application target to allow the TortoiseGit application.

Delinea

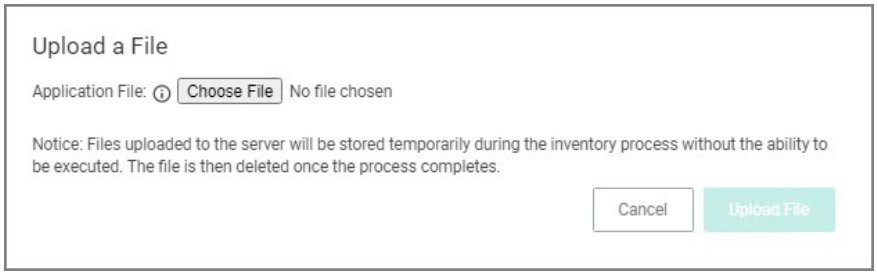

Allow TortoiseGit Application Policy
General
Policy Events
Change History
Inactive
Refresh
More
Policy Details
Add or update the computer group(s) this policy applies to and change the order that this policy is evaluated when an application executes on the endpoint.
Computer Groups Targeted
1 (1 total endpoints)
Windows Computers ×
Add
Deployment
Not deployed (Policy is inactive)
Last Modified
Jun 30, 2020, 7:01:12 PM by test-lab-docs\Administrator
Priority *
85
Description
This policy allows the specified applications.
Conditions
Add or update the filters this policy will use to target applications. Optionally apply filters to explicitly include and/or exclude applications, processes, users, etc.
Filters
Applications Targeted
TortoiseGit-2.8.0.0-64bit.msi Secondary Filter
Edit
Inclusions
Add Inclusions
Exclusions
Add Exclusions
Actions
Add or update the action(s) applied to the application's processes and child processes like deny, add admin rights, display an approval or justification prompt to the end user, etc.
Actions
Add Actions
Child Actions
Add Child Actions

Executables File Example

In this example we are creating a policy to deny running .msi files.

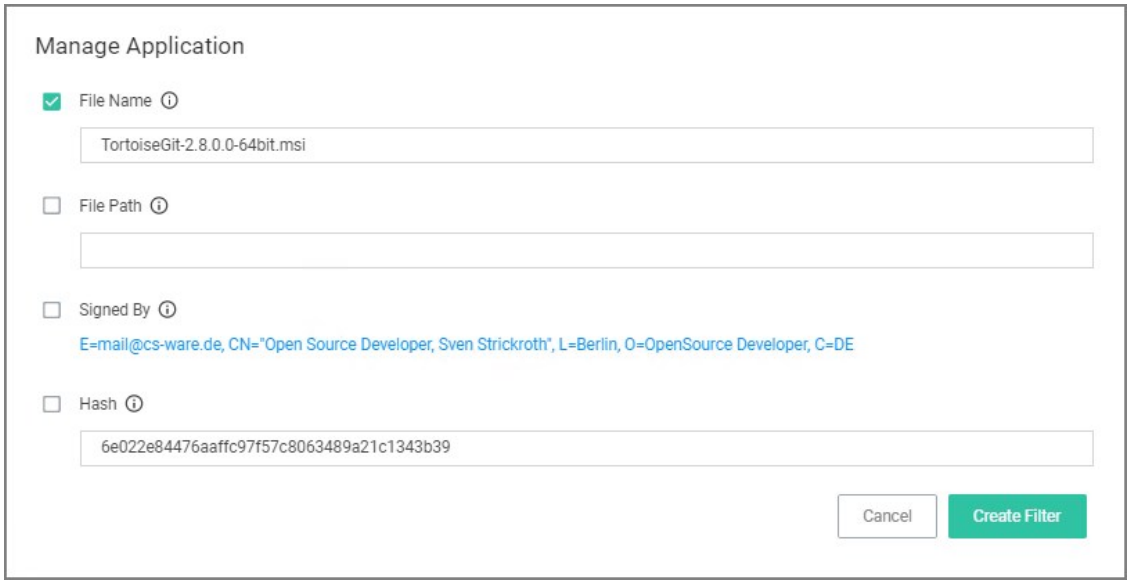
Creating the Policy

1. Navigate to **Computer Groups | Windows Computers**.
2. Select **Application Policies**.
3. Click **Create Policy**.
4. In the policy wizard select **Controlling**, click **Next Step**.
5. In the policy wizard select **Block**, click **Next Step**.
6. In the policy wizard select **Notify and Block**, click **Next Step**.
7. In the policy wizard select **Installer Packages**, click **Next Step**.
8. In the policy wizard select **File Upload**.
    1. On the Upload a File modal, Click **Choose File**.



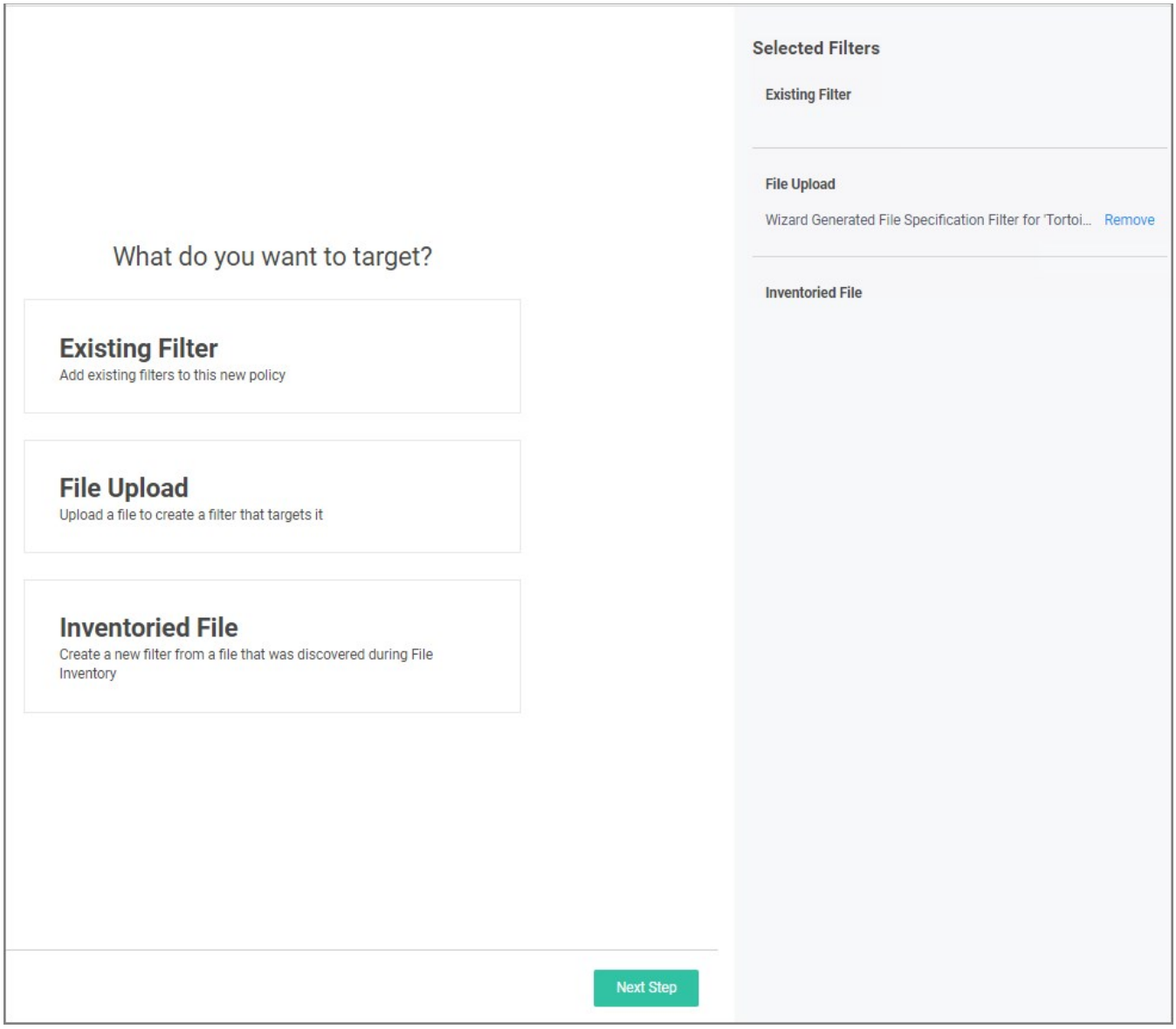
    2. Select the file(s) you wish to be targeted. For this example we are selecting a TortoiseGit installer package.

    3. Click **Upload File**.
    4. On the Manage Application dialog, check **File Name**.



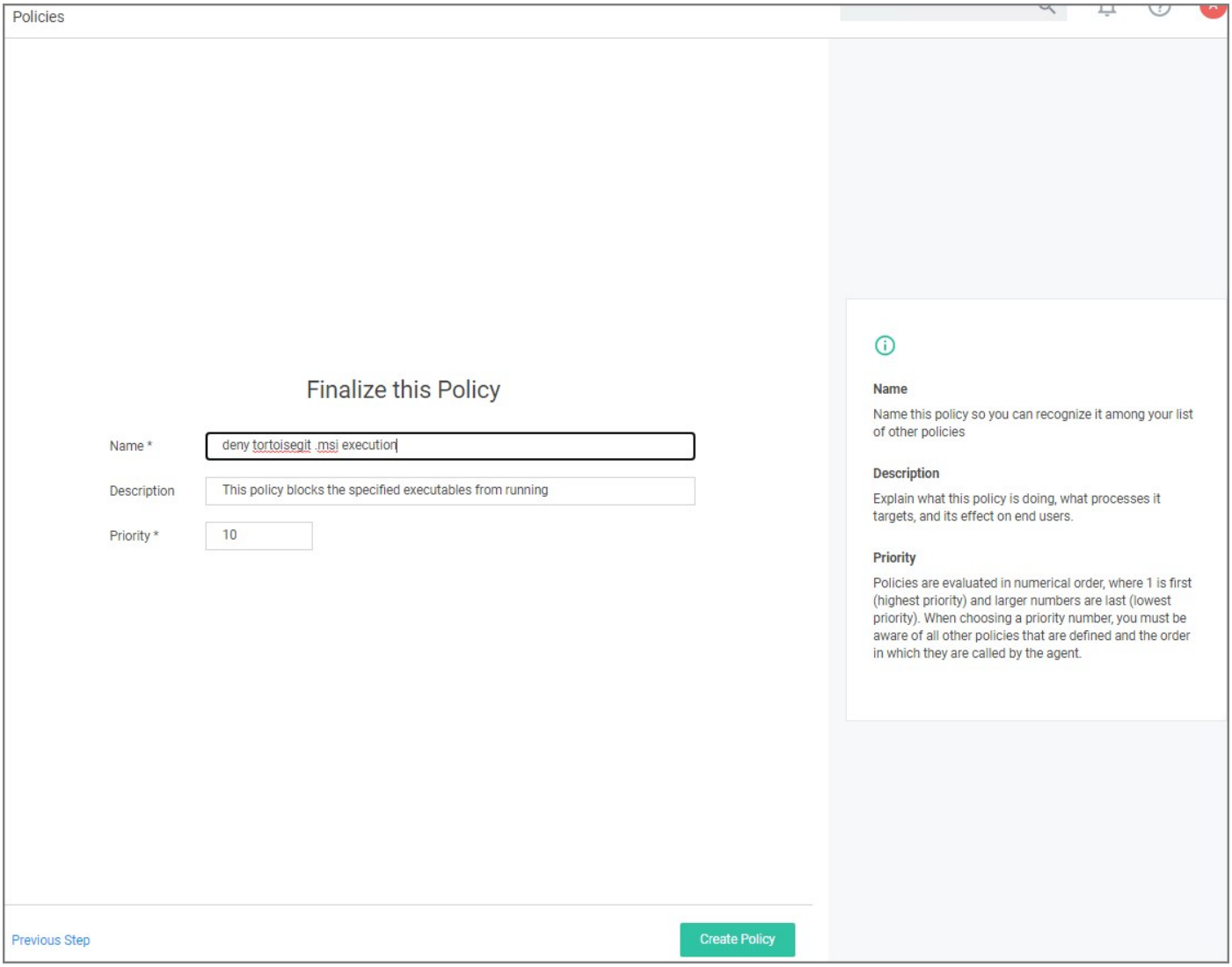
Select more details like the File Path or the Hash, if you want to make this policy more specific.

5. Click **Create Filter**.

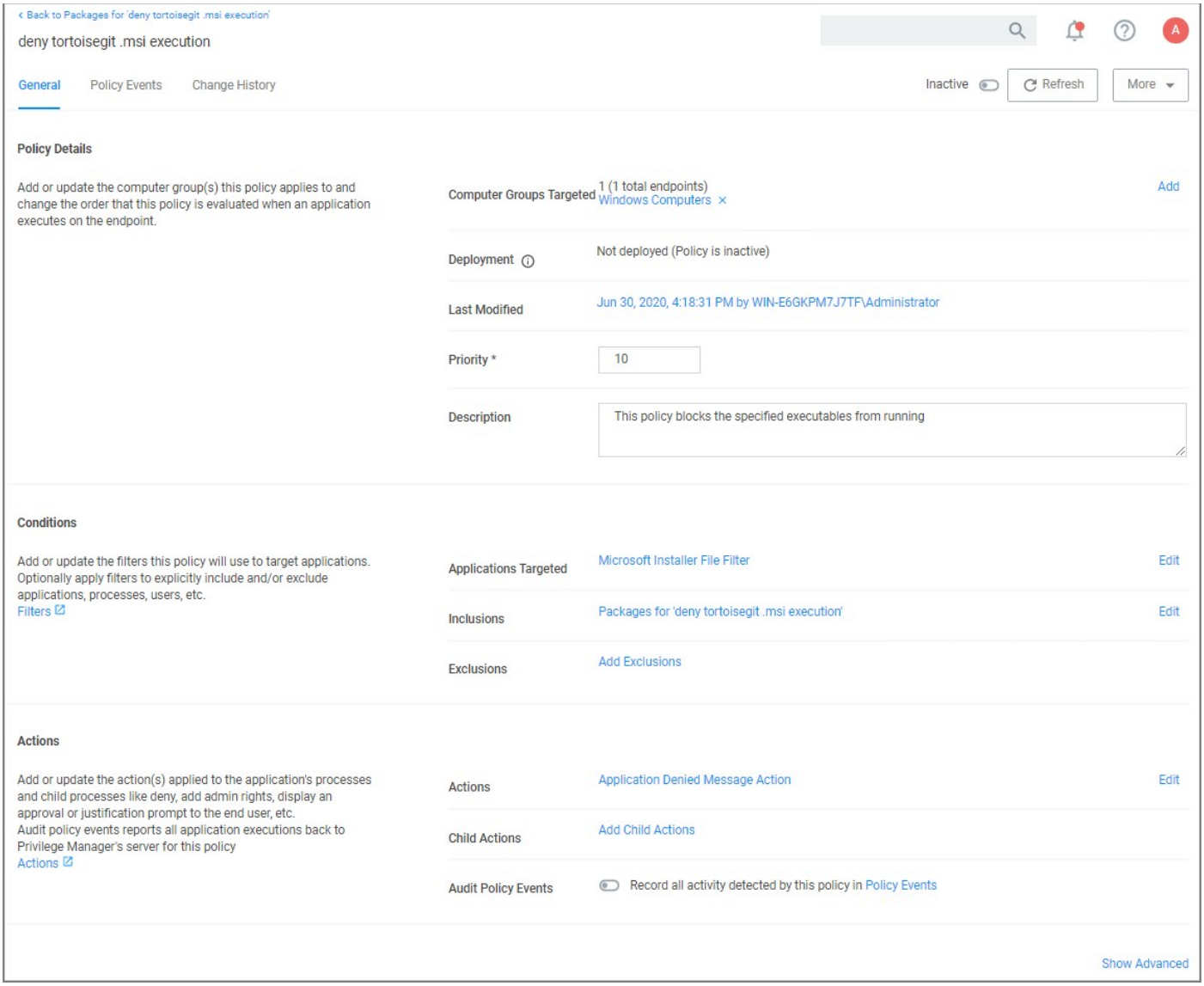


6. Click **Next Step**.

9. On the Finalize the Policy page, enter a name for your new policy. The policy will be created with a default priority of 10, since it is a deny and notify policy.



10. Click **Create Policy**.



The policy wizard added based on the selected file upload and the file inventory that was executed and application target of Microsoft Installer Files.

A secondary file filter was added under Inclusions, identifying a specific file filter for the tortoisegit.msi execution.

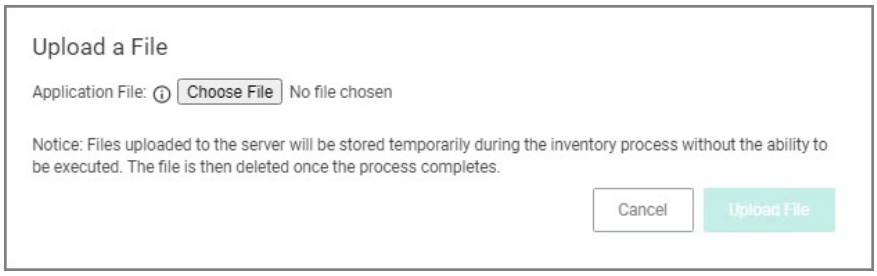
Script Execution File Example

In this example we are creating a policy to deny running a batch or ps1 file, which the policy targets through a secondary file filter.

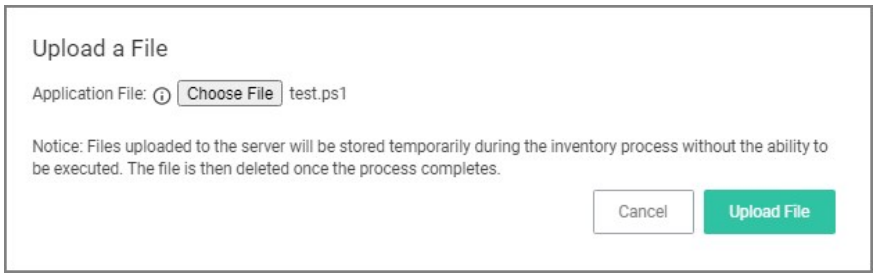
This example is for a Windows endpoint, but the policy can be created in the same way for a macOS system.

Creating the Policy

1. Navigate to **Computer Groups | Windows Computers**.
2. Select **Application Policies**.
3. Click **Create Policy**.
4. In the policy wizard select **Controlling**, click **Next Step**.
5. In the policy wizard select **Block**, click **Next Step**.
6. In the policy wizard select **Notify and Block**, click **Next Step**.
7. In the policy wizard select **Script**, click **Next Step**.
8. In the policy wizard select **File Upload**.
    1. On the Upload a File modal, Click **Choose File**.



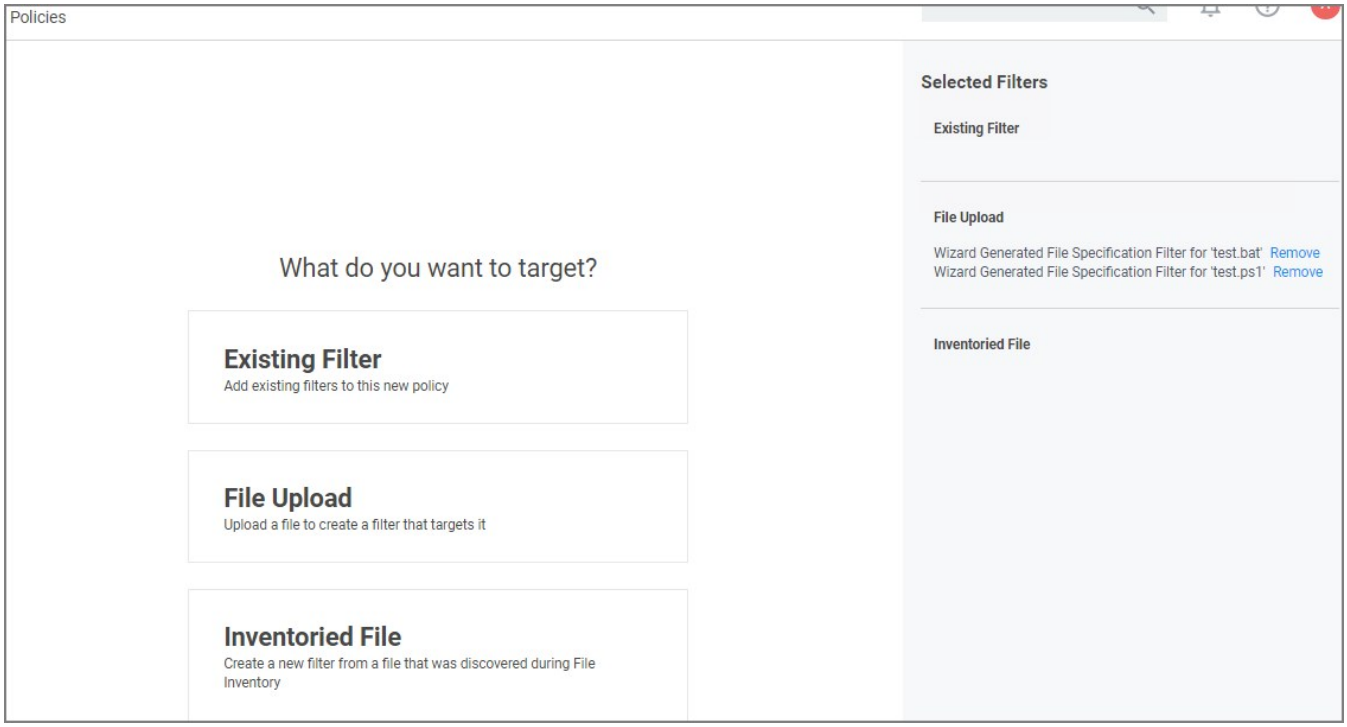
    2. Select the file(s) you wish to be targeted. For this example we are first uploading a test.bat and then test.ps1 file. You need to run through the upload and manage application steps twice, once for each file you are uploading.



    3. Click **Upload File**.
    4. On the Manage Application dialog, check **File Name**.

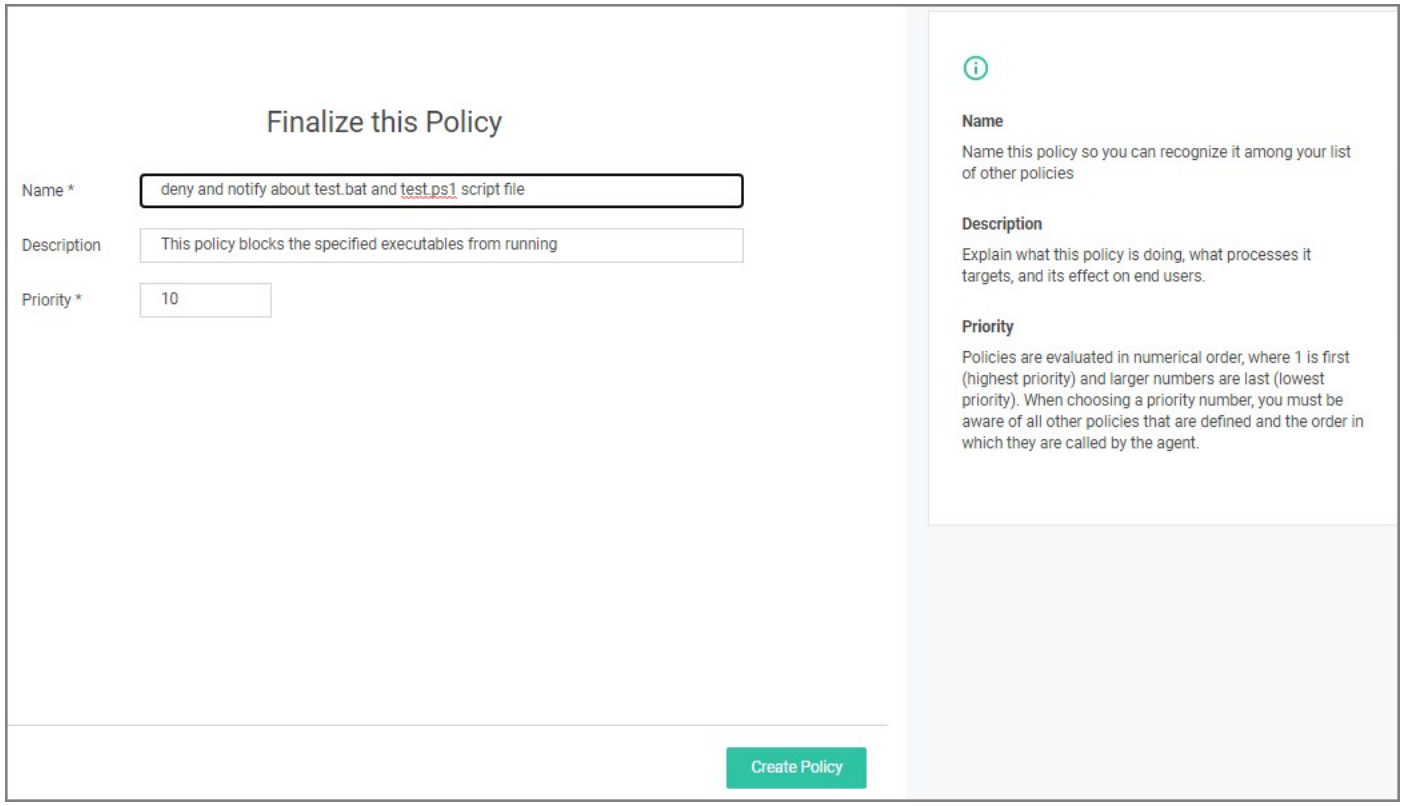
Select more details like the File Path or the Hash, if you want to make this policy more specific.

5. Click **Create Filter**.

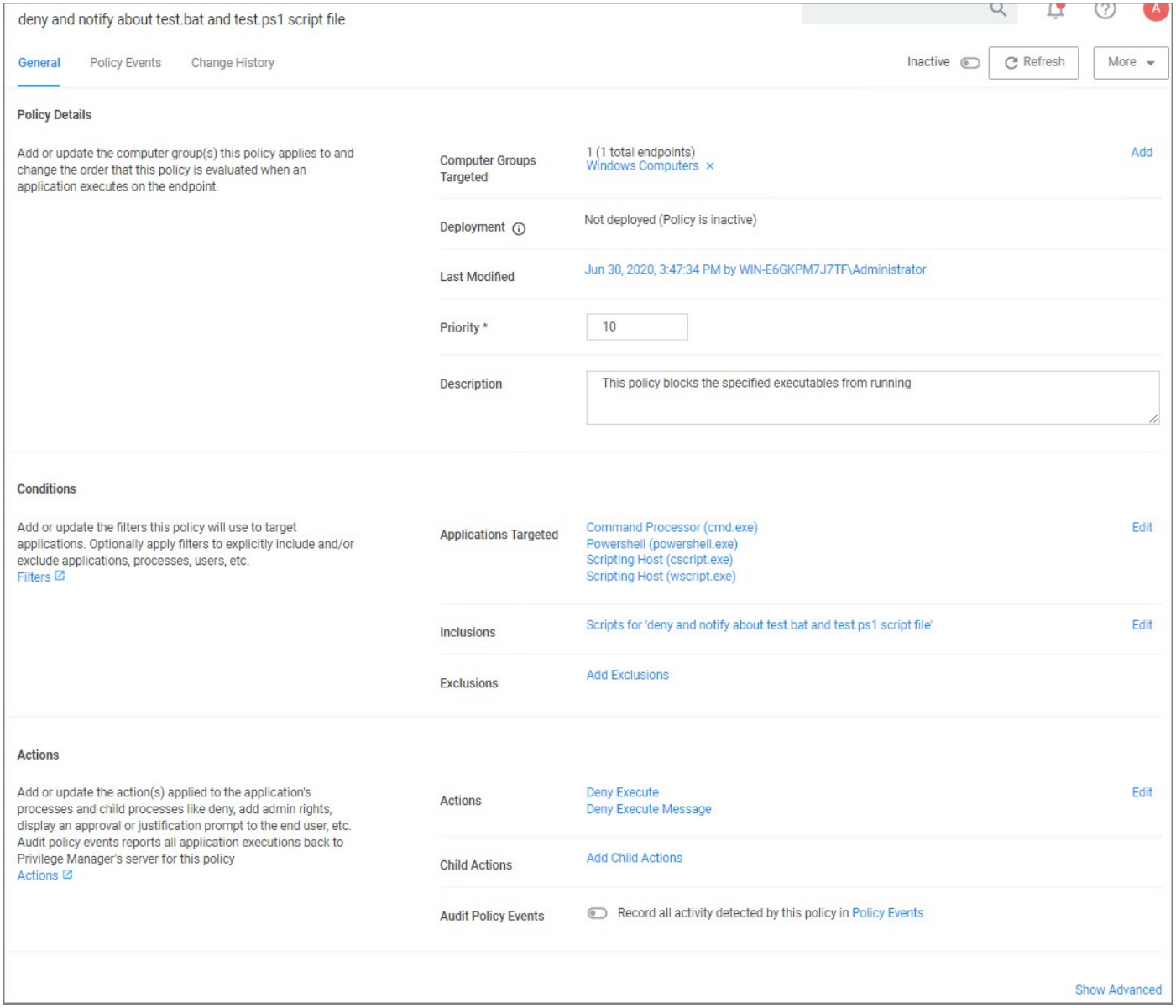


6. Click **Next Step**.

9. On the Finalize the Policy page, enter a name for your new policy. The policy will be created with a default priority of 10, since it is a deny and notify policy.



10. Click **Create Policy**.



The policy wizard added based on the selected file uploads and the file inventory that was executed 4 types of application targets:

- Command Processor (cmd.exe)
- Powershell (powershell.exe)
- Scripting Host (cscript.exe)
- Scripting Host (wscript.exe)

A secondary file filter was added under Inclusions, identifying two specific file filters for the test.bat and test.ps1 files.

Verifying the Policy Works

1. Add a test.bat file with a simple Hello World command to your system.
    1. Create a new text file and add

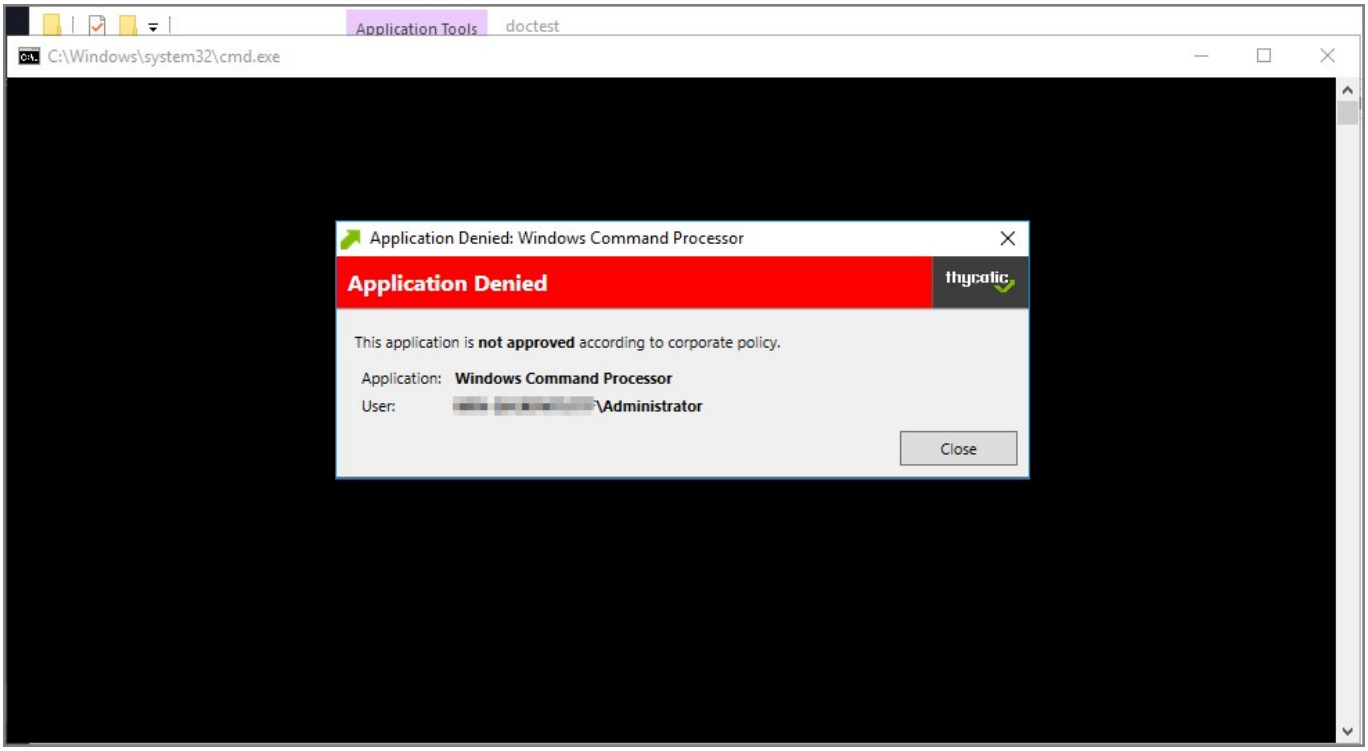
        ECHO OFF

```
ECHO Hello World
PAUSE
```

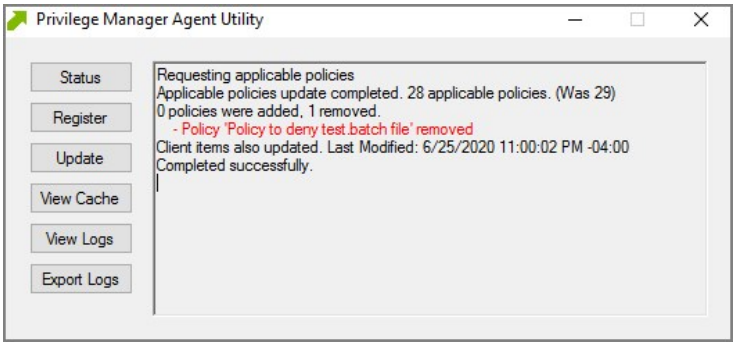
2. Save the file as test.bat.

2. With your policy set to **active**, double-click the test.bat file.

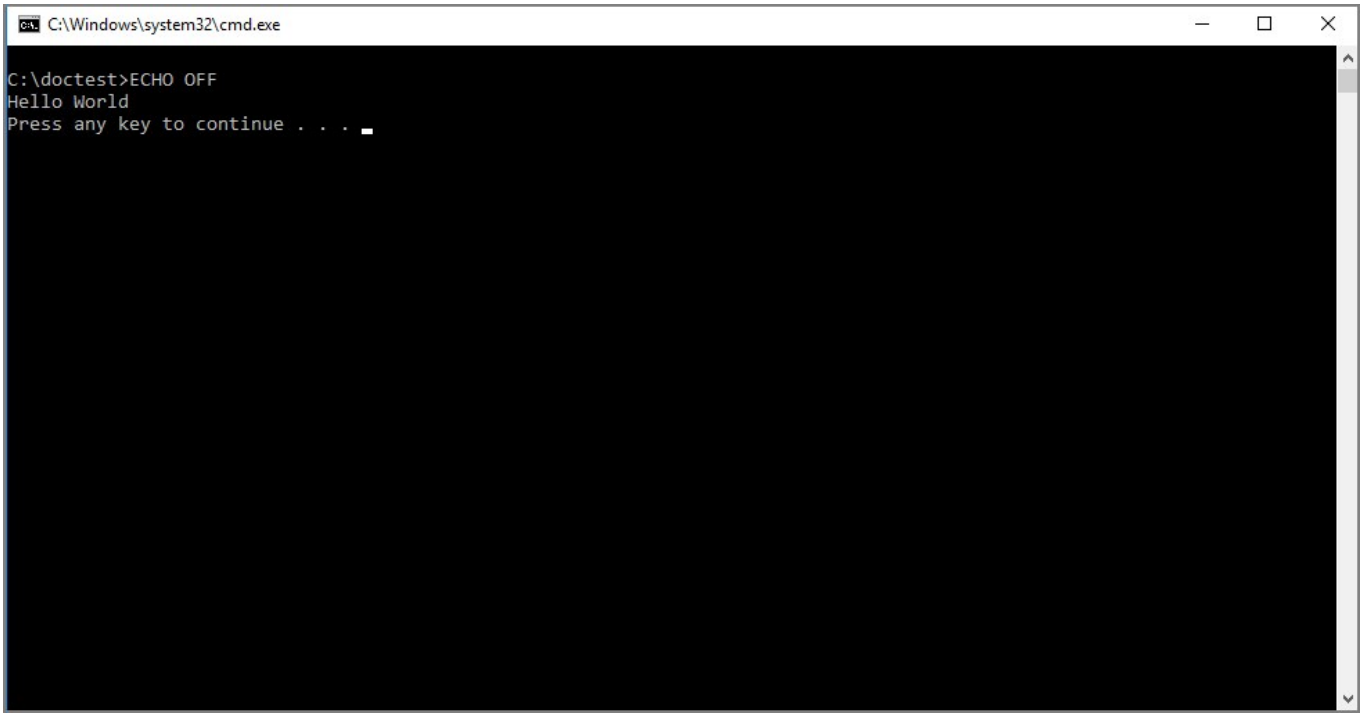
The policy triggers the specified message action:



3. With your policy set to **inactive**, verify via Agent Utility that the update was received and the policy was removed:



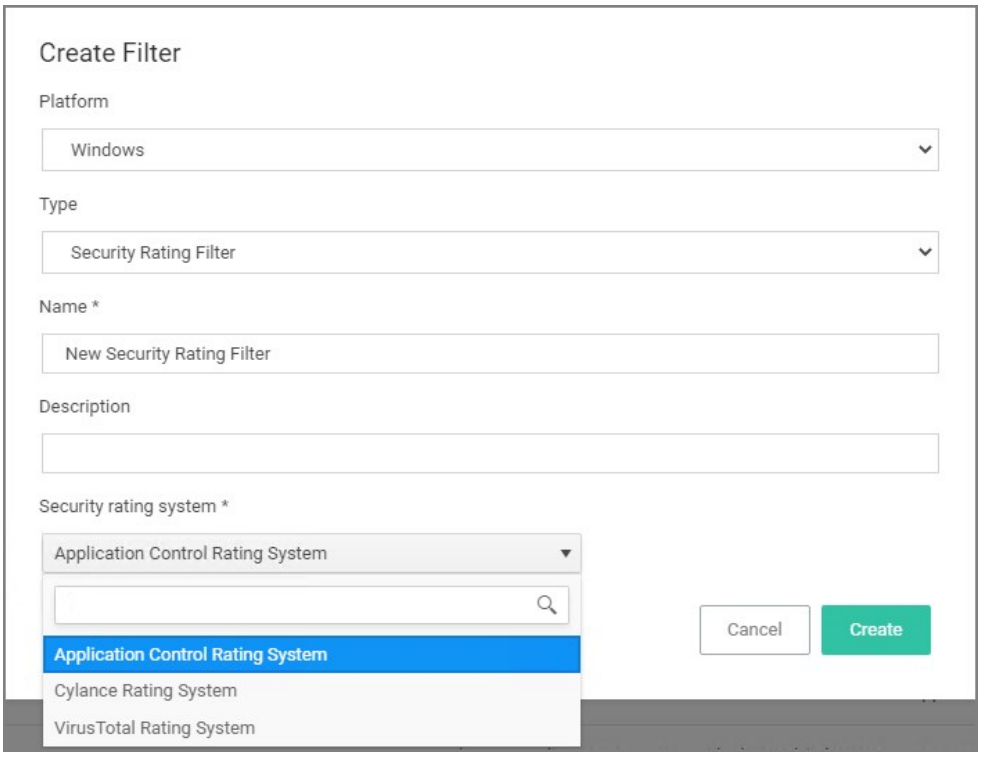
4. Double-click the test.bat file.



The batch file is executed and Hello World is printed to the cmd.exe output window.

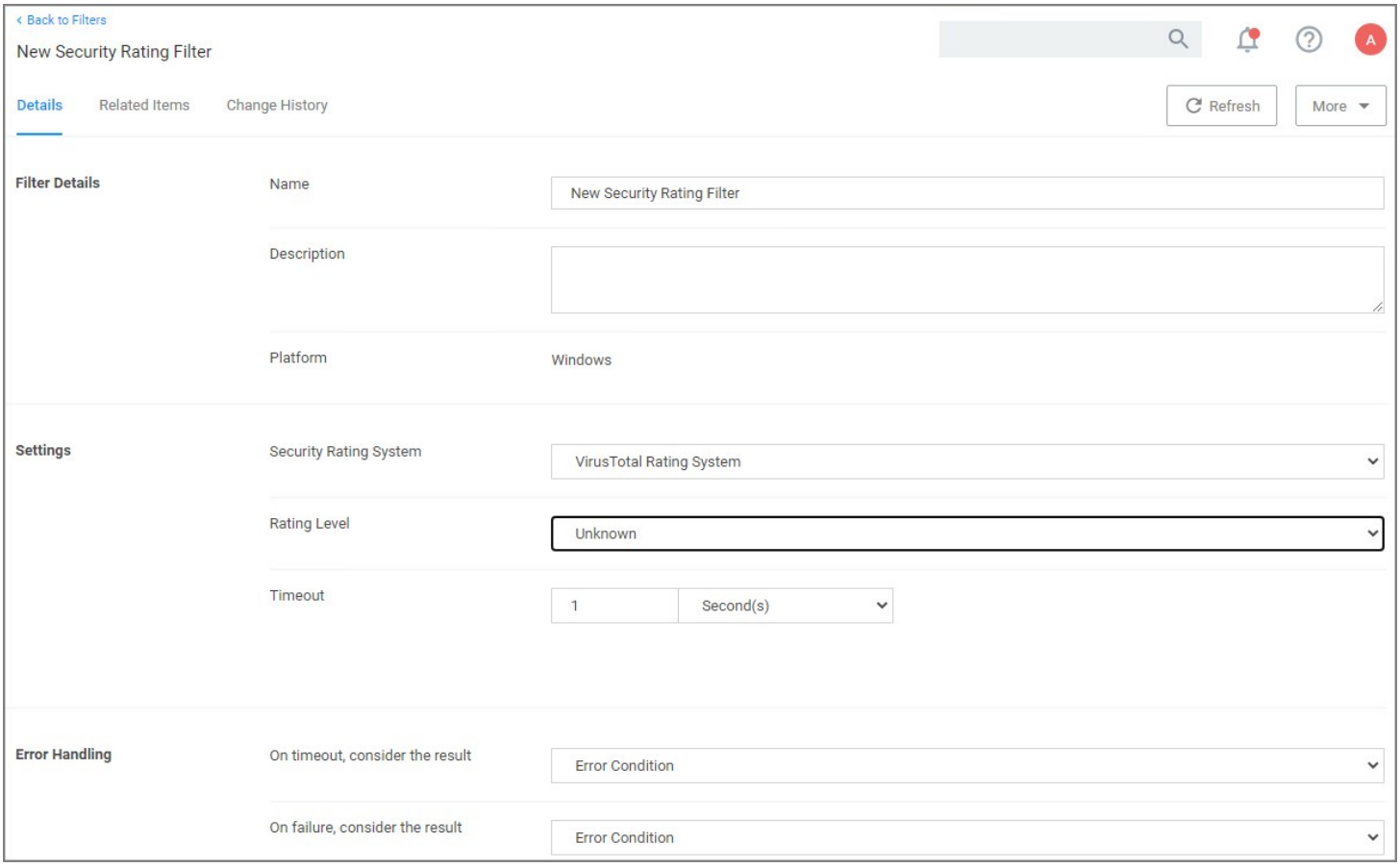
Security Rating Filter

If you have integrated Privilege Manager with a Reputation Checking provider like VirusTotal, these filters allow you to look up a rating for a file or application (is it good, bad, suspect/suspicious, or unknown).



This filter is available for both Windows and macOS systems.

Parameters



The parameters for the Security Rating Filter would include the following:

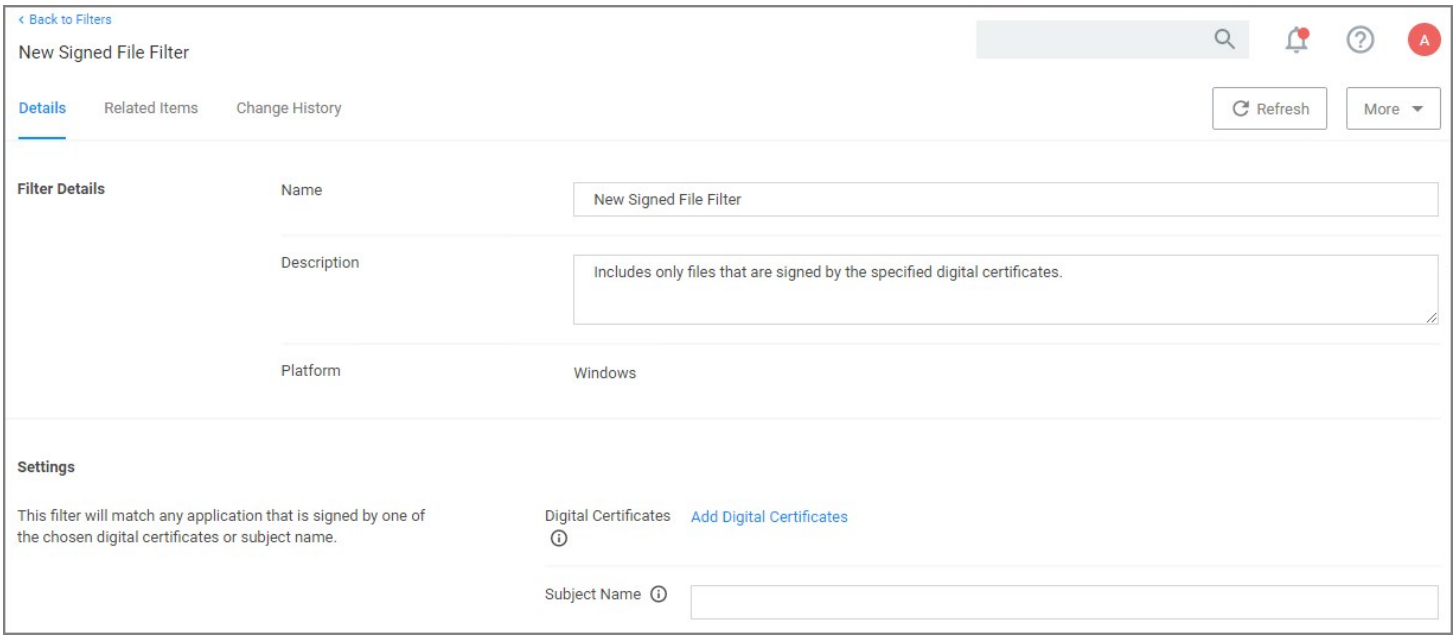
- Security Rating System
  - Application Control Rating System
  - Cylance Rating System
  - VirusTotal Rating System
- Rating level
  - Unknown
  - Clean
  - Suspect
  - Bad
- Timeout, can be specified in seconds or milliseconds
- Error Handling
  - On timeout, consider the result
    - Matched
    - Note Matched
    - Error Condition
  - On Failure, consider the result
    - Matched
    - Note Matched
    - Error Condition

Examples

The example above displays how to create a security rating filter after integrating Privilege Manager with VirusTotal.

Signed File Filter

This filter allows you to associate one or more Digital Certificate(s) that are trusted and verify that an application or file is signed by one of those certificates. *No out-of-box filters exist in Privilege Manager for this type.*



These filters can be used in several of the following ways:

- A target for ACS policies
- A parameter to prevent spoofing

Signed Application filters identify applications based on their digital certificates.

This filter is available for both Windows and macOS systems.

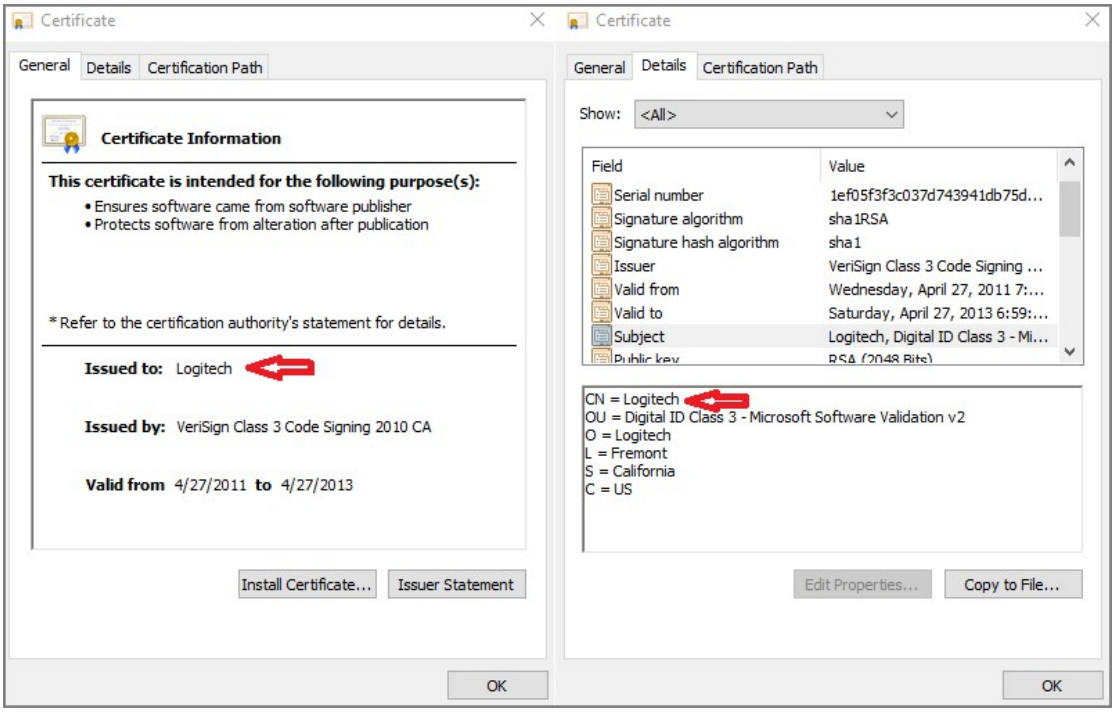
Parameters

Under Settings users:

- add one or more digital certificates, which are discovered via inventory.
- enter a Subject Name (version **10.7 and up**). If Subject Name is specified, the digital certificates above will be ignored. The following three match types are supported:
    - The * character can be pre- or post- appended to a string to perform a begins with or ends with match (i.e. Microsoft*).
    - Lower-case RegEx is also supported and must be surrounded with parenthesis. (i.e. (micro.*))
    - Setting the subject name to * will match any file signed with a valid certificate. (**Not recommended by Thycotic**)

Subject Name

This filter matches on the common name (CN=) data of the certificate as the Subject Name. Make sure to specify the right string, for example for the following certificate the filter Subject Name field would contain Logitech.



If the common name contains quotes on the certificate, those quotes should NOT be used in the Subject Name field.

Examples

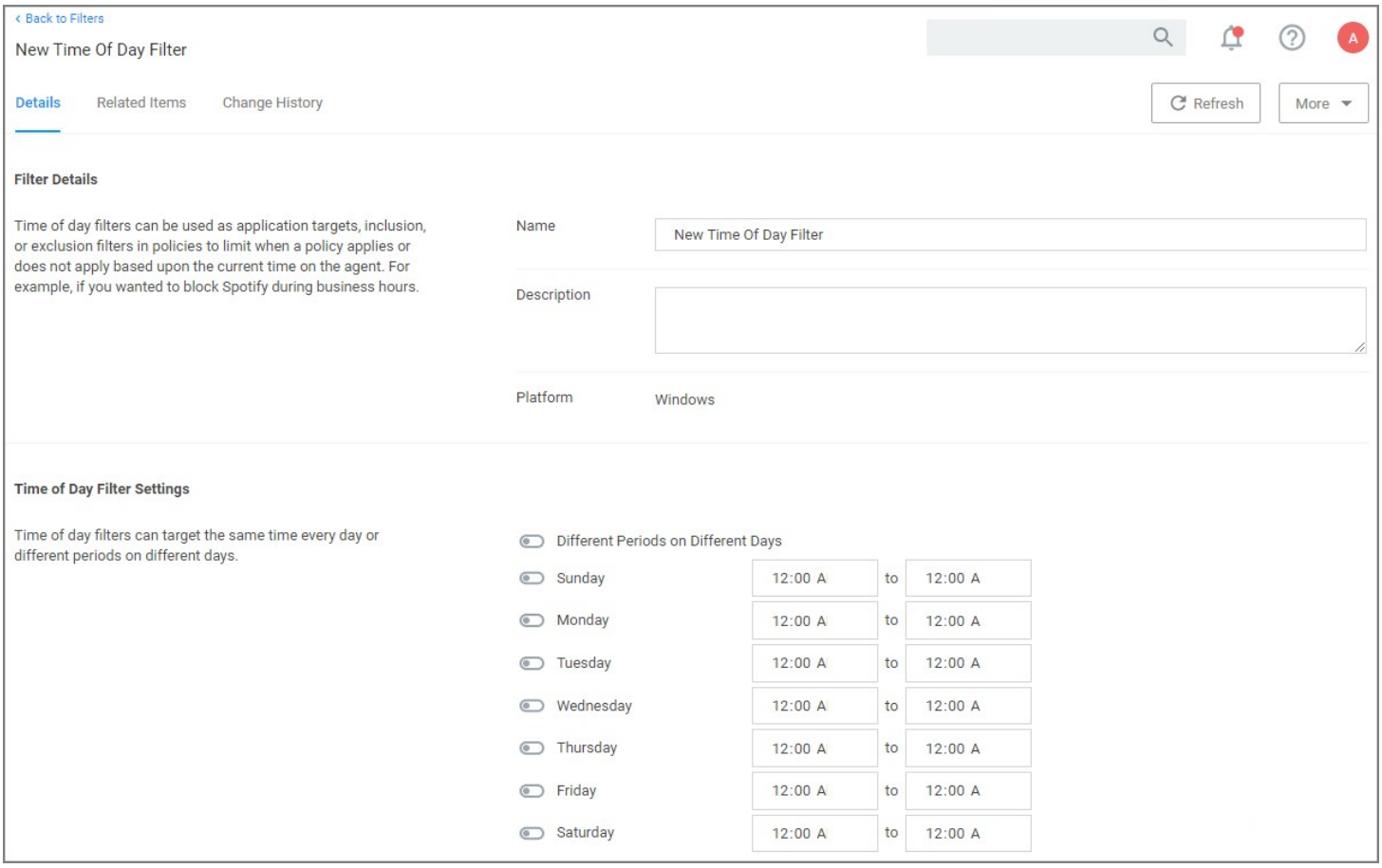
Adobe (TM) requires several certificates that are used to sign applications.

Because of this, you may want all applications signed by Adobe to allow listed, so that a signed application filter targeting Adobe Certificates allows all applications signed by Adobe to run.

Targeting the latest Adobe Flash Installer via a Win32 Executable filter and then using the signed application filter ensures that the application really is the adobe flash installer. The Signed Application Filter works as a validation filter for applications.

Time of Day Filter

This type of filter exists to create policy parameters for specific time frames.



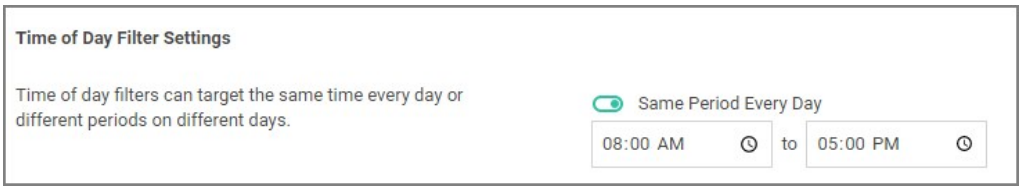
This filter is available for all supported platforms.

Parameters

The time of day filter has two different settings to allow you to set time and day allowances.

Flip the switch to toggle between these option:

- **Different Periods on Different Days** (default). When set to Different Periods on Different Days, the page also shows switches to turn on the time of day settings for the specific day of the week. By default no periods are enabled.
- **Same Period Every Day**, when turned ON only one period entry option is available



Save the changes after any customization.

Examples

You can use the time of day filter in a policy to only pickup specific times or days of the week.

Using User Context Filters

User Context Filters are used in a policy as either an

- inclusion filter, to specify that the policy only applies to users in a specific AD Group.
- exclusion filter, to specify that the policy applies to everyone except the users in a specific AD Group.

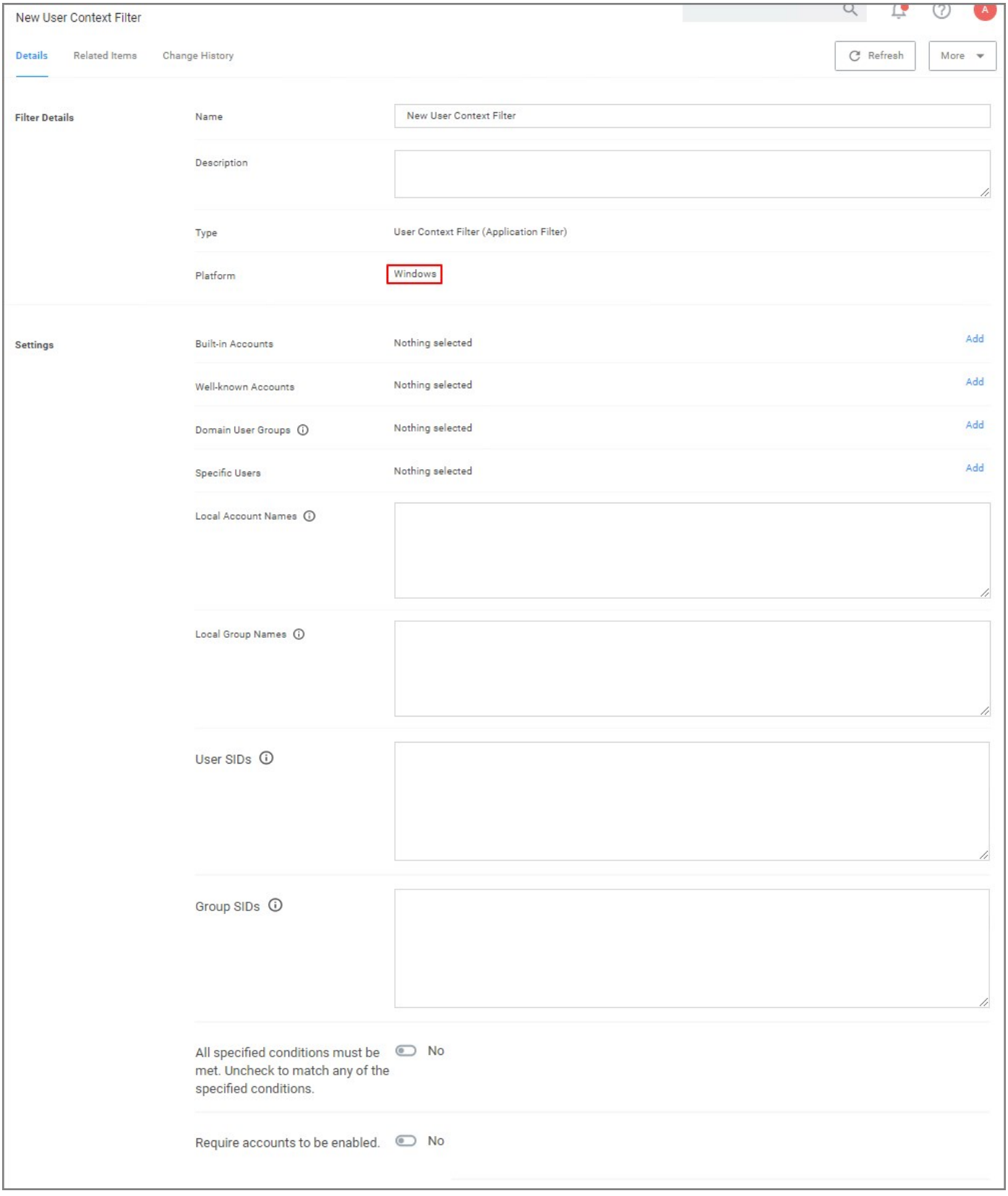
The User Context Filters are part of the Application Filter templates listed for Windows, macOS, and Unix/Linux systems, once created the OS type is referenced:

This filter is available for all supported operating systems, with a couple of minor differences.

Windows

On Windows 10 endpoints, the filter ensures that Azure AD security groups can be targeted within Windows-based User Context Filters computers that are **only** joined to Azure AD. The User Context by User or Group SID allows the user to target an account (user or group) even if that account has not yet been inventoried in the server.

Delinea


New User Context Filter
Details
Related Items
Change History
Refresh
More
Filter Details
Name
New User Context Filter
Description
Type
User Context Filter (Application Filter)
Platform
Windows
Settings
Built-in Accounts
Nothing selected
Add
Well-known Accounts
Nothing selected
Add
Domain User Groups
Nothing selected
Add
Specific Users
Nothing selected
Add
Local Account Names
Local Group Names
User SIDs
Group SIDs
All specified conditions must be met. Uncheck to match any of the specified conditions.
No
Require accounts to be enabled.
No

For Privilege Manager on-premises, the **User Context Filter** can be used after the Active Directory synchronization completes. When creating and editing the filter, add any

- Built-in Accounts,
- Well-known Accounts, and/or
- Domain User Groups, for which you may need to run the Active Directory sync task to update available users and groups, or
- Specific Users,
- Local Account Names,
- Local Group Names,
- User SIDs,
- Group SIDs

to specifically select user and group context.

Then set the **All specified conditions must be met** switch to **Yes**, if **ALL** conditions must be met. Leave the switch set to **No** to match **ANY**.

You can also specify if accounts must be enabled to be targeted. This is an important checkbox to set if specific users have been added.

Refer to Using User Context Filters via SID to set up a User Context Filter via SID, if Azure AD synchronization has not yet happeded, but the Group SID is known.

macOS

On macOS endpoints, the filter can be set-up to target Domain User Groups when endpoints are integrated with NoMAD.

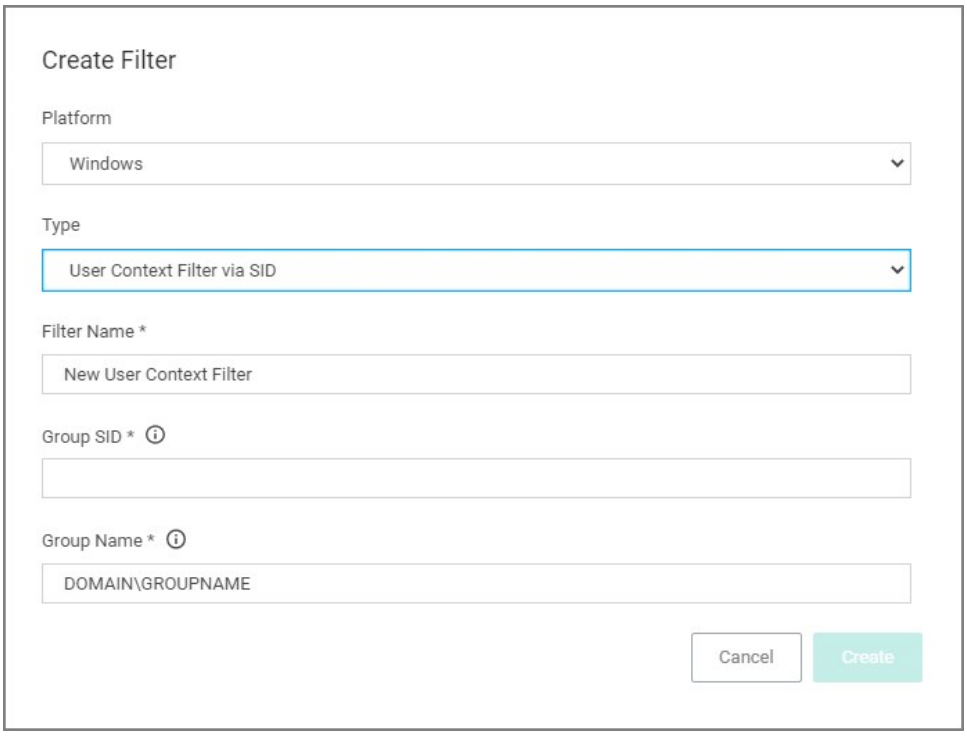
Refer to Leveraging the User Context Filter for NoMAD for macOS specifics of the User Context Filter.

Unix/Linux

Refer to User Context Filter under the Unix/Linux Filter section for Unix/Linux specifics of the User Context Filter.

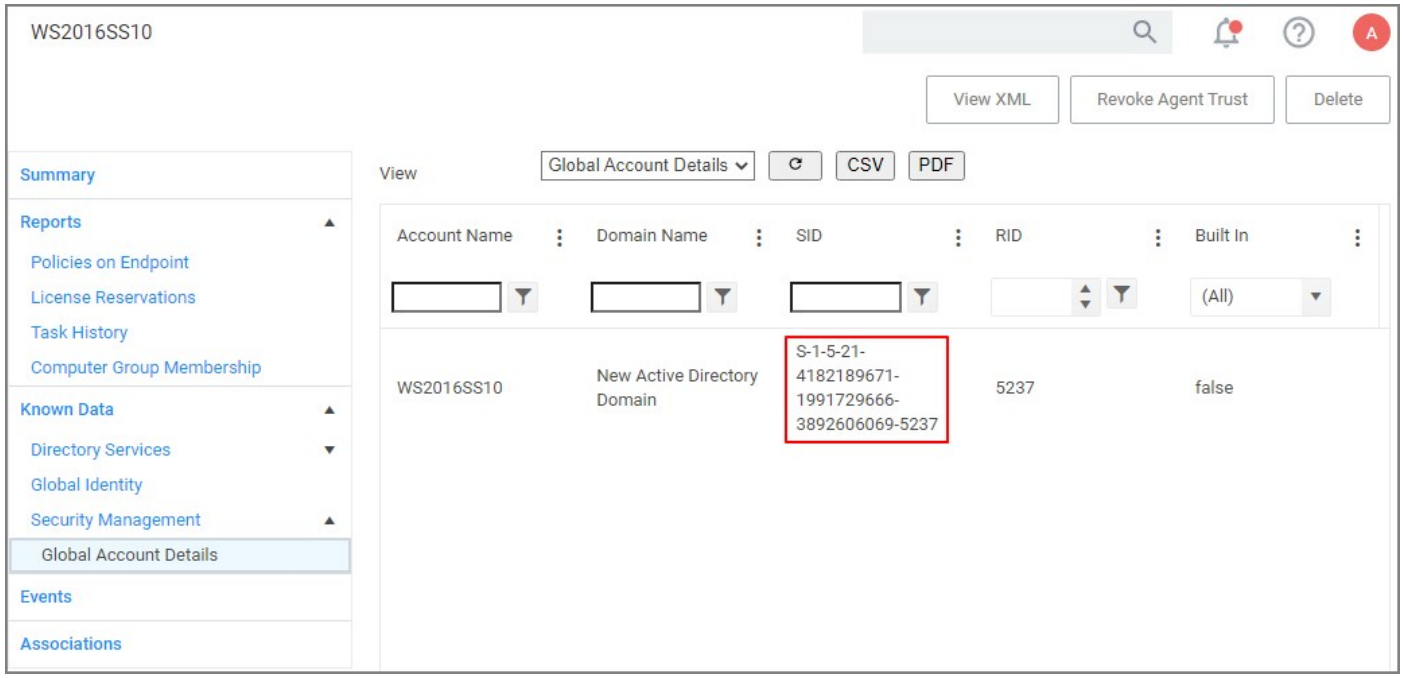
Using User Context Filters via SID

For Privilege Manager Cloud, the **User Context Filter via SID** can be used if (Azure) AD synchronization has not been set up but the SID of the group is known. When creating the filter,

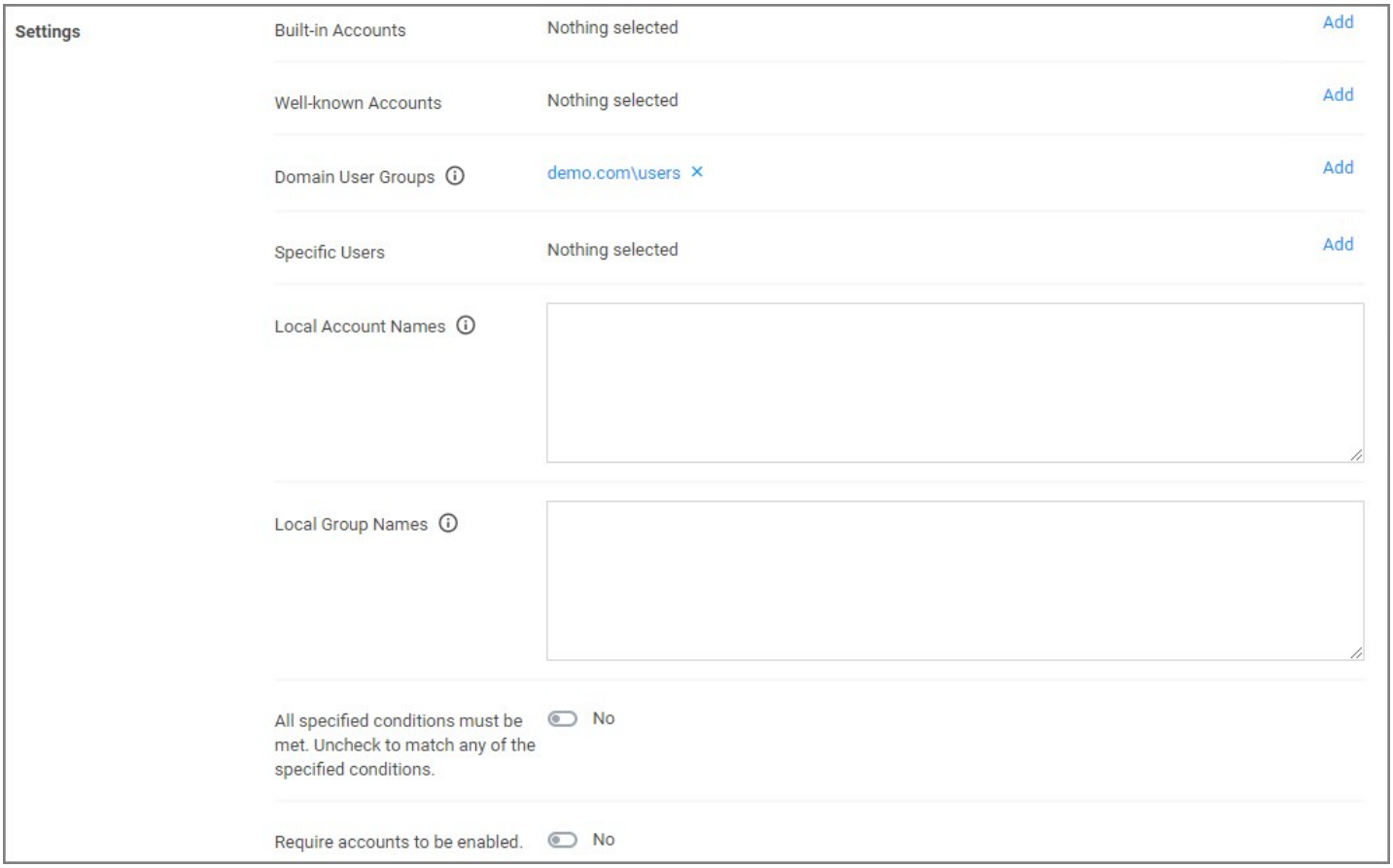


enter the

- **Group SID**, which you can find under the Global Account Details for a given resource:



- **Group Name**, to name the group if it does not exist.



If the Group SID and Group Name are not known for a resource, Delinea recommends customers use the User Context Filter as described here.

File Filters

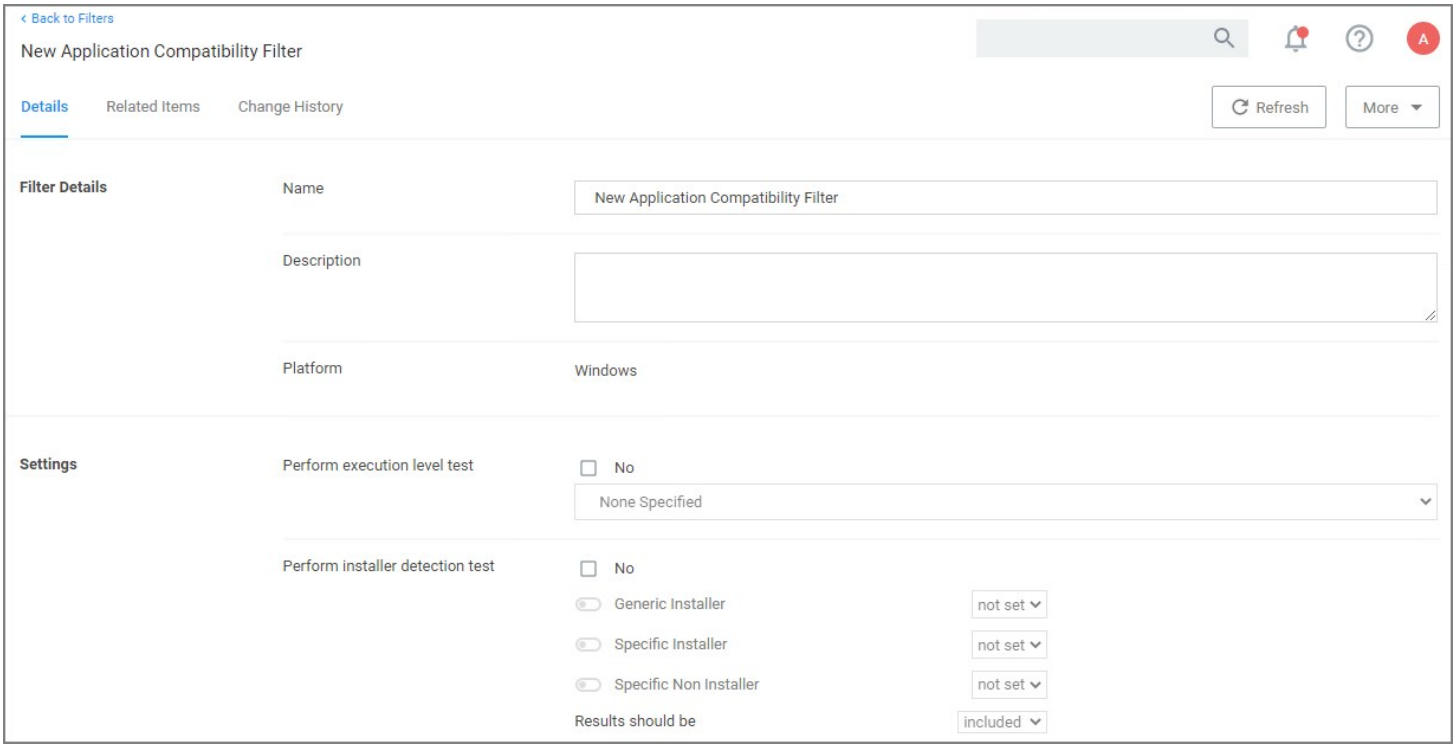
These target specific file information. File Filters can be used to target the file owner of the application, the type of file, the application manifest of the file, or whether the application is present in the signed security catalog (Operating System Files).

The following File Filter type filter topics are available:

- Application Compatibility Filter
- Application Manifest Filter
- File Collection Security Catalog Filter
- File Existence Filter
- File Owner Filter
- File Specification Filter
- File Type Filter
- Internet Zone Filter
- Security Catalog Filter

Application Compatibility Filter

This type of filter identifies the rights or permissions that an application requires to run.



Parameters

By default **Perform execution level test** is set to no, if you change this to Yes, you can specify:

- As Invoker
- Highest Available
- Require Administrator

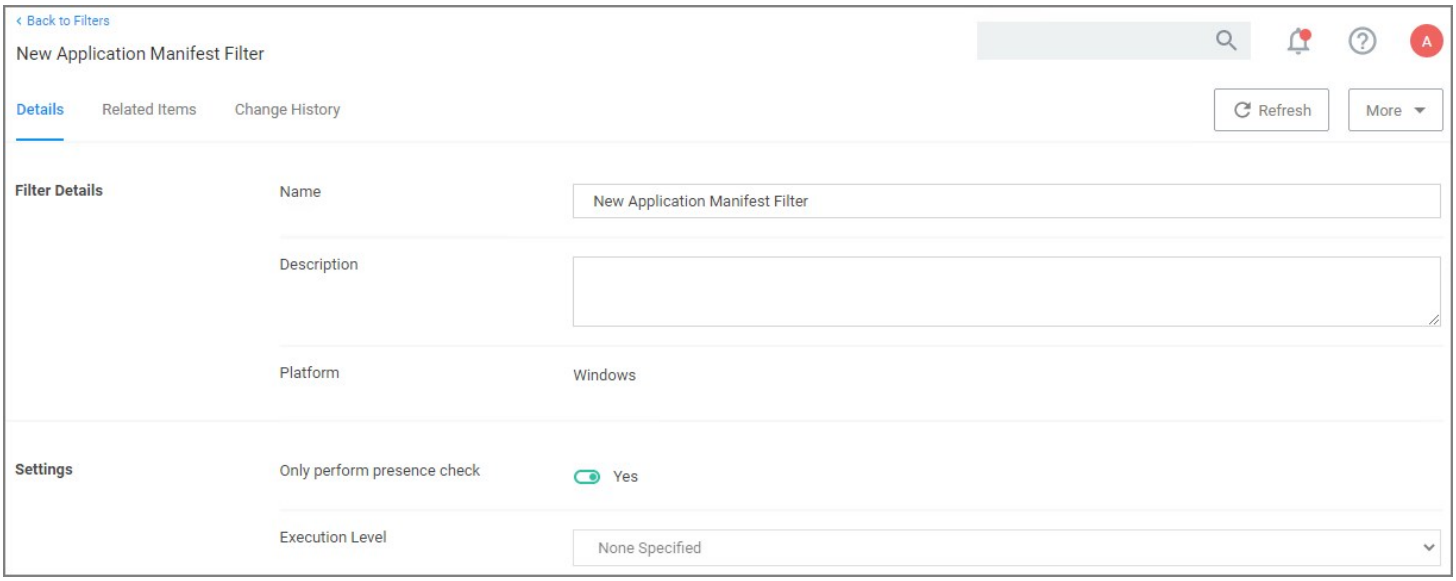
By default **Perform installer detection test** is set to no, if you change this to Yes, you can specify:

- Generic Installer to be set or not set.
- Specific Installer to be set or not set.
- Specific Non Installer to be set or not set.
- if the Results should be included or excluded.

Remember to **Save Changes** after any customization.

Application Manifest Filter ("Manifest Filter")

Applications that declare specific rights required via a manifest, such as applications that need administrative privileges.



Parameters

By default **Only perform presence check** is set to Yes, if you change this to No, you can specify the **Execution Level** as either:

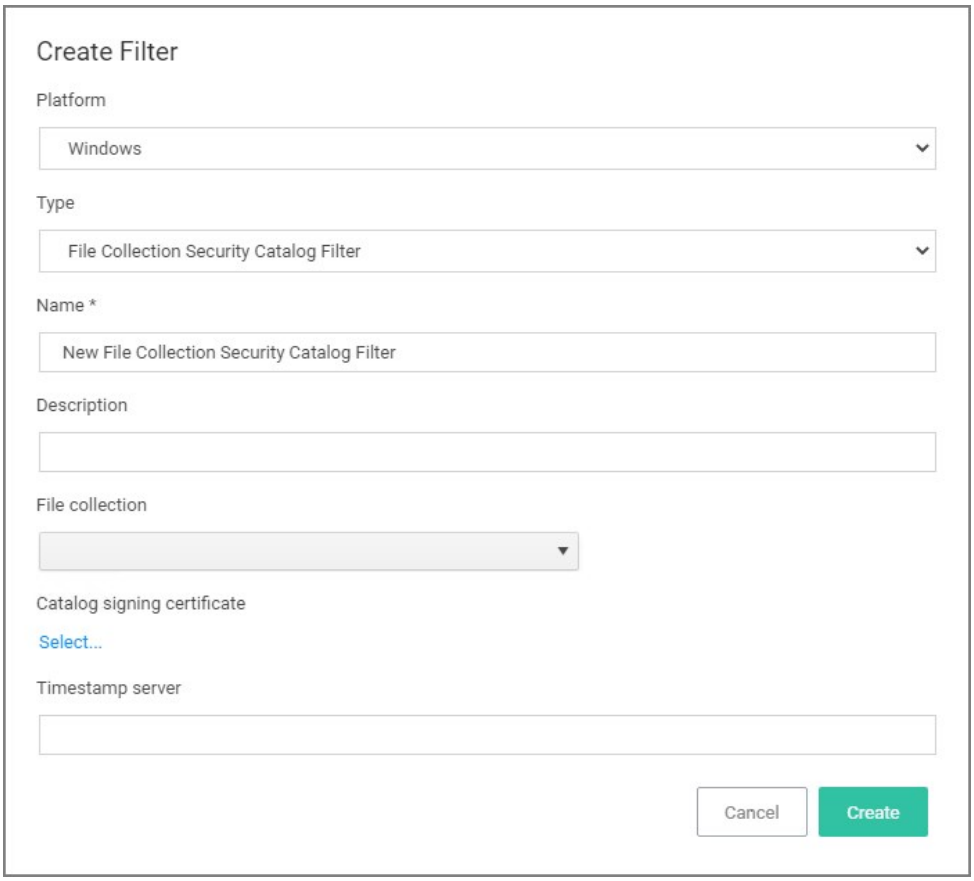
- As Invoker
- Highest Available
- Require Administrator

Remember to **Save Changes** after any customization.

File Collection Security Catalog Filter

This is a special collection of files allow or deny list. This filter type is similar to other Inventory Filters, particularly our Security Catalog Filter. *No out-of-box filters exist in Privilege Manager for this type.*

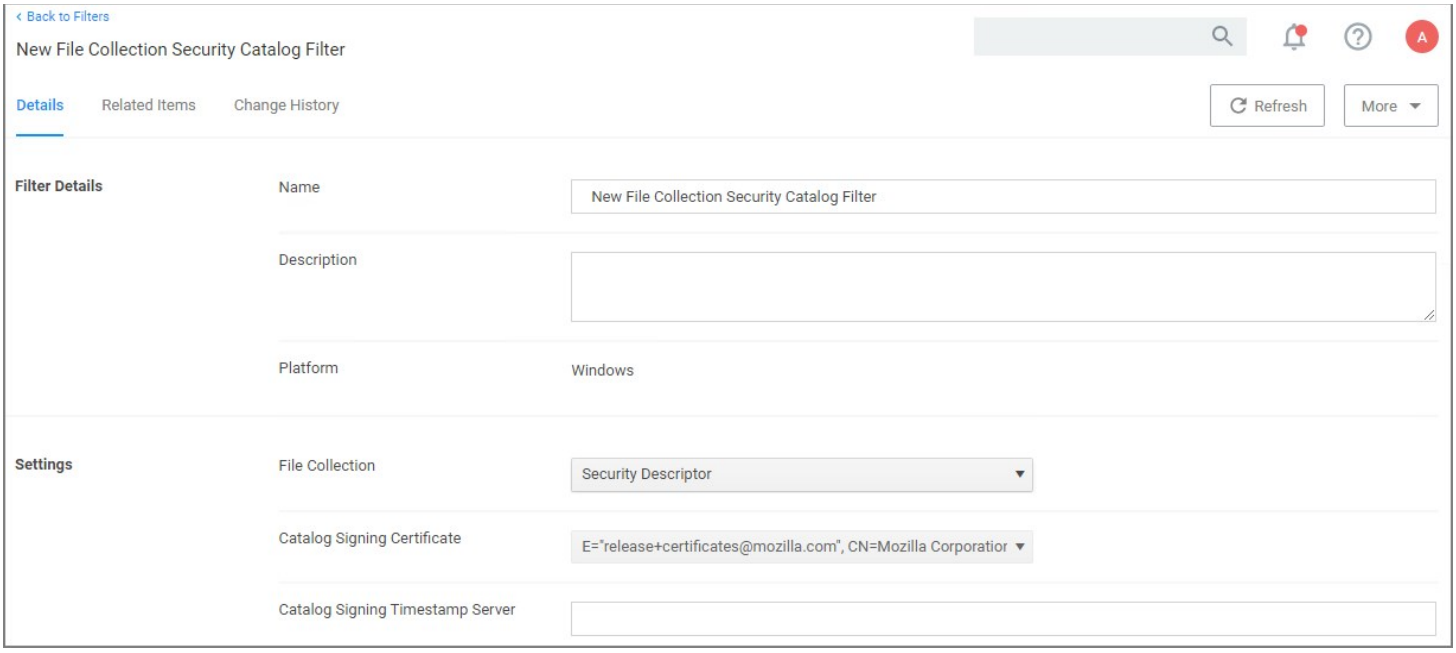
You can use these filters to target executables found in security catalogs. The built-in filter targets the Signed Security Catalog (\Windows\System32\catroot) and is typically used to automatically allow list applications from Microsoft.



Parameters

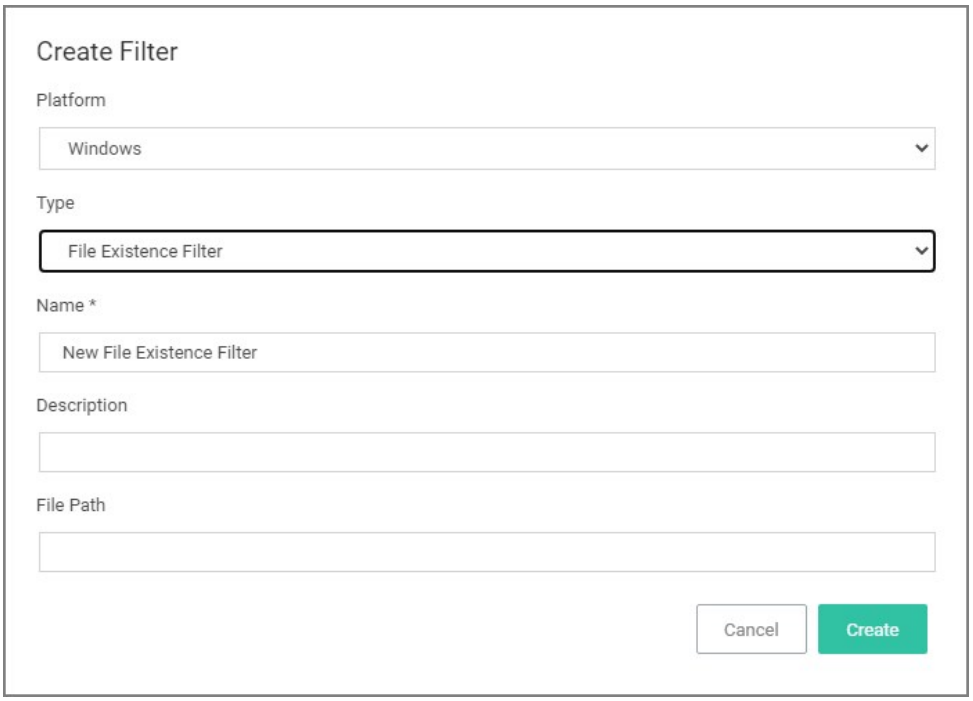
- File collection, this is the specific catalog you want to use.
- Catalog signing certificate, select the specific certificate from a list.
- Timestamp server, specifies a particular version to be used.

Delinea


Back to Filters
New File Collection Security Catalog Filter
Details
Related Items
Change History
Refresh
More
Filter Details
Name
New File Collection Security Catalog Filter
Description
Platform
Windows
Settings
File Collection
Security Descriptor
Catalog Signing Certificate
E="release+certificates@mozilla.com", CN=Mozilla Corporatior
Catalog Signing Timestamp Server

File Existence Filter

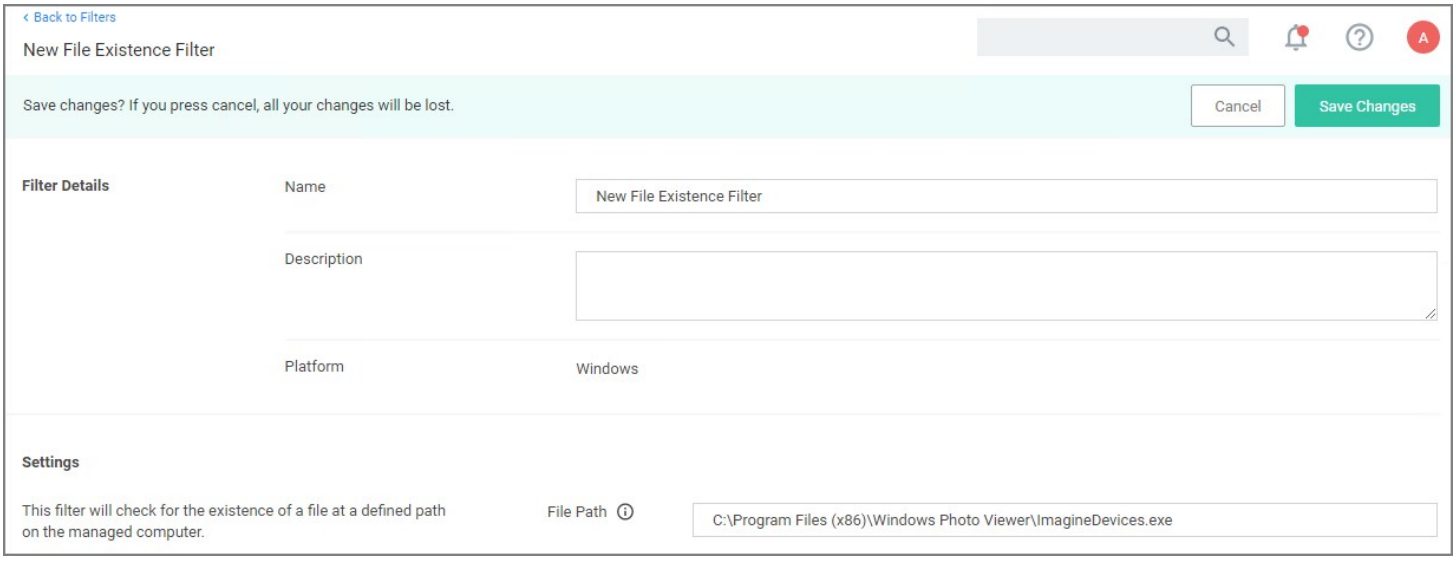
This type of filter identifies whether a file exists. *No out-of-box filters exist in Privilege Manager for this type.*



This filter is available for both Windows and macOS systems.

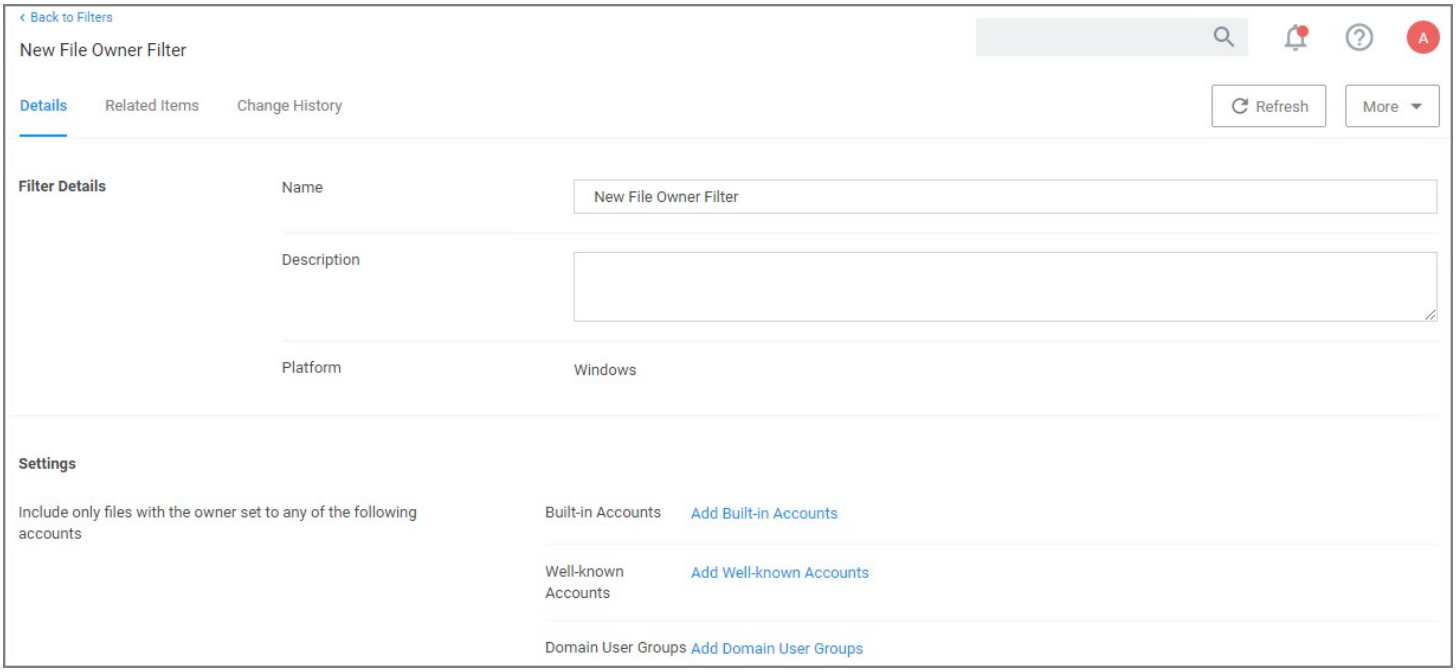
Parameters

- Path, this must be an exact file path. Windows Environment Variables are supported though, %ProgramFiles% for example.



File Owner Filter

This filter identifies files based on ownership.

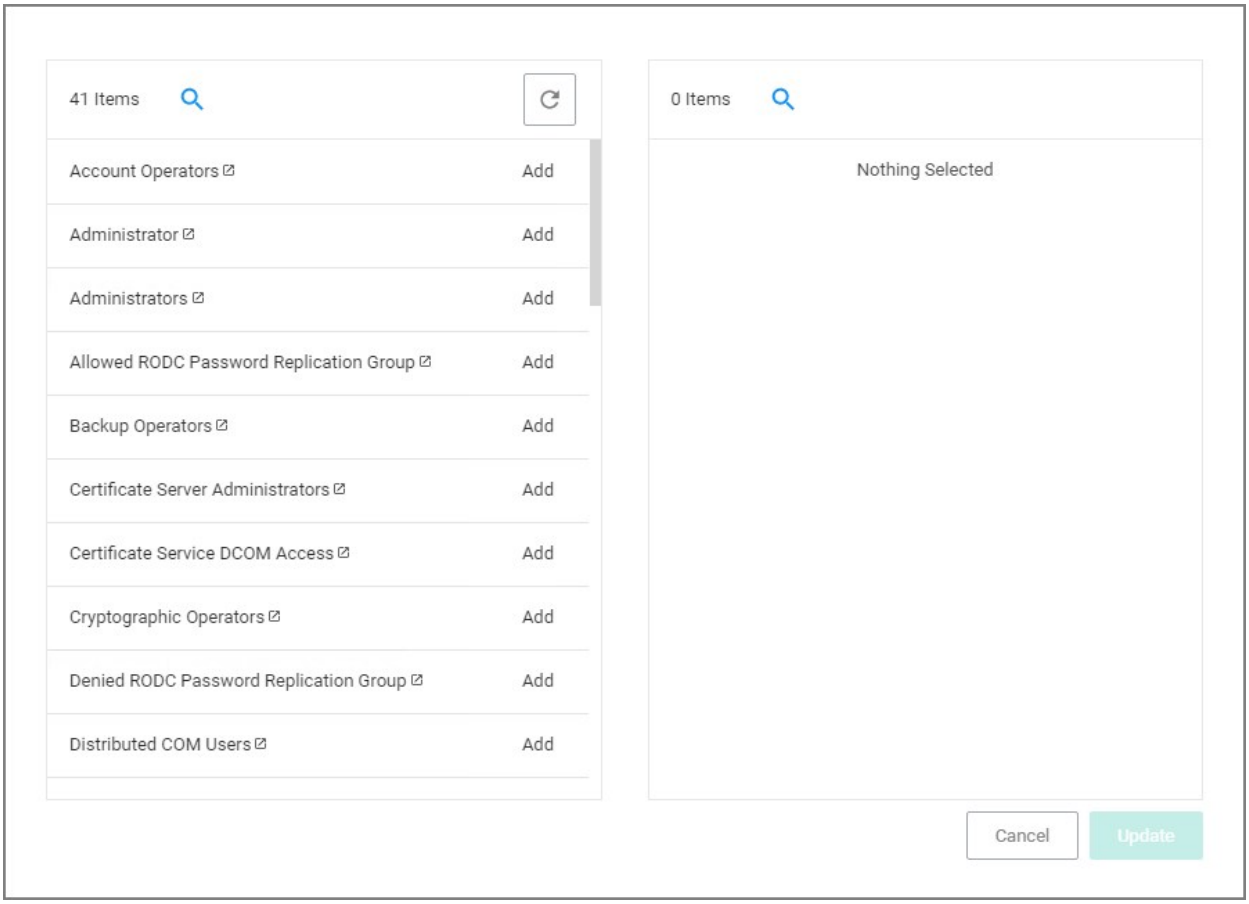


This filter is available for both Windows and macOS systems.

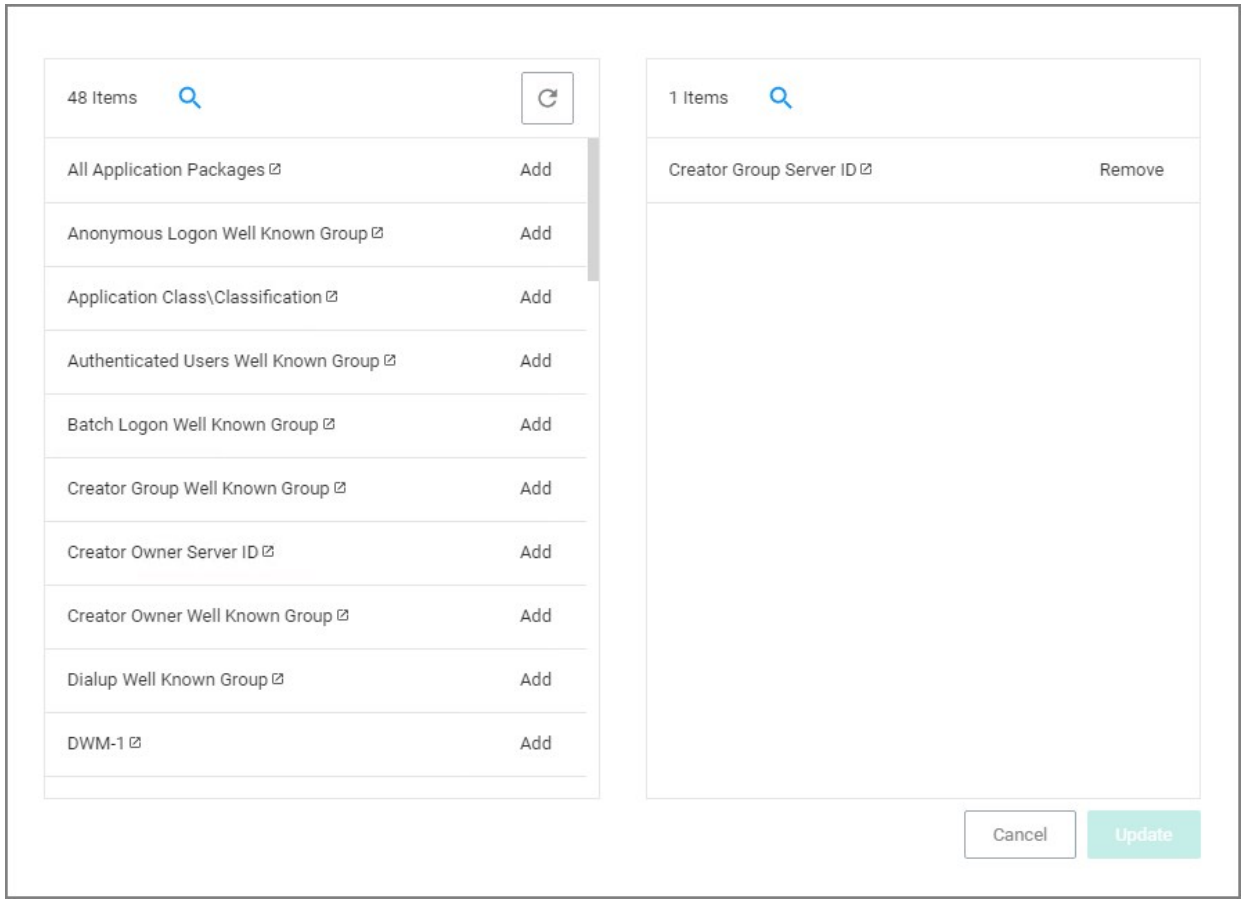
Parameters

Under settings you specify to include only those files with an owner having certain accounts or being part of certain domain user groups.

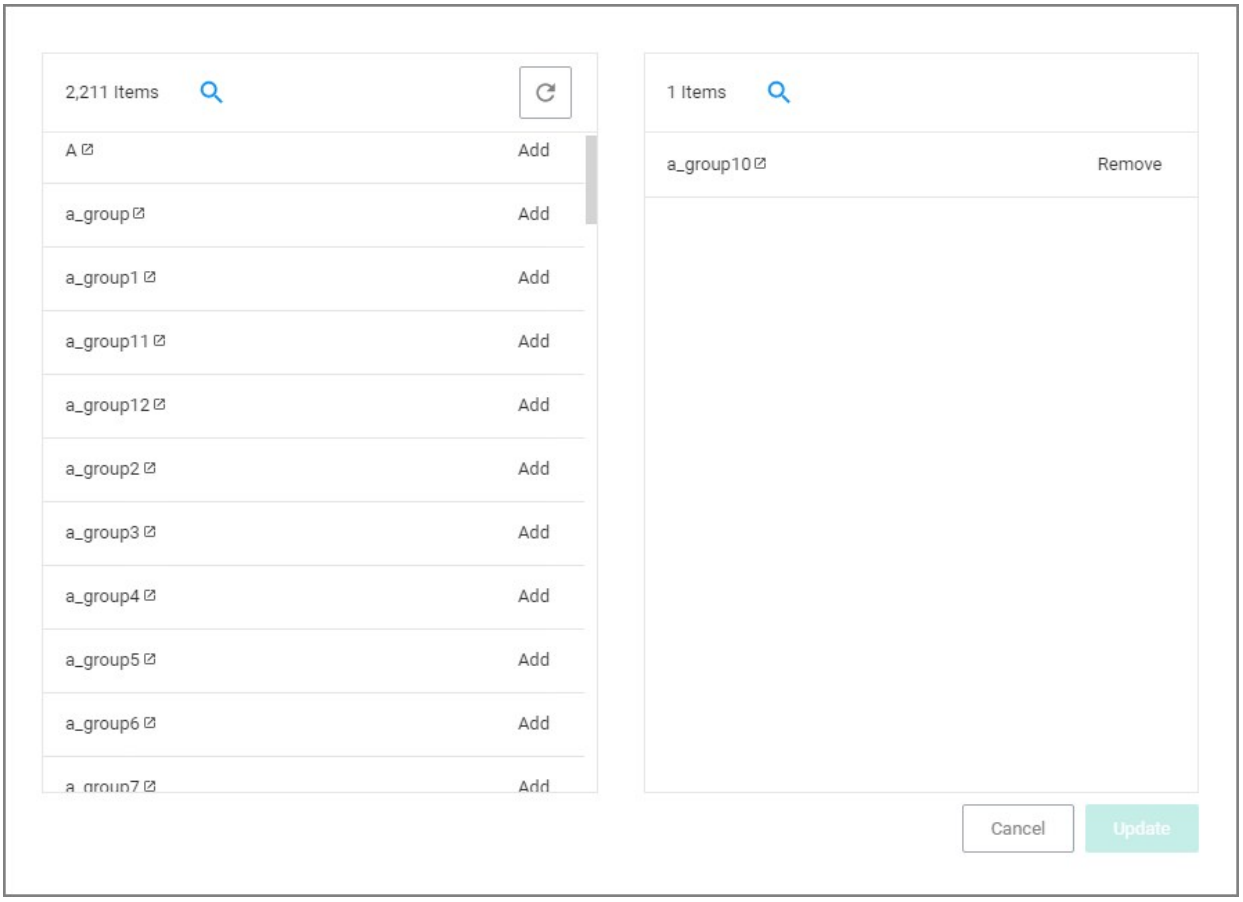
- Build-in Accounts



- Well-known Accounts



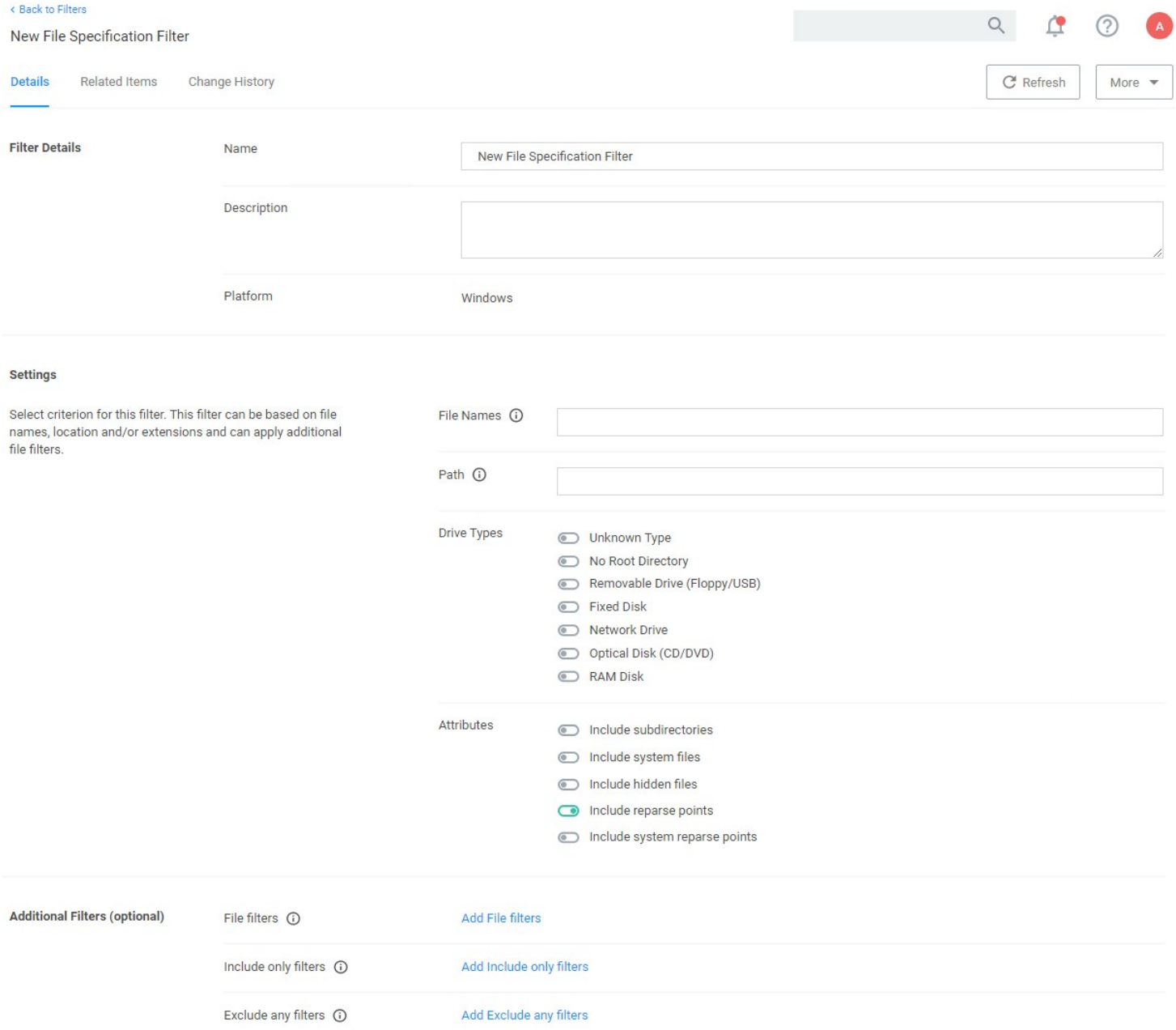
- Domain User Groups



Remember to click **Update** and **Save Changes** following any customization.

File Specification Filter

This filter identifies files based on their file name, extension, path, or location on a computer.



This filter is available for both Windows and macOS systems. Use this filter for macOS endpoints only to target known scripts or command-line tools; otherwise use the Default File Specification (macOS) filter.

Parameters

- File Names
- Path
- Drive Types

- Attributes, include reparse points is the only default enabled attributes

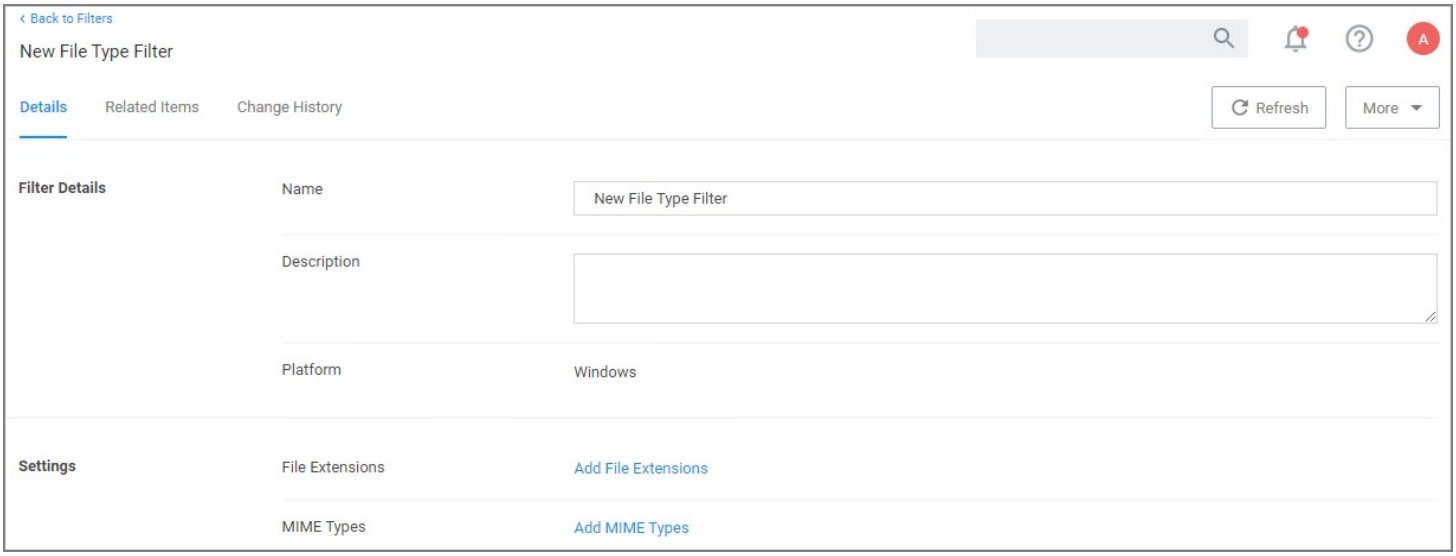
Additional Filters

Additional Filters can be added optionally.

- File filters, at least one of the filters added here must match.
- Include only filters, all of the filters added here have to match.
- Exclude any filters, any matching filters added here will be excluded.

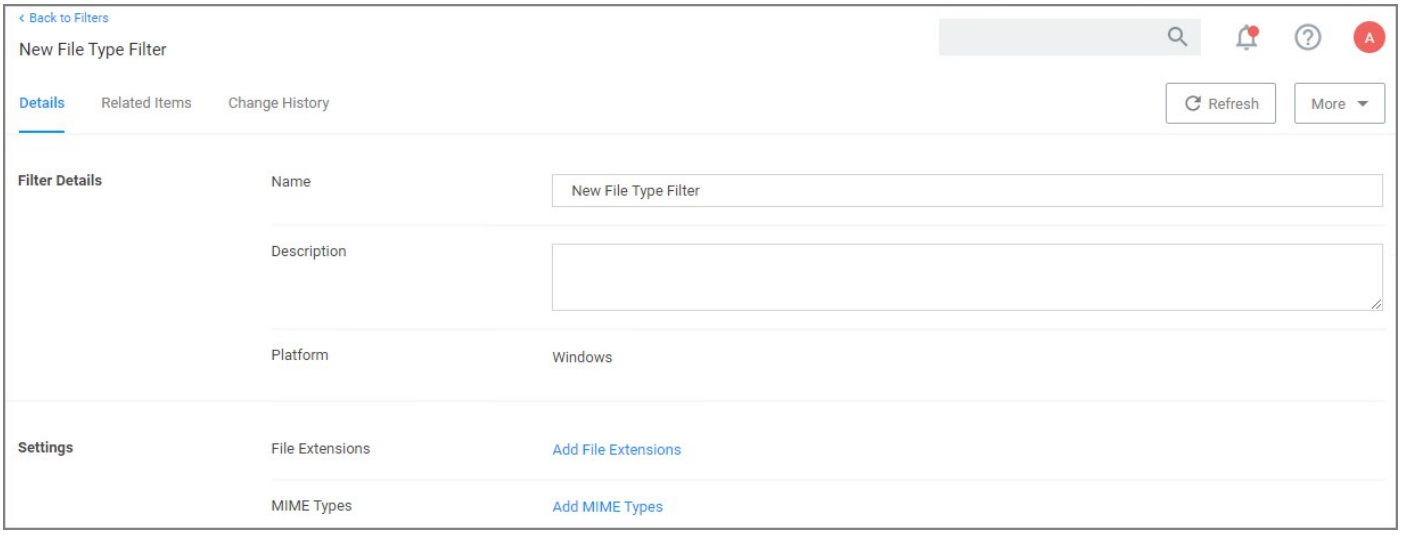
File Type Filter

This filter identifies files based on what type of file it is. *No out-of-box filters exist in Privilege Manager for this type.*

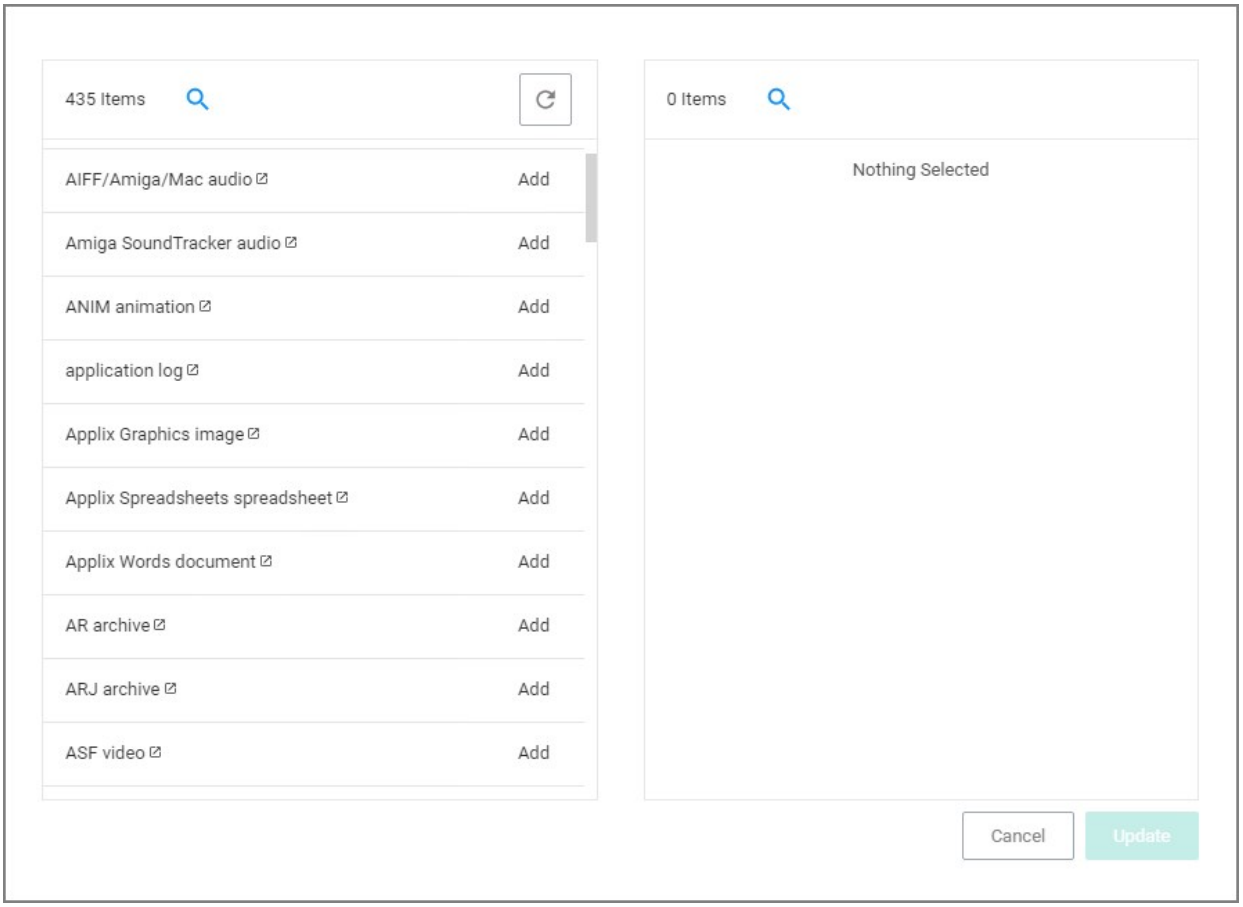


Parameters

- File Extensions



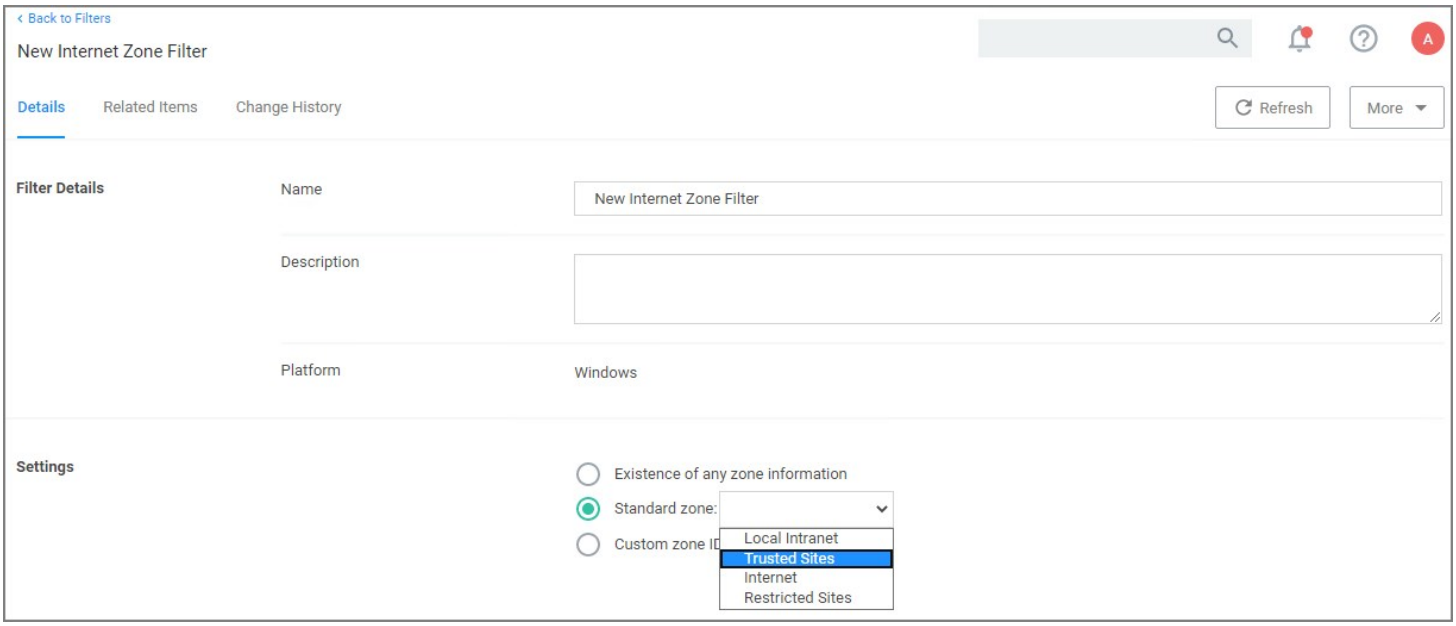
- MIME Types



Add the parameters, click **Update** and **Save Changes**.

Internet Zone Filter

This filter identifies what internet zone a computer is connected to on your network, such as Trusted Sites and Local Intranet. *No out-of-box filters exist in Privilege Manager for this type.*

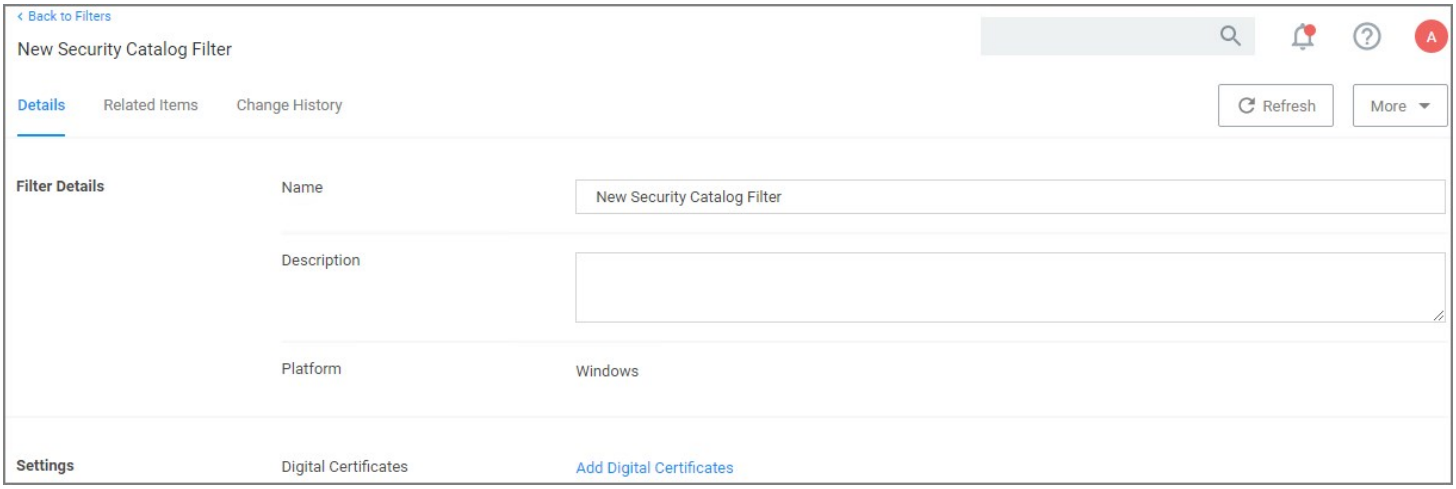


Parameters

- Existence of any zone information
- Standard zone:
  - Local Intranet
  - Trusted Sites
  - Internet
  - Restricted Sites
- Custom Zone IDs

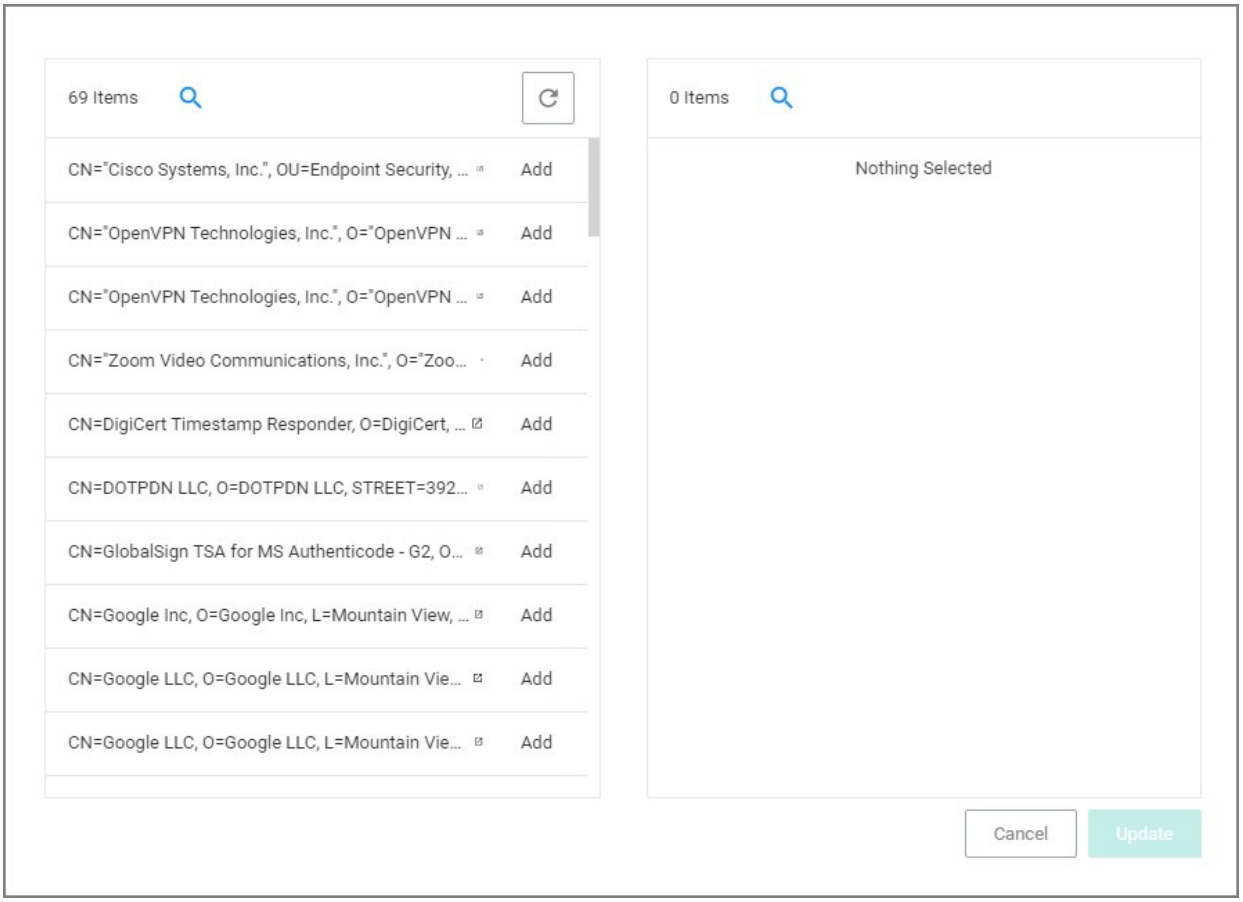
Security Catalog Filter

This is a special collection of files to allow or deny list. For example, the Microsoft Security Catalog is often allow listed as a trusted catalog.



Parameters

- Digital Certificates

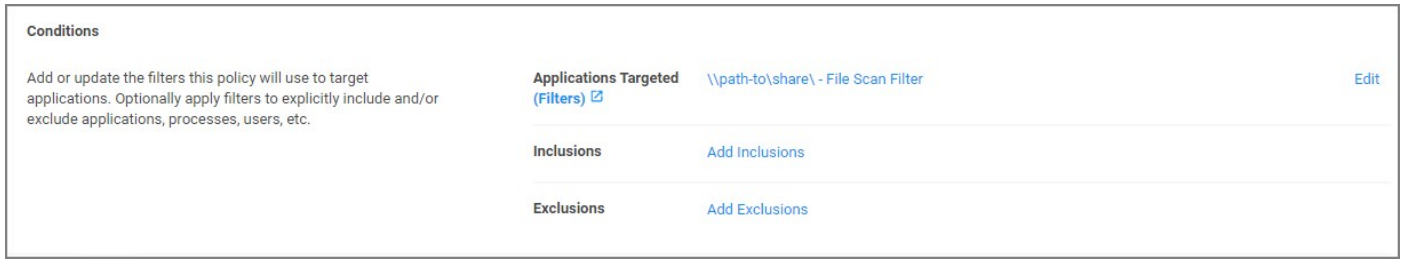


Unable to Access Cortana and Search for Windows 10

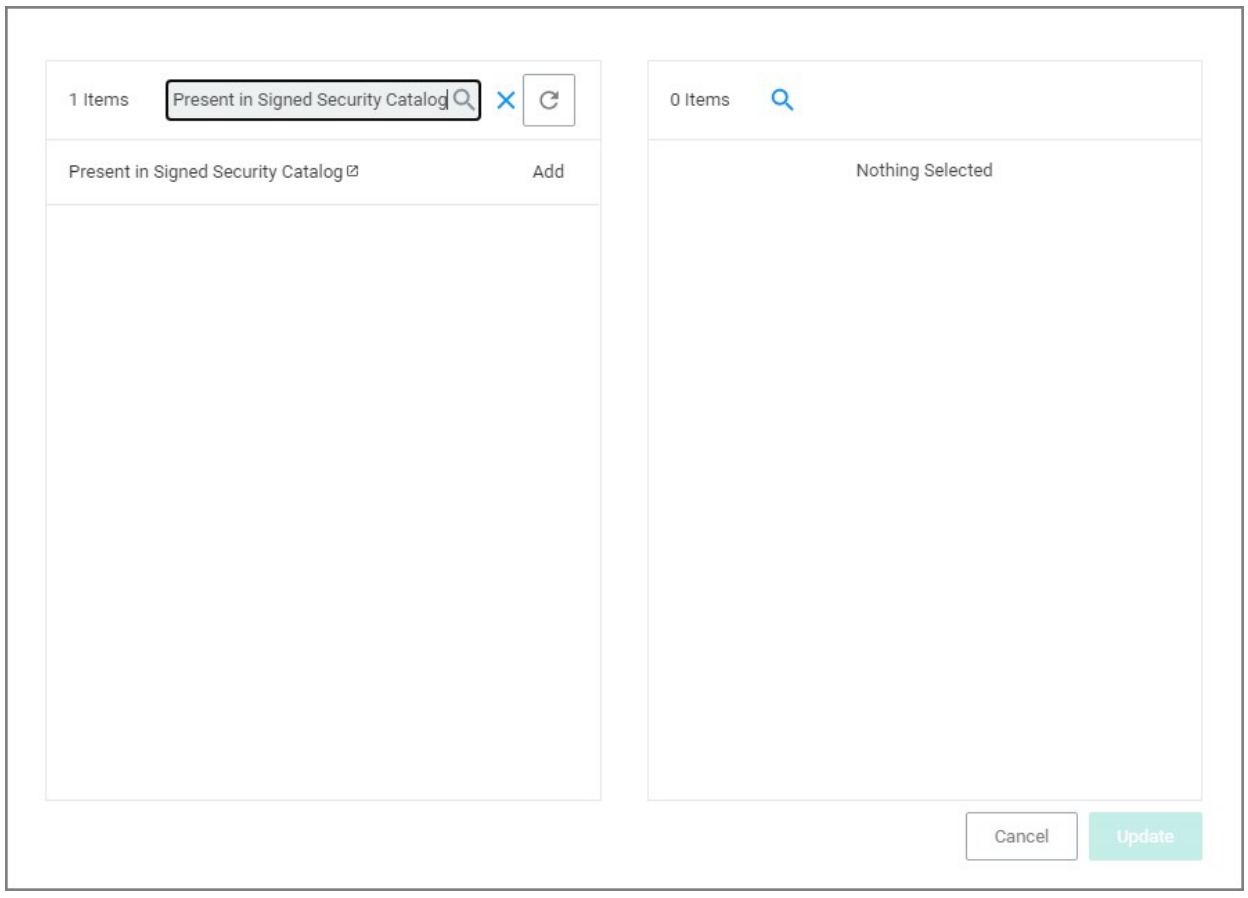
This issue might be due to the **Present in Signed Security Catalog** not being added to the **Exclusion Filters** section in a policy.

How to Resolve

1. Launch **$1Privilege Manager $2** and navigate to your **Application Policies**.
2. Click on a previously created policy.
3. Under **Conditions**, next to Exclusions select **Add Exclusion Filter**.



4. Search for **Present in Signed Security Catalog**.



5. Click **Add** next to the **Present in Signed Security** filter.

6. Click **Update**.
7. Click **Save Changes** on the policy page.

   Note: Once the agents check back into the web console which by default occurs every 30 minutes, the machines will get the new policy changes. However if you would like to test the policy update on a specific machine, please continue.

8. Go to the Machine(s) where you want to update the policy and open the Agent Utility.

   e.g., C:\Program Files\Thycotic\Agents\Agent

9. Click **Update**.

Delinea

Inventory Filters

These depend on file inventory data, meaning they generally apply to already discovered applications or files pulled in by Privilege Manager tasks. For example, after running an inventory task on a specific computer or group of computers, Privilege Manager can use the list of files inventoried and target those files.

> **Note**: No out-of-box filters exist in Privilege Manager for this type of filter category. Most filters of this type are associated with a data source during their creation. That data source is not to be changed. The exception is the Security Catalog File Filter where the data source needs to be added after the filter has been created.

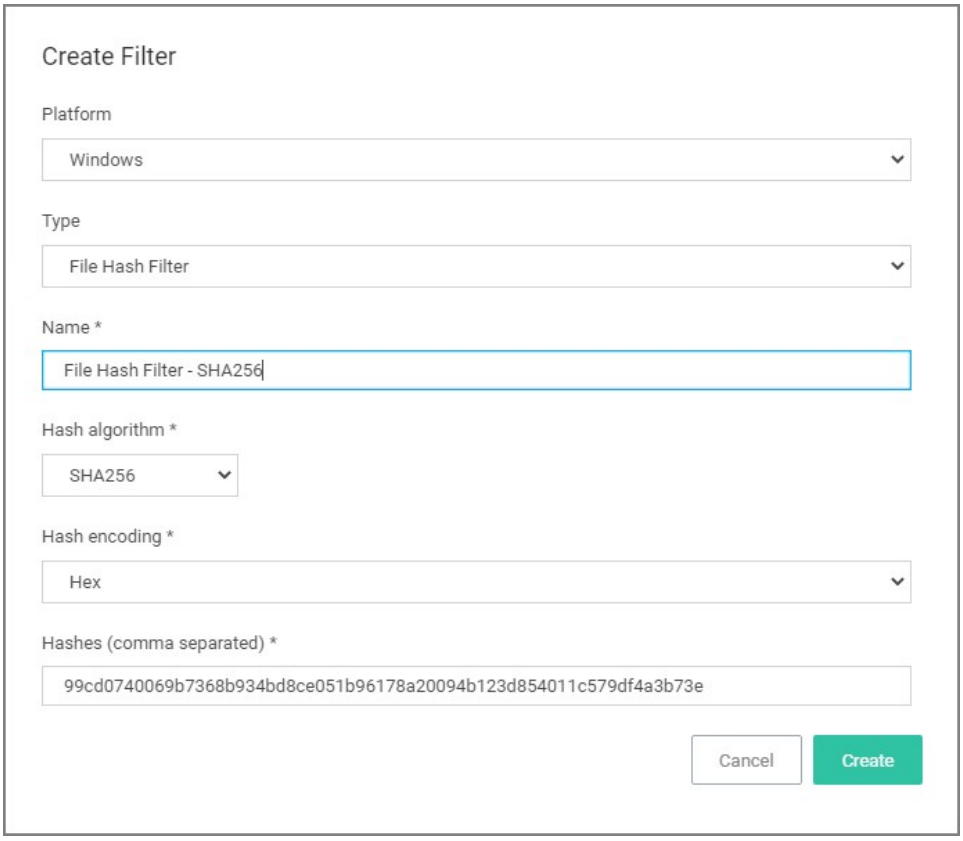
The following Inventory Filter type filter topics are available:

- File Hash Filter
- File Scan Results Filter - Computer
- File Scan Results Filter - Policy
- MSI File Contents Filter
- MSI Package Contents Filter
- Package Contents Filter
- Security Catalog Contents Filter
- Virtual Disk File Contents Filter
- Virtual Disk Package Contents Filter

File Hash Filter

This type of filter identifies files inventoried based on Hash Algorithms. *No out-of-box filters exist in Privilege Manager for this type.*

When creating this filter, the target hashes need to be entered as a comma-separated list:



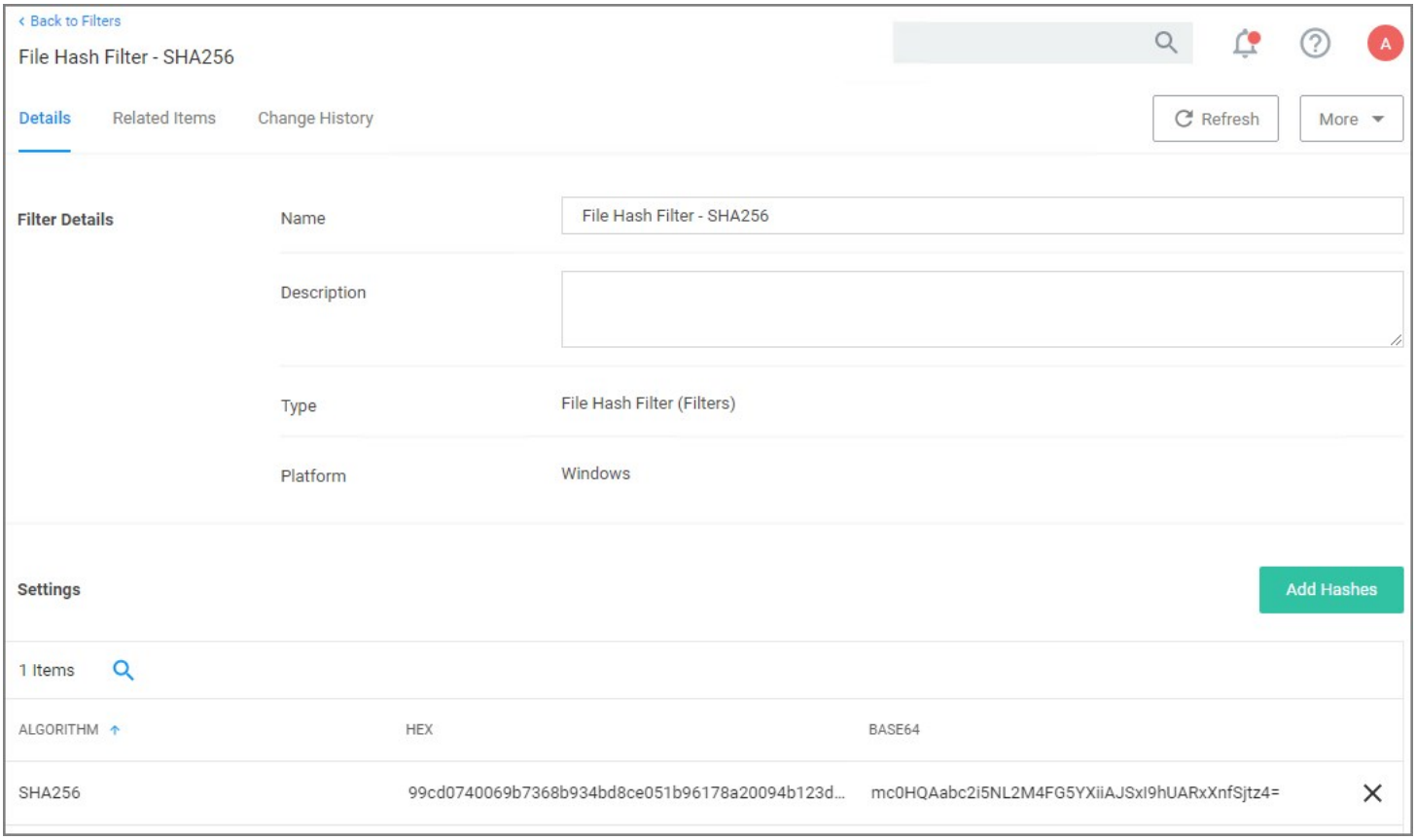
This filter is available for macOS, Unix/Linux, and Windows systems.

Required Parameters on Filter Creation

- **Hash algorithm** drop-down, only one can be specified per filter:
  - MD5
  - SHA1 (only for backwards compatibility - should not be used anymore!)
  - Authenticode
  - SHA256
  - Authenticode 2
- **Hash encoding** drop-down:
  - Hex
  - Base64
- **Hashes (comma separated)** text field.

Example of SHA256 Filter

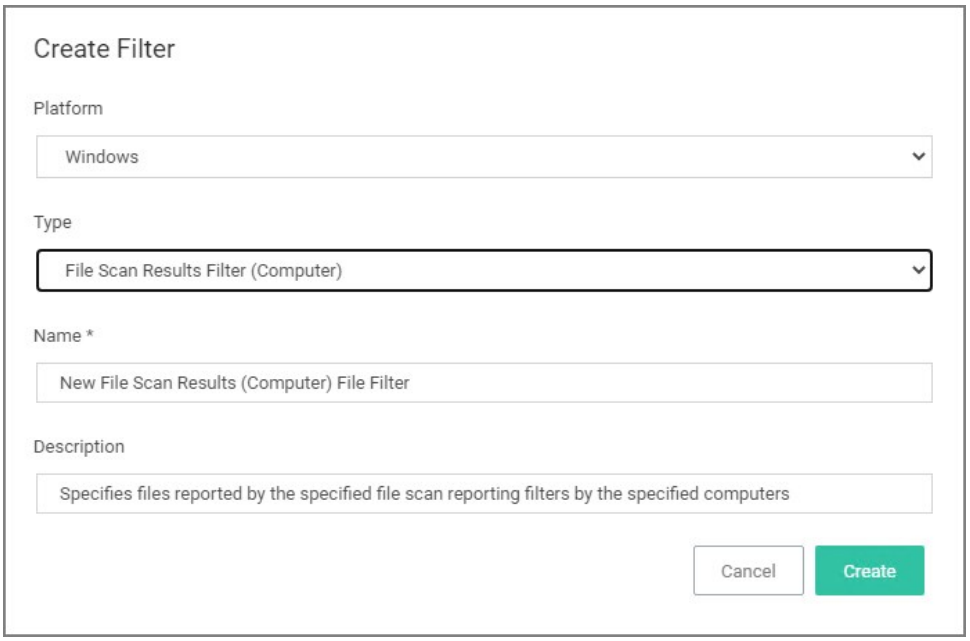
Once the filter is created, the following settings can be viewed and/or edited:



- **Algorithm**, in hex and base64 format. Algorithms and hashes can be added via the **Add Hashes** button.

File Scan Results Filter (Computer)

This type of filter identifies file inventory based on another computer's file scan results. This allows for one computer that has been setup properly to be used as a source for this filter. *No out-of-box filters exist in Privilege Manager for this type.*



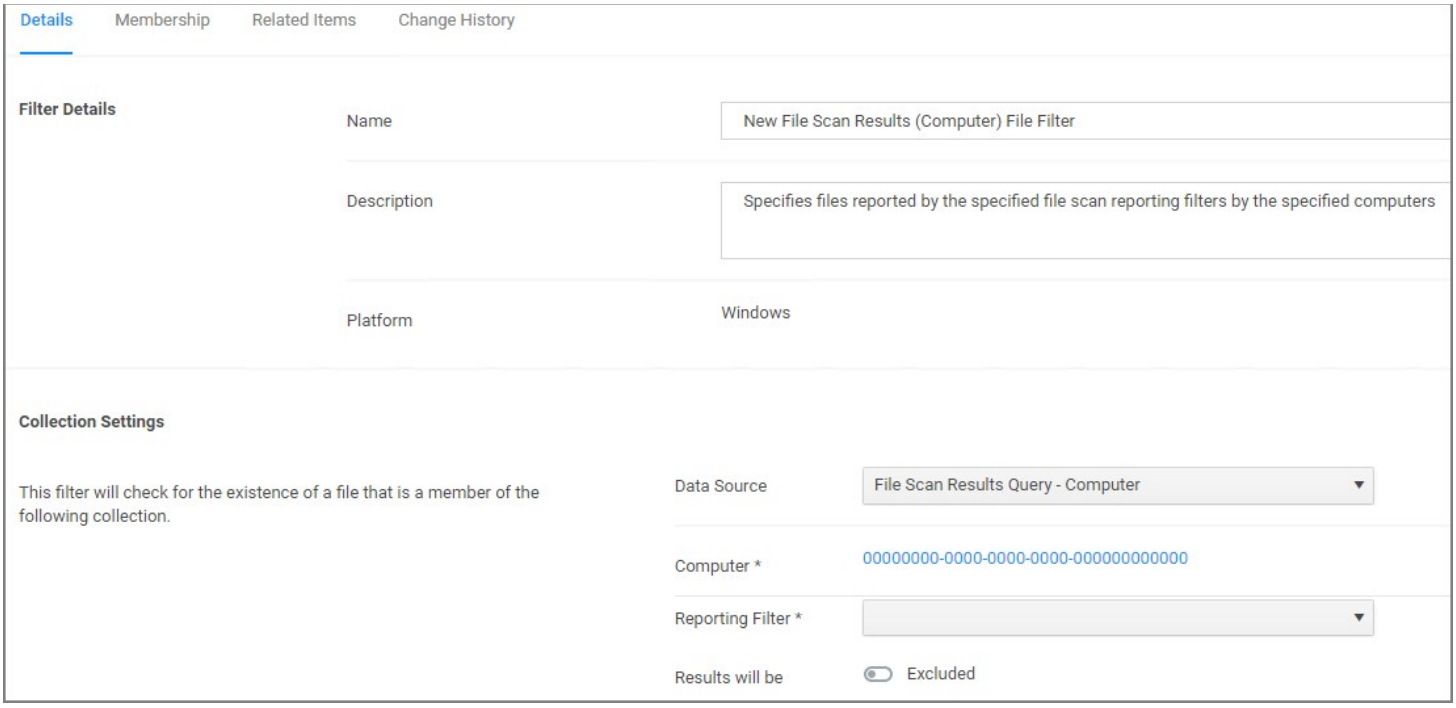
This filter is available for both Windows and macOS systems.

Parameters

Once the filter is created the following settings can be viewed and/or edited:

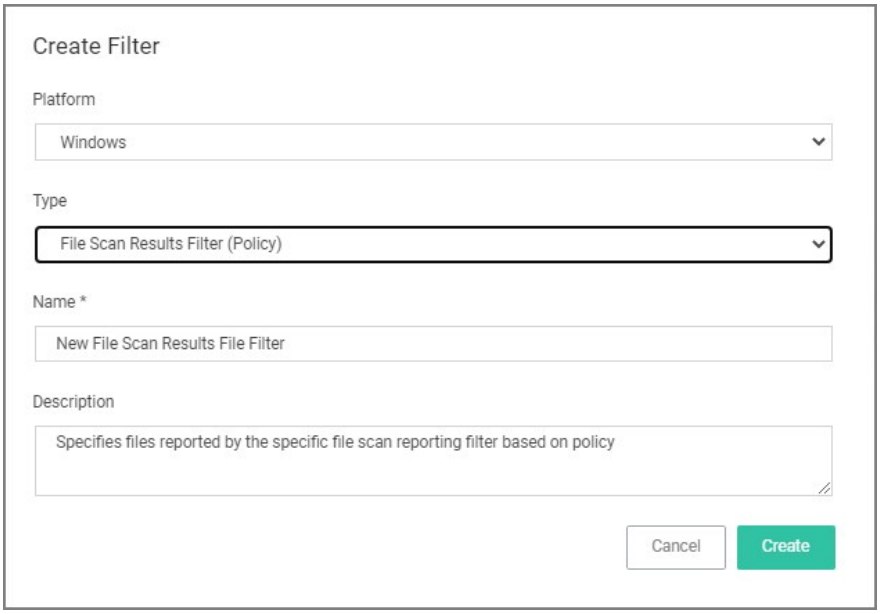
- Data Source, this **should not be edited**. The information here is specific to the task of the File Scan Results Filter for computers.
- Computer, this is the actual computer resource that has to be selected for the scan.
- Reporting Filter
- Results will be either excluded (default) or included.

Delinea


Details
Membership
Related Items
Change History
Filter Details
Name
New File Scan Results (Computer) File Filter
Description
Specifies files reported by the specified file scan reporting filters by the specified computers
Platform
Windows
Collection Settings
This filter will check for the existence of a file that is a member of the following collection.
Data Source
File Scan Results Query - Computer
Computer *
00000000-0000-0000-0000-000000000000
Reporting Filter *
Results will be
Excluded

File Scan Results Filter (Policy)

This type of filter identifies file inventory based on Privilege Manager Policies. *No out-of-box filters exist in Privilege Manager for this type.*

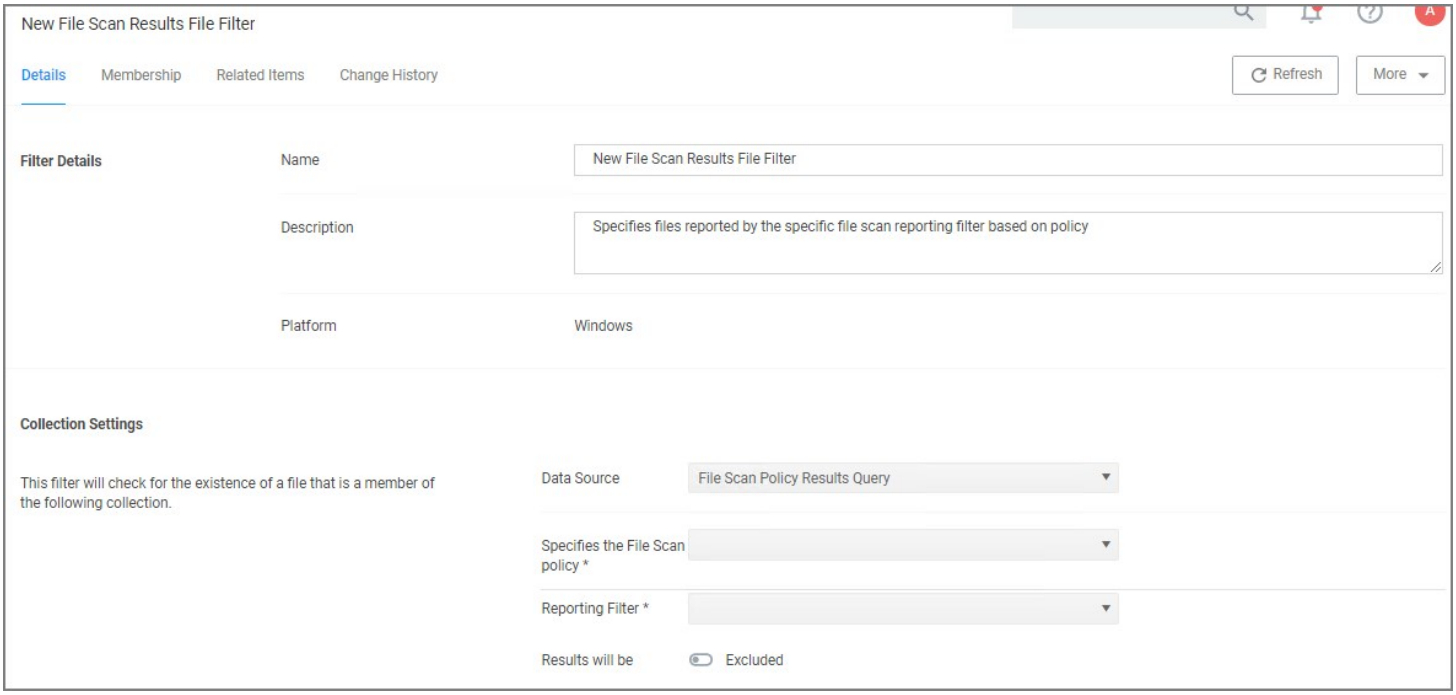


Parameters

Once the filter is created the following settings can be viewed and/or edited:

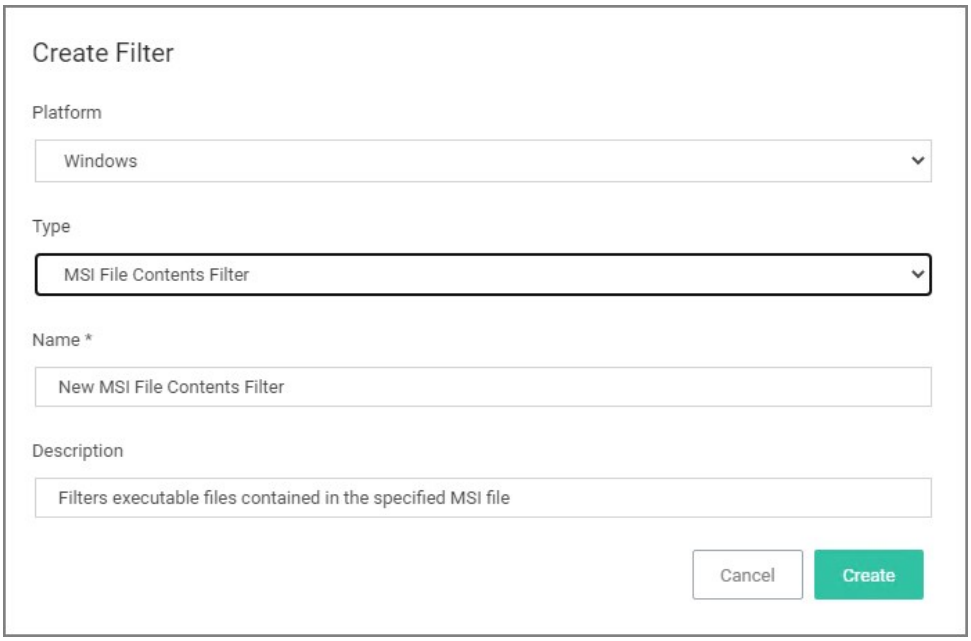
- Data Source, this **should not be edited**, it is the File Scan Policy Results Query.
- Specifies the File Scan Policy, this is the actual Policy resource that has to be selected for the scan.
- Reporting Filter
- Results will be either excluded (default) or included.

Delinea


New File Scan Results File Filter
Details
Membership
Related Items
Change History
Refresh
More
Filter Details
Name
New File Scan Results File Filter
Description
Specifies files reported by the specific file scan reporting filter based on policy
Platform
Windows
Collection Settings
This filter will check for the existence of a file that is a member of the following collection.
Data Source
File Scan Policy Results Query
Specifies the File Scan policy *
Reporting Filter *
Results will be
Excluded

MSI File Contents Filter

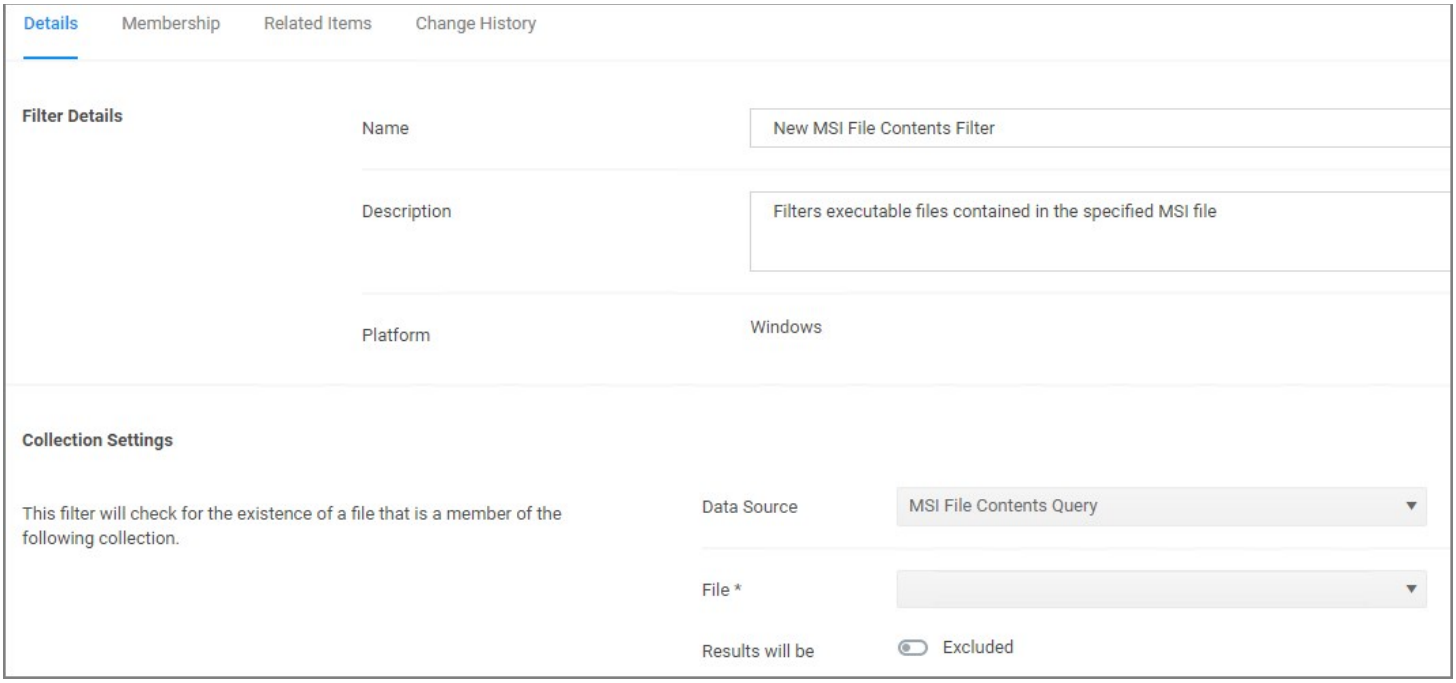
This type of filter identifies file inventory based on .MSI file contents, i.e. specific Windows package installers. *No out-of-box filters exist in Privilege Manager for this type.*



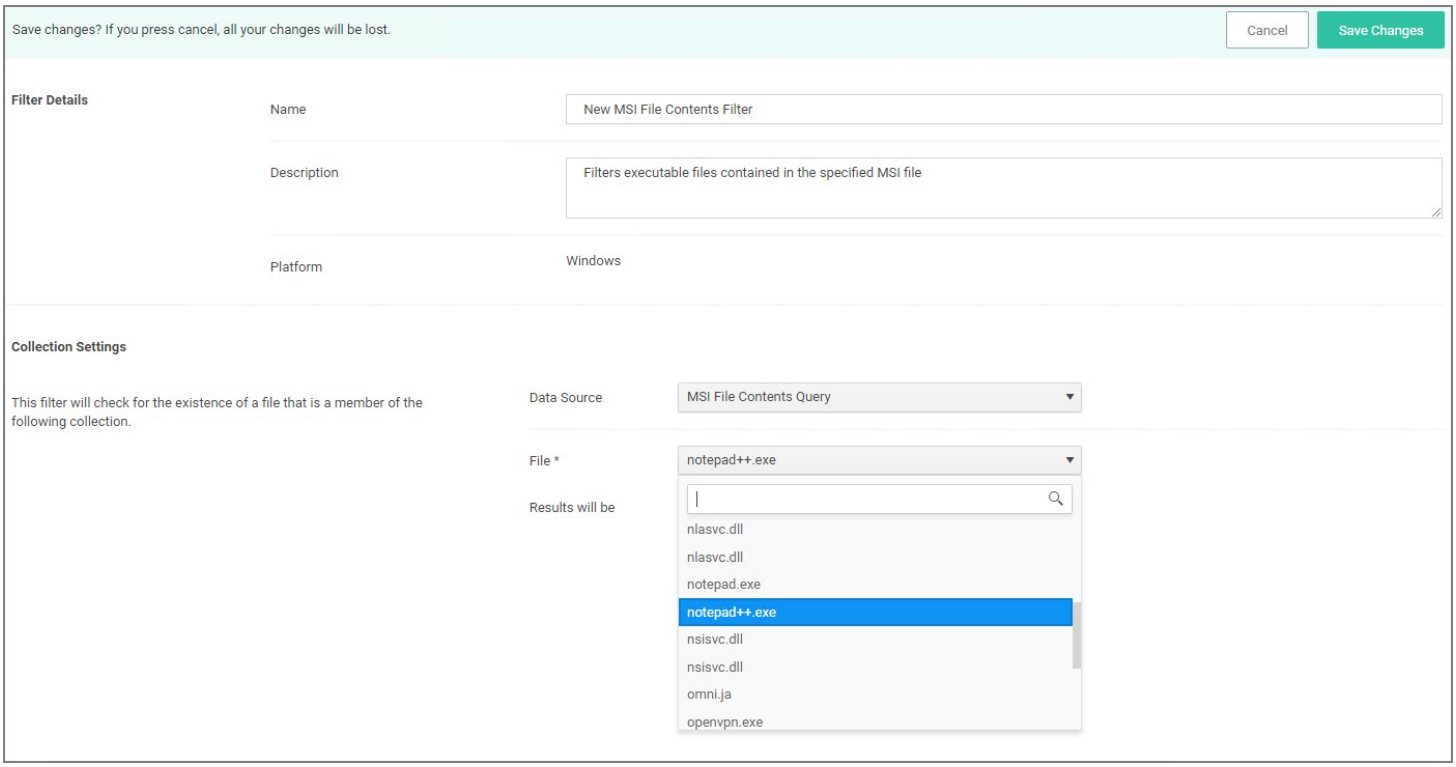
Parameters

Once the filter is created the following settings can be viewed and/or edited:

- Data Source, (**do not edit**) this is the MSI File Contents Query.
- File:
  - Parameters (these are required)
    - Win32 Executable
    - Product Name
  - Select Resource, this is the actual MSI file resource that has to be selected for the scan.
- Results will be either excluded (default) or included.

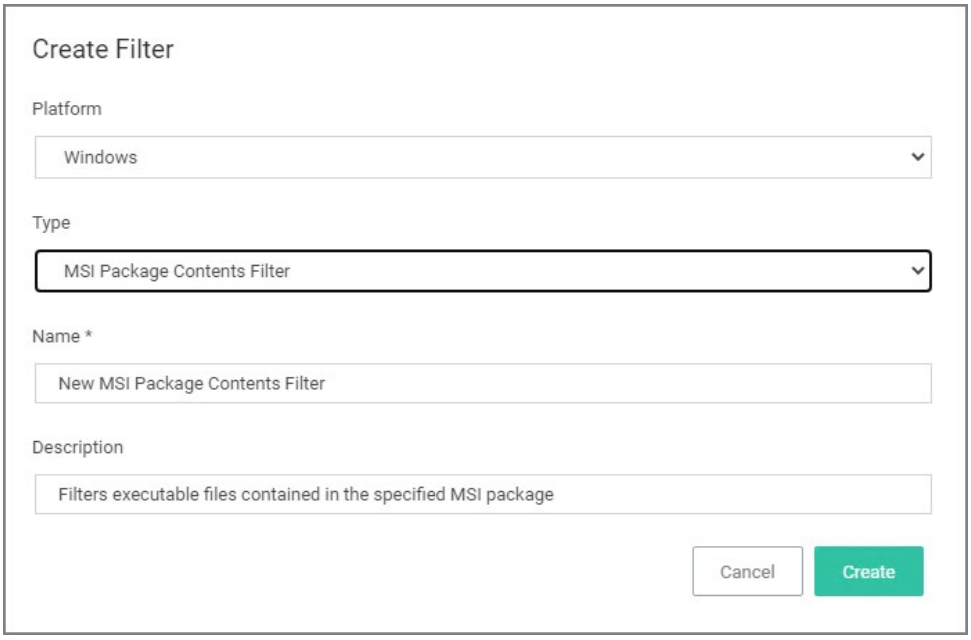


Viewing, Editing, and Saving the Parameters



MSI Package Contents Filter

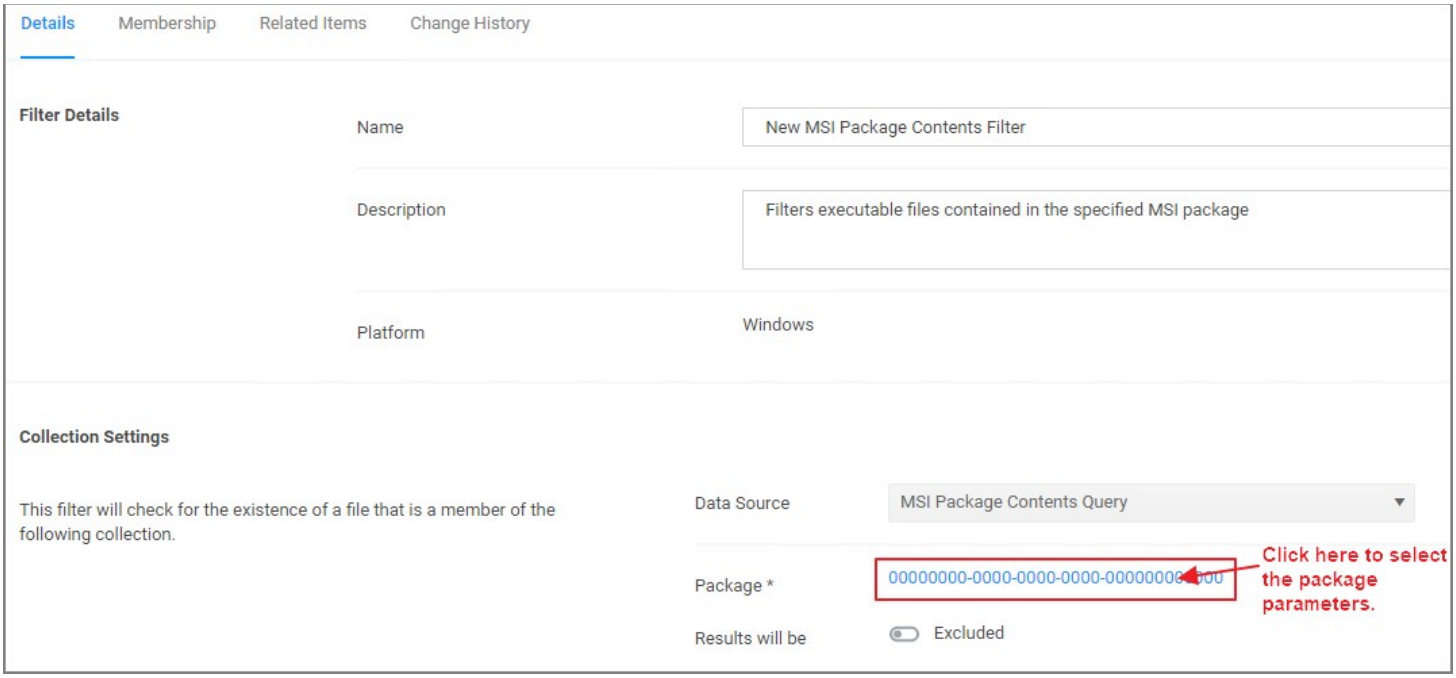
This type of filter identifies file inventory based on MSI package contents. *No out-of-box filters exist in Privilege Manager for this type.*



Parameters

Once the filter is created the following settings can be viewed and/or edited:

- Data Source, (**do not edit**) this is the MSI Package Contents Query.
- Package:
  - Parameters:
    - Scope by Organizational Group
    - Search text
    - Maximum rows returned, this is a required parameter and the default is 10000.
  - Select Resource, this is the actual MSI package resource that has to be selected for the query.
- Results will be either excluded (default) or included.



Viewing and Editing the Package Parameters

Viewing and Adding the Resource(s)

Delinea

Select Resource

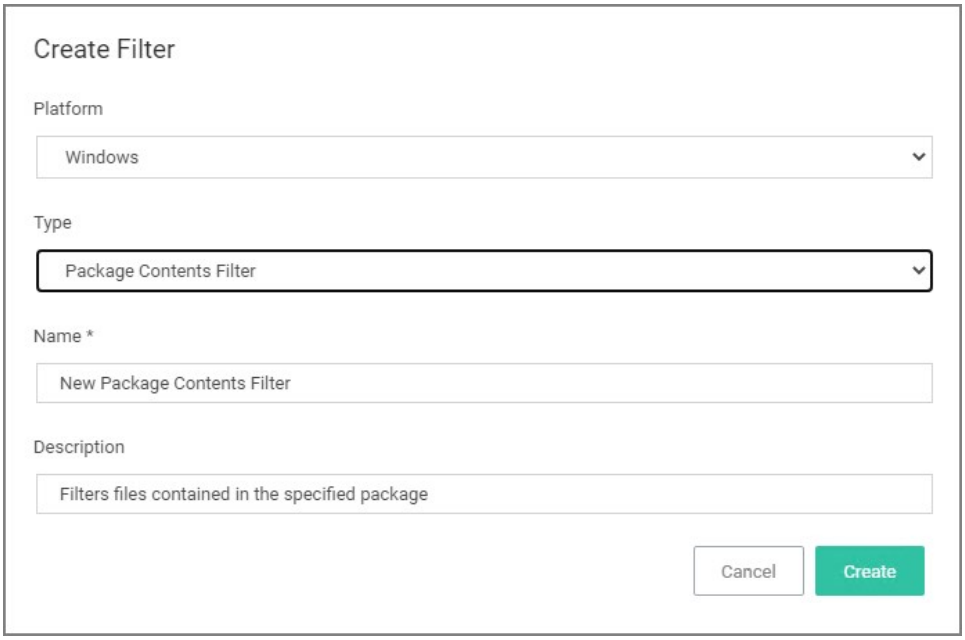
Name	Resource Type	Description	CreatedDate
UNC File Inventory Package for \\fileshare1\TP\	Package		Wed Aug 07 2019 15:39:36 GMT-0400 (Eastern Daylight Time)
UNC File Inventory Package for \\path-to\share\	Package		Thu Aug 08 2019 09:47:26 GMT-0400 (Eastern Daylight Time)

1 10 items per page 1 - 2 of 2 items

Cancel Change Search

Package Contents Filter

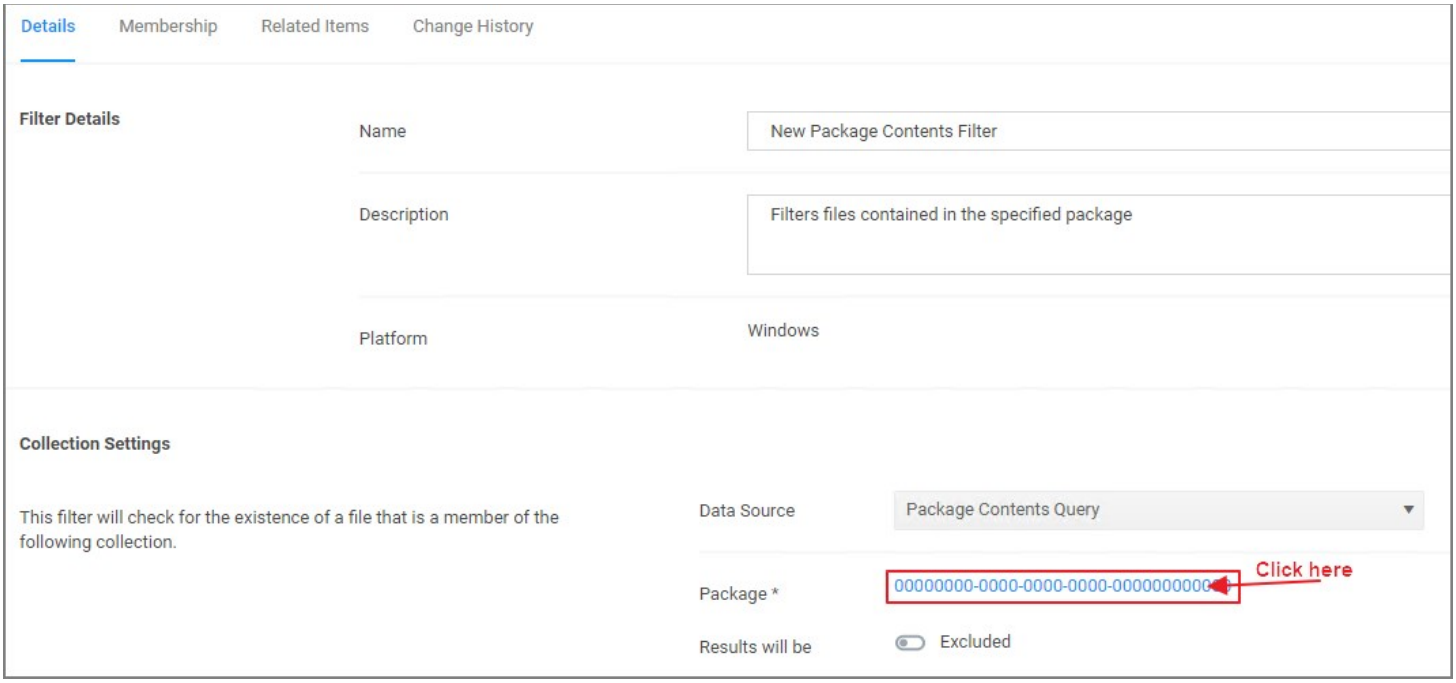
This type of filter identifies file inventory based on package contents. *No out-of-box filters exist in Privilege Manager for this type.*



Parameters

Once the filter is created the following settings can be viewed and/or edited:

- Data Source, (**do not edit**) this is the Package Contents Query.
- Package:
    - Parameters:
        - Scope by Organizational Group
        - Search text
        - Maximum rows returned, this is a required parameter and the default is 10000.
    - Select Resource, this is the actual package resource that has to be selected for the query.
- Results will be either excluded (default) or included.



Viewing and Editing the Package Parameters

Adding the Resource(s)

Delinea

Select Resource

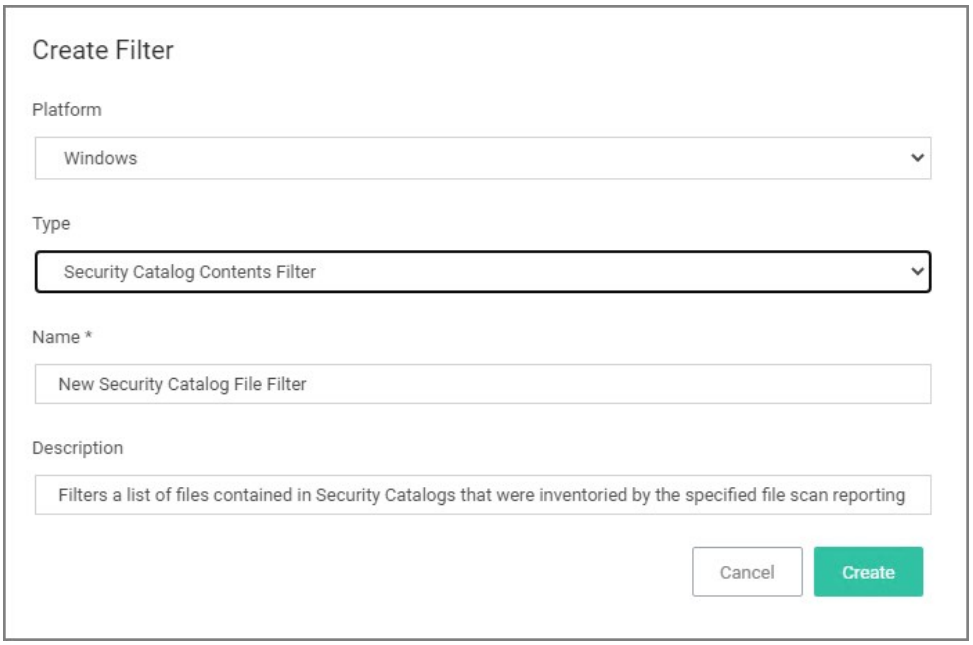
Name	Resource Type	Description	CreatedDate
UNC File Inventory Package for \\fileshare1\TP\	Package		Wed Aug 07 2019 15:39:36 GMT-0400 (Eastern Daylight Time)
UNC File Inventory Package for \\path-to\share\	Package		Thu Aug 08 2019 09:47:26 GMT-0400 (Eastern Daylight Time)

1 10 items per page 1 - 2 of 2 items

Cancel Change Search

Security Catalog Contents Filter

This is a special collection of files to allow or deny list. This filter type is similar to other Inventory Filters, particularly our Security Catalog Filter. *No out-of-box filters exist in Privilege Manager for this type.*

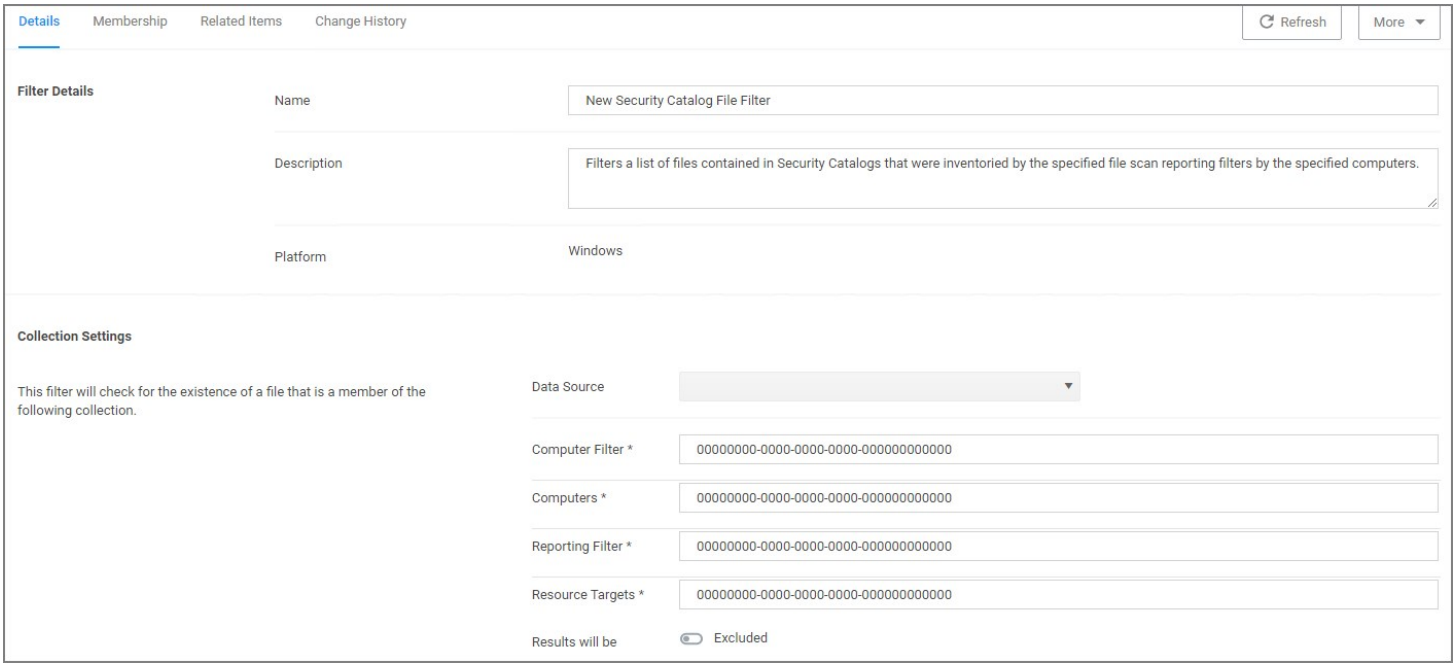


Parameters

Once the filter is created the following settings can be viewed and/or edited:

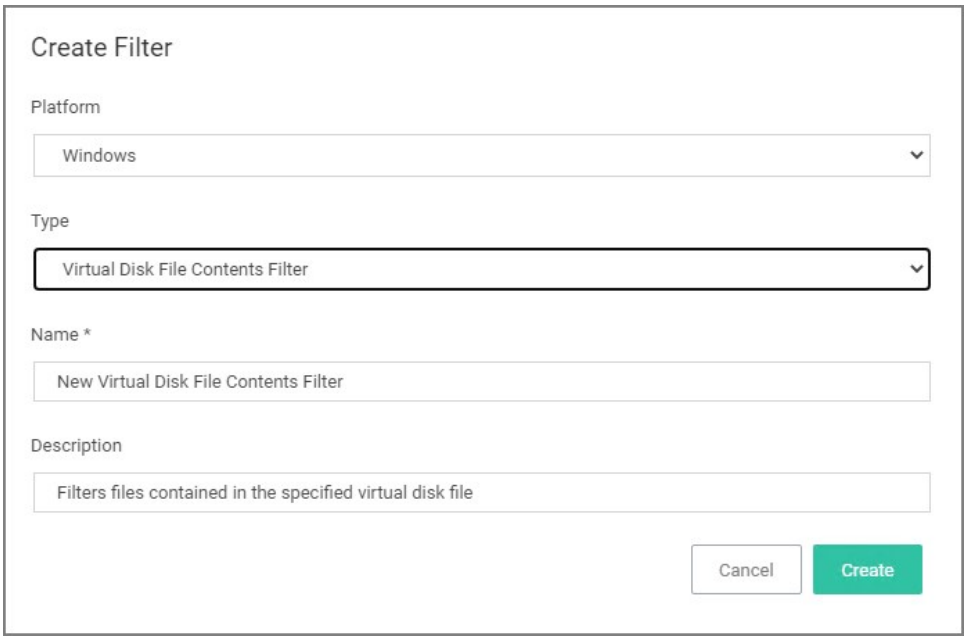
- Data Source
- Computer Filter
- Computers
- Reporting Filter
- Resource Targets
- Results will be either excluded (default) or included.

Delinea


Details
Membership
Related Items
Change History
Refresh
More
Filter Details
Name
New Security Catalog File Filter
Description
Filters a list of files contained in Security Catalogs that were inventoried by the specified file scan reporting filters by the specified computers.
Platform
Windows
Collection Settings
This filter will check for the existence of a file that is a member of the following collection.
Data Source
Computer Filter *
00000000-0000-0000-0000-000000000000
Computers *
00000000-0000-0000-0000-000000000000
Reporting Filter *
00000000-0000-0000-0000-000000000000
Resource Targets *
00000000-0000-0000-0000-000000000000
Results will be
Excluded

Virtual Disk File Contents Filter

The Virtual Disk File Contents Filter filters files contained in the specified virtual disk file. *No out-of-box filters exist in Privilege Manager for this type.*

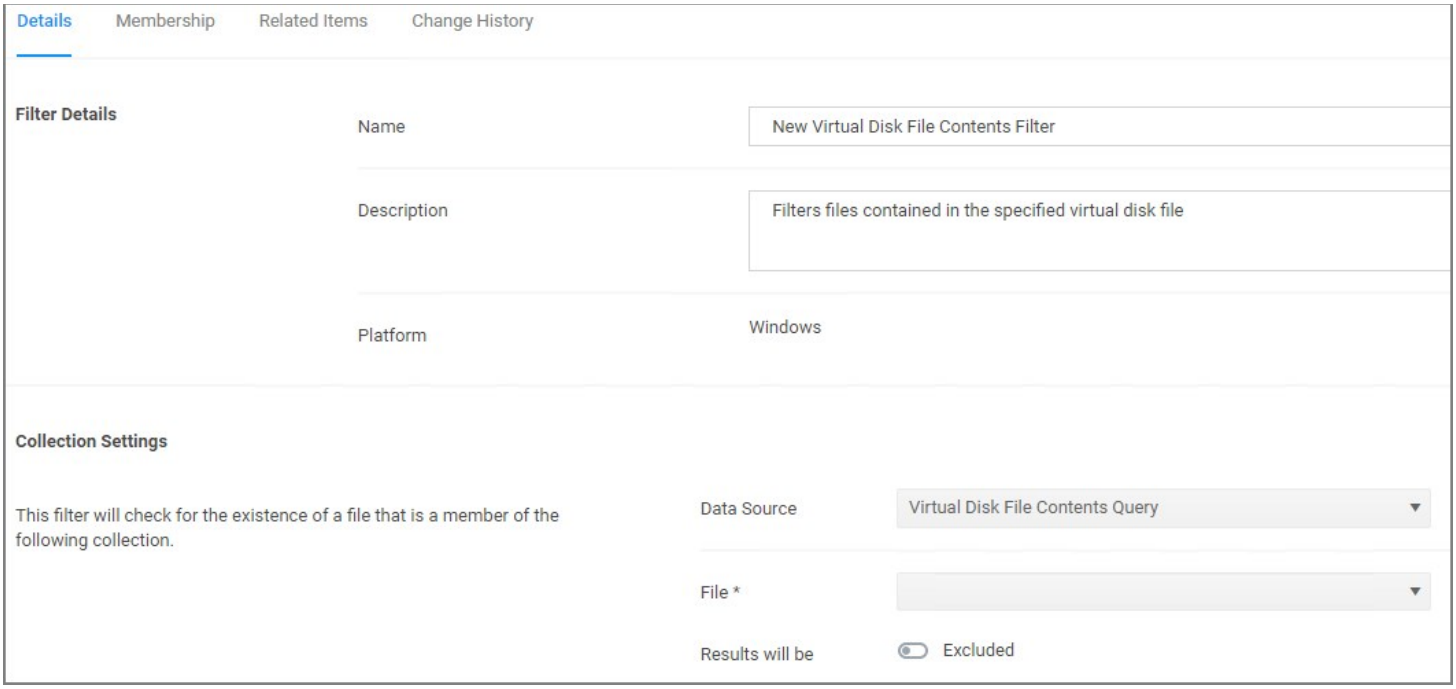


Parameters

Once the filter is created the following settings can be viewed and/or edited:

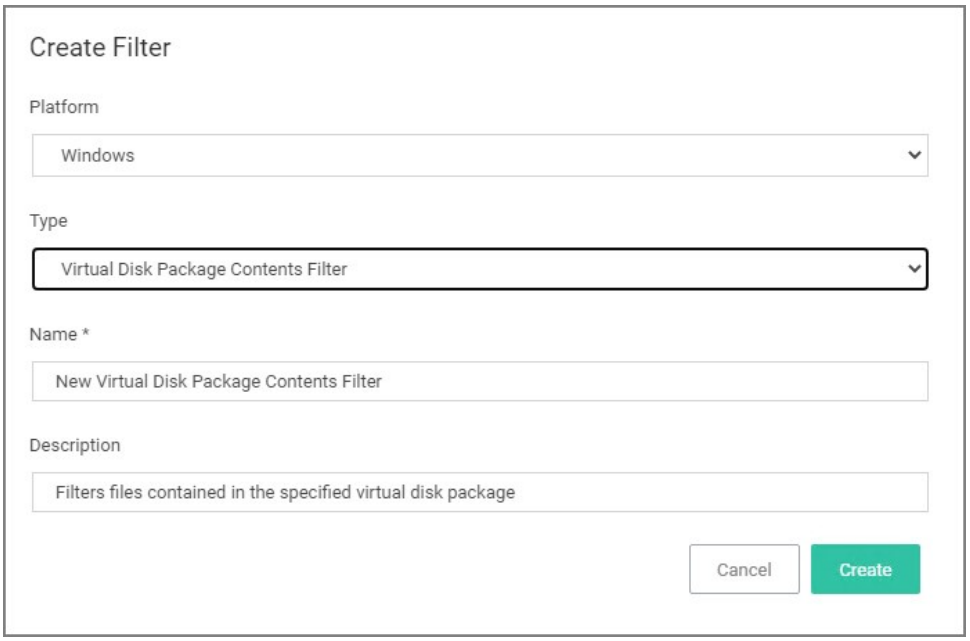
- Data Source, (**do not edit**) this is the Virtual Disk File Contents Query.
- File, this is the actual virtual disk file resource that has to be selected for the scan.
- Results will be either excluded (default) or included.

Delinea


Details
Membership
Related Items
Change History
Filter Details
Name
New Virtual Disk File Contents Filter
Description
Filters files contained in the specified virtual disk file
Platform
Windows
Collection Settings
This filter will check for the existence of a file that is a member of the following collection.
Data Source
Virtual Disk File Contents Query
File *
Results will be
Excluded

Virtual Disk Package Contents Filter

Filters files contained in the specified virtual disk package. *No out-of-box filters exist in Privilege Manager for this type.*

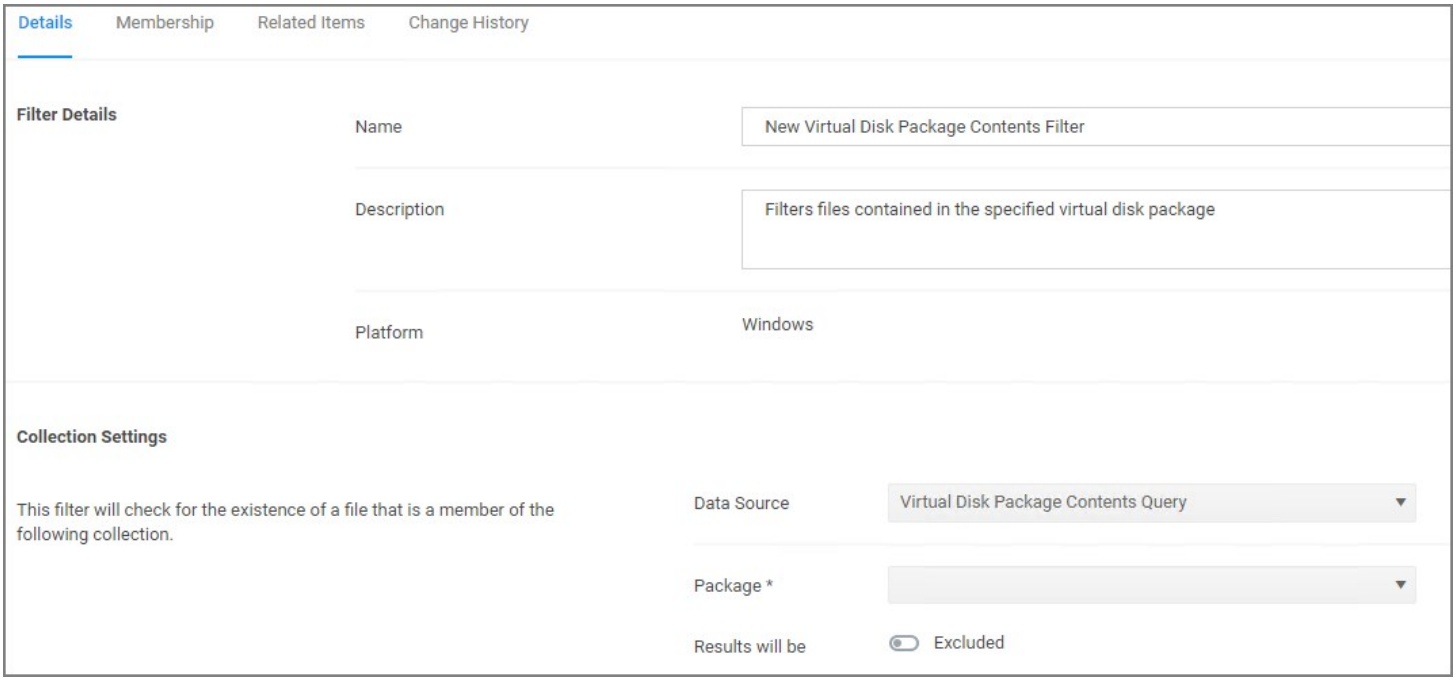


Parameters

Once the filter is created the following settings can be viewed and/or edited:

- Data Source, (do not edit) this is the Virtual Disk Package Contents Query.
- Package, select the actual package resource that is required for the query.
- Results will be either excluded (default) or included.

Delinea


Details
Membership
Related Items
Change History
Filter Details
Name
New Virtual Disk Package Contents Filter
Description
Filters files contained in the specified virtual disk package
Platform
Windows
Collection Settings
This filter will check for the existence of a file that is a member of the following collection.
Data Source
Virtual Disk Package Contents Query
Package *
Results will be
Excluded

MacOS Specific Filters

Most of the Application and File type filters apply to Windows as much as macOS platforms. There are some macOS specific filters that are covered in this section.

This is the default drop-down list when adding a new filter for macOS:

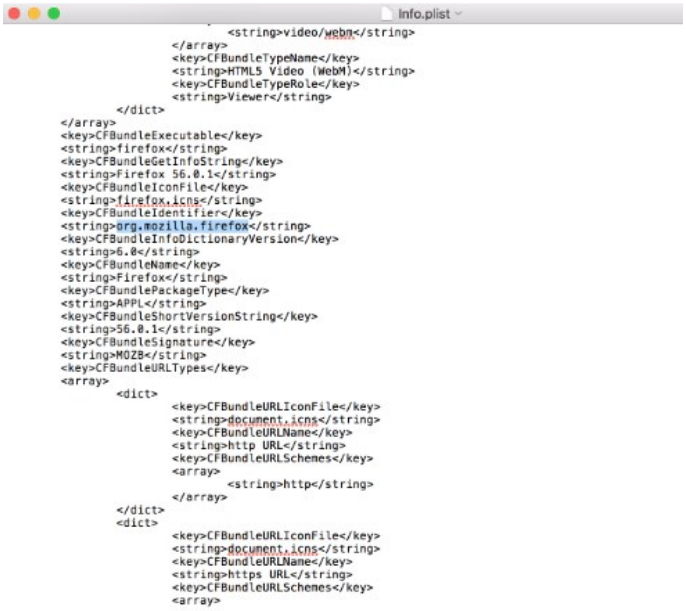
Creating macOS Filters Manually

In cases when Privilege Manager does not have enough information from the discovery process on a macOS endpoint, filters have to be created manually.

To manually find granular information required for targeting applications in Privilege Manager on a macOS endpoint,

1. Right-click the target application and select **Show Package Contents**.
2. Navigate to **Contents | Info.plist**, this gives you a coded list of items that you can match into the details page of your Filter.

For example, the highlighted section below can be entered into the **Bundled Identifier** line item when creating a Firefox filter.



List of MacOS Filters

The following filters are available based on type from a quick select drop-down menu, after choosing macOS as the platform.

Application Filter Types

- Commandline Filter
- Download Source Filter
- Parent Process Filter
- Secondary File Filter
- Security Rating Filter
- Signed File Filter
- Time Of Day Filter
- User Context Filter
    - Leveraging the User Context Filter for NoMAD

File Filter Types

- Application Bundle Filter
- File Hash Filter
- File Existence Filter
- File Owner Filter
- File Scan Results Filter (Computer)
- File Specification Filter

List of Default Filters for Event Discovery

The following filters are the default filters used during inventory event discovery on macOS endpoints:

- Default File Specification (MacOS)
    - Default Applications Folder (MacOS)
    - System Applications Folder (MacOS)

- Default App Bundles File Specification Filter
    - Default Application Bundles Filter (MacOS)
    - System Application Bundles Filter (MacOS)

Available Preference Pane Filters

- Date and Time Preference Pane filter
- Energy Saver Preference Pane filter
- Network Preference Pane filter

Application Bundle Filter

This type of filter identifies application bundles for macOS systems.

Prior to Privilege Manager v10.7.1, the value of the Bundle Name field required the inclusion of the .app extension (e.g. Console.app). The Bundle Name field should have an entry like **console.app** or **photos.app** to correctly apply the filter. If it is not present, the filter will fail to properly match. With Privilege Manager v10.7.1, the presence of the .app extension is properly calculated during policy processing.

Pre-10.7.1 Example

The bundle name should appear when creating the filter.

Parameters

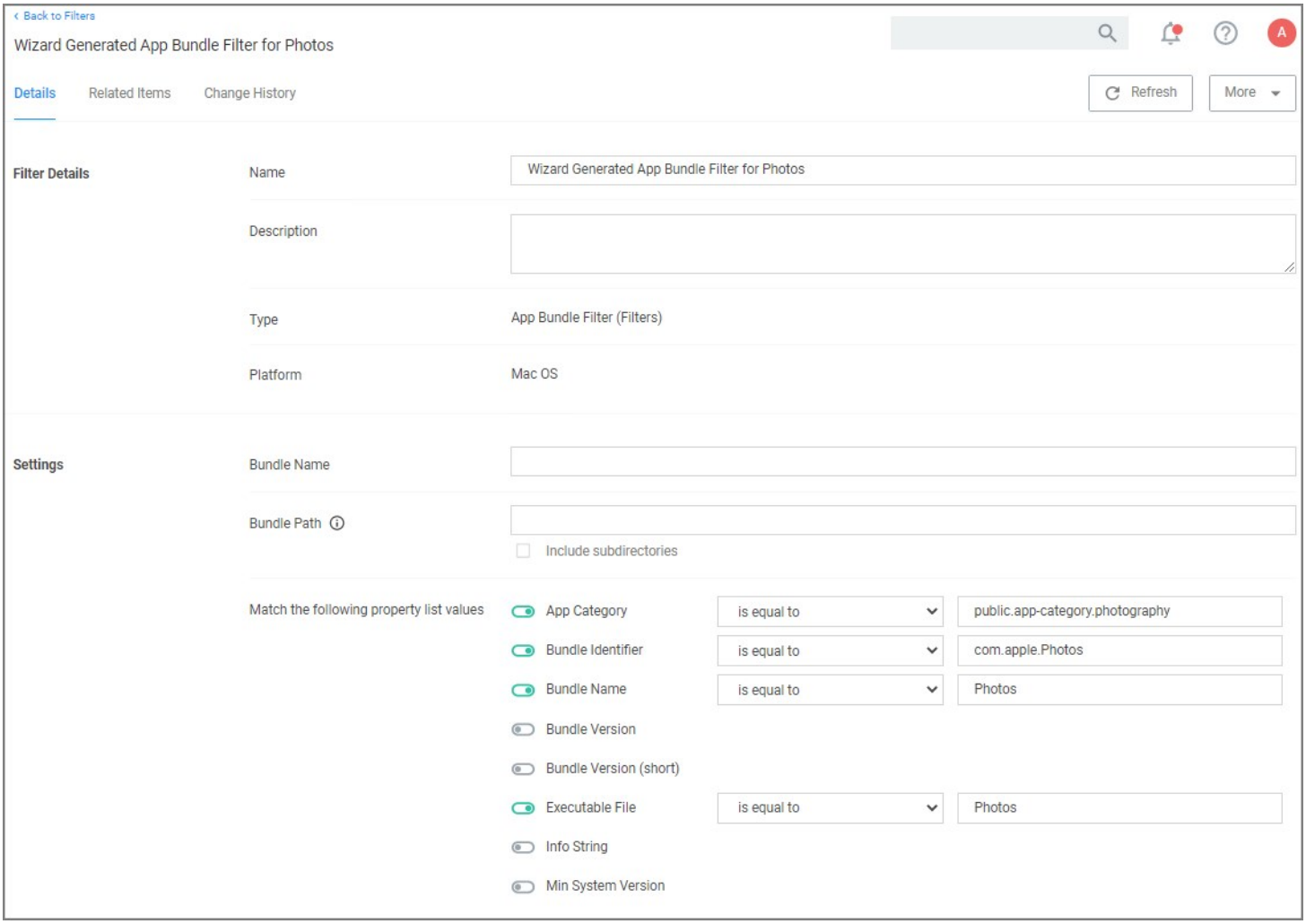
- Bundle Name
- Bundle Path
    - Include subdirectories

The following bundle properties can be used to identify an application bundle in an Application Bundle filter. These properties are found in the info.plist for the application on macOS systems.

- App Category
- Bundle Identifier
- Bundle Name
- Bundle Version

- Bundle Version (short)
- Executable File
- Info String
- Min System Version

Note: The **Bundle Name** field is separate from the Bundle Name in the property list. If you have the Bundle Name field populated and it doesn't match the binary being executed, the filter will fail to match and not process the property list values in the Info.plist file. If an app is discovered as a new loaded resource and assigned to a policy, a filter is created and pre-populated based on the information pulled from the info.plist file.



Info.plist Example for Photos

```
<key>CFBundleExecutable</key>
<string>Photos</string>
<key>CFBundleHelpBookFolder</key>
<string>Photos.help</string>
<key>CFBundleHelpBookName</key>
<string>com.apple.Photos.help</string>
<key>CFBundleIconFile</key>
<string>AppIcon</string>
<key>CFBundleIconName</key>
<key>CFBundleIdentifier</key>
<string>com.apple.Photos</string>
<key>CFBundleInfoDictionaryVersion</key>
```

<string>6.0</string>

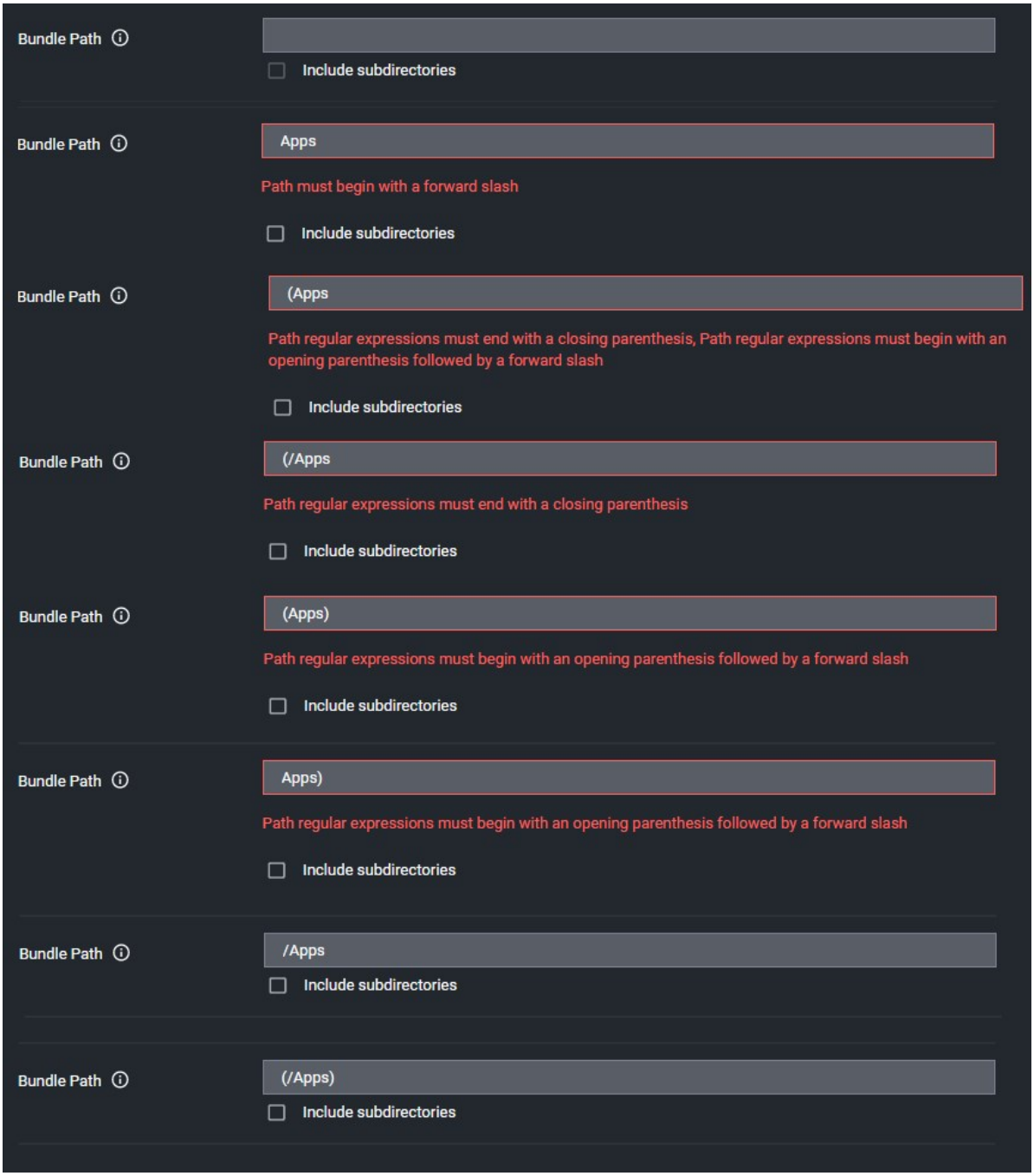
Using RegEx in Bundle Path

The Bundle Path parameter supports RegEx. The RegEx must be surrounded by parenthesis and will be compared against the lowercase file path, for example "(/applications/.*)". When a RegEx is used for the Bundle Path, **Include subdirectories** is automatically disabled.

Validation error messages are provided when the

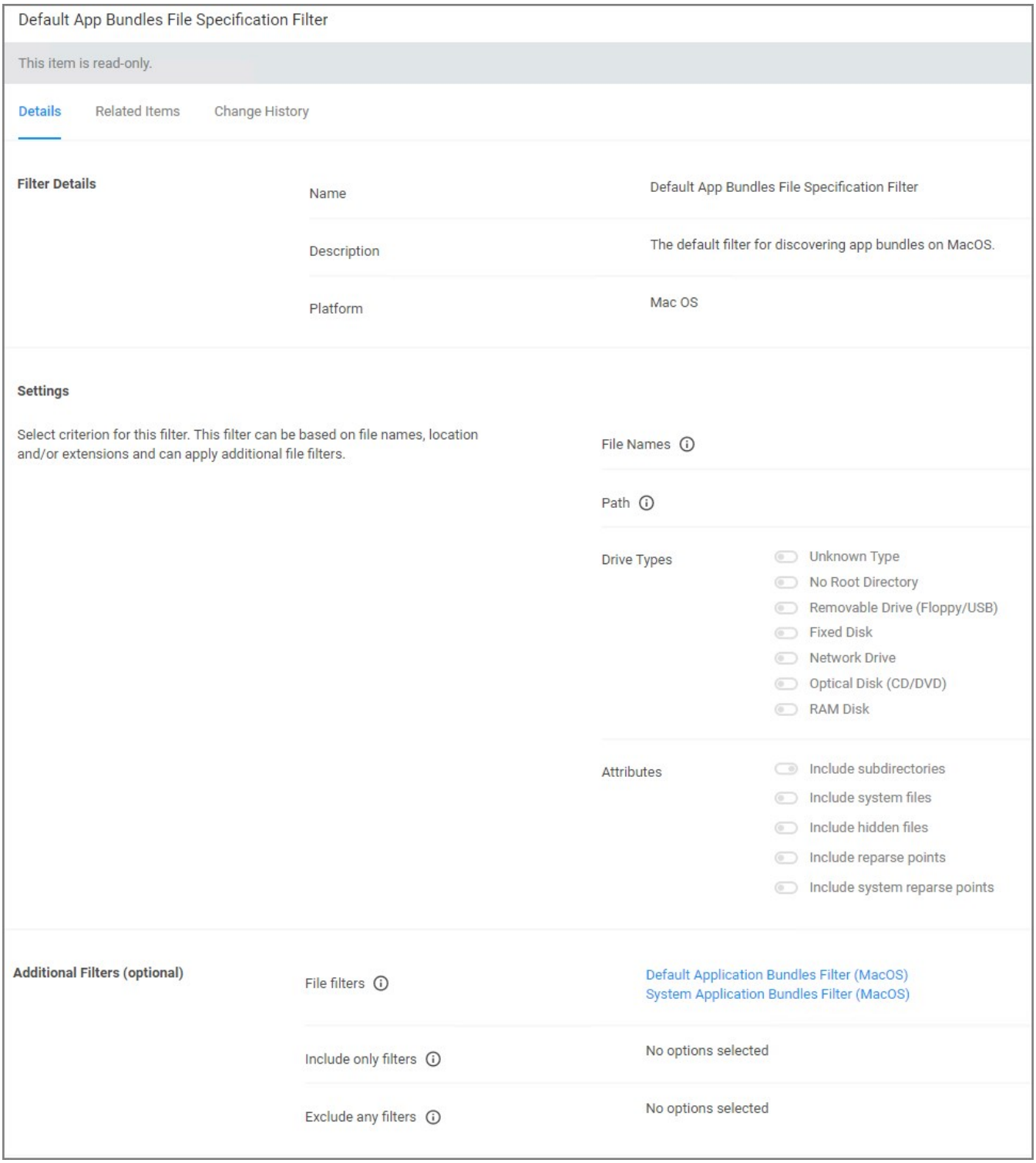
- Basic path is missing the leading /.
- RegEx path is missing the opening (.
- RegEx path is missing leading the (/.
- RegEx path is missing the closing).

Delinea


Bundle Path
Include subdirectories
Bundle Path
Apps
Path must begin with a forward slash
Include subdirectories
Bundle Path
(Apps
Path regular expressions must end with a closing parenthesis, Path regular expressions must begin with an opening parenthesis followed by a forward slash
Include subdirectories
Bundle Path
(/Apps
Path regular expressions must end with a closing parenthesis
Include subdirectories
Bundle Path
(Apps)
Path regular expressions must begin with an opening parenthesis followed by a forward slash
Include subdirectories
Bundle Path
Apps)
Path regular expressions must begin with an opening parenthesis followed by a forward slash
Include subdirectories
Bundle Path
/Apps
Include subdirectories
Bundle Path
(/Apps)
Include subdirectories

Default App Bundles File Specification Filter

This type of filter identifies application bundles for macOS systems. With this application bundles filter in place, macOS application bundles are inventoried regardless of their installation path in either /Applications or /System/Applications) on all versions of macOS.



By default this is a read-only filter which uses the following Additional Filters:

- File filters:
  - Default Application Bundles Filter (MacOS)
  - System Application Bundles Filter (MacOS)

The option to include subdirectories is enabled by default.

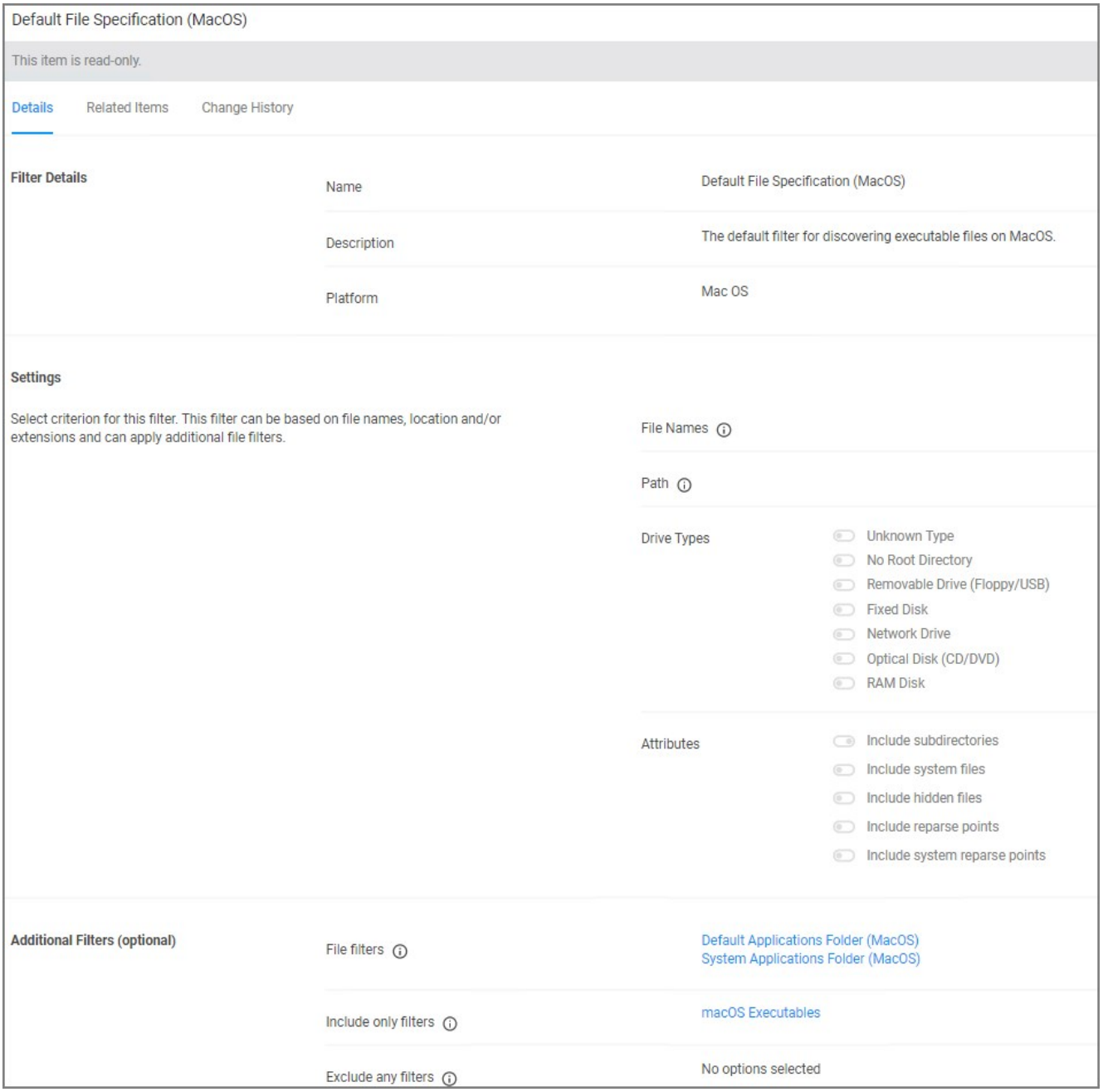
Example

1. Navigate to **Admin I Filters**.
2. In the search field next to the supported/not supported OS drop-downs, search for *default app*.

3. Select the **Default App Bundles File Specification Filter** filter to view its details and/or create a copy to customize the filter.
4. Click **Duplicate**.
5. Set the needed parameters.
6. Click **Save Changes**.

Default File Specification (MacOS)

This filter identifies files based on their file path or location on a computer.



This filter is available for macOS systems.

By default this is a read-only filter which uses the following Additional Filters:

- File filters:
  - System Applications Folder (MacOS)

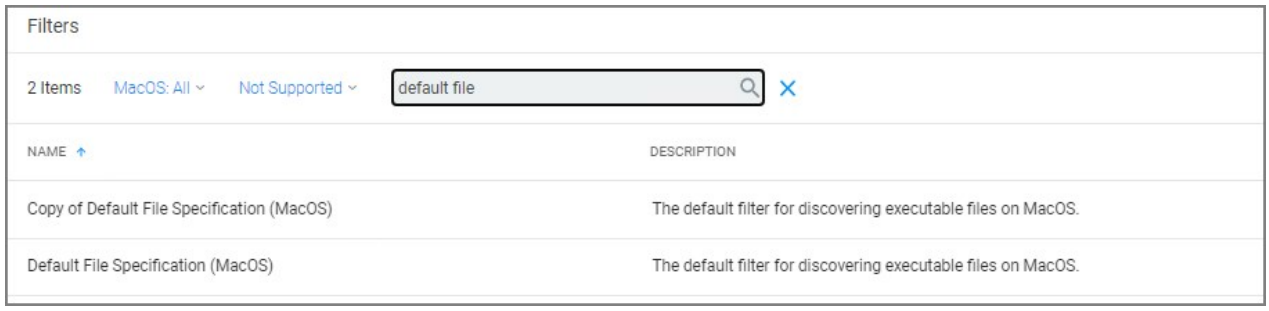
- Default Applications Folder (MacOS)

- Include only filters:
  - macOS Executables

The option to include subdirectories is enabled by default.

Example

1. Navigate to **Admin I Filters**.
2. In the search field next to the supported/not supported OS drop-downs, search for *default file*.



3. Select the **Default File Specification Filter (MacOS)** filter to view its details and/or create a copy to customize the filter.
4. Click **Duplicate**.
5. Set the needed parameters.
6. Click **Save Changes**.

Preference Pane Filters

The following Preference Pane Filters are supported for targeting in run as root type policies triggering justification and approval type interactive user dialogs:

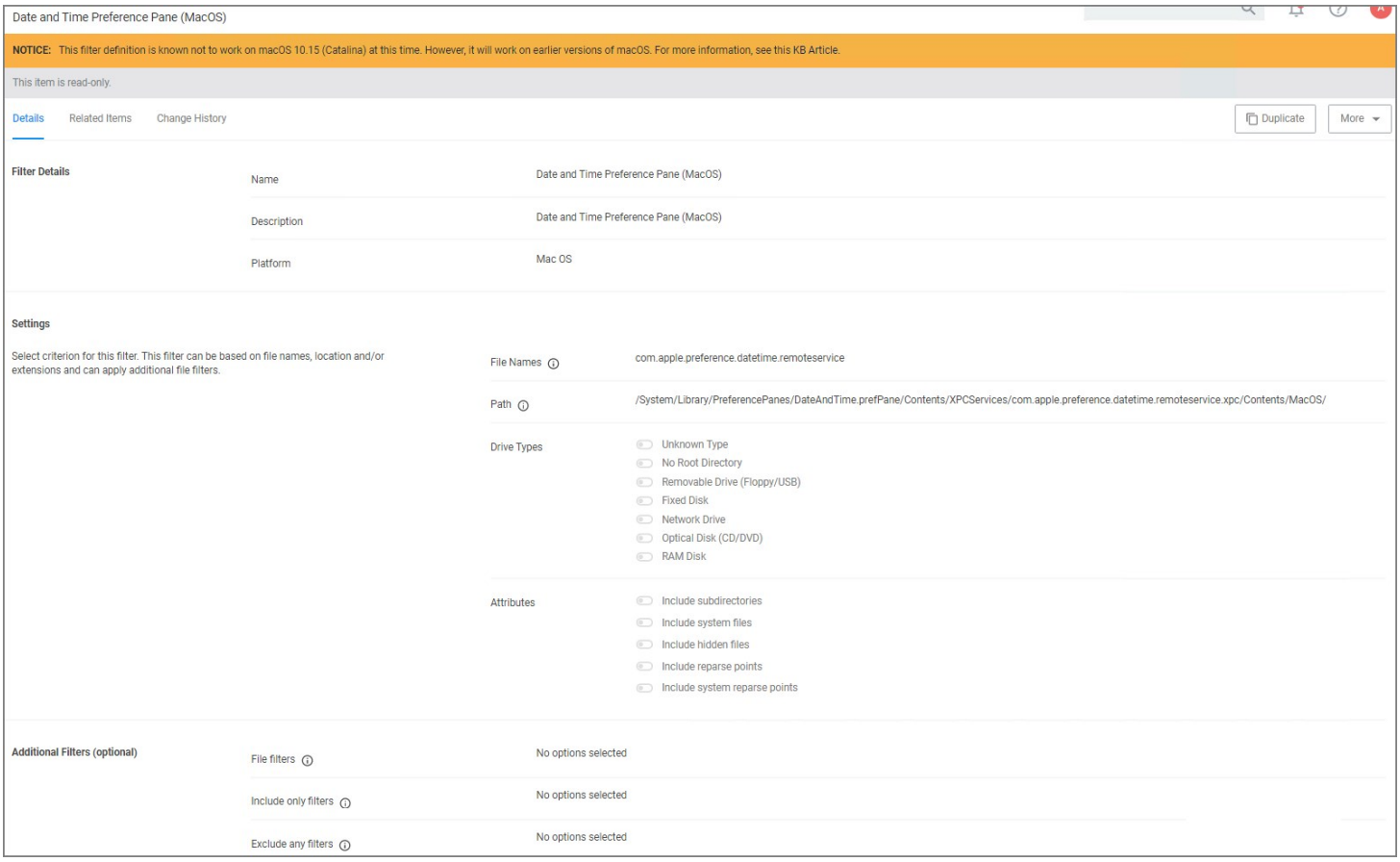
- Date and Time Preference Pane filter
- Energy Saver Preference Pane filter
- Network Preference Pane filter

For the following list of default preference pane filters, Delinea recommends to only target the preference pane in basic deny access policies:

- App Store Preference Pane
- Parental Controls Preference Pane
- Printers and Scanners Preference Pane
- Security and Privacy Preference Pane
- Sharing Preference Pane
- Time Machine Preference Pane
- Users and Groups Preference Pane

Date and Time Preference Pane Filter

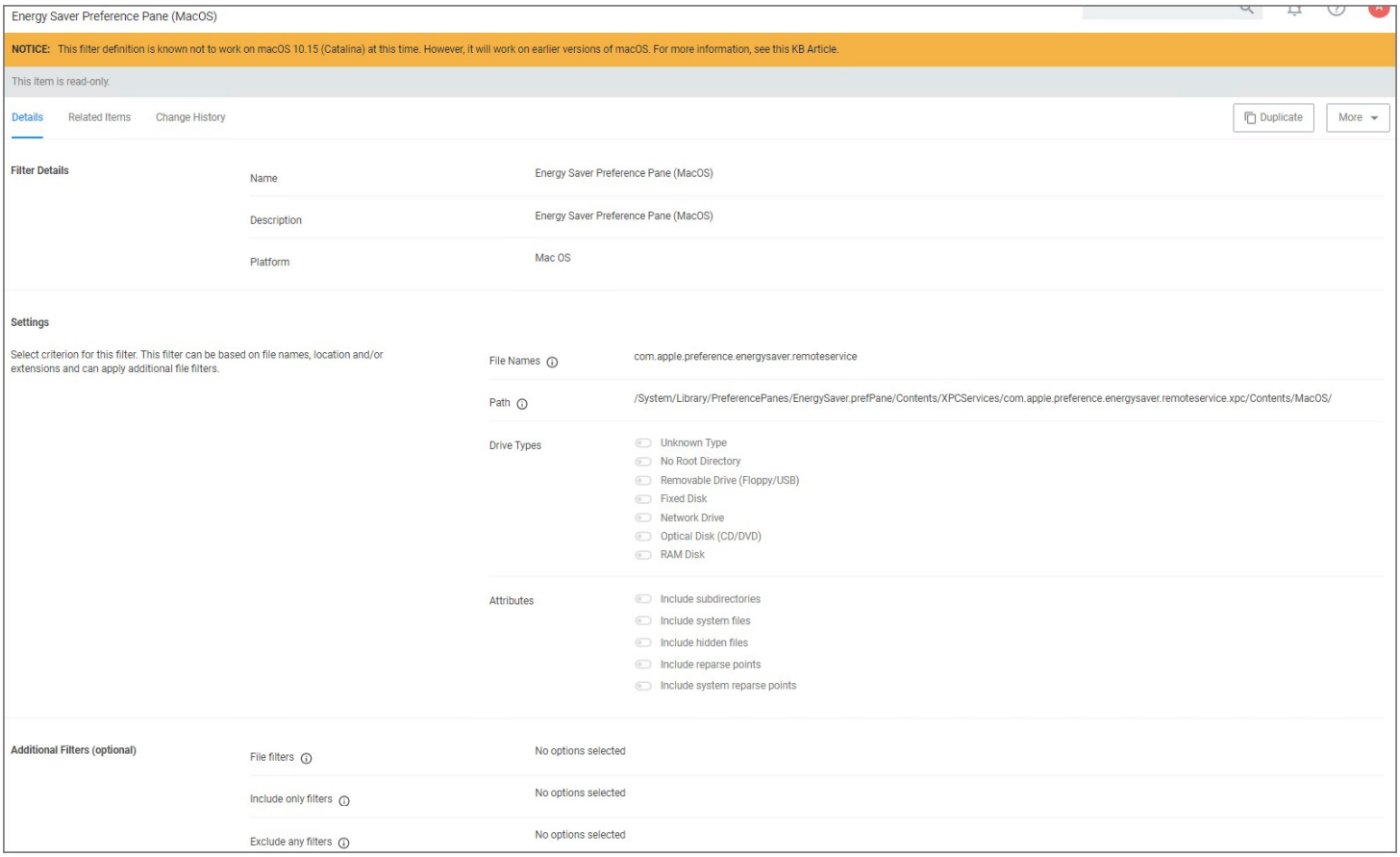
The Date and Time Preference Pane Filter is a read-only filter. If you need to customize the filter, create a copy and edit Settings and/or add Additional Filters.



Once you create a duplicate, you can edit the default file names and path details. You can further specify to limit the targeting to specific drive type only based on selection, by default Delinea does not add any limitations here. Selecting Attributes allows to widen the default scope of the filter.

Energy Saver Preference Pane Filter

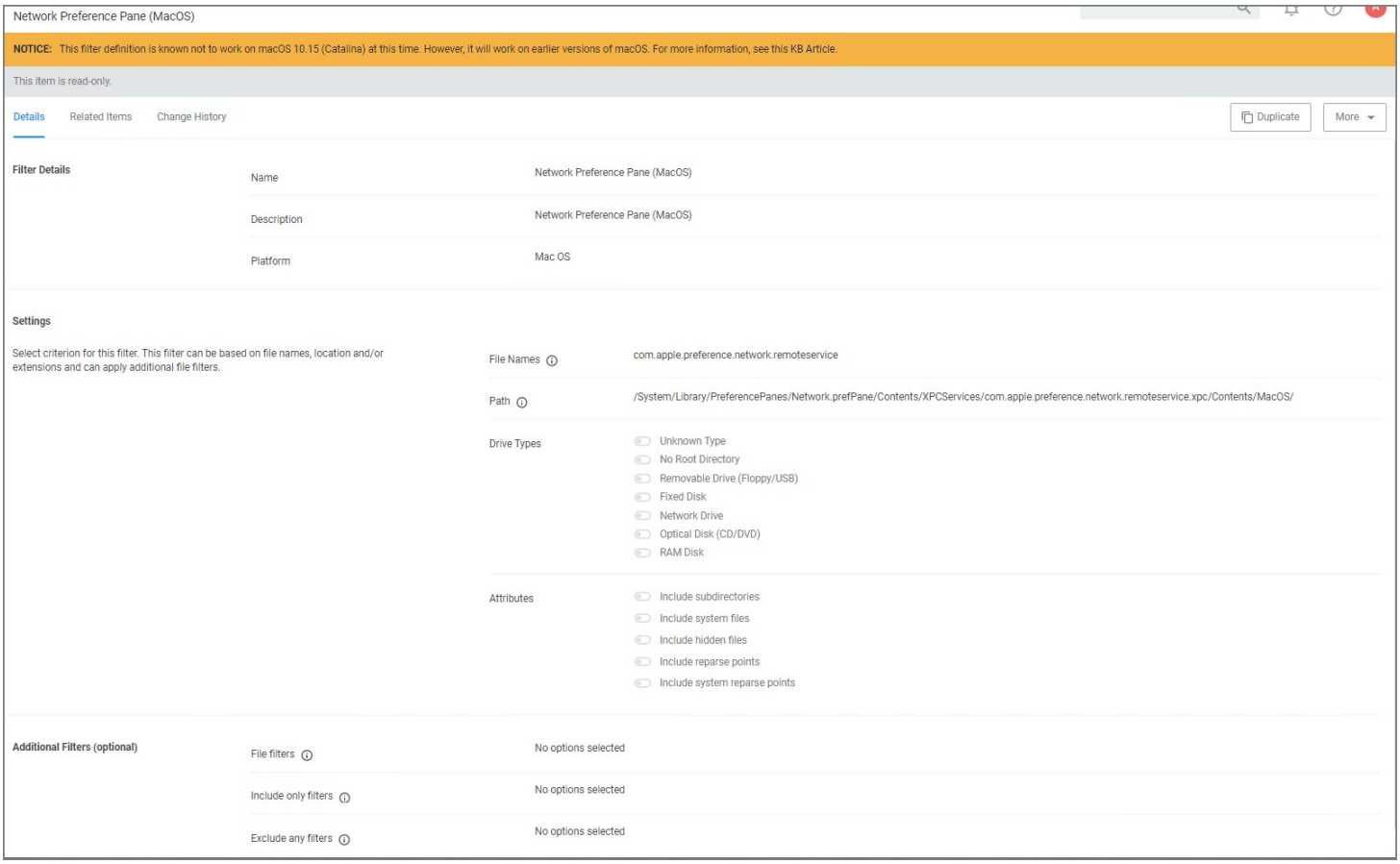
The Energy Saver Preference Pane Filter is a read-only filter. If you need to customize the filter, create a copy and edit Settings and/or add Additional Filters.



Once you create a duplicate, you can edit the default file names and path details. You can further specify to limit the targeting to specific drive type only based on selection, by default Delinea does not add any limitations here. Selecting Attributes allows to widen the default scope of the filter.

Network Preference Pane Filter

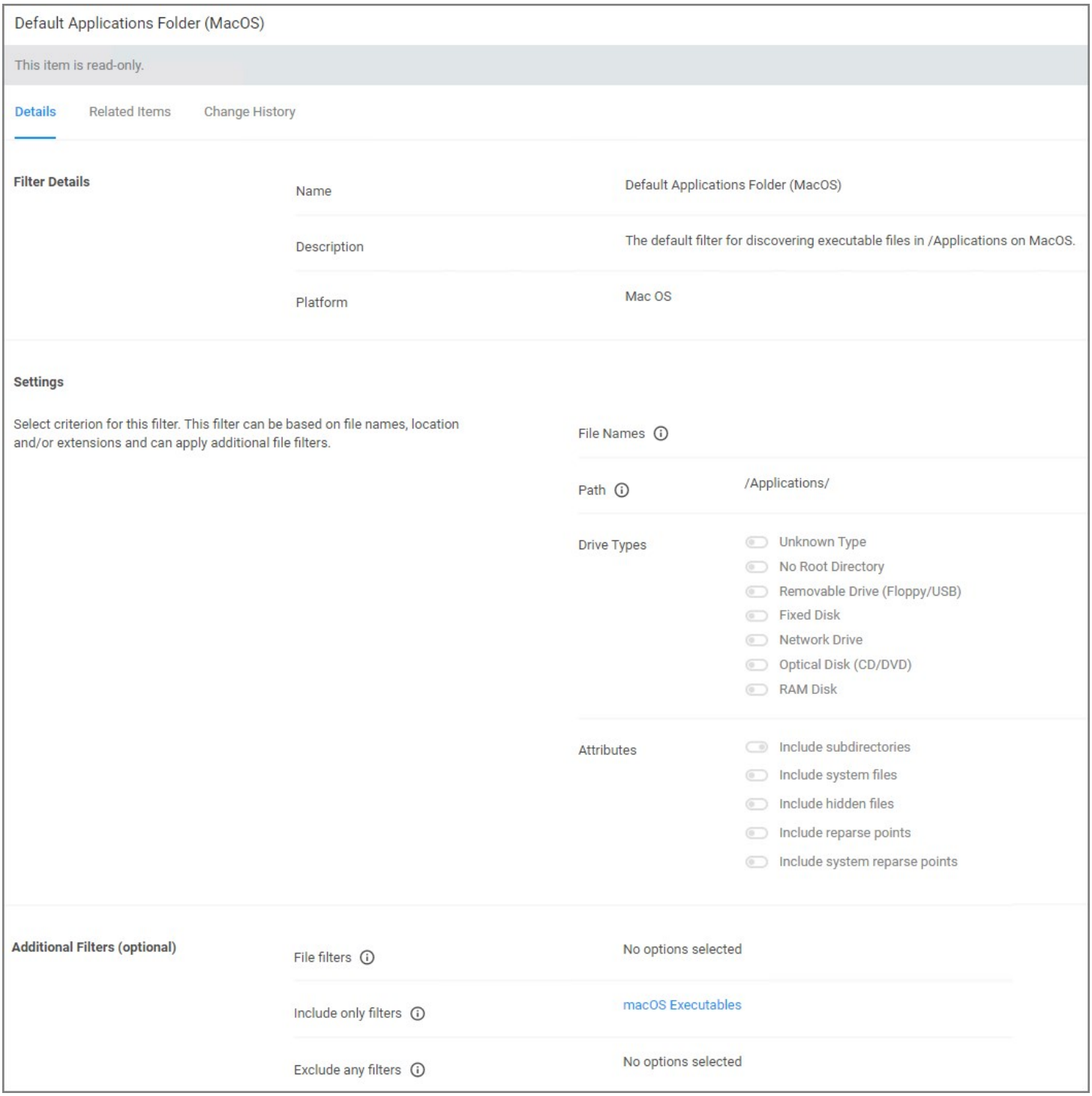
The Network Preference Pane Filter is a read-only filter. If you need to customize the filter, create a copy and edit Settings and/or add Additional Filters.



Once you create a duplicate, you can edit the default file names and path details. You can further specify to limit the targeting to specific drive type only based on selection, by default Delinea does not add any limitations here. Selecting Attributes allows to widen the default scope of the filter.

Default Applications Folder (MacOS)

The default filter for discovering executable files in /Applications on macOS.



This filter is available for macOS systems.

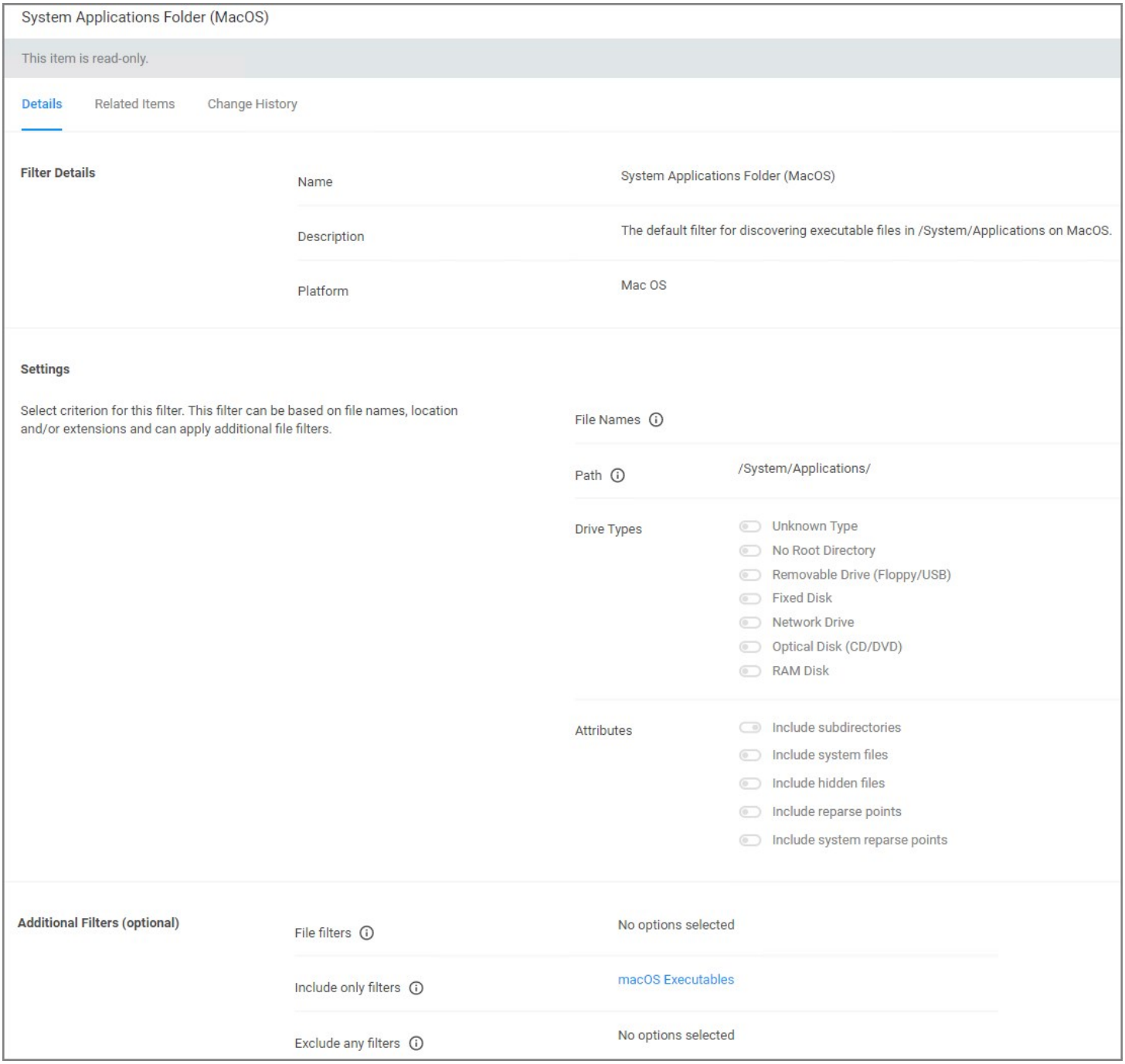
By default this is a read-only filter which uses the following Additional Filters:

- Include only filters:
  - macOS Executables

The option to include subdirectories is enabled by default.

System Applications Folder (MacOS)

The default filter for discovering executable files in /System/Applications on macOS endpoints.



This filter is available for macOS systems.

By default this is a read-only filter which uses the following Additional Filters:

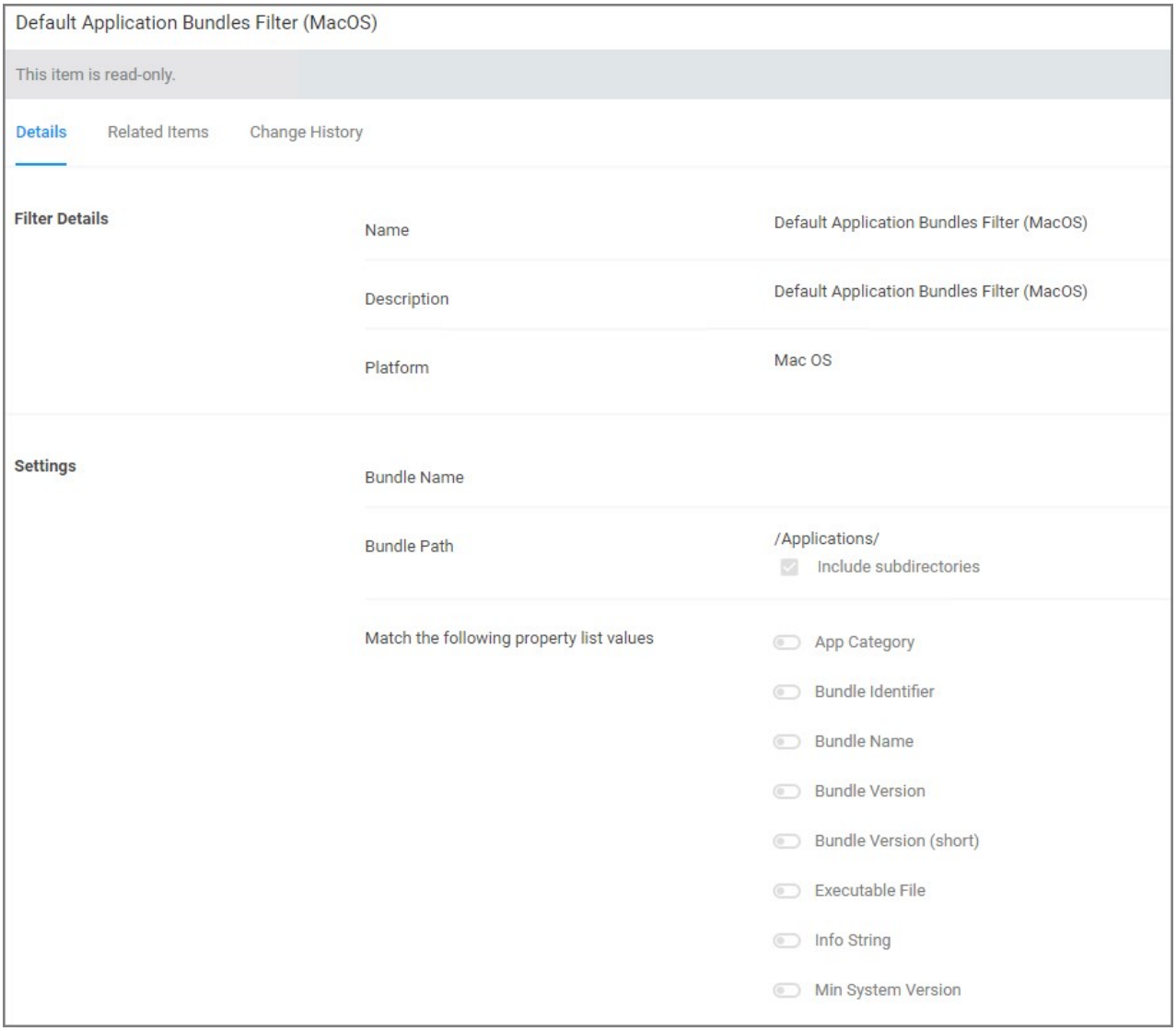
- Include only filters:

- macOS Executables

The option to include subdirectories is enabled by default.

Default Applications Bundle Filter (MacOS)

The default filter for discovering application bundles in /Applications on macOS endpoints.



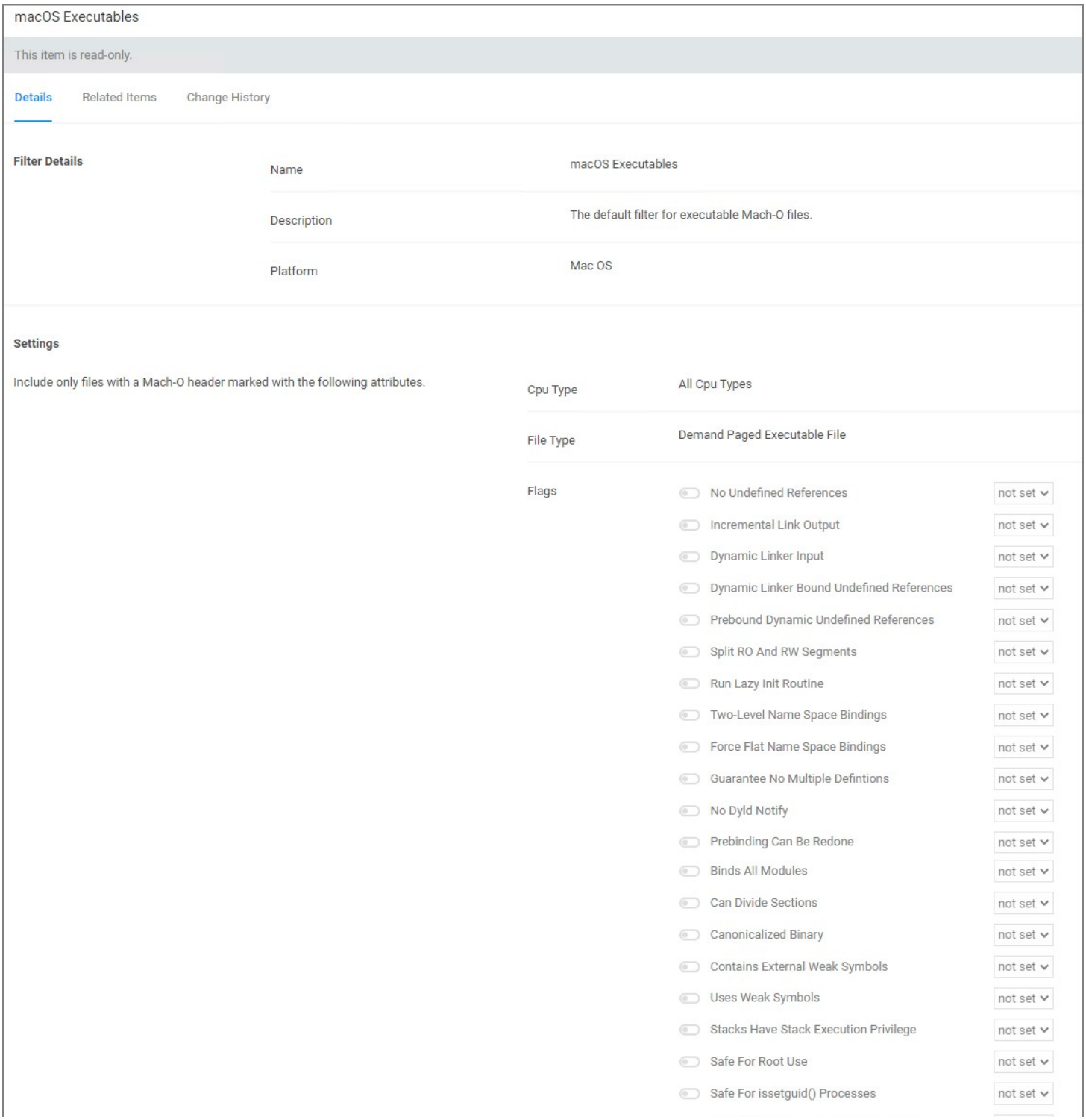
This filter is available for macOS systems.

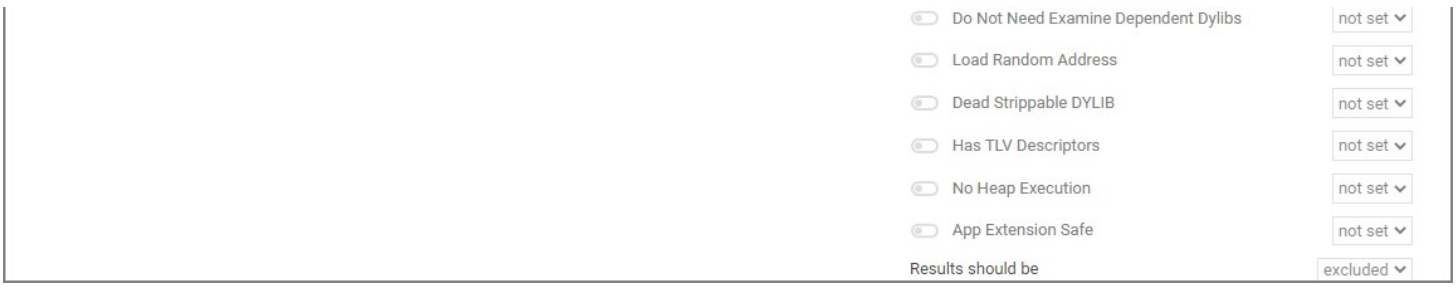
The option to include subdirectories is enabled by default.

macOS Executables

The default filter for executable Mach-O files. This filter is available for macOS systems.

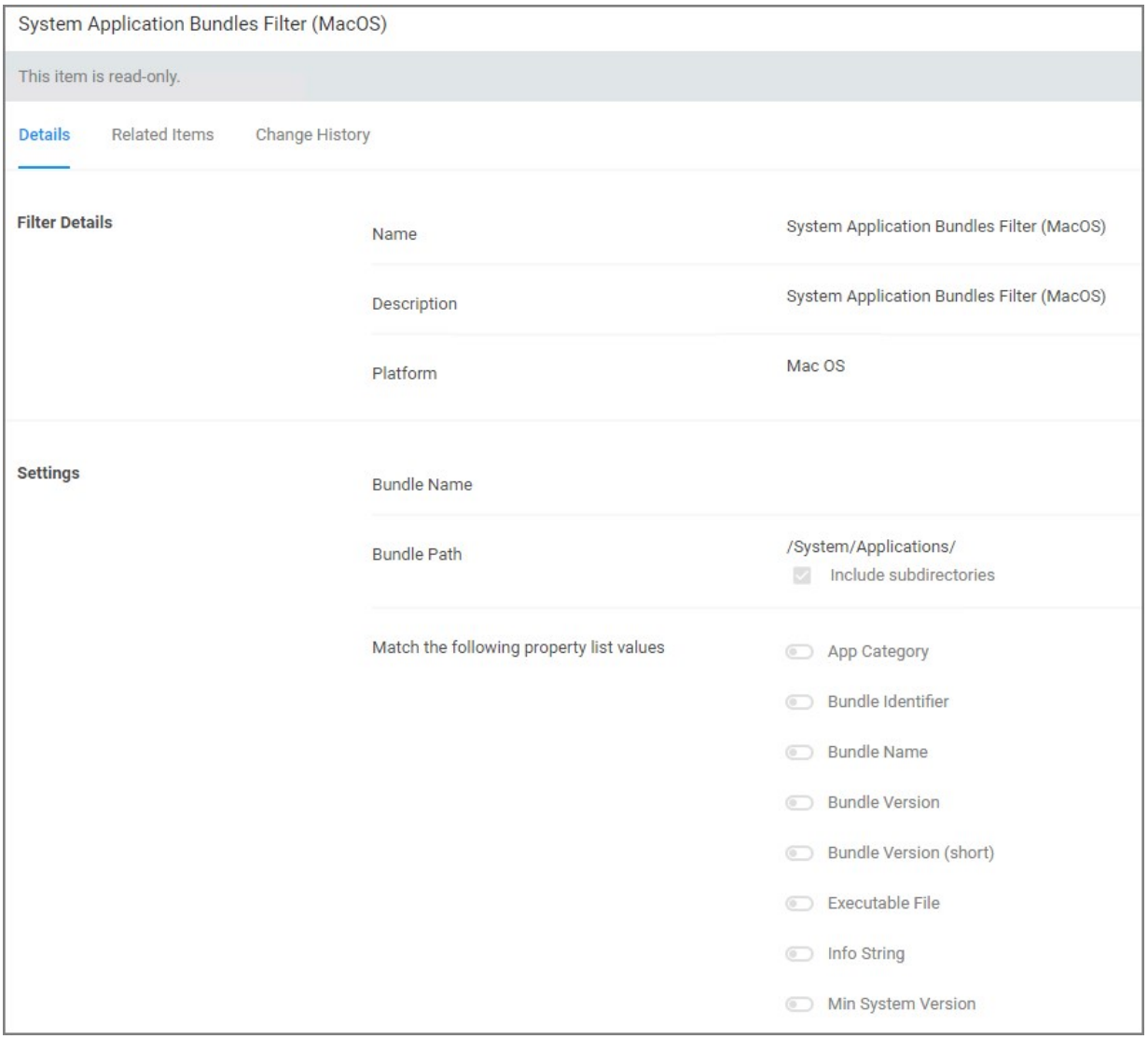
Include only files with a Mach-O header marked with attributes set via the filter Settings:




Do Not Need Examine Dependent Dylibs
not set
Load Random Address
not set
Dead Strippable DYLIB
not set
Has TLV Descriptors
not set
No Heap Execution
not set
App Extension Safe
not set
Results should be
excluded

System Application Bundles Filter (MacOS)

The default filter for app bundles files in /System/Applications on macOS endpoints.



