



BeyondTrust

Privilege Management Cloud

23.3 Administration Guide

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Privilege Management Cloud Administration Guide

Privilege Management Console is a management platform for Privilege Management that allows you to control your computers from one central location.

This Administration Guide details the features and functionality of PMC.



For detailed instructions for configuring the MMC and PMC, see "[Privilege Management Console QuickStart](#)" on page 10.

Sign into Privilege Management Console



Note: You must have cookies enabled in your browser to use PMC. If you do not enable cookies, you will get a blank page when you attempt to navigate to PMC.

The PM Cloud version is displayed at the bottom of the logon page.

To log on:

1. Navigate to your PMC instance and click **Sign in**.
2. Click the appropriate email associated with your account.

PM Cloud Home Page

The Privilege Management Console **Home** page serves as a dashboard offering **Computer Status**, **Computer Policy**, and **Client & Adapter** summary information.



Note: PMC functions on a **role-based access control (RBAC)** system, in which the role assigned to a user dictates what features this user has access to. A standard user must have sufficient permissions to access the some of the menu options. For more information, see "[Role-Based Access Control](#)" on page 48.

Computer Status Summary

84 Total Computers 38 Connected Computers 46 Disconnected Computers

Computer Policy Summary

Computer Groups: All Computer Groups

- 33 On Latest Policy
- 12 Awaiting Latest Policy
- 5 On an Earlier Policy
- 0 Awaiting an Earlier Policy
- 2 No Policy

Client & Adapter Summary

CLIENT VERSION	ADAPTER VERSION	Computers
WINDOWS	MAC	
Version		
23.1.942.0 (latest)		4
23.1.931.0		17
23.1.883.0		1
22.9.386.0		12
22.9.36.0		1
22.8.396.0		2
22.8.384.0		1
22.8.113.0		1

User Account Profile and Preferences

You can click the **User Account Profile** icon to view your current account profile information, including the type of user role assigned (*Standard* or *Administrator*).

You can expand the **Account Preferences** section and *view* or *edit* the basic settings.

This is also where you *log out* of the PMC Console.

Note: The **User Account Profile** icon is accessible from any page in the PMC Console.

Search

Administrator

Log Out

Account Preferences

Language: English (US)

Time Zone: (UTC -04:00) America/Halifax

Date Format: 12/31/2020 2:35 PM

Computer Status Summary

Get the most up to date status information on each of the computers in the estate with Privilege Management installed. The status information includes the total number of computers, connected computers, and disconnected computers. Click the link to view more information about the computers.

i For more information, please see:

- ["Manage Computers" on page 35](#)
- ["Computer Settings" on page 146](#)

Computer Policy Summary

In the **Computer Policy Summary** section, current metrics on policy status are shown. Select a computer group from the list to display the status per group.

Client & Adapter Summary

In the **Client & Adapter Summary** section, view version information for clients and adapters sorted by operating system.

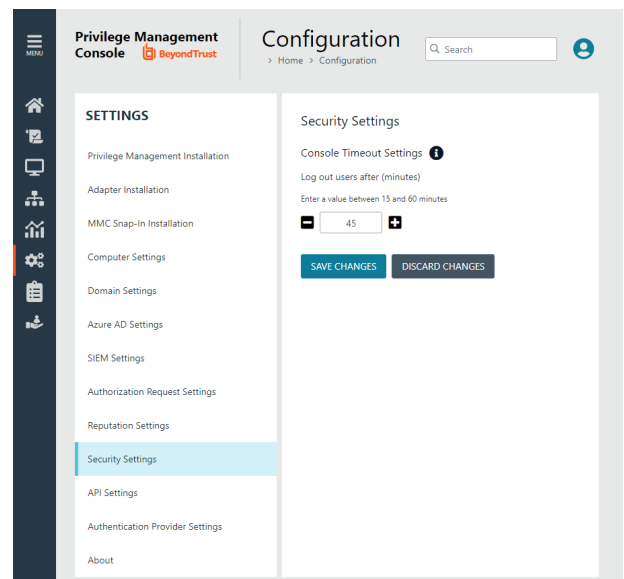
The list displays which client/adapter version is used and by how many computers. Drill down to see more information about each computer on the **Computers** page.

Console Timeout Settings

You can set how long users can be in a PM Cloud session before they are automatically logged out.

To set the **Console Timeout Settings**:

1. On the sidebar menu, click **Configuration**
2. Under **Settings**, select **Security Settings**.
3. In the **Security Settings** pane, enter a value between 15 and 60 minutes.
4. Click **Save Changes**.



Privilege Management Console Search

An auto-suggest global search is available that displays results from computer groups, policies, computers, and users.

The icon adjacent to the search term indicates if it is a **Computer**, **Policy**, **Computer Group**, or **User**, respectively.



For more information, please see the following:

- *"Privilege Management Console Computer Groups" on page 39*
- *"Policies" on page 29*
- *"Manage Computers" on page 35*
- *"Manage User Accounts" on page 43*

Privilege Management Console QuickStart

This section details the most likely tasks to get started with PM Cloud, including automatically authorizing and assigning computers to groups.

After you deploy PM Cloud, you can:

- Create policy
- Create groups and assign policy
- Assign computers to these groups

Create Policy

There are various approaches you can take to create policies in PM Cloud. For example, if you are new to PM Cloud, you may want to create a group, assign it as the Default group, add all your computers to that group, and then assign the Privilege Management QuickStart policy to that group.

If you are migrating to PM Cloud, you may want to replicate your existing groups and assign the same policy to them, before authorizing and placing your computers in those groups.

Create Groups and Assign Policy

After you create a policy, you can create a computer group and assign the policy to the group.

Create Groups

1. On the sidebar menu, click **Computer Groups**.
2. Click **Create Group**.
3. Enter a **Group Name**. The **Description** field is optional. At any time, click the vertical ellipsis menu, and then select **Edit Properties** to edit the group name and description.
4. Click **Create Group**. Your group is created and appears in the list.
5. After a group is created, you can set it as the default group. Select a group name, and then select **Set as Default** from the menu.

When computers are added to PM Cloud, they are automatically added to the default group.

Assign Policy

1. On the sidebar menu, click **Policies**.
2. Click the vertical ellipsis menu for a policy, and then select **Assign Policy to a Group**.
3. In the **Assign Policy to a Group** panel, use the dropdown list to select the revision for the policy you want to assign, and then select the group.
4. Click **Assign Policy**.

A confirmation toaster displays when a policy is successfully applied.

Install Privilege Management

Requirements

i For more information about the installation requirements, please see [Privilege Management Release Notes](https://www.beyondtrust.com/docs/release-notes/privilege-management/index.htm) at <https://www.beyondtrust.com/docs/release-notes/privilege-management/index.htm>.

You need to install Privilege Management for the target operating system, as well as the PMC adapter.

You can view installation package details by visiting the **Configuration** page.

The Privilege Management installation packages differ based on your operating system.

Windows

For 32-bit (x86) systems, choose the **Win 32 Bit** Download Type.

For 64-bit (x64) systems, choose the **Win 64 Bit** Download Type.

You need to install Privilege Management for Windows with the iC3MODE switch enabled:

```
Msiexec.exe /i PrivilegeManagementForWindows_x.xxx.x.msi IC3MODE=1 /qn /norestart
```

Optionally, use the **/qn** switch to run a silent install. Using this switch requires administrative rights.

MacOS

For MacOS computers, choose the **MacOS** Download Type.

Install the Windows Adapter

The adapter is responsible for delivering policies and events between the computer and PM Cloud when computers are managed by Privilege Management.



Note: The adapter polls for policy updates every 5 minutes, and for pending commands every 60 minutes.



Tip: Setup information is available for the Windows adapter on the **Configuration** page. On the sidebar menu, click **Configuration > Adapter Installation**.

Prerequisites

.NET 4.6.2

Installer Parameters

Before running the installer, copy the values for the following parameters:

- **TenantID:** Go to **Configuration > Adapter Installation** to copy the Tenant ID for the installer script.
- **InstallationID:** Go to **Configuration > Adapter Installation** to copy the Installation ID for the installer script.
- **InstallationKey:** Go to **Configuration > Adapter Installation** to copy the Installation Key for the installer script.
- **ServerURI:** This is the URL for PM Cloud. For example, <https://<customerhost>-services.pm.beyondtrust.cloud.com>, where **customerhost** is the DNS name for PM Cloud.



Note: Do not include a port number or slash character on the end of the **ServerURI**.

For example, neither <https://test.pm.beyondtrustcloud.com/> nor <https://test.pm.beyondtrustcloud.com:8080/> will work.

- **UserAccount** (Optional):
 - For versions before 21.8, the default account for installing the adapter is **iC3Adapter**.
 - From version 21.8 and up, **LocalSystem** is the *only* account name to use.
- **GroupID:** (Optional). If supplied, automatically authorizes and assigns the computer to the specified computer group. To get the **GroupID**, go to the **Computer Groups** page, and click the group you want to use. The **Group ID** is shown on the **Properties** page. Copy the **Group ID**.

The computer remains in a pending state if the computer group does not exist.

You can assign and authorize computers on the **Computers** page if you are not using the **GroupID** during the install.



For information on how to automatically assign and authorize computer groups, please see "[Authorize and Assign Computers to a Group](#)" on page 36.

Run the Installer

You must install the Windows adapter using the Windows command line.

To install adapters:

1. Go to **Configuration > Adapter Installation** to download the Privilege Management adapter installer.
2. Also on the **Adapter Installation** page, note the Tenant ID, Server URL, Installation Key, and Installation ID. You need these required parameters for the installer script.
3. Navigate to the location of the adapter installer. By default this is the **AdapterInstallers** folder.
4. From the command line, enter the install command with the required parameters and press **Enter**. The adapter installer launches. Proceed through the installation wizard.



Example: The line breaks must be removed before you run the script.

```
msiexec.exe /i "PrivilegeManagementConsoleAdapter_x64.msi"
TENANTID="<TenantID_GUID>"
INSTALLATIONID="<InstallationID>"
INSTALLATIONKEY="<InstallationKey>"
SERVICEURI="<PMC URL>"
USERACCOUNT=LocalSystem
GROUPID="<PMC GroupID GUID>"
```

Add the following argument if you don't want the adapter service to start automatically. This option is useful when Privilege Management for Windows and the adapter are being installed on an image that will be reused to create many individual computers. If the adapter is not disabled in this scenario, the adapter will immediately join the PM Cloud instance indicated.



Note: If the adapter starts up and registers with PM Cloud prior to creating the VM image, then all VMs created from this image will contain the same adapter identifier and will not work properly.

```
SERVICE_STARTUP_TYPE=Disabled
```

You can start the **IC3Adapter** service manually later in the Services.



Example:

```
msiexec.exe /i "PrivilegeManagementConsoleAdapter_x64.msi" TENANTID="6b75f647-d3y7-4391-
9278-002af221cc3f" INSTALLATIONID="08A1CD8F-FAE4-479F-81B4-00751A55EEB8"
INSTALLATIONKEY="ABCDEFGHJKLMNO" SERVICEURI="https://CUSTOMERHOST-
services.pm.beyondtrustcloud.com"
USERACCOUNT=LocalSystem GROUPID="e531374a-55b9-4516-g156-68f5s32f5e57"
SERVICE_STARTUP_TYPE=Disabled
```

CUSTOMERHOST = the hostname. For example, if the hostname were **test**, the desired input would be:

```
https://test-services.pm.beyondtrustcloud.com
```

Upgrade the Windows Adapter

To upgrade to a full system-level DPAPI adapter:

1. Upgrade to the 22.1 adapter, where the adapter continues to run as the IC3 user, but at the system level.
2. Upgrade from 22.1 to a later version of the adapter allows the adapter to run as any system-level user, like LocalSystem.



Note: For a new adapter install, starting in version 22.1, this 2-step process is not required.

Configure the Windows PMC Adapter

The adapter uses HTTPS when communicating with PM Cloud. If there is a proxy in place that this communication goes through, it must be configured for the adapter user account, which is separate from the logged-on user account.

The computer must be configured to use proxy settings for the machine rather than the individual user. The following registry key needs to be edited to make this change:

```
[HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\Windows\CurrentVersion\Internet Settings]
```

The Data value must read **0**. This specifies the machine (**1** specifies per user).

Name	Type	Data
ProxySettingsPerUser	REG_DWORD	0

Ensure the iC3Adapter User Has the "User Can Log on as a Service" Right

When you install the adapter, a user account called **iC3Adapter** is created. The **iC3Adapter** user is granted the right to **Log on as a Service** by the installation process. If you have a Group Policy in place that revokes this permission, ensure the **iC3Adapter** user is excluded, as it requires the **Log on as a Service** right.



For more information, please see the Microsoft Knowledgebase article [Add the Log on as a service Right to an Account](https://docs.microsoft.com/en-us/previous-versions/windows/it-pro/windows-server-2008-R2-and-2008/cc794944(v=ws.10)) at [https://docs.microsoft.com/en-us/previous-versions/windows/it-pro/windows-server-2008-R2-and-2008/cc794944\(v=ws.10\)](https://docs.microsoft.com/en-us/previous-versions/windows/it-pro/windows-server-2008-R2-and-2008/cc794944(v=ws.10)).



Example:

```
msiexec.exe /i "PrivilegeManagementConsoleAdapter_x64.msi" TENANTID="6b75f647-d3y7-4391-9278-002af221cc3f" INSTALLATIONID="08A1CD8F-FAE4-479F-81B4-00751A55EEB8"
INSTALLATIONKEY="ABCDEFGHijklmno" SERVICEURI="https://CUSTOMERHOST-
services.pm.beyondtrustcloud.com" GROUPID="e531374a-55b9-4516-g156-68f5s32f5e57"
SERVICE_STARTUP_TYPE=Disabled
```

CUSTOMERHOST = the hostname. For example, if the hostname were **test**, the desired input would be:



```
https://test-services.pm.beyondtrustcloud.com
```

Set Up a Proxy During Adapter Install

Starting in version 23.1, the Windows adapter installer supports setting up a proxy during installation using the following command line parameters:

PROXYADDRESS, **BYPASSONLOCAL**, **USESISTEMDEFAULT**, and **SCRIPTLOCATION**

An example command using a proxy configuration parameter looks like the following:



Example:

```
msiexec.exe /l*v adapter_install.log /i "PrivilegeManagementConsoleAdapter_x64.msi"
TENANTID="02fe4a89-ae4b-316c-d026-da8acc80b33f" INSTALLATIONID="0066f094-7f73-4c47-bfca-
e7d4849d1449" INSTALLATIONKEY="angUArSM39Mk/MRD44o4Mn8dmOBGVBA6l01BBk71jek="
SERVICEURI="https://tenantid-services.epm.btrusteng.com" GROUPID="bfac11e7-bf82-40c7-
b5ee-3a0b34a304cd" usesystemdefault="false" PROXYADDRESS="http://<PROXY URL>:<PORT>"
```

The proxy settings are written to the **Avecto.Ic3.Client.Host.exe.config** file on the computer's file system.

When using a non-authenticated proxy configuration, you can install an adapter by passing the command line parameters **USESISTEMDEFAULT='false' PROXYADDRESS='http://<PROXY URL>:<PORT>'**



Example:

```
<http://system.net >
  <defaultProxy enabled="true" useDefaultCredentials="true">
    <proxy usesystemdefault="false" proxyaddress="http://<PROXY URL>:<PORT>" />
  </defaultProxy>
</system.net>
```

```
msiexec.exe /l*v adapter_install.log /i "PrivilegeManagementConsoleAdapter_x64.msi"
TENANTID="02fe4a89-ae4b-316c-d026-da8acc80b33f" INSTALLATIONID="0066f094-7f73-4c47-bfca-
e7d4849d1449" INSTALLATIONKEY="angUArSM39Mk/MRD44o4Mn8dmOBGVBA6l01BBk71jek="
SERVICEURI="https://tenantid-services.epm.btrusteng.com" GROUPID="bfac11e7-bf82-40c7-
b5ee-3a0b34a304cd" usesystemdefault="true"
scriptLocation="http://pactest/adaptertest.pac"
```

```
<http://system.net >
  <defaultProxy enabled="true">
    <proxy usesystemdefault="true" scriptLocation="http://pactest/adaptertest.pac" />
  </defaultProxy>
</system.net>
```

Remove Proxy Configuration

To remove the proxy address configuration, pass **PROXYADDRESS=""** as a command line parameter during upgrade.

This removes the proxy address configuration from the **Avecto.Ic3.Client.Host.exe.config** file.

Install and Upgrade Considerations When Using a Proxy

Keep the following in mind when installing and upgrading the adapter using proxy settings:

- If you install an adapter with proxy command line parameters and later upgrade to a newer version without proxy command line parameters, the older config file proxy settings are retained and persisted.
- If you install an adapter without proxy command line parameters and later upgrade to a newer version with proxy command line parameters, the newly added proxy configuration are reflected.
- If you install an adapter version with proxy command line parameters and later upgrade to a newer version with a different proxy configuration, the newly added proxy configuration is used.
- If you install or upgrade an adapter with an invalid proxy address, the computer is not registered in PM Cloud.
- Leaving the proxy address field empty does not set the proxy address in the **Avecto.Ic3.Client.Host.exe.config** file.

Install the Mac Adapter

The adapter is responsible for delivering policies and events between the computer and PM Cloud when computers are managed by Privilege Management.



Note: The adapter polls for pending commands every 60 minutes, which can include policy updates.



Tip: Setup information is available for the Mac adapter on the **Configuration** page. On the sidebar menu, click **Configuration** to view the details.

Distribute the Adapter

The Mac adapter can be distributed to the computers using the method of your choice, including Mobile Device Management (MDM), such as Jamf or AirWatch.

You can also use the Privilege Management for Mac Rapid Deployment Tool to install the adapter. You can download the Rapid Deployment Tool from the **Configuration** page.



For more information, please see the [Rapid Deployment Tool Guide](https://www.beyondtrust.com/docs/privilege-management/documents/windows-mac/pm-mac-rapid-deployment-tool) at <https://www.beyondtrust.com/docs/privilege-management/documents/windows-mac/pm-mac-rapid-deployment-tool>.

Installer Parameters

The installer parameters include the following:

- **TenantID** for your chosen method of authentication. This was recorded when PM Cloud was installed.
- **InstallationID:** Click **Configuration > Adapter Installation** to copy the Installation ID for the installer script.
- **InstallationKey:** Click **Configuration > Adapter Installation** to copy the Installation Key for the installer script.
- **ServiceURI:** The URL for your PM Cloud portal.




Note: Do not include a port number or slash character on the end of the **ServerURI**.

For example, neither <https://test.pm.beyondtrustcloud.com/> nor <https://test.pm.beyondtrustcloud.com:8080/> will work.

- **GroupID:** (Optional). If supplied, automatically authorizes and assigns the computer to the specified computer group. To get the **GroupID**, go to the **Computer Groups** page, and click the group you want to use. The **Group ID** is shown on the **Properties** page. Copy the **Group ID**.

The computer remains in a pending state if the computer group does not exist.

You can assign and authorize computers on the **Computers** page if you are not using the **GroupID** during the install.

 For information on how to automatically assign and authorize computer groups, please see "[Authorize and Assign Computers to a Group](#)" on page 36.

Run the Installer

You must install the Mac adapter using Terminal.

To install adapters:

1. Go to **Configuration > Adapter Installation** to download the Privilege Management adapter installer.
2. Also on the **Adapter Installation** page, note the Tenant ID, Server URL, Installation Key, and Installation ID. You need these required parameters for the installer script.
3. Navigate to the location of the adapter installer. By default this is the **AdapterInstallers** folder.
4. Mount the DMG.
5. From Terminal, run the installer command as shown in the example below with the parameters. The adapter installer launches. Proceed through the installation wizard.

Example:

```
sudo /Volumes/PrivilegeManagementConsoleAdapter/install.sh tenantid="750e85d1-c851-4d56-8c76-b9566250cfd" installationid="95a10760-2b96-4a0e-ab65-ed7a5e8f1649" installationkey="VGhpcyBzZWNYZXQgaTYzIGJlZW4gQmFzZTY0IGVuY29kZWQ=" serviceuri="https://test.ic3.beyondtrust.com" groupid="fcc4022e-12fa-4246-87w8-0de9a1483a68"
```

 For more information, please see "[Authorize and Assign Computers to a Group](#)" on page 36.

Uninstall Privilege Management for Mac

 **Note:** The uninstall scripts must be run from their default locations.

Uninstall Privilege Management

To uninstall Privilege Management locally on a Mac, run the following command:

```
sudo /usr/local/libexec/Avecto/Defendpoint/1.0/uninstall.sh
```

Uninstall the Mac Adapter

To uninstall the Mac adapter, run the following command. After running the uninstall script some related directories remain if they are not empty, such as **/Library/Application Support/Avecto/iC3Adapter**.

```
sudo /usr/local/libexec/Avecto/iC3Adapter/1.0/uninstall_ic3_adapter.sh
```

Remove the Privilege Management Policy

To remove the policy once you have uninstalled Privilege Management, run the following command:

```
sudo rm -rf /etc/defendpoint
```



Note: Do not remove the Privilege Management policy unless you have already uninstalled Privilege Management.

Add Azure URLs to Allowlist

Add the URL for your Azure region instance to the Allowlist to permit policy download.

Region	Allowlist URL
East US	https://prdpmpolicyeastus.blob.core.windows.net
	https://prdpmpolicy2eastus.blob.core.windows.net
Central US	https://prdpmpolicycentralus.blob.core.windows.net
	https://prdpmpolicy2centralus.blob.core.windows.net
West US	https://prdpmpolicywestus2.blob.core.windows.net
	https://prdpmpolicy2westus2.blob.core.windows.net
Canada Central	https://prdpmpolicycanadacentral.blob.core.windows.net
	https://prdpmpolicy2canadacentra.blob.core.windows.net
UK South	https://prdpmpolicyuksouth.blob.core.windows.net
	https://prdpmpolicy2uksouth.blob.core.windows.net
Germany West Central	https://prdpmpolicygermanywestce.blob.core.windows.net
	https://prdpmpolicy2germanywestc.blob.core.windows.net
North Europe	https://prdpmpolicynortheurope.blob.core.windows.net
	https://prdpmpolicy2northeurope.blob.core.windows.net
South Africa North	https://prdpmpolicysouthafricano.blob.core.windows.net
	https://prdpmpolicy2southafrican.blob.core.windows.net
Central India	https://prdpmpolicycentralindia.blob.core.windows.net
	https://prdpmpolicy2centralindia.blob.core.windows.net
South East Asia (Singapore)	https://prdpmpolicysoutheastasia.blob.core.windows.net
	https://prdpmpolicy2southeastasi.blob.core.windows.net

Region	Allowlist URL
East Japan	https://prdpmpolicyjapaneast.blob.core.windows.net https://prdpmpolicy2japaneast.blob.core.windows.net
Australia East	https://prdpmpolicyaustraliaeast.blob.core.windows.net https://prdpmpolicy2australiaeas.blob.core.windows.net

Configure the Privilege Management MMC PMC snap-in



Tip: Setup information is available for the MMC snap-in on the **Configuration** page. On the sidebar menu, click **Configuration** to view the details.

You need to install and configure the Privilege Management MMC on the machine you will use to administer PMC policy.

The installation packages differ based on your operating system:

- For 32-bit (x86) systems run **PrivilegeManagementPolicyEditor_x86.exe**.
- For 64-bit (x64) systems run **PrivilegeManagementPolicyEditor_x64.exe**.



For compatible versions, please see the [Release Notes](https://www.beyondtrust.com/docs/release-notes/privilege-management/index.htm) at <https://www.beyondtrust.com/docs/release-notes/privilege-management/index.htm>.

Add and Configure the Privilege Management PMC Snap-in

You need to use the Privilege Management MMC PMC snap-in for the Microsoft Management Console (MMC) to manage policy for computers managed by PMC.

To load the Privilege Management PMC snap-in for the MMC:

1. Run **mmc.exe** from the **Start** menu.
2. Click **File > Add/Remove Snap-in** and select **Privilege Management Settings (PMC)**. Click **Add**.
3. Select the **Privilege Management Settings (PMC)** node and click **PMC Connection** under **Settings**.



Note: Ensure you install the **Privilege Management Settings (PMC)** snap-in, rather than the **Privilege Management Settings** snap-in.

The next step is to configure the MMC to connect to PM Cloud.

Setting	What to Enter
Connection	
Server URL	This is the URL for PMC with 443 in the Port field. This is shown on the Finish tab of the deployment wizard. For example, https://<customerhost>-services.pm.beyondtrust.cloud.com , where customerhost is the instance hostname for your Privilege Management Console.
Tenant ID	This can be located at Configuration > Settings > MMC Snap-In Installation in the PMC Portal.
Authorization Provider	
URL	This is the URL for PMC with /oauth appended to it. For example, https://customerhost-services.pm.beyondtrust.cloud.com , where customerhost is the instance hostname for your Privilege Management Console.

Setting	What to Enter
Identification	
MMC Client ID	This can be located at Configuration > Settings > MMC Snap-In Installation in the PMC Portal.
Client Return URI	Enter http://defendpoint-mmc.com . This string does not resolve but needs to be as stated.
Amend token resource ID	Check this box. This string needs to be https://api.ic3.avecto.com . This string does not resolve but needs to be as stated.



For more information, please see "[Configure PMC to Connect to the Policy Editor](#)" on page 23.

Configure PMC to Connect to the Policy Editor

Configure PMC to allow the Privilege Management MMC snap-in to communicate with the PMC services.

1. Select **Configuration** on the sidebar menu.
2. Under **Settings**, click **MMC Snap-In Installation**.
3. Click the **Remote MMC client access** toggle to enable the feature. Generate a new GUID and enter it here. Click the Refresh button to generate a new GUID. Use the same GUID when you configure the MMC. This is the MMC Client ID in the MMC.

Once you have configured PMC, you must configure the Privilege Management MMC snap-in to communicate with it.

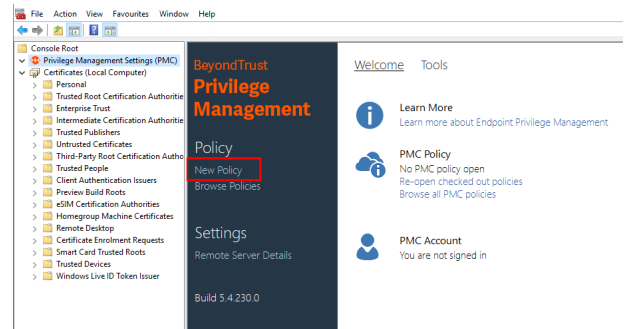


For more information, please see *"Configure the Privilege Management MMC PMC snap-in" on page 21*.

Confirm Connection to PMC

You should now confirm that you can access PMC from the Privilege Management MMC snap-in.

1. Click **New Policy** in the Privilege Management MMC snap-in.



2. Enter your credentials for PMC when prompted, and then click **Sign in**.
3. When you click **Create**, you are prompted to enter a name for your policy. When you click **PMC Policies**, you are taken to a list of policies in PMC.



Note: If you receive an error connecting to PMC, ensure you have entered the correct options in both PMC and the PMC Privilege Management MMC snap-in.

Privilege Management Console Grid Behavior

There are several grids in PM Cloud that have similar behavior. For example, you can use filtering options to reduce the number of items displayed in the grid.

Access Details Page or Panel

From the main page for **Computers**, **Computer Groups**, **Activity Auditing**, and **Users**, you can click the item in the first column to access a **Details** page or panel.

Click the following for access:

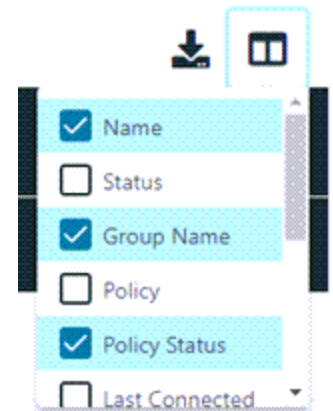
- Computer Name (Computers)
- Computer Group Name (Computer Groups)
- Entity (Activity Auditing)
- Email Address (Users)

Select Columns to Display

At the right, click the **Columns** icon, and then select the columns you want to display.

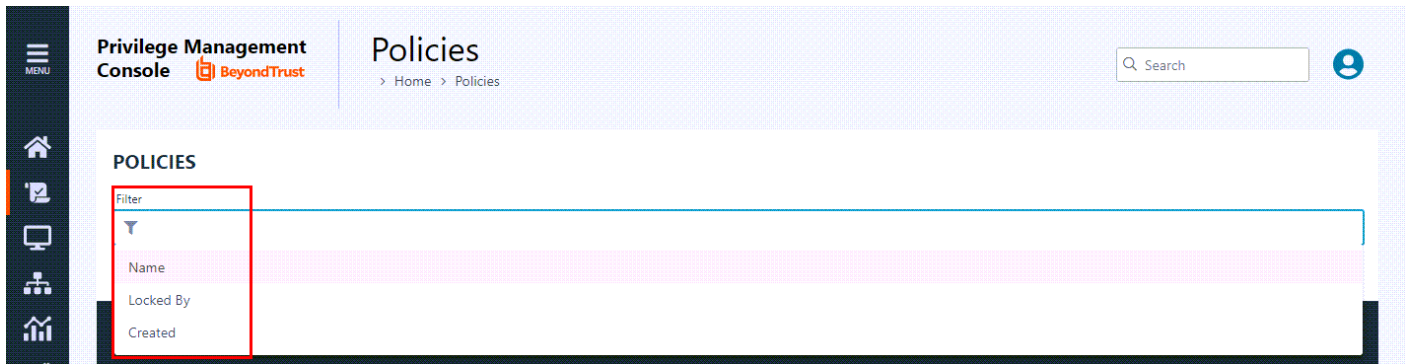
Sort Columns

You can sort columns independent of each other by clicking the column name. An **Up** or **Down** arrow icon appears to designate the *ascending* or *descending* sorting order.

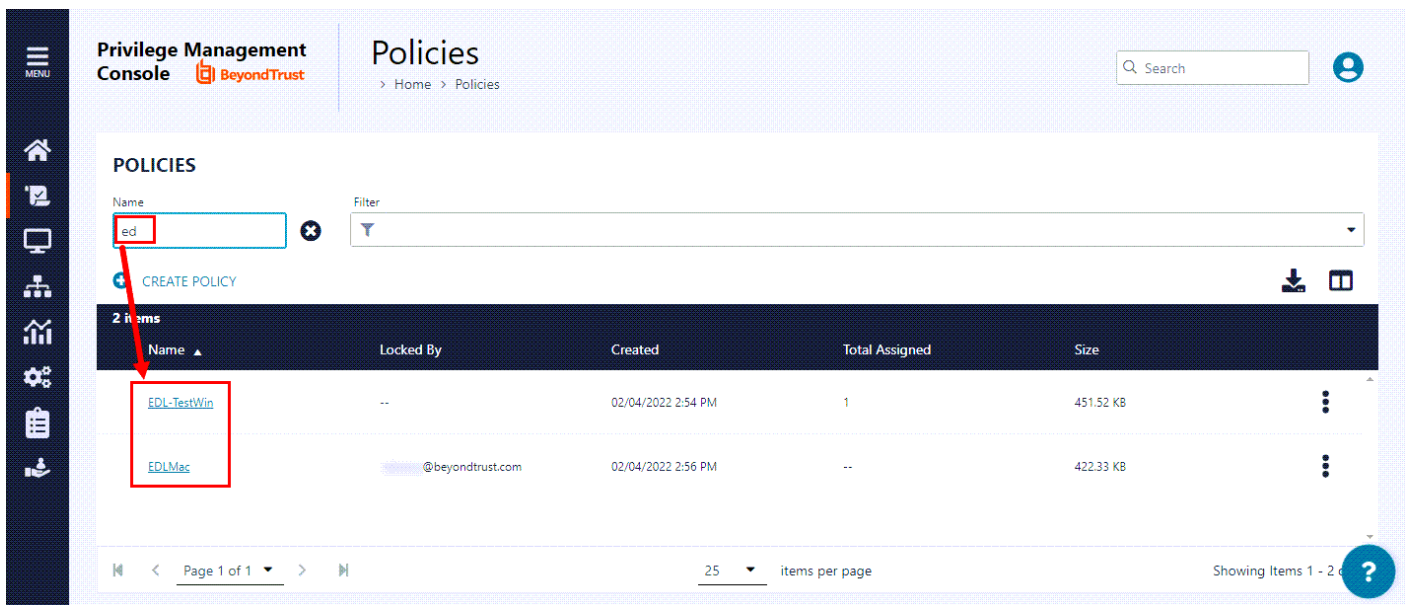


Filter

Use the filter tool to filter within the grids. click in the filter field, and then from the list, select a filtering option.



When you enter a string of text in the field, the results in the grid filter below automatically update to the records that contain that string.



To remove a filter, at the right of the filter, click the **X** icon.

The following grids support filtering:

- Policies
- Computers
- Computer Groups
- Auditing
- Users



Tip: You can use multiple filters in your search. After your initial filter is applied, click in the **Filter** field again, and select an additional filter item to use. For example, you can filter policies by name, and then by date created.

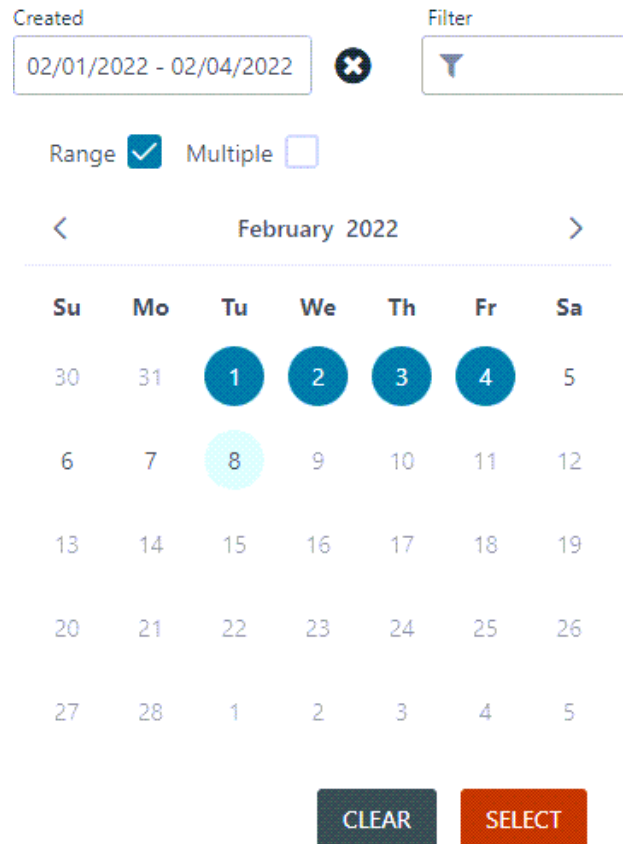
Filter Using the Date Picker

PMC has a **date picker** that you can use to filter in the grids. For example, you can use it to select a range of dates within which computers or computer groups were created.