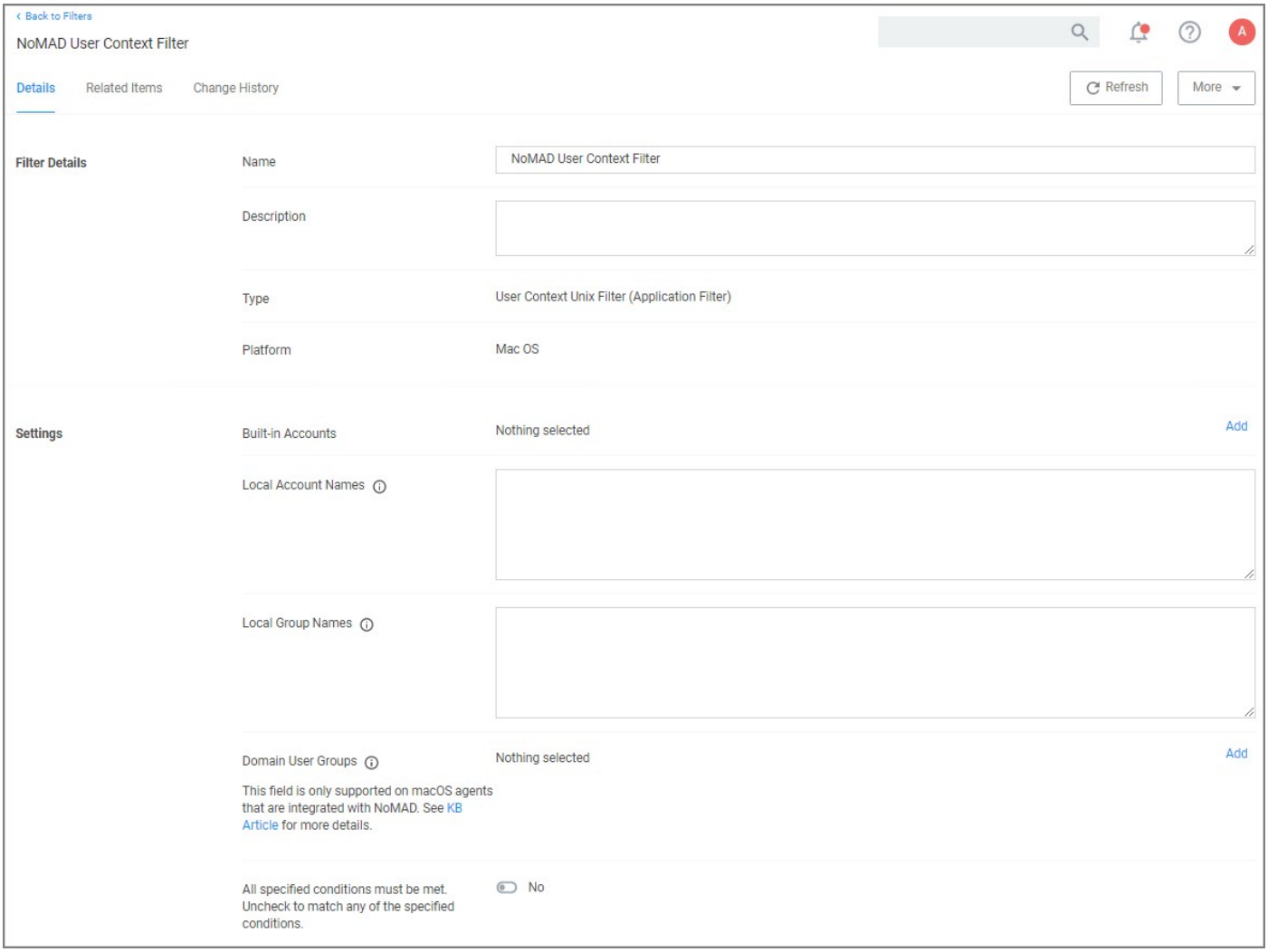
This filter is available for macOS systems.

The option to include subdirectories is enabled by default.

Leveraging the User Context Filter for NoMAD

Domain group memberships on macOS agents integrated with NoMAD can be targeted with a specific User Context filter.

1. Navigate to **Admin | Filters**.
2. Click **Create Filter**.
3. From the **Platform** drop-down, select **Mac OS**.
4. From the **Type** drop-down, select **User Context Filter**.
5. Name your filter to later search and easily find it for inclusion in policies.
6. Click **Create**.



7. Under **Settings | Domain User Groups**, click **Add**.
    1. On the **Select Resources** modal, enter a resource name for the search. Any group with the entered term in the name will be returned. If no name is entered all domain groups will be returned.
    2. Click **Search**.

3. On the page with the list of returned resources, select the NoMAD integrated groups for this User Context Filter and click **Select**.

8. Click **Save Changes**.

You User Context Filter now contains the groups you associated with this filter, for example:

Note: If no groups are shown after the select resources search, you might have to run the Active Directory sync task to update available users and groups.

Refer to this video demonstration.

Unix/Linux Filters

Most of the Application and File type filters apply to all OS platforms. However, for Unix/Linux platforms, the filters are covered in this section.

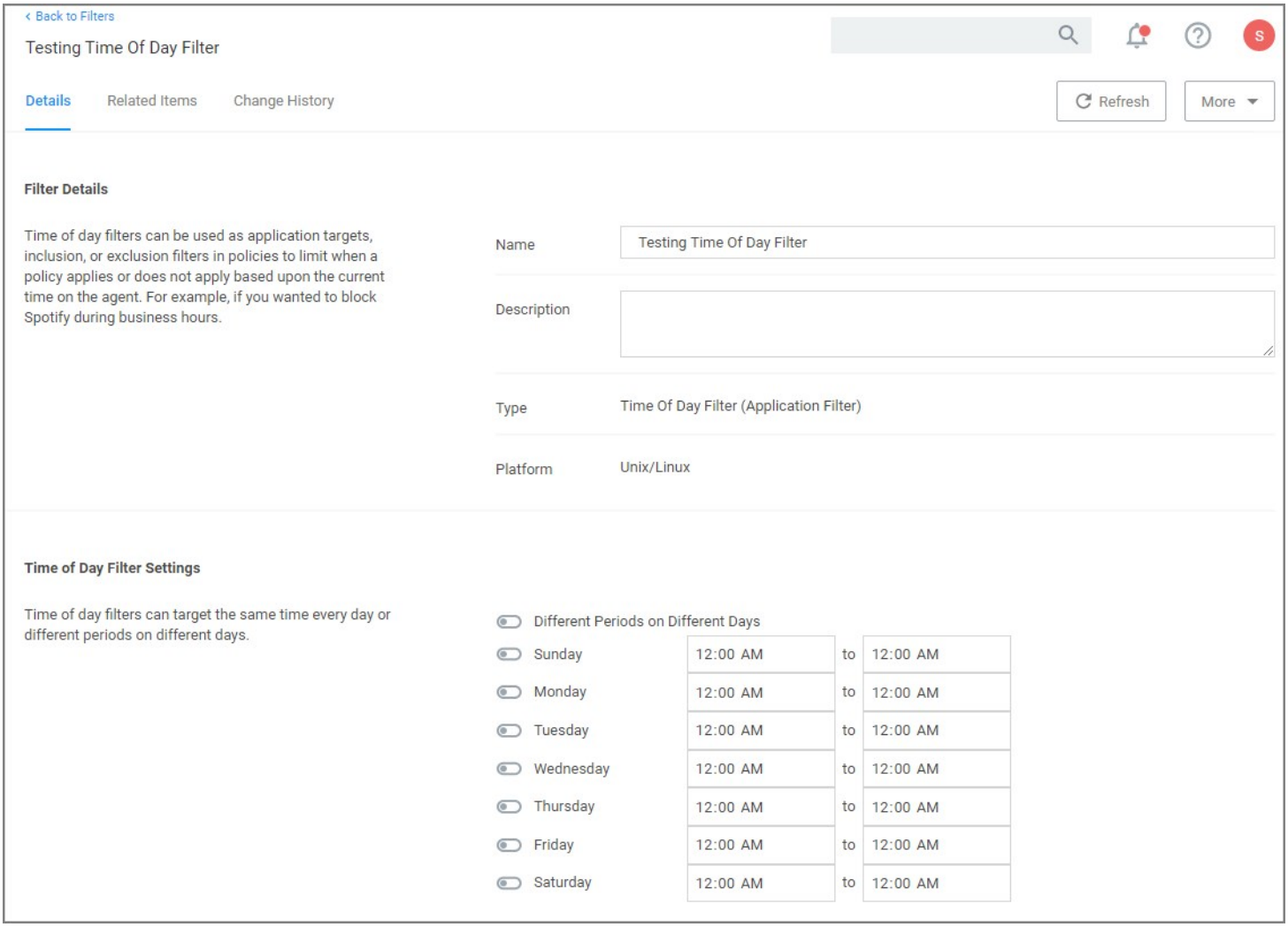
List of Unix/Linux Filters

The following filters are available based on type from a quick select drop-down menu, after choosing Unix/Linux as the platform.

- Advanced Commandline Filter
- File Hash Filter
- Time of Day Filter
- User Context Filter

Time of Day Filter

This type of filter exists to create policy parameters for specific time frames.



This filter is available for all supported platforms.

Parameters

The time of day filter has two different settings to allow you to set time and day allowances.

Flip the switch to toggle between these option:

- **Different Periods on Different Days** (default). When set to Different Periods on Different Days, the page also shows switches to turn on the time of day settings for the specific day of the week. By default no periods are enabled.
- **Same Period Every Day**, when turned ON only one period entry option is available

Save the changes after any customization.

Examples

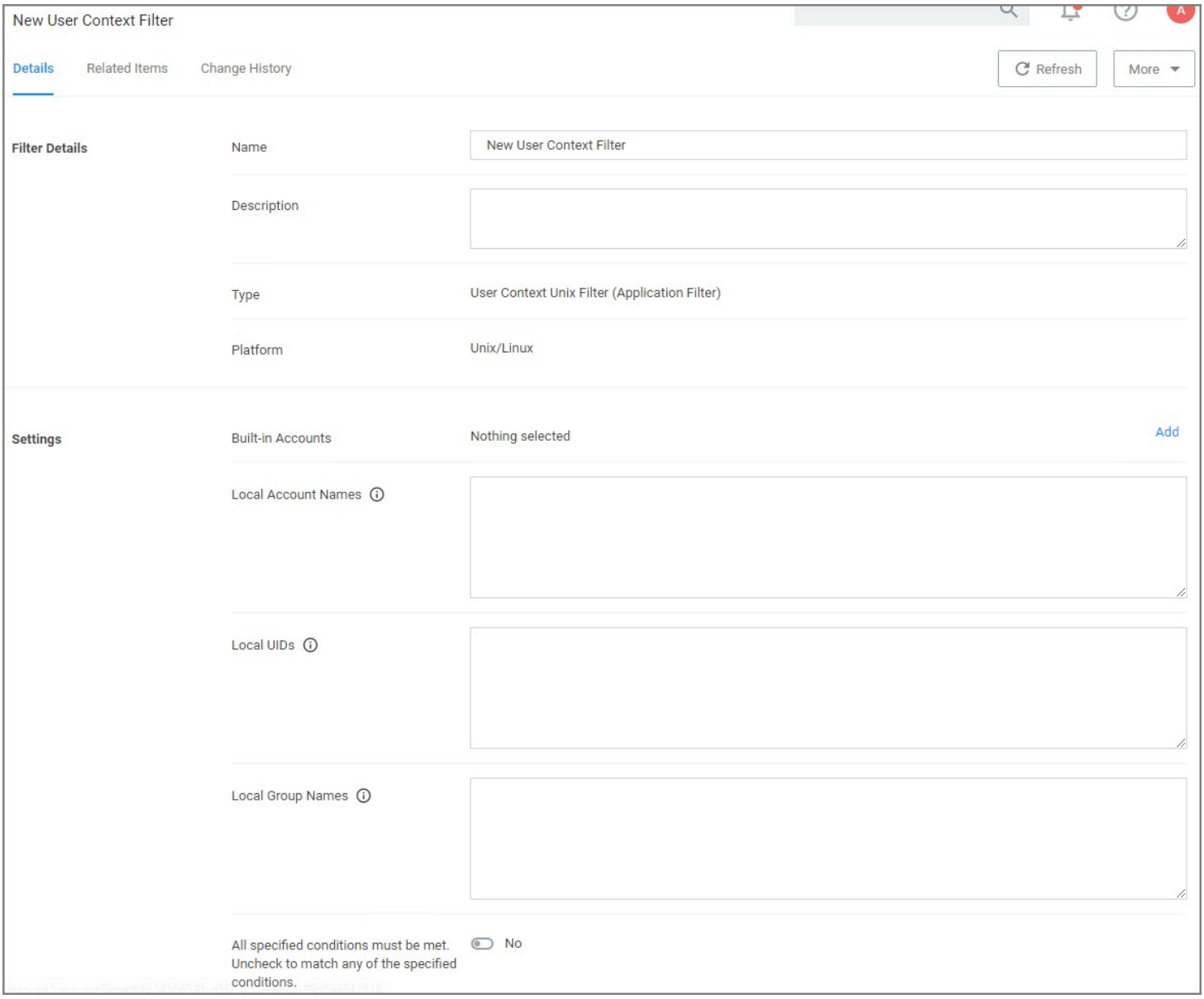
You can use the time of day filter in a policy to only pickup specific times or days of the week.

Using User Context Filters

User Context Filters are used in a policy as either an

- inclusion filter, to specify that the policy only applies to users in a specific AD Group.
- exclusion filter, to specify that the policy applies to everyone, except the users in a specific AD Group.

The User Context Filters are part of the Application Filter templates:



This filter is available for all supported OSs.

On-Premise

For Privilege Manager on-premises the **User Context Filter** can be used after the Active Directory synchronization completes. When creating and editing the filter, add any of the following information can be specified to identify the user context.

- Built-in Accounts: Use **Add**, then select a resource and click **Select**.
- Local Account Names: If entering multiple account names, each entry must go on a new line.
- Local UIDs: If entering multiple UIDs, each entry must go on a new line.
- Local Group Names: If entering multiple local group names, each entry must go on a new line.
- Domain User Groups: Refer to "Leveraging the User Context Filter for NoMAD" topic below.

1. Select if **ALL** conditions must be met. Leave the box unchecked to match **ANY**. You can also specify if accounts must be enabled to be targeted. This is an important checkbox to set if specific users have been added.
2. Click **Save Changes** to save any customization of the filter.

Advanced Commandline Filter

This filter performs a Glob or RegEx match on the commandline submitted by Unix\Linux agent via sudo or pmsh. Commands can then be executed as they have been submitted or the filter has the ability to re-write the executed command via the Replacement field of the Command.

When adding commands, the Glob or RegEx is matched:

- Glob for simple filename matches such as *
- RegEx for advanced searches and matches of patterns in files such as $

The command match is based on the command source, such as from the agent:

- The submitting user would only type a command such as sudo id, although the agent will submit the full path of the command such as /usr/bin/id.
- For security the command should be defined with the full executable path such as /usr/bin/id or /bin/id.

Arguments

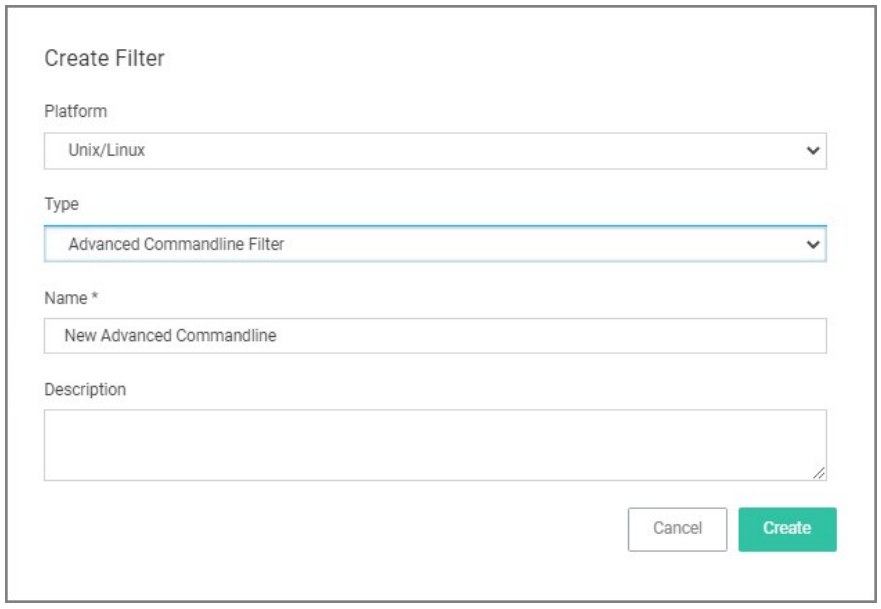
Allows more specific command submission matching from the agent such as ls -l /root/*.

Replacement

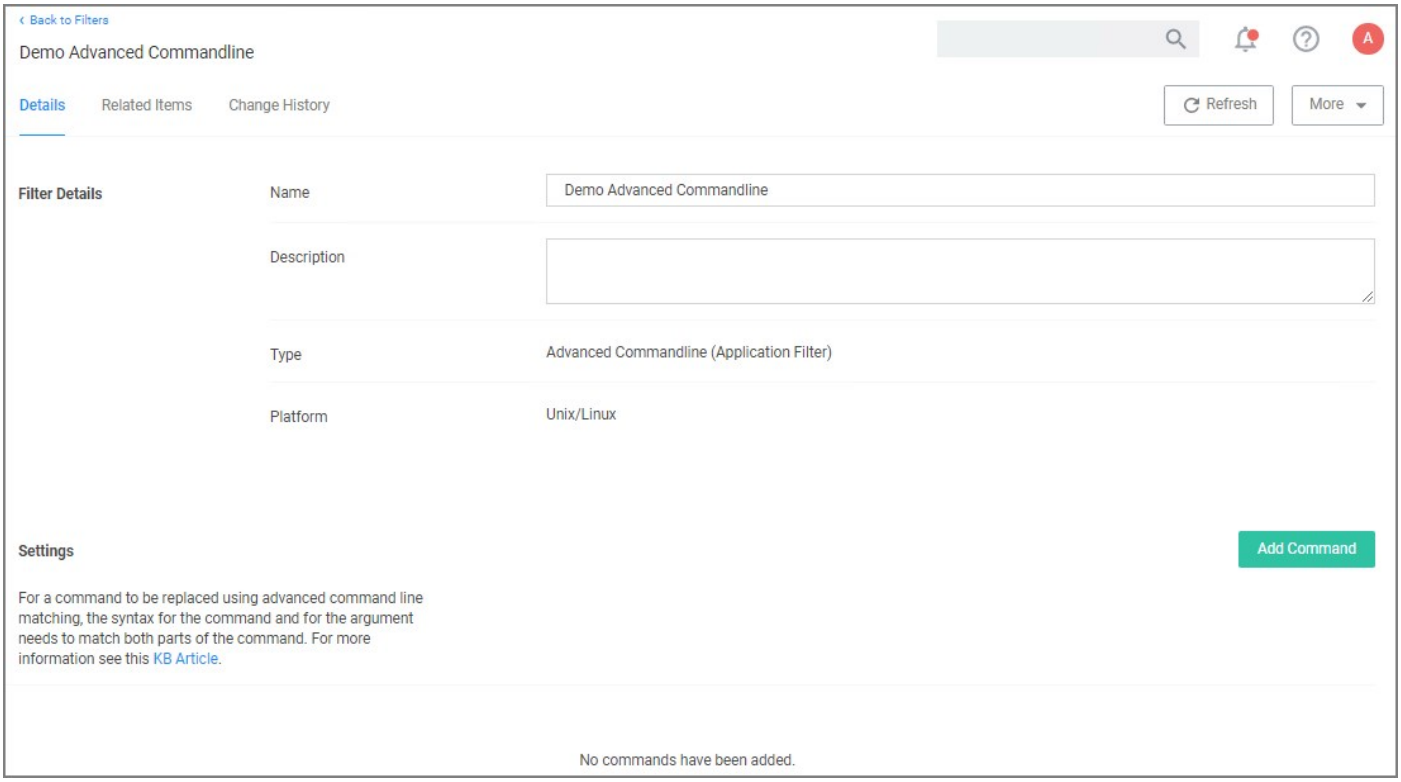
Rewrites the submitted command being executed on the Unix\Linux Agent

Creating a new Advanced Commandline Type Filter

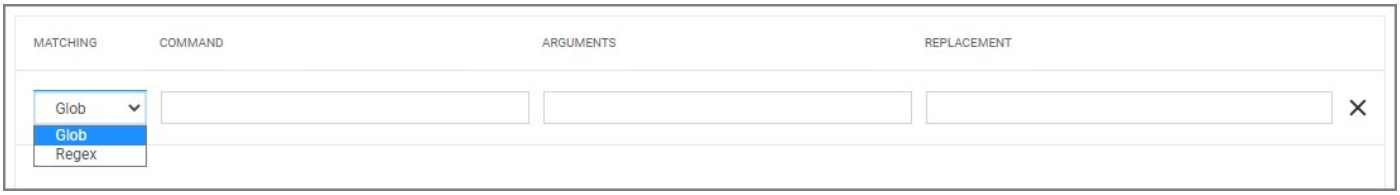
1. Navigate to **Admin I Filters**.
2. Click **Create Filter**.



3. On the New Filter page, select the platform. For this example, select **Unix/Linux**.
4. From the **Filter Type** drop-down select **Advanced Commandline Filter**.
5. Enter a name and description and click **Create**.



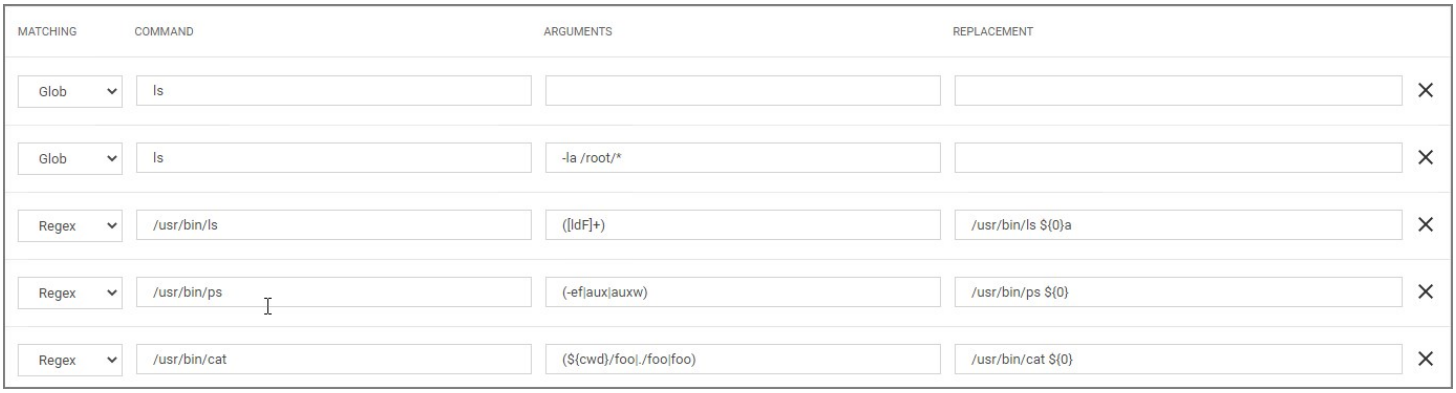
6. Customize the newly created filter, click **Add Command**.



7. Select the matching type, Glob or RegEx. Use Glob for filename matches and RegEx for searches and matches of patterns in files.
8. Enter a **Command**.
9. Enter **Arguments**.
10. Enter a **Replacement**.
11. Click **Save Changes**.

Examples

A commandline filter examines the commandline (excluding the primary executable) and uses either Glob or RegEx for the pattern match. Here are examples for both options:



Example of Commandline Replacements

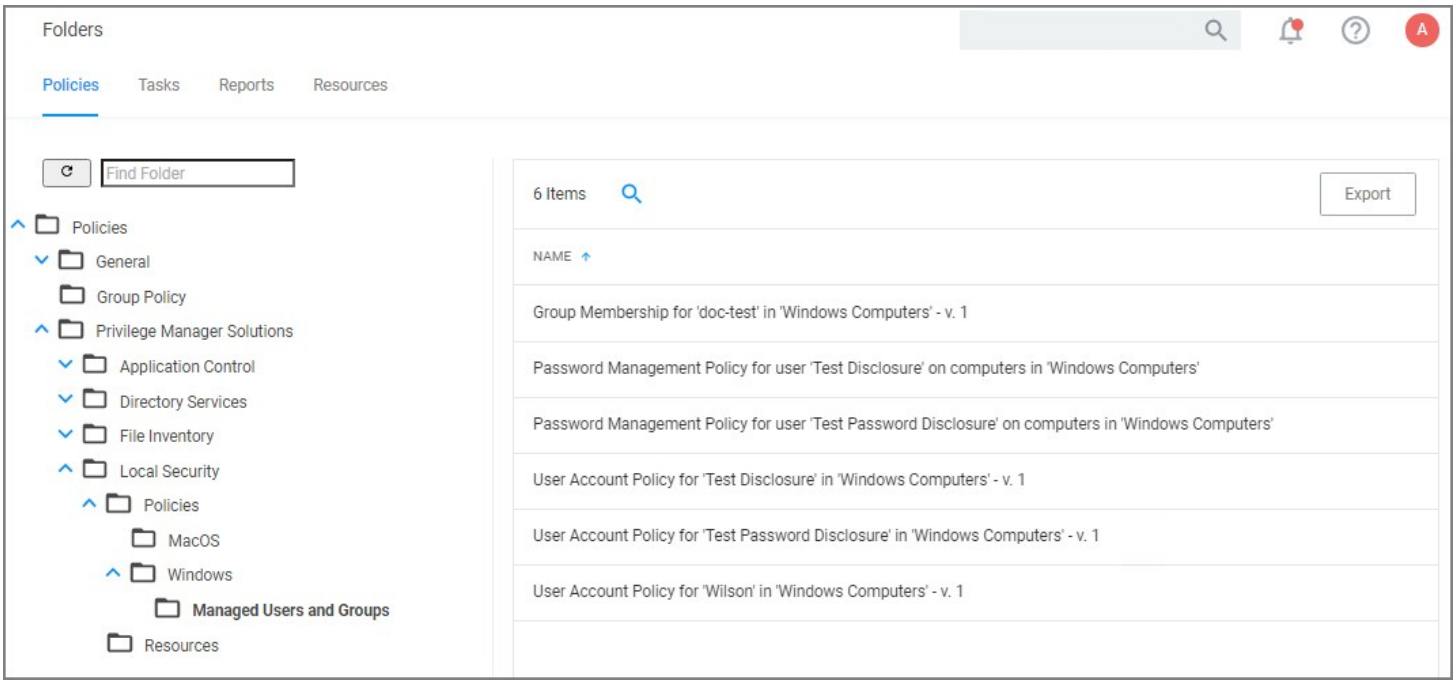
Command: restart Arguments: pmagent Replacement: /usr/bin/systemctl restart pmagent User submits: sudo restart pmagent Command executed: /usr/bin/systemctl restart pmagent

Limitations of the Advanced Commandline Filter

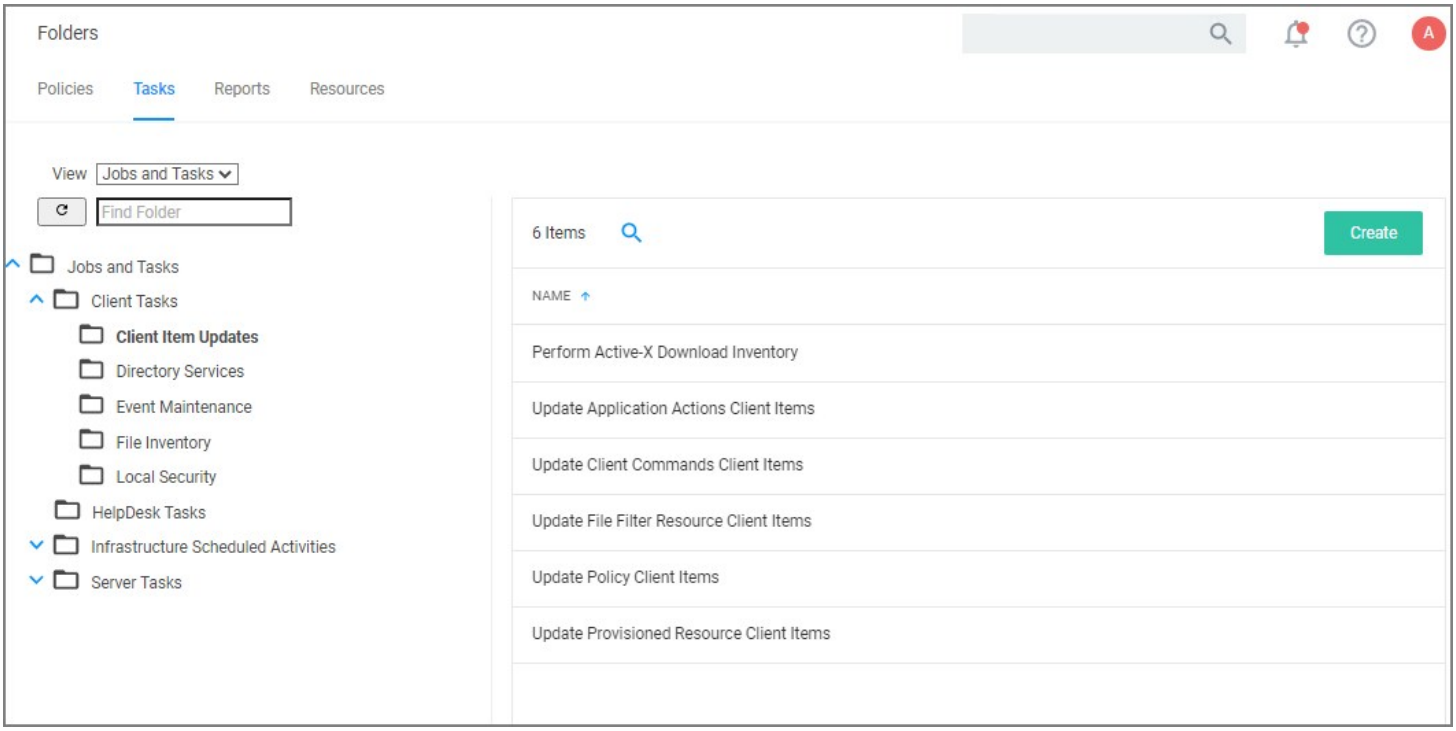
The command re-write is done BEFORE any action defined in the Policy, therefore commands that will also display actions assigned to the policy such as runas user and environment variable will not be displayed as expected, because the commandline filter is processed before the action.

The Folders area contains all the resource items available by default and custom created in Privilege Manager . It provides an overview for each major items group.

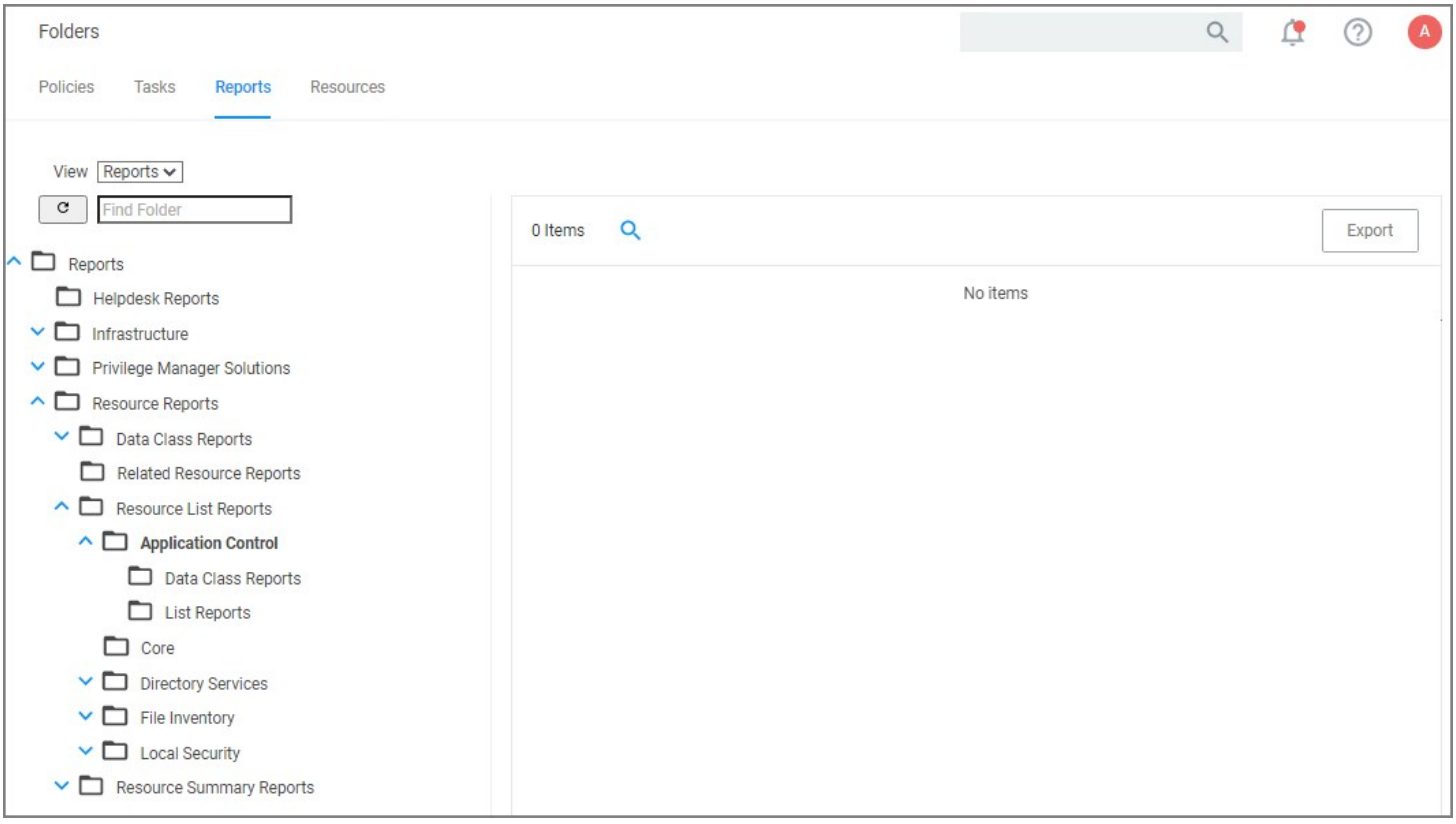
Policies Folder Overview



Tasks Folder Overview



Reports Folder Overview



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Resources Folder Overview

In Privilege Manager Administrators need the ability to export complete policies, including dependent filters, actions, resource targets and any related items. They also need the ability to then import those policies into another instance.

The export and import feature can be used for production environments with multiple instances and for troubleshooting purposes when assistance is needed.

The feature provides the ability

- to export single policies for specific troubleshooting purposes.
- to bulk export via policies folders at any given folder level, except on root folders, depending on specific needs.
- to choose to overwrite or leave in place what's already there.
- to select specific objects or bulk select

This feature supports the bulk migration and creation of policies, including all of their dependencies.

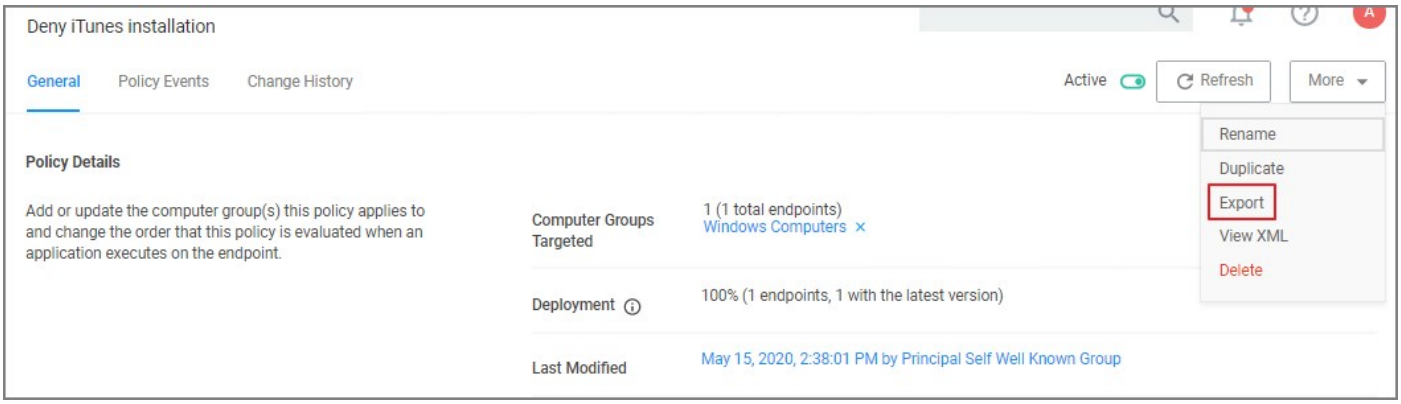
Exporting Items

Items at various levels of complexity can be exported. The UI offers several access points for an export operation.

Specific Policy Export

To export a specific policy with dependent filters and actions:

1. Navigate to the specific Policy and select it.
2. From the top-right **More** menu select **Export**.



3. A modal opens asking the user to confirm the download of the specific policy.

   Click **Download**.

   The policy is downloaded to your system's default download location as a .zip file

The policy details are downloaded in a zip file named after the policy name that was selected for export. The zip file contains one items.xml file

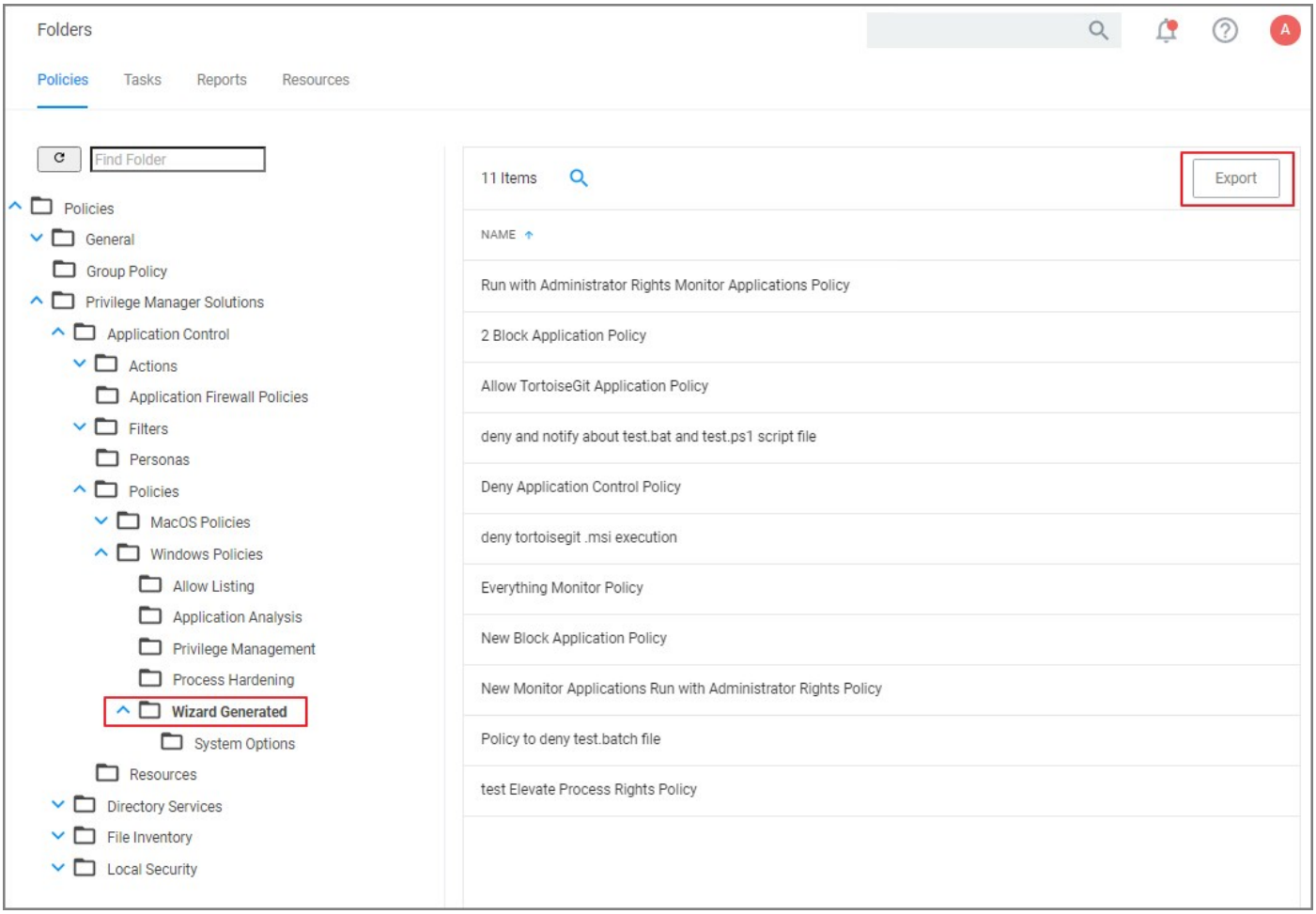
with all the exported data. Extract the zip file and open/edit the exported xml.

The export of filters, tasks, or reports is done in a similar way, by navigating to the specific item, locating the Export button and proceeding through the export process steps.

Folder Exports

Bulk export of items is possible via the Folders page.

1. Navigate to **Admin I Folders**. The export of folders is available on the Policies, Tasks, and Reports. On the Resources tab, the export is only possible for Resource Filters.
2. From the folders tree select any of the available folders.



   Click **Export**.

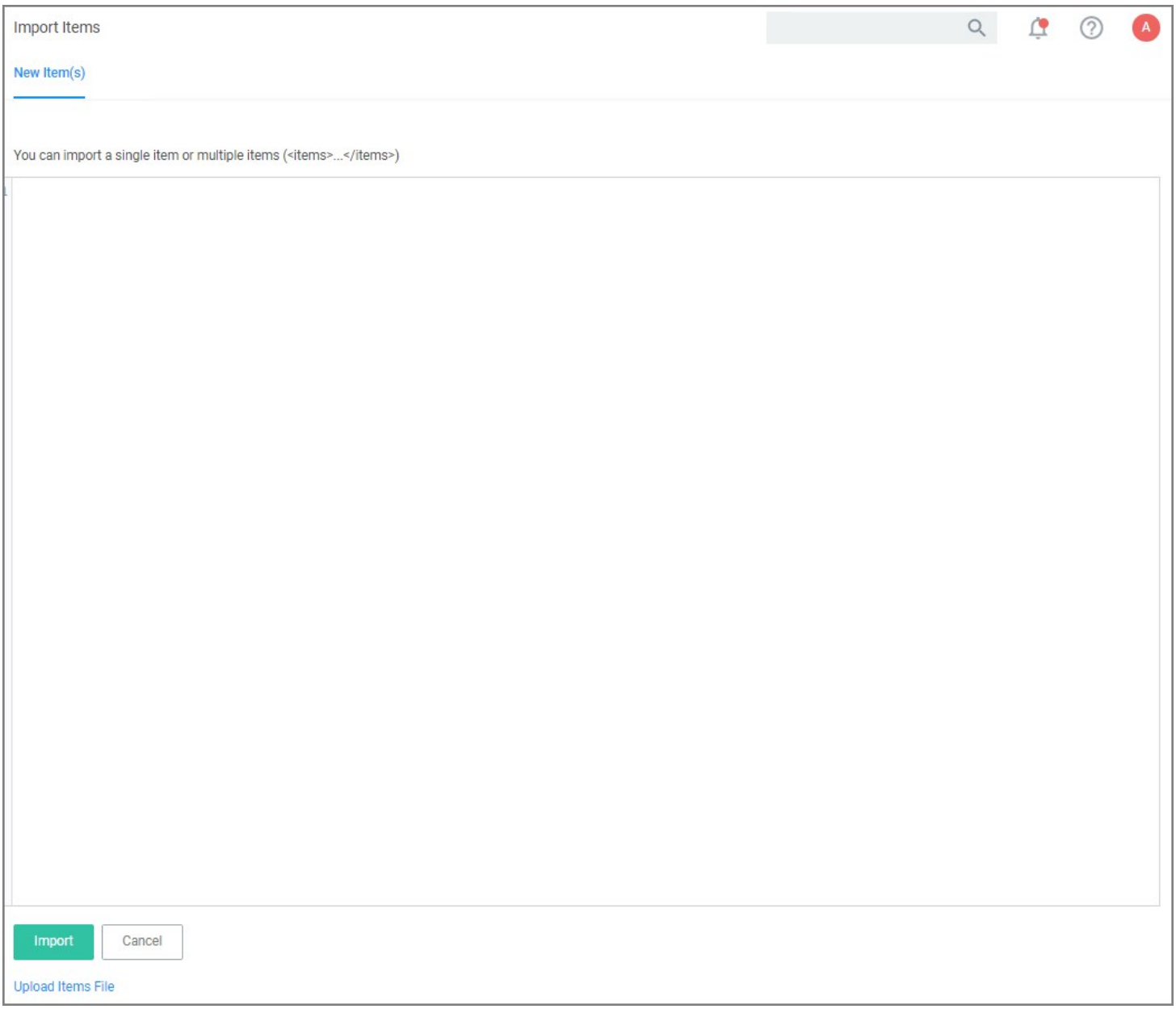
3. A modal opens asking the user to confirm the download of the specific policy.

Click **Download**.

The items are downloaded in a zip file named after the folder that was selected for export. The zip file contains one items.xml file with all the exported data. Extract the zip file and open/edit the exported xml.

Note: Prior to importing any data into your environment, Delinea recommends to create a backup of the current Privilege Manager Database.

Items can be imported in different ways, which are further detailed below.



Unsupported or missing file extensions trigger an error message on the import modal. The following file types are supported:

- .xml
- .zip

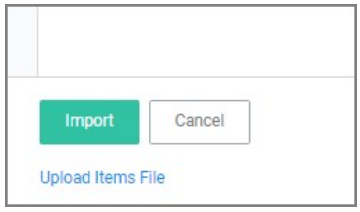
Using Import Items

1. Navigate to **Admin | Import Items**.
2. The xml viewer opens and you may copy xml item data here to import. Or use the **Upload Items File** option as described under Using Diagnostics Upload Items File.

Using Diagnostics Upload Items File

To import items via file upload follow these steps:

1. Navigate to **Admin | Diagnostics** and select **Import Items**.
2. Scroll to the bottom of the page and select the **Upload Items File** link.



3. The **Import Items** dialog opens, browse to your file location and select the file containing the data to import.

   Supported file types for the import are .xslt, .xbl, .xsl, .xml, and .zip.

   By default the **Overwrite Existing Items** checkbox is selected. If you want to skip items that already exist, un-check the box. The import is based on the following conditions:

   - When the checkbox is selected, import all items (including changes saved in state).
   - When the checkbox is **NOT** selected, import only **new** items (including changes saved in state).
   - Any policies imported will be disabled (assuming they are not skipped).

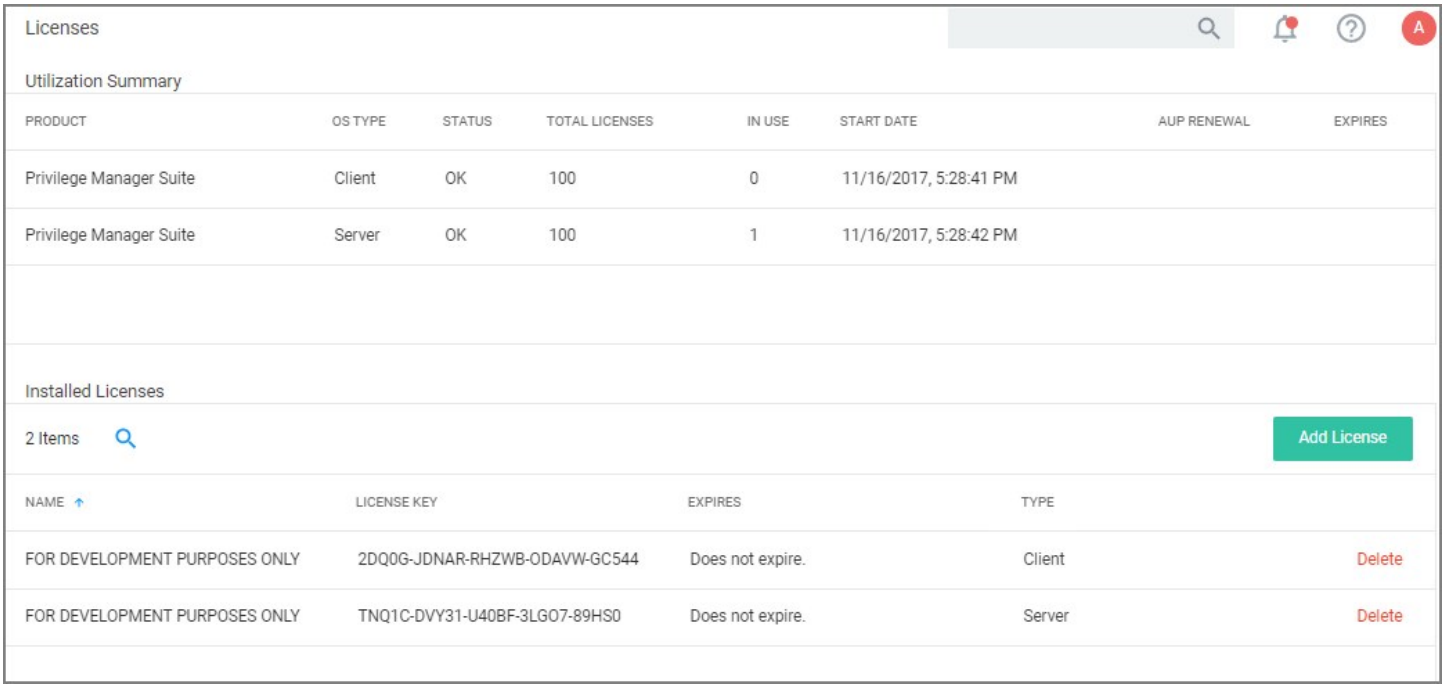
4. Click the **Upload** button.

You can verify the uploaded data by navigating to **Admin | Folders**. Depending on your import, the data is listed under Policies, Tasks, or Resource Filters.

For details about License setup etc., refer to Getting Started .

On-Premises

For On-prem instances licenses can be added and deleted by users with Privilege Manager Administrators' roles.

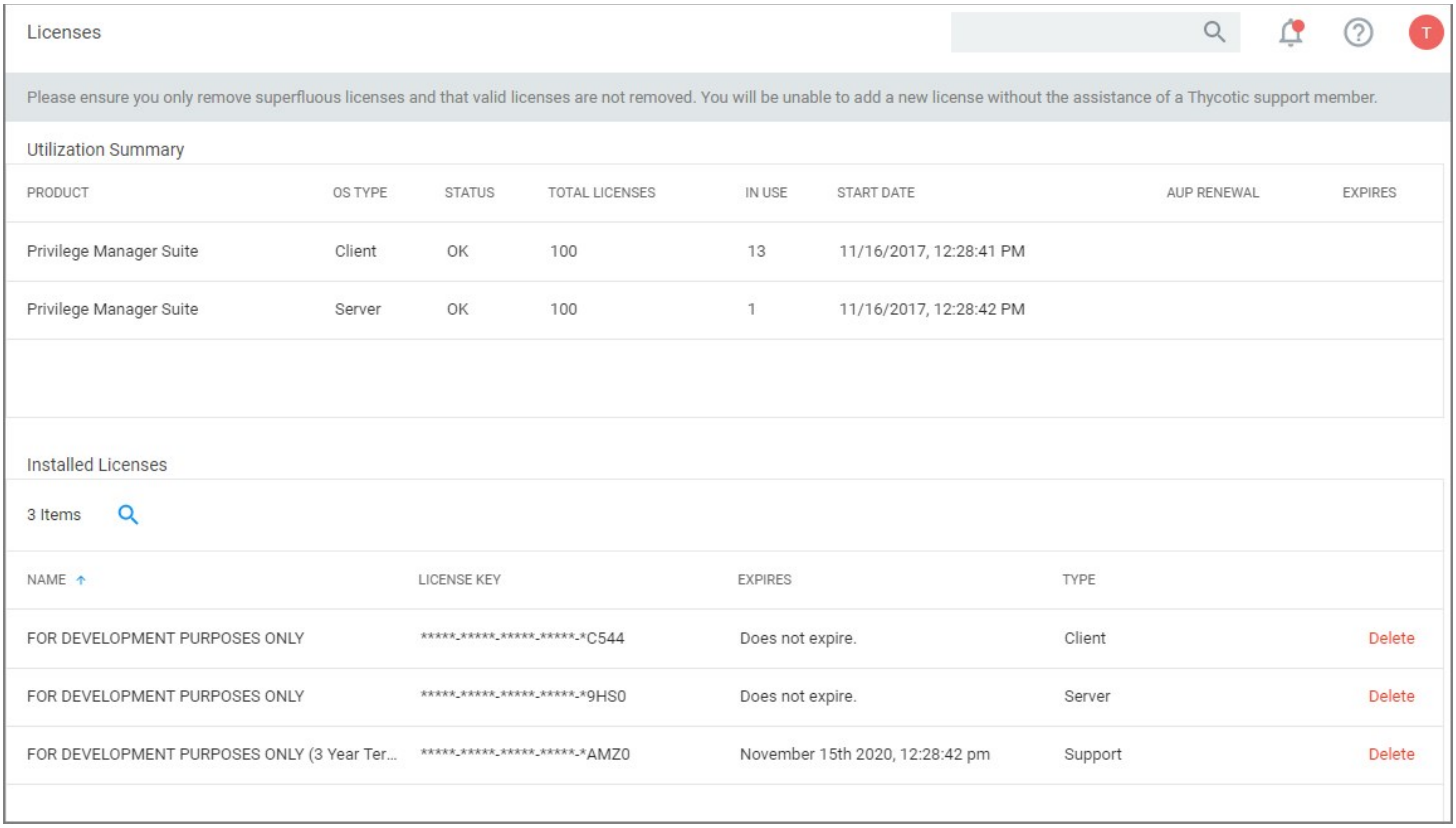


The Add License button is always available, independent of a potential integration with Secret Server. Privilege Manager Unix/Linux licenses must be installed in the Licensing page within Privilege Manager . Installing these licenses via an integrated Secret Server installation is not (yet) supported.

When licenses are added the **Licensing Update** task should be run manually to immediately update any gauges and reports with the correct number.

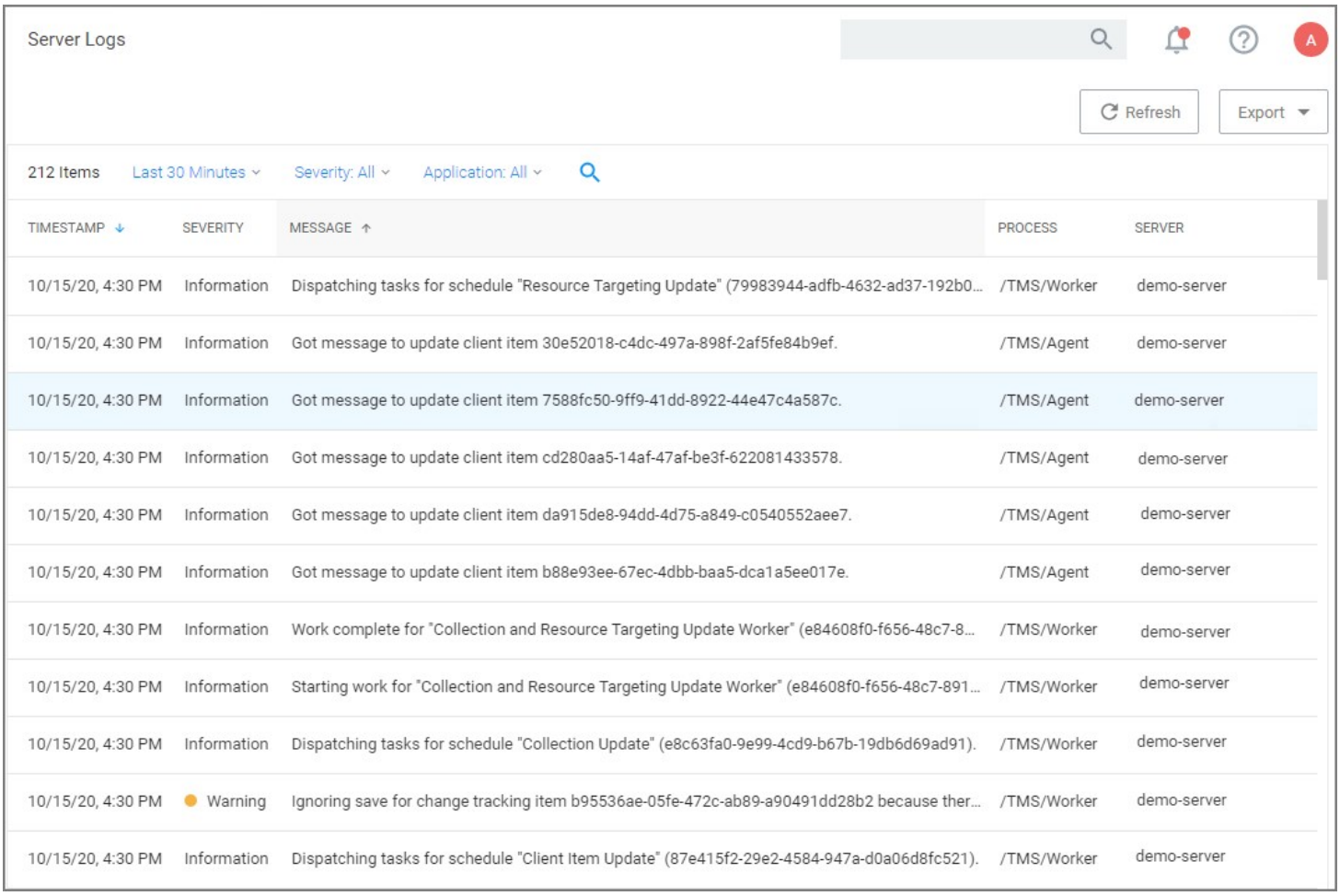
Cloud

For Cloud instances, licenses can be deleted by users with Privilege Manager Administrators' roles.

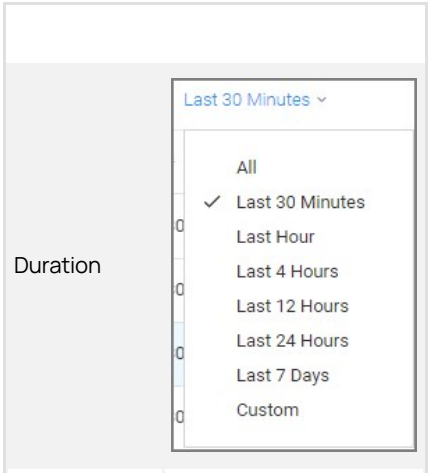


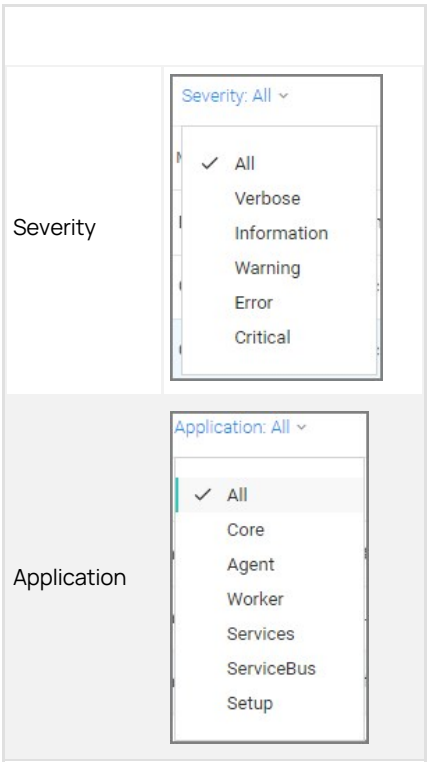
Cloud licenses can only be added by Delinea support members.

The Server Logs provide insight into the Privilege Manager Server Logs.



By default the Server Logs are shown for the last 30 minutes and with the Severity and Application set to All. These change be changed via the available drop-down options:





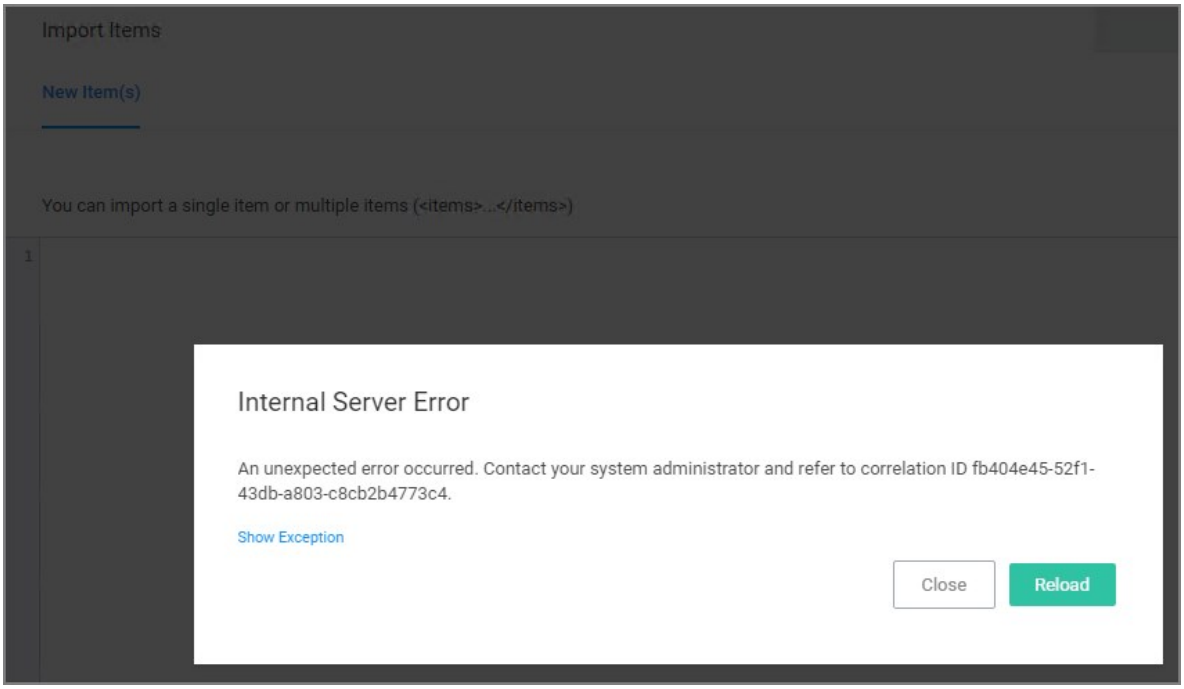
Details

Details for a log entry can be viewed by clicking on the row containing the log entry.

Search by CorrelationID

The Server Logs are searchable via CorrelationID for better troubleshooting support. If you are looking for log details about an error that occurred in the UI, copy the CorrelationID from the error message and enter it in the table grid search field.

- Error providing CorrelationID:



- Search Server Logs for CorrelationID:

- Details for error based on CorrelationID search:

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Server Log Detail

Time: Nov 3, 2020
Severity: Error
Process: /TMS/Services
Server: [redacted]

```
Service request "POST" to "https://127.0.0.1/TMS/Services/api/item/Import?folderId=null&productId=null&importFl

( Exception Details: System.InvalidOperationException: Uploaded file of unknown type "application/octet-stream"
   at Thycotic.Tms.ServiceRole.Services.Json.ItemManagementService.ImportItems2(Nullable`1 folderId, Nullable`1
   at lambda_method(Closure , Object , Object[] )
   at System.Web.Http.Controllers.ReflectedHttpActionDescriptor.ActionExecutor.<>c__DisplayClassc.<GetExecutor>
   at System.Web.Http.Controllers.ReflectedHttpActionDescriptor.ExecuteAsync(HttpControllerContext controllerCo
--- End of stack trace from previous location where exception was thrown ---
   at System.Runtime.ExceptionServices.ExceptionDispatchInfo.Throw()
   at System.Runtime.CompilerServices.TaskAwaiter.HandleNonSuccessAndDebuggerNotification(Task task)
   at System.Web.Http.Controllers.ApiControllerActionInvoker.<InvokeActionAsyncCore>d__0.MoveNext()
--- End of stack trace from previous location where exception was thrown ---
   at System.Runtime.ExceptionServices.ExceptionDispatchInfo.Throw()
   at System.Runtime.CompilerServices.TaskAwaiter.HandleNonSuccessAndDebuggerNotification(Task task)
   at System.Web.Http.Filters.ActionFilterAttribute.<CallOnActionExecutedAsync>d__5.MoveNext()
--- End of stack trace from previous location where exception was thrown ---
```

Close

In Privilege Manager , Personas are collections of privileges for specific roles at an organization. You can assign Personas to users on a specific Computer Group to elevate their identity to perform specific tasks.

For example: A "SQL Administrator" Persona might be created that assigns rights to launch Certificate Manager and SQL Server Configuration Manager. Only users under this Persona would be allowed to execute these applications on your network.

> **Note**: It is recommended to setup Active Directory Synchronization first and run the synchronization task to then easily assign Personas to domain user groups.

Viewing your Personas

To see all your Personas navigate to **Admin | Personas**. From the Windows Privilege Personas page, you can create new Personas and manage existing Personas.

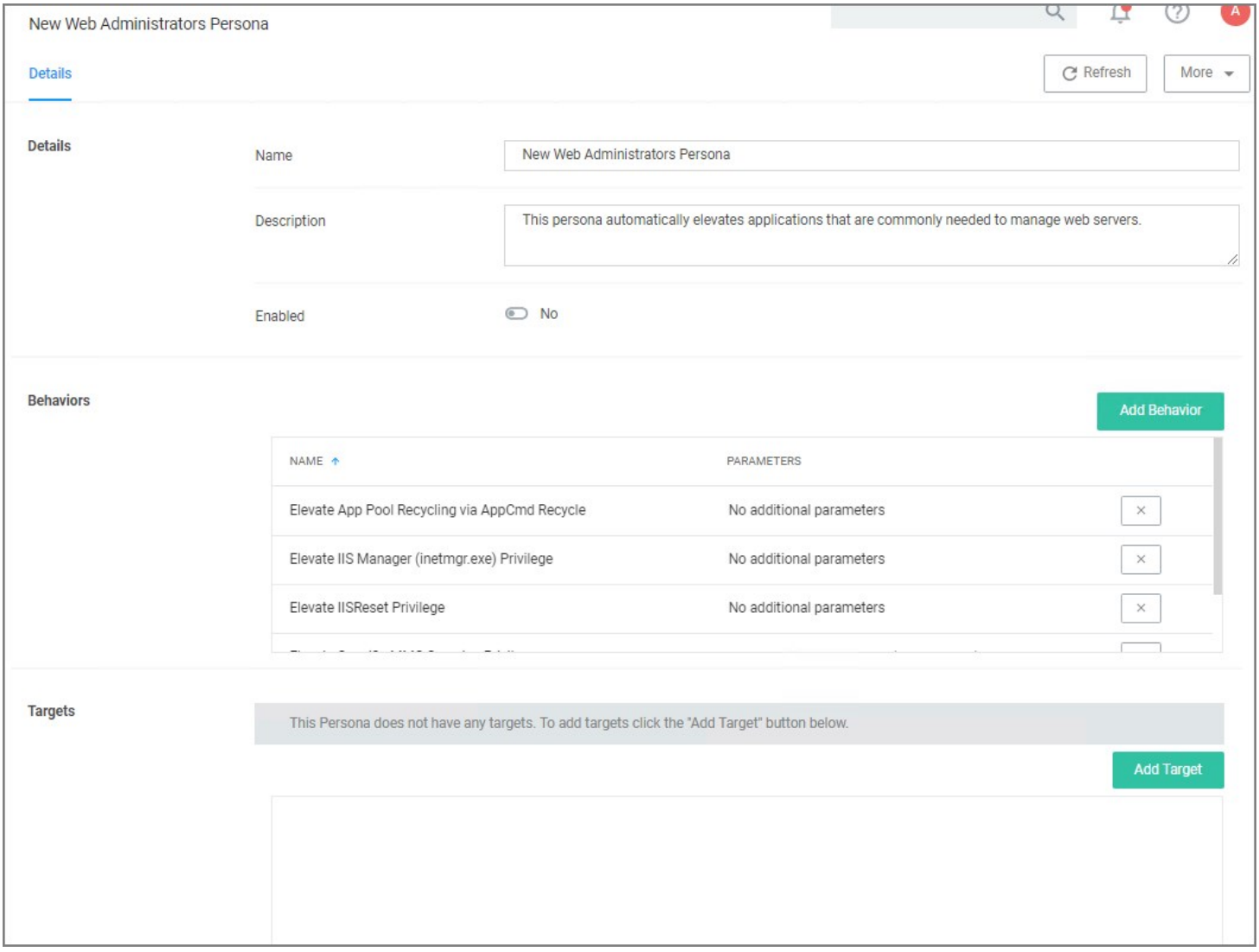
Creating a Persona

To create a Persona, click **Create Persona**. You will be presented with a dropdown list of Persona Templates to choose from.

Custom Persona	An empty Persona template for the users to customize based on their needs.
Network Administrators Persona	Automatically elevates applications that are commonly needed to manage network configurations. Elevate DHCP, DNS, and NLB Configuration
Security Administrators Persona	Automatically elevates applications that are commonly needed to manage local users and security settings. Elevate Local User and Groups and Group Policy Object Editor
SQL Administrators Persona	Automatically elevates applications that are commonly needed to manage SQL servers. Elevate Certificate Manager, ODBC Configuration, and SQL Server Configuration Manager
Storage Administrators Persona	Automatically elevates applications that are commonly needed to manage file storage settings. Elevate Disk Defragmentation, Disk Management, ISCSI Connection Configuration, Quota Management, Shared Folders, and Windows Backup
Web Administrators Persona	Automatically elevates applications that are commonly needed to manage web servers. Elevate App Pool Recycling, Certificate Manager, IISReset, and adding TCP Firewall Rules

Select a Persona Template and then provide a Name and Description. Once you are ready to proceed, click Create. If you selected any Persona Template other than Custom Persona then you will have pre-populated Behaviors that you can choose to delete or keep. Otherwise, you will start with a blank Persona.

For Persona Settings, you can change the name, description, and whether the Persona will be enabled. For Persona Behaviors, you can click Add Behavior and choose which privilege(s) you want to allow for this Persona. Finally, for Persona Targets you can choose which Active Directory Domain User Groups this Persona will affect and on which Active Directory Organizational Units this Persona will apply.



Set the persona to **Enabled** and click **Save Changes** to finish creating your Persona.

Resource Explorer provides information about any type of resource item in Privilege Manager .

Resource Explorer provides:

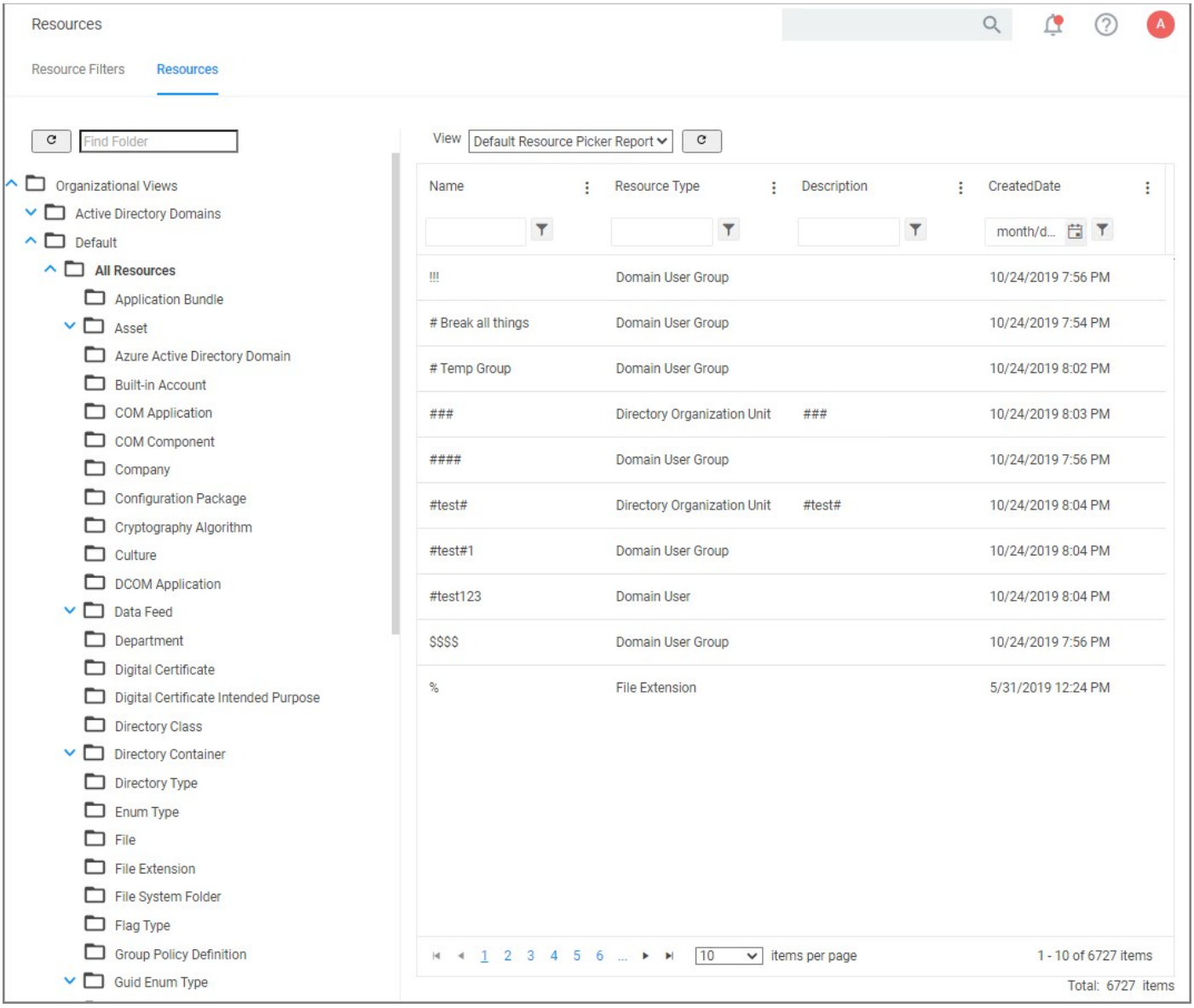
- **Summary**, which contains general information, such as name, description, and modified date for any resource accessed.
- **Known Data**, such as any data known that relates to the resource. This data is different from resource type to resource type. For example, a domain has Global Domain Details and no account details, and a file will have all sorts of information pertaining to the file.
- **Events** are log-style data entries that are directly related to the resource. For example for discovered files, those are the events that are reported from and endpoint.
- **Associations**, are any associated/related items.

Resources can be deleted from the Resource Explorer page.

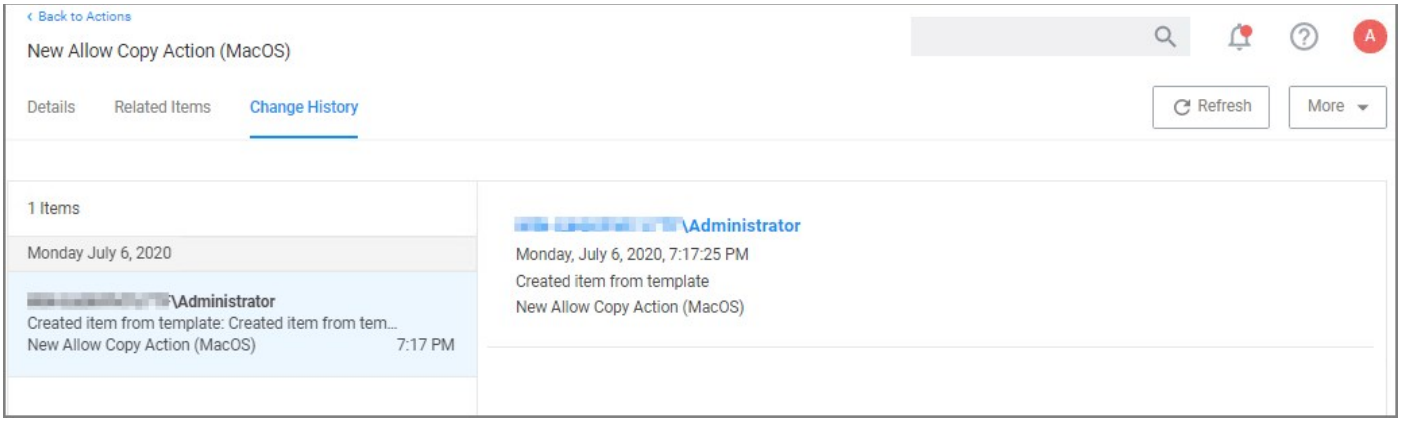
> **Note**: Only use Delete when you are absolutely sure that you want to delete that resource. Clicking on Delete will delete the current resource record you are viewing.

Resource Explorer is accessible by either navigating to

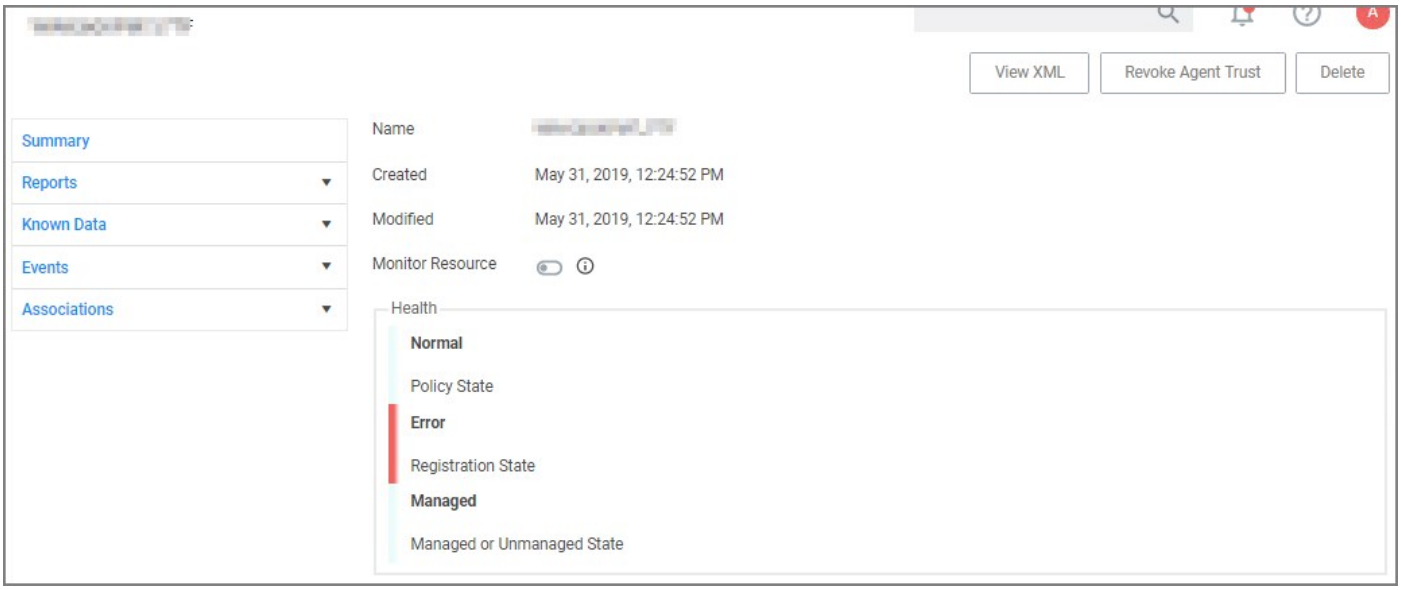
- **Admin | Resources** and expanding the Resources tree drilling down to a named resource to further explore and/or edit.



- **Change History** tab of a named resource.



- any named item, such as a report, in the Privilege Manager console and selecting a named resource. Example navigation for the following image, *Admin I Agents I select one system from the list I select one computer from "Managed Computers by Operating System " list*:

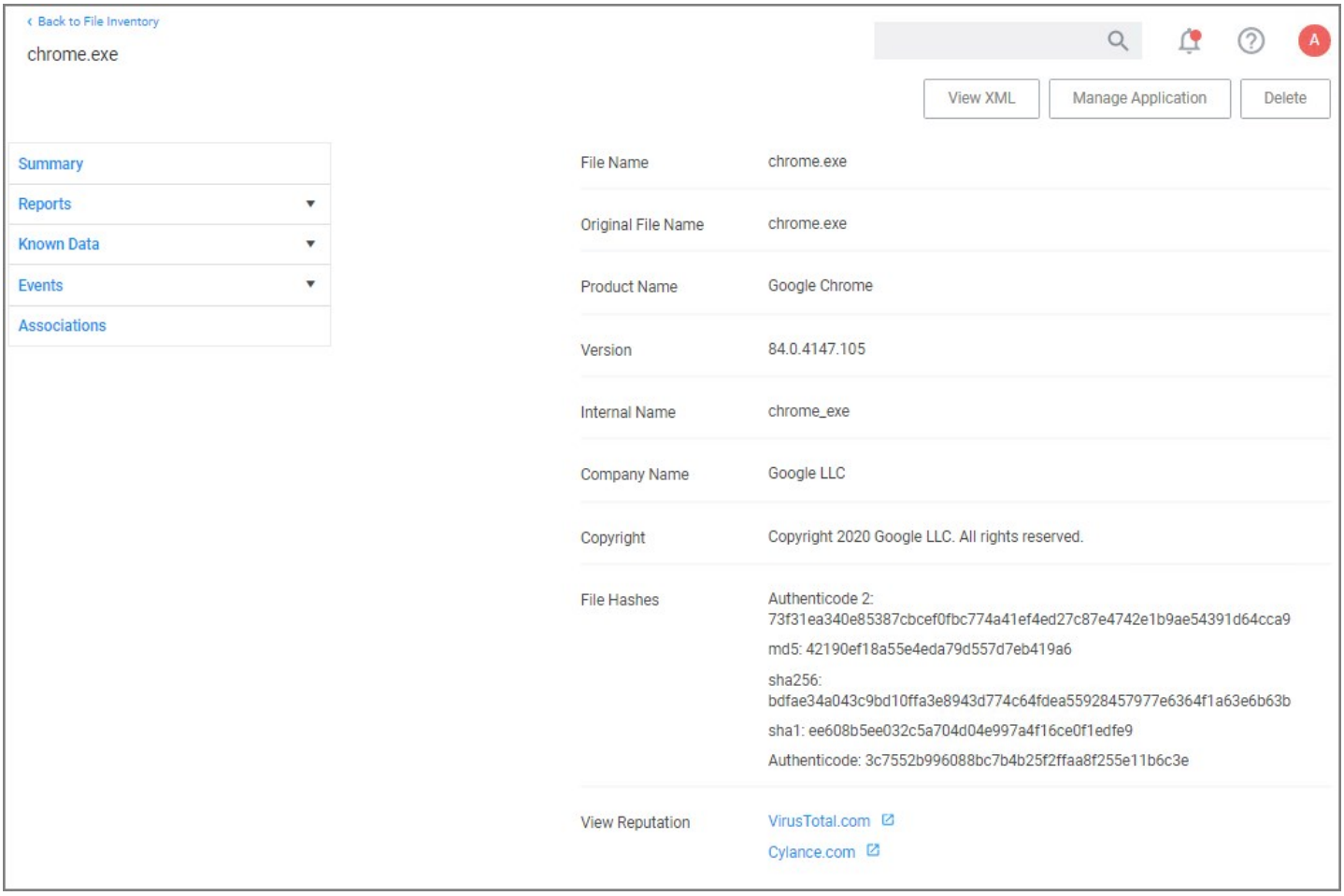


Example for Discovered Files

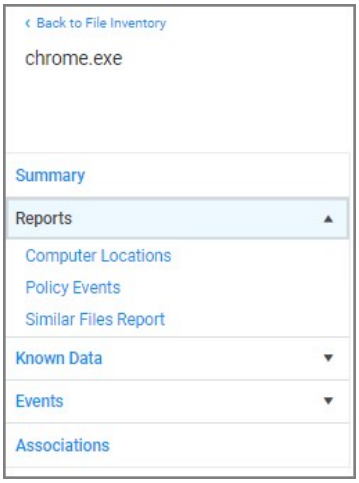
You enter the Resource Explorer for discovered files through **File Inventory** on the main navigation tree. On the Events page, click any of the discovered files and use **View File** to drill down to the files resources.

The following image shows all discovered information about the chrome.exe file, such as:

- File Name
- Original File Name
- Product Name
- Version
- Internal Name
- Company Name
- Copyright information
- File Hashes
- View Reputation, if a reputation provider is integrated with your Privilege Manager instance.



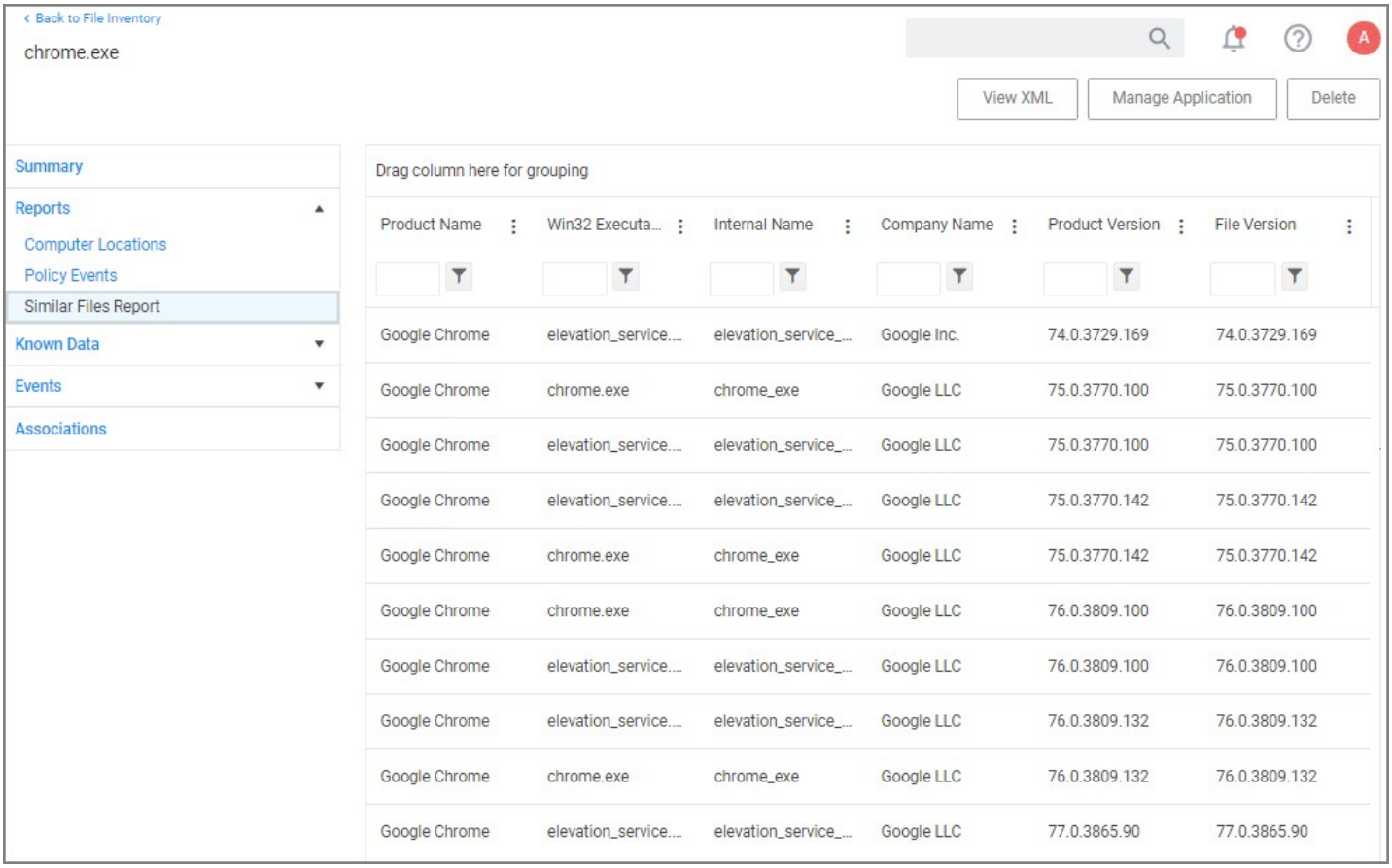
Under the **Reports** drop-down you can look at further details on the **Computer Locations**, **Policy Events**, and **Similar Tiles Report** tabs.



The **Computer Locations** tab provides details about the discovery locations where the file was discovered.

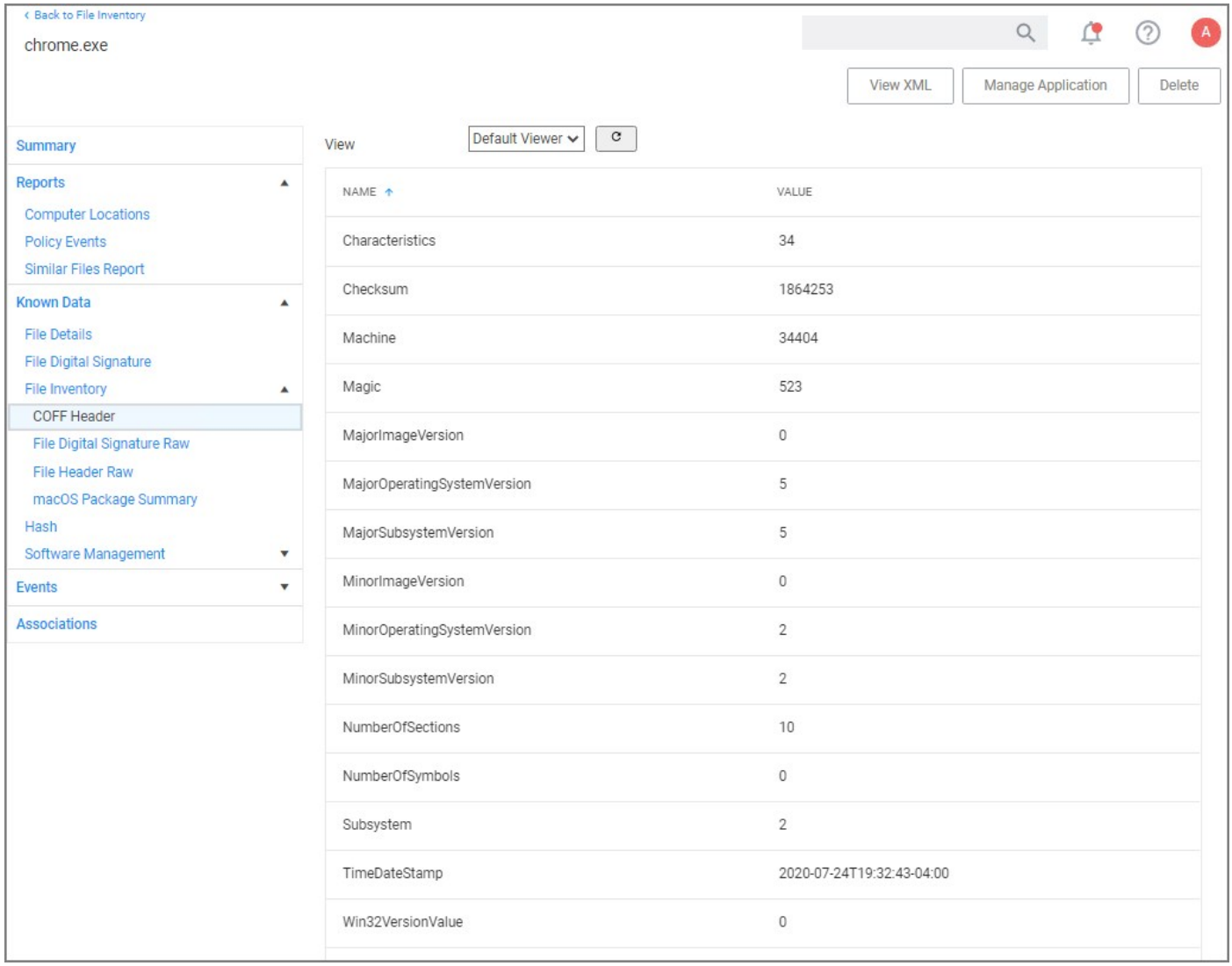
The **Policy Events** tab provides details about the policy events that triggered by the file if executed.

The **Similar Files Report** tab provides a list of and links to similar files that have been discovered by Privilege Manager .

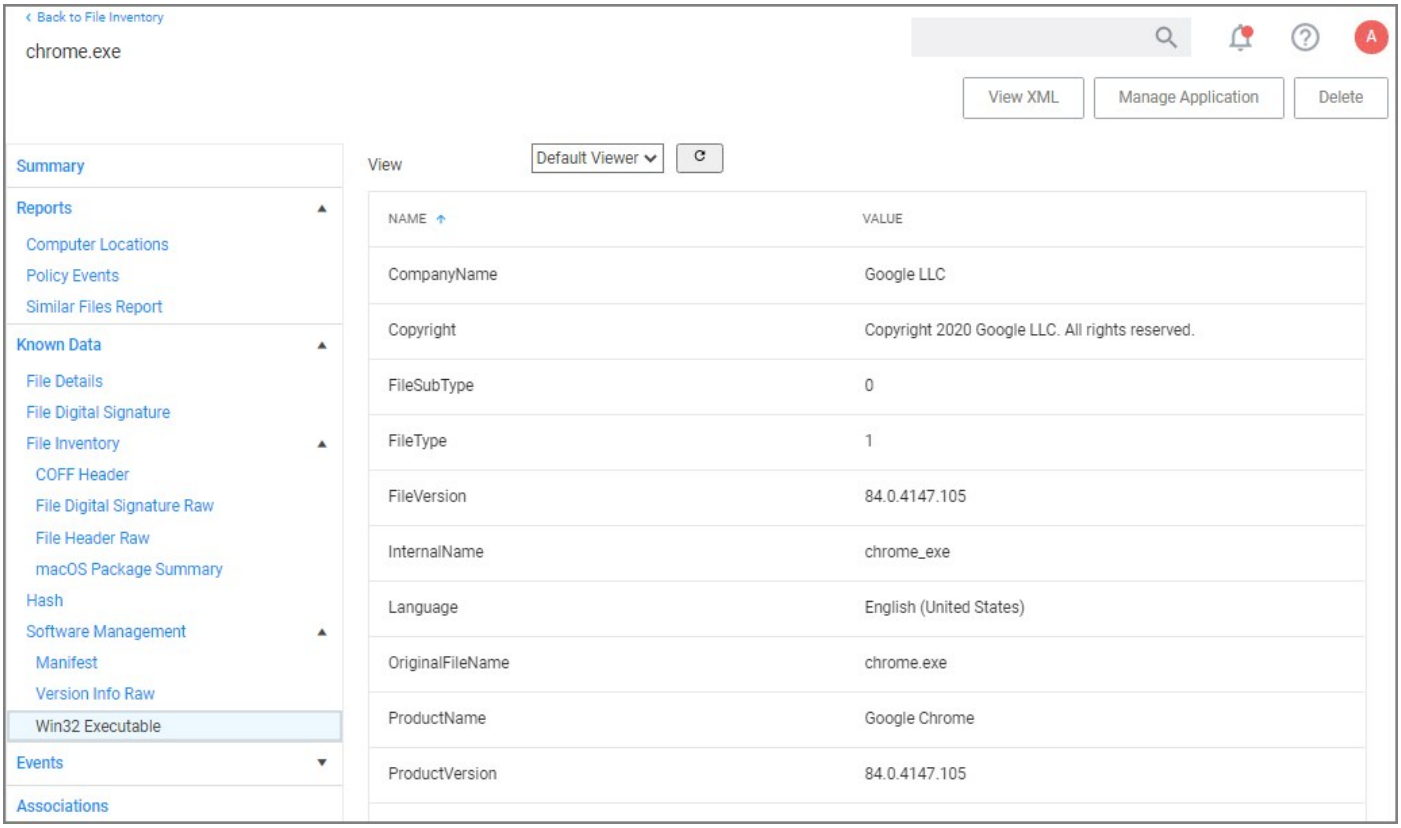


The Known Data for a discovered file includes details like:

- File Inventory, which provides COFF Header and File Digital Signature data in raw form.

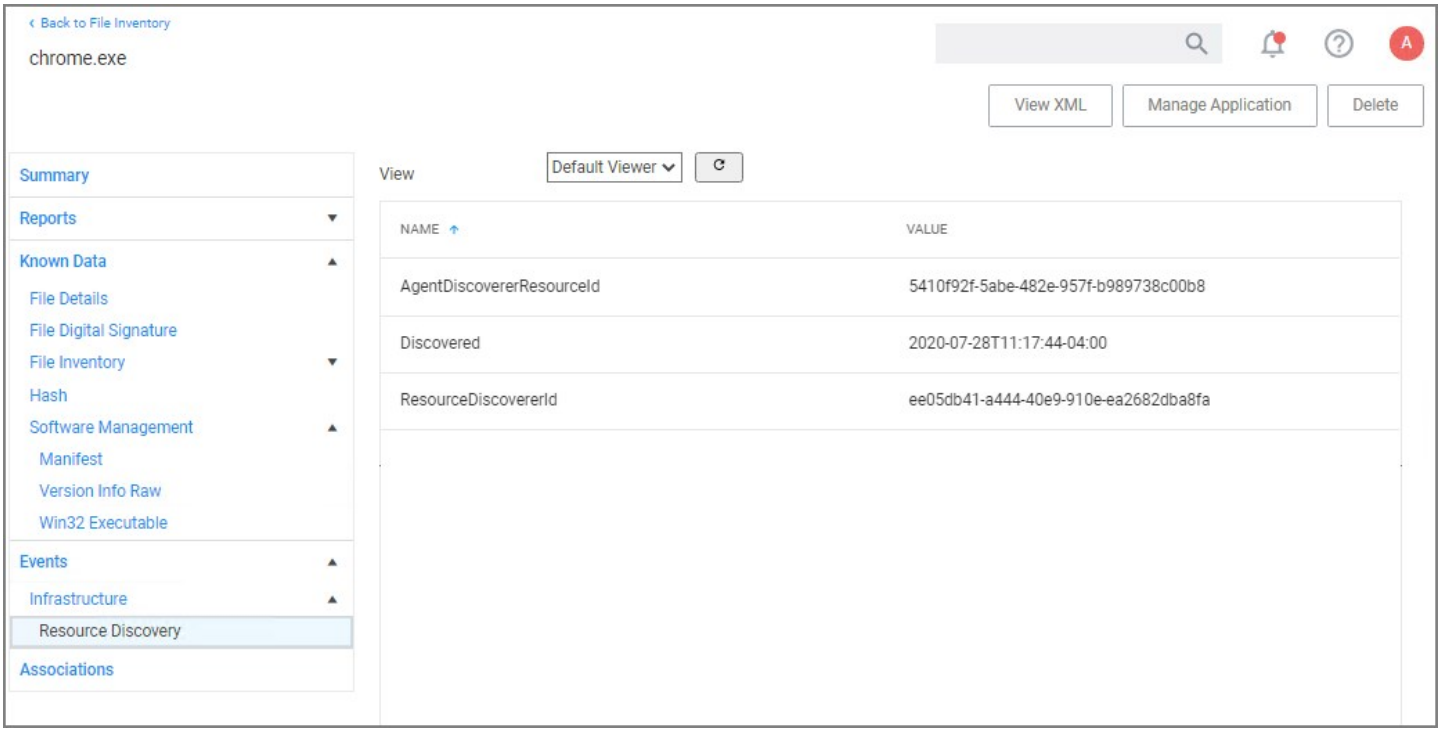


- Software Management, which provides the files Manifest, Version Info in raw form, and Win32 Executables details.



- File Details, such as name, file extension, file size, and if protected or not.
- File Digital Signature, which provided information on the Signer, Countersigner if available, and the signature date/time stamp.
- Hash, provides details on the name, the hash, and hex hash.

Under Events, Infrastructure offers a view into the Resource Discovery events that discovered the file, in this example the File Agent Discoverer and File Agent Discoverer (File Location) events.

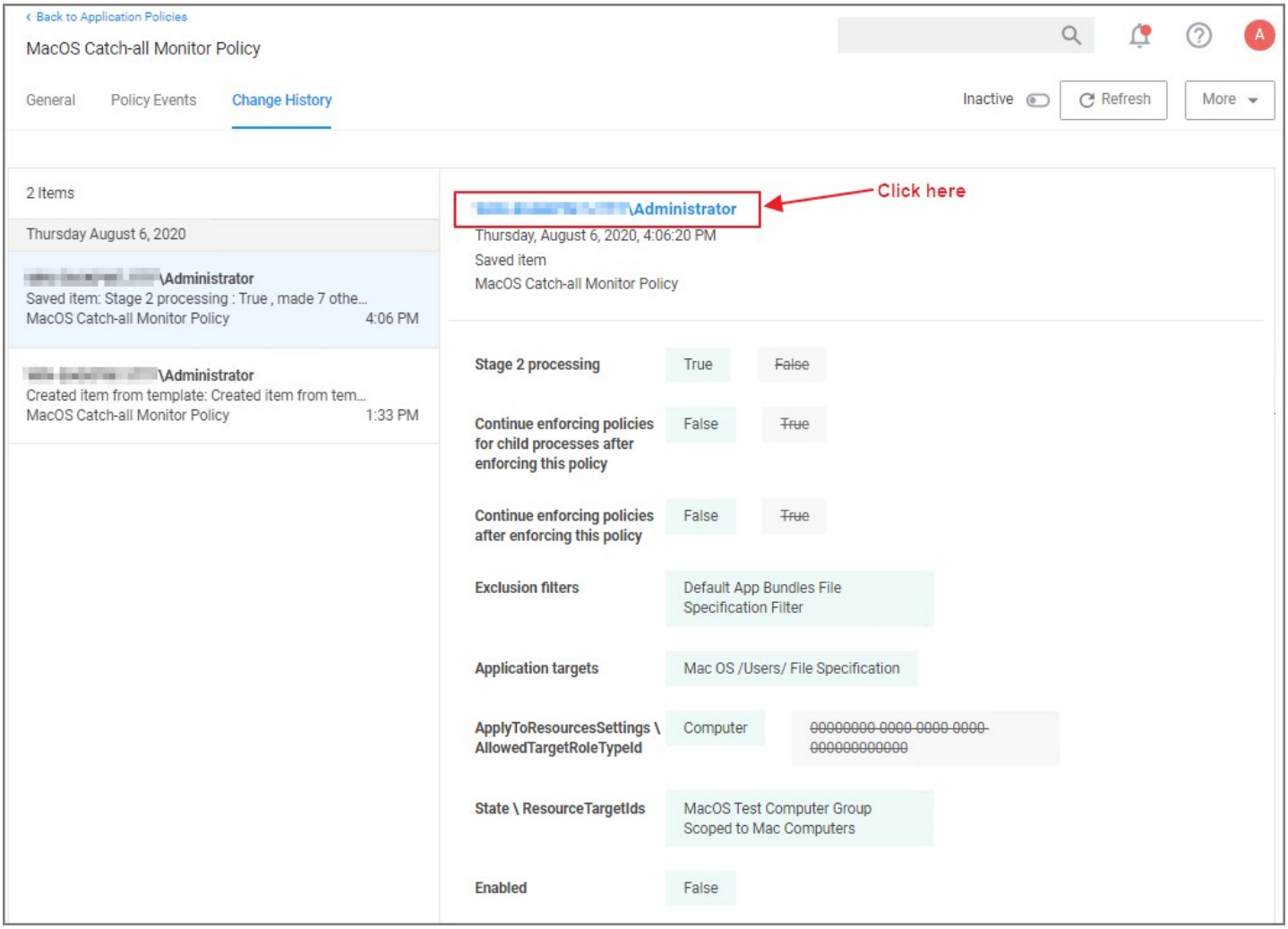


This discovered file resource has no related items associated and thus the Associations area of the Resource Explorer is empty.

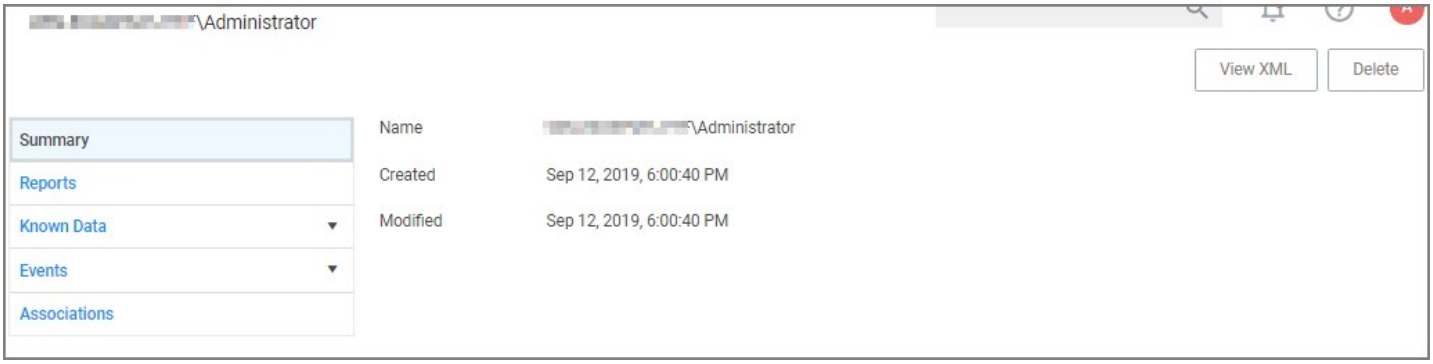
Example for User Resource

When you are looking at change history for any item and click the view user link, you access the **Resource Explorer** for that specific user resource. The Summary information for that specific user resources shows:

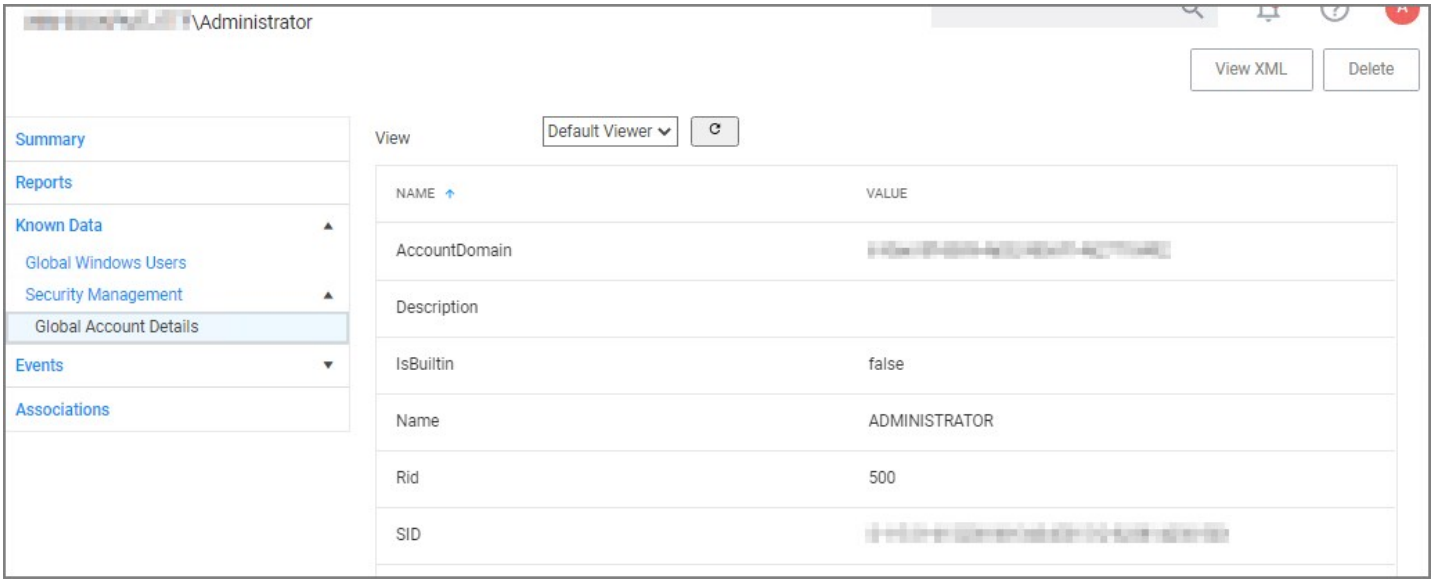
- Name – this is the user account that made the change.
- Created – indicates when the item was created.
- Modified – indicates when the item was last modified.



The resource explorer is providing information about the current state of that user resource.



Under **Known Data** we can explore the information for **Security Management I Global Account Details**.

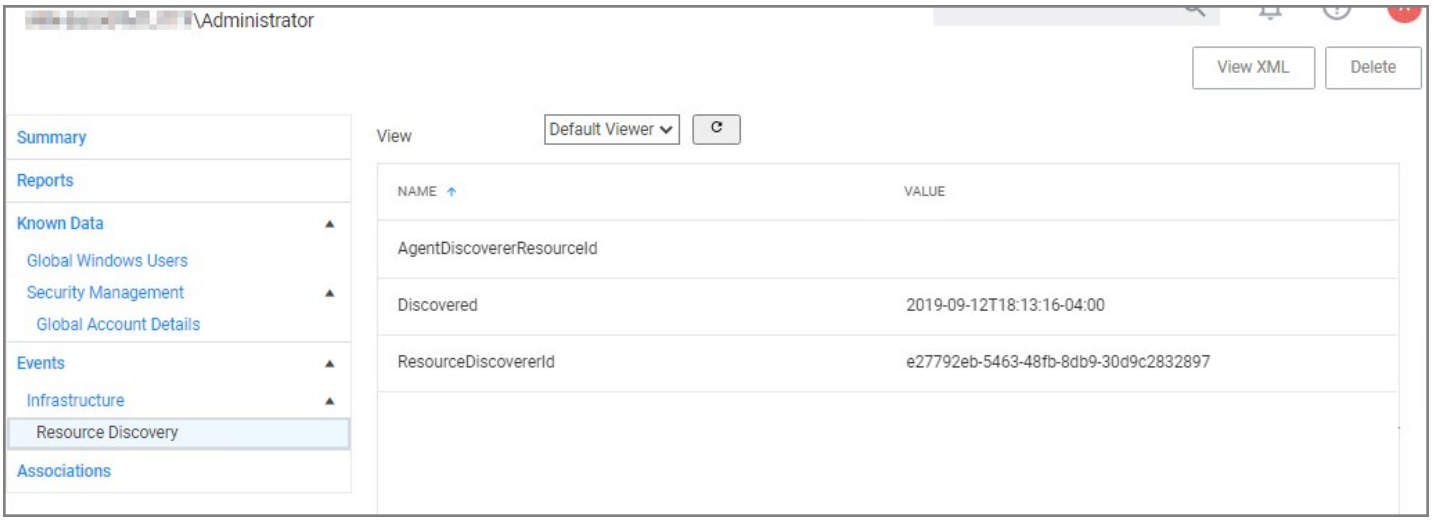


Users can select the View from the drop-down and see information on the type of the resource. User resources provide details about:

- AccountDomain – identifies the domain for the user account.
- Description
- IsBuiltin – can be true false to indicate if the account in built-in or not.
- Name – Name associated with the user account.
- Rid
- SID

Selecting the Global Windows Users information shows Name, Domain, and UserId.

Under **Events**, you can view **Infrastructure | Resource Discovery** information:



Under **Associations** you can see related items, such as **Group Membership**, which is based on the users credentials.

Error Message after Deleting a User Resource

In case a resource was deleted, an error message like the following will be shown the next time the resource view link is accessed.

Delinea

InvalidItemIdException
The server could not find an item required for this request. Please check the server logs for additional information.
The specified Guid '9c0f4d76-5557-4aab-941d-3d13bc30cf81' is not a valid Item.

If you have specific patterns of computer names that you wish to target, create a query-based collection using the **Computers by Name Patterns Query**. This collection can then be used within Computer Group definitions. The query uses SQL wildcard characters in the search to create a custom collection based on the results.

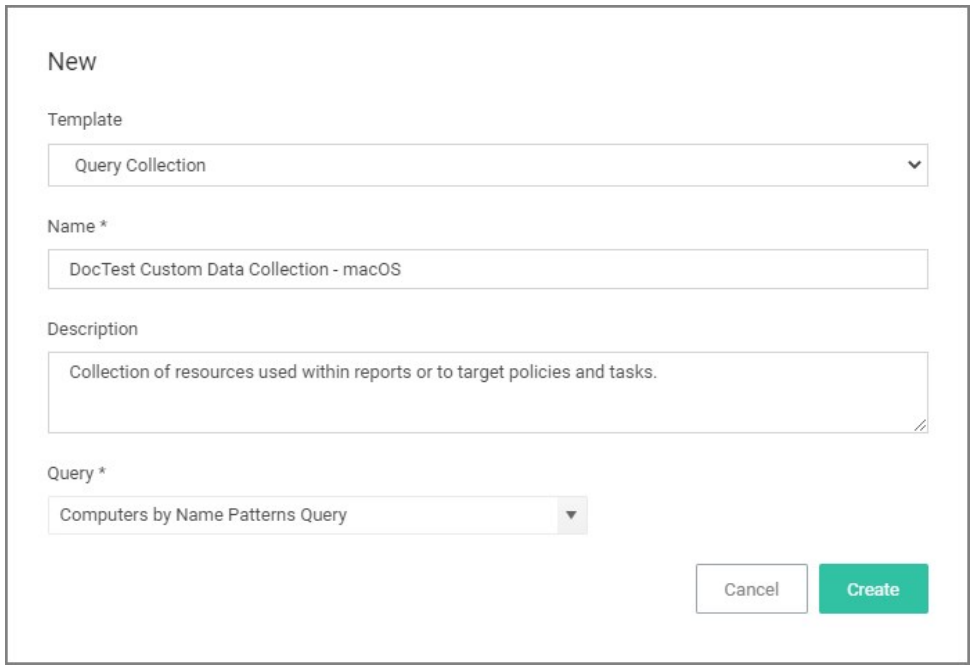
For example, if a company has their computer resources around the globe set up to have geo location references like EU, AS, US, etc. as a pre- or postfix, collections can be created for all machines in either Europe, Asia, or the United States based on those characters in the computer names.

The query for creating a custom data collection is **Computer by Name Pattern Query**, which is available for macOS, Unix/Linux, and Windows collections.

Creating a Computer Name Pattern Collection Query

These queries are dependent on the admin role a user might have. Privilege Manager Administrators can create new collections on the **Collections** root level. Privilege Manager MacOS, Unix/Linux, or Windows Administrators must select the OS specific folder from the **Collections** tree.

1. Navigate to **Admin | Resources** and select the **Resource Filters** tab.
2. From the **Resource Filters** tree, select **Collections**.
3. Click **Create**.
4. From the **Template** drop-down, select **Query Collection**.
5. Enter a name and edit the description to better identify the purpose of the resource you are creating.
6. From the **Query** drop-down, select **Computer by Name Pattern Query**.



7. Click **Create**.
8. Select **Filter Definition**.
9. In the **Computer name patterns** field, enter one or more comma-separated computer name patterns.

For example, *EU-%,%123,SRV-%01*

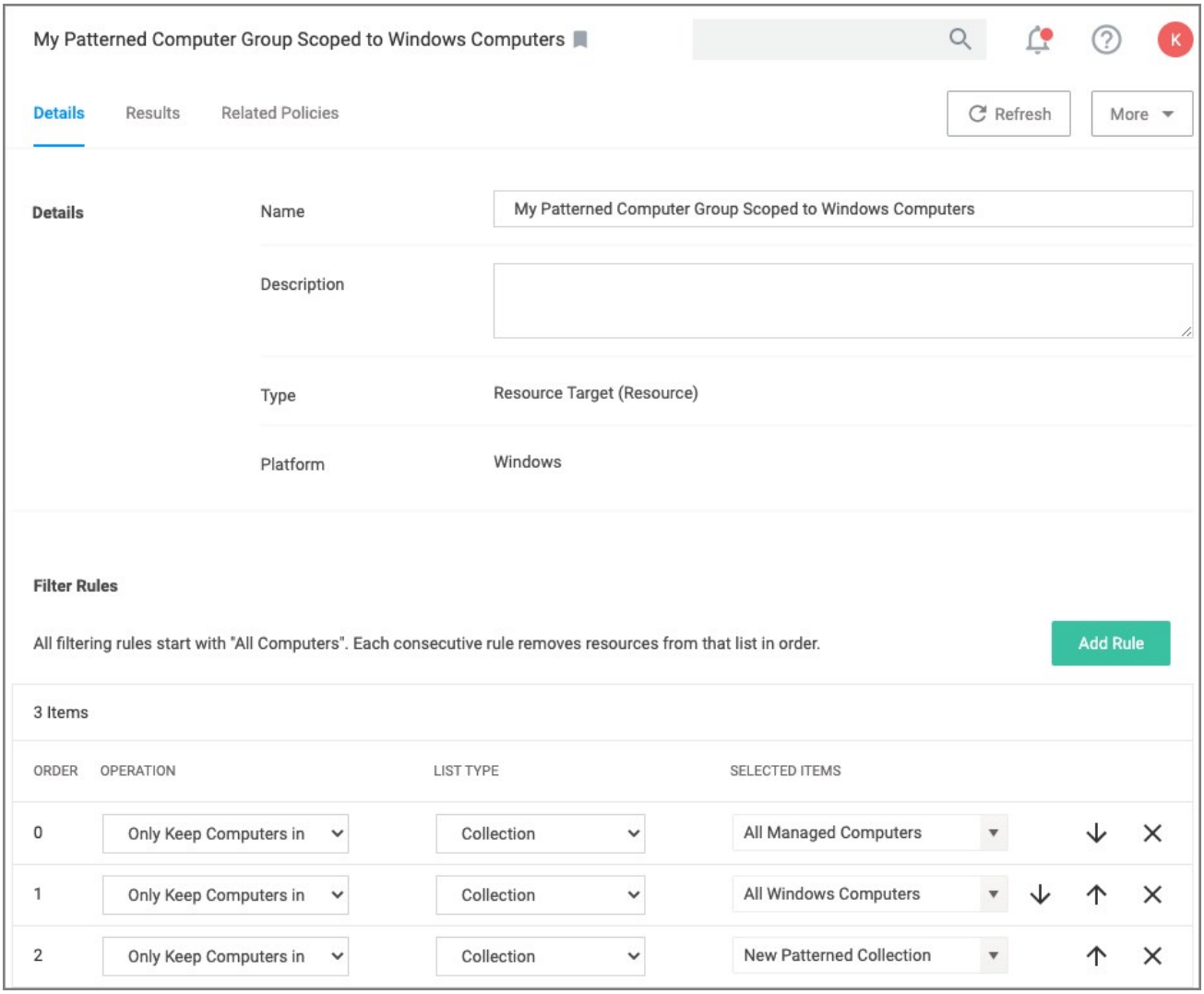
- would select all computers that started with *EU-*,
- include all computer names that end with *123*,
- and all that start with *SRV-* but must end with *01*.

10. Click **Save Changes**.
11. Select **Membership**.
12. Click **Update Membership** to immediately run the **Collection and Resource Targeting Update** task. This task is assigned to a shared schedule "Collection Update", which runs every 15 minutes by default.

Using the Query for a New Computer Group

To create a new computer group using the new custom collection query, follow these steps:

1. Navigate to **Computer Groups**, click **Create Computer Group**.
2. From the Platform drop-down select the targeted platform for your new group.
3. Enter a Name and Description for your new computer group.
4. Click **Create**.
5. Under **Filter Rules**, click **Add Rule** to add another rule (leave the existing platform-based rule at the top). For the new rule, specify for:
    1. **Operation** drop-down, select **Only Keep Computers in**.
    2. **List Type** drop-down, select **Collection**.
    3. **Selected Items** drop-down, select the **All Managed Computers**.
6. Click **Add Rule** again to add another rule (leaving the existing rules in place). For this new rule specify for:
    1. **Operation** drop-down, select **Only Keep Computers in**.
    2. **List Type** drop-down, select **Collection**.
    3. **Selected Items** drop-down, select the *Computer Name Pattern Collection Query* you created above.



7. Click **Save Changes**.

For computer groups that do not employ Active Directory services to identify computers, the Filter by Name filter rule can be used to identify computers using any of three identification methods:

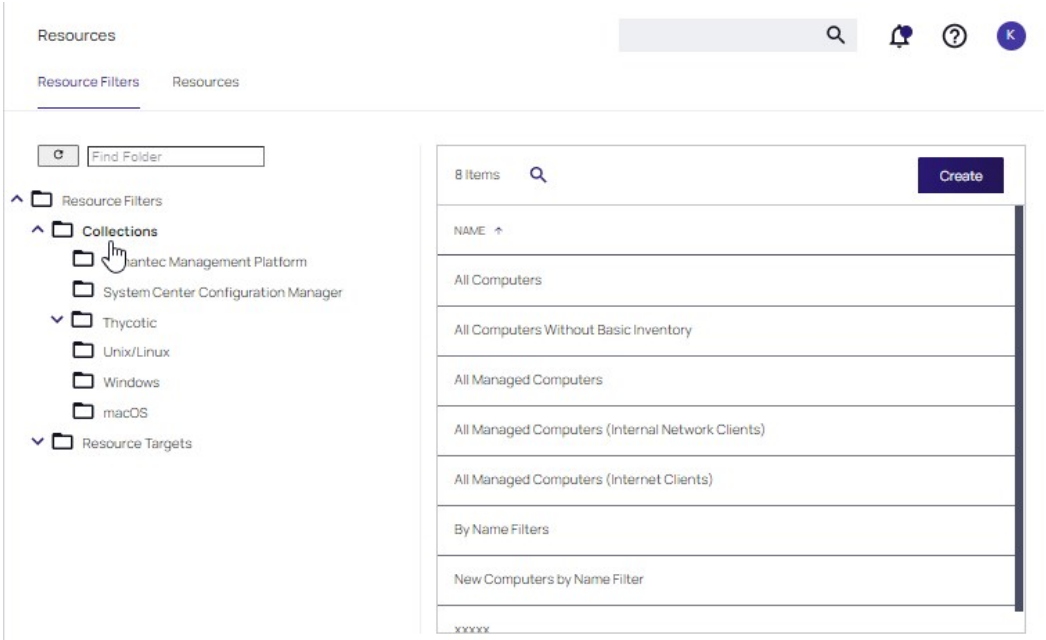
- manual entry
- copy from a spreadsheet
- populate and manage from an API

These instructions step through the Filter by Name feature that is used to create filters for computer groups using computer names.

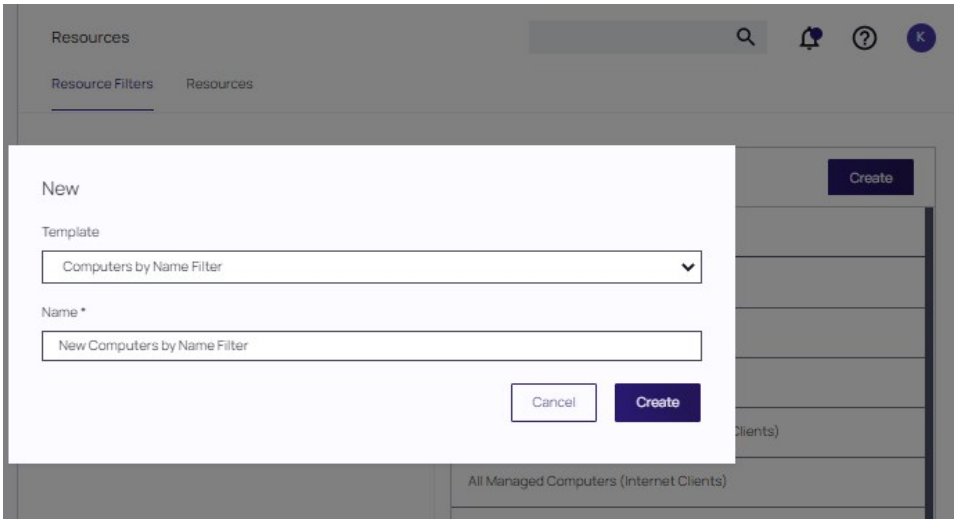
Creating a Computer Name Filter Collection Query

These queries are dependent on the admin role a user might have. Privilege Manager Administrators can create new collections on the **Collections** root level. Privilege Manager MacOS, Unix/Linux, or Windows Administrators must select the OS specific folder from the **Collections** tree.

1. Navigate to **Admin | Resources** and select the **Resource Filters** tab.
2. From the **Resource Filters** tree, select **Collections**.

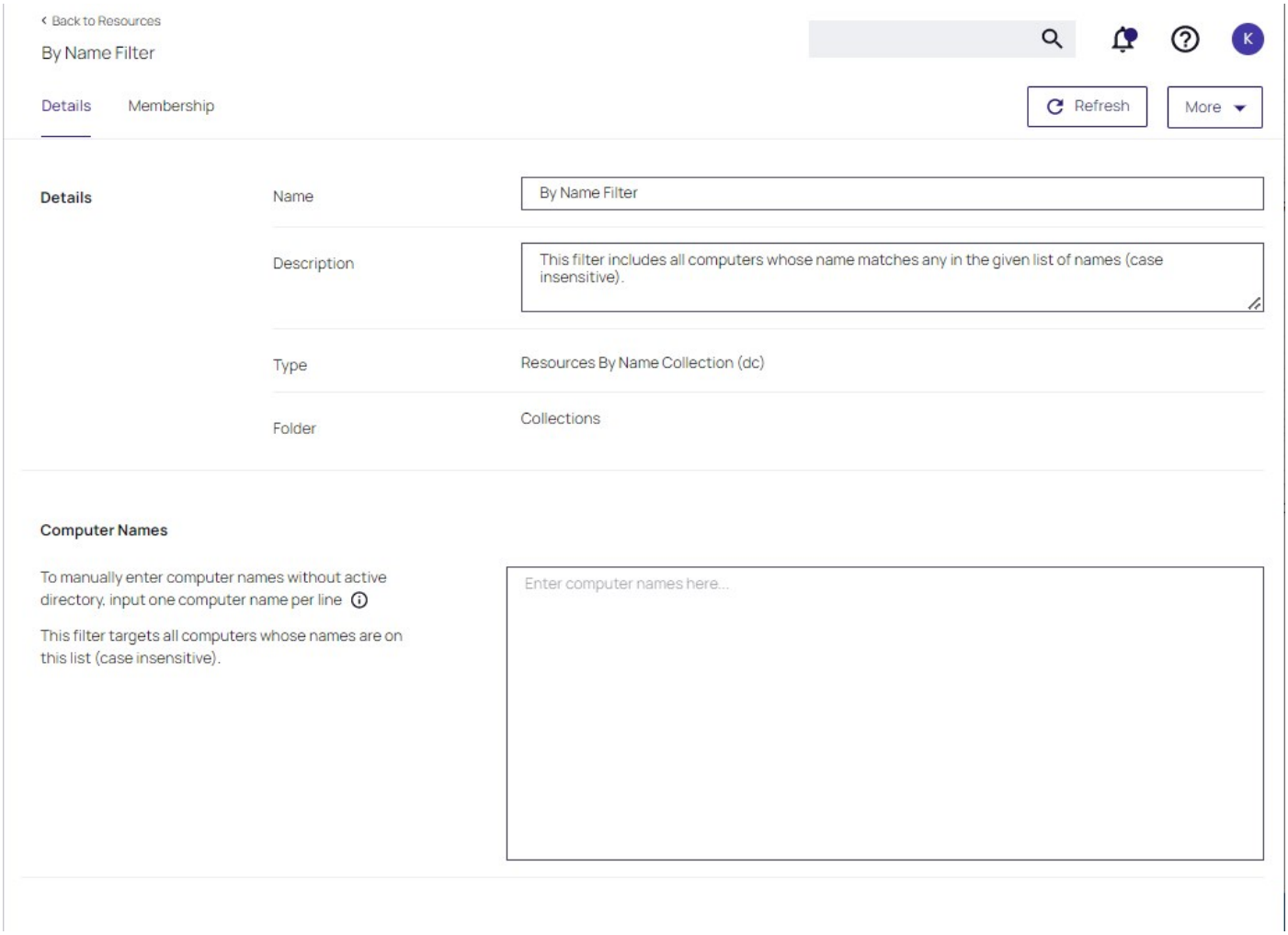


3. Click **Create**.
4. From the **Template** drop-down, select **Computers by Name Filter**.
5. Enter a name and edit the description to better identify the purpose of the resource you are creating.

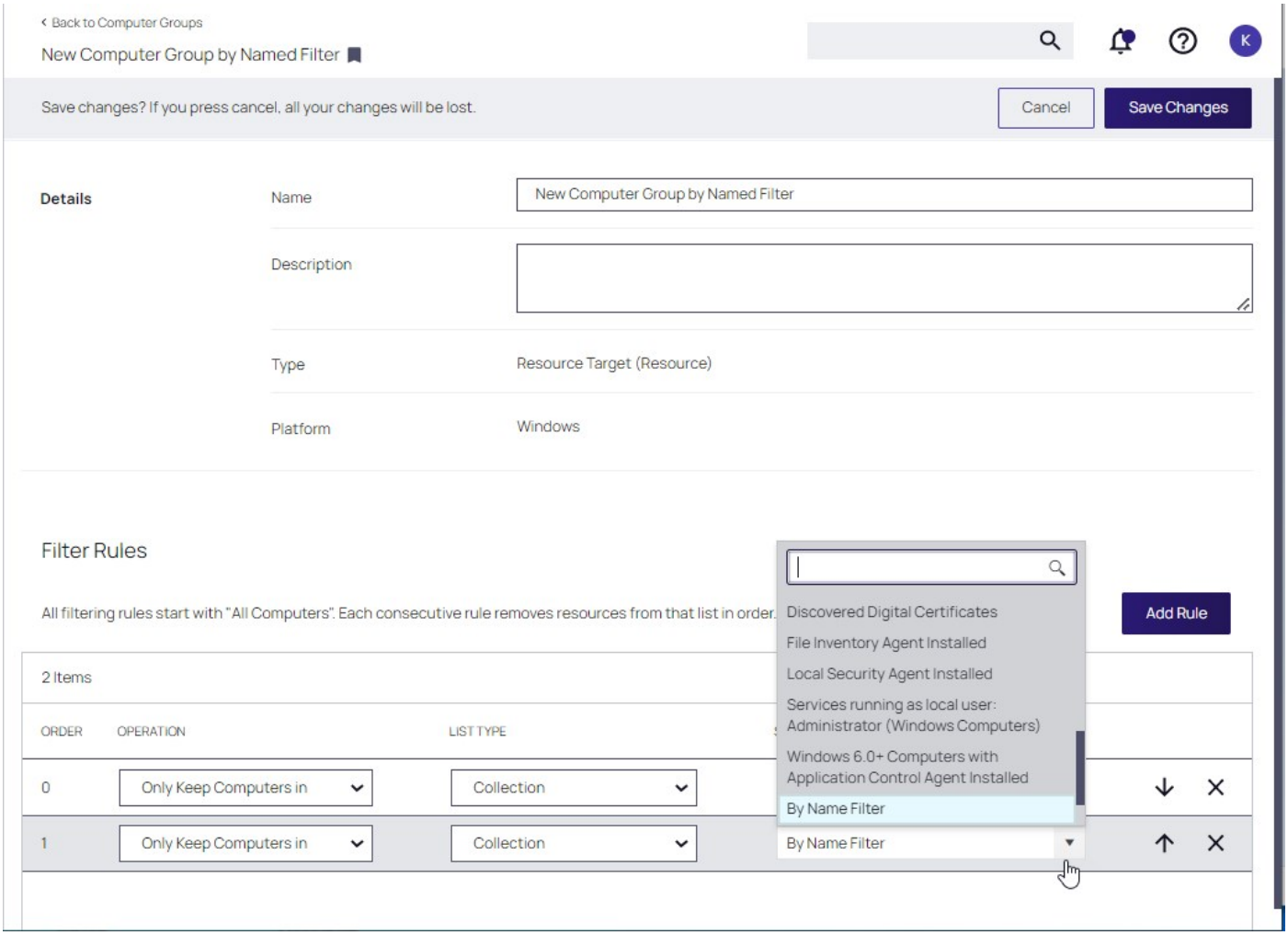


6. The Details page for the newly created collection is displayed. Three options are available for entering names in the **Computer Names** field: enter names manually, paste in entries from an Excel spreadsheet, or use the API to populate names.

   To use the API method, refer to the instructions for Populating Computer Names using the API after these instructions. Proceed to create a rule for the named filter in the designated computer group next.



7. Navigate to the Computer Group that will be associated with the newly created filter.
8. On the Details page for that computer group, click **Add Rule**.
9. Specify a **Collection** as the **LIST TYPE**. Select the newly created filter in the **SELECTED ITEMS** drop-down.
10. Click **Save Changes**.



11. Proceed with the instructions for Populating Computer Names using the API.

Populating Computer Names using the API

Below is an **example** of a Powershell script that is used to populate computer names.

To create your script, use the By Name Filters methods presented in the Privilege Manager API.

> **Note**: The API script can be run at your discretion at any time computer names need to be refreshed.

Example Powershell Script

The example powershell script incorporates API methods that includes Create-ComputersByNameFilter. In practice, this is not required for subsequent script executions. Instead, use one of the API mthods to update the list and get $filterId from the item ID shown in the browser URL when viewing the Computers by Name filter created in the first step.

In this example,

- $api_user_clientid and $api_user_secret are obtained from the **Admin** | **Users** page for that user.
- client ID and secret are obtained from the Details page for that user.

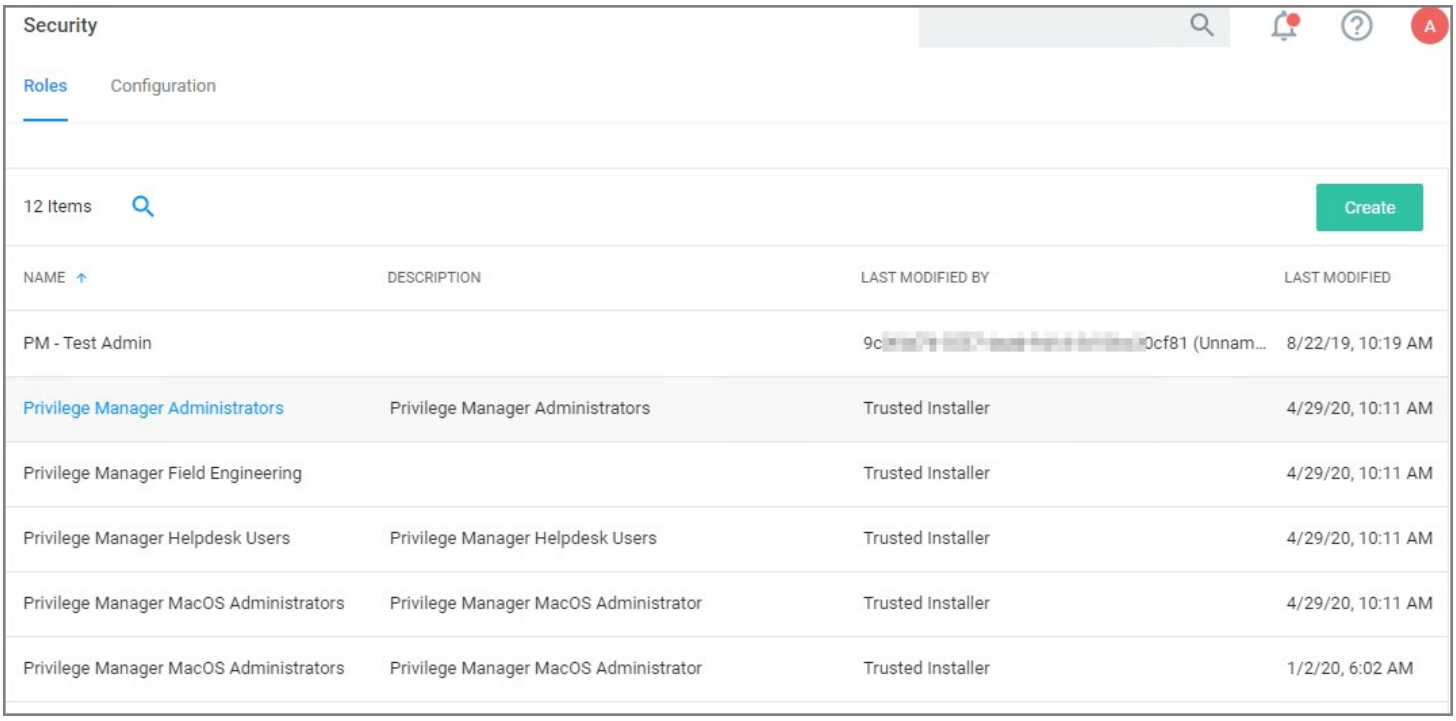
```
# Computers By Name Filter Test Script #
```

```
$api_user_clientid = ''
$api_user_secret = ''
$tmsBaseUri = 'https://localhost/Tms'
$tmsAPIBaseUri = "$tmsBaseUri/services/api"
$tmsAPIAuthUri = "$tmsAPIBaseUri/logon/token"
$tmsAPIByNameFiltersUri = "$tmsAPIBaseUri/v1/bynamefilters"
$tmsAPIContentType = 'application/json'
$tmsAPIBearerToken = $null;
# Functions
function Ignore-SSLCertificateErrors
{
    if (-not ([System.Management.Automation.PSTypeName]'ServerCertificateValidationCallback').Type)
    {
        $certCallback = @"
            using System;
            using System.Net;
            using System.Net.Security;
            using System.Security.Cryptography.X509Certificates;
            public class ServerCertificateValidationCallback
            {
                public static void Ignore()
                {
                    if(ServicePointManager.ServerCertificateValidationCallback ==null)
                    {
                        ServicePointManager.ServerCertificateValidationCallback +=
                            delegate
                            (
                                Object obj,
                                X509Certificate certificate,
                                X509Chain chain,
                                SslPolicyErrors errors
                            )
                            {
                                return true;
                            };
                    }
                }
            }
"@
        Add-Type $certCallback
    }
    [ServerCertificateValidationCallback]::Ignore()
}
function Read-ResponseJson
{
    param ([Microsoft.PowerShell.Commands.WebResponseObject] $response)
    if($response.StatusCode -lt 200 -or $response.StatusCode -gt 299)
    {
        throw "Request failed with error code: $($response.StatusCode): $($response.StatusDescription)"
    }
    ConvertFrom-Json $response.Content
}
function Authenticate-APIUser
{
    if($tmsAPIBearerToken -eq $null)
    {
        $body = "{ ""username"": ""$api_user_clientid"", ""password"": ""$api_user_secret"" }"
        $response = Invoke-WebRequest -Uri $tmsAPIAuthUri -Body $body -ContentType $tmsAPIContentType -Method Post
        $tmsAPIBearerToken = Read-ResponseJson -response $response
    }
    $tmsAPIBearerToken
}
function Invoke-APIRequest
{
    param ([string]$uri, [string]$body, [Microsoft.PowerShell.Commands.WebRequestMethod] $method)
    $bearerToken = Authenticate-APIUser
    $headers = @{Authorization="Bearer $bearerToken"}
    if(-not $body)
    {
        $response = Invoke-WebRequest -Uri $uri -Method $method -Headers $headers
    }
    else
    {
        $response = Invoke-WebRequest -Uri $uri -Method $method -Body $body -ContentType "application/json" -Headers $headers
    }
    Read-ResponseJson -response $response
}
function Create-ComputersByNameFilter
{
```

```
    param ([string]$name, [string]$description, [string]$names)
    $body = "{ ""Name"": ""$name"", ""Description"": ""$description"", ""Names"": ""$names"" }"
    $response = Invoke-APIRequest -uri "$tmsAPIByNameFiltersUri/new" -body $body -method Post
    $response
}
function Add-ComputersByNameToFilter
{
    param ([Guid]$filterId, [string]$names)
    $body = "{ ""Names"": ""$names"" }"
    $response = Invoke-APIRequest -uri "$tmsAPIByNameFiltersUri/$filterId/add-names" -body $body -method Post
    $response
}
function Remove-ComputersByNameToFilter
{
    param ([Guid]$filterId, [string]$names)
    $body = "{ ""Names"": ""$names"" }"
    $response = Invoke-APIRequest -uri "$tmsAPIByNameFiltersUri/$filterId/remove-names" -body $body -method Post
    $response
}
function Set-ComputersByNameToFilter
{
    param ([Guid]$filterId, [string]$names)
    $body = "{ ""Names"": ""$names"" }"
    $response = Invoke-APIRequest -uri "$tmsAPIByNameFiltersUri/$filterId/names" -body $body -method Post
    $response
}
function Get-ComputersByNameFromFilter
{
    param ([Guid]$filterId)
    $response = Invoke-APIRequest -uri "$tmsAPIByNameFiltersUri/$filterId/names" -body $body -method Get
    $response
}
function Get-ComputersByNameFromFilterAsCsv
{
    param ([Guid]$filterId)
    $response = Invoke-APIRequest -uri "$tmsAPIByNameFiltersUri/$filterId/namescsv" -body $body -method Get
    $response
}
function Get-ComputersByNameFromFilterAsLines
{
    param ([Guid]$filterId)
    $response = Invoke-APIRequest -uri "$tmsAPIByNameFiltersUri/$filterId/namesnewline" -body $body -method Get
    $response
}
Ignore-SSLCertificateErrors
# Create a new filter
$response = Create-ComputersByNameFilter -name "Test Computers by Name From API" -description "This is a test - delete me" -names 'Computer1, Computer2, Computer3'
$filterId = $response.Result
# Add some new names
Add-ComputersByNameToFilter -filterId $filterId -names 'Comp4\r\ncomp5'
# Remove some names
Remove-ComputersByNameToFilter -filterId $filterId -names 'Computer1,Computer2'
# Show current names
Get-ComputersByNameFromFilter -filterId $filterId
# Set the full list of names (overwrite)
Set-ComputersByNameToFilter -filterId $filterId -names 'New1, NewABC'
# Show current names
Get-ComputersByNameFromFilter -filterId $filterId
# Show current names as CSV
Get-ComputersByNameFromFilterAsCsv -filterId $filterId
# Show current names as one name per line
Get-ComputersByNameFromFilterAsLines -filterId $filterId
```

Roles Tab

The following Privilege Manager roles are available by default and it is possible to add to or remove members from these roles. Privilege Manager also allows the creation of new roles, if a customer environment requires more role support.



Note:

- Privilege Manager 's Roles logic prevents the removal of a user account with an Administrator Role, if that user account is the last with those Administrator Role privileges. Privilege Manager does not allow current users to delete their own account.
- Privilege Manager manages the roles of users accessing the console, unless Privilege Manager is connected to Secret Server. When connected to Secret Server, role membership is controlled by Secret Server.

Also refer to the following topic: User Credentials and Roles.

All these roles are considered application role permissions.

Privilege Manager Administrators

This role allows the Privilege Manager Administrator to have full administrative access to the Privilege Manager Server Console.

Privilege Manager Field Engineering

This role is reserved for future use.

Privilege Manager Helpdesk Users

This role allows the user to have approve or deny escalation requests access. The helpdesk role can also disclose passwords.

Privilege Manager MacOS Administrators

This role allows the Privilege Manager MacOS Administrator to have full administrative access to the Privilege Manager Server Console to administer local security and application control items pertaining to macOS systems. This role can view but not edit Unix/Linux and Windows policies.

Privilege Manager Unix/Linux Administrators

This role allows the Privilege Manager Unix/Linux Administrator to have full administrative access to the Privilege Manager Server Console to administer local security and application control items pertaining to Unix/Linux-based endpoints. This role can view but not edit macOS and Windows policies.

Privilege Manager Users

This role allows the user to have read permissions to most items, but no rights to modify security permissions. This role can disclose passwords.

Privilege Manager View Password Role

This role allows the user to have view access to passwords for managed users in Privilege Manager . They can view the current passwords and password change history.

Privilege Manager Windows Administrators

This role allows the Privilege Manager Administrator to have full administrative access to the Privilege Manager Server Console to administer local security and application control items pertaining to Windows systems. This role can view but not edit macOS and Unix/Linux policies.

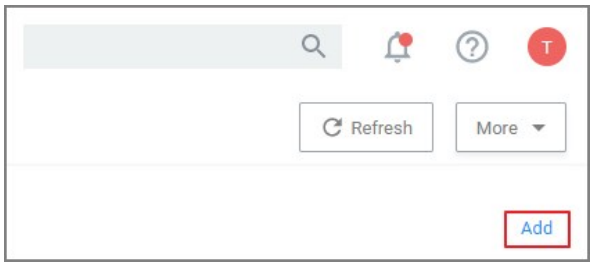
Creating/Deleting Roles

To create a new role,

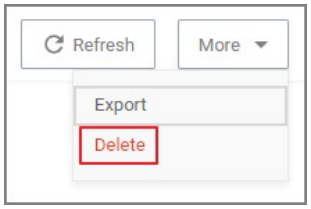
1. On the top of the Roles page, click **Create**.
2. Enter a name for the role, a description, and an account name.
3. Click **Create**.

   Once has been added, the new role's page opens and you can

   1. Add Users to or edit the role, via **Add**.

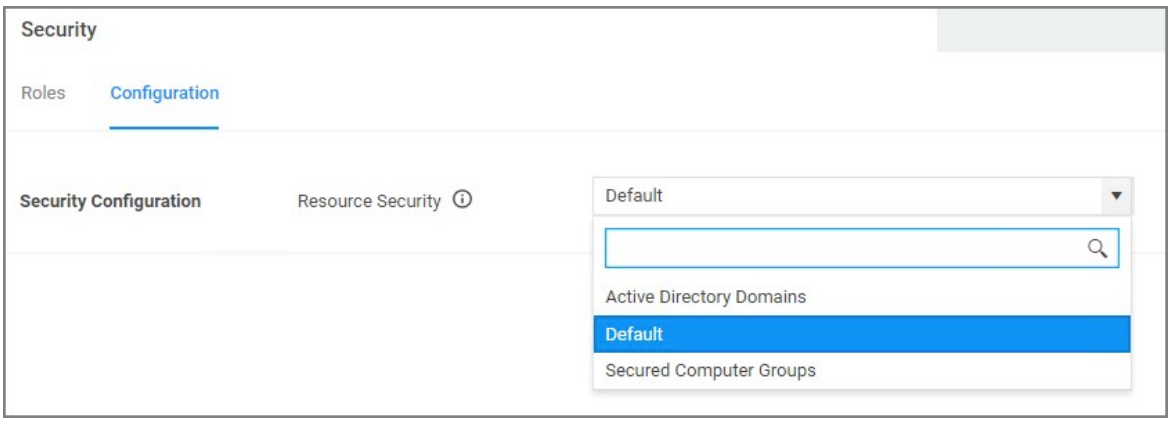


   2. Delete the role, via **More I Delete** and then confirm on the Delete Item modal by clicking **Delete Item**.



Security Configuration Tab

On the Security tab, Privilege Manager Admins specify the **Resource Security**. The Resource Security controls who can view data associated with specific computers.



- Using the **Default** option will allow all Administrators, Users, and Helpdesk Users of Privilege Manager to have access.
- Using the **Secured Computer Groups** option will allow for easier customization of which Roles have access to specific computers.
- Using the **Active Directory Domains** options will allow customization of which Roles have access to associated AD Domain resources.

The following table provides an overview of Privilege Manager Application Roles.

> **Note**: In general, the Privilege Manager User role can view reports, but access may be dependent on each report and the viewing rights assigned to the user's account.

Privilege Manager Administrators	Can do anything.	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Privilege Manager Field Engineering	Cannot do anything out of the box. Reserved for future use.										
Privilege Manager Helpdesk Users	This role has the least permissions. It can disclose passwords and manage approvals only.				yes	yes					
Privilege Manager MacOS Administrators	Can do anything an administrator can, but only for macOS policies and resource targets.	yes (macOS)	yes	yes	yes	yes	yes	yes (macOS)	yes	yes	yes
Privilege Manager Unix/Linux Administrators	Can do anything an administrator can, but only for Unix/Linux policies and resource targets.	yes (Unix/Linux)	yes	yes	yes	yes	yes	yes (Unix/Linux)	yes	yes	yes
	This is a read only role that										

Privilege Manager Users	can view all items, disclose passwords, and manage approvals.		yes		yes	yes			yes		
Privilege Manager View Password Role	Can only view current passwords and password change histories of managed users					yes					
Privilege Manager Windows Administrators	Can do anything an administrator can, but only for Windows policies and resource targets.	yes (Win)	yes	yes	yes	yes	yes	yes (Win)	yes	yes	yes

Refer to the Upgrade to learn more about Privilege Manager 's setup feature for updates.

In Privilege Manager tasks are activities that can be run on demand or regularly scheduled. If they are regularly scheduled, the schedule triggers the execution of a task instance, which performs specific actions based on set parameters.

Remote Scheduled Client Command type tasks that are considered agent-side require policies to be applied on the agent endpoints, the ones that are considered server-side do not require policies to be executed.

> **Note**: With Privilege Manager v11.2.0, UTC support on task schedules has been deprecated. Delinea recommends to disable UTC on any configured task schedules.

Tasks are set-up via **Admin | More** and then selecting the Tasks link. They are categorized as following:

- Client Tasks - Scheduled Jobs default policies
- Server Tasks
- HelpDesk Tasks
- Infrastructure Scheduled Activities

The following general task topics are available:

- Agent Hardening
- Maintenance tasks details
- Other tasks to schedule
  - Emailing Reports
- Reset Licensing
- Tasks Launching Executables without User Context

> **Note**: Upgrading to Privilege Manager v10.8 causes a task to run to merge computer groups and remove unused system computer groups. This primarily affects the Application Control policies that are using resource targets/computer groups named **All Windows Computers with Application Control Agent Installed**. With v10.8, those policies will use the **Windows Computers** computer group and macOS will use **MacOS Computers**.
>
> If you want to prevent this automatic merge, modify the XML of this item:
>
> PrivilegeManager/#/item/xml/b2e02684-d154-48ca-9987-12b1759df822
>
> Add on line 2 <adc:Attributes>NoModify</adc:Attributes>.

Client Tasks

Client Tasks are used to run or schedule activities at the endpoints, like:

- Basic Inventory, which triggers the agent to immediately report basic inventory back to the server. The information can be viewed for a computer under Known Data. Data sets are different based on endpoint operating system.
- Resource Discovery Client Task, which populates agent-side data for any resources that have been discovered but lack detailed information.
- Update Applicable Policies, which triggers policy updates at the endpoints.

  Note: All default enabled client tasks **are read-only items** and if any customization to the schedule is required, create a copy to add, save, and apply changes. Schedule changes can be added on the Triggers page when clicking the existing schedule and then **Show Advanced**.

  UTC support has been deprecated for these tasks. Delinea recommends to disable UTC on any configured task schedules.

These default or out-of-the-box client tasks are available via the **Scheduled Jobs** menu for each computer group. Details for each task are provided under the following topics:

- Basic Inventory
- Cleanup Agent Inventory Transfer
- COM Inventory Policy
- Cleanup Sent Privilege Manager Event
- Configure PM Remove Programs
- Default File Inventory Policy
- Deploy File Hash Exclusion Setting (Windows) - installed via Configuration Feeds only!
- Ensure UAC Override Setting
- Ignore macOS Catalina software update (Mac OS) - installed via Configuration Feeds only!
- Local User Inventory Policy
- Perform Resource Discovery
- Remove Successful Agent Events
- Reset ignored macOS software updates (Mac OS) - installed via Configuration Feeds only!
- Retry Errored TMS Events
- Set Agent Log Size
- Scheduled Check for Pending Tasks
- Shared Folder Inventory Policy
- Scheduled Registration
- Update Agent Commands
- Update Applicable Policies
- User Logon Inventory Policy
- Update Provisioned Resource Client Items
- Windows Service Inventory Policy

None Default Client Tasks

Client tasks can be created via **Admin | Tasks** on the Tasks tab by expanding **Jobs and Tasks** and selecting the **Client Tasks** folder.

Refer to Custom Client Tasks for examples and use cases.

Custom Client Tasks

Custom client tasks can be created on the following folder levels:

- Client Tasks
  - Client Item Updates
  - Directory Services
  - Event Maintenance
  - File Inventory
  - Local Security

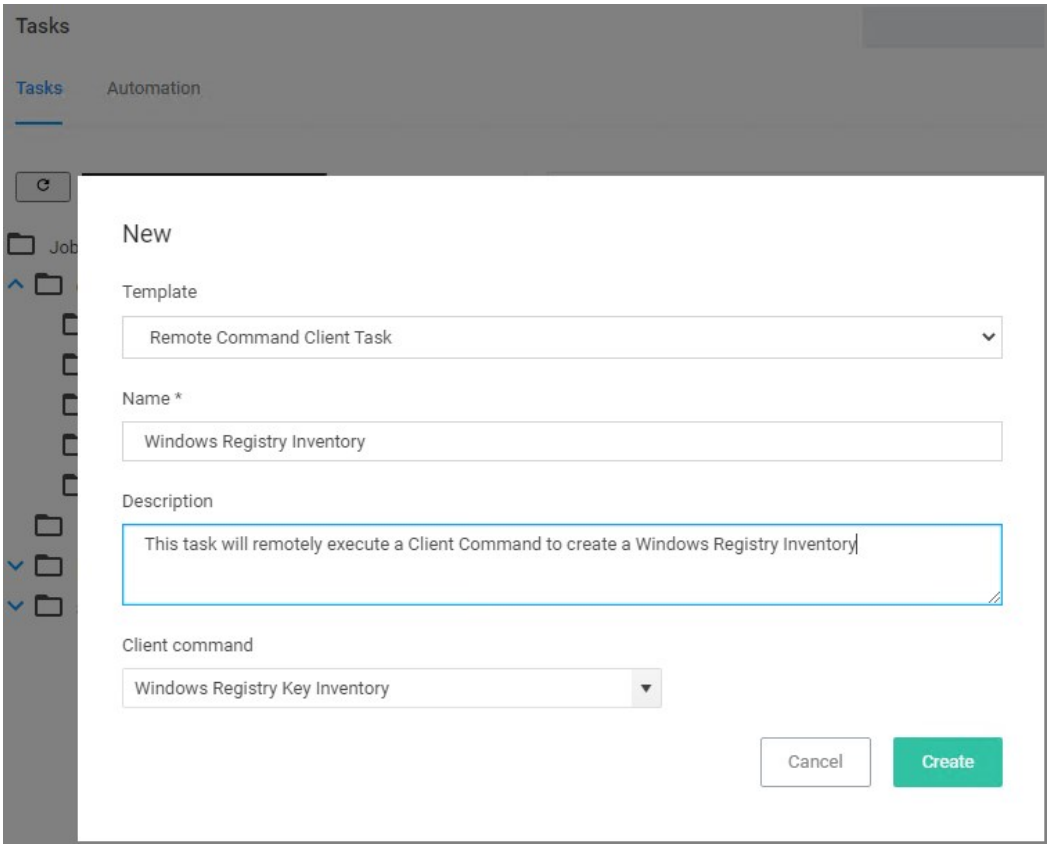
Refer to these examples:

- Windows Registry Inventory

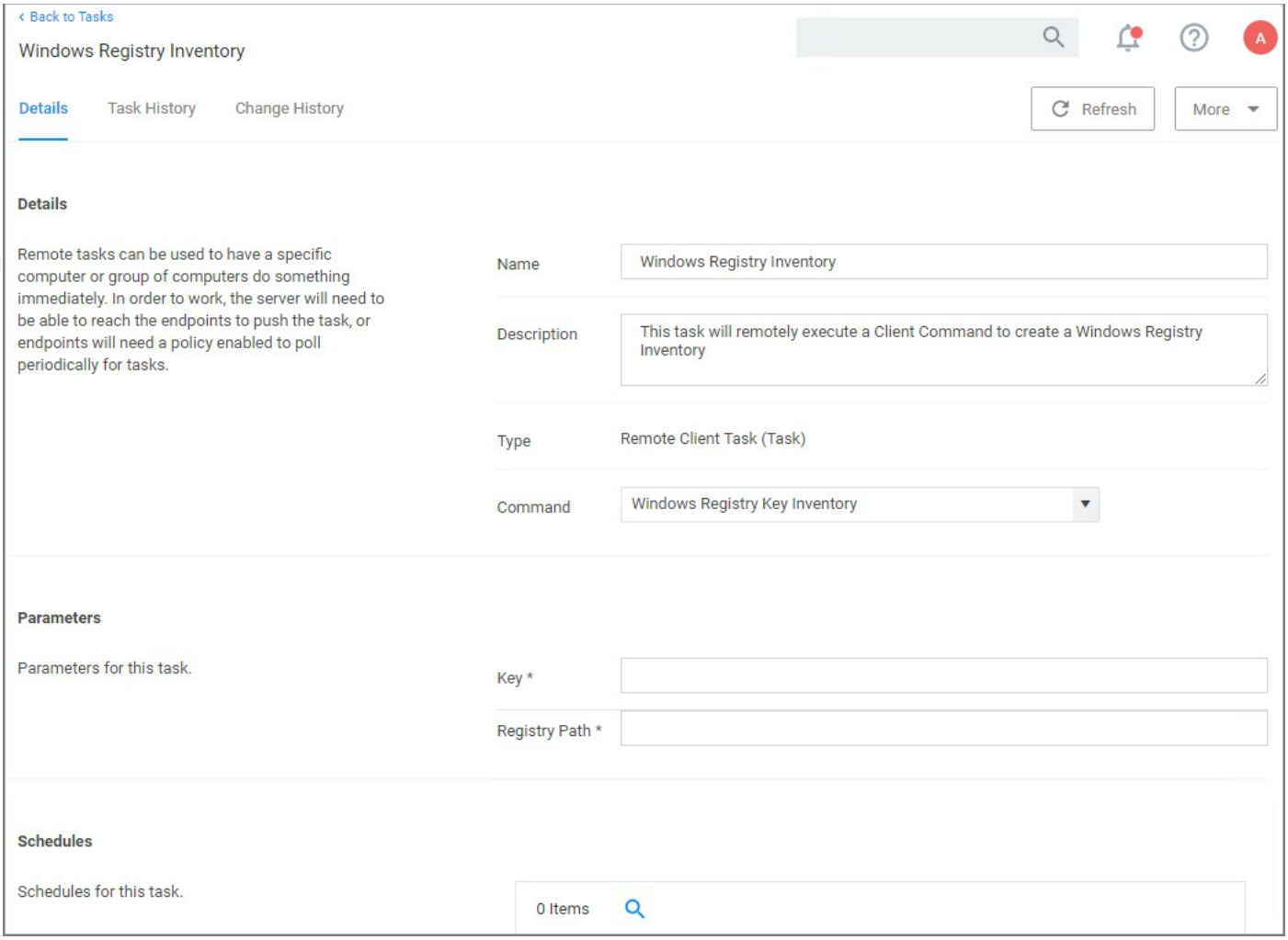
Windows Registry Inventory

The Windows Registry Inventory task executes a client command to create a Windows Registry Inventory.

1. Navigate to **Admin I Tasks**.
2. On the **Tasks** tab under **Jobs and Tasks**, click on **Client Tasks**.
3. Click **Create**.
4. From the **Template** drop-down, select **Remote Client Task**.
5. From the **Client command** drop-down, select **Windows Registry Inventory**.
6. Copy the command name to paste it into the Name field or enter a name to reflect your use case.
7. Modify the description.



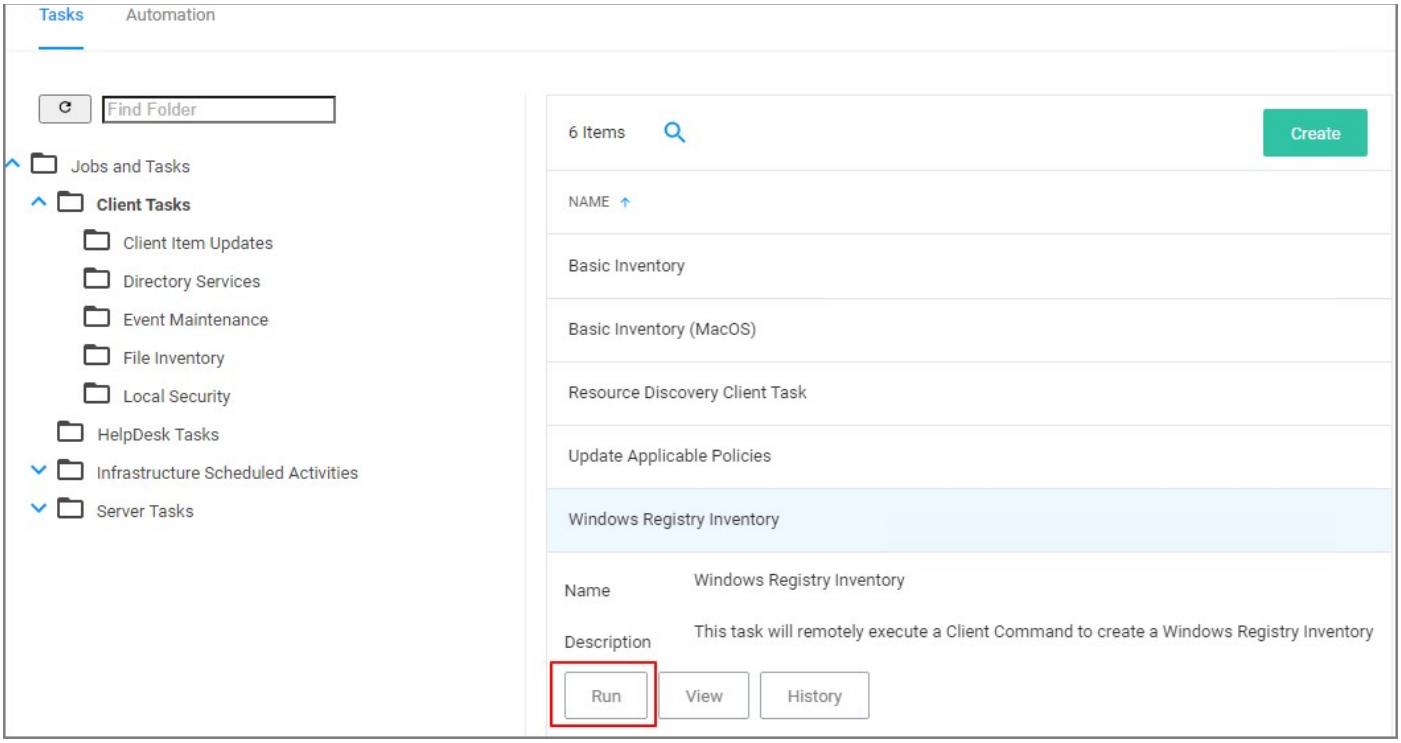
8. Click **Create**.



Customizing the Windows Registry Inventory Task

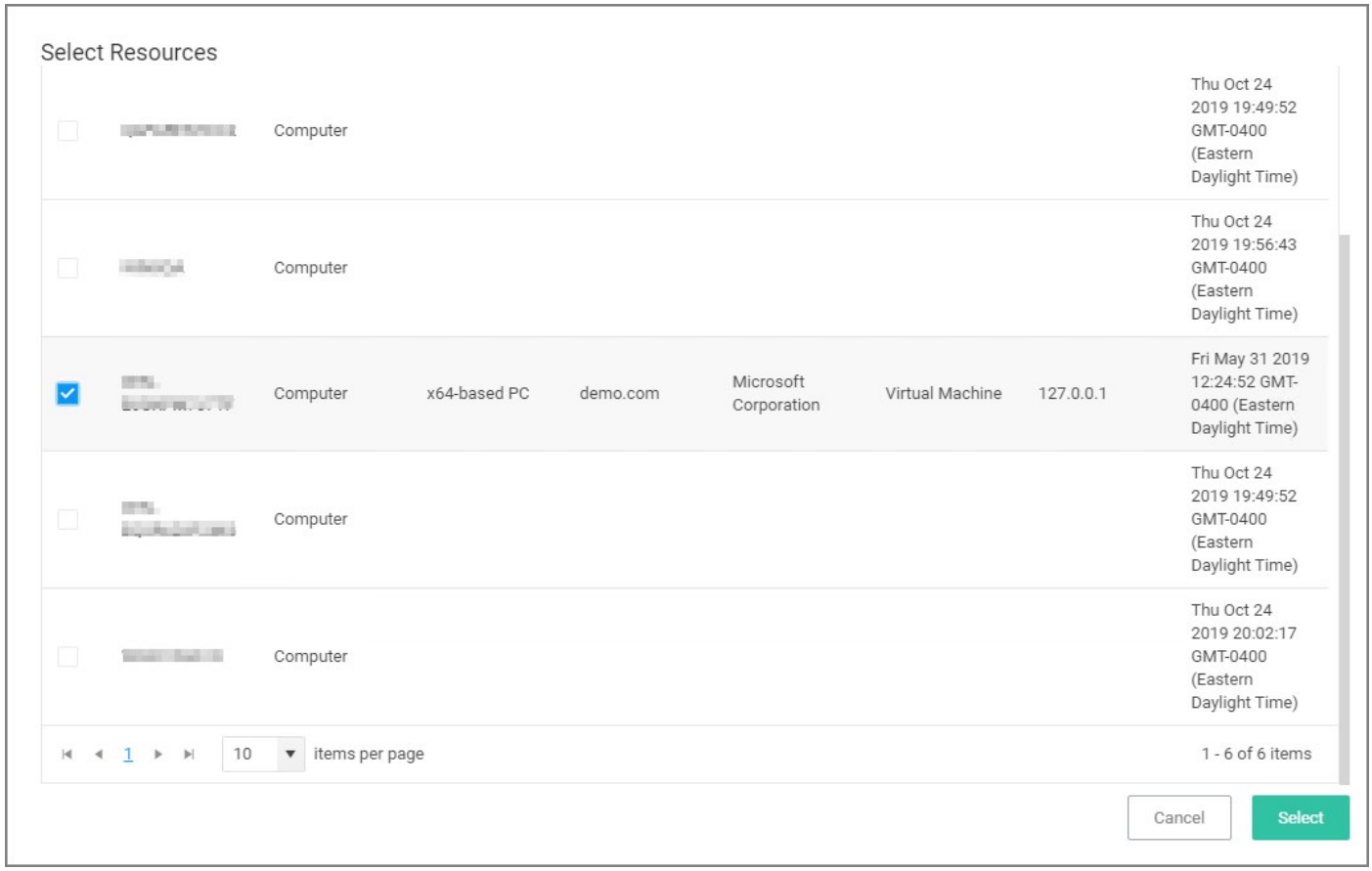
To be able to run the task, the key and registry path information needs to be provided. There are two options to run the task, via:

- the Windows Registry Inventory page or
- Run Task under the task quick view list:



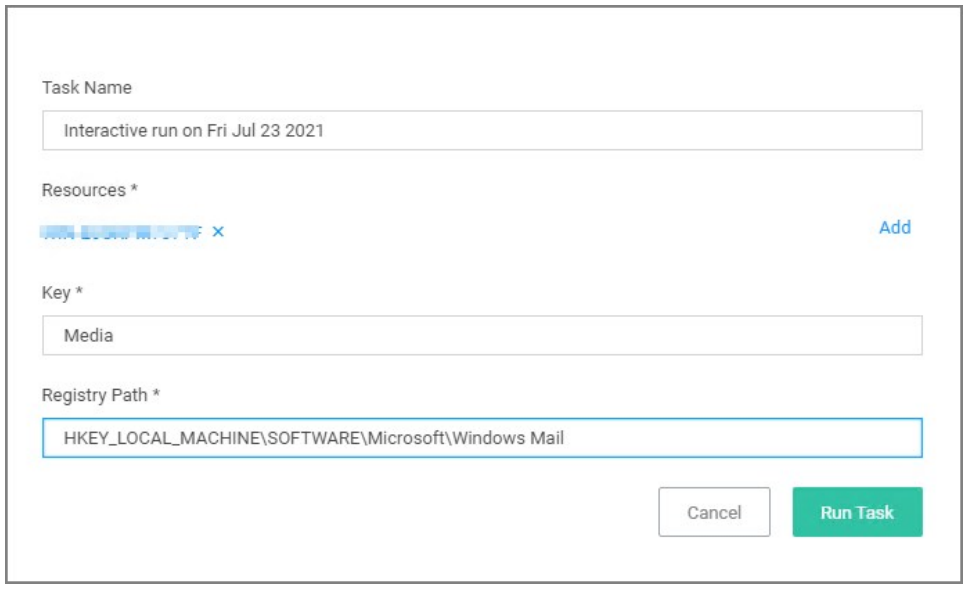
Using the Windows Registry Inventory page

1. On the Windows Registry Inventory task page under Parameters, enter the **Key** information, e.g. Media.
2. Enter the Registry Path, e.g. HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Windows Mail.
3. Click **Save Changes**.
4. From the **More** drop-down, select **Run Task**.
5. Add any number of resources you want to target with this task.

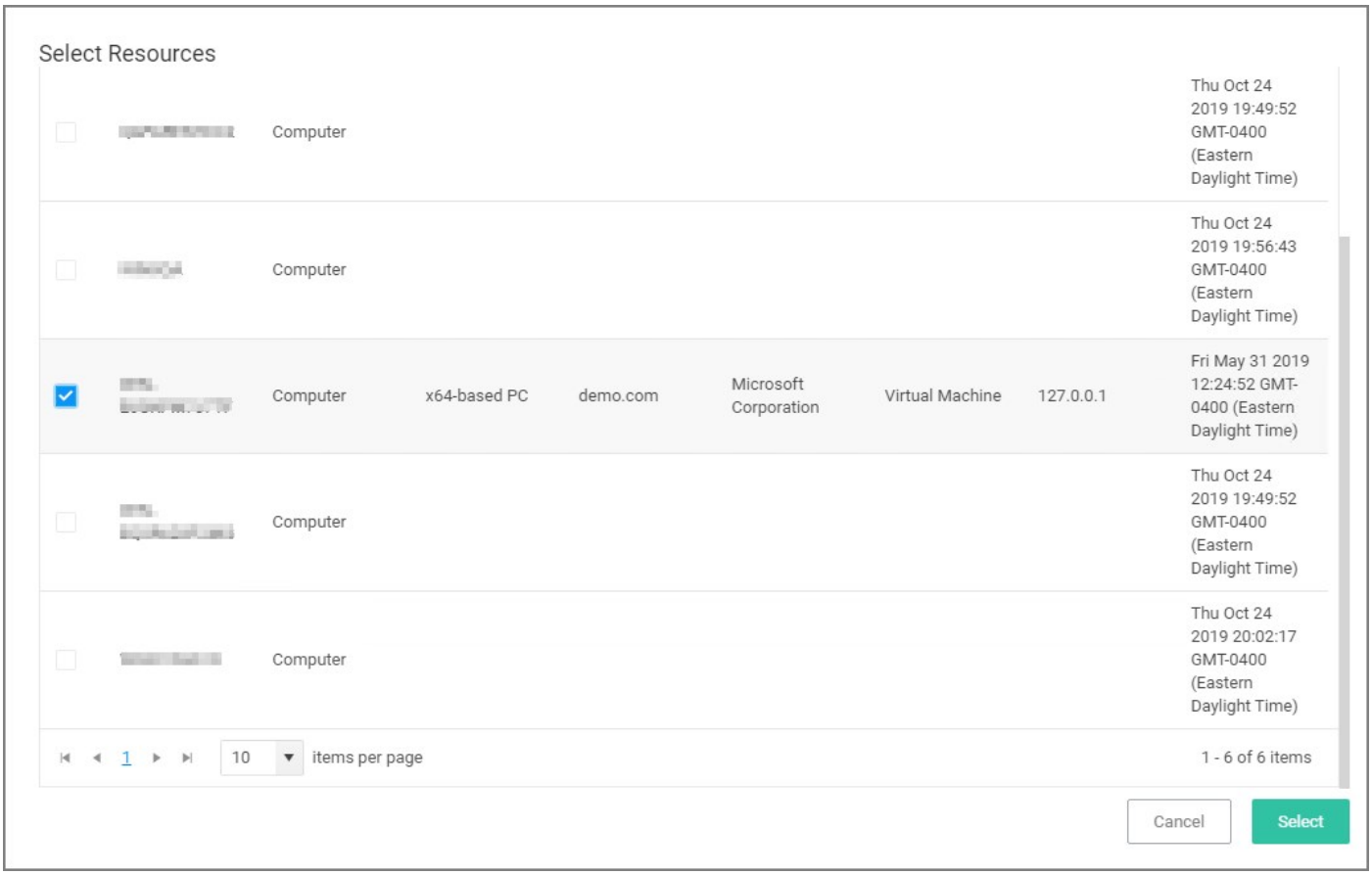


Note: Do not run this task for macOS or Unix/Linux agent endpoints, only select agent endpoints on Windows systems.

6. Click **Run Task**.

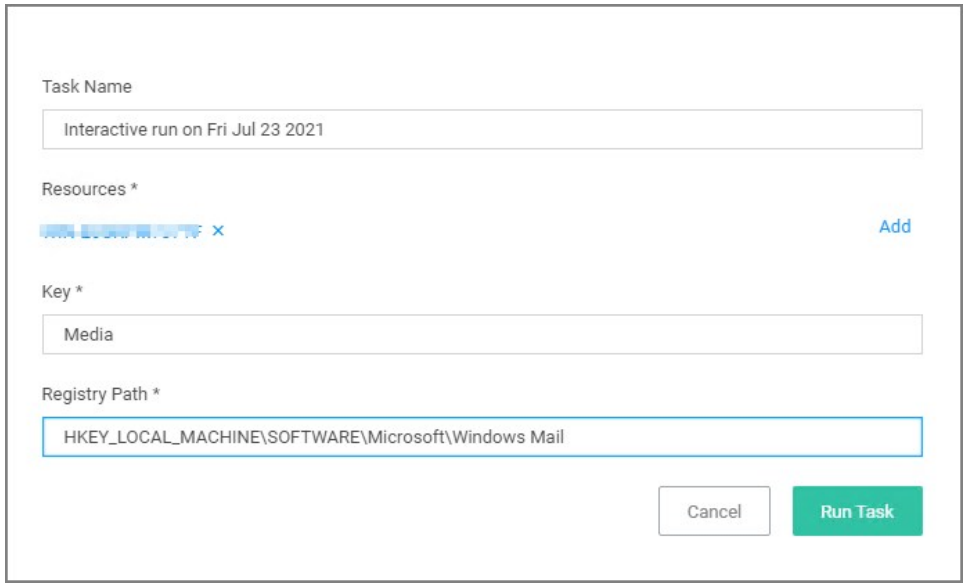


1. Select your Windows Registry Inventory task from the task list.
2. Click **Run**.
3. Add any number of resources you want to target with this task.



Note: Do not run this task for macOS or Unix/Linux agent endpoints, only select agent endpoints on Windows systems.

4. Enter the Key value.
5. Enter the Registry Path value.

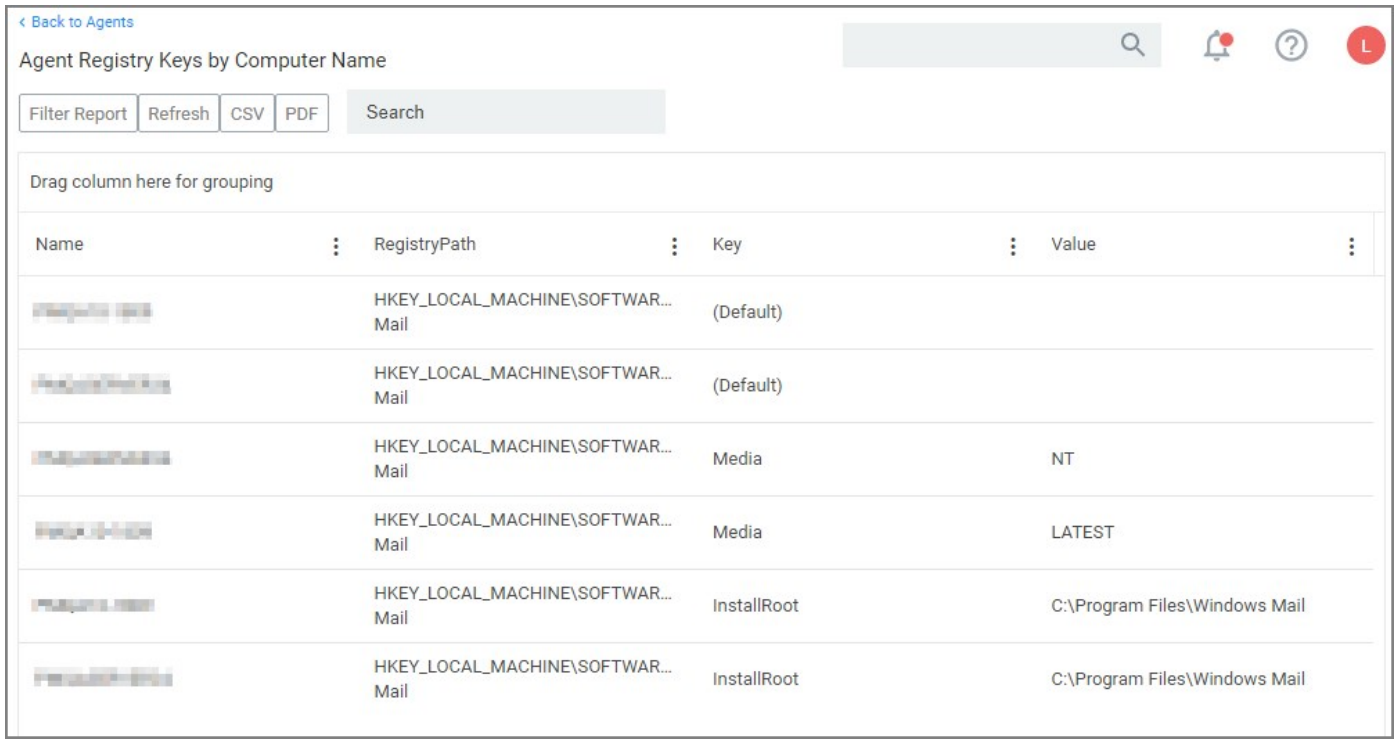


6. Click **Run Task**.

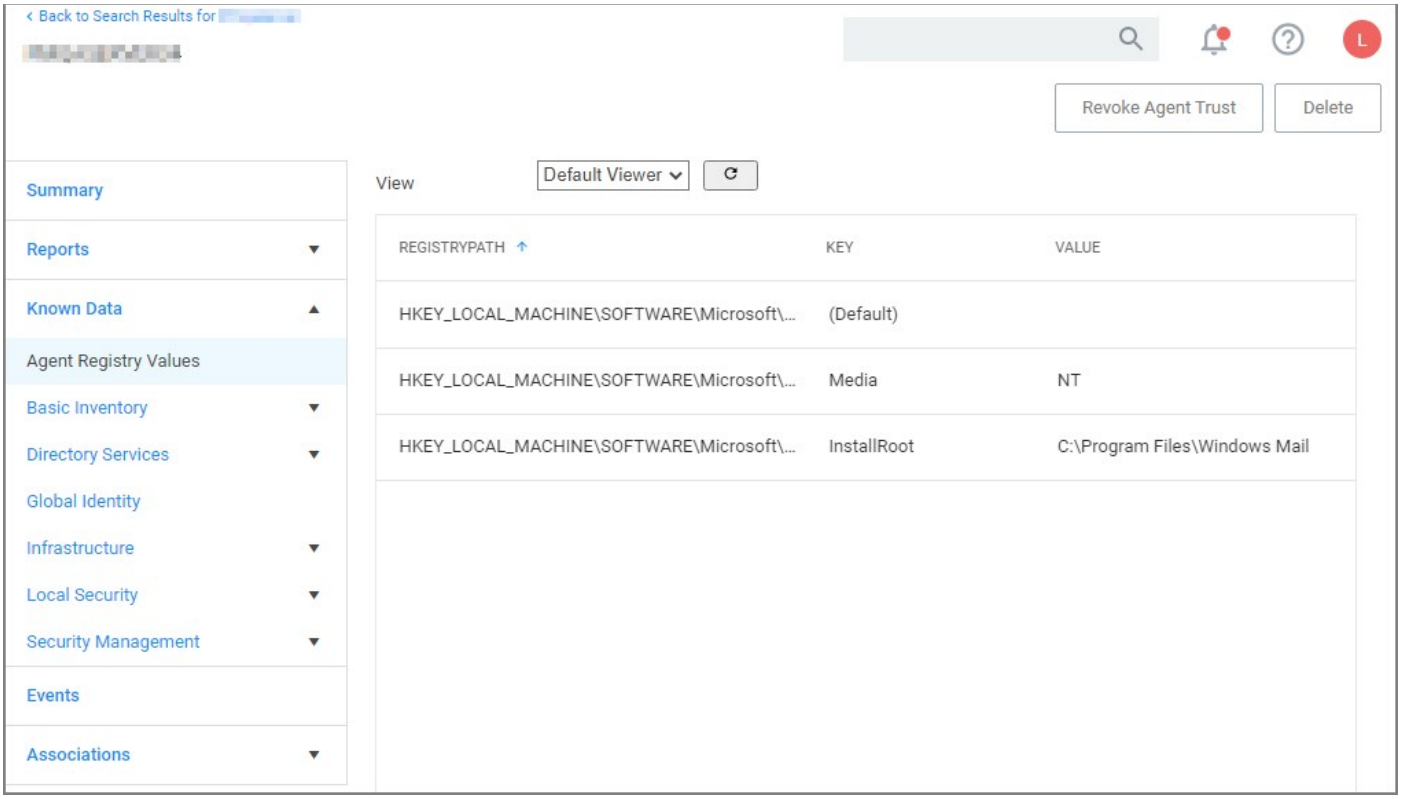
View the Results

The results of the task execution can be viewed via either Agent Reports or Known Data in the Resource Explorer:

- Navigate to **Admin I Agents I Agent Reports (tab) I Agent Registry Keys By Computer Name**:



- Navigate to the Computer Resource page and select **Known Data I Agent Registry Values**:


Back to Search Results for
Revoke Agent Trust
Delete
Summary
Reports
Known Data
Agent Registry Values
Basic Inventory
Directory Services
Global Identity
Infrastructure
Local Security
Security Management
Events
Associations
View
Default Viewer
REGISTRYPATH
KEY
VALUE
HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\...
(Default)
HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\...
Media
NT
HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\...
InstallRoot
C:\Program Files\Windows Mail

Basic Inventory

Basic Inventory (Initial, Windows), (Initial, Mac OS), and (Initial, Unix/Linux) are scheduled to run at a client's initial start-up after the agent is installed. The cause of the policy's trigger is the task creation.

The common Basic Inventory is scheduled to run daily at a set time.

For Windows systems the policies instruct the agent on the client system to report the following WMI classes to the server:

- Win32_ComputerSystem,
- Win32_ComputerSystemProduct
- Win32_OperatingSystem WMI

Basic Inventory (Initial, Windows)

Default Active	Yes
Command	Perform WMI Basic Inventory (Windows)
Parameters	WMI classes: ROOT\CIMV2:WIN32_ComputerSystemProduct, ROOT\CIMV2:Win32_ComputerSystem, ROOT\CIMV2:Win32_OperatingSystem
Triggers	Daily at 10:00:00 AM
	Upon task creation/modification
Targets	All Windows Managed Computers - No Basic Inventory (Target)
Conditions	None specified by default
Advanced	Allow task to be run on demand
(missed)	Run task as soon as possible after a scheduled start is missed
	Stop the task if it run for longer than 5 minutes.
(retry on failure)	Not set by default
Rule	Default (Do not start a new instance)
Agent Sent Size	250 KB
Agent Received Size	n/a
Restrictions	None

Basic Inventory (Windows)

Default Active	Yes

Command	Perform WMI Basic Inventory (Windows)
Parameters	WMI classes: ROOT\CIMV2:WIN32_ComputerSystemProduct, ROOT\CIMV2:Win32_ComputerSystem, ROOT\CIMV2:Win32_OperatingSystem
Triggers	Daily at 8:00:00 AM
Targets	Windows Computers
Conditions	None specified by default
Advanced	Allow task to be run on demand
(missed)	Run task as soon as possible after a scheduled start is missed
	Stop the task if it run for longer than 5 minutes.
(retry on failure)	Not set by default
Rule	Default (Do not start a new instance)
Agent Sent Size	
Agent Received Size	
Restrictions	

Basic Inventory (Initial, Mac OS)

Default Active	Yes
Command	Perform Basic Inventory (MacOS)
Triggers	Daily at 10:00:00 AM
	Upon task creation/modification
Targets	All MacOS Managed Computers - No Basic Inventory (Target)
Conditions	None specified by default
Advanced	Allow task to be run on demand
(missed)	Run task as soon as possible after a scheduled start is missed
	Stop the task if it run for longer than 5 minutes.
(retry on failure)	Not set by default
Rule	Default (Do not start a new instance)

Agent Sent Size	
Agent Received Size	
Restrictions	

Basic Inventory (Mac OS)

Default Active	Yes
Command	Perform Basic Inventory (MacOS)
Triggers	Daily at 10:00:00 AM
Targets	MacOS Computers
Conditions	None specified by default
Advanced	Allow task to be run on demand
(missed)	Run task as soon as possible after a scheduled start is missed
	Stop the task if it run for longer than 5 minutes.
(retry on failure)	Not set by default
Rule	Default (Do not start a new instance)
Agent Sent Size	
Agent Received Size	
Restrictions	

Basic Inventory (Initial, Unix/Linux)

This scheduled task triggers Unix/Linux agents who have not already sent basic inventory to send it for the first time.

Default Active	Yes
Command	Perform Basic Inventory (Unix/Linux)
Triggers	Daily at 10:00:00 AM
	Upon task creation/modification

Targets	Unix/Linux Computers
Conditions	None specified by default
Advanced	Allow task to be run on demand
(missed)	Run task as soon as possible after a scheduled start is missed
	Stop the task if it run for longer than 5 minutes.
(retry on failure)	Not set by default
Rule	Default (Do not start a new instance)
Agent Sent Size	
Agent Received Size	
Restrictions	

Basic Inventory (Unix/Linux)

This scheduled task triggers Unix/Linux agents who have already sent initial basic inventory.

Default Active	Yes
Command	Perform Basic Inventory (Unix/Linux)
Triggers	Daily at 10:00:00 AM
	Upon task creation/modification
Targets	Unix/Linux Computers
Conditions	None specified by default
Advanced	Allow task to be run on demand
(missed)	Run task as soon as possible after a scheduled start is missed
	Stop the task if it run for longer than 5 minutes.
(retry on failure)	Not set by default
Rule	Default (Do not start a new instance)
Agent Sent Size	
Agent Received Size	

Restrictions	

Cleanup Agent Inventory Transfer

Completes and cleans BITS transfers and temporary files used by the TMS Agent Inventory Helper.

Cleanup Agent Inventory Transfers (Windows)

Default Active	Yes
Command	Cleanup Agent Inventory Transfers
Triggers	Daily at 2:00:02 AM
Targets	10.8: Windows Computers
	Legacy: All Windows Computers with Application Control Agent Installed (Target)
Conditions	None specified by default
Advanced	Allow task to be run on demand
(missed)	Run task as soon as possible after a scheduled start is missed
	Stop the task if it run for longer than 30 minutes.
(retry on failure)	Not set by default
Rule	Default (Do not start a new instance)
Agent Sent Size	Depends on number of failed file transfers
Agent Received Size	n/a
Restrictions	None

Cleanup Sent Privilege Manager Events

Purges Agent events that have been successfully transmitted from managed endpoints to reclaim disk space.

Cleanup sent Privilege Manager Events (Windows)

Default Active	Yes
Command	Remove sent TMS Client Events (Windows)
Triggers	Daily at 2:00:02 AM
Targets	Windows Computers
Conditions	None specified by default
Advanced	Allow task to be run on demand
(missed)	Run task as soon as possible after a scheduled start is missed
	Stop the task if it run for longer than 30 minutes.
(retry on failure)	Not set by default
Rule	Default (Do not start a new instance)
Agent Sent Size	n/a
Agent Received Size	n/a
Restrictions	None

Cleanup sent Privilege Manager Events (Mac OS)

Default Active	Yes
Command	Remove sent TMS Client Events (MacOS)
Triggers	Daily at 2:30:02 AM
Targets	MacOS Computers
Conditions	None specified by default
Advanced	Allow task to be run on demand
(missed)	Run task as soon as possible after a scheduled start is missed

	Stop the task if it run for longer than 30 minutes.
(retry on failure)	Not set by default
Rule	Default (Do not start a new instance)
Agent Sent Size	n/a
Agent Received Size	n/a
Restrictions	None

Delinea

COM Inventory Policy

The purpose of this policy is to inventory COM+ and DCOM packages installed on the client. The inventory of these package

COM+ (Component Object Model) and DCOM (Distributed Component Object Model) utilize RPC calls for component communication and access to the object's methods and data. Running an inventory on those packages on a client is beneficial, if apps using those packages require elevation or should be denied.

Default Active	No
Command	Local Security COM Inventory Command
Triggers	Weekly on Sun at 2:00:00 AM
	Upon task creation/modification
Targets	All Windows Computers with Local Security Agent Installed (Target)
Conditions	None specified by default
Advanced	Allow task to be run on demand
(missed)	Run task as soon as possible after a scheduled start is missed
(stop)	Stop the task if it run for longer than 0 minute(s) - not set by default.
(retry on failure)	Not set by default
Rule	Default (Do not start a new instance)
Agent Sent Size	Depends on number of COM+ and DCOM packages
Agent Received Size	n/a
Restrictions	None

Configure Privilege Manager Remove Programs

Configure the Privilege Manager Remove Programs behavior.

For standard users the utility by default,

- adds all programs to the Control Panel.
- hides repair options for all installers.
- shows the blocked installer list.
- prevents Delinea software from being uninstalled.

Default Active	Yes
Command	Configure Remove Programs Application
Parameters	selected: Add to Control Panel, Hide Repair for All Installers, Show Blocked Installers in List, Vendor software that can't be Uninstalled: Thycotic.
Triggers	Daily at 10:00:00 PM (repeating every 2 hours for a duration of 24 hours)
	Upon task creation/modification
Targets	Windows Computers
Conditions	None specified by default
Advanced	Allow task to be run on demand
(missed)	Run task as soon as possible after a scheduled start is missed
	Stop the task if it run for longer than 3 day(s).
(retry on failure)	Not set by default
Rule	Default (Do not start a new instance)
Agent Sent Size	n/a
Agent Received Size	n/a
Restrictions	None

Default File Inventory Policy

The purpose of this policy is to inventory software programs running on the managed computer.

These policies use their respective OS based File Specification filters, which in turn have a set of optional additional filters to identify the programs to be inventoried.

Default File Inventory Policy (Windows)

Default Active	Yes
Command	File Inventory Command
Parameters	Default File Specification (Windows)
Triggers	Weekly on Sun at 3:00:00 AM
Targets	All Windows Computers with File Inventory Agent Installed (Target)
Conditions	Idle: None specified by default
	Power: Start the task only if the computer is on AC power, Stop if the computer switches to battery power
Advanced	Allow task to be run on demand
(missed)	Run task as soon as possible after a scheduled start is missed
	Stop the task if it run for longer than 3 day(s).
(retry on failure)	Not set by default
Rule	Default (Do not start a new instance)
Agent Sent Size	Depends on number of programs to inventory
Agent Received Size	n/a
Restrictions	None

Default File Inventory Policy (MacOS)

Default Active	Yes
Command	File Inventory Command
Parameters	Default File Specification (MacOS), Default App Bundles File Specification Filter
Triggers	Weekly on Sun at 3:00:00 AM

Targets	All Mac OS Computers with File Inventory Agent Installed (Target)
Conditions	Idle: None specified by default
	Power: Start the task only if the computer is on AC power, Stop if the computer switches to battery power
Advanced	Allow task to be run on demand
(missed)	Run task as soon as possible after a scheduled start is missed
	Stop the task if it run for longer than 3 day(s).
(retry on failure)	Not set by default
Rule	Default (Do not start a new instance)
Agent Sent Size	Depends on number of programs to inventory
Agent Received Size	n/a
Restrictions	None

Exclude File Extensions during File Hashing

The Delinea Application Control Agent collects the file hash of a new process and also the hashes of the child processes it runs. Sometimes non-executable file types cause execution issues during the hashing process. Via the downloadable Configuration Feeds, Delinea offers a policy template that provides the ability to exclude certain file extensions from the hash process.

If non-executable files like xlsx, xls, mdb, and accdb for example cause execution issues, download the **Secondary Hash Exclusions** policy template. By default .mdb and .accdb are excluded from the file hashing procedure in Privilege Manager . To not overwrite default behavior, make them a part of your exclude list at all times.

Always manually test a new policy deployment on a single endpoint, and only push the solution to all desired endpoints after a successful verification on the test environment.

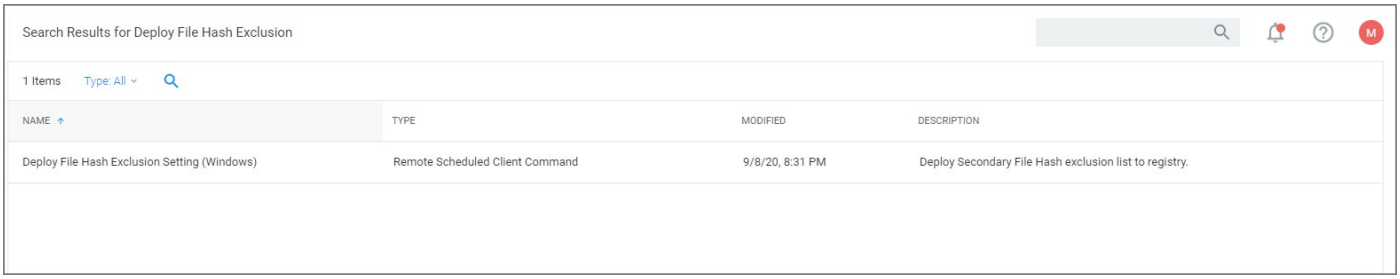
> **Note**: This feature requires a Delinea Control Agent version of 10.5 or greater and is **only available via Configuration Feeds installation**.

Default File Inventory Policy (Windows)

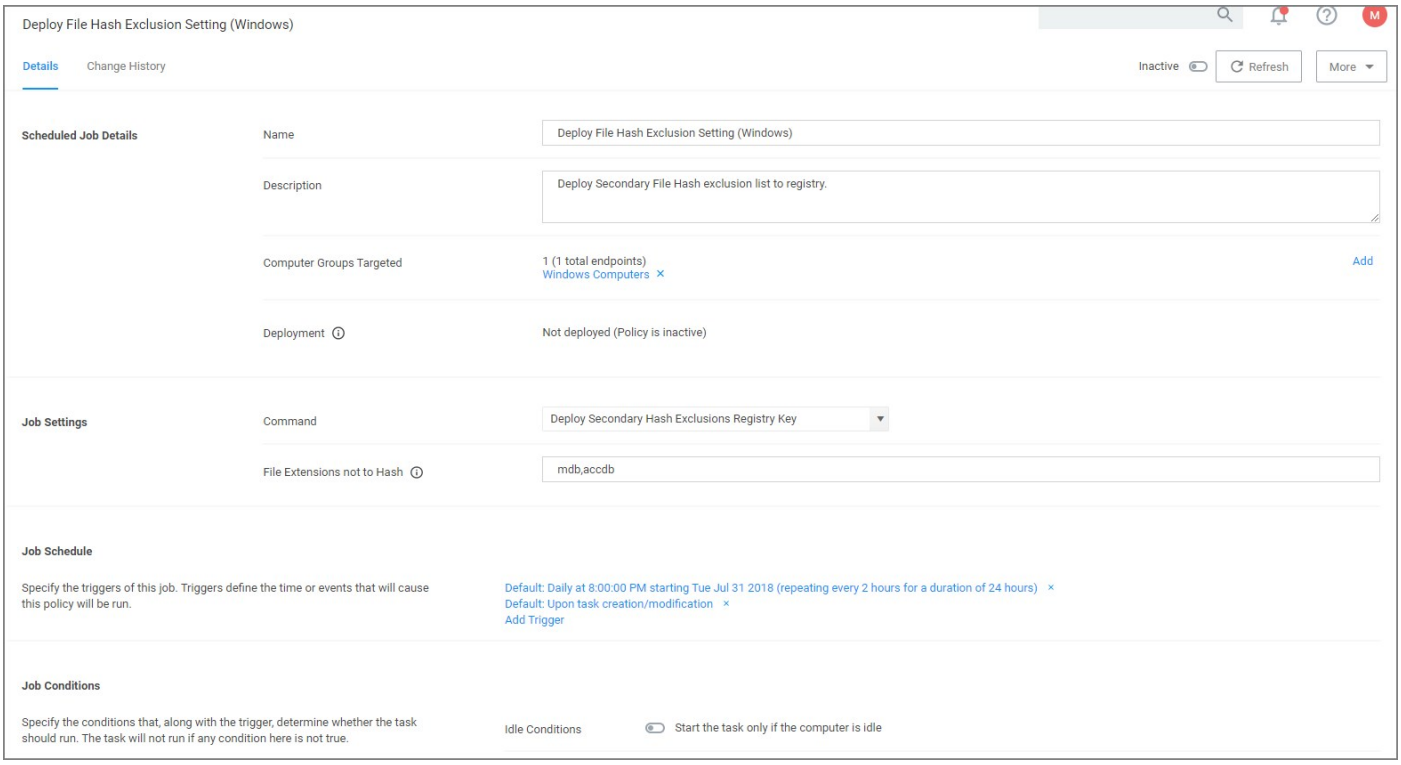
Default Active	No
Command	Deploy Secondary Hash Exclusions Registry Key
Parameters	Comma-separated List of extensions to exclude, default: *mdb,accdb*
Triggers	Default: Daily at 10:00:00 PM starting Tue Jul 31 2018 (repeating every 2 hours for a duration of 24 hours)
	Default: Upon task creation/modification
Targets	Windows Computers
Conditions	Idle: None specified by default
	Power: Start the task only if the computer is on AC power, Stop if the computer switches to battery power
Advanced	On: Allow task to be run on demand
	Off: Run task as soon as possible after a scheduled start is missed
	Off: Stop the task if it run for longer than 3 day(s).
	Off: If the task fails, attempt to restart
Rule	Default (Do not start a new instance)
Agent Sent Size	n/a
Agent Received Size	n/a
Restrictions	None

Create File Exclusion through Config Feed

1. Navigate to **Admin I Config Feeds** link.
2. Expand **Privilege Manager Configuration Feeds**.
3. Expand **Application Control Solution**.
4. Locate the **Application Control - Secondary Hash Exclusions** and click **Install**. The policy template is being downloaded and installed.
5. After the successful installation of the configuration feed, use **Search** and type **Secondary Hash Exclusion**.
6. From the results list select the new policy **Deploy File Hash Exclusion Setting (Windows)**.



7. Under **Job Settings** I **File Extensions not to Hash** you can add to the list of extensions, for example xlsx, xls. By default *.mdb* and *.accdb* extensions are already listed.



8. Click **Save Changes**.

Manually Test on Endpoint

To create manual secondary extension exceptions to file hash collection, add a registry key to the endpoint.

1. Open Registry Editor (regedit.exe) and navigate to

   HKLM:\Software\Policies\Arellia\AMS.

2. Create **New | String Value**

   1. Name: **SecondaryExtensionExclusions**
   2. Value: enter a comma-separated list of extensions to include, i.e. xlsx,xls,mdb,accdb.

3. Restart the Thycotic services on this machine.

Open a file matching an extension from your inclusion list and test if it works on this endpoint. If it works, create a Policy to push this registry key creation to all desired endpoints.

Ensure UAC Override Setting (Windows)

Ensures that the UAC Override Registry Key is set.

Default Active	Yes
Command	Ensure UAC Override Registry Key
Parameters	Default File Specification (Windows)
Triggers	Daily at 12:00:00 AM
	At startup
Targets	10.8: Windows Computers
	Legacy: All Windows Computers with Application Control Agent Installed (Target)
Conditions	None specified by default
Advanced	Allow task to be run on demand
(missed)	Run task as soon as possible after a scheduled start is missed
	Stop the task if it run for longer than 15 minute(s).
(retry on failure)	Not set by default
Rule	Default (Do not start a new instance)
Agent Sent Size	n/a
Agent Received Size	n/a
Restrictions	None

Local User Inventory Policy

The purpose of this policy is to inventory Local User accounts, groups and group membership on the client. This policy can also be used to inventory specific account privileges.

Local User Inventory Policy

Default Active	Yes
Command	Local Security Inventory Command
Triggers	Weekly on Sun at 2:00:00 AM
	Upon task creation/modification
Targets	All Windows Computers with Local Security Agent Installed (Target)
Conditions	None specified by default
Advanced	Allow task to be run on demand
(missed)	Run task as soon as possible after a scheduled start is missed
(stop)	Stop the task if it run for longer than 0 minute(s) - not set by default.
(retry on failure)	Not set by default
Rule	Default (Do not start a new instance)
Agent Sent Size	Depends on the number of users and groups
Agent Received Size	n/a
Restrictions	GPO - Audit Account Management enabled does not use Security Event Log

Local User Inventory Policy (MacOS)

Default Active	Yes
Command	Local Security Inventory Command
Triggers	Weekly on Sun at 2:00:00 AM
	Upon task creation/modification
Targets	MacOS Computers
Conditions	None specified by default

Advanced	Allow task to be run on demand
(missed)	Run task as soon as possible after a scheduled start is missed
(stop)	Stop the task if it run for longer than 0 minute(s) - not set by default.
(retry on failure)	Not set by default
Rule	Default (Do not start a new instance)
Agent Sent Size	Depends on the number of users and groups
Agent Received Size	n/a
Restrictions	None

Perform Resource Discovery

Schedule on which agents check with server to determine, if any local resources require discovery.

After any type of resource discovery, it might be possible that the server does not have all the details required to correctly identify what was initially provided by the agent. The agent periodically checks in with the server, if any additional information needs to be discovered. The server then sends information back to the agent about any pending item clarifications.

Perform Resource Discovery (Windows)

Default Active	Yes
Command	Resource Discovery Command
Triggers	Daily at 12:00:00 AM (repeating every 4 hours for a duration of 24 hours)
	Upon task creation/modification
Targets	Windows Computers
Conditions	None specified by default
Advanced	Allow task to be run on demand
(missed)	Run task as soon as possible after a scheduled start is missed
(stop)	Stop the task if it run for longer than 1 hour.
(retry on failure)	Not set by default
Rule	Default (Do not start a new instance)
Agent Sent Size	Depends on server request
Agent Received Size	Depends on request volume and the number of items pending on server for clarification
Restrictions	None

Perform Resource Discovery (Mac OS)

Default Active	Yes
Command	Resource Discovery Command
Triggers	Daily at 3:00:00 AM (repeating every 4 hours for a duration of 24 hours)
	Upon task creation/modification

Targets	MacOS Computers
Conditions	Idle: None specified by default
	Power: Start the task only if the computer is on AC power, Stop if the computer switches to battery power
Advanced	Allow task to be run on demand
(missed)	Run task as soon as possible after a scheduled start is missed
(stop)	Stop the task if it run for longer than 3 day(s).
(retry on failure)	Not set by default
Rule	Default (Do not start a new instance)
Agent Sent Size	Depends on server request
Agent Received Size	Depends on request volume and the number of items pending on server for clarification
Restrictions	None

Remove Successful Agent Events

Remove Successful Agent Events (Unix/Linux)

This command will remove agent events that have been successfully uploaded to Privilege Manager .

Default Active	Yes
Command	Remove Successful Agent Events (Unix/Linux)
Triggers	Daily at 2:30:02 AM
Targets	Unix/Linux Computers
Deployment	The deployment status of this policy, if this number is 0 or incorrect, then the Resource and Collection Targeting Update Task might need to run.
Conditions	None specified by default
Advanced	On: Allow task to be run on demand
	On: Run task as soon as possible after a scheduled start is missed
	Off: If the task fails, attempt to restart
	On: Stop the task if it runs for longer than 5 minute(s).
Rule	Default (Do not start a new instance)
Agent Sent Size	
Agent Received Size	
Restrictions	None

Retry Errored TMS Events

Scan Agent queue for any events that require retransmission.

Retry errored TMS Events (Windows)

Default Active	Yes
Command	Retry errored TMS Client Events (Windows)
Parameters	Force Resending (incl. transient errors)
Triggers	Daily at 2:00:02 AM
Targets	Windows Computers
Conditions	None specified by default
Advanced	Allow task to be run on demand
(missed)	Run task as soon as possible after a scheduled start is missed
(stop)	Stop the task if it run for longer than 1 hour(s).
(retry on failure)	Not set by default
Rule	Default (Do not start a new instance)
Agent Sent Size	Depends on number of items that require retransmission
Agent Received Size	n/a
Restrictions	None

Retry errored TMS Events (Mac OS)

Default Active	Yes
Command	Retry errored TMS Client Events (MacOS)
Triggers	Daily at 2:00:02 AM
Targets	MacOS Computers
Conditions	None specified by default
Advanced	Allow task to be run on demand

(missed)	Run task as soon as possible after a scheduled start is missed
(stop)	Stop the task if it run for longer than 1 hour(s).
(retry on failure)	Not set by default
Rule	Default (Do not start a new instance)
Agent Sent Size	Depends on number of items that require retransmission
Agent Received Size	n/a
Restrictions	None

Scheduled Check for Pending Tasks

Scheduled Check Pending Client Tasks - Internet Clients (Windows)

Initiate a check for pending client tasks. Used by agents that are unable to receive an incoming connection from the server.

Default Active	Yes
Command	Check Pending TMS Client Tasks
Triggers	Daily at 2:00:00 AM (repeating every 4 hours)
Targets	All Windows Managed Computers - Internet Client (Target)
Conditions	None specified by default
Advanced	On: Allow task to be run on demand
	On: Run task as soon as possible after a scheduled start is missed
	Off: If the task fails, attempt to restart
	On: Stop the task if it runs for longer than 5 minute(s).
Rule	Default (Do not start a new instance)
Agent Sent Size	n/a
Agent Received Size	Depends on number of pending items
Restrictions	None

Scheduled Registration

Scheduled Registration (Windows)

Initiate agent registration with server.

Default Active	Yes
Command	Check Pending TMS Client Tasks
Triggers	Daily at 2:00:00 AM (repeating every 4 hours)
Targets	All Windows Managed Computers - Internal Network (Target)
Conditions	None specified by default
Advanced	On: Allow task to be run on demand
	On: Run task as soon as possible after a scheduled start is missed
	Off: If the task fails, attempt to restart
	On: Stop the task if it runs for longer than 5 minute(s).
Rule	Default (Do not start a new instance)
Agent Sent Size	5 KB
Agent Received Size	n/a
Restrictions	None

Scheduled Registration - Internet Clients (Windows)

Initiate agent registration with server less frequently than internal clients.

Default Active	Yes
Command	Check Pending TMS Client Tasks
Triggers	Daily at 2:00:00 AM (repeating every 4 hours)
Targets	All Windows Managed Computers - Internet Client (Target)
Conditions	None specified by default
Advanced	On: Allow task to be run on demand

	On: Run task as soon as possible after a scheduled start is missed
	Off: If the task fails, attempt to restart
	On: Stop the task if it runs for longer than 5 minute(s).
Rule	Default (Do not start a new instance)
Agent Sent Size	5 KB
Agent Received Size	n/a
Restrictions	None

Scheduled Registration (Mac OS)

When this policy is triggered the Agent will attempt (or re-attempt) to register with the server.

Default Active	Yes
Command	Start TMS Registration
Triggers	Daily at 2:00:00 AM (repeating every 1 hour for a duration of 24 hours)
Targets	All MacOS Managed Computers - Internal Network (Target)
Conditions	None specified by default
Advanced	On: Allow task to be run on demand
	On: Run task as soon as possible after a scheduled start is missed
	Off: If the task fails, attempt to restart
	On: Stop the task if it runs for longer than 5 minute(s).
Rule	Default (Do not start a new instance)
Agent Sent Size	5 KB
Agent Received Size	n/a
Restrictions	None

Scheduled Registration (Unix/Linux)

This agent-scheduled task refreshes registration data for the assigned agents.

Default Active	Yes
Command	Start TMS Registration
Triggers	Daily at 2:00:00 AM (repeating every 1 hour for a duration of 24 hours)
Targets	Unix/Linux Computers
Deployment	The deployment status of this policy, if this number is 0 or incorrect, then the Resource and Collection Targeting Update Task might need to run.
Conditions	None specified by default
Advanced	On: Allow task to be run on demand
	On: Run task as soon as possible after a scheduled start is missed
	Off: If the task fails, attempt to restart
	On: Stop the task if it runs for longer than 5 minute(s).
Rule	Default (Do not start a new instance)
Agent Sent Size	5 KB
Agent Received Size	n/a
Restrictions	None

Set Agent Log Size

Configures the size of the Agent Event Log. By default this is set to 1 MB. For most environments it is recommended to increase the Agent Event Log size. This task can be used to override the default setting.

Default Active	No
Command	Set Agent Log Size (Windows)
Parameters	Log Size: 20 MB
Triggers	Daily at 6:00:00 AM
Targets	Windows Computers
Conditions	None specified by default
Advanced	Allow task to be run on demand
(missed)	Run task as soon as possible after a scheduled start is missed
(stop)	Stop the task if it run for longer than 0 minute(s). - not set by default
(retry on failure)	Not set by default
Rule	Default (Do not start a new instance)
Agent Sent Size	n/a
Agent Received Size	n/a
Restrictions	None

Shared Folder Iventory Policy

The purpose of this policy is to inventory shared folders on the client.

Default Active	No
Command	Local Security Shared Folder Inventory Command
Triggers	Weekly on Sun at 2:00:00 AM
Targets	All Windows Computers with Local Security Agent Installed (Target)
Conditions	None specified by default
Advanced	Allow task to be run on demand
(missed)	Run task as soon as possible after a scheduled start is missed
(stop)	Stop the task if it run for longer than 0 minute(s). - not set by default
(retry on failure)	Not set by default
Rule	Default (Do not start a new instance)
Agent Sent Size	Depends on number of shared folders on the endpoint
Agent Received Size	n/a
Restrictions	None

Update Agent Commands

Task sends up request for hashes of specific client item types. With Privilege Manager version 10.7 and up returned items are filters based on the last time run the task ran.

Update Agent Commands (Windows)

Instructs Agent to update any agent commands if required.

Default Active	Yes
Command	Force Client Item Update Command
Parameters	Category: Agent Command
Triggers	Daily at 12:00:00 AM
Targets	Windows Computers
Conditions	None specified by default
Advanced	Allow task to be run on demand
(missed)	Run task as soon as possible after a scheduled start is missed
(stop)	Stop the task if it run for longer than 10 minute(s).
(retry on failure)	Not set by default
Rule	Default (Do not start a new instance)
Agent Sent Size	
Agent Received Size	
Restrictions	None

Update Agent Commands (Mac OS)

When this policy is triggered the Agent will update agent command items.

Default Active	Yes
Command	Force Client Item Update Command
Parameters	Category: Agent Command
Triggers	Daily at 12:00:00 AM

Targets	MacOS Computers
Conditions	None specified by default
Advanced	Allow task to be run on demand
(missed)	Run task as soon as possible after a scheduled start is missed
(stop)	Stop the task if it run for longer than 10 minute(s).
(retry on failure)	Not set by default
Rule	Default (Do not start a new instance)
Agent Sent Size	
Agent Received Size	Depends on the number of updated commands
Restrictions	None

Update Applicable Policies

Update Applicable Policies (Windows)

Instructs Agent to check with server for policy changes.

Default Active	Yes
Command	Update Applicable Policies
Triggers	Daily at 12:00:00 AM (repeating every 30 minutes for a duration of 24 hours)
Targets	All Windows Managed Computers - Internal Network (Target)
Conditions	None specified by default
Advanced	On: Allow task to be run on demand
	On: Run task as soon as possible after a scheduled start is missed
	Off: If the task fails, attempt to restart
	On: Stop the task if it runs for longer than 5 minute(s).
Rule	Default (Do not start a new instance)
Agent Sent Size	
Agent Received Size	
Restrictions	None

Update Applicable Policies - Internet Clients (Windows)

Instructs Agent to check with server for policy changes less frequently than internal clients.

Default Active	Yes
Command	Update Applicable Policies
Triggers	Daily at 12:00:00 AM (repeating every 2 hours for a duration of 24 hours)
Targets	All Windows Managed Computers - Internet Client (Target)
Conditions	None specified by default
Advanced	On: Allow task to be run on demand

	On: Run task as soon as possible after a scheduled start is missed
	Off: If the task fails, attempt to restart
	On: Stop the task if it runs for longer than 5 minute(s).
Rule	Default (Do not start a new instance)
Agent Sent Size	
Agent Received Size	
Restrictions	None

Update Applicable Policies (Mac OS)

When this policy is triggered the Agent will check the server for updated policies.

Default Active	Yes
Command	Update Applicable Policies
Triggers	Daily at 12:00:00 AM (repeating every 30 minutes for a duration of 24 hours)
Targets	All MacOS Managed Computers - Internal Network (Target)
Conditions	None specified by default
Advanced	On: Allow task to be run on demand
	On: Run task as soon as possible after a scheduled start is missed
	Off: If the task fails, attempt to restart
	On: Stop the task if it runs for longer than 5 minute(s).
Rule	Default (Do not start a new instance)
Agent Sent Size	
Agent Received Size	Depends on the number of updated policies
Restrictions	None

Update Applicable Policies (Unix/Linux)

This remote-scheduled command will update policies applicable to the assigned agents.

Default Active	Yes
Command	Update Applicable Policies
Triggers	Daily at 12:00:00 AM (repeating every 2 hours for a duration of 24 hours)
Targets	Unix/Linux Computers
Deployment	The deployment status of this policy, if this number is 0 or incorrect, then the Resource and Collection Targeting Update Task might need to run.
Conditions	None specified by default
Advanced	On: Allow task to be run on demand
	On: Run task as soon as possible after a scheduled start is missed
	Off: If the task fails, attempt to restart
	On: Stop the task if it runs for longer than 5 minute(s).
Rule	Default (Do not start a new instance)
Agent Sent Size	
Agent Received Size	
Restrictions	None

Update Provisioned Resource Client Items

These policies trigger the Agent to force a Client Item Update for provisioned resources on the specific client system.

Update Provisioned Resource Client Items (Windows)

Default Active	Yes
Command	Force Client Item Update Command
Parameters	Category: Provisioned Resource
Triggers	Daily at 8:00:00 AM starting Sun Apr 07 2013
Targets	All Windows Computers with Local Security Agent Installed (Target)
Conditions	None specified by default
Advanced	Allow task to be run on demand
(missed)	Run task as soon as possible after a scheduled start is missed
(stop)	Stop the task if it run for longer than 0 minute(s). - not set by default
(retry on failure)	Not set by default
Rule	Default (Do not start a new instance)
Agent Sent Size	Depends on the number of provisioned items
Agent Received Size	n/a
Restrictions	None

Update Provisioned Resource Client Items (MacOS)

Default Active	Yes
Command	Force Client Item Update Command
Parameters	Category: Provisioned Resource
Triggers	Daily at 8:00:00 AM starting Sun Apr 07 2013
Targets	All MacOS Computers with Local Security Agent Installed (Target)
Conditions	None specified by default

Advanced	Allow task to be run on demand
(missed)	Run task as soon as possible after a scheduled start is missed
(stop)	Stop the task if it run for longer than 0 minute(s). - not set by default
(retry on failure)	Not set by default
Rule	Default (Do not start a new instance)
Agent Sent Size	Depends on the number of provisioned items
Agent Received Size	n/a
Restrictions	None

User Logon Inventory Policy

Updates user logon data based on a given schedule to provide primary user information.

Default Active	Yes
Command	Windows Logon Event Processor
Triggers	Weekly on Sun at 2:00:00 AM
Targets	All Windows Computers with Local Security Agent Installed (Target)
Conditions	None specified by default
Advanced	Allow task to be run on demand
(missed)	Run task as soon as possible after a scheduled start is missed
(stop)	Stop the task if it run for longer than 0 minute(s). - not set by default
(retry on failure)	Not set by default
Rule	Default (Do not start a new instance)
Agent Sent Size	Depends on number of user sessions
Agent Received Size	n/a
Restrictions	None

Windows Service Inventory Policy

The purpose of this policy is to inventory Windows Services on the client.

Default Active	Yes
Command	Local Security Service Inventory Command
Triggers	Weekly on Sun at 2:00:00 AM
	Upon task creation/modification
Targets	All Windows Computers with Local Security Agent Installed (Target)
Conditions	None specified by default
Advanced	Allow task to be run on demand
(missed)	Run task as soon as possible after a scheduled start is missed
(stop)	Stop the task if it ran for longer than 0 minute(s). - not set by default
(retry on failure)	Not set by default
Rule	Default (Do not start a new instance)
Agent Sent Size	Depends on the number of installed windows services
Agent Received Size	n/a
Restrictions	None

Ignoring macOS Updates

> **Important**: This does not apply to macOS systems based on Big Sur (macOS 11.0) or later. The --ignore option is not supported on Big Sur system or any agents installed on Catalina and up using SYSEX.

MacOS has a command-line utility that can be used to ignore specific software updates in the Software Update preference pane. To provide a way in Privilege Manager to ignore or reset ignored OS updates, the following policies are available via configuration feeds.

- The **Ignore macOS Catalina software update (Mac OS)** - The Ignore macOS Catalina Software Update (Mac OS) policy uses the Run Shell Script (Mac OS) command.
- The **Reset ignored macOS software updates (Mac OS)** - The Reset ignored macOS Softwares Update (Mac OS). uses the Run Shell Script (Mac OS) command.

Ignore macOS Catalina software update (Mac OS)

Default Active	No
Command	Run Shell Script (MacOS)
Parameters	softwareupdate --ignore "macOS Catalina"
Triggers	Default: Default: Daily at 5:00:00 AM starting Fri Dec 20 2019
Targets	MacOS Computers
Conditions	Idle: None specified by default
	Power: Start the task only if the computer is on AC power, Stop if the computer switches to battery power
Advanced	On: Allow task to be run on demand
	Off: Run task as soon as possible after a scheduled start is missed
	Off: Stop the task if it run for longer than 3 day(s).
	Off: If the task fails, attempt to restart
Rule	Default (Do not start a new instance)
Agent Sent Size	n/a
Agent Received Size	n/a
Restrictions	None

Reset ignored macOS software updates (Mac OS)

Default Active	No

Command	Run Shell Script (MacOS)
Parameters	softwareupdate --reset-ignored
Triggers	Default: Default: Daily at 5:30:00 AM starting Fri Dec 20 2019
Targets	MacOS Computers
Conditions	Idle: None specified by default
	Power: Start the task only if the computer is on AC power, Stop if the computer switches to battery power
Advanced	Allow task to be run on demand
	Off: Run task as soon as possible after a scheduled start is missed
	Off: Stop the task if it run for longer than 3 day(s).
	Off: If the task fails, attempt to restart
Rule	Default (Do not start a new instance)
Agent Sent Size	n/a
Agent Received Size	n/a
Restrictions	None

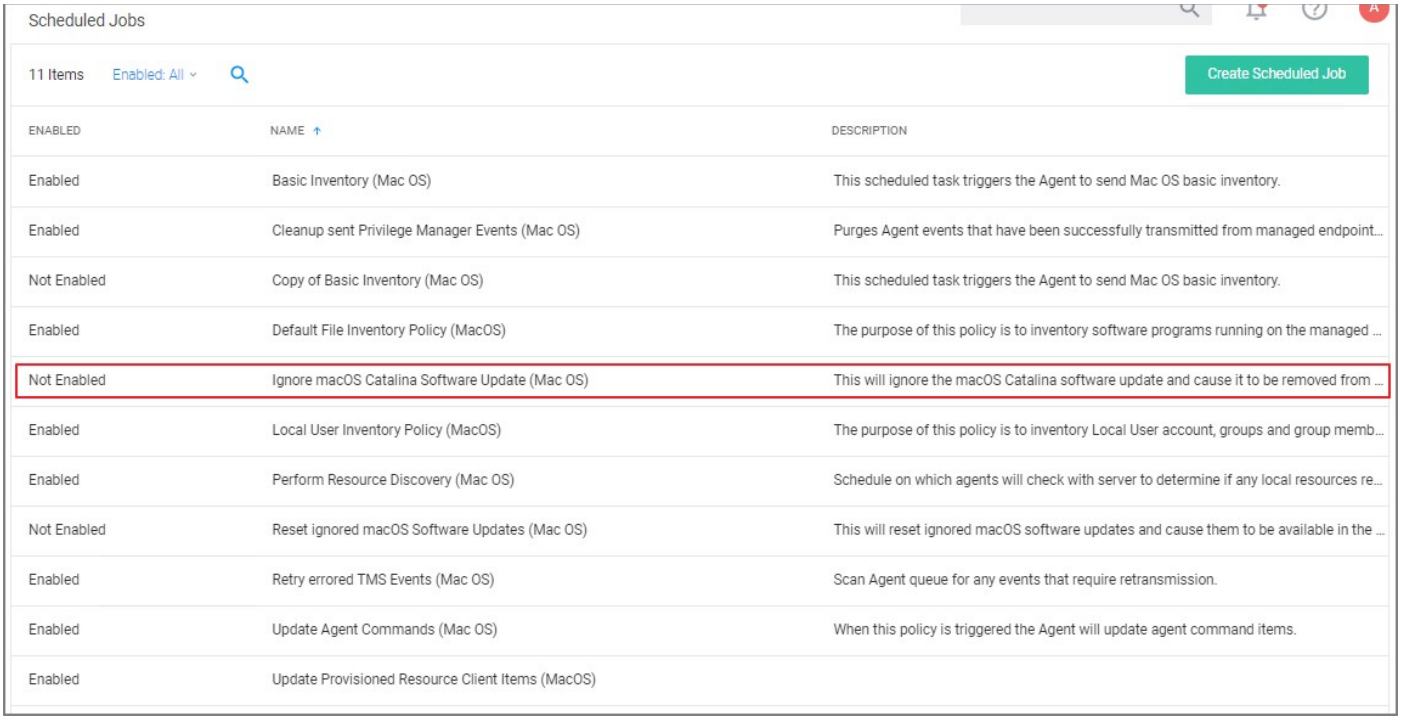
Configuration Feeds

1. Navigate to **Admin | Config Feeds**.
2. Expand **Privilege Manager Product Configurations**.
3. Expand **Application Control Solution**.
4. Install **Ignore macOS Catalina software update** and **Reset ignored macOS software updates**.

Enabling the Policies

Following the config feeds install, you need to enable the policy to ignore the update.

1. Navigate to your macOS Computer Group and click **Scheduled Jobs**.
2. Click on **Ignore macOS Catalina Software Update (Mac OS)**.



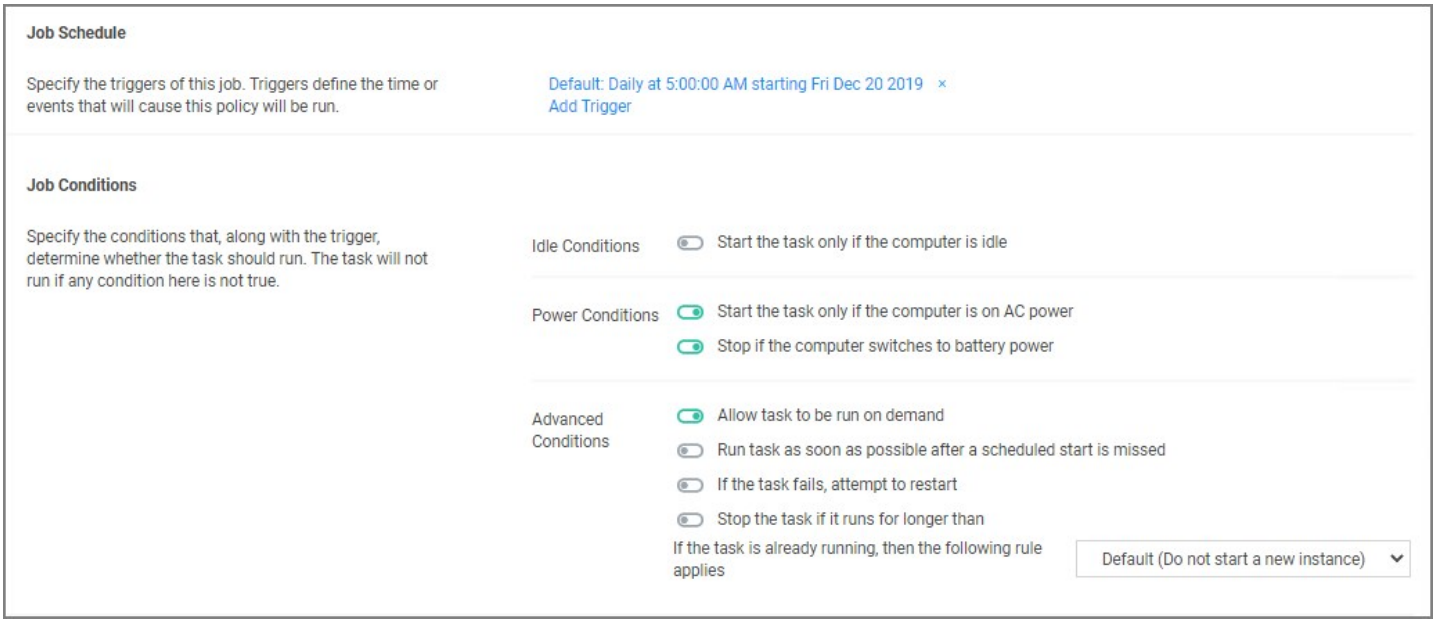
3. Set the **Inactive** switch to **Active**.
4. Click **Save Changes**.

Resetting the Policy

1. To reset the changes, set the ignore updates policy to inactive and save the changes.
2. Navigate to the **Reset ignored macOS Software Updates (Mac OS)** policy.
3. Set the **Inactive** switch to **Active**.
4. Click **Save Changes**.

Scheduling

You can edit when the policy runs by scrolling down to the Job Schedule and Job Conditions section on the policy page.



Note: Once the policies are enabled they do not run immediately. If you would like the policies to run right way you will need to click on the information icon next to Deployment and select the **Resource and Collection Targeting Update** task.

Server Tasks

Note: With Privilege Manager v11.2.0, UTC support on task schedules has been deprecated. Delinea recommends to disable UTC on any configured task schedules.

Component Based List of Default Tasks

Application Control	Get Security Rating for File	Get/update the security rating for the given file.
	Get Security Ratings for Files	Get/update the security ratings for the given files.
	Refresh Security Rating Reports	Refreshes old security rating reports for resources rated by the given provider.
Application Control Cylance		
Email Tasks	Send Gauge Summary E-mail Task	Send a specific report on a schedule.
File Inventory	Inventory File	Run this task to collect detailed information on the selected file for reports, filters, etc.
	Inventory File Resource	Run this task to update information on an existing file resource for reports, filters, etc.
	Inventory Package	Run this task to scan the contents of a package and report detailed information on files it contains for reports, filters, etc.
	Inventory Package with Exclusions	Run this task to scan the contents of a package and report detailed information on files it contains for reports, filters, etc.
	Inventory Packages	Run this task to scan the contents of a list of packages and report detailed information on files it contains for reports, filters, etc.
	Inventory Packages Referenced in Allow Lists	Run this task to collect detailed information for files contained in packages referenced in one or more allow lists.
	Inventory Uploaded File	This task is used internally to collect detailed information from files uploaded remotely to the server. It is visible only for status information and troubleshooting.
Foreign Systems		
	Refer to	Directory Services for details on the following Directory Services Tasks
Directory Services	Import Directory	Run this task to import/update directory OUs, users, and containers.
	Import Directory Computers	Run this task to import/update directory computer resources.

	Import Directory Sites	Run this task to import/update directory sites.
	Import Specific Azure AD Users and Groups	Import specific users and groups from Azure Active Directory.
	Synchronize Organizational Unit Server Task	Synchronize Organizational Unit Server Task.
	Update OU Directory Scope Collections Membership	This task updates the membership of Directory Services OU scope collections.
	Update OU Directory Scope Collections Membership 2	This task updates the membership of Directory Services OU scope collections.
DS - Maintenance	Delete Imported Azure AD Resources	This task will delete users, groups, and devices from Privilege Manager that were imported from Azure AD.
	Refer to	Directory Services Maintenance for details on the following Directory Services Maintenance Tasks
	Delete Imported Directory Resources	This task will delete users, groups, computers, OUs, and Sites from Privilege Manager that were imported from AD.
	Merge Computers with Duplicate Azure Device IDs	This task will merge computers with duplicate Azure AD Device IDs.
	Merge Duplicate Account SID Resources	Run this task to merge resources that have a duplicate account SID.
	OU Directory Scope Collection Update	This task updates the membership of Directory Services OU scope collections based on a selected Schedule Type.
	Update OU Directory Scope Collections Membership	This task updates the membership of Directory Services OU scope collections.
	Update OU Directory Scope Collections Membership 2	This task updates the membership of Directory Services OU scope collections.
Obsolete	Import Azure Ad Users/Groups	This task is obsolete and should not be used anymore.
	SCCM	Tasks here let you synchronize users, computers, and specific SCCM collection.
	ServiceNow	Creates ServiceNow Approval Request items.
	Symantec Management Platform	Tasks here let you synchronize SMP collections and package(s).
	Syslog	Creates tasks to send events to the configured syslog server based on specific templates.
Local Security	Update Primary User	Updates the primary user for the given computer resource.

	Update Primary User for Collection	Updates the primary user for each computer in the given collection.
Thycotic One Users	Sync users with Thycotic One	Run this task to synchronize PM users with a Thycotic One instance.
Security	Rebuild Item Security Cache	Run this task to mark all entries in the item security cache as invalid, forcing a rebuild.
	Refresh Agent Secrets	Run this task to refresh the agent secrets that were generated before the given max age.
	Revoke Agent Secrets	Run this task to revoke the secrets from one or more agents.
	Revoke Secrets from All Agents	Run this task to revoke the secrets from all agents.
	Set Security Rating	Run this task to manually set the security rating (used in filters) for the selected files.
	Update Security Ratings for Resource	Run this task to update the security ratings (used in filters) for the given resources using the given rating system.
Utility	Delete Item	This task will delete an item, and optionally dependent children.
	Reset Licensing	This task will reset licensing, deleting all installed license keys.
	Update Server Gauge State	This task will update the state of a server gauge.
	Merge Duplicate Resources	This task will identify and merge Computers, Domain Users and Domain Groups with duplicate attributes, based on the Auto-Merge Computer settings in the Advanced Configuration.
	Merge Specific Resources	This task will merge one or more resources into a selected target resource, regardless of whether they have any duplicate data.

Directory Services Tasks

The directory services tasks in this component cover different types of directory services imports.

You find the tasks when you:

1. Navigate to **Admin I Tasks**.
2. On the Tasks tab under Jobs and Tasks, select **Server Tasks**.
3. Select **Foreign Systems I Directory Services**.

Import Azure AD Resources

This task will import devices, users, and groups from Azure AD.

Parameters

- Directory: The Azure AD instance from which to import/synchronize.
- Import Users: If set, then this task will search for users in the given Azure AD instance.
- Import Groups: If set, then this task will search for groups in the given Azure AD instance.
- Import Devices: If set, then this task will search for devices in the given Azure AD instance.
- Create users when not matched: If set, then users not matched to an existing resource in Privilege Manager will be created.
- Create groups when not matched: If set, then groups not matched to an existing resource in Privilege Manager will be created.
- Create devices when not matched: If set, then devices not matched to an existing resource in Privilege Manager will be created.

  Note: Devices are particularly vulnerable to duplication due to the lack of identifiers in Azure AD. Refer to Best Practices for AD Imports for details.

Import Directory Computers

Run this task to import/update computers and their OUs.

Parameters

- Directory Id: The directory Id from which to import/synchronize. This is the only required parameter for this task.
- Directory partner Id:
- Full sync:
- Query: Where the object class = the computer.
- Search configuration:

Import Directory Sites

Run this task to import/update directory sites.

Parameters

- Directory Id: The directory Id from which to import/synchronize. This is the only required parameter for this task.
- Directory partner Id:
- Full sync:
- Query: Where the object class = the site.
- Search configuration:

Import Directory Users and Groups

Run this task to import/update users, groups, and their OUs.

Parameters

- Directory Id: The directory Id from which to import/synchronize. This is the only required parameter for this task.
- Directory partner Id:
- Full sync:
- Query: Where the object class = the site.
- Search configuration:

Import Directory OU

Run this task to import resources from a specific Directory Services OU.

Parameters

- Organization Unit:

Import Specific Azure AD Users and Groups

This task will import the specified users, devices, groups, and optionally child groups, users, and devices from Azure AD.

Parameters

- Azure AD: The Azure AD instance from which to import/synchronize.
- Create groups when not matched (no): If set, then devices not matched to an existing resource in Privilege Manager will be created.

  Note: Devices are particularly vulnerable to duplication due to the lack of identifiers in Azure AD. Refer to Best Practices for AD Imports for details.
- Create groups when not matched (yes): If set, then groups not matched to an existing resource in Privilege Manager will be created.
- Create users when not matched: If set, then users not matched to an existing resource in Privilege Manager will be created.
- Device names: The display names of the devices to import. Leave empty for none. Use a newline between names. End name with '*' to find all that start with the given name.
- Group display names: The display names of the groups to import. Leave empty for none. Use a newline between names. End name with '*' to find all that start with the given name.
- Import child devices: If set, then child devices of any discovered group will be imported.
- Import child users: If set, then child users of any discovered group will be imported.
- Recurse child groups: If set, then child groups of the given group names will be imported recursively.
- User names: The display names or user principal names (UPN) of the users to import. Leave empty for none. Use a newline between names. End name with '*' to find all that start with the given name.

Merge Duplicate Resources

This task will identify and merge Computers, Domain Users and Domain Groups with duplicate attributes, based on the **Auto-Merge Computer** settings in the Advanced Configuration.

Merge Specific Resources

This task will merge user defined Computers, Domain Users and Domain Groups with duplicate attributes, based on the **Auto-Merge Computer** settings in the Advanced Configuration.

Directory Services Maintenance Tasks

The tasks in this component all help with the maintenance of directory services resources. These tasks are read-only items that need to be duplicated for any task customization.

You find the tasks when you:

1. Navigate to **Admin | Tasks**.
2. On the Tasks tab under Jobs and Tasks, select **Server Tasks**.
3. Select **Foreign Systems | Directory Services**.
4. Select **Maintenance**.

Delete Imported Azure AD Resources

This task will delete users, groups, and devices from Privilege Manager that were imported from Azure AD.

Parameters

- Directory: The Azure AD instance from which to delete resources.
- Delete users: If set, then this task will delete users from Privilege Manager imported from the given directory.
- Delete groups: If set, then this task will delete groups from Privilege Manager imported from the given directory.
- Delete devices: If set, then this task will delete computers and other devices from Privilege Manager imported from the given directory.
- Ignore dependencies: Use this as a last resort if you wish to delete and ignore any items that depend on the resources being deleted.

Delete Imported Directory Resources

This task will delete users, groups, computers, OUs, and Sites from Privilege Manager that were imported from AD.

Parameters

- Directory: The AD instance from which to delete resources.
- Delete users: If set, then this task will delete users from Privilege Manager imported from the given directory.
- Delete groups: If set, then this task will delete groups from Privilege Manager imported from the given directory.
- Delete computers: If set, then this task will delete computers from Privilege Manager imported from the given directory.
- Delete organization: If set, then this task will delete OUs from Privilege Manager imported from the given directory.
- Delete sites: If set, then this task will delete sites from Privilege Manager imported from the given directory.
- Ignore dependencies: Use this as a last resort if you wish to delete and ignore any items that depend on the resources being deleted.

Merge Computers with Duplicate Azure Device IDs

This task will merge computers with duplicate Azure AD Device IDs.

Parameters

- Directory: The Azure AD instance from which to merge resources. Leave empty for all.

Merge Duplicate Account SID Resources

Run this task to merge resources that have a duplicate account SID.

Parameters

- Target Resources: Leave empty to automatically discover all. Select only the target, not its duplicates. Any resources with SID matching a target will be merged into the target.

OU Directory Scope Collection Update

This task updates the membership of Directory Services OU scope collections based on a selected Schedule Type.

Update OU Directory Scope Collections Membership

This task updates the membership of Directory Services OU scope collections.

Parameters

- Directory collections: The set of directory collections whose membership will be updated.

Update OU Directory Scope Collections Membership 2

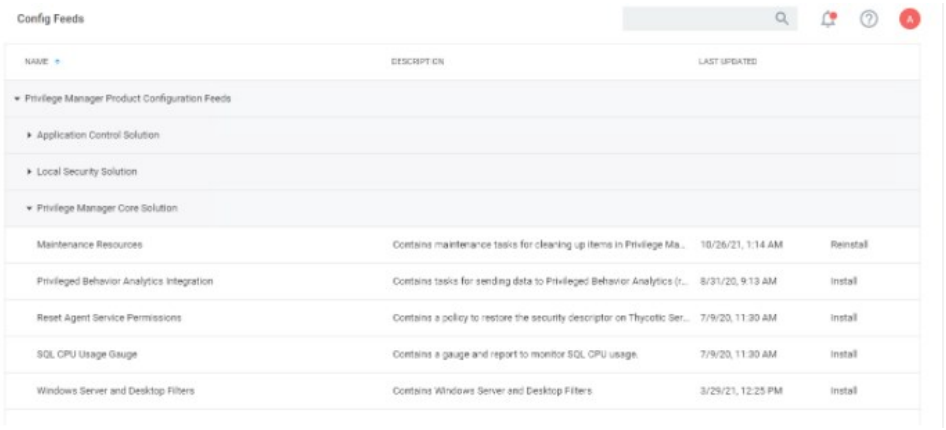
This task updates the membership of Directory Services OU scope collections.

Parameters

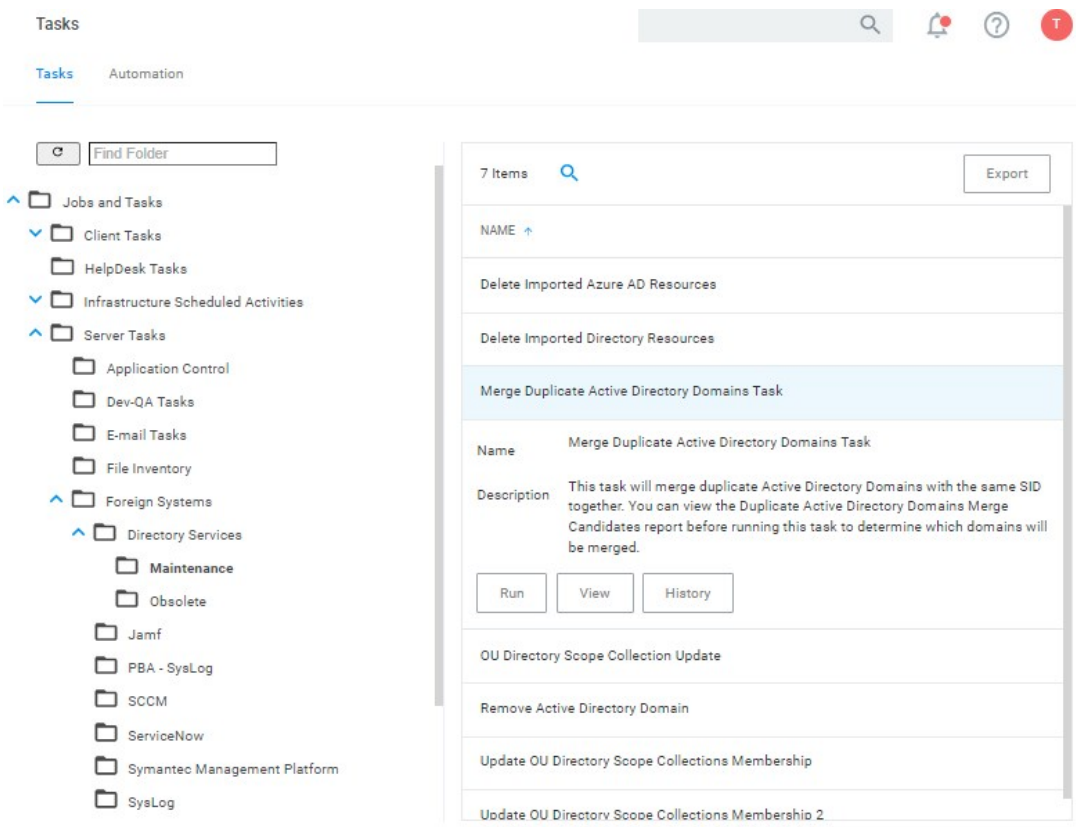
This task has a **Force all** parameter that forces the membership of all directory scope collections to update, regardless of an update required detection.

Merge Duplicate Active Directory Domains

1. Navigate to **Admin | Config Feeds**.
2. From the **Privilege Manager Product Configuration Feeds | Privilege Manager Core Solution**, install the **Maintenance Resource**.

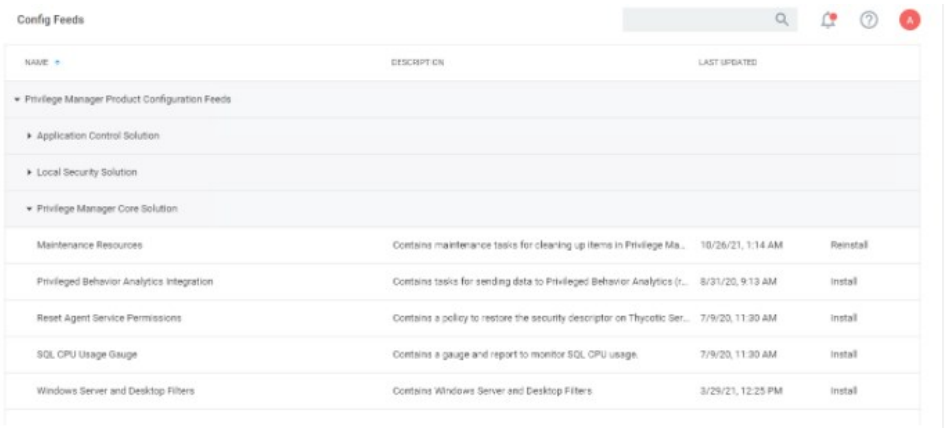


3. Navigate to **Reports**.
4. From the **Diagnostics** section, select **Duplicate Active Directory Domain Merge Candidates**. Identify the existing rows that require merging.
5. To merge domains, navigate to **Admin | Tasks**.
6. Expand **Server Tasks**.
7. Select **Foreign Systems | Directory Services | Maintenance**.
8. Select and run **Merge Duplicate Active Directory Domains**.

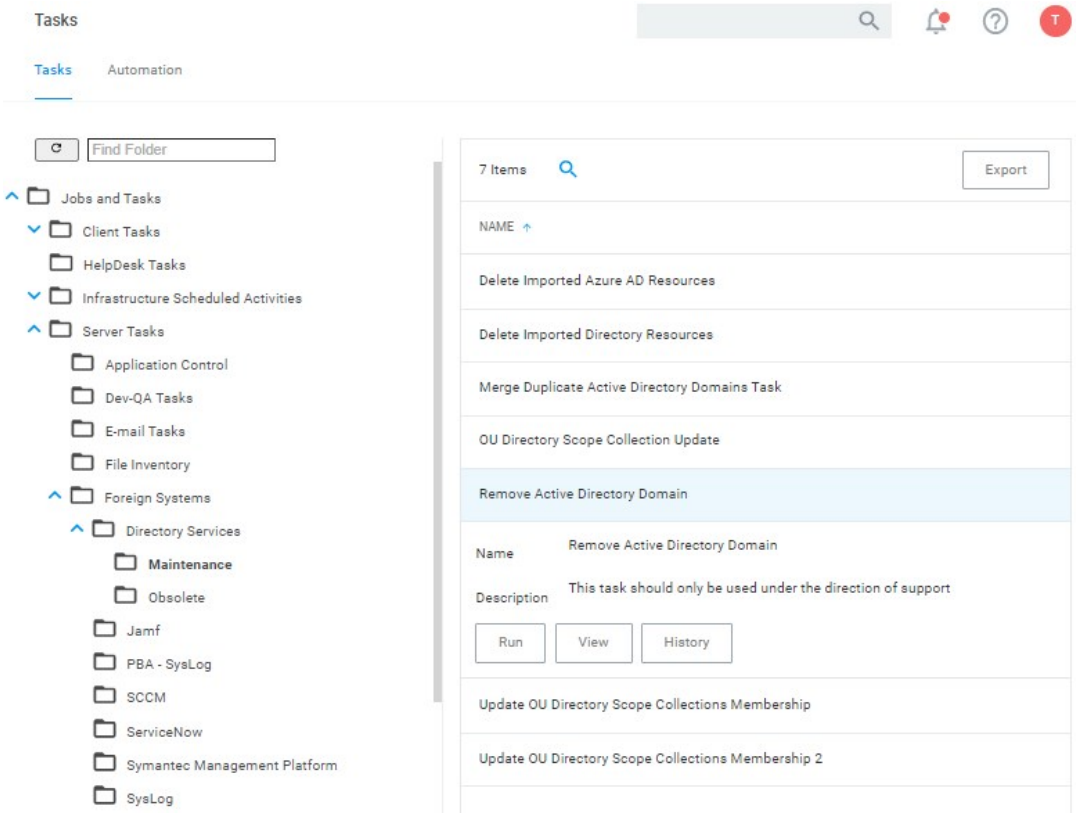

Tasks
Tasks
Automation
Find Folder
Jobs and Tasks
Client Tasks
HelpDesk Tasks
Infrastructure Scheduled Activities
Server Tasks
Application Control
Dev-QA Tasks
E-mail Tasks
File Inventory
Foreign Systems
Directory Services
Maintenance
Obsolete
Jamf
PBA - SysLog
SCCM
ServiceNow
Symantec Management Platform
SysLog
7 Items
Export
NAME
Delete Imported Azure AD Resources
Delete Imported Directory Resources
Merge Duplicate Active Directory Domains Task
Name
Merge Duplicate Active Directory Domains Task
Description
This task will merge duplicate Active Directory Domains with the same SID together. You can view the Duplicate Active Directory Domains Merge Candidates report before running this task to determine which domains will be merged.
Run
View
History
OU Directory Scope Collection Update
Remove Active Directory Domain
Update OU Directory Scope Collections Membership
Update OU Directory Scope Collections Membership 2

Remove Active Directory Domain

1. Navigate to **Admin I Config Feeds**.
2. From the **Privilege Manager Product Configuration Feeds I Privilege Manager Core Solution**, install the **Maintenance Resource**.



3. Following the installation, navigate to **Admin I Tasks**.
4. Expand **Jobs and Task I Server Tasks**.
5. Under **Foreign Systems I Directory Services I Maintenance**, select and run **Remove Active Directory Domain**.



Helpdesk Tasks

By default this folder is empty. Administrators can use it to copy tasks for HelpDesk users to run them. The HelpDesk folder provides security settings on those folders that would grant permissions if someone puts tasks in that area.

Infrastructure Scheduled Activities

These are tasks that pertain to either core functions or to components and subcomponents of Privilege Manager .

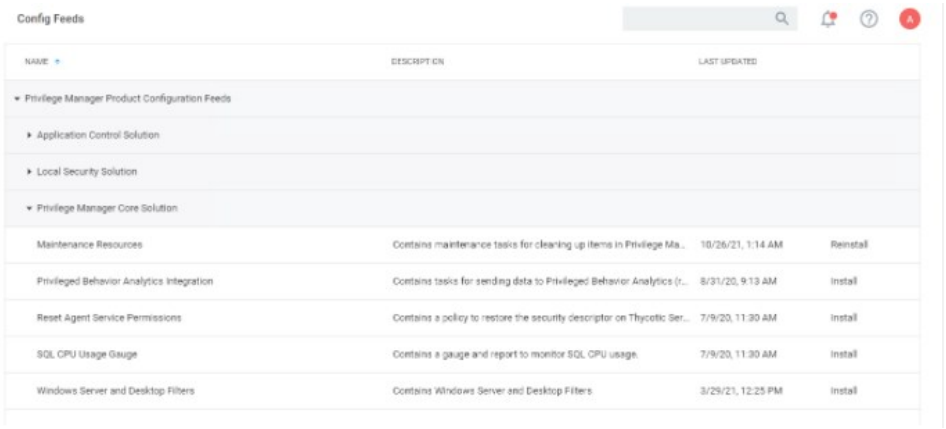
Core, no folder at root level	Client Items Update **OBSOLETE WITH v10.7 and higher**	Updates client items required by agents.
	Collection and Resource Targeting Update	Updates collections and resource targets.
	Collection Update	Update collections.
	Import Local Group Policy Definitions	Loads Group Policy Definitions from the local machine.
	Import Secret Server Licenses	A scheduled import of licenses from Secret Server.
	Licensing Update	Updates licensing product counts.
	Resource Discovery	Run this task to populate data for resources that have been discovered but lack detailed information.
	Resource Target Update	Use this task to updates resource targeting.
Application Control		
App Control Cylance	Refresh Cylance Security Rating Report	Refreshes Cylance security rating reports on a schedule.
App Control VirusTotal	Recalculate Ratings for VirusTotal Provider	Recalculates security rating levels for resource rated by the given provider.
	Refresh VirusTotal Security Rating Reports	Refreshes VirusTotal security rating reports on a schedule.
Approval	ServiceNow Approval	Initiates a ServiceNow approval process and waits for the result.
Configuration	Reconfigure for System Secret Vault Change	This task is run by the system when the configured system secret vault setting has changed.
Data Feed	Content Tasks	Download Data Feed Entry - Download Data Feed Entity.
		Import Data Feed Entry - Imports data feed entities and their corresponding data feeds, primarily designed to be used by the Setup component.
		Import Product Configuration Package - Download Data Feed Entity.

	Update Tasks	Clear Data Feed Entity Updated - Clear Data Feed Entity.
		Update Data Feed - Updates the Privilege Manager Configuration Feed List
		Update TMS Configuration List Data Feed - Updates the Privilege Manager Configuration Feed List.
Directory Services	Active Directory Merge Computers	Merges computers created by Directory Services.
	Active Directory Merge Single Computer	Merges a single computer during agent registration. Needed if AD Sync has occurred before agent registration.
	Import Secret Server Domains	A scheduled import of AD domains from Secret Server.
	OU Directory Scope Collection Update	This task updates the membership of Directory Services OU scope collections.
	Promote Windows Domains	Promotes any Windows domains to Active Directory domains.
	Update Active Directory Details	Updates Active directory domain details including domain controllers.
File Inventory	Update File Filter Security Catalogs	Updates security catalogs associated with File Collection Security Catalog Filter items.
Import Activities	Import Packages	Imports multiple product packages, data feed entries and performs initial configuration, primarily designed to be used by the Setup component.
	Import Packages v3	Imports multiple product packages, data feed entries and performs initial configuration, primarily designed to be used by the Setup component.
	Install Products V4	This task installs product NuGet packages.
	Install Products V4 (Server Nodes)	This task is used to upgrade binaries for additional server nodes.
	Install Products V5	This task installs product NuGet packages.
	Install Products V5 (Server Nodes)	This task is used to upgrade binaries for additional server nodes.
Local Security	Primary User Update	Updates the primary user for each computer in the given collection.
	User Credentials Data Update	This task ensures that resource credentials match the source user data.
Maintenance Tasks	Assign Orphaned Agent Uploads	This task assigns agent event uploads that have been orphaned.

	Delete Old Performance Counter Events	This task deletes internal performance counter events last updated before the specified time.
	Purge Maintenance - Agent Logs	This server task removes all Agent Log data that is older than the time period specified.
	Purge Maintenance - Application Control Events	Purges the selected Application Control Event types from the database based on the time range specified.
	Purge Maintenance - Audit Events	This task removes audit event records older than the specified time period.
	Purge Maintenance - Completed File Upload Sessions	This task removes completed file upload sessions older than the specified time period.
	Purge Maintenance - Files Undiscovered	Run this task to delete file resources which have not been discovered by File Inventory, and no agent can be identified to collect information for the files.
	Purge Maintenance - Incomplete File Upload Sessions	This task removes incomplete file upload sessions older than the specified time period.
	Purge Maintenance - Message History	This server task removes all Message History data that is older than the number of seconds/minutes/hours/days/weeks specified. Message History data tracks all events received by the Privilege Manager Server and is used for information purposes.
	Purge Old Computers	Removes old computers and gauge data for those old computers.
	Purge Old Unmanaged AD Computers	Deletes unmanaged computers, imported from Active Directory, that have not been updated in 90 days by default.
Monitoring	Check for Available Product Updates	Checks the configured nuget:source:SolutionCentre for available product updates.

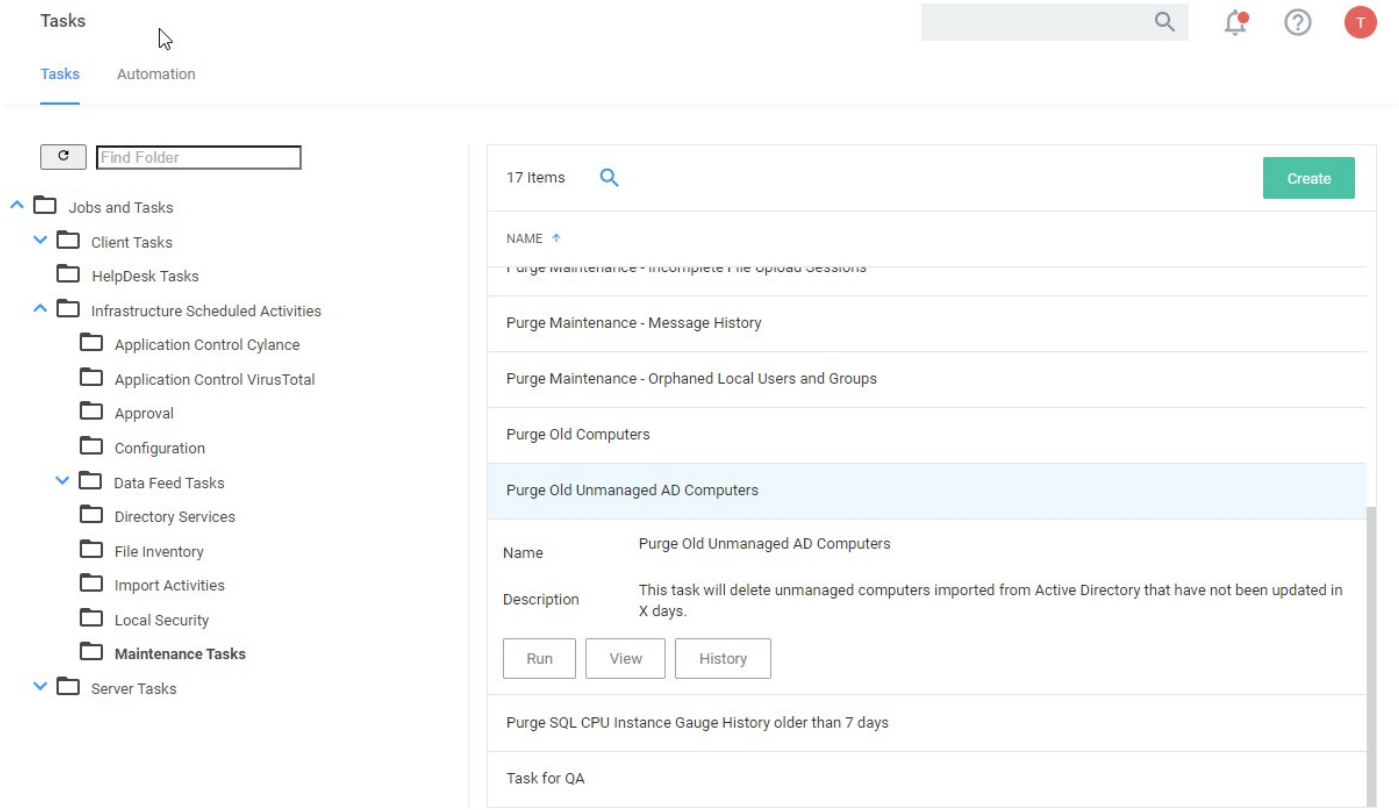
Purge Old Unmanaged AD Computers

1. Navigate to **Admin | Config Feeds**.
2. Install the **Maintenance Resource**, located under **Privilege Manager Product Configuration Feeds | Privilege Manager Core Solution**.



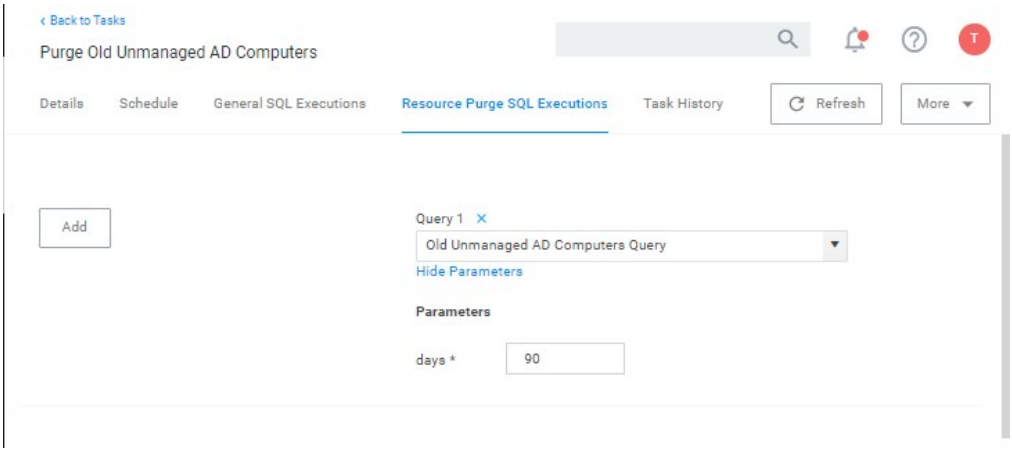
3. Navigate to **Admin | Tasks | Jobs and Tasks | Infrastructure Scheduled Activities | Maintenance Tasks**, select **Purge Old Unmanaged AD Computers**.

   This task deletes unmanaged computers, imported from Active Directory, that have not been updated in 90 days by default.



4. (Optional) The 90-day default can be set to a different default number of days used in the query. To do so, prior to clicking **Run**, click **View**.

   At the top of the page, select **Resource Purge SQL Executions** and amend the value in the **Show Parameters**.



5. When the query parameters are satisfactory, return to the task and click **Run**.

Scheduling Tasks

In addition to maintenance tasks, there are other tasks that should be scheduled to run regularly by Privilege Manager administrators. It's recommended to run these tasks to determine how long they take to complete in each environment, then schedule appropriately to cover task completion and needs.

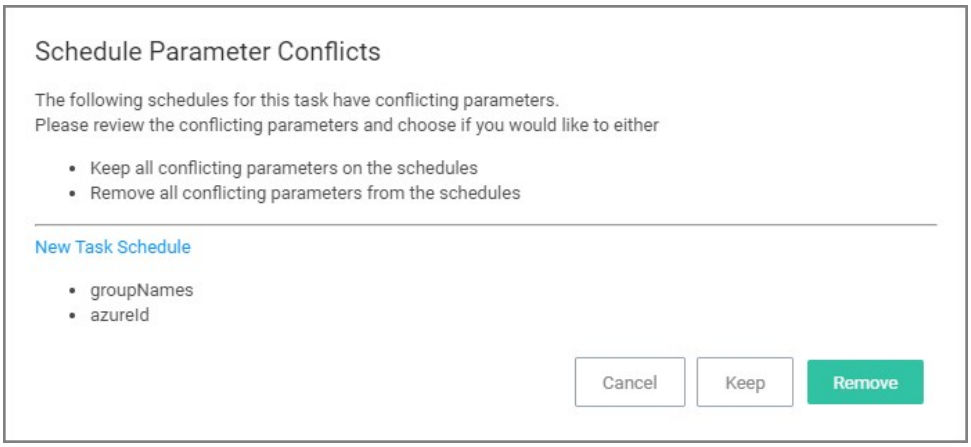
AD Import and Synchronization Tasks

Import Active Directory users and groups on demand and based on a set schedule.

> **Note**: Depending on AD structure and size, the tasks should be planned to avoid bulk imports and synchronization of too large of a number of accounts.

Task Parameter Conflicts

When task parameters are set at the task level, they can't be changed when a schedule is created for that task. However, in some circumstances, if you have already defined parameters at the task schedule level and then go back to the task to set the values, you may end up with task schedule parameter conflicts. When there are conflicts with the version currently on the server, the Privilege Manager console shows a modal to resolve the existing conflicts before any schedule modifications can be saved.



The user can review the task that introduced the conflict by clicking the linked item, which is opened in a new browser tab.

The options to resolve are

- Keep all conflicting parameters on the schedule - click the **Keep** button.
- Remove all conflicting parameter from the schedule - click the **Remove** button.

Or cancel if you wish to clean up the conflicts by manually editing task parameters on the conflicting items. However, something indicated as a conflict isn't necessarily a problem. The functionality is implemented so that users have the ability to stop changes on the schedule level by setting something other than default on the task level. If a parameter on the task is a default value, then that parameter will not be in conflict, if it does not match on the schedule.

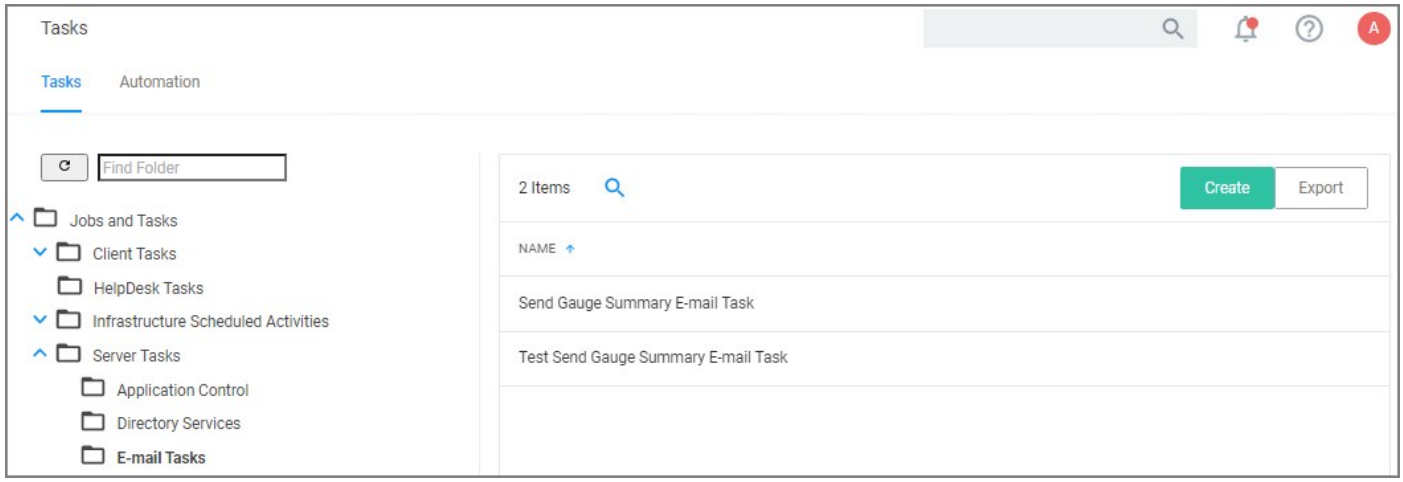
Whenever there is a deviation from the default value on the task level, even with the parameter on the schedule matching, users are asked to resolve the conflict by keeping the current values.

E-mail Reports Task

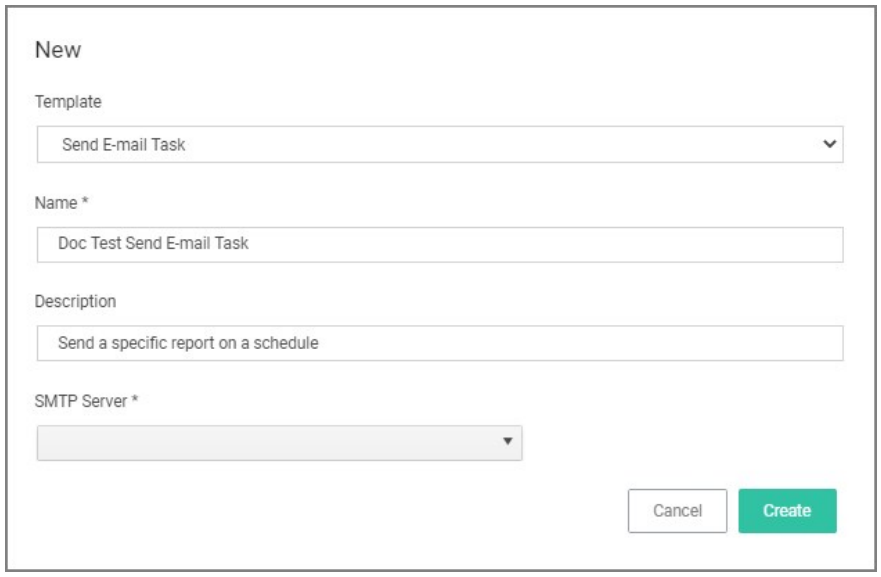
Any report created in Privilege Manager can be sent to a group of recipients based on a scheduled task.

To set this up, create a new Server task to send emails.

1. Navigate to **Admin | Tasks**.
2. In the folder tree open **Server Tasks | E-mail Tasks**.

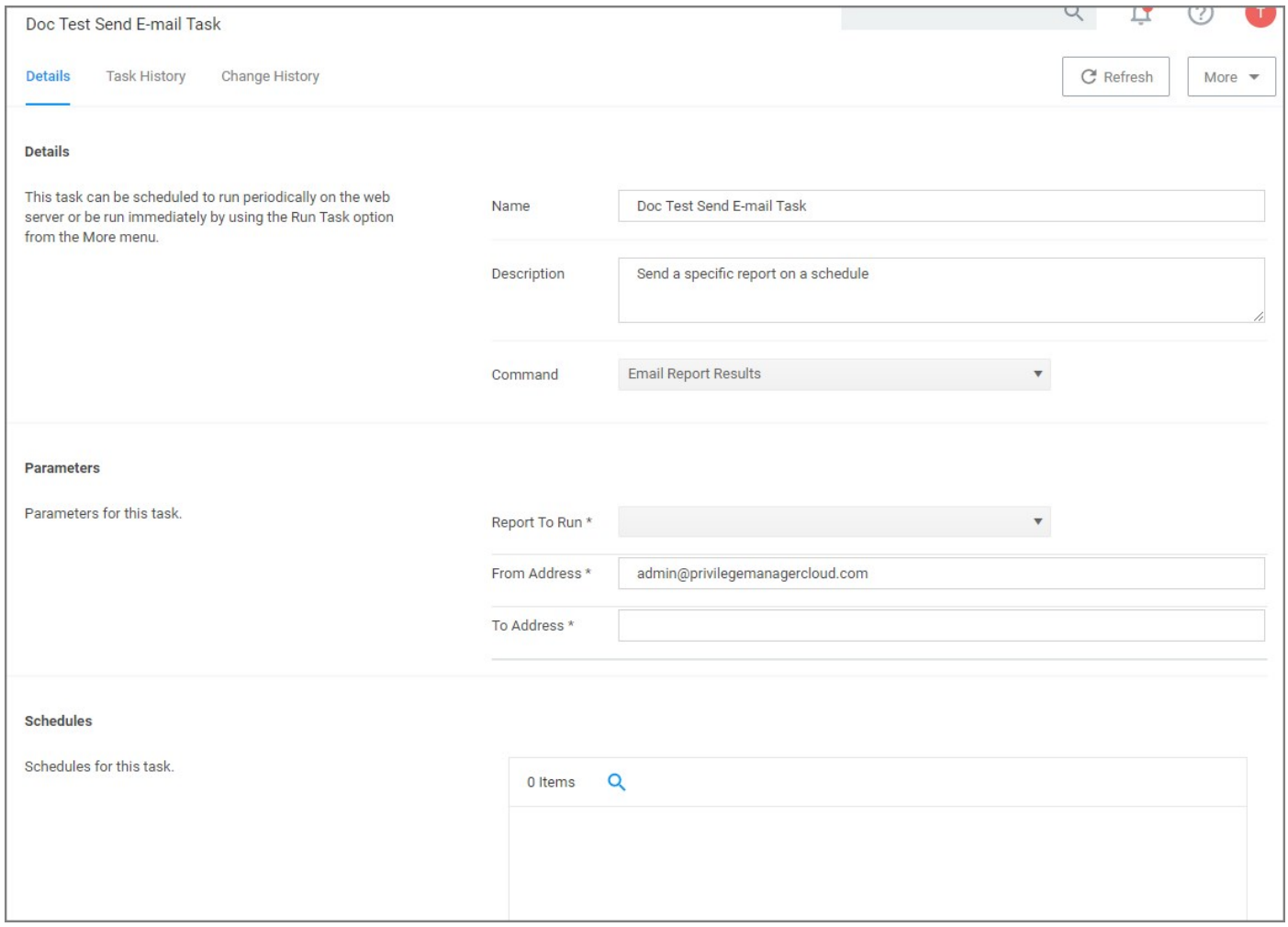


3. Click **Create**. For on-prem instances the modal has an SMTP Server selection option, for cloud instances the server defaults to a pre-configured value and does not have the SMTP Server field.



4. From the Template drop-down select **Send E-mail Task**.
5. Enter the task name and description.
6. If this is for an on-premises instance, for **SMTP Server**, search for your SMTP server that is already configures as a foreign system for your instance.

7. Click **Create**.



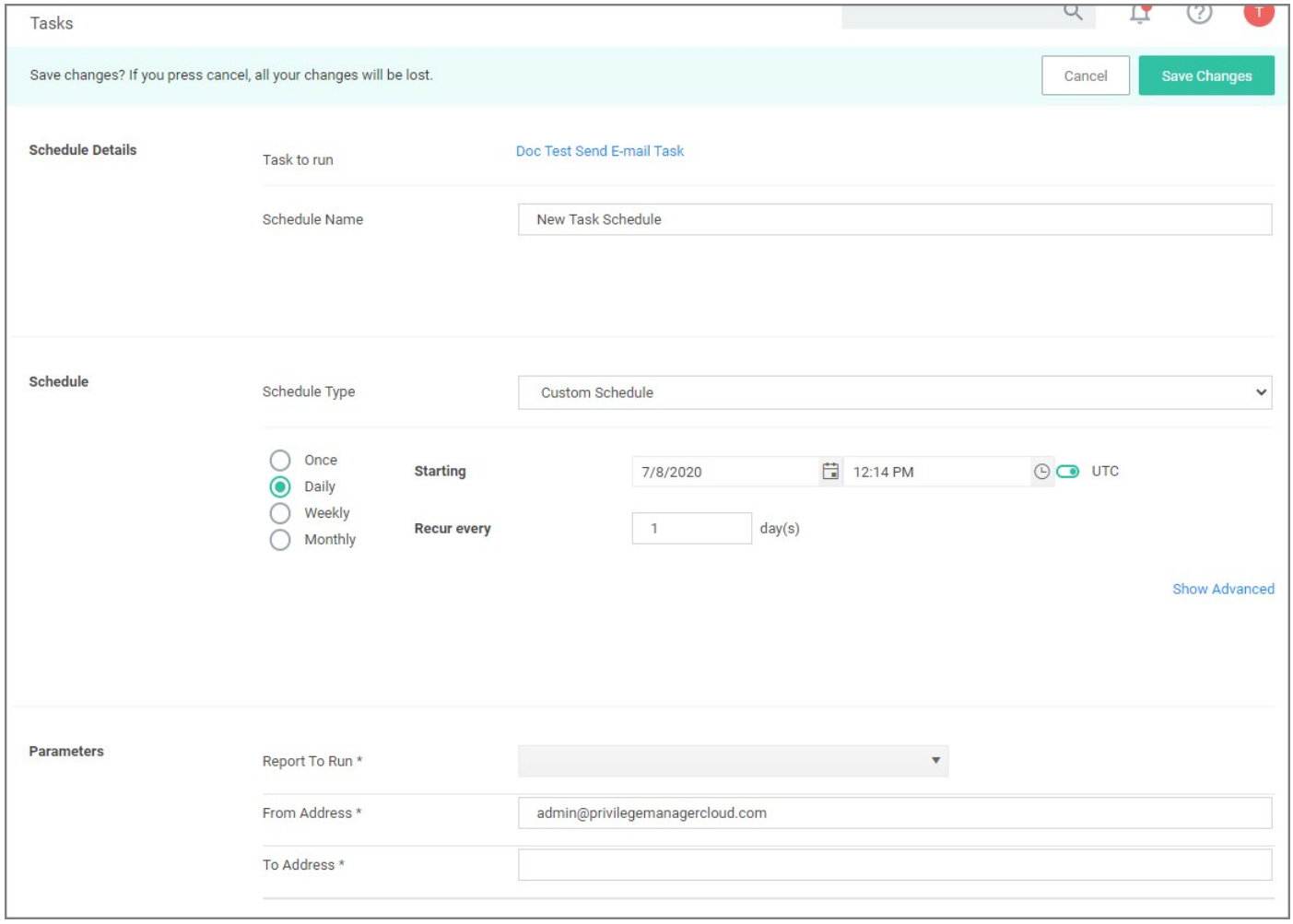
Note: For cloud environments the SMTP server settings are pulled from an existing configuration and can't be edited via the parameters tab.

Under **Details** and **Parameters** you can change/edit any of the task specific information:

1. From the **Command** drop-down, select what command you wish to execute, e.g. Email Report Results.
2. From the **Report to Run** drop-down, search for and select the report you wish to send.
3. In the **From Address** field enter the sender information you wish to be provided.
4. In the **To Address** field specify the recipient(s) (this can be a comma-separated list of addresses).
5. Click **Save Changes**.

Under the **Schedules** section of the page you can specify a schedule for this specific task.

1. Click **New Schedule**.



Set up the schedule specifics for this task.

2. Click **Save Changes**.

When a task is used to launch executables, but the task does not have an associated user context, the appropriate user token cannot be assigned. This applies to systems with v10.7 and above agents.

Example Scenario

A scheduled task launches an executable, which requires elevation, for example running the performance monitor process. That task is then set to run with elevated permissions, however not as a specific user, but rather as a local user group. Such task used in a policy will cause the executable to fail, since a specific user token cannot be associated.

Workaround

If you don't have a user context to assign to a task for launching an executable, you can use a PowerShell script in combination with the task and policy.

1. Create a PowerShell script to launch the executable.
2. Set the task to launch powershell.exe.
3. Pass in the name of the script.
4. Set the your policy to target that script.

Privilege Manager has many tasks that can be run to ensure that the data in the database is up-to-date and to purge old or unwanted information. This section provides an overview of the maintenance tasks and other schedulable tasks in Privilege Manager .

Determining how often to schedule maintenance tasks depends on the associated items, like events, files, computers, etc. and their build up. These tasks have default **parameters** assigned but are not scheduled to run. Privilege Manager administrators should schedule these tasks based on their needs and system performance.

The primary maintenance tasks that will need to be scheduled to ensure Privilege Manager databases do not grow too excessively are the

- Purge Maintenance - Application Control Events and
- Purge Maintenance - Files Undiscovered tasks and,
- in pre-10.5 systems, the
  - Purge Maintenance - Completed File Upload Sessions and
  - Purge Maintenance - Incomplete File Upload Sessions tasks.

Maintenance Tasks

These maintenance tasks can be found at

- **Admin | Configuration | General (tab)** or
- **Admin | Tasks | Jobs** and
- **Tasks | Infrastructure Scheduled Activities | Maintenance Tasks**.

Assign Orphaned Agent Uploads

This task will assign agent event uploads that have been orphaned.

Parameters: Max records [default setting = 2500]

Delete Old Performance Counter Events

This task will delete internal performance counter events last updated before the specified time.

Parameters: Can be set to Seconds, Minutes, Hours, Days, and Weeks. The default is 1 Day.

This maintenance task should be used if Save Performance Counters is enabled in the general section of the advanced configuration settings.

Initialize Item Change History

This task is run after installs to ensure items with change tracking enabled have initial history entries. This is an automated task to populate initial states of items across updates.

LSS Migration Tasks

For information on the LSS Migration tasks refer to Migrate Local Security Policies.

Purge Agent and Gauge Data for Deleted Computers

This task will delete orphaned data from AgentActivity, AgentRegistration, and GaugeInstanceState.

Notes: This can be helpful to run, to remove unwanted data for computers that have been deleted from Privilege Manager .

Purge Duplicate Computers

Remove duplicate computers.

Notes: When AD sync occurs, Privilege Manager creates a new object in the database for each computer object. When the agent is installed, it references this same object. If the agent is installed before AD sync occurs, there can be 2 different objects in the database for the same machine. This task merges the duplicate objects and is usually only needed when agents are installed before a computer comes in from AD sync.

Purge Maintenance - Agent Logs

This server task will remove all Agent Log data that is older than the time period specified.

Parameters: Can be set to Seconds, Minutes, Hours, Days, and Weeks. The default is 1 Week.

Purge Maintenance - Application Control Events

Purges the selected Application Control Event types from the database either

- manually based on a specified range of time, or
- automatically after reaching a set threshold. Refer to Maximum Application Event Count time range specified.

Parameters: Event Types to Purge (Application Action Events, Application Justification Events, Application Metering Events, Application Verifier Events). All of these Application Control Events are populated in the various Application Action reports.

Notes: Only Purge Events that belong to specific policies

Purge Application Control Events older than

Notes: Depending on policy settings, Application Control Events can pull a large amount of data into the database. Privilege Manager administrators must setup schedules for this task, as needed, to purge old or excessive data from Application Control policies.

Purge Maintenance - Audit Events

This task will remove audit event records older than the specified time period.

Parameters: Purge events older than [default setting = 30 day(s)]

Notes: The Audit events mainly pertain to and are used in Change History tracking. This task should not need to be scheduled.

Purge Maintenance - Completed File Upload Sessions

This task will remove completed file upload sessions older than the specified time period.

Parameters: Purge completed sessions older than [default setting = 1 day(s)]

Notes: For versions 10.5 and later, the need to run this task should be significantly reduced since they are now cleaned up as file uploads complete.

Purge Maintenance - Files Undiscovered

Run this task to delete file resources which have not been discovered by File Inventory, and no agent can be identified to collect information for the files.

Parameters: Delete Files that have been undiscoverable for longer than [default setting = 1 week(s)]

Notes: This task clears up files with the name "New Loaded Resource" that are older than X days. This can be a helpful task to schedule to remove undiscoverable files from the Event Discovery results (for example, temp files that an installer creates and then deletes).

Purge Maintenance - Incomplete File Upload Sessions

This task will remove incomplete file upload sessions older than the specified time period.

Parameters: Purge incomplete sessions older than [default setting = 2 day(s)]

Notes: For versions 10.5 and later, the need to run this task should be significantly reduced since they are now cleaned up as file uploads complete.

Purge Maintenance - Message History

This server task will remove all Message History data that is older than the time period specified. Message History data tracks all events received by the Privilege Manager Server and is used for informational purposes.

Parameters: Delete Message History older than [default setting = 30 day(s)]

Notes: This task clears the [Ams.Resource].[MessageHistory] table. Use this task to purge that table, if it is excessively large.

Purge Maintenance - Orphaned Local Users and Groups

This task will delete local users and groups that reference a computer as their parent domain (which will block deletes), but are not part of that computers users and groups.

Purge Old Computers

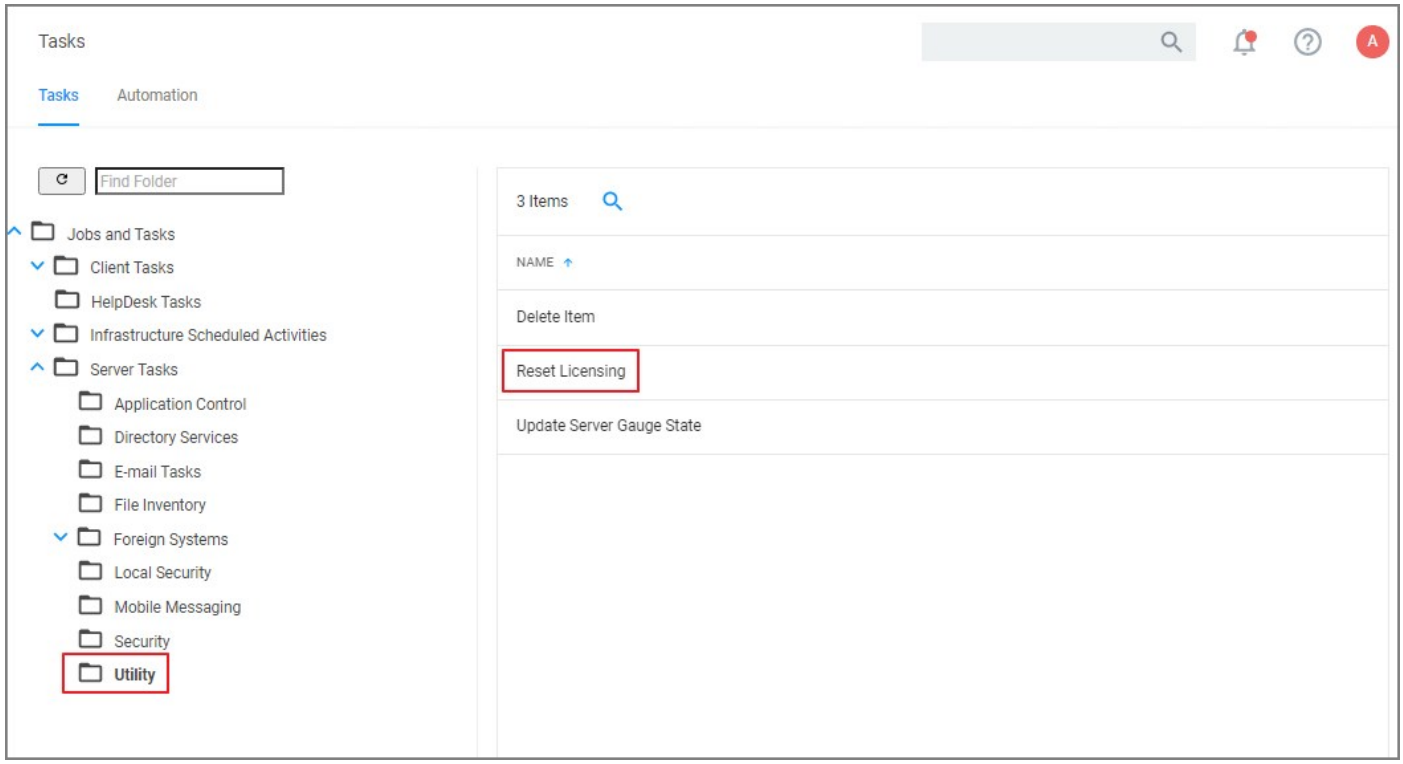
Remove old computers and gauge data for old computers. Remove any agents that have not communicated with the server in a set number of days (default 90), resulting in a critical Agent state.

With Privilege Manager v10.7 and up license registrations can be reset. The Reset Licensing task allows upgrading users to remove outdated licenses.

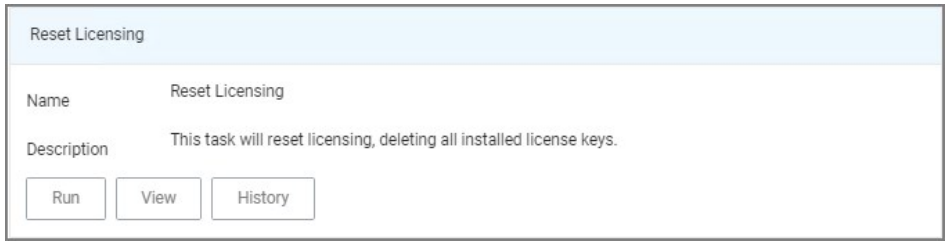
After acknowledging the license reset, all licenses are removed from the Privilege Manager instance. When no licenses can be found, the no product licenses warning banner displays on the top of the console.

Using the Reset Licensing Task

1. Navigate to the **Admin I Tasks**.
2. From the Tasks folder tree, select **Server Tasks I Utility**.
3. From the options on the right, select **Reset Licensing**.



Reset Licensing is a read-only task.



4. Click **Run**.

To run the task, the user needs to acknowledge the removal of all installed license key.

The task does not run without that acknowledgement and an error is generated.

Note: Do not use the scheduling functionality on this task. After a license reset, new licenses should be applied ASAP.

To re-apply licenses refer to the information under Licensing in the Getting Started section.

Administrator users can create and edit Privilege Manager users and assign and remove roles for these users.

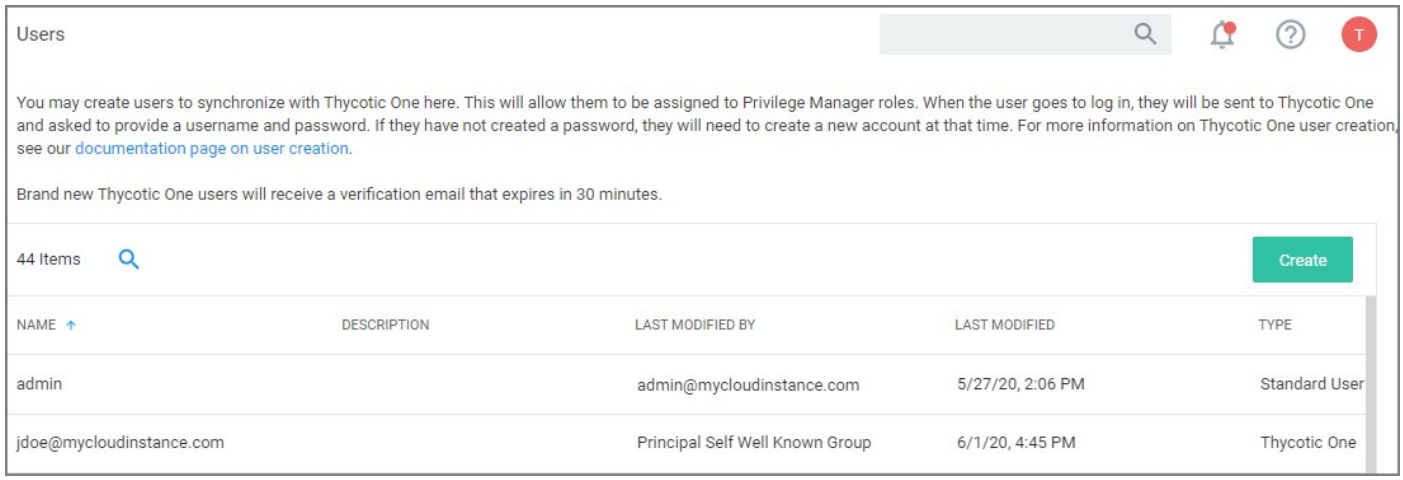
There are three types of users:

- Thycotic One users - these are only available in cloud environments and are manually added.
- API Users - these are available for the public API implementation.
- Standard Users - these are users manually added by an administrator after the initial installation of Privilege Manager .
- Federated Users - these are users, whose identity is linked across multiple security domains. They authenticate with one and can access resources in the other.

How to Manually Add Thycotic One Users

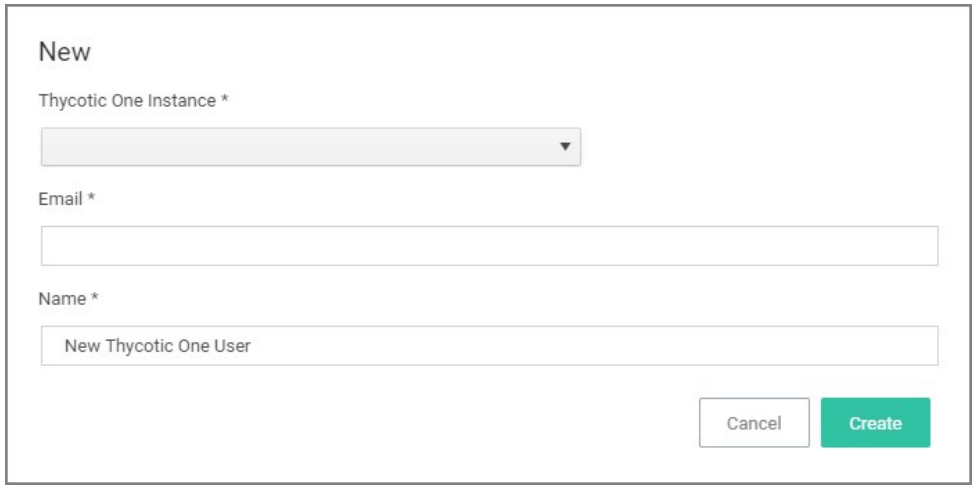
To manually add users to your Privilege Manager cloud instance, follow these steps:

1. Navigate to **Admin I Users**.



2. Click **Create**.

3. From the **User Type** drop-down, select **Thycotic One** and click **Create**.

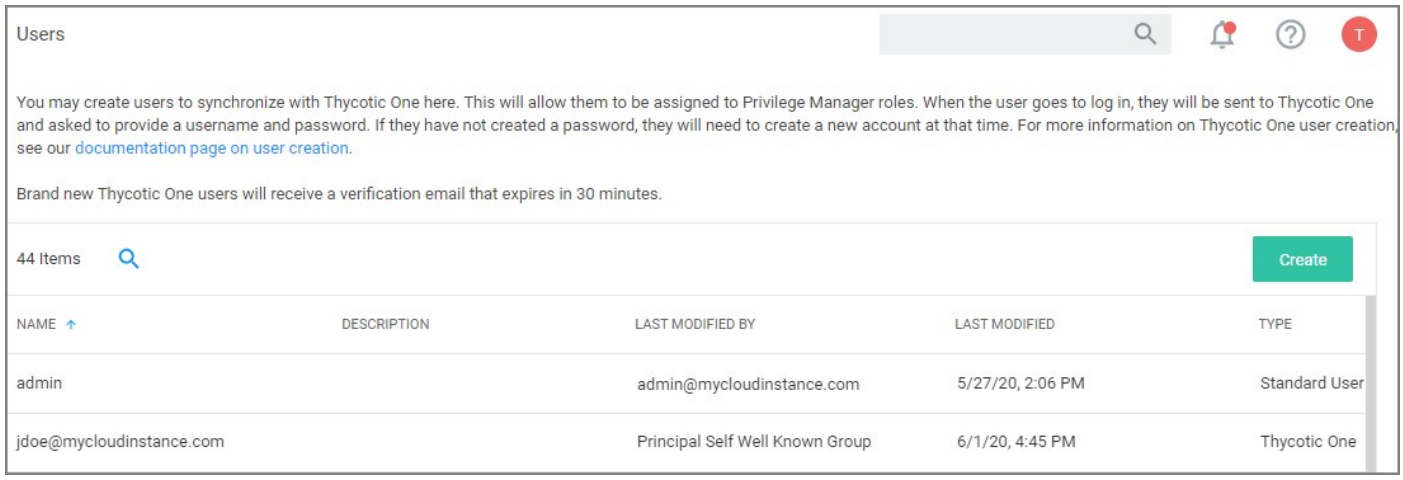


4. From the **Thycotic One Instance** drop-down, search for and select your instance for the new user.
5. Enter the **Email** and **Name** of the new Thycotic One user in the respective fields.
6. Click **Create**.

How to Manually Add Standard Users

Standard users can view and edit their own accounts, such as password updates, but can't create new users or delete their own user.

1. Navigate to **Admin I User**.



   On-prem instances see a note that Thycotic One users can only be created if a Thycotic One Foreign System is configured.

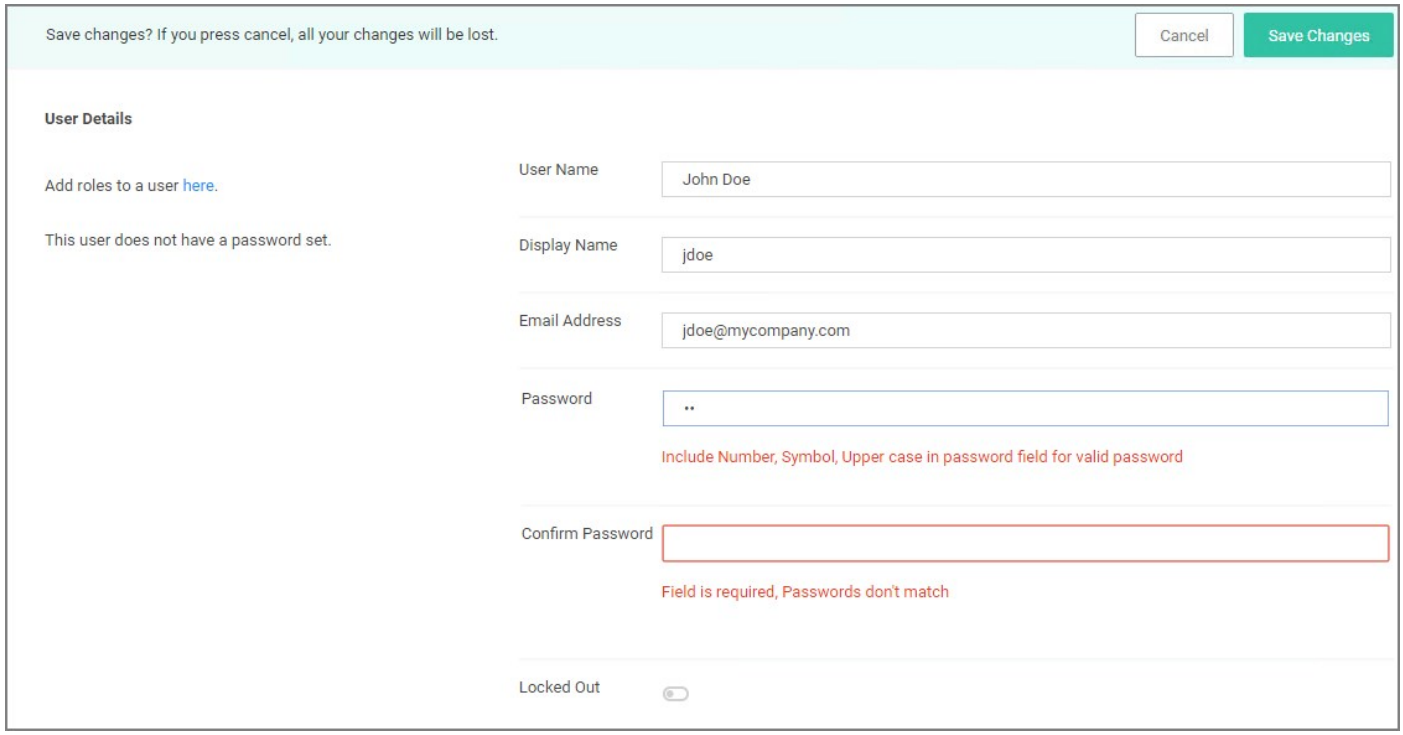
2. Click **Create**.
3. From the **User Type** drop-down, select **Standard User** and click **Create**.

4. On the **Enter User Details** modal, enter

   1. the **User Name**.
   2. the **Display Name**.

5. Click **Create**.

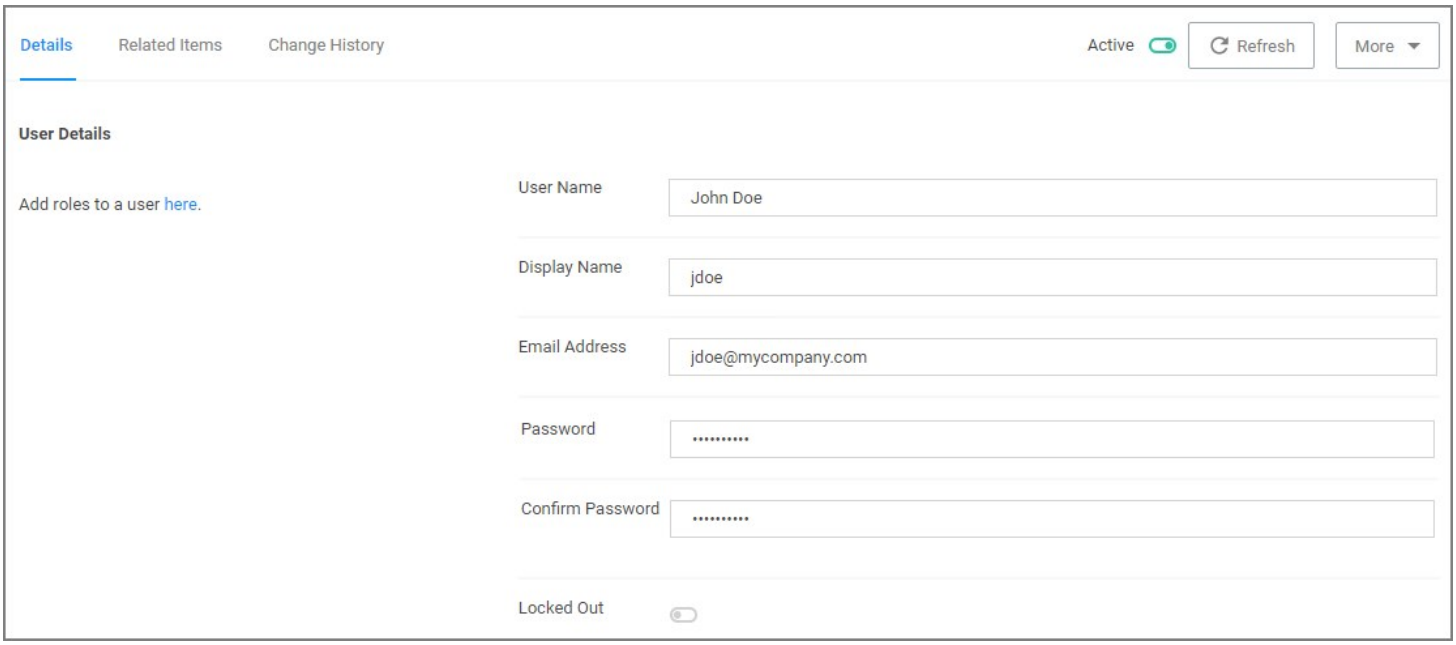
6. On the newly created User's details page, add



- the user's **email address**
- a **password**.
- **roles** to the user by clicking the **Add roles to a user here** link. You can create users without assigning roles. To go through the steps of assigning roles, refer to the **Add Roles to a User** topic below.

7. Click **Save Changes**.

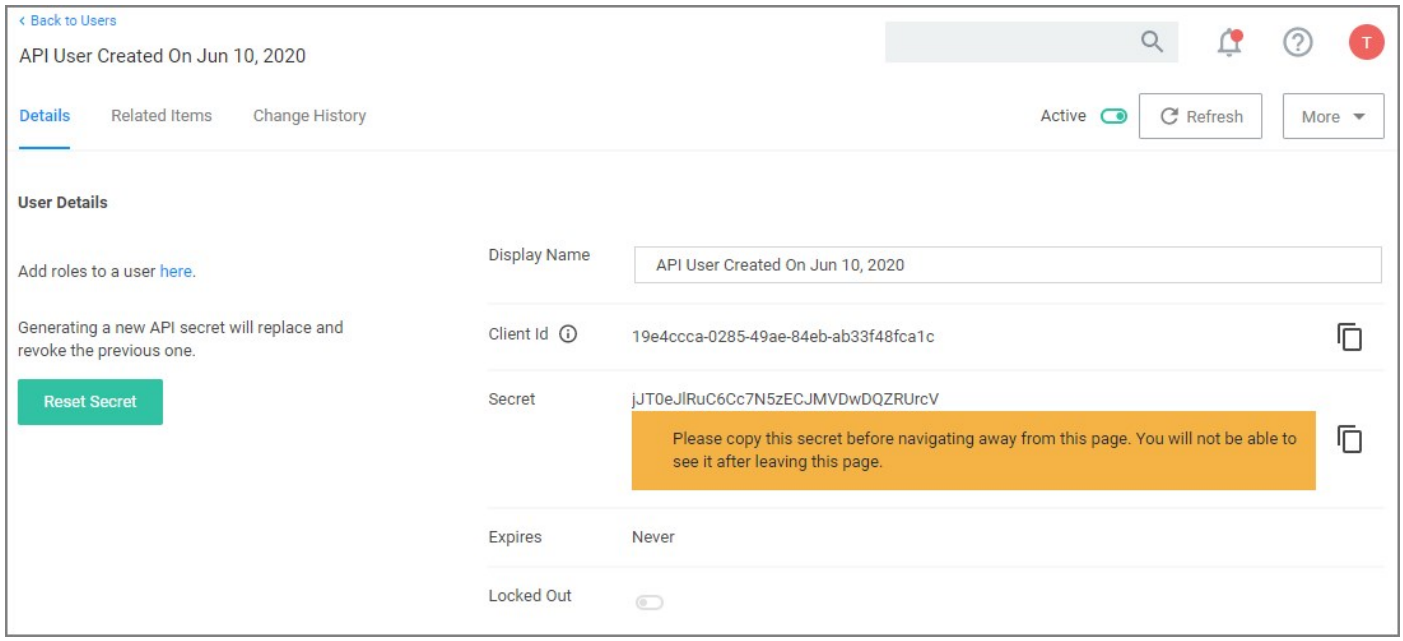
The user is now active in the system and you may edit the user details.



How to Manually Add API Client Users

API Client users can view and edit their own accounts, such as password updates, but can't create new users or delete their own user.

1. Navigate to **Admin I User**.
2. Click **Create**.
3. From the **User Type** drop-down select **API Client** and click **Create**.



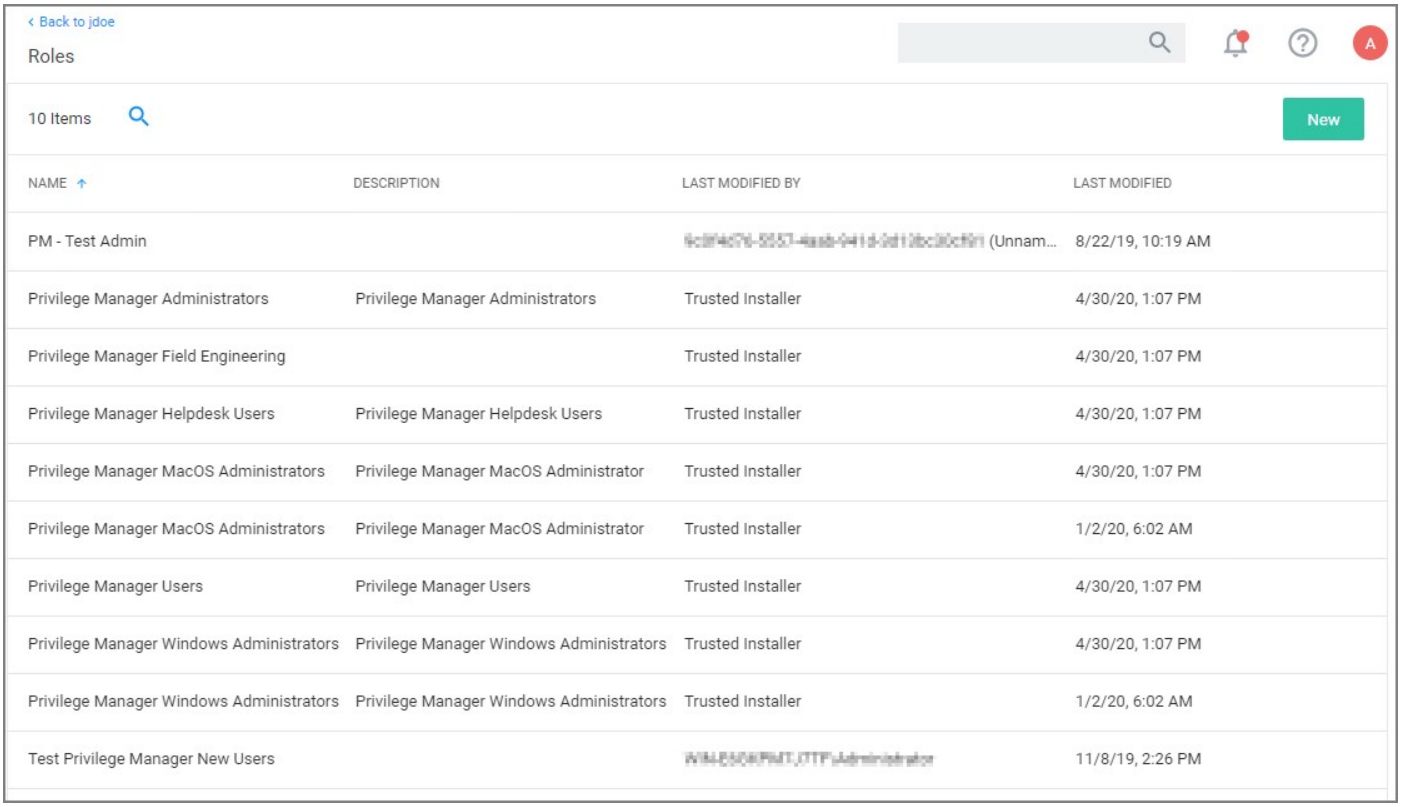
API Client users are by default created with a date and time reference when the user was added. If you wish, you can modify the display name. The newly create user is automatically set to active on creation. Prior to navigating away from the page, make sure to take note of the **Client ID** and copy the **Secret** into your vault.

Make sure the API user is a member of a role, the role depends on what you need the API to do.

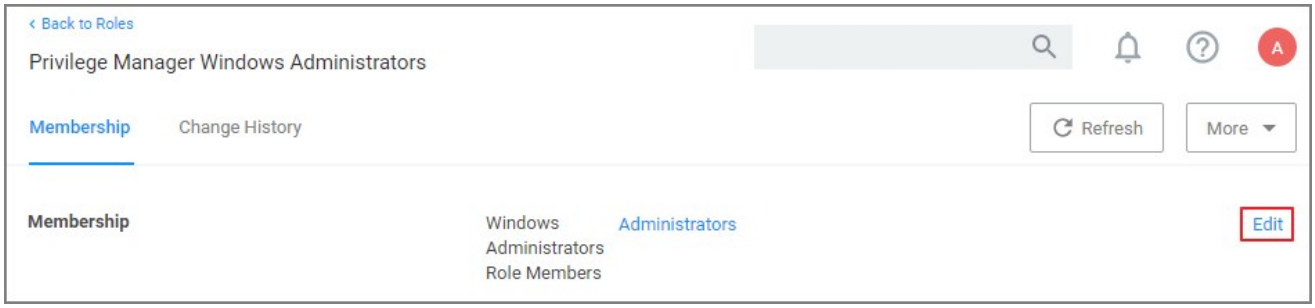
Use **Reset Secret** to generate a new secret for this user, it invalidates the old secret you copied to the vault. Once you click **Reset Secret** you need to confirm the action. The new secret will be shown until you navigate away from the page. All changes need to be saved to take effect.

Add Roles to a User

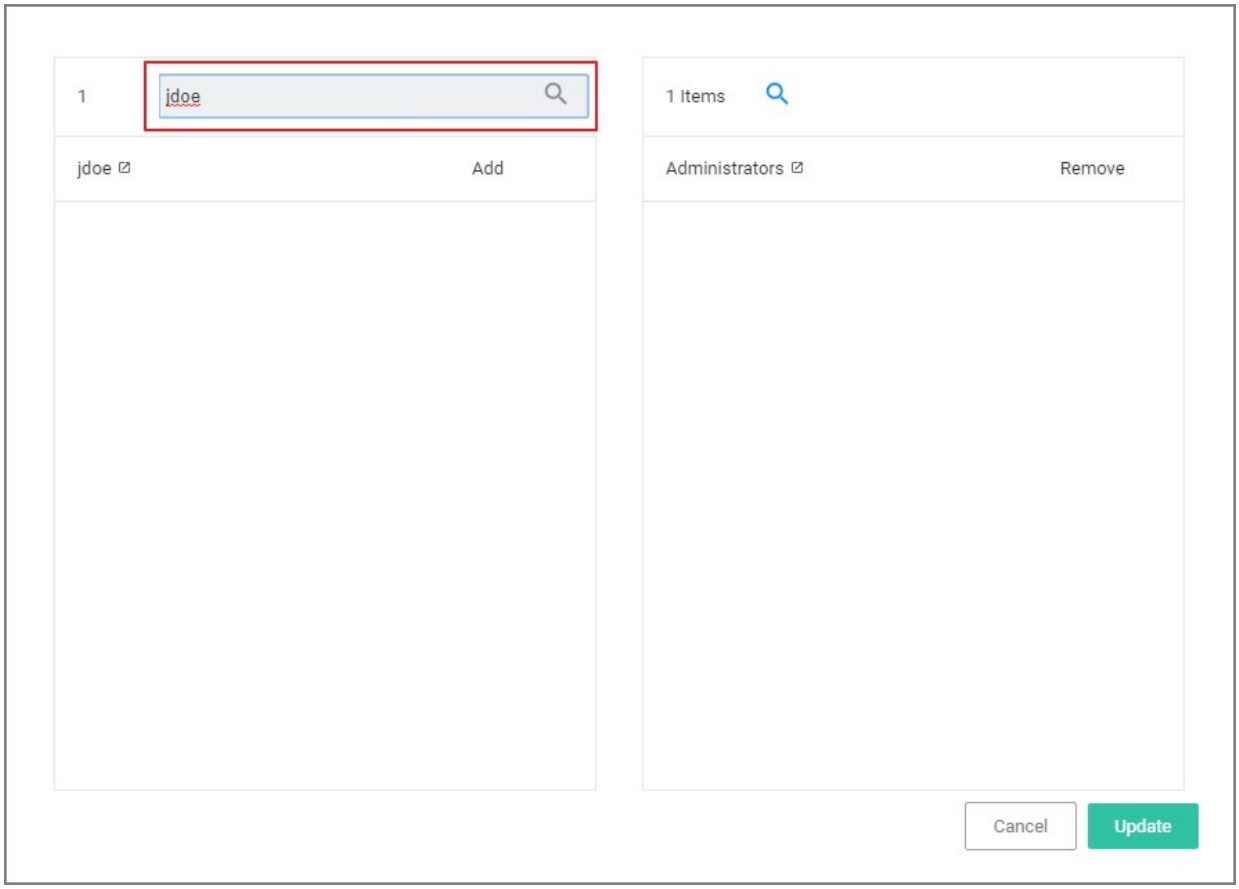
1. On the **User Details** page, from the **Add roles to user here** click **here**.



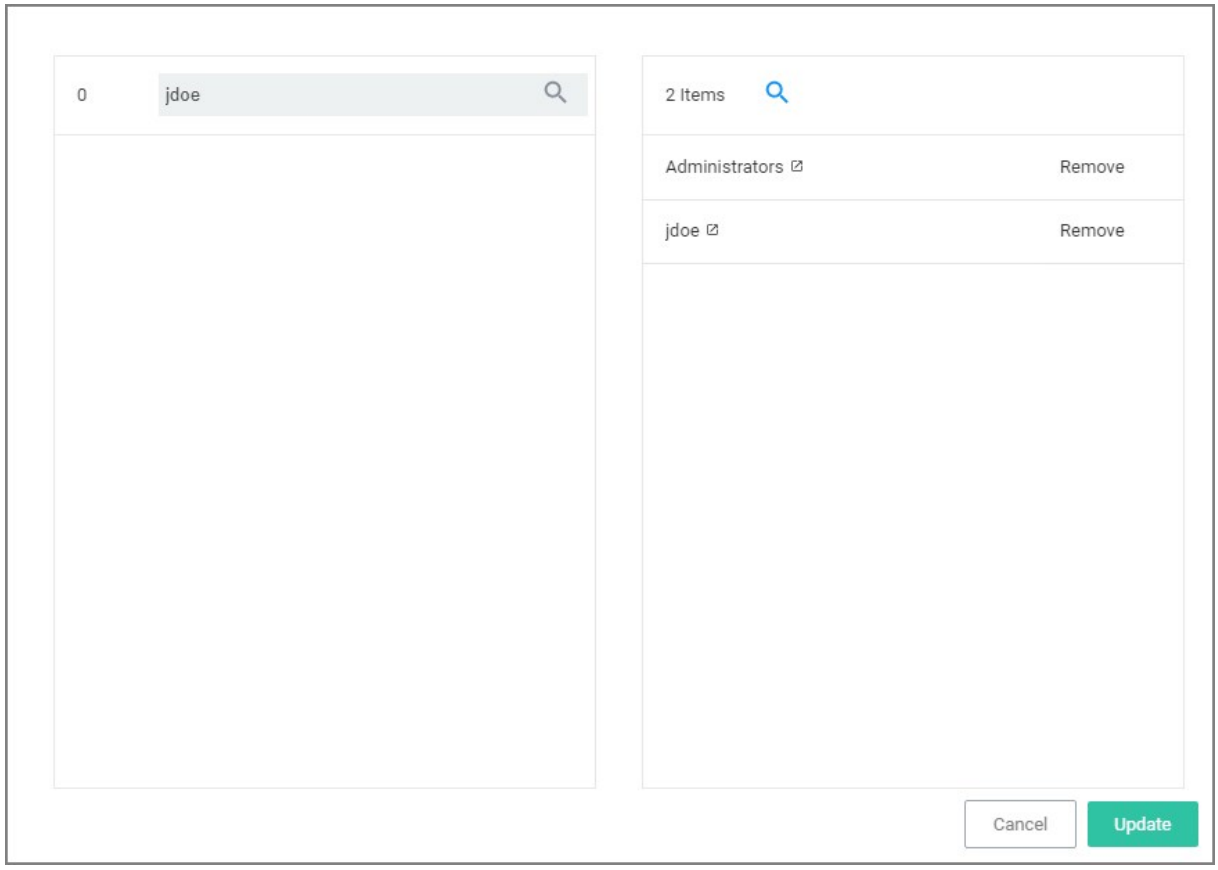
2. From the roles page select the role you want to add to the user, for example *Privilege Manager Windows Administrators*.



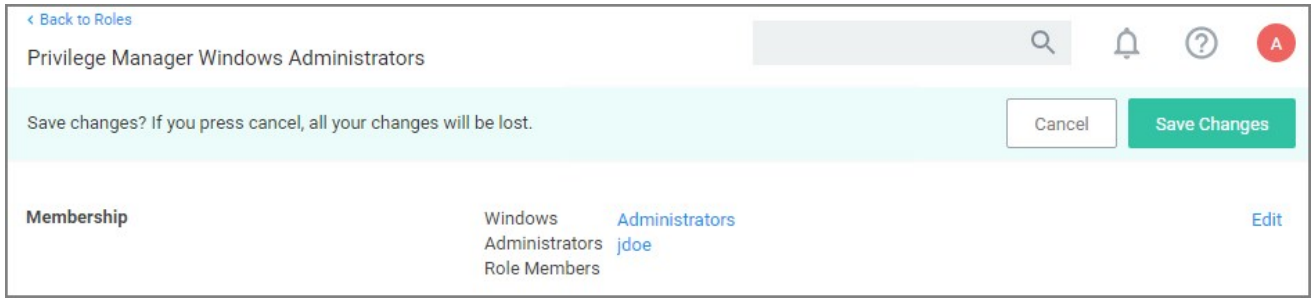
1. Click **Edit**.



1. Click the **name** or **Add** to add the user to the role.



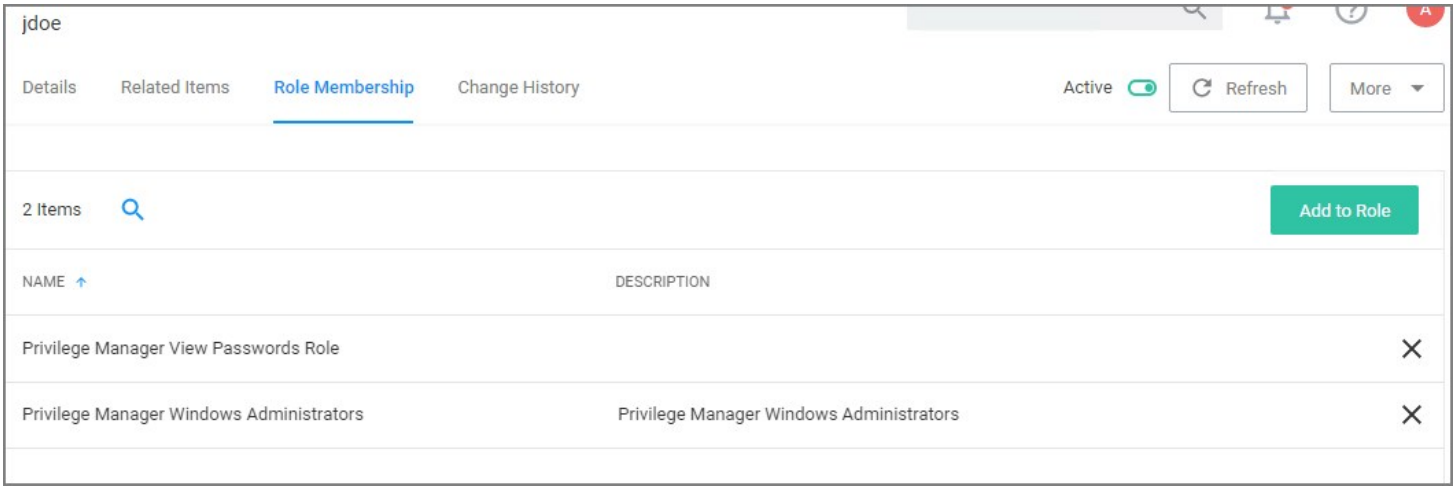
2. Click **Update**.



3. Click **Save Changes** to save the role update.

Role Membership Tab

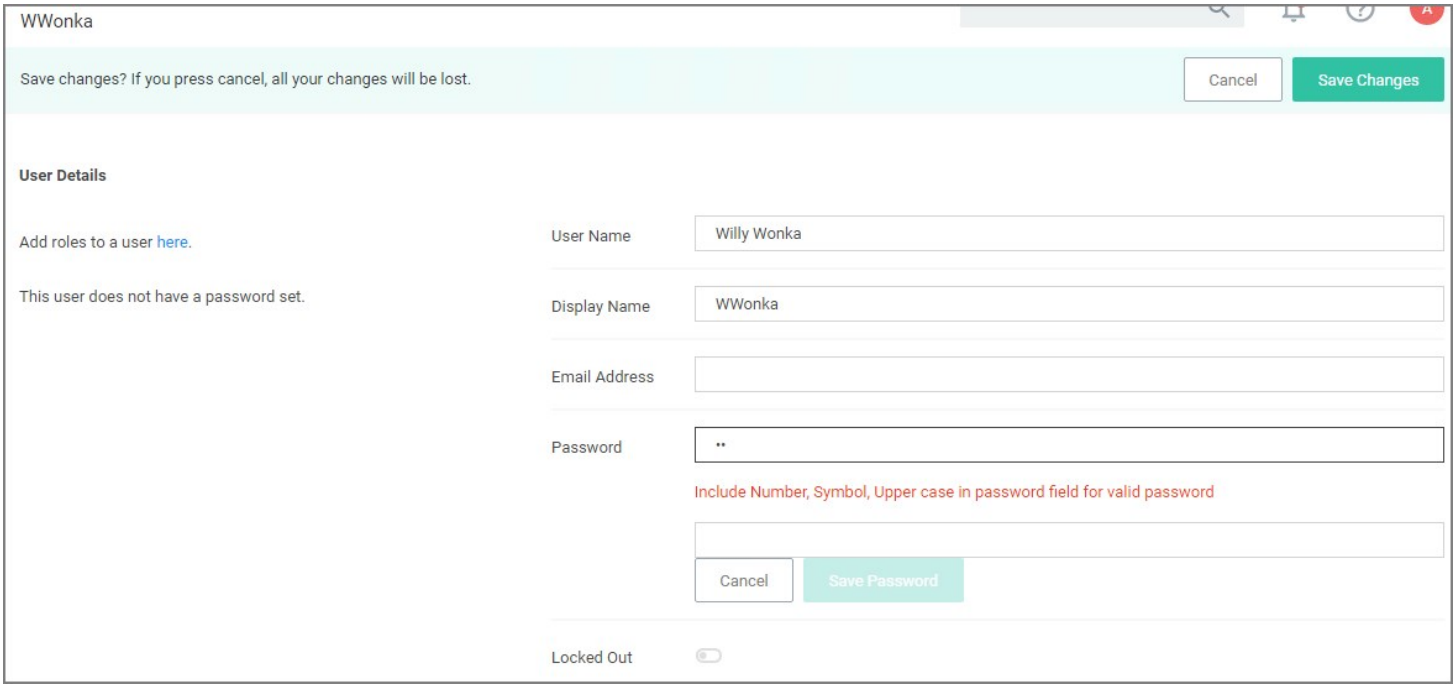
The Role Membership tab allows administrators to verify existing role memberships for any given Privilege Manager user. Administrators can also remove any roles via the **X** on the table grid and add users to a role via **Add to Role** options.


jdoe
Details
Related Items
Role Membership
Change History
Active
Refresh
More
2 Items
Add to Role
NAME
DESCRIPTION
Privilege Manager View Passwords Role
Privilege Manager Windows Administrators
Privilege Manager Windows Administrators

Privilege Manager Administrators can turn complex password policy rules on and off for Privilege Manager users. This can be set via the advanced configuration page. Password complexity is turned on by default.

Policy rules:

- minimum of 8 characters
- minimum 1 symbol
- minimum 1 uppercase
- minimum 1 lowercase



The password policy applies to UI and API Client users.

The enforcement takes effect when a new Privilege Manager user is created or an existing user resource is edited.

The Tools menu in Privilege Manager offers access to

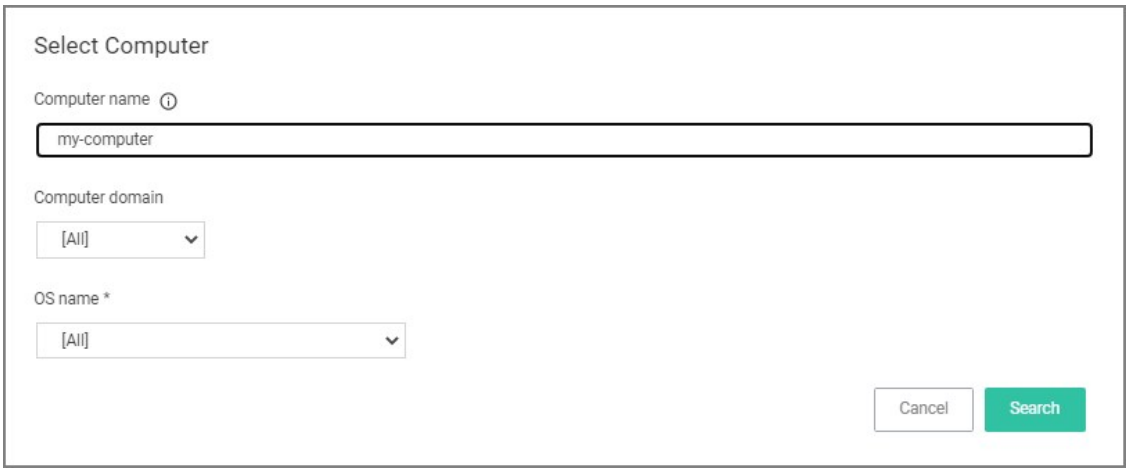
- Disclose Password
- File Upload
- Manage Approvals
- Offline Approvals
- Secret Server, if integrated.

The Password Disclosure tool lets users based on role permissions disclose passwords and look a password rotation history.

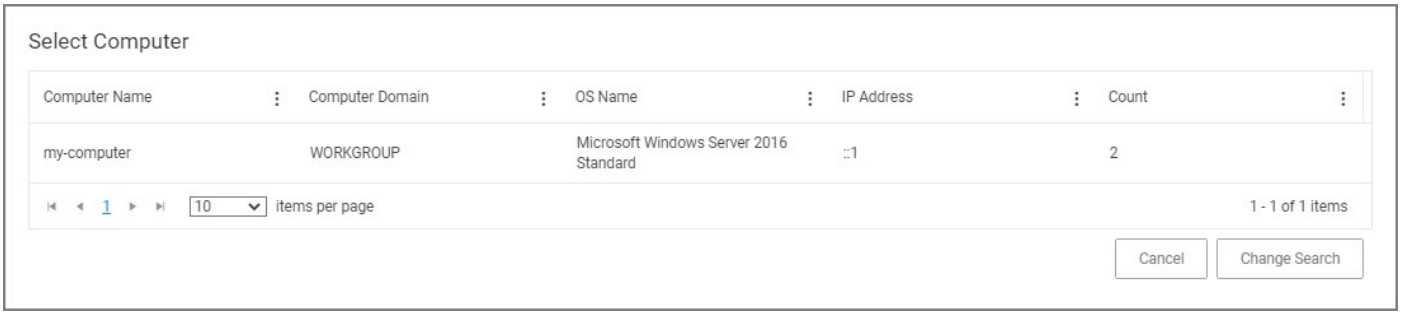
The password rotation history is helpful when systems are being restored to a time prior to the current password.

Using the Disclose Password Tool

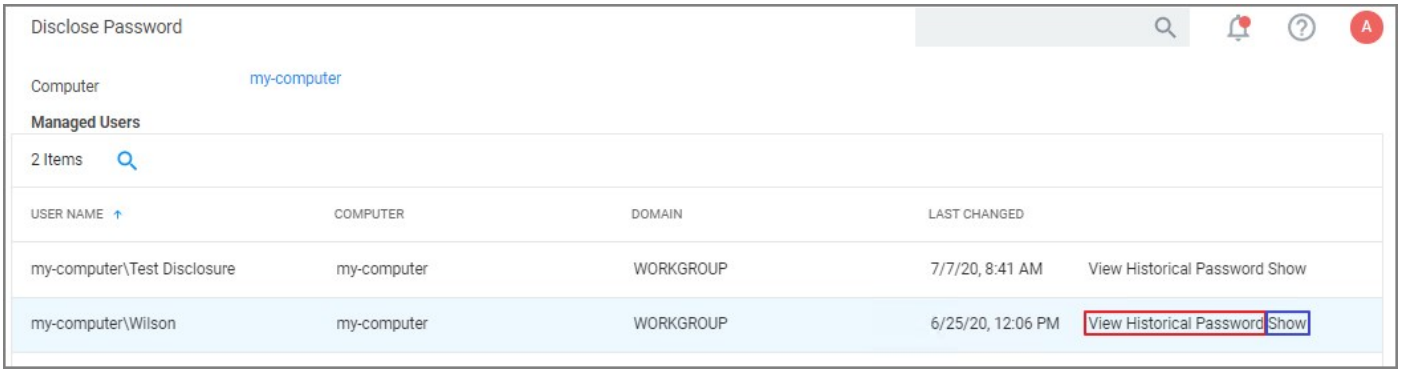
1. Navigate to **Admin I Tools: Disclose Password**.
2. The Computer page opens.



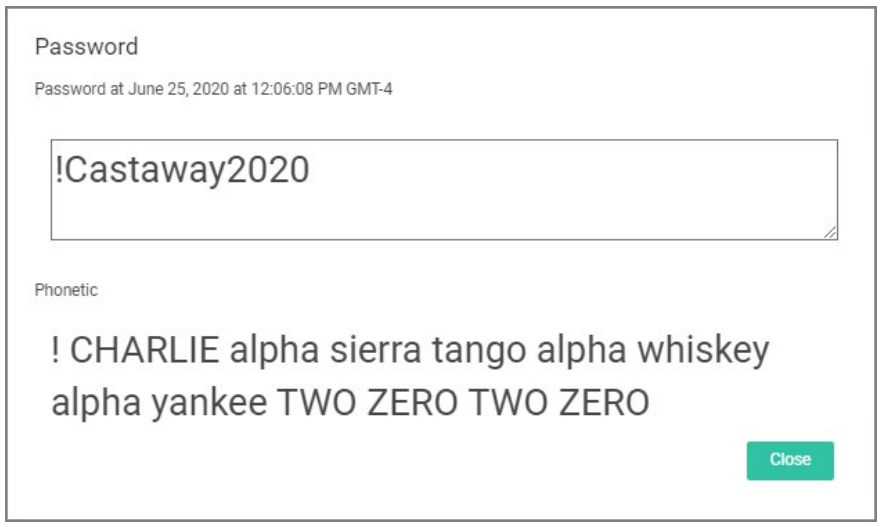
Select a computer from the list.



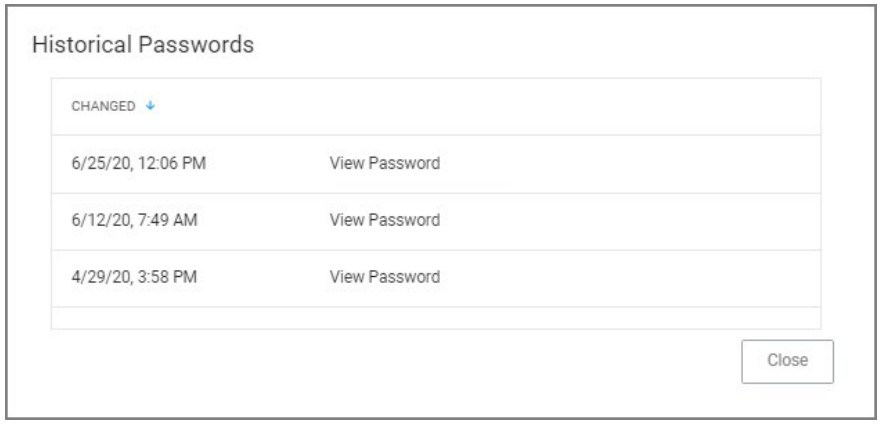
3. The Password Disclosure page opens, it list the managed users and also provides links to view the current password and to password history.



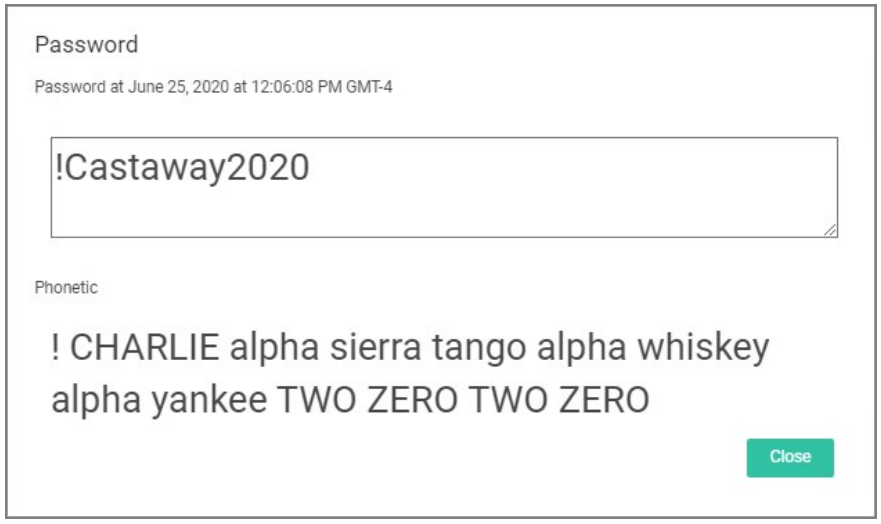
4. Click on **Show** to view the current password.



5. Click on **View Historical Password** to view the password history.



Select a link on the **Historical Password** modal to view any of the rotated passwords.



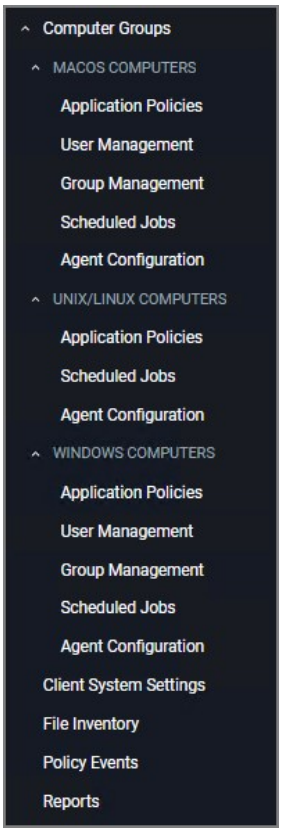
Note: Any password disclosure is audited and can be viewed in the **Password Disclosure History** report (requires Administrator role membership).

Computer Groups

Privilege Manager organizes content by platform or operating system. From each operating system, you can define Computer Groups. In addition, you can use the **Show in Side Menu** bookmark on the **Computer Groups** screen to determine the Computer Groups that display in the left navigation pane.

Each Computer Group (also referred to as a Resource Target) addresses:

- Application Policies
  - Policies, associated with Application Control, that you establish using the **Create Wizard** policy.
- User Management
  - Local security control that pertains to specific users.
- Group Management
  - Local security control that pertains to specific groups of users.
- Scheduled Jobs
  - Client tasks that you designate to run on certain dates and at certain times. Privilege Manager sets many scheduled jobs to Active by default.
- Agent Configuration
  - Policies that allow global configuration of agent behavior.
    - macOS
    - Unix/Linux
    - Windows

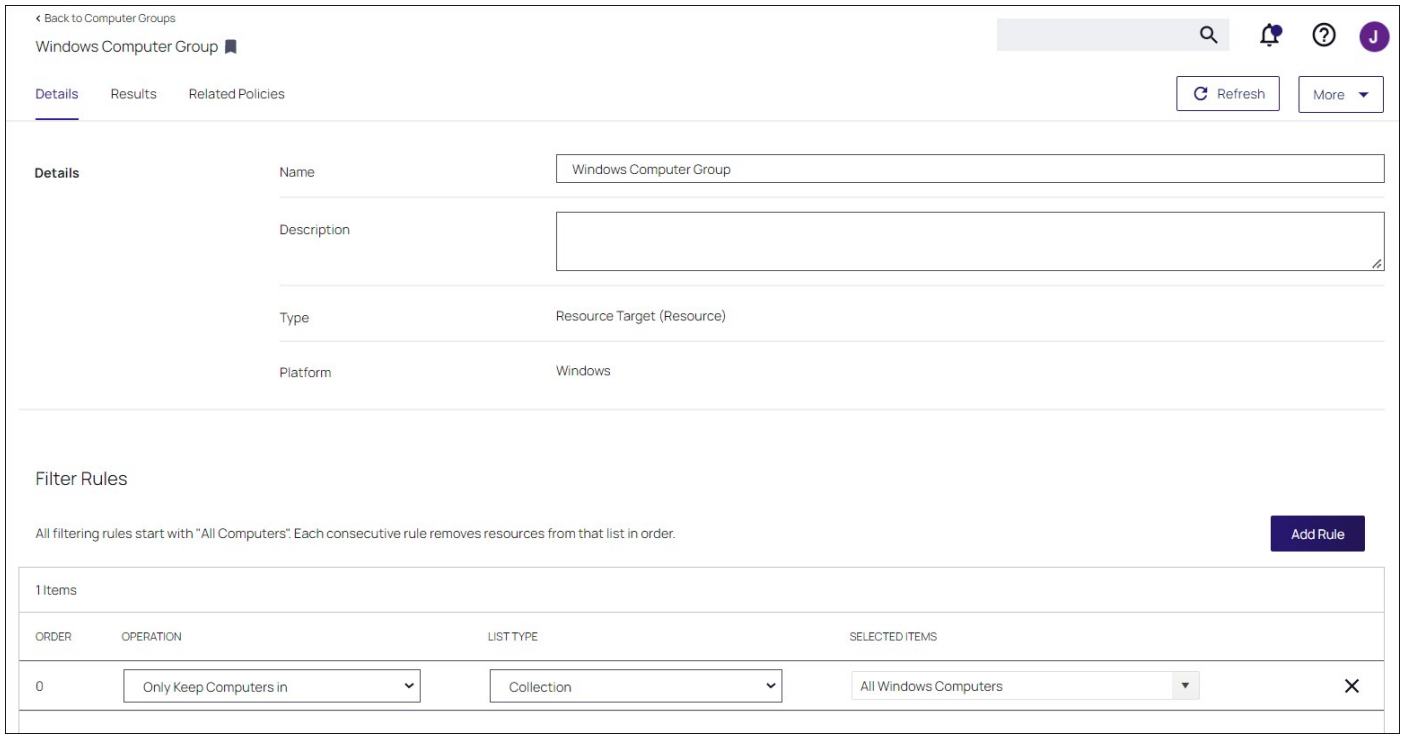


After you select **Computer Groups** from the left navigation pane, you can view each **Name** and **Group Type** along with the total number of entries.

Application Control policies for each Computer Group appear under **Group Management** for the given Computer Group in the left navigation pane, if you selected it for display.

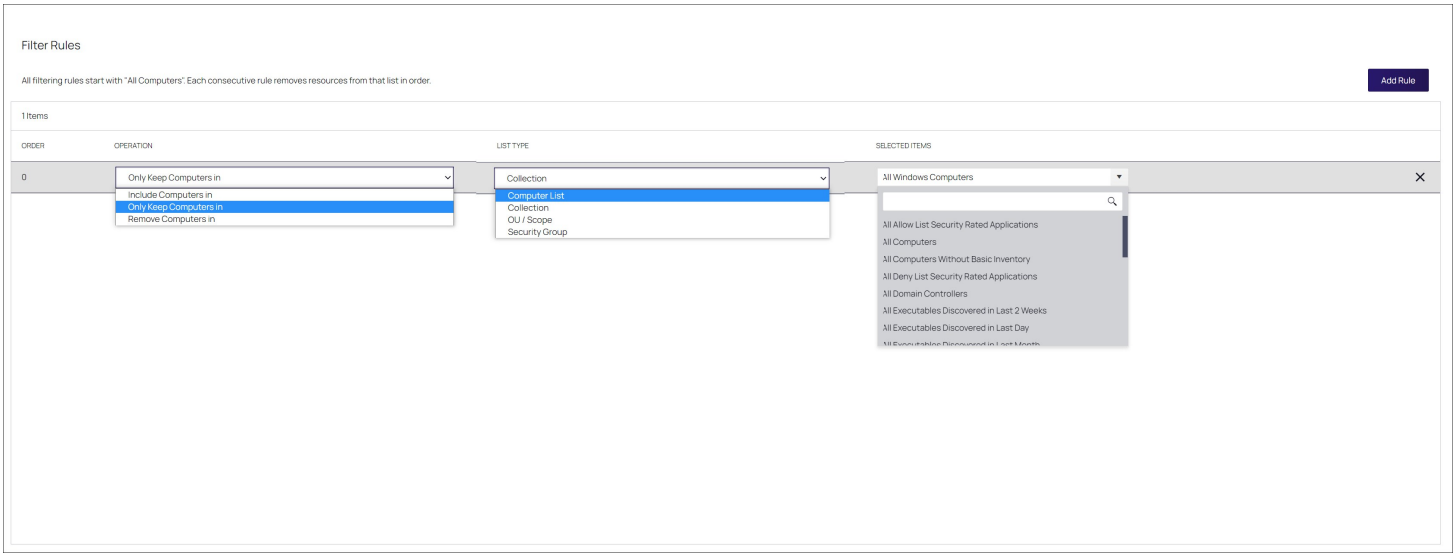
To add new Computer Groups for your organization's environment:

1. Click **Create Computer Group**.
2. From the **Platform** drop-down list box, select macOS, Secured Scope, Unix/Linux, or Windows.
3. From the **Create Computer Group** window, enter a **Name** and **Description** for your new group.

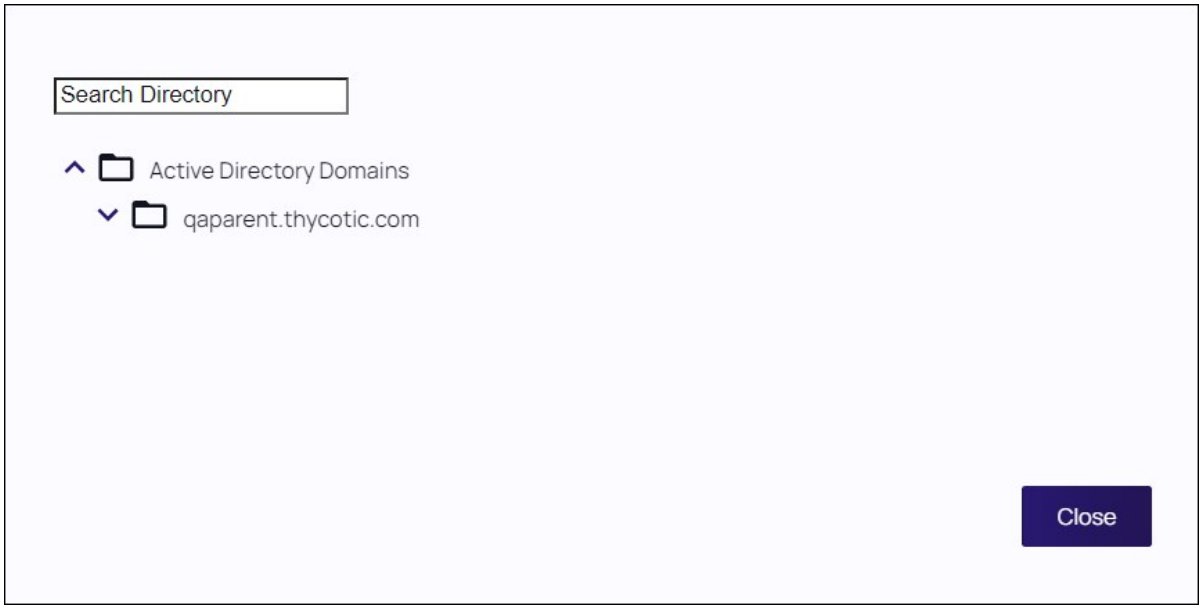


To select the machines you want to include within a Computer Group, you must add filter rules that target the appropriate machines on your organization's network. The default filter rule begins with a rule that targets computers within the main OS Computer Group that you selected when you initially created the group.

You can add multiple rules per Computer Group. To change existing Computer Groups, you can select **Add Rule** or change the resources already targeted.



1. To narrow your group, click **Add Rule**.
2. Specify the **Operation** behavior, such as:
    - Only Keep Computers in (default)
    - Include Computers in
    - Remove Computers in
3. In the **List Type** column, select from the following options:
    - **Computer List**: Under **Selected Items**, if the label, **Nothing selected** appears, click **Add**. Search for and select computers from the list of registered machines.
    - **Collection**: Under **Selected Items**, click the drop-down list box and choose a collection name such as, All Windows Desktops or All Windows Servers.
    - **OU/Scope**: Under **Selected Items**, click **Select** and choose from the options that appear.

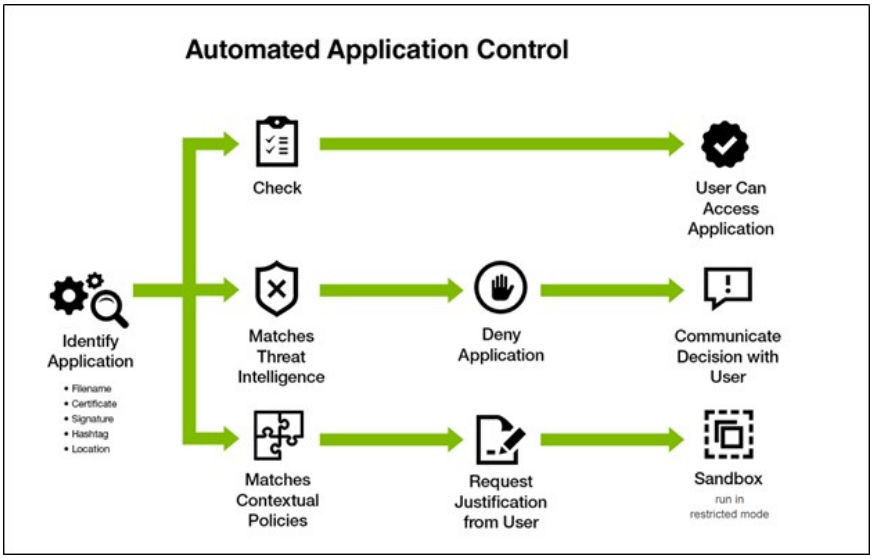


- **Security Group**: Under **Selected Items**, search for and select a security group filter.

4. Click **Save Changes**.

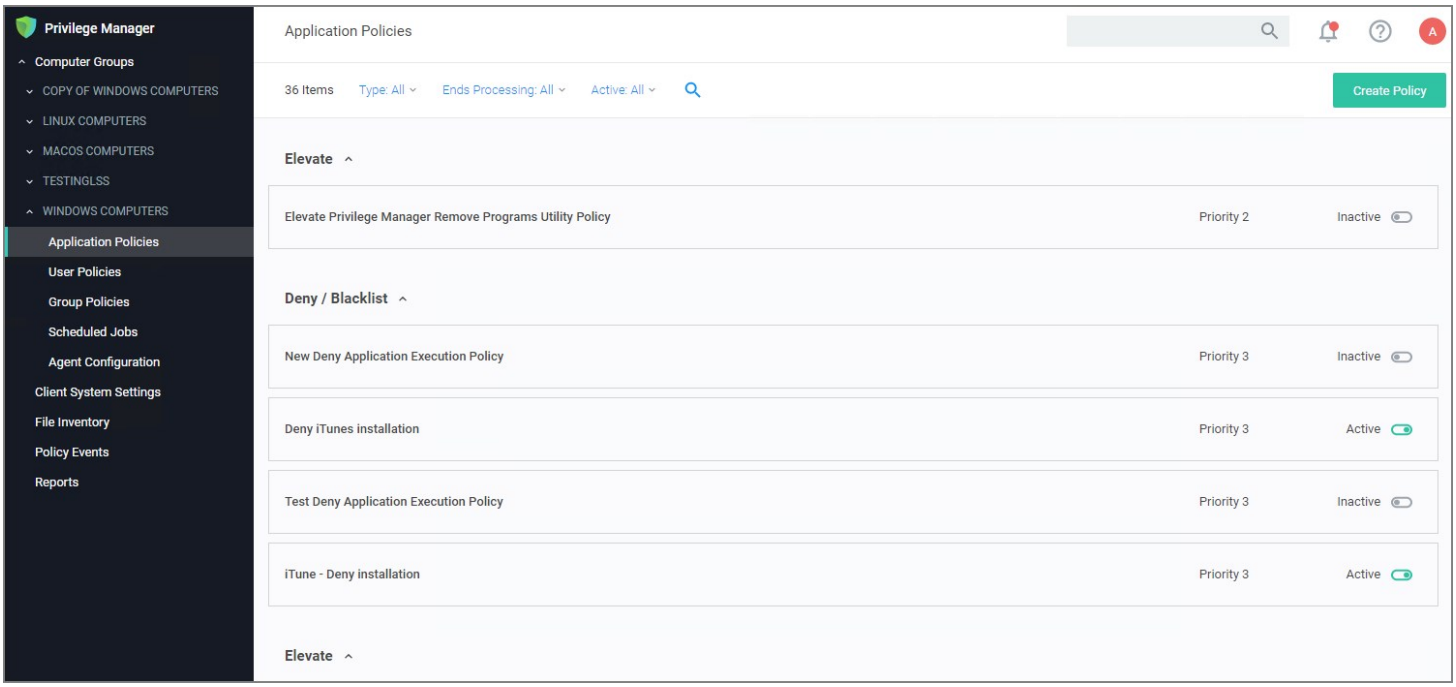
Application Control in Privilege Manager allows administrators to manage all application activity on endpoints. Applications requiring admin rights or root access can be automatically elevated if trusted, applications can be allowed, and malicious applications can be blocked.

In other words, the key to keeping your organization's employees working both securely and effectively without notable disruptions to their work is by tailoring a robust, role-based Application Control system. On the other hand, managing local administrator and root accounts through Local Security is the fastest way to lock down your network from malicious endpoint attacks that exploit administrator access.



Dashboard

From Privilege Manager 's Home navigate to your computer groups in the left navigation tree and select Application Policies.



At the most basic level, a Monitoring policy is a policy that takes no action, it exists only to gather data and you can use the data it gathers for audits or for assigning actions to application events retrospectively. For trials and Proof of Concept (PoC) environments these can be pointed at specific endpoints in order to learn about events that are already happening, or in order to test-run specific applications that you want to quickly introduce into Privilege Manager .

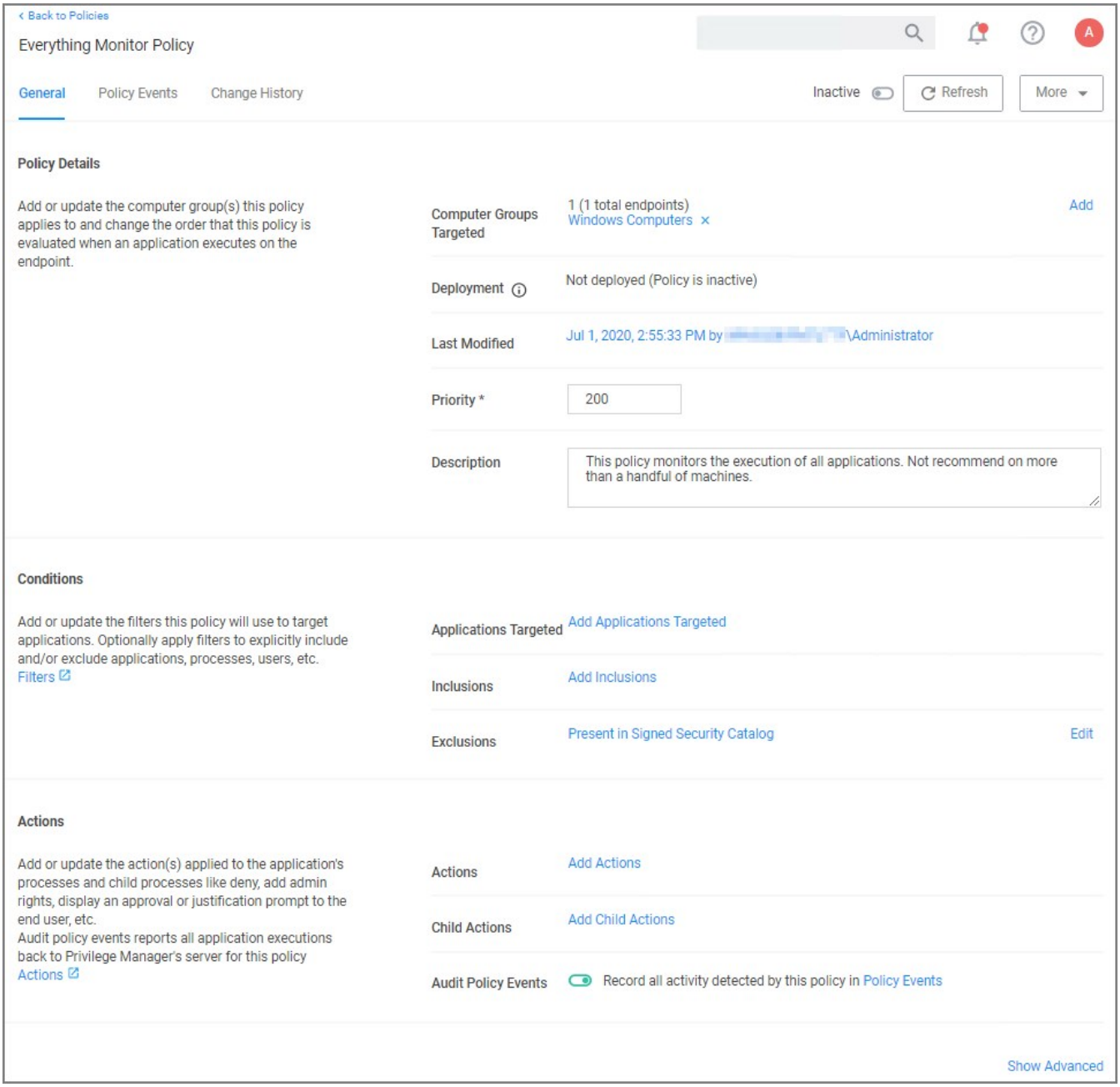
Any Monitoring policy will have the **Audit Policy Events** set to active under the Actions section.

> **Note**: Audit Policy Events is generally inactive in production environments outside of specific auditing or data-collecting initiatives due to the large amount of data these policies can gather.

Creating a Monitoring Policy

Use the policy wizard to create a monitoring policy for the learning mode phase on your instance.

1. Under your Computer Group navigate to Application Policies, click **Create Policy**.
2. On the **What type of policy?** page select Monitoring and click **Next Step**.
3. On the **What processes do you want this policy to monitor in this computer group?** page select **Everything** and click **Next Step**.
4. Enter a new name for the policy and click **Create Policy**.



Note: It is not recommended to run be active on more than a handful of machines.

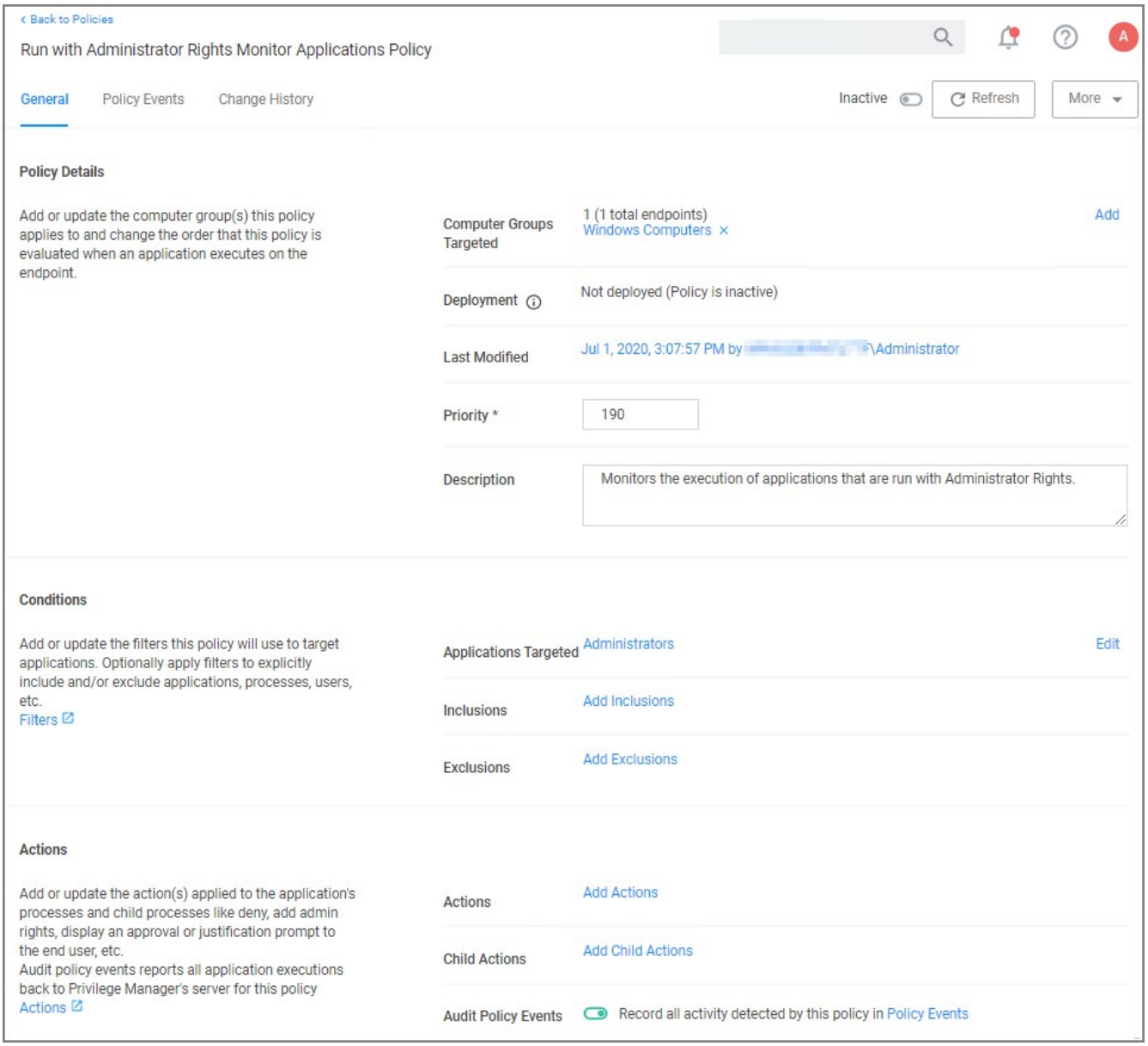
Discover Applications that Require Administrator Rights

The most influential applications are those that require administrator credentials to run. For setting up endpoints that are organized by Least Privilege, you can use a monitoring policy to discover all events requiring Administrator rights.

Use the policy wizard to create a monitoring policy for the learning mode phase on your instance.

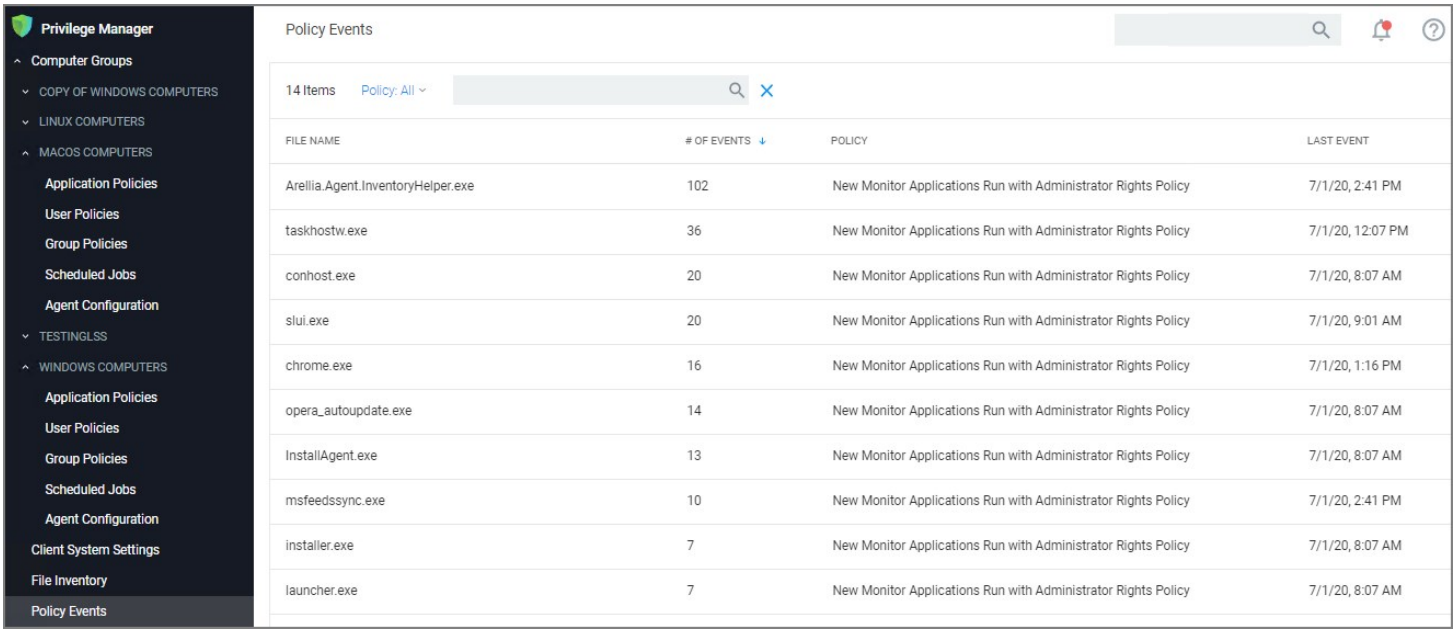
1. Under your Computer Group navigate to Application Policies, click **Create Policy**.
2. On the **What type of policy?** page select Monitoring and click **Next Step**.

3. On the **What processes do you want this policy to monitor in this computer group?** page select **Applications Run as Admin** and click **Next Step**.
4. Enter a new name for the policy and click **Create Policy**.



View Policy Results

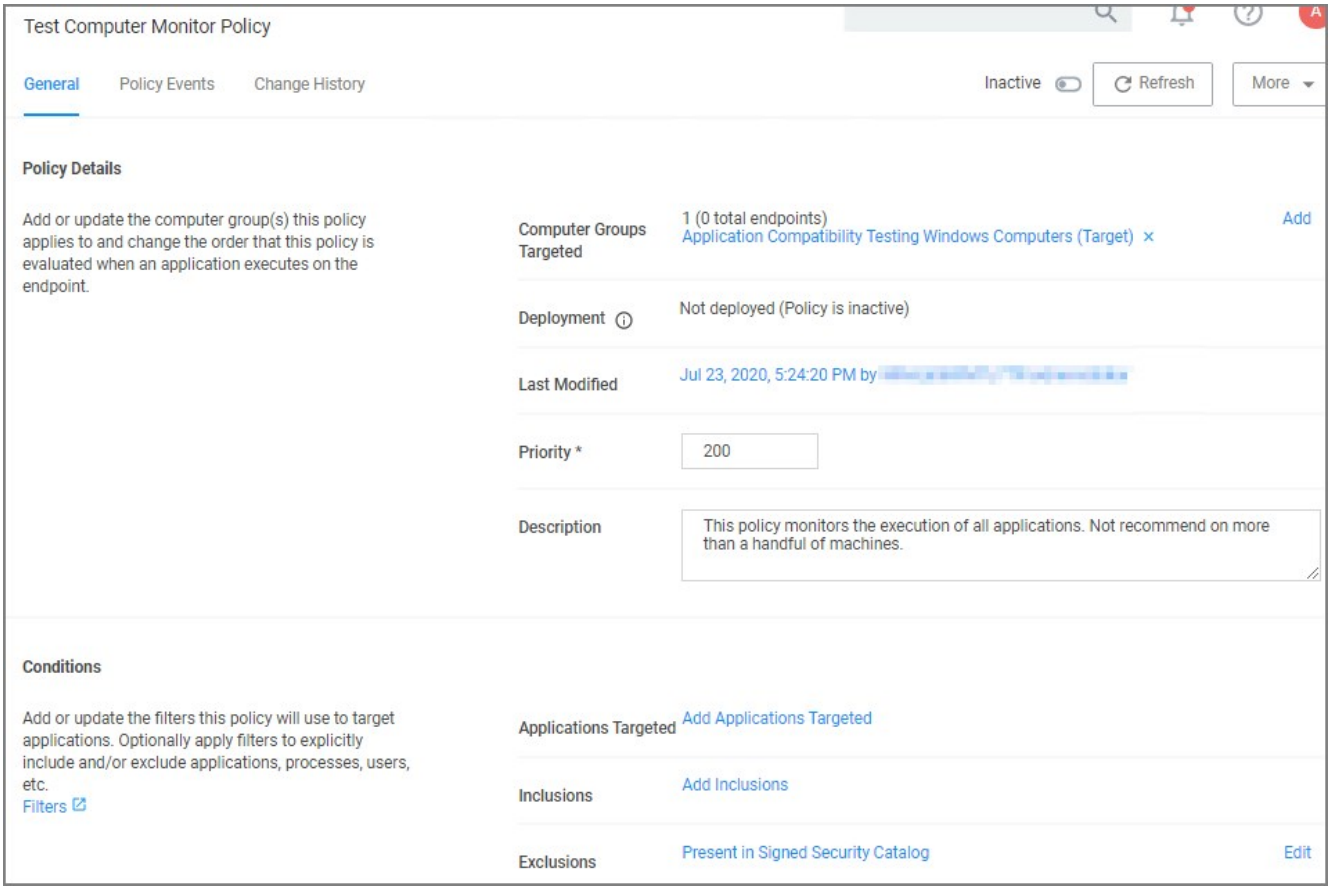
To view all feedback, or event, sent from your existing policies with the Send Policy Feedback activity checked, navigate to **Policy Events**. Events will be listed in the main section and on the left sidebar you can scope results for certain policies, computers, time frame, etc. You can use this view to assign any events to policies by clicking Assign to Policy under the event listing.



Discover All Events on Test Endpoints

Another type of monitoring policy will discover all events on targeted machines regardless of whether the application requires Administrator Rights. This policy is used in test environments to quickly target policies at untrusted/unwanted applications, but is not recommended for production settings.

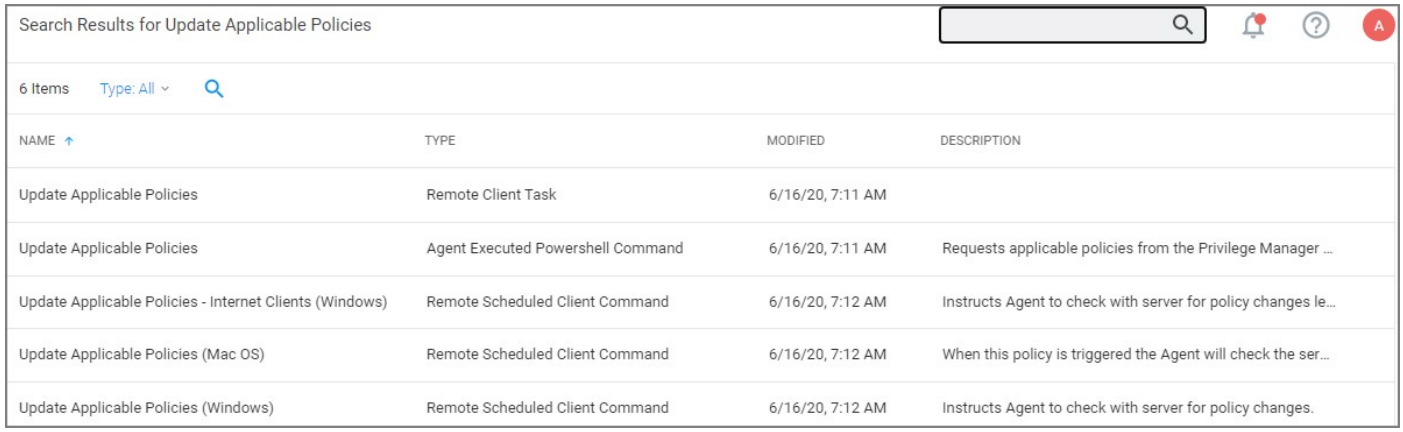
1. Under your Computer Group navigate to Application Policies, click **Create Policy**.
2. On the **What type of policy?** page select **Monitoring** and click **Next Step**.
3. On the **What processes do you want this policy to monitor in this computer group?** page select **Everything** and click **Next Step**.
4. Enter a new name for the policy and click **Create Policy**.
5. Under **Computer Groups Targeted** add the **Application Compatibility Testing Windows Computers (Target)** collection and remove the **Windows Computer** target.



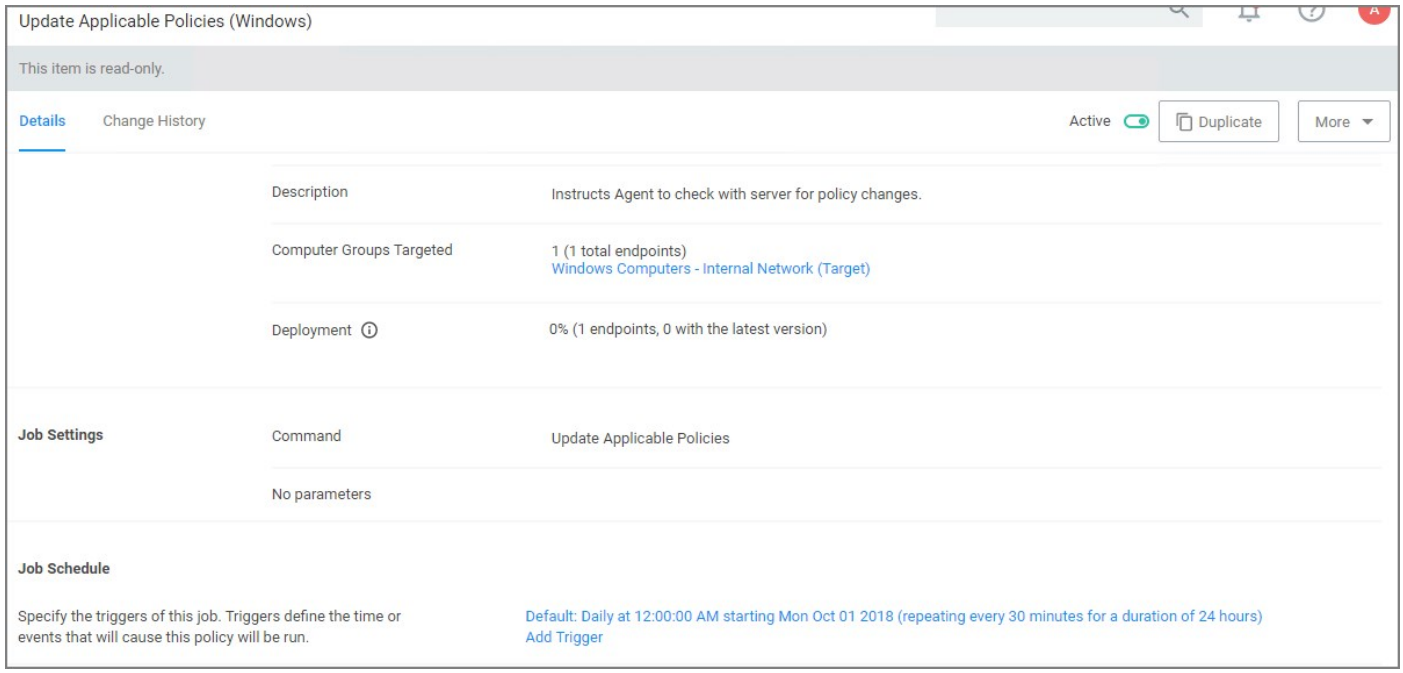
6. Click **Save Changes**.

After setting up your first policies, keep in mind that even after you enable them, new policies are not immediately sent to target endpoints. Instead, policies are updated on endpoints via the schedule defined by the Update Applicable Policies task. By default this tasks runs once daily.

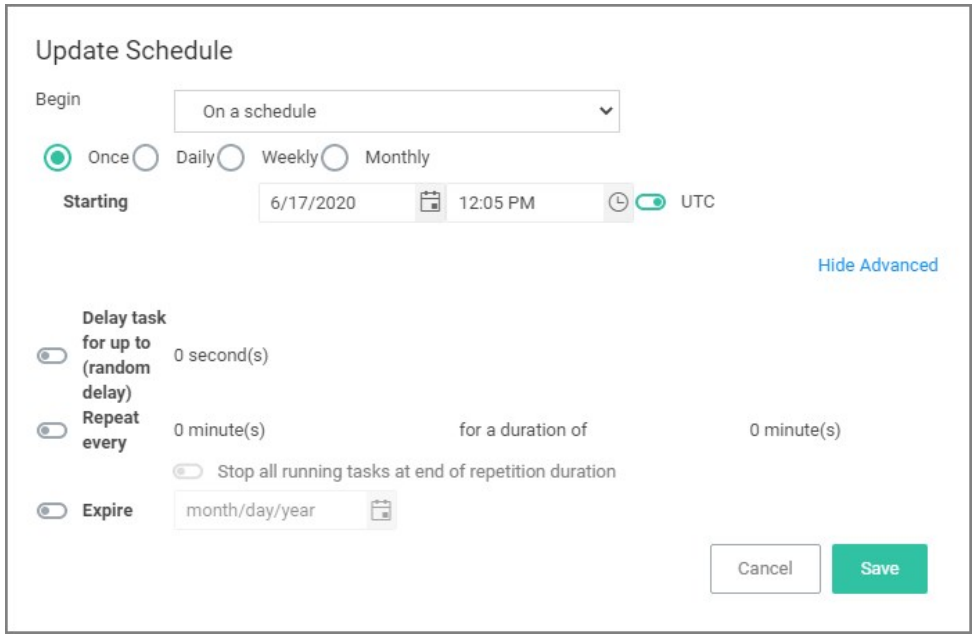
1. Search for the *Update Applicable Policies* task:



2. Select the **Update Applicable Policies (Windows)** for example.
3. To edit the time scheduled that sets off this task, under Job schedule click **Add Trigger**.



    1. Select to run this schedule **Once** on demand and make sure the time indicated is in the future. Clicking **Show Advanced** give you more options for the modification.



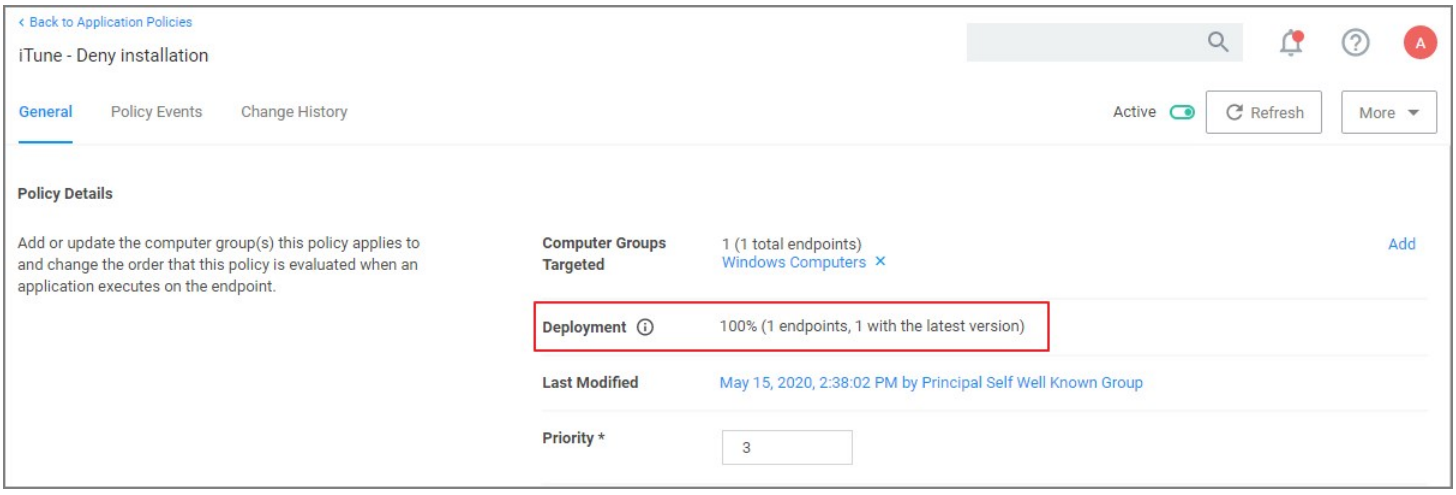
In production environments having a delayed deployment schedule prevents performance issues when adjusting policies and rolling them out across a large number of agents on your network. However, when setting up new policies you may want to immediately activate them on testing endpoints and verify your configurations are working correctly.

4. Click **Save**. The data under **Job Schedule** indicates to run once.

5. Click **Save Changes** for the modification to take effect.

View Deployment Status

Within a Policy's Detail View, verify the deployment status. This will tell you how many computers the policy is already deployed on:



Note: If the deployment status number is 0 or incorrect, it is possible that the *Resource and Collection Targeting Update* task needs to run.

Update Policies on an Endpoint using Powershell (prior version 10.7)

On Privilege Manager version prior to 10.7, the fastest way to deploy or update your policies on a specific testing endpoint is by running a simple Powershell script directly on your test machine where a Delinea Agent is installed.

1. On your endpoint machine, right-click on the Windows Powershell application and select Run as Administrator.
2. Navigate to the Agent directory by entering the following command and then enter:

   ```
   cd "C:\Program Files\Thycotic\Powershell\Arellia.Agent"
   ```

3. Next type

   ```
   UpdateClientItems.ps1
   ```

4. Hit enter.

   Note: If your policies are not immediately updated, wait a few minutes and try running the script again.

After you've updated your test endpoints, you can try running applications that are targeted by your policies to make sure the policies are configured correctly. You will also see the policy's Deployment status information updated if refreshed.

Agent Event Log Viewer

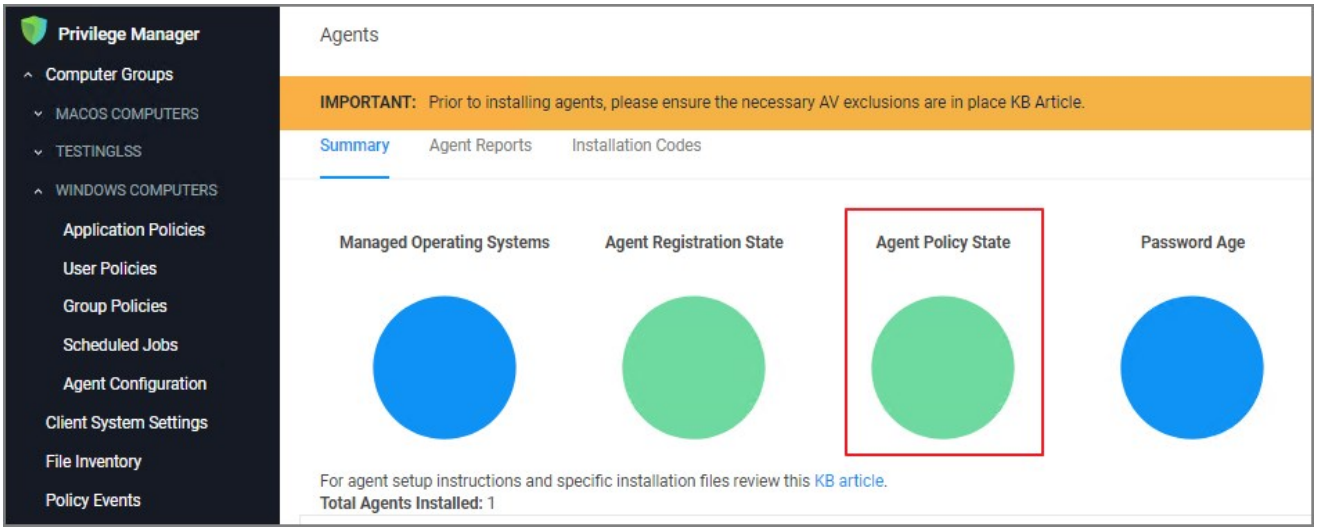
Another helpful place to look when setting up new policies is your Agent's Event Log Viewer. On your endpoint machine,

1. Navigate to your Delinea Agent files. This is usually located in `C:\Program Files\Thycotic\Powershell\Arellia.Agent`.
2. Right-click on **AgentLogViewer** and select the Log Viewer button. This opens your Agent Event Log Viewer, which shows updates in real time as the agent communicates with the Privilege Manager server. For remote access, Agent logs are also viewable through the Windows Event Viewer.
3. Scroll all the way to the top of the page to see the most recent activity from your Delinea Agent.
4. Deselect the Information box on the upper right-hand corner to narrow search results for any Errors and Warning messages that may be occurring. You can also double-click any line item for more detailed information about each event.

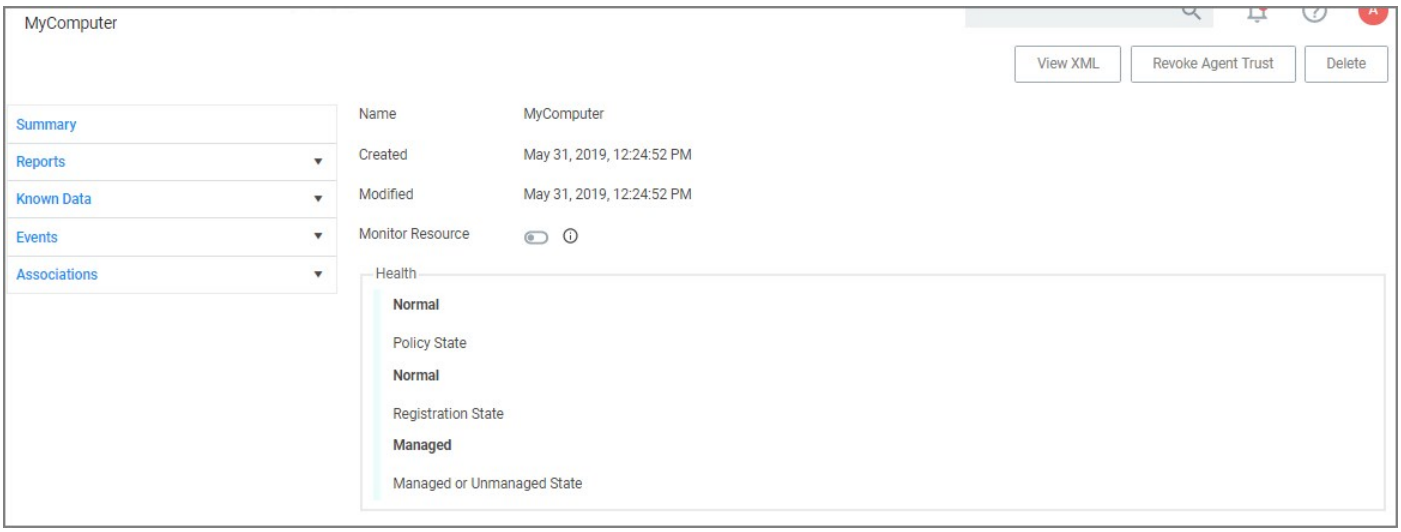
Now that you know how to update your endpoints and check to make sure your policies are working, it's time to start building new policies!

These are the steps for verifying which policies were received by an agent:

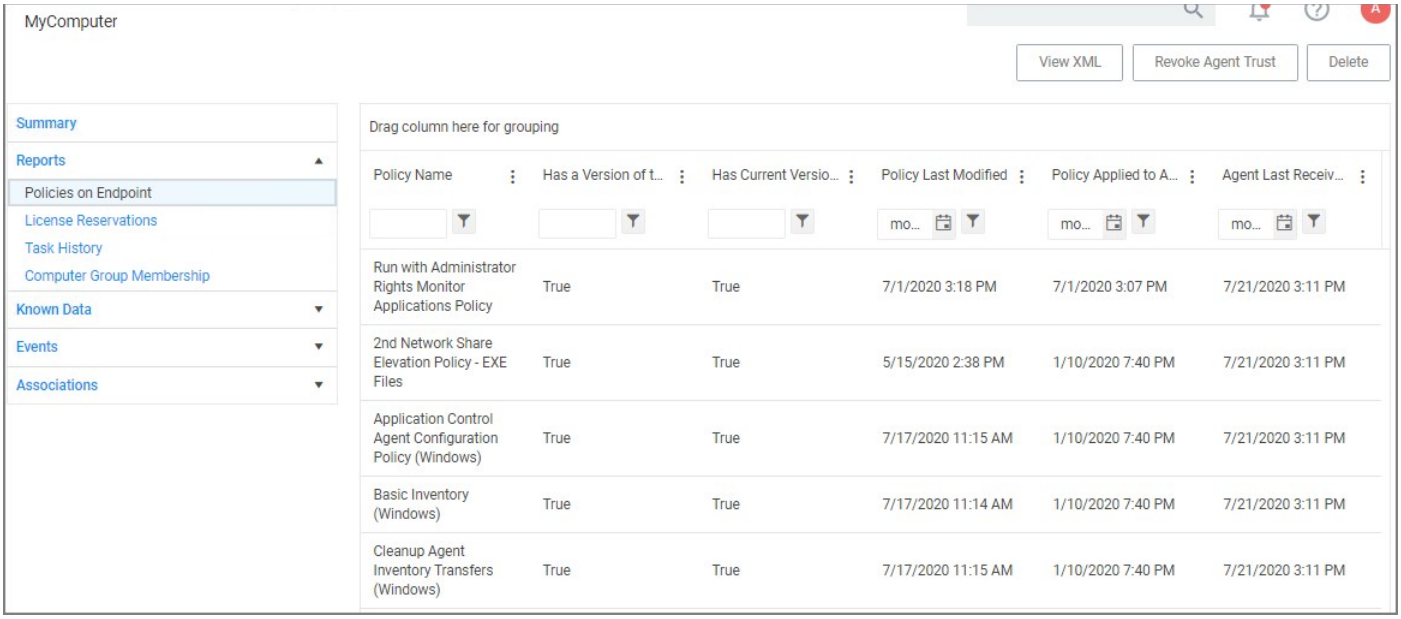
1. Navigate to **Admin I Agents** and click on **Agent Policy State**.



2. On the **Agent Policy State - Drilldown** page select the computer, whose policy state you wish to examine.
3. This opens the Resource Explorer for the selected endpoint.



4. Open the **Reports** section and select **Policies on Endpoint**.



View the polices that the agent on the endpoint has received. The Filter on the **Policy Name** column allows you to search for specific policies.

The column details are:

- **Has a Version of the Policy** and **Has Current Version of the Policy** provide information about the version of the policy.
- **Policy Last Modified** informs when a policy was last changed.
- **Policy Applied to Agent** specifies when the policy was first received by the agent.
- **Agent Last Received Policies** informs when the agent last contacted the server to request updates.

Delinea

Various Privilege Manager policies and filters use Regular Expressions (RegEx) to specify application or file names to match against.

For Privilege Manager all RegEx strings need to be in lowercase. A good resource for testing RegEx is https://regexr.com

Special RegEx Characters

The following characters have special meaning in RegEx, and should be used with an escape character when there is a need to represent a literal character.

To perform the escape a \ (backslash) needs to precede the following characters: + * ? ^ $. [ ] { } ( ) | \ /

A Privilege Manager Win32 file filters path name does not use the ending directory slash \. RegEx for path names should also not include the ending \.

Escape Example

For the literal (x86)\.net\C++ the RegEx is \(x86\)\\.net\\c\+\+.

Wildcard Example

In RegEx: .* is a wildcard

File Name Examples

Match with Wildcard before the File Name

Matching anything before the file name and ending with a file type, use a wildcard before the file name.

File Name="*eetechcode.exe" use this in Privilege Manager (.*eetechcode\.exe$)

Results:

- Match eetechcode.exe
- NoMatch eetecTesThcode.exe
- NoMatch eetechcodeTesT.exe
- Match TesTeetechcode.exe

Match File Name Containing String and File Type

To match a filename that contains a character string on both sides of the actual file name and that must end with a specific file type:

File Name="*eetechcode*.exe" use this in Privilege Manager (.*eetechcode.*\.exe$)

Results:

- Match eetechcode.exe
- NoMatch eetecTesThcode.exe
- Match eetechcodeTesT.exe
- Match TesTeetechcode.exe

Match with Wildcard at end of File Name and before File Type

Matching a file name with a string that contains anything between the string and the file type.

File Name="eetechcode*.exe" use this in Privilege Manager (^eetechcode.*\.exe$) this is a

Results:

- Match eetechcode.exe
- NoMatch eetecTesThcode.exe
- Match eetechcodeTesT.exe
- NoMatch TesTeetechcode.exe

Match with Wildcard in the Middle of Two Strings

Matching a file name beginning with a sting, followed by a wildcard and another string with the last string that includes the file type at the end.

File Name="eetech*code.exe" use this in Privilege Manager (^eetech.*code\.exe$)

Results:

- Match eetechcode.exe
- Match eetecTesThcode.exe
- NoMatch eetechcodeTesT.exe
- NoMatch TesTeetechcode.exe

Match with Wildcard at End of File Type

Matching a file name with the wildcard at the end of the file name after the file type, when the filename begins with a string that includes the file type and matches anything after the file type.

File Name="eetechcode.exe*" use this (^eetechcode\.exe.*)

Results:

- Match eetechcode.exe
- NoMatch eetecTesThcode.exe
- NoMatch eetechcodeTesT.exe
- NoMatch TesTeetechcode.exe

File Path Examples

Wildcard at the End of the Path

To match when a wildcard is at the end of the File Path like:

File Path="C:\Program Files\Thycotic\Agents\Agent*" use this (^c:\\program files\\thycotic\\agents\\agent.*)

> **Note**: The final backslash has been removed for Privilege Manager .

Also note the system variables like %ProgramFiles% don't work using regex unless %ProgramFiles% is what is shown in the Privilege Manager logs for the event.

Results:

- Match C:\Program Files\Thycotic\Agents\Agent
- NoMatch \Program Files\Thycotic\Agents\Agent
- NoMatch %ProgramFiles%\Program Files\Thycotic\Agents\Agent
- Match C:\Program Files\Thycotic\Agents\Agent\x86

Wildcard in IP Address for Network File Path

To match when a wildcard is used in an IP address for a network File Path like:

File Path="\\10.10.10.*\Program Files\Thycotic\Agents\Agent" use this (^\\\\10\.10\.10\..*\\program files\\thycotic\\agents\\agent$)

> **Note**: The final backslash has been removed for Privilege Manager .

Results:

- No Match C:\Program Files\Thycotic\Agents\Agent
- NoMatch \Program Files\Thycotic\Agents\Agent
- NoMatch %ProgramFiles%\Program Files\Thycotic\Agents\Agent
- NoMatch C:\Program Files\Thycotic\Agents\Agent\x86
- Match \10.10.10.2\ProgramFiles\Thycotic\Agents\Agent
- Match \10.10.10.9\ProgramFiles\Thycotic\Agents\Agent

Wildcard for Application Updates for all Users

To match when a wildcard is used several times to target application updates for all Users:

File Path "*\Users*\AppData\Local\Temp\notepad++*\bin" use this (.*\\users\\.*\\appdata\\local\\temp\\notepad\+\+\\.*\\bin$)

This targets any drive, any user, and multiple versions of an application update. Building filters like these can help streamline Privilege Manager administration since the filter stays current even with new versions coming out and working for all users.

Results:

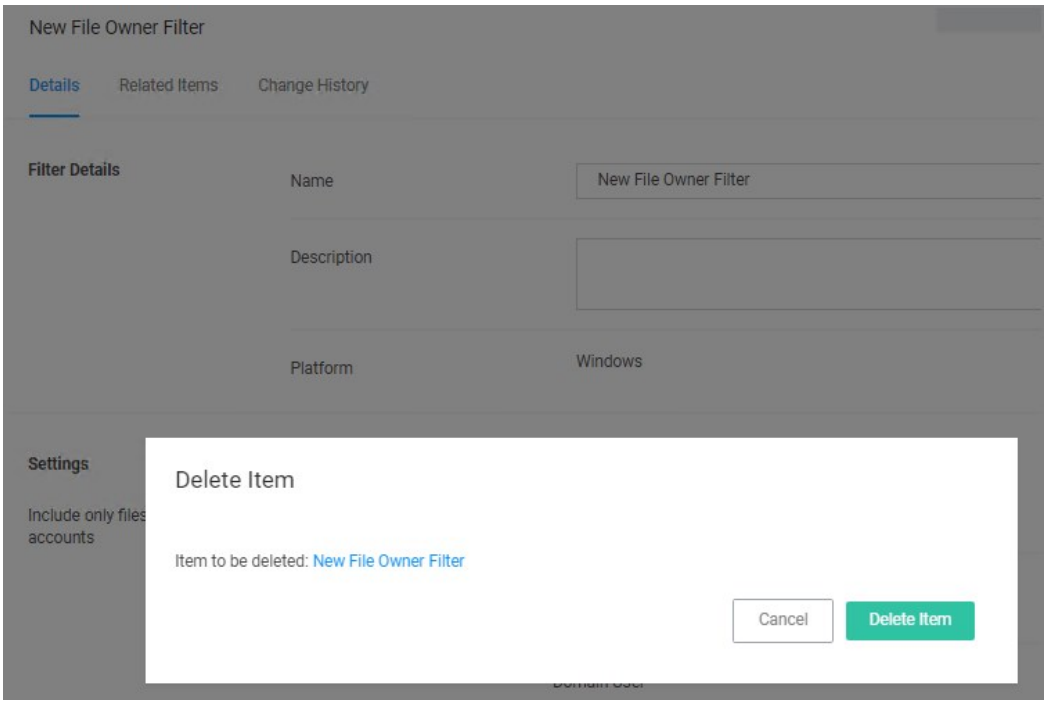
- Match C:\Users\MarkH\AppData\Local\Temp\notepad++\1.23.59874\bin
- Match C:\Users\DarinS\AppData\Local\Temp\notepad++\1.23.59874\bin
- Match C:\Users\MarkH\AppData\Local\Temp\notepad++\2.56.89457\bin
- Match C:\Users\DarinS\AppData\Local\Temp\notepad++\2.56.89457\bin
- NoMatch C:\Users\MarkH\AppData\Local\Temp\notepad++\2.56.89457
- NoMatch C:\Users\MarkH\AppData\Local\Temp\notepad++\2.56.89457\bin\test

When deleting items there might be dependencies, like a filter is used in a policy. If that filter is then deleted without modifying or also deleting the policy, the policy will stop working without anyone realizing that the filter has been deleted.

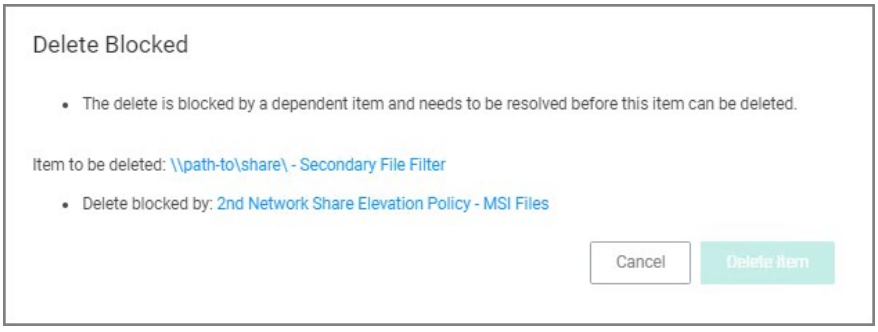
Privilege Manager detects dependencies when items are deleted and alerts the user to

- any dependent items, which block the deletion.
- any child items, which will also be deleted.

When a the **Delete** button is clicked on a filter, in this example the filter is called **allow notepad++ any version secondary file filter** and no dependencies are detected, a **Delete Item** modal opens. The user can proceed by clicking the **Delete Item** button.

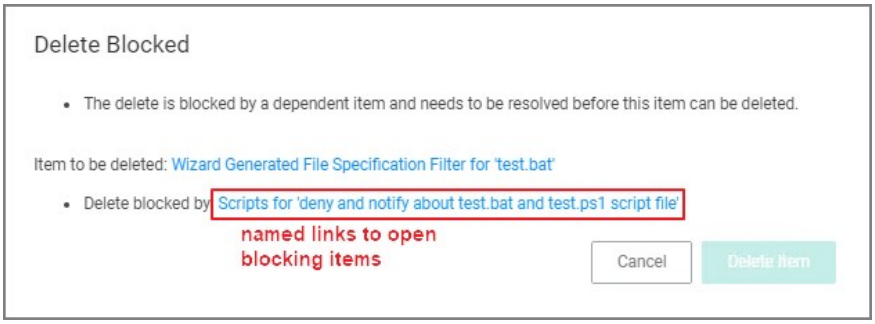


If that filter is part of a policy and the **Delete** button is clicked, the **Item Dependency: Delete Blocked** modal opens.



From the modal the user can see that the delete is blocked by a dependent item. A tool tip is shown when hovering the mouse pointer over the icons.

The trash can icon informs about which item was selected to be deleted. The blocked icon informs which items are blocking the deletion.



While there are blocking items, the **Delete Item** or **Delete Item and Children** buttons are disabled. The delete button is dynamic and will only display **Delete Item and Children** if both of those are dependencies, otherwise it will only display **Delete Item**.

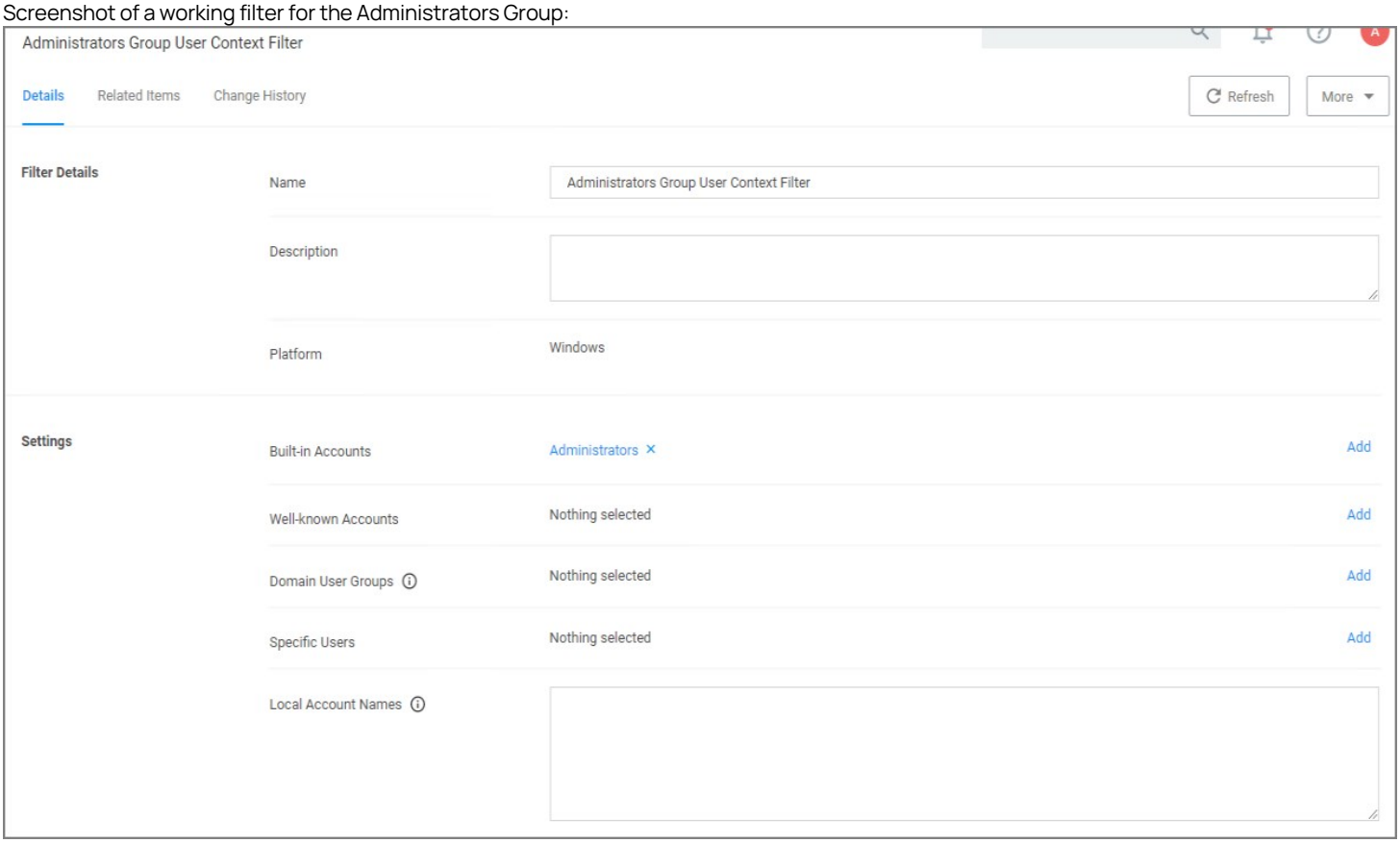
Blocking dependent items can be accessed and deleted by clicking on the named item link. This opens the dependent item in another browser tab, where it can be viewed and deleted.

If you wish to exclude certain users via filter from an application policy, follow these general guidelines.

Targeting Administrators with the Exclusion

To target the Administrators group, you need to use a User Context filter and select under **Built-in Accounts** options the **Administrators**. The out of the box **Administrators (Include Disabled)** filter (item f9569529-62d4-49ba-aa21-b9362e1f4de6) accomplishes the same. the include disabled text just means the user is a member of the group, but the process may or may not be elevated.

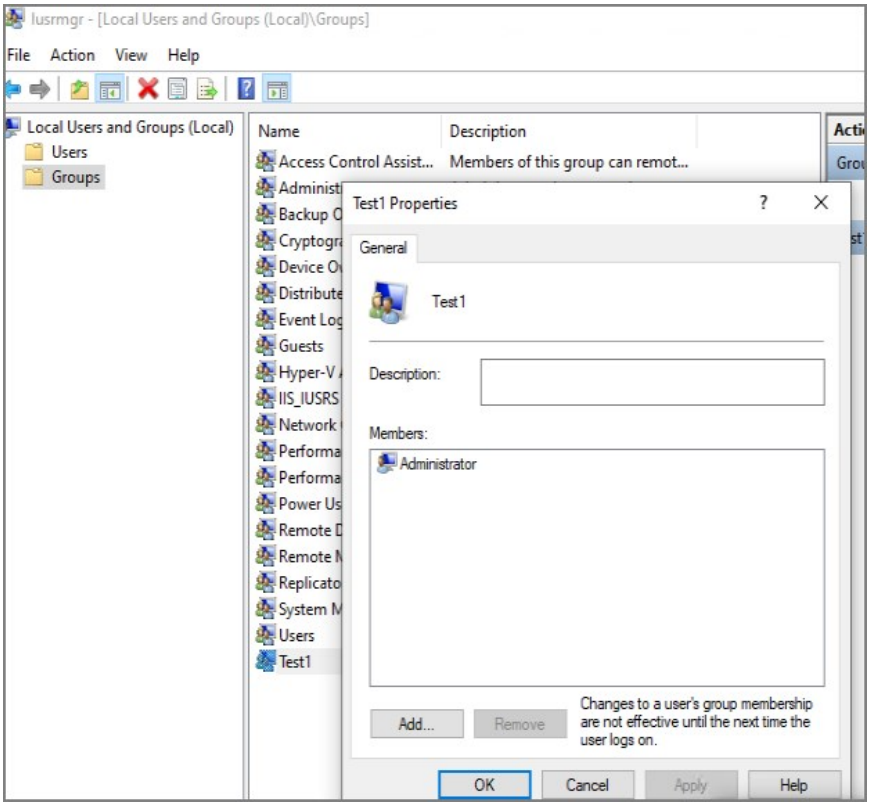
Screenshot of a working filter for the Administrators Group:



Targeting new Local Groups (not built-in)

The Local Group Names option can be used to target new local groups. New local groups are user groups that are not considered built-in system or out of the box Windows groups, such as Users, Administrators, Power Users, Backup Users, etc.

For example, create a new local group on a local computer and call the group "Test1". Then add a user to it that you wish to exclude.



If you then configure a filter like the following the policy should correctly exclude users in the group.

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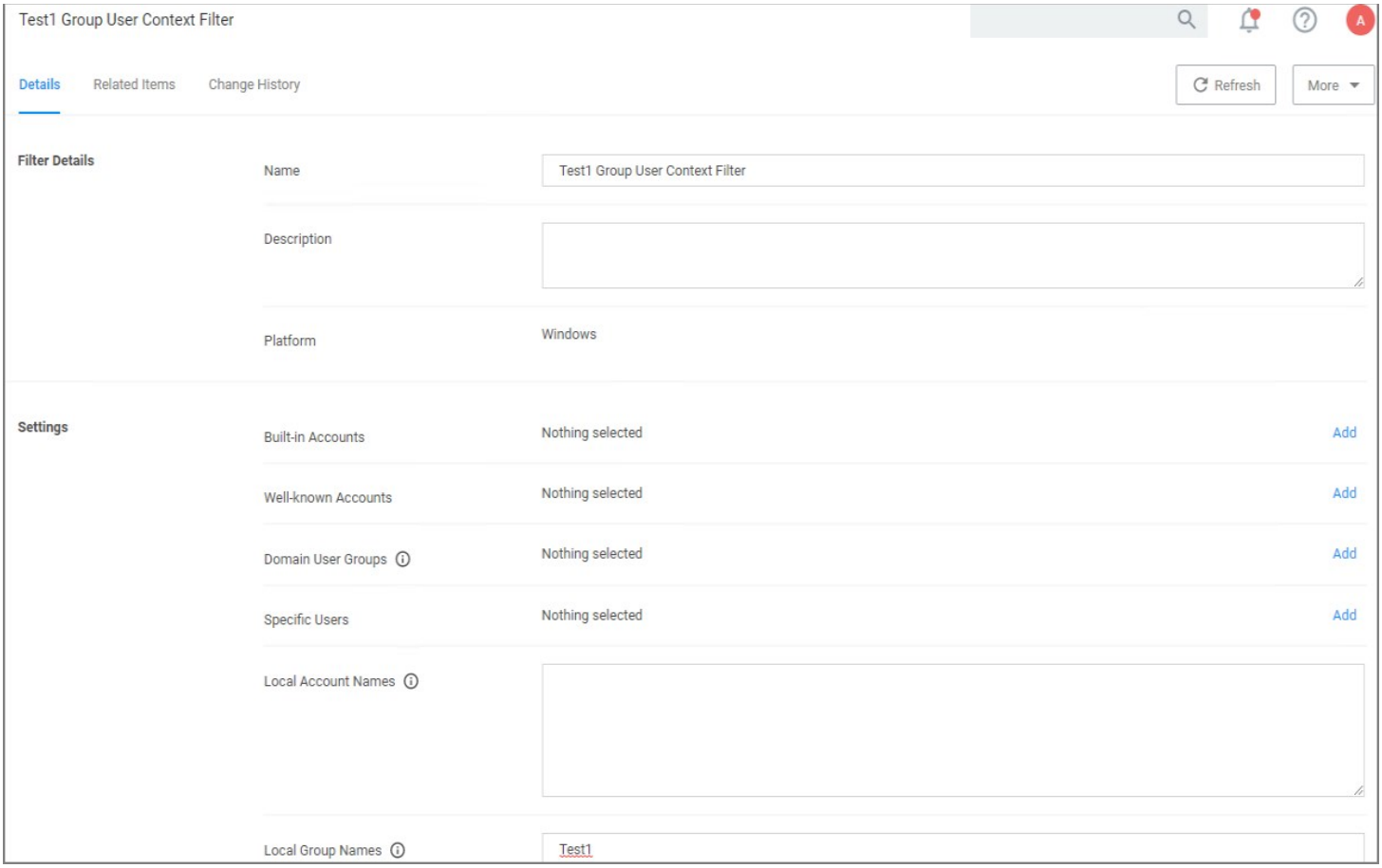

Test1 Group User Context Filter
Details
Related Items
Change History
Refresh
More
Filter Details
Name
Test1 Group User Context Filter
Description
Platform
Windows
Settings
Built-in Accounts
Nothing selected
Add
Well-known Accounts
Nothing selected
Add
Domain User Groups
Nothing selected
Add
Specific Users
Nothing selected
Add
Local Account Names
Local Group Names
Test1

Policies

In Application Control, layered Policies create the backbone or parameters, that dictate precisely how privileges are accessed across your network. They define what a user can run, and where. A policy is made up of customizable filters that apply an action to specific Computer Groups. In other words, each policy is defined by:

- Filters - What criteria needs to be met to apply this policy?
- Targets - Where should this policy be applied?
- Actions - What should happen to the applications this policy applies to? (i.e. blocked, allowed, etc.)

During the creation of a Policy you will specify Actions and Targets, and Filters that are created separately but then assigned to Policies.

The **Privilege Manager Policy Wizard**, guides users through the policy creation process, with step-by-step decision making guidance.

Using Policy Templates

Privilege Manager ships with most commonly used policy templates. These are utilized by the policy wizard when creating a new policy.

Delinea also provides templates that do not ship with the product, but that can be downloaded via **Config Feeds** from within the Privilege Manager Console. Once downloaded and installed, customers can access those policy templates via **Admin I Folders**. Here a new policy can be created based on a template from a drop-down list. This policy will have associated targets, filters, and actions set, which can be further customized to cover an organization's specific needs. Also refer to Configuration Feeds.

Overview of the Configuration Process

While there are many different types of policies, the setup process must follow these basic steps:

1. Collect File Data - This enables Privilege Manager to recognize specific files and file types in your environment. The file data that you want to target with policies are called Events. All imported files can be viewed under **File Inventory**.
2. Create Filters - This step sorts important file data (Events) according to different criteria.
3. Create Policies - This step defines what
    1. Actions to perform on applications and the
    2. Targets (Locations) for those actions.
4. Assign Filters to Policies - This step directs a Policy's actions to the appropriate Events happening on your network.
5. Order your Policies based on priority level - Once your policies are created, the order they execute across your network matters. See the Policy Priority section in this guide for more details.

Collecting File Data

Before Privilege Manager can do anything else for Application Control, it must be able to recognize files or file types in your environment like applications or executables that run. File data can be collected in several ways:

- Event Discovery - Discover active applications on your network by setting up Learning Mode Policies
- File Upload - Directly upload a specific file that you want to target
- Remote File Inventory Task (Windows/macOS) - Scans endpoints directly and imports all file data (both active and inactive files) that exist on the targeted machine(s).

Points to Consider

If you configure Privilege Manager policies incorrectly they could prevent services or programs from starting or running with the proper rights.

Policies are evaluated in order based on the Policy Priority value on the Policy. If a blocking policy that denies applications is too broad and is set with too high a priority, it can unintentionally prevent other applications from running or letting the user request approval to run.

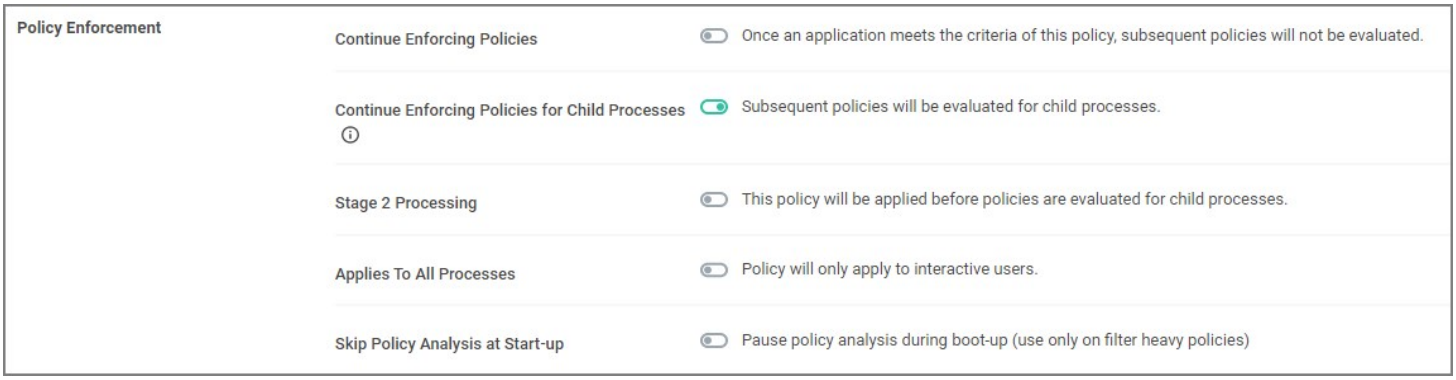
You can avoid conflicts resulting from incorrectly configured Privilege Manager policies by using the following best practices:

- Always test policies on machines which mirror the production environment before rolling out to production.

- Assign policies that allow processes a lower policy priority number than policies that deny processes.
- Make sure your other policy enforcement settings check boxes are selected or cleared, depending on the aims of your policy.
- Policies that deny processes always exclude the following application filters:
  - LocalSystem and Service
  - Signed Security Catalog
- You should (almost) never use wildcards in deny policies. Wildcards should be considered only after performing extensive testing.
- Do not add User Context filters as the only application target to a policy. Starting with Privilege Manager version 11, the UI does alert to this as being an invalid policy. Refer to Warning Banner indicating Filter Error Conditions in Policies.

Policy Enforcement

Each policy has advanced settings to address any non default Policy Enforcement options. Some of those pertain to parent-child processes and how policies are processed when they are supposed to work together in such parent-child or stage 2 processing scenarios.



Continue Enforcing

After an application meets the criteria of this policy, the agent will continue checking if it matches additional policies. If this setting is not enabled, subsequent policies will not be evaluated.

This setting has to be active for **Stage 2 Processing** to work as intended.

Continue Enforcing Policies for Child Processes

Include child processes in the policy enforcement, meaning subsequent policies will be evaluated.

In certain situations this needs to be disabled, if for example you want to allow and application if it is launched by a specific process, but deny it if it's executed directly. Refer to the **Stage 2 Processing** description.

Stage 2 Processing

Policies are initially evaluated for the primary process. If no matches are found, policies are evaluated for a parent of that process. If active, the policy is applied before policies are evaluated for child processes.

For example, if you want to allow regedit.exe when launched by cmd.exe but block it if launched directly, you need to create

1. a policy to target and allow cmd.exe with an inactive "Enforce Child Processes" and
2. a policy that targets regedit.exe with a deny action and "Stage 2 processing" enabled.

The priority on the policy that targets regedit.exe directly needs to be higher than the priority on the allow cmd.exe policy.

Applies to All Processes

Policy will apply to system based processes. If this setting is not active, the policy will only apply to interactive users.

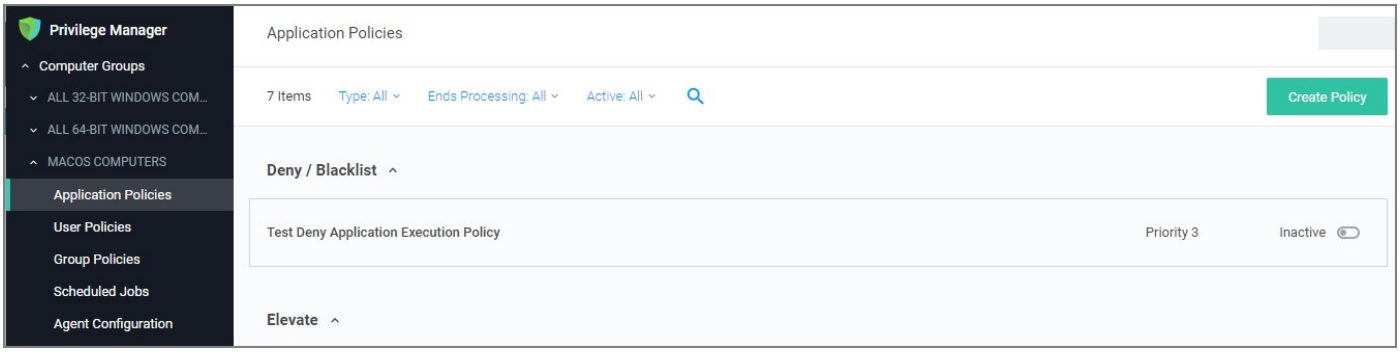
Skip Policy Analysis at Start-up

This setting can be used to pause policy analysis during boot-up, refer to Increase Boot-up Performance for details.

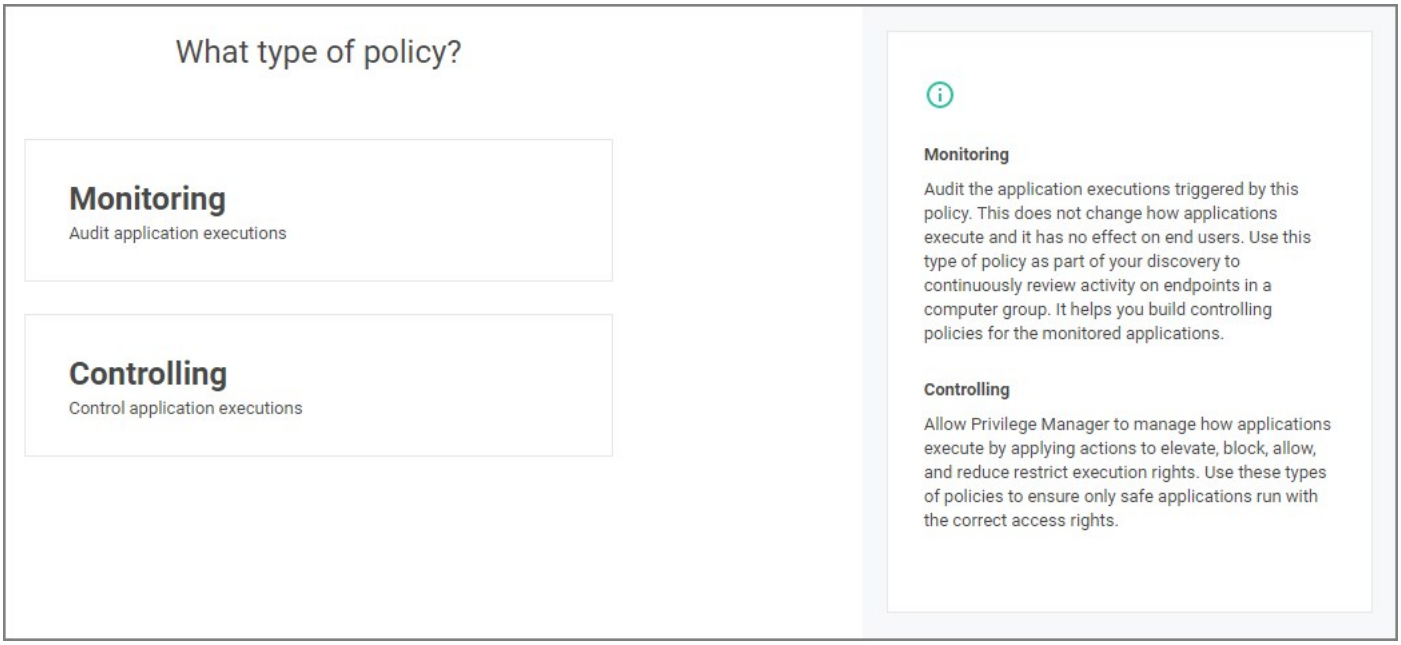
Using the Policy Wizard

Privilege Manager v10.8 is introducing the Policy Wizard for an easy and guided creation of new policies.

1. For any of your Computer Groups navigate to **Application Policies**.



2. Click **Create Policy**.



Make your selection and click **Next** to get to the next wizard page.

For the steps through the wizard, follow these decision points references per OS:

- Monitoring Policy Diagram
- macOS:
  - Controlling Allow Diagram
  - Controlling Block Diagram
  - Controlling Elevate Diagram
- Unix/Linux
  - Wizard Flow Diagram for Unix/Linux Policies
- Windows
  - Controlling Allow Diagram
  - Controlling Block Diagram

- Controlling Elevate Diagram
- Controlling Restrict Diagram

3. After assigning a name, description and verifying the priority number, click **Create Policy**.

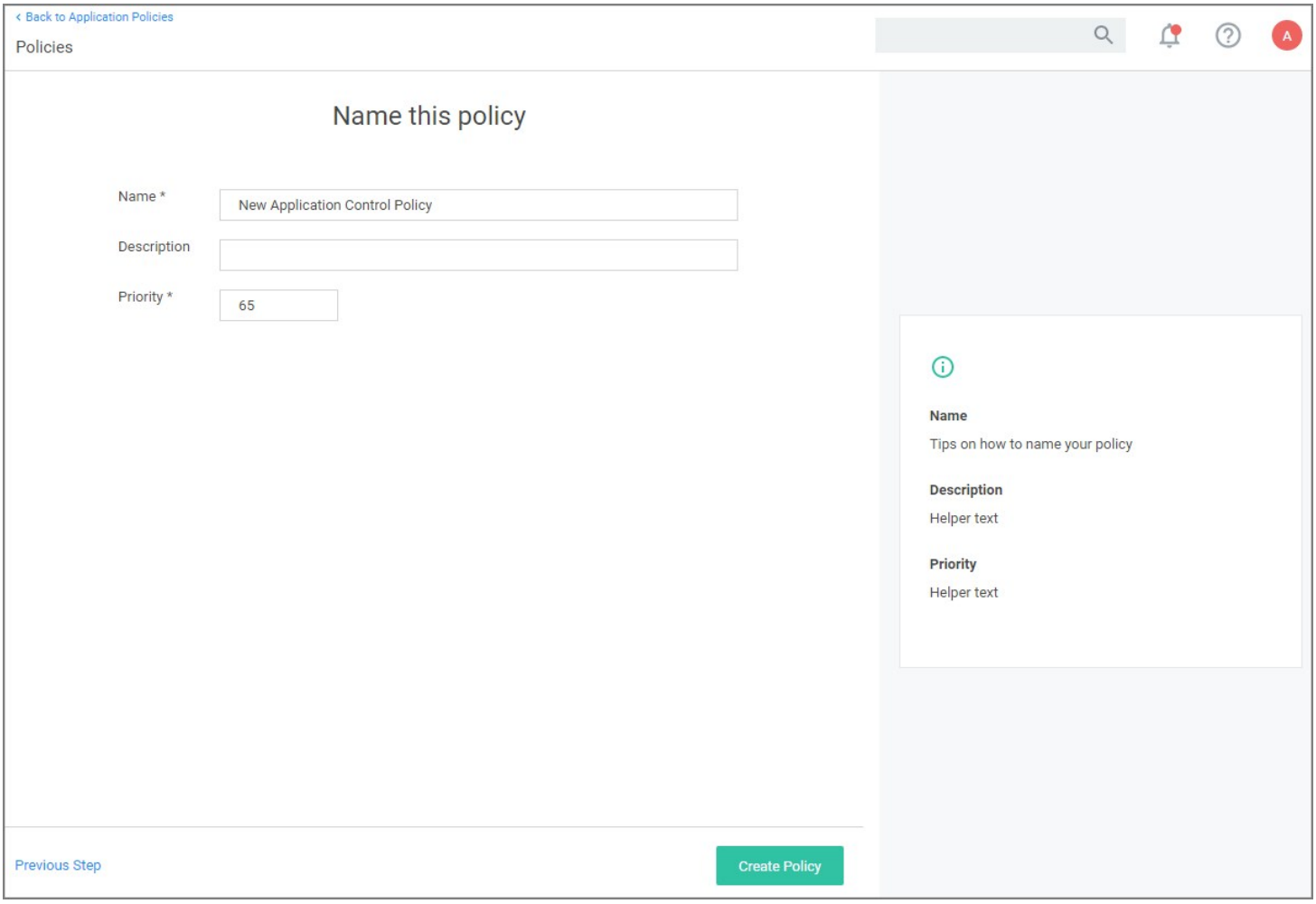
While in the wizard you can navigate back to previous pages via the **Previous Step** link to select another path. However, any **Previous Step** navigation clears selected options on accessed wizard pages.

The wizard provides on page help explaining the different options available to the user.

Using a Blank Policy

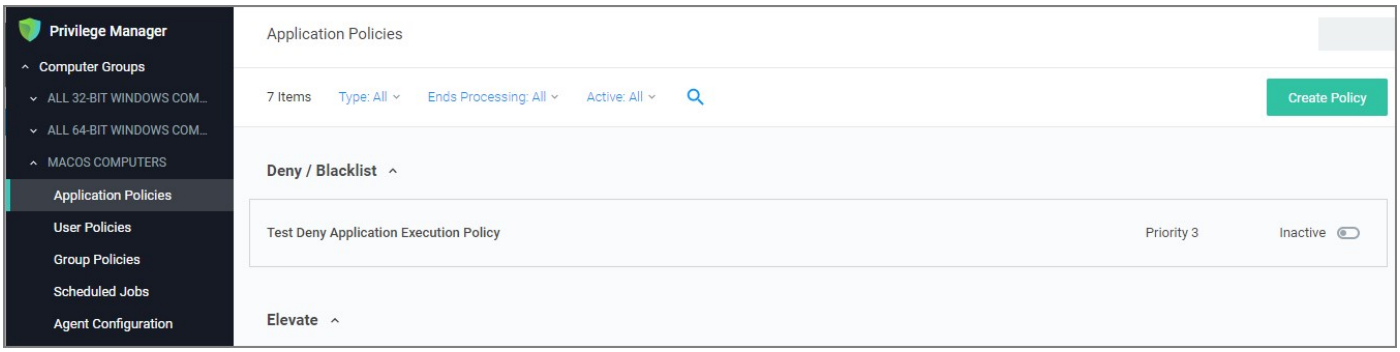
It is possible to create a new policy based on a blank template. On the first page of the Policy Wizard, you can find a link to **Skip the wizard** at the bottom of the page.

Click the link to open a blank policy and build the policy out manually.

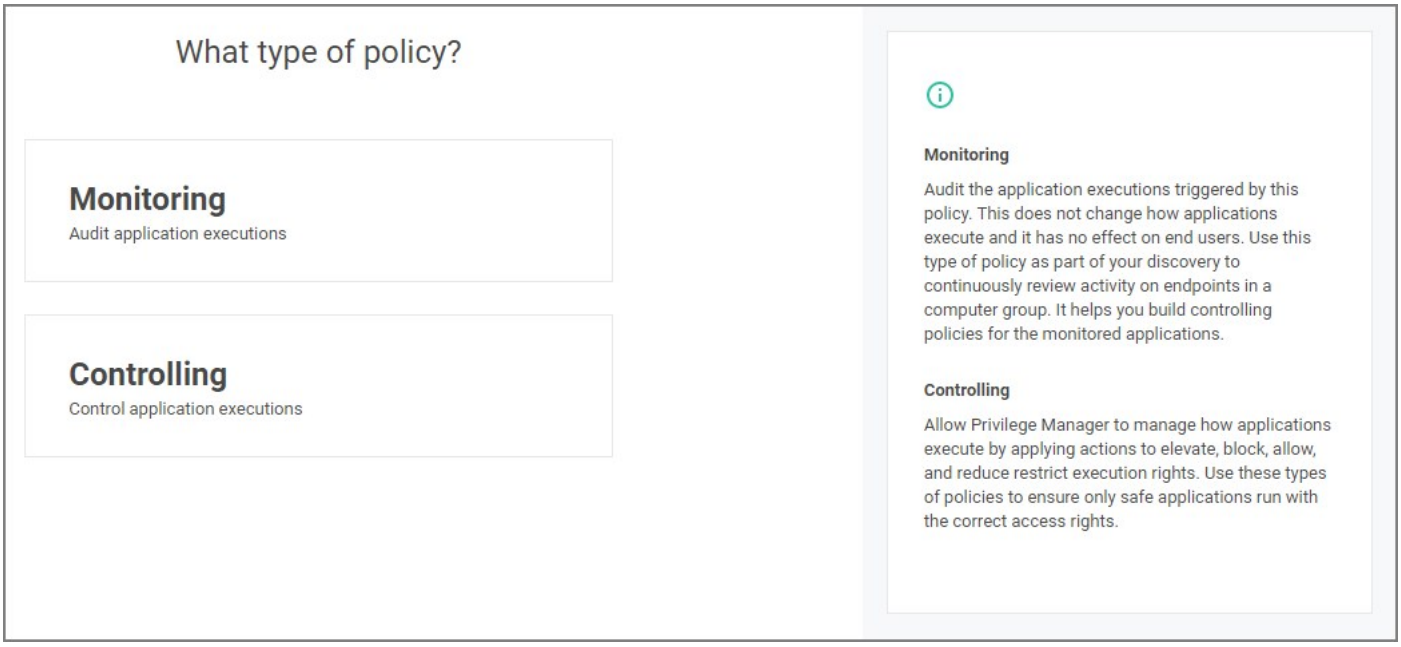


Creating a Monitoring Policy

1. For any of your Computer Groups navigate to **Application Policies**.

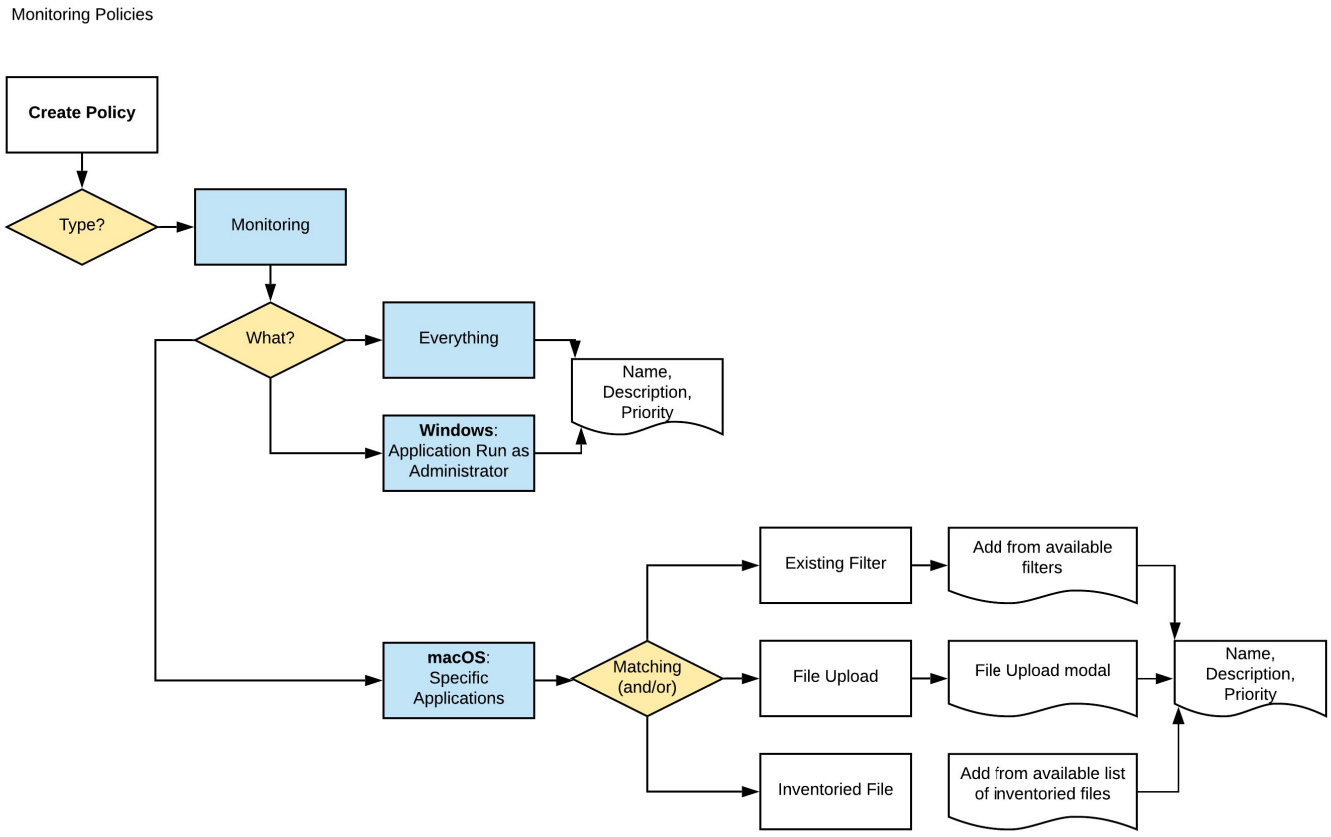


2. Click **Create Policy**.



Make your selection and click **Next** to get to the next wizard page.

For the steps through the wizard, follow these decision points:



3. After assigning a name, description and verifying the priority number, click **Create Policy**.

While in the wizard you can navigate back to previous pages via the **Previous Step** link to select another path. However, any **Previous Step** navigation clears selected options on accessed wizard pages.

The wizard provides on page help explaining the different options available to the user.

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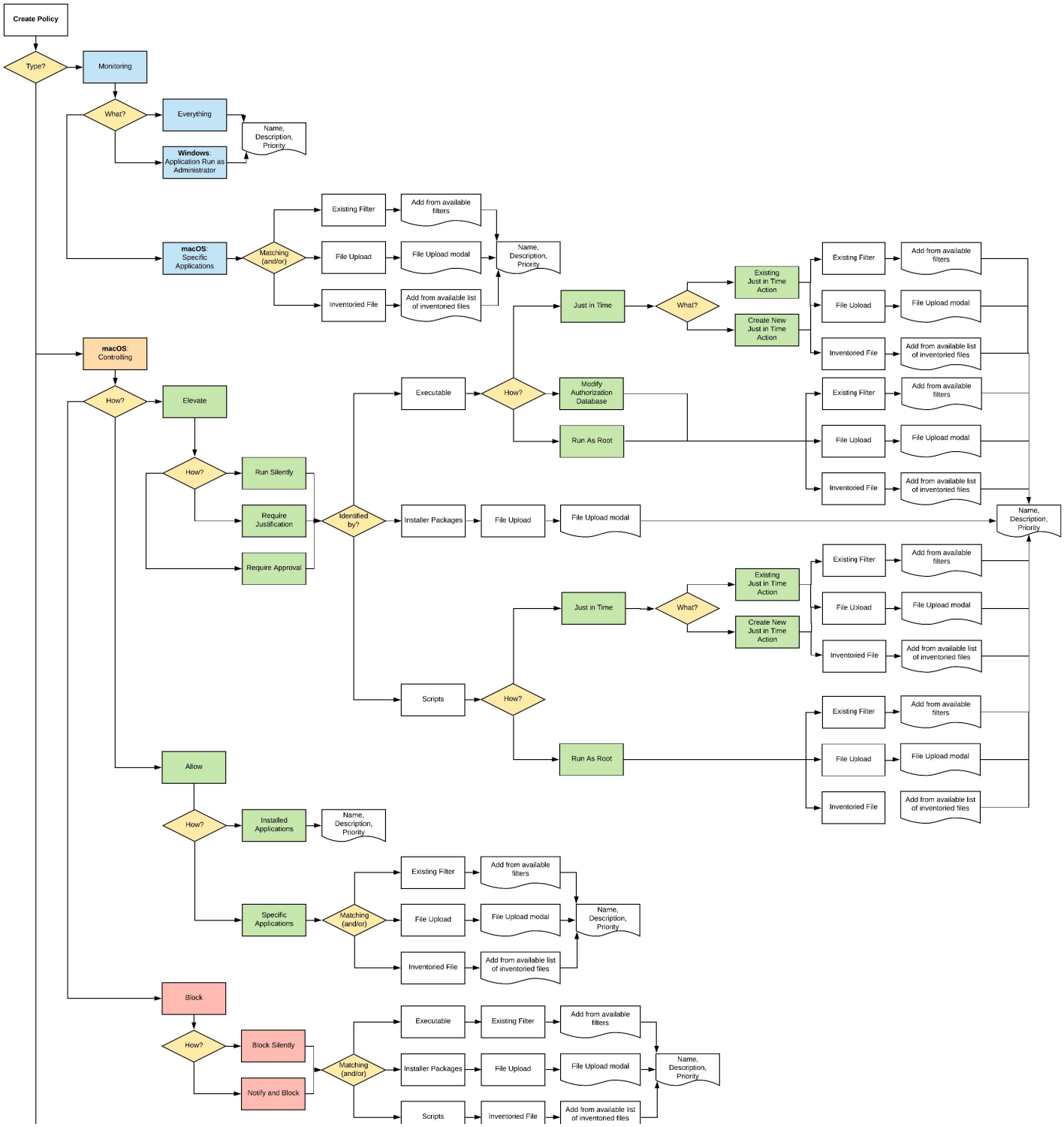
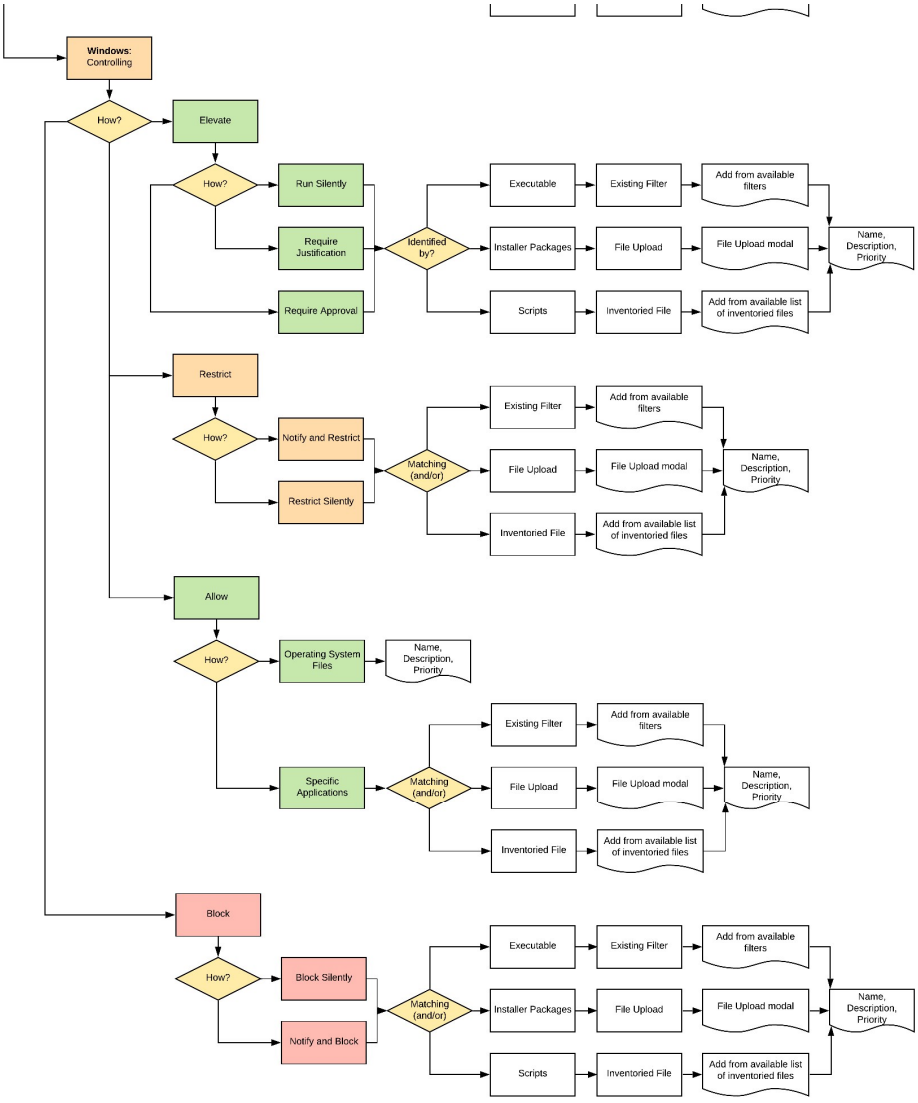
Full Policy Wizard Diagram

Note: The diagram shows macOS actions "Run as Root" and "Just in Time" which will only work with the system extension based agent introduced with Privilege Manager v10.8.2.



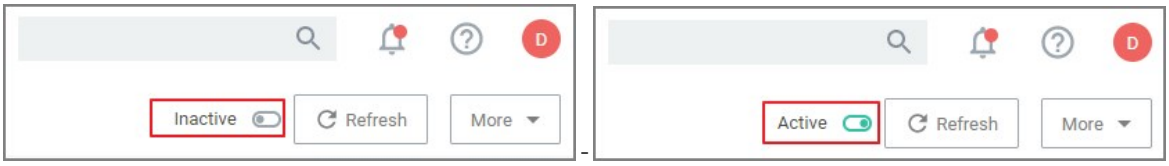

Windows: Controlling
How?
Elevate
How?
Run Silently
Require Justification
Require Approval
Identified by?
Executable
Existing Filter
Add from available filters
Installer Packages
File Upload
File Upload modal
Scripts
Inventoried File
Add from available list of inventoried files
Name, Description, Priority
Restrict
How?
Notify and Restrict
Restrict Silently
Matching (and/or)
Existing Filter
Add from available filters
File Upload
File Upload modal
Inventoried File
Add from available list of inventoried files
Name, Description, Priority
Allow
How?
Operating System Files
Name, Description, Priority
Specific Applications
Matching (and/or)
Existing Filter
Add from available filters
File Upload
File Upload modal
Inventoried File
Add from available list of inventoried files
Name, Description, Priority
Block
How?
Block Silently
Notify and Block
Matching (and/or)
Executable
Existing Filter
Add from available filters
Installer Packages
File Upload
File Upload modal
Scripts
Inventoried File
Add from available list of inventoried files
Name, Description, Priority

What's on the Policy Page

Once a policy is created, it can be customized. The following screen capture shows a policy example that denies the execution of a specific batch file.

Policy Activation

By default newly created policies are inactive and to activate them, the switch needs to be set to active.



Policy Details

The Policy Details section provides information about and customization options for:

- **Computer Groups Targeted** can be edited by either
  - deleting the current target by clicking the **x** next to the computer group name, or
  - adding another computer group by clicking **Add**.
- **Deployment**, provides information about the deployment status at endpoints. Click the explanation point next to Deployment to run the **Resource and Collection Targeting Update Task**.
- **Last Modified** provided a quick history on the last edit to the policy, time and by whom.
- **Priority**, modify the priority if needed, specific deny policies get lower priority values than monitor, allow, or elevate policies.

Conditions

Under Conditions edit the

- Applications Targeted,
- Inclusions, and
- Exclusions.

Actions

Under Actions edit which message action to use, if child actions are applicable, and if you wish to audit all activities this policy is detecting.

- Actions
- Add Child Actions
- Audit Policy Events

Audit Policy Events

All activity identified on a policy can be recorded by using the Audit Policy Events switch. This setting is automatically enabled for all monitoring policies. It can be activated on demand for controlling policies. Once selected, a confirmation message appears advising users that this functionality should only be enabled for a limited time on a selected number of endpoints.

> **Note**: For Unix/Linux endpoints the `pmagent --privman --refreshpolicies` command needs to run, to update the policy on the endpoint.

Show Advanced

Clicking **Show Advanced**, provides access to setting Policy Enforcement options, like:

- Continue Enforcing
- Applies to All Processes
- Enforce Child Processes
- Stage 2 Processing
- Skip Policy Analysis at Start-up.

Refer to Policy Enforcement for further details.

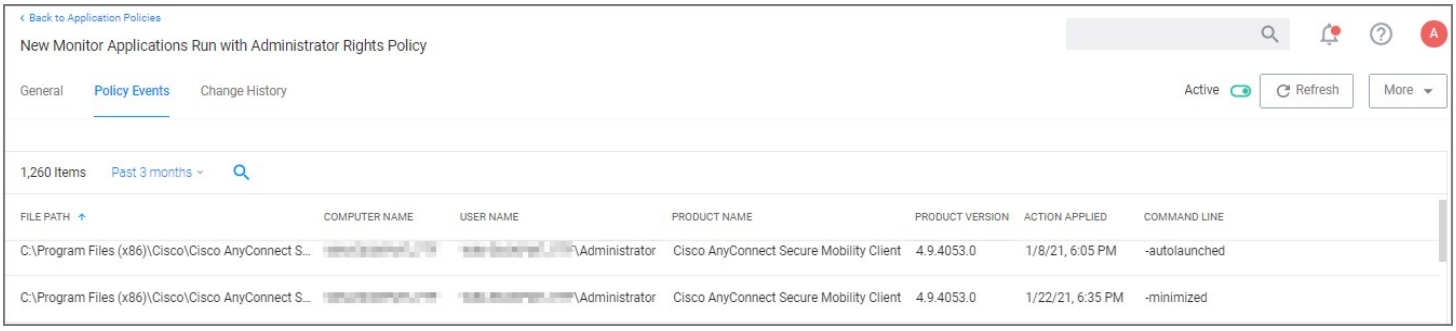
Policy Events Tab

The Policy Events tab lists all events that were discovered with this specific policy.

The Policy Events page provides the

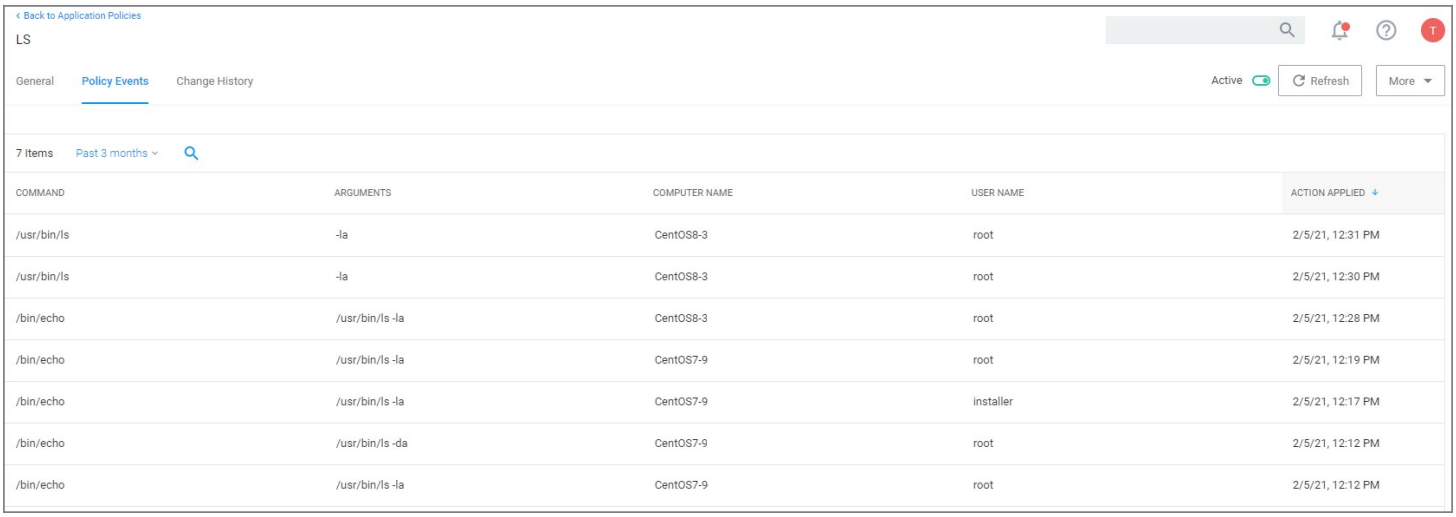
- File Path
- Computer Name
- User Name
- Product Name
- Product Version
- Action Applied
- Command Line

information for the active application control policy creating the events.



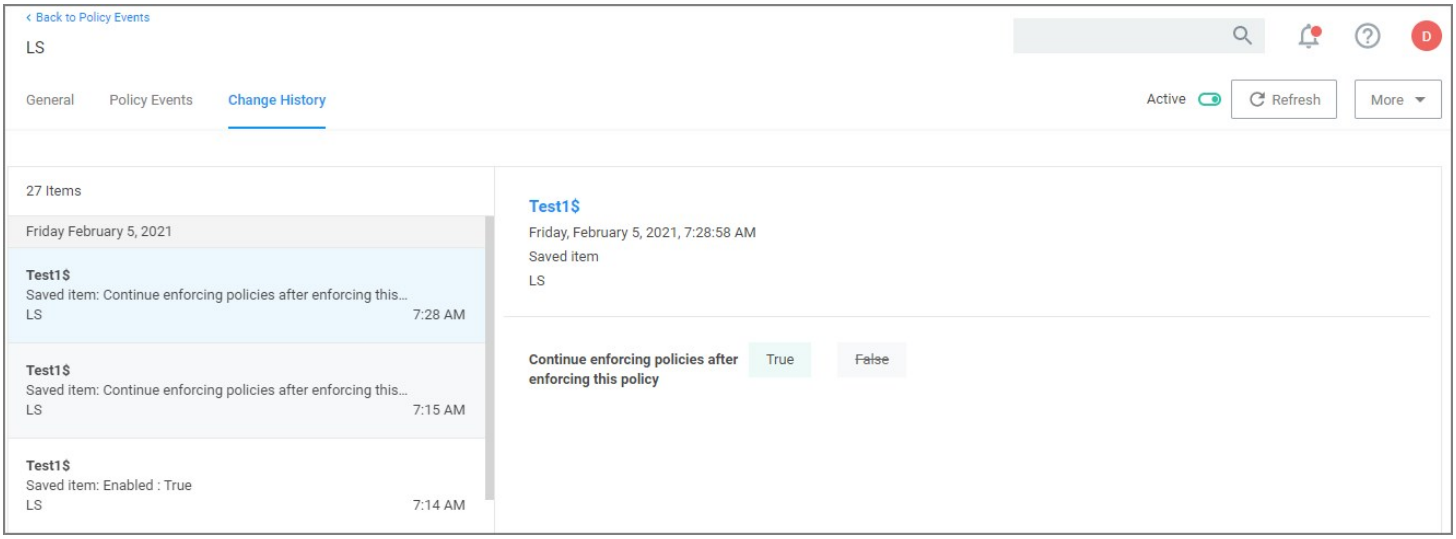
Unix/Linux Policy Events Tab

The Policy Events page for Unix/Linux shows a subset of the information available for macOS/Windows systems on this page.



Change History Tab

The Change History tab provides insight into any change events for the specific policy.



Priority

In Privilege Manager your Policies are evaluated in a certain order for each application that runs. It is important to have an awareness of all policies that are defined and the order in which they are called by the agent. If one policy blocks an application and ends execution before a second policy that was intended to elevate privileges, then only the block will occur.

The Policy Priority setting can be found on the Policies main screen in the left column. By default, policies are ordered according to their priority. You can edit this setting under the General tab after clicking into a policy.

Why Policy Priority Matters

To illustrate the way policies are applied in order, this use case will define two policies to

- block MMC.EXE, but
- allow a specific MMC Snap-in.

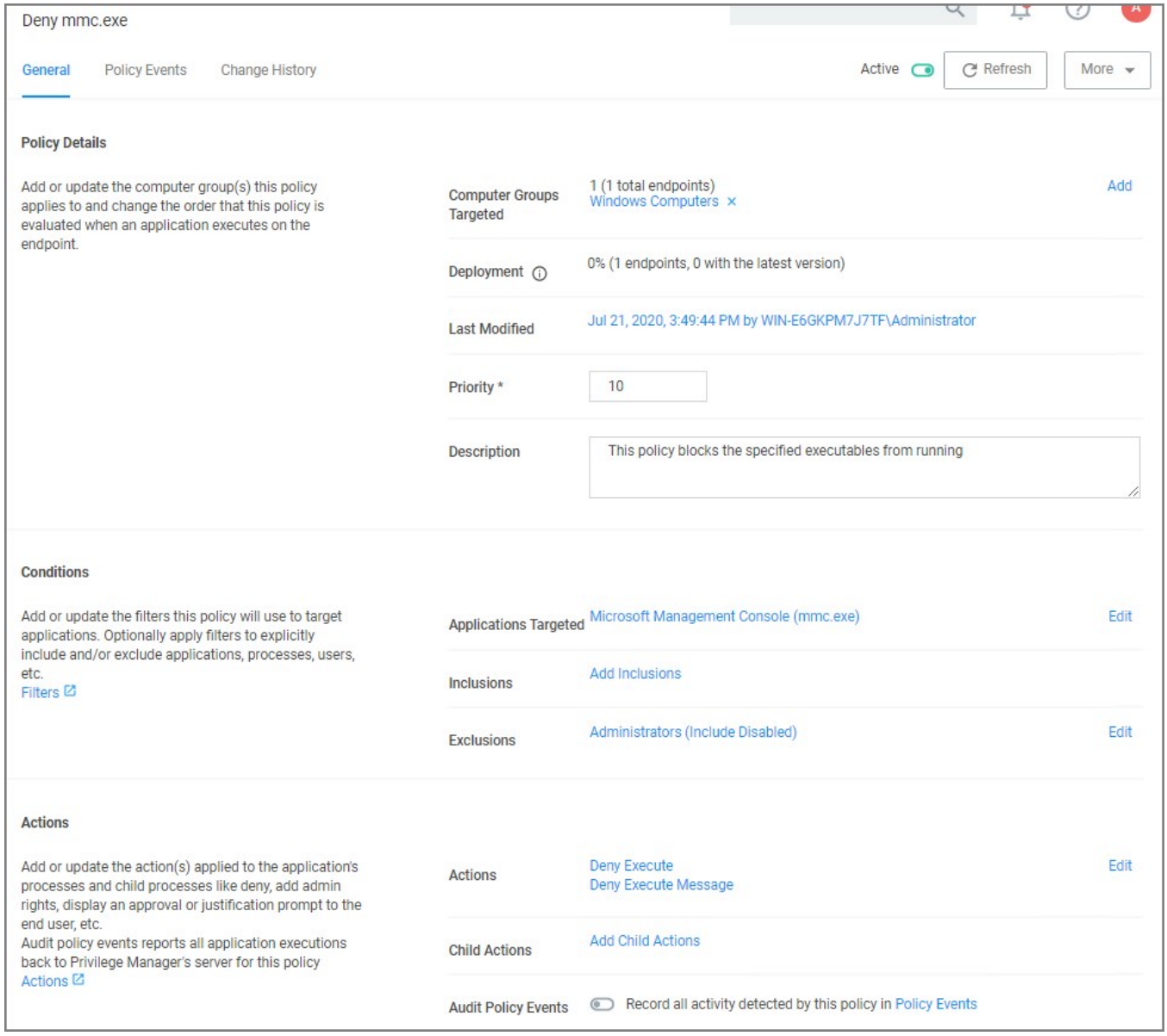
Deny MMC.EXE Policy setup

1. We will create a policy at with a default priority level of 10. This policy will block the execution of MMC.EXE.

   Privilege Manager provides a filter to identify the executable mmc.exe. This can be used in this policy to block mmc.exe. Search for mmc.exe from the main screen search tool. Select the filter named Microsoft Management Console (mmc.exe). Review how the Filter is setup. Note that both File Name and File Path parameters are used.

2. Create the deny mmc.exe policy.

    1. Under your **Computer Group** select **Application Policies**.
    2. Click **Create Policy**.
    3. Select **Controlling** and click **Next Step**.
    4. Select **Block** and click **Next Step**.
    5. Select **Block Silently** and click **Next Step**.
    6. Select **Executables** and click **Next Step**.
    7. Select **Existing Filter**.
    8. Search for **mmc.exe**.
    9. Next to **Microsoft Management Console (mmc.exe)** click Add.
    10. Click **Update**.
    11. Click **Next Step**.
    12. Set the **Inactive** switch to **Active**.
    13. Click **Add Exclusion** to set an exception filter to not have this policy apply to Administrators.
    14. Search for the **Administrators (Include Disabled)** filter.
    15. Click **Add**.
    16. Click **Update**
    17. Click **Save Changes**.



The policy will now be listed on the Application Policies page under the deny group. Once the policy is delivered to the endpoint agent, mmc.exe will be denied execution for all users without administrator credentials on all target computers. See details on how to deliver policies to the endpoint in the Sending Policies to Endpoints topic.

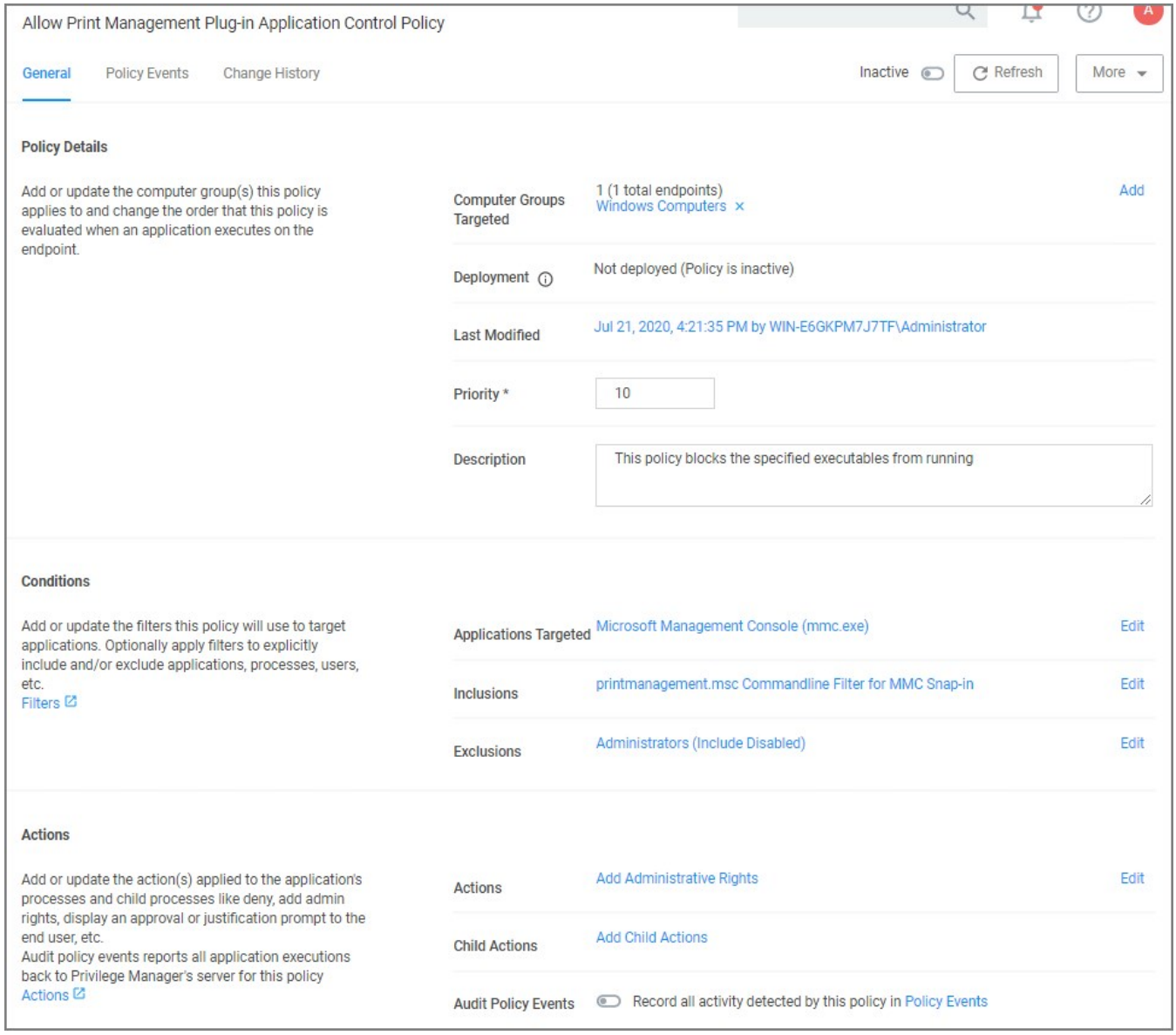
Once the policy is delivered to the endpoint, test running mmc.exe to see the results.

Allow specific MMC Snap-in

Next, we will create a policy that has a priority of less than 50 and it will allow specific MMC snap-ins. Having a priority less than 50 means this policy will be examined before the Deny MMC Console Application Control Policy.

1. As a short cut to this use case, start by duplicating the policy we just created, select **More | Duplicate**
2. Name the new policy Allow Print Management Plug-in Application Control Policy.

3. Click **Create**
4. Set the **Policy Priority** value to 9. (This level is not required, only defined for this use case.) This means that this policy will be examined prior to the policy that blocks the mmc console. If the conditions are met, printmanagement.msc will run with elevation.
5. Under **Conditions**, click **Add Inclusions** and search for the **printmanagement.msc Commandline Filter**.
6. Click **Add**.
7. Click **Update**. This filter will identify the mmc.exe file ONLY if the printmanagement.msc is run.
8. Under **Actions**, click **Edit**.
9. Next to **Deny Execute** and **Deny Execute Message**, click **Remove**.
10. Search for **Add Administrative Rights**, click **Add**.
11. Click **Update**.
12. Click **Save Changes**. You will now see your two policies in your Policies List. Once this policy is delivered to the endpoint agent, printmanagement.msc will be elevated with administrative rights.

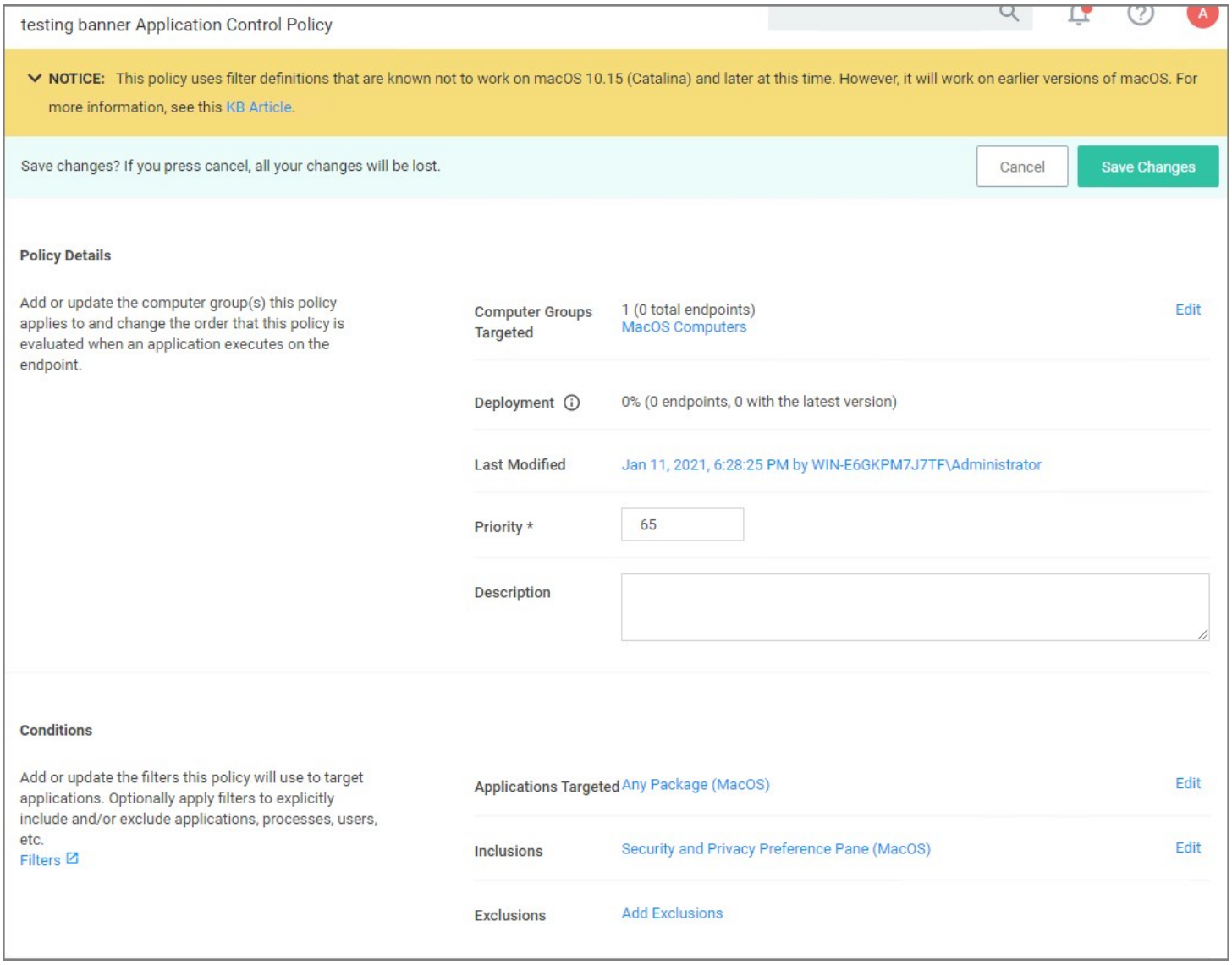


Test this use case

1. Run MMC.EXE from an endpoint where the user is NOT an administrator. This MMC.EXE execution will be denied execution.
2. Run printmanagement.msc from an endpoint where the user is NOT an administrator. This MMC snap-in will run with elevation.
3. Change the Policy Priority of your "Allow Print Management Plug-in Application Control Policy" to Priority 11 rather than priority 9. Repeat the second test. When you now run printmanagement.msc, the application will be blocked despite your elevation policy. This is why it is crucial to keep the priority levels that are set for your policies in mind and adjust them to meet your intended system requirements.

Warning Banner indicating Filter Error Conditions in Policies

A warning banner on the top of a policy page indicates error conditions in the policy due to conflicting filters or OS version based restrictions/limitation for an applied filter.



The warning banner in the image indicates that the filter selected as an inclusion filter does not work with macOS 10.15 or later versions.

The banner is displayed for the following conditions:

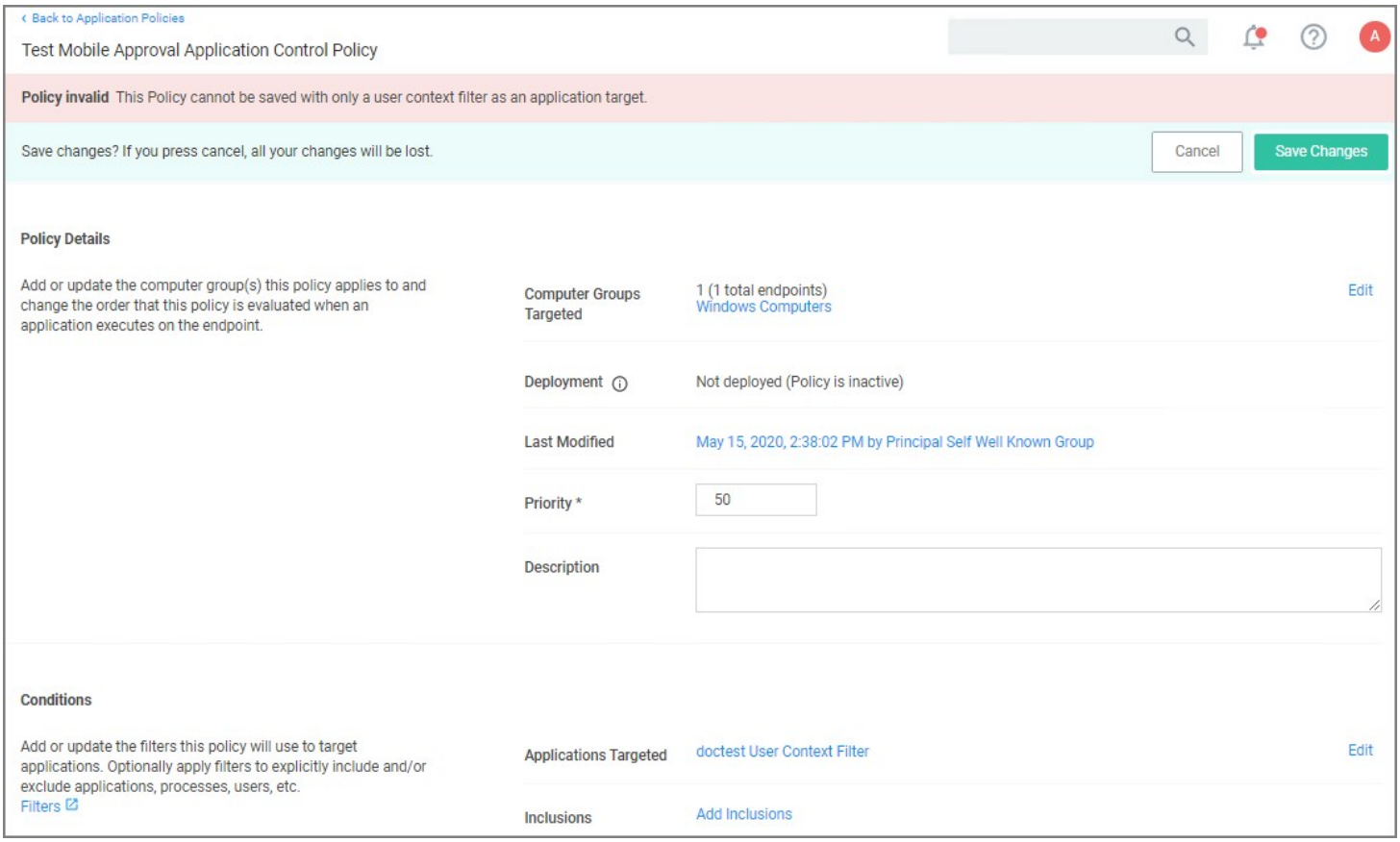
- A filter has a warning banner associated due to targeting a macOS preference pane in combination with a conflicting computer group.
- A filter starts with com.apple.preference or the file path starts with /System/Library/PreferencePanes/.
- Invalid filter definitions are selected.

The banner is expandable and lists all filter definitions creating the potential conflict. Each filter definition is a hyperlink to the offending filter.

Removing the offending filters from the policy clears the banner warning.

Invalid Policies

When a policy has a user context filter as the only application target, the policy validation fails and a **Policy invalid** warning is displayed.



List of Default Policies

Here is the complete list of policies that come with Privilege Manager out-of-the-box, grouped by folder type. Once you create custom policies they are listed along the default policies under the tab respective to the template used, as the template associates the folder type.

Process Hardening

Remove Advanced Privileges for Interactive Users	Removes advanced privileges for users interacting with a system via Desktop	n/a	50	n

System Options

Client Option - Elevate Adding Printers via Control Panel	Elevates privileges of users to allow printer drivers to be installed through the Control Panel	Elevate	60	n
Client Option - Elevate Adding Printers via PrintUI.exe	Elevates privileges of users to allow printer drivers to be installed by the PrintUI Utility	Elevate	60	n
Client Option - Elevate Changing Time and Date	Elevates privileges of users to allow them to change the system time and date	Elevate	60	n
Client Option - Elevate Device Pairing	Elevates privileges of users to allow new drivers to be installed during the device pairing wizard.	Elevate	60	n
Client Option - Elevate Disk Defragmentation (Vista/7)	Elevates privileges of users to allow them to defragment their hard disks on Windows Vista and Windows 7.	Elevate	60	n
Client Option - Elevate Disk Defragmentation (XP)	Elevates privileges of users to allow them to defragment their hard disks on Windows XP.	Elevate	60	n
Client Option - Elevate Installing Display Languages	Elevates privileges of users to allow display languages to be installed	Elevate	60	n
Client Option - Elevate Network Adapter Settings	Elevates privileges to allow user to change network adapter settings.	Elevate	60	n
Client Option - Elevate Resource and Performance Monitoring	Elevates privileges of users to allow them to run Windows Resource and Performance Monitor utilities	Elevate	60	n
Client Option - Elevate Windows Backup	Elevates privileges of users to allow them to run Windows Backup	Elevate	60	n

Privilege Management

Limit Internet Browser and Mail Clients Process	This policy implements the fundamental security principle of least privilege by restricting the process rights for standard Internet browsers and mail clients. Running these applications with administrative rights can present significant security problems. This policy	Reduce	50	n

Rights	reduces the risk of an exploit infecting a computer from within these applications.			
Limit Popular Instant Messaging Application Process Rights	This policy implements the fundamental security principle of least privilege by restricting the process rights for instant messaging applications. Running these applications with administrative rights can present significant security problems. This policy reduces the risk of an exploit infecting a computer from within these applications.	Reduce	50	n
Limit Popular Media Player Process Rights	This policy implements the fundamental security principle of least privilege by restricting the process rights for media player applications. Running these applications with administrative rights can present significant security problems. This policy reduces the risk of an exploit infecting a computer from within these applications.	Reduce	50	n
Limit Process Rights for Unclassified Applications Discovered in the Last Week	This policy implements the fundamental security principle of least privilege by restricting the process rights for an application. Unnecessarily running applications with administrative rights can present significant security problems. This policy reduces the risk of an exploit infecting a computer from within an application. This policy affects applications that have been discovered locally in the last week.	Reduce	95	n
User Access Control (UAC) Override Policy	This policy allows standard users to provide a justification for elevation instead of seeing the UAC prompt.	Elevate	15	n
User Requested Elevation Justification Policy	This policy allows users to request applications to run with Administrative Rights if they provide a justification.	Elevate	15	n

Application Analysis

Administrative Rights Required Detection Policy (Application Compatibility)	This policy detects applications that are deemed to require Administrative rights by Windows.	Elevate	45	n
Administrative Rights Required Detection Policy (Security Manifest)	This policy detects applications that contain a security manifest that specifies administrative rights are required.	Elevate	45	n
Event Discovery Audit Elevated Privileges Policy	This policy will detect all applications that are run with Administrator Rights on endpoints with the agent. This policy can be configured on the Event Discovery Configuration page.		45	n
Setup Detection Policy	This policy reports on applications that are detected as an installer.		45	n

Windows Policies

Event Discovery Testing Computers Audit Policy (Windows)	This policy is enabled through the Event Discovery configuration by enabling the option to log all activity from the test group.	97	n	
Elevate Privilege Manager Remove Programs Utility Policy	This policy needs to be enabled if users are supposed to be able to remove programs and apps via the Remove Programs Utility.	2	n	

macOS Policies

Event Discovery Testing Computers Audit Policy (MacOS)	This policy is enabled through the Event Discovery configuration by enabling the option to log all activity from the test group.		97	n

Automatic Elevation via Windows Client System Settings

Common Windows client settings can be deployed to endpoint agents the same way as any policy. These settings target **All** Windows Computers with Application Control Agent Installed (Target)" as the default resource target. Once a setting is selected from the list, the resource target can be modified to include specific computer or other existing resource targets can be assigned on screen.

Add Devices	Allow users to add drivers, installing drivers as necessary.
Add Printers	Allow users to add printers, installing drivers as necessary.
Backup the System	Allow users to perform system backup operations.
Change the Date and Time	Allow users to change the date, time and timezone.
Change Network Adapter Settings	Allow users to change the network adapter settings.
Defragment the Disk	Allow users to perform disk defragmentation operations.
Install Language Packs	Allow users to install operating system display languages.
Monitor Performance	Allow users to run the Windows Performance Monitor utility.

ActiveX

ActiveX Setting define which sites can run ActiveX controls for standard users.

To create an ActiveX setting, a new policy must be created based on the ActiveX policy type template.

> **Note:** You will need to import local group policy definitions before editing your Active-X Group Policy Settings.

Firewall

An Application Firewall Policy policy type allows for firewall rules to be applied as an Action in an Application Control Policy.

To create Firewall rules, a new policy must be created based on the Windows Application Policy type template.

When defining the Firewall Policy an Application Classification must be set. An Action of type Application Classification can then apply that classification to an Application Control Policy, which then enforces all of the defined Firewall Policies that are defined with that classification.

General

The policies available on the General tab are covering the basic Privilege Manager functionality and are enabled by default. Most of these policies are fulfilling utility functions otherwise also considered tasks.

Basic Inventory (Initial, Mac OS)	This scheduled task triggers the Agent to send Mac OS basic inventory. This policy takes an inventory as soon at the agent and the initial policies are deployed and should be removed from the machines afterwards.
Basic Inventory (Initial, Windows)	Instructs computers to report the Win32_ComputerSystem, Win32_ComputerSystemProduct and Win32_OperatingSystem WMI classes to the server. This policy takes an inventory as soon at the agent and the initial policies are deployed and should be removed from the machines afterwards.
Basic Inventory (Mac OS)	This scheduled task triggers the Agent to send Mac OS basic inventory.
Basic Inventory (Windows)	Instructs computers to report changes to their Win32_ComputerSystem, Win32_ComputerSystemProduct and Win32_OperatingSystem WMI classes to the server on a scheduled basis, like once a week for example.
Cleanup Agent Inventory Transfers (Windows)	Completes and cleans BITS transfers and temporary files used by the TMS Agent Inventory Helper.
Cleanup sent Privilege Manager Events (Mac OS)	Purges Agent events that have been successfully transmitted from managed endpoints to reclaim disk space.
Cleanup sent Privilege Manager Events (Windows)	Purges Agent events that have been successfully transmitted from managed endpoints to reclaim disk space.
Default File Inventory Policy (MacOS)	The purpose of this policy is to inventory software programs running on the managed computer.
Default File Inventory Policy (Windows)	The purpose of this policy is to inventory software programs running on the managed computer.
Ensure UAC Override Setting (Windows)	Ensures that the UAC Override Registry Key is set.
Local User Inventory Policy	The purpose of this policy is to inventory Local User account, groups and group membership on the client. This policy can also be used to inventory for specific account privileges.
Local User Inventory Policy (MacOS)	The purpose of this policy is to inventory Local User account, groups and group membership on the client. This policy can also be used to inventory for specific account privileges.
Perform Resource Discovery (Mac OS)	Schedule on which agents will check with server to determine if any local resources require discovery.
Perform Resource Discovery (Windows)	Schedule on which agents will check with server to determine if any local resources require discovery.

Retry errored TMS Events (Mac OS)	Scan Agent queue for any events that require retransmission.
Retry errored TMS Events (Windows)	Scan Agent queue for any events that require retransmission.
Scheduled Check Pending Client Tasks - Internet Clients (Windows)	Initiate a check for pending client tasks. Used by agents that are unable to receive an incoming connection from the server.
Scheduled Registration - Internet Clients (Windows)	Initiate agent registration with server less frequently than internal clients.
Scheduled Registration (Mac OS)	When this policy is triggered the Agent will attempt (or re-attempt) to register with the server.
Scheduled Registration (Windows)	Initiate agent registration with server.
Update Agent Commands (Mac OS)	When this policy is triggered the Agent will update agent command items.
Update Agent Commands (Windows)	Instructs Agent to update any agent commands if required.
Update Applicable Policies (Mac OS)	When this policy is triggered the Agent will check the server for updated policies.
Update Applicable Policies (Windows)	When this policy is triggered the Agent will check the server for updated policies.
Update Applicable Policies - Internet Clients (Windows)	Instructs Agent to check with server for policy changes less frequently than internal clients.
Update Provisioned Resource Client Items (MacOS)	
Update Provisioned Resource Client Items (Windows)	
User Logon Inventory Policy	Updates user logon data on the given schedule.
Windows Service Inventory Policy	The purpose of this policy is to inventory Windows Services on the client.

Not Enabled

COM Inventory Policy	The purpose of this policy is to inventory COM+ and DCOM packages installed on the client.
Disable Local Guest Accounts	Provisioning policy to disable local Guest accounts on Windows computers.
Randomize Administrator Password	
Shared Folder Inventory Policy	The purpose of this policy is to inventory shared folders on the client.

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Example Policies

This sections contains examples on how to configure and use policies in Privilege Manager .

These following topics are available:

- Approval Policies
  - Offline Approvals
  - HelpDesk Approvals
  - Setup a Policy to use Google Authenticator
- Allow Policies
  - Google Application with File Upload
  - Microsoft Security Catalog
- Elevation Policies
  - UAC Override Policy
  - Elevate Applications launched from Network Share Policy
  - Elevate msi launched from a Network Share
  - Elevate Applications whose Execution Requires Approval
  - Elevate Applications that Require User Justification
  - MS Visual Studio Installations - Filters and policy now provided via Configuration Feeds. Refer to Config Feeds for download and installation information.
- Monitoring Policies
  - Using a Catch All Policy
  - Reputation Checking Policies
- Blocking Policies
  - Blocking Specific Applications
  - iTunes with File Upload
  - Quarantine Specific Malware
  - Catch-all Blocking Policy
- macOS Specific Policies
  - Allow Copy/Install of Applications
  - Application Self-elevation
  - Require Justification for Firefox
  - Deny Photos Application
  - Adding macOS Agents to a Computer Testing Group
  - Inventorying .pkg Files

Approval Policies

Approval policies require an end-user justification and use an admin approval workflow.

This policy type requires that people provide a justification for why they need to run an application before elevating with administrator privileges. User Justification refers to the policy action. Since Conditions and Actions are independent, this action can be applied to any condition.

The following examples are available:

- Offline Approvals
- HelpDesk Approvals
- Google Authenticator approval
- macOS Approval Process

Offline Approvals

Approval workflows usually require an endpoint to be online to send out the approval request and then receive an approval for an application to continue to run or execute. If an endpoint is offline, an end user needs a way to also request an approval for an application to continue to execute, for such a situation an Offline Approval process has been implemented.

During an offline approval process a prompt is triggered for a 6-digit numeric pin also called request code. The end user then calls the Help Desk and provides system information to the Help Desk representative. The Help Desk representative generates and provides a 12-character alphanumeric response code for the deployed policy residing on the offline endpoint. Once the end user enters the response code the application execution continues and other actions can be performed, for example adding administrative rights.

The message actions used in the Offline Approval policy are OS specific. Use the action:

- Windows:

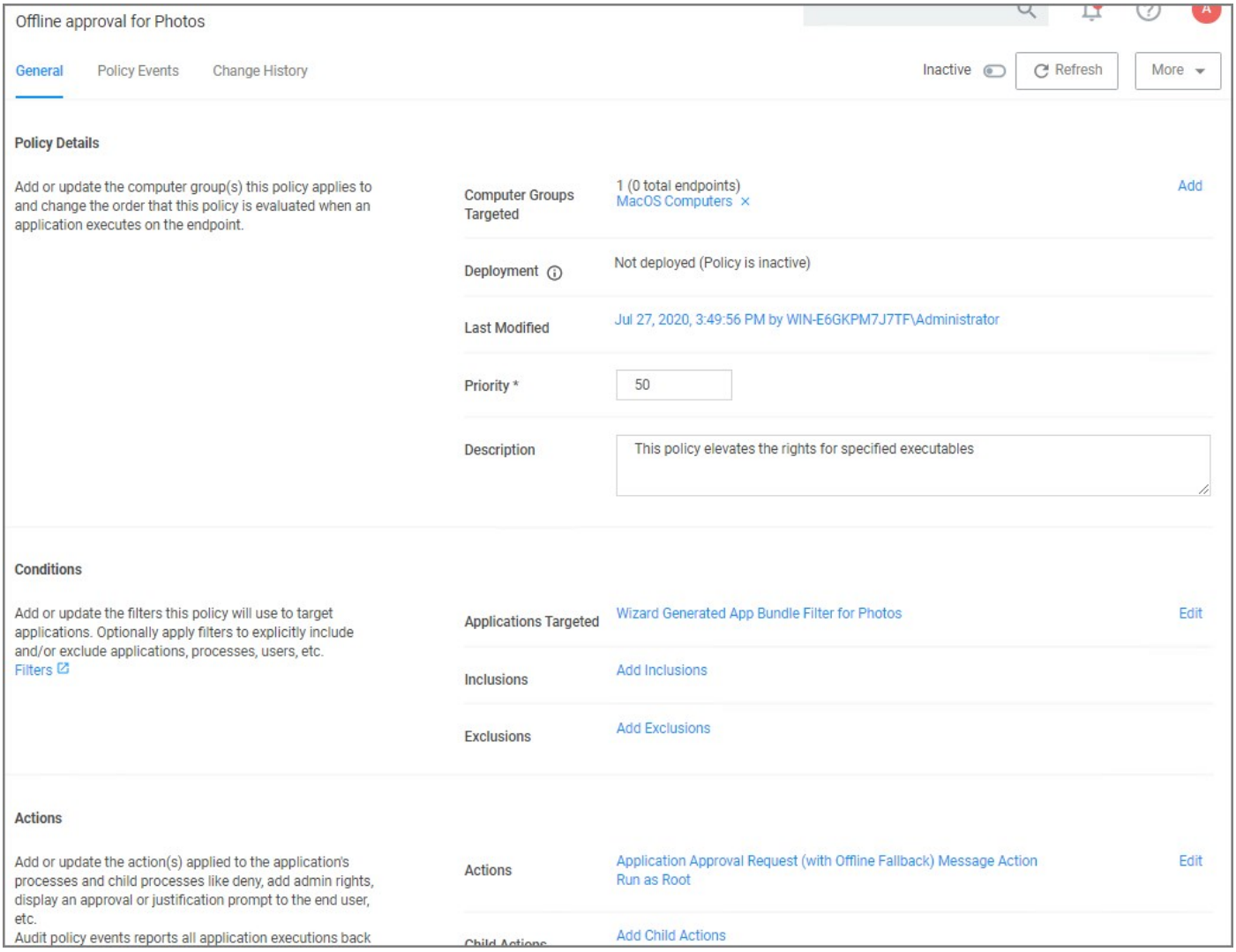
- macOS:

Notifications for approvals can also be issued to mobile devices. Refer to Mobile App section - Configure the Notification Settings

Creating an Offline Approval Policy

For offline approvals to work, a message action supporting offline fallback needs to be configured. This example uses the macOS based message action.

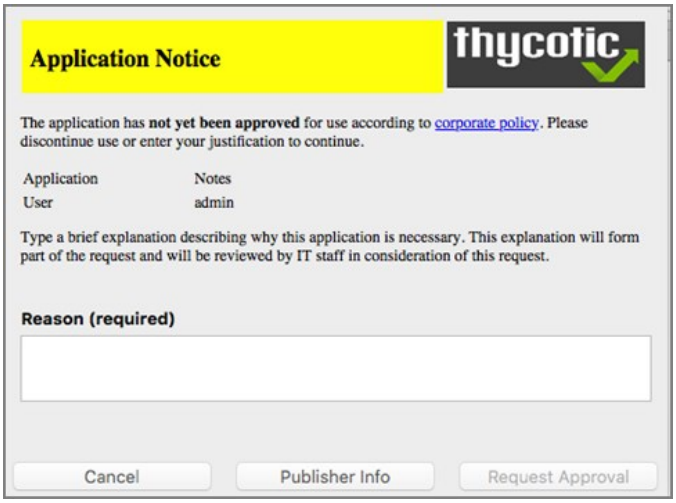
1. Create an Offline Approval Policy, by specifying the specific message action:
    1. Navigate to Actions and click **Edit**.
    2. Search for and **Add** the action **Application Approval Request (with Offline Fallback) Message Action**.
    3. Click **Update**.
2. Click **Save Changes**.



Endpoint Offline Approval

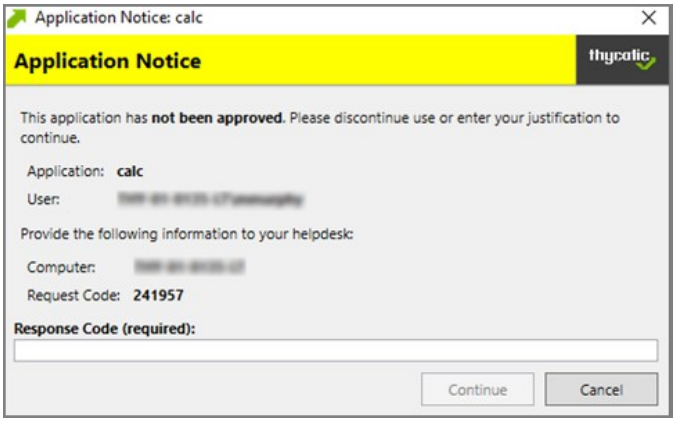
When the policy created above applies, the system first attempts an online approval request and if the server is unavailable it uses the request and response codes to verify authorization.

1. When trying to install an application that is not explicitly white-listed via policy while offline, the following Application Notice opens:



2. When the system is offline, the following notice opens:

3. Follow the instructions to contact your helpdesk and only click **Generate** when prompted.
4. You will then see:



Provide the information to the helpdesk, they will need the 6-digit code, in this example 191279, to create a response code.

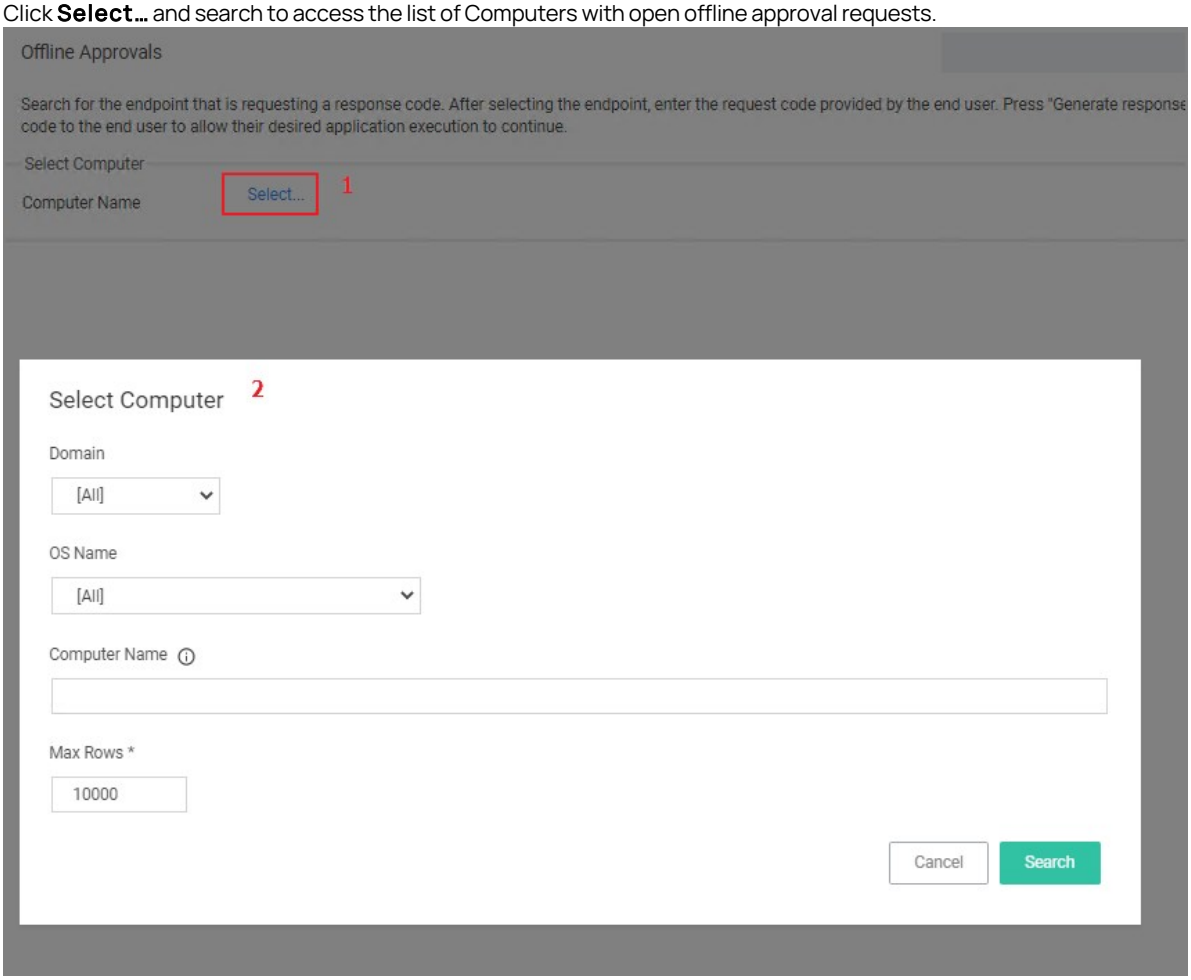
5. Once your helpdesk contact verifies the authenticity of the request, you will be provided a 12-digit **Response Code** that needs to be entered in the text field.
6. Click **Continue** after entering the Response Code.

At this point the application installation should be able to continue.

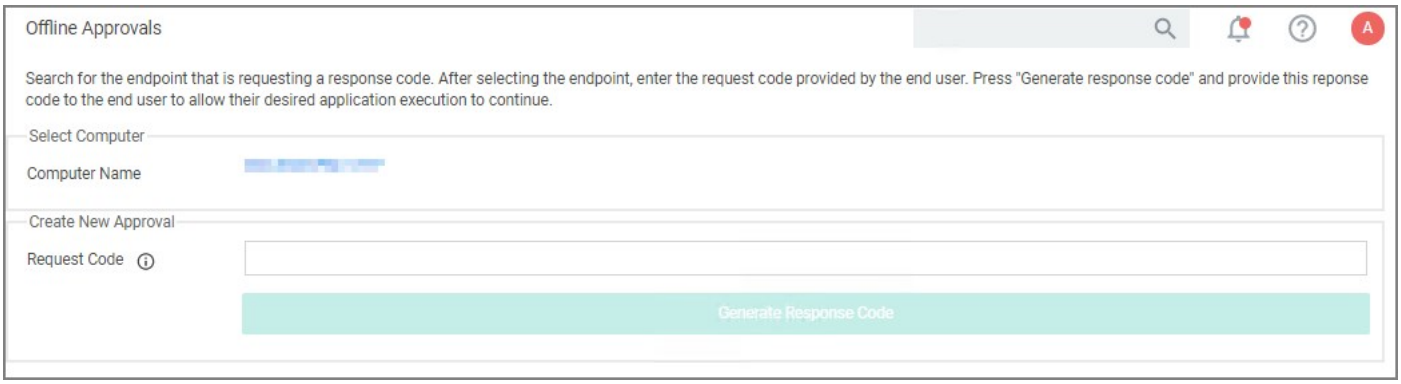
Privilege Manager Offline Approval

The following procedures provides detailed steps about the offline approval process in the Privilege Manager UI.

1. Navigate to **Admin I Tools I Offline Approval**.
2. Click **Select...** and search to access the list of Computers with open offline approval requests.



3. Verify the customer's name is in the list.
4. Select the customer's computer from the list and click the **Select** button.



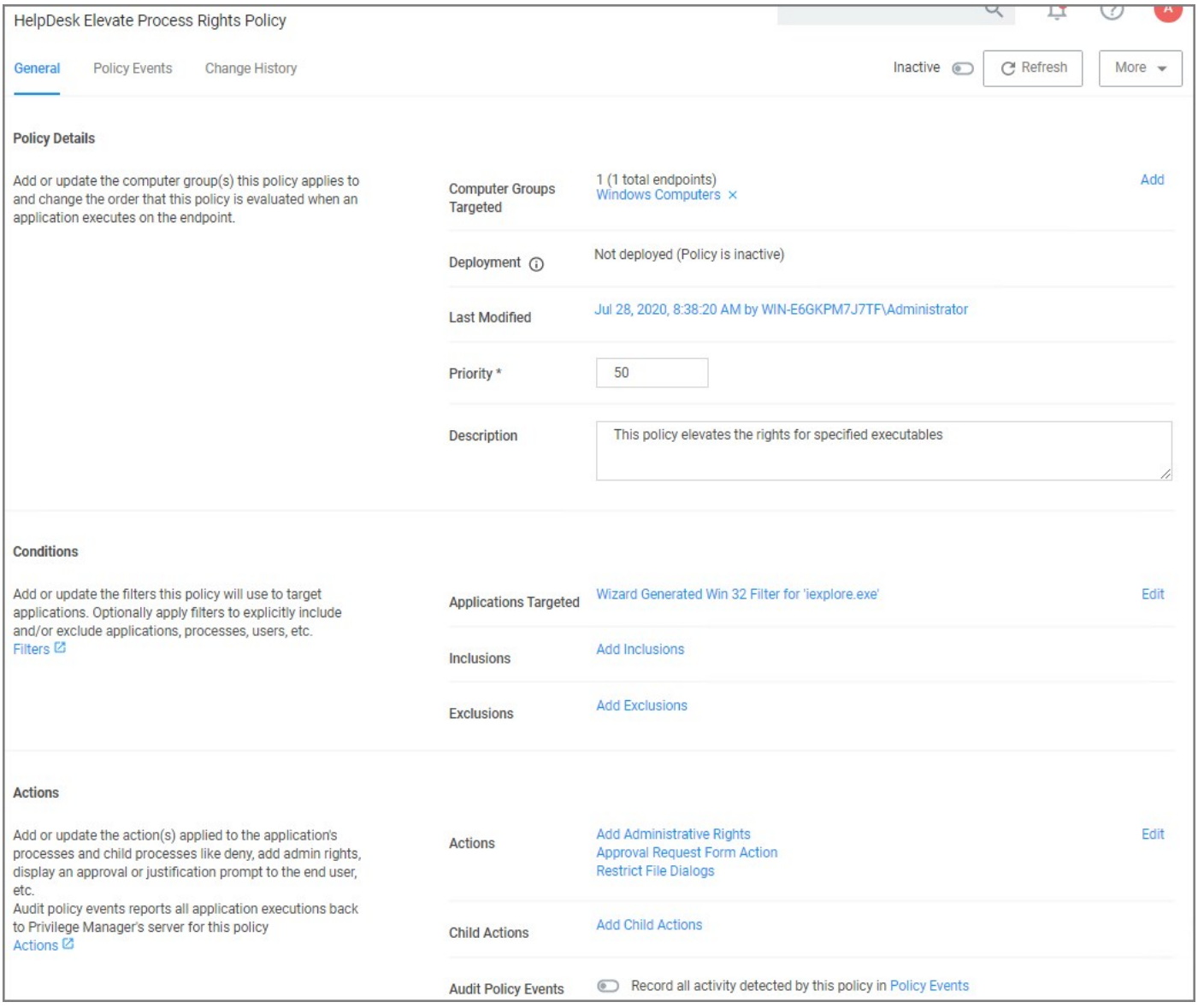
5. Enter the **Request Code** provided by the customer and click **Generate Response Code**.
6. Read the Response Code back to the customer to enter at the endpoint.