To use the date picker:

1. On the **Policies, Computers, Computer Groups, Activity Auditing, or Users** page, click in the **Filter** field above the grid. The filter options list appears.
2. Select an option that requires a date, such as **Created**. The date picker appears.
3. You have three options for filtering:
 - Select a single date.
 - Check the **Range** box, and then select a beginning and end date for the range.
 - Check the **Multiple** box, and then select multiple, specific dates.
4. To apply the filter, click **Select**. The grid displays a list according to your criteria.

To further reduce the list returned, you can modify the dates or add one or more additional filters.



Created: 02/01/2022 - 02/04/2022

Filter: [Dropdown arrow]

Range Multiple

< February 2022 >

Su	Mo	Tu	We	Th	Fr	Sa
30	31	1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	1	2	3	4	5

CLEAR SELECT

Progress and Change Indicators

When PM Cloud is busy performing an action, you see a spinner on the grid to indicate that it is processing.

Where actions affect one or more rows, you see a green toaster notification briefly flash across the top right of the grid to indicate that PM Cloud has processed your request.

Error Notifications

If PM Cloud cannot complete an action successfully, it does not make any changes and you get a toaster notification on the top right, next to the search field. PM Cloud does not process a task that it cannot action successfully. The error notification tells you that the action was not successful. You can clear the errors as required from the page that generated the error.

Export to CSV

You can export all grid data results in the currently filtered result set, not just the results which are displayed on the current page, from the **Download records to CSV** icon above the grid.

COMPUTERS


Filter



25 items (0 Selected)

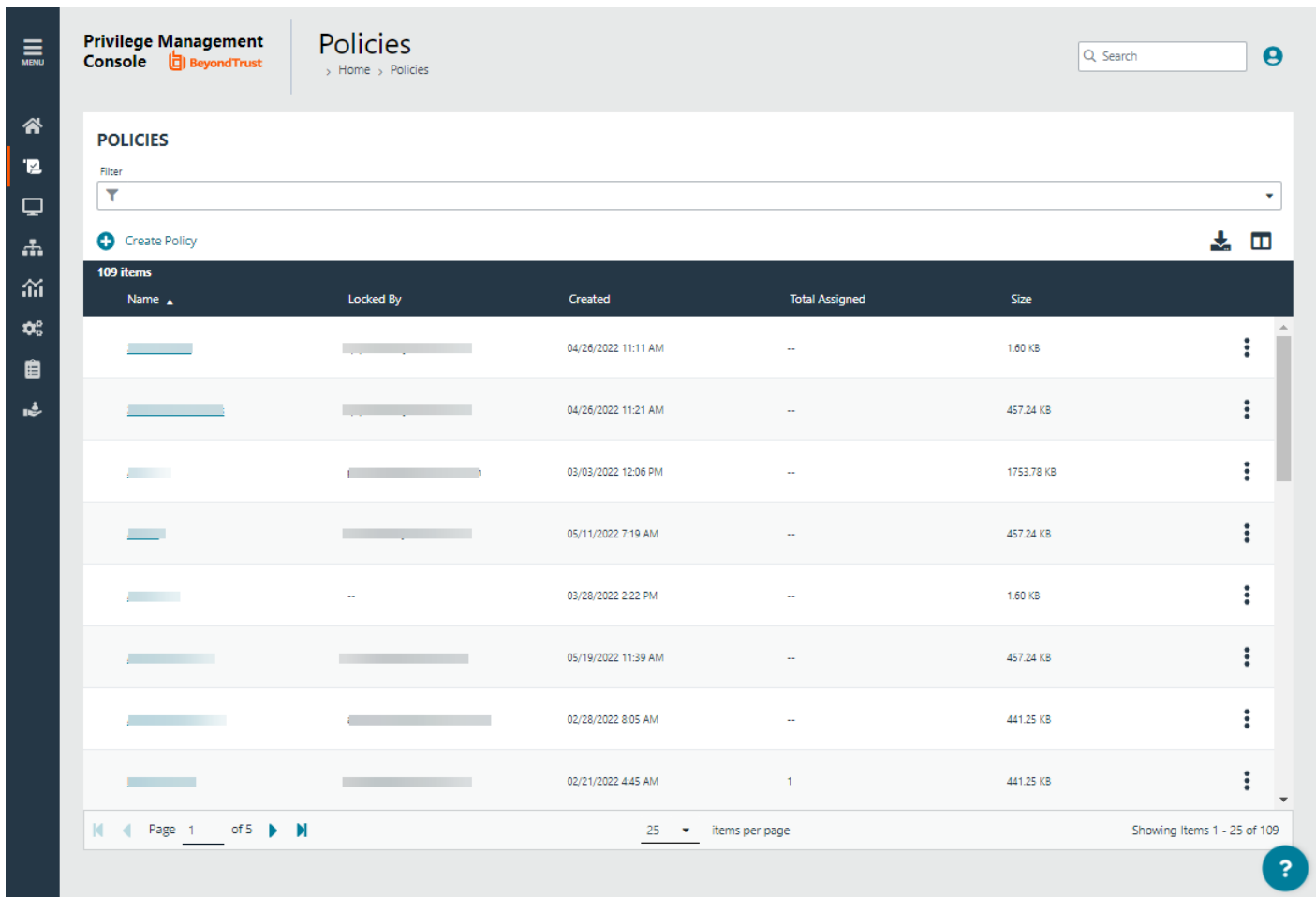
<input type="checkbox"/>	Name ▲	Status	Group Name	OS	Domain	Created On
--------------------------	--------	--------	------------	----	--------	------------

Policies

 **Note:** PM Cloud functions on a **role-based access control (RBAC)** system, where the role assigned to a user dictates what features this user has access to. A standard user must have sufficient permissions to access the **Policies** page and options. For more information, see ["Role-Based Access Control" on page 48.](#)

The **Policies** page allows you to see and interact with the policies being deployed by PMC.

To access the **Policies** page, on the sidebar menu, select **Policies**.



Privilege Management Console Policies

Home > Policies

Search

POLICIES

Filter

+ Create Policy

109 items

Name	Locked By	Created	Total Assigned	Size
[Redacted]	[Redacted]	04/26/2022 11:11 AM	--	1.60 KB
[Redacted]	[Redacted]	04/26/2022 11:21 AM	--	457.24 KB
[Redacted]	[Redacted]	03/03/2022 12:06 PM	--	1753.78 KB
[Redacted]	[Redacted]	05/11/2022 7:19 AM	--	457.24 KB
[Redacted]	--	03/28/2022 2:22 PM	--	1.60 KB
[Redacted]	[Redacted]	05/19/2022 11:39 AM	--	457.24 KB
[Redacted]	[Redacted]	02/28/2022 8:05 AM	--	441.25 KB
[Redacted]	[Redacted]	02/21/2022 4:45 AM	1	441.25 KB

Page 1 of 5 25 items per page Showing Items 1 - 25 of 109

You can perform the following tasks on the **Policy** page:

- Create a policy
- Open a policy
- View the policy details
- Edit and lock a policy
- Edit the policy properties
- Assign a policy to a computer group

- Download the latest revision
- Upload a policy revision
- Revert and discard changes to a policy
- Delete a policy

We recommend using PM Cloud Policy Editor to manage your policies. However, you can use Privilege Management MMC Policy Editor. The Privilege Management MMC snap-in allows you to create, edit, check in, and check out policies to the PMC portal.



For information on editing Workstyle policy for Windows, please see the [Windows Administration Guide](https://www.beyondtrust.com/docs/privilege-management/windows/index.htm) at <https://www.beyondtrust.com/docs/privilege-management/windows/index.htm>.

Choose Policies Columns to Display

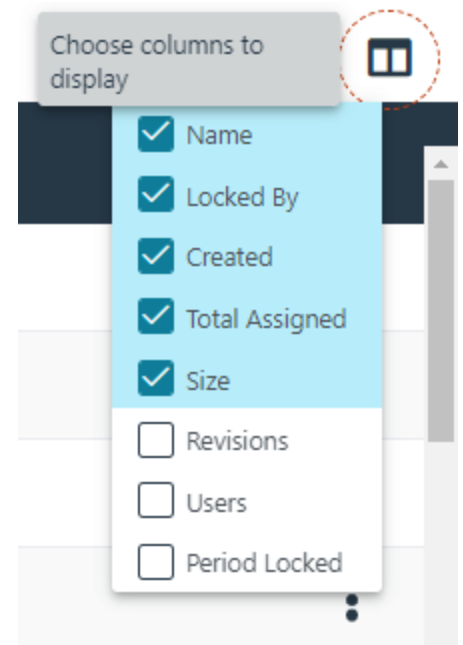
You can choose which columns to display in the grid.

To select which columns to display, at the top-right of the grid, click the **Choose Columns to Display** icon and select one or more columns to display.

The columns appear from left to right in the grid, in the order that you select them.

The following columns can be displayed:

- **Name:** The policy name. Click to access the Policy Editor for this policy.
- **Locked By:** Which user the policy has been locked by.
- **Created:** The date and time when the policy was created.
- **Total Assigned:** The number of groups the policy is assigned to.
- **Size:** The size of the policy.
- **Revisions:** The number of revisions that have been made to the policy.
- **Users:** The number of users that can access this policy, by user roles. Click to view the list.
- **Period Locked:** How long since the policy was last locked.

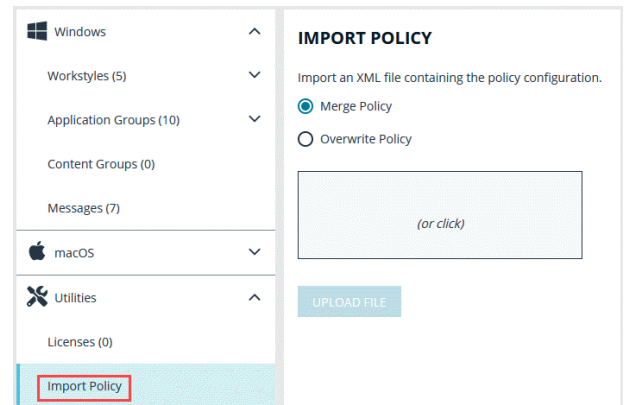


Upload a File in PMC to Create Policy

You can upload an XML policy file in PMC when you first create the policy, or make edits to the policy at a later time.

To upload an XML file for a *new* policy:

1. On the sidebar menu, click **Policies**.
2. At the top of the **Policies** grid, click **Create Policy**.
3. Select the desired policy template and enter policy details.
4. Click **Create Policy**.
5. Select **Utilities > Import Policy**.
6. Choose either **Merge Policy** or **Overwrite Policy** and click the box to import your XML policy. You can also drop the file to upload in the box.
7. Click **Upload File**.



To upload an XML file for an *existing* policy:

1. On the sidebar menu, click **Policies**.
2. To the right of the policy you want to edit, click the vertical ellipsis icon, and then select **Edit Policy**.
3. Select **Utilities > Import Policy**.
4. Choose either **Merge Policy** or **Overwrite Policy** and click the box to import your XML policy. You can also drop the file to upload in the box.
5. Click **Upload File**.

Upload a Policy Revision

You can upload a new revision of an existing policy. Policies downloaded from PMC, modified and then reuploaded are recognized as a new revision based on a unique identifier in the XML.

To upload a new revision of an existing policy:

1. On the sidebar menu, click **Policies**.
2. To the right of the policy you want to edit, click the vertical ellipsis icon, and then select **Revision History**.
3. Click **Upload Revision**. Browse to the XML file and click **Open**. The XML file is uploaded to the portal.
4. The new revision is uploaded, provided the XML validation passes. If the XML policy does not pass validation, the row is highlighted in red, and the policy is not uploaded.
5. On the **Auto Assign Policy to Groups** dialog box, select the groups to update with the new policy revision.
6. Select **Apply to Groups**.

Each time the same policy is checked in, the revision of the policy is incremented.

Open Policy in Read-only Mode

You can view the contents of a policy in *read-only* mode.

To view a policy:

1. On the sidebar menu, click **Policies**.
2. To the right of the policy you want to view, click the vertical ellipsis icon, and then select **Open Policy**. You can also just click on the policy name.

3. When done viewing the policy information, in the Read Only box at the top center of the page, click the **Policy List** link to return to the **Policies** page.
4. If you want to edit a policy, proceed as described in ["Edit a Policy" on page 57](#).

Download Latest Policy Revision

You can download the latest revision of a policy from PMC in XML format if required.

To download the latest policy revision as an XML file:

1. On the sidebar menu, click **Policies**.
2. To the right of the policy you want to edit, click the vertical ellipsis icon, and select **Download Latest Revision**.



Note: If you want to download a previous revision version, select **Revision History** from the dropdown menu.

Assign a Policy to a Group

1. On the sidebar menu, click **Policies**.
2. Click the vertical ellipsis menu for a policy, and then select **Assign Policy to a Group**.
3. In the **Assign Policy to a Group** panel, use the dropdown list to select the revision for the policy you want to assign, and then select the group.
4. Click **Assign Policy**.

A confirmation toaster displays when a policy is successfully applied.

Discard Policy Draft and Undo Check Out in MMC Snap-in

If a policy is checked out using the Privilege Management MMC snap-in, you can force PMC to discard the changes and undo the checkout. You must be an Administrator or Policy Administrator.

To discard draft and undo checkout of a policy:

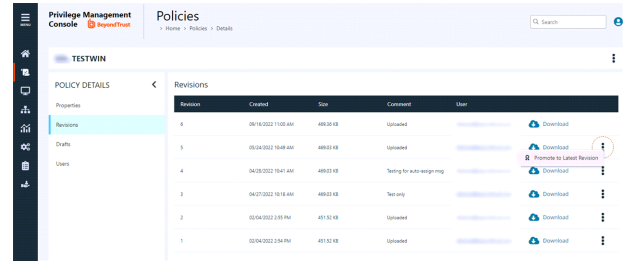
1. On the sidebar menu, click **Policies**.
2. To the right of the policy you want to edit, click the vertical ellipsis icon, and then select **Revert & Discard Changes**.
3. Review the warning and click **Revert & Discard** to revert the policy changes; otherwise, click **Cancel**.

Promote a Policy

If you change a policy and you want to discard those changes, you can promote a previous version of the policy.

To promote a previous version of a policy:


1. On the sidebar menu, click **Policies**.
2. To the right of the policy you want to edit, click the vertical ellipsis icon, and then select **View Policy Details**.
3. In the **Policy Details** panel on the left, click **Revisions**.
4. To the right of the policy you want to promote, click the vertical ellipsis icon, and then select **Promote to Latest Revision**.
5. On the **Promote Policy to Latest Revision** dialog box, you can add notes for future reference.
6. If the policy is already applied to certain groups, you can choose to apply the latest revision now by checking the **Yes, auto assign latest revision to group(s)** box.



! IMPORTANT!

To auto-assign a policy revision to one or more groups, you must be an administrator user or a standard user with permissions to all the groups that are affected by the policy. If you have insufficient access permissions, the auto-assign policy feature will not be accessible.

7. Click **Promote to Latest**.

 For more information on roles and permissions, see *"Role-Based Access Control"* on page 48.

View Policy Details

On the **View Details** page for a policy, you can download policy revisions, see the check-in and discarded date and time, see the users with policy permissions, and review activity auditing on the policy.


Auditing activity includes audit type, the user accessing the policy, and a summary of the activity.

To access policy details:

1. On the sidebar menu, click **Policies**.
2. Click the menu for a policy, and then select **View Computer Details**.

Delete a Policy

You can only delete policies if they are unlocked.

 **Note:** If a policy is locked, the **Delete** button is not available for use. The policy must be unlocked first.

To delete an *unassigned* policy:

1. On the sidebar menu, click **Policies**.
2. To the right of the policy you want to delete, click the vertical ellipsis icon, and then select **Delete**.
3. To confirm and discard the policy, click **Delete Policy**; otherwise, click **Cancel**.

To delete an *assigned* policy:

1. On the sidebar menu, click **Policies**.
2. To the right of the policy you want to delete, click the vertical ellipsis icon, and then select **Delete**.
3. The **Policy Deletion Warning** dialog box appears, indicating that this policy is assigned to one or more groups. You have two options:
 - Select a different policy and revision to assign to the group(s), and then click **Confirm**.
 - Click **Confirm** without assigning any policy. The group or groups are no longer policy controlled.

Manage Computers

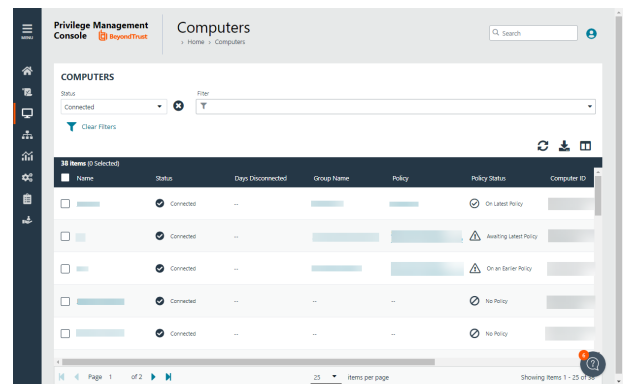
After the Privilege Management client software is deployed to a computer, use the **Computers** page to keep track of the computers managed by PM Cloud. You can:

- Authorize and assign a computer to a group.
- Deactivate and delete a computer no longer in use.
- Download logs for a computer to ensure proper communication between the computer and PM Cloud
- Assess computer health
- Change the group a computer is assigned to
- Check the status of the policy deployment. If a computer is not on the latest policy, you can drill down to policy details to determine next steps.

Overview

When working on the **Computers** page, there are many UI features available so you only view relevant computers.

- Use the **Status** filter to see disconnected or connected computers. The first time a computer comes online, the computer shows as *Connected*. A computer can stop communicating with PM Cloud when it goes offline for any period (weekends, leave of absence from work, etc). When the computer is back online the status automatically returns to *Connected*. Drill down to more details to learn more information about the health of the computer.
- Select from a list of computer filters, like policy status, authorization state, created on date.
- Choose columns that you want to view in the main display.
- Access computer features on the menu to individually manage a computer
- Use the **Show Computers with Duplicate Names** to filter all computers with the same host name. Determine the most recently active computer by the time in the **Last Connected** column.



i For more information on computer status, please see "[Computer Settings](#)" on page 146.

Assign Computers to a Group

Add computers to a computer group to organize computers that will receive the same policy.

You must create a computer group first.

1. On the sidebar menu, click **Computers**.
2. To the right of the computer you want to edit, click the vertical ellipsis icon, and then select **Edit Group Assignment**.
3. From the dropdown list, select a group, and then click **Save Group Assignment**. A notification appears indicating PM Cloud has processed your request.

i For more information on creating a group, please see ["Create a Group"](#) on page 40.

Authorize and Assign Computers to a Group

You can authorize and assign computers to a group in one step, provided the computers have not previously been authorized. If they have previously been authorized, then follow the steps in the link below to assign computers to a group.

You can see which endpoints are not authorized by selecting **Pending Activation** from the top of the **Status** column.

To authorize and assign computers in one step:

1. On the sidebar menu, click **Computers**.
2. Select the computers, and then select **Authorize** at the top of the page.
3. From the group dropdown list, select a group, and then click **Assign**. If you have not created any groups yet, you will see only **No Group** in the dropdown.
4. If you have a Default group, it will be selected by default, otherwise you can select the group from the dropdown list. Click **Assign**. A notification briefly flashes green at the bottom of the screen to indicate that PMC has processed your request.

i For more information, please see the following:

- For instructions on assigning computers to a group, ["Assign Computers to a Group"](#) on page 35
- For instructions on creating a group, ["Privilege Management Console Computer Groups"](#) on page 39

Deactivate Computers

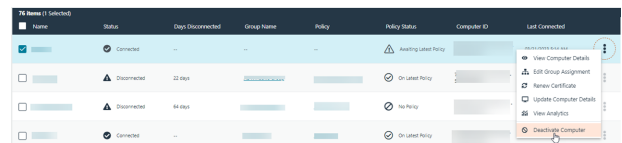
As an administrator, you want to deactivate computers when a user is leaving the company or might be away on leave for some time. Deactivating a computer removes that computer from PM Cloud analytics and the license count.

Deactivated computers are disconnected from PM Cloud and can no longer communicate with PM Cloud. You must reinstall Privilege Management client software to reverse a deactivated state.

Only authorized computers can be deactivated.

To deactivate a computer:

1. Click **Computers**.
2. Select the menu for a computer, and then select **Deactivate Computer**.
3. After a computer is in a deactivated state, you can delete the computer from PM Cloud. Select the computer menu, and then select **Delete Computer**.



Name	Status	Days Disconnected	Group Name	Policy	Policy Status	Computer ID	Last Connected
[Computer Name]	Connected	---	---	---	Waiting Latest Policy	---	---
[Computer Name]	Disconnected	2 days	---	---	Orphaned Policy	---	---
[Computer Name]	Disconnected	41 days	---	---	No Policy	---	---
[Computer Name]	Connected	---	---	---	Orphaned Policy	---	---

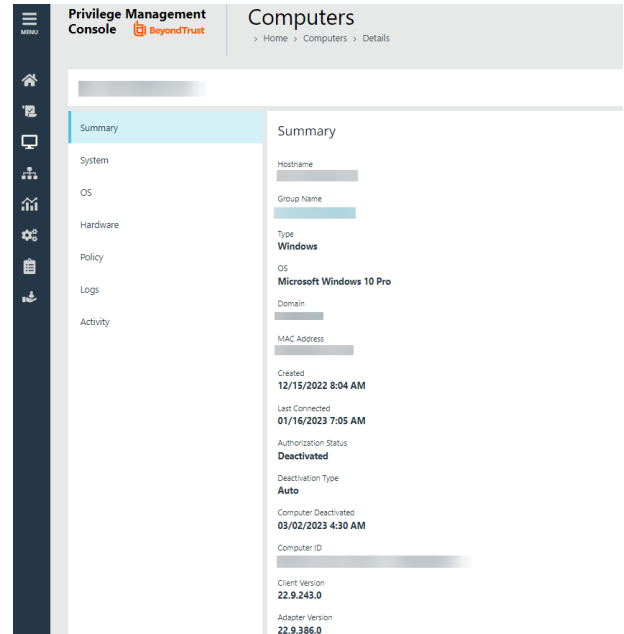
You can also set a time period, in days, to delete deactivated computers.

i For more information, please see ["Computer Settings"](#) on page 146.

Assess Computer Status

To ensure computers are up to date and running properly, you can view details on the computer which include, hardware and operating system information, policy status, and logging information.

To get a quick at-a-glance view of recent activities on the computer, click the **Activity** tab. You can see who accesses the computer, the event time, and summary information on the action that occurred.



Check Policy Status

You can view the policy status on the main **Computers** page for each computer. If the status is **Awaiting Latest Policy**, drill down to see more information about the policy on the **Policy** tab. The collected metrics include the current policy applied and the version.

If the computer is not receiving updated policies, go through the computer details to determine if there are connection issues with the computer. The **Logs** tab, **Activity** tab, and **OS** tab might have helpful information to troubleshoot issues.

Download Logs

You can view and download logs to track activities between the computer and PM Cloud. This can be helpful to troubleshoot issues with the computer. For example, you can see if a computer is successfully receiving incoming commands from PM Cloud.

There are two types of logs:

- **Computer**: Records all communication between PM Cloud and the computer.
- **Command**: Records the commands sent to the computer. The log information includes the command sent and whether the command was received by the computer.

To access the logs:

1. Select a computer.
2. Select **View Computer Details**, and then click **Logs**.
3. Select the **Computer Logs** tab or **Command Logs** tab.
4. To gather recent activity or if there are no logs, click **Request Logs**.

Update Computer Information

If you are troubleshooting a computer problem or you want to make sure policy status is current, you want to be sure that you are viewing the most recent information collected for that computer. To do this, select the computer, and then select **Update Computer Details** from the menu.

View Computer Analytics

Open a host report to view analytics on the computer activity and includes:

- Applications that have been run
- Running processes
- Users accessing the computer
- Logon activity

The host report can also be accessed from the **Events > All** report.

To view computer analytics:

1. On the sidebar menu, click **Computers**.
2. From the menu for a computer, select **View Analytics**.

Clear a Computer from a Group

Since policies are assigned to groups rather than to individual computers, if you clear a computer from a group, the policy on that computer is also cleared. The policy assignment to the wider group is not affected.

1. On the sidebar menu, click **Computers**.
2. Find the computer, click the vertical ellipsis icon, and then select **Edit Group Assignment**.
3. Click **Clear Group Assignment**.

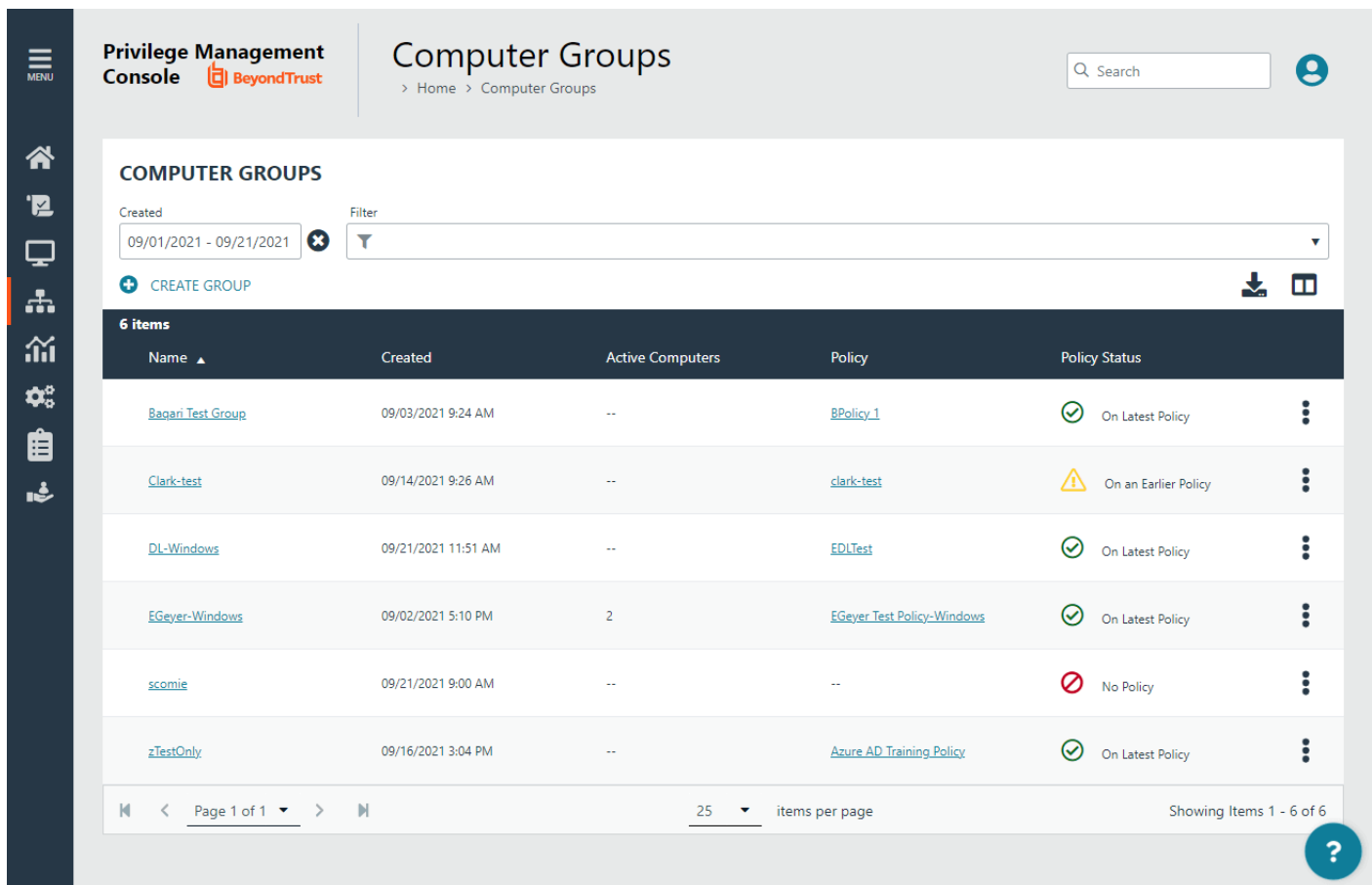
Privilege Management Console Computer Groups

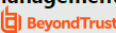


Note: PMC functions on a **role-based access control (RBAC)** system, in which the role assigned to a user dictates what features this user has access to. A standard user must have sufficient permissions to access the **Computer Groups** page and options. For more information, see "[Role-Based Access Control](#)" on page 48.

Computer Groups contain one or more computers. A policy is assigned to a group.

To access the **Computer Groups** page, on the sidebar menu, click **Computer Groups**.



Privilege Management Console  **Computer Groups**

> Home > Computer Groups

Search

COMPUTER GROUPS

Created: 09/01/2021 - 09/21/2021 Filter

+ CREATE GROUP

Name	Created	Active Computers	Policy	Policy Status
Bagari_Test_Group	09/03/2021 9:24 AM	--	BPolicy_1	On Latest Policy
Clark-test	09/14/2021 9:26 AM	--	clark-test	On an Earlier Policy
DL-Windows	09/21/2021 11:51 AM	--	EDLTest	On Latest Policy
EGeyer-Windows	09/02/2021 5:10 PM	2	EGeyer_Test_Policy-Windows	On Latest Policy
scomie	09/21/2021 9:00 AM	--	--	No Policy
zTestOnly	09/16/2021 3:04 PM	--	Azure AD Training Policy	On Latest Policy

Page 1 of 1 25 items per page Showing Items 1 - 6 of 6

You can perform the following tasks on the **Computer Groups** page:

- Create a group.
- View the group details.
- Edit the group properties.
- Set the default group.
- Set or edit the policy assignment for the group.
- Delete a group.

Choose Computer Groups Columns to Display

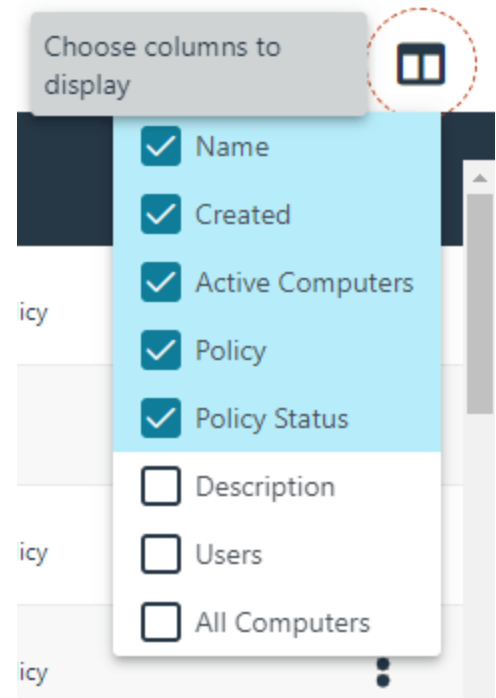
You can choose which columns to display in the grid.

To select which columns to display, at the top-right of the grid, click the **Choose Columns to Display** icon and select one or more columns to display.

The columns appear from left to right in the grid, in the order that you select them.

The following columns can be displayed:

- **Name:** The group name. Click to view the **Computer Group Details** page.
- **Created:** The date and time when the group was created.
- **Active Computers:** The active computers in the group (authorized and not deactivated). Click to view the list of computers associated with this group.
- **Policy:** The policy associated with this group. Click to access the Policy Editor for this policy.
- **Policy Status:** The current status of the policy associated with this group.
- **Description:** The group description, if one was provided when the group was created.
- **Users:** The list of users that can access this group, by user roles. Click to view the list.
- **All Computers:** All computers, regardless of state.



Create a Group

Create a computer group when you want to assign the same policy to more than one computer.

1. On the sidebar menu, click **Computer Groups**.
2. Click **Create Group**.
3. Enter a **Group Name**. The **Description** field is optional. At any time, click the vertical ellipsis menu, and then select **Edit Properties** to edit the group name and description.
4. Click **Create Group**. Your group is created and appears in the list.
5. After a group is created, you can set it as the default group. Select a group name, and then select **Set as Default** from the menu.

When computers are added to PM Cloud, they are automatically added to the default group.

Computers being added to the system do not join the Default group if no group is specified at install time.



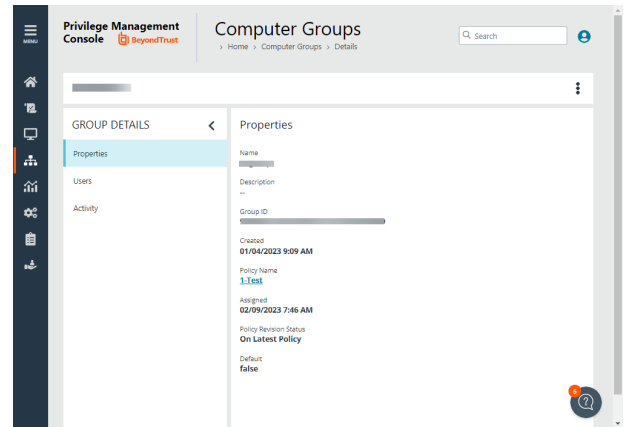
For more information, please see ["Create Groups and Assign Policy" on page 10](#).

View Group Details

You can view details on a group which include, name, group ID, create date, and policy information.

To get a quick at-a-glance view of recent activities on the group, click the **Activity** tab. You can see who accesses the group, the event time, and summary information on the action that occurred.