Help Desk Approvals

Privilege Manager enables end users to request elevation and then have their request approved or denied by the helpdesk. You can approve or deny requests via the Privilege Manager console, or forward requests to a third-party ticketing system such as ServiceNow.

Creating a Helpdesk Policy

1. Using the Policy Wizard, create a controlling policy that elevates requiring approval.
2. Select what file types you want targeted with the approval elevation.
3. Choose your targets. You can specify several different targets.
4. Name your policy and click **Create**.



The important wizard added actions on this policy are:

- **Approval Request From Action**
- **Restrict File Dialogs**
- **Add Administrative Rights**.

5. Set the **Inactive** switch to **Active**.

Once the agent receives the update, users receive a message action dialog to enter their written request in the Reason (required) field which then sends a request to either the Privilege Manager console or integrated Helpdesk.

Workflow

When end users try to open a restricted application, they must enter a reason for needing the application and send it for approval. While the request is being evaluated, whenever end users start the application a status pending message will appear. Once the request has been approved or denied, end users receive an approval or denial.

Approve requests

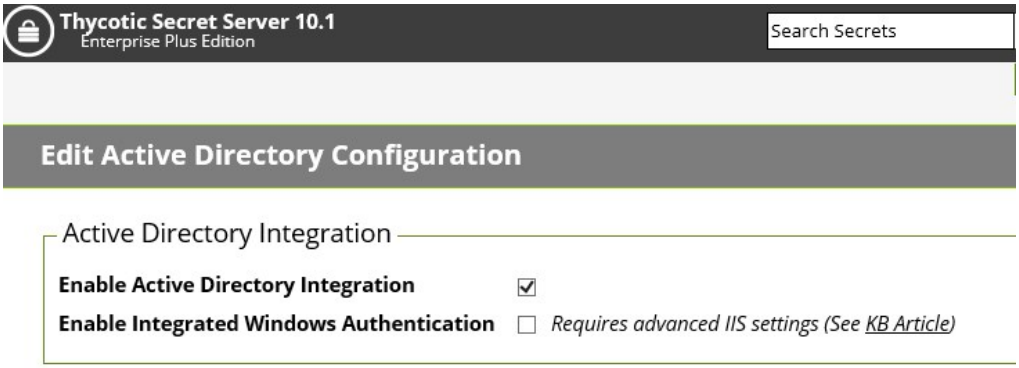
To approve or deny requests in the Privilege Manager Console, go to **Admin: Tools I Manage Approvals** to view all application requests.

Google Authenticator

This topic describes how to set up a Privilege Manager policy for enabling two-factor functionality with Google Authenticator.

Follow the steps described below to set up a policy for enabling two-factor functionality with Google Authenticator.

1. If you are using the Secret Server login for Privilege Manager , make sure you log in with an Active Directory credential. If you are currently using a Secret Server credential, you need to enable Active Directory Integration.



1. Once you log in with an Active Directory credential go to this URL:

   https://[ServerName]/Tms/Account/Totp

2. There you will see the QR Code or Secret to input into Google Authenticator in order for your user account to authenticate on the endpoint. Each user will need to go to this URL after logging in to Secret Server and add this QR Code to their authenticator app. Users can NOT re-use the same authenticator code that they are using for Secret Server.

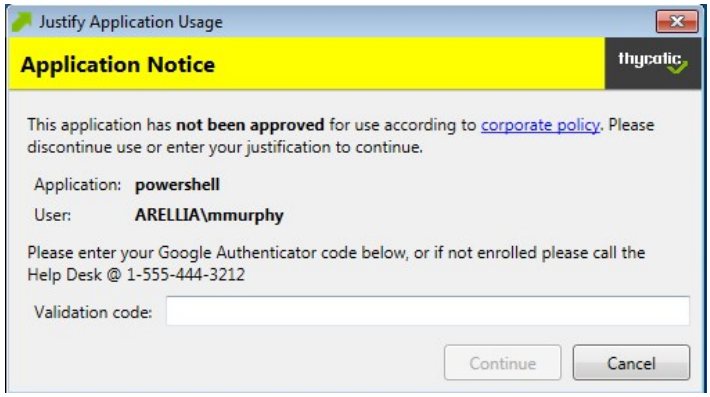
3. After you have done that with one of your user accounts, you need to import an XML file as follows:

   1. Access the topic, XML for Challenge Response Message Actions. It contains XML code, copy all that XML code.
   2. Go to https://[ServerName]/Tms/PrivilegeManager/#/item/xml/
   3. Paste the contents of the XML code (which you copied in a previous sub-step) into the text field and click the Import button.

4. You can then go to each policy for which you want to enable the two-factor prompt and add the "Challenge/Response Message Action" as an action.

   Note: It is not recommended that you do this for ALL applications that are being run.

5. The end users will then see a prompt such as shown below, when they go to launch an application which triggers that action:



NOTE: Justification prompt messages are customizable.

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XML for Challenge Response Message Action

```
<?xml version="1.0" encoding="ISO-8859-1"?>
<!--Thycotic.Data.Contracts.ApplicationControl.ApplicationAction.CustomXamlExecutionActionContract-->
<CustomXamlExecutionActionContract xmlns:adc="http://schemas.arellia.com/dc/" xmlns:arr="http://schemas.microsoft.com/2003/10/Serialization/Arrays"
xmlns:mss="http://schemas.microsoft.com/2003/10/Serialization/" xmlns:dc="http://schemas.datacontract.org/2004/07/System"
xmlns:d1p4="http://schemas.arellia.com/dc/ClientItem/" xmlns:d1p5="http://schemas.arellia.com/dc/ApplicationControl/ApplicationActions/"
xmlns:i="http://www.w3.org/2001/XMLSchema-instance" xmlns="http://schemas.arellia.com/dc/ApplicationControl/ApplicationAction/">
   <adc:Description>This action will display a customized message to the user, allowing for a challenge/response authorization before running an application.</adc:Description>
   <adc:FolderId>26bc9625-ed2b-4e45-9377-a3efb4462118</adc:FolderId>
   <adc:ItemId>9ea45416-f3f5-4dac-abcd-6d8ef94c9316</adc:ItemId>
   <adc:Name>Challenge/Response Message Action</adc:Name>
   <adc:ProductId>27bedb8a-db37-4d53-b748-bc6651461fe4</adc:ProductId>
   <adc:Strings />
   <adc:Tags />
   <AdjustSession>false</AdjustSession>
   <Commandline i:nil="true" />
   <Executable>.\ArelliaDisplayXamlAction.exe</Executable>
   <TerminateExitCode>100</TerminateExitCode>
   <WaitOnApplication>true</WaitOnApplication>
   <ChildAssociations />
   <OfflineApprovalType>OfflineNotAllowed</OfflineApprovalType>
   <OwnsItemIds />
   <RequireLogon>false</RequireLogon>
   <UserGroupId i:nil="true" />
   <Xaml><![CDATA[
<Window
 xmlns="http://schemas.microsoft.com/winfx/2006/xaml/presentation"
 xmlns:x="http://schemas.microsoft.com/winfx/2006/xaml"
 xmlns:sys="clr-namespace:System;assembly=mscorlib"
 xmlns:adx="http://schemas.arellia.com/winfx/2012/arelliadisplayxamlaction"
 xmlns:ac="http://schemas.arellia.com/winfx/2010/xaml"
 xmlns:mc="http://schemas.openxmlformats.org/markup-compatibility/2006"
 mc:Ignorable="ac"
 Icon="Images/thycotic-icon.png"
 WindowStartupLocation="CenterScreen"
 Title="{DynamicResource WindowTitle}"
 ResizeMode="NoResize"
 SizeToContent="WidthAndHeight">

 <Window.Resources>

  <!-- common control styles -->

  <Style x:Key="BaseLabelStyle" TargetType="TextBlock">
   <Setter Property="Margin" Value="10,3" />
   </Style>

  <Style x:Key="BaseButtonStyle" TargetType="Button">
   <Setter Property="Padding" Value="15,3" />
   <Setter Property="MinHeight" Value="25" />
   <Setter Property="MinWidth" Value="85" />
   <Setter Property="Margin" Value="8,0,0,0" />
   </Style>

  <Style x:Key="ReadOnlyFieldStyle" TargetType="TextBlock">
   <Setter Property="FontWeight" Value="Bold" />
   <Setter Property="VerticalAlignment" Value="Center" />
   <Setter Property="TextWrapping" Value="Wrap" />
   </Style>

  <Style x:Key="BaseRichTextBoxStyle" TargetType="RichTextBox">
   <Setter Property="BorderThickness" Value="0" />
   <Setter Property="Background" Value="Transparent" />
   <Setter Property="Padding" Value="0" />
   <Setter Property="IsReadOnly" Value="True" />
   <Setter Property="IsTabStop" Value="False" />
   </Style>

   <sys:String
x:Key="EncodedLogoImage">iVBORw0KGgoAAAANSUhEUgAAAQcAAABYCAIAAAB3ZqVmAAAAAXNSR0IArs4c6QAAAARnQU1BAACxjwv8YQUAAA4rSURBVHhe7ZxfjBXVHcf
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Vq1evcoePJsG6gtYDK5Vi7l4LmuoKAqlDIMBQlCvUcSvNZCYN27dvV2nDhLd8AuF14NaH6imhWuewK6zWP1gpH3zmga4GNeTjjz9GLDdlOi+wrqBNSb25zvT0NNaOAboaK1asQKIUr
```

oAuQB0V9uzZgxhD/OCBAENRrqDvTe5STz75pJIp/TPPPIMAA2nqMwT1BgEG0kTafvnyZcRM0DRPycbGxtSuoV3ZcI8opUItTiDGA12NarVKlQmbS8moOQrUMly4cEHp54GkGVQEr
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XfXddK/Rx/z0ZR4lTXb8Z/05gCXGFcMPyy6GfDu/9xoZ6ec53RQY/TJ7qnZrt/cPTdztuAb93tUJcIRSM45YHN/xg3V/uobL+2W+uf/aebHevJ+e6tr7cR5bI+LdtORBXCE1haNv31j39rd8/S
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UVORK5CYII=</sys:String>
 <!-- specific element styles -->

<sys:String x:Key="WindowTitle">Justify Application Usage</sys:String>

 <!-- heading -->

<Style x:Key="MainWindowPanelStyle" TargetType="Panel">
 <Setter Property="Width" Value="500" />
 <Setter Property="Background" Value="#FFF0F0F0" />
 </Style>

<Style x:Key="HeadingBorderStyle" TargetType="Border">
 <Setter Property="BorderThickness" Value="0,0,0,1" />
 <Setter Property="BorderBrush" Value="#FF777777" />
 </Style>

<Style x:Key="TitleHeadingBorderStyle" TargetType="Border">
 <Setter Property="Grid.Column" Value="0" />
 <Setter Property="Padding" Value="8" />
 <Setter Property="Background" Value="Yellow" />
 </Style>

<Style x:Key="TitleHeadingStyle" TargetType="TextBlock">
 <Setter Property="Text" Value="Application Notice" />
 <Setter Property="FontSize" Value="16" />
 <Setter Property="FontWeight" Value="Bold" />
 <Setter Property="Foreground" Value="Black" />
 </Style>

<Style x:Key="ImageHeadingBorderStyle" TargetType="Border">
 <Setter Property="Grid.Column" Value="1" />
 <Setter Property="Padding" Value="8" />
 <Setter Property="Background" Value="#3d3d3d" />
 </Style>

<Style x:Key="ImageHeadingStyle" TargetType="Image">
 <Setter Property="Grid.Column" Value="1" />
 <Setter Property="Height" Value="18" />
 <!-- <Setter Property="FlowDirection" Value="{Binding [FlowDirection],Source={StaticResource LocaleResources}}" /> -->
 </Style>
  <!--
<Style x:Key="ImageHeadingBorderStyle" TargetType="Border">
 <Setter Property="Grid.Column" Value="1" />
 <Setter Property="Padding" Value="8" />
 <Setter Property="Background" Value="Black" />
 </Style>

<Style x:Key="ImageHeadingStyle" TargetType="Image">
 <Setter Property="Grid.Column" Value="1" />
 <Setter Property="Source" Value="Images/logo-white.png" />

```
    <Setter Property="Height" Value="18" />
    </Style>
-->
  <!-- content area -->

  <Style x:Key="ContentPanelStyle" TargetType="Panel">
    <Setter Property="Margin" Value="8" />
    </Style>

  <Style x:Key="InformationRichTextBoxStyle" TargetType="RichTextBox" BasedOn="{StaticResource BaseRichTextBoxStyle}">
    <Setter Property="Margin" Value="0,8,0,0" />
    </Style>

  <Section x:Key="InformationTextSection" xml:space="preserve">
    <Paragraph FontFamily="Segoe UI" FontSize="12"><Run>This application has </Run><Bold>not been approved</Bold><Run> for use according to </Run>
<Hyperlink Foreground="Blue" TextDecorations="Underline" TargetName="_blank" NavigateUri="http://www.example.com/policy.html"><Run>corporate policy</Run></Hyperlink>
<Run>. Please discontinue use or enter your justification to continue.</Run></Paragraph>
    </Section>

  <Style x:Key="PropertiesPanelStyle" TargetType="Panel">
    <Setter Property="Margin" Value="0,8,0,0" />
    </Style>

  <Style x:Key="ApplicationNameLabelStyle" TargetType="TextBlock" BasedOn="{StaticResource BaseLabelStyle}">
    <Setter Property="Grid.Row" Value="0" />
    <Setter Property="Text" Value="Application:" />
    </Style>

  <Style x:Key="ApplicationFieldStyle" TargetType="TextBlock" BasedOn="{StaticResource ReadOnlyFieldStyle}">
    <Setter Property="Grid.Row" Value="0" />
    <Setter Property="Grid.Column" Value="1" />
    <Setter Property="Text" Value="{Binding ProcessName}" />
    </Style>

  <Style x:Key="UserNameLabelStyle" TargetType="TextBlock" BasedOn="{StaticResource BaseLabelStyle}">
    <Setter Property="Grid.Row" Value="1" />
    <Setter Property="Text" Value="User:" />
    </Style>

  <Style x:Key="UserNameFieldStyle" TargetType="TextBlock" BasedOn="{StaticResource ReadOnlyFieldStyle}">
    <Setter Property="Grid.Row" Value="1" />
    <Setter Property="Grid.Column" Value="1" />
    <Setter Property="Text" Value="{Binding UserName}" />
    </Style>

  <Style x:Key="InstructionRichTextBoxStyle" TargetType="RichTextBox" BasedOn="{StaticResource BaseRichTextBoxStyle}">
    <Setter Property="Margin" Value="0,8,0,0" />
    </Style>

  <Section x:Key="InstructionTextSection" xml:space="preserve">
    <Paragraph FontFamily="Segoe UI" FontSize="12"><Run>Please enter your Google Authenticator code below, or if not enrolled please call the Help Desk @ 1-555-
444-3212</Run></Paragraph>
    </Section>

  <Style x:Key="ChallengeResponsePanelStyle" TargetType="Panel">
    <Setter Property="Margin" Value="0,8,0,5" />
    </Style>

  <Style x:Key="ChallengeLabelStyle" TargetType="TextBlock" BasedOn="{StaticResource BaseLabelStyle}">
    <Setter Property="Text" Value="Request code:" />
    <Setter Property="Grid.Row" Value="0" />
    <Setter Property="Grid.Column" Value="0" />
    </Style>

  <Style x:Key="ChallengeTextStyle" TargetType="TextBlock">
    <Setter Property="Text" Value="{Binding ChallengeToken,Mode=OneWay}" />
    <Setter Property="VerticalAlignment" Value="Center" />
    <Setter Property="FontWeight" Value="Bold" />
    <Setter Property="FontSize" Value="15" />
    <Setter Property="Margin" Value="0,0,0,8" />
    <Setter Property="Grid.Row" Value="0" />
    <Setter Property="Grid.Column" Value="1" />
    </Style>

  <Style x:Key="ResponseLabelStyle" TargetType="TextBlock" BasedOn="{StaticResource BaseLabelStyle}">
    <Setter Property="Text" Value="Validation code:" />
    <Setter Property="Grid.Row" Value="1" />
    <Setter Property="Grid.Column" Value="0" />
    </Style>
```

```
<Style x:Key="ResponseTextBoxStyle" TargetType="TextBox">
 <Setter Property="Grid.Row" Value="1" />
 <Setter Property="Grid.Column" Value="1" />
 <Setter Property="MaxLength" Value="40" />
<Setter Property="Text" Value="{Binding ResponseToken,Mode=TwoWay,UpdateSourceTrigger=PropertyChanged}" />
 </Style>

<Style x:Key="ButtonPanelStyle" TargetType="StackPanel">
 <Setter Property="Orientation" Value="Horizontal" />
 <Setter Property="HorizontalAlignment" Value="Right" />
 <Setter Property="Margin" Value="0,8,0,0" />
 </Style>

<Style x:Key="ContinueButtonStyle" TargetType="Button" BasedOn="{StaticResource BaseButtonStyle}">
 <Setter Property="Content" Value="Continue" />
<Setter Property="Command" Value="{Binding ContinueWithChallengeResponseCommand}" />
<Setter Property="CommandParameter" Value="{Binding ResponseToken}" />
 </Style>

<Style x:Key="CloseButtonStyle" TargetType="Button" BasedOn="{StaticResource BaseButtonStyle}">
 <Setter Property="Content" Value="Cancel" />
<Setter Property="Command" Value="{Binding CloseCommand}" />
 </Style>

</Window.Resources>

<StackPanel Style="{StaticResource MainWindowPanelStyle}"
   adx:WindowHelper.Title="{Binding Result,Source={StaticResource WindowTitle}}">

<Border Style="{StaticResource HeadingBorderStyle}">
    <Grid>
   <Grid.ColumnDefinitions>
    <ColumnDefinition Width="*" />
    <ColumnDefinition Width="Auto" />
   </Grid.ColumnDefinitions>

  <Border Style="{StaticResource TitleHeadingBorderStyle}">
   <TextBlock Style="{StaticResource TitleHeadingStyle}" />
     </Border>
  <Border Style="{StaticResource ImageHeadingBorderStyle}">

   <Image Style="{StaticResource ImageHeadingStyle}"
     adx:ImageSourceHelper.EncodedImage="{StaticResource EncodedLogoImage}" />
     </Border>
    </Grid>
</Border>

<StackPanel Style="{StaticResource ContentPanelStyle}">

 <!-- Information of why this dialog needs attention -->
<RichTextBox Style="{StaticResource InformationRichTextBoxStyle}"
    ac:RichTextBoxHelper.Section="{StaticResource InformationTextSection}"
    adx:RichTextBoxHelper.Section="{StaticResource InformationTextSection}" />

 <!-- Details about detected process -->
<Grid Style="{StaticResource PropertiesPanelStyle}">
  <Grid.ColumnDefinitions>
   <ColumnDefinition Width="Auto" />
   <ColumnDefinition Width="*" />
  </Grid.ColumnDefinitions>
  <Grid.RowDefinitions>
    <RowDefinition />
    <RowDefinition />
  </Grid.RowDefinitions>

 <TextBlock Style="{StaticResource ApplicationNameLabelStyle}" />
 <TextBlock Style="{StaticResource ApplicationFieldStyle}" />

 <TextBlock Style="{StaticResource UserNameLabelStyle}" />
 <TextBlock Style="{StaticResource UserNameFieldStyle}" />

   </Grid>

 <!-- Instruction for Challenge/Response fields -->
<RichTextBox Style="{StaticResource InstructionRichTextBoxStyle}"
    ac:RichTextBoxHelper.Section="{StaticResource InstructionTextSection}"
    adx:RichTextBoxHelper.Section="{StaticResource InstructionTextSection}" />

<Grid Style="{StaticResource ChallengeResponsePanelStyle}">
```

```
    <Grid.ColumnDefinitions>
     <ColumnDefinition Width="Auto" />
     <ColumnDefinition Width="*" />
    </Grid.ColumnDefinitions>
    <Grid.RowDefinitions>
      <RowDefinition />
      <RowDefinition />
    </Grid.RowDefinitions>

    <!-- Challenge field -->
   <!-- <TextBlock Style="{StaticResource ChallengeLabelStyle}" />
   <TextBlock Style="{StaticResource ChallengeTextStyle}" />
           - - >

    <!-- Response field -->
   <TextBlock Style="{StaticResource ResponseLabelStyle}" />
   <TextBox Style="{StaticResource ResponseTextBoxStyle}" />
     </Grid>

  <!-- Buttons at bottom -->
  <StackPanel Style="{StaticResource ButtonPanelStyle}">
   <Button Style="{StaticResource ContinueButtonStyle}"
        adx:ButtonHelper.IsDefault="true" />
   <Button Style="{StaticResource CloseButtonStyle}"
        adx:ButtonHelper.IsCancel="true" />
   </StackPanel>

  </StackPanel>
 </StackPanel>
</Window>
     ]]></Xaml>
</CustomXamlExecutionActionContract>
```

Allow Listing Policies

Allow listing is a type of policy that allows applications to run on your endpoints. You can think of allow listing as a neutral policy type because it does not alter an application's default permissions, it merely signifies that the application is "known/trusted" and allowed to run. Although simple allow listing follows normal, user-level credentials, allow listed applications are also often paired with Elevation Policies outlined Elevation Policies.

The following examples are available:

- Allow MS Security Catalog
- Allow Google Application with File Upload

Allow Listing Policies without Actions

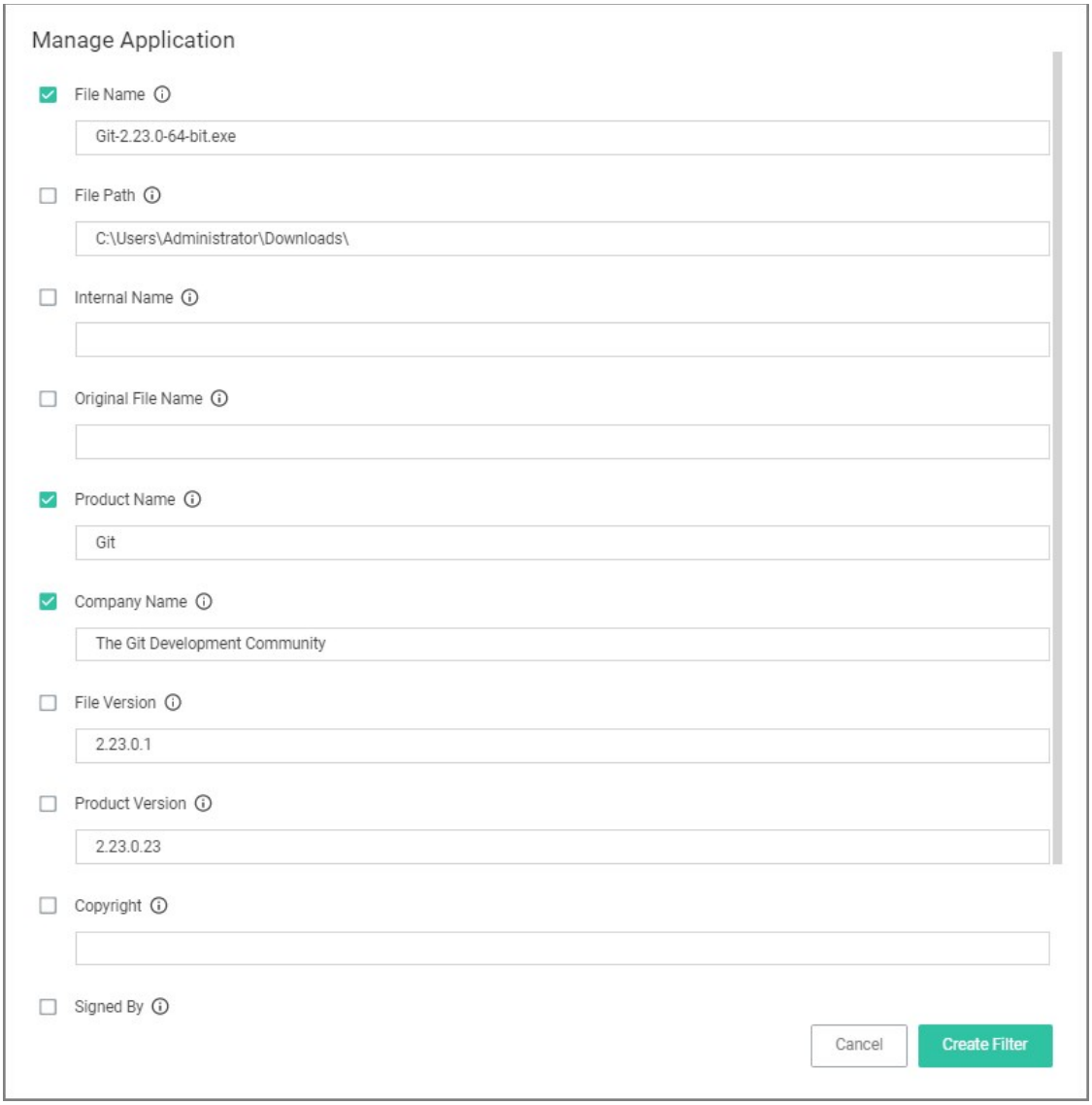
If an application is allow listed under a user context instead of group context and without an action specified, Delinea recommends to use the Administrators (Include Disabled) filter for the policy to execute as desired.

Git App with File Upload

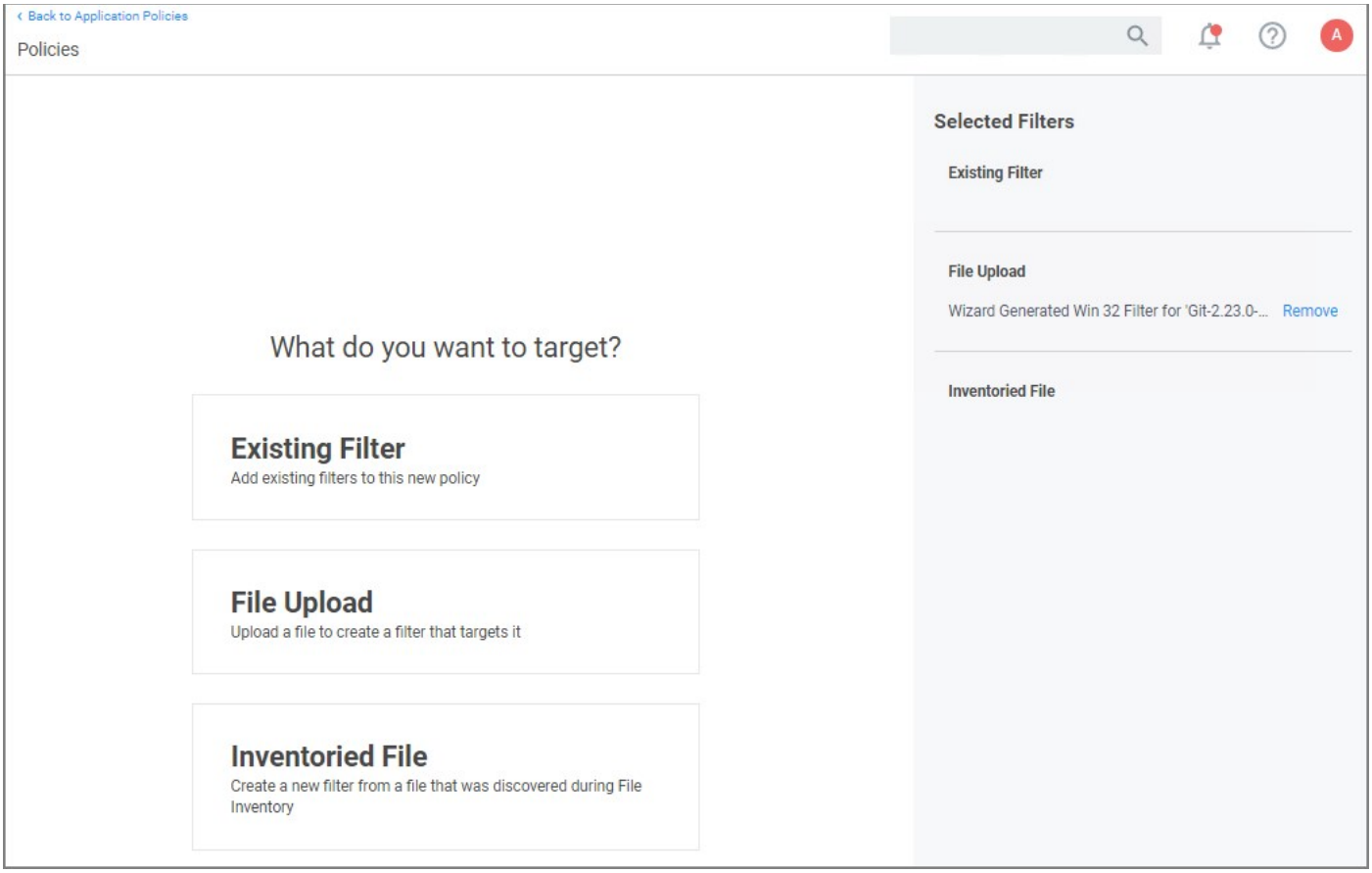
In evaluation and production installations, proactive introduction of executables into Privilege Manager can be accomplished with a feature called File Upload. File Upload allows you to quickly introduce a file, then create a Filter and/or a Policy to govern the application. As example, here's how to introduce the Git Installer into Privilege Manager and use the file information to allow list Git applications.

For this use-case you will need to have access to downloaded Git installer files.

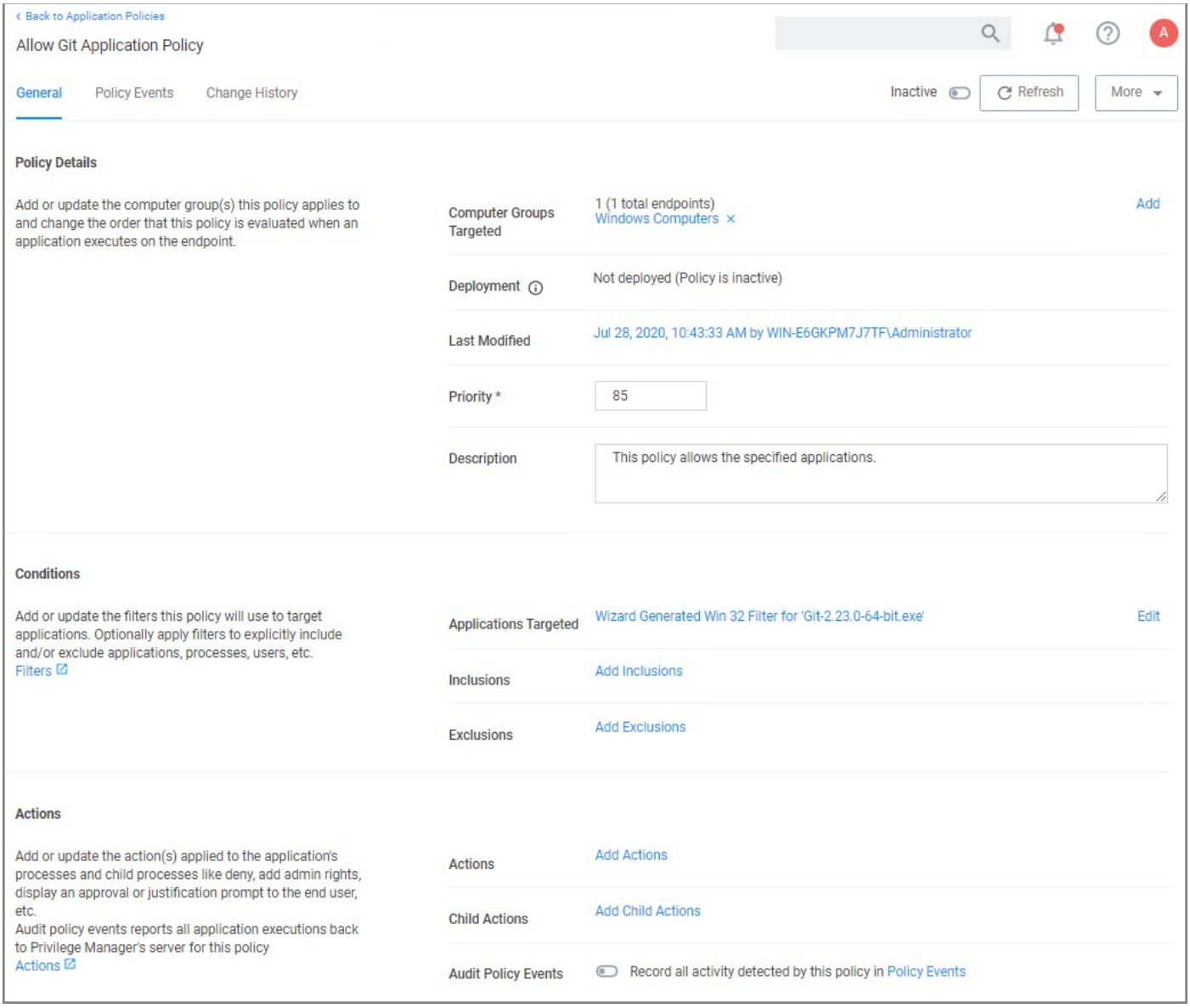
1. Using the Policy Wizard, create a controlling policy that allows application execution on endpoints.
2. Select what process types you want the policy to allow, for this example it's **Specific Applications**.
3. Choose your target, for this example **File Upload**.
4. Click **Choose File** and select a file to upload.
5. Click **Upload File**.
6. On the **Manage Application** page select all the identifying factors you want the filter to target.



7. Click **Create Filter**.



8. Click **Next Step**.
9. Name your policy and add a description, click **Create Policy**.

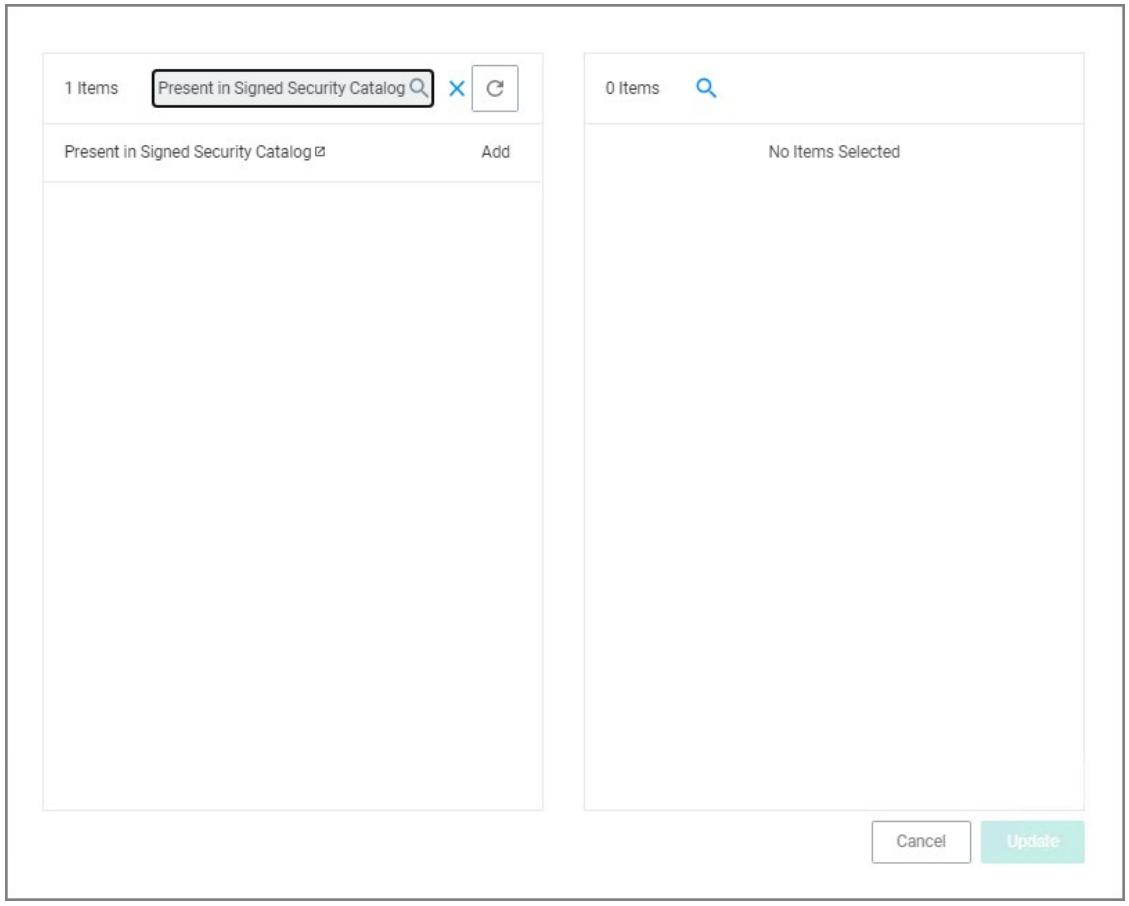


10. Set the **Inactive** switch to **Active**.

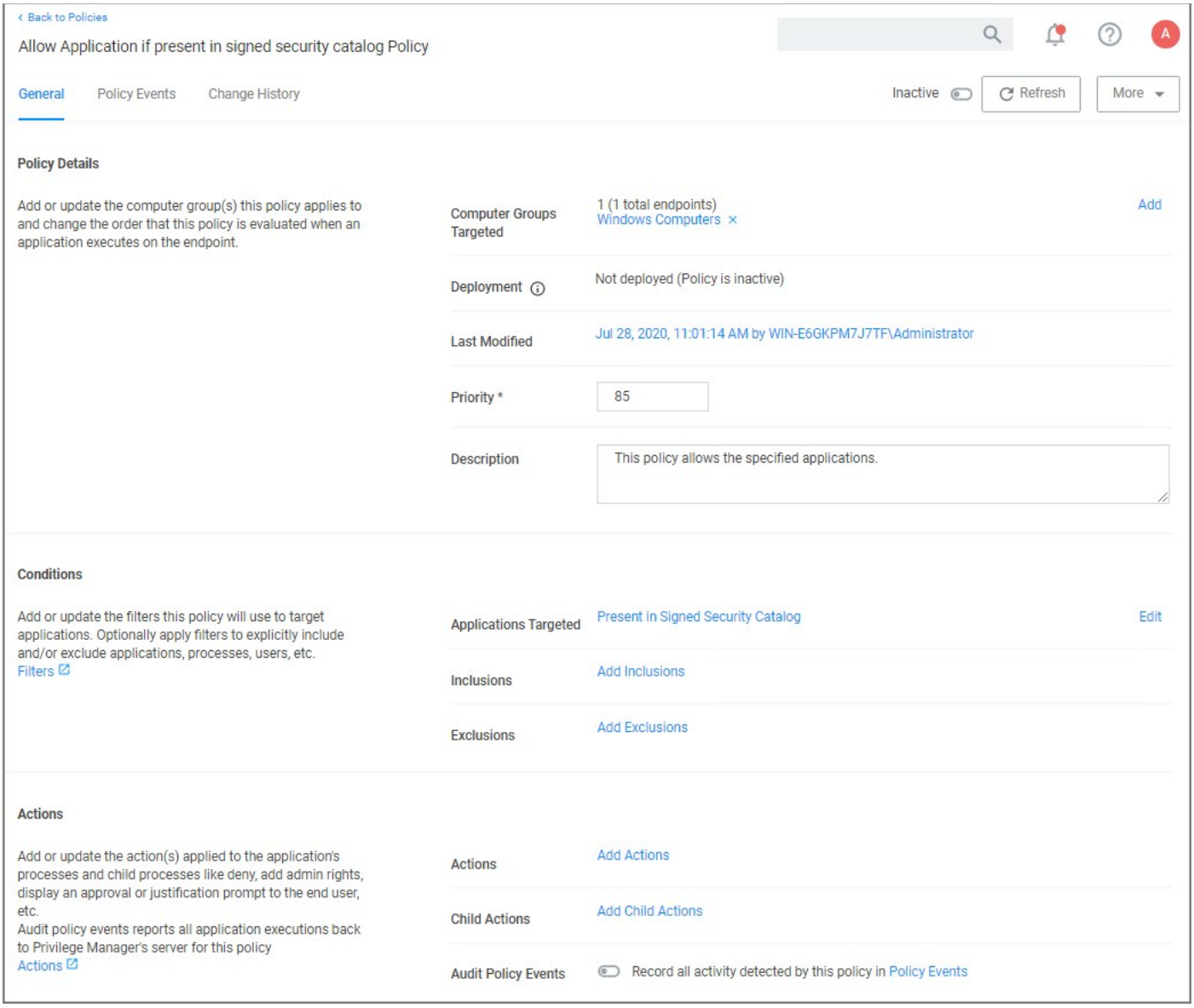
MS Security Catalog

This policy uses a built-in filter to allow list Microsoft's Signed Security Catalog. This filter is often used to dynamically allow to update items from Microsoft. Allow listing these executables clears them so they are not effected by any other policy, (i.e. they are allowed to run).

1. Using the Policy Wizard, create a controlling policy that allows application execution on endpoints.
2. Select what process types you want the policy to allow, for this example it's **Specific Applications**.
3. Choose your target, for this example **Existing Filter**.
4. Search for and **Add** the **Present in Signed Security Catalog** filter.



5. Click **Update**.
6. Click **Next Step**.
7. Name your policy and add a description, click **Create Policy**.



8. Set the **Inactive** switch to **Active**.

There is no need to add actions under the Actions tab, because these applications are allow listed, they are allowed to run with default permissions.

Elevation Policies

Distinct from allow policies where applications are simply allowed to run with default user level privileges, an Elevation Policy will apply Administrator credentials to specified applications. This type of policy is often paired with allowlisting to save IT Administrators time when many employees must perform trusted tasks that require Administrator credentials to complete, like installing a trusted application (Adobe) or device (printer).

In Privilege Manager v10.7 the Restrict File Dialogs action has been added to the product. Delinea recommends using this action on elevation policies to prevent the misuse of file open and save dialogs for elevated applications.

Topics in this section:

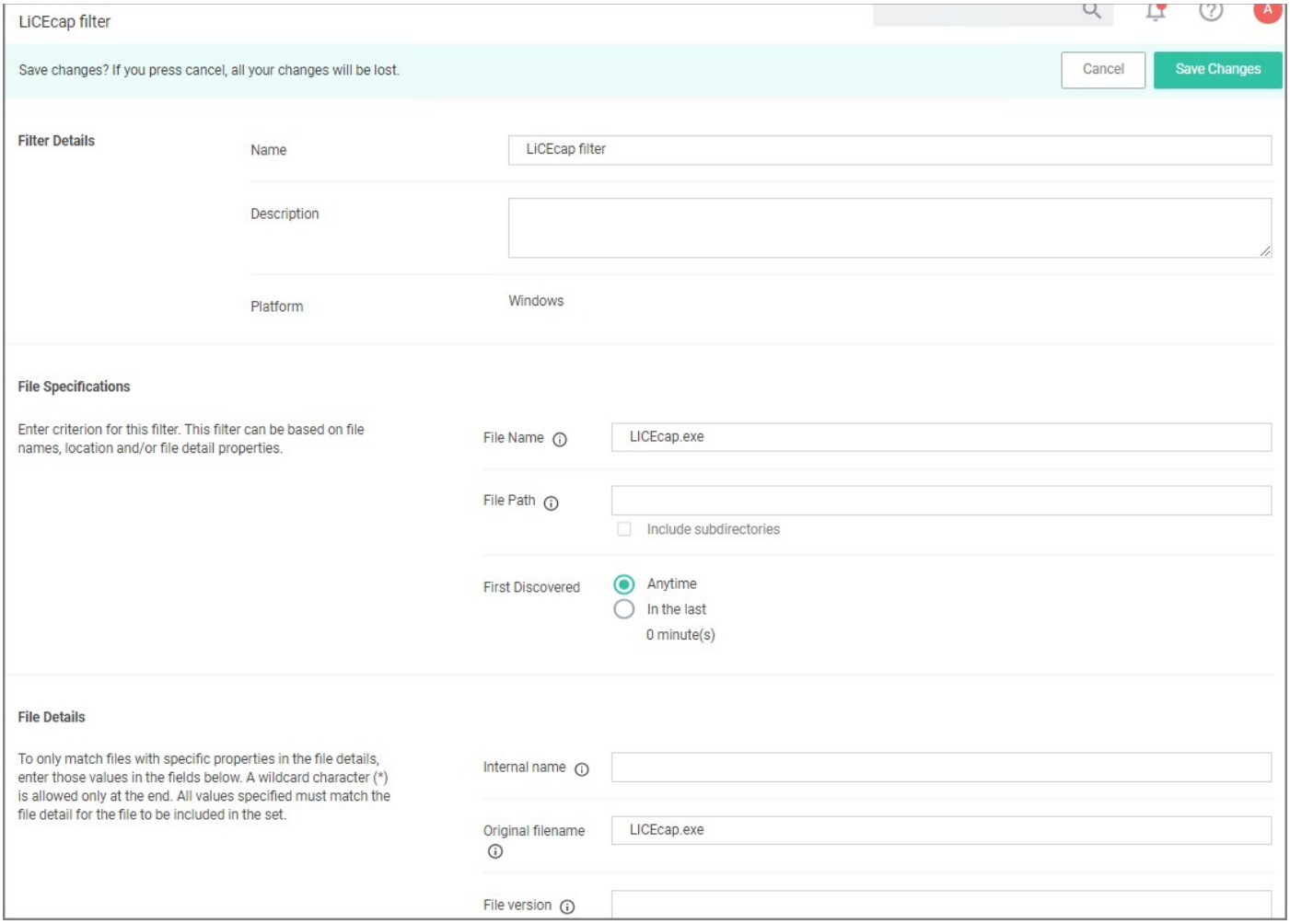
- Setting up ActiveX Policies
- UAC Override Policy
- Elevate Applications launched from Network Share Policy
- Elevate msi launched from a Network Share
- Elevate Applications whose Execution Requires Approval
- Elevate Applications that Require User Justification
- MS Visual Studio Installations - Filters and policy now provided via Configuration Feeds. Refer to Config Feeds for download and installation information.

Application Execution Requires Approval

This policy type requires a user to provide a justification reason as to why they need to run a process (installer or executable). Then, the reason is submitted to specified managers via Privilege Manager **Admin: Tools | Manage Approvals** for approval. It also depends on whether or not the Manual Approval process is used. For instance, if you have configured Service Now as your approval process handler, these approval requests won't appear in the **Admin: Tools | Manage Approvals** area. There are several pieces to the Actions in this policy. Because Conditions and Actions are independent, these actions for approval can be applied to any condition. In this use case, we will apply this action to the LICEcap gif creator.
First create a filter that will identify the process/executable on which Privilege Manager will act.

1. Navigate to **Admin | Filters**.
2. Click **Create Filter**.

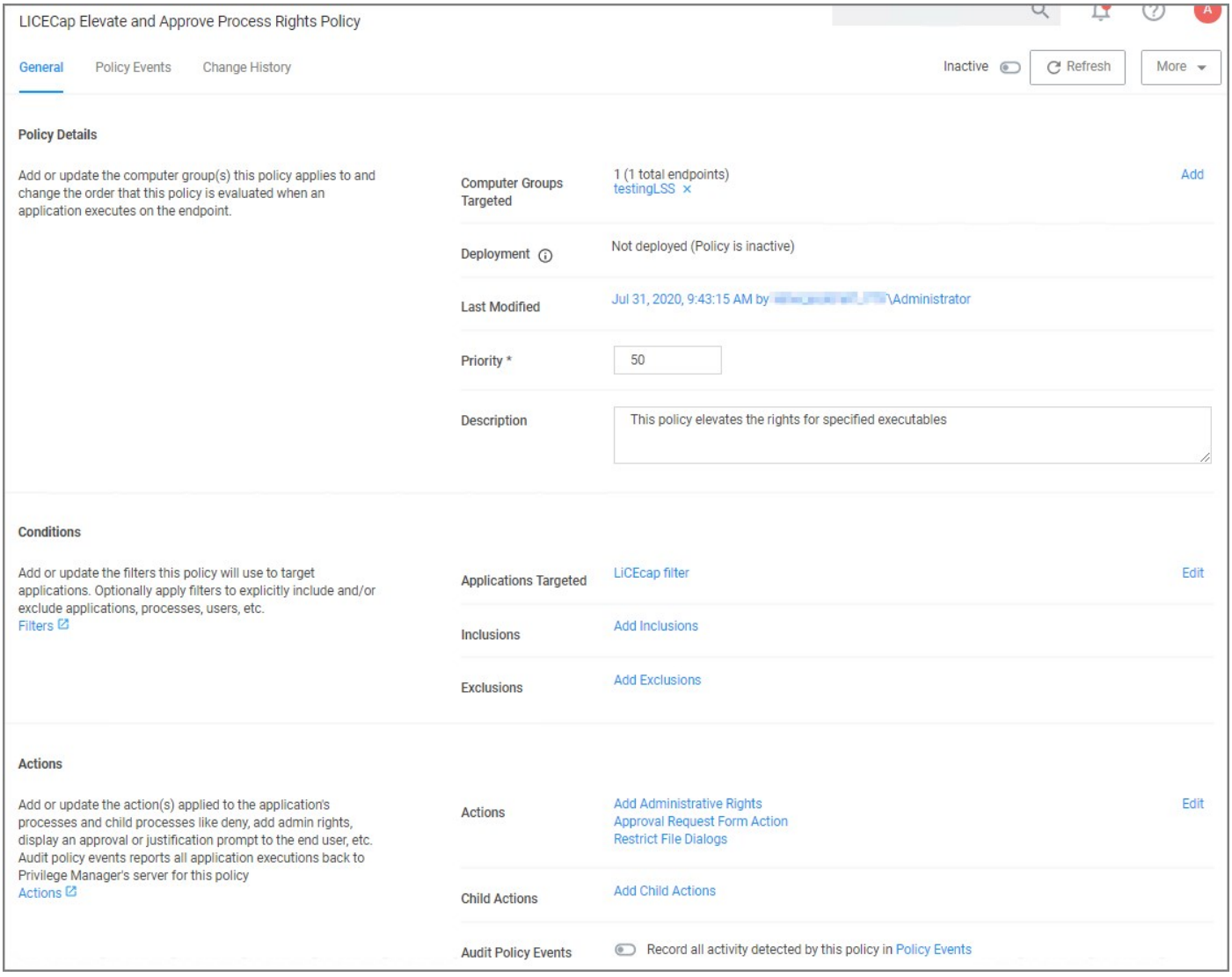
   Note: In this use case, we will target the LICEcap application (LICEcap.exe).
3. From the **Platform** drop-down select **Windows**.
4. From the **Filter Type** drop-down select **Blank Win32 Executable Filter**.
5. Add a name and description, click **Create**.
6. Enter **LICEcap.exe** in the File Name field under File Specifications as well as in the Original filename field under File Details.



7. Click **Save Changes**.

Create a Policy using this Filter

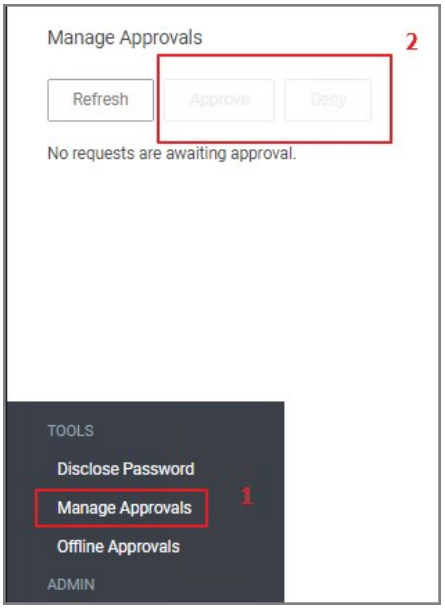
1. Using the Policy Wizard, create a controlling policy that elevates requiring approval.
2. Select what file types you want targeted with the approval elevation, for this example select **Executables**.
3. Choose your targets. You can specify several different targets, for this example select **Existing Filter**.
4. Search for and add the LICEcap filter created previously.
5. Click **Update**. You may also use **File Upload** to upload the LICEcap.exe file or **Inventoried File** if LICEcap.exe was inventoried for this computer group.
6. Click **Next Step**.
7. Name your policy and click **Create Policy**.



8. Set the **Inactive** switch to **Active**.
    - Once the policy is delivered to the endpoint agent LICEcap.exe will require the user to enter a justification reason for running this application:
    - Once the reason is entered by the user, the user clicks Continue to forward to the request to Privilege Manager for approval. On their desktop the Application Notice approval status is marked as Pending.
    - Finally, a Privilege Manager user will approve this application request

To Approve Requests

1. Return to the Privilege Manager Dashboard and navigate to **Admin: Tools | Manage Approvals**.



2. Select the approval requested from the list and click on **Approve**.
3. Select **One Time or an allotted time frame for access** and **Manage Approve**.
4. You can now return to the desktop where the user initiated the executable, and you will see the request has been approved.
5. Click on **Continue** and the user is allowed to run that executable.

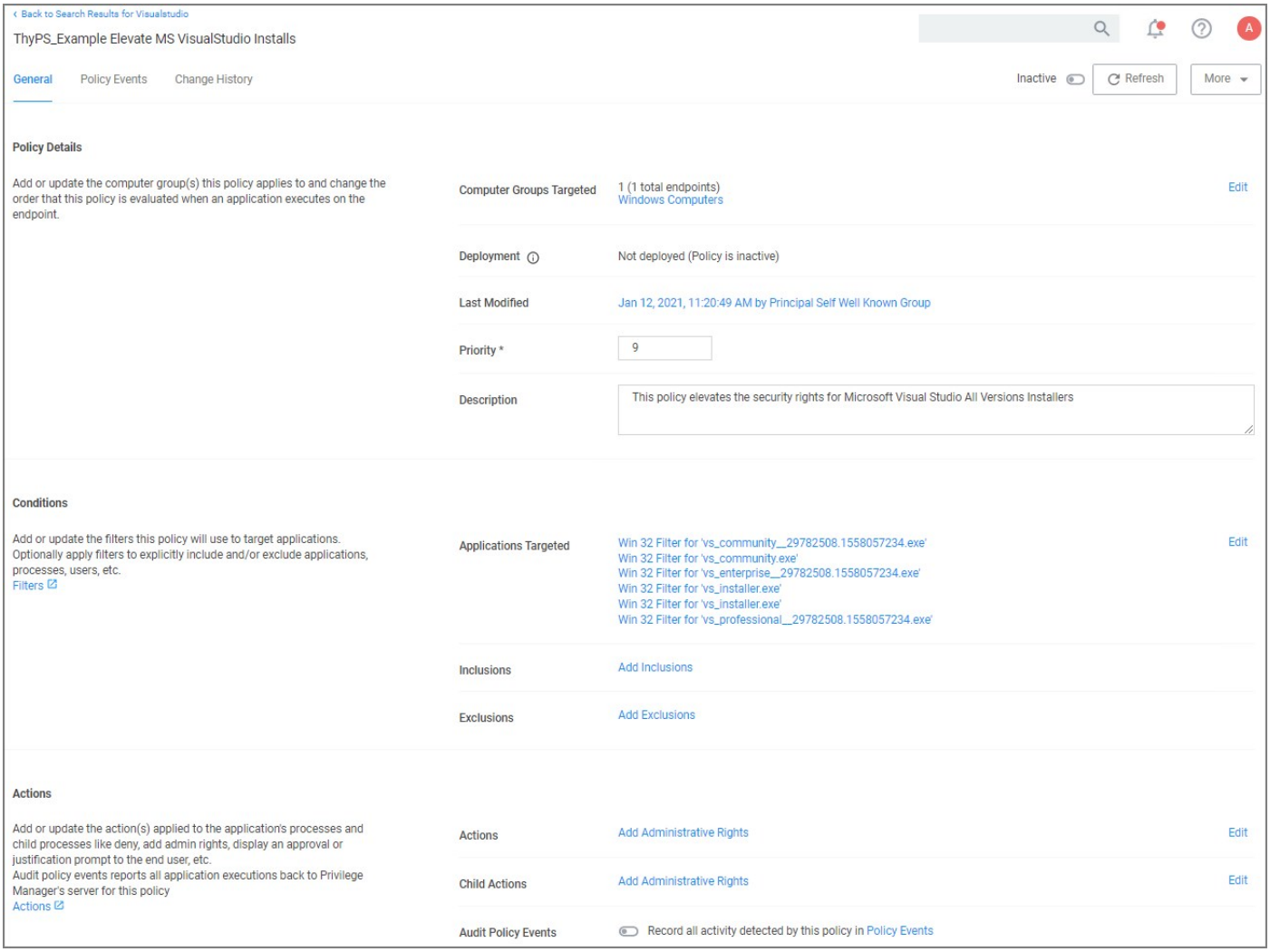
> **Note**: To adjust this policy to apply to specific users or endpoints, use the option to add Inclusion/Exclusion filters and Computer Groups.

MS Visual Studio Installations

After downloading the Visual Studio Installer Elevation configuration feed, follow the below best practices to elevate Visual Studio Installer packages.

Customizing the Policy

1. In the Privilege Manager console search for **ThyPS_Example Elevate MS VisualStudio Installs**.
2. On the results page click the **ThyPS_Example Elevate MS VisualStudio Installs** policy.



   The policy

   - is set to a priority of 9.
   - incorporates various filters, covering various Visual Studio versions. Each File Specification Filter incorporates a Certificate Filter for the signing cert and a Win 32 Filter for the targeted file attributes.
   - adds Administrative Rights to each of the application targets.

3. Save any changes and set the policy to active for it to take effect.

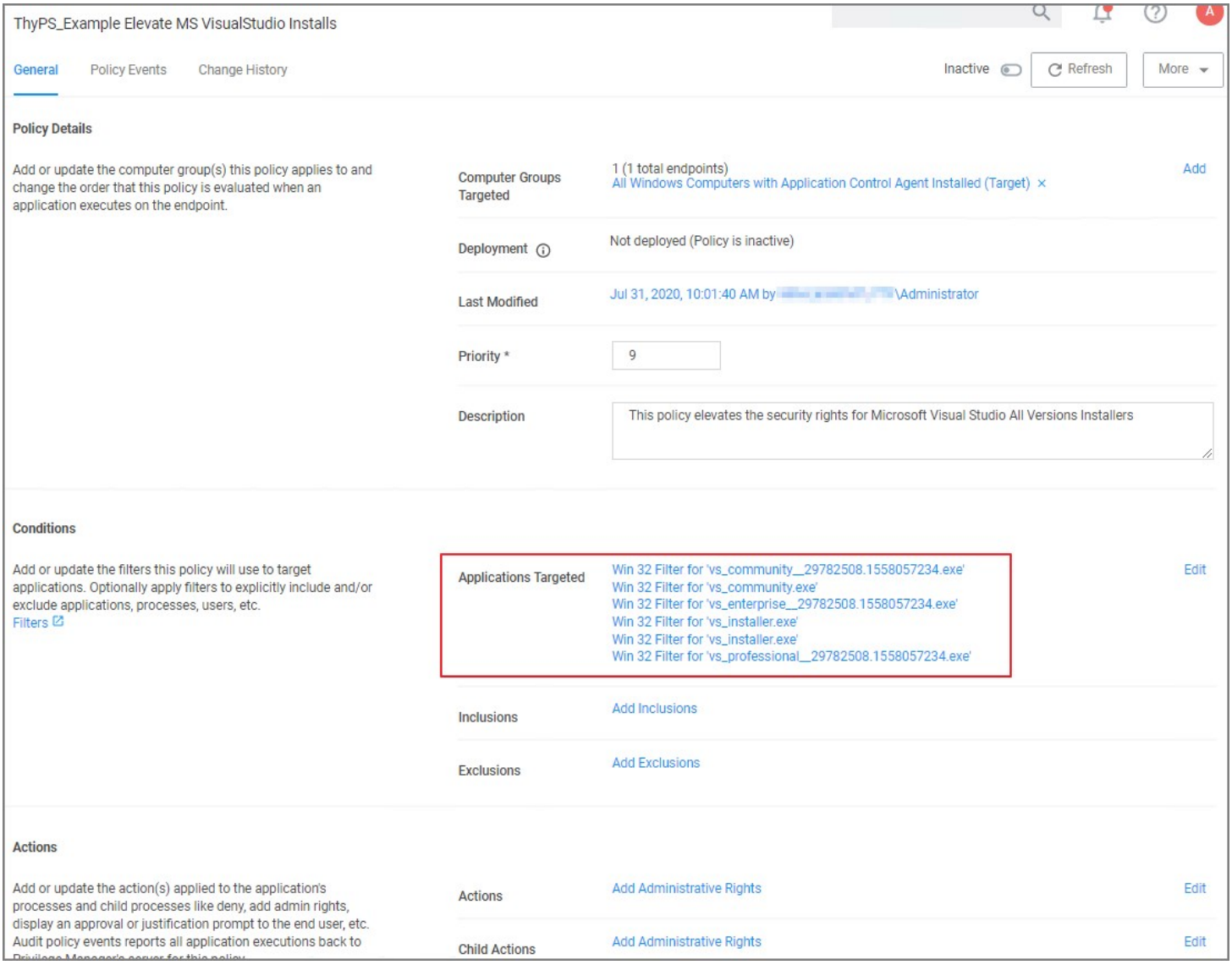
Note:

Any changes to the default policy or filters will be overwritten if the configuration feed is reinstalled or updates. Delinea recommends to save items from configuration feeds that are being customized under a new name.

For enhanced security, the policy should include a certificate filter when rolled out into a production environment.

Best Practices

Four Microsoft Initial download files and subsequent two Windows Start Menu target files are defined as Application targets in this default policy.



If you use this policy in your environment, check frequently to update when new versions are released. Verify if there are any versions of Visual Studio you would need to include for your customization. To cover additional versions, use these filters as a basis and download desired versions including signature certificates from Microsoft. If you make changes to the default policy, take action to prevent accidental overwriting your changes when updating via configuration feed. Save the policy under a new name and compare with any Delinea provided updates in the future.

Additionally, work is needed to sort out what needs elevation when using the application's various modules. Not every module installation was

tested with these filters.

The Applications Elevation Policy should be a separate Policy, as it should be located differently in the Policy Stack.

Prior to rolling this out to a production environment, proper testing by a developer should be performed.

Elevate MSI Files on the Network Share

A wizard generated UNC or Network Share Path Elevation Policy elevates .exe files but not .msi files.

When launching an .msi file, the following command line is executed:

```
C:\Windows\System32\msiexec.exe /i "\\[path-to-network-share]\[file]"
```

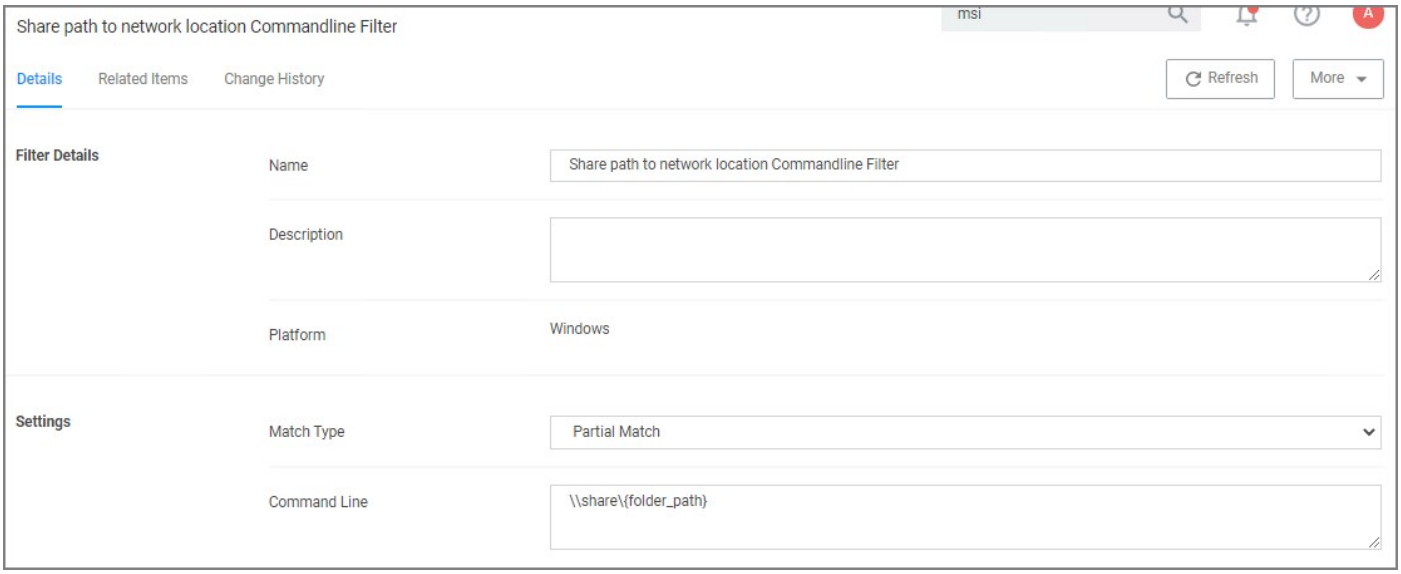
This means that the application is not elevated because the msiexec.exe file is not in the elevated Network Share directory.

This topic details two options for elevating .msi files from a network share.

Option 1

In order to enable elevation for .msi files on the network share, a command line filter can be created and added to the Elevation Policy.

1. In the Privilege Manager , navigate to **Admin | Filters**.
2. Click **Add Filters**.
3. From the **Platform** pull-down menu, select **Windows**.
4. From the **Filter Type** pull-down menu, select **Commandline Filter**.
5. Give this filter a custom name and description.
6. Click **Create**.
7. Under **Settings | Match Type**, select **Partial Match**.
8. In the Command line field, enter the network share path that needs to be elevated (such as `\\share\folder_path`).



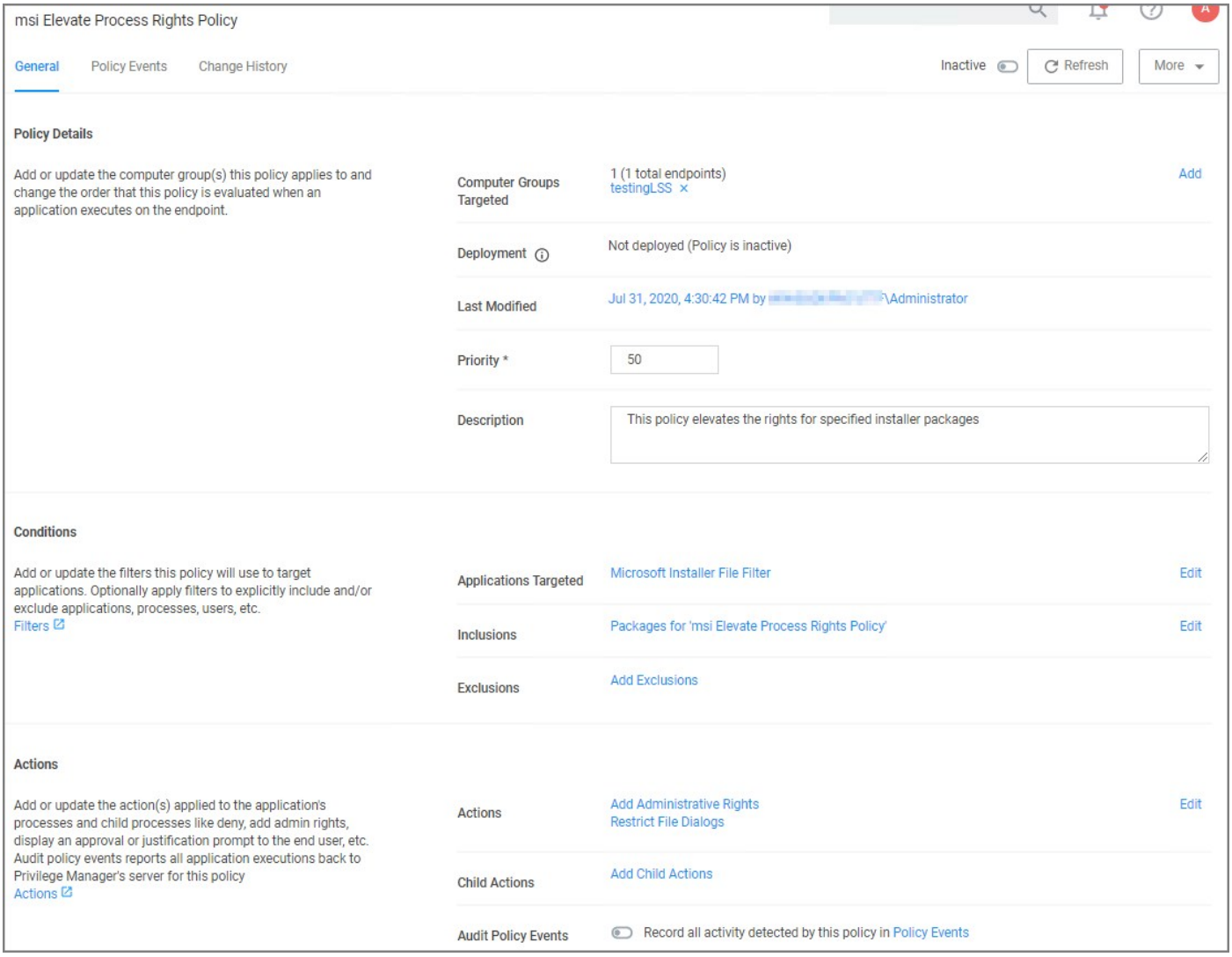
9. Click **Save Changes**.
10. Navigate to your Elevation Policy. Under **Conditions** for **Application Targets** add the command line filter you just created.

Now MSI files in the network share will be elevated.

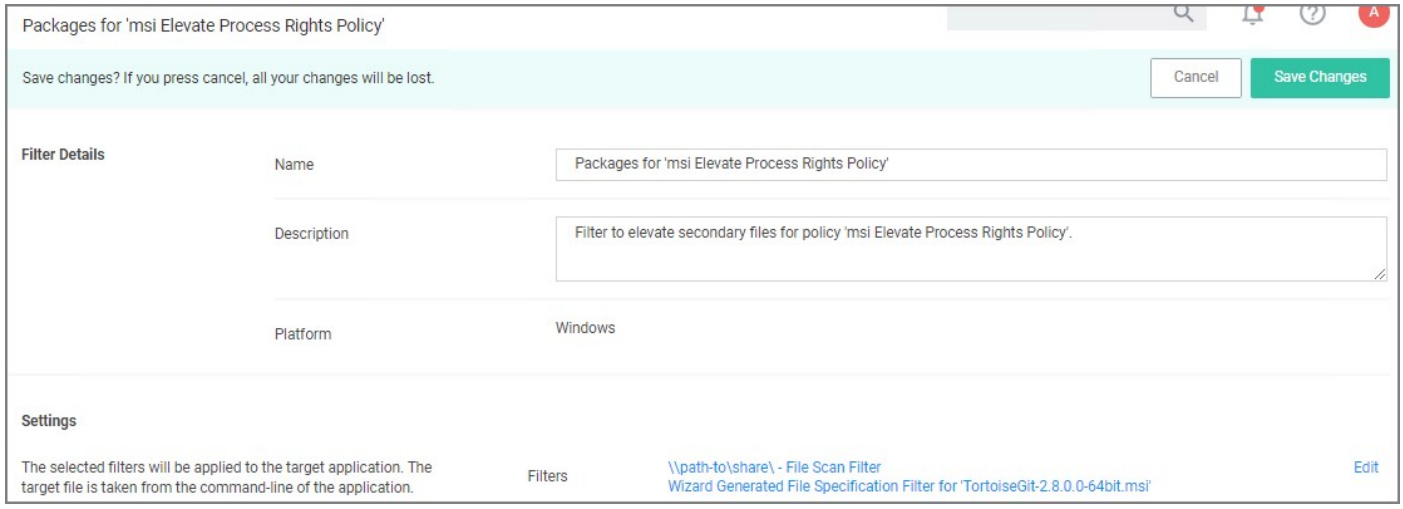
Option 2

An application control policy can be created that targets "msiexec.exe" and uses a secondary file filter as an include only filter.

1. Navigate to **Computer Groups | Windows Computers**.
2. Select **Application Policies**.
3. Click **Create Policy**.
4. In the policy wizard select **Controlling**, click **Next Step**.
5. In the policy wizard select **Elevate**, click **Next Step**.
6. In the policy wizard select **Run Silently**, click **Next Step**.
7. In the policy wizard select **Installer Packages**, click **Next Step**.
8. In the policy wizard select **File Upload**.
    1. On the Upload a File modal, Click **Choose File**.
    2. Select the file(s) you wish to be targeted.
    3. Click **Upload File**.
    4. On the Manage Application dialog, check **File Name**.
    5. Click **Create Filter**.
    6. Click **Next Step**.
9. On the Finalize the Policy page, enter a name for your new policy. The policy will be created with a default priority of 50, since it is a silent elevation policy.
10. Click **Create Policy**.



11. Click the **Packages for 'msi Elevate Process Rights Policy'** Filter and under **Settings** search for and add the **\share\to-path** filter previously created.



12. Click **Save Changes**.
13. Set the **Inactive** switch to **Active**.

MSI files in the network share will be elevated.

Adding the Secondary File Filter created to the Applications Targets under Conditions of the Policy will catch all instances where .msi files are run from \\share\folder_path. Only msiexec.exe will run .msi files, so the Secondary File Filter can be added to an Elevation Policy that has other Application Targets.

An Elevation Policy can be built with this Secondary File Filter as the Application Target and add the built-in Microsoft Installer File Filter as an Inclusion Filter to specifically target msiexec.exe runs an .msi from \\share\folder_path\.

Network Share Applications

Many organizations put trusted installers on a network share that employees can use. Those installers can be elevated automatically from the shared network location by assigning an elevation policy to the network share location.

There are different options to elevate rights to launch applications from a network share location.

- One option is to create a file specification filter setting the path for the network share location. Then use that filter in a policy to apply administrative rights to all application launches from that path.
- The other option is to download the Application Control - UNC Elevation Policy Template via Config Feeds and customize the template.

Applying Administrator Rights to a Network Share

Creating the Filter

1. In the Privilege Manager Console navigate to **Admin | Filters**.
2. On the Filter page, click **Create Filter**.
3. On the New Filter page, select the platform. This can be either **Both Windows / Mac OS**, **Windows**, or **Mac OS**. For this example, select **Windows**.
4. From the **Filter Type** drop-down select **File Specification Filter**. This also allows you to link in hashes or signatures.
5. Enter the name and a description for the filter, for example "network share" and "filter to elevate applications installed from network share".
6. Click **Create**.
7. Add the Path that points to your Fileshare folder, click **Save Changes**. Use the same UNC path format for both macOS and Windows endpoints.

Creating the New Policy

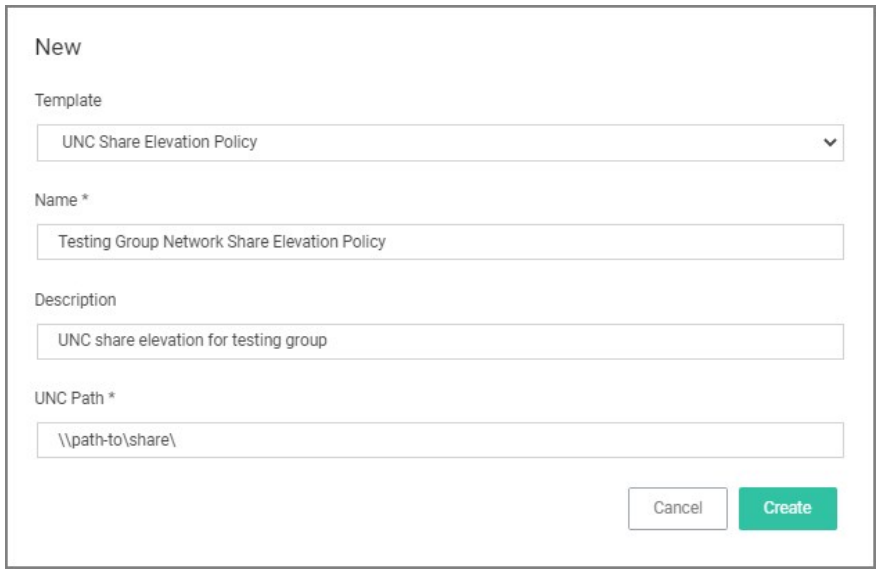
1. Navigate to **Computer Groups | Windows Computers**.
2. Select **Application Policies**.
3. Click **Create Policy**.
4. In the policy wizard select **Controlling**, click **Next Step**.
5. In the policy wizard select **Elevate**, click **Next Step**.
6. In the policy wizard select **Run Silently**, click **Next Step**.
7. In the policy wizard select **Installer Packages**, click **Next Step**.
8. In the policy wizard select **Existing Filter**.
9. Search and add the network share path filter previously created.
10. Click **Update**.
11. Click **Next Step**.
12. Name your policy and enter a description.
13. Click **Create**.
14. Set the **Inactive** switch to **Active**.

Using the UNC Elevation Policy Template

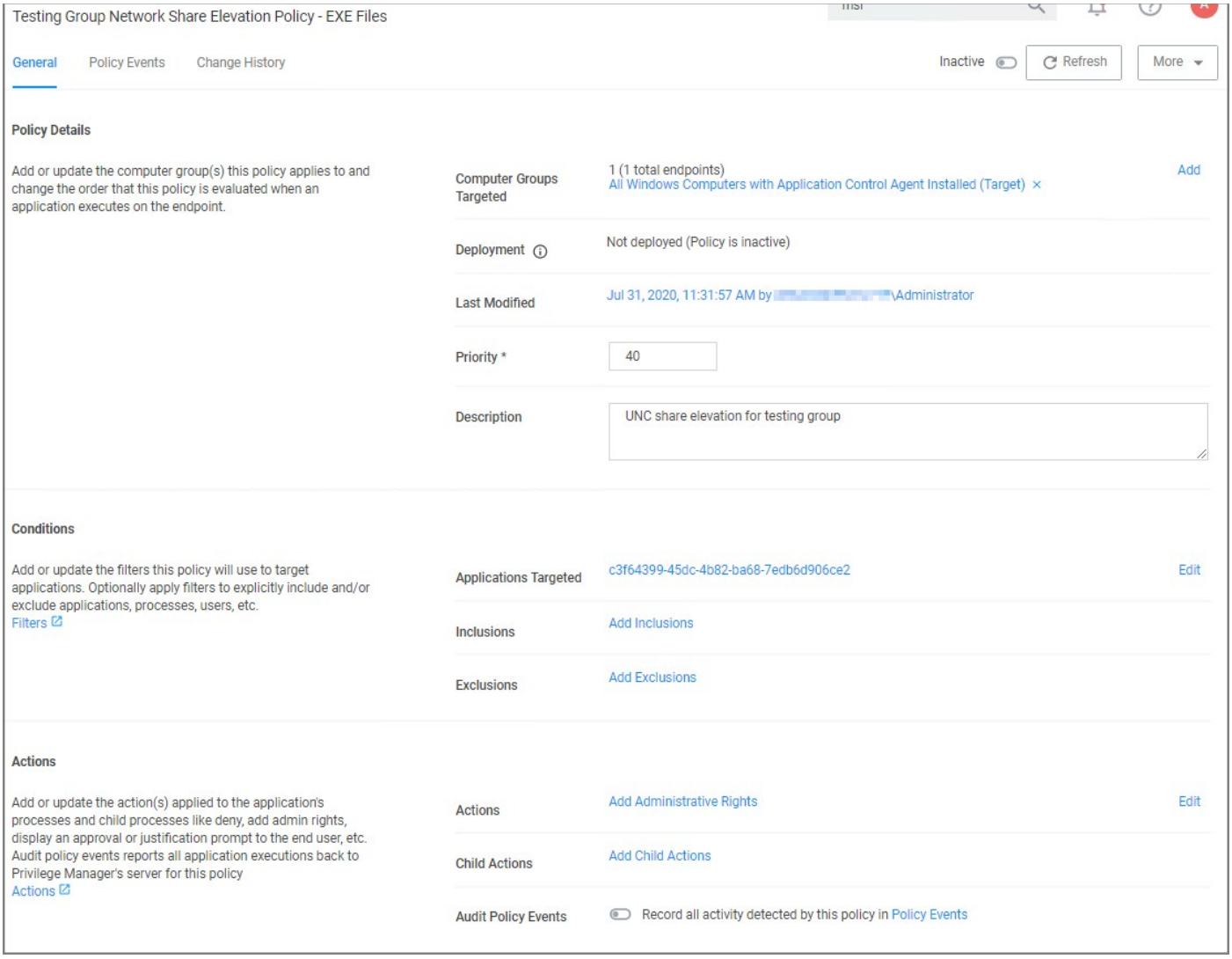
Use the UNC Elevation Policy Template to create a customized policy that lets you scan a network share and automatically elevates launches of MSI and EXE files from that share.

1. Navigate to **Admin | Config Feeds**.
2. Expand **Privilege Manager Product Configuration Feeds**.
3. Expand **Application Control Solution**.
4. Install **Application Control - UNC Elevation Policy Template**. The template is being installed.
5. Navigate to **Admin | Folders**.

6. In the folder tree open **Privilege Manager Solutions | Application Control | Policies | macOS or Windows policies | Privilege Management**.
7. Click **Create**.
8. From the template drop-down select **UNC Share Elevation Policy**.
9. Enter a name and description.
10. Enter the UNC Path to the network share. Use the same UNC path format for both macOS and Windows endpoints.



11. Click **Create**.
12. The Policy is created, but needs some attention. Confirm that this is an elevation policy and click **Set as Elevate**.



13. Change the priority based on how this policy needs to interact with other policies for your organization, click **Save Changes**.
14. Set the **Inactive** switch to **Active**.

Setting up ActiveX Policies

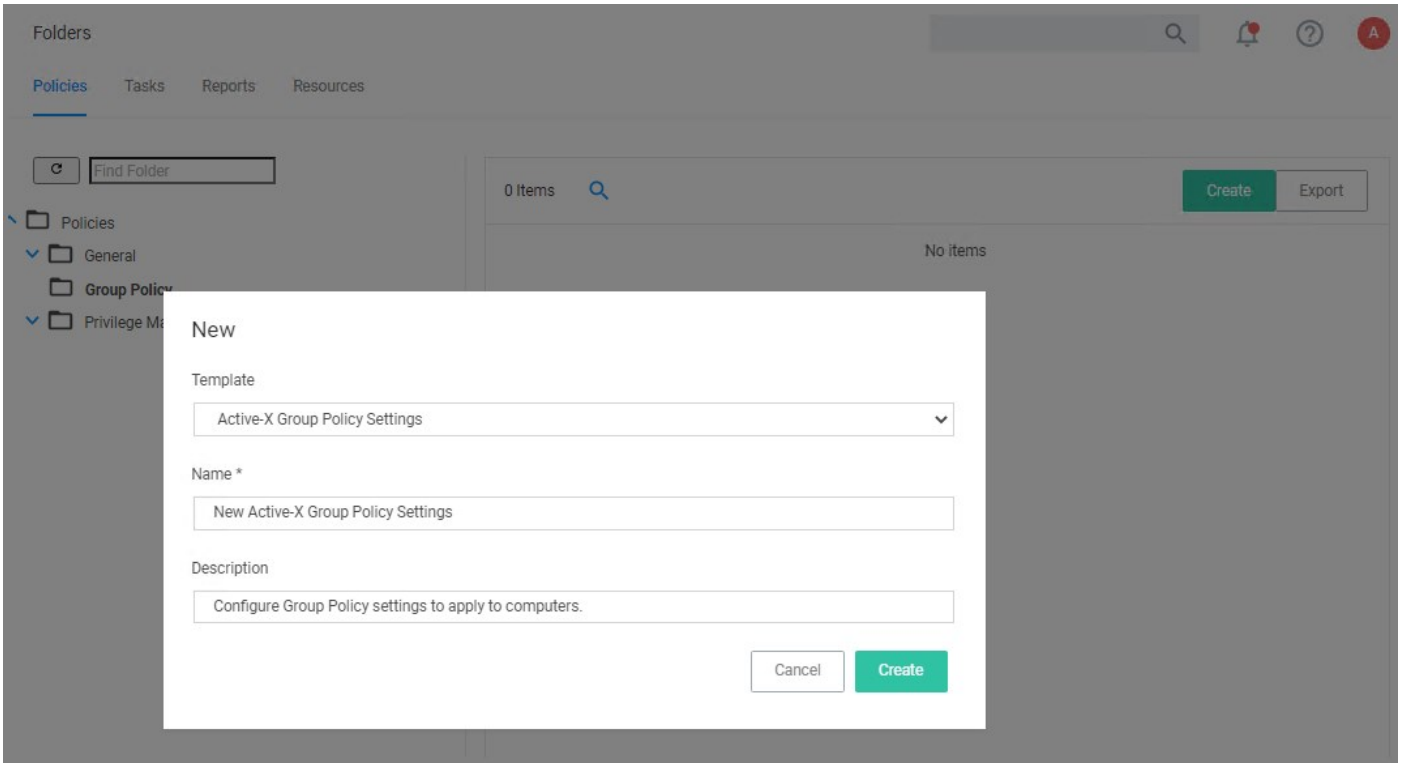
To allow add-ins to be installed via Internet Explorer, you need to create an allow policy for ActiveX.

Note: You will need to import local group policy definitions before editing your Active-X Group Policy Settings.

Refer to the Local Security topic, specifically Manage Local Groups.

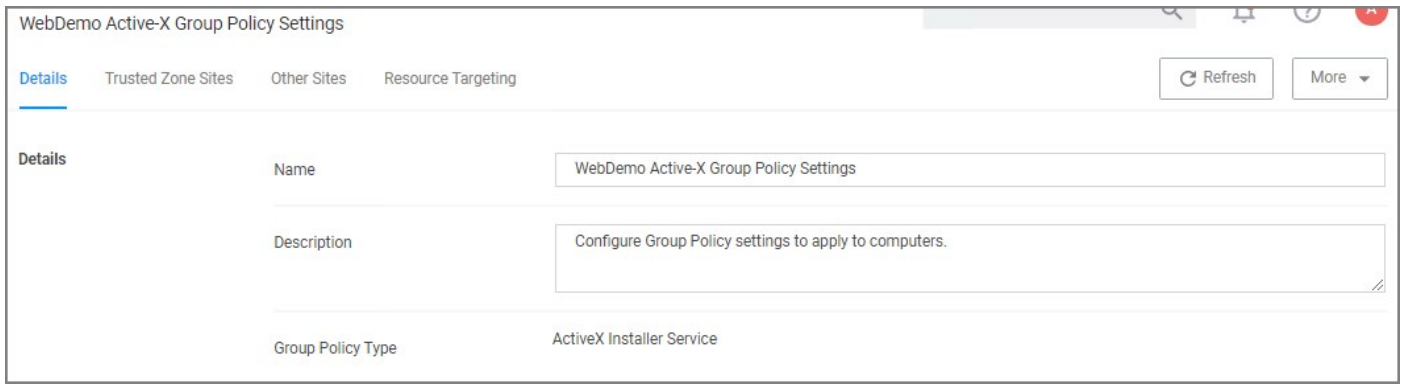
Creating the Policy

1. Navigate to **Admin I Folders**.
2. Select **Group Policies**.
3. Click **Create**.

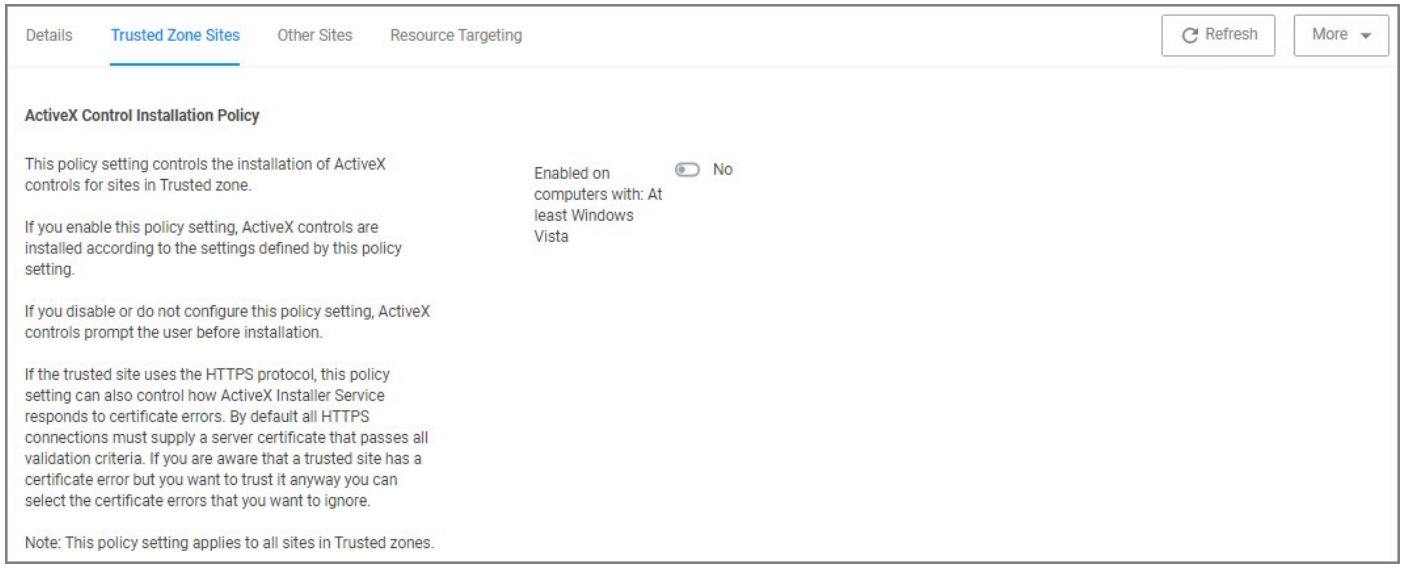


4. From the **Template** drop-down, select **Active-X Group Policy Settings**.
5. Enter a name and description to identify the policy.
6. Click **Create**.
7. If you haven't already imported the Local Group Policy Definitions, Privilege Manager prompts you to import the definitions.

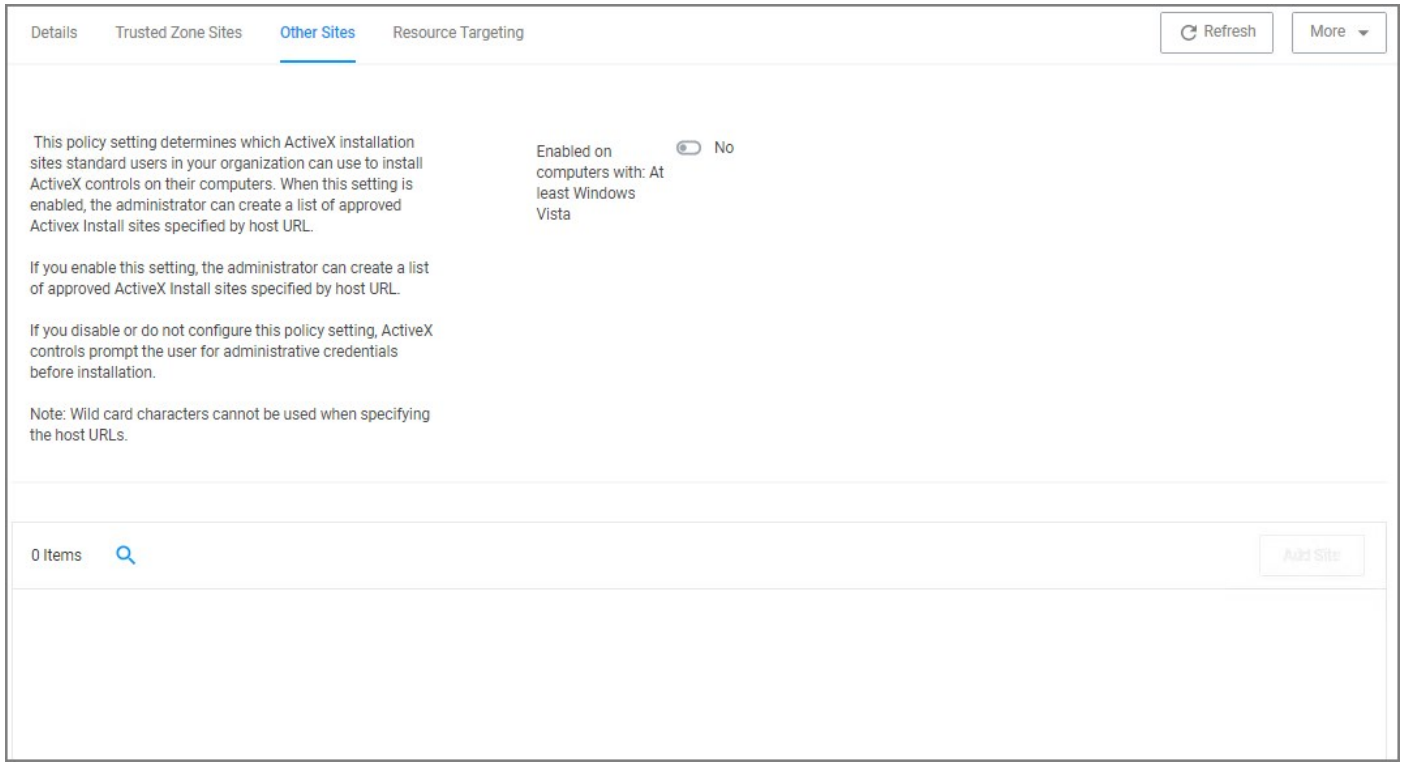
Click **Go to Import Task** and run the task. Return to the Active-X policy.



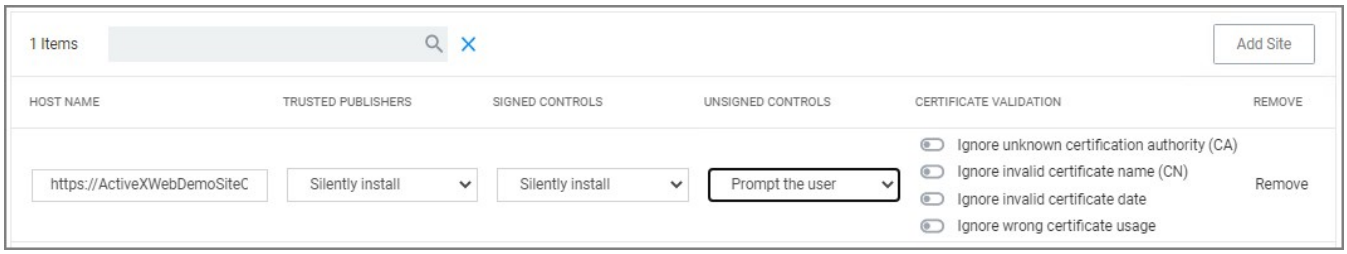
8. You can now add Trusted Zone sites and Other Sites and customize what actions to take when they are accessed.
    - Trusted Zone Sites tab:



    - Other Sites tab:



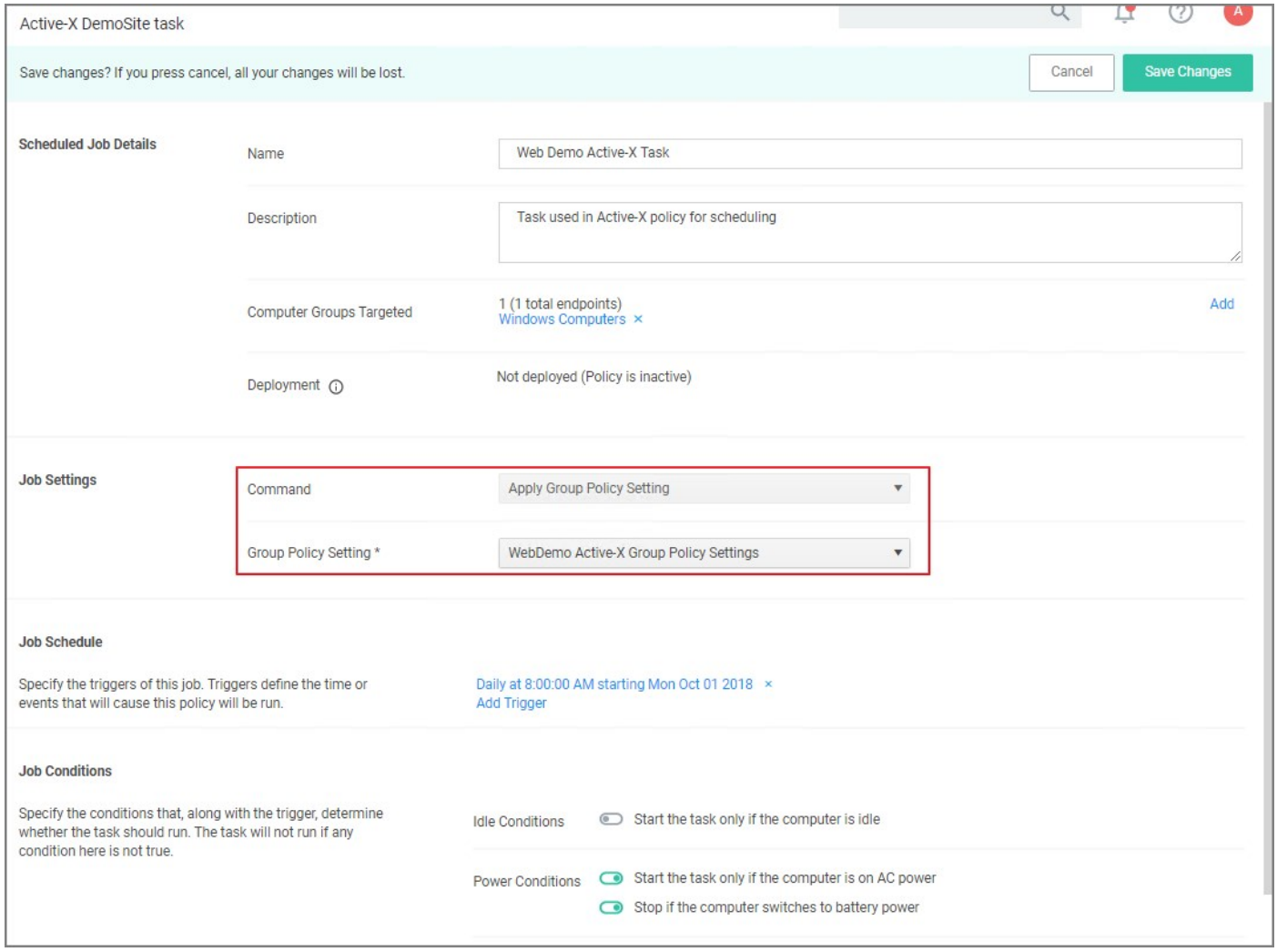
1. To customize, set the **Enabled on computers with: At least Windows Vista** to **Yes**.
2. Click **Add Site**.



3. Enter the Host Name (URL) for the site.
4. Select from the Trusted Publishers and Signed Controls drop-down. The options are
    - Don't install
    - Prompt the user
    - Silently install
5. Select from the Unsigned Controls drop-down. The options are
    - Don't install
    - Prompt the user
6. Set any of the Certificate Validations switches to active specific ignore behavior, such as
    - Ignore unknown certification authority (CA)
    - Ignore invalid certificate name (CN)
    - Ignore invalid certificate date

- Ignore wrong certificate usage

9. Click **Save Changes**.
10. On the **Resource Targeting** tab, Privilege Manager provides instructions for setting up how to deploy the Active-X policy to Resource Targets.
11. In **Clone the following Policy**, click the **Policy** link to open the read-only client task.
12. Duplicate the client task and give it a name identifying it as the task for your Active-X policy.



1. From the **Job Settings | Command** drop-down, select **Apply Group Policy Settings**.
2. From the **Group Policy Setting** drop-down, select the Active-X policy created above.

   Note: Apply Group Policy Settings when you have 2 or more ActiveX policies to add to the Parameters, otherwise use the Apply Group Policy Setting item.

13. Under Job Schedule modify the schedule and/or add triggers.
14. Set the **Inactive** switch to **Active**.
15. Click **Save Changes**.

On completing this configuration, Privilege Manager Triggers feature will then send the configured task to the targeted endpoint.

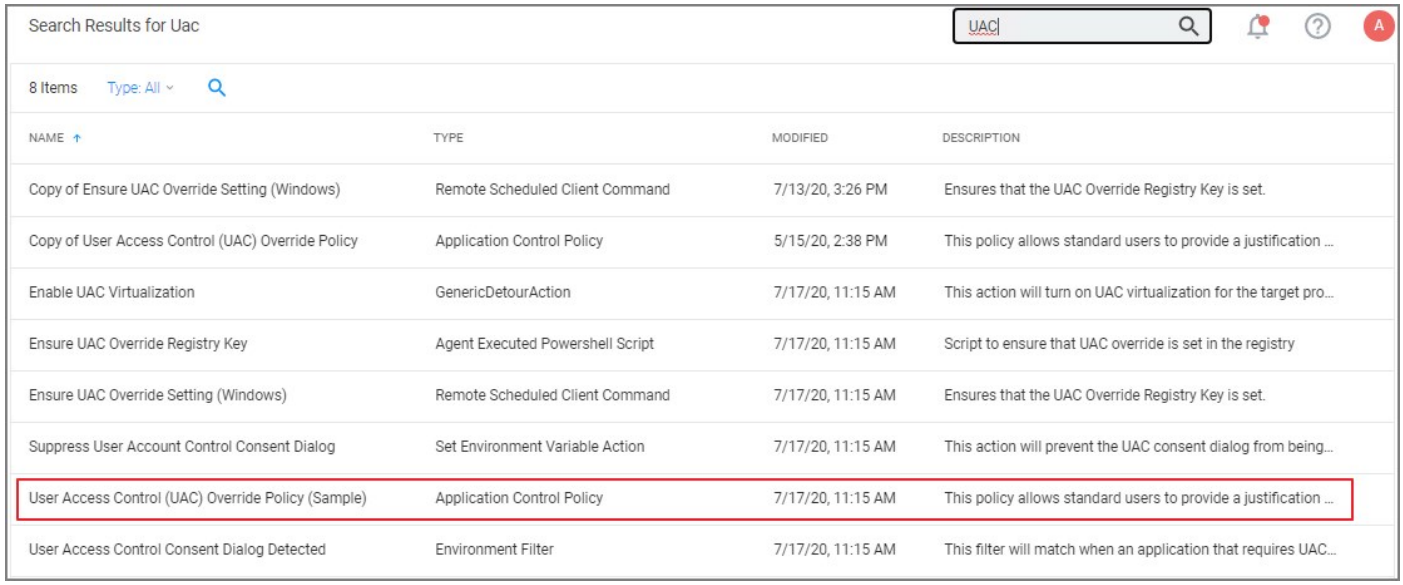
To view the Task, go to the **Task Scheduler**. You must have administrator access to view the task inside Thycotic folder.

UAC Override Policy

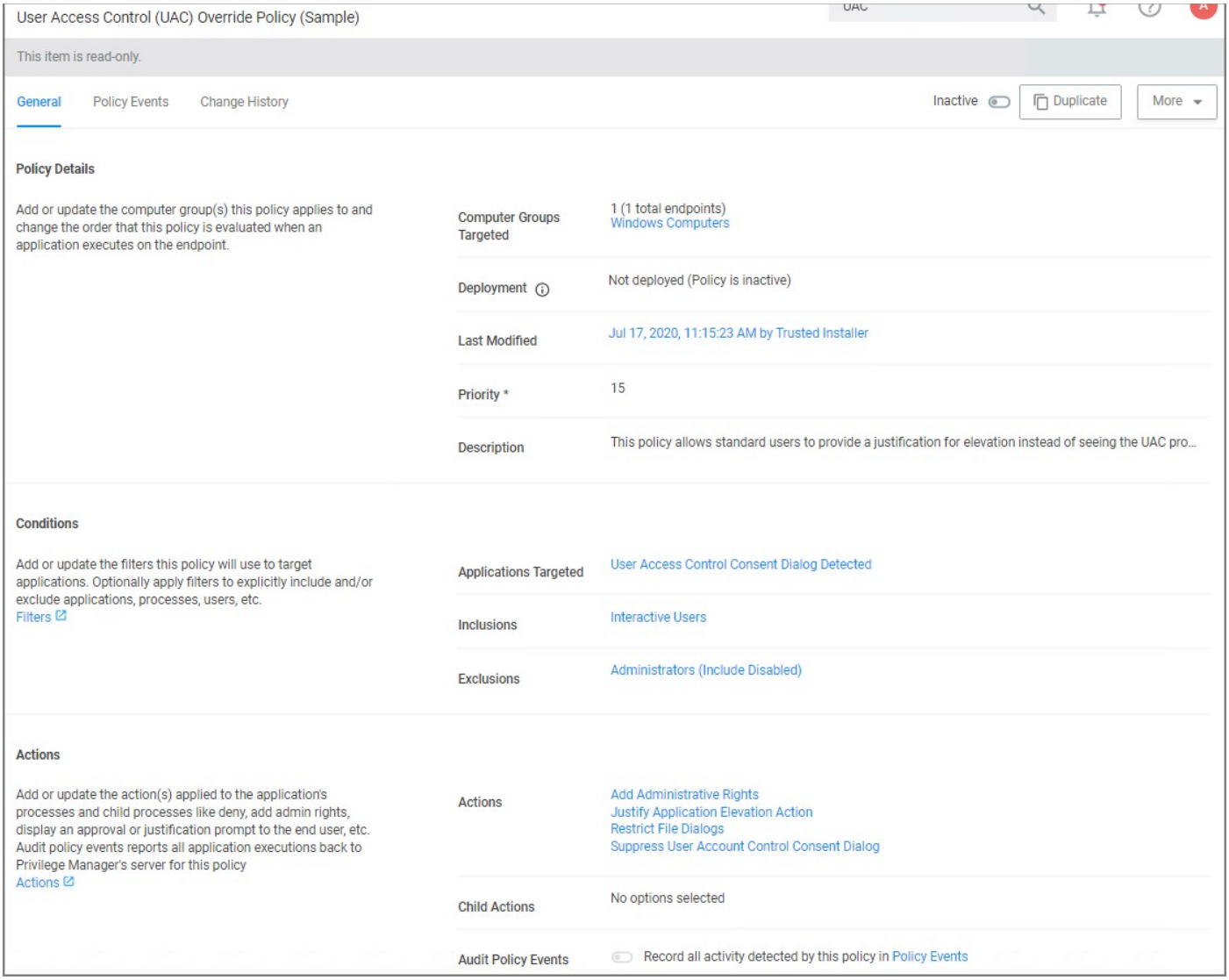
By creating a User Access Control (UAC) Override Policy you can override UAC prompts for end-users. You can create custom messages that require users to submit a reason for requesting administrator rights, which replace UAC prompts for credentials.

Using the Default Policy

1. Under **Computer Groups** search for **User Access Control (UAC) Override Policy (Sample)**.



The UAC Override Policy is a read-only item, that allows standard user to provide a justification for elevation instead of seeing the UAC prompt.



2. To edit this policy, you need to make a copy and assign a different name, to do so click **Duplicate**.
3. Under **Computer Groups Targeted** you may change the targeted endpoints.
4. Under **Conditions** you edit the
    - Application Targets
    - Inclusion Filters
    - Exclusion Filters
5. Under **Actions** you can edit
    - the available actions for the policy like
        - the Justify Application Elevation Action
        - the Add Administrative Rights Action
        - the Suppress User Account Control Consent Dialog (Legacy) Action. Only used with Agent versions 10.4 and older.
    - if you want to Audit Policy Events (as a learning mode/monitoring feature)
    - you can add Child Actions.

6. Click **Save Changes**, if you created a copy and made edits.
7. Set the **Inactive** switch to **Active**.

By default the UAC Override Policy has a priority setting of 15.

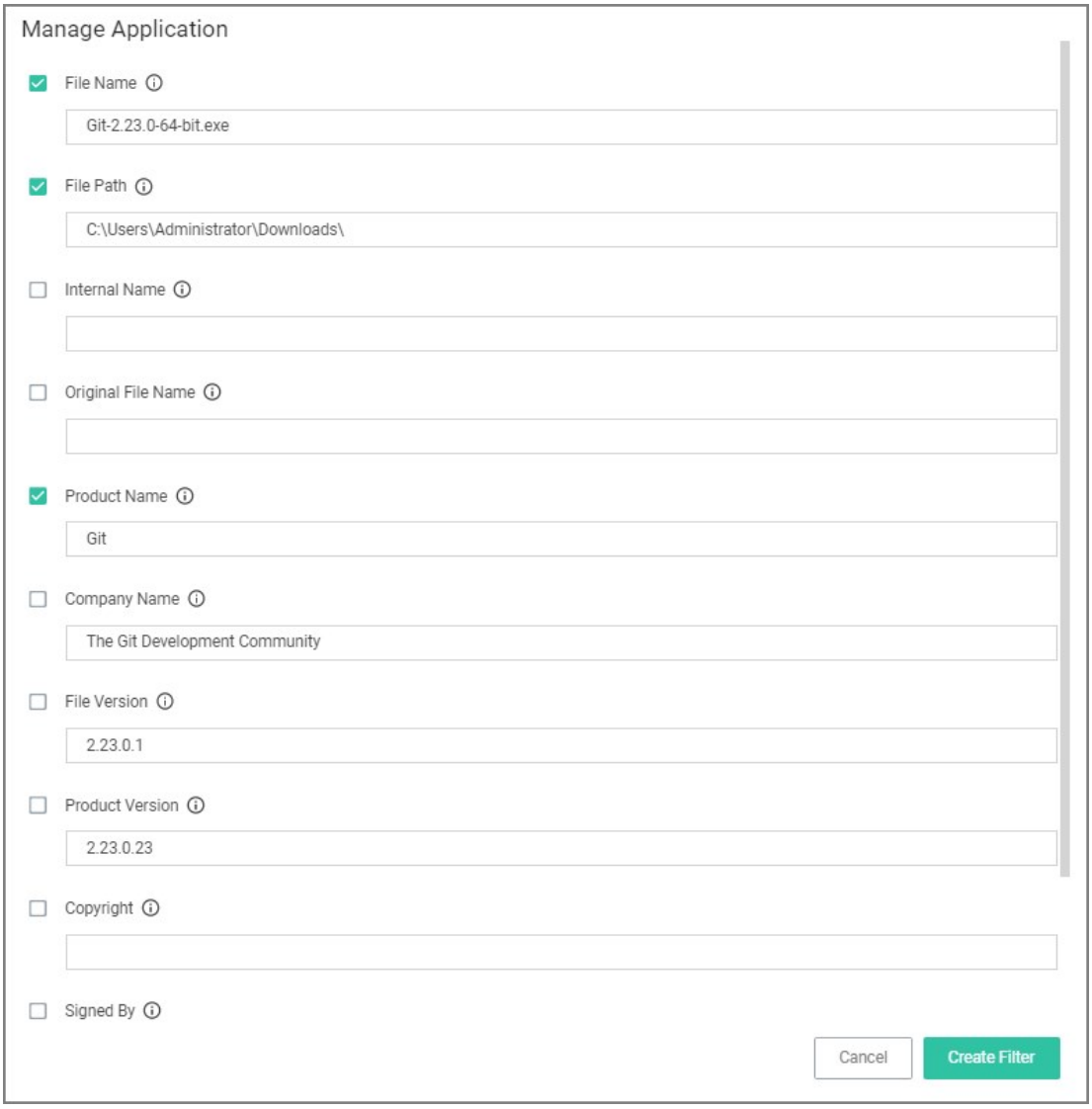
Targeting MSI

1. Create a new elevation policy that targets the **MSIElevateHost.exe** application. Other filters can be added to target a secondary MSI file or command if desired, but it is not required.
2. Add the **Add Administrator Rights** action; as well as one of the message actions such as Justification or Approval.

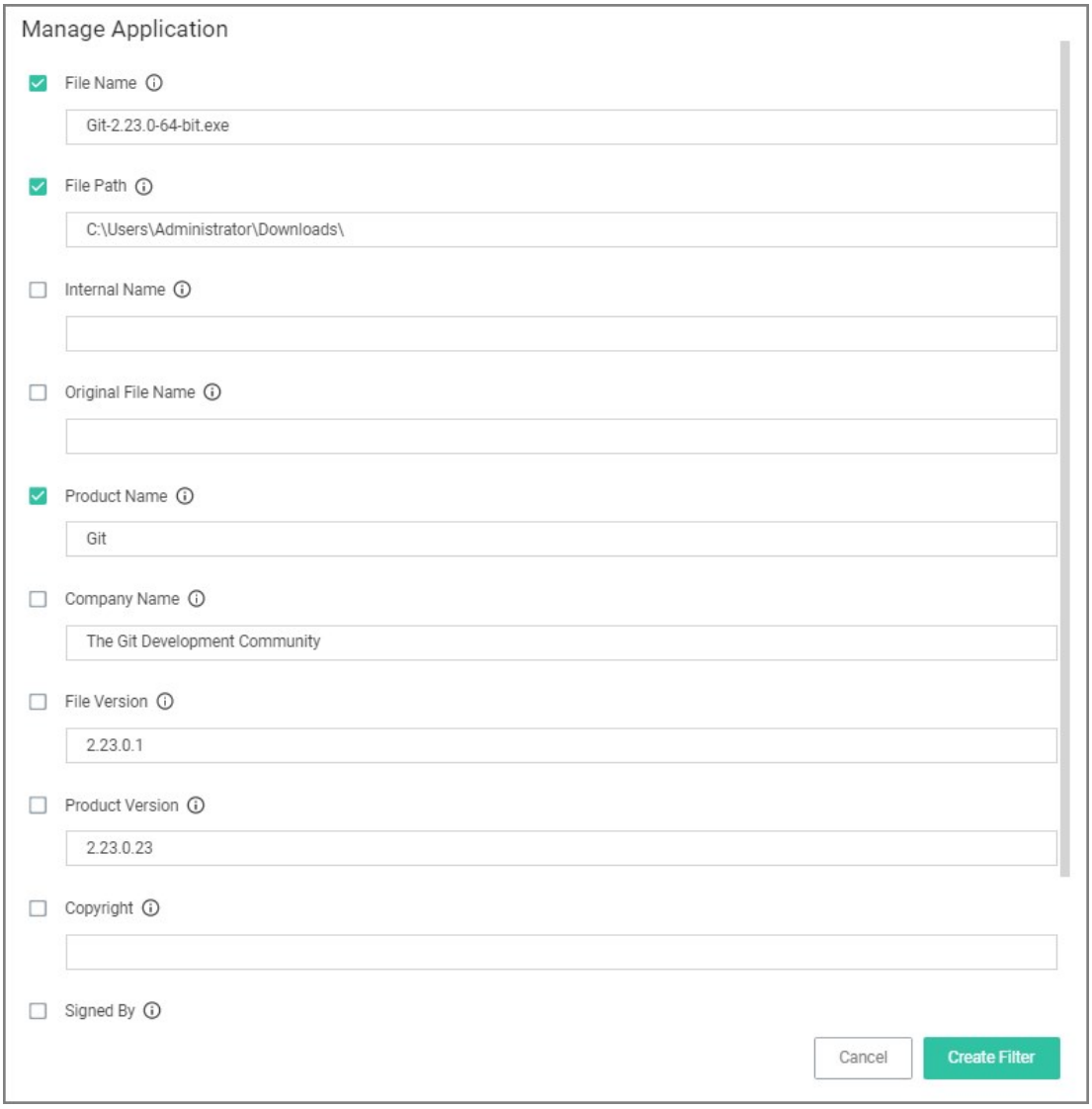
User Justification Required to Run

This policy type requires a user to provide a justification for why they need to run an application before elevating with administrator privileges. User Justification refers to the policy action. Since Conditions and Actions are independent, this action can be applied to any condition. In this use case, we will simply apply this action to a specific application.

1. Using the Policy Wizard, create a controlling policy that elevates application execution on endpoints.
2. Select **Require Justification**, and click **Next Step**.
3. Select what file type to target, for this example select **Executable**, and click **Next Step**.
4. Choose your target, for this example **File Upload**.
5. Click **Choose File** and select a file to upload.
6. Click **Upload File**.
7. On the **Manage Application** page select all the identifying factors you want the filter to target.



8. Click **Create Filter**.
9. Click **Next Step**.
10. Name your policy and add a description, click **Create Policy**.



11. Set the **Inactive** switch to **Active**.

The user will see a justification message as a result of the policy. When the user adds a reason, they will then click the **Continue** button and the application is allowed to execute.

> **Note**: You can then view a user's provided reasons in Privilege Manager under **Reports | Application Justification Summary Details Report**.

Monitoring Policies

Monitoring Policies apply to any unknown applications that will attempt to run in your environment. It is important to discover unknown applications and determine whether to let them run or whether they are harmful. Monitoring provides a system for discovering the unknowns and adding an action that hinges on a reputation check.

The following examples are available:

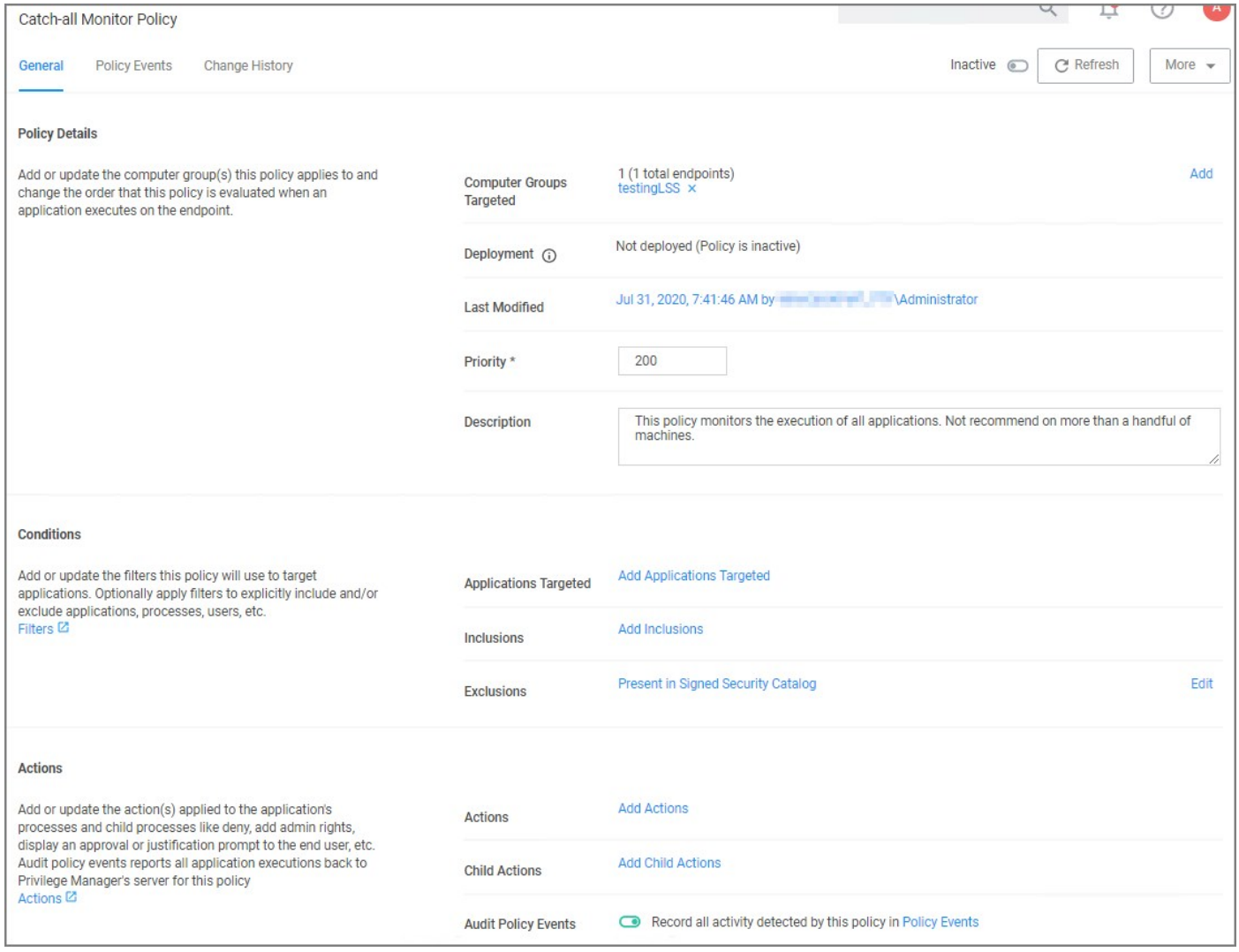
- Catch-All Policy
- Reputation Checking

Catch-All Policy

A useful Learning Mode Policy to set up in Production environments is called a Catch-All Policy. This type of policy will gather information on any executables in your environment that are not satisfied by other Privilege Manager policies.

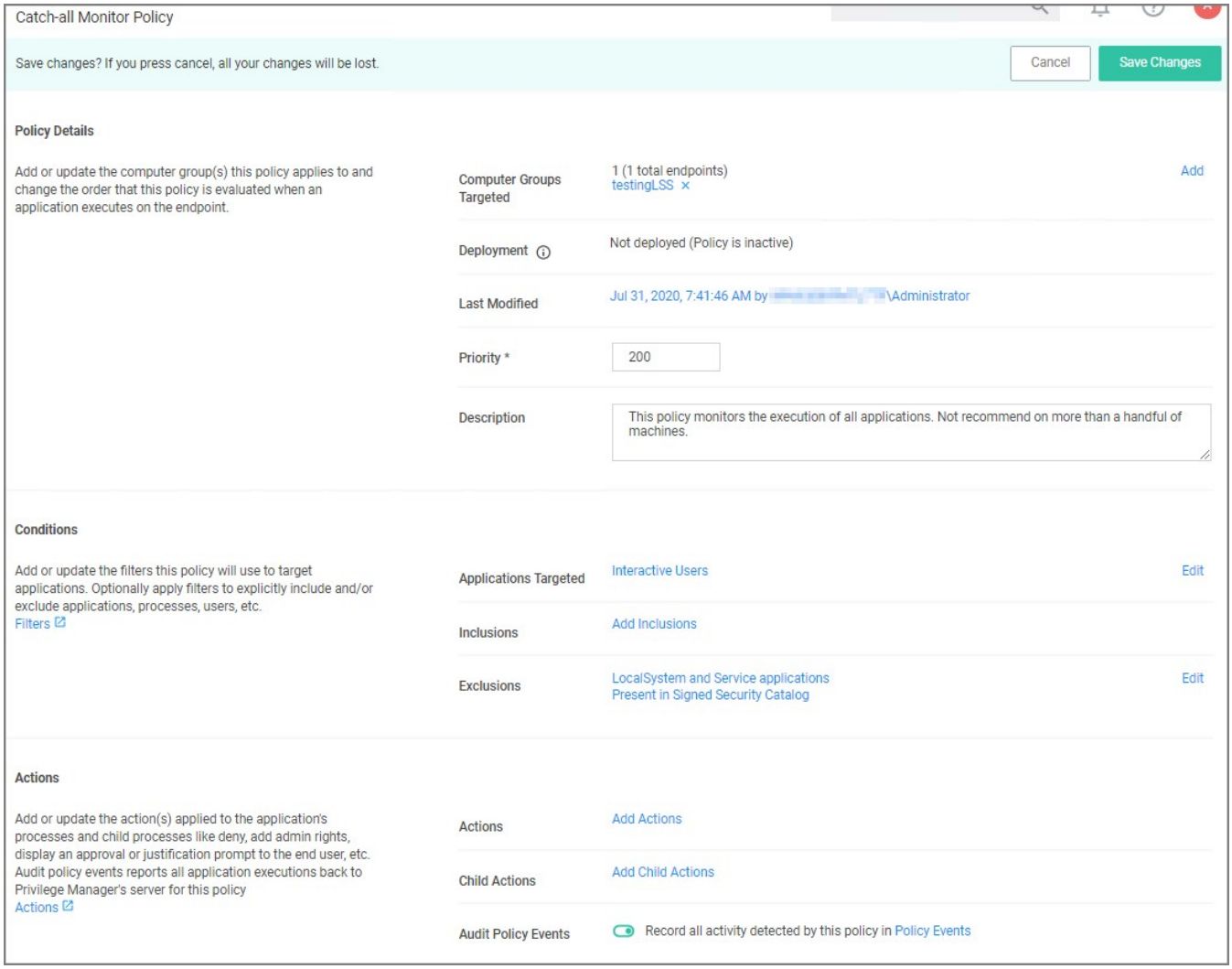
> **Note**: These types of Catch-all monitor policies SHOULD NOT BE used for the Windows or Mac OS Computer Groups. Those groups apply to ALL computers in the environment and unless a monitor policy like this is setup to work with really good allow policies in front a lot of events will be sent.

1. Under your Computer Group for which you want to monitor all activities select **Application Policies** and click **Create Policy**.
2. From the Policy Wizard select **Monitoring** and click **Next Step**.
3. Select **Everything** and click **Next Step**.
4. Enter a name, for example *Catch-all Monitor Policy*.
5. Click **Create Policy**.

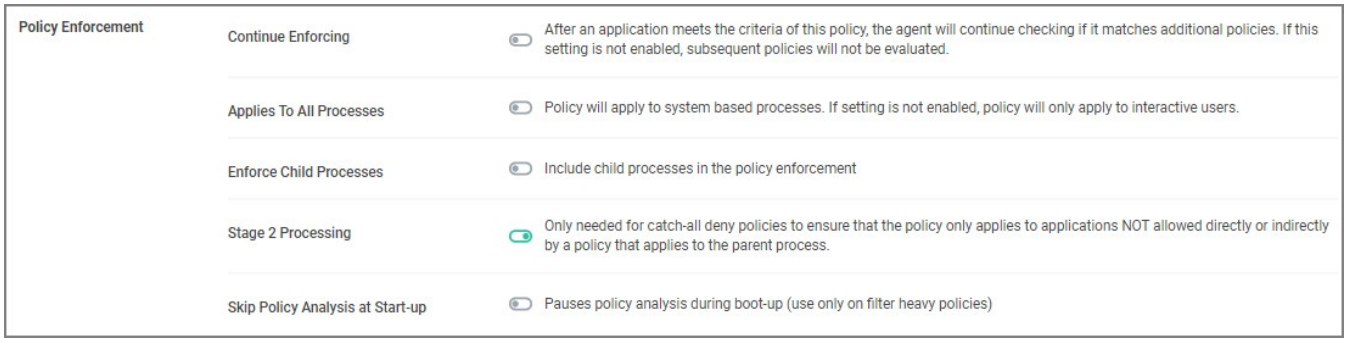


6. Customize the policies Conditions, Actions, and Policy Enforcement, for example:

- Under Applications Targeted, click **Add Application Target** and search for and add **Interactive Users**.
- Under Exclusions, click **Edit** and add **LocalSystem and Service applications** to the exclusion list.



- Under **Show Advanced | Policy Enforcement** set the switch for **Stage 2 Processing** to active an all others to inactive.



7. Click **Save Changes**

8. Set the **Inactive** switch to **Active**.

Reputation Checking

Privilege Manager analyzes applications in real-time. This unique feature allows for reputation analysis of any unknown applications that will mitigate endpoint attacks from Ransomware, Zero-day attacks, Drive-by Downloads, and other unknown malicious software.

The monitor approach used here is that all applications that meet a general condition (i.e. executed from a specific directory or directories) will be sent to VirusTotal for a reputation check. For this use case we will perform real-time reputation analysis of unknown applications using VirusTotal.

First, you will need to integrate Privilege Manager and VirusTotal by following the Integration steps listed in the Setting Up VirusTotal for Reputation Checking topic. That section will walk you how to do the following:

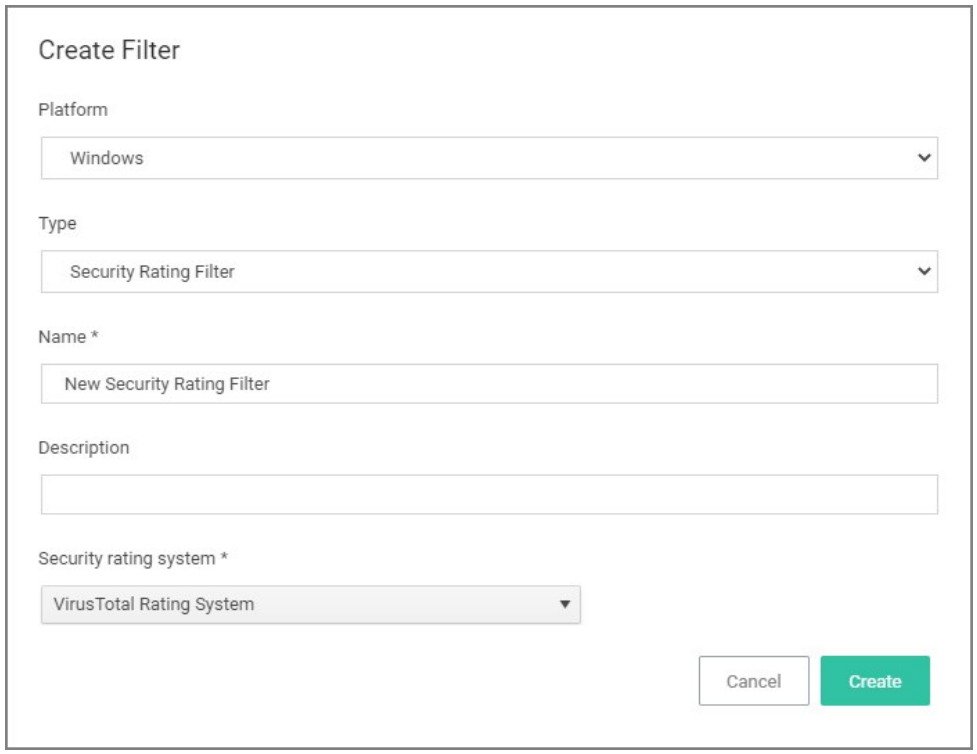
1. Configure VirusTotal Ratings Provider
2. Install VirusTotal in Privilege Manager
3. Create a Security Rating Filter for VirusTotal

For information and setup steps to configure reputation checking using Cylance, see the Cylance Integration topic.

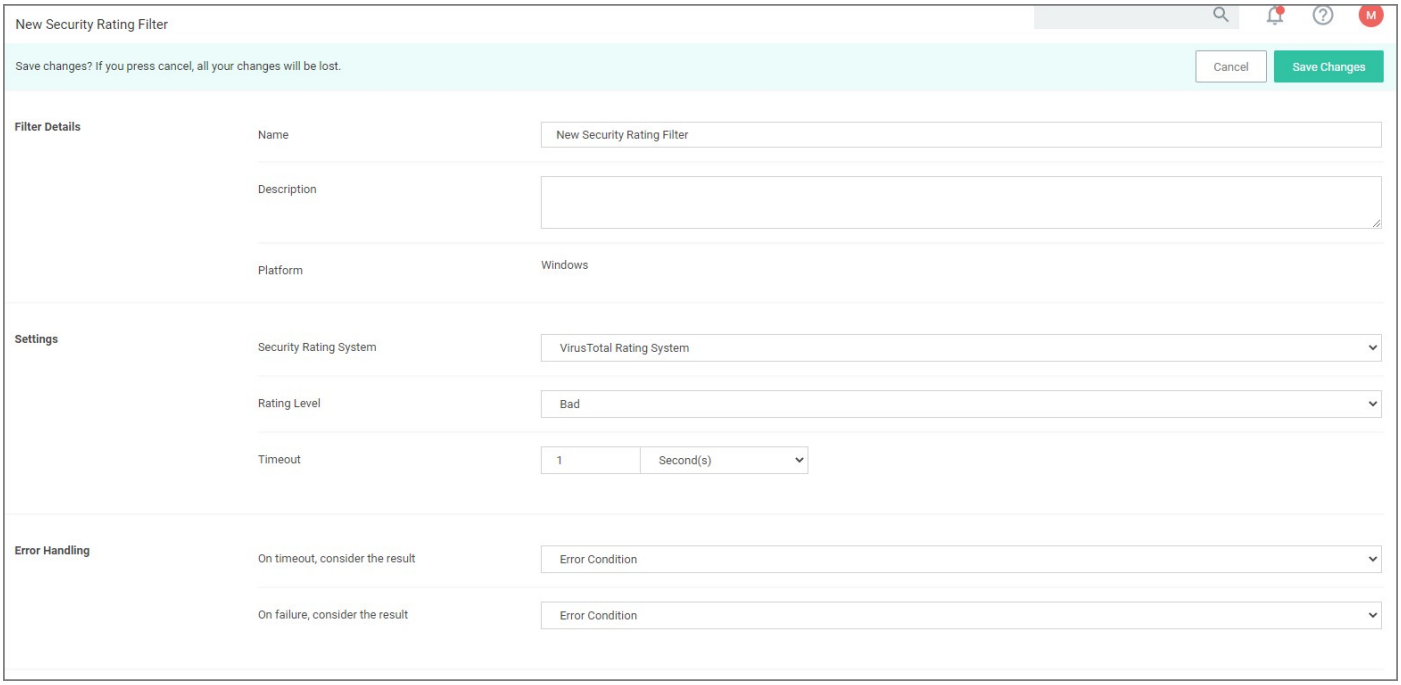
Creating Security Rating Filter

Next you have to create a Security Rating Filter for VirusTotal. Follow these steps:

1. Navigate to **Admin I Filters**, the click **Create Filter**.
2. Select a platform, then **Security Rating Filter** as a Filter Type. Name the policy and add a description.
3. From the **Security Rating System** drop-down, select **Virus Total Rating System**.



4. Click **Create**.
5. Under **Settings**, change the **Rating Level** drop-down to specify **Bad**.

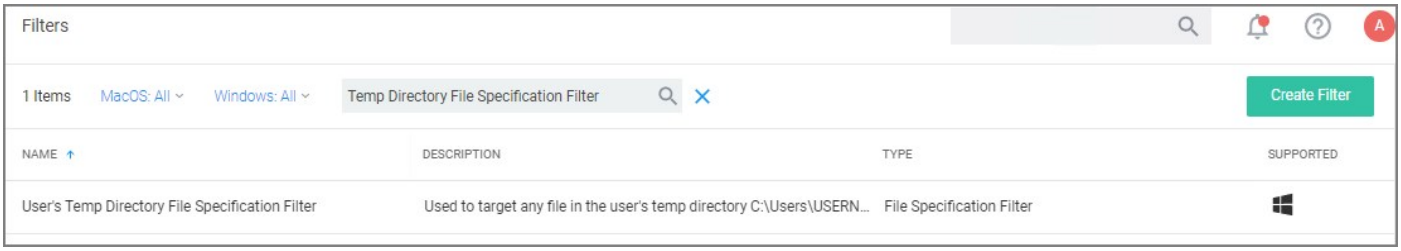


The rating level trigger is supposed to match what you want to accomplish with the policy that will be using this filter. A rating level of Bad should be used for Deny policies, and Clean for applications or files that are part of the safe list. A rating level of Suspect can be used in justification and/or learning/discovery policies.

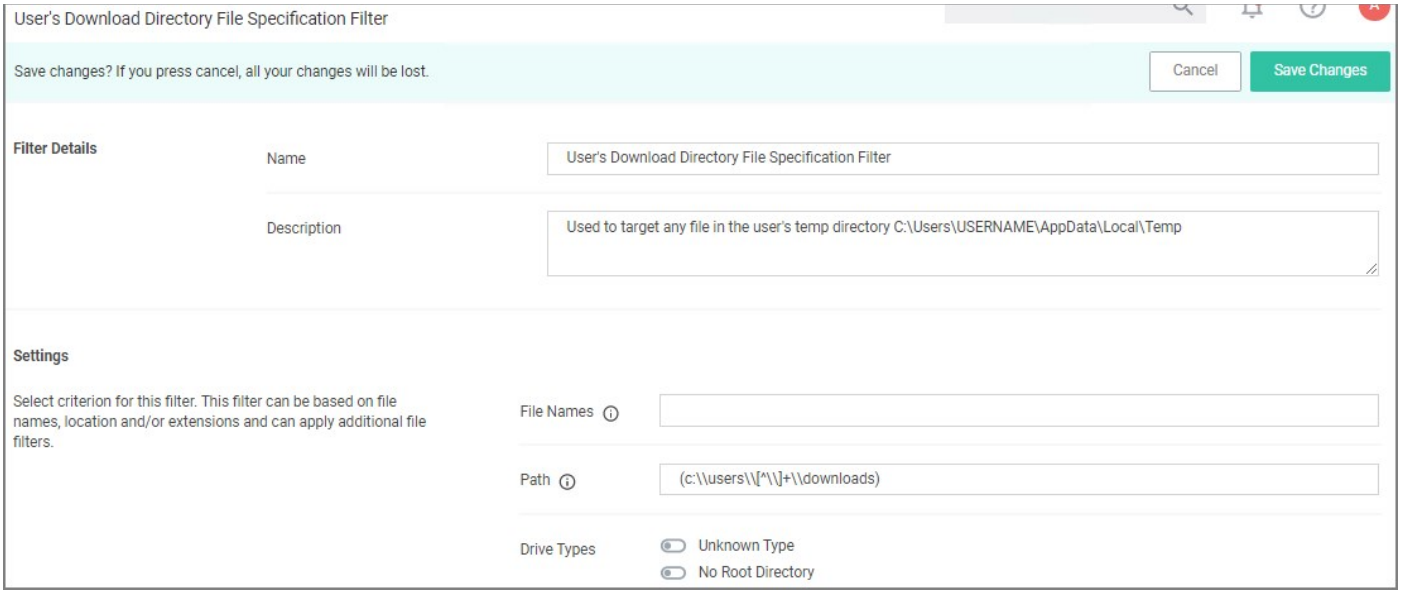
6. Click **Save Changes**.

Creating User's Downloads Location, Temp Dir, and Collection Filters

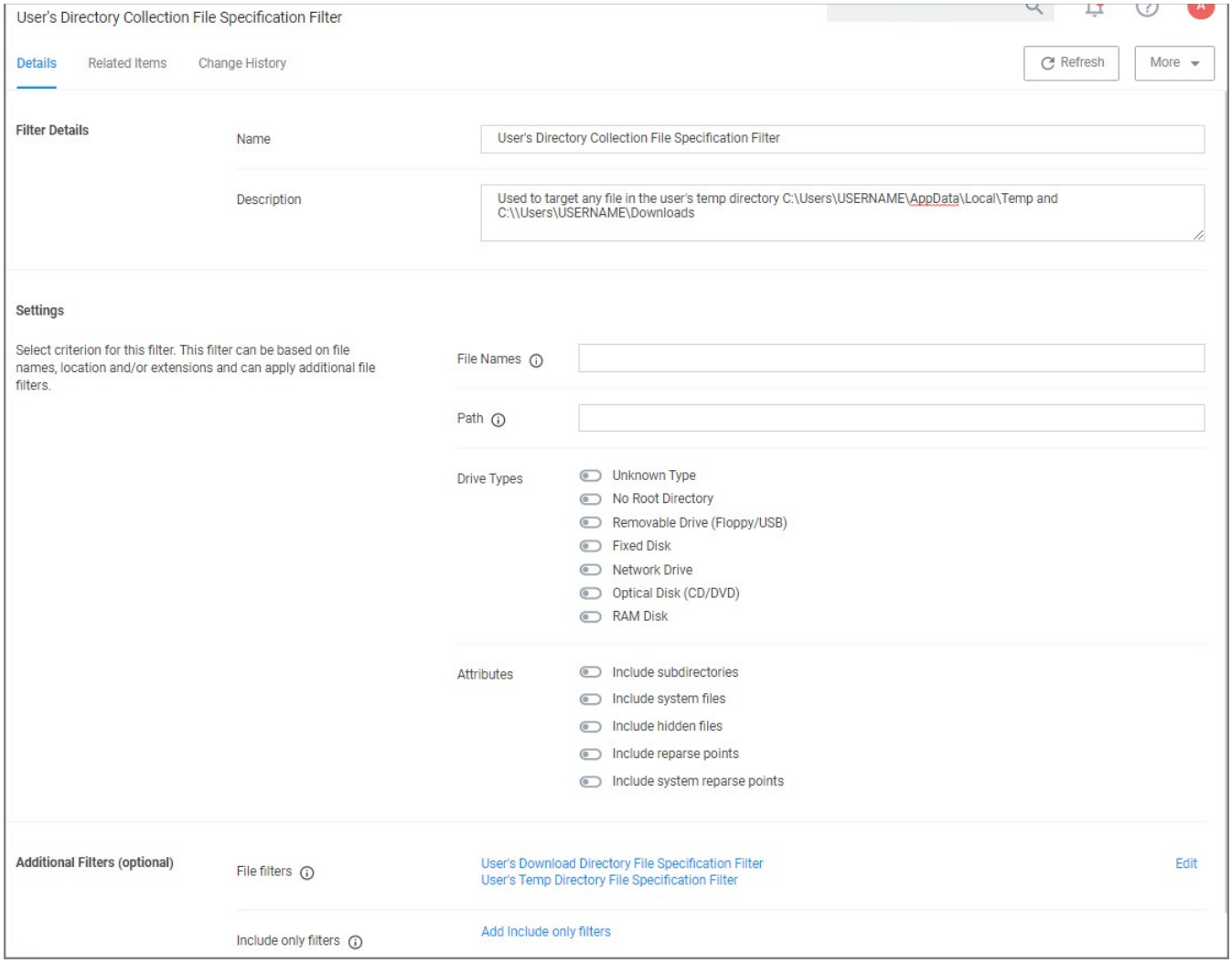
1. Navigate to **Admin I Filters** and search for **Temp Directory File Specification Filter**.



2. Select the filter **User's Temp Directory File Specifications Filter**, click **Duplicate**.
3. Name the new filter *User's Download Directory File Specification Filter*, provide a description and click **Create**.
4. Change the regular expression in the Path filed to the following: (c:\users\[^\]+\downloads):



5. Click **Save Changes**.
6. Finally, combine the 2 filters into a single filter to target both directories:
    1. Click **More I Duplicate**.
    2. Enter the name for the new filter *User's Directory Collection File Specification Filter*, click **Create**.
    3. Clear the data in the Path field.
    4. Under Additional Filters, click **Add File filters**.
    5. Search for **User's Download** and add the **User's Downloads Directory File Specification Filter**.
    6. Search for **User's Temp Directory** and add **User's Temp Directory File Specification Filter** (this is a default filter).
    7. Click **Update**.

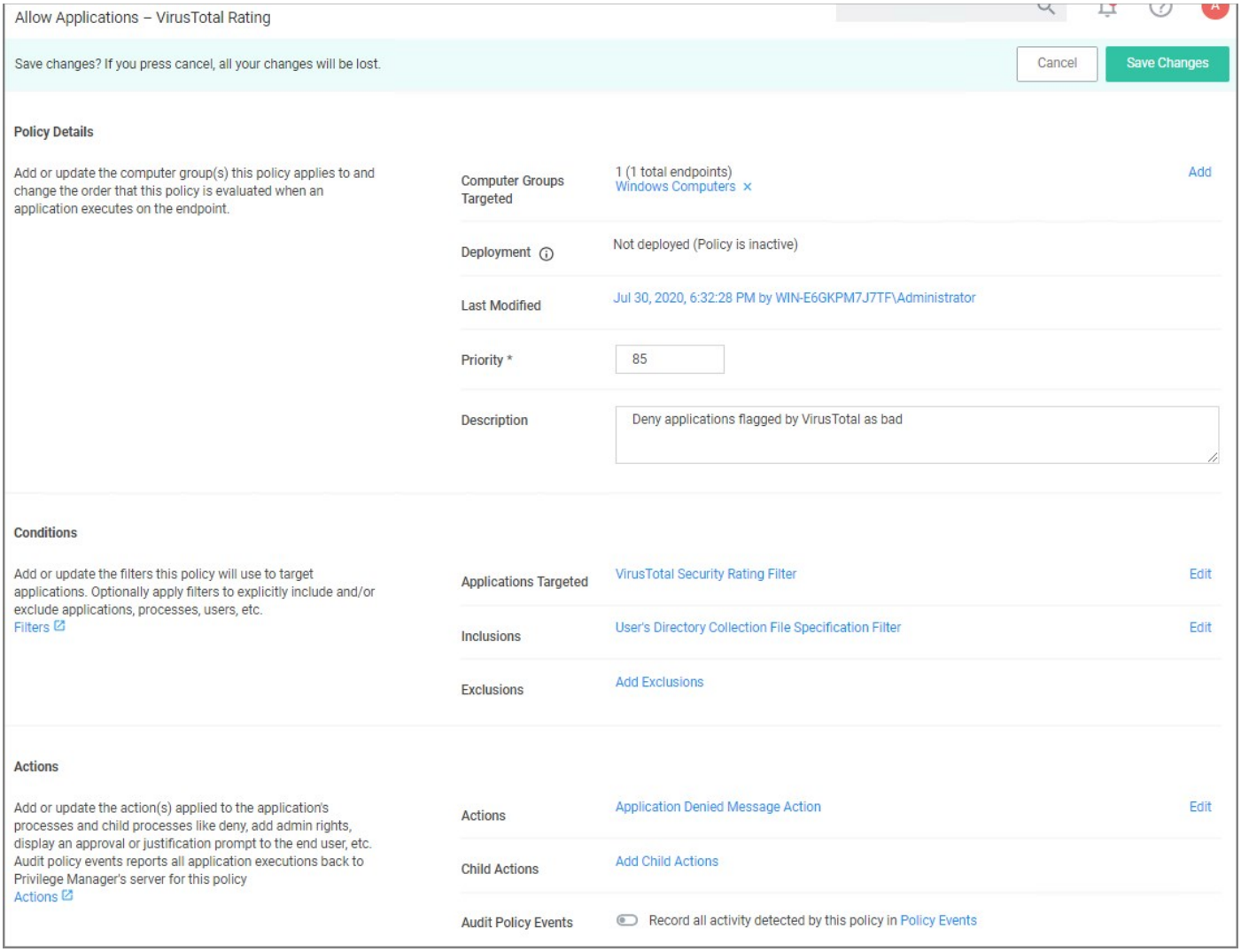


8. Click **Save Changes**.

Creating a Policy

Next you have to create a Policy and add the filters for VirusTotal:

1. Using the Policy Wizard, create a controlling policy that allows application execution on endpoints.
2. Select **Existing Filter**.
3. Search for add the previously created **VirusTotal Security Rating Filter**.
4. Click **Update**
5. Name the policy **Allow Applications – VirusTotal Rating**, and add a description *Deny applications flagged by VirusTotal as bad*, click **Create Policy**.
6. Click **Add Inclusions**, search for and add the **User's Directory Collection File Specification Filter**.
7. Click **Update**



8. Click **Save Changes**.
9. Set the **Inactive** switch to **Active**.

   Note: This policy will send any application run from the user's Downloads or Temp directory to VirusTotal for a reputation check in real-time. If the application is graded with Bad from VirusTotal, the application will be denied.

Viewing a File Security Ratings Report

To view a File Security Ratings report, search for **File Security Rating Details Report**. To see details of the applications in the report, click on the file name in the File column.

Blocking Policies

Blocking is a policy that denies applications from running on your endpoints based on application attributes, file hash, location, or certificates. This is a powerful type of policy and it may be used to block specific, known and unwanted applications from running. A block policy can target programs that prevent productivity for your end users or applications that are known malware. If malware, you can also add a quarantine action for your block policy as outlined in the second example below.

Delinea Privilege Manager controls any application on a machine. When you configure Privilege Manager correctly, targeted applications can be elevated, allow listed, or blocked. But if you create new policies without careful consideration then you can potentially block core system processes.

Before you create new polices, keep in mind the following best practices:

- Do not enable policies until after you have configured them. As a safety precaution, all newly-created application control policies are turned off until you enable them.
- Important: New policies that you create will automatically target all applications until you add application filters that will narrow the scope.
- Additionally, Delinea highly recommends testing all policies on a limited number of machines before they are deployed to the entire environment. See Best practices for Application Control Solution policies for more information.

The following examples are available:

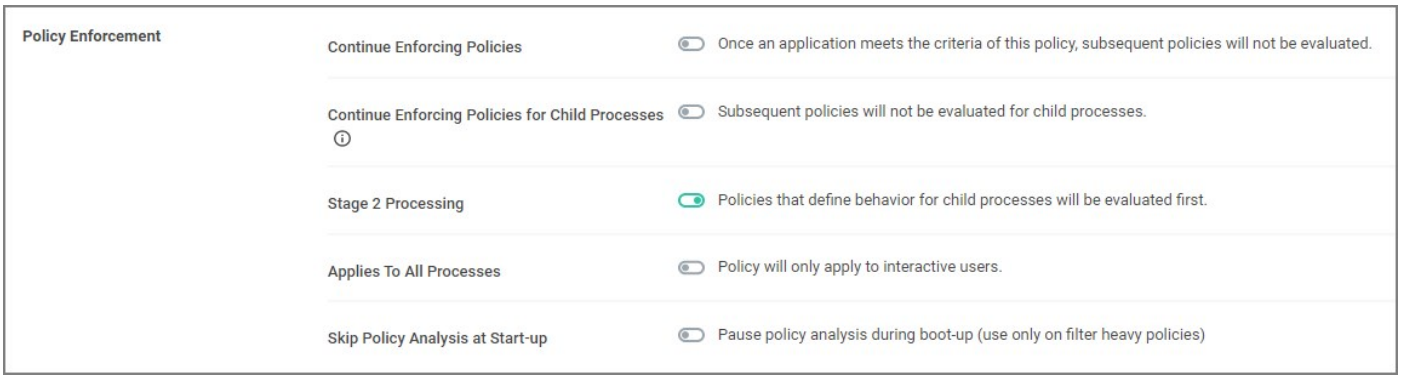
- Blocking Specific Applications
- iTunes with File Upload
- Quarantine Specific Malware
- Catch-all block Policy

Catch-all Deny

A catch-all deny policy is the last policy executed following the execution of a group of allow list policies. This enables you to configure your allow list to allow approved applications, like the Windows directory or other installed applications, and then to deny everything else, like applications downloaded from the internet or a thumb drive.

To create a catch-all deny policy, follow these steps:

1. Under your Computer Group select Application Policies and click **Create Policy**.
2. Select **Skip the wizard, take me to a blank policy** to create a blank policy.
3. Enter a name and description, change the default priority value to a higher number, for example 99 and click **Create**.
4. Under **Conditions**, click **Add Exclusions**.
5. Search for and **Add** the **LocalSystem and Service applications** filter.
6. Click **Update**.
7. On the bottom of the policy page, click **Show Advanced**.
8. Under **Policy Enforcement**, ensure only **Stage 2 processing** is set to active.



9. Click **Save Changes**.
10. Set the **Inactive** switch to **Active**.

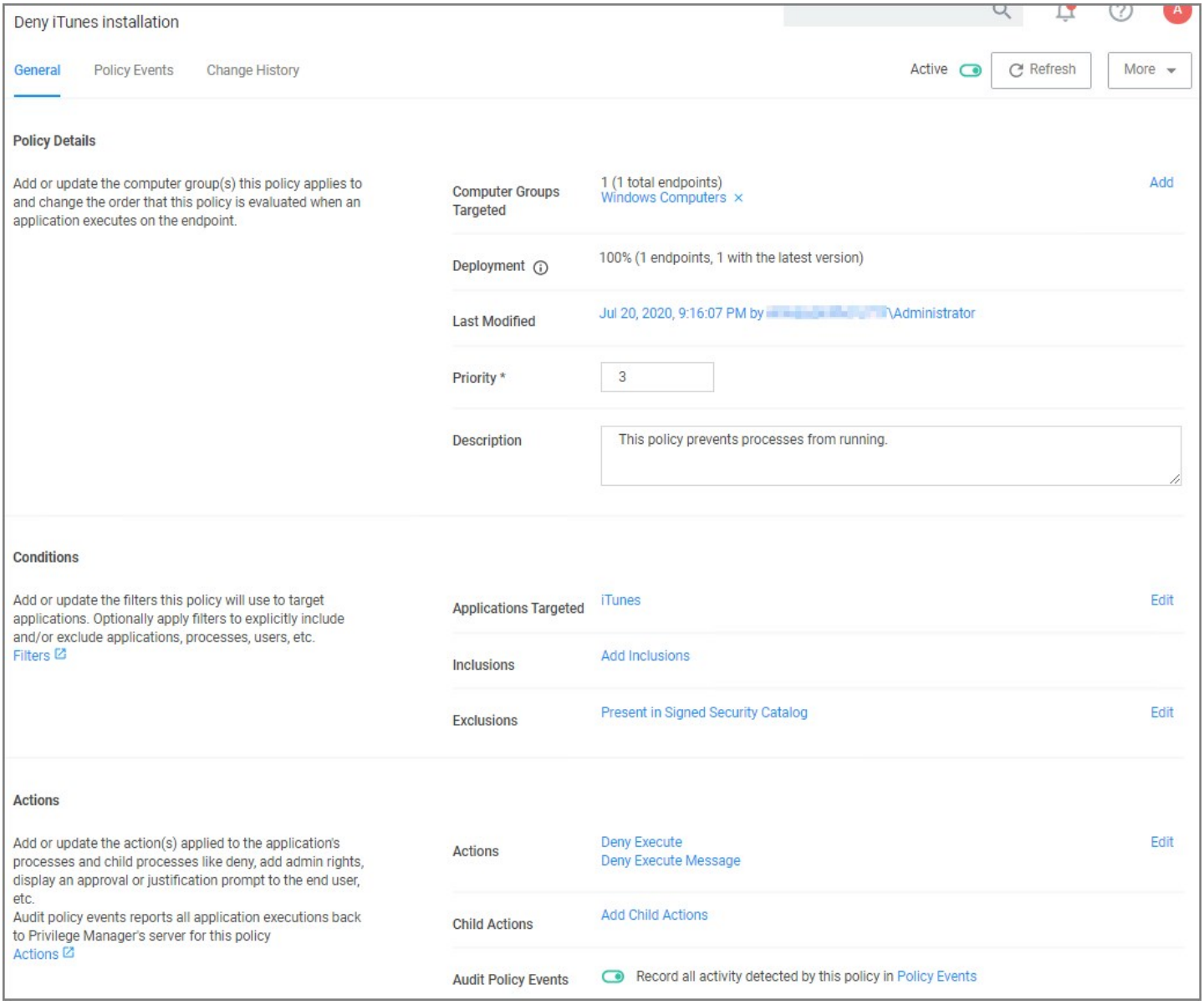
If you are creating a new catch-all policy to be used in conjunction with allow list policies, please verify that the allow list is catching all system applications and that the new deny policy is the last policy executed. For additional safety you can define the exclude any parameter to exclude system and service applications.

iTunes with File Upload

As we've seen, there are multiple ways to introduce a new application into Privilege Manager before assigning a policy to it. For this example we will perform a File Upload for the iTunes installer to quickly deny list the iTunes program from running on target endpoints.

> **Note:** When the iTunes default filter is used, verify the correct Company name is entered to match the application targeted by the policy.

1. Using the Policy Wizard, create a controlling policy that blocks application execution on endpoints.
2. Select how you want the processes blocked, either **Block Silently** or **Notify and Block**, for this example we use **Block Silently**. Click **Next Step**.
3. Select what types you want the policy to block, for this example it's **Executables**.
4. Choose your target, for this example **File Upload**.
5. Click **Choose File** and select the installer (iTunes.exe) to upload.
6. Click **Upload File**.
7. On the **Manage Application** page select all the identifying factors you want the filter to target.
8. Click **Create Filter**.
9. Click **Next Step**.
10. Name your policy and add a description, click **Create Policy**.
11. Set the **Inactive** switch to **Active**.



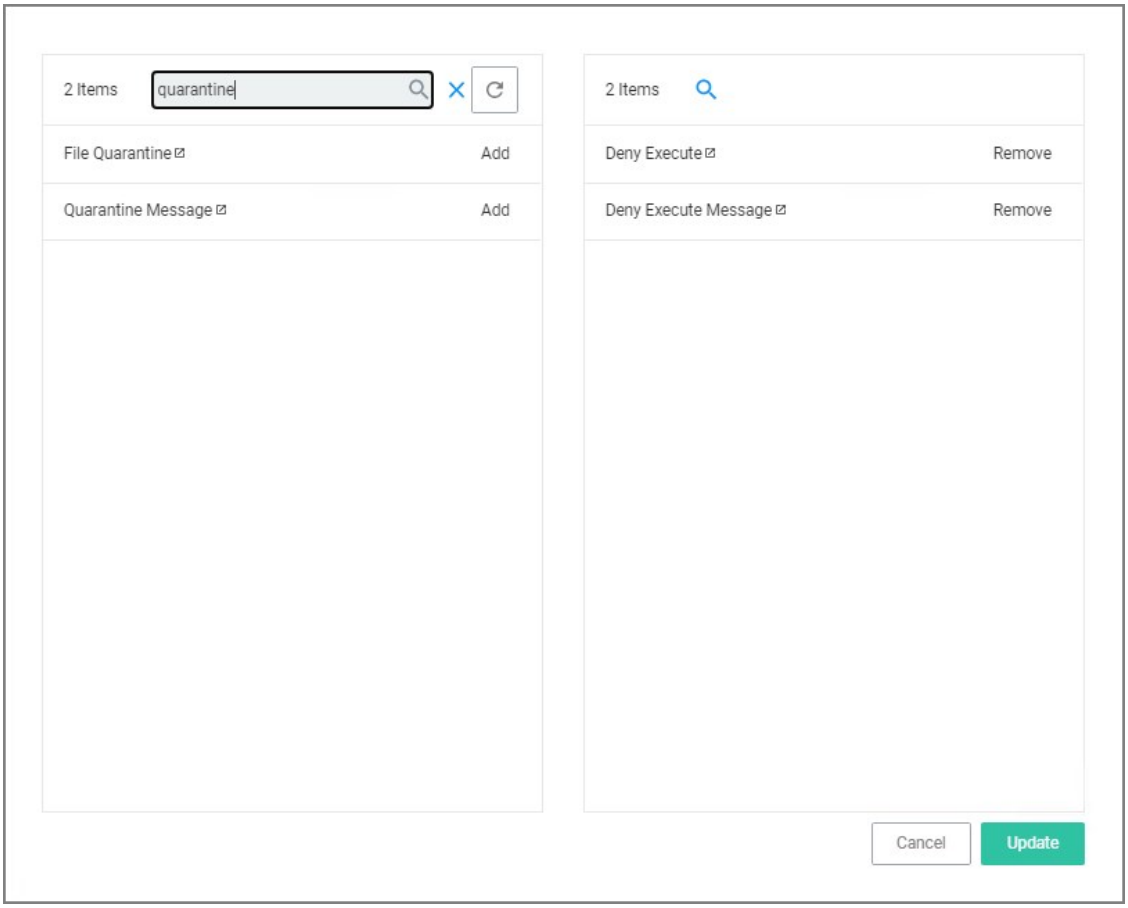
Under the Actions tab, do not change the settings, but notice it is set to Deny Execute Message. This will produce a pop-up message to the user telling them this application execution is denied.

You can edit the policy further, if needed. Adjust the Policy Priority as needed.

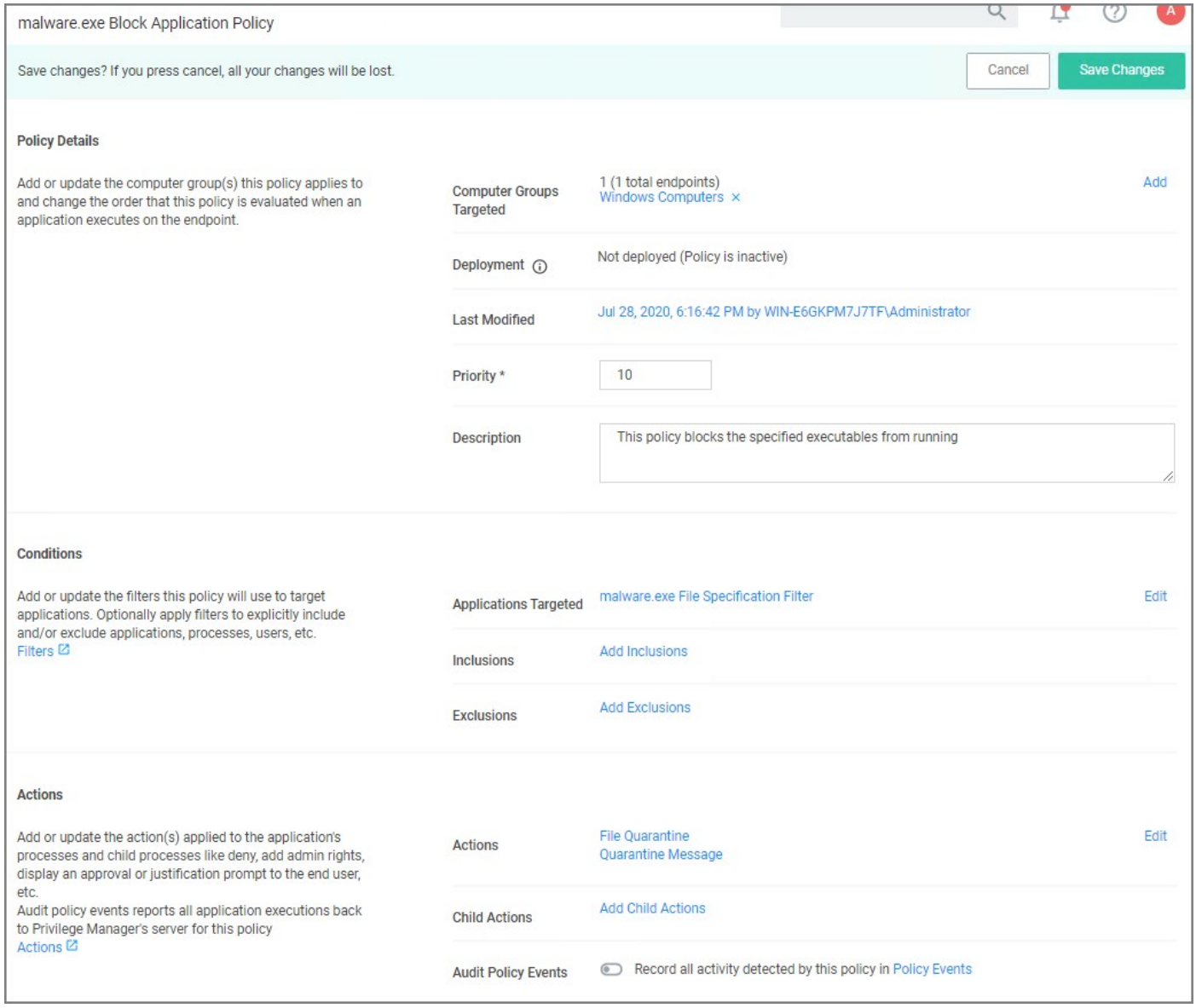
Quarantine Specified Malware

For known cases of malware or ransomware, you can use Privilege Manager to prevent specified applications from running and place them in a quarantine. For this example we'll target the generic executable "malware.exe," but you can do this with any file name.

1. Navigate to **Admin | Filters** and click **Create Filter**.
2. From the platform drop-down select the OS to target, for this example **Windows**.
3. From the type drop-down select **File Specification Filter**.
4. Add a Name and Description, click **Create**.
5. On the filter page, under **Settings: File Names** type **malware.exe**.
6. Click **Save Changes**.
7. Under you Computer Group, select **Application Policies**.
8. Using the Policy Wizard, create a controlling policy that blocks application execution on endpoints.
9. Select how you want the processes blocked, either **Block Silently** or **Notify and Block**, for this example we use **Block Silently**. Click **Next Step**.
10. Select what types you want the policy to block, for this example it's **Executables**.
11. Choose your target, for this example **Existing Filter**.
12. Search for and **Add** the **malware.exe** filter created in the above steps.
13. Click **Update**.
14. Click **Next Step**.
15. Name your policy and add a description, click **Create Policy**.
16. Under **Actions**, click **Edit**.
17. Search for **quarantine** and **Add** the **File Quarantine** and **Quarantine Message** actions.
18. **Remove** the **Deny Execute** and **Deny Execute Message** actions.



19. Click **Update**.



20. Click **Save Changes**.
21. Set the **Inactive** switch to **Active**.

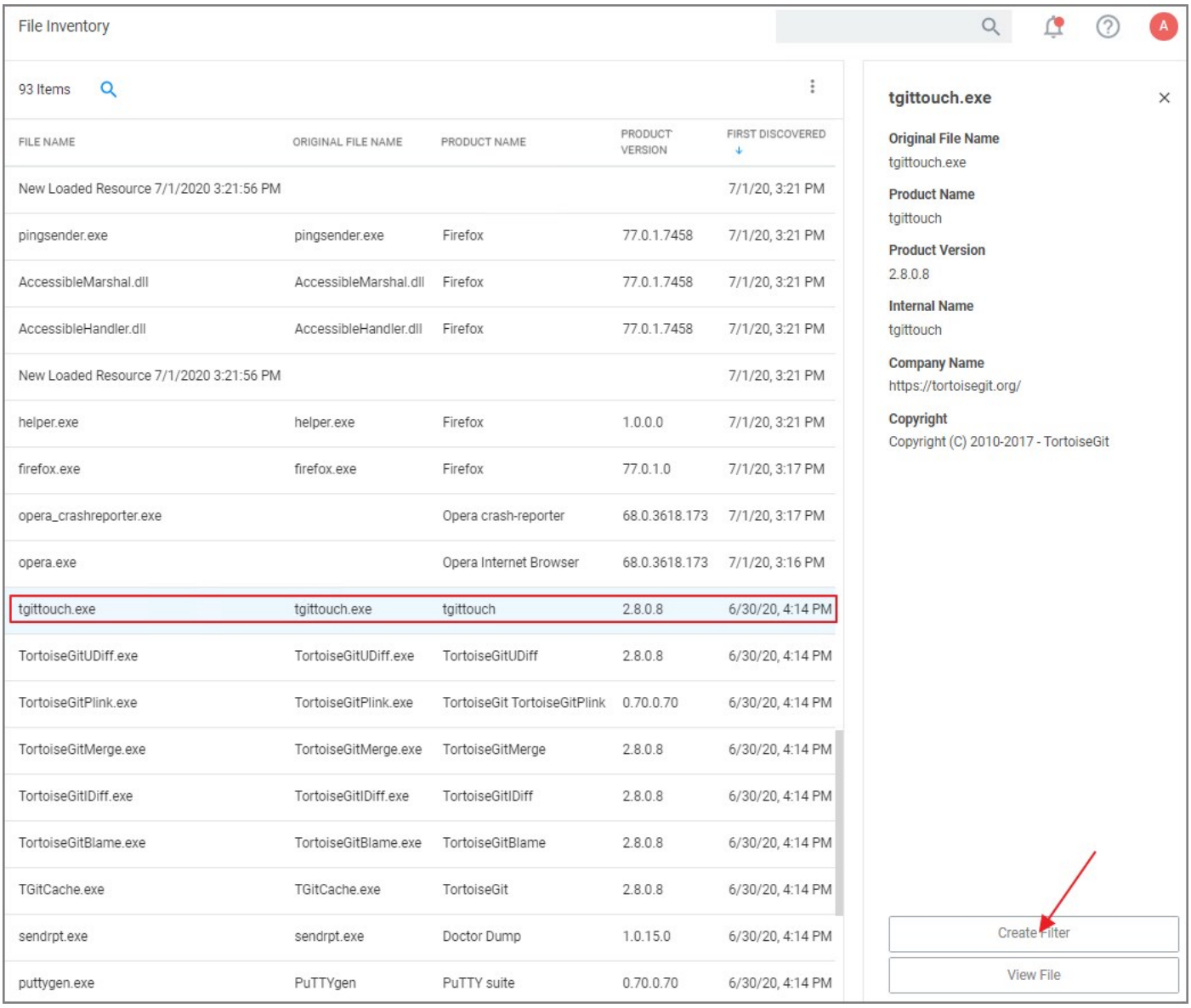
Once this policy has been applied to your endpoint/s, any executable called malware.exe will be automatically blocked and quarantined if prompted to run

Specific Applications

Using File Inventory

To create a new policy using file inventory data to block specific applications, follow these steps:

1. From the navigation menu select **File Inventory**.
2. From the table grid of inventoried files, select the application you want to block.



3. Click **Create Filter**.
4. On the **Manage Application** page select all the identifying factors you want the filter to target.
5. Click **Create Filter** or **Create and Add to Policy**. Use the **Create and Add to Policy** option if you already have a deny policy to target applications.

Otherwise use **Create Filter** and then use the Policy Wizard or a blank policy to add that filter.

Using the Policy Wizard

To create a new policy using the policy wizard to block specific applications, follow these steps:

1. Using the Policy Wizard, create a controlling policy that blocks application execution on endpoints.
2. Select how you want the processes blocked, either **Block Silently** or **Notify and Block**, for this example we use **Block Silently**. Click **Next Step**.
3. Select what types you want the policy to block, for this example it's **Executables**.
4. Choose your target, for this example **File Upload**.
5. Click **Choose File** and select a file to upload.
6. Click **Upload File**.
7. On the **Manage Application** page select all the identifying factors you want the filter to target.
8. Click **Create Filter**.
9. Click **Next Step**.
10. Name your policy and add a description, click **Create Policy**.
11. Set the **Inactive** switch to **Active**.

Be sure to test the new policy on a few machines before you roll it out to the environment.

Local Security in Privilege Manager allows customers to

- discover all local accounts and groups that exist on endpoints.
- provide membership control of those accounts on endpoints.
- allows to take complete ownership of the local credentials by enforcing password rotation for all accounts on those endpoints.
- use best practices when it comes to locking down the network from malicious endpoint attacks that exploit unsecured administrative access.

Local Security is made up of

- Computer Groups
- Local Groups
- Local Users

Under Reports various Local Security reports and summaries are available.

Computer Groups

These so called resource targets (as configured in Application Control) are specified sets of computers that meet certain criteria, that are targeted by certain policies and scheduled tasks.

Each computer group contains all local groups and local users on endpoints with a local security agent installed. When the agent registers, Local Security automatically discovers the local groups that exist on each machine.

Local Groups

Groups are created and managed under the Group Management menu node.

Each local group has a list of local users that exist in that specific local group. From that list you can see

- how many groups each user account is a member of.
- whether the user account is built-in or user-defined.
- whether or not the account itself is managed.

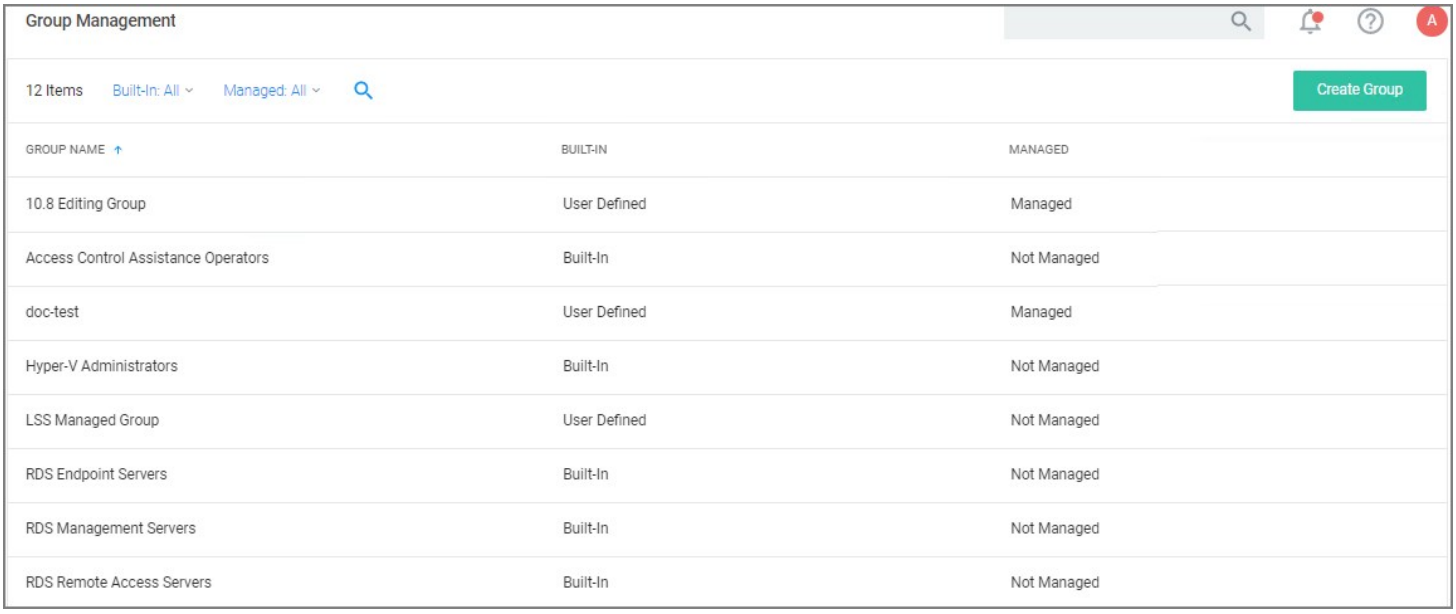
Local Users

Users are created and managed under the Users Management menu node.

Setting up a local user account with password rotation means that the account is a managed account within Privilege Manager .

Group Management

Every Computer Group is divided into Groups and Users. Both **Groups** and **Users** in this context refer to local accounts and any Azure AD synchronized resources as part of a particular Computer Group.



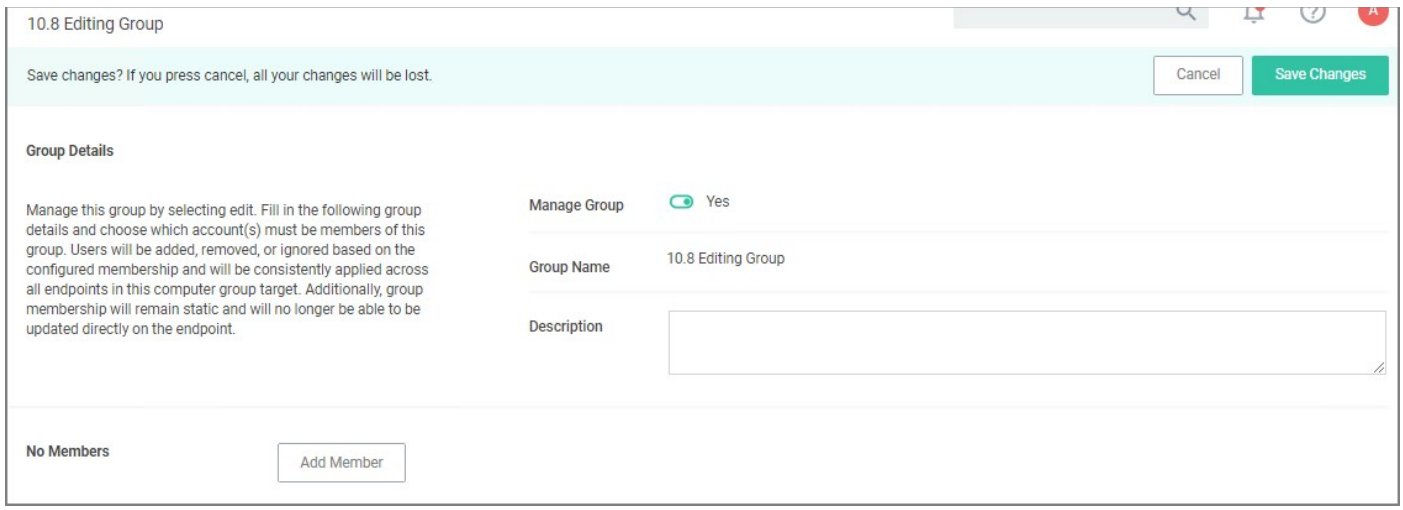
The Computer Group page lists all local groups on this set of computers, and provides a high-level overview of the selected computer group based on Local Users, Local Groups, and the number of computers in the group.

Remember: when an agent registers, Local Security will automatically discover the local groups that exist on each machine.

Create New Local Group

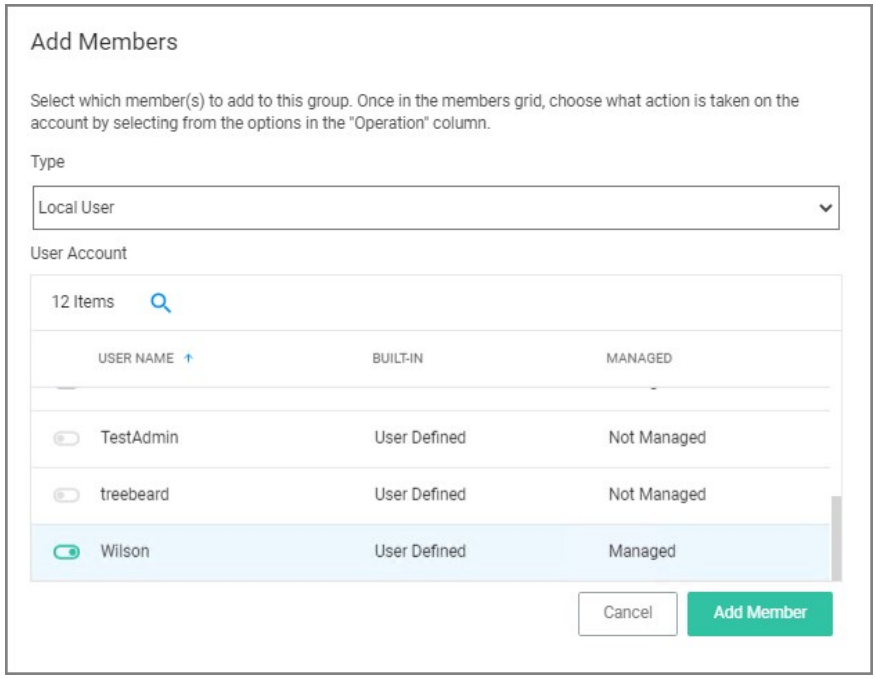
To create a new Group,

1. Under your Computer Group, select Group Management.
2. Click **Create Group**.
3. Enter a Name for your new group.
4. Click **Create**.



The Manage Group switch is by default set to Yes.

5. Click **Add Member**.
6. From the **Type** drop-down, select either
   - Domain User
   - Domain Group
   - Local User
7. On the **Add Member** dialog, select from the available resource items for Domain User or Domain Group, click **Select** to enter the search, for Local User, select the user from the list as shown in the example image below.



8. Click **Add Member**.

Manage Local Groups

Managing a local group means that you determine which user accounts are in the group. In other words, if a group is being managed, the group membership will remain static and will no longer be able to be updated directly on the endpoint. Before adding users to any group, make sure you really want all those users in that particular group. Any exact group membership setting is rolled out to ALL endpoints in that computer group.

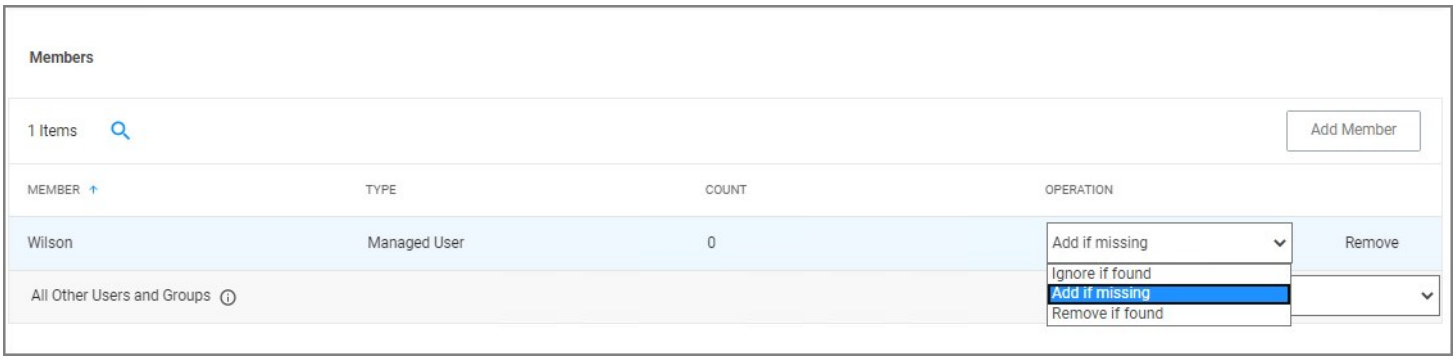
If a local group is not managed, the Manage Group checkbox is not selected. To Manage the group, click Edit from the Details tab and then check the Manage Group box. Click Save Changes, and Yes to Confirm Navigation. Changes to these settings may take up to 15 minutes to update on your endpoints.

When managing a group, existing members and any that have been added to the policy will appear in the Members table. Users will be added, removed, or ignored based on the configured membership and will be consistently applied across all endpoints in this computer group target. From the drop-down, choose which operation to perform if an account (user) is found on the endpoint. The following options can be selected:

- Ignore if found
- Add if missing
- Remove if found

Using **Remove if found** for **All Other Users and Groups** instates exact group membership and **Ignore if found** cannot be used on individual accounts that are part of that group. Note that, if **exact group membership** is used, an account that is initially listed as **Ignore if found** switches to **Remove if found** as part of the group membership. Individually specified accounts can be set to **Add if missing** in those groups. Also refer to Non-Managed Local Users in Group Management for details about non-managed users in managed groups.

> **Note**: Once saved, group membership is permanently defined. Updates made directly on the endpoint that break this policy will be immediately reverted.

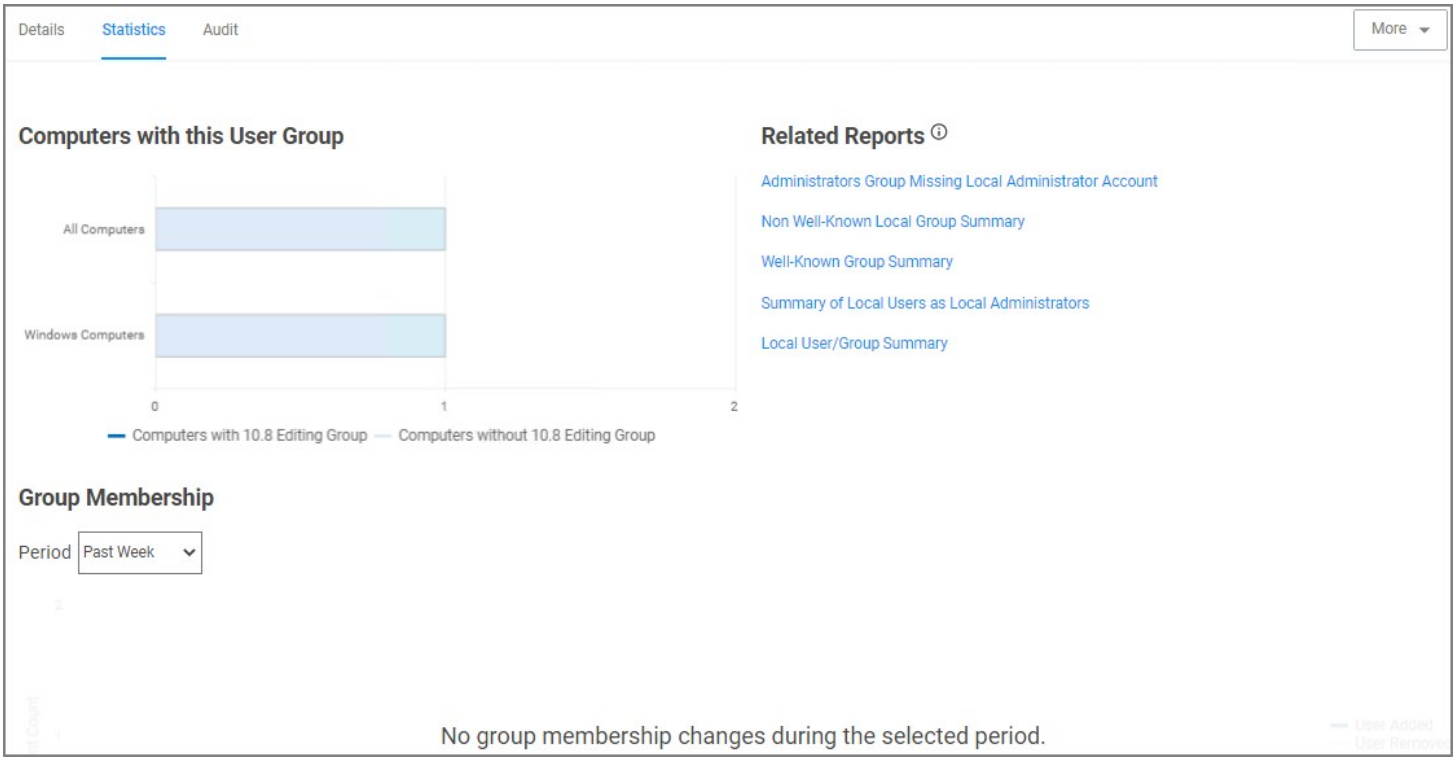


The last row defines what action to take **on all other users and groups**. This ensures exact membership can be defined and any other users or groups can be automatically removed.

Statistics

The **Statistics tab** for a local group highlights some quick visual statistics and links you to relevant reports based on key factors like how many computers from your network are included in this group and whether there have been changes made to the Group's Membership within the specified period. Click on these graphs to drill down into more details.

> **Note**: The reports in the "Related Reports" sections are scoped to only include endpoints in the current computer group. To view reports across all computers, go to the Reports section of the product.

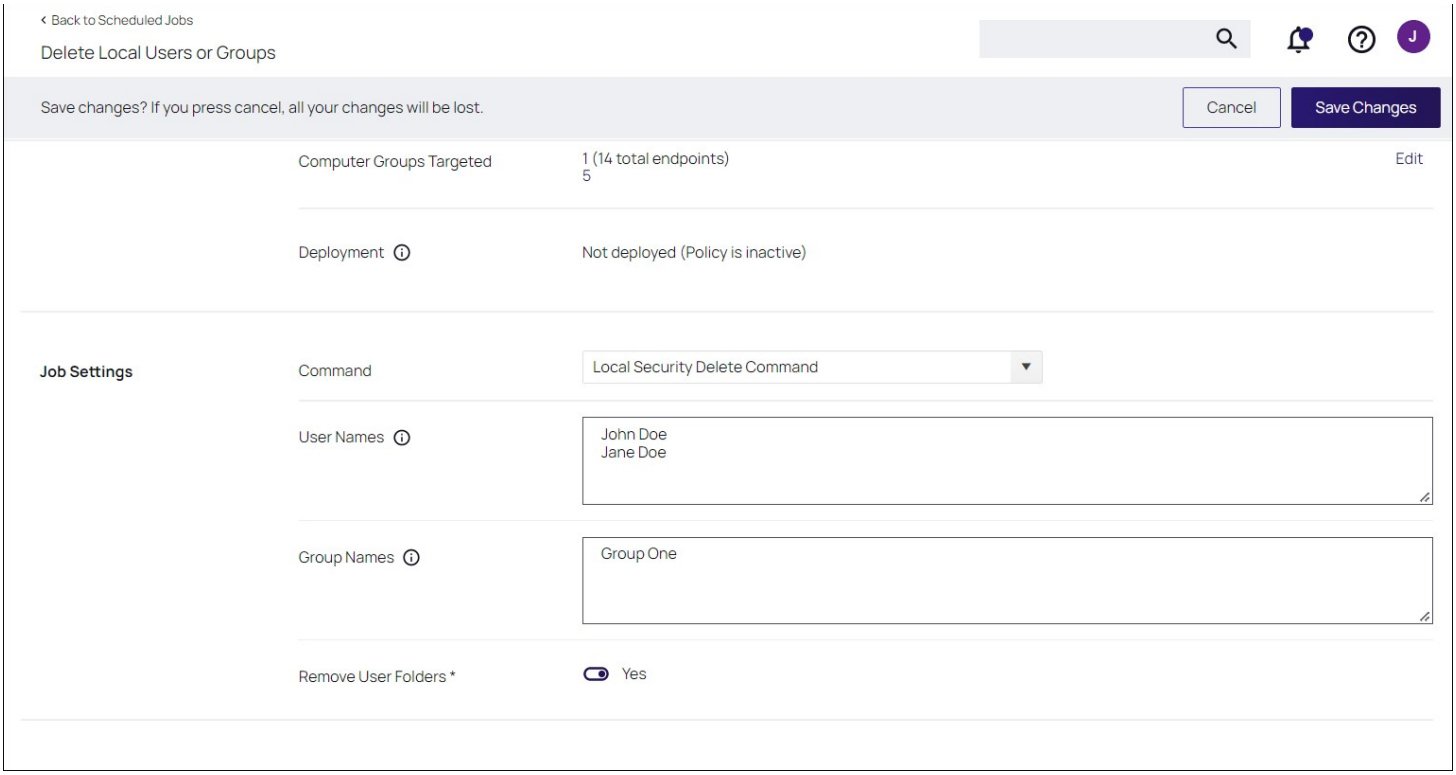


Audit

The **Audit tab** is where you will find an audit record of all membership additions and deletions that have been made to your local groups.

Delete Local Users and Groups

Privilege Manager allows you to delete local **User Names** and **Group Names** via the Scheduling function. You can also delete user folders; the **Remove User Folders** switch (set to **Yes** by default) deletes the associated user folders in c:\users.



To delete **User Names** and **Group Names**:

1. From the left navigation pane of the Privilege Manager console, select **Computer Groups**.
2. From a computer group, select **Scheduled Jobs**.
3. Click **Create Scheduled Job**.
4. From the **Create Scheduled Job** window, enter a **Name** and **Description** – ensuring each is meaningful and aligned with the task you are scheduling.
5. From the **Client Command** drop-down list box, select **Local Security Delete Command**.
6. Click **Create**.
7. Scroll to the **Job Settings** section of the page that opens, entering text in the appropriate **User Names** and **Group Names** fields. Enter one name per line, pressing ENTER to add multiple entries in one or both fields.

   Note: Neither the **User Names** nor **Group Names** fields are case sensitive; however, you must spell each name correctly. For example, entering *JOHN DOE*, *john doe*, or *John DoE* will delete user: *John Doe*. Entering *John Doee* will not remove the *John Doe* user. Also, you cannot append the computer name_domain name to a user name; *PMQA1Z-1234-1\JohnDoe123* will not remove the *JohnDoe123* user. Similarly, relative to **Group Names**, entering *GROUP ONE*, *group one*, or *Group OnE* will delete: *Group One*. Entering *Group 1* will not remove the *Group One* group name.
8. Accept the default **Yes** position of the **Remove User Folders** switch to delete the associated user folders (c:\users). Slide this switch to the left or **No** position if you do not want to delete these folders.
9. To schedule the job run frequency, click **Add Trigger**. Here, you can establish run dates and times, managing the job schedule using Privilege Manager. Alternatively, you can disregard **Add Trigger**, running scheduled jobs on an ad hoc basis from the agent workstation.
10. To store your updates, click **Save Changes**. The **Inactive** switch appears near the top right of the page. You can slide this switch to the

right, activating the scheduled job.

Membership

This topic describes types of membership groups and how to establish them.

IT administrators can create user and group accounts. The names of the users associated with specific groups appear in the **Members** table on the primary page for each group, which is accessible via **Group Management** in the Privilege Manager left navigation pane. The **Type** field in the **Members** table displays the *managed user* status. More specifically, the **Type** field can include the following memberships:

- Domain Group
  - Group of users from AD
- Domain User
  - Single users from AD
- Built-in
  - User shipped with the OS
- Managed User
  - User actively managed by Privilege Manager
- Named User
  - User manually added to the group by name and, therefore, not selected from an existing list of users.
- Unmanaged User
  - User that is inventoried or formerly Managed

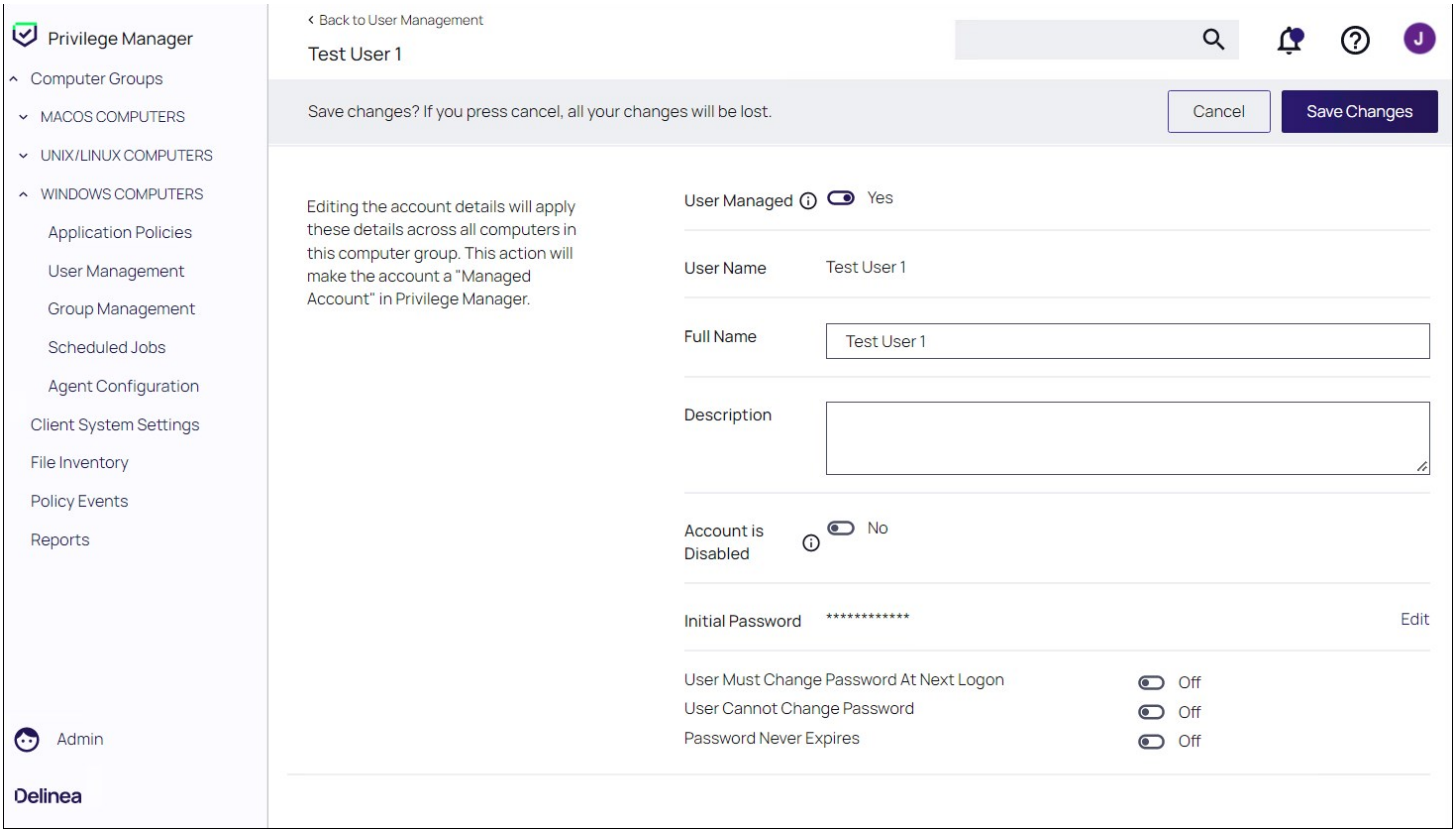
Each membership comprises distinct users, and each membership is significant. The **Domain Group**, **Domain User**, and **Built-in** user memberships populate the **Type** field based on the explanations above.

In the spirit of ensuring a solid understanding, this topic focuses on the **Managed User**, **Named User**, and **Unmanaged User**, which are a subset of the **Local User** category. This topic provides insight and clarity on how each populates the **Type** field.

User Management

To add a user:

1. Navigate to **Windows Computers I User Management**.
2. Click **Create User**.
3. From the **Create Managed User** window, enter a **Username**.
4. Click **Create**. A new page opens, displaying **User Details**.
5. Slide the **User Managed/Not Configured** switch to the right or **Yes** position, thereby applying this account across all endpoints in the computer group. This action also reveals additional fields.
6. Click **Edit** to modify the **Initial Password**.
7. Type a password in the first field and, in the second field, confirm the password by retyping this entry. The password must include an uppercase letter, lowercase letter, number, and symbol.
8. Click **Save Password**.
9. Click **Save Changes**. The **Save Changes** button becomes a **More** drop-down list box. You can click **More** and choose **Delete** to remove this account if needed.

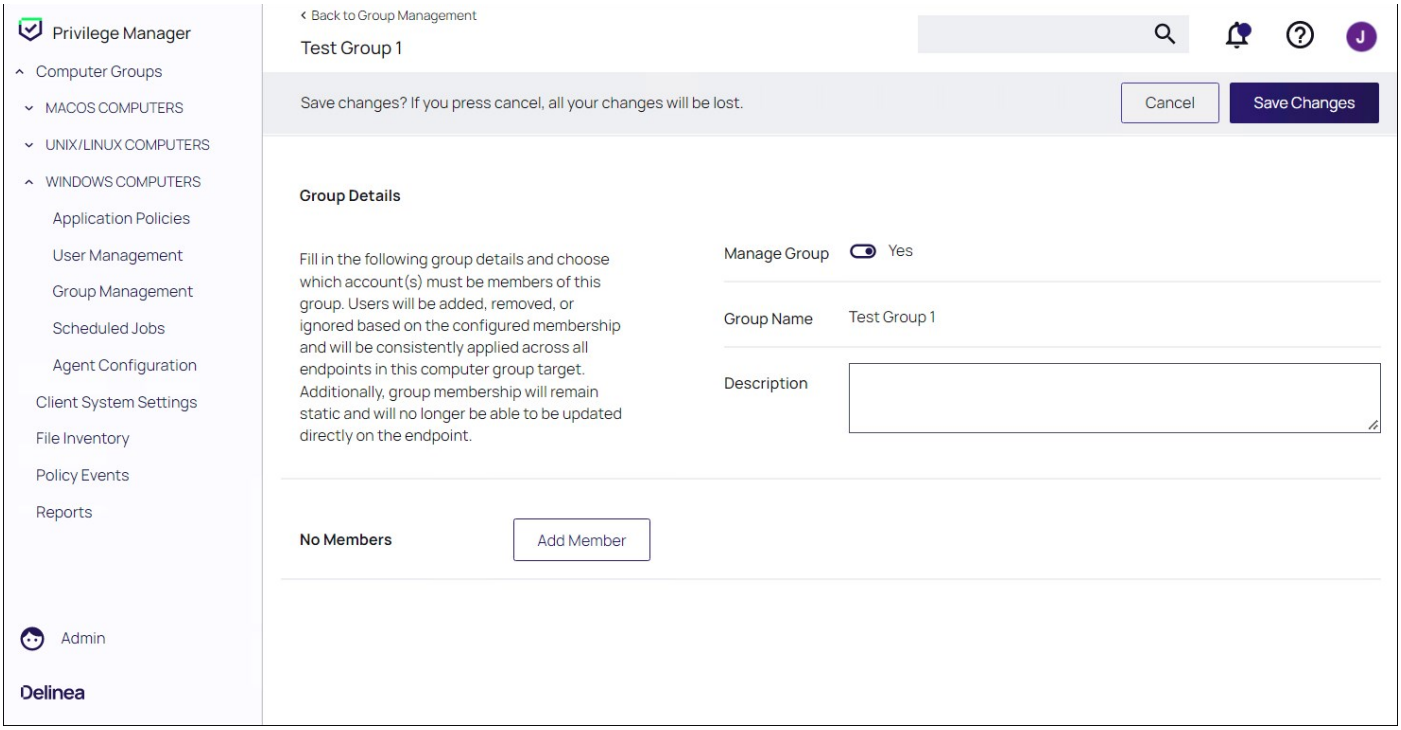


Group Management

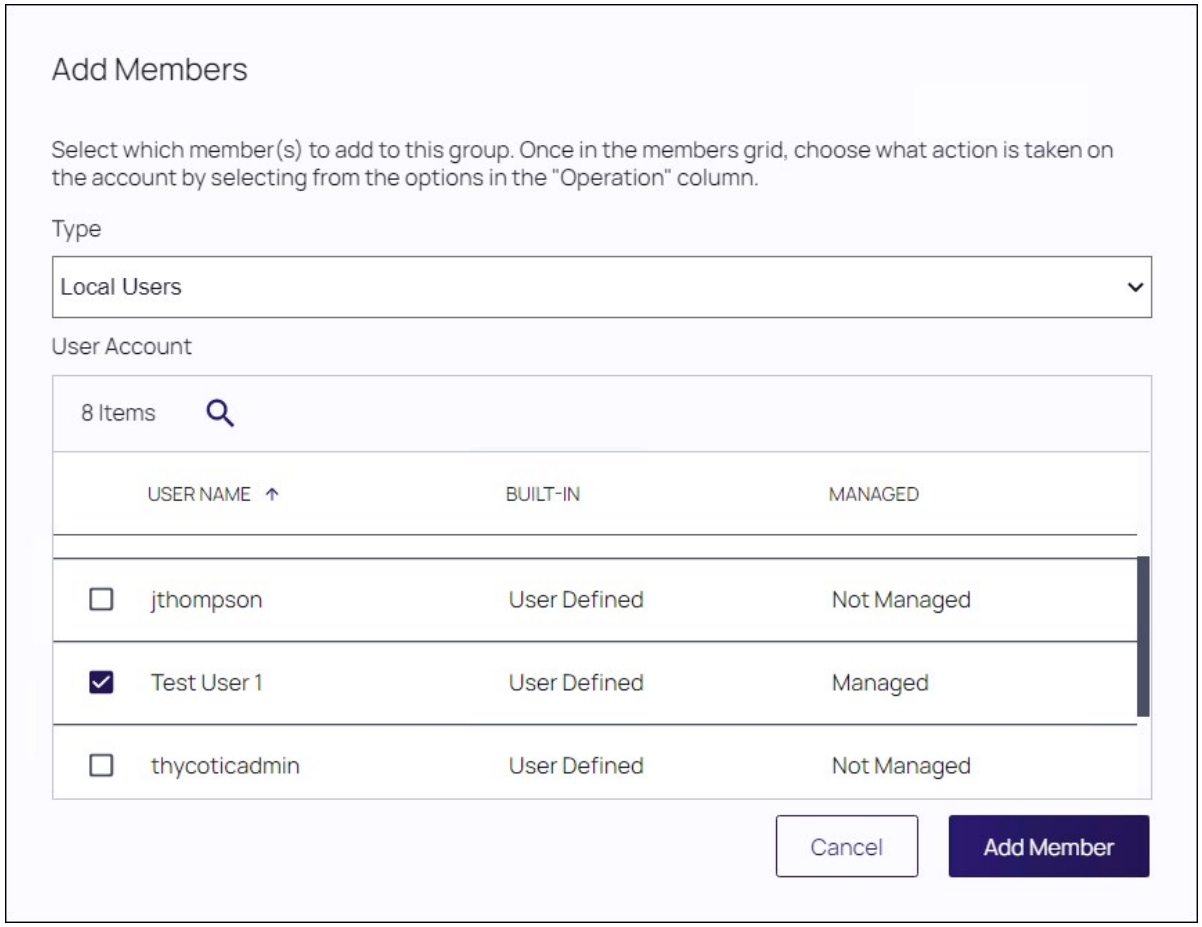
Managed User

To establish and view a Managed User:

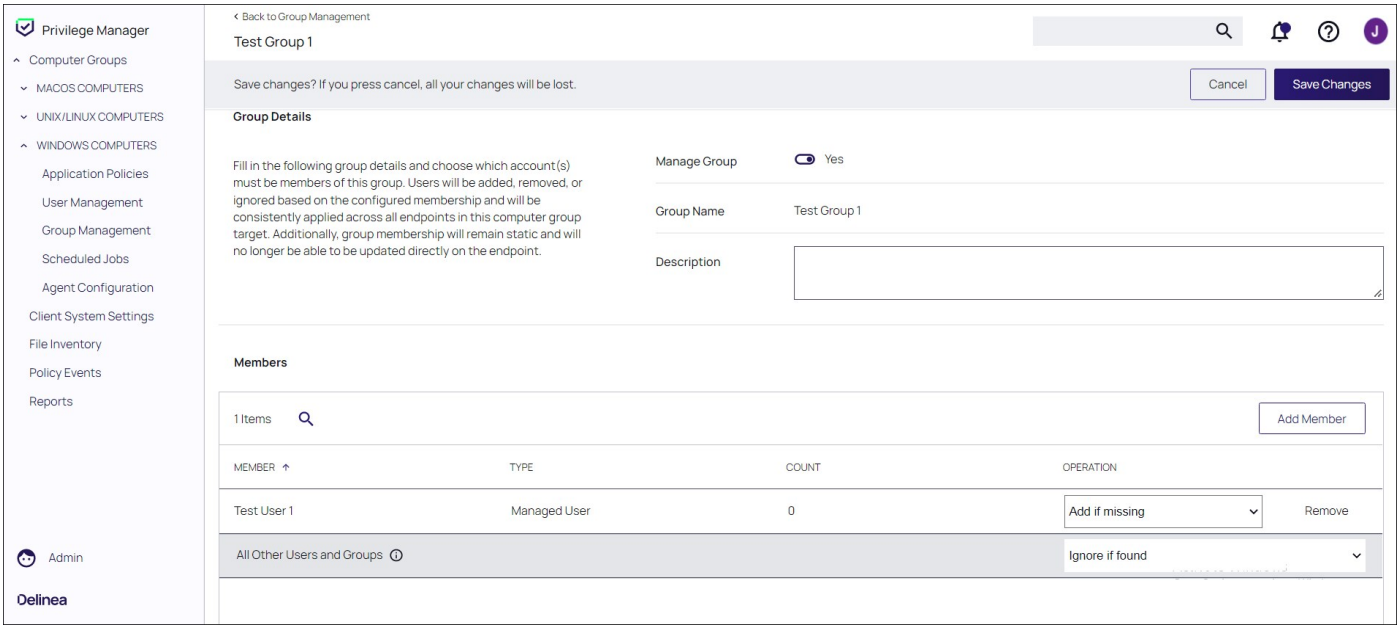
1. Navigate to **Windows Computers | Group Management**.
2. Click **Create Group**.
3. From the **Create Managed Group** window, enter a **Group Name**.
4. Click **Create**. A new page opens, displaying **Group Details**.
5. Click **Add Member**.



6. From the **Type** drop-down list box in the **Add Members** window, select **Local Users**.
7. In the lower section of the window, scroll then find and select the checkbox associated with the user you added.
8. Click **Add Member**.



9. System functionality returns to the previous page. From the **Members** table, you can view the record associated with the user you added. **Managed User** appears in the **Type** field associated with this user.
10. Click **Save Changes**.



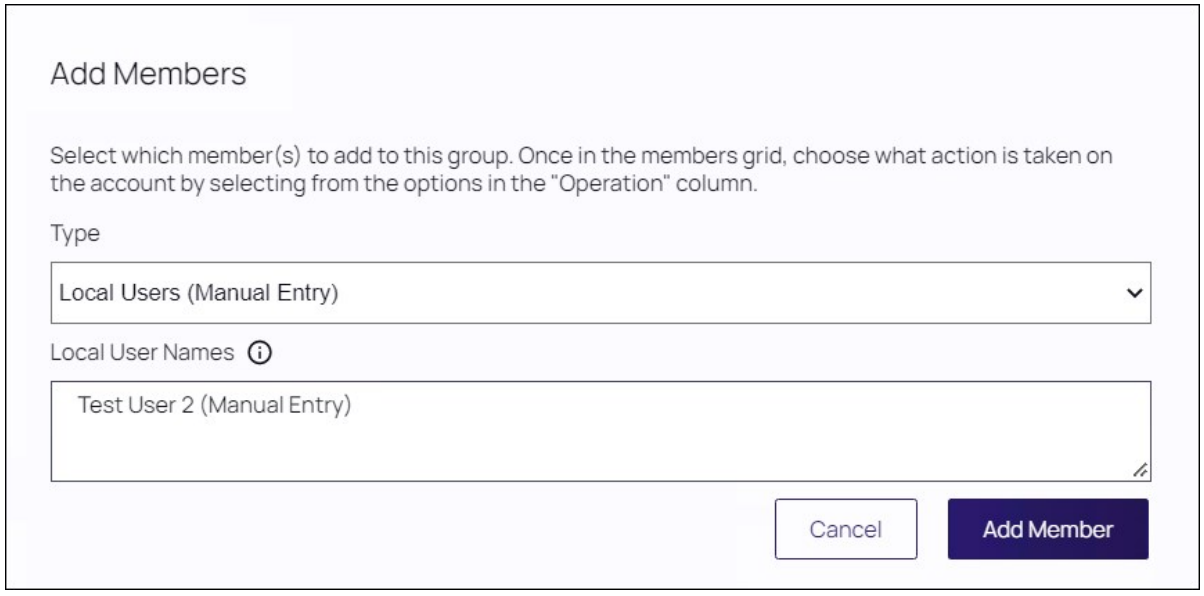
A message appears: **Group membership changes will occur automatically when the endpoint receives the policy or when any membership changes occur directly on the endpoint**.

11. Click **Yes** to proceed.

Named User

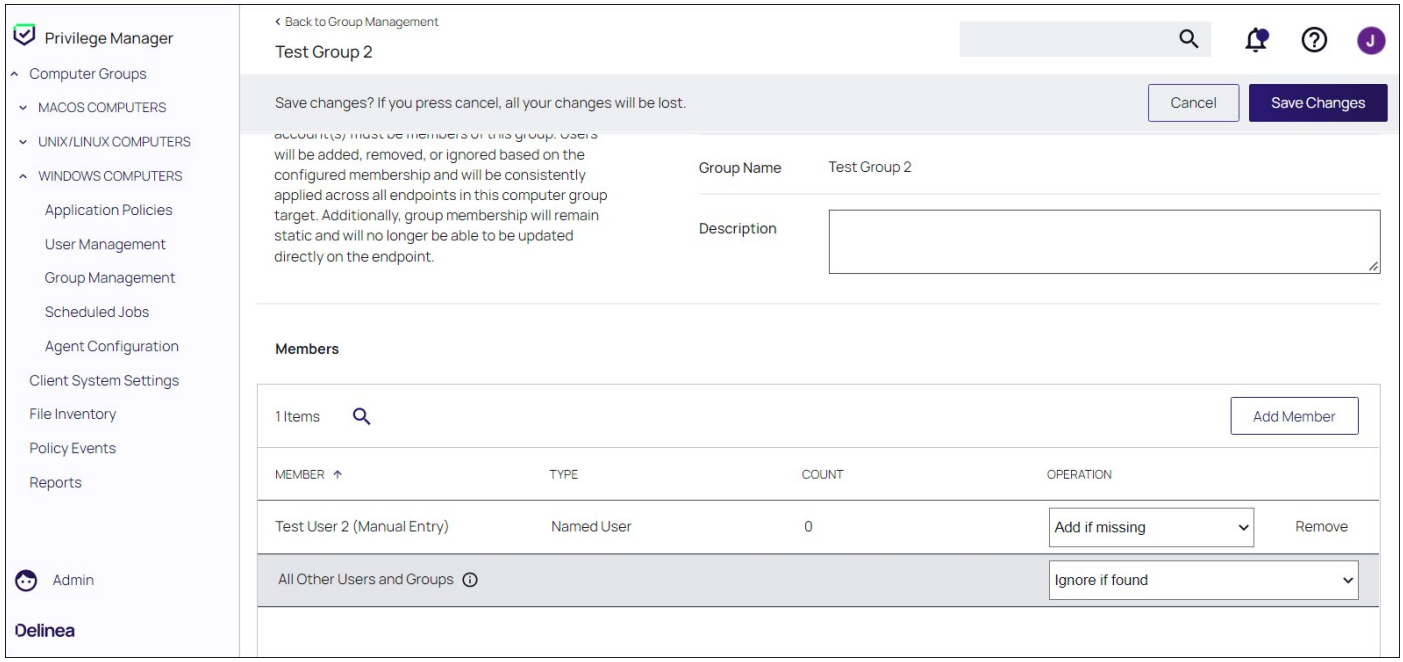
To establish and view a Named User:

1. Navigate to **Windows Computers | Group Management**.
2. Click **Create Group**.
3. From the **Create Managed Group** window, enter a **Group Name**.
4. Click **Create**. A new page opens, displaying **Group Details**.
5. Click **Add Member**.
6. From the **Add Members** window, click **Local Users (Manual Entry)**.
7. Enter one name per line, if adding multiple users.
8. Click **Add Member**.



9. System functionality returns to the previous page. From the **Members** table, you can view the record associated with the user(s) you added. **Named User** appears in the **Type** field associated with this user.

10. Click **Save Changes**.



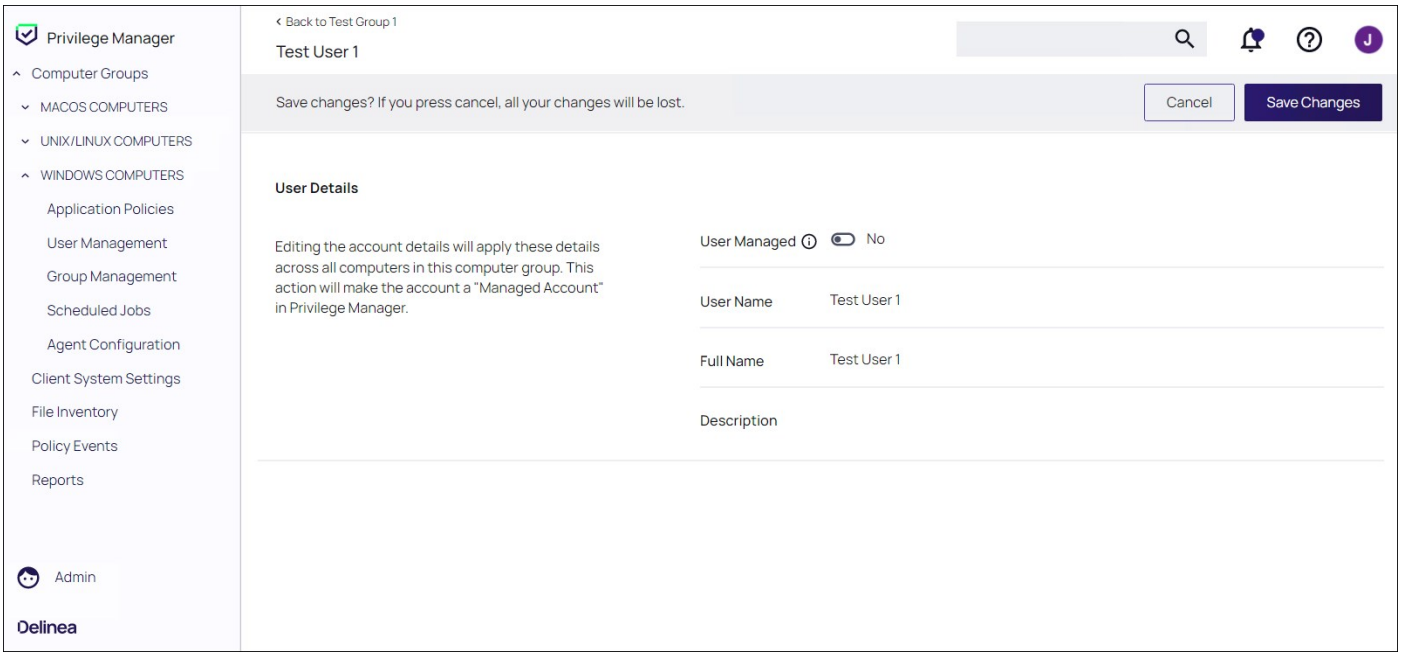
A message appears: **Group membership changes will occur automatically when the endpoint receives the policy or when any membership changes occur directly on the endpoint**.

11. Click **Yes** to proceed.

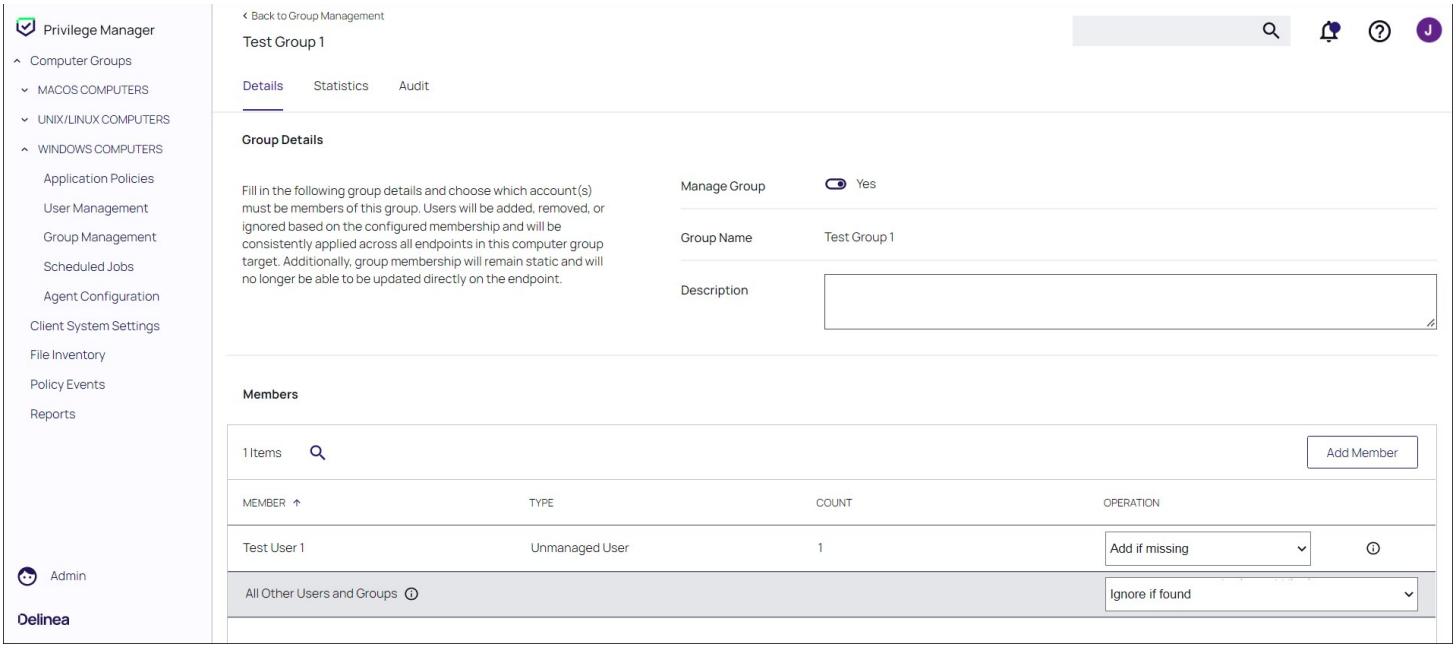
Unmanaged User

To establish and view an Unmanaged User:

1. From the left navigation pane, click **Group Management** then select a group.
2. Access the **Members** table and click the Managed User you created.
3. System functionality launches you to the **User Management** page for this user.
4. Slide the **User Managed** switch to the left or **No** position.
5. Click **Save Changes**.



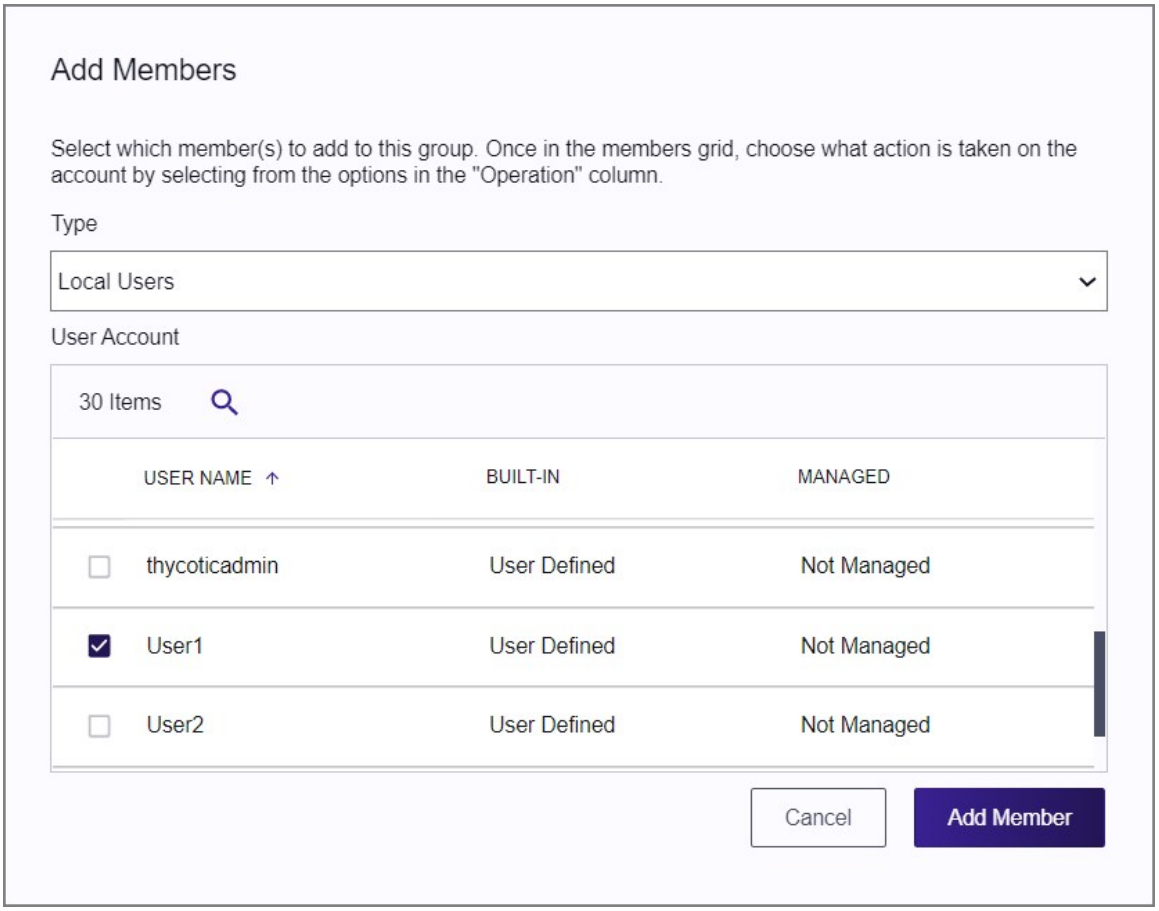
6. Click the **Back to** breadcrumb link near the top left of the page.
7. The **Type** field now displays **Unmanaged User**.


Privilege Manager
Computer Groups
MACOS COMPUTERS
UNIX/LINUX COMPUTERS
WINDOWS COMPUTERS
Application Policies
User Management
Group Management
Scheduled Jobs
Agent Configuration
Client System Settings
File Inventory
Policy Events
Reports
Admin
Delinea
Back to Group Management
Test Group 1
Details
Statistics
Audit
Group Details
Fill in the following group details and choose which account(s) must be members of this group. Users will be added, removed, or ignored based on the configured membership and will be consistently applied across all endpoints in this computer group target. Additionally, group membership will remain static and will no longer be able to be updated directly on the endpoint.
Manage Group
Yes
Group Name
Test Group 1
Description
Members
1 Items
Add Member
MEMBER
TYPE
COUNT
OPERATION
Test User 1
Unmanaged User
1
Add if missing
All Other Users and Groups
Ignore if found

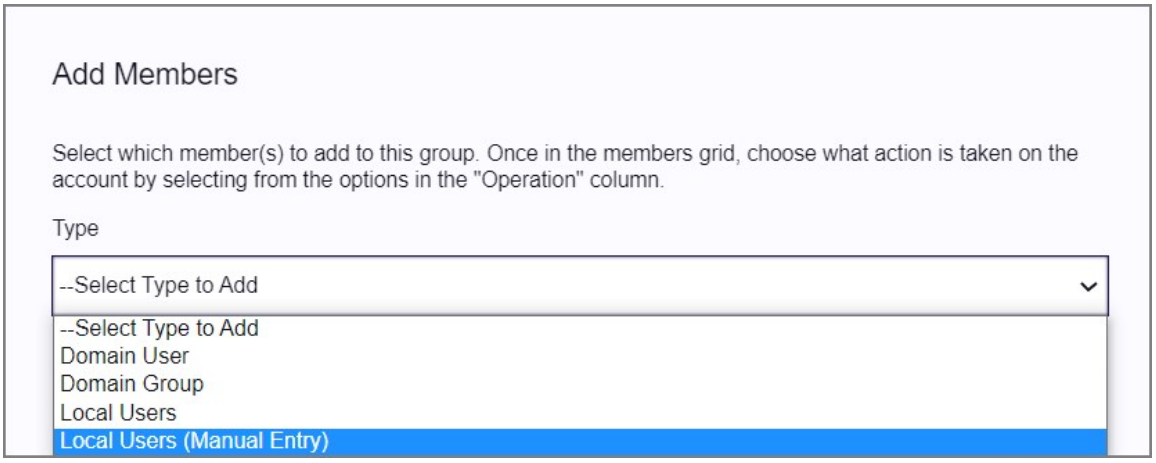
Non-Managed Local Users in Group Management

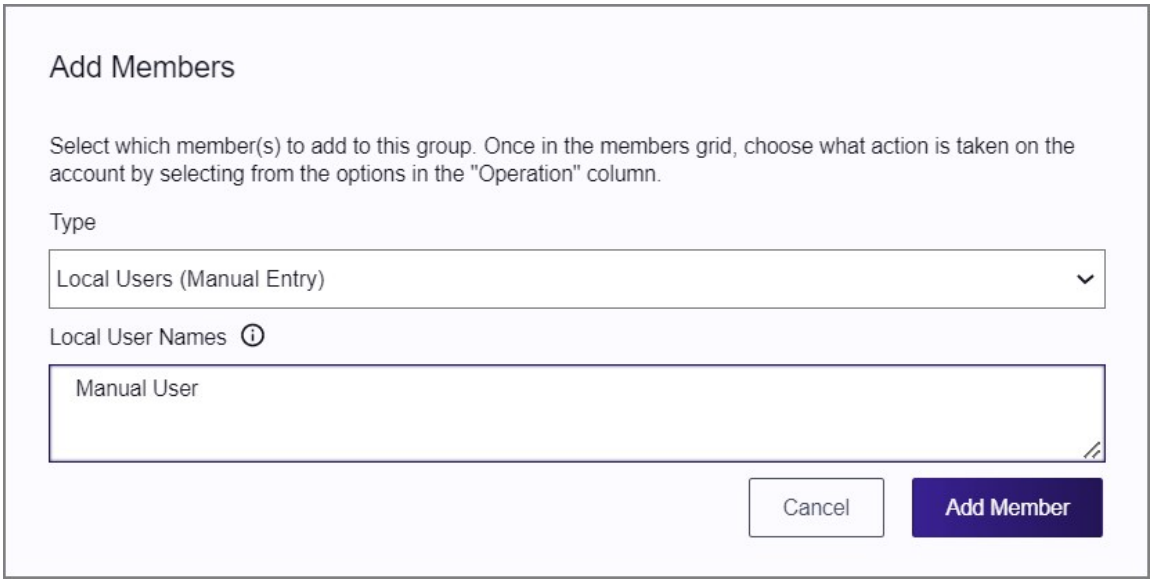
This feature allows for group management of local users that are not managed by Privilege Manager.

When users are added to a group, the modal indicates if their status is managed or not managed:

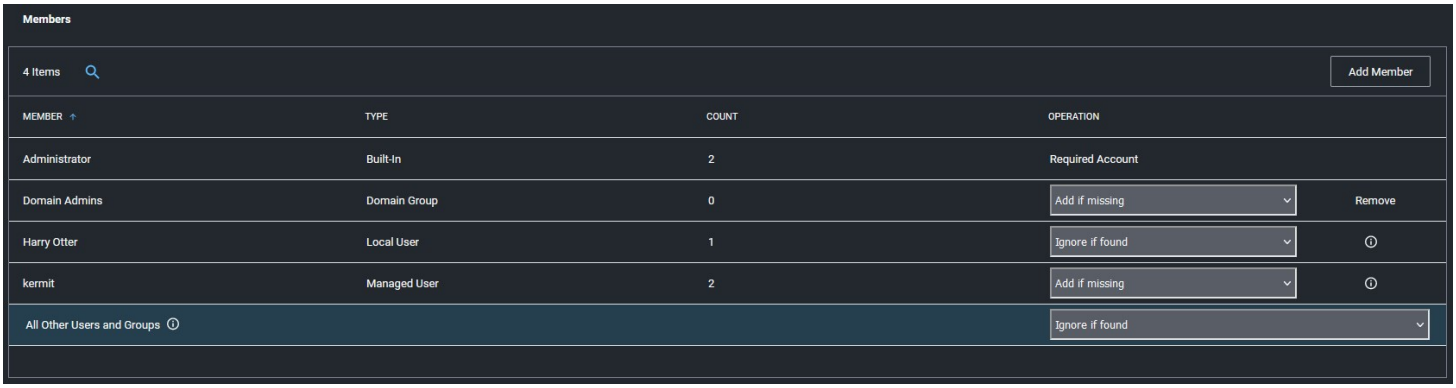


To create an un-inventoried local user to add to a group, select **Local User (Manual Entry)**.





The new view of a Group Management Policy is below.



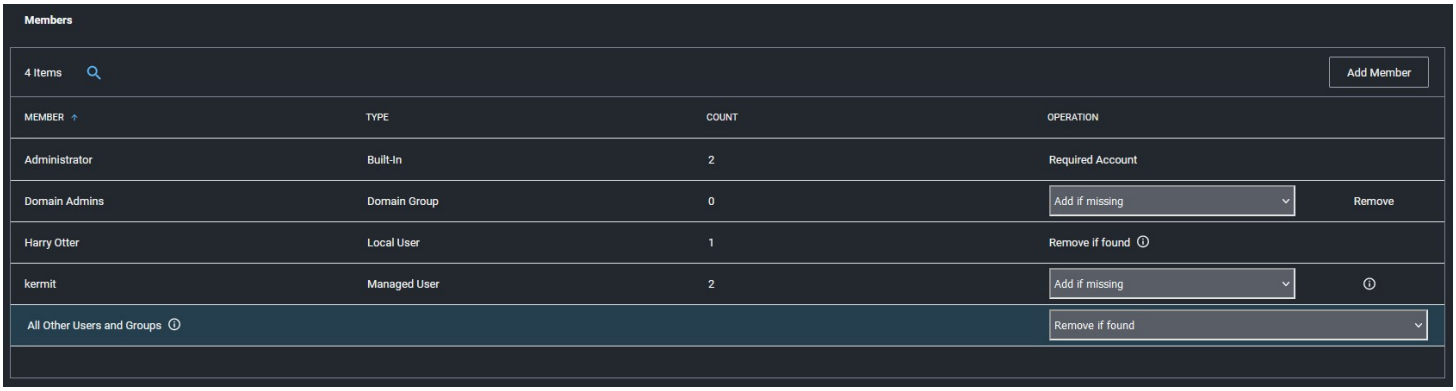
Notice that both Harry Otter and kermit are local users on machines in this Computer Group. However, the kermit account is managed by Privilege Manager and Harry Otter is not.

Even though the Harry Otter account is not managed by Privilege Manager, the group membership definitions can still be defined to **Ignore if found** or **Add if missing**. This allows Privilege Manager administrators to be able to manage the account in a Group Management Policy without having to manage (or provision) that local user on all machines in the Computer Group. If the unmanaged local user is set to **Add if missing**, the user will only be added to the local group on the machines where this local user already exists. This allows Privilege Manager administrators to manage local users without having to provision those users on all machines in the Computer Group.

This functionality is only available when the **All Other Users and Groups** are set to **Ignore if found**.

When **All Other Users and Groups** are set to **Remove if found**, the Group Management requires exact membership – the membership definitions will be the same for all machines in this Computer Group. When this is set, each individual user's membership must be specifically defined. In this mode, the group management of unmanaged local user accounts is not allowed. When **All Other Users and Groups** are set to **Remove if found**, local users must be managed by Privilege Manager (which provisions the account on all machines in the Computer Group) to have their local group membership defined.

Notice that the unmanaged local user (Harry Otter) defaults to **Remove if found** if **All Other Users and Groups** are set to **Remove if found**.


Members
4 Items
Add Member
MEMBER
TYPE
COUNT
OPERATION
Administrator
Built-In
2
Required Account
Domain Admins
Domain Group
0
Add if missing
Remove
Harry Otter
Local User
1
Remove if found
kermit
Managed User
2
Add if missing
All Other Users and Groups
Remove if found

User Management

The Users page listed under your Computer Group shows a list of local users that exist within this Computer Group. The information highlighted by this table includes

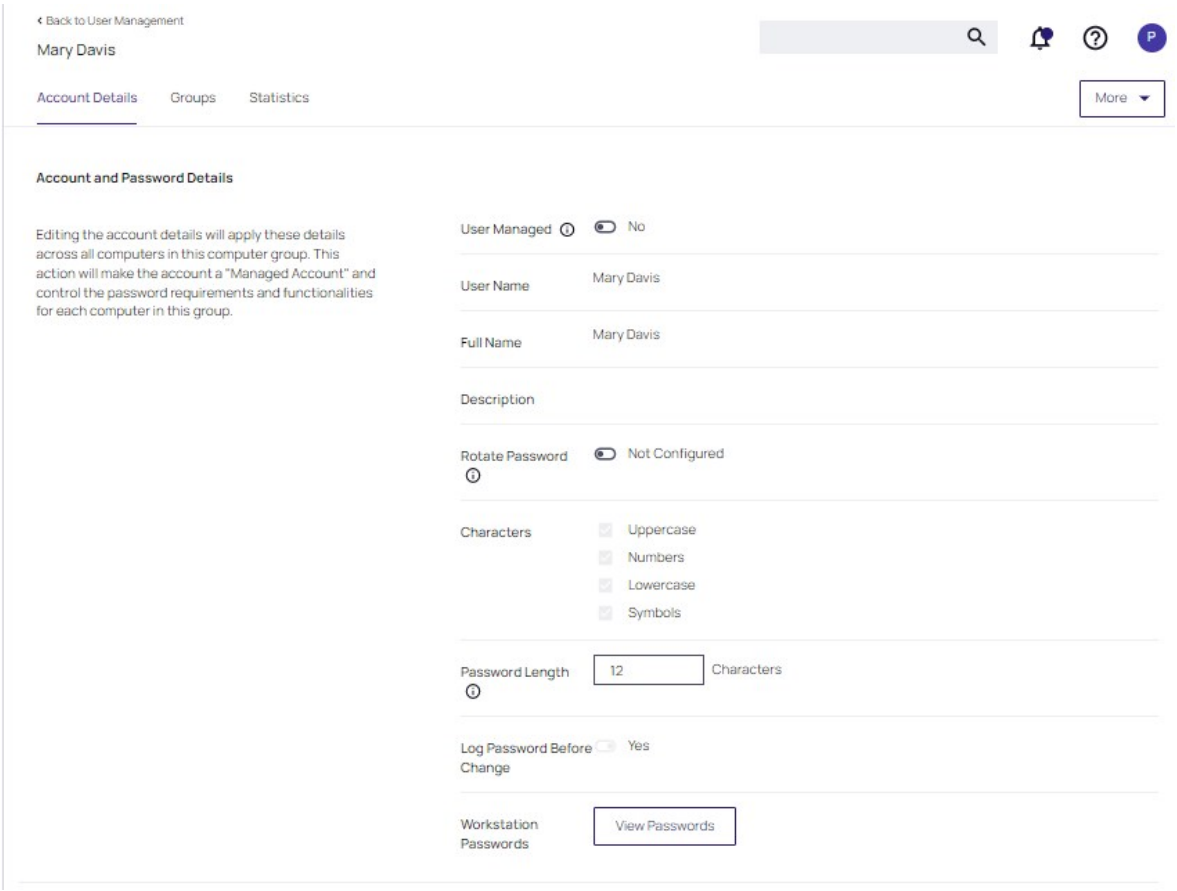
- how many groups each user account is a member of,
- whether the user account was built-in or user-defined, and
- whether or not the account itself is managed.

Local Security allows administrators to manage users and also to manage passwords and password rotation. Managing local users in Local Security means that you are setting a password for the account and can rotate the password as desired.

Creating New Local User Account

To create a new local user,

1. Navigate to your Computer Group for this new user and select User Management.
2. On the User Management page, click **Create User**.
3. Enter the new User Name.
4. Click **Create**.
5. This takes you to the Account Details tab of your new user's account. To create a user through Local Security, it must be a managed user.

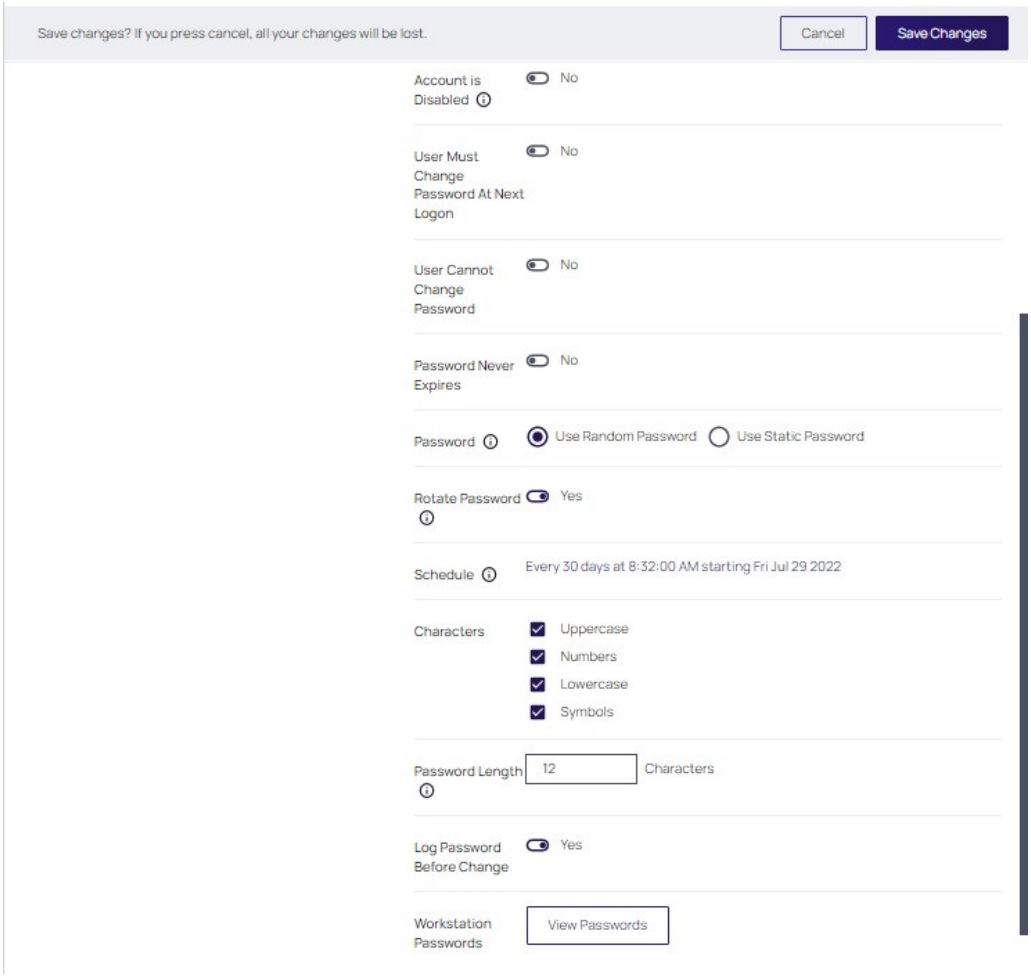


6. Set the **User Managed** switch to **Yes**.

   In Local Security, the most important thing to know about your user accounts is whether or not each is being managed. Managing a local user account means that you are able to rotate the account's password from Local Security's console in Privilege Manager .

   If the password is being rotated, the update schedule determines when the new password is applied.

   Note: The user does not need to be managed in order to rotate the password on a local account.



Note: The following settings are all specific to Windows endpoints and will not be displayed for macOS based Computer Groups:

- Account is Disabled
- User Must Change Password At Next Logon
- User Cannot Change Password
- Password Never Expires

7. Managed user accounts require an initial password when created.

   When the agent first receives the instructions for this account, it will create the account if necessary. Next, the agent sets the password to either the fixed password or random password, depending on which option is selected. This occurs regardless of whether the user existed or not. This overwrites any existing password.

   Note: If the user account is enabled, disabled, or deleted, it will repeat this initial deployment process.

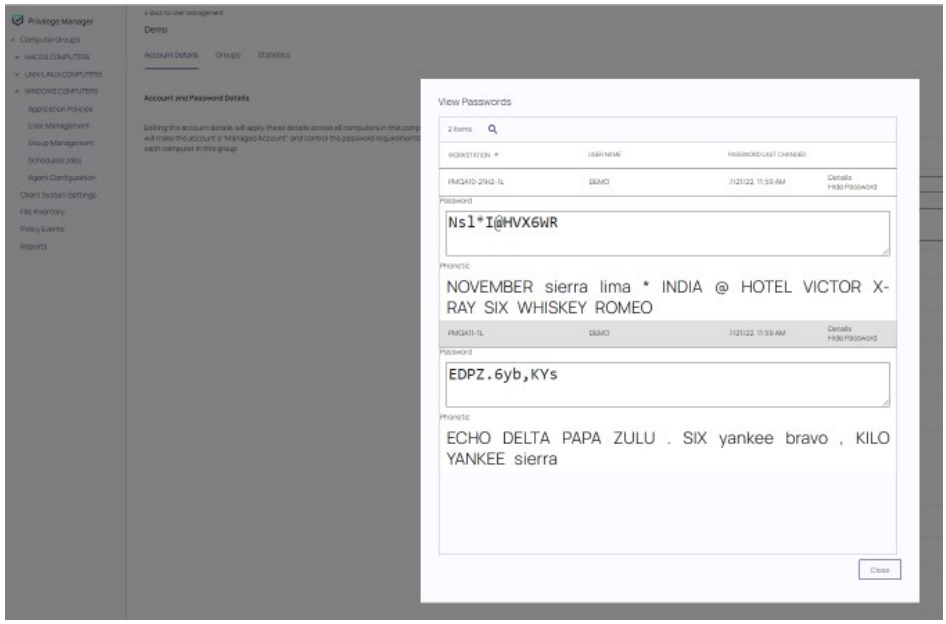
   In an addition to creating a static initial password, an additional option to create a randomized initial password is available.

   If **Use Static Password** is selected, click the **Edit** link and specify a password, according to the password criteria set. The user will be able to login to any computer defined for the user account using this password. The password becomes effective at the point that the User Management task is updated on the agent endpoint (a message will be returned to the server).

   If **Use Random Password** is selected, a different randomized password will be produced for every agent endpoint workstation that the user is managed on. Random passwords are also based on the password criteria set. The password(s) generated will display when the **View**

Password button is selected, but only after the User Management task is updated on the agent endpoint (a message will be returned to the server).

For example:

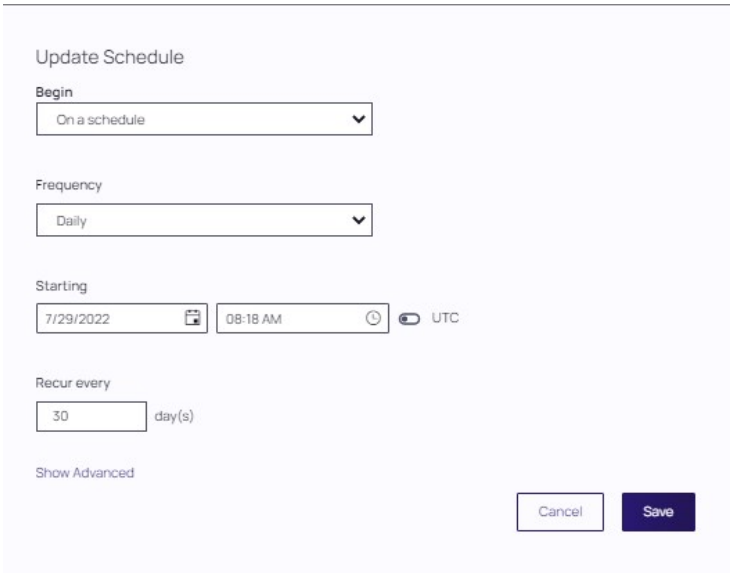


Select the method for password creation (Static or Random), then edit **Characters** and **Password Length** settings pertaining to the user's password.

8. Managing users, passwords, and rotation schedules often go hand-in-hand, but not every managed user account also requires password rotation. For example, service accounts are managed, but usually do not have password rotation setup. Password rotation can also be setup for existing users without having to provision user accounts.

   Note: Password rotation is an option that is not required for all accounts, especially not for service accounts.

   If password rotation is desired, enable **Rotate Password**. When prompted, click **Confirm Manage Password**. Click the link provided in the **Schedule** field and supply values in the **Update Schedule** dialog box and click **Save**. The password on this account will be rotated based on the Update Schedule details.



9. When all account settings are satisfactory, click **Save Changes**.

Editing a Local User Account

While editing a user, you can change the account User Name, add details like the full name of the user, disable the account, or update the schedule that pushes out modifications to endpoints.

The **Groups tab** for a Local Account tells you how many groups and computers the account is on. Clicking on a Group Name from this page directs you back to the details of that local group.

The **Statistics tab** for a local user account highlights some quick visual statistics and links to relevant reports based on key factors, like how many computers from your network have this user account and whether there have been changes made to the user's membership within the specified period. Click on the graphs to drill down into more details.

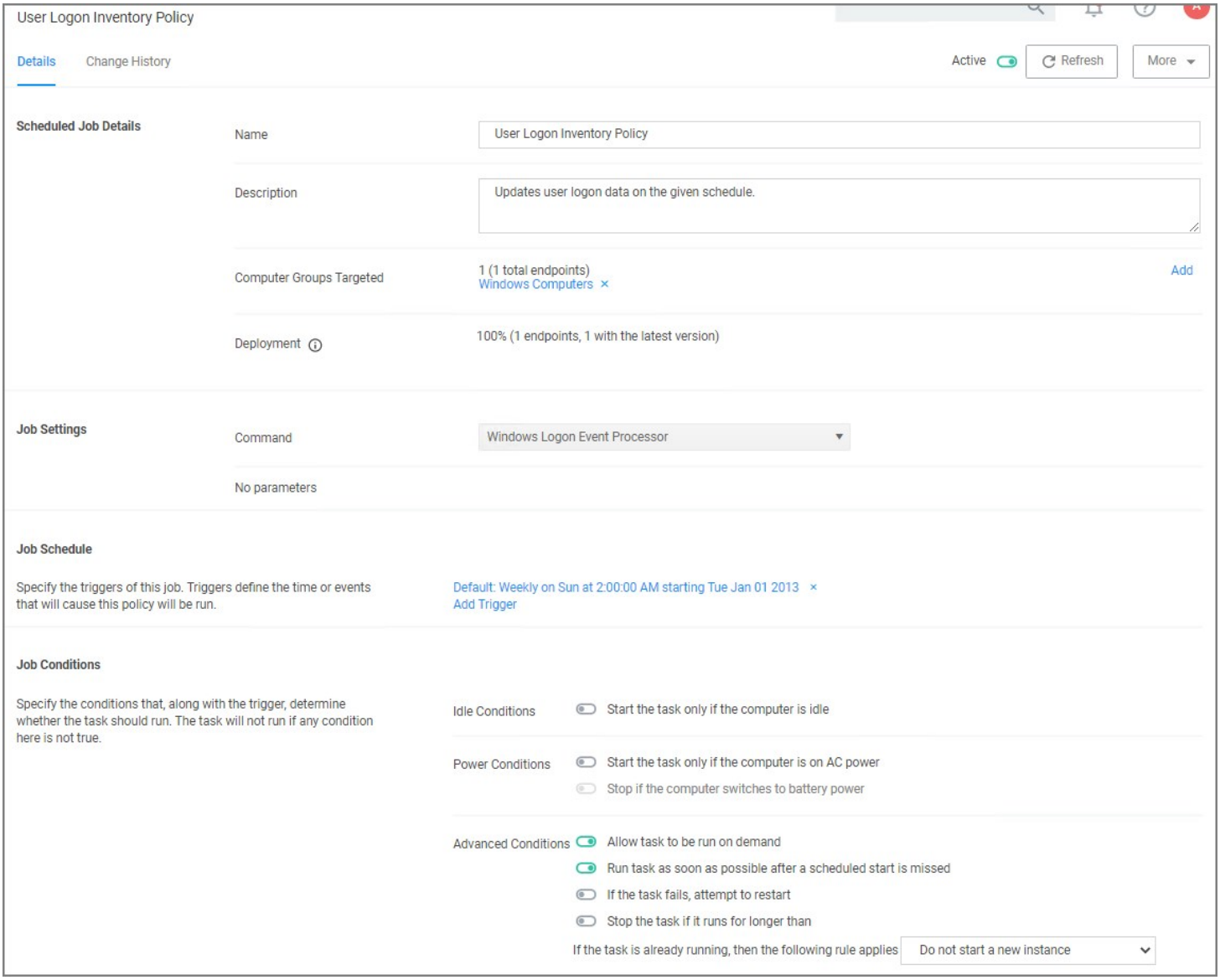
Reports Relating to Managed Accounts

- **All Computers with Managed Passwords**: Lists all computers that have at least one local user with a managed password.
- **Password Disclosure History**: Lists all local and provisioned user's passwords that have been disclosed in a given time frame.
- **Disclosure Summary (Local User)**: Lists all local users whose managed password has been disclosed in the given time frame.

Logon User Tracking

The Delinea Local Security Agent collects logon and logoff events from Windows on a schedule configured via the User Logon Inventory policy. The Agent collects logon and logoff events and reports them as inventory data. The **Update Primary User for Collection** task calculates the primary user and the primary user and associated inventory data can then be viewed in the Resource Explorer.

The **User Logon Inventory Policy** is by default active.

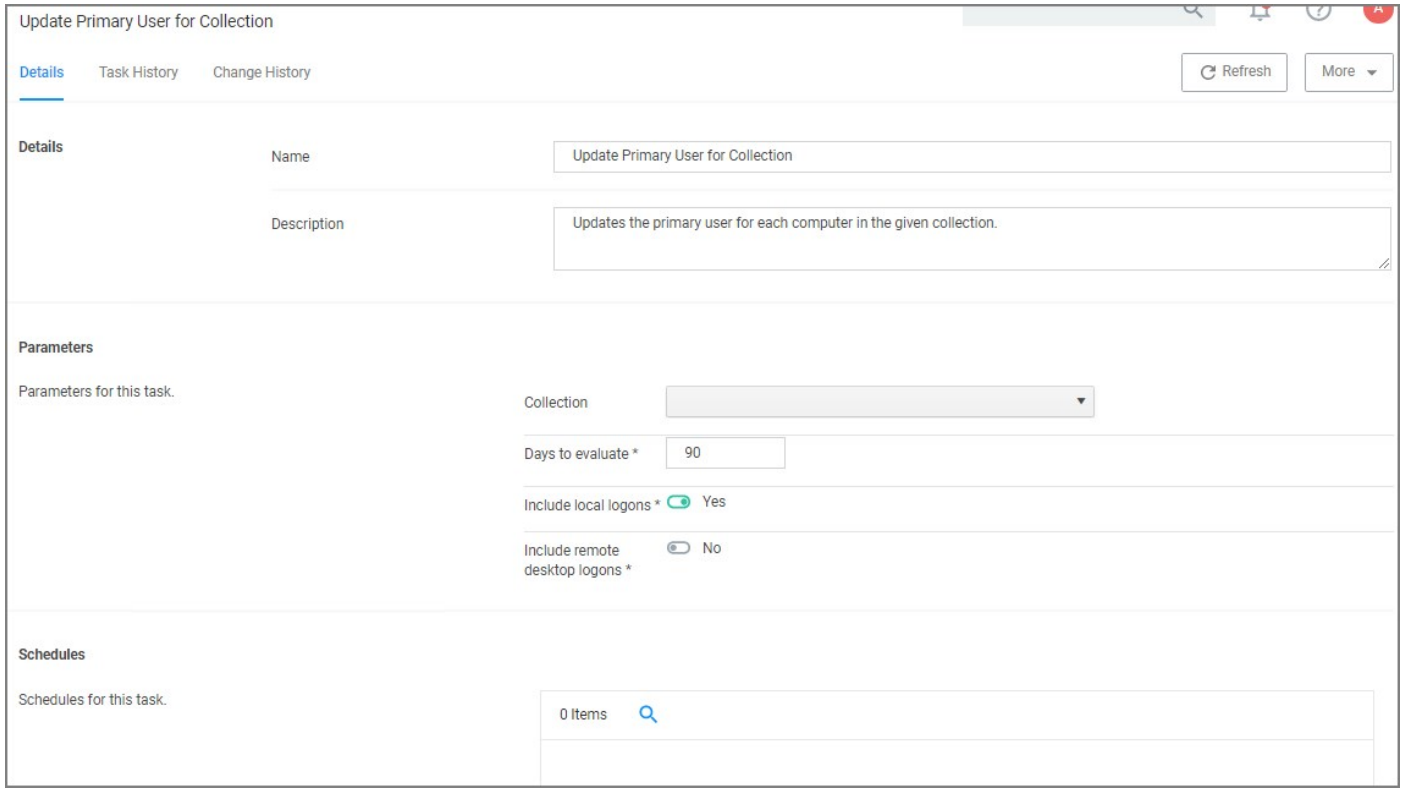


If you wish to customize the schedule or any other policy specification, create a copy of the default policy (More > Duplicate) and edit the settings.

The default update primary user for collection task calculates the primary user on a schedule from inventory data.

1. Navigate to **Admin I Tasks**.
2. In the folder tree open **Server Tasks I Local Security** and search for **Update Primary User for Collection**.
3. Click **View**.

4. Customize the settings and schedule by editing the task.

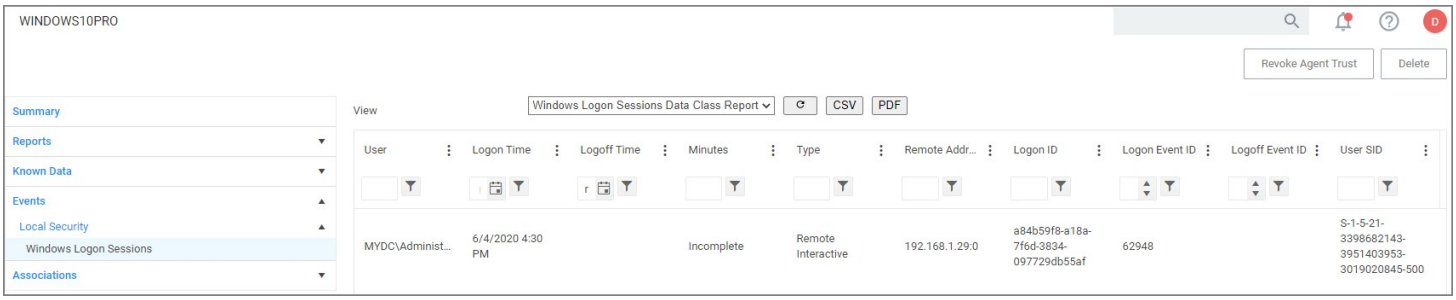


5. Click **Save Changes**.

You can run the **Update Primary User for Collection** task at any time to immediately recalculate the primary user for all computers in the selected collection.

Viewing the Resource

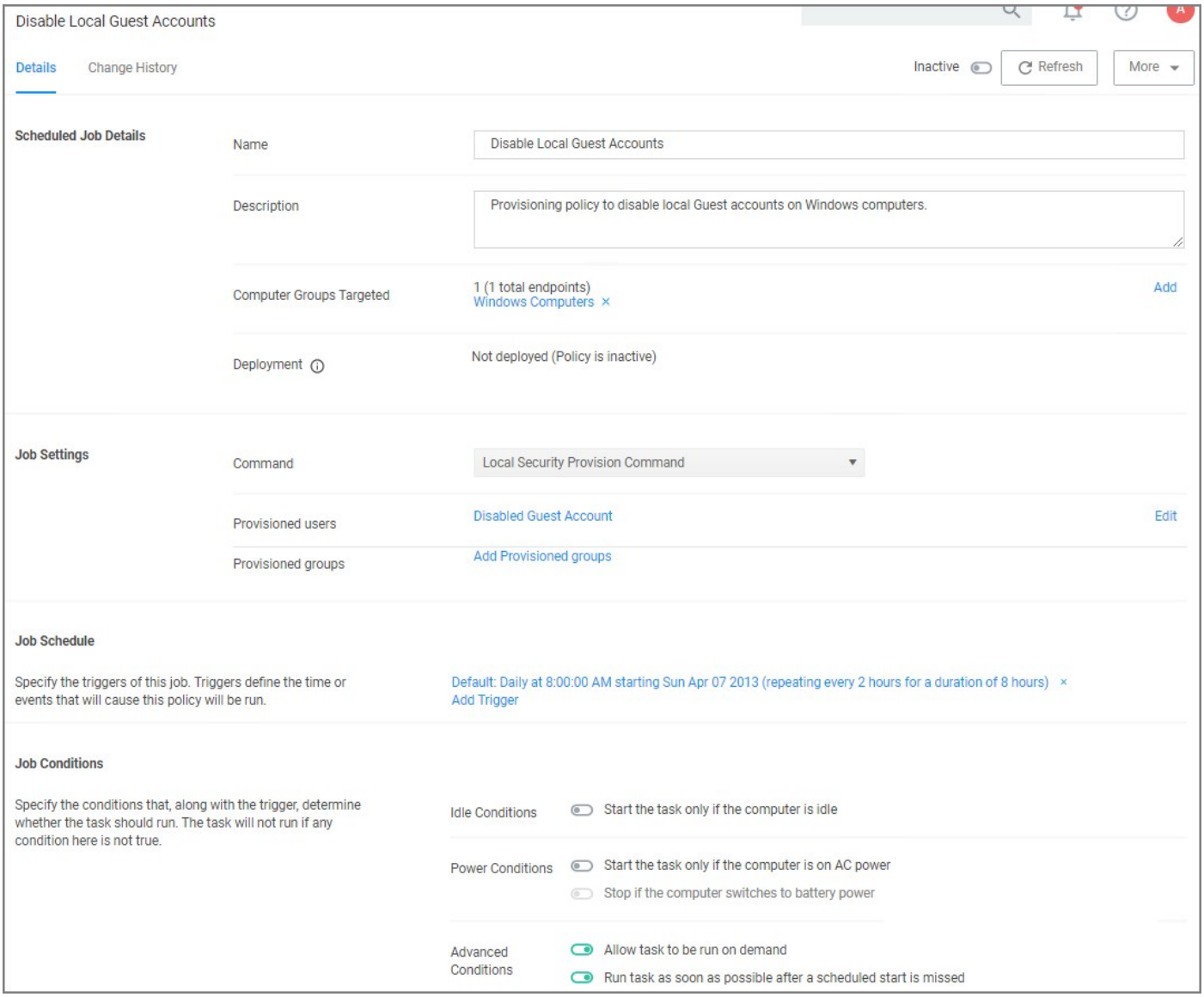
The Windows Logon Session events can be viewed by opening the **Local User/Group Summary** report and selecting a computer resource from the list. Then select Events | Local Security | Windows Logon Sessions.



To disable the guest account on computers that have the Local Security Agent installed, enable the **Disable Local Guest Accounts** remote scheduled client command. This is an out-of-the-box policy; you do not need to make any configuration changes to this policy.

To enable the policy:

1. Under your **Computer Group**, navigate to **Scheduled Jobs**.
2. From the Scheduled Jobs list, select **Disable Local Guest Accounts**.

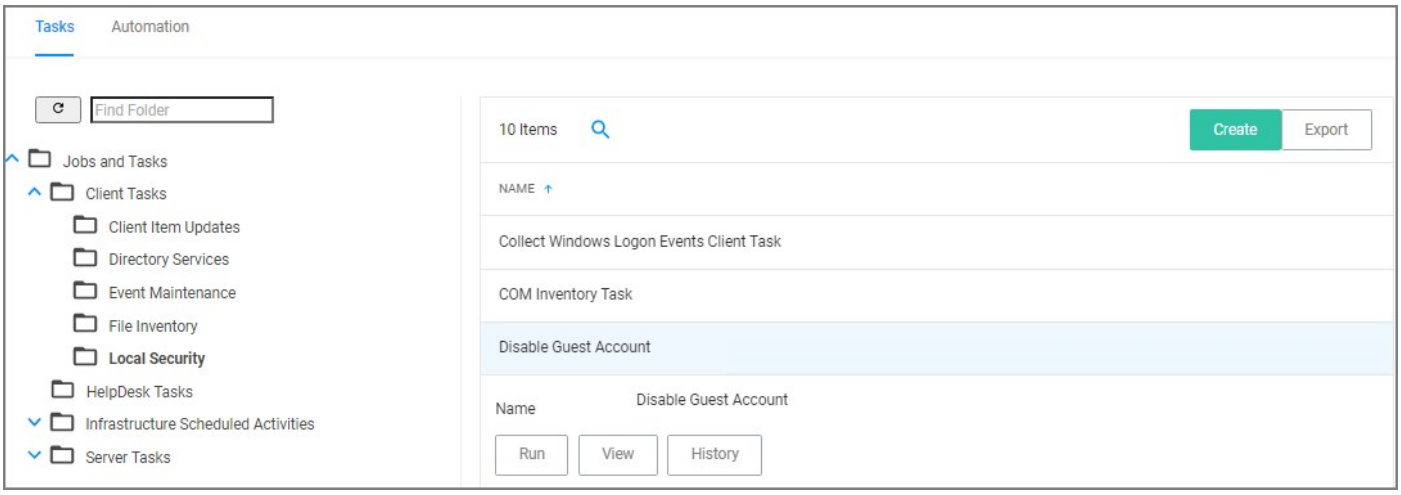


3. Set the **Inactive** switch to **Active**.

If you wish to customize any aspects of the default behavior, create a copy and edit the copied policy.

The Disable Local Guest Accounts policy uses the Local Security task **Disable Guest Accounts**. If you wish to run the task on demand follow these steps:

1. Navigate to **Admin I Tasks**.
2. On the Tasks tab open the folder tree to **Client Tasks I Local Security**.
3. Select the **Disable Guest Account** task.

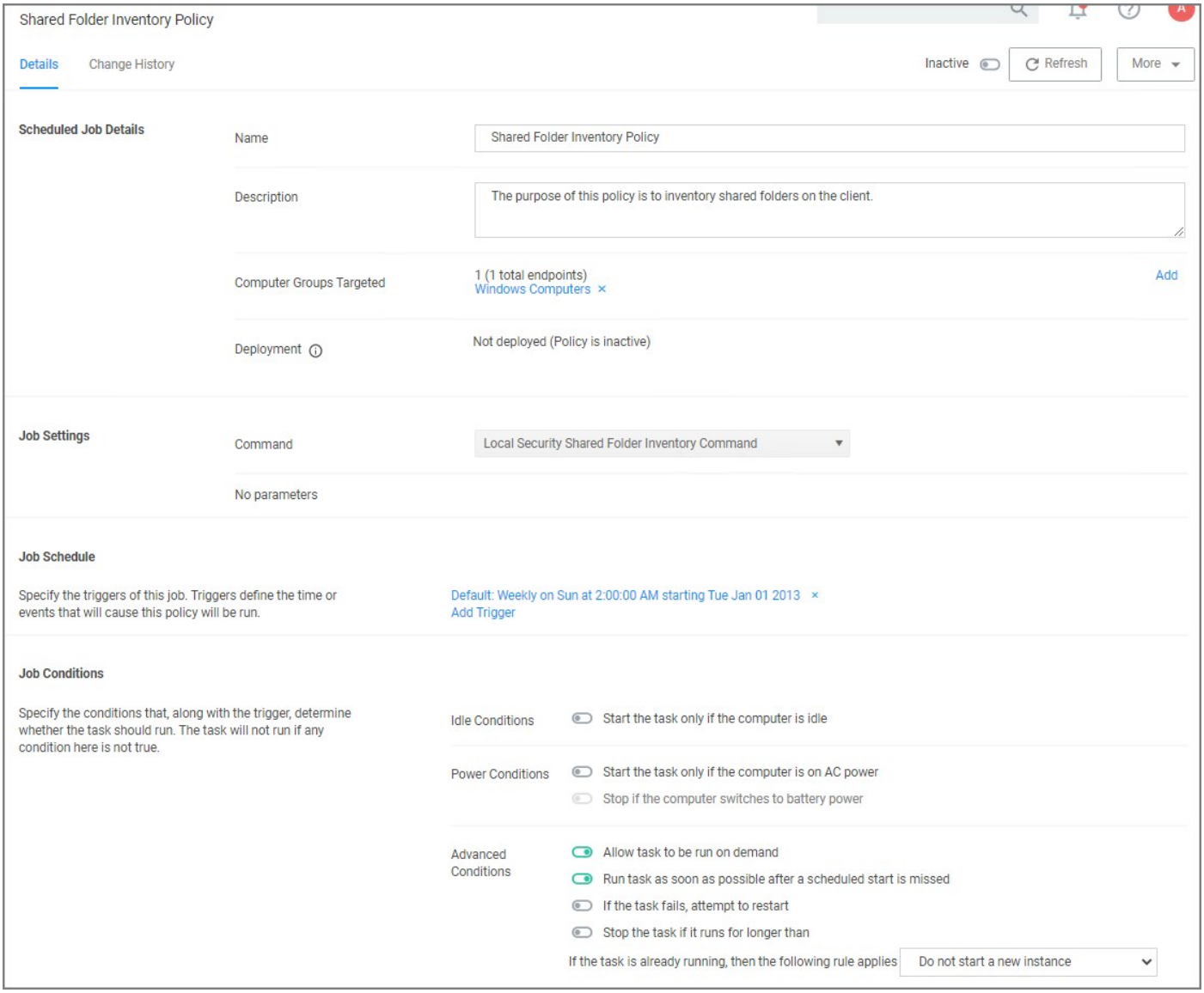


4. Click **Run**.

To inventory shared folders on computers that have the local security agent installed, enable the shared folder inventory policy. This is an out-of-the-box policy; you do not need to make any configuration changes to this policy.

Enable the Policy

1. Under your **Computer Group**, navigate to **Scheduled Jobs**.
2. From the Scheduled Jobs list, select **Shared Folder Inventory Policy**.



3. Set the **Inactive** switch to **Active**.

The migration path to the latest Local Security implementation provides an analysis report of issues like missing account credentials, or accounts that are not unique across targets, which can then be remediated before the migration.

> **Note**: Delinea recommends to use a Professional Services engagement when migrating local security to Privilege Manager 10.7 or newer.

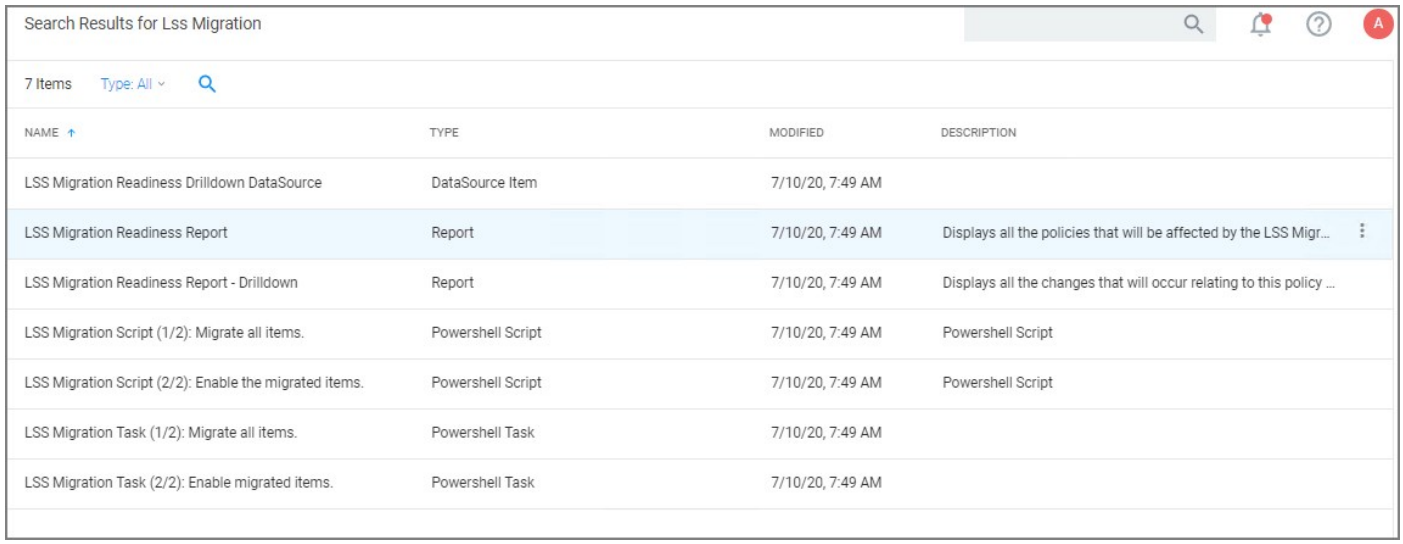
Before any migration is performed, make sure to backup your Privilege Manager database.

Migration Steps

Starting with Privilege Manager v10.7 the LLS Migration Readiness Report is available. The report is generated after an upgrade to v10.7 or higher from any previous Privilege Manager version.

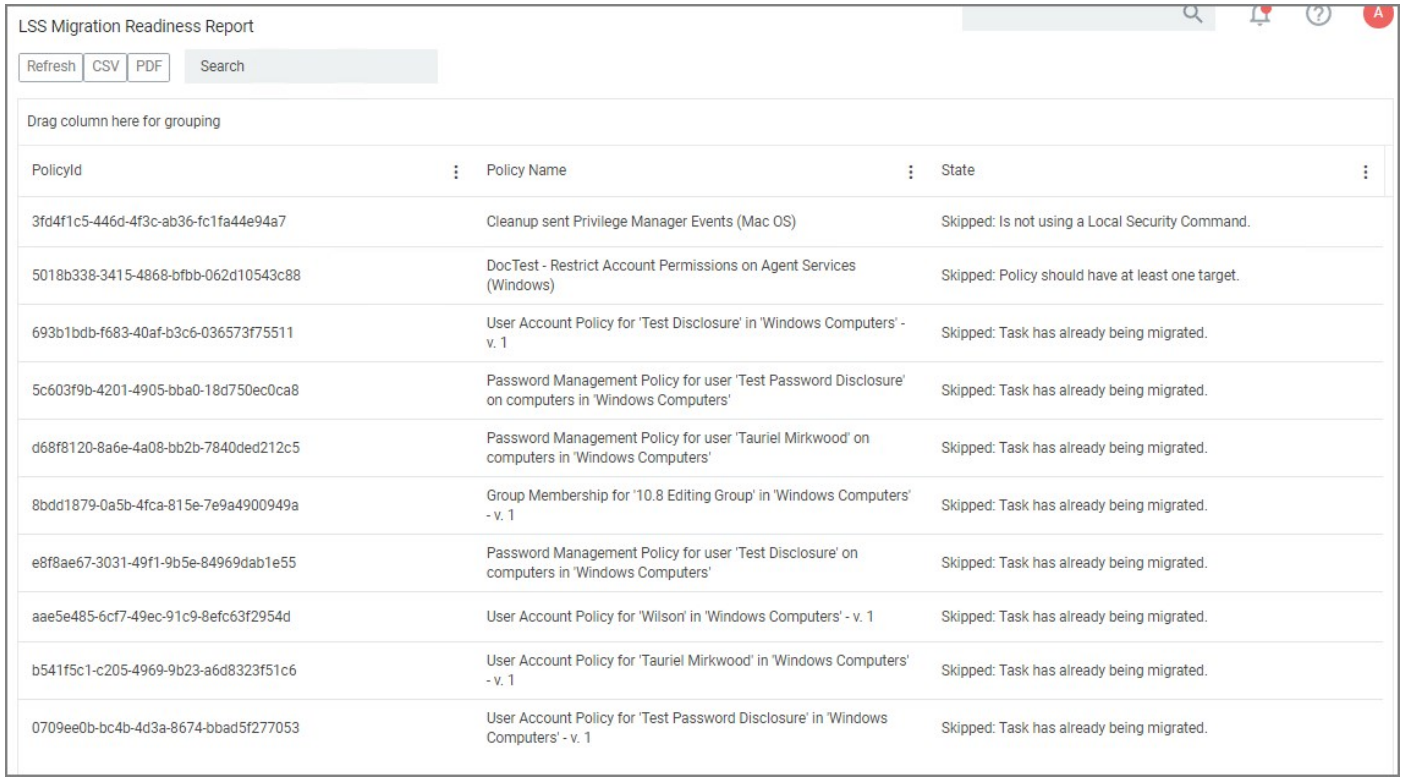
To access the LSS Migration Readiness Report, follow these steps:

1. From anywhere in the Privilege Manager console search for LSS Migration.



   The search does show all LSS Migration labeled results found in Privilege Manager . As the image shows, there are two related reports and tasks.

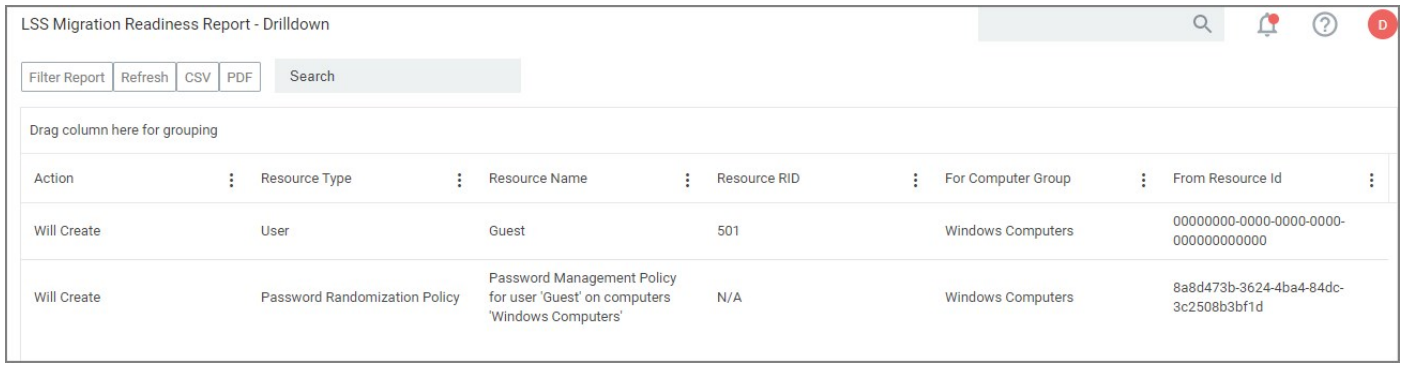
2. Select **LSS Migration Readiness Report**.
3. The report shows a table containing Policy IDs, their Name, and the current migration status.



The migration state can be:

- Ready for migration.
- Skipped: Is not using a Local Security Command.
- Skipped: Task has already been migrated.

4. To learn more about items that are listed as *Ready for migration* click on the item in the table. This opens up the **LSS Migration Readiness Report - Drilldown** report.



The drilldown report shows the Action to be performed for that particular item during the migration.

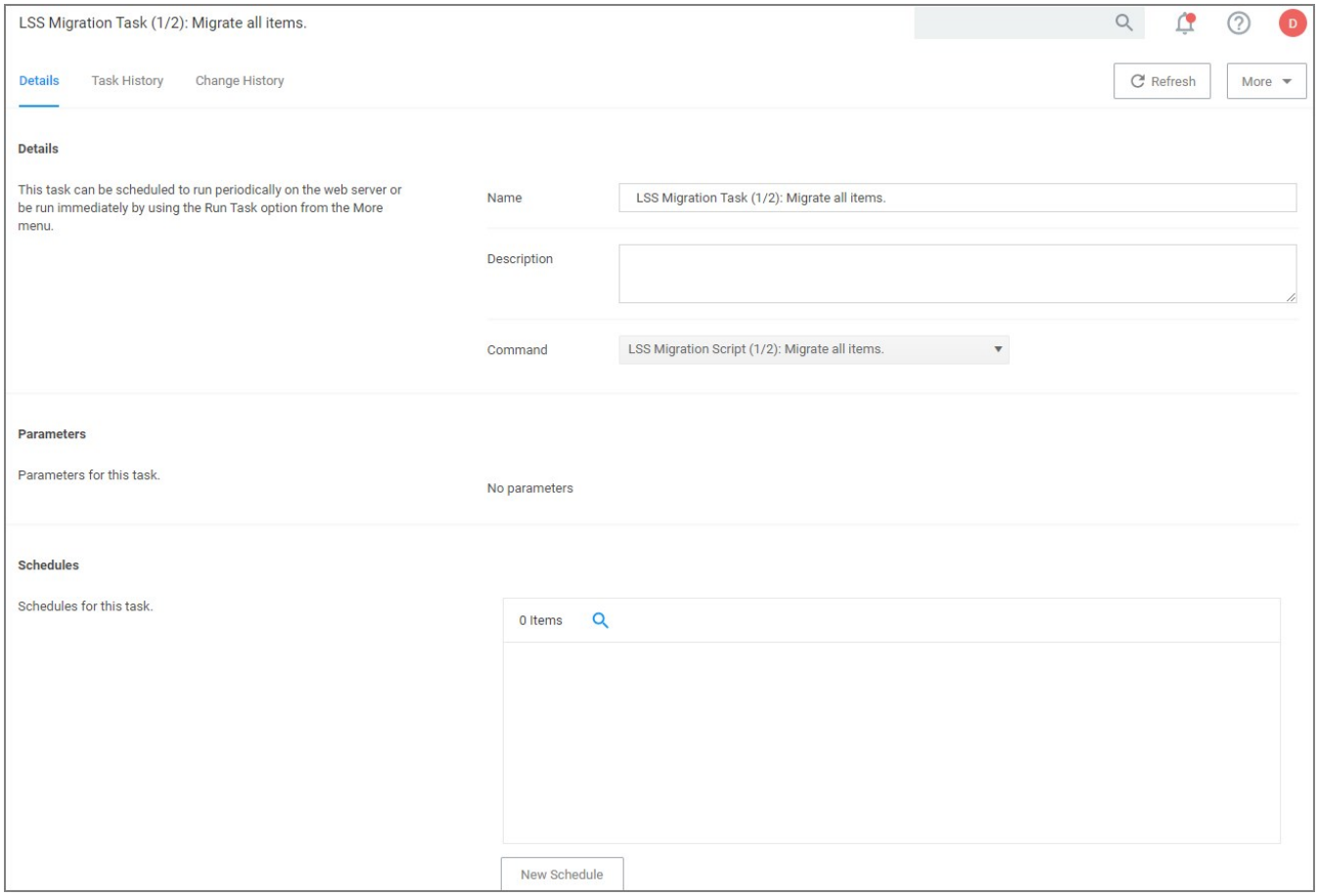
For example: The data shown in the image above indicates that two items will be created in Privilege Manager 's Local Security. One item is a *User* the other a *Password Randomization* entry. For the user the item is created with **Resource Name** of *Administrator* and the **Resource RID** will be *500*. It further shows that the action will be done **For Computer Group** and **From ResourceID** as indicated.

During the report creating, Privilege Manager will find and resolve conflicts that might be caused by many policies targeting the same computer group with the same user/group, or multiple password rotation policies for the same user. The LSS migration script resolves these

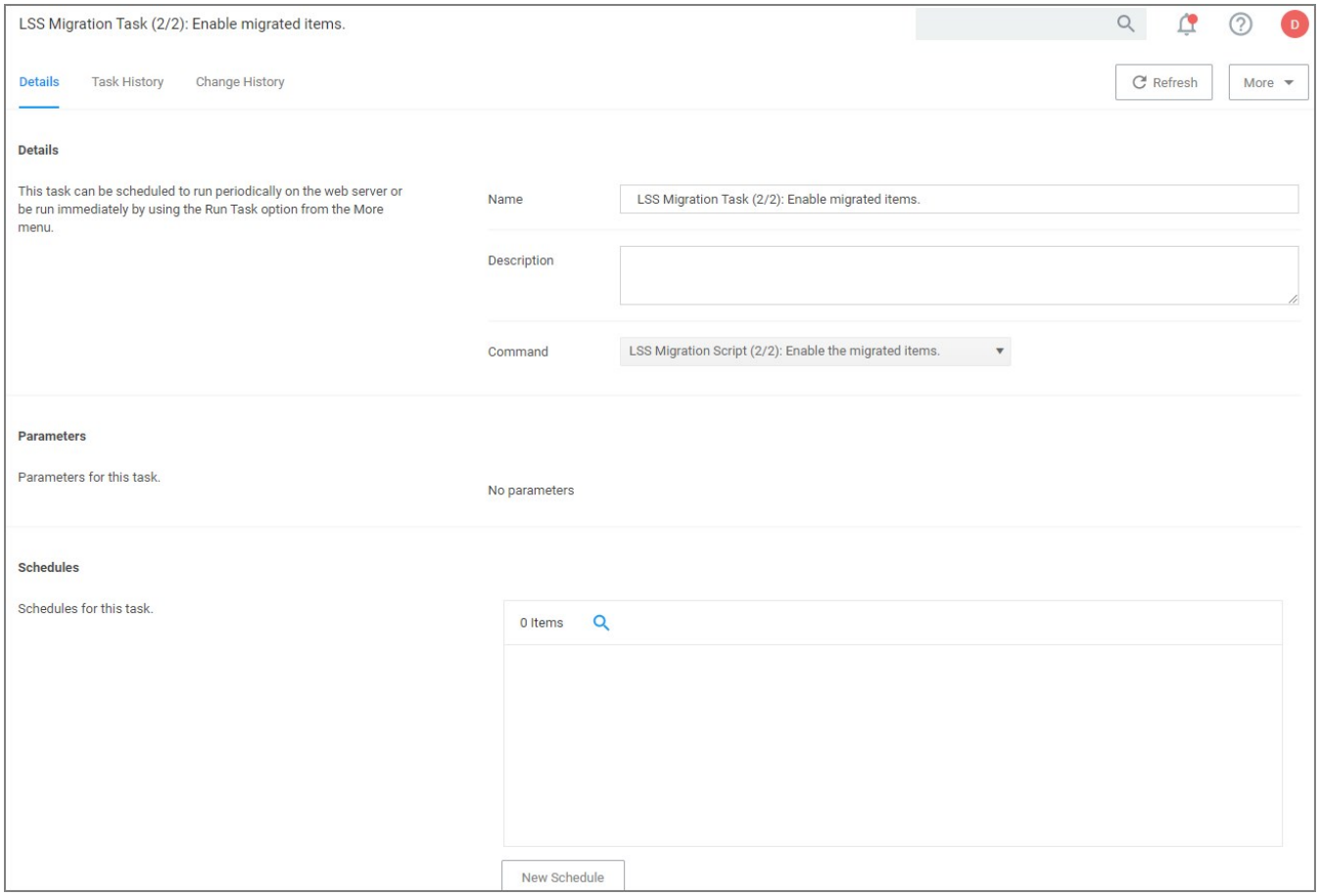
conflicts in a way that respects the logic of the initial policy set-up, and comply with the new model for the data.

5. If there aren't any conflicts and all items found can be migrated, use the LSS Migration tasks to migrate and then enable to items pertaining to Local Security. This is a two step process, first migrate then enable.

    1. Search for LSS Migration Task (1/2): Migrate all items.

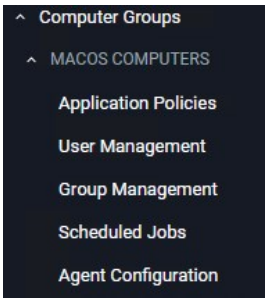


    2. After all items are migrated, run the LSS Migration Task (2/2): Enable migrated items.



Either of these tasks can be edited, to have parameters or schedules defined.

The default macOS Computer Group.



This is the navigation entry point into the macOS Computer Group. The sub nodes are in feature parity with other OS computer groups. All policies or resources underneath **MACOS COMPUTERS** pertain to that specific default computer group.

Refer to the Policy Wizard section for details on decision points for:

- Creating a Monitoring Policy

The following macOS controlling policy decision diagrams are available:

- Creating a Controlling Elevation Policy for macOS
- Creating a Controlling Allow Policy for macOS
- Creating a Controlling Block Policy for macOS

For macOS Agent Configuration information refer to Agent Configuration.

macOS Specific Policies

Once your macOS agent is registered, creating policies for your macOS machines follows a very similar process to creating policies for Windows machines in Privilege Manager . The main approach should be via the use of the Policy Wizard aided by the following:

1. Collect File Data — This enables Privilege Manager to recognize specific files and file types in your environment. The file data that you want to target with policies are called Events. All imported files can be viewed via **File Inventory**.
2. Create Filters — This step sorts important file data (Events) according to different criteria.
3. Create Policies — This step defines what
    1. Actions to perform on applications and
    2. Targets (Locations) for those actions.
4. Assign Filters to Policies — This step directs a Policy's actions to the appropriate Events happening on your network. This step also allows a Policy to be set to active.
5. Order your Policies based on priority level—Once your policies are created, the order they execute across your network matters. See the Policy Priority topic for more details.

In macOS, roles are bifurcated into two groups: Admins, and Users rather than by Group Policy Objects (GPO) found in Windows environments.

Actions Supported by macOS Agents (Kernel vs System Extensions)

The following actions are supported by macOS agents:

Allow Copy to /Applications/ Directory	Y	Y	10.5 - 11.1.x	Used to elevate installation of an Application Bundle to the /Applications folder via Drag-n-Drop to the Privilege Manager.app window. This action is deprecated and does not work with v11.2+ macOS agents.
Allow Package Installation	Y	Y	10.5+	Used to elevate installation of installer packages.
Application Approval Request (with Offline Fallback) Message Action	Y	Y	10.6+	
Application Approval Request (with ServiceNow Request Item Number) Message Action	Y	Y	10.5+	
Application Approval Request Message Action	Y	Y	10.5+	
Application Denied Message Action	Y	Y	10.5+	
Application Justification Message Action	Y	Y	10.5+	
Application Warning Message Action	Y	Y	10.5+	
Authorization DB Rights	N	Y	11.0+	Grants the specified right allowing an application to perform an elevated task.
Command Line Approval Message	N	Y	11.1+	
Command Line Justification Question	N	Y	11.1+	

Deny Execute	Y	Y	10.5+	
Deny Execute Message	Y	Y	10.5+	
Display User Message	Y	Y	10.5+	
File Quarantine	Y	Y	10.5+	
Just in Time Group Membership	N	Y	10.8.2+	
Run as Custom User	Y	N	10.5-10.8.2	
Run as Print Admin User	Y	N	10.5-10.8.2	
Run as Root	Y	N	10.5-10.8.2	
Run As User	N	Y	11.1+	

The following actions are specific to the use of sudo through our sudo plugin:

- Command Line Approval Message
- Command Line Justification Message
- Run As User

Agent Behavior with Actions

When a policy is used to manage .pkg installations on macOS endpoints with the Privilege Manager agent installed, you can expect the following behaviors:

Installation of a .pkg happens without prompting for credentials when

- the only action configured in the policy is **Allow Package Installation** or
- if any of the following are configured along with **Allow Package Installation**:
  - Application Approval Request Message Action
  - Application Approval Request (with Offline Fallback) Message Action
  - Approval Request (with ServiceNow Request Item Number) Form Action
  - Application Justification Message Action
  - Application Warning Message Action

A .pkg will NOT be installed if the only action is either of the following:

- Deny Execute
- Deny Execute + Deny Execute Message
- Application Denied Message Action

Any .pkg not managed by a Privilege Manager policy will be installed via the normal macOS workflow requiring admin credentials when prompted.

macOS Approval Process

To accommodate the new macOS Endpoint Security system extensions, the approval workflow of the macOS agent now terminates any justification or approval process and presents the user with an applicable message action.

The following workflows are impacted by this change:

- Application Approval Request Message Action
- Deny Execute
- Deny Execute and Deny Execute Message Action
- Deny Execute and Application Denied Message Action
- Application Justification Message Action
- Application Warning Message Action

Refer to the Actions topic.

Application Approval Request Message Action

Workflow **prior to** Privilege Manager **v10.8**:

Action waits for the user to either click **Cancel** or enter an **Approval Request Message** and click **Request Approval**.

Workflow **starting with** Privilege Manager **v10.8**:

Privilege Manager immediately denies the execution with macOS displaying a dialog indicating the application can't be opened. If the user has granted Privilege Manager.app the necessary *SendEvents* right, Privilege Manager closes the dialog.

- If the user clicks **Cancel**, the dialog is dismissed and no further action taken.
- If the user clicks **Request Approval**, the Approval is submitted and the user is presented with a modal dialog informing them that the approval request has been submitted and that they will be notified via Notification Center.
    - If successfully submitted, the request is queued and monitored by Privilege Manager.app.
    - If denied, a notification is pushed to the Notification Center indicating the app was denied. Clicking the notification or clicking the button to dismiss the notification causes the notification to be removed from the Notification Center.
    - If the request is approved, a notification is pushed to the Notification Center indicating the request was approved. Behavior for:
        - **application bundles**: Clicking the notification causes the app to be launched and the notification to be removed from the Notification Center.
        - **command-line utilities**: Clicking the notification causes the notification to be removed from the Notification Center. The user will have to manually run the command-line utility from a terminal window. If the user chooses to dismiss the notification, the notification is removed from the Notification Center and no further action is taken.
    - If the approval request fails to be submitted, **Request Approval** is disabled on the Request Approval dialog and an error message displayed.

Deny Execute

This action immediately denies the execution of the application and no interaction with Privilege Manager.app is required. The workflow is:

- MacOS will display a dialog indicating the application can't be opened. If the user has granted PrivilegeManager.app the necessary *SendEvents* right, Privilege Manager closes the dialog.
- No further user interaction is provided or necessary.

Deny Execute and Deny Execute Message Action

This action immediately denies the execution of the application. The workflow is:

- MacOS will display a dialog indicating the application can't be opened. If the user has granted Privilege Manager.app the necessary *SendEvents* right, Privilege Manager closes the dialog.
- A user notification is posted to the Notification Center that indicates the process was denied.
    - Clicking the notification or clicking the button to dismiss the notification causes the notification to be removed from the Notification Center.
- No further user interaction is necessary.

Deny Execute and Application Denied Message Action

- Privilege Manager immediately denies the execution with macOS displaying a dialog indicating the application can't be opened. If the user has granted Privilege Manager.app the necessary *SendEvents* right, Privilege Manager closes the dialog.
- The custom **Application Denied Message** is shown. **Cancel** and **Publisher Info** are the only buttons enabled.
    - Clicking **Cancel** closes the window.
    - Clicking **Publisher Info** displays certificate information for the application that was denied.
- No further user interaction is necessary.

Application Justification Message Action

This action waits for the user to either **Cancel** or enter a **Justification Message** and click **Continue**. The workflow is:

- Privilege Manager immediately denies the execution with macOS displaying a dialog indicating the application can't be opened. If the user has granted Privilege Manager.app the necessary *SendEvents* right, Privilege Manager closes the dialog.
    - If the user clicks **Cancel**, the dialog is dismissed and no further action taken.
    - If the user clicks **Continue**, the **Justification** will be submitted and the app bundle will be launched.

Application Warning Message Action

This action waits for the user to either click **Cancel** or **Continue**. The workflow is:

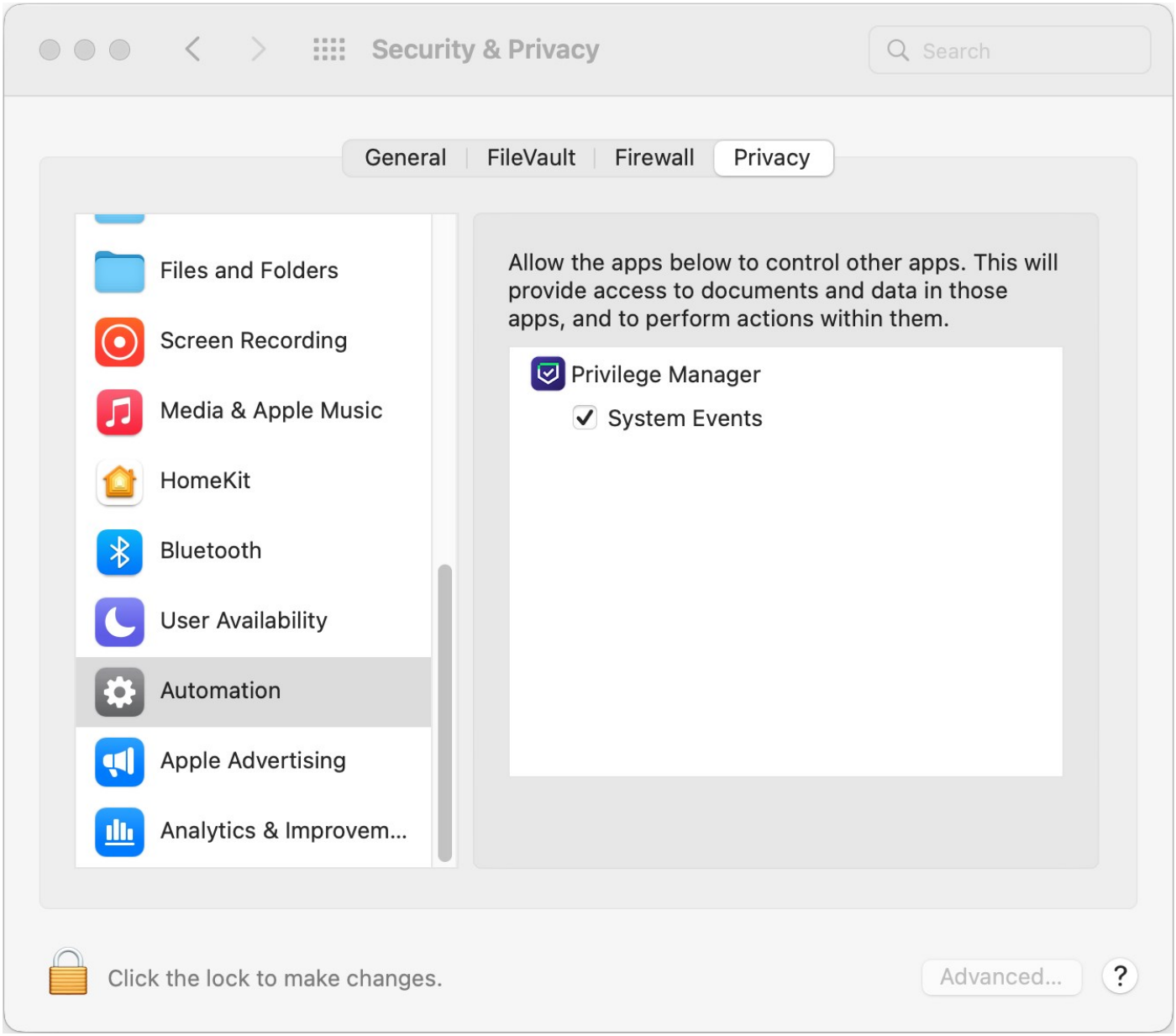
- Privilege Manager immediately denies the execution with macOS displaying a dialog indicating the application can't be opened. If the user has granted Privilege Manager.app the necessary *SendEvents* right, Privilege Manager closes the dialog.
    - If the user clicks **Cancel**, the dialog is dismissed and no further action taken.
    - If the user clicks **Continue**, the app bundle will be launched.

Privacy Preference Policy Control Requests

If you have a policy in Privilege Manager that includes **Deny Execute** or any of the Advanced Message Actions, for example *Application Approval Request*, *Application Denied*, or *Application Justification*, the user at the endpoint might be presented with a macOS dialog saying that the application could not be launched.

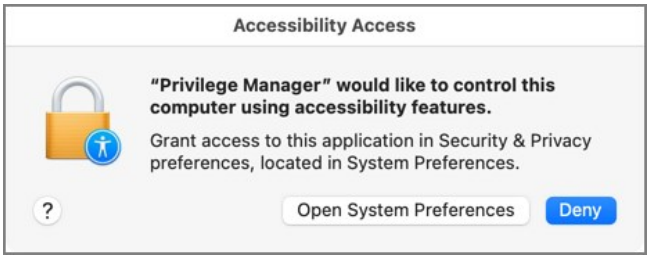
When a policy with one of the above Advanced Message Actions is triggered, Privilege Manager.app attempts to use AppleEvents to dismiss this dialog on behalf of the user to provide the best user experience possible. When Privilege Manager.app attempts to use AppleEvents for the first time, macOS will prompt the user with the following:

- If the user clicks **OK** on the AppleEvents dialog, System Events will be checked for Privilege Manager.app and it is added to Automation in the Security & Privacy preference pane on the Privacy tab:



- If the user clicks **Don't Allow** on the AppleEvents dialog, the System Events will be unchecked.

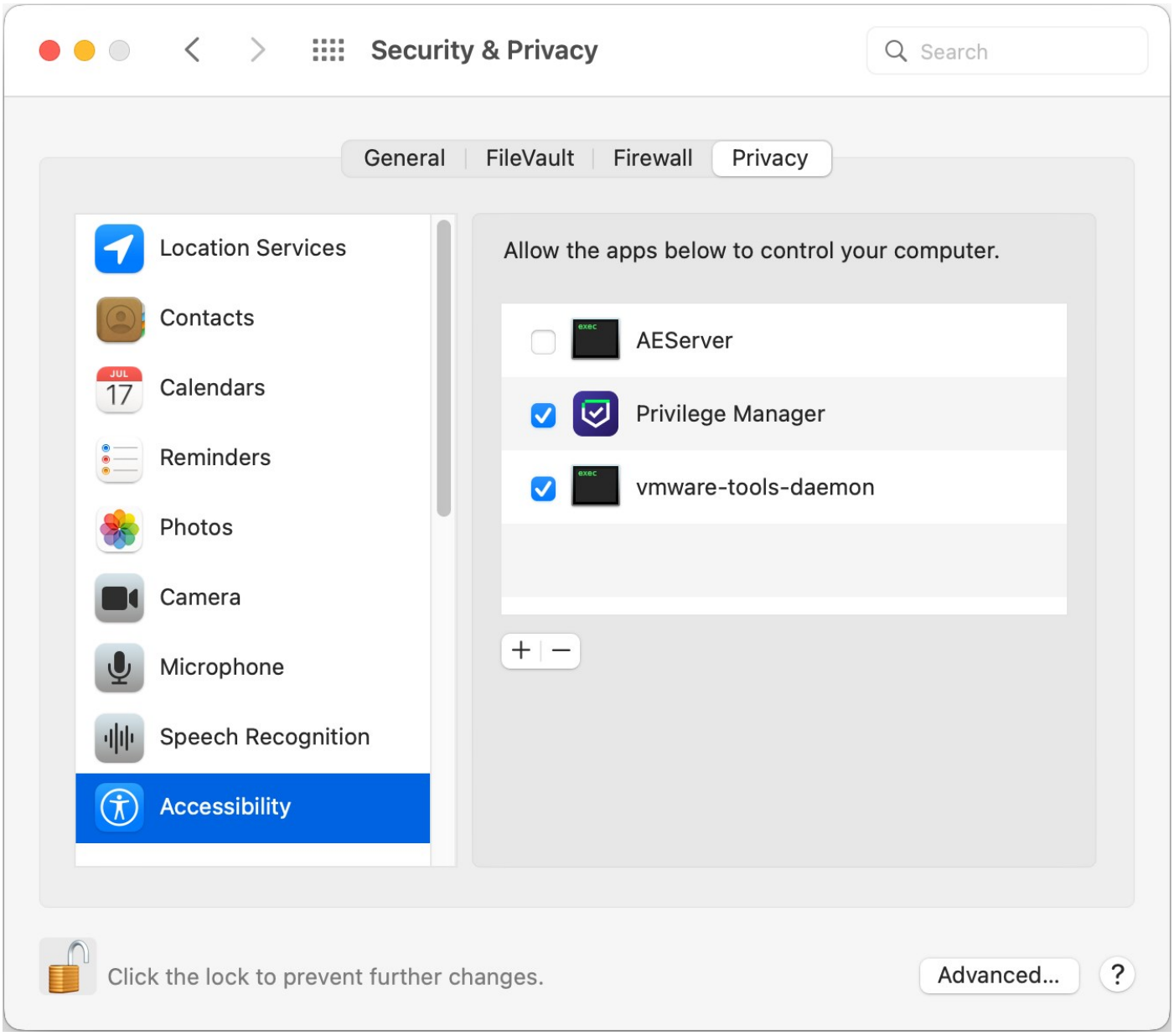
Afterwards, macOS prompts the user with an Accessibility Access dialog:



- If the user clicks **Deny**, Privilege Manager.app will not be granted access to use accessibility features to automatically close the dialog that

states the application couldn't be launched.

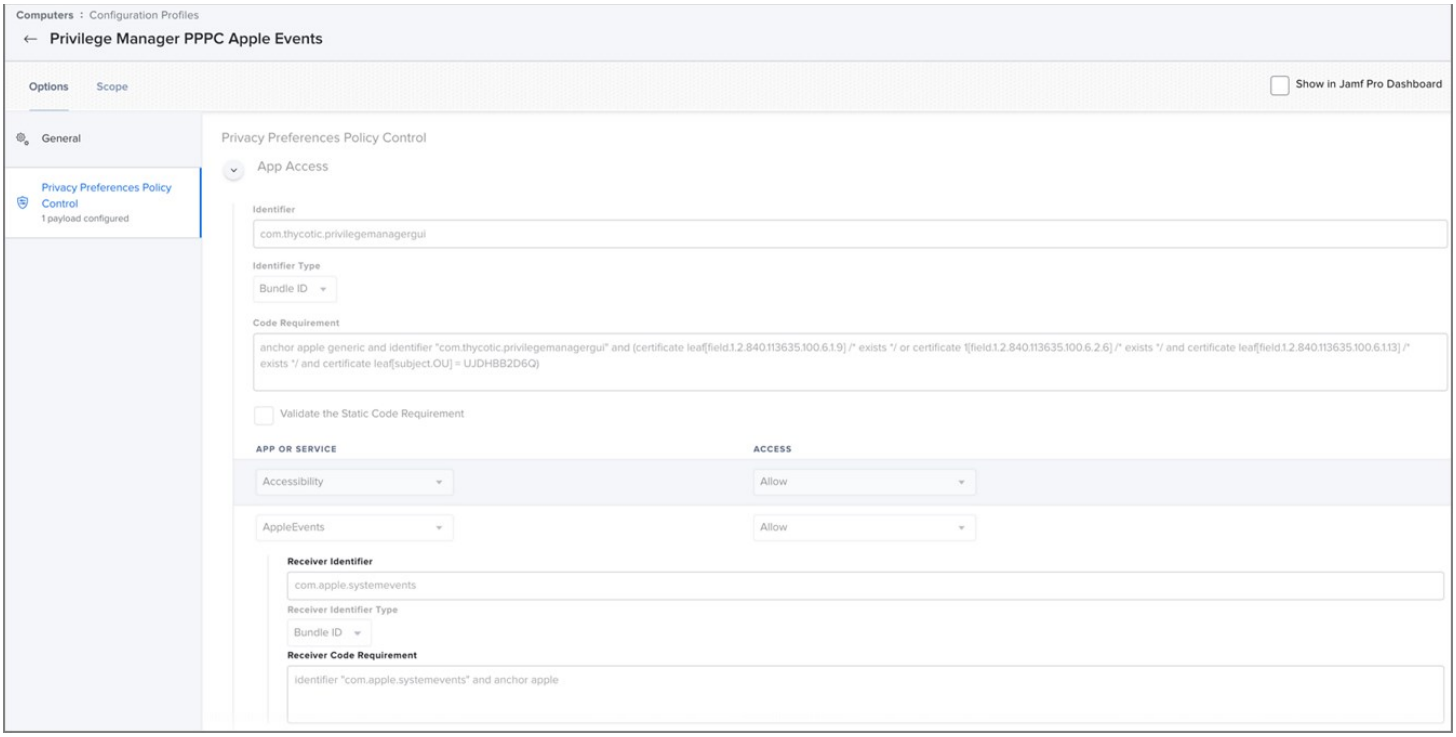
- If the user clicks **Open System Preferences**, the Security & Privacy preference pane opens to the Privacy tab:



If you check **Privilege Manager**, it will be granted access to use accessibility features to control other applications.

In order to automate the approval of these manual prompt(s), use this XML or refer to the Jamf Pro screenshot as an example, depending on your existing MDM.

Delinea


Computers : Configuration Profiles
Privilege Manager PPPC Apple Events
Options
Scope
Show in Jamf Pro Dashboard
General
Privacy Preferences Policy Control
1 payload configured
Privacy Preferences Policy Control
App Access
Identifier
com.thycotic.privilegemanagergui
Identifier Type
Bundle ID
Code Requirement
anchor apple generic and identifier "com.thycotic.privilegemanagergui" and (certificate leaf[field.1.2.840.113635.100.6.1.9] /* exists */ or certificate 1[field.1.2.840.113635.100.6.2.6] /* exists */ and certificate leaf[field.1.2.840.113635.100.6.1.13] /* exists */ and certificate leaf[subject.OU] = UJDHBB2D6Q)
Validate the Static Code Requirement
APP OR SERVICE
ACCESS
Accessibility
Allow
AppleEvents
Allow
Receiver Identifier
com.apple.systemevents
Receiver Identifier Type
Bundle ID
Receiver Code Requirement
identifier "com.apple.systemevents" and anchor apple

macOS Application Approval Process via Sudo Plugin

The macOS sudo plugin provides the means to run an application elevated via Terminal.app on macOS systems running Catalina or newer macOS versions and the SYSEX Privilege Manager agent on the endpoint. The sudo plugin also provides user feedback via Terminal when the request is approved or denied.

When an application policy requires approval, the user will initially be presented with the defined approval action text along with the following message in Terminal `Enter your response, or type Ctrl+D to cancel:`, this allows the user to cancel out of the approval process and the command will not be run. For the approval workflow, the user has to enter a response text for the approval. Once the approval has been submitted the user is presented with a message in Terminal `Waiting for approval... (Ctrl+C to cancel)`. The application execution is blocked until the approval comes in. If the request is approved, the application runs. If it is denied, the process exits. If the user cancels, the command will not run.

> **Note**: Not supported on endpoints running the KEXT agent.

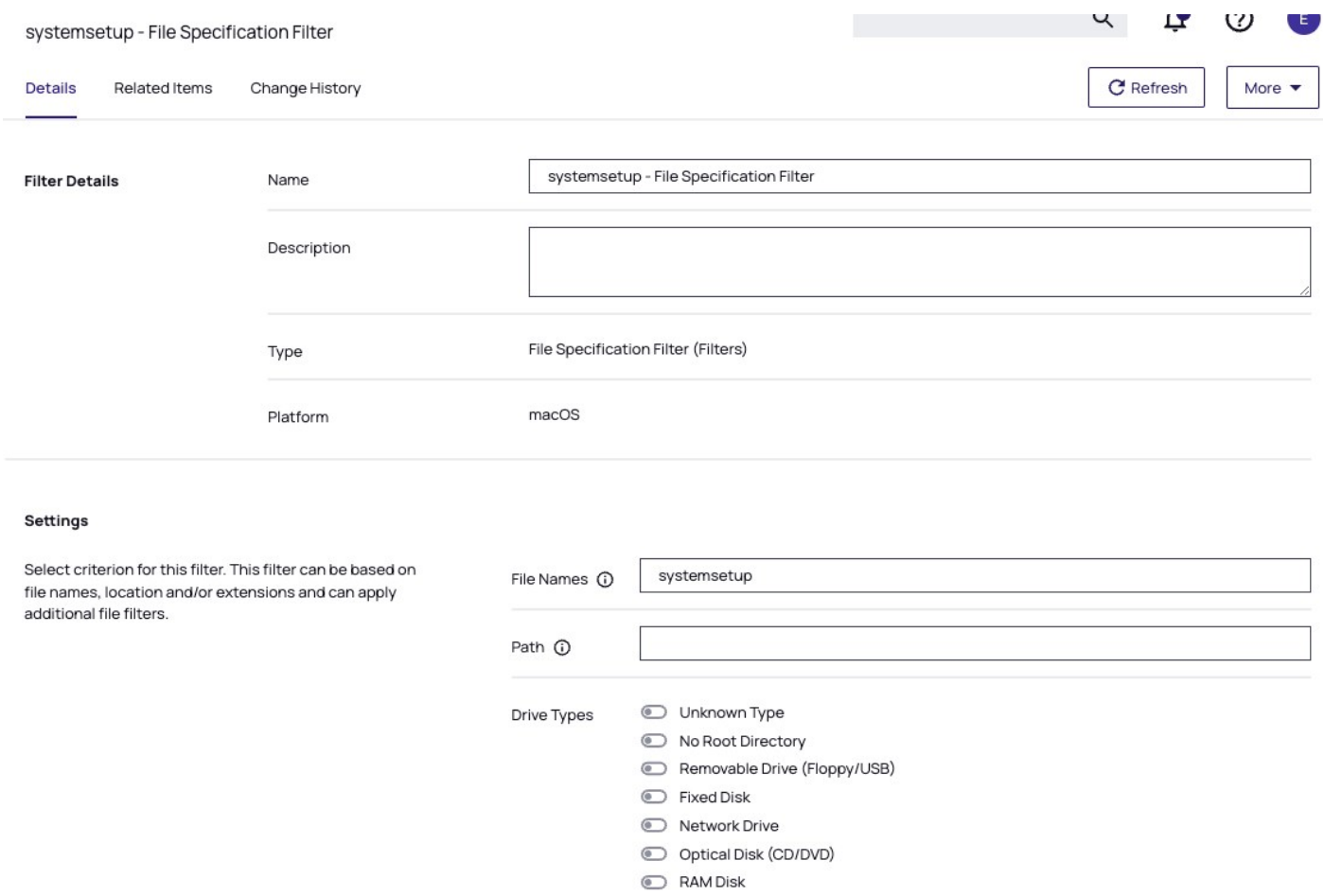
Example: Elevate systemsetup Command

The following policy is configured to elevate the `systemsetup` command after an approval when run via `sudo`.

Create a systemsetup File Specification Filter

This filter will specify the applications targeted.

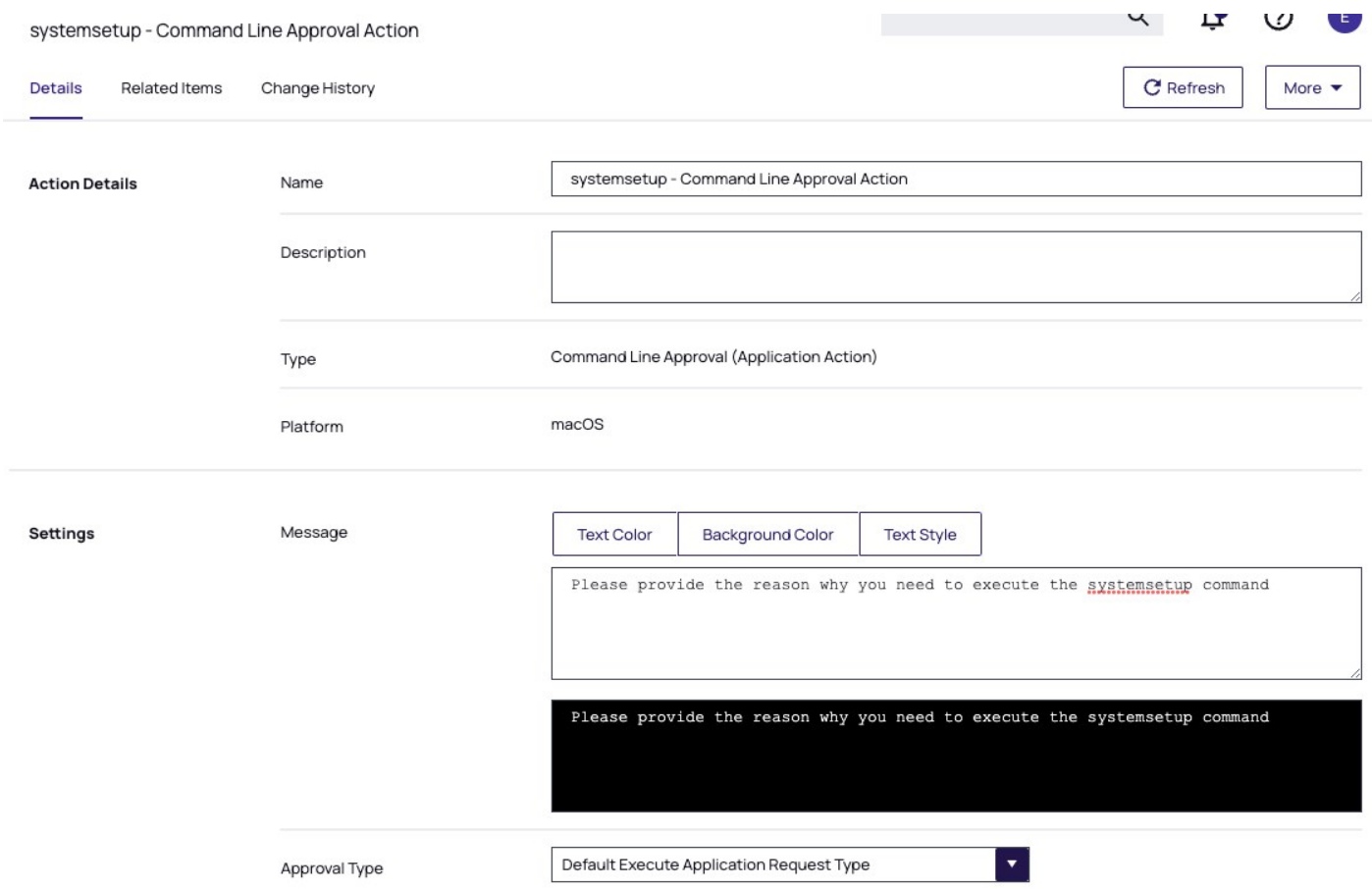
1. Navigate to **Admin | Filters**.
2. Click **Create Filter**.
3. From the Platform drop-down, select **MacOS Computers Filters**.
4. From the Type drop-down under **File Filters (MacOS)**, select **File Specification Filter**.
5. Name the filter and provide a description to reflect the purpose, for example *systemsetup - File Specification Filter*.
6. Click **Create**.
7. Under **Settings | File Names**, enter **systemsetup**.
8. Click **Save Changes**.



Creating the Command Line Approval Action

This action will be added under the Actions section of the policy.

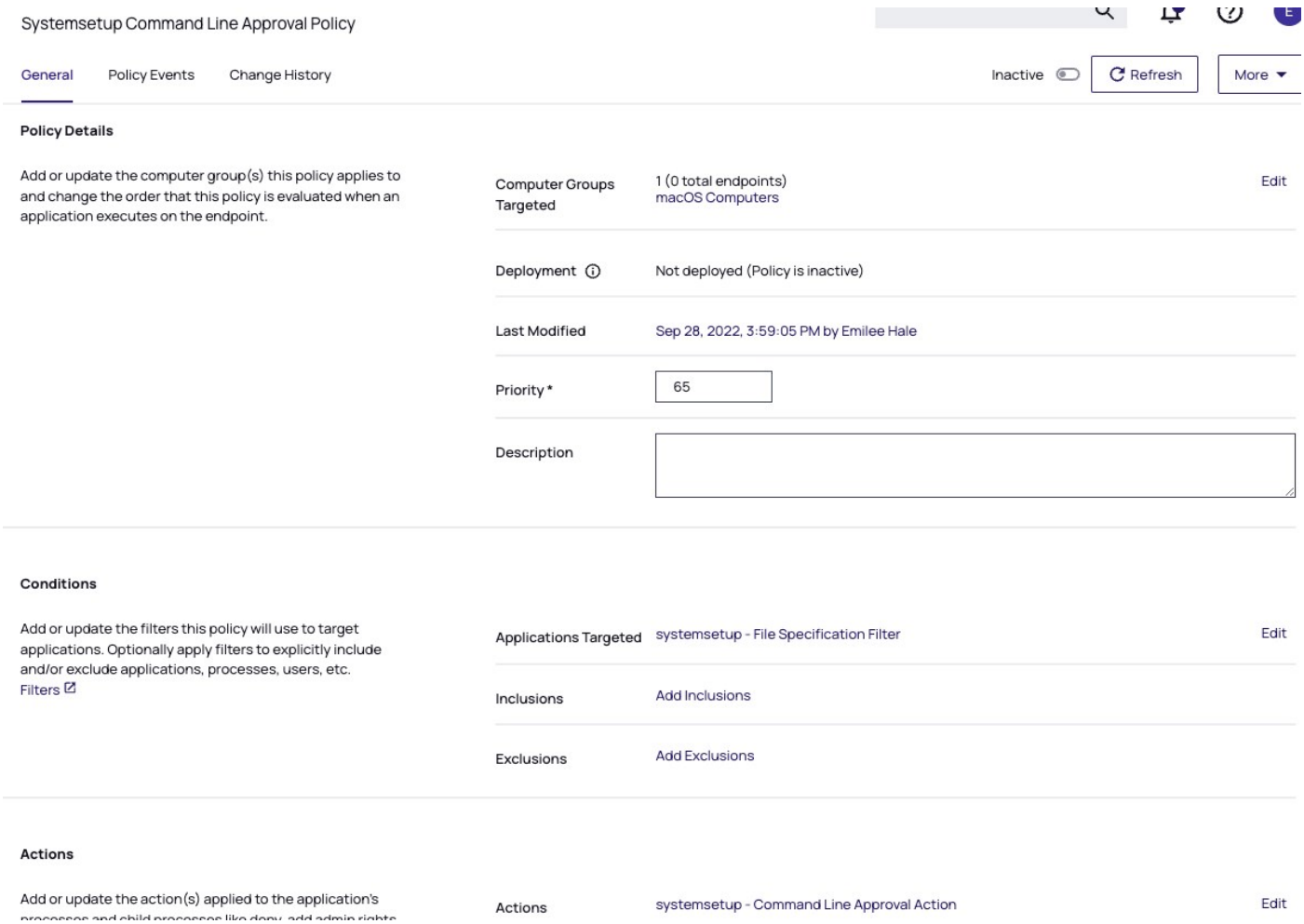
1. Navigate to **Admin I Actions**.
2. Click **Create Action**.
3. From the Platform drop-down, select **MacOS Computers Actions**.
4. From the Type drop-down, select **Command Line Approval Message**.
5. Name the Action and provide a description to reflect the purpose, for example *systemsetup - Command Line Approval Action*.
6. Click **Create**.
7. Under **Settings I Message**, provide a message that will be displayed to the user before they are required to enter their reason, for example *Please provide the reason why you need to execute the systemsetup command*.
    1. Under Settings you can also set the Text Color, Background Color, and Text Style that is presented to the user when entering the approval process.
8. From the Approval Type drop-down, select **Default Execute Application Request Type**.
9. Click **Save Changes**.



Creating the Systemsetup Command Line Approval Policy

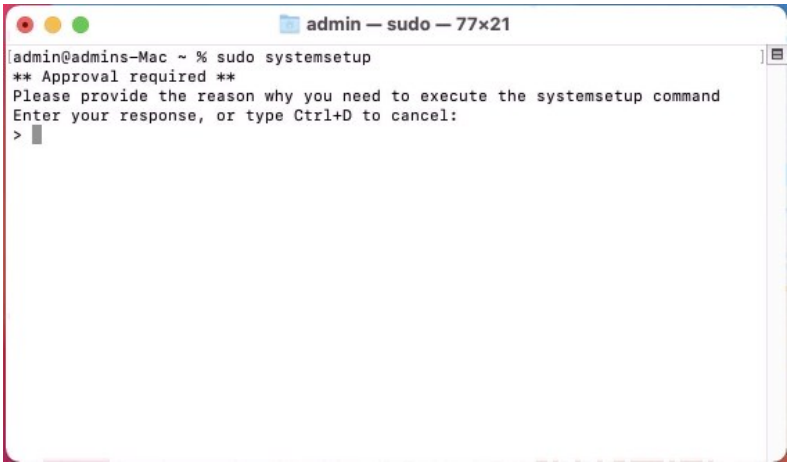
1. Navigate to your macOS computer group and select **Application Policies**.
2. Click **Create Policy**.
3. Select the option **Skip the wizard, take me to a blank policy**.
4. Name the policy, for example *Systemsetup Command Line Approval Policy*.
5. Click **Create Policy**.
6. Under **Conditions | Applications Targeted**, click **Add Application Target**.
7. Search for and add the *systemsetup - File Specification Filter* previously created.
8. Click **Update**.
9. Under **Actions**, click **Add Actions**.
10. Search for and add the *systemsetup - Command Line Approval Action* previously created.
11. Click **Update**.
12. Click **Save Changes**.

13. Enable the Policy.



Endpoint Interaction

1. At the macOS endpoint, open Terminal.app and run systemsetup via sudo. The **Approval required** message opens:



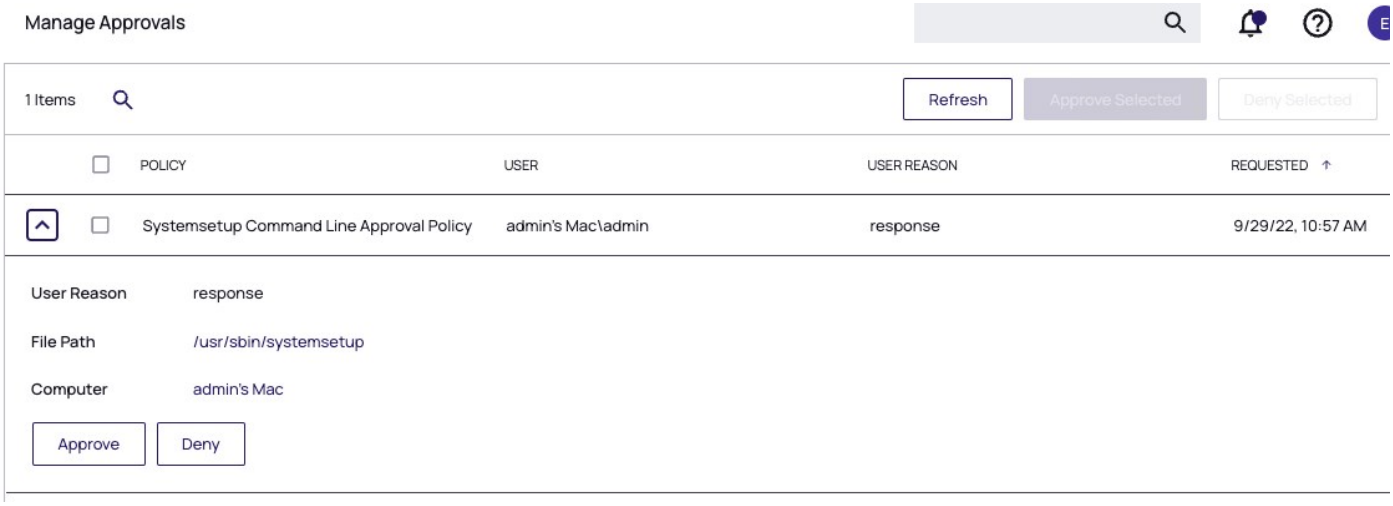
2. Enter the approval reason and hit the Enter key.

   In the Terminal, **Waiting for approval... (Ctrl+C to cancel)** is displayed and the approval request is submitted. You will be notified of any status change via the Terminal.app.

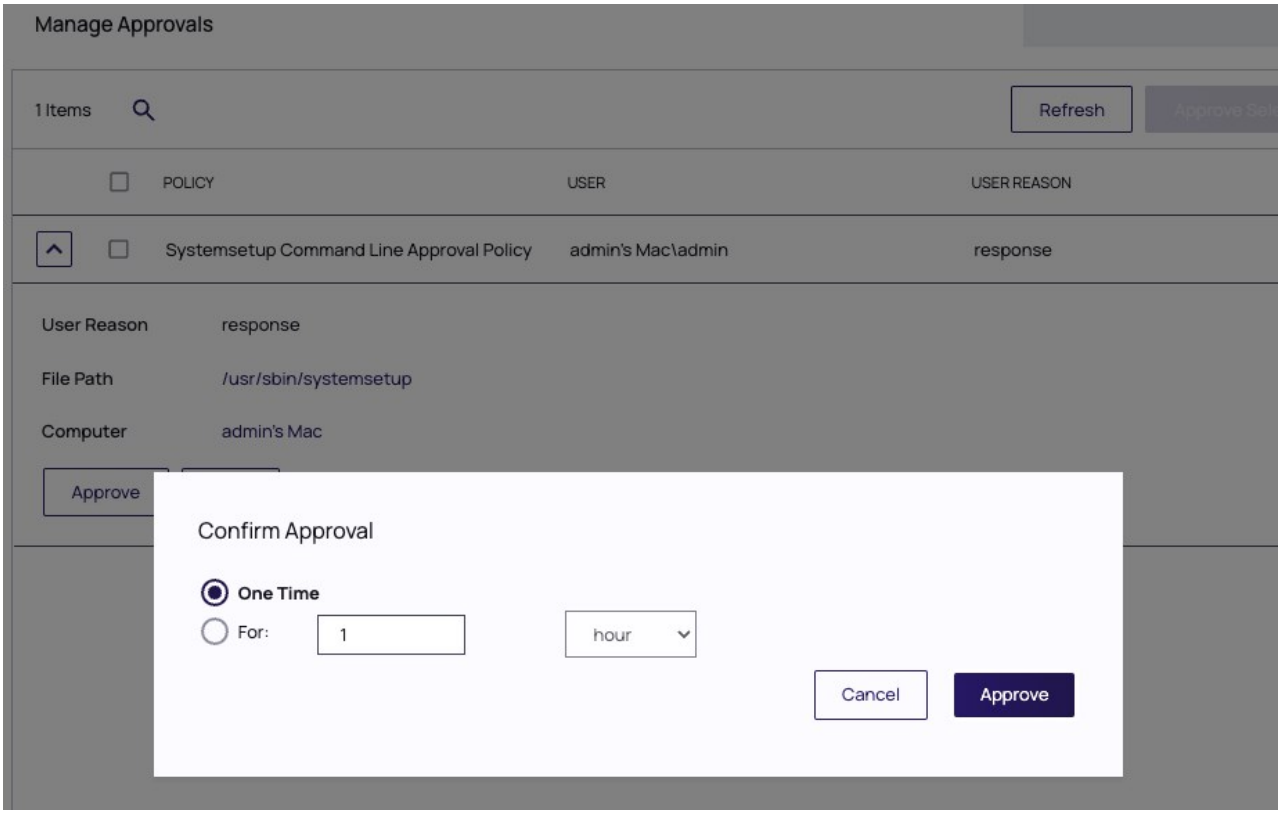
Privilege Manager Console Interaction

1. As an approval supervisor, navigate to **Admin I Manage Approvals**.

2. If no approval requests are listed, click **Refresh**.
3. **Expand** the approval you want to either approve or deny.



4. Click **Approve**.

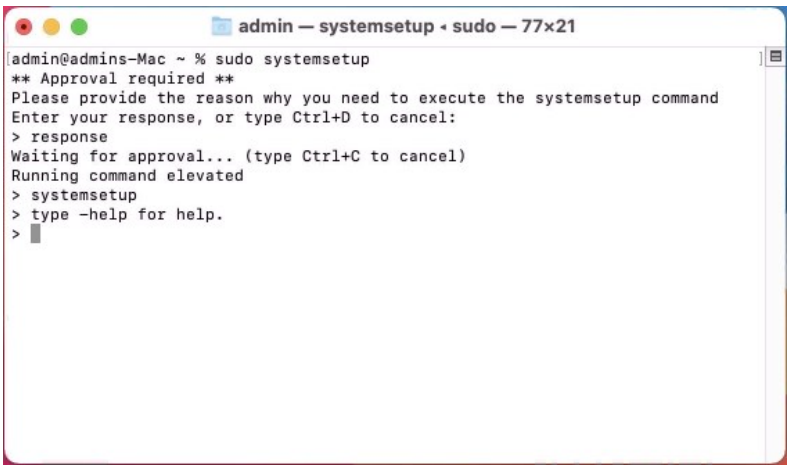


5. On the **Confirm Approval** modal, choose to either issue a **One Time** or a **timed** approval. The default opens to **One Time**.
6. Click **Approve**

Endpoint Interaction

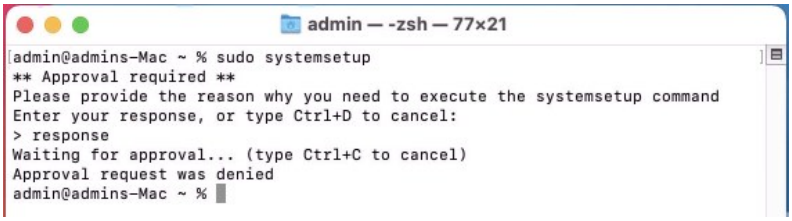
Following Approval

Following an approval, Terminal writes **Running command elevated** and shows other process messages.



Following Denial

Following a denial, Terminal writes **Approval request was denied** and shows other process messages.



Block Agent Removal - launchctl

These are the filters and the example policy that need to be created that aid with the macOS agent hardening process.

Creating a File Specification Filter

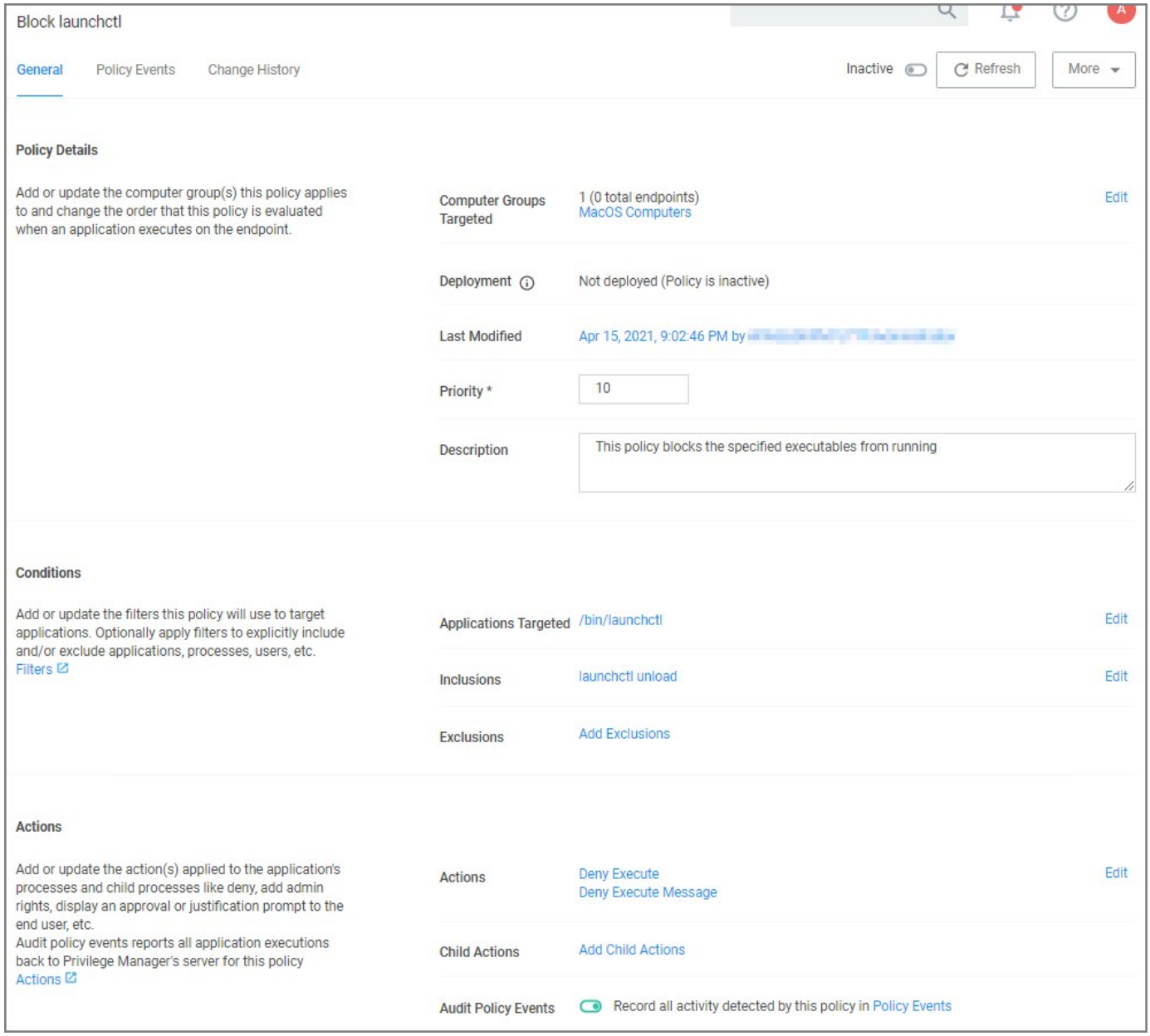
1. Navigate to **Admin I Filters** and click **Create Filter**.
2. From the platform drop-down select **macOS**.
3. From the type drop-down select **File Specification Filter**.
4. Add a Name and Description, for example */bin/launchctl* and click **Create**.
5. On the filter page, under **Settings**:
    - **File Names**, type launchctl.
    - **Path**, type /bin.
6. Click **Save Changes**.

Creating a Commandline Filter

1. Navigate to **Admin I Filters** and click **Create Filter**.
2. From the platform drop-down select **macOS**.
3. From the type drop-down select **Commandline Filter**.
4. Add a Name and Description, for example *launchctl unload* and click **Create**.
5. On the filter page, under **Settings**:
    - **Match Type**, type **Regular Expression**.
    - **Command Line**, type com\.delinea.
6. Click **Save Changes**.

Creating the Blocking Policy

1. Under your macOS Computer Group, select **Application Policies**.
2. Using the Policy Wizard, create a controlling policy that blocks application execution on endpoints.
3. Select how you want the processes blocked, either **Block Silently** or **Notify and Block**, for this example we use **Block Silently**. Click **Next Step**.
4. Select what types you want the policy to block, for this example it's **Executables**.
5. Choose your target, for this example **Existing Filter**.
6. Search for and **Add** the **/bin/launchctl** filter created in the above steps.
7. Click **Update**.
8. Click **Next Step**.
9. Name your policy and add a description, click **Create Policy**.
10. Under **Inclusions**, click **Edit**.
11. Search for **launchctl unload** and **Add** the filter created in the above steps.
12. Click **Update**.
13. Click **Save Changes**.



14. Set the **Inactive** switch to **Active**.

XML Example Files

- Policy xml sample to use as item upload.
- File Specification Filter bin-launchctl.
- Commandline Filter launchctl-unload.

macOS Homebrew Installer Support

If you are using Homebrew to manage command line utilities and applications, you need to add the user to the admin group with a JIT group action and use a policy with additional advanced settings as described below.

With a policy in place, a standard (non-admin) user is able to run the Homebrew installer by entering the command line found on the Homebrew home page (https://brew.sh) at a Terminal window prompt. After that the installer proceeds and completes successfully, resulting in a Homebrew installation under /usr/local (or /opt/homebrew on Apple Silicon machines) owned by the user (not root).

Refer to this video demonstration.

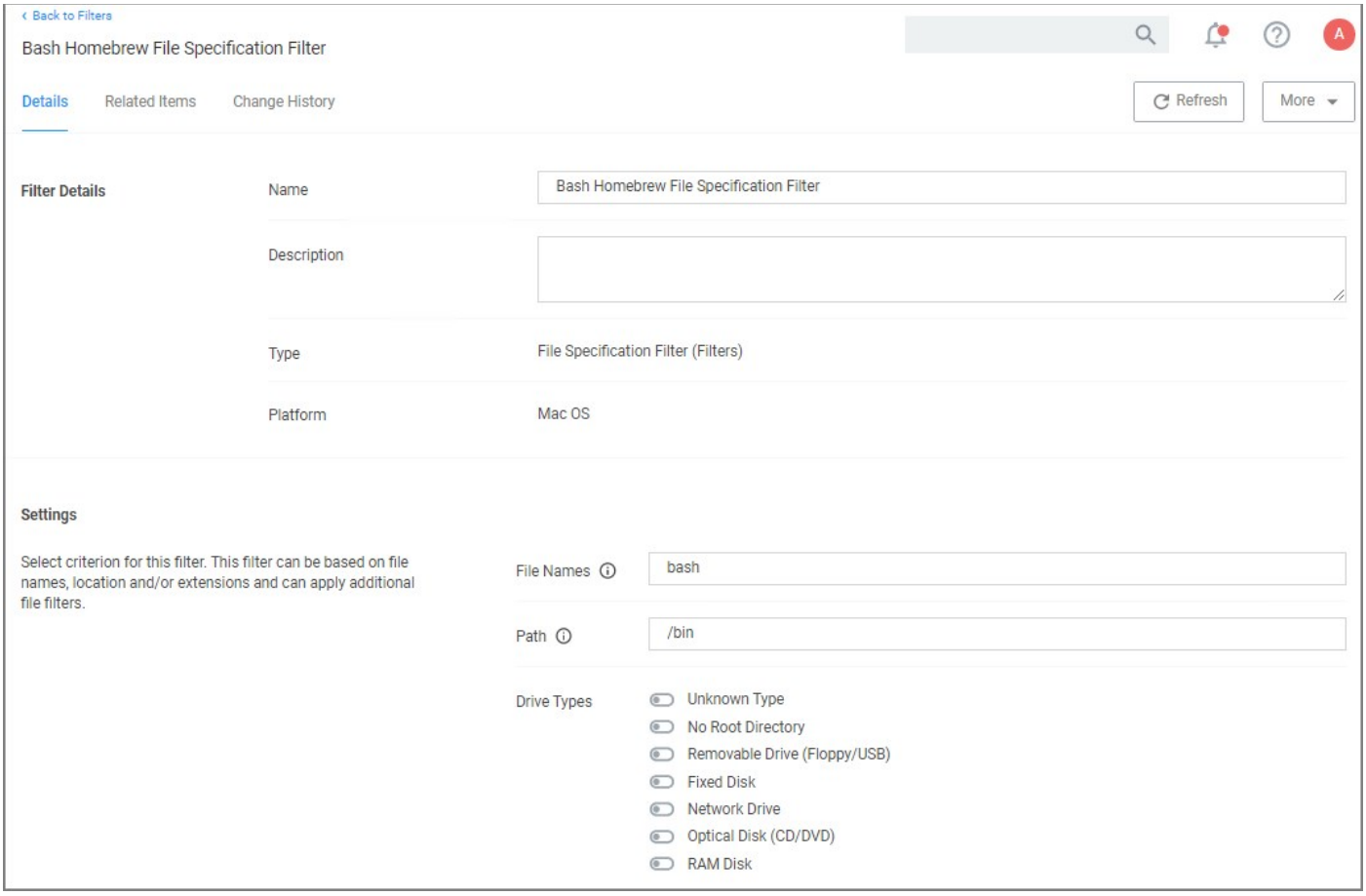
> **Note**: Not supported on endpoints running the KEXT agent.
>
> Copying any example text below and pasting it into filters, actions, or policies being set up on a server, might introduce special characters in pasted text, which can cause policies to fail.

Creating the Filters Needed

Create a Bash File Specification Filter

This filter will specify the applications targeted.

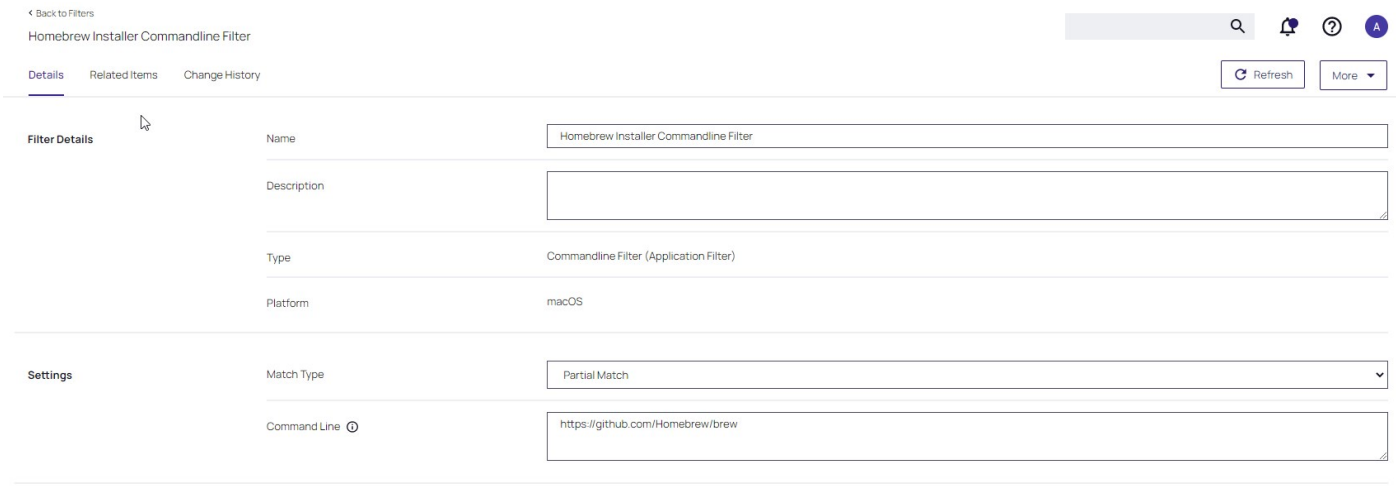
1. Navigate to **Admin | Filters**.
2. Click **Create Filter**.
3. From the **Platform** drop-down, select **Mac OS**.
4. From the **Type** drop-down, select **File Specification Filter**.
5. Name the filter and provide a description to reflect the purpose, for example **Bash Homebrew File Specification Filter**.
6. Click **Create**.
7. Under **Settings | File Names**, enter **bash**.
8. For **Path**, enter **/bin**.
9. Click **Save Changes**.



Create a Homebrew Installer Commandline Filter

This filter will be added as an inclusion filter.

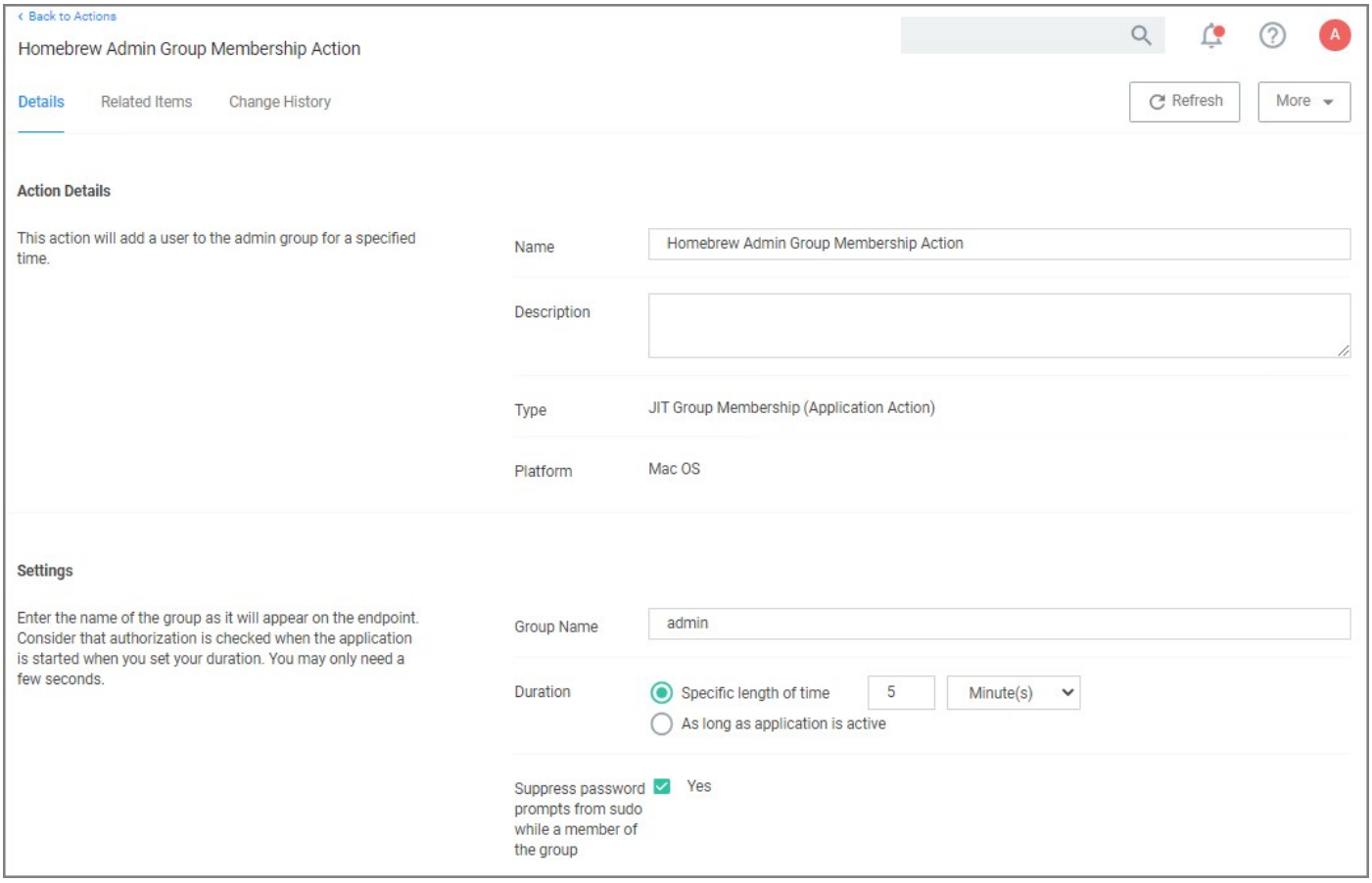
1. Navigate to **Admin I Filters**.
2. Click **Create Filter**.
3. From the **Platform** drop-down, select **Mac OS**.
4. From the **Type** drop-down, select **Commandline Filter**.
5. Name the filter and provide a description to reflect the purpose, for example **Homebrew Installer Commandline Filter**.
6. Click **Create**.
7. Under **Settings I Match Type**, select **Partial Match**.
8. For **Command Line**, enter https://github.com/Homebrew/brew.
9. Click **Save Changes**.



Creating the Homebrew Admin Group Membership Action

This action will be added under Actions section of the policy.

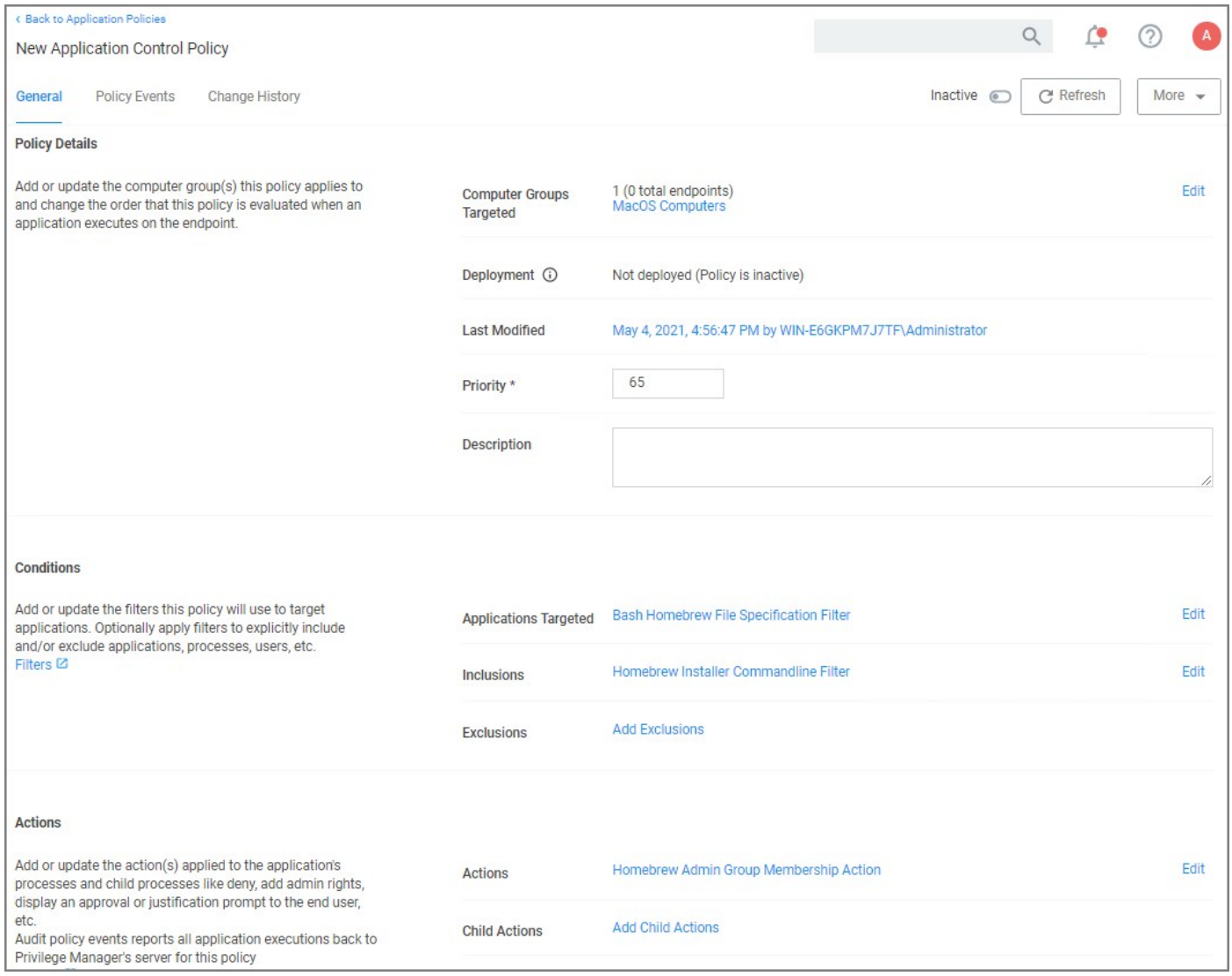
1. Navigate to **Admin I Actions**.
2. Click **Create Action**.
3. From the **Platform** drop-down, select **Mac OS**.
4. From the **Type** drop-down, select **Just-in-Time Group Membership Action**.
5. Name the Action and provide a description to reflect the purpose, for example **Homebrew Admin Group Membership Action**.
6. Click **Create**.
7. Under **Settings I Group Name**, enter **admin**.
8. For **Duration** keep the default 5 min setting.
9. For **Suppress password prompts from sudo while a member of the group** set the checkmark to change to yes.
10. Click **Save Changes**.



Creating the Homebrew Installation Policy

1. Navigate to your macOS computer group and select **Application Policies**.
2. Click **Create Policies**.
3. Select **Skip the wizard, take me to a blank policy** option.
4. Name the policy, for example **Homebrew Installation Policy**.
5. Click **Create Policy**.
6. Under **Conditions | Applications Targeted**, click **Add Application Targeted**.
7. Search for and add the **Bash Homebrew File Specification Filter** previously created.
8. Click **Update**.
9. Click **Inclusions**.
10. Search for and add the **Homebrew Installer Commandline Filter** previously created.
11. Click **Update**.
12. Under **Actions**, click **Add Actions**.
13. Search for and add the **Homebrew Admin Group Membership Action** previously created.

14. Click **Update**.
15. Click **Save Changes**.



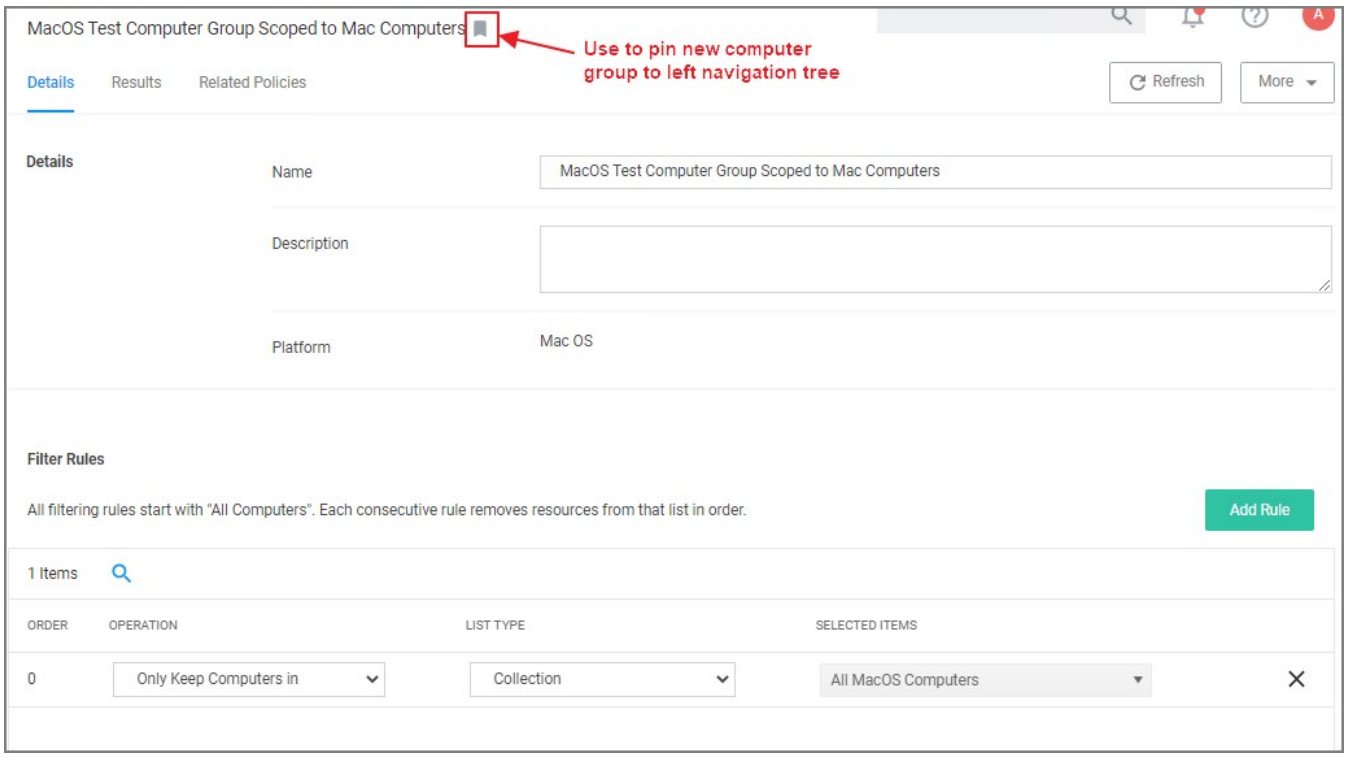
Adding macOS Agents to a Computer Testing Group

The Policy Configuration examples in the following section will use a Learning Mode Policy that enables us to perform actions (i.e. run applications) on a test computer that Privilege Manager will then pick up. This makes targeting specific applications during policy creation easy.

Creating a MacOS Test Computer Group

To create a Monitoring (or Learning Mode Policy) on your Mac, begin by

1. Creating a macOS based test computer group:
    1. Navigate to **Computer Groups**.
    2. Click **Create Computer Group**.
    3. From the **Platform** drop-down select MacOS.
    4. Enter a name and description for your new group.
    5. Click **Create**.

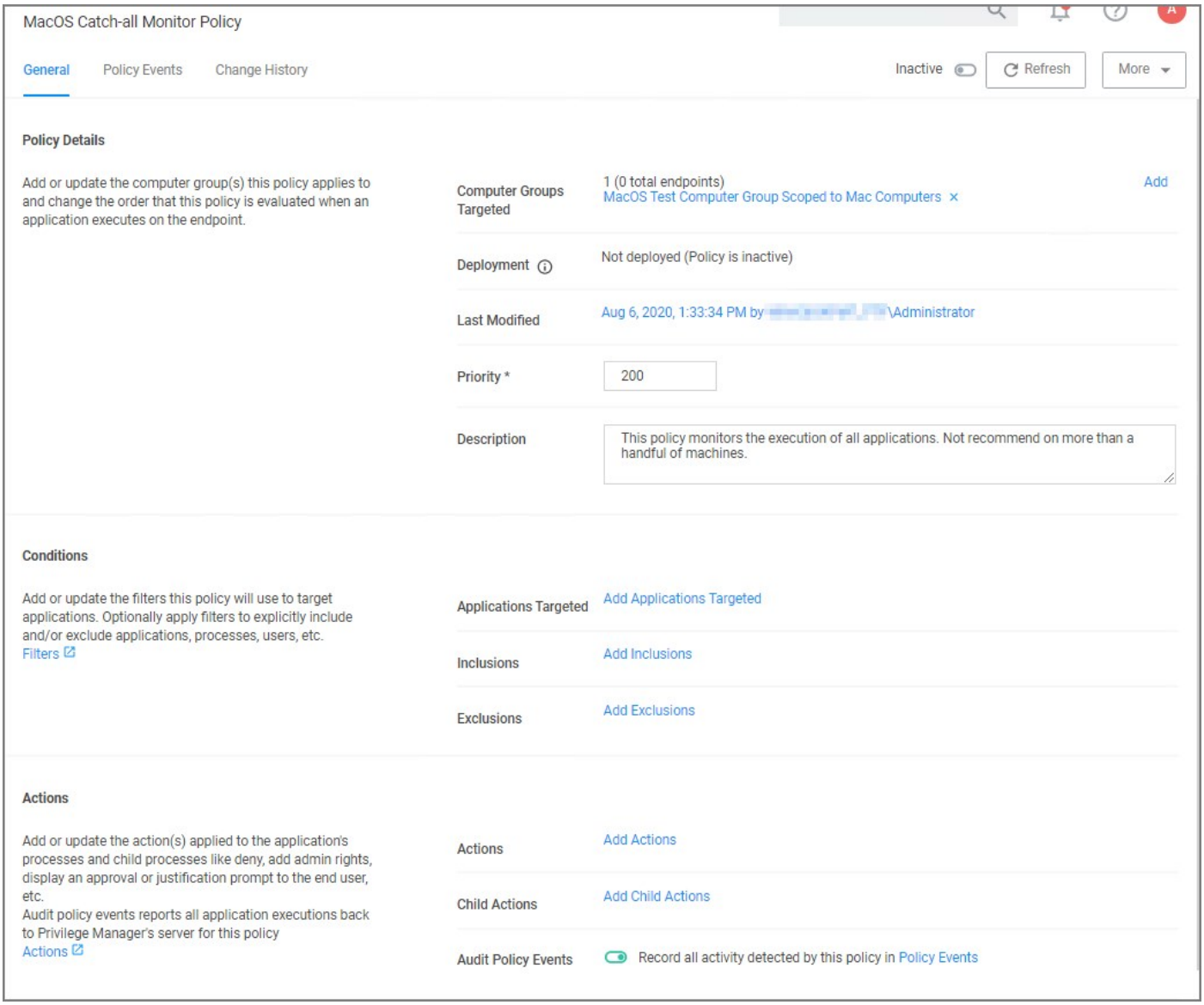


    6. Add the macOS endpoints you want to be part of the computer group.
    7. Click **Save Changes**.
    8. Pin your computer group to the left navigation menu for quick access. Click the bookmark icon next to the computer group name.

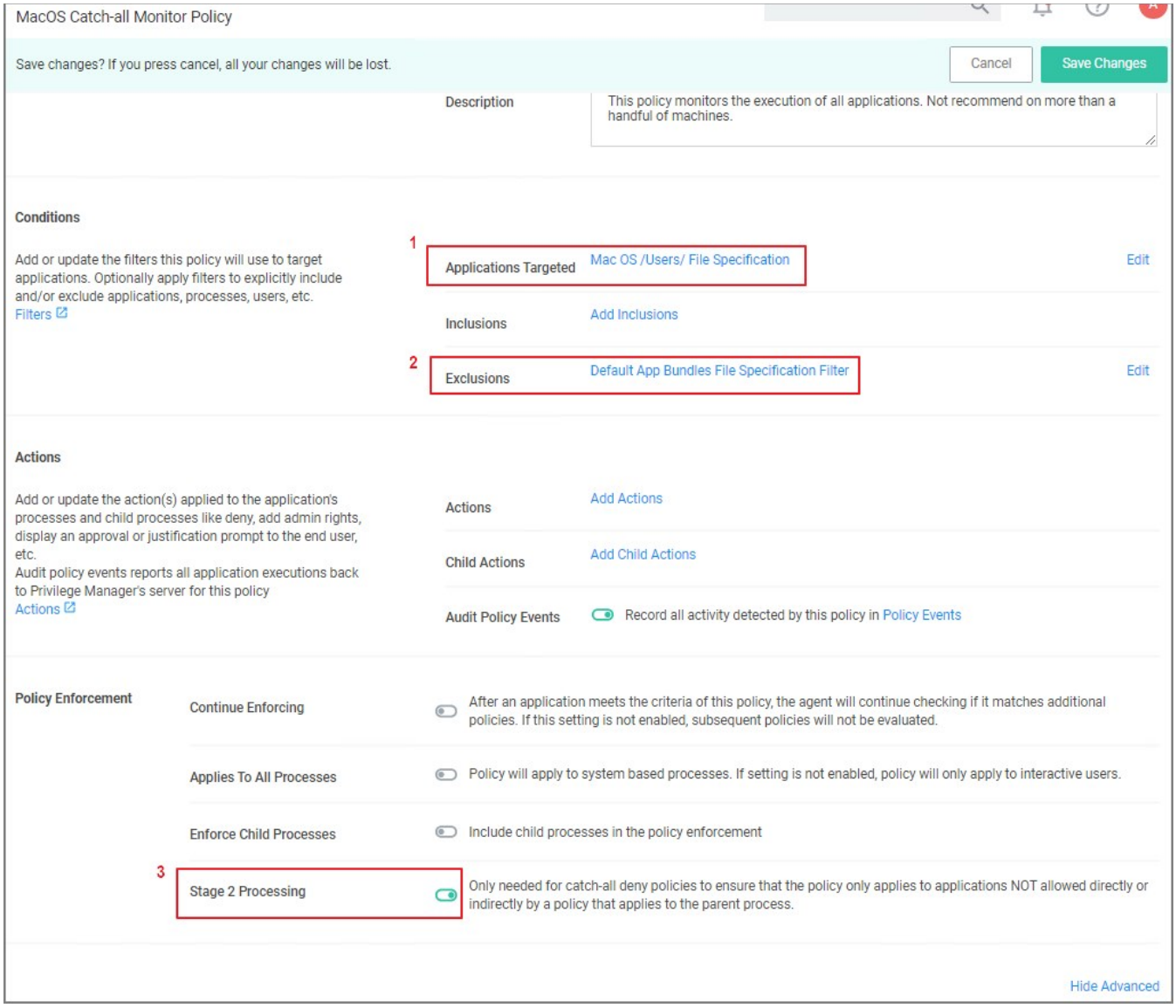
Setting Up Monitoring Policies for macOS

1. Under your MacOS Test Computers Computer Group select **Application Policies** and click **Create Application Policy**.
2. From the Policy Wizard select **Monitoring** and click **Next Step**.

3. Select **Everything** and click **Next Step**.
4. Enter a name, for example *MacOS Catch-all Monitor Policy*.
5. Click **Create Policy**.



6. Customize the policies Conditions, Actions, and Policy Enforcement, for example:
   - Under Applications Targeted, click **Add Application Target** and search for and add **Mac OS /Users/ File Specification**.
   - Under Exclusions, click **Edit** and add **Default App Bundles File Specification Filter** to the exclusion list.
   - Under **Show Advanced | Policy Enforcement** set the switch for **Stage 2 Processing** to active an all others to inactive.



7. Click **Save Changes**
8. Set the **Inactive** switch to **Active**.

This "Testing Computers" group should only be used for testing specific machines and configuration purposes. It should not be assigned to large groups of computers in your production environment.

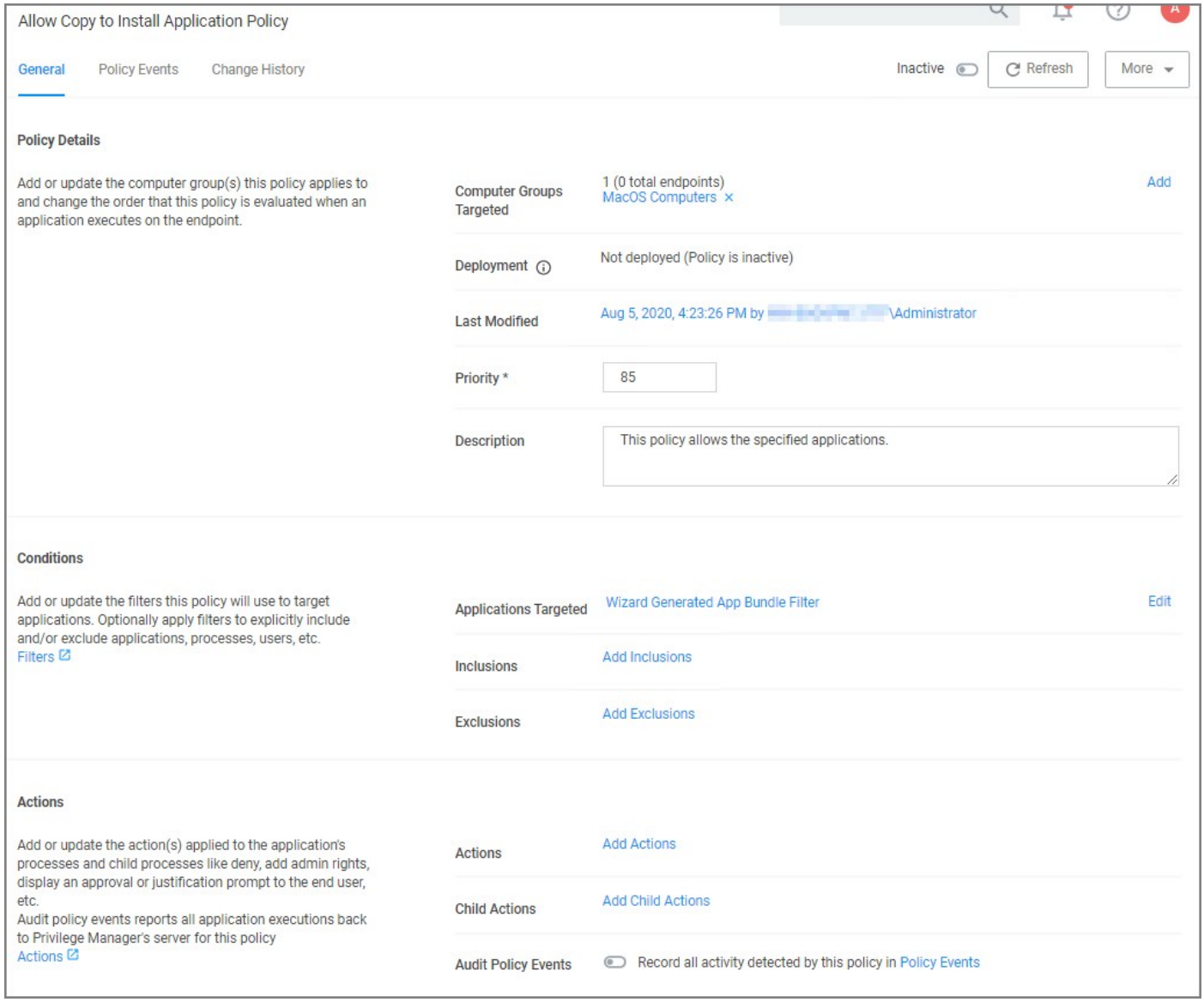
Verify that under **Actions** the **Audit Policy Events** switch is active.

Allow Copy to Install Applications

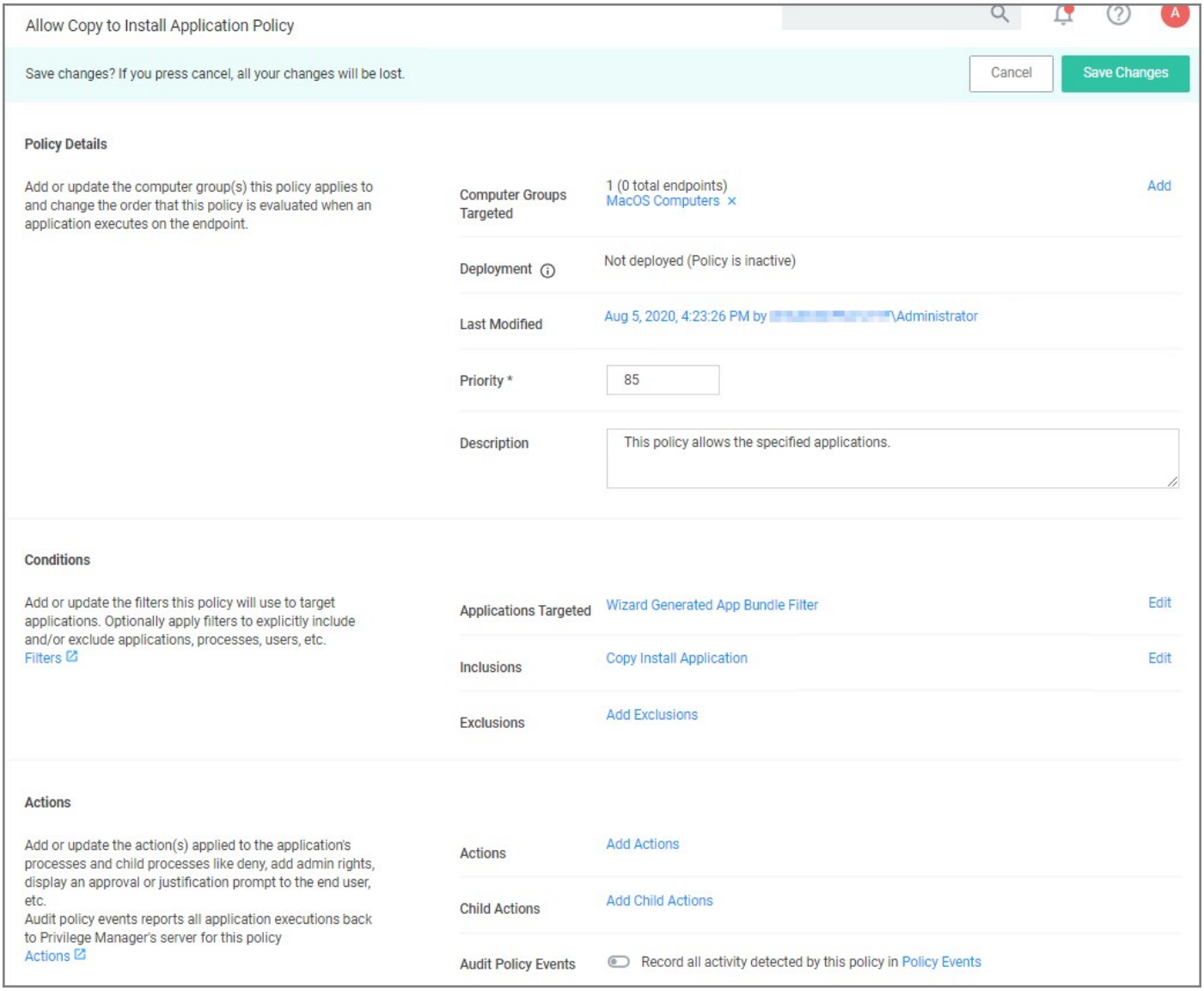
A policy can be created to allow or deny standard users to install specific applications by dragging-and-dropping the application into the /Applications folder. Follow this example to create a policy that will enable this functionality for macOS standard users. This example policy has been verified for use with KEXT and SYSEX endpoint agents.

> **Note**: This functionality can not be run by an admin user. It only applies to standard users.

1. Navigate to your macOS Computer Group and select **Application Policies**.
2. Click **Create Policy**.
3. Select **Controlling** and click **Next Step**.
4. Select **Allow** and click **Next Step**.
5. Select what exactly you want the policy to target. This can be based of an **Existing Filter**, a **File Upload**, and/or **Inventoried File(s)**. Multiple targets can be selected.
6. Click **Next Step**.
7. Enter a Name and description for your policy, click **Create Policy**.



8. Click **Add Inclusions**.
9. Search for and add the **Copy Install Application** filter.
10. Click **Update**.



11. Click **Save Changes**.
12. Set the **Inactive** switch to **Active** for policy updates at the endpoint.

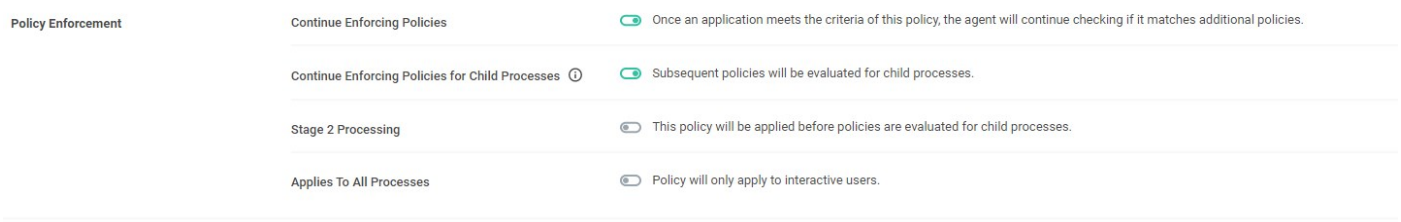
    Note: The new Copy Install Application Filter should not be used with the existing Privilege Manager Copy/Installer Helper Parent Process Filter, which should be removed from any policy before adding the new Copy Install Application Filter to the policy.

Updating Existing Policies to Use the Copy Install Application Filter

If you have policies that currently use the Privilege Manager Copy/Installer Helper Parent Process Filter use the following steps to update them to use the Copy Install Application Filter in the Privilege Manager UI:

1. Navigate to the macOS Computers Group and select **Application Policies**.
2. For each application that currently uses the **Privilege manager copy/installer helper parent process filter** as an inclusion filter, remove that filter and add the **Copy Install Application** filter instead.

3. Click **Update**.
4. Under Actions remove **Allow copy to /Applications Directory** and add the **Application Approval Request Message Action** in its place.
5. Click **Update**.
6. Click **Show Advanced** and set these two option to active:
    - Continue Enforcing.
    - Enforce Child Processes.

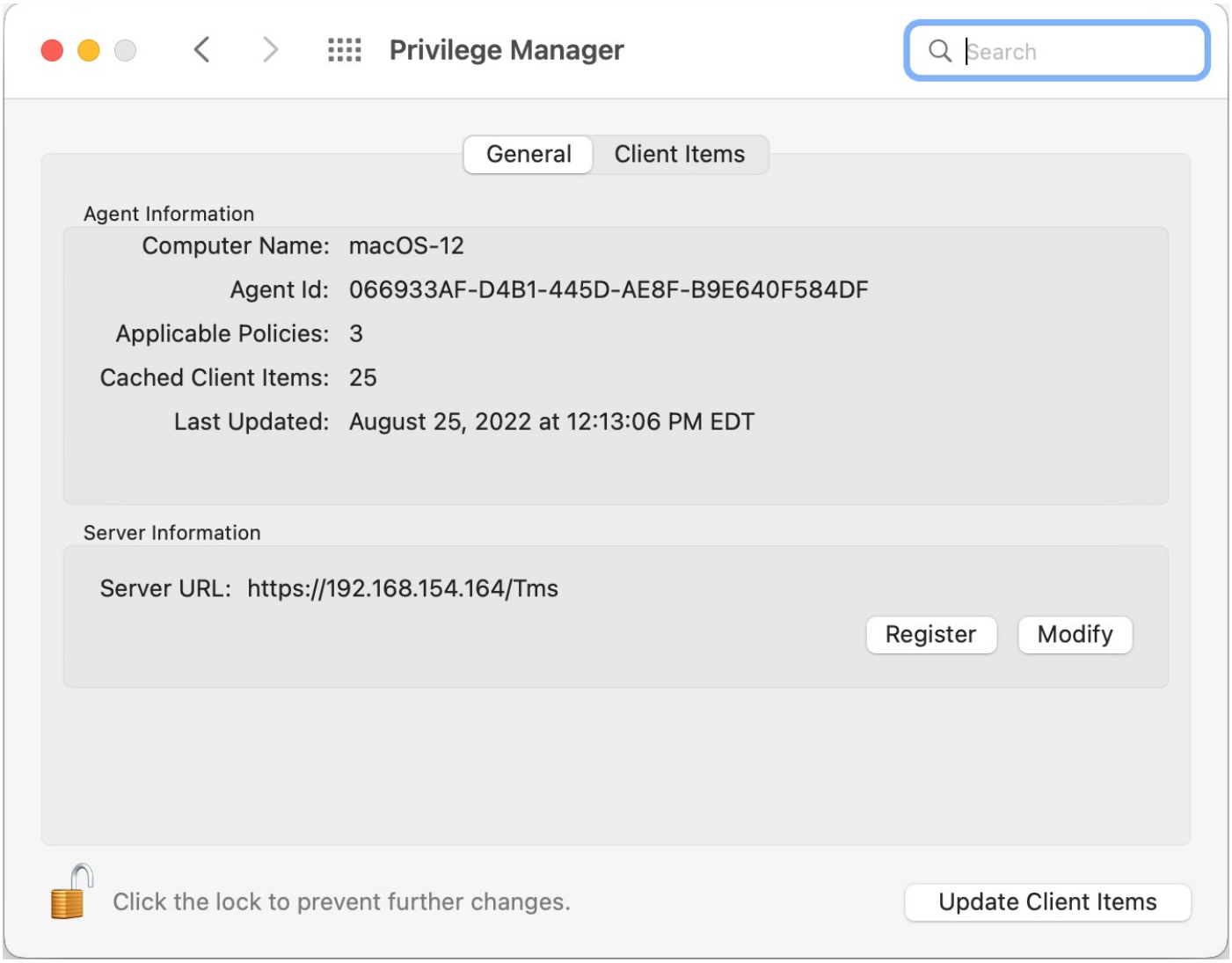


7. Click **Save Changes**.

Updating the Endpoint

On the macOS endpoint,

1. Open **System Preferences | Privilege Manager**.

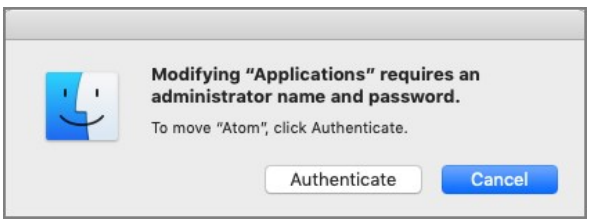


2. Click **Update Client Items**.

The agent updates with new and updated policies and synchronizes.

Expected User Experience

After the policies are updated, users can open a DMG or just drag-and-drop an application bundle to /Applications. Depending on the version of macOS, users may see a dialog asking to authenticate by clicking **Authenticate**. Users will not be prompted for admin credentials to complete the operation.



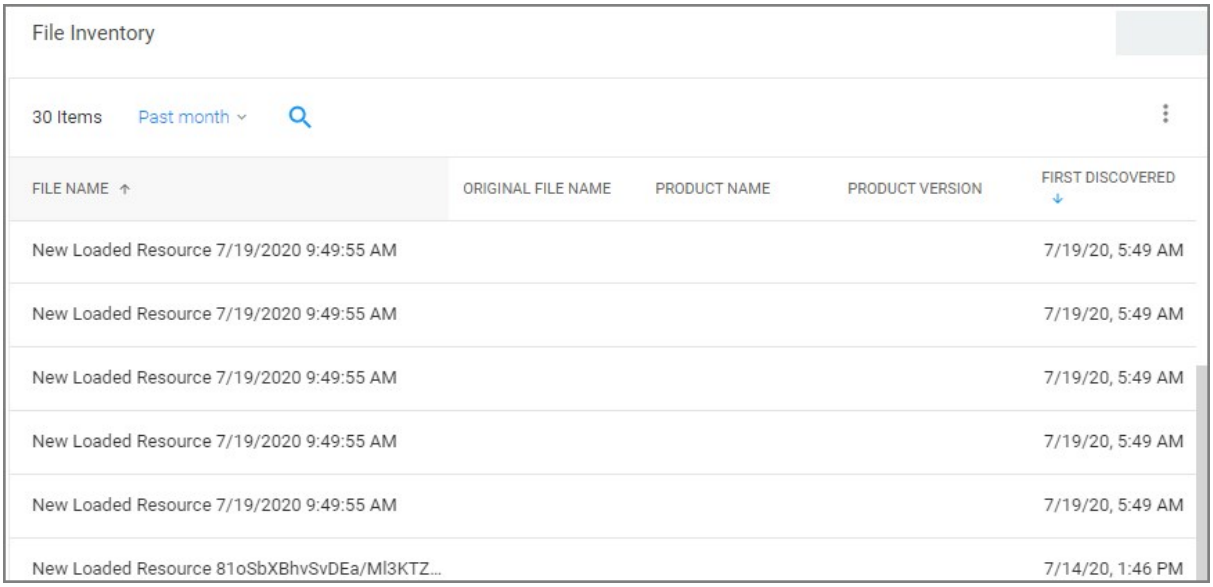
Deny Zoom Application

With your monitoring policies properly set up, anything you do on your Mac test machine will be discovered by Privilege Manager. For this example we will create a policy that blocks the Zoom application.

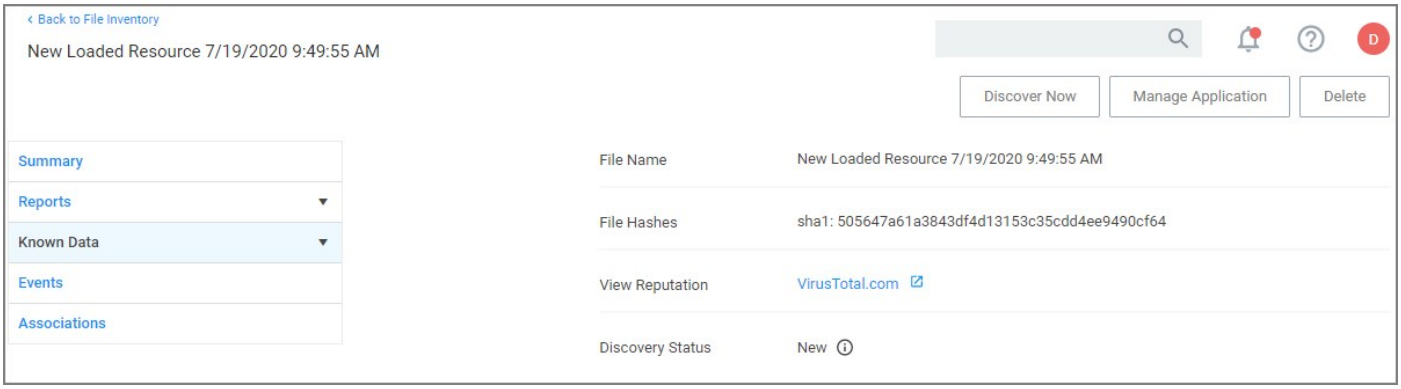
File Inventory

Open the Zoom application on a macOS test endpoint. When the application is opened, Privilege Manager discovers it as an *Application Action from Event Discovery Testing Computers Audit Policy (MacOS)*.

1. In the Privilege Manager Console, navigate to **File Inventory**.
2. Verify new items have been registered by your Event Discovery Testing Computers (MacOS) policy. These may be listed as **New Loaded Resources**.



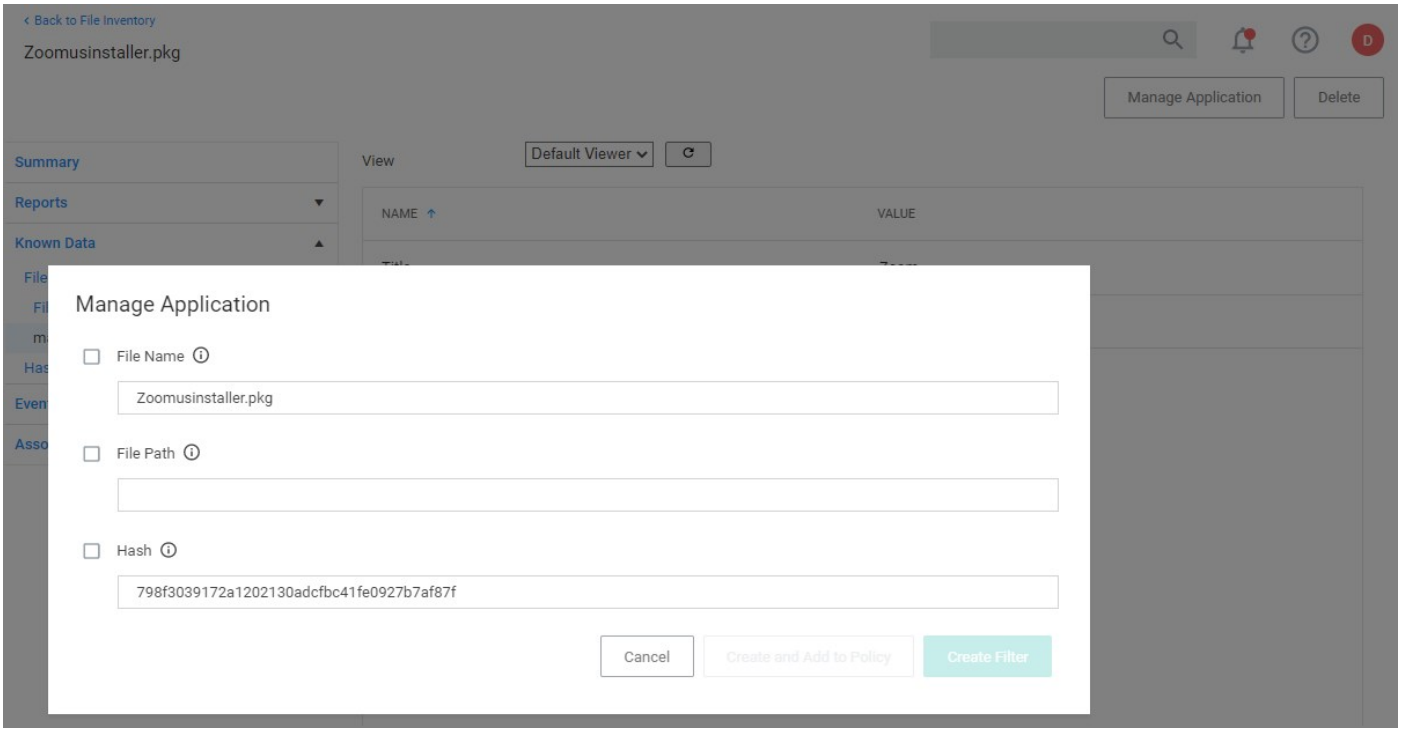
3. Select a **New Loaded Resource** link.
4. On the loaded Resource Explorer page, click **Discover Now**. It still may take time to properly load details about these new events, usually indicated by a **Discovery Status** of **New**.



Clicking **Discover Now** creates and executes a **Manual client-side resource discovery** task. If you click the status link the task page opens (not shown in this example sequence).

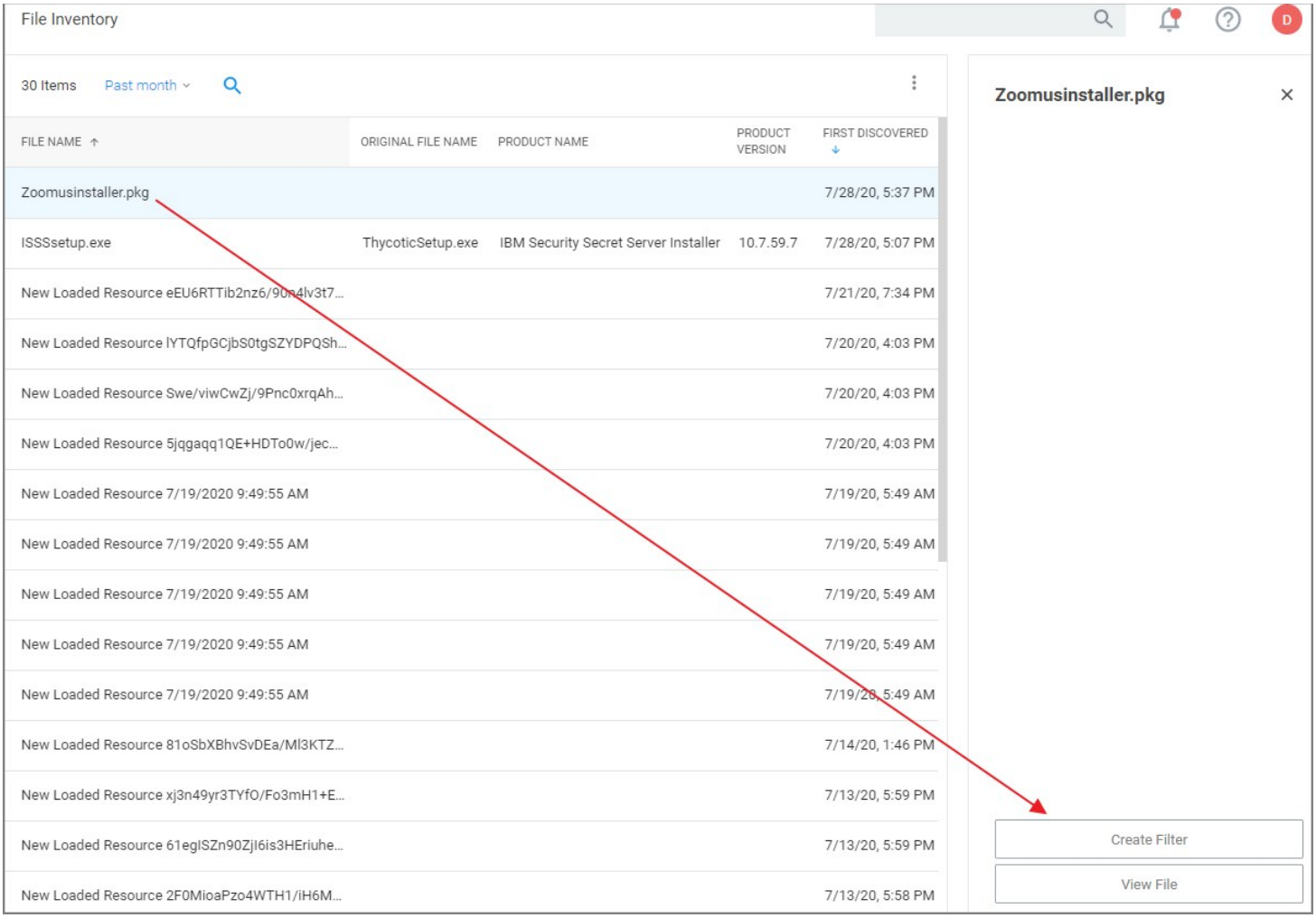
On the Resource Explorer page of a fully discovered resource, you can click **Manage Application** to select the option you want to use, which is to either

- create a filter, or
- create and add to a policy.



When a resource is fully discovered it is displayed with full name on the discovery events page:

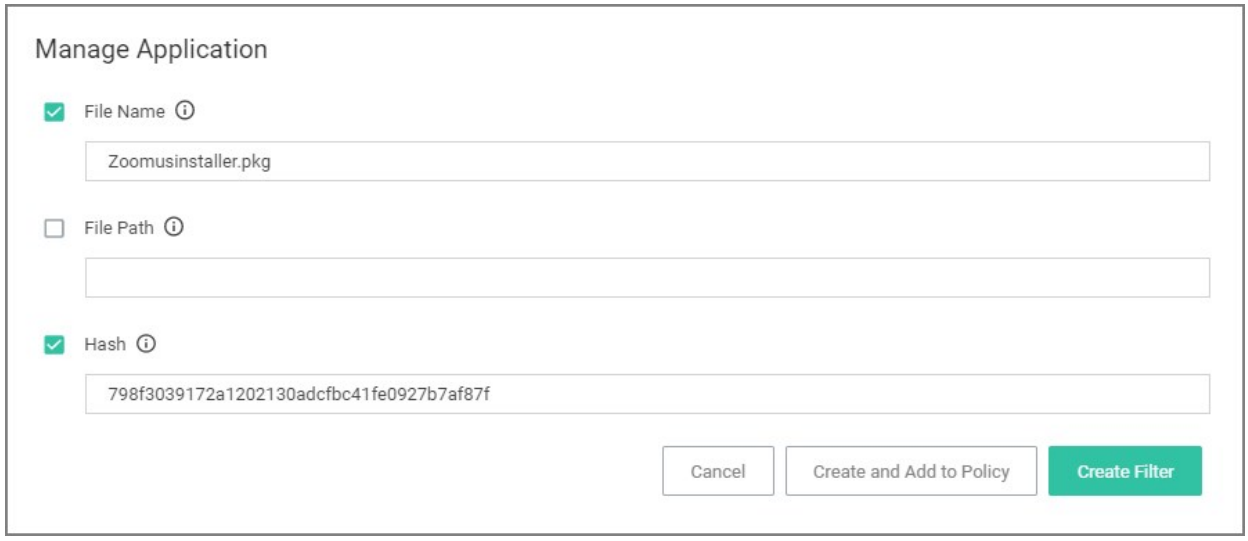
From the File Inventory page you can also use the **View File** or **Create Filter** options to create specific filters for the discovered applications and assign those to existing policies.



Assign to Policy

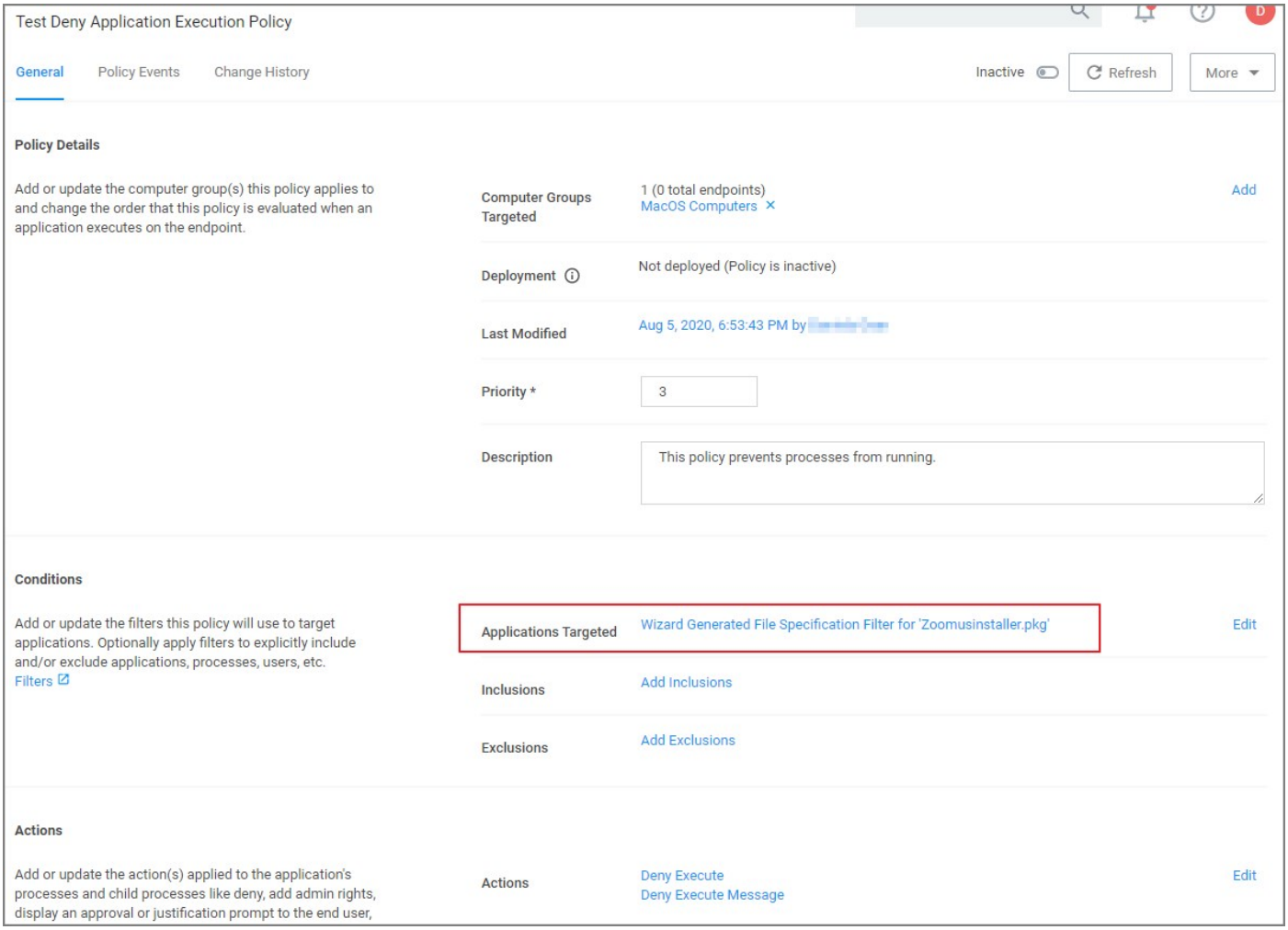
Once the resources have been fully discovered, the fastest way to either create a new policy or add to an existing one is via the Assign to Policy link on the Events page.

1. Click **Create Filter**.
2. The **Manage Application** page opens for the selected resource.



3. Click **Create and Add To Policy**.

4. On the **Manage Application** page select your existing deny application execution policy from the drop-down and click **Update Policy**.

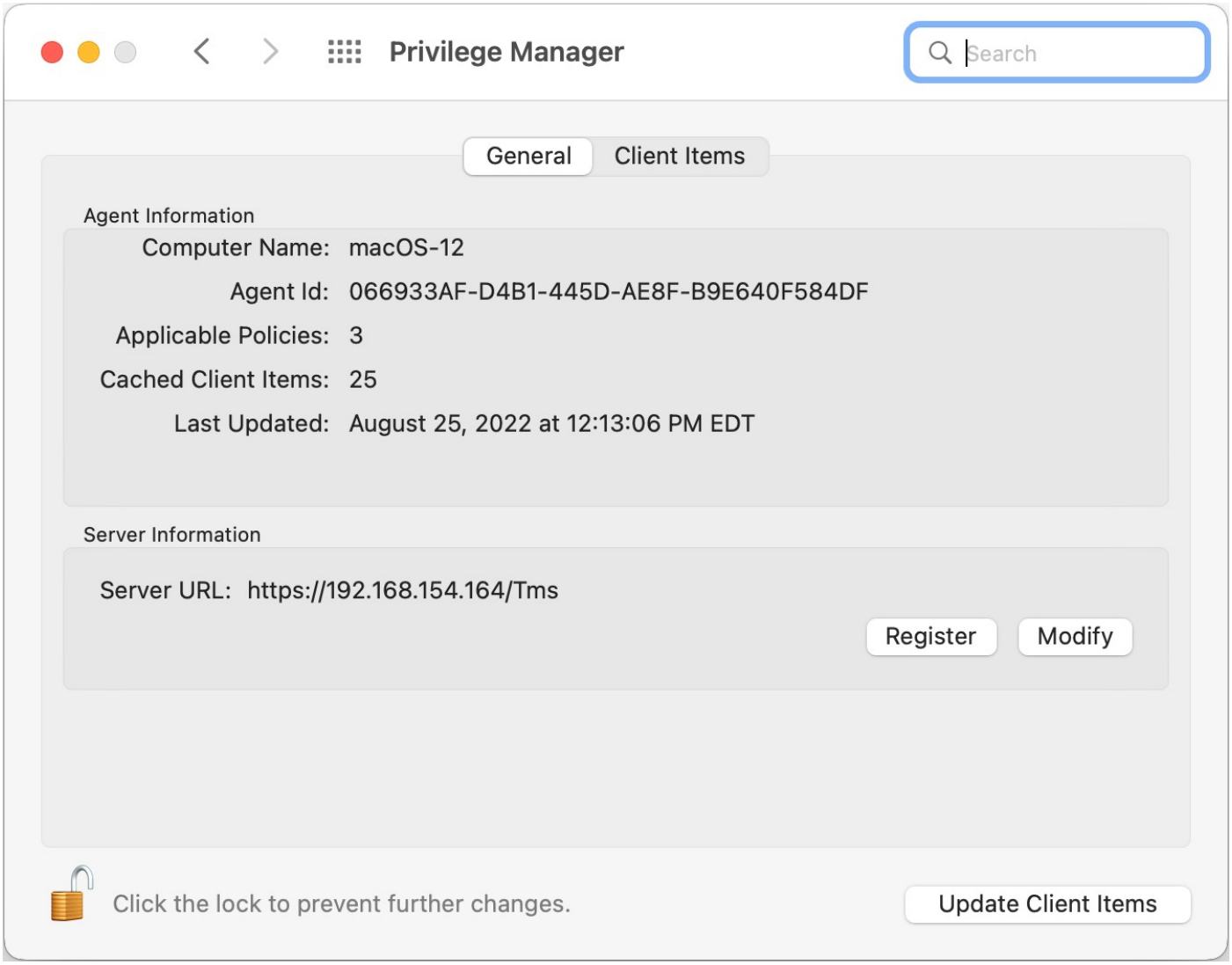


5. Set the **Inactive** switch to **Active**.

Updating the Endpoint

On the macOS endpoint,

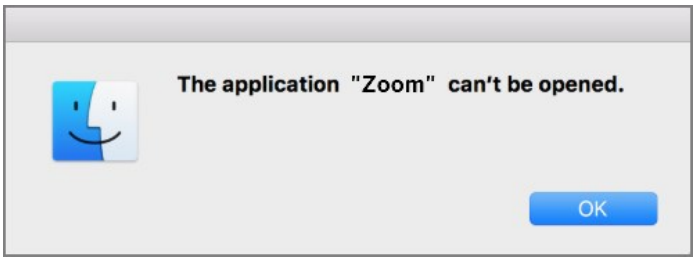
1. Open **System Preferences | Privilege Manager**.



2. Click **Update Client Items**.

Policy Verification

Once this Deny-policy is updated on your endpoint, when you click Zoom, you will see a message like this:



Elevating Activity Monitor

Authorizationdb Right: com.apple.activitymonitor.kill

This action can be used to elevate killing processes that do not belong to the logged in user in Activity Monitor while it is running. The right will be elevated for the duration that Activity Monitor is running. Once the application is quit, the right will be restored to its default.

Advanced message actions such as Approval, Deny, Justification, or Warning should not be used in conjunction with this action.

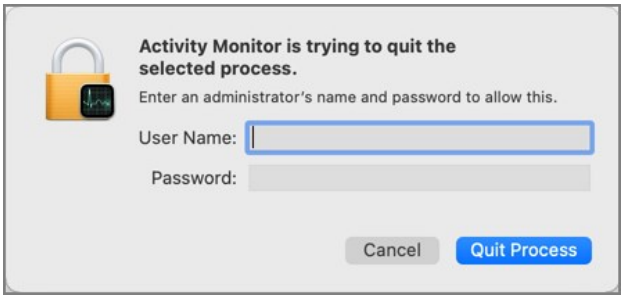
Example Application: Activity Monitor

1. Using the Policy Wizard, create a controlling policy, click **Next Step**.
2. Select **Elevate**, click **Next Step**.
3. Select **Run Silently**, click **Next Step**.
4. Select **Executables**, click **Next Step**.
5. Select **Modify Authorization Database**, click **Next Step**.
6. Select **Existing Filter**, search for select the App Bundle filter for Activity Monitor. If it doesn't exist, create it.
7. Click **Update**.
8. Click **Next Step**.
9. Name your policy, add a description.
10. From the **Right Name** drop-down, select **Activity Monitor Kill Authorization Right (com.apple.activitymonitor.kill)**.

11. Click **Create Policy**.
12. Set the **Inactive** switch to **Active**.
13. Next to **Deployment** click the **i** icon and run the **Resource and Collection Targeting Update** task.

What to Expect on the Endpoint

- **With** a policy in place, when Activity Monitor is running and the policy is effective and you try to kill a process that doesn't belong to you and you click **Force Quit**, the process will be terminated without prompting you for admin credentials.
- **Without** a policy in place, when Activity Monitor is running and you try to kill a process that doesn't belong to you, it will present this dialog:


Activity Monitor is trying to quit the selected process.
Enter an administrator's name and password to allow this.
User Name:
Password:
Cancel
Quit Process

Elevating Charles Proxy

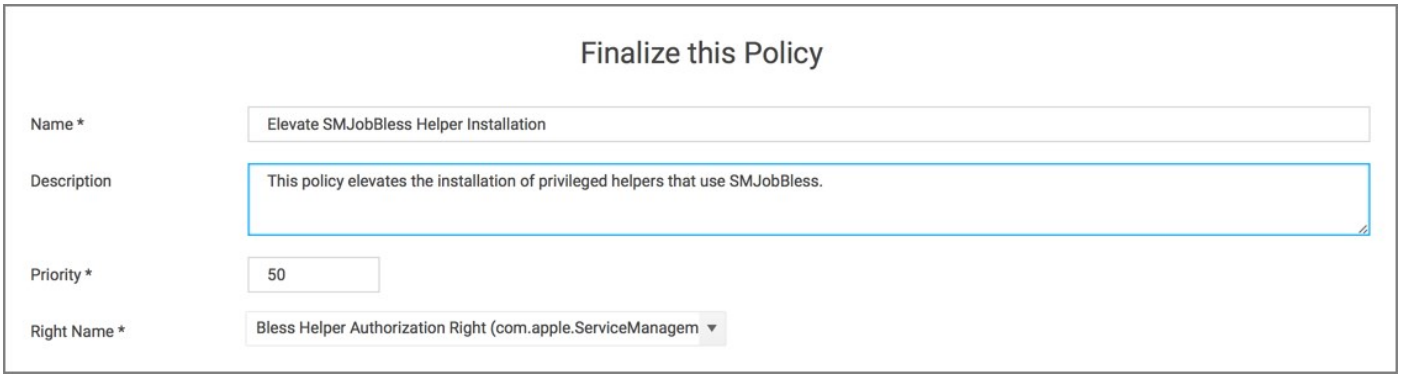
Authorizationdb Right: com.apple.ServiceManagement.blesshelper

This action deals with applications that use SMJobBless to install privileged helpers. This action can be used to elevate the installation of a privileged helper while an application is running. The right will be elevated for the duration of the targeted application. Once the application is quit, the right will be restored to its default.

Advanced message actions such as Approval, Deny, Justification, or Warning should not be used in conjunction with this action.

Example Application: Charles Proxy

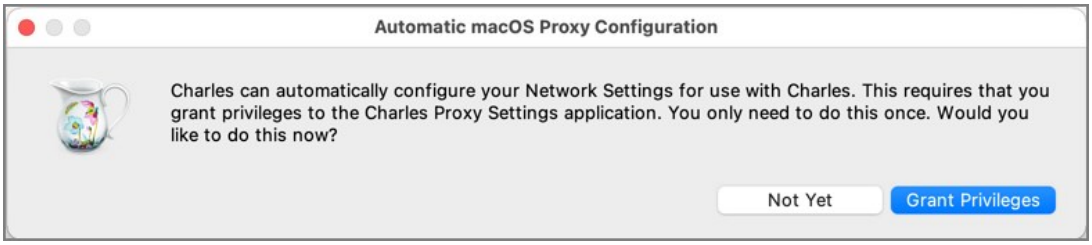
1. Using the Policy Wizard, create a controlling policy, click **Next Step**.
2. Select **Elevate**, click **Next Step**.
3. Select **Run Silently**, click **Next Step**.
4. Select **Executables**, click **Next Step**.
5. Select **Modify Authorization Database**, click **Next Step**.
6. Select **Existing Filter**, search for select the App Bundle filter for Charles Proxy. If it doesn't exist, create it.
7. Click **Update**.
8. Click **Next Step**.
9. Name your policy, add a description.
10. From the **Right Name** drop-down, select **Bless Helper Authorization Right (com.apple.ServiceManagement.blesshelper)**.



11. Click **Create Policy**.
12. Set the **Inactive** switch to **Active**.
13. Next to **Deployment** click the **i** icon and run the **Resource and Collection Targeting Update** task.

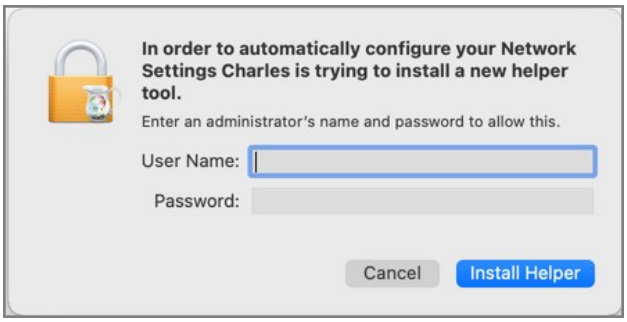
What to Expect on the Endpoint

- **With** a policy in place, when Charles Proxy is started and the policy is effective and its helper isn't installed, it will present this dialog:



Clicking **Grant Privileges** will approve the installation of the helper without prompting for admin credentials.

- **Without** a policy in place, when Charles Proxy is started and its helper isn't installed, it will present an authorization required dialog:



Note: Privileges to the Helper, if not already installed, need to be granted no matter if a policy is in place or not. Granting those privileges, however won't require an authorization when a policy with Bless Helper Authorization Right action is in place and active.

Delinea

How to Allow a Standard User to Upgrade to macOS Big Sur

Refer to the example video for details.

Elevating Modifying the Keychain

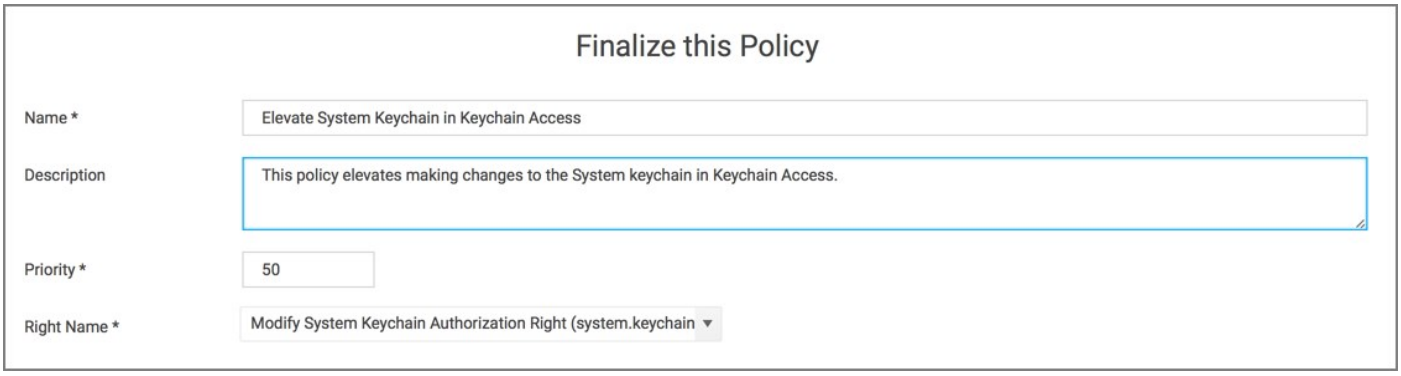
Authorizationdb Right: system.keychain.modify

This action can be used to elevate modifying the System keychain in Keychain Access while it is running. The right will be elevated for the duration that Keychain Access is running. Once the application is quit, the right will be restored to its default.

Advanced message actions such as Approval, Deny, Justification, or Warning should not be used in conjunction with this action.

Example Application: Keychain Access

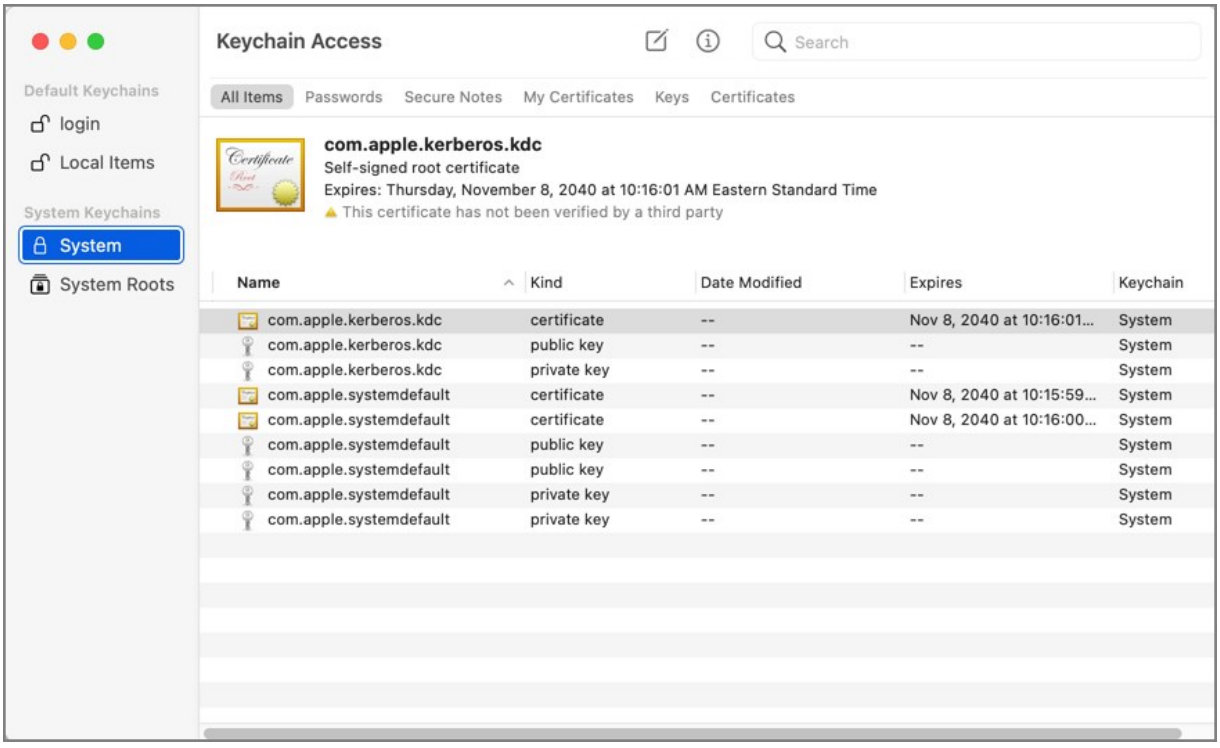
1. Using the Policy Wizard, create a controlling policy, click **Next Step**.
2. Select **Elevate**, click **Next Step**.
3. Select **Run Silently**, click **Next Step**.
4. Select **Executables**, click **Next Step**.
5. Select **Modify Authorization Database**, click **Next Step**.
6. Select **Existing Filter**, search for and select the App Bundle filter for Keychain Access. If it doesn't exist, create it.
7. Click **Update**.
8. Click **Next Step**.
9. Name your policy, add a description.
10. From the **Right Name** drop-down, select **Modify System Keychain Authorization Right (system.keychain.modify)**.



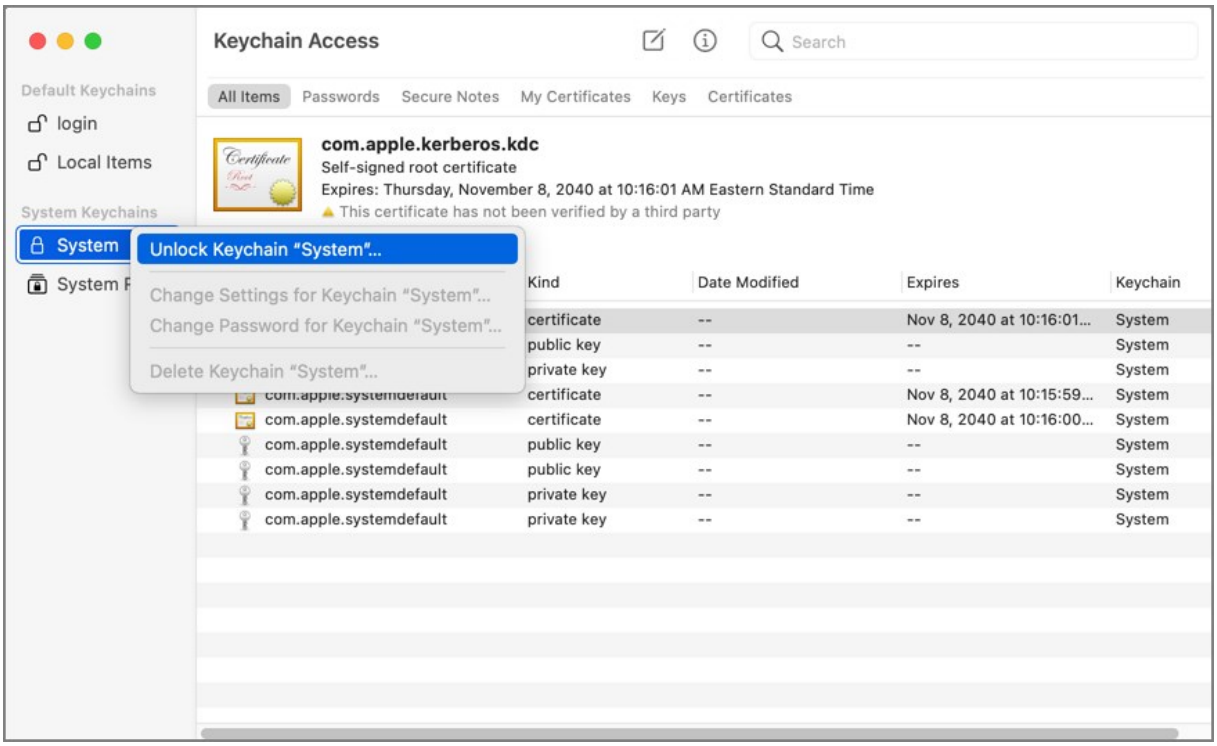
11. Click **Create Policy**.
12. Set the **Inactive** switch to **Active**.
13. Next to **Deployment** click the **i** icon and run the **Resource and Collection Targeting Update** task.

What to Expect on the Endpoint

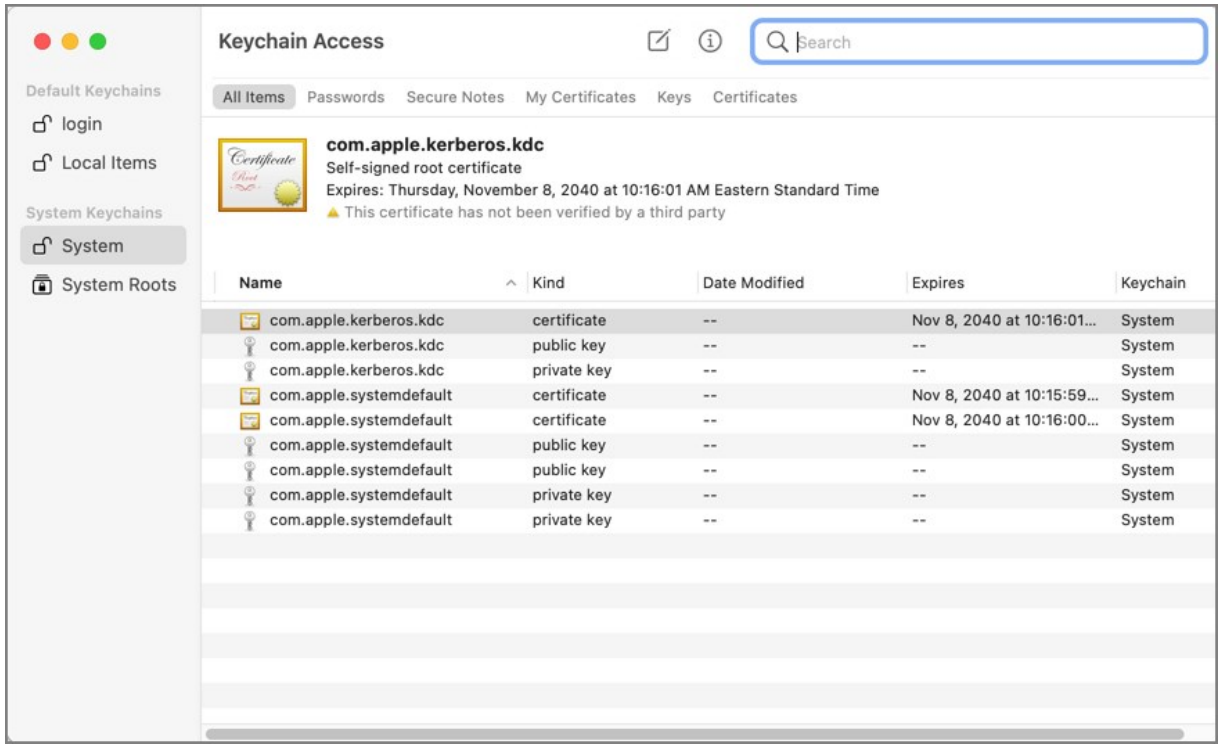
- **With** a policy in place, with Keychain Access running and the policy is effective, the System keychain icon will appear to be locked:



When you right-click the System keychain icon, the Unlock Keychain "System" menu item will appear:



When you click on Unlock Keychain "System", the System keychain will be unlocked and you can add and delete items without being prompted for admin credentials:



- **Without** a policy in place, when Keychain Access is running and you try to unlock or modify the System keychain, it will present this dialog:

Elevating Xcode

Xcode relies on two authorizationdb rights to provide certain aspects of its functionality:

- The acknowledgment of the license agreement upon first run after being installed.
- The ability to install iOS simulators.

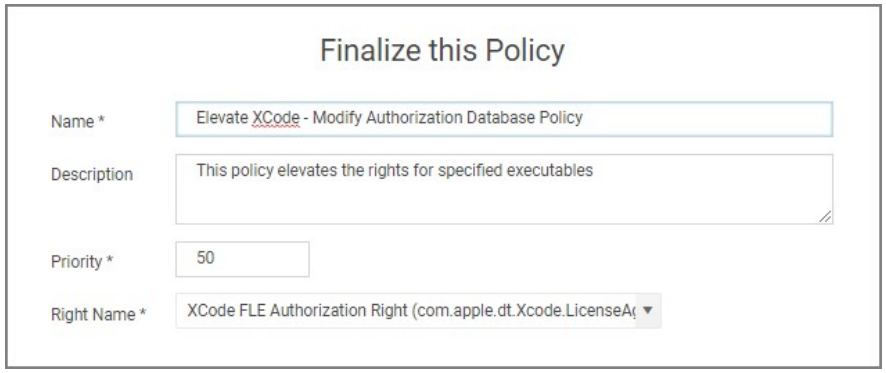
Agree to License Agreement

The default right to agree to the license agreement Xcode uses, requires the user to be in the admin's group and will prompt for admin credentials.

To elevate this aspect of Xcode, you can create a policy that targets Xcode and has the Xcode FLE Authorization Right (com.apple.dt.Xcode.LicenseAgreementXPCServiceRights) Authorization DB Right Name.

Advanced message actions such as Approval, Deny, Justification, or Warning should not be used in conjunction with this action.

1. Using the Policy Wizard, create a controlling policy, click **Next Step**.
2. Select **Elevate**, click **Next Step**.
3. Select **Run Silently**, click **Next Step**.
4. Select **Executables**, click **Next Step**.
5. Select **Modify Authorization Database**, click **Next Step**.
6. Select **Existing Filter**, search for and use an App Bundle filter that targets Xcode. If one doesn't exist, create it.
7. Click **Update**.
8. Click **Next Step**.
9. Name your policy, add a description.
10. From the **Right Name** drop-down, select **Xcode FLE Authorization Right (com.apple.dt.Xcode.LicenseAgreementXPCServiceRights)**.

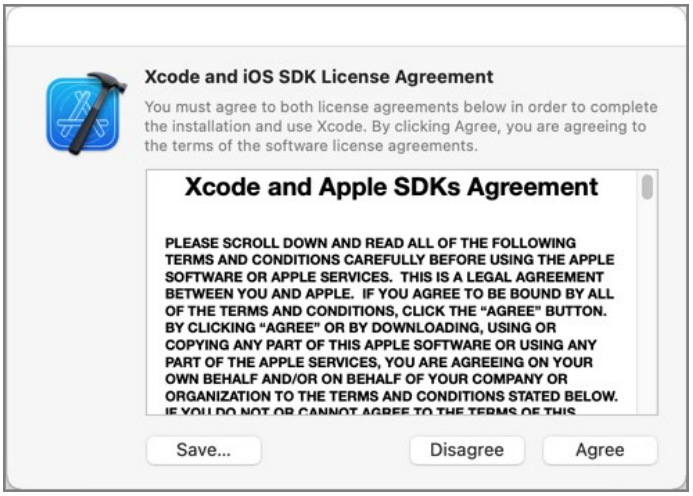


11. Click **Create Policy**.
12. Set the **Inactive** switch to **Active**.
13. Next to **Deployment** click the **i** icon and run the **Resource and Collection Targeting Update** task.

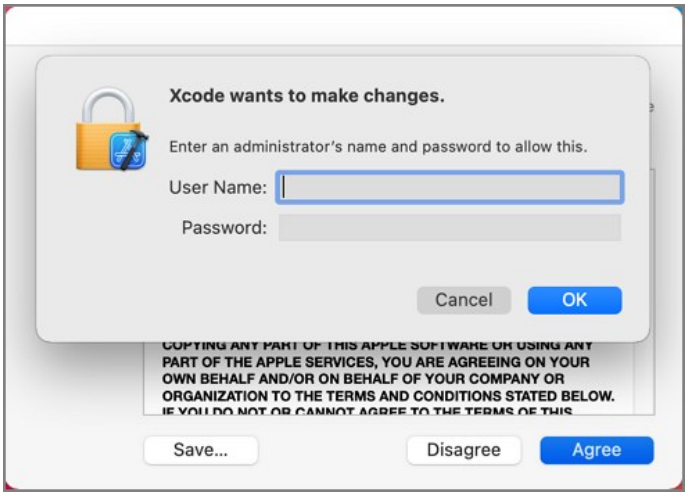
What to Expect on the Endpoint

- **With** a policy in place, when Xcode is run the first time and the user is a standard user and the policy is effective, the user will only be

prompted to agree to the license agreement:



- **Without** policy in place, when Xcode is run the first time and the user is a standard user, it prompts to agree to the license agreement. Clicking Agree results in the user being asked to provide admin credentials:



Install iOS Simulators

Xcode uses a right that requires the user to be in the admin's group to install iOS Simulators. By default, when a standard user tries to install an iOS simulator they will be prompted to enter admin credentials.

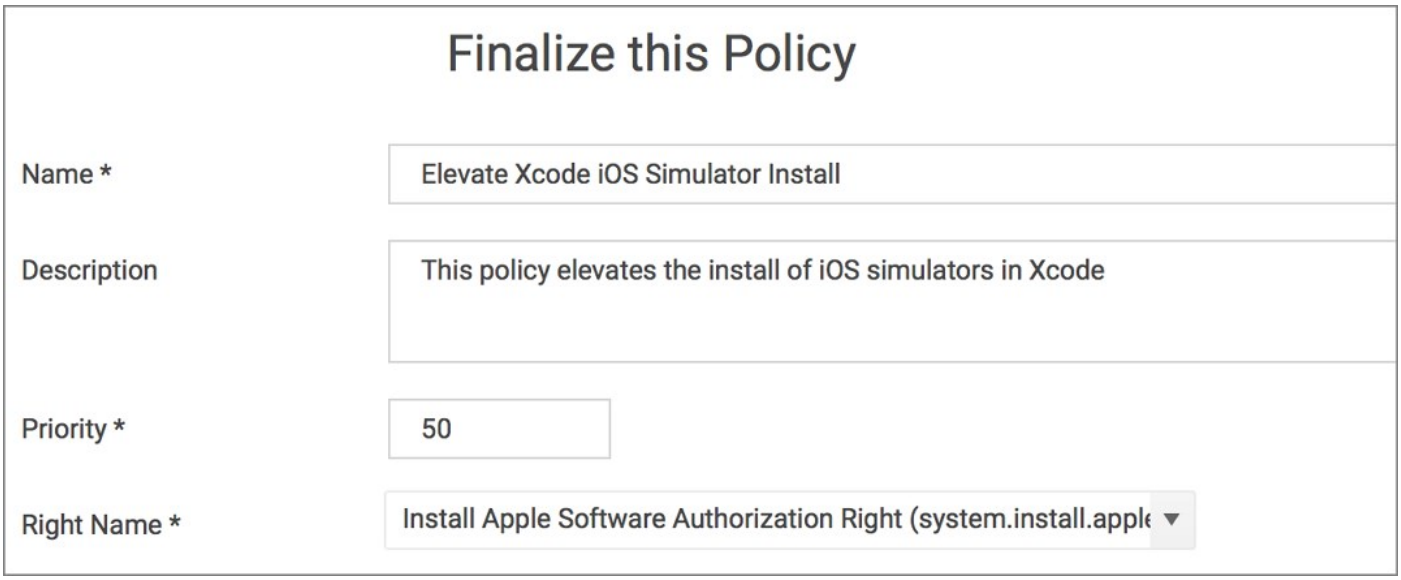
To elevate this aspect of Xcode, you can create a policy that targets Xcode and has the Install Apple Software Authorization Right (system.install.apple-software) Authorization DB Right Name.

You can add this to a policy that already targets Xcode to elevate the license agreement with the XCode FLE Authorization Right (com.apple.dt.Xcode.LicenseAgreementXPCServiceRights) Authorization DB Right Name or you can create a policy that targets Xcode and this Authorization DB Right Name specifically.

To elevate this aspect of Xcode specifically, you can create a policy that targets Xcode and has the Install Apple Software Authorization Right (system.install.apple-software) Authorization DB Right Name.

Advanced message actions such as Approval, Deny, Justification, or Warning should not be used in conjunction with this action.

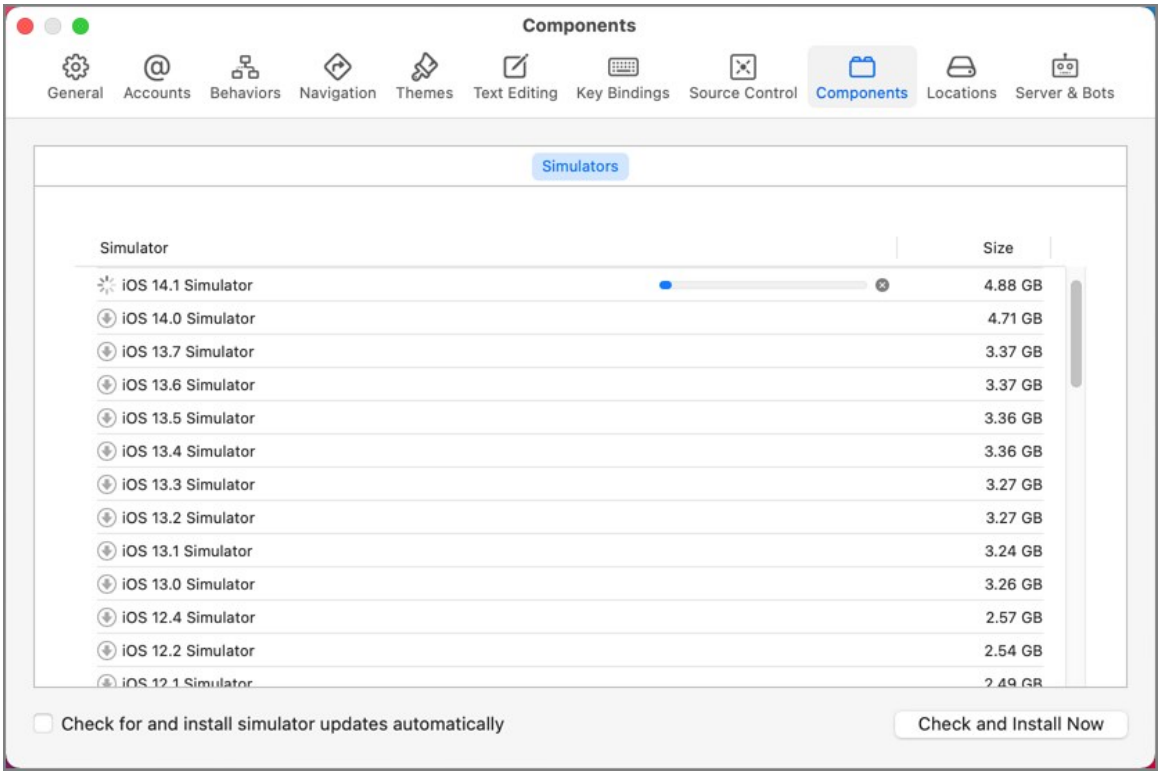
1. Using the Policy Wizard, create a controlling policy, click **Next Step**.
2. Select **Elevate**, click **Next Step**.
3. Select **Run Silently**, click **Next Step**.
4. Select **Executables**, click **Next Step**.
5. Select **Modify Authorization Database**, click **Next Step**.
6. Select **Existing Filter**, search for and use an App Bundle filter that targets Xcode. If one doesn't exist, create it.
7. Click **Update**.
8. Click **Next Step**.
9. Name your policy, add a description.
10. From the **Right Name** drop-down, select **Install Apple Software Authorization Right (system.install.apple-software)**.



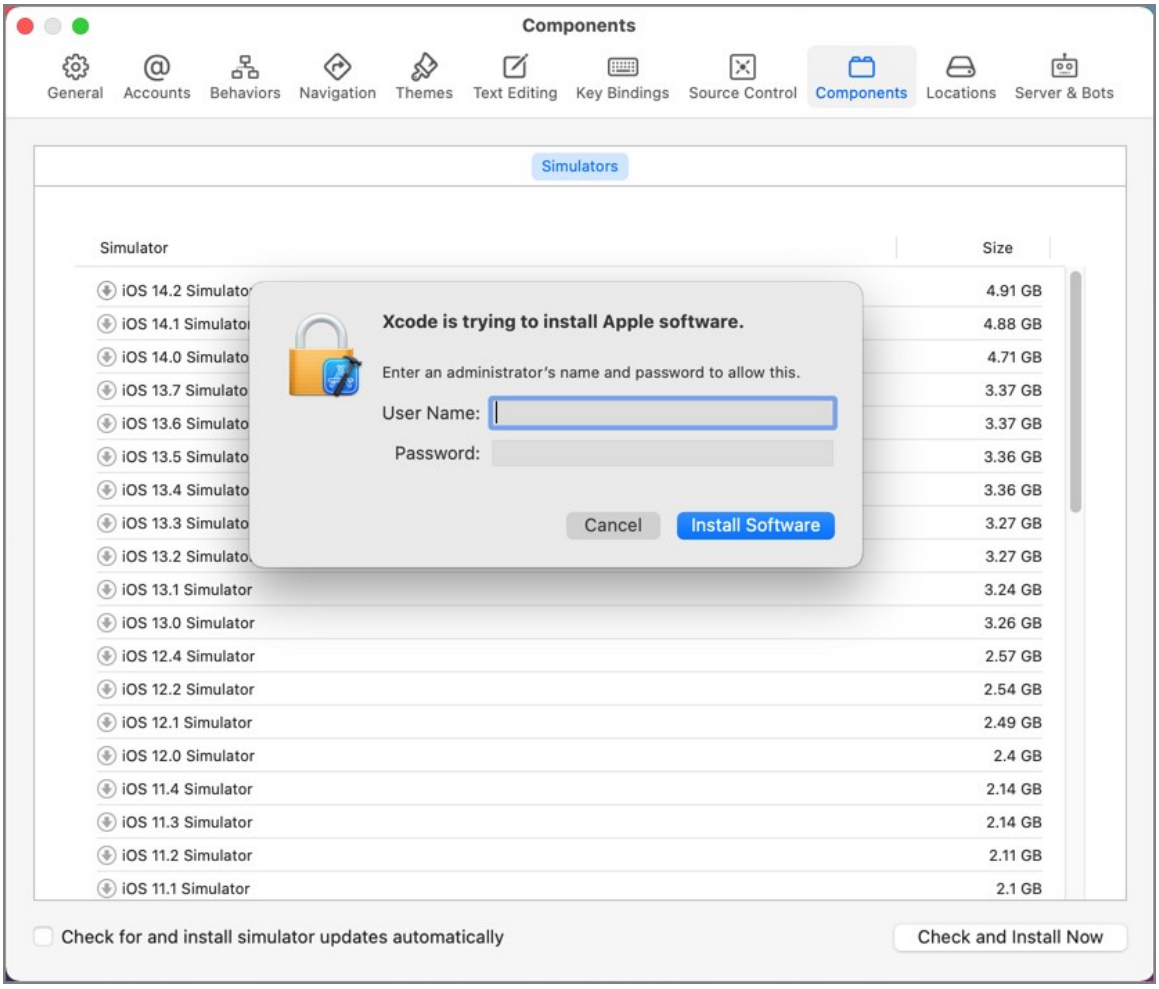
11. Click **Create Policy**.
12. Set the **Inactive** switch to **Active**.
13. Next to **Deployment** click the **i** icon and run the **Resource and Collection Targeting Update** task.

What to Expect on the Endpoints

- **With** a policy in place, when a standard user attempts to install an iOS simulator and the policy is effective, the install will begin without prompting for credentials:



- **Without** a policy in place, by default, when a standard user attempts to install an iOS simulator they will be prompted for admin credentials:



Enabling Developer Mode

By default, Xcode's Developer mode is disabled. When disabled, Xcode will prompt for admin credentials when the debugger or performance analysis tools are used to examine a process. If the user is a member of the **_developer** group, the user will be prompted for their credentials instead.

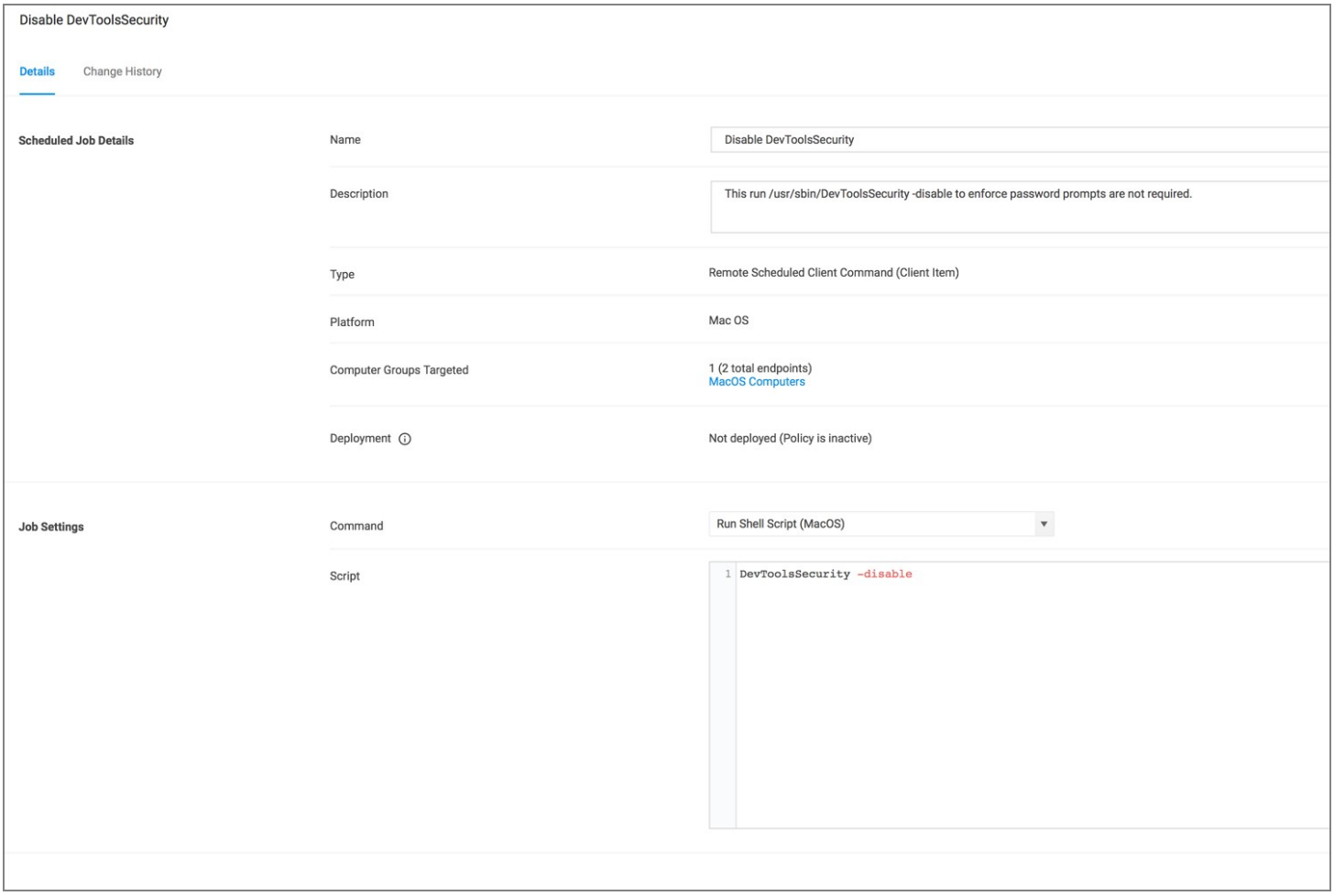
The man page for DevToolsSecurity says:

"This tool changes the security authorization policies for use of Apple-code-signed debugger and performance analysis tools on development systems.

On normal user systems, the first time in a given login session that any such Apple-code-signed debugger or performance analysis tools are used to examine one of the user's processes, the user is queried for an administrator password for authorization. Use the DevToolsSecurity tool to change the authorization policies, such that a user who is a member of either the admin group or the **_developer** group does not need to enter an additional password to use the Apple-code-signed debugger or performance analysis tools." (macOS system man page quote)

Depending on your requirements, you can address the issue of the user being prompted for admin credentials by adding your users to the **_developer** group via LSS. If you wish to enable Developer mode and avoid the dialog entirely, you can create a scheduled command (client task) in Privilege Manager to run the DevToolsSecurity command and enforce it on specific endpoints based on the LSS group membership.

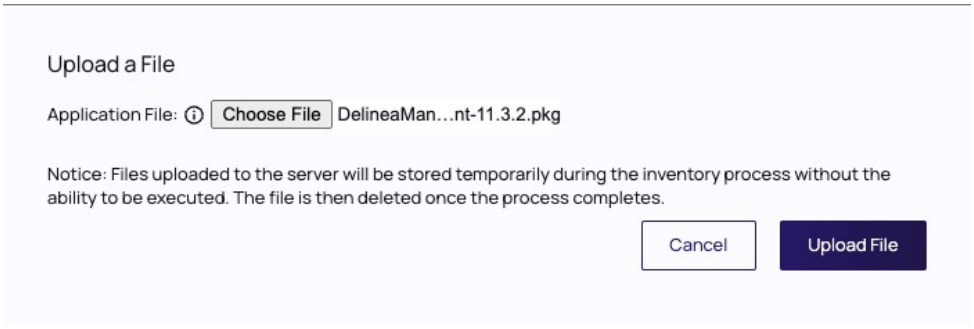
Delinea


Disable DevToolsSecurity
Details
Change History
Scheduled Job Details
Name
Disable DevToolsSecurity
Description
This run /usr/sbin/DevToolsSecurity -disable to enforce password prompts are not required.
Type
Remote Scheduled Client Command (Client Item)
Platform
Mac OS
Computer Groups Targeted
1 (2 total endpoints)
MacOS Computers
Deployment
Not deployed (Policy is inactive)
Job Settings
Command
Run Shell Script (MacOS)
Script
1
DevToolsSecurity -disable

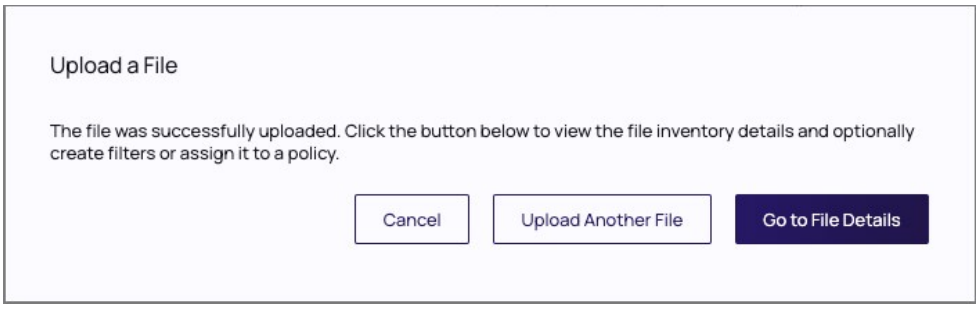
Inventorying .pkg Files

Privilege Manager allows the inventory of macOS .pkg files. With the ability to upload and extract the contents within the .pkg files, Privilege Manager inventories the applications that are bundled in any given .pkg, however, it is useful to note that not all .pkg files will be bundles.

1. Use **Admin | File Upload** to start the inventory process.
2. Choose a file to upload and click **Upload File**.

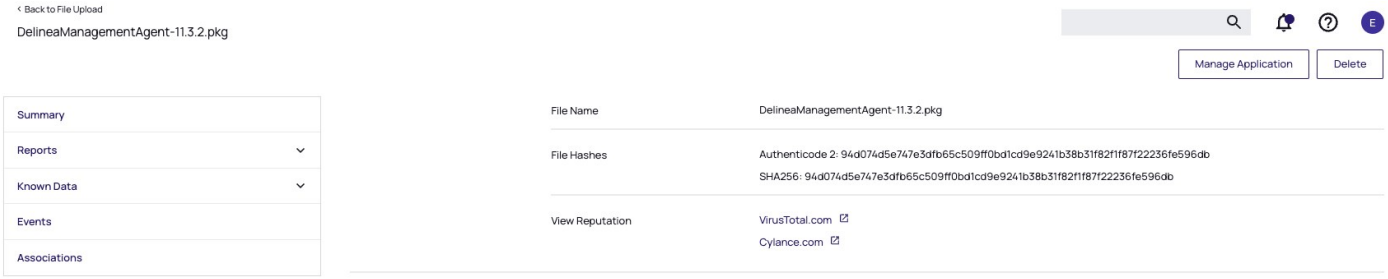


3. After uploading a .pkg file select the **Go to File Details** button.



In the Resource Explorer, an Administrator can now look at all the details from the inventory.

- Showing the Summary:



- Click **Known Data** to see the information specified in the macOS bundle:

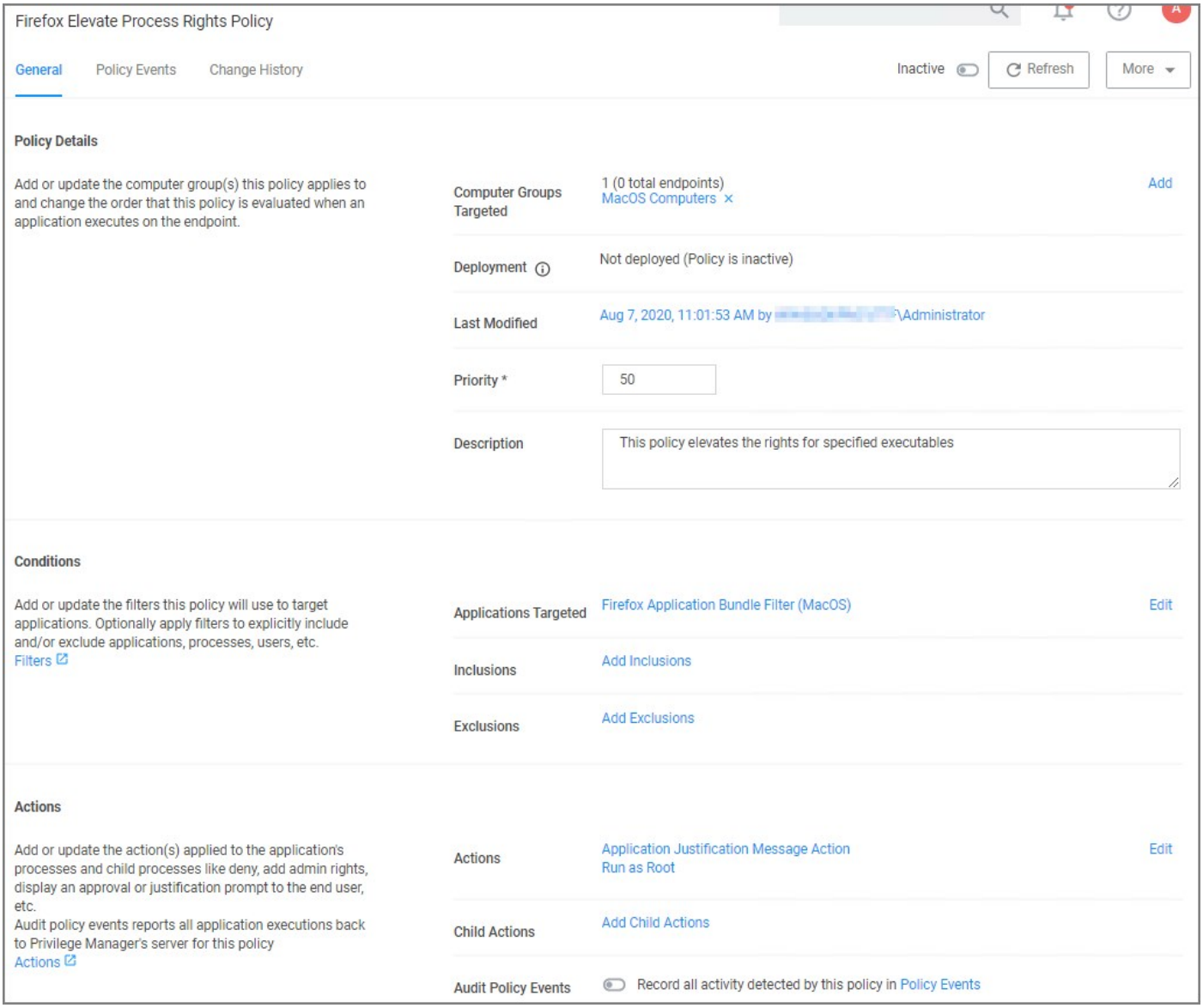
Note: Any packages that deviate from the standard configuration and layout might not have their contents inventoried correctly. If that is the case, unpack the .pkg and upload each contents file individually for inventory purposes.

Require Justification - FireFox

The following example provides information on setting up a justification required policy for FireFox on a macOS endpoint. This policy is supported for all agent types.

Create a filter for Firefox either from discovery, refer to File Inventory or manually, refer to Creating a Filter Manually. Use that filter in the steps below.

1. Using the Policy Wizard, create a controlling policy, click **Next Step**.
2. Select **Elevate**, click **Next Step**.
3. Select **Require Justification**, and click **Next Step**.
4. Select what file type to target, for this example select **Executable**, and click **Next Step**.
5. Choose your target, for this example **Existing Filter**.
6. Search for and add your Firefox filter.
7. Click **Updated**.
8. Click **Next Step**.
9. Name your policy and add a description, click **Create Policy**.

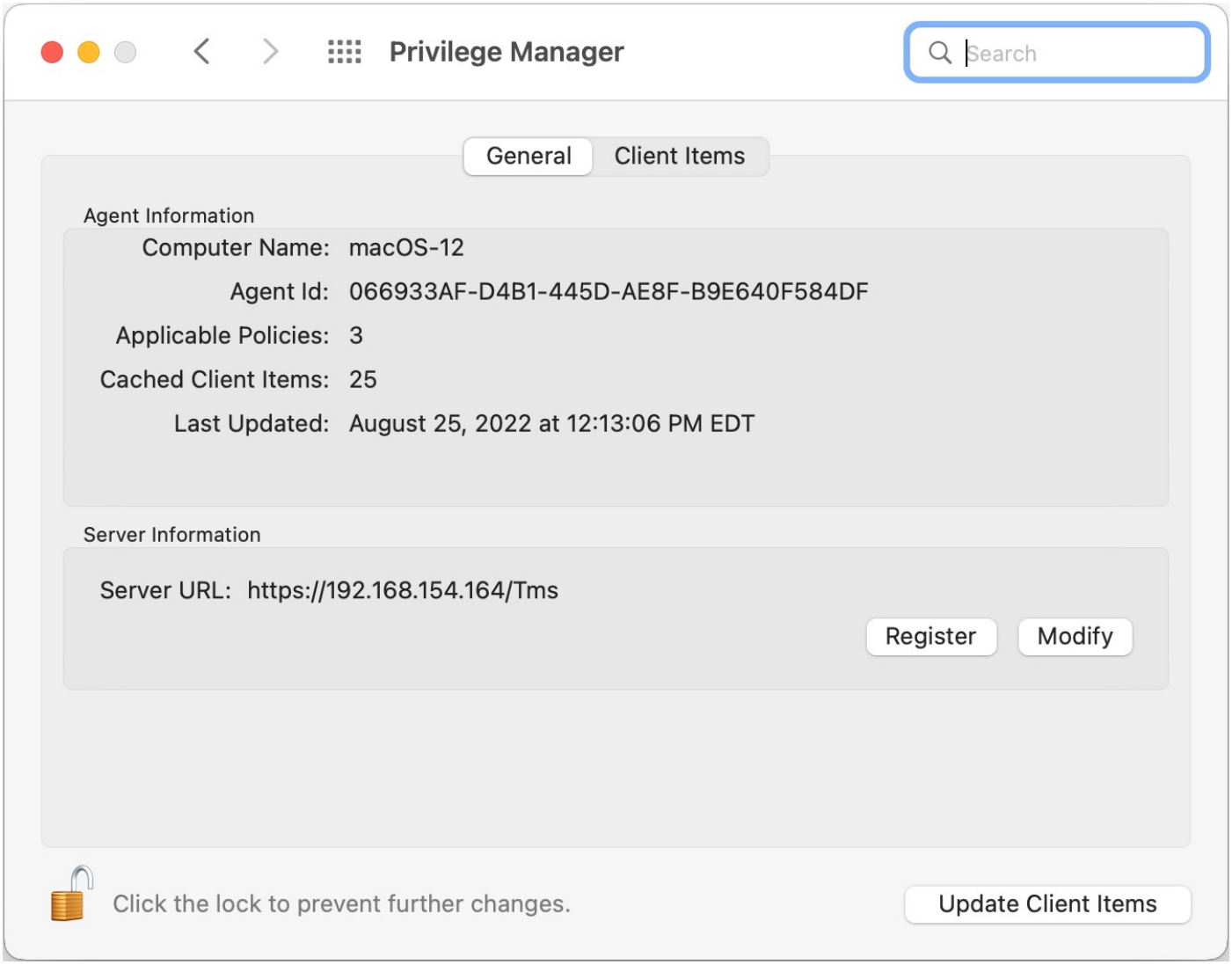


10. Set the **Inactive** switch to **Active**.

Updating the Endpoint

On the macOS endpoint,

1. Open **System Preferences | Privilege Manager**.



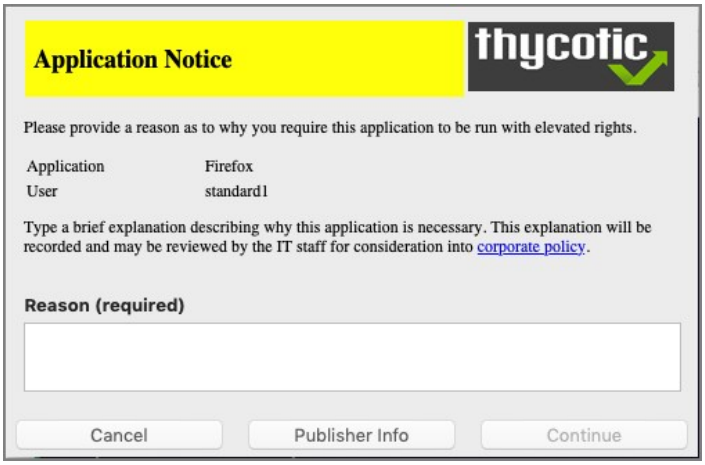
2. Click **Update Client Items**.

The agent updates with new and updated policies and synchronizes.

Expected User Experience

Once the justification policy is updated on an endpoint, when users click Firefox they will see a prompt to enter their justification reason for accessing Firefox.

Delinea


Application Notice
thycotic
Please provide a reason as to why you require this application to be run with elevated rights.
Application Firefox
User standard1
Type a brief explanation describing why this application is necessary. This explanation will be recorded and may be reviewed by the IT staff for consideration into corporate policy.
Reason (required)
Cancel
Publisher Info
Continue

Delinea

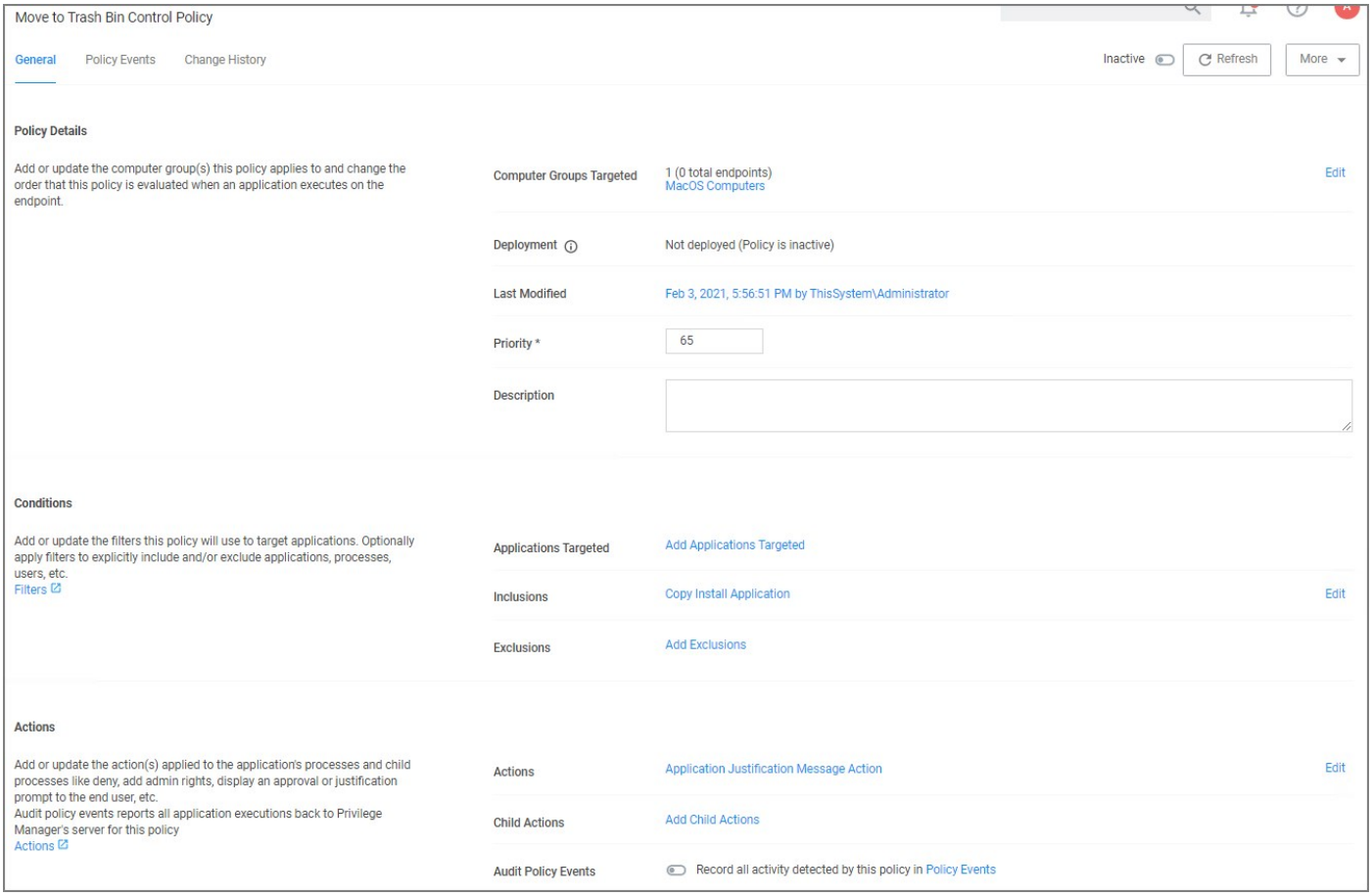
Move to Trash Bin Policy

When a standard user deletes an application bundle via **-delete** or **drag-n-drop** from /Applications, the following actions are taken based on policy evaluation:

- Allow - Is allowed without prompting user for credentials
- Present appropriate Advanced Message Dialog:
  - Approval - Approval process is invoked before it is allowed to complete
    - Cancelled - It is denied.
  - Denied - Denied dialog is invoked and user can not delete the application bundle
  - Justification - Justification process is invoked before it is allowed to complete
    - Cancelled - It is denied.
  - Offline-Approval - Offline-approval process is invoked before it is allowed to complete
    - Cancelled - It is denied.
  - Warning - Warning dialog is invoked before it is allowed to complete
    - Cancelled - It is denied.

To allow a standard user to delete application bundles from the /Applications directory, create an elevation policy that uses the **Copy Install Application** filter under Inclusions. We recommend to also add a justification message action. If used on endpoints running the **KEXT** agent, the policy needs to target an application to work correctly. For this example we are starting with an empty policy.

1. Navigate to your macOS Computer Group and select **Application Policies**.
2. Click **Create Policy**.
3. Click **Skip the wizard, take me to a blank policy**.
4. Enter a Name and description for your policy, click **Create Policy**.
5. Click **Add Inclusions**.
6. Search for and add the **Copy Install Application** filter.
7. Click **Update**.
8. Click **Add Actions**.
9. Search for and add the **Application Justification Message Action**.
10. Click **Update**.
11. Click **Save Changes**.
12. Set the **Inactive** switch to **Active** for policy updates at the endpoint.



Note: A policy configured in this way will also allow a user to update or replace an App Bundle by drag-n-drop via Finder to the /Applications folder.

Targeting .pkg Files

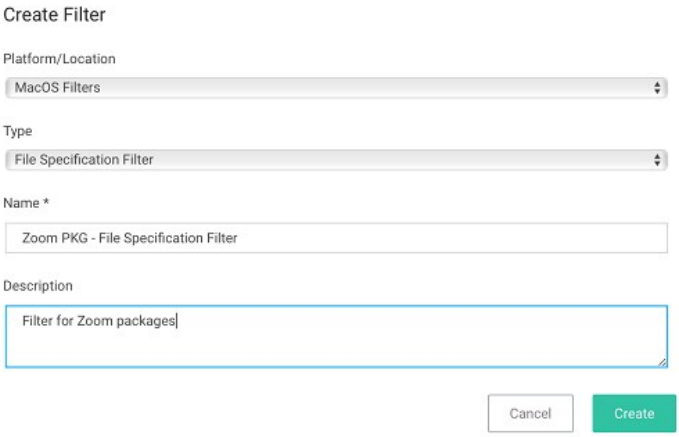
Privilege Manager supports elevation of an installation package (also known as a package). A package contains a product or product component—the package's payload—to be installed on a computer and install configuration information that determines where and how the product is installed. A package is often identified by the file extension of *.pkg* or *.mpkg*.

You can use the Policy Wizard to create policies that apply to packages or you can create them manually. This document details how to create a policy manually.

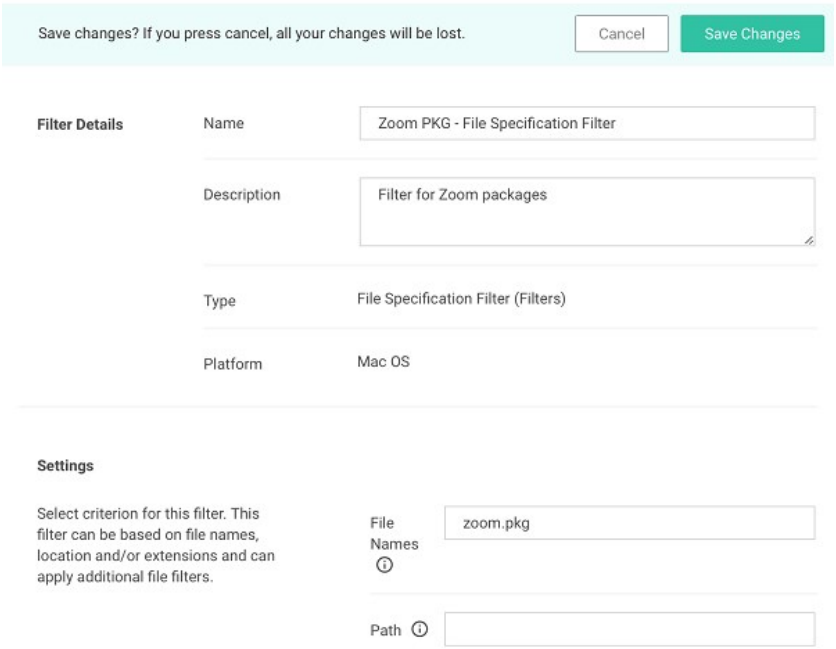
For this example, we'll be using a file specification filter for the file "Zoom.pkg". To be more granular, you could use a file hash filter that targets the desired algorithm for the package file. Signed file filters are not supported for packages at this time.

Create File Specification Filter for the Package

1. Navigate to **Admin I Filters**
2. Click **Create Filter**
3. For Platform/Location, pick **MacOS Computer Filters**
4. For Type, pick **File Specification Filter**



5. Give the filter a name and description and click **Create**



6. Set File Names to *zoom.pkg* and click **Save Changes**

Create Policy Targeting File Specification Filter

1. Navigate to **MACOS Computers | Application Policies**
2. Click **Create Policy**
3. Click **Skip the wizard, take me to a blank policy**
4. Give the policy a name and description and click **Create Policy**
5. Set **Applications Targeted** to the file specification filter you created for the package
6. Set **Inclusions** to **Privilege Manager Copy/Installer Helper Parent Process Filter**
7. Actions – Depending on the desired user experience, use the following combinations of actions:

Deny Execute	Package installation is denied.
Deny Execute Deny Execute Message	Package installation is denied and a notification is posted in notification center.
Application Denied Message Action (HTML)	Package installation is denied and the custom Application Denied Message Action (HTML) dialog is displayed.
Allow Package Installation	Package installation is allowed without prompting the user for admin credentials.
Allow Package Installation Application Approval Request Message Action (HTML)	Package installation is allowed after the user's approval request has been approved. ^
Allow Package Installation Application Approval Request (with Offline Fallback) Message Action	Package installation is allowed after the user's approval request has been approved. ^
Allow Package Installation Application Justification Message Action (HTML)	Package installation is allowed after the user enters a justification.

Allow Package Installation Application Warning Message Action (HTML)	Package installation is allowed after the user acknowledges the warning dialog.

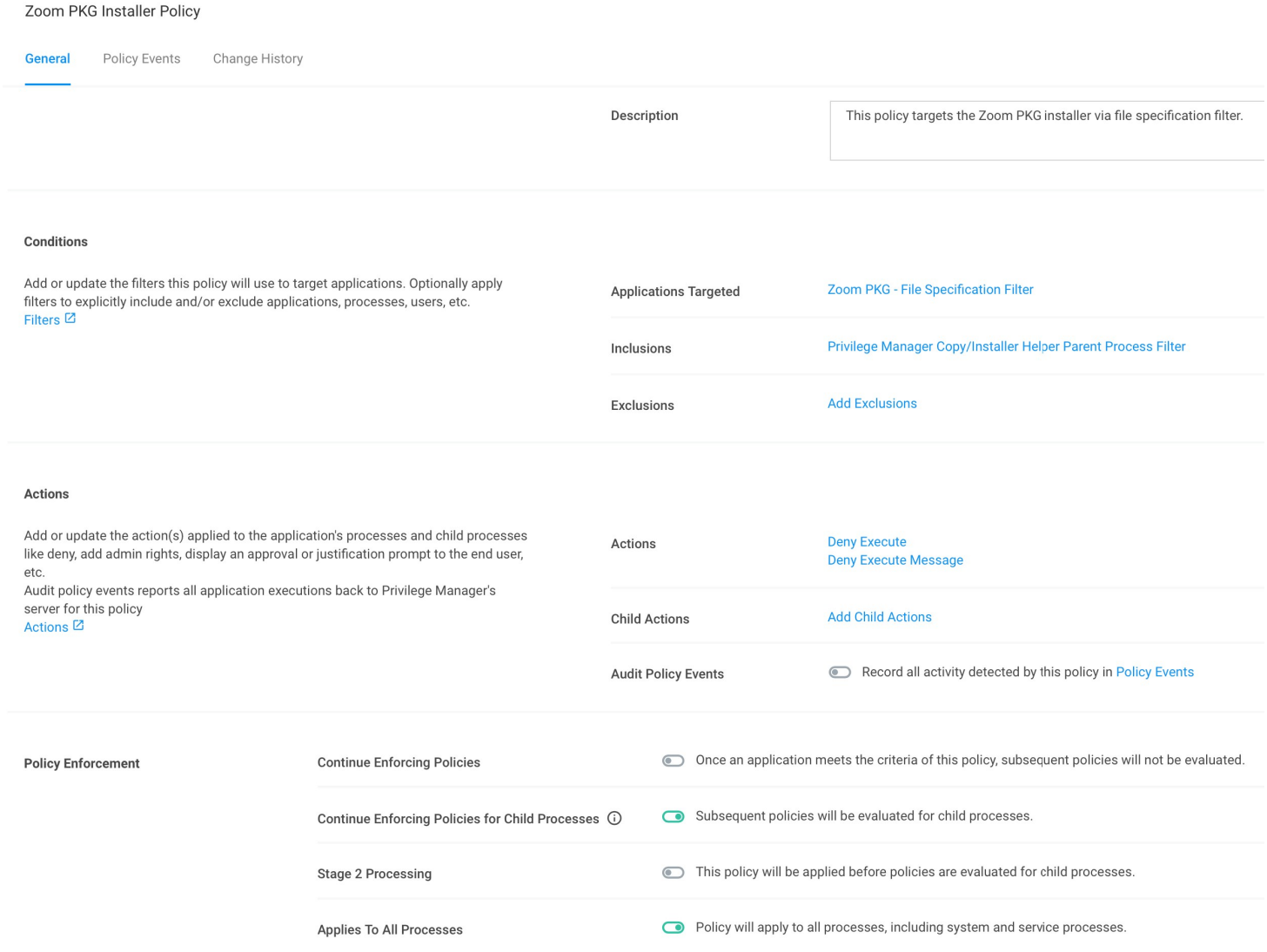
^ If the request is denied, a notification will be posted in notification center.

8. Click **Show Advanced**
   - Click **Continue Enforcing Policies** so that it is disabled
   - Click **Applies To All Process** so that it is enabled
9. Click **Save Changes**
10. Set the policy as **Active**

Policy Examples

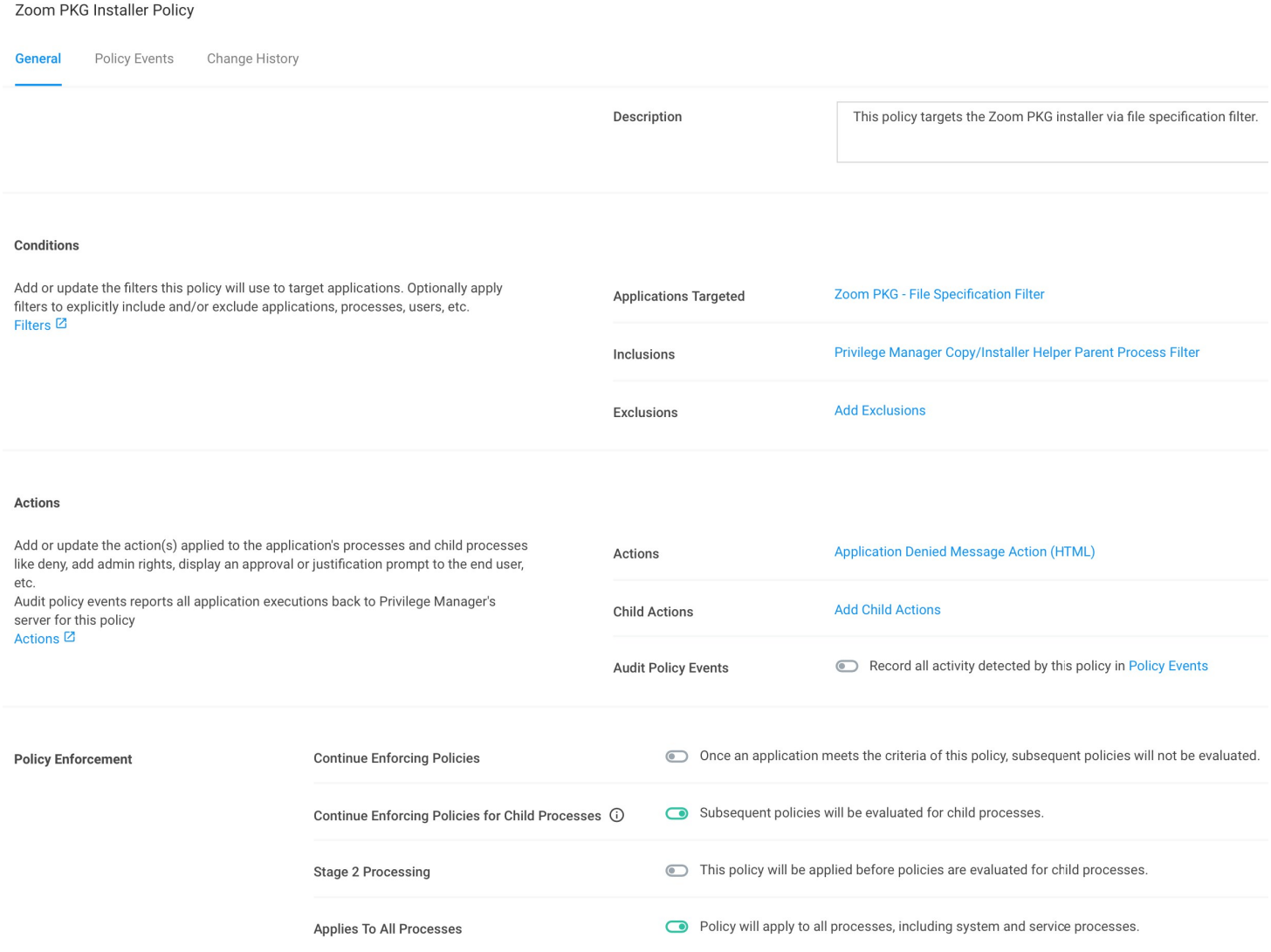
Deny Execute + Deny Execute Message

The Policy below will deny package installation and a notification is posted in notification center.



Application Denied Message Action (HTML)

The Policy below will deny the package installation and the custom Application Denied Message Action (HTML) dialog is displayed.



Allow Package Installation

The Policy below will allow package installation without prompting the user for admin credentials.

Zoom PKG Installer Policy

General | Policy Events | Change History

Description

This policy targets the Zoom PKG installer via file specification filter.

Conditions

Add or update the filters this policy will use to target applications. Optionally apply filters to explicitly include and/or exclude applications, processes, users, etc.
Filters

Applications Targeted	Zoom PKG - File Specification Filter
Inclusions	Privilege Manager Copy/Installer Helper Parent Process Filter
Exclusions	Add Exclusions

Actions

Add or update the action(s) applied to the application's processes and child processes like deny, add admin rights, display an approval or justification prompt to the end user, etc.
Audit policy events reports all application executions back to Privilege Manager's server for this policy
Actions

Actions	Allow Package Installation
Child Actions	Add Child Actions
Audit Policy Events	Record all activity detected by this policy in Policy Events

Policy Enforcement

Continue Enforcing Policies	Once an application meets the criteria of this policy, subsequent policies will not be evaluated.
Continue Enforcing Policies for Child Processes	Subsequent policies will be evaluated for child processes.
Stage 2 Processing	This policy will be applied before policies are evaluated for child processes.
Applies To All Processes	Policy will apply to all processes, including system and service processes.

Allow Package Installation + Application Approval Request Message Action (HTML)

The Policy below will allow package installation after the user's approval request has been approved. If the request is denied, a notification will be posted in notification center.

Zoom PKG Installer Policy

General | Policy Events | Change History

Description

This policy targets the Zoom PKG installer via file specification filter.

Conditions

Add or update the filters this policy will use to target applications. Optionally apply filters to explicitly include and/or exclude applications, processes, users, etc.
Filters

Applications Targeted	Zoom PKG - File Specification Filter
Inclusions	Privilege Manager Copy/Installer Helper Parent Process Filter
Exclusions	Add Exclusions

Actions

Add or update the action(s) applied to the application's processes and child processes like deny, add admin rights, display an approval or justification prompt to the end user, etc.
Audit policy events reports all application executions back to Privilege Manager's server for this policy
Actions

Actions	Allow Package Installation Application Approval Request Message Action (HTML)
Child Actions	Add Child Actions
Audit Policy Events	Record all activity detected by this policy in Policy Events

Policy Enforcement

Continue Enforcing Policies	Once an application meets the criteria of this policy, subsequent policies will not be evaluated.
Continue Enforcing Policies for Child Processes	Subsequent policies will be evaluated for child processes.
Stage 2 Processing	This policy will be applied before policies are evaluated for child processes.
Applies To All Processes	Policy will apply to all processes, including system and service processes.

Allow Package Installation + Application Approval Request (with Offline Fallback) Message Action (HTML)

The Policy below will allow package installation after the user's approval request has been approved. If the request is denied, a notification will be posted in notification center.

Zoom PKG Installer Policy

General | Policy Events | Change History

Description	This policy targets the Zoom PKG installer via file specification filter.

Conditions

Add or update the filters this policy will use to target applications. Optionally apply filters to explicitly include and/or exclude applications, processes, users, etc.
Filters

Applications Targeted	Zoom PKG - File Specification Filter
Inclusions	Privilege Manager Copy/Installer Helper Parent Process Filter
Exclusions	Add Exclusions

Actions

Add or update the action(s) applied to the application's processes and child processes like deny, add admin rights, display an approval or justification prompt to the end user, etc.
Audit policy events reports all application executions back to Privilege Manager's server for this policy
Actions

Actions	Allow Package Installation Application Approval Request (with Offline Fallback) Message Action (HTML)
Child Actions	Add Child Actions
Audit Policy Events	Record all activity detected by this policy in Policy Events

Policy Enforcement

Continue Enforcing Policies	Once an application meets the criteria of this policy, subsequent policies will not be evaluated.
Continue Enforcing Policies for Child Processes	Subsequent policies will be evaluated for child processes.
Stage 2 Processing	This policy will be applied before policies are evaluated for child processes.
Applies To All Processes	Policy will apply to all processes, including system and service processes.

Allow Package Installation + Application Justification Message Action (HTML)

The Policy below will allow package installation after the user enters a justification.

Zoom PKG Installer Policy

General | Policy Events | Change History

Description

This policy targets the Zoom PKG installer via file specification filter.

Conditions

Add or update the filters this policy will use to target applications. Optionally apply filters to explicitly include and/or exclude applications, processes, users, etc.
Filters

Applications Targeted	Zoom PKG - File Specification Filter
Inclusions	Privilege Manager Copy/Installer Helper Parent Process Filter
Exclusions	Add Exclusions

Actions

Add or update the action(s) applied to the application's processes and child processes like deny, add admin rights, display an approval or justification prompt to the end user, etc.
Audit policy events reports all application executions back to Privilege Manager's server for this policy
Actions

Actions	Allow Package Installation Application Justification Message Action (HTML)
Child Actions	Add Child Actions
Audit Policy Events	Record all activity detected by this policy in Policy Events

Policy Enforcement

Continue Enforcing Policies	Once an application meets the criteria of this policy, subsequent policies will not be evaluated.
Continue Enforcing Policies for Child Processes	Subsequent policies will be evaluated for child processes.
Stage 2 Processing	This policy will be applied before policies are evaluated for child processes.
Applies To All Processes	Policy will apply to all processes, including system and service processes.

Allow Package Installation + Application Warning Message Action (HTML)

The Policy below will allow package installation after the user acknowledges the warning dialog.

Delinea

Zoom PKG Installer Policy

General | Policy Events | Change History

Conditions

Add or update the filters this policy will use to target applications. Optionally apply filters to explicitly include and/or exclude applications, processes, users, etc.
Filters

Applications Targeted	Zoom PKG - File Specification Filter
Inclusions	Privilege Manager Copy/Installer Helper Parent Process Filter
Exclusions	Add Exclusions

Actions

Add or update the action(s) applied to the application's processes and child processes like deny, add admin rights, display an approval or justification prompt to the end user, etc.
Audit policy events reports all application executions back to Privilege Manager's server for this policy
Actions

Actions	Allow Package Installation Application Warning Message Action (HTML)
Child Actions	Add Child Actions
Audit Policy Events	Record all activity detected by this policy in Policy Events

Policy Enforcement

Continue Enforcing Policies	Once an application meets the criteria of this policy, subsequent policies will not be evaluated.
Continue Enforcing Policies for Child Processes	Subsequent policies will be evaluated for child processes.
Stage 2 Processing	This policy will be applied before policies are evaluated for child processes.
Applies To All Processes	Policy will apply to all processes, including system and service processes.

Application Self-elevation

> **Important**: The Finder Sync Extension is deprecated with release version 11.2+. This feature is only available with the KEXT based Privilege Manager Agent. Self-elevation in this form is not possible with the system extension.

Refer to previous documentation versions for details about the Finder Sync Extension setup for KEXT based Privilege Manager agents.

Inventory of Application Bundles

Privilege Manager allows the inventory of macOS application bundles. These are most likely applications already installed on a macOS system that can be found in the Applications folder. In order for Privilege Manager to inventory application bundles, the user needs to create a .zip file of the application bundles and move it outside of the Applications folder. Once the .zip is created and moved, it can be uploaded to Privilege Manager for inventory purposes.

A .zip of an application bundle when inventoried can contain one or more Mach-O binaries. The level of details that can be inventoried automatically depends on the format of and information provided in the Info.plist file.

The examples below show certain steps for the zip and upload process for one type of file, while the inventory examples are shown for

- a readable Info.plist file with an application bundle containing one Mach-O binary.
- a readable Info.plist file with an application bundle containing more than one Mach-O binary.
- a binary Info.plist file that does not provide sufficient details automatically and that will require manual steps to add information to the filter and/or policy.

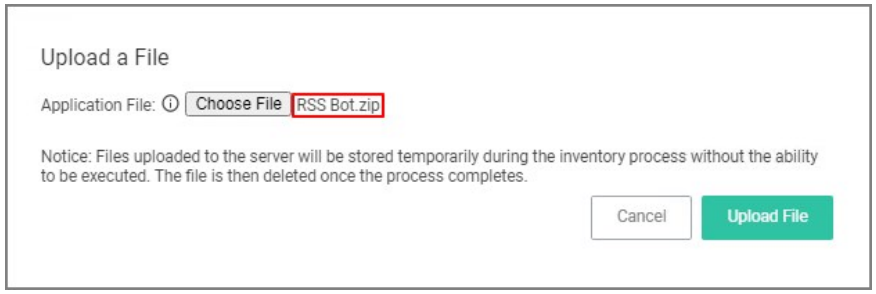
The **Manage Application** option is only available on files inside the .zip compressed archives and not on the .zip file itself.

Creating a .zip File

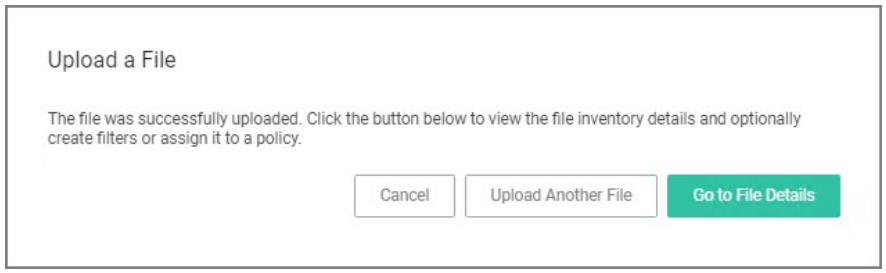
1. Navigate to an application bundle file inside **/Applications**.
2. Right-click and select **Compress**.
3. Select the created .zip file and move it out of **/Applications**.

Uploading the .zip File

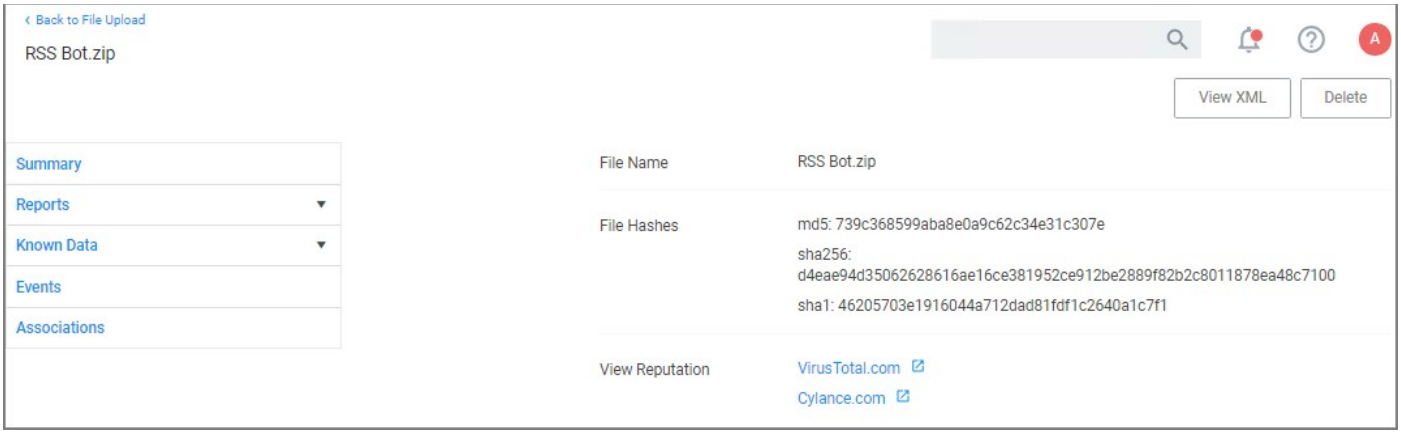
1. Use **Admin | File Upload** to start the inventory process.
2. Choose a file to upload and click **Upload File**.



3. After uploading a .zip file, click **Go to File Details**.

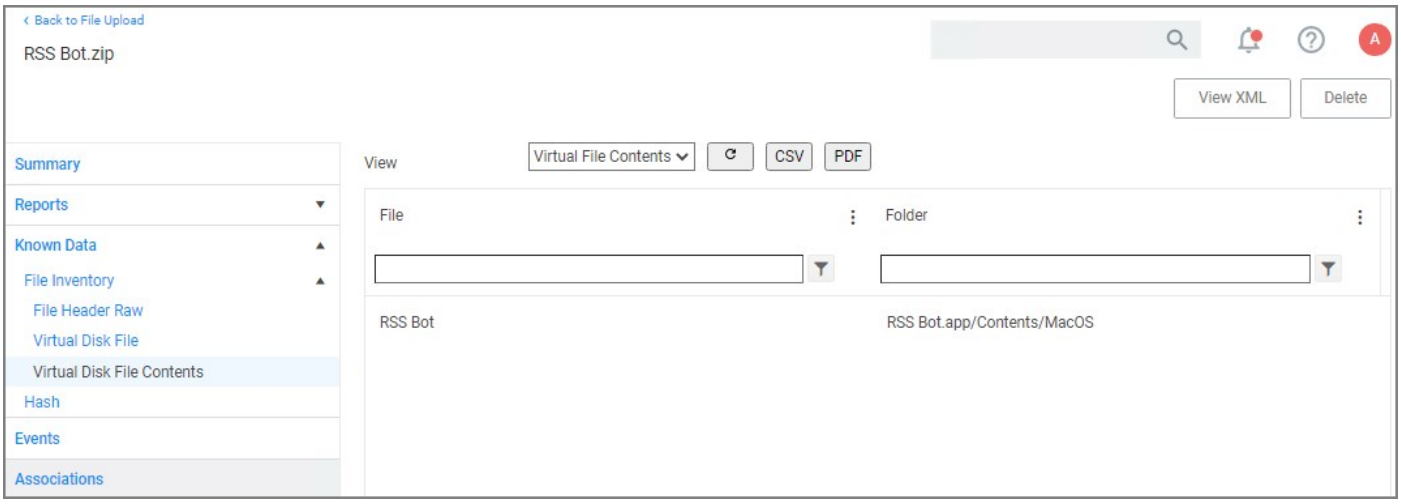


4. On the Resource Explorer page, view all the details available.

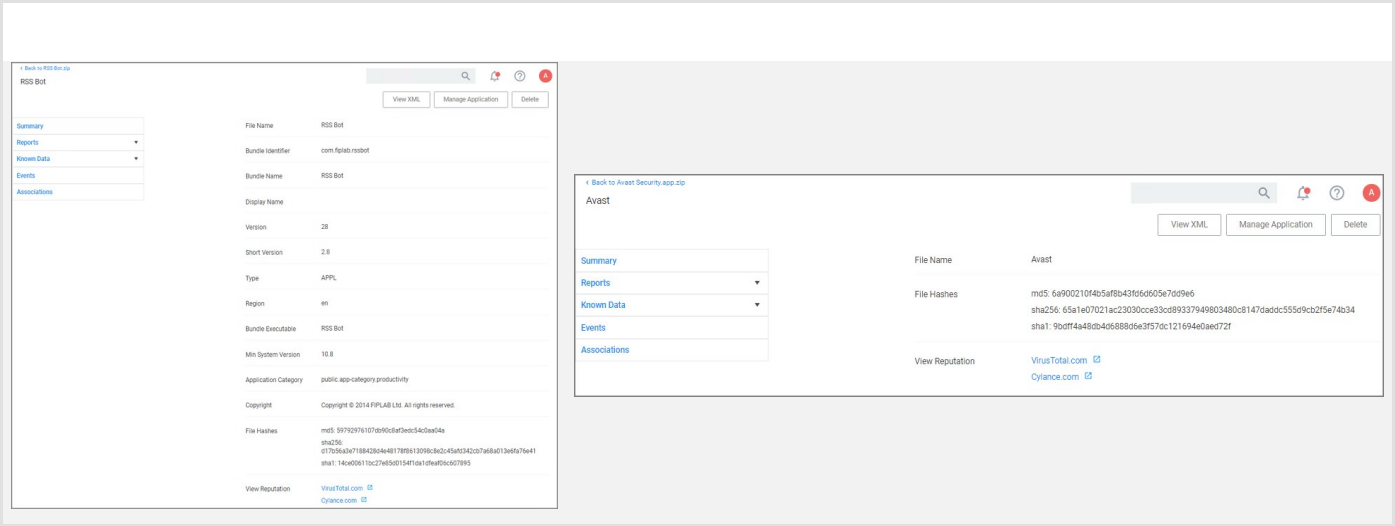


Creating a Filter from the Inventoried .zip File

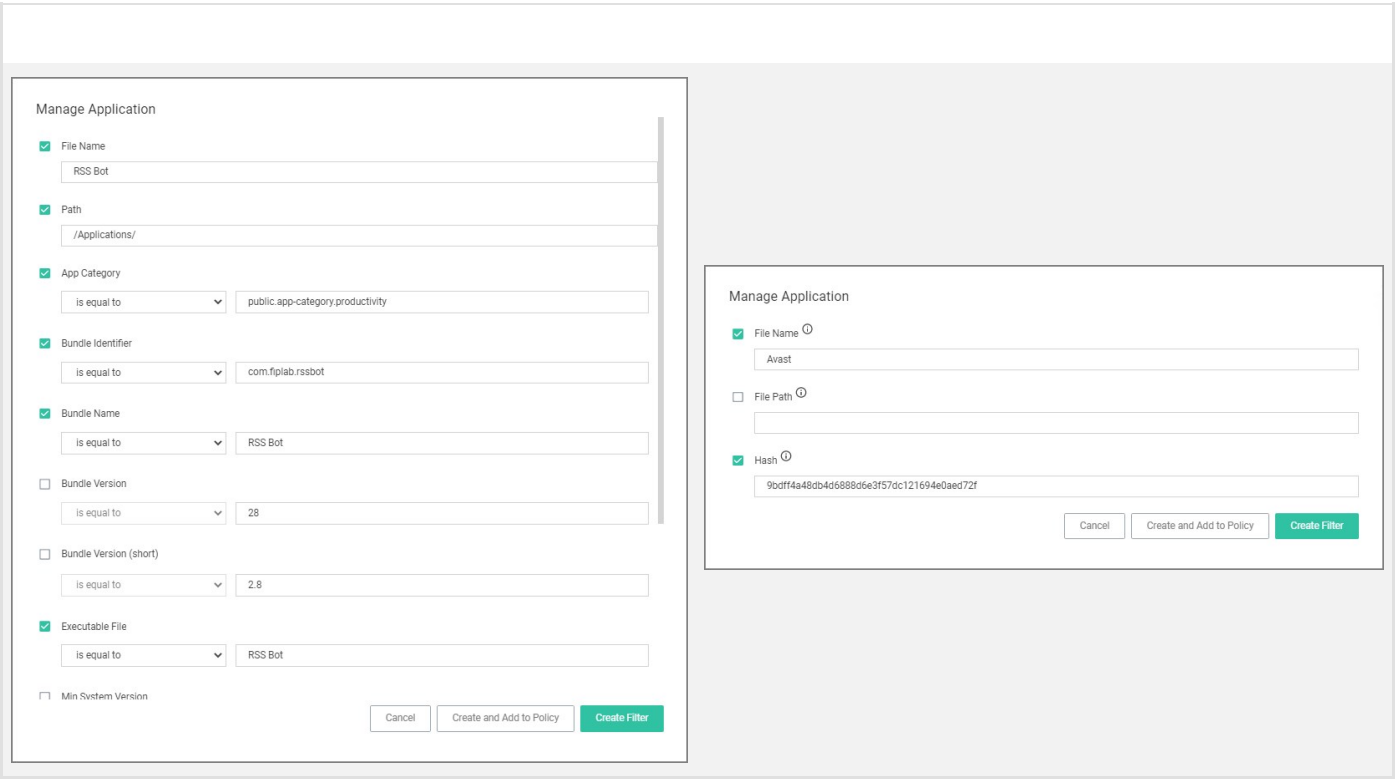
1. On the Resource Explorer page under **Known Data I File Inventory**, select **Virtual Disk File Contents**.



2. In the **File** column, click on the Mach-O binary name.
3. The Resource explorer is now displaying the information for the client item. The table below shows the difference between readable (left column) and non-readable (right column) Info.plist files.