1. On the sidebar menu, click **Computer Groups**.
2. Select the menu for a group, and then select **View Group Details**. You can also click the name of the group in the grid.



Check the Policy Assigned Date

If you are investigating a computer with a policy status of *Awaiting Policy*, check the date and time a policy was assigned to the group on the **Group Details** panel. The **Assigned Date** displays the most recent policy assignment.

The **Assigned Date** can help you determine when computers are out of compliance. You do not want computers in a *Awaiting Policy* state for longer than 1-2 days.

Edit Group Properties

1. On the sidebar menu, click **Computer Groups**.
2. To the right of the group you want to edit, click the vertical ellipsis icon, and then select **Edit Group**.
3. Change the **Group Name**, and **Description** as required, and then click **Save Group**.

Changing the details of a group, including the name, does not affect the computers that are added to the group, or the policy delivered to those computers.

Assign a Policy to a Group

Assigning a policy to a group allows you to manage computers in that group with the policy.

1. On the sidebar menu, click **Computer Groups**.
2. To the right of the group you want to assign a policy to, click the vertical ellipsis icon, and then select **Edit Policy Assignment**.
3. In the **Edit Policy Assignment** panel, use the dropdown list to select the policy you want to assign, and then select which revision to use.
4. Click **Save Policy Assignment**. A prompt briefly appears and flashes green to indicate that PMC has processed your request.

Clear a Policy from a Group

Computers in the group will have the policy removed when you clear a policy from a group.

1. On the sidebar menu, click **Computer Groups**.
2. To the right of the group you want to edit, click the vertical ellipsis icon, and then select **Edit Policy Assignment**.
3. To remove the policy from the group, click **Clear Policy Assignment**.
4. You are notified how many computers will be affected by the change. To clear the policy assignment, click **Clear Policy Assignment**.

Delete a Group

You can only delete groups that do not have any computers assigned to them. Groups can be deleted if they have a policy assigned to them.

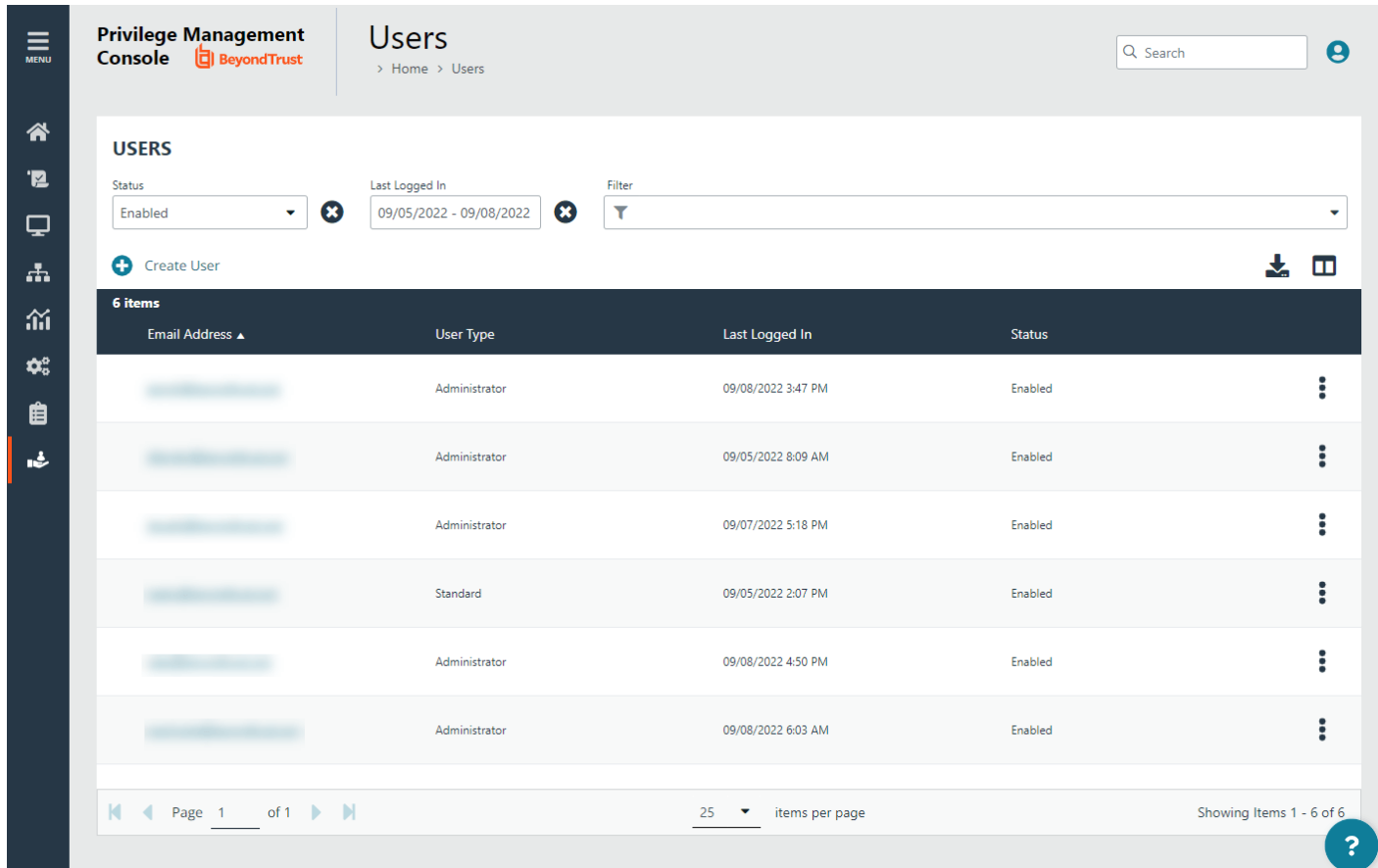
1. On the sidebar menu, click **Computer Groups**.
2. To the right of the group you want to delete, click the vertical ellipsis icon, and then select **Delete**.
3. You are prompted to confirm the decision. To delete the group, click **Delete Group**.

Manage User Accounts

The **Users** page allows you to see and to interact with the users being managed by PM Cloud.

To access the **Users** page, on the sidebar menu, click **Users**.

Each user in PM Cloud must exist in your authentication provider. Each user is assigned a role, which determines what actions they are allowed to perform in the PM Cloud portal and Privilege Management MMC snap-in.



Privilege Management Console BeyondTrust

Users
> Home > Users

Search

USERS

Status: Enabled (x) Last Logged In: 09/05/2022 - 09/08/2022 (x) Filter: [v]

+ Create User [Download] [Grid]

6 items

Email Address	User Type	Last Logged In	Status
[Redacted]	Administrator	09/08/2022 3:47 PM	Enabled
[Redacted]	Administrator	09/05/2022 8:09 AM	Enabled
[Redacted]	Administrator	09/07/2022 5:18 PM	Enabled
[Redacted]	Standard	09/05/2022 2:07 PM	Enabled
[Redacted]	Administrator	09/08/2022 4:50 PM	Enabled
[Redacted]	Administrator	09/08/2022 6:03 AM	Enabled

Page 1 of 1 25 items per page Showing Items 1 - 6 of 6

You can perform the following tasks on the **Users** page:

- Create a user
- View the user details
- Edit a user account
- Disable a user account

Create a User Account

Once the initial administrator account is created and authorized, you can create additional user accounts in PM Cloud with whichever roles are needed. You can also create future accounts with the **Administrator** role by following the same process outlined below.

**IMPORTANT!**

The user needs to exist in your authorization provider before you add that user in PM Cloud. Currently, Azure B2B and OpenID Connect are supported providers.

To create a user account:

1. On the sidebar menu, click **Users**.
2. At the top left of the grid, click **Create User**.



For more information about setting up a connection to Azure B2B, see "[Register an Azure Tenant](#)" on page 180. If you choose to configure OpenID Connect, see "[Configure OpenID Connect](#)" on page 158.

Set up the User Profile

1. Choose whether you want to create the user from a *blank* user profile or base it on an *existing* user profile.
2. To use an *existing* profile, select a user from the list, then proceed to the **User Details** section. Later, you can review the profile's **Roles and Resources** setup, or modify it as needed.
3. In the **User Profile** section:
 - Enter the user's **Email Address**.
 - Select their **Language**.
 - Select their appropriate **Time Zone**.
 - Choose the **Time & Date** format.



Tip: While you may click **Create User** after this step, if you create a standard user account without assigning any resources, the user may log in to PM Cloud, but will be greeted with a home page with a message indicating to contact their administrator, to be granted access to groups and policies to work in PM Cloud. It is better to continue with the following steps and grant some access to the new user.

4. Click **Next: Roles and Resources**.
5. In the **Roles and Resources** section, select **Standard User** or **Administrator**.
 - When you select **Administrator**, the user can access and manage all areas of the system. Click **Create User** to complete the process.
 - When you select **Standard User**, the user can only access and manage resources that you identify in the next steps.



Note: Users can edit their user account preferences after their account is created. They can do this by clicking the **User Account Profile** icon at the top of the page. For more information, please see "[User Account Profile and Preferences](#)" on page 7.

i You can add a domain in the **Configuration > Domain Settings** page. For more information, please see *"Add a Domain"* on page 147.

Assign Roles and Resources for a Standard User

1. Below the **User Profile** section, click **Next: Roles and Resources**.
2. Select **Standard User**. The **Resources** section appears below, with options to set for **Computer Groups** and **Policies**.
3. Under **Computer Groups**, you can either select **All Computer Groups**, or make *individual* group and role selections.
 - If you select **All Computer Groups**, select one or more roles from the **Computer Groups Role** list. The user will have the role(s) across all existing and future computer groups. The **View Groups** role is automatically selected with any of the other options.
 - If you want to select *individual* groups and roles, check the boxes for the roles to associate with each group selected. You can shorten the list by selecting the **Name** filter option, and then typing into the **Name** box.
4. Under **Policies**, you can either select **All Policies**, or make *individual* policy and role selections.
 - If you select **All Policies**, select one or more roles from the **Policies Role** list. The user will have the role(s) across all existing and future policies. The **View Policies** role is automatically selected with any of the other options.
 - If you want to select *individual* policies and roles, check the boxes for the roles to associate with each policy selected. You can shorten the list by selecting the **Name** filter option, and then typing into the **Name** box.
5. To complete the process, click **Create User**.

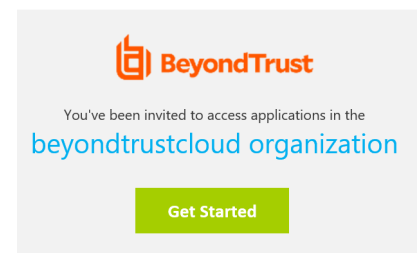
Roles and Resources for an Administrator User

An **administrator** user does not require any additional setup for roles and resources, as this type of account can access and manage all areas of the system.

Registration and User Confirmation

An email notification is sent to the user after the account is created.

1. In the email, the end user must click the **Get Started** button to go to the invitation landing page.
2. Review permissions and click **Accept** to continue.
3. Log in using your credentials.



Resend User Invites

An email invitation can be resent to a user that has not accepted their invite to the PM Cloud portal.

On the **Users** page, select the user, and then select **Resend Email Invite**.



Note: *There is no limit on how many times an invitation can be sent to a user.*

View User Account Details

You can view information about a user account such as: email address, create date, and status.

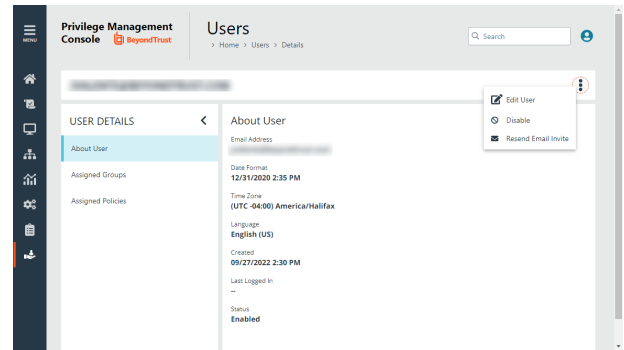
To get a quick at-a-glance view of recent activities for a user, click the **Activity** tab. You can see the event time, audit type, and summary information on the action that occurred.

The information displayed on the **User Details** page varies depending on the user role and responsibilities.

1. On the sidebar menu, click **Users**.
2. To the right of the user you want to view, click the vertical ellipsis icon, and then select **View User Details**. You can shorten the list by using the filter option, and then typing into the filter box. You can also click the email address of the user in the grid to access the panel.

This section displays the details for the user under **About User**, **Assigned Groups**, and **Policies** headings. You can edit the details of the user here.

At the top-right of **User Details** page, you can also click the vertical ellipsis menu icon and access other options for this user.



For more information, please see "[Edit User Account Properties](#)" on page 47.

Edit User Account Properties

1. On the sidebar menu, click **Users**.
2. To the right of the user you want to edit, click the vertical ellipsis icon, and then select **Edit User**. You can shorten the list by using the filter option, and then typing into the filter box. This section allows you to edit the details for the user. You can edit details such as the account name, email address, the time and date format, as well as the time zone. You can also edit *roles* and *resources* for the user.
3. Click **Save Changes**.



Note: After changing either the date/time format or the time zone, be sure to log out and back in again for the changes to take effect.

Remove Access for a User

Disable a user account when they no longer require access to PM Cloud or if they leave the company.

1. Go to the **Users** main page.
2. Select the menu for a user, and then select **Disable**.

If you need to reinstate the user account, select **Enable** from the menu to reverse the action.

Role-Based Access Control

PM Cloud functions on a **role-based access control (RBAC)** system, in which the role assigned to a user dictates what features this user has access to.

User Roles

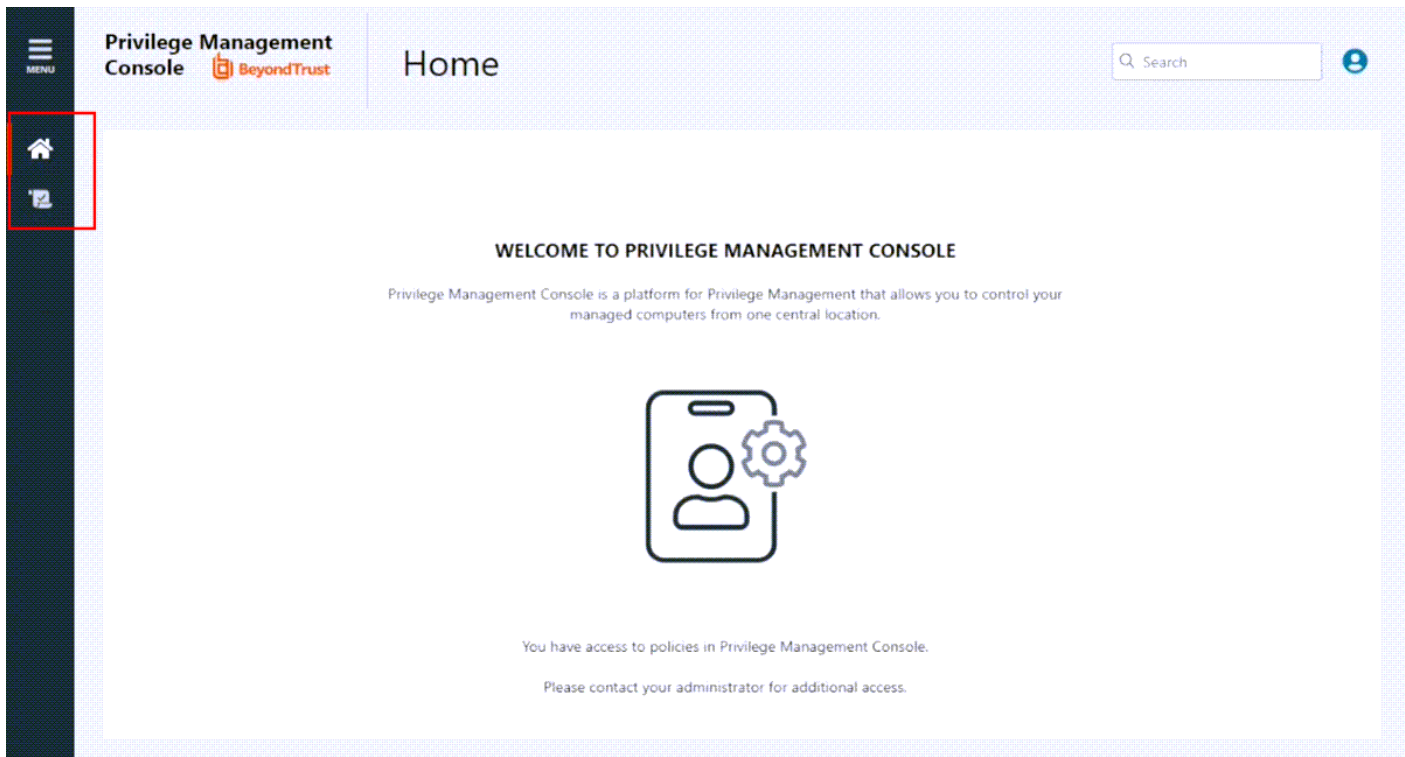
Each user in PM Cloud has an associated user role. You can view the roles by navigating to **Users > Edit User > Next: Roles and Resources**.

There are two user roles:

- **Administrator:** This role allows the user to access and manage all areas of the system.
- **Standard User:** This role limits the user to only access and manage resources that you identify in the **Roles and Resources** section. The **Auditing** menu options are not visible to the **Standard User** role.



Note: Main menu items and icons that appear on the left side depend on which user role is assigned to a user. For example, if you only assign access to policies for a standard user, when logging in the user will see only the **Home** and **Policies** menu items.



Resources Access for a Standard User

A standard user can access a variety of resources according to the **Computer Groups Roles** and **Policies Roles** that you assign.

Computer Groups Roles

The following computer group roles can be assigned to a standard user, for either *all* groups or *individually selected* groups.

Role	Menu access to	Description
Assign Policy to Group	Home, Policies, and Computer Groups	User can view policies and computer groups, and assign policies and revisions to selected computer groups.
Analyze Group	Home, Computer Groups and Analytics	User can view data analytics for selected computer groups. Access to Analytics 1.0 is restricted. A user requires the Analyze Groups permission for <i>all</i> groups for a user to see Analytics 1.0.
Create Groups	Home and Computer Groups	User can create, edit, and view selected group properties.
Edit Group	Home and Computer Groups	User can view and edit selected computer group properties.
View Group	Home and Computer Groups	User can only view selected computer groups. This option is automatically selected when any of the other options are selected.

Policies Roles

The following policies roles can be assigned to a standard user, for either *all* policies or *individually selected* policies.

Role	Access to	Description
Create Policies	Home and Policy	User can create, edit, and view selected policies.
Edit Policy	Home and Policy	User can view and edit selected policies.
View Policy	Home and Policy	User can only view selected policies. This option is automatically selected when the edit option is selected.

Delegate Access to Configuration Settings

As an administrator, delegate access to configuration settings so that the user only sees the resources they need access to. A standard user can be assigned edit and view permissions on each of the configuration areas of PM Cloud.

Assign a standard user the **Edit Setting** permission when they need to access and change settings for a particular configuration setting.

A standard user can see but not interact with settings when assigned the **View Setting** permission.

The user will not see the configuration setting if neither edit nor view is selected.



Note: The **About** configuration setting cannot be assigned edit permissions. All standard users can see **About** information but they cannot change the information on the **About** page.

Automatic Role Mappings on Upgrade

When upgrading from PM Cloud 22.7 and earlier to version 22.8 and later, existing roles will be mapped as follows.

22.7 and Earlier Role	22.8 and Later Role and Access
Administrator	Administrator
Computer Administrator	Group Editor and Viewer, Policy Viewer and Assigner
Policy Administrator	Group Viewer, Policy Editor, Policy Viewer, Policy Assigner, Analytics
Policy Editor	Group Viewer, Policy Editor and Viewer, Analytics
Standard User	Group Viewer, Policy Viewer, Analytics
Automation Client	Automation Client

For more granular access, you can manually edit users and assign access to computer group and policy records.

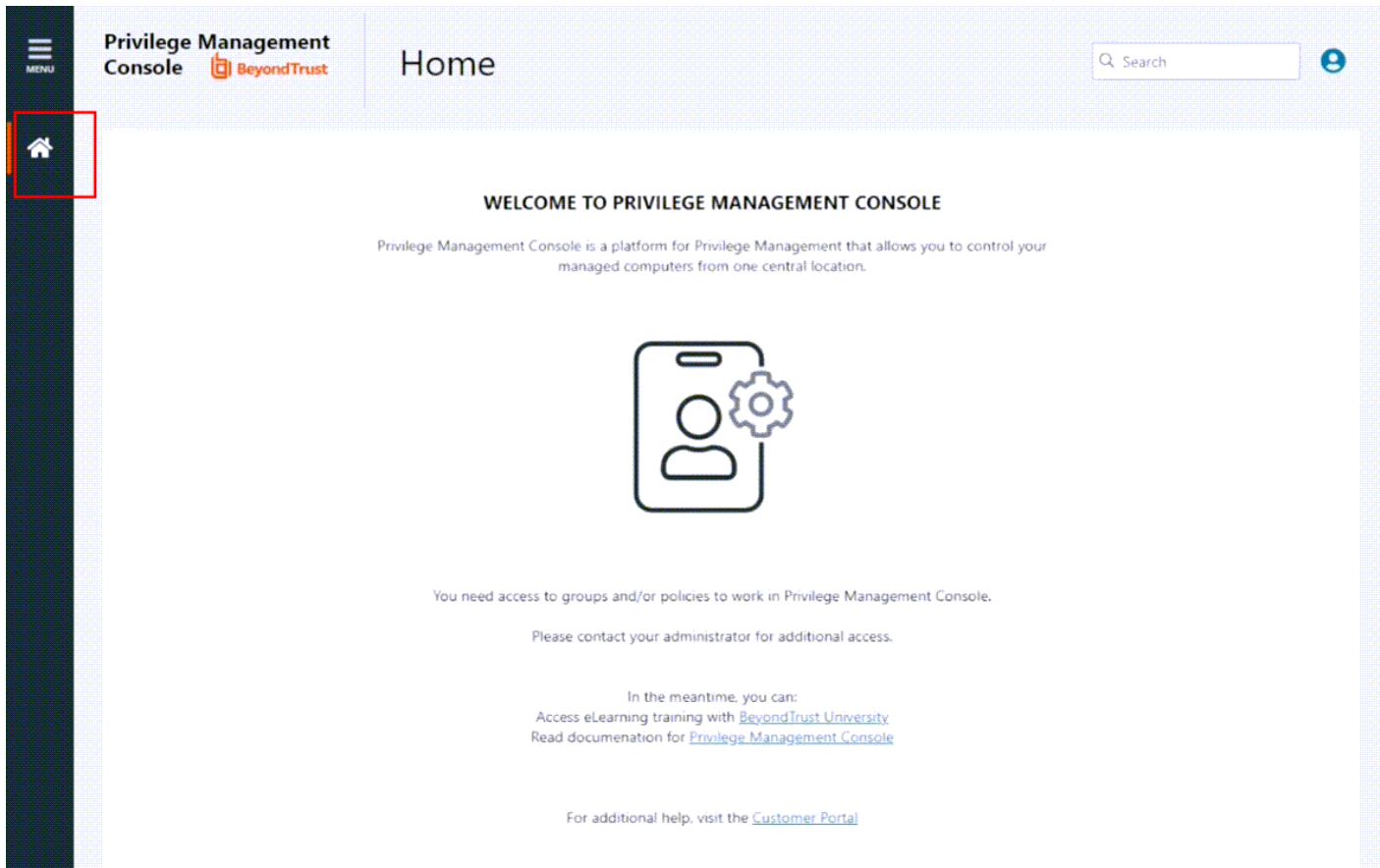
Edit Roles and Resources for a User Account

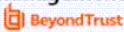

As an administrator user, you can edit roles and resources for a user account.

1. On the sidebar menu, click **Users**.
2. Locate the user account you want to edit. Use the filter option to quickly reduce the list size.
3. To the right of the user you want to edit, click the vertical ellipsis icon, and then select **Edit User**. You can also click the email address of the user in the grid to access the panel.
4. At the bottom of the **User Profile** section, click **Next: Roles and Resources**.
5. Make the role and resources changes you want for the user.
6. Click **Save Changes**.




Note: If you remove all access for a standard user account here, the user may log in to PM Cloud, but will be greeted with a home page with a message indicating to contact their administrator, to be granted access to groups and policies to work in PM Cloud.



Privilege Management Console  **Home** 

WELCOME TO PRIVILEGE MANAGEMENT CONSOLE

Privilege Management Console is a platform for Privilege Management that allows you to control your managed computers from one central location.



You need access to groups and/or policies to work in Privilege Management Console.

Please contact your administrator for additional access.

In the meantime, you can:


- Access eLearning training with [BeyondTrust University](#)
- Read documentation for [Privilege Management Console](#)

For additional help, visit the [Customer Portal](#)

i For more information on assigning roles and resources, see "[Assign Roles and Resources for a Standard User](#)" on page 45.

Get Started With the Policy Editor

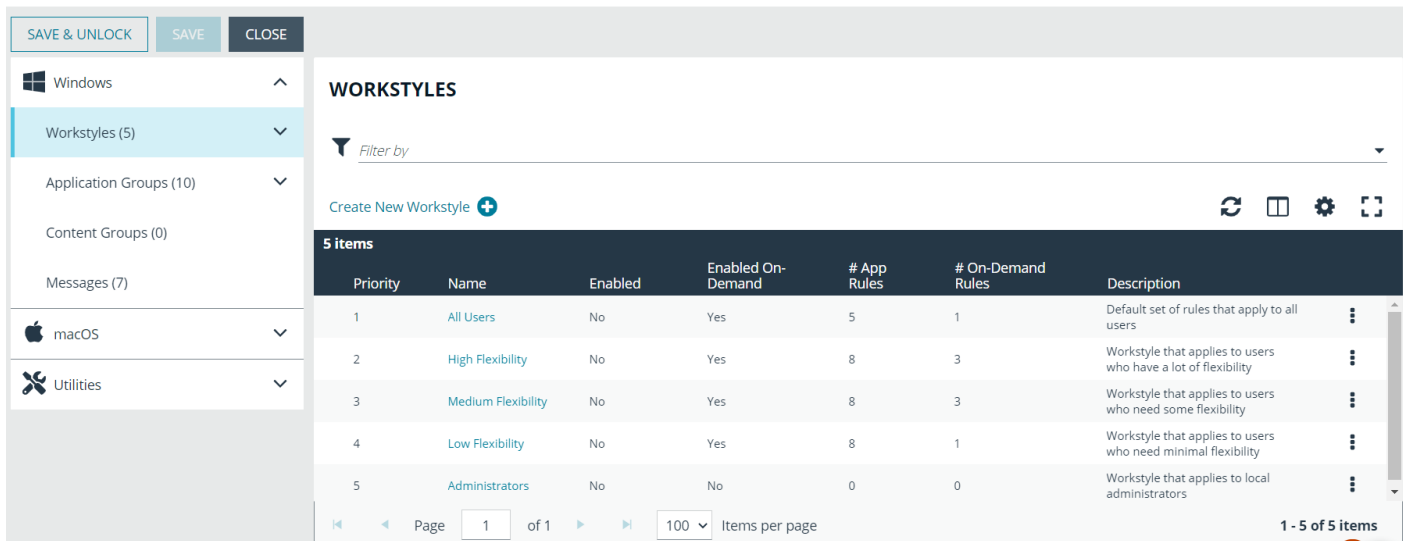
This section provides information on getting started with the Policy Editor. Details include accessing the Policy Editor, creating a policy using QuickStart template, and editing a policy.

 **Note:** You cannot edit policy in the Privilege Management Policy Editor and Privilege Management Cloud Policy Editor at the same time.

Access the Policy Editor


1. Log in to PM Cloud and select **Policies** on the sidebar menu.
2. Click a policy in the list, and then select **Edit and Lock Policy**.

POLICY EDITOR



The screenshot shows the Policy Editor interface. On the left is a sidebar with categories: Windows, Workstyles (5), Application Groups (10), Content Groups (0), Messages (7), macOS, and Utilities. The main area is titled 'WORKSTYLES' and contains a table with 5 items. The table has columns for Priority, Name, Enabled, Enabled On-Demand, # App Rules, # On-Demand Rules, and Description. Below the table is a pagination control showing 'Page 1 of 1' and '100 Items per page'.

Priority	Name	Enabled	Enabled On-Demand	# App Rules	# On-Demand Rules	Description
1	All Users	No	Yes	5	1	Default set of rules that apply to all users
2	High Flexibility	No	Yes	8	3	Workstyle that applies to users who have a lot of flexibility
3	Medium Flexibility	No	Yes	8	3	Workstyle that applies to users who need some flexibility
4	Low Flexibility	No	Yes	8	1	Workstyle that applies to users who need minimal flexibility
5	Administrators	No	No	0	0	Workstyle that applies to local administrators

 **Tip:** For quick access to the *Workstyles Summary* page, click the hyperlink for the appropriate Workstyle name.

Overview of Policy Editor Components

Workstyles

Workstyles are used to assign Application Rules for a specific user, or group of users.

Application Groups

Application Groups are used by Workstyles to group applications together to apply certain Privilege Management behavior.

Content Groups

Content groups are used by Workstyles to group content together to apply certain Privilege Management behavior.

Messages

Messages are used by Workstyles to provide information to the end user when Privilege Management has applied certain behavior that you have defined and need to notify the end user.

Utilities

The Policy Editor provides some useful tools to help with managing policies, including an import policy tool and a license management tool.

Create a Policy

1. Log on to PM Cloud and click **Policies** on the sidebar menu.
2. Click **Create Policy** at the top of the grid.
3. Select one of the following:
 - **QuickStart for Windows:** A preconfigured template with Workstyles, Application Groups, messages, and Custom Tokens already configured.
 - **QuickStart for Mac:** A preconfigured template with Workstyles, Application Groups, and messages already configured.
 - **Server Roles:** The Server Roles policy contains Workstyles, Application Groups, and Content Groups to manage different server roles such as DHCP, DNS, IIS, and Print Servers.
 - **Blank:** Select to configure a policy from scratch. There are no preconfigured settings in this template.
4. Enter a name and description.
5. Click **Create Policy**.

The Policy Editor opens to the **Workstyles** page. At this point you must configure the Workstyle, Application Groups, Application Rules, and other policy configuration as required for your organization.

Use the QuickStart for Windows or Mac Template

To get started quickly using the Policy Editor, create a new policy using either the **QuickStart For Windows** template, or the **Quickstart For Mac** template.

Both QuickStart templates for Windows and Mac policies contain Workstyles, Application Groups, Messages, and Custom Tokens configured with Privilege Management and Application Control. The QuickStart policy is designed from BeyondTrust's experiences of implementing the solution across thousands of customers, and is intended to balance security with user freedom. As every environment is different, we recommend you thoroughly test this configuration to ensure it complies with the requirements of your organization.

Customize the QuickStart Policy

Before deploying the QuickStart policy to your users, you need to make some company-specific customizations to the standard template.

At a minimum you need to:

- Configure the users or groups that can authorize requests that trigger messages.
- Assign users and groups to the high, medium, and low flexibility Workstyles.
- Populate the **Block - Blocklisted Apps** Application Group with any applications that you want to block for all users.
- Set your shared key so you can generate a Privilege Management Response code.

QuickStart Template Summary

This section provides information about the properties for the Windows and Mac QuickStart templates, including the Workstyles and Application Groups that comprise the template.

Workstyles

All Users

This Workstyle contains a set of default rules that apply to all standard users regardless of the level of flexibility they need.

The **All Users** Workstyle contains rules to:

- Block any applications in the **Block - Blocklisted Apps** group
- Allow Privilege Management Support tools
- Allow standard Windows functions, business applications, and applications installed through trusted deployment tools to run with admin rights (Windows QuickStart template)
- Allow standard Mac functions, business applications, and applications installed through trusted deployment tools to run with admin rights (Mac QuickStart template)
- Allow approved standard user applications to run passively

High Flexibility

This Workstyle is designed for users that require a lot of flexibility, such as developers.

The **High Flexibility** Workstyle contains rules to:

- Allow known business applications and operating system functions to run.
- Allow users to run signed applications with admin rights.
- Allow users to run unknown applications with admin rights once they confirm that the application should be elevated.
- Allow applications that are in the **Add Admin – High Flexibility** group to run with admin rights.
- Allow unknown business application and operating system functions to run on-demand.

Medium Flexibility

This Workstyle is designed for users that require some flexibility, such as sales engineers.

The **Medium Flexibility** Workstyle contains rules to:

- Allow known business applications and operating system functions to run.
- Allow users to run signed applications with admin rights once they confirm that the application should be elevated.
- Prompt users to provide a reason before they can run unknown applications with admin rights.

- Allow applications that are in the **Add Admin – Medium Flexibility** group to run with admin rights.
- Allow unknown business application and operating system functions to run on-demand.
- Restricted OS functions that require admin rights are prevented and require support interaction.

Low Flexibility

This Workstyle is designed for users that don't require much flexibility, such as helpdesk operators.

The **Low Flexibility** Workstyle contains rules to:

- Prompt users to contact support if a trusted or untrusted application requests admin rights.
- Prompt users to contact support if an unknown application tries to run.
- Allow known approved business applications and operating system functions to run (Windows only).

Administrators

This Workstyle provides visibility on the Administrator accounts in use in the estate.

The Administrators workstyle contains general rules to:

- Capture user and host information
- Block users from modifying local privileged group memberships.

Application Groups

The Application Groups that are prefixed with **(Default)** or **(Recommended)** are hidden by default and do not need to be altered.