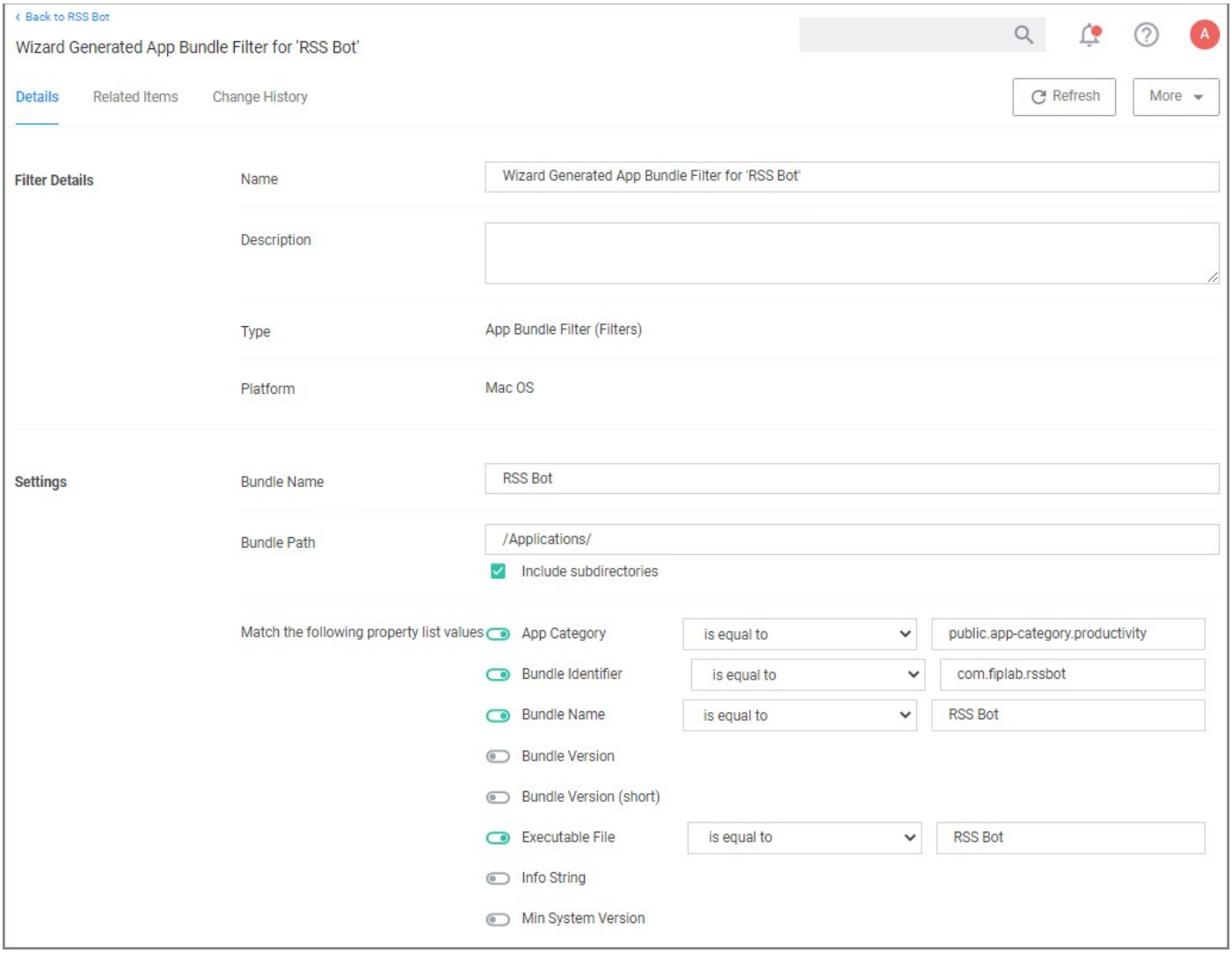
4. Click **Manage Application**.



Select any or all of the options on the Manage Application modal.

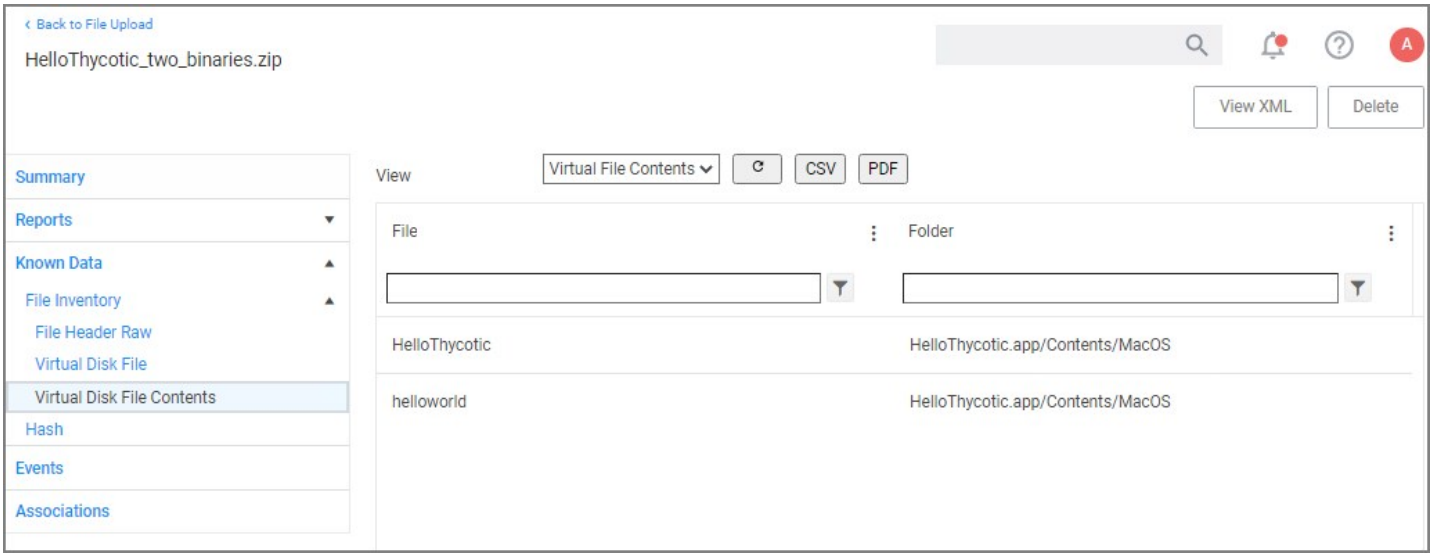
5. Click **Create Filter**.

When dealing with an application bundle that has a readable Info.plist, Privilege Manager creates a very detailed *Wizard Generated App Bundle Filter* for the application bundle. This filter can be further customized and added to any policy.



Uploading a .zip with Two Mach-O Binaries

App bundles can contain more than one Mach-O binary, which will all be inventoried and accessible via the client items under **Known Data | Virtual Disk File Contents**:



While an application bundle can contain many binaries, you may want to only create an App Bundle filter for the binary set as the **CFBundleExecutable** in the Info.Plist. For some applications this may be sufficient, but you may need to create additional non-App Bundle filters for the other binaries.

App Bundle Contents Info.plist (binary format)

Depending on how the vendor created the application bundle, the level of detail to be inventoried might vary. Sometimes it is necessary to look at other artifacts in the bundle to customize the filter and or policy further.

For this we will look at an Info.plist file in binary format. For example,

- to manually add a Bundle Identifier to the filter, search for the tag <CFBundleIdentifier> and enter the string value in the appropriate filter field.
- to manually add a Bundle Version (short) to the filter, search for the tag <CFBundleShortVersionString > and enter the string value in the appropriate filter field.

  Note: Reading an Info.plist file might depend on the tool that is being used. If opened in TextEdit only, they can appear garbled. On macOS systems, we recommend using QuickLock (Y), XCode, or something like Visual Studio Code. On Windows systems, we recommend Visual Studio Code or Notepad++.

```
<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE plist PUBLIC "-//Apple//DTD PLIST 1.0//EN" "http://wwwapplicationle.com/DTDs/PropertyList-1.0.dtd">
<plist version="1.0">
<dict>
 <key>BuildMachineOSBuild</key>
 <string>19G2021</string>
 <key>CFBundleDevelopmentRegion</key>
 <string>en</string>
 <key>CFBundleDisplayName</key>
 <string>Avast</string>
 <key>CFBundleDocumentTypes</key>
  <array>
    <dict>
   <key>CFBundleTypeName</key>
   <string>Any Item</string>
   <key>CFBundleTypeRole</key>
   <string>None</string>
   <key>LSHandlerRank</key>
   <string>None</string>
   <key>LSItemContentTypes</key>
     <array>
    <string>public.item</string>
     </array>
   </dict>
 </array>
<key>CFBundleExecutable</key>
```

```
<string>Avast</string>
<key>CFBundleIconFile</key>
<string>AppIcon</string>
<key>CFBundleIdentifier</key>
<string>com.avast.AAFM</string>
<key>CFBundleInfoDictionaryVersion</key>
<string>6.0</string>
<key>CFBundleName</key>
<string>Avast</string>
<key>CFBundlePackageType</key>
<string>APPL</string>
<key>CFBundleShortVersionString</key>
<string>14.9</string>
<key>CFBundleSupportedPlatforms</key>
 <array>
  <string>MacOSX</string>
 </array>
<key>CFBundleURLTypes</key>
 <array>
    <dict>
   <key>CFBundleTypeRole</key>
   <string>Viewer</string>
   <key>CFBundleURLName</key>
  <string>com.avast.webdocument</string>
   <key>CFBundleURLSchemes</key>
      <array>
     <string>avastav</string>
      </array>
   </dict>
 </array>
<key>CFBundleVersion</key>
<string>1</string>
<key>DTCompiler</key>
<string>comapplicationle.compilers.llvm.clang.1_0</string>
<key>DTPlatformBuild</key>
<string>12B45b</string>
<key>DTPlatformName</key>
<string>macosx</string>
<key>DTPlatformVersion</key>
<string>11.0</string>
<key>DTSDKBuild</key>
<string>20A2408</string>
<key>DTSDKName</key>
<string>macosx11.0</string>
<key>DTXcode</key>
<string>1220</string>
<key>DTXcodeBuild</key>
<string>12B45b</string>
<key>LSMinimumSystemVersion</key>
<string>10.10</string>
<key>LSUIElement</key>
 <true/>
<key>NSCameraUsageDescription</key>
<string>Change Avast Omni profile picture</string>
<key>NSHumanReadableCopyright</key>
<string>Copyright © 2021 AVAST Software s.r.o. All rights reserved.</string>
<key>NSMainNibFile</key>
<string>MainMenu</string>
<key>NSPrincipalClass</key>
<string>Avast.AntivirusModule</string>
<key>NSServices</key>
 <array>
   <dict>
   <key>NSMenuItem</key>
      <dict>
     <key>default</key>
    <string>Scan with Avast</string>
      </dict>
   <key>NSMessage</key>
  <string>scanFromServicesMenu</string>
   <key>NSPortName</key>
   <string>Avast</string>
  <key>NSRequiredContext</key>
      <dict>
    <key>NSApplicationIdentifier</key>
    <string>comapplicationle.finder</string>
      </dict>
  <key>NSSendFileTypes</key>
    <array>
```

```
    <string>public.item</string>
     </array>
   <key>NSServiceDescription</key>
   <string>ScanServicesDesc</string>
    </dict>
 </array>
</dict>
</plist>
```

macOS Policy Wizard

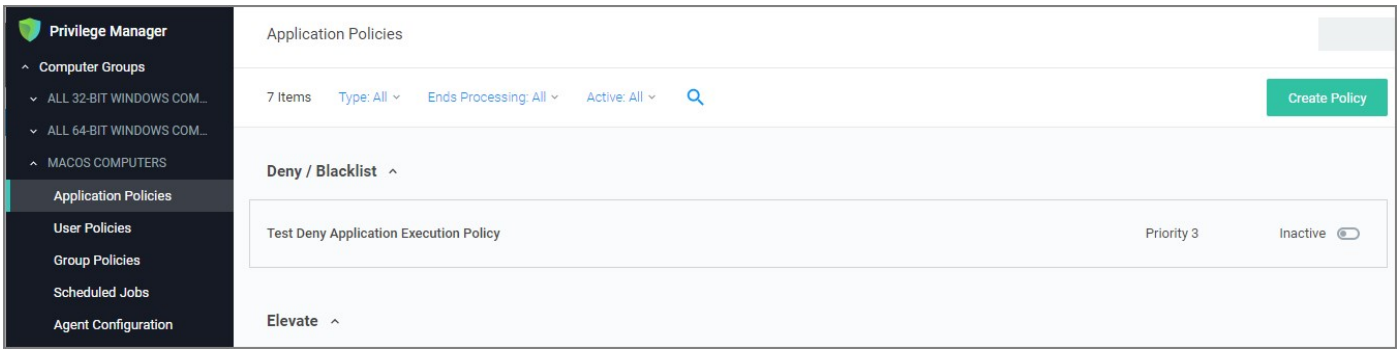
This section contains macOS policy wizard decision flow diagrams for controlling policies.

The following diagrams are available:

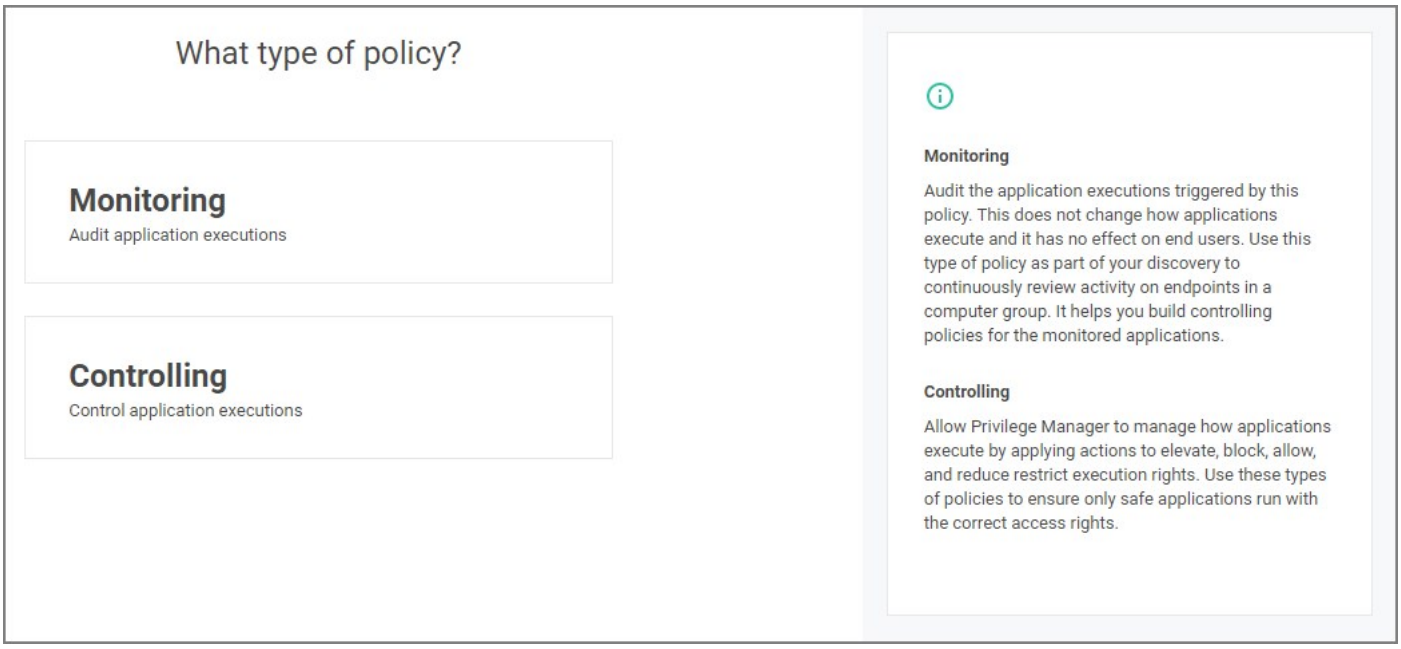
- Creating a Controlling Elevation Policy for macOS
- Creating a Controlling Allow Policy for macOS
- Creating a Controlling Block Policy for macOS

Creating a Controlling Allow Policy for macOS

1. For any of your Computer Groups navigate to **Application Policies**.

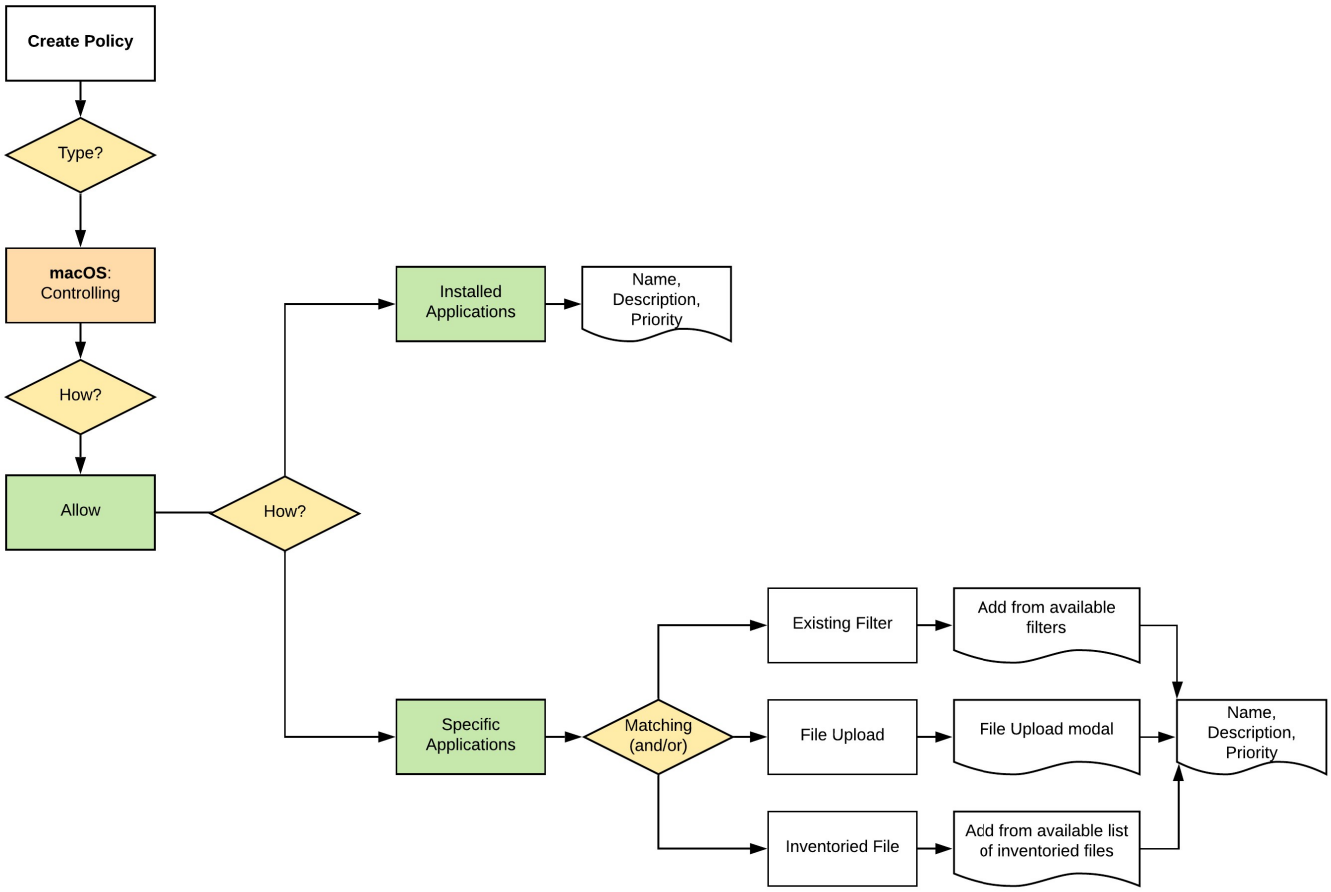


2. Click **Create Policy**.



Make your selection and click **Next** to get to the next wizard page.

For the steps through the wizard, follow these decision points:



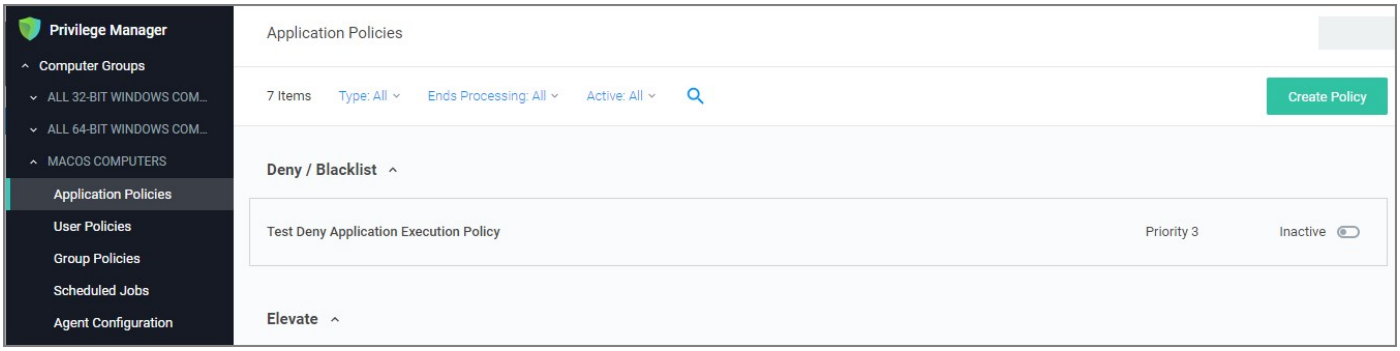
3. After assigning a name, description and verifying the priority number, click **Create Policy**.

While in the wizard you can navigate back to previous pages via the **Previous Step** link to select another path. However, any **Previous Step** navigation clears selected options on accessed wizard pages.

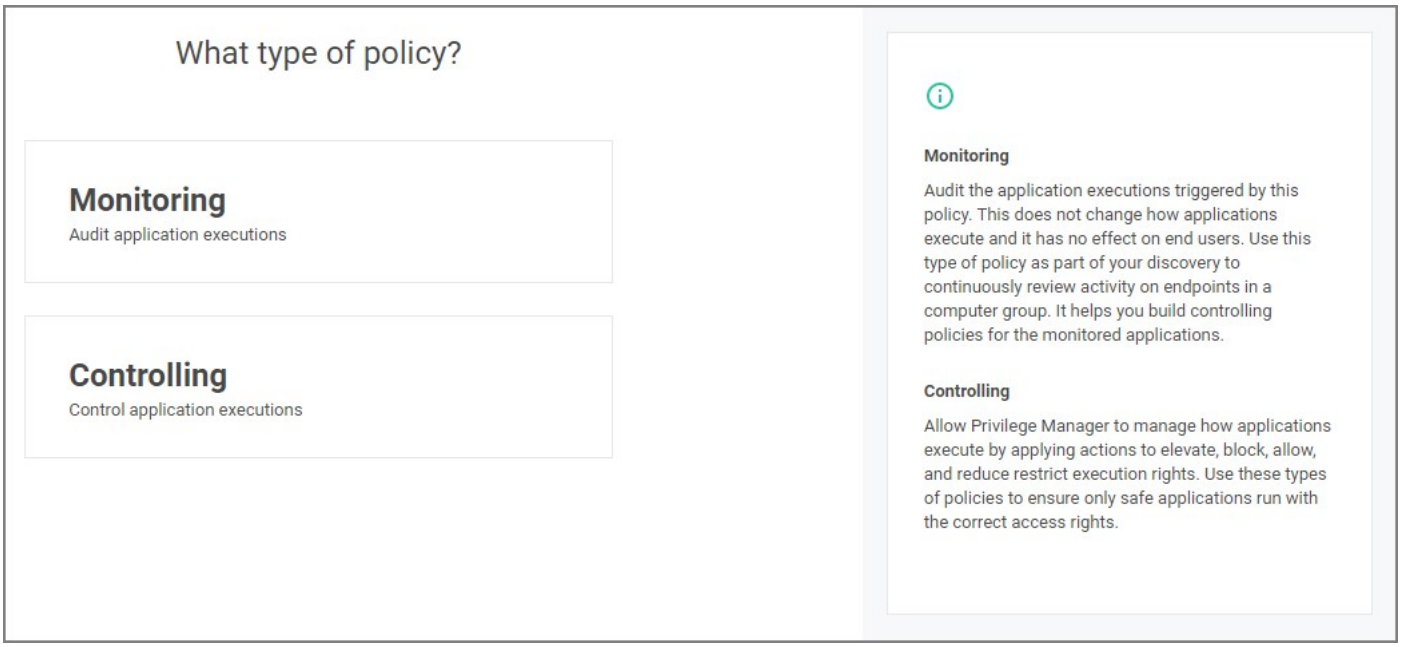
The wizard provides on page help explaining the different options available to the user.

Creating a Controlling Block Policy for macOS

1. For any of your Computer Groups navigate to **Application Policies**.

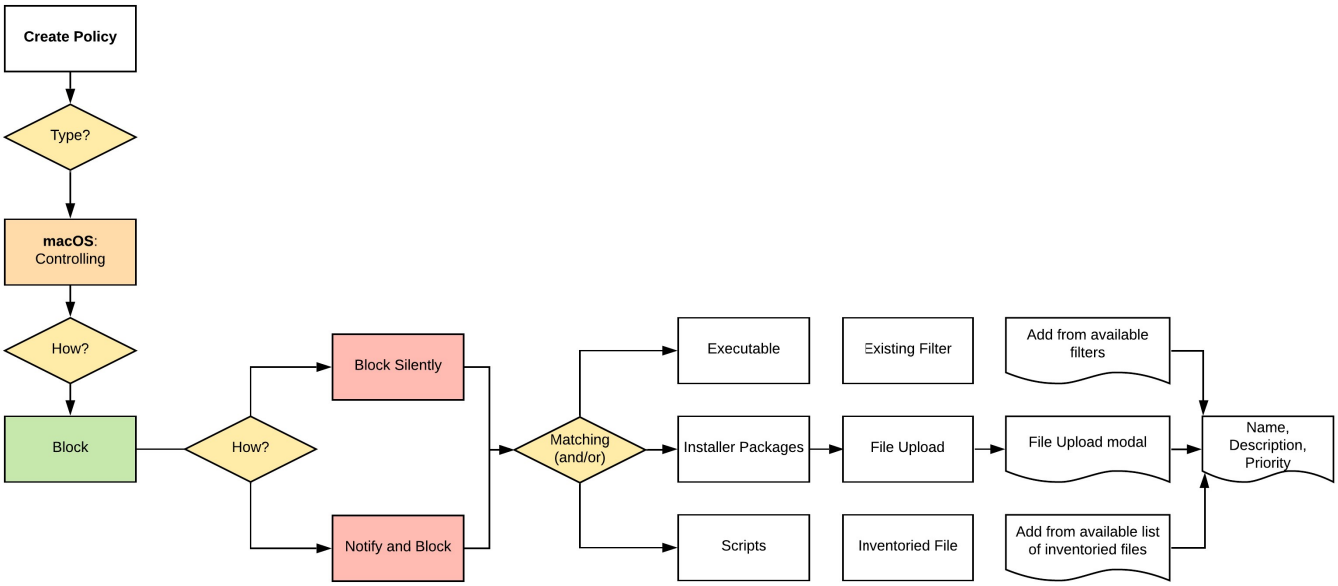


2. Click **Create Policy**.



Make your selection and click **Next** to get to the next wizard page.

For the steps through the wizard, follow these decision points:



3. After assigning a name, description and verifying the priority number, click **Create Policy**.

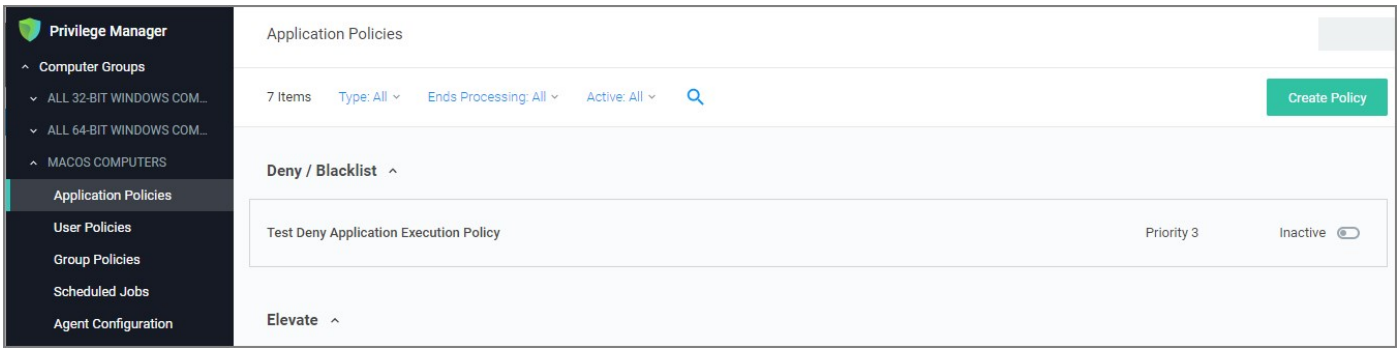
While in the wizard you can navigate back to previous pages via the **Previous Step** link to select another path. However, any **Previous Step** navigation clears selected options on accessed wizard pages.

The wizard provides on page help explaining the different options available to the user.

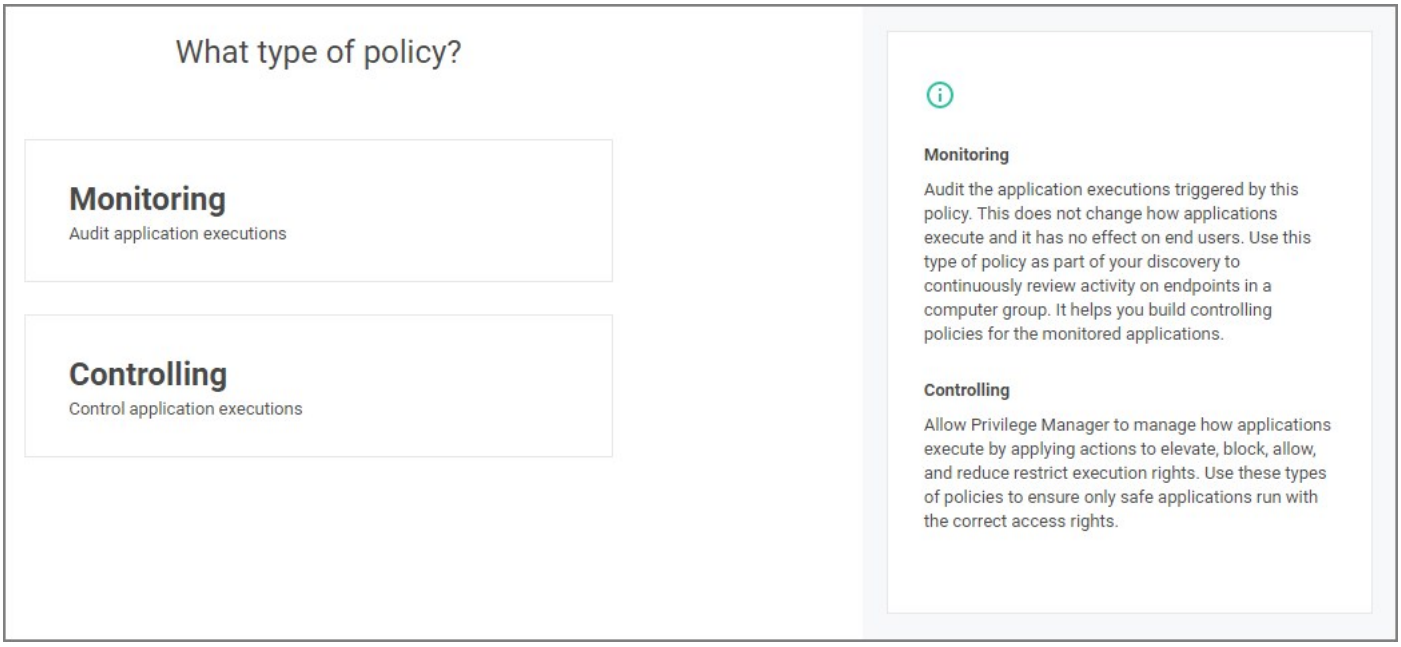
Creating a Controlling Elevation Policy for macOS

Note: The diagram shows actions "Run as Root" and "Just in Time" which will only work with the system extension based agent introduced with Privilege Manager v10.8.2.

1. For any of your Computer Groups navigate to **Application Policies**.

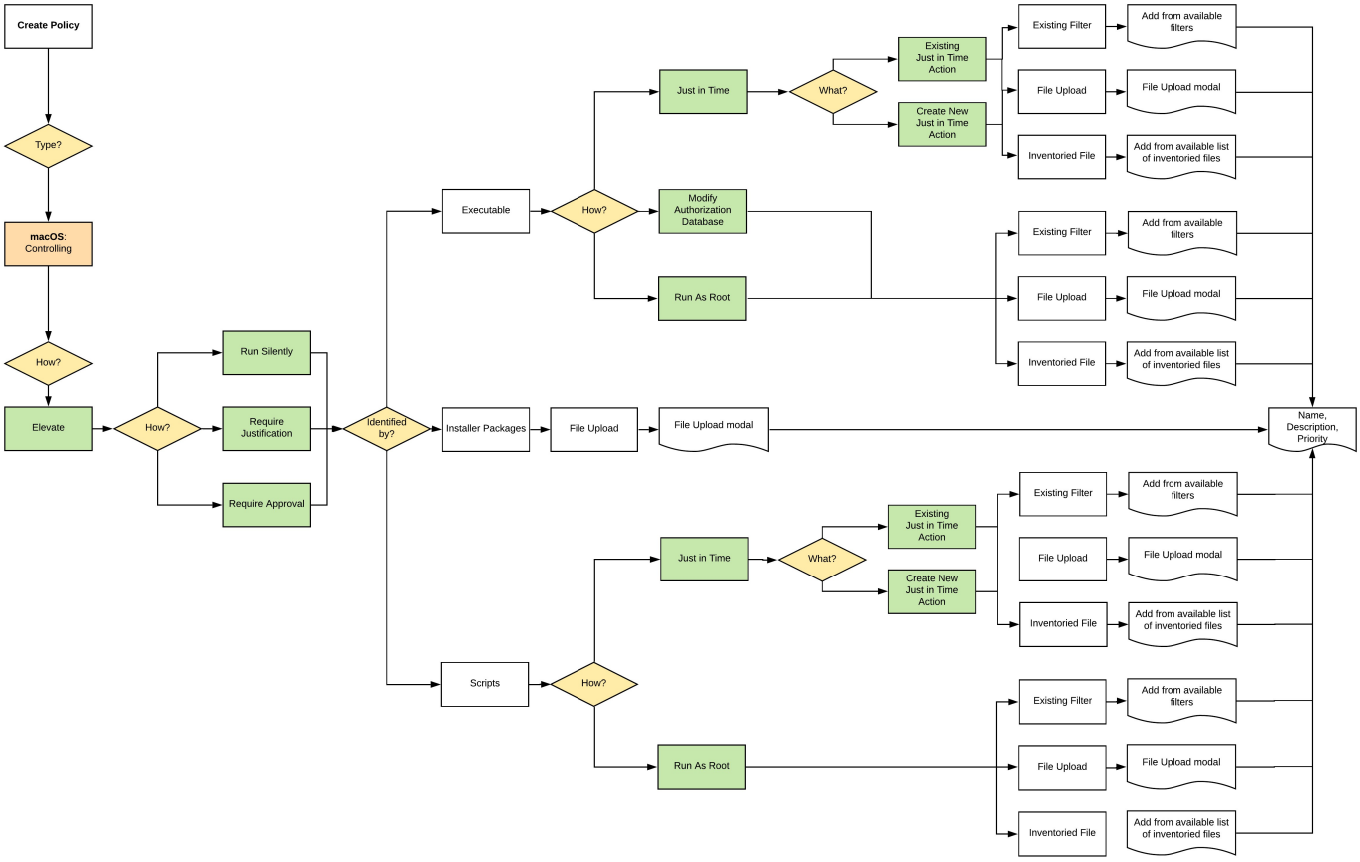


2. Click **Create Policy**.



Make your selection and click **Next** to get to the next wizard page.

For the steps through the wizard, follow these decision points:



3. After assigning a name, description and verifying the priority number, click **Create Policy**.

While in the wizard you can navigate back to previous pages via the **Previous Step** link to select another path. However, any **Previous Step** navigation clears selected options on accessed wizard pages.

The wizard provides on page help explaining the different options available to the user.

The default Unix/Linux Computer Group.

This is the navigation entry point into the Unix/Linux Computer Group. The sub nodes are in feature parity with other OS computer groups. except for User and Group Management, which is not currently covered. All policies or resources underneath **UNIX/LINUX COMPUTERS** pertain to that specific default computer group.

For Unix/Linux Agent Configuration information refer to Agent Configuration.

> **Note**: Linux/Unix user and group management is not enabled. The Unix/Linux agent allows administrators to get lists and details of local users, groups, and membership.

Unix/Linux Specific Policies

Once your Unix/Linux agent is registered, creating policies for your Unix/Linux machines follows a very similar process to creating policies for Windows machines in Privilege Manager . The main approach should be via the use of the Policy Wizard aided by the following:

1. **Collect File Data**: This enables Privilege Manager to recognize specific files and file types in your environment. The file data that you want to target with policies are called Events. All imported files can be viewed via **File Inventory**.
2. **Create Filters**: This step sorts important file data (Events) according to different criteria.
3. **Create Policies**: This step defines what
    1. Actions to perform on applications and
    2. Targets (Locations) for those actions.

    Refer to the Policy Page topic.
4. **Assign Filters to Policies**: This step directs a Policy's actions to the appropriate Events happening on your network. This step also allows a Policy to be set to active.
5. **Order your Policies** based on priority level—Once your policies are created, the order they execute across your network matters. See the Policy Priority topic for more details.

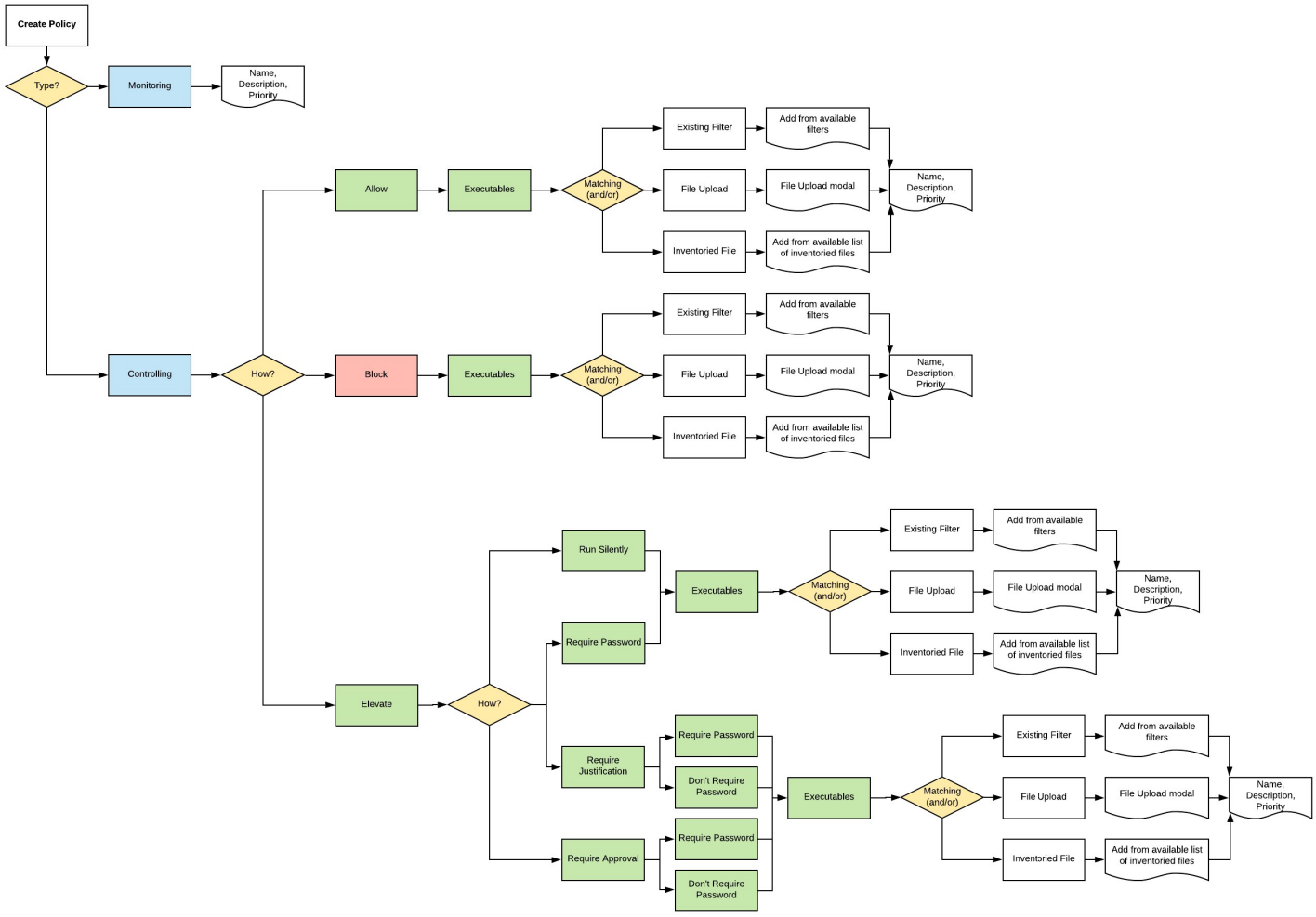
    Note: In Unix/Linux, roles are bifurcated into two groups: Admins, and Users rather than by Group Policy Objects (GPO) found in Windows environments.

Example Policies

- Allow ID
- Block Diskspace Command
- Elevate LS

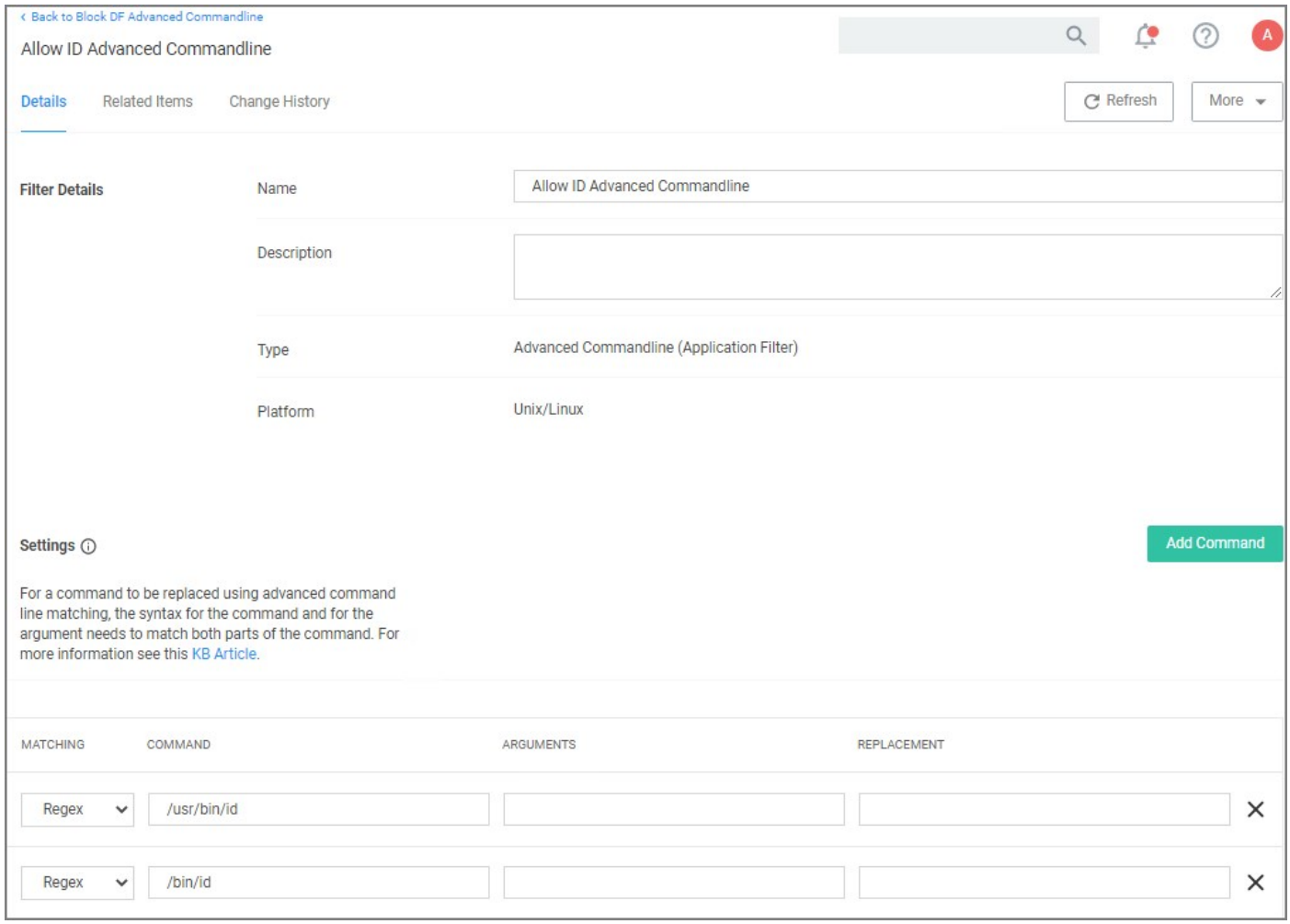
Wizard Flow Diagram

The following diagram shows the typical decision flow when using the policy wizard for creating Unix/Linux policies.

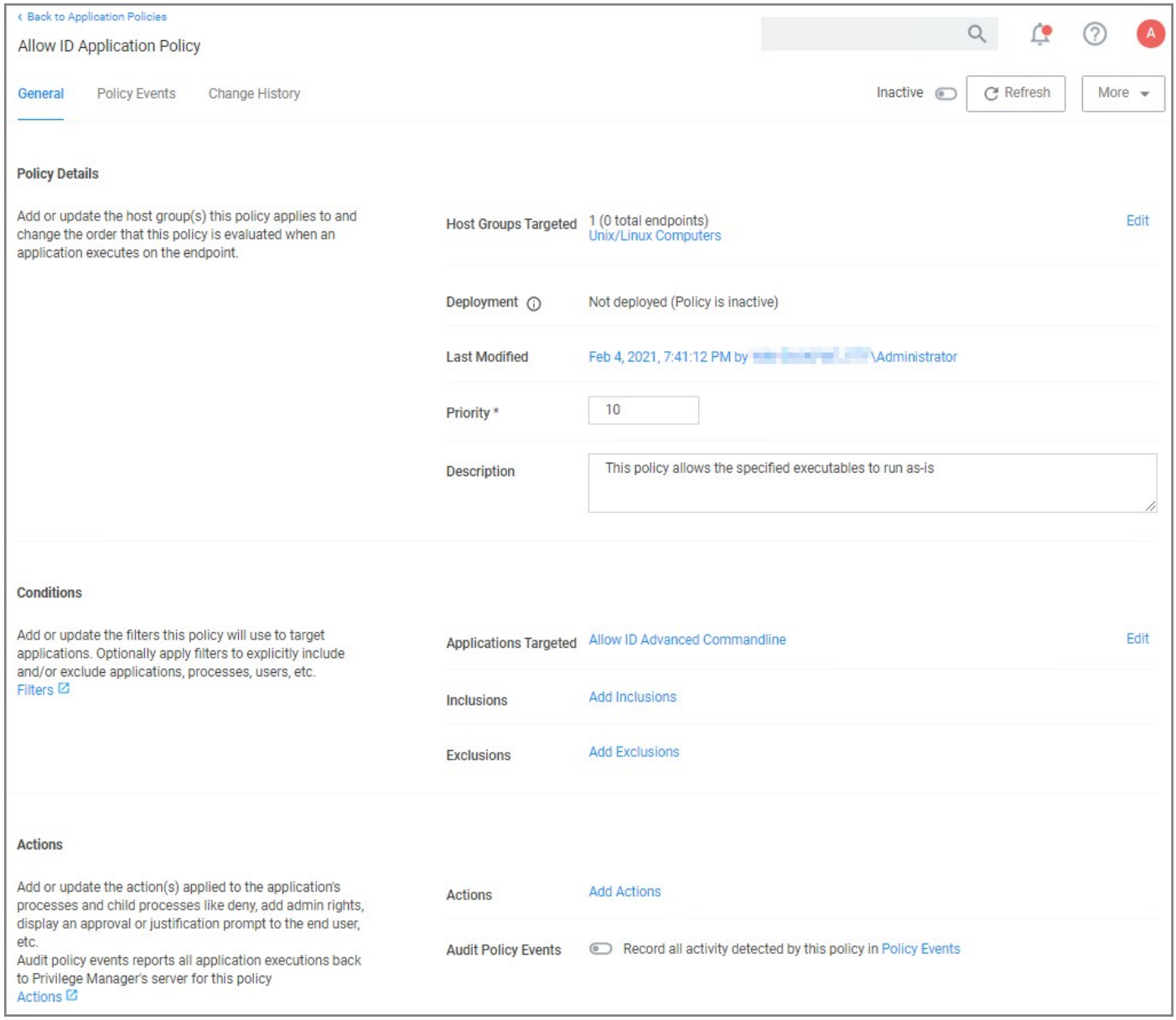

Create Policy
Type?
Monitoring
Name, Description, Priority
Controlling
How?
Allow
Executables
Matching (and/or)
Existing Filter
Add from available filters
File Upload
File Upload modal
Inventoried File
Add from available list of inventoried files
Name, Description, Priority
Block
Executables
Matching (and/or)
Existing Filter
Add from available filters
File Upload
File Upload modal
Inventoried File
Add from available list of inventoried files
Name, Description, Priority
Elevate
How?
Run Silently
Require Password
Require Justification
Require Approval
Executables
Matching (and/or)
Existing Filter
Add from available filters
File Upload
File Upload modal
Inventoried File
Add from available list of inventoried files
Name, Description, Priority
Require Password
Don't Require Password
Require Password
Don't Require Password
Executables
Matching (and/or)
Existing Filter
Add from available filters
File Upload
File Upload modal
Inventoried File
Add from available list of inventoried files
Name, Description, Priority

Allow ID

1. Navigate to your Unix/Linux computer group and select Application Policies.
2. Click **Create Policy**.
3. Using the Policy Wizard, create a controlling policy, click **Next Step**.
4. Select **Allow**, click **Next Step**.
5. Select **Executables**, click **Next Step**.
6. Select **Existing Filter**, search for select the **ID Advanded Commandline Filter**. If it doesn't exist, create it.



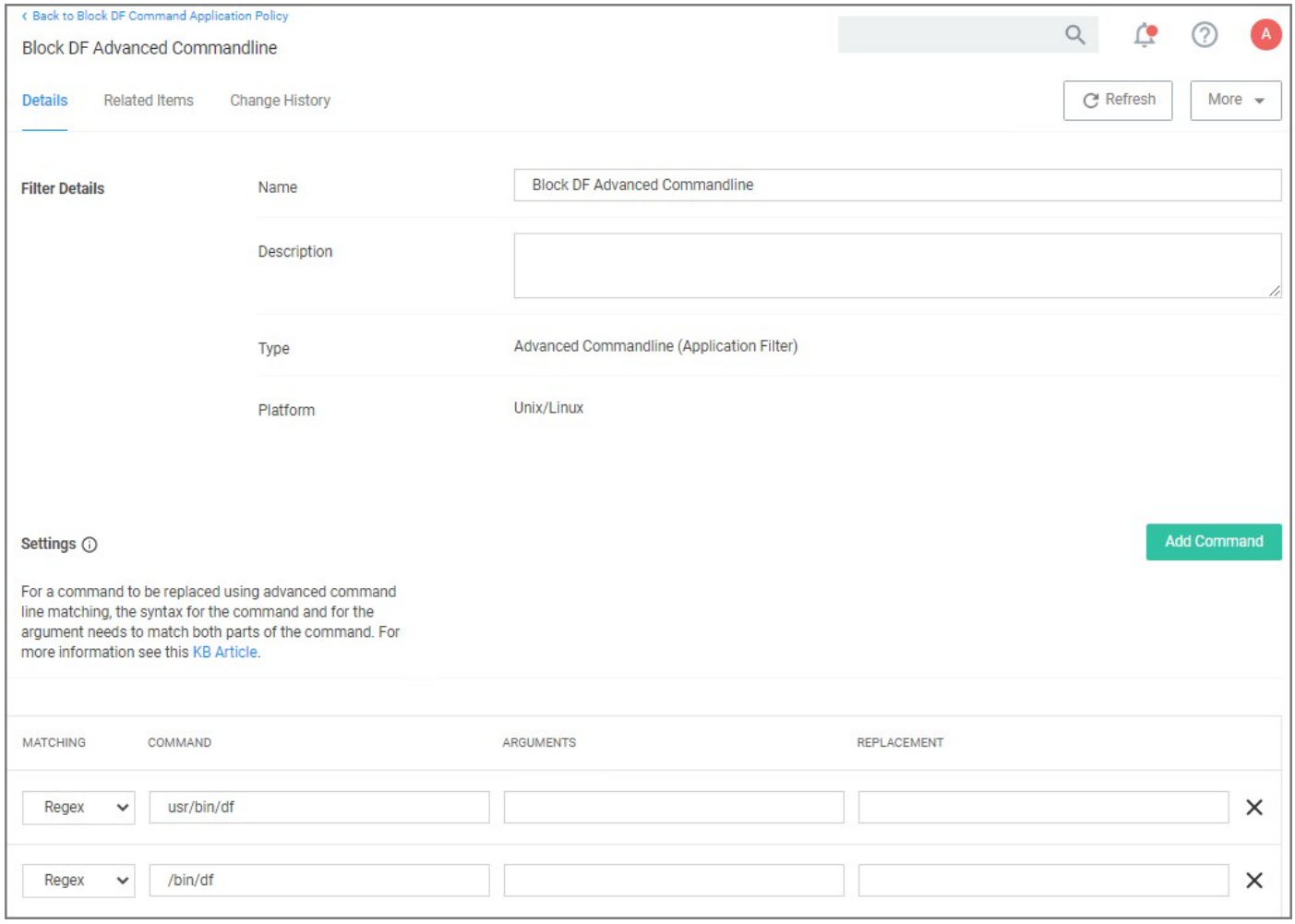
7. Click **Update**.
8. Click **Next Step**.
9. Name your policy, add a description.
10. Click **Create Policy**.



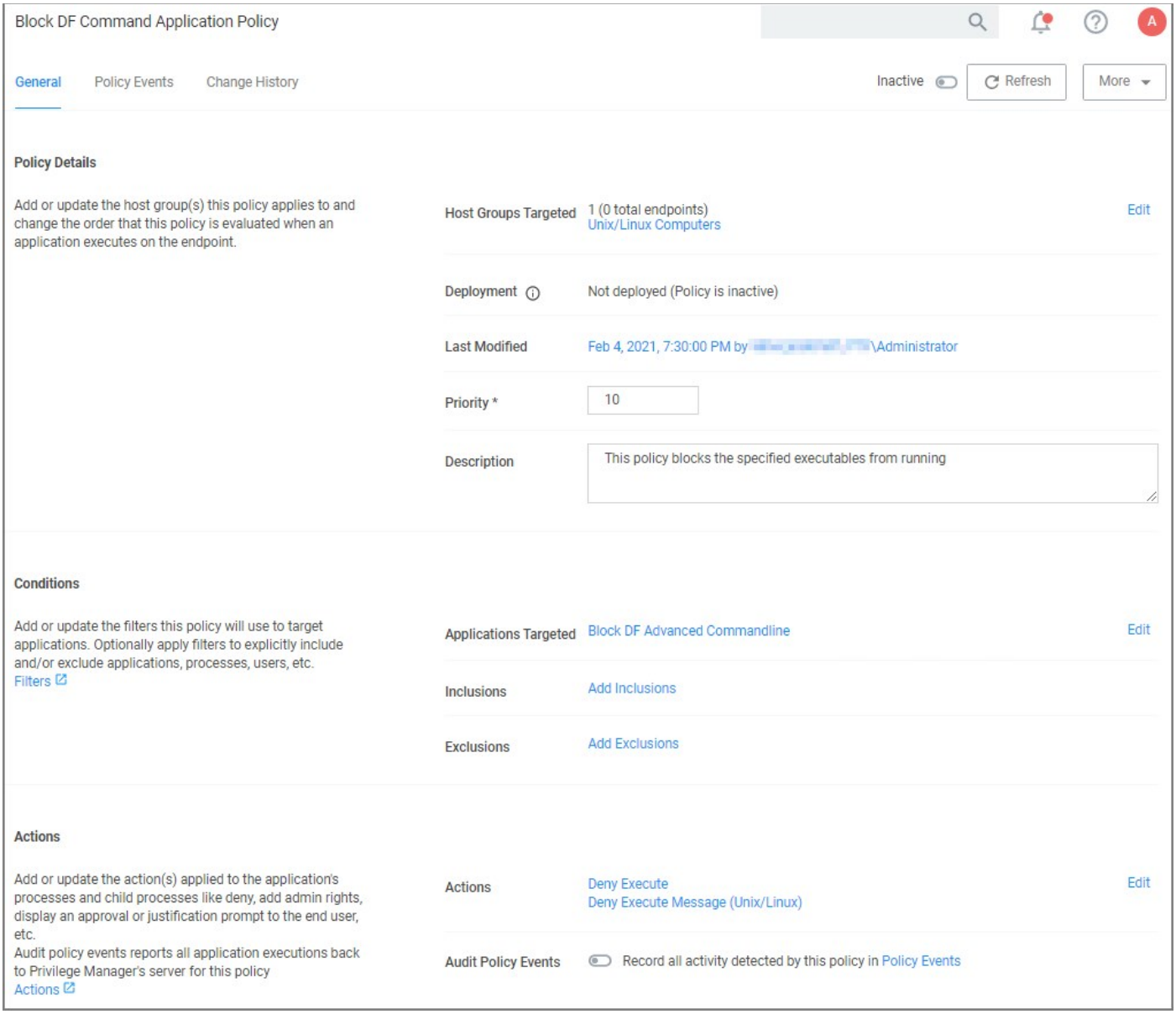
11. Set the **Inactive** switch to **Active**.
12. Next to **Deployment** click the **i** icon and run the **Resource and Collection Targeting Update** task.

Block Diskspace Command

1. Navigate to your Unix/Linux computer group and select Application Policies.
2. Click **Create Policy**.
3. Using the Policy Wizard, create a controlling policy, click **Next Step**.
4. Select **Block**, click **Next Step**.
5. Select **Executables**, click **Next Step**.
6. Select **Existing Filter**, search for select the **Block DF Advanded Commandline Filter**. If it doesn't exist, create it.



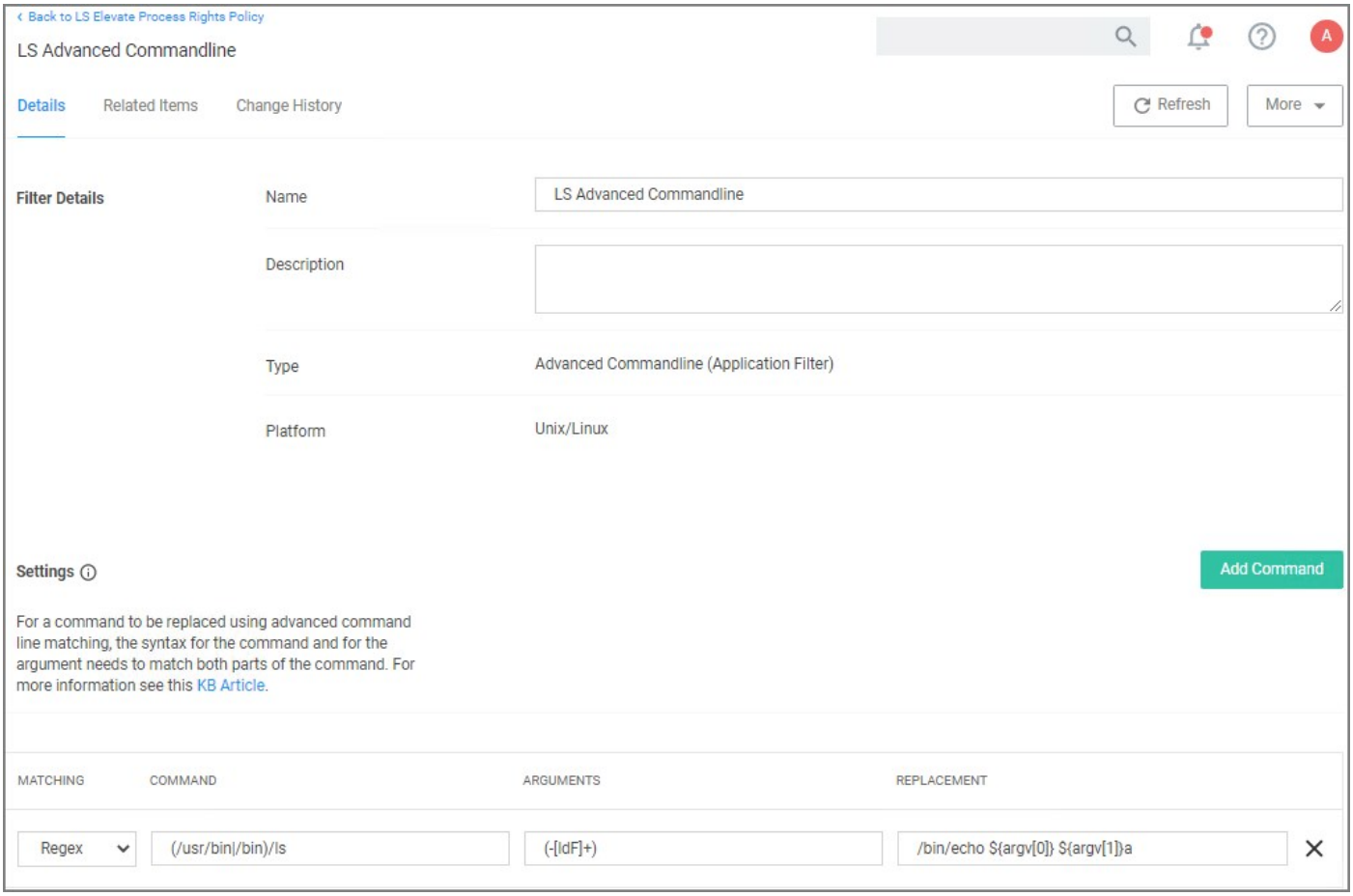
7. Click **Update**.
8. Click **Next Step**.
9. Name your policy, add a description.
10. Click **Create Policy**.



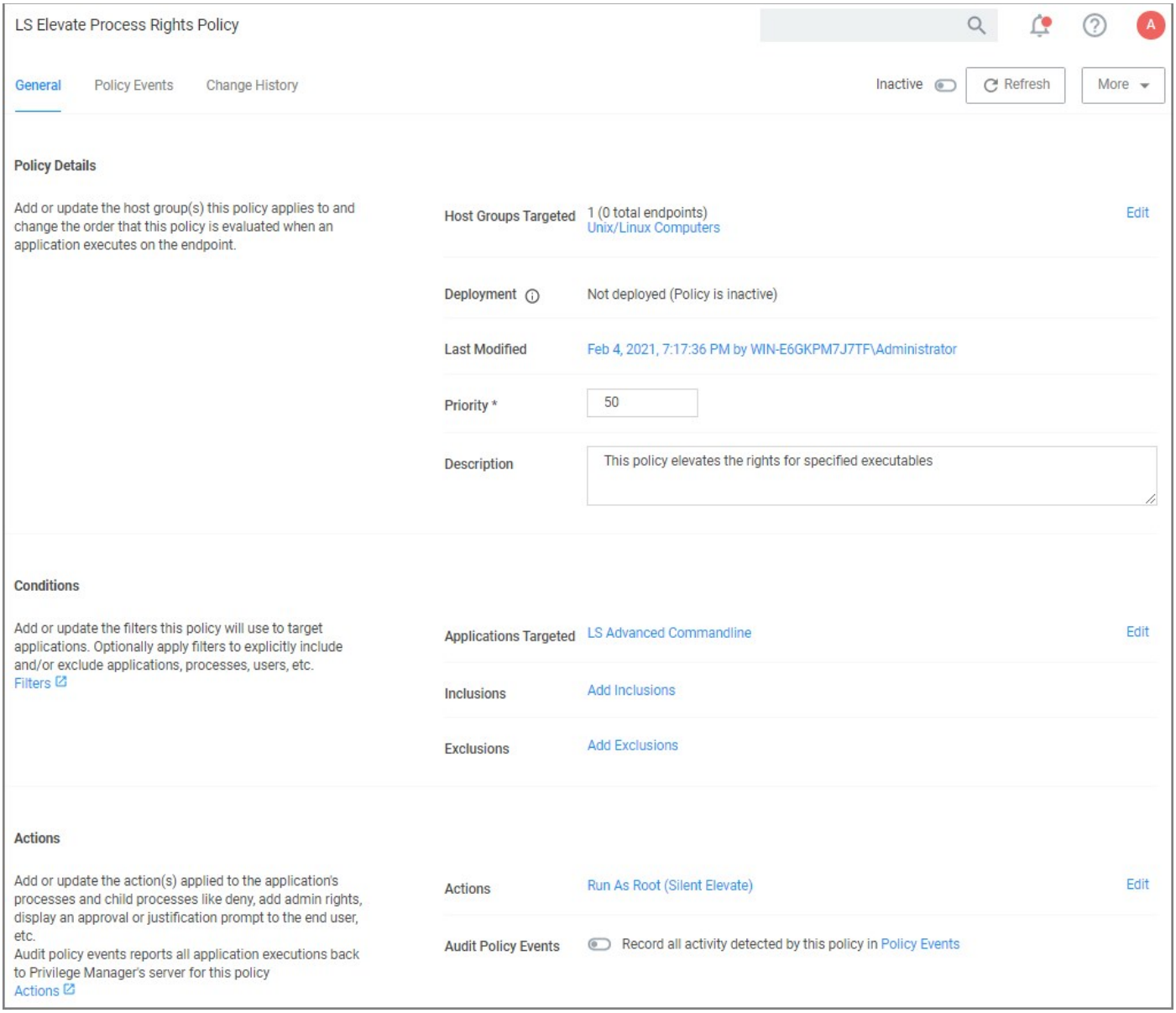
11. Set the **Inactive** switch to **Active**.
12. Next to **Deployment** click the **i** icon and run the **Resource and Collection Targeting Update** task.

Elevate LS

1. Navigate to your Unix/Linux computer group and select Application Policies.
2. Click **Create Policy**.
3. Using the Policy Wizard, create a controlling policy, click **Next Step**.
4. Select **Elevate**, click **Next Step**.
5. Select **Run Silently**, click **Next Step**.
6. Select **Executables**, click **Next Step**.
7. Select **Existing Filter**, search for select the **LS Advanded Commandline Filter**. If it doesn't exist, create it.

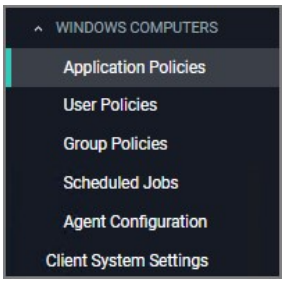


8. Click **Update**.
9. Click **Next Step**.
10. Name your policy, add a description.
11. Click **Create Policy**.



12. Set the **Inactive** switch to **Active**.
13. Next to **Deployment** click the **i** icon and run the **Resource and Collection Targeting Update** task.

The default Windows Computer Group.



This is the navigation entry point into the Windows Computer Group. The sub nodes are in feature parity with other OS computer groups. All policies or resources underneath **WINDOWS COMPUTERS** pertain to that specific default computer group.

Refer to the Policy Wizard section for details on decision points for:

- Creating a Monitoring Policy
- Creating a Controlling Elevation Policy for Windows
- Creating a Controlling Allow Policy for Windows
- Creating a Controlling Block Policy for Windows
- Creating a Controlling Restrict Policy for Windows

For Windows Agent Configuration information refer to Agent Configuration.

Windows Policy Wizard

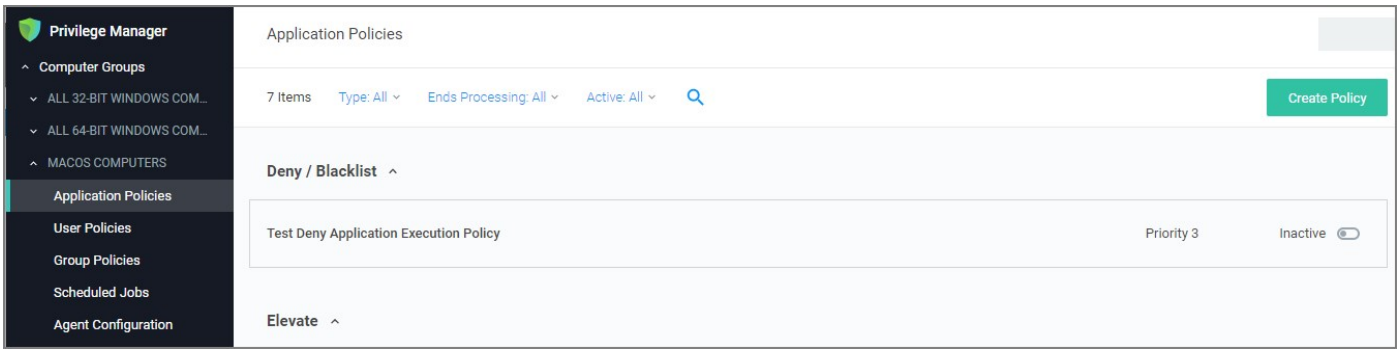
This section contains Windows policy wizard decision flow diagrams for controlling policies.

The following diagrams are available:

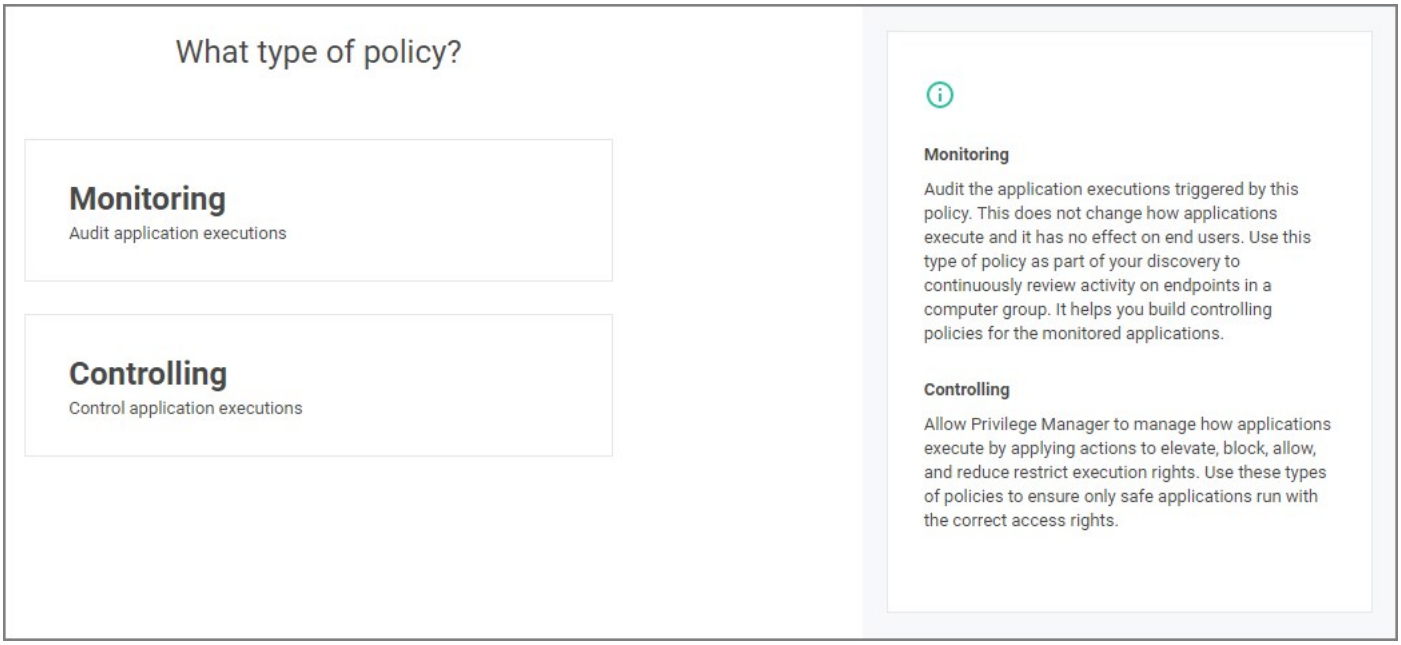
- Creating a Controlling Elevation Policy for Windows
- Creating a Controlling Allow Policy for Windows
- Creating a Controlling Block Policy for Windows
- Creating a Controlling Restrict Policy for Windows

Creating a Controlling Allow Policy for Windows

1. For any of your Computer Groups navigate to **Application Policies**.

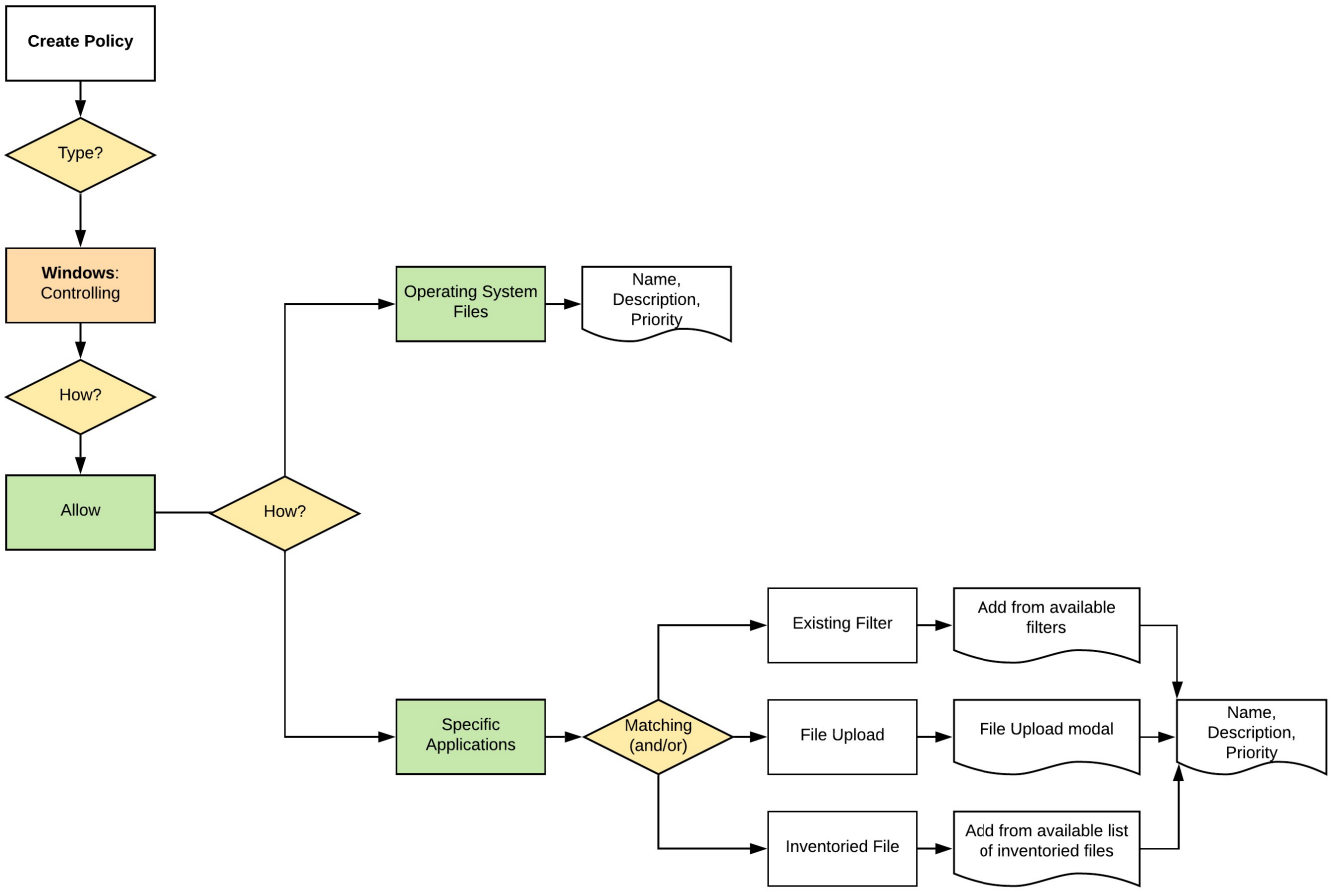


2. Click **Create Policy**.



Make your selection and click **Next** to get to the next wizard page.

For the steps through the wizard, follow these decision points:



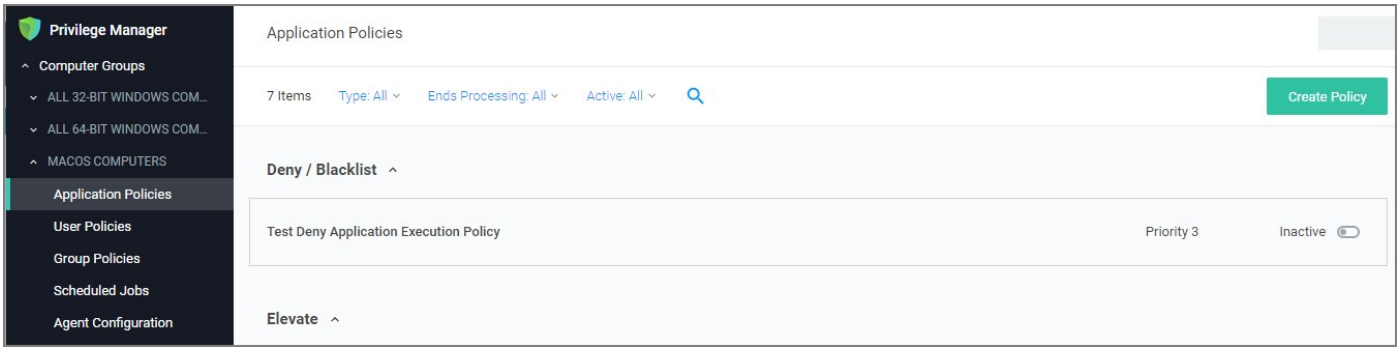
3. After assigning a name, description and verifying the priority number, click **Create Policy**.

While in the wizard you can navigate back to previous pages via the **Previous Step** link to select another path. However, any **Previous Step** navigation clears selected options on accessed wizard pages.

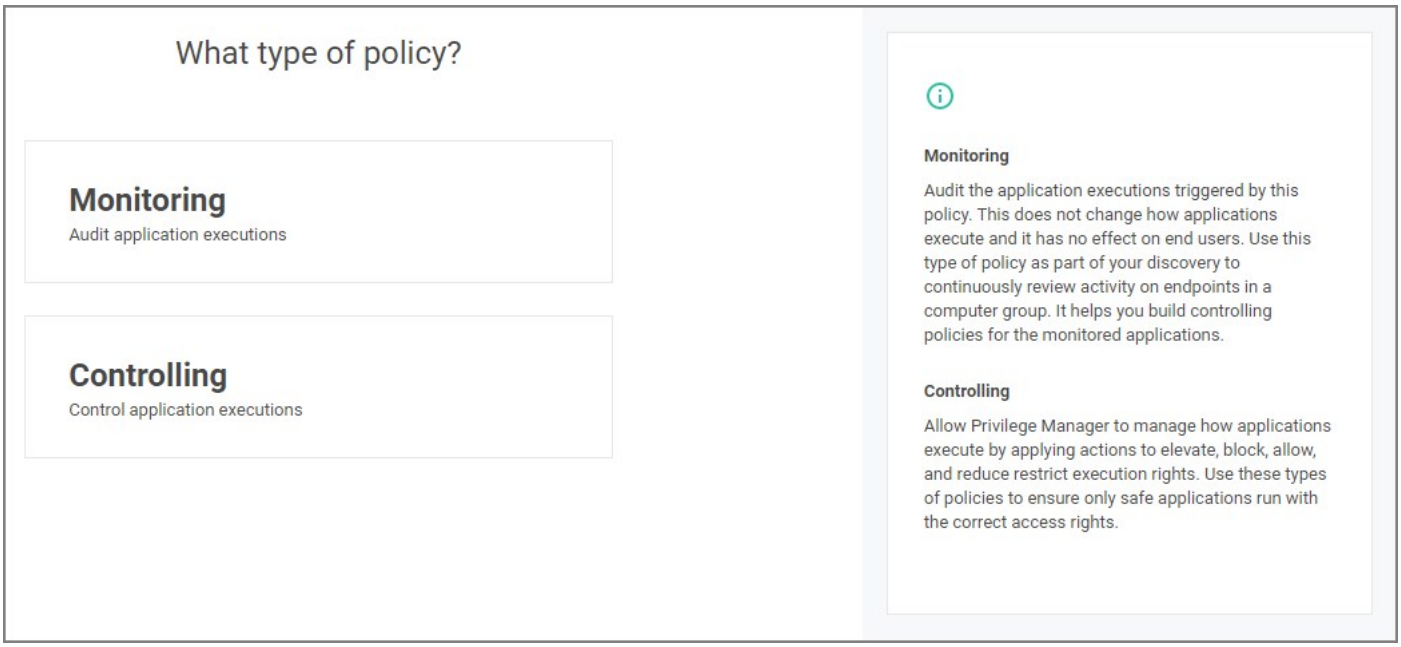
The wizard provides on page help explaining the different options available to the user.

Creating a Controlling Block Policy for Windows

1. For any of your Computer Groups navigate to **Application Policies**.

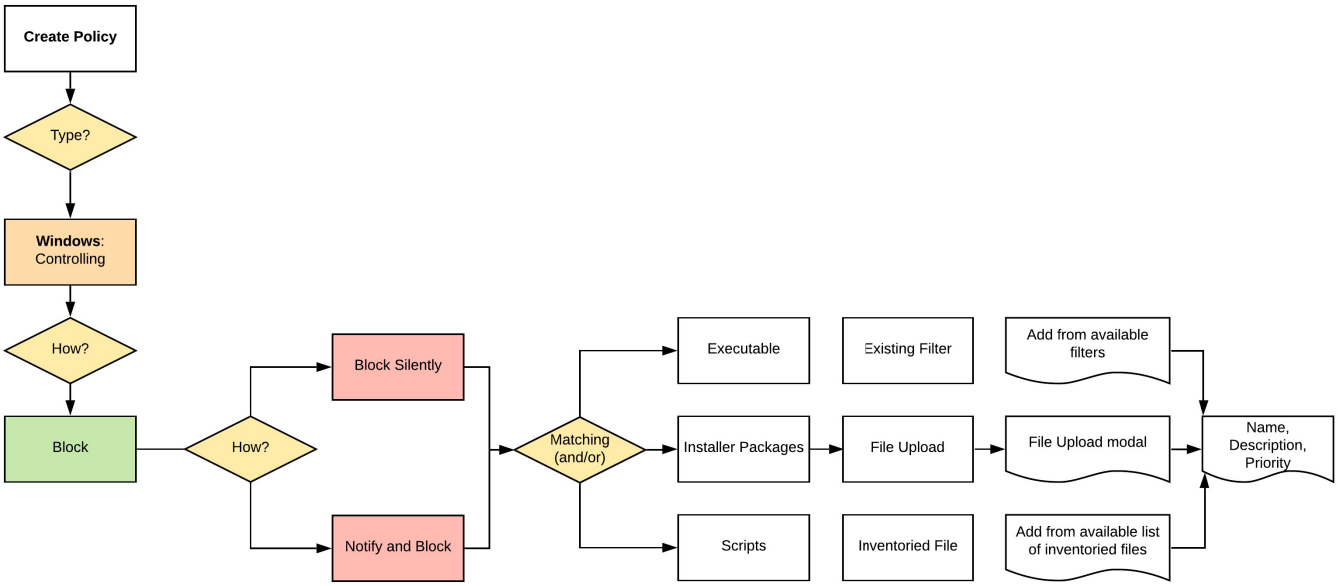


2. Click **Create Policy**.



Make your selection and click **Next** to get to the next wizard page.

For the steps through the wizard, follow these decision points:



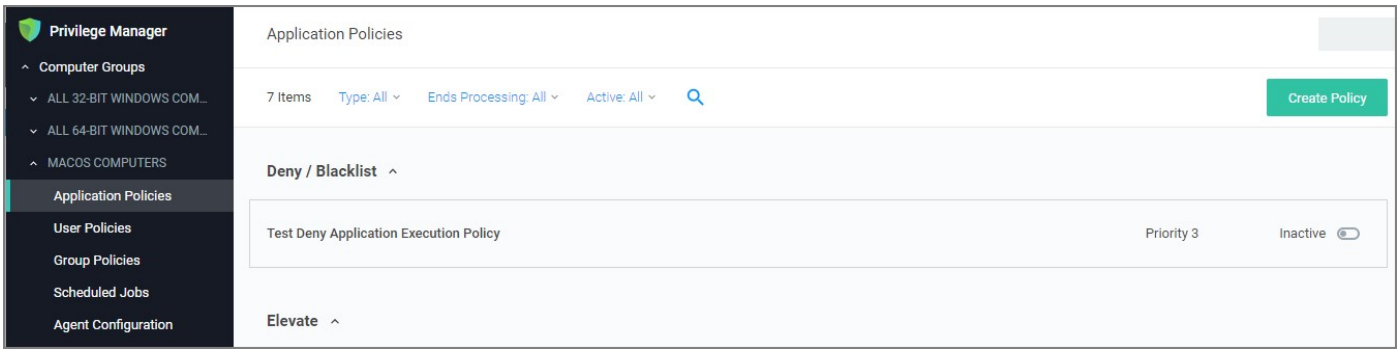
3. After assigning a name, description and verifying the priority number, click **Create Policy**.

While in the wizard you can navigate back to previous pages via the **Previous Step** link to select another path. However, any **Previous Step** navigation clears selected options on accessed wizard pages.

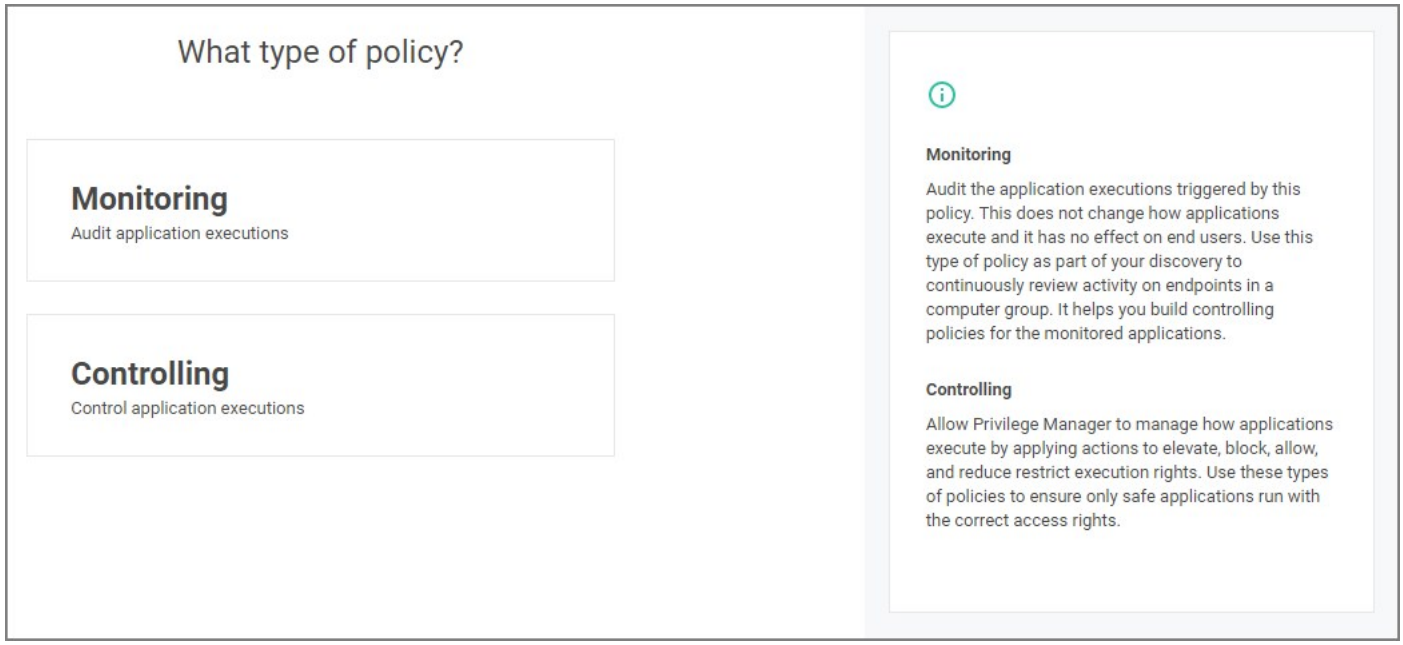
The wizard provides on page help explaining the different options available to the user.

Creating a Controlling Elevation Policy for Windows

1. For any of your Computer Groups navigate to **Application Policies**.

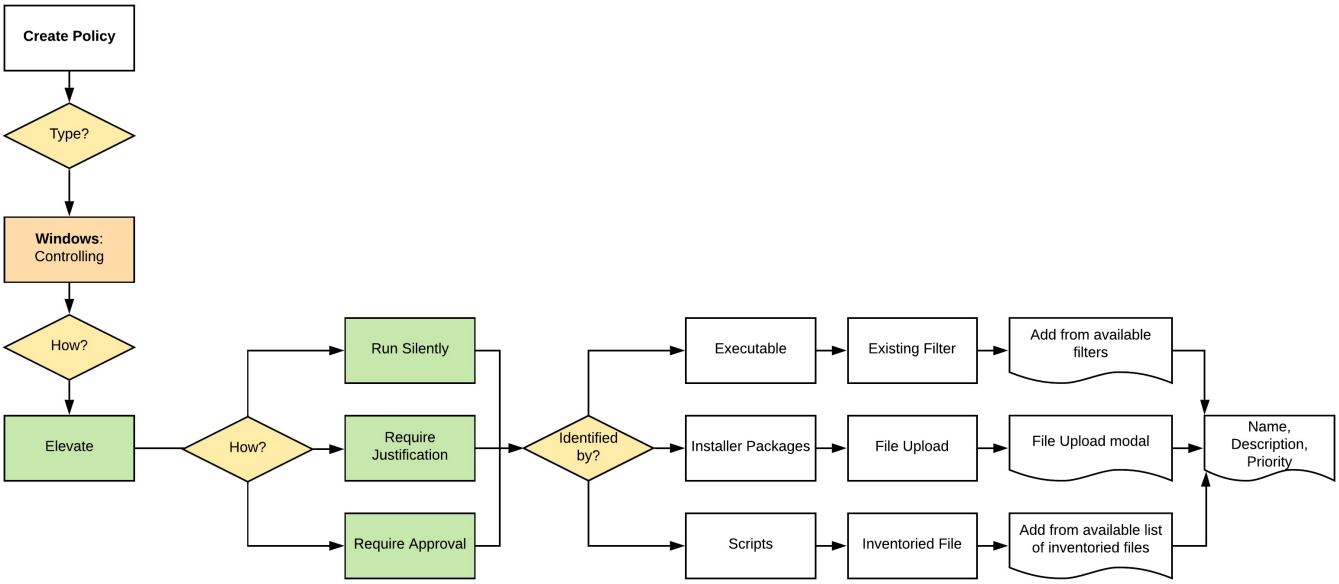


2. Click **Create Policy**.



Make your selection and click **Next** to get to the next wizard page.

For the steps through the wizard, follow these decision points:



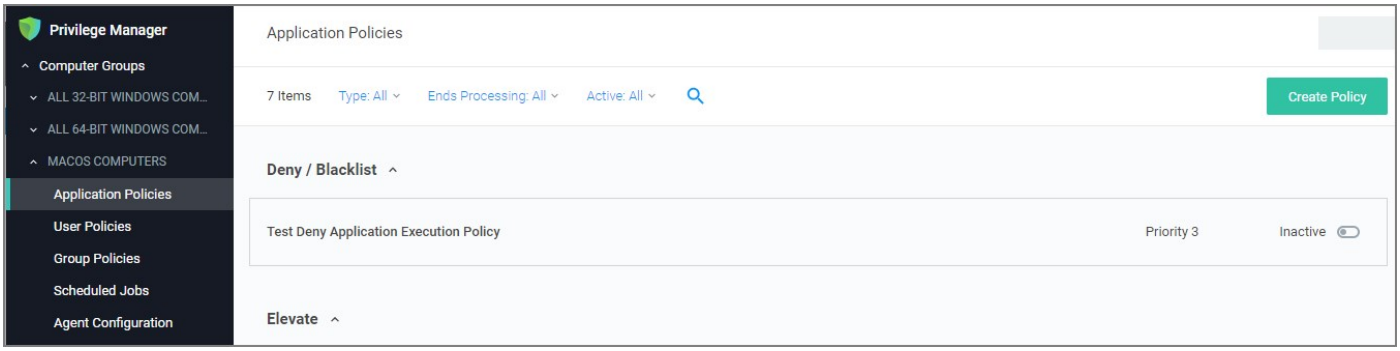
3. After assigning a name, description and verifying the priority number, click **Create Policy**.

While in the wizard you can navigate back to previous pages via the **Previous Step** link to select another path. However, any **Previous Step** navigation clears selected options on accessed wizard pages.

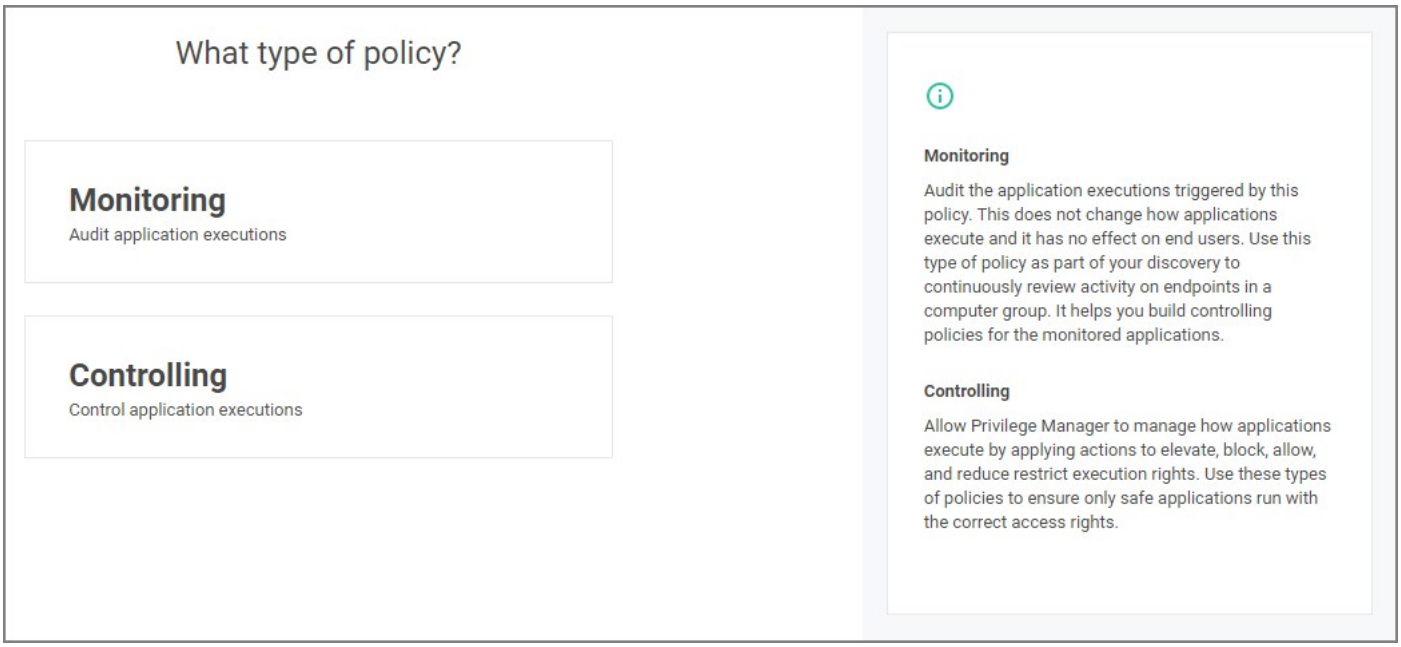
The wizard provides on page help explaining the different options available to the user.

Creating a Controlling Restrict Policy for Windows

1. For any of your Computer Groups navigate to **Application Policies**.

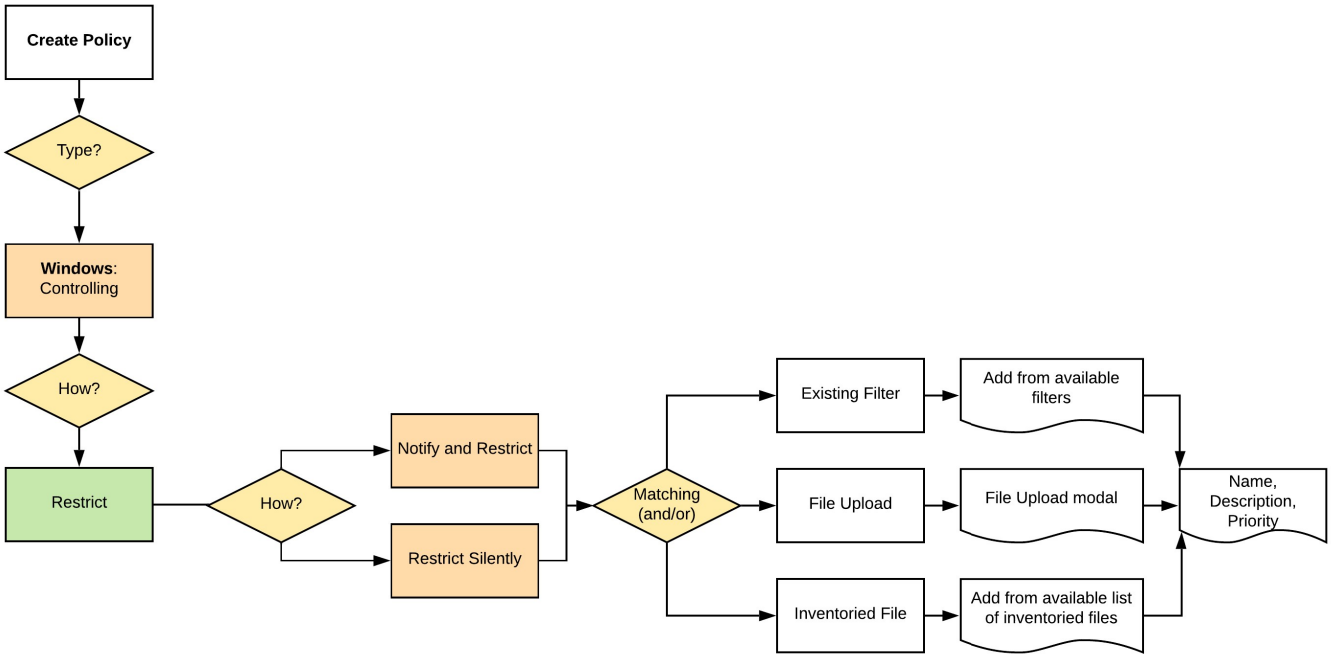


2. Click **Create Policy**.



Make your selection and click **Next** to get to the next wizard page.

For the steps through the wizard, follow these decision points:



3. After assigning a name, description and verifying the priority number, click **Create Policy**.

While in the wizard you can navigate back to previous pages via the **Previous Step** link to select another path. However, any **Previous Step** navigation clears selected options on accessed wizard pages.

The wizard provides on page help explaining the different options available to the user.

This topic describes the Privilege Manager **Right-Click Run As Thycotic Administrator**, or **Request Run As Administrator** (RRAA), functionality and cover use cases.

> **Note**: Also refer to the Adjust Process Rights Action topic for further details and best practices.

RRAA Use Cases

Removing all accounts from the local Administrators Group creates several "Gotcha" situations:

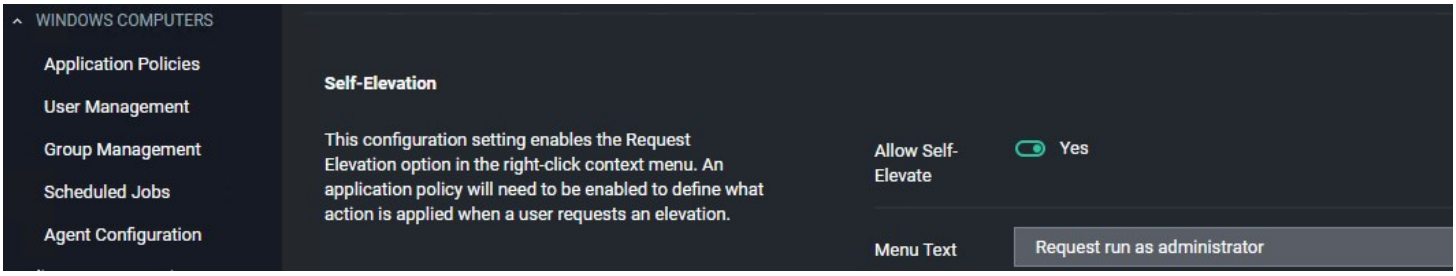
- The UAC prompt to Elevate becomes an un-answerable request when there are no account credentials to satisfy UAC with
- Trying to use the built-in Right Click "Run as Administrator" we also have no credentials that can be entered.

RRAA becomes a very useful support tool and can provide those "special" users unfettered access to admin functionality they demand.

RRAA is a tool that satisfies Admin removal issues when: you are under the gun of a deadline to remove Admin, in a very fast paced environment and understaffed to keep-up with policy creation, it can also provide the support staff with the super powers they need.

Background of RRAA

This function is built into the Privilege Manager Agent. There are different versions of the Agent and new versions sometimes have additional RRAA functionality, like the recent addition of .MSI file types to the right click option. This feature is for Windows Operating Systems only. It is toggled on or off via any of your **Windows Computer Groups | Agent Configuration** and under **Self-Elevation** set the switch to on.



Testing RRAA Policies

This section explains how to create a RRAA Elevation Policy for Developers. As described here, this feature will be added to all endpoints with the Application Control Agent. It will require authentication from a Developer to proceed, so other users won't be able to *use* the feature, but it will be present.

There are two steps to configuring the **Right-Click Run As Thycotic Administrator** feature.

One is the global configuration setting to enable the feature. Enabling this adds the "Request run as Thycotic Administrator" option to all endpoints with the Application Control Agent installed.

After enabling the global feature, Policies are created that assign Actions to this feature, typically based on specific use cases (such as the Developer use case detailed below).

If testing this feature in an environment with Agents deployed to production machines, consider first creating a Policy that targets all endpoints and all users that includes a custom Application Denied Message Action or Application Warning Message Action explaining that this feature isn't currently enabled, but may be used in the future by Helpdesk or other users. Then create a separate policy that has Resource Targets only for your test machines and a Policy Priority to occur earlier in processing. That way, your tests will be separate from the global actions of this feature.

Create a RRAA Elevation Policy for Developers

After the Right-Click Run As Thycotic Administrator feature is enabled, an Elevation Policy that handles the Elevation workflow will need to be

created. The policy in this topic uses the default Resource Targets for All Windows computers with the Privilege Manager Agent installed. Using computer groups, smaller Resource Targets can be used and many custom options can be created to address many use cases in the environment, each having a customized Menu Text and resource specific targeting.

In the following example, a RRAA Elevation Policy will be created for the Developers group. First, a custom Message Action will be created to use on the Policy.

Advanced Message Actions

There are several Advanced Message Actions that can be displayed to end users. Advanced Message Actions can either require feedback in a justification and/or group member authentication, require approval from within Privilege Manager when the process runs, or require no input.

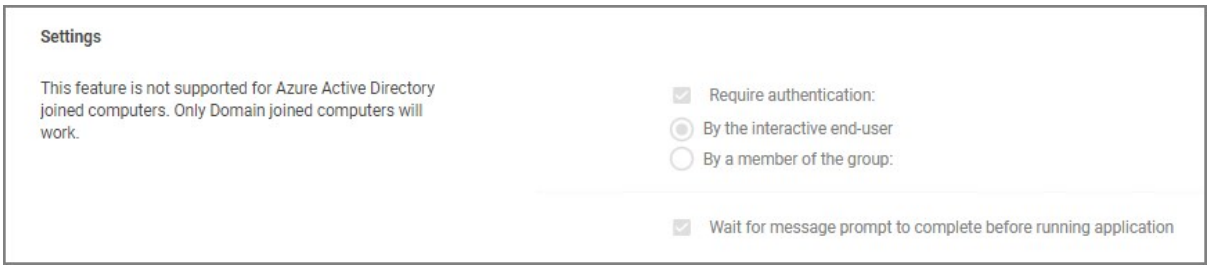
The most common Message Actions used with RRAA Policies are the Advanced Feedback Message Actions, including:

- Group Member Authenticated Message Action: This action will display a customized message to the user and requires authentication by a member of the specified group if the end-user is not a member.
- Authenticated Justification Message Action: This action will display an authentication prompt to the user before continuing to the process controlled by a policy.
- Justify Application Elevation Action: This action will display a justification prompt to the user before continuing to the process controlled by a policy.

Each of these Actions provide fields that can adjust the communication presented to the User.

As the following steps demonstrate, the Message Actions have several radio buttons in the Settings area to shape what they do and how they interact with the user.

These Actions are really just different radio button selections of two basic Actions. One Action with a Justification and the other Action without Justification.

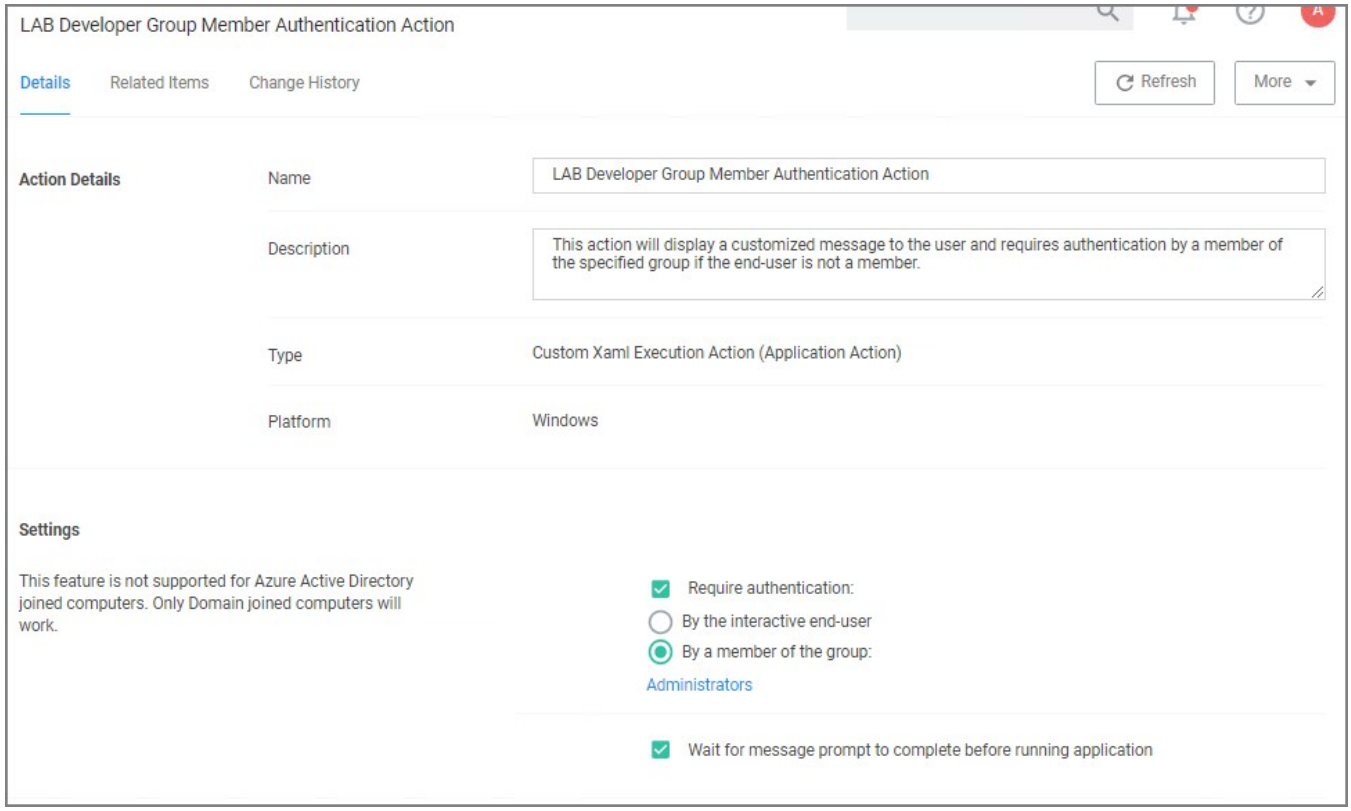


Custom Group Member Authentication Action for Developers

For this example, we will be using the "Group Member Authenticated Message Action" with the default radio button configuration. The Action will require credentials from a user who is a member of a specific AD group. This Action will not require justification.

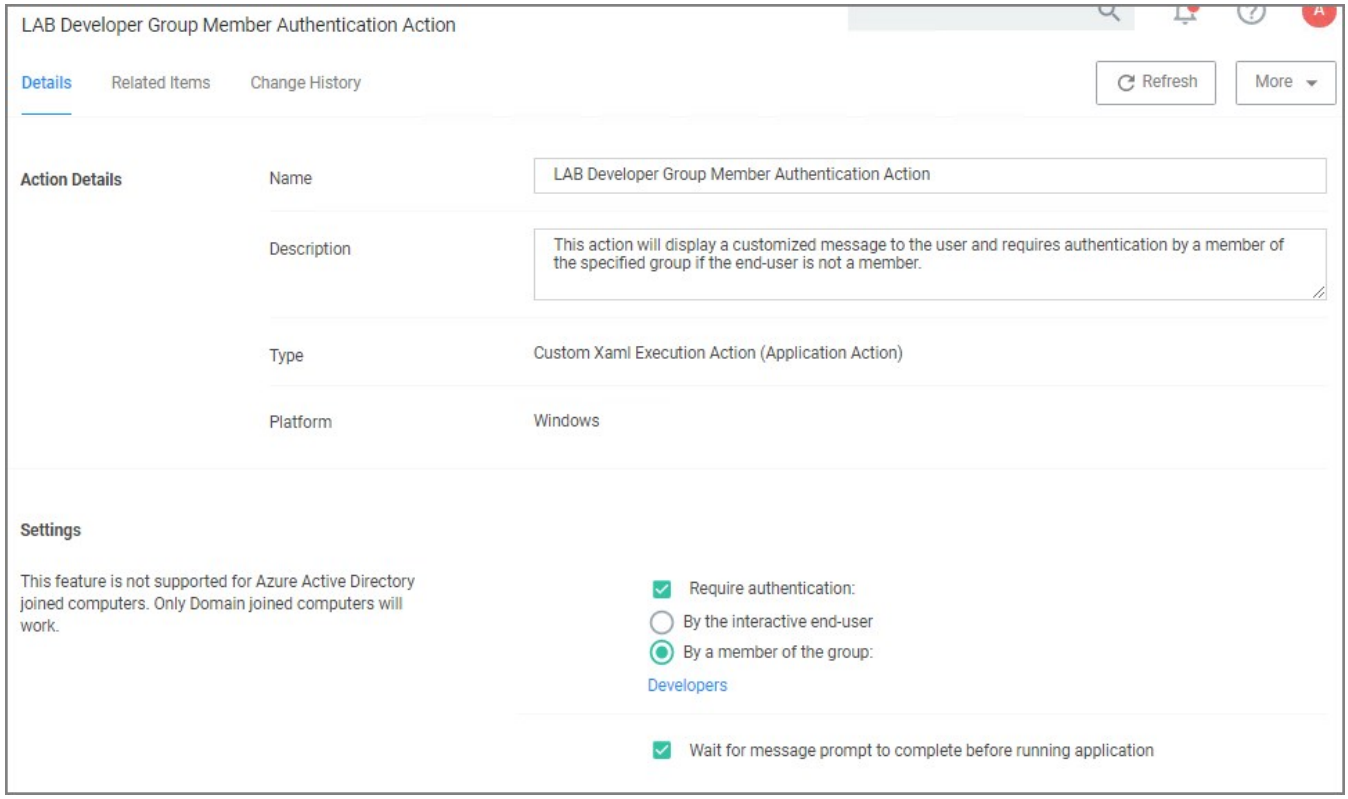
To begin, find an existing Message Action to duplicate.

1. Navigate to **Admin | Actions**.
2. Search for **Group Member Authenticated Message Action**.
3. Click **Duplicate**.
4. In the **Duplicate** modal, enter the name *LAB Developer Group Member Authentication Action*.
5. Click **Create**.



6. Under Settings and **By a member of group**, click **Administrators**.
    1. As a resource select the AD group for your developers, in this example *Developers*.

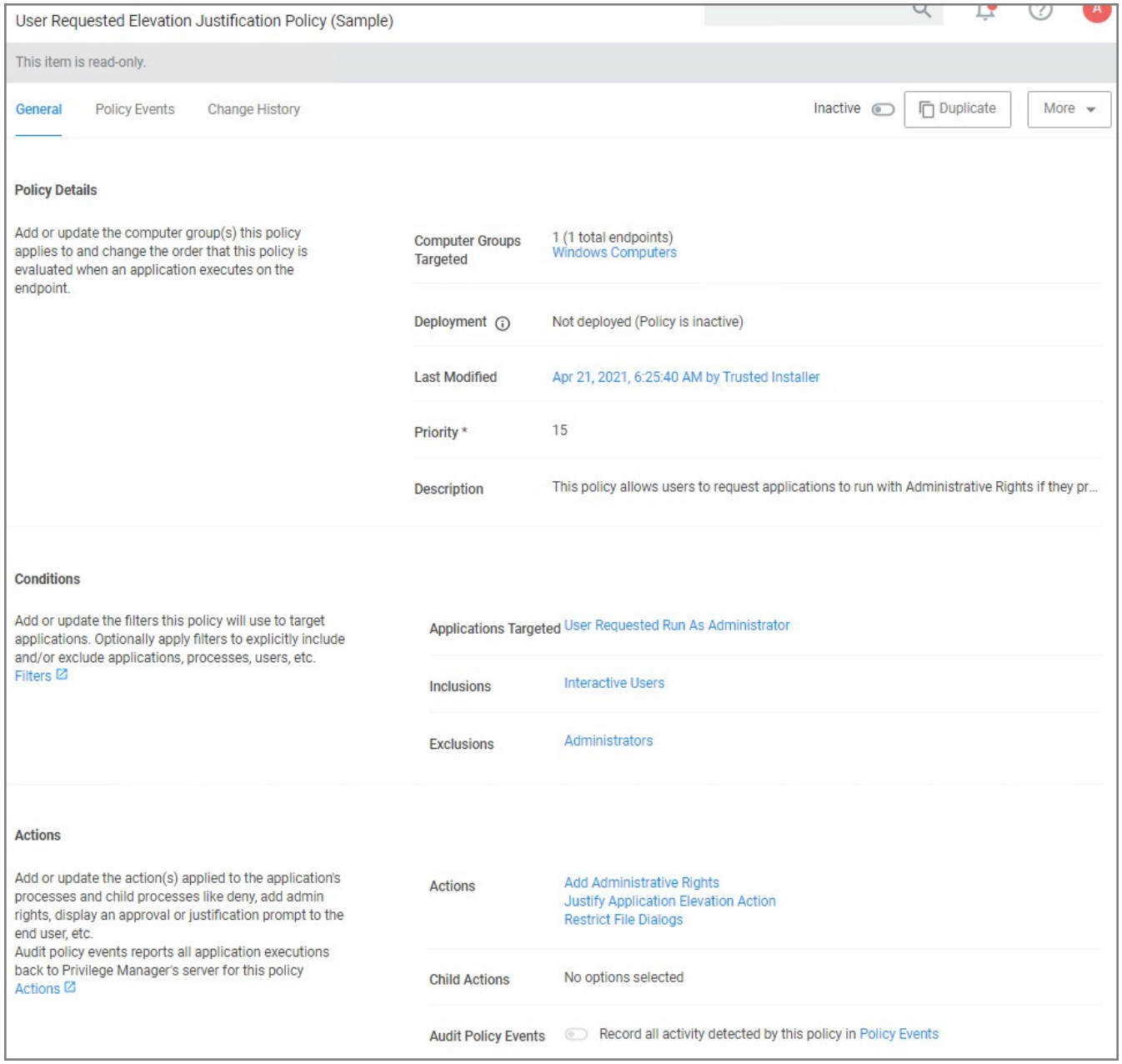
7. Click **Save Changes**.



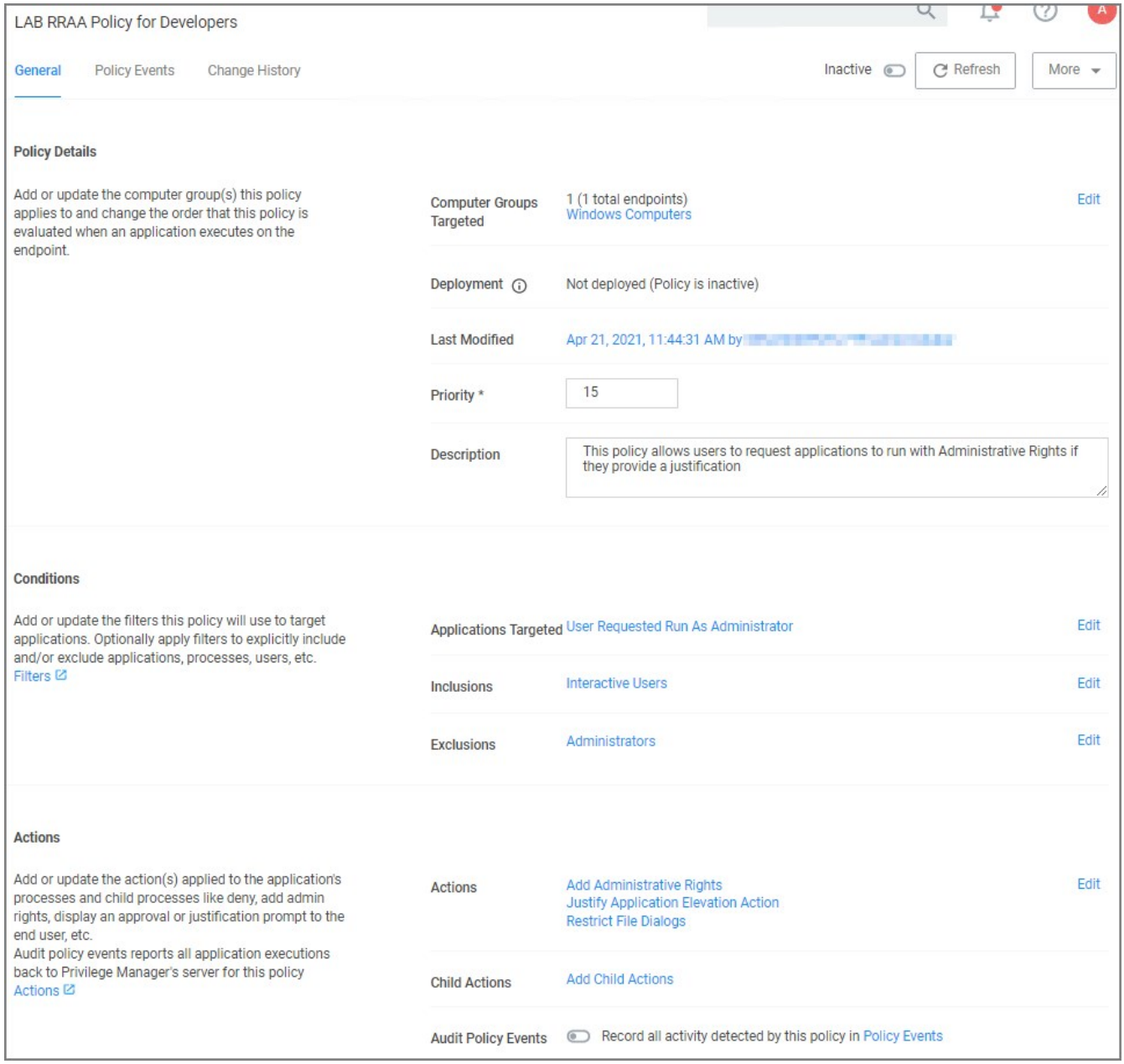
Custom RRAA Elevation Policy for Developers

To build the custom RRAA Elevation Policy for Developers, copy an existing RRAA Elevation Policy. A default policy is included with Privilege Manager .

1. Navigate to your Windows Computer group.
2. Search for **User Requested Elevation Justification Policy (Sample)**, to locate the default policy.



3. Click **Duplicate**.
4. In the **Duplicate** modal, enter the name *LAB RRAA Policy for Developers*.
5. Click **Create**.



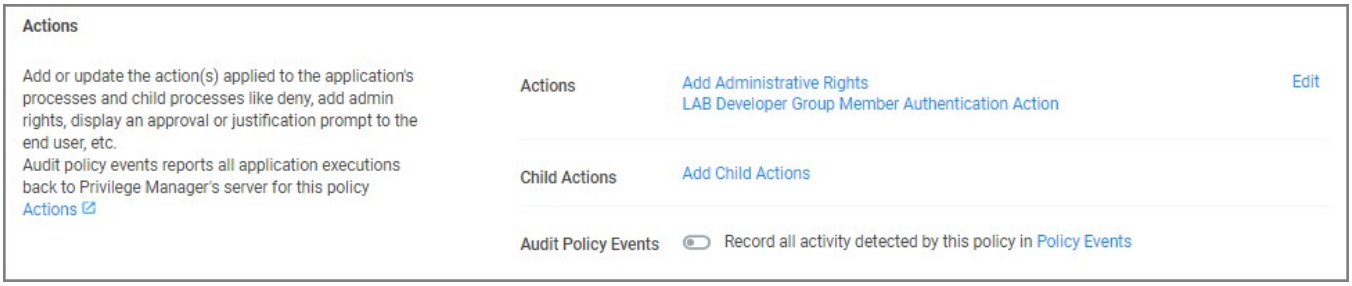
Under **Conditions** the policy includes the Application Target of **User Requested Run As Administrator**. This corresponds to the **Right-Click Run As Thycotic Administrator** option on the endpoint.

Under **Actions** the policy includes by default:

- Add Administrative Rights
- Justify Application Elevation Action
- Restrict File Dialogs

6. Next to these actions, click **Edit**.
7. Remove the **Justify Application Elevation Action** and **Restrict File Dialogs** default actions.

8. Search for and add the **LAB Developer Group Member Authentication Action**.
9. Click **Update**.



10. Click **Save Changes**.

With the **LAB RRAA Policy for Developers**, logged-on members of the Developers group can seamlessly get Admin rights when using the Right-Click Request Run As Thycotic Administrator.

Activate this policy, when you are ready to begin using it on endpoints.

Multiple RRAA Policies in the Same Policy Stack

Another common use case for the Right-Click Run As Thycotic Administrator feature is a RRAA Elevation Policy for Helpdesk. To do this, follow the same steps for the RRAA Elevation Policy for Developers, outlined above, using Helpdesk AD groups and naming conventions for the Action and Policy during creation.

It's possible to have multiple RRAA policies that work for different groups in the same Policy stack. To get this working, User Context Filters will be built in Privilege Manager that match the targeted AD groups.

Once the basic policies needed are made, and the User Context Filters are created, use the "Add Inclusion Filter" and "Add Exclusion Filter" sections under the Policy's "Conditions" to logically get all Policies working in your policy stack.

In the Developers & Helpdesk example:

- If the Current User on an endpoint is in the Developers AD group and initiates the Right-Click Run As Thycotic Administrator feature, the LAB Developer Group Member Authentication Action will execute, requiring the credentials of a member of the Developer AD group.
- A separate Policy is created that excludes the Developers User Context Filter (therefore, applies to all other users) and includes a custom Helpdesk Action that requires credentials from a member of a Helpdesk AD group and a justification/reason.
- If the Current User on an endpoint is not a member of the Developers AD group and initiates the Right-Click Run As Thycotic Administrator feature, the custom Helpdesk Action executes.
- The Helpdesk's RRAA Policy would not work when the computer User is in the Developers group, but the Helpdesk policy would work on all other computers regardless of who the User is.

This example gives Helpdesk users a workflow to enter their credentials on any computer to request elevation for supporting all computers not having a separate RRAA Policy of their own (in the above example, only the Developers have a separate RRAA Policy).

Other examples can be added for other use cases. By utilizing user AD groups, this can be managed in AD with corresponding User Context Filters created in Privilege Manager and assigned to Policies.

If more than two RRAA policies are required like adding with and without Justifications, sorting the Inclusion/Exclusion logic would be required. The Global RRAA has all other RRAA group filters in the Exclusions, the user specific RRAA get only their Group filter put in the Inclusions.

If the Inclusion/Exclusion logic is managed correctly, the RRAA Policies could use the same Policy Priority, but Policy Priorities can also help with the logic. Assume the RRAA Elevation Policy for Developers has a Policy Priority of 14, and the RRAA Elevation Policy for Helpdesk has a Policy

Priority of 15. In this example, the RRAA Elevation Policy for Developers has priority over the RRAA Elevation Policy for Helpdesk.

Also, the Policy Priority of the RRAA Elevation Policies matters in relation to the other Policies in the Policy stack. Other Policies with Policy Priorities to occur before the RRAA Elevation Policies – such as Deny Policies – would happen before the RRAA Elevation. This is why the single, default User Requested Elevation Justification Policy has a Policy Priority of 15, to occur early in the Policy stack.

> **Note**: Enabling the Right-Click Run As Thycotic Administrator feature via Computer Groups I Agent Configuration will add the Right-Click Run As Thycotic Administrator feature to all machines with the Application Control Agent installed.

If not using the RRAA Elevation Policy for Helpdesk example for all other RRAA use cases not defined, consider a Global RRAA Policy that adds a Notification Message Action to inform these users that they do not have permissions to run the Right-Click Run As Thycotic Administrator feature.

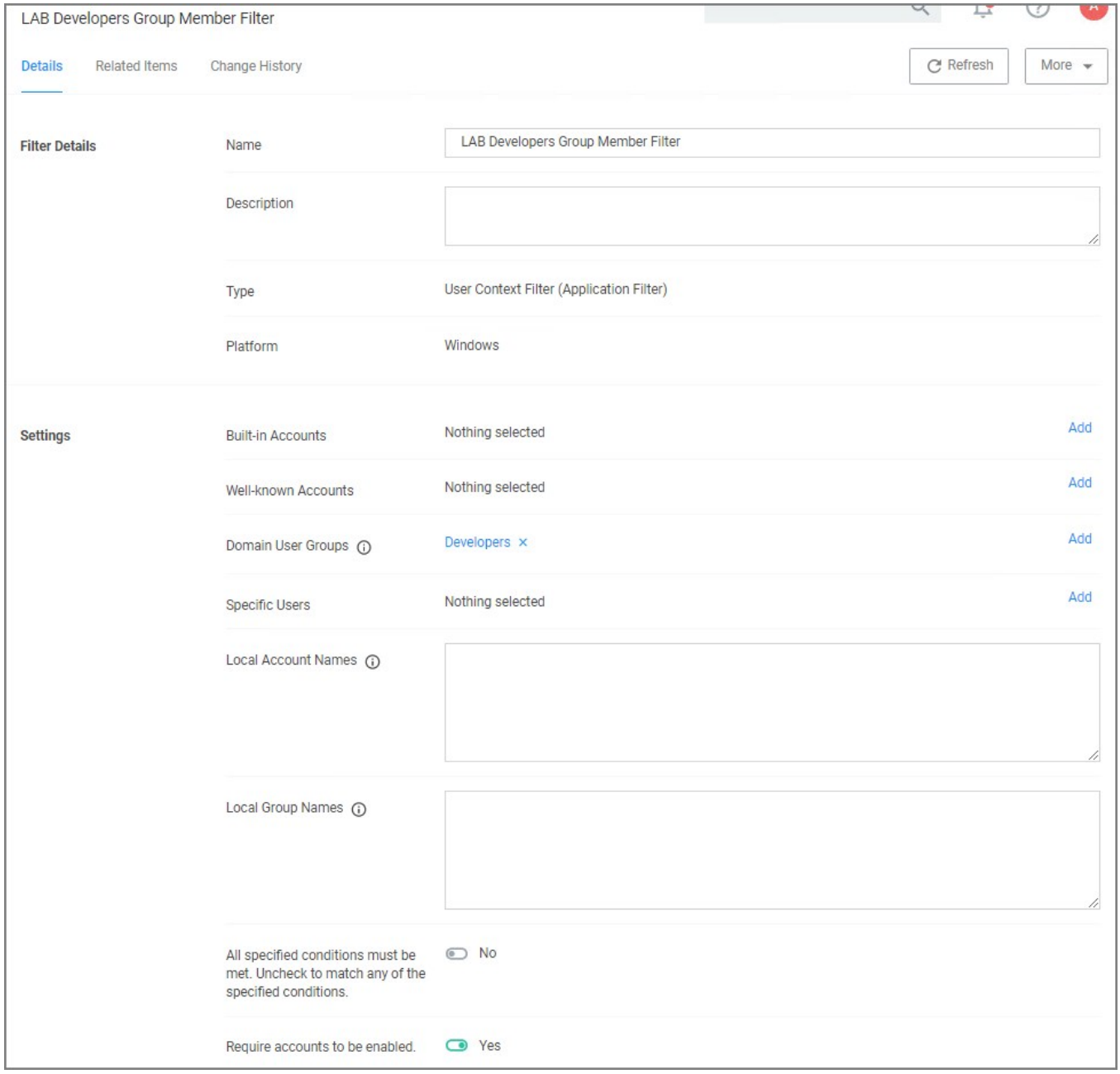
User Context Filter for Developers

A User Context Filter can be created for the Developers AD group. That filter can then be used as an Inclusion Filter on the RRAA Elevation Policy for Developers.

In the use case of a separate RRAA Elevation Policy for Helpdesk, the User Context Filter for the Developers AD group will also be used as an Exclusion Filter on the RRAA Elevation Policy for Helpdesk.

Create a Custom User Context Filter for Developers

1. Navigate to Admin I Filters.
2. Click **Create Filter**.
3. From the **Platform** drop-down, select **Windows**.
4. From the **Type** drop-down, select **User Context Filter**.
5. Enter the name *LAB Developers Group Member Filter*.
6. Click **Create**.
7. Under **Settings** next to **Domain User Groups**, click **Add**.
8. In the **Search** modal, click **Search** and add the **Developers** AD group.
9. Click **Select**.
10. Set the **Require accounts to be enabled** switch to **Yes**.
11. Click **Save Changes**.

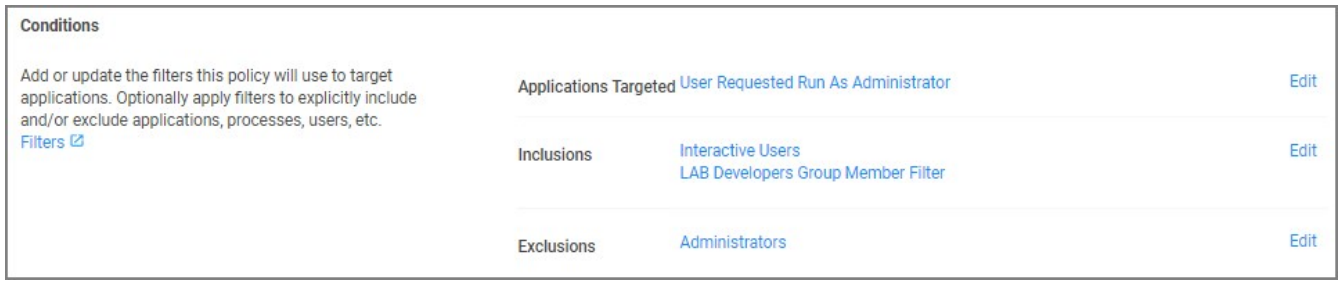


Include User Context Filter for Developers to RRAA Elevation Policies for Developers

Adding LAB Developers Group Member Filter to the RRAA Elevation Policy for Developers will result in the Actions on this Policy only executing if a member of the Developers AD group initiates the Right-Click Run As Thycotic Administrator.

1. Navigate to your **LAB RRAA Policy for Developers** policy.
2. Under **Conditions** next to **Inclusions**, click **Edit**.
3. Search for and add the **LAB Developers Group Member Filter**, you might have to refresh the available filter list.
4. Click **Update**.

5. Click **Save Changes**.



Exclude User Context Filter for Developers to RRAA Elevation Policies for Helpdesk

If a RRAA Elevation Policy for Helpdesk was created, as described in the "Multiple RRAA Policies in the Same Policy Stack" section of this document, the LAB Developers Group Member Filter can be added to the RRAA Elevation Policy for Helpdesk as an Exclusion Filter to ensure that there is not a conflict between which action to run when Developers initiate the Right-Click Run As Thycotic Administrator feature.

To create a RRAA Elevation Policy for Helpdesk, follow the same steps for the RRAA Elevation Policy for Developers, as described in this document, but use the Helpdesk AD group(s) and naming conventions for the Action and Policy.

A RRAA Elevation Policy for Helpdesk may require or desire different types of Message Actions than used on the RRAA Elevation Policy for Developers. Consider using the Authenticated Justification Message Action for the RRAA Elevation Policy for Helpdesk.

To add the LAB Developers Group Member Filter as an Exclusion Filter:

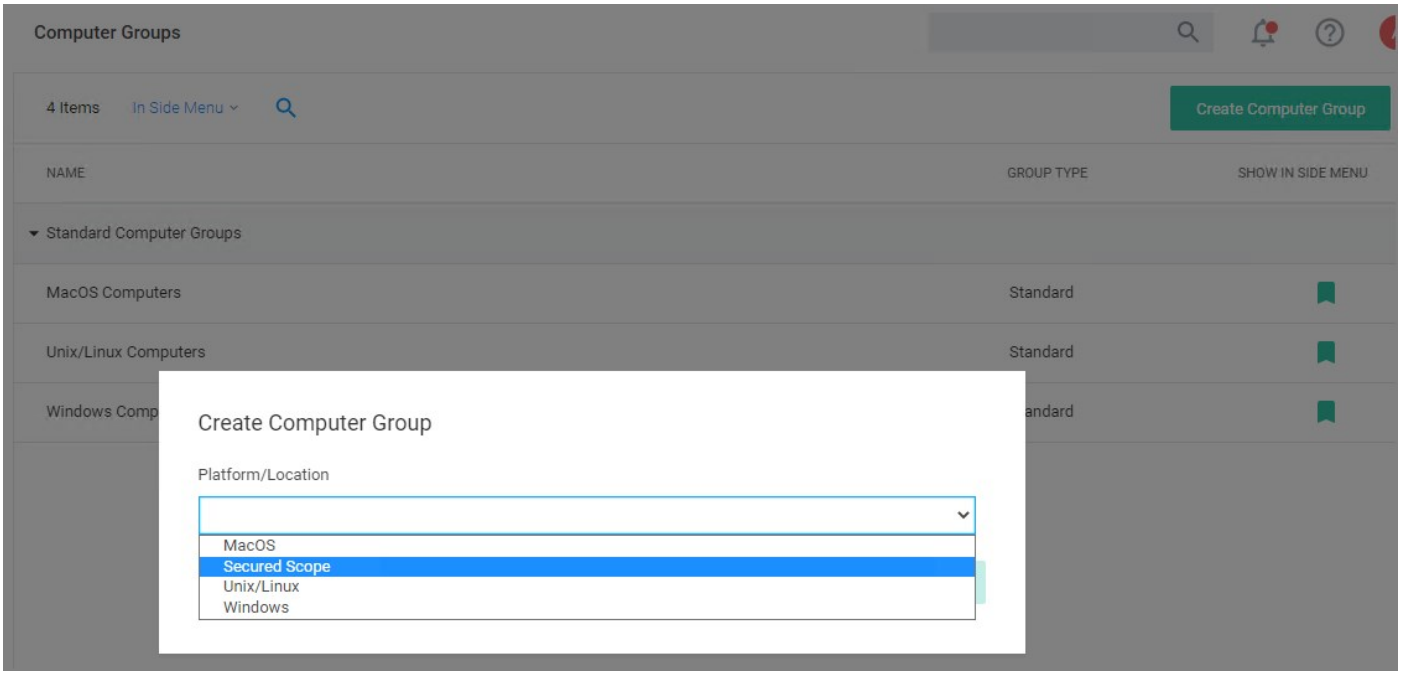
1. Navigate to your **LAB RRAA Policy for Helpdesk** policy.
2. Under **Conditions** next to **Exclusions**, click **Edit**.
3. Search for and add the **LAB Developers Group Member Filter**, you might have to refresh the available filter list.
4. Click **Update**.
5. Click **Save Changes**.

The Helpdesk Policy is now finished. When ready to use, Enable on the General tab and Save.

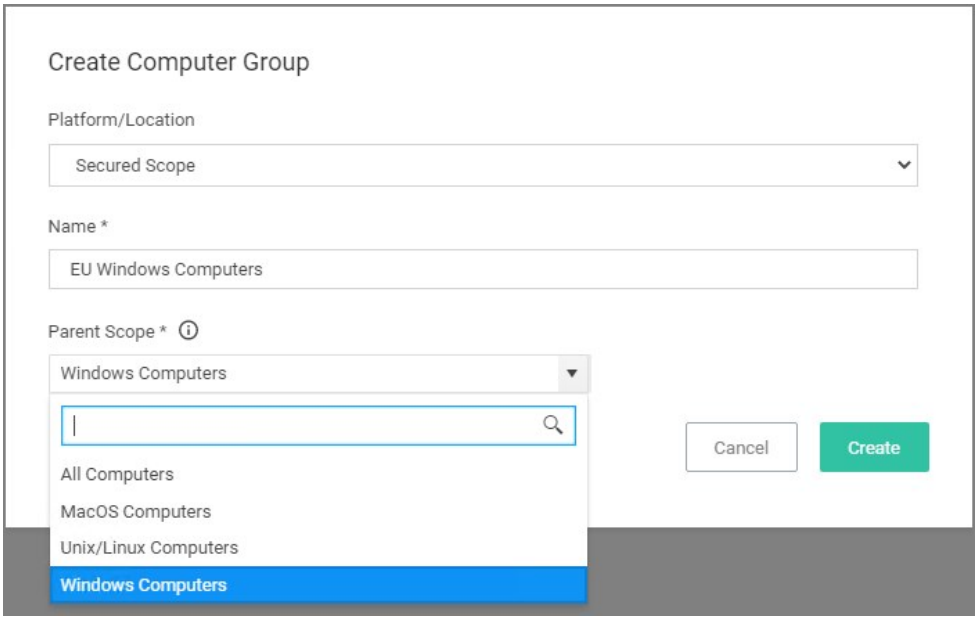
Targeted Computer Groups

Targeted Computer Groups allows Privilege Manager Administrators to create subgroups within the macOS, Linux/Unix, and Windows OS based scopes. These subgroups, or targeted groups can be specific to geo locations, like all systems based on a specific OS in Asia or Europe.

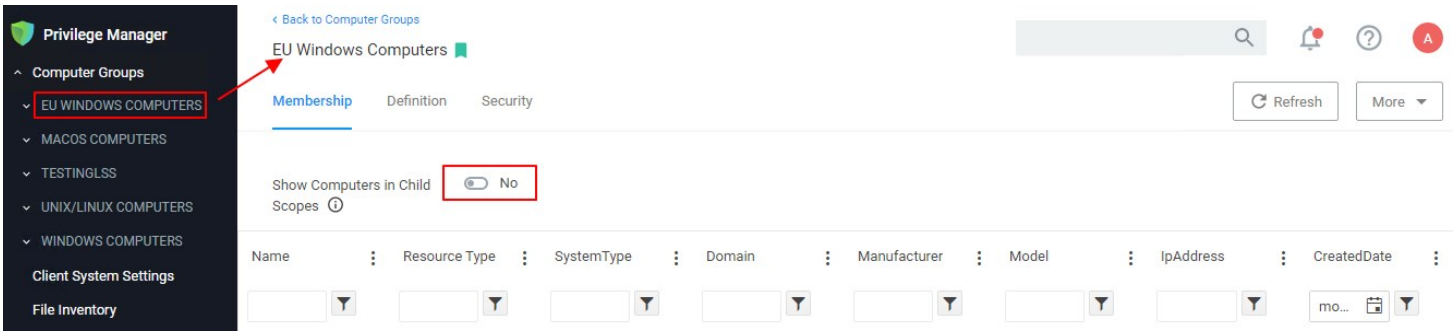
1. In your Privilege Manager console in the left navigation menu, click on Computer Groups.
2. Click on Create Computer Group.



1. From the Platform/Location drop-down, select Secured Scope.
2. In the Name field, enter a meaningful name for your use case of this group.
3. From the Parent Scope drop-down, select the parent association based on OS Computer Group. Do not select All Computers. This Targeted Computer Group is a subset of the parent and has to be scoped to either macOS, Unix/Linux, or Windows Computers.

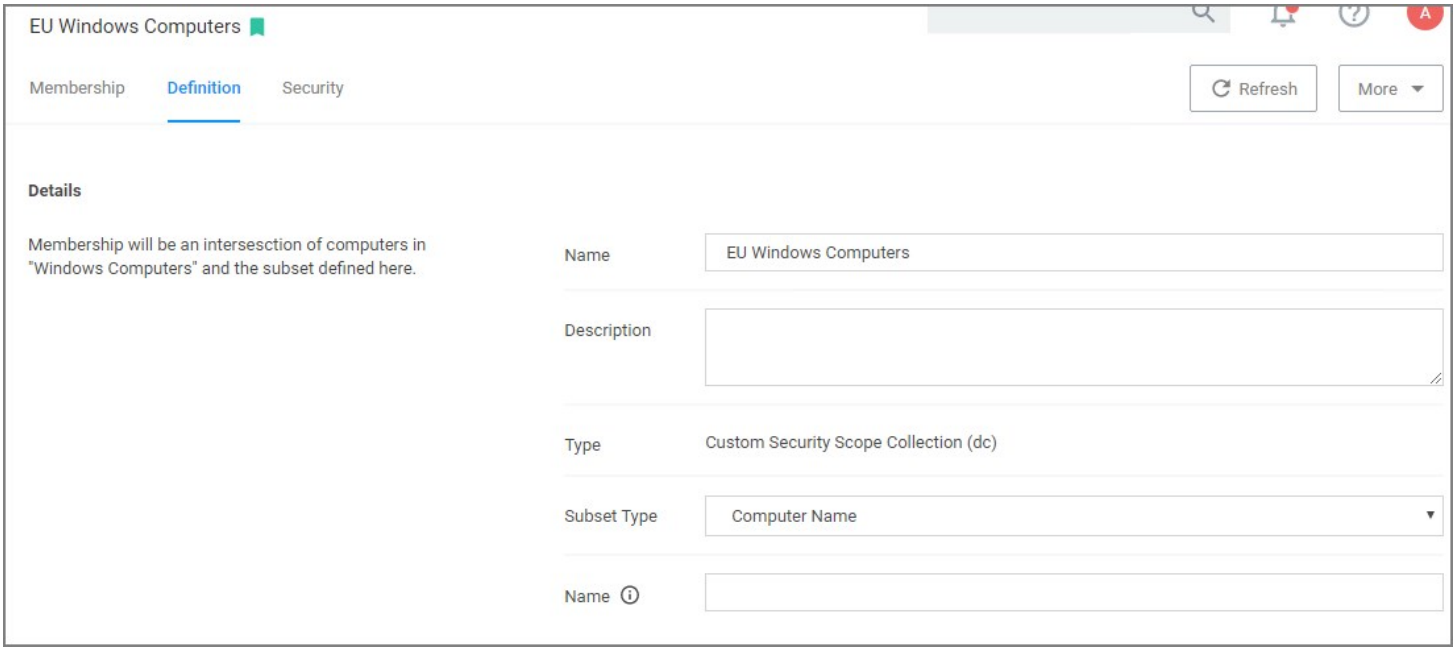


Once created, the Targeted Computer Group page is displayed. By default, the group is added to the left navigation menu of the Privilege Manager console.



The **Membership** information will show only the direct members of the group, unless you set the **Show Computers in Child Scopes** switch to **Yes**.

On the Definition tab, you can further define the subset of the group.



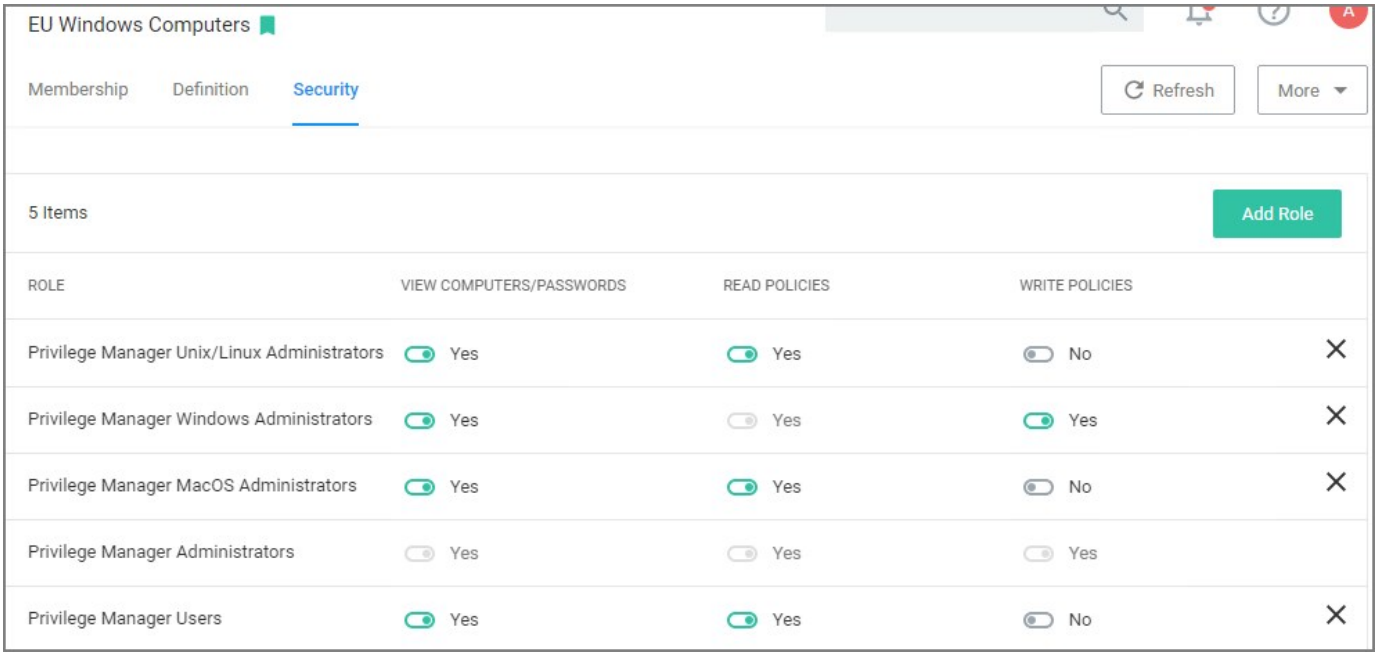
Under Details, the Name and Description are reflected as specified when the Targeted Computer Group was created.

The **Type** is Custom Security Scope Collection (dc).

The **Subset Type** can be changed via drop-down, it defaults to Computer Group, but for definition purposes a Privilege Manager Admin can choose from the options listed in the table below. Based on **Subset Type** selection the last definition field changes:

Computer List	**Computers** - Click **Add** to select computers to be added from a picker. The picker will show all computers in the environment, only those that are members of the parent collection can be members of this set.
Computer Name	**Name** - Enter the names for the computer to be added. You can type in the exact name of a computer or append/prepend a '%' as a wildcard.
Scope	An **AD domain** to be selected from the list of known AD domains.
Security Group	A **Group** to be selected from a list of resources based on a search by Name option.

On the Security tab, Roles can be turned on and off for various CRUD operations.



Note: In order for the View Computers/Passwords options to be enforced correctly and to use what is defined in the scopes, navigate to **Admin | Security** and open the Configuration tab to set the Resource Security to **Secured Computer Groups**. Refer to Security Configuration Tab on the **Security** topics page under the Admin Menu section.

Note: If you are using Secret Server as the vault, roles and permissions as defined in Secret Server control who can see which secrets. The Targeted Computer Group Security settings only apply to data within Privilege Manager .

When setting up Secured Computer groups and policies, the priority settings of those policies needs to be well considered between the parent and child computer groups.

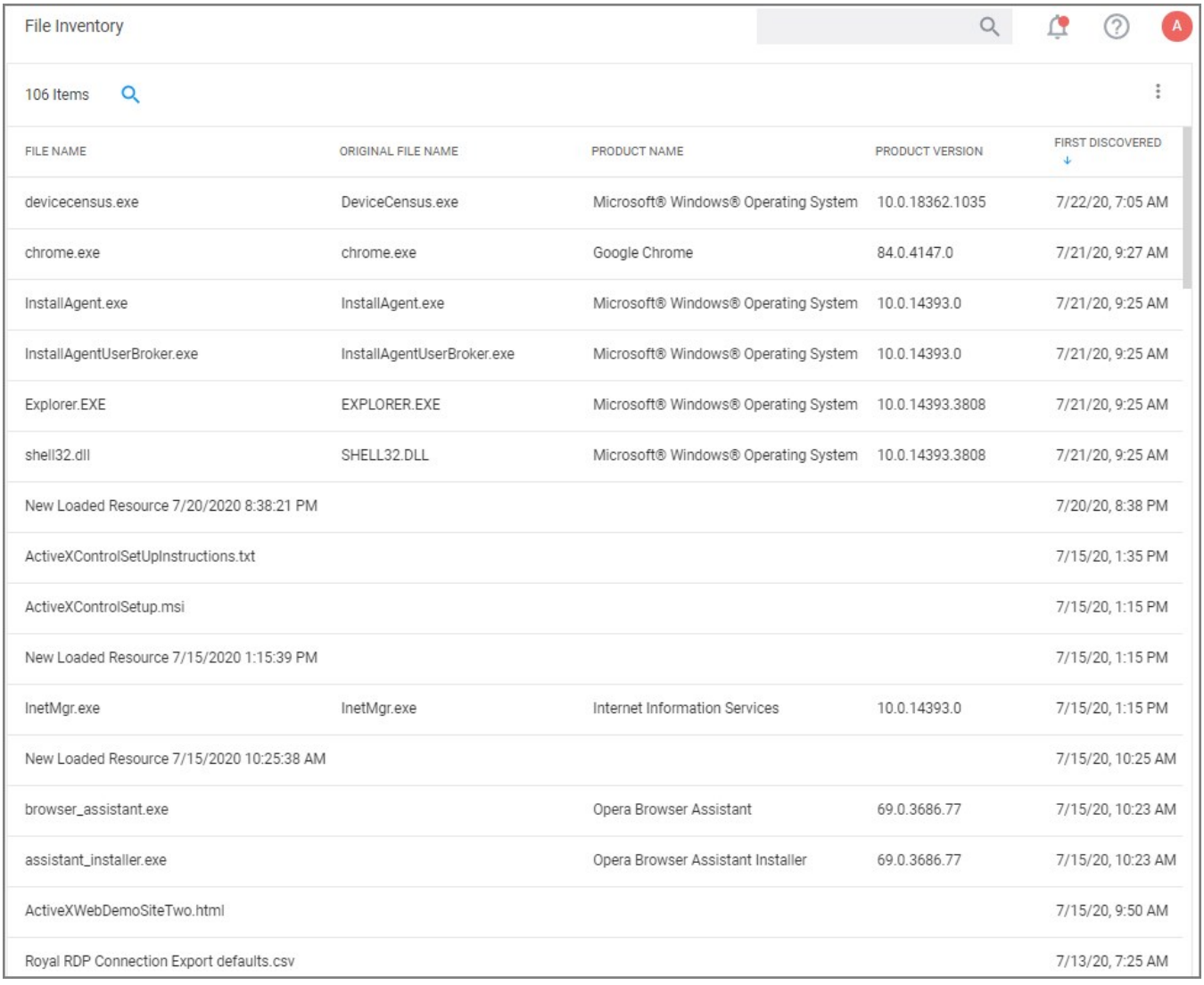
An example of conflicting policies is where a Windows Computer Group may have a policy to block notepad.exe and its child Windows Computer Group has a policy that requires an approval for notepad.exe. In order to make this work, the child Windows Computer Group policy needs to have a higher priority than the parent Windows Computer Group policy. This ensures that the computers in the child group request approval when Notepad is selected and the computer in the parent group blocks Notepad when it is selected.

File Inventory

The file inventory page lists all files discovered based on the Basic Inventory policies.

The table grid contains the following columns:

- File Name
- Original File Name
- Product Name
- Product Version
- First Discovered

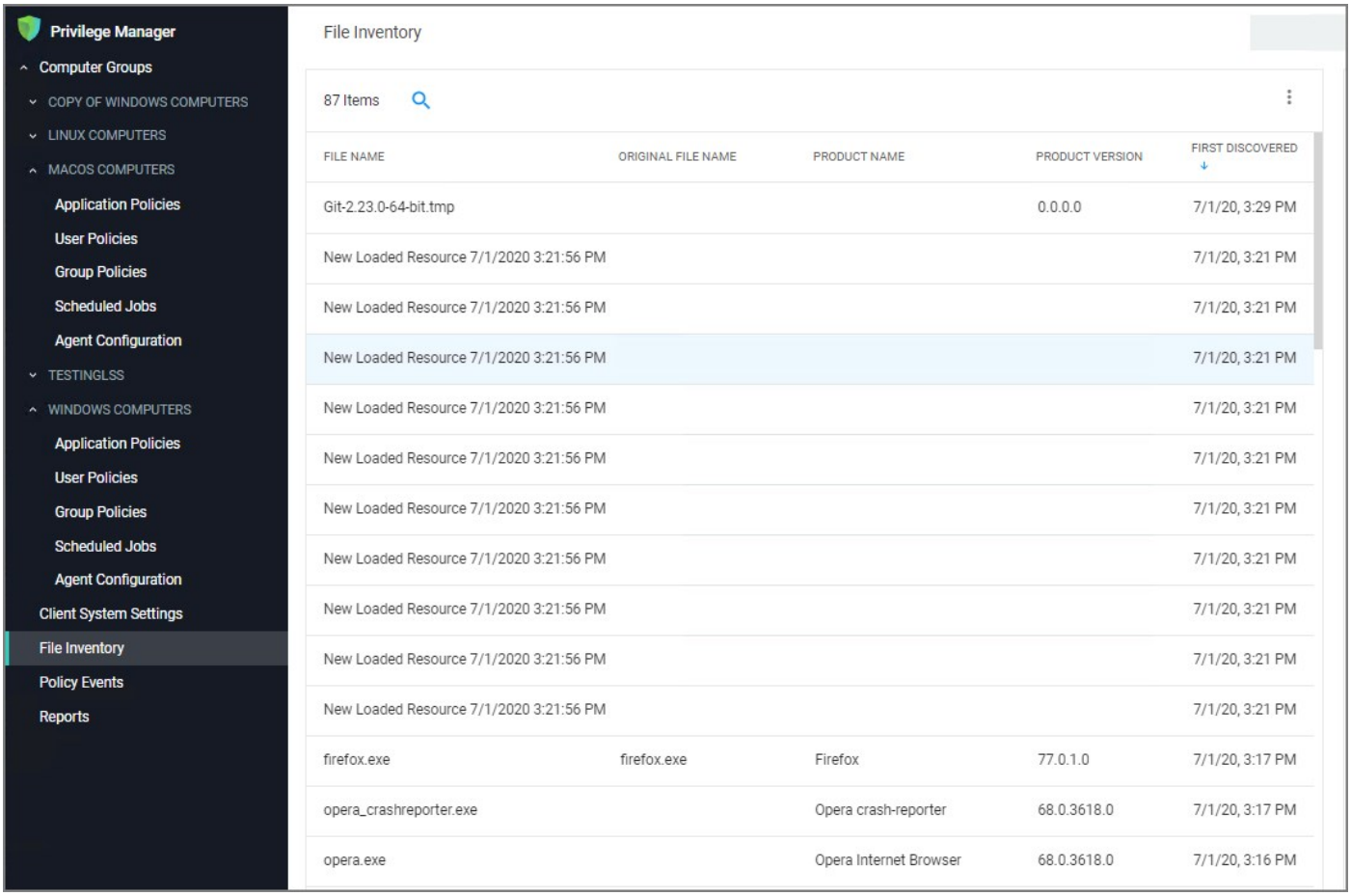


FILE NAME	ORIGINAL FILE NAME	PRODUCT NAME	PRODUCT VERSION	FIRST DISCOVERED
devicecensus.exe	DeviceCensus.exe	Microsoft® Windows® Operating System	10.0.18362.1035	7/22/20, 7:05 AM
chrome.exe	chrome.exe	Google Chrome	84.0.4147.0	7/21/20, 9:27 AM
InstallAgent.exe	InstallAgent.exe	Microsoft® Windows® Operating System	10.0.14393.0	7/21/20, 9:25 AM
InstallAgentUserBroker.exe	InstallAgentUserBroker.exe	Microsoft® Windows® Operating System	10.0.14393.0	7/21/20, 9:25 AM
Explorer.EXE	EXPLORER.EXE	Microsoft® Windows® Operating System	10.0.14393.3808	7/21/20, 9:25 AM
shell32.dll	SHELL32.DLL	Microsoft® Windows® Operating System	10.0.14393.3808	7/21/20, 9:25 AM
New Loaded Resource 7/20/2020 8:38:21 PM				7/20/20, 8:38 PM
ActiveXControlSetUpInstructions.txt				7/15/20, 1:35 PM
ActiveXControlSetup.msi				7/15/20, 1:15 PM
New Loaded Resource 7/15/2020 1:15:39 PM				7/15/20, 1:15 PM
InetMgr.exe	InetMgr.exe	Internet Information Services	10.0.14393.0	7/15/20, 1:15 PM
New Loaded Resource 7/15/2020 10:25:38 AM				7/15/20, 10:25 AM
browser_assistant.exe		Opera Browser Assistant	69.0.3686.77	7/15/20, 10:23 AM
assistant_installer.exe		Opera Browser Assistant Installer	69.0.3686.77	7/15/20, 10:23 AM
ActiveXWebDemoSiteTwo.html				7/15/20, 9:50 AM
Royal RDP Connection Export defaults.csv				7/13/20, 7:25 AM

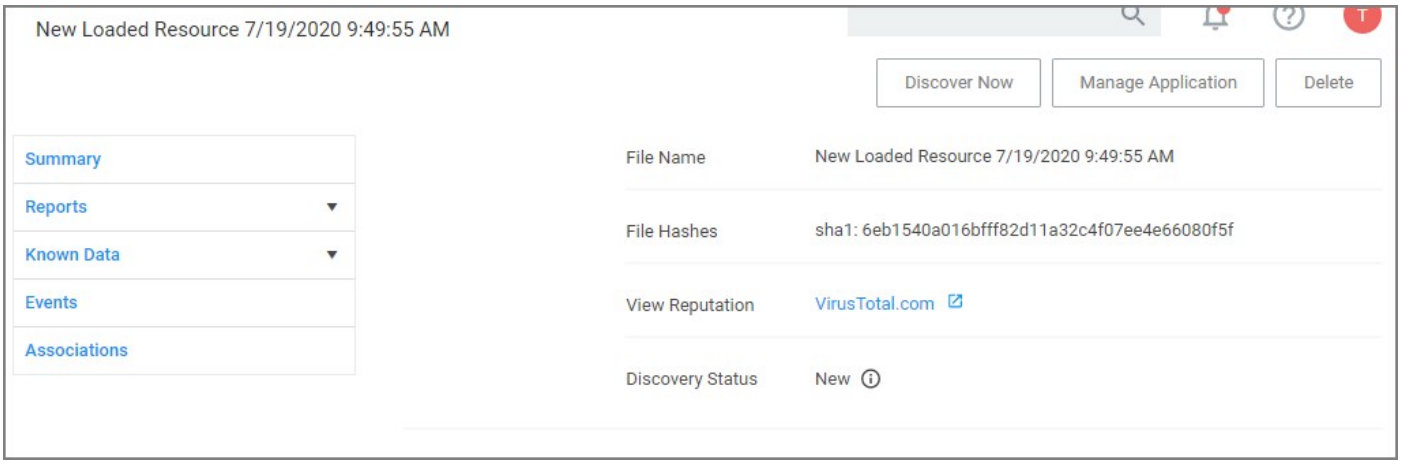
At the beginning of your policy creation process you will see many new events labeled as **New Loaded Resource**. This is because importing files in Privilege Manager is not the same thing as discovering information about the files. Discovery of file details is done by scheduled tasks by default, but if you want to discover file details immediately, do the following:

1. Navigate to **File Inventory**.

2. Select **New Loaded Resource**.



3. Click on a **New Loaded Resource** entry.



1. Check the Discover Status. The following states are available:

   - **New**, the resource was just reported).
   - **Pending Assignment**, the resource will soon be assigned to an agent for discovery).

- **Assigned to agent**, an agent was chosen to discover this resource.

Once an agent is assigned, you can click **Discover Now** to attempt to force the agent to immediately discover the resource. Many factors affect the agent's promptness in discovering the resource: agent up-time, current processing queue, etc. Please be patient.

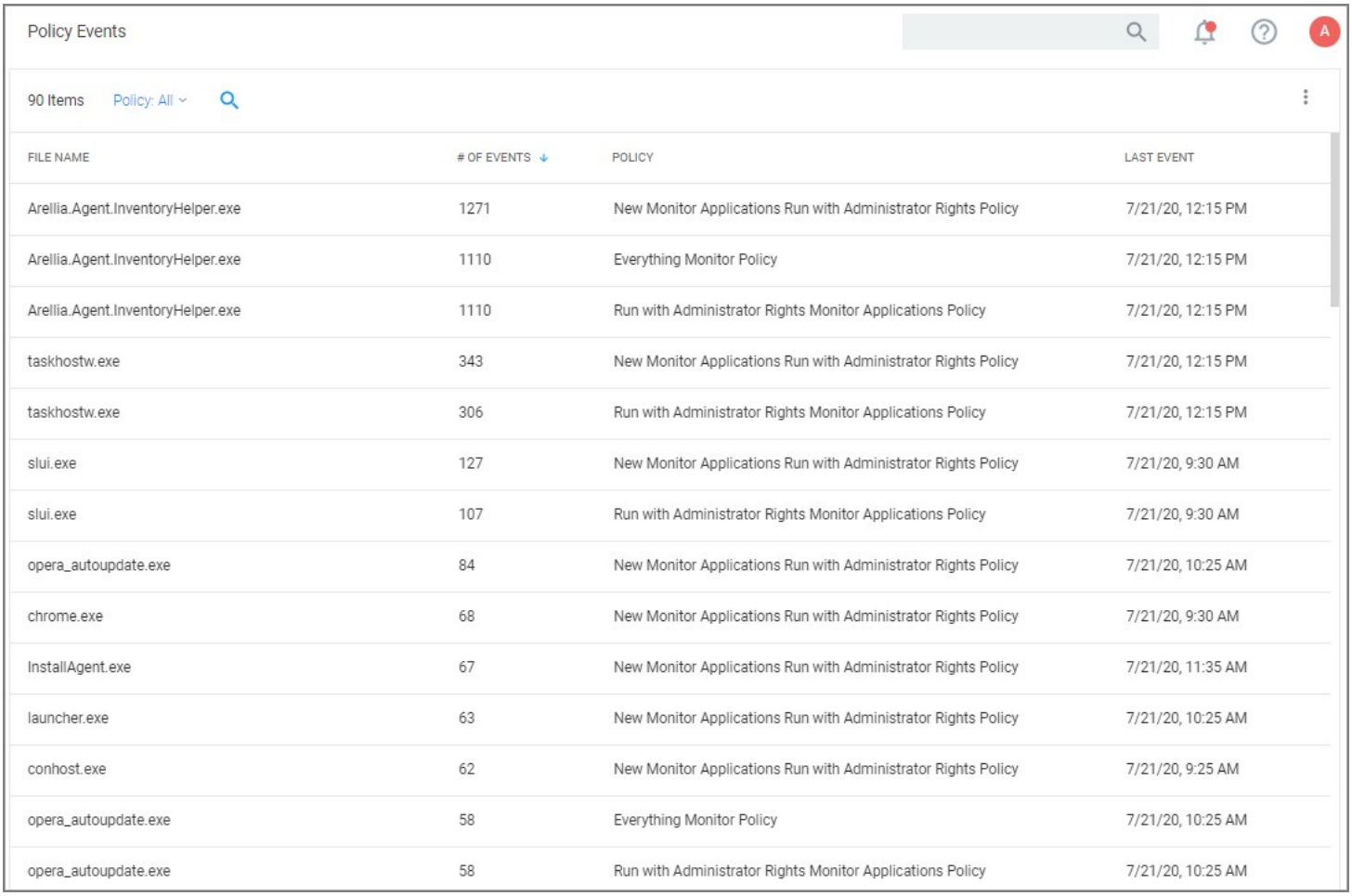
4. Click **Discover Now**.
5. After the successful discovery, click **View File** or **Create Filter** as your next option to use the discovered or inventoried resource. You have the option to add it to a Policy.

   Note: Files may not be discovered if they have already been deleted from your system.

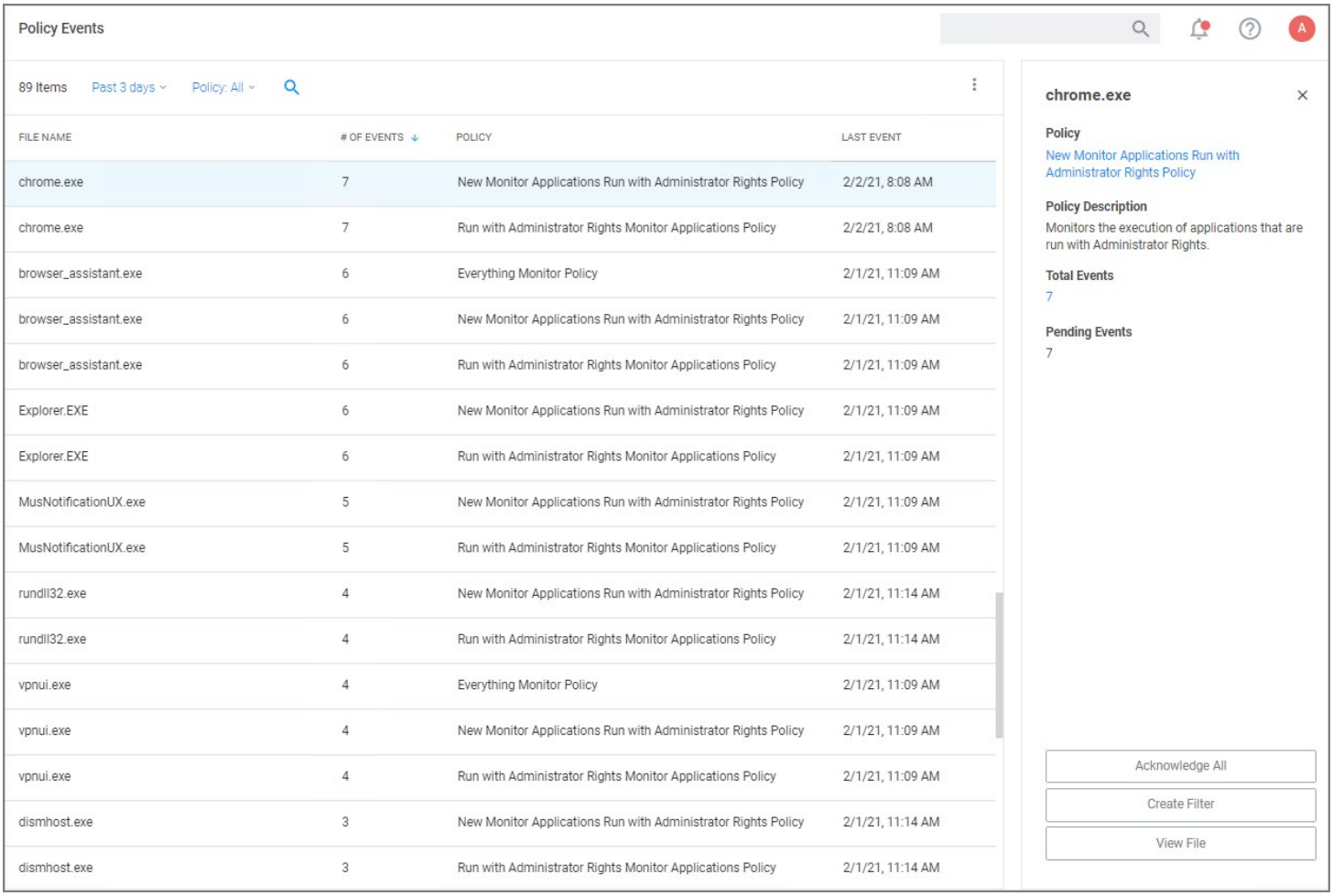
Policy Events

Application control events or **Policy Events** are created if you choose to have one or more policies send feedback (from the endpoint to the server) each time the policy is triggered.

Under **Policy Events** Privilege Manager provides access to all information collected and events discovered due to using monitoring policies with the **Audit Policy Events** switch set to active.



All events are shown independent of an executed file being target by a policy or being unknown. The policy events are listed in a table grid and if you select an event, you can find discovered details on the right.



The details provided are the application or process name that triggered the event and based on which policy the event was recorded, including a short policy description. You can also see how often this event has occurred.

Use the details view to either create a filter or view the file. If you choose to create a filter, you can also select to immediately add that filter to an existing policy.

If you choose **View File**, you can drill into the event details further. Refer to Events Drilldown.

If you enabled the **Show Acknowledge Events** switch, the Acknowledge Events button is visible. Refer to Privilege Manger Solution for details.

Best Practices

In Privilege Manager , the option to Send Policy Feedback is the main notification mechanism about application installation and execution on user endpoints. Using Send Policy Feedback is recommended while systems are in Event Discovery and Learning Mode. This helps administrators to gather data, analyze patterns, and then assign actions to application events retrospectively.

It is not recommended to use Event Discovery for all configurable options and all user endpoints all the time. Event Discovery in an established production environment should be targeted to not generate unnecessary and overwhelming amounts of data.

Privilege Manager isn't a SIEM tool, so it shouldn't be capturing events from every endpoint. On the Conditions tab of any policy, users can see what is being targeted. The Application Filters on the policies are typically built with the target file name (and with established naming conventions, the policies and filters are easier to filter and to determine what they are targeting). The Privilege Manager User role can be assigned to the employees who need to audit these policies. That role will give them the ability to read items in Privilege Manager but not make any changes. Those users, as needed, look at the policies to see what's being targeted and can then relay that information to administrators that need to know those details.

Privilege Manager should not be used to audit events on all endpoints, but small scope audit can be done. For those, an elevate policy can be copied and targeted to a specific user, machine, or very small group with send policy feedback. As long as it's a small sample, it shouldn't flood the database with events. This type of audit policy can be assigned to an AD group. Change what user or machine is in that group to change who/what is spot audited. It provides a small example of what is being elevated.

Privilege Manager includes policies to discover when an end user runs an application that requires administrative rights. Creating policies for any known applications and tasks should be first. Organizations are aware of applications that require elevated permissions to run or install. Collect any files that have already been identified and create policies targeting those applications.

Often different users have different rights on their endpoints, based by division, hierarchy, or other classifications. Privilege Manager can quickly inventory local groups and users. If current permissions are unknown, use Privilege Manager to discover which accounts have administrative permissions on each endpoint. Action can be taken to immediately remove suspicious or unwanted users and groups.

Understanding which users and groups have administrative rights, allows you to properly assess what permissions should exist on an endpoint.

> **Note**: Do not elect to Send Policy Feedback for trusted applications for those specified groups that are cleared to use and install the applications.

Event Discovery

Event Discovery is Privilege Manager 's process to determine which applications will require policies.

Based on your use cases, different Event Discovery policies should be enabled. Enable event discovery for the most common use cases like:

- applications that require elevated rights,
- installers, and
- processes that trigger a UAC prompt.

Privilege Manager admins will work through the results of Event Discovery and build policies targeting these applications. Admins will determine if a file should be added to an allow, deny, or elevation policy. If elevated, determine if the file will be silently elevated or if justification, approval, or another workflow will be required.

Add the applications that are discovered to policies with priorities to be triggered before Event Discovery. This will prevent those applications from continuing to be discovered by Event Discovery in the future.

Following this process will naturally clean up the results from Event Discovery.

Refer to Discovery in the Admin menu section.

Delinea

Never Disable Event Discovery

Event Discovery is not a short process. It's an integral part of Privilege Manager . Once Event Discovery is enabled, it is never disabled.

Even after all policies have been built and all end user needs are met and the local admin groups are empty on all endpoints, you'll still want to know if there are new items that require elevated permissions. Or, after admin rights have been removed, you may want to setup Event Discovery to send feedback if someone runs an application in a context that is unexpected and highly suspicious.

What is discovered and who/which machines Event Discovery targets may change, but Event Discovery will always be used in some capacity.

Event Discovery will never be disabled – you will always want to discover new events that require elevated rights. Consider a maturity plan for Event Discovery.

- Begin by silently discovering applications and creating filters/policies.
- As policies are tightened, add a justification prompt for new items.
- When admin rights have been removed and policies are set, use an approval process or reputation check for newly discovered items.

Event Discovery cannot be sped up. Files will only be discovered when end users initiate a process. If a certain team has an application that is only used at the end of the quarter to finalize business, that application will only be discovered once it is run by the end user.

The scale can be adjusted to ensure the workload is manageable. Start small, understand the workload when the pipeline is slow, then scale to the workload that can be maintained.

Event notifications are helpful and important when administrators want to initially establish policies and to continually monitor the installation and execution of new/unknown applications.

For a production environment it is necessary to know when potentially dangerous applications are installed on a user endpoint. It is not important to be notified every time a white listed application is installed or run on a system.

> **Note**: That means that silent elevation policies do not need an event notification and should not have Send Policy Feedback enabled. Information should only be given on application events that require a follow-up with actions.

Approval and justification policies always generate an event as required for an audit trail. These events cannot be subdued.

Self-elevation, deny list, and other events on an endpoint triggering UAC are part of the never-ending event discovery process in an organization.

Create policies that are used for a certain amount of time before they are revisited and potentially adjusted for current needs. Target specific systems or user groups with group specific policies. Once those requirements are set, define what events will need a follow-up action in your environment:

- What exceptions can be made if any
- When to use overrides
- What to block
- What to deny list.

For certain groups of users, it might also be an idea to target a specific machine routinely to use the data to fine-tune any policies that are enforced on the endpoint. Group Management based on existing groupings – AD OUs, AD user groups, SCCM groups, etc.

However, requirements and circumstances are not set in stone and revisiting existing and established policies is part of a best practice approach in PAM.

It is important for administrators to know when (and potentially why) deny listing policies are triggered. It indicates that employees are violating company policy. However, if this happens a lot, it might indicate that there is a business need for this application and that the blocked software was not fully understood.

Send Policy Feedback

An UAC override policy allows a user to elevate a program not blocked by a deny listing or elevated by an allow list, by reentering their password to install/run, is a good candidate for sending policy feedback. It presents an exception to normal execution of programs as an unprivileged user. This type of event logging should be used to identify new programs to add to silent elevation policies if the frequency warrants, or to audit user usage to elevate items they shouldn't to mark them for blocking or follow up action.

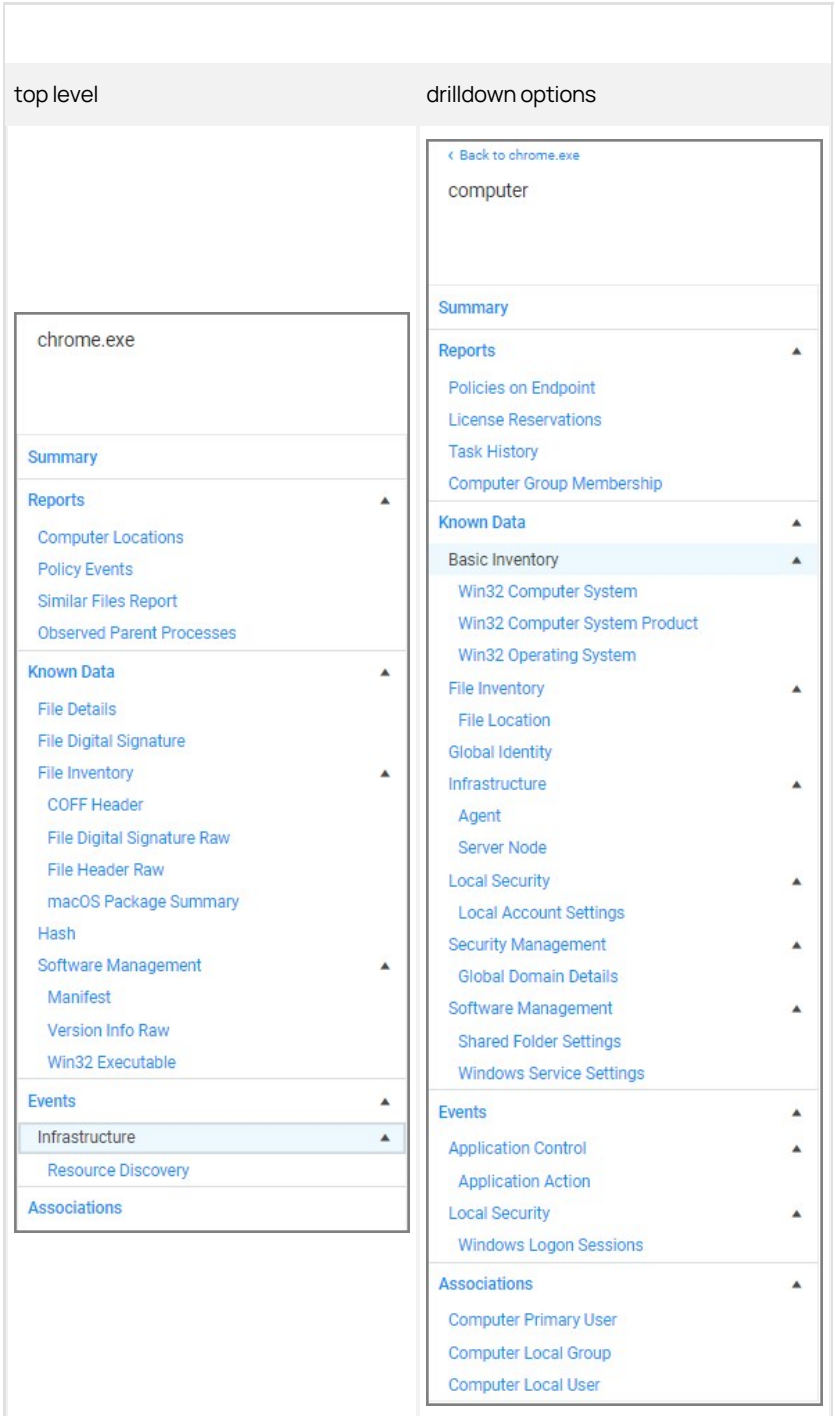
Don't Send Policy Feedback

For most business organizations, it makes no sense to implement a policy that sends feedback when a MS Office product or the company wide instant messaging product is installed or run. For user groups like developers, programming tools are needed and running those should not trigger any notifications.

Events Drilldown

After selecting **View File** the Summary page is displayed for the process that triggered the application policy event. The summary page lists details, such as the File Name, Original File Name, Product Name, Version, Internal Name, Company Name, Copyright, File Hashes, and provides the ability to view reputation details if reputation checking is enabled.

When drilling down into this information the context determines the information that is provided:



Computer Locations

The **Computer Locations** report lists the computer name, domain, operating system, and file path information for the recorded policy event. Clicking on a computer name listed, opens that computer's (end point's) summary page, with the options to further drilldown into details contextual to that specific computer.

Policy Events

The **Policy Events** report lists all event policies that were triggered by the event. Clicking on items in this list drills into the process details.

Similar Files Report

The **Similar Files Report** lists all files that are similar to the recorded policy event.

Observed Parent Processes

The **Observed Parent Processes** report lists all parent processes for the recorded policy events. This report allows the view of all parent and grant parent processes as recorded.

Known Data Provides all the discovered details about the application triggering the event.

File Details

File details lists information like extension, size and if the file is protected or not.

File Digital Signatures

File digital signatures provides information about the signer, countersigner, and timestamp of the file signature.

File Inventory

File inventory provides information about the following details:

- Coff Header
- File Digital Signature Raw
- File Header Raw
- macOS Package Summary

Hash

Hash lists the hash names in use and provides the hash and hex hash values.

Software Management

Software management provides information about the following details:

- Manifest
- Version Info Raw

- Win32 Executable

Infrastructure

Infrastructure provides information about the following details:

- Resource Discovery

Associations are usually only available on a resource context level.

The summary page provides the computer name, created and modified dates, offers a switch to turn on monitoring of the resource to generate alert notifications about certain actions performed by the resource, and it provides a Health status for the endpoint, like the policy and registration states, and if the resource is managed.

Reports

- Policies on Endpoints: Lists the policy names of all the policies on the endpoint. Information provided:
  - Has a Version of the Policy: True/False indicator
  - Has Current Version of the Policy: True/False indicator
  - Policy Last Modified: Date of last policy change.
  - Policy Applied to Agent: The date when the policy was first applied to the agent.
  - Agent Last Received Policies: The date the agent last received policy updates.
- License Reservations: Lists all the licenses that apply to the endpoint including the reservation date.
- Task History: Lists all the tasks run and completed including status details for the endpoint.
- Computer Group Membership: Lists all the computer groups this computer is a member of.

Known Data

- Basic Inventory: Provides information pertaining to the local system data, including OS.
- File Inventory: Provided information about the application/process names and their file path as well as discovery date.
- Global Identity: List the domain and user id information.
- Infrastructure:
  - Agent: Lists the agents on the endpoint and provides version details.
  - Server Node: Provides information about the server heartbeat and version.
- Local Security: Provides local account setting information.
- Security Management: Provides Global Domain Details.
- Software Management:
  - Shared Folder Settings: Lists the shared folders, their path, maximum users, if they are secured or not, provides remarks about the type of share.
  - Windows Service Settings: Lists all Windows services, the primary and secondary file names, user account, start and service types.

Events

- Application Control
  - Application Action: Lists all application file names, the policy names, the user, file path, event received details, and information about the command line executed to trigger the event.
- Local Security
  - Windows Logon Sessions: Lists all the user logon/logoff events with details about duration, type, ID User SID to just name a few.

Delinea

Associations

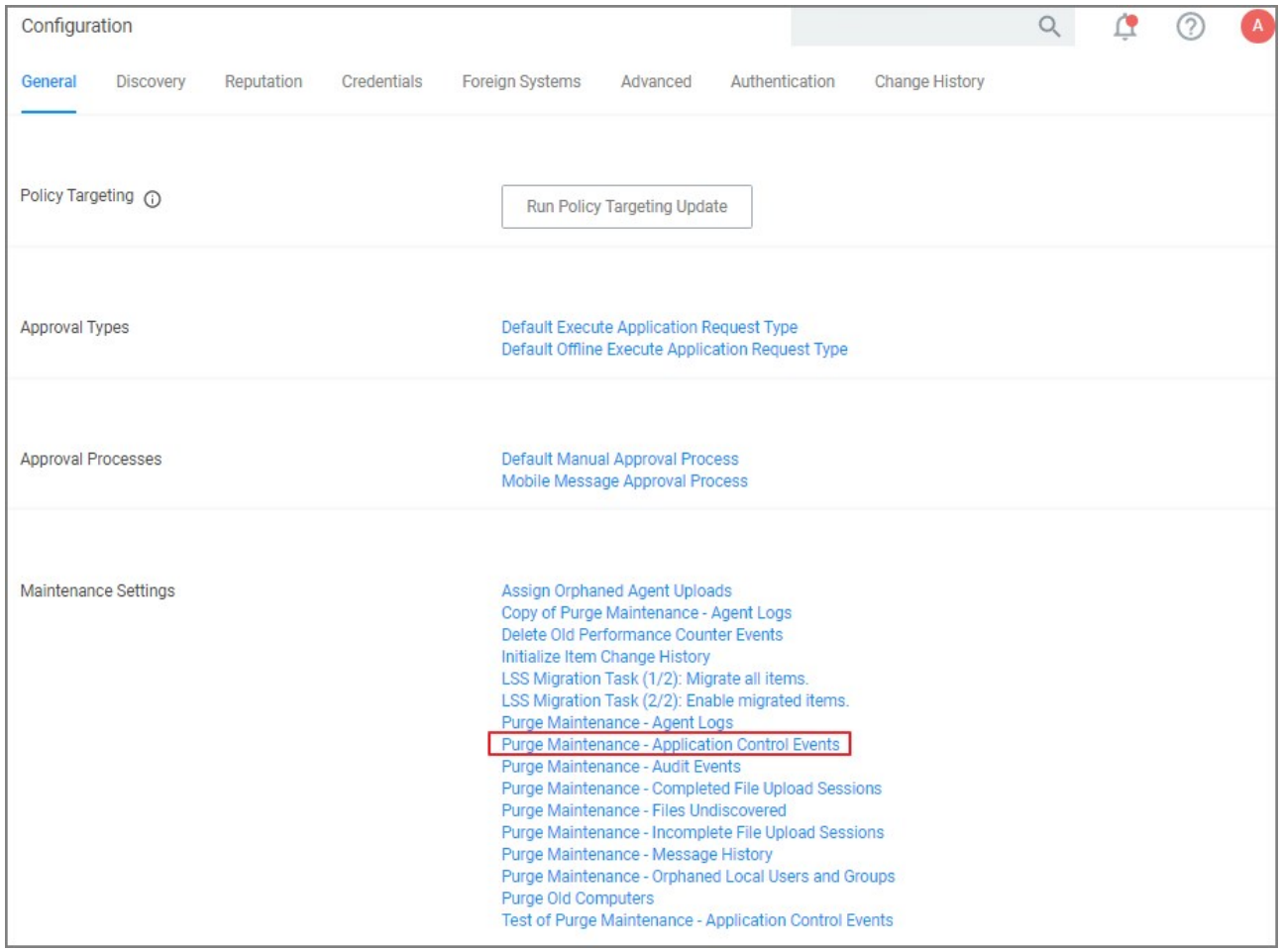
- Computer Primary User: Provides the name of the primary user on the managed endpoint.
- Computer Local Group: Lists the names of the local user groups on the endpoint.
- Computer Local User: List the name of the local user.

Events Maintenance

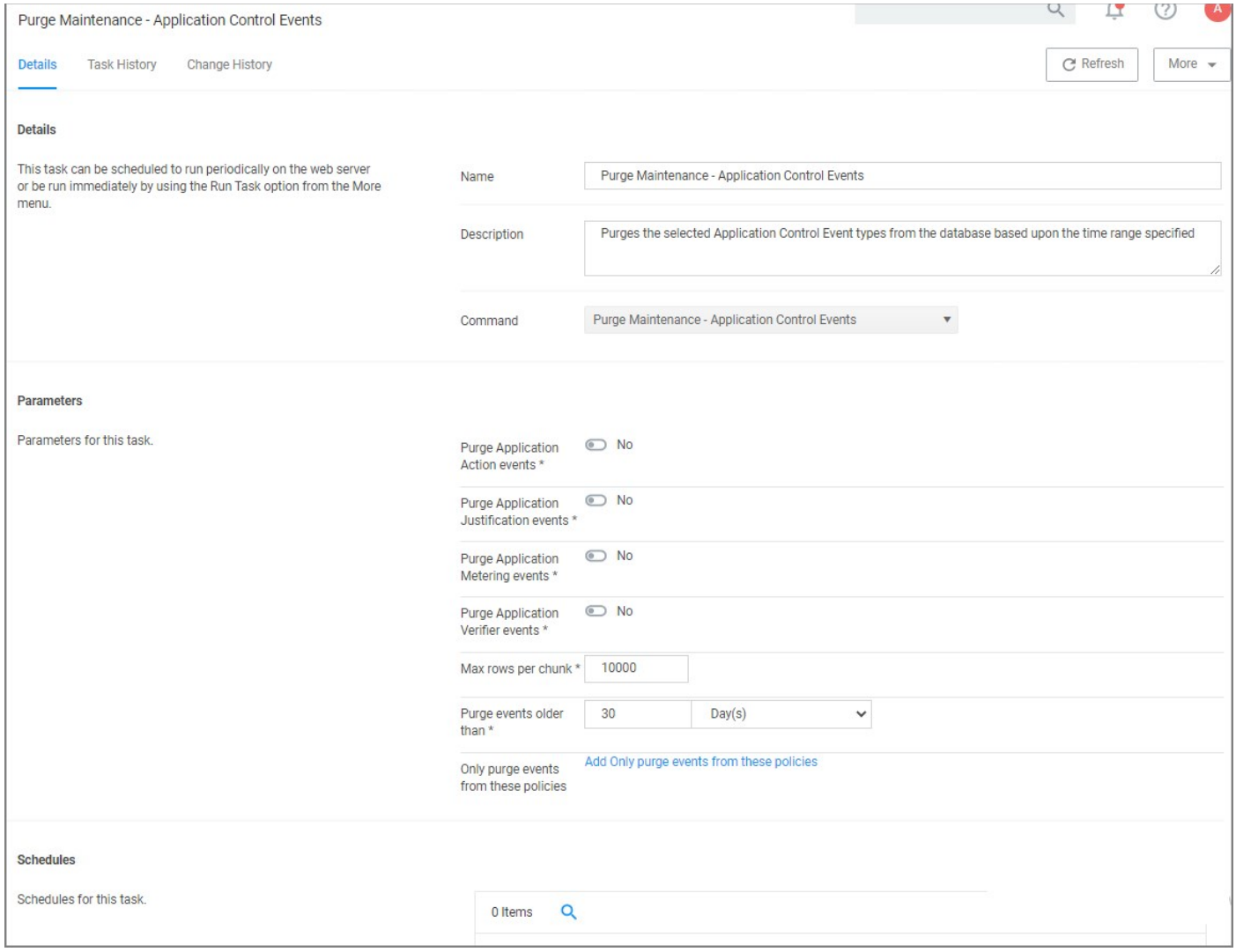
In Privilege Manager versions prior to 10.6, all events are stored unless **manually purged**. Event storage uses database space and can impact performance of dashboard queries so it is sometimes desirable to purge the stored events.

Privilege Manager version 10.6 and up, includes an option to specify the **maximum number of events** to be stored (rather than let the system continue to add events to be stored until manually purged).

1. Navigate to **Admin | Configuration** and select the **General** tab



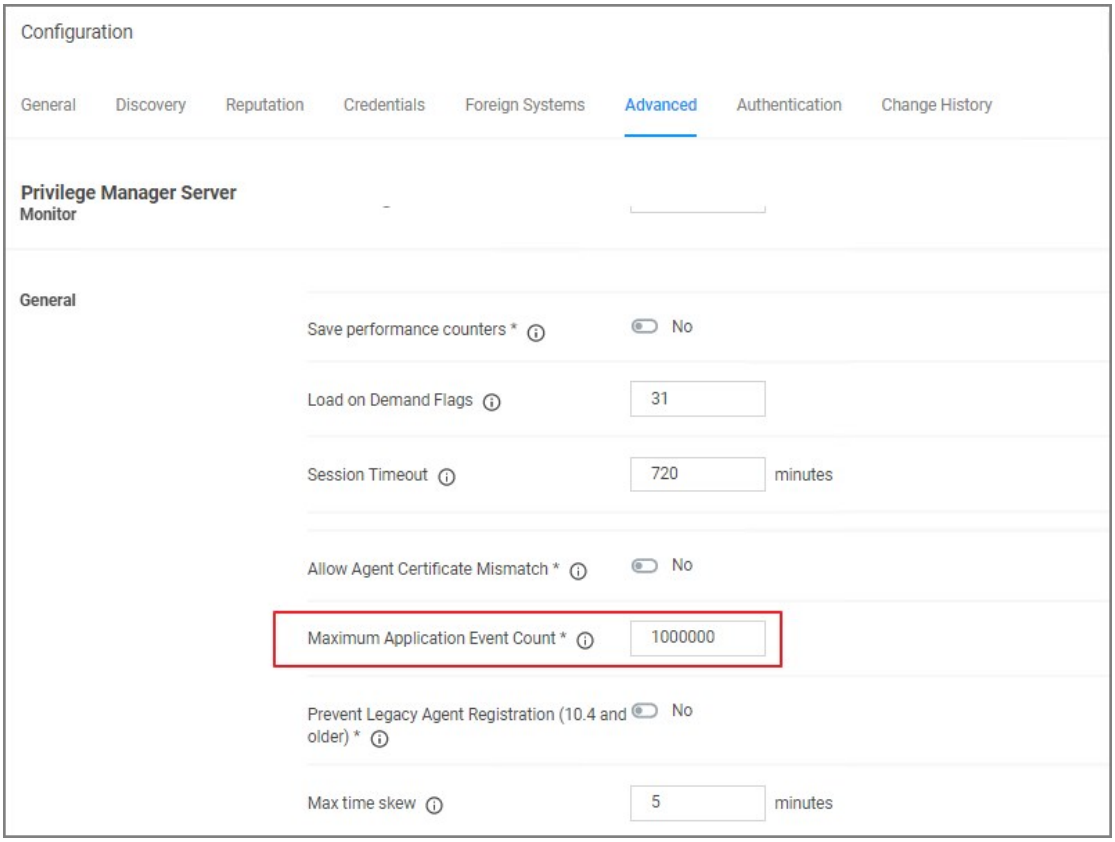
2. In the **Maintenance Settings** section of this page, click on **Purge Maintenance - Application Control Events**.



The Description text explains what this feature does: "Purges the selected Application Control Event types from the database based upon the time range specified".

3. Under **Parameters**, set the switches and edit values based on how you want the maintenance to be performed for your instance.
4. Click **Save Changes**.

1. Navigate to **Admin | Configuration** and select the **Advanced** tab.



The "Privilege Manager Server" section of the page shows the option "Maximum Application Event Count" and its default value, which is 1,000,000.

You can change the value, but storing a large number of events could cause database issues and slow down dashboard queries. Save your changes, if you edit the number.

> **Note**: In the Cloud version of Privilege Manager , the Maximum Event Count cannot be changed by the user; it is fixed at its default value.

Maximum Event Count: Additional Information

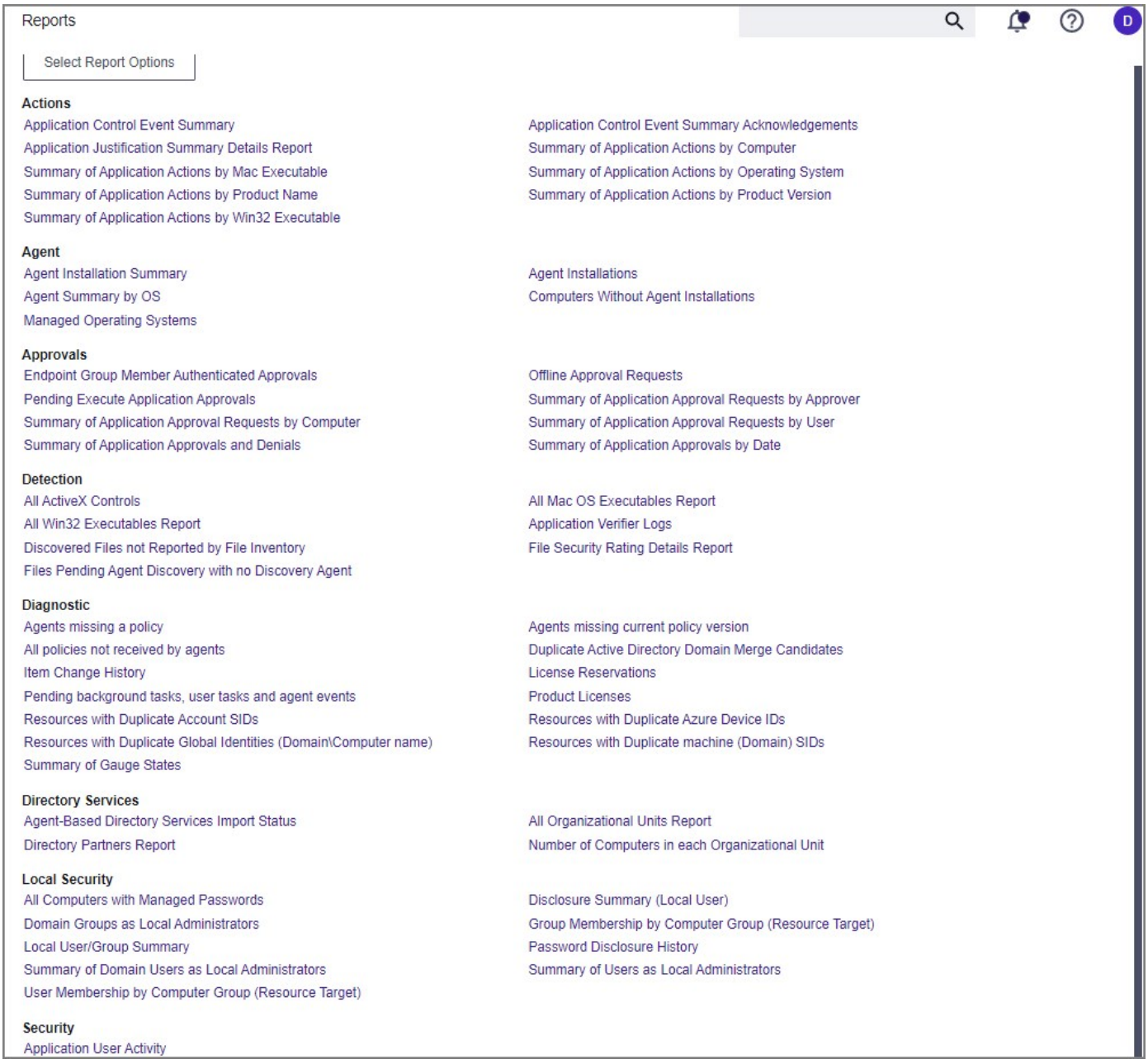
The points below provide additional information about the Maximum Event Count:

- The count value is a total for all policies; it is not a per policy setting.
- The count is treated as a rolling window; if a new event would cause the count to exceed the maximum limit, the oldest event is removed.
- The manual purge, as described in a previous section, is still available.
- As mentioned in the previous section, the Maximum Event Count cannot be changed by the user in the Cloud version of Privilege Manager ; there it is fixed at its default value.

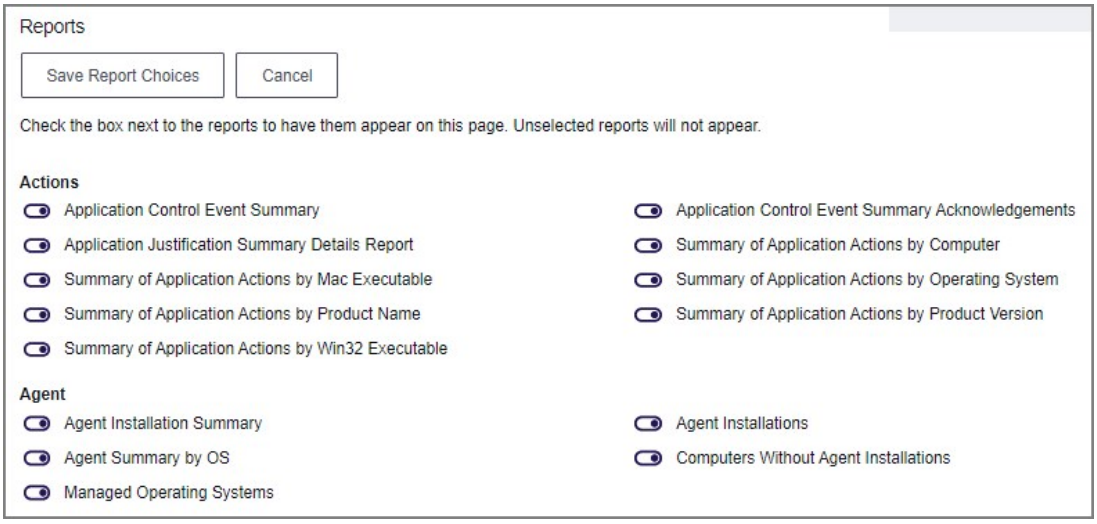
Reports

Privilege Manager includes an array of reports. To access reports navigate to the top menu, click the Reports tab for a list of relevant out-of-the-box reports that span a spectrum of system activity and diagnostic information in Privilege Manager .

Click on the name of any of these reports to access details about your system.

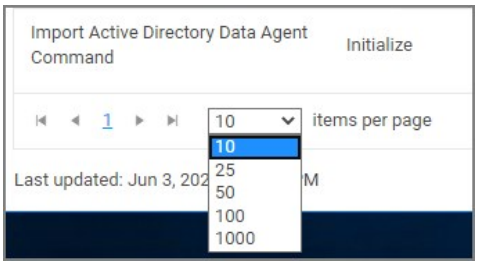


The **Select Report Options** button lets users customize which of the default report options are shown on the Reports landing page.



By default all reports are listed on the Reports landing page. Use the switch to disable showing any given report.

Users can adjust the amount of data entries to display per page. When you adjust this number of rows on a page



The default number of data grid rows to display on pages across the Privilege Manager UI is set via user preferences.

Privilege Manager reports can be exported via **CSV** and **PDF** export option buttons.

Once the **CSV** or **PDF** button is clicked, users can choose to

- export the current page or
- export all pages.

Note: Selecting all pages might take some time to complete, depending on the overall size of the data records to export.

Privilege Manager Cloud Reports

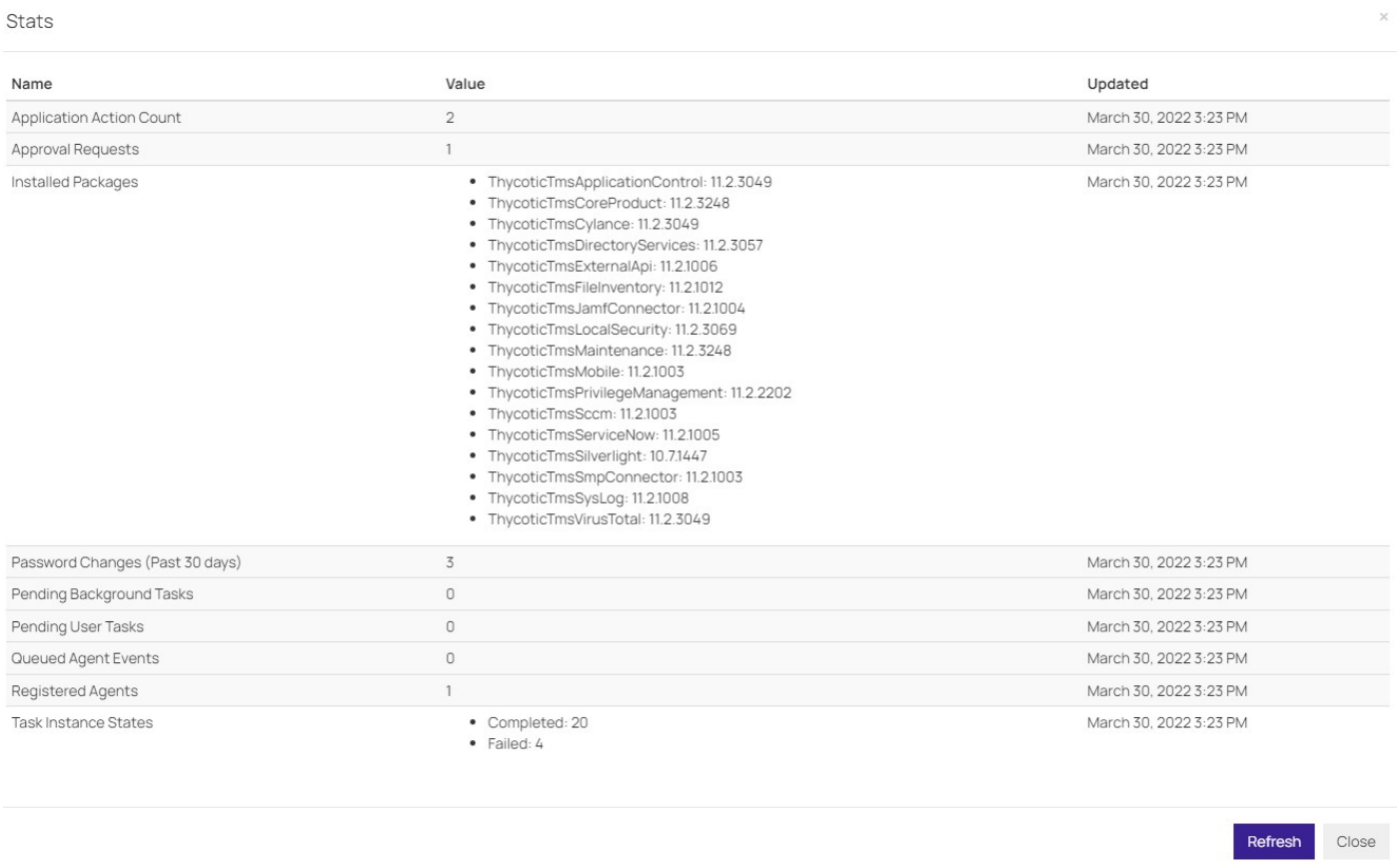
Reports in **Cloud Manager** are accessed via the relevant cloud tenant.

1. Navigate to **Admin | Product Instances**.
2. From the list of management options, select **Get Statistics**.

Available are:

- **Application Action Count**

  Shows the total number of actions that have returned data (such as Policy Events) to the Privilege Manager Server.



- **Approval Requests**

  Displays the total number of Approval Requests that are sent from agents to the Privilege Manager Server.

- **Installed Packages**

  This report shows the installed packages and their currently installed version.

- **Password Changes**

  This count will be updated when the User Password policies are run on the agent workstation.

- **Pending Background Tasks**

This item is populated when the Scheduled Check Pending Client Tasks - Cloud (Windows) actively runs on the agent endpoint. After these tasks complete, the value returns to zero.

- **Pending User Tasks**

  This report is populated while User Tasks are pending, for example a Privilege Manager Server update. After these tasks complete, the value returns to zero.

- **Queued Agent Events**

  This report is populated for queued agent events, for example the File Inventory task. When refreshed during the process, it updates the number of events that remain queued. After these events leave the queue, the value returns to zero.

- **Registered Agents**

  This shows the total number of agents currently registered on the Privilege Manager instance.

- **Task Instance States**

  This value increments and shows other options based on what is running and failing in the Task Scheduler at the time.

Reports and Queries

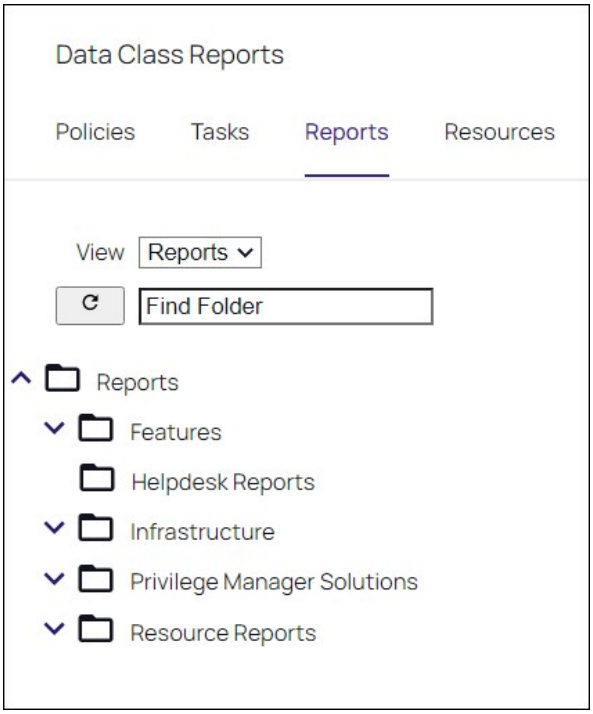
This topic provides an overview of the access and use of Privilege Manager **Reports and Queries**.

Privilege Manager executes SQL queries to produce reports. You can view existing (or canned) queries and generate resolved queries for testing purposes.

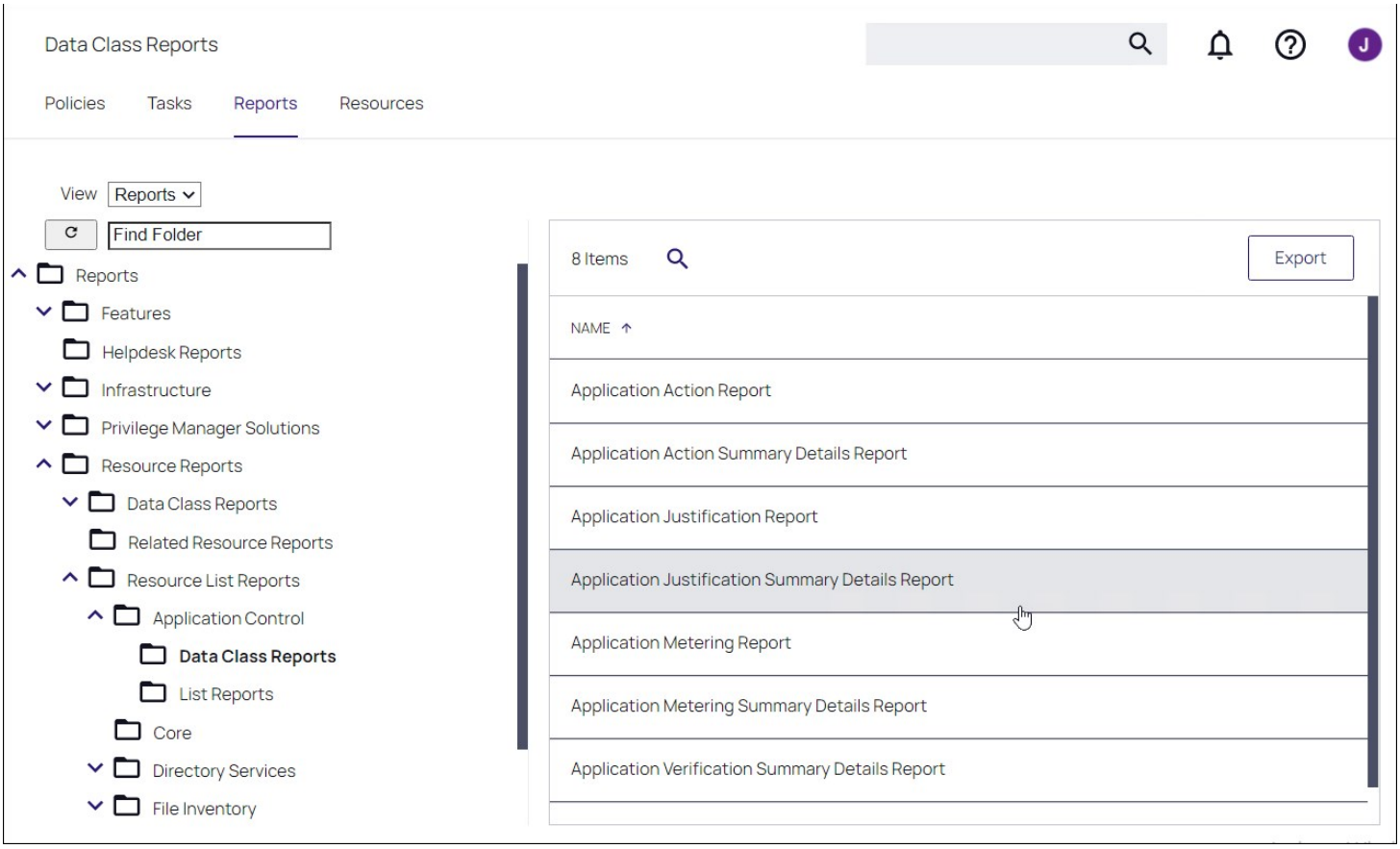
You also can run existing and custom reports external to the application using SQL Server Reporting Services, SQL Server Management Services, or a preferred tool.

Reports, accessible via the Privilege Manager left navigation pane, provides a categorized list of these items; in addition, **Select Report Options** allows you to hide or reveal reports by manipulating the switch associated with each.

You can view these reports by navigating to **Admin | Folders** and selecting the **Reports** tab, expanding to view the folder tree.



For example, **Application Justification Summary Details Report** is accessible via **Reports | Resource Reports | Resource List Reports | Application Control | Data Class Reports**.



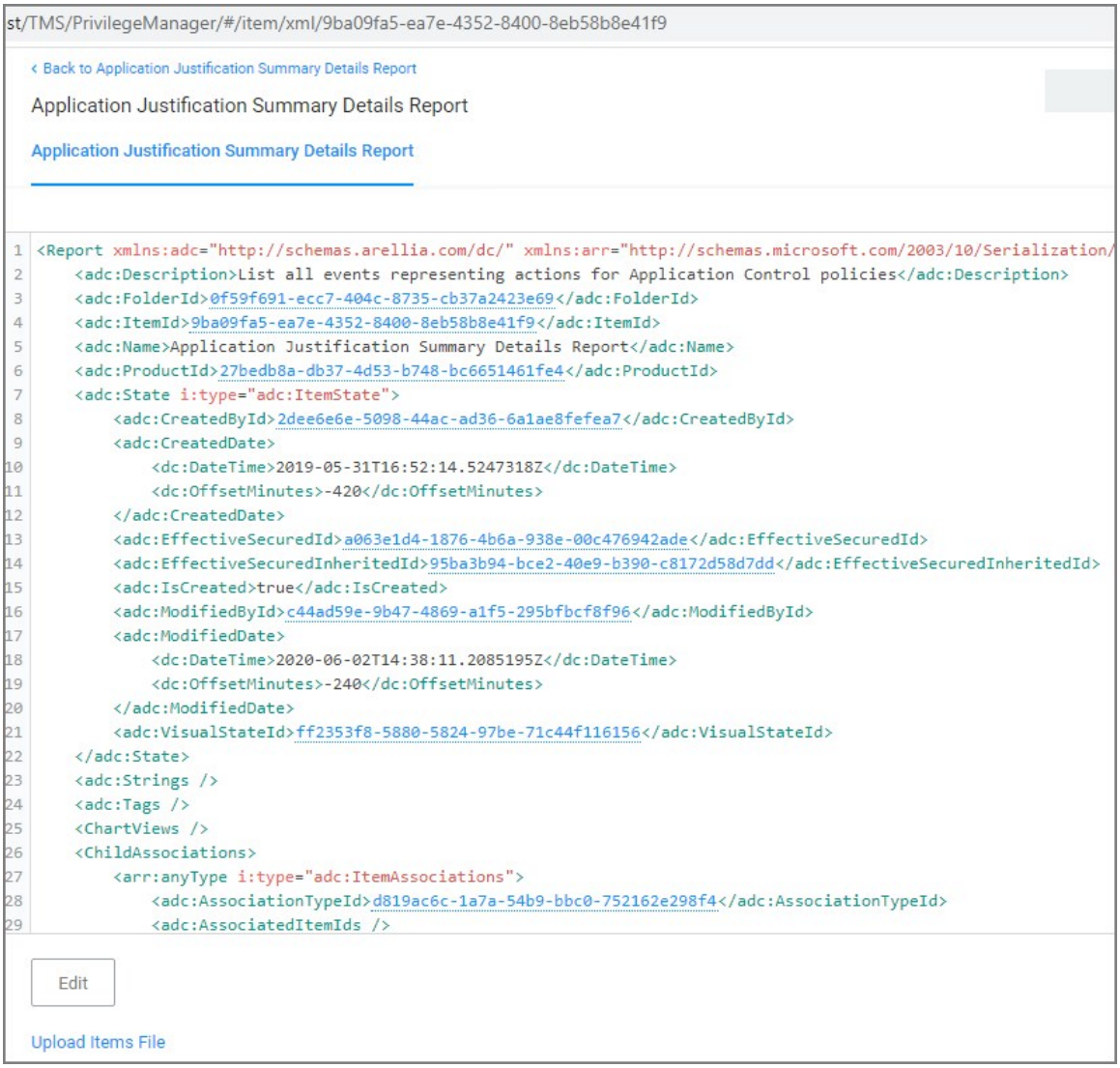
Each Privilege Manager report is a single XML object that references a separate XML object that contains the SQL query. By viewing the report object's XML, you can determine the SQL query object.

To view the report as an XML object, change the URL from:

[Your_TMS_URL]/PrivilegeManager/#/item/view/9ba09fa5-ea7e-4352-8400-8eb58b8e41f9

to:

[Your_TMS_URL]/PrivilegeManager/#/item/xml/9ba09fa5-ea7e-4352-8400-8eb58b8e41f9



Viewing an XML item helps determine the folder location, as detailed below. Viewing a report as XML also reveals the XML object for the SQL query.

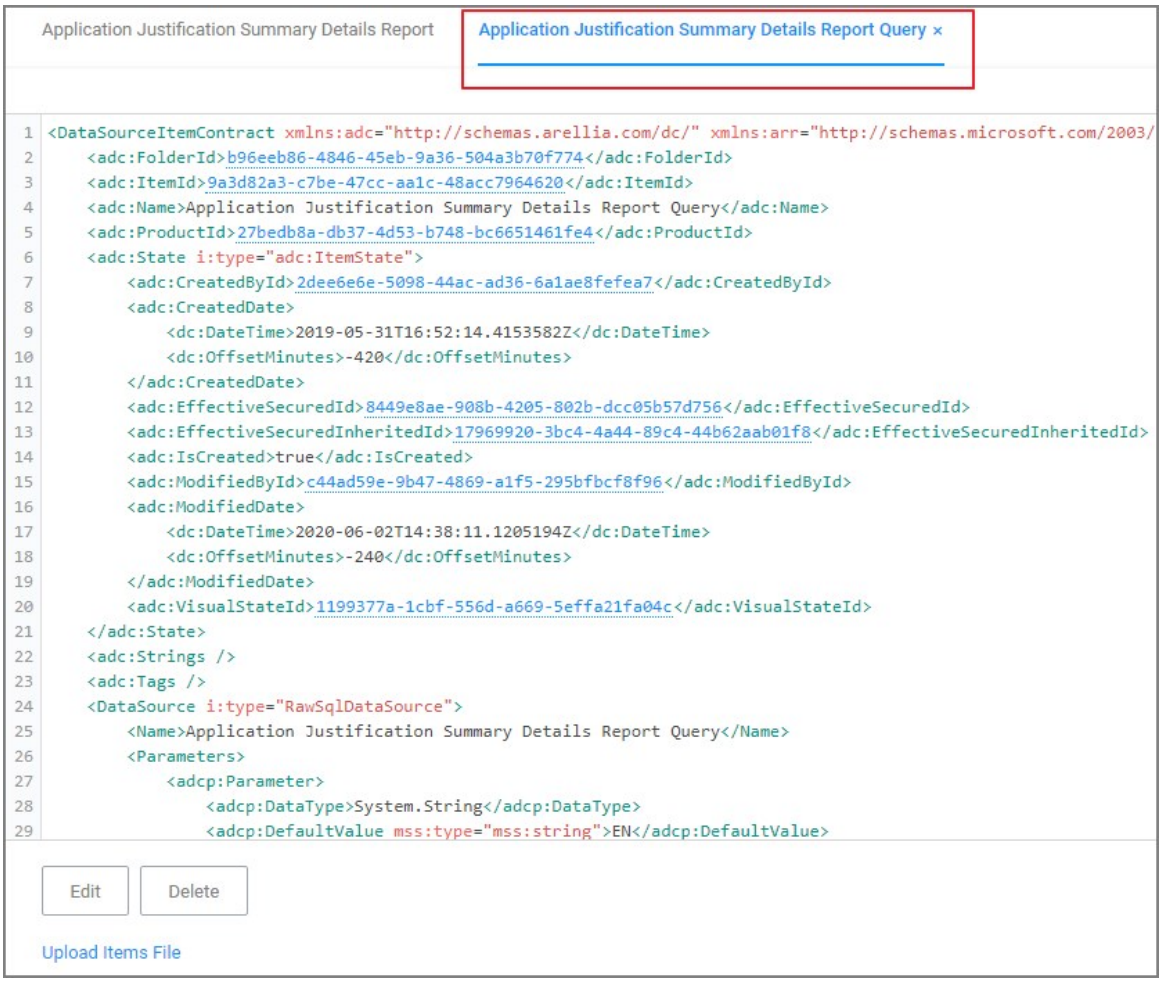
Use your mouse to hover over the GUIDs in the XML, which displays the name of each GUID's object. Within the section for ChildAssociations, there is an Association for the report's Data Source. Hovering over the GUID for the AssociatedItemId reveals the report query name.

In the screenshot below, hovering over the GUID (9a3d82a3-c7be-47cc-aa1c-48acc7964620) identifies that Item as the **Application Justification Summary Details Report Query**.

```
26      <ChildAssociations>
27          <arr:anyType i:type="adc:ItemAssociations">
28              <adc:AssociationTypeId>d819ac6c-1a7a-54b9-bbc0-752162e298f4</adc:AssociationTypeId>
29              <adc:AssociatedItemIds />
30          </arr:anyType>
31          <arr:anyType i:type="adc:ItemAssociations">
32              <adc:AssociationTypeId>5b7800bc-7e4f-54ec-88b0-9797c09c5506</adc:AssociationTypeId>
33              <adc:AssociatedItemIds>
34                  <arr:guid>9a3d82a3-c7be-47cc-aa1c-48acc7964620</arr:guid>
35              </adc:AssociatedItemIds>
36          </arr:anyType>
37      </ChildAssociations>
38      <DefaultDataPresentation>Table</DefaultDataPresentation>
39      <LastRunDateTime>0001-01-01T00:00:00</LastRunDateTime>
```

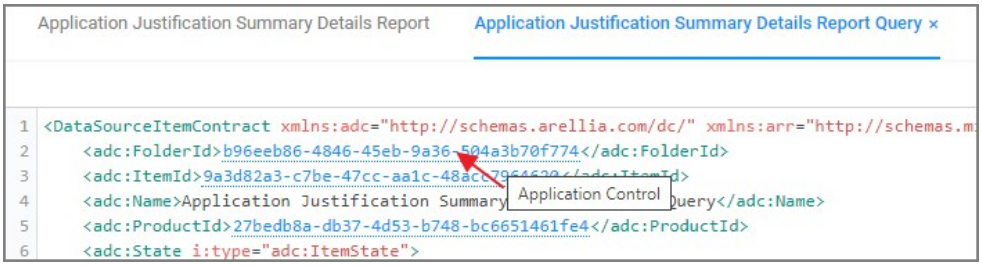
Application Justification Summary Details Report Query

Clicking this GUID opens the XML for the query object in another tab on this screen:

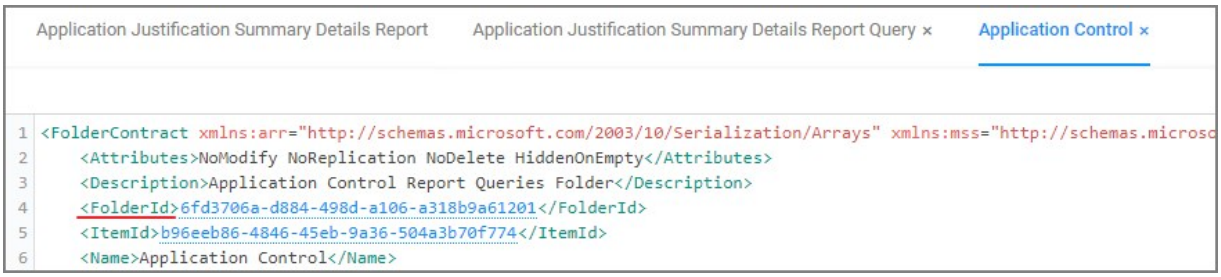


The XML object for the query includes the direct SQL query that the application runs. However, viewing the query in Privilege Manager provides more reliable query results.

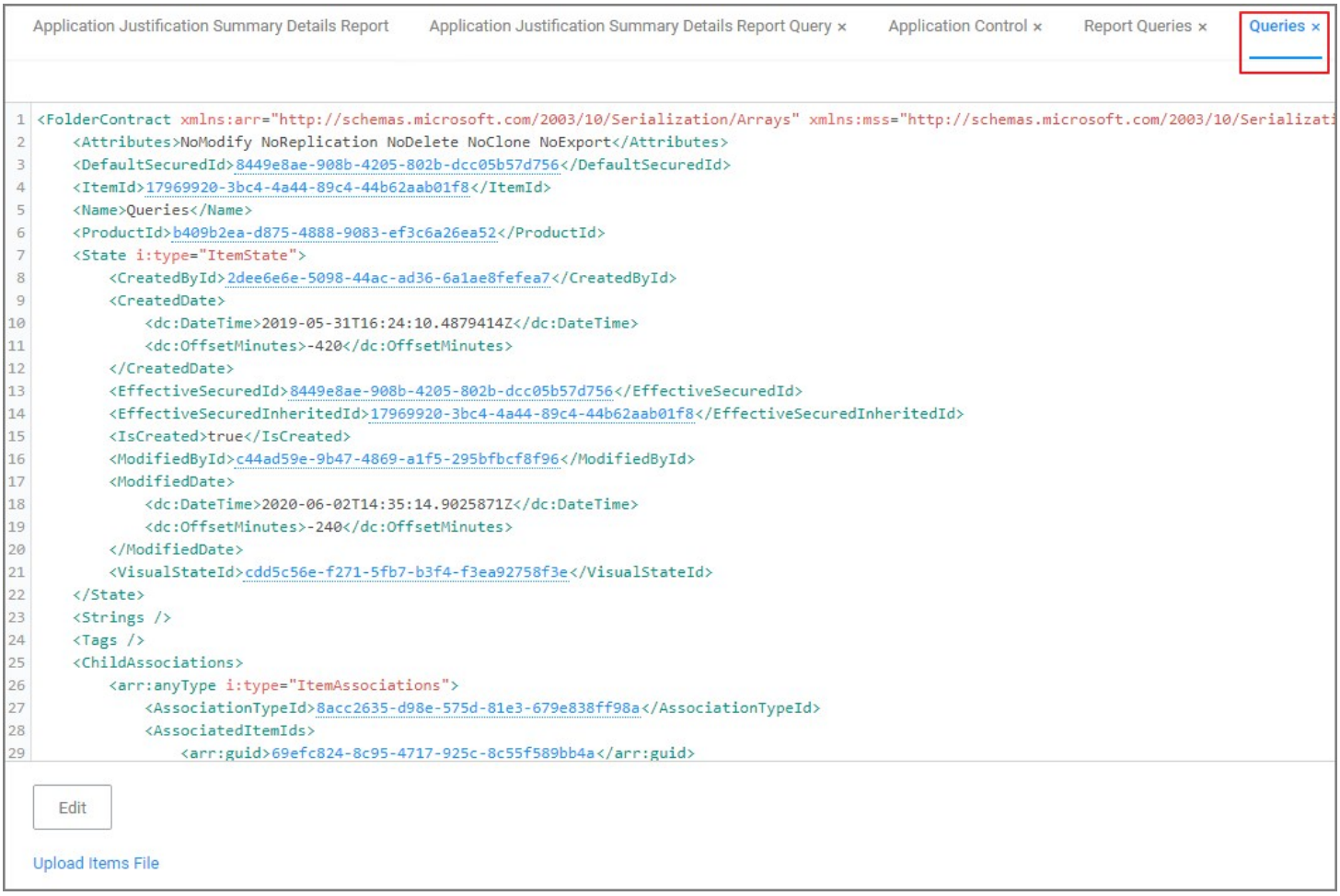
You can view the Privilege Manager SQL queries via **Admin | Folders**; however, it is helpful to know the folder location for specific queries. In the XML object for the query, hover over the GUID associated with the **FolderId** and select.



This action opens the XML folder that contains the query.



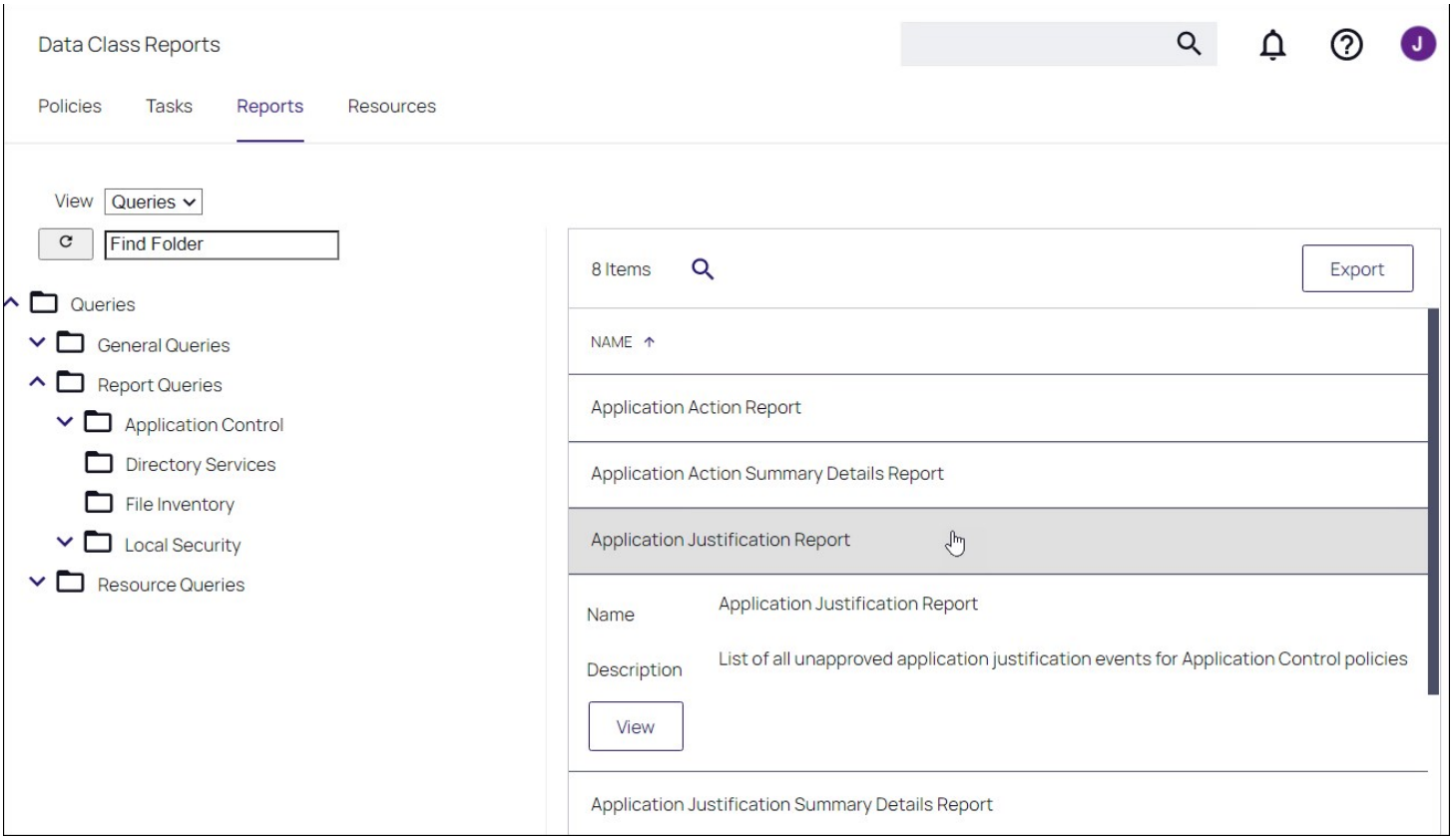
Click **FolderId** to open the XML for its parent folder and continue until reaching the root folder, which will not have a **FolderId** attribute. For the SQL queries, the root folder is **Queries**.



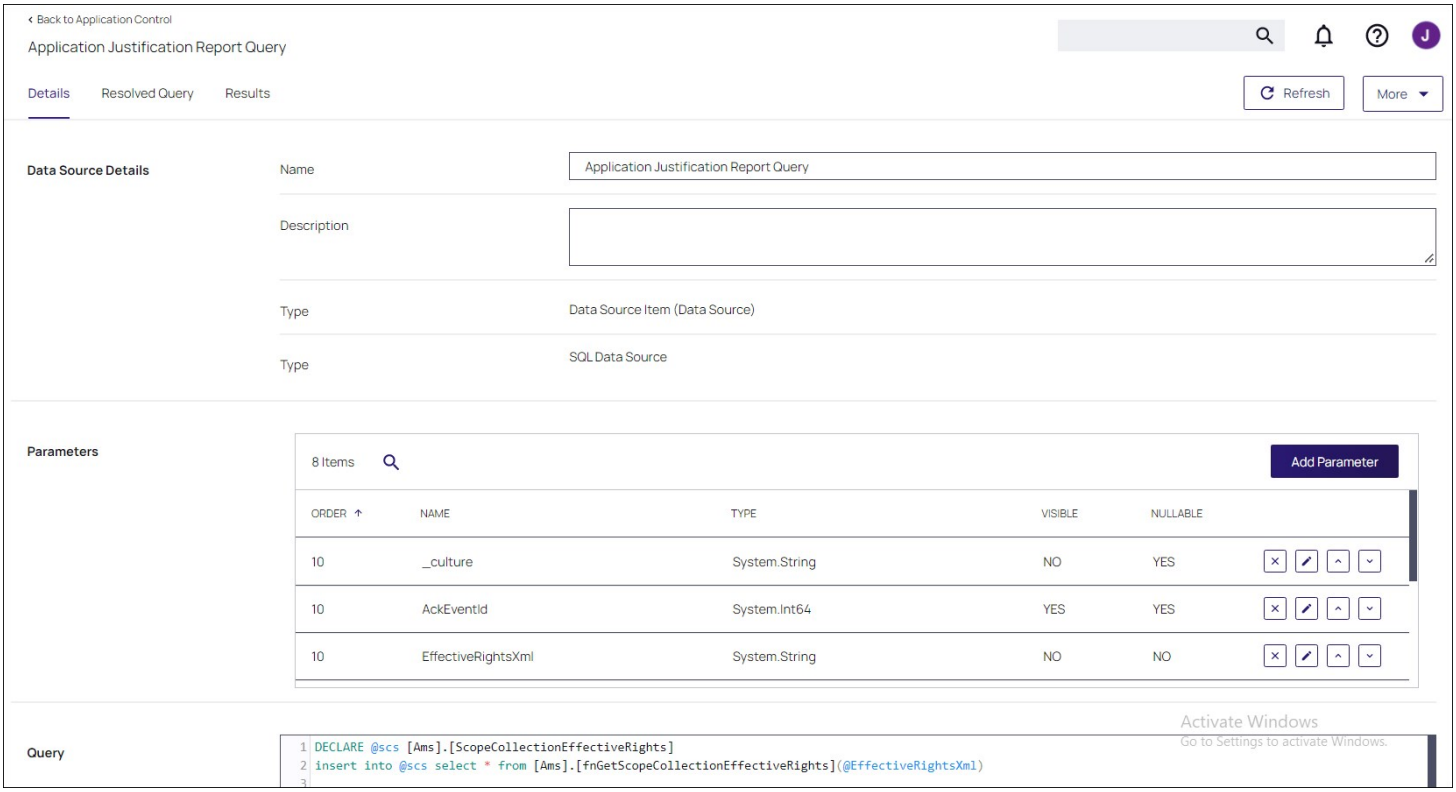
This XML view now displays the full folder location of this query: **Queries | Report Queries | Application Control**.

Access and Edit a Query from the Folder View

Navigate to **Admin | Folders** and select the **Reports** tab. From the **View** drop-down list box, select **Queries**. Navigate the folder structure determined above: **Queries | Report Queries | Application Control**. Select the **Application Justification Report Query** from the center pane.



View this query object. The **Query** tab displays the SQL query that the application runs. This is the same query that appears in the XML of the object.



Scroll to the lower section of the page to edit the query XML.

Resolved Query

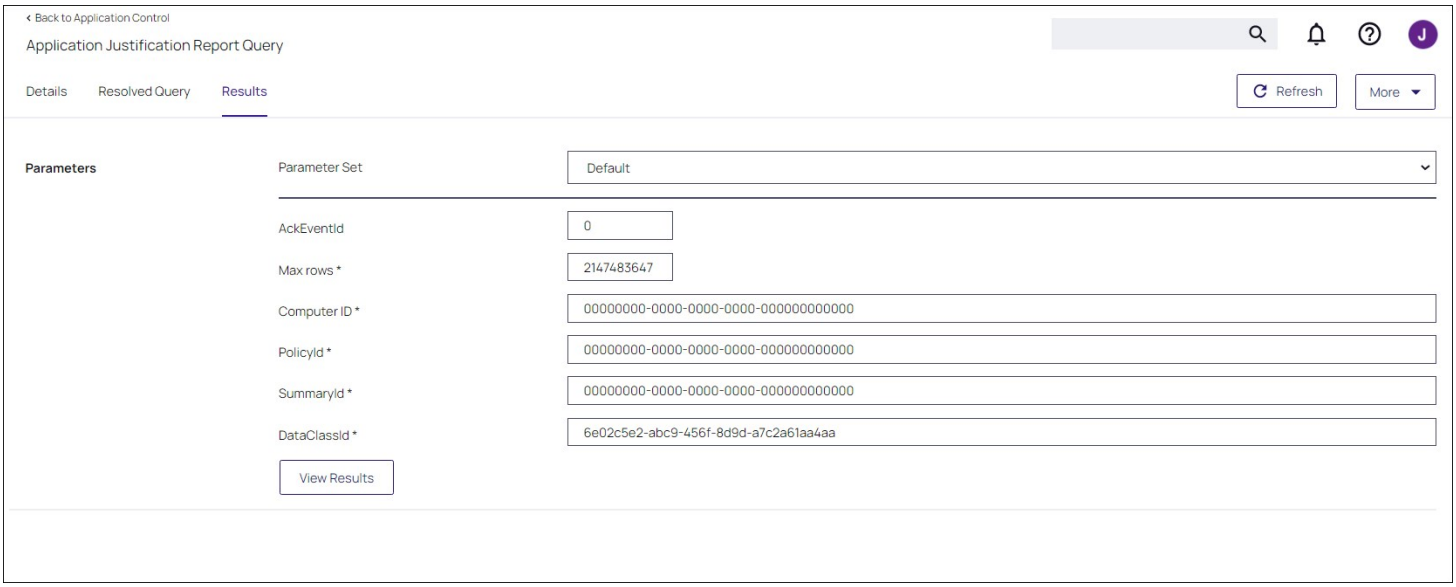
The **Resolved Query** tab provides queries you can use directly on the database to return similar results that the application receives when it runs the query in the object – facilitating your ability to run or customize queries in SQL Server Reporting Services.

On the **Resolved Query** tab, sliding the **Show as Anonymous Block** switch to the right or **Yes** position assigns values to the parameters the query uses. From the **Parameter Set** drop-down list box, select **Test** to assign the parameters with appropriate values to run this query directly on your database.

Click **Copy To Clipboard** and then paste the resolved query in SQL Server Reporting Services, SQL Server Management Services, or your preferred tool.

Results

The **Results** tab provides options to change query information.



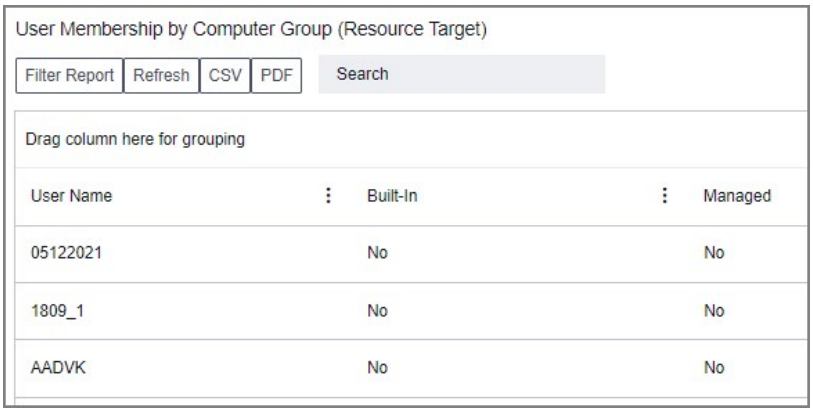
You can change the **Parameters** and enter specific item Ids.

Membership by Computer Group Reports

Two reports are available to report on User and Group Memberships by Computer Group (Resource Target).

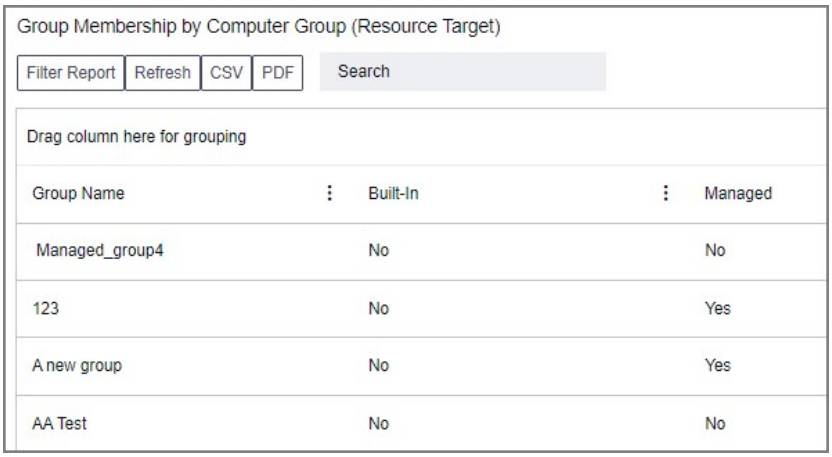
The User Membership by Computer Group (Resource Target) report lists all User Names that are part of a configured computer group. The table columns can be customized and sorted for grouping purposes.

Default columns are User Name, Built-in, Managed, and Inventoried.



The Group Membership by Computer Group (Resource Target) report lists all groups that are part of a configured computer group. The table columns can be customized and sorted for grouping purposes.

Default columns are Group Name, Built-in, Managed, and Inventoried.



Change History Report

Administrators need to be able to look at changes done by other users in Privilege Manager . The need to be able to audit any issue causing changes to configuration settings, policies, filters, and actions. The new **Change History Report** allows Privilege Manager Administrators to track changes and their impact on endpoints.

As part of the audit the following information is recorded:

- User account initiating the change.
- Date/Time of the change.
- Description of the change made.

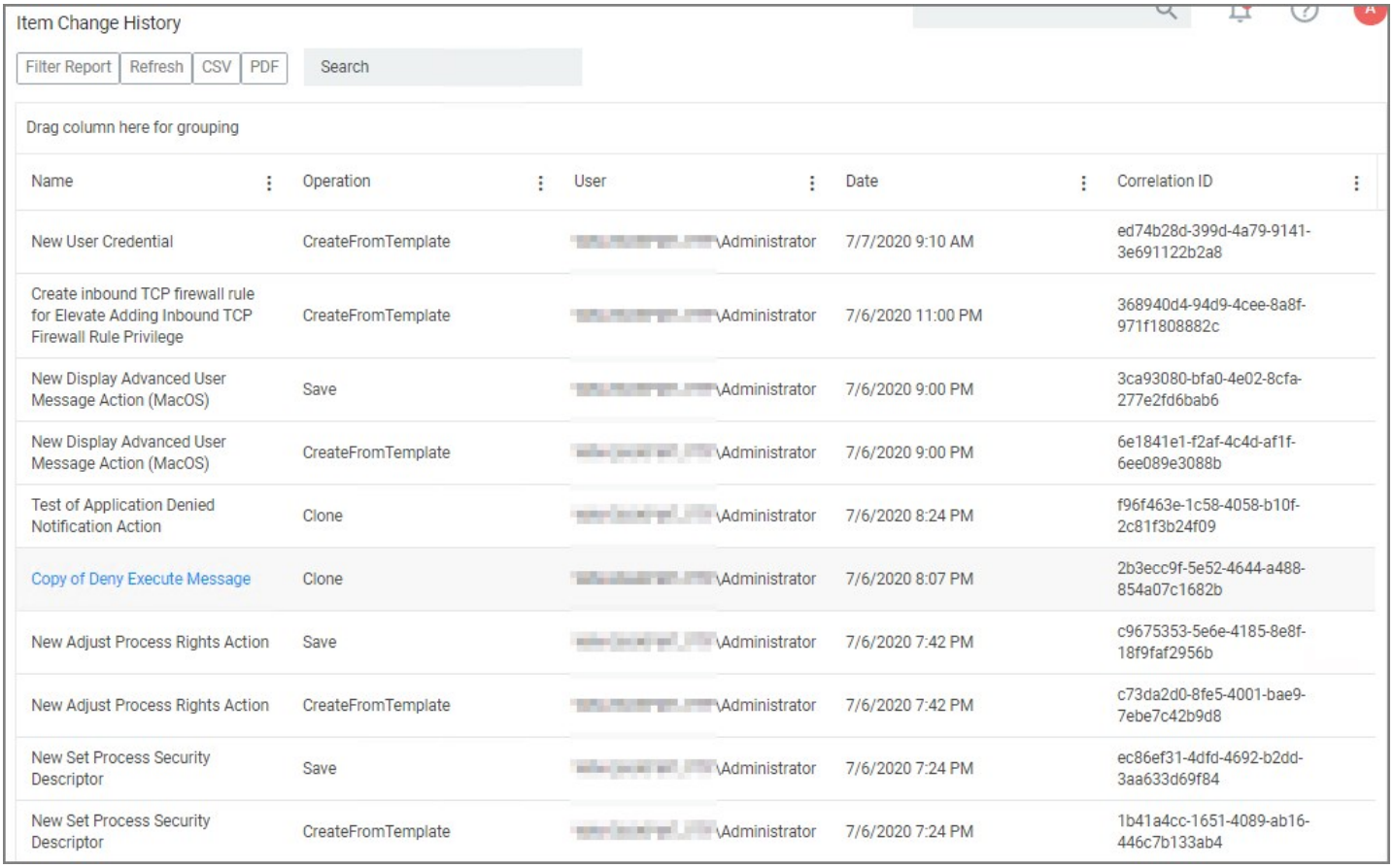
The following changes are reported:

- Configuration settings to Advanced, Discovery, and Reputation items (new tab on Configuration page)
- Changes to items, like
    - User and Group changes inside Roles
    - Credentials added or existing credentials updated
    - Foreign system added or existing updated
    - Any setting in the Advanced tab
- Changes to conditions of user editable resources.
- Policy, actions, filters, resource target changes, and additions (new tab on policy, actions, filters, resource target pages)
- Editing of task schedules (parameters and schedule of a task) - any change made to the schedule and parameters (New tab on task schedule page for each individual task)
- Imports and Saves of XML - differentiate between import and save

The reporting of any of these changes cannot be turned off and the results can be filtered by categories like Policy, Filter, Action, and Configuration.

Each save creates or adds to the revision history of items. The **Item Change History Report** cannot be used to revert to a previous state.

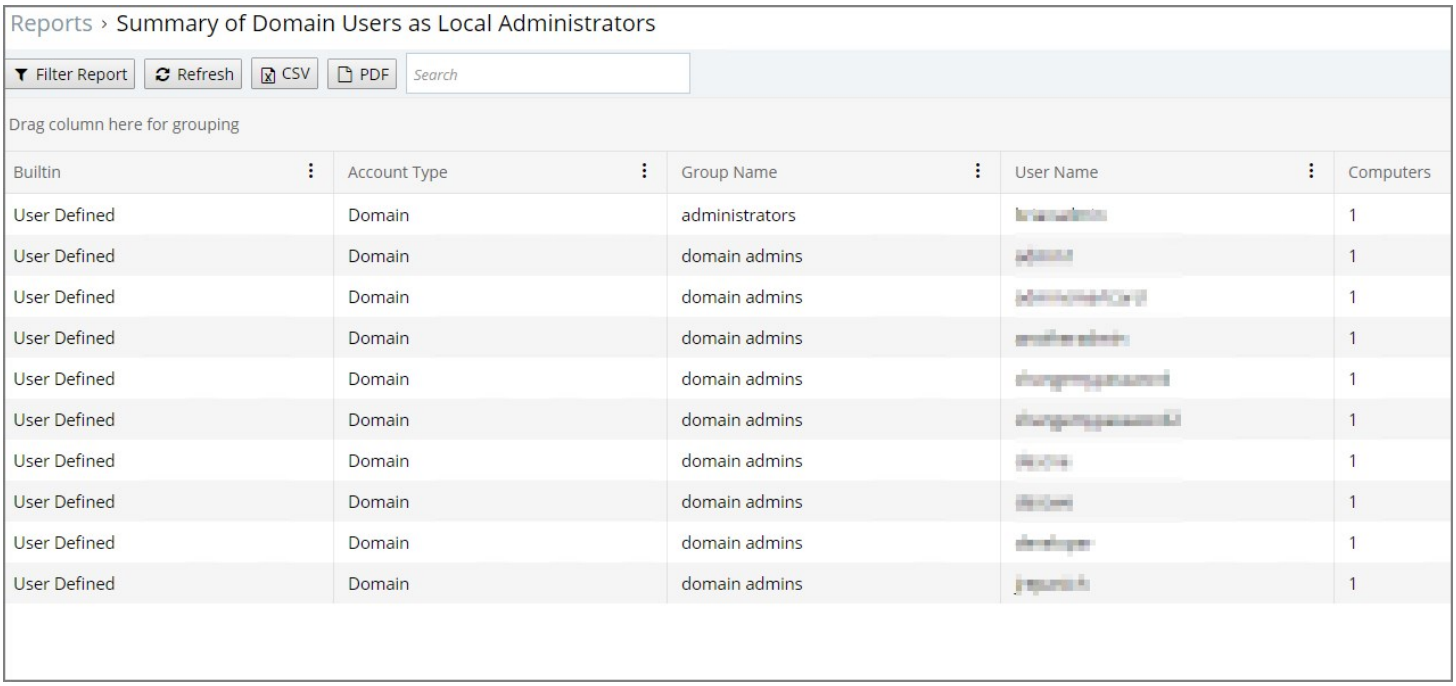
Delinea


Item Change History
Filter Report
Refresh
CSV
PDF
Search
Drag column here for grouping
Name
Operation
User
Date
Correlation ID
New User Credential
CreateFromTemplate
\Administrator
7/7/2020 9:10 AM
ed74b28d-399d-4a79-9141-3e691122b2a8
Create inbound TCP firewall rule for Elevate Adding Inbound TCP Firewall Rule Privilege
CreateFromTemplate
\Administrator
7/6/2020 11:00 PM
368940d4-94d9-4cee-8a8f-971f1808882c
New Display Advanced User Message Action (MacOS)
Save
\Administrator
7/6/2020 9:00 PM
3ca93080-bfa0-4e02-8cfa-277e2fd6bab6
New Display Advanced User Message Action (MacOS)
CreateFromTemplate
\Administrator
7/6/2020 9:00 PM
6e1841e1-f2af-4c4d-af1f-6ee089e3088b
Test of Application Denied Notification Action
Clone
\Administrator
7/6/2020 8:24 PM
f96f463e-1c58-4058-b10f-2c81f3b24f09
Copy of Deny Execute Message
Clone
\Administrator
7/6/2020 8:07 PM
2b3ecc9f-5e52-4644-a488-854a07c1682b
New Adjust Process Rights Action
Save
\Administrator
7/6/2020 7:42 PM
c9675353-5e6e-4185-8e8f-18f9faf2956b
New Adjust Process Rights Action
CreateFromTemplate
\Administrator
7/6/2020 7:42 PM
c73da2d0-8fe5-4001-bae9-7ebe7c42b9d8
New Set Process Security Descriptor
Save
\Administrator
7/6/2020 7:24 PM
ec86ef31-4dfd-4692-b2dd-3aa633d69f84
New Set Process Security Descriptor
CreateFromTemplate
\Administrator
7/6/2020 7:24 PM
1b41a4cc-1651-4089-ab16-446c7b133ab4

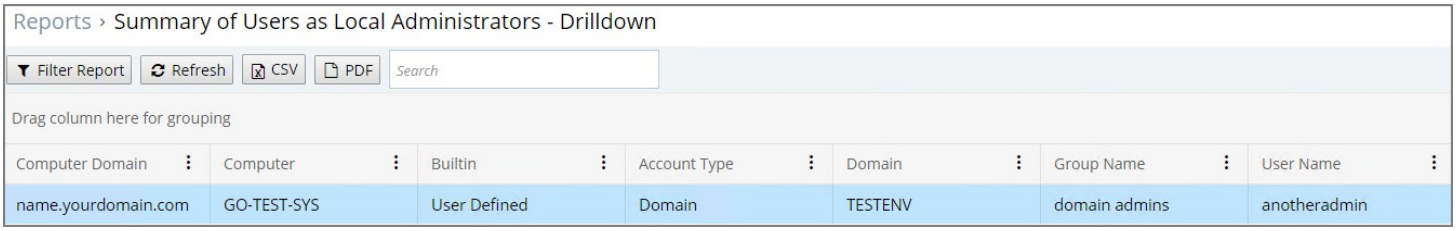
Domain Users in Administrator Group

You can get instant reports by clicking the Reports tab. To see which domain users are members of the administrators group, view the domain users as local administrators report.

Click the Summary of Domain Users as Local Administrators report to view details:



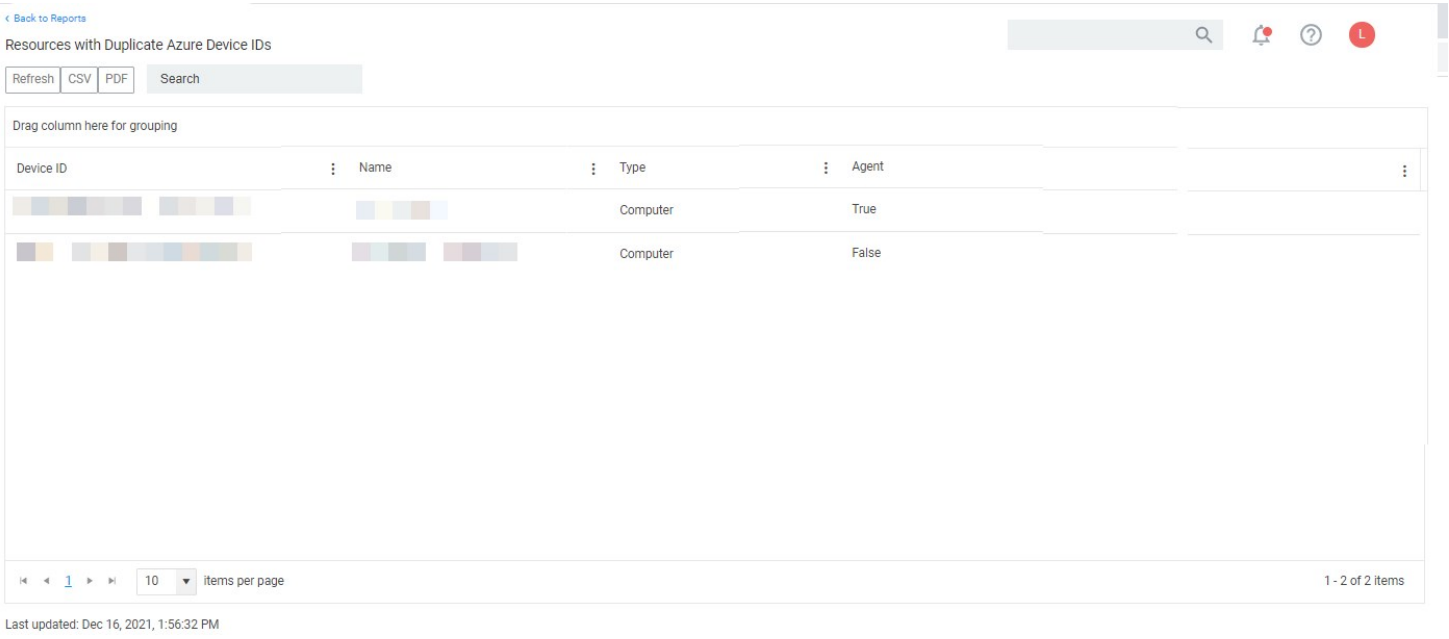
Selecting any of the accounts listed, open the Drilldown report for that specific item:



Duplicate Active Directory Domain Merge Candidates

This report identifies any existing Active Directory Domains that have been duplicated. Refer to the new Merge Duplicate Active Directory Domains task to address these duplicates.

To view this report, locate the Diagnostic section of the Reports page. Select **Duplicate Active Directory Domain Merge Candidates**. If desired, drag-and-drop the report headers to modify the sort hierarchy. Columns can also be sorted. Click **CSV** and **PDF** to export the report to the associated format.



Duplicate Resource Reports

Four reports are available to identify any duplicate Computers, Domain Users, and Domain Groups associated with your instance of Privilege Manager .

They can be accessed under the Diagnostic section of the Reports page.

This report will list Computers, Domain User, and Domain Groups associated with the Privilege Manager Server, that have identical Account SIDs.

This report will list Computers associated with the Privilege Manager Server that have identical Domain SIDs.

This report will list Computers associated with the Privilege Manager Server that have identical Device IDs.

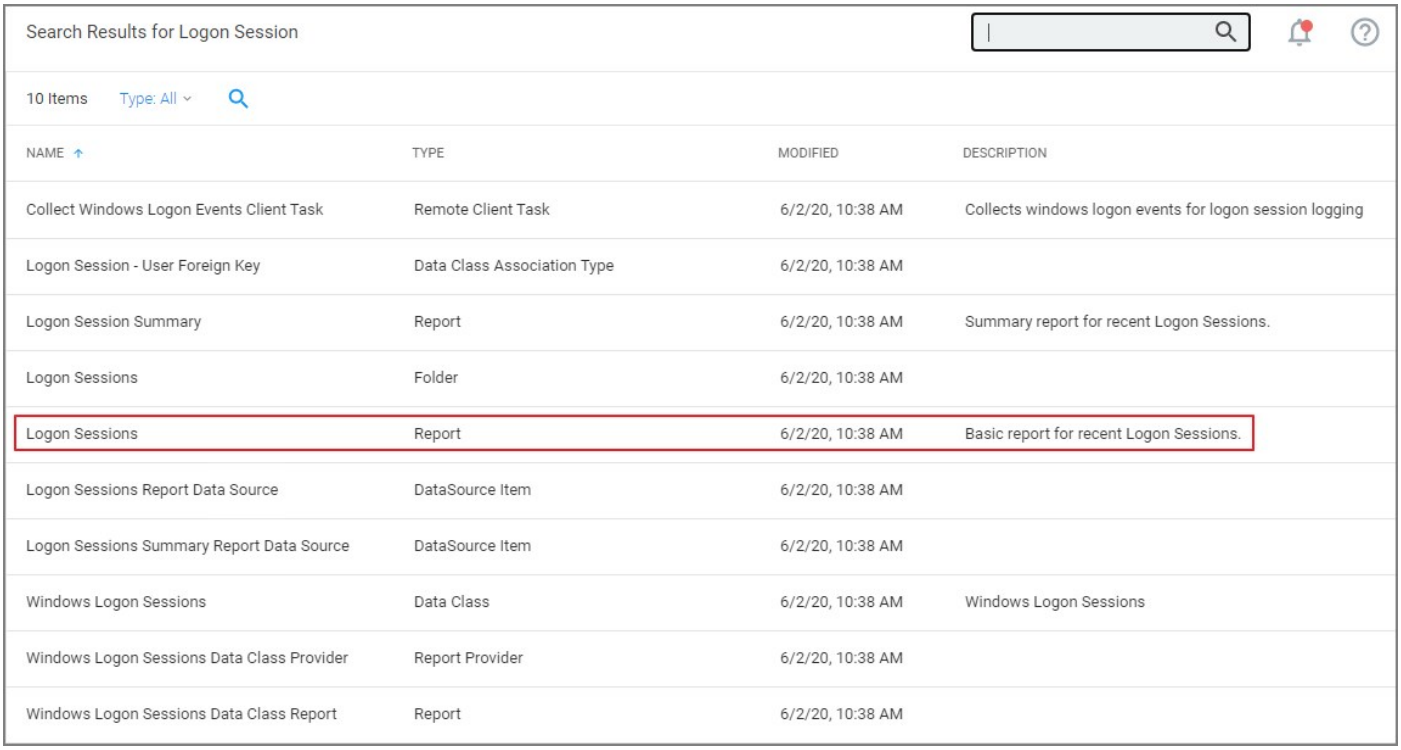
This report will list Computers, Domain User, and Domain Groups associated with the Privilege Manager Server, that have identical Account Names.

> **Note**: Information regarding the tasks that are run to address the duplicates identified in these reports are found in Server Tasks. They are: **Merge Duplicate Active Directory Domain** and **Remove Active Directory Domain**.

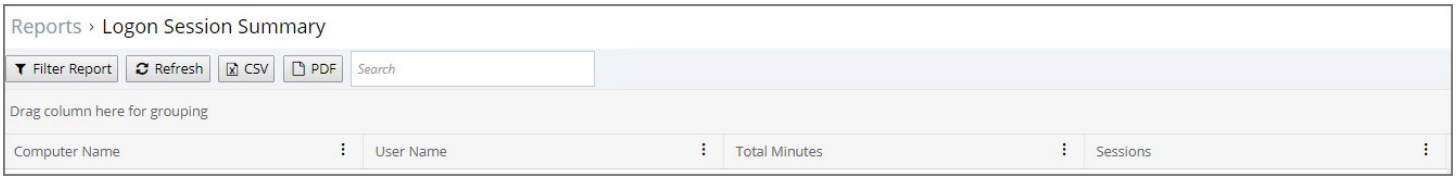
Logon Session Summary Report

The Summary report for recent Logon Sessions.

1. Navigate to the Privilege Manager Dashboard.
2. In the Search field enter **Logon session**.

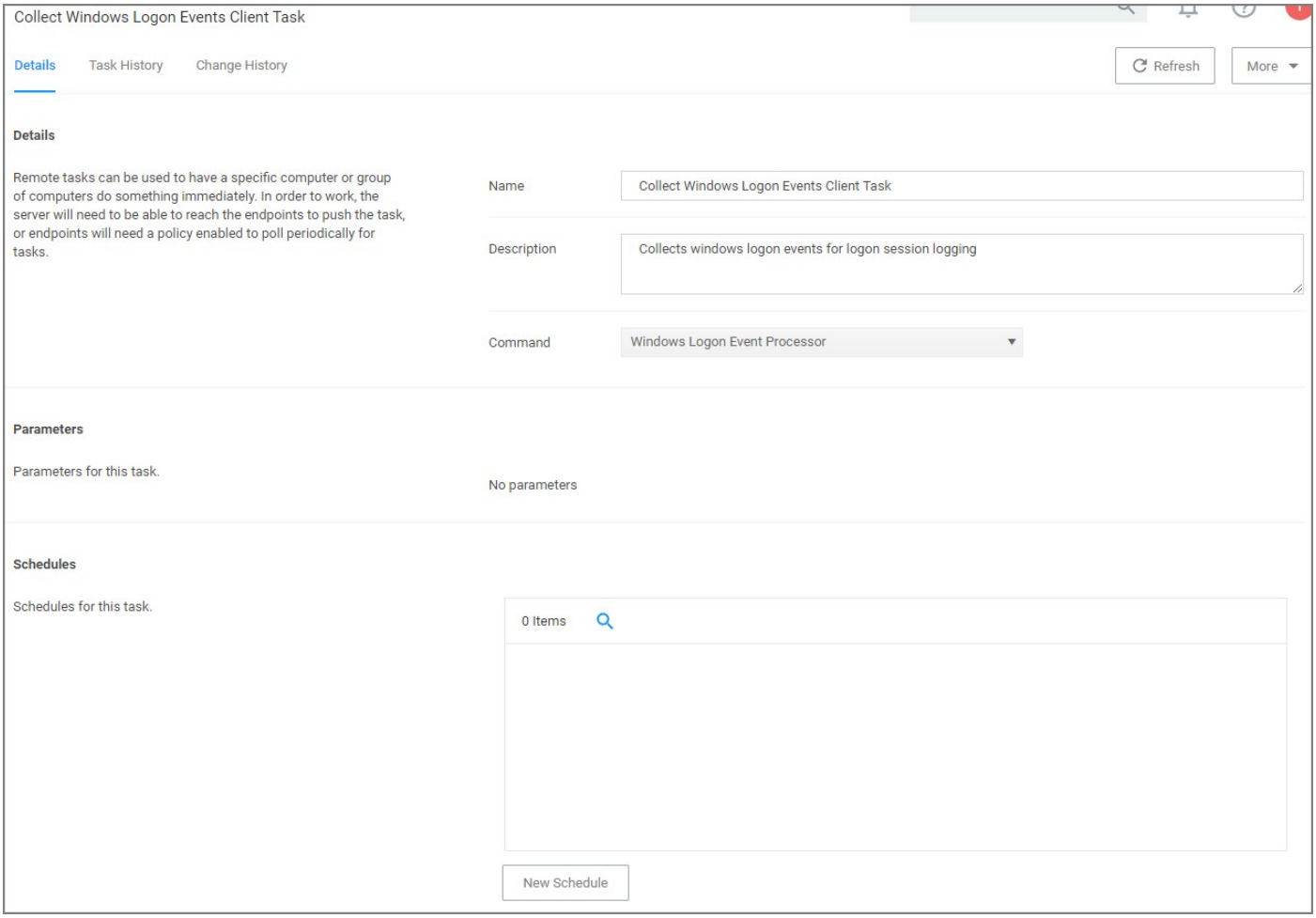


3. Click on **Logon Session Summary**.
4. The report contains the information for the Computer Name, User Name, total minutes and sessions.



Note: You can also run the **Collect Windows Logon Events Client Task** to get updated windows logon events for logon session logging.

1. Navigate to **Admin I Tasks I Client Tasks** and select **Local Security**.
2. Click the **Collect Windows Logon Events Client Task**.



3. Run the task.

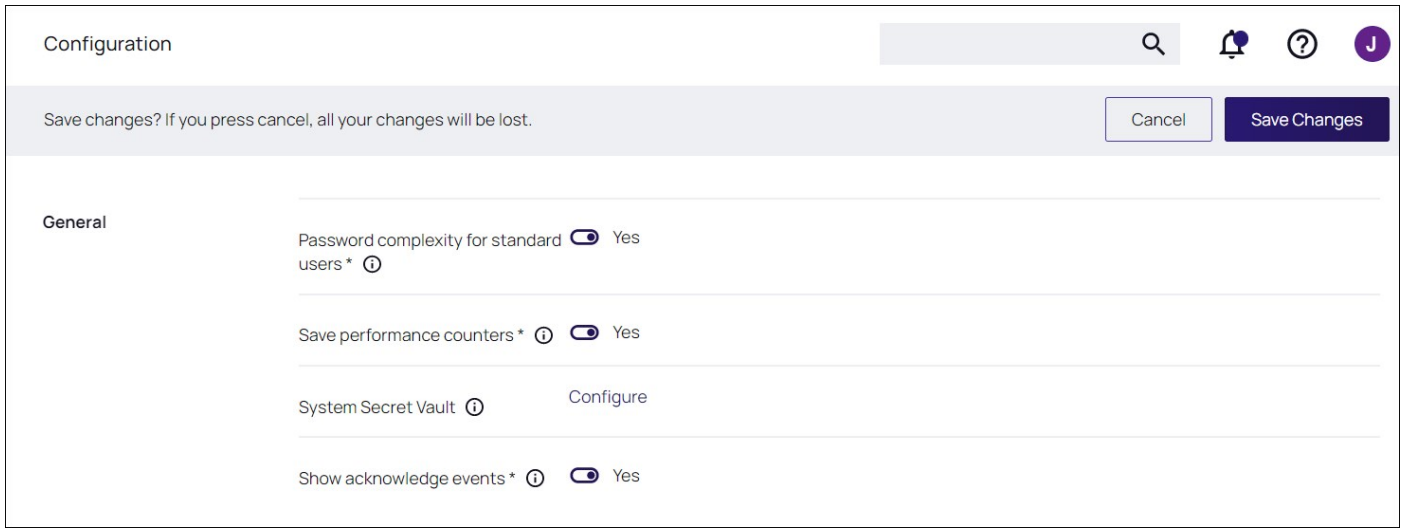
Performance Reporting

Performance Reporting, available for Privilege Manager 10.5 and later, keeps admins abreast of all activity across the network that could potentially impact Privilege Manager server performance.

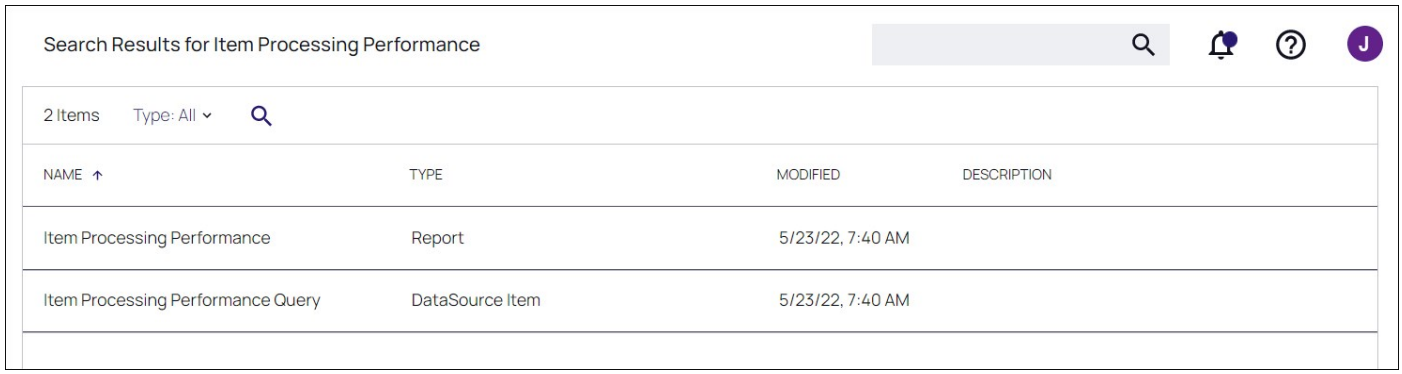
Nightly tasks collect performance information via the following reports:

- Item Processing Performance
- Processing Performance

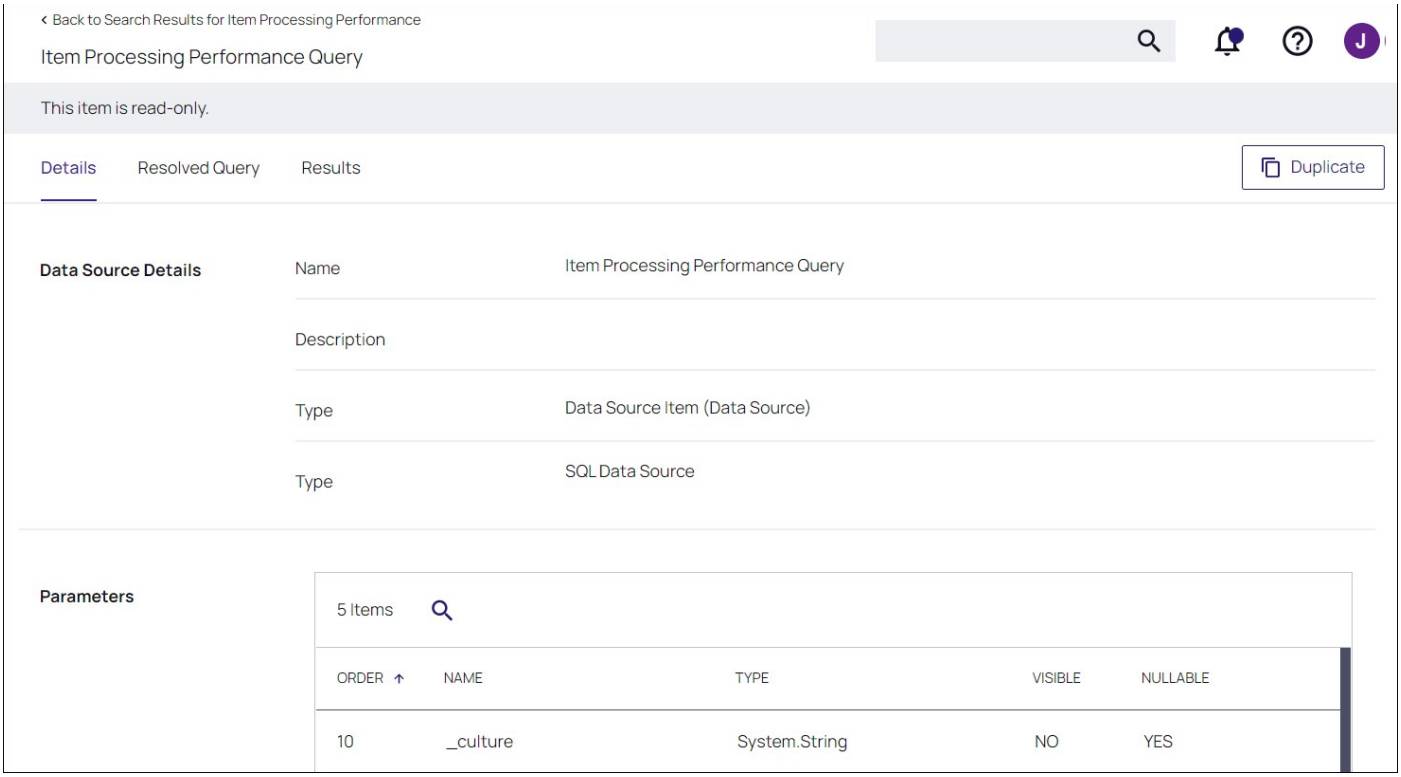
1. Navigate to **Admin** | **Configuration**.
2. Select the **Advanced** tab.
3. Scroll to the **General** section, activating **Save performance counters** by sliding the switch to the Yes position.



4. Click **Save Changes**.
5. Locate the performance reports by entering **Item Processing Performance** or **Processing Performance** in the search bar.



6. Select the report you want to view.



To enable customers to track agent events passed to the server, the **agentevent** category displays on the **Item Processing Performance** report. The report displays all applicable agent events that pass messages to the server. These include, but are not limited to, the following events:

Application Control

- Application Actions
- Justifications
- App Metering

Core

- Basic Inventory Events
- Discovery Events

File Inventory

- File Inventory
- File Location Inventory

Local Security

- Local User/Group Inventory
- User Logon Inventory
- Randomize Password
- COM Object Inventory
- Service Inventory

Directory Services

- Import Data Events

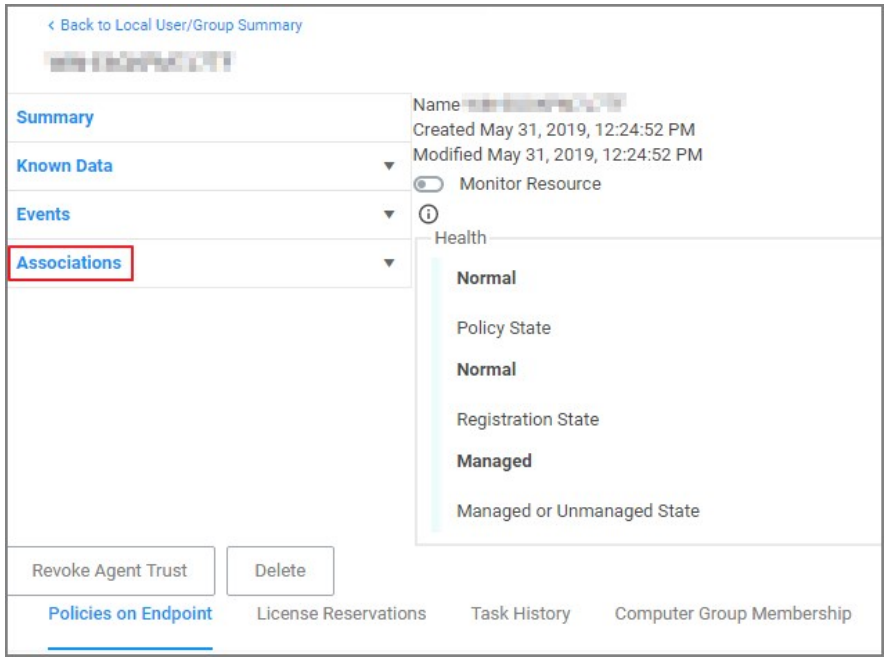
In the past, competing group membership policies could cause excessive uploads that impacted performance. Reviewing this report allows Privilege Manager admins to both identify policies that may be causing issues and take corrective action, such as making policy scheduling adjustments.

The image below displays examples of policy events that have been passed to the server:

Primary User

The primary user is calculated by the data reported from the Logon Session inventory policy. The primary user is considered to be the user with the most minutes on the machine.

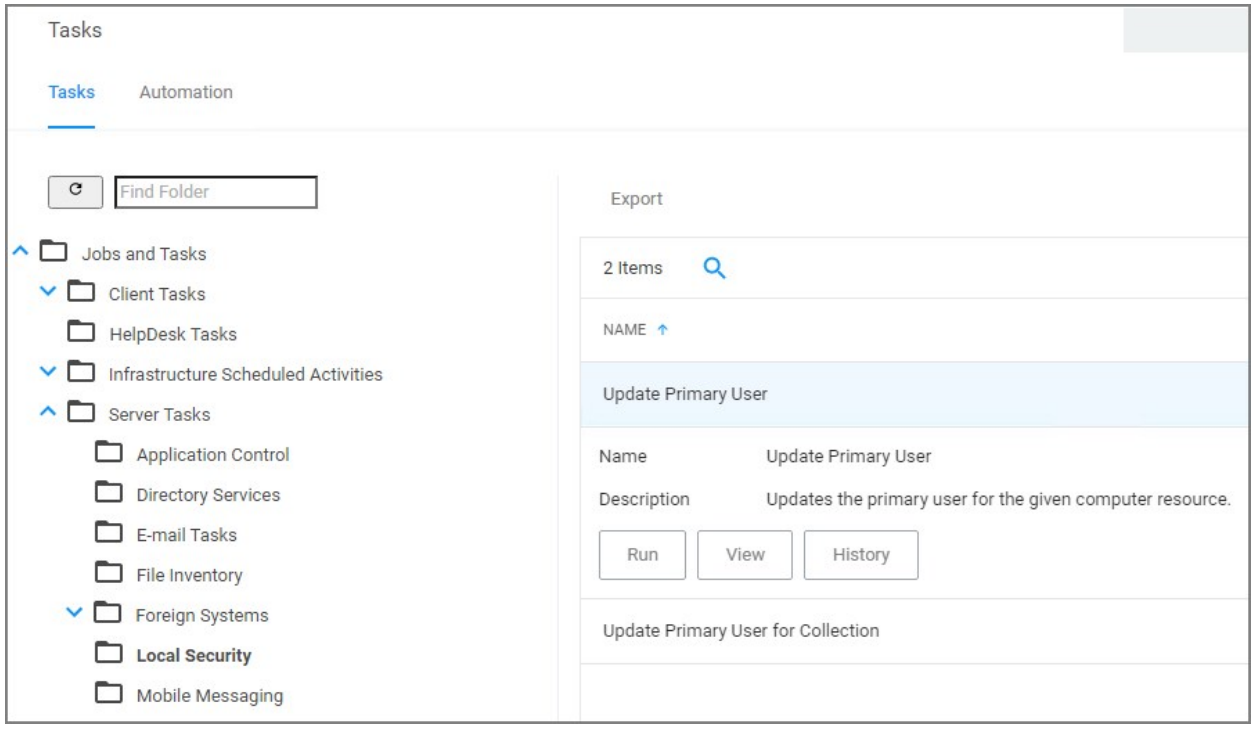
1. Navigate to your **Local User/Group Summary**.
2. Select the system for which you want to know the primary user.
3. Click on **Associations**.



4. This will display the **Computer Primary User**.

The default update primary user for collection task calculates the primary user on a schedule from inventory data.

1. Navigate to **Admin | Tasks**.
2. Expand **Server Tasks**.
3. Click on **Local Security**.
4. From here you can run the **Update Primary User** or the **Update Primary User for Collection** Task.

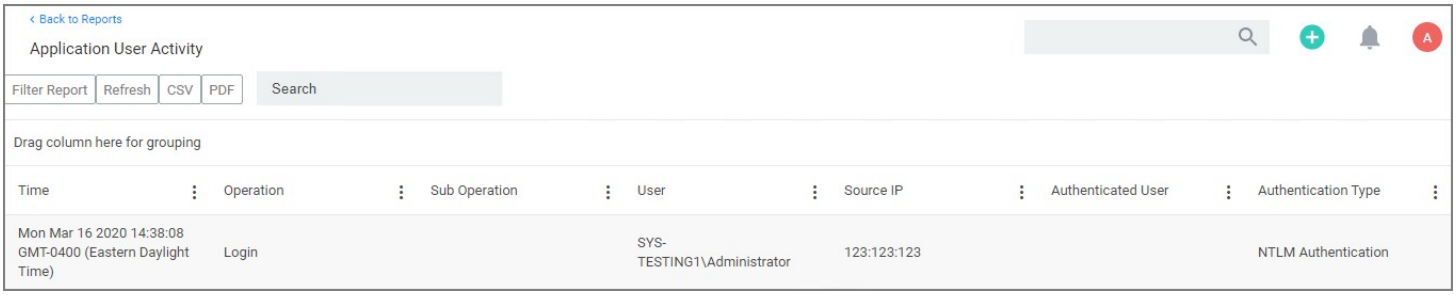


Note: The Update Primary User Task only updates the primary user for a given computer resource.

Application User Activity

Auditing for user activities like logins and logouts can be viewed via the Application User Activity report. The report is a chronological data collection of user login/logout events and relating data.

To access the report navigate to **Reports** and locate the **Security** reports, select **Application User Activity**.



User activity auditing is by default enabled. The following auditing data is stored and provided via report:

- User resource ID.
- Username associated with the resource ID.
- IP address from the system used to login.
- Date and time of the login/logout.
- Activity information, like successful login, unsuccessful login, logout, etc.

The report can be distributed via standard Email Report task.

Product Licenses

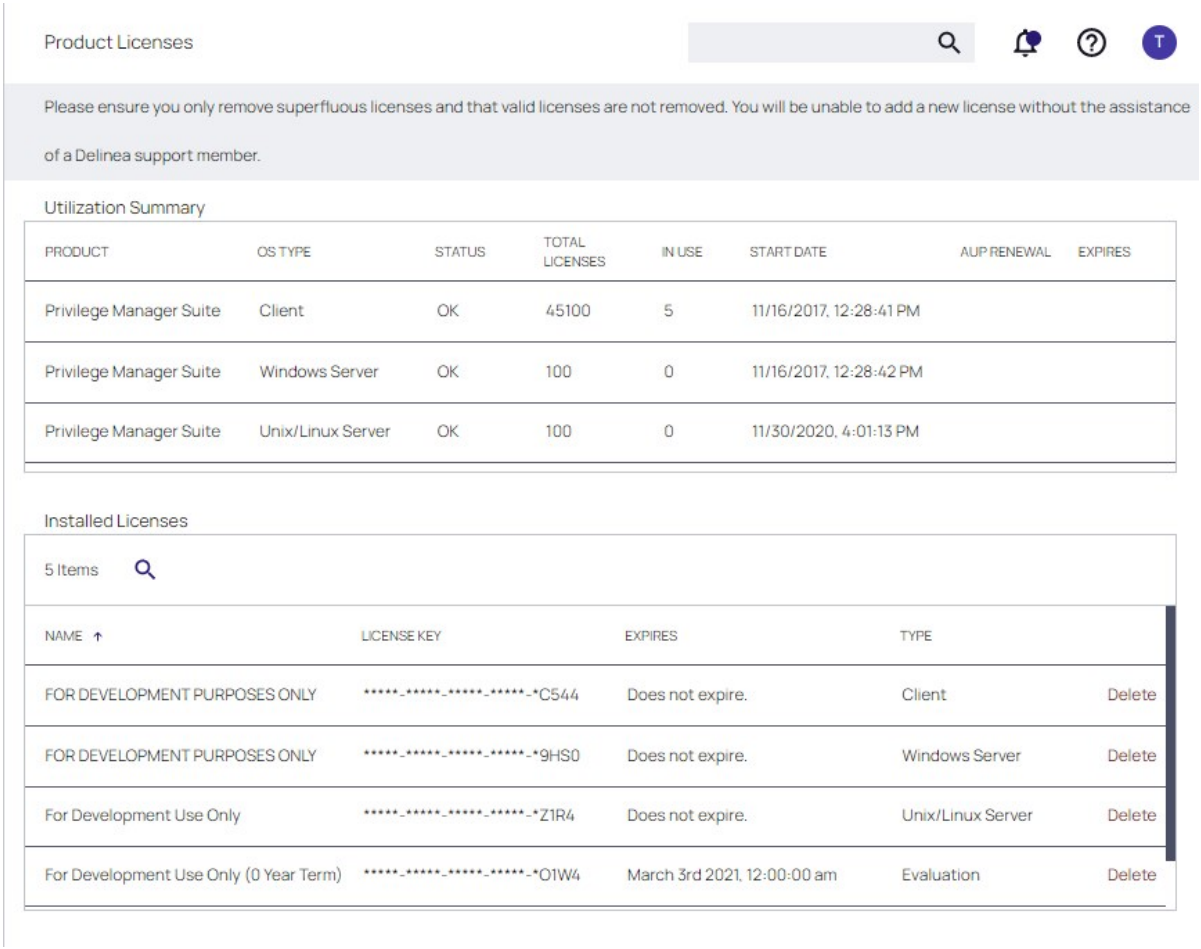
The Product Licenses report shows the number of licenses in use, per Operating System type (**OS TYPE**) configured in your application. OS types include both Windows and macOS clients.

To access the report navigate to **Reports**, locate the **Diagnostic** reports group, and select **Product Licenses**.

A summary of all installed licenses is displayed, grouped by operating system.

To view details for any license count in an operating system, click the associated number in the **IN USE** column. A list of each license, its license key, type, and expiration is displayed. (Details are not displayed when **IN USE** is 0.)

Click **Delete** to delete any license.



The following factors may effect the number of licenses displayed:

- **Refresh** - License counts are periodically updated, and the count refreshed for the Utilization Summary. We recommend you recheck the count periodically for accuracy.

  Note: On the Home page, **AGENT POLICY STATE** displays counts for agents in a selected computer group, and does not directly relate to license usage. Therefore, this tile should not be used for a 1:1 comparison with the Utilization Summary of licenses in the Product Licenses report.

Delinea

How to...

This topic is a collection of articles covering "How to..." procedures for different tasks.

- Best Practices:
  - Disaster Recovery
  - Using a Service Account to run the IIS App pool
  - Prevent Read and Write Access to File Types or Locations
  - Securing the IIS SErver
- Import, Export, and Migration:
  - Export Items
  - Import Items
  - Migrate Local Security Policies
- Azure:
  - Add Thycotic One Users Manually
- Infrastructure
  - Azure Service Bus Configuration
  - Setup High Availability/Clustering
  - Setup Reverse Proxy
  - Migrating SQL Server Database for Privilege Manager and Secret Server Combined Installation
  - Migrating the Privilege Manager Server
  - Removing Privilege Manager from a Combined Install
  - VM Deployments
- macOS:
  - Preference Pane Targeting on macOS
- Maintenance:
  - Export Items
  - Import Items
  - How to Purge Computers
  - How to Purge the Action Items Table
  - Using the Remove Programs Utility

The following topics are available:

- Disaster Recovery
- Active Directory Import
- Using a Service Account to run the IIS App pool
- Prevent Read and Write Access to File Types or Locations
- Securing the IIS Server
- Updating to higher security algorithms

Active Directory Import - On-prem vs Cloud

On-premises

The support for on-prem AD import is better than the support for Azure AD. On-prem AD import has more usable data. For customers that want to target computers based on OU or Security Groups, this is the best option. Our customers can setup an AD foreign system with credentials and import directly using LDAP.

Cloud

In a cloud environment the Privilege Manager server(s) typically don't have direct access to Active Directory. Instead the customer can select a local machine on which to install the Directory Services Agent. The agent retrieves information, and sends data to the server on a schedule.

Full vs Differential Synchronization

Unless otherwise specified, both the server and agent imports attempt a differential synchronization of AD data. AD keeps an Update Sequence Number (USN) that goes up as changes are made and resources are added. The following 3 conditions must be met for a differential sync:

1. Privilege Manager has a record of a prior sync with a session ID and USN.
    - On the server these are recorded in the database as data for the foreign system in the [Ams.Data].[DirectorySync] table.
    - For the agent they're recorded in the registry under HKLM\\Software\\Arellia\\Agent\\DirectoryServices\\Imports. Users can force a full sync by deleting this data.
2. The directory partner (Domain Controller Server) must be the same. Starting with Privilege Manager version 10.8 and later, a server will be automatically picked if none is specified. But on older versions of the product, no differential sync is available unless the server is specified.
3. The LDAP query must be the same query as the hash is stored.

Assuming the conditions are met, Privilege Manager takes the given LDAP query, and appends a condition that the USN is greater than the recorded last USN.

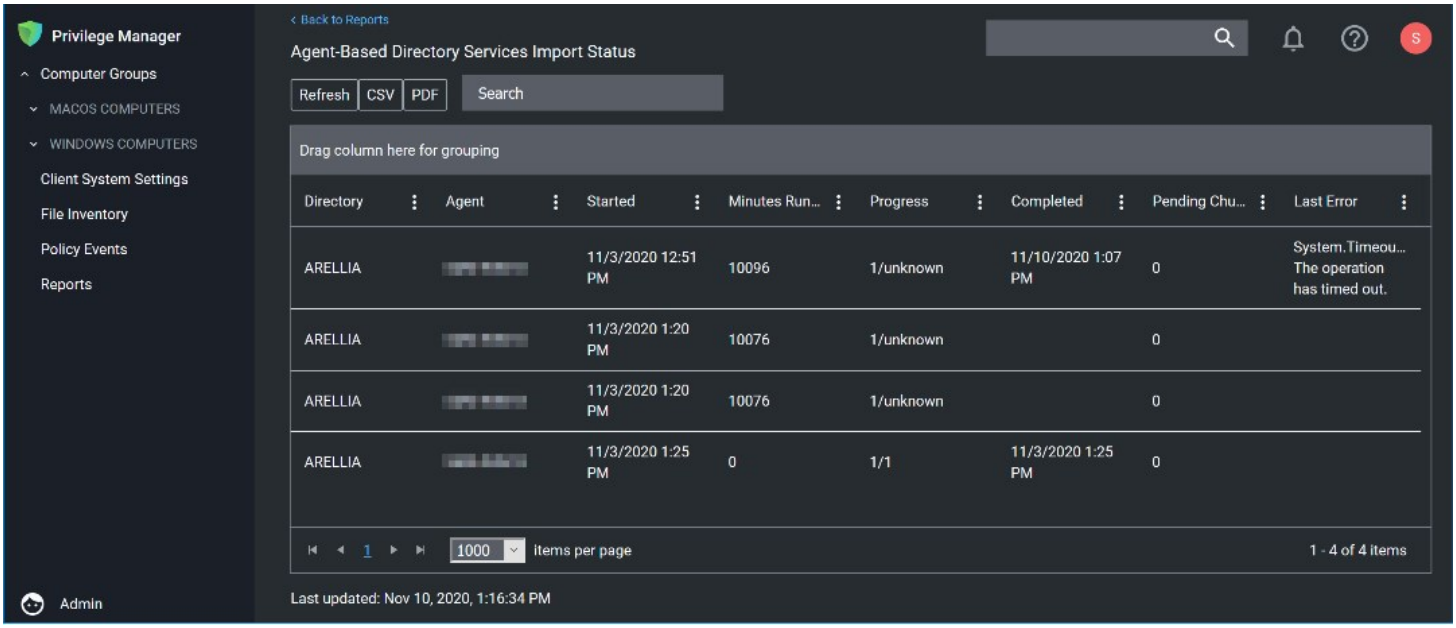
> **NOTE**: In test environments it's common to have a sync "fail" because the agent has done a sync prior on a different PM server. For a new environment setup with a Directory Services Agent, remember to clear out the registry record of syncs.

Expected Performance

If connectivity is good (low latency is just as important as high throughput), the main bottleneck is writing item data to the Privilege Manager database. Small ADs with a few hundred resources complete in a couple minutes. Large ADs with hundreds of thousands may take 10 hours or more.

Status

For imports run via the Directory Services Agent, Privilege Manager contains a report to give basic status named **Agent-Based Directory Services Import Status**.



When Privilege Manager runs an LDAP query, the number of results returned or how long the process will take is an unknown. The agent reports the data as it gets it in chunks to the server. The Progress field shows the number of chunks the server has successfully processed vs the total number. Typically what happens is that the agent finishes importing from AD before the server imports all the chunks. This shows at a minimum that there is progress.

Azure AD Imports

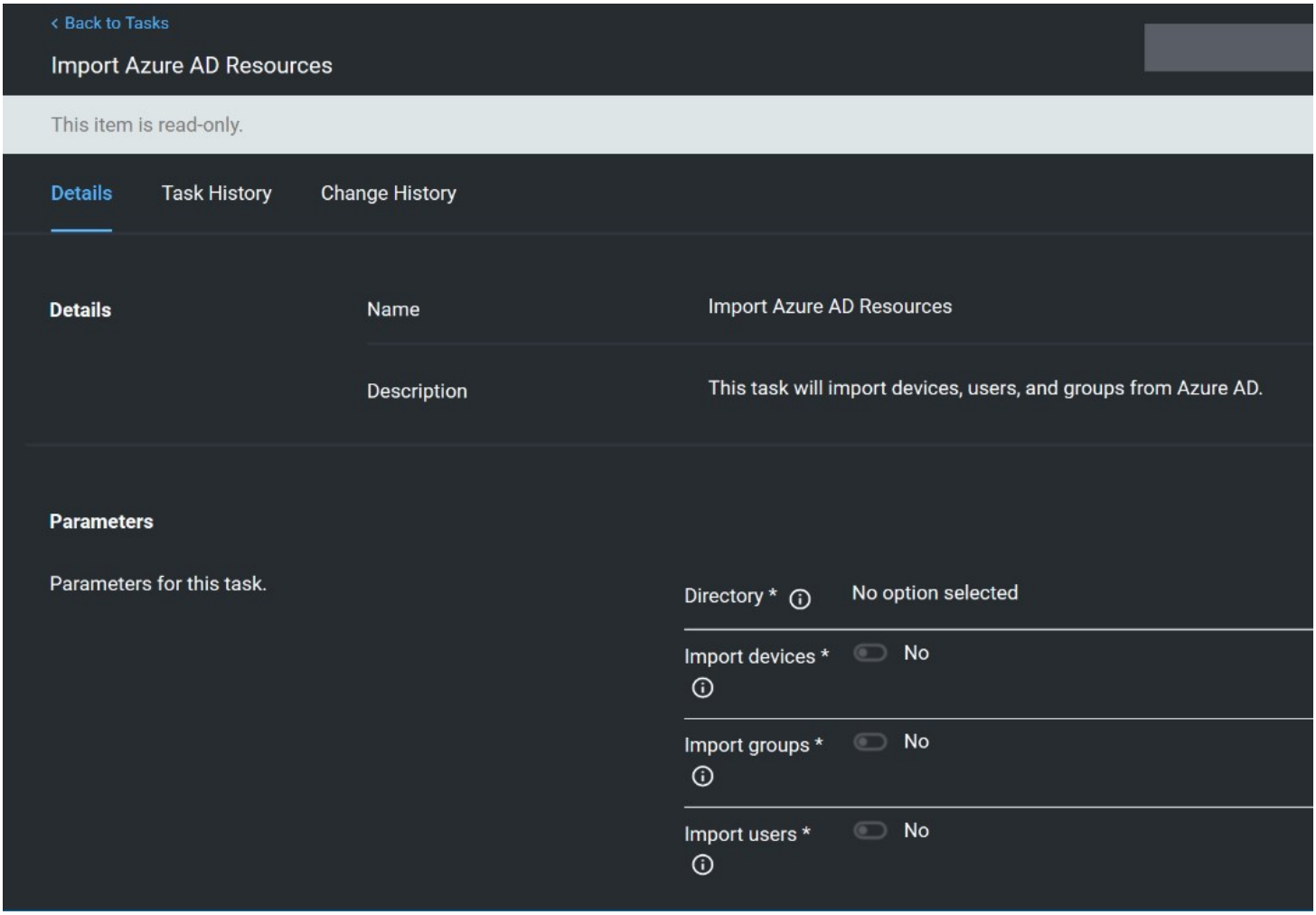
The primary reason for imports from Azure AD is to configure authentication in Privilege Manager .

Users/Groups

Importing users and groups from Azure AD works well for authentication, and usually plays well with data from other sources.

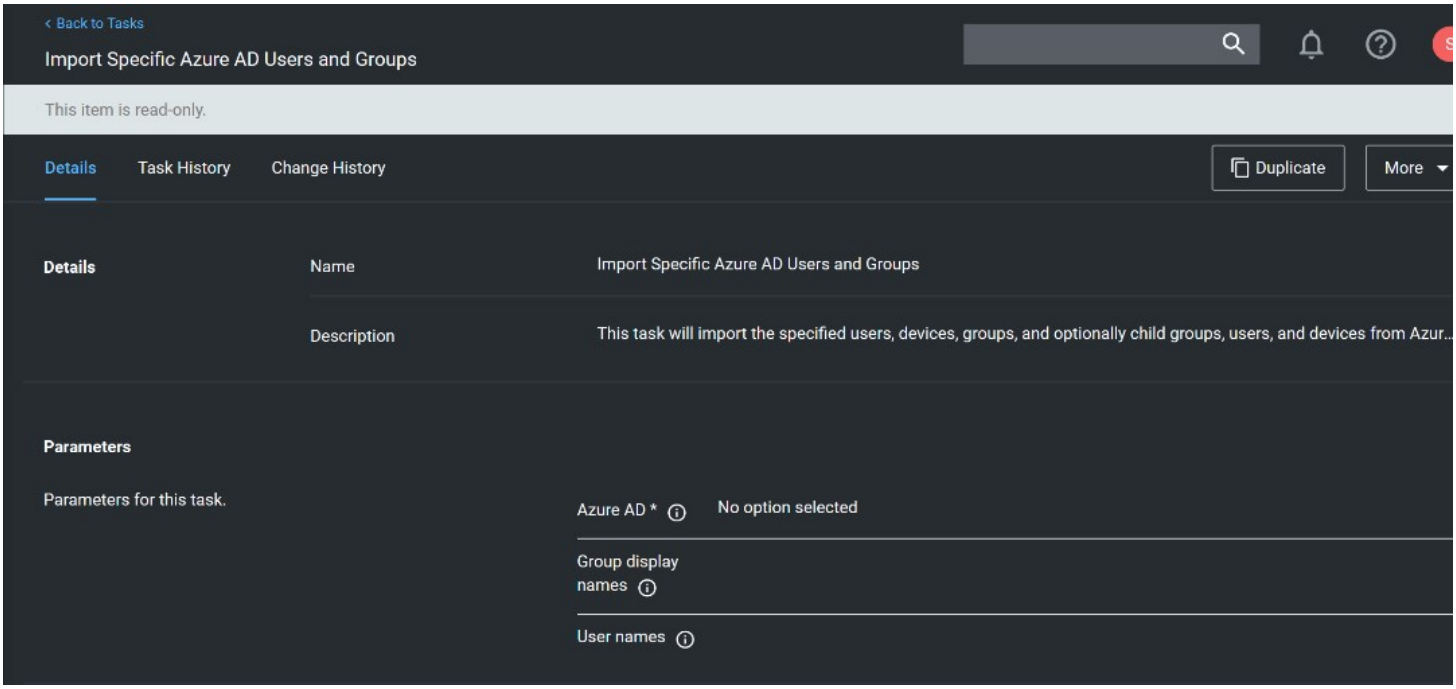
Import Azure AD Resources

This is the primary task users should run to import from Azure AD.



Import Specific Azure AD Users and Groups

This task allows users to import selected users and groups, instead of importing all.



NOTE: For groups the search filter is by display name. For users either display name or UPN can be entered (or a partial with *). This is a common point of trouble - users often use account names or other names that don't match the Azure AD data. When in doubt, open the Azure AD portal and make sure the display names match.

Device Import

At this time, importing devices (computers) from Azure AD is discouraged. The usable data for Privilege Manager is very limited, and there is basically only one way to link an Azure AD device to an existing computer resource in Privilege Manager and that by Device ID. Refer to Azure AD - Device ID in the troubleshooting topic. Unless the agent is reporting this data, there are guaranteed to be duplicates and/or resources that will not work to assign policies.

On-Premises vs. Cloud

Since Azure AD is itself a cloud service, there's basically no difference between our support on-premises and in cloud.

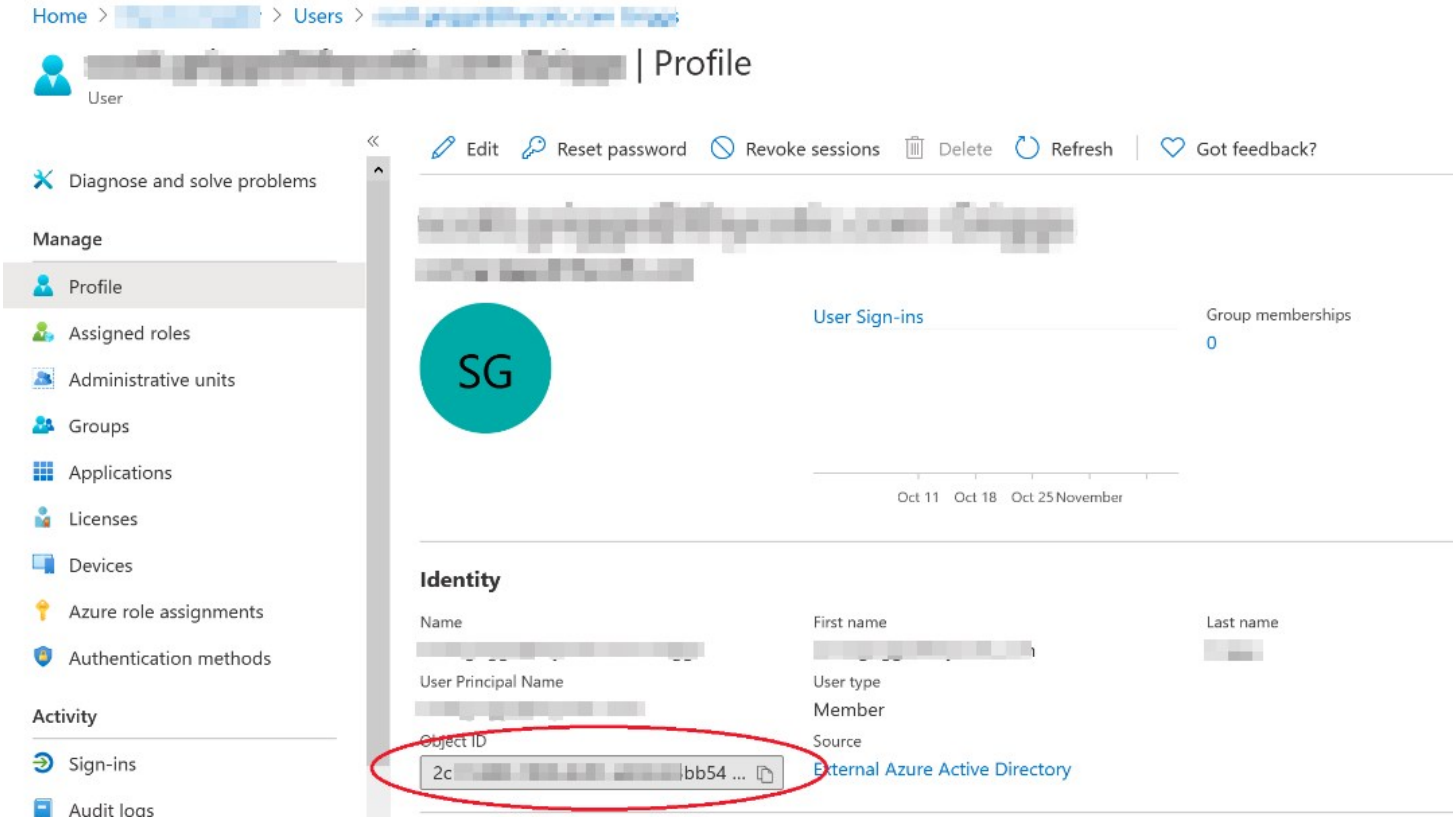
Troubleshooting AD Sync

Authentication

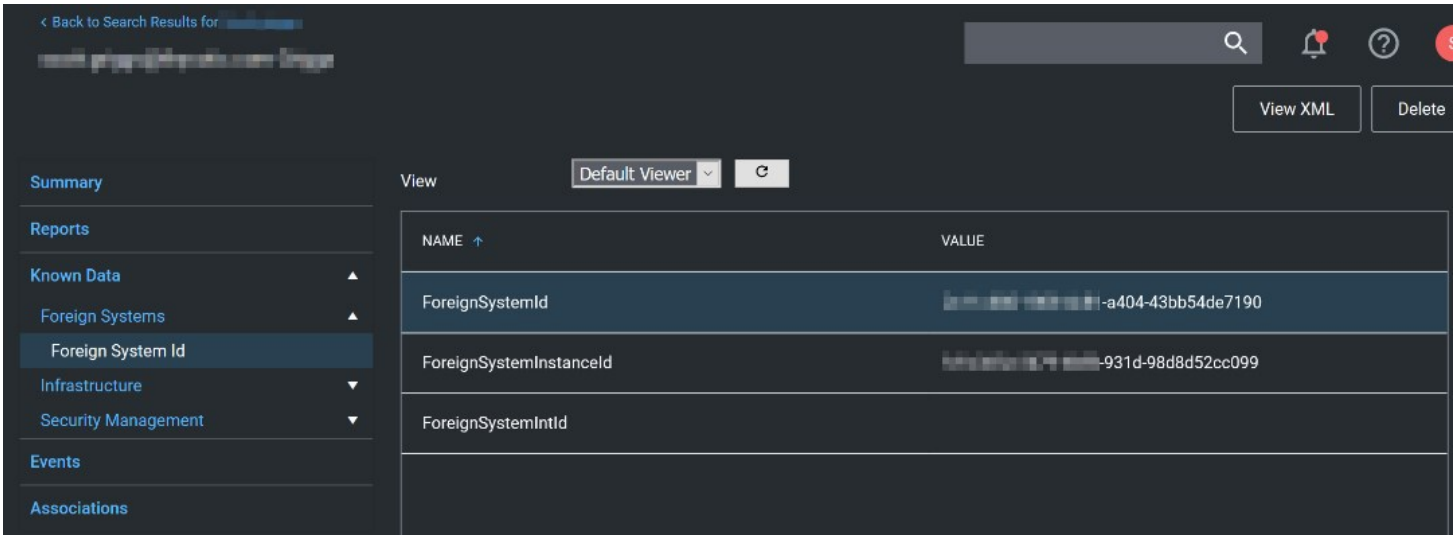
> **NOTE**: Delinea recommends that customers create a new user in Azure AD (one that is not sync-ed from AD) as a Privilege Manager *global administrator*. This user can be used as a backup access if other users fail to sync correctly.

When a user logs in to Privilege Manager with Azure AD, Privilege Manager gets back an object ID. A search of the database for that Object ID in Foreign System ID, provides what roles that user is a member of. The internal caching uses SID, so the user must also have a Global Account Details - SID. If there are any issues with the user authentication, it is recommended to check this data to make sure it exists, and make sure it matches the Azure portal data.

The object ID in the Azure portal:

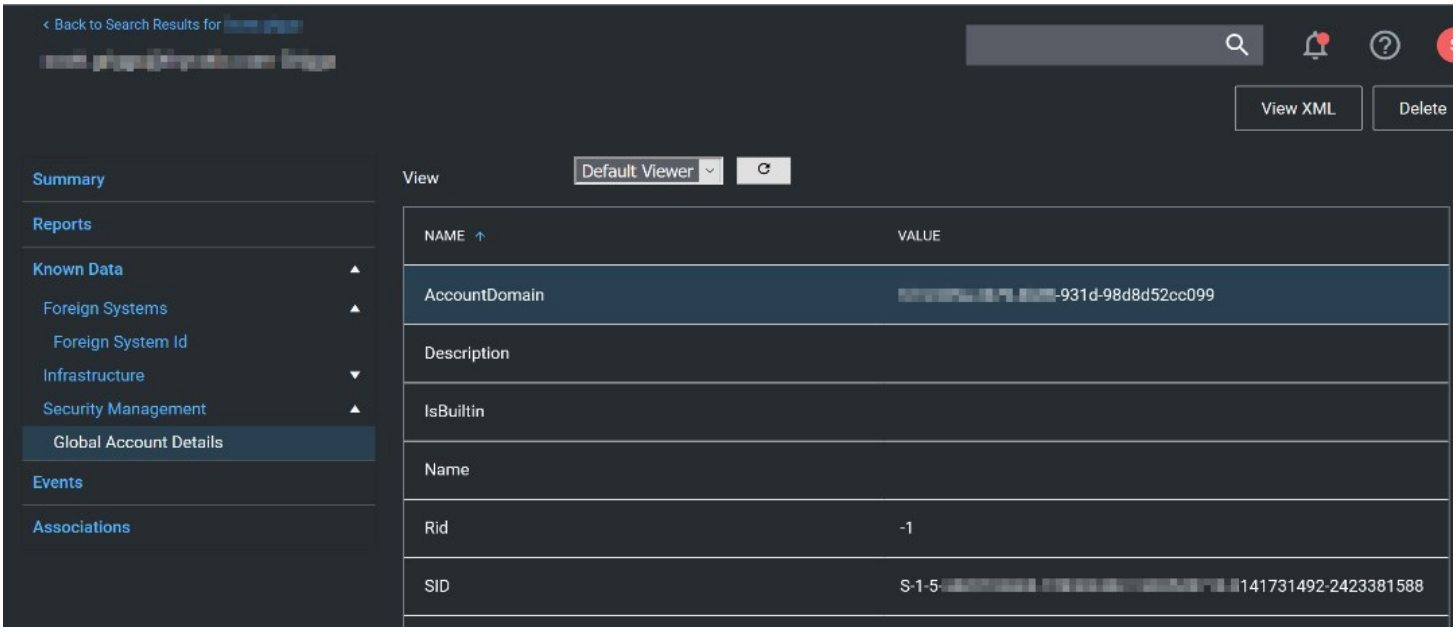


should match Foreign System ID in Privilege Manager :



NOTE: There may be multiple foreign systems entries here, when it doubt browse the Azure AD foreign system, not the GUID in the browser URL, and match that up in the list along with the object ID.

Users also need to have a Global Account Details - SID from the same Azure AD foreign system ID:



NOTE: There may be multiple entries here. If Privilege Manager doesn't have one where the AccountDomain matches the foreign system ID, that could potentially point to a problem.

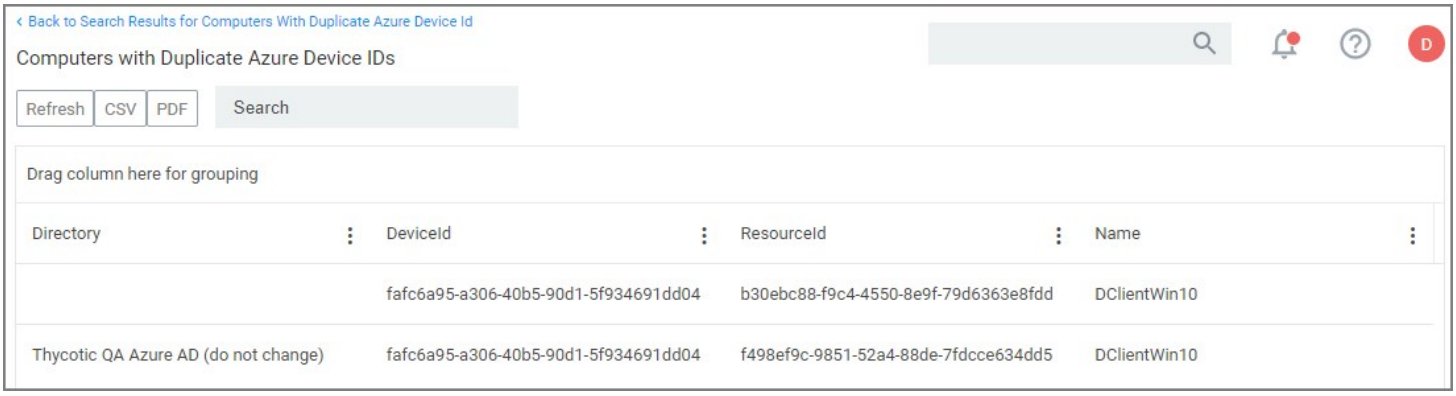
Duplicates

The basic reason for duplicates is not having matching information when Privilege Manager imports resources, registers computers, or updates inventory.

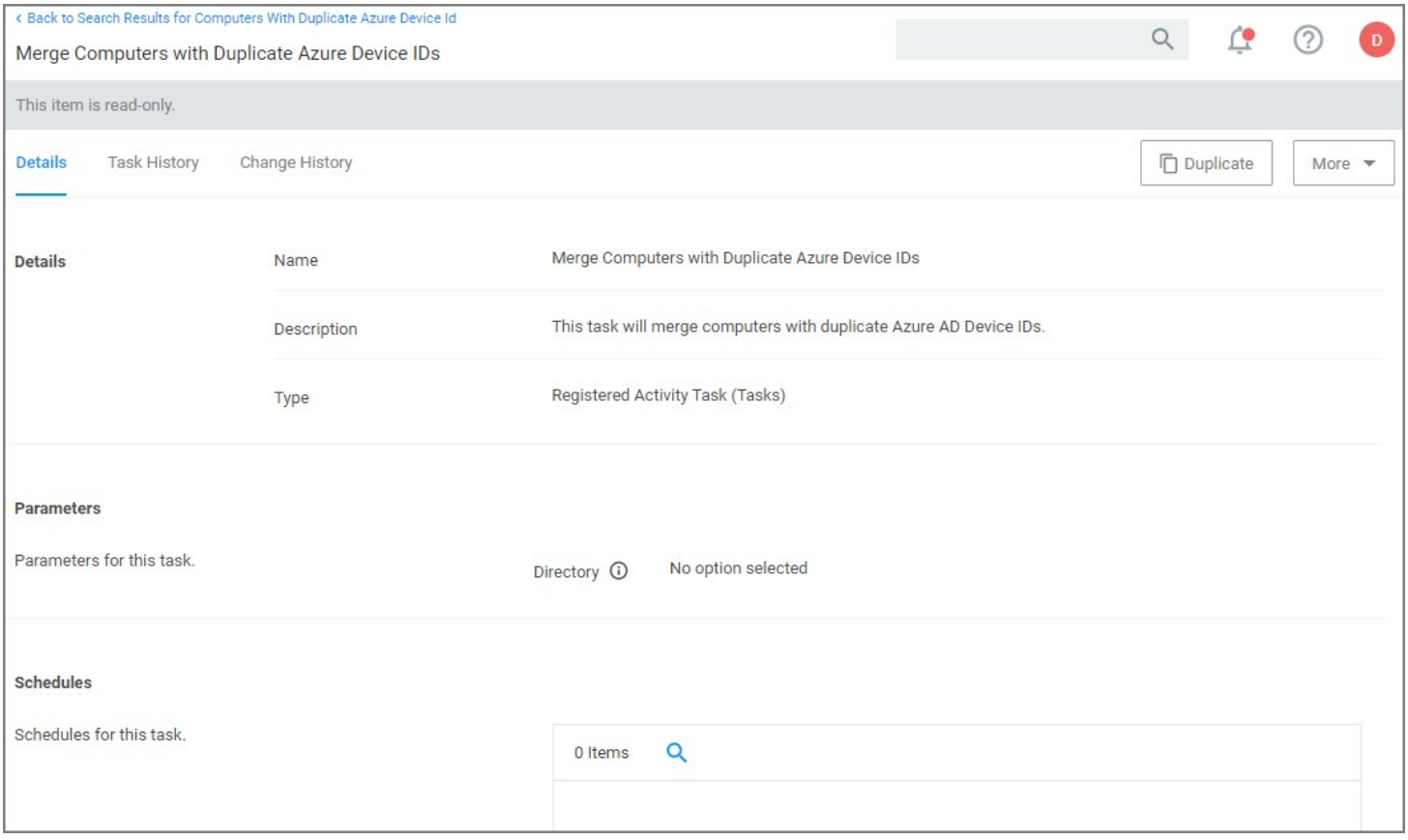
Agent Registration

Prior to Privilege Manager release version 11.1.0, if you imported devices from Azure AD and then registered agents, you were guaranteed to get duplicate computers. With version 11.1.0, when agents register, the server checks for existing computers with the same Device ID and merges them automatically.

For existing systems where duplicate computers have been recorded, the **Computers with Duplicate Azure Device IDs** report is available.



Run the report and then use the **Merge Computers with Duplicate Azure Device IDs** task to merge all computers with duplicate device Ids based on the report.



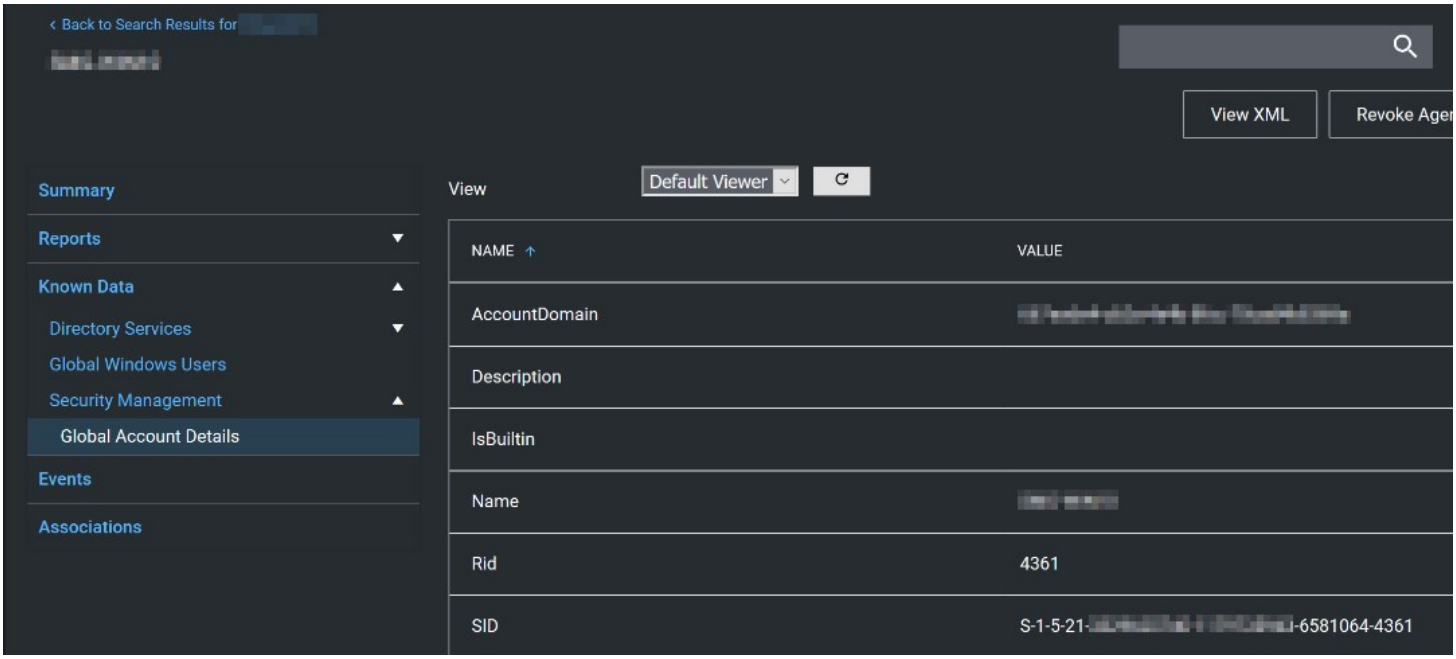
The report and task require a version 11.1.x based agent.

Resource Type Keys

Privilege Manager identifies resources in several ways. The primary way is through “keys”, which is basically just uniquely identifying data about a resource. Not all keys are available from all sources, so below each key is a table that lists availability.

Global Account Details - SID

This key is used to match computers, users, and groups based on the SID from their primary domain.



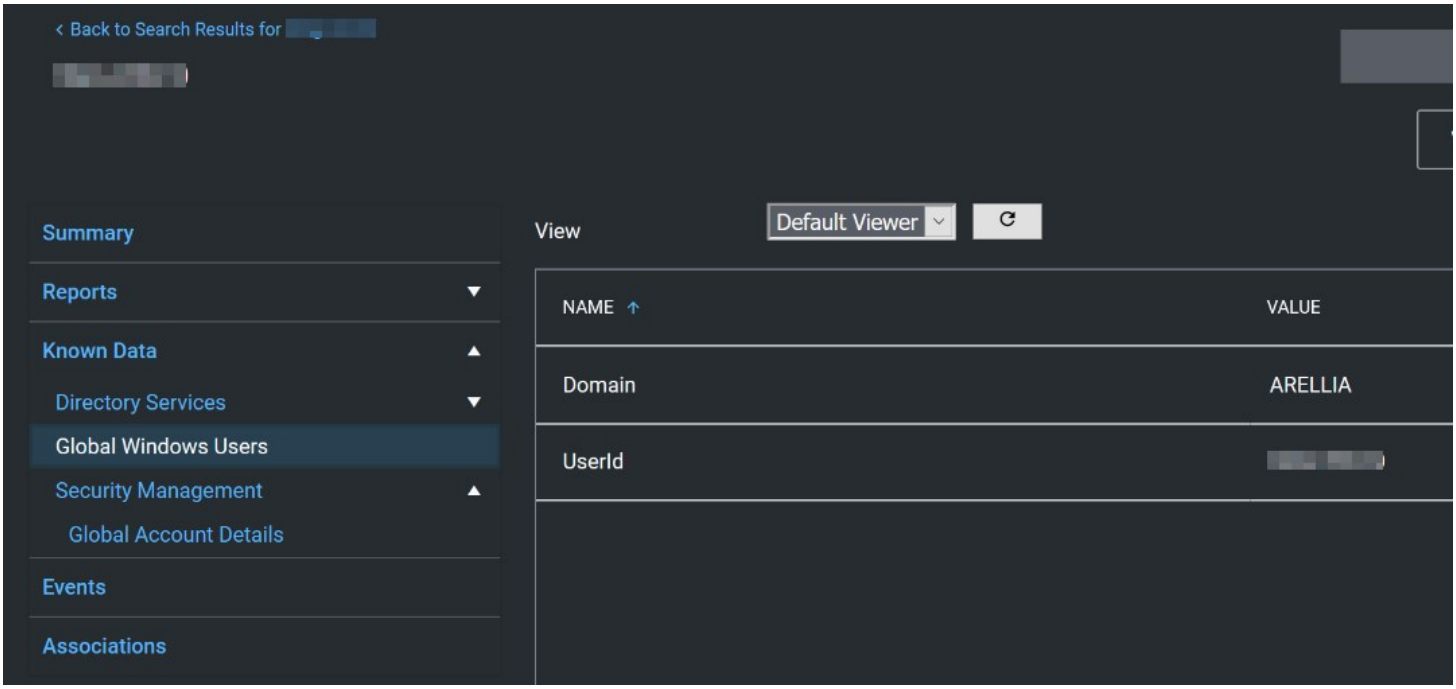
Availability

Users	Yes and No[^1]	Yes	Yes[^2]	N/A
Groups	Yes and No[^1]	Yes	Yes[^3]	N/A
Computers	No	Yes	N/A	Yes[^4]

- [^1] Users and groups created natively in Azure AD will not have a SID.
- [^2] SID may not be available on all Azure AD systems. Users and Groups imported from AD will have a SID (by default, customers can change the settings in Azure AD Connect, so it's typical, but not a guarantee). Devices (computers) in Azure AD will typically not have this information.
- [^3] Starting with the 10.8 agent, when reporting AD domain users and groups that are members of a local group, the agent will include Global Account Details SID. But with older agents it's not reported, and this can be a likely source of duplicates.
- [^4] Starting with the 10.8 agent, when registering the agent will report its SID from the domain to which it's currently connected. Agents that are offline will cache this information for a period of time, but agents long disconnected from the domain will not be able to report this.

Global Windows Users - User Id & Domain Name

This is the key that has the longest history of use in Privilege Manager .



Availability

Users	No[^1]	Yes	Yes	N/A
Groups	No[^1]	Yes	Yes	N/A
Computers	No	Yes	N/A	Yes

[^1] Azure AD can be configured (Azure AD Connect) to report this information for users and groups, but we don't read it when importing. This is planned as a future product update.

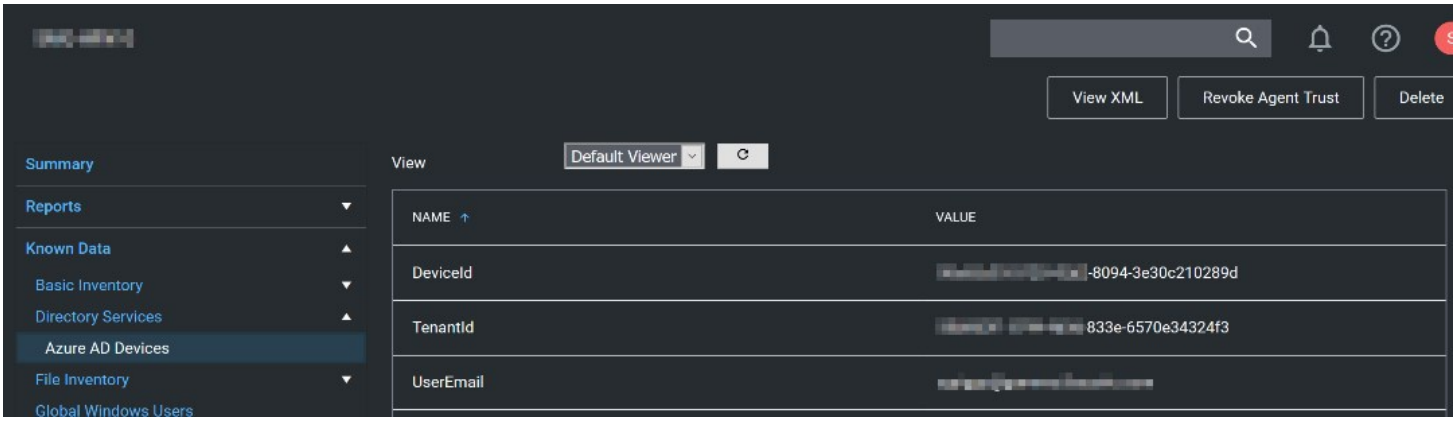
> **NOTE**: Until recently, the agent didn't report SID for domain users and groups. So the agent would report users with name/domain, import from Azure AD would report SID, since there wasn't common data, this was a common source of duplication.

There are a couple of solutions to duplicates here:

1. Also run an import from AD (typically on-premises AD agent), and then run the task "Merge Duplicate Account SID Resources". Note that this will not work for computers - we can't get SID for computers from Azure AD.
2. Delete the duplicates. When you delete duplicates, delete the resource that is not an agent, and with the least information.

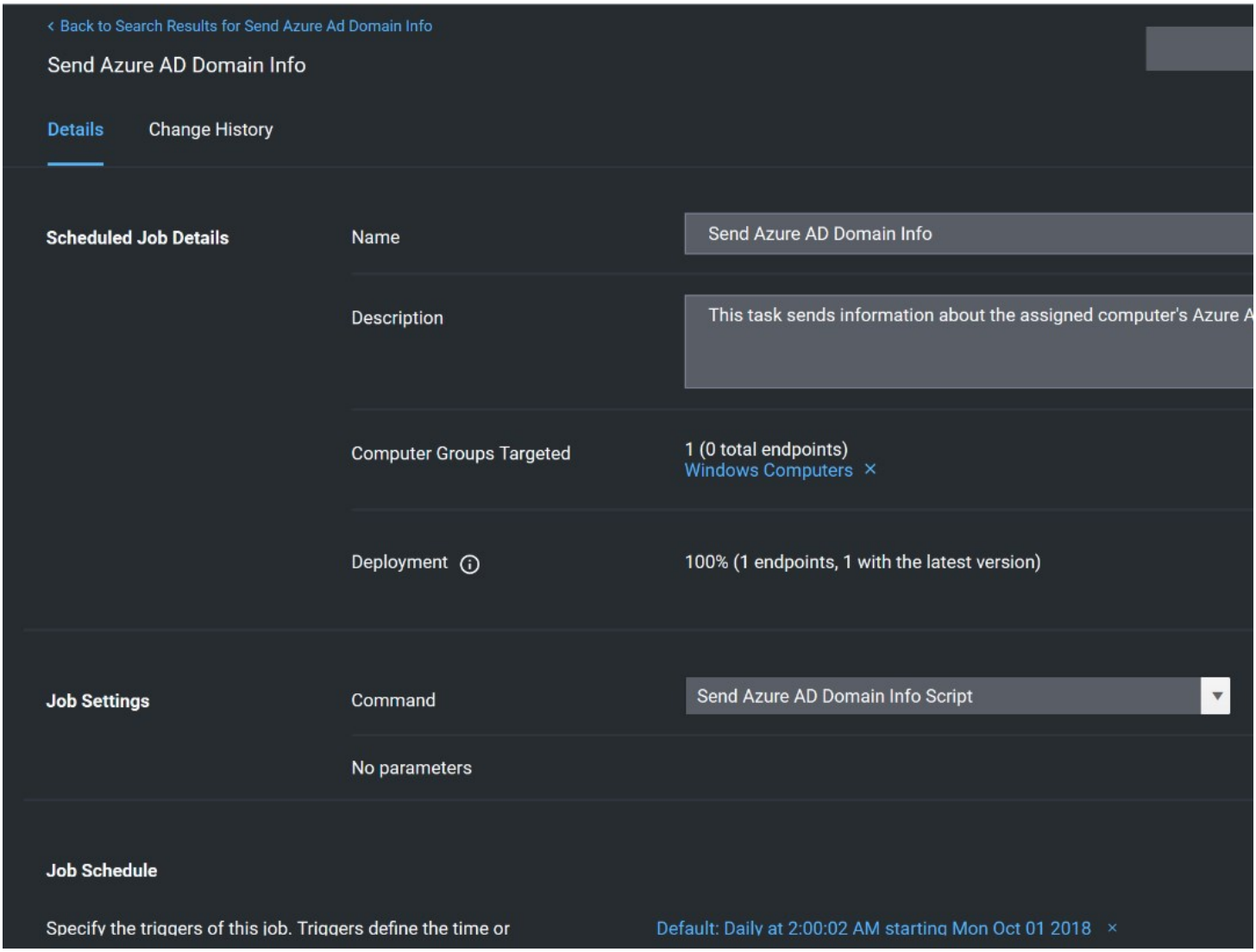
Azure AD - Device ID

This data was added in an attempt to support importing devices from Azure AD. The agent will report Azure AD domain join info which includes Device ID and Tenant ID, and when importing from Azure AD Privilege Manager will attempt to match existing computers before creating a new one.



Send Azure AD Domain Info

This is the agent-scheduled task that reports the Azure AD info, by default it runs at 2AM daily.

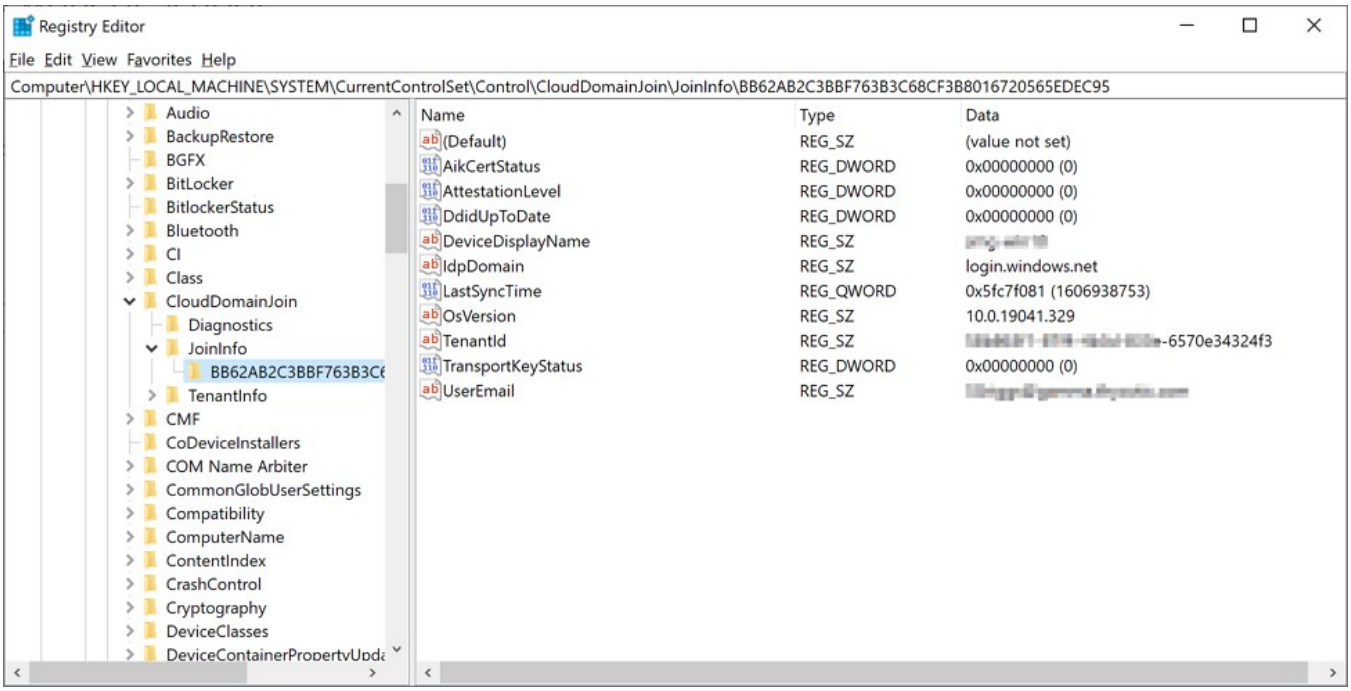


Limitations

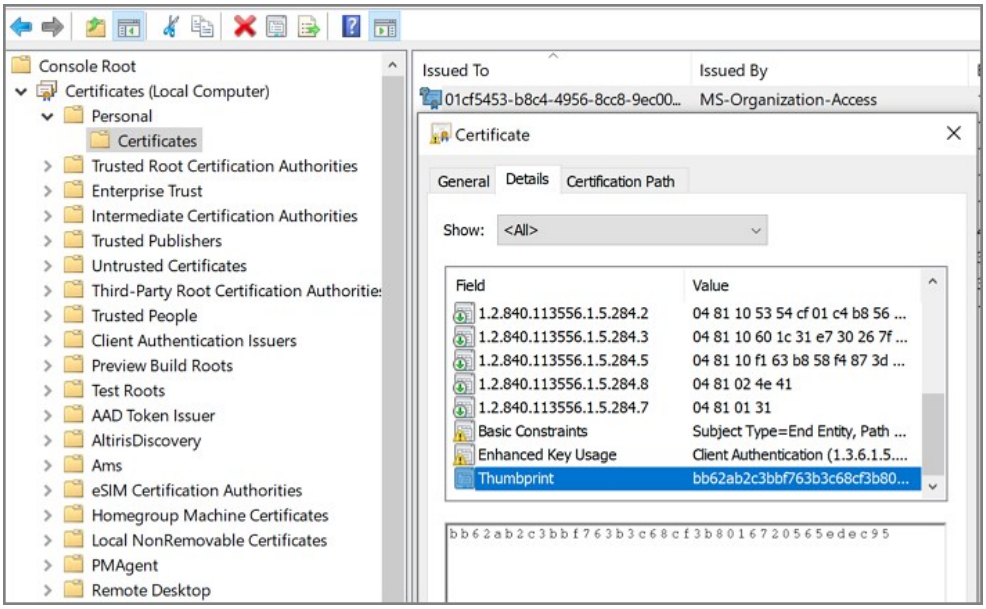
Unfortunately this data is limited to a very specific domain join. Hybrid domain joins (both AD and Azure AD) don't seem to support this. When using hybrid join, all the data seems to be per-user, and currently the agent task to report info only works if the data is global.

Registry/Certificates

If you want to troubleshoot why an agent isn't reporting this domain join info, you can follow in the registry to check the data for yourself. Go to HKLM\System\CurrentControlSet\Control\CloudDomainJoin\JoinInfo\. The keys there are named by the hash of the relevant certificate (the image below is for a local user (the one that doesn't work), but the concept is the same):



In this case 6A901B.... is referencing a certificate. The certificate will be in the local machine, personal store (again, the image below is actually for a user's cert, but the concept is the same):



So we find the certificate with thumbprint 6A901B…. and it's subject, in this case “58b863f1-87f4-4b3d-833e-6570e34324f3” is what will be reported, and what we can match up to the Device ID in Azure.

Privilege Manager Disaster Recovery

Any disaster recovery plan needs to include contingency plans for the event when a company's data center goes down. as such, it should always include storing backups of the latest web application and database offsite, potentially at multiple locations.

For Privilege Manager web application backups, Delinea recommends creating a copy following any install/upgrade. For the database backups, SQL database backup recommendations should be followed.

Maintaining Privilege Manager in a Disaster

With Privilege Manager environments three types of Disaster recovery strategies can be implemented. The framework of a solid Privilege Manager Disaster Recovery Plan should follow these methods of maintaining operations:

- manual backups to restore (restoring/rebuilding from backup)
- passive failover (built and ready, but with a few manual switches)
- active fail-over via High Availability setup. Privilege Managers licensing allows for full clustering.

As a best practice for Privilege Manager databases, we recommend asynchronous replication. There are a lot of transactions - too many transactions for synchronous replication in most enterprise environments. Asynchronous replication works with a manual failover.

Simple Installation and Architecture

Privilege Manager operates on typical modern servers On-Premises, in the Cloud, and in virtual environments.

By design, Privilege Manager 's installation is a quick and easy process. Keeping this process as quick and easy to install was a goal from the outset. This serves as a viable fallback option should redundancy plans fail. In a worst-case scenario where the host server fails, a cluster/mirror fails, and the other backup plans fail, Privilege Manager can be installed from scratch quickly and data imported from various methods.

Administrators familiar with Microsoft SQL and IIS can typically install Privilege Manager in about 30 minutes on a prepared server.

Refer to the following installation topics:

- Privilege Manager Product Installation - Basic
- Privilege Manager Manual Installation

Restoring from Backup

Delinea recommends to make a back-up copy of your Privilege Manager web application folder after installation or following an upgrade. This back-up copy is used during disaster recover to restore the instance. Microsoft SQL database restores are simple as well, but require several steps, depending on the backup scenario. Refer to vendor details, such as Back Up and Restore of SQL Server Databases.

Start by preparing servers for installation. When the servers are prepared, restore the Privilege Manager application on one and the database on the other. Some specific web configurations may be needed to match the previous IIS settings.

Restoring Privilege Manager from a Backup

When restoring from backup in the single-server configurations, be certain to make copies of the backup files on a different device or media.

Follow instructions as detailed under Installing as a Virtual Directory.

High Availability

A Privilege Manager implementation based on a high availability setup plays well with any disaster recovery plan.

With HA clustering, there are more than one front-end web servers, and more than one active node. Allowing users to use Privilege Manager through more than one active node simultaneously requires enabling clustering within the application. Only one server handles background processes, meaning that one of the active nodes will be designated as the Primary Node at any given time (this can be changed manually, if

necessary, in the application). In the event that the Primary Node becomes unavailable, the "Primary" status will be transferred to one of the other active nodes and users can continue using the application without interruption. There can be more than one active and passive server nodes (no limit), depending on the needs of the organization.

A Disaster Recovery Plan for High Availability consists of failover for Web Server or Microsoft SQL Server issues. If the failover members were to themselves fail, then Web Application Backups and Automated Application Database Backups can be used to restore functionality. If these Servers are virtualized, leveraging strategies such as making scheduled Snapshots or having a hot/cold Site may add additional layers of redundancy.

Refer to Privilege Manager High Availability Setup.

Summary & Additional Support Resources

The integration of Privilege Manager into Business Continuity Planning should not present any unique challenges beyond normal server and database recovery. If your organization already has disaster recovery plans for servers and databases, Privilege Manager and its Microsoft SQL database should fit within your organization's current framework. Using server virtualization to assist with Business Continuity and Disaster Recovery in terms of snapshots, replication, and other 3rd party features are recommended where applicable.

Delinea recommends setting up a domain service account that can both:

- access the Delinea product's SQL database
- run the IIS Application Pool(s) dedicated to your Delinea product

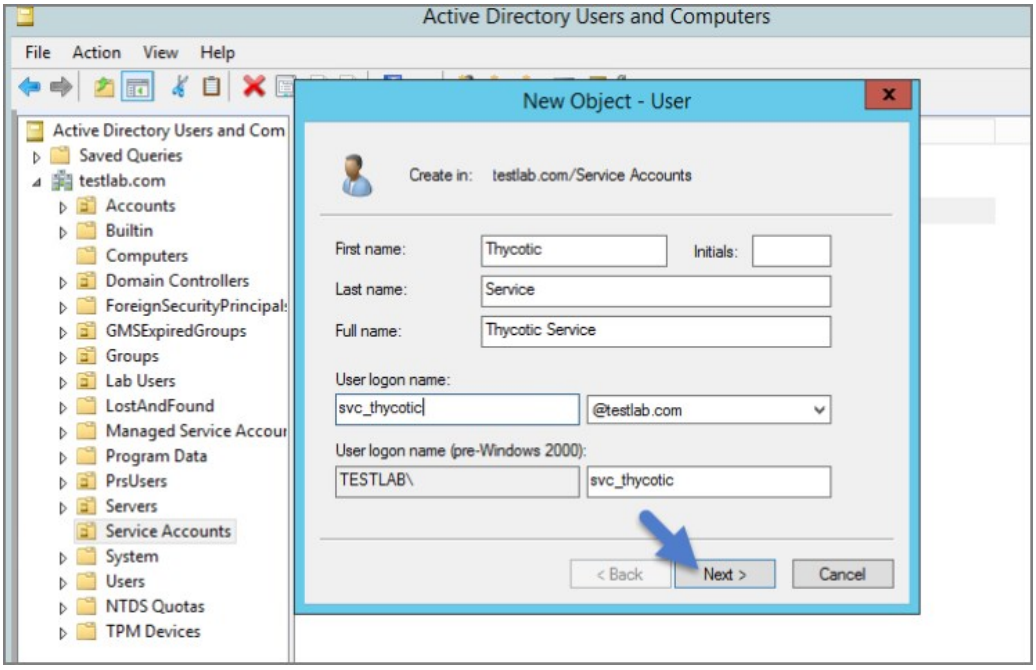
Note: The service account created in this KB should NOT be the same account that is created during the installation of SQL and used to manage SQL as a whole.

To set up this service account correctly you will need to:

1. Create a service account in Active Directory that will be dedicated to your Delinea product (Domain).
2. Grant the service account access to the SQL Server database (Database).
3. Assign the service account as Identity of the Application Pool(s) in IIS (Web).
4. Grant folder permissions for the service account on two folders (Web).
5. Configure User Rights Assignment to the service account (Domain AND/OR Web).

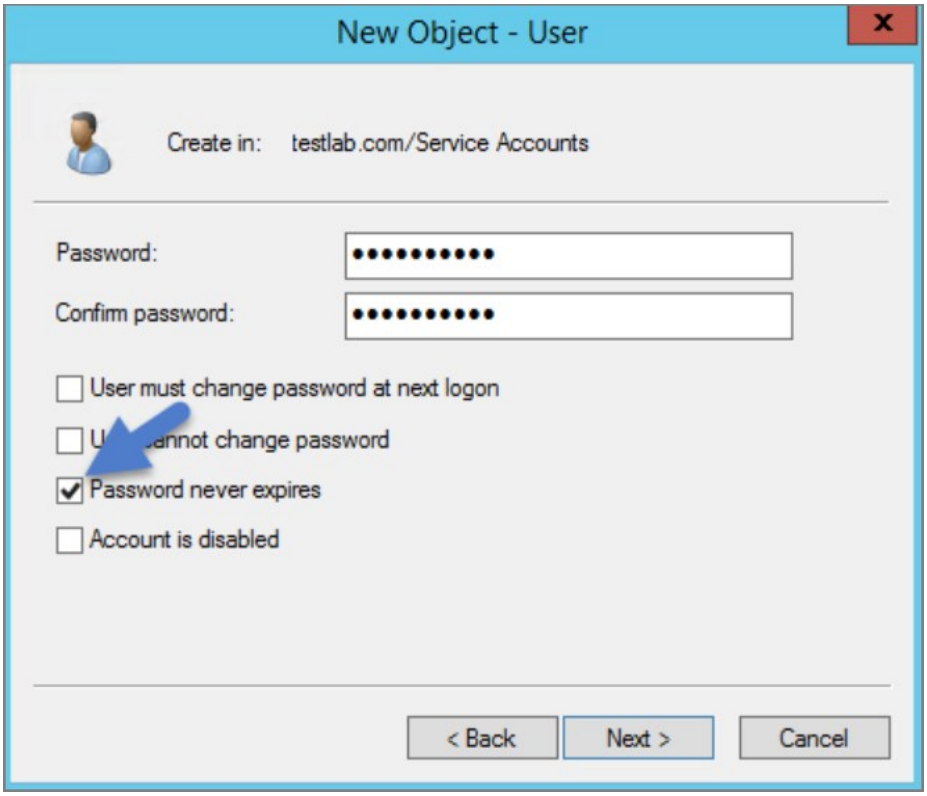
Creating a Domain Service Account

1. Open the **Active Directory Users and Computers** link from Administrative Tools.
2. Right-click the directory where you want to assign this account (i.e. testlab.com > Service Accounts).
3. Click **New** and **User**.
4. Add a name and logon name for the service account.
5. Click **Next**.



6. Enter a password.

   Note: Uncheck "User must change password at next login if checked." Check Password never expires or the account could lock you out of Privilege Manager .

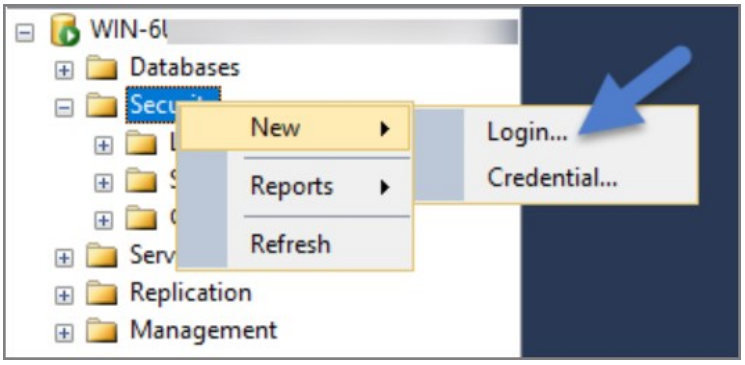


7. Click **Next**.
8. Click **Finish**. This account can now be given access to the database server and the application server.

Granting Access to SQL Database

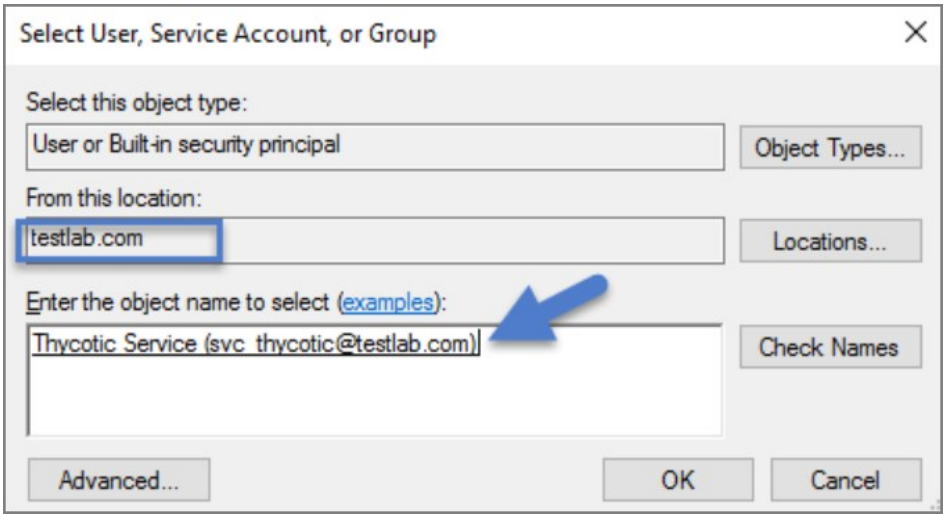
You must have SQL installed on your database server before completing these steps:

1. Using SQL Management Studio (on your database server), connect to your Delinea product's SQL Database using an Administrator account.
2. Right-click on the Security node (Ensure this is the top most Security node under the instance and not under the database name itself).
3. Click **New** and **Login**.

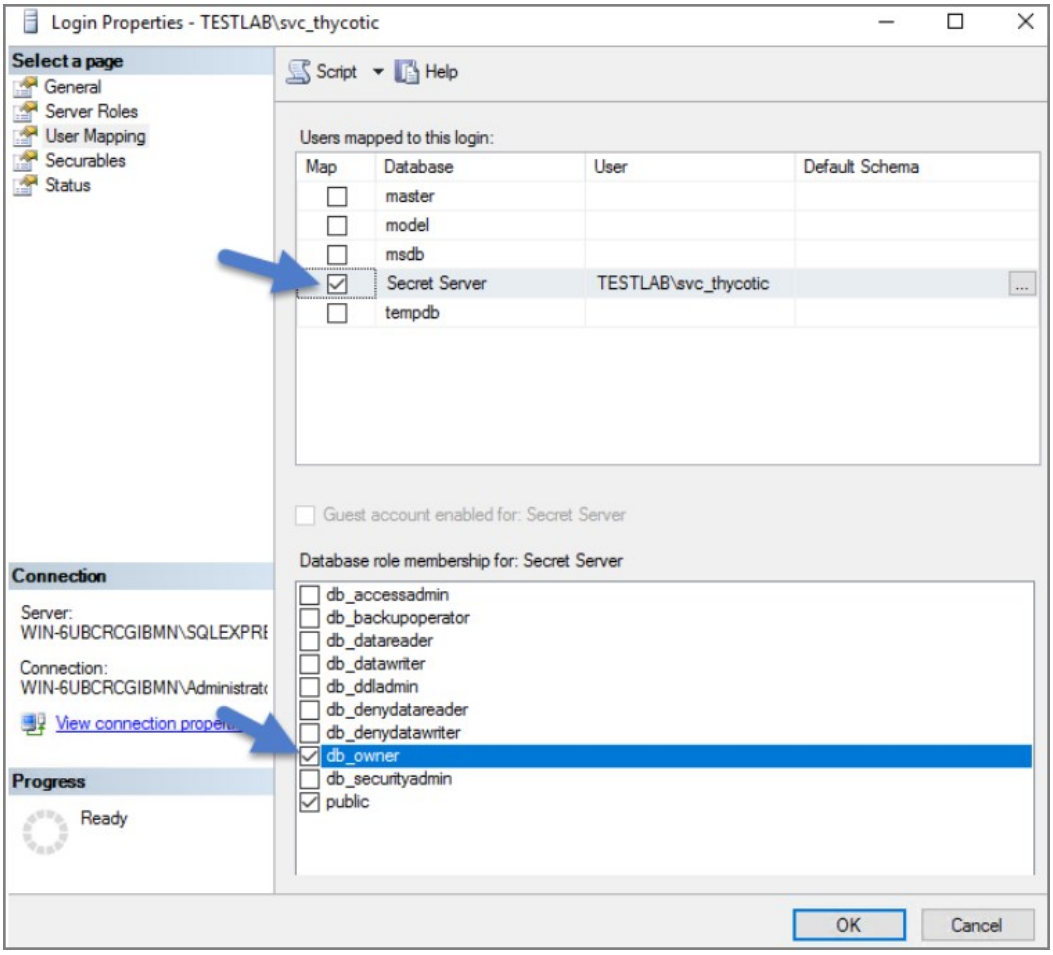


4. Ensure Windows Authentication radio button is selected.
5. On the New Login page click Search... Ensure that your domain/AD server is selected as the location.

6. In the “Enter the object name to select” box enter the Login name created for your Delinea service account (e.g., “svc_thycotic”). Click Check Names and select the correct account.
7. Click **OK**.

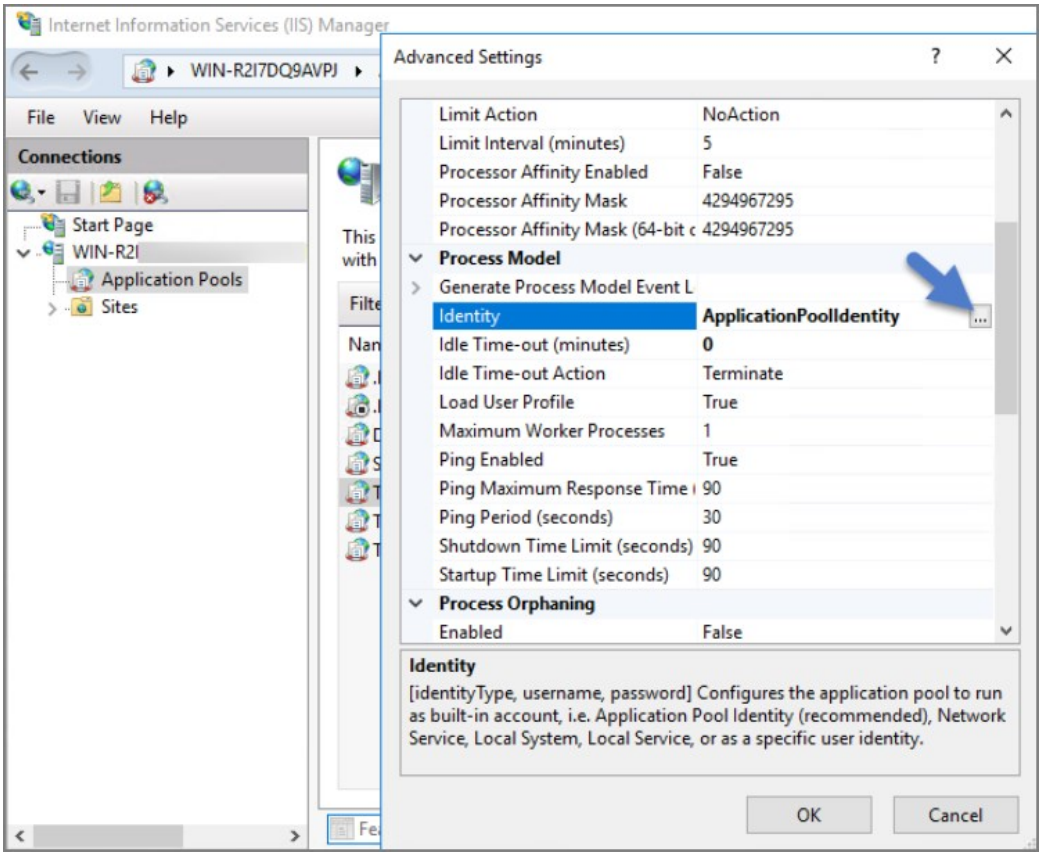


8. If you have already created the database for your Delinea product, under User Mappings select the database and check the box to grant the db_owner permission (example pictured below). OR - If you have not yet created the Database, Under Server Roles select db_creator
9. Click **OK**.



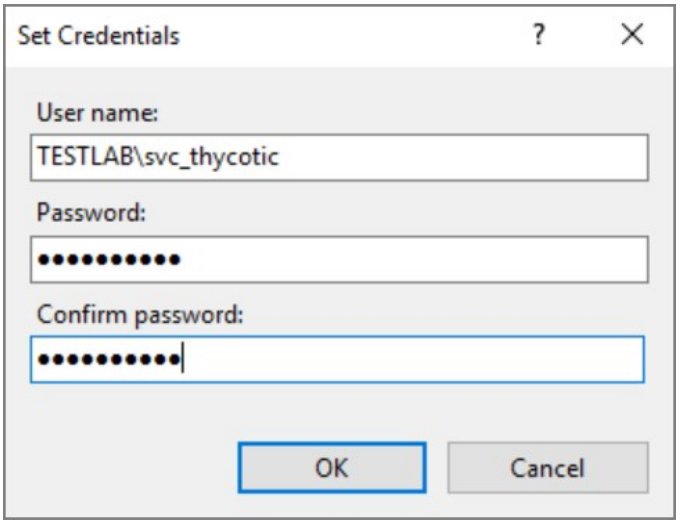
Assigning Identity of Application Pool(s) in IIS

1. Open IIS on your web server **Search I inetmgr**.
2. Locate the application pool(s) that your Delinea product is using, right-click Advanced Settings.
3. The Identity box in the **Process Model** section, click the three dots on the right of the box.



4. Select the Custom Account radio button.
5. Click **Set** and enter your service account's name and password.
6. Click **OK**.

Note: You will need to perform this step for multiple application pools for Privilege Manager .



Granting Folder Permissions

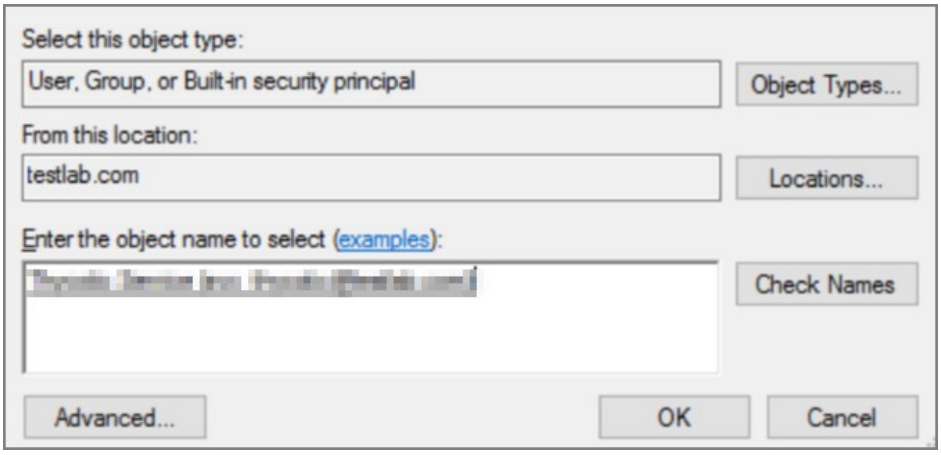
You must have the Delinea product application files installed (on your web server) before completing this section.

Following the steps below you will need to give the service account **Modify** access to two folders:

- **C:\Windows\TEMP**
- The folder where your Delinea product's application files are located (i.e.:**C:\inetpub\wwwroot\SecretServer**)

You must have the Delinea Product Application Files installed on your web server before completing these steps.

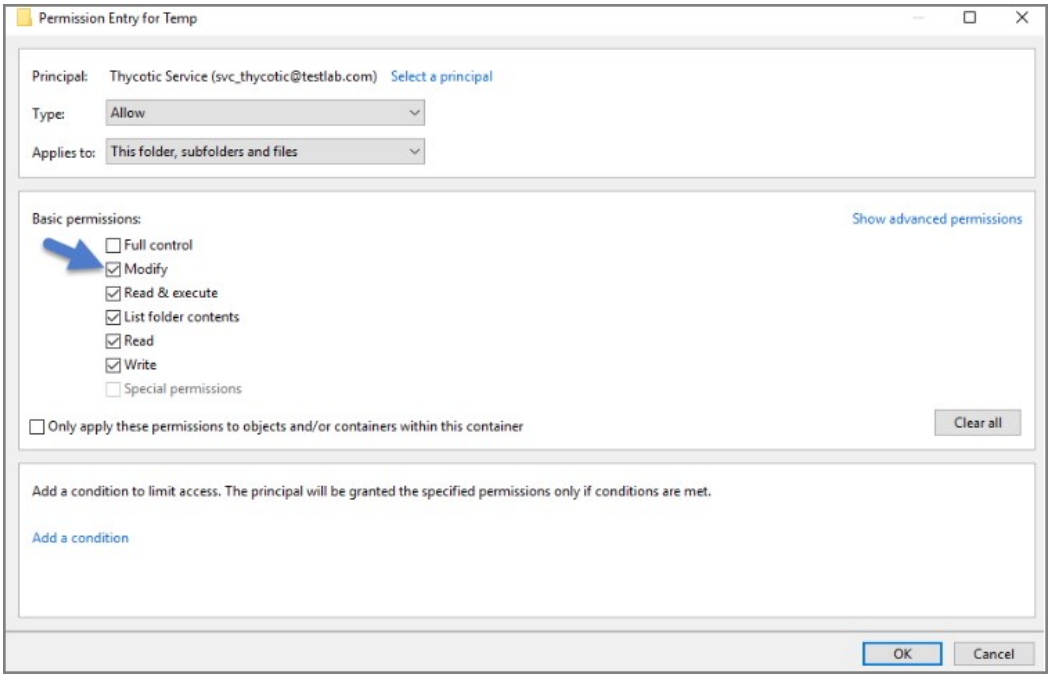
1. Open **C:\inetpub\wwwroot\TMS** and right-click the folder you are modifying.
2. Click **Properties** | **Security** | **Advanced**.
3. Click **Add** and then select a principal.
4. Ensure the domain machine is listed as the Location and type the service account under the "Enter the object name to select" box, click Check Names and Enter network credentials for accessing your domain machine.
5. Click **OK**.



6. Click the **Modify** checkbox.

   Your service account should now have Modify, Read & execute, List folder contents, Read, and Write permissions for this folder.

7. Click **OK**, then **Apply**.



Note: If a Windows Security pop-up appears, click Yes. The service account will now be able to access this folder.

Note: The application folder only needs Write and Modify permissions during the installation or during an upgrade. You can remove these once the installation process is complete.

Configuring User Rights Assignment

The following settings are required for Delinea Privilege Manager to function:

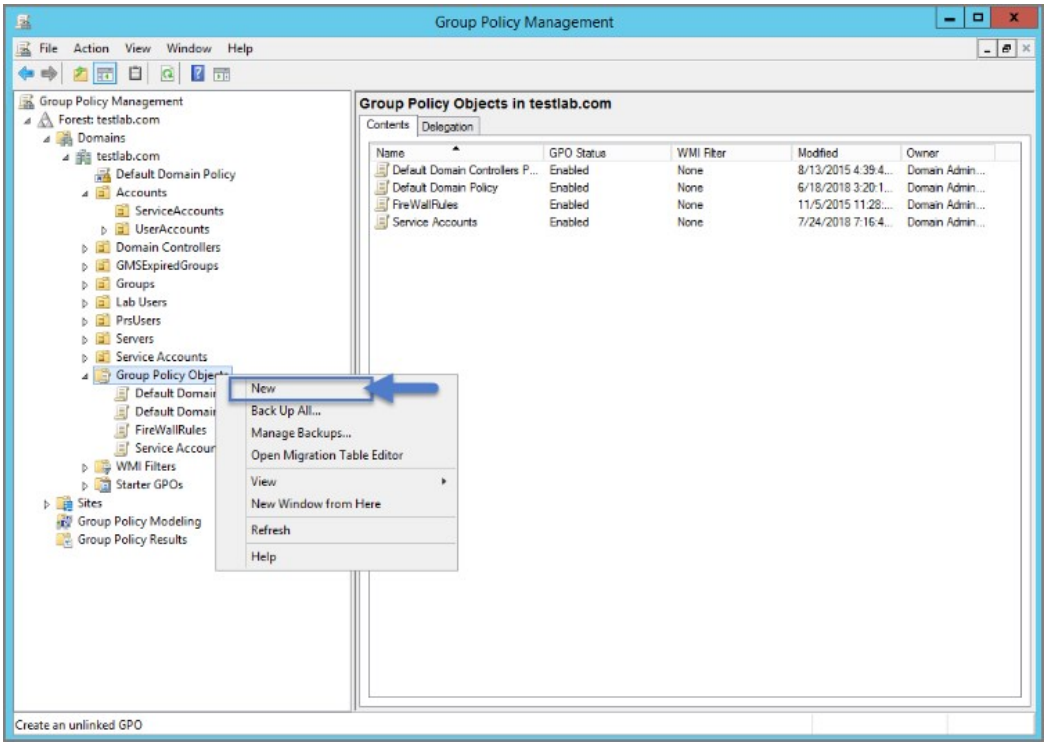
- Log on as a batch job
- Impersonate a client after authentication

You can adjust these settings either

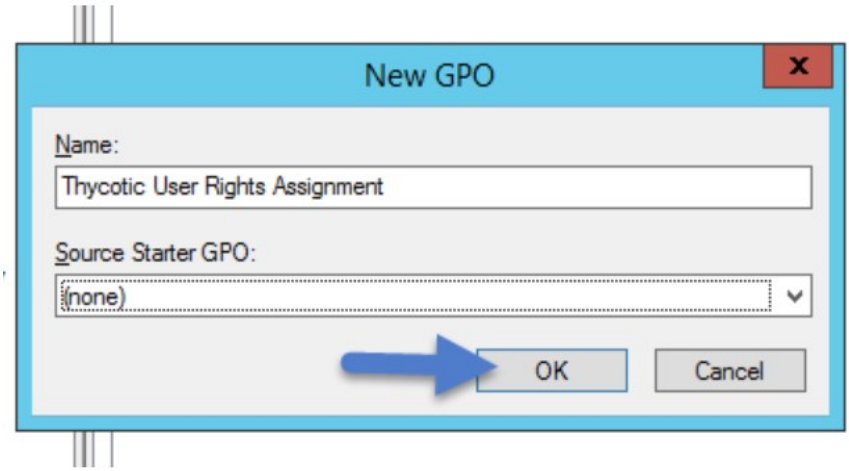
- At the Domain level using Group Policy
- Locally on your IIS Web Server using the Local Security Policy Console

Setting User Rights Assignment on the Domain

1. Open Group Policy Management Console and right-click your preferred GPO container (i.e. Group Policy Objects).
2. Click **New**.

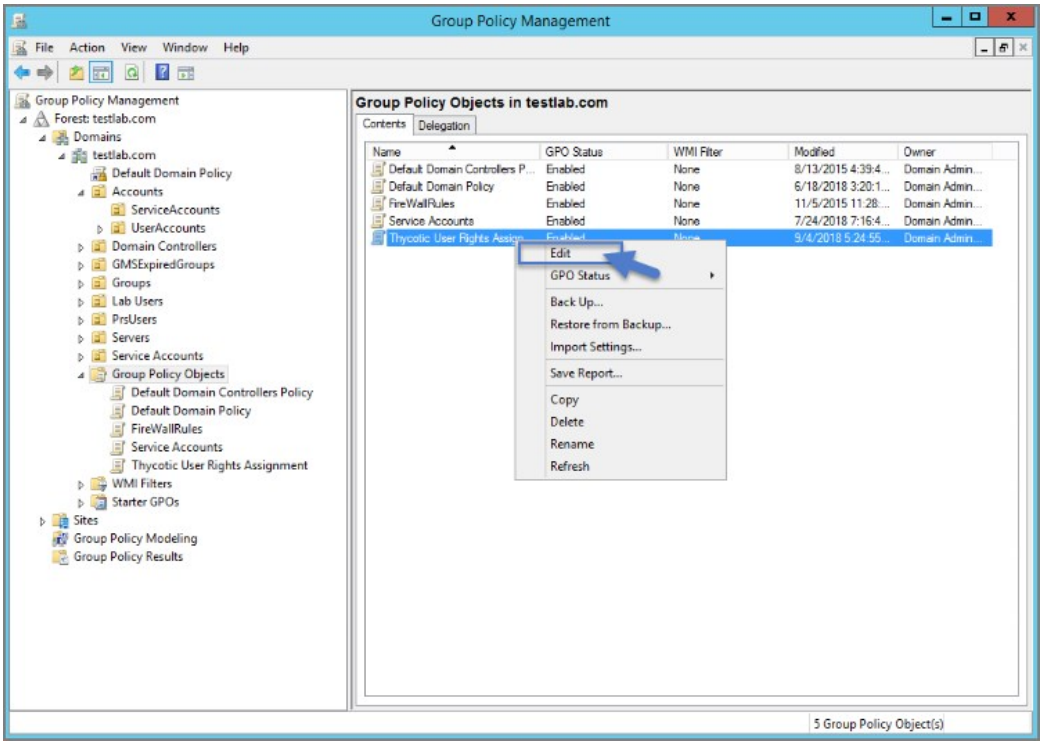


3. Name the new GPO (i.e. Delinea User Rights Assignment).
4. Click **OK**.
5. Right-click **new GPO**.
6. Click **Edit**.
7. Expand **Computer Configuration** | **Policies** | **Windows Settings** | **Security Settings** | **Local Policies**.
8. Click **User Rights Assignment**.
9. Right-click **Log on as a batch job** and click **Properties**.



10. Ensure that the **Define these policy settings** box is checked

11. Click **Add User or Group**.
12. Add your Delinea Service Account.
13. Click **OK**, then **Apply**.



14. Grant **Impersonate a client after authentication** permission to the service account under "User Rights Assignment" the same way "Log on as a batch job" was assigned above.
15. Link your new GPO to the OU where your Delinea product machine accounts exist (web + database servers).

    Note: This will overwrite any configuration in the local security policy. Utilizing the local security policy is a safer option if you are not sure about your usage across your domain.

Setting User Rights Assignment Locally

1. On the web server hosting IIS and your Delinea Application files.
2. Open **Local Security Policy Console** (Run as administrator).
3. Expand **Local Policies** | **User Rights Assignment**.
4. Right-click **Log on as a batch job** | **Properties** | **Add User or Group**.
5. Select your Delinea Service Account and then click **OK**.
6. Do the same to set Impersonate a client after authentication.

    Note: If you get a **Service Unavailable** after applying "Log on as a batch job" permissions, try updating your group policy settings:

    1. Open the Command Console.

2. Type in **gpupdate /force**.
3. Restart the Windows Process Activation Service.

You can restrict access to specific file types or locations using Privilege Manager . To prevent read / write access to file types or locations, do the following steps:

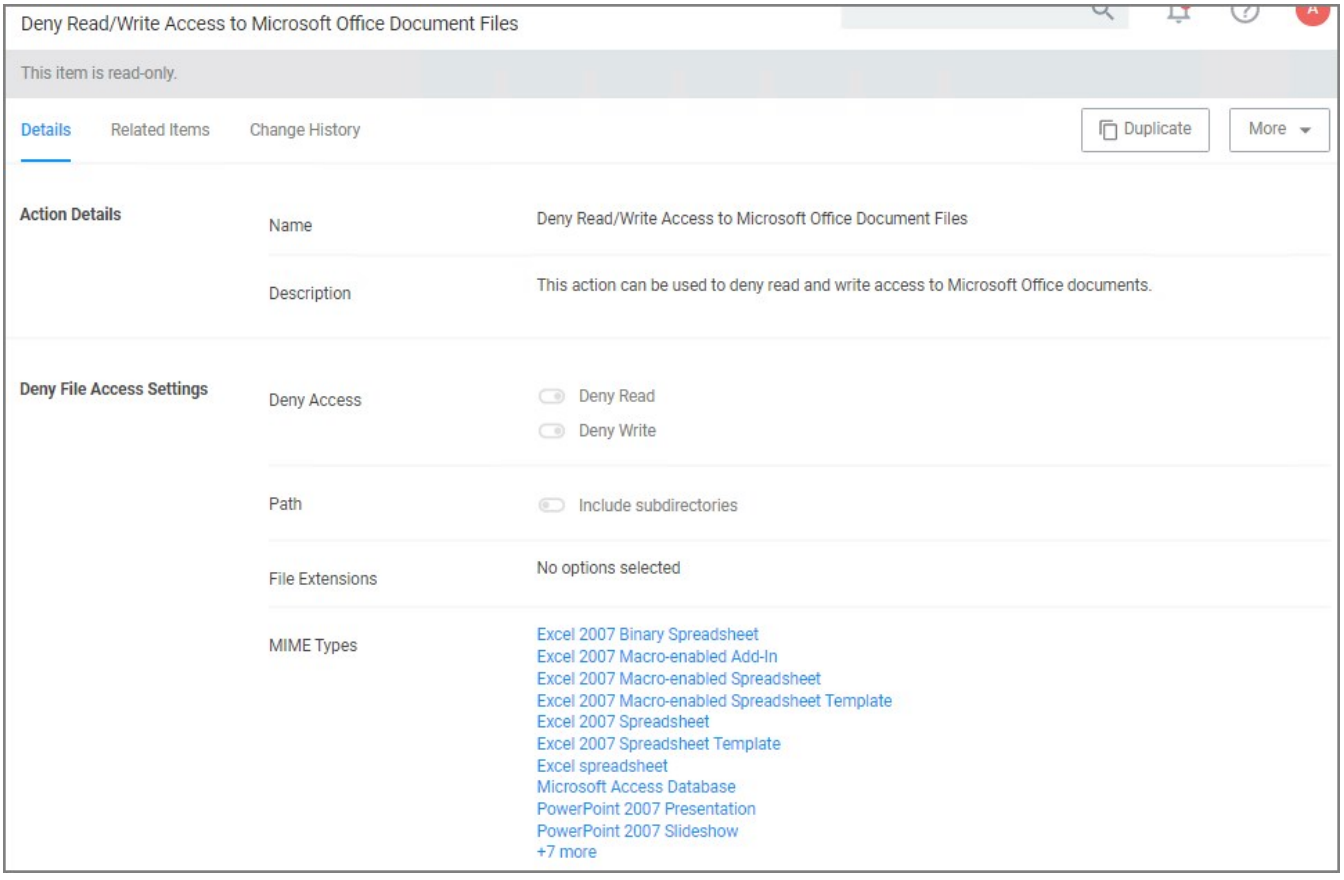
- Create a Deny File Access Action
- Create an Application Control Policy to which you will add the Deny File Access Action
- Test the privilege reduction you've just created

In the following scenario you will create a Microsoft Word document and save it on your machine to:

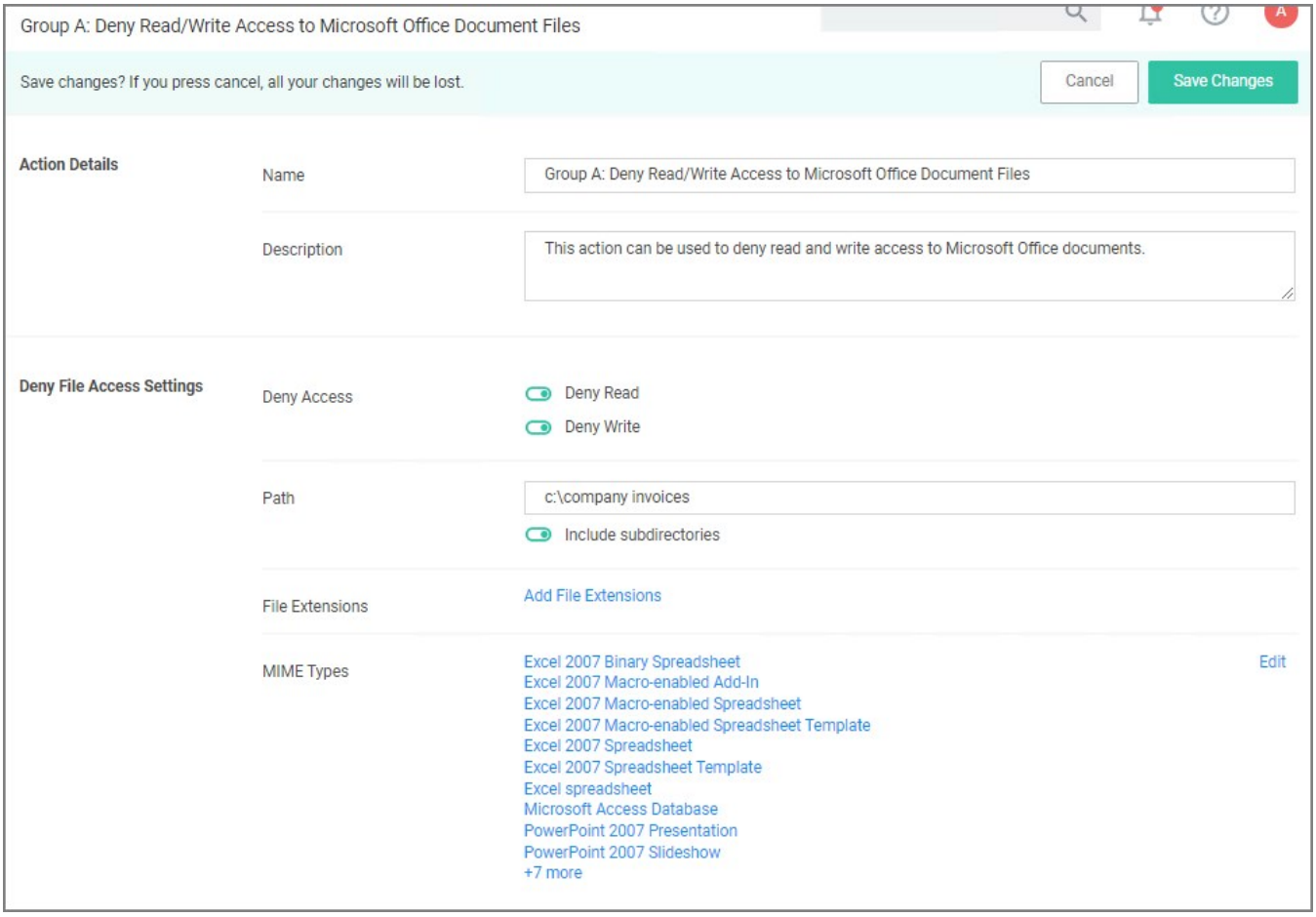
c:\company invoices\invoice 101.doc

Create a Deny File Access Action

1. Navigate to **Admin I Actions**.
2. Search for **Deny File Access Action**.
3. Click on **Deny Read/Write Access to Microsoft Office Document Files**.



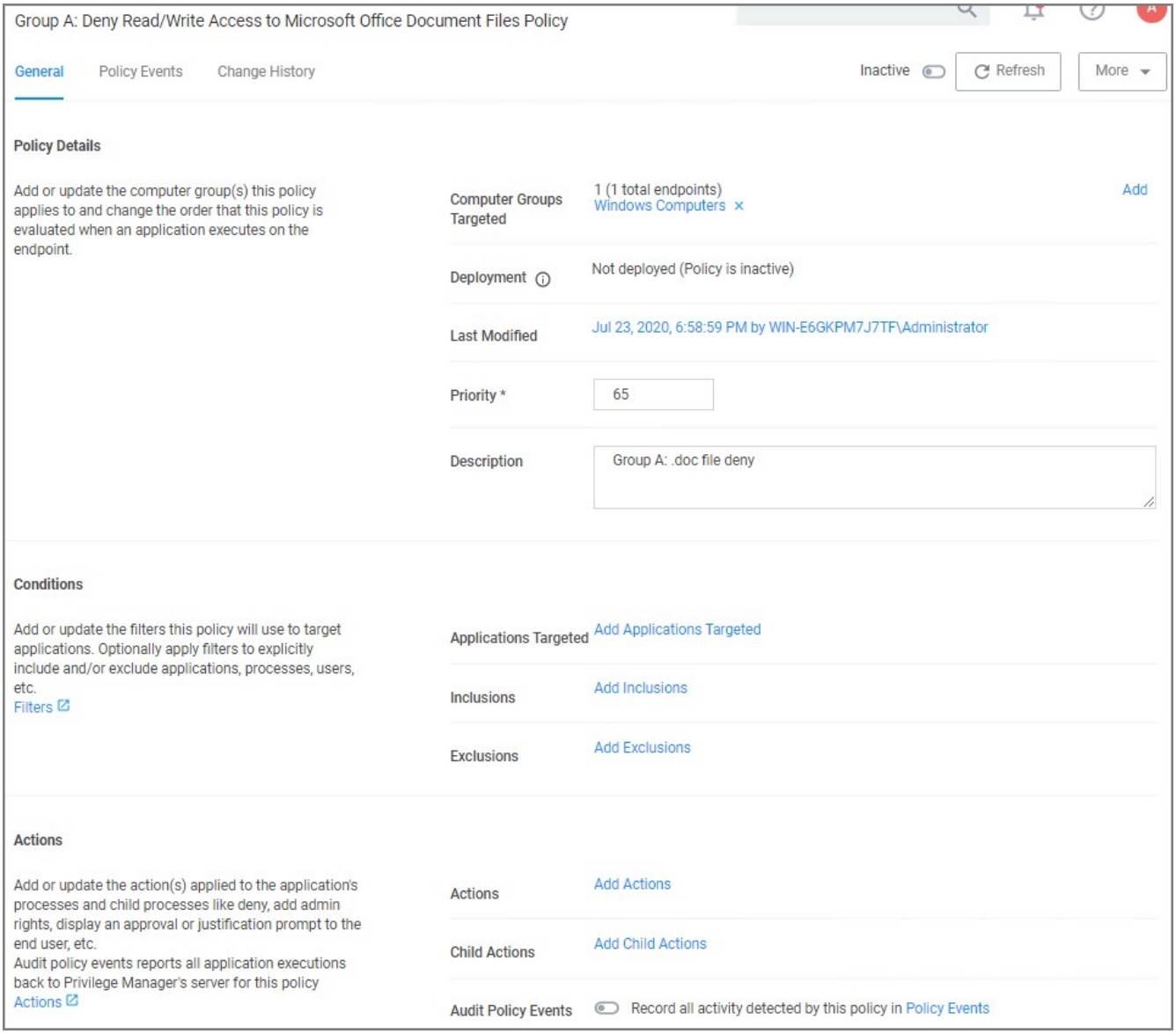
4. Click on **Duplicate**.
5. Name the new copy of the action and click **Create**.
6. Enter the path of the file location (e.g., c:\company invoices), for our example we also set the switch to include subdirectories.



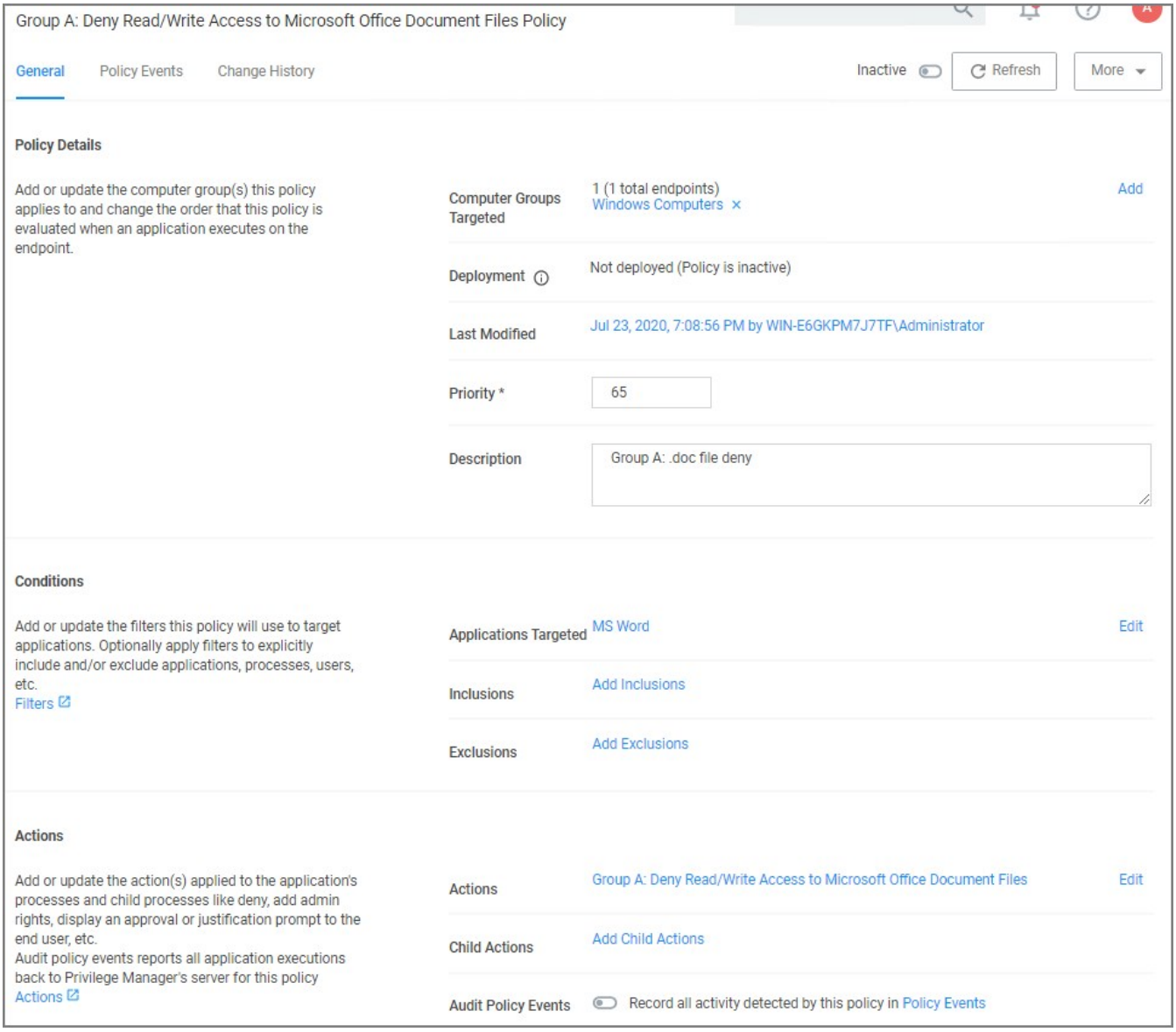
7. Click **Save Changes**.

Create an Application Control Policy

1. Under your Computer Group select **Application Policies**.
2. Click **Create Policy**.
3. Select **Skip the wizard, take me to a blank policy**.
4. Add Name and Description, click **Create Policy**.



5. Under **Conditions | Applications Targeted**, click **Add Application Targeted**.
6. Search for **word** and add the **MS Word** filter.
7. Click **Update**.
8. Under **Actions**, click **Add Actions**.
9. Search for and add your **Deny Read/Write Access to Microsoft Office Document Files** Action.
10. Click **Update**.



11. Click **Save Changes**.
12. Set the Inactive switch to **Active**.
13. Next to Deployment, click the **i** icon and run the **Resource and Collection Targeting Update**. After you run update, the appropriate endpoints will receive the new policy.

Test Access

Verify that the restricted access you set up was successful by applying the following tests:

- In Microsoft Word, open C:\company invoices\invoice 101.doc. The file is read only and can't be modified.
- Create a new document and attempt to save it to c:\company invoices\. You will be unable to open it and will receive a File Permission error.
- Verify that you can create or modify a Word document in a different directory.
- In Microsoft Excel, save a spreadsheet to c:\company invoices\invoice 101.doc. The permissions are limited to Microsoft Word.

This is a list of items that IIS admin can implement to secure the IIS/Web server.

Patches and Updates

Run Microsoft Baseline Security Analyzer on a regular interval to check for latest operating system and components updates.
The latest updates and patches are applied for Windows, IIS server, and the .NET Framework. (These should be tested on development servers prior to deployment on the production servers.)
Check the Microsoft Security Updates at https://docs.microsoft.com/en-us/security-updates/ on a regular interval for up to date Microsoft technical security notifications.

Services

- Unnecessary Windows services are disabled.
- Services are running with least-privileged accounts.
- FTP, SMTP, and NNTP services are disabled if they are not required.
- Telnet service is disabled.
- ASP .NET state service is disabled and is not used by your applications.

Protocols

- WebDAV is disabled if not used by the application OR it is secured if it is required.
- TCP/IP stack is hardened.
- NetBIOS and SMB are disabled if not used (closes ports 137, 138, 139, and 445).

Accounts

- Unused accounts are removed from the server.
- Windows Guest account is disabled.
- Administrator account is renamed and has a strong password.
- IUSR_MACHINE account is disabled if it is not used by the application.
- If your applications require anonymous access, a custom least-privileged anonymous account is created.
    - The anonymous account does not have write access to Web content directories and cannot execute command-line tools.
- ASP.NET process account is configured for least privilege. (This only applies if you are not using the default ASPNET account, which is a least-privileged account.)
- Strong account and password policies are enforced for the server.
- Remote logons are restricted. (The "Access this computer from the network" user-right is removed from the Everyone group.)
- Null sessions (anonymous logons) are disabled.
- No more than two accounts exist in the Administrators group.

Files and Directories

- Files and directories are contained on NTFS volumes.
- Web site content is located on a non-system NTFS volume.
- Log files are located on a non-system NTFS volume and not on the same volume where the Web site content resides.
- The Everyone group is restricted (no access to \Windows\system32 or Web directories).
- Web site root directory has deny write ACE for anonymous Internet accounts.
- Content directories have deny write ACE for anonymous Internet accounts.
- Remote IIS administration application is removed.
- Resource kit tools, utilities, and SDKs are removed.

Shares

- All unnecessary shares are removed (including default administration shares).
- Access to required shares is restricted (the Everyone group does not have access).
- Administrative shares (C$ and Admin$) are removed if they are not required.

Ports

- Internet-facing interfaces are restricted to port 80 (and **443** if SSL is used).
- Intranet traffic is encrypted (for example, with SSL) or restricted.

Registry

Remote registry access is restricted.
SAM is secured (HKLM\System\CurrentControlSet\Control\LSA\NoLMHash).

Auditing and Logging

- Failed logon attempts are audited.
- IIS log files are relocated and secured.
- Log files are configured with an appropriate size depending on the application security requirement.
- Log files are regularly archived and analyzed.
- Access to the Metabase.bin file is audited.
- IIS is configured for W3C Extended log file format auditing.

Sites and Virtual Directories

- Web sites are located on a non-system partition.
- "Parent paths" setting is disabled.
- Potentially dangerous virtual directories, including IISSamples, IISAdmin,
- IISHelp, and Scripts virtual directories, are removed.
- MSADC virtual directory (RDS) is removed or secured.
- Include directories do not have Read Web permission.
- Virtual directories that allow anonymous access restrict Write and Execute Web permissions for the anonymous account.
- There is script source access only on folders that support content authoring.
- There is write access only on folders that support content authoring and these folder are configured for authentication (and SSL encryption, if required).
- FrontPage Server Extensions (FPSE) are removed if not used. If they are used, they are updated and access to FPSE is restricted.

Script Mappings

- Extensions not used by the application are mapped to 404.dll (.idq, .htw, .ida, .shtml, .shtm, .stm, idc, .htr, .printer).
- Unnecessary ASP.NET file type extensions are mapped to "HttpForbiddenHandler" in Machine.config.

ISAPI Filters

Unnecessary or unused ISAPI filters are removed from the server.

IIS Metabase

- Access to the metabase is restricted by using NTFS permissions %systemroot%\system32\inetsrv\metabase.bin).
- IIS banner information is restricted (IP address in content location disabled).

Server Certificates

- Certificate date ranges are valid.
- Certificates are used for their intended purpose (for example, the server certificate is not used for e-mail).

- The certificate's public key is valid, all the way to a trusted root authority.
- The certificate is SHA 256 or better.

Machine.config

- Protected resources are mapped to HttpForbiddenHandler.
- Unused HttpModules are removed.
- Tracing is disabled <trace enable="false"/>
- Debug compiles are turned off. <compilation debug="false" explicit="true" defaultLanguage="vb">

Code Access Security

- Code access security is enabled on the server.
- All permissions have been removed from the local intranet zone.
- All permissions have been removed from the Internet zone.

Other Check Points

- HTTP requests are filtered.
- Remote administration of the server is secured and configured for encryption, low session time-outs, and account lockouts.

Other Considerations

- Do use a dedicated machine as a Web server.
- Do physically protect the Web server machine in a secure machine room.
- Do configure a separate anonymous user account for each application, if you host multiple Web applications,
- Do not install the IIS server on a domain controller.
- Do not connect an IIS Server to the Internet until it is fully hardened.
- Do not allow anyone to locally log on to the machine except for the administrator.

Privilege Manager v11.1 introduced configurable security algorithms.

Configuration of security algorithms is managed via **Admin | Configuration | Advanced** under the Agent section. Refer to Advanced Tab.

Delinea recommends that all customers update to SHA256 at this point.

Server-Targeted Settings

The following settings are targeted at the Privilege Manager server.

Allowed agent event signature algorithms

This setting specifies what signature algorithms the server accepts when processing events from the agent. The new minimum standard for agents v11.1 events is XML RSA/SHA256. XML RSA/SHA1 is considered legacy support for older agent version only.

By default in v11.1 and up XML RSA/SHA256 and SHA1 are configured. Once your server only communicates with the latest agent version and all your policies/filters have been updated, SHA1 can be removed from the configuration.

Client item signature algorithms

This is the list of one or more signature algorithms the server will use when signing client items.

- **Legacy Value**: XML RSA/SHA1
- **Default**: Both XML RSA/SHA1 and XML RSA/SHA256.

Allowed client item signature algorithms

This setting specifies the signature algorithm(s) on tokens the server should accept for agent service calls.

Agent-Targeted Settings

These are settings that are targeted at agents, and will be part of agent configuration items. If the settings are not specified in the agent configuration contract XML, then the global setting will be sent to the agent.

Agent Event Signature Algorithm

This is the signature algorithm agents are instructed to use when signing XML events.

- **Legacy/unspecified**: The legacy value is XML RSA/SHA1. Agents should continue using this if not specified in their configuration.
- **Default**: XML RSA/SHA256

Inventory Hash Algorithms

These are the hash algorithms that agents should use when reporting inventory for resources.

> **Note**: The agent should always report as many hashes as possible from the configured set. Legacy hashes don't do any harm except maybe take up a bit of space.

- **Legacy**: The legacy values are mixed, some resources (like Folders) were using MD5, most files and other resources used SHA1.
- **Unset**: If the agent doesn't have a configuration value for this, it reports all hashes it can from the set of (MD5, SHA1, SHA256, Authenticode, Authenticode 2).
- **Default**: MD5, SHA1, SHA256, Authenticode, and Authenticode2.

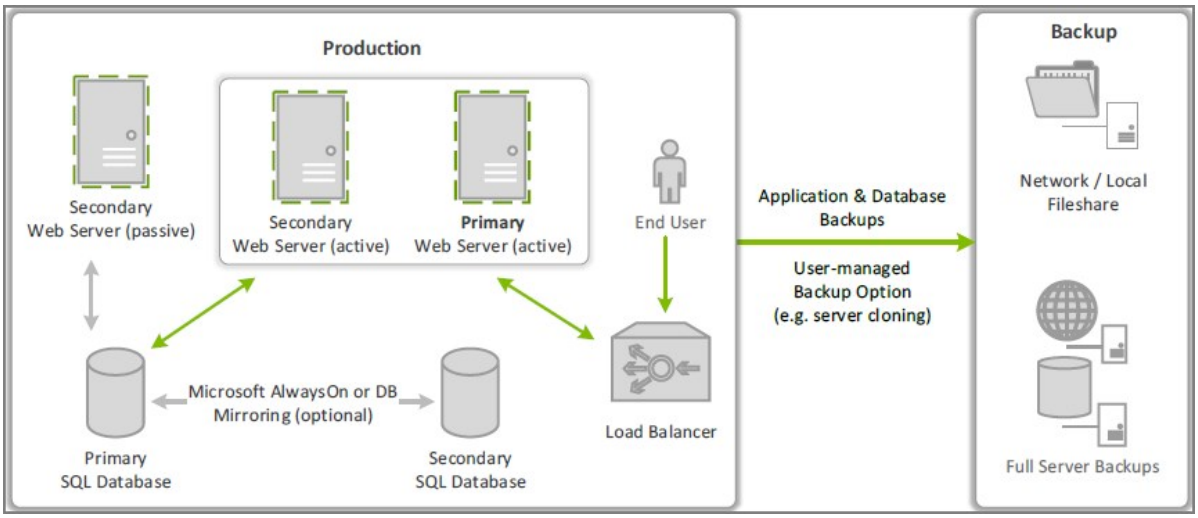
> **Note**: Authenticode is a Windows technology for signing executables, it essentially contains the hash of the raw executable before signing. For non-Windows OSes and non-Executable resources, this hash is ignored.

Delinea

This sections contains topics around infrastructure set-up and/or changes:

- Setting up Internet Connected Clients
- Setup High Availability/Clustering
- Setup Reverse Proxy
- VM Deployments
- Migrating SQL Server Database for Privilege Manager and Secret Server Combined Installation
- Migrating the Privilege Manager Server
- Removing Privilege Manager from a Combined Install

This topic explains the steps involved to set up Delinea Privilege Manager High Availability, also known as clustering.



Pre-Requisites

Make sure that Privilege Manager is installed and working on a primary node with an existing database.

To cluster Privilege Manager a secondary server must be prepared with the proper Privilege Manager pre-requisites. The pre-requisites check can be performed via standard Privilege Manager setup.exe. However, exit that automated installer once all pre-requisites clear.

Except for the Operating System, the following pre-requisites will be installed automatically by our installer. If you already have some of them installed or wish to install them yourself then the installer will skip over them.

System Requirements Overview

1. **Windows 2012 R2 or newer** operating system (2012 or newer is recommended)
2. Microsoft **SQL Server 2012 or newer** (Standard edition or higher is recommended)
3. Microsoft **Internet Information Services** (IIS) **7 or newer**
4. Microsoft **.NET Framework 4.6.1 or newer**

> **Note**: Windows Server 2016 comes with the .NET Framework already installed.

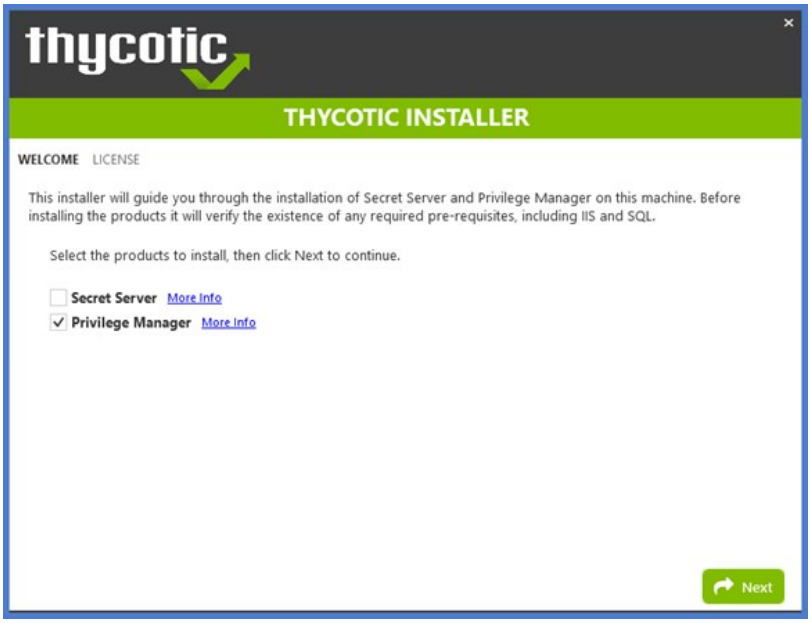
Using the Installer to Install/Confirm Pre-Requisites

The latest version of Privilege Manager is available for download. By clicking the Installer (.exe) link, a setup.exe file will be downloaded to your machine. It is recommended to run the setup.exe file as an administrator.

> **Note**: The setup executable will ONLY be used to install/confirm all pre-requisites are installed on the web server. After confirming the pre-requisites, the installer will be closed and a manual installation will be completed. The manual installation will allow for separate databases and custom file locations. Do NOT complete the installation with the setup executable.

Running the setup.exe will begin an installation wizard. This wizard will ONLY be used to install any remaining pre-requisites required on the web server. The wizard will walk through the initial installation steps, beginning with a Welcome page.

1. On the Welcome dialog, verify that Privilege Manager is selected and select the checkbox if not already checked.



2. Click **Next**.
3. On the License dialog review the End User License Agreement (EULA) and click **Accept License**.
4. On the Database dialog select **Connect to an existing SQL Server**, click **Next**.
5. The Pre-Requisites dialog helps you to ensure everything that is required gets installed for Privilege Manager . Click **Fix Issues** to automatically install the necessary pre-requisites.
6. Close the installer once all pre-requisites are successfully installed.

   Note: Do NOT continue installing the products with this installer.

Manual Set-up of Secondary Node

In this procedure you will:

1. Copy the web application files from the primary server to the secondary server.
2. Use those copied files to setup and configure the secondary Privilege Manager server.
3. Use the Internet Information Services Manager to setup Application Pools.
4. Convert application pools to applications.
5. Configure Authentication.
6. Set the Preload Status.
7. Change the Disable Overlapped Recycle setting.
8. Edit the TMS/Worker Web.config file.

Copy Web Application Files from Primary to Secondary Servers

1. On the primary server, decrypt the **connectionStrings.config** by running the following command:

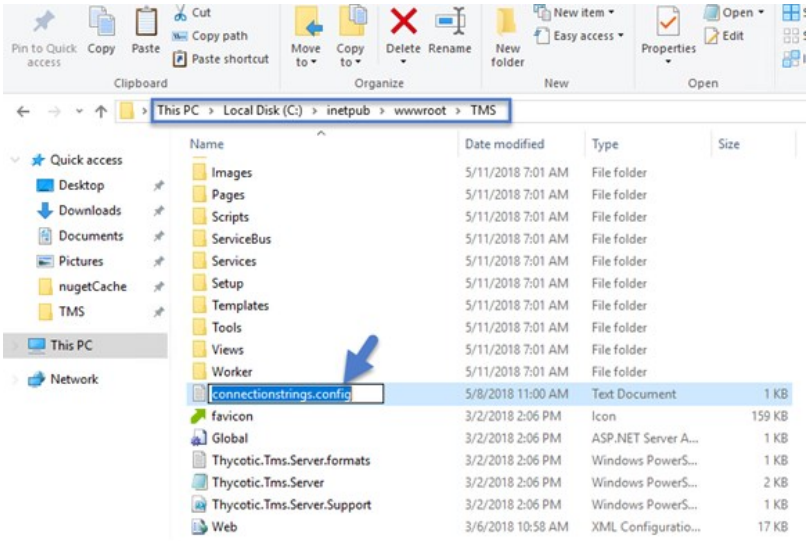
   ```
   C:\Windows\Microsoft.NET\Framework64\v4.0.30319\aspnet_regiis.exe -pd "connectionStrings" -app "/Tms"
   ```

2. Select and copy all contents of the Privilege Manager web application folder at

   ```
   C:\inetpub\wwwroot\TMS\
   ```

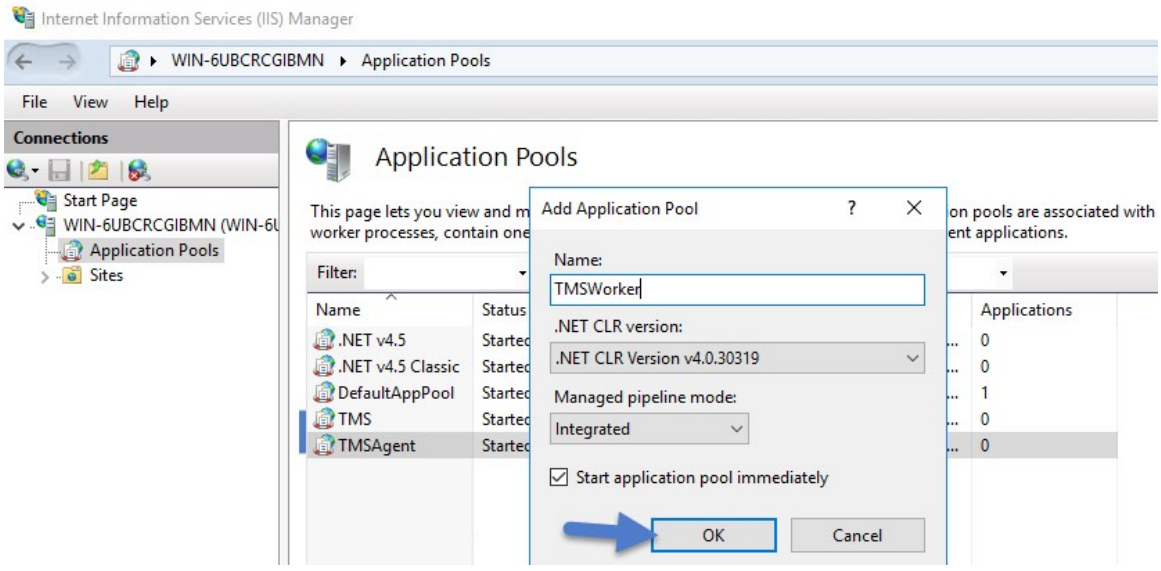
   Including the unencrypted connectionStrings.config file.

3. On the secondary server, create the same folder path.
4. Paste the entire contents of the Privilege Manager web application folder from the primary web server to the similar location on the secondary web server.

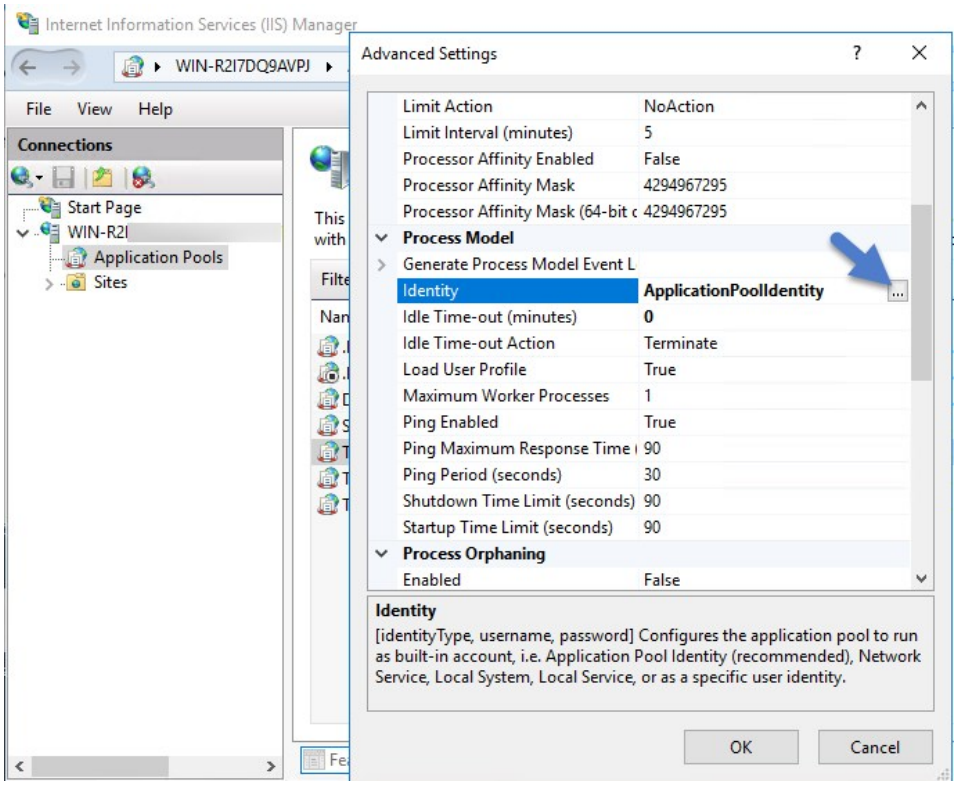


Setting up Application Pools

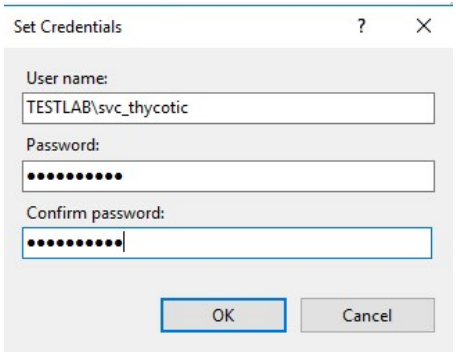
1. Open **Internet Information Services Manager** (inetmgr).
2. Under your local server, right-click **Application Pools** and select **Add Application Pool...**
3. **Add** three new application pools.
    1. **TMS** - Under General > Start Mode select **OnDemand (Default)**.
    2. **TMSAgent** - Under General > Start Mode select **AlwaysRunning**.
    3. **TMSWorker** - Under General > Start Mode select **AlwaysRunning**.



4. For each of the 3 app pools (TMS, TMSAgent, and TMSWorker),
    1. right-click on each app pool,
    2. select **Advanced Settings...**
    3. then the **Identity** box in the "Process Model" section,
    4. click the three dots on the right of the box.



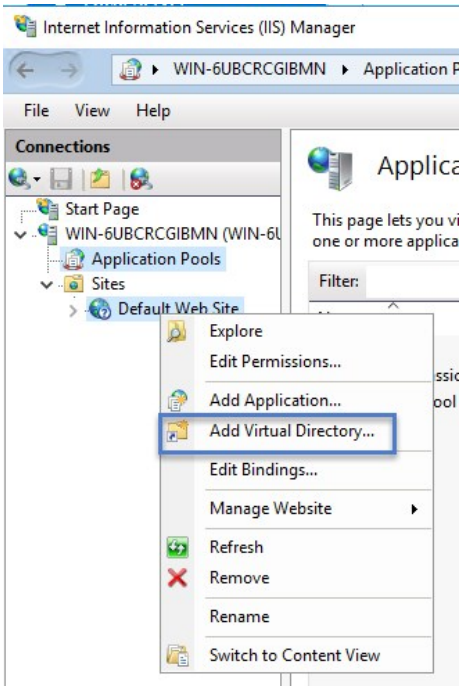
    5. Select the **Custom Account** radio button,
    6. Click **Set**, enter your service account's name and password.



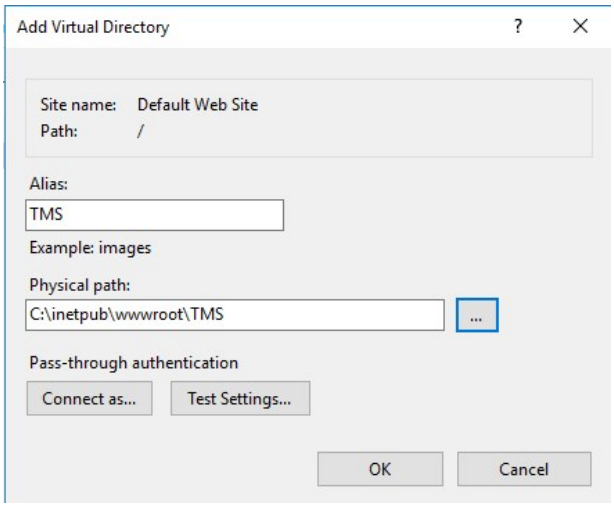
    7. Click **OK**.

Converting the Application Pools

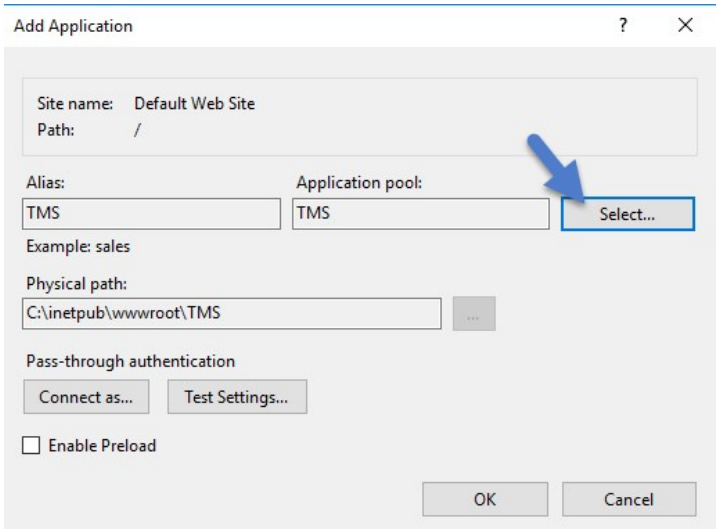
1. Right-click **Default Web Site** in IIS and select **Add Virtual Directory…**.



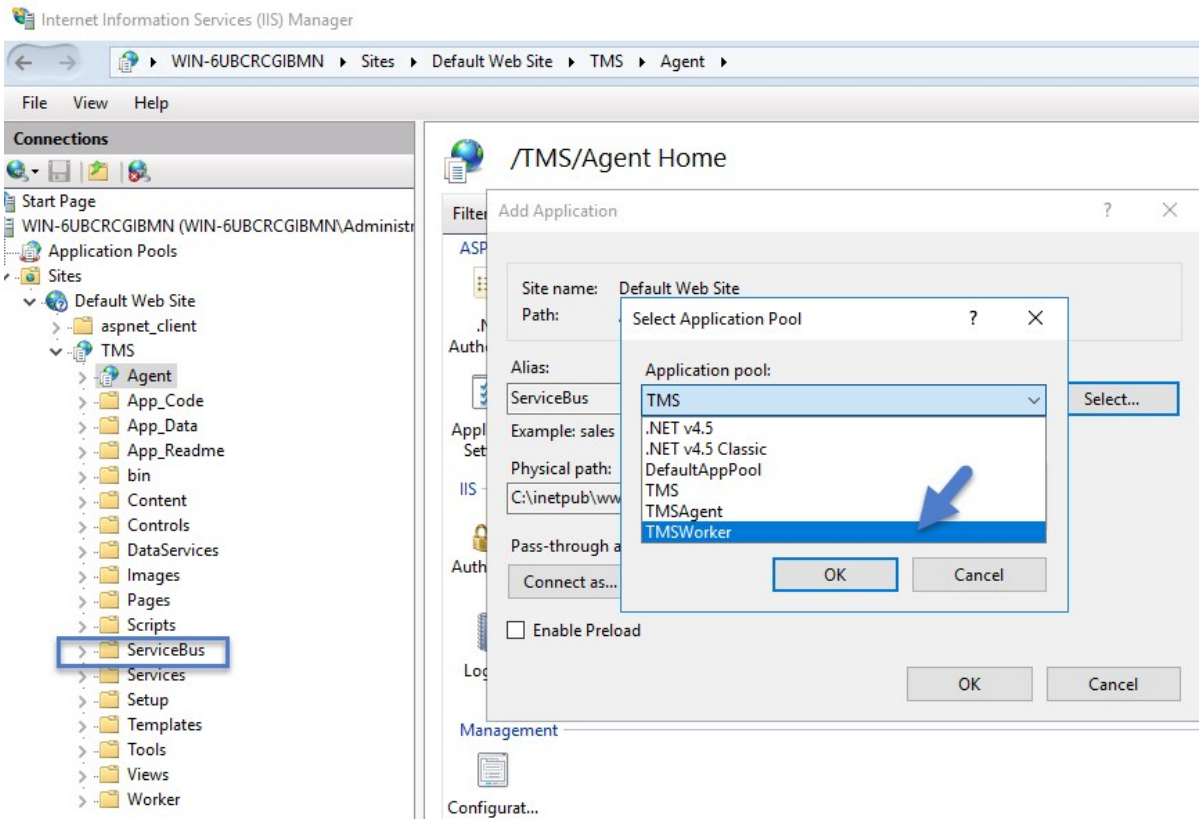
2. Select an alias for your Privilege Manager . The alias is what will be appended to the website. For instance, "TMS" in http://myserver/TMS.
3. Next, enter the physical directory where you unzipped Privilege Manager (i.e., 'C:\inetpub\wwwroot\TMS').



4. Click **OK**.
5. In the tree, right-click the new virtual directory and select **Convert to Application**.
    1. Set the **Application Pool** to the one called **TMS**.
    2. Click **OK**.



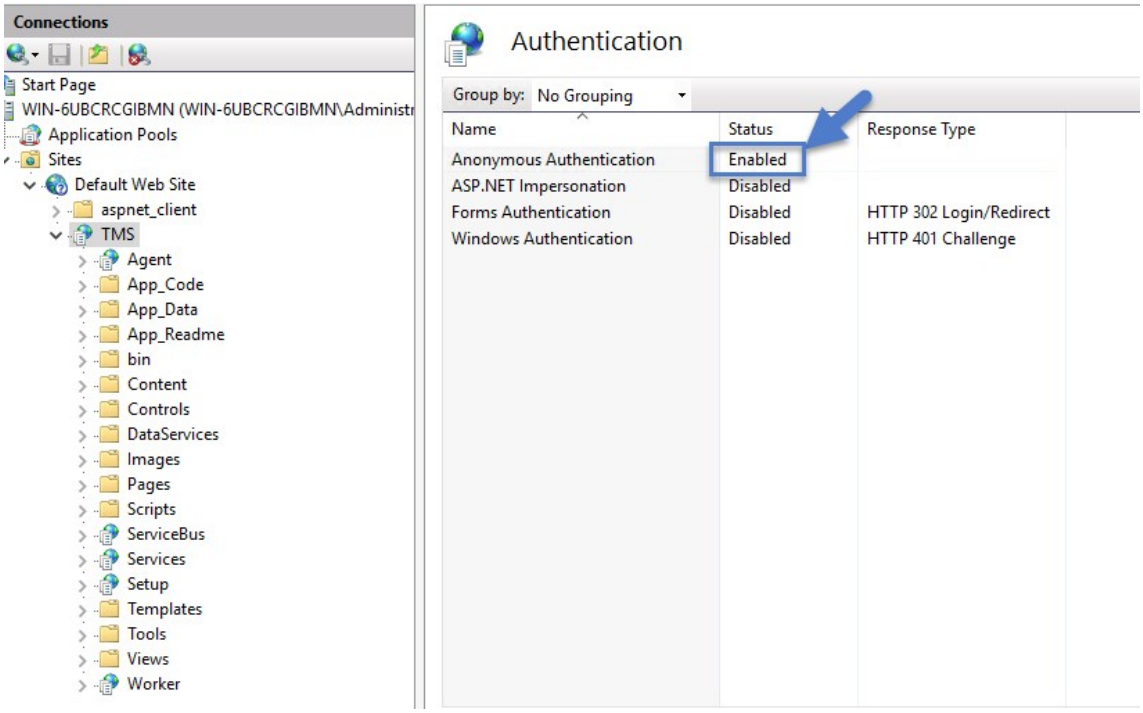
6. In the virtual directory expand the new **TMS** site,
    1. right click the **Agent** Subfolder and select **Convert to Application**.
    2. Set the **Application Pool** to the one called **TMSAgent**, click **OK**.
7. In the virtual directory navigate to the **ServiceBus** Subfolder.
    1. Right-click and select **Convert to Application**.
    2. Set the **Application Pool** to the one called **TMSWorker** you created earlier, click **OK**.



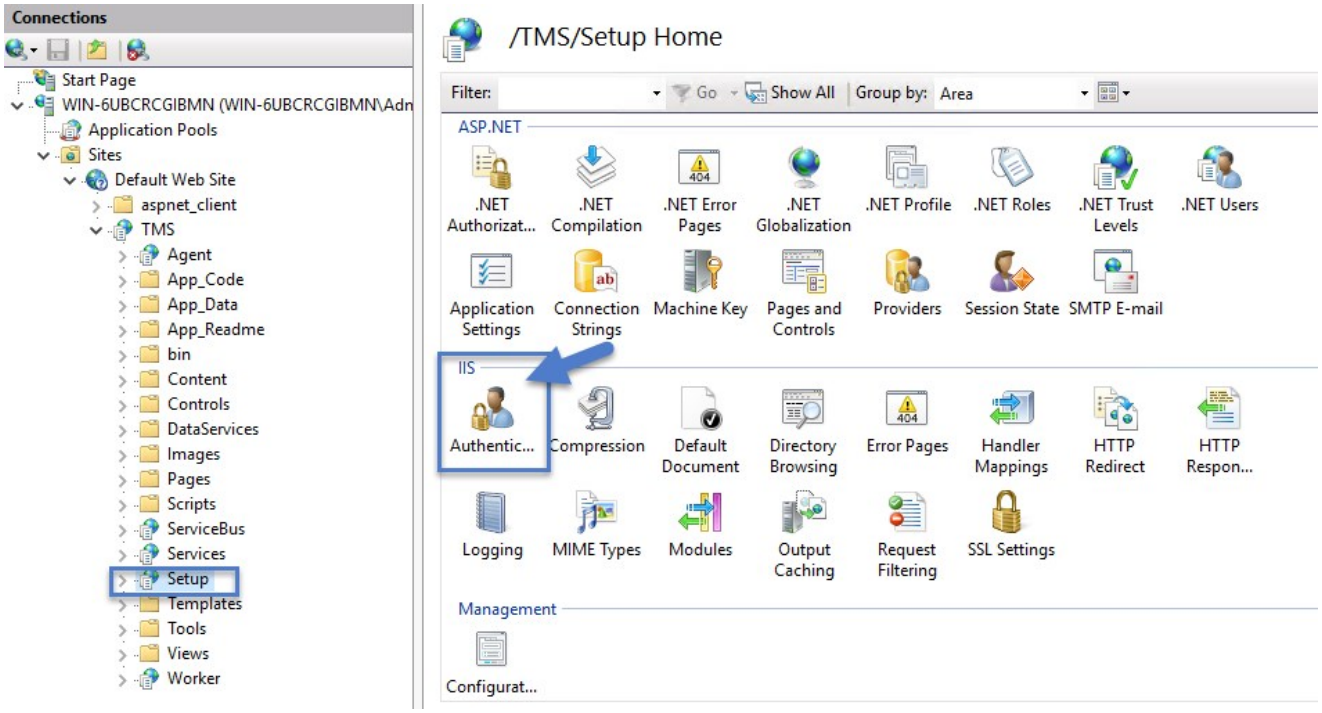
8. In the virtual directory select the **Services** Subfolder,
    1. Right-click the new virtual directory and select **Convert to Application**.
    2. Ensure that the **Application Pool** is set to the one called **TMS**, click **OK**.
9. In the virtual directory select the **Setup** Subfolder,
    1. Right-click the new virtual directory and select **Convert to Application**.
    2. Ensure that the **Application Pool** is set to the one called **TMS**, click **OK**.
10. In the virtual directory select the **Worker** Subfolder,
    1. Right-click the new virtual directory and select **Convert to Application**.
    2. Set the **Application Pool** to the one called **TMSWorker**, click **OK**.

Setting Authentication

1. Select your **TMS** virtual directory.
    1. Double-click **Authentication** in the features pane.
    2. Make sure that only **Anonymous Authentication** is set to **Enabled**. Everything else should be set to disabled.

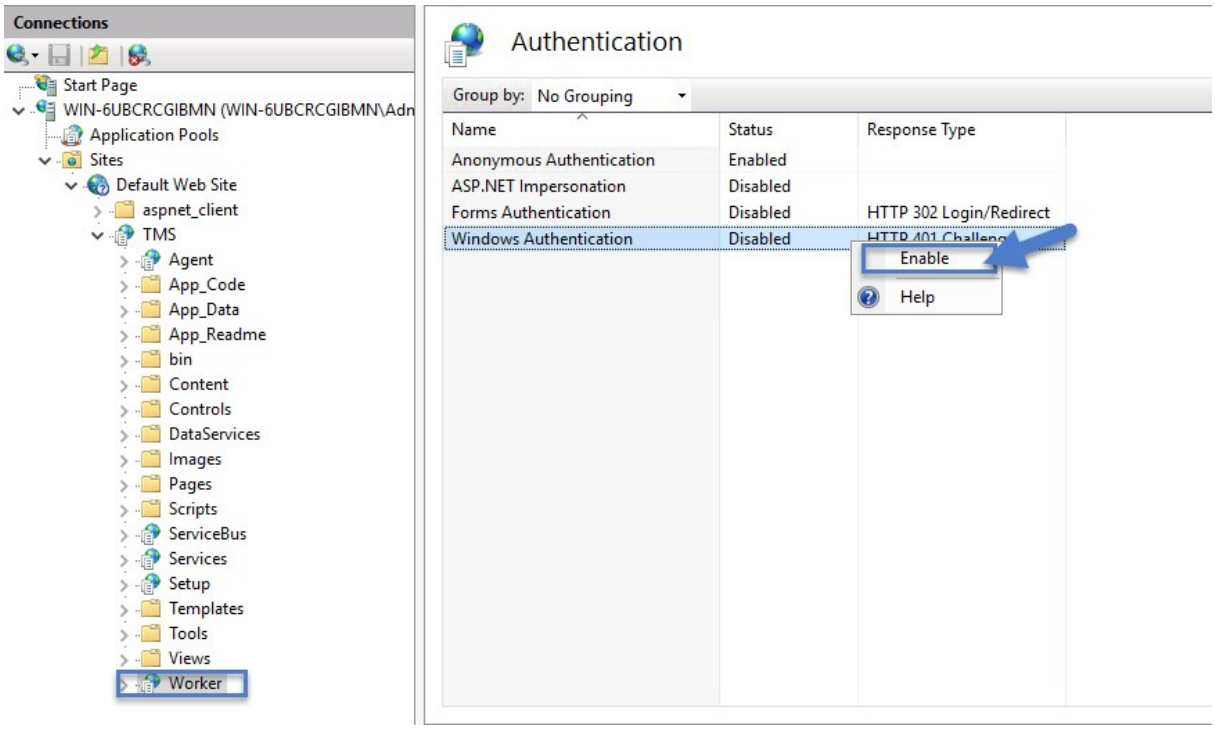


2. Select the **Setup** directory.
    1. Double click **Authentication** in the features pane.
    2. Make sure that **Anonymous Authentication** and **Windows Authentication** are both set to **Enabled** and everything else is disabled.



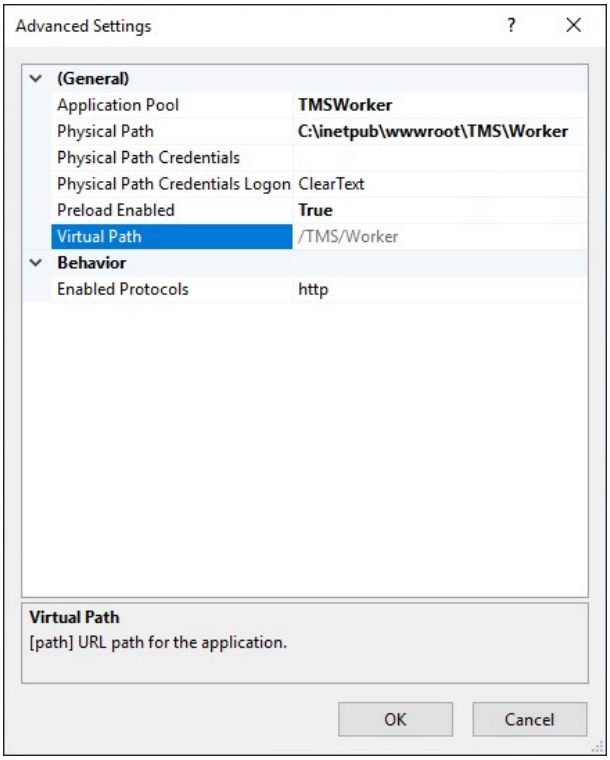
3. Select the **Worker**.

1. Double-click **Authentication** in the features pane and make sure that **Anonymous Authentication** and **Windows Authentication** are both set to **Enabled** and everything else is disabled.



Setting the Preload Status

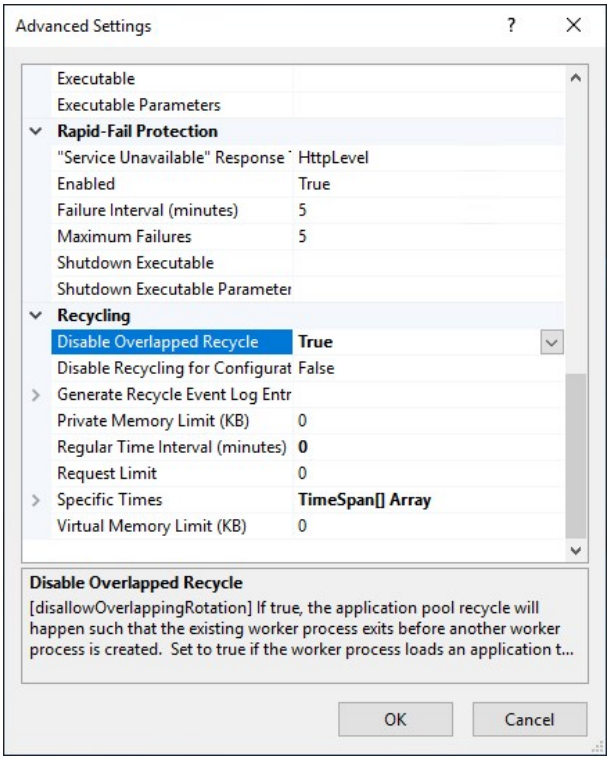
1. Right-click the **TMSWorker** application.
2. Select **Advanced** settings.
3. Under **General** > **Preload Enabled**, change the setting to **True**.



HA Deployment

Perform the following IIS changes as part of the best practices setup.

1. In IIS, right-click the **TMSWorker** application pool.
2. Select **Advanced Settings**.
3. Under the **Recycling** section, change **Disable Overlapped Recycle** to **True**.



4. Navigate to C:\inetpub\wwwroot\TMS\Worker\Web.config.
5. Locate the **system.webServer** section and add:

```
<applicationInitialization doAppInitAfterRestart="true">
 <add initializationPage="/status/ping" />
</applicationInitialization>
```

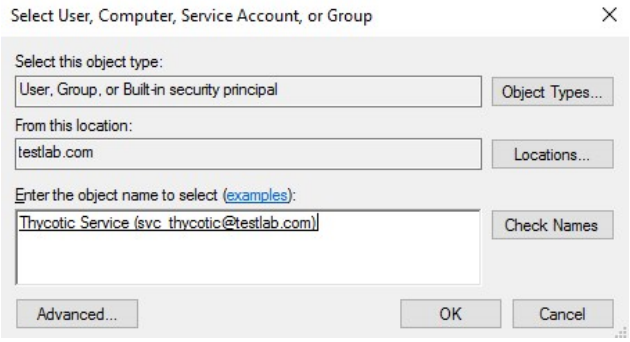
The section should now look like this:

```
<system.webServer>
 <applicationInitialization doAppInitAfterRestart="true">
  <add initializationPage="/status/ping" />
 </applicationInitialization>
 <modules runAllManagedModulesForAllRequests="true">
  <remove name="UrlRoutingModule"/>
  <add name="UrlRoutingModule" type="System.Web.Routing.UrlRoutingModule, System.Web, Version=4.0.0.0, Culture=neutral,
PublicKeyToken=b03f5f7f11d50a3a"/>
  </modules>
  <handlers>
  <add name="UrlRoutingHandler" preCondition="integratedMode" verb="*" path="UrlRouting.axd"
   type="System.Web.HttpForbiddenHandler, System.Web, Version=2.0.0.0, Culture=neutral, PublicKeyToken=b03f5f7f11d50a3a"/>
  </handlers>
  <security>
      <authorization>
         <add accessType="Allow" users="?"/>
      </authorization>
   </security>
</system.webServer>
```

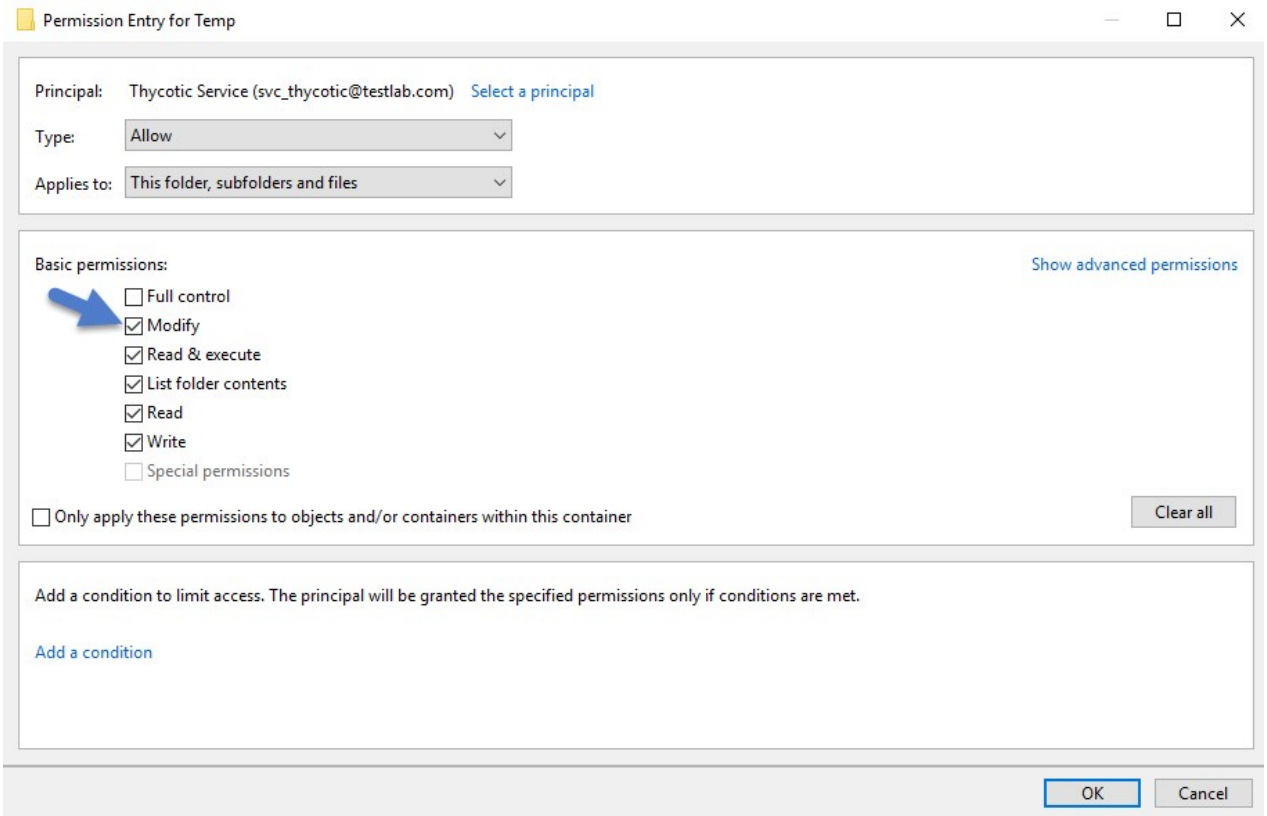
Folder Permissions to C:\Windows\Temp

1. Navigate to the **C:\Windows\TEMP** folder.
2. Right-click the folder and select Properties | Security | Advanced.
3. Click **Add** and **Select a principal**.

4. Ensure the domain machine is listed as the **Location** and type the service account into the **Enter the object name to select** field.
5. Click **Check Names** and **Enter network credentials** for accessing your domain machine.



6. Click **OK**.
7. Under Basic permissions, select the **Modify** checkbox.

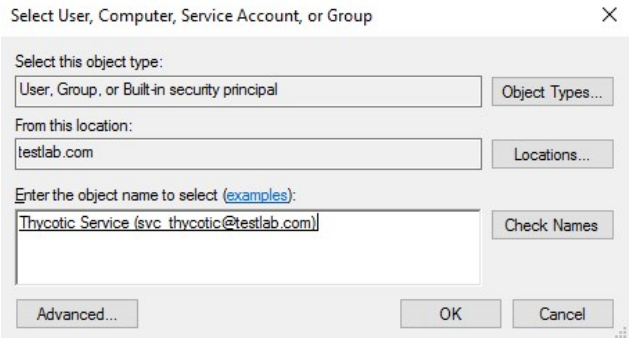


8. Verify your service account has **Modify**, **Read & execute**, **List folder contents**, **Read**, and **Write** permissions for the **C:\Windows\TEMP** folder.
9. Click **OK**, then **Apply**.

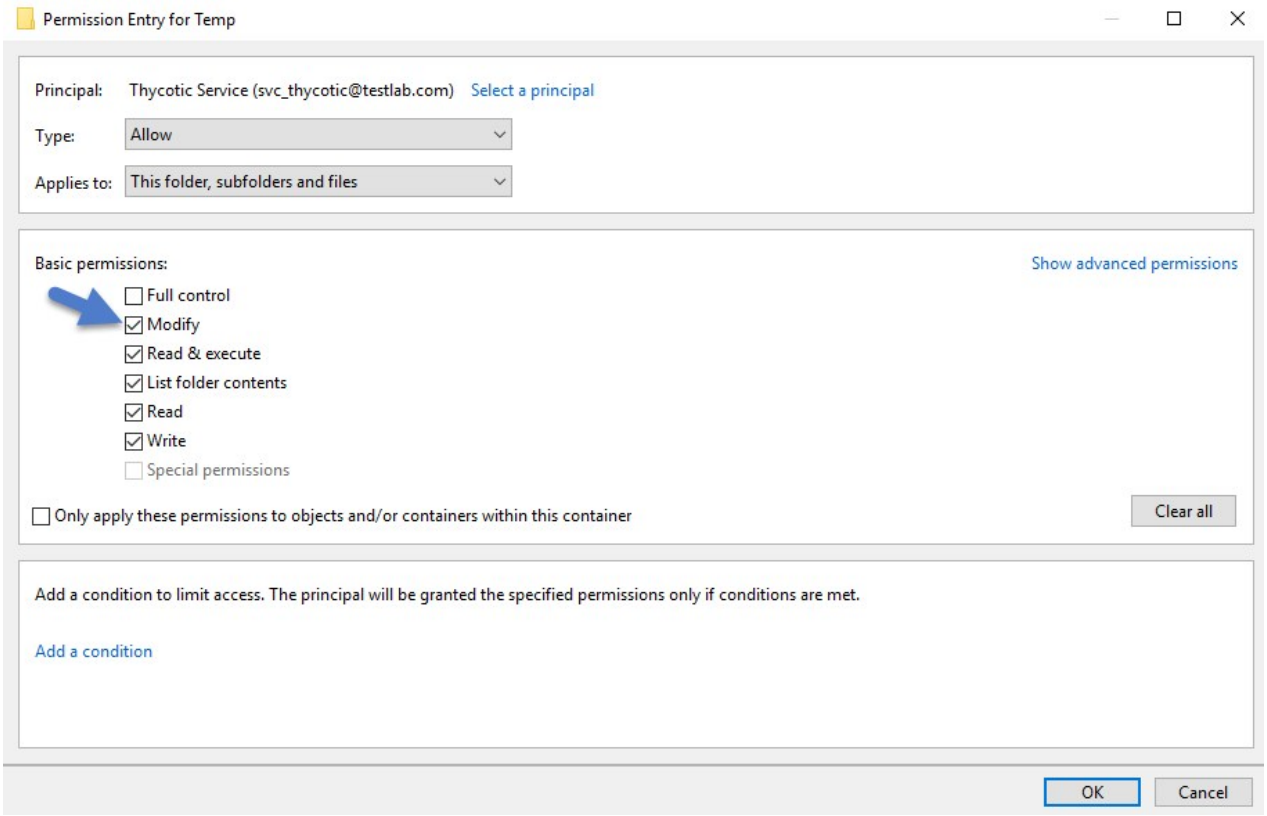
Folder Permissions to the Privilege Manager Application Folder

1. Navigate to the Privilege Manager application folder at **C:\inetpub\wwwroot\TMS**.

2. Right-click the folder and select Properties | Security | Advanced.
3. Select **principal**.
4. Ensure the domain machine is listed as the **Location** and type the service account into the **Enter the object name to select** field.
5. Click **Check Names** and **Enter network credentials** for accessing your domain machine.



6. Click **OK**.
7. Under Basic permissions, select the **Modify** checkbox.



8. Verify your service account has **Modify**, **Read & execute**, **List folder contents**, **Read**, and **Write** permissions for the **C:\Windows\TEMP** folder.
9. Click **OK**, then **Apply**.

Note: The application folder only needs **Write** and **Modify** permissions during the installation or during an upgrade. You can remove these once the installation process is complete.

Upgrade Prep

Following these changes, ensure that

- all server nodes are up and running without error conditions.
- all server nodes have access to the NuGet repository.
- for upgrades login into one of the server nodes directly and not the clustered shared address.
- Initiate the upgrade, the selected node will deploy all upgrade components to all other nodes within the cluster.

Permission to Certificate Private Key (prior to 10.6 only)

Note: This is only required for Privilege Manager prior to release 10.6.

TMS requires **Read** access to the private key of the certificate being used for the HTTPS binding. To set this:

1. Open **mmc.exe** as an administrator.
2. Add the certificate manager snap-in choosing to manage certificates for the computer account (**File | Add/Remove Snap-in…**)
3. Click **Certificates**,
4. then **Add | Computer account | Next | Local computer | Finish | OK**.
5. Find the certificate that the HTTPS binding for your site is using.
6. Right-click on the certificate and select **All Tasks | Manage Private Keys**.
7. Grant **Read** access to the identity account for your application pools.

If the "Manage Private Keys" option is not available, you can set this permission in PowerShell.

Verify Login on Secondary Node

1. Navigate to Privilege Manager, ex: **http://localhost/TMS**. You should be able to authenticate to Privilege Manager.
2. After logging in, all policies and all data accessible on the primary node should be accessible on the secondary node.

Re-encrypt ConnectionStrings.config

1. On the **primary node**, run the following command to re-encrypt the connectionStrings.config file:

   ```
   C:\Windows\Microsoft.NET\Framework64\v4.0.30319\aspnet_regiis.exe -pe "connectionStrings" -app "/Tms"
   ```

2. On the **secondary node**, run the same command to re-encrypt the connectionStrings.config file:

   ```
   C:\Windows\Microsoft.NET\Framework64\v4.0.30319\aspnet_regiis.exe -pe "connectionStrings" -app "/Tms"
   ```

Privilege Manager has now successfully been clustered. A load balancer, GTM, VIP, etc. can be used to manage the traffic. The settings to configure this will be handled on the side of this infrastructure piece and is beyond the scope of this document. Contact Delinea's Professional Services team if additional consultation is required.

Delinea requires that **sticky sessions** are enabled on the load balancer to prevent a user from bouncing between servers on each request of a single session.

On-premises Privilege Manager instances need to use an Azure Service Bus for internet connected clients. The Azure Service Bus is a subscription service that external agents can connect to and use to communicate with an internal Privilege Manager Server (TMS) instance.

> **Note**: Cloud customers don't need to use the Internet Connected Clients set-up, because their clients can already connect to the internet-based cloud instance.

With Privilege Manager 10.7 and up, TLS 1.2 is supported.

This page is broken up into three sections:

- Azure Service Bus Queue Configuration
- Setting up the Service Bus as a Foreign System in Privilege Manager
- Configuring the Agents to use the Service Bus (if this is a new agent installation, the Agents can be pointed directly at the Service Bus namespace URL)

Azure Service Bus Queue Configuration

Delinea requires a Service Bus relay for remote communication. For this a Service Bus Queue needs to be created, follow the procedure as outlined by Microsoft here in Quickstart: Use Azure portal to create a Service Bus queue.

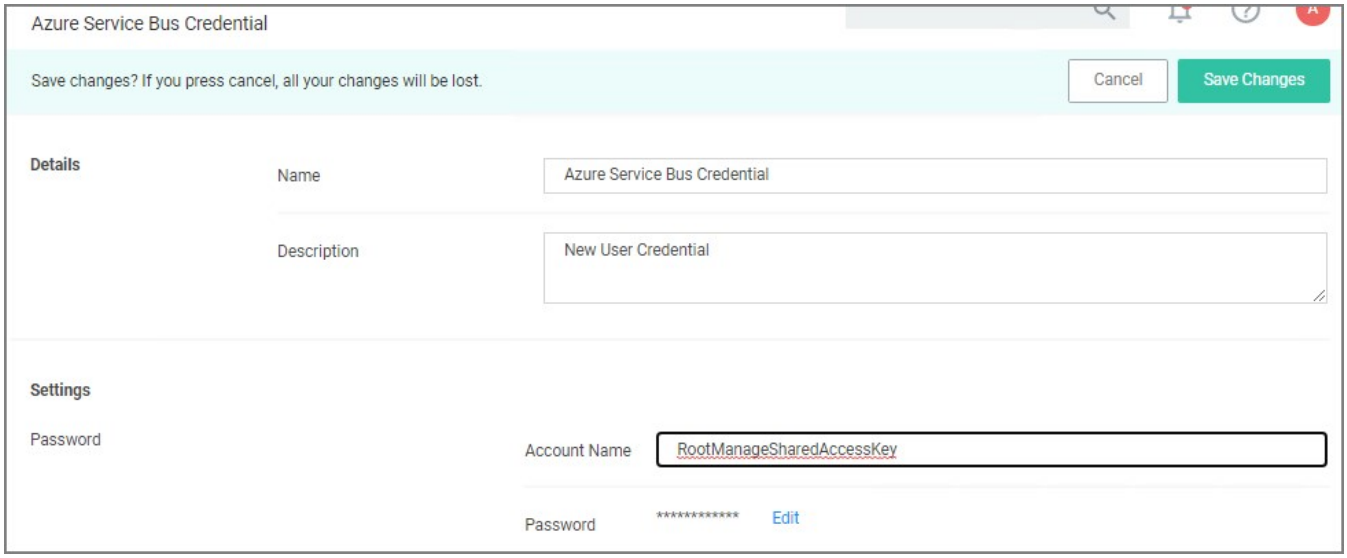
1. In the Azure Service Bus portal go to the **Shared access policies** page.
2. Find the policy called **RootManageSharedAccessKey**. If you don't have one yet, create one by that name and select the **Manage** option and save it.
3. On the **RootManageSharedAccessKey** policy you can see the **Primary Key** field. Make note of where this is. We have use it in a step down below.
4. Next, navigate to the **Queues** page and create a new queue.
5. Do not check any of the options, using the defaults is fine. Take note of the queue name you gave it.

Next you will need to follow the instructions below to create a credential for the Service Bus and add the Service Bus as a foreign system in Privilege Manager .

Setting up the Service Bus Foreign System

The Azure Service Bus requires a Foreign Systems configuration in Privilege Manager . To configure a Service Bus instance with a custom URL and credentials follow these steps:

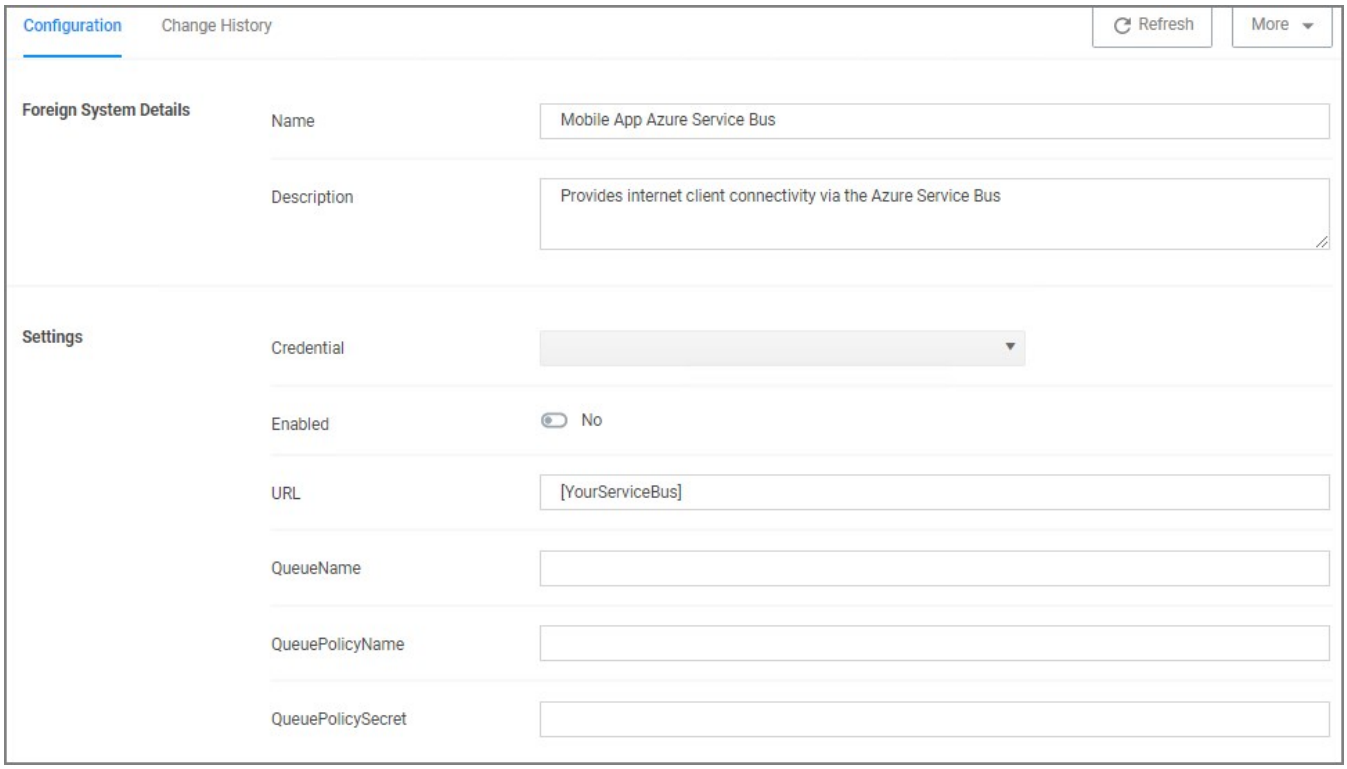
1. In the Delinea Privilege Manager Console, click **Admin | Configuration**.
2. Click the **User Credentials** tab.
3. Click **Create**.
    1. Enter a **Name**, for example *Azure Service Bus Credential*.



2. Set the Account name to **RootManageSharedAccessKey**.
3. Set the Password to the value of the **Primary Key** obtained during the Azure Service Bus configuration procedure **step 3** under "Azure Service Bus Queue Configuration" above.
4. Click **Save Changes**.

4. Navigate to **Admin | Configuration** and select the **Foreign Systems** tab.
5. Click the **Azure Service Bus** option.
6. Click **Create**.

1. Enter a **Name**, for example *Privilege Manager Azure Service Bus*.
2. Set the **ServiceBus Name** to the namespace of the Service Bus from the Azure Portal. To find this value, open the Azure Portal, locate the Service Bus that is being used for this integration (refer to the intro above). Go to the **Properties** page and locate the Name property (generally, this is the same name as the instance you just located in the list of Service Bus instances).
3. Set the **Enabled** switch to **No** for now.
4. Click **Create**.



5. Set the credential to the credential created in step 3 of this procedure (*Azure Service Bus Credential*).
6. Leave the URL field as is (and ignore the fact that it's called URL – it's just the Service Bus name).
7. Make sure the URI matches the first part of the namespace created in Azure.
8. Set the QueueName to the same queue name created above in **step 4** under "Azure Service Bus Queue Configuration".
9. Set the Queue Policy Name to **RootManageSharedAccessKey**.
10. Set the Queue Policy Secret to the **Primary Key** as obtained in **step 3** under "Azure Service Bus Queue Configuration" above.
11. Click **Save Changes**.
12. Enable the Service Bus, set Enabled switch to **Yes**.

7. To verify everything is working correctly, open your browser and point it to the ServiceBus worker service:
   - **On-Premises**: https://yourinstance.privilegemanager.com/Tms/ServiceBus/WorkerService.svc

   Wait for the page to respond.

Configuring Agents to Use the Service Bus

When setting the URL for Agent communication, Internet connected clients need to use the Service Bus URL created above.

> **Note**: For new installations, the agents can be set up to communicate with the service bus during the initial installation process when the **TMSURL** and installation codes are provided, refer to Bundled Install.

Using regedit

1. Open the Registry Editor (**regedit**).
2. Navigate to **HKEY_LOCAL_MACHINE | SOFTWARE | Policies | Arellia | AMS**.
3. Right click **BaseUrl** and select **Modify**.
4. In the **Edit String** dialog box, change the **BaseURL** to your Privilege Manager (TMS) Address based on the **Azure Service Bus Queue** configuration, for example https://[your company].servicebus.windows.net/, which in our example is https://testing.servicebus.windows.net/
5. Close the Registry Editor.
6. Restart the Agent service.

Using PowerShell

To modify the TMS address via PowerShell, run this command as Administrator:

```
C:\Program Files\Thycotic\Powershell\Arellia.Agent\SetAmsServer.ps1
```

The script will then ask you to type in the fully qualified domain name of the server, enter the **Azure Service Bus Queue URL**, for example https://[your company].servicebus.windows.net/, which in our example is https://testing.servicebus.windows.net/.

If you are moving/migrating Privilege Manager to a new machine and have installed IIS and .NET Framework as described in the Installation Guide on the new machine, you do not need to run the installer, simply follow the steps below:

1. Copy the folder that holds your Privilege Manager instance to the new computer.
2. Shut down the old web site and recycle its application pool as it is running background threads which are accessing the database.
3. Set up the new folder in Internet Information Server (IIS) as a virtual directory/application under the Default Web Site or as a separate Website (refer to the Advanced Installation section of the Installation Guide for detailed instructions).
4. Browse to your TMS URL database connection page e.g. https://<YOUR_URL_INSTANCE>/TMS/setup/database/connectdatabase (for Arellia this URL would be slightly different e.g. https://<YOUR_URL_INSTANCE>/ams/setup/database/connectdatabase) and you will see a page to enter your database connection details.
5. Activate the licenses for the new server by going to the Licenses page.
6. If you are using certs, remember to set them on your new IIS, then browse to Privilege Manager over HTTPS and re-enable force HTTPS if this was set on the original machine.
7. Re-enable DPAPI if this was disabled in the earlier step.

   Note: If you're migrating the Privilege Manager web application from Windows Server 2008 to 2012 or newer AND your Privilege Manager is below version 8.5, make sure that:

   - .Net extensions 3.5 and ASP.Net 3.5 when adding the IIS role on the new server.
   - Change the Privilege Manager Application Pool to 2.0 and recycle the application pool after running the installer.

Steps to Setup Secondary Node with both Secret Server & Privilege Manager

If you are migrating a combined install environment, also perform these steps:

1. Check web-auth.config and web-cookie.config (in Secret Server web folder) to make sure forceSSL = 'false'.
2. Confirm app pool account and IIS settings (confirm if SS and TMS are virtual directories, confirm IIS auth settings).
3. Disable DPAPI.
4. Disable Force SSL.
5. Decrypt connectionStrings.config on primary web server:

   ```
   C:\Windows\Microsoft.NET\Framework64\v4.0.30319\aspnet_regiis.exe -pd "connectionStrings" -app "/Tms"
   ```

6. Copy files to secondary.
7. Download current installer to secondary server.
8. Run installer to **confirm and fix pre-requisites only**. **DO NOT install the application** with the installer.
9. Make sure Secret Server and TMS web folders from primary are in C:\inetpub\wwwroot (or a similar location).
10. Create 4 app pools: SecretServer, TMS, TMSAgent, and TMSWorker (same as set for primary node).
11. Assign service account to all 4 app pools (same as set for primary node).
12. If the Secret Server and TMS directories do not appear in IIS Manager, add the virual directories (same as set for primary).
13. Convert to Applications

1. Right-click on **Secret Server > Convert to Application**, make sure SecretServer app pool is assigned.
2. Right-click on **TMS > Convert to Application**, make sure TMS app pool is used.
3. Under TMS, right-click on **Agent > Convert to Application**, make sure TMSAgent app pool is used.
4. Under TMS, right-click on **ServiceBus > Convert to Application**, make sure TMSWorker app pool is used.
5. Under TMS, right-click on **Services > Convert to Application**, make sure TMS app pool is used.
6. Under TMS, right-click on **Setup > Convert to Application**, make sure TMS app pool is used.
7. Under TMS, right-click on **Worker > Convert to Application**, make sure TMSWorker app pool is used.

14. Run the ASP.NET IIS Registration Tool:
    1. Change the directory to your .NET framework installation directory using the "cd" command (i.e.: C:\Windows\Microsoft.NET\Framework\v4.0.30319 or C:\Windows\Microsoft.NET\Framework64\v4.0.30319).
    2. Type in .\aspnet_regiis -ga <domain name>\<user name> and press enter.
15. Assign folder permissions:
    1. Give your service account "modify" access to C:\Windows\TEMP.
    2. Give your service account "modify" access to the Secret Server web folder.
    3. Give your service account "modify" access to the TMS web folder.
16. Set IIS authentications (set to same as primary, depending on IWA and other settings), typical example:
    - Secret Server (Anonymous & Forms, except winauthwebservices = Forms & Windows; see TMS notes)
17. Install certfification on new server, if not already done.
18. Give the 3 TMS App Pools read access on the PrivateKey of the cert.
    1. MMC snap-in > Certificates.
    2. Find the certificate (most like in personal store).
    3. Right-click > All Tasks > Manage PrivateKey.
    4. Choose local computer name from location and format is iis apppool\tms, iis apppool\tmsagent, iis apppool\tmsworker.
19. Login in to Secret Server.
20. Activate licenses.
21. Re-enabled Force SSL.
22. Re-enabled DPAPI on all web nodes.
23. Re-encrypt connectionStrings.config on all web nodes:

    C:\Windows\Microsoft.NET\Framework64\v4.0.30319\aspnet_regiis.exe -pe "connectionStrings" -app "/Tms"

If you have a combined installation of Privilege Manager and Secret Server and wish to move/migrate the MS SQL Server databases, follow the steps below for the case that applies to you:

- **Case I**: Keeping all data in the current database: Backup the existing databases and restore them to the new SQL Server using the instructions below:
    - For Privilege Manager : see Moving the Privilege Manager DB topic below.
    - For Secret Server: Moving the Microsoft SQL Server Database to Another Machine.

  If you have successfully performed the backup and restore (per the applicable instructions above), your site will be connected to the new database.

- **Case II**: Abandoning all data and starting fresh:

    1. In Privilege Manager , go to https://<SERVERNAME>/Tms/Setup/Database/ConnectDatabase
    2. Provide the new database connection and click **OK**
    3. Install desired Delinea products like Privilege Manager and/or Secret Server.

Moving the Privilege Manager DB

Step 1: Backup and Restore the Database

1. Stop the TMS site (Ams site for Arellia) in Internet Information Server (IIS) to prevent any changes to the database
2. Stop the TMS, TMSAgent, and TMSWorker application pools (Ams and AmsWorker application pools for Arellia).
3. Back up the database by accessing SQL Management Studio and right-clicking on the database to select Tasks › Back Up.
4. Select a file location for the .bak file. Transfer this file to the new server.
5. On the new database server, through SQL Management Studio, restore the database backup (the .bak file).
6. Create and/or grant access to the account that will be accessing the database (see TMS Installation Guide for account creation instructions)

We recommend taking the old database offline.

Step 2: Connect to the new database (configure the database connection details)

1. Restart TMS website.
2. Check that the TMS, TMSAgent, and TMSWorker application pools are running.
3. Browse to your TMS URL database connection page e.g. https://<YOUR_URL_INSTANCE>/TMS/setup/database/connectdatabase (for Arellia this URL would be slightly different e.g. https://<YOUR_URL_INSTANCE>/ams/setup/database/connectdatabase) and you will see a page to enter your new database connection details.

   > **Note**: This can only be accessed locally via the server running the Privilege Manager instance or via active RDP session into the Privilege Manager server.

4. Enter your new SQL Server and the account information.
5. Click Next and the site will connect to the new database.

Your site is now pointing to the new database.

If also migrating to new web servers or doing a reinstallation, copy the tmsEncryption.config file(s) to the new web servers(s). The file is located on the web server at the root of the TMS web site and should be copied to the same place on the destination server(s): \inetpub\wwwroot\TMS This file is only applicable if current servers are on version 10.5 or higher. (refer to Item Encryption)

To roll back changes and restore the original database, simply start back at Step 1 and move the database back to the original database server.

Delinea

To remove the Privilege Manager instance from a combined install instance with Secret Server perform the following steps:

Remove the Privilege Manager to Secret Server Connection

1. Open SQL Management Studio and connect to the SQL Server that hosts the Secret Server database.
2. Expand Databases.
3. Right-click on the Secret Server database and choose **New Query**.
4. Copy the following query and paste into the *New Query* screen.

```
DELETE from [dbo].tbAppClient WHERE AppClientId = 1
UPDATE [dbo].tbConfiguration set TmsRootUrl = null
```

5. Click **Execute** to run the query.

Remove the TMS Site

1. Open IIS Manager and go to Application Pools.
2. Stop the TMS, TMSAgent and TMSWorker pools.
3. Expand Sites and find and expand the TMS site.
4. Right-click the following site applications and choose Remove:
    - TMS,
    - Agent,
    - ServiceBus,
    - Services,
    - Setup, and
    - Worker.
5. Navigate back to Application Pools and remove the TMS, TMSAgent and TMSWorker pools.

Remove the TMS Site Files and Registry Key

1. On the IIS Server, open File Explorer.
2. Find the TMS site folder (default: `c:\inetpub\wwwroot\TMS`)
3. Delete the TMS site folder.
4. Navigate to the Registry and remove the Registry key: `HKLM\Software\Thycotic\Tms`

Note: Thycotic Management Server, or "TMS", is an umbrella term for our base application layer that Privilege Manager runs on top of. For this guide you only need to recognize that "Tms" is programmed into your Privilege Manager URL string for configuration purposes.

Many organizations as a best practice restrict their Privilege Manager web server from inbound and outbound internet traffic. However this can cause a functional issue as agents not connected to the corporate network would not be able to reach the server to receive policy updates or submit event feedback.

To resolve this functional issue while maintaining security Delinea supports agent connections through a Reverse Proxy which can live in the DMZ. The proxy will filter connection requests and only forward those from the agents allowing communication while significantly reducing the potential attack surface. Proxies can be configured using many different networking tools and in this document we will show how to do so with Windows Application Request Routing in IIS.

In this setup, only the endpoint agent needs to be accessible via HTTPS. It is important to note that the certificate being used for HTTPS communication should be the same certificate that is installed on your Privilege Manager web server.

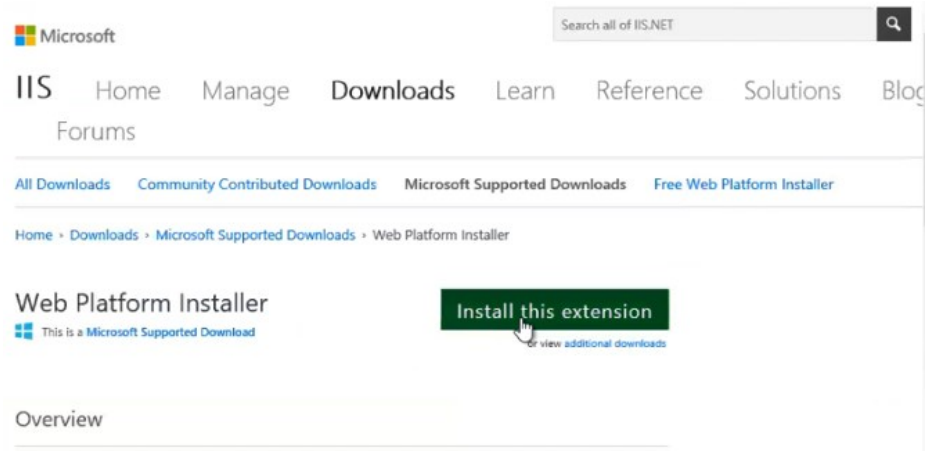
System Specifications

These are the minimum system specifications for a server that is used as a reverse proxy:

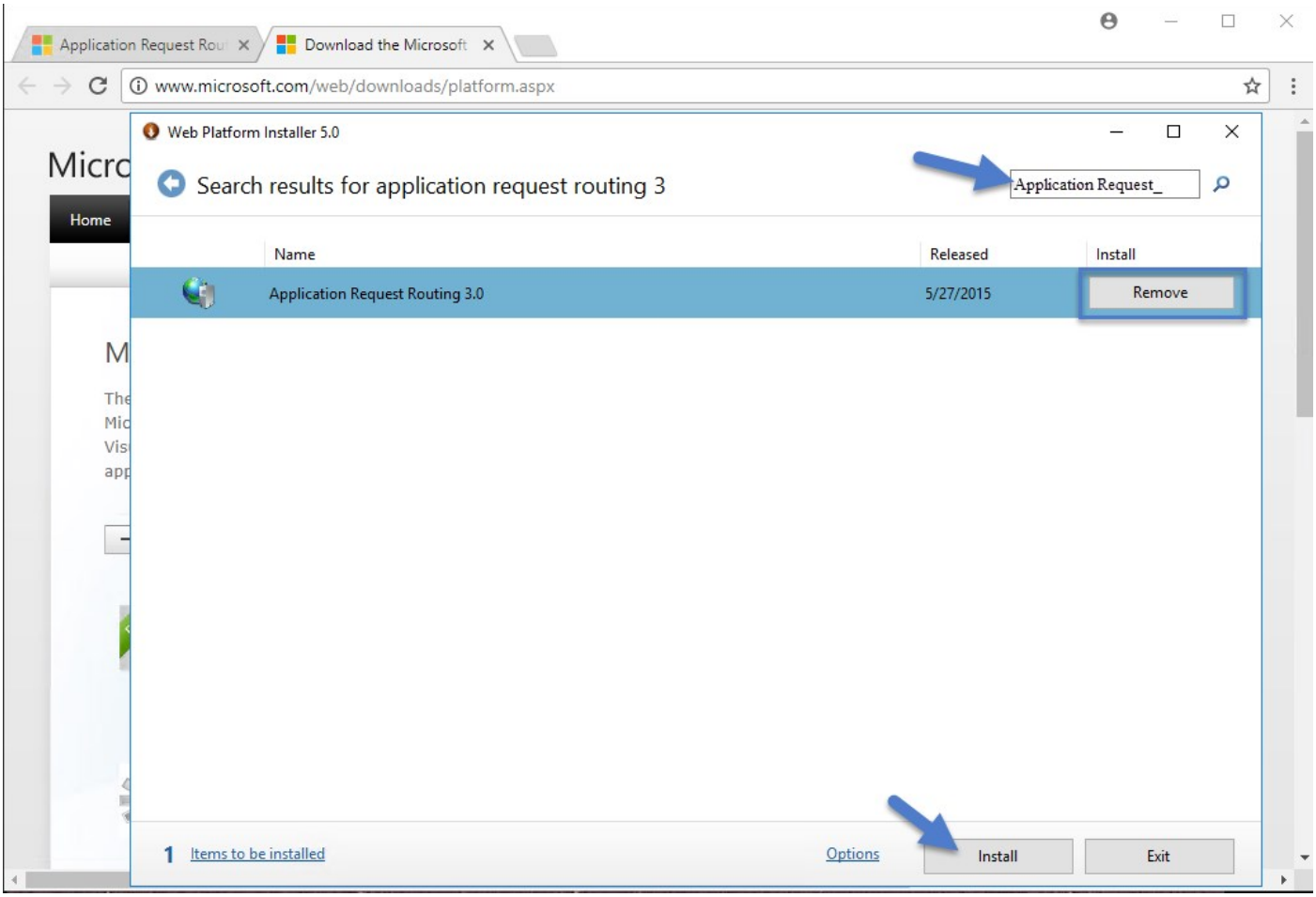
- 2 Cores
- 4 GB RAM
- 40 GB hard drive

Server Configuration

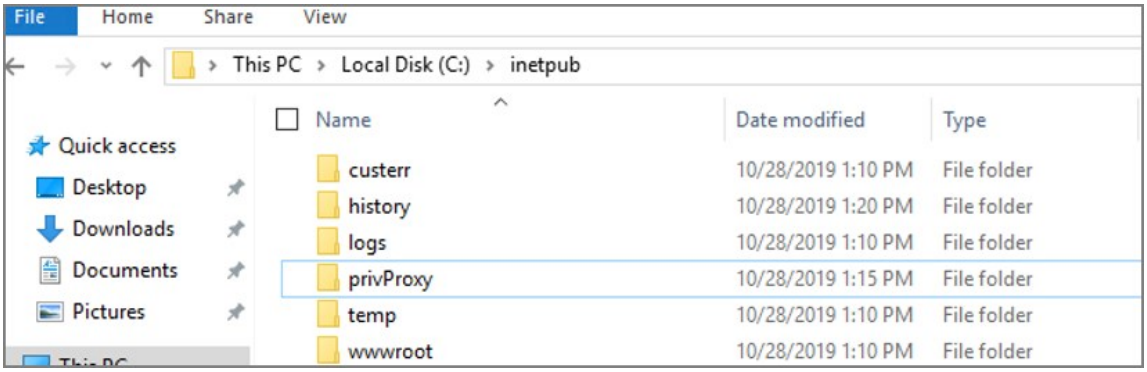
1. Setup a new server or modify an existing server to be in the DMZ.
2. Download Web Platform Installer on your new Reverse Proxy server. This allows you to add updated IIS extensions from Microsoft.



3. In the search bar of the Web Platform Installer, enter **Application Request Routing #3.0**. Click **Add** and then **Install**. You will need to accept the license terms.



4. Create an empty folder under C:\inetpub\ named **privProxy**.



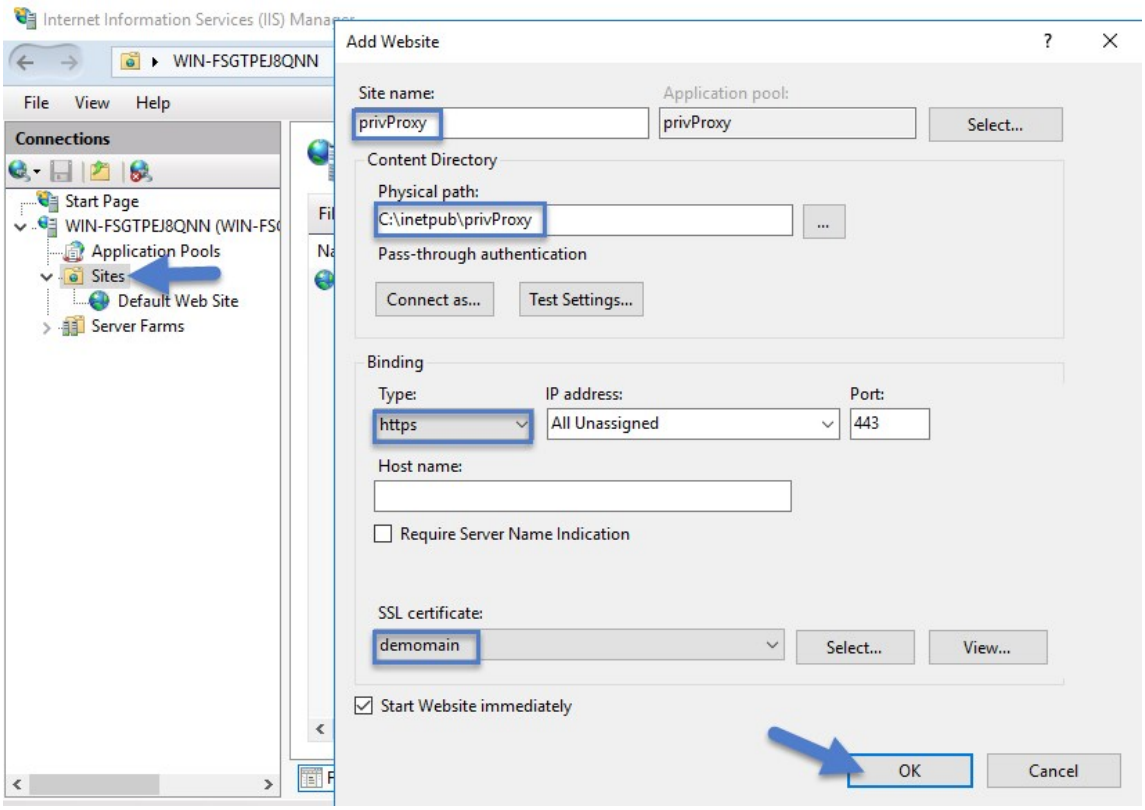
5. Open IIS Manager and right-click **Sites** and select **Add Web Site**.
6. Name the site **privProxy** and set the **Physical Path** to the folder under C:\inetpub\ named **privProxy**.
7. Change the binding to **HTTPS**.
8. Use the default port of 443.

Note: If there are other applications using port 443 on this server, such as Symantec CEM, then set the privProxy to use a

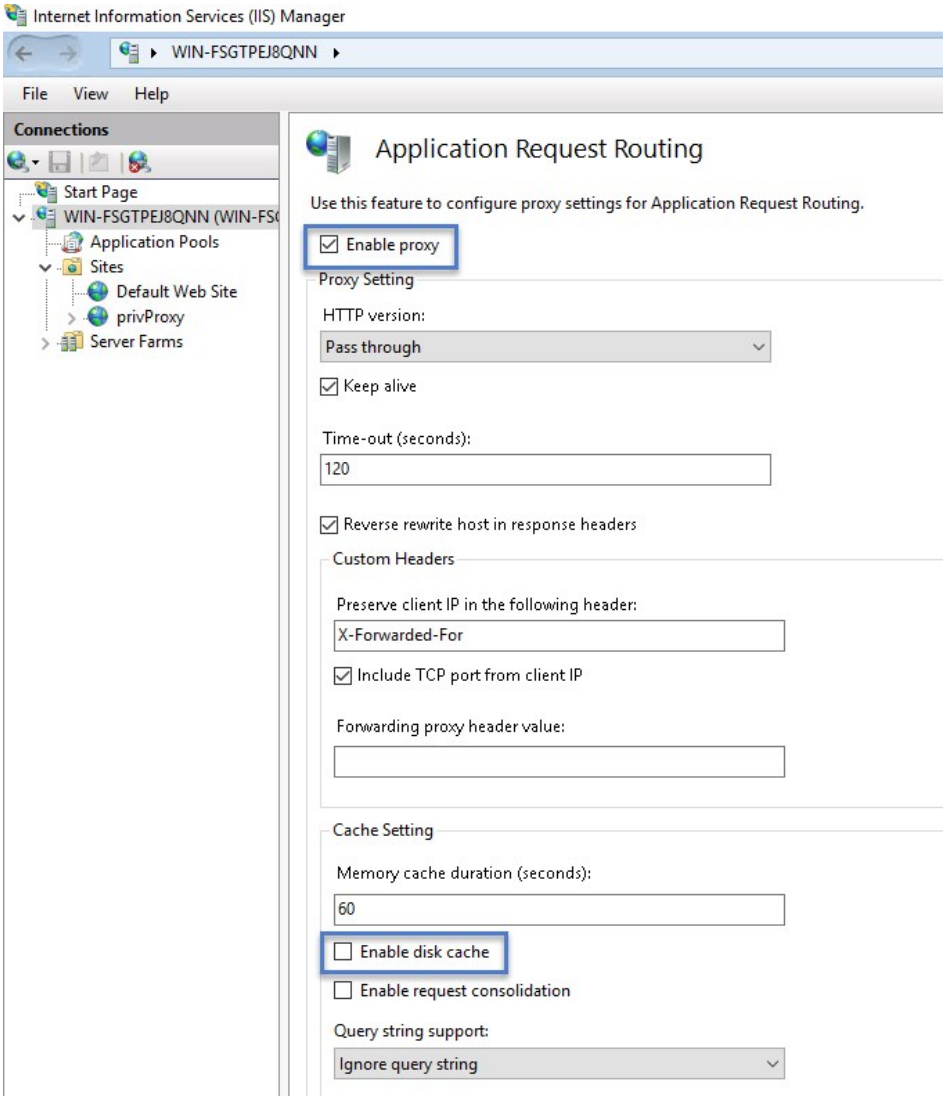
different port, such as **45593**. If you use a port other than 443, make sure to add the appropriate firewall rule.

9. Select a certificate for the binding to use and Click **OK**. The certificate being used for HTTPS communication should be the same certificate that is installed on your Privilege Manager web server. Follow these instructions to install a certificate on your Reverse Proxy server.

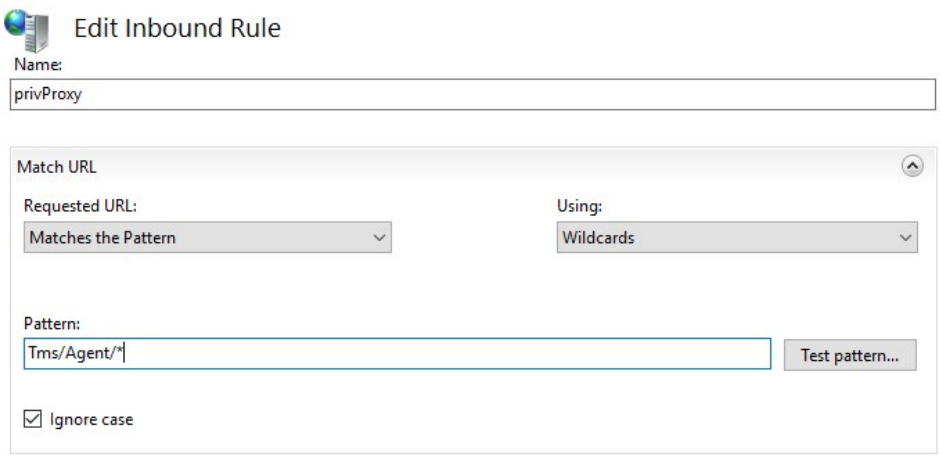
   Note: The certificate used for HTTPS binding on the Web App Server needs to be exported then imported into the Root and Intermediate certificate stores on the Proxy Server.



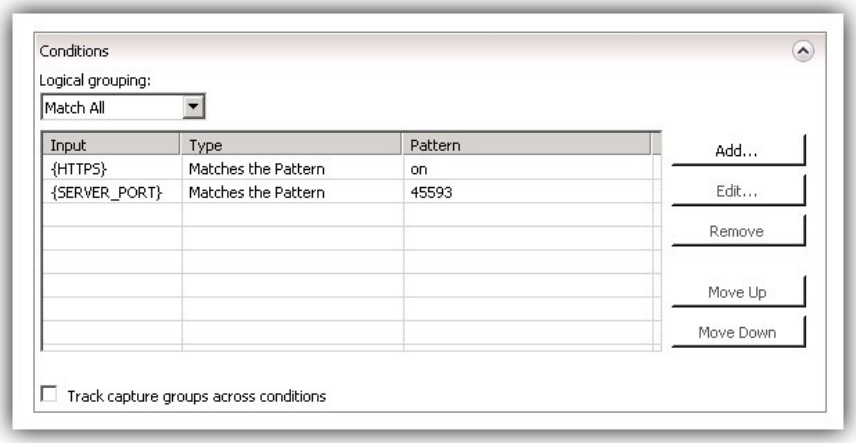
10. In the IIS Manager's left hand navigation pane select the server node.
11. Open **Application Request Routing** from the middle pane.
12. Select **Server Proxy Settings** in the right hand actions pane
13. In the **Application Request Routing** pane, select **Enable Proxy** and deselect **Enable disk cache**.



14. Select **Apply** under the actions pane and then select **URL Rewrite**.
15. Select **Add Rule(s)** on the actions pane and then under **Inbound rules** select **Blank rule**.
16. Name the rule **privProxy**.
17. In the Edit Inbound Rule window, do the following steps:
    1. Under **Match URL** from the **Requested URL** menu, choose **Matches the Pattern**.
    2. From the **Using** menu, choose **Wildcards**.
    3. From the **Pattern** menu, choose **Tms/Agent/***.
    4. Select **Ignore case**.



18. Under **Conditions**, from the **Logical Grouping** menu, choose **Match All**.
19. Add a condition for **: Matches the pattern: on**.
20. (optional) You can also add a condition and set it to the port number configured above.



21. Under **Action**, from the **Action Type** menu, choose **Rewrite**.
22. Under **Action Properties**, in the **Rewrite URL** field, type the URL https://server.example.com/Tms/Agent/{R:1}
23. Select **Append query string**.
24. Select **Stop processing of subsequent rules**.

25. In the **Actions** pane, click **Apply**.

Now your internet-connected agents will be able to communicate with the Privilege Manager server through https://external-name.domain.com:45593/Tms/ or https://external-name.server.com/Tms/, depending on the port you chose.

Testing Agent URLs

To test registered agent URLs use the following, based on Privilege Manager version:

- /agent/agentregistration4.svc
- /agent/agentregistration3.svc
- /agent/agentregistration2.svc

For example using https://PrivilegeManagerAppServerName.DomainName/TMS/Agent/agentregistration4.svc at the agent agent point, should successfully return XML like the following:

```
▼<wsdl:definitions xmlns:wsdl="http://schemas.xmlsoap.org/wsdl/" xmlns:wsx="http://schemas.xmlsoap.org/ws/2004/09/mex" xmlns:i0="http://tempuri.org/"
 xmlns:wsu="http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-wssecurity-utility-1.0.xsd" xmlns:wsa10="http://www.w3.org/2005/08/addressing"
 xmlns:wsp="http://www.w3.org/ns/ws-policy" xmlns:wsap="http://schemas.xmlsoap.org/ws/2004/08/addressing/policy"
 xmlns:msc="http://schemas.microsoft.com/ws/2005/12/wsdl/contract" xmlns:soap12="http://schemas.xmlsoap.org/wsdl/soap12/"
 xmlns:wsa="http://schemas.xmlsoap.org/ws/2004/08/addressing" xmlns:wsam="http://www.w3.org/2007/05/addressing/metadata" xmlns:xsd="http://www.w3.org/2001/XMLSchema"
 xmlns:tns="http://arellia.com/services/Agent/" xmlns:soap="http://schemas.xmlsoap.org/wsdl/soap/" xmlns:wsaw="http://www.w3.org/2006/05/addressing/wsdl"
 xmlns:soapenc="http://schemas.xmlsoap.org/soap/encoding/" name="Thycotic.Tms.Services.Agent.AgentRegistration4" targetNamespace="http://arellia.com/services/Agent/">
  <wsdl:import namespace="http://tempuri.org/" location="https://localhost/TMS/Agent/AgentRegistration4.svc?wsdl=wsdl1"/>
  <wsdl:types/>
 ▼<wsdl:service name="Thycotic.Tms.Services.Agent.AgentRegistration4">
  ▼<wsdl:port name="CustomBinding_IAgentRegistration2" binding="i0:CustomBinding_IAgentRegistration2">
     <soap12:address location="https://localhost/TMS/Agent/AgentRegistration4.svc"/>
   ▼<wsa10:EndpointReference>
      <wsa10:Address>https://localhost/TMS/Agent/AgentRegistration4.svc</wsa10:Address>
     </wsa10:EndpointReference>
    </wsdl:port>
  ▼<wsdl:port name="CustomBinding_IAgentRegistration21" binding="i0:CustomBinding_IAgentRegistration21">
     <soap12:address location="http://win-e6gkpm7j7tf/TMS/Agent/AgentRegistration4.svc"/>
   ▼<wsa10:EndpointReference>
     ▼<wsa10:Address>
        http://test-system/TMS/Agent/AgentRegistration4.svc
      </wsa10:Address>
     </wsa10:EndpointReference>
    </wsdl:port>
  </wsdl:service>
</wsdl:definitions>
```

Note: Make sure that the server acting as the reverse proxy trusts and matches the certificate that the Privilege Manager web server

is using for its HTTPS binding. If the certificate is not trusted, the proxy will return a 500.21 Gateway error.

Agent Configuration

When you set up the Agent, make sure that the BaseURL has been set to the DMZ Server Address by following the steps in Setting the Privilege Manager Server Address.

Important: The Privilege Manager server is **not** able to push tasks to agents when the agents are not connected to the same network. However, the internet connected clients will automatically pull tasks from the server on a scheduled interval.

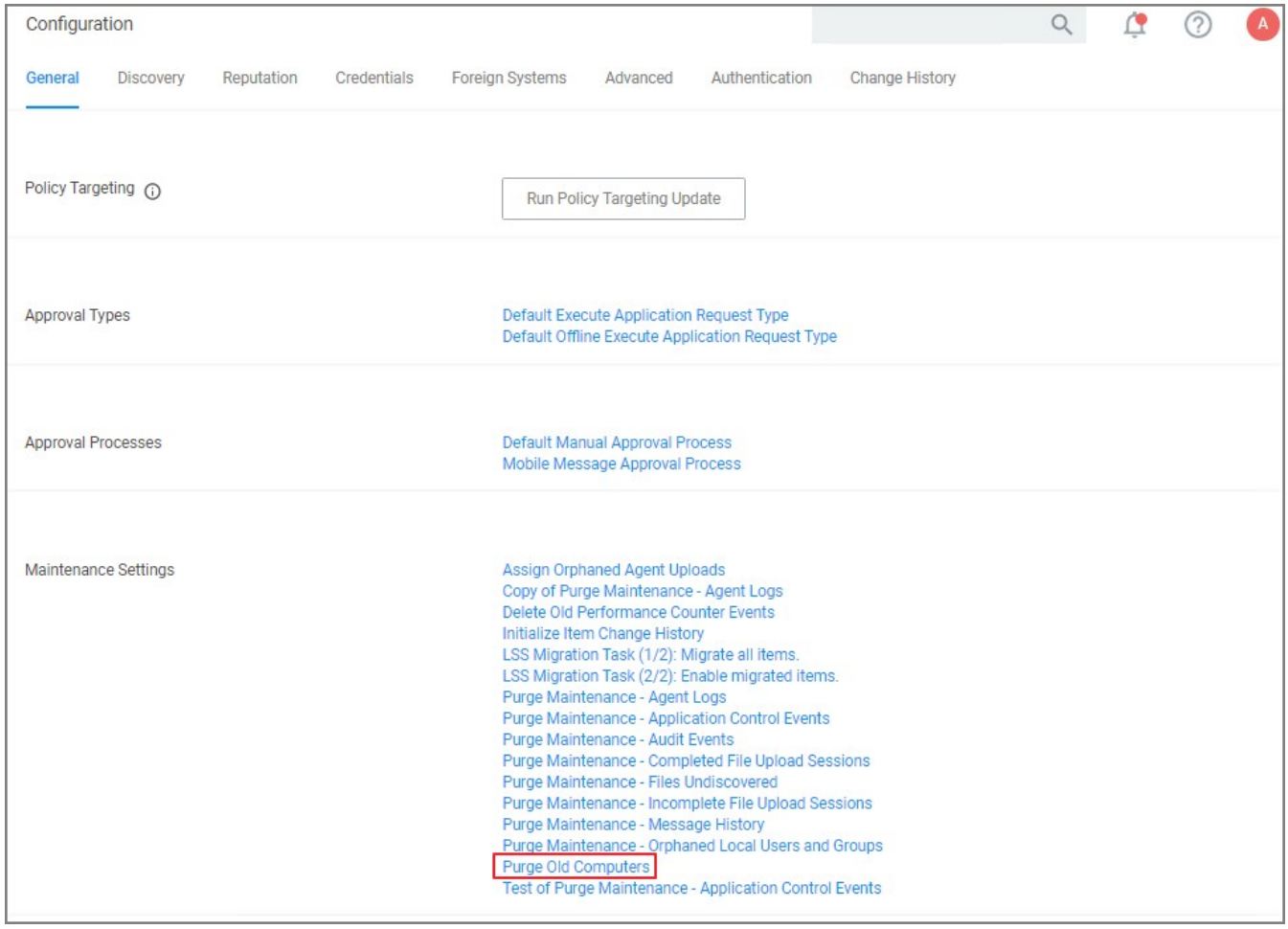
This topic is a collection of articles covering maintenance procedures for different areas of the Privilege Manager product.

The following topics are available:

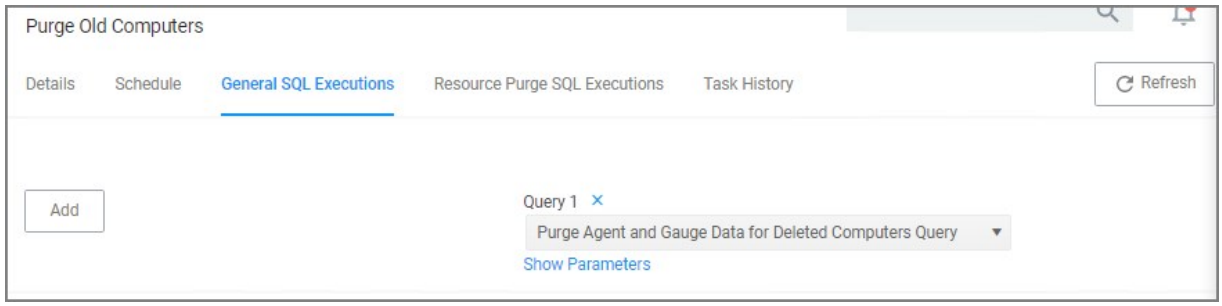
- How to Purge Computers
- How to Purge the Action Items Table
- Using the Remove Programs Utility
- Export Items
- Import Items
- Migrate Local Security Policies
- Remove Active Directory Domain
- Merge Duplicate Active Directory Domains

After using Privilege Manager for a certain amount of time, you may have computers that haven't communicated with the Privilege Manager server for an extended period of time. This can be done via the Purge Computers task, which can be found under Configuration on the General tab.

1. Navigate to **Admin | Configuration** and select the **General** tab.
2. Under the Maintenance Settings section click **Purge Old Computers**.

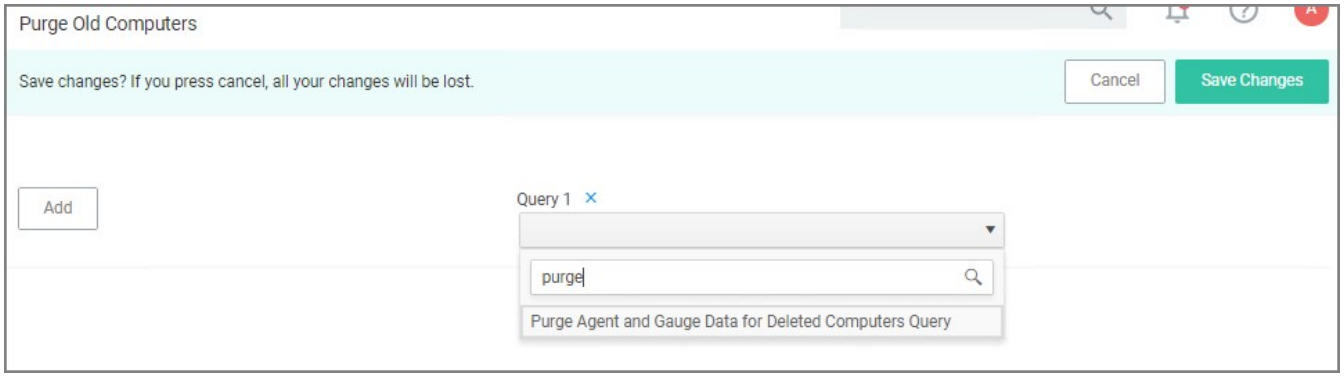


3. On the **Purge Old Computers** page select the **General SQL Executions** tab.
4. Verify that **Query 1** is set to **Purge Agent Gauge Data for Deleted Computers Query**.



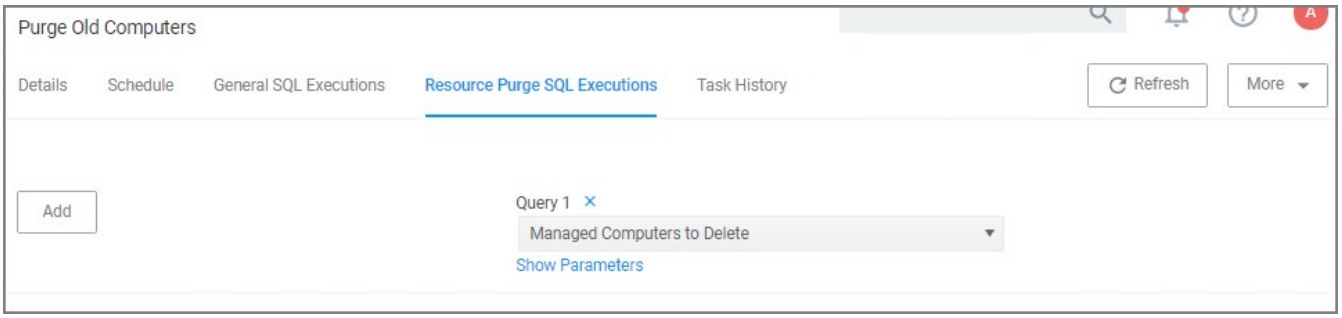
If for whatever reason that specific query is not listed or if you need to add other queries,

1. Click **Add** to either replace the query currently listed or add this query.
2. Start typing the query name *Purge Agent Gauge Data for Deleted Computers Query* and select the query from the results list.



3. Click **Save Changes**.

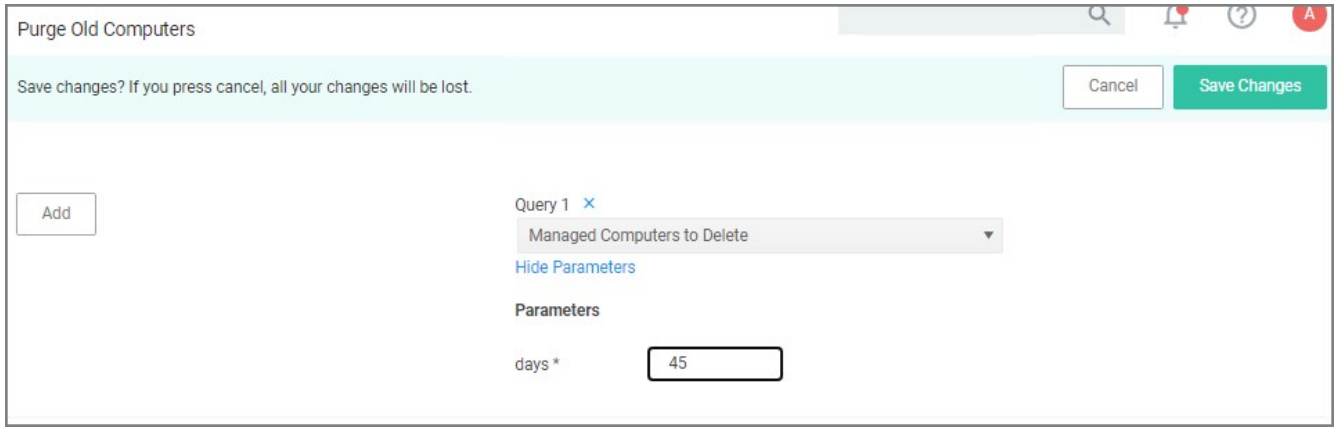
5. Select the Resource Purge SQL Executions tab.
6. Verify that **Query 1** is set to **Managed Computers to Delete**.



If that specific query is not listed,

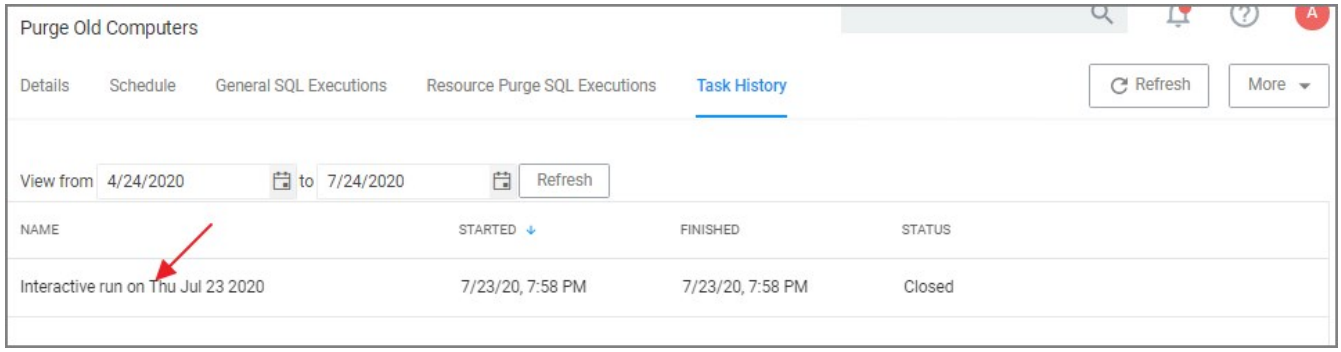
1. Click **Add** to either replace the query currently listed or add this query.
2. Start typing the query name *Managed Computers to Delete* and select the query from the results list.
3. Click **Save Changes**

7. Click **Show Parameters**. The Days field indicates after how many days a system is considered to be an old computer and thus should be purged. The default value is 90 days. If you want a different value, enter a number to change the number of days.



1. Click **Save Changes**.

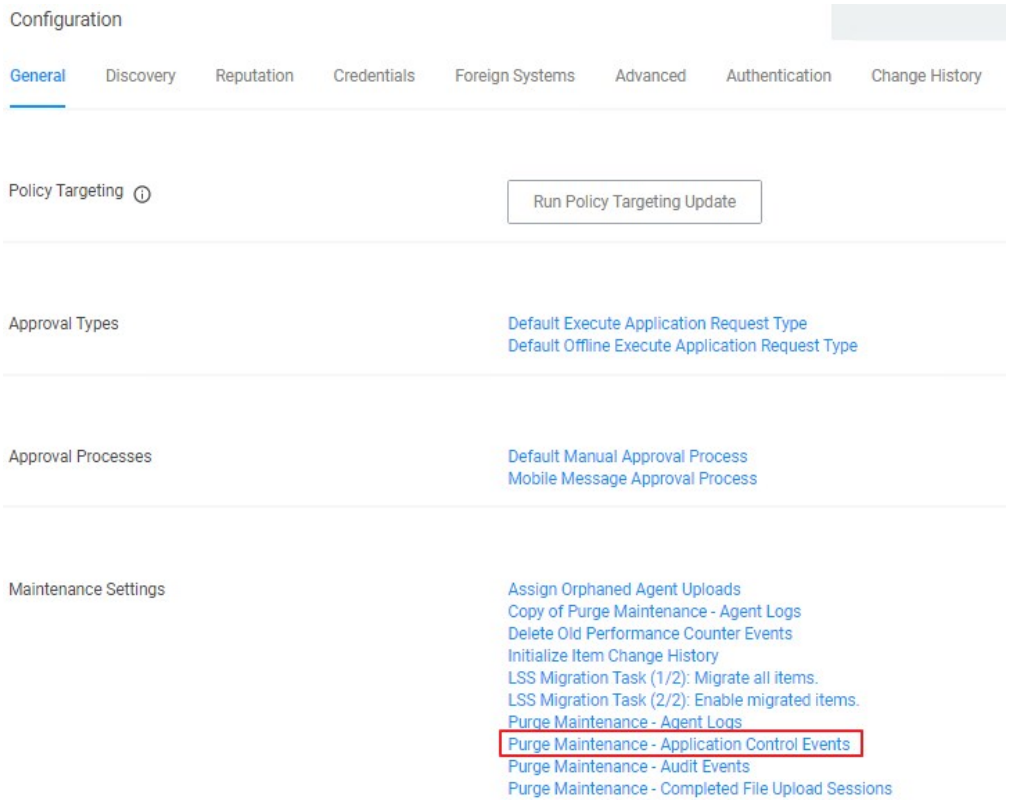
8. Click **More I Run Task**.
9. On the **Task Name** modal, you may change the task name and click **Run Task**.
10. On the **Task History** tab you can view the status of the running task by selecting the task from the table grid.