- **Add Admin – General (Business Apps):** Contains applications that are approved for elevation for all users, regardless of their flexibility level.
- **Add Admin – General (Windows Functions):** Contains operating system functions that are approved for elevation for all users.
- **Add Admin – High Flexibility:** Contains the applications that require admin rights that should only be provided to the high flexibility users.
- **Add Admin – Low Flexibility:** Contains the applications that require admin rights that should only be provided to the low flexibility users.
- **Add Admin – Medium Flexibility:** Contains the applications that require admin rights that should only be provided to the medium flexibility users.
- **Add Admin – Protected Operations:** Contains the applications that require admin rights that should only be provided to the protected operations users.
- **Passive - High Business Apps**
- **Passive - Medium Business Apps**
- **Passive - Low Business Apps**
- **Block - Blocklisted Apps:** This group contains applications that are blocked for all users.
- **Passive - All Users Functions & Apps:** Contains trusted applications, tasks and scripts that should execute as a standard user.
- **(Default) Any Application:** Contains all application types and is used as a catch-all for unknown applications.
- **(Default) Any Trusted & Signed UAC Prompt:** Contains signed (trusted ownership) application types that request admin rights.
- **(Default) Any UAC Prompt:** This group contains application types that request admin rights.

- **(Default) Privilege Management Tools:** This group is used to provide access to a BeyondTrust executable that collects Privilege Management for Windows troubleshooting information.
- **(Default) Child Processes of TraceConfig.exe**
- **(Default) Signed UAC Prompt:** Contains signed (trusted ownership) application types that request admin rights.
- **(Default) Software Deployment Tool Installs:** Contains applications that can be installed by deployment tools such as System Center Configuration Manager (SCCM).
- **(Recommended) Restricted Functions:** This group contains OS applications and consoles that are used for system administration and trigger UAC when they are executed.
- **(Recommended) Restricted Functions (On Demand):** This group contains OS applications and consoles that are used for system administration.
- **(Default) Trusted Parent Processes**

Messages

The following messages are created as part of the QuickStart policy and are used by some of the Application Rules:

- **Allow Message (Authentication):** Asks the user to provide a reason and enter their password before the application runs with admin rights.
- **Allow Message (Select Reason):** Asks the user to select a reason from a dropdown menu before the application runs with admin rights.
- **Allow Message (Support Desk):** Presents the user with a challenge code and asks them to obtain authorization from the support desk. Support can either provide a response code or a designated, authorized user can enter their login details to approve the request.
- **Allow Message (Yes / No):** Asks the user to confirm that they want to proceed to run an application with admin rights.
- **Block Message:** Warns the user that an application has been blocked.
- **Block Notification:** Notifies the user that an application has been blocked and submitted for analysis.
- **Notification (Trusted):** Notifies the user that an application has been trusted.

Use the Server Role Template

The Server Roles policy contains Workstyles, Application Groups, and Content Groups to manage different server roles such as DHCP, DNS, IIS, and Print Servers.

Server Roles Template Summary

This template policy contains the following elements.

Workstyles

- Server Role - Active Directory - Template
- Server Role - DHCP - Template
- Server Role - DNS - Template
- Server Role - File Services - Template
- Server Role - Hyper V - Template

- Server Role - IIS - Template
- Server Role - Print Services - Template
- Server Role - Windows General - Template

Application Groups

- Server Role - Active Directory - Server 2008R2
- Server Role - DHCP - Server 2008R2
- Server Role - DNS - Server 2008R2
- Server Role - File Services - Server 2008R2
- Server Role - General Tasks - Server 2008R2
- Server Role - Hyper V - Server 2008R2
- Server Role - IIS - Server 2008R2
- Server Role - Print Services - Server 2008R2

Content Groups

- AD Management
- Hosts Management
- IIS Management
- Printer Management
- Public Desktop

Edit a Policy

When you edit a policy, the policy is locked. Other policy administrators cannot access the policy to change the properties when the status is **Locked**.

1. After you finish all updates to the policy, click **Save & Unlock** to save a new revision of the policy.
2. (Optional). On the **Save & Unlock** dialog box, you can enter **Annotation notes** about the policy changes. You can also check the **Assign latest revision to affected groups** box to assign the latest revision to groups the policy is currently assigned to. If you select this option:
 - (Optional). Use the filter option to filter by **Group Name**, **Computers**, or **Revision**.
 - To apply the revision to all groups listed, at the top left of the list, check the All box next to the **Group Name** heading.
 - You can also select **Group Names** individually, by checking the box at the left of each group.
3. Click **Save & Unlock**.
4. On the sidebar menu, click **Policies**.
5. To the right of the policy you want to edit, click the vertical ellipsis icon, and then select **Edit & Lock Policy** (or **Edit Policy**, if the policy is unlocked). You can also just click on the policy name.

SAVE & UNLOCK ➤

Annotation notes (optional)

This policy is currently assigned to one or more groups. Do you want to assign the latest revision?

Assign latest revision to affected groups

Filter by ▼

1 item (1 selected)			
Group Name ▲	Computers	Revision	
<input checked="" type="checkbox"/> EDL-TestGroup	0	8	▼

⏪ ⏩ Page 1 of 1 ⏪ ⏩ 100 items per page 1 - 1 of 1 items

SAVE & UNLOCK
CANCEL

6. On the **Policy Editor** page, go to the policy property you want to change, and edit as needed.
7. Click **Save** to save a draft of the policy. Clicking **Save** allows you to keep the Policy Editor open to continue editing the policy.

Policy Revisions and Drafts

You can review the history of revisions and drafts on the policy **Revision History** page.

1. To the right of the policy you want to edit, click the vertical ellipsis icon, and then select **Revision History**. You can also just click on the policy name.
2. On the left, click the **Revisions** or **Drafts** option to view more information about the changes to the policy.

Unlock a Policy

A policy locked by a user can be unlocked. The policy is reverted to the previous version.

After unlocking the policy, the user account that locked the policy can no longer save or check in changes to that policy.

To unlock and discard the changes to a policy:

1. On the sidebar menu, click **Policies**.
2. To the right of the policy you want to unlock, click the vertical ellipsis icon, and then select **Revert & Discard Changes**.
3. Click **Revert & Discard** to discard the draft and revert the policy version; otherwise, click **Cancel**.

Edit Policy Properties

You can change the name and description for a policy.



Note: You can only edit the policy properties when the policy is **unlocked** (except if you are the one who locked the policy). When a policy is locked, the **Edit Policy Properties** fields are not available.

1. On the sidebar menu, click **Policies**.
2. To the right of the policy you want to view, click the vertical ellipsis icon, and then select **Policy Properties**.
3. The **Edit Policy Properties** panel allows you to change the policy name and description.

Edit Policy Properties ➤

Policy Name

Policy Description

Test a Policy

Starting in version 23.1, an application rule or application definition can be enabled or disabled. If you are a policy administrator, you can create a policy and test the configuration on computers. Enable the rule or definition to test the policy. Disable the rule or definition until you are ready to roll out the policy to your production environment.

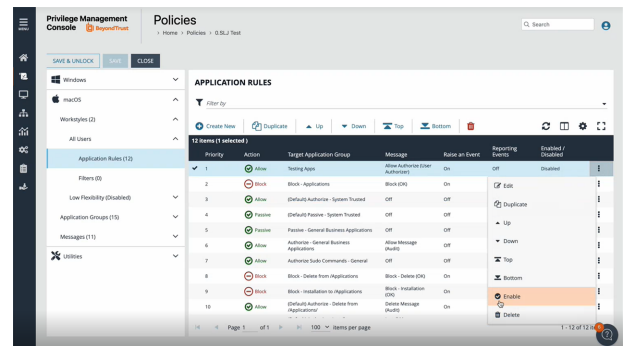
Workflow:

- Create your app rule or app definition.
- Set to **Disabled**.
- When ready for testing, enable the rule or definition.
- Save the change to the policy.
- Push the policy to your computers.
- Access your test computer to verify the policy works.

Available on Windows and macOS policies.

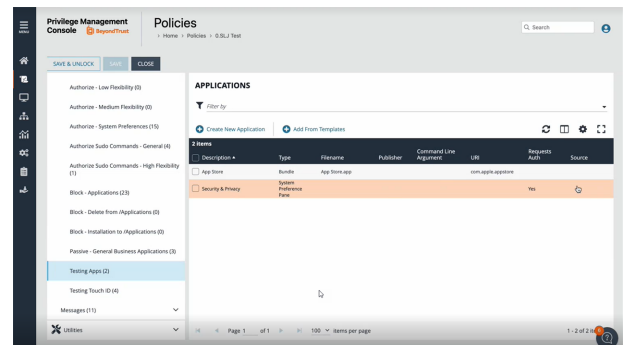
To enable or disable an application rule:

1. Go to **Application Rules**.
2. Find the rule, and then select **Enabled** or **Disabled** from the menu.



To enable or disable the application definition:

1. Go to the **Application Group**.
2. Select **Enabled** or **Disabled** from the menu.



i For more information, please see

- ["Application Rules" on page 62](#)
- ["Application Groups" on page 71](#)

Use the Policy Editor

This section provides information on editing the various components of a policy, including Workstyles, Application Rules, and Application Groups.

Workstyles

Policy Editor Workstyles are used to assign Application Groups for a specific user, or group of users.

Create a Workstyle

To create a Workstyle:

1. Select **Policies** on the sidebar menu.
2. Find the row of the policy you would like to create a Workstyle for, and then click the vertical ellipsis icon.
3. From the dropdown menu, select **Edit & Lock Policy**, or **Edit** (if the policy is already locked by you).
4. On the **Policy Editor** page, go to the **Workstyles** page.
5. Click **Create New Workstyle**.
6. Enter a name and a description. By default, the Workstyle is disabled. Enable the Workstyle when the configuration is complete.
7. Click **Create Workstyle**.
8. Add monitoring to the Workstyle. Optional. See the next section for details.
9. Select the Workstyle in the navigation pane to expand the properties.
10. Configure the Workstyle properties: **Application Rules**, **On-Demand Application Rules**, **Trusted Application Protection**, **Content Rules**, **General Rules**, and **Filters**.

Add Logging for Privileged Applications and Processes

Privilege monitoring logs all privileged actions run by the application or process that would fail under a standard user account. These include file operations, registry operations, and any interactions with other components such as Windows services.

Applications included in privilege monitoring:

- Applications running under a privileged account, such as an administrator or power user.
- An application added to an Application Rule or On-Demand Application Rule that is set up to run with elevated privileges.

Configure privilege monitoring when you create a Workstyle.

Privilege monitoring logs are recorded on each endpoint.

Privilege monitoring is available only on Windows.



For more information about privilege monitoring, contact your BeyondTrust consultant.

Privilege Monitoring Events

- **Log Event to Application Event Log:** Logs an event to the Application event log the first time an application performs a privileged operation.
- **Log Cancel Events (message cancelled):** Raises an event when a user cancels an end user message, either by clicking the **Cancel** button, by clicking the **Email** button, or by clicking a **Hyperlink**. You can configure the user action using policy parameter [PG_ACTION], which can be used by the script to perform different audit actions based on the user interaction. To log **Cancel Events**, enable **Raise an Event** for the rule that has been matched.

Privilege Monitoring Log Files

The following privilege monitoring options are available:

- **Log Application Activity to Log Files:** Check the box to turn on logging.
- **Application Summary and Activity:** Select to log information about the application and unique privileged activity (Default option).
- **Application Summary and Detailed Activity:** Select to log information about the application and all privileged activity.
- **Maximum Activity Records Per Process:** Set the maximum number of records logged per process (Default 100).
- **Keep Application Activity Logs for (Days):** Set how long activity logs are kept before they are purged (Default 14 days).

Enable a Workstyle

By default, a Workstyle is disabled when initially created. Enable a Workstyle when configuration is complete and ready for the production environment.

Disable the Workstyle whenever you need to change the configuration.

1. Go to the Policy Editor, and then navigate to Workstyles.
2. Click the vertical ellipsis menu icon for the Workstyle, and then select **Enable**.

Set the Order for Workstyle Processing

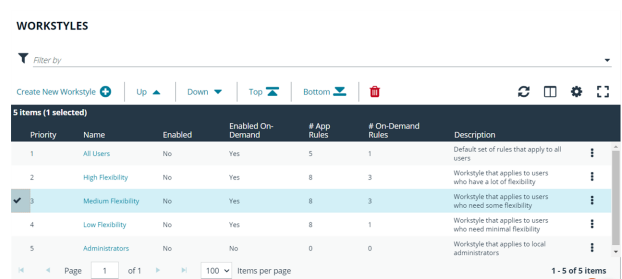
Workstyles are evaluated in the order they are listed. When an application matches on a Workstyle, no further Workstyles are processed for that application.

Ensure the order of the Workstyles is correct because it is possible for an application to match more than one Workstyle.

To change the order:

1. Select a Workstyle in the list to change the order.
2. Use the buttons to move the rule to the preferred location.

Changes are automatically saved.



Priority	Name	Enabled	Enabled On-Demand	# App Rules	# On-Demand Rules	Description
1	All Users	No	Yes	5	1	Default set of rules that apply to all users
2	High Flexibility	No	Yes	8	3	Workstyle that applies to users who have a lot of flexibility
3	Medium Flexibility	No	Yes	8	3	Workstyle that applies to users who need some flexibility
4	Low Flexibility	No	Yes	8	1	Workstyle that applies to users who need minimal flexibility
5	Administrators	No	No	0	0	Workstyle that applies to local administrators

Application Rules

Application Rules can be used to enforce allow listing, monitoring, and assigning privileges to groups of applications. They are a set of rules that apply to the applications listed in the Application Group.

Create an Application Rule

1. On the **Policy Editor** page, expand **Windows**.
2. Expand the **Workstyles** node, and then expand a Workstyle.
3. Click **Application Rules**, and then click **Create New**.
4. Set the following:
 - **Target Application Group**: Select an Application Group.
 - **Action**: Select **Allow**, **Allow as Password Safe User**, **Block**, or **Request**. The action that occurs if the application in the targeted Application Group is launched by the end user.
 - **Password Safe Account Name**: Enter the Managed Account name configured in Password Safe for the computer.
 - **Run Rule Script**: Assign a rule script that runs before the Application Rule triggers. Select a rule script from the list.
 - **End User Message**: Select a message from the list.
 - **Access Token**: Select the type of token to pass to the Target Application Group. You can select from:
 - **Passive (no change)**: Doesn't make any change to the user's token. This is essentially an audit feature.
 - **Enforce User's Default Rights**: Removes all rights and uses the user's default token. Windows UAC always tries to add administration rights to the token being used so if the user clicked on an application that triggers UAC, the user cannot progress past the UAC prompt.
 - **Drop Admin Rights**: Removes administration rights from the user's token.
 - **Add Full Admin (Required for installers)**: Standard Windows Admin token containing all Admin privileges.
 - **Add Basic Admin Rights**: Gives greater control over the privileges granted when targeting rules at actions. This excludes the following privileges: **SeDebugPrivilege**, **SeLoadDriverPrivilege**.
 - **Privilege Management Support Token**: Applies Add Full Admin privileges with tamper protection removed.
 - **Keep Privileges - Enhanced**: Keeps the same privileges of the process token and adds some additional context to it. Use the token with features such as Advanced Parent Tracking or Anti-tamper.
 - **Raise An Event: Off, On, Anonymous**. Select if an event is raised if this Application Rule is triggered. When on, an event is sent to the local event log file. Anonymous removes user and host name from events so the user / host are not identifiable.
 - **Run an Audit Script**: Select an audit script from the list.
 - **Privilege Monitoring: Off, On, Anonymous**. Select **On** to raise a privileged monitoring event.
 - **Reporting Events**: On by default, click to turn off. When the setting is on, events are raised for viewing in PMC Reporting.
5. Click **Create Application Rule**.

Set the Order for Rules Processing

If you add more than one Application Rule to a Workstyle, entries higher in the list have precedence. When an application matches an Application Rule, no further rules or Workstyles are processed. If an application could match more than one Workstyle or rule, then it is important that you order both your Workstyles and rules correctly.

Select an Application Rule in the list to change the order. Changes are automatically saved.

On-Demand Application Rules

Create an on-demand rule to start an application with specific privileges (usually admin rights) from a Windows right-click context menu. The on-demand application rule triggers when the context menu item is selected.

Before creating an on-demand rule, you can set the behaviour for the right-click context menu on the **On-Demand Integration Settings** page.

- **Apply the on-demand application rules to the "Run as administrator" option:** Select to override the **Run as administrator** right-click context menu. The labeling of the menu does not change in this instance. This setting applies to all versions of Windows that have the **Run as administrator** context menu.
- **Add a custom on-demand option to the Classic Shell context menu (this won't affect the "Run as administrator" option):** Select to add a new option to the right-click context menu. Select a language and the option text. You can add text like *Run with Privilege Management for Windows*. This setting applies to the Classic Windows Shell only.
- **Hide "Run as" and "Run as administrator" commands in the Classic Shell context menu:** Select to hide these menu items, where present, from the right-click context menu. This setting applies to the Classic Windows Shell only.

To create an On-Demand Application Rule:

1. Expand **Workstyles**, and then expand a Workstyle.
2. Select **On Demand Application Rules**.
3. Click **Create New**.
4. Set the following:
 - **Raise An Event: Off, On, Anonymous.** Select if an event is raised if this Application Rule is triggered. When on, an event is sent to the local event log file. Anonymous removes user and host name from events so the user / host are not identifiable.
 - Click **Create On-Demand Rule**.
 - **Target Application Group:** Select an Application Group.
 - **Action:** Select **Allow**, **Allow as Password Safe User**, **Block**, or **Request**. The action that occurs if the application in the targeted Application Group is launched by the end user.
 - **Password Safe Account Name:** Enter the Managed Account name configured in Password Safe for the computer.
 - **Run Rule Script:** Assign a rule script that is run before the Application Rule triggers. Select a rule script from the list.
 - **End User Message:** Select a message from the list.
 - **Access Token:** Select the type of token to pass to the Target Application Group. You can select from:
 - **Passive (no change):** Doesn't make any change to the user's token. This is essentially an audit feature.
 - **Enforce User's default rights:** Removes all rights and uses the user's default token. Windows UAC always tries to add administration rights to the token being used so if the user clicked on an application that triggers UAC, the user cannot progress past the UAC prompt.
 - **Drop Admin Rights:** Removes administration rights from the user's token.
 - **Add Full Admin (Required for installers):** Standard Windows Admin token containing all Admin privileges.
 - **Add Basic Admin Rights:** Gives greater control over the privileges granted when targeting rules at actions. This excludes the following privileges: **SeDebugPrivilege**, **SeLoadDriverPrivilege**.
 - **Privilege Management Support Token:** Applies Add Full Admin privileges with tamper protection removed.
 - **Raise An Event: Off, On, Anonymous.** Select if an event is raised if this Application Rule is triggered. When on, an event is sent to the local event log file. Anonymous removes user and host name from events so the user / host are not identifiable.

- **Run an Audit Script:** Select an audit script from the list.
- **Privilege Monitoring: Off, On, Anonymous.** Select **On** to raise a privileged monitoring event.
- **Reporting Events:** On by default, click to turn off. When the setting is on, events are raised for viewing in PMC Reporting.

Integrate BeyondTrust Password Safe

Password Safe users can be included in an Application Rule or On-Demand Application Rule to help manage access to applications.

Password Safe must already be installed and configured.

i For more information, please see the [Password Safe Integration Guide](https://www.beyondtrust.com/docs/privilege-management/windows/index.htm) at <https://www.beyondtrust.com/docs/privilege-management/windows/index.htm>.

Use the following procedure to set up the integration to Password Safe. After this initial setup is complete, you can edit the Application Rule or On-Demand Application Rule to allow Password Safe users.

1. On the **Policy Editor** page, expand **Windows**.
2. Expand the **Workstyles** node, and then expand a Workstyle.
3. Select **Application Rules** or **On Demand Application Rules**, and then click **Integration Settings**.
4. From the **Activation** list, select one of the following: **Not Configured**, **Enabled**, or **Disabled**.
5. Set a heartbeat interval. This is the time span the computer polls Password Safe unless the time is determined by Password Safe. For most subsequent messages, the poll time is driven by Password Safe in the messages it sends to Privilege Management for Windows. This is because Password Safe knows when the next scheduled action must be performed.
6. Click **Update Settings**.

Configure Local Account Discovery

Configure a discovery scan to detect unmanaged accounts on an endpoint. The scan results are sent to Password Safe.

1. On the **Policy Editor** page, expand **Windows**.
2. Expand the **Workstyles** node, and then expand a Workstyle.
3. Select **Application Rules** or **On Demand Application Rules**, and then click **Integration Settings**.
4. From the **Activation** list, select **Enabled**.
5. Set an account discovery interval.
6. Click **Update Settings**.

Trusted Application Protection Rules

Use Trusted Application Protection (TAP) rules to dynamically evaluate DLLs for trusted applications for each Workstyle.

Unless a DLL has a trusted publisher and a trusted owner, it is not allowed to run within the TAP application.

- **Trusted Publisher:** A trusted publisher must be signed. In addition, the publisher certificate must be valid, in date, and not revoked.
- **Trusted Owner:** A trusted owner is any owner that is in the default Windows groups **Administrators**, **SystemUser** or **TrustedInstaller**.

Windows Version Specific DLLs

A number of the recommended DLLs to block are specific to certain versions on certain Windows 10 versions. For example, it is advised to block the DLLs if you are running Windows 10 1607 or Windows 10 1809. These are identified in the list with the either **RS1 Windows 1607** or **RS5 Windows 1809** labels.

Additionally, Windows creates some cached versions of DLLs that have different names and properties. Ensure DLLs with a *Native Image* version are set to blocked, when required. You can identify these in the list with the **Native image** label.

i For more information, please see *Microsoft recommended block rules* at <https://learn.microsoft.com/en-us/windows/security/threat-protection/windows-defender-application-control/microsoft-recommended-block-rules>.

General Rules

To view or edit the general rules of a Workstyle, select **Windows > Workstyles > 'Workstyle Name' > General Rules**.

The general rules include the following:

- **Collect User Information:** When enabled, raises an audit event each time a user logs on to the client machine.
- **Collect Host Information:** When enabled, raises an audit event on computer start-up or when the Privilege Management for Windows service is started.
- **Prohibit Privileged Account Management:** When enabled, blocks users from modifying local privileged group memberships. This prevents real administrators, or applications which have been granted administrative rights through Privilege Management for Windows, from adding, removing, or modifying a privileged account.

The local privileged groups that cannot be changed when this rule is enabled:

- Built-in administrators
 - Power users
 - Account operators
 - Server operators
 - Printer operators
 - Backup operators
 - RAS servers group
 - Network configuration operators
- **Enable Windows Remote Management Connections:** When enabled, authorizes standard users who match the Workstyle to connect to a computer remotely using WinRM, which would normally require local administrator rights. This general rule supports remote PowerShell command management and must be enabled to allow a standard user to execute PowerShell scripts or commands.

To allow remote network connections, you may be required to enable the Windows Group Policy setting to access this computer from the network.

i For more information, please see the following:



- ["Remote PowerShell Commands" on page 87](#)
- [Access this Computer from the Network on Microsoft-us/previous-versions/windows/it-pro/windows-server-2003/cc740196\(v=ws.10\)](#)

Filters

A Workstyle filter refines when a Workstyle is applied. Workstyle filters apply to Windows and macOS systems.

By default, a Workstyle applies to all users and computers who receive it. However, you can add one or more filters that restrict the application of the Workstyle:

- **Account Filter:** Restrict the Workstyle to specific users or groups of users.
- **Computer Filter:** Restrict the Workstyle to specific computers (names or IP addresses), or Remote Desktop clients.
- **WMI (Windows Management information) Filter:** Restrict the Workstyle based on the success or failure of a WMI query.

The following conditions can be applied to a filter:

- **ALL filters must match:** The Workstyle is applied only if all filters match.
- **ANY filter can match:** The Workstyle is applied when any filter matches.

Account Filters

An account filter restricts a Workstyle to specific users or groups of users. Account filters can be created for Windows and macOS Workstyles.

You can add local or domain users and groups and Azure Active Directory groups (Windows only).

To create an account filter:

1. Expand a Workstyle, and then select **Filters**.
2. Click **Create New Filter**, and then select **Account Filter**.
3. Select the new filter in the list, and then select **Go To** from the menu.
4. Select the following to add users or groups:
 - **Add From Local/Domain AD** (Windows): Add an account name and SID details. If you are adding a group, you can select from a list of known Active Directory Built-in groups. Click **Add Account**.
 - **Add From Azure AD** (Windows): The Azure AD group list is populated with cached Azure AD group data. Select a group from the list, and then click **Add**. You can select more than one group at a time.
 - **Add Account:** (macOS). Add the account or group details. User IDs on macOS must be values greater than 500. A value less than that might be used by a system process.

To filter account names, click inside the **Filter by** list at the top of the **Accounts** grid and select **Account Name**, **Type**, or **Value**. You can use multiple filters to help narrow down an especially lengthy list of names.

Computer Filters

A computer filter can be used to target specific computers and remote desktop clients. You can add a computer using either its host or DNS name, or by an IP address.

Computer filters can be configured on Windows and macOS computers.

To restrict the Workstyle to specific computers by IP address:

1. Expand a Workstyle, and then select **Filters**.
2. Click **Create New Filter**, and then select **Computer Filter**.
3. Enter the IP address manually, in the format **123.123.123.123**. Optionally, use asterisk wildcard (*) and - for range, as shown: **127.*.0.0-99**.
4. (Windows only) Select **Match the remote desktop (instead of the local computer)** if the computer filter is intended to match the IP address of remote computers using remote desktop sessions.
5. Click **Add**.

To restrict the Workstyle to specific computers by host name:

1. Expand a Workstyle, and then select **Filters**.
2. Click **Create New Filter**, and then select **Computer Filter**.
3. Enter one or more host names, separated by semicolons. You can use the * and ? wildcard characters in host names.
4. (Windows only) Select **Match the remote desktop (instead of the local computer)** if the computer filter is intended to match the IP address of remote computers using remote desktop sessions.
5. Click **Add**.

WMI filters

A WMI filter is applied to a Workstyle based on the outcome of a WMI query.

When a WMI query runs, the client checks whether any rows of data are returned. If any data is returned, then the WMI query is successful. If no data is returned or an error is detected, the WMI query is unsuccessful.

WMI queries are always run as the Windows SYSTEM account, and cannot be executed against remote computers or network resources. WMI filters do not support impersonation levels, and can only be used with **SELECT** queries.

To create a WMI filter:

1. Expand a Workstyle, and then select **Filters**.
2. Click **Create New Filter**, and then select **WMI Filter**.
3. Click the **WMI Filter** link in the list. Alternatively, select **Go To** from the menu for that filter.
4. Click **Create New Query**.
5. Enter the following details:
 - **Description:** Free text to describe the WMI query.
 - **Namespace:** Set the namespace that the query runs against. By default, this is **root\CIMV2**.
 - **Query:** The WMI Query Language (WQL) statement to execute.
 - **Timeout:** The time (in seconds) the client waits for a response before terminating the query. By default, no timeout is set. Long running WMI queries result in delayed application launches. Therefore, we recommend setting a timeout to ensure that queries are terminated in a timely manner.
6. Click **Add Query**.

i For more information, please see [WMI \(Windows Management information\) Filters](https://www.beyondtrust.com/docs/privilege-management/windows/admin/windows-policies/workstyles/filters/wmi-filters.htm) at <https://www.beyondtrust.com/docs/privilege-management/windows/admin/windows-policies/workstyles/filters/wmi-filters.htm>.

Application Groups

Application Groups are used to define logical groupings of applications.

Application Groups are assigned to Workstyles, so you must define Application Groups for all the applications you want to assign to a Workstyle.

Show Hidden Application Groups

1. On the **Policy Editor** page, expand **Windows** or **macOS**.
2. Click **Application Groups**, and then select **Show Hidden**.

Search Application Groups

You can search for applications that are already a part of an Application Group. Using the search, you can:

- Drill into an application and edit the properties.
- Drill into the Application Group to see the applications that are part of the group.

To search application groups:

1. On the **Policy Editor** page, expand **Windows** or **macOS**.
2. Click **Application Groups**, and then click **Search**.
3. Optionally, select filters from the list to narrow the search results.

Create an Application Group

1. On the **Policy Editor** page, expand **Windows** or **macOS**.
2. Click **Application Groups**.
3. Click **Create New Application Group**.
4. Add a name and description. Click **Create Application Group**.
5. The Application Group is now displayed in the navigation pane and the grid. You are now ready to add applications to the group.

View or Edit the Properties of an Application Group

1. On the **Policy Editor** page, expand **Windows** or **macOS**.
2. Click **Application Groups**.
3. Select an Application Group in the list, and then click the vertical ellipsis menu icon and select **Edit**.
4. Change the properties.
5. Click **Save Changes**.

Delete an Application Group

1. On the **Policy Editor** page, expand **Windows** or **macOS**.
2. Select **Application Groups**.
3. Select an Application Group in the list, and then click the vertical ellipsis menu icon and select **Delete**.

Duplicate an Application Group

1. On the **Policy Editor** page, expand **Windows** or **macOS**.
2. Select **Application Groups**.
3. Select an Application Group in the list, and then click the vertical ellipsis menu icon and select **Duplicate**.
4. Select the duplicated group and change the settings, as required.

Add an Application to an Application Group

When adding an application, you can configure the following components:

- **Application Definitions:** The application definitions are the properties of an application that are used to detect the application in your environment. When the application matches on the configured criteria the rule triggers.
- **Advanced Options:** When adding the application, advanced settings on child processes and standard user rights enforcement can be configured.

When adding file or folder paths, you can use environment variables as part of the entry. Using environment variables is optional.

You can add applications using a template. Application templates provide a way to pick from a list of known applications.

The procedure for adding an application is generally the same for every application. The matching criteria varies depending on the application.

To add an application:

1. In the navigation pane, select the Application Group.
2. Click **Create New Application**, and then select the application type you want to add.
3. Enter a description, if required. By default, this is the name of the application you are inserting.
4. Configure the matching criteria for the application.
5. You need to configure the **Advanced Options** for the application. You can configure:
 - Allow child processes will match this application definition
 - Force standard user rights on File Open/Save common dialogs
6. Click **OK**. The application is added to the Application Group.



For more information, please see the following:

- *"Application Definitions" on page 74*
- *"Advanced Options" on page 79*
- *"Environment Variables" on page 78*

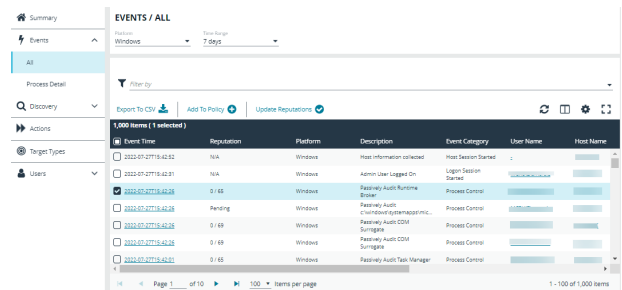


- "Add an Application From a Template" on page 73

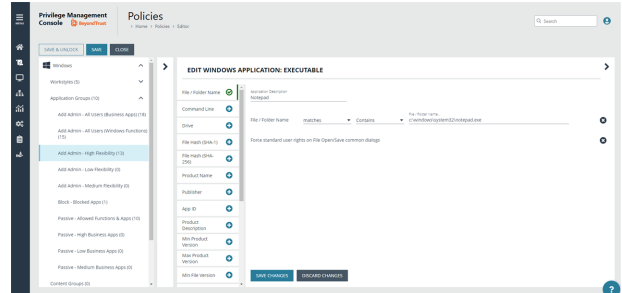
Add an Application From Reports

You can add an application to a policy based on events generated from a particular application type.

1. In the console, select **Analytics** from the menu.
2. Expand **Events** and select **All** or **Process Detail**.
3. Select an event in the list and click **Add to Policy**. The Policy Editor opens.



4. On the **Add Applications to Policy** page, select a policy and an application group.
5. Click **Add and Edit**. Alternatively, click **Add and Close** here which adds the application to the Application Group and redirects you back to the report.
6. The policy opens to the **Application Groups > Applications** page where you can edit the application settings. If you are adding one application, then you are directed to the application matching criteria page as shown.



Add an Application From a Template

Application templates provide a way to pick from a list of known applications. A standard set of templates is provided that covers basic administrative tasks for all supported operating systems, common ActiveX controls, and software updaters.

1. On the **Policy Editor** page, navigate to the policy to update.
2. Go to **Application Groups > Applications**, and then click **Add From Templates**.
3. Select an application template from the list, and then click **Add**. You can select more than one template at a time.


Disable an Application


You can temporarily pause the processing of an application rule against an application in an application group. Use this feature if you are rolling out or testing new rules. Disable the application while you investigate and fix any problems.

Application Definitions

The Policy Editor must match every enabled criterion in an application definition before it will trigger a match (the rules are combined with a logical AND).

Application definitions that require a match can also be negated. To target applications that do not match the definition, select does NOT match.

Name	Description
ActiveX Codebase matches	<p>When inserting ActiveX controls, this is enabled by default, and we recommend you use this option in most circumstances. You must enter the URL to the codebase for the ActiveX control. You can choose to match based on the following options (wildcard characters ? and * may be used):</p> <ul style="list-style-type: none"> • Exact Match • Starts With • Ends With • Contains • Regular Expressions <p>Although you can enter a relative codebase name, we strongly recommend you enter the full URL to the codebase, as it is more secure.</p>
ActiveX Version matches	<p>If the ActiveX control you entered has a version property, then you can choose Check Min Version and/or Check Max Version and edit the respective version number fields.</p>
App ID matches	<p>Matches on the App ID of the COM class, which is a GUID used by Windows to set properties for a CLSID. AppIds can be used by 1 or more CLSIDs.</p> <p>The available operators are identical to the File or Folder Name definition.</p>
Application Requires Elevation (UAC)	<p>This option can be used to check if an executable requires elevated rights to run and would cause UAC (User Account Control) to trigger. This is a useful way to replace inappropriate UAC prompts with PMC end user messages to either block or prompt the user for elevation.</p>
Application Requires Elevation (UAC)	<p>This option can be used to check if an MSI requires elevated rights to run and would cause User Account Control (UAC) to trigger.</p> <div data-bbox="293 1478 1511 1560" style="border: 1px solid black; background-color: #e1f5fe; padding: 5px;"> <p> Note: This is supported on install only.</p> </div>
BeyondTrust Zone Identifier exists	<p>This option allows you to match on the BeyondTrust Zone Identifier tag, where present. If an Alternate Data Stream (ADS) tag is applied by the browser, we also apply a BeyondTrust Zone Identifier tag to the file. The BeyondTrust Zone Identifier tag can be used as matching criteria if required.</p>
CLSID matches	<p>This option allows you to match the class ID of the ActiveX control or COM class, which is a unique GUID stored in the registry.</p>
COM Display Name matches	<p>If the class you entered has a Display Name, then it will automatically be extracted, and you can choose to match on this property. By default, a substring match is attempted (Contains). Alternatively, you may choose to pattern match based on either a wildcard match (? and *) or a regular expression. The available operators are identical to File or</p>

Name	Description
	Folder Name definition.
Command Line matches	<p>If the filename is not specific enough, you can match the command line, by checking this option and entering the command line to match. By default, a substring match is attempted (Contains). Alternatively, you may choose to pattern match based on either a wildcard match (? and *) or a regular expression. The available operators are identical to File or Folder Name definition.</p> <p>PowerShell removes double quotes from command strings prior to transmitting to the target. Therefore, we do not recommend that Command Line definitions include double quotes, as they will fail to match the command.</p>
Controlling Process matches	This option allows you to target content based on the process (application) that will be used to open the content file. The application must be added to an Application Group. You can also define whether any parent of the application will match the definition.
Drive matches	<p>This option can be used to check the type of disk drive where the file is located. Choose from one of the following options:</p> <ul style="list-style-type: none"> • Fixed disk: Any drive that is identified as being an internal hard disk. • Network: Any drive that is identified as a network share. • RAM disk: Any drive that is identified as a RAM drive. • Any Removable Drive or Media: If you want to target any removable drive or media, but are unsure of the specific drive type, choose this option which will match any of the removable media types below. Alternatively, if you want to target a specific type, choose from one of the following removable media types: <ul style="list-style-type: none"> ◦ Removable Media: Any drive that is identified as removable media. ◦ USB: Any drive that is identified as a disk connected by USB. ◦ CD/DVD: Any drive that is identified as a CD or DVD drive. ◦ eSATA Drive: Any drive that is identified as a disk connected by eSATA.
File or Folder Name matches	<p>Applications are validated by matching the file or folder name. You can choose to match based on the following options (wildcard characters ? and * may be used):</p> <ul style="list-style-type: none"> • Exact Match • Starts With • Ends With • Contains • Regular Expressions <div style="border: 1px solid orange; padding: 5px; margin: 10px 0;"> <p> For more information, please see <i>"Regular Expression Syntax"</i> on page 178.</p> </div> <p>Although you can enter relative file names, we strongly recommend you enter the full path to a file or the COM server. Environment variables are also supported.</p> <p>We do not recommend you use the definition File or Folder Name does NOT Match in isolation for executable types, as it will result in matching every application, including hosted types, such as installer packages, scripts, batch files, registry files, management consoles, and Control Panel applets.</p> <p>When creating blocking rules for applications or content, and the File or Folder Name is used as matching criteria against paths which exist on network shares, this should be done using the UNC network path and not by the mapped</p>

Name	Description
	drive letter.
File Hash (SHA-1 Fingerprint) matches	If a reference file was entered, then a SHA-1 hash of the PowerShell script will be generated. This definition ensures the contents or the script file (which can normally be edited by any user) remain unchanged, as changing a single character in the script will cause the SHA-1 hash to change. While SHA-1 is supported, SHA-256 is recommended.
File Hash (SHA-256) matches	Set the SHA-256 file hash on an application. The SHA-256 hash is supported on all appropriate applications, both Windows and macOS operating systems. On the Windows operating system, you can select either match or does NOT match . The does NOT match setting is not available on macOS. We recommend using SHA-256 rather than SHA-1.
File Version matches	If the file, service executable, or COM server you entered has a File Version property, then it will automatically be extracted and you can choose Check Min Version and/or Check Max Version, and then edit the respective version number fields.
Parent Process matches	This option can be used to check if an application's parent process matches a specific Application Group. You must create an Application Group for this purpose or specify an existing Application Group in the Parent Process group. Setting match all parents in tree to True will traverse the complete parent/child hierarchy for the application, looking for any matching parent process, whereas setting this option to False will only check the application's direct parent process.
Product Code matches	If the file you entered has a Product Code, then it will automatically be extracted, and you can choose to check this code.
Product Description matches	If the file you entered has a Product Description property, then it will automatically be extracted, and you can choose to match on this property. By default, a substring match is attempted (Contains). Alternatively, you may choose to pattern match based on either a wildcard match (? and *) or a Regular Expression. The available operators are identical to the File or Folder Name definition.
Product Name matches	If the file, COM server, or service executable you entered has a Product Name property, then it will automatically be extracted and you can choose to match on this property. By default, a substring match is attempted (Contains). Alternatively, you may choose to pattern match based on either a wildcard match (? and *) or a Regular Expression. The available operators are identical to the File or Folder Name definition.
Product Version matches	If the file, COM server, or service executable you entered has a Product Version property, then it will automatically be extracted and you can choose Check Min Version and/or Check Max Version and edit the respective version number fields.
Publisher matches	<p>Check for the existence of a valid publisher. If you browsed for an application, then the certificate subject name will automatically be retrieved, if the application is signed. For Windows system files, the Windows security catalog is searched, and if a match is found, the certificate for the security catalog is retrieved. Publisher checks are supported on Executables, Control Panel Applets, Installer Packages, Windows Scripts, and PowerShell Scripts. By default, a substring match is attempted (Contains).</p> <p>Alternatively, you may choose to pattern match based on either a wildcard match (? and *) or a Regular Expression. The available operators are identical to the File or Folder Name definition.</p>
Service Actions match	<p>Define the actions which are allowed. Choose from:</p> <ul style="list-style-type: none"> • Service Stop: Grants permission to stop the service. • Service Start: Grants permission to start the service. • Service Pause / Resume: Grants permission to pause and resume the service.

Name	Description
	<ul style="list-style-type: none"> • Service Configure: Grants permission to edit the properties of the service.
Service Display Name matches	Matches on the name of the Windows service, for example, W32Time . You may choose to match based on the following options (wildcard characters ? and * may be used): <ul style="list-style-type: none"> • Exact Match • Starts With • Ends With • Contains • Regular Expressions
Service Name matches	Matches on the name of the Windows service, for example, W32Time . You may choose to match based on the following options (wildcard characters ? and * may be used): <ul style="list-style-type: none"> • Exact Match • Starts With • Ends With • Contains • Regular Expressions
Source URL matches	If an application was downloaded using a web browser, this option can be used to check where the application or installer was originally downloaded from. The application is tracked by Privilege Management for Windows at the point it is downloaded, so that if a user decided to run the application or installer at a later date, the source URL can still be verified. By default, a substring match is attempted (Contains). Alternatively, you may choose to pattern match based on either a wildcard match (? and *) or a Regular Expression. The available operators are identical to the File or Folder Name definition.
Trusted Ownership matches	This option can be used to check if an application's file is owned by a trusted owner (the trusted owner accounts are SYSTEM, Administrators, or Trusted Installer).
Upgrade Code matches	If the file you entered has an Upgrade Code , then it will automatically be extracted and you can choose to check this code.
Windows Store Application Version	Matches on the version of the Windows Store application, for example, 16.4.4204.712 . You can choose Check Min Version and/or Check Max Version and edit the respective version number fields.
Windows Store Package Name	Matches on the name of the Windows Store Application, for example, microsoft.microsoftskydrive . You can choose to match based on the following options (wildcard characters ? and * may be used): <ul style="list-style-type: none"> • Exact Match • Starts With • Ends With • Contains • Regular Expressions
Windows Store	Matches on the publisher name of the Windows Store Application, for example, Microsoft Corporation . By default, a

Name	Description
Publisher	substring match is attempted (Contains). Alternatively, you may choose to pattern match based on either a wildcard match (? and *) or a Regular Expression. The other available operators are: <ul style="list-style-type: none"> • Exact Match • Starts With • Ends With • Contains • Regular Expressions The Browse File and Browse Apps options can only be used if configuring PMC settings from a Windows 8 client.

Environment Variables

You can use the following environment variables in file path and command line application definitions.

System Variables

- %ALLUSERSPROFILE%
- %COMMONPROGRAMFILES(x86)%
- %COMMONPROGRAMFILES%
- %PROGRAMDATA%
- %PROGRAMFILES(x86)%
- %PROGRAMFILES%
- %SYSTEMROOT%
- %SYSTEMDRIVE%

User Variables

- %APPDATA%
- %USERPROFILE%
- %HOMEPATH%
- %HOMESHARE%
- %LOCALAPPDATA%
- %LOGONSERVER%


To use any of the environment variables above, enter the variable, including the % characters, into a file path or command line. PMC will expand the environment variable prior to attempting a file path or command line match.


Advanced Options

Allow child processes will match this application definition

If selected, then any child processes that are launched from this application (or its children) will also match this rule. The rules are still processed in order, so it is still possible for a child process to match a higher precedence rule (or Workstyle) first. Therefore, this option will prevent a child process from matching a lower precedence rule.

It should also be noted that if an application is launched by an on-demand rule and this option is selected, then its children will be processed against the on-demand rules, and not the Application Rules. If this option is not selected, then the children will be processed against the Application Rules in the normal way. You can further refine this option by restricting the child processes to a specific Application Group. The default is to match **<Any Application>**, which will match any child process.

 **Note:** If you want to exclude specific processes from matching this rule, then click **...match...** to toggle the rule to **...does not match...**

 **Note:** Child processes are evaluated in the context that the parent executed. For example, if the parent executed through on-demand shell elevation, then PM Cloud will first attempt to match On-Demand Application Rules for any children of the executed application.

Force standard user rights on File Open/Save common dialogs

If the application allows a user to open or save files using the common Windows open or save dialog box, then selecting this option ensures the user does not have admin privileges within these dialog boxes. These dialog boxes have Explorer-like features, and allow a user to rename, delete, or overwrite files. If an application is running with elevated rights and this option is disabled, the open/save dialog boxes will allow a user to replace protected system files.

Where present, this option is selected by default to ensure PM Cloud forces these dialog boxes to run with the user's standard rights, to prevent the user from tampering with protected system files.

When enabled, this option also prevents processes launched from within these dialog boxes from inheriting the rights of an elevated application.

Application Details

This section provides details about the properties that can be configured on the application.

In some cases, additional information to configure the application is provided.

ActiveX Control

Unlike other application types, PM Cloud only manages the privileges for the installation of ActiveX controls. ActiveX controls usually require administrative rights to install, but once installed, they run with the standard privileges of the web browser.

Matching criteria:

- ActiveX Codebase matches
- CLSID matches

- ActiveX Version matches

Batch Files

Matching criteria

- File or Folder Name matches
- Command Line matches
- Drive matches
- File Hash (SHA-1) matches
- File Hash (SHA-256) matches
- Trusted Ownership matches
- Application Requires Elevation (UAC)
- Parent Process matches
- Source URL matches
- BeyondTrust Zone Identifier exists

COM Classes

COM elevations are a form of elevation which are typically initiated from Explorer, when an integrated task requires administrator rights. Explorer uses COM to launch the task with admin rights, without having to elevate Explorer. Every COM class has a unique identifier, called a CLSID, that is used to launch the task.

COM tasks usually trigger a Windows UAC prompt because they need administrative privileges to proceed. PM Cloud allows you to target specific COM CLSIDs and assign privileges to the task without granting full administration rights to the user. COM based UAC prompts can also be targeted and replaced with custom messaging, where COM classes can be allowlisted and/or audited.

COM classes are hosted by a COM server DLL or EXE, so COM classes can be validated from properties of the hosting COM server. You can configure:

Matching criteria:

- File or Folder Name matches
- Drive matches
- File Hash (SHA-1) matches
- File Hash (SHA-256) matches
- Product Name matches
- Publisher matches
- CLSID matches
- App ID matches
- COM Display Name matches
- Product Description matches
- Product Version matches
- File Version matches
- Trusted Ownership matches

- Application Requires Elevation (UAC): Match if **Application Requires Elevation (User Account Control)** is always enabled, as COM classes require UAC to elevate
- Source URL matches

Control Panel Applet

Matching criteria:

- File or Folder Name matches
- Command Line matches
- Drive matches
- File Hash (SHA-1) matches
- File Hash (SHA-256) matches
- Product Name matches
- Publisher matches
- Product Description matches
- Product Version matches
- File Version matches
- Trusted Ownership matches
- Application Requires Elevation (UAC)
- Parent Process matches
- Source URL matches
- BeyondTrust Zone Identifier exists

Executables

Matching criteria:

- File or Folder Name matches
- Command Line matches
- Drive matches
- File Hash (SHA-1) matches
- File Hash (SHA-256) matches
- Product Name matches
- Publisher matches
- Product Description matches
- Product Version matches
- File Version matches
- Trusted Ownership matches
- Application Requires Elevation (UAC)
- Parent Process matches
- Source URL matches
- BeyondTrust Zone Identifier exists

Installer Package

PM Cloud allows standard users to install and uninstall Windows Installer packages that normally require local admin rights. The following package types are supported:

- Microsoft Software Installers (MSI)
- Microsoft Software Updates (MSU)
- Microsoft Software Patches (MSP)

When a Windows Installer package is added to an Application Group, and assigned to an Application Rule or On-Demand Application Rule, the action will be applied to both the installation of the file, and also uninstallation when using **Add/Remove Programs** or **Programs and Features**.



Note: The publisher property of an MSx file may sometimes differ to the publisher property once installed in **Programs and Features**. We therefore recommend applications targeted using the **Match Publisher** validation rule are tested for both installation and uninstallation, prior to deployment, using the PMC Activity Viewer.

Installer packages typically create child processes as part of the overall installation process. Therefore, we recommend when elevating MSI, MSU, or MSP packages, that the advanced option **Allow child processes will match this application definition** is enabled.



Note: If you want to apply more granular control over installer packages and their child processes, use the **Child Process** validation rule to allowlist or blocklist those processes that will or will not inherit privileges from the parent software installation.

Matching criteria:

- File or Folder Name matches
- Command Line matches
- Drive matches
- File Hash (SHA-1) matches
- File Hash (SHA-256) matches
- Product Name matches
- Publisher matches
- Product Version matches
- Product Code matches
- Upgrade Code matches
- Trusted Ownership matches
- Application Requires Elevation (UAC)
- Parent Process matches
- Source URL matches
- BeyondTrust Zone Identifier exists

Insert Privilege Management Policy Editor Snap-ins

Matching criteria:

- File or Folder Name matches
- Command Line matches
- Drive matches
- File Hash (SHA-1) matches
- File Hash (SHA-256) matches
- Publisher matches
- Trusted Ownership matches
- Application Requires Elevation (UAC)
- Parent Process matches
- Source URL matches
- BeyondTrust Zone Identifier exists

Management Console

Matching criteria:

- File or Folder Name matches
- Command Line matches
- Drive matches
- File Hash (SHA-1) matches
- File Hash (SHA-256) matches
- Publisher matches
- Trusted Ownership matches
- Application Requires Elevation (UAC)
- Parent Process matches
- Source URL matches
- BeyondTrust Zone Identifier exists

PowerShell Scripts

Privilege Management for Windows allows you to target specific PowerShell scripts and assign privileges to the script without granting local administration rights to the user. Scripts can also be blocked if they are not authorized or allowlisted.



Note: PowerShell scripts that contain only a single line are interpreted and matched as a PowerShell command, and will not match a PowerShell script definition. We recommend PowerShell scripts contain at least two lines of commands to ensure they are correctly matched as a PowerShell script. This cannot be achieved by adding a comment to the script.

Matching criteria:

- File or Folder Name matches
- Command Line matches
- Drive matches
- File Hash (SHA-1) matches

- File Hash (SHA-256) matches
- Publisher matches
- Trusted Ownership matches
- Parent Process matches
- Source URL matches
- BeyondTrust Zone Identifier exists

Example PowerShell Configurations

Create New Configuration, Save to Local File

```
# Import both Defendpoint cmdlet module
Import-Module 'C:\Program Files\Avecto\Privilege Guard
Client\PowerShell\Avecto.Defendpoint.Cmdlets\Avecto.Defendpoint.Cmdlets.dll'
# Create a new variable containing a new Defendpoint Configuration Object
$PGConfig = New-Object Avecto.Defendpoint.Settings.Configuration

## Add License ##
# Create a new license object
$PGLicence = New-Object Avecto.Defendpoint.Settings.License
# Define license value
$PGLicence.Code = "5461E0D0-DE30-F282-7D67-A7C6-B011-2200"
# Add the License object to the local PG Config file
$PGConfig.Licenses.Add($PGLicence)

## Add Application Group ##
# Create an Application Group object
$AppGroup = new-object Avecto.Defendpoint.Settings.ApplicationGroup
# Define the value of the Application Group name
$AppGroup.name = "New App Group"
# Add the Application Group object to the local PG Config file
$PGConfig.ApplicationGroups.Add($AppGroup)

## Add Application ##
# Create an application object
$PGApplication = new-object Avecto.Defendpoint.Settings.Application $PGConfig
# Use the Get-DefendpointFileInformation to target Windows Calculator
$PGApplication = Get-DefendpointFileInformation -Path C:\windows\system32\calc.exe
# Add the application to the Application group
$PGConfig.ApplicationGroups[0].Applications.AddRange($PGApplication)

## Add Message ##
# Create a new message object
$PGMessage = New-Object Avecto.Defendpoint.Settings.message $PGConfig
#Define the message Name, Description and OK action and the type of message
$PGMessage.Name = "Elevation Prompt"
$PGMessage.Description = "An elevation message"
$PGMessage.OKAction = [Avecto.Defendpoint.Settings.Message+ActionType]::Proceed
$PGMessage.Notification = 0
# Define whether the message is displayed on a secure desktop
```

```
$PGMessage.ShowOnIsolatedDesktop = 1
# Define How the message contains
$PGMessage.HeaderType = [Avecto.Defendpoint.Settings.message+MsgHeaderType]::Default
$PGMessage.HideHeaderMessage = 0
$PGMessage.ShowLineOne = 1
$PGMessage.ShowLineTwo = 1
$PGMessage.ShowLineThree = 1
$PGMessage.ShowReferLink = 0
$PGMessage.ShowCancel = 1
$PGMessage.ShowCRInfoTip = 0
# Define whether a reason settings
$PGMessage.Reason = [Avecto.Defendpoint.Settings.message+ReasonType]::None
$PGMessage.CacheUserReasons = 0
# Define authorization settings
$PGMessage.PasswordCheck =
Avecto.Defendpoint.Settings.message+AuthenticationPolicy]::None
$PGMessage.AuthenticationType = [Avecto.Defendpoint.Settings.message+MsgAuthenticationType]::Any
$PGMessage.RunAsAuthUser = 0
# Define Message strings
$PGMessage.MessageStrings.Caption = "This is an elevation message"
$PGMessage.MessageStrings.Header = "This is an elevation message header"
$PGMessage.MessageStrings.Body = "This is an elevation message body"
$PGMessage.MessageStrings.ReferURL = "http:\\www.bbc.co.uk"
$PGMessage.MessageStrings.ReferText = "This is an elevation message refer"
$PGMessage.MessageStrings.ProgramName = "This is a test Program Name"
$PGMessage.MessageStrings.ProgramPublisher = "This is a test Program Publisher"
$PGMessage.MessageStrings.PublisherUnknown = "This is a test Publisher Unknown"
$PGMessage.MessageStrings.ProgramPath = "This is a test Path"
$PGMessage.MessageStrings.ProgramPublisherNotVerifiedAppend = "This is a test verification
failure"
$PGMessage.MessageStrings.RequestReason = "This is a test Request Reason"
$PGMessage.MessageStrings.ReasonError = "This is a test Reason Error"
$PGMessage.MessageStrings.Username = "This is a test Username"
$PGMessage.MessageStrings.Password = "This is a test Password"
$PGMessage.MessageStrings.Domain = "This is a test Domain"
$PGMessage.MessageStrings.InvalidCredentials = "This is a test Invalid Creds"
$PGMessage.MessageStrings.OKButton = "OK"
$PGMessage.MessageStrings.CancelButton = "Cancel"
# Add the PG Message to the PG Configuration
$PGConfig.Messages.Add($PGMessage)

## Add custom Token ##
# Create a new custom Token object
$PGToken = New-Object Avecto.Defendpoint.Settings.Token
# Define the Custom Token settings
$PGToken.Name = "Custom Token 1"
$PGToken.Description = "Custom Token 1"
$PGToken.ClearInheritedPrivileges = 0
$PGToken.SetAdminOwner = 1
$PGToken.EnableAntiTamper = 0
$PGToken.IntegrityLevel = Avecto.Defendpoint.Settings.Token+IntegrityLevelType]::High
# Add the Custom Token to the PG Configuration
$PGConfig.Tokens.Add($PGToken)

## Add Policy ##
```

```
# Create new policy object
$PGPolicy = new-object Avecto.Defendpoint.Settings.Policy $PGConfig
# Define policy details
$PGPolicy.Disabled = 0
$PGPolicy.Name = "Policy 1"
$PGPolicy.Description = "Policy 1"
# Add the policy to the PG Configurations
$PGConfig.Policies.Add($PGPolicy)

## Add Policy Rule ##
# Create a new policy rule
$PGPolicyRule = New-Object Avecto.Defendpoint.Settings.ApplicationAssignment PGConfig
# Define the Application rule settings
$PGPolicyRule.ApplicationGroup = $PGConfig.ApplicationGroups[0]
$PGPolicyRule.BlockExecution = 0
$PGPolicyRule.ShowMessage = 1
$PGPolicyRule.Message = $PGConfig.Messages[0]
$PGPolicyRule.TokenType = [Avecto.Defendpoint.Settings.Assignment+TokenTypeType]::AddAdmin
$PGPolicyRule.Audit = [Avecto.Defendpoint.Settings.Assignment+AuditType]::On
$PGPolicyRule.PrivilegeMonitoring = [Avecto.Defendpoint.Settings.Assignment+AuditType]::Off
$PGPolicyRule.ForwardEPO = 0
$PGConfig.Policies[0].ApplicationAssignments.Add($PGPolicyRule)

## Set the Defendpoint configuration to a local file and prompt for user confirmation ##
Set-DefendpointSettings -SettingsObject $PGConfig -Localfile -Confirm
```

Open Local User Policy, Modify then Save

```
# Import the Defendpoint cmdlet module
Import-Module 'C:\Program Files\Avecto\Privilege Guard
Client\PowerShell\Avecto.Defendpoint.Cmdlets\Avecto.Defendpoint.Cmdlets.dll'
# Get the local file policy Defendpoint Settings
$PGConfig = Get-DefendpointSettings -LocalFile
# Disable a policy
$PGPolicy = $PGConfig.Policies[0]
$PGPolicy.Disabled = 1
$PGConfig.Policies[0] = $PGPolicy
# Remove the PG License
$TargetLicense = $PGConfig.Licenses[0]
$PGConfig.Licenses.Remove($TargetLicense)
# Update an existing application definition to match on Filehash
$updateApp = $PGConfig.ApplicationGroups[0].Applications[0]
$updateApp.CheckFileHash = 1
$PGConfig.ApplicationGroups[0].Applications[0] = $updateApp
# Set the Defendpoint configuration to the local file policy and prompt for user confirmation
Set-DefendpointSettings -SettingsObject $PGConfig -LocalFile -Confirm
```

Open Local Configuration and Save to Domain GPO

```
# Import the Defendpoint cmdlet module
Import-Module 'C:\Program Files\Avecto\Privilege Guard
```

```
Client\PowerShell\Avecto.Defendpoint.Cmdlets\Avecto.Defendpoint.Cmdlets.dll'  
# get the local Defendpoint configuration and set this to the domain computer policy, ensuring  
the user is prompted to confirm the change  
Get-DefendpointSettings -LocalFile | Set-DefendpointSettings -Domain -LDAP "LDAP://My.Domain/CN=  
{GUID},CN=Policies,CN=System,DC=My,DC=domain" -Confirm
```

Registry Settings

Matching criteria:

- File or Folder Name matches
- Command Line matches
- Drive matches
- File Hash (SHA-1) matches
- File Hash (SHA-256) matches
- Trusted Ownership matches
- Application Requires Elevation (UAC)
- Parent Process matches
- Source URL matches
- BeyondTrust Zone Identifier exists

Remote PowerShell Commands

PM Cloud provides an additional level of granularity for management of remote PowerShell cmdlets to ensure you can execute these commands without local administrator privileges on the target computer.

```
Get-service -Name *time* | restart-Service -PassThru
```

PM Cloud allows you to target specific command strings and assign privileges to the command without granting local admin rights to the user. Commands can also be blocked if they are not authorized or allowlisted. All remote PowerShell commands are fully audited for visibility.

To allow standard users to connect to a remote computer with Windows Remote Management, or WinRM (a privilege normally reserved for local administrator accounts), it is necessary to enable the General rule **Enable Windows Remote Management Connections**. This rule grants standard users, who match the Workstyle, the ability to connect using WinRM, and can be targeted to specific users, groups of users, or computers using Workstyle filters.

1. Select the Application Group you want to add the application to.
2. Right-click and select **Insert Application > Remote PowerShell Command**.
3. You can leave the **Select reference script file** blank to match on all applications of this files, type in a specific name or path manually, or click **Browse Cmdlets**. This lists the PowerShell cmdlets for the version of PowerShell that you installed. If the cmdlet you want to use is not listed because the target version of PowerShell is different, you can manually enter it.
4. Enter a description, if required. By default, this is the name of the application you are inserting.
5. You need to configure the matching criteria for the PowerShell command. You can configure:
 - **Command Line matches:** PowerShell removes double quotes from the Command Line before it is sent to the target. **Command Line** definitions that include double quotes are not matched by PM Cloud for remote PowerShell commands.

6. Click **OK**. The application is added to the Application Group.

i For more information, please see:

- *"Application Definitions" on page 74 for more about command line matching.*
- *To manage remote PowerShell scripts instead of a single cmdlet, please see "Insert Remote PowerShell Scripts" on page 88.*

Messaging

PM Cloud end user messaging includes limited support for remote PowerShell sessions; block messages can be assigned to Workstyle rules, which block remote PowerShell scripts and commands. If a block message is assigned to a Workstyle, which blocks a script or command, then the body message text of an assigned message will be displayed in the remote console session as an error.

Insert Remote PowerShell Scripts

From within a remote PowerShell session, a script (.PS1) can be executed from a remote computer against a target computer. Normally this requires local administrator privileges on the target computer, with little control over the scripts that are executed, or the actions that the script performs. For example:

```
Invoke-Command -ComputerName RemoteServer -FilePath c:\script.ps1 -Credential xxx
```

You can target specific PowerShell scripts remotely and assign privileges to the script without granting local administration rights to the user. Scripts can also be blocked if they are not authorized or allowlisted. All remote PowerShell scripts executed are fully audited for visibility.

Note: You must use the **Invoke-Command** cmdlet to run remote PowerShell scripts. PM Cloud cannot target PowerShell scripts that are executed from a remote PowerShell session. Remote PowerShell scripts must be matched by either a SHA-1 File Hash or a Publisher (if the script has been digitally signed).

You can elevate individual PowerShell scripts and commands which are executed from a remote machine. This eliminates the need for users to be logged on with an account which has local admin rights on the target computer. Instead, elevated privileges are assigned to specific commands and scripts which are defined in Application Groups, and applied by a Workstyle.

PowerShell scripts and commands can be allowlisted to block the use of unauthorized scripts, commands, and cmdlets. Granular auditing of all remote PowerShell activity provides an accurate audit trail of remote activity.


PowerShell definitions for scripts and commands are treated as separate application types, which allows you to differentiate between predefined scripts authorized by IT, and session-based ad hoc commands.

To allow standard users to connect to a remote computer with Windows Remote Management, or WinRM (a privilege normally reserved for local administrator accounts), it is necessary to enable the General rule **Enable Windows Remote Management Connections**. This rule grants standard users who match the PM Cloud Workstyle the ability to connect using WinRM, and can be targeted to specific users, groups of users, or computers using Workstyle filters.

Matching criteria:

- File Hash (SHA-1) matches
- File Hash (SHA-256) matches
- Publisher matches

You can leave the **Select reference script file** blank to match on all applications of this files, type in a specific name or path manually, or click **Browse File**.

 **Note:** Remote PowerShell scripts that contain only a single line will be interpreted and matched as a Remote PowerShell Command, and will fail to match a PowerShell script definition. We therefore recommend PowerShell scripts contain at least two lines of commands to ensure they are correctly matched as a script. This cannot be achieved by adding a comment to the script.

Messaging

End user messaging includes limited support for remote PowerShell sessions; block messages can be assigned to Workstyle rules which block remote PowerShell scripts and commands. If a block message is assigned to a Workstyle which blocks a script or command, then the body message text of an assigned message will be displayed in the remote console session as an error.

Uninstaller (MSI or EXE)


PM Cloud allows standard users to uninstall Microsoft Software Installers (MSIs) and executables (EXEs) that would normally require local admin rights.

When the **Uninstaller** application type is added to an Application Group and assigned to an Application Rule in the policy, the end user can uninstall applications using **Programs and Features** or, in Windows 10, **Apps and Features**.

The **Uninstaller** application type allows you to uninstall an EXE or MSI when it is associated with an Application Rule. As the process of uninstalling a file requires admin rights, you need to ensure when you target the Application Group in the Application Rules you set the access token to **Add Full Admin**.

 **Note:** The **Uninstaller** type must be associated with an Application Rule. It does not apply to On-Demand Application Rules.

You cannot use the **Uninstaller** application type to uninstall the BeyondTrust or the BeyondTrustPM Cloud Adapter using, irrespective of your user rights. The anti-tamper mechanism built into PM Cloud prevents users from uninstalling PM Cloud, and the uninstall will fail with an error message.

 **Note:** If a user attempts to use PM Cloud to modify the installation of PM Cloud, for example, uninstall it, and they do not have an anti-tamper token applied, the default behavior for the user is used. For example, if Windows UAC is configured, the associated Windows prompt will be displayed.

If you want to allow users to uninstall either BeyondTrust's or the BeyondTrust PMC Adapter, you can do this by either:

- Logging in as a full administrator
- Elevating the **Programs and Features** control panel (or other controlling application) using a **Custom** Access Token that has anti-tamper disabled.

Upgrade Considerations

Any pre 5.7 Uninstaller Application Groups which matched all uninstallations will be automatically upgraded when loaded by the Policy Editor to File or Folder Name matches *. These will be honored by Privilege Management for Windows.

Pre 5.7 versions of Privilege Management for Windows will no longer match the upgraded rules, the behavior will be that of the native operating system in these cases.

If you do not want the native operating system behavior for uninstallers; please ensure that your clients are upgraded to the latest version before you deploy any policy which contains upgraded Uninstaller rules.

1. Select the Application Group you want to add the uninstaller to.
2. Right-click and select **Insert Application > Uninstaller**.
3. Enter a description, if required. By default, this is the name of the application you are inserting.
4. Click **Browse File** to select an uninstaller file and populate the available matching criteria for the selected uninstaller file.
5. Configure the matching criteria for the executable. You can configure:
 - **File or Folder Name matches**
 - **Upgrade Code matches**
 - **Product Name matches**
 - **Publisher matches**

Windows Services

The Windows service type allows individual service operations to be allowlisted, so that standard users are able to start, stop, and configure services without the need to elevate tools such as the Service Control Manager.

Matching criteria:

- File or Folder Name matches
- Command Line matches
- Drive matches
- File Hash (SHA-1) matches
- File Hash (SHA-256) matches
- Product Name matches
- Publisher matches
- Product Description matches
- Product Version matches
- File Version matches
- Service Name matches
- Service Display Name matches
- Service Actions match

Windows Store Applications

The **Windows Store** application type allows the installation and execution of Windows Store applications on Windows 8 and later to be allowlisted, so that users are prevented from installing or using unknown or unauthorized applications within the Windows Store.



Note: *PM Cloud can only be used to block Windows Store Applications. When you use PM Cloud to block a Windows Store Application and assign a PM Cloud block message to the Application Rule, the native Windows block message overrides the PM Cloud block message, meaning it is not displayed. Event number 116 is still triggered if you have events set up in your Application Rule.*

Windows Scripts

Matching criteria:

- File or Folder Name matches
- Command Line matches
- Drive matches
- File Hash (SHA-1) matches
- File Hash (SHA-256) matches
- Publisher matches
- Trusted Ownership matches
- Application Requires Elevation (UAC)
- Parent Process matches
- Source URL matches
- BeyondTrust Zone Identifier exists

Content Groups

Build a Content Group using the definitions provided to control access to privileged content. Content Groups are added to a Content Rule in a Workstyle. When matches are detected on computers receiving the policy, the rule triggers and the rule behavior applies (allow or block rule).

There are two main use cases for applying content control:

- **Allow modification:** Allows standard users to modify privileged content, without having to assign admin rights to either the user, or the application used to modify the content.
Add a Content Group to a content rule where the content can be assigned admin rights. When this is done, any user who receives the Workstyle can modify matching content without requiring an administrator account.
- **Block access to content or directories.**
Add a Content Group to a content rule where the ability to open the content can be controlled with a Block action. When this is done, any user who can open and read the content is blocked from opening the content.

Content Definitions

A Content Group is composed of one or more definitions. All definitions that make up a Content Group must match before the Content Rule triggers.

The following content definitions are available:

- File or Folder Name
- Drive
- Controlling Process

Review the next sections to learn more before building a Content Group.

File or Folder Name

Validate applications by matching the file or folder name. You can choose to match based on the following options (wildcard characters ? and * may be used):

- **Exact Match**
- **Starts With**
- **Ends With**
- **Contains**
- **Regular Expressions**

Although you can enter relative filenames, we strongly recommend that you enter the full path to a file or the COM server. Environment variables are also supported.

We do not recommend using the **File or Folder Name does NOT Match** definition in isolation for executable types, as it results in matching every application, including hosted types such as Installer packages, scripts, batch files, registry files, management consoles, and Control Panel applets.

When creating blocking rules for applications or content, and using the **File or Folder Name** definition as matching criteria against paths which exist on network shares, use the Universal Naming Convention (UNC) network path rather than a mapped drive letter.

Drive

Verify the type of disk drive where the file is located. Choose from one of the following options:

- **Fixed disk:** Any drive that is identified as being an internal hard disk.
- **Network:** Any drive that is identified as a network share.
- **RAM disk:** Any drive that is identified as a RAM drive.
- **Any Removable Drive or Media:** If you want to target any removable drive or media, but are unsure of the specific drive type, this option will match any of the removable media types below. Alternatively, if you want to target a specific type, choose one of the following removable media types:
 - **Removable Media:** Any drive that is identified as removable media.
 - **USB:** Any drive that is identified as a disk connected via USB.
 - **CD/DVD:** Any drive that is identified as a CD or DVD drive.
 - **eSATA Drive:** Any drive that is identified as a disk connected via eSATA.

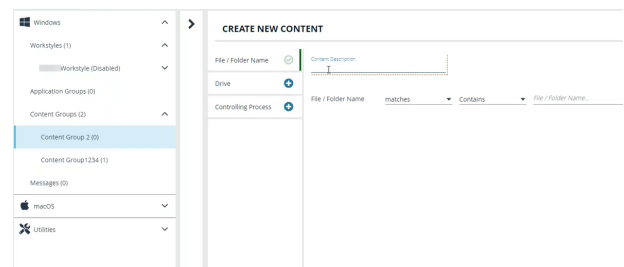
Controlling Process

Use this definition to target content based on the process (application) used to open the content file. The application must have been added to an Application Group. You can also define whether any parent of the application matches the definition.

We recommend adding a controlling process for each content definition. If a controlling process is not added to a content definition, then performance issues can occur on computers the policy is applied to.

Create a Content Group

1. Expand the Windows panel of the Policy Editor.
2. Click **Content Groups**, and then click **Create New Content Group**.
3. Enter a name, and then click **Create Content Group**.
4. Select the saved content group, and then click **Create New Content**.
5. Configure the definitions.
6. Click **Create Content**.



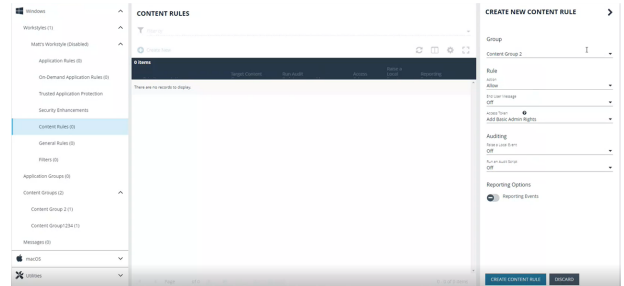
After the content is added, add the Content Group to an existing Content Rule or create a new one.

Create a Content Rule

1. Expand a Workstyle, and then go to **Content Rules**.
2. Click **Create New**.

3. Select the rule properties:

- **Group:** Select a Content Group.
- **Action:** Select **Allow** or **Block**. The action that occurs if the content in the Content Group is accessed by the end user.
- **End User Message:** Select a message from the list.
- **Access Token:** Select the type of token to pass to the Content Group. You can select from:
 - **Passive (no change):** Doesn't make any change to the user's token. This is essentially an audit feature.
 - **Enforce User's Default Rights:** Removes all rights and uses the user's default token. Windows UAC always tries to add administration rights to the token being used so if the user clicked on an application that triggers UAC, the user cannot progress past the UAC prompt.
 - **Drop Admin Rights:** Removes administration rights from the user's token.
 - **Add Full Admin (Required for installers):** Standard Windows Admin token containing all Admin privileges.
 - **Add Basic Admin Rights:** Gives greater control over the privileges granted when targeting rules at actions. This excludes the following privileges: **SeDebugPrivilege**, **SeLoadDriverPrivilege**.
 - **Privilege Management Support Token:** Applies Add Full Admin privileges with tamper protection removed.
 - **Keep Privileges - Enhanced:** Keeps the same privileges of the process token and adds some additional context to it. Use the token with features such as Advanced Parent Tracking or Anti-tamper.
- **Raise a Local Event: Off, On, Anonymous.** Select if an event is raised if this Content Rule is triggered. When on, an event is sent to the local event log file. Anonymous removes user and host name from events so the user / host are not identifiable.
- **Run an Audit Script:** Select an audit script from the list.
- **Reporting Events:** When the setting is on, events are raised for viewing in PM Cloud Analytics.



4. Click **Create Content Rule**.

Messages

You can define two types of end user messages:

- **Messages:** Messages take focus when they are displayed to the user.
- **Notifications:** (Windows only). Message notifications appear on the user's task bar. A notification is displayed as a toast notification.

Messages (and Notifications) are displayed when a user's action triggers a rule (application, on-demand or content rule). Rules can be triggered by an application *launch* or *block*, or when content is modified.

Messages provide an effective way of alerting the user before an action is performed, for example, before elevating an application or allowing content to be modified, or advising that an application launch or content modification is blocked.

Messages give the user information about the application or content, the action taken, and can be used to request information from the user.

Messages are assigned to Application Rules. A message displays different properties, depending on the targets it is assigned to.

Create a Message



Note: Message templates vary between Windows and macOS.

1. In the Policy Editor, go to **Messages**.
2. Click **Create New Message** (Windows options shown in image at right).
3. (Windows only). Select a message type: *message box* or *notification*.
4. Select a message template from the list.
5. Enter a name. The default name is the name of the template.
6. Enter a description.
7. (Windows only). Enter the title that displays in the title bar of the window.
8. Enter text for the message header.
9. Enter text for the body.
10. (Windows only). Select **Show Message On Secure Desktop** to show the message on the secure desktop.
11. (Windows only). Turn off **Show the details of application being executed** to hide the details from being displayed. This option is enabled by default.
12. Click **Create New Message**.


You can edit or delete messages at any time.

CREATE NEW MESSAGE

Use a Message Box Template

Use a Notification (Balloon) Template

Template

Allow Message (Elevate) 

Name

Allow Message (Elevate)

Description

Simple confirmation before elevating privileges

Message Window Title

IT Security Policy

Message Header

Confirm Elevation

Message Body

You are about to run this [PG_PROG_TYPE] with admin rights. Are you sure you wish to proceed?

Show Message On Secure Desktop

Show the details of application being executed

CREATE NEW MESSAGE

DISCARD



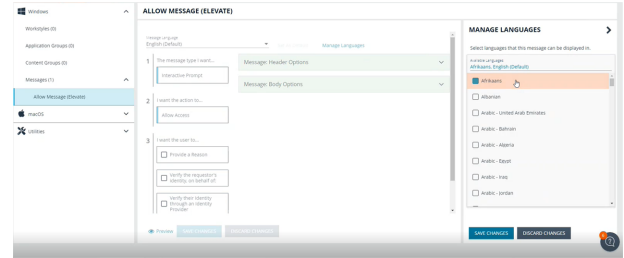
Tip: Click **Preview** when editing a message to view the message on-the-fly. Message preview is available for Windows and macOS messages.

Manage Languages

You can configure message text to display a language of your choice. Click **Add Languages** and select the language from the dropdown list.

If you are using more than one language, select a language and click **Set As Default**. The default language is English.

If you delete the default language, then the language at the top of the list is set to the default. You must always have at least one language selected.

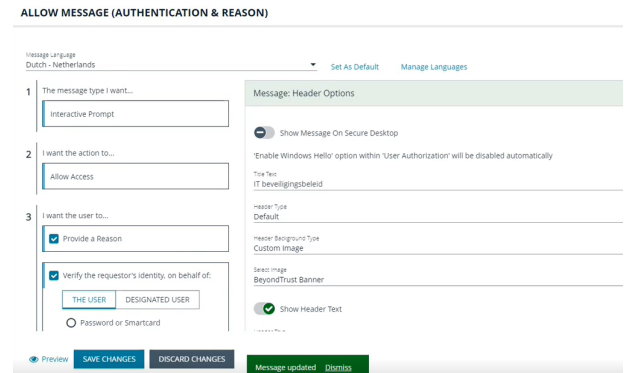


PM Cloud checks the locale of the user's language and tries to match it to a language set up in PM Cloud.

- If there is a match, the strings for that language are displayed for the message text.
- If there isn't a match, the language assigned as the default language is used.

PM Cloud does not localize the text in the language you select. You must edit the message text in your chosen language.

If you import a policy with messages in a supported language, then the strings display in that language. The screen capture shows an example where a policy file was imported in Dutch.



Add ActiveX Message

When you are elevating the installation of an ActiveX control in an application group, a built-in progress dialog box displays during the installation. You can customize the messaging on the installation progress dialog box.

ActiveX messages can be displayed in multiple languages. In PM Cloud, the regional language of the end user can be detected, and if ActiveX strings in that language are configured, the correct translation is displayed.



Note: If language settings for the region of the end user are not configured, then the default language text is displayed. To change the default language, select a language and click **Set Default**.

To create an ActiveX message:

1. Go to the **Messages** tab, and then click **Create New Message**.
2. Select **Use ActiveX Control** from the list.
3. Fill in the text fields that will display on the dialog box.
4. Click **Create New Message**.

5. If you want to select a language other than English, click the newly created message in the navigation panel, and then click **Manage Languages**.
6. Select and save the language.

Customize a Message

There are attributes of a message that you can choose to use when configuring messaging:

- General message features such as **Header** and **Body** options.
- **User Reason** settings when you want your end users to provide a reason before proceeding.
- **User Authorization** where a user must provide password, smart card, or both types of authentication information.
- **Multifactor Authentication** where an Identity Provider is configured.
- **Challenge/Response Authorization** where a user must enter a response code before proceeding.

Select the **Edit** menu for a message template to customize the message properties.

Set up the Message Header Options

You can configure the following message header options:

- **Show Message On Secure Desktop:** (Windows only). Select to show the message on the secure desktop. We recommend this if the message is being used to confirm the elevation of a process, for enhanced security.
- **Title Text:** (Windows only). Add text that appears in the title bar of the dialog box.
- **Header Type:** Select the type of header: **Default**, **Error**, **None**, **Question**, **Warning**.
- **Header Background Type:** Select **Solid** or **Custom Image**.
 - If you select **Solid**, use the color picker to select a header background color.
 - If you select **Custom Image**, you must select an image from the **Select Image** dropdown list. To use additional images, see "[Manage Images](#)" on page 98.
- **Show Header Text:** Select if you want to display header text.
- **Header Text:** Add text that displays next to the header type icon.
- **Header Text Color:** Select the color for the header text.



Note: (Windows only). For a **Notification** type of message, you can only configure the **Title Text**.

Additional header message design properties are available when using the **User Request Message** template. You can customize the text for the interactive prompts displayed during the request workflow, such as *request text*, *pending text*, and *approval text*.

Manage Images

To use different images in the header than the default BeyondTrust ones (such as your own company's logo, for branding purposes), you can import images into this list.



Note: The image type must be **.png**, with a maximum size of 240KB. The recommended size for the image is 450x50 pixels. Images smaller than 450x50 and greater than 600x100 will be rejected.

To *add* images to the list:

1. To the right of the **Select Image** field, click **Manage Images**.
2. At the top left above the grid list, click **Import Image**.
3. On the **Upload Image** panel, drag or click to select an image to upload.
4. Enter the image name and a description.
5. Click **Upload Image**. The image is added to the list and is available for selection as a custom image.

You can also delete images you have imported into the list, but not the default set of BeyondTrust images.



Note: You cannot delete an image that is currently *in use*. You must select a different image for use first, and then delete the image you intended to delete.

To *delete* images from the list:

1. To the right of the **Select Image** field, click **Manage Images**.
2. Select an image (not in use) from the list.
3. At the top left above the grid list, click the **Delete** button.

Edit an Image

To edit an image that you have uploaded to the list:

1. To the right of the **Select Image** field, click **Manage Images**.
2. To the right of an image name entry, click the vertical ellipsis menu icon, and then select **Edit**.
3. Update the name and/or description for the image, and then click **Save Changes**.

Set up the Message Body Options

You can configure the following message body options:

- **Body Text:** Add additional information for the end user.
- **Message Mode:** (Windows only). From the list, select **Automatic** or **Custom**. You can decide what information you want to display on the message. By default, all rows are *on* and will be displayed as part of the message. The **Automatic** default values are:
 - **Show Line One:** The *Program Name* or the *Content Name*.
 - **Show Line Two:** The *Program Publisher* or the *Content Owner*.
 - **Show Line Three:** The *Program Path* or the *Content Program*.
- **Show Reference Hyperlink:** Turn the option *on* (it is *off* by default). Update text for existing link on the message. In some cases, you might want to provide a website with more information for your end users. The URL appears *below* the body text.



Example: Here are some sample use cases.

- *Linking users to web pages that provide support resources, terms of use statements, and web-based submission forms*



- *Linking users to web based ITSM solutions, including those that support parameterization of URLs for prepopulation of fields*
- *Linking users to teams, and other community support products*
- *Linking users to email via mailto links, for integration with email based ITSM solutions*

- **Publisher:** Enter a publisher name and information to display if the verification for the publisher fails.
- **Buttons:** Customize the labels for the **OK** and **Cancel** buttons (Mac sample message shown in image at right).





Note: (Windows only). For a **Notification** type of message, you can only configure the **Body Text**.


Additional body message design properties are available when using the **User Request Message** template. You can customize the text for the interactive prompts displayed during the request workflow, such as *request text, pending text, approval text, denial text, and referral text*.



Tip: Click **Preview** when editing a message to view the message on-the-fly. Message preview is available for Windows and macOS messages.


Bundle Blocked


This Bundle has been blocked by IT Support.



Program Name	Calculator.app
Program Publisher	Software Signing
Program Path	/System/Applications/Calculator.app

[Click here to find out why this has happened](#)

Add User Reason

You can configure the message to prompt the user to provide a reason for the request.

To set up the User Reason option:

1. Under section 3 on the left, check the **Provide a Reason** box.
2. Select the **User Reason Type**, a *textbox* or a *dropdown*.
3. (Optional). Select if you want to **Remember the User Reason (per application)**.
4. (Optional). You can change the default **Reason Text** and **Reason Error Message Text**.
5. (Optional). If you select the *drop-down* type, you can change the default **Drop-down List Prompt Text**.
6. (Optional). With the drop-down option, you can use the default **User Reason List** to be displayed for the user to choose from. You can also:
 - Change the text of the default list options.
 - Delete one or more of the default options.
 - Click the **Add User Reason** option to add your own user reason to the list.
7. Click **Save Changes**.

Email Settings (Windows Only)

Email settings can be configured when using the Block Message template.

To access email settings, you must first create the message then edit the properties for the message.

Configure the following:

- **Mail To:** Email address to send the request to (separate multiple email addresses with semicolons).
- **Subject:** Subject line for the email request.

BLOCK MESSAGE

1	The message type I want...	Message: Header Options
	<input type="text" value="Interactive Prompt"/>	Message: Body Options
2	I want the action to...	Email Settings
	<input type="text" value="Block Access"/>	Mail To: name@company Subject: Privilege Management - User request for privilege elevation
3	I want the user to...	
	<input type="checkbox"/> Provide a Reason	
	<input checked="" type="checkbox"/> Add Email Settings	

Add Challenge/Response Authorization

There are two parts to setting up Challenge/Response Authorization:

- **Set a shared key:** The Challenge/Response Key must be set to use Challenge/Response Authorization in your messages. The key is encrypted. The key is required by the Challenge/Response generator to generate response codes. The only way to change the shared key is by setting a new one.
- **Add the authorization type to a message:** When configuring your message, configure the Challenge/Response settings.

The Challenge/Response feature is a global setting and can be configured for Windows and macOS messages. Challenge/Response Authorization only applies to Allow message types.

To add a shared key:

1. In the Policy Editor, click **Messages**.
2. Click **Challenge/Response Keys**.
3. Enter a key value and enter again to confirm.
4. Click **Set Key**.

To configure Challenge/Response Authorization:

1. In the Policy Editor, click **Messages**.
2. Create a message following the steps provided earlier. If this is an existing message, select **Edit** from the menu.
3. Under section 3 on the left, check the **Request Access via Challenge/Response** box.

4. Open the **Challenge / Response Authorization** dropdown, and set the following:

- **Header text:** The text that introduces the challenge/response authorization.
- **Hint text:** The text that is in the response code field for challenge/response messages.
- **Authorization Period (per application):** Set this option to determine the length of time a successfully returned challenge code is active for.
 - **One Use Only:** A new challenge code is presented to the user on every attempt to run the application.
 - **Entire Session (Windows only):** A new challenge code is presented to the user on the first attempt to run the application. After a valid response code is entered, the user is not presented with a new challenge code for subsequent uses of that application until they next log on.
 - **As defined by helpdesk (Windows only):** A new challenge code is presented to the user on the first attempt to run the application. If this option is selected, the responsibility of selecting the authorization period is delegated to the helpdesk user at the time of generating the response code. The helpdesk user can select one of the three above authorization periods. After a valid response code is entered, the user does not receive a new challenge code for the duration of time specified by the helpdesks.
- **Suppress messages once authorized (Windows only):** Select to suppress messages. This setting is not shown when set to **One Use Only**.
- **Show Information Tip (Windows only):** Select to add helpful information for the end user.
- **Information Tip Text:** Add text that appears above the challenge and response code fields. In Windows, this only appears if the **Show Information Tip** option above is selected.
- **Error Message Text:** Add text to display to the end user if they enter an incorrect response code.
- **Maximum Attempts:** Select from **Unlimited** and **Three Attempts**.
- **Maximum Attempts Exceeded Message Text:** The message is only displayed when **Three Attempts** is selected. Add text to display to the end user if they exceed the allowed number of challenge/response attempts.

Challenge / Response Authorization
⤴

Header Text
Enter Response Code

Hint Text
Code

Authorization Period (per-application)
One Use Only ⌵

Show Information Tip

Information Tip Text
To get a Response Code contact IT Support and quote the number shown on the screen

Error Message Text
You have entered an incorrect Response Code

Maximum Attempts
 Unlimited
 Three Attempts

SAVE CHANGES

DISCARD CHANGES



Tip: Click *Preview* when editing a message to view the message on-the-fly. Message preview is available for Windows and macOS messages.

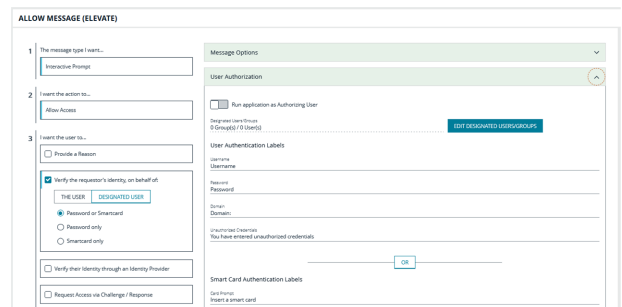
Add User Authorization

When using a message to allow access to an application, you can enforce strict access to network resources using the authorization settings. When configured, users are required to enter credentials to proceed. The credential can be a *password*, *smart card*, or *both*.

User authorization settings can be configured on both Windows and macOS messages.

1. Select the message where you want to add user authorization as part of the access workflow.
2. Under section 3 on the left, check the **Verify the requestor's identity, on behalf of:** box.
3. Choose either **The User** or **Designated User**. If you select **Designated User**, see the following procedure for details on adding users and groups.
4. Select the authorization method: **Password or Smartcard**, **Password only**, or **Smartcard only**.
5. Click **User Authorization** to expand and customize labels and descriptions. The available fields will change depending on which method of authorization is selected, as noted here:


- **The User:** When selected, enter the password. Optionally, customize the message that displays to users when the credentials are not approved.
- **Designated User:** When selected, click the **Edit Designated Users/Groups** button to add the authorized users/groups. A designated user can be selected from a local account, Active Directory domain, or Azure Active Directory. Only Azure Active Directory groups are supported.
 - After the groups are added, enter the *user name*, *password*, and *domain*.
 - (Optional). Select **Run application as Authorizing User**. When selected, the application runs in the context of the authenticating user. When not selected, the application runs in the context of the logged on user.
 - (Optional). Customize the message that displays to users when the credentials are not approved.
- **Windows Hello:** Select to use the Windows Hello service to authenticate the user. Windows Hello must be installed on the endpoint for this to work with PM Cloud.
 - Windows Hello is not supported with the **Designated User** option.
 - Set Authentication to the **Password or Smartcard** or the **Password only** option.
 - Windows Hello is unavailable when using Secure Desktop.
- **TouchID:** Select to use TouchID to authenticate the user. TouchID must be configured on the endpoint to work with the policy editor messages.
 - TouchID is not supported with the **Designated User** option.
 - Set Authentication to the **Password or Smartcard** or the **Password only** option.
- **Smart Card:** When smart card authorization is included, you can:
 - (Optional). Customize the **Smart Card Authentication Labels** that display to the user.
 - (Mac only). Select the **Sudo User Authorization** option.



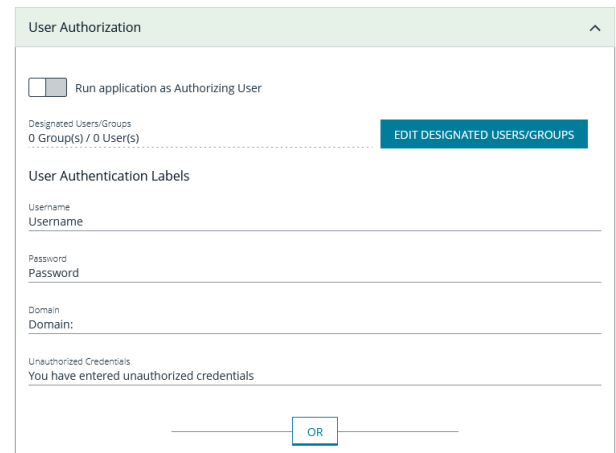

Note: At this time, you must fill out all of the fields under **User Authorization** to confirm your changes.

Edit Designated Users

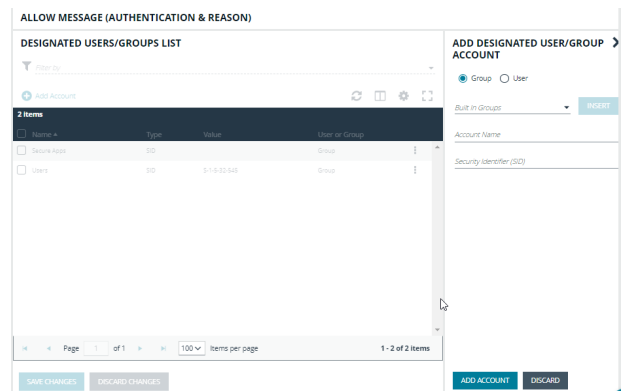
You can add, edit, and remove users and groups from the **Designated Users/Groups List** in the message configuration. You can manage multiple accounts at once from the **Designated Users/Groups List** page.

 **Note:** *Designated User* must be selected on step 3. *Verify the requestor's identity, on behalf of:* for the **Edit Designated Users/Groups** button to appear in *User Authorization*.

1. With **User Authorization** expanded, click **Edit Designated User/Groups**.



2. Click **Add Account**.
3. Select **User** or **Group**, and then add the information.
4. If you select a built-in group, click **Insert** to automatically populate the account name and security identifier (SID).
5. After providing account the information, click **Add Account**.
6. After adding your accounts, click **Save Changes** to return to the message configuration page.



7. Click **Save Changes** again to close the message configuration page.
8. Click **Save** at the top left of the **Policies** page to save your message changes, or they will not be confirmed in the Web Policy Editor.

Configure Multifactor Authentication Using an Identity Provider

Multifactor authentication (MFA) using an identity provider can be configured for messages in Privilege Management. Identity providers supported by Privilege Management include those using OpenID Connect (OIDC) and RADIUS protocols, and BeyondTrust should be setup as a *Native* or *Desktop* app within your Identity Provider configuration.

The RADIUS protocol is supported on Windows OS only.

Add an Identity Provider

1. In the Policy Editor, click **Messages**.
2. Click **Identity Provider Settings**.
3. On the **Identity Provider Settings** panel, select an identity provider from the list: **OIDC** or **RADIUS**.
4. Enter the following details for the identity provider:
 - **OIDC Settings**
 - **Authority URI:** The address of your identity provider.
 - **Client ID:** Must match the same value configured for your identity provider's BeyondTrust application.
 - **Redirect URI:** Must match the same value configured for your identity provider's BeyondTrust application. The format is **http://127.0.0.1:port_number**, where *port_number* is an open port on your network. The *port_number* is only needed if required by your identity provider.
 - **RADIUS Settings**
 - **Authentication Mechanism:** The authentication type that is required by your RADIUS server. Supported authentication mechanisms are MS-CHAPV2 or PAP.
 - **Host:** The hostname of your RADIUS server.
 - **Port:** The port number for connecting to your RADIUS server.
 - **Shared Secret:** The secret key required by your RADIUS server.
5. Click **Save RADIUS Settings** or **Save OIDC Settings** depending on the type you selected.

After an identity provider is added you can configure any allow message type to use multifactor authentication.



For more information about adding identity providers, please see "[Configure OpenID Connect](#)" on page 158.

Set up a Multifactor Authentication Message

1. In the Policy Editor, click **Messages**.
2. Click **Create New Message**.
3. Select the template **Allow Message (with Authentication)**, and then click **Create New Message**.
4. Select the message in the **Messages** navigation pane.
5. Under section 3 on the left, check the **Verify their Identity through an Identity Provider** box.
6. Expand **Multifactor Authentication**.
7. Select **Idp - OIDC** or **Idp - RADIUS**.
8. In the **Suppress Message when Authenticated for (Mins)** box, enter a value (maximum 720) to set the number of minutes that the authentication message is suppressed. The message will not be shown again for the given number of minutes after a successful authentication.
9. Enter information that displays on the message dialog box such as authentication failure text and authentication success text. Optionally, you can use the default text provided.
10. Enter the ACR value. The value is optional and required only if your identity provider uses it.
11. The following fields are specific to configuring Azure AD conditional policies. If you are using conditional policies, contact BeyondTrust Technical Support for configuration details.

- **Additional Scopes (optional)**: Some IdPs can trigger additional authentication policies server-side based on the scopes requested. This field can be used to provide that context to the IdP.
- **Max age (seconds) (optional)**: The lifetime of the authorization request. The authorization runs out when the maximum age is reached.

12. Click **Save Changes**.

Policy Editor Utilities

Policy Editor Licensing

Privilege Management for Windows requires a valid license code to be entered in the Privilege Management Policy Editor. If more than one policy is applied to a computer, you need at least one valid license code for one of those policies.

For example, you could add the Privilege Management for Windows license to a Privilege Management policy that is applied to all managed endpoints, even if it does not have any Workstyles. This ensures all endpoints receive a valid license if they have Privilege Management for Windows installed. If you are unsure, then we recommend you add a valid license when you create the Privilege Management policy.

To add a license:

1. Go to the **Policies** page and then select **Edit & Lock Policy** for the policy you want to edit.
2. Expand the **Utilities** node.
3. Click the **Licenses** node.
4. Click **Add**.
5. Enter the license key, and then click **Add License**.

Import Policy

Privilege Management policies can be imported to and exported from Group Policy as XML files, in a format common to other editions of Privilege Management, such as the Privilege Management ePO Extension. Policies can be migrated and shared between different deployment mechanisms.

1. In the Policy Editor, expand **Utilities**.
2. Select **Import Policy**.
3. Select one of the following:
 - **Merge Policy**
 - **Overwrite Policy**: If you select to overwrite, you can optionally select **Export Existing Policy** to save a copy before overwriting the policy.
4. Drop the file onto the box or click inside the box to navigate to the file.
5. Click **Upload File**.

Import Template Policies

You can import a template and merge or overwrite the settings in an existing template.

1. In the Policy Editor, expand **Utilities**.
2. Select **Template Policies**.
3. Select one of the following:
 - **Merge Policy**: Merges the configuration to the existing template.
 - **Overwrite Policy**: If you select to overwrite, you can optionally select **Export Existing Policy** to save a copy before overwriting the policy.

4. Select a template from the list: **Discovery**, **QuickStart for Mac**, **QuickStart for Windows**, **Server Roles**, **TAP (High Flexibility)**, **TAP (High Security)**.
5. If you are merging, select **Merge Template Policy** to save the settings. If you are overwriting, select **Overwrite Policy**.

Manage Audit Scripts

When an application is allowed, elevated, or blocked, an event is logged to record details of the action. Actions are recorded in a third party tracking system by using Audit Scripts. You can write Audit Scripts in Powershell, VBScript, or Javascript and configure these scripts through the web policy editor.

1. In the Policy Editor, expand the **Utilities** node.
2. Select **Manage Audit Scripts**.
3. Click **Upload Script** to expand the Upload Script panel.
4. Click the following dropdown menus to further configure the script:
 - **Timeout Options**
 - **Context Options**
5. Click inside the upload box to select the script.

Manage Rule Scripts

You can upload, view, and delete Power Rules from within the Web Policy Editor.

1. In the Policy Editor, expand **Utilities**.
2. Select **Manage Rule Scripts**.
3. Click **Upload Script** to expand the **Upload Script** panel.
4. Drag and drop the new script into the upload box or click to select a file.



Note: The script uploaded must be a Powershell script.

5. Click inside the **Timeout options** field to select a value.
6. Click **Upload Script** to save your changes.



For more information, please see [Apply Power Rules Scripts to Your Application Rules](https://www.beyondtrust.com/docs/privilege-management/windows/epo-admin/utilities/power-rule-scripts.htm) at <https://www.beyondtrust.com/docs/privilege-management/windows/epo-admin/utilities/power-rule-scripts.htm>.

Upload and Delete Settings

You can upload settings for an existing Rule Script by clicking the vertical ellipsis icon and selecting **Upload Settings** from the dropdown menu.



Note: The file that is uploaded must be in JSON format.

To delete the settings file, click the vertical ellipses again and select **Delete Settings** from the dropdown menu.

Advanced Agent Settings

You can configure the Advanced Agent Settings utility through the web policy editor to deploy additional registry based settings to endpoints that are running Privilege Management for Windows and Mac.

1. In the Policy Editor, expand **Utilities**.
2. Select **Advanced Agent Settings**.
3. Click **Add** to create a new setting.
4. Type the desired value name.
5. Select one of the following to designate the type:
 - **DWORD**
 - **String**
 - **Multi-String**
6. Click **Create** to confirm your changes and create the new setting, or **Discard** to delete your work.

Set Up Agent Protection

Add agent protection to your endpoints to prevent users from uninstalling Privilege Management for Windows.

The setup is a two-part process:

- Generate public-private key pair.
 - The public key is stored in a policy and distributed to all computers. The public key is automatically inserted into the policy.
 - The password-protected private key must be stored securely by the administrator. The private key and private key password are required when you want to disable agent protection.
- Enable protection.

Generate Key Pairs

To generate the key pair:

1. In the Policy Editor, expand **Utilities**.
2. Select **Agent Protection Settings**.
3. Click **Generate Key**.
4. Enter a password to encrypt the private key.
5. Click **Generate Key**.
6. The private key is automatically downloaded to the local computer. The file name is **private.pem**. The public key is automatically inserted into the policy.

Enable Agent Protection

To enable protection:

1. In the Policy Editor, expand **Utilities**.
2. Select **Advanced Agent Settings**.
3. Click **Add**.
4. Enter **AgentProtectionState** in the **Name** box.
5. Select **64 bit**.
6. Ensure type is **DWORD**.
7. In the **Decimal** box, set the value to **1**. The **Hex** value automatically populates with the same value. There are three possible states: **0** = off, **1** = enabled, **2** = disabled.

Agent protection is enabled after the policy is deployed and loaded by the Windows computers.



For more information about using agent protection, please see [Set up Agent Protection at https://www.beyondtrust.com/docs/privilege-management/windows/admin/install-upgrade/install-pm-windows.htm](https://www.beyondtrust.com/docs/privilege-management/windows/admin/install-upgrade/install-pm-windows.htm).

Regenerate UUIDs

When importing and exporting policies from external sources, it can sometimes be necessary to regenerate the internal policy **Universally Unique Identifier (UUID)**, so that Reporting manages the events correctly. For most normal scenarios in which this is required (policy duplication, for example), this is handled seamlessly.

However, duplication by importing a text XML file will not be covered because sometimes you will not want to regenerate the UUIDs, such as when restoring a policy from a backup.

To regenerate UUIDs:

1. In the Policy Editor, expand **Utilities**.
2. Select **Regenerate UUIDs**.
3. Click the **Regenerate UUIDs** button.

A success message displays at the bottom center of the page.

Force Policy Updates

End users working on either Windows or macOS computers can update policy on their computers without administrator assistance.

Force Update Policy for Windows End Users

End users are able to force a policy update to their computer from the system tray. This feature allows the end-user to request a new policy from their desktop, thus significantly reducing the time it takes to update a policy.

1. In the system tray, click the Privilege Management icon.
2. Click **Check for Policy Update**.

A notification appears with **Update Finished** to notify the user that a policy update has been applied to the client.

A notification appears with **No Updates Found** if the current policy is already up to date.

A notification appears with **Unable to Check for Updates** if the computer is unable to reach the management platform.

Force Update Policy for macOS End Users

A user can check whether a new policy is available. If it is, then the new policy is downloaded and applied. The immediate availability of a new policy is useful when you have an issue that requires a policy update, without the necessity of waiting for a poll to pull in a new one.

To refresh all policies, select the **Privilege Management for Mac** menu bar icon, and select **Refresh all Policies**.

If a newer policy is found, it is downloaded and applied immediately.

A message confirming the successful update appears. The new policy revision date also appears in the dropdown menu as *Last updated*.

Privilege Management Console Analytics



IMPORTANT!

In the situation of excess endpoint audit event generation (as determined by the policy configuration), which is deemed likely to have a severe impact on overall performance and availability of the PM Cloud console, BeyondTrust will take measures to ensure ongoing availability and functionality of the PM Cloud console.

The solution will be in the form of a temporary process by which all passive events (Event Type 106) will only be sent to our new Reporting 2.0 Elastic infrastructure (see <https://www.beyondtrust.com/docs/privilege-management/console/pm-cloud/analytics/index.htm>) and not to the SQL database which supports our legacy reporting solution, sometimes referred to as PMR. This means that PMR will not include any passive events, and to view them, a user must enable the Reporting 2.0 toggle available in the UI. Within Reporting 2.0, all event types, including passive, will be available.

This ensures that the PM Cloud console remains available for policy editing, so that an updated policy can be made available to endpoints. Should auditing levels decrease to a level where this configuration is no longer required, a customer may request, via BeyondTrust Technical Support, to have passive events resume being sent to the legacy PMR reporting interface.

Should BeyondTrust need to take the action described, a support ticket will be automatically raised on your behalf, and a representative from our Support organization will reach out to make you aware of the situation and to work with you to make any recommended policy changes, if required.



Note: PM Cloud functions on a **role-based access control (RBAC)** system, in which the role assigned to a user dictates what features this user has access to. A standard user must have sufficient permissions to access the Analytics page and options. For more information, see "[Role-Based Access Control](#)" on page 48.

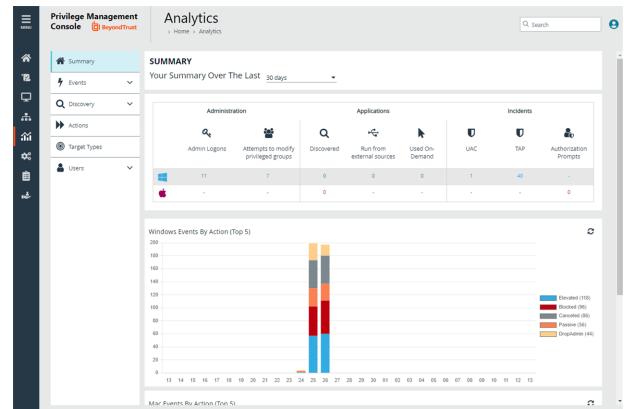
Overview

Analytics provides detailed activity information for computers in your Privilege Management Console environment. Areas covered include:

- Summary of data collected
- Events
- Discovery
- Actions
- Target types
- Users

The Analytics UI offers an interactive experience. View high-level data points or drill down to see more detail.

- Bar charts and graphs provide a big picture view of the data. You can drill down on a particular data point to see more detail.
- Filters help to refine the scope of data displayed when you want to focus in on certain data points.
- Links on certain data points that lead to additional event detail.



Event Data Caching

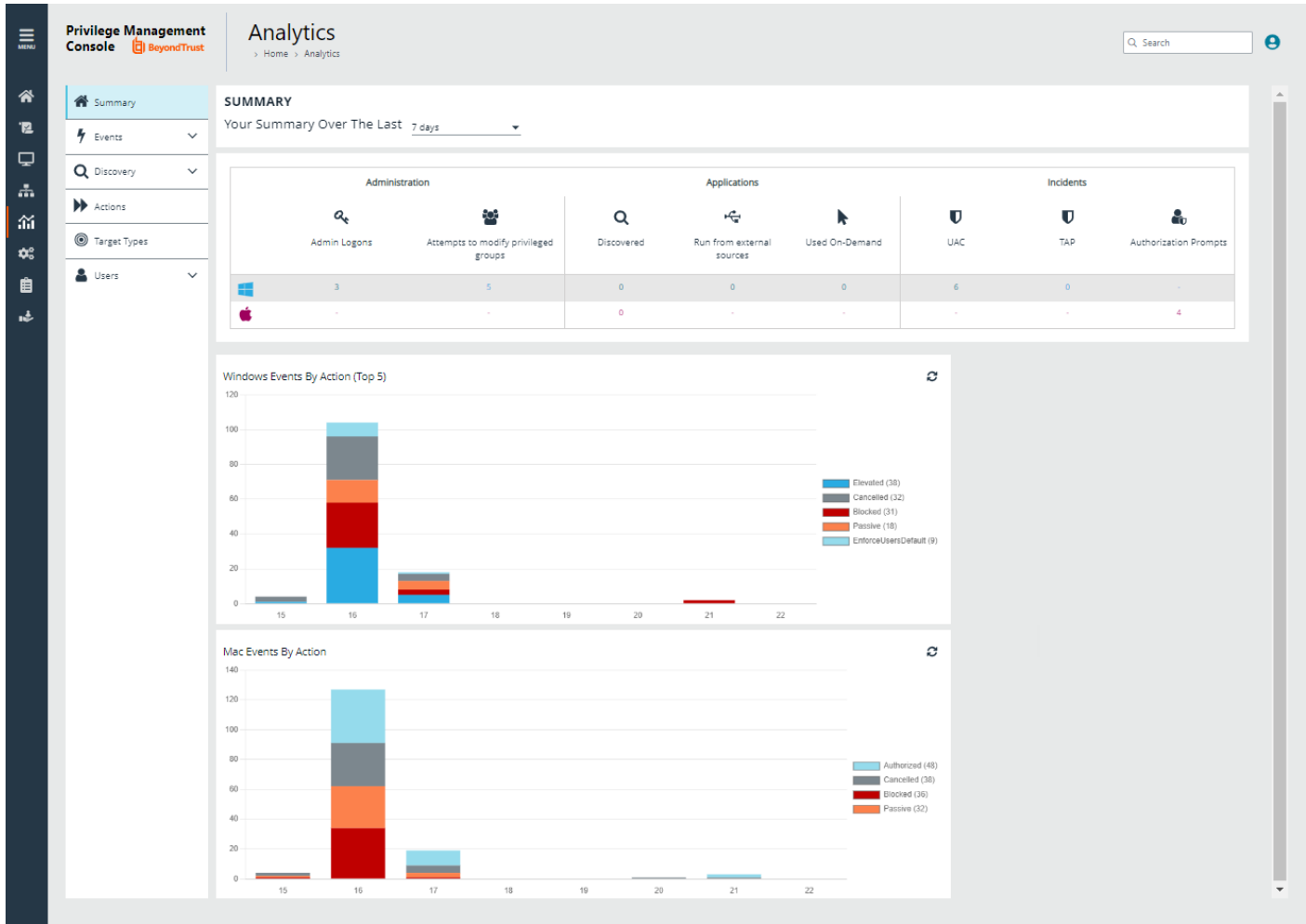
Event data is cached to reduce load times. The data is cached only for the following reports: Events > All, Events > Process Detail, Target Types and Discovery reports.

The expiry of the cache depends on the **Time Range** filter set for the report:

- 24 hours is live
- 7 days expires after 1 hour
- 30 days or higher expires after 24 hours

Summary Dashboard

The bar charts on the dashboard represent the most important activity that has occurred in the time period defined by the quick filter.



The **Administration**, **Applications**, and **Incidents** tables provide information to help inform Workstyle development or to show anomalous user behavior in your organization.

When available, drill down to see more details.

Table	Description
Admin logons	Summarizes the number of admin logons, how many users carried them out, and how many endpoints were used.
Attempts to modify privileged groups	The number of blocked attempts to modify privileged groups.

Table	Description
Discovered	The total number of newly discovered Applications split by the type of user rights required: <ul style="list-style-type: none"> • Admin rights required • Standard rights required
Run from external sources	The number of applications that were run from external sources.
Used On-Demand	The number of applications that were used on-demand.
UAC	The number of applications that triggered User Account Control (UAC).
TAP	The number of Trusted Application (TAP) incidents, how many users, and how many endpoints were affected.
Authorization Prompts	The number of incidents that prompted an authorization request.

Discovery Reports

The following discovery reports are available:

- Discovery by Path
- Discovery by Publisher
- Discovery by Type
- Discovery Requiring Elevation
- Discovery from External Sources
- Discovery All

When viewing Discovery reports, use the quick filters to narrow the results displayed. The quick filters vary depending on the report.

Discovery Dashboard

The dashboard displays information about applications that have been discovered for the first time. An application is first discovered when an event is received by the Reporting database.

The dashboard displays the following information:

- **New applications with admin rights detected (top 10 of <number>):** Click **View All** to display the **Discovery > All** report with the **Admin Rights / Authorization** filter applied.
- **New applications with admin rights *not* detected (top 10 of <number>):** Click **View All** to display the **Discovery > All** report with the **Admin Rights** filter applied.
- **New applications with admin rights detected (by type):** Click **View All** to open the **Discovery > All** report with the **Admin Rights** filter applied.
- **New applications with admin rights *not* detected (by type):** Click **View All** to display the **Discovery > All** report with the **Admin Rights** filter applied.
- **Applications first reported over the last x months (number):** Grouped by: Admin Rights Detected and Admin Rights Not Detected
- **Types of newly discovered applications:** Grouped by: Admin Rights Detected and Admin Rights Not Detected

Discovery by Path

Displays all distinct applications installed in certain locations that are discovered during the specified time frame.

- **User Profiles:** /Users?%
- **Applications:** /Applications/%, /usr/%
- **Operating System Areas:** /System/%, /bin/%, /sbin/%

The following columns are available for the **Discovery By Path** table:

- **Path:** The Path category that the application was installed in. Drill down to learn more information about the application.
- **# Users:** The number of users.
- **Median # processes / user:** The median number of processes per user.
- **# Hosts:** The number of hosts. Drill down to view a list of hosts the application events came from.

- **# Processes:** The number of processes. Drill down to see the **Events All** table and lists the events received in the time period for the selected application.
- **# Applications:** The number of applications.

Discovery by Publisher

Displays the discovered applications grouped by publisher. Where there is more than one application per publisher, click **+** to expand the entry to examine each application.

The following columns are available for the **Discovery By Publisher** table:

- **Publisher:** The publisher of the applications.
- **Description:** The description of the application.
- **Product Name:** The product name of the application.
- **Type:** The type of application.
- **Product Version:** The version number of a specific application.
- **# Users:** The number of users. Drill down to see more information about the users.
- **# Hosts:** The number of hosts. Drill down to see more information about the hosts.
- **# Processes:** The number of processes. Drill down to see more information about the processes.
- **# Applications:** The number of applications.

Discovery by Type

Displays applications filtered by type. When there is more than one application per type, click the link in the **Type** column to see more information about each application.

The following columns are available for the **Discovery By Type** table:

- **Type:** The type of application
- **# Users:** The number of users
- **Median # processes / user:** The median number of processes per user
- **# Hosts:** The number of hosts
- **# Processes:** The number of processes
- **Applications:** The number of applications
- **Date First Reported:** The date the application was first entered in the database
- **Date First Executed:** The first known date the application was executed

Discovery Requiring Elevation

Displays the applications that were elevated or required admin rights.

The following columns are available for the **Discovery Requiring Elevation** table:

- **Description:** The description of the application.
- **Publisher:** The publisher of the application.
- **Name:** The product name of the application.

- **Type:** The type of application.
- **Elevate Method:** The type of method used to elevate the application: **All**, **Admin account used**, **Auto-elevated**, or **on-demand**. Drill down to see more information about the events.
- **Version:** The version number of a specific application.
- **# Users:** The number of users. Drill down to see more information about the users.
- **Median # processes / user:** The median number of processes per user.
- **# Hosts:** The number of hosts. Drill down to see more information about the hosts.
- **# Processes:** The number of processes. Drill down to see more information on the **Events All** page.
- **Date first reported:** The date the application was first entered in the database.
- **Date first executed:** The first known date the application was executed.

Discovery from External Sources

Displays all applications that have originated from an external source, such as the internet or an external drive.

The following columns are available for the **Discovery By Publisher** table:

- **Description:** The description of a specific application. Drill down to see more detailed information on the application, including the actions over the last 30 days split by the type of token, the top 10 users, the top 10 hosts, the run method, and the portion of those discoveries where admin rights were detected.
- **Publisher:** The publisher of the applications
- **Name:** The product name of a specific application
- **Type:** The type of application
- **Source:** The source of the application
- **Version:** The version number of a specific application
- **# Users:** The number of users
- **Median # processes/user:** The median number of processes per user
- **# Hosts:** The number of hosts
- **# Processes:** The number of processes
- **Date first reported:** The date when the application was first entered into the database
- **Date first executed:** The first known date that the application was executed

This table groups the applications by type. You can click the plus icon to expand the path to show each individual application. You can view additional information about the application, their type, version, and the number of users using them. You can click the description to see in depth information about the application.

Discovery All

Lists all applications discovered in the time period, grouped by the application description. If multiple versions of the same application exist, they are grouped on the same line. These can be expanded by clicking on the plus (+) symbol in the **Version** column.

The following columns are available for the **Discovery By Publisher** table:

- **Description:** The description of a specific application. Drill down to see more detailed information on the application, including the actions over the last 30 days split by the type of token, the top 10 users, the top 10 hosts, the run method, and the portion of those discoveries where admin rights was detected.

- **Publisher:** The publisher of the applications
- **Name:** The product name of a specific application
- **Type:** The type of application
- **Version:** The version number of a specific application
- **# Users:** The number of users
- **Median # processes/user:** The median number of processes per user
- **# Hosts:** The number of hosts
- **# Processes:** The number of processes
- **Date first reported:** The date when the application was first entered into the database
- **Date first executed:** The first known date that the application was executed

Export to a CSV File

The number of items that can be displayed at one time might be limited by the browser display. Use **Export to CSV** to save the items to a CSV file.

On a report page where **Export to CSV** is available, you must select the filter **Row Count for Export (Max 5M)**, and then enter the number of rows to include in the CSV file.

All filters are saved to the file.

TARGET TYPES

Platform: Windows | Time Range: 7 days | Action: Elevated

Row Count for Export (max 5M)
250

Export To CSV 

Actions Reports

Data is collected for the following actions:

- Elevated
- Blocked
- Passive
- Canceled
- Custom
- Drop Admin Rights

When viewing the data, use the interactive graphs to see high-level metrics and drill down to see more information on the collected data.

Elevated

The **Elevated** report breaks down the elevated application activity by target type.

- **Elevated activity over the last <time period>**: The number of targets that were elevated for each time segment split by the type of action.
- **Distinct elevated target count by target type**: The number of targets that were elevated for the complete time period split by the type of action.
- **Top 10 targets**: The top ten targets that were elevated for the time period.

Blocked

The **Blocked** dashboard breaks down the blocked application activity by target type.

- **Blocked activity action over the last <time period>**: The number of targets that were blocked for each time segment split by the type of action.
- **Distinct target count by target type**: The number of targets that were blocked for the complete time period split by the type of action.
- **Top 10 targets**: The top ten targets that were blocked for the time period.

Passive

The **Passive** dashboard breaks down the passive application activity by target type.

- **Passive action activity over the last <time period>**: The number of targets where a passive token was used for each time segment split by the type of action.
- **Distinct target count by target type**: The number of targets where a passive token was used for the complete time period split by the type of action.
- **Top 10 targets**: The top ten targets where a passive token was used for the time period.

Canceled

The **Canceled** dashboard breaks down the canceled application activity by target type.

- **Canceled activity action over the last <time period>**: The number of targets that were canceled for each time segment split by the type of action.
- **Distinct target count by target type**: The number of targets that were canceled for the complete time period split by the type of action.
- **Top 10 targets**: The top ten targets that were canceled for the time period.

Custom

The **Custom** report breaks down the custom application activity by the type of action.

- **Custom action activity over the last <time period>**: The number of targets where a Custom Token was used for each time segment split by the type of action.
- **Distinct target count by target type**: The number of targets where a Custom Token was used for the complete time period split by the type of action.
- **Top 10 targets**: The top ten targets where a Custom Token was used for the time period.

Drop Admin Rights

The **Drop Admin Rights** dashboard breaks down the drop admin application activity by target type.

- **Drop admin rights action activity over the last <time period>**: The number of targets where a drop admin rights token was used for each time segment split by the type of action.
- **Distinct target count by target type**: The number of targets where a drop admin rights token was used for the complete time period split by the type of action.
- **Top 10 targets**: The top ten targets where a drop admin rights token was used for the time period.

Target Types Report

The Target Types report lists all applications active in the time period, grouped by the application description ordered by user count descending.

When a specific platform is selected from the **Platform** list, then the **Action** list populates with actions only available to that platform.

The following columns are available for the **Target Types** report:

- **Description:** The description of a specific application. Drill down to view actions over the time period, the top 10 users, top 10 hosts, the type of run method, and whether admin rights were detected.
- **Platform:** The platform that the events came from.
- **Publisher:** The publisher of a specific application.
- **Product Name:** The product name of a specific application.
- **Application Type:** The type of application.
- **Product Version:** The version number of a specific application.
- **Process Count:** The number of processes. Drill down to open the **Events All** report.
- **User Count:** The number of users. Drill down to view the user names accessing the application. From the **User List** page, click a user name to open the **User Report** page.
- **Host Count:** The number of hosts. Drill down to view the list of hosts, click a host name to open the **Host Report** page.

Export to a CSV File

The number of items that can be displayed at one time might be limited by the browser display. Use **Export to CSV** to save the items to a CSV file.

On a report page where **Export to CSV** is available, you must select the filter **Row Count for Export (Max 5M)**, and then enter the number of rows to include in the CSV file.

All filters are saved to the file.

TARGET TYPES

Platform	Time Range	Action
Windows	7 days	Elevated

Row Count for Export (max 5M)

Filter by
T

[Export To CSV](#)

Events Reports

The Events Summary dashboard shows information about the different types of events that have been raised over the specified time period. It also shows the time elapsed since a host raised an event.

- **Events over the last <time period>**: A chart showing the number of the different event types, broken down by the time period.
- **Event Types**: A chart showing how many events have been received, broken down by the event type. Clicking the chart takes you to the **Events > All** report with the **Event Number** filter applied.
- **Time since last endpoint event**: A chart showing the number of computers in each time group since the last event category.
- **By Category**: A chart breaking down the events received, split by category.

Event Types

Privilege Management sends events to the local Application event log, depending on the audit and privilege monitoring settings within the Privilege Management policy.

The following events are logged by Privilege Management:

Event ID	Description
100	Process has started with admin rights added to token.
101	Process has been started from the shell context menu with admin rights added to token.
103	Process has started with admin rights dropped from token.
104	Process has been started from the shell context menu with admin rights dropped from token.
106	Process has started with no change to the access token (passive mode).
107	Process has been started from the shell context menu with no change to the access token (passive mode).
109	Process has started with user's default rights enforced.
110	Process has started from the shell context menu with user's default rights enforced.
112	Process requires elevated rights to run.
113	Process has started with Custom Token applied.
114	Process has started from the shell context menu with user's Custom Token applied.
116	Process execution was blocked.
118	Process started in the context of the authorizing user.
119	Process started from the shell menu in the context of the authorizing user.
120	Process execution was canceled by the user.
199	Process execution was blocked, the maximum number of challenge / response failures was exceeded.



Note: With our SIEM Integration, we only support a subset of all event types.

Each process event contains the following information:

- Command line for the process
- Process ID for the process (if applicable)
- Parent process ID of the process

- Workstyle that applied
- Application Group that contained the process
- End user reason (if applicable)
- Custom access token (if applicable)
- File hash
- Certificate (if applicable)

SIEM Format Information

PM Cloud supports **Common Event Format (CEF)** and **Elastic Common Schema (ECS)** formats for *Privilege Management*, *Activity Audit*, and *Authorization Request* events.

Common Event Format (CEF) for Splunk

CEF Format of Computer (PMfW) Events

Dataset Name	Field Name	Data Type	Description
	@timestamp	timestamp	The time at which the event occurred.
Processes	process_start_time	timestamp	The time the event is generated in Privilege Management.
Processes	parent_process_exec	string	The executable name of the parent process.
Processes	process_exec	string	The executable name of the process, such as notepad.exe.
Processes	process_hash	string	The digests of the parent process, such as <md5>, <sha1>, etc.
Processes	process_name	string	The friendly name of the process, such as notepad.exe.
Processes	parent_process	string	The full command string of the parent process.
Processes	parent_process_id	number	The numeric identifier of the parent process assigned by the operating system.
Processes	process_id	number	The numeric identifier of the process assigned by the operating system.
Processes	process	string	The full command string of the spawned process.
Processes	user_id	string	The unique identifier of the user account which spawned the process.
Processes	description	string	The description of the process event.
Processes	user	string	The user account that spawned the process.
Processes	action	string	The action taken by the endpoint, such as allowed, blocked, deferred.
Processes	process_path	string	The file path of the process, such as C:\Windows\System32\notepad.exe.
Processes	vendor_product	string	"Beyondtrust Privilege Management"
Processes	dest	string	The endpoint for which the process was spawned.

CEF Format of Activity Audit Events (since PM Cloud 21.6)

Dataset Name	Field Name	Data Type	Description
	@timestamp	timestamp	The time at which the event occurred.
All_Changes	action	string	The action attempted on the resource, regardless of success or failure.
All_Changes	command	string	Description of the action.
All_Changes	object_category	string	Generic name for the class of the updated resource object. Possible values are: Computer, InstallationKey, User, Group, Policy, PolicyRevision, Settings.
All_Changes	object_id	string	The unique updated resource object ID as presented to the system, if applicable.
All_Changes	src_user	string	For user account changes, the user performing the action.
All_Changes	user	string	The user performing the action.
All_Changes	vendor_product	string	"Beyondtrust Privilege Management"

CEF Format of Authorization Request Events (since PM Cloud 21.6)

Dataset Name	Field Name	Data Type	Description
All_Ticket_Management	comments	string	This will show the duration if the request was approved.
All_Ticket_Management	description	string	Reason for request as given by the user.
All_Ticket_Management	src_user	string	The requesting user.
All_Ticket_Management	status	string	Status of ticket: Pending, Approved, Denied.
All_Ticket_Management	ticket_id	string	The ticket id.
All_Ticket_Management	time_submitted	time	The time the request was submitted.
All_Ticket_Management	user	string	User in ticking system who approved or denied.
All_Ticket_Management	tag	string	Indicates type of ticket: incident, change.

Elastic Common Schema (ECS) v1.10 Format

ECS Format of Computer (PMfW) Events (since PM Cloud 21.6)

Dataset Name	Field Name	Data Type	Description
	@timestamp	timestamp	The time at which the event occurred.
	message	text	Description of the process.
process.parent	name	keyword	Process name.
process.parent	executable	keyword	Absolute path to the process executable.
process.parent	pid	long	Process id.
process	name	keyword	Process name.

Dataset Name	Field Name	Data Type	Description
process	command_line	keyword	Full command line that started the process, including the absolute path to the executable, and all arguments.
process	executable	keyword	Absolute path to the process executable.
process	entity_id	keyword	Unique identifier for the process (hash).
process	ppid	long	Parent process' pid.
process	pid	long	Process id.
process	title	keyword	Process title.
host	hostname	keyword	Hostname of the host.
host.user	name	keyword	Short name or login of the user.
host.user	id	keyword	Unique identifier of the user.
event	code	keyword	Type of PMfW event.
event	kind	keyword	"event"
event	category	array of keyword	["process"]
event	provider	keyword	"Beyondtrust Privilege Management"
event	type	array of keyword	Array containing one of: allowed, info, denied
event	action	keyword	The action captured by the event: allowed, deferred, blocked
ecs	version	keyword	1.10

ECS Format of Activity Audit Events (since PM Cloud 21.6)

Dataset Name	Field Name	Data Type	Description
	@timestamp	timestamp	The time at which the event occurred.
	labels.related_item_id	object	PM Cloud custom key/value pairs. related_itme_id is the unique updated resource object ID as presented to the system, if applicable.
event	action	keyword	The action captured by the event.
event	reason	keyword	Description of the action.
event	created	date	Event creation date.
event	provider	keyword	Generic name for the class of the updated resource object. Possible values are: Computer, InstallationKey, User, Group, Policy, PolicyRevision, Settings.
event	kind	keyword	"event"
event	category	array of keyword	Array containing one of: authentication, configuration.
event	type	array of keyword	Array containing one of: start, creation, deletion, change.
user	email	keyword	User email address.
ecs	version	keyword	1.10

ECS Format of Authorization Request Events (since PM Cloud 21.6)

Dataset Name	Field Name	Data Type	Description
	@timestamp	timestamp	The time at which the event occurred.
	labels.duration	object	PM Cloud custom key/value pairs. Allowed duration if request is approved
	labels.decision	object	PM Cloud custom key/value pairs. Decision of request, one of: Pending, Approved, Denied.
	labels.decision_by_user	object	PM Cloud custom key/value pairs. User who made decision.
process	name	keyword	Process name.
process	entity_id	keyword	Unique identifier for the process (hash).
process	title	keyword	Process title.
process	command_line	keyword	Full command line that started the process, including the absolute path to the executable, and all arguments.
host	hostname	keyword	Hostname of the host.
host.user	name	keyword	Short name or login of the user.
event	reason	keyword	Reason for request as given by the user.
event	ticket_id	keyword	The ticket id.
event	url	keyword	Url for ticket.
event	created	date	Request creation date.
event	action	keyword	Indicates type of ticket: incident, change.
event	kind	keyword	"event"
event	category	array of keyword	["process"]
event	provider	keyword	"Beyondtrust Privilege Management"
ecs	version	keyword	1.10

Events All

The following columns are available for the Windows **Events > All** table:

- **Event Time:** The date and time of the event. Click to view the **Event Details** panel. Users with access permissions to edit policies can use the available **Add to Policy** button directly from the panel. For details on adding to a policy, see ["Add an Application From Reports" on page 73](#).
- **Reputation:** Indicates the results of the reputation scan analysis.
- **Platform:** The platform that the event came from.
- **Description:** The description of the event.
- **Event Category:** The category of the event.
- **User Name:** The user name of the user who triggered the event. Click to view the **User Report**.
- **Host Name:** The host name where the event was triggered. Click to view the **Host Report**.
- **Workstyle:** The **Workstyle** containing the rule that triggered the event.
- **Event Type:** The type of event that occurred.

- **Elevation Method:** The method of elevation.
- **Authorization Source:** The method used to authorize the application, such as: a user prompt, a rule script running, or through a Password Safe integration.

Update Reputations

If you are using a reputation service such as VirusTotal, you can update the reputation value collected in the events reporting. A valid reputation for an application can help you make an informed decision on how to manage that application in your policy.

To update the reputation, select the event, and then click **Update Reputations**. You can select more than one event at a time.



For more information about using reputation, please see "Set Up Reputation Integration" on page 154.

Process Detail

This report gives details about a specific process control event. Only processes that match rules in Workstyles are displayed.

There is an **Advanced** view available with this report, which is available from the **Filters** dropdown. The **Advanced** view shows you the full set of columns available in the database.

- **Start Time:** The start time of the event
- **Platform:** The platform that the events came from
- **Description:** The description of a specific application
- **Publisher:** The publisher of a specific application
- **Application Type:** The type of application
- **File Name:** The name of the file, where applicable
- **Command Line:** The command line path of the file, if applicable
- **Product Name:** The product name, where applicable
- **Trusted Application Name:** The name of the trusted application
- **Trusted Application Version:** The version of the trusted application
- **Product Version:** The version of the product of applicable
- **Group Policy Object:** The Group Policy object, if applicable
- **Workstyle:** The Workstyle containing the rule that triggered the event
- **Message:** Any message associated with the event
- **Action:** Any action associated with the event
- **Application Group:** The Application Group that the application that triggered the event belongs to
- **PID:** The operating system process identifier
- **Parent PID:** The operating system process identifier of the parent process
- **Parent Process File Name:** The name of the parent process
- **Shell/Auto:** Whether the process was launched using the shell **Run with Privilege Management** option or by normal means (opening an application)
- **UAC Triggered:** Whether or not Windows UAC was triggered
- **Admin Rights Detected:** Whether or not admin rights was detected
- **User Name:** The user name that triggered the event

- **Host Name:** The host name where the event was triggered
- **Rule Script File Name:** The name of the Rule Script (Power Rule) that ran
- **Rule Script Affected Rule:** True when the Rule Script (Power Rule) changed one or more of the default Privilege Management for Windows rules
- **User Reason:** The reason given by the user, if applicable
- **COM Display Name:** The display name of the COM, if applicable
- **Source URL:** The source URL, if applicable
- **Auth Methods:** The type of authentication method selected in the Policy Editor. Multiple values can be present and will be comma separated. Possible values: **Identity Provider, Password, Challenge Response, Smart Card, and User Request.**
- **Idp Authentication User Name:** The credential provided when adding an Identity Provider authorization message in the Policy Editor.

Export Events to CSV File

The number of items that can be displayed at one time might be limited by the browser display. Use **Export to CSV** to save the items to a CSV file.

On a report page where **Export to CSV** is available, you must select the filter **Row Count for Export (Max 5M)**, and then enter the number of rows to include in the CSV file.

All filters are saved to the file.

TARGET TYPES

Platform: **Windows** | Time Range: **7 days** | Action: **Elevated**

Row Count for Export (max 5M)
   Filter by

Export To CSV 

Users Reports

There are three reports for users:

- **User Experience**
- **Users Privileged Logons**
- **Users Privileged Account Management**

When viewing the data, use the interactive tables and graphs to see high-level metrics and drill down to see more information on the collected data.

User Experience

The **User Experience** report shows you how many users have interacted with PM Cloud events, and is broken down over the specified time frame.

This dashboard displays the following charts:

- **Messages per action type:** The number of times prompts and notifications were allowed or blocked, as well as the number of notifications presented. Drill down to see detailed information about each event of that message type.
- **User experience over the last <time period>:** The number of times users canceled a message, were presented a challenge, were blocked from launching an activity, or were allowed to use an application using on-demand privileges.
- **Message distribution:** The average number of *Allow* messages and *Block* messages users receive per day.

Privileged Logons

The **Privileged Logons** report shows you how many accounts with standard user rights, power user rights, and administrator rights have generated logon events broken down over the specified time frame.

The dashboard displays the following charts:

- **Privileged logons over the last <time period>:** The number of logons by the different account types over time.
- **Administrators, Power Users, and Standard Users table:** The number of logon events by administrators, power users, and standard users, and the number of users that logged in.
- **Privileged logons by user type:** The total number of privileged logons broken down by standard users and administrator users.
- **Logons by account privilege:** The total number of logons, broken down by standard user and administrator.
- **Logons by account type:** The total number of logons, broken down by domain accounts and local accounts.
- **Top 10 logons by chassis type:** The total number of logons, broken down by the top 10 chassis types.
- **Top 10 logons by operating system:** The total number of logons, broken down by the top 10 host operating systems.
- **Top 10 accounts with admin rights:** The top 10 accounts with admin rights that have logged into the most host machines.
- **Top 10 hosts with admin rights:** The top 10 host machines that have been logged on to by the most users with admin rights.

User Session

On the **User Session** report, accessed from the **Privileged Logons** report, you can view more details about the privileged logon account sessions. The details include the user name, logon time, account type, and domain, etc.

Export to a CSV File

The number of items that can be displayed at one time might be limited by the browser display. Use **Export to CSV** to save the items to a CSV file.

On a report page where **Export to CSV** is available, you must select the filter **Row Count for Export (Max 5M)**, and then enter the number of rows to include in the CSV file.

All filters are saved to the file.

TARGET TYPES

Platform: **Windows** | Time Range: **7 days** | Action: **Elevated**

Row Count for Export (max 5M)
   Filter by

Export To CSV 

Privileged Account Management

The **Privileged Account Management** report shows any blocked attempts to modify privileged accounts over the specified time interval.

- **Privileged Account Management over the last <time period>**: A chart breaking down the privileged account management events and the number of events.
- **Activity table**: The number of **Users blocked**, **Hosts blocked**, **Applications blocked**, and the **Blocked modifications** within the specified time frame.
- **By Privileged Group**: The same data grouped by type of account. Click the account type for more information about the account and hosts with the **Group Name** filter applied.
- **By application**: The privileged account modification activity that was blocked, broken down by the description of the application used.
- **Top 10 users attempting account modifications**: The top 10 users who attempted modifications.
- **Top 10 hosts attempting account modifications**: The top 10 hosts attempting privileged account modifications.

Report Filters

Filters and advanced filters are available from the **Filters** dropdown.

The reports retrieve data and sort it using Javascript. If the volume of data exceeds the row limit, you may get misleading results due to this restriction.

Name	Description
Action	This filter allows you to filter by a type of action. <ul style="list-style-type: none"> • All • Elevated • Blocked • Passive • Sandboxed • Custom • Drop Admin Rights • Enforce Default Rights • Canceled • Allowed • Keep Privileges – Enhanced token
Activity ID	Each activity type in Privilege Management has a unique ID. This is generated in the database as required.
Admin Required	This allows you to filter on whether admin rights were required, not required, or both. Filter options: <ul style="list-style-type: none"> • All • True • False
Authorization Required	This allows you to filter on whether authorization was required, not required, or both. Filter options: <ul style="list-style-type: none"> • All • True • False
Admin Rights	Allows you to filter by the admin rights token. Filter options: <ul style="list-style-type: none"> • All • Detected • Not Detected
Application Description	A text field that allows you to filter on the application description.

Name	Description
Application Group	A text field that allows you to filter on the Application Group. You can obtain the Application Group from the policy editor.
Application Hash	This field is used by Reporting. You do not need to edit it.
Application Type	A text field that allows you to filter on the application type. You can obtain the application type from the policy editor.
Auth Methods	The type of authentication method selected in the Policy Editor. Multiple values can be present and will be comma separated. Possible values: Identity Provider, Password, Challenge Response, Smart Card, and User Request
Authorizing User Name	The name of the user that authorized the message.
Browse Destination URL	The destination URL of the sandbox.
Challenge/Response	<p>Allows you to filter by challenge/response events. For example, you can filter the application that required elevation on those applications that were launched following a completed challenge/response message.</p> <p>Filter options:</p> <ul style="list-style-type: none"> • All • Only C/R
Client IPV4	This field is used by Reporting. You do not need to edit it.
Client Name	This field is used by Reporting. You do not need to edit it.
COM Application ID	This field is used by Reporting. You do not need to edit it.
COM Display Name	This field is used by Reporting. You do not need to edit it.
COM CLSID	This field is used by Reporting. You do not need to edit it.
Command Line	A text field that allows you to filter on the command line.
Date Field	<p>This allows you to filter by the time the event was first generated, discovered, or executed.</p> <p>Filter options:</p> <ul style="list-style-type: none"> • Time Generated <p>This is the time that the event was generated. One application can have multiple events. Each event has a Time Generated attribute.</p> • Time App First Discovered <p>This is the time that the first event for a single application was entered into the database. This can be delayed if the user is working offline.</p> • Time App First Executed <p>This is the first known execution time of events for that application.</p>

Name	Description
Device Type	The type of device that the application file was stored on. Filter options: <ul style="list-style-type: none"> • Any • Removeable Media • USB Drive • Fixed Drive • Network Drive • CDROM Drive • RAM Drive • eSATA Drive • Any Removeable Drive or Media
Distinct Application ID	This field is used by Reporting. You do not need to edit it.
Elevate Method	Allows you to filter by the elevation method used. Filter options: <ul style="list-style-type: none"> • All • Admin account used • Auto-elevated • On-demand
Event Category	This filter allows you to filter by the category of the event. Filter options: <ul style="list-style-type: none"> • All • Process • Content • DLL Control • URL Control • Privileged Account Protection • Agent Start • User Logon • Services
Event Number	This field is used by Reporting. You do not need to edit it. The number assigned to the event type.
File Owner	The owner of the file.
File Version	You can filter on the file version in the Advanced View of the Process Detail report.
GPO Name	You can filter on the Group Policy Object (GPO) name in some of the advanced reports, such as Process Detail .
Host Name	This field allows you to filter by the name of the computer the event came from.

Name	Description
Idp Authentication user name	The credential provided when adding an Identity Provider authorization message in the Policy Editor.
Ignore Admin Required Events	This field is used by Reporting. You do not need to edit it.
Just Discovery Events	This field is used by Reporting. You do not need to edit it.
Matched	Allows you to filter on the type of matching. Filter options: <ul style="list-style-type: none"> • All • Matched as child • Matched directly
Message Name	The name of the message that was used.
Message Type	The type of message that was used. Filter options: <ul style="list-style-type: none"> • Any • Prompt • Notification • None
Ownership	Allows you to group by the type of owner. Filter options: <ul style="list-style-type: none"> • All • Trusted owner • Untrusted owner
Parent PID	The operating system process identifier of the parent process.
Parent Process File Name	The file name of the parent process.
Path	Allows you to filter by the path. For example, to filter on applications that were launched from the System path. Filter options: <ul style="list-style-type: none"> • All • System • Program Files • User Profiles
PID	The operating system process identifier.
Platform	Filters by the type of operating system. <ul style="list-style-type: none"> • Windows: Filters by endpoints running a Windows operating system. • macOS: Filters by endpoints running a Mac operating system.
Process Unique ID	The unique identification of the process.

Name	Description
Product Code	This field is used by Reporting. You do not need to edit it.
Product Name	The product name of the application.
Product Version	The product version of the application.
Program Files Path	Sets the Program Files path used by the Discovery > Path report.
Publisher	The publisher of the application.
Range End Time	The end time of the range being displayed.
Range Start Time	The start time of the range being displayed.
Row Limit	The maximum number of rows to be retrieved from the database.
Rule Script Affected Rule	True when the Rule Script (Power Rule) changed one or more of the default Privilege Management rules; otherwise, false.
Rule Script File Name	The Rule Script (Power Rule) file name on disk, if applicable.
Rule Script Name	The name of the assigned Rule Script (Power Rule).
Rule Script Output	The output of the Rule Script (Power Rule).
Rule Script Publisher	The publisher of the Rule Script (Power Rule).
Rule Script Result	The result of the Rule Script (Power Rule). This can be: <ul style="list-style-type: none"> • <i><None></i> • <i>Script ran successfully</i> • <i>[Exception Message]</i> • <i>Script timeout exceeded: <X> seconds</i> • <i>Script execution canceled</i> • <i>Set Rule Properties failed validation: <reason></i> • <i>Script execution skipped: Challenge Response Authenticated</i> • <i>Script executed previously for the parent process: Matched as a child process so cached result applied</i> • <i>Script execution skipped: <app type> not supported</i> • <i>Script execution skipped: PRInterface module failed signature check</i> • <i>Set RunAs Properties failed validation: <reason></i>
Rule Script Status	The status of the Rule Script (Power Rule). This can be: <ul style="list-style-type: none"> • <None> • Success • Timeout • Exception • Skipped • ValidationFailure
Rule Script Version	The version of the assigned Rule Script (Power Rule).

Name	Description
Rule Match Type	Rule Match Type: <ul style="list-style-type: none"> • Any • Direct match • Matched on parent
Sandbox	The sandboxed setting. Filter options: <ul style="list-style-type: none"> • Not Set • Any Sandbox • Not Sandboxed
Shell or Auto	Whether the process was launched using the shell Run with Privilege Management option or by normal means (opening an application): Filter options: <ul style="list-style-type: none"> • Any • Shell • Auto
Show Discovery Events	Whether or not you want to show Discovery events. An event is a Discovery event if it has been inserted into the database in the filtered time period.
Source	The media source of the application. For example, whether the application was downloaded from the Internet or removable media. Filter options: <ul style="list-style-type: none"> • All • Downloaded over the internet • Removable media • Any external source
System Path	Sets the system path.
Target Description	This field allows you to filter by the target description.

Name	Description
Target Type	<p>This filter allows you to filter by a type of target. For example, you can filter by the applications that have been canceled across your time range in the Actions > Canceled report.</p> <p>Filter options:</p> <ul style="list-style-type: none"> • All • Applications • Services • COM • Remote PowerShell • ActiveX • URL • DLL • Content
Time First Executed	<p>This is the time range over which the application was first executed.</p> <p>Filter options:</p> <ul style="list-style-type: none"> • 24 Hours • 7 Days • 30 Days • 6 Months • 12 Months
Time First Reported	<p>This is the time range filtered by the date the application was first entered into the database.</p> <p>Filter options:</p> <ul style="list-style-type: none"> • 24 Hours • 7 Days • 30 Days • 6 Months • 12 Months
Time Range	<p>This is the time range over which the actions are displayed.</p> <p>Filter options:</p> <ul style="list-style-type: none"> • 24 Hours • 7 Days • 30 Days • 6 Months • 12 Months

Name	Description
Token Type	The type of Privilege Management token that was applied to the trusted application protection event. Filter options: <ul style="list-style-type: none"> • All • Blocked • Passive • Canceled
Trusted Application Name	The trusted application that triggered the event.
Trusted Application Version	The trusted application version number.
Trusted File Owner	Whether the file owner of the target file is considered trusted. To be a trusted owner, the user must be in one of the following Windows groups: TrustedInstaller , System , or Administrator .
UAC Triggered	Whether or not Windows UAC was triggered. Filter option: <ul style="list-style-type: none"> • Not Set • Triggered UAC • Did not trigger UAC
Uninstall Action	The type of uninstall action. Filter options: <ul style="list-style-type: none"> • Any • Change/Modify • Repair • Uninstall
Upgrade Code	This field is used by Reporting. You do not need to edit it.
User Name	The user name of the user who triggered the event.
User Profiles Path	Sets the User Profiles path.
Workstyle	A dropdown of Workstyles in use.
Workstyle Name	The name of the Workstyle that contains the rule that matched the application.
Zone Identifier	The BeyondTrust Zone Identifier. This tag will persist to allow you to filter on it even if the ADS tag applied by the browser is removed.

Analytics v2 (Beta)

The Analytics v2 beta provides a preview of the next generation reporting and analytics for PM Cloud. The next-gen analytics uses Elasticsearch as the back-end technology for collecting and searching the PM Cloud event data.

PM Cloud analytics can display up to 10,000 events at a time in the grid view.

The beta preview includes:

- **Events** tab
- **Save View**
- **Load View**
- **Event Details**
- **Add to Policy** (only on the **Events** page at this time)

Please take the opportunity to try out this first look at the new **Events** grid and provide us feedback via the in-product feedback tool.

We are already working on making all event types available, providing the ability to add to policy, and will be building a view of events aggregated by application type, publisher, app name, and app description.

Overview

On the **Events** page, there are two types of filtering:

- **Persistent:** The persistent filters are: **Time period, Computer groups, Operating system**
- **Dynamic:** There is an extensive selection of filters which can be selected and configured at time of viewing.

Select the data you want to view by choosing the time period, a computer group, and operating system. Select and set filters to further refine the data displayed in the view.

The dynamic filtering provides a *search as you type* feature that helps you to quickly and easily narrow the scope of the data set displayed. You must type at least three characters in the dynamic filter box for an auto suggestion to populate. You can then click on an auto suggested field to help you narrow the scope of the data set. The search as you type filtering is available for the following filter types:

- App description
- Command line
- Executable path
- File path
- Host domain
- Hostname
- Publisher
- Path name
- User name
- User reason



For more information about the Elasticsearch events in PM Cloud, please see [PM Cloud ECS Event Reference](https://www.beyondtrust.com/docs/privilege-management/console/index.htm) at <https://www.beyondtrust.com/docs/privilege-management/console/index.htm>.

Create and Add Users to Computer Groups

As a PM Cloud administrator, use role-based access control (RBAC) when you want your policy administrators to see events only for the computer groups they manage.

When creating a user, select a **Standard** user account type. From the **Computer Groups Roles** list, select **Analyze Groups**.

i For more information, please see *"Role-Based Access Control"* on page 48.

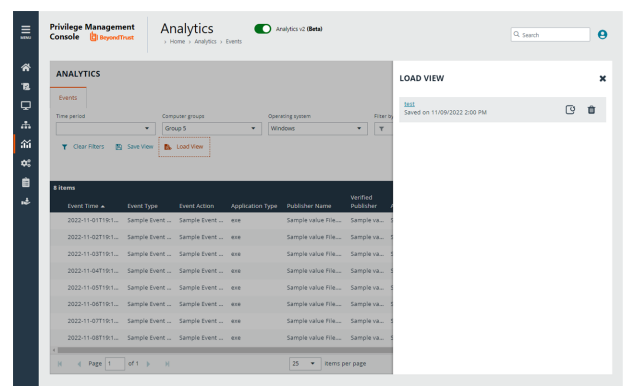
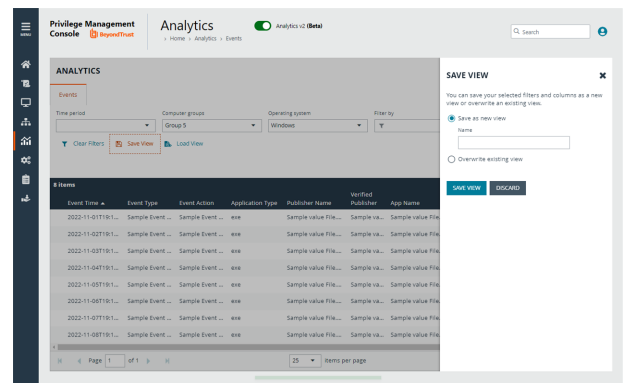
Build Data Sets

All PM Cloud users with **Analyze Group** permissions can create and save a set of filters and columns so that the same set of filters does not have to be selected every time Analytics is accessed. Saving viewing preferences provides an easy way to return to views of data used frequently to monitor Privilege Management activity in the estate.

Save and Load View Preferences

You can load and save data sets from either the **Events** page.

1. After selecting filters, you can select **Save View** to retain those preferences for viewing later. Preferences are saved locally.
2. If a view name already exists, select **Overwrite existing view**, and then select the view you want to replace.
3. The next time you access Analytics v2, your view settings are preserved. Click **Load View** to select and load a view.
4. On the **Load Event View** pane, you can delete and refresh views.



Add an Application to Policy from the Events Page

You might want to add an application to a policy from the **Events** page in the following scenarios:

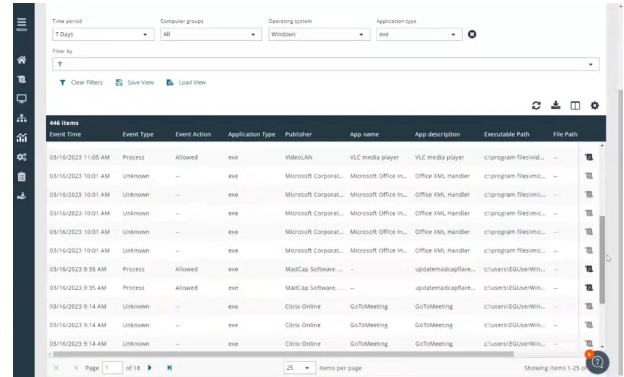
- An application rule might have matched on a new or unknown application. Add that application to your policy or create a policy for that application.
- Find applications that are elevated by on-demand application rules.
- Find all elevated applications. If they are higher risk applications, then add to a block rule.

Add to policy feature will be available from the Application grid in a future PM Cloud release.

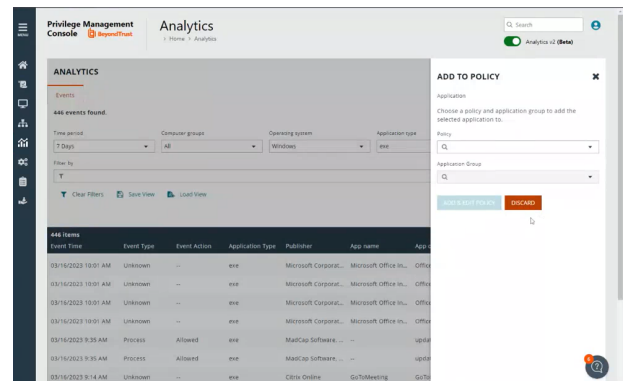
To add an application to a policy:

1. Go to the **Events** page in Analytics v2.
2. Click the **Call to Action** button for an application event that you want to add to policy.

The **Call to Action** button is not displayed for unsupported applications and event types.



3. Click the **Call to Action** button for the selected event to display an **Add to Policy** panel.
4. On the **Add to Policy** panel, select a policy and application group to add the selected application to.
5. Click **Add and Edit Policy** to open the Policy Editor to edit the application.
6. The policy opens to the **Application Groups > Applications** page where you can edit the application settings. If you are adding one application, then you are directed to the application matching criteria page as shown. After you edit the application, save the changes to add the application to the selected Application Group.



View Details for an Application

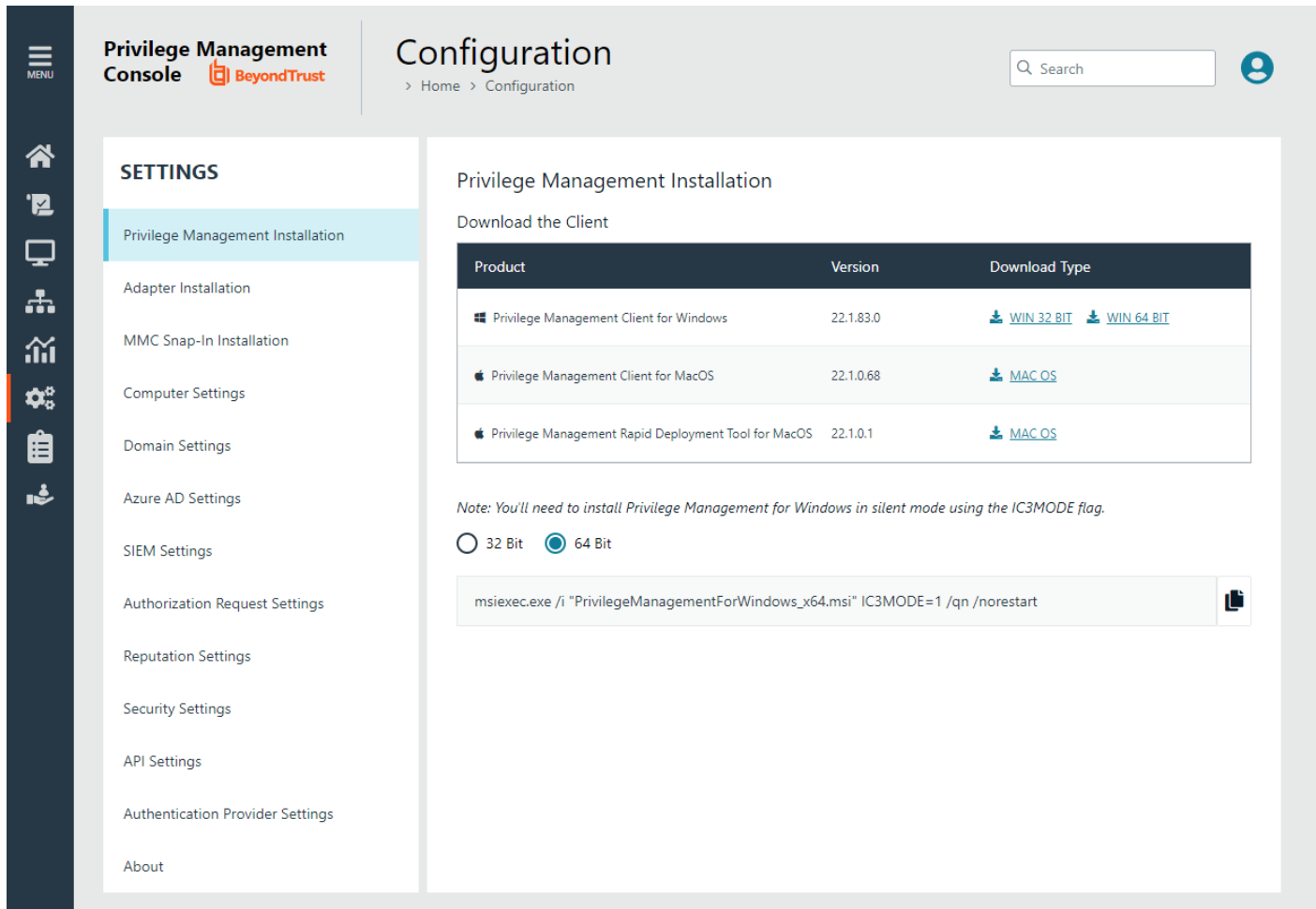
On the **Events** page, click an event to drill down to more information about the application on the **Event Details** page.

EVENT DETAILS: WINDOWS CALCULATOR 03/13/2023 12:24 PM

Application	Application
COM	App Description Windows Calculator
Process	Publisher Microsoft Windows
Process Hierarchy	On Demand No
Rule Script	Application Type exe
Session	File Path ..
Trusted Application Protection	Executable Path c:\Windows\system32\calc.exe
Windows Store	Command Line "C:\Windows\System32\calc.exe"
	App Name Microsoft® Windows® Operating System
	App Version 10.0.19041.1
	File Version 10.0.19041.1 (WinBuild.160101.0800)
	Hash (sha1) ED13AF4A0A75488DAEE4929134D2FF15EBE053CD
	Hash (sha256) 58189CBD4E6DC0C7D8E66B6A6F75652FC9F4AFC7CE0EBA7D67D8C3FEB0D5381F
	Hash (md5) 5DA8C98136D98DFEC4716EDD79C7145F

Privilege Management Console Configuration

The **Configuration** page contains a variety of settings to help with automation and easy installation.



Privilege Management Console Configuration

> Home > Configuration

SETTINGS

- Privilege Management Installation
- Adapter Installation
- MMC Snap-In Installation
- Computer Settings
- Domain Settings
- Azure AD Settings
- SIEM Settings
- Authorization Request Settings
- Reputation Settings
- Security Settings
- API Settings
- Authentication Provider Settings
- About

Privilege Management Installation

Download the Client

Product	Version	Download Type
Windows Privilege Management Client for Windows	22.1.83.0	WIN 32 BIT WIN 64 BIT
MacOS Privilege Management Client for MacOS	22.1.0.68	MAC OS
MacOS Privilege Management Rapid Deployment Tool for MacOS	22.1.0.1	MAC OS

Note: You'll need to install Privilege Management for Windows in silent mode using the IC3MODE flag.

32 Bit 64 Bit

```
msiexec.exe /i "PrivilegeManagementForWindows_x64.msi" IC3MODE=1 /qn /norestart
```

The **Configuration** menu contains the following areas:

- Privilege Management Installation
- Adapter Installation
- MMC Snap-In Installation
- Computer Settings
- Domain Settings
- Azure AD Settings
- SIEM Settings
- Authorization Request Settings
- Reputation Settings
- Security Settings

- API Settings
- About



For more information, please see the following:

- *"Privilege Management Console QuickStart" on page 10*
- *"Install the Windows Adapter" on page 12*
- *"Install the Mac Adapter" on page 17*
- *"Configure the Privilege Management MMC PMC snap-in" on page 21*

Computer Settings

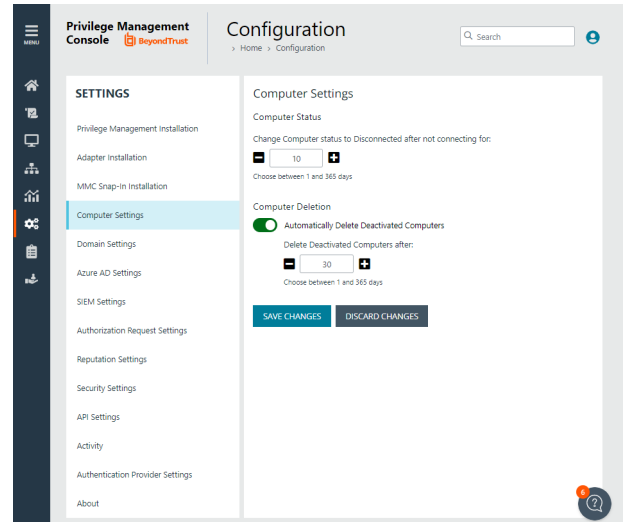
Set Time to Change Status

The computer status tracks connections between computers and PM Cloud. If a computer fails to connect to PM Cloud, then the status changes to *Disconnected*.

As an IT systems engineer, set the length of time it takes for a computer to show as disconnected so that routine disconnects (weekends) are not investigated.

To set the status change timeframe:

1. On the sidebar menu, click **Configuration**.
2. On the **Settings** panel, click **Computer Settings**.
3. Enter the number of days that pass before the status changes to *Disconnected*. The default value is 2 days.



i For more information, please see "[Manage Computers](#)" on page 35.

Set a Time to Delete Deactivated Computers

Deactivated computers are disconnected from PM Cloud and can no longer communicate with PM Cloud. You must reinstall Privilege Management client software to reverse a deactivated state.

You can also manually deactivate computers from the **Computers** page.

To set a time period to delete deactivated computers:

1. Select **Automatically Delete Deactivated Computers**.
2. Enter the number of days the computer will be in a deactivated state before deleting. The default value is 30 days.
3. Click **Save Changes**.

i For more information, please see "[Deactivate Computers](#)" on page 36.

Add a Domain

An email address is entered when a user account is created in PM Cloud. Email notifications are sent for PM Cloud user registration and confirmation.



IMPORTANT!

It is a security best practice to restrict the domains where PM Cloud communications can be sent.

One domain always exists on the **Domain Settings** page. The first domain is created when the application is deployed for the first time for the customer.

Any additional domains added must exist in your authentication provider (Azure AD or OpenID Connect) before you can add it here. If you add another domain, you can add an Administrator account associated with that domain.



Note: Only a user assigned to the Administrator role can add a domain.

To add a domain:

1. Navigate to **Configuration > Domain Settings**.
2. Click **Add Domain**.



Note: A valid domain must contain at least 2 segments and be at least 3 characters long.

3. Type the domain name, and then click **Add Domain**.

At any time after a domain is created, click the **x** to remove it. A toast notification indicates the domain is successfully removed.

There must always be at least one domain in the list.

Configure SIEM Settings

Configure SIEM settings to send audit event data to an accessible SIEM provider. PM Cloud supports the following SIEM providers:

- [AWS](#)
- [Splunk](#)
- [Microsoft Sentinel](#)
- [QRadar](#)



Note: There can only be one SIEM tool configured. If you choose to add details for a new SIEM tool, existing settings data will be lost.

Events are queued and sent in batches in one-minute intervals. This is not configurable. A folder is created where the batches are saved. You can open and download the batch file, which stores the event data in JSON format.

Starting in PM Cloud 23.1, the ECS mappings are updated for SIEM integrations.

If you previously configured SIEM settings and selected the ECS format, then there are two ECS format menu items: **ECS - Elastic Common Schema** and **ECS - Elastic Common Schema (Deprecated)**. To update to the new ECS schema, select **ECS - Elastic Common Schema**, and then click **Validate Settings**.



For a list of supported events in 23.1 and later, please see [PM Cloud ECS Event Reference](https://www.beyondtrust.com/docs/privilege-management/console/pm-cloud/ecs-events/index.htm) at <https://www.beyondtrust.com/docs/privilege-management/console/pm-cloud/ecs-events/index.htm>.

Event Types

Events include computer, activity, and authorization requests. Events are sent in the selected format (CEF or ECS).



Note: For SIEM integrations using the CEF format or ECS - Elastic Common Schema (Deprecated), we only support a subset of all event types (see the table below).

The following events are logged by Privilege Management:

Event ID	Description
100	Process has started with admin rights added to token.
101	Process has been started from the shell context menu with admin rights added to token.
103	Process has started with admin rights dropped from token.
104	Process has been started from the shell context menu with admin rights dropped from token.
106	Process has started with no change to the access token (passive mode).
107	Process has been started from the shell context menu with no change to the access token (passive mode).
109	Process has started with user's default rights enforced.
110	Process has started from the shell context menu with user's default rights enforced.
112	Process requires elevated rights to run.

Event ID	Description
113	Process has started with Custom Token applied.
114	Process has started from the shell context menu with user's Custom Token applied.
116	Process execution was blocked.
118	Process started in the context of the authorizing user.
119	Process started from the shell menu in the context of the authorizing user.
120	Process execution was canceled by the user.
199	Process execution was blocked, the maximum number of challenge / response failures was exceeded.

Configure AWS S3 Bucket

You must configure the S3 bucket details before you can configure the SIEM integration in PM Cloud. In AWS, set up the bucket and access to the bucket. This includes:

- Create a bucket. When creating the bucket be sure to note the bucket name and region. You need to enter the information when configuring the settings in PM Cloud.
- Create an access policy. When creating the access policy, the permissions required for the integration include: **PutObject**, **ListAllMyBuckets**, **GetBucketAcl**, and **GetBucketLocation**.
- Add a user. When attaching a user to a policy, be sure to select **Programmatic access** as the access type and **Attach existing policies directly** as the permission type. Copy the Access ID and secret access key to a file; you need to enter the details when configuring the settings in PMC.



For more information, please see the following AWS documentation:

- [Create your first S3 bucket](https://docs.aws.amazon.com/AmazonS3/latest/userguide/creating-bucket.html) at <https://docs.aws.amazon.com/AmazonS3/latest/userguide/creating-bucket.html>.
- [Creating IAM policies](https://docs.aws.amazon.com/IAM/latest/UserGuide/access_policies_create.html) at https://docs.aws.amazon.com/IAM/latest/UserGuide/access_policies_create.html.
- [Creating an IAM user in your AWS account](https://docs.aws.amazon.com/IAM/latest/UserGuide/id_users_create.html) at https://docs.aws.amazon.com/IAM/latest/UserGuide/id_users_create.html.

Add the AWS S3 Bucket in PMC

1. Select **Configuration**, and then select **SIEM Settings**.
2. Select **Enable SIEM Integration** to turn on the feature.
3. From the **Integration Type** list, select **S3**
4. Enter the details for your storage site:
 - **Access Key ID:** Enter the value created when you added the user.
 - **Secret Access Key:** Enter the value created when you added the user.
 - **Bucket:** Enter the name of the S3 bucket.
 - **Region:** Select or search for the name of the region where your storage bucket resides.
5. Select the data format: **CEF - Common Event Format** or **ECS - Elastic Common Schema**.
6. Select **Server-Side Encryption** to encrypt files sent to the S3 bucket using the default AWS encryption key.
7. Click **Validate Settings** to test the connection to your storage site.
8. Click **Save Settings**.

If you no longer want the SIEM integration active, click **Enable SIEM Integration** to turn the feature off.

Add Splunk to PMC

1. Select **Configuration**, and then select **SIEM Settings**.
2. Select **Enable SIEM Integration** to turn on the feature.
3. From the **Integration Type** list, select **Splunk**.
4. Enter the details for your Splunk configuration:
 - Hostname
 - Index
 - Token
5. Select the data format: **CEF - Common Event Format** or **ECS - Elastic Common Schema**.
6. Click **Validate Settings** to test the connection to Splunk.
7. Click **Save Settings**.

Add Microsoft Sentinel to PMC

1. Select **Configuration**, and then select **SIEM Settings**.
2. Select **Enable SIEM Integration** to turn on the feature.
3. From the **Integration Type** list, select **Sentinel**.
4. Enter the details for your Sentinel configuration:
 - **Workspace ID:** Enter the Sentinel workspace ID. In Sentinel, the workspace ID is located in this path: **Settings > Workspace Settings > Agents Management**.
 - **Workspace Key:** Enter the primary key. In Sentinel, the workspace key is located in this path: **Settings > Workspace Settings > Agents Management**.
 - **Custom Log Table Name:** The table is listed under the **Custom Logs** category in Azure Sentinel. A **_CL** suffix is automatically appended to the end of the custom log table name. A custom log is created if the table name does not exist.
5. Select the data format: **CEF - Common Event Format** or **ECS - Elastic Common Schema**.
6. Click **Validate Settings** to test the connection to Sentinel.
7. Click **Save Settings**.

Add QRadar to PM Cloud

1. Select **Configuration**, and then select **SIEM Settings**.
2. Select **Enable SIEM Integration** to turn on the feature.
3. From the **Integration Type** list, select **QRADAR**.
4. Enter the details for your QRadar configuration:
 - Hostname
 - Port
 - Cert: This is the client certificate required when sending events to a syslog server using mutual TLS (mTLS) authentication.
 - Key: This is the mTLS client certificate private key.
5. Click **Validate Settings**.
6. Click **Save Changes** to confirm and save.

Set Up Reputation Integration

Using VirusTotal, PM Cloud can provide scan analysis information based on application hash. The analytics gathered can help an organization determine whether an application is suspicious or malicious.

View results of the reputation findings on the **Events > All** reporting page. The **Reputation** column displays only when reputation is configured here.

EVENTS / ALL

Platform: All | Time Range: 7 days

Filter by

Export To CSV | Add To Policy | Update Reputations

Event Time	Reputation	Platform	Description	Event Category
2022-07-25T12:15:30	0 / 60	Mac	Authorize Notes	Process Control
2022-07-25T12:14:56	27 / 69	Mac	Authorize Calendar	Process Control
2022-07-25T12:14:01	27 / 69	Mac	Block Calendar	Process Control
2022-07-22T07:01:37	0 / 69	Windows	Block Notepad	Process Control
2022-07-22T07:01:19	0 / 69	Windows	Elevate Paint	Process Control
2022-07-22T07:01:02	0 / 69	Windows	Block Notepad	Process Control
2022-07-22T07:00:54	0 / 69	Windows	Block Notepad	Process Control

Click the link for an event to view more details. Here, click the link for the reputation score to learn more about the VirusTotal scoring.

[find](#) Mac Event Details

Application	
Description	find
Reputation	0 / 60 engines detected this
Publisher	Software Signing
Application Type	OS X Binary
File Name / Codebase	/usr/bin/find
Command Line	/Users/test2/.zsh_sessions/_expiration_check_timestamp -m

Set Up Reputation

1. Go to **Configuration > Reputation**.
2. Select **Enable VirusTotal Reputation Integration**.
3. Integrating with VirusTotal requires an API key. If you do not already have a key, click **Get Virus Total API Key**.
4. Copy the key, and then click **Check API** to confirm the key is valid.
5. Click **Validate Settings**.

Configure Access to the Management API

The management API requires a secure account. Create an account in the PM Cloud Configuration area.

i For authentication information to access the API, please see the [PM Cloud API Guide](https://www.beyondtrust.com/docs/privilege-management/console/pm-cloud/api/index.htm) at <https://www.beyondtrust.com/docs/privilege-management/console/pm-cloud/api/index.htm>.

Create an API Account

When using the PM Cloud Management API, you must set up an account that is used to authenticate access to the API.

Not all API users will require full access to the API. Apply permissions to an account to avoid potential security risks. Configure permissions to the different areas of the API, including:

- SCIM
- Reporting
- Audit
- Management

To create the account:

1. Click the **Configuration** menu, and then click **API Settings**.
2. Click **Create an API Account**.
3. Enter a name and description.

The **Client ID** and **Client Secret** are automatically generated. The secret is only visible when initially generated for security reasons.

You can use the copy icons to copy the values to the API tool you are using. You can access these after the account is created as well.

4. Set the permissions for the account.
5. Click **Save API Account**.

CREATE AN API ACCOUNT

Name ⓘ

Description ⓘ

Client id ⓘ

Client Secret ⓘ

You are responsible for storing the Client Secret in a secure location. This is the only time you will be able to view the Client Secret in plain text.

Delete an API Account

1. Click the **Configuration** menu, and then click **API Settings**.
2. Click the trash can icon to delete the account.
3. Click **Delete Anyway** on the confirmation dialog box.

Generate a Client Secret

1. Click the **Configuration** menu, and then click **API Settings**.
2. Click the **Generate new Client secret** icon for the API account you use to access the API.
3. Click **Generate Secret**.
4. The client secret is displayed in the **Client Secret** column. Copy the secret to the authorization page of the API.

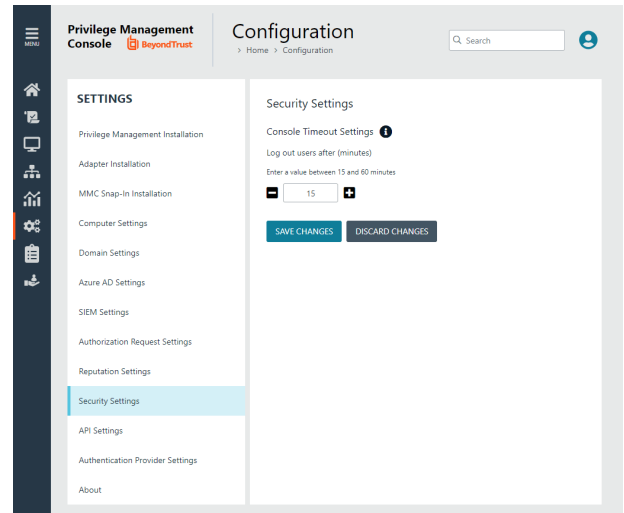
Configure Security Settings

Depending on your network security, you might want to set a session timeout for PM Cloud users. If a user is logged on to PM Cloud but inactive, the session ends after the time period expires.

The timeout settings is global and applies to all PM Cloud users.

To set the console timeout settings:

1. On the sidebar menu, click **Configuration**.
2. Click **Security Settings**.
3. Enter a time. The default value is 15 minutes.
4. Click **Save Changes**.



Configure OpenID Connect

PM Cloud supports OpenID Connect authentication. You can change your authentication provider from the default AzureB