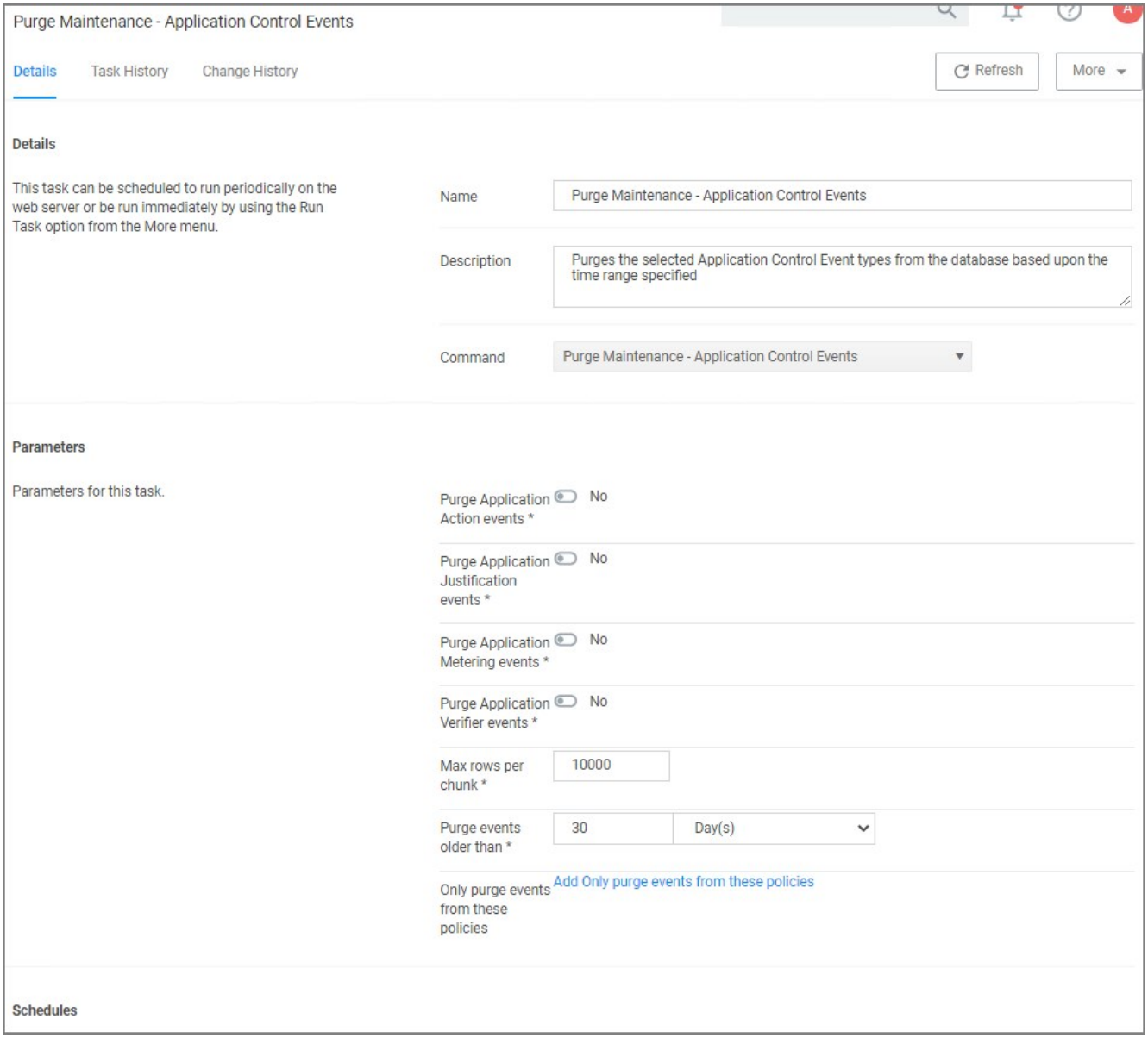
If the application action table frequently grows too large, you can use the steps below to create a scheduled event to purge old application action events.

Creating a Scheduled Event for Purging

1. Launch **Privilege Manager**.
2. Click **Admin | Configuration**.

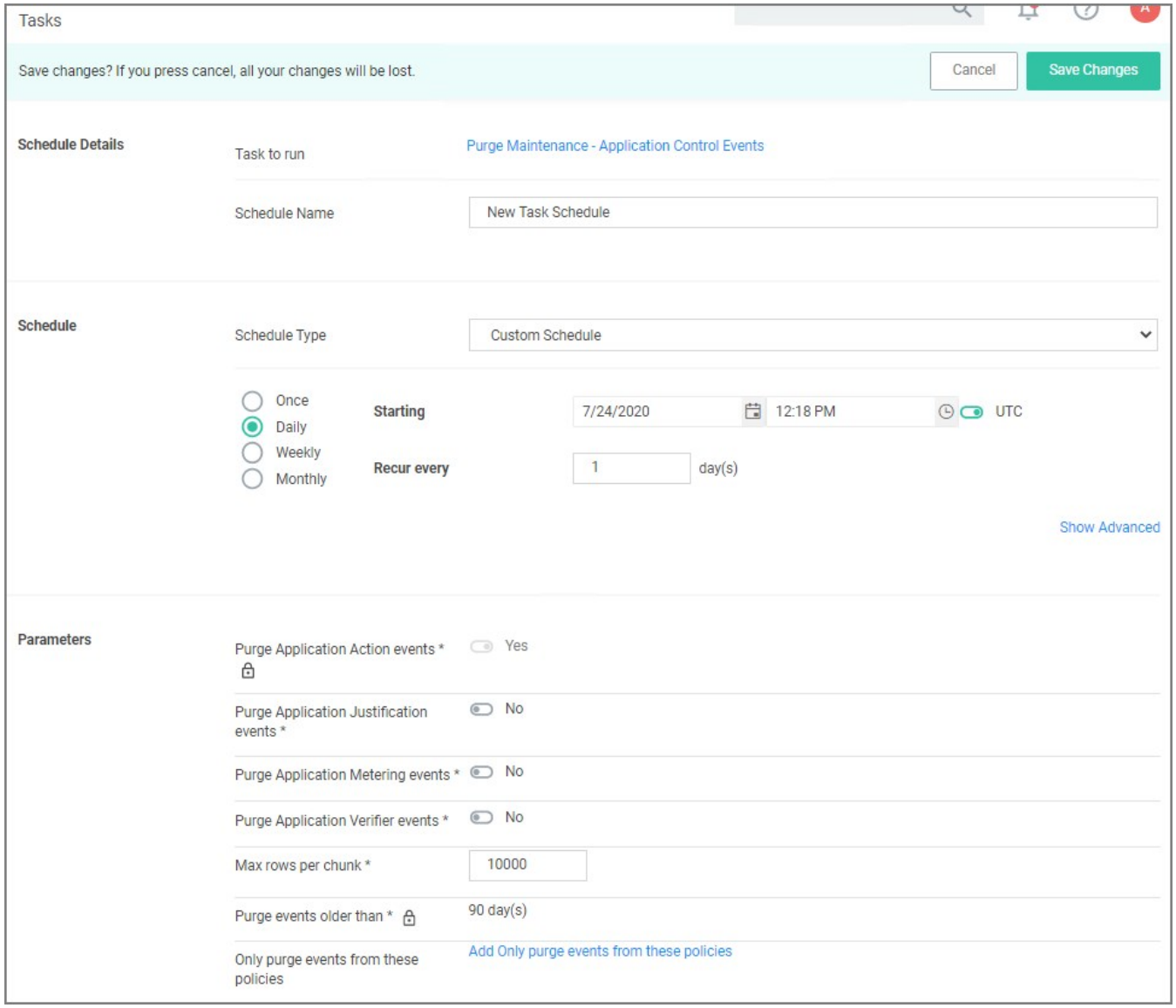


3. Click **Purge Maintenance – Application Control Events**.



4. Under **Parameters**,
    1. Set the **Purge Application Action events** switch to **Yes**.
    2. Under **Purge events older than** you may change the default of 30 days to another value.

        Note: You can also select the other events to purge as well.
5. Click **Save Changes**.
6. Under **Schedules** click **New Schedule**.



7. Enter in a **Schedule name** and the frequency you want the task to run. You can add other parameters here too. Parameters that were previously selected are locked at this point.
8. Click **Save Changes**.

The Remove Programs Utility provides a solution to the following problem that Windows standard users are not able to remove applications from the control panel because of Windows checking for admin rights. This utility is available for deployment via Privilege Manager .

Customers can use this utility in any of the following ways:

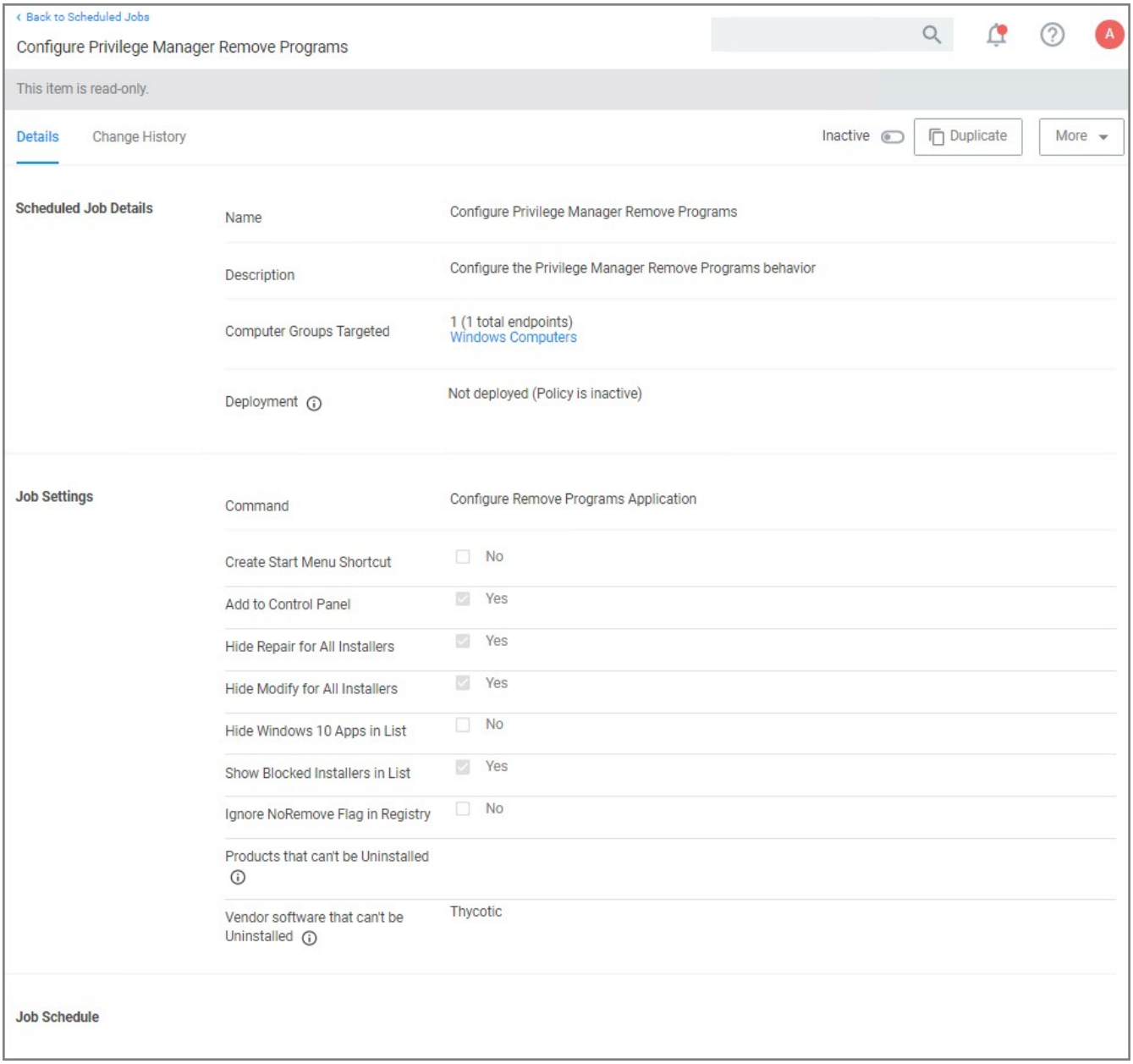
- Allow users to uninstall any and all applications by using the utility.
- Make the utility show an approval request for each uninstaller that is launched.
- Make the utility show an approval prompt when it launches.

The utility will list all the same applications as the Remove Programs in the Control Panel, but it can also hide software that end users should not be able to uninstall (such as the Delinea agents).

With Privilege Manager version 10.7 Delinea introduced support for Windows 10 **Apps & Features** and the management of Windows Store apps via the **Remove Programs Helper**. Certain apps designed as a Windows 10 package are registered in **Apps & Features** but do not appear in the operating systems Add Remove Programs options. Privilege Manager locates those applications and provides management via the enhanced **Remove Programs Utility**.

Configuring the Remove Programs Utility

1. Under your **Computer Group** select **Scheduled Jobs**.
2. Search for **Configure Privilege Manager Remove Programs**.
3. Click on the policy link **Configure Privilege Manager Remove Programs**.

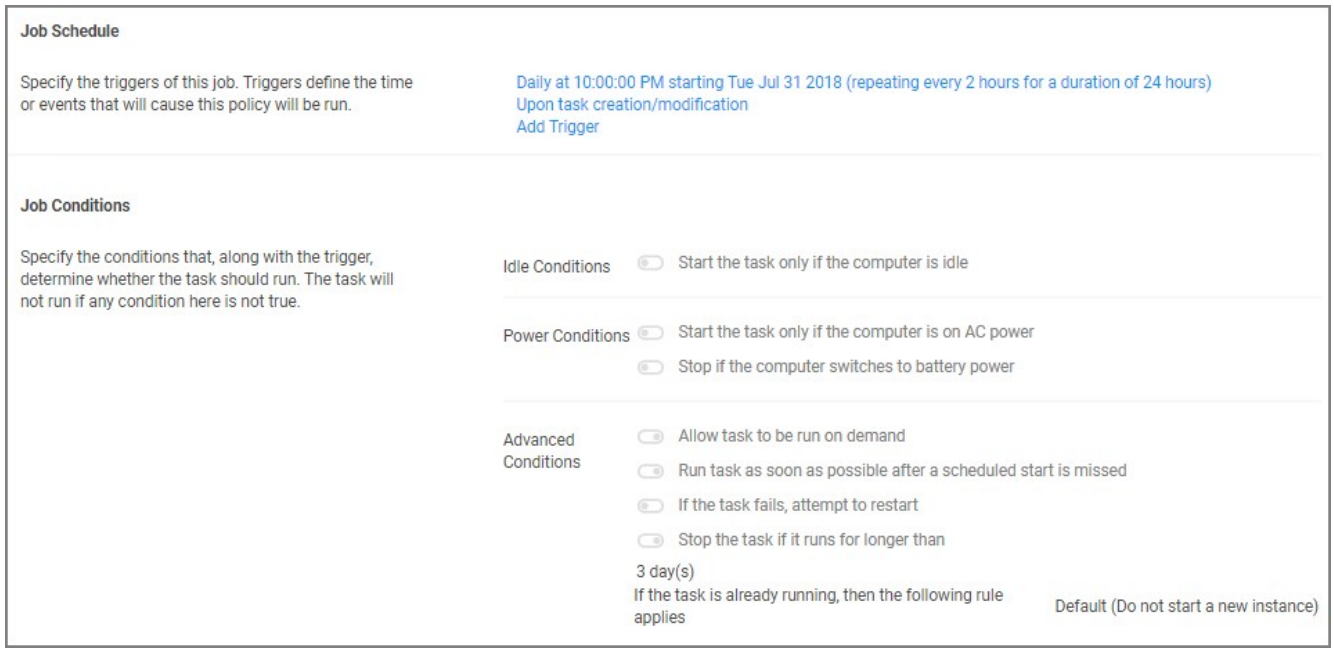


If you need to customize the default policy, Delinea recommends to create a copy.

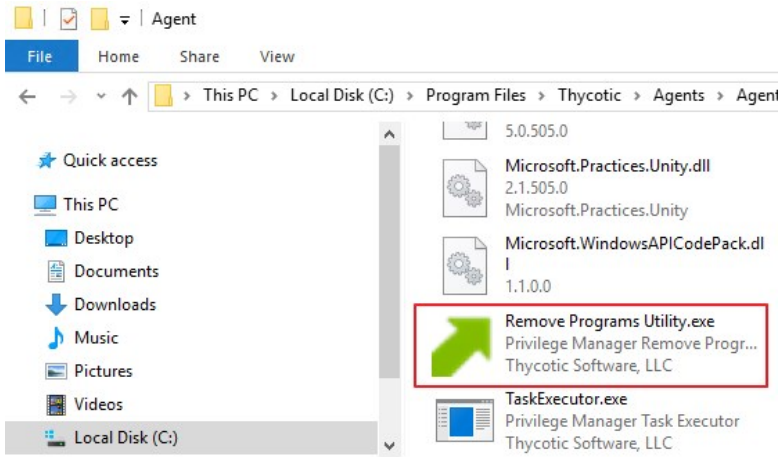
4. Click **Duplicate** and name your policy.
5. Click **Create**.
6. Under **Job Settings**, customize the access and functions of the utility. For example:
    - Choose whether a shortcut on the start menu or on the control panel should be created.
    - List products that you want to prevent being uninstalled. There are two options for this:
        - If the "Show Blocked Installers in List" option is unchecked, the products will be hidden.
        - If the "Show Blocked Installers in List" option is checked, the products will just be disabled from being uninstalled.

If you selected "Create Start Menu Shortcut", the users will see Privilege Manager Remove Programs on the Start Menu. If you selected "Add to Control Panel", the users will see Privilege Manager Remove Programs in the Control Panel.

7. Under **Job Schedule**, customize the triggers, such as when to run the utility for inventory purposes. This determines how often you want the policy from the Task Scheduler on the endpoint to check to ensure the settings match.

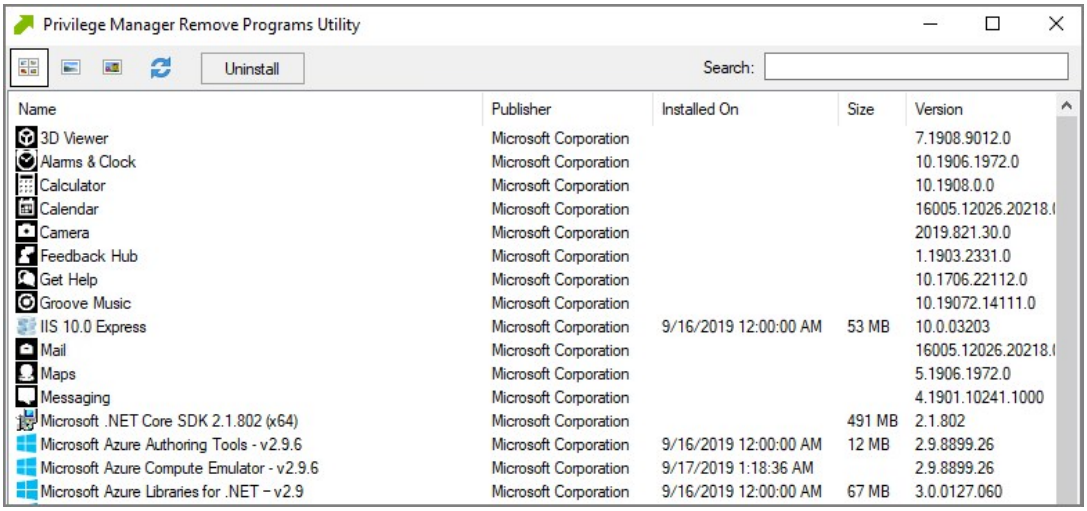


8. Under **Job Conditions**, customize additional conditions that impact running the task, e.g. allowing the utility to be used on demand.
9. Set the **Inactive** switch to **Active**.
10. Click **Save Changes**.
11. Next to **Deployment**, click the **i** icon and select the **Resource and Collection Targeting Update** task.



Using the Utility

The utility is straightforward to use. It's installed on endpoints as part of the Agents installation. Users can select the row containing the program that they want to uninstall and then select the uninstall button.



Using the Elevate Privilege Manager Remove Programs Policy Children Policy (Sample)

Note: Starting with Privilege Manager agents version 11.0, the Remove Program Utility does not require elevation on endpoints.

Delinea recommends using the out-of-the-box **Elevate Privilege Manager Remove Programs Policy Children Policy (Sample)** policy on endpoints that are configured to use the Remove Program Utility. This policy elevates the uninstallers only after an approval request has been granted.

You may also manually block non installers from running by importing the block-non-installer-child-processes XML file.

Troubleshooting

This section contains a collection of troubleshooting articles to help with problems that might occur in your Privilege Manager integration/instance.

The following troubleshooting topics are available:

- Troubleshooting Installation Issues
- 10.5 Folder Permission for MachineKeys
- Retrieving the COM class factory error
- Database Connection Issue during Setup
- Supporting Multiple TLS Versions

- Agent Registration Error Following an OS Upgrade
- Running updateclientitems.ps1 on an Agent triggers an error
- Client Item List Downloads
- Advanced Messages not working for child processes of Microsoft Edge

- Endpoint Troubleshooting
- How to Recover an Unresponsive macOS Endpoint
- Catalina FileSystemWatcher Issue

- Where are My Server Logs?
- Where are My Agent Logs?
- SQL Server Transaction Log
- User Interface and Ports

- Improve Boot-up Performance
- Unable to access Privilege Manager

- Common Errors
- Error: Could not allocate space for object
- UI Storage Error Message
- Notify User Justification failed
- Invalid Product Identifier
- Installation Hangs with Error: Worker Role Monitor received exception during ping

- How to use the Thycotic Monitor for Troubleshooting
- Using Process Hacker for Troubleshooting
- Troubleshooting a Policy with Process Explorer

The following topics about error messages in Privilege Manager are available:

- Common Errors
- Error: Could not allocate space for object
- UI Storage Error Message
- Notify User Justification failed
- Invalid Product Identifier
- Installation Hangs with Error: Worker Role Monitor received exception during ping

Access Denied

Error: "Access Denied. You do not have permission to view this directory or page using the credentials that you supplied."

To Resolve:

After logging in to Privilege Manager 10.3 with a user account that has Privilege Manager Administrator Role rights, if you experience this error, verify if SSL 3.0 and/or TLS 1.0 have been disabled. If those protocols have been disabled on the server, you'll need to replace C:\inetpub\wwwroot\Tms\bin\Thycotic.Owin.Security.dll with http://tmsnuget.thycotic.com/scripts/Thycotic.Owin.Security.dll

Recycle the TMS Application Pools in IIS and attempt to access Privilege Manager again.

Server Error in...

Error: "Server Error in '/' Application. Runtime Error"

Your Secret Server instance doesn't have the correct URL pointing at Privilege Manager .

To Resolve:

Go to your Secret Server instance (Tools | Secret Server). Then Admin | Configuration. Verify that your TMS Installation URL is set to ~/../TMS.

SSL Connectivity or Certificate Issues

Error: SSL Connectivity or Certificate Issues?

Trusting an SSL Certificate on a Client Machine (KB)

When a self-signed certificate is installed on a server for the Secret Server website, client computer browsers will generally give security warnings for that web site. This is because for public websites, only certificates issued by trusted authorities can be trusted as valid certificates. For certificates that will only be used within a company or domain, self-signed certificates the security warnings can generally be ignored.

However, the security warnings can also interfere with the use of the Secret Server Launcher and Web Password Filler. To resolve, the certificate can be installed on the client machine either through Internet Explorer or Certificates snap-in.

The following steps can be used to trust the certificate:

1. Make sure that the host to which the certificate is issued is the same as the host name for your Secret Server website.
    - Open Internet Explorer and navigate to Secret Server
    - Click Continue to this website if you are prompted
    - Click the Certificate Error icon next to the navigation bar and then click View certificate. The value next to Issued to should match the host name for your website. For example, if your website is https://www.mydomain.local/SecretServer, it should say "Issued to: www.mydomain.local". If these fields do not match, the client will not be able to fully trust the certificate.
2. Obtain a copy of the certificate file and transfer it to the client computer.
    - On the server that Secret Server is installed on, find Run from the start menu or screen and type in mmc, then hit Enter.
    - From the File menu, select Add/Remove Snap-in.
    - Select the Certificates snap-in, then click the right arrow button to add it.
    - In the window that appears, select Computer Account, then Local Computer, and then click Finish.
    - You should now see the Certificates (Local Computer) node. Expand the Personal folder and then the Certificates folder under it.
    - Right-click the certificate that Secret Server uses, then click All tasks and select Export.
    - Keep clicking Next to accept defaults in the wizard. Enter a filename, and then click Finish. The certificate has now been exported.
    - Copy the certificate from your server and transfer it to your client computer. I**Note**: IIf you have Firefox, the certificate can be saved to

your client computer by viewing and exporting it after navigating to the website.

3. Install the certificate on the client computer.
    - On the client computer, find Run from the start menu or screen and type in mmc, then hit Enter.
    - From the File menu, select Add/Remove Snap-in.
    - Select the Certificates snap-in, then click the right arrow button to add it.
    - In the window that appears, select My user account, and then click Finish.
    - Expand the Trusted Root Certification Authorities folder, then right-click the Certificates folder, and select All Tasks | Import.
    - Click Next and Yes to accept default settings for all steps of the wizard.
    - When prompted for the certificate file, select the file you saved in the previous step (2).

    Note: You may need to reopen Internet Explorer and browse to Secret Server once more to see the change reflected on the client machine.

Granting Permissions on New SSL Certificate for Privilege Manager (KB)

If you change your certificate or if it is automatically renewed, you may need to grant permissions on your new SSL certificate to the service account that the TMS app pools run under. TMS accesses the SSL certificate to sign all of the policies that Privilege Manager sends out to agents, adding an extra security layer to your environment.

Messages you may see include:

- https: does not render
- Navigating to Https://[ServerName]/TMS/PrivilegeManager loads a blank screen
- Agents stop receiving configuration information from the Privilege Manager Web Server,
- Http : TMS requires an https (SSL) / secure connection

For the fastest resolution to Permissions issues, you can run a Powershell script:

- Navigate to your TMS Website on your Privilege Manager web server (Usually located in `c:\inetpub\wwwroot\`), then navigate to `Tms\App_Data\Tools\SSLHelper.ps1` on your Privilege Manager web server, right-click this and select Run with Powershell to execute.

To grant permissions manually, follow these steps

1. Using MMC on your Privilege Manager web server, open the certificates snap-in (File|"Add/Remove Snap-in..." | Certificates | click Add), then select Computer account to manage the local computer. Click Next, then Finish and OK.
2. Double click Certificates (Local Computer) and locate the certificate that your TMS site is using (it will most likely be under Personal|Certificates unless you specified a different location*)
3. Right click on the certificate and select All Tasks | Manage Private Keys

Grant Read Access to the account(s) that TMS is running under

If this is a user account then you may adjust permissions to the user account. To check, go to your app pool in IIS, right-click the IIS app pool | Advanced Settings... | "Identity" row: if your app pool "identity" is listed as something OTHER THAN "ApplicationPoolIdentity" in IIS, i.e. "Delinea IServiceAccount", then your app pool is using a user account.

If this IS the Application Pool Identity (i.e. not a user account) you will need to adjust permissions to three app pools: "IIS AppPool\TMS", "IIS AppPool\TMSWorker" and "IIS AppPool\TMSAgent." Note that names of app pools may vary depending on your environment.

Recycle your TMS, TMSAgent, and TMSWorker app pools in IIS.

Note: If you are unsure which certificate matches the one you are using in IIS, follow these steps to ensure your certificate thumbprints match:

In IIS on your Privilege Manager web server, navigate to the site you are using to run Privilege Manager Right-click on this site, click Bindings. Choose the https port you need to update and select Edit. View the SSL Certificate this is attached to.

Next, choose the Details tab and scroll down to find the certificate's Thumbprint. Copy the list of numbers and letters that make up your certificate's thumbprint (a SHA256 hash).

Return to your certificates in MMC (step 2 above). Right-click Certificates (Local Computer) and select Find Certificates...

In the Contains box, paste your Thumbprint SHA256 hash and select SHA256 from the Look in Field drop down. Click Find Now. This will return the certificate name that your Privilege Manager Binding is currently linked to.

Tasks Stuck at Ready

Error: Are your tasks sitting at "Ready" for extended periods of time?

To Resolve:

1. Navigate to Admin | Configuration | Advanced and make sure the URL for the "Monitor Worker Role" are accurate for the bindings (Check the hostname in the Base local address and the Port).
2. Open IIS Manager, check to make sure the app pools have Read Access to the certificate that you've assigned to that binding via MMC Certificates plug-in. More instructions on how to do this in our Granting Permissions on New SSL Certificate for Privilege Manager KB, posted here.
3. Manually recycle the TMS and TMS Worker app pools.

CPU Issue

Error: CPU overworked in your Agent or 'Unexpected failure in ACS Agent background'

Your agent may be configured incorrectly.

To Resolve:

1. In Privilege Manager navigate to Admin | Agents.
2. Under the Windows tab, verify that your "Send Application events every" and "Refresh Client item cache every" settings are both set to 0.
3. Save changes, refresh your client item cache, enforce the update on your endpoint machine (Follow the update Powershell script instructions listed under "How do I Update Specific Agents Immediately?" above).

System Critical Error

Error: 'System Critical Error - execute/PolicyDetailComponent' in Firefox

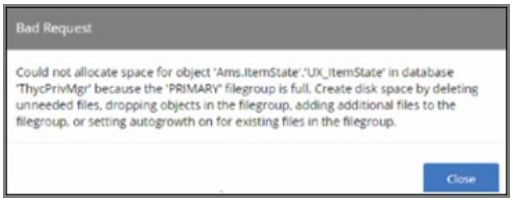
To Resolve:

Open Privilege Manager in a different browser, such as Chrome or Internet Explorer 11. If you prefer Firefox as your web browser, download this zip file: http://tmsnuget.thycotic.com/scripts/firefox.fix.zip Unzip these files, then copy and paste into C:\inetpub\wwwroot\Tms\Spa\PrivilegeManager\ on your Privilege Manager Server.

Refresh your Firefox browser.

This topic describes the following error while working with Privilege Manager :

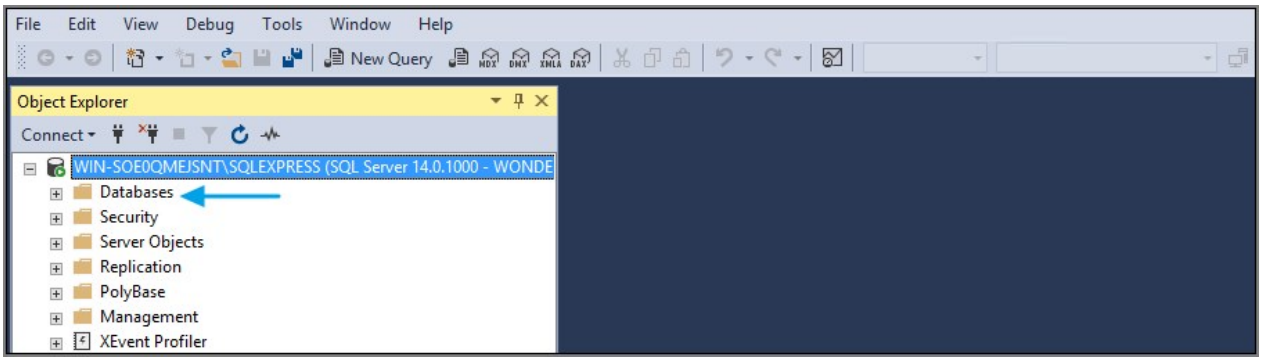
Could not allocate space for object 'Ams.ItemState'.'UX_ItemState' in database 'ThycPrivMgr' because the 'PRIMARY' filegroup is full.



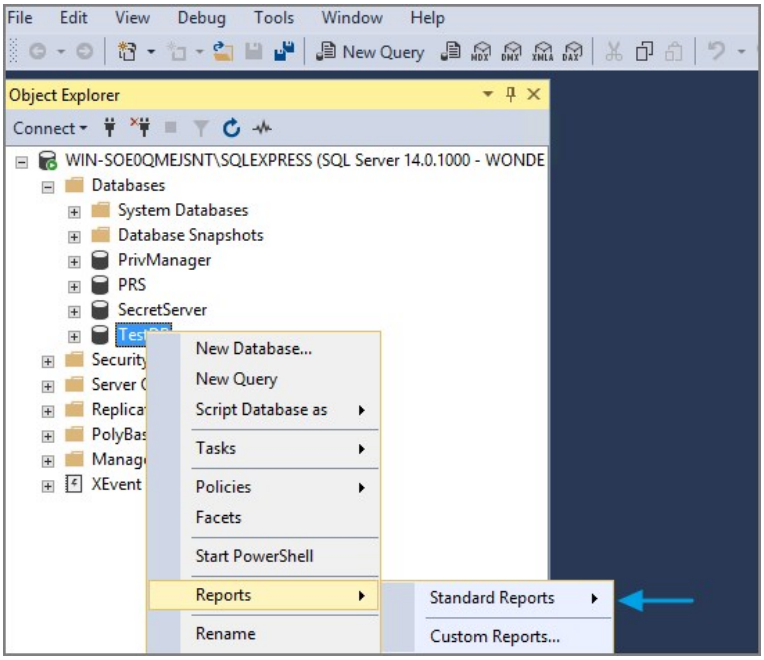
The error indicates that either the Privilege Manager database is full and out of space or the database server running is out of space.

Resolving the Error

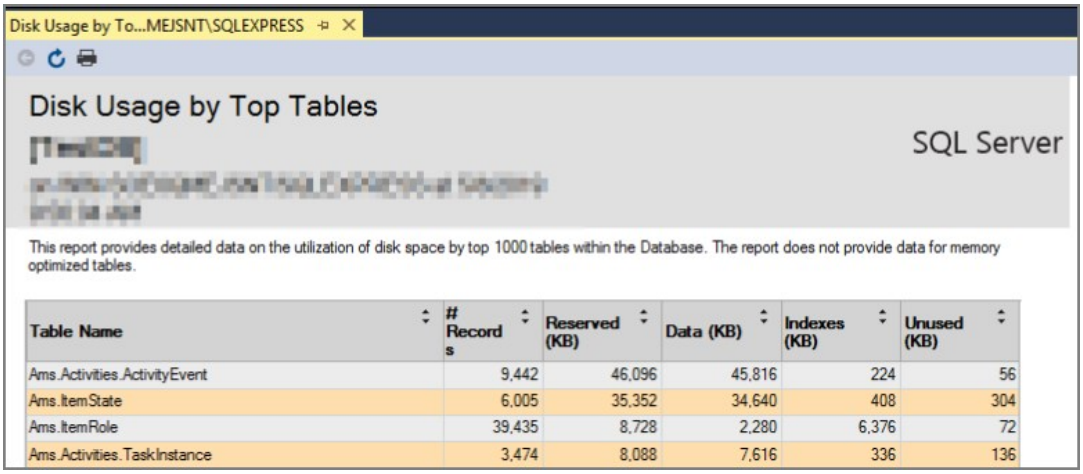
1. Navigate to SQL Server Management Studio.
2. Click Connect.
3. Expand Databases.



4. Right-click on the Privilege Manager Database, select **Reports**.
5. Select **Standard Reports**.



6. Select Disk Usage by Top Tables report.



7. The report shows the top tables by data usage.

8. If the top table does contain a lot of data, locate the table which contains the highest number of files and open a support case. Provide the information collected with a screenshot of the report to determine the best way to reduce the size of the table.

   If the top tables do not contain a lot of data, the issue could possibly be:

   - The database server is running out of disk space. You can check to see what drive the database is stored on to see how much space is left. This will be specific to your environment regarding disk space.
   - Check if there are other databases on the same server and investigate if a different database is taking up space.

During the installation of Privilege Manager the install hangs and is unable to proceed to the next step of the installation.

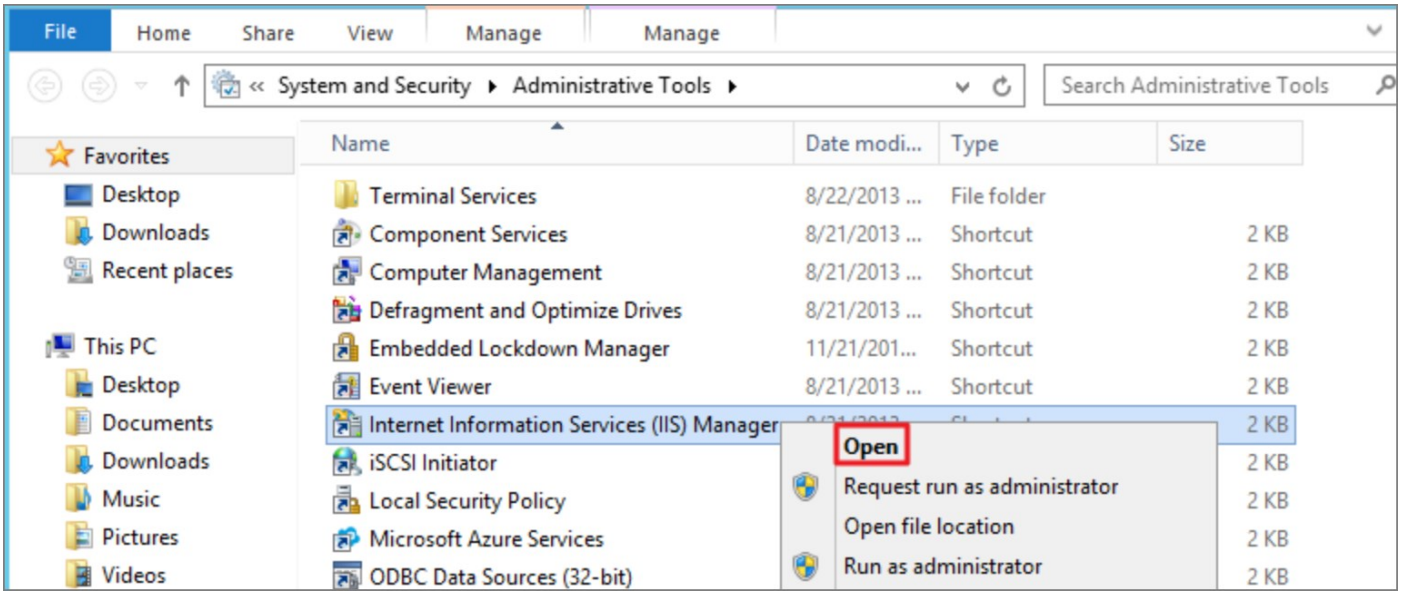
After checking the Thycotic Monitor, you see the below error in the log viewer:

Worker Role Monitor received exception during ping: The HTTP request is unauthorized with client authentication scheme 'Negotiate'. The authentication header received from the server was 'Negotiate,NTLM'

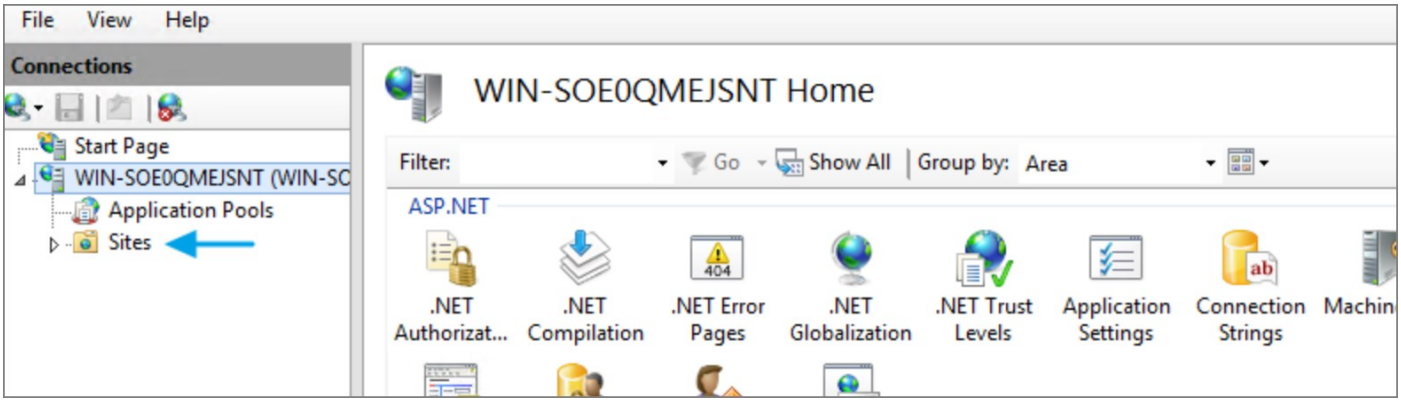
Note: This error is due to a host name in the binding within IIS.

Resolve

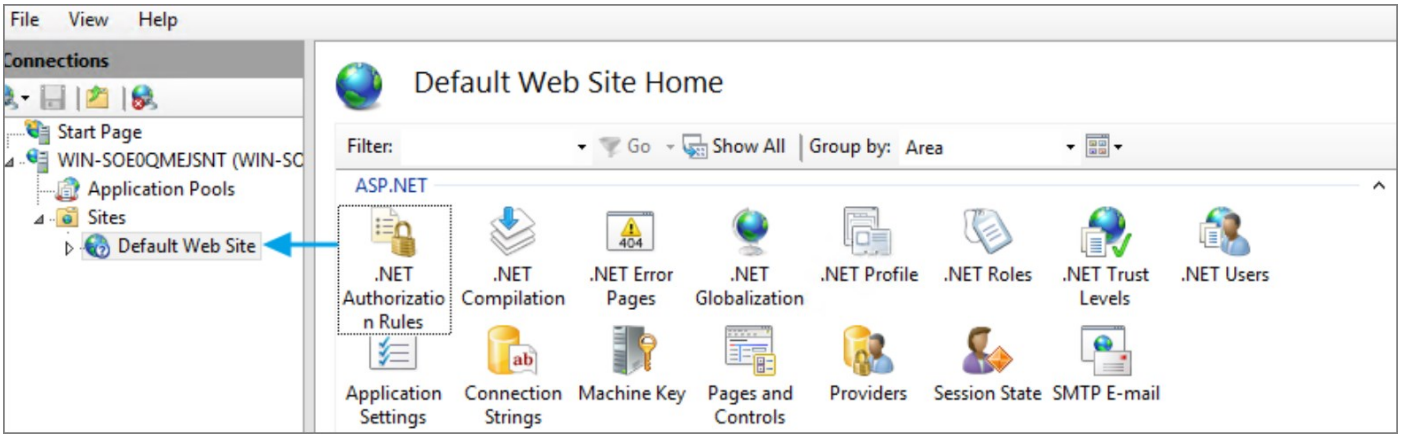
1. Open **Internet Information Services (IIS) Manager**.



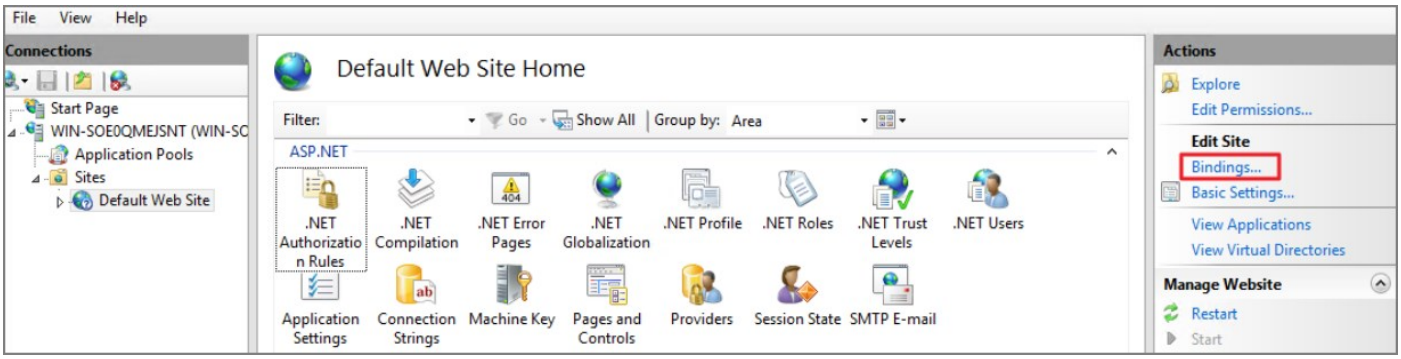
2. Expand down to **Sites**.



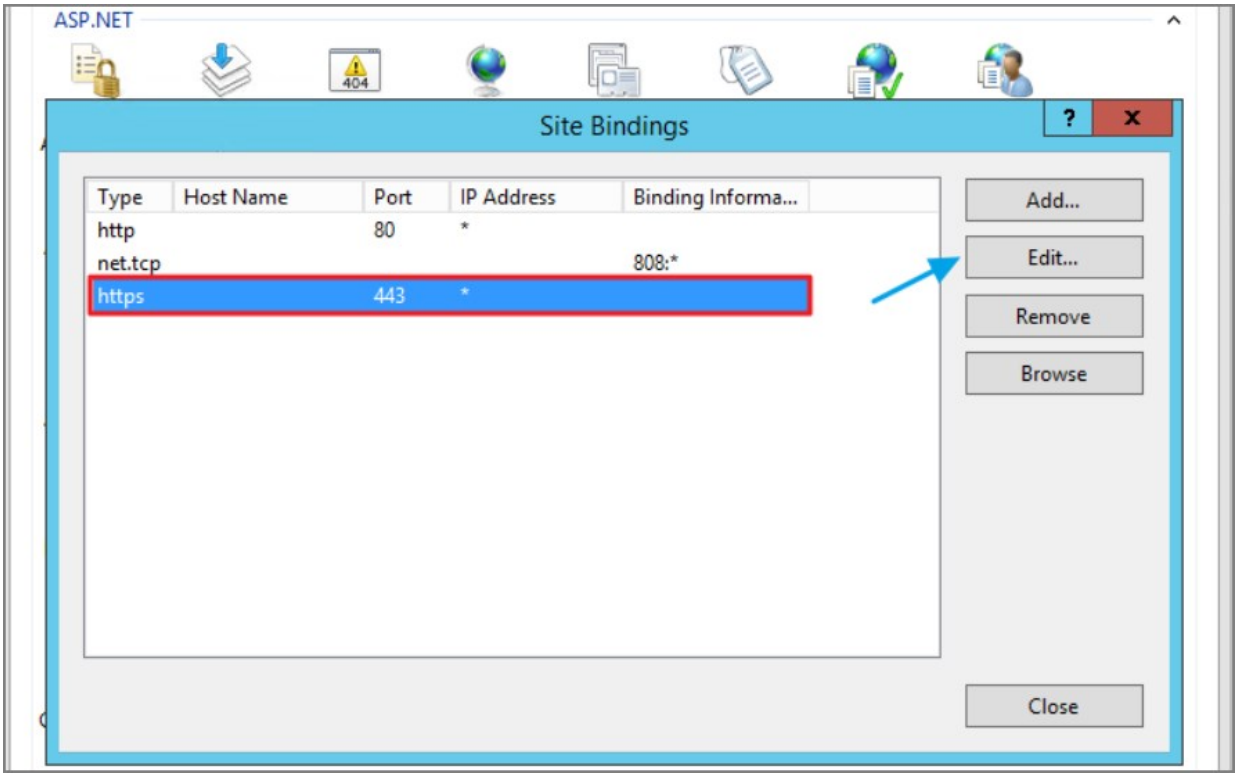
3. Click **Default Web Site** or the **top node site**.



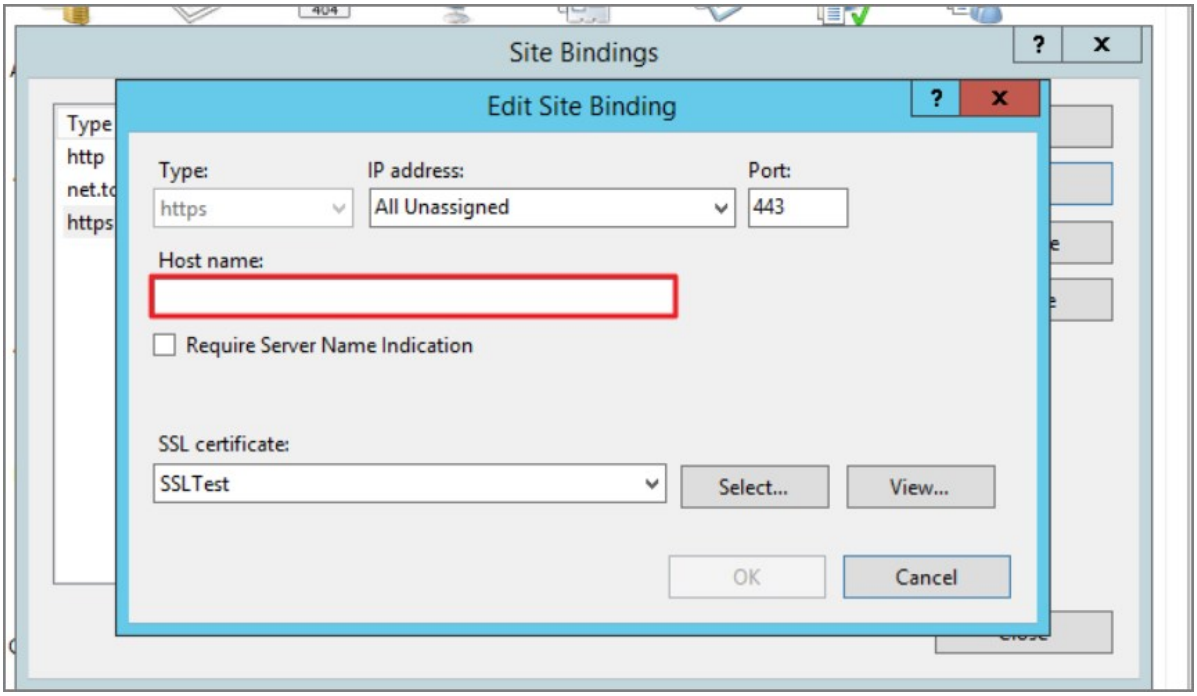
4. Click **Bindings**.



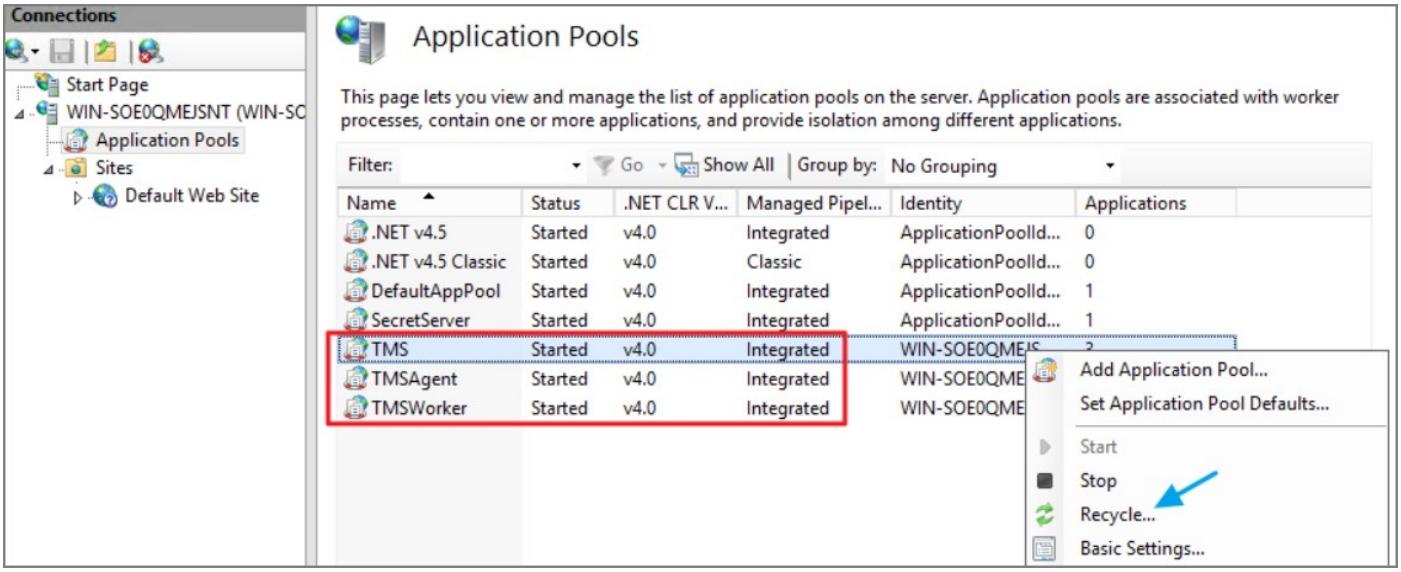
5. Select the **HTTPS binding** I click **Edit.**



6. Confirm that there is no Hostname included for the HTTPS binding for the TMS site. If so, please delete it.



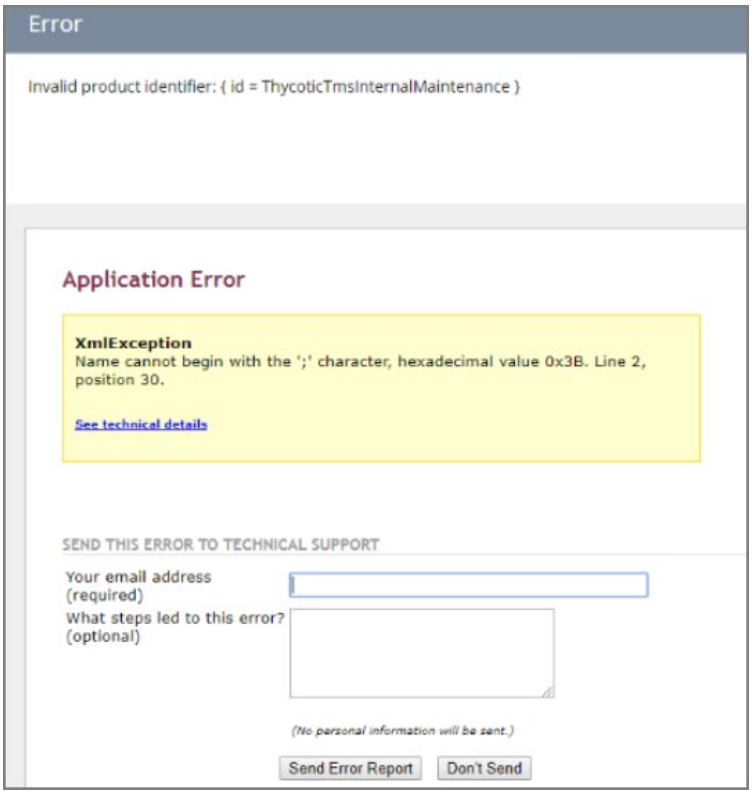
7. **Recycle** all the TMS application pools in IIS.



8. Try the install again by going to **https://localhost/TMS/Setup**.

When attempting to upgrade Privilege Manager , you receive the following error:

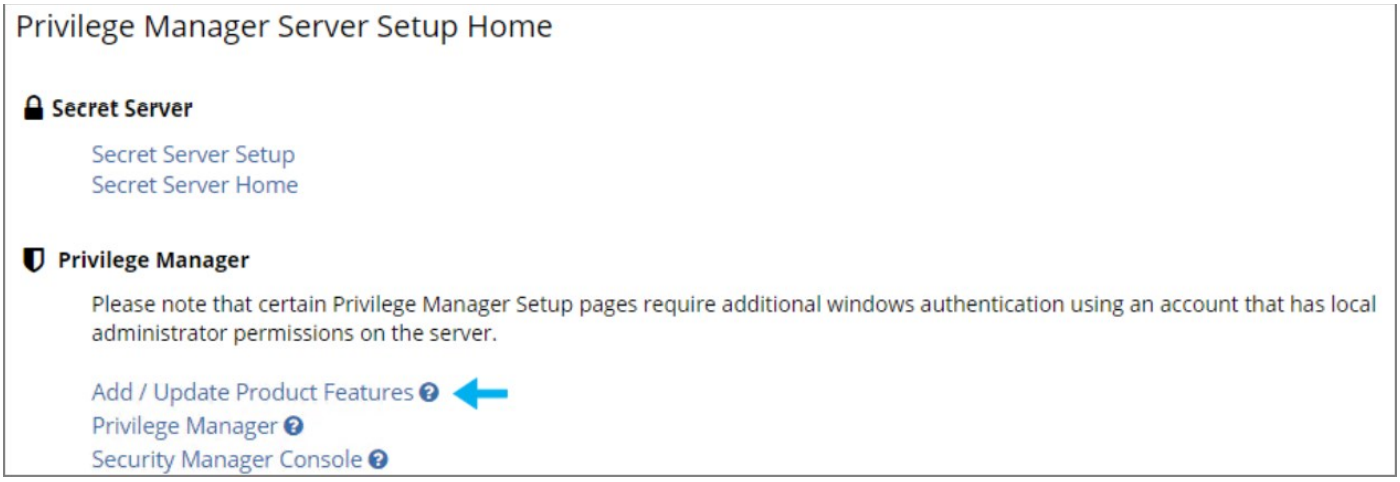
Error: Invalid product identifier:



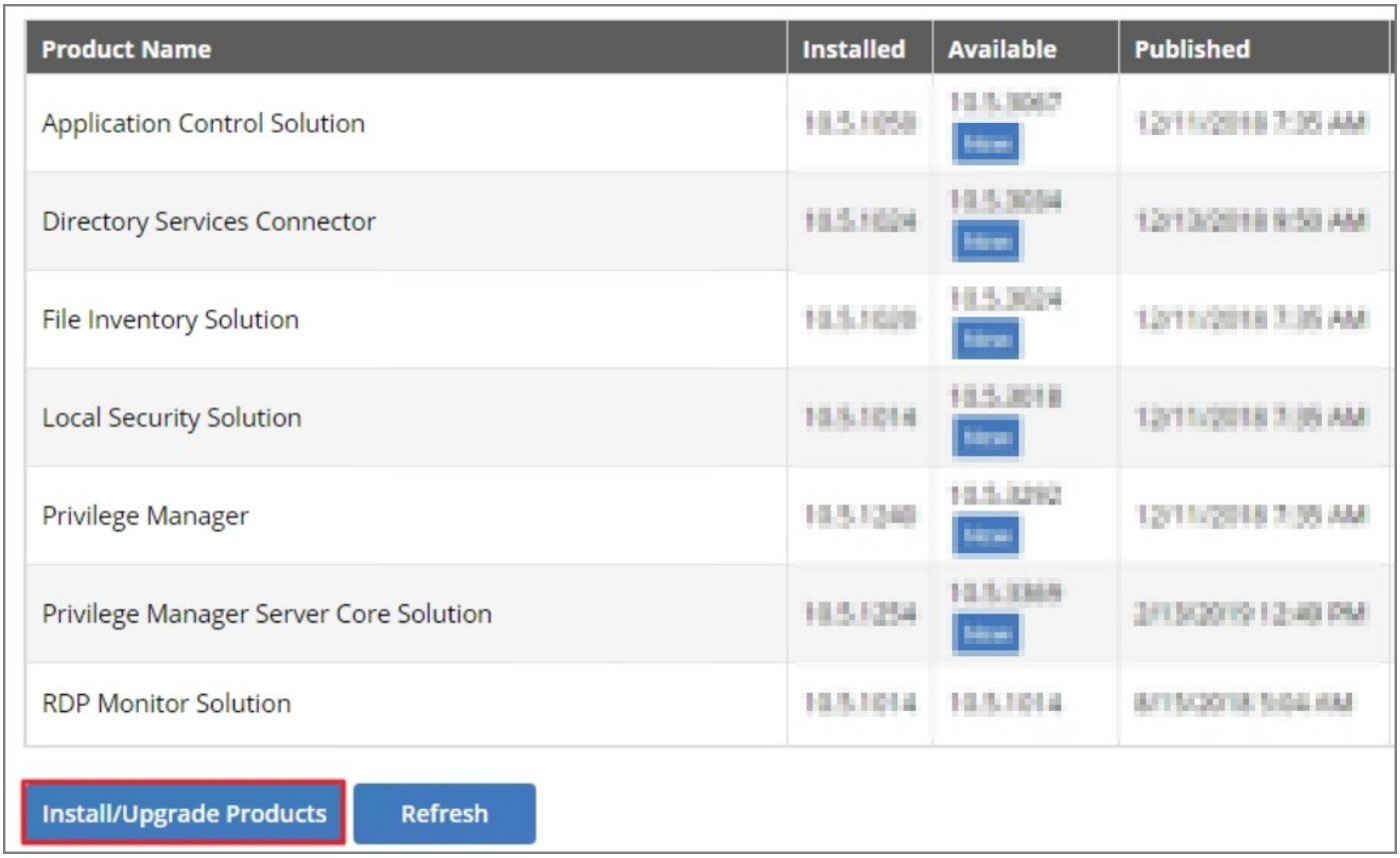
Resolve

1. Navigate to **https://[YourInstanceName]/TMS/Setup**.
2. Click the **Upgrade Banner** at the top of the Privilege Manager home page.

3. Click **Add / Update Product Features**.

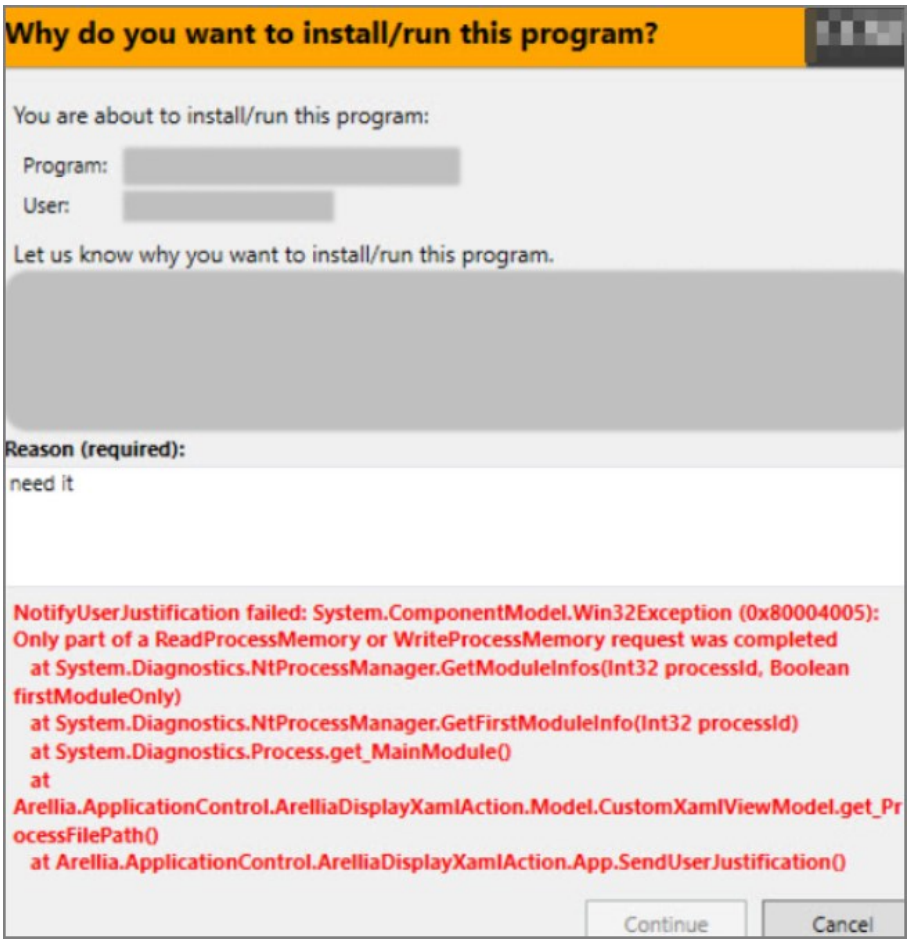


4. Click **Install/Upgrade Products**.



5. Select **ALL** of the required solutions.
6. Click **Install** and the upgrade process will begin.

You receive the following error when users attempt to run a program with a policy that uses the action for Notify User justification.

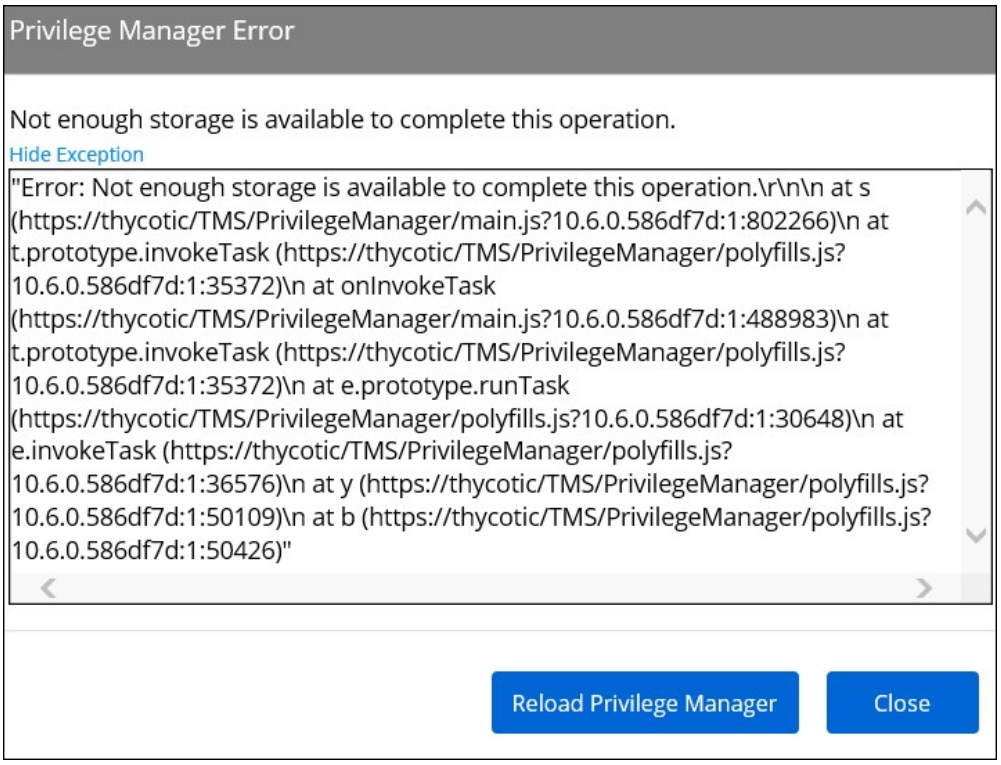


Resolve

1. Either disable the Anti-Virus Real time scan.
2. Or, set Anti-Virus Real-time scanning exclusions.

You might have to clear your browser cache if you get the following error in the Privilege Manager console:

Not Enough Storage is available to complete this operation



Resolution

1. Open your browser window and clear the cache.
2. Close and re-open the browser
3. Launch Privilege Manager and re-try the action.

   Note: If the error continues, open a different browser and try to replicate the error. Save any screenshots and open a support case.

4. If this occurs while on the server, please ensure that there is enough disk space to complete the action.

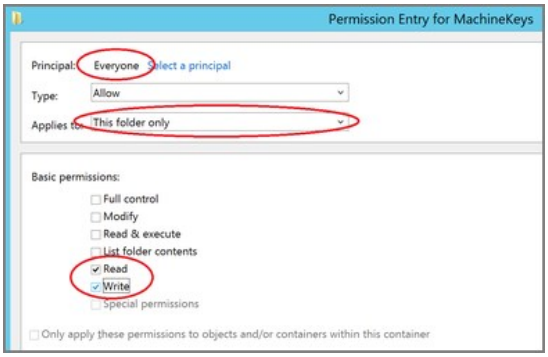
The following topics are available:

- Troubleshooting Installation Issues
- 10.5 Folder Permission for MachineKeys
- Retrieving the COM class factory error
- Database Connection Issue during Setup
- Supporting Multiple TLS Versions

During installation of Privilege Manager 10.5 (or an upgrade from prior versions) Privilege Manager attempts to create a new self-signed certificate for internal use. If permissions on the folder %ProgramData%\Microsoft\Crypto\RSA\MachineKeys are incorrect, the install fails with a cryptographic exception and the text **Access Denied**.

Follow the steps below to add Everyone (Read, Write, This Folder Only) permissions to %ProgramData%\Microsoft\Crypto\RSA\MachineKeys.

1. Browse to %ProgramData%\Microsoft\Crypto\RSA\MachineKeys.
2. Right-click on the folder and select **Properties**.
3. Select the **Security** tab and click the **Advanced** button.
4. On the **Permissions** tTab, click the **Change permissions** button. (If you are already running as an administrator, you may not need this step.)
5. On the **Permissions** Tab, click **Add**.
6. On the next dialog, click the **Select a principal** link.
7. In the **Enter the object name to select** field, type **Everyone** and click **OK**.
8. You will see the dialog shown below, select **This folder only** and **Read and Write**.

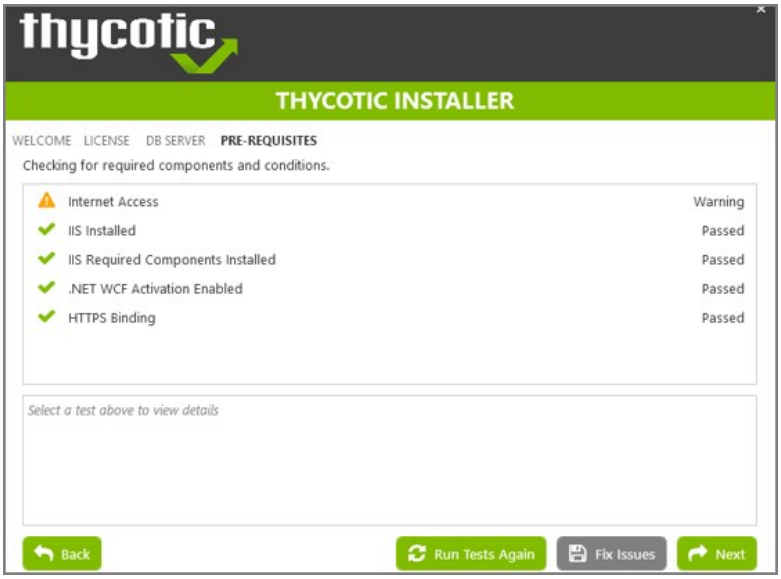


9. Click **OK** to add the entry.
10. Click **Apply** to apply the changes.
11. Navigate back to the Privilege Manager Setup page and select the repair option for the Privilege Manager Server Core Solution.

This article provided troubleshooting tips to help anyone who hits a snag during an install for Privilege Manager .

Internet Connection

If your server is not connected to the internet, you see the following:

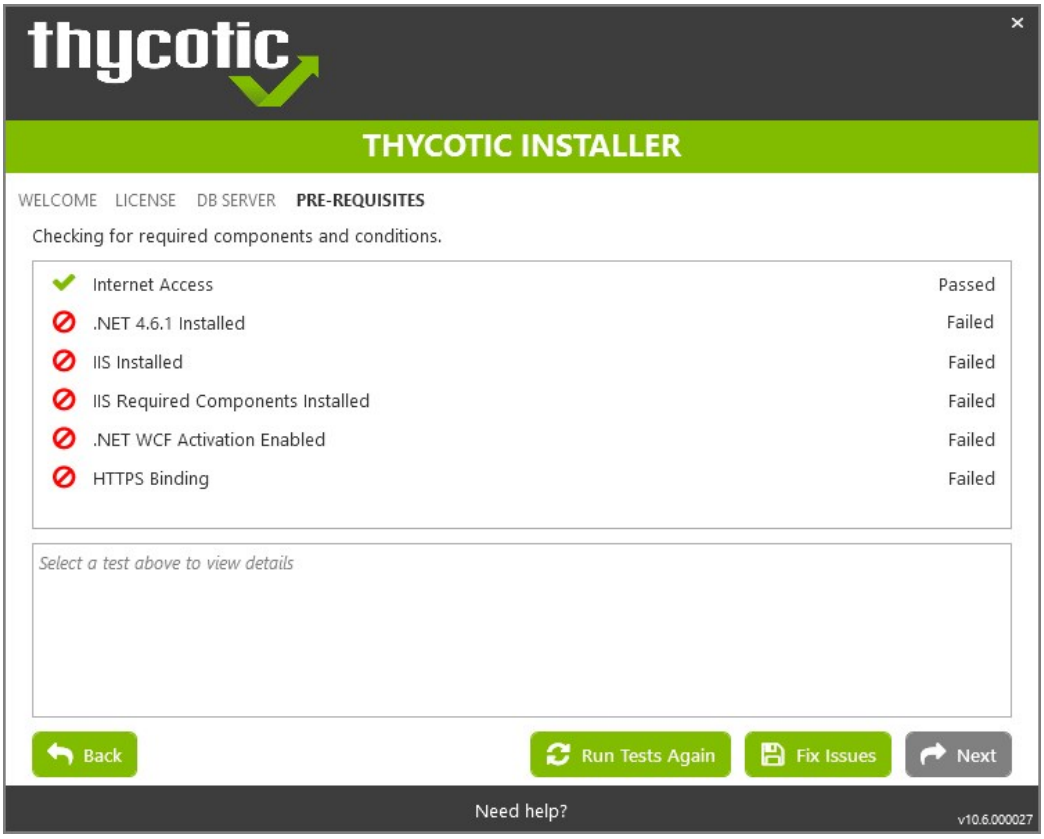


To Resolve:

Click **Next** to proceed through your installation offline.

.NET Dependency

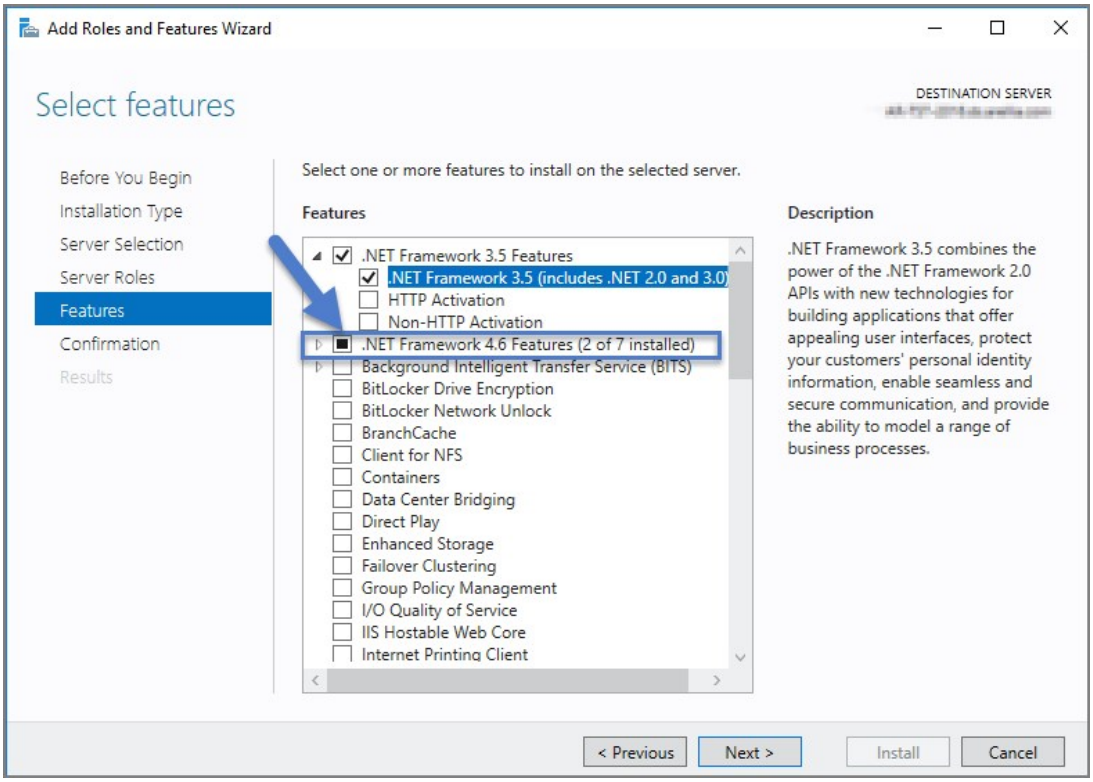
Don't have the required .NET version Dependency installed to accompany your SQL DB? This is what you will see:



To Resolve: Click the Fix Issues button on the Delinea Installer, then run the pre-requisites check again.

If the error persists, manually install the recommended .NET version.

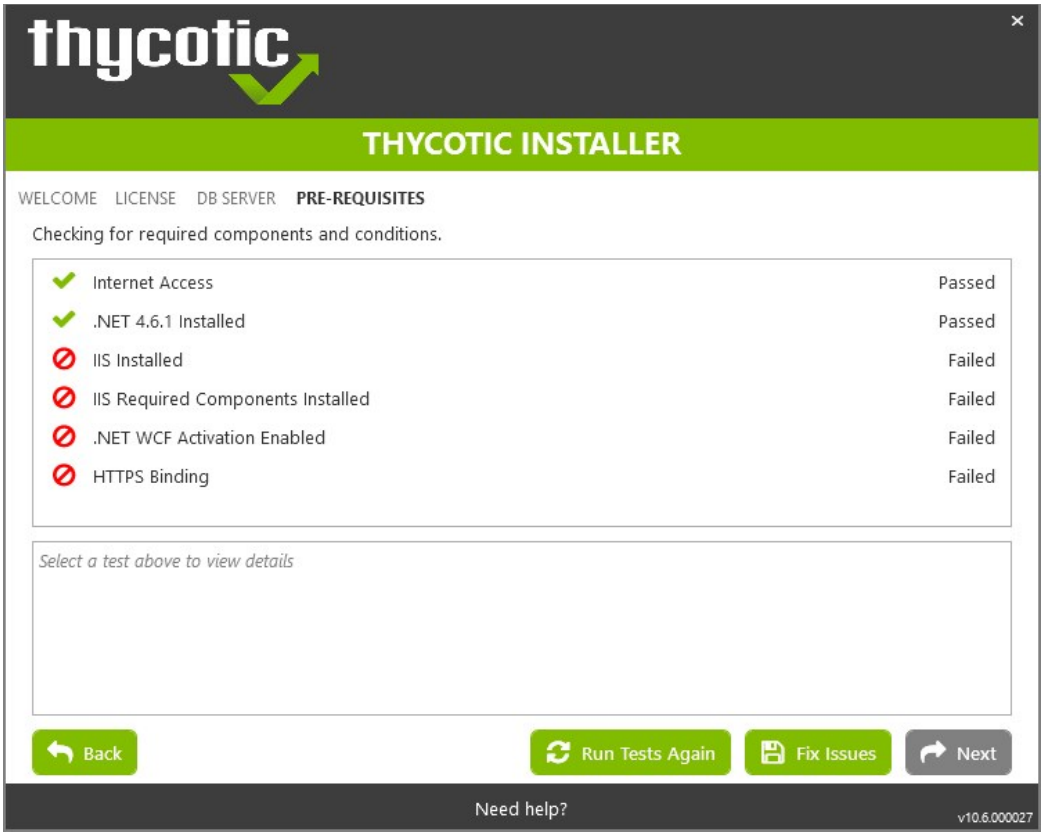
1. Open your Server Manager, in the upper right side of the screen, click Manage, then Add Roles and Features from the dropdown list. This will open your Add Roles and Features Wizard. Verify that the correct Destination Server is listed in the upper right-hand side of the screen.
2. Click Next through the Wizard steps until you arrive on the Features page.
3. Check the box next to the latest .NET Framework, here it is the .NET Framework 4.6 Features, click Next.



Follow the rest of the Wizard's steps until the install is completed. Once .NET 4.6 or greater framework is installed on your server, then run the pre-requisites check again.

IIS not Installated

Don't have IIS installed yet? This is what you will see:



To Resolve:

Click the Fix Issues button on the Delinea Installer. Then run the pre-requisites checks again.

HTTPS Binding Error

Did you encounter an HTTPS Binding Error? Does it not clear after using the Fix Issues button?

To Resolve:

Close and re-open the Delinea Installer and run the pre-requisites checks again.

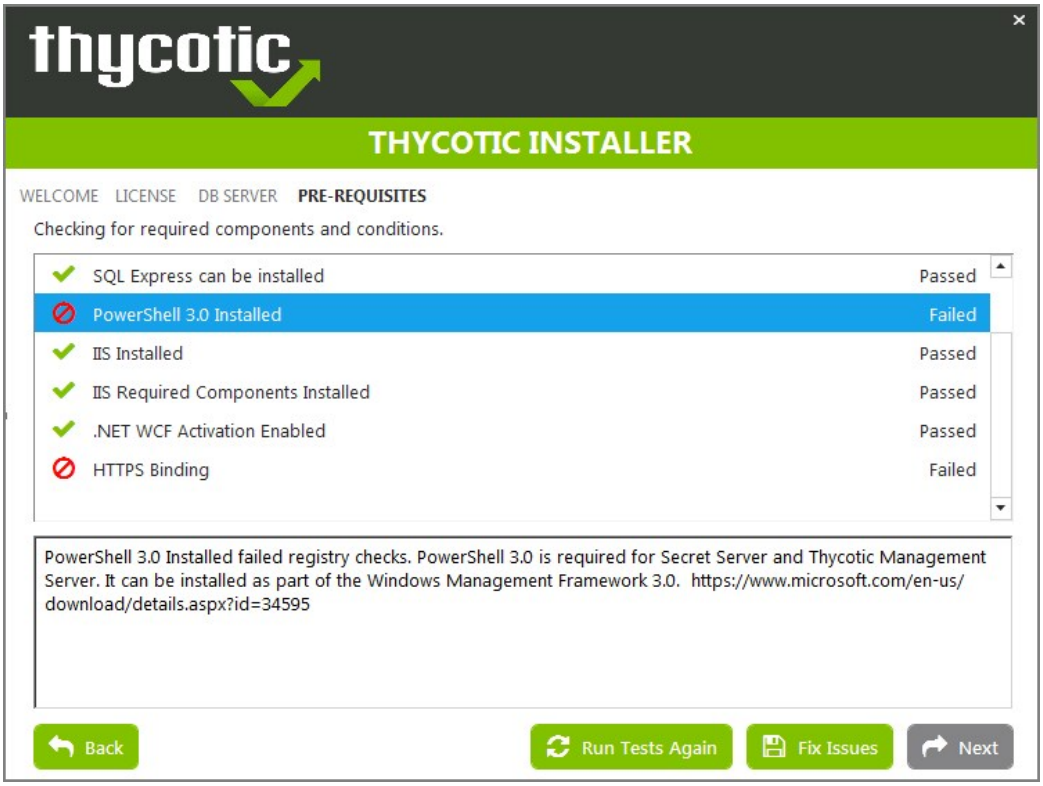
If the Binding Error persists, verify the following:

For combined Privilege Manager and Secret Server installations, did you previously move the Secret Server app pool in IIS to its own website, rather than allowing it to reside under the Default website? see this KB for details.

The installer checks the Default Web Site for an HTTPS binding, and whether there is a certificate assigned to it. This means that if you pre-created the Secret Server Web Application and assigned the HTTPS binding to that site, you may need to manually move your previously installed Secret Server IIS site to reside back under the Default Web Site in IIS when installing Privilege Manager .

PowerShell Error

Are you receiving a Powershell error? You may be trying to install Privilege Manager on an outdated server! Here's what you will see:



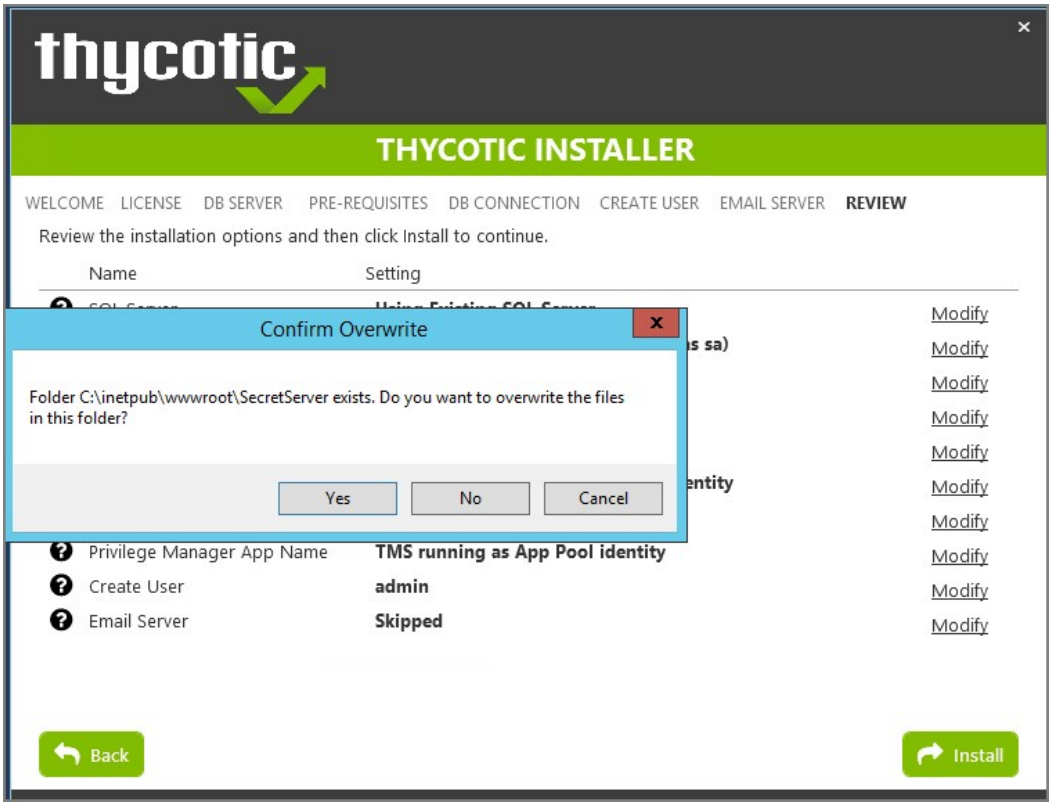
To Resolve:

You may need to update the server you are installing on. Please see our System Requirements Guide for supported servers. You can also manually download Powershell 3.0 and install it from Microsoft's website here.

Once Powershell is properly installed on your server run the pre-requisites checks again.

Secret Server and Privilege Manager Installed

Already have Secret Server installed on your server? Here is what you will see:



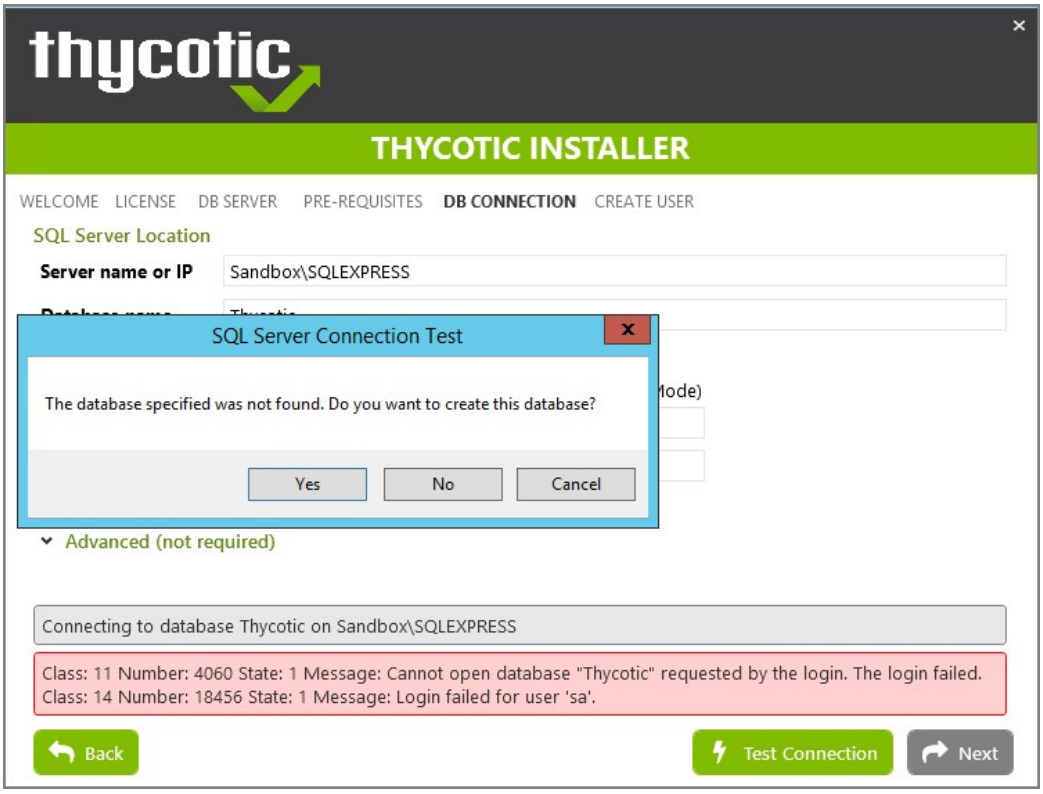
To Resolve:

We recommend installing new instances of Secret Server and Privilege Manager on a clean server.

If you do not already have an instance of Secret Server or Privilege Manager on this server to your knowledge, these files may exist due to an incomplete install. Check with anyone with access to this server who may have attempted this install previously. Only if you are confident that this is your first and only existing Secret Server or Privilege Manager instance click Yes to overwrite the existing files.

Error in DB File Path

Trying to test your connection to an existing SQL database? Here's what you will see:



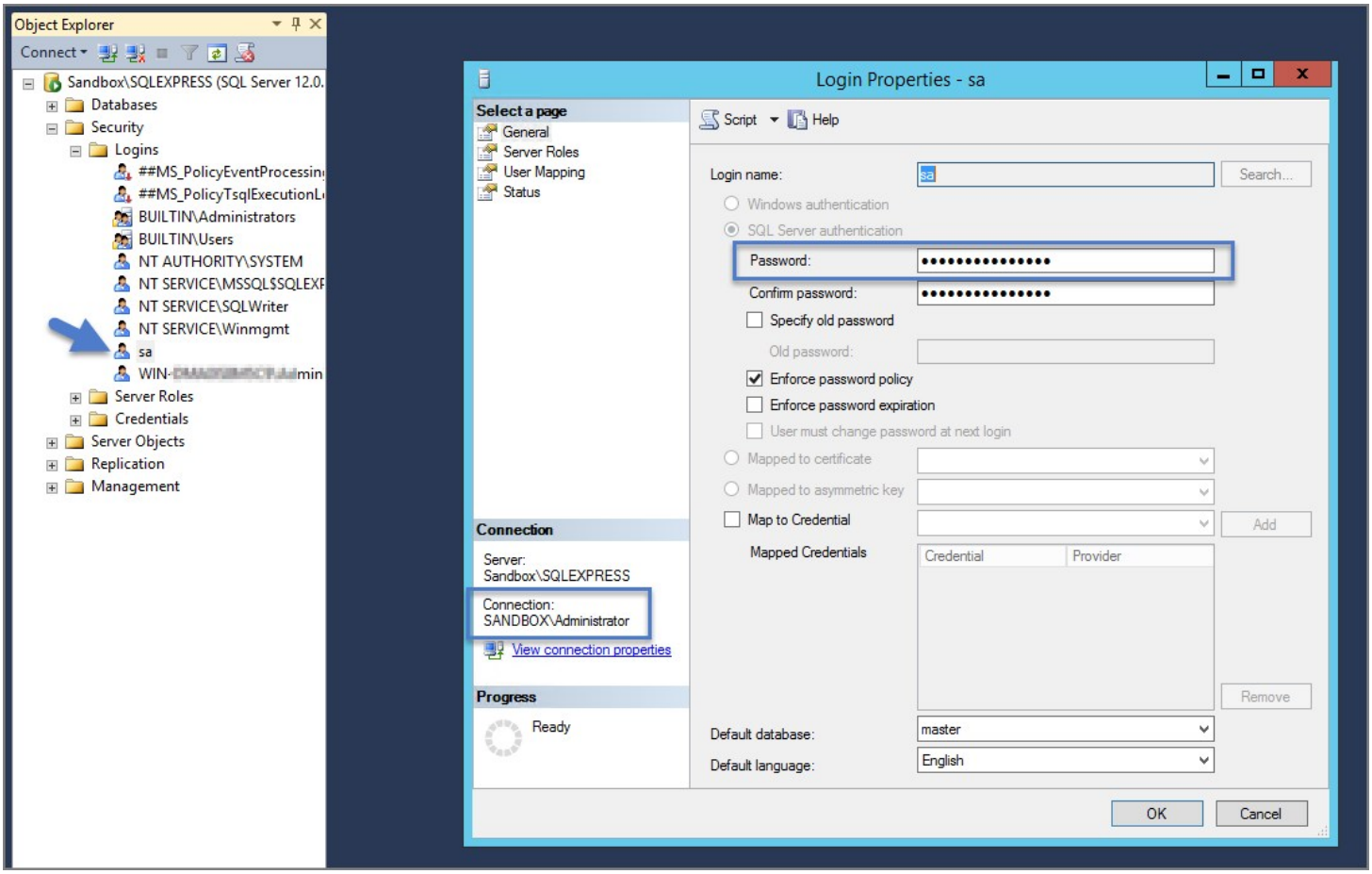
To Resolve:

This message means that your file path to your database is incorrect or your account does not have the correct permissions to access it.

If you have an existing database,

1. navigate to your SQL Server Management Studio and login.
2. Navigate to Security I Logins and right click on the account you are using for your Delinea product, click Properties.

The information you need to enter in the Delinea Installer for the connection path is listed in the bottom left corner under "Connection." You will also need to provide this account's password. Note that this account must have **db_creator** permissions.



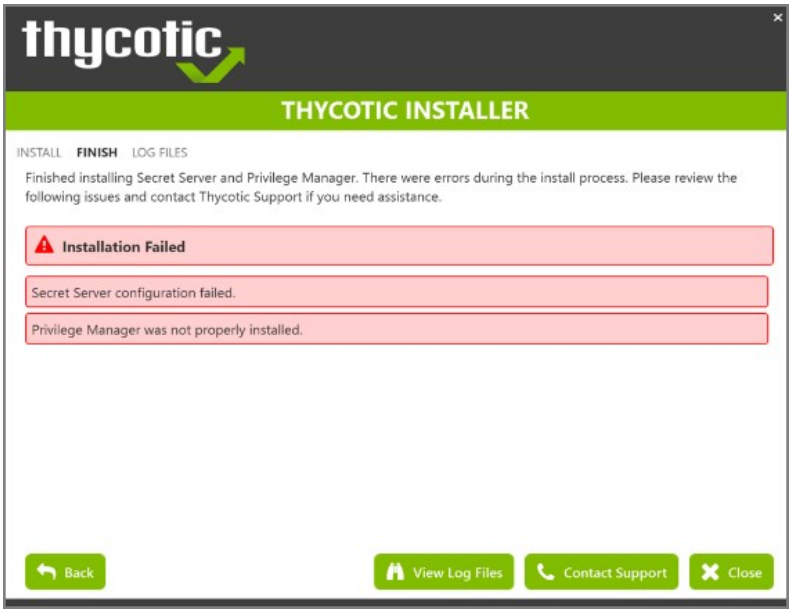
Outdated Browser

Are you trying to open your newly installed Privilege Manager in an outdated version of Internet Explorer? Here's what you will see:

To Resolve: Try opening Privilege Manager in a different browser, or update your Internet Explorer browser.

Integrated Authentication Error

Are you using Integrated Authentication and your installation failed? Here's what you will see:



To Resolve:

For clients using Windows Integrated Authentication, the Delinea installer does not validate your database connection, so entering the wrong database server, database name, or if the user account provided does not have access to the database, your install will fail without warning you in advance. To resolve, please verify your database connection settings and enter them correctly under the **DB Connection** tab during the installation process.

While attempting to upgrade Privilege Manager , you receive an error message when accessing https://[YourInstanceName]/TMS/Setup.

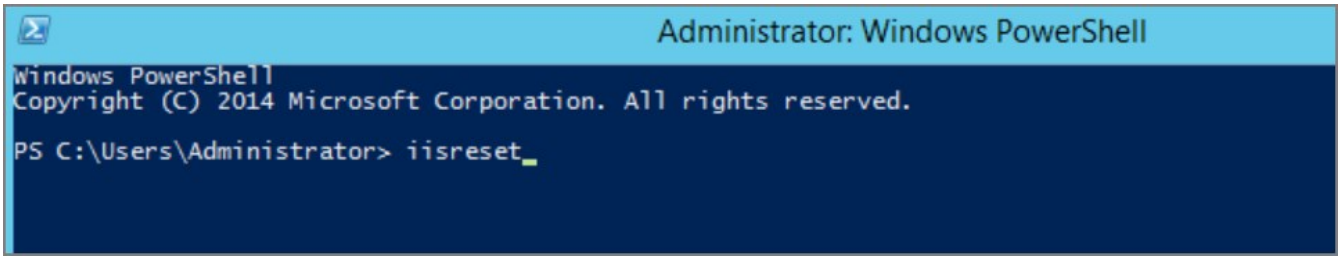
The window is unable to load with the following error message:

“Server Error in '/Tms/Setup' Application.

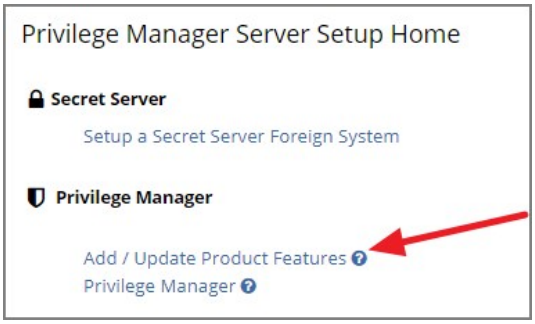
Retrieving the COM class factory for component with CLSID {228FB8F7-FB53-4FD5-8C7B-FF59DE606C5B} failed due to the following error: 800703fa Illegal operation attempted on a registry key that has been marked for deletion. (Exception from HRESULT: 0x800703FA).”

Resolve

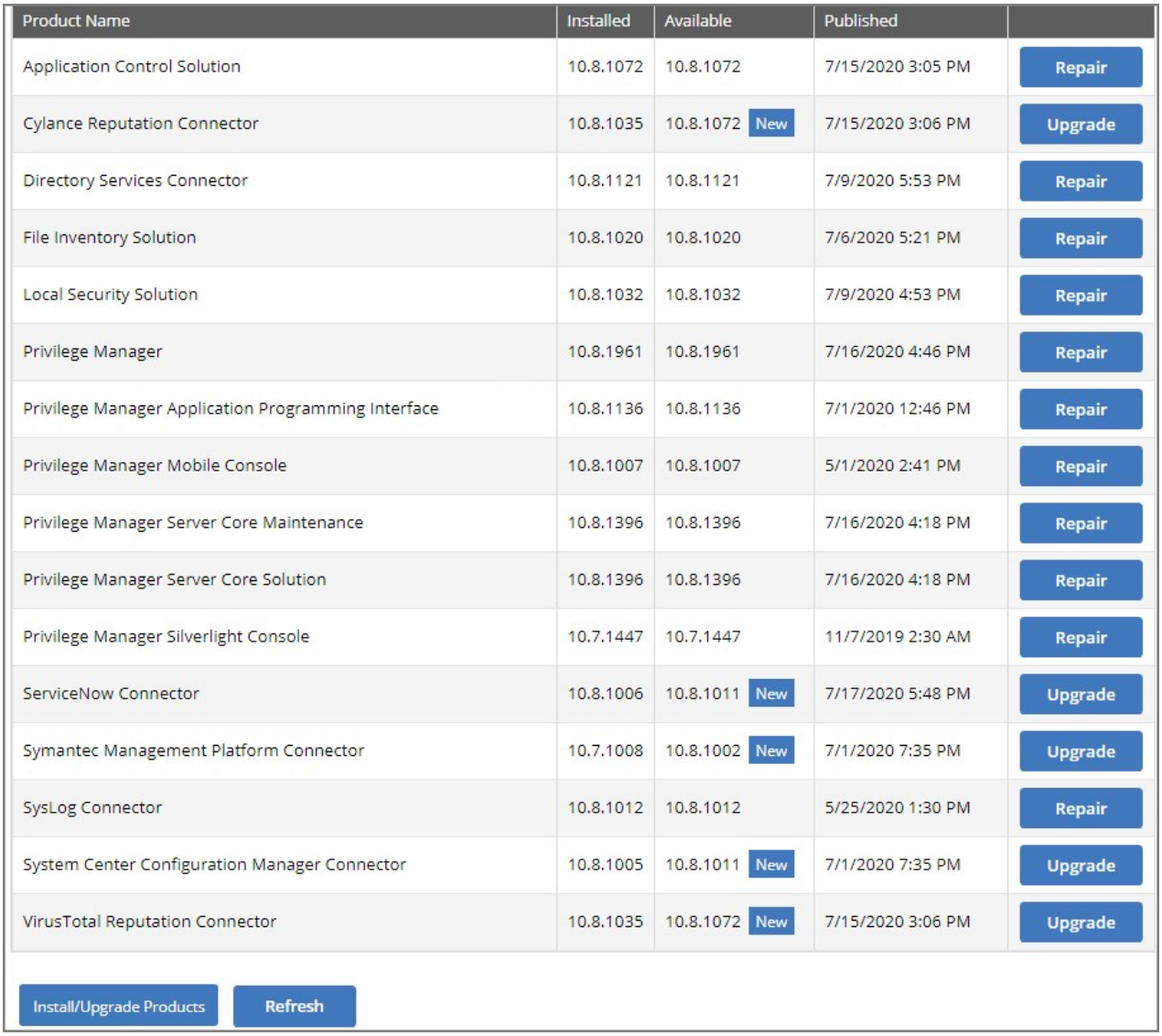
1. Close the browser window.
2. Complete an IIS reset by searching for the Windows Powershell application.
3. Right-click and select Run as Administrator.
4. Enter in: **IISreset** I hit **Enter**.



5. Once the IIS reset has completed navigate back to https://[YourInstanceName]/TMS/Setup.
6. Click **Add / Update Product Features**.



7. Click **Install/Upgrade Products**.



Product Name	Installed	Available	Published	
Application Control Solution	10.8.1072	10.8.1072	7/15/2020 3:05 PM	Repair
Cylance Reputation Connector	10.8.1035	10.8.1072 New	7/15/2020 3:06 PM	Upgrade
Directory Services Connector	10.8.1121	10.8.1121	7/9/2020 5:53 PM	Repair
File Inventory Solution	10.8.1020	10.8.1020	7/6/2020 5:21 PM	Repair
Local Security Solution	10.8.1032	10.8.1032	7/9/2020 4:53 PM	Repair
Privilege Manager	10.8.1961	10.8.1961	7/16/2020 4:46 PM	Repair
Privilege Manager Application Programming Interface	10.8.1136	10.8.1136	7/1/2020 12:46 PM	Repair
Privilege Manager Mobile Console	10.8.1007	10.8.1007	5/1/2020 2:41 PM	Repair
Privilege Manager Server Core Maintenance	10.8.1396	10.8.1396	7/16/2020 4:18 PM	Repair
Privilege Manager Server Core Solution	10.8.1396	10.8.1396	7/16/2020 4:18 PM	Repair
Privilege Manager Silverlight Console	10.7.1447	10.7.1447	11/7/2019 2:30 AM	Repair
ServiceNow Connector	10.8.1006	10.8.1011 New	7/17/2020 5:48 PM	Upgrade
Symantec Management Platform Connector	10.7.1008	10.8.1002 New	7/1/2020 7:35 PM	Upgrade
SysLog Connector	10.8.1012	10.8.1012	5/25/2020 1:30 PM	Repair
System Center Configuration Manager Connector	10.8.1005	10.8.1011 New	7/1/2020 7:35 PM	Upgrade
VirusTotal Reputation Connector	10.8.1035	10.8.1072 New	7/15/2020 3:06 PM	Upgrade

Install/Upgrade Products Refresh

8. Select **ALL** required solutions.
9. Click **Install** and the upgrade process will begin.

Privilege Manager on-premise does not work with Azure Service Bus if the web server is set to use only TLS 1.2.

Customers that want to restrict connections on their web server to TLS 1.2 need to make modifications to C:\inetpub\wwwroot\Tms\ServiceBus\web.config and C:\inetpub\wwwroot\Tms\Worker\web.config. They also must have .NET Framework 4.6 or newer installed and modify the <system.web> section as follows:

1. Open C:\inetpub\wwwroot\Tms\ServiceBus\web.config.
2. Change the <system.web> section to:

```
<system.web>
 <httpRuntime targetFramework="4.6"/>
  <authorization>
   <allow users="?"/>
  </authorization>

 <authentication mode="Windows"/>
</system.web>
```

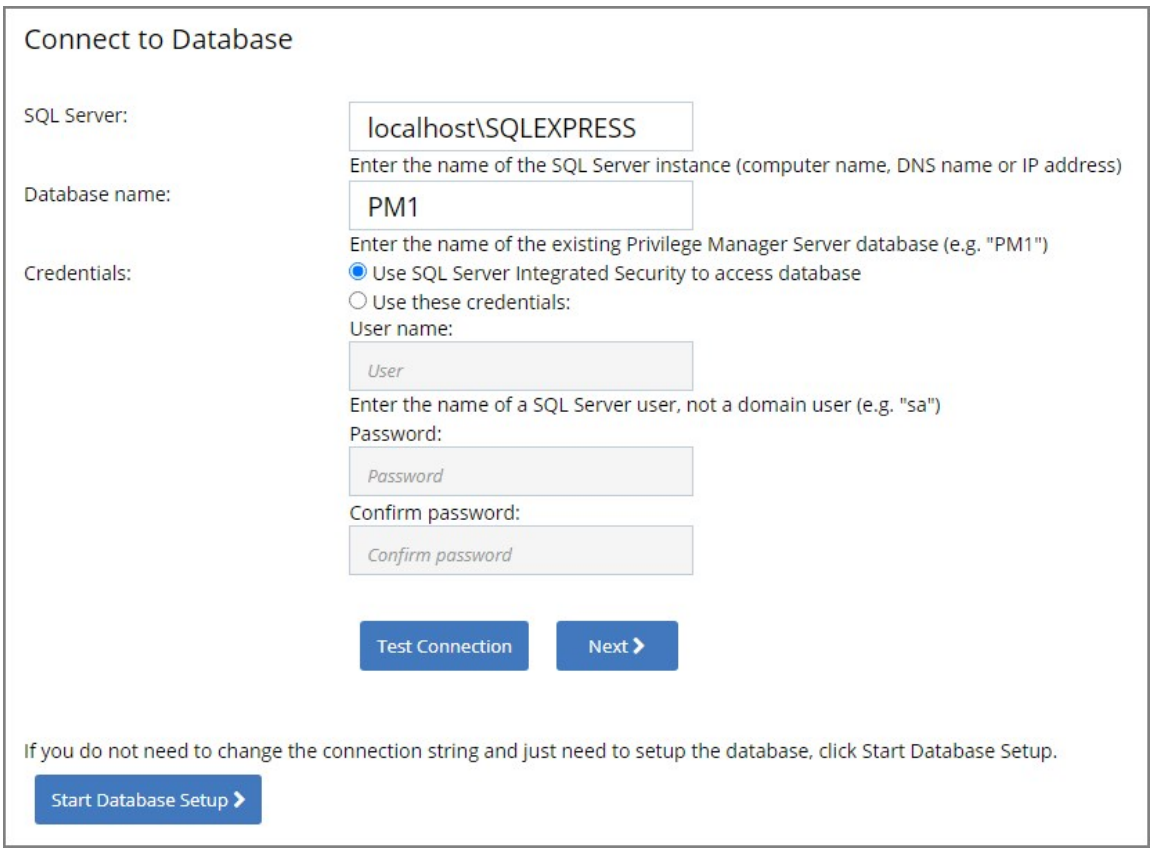
3. Save the file.
4. Open C:\inetpub\wwwroot\Tms\Worker\web.config.
5. Change the <system.web> section to:

```
<system.web>
 <httpRuntime targetFramework="4.6"/>
  <authorization>
   <allow users="?"/>
  </authorization>

 <authentication mode="Windows"/>
</system.web>
```

6. Save the file.

When accessing the Privilege Manager console or during an instance update, if one of the databases is unreachable the user is directed to the "Connect to Database" screen.



Reasons for this state:

- The SQL Server service is not reachable. Check the service and restart if necessary.
- The SQL Certificate has expired. Delete the old certificate and have the server recreate the certificate.
- SQL Server authentication method changed. Depending on the selection during initial setup, the credentials used come from either
  - SQL Integrated Security settings and no further details need to be entered when the first radio button is selected. This is usually the account information for the account running the application pools for Privilege Manager in IIS.
  - Overwrite Account credentials when the second radio button is selected.

If a database connection ever needs to be updated, the **Connect to Database** page can be accessed locally on the server hosting the Privilege Manager instance by navigating to .../TMS/Setup/Database/ConnectDatabase in the browser. To access the page the user needs to have local admin rights on the server.

This section provides a collection of possible performance issues and their remediation options.

The following topics are available:

In environments with policies having many filters, starting policy analysis during boot-up can impact the overall boot performance.

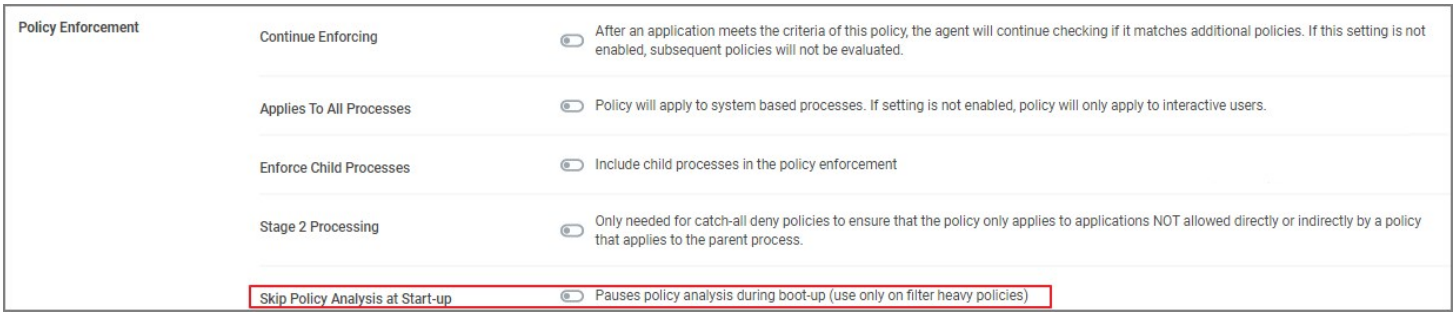
If this is an issue in your environment you can pause the policy analysis during boot. Pause analysis during the boot-phase decreases CPU utilization and delays to the boot process.

The end of the boot-phase in which policy analysis is paused, is defined as the CPU utilization after start-up being below 25% for a minimum of 120 seconds. Once that benchmark is reached, policy analysis will start.

> **Warning**: Using this feature opens your systems up to vulnerabilities during the boot-phase due to policies not being enforced for a certain amount of time, until the above mentioned condition is met.

Enable Pausing Policy Analysis during Boot-up

Each policy by default has a list of policy enforcement options under **Advanced | Policy Enforcement**.

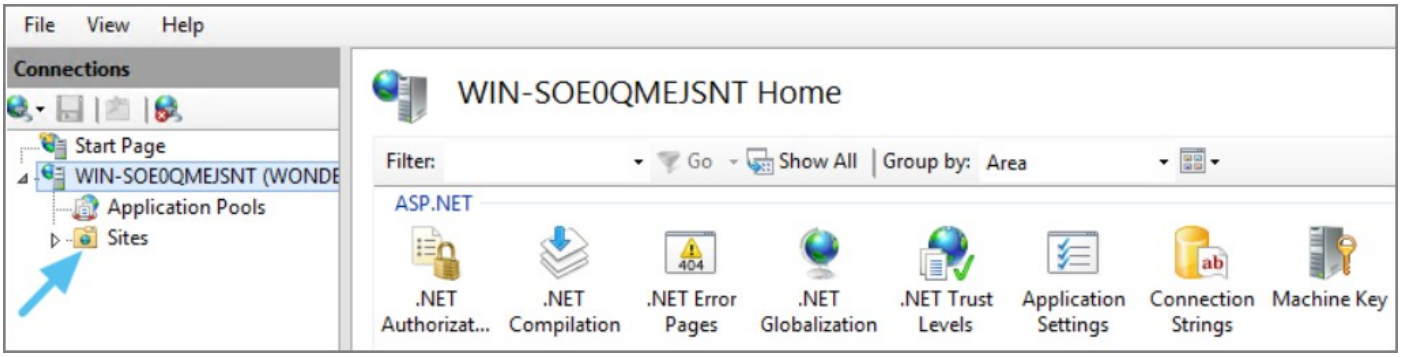


To enable pausing policy analysis during boot-up on filter-rich policies, set the **Pause Policy Analysis During Boot** switch to on and save the change.

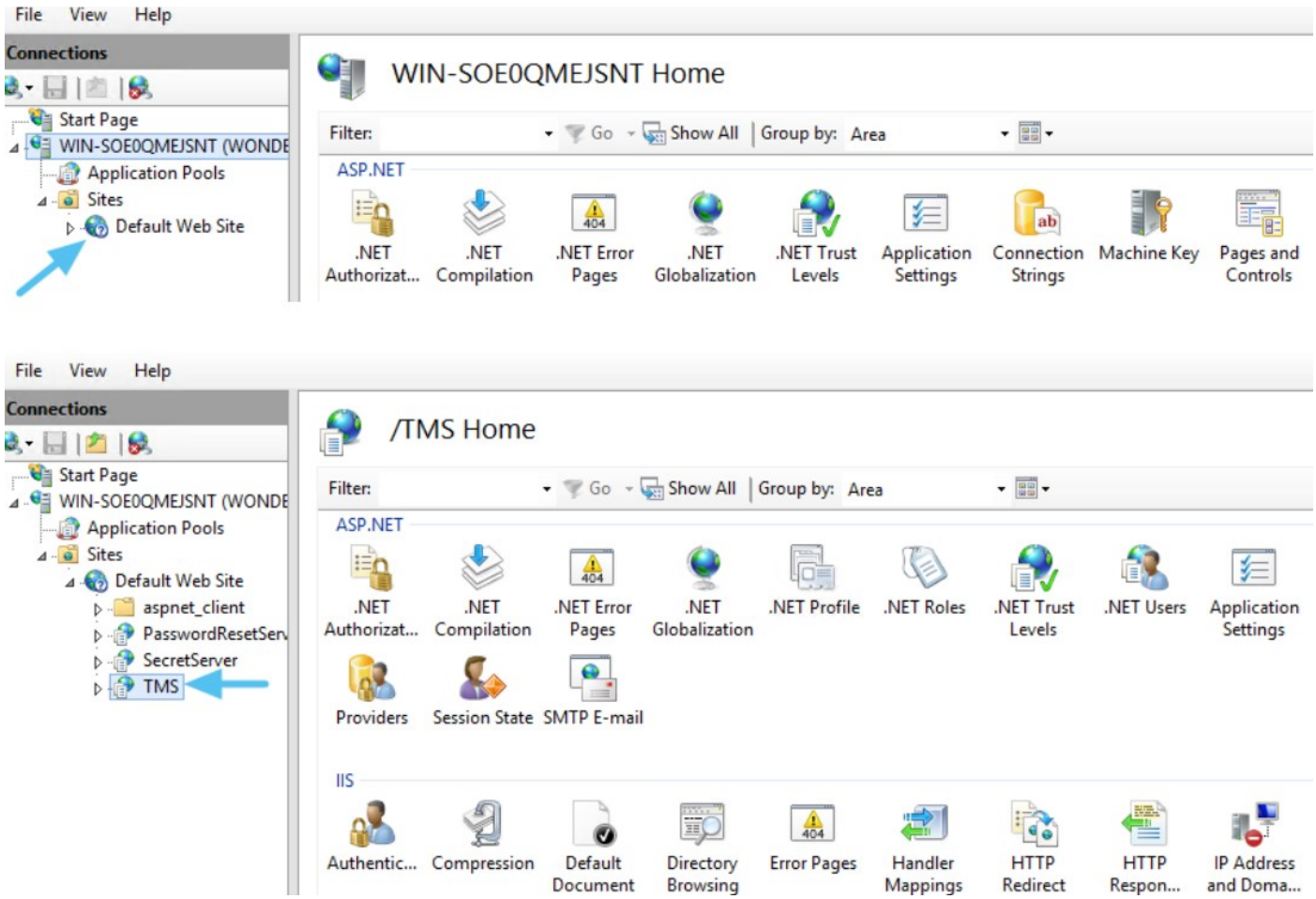
When attempting to login to Privilege Manager and you are unable to access the application window and you are continuously redirected to the login modal, verifying the IIS settings and resetting the app server might help.

Resolve

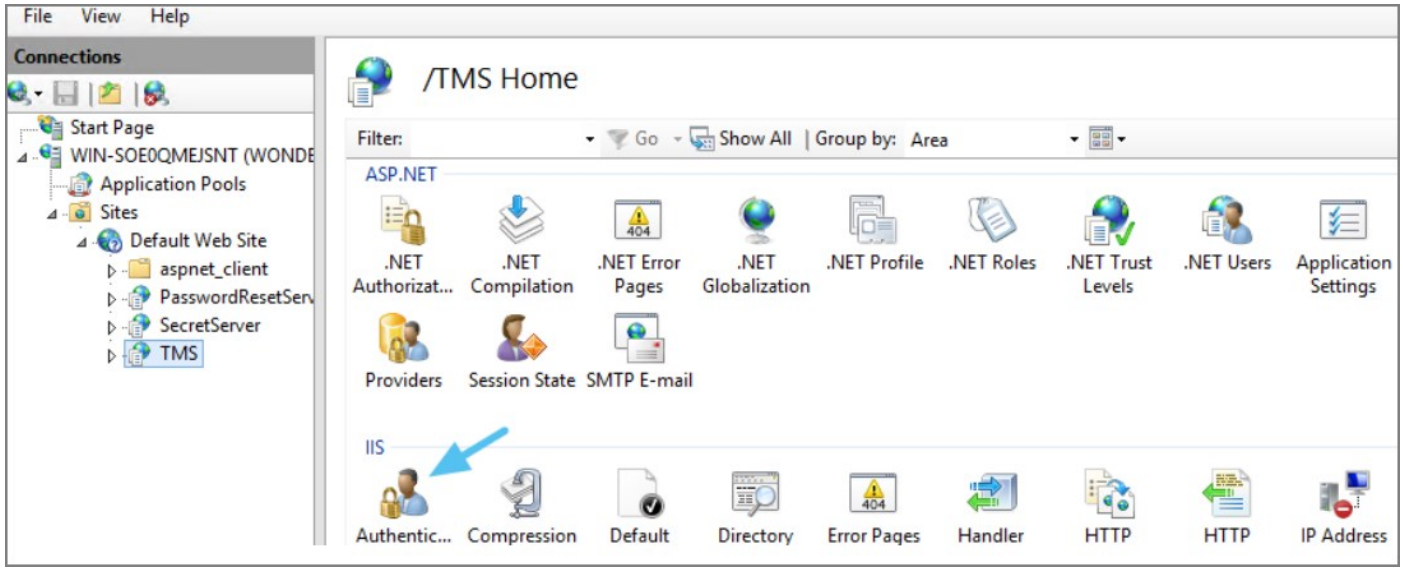
1. Open **Internet Information Services (IIS) Manager**.
2. Expand **Sites**.



3. Click the **TMS** Site.

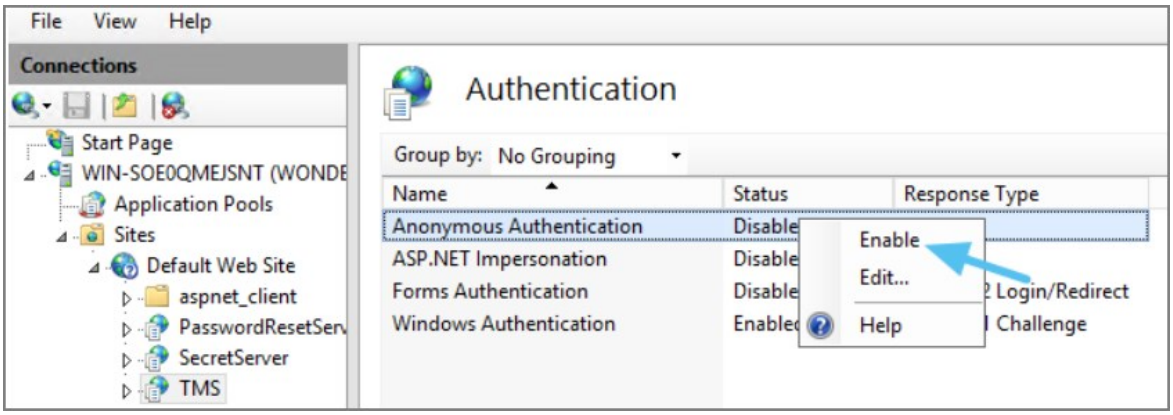


4. Click on **Authentication**.

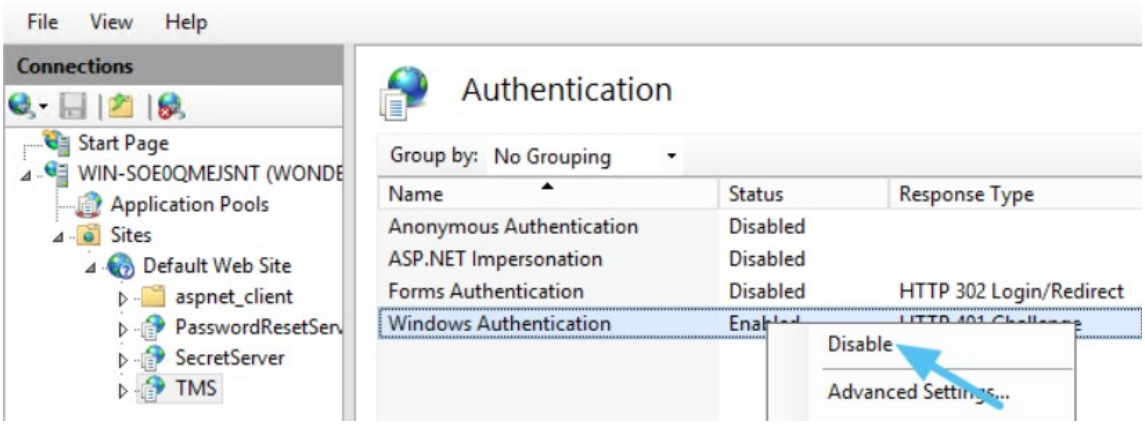


5. Right-click on **Anonymous Authentication**.

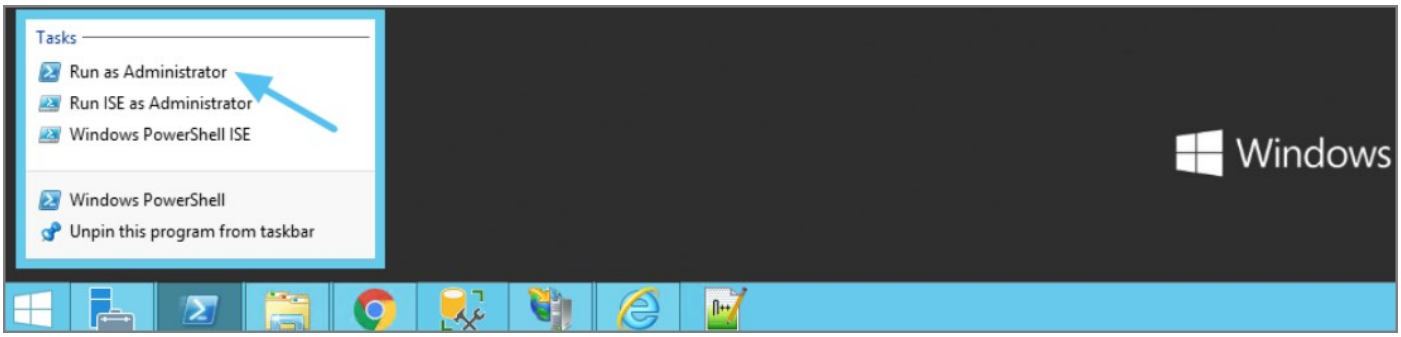
6. Click **Enable**.



7. Right-click on **Windows Authentication**.
8. Click on **Disable**.



9. Open **Powershell**, type iisreset and press **Enter**.



10. Launch Privilege Manager .

The following topics dealing with logs in Privilege Manager are available:

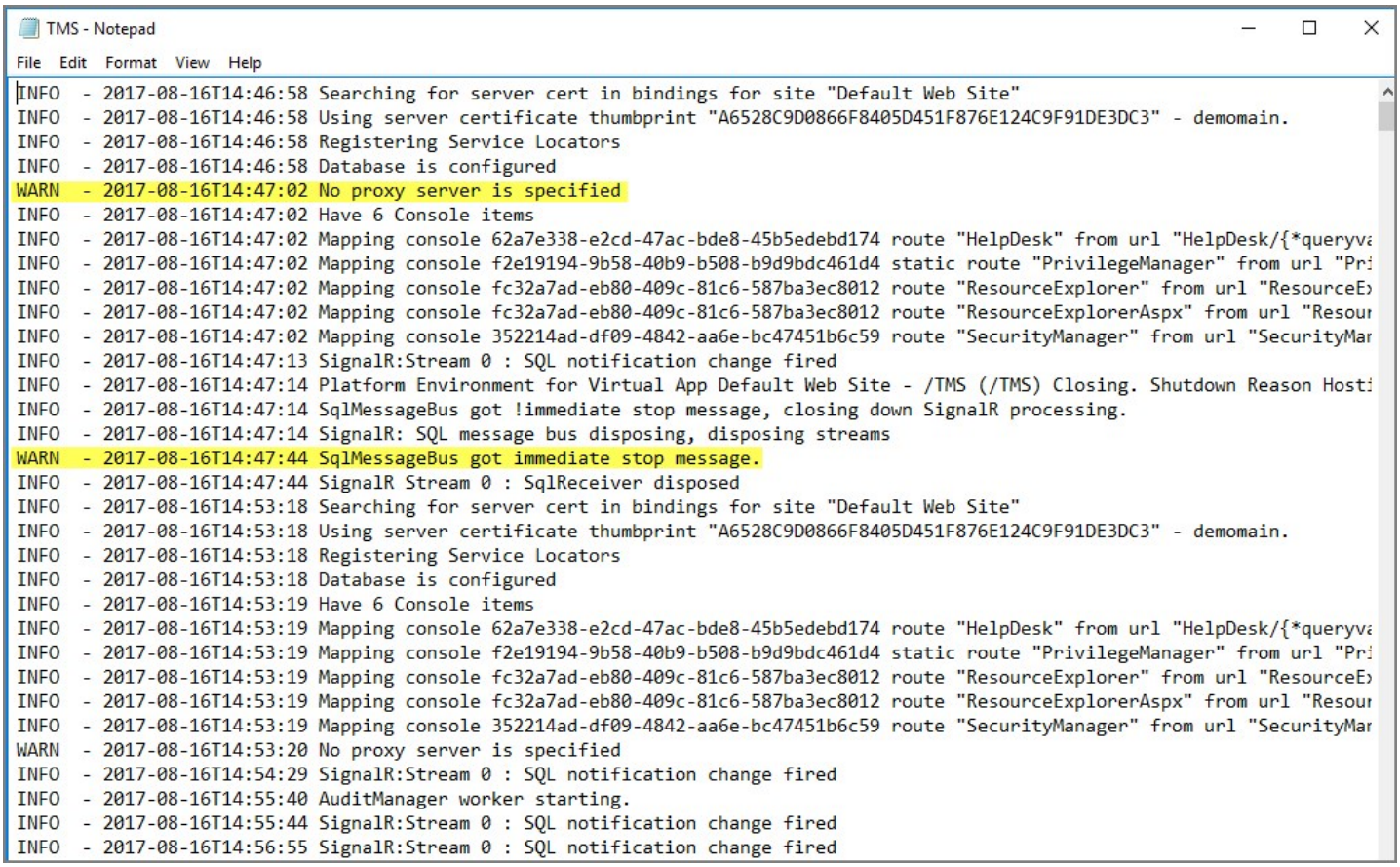
- Where are My Server Logs?
- Where are My Agent Logs?
- SQL Server Transaction Logs
- User Interface and Ports

When something goes wrong in any technological platform, the best clues about 'why' are usually buried in log files. In Privilege Manager , it depends on 'what' is happening to know where to look for clues first, but server log files are usually a good are to start.

All Server-Side Privilege Manager Logs are written to %PROGRAMDATA%\Thycotic\Logs. Usually that means the folder path on your server is C:\ProgramData\Thycotic\Logs.

Keep in mind that the shared folder ProgramData can be hidden. You can enter this path directly in your file explorer's navigation bar to find the logs.

Within the Logs folder, you will find one log file for each web app. (e.g. Tms.log, Tms-Setup.log, Tms-Worker.log, etc.). When submitting a case to Delinea's Support team, it is always a good practice to send these log files.



By default, these log files will contain informational events, warnings, and errors.

Not included in your default logs are verbose/trace/debug errors, but this is configurable via the web-logging.config file in each web app directory discussed below. If interested in changing your log settings, you can find more information about the Log4Net Core “Level Value” options here: https://logging.apache.org/log4net/log4net-1.2.11/release/sdk/log4net.Core.Level.html

To edit log settings (i.e. Log trimming by size, type of recorded Log4Net Events) you can edit the code in your web-logging file, usually located in C:\inetpub\wwwroot\TMS\web-logging. By default, this file looks like this:

```
<?xml version="1.0" encoding="utf-8" ?>
<log4net>
<root>
<level value="INFO" />
<appender-ref ref="Thycotic.LogFileAppender" />
```

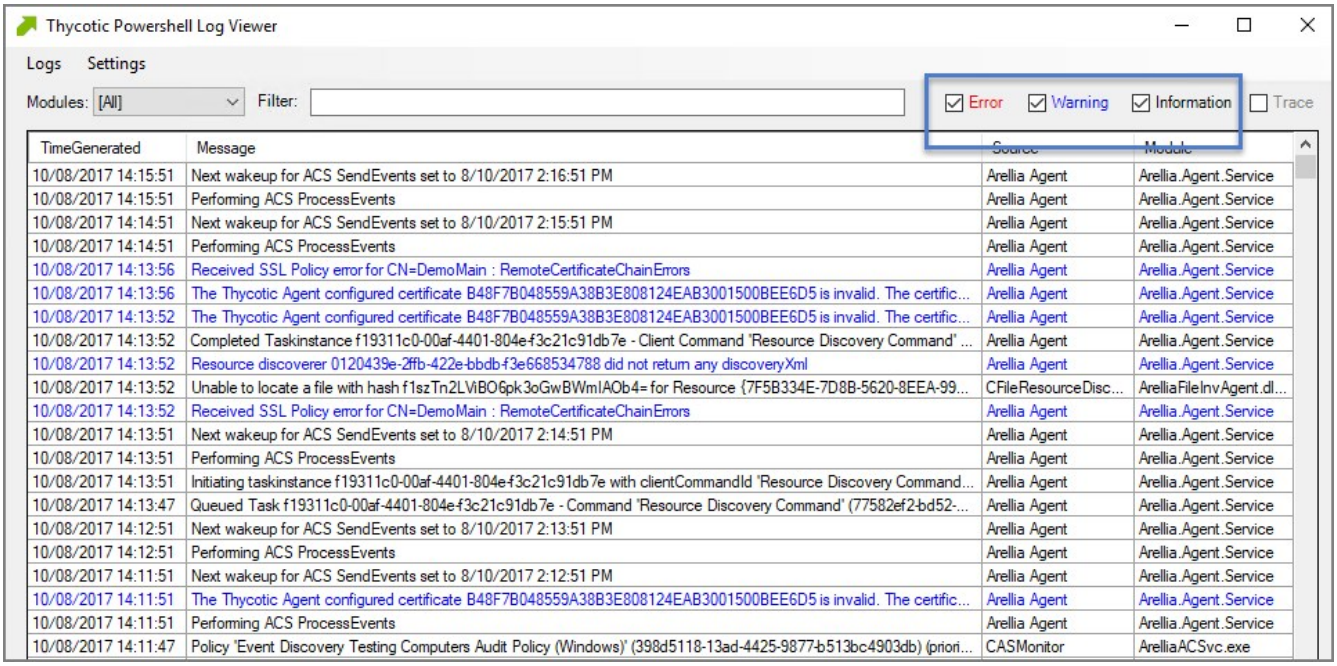
```
</root>
<logger name="Thycotic">
<level value="INFO" />
</logger>
<appender name="Thycotic.LogFileAppender" type="log4net.Appender.RollingFileAppender">
<file value="${ProgramData}\Thycotic\Logs\TMS.log" />
<rollingStyle value="Size" />
<maxSizeRollBackups value="34" />
<maximumFileSize value="1MB" />
<lockingModel type="log4net.Appender.FileAppender+MinimalLock" />
<layout type="Thycotic.Platform.Logging.Log4NetSimpleLayout,Thycotic.Platform"></layout>
</appender>
</log4net>
```

If something is going wrong on specific endpoints, another place to look for answers is in your Agent's Event Log Viewer.

In your endpoint machine, navigate to your Delinea Agent files. This is usually located in C:\Program Files\Thycotic\Powershell\Arellia.Agent. Right-click on AgentLogViewer and select Run with Powershell. This will open your Agent Event Log Viewer, which shows updates in real time as the agent communicates with the Privilege Manager server.

For remote access, Agent logs are also viewable through the Windows Event Viewer.

Scroll all the way to the top of the page to see the most recent activity from your Delinea Agent. Uncheck the Information box on the upper right-hand corner to narrow search results for any Errors and Warning messages that may be occurring. You can also double-click any line item for more detailed information about each event.



TimeGenerated	Message	Source	Module
10/08/2017 14:15:51	Next wakeup for ACS SendEvents set to 8/10/2017 2:16:51 PM	Arellia Agent	Arellia.Agent.Service
10/08/2017 14:15:51	Performing ACS ProcessEvents	Arellia Agent	Arellia.Agent.Service
10/08/2017 14:14:51	Next wakeup for ACS SendEvents set to 8/10/2017 2:15:51 PM	Arellia Agent	Arellia.Agent.Service
10/08/2017 14:14:51	Performing ACS ProcessEvents	Arellia Agent	Arellia.Agent.Service
10/08/2017 14:13:56	Received SSL Policy error for CN=DemoMain : RemoteCertificateChainErrors	Arellia Agent	Arellia.Agent.Service
10/08/2017 14:13:56	The Thycotic Agent configured certificate B48F7B048559A38B3E808124EAB3001500BEE6D5 is invalid. The certific...	Arellia Agent	Arellia.Agent.Service
10/08/2017 14:13:52	The Thycotic Agent configured certificate B48F7B048559A38B3E808124EAB3001500BEE6D5 is invalid. The certific...	Arellia Agent	Arellia.Agent.Service
10/08/2017 14:13:52	Completed Taskinstance f19311c0-00af-4401-804e-f3c21c91db7e - Client Command 'Resource Discovery Command' ...	Arellia Agent	Arellia.Agent.Service
10/08/2017 14:13:52	Resource discoverer 0120439e-2ffb-422e-bbdb-f3e668534788 did not return any discoveryXml	Arellia Agent	Arellia.Agent.Service
10/08/2017 14:13:52	Unable to locate a file with hash f1szTn2LViBO6pk3oGwBWmIAOb4= for Resource {7F5B334E-7D8B-5620-8EEA-99...	CFileResourceDisc...	ArelliaFileInvAgent.dl...
10/08/2017 14:13:52	Received SSL Policy error for CN=DemoMain : RemoteCertificateChainErrors	Arellia Agent	Arellia.Agent.Service
10/08/2017 14:13:51	Next wakeup for ACS SendEvents set to 8/10/2017 2:14:51 PM	Arellia Agent	Arellia.Agent.Service
10/08/2017 14:13:51	Performing ACS ProcessEvents	Arellia Agent	Arellia.Agent.Service
10/08/2017 14:13:51	Initiating taskinstance f19311c0-00af-4401-804e-f3c21c91db7e with clientCommandId 'Resource Discovery Command...	Arellia Agent	Arellia.Agent.Service
10/08/2017 14:13:47	Queued Task f19311c0-00af-4401-804e-f3c21c91db7e - Command 'Resource Discovery Command' (77582ef2-bd52-...	Arellia Agent	Arellia.Agent.Service
10/08/2017 14:12:51	Next wakeup for ACS SendEvents set to 8/10/2017 2:13:51 PM	Arellia Agent	Arellia.Agent.Service
10/08/2017 14:12:51	Performing ACS ProcessEvents	Arellia Agent	Arellia.Agent.Service
10/08/2017 14:11:51	Next wakeup for ACS SendEvents set to 8/10/2017 2:12:51 PM	Arellia Agent	Arellia.Agent.Service
10/08/2017 14:11:51	The Thycotic Agent configured certificate B48F7B048559A38B3E808124EAB3001500BEE6D5 is invalid. The certific...	Arellia Agent	Arellia.Agent.Service
10/08/2017 14:11:51	Performing ACS ProcessEvents	Arellia Agent	Arellia.Agent.Service
10/08/2017 14:11:47	Policy 'Event Discovery Testing Computers Audit Policy (Windows)' (398d5118-13ad-4425-9877-b513bc4903db) (priori...	CASMonitor	ArelliaACSvc.exe

SQL Server maintains a history of all operations using a Transaction Log. If this transaction log becomes full, you may receive one or more of the following errors:

- System.ArgumentException: Cannot add two background tasks with the same name.
- Thycotic.Data.DataAccessorException: The transaction log for database '' is full. To find out why space in the log cannot be reused, see the log_reuse_wait_desc column in sys.databases

By default, a transaction log can grow to an unrestricted size. A transaction log may become full under the following circumstances:

- The drive where the transaction log file is kept is out of disk space.
- The transaction log file hits its growth limit.

Possible solutions include:

- Backing up the log.
- Freeing disk space so that the log can automatically grow.
- Moving the log file to a disk drive with sufficient space.
- Increasing the size of a log file.
- Adding a log file on a different disk.
- Completing or killing a long-running transaction.
- Switching to simple recovery mode and truncating the log.

For more detailed information on transaction logs in SQL, see http://technet.microsoft.com/en-us/library/ms345583%28v=sql.90%29.aspx

When something goes wrong in Privilege Manager , the UI has a few places worth checking:

- **Admin | Diagnostics** - this will give you information on Agents and Operating Systems, click **Console Logs** for more details.
- **Reports | Diagnostics** – A great place to look for some useful programmed reports on Agents, Remote Tasks, Policies Not Received by Agents, Summary of Gauge States, and Licensing.

Connectivity

Are you having Connectivity issues? A few things to keep in mind:

- Outbound access from the agent to the server is done by default over port 443 (the standard port for HTTPS communication), but you may specify a different port if desired.
- The only port that the agent listens on is port 5593. This is not required. For example, you can block this port and agents will pull from the server on a set schedule.

Delinea

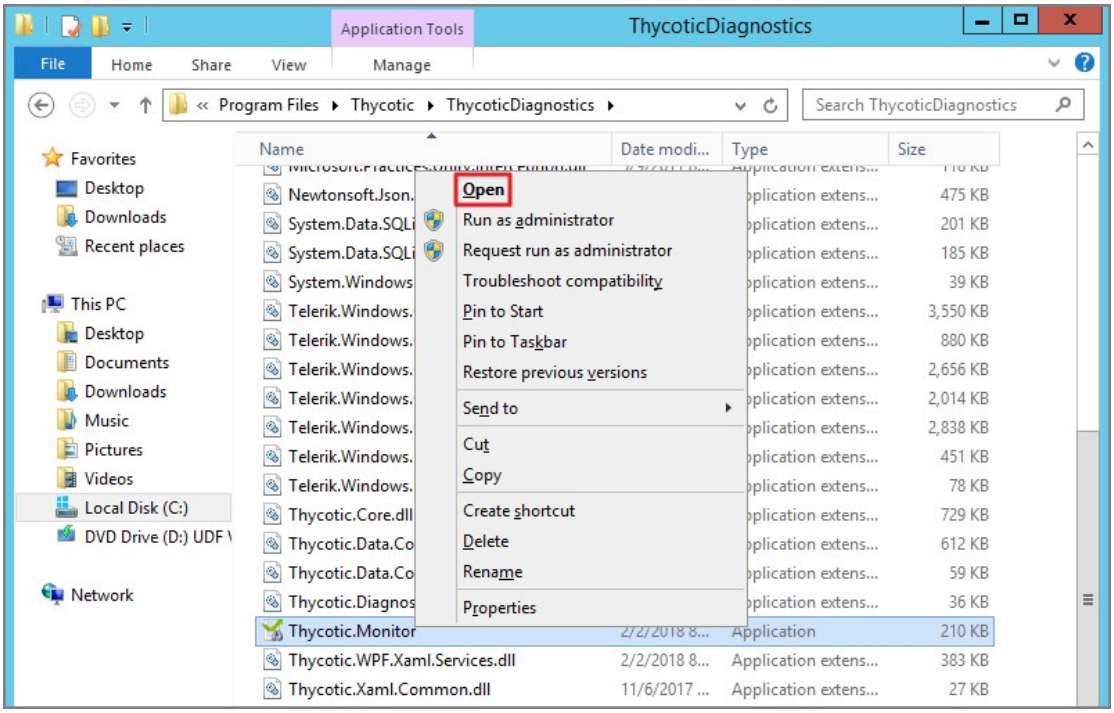
Using certain tools for troubleshooting purposes can help locating issues and finding a solution to a problem.

The following troubleshooting tools topics are available in this section:

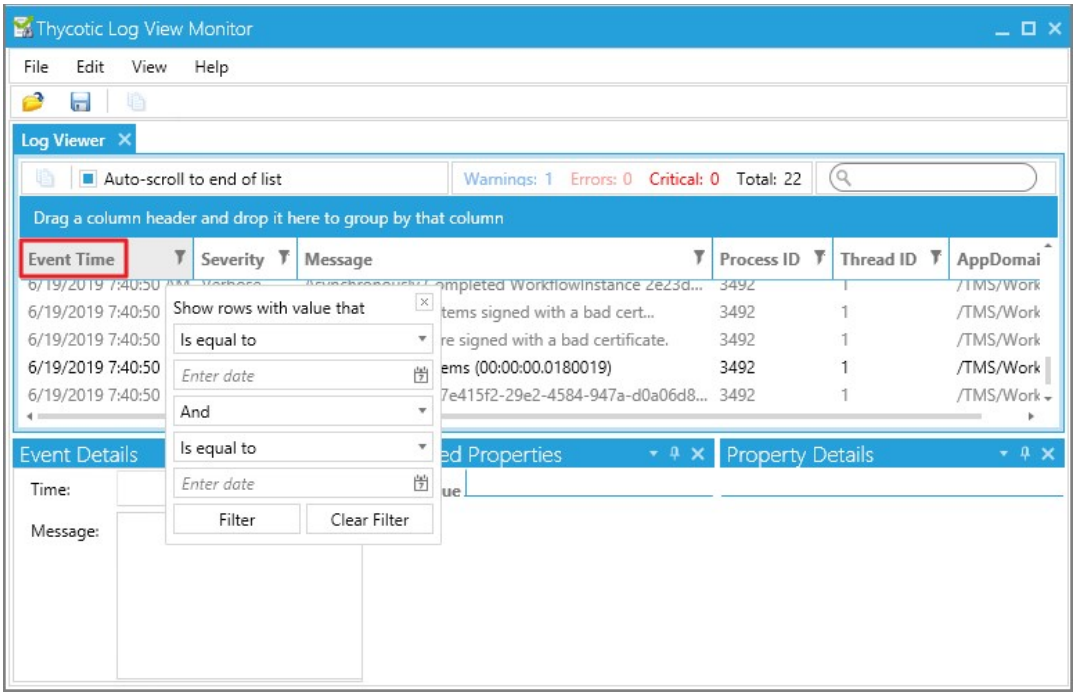
- How to use the Thycotic Monitor for Troubleshooting
- Using Process Hacker for Troubleshooting
- Troubleshooting a Policy with Process Explorer

While using Privilege Manager , you can utilize the Thycotic Monitor to help troubleshoot issues that occur on the web console.

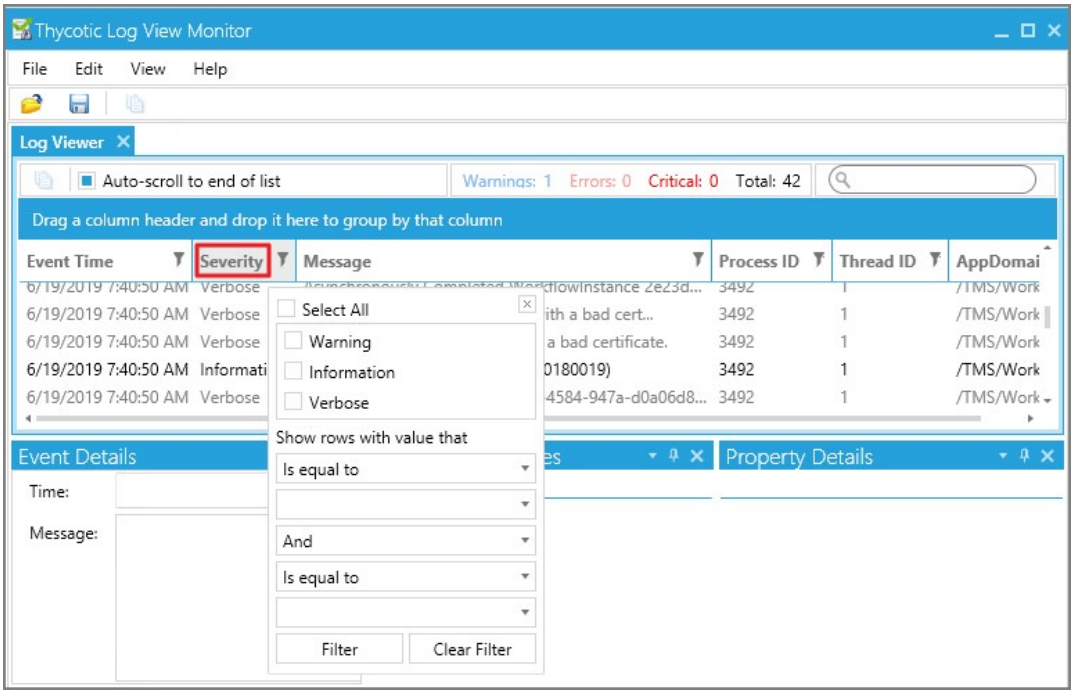
1. On the server with the Privilege Manager installation navigate to C:\ProgramFiles\Thycotic\ThycoticDiagnostics and open the Thycotic Monitor.
2. Right-click on Thycotic Monitor and select Open.



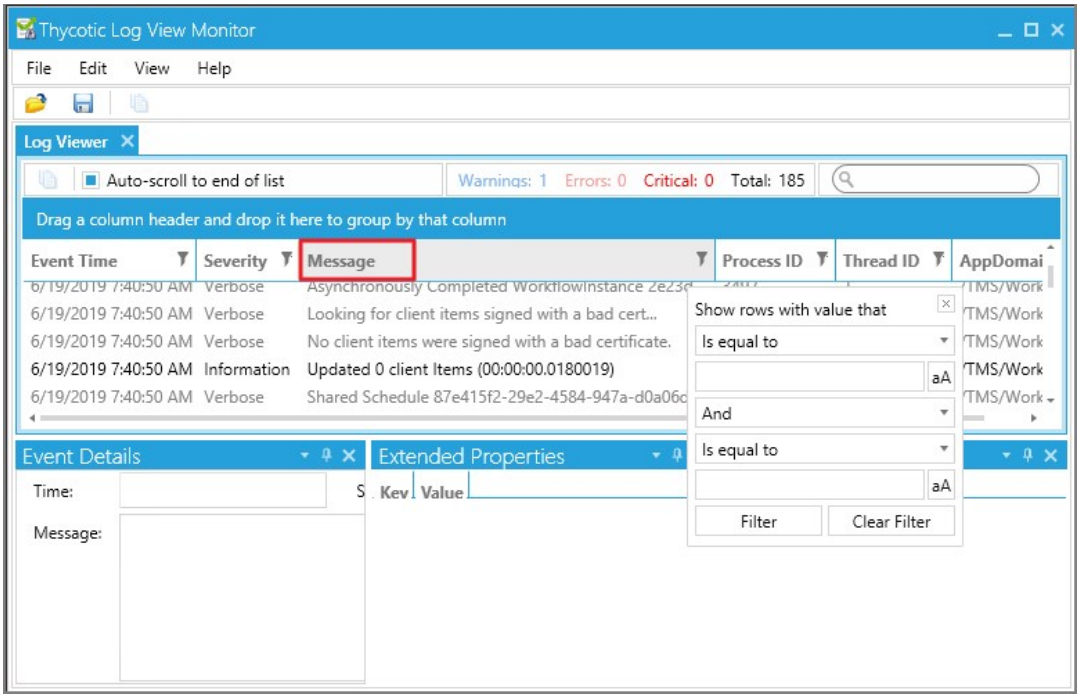
3. Left-click on the filter icon for Event Time to filter for specific times in order to better help find a specific event.



4. Left-click on the filter icon for Severity to filter for specific severity levels.



5. Left-click on the filter icon for Message to narrow down specific messages and GUID's to help find errors.



Note: If you're attempting to troubleshoot an issue open the Thycotic Monitor and replicate the issue on the server that Privilege Manager is installed on. It may also be helpful to grab a screenshot including a time-stamp from when you replicate the error in order to better help with troubleshooting.

1. Open the Thycotic Monitor.
2. Replicate the issue server-side.
3. Select **File**.
4. Select **Save**.

The file saves as a .tracelog file type. You can upload the tracelog to your support case or review the event details for further information.

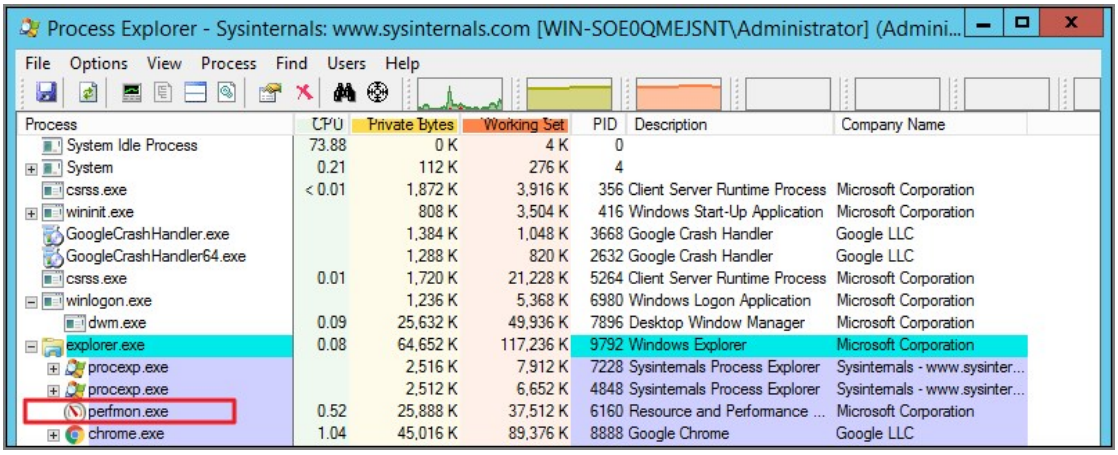
This topic describes how to troubleshoot a policy with Process Explorer. Process Explorer is used to look at policies that grant administrative privileges, but don't seem to work when

- an application is accessed, or
- actions are supposed to run.

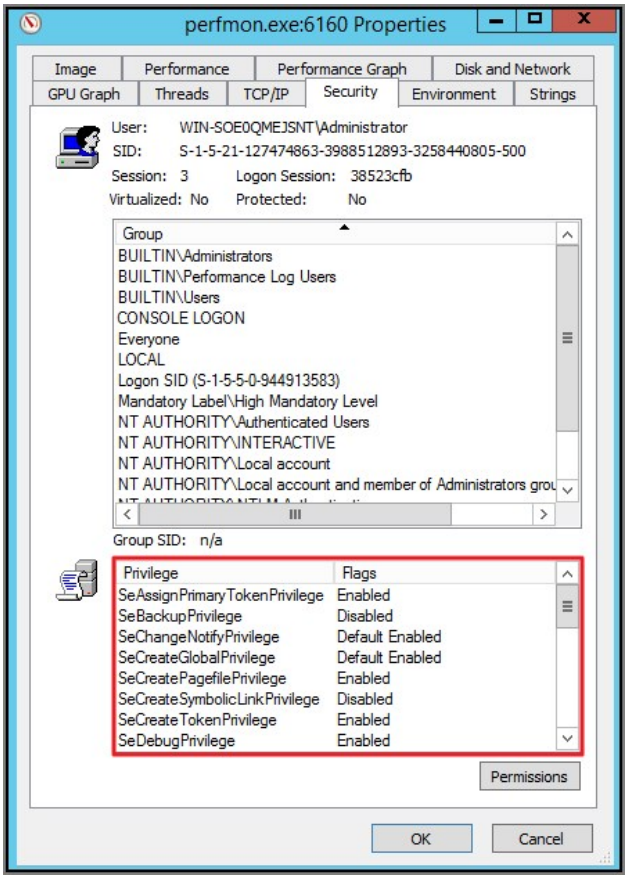
In the example below the policy allows resource monitor to run but the application is blank due to not having sufficient Windows Privileges. You can use Process Explorer to determine the correct Windows Privileges to add to the policy in order to use the resource monitor application.

Detailed Troubleshooting Steps

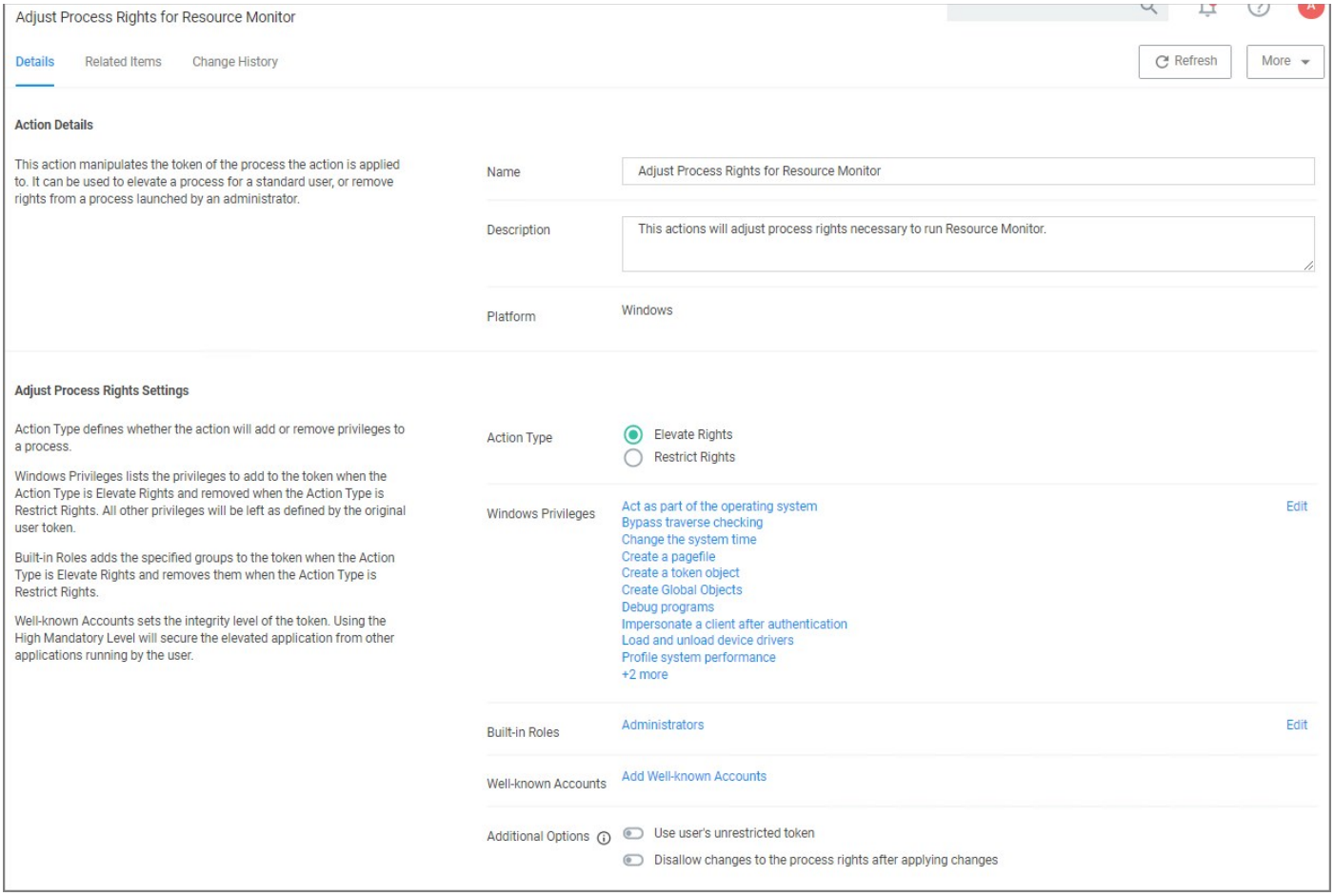
1. Download Process Explorer from the Mircosoft website and extract the downloaded ProcessExplorer.zip file locally on your system.
2. Open **Process Explorer**.
3. Next open **Resource Monitor** as the Administrator.
4. Navigate back to the Process Explorer Window and find the Resource Monitor application (perfmon.exe).



5. Right-click and select **Properties**.
6. Select the **Security** tab.
7. Under the Privilege section, you can see all the flags that are enabled in order to use the application.



8. Launch Privilege Manager and navigate to **Admin | Application Policies**.
9. Select the policy that elevates privileges to run **Resource Monitor**.
10. Under **Adjust Process Rights**, modify settings.



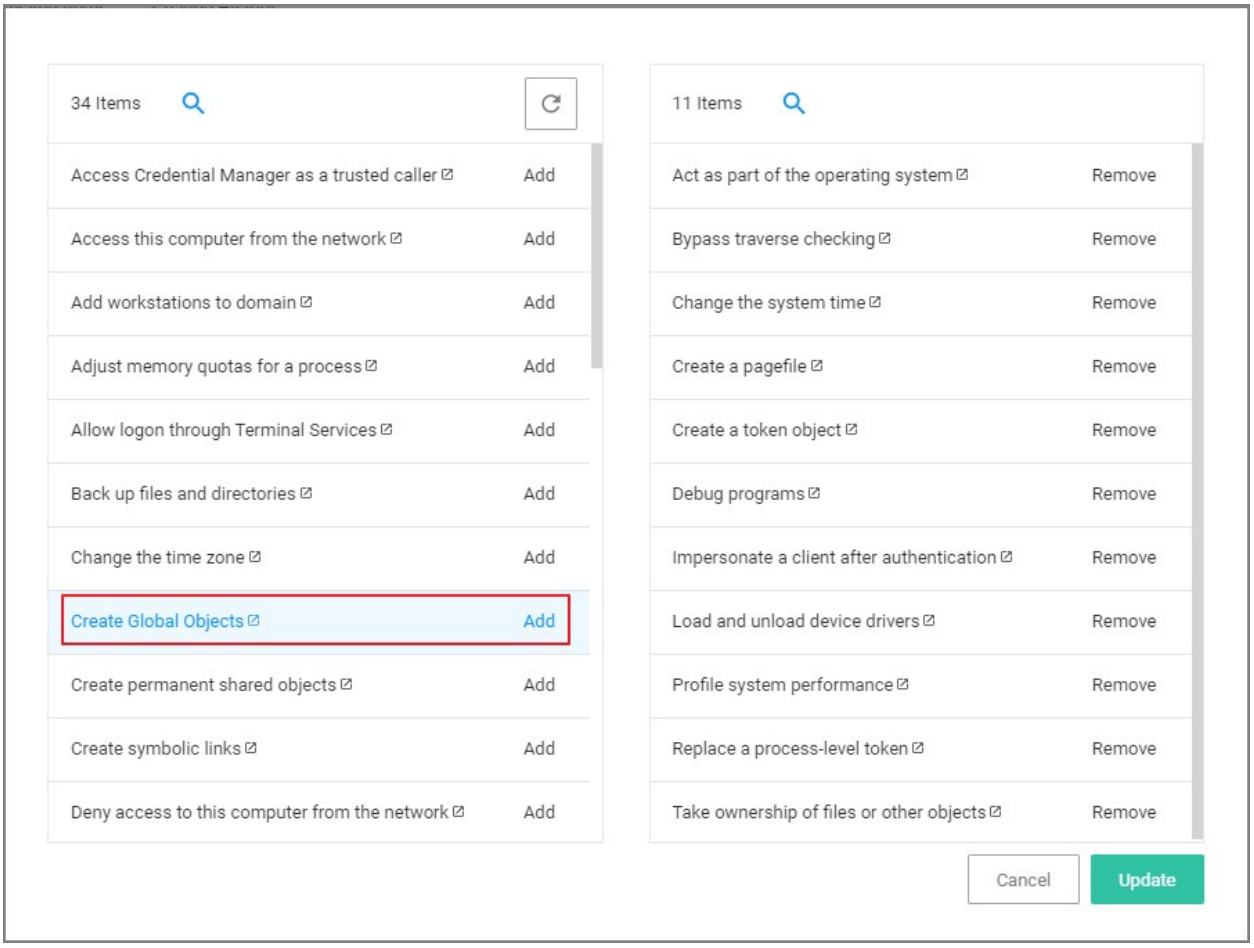
1. Select Add Administrative Rights or the elevation action you are using.

11. Under **Windows Privileges**, click **Edit**. (For this step you will have to determine which flags are enabled in Process Explorer in order to add the additional Windows Privileges to the action.)

12. In another window navigate to the following Microsoft web site @ https://docs.microsoft.com/en-us/windows/win32/secauthz/privilege-constants. The site will show the name of the Windows Privileges, along with the user right information that needs to be added to the action in Privilege Manager .

    For Example: The privileges listed under the properties security tab show **SeCreateGlobalPrivilege** as enabled. On the Microsoft website for Privilege Constants @ https://docs.microsoft.com/en-us/windows/win32/secauthz/privilege-constants the user right for SeCreateGlobalPrivilege privilege is: **Create global Objects**.

13. Enter the User right into the search box and then select the user right from the returned list. In this example enter in Create global objects.



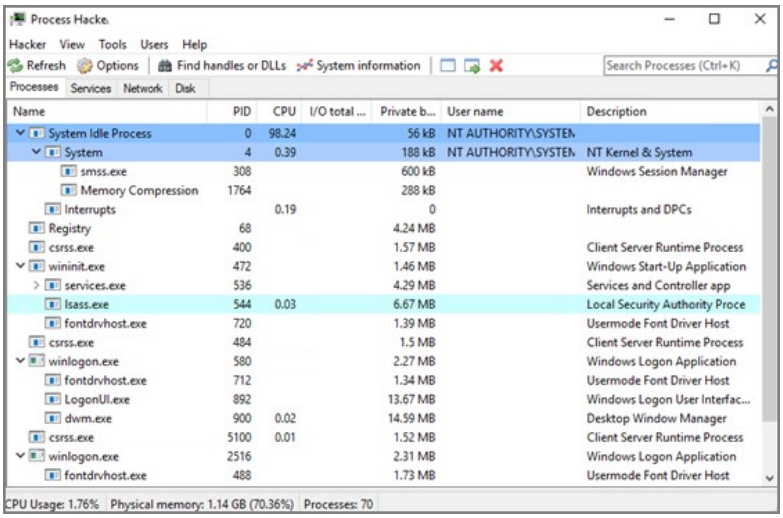
14. Click **Add**.
15. Remove any actions you don't need.
16. Click **Update**.
17. Click **Save Changes**.

Once the agent has received the updated policy, the additional Windows Privileges will be applied to the application next time it is launched.

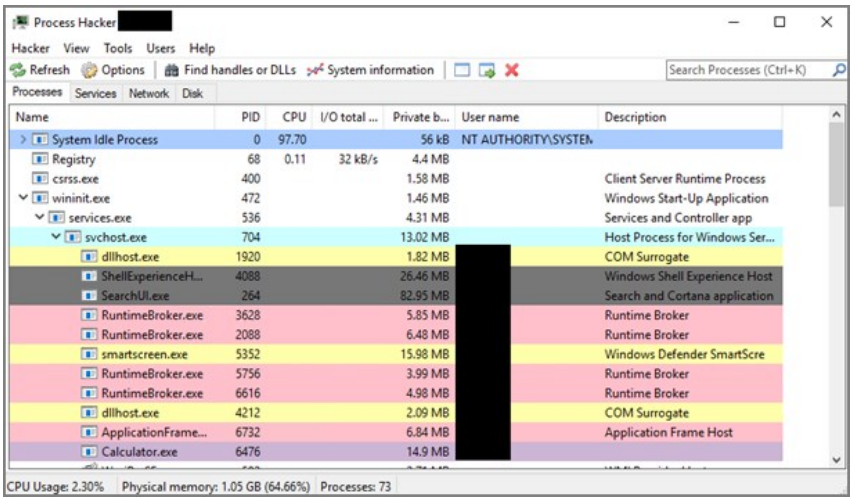
Process Hacker is a third-party tool that can be useful for troubleshooting as well. Please note that since this is a third-party tool, Delinea is not responsible for any part of the application and has no control over it.

It can be used to determine whether a process you are trying to apply an action to is a parent process or a child process of another application. If you do not want to install Process Hacker on the endpoint you are troubleshooting from, there is a portable version available as well that does not require it to be installed on the machine.

When you open Process Hacker, you will notice a screen like the one below that shows the running processes on the machine.

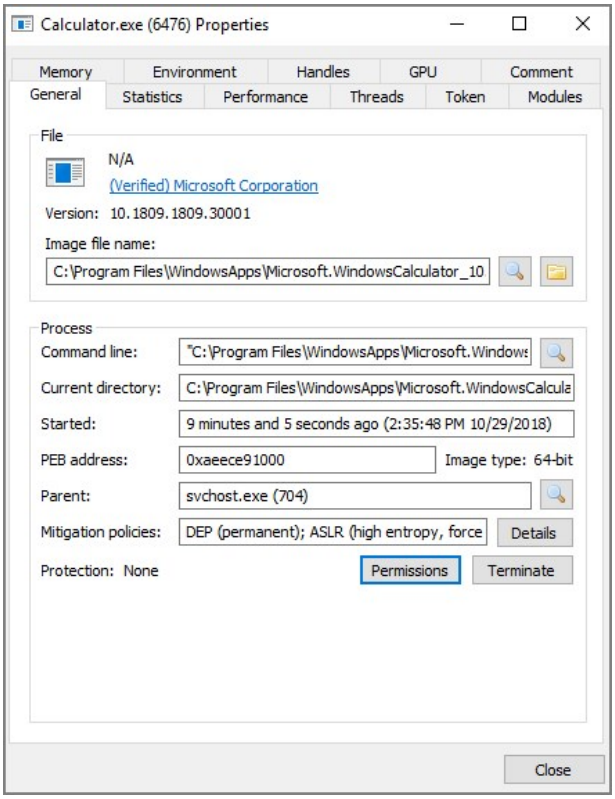


You will notice that some processes are listed underneath other processes. The processes listed under other processes are child processes of the top parent one. For example, after opening up the Calculator app on a test machine, the Process Hacker window looked like the screenshot below.



You can see at the bottom of the screenshot above that the Calculator.exe process is actually a child process of the svchost.exe process, which itself is a child process of the services.exe process, which is a child process of the wininit.exe process. Not all processes will be nested underneath as many parent processes as in this example.

You can also double-click on the process to open a window with more information about the process. You can find the parent process that way as well on the General tab of that window. The screenshot below is what the General tab shows for the Calculator.exe process.



You can see the Parent field, which shows you that the svchost.exe process is the parent of the Calculator.exe process. If you are viewing the parent process, then in the Parent field you will see “Non-existent process” instead of seeing a parent process listed.

You will also notice a Token tab in the screenshot above. That tab is useful in showing you whether the process is running elevated; it shows an “Elevated” field, with values Yes or No. It will also show you the process security tokens that the application needs to run. You normally do not need that information, but it is good to know where to find it, just in case.

As you can see from the information above, Process Hacker is a third-party tool that can be useful when troubleshooting why a policy is not applying like you think it should. For example, if you are trying to elevate a specific application or process, it might not be working correctly if that process is actually a child process. In that case, you can configure the policy to target the parent process and apply that same action to the child processes. You might not need to target the parent process in all situations, but sometimes it will be necessary.

Privilege Manager Mobile Application

The Privilege Manager Mobile console allows you to process approval requests, disclose passwords, and view alerts via the Privilege Manager Mobile Application on iOS and Android smartphones.

- Perform Azure AD synchronization
- Include "Mobile Message Approval Process" as a user role

Next, you must:

- Install the Privilege Manager Mobile Console
- Set up Azure AD such that you can add an application registration
- Configure the Microsoft Azure Service Bus
- Install the Privilege Manager Mobile Application

These instructions are based on the following assumptions:

1. The customer is using Azure AD and has already configured the Azure Active Directory App Registration per the documentation, allowing the customer to authenticate as an Azure AD user. The mobile application registration is added to the **same domain**.
2. The customer has the ability to create an Azure Service Bus service.

To begin the Privilege Manager Mobile Console setup, review the topics below (in the sequence listed) and follow all instructions:

1. Add the mobile application registration to your Azure Active Directory integration with Privilege Manager
2. Configure the Service Bus for Mobile
3. Install and Configure the Privilege Manager Mobile Console Solution on the Privilege Manager Server
4. Install the Privilege Manager Mobile App on a Mobile Device
5. Use the Mobile Application

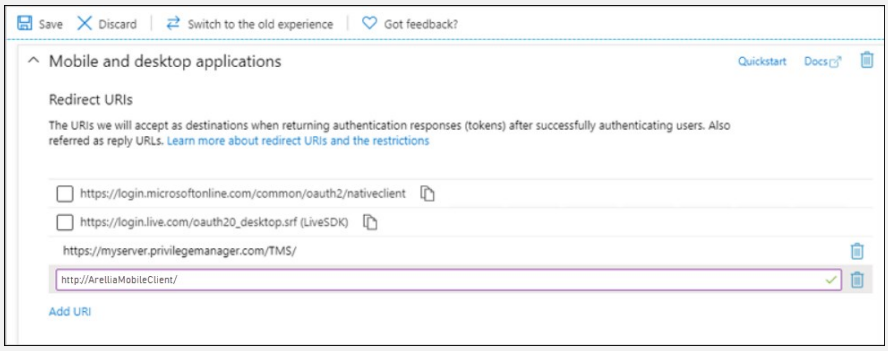
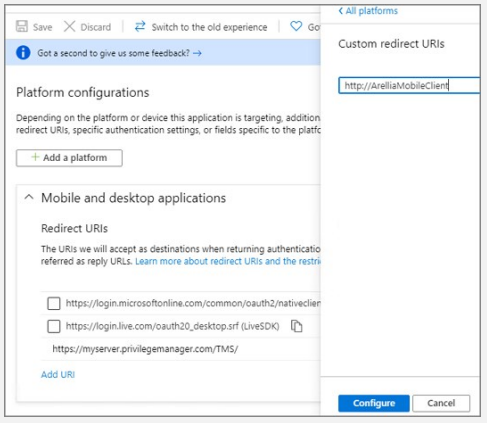
Configure Azure Active Directory

As a prerequisite for running the Privilege Manager Mobile Console, you must configure Azure Active Directory integration with Privilege Manager . Refer to Setting Up Azure Active Directory Integration in Privilege Manager .

Once Azure AD integration for your Privilege Manager instance is configured, follow these steps to add an additional Redirect URI for the mobile application to the Azure AD application registration:

1. Open the **Azure Management Console**.
2. Navigate to your **Active Directory** instance.
3. Select **App registrations** from the menu.
4. Click the **Owned applications** tab.
5. From the list under **Display name** select your Privilege Manager registration.
6. Either select the **Redirect URI** links or the **Authentication** menu.
7. Select **Add a platform**.
8. Select **Mobile and desktop applications**.
9. Set the Redirect URI to exactly http://ArelliaMobileClient/. There are two access points to do this either via:
    - Redirect URI or
    - Authentication menu.

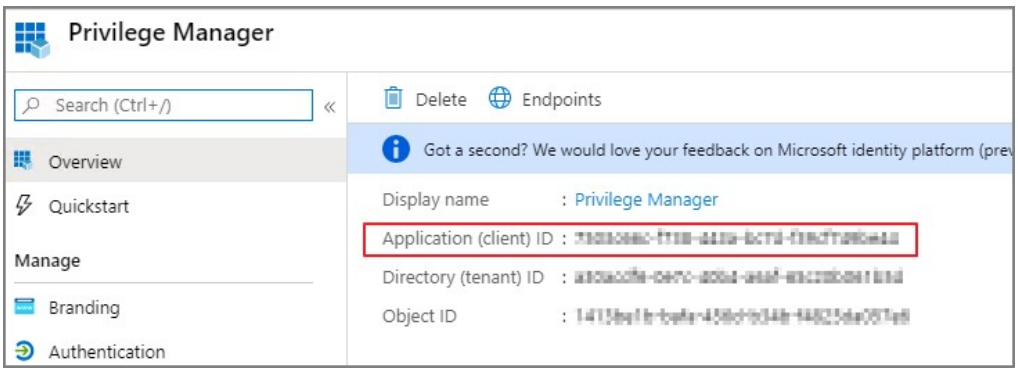
    The following table shows the steps you will see for each option:

	
1. Click Add URI.	1. Enter http://ArelliaMobileClient/.
2. Enter http://ArelliaMobileClient/.	2. Click **Configure**.

    Important: The URI value needs to exactly match http://ArelliaMobileClient/.
10. Click **Save**.

On the **App registrations** page under **Owned applications**, take note of the **Application (client) ID**. You will need to use the client ID when

you Configure the Mobile Console in Privilege Manager .



Configure the Service Bus for Mobile

For this a Service Bus Queue needs to be created, always refer to the latest instructions as outlined by Microsoft here in Quickstart: Use Azure portal to create a Service Bus queue.

If you already have an existing Service Bus in Azure, you are welcome to use the existing setup. You just need to create a new queue within your existing Service Bus to be used by the Mobile App.

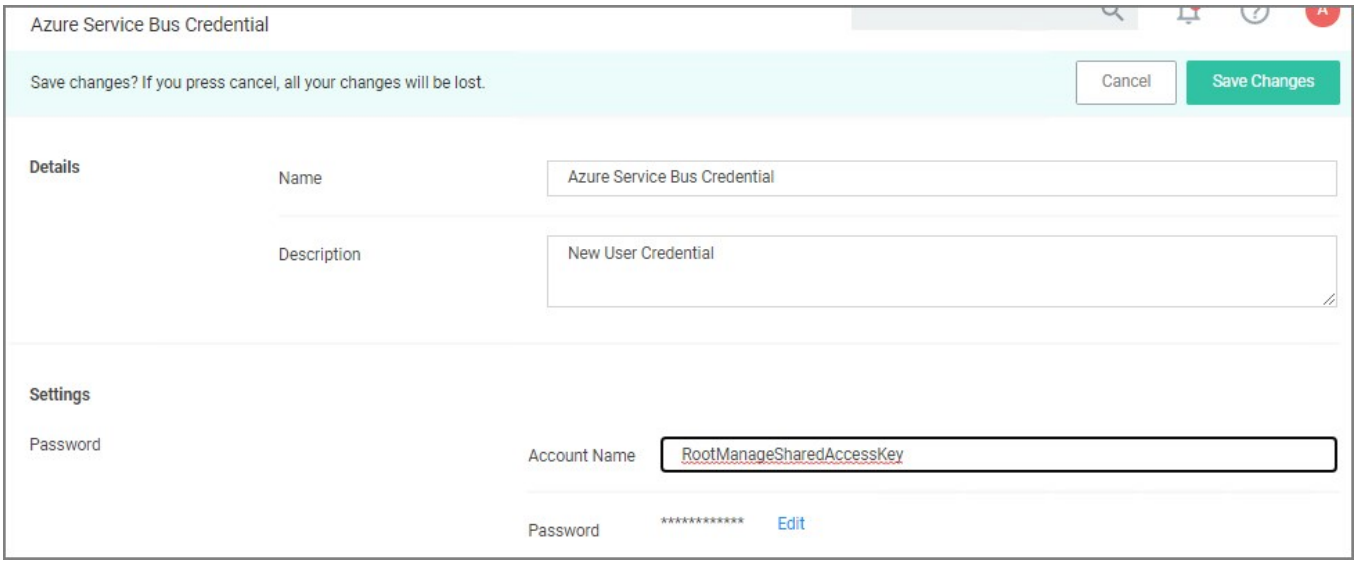
The following steps explain what is required for the Mobile App integration:

1. In the Azure Service Bus portal go to the **Shared access policies** page.
2. Find the policy called **RootManageSharedAccessKey**. If you don't have one yet, create one by that name and select the **Manage** option and save it.
3. On the **RootManageSharedAccessKey** policy you can see the **Primary Key** field. Make note of where this is. We have to use it in a step down below.
4. Next, navigate to the **Queues** page and create a new queue.
5. Do not check any of the options, using the defaults is fine. Take note of the queue name you gave it.

Next you will need to follow the instructions below to create a credential for the Service Bus and add the Service Bus as a foreign system in Privilege Manager .

The Azure Service Bus requires a Foreign Systems configuration in Privilege Manager . To configure a Service Bus instance with a custom URL and credentials follow these steps:

1. In the Delinea Privilege Manager Console, click **Admin I Configuration**.
2. Click the **User Credentials** tab.
3. Click **Create**.



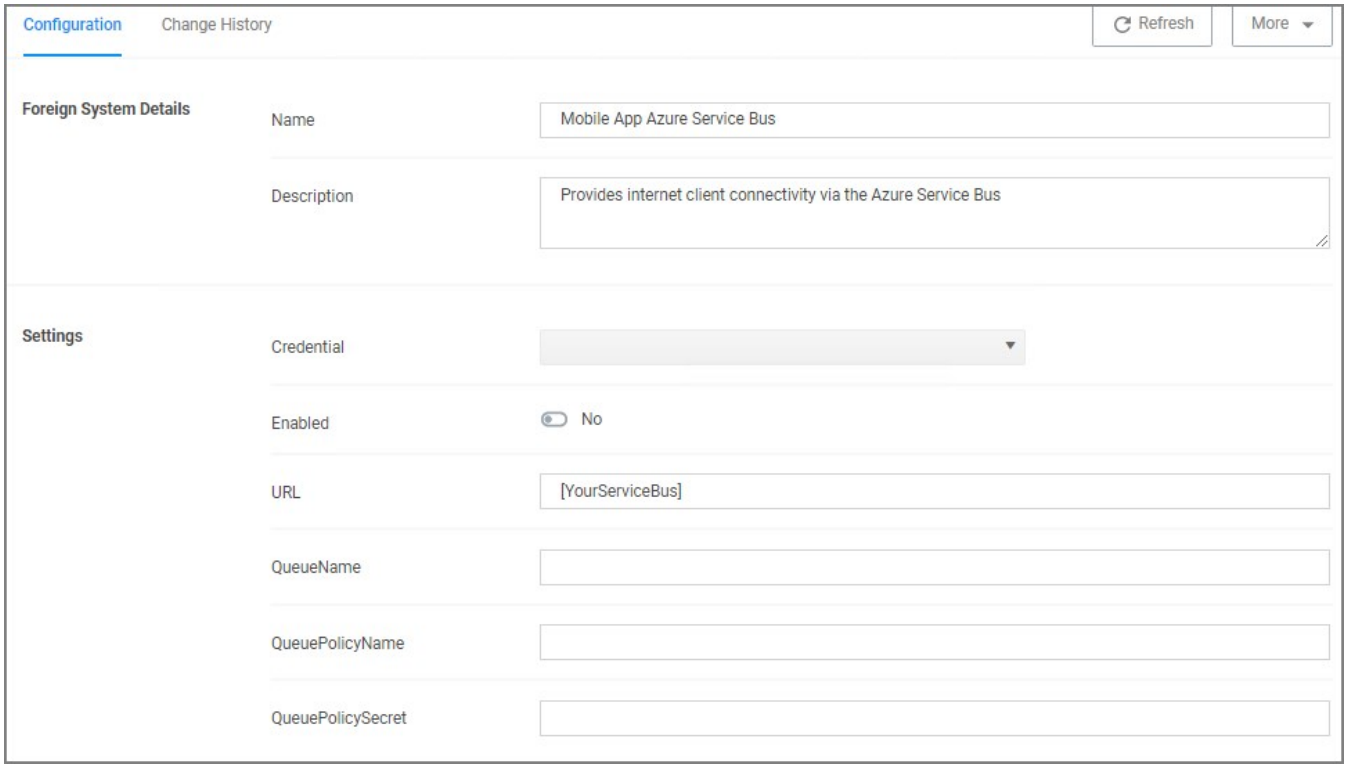
1. Enter a **Name**, for example *Azure Service Bus Credential*.
2. Set the Account name to **RootManageSharedAccessKey**.
3. Set the Password to the value of the **Primary Key** obtained during the Azure Service Bus configuration procedure **step 3** under

"Creating a Service Bus and Queue in the Azure Portal" above.

4. Click **Save Changes**.

4. Navigate to **Admin | Configuration** and select the **Foreign Systems** tab.
5. Click the **Azure Service Bus** option.
6. Click **Create**.

1. Enter a **Name**, for example *Mobile App Azure Service Bus*.
2. Set the **ServiceBus Name** to the namespace of the Service Bus from the Azure Portal. To find this value, open the Azure Portal, locate the Service Bus that is being used for this integration (refer to the intro above). Go to the **Properties** page and locate the Name property (generally, this is the same name as the instance you just located in the list of Service Bus instances).
3. Set the **Enabled** switch to **No** for now.
4. Click **Create**.



5. Set the credential to the credential created in step 3 of this procedure (*Azure Service Bus Credential*).
6. Leave the URL field as is (and ignore the fact that it's called URL – it's just the Service Bus name).
7. Make sure the URI matches the first part of the namespace created in Azure.
8. Set the QueueName to the same queue name created above in **step 4** under "Creating a Service Bus and Queue in the Azure Portal".
9. Set the Queue Policy Name to **RootManageSharedAccessKey**.
10. Set the Queue Policy Secret to the **Primary Key** as obtained in **step 3** under "Creating a Service Bus and Queue in the Azure Portal" above.
11. Click **Save Changes**.
12. Enable the Service Bus, set Enabled switch to **Yes**.

7. To verify everything is working correctly, open your browser and point it to the ServiceBus worker service:
   - **On-Premises**: https://yourinstance.privilegemanager.com/Tms/ServiceBus/WorkerService.svc
   - **Cloud**: https://yourinstance.privilegemanagercloud.com/Tms/ServiceBus/WorkerService.svc

   Wait for the page to respond.

You are now ready to install the Thycotic ACS application on your mobile devices.

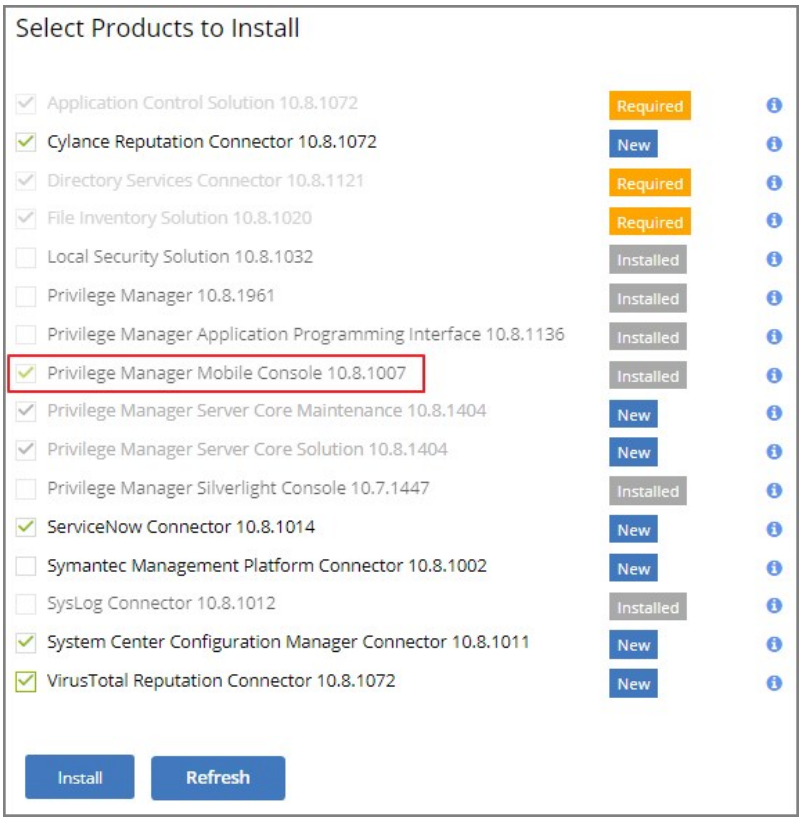
Install and Configure the Mobile Console in Privilege Manager

To configure the Mobile Console in Privilege Manager , you must:

1. Install the Privilege Manager Mobile Console.
2. Set the Client ID and Tenant ID.
3. Configure the notification settings.

The Privilege Manager Mobile Console needs to be installed on the same server that is running the Privilege Manager instance.

1. Navigate to your Privilege Manager setup page or select **ADMIN | More...** and select the **Add / Update Program Features**.
2. Click **Select Products to Install**.



3. Select **Privilege Manager Mobile Console** and click **Install**.

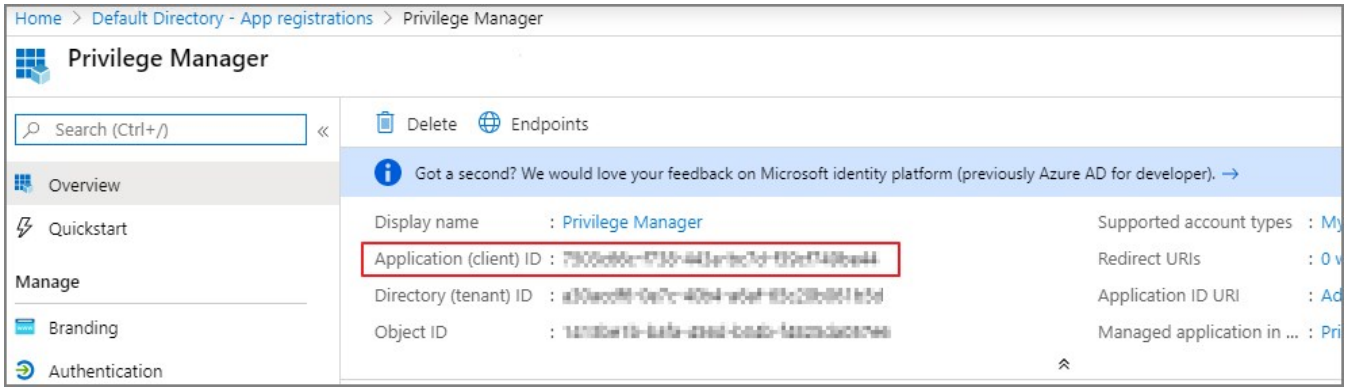
Once the installation completes click **Home** to navigate back.

After you have installed the Privilege Manager Mobile Console, set the Client ID and Tenant ID.

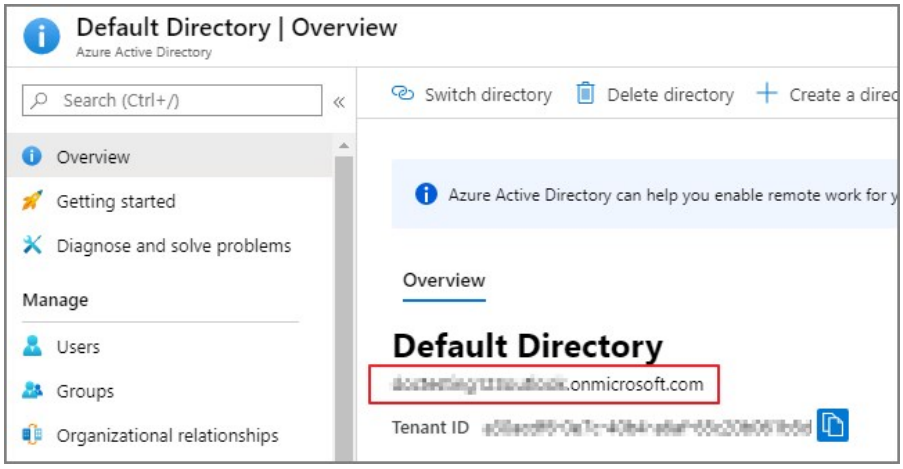
1. Navigate to **Admin | Configuration**.
2. Select the **Advanced** tab.

3. Scroll down and under **Thycotic Mobile Console Solution** under General enter values for:

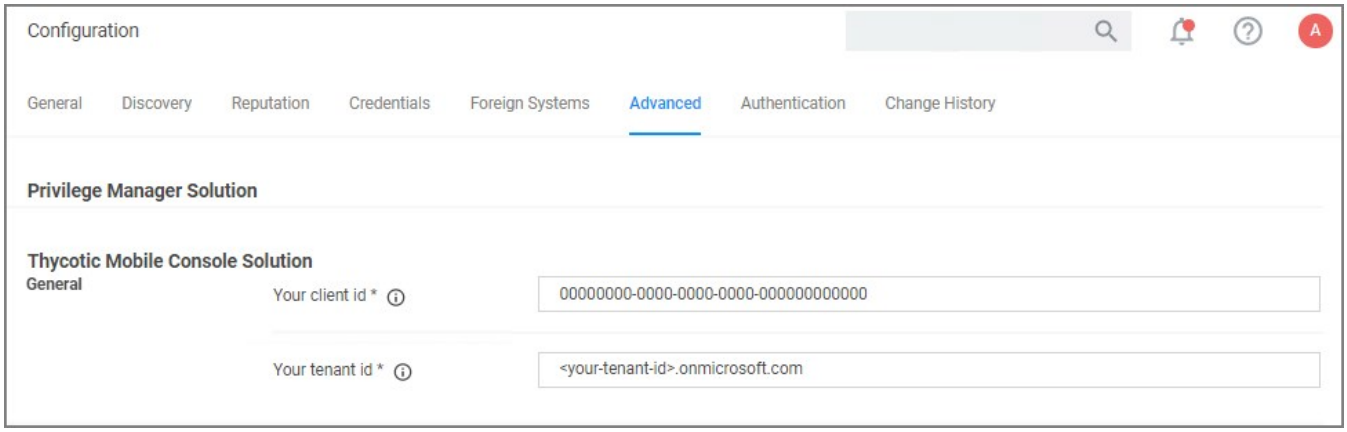
    1. **Your client id**: In the **Your client id** field, enter the Client Id that you generated when you configured the Microsoft Azure Active Directory. In the Azure AD portal, you find this under App Registration. Look for the **Application (client) ID** value.



    2. **Your tenant id**, is the DNS name of the Azure Active Directory instance. You find it on the Azure AD Home page, between the friendly name and the Azure Tenant ID, for example **name.myinstance.com** or **MyCompanyName.onmicrosoft.com**.



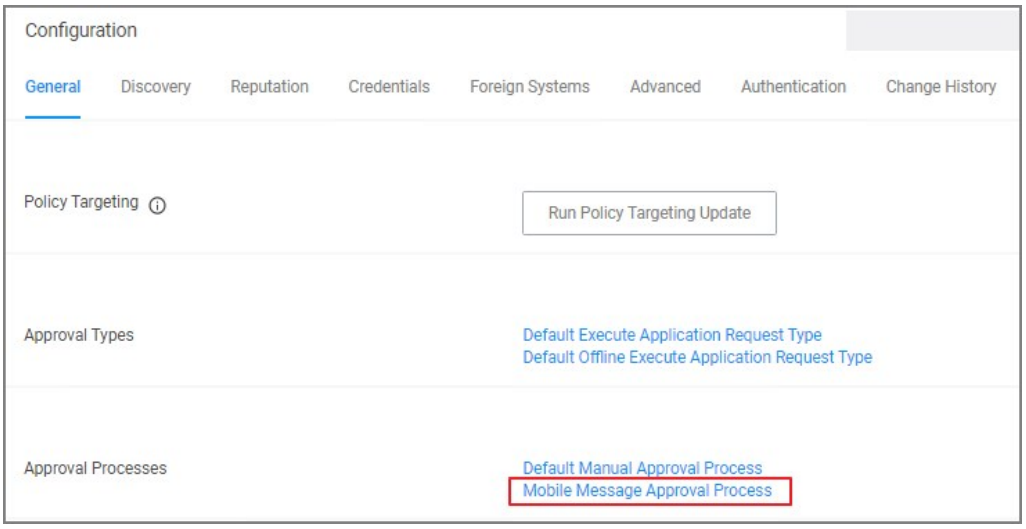
    Enter that DNS in the **Your tenant id** field.



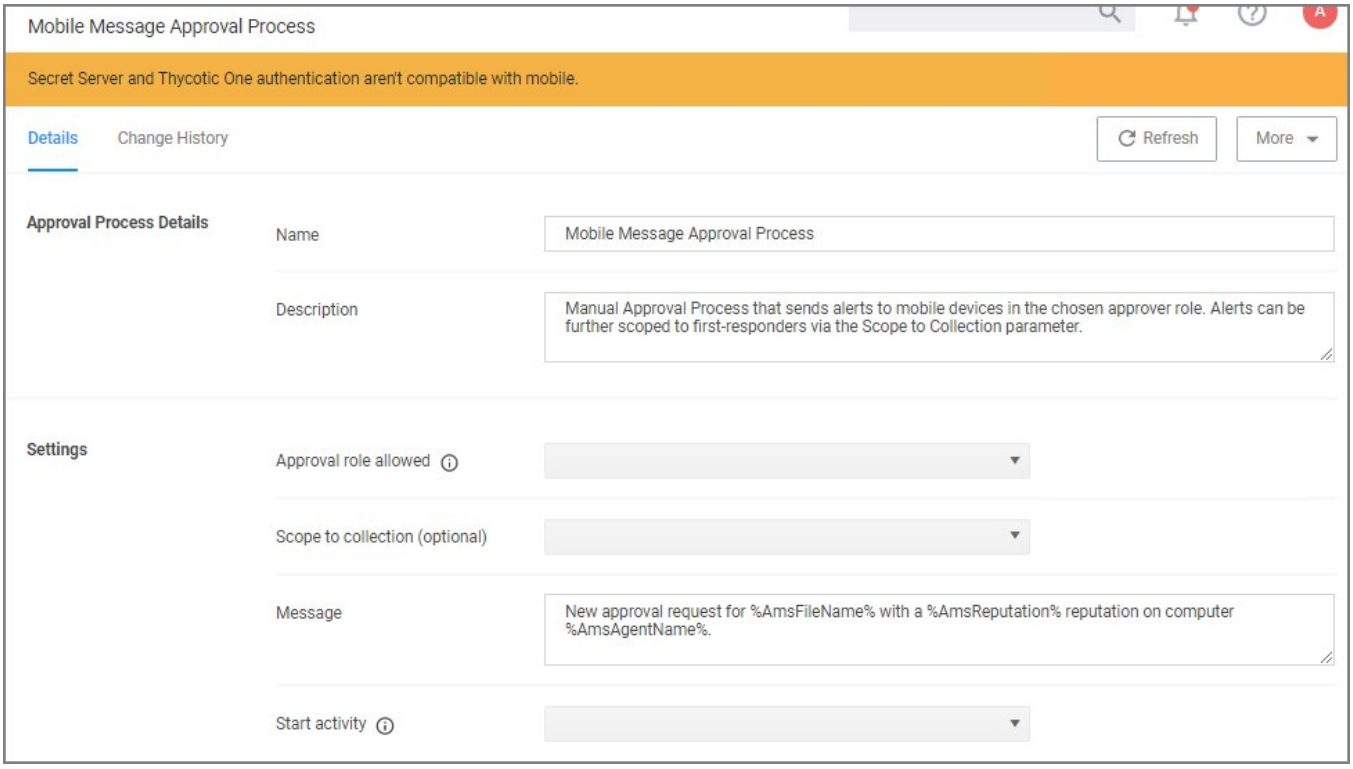
4. Click **Save Changes**.

The notification settings for the mobile app are available via general configuration and task automation.

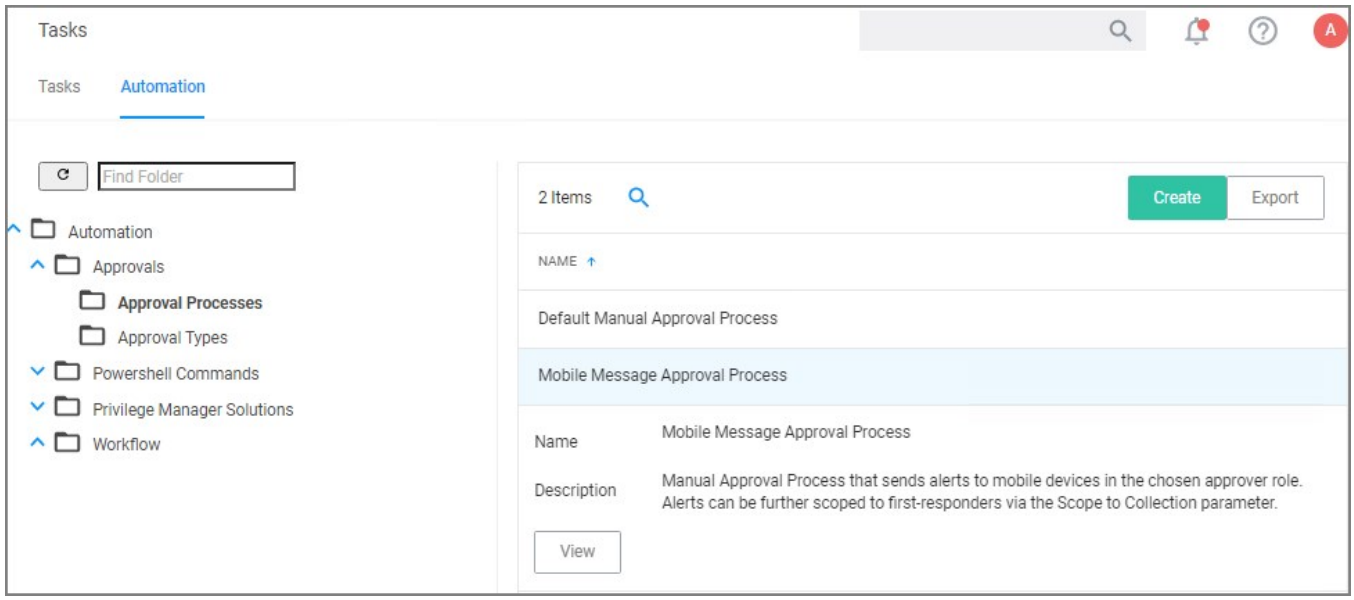
1. Navigate to **Admin I Configuration**.
2. Select the **General** tab.



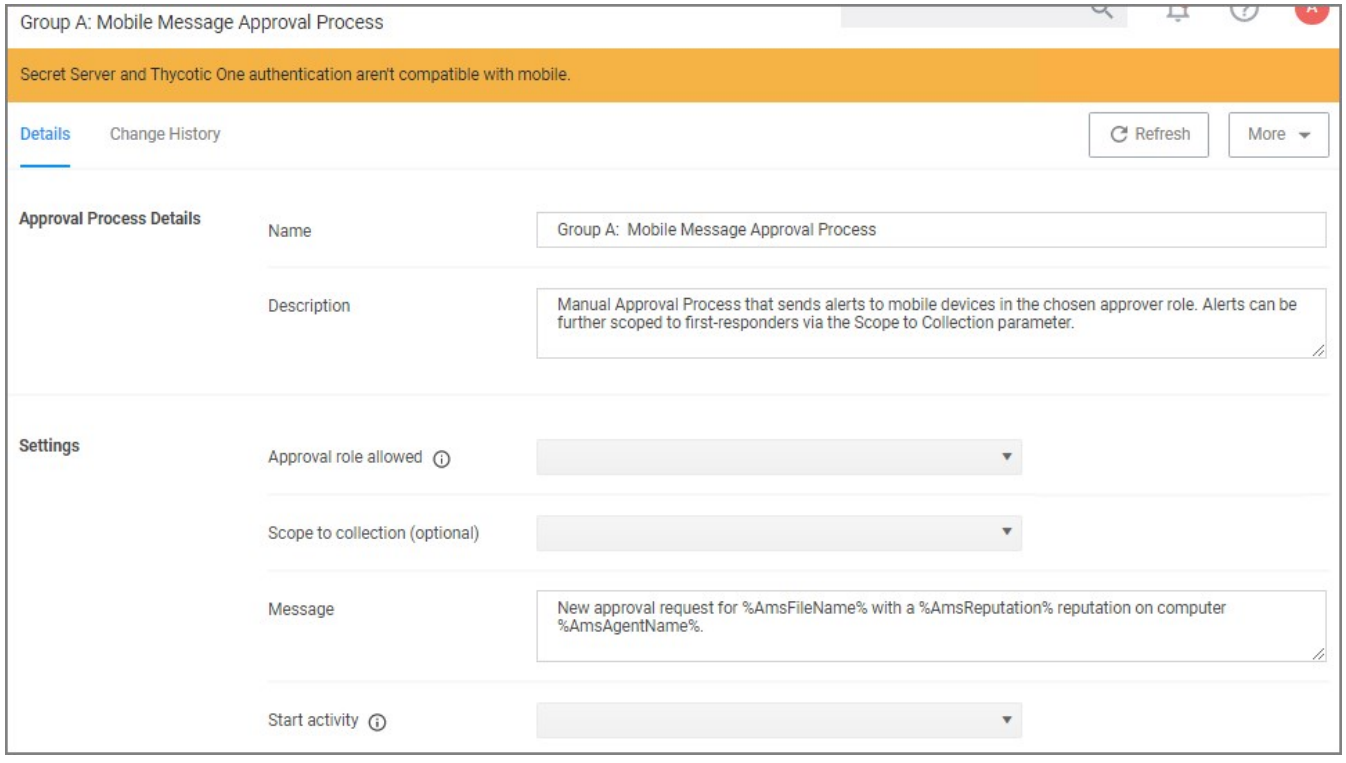
3. Under Approval Processes click **Mobile Message Approval Process**.



This task can also be accessed via **Admin I Tasks**, selecting the **Automation** tab and the in the folder tree **Automation I Approvals I Approval Processes I Mobile Message Approval Process**.



4. For customization, duplicate the default task. Give it a meaningful name for your environment.
5. Click **Create**.



6. Under **Settings**, you specify
   - **Approval role allowed**, which roles have approval permissions. By default the alerts for new approval requests will only be sent to mobile users in the Administrators role. You can change this setting by adding the approver role to a different role.
   - **Scope to collection (optional)**, which is an optional setting, to scope these messages to a subset of users in that role.

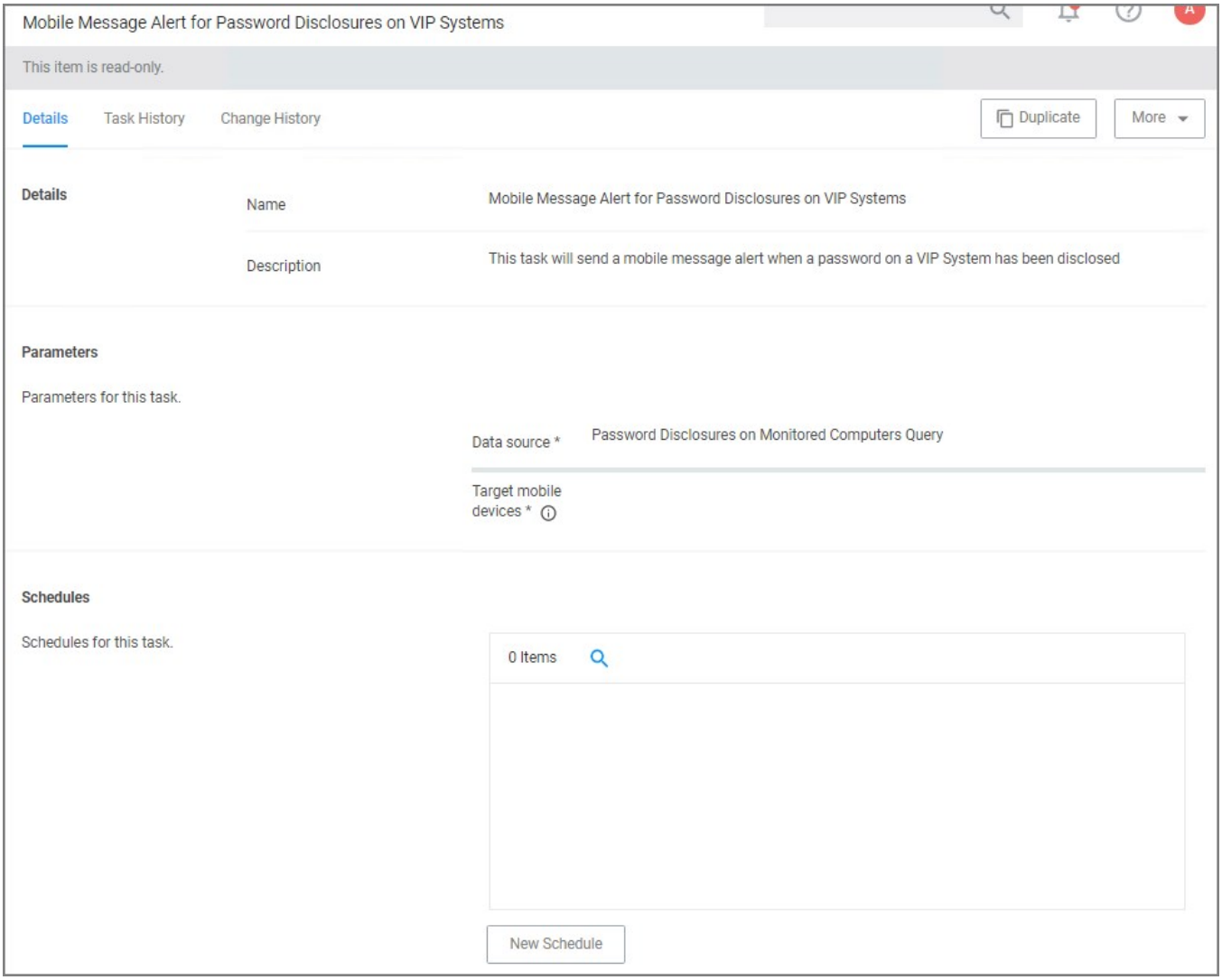
- **Message**, what message will be displayed to the approver when a approval request was triggered.
- **Start activity**, which is an optional setting, any activity you wish to start as part of the approval.

7. Click **Save Changes**.

To start sending notifications to phones, select the **Default Execute Application Request Type** and change the **Approval Process** from the **Default Manual Approval Process** to the **Mobile Message Approval Process** and save the changes.

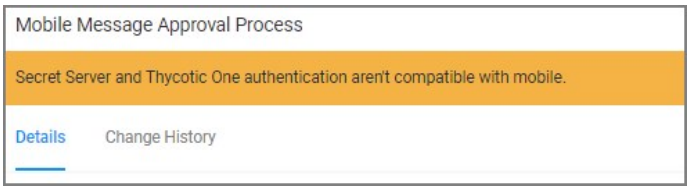
> **Note**: The approval process change to Mobile Message Approval Process is only for the notification message that an approval was requested. The actual approval has to be followed through via HelpDesk interface. Currently approval requests cannot be approved via the Mobile app.

You can also send notifications based upon report data. These can be used to send alerts for suspicious activity, etc. An example of this can be found under **Tasks I Server Tasks I Mobile Messaging I Mobile Message Alert for Password Disclosures on VIP Systems**.



This message can be executed on a schedule to send alerts for any password disclosures on VIP Systems. VIP Systems are configured via the Monitored Computers parameter that allows you to choose a Collection of computers.

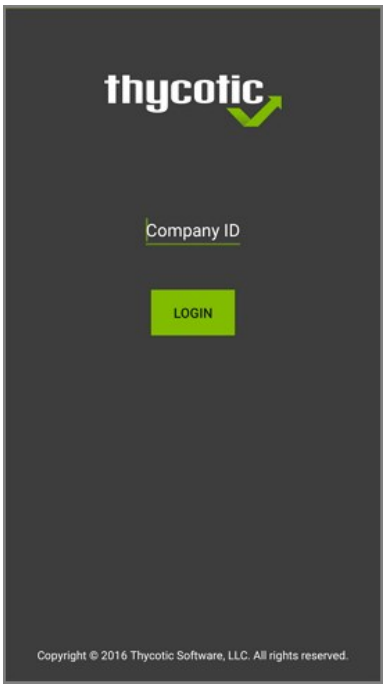
The Privilege Manager Mobile Console does currently not work with Secret Server or Thycotic One as the authentication provider. If Secret Server is configured as the authentication provider in Privilege Manager , a warning message is shown on the Mobile Message Approval Process configuration page.



Mobile App Install and Sign In

After installing and configuring the server components, help desk users can download the Mobile app for their smartphone via the appropriate app store by searching for **Thycotic ACS**. After you install the app, do the following:

1. Open the application on the mobile device.



2. When prompted for the **Company ID**, enter the name of your **Service Bus**. To find the name, open the Azure Portal, locate the Service Bus that is being used for this integration. Go to the **Properties** page and locate the Name property (generally, this is the same name as the instance in the list of Service Bus instances).
3. Next enter the Azure Active Directory user credentials.
4. Create a pin to secure the Mobile app.

If you experience any issues completing those steps, try the following to solve the problem:

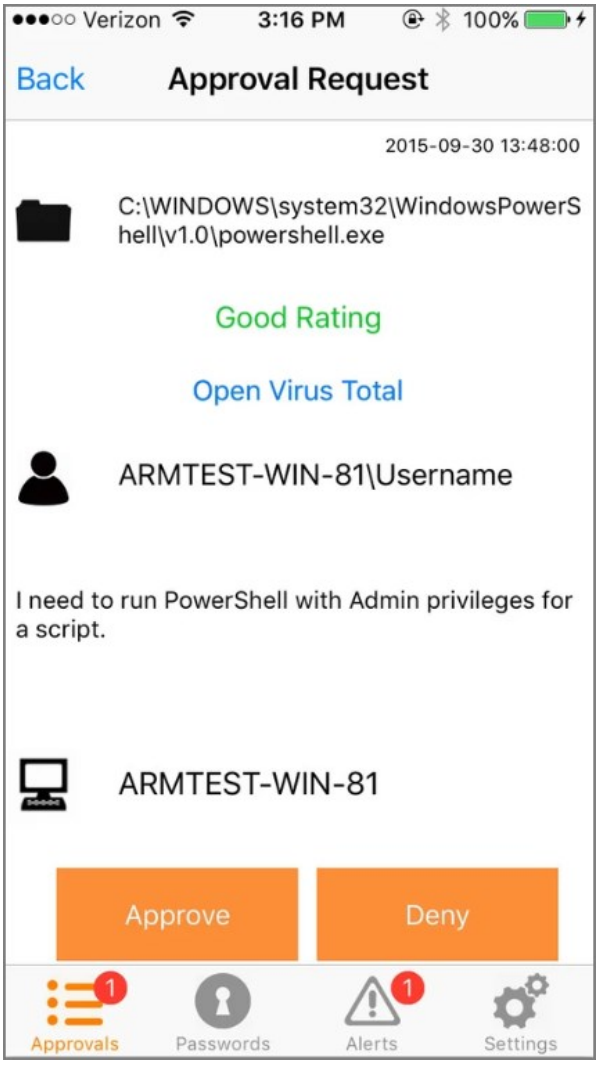
1. Verify that you can reach the Service Bus worker service by pointing your browser at the ServiceBus worker service. Enter the URL into your browser navigation bar:
    - **On-Premises**: https://yourinstance.privilegemanager.com/Tms/ServiceBus/WorkerService.svc
    - **Cloud**: https://yourinstance.privilegemanagercloud.com/Tms/ServiceBus/WorkerService.svc

    Wait for the page to respond.
2. Verify the Redirect URI setting in your Azure AD application registration matches the configuration values in Privilege Manager .
3. **Recycle the App Pools on the Privilege Manager Instance** following any changes for this integration. Without the recycle, the new settings won't be applied.

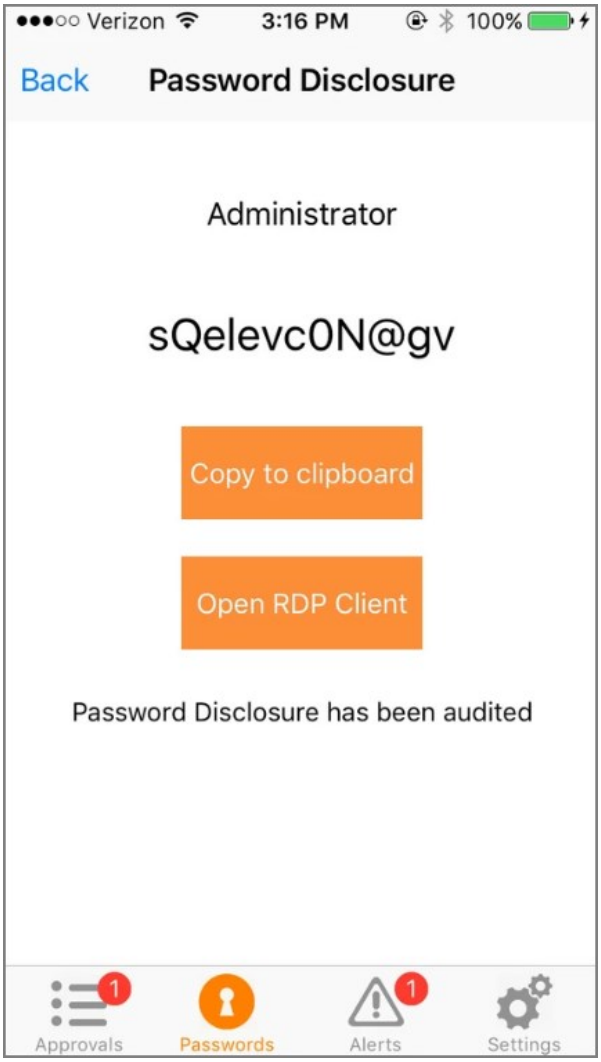
    Cloud customers, please contact support for assistance to get these recycled. Unfortunately, this is a "must-contact" situation.

Use the Mobile Application

Approval Requests area provides the ability to approve/deny pending approval requests and the ability to view recently approved requests.



Password Disclosure area provides the ability to disclose managed user passwords that the mobile user has access to.



The Alerts area provides the ability to view non-approval request alerts, such as the Password Disclosures on VIP Systems. These alerts can be forwarded via e-mail or removed.

Delinea


9:41 AM
100%
Alerts
Edit
Ben Stiller disclosed the password for the Administrator on computer ARMTEST-WIN-81. For more information go to http://ServerName/Ams/SecurityManager#/Reports/63582cad-e5f0-44b9-8736-3897139a074b
Approvals
Passwords
Alerts
Settings

Release Notes

This section includes the most recent Privilege Manager Release Notes.

- 11.3.3 Release Notes - Cloud

Previous versions:

- 11.3.2 Release Notes - Cloud
- 11.3.1 Release Notes - On-prem/Cloud
- 11.3.0 Release Notes - On-prem/Cloud
- 11.3 Agents Releases
- 11.2.1 Release Notes - On-prem/Cloud
- 11.2.0 Release Notes - On-prem/Cloud
- 11.1.1 Release Notes - On-prem/Cloud
- 11.1.0 Release Notes - On-prem/Cloud
- 11.0.0 Release Notes - On-prem/Cloud
- 10.8.2 Release Notes - On-prem/Cloud
- 10.8.1 Release Notes - On-prem/Cloud
- 10.8.0 Release Notes - On-prem/Cloud
- 10.7.1 Release Notes - On-prem/Cloud
- 10.7.0 Release Notes - On-prem
- 10.6 Release Notes - On-prem
- 10.6 Release Notes - Cloud
- 10.5 and previous releases Release Notes

11.3.0 Release Notes – Server

Enhancements for the Privilege Manager 11.3.0 release are specific to On-premises and Cloud versions, unless otherwise referenced under an On-premises or Cloud subtopic.

> When upgrading Privilege Manager to a newer version, Delinea recommends upgrading the Directory Services agent such that both are running on the same release version.

- With this version of Privilege Manager, Delinea introduces the new brand design which includes updated colors and logos. For more information, refer to User Interface Updates.
- On the Reports page, under the Local Security section, added a report for "Group Membership By Computer Group (Resource Target)" which returns the same details as the Group Management page for a Computer Group and can be exported as CSV or PDF.
- On the Reports page, under the Local Security section, added a report for "User Membership By Computer Group (Resource Target)" which returns the same details as the User Management page for a Computer Group and can be exported as CSV or PDF.
- New scheduled jobs have been added:
  - Privilege Manager allows the deletion of local User Names and Group Names via the Scheduling function. For more information, refer to Delete Local Users and Groups.
- The **Item Processing Performance** report displays the **agentevent** category, which enables customers to track agent events passed to the server. These events include Application Control, Core, File Inventory, Local Security, and Directory Services.

Cloud

- Added process randomization for out-of-the-box scheduled events to improve overall processing performance.
- Performance improvement for setting up new cloud instances.
- Added **Reset Auth Provider to Thycotic One** task to generate a new client ID and secret, allowing use of new values rather than those stored in the database.
- Implemented process improvements for cloud provisioning tasks that were timing out due to pending app pool recycles.
- Added reports to Cloud Manager for Privilege Manager Cloud instances.

macOS

- To ensure consistent behavior with the Energy Saver preference pane on Monterey, it is recommended that the latest macOS agent be used in conjunction with the Privilege Manager Server updates:
  - To support the new Energy Saver preference pane on Monterey, the following filter was added:
    - Energy Saver Preference Pane (MacOS) – Monterey and Later
  - In support of the Battery preference pane on laptop hardware introduced in Big Sur, the following filter was added:
    - Battery Preference Pane (MacOS) – Big Sur and Later

    The following policy was added as an example of how to target Battery and Energy Saver preference panes:
    - Elevate Energy Saver and Battery Preference Panes

- If a Privilege Manager Cloud connectivity issue occurs during a page load, a dialogue box will appear with a retry option.
- Recursive AD Groups can cause queries from various resource groups, such as the Directory Service, to time out.
- Privilege Manager does not honor connection string settings for connection pool sizes.
- Timing issues cause failures when decrypting the Azure Service Bus connection strings during Privilege Manager startup.
- Following a Privilege Manager upgrade to 11.2.0 and later, various widgets on the diagnostics and dashboard pages spin indefinitely.
- UI displays multiple languages for a management group as opposed to the language specific to the user's region.

- Mac admin users can update Windows filters and policies; Windows admin users can update Mac filters and policies. Similarly, admin users can create Mac filters using Windows files; admin users can create Windows filters using Mac files.
- Unable to delete Secured Computer Groups.
- Deleting Secured Computer Groups is blocked.
- System improperly requests and reads the on-premises SID for Azure AD users/groups.
- Certain group memberships are overwritten, depending on the domain size and the order domain objects are processed.

- Adding a Foreign System for Azure AD Domain import and synchronizing wildcard substitutions for Group Display Names and/or User Names may cause errors.
- Shortcut notations, such as `c:\progra~2`, should not be used when specifying a folder/file path in a filter.

11.3 Agent Release Notes

- The **Item Processing Performance** report displays the **agentevent** category, which enables customers to track agent events passed to the server. These events include Application Control, Core, File Inventory, Local Security, and Directory Services.

macOS

- Added support for the Energy Saver preference pane for Monterey.
- Added support for the Battery preference pane for Big Sur and later.

- The Application Control agent is unable to remove expired hashes.
- Windows agents do not enforce policies following post-installation reboot.
- There is memory leak in the Application Control agent.
- Privilege Manager collects certificates in the local store, which diminishes performance.
- The "User Access Control Consent Dialog Detected" action does not always replace the Windows UAC prompt on the first UAC challenge after an endpoint reboot.

- A vulnerability was discovered in the Windows agent which may result in an elevation of privilege attack. It is highly recommended that customers upgrade their agents to version 11.2.3095 or higher to mitigate the exposure. Security Vulnerability Discovered by : Andrew Kisliakov.

11.3.1 Release Notes

Note: >When upgrading Privilege Manager to a newer version, Delinea recommends upgrading the Directory Services agent such that both are running on the same release version.

- Workstation User accounts can now be created with a static password or a random password. Refer to User Management.
- For improved usability, the **Details** and **Password** tabs have been combined on the User Management page.
- Azure Active Directory domains now support the Azure Government Cloud instance with a new Unexpected Link Text setting.

- A Policy Priority from the Application Policies page now enforces maximum values of 10,000.
- From the Event Summary widget on the Dashboard,the numbers displayed for categories correctly reflect the amount of events on the Event Summary page.
- Documentation has been updated to clarify the relationship of Product Licenses reports to the actual license values reflect on the Home screen.
- Scheduled Job names have been restricted to prevent scheduling and display issues. Only the following special characters are permitted: ".", "-", "_". and "()".
- If an agent requested a hash filter before collections were updated, the filter would not be properly applied to a policy. We now properly detect collection changes and rebuild these cached items.
- User-defined endpoint groups that previously appeared under the root of a user-defined target now appear in Windows-specific and macOS-specific folders.
- When saving managed User Group updates, a cached definition of the computer Group was saved, potentially reverting recent changes to the computer group. Now, the updated Computer Group is saved with the updates.
- Resolved an issue with multiple policies not triggering in the correct order for the same event. Now, the higher priority policy will always trigger the event first.
- Resolved an issue that caused an error when uploading an MSI file with a SHA256 signature.
- Users can now select secure Computer Groups on the Policy Details page for Computer Groups targeted.
- Previously, a valid signature had to be valid if any signature was present, regardless of the settings. Now, if the setting to require agent event signature is off, both missing an invalid signatures are ignored.

Agent Specific

Windows

- HTML-based actions now pop up in the foreground. Additionally, icons for the user interface have been added to the task tray.
- Elevation of programs located on remote network shares is now working properly across all known and commonly used server and share configurations.
- The icons correctly display on the Privilege Manager Remove Programs Utility.
- The Agent Utility now reflects any policy updates that have occurred since the utility was started.
- Resolved an issue with the update utility for Dell BIOS updates.

macOS

- Fixed an issue where incorrect permissions prevented some administrators from editing the macOS Agent Configuration.

- Computational errors will occur with running local processes that access any of the content on the drive letter made available via Google Drive for Desktop. For example, file inventory operations will fail to access Google Drive for Desktop.
- Policies intended to elevate, require approval/justification, or block/deny access to the the entire Control Panel or to specific applets within it such as Set Time & Date and Time zone. Advanced System Settings may not work 100% of them the time due to how Microsoft has been

evolving the implementation of the Control Panel and the System Settings tools.

11.3.2 Release Notes

Note: >When upgrading Privilege Manager to a newer version, Delinea recommends upgrading the Directory Services agent such that both are running on the same release version.

- A new option, **Verify group membership via Domain Controller(s)** allows the user to control how te domain controller is contacted to re-authenticate the user. See the New Group Member Authenticated Message Action in the documentation.
- A new method for adding computer names to a computer group is available using the API. A resource filter is defined by a **Computer by Name Filter** and computer names are populated using a Powershell script. See Creating a Computer Name Filter Collection Query.
- Windows 10 Enterprise for Virtual Desktops (EVD) machines will now consume a Client license within Privilege Manager Server rather than a Server license.

- Correct error messages are now returned when incorrect login credentials are entered.
- Resolved an error being displayed when when using XAML notification actions when User Access Control Consent Dialog Detected filter is added as an inclusion filter.
- Issues with the authentication token expiring and not refreshing for large Azure Active Directory imports has been addressed. Azure Active Directory domains with large databases are now correctly synced to the Privilege Manager Server.
- An issue was resolved that caused Local Security data to unnecessarily block the deletion of some users in Privilege Manager.
- When editing a copy of the Restrict File Dialog actions, the Disable Context Menu Options setting was not properly saved. This has been resolved.
- When deleting Active Directory organizational units (OUs) from the UI, some related objects were not properly cleaned up, leading to errors blocking further deletes. Related objects are now properly deleted.
- Privilege Manager has two different versions of the ServiceNow connector, one of them was sending InitiatorUserName and one was not. Now both versions should properly send `InitiatorUserName` with the format `domain\username`.
- Privilege Manager now functions with FIPS enabled in the Windows policy (both agent and server). Upgrade will change the default inventory hash algorithm setting to SHA256 and Authenticode 2. This fixes an error with NTLM authentication when FIPS is enabled on the PM server.

Agent Specific

Windows

- Fixed a problem where elevation fails for **Advanced system settings** when it is launched from **System Settings** and the associated policy contains an approval/justification action.

macOS

- macOS application policies are no longer flagged as invalid when using a message action with the option **Applies To All Processes** when the action **Allow Package Installation** is also used.

11.3.3 Release Notes

Note: >When upgrading Privilege Manager to a newer version, Delinea recommends upgrading the Directory Services agent such that both are running on the same release version.

- Added various tooltips to fields within the product.
- The MessageHistory table was unused and has been removed.
- The Policy Events page now defaults to last 3 days to load more quickly, and is restricted to a maximum of 250,000 events.
- Refresh button is now tab-aware in select locations. Refreshing on the membership page of a Secured Computer Group will recalculate the groups membership.
- New maintenance task for purging Group Membership History table.
- Changed default recursive group membership lookup to avoid issues with large nested groups when logging in to Privilege Manager.
- Added an option for Secured Groups to enable selecting an OU and all children to address issues with migrating computers into directed policy groups.

- Fixed issue with SAML Authentication Provider where certificates could not be uploaded.
- Fixed structuredClone UI error in some browsers.
- Fixed changing and saving Security tab settings for Secure Computer Groups.
- Fixed sizing of graphs on high resolution monitors.
- Fixed endless spinner on Alerts page when there are no alerts.
- Fixed issue with gracefully handling null responses for report calls.
- Fixed incorrect handling of local users that have the same name as the domain to which the computer belongs.
- Fixed an issue related to AD import that caused database upgrade failures.
- Fixed the Users as Local Administrators report and drilldown to no longer time out on large systems.
- Fixed grid rows to show all text when the row is selected. Grid supports resizable columns.
- Fixed the Computer Group Membership report was updated to prompt for required parameters instead of just displaying no results.
- Fixed issue with license start dates being incorrect for multi-year keys.
- Fixed local account lookup if the account name was the same as the domain to which the computer is connected.
- Fixed issue with policy deployment statistics including computers that did not have the latest version of the policy.
- Fixed issue with upgrades denying pending approvals.
- Fixed issue with inaccurate data on Application Actions drilldown report.
- Fixed issue with Agent Registration State drilldown to properly show last registered date.
- Fixed issue with assigned a computer not being removed from assigned computer groups upon deletion of the computer.
- Fixed report parameter issue that was blocking the Application Metering Events report from displaying data.
- Fixed an issue that caused API calls to produce a 500 error following system maintenance.
- Fixed and issue where the Secret name from Secret Server was not being updated.
- Fixed issue where authentication through a SAML provider would produce 2 audit logon events.
- Fixed an issue with the Thycotic Digital Certificate filter missing the certificate association in some environments.
- Fixed an issue where collection filters were not properly displaying values.

Agent Specific

Windows

- Fixed issue with user context filters not applying to child processes of elevated applications.
- Fixed issue with advanced messages not opening up URLs in the default browser.
- Fixed issue with advanced message crashing.
- Fixed issue with remove programs helper not uninstalling some applications.
- Fixed issue with 32-bit Application Control Agent crashing.
- Changed certain repeating log messages to a trace level.

macOS

- Native macOS agent now supports both Intel and Apple silicon-based hardware.

- An improperly configured policy that uses the Group Member Authenticated Message Action [GMAMA] will result in the policy being erroneously applied to child processes created by a process that already had the policy applied to it. This results in multiple authentication prompts being presented to the user.
- For the 11.3.3.1 MacOS Agent support has been introduced for MacOS Ventura (13.x) although the following known issues are noted below:
- The Privilege Manager Agent does not currently support policy filtering for System Settings (preference panes) in Ventura.
  - Any policies deployed will not be supported on Ventura at present.
- If the Agent is uninstalled and re-installed Full Disk Access will be required to be granted again in the System Preferences.
  - This is a known issue with version 13.0.x of macOS Ventura. Apple has documented the issue with details here: https://developer.apple.com/documentation/macos-release-notes/macos-13-release-notes/#Endpoint-Security.

Documentation Changelog

This topic provides a chronological list of documentation changes. Minor content alterations are not tracked.

- Added topics:
  - 11.3.0 Release Notes - Server
  - 11.3 Agent Releases
  - Privilege Manager Cloud Reports
- Changed Topics:
  - Updates Software Downloads to point to latest released version of Windows based agents in support of Privilege Manager 11.3.0.
  - Group Management
  - Changed 10.8 User Interface title to User Interface Updates and added 11.3-specific brand update information.

- Changes to topics:
  - Updates Software Downloads to point to latest released version of Windows based agents in support of Privilege Manager 11.2.1.
  - Updated 11.2.1 Release Notes with bug fixes for Windows agents.

- Removed the references for the UNC Allow Policy Template configuration feed.

- Changes to topics:
  - Updated 11.2.1 Release Notes with bug fix info for Unix/Linux agent.
  - Updated Software Downloads

- Added topics:
  - 11.2.1 Release Notes
  - Merge Duplicate Resources
  - Merge Specific Resources
  - Merge Duplicate Active Directory Domains
  - Purge Old Unmanaged AD Computers
  - Remove Active Directory Domain
  - The **Users and Groups with Duplicate SIDs** report renamed to **Resources with Duplicate Global Identities (Domain\Computer name)**.
  - New Diagnostic reports: **Resources with Duplicate Azure Device IDs**, **Resources with Duplicate machine (Domain) SIDs**, **Resources with Duplicate Account SIDs**, **Duplicate Active Directory Domain Merge Candidates**
- Changes to topics:
  - There is a new field in the ServiceNow approval request **InitiatorUserName**
  - Email notifications for approvals now have an updated link for the VirusTotal page.
  - The topic Setting Up Azure Active Directory Integration in Privilege Manager now reflects an update to reflect the change from Azure Graph API to Microsoft Graph API.

- Added a known issue to the 11.2.0 Release Notes, about items being re-saved.

- Added topics:
  - Targeted Computer Groups
  - Role Membership tab
  - Windows Registry Inventory
  - Block All Sudo Commands on a macOS Agent and Stopping the Fallback to Standard Behavior
  - Removing Privilege Manager from a Combined Install
  - Advanced Display Message Action
- Changes to topics:
  - UTC support deprecation for Task Schedules
  - Roles option in the Admin menu was renamed to Security
  - Multiple SAML provider support
  - App Bundle Filter
  - User Context Filter
  - Retry errored TMS Events - Catalina and later (macOS)
  - Importing Items
  - UAC prompts run for MSI installer
- Changes to topics due to feature deprecation:
  - Allow Copy to /Applications/ Directory action
  - Finder Sync Extension

- Added topics:
  - 11.1.1 Release Notes

- Added topics:
  - 11.1.0 Release Notes
  - SAML Support
  - Security Algorithms
  - ServiceNow Application
  - Privilege Manager Foreign Systems setup that includes webhooks configuration
  - Computer Name Pattern Collections
  - The About Page
  - Setting up a ServiceNow Webhook Foreign Systems
  - macOS: Inventory of Application Bundles
  - macOS: Run as User action
  - macOS: CLI Approval Message action
  - macOS: CLI Justification Message action
  - Unix/Linux: Run as User action
  - Unix/Linux: CLI Approval Message action
  - Unix/Linux: CLI Justification Message action
  - Directory Services
  - Directory Services Maintenance

    - Standardized Privilege Manager logout process
    - macOS Homebrew Installer Support
    - Configuration Profiles
    - File Hash Filter, this file replaces the obsolete File Collection from List os SHA1 HAshes Filter
    - New API to run an existing report and return the results.
    - New API to run a task
    - Thycotic Policy Framework
- Added subtopics:
    - Allow Listing Policies without Actions
- Changes to topics:
    - Advanced Tab and subtopics.
    - Troubleshooting AD Sync
    - User Context Filters
    - Console Audit Logs
    - View Password role
    - Scheduled Tasks
    - Windows Policy Wizard
    - Unix/Linux Specific Policies
    - macOS Policy Wizard
    - Actions Supported by macOS Agents (Kernel vs System Extensions)
    - Computer Groups
    - Renamed Application Control to Application Policies - documentation only issue.
    - Renamed Group Policies to Group Management
    - Renamed User Policies to User Management
    - Allow Listing Policies without Actions
    - Just-in-Time Group Membership Action

- Updated Privilege Manager macOS Agent download version in support of a hotfix.
- Added a macOS Block Agent Removal Policy in support of agent hardening.

- Added Apple Silicon support.
- Updates:
    - Added a resolved bug to the 10.8.2 release notes.
    - Fixed typos and broken links from previous release notes reference links to current topic locations.

- Added 11.0.0 Release Notes.
- Changes to Default Actions and Adjust Process Rights Action due to renaming of the **Suppress UAC** Action to **Suppress UAC (Legacy)**.
- Changes to Remove Program Utility covering the new **Elevate Privilege Manager Remove Programs Policy Children Policy (Sample)** policy.
- Changes to Policy Events, covering information about Observed Parent Processes and Server reports.
- Changes to Config Feeds.
- Added information about Filter validations for application control policies.
- Added topics:
    - Privilege Manager on Unix/Linux
    - Unix/Linux Privilege Manager Sudo Plugin
    - Unix/Linux Computers
    - Unix/Linux Agent topic.
    - Unix/Linux Administrators.

  - Filters.
  - Actions.
  - Computer Group.
  - Authorization DB handler.
  - HTML editor.
  - Jamf Connector.
  - Package Hash Verification
  - Events Drilldown
  - Supporting multiple TLS and .NET Versions

- Added 10.8.2 Release Notes.
- NuGet source zip for manual installs/upgrades provided via Software Downloads topic.
- Added Platforms section.
  - Moved macOS Secure Token to the Platforms section.
  - Moved Best Practices to the Platforms section.
  - Moved and edited macOS Legacy Extensions to reflect behavior and best practices for kernel and system extensions on Catalina and Big Sur.
  - Moved File/Folder Access to Platforms section.
  - Added topic on Sudo Plugin.
- Added Just-in-Time Group Membership Action topic.
- Edits to Server Logs topic.
- Edits to CorrelationID support to Server Logs.
- New subtopic Complex Password Policy enforcement for Privilege Manager users.
- Added MDM Profiles for macOS Agents topic.
- Added Visual Studio Installer Elevation example policy and filters to configuration feeds. Removed topic MS Visual Studio Installations.
- New topic Active Directory Import - On-prem vs Cloud
- New topic Securing the IIS Server

Added 10.8.1 Release Notes.

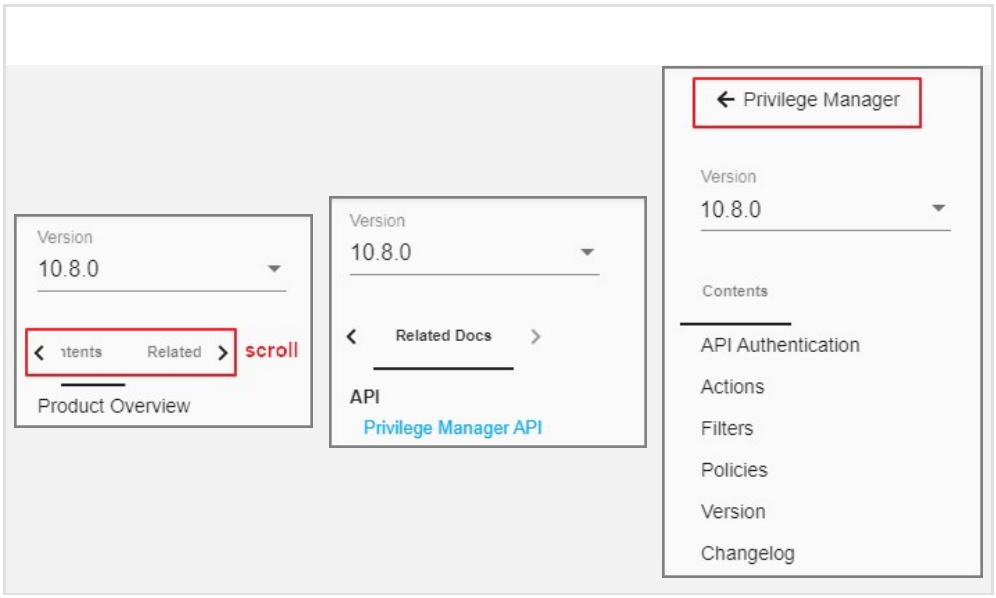
Group Member Based Approvals

- Added Group Member Approval Action topic.
- Added Endpoint Group Member Approval Action topic.
- Updates to the ServiceNow Integration Setup topic to include *over-the-shoulder* approvals at the endpoint.

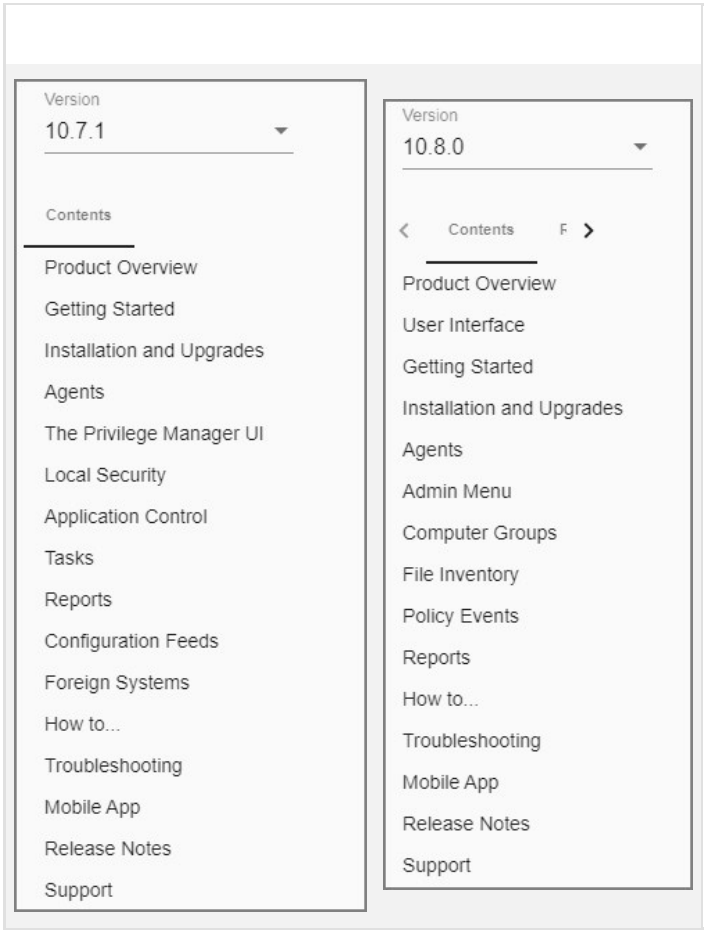
- New 10.8 UI introduction with changed user workflow and major documentation reorganization to accommodate the new UI layout.

New Related Docs

The Privilege Manager Public API documentation can be accessed via Related Docs.



Restructure of Contents



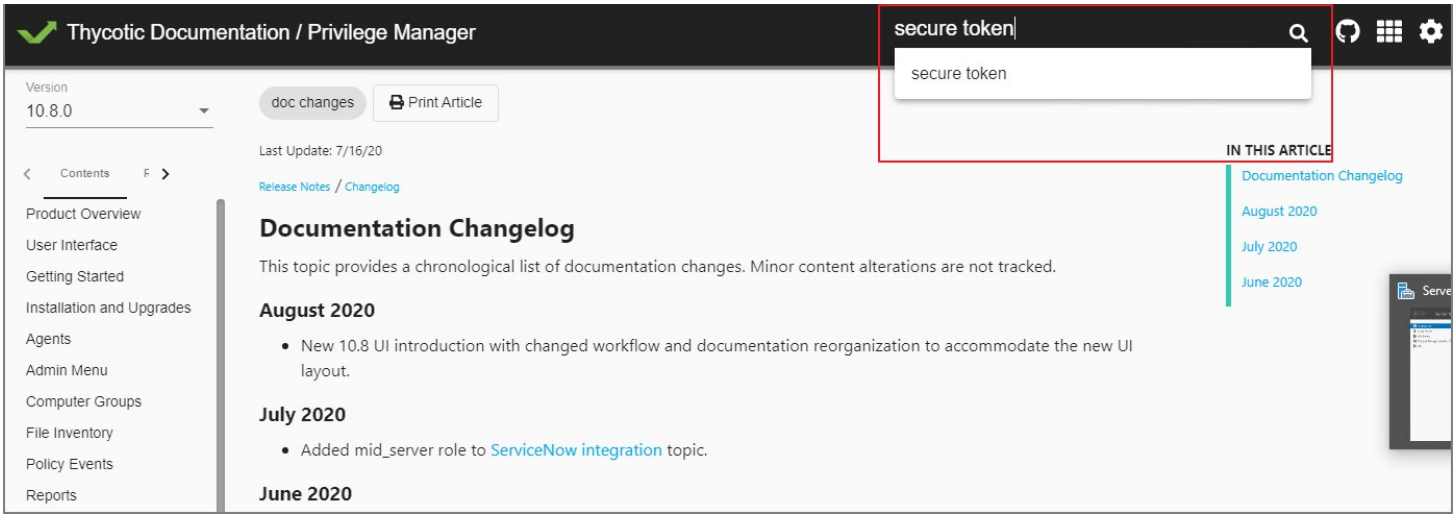
The contents is aligned with the new Privilege Manager navigation flow for users. The following references where the contents moved to for all major topics.

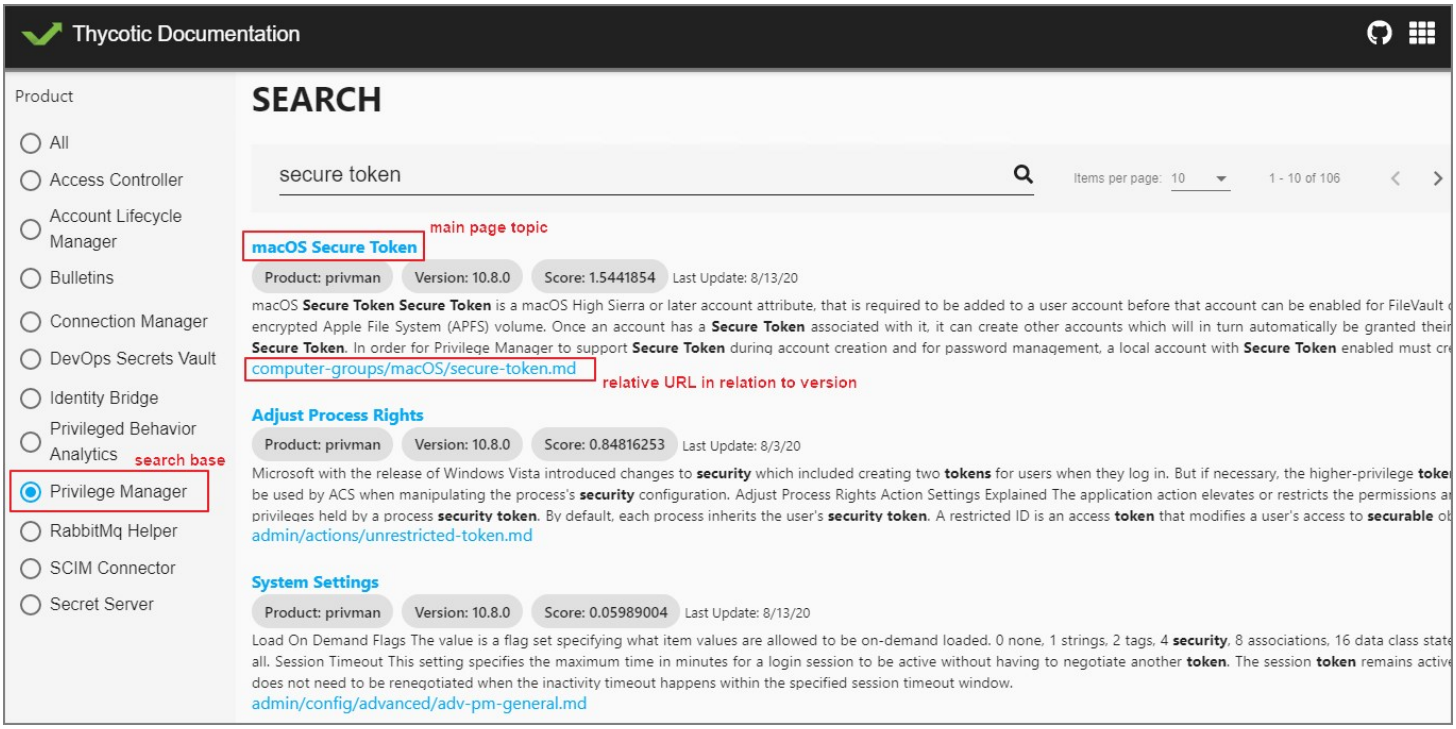
Application Control	Now under Computer Groups
Application Control > Policies	Now under Computer Groups
Application Control > Filters	Now under Admin Menu
Application Control > Actions	Now under Admin Menu
Local Security	Now under Computer Groups
The Privilege Manager UI	Now under User Interface and only pertains to navigation and controls of the new UI.
The Privilege Manager UI > Configuration	Now under Admin Menu
The Privilege Manager UI > Diagnostics	Now under Admin Menu
The Privilege Manager UI > MacOS Specifics	Now under Computer Groups
The Privilege Manager UI > Resource Explorer	Now under Admin Menu
The Privilege Manager UI > Configuration	Now under Admin Menu
Tasks	Now under Admin Menu
Configuration Feeds	Now under Admin Menu
Foreign Systems	Now under Admin Menu

Refer to the Admin Menu topic for everything that was accessed via **ADMIN | More...** in the old UI.

Information about installing and upgrading Agents is available under Installation and Upgrades > Agents. Information pertaining to the use, features, configuration, and troubleshooting of Agents is available under Privilege Manager Agents. Agent topics are for the most part OS specific, with the exception of information under Pertaining to All Agents.

If you have trouble finding a topic that you frequently consult, use the documentation platform's search option to find and bookmark accordingly. For example:





- Added mid_server role to ServiceNow integration topic.

- Added Legacy System Extensions topic.
- Updated 10.7.1 Release Notes to reflect Agent software version updates and associated bug fixes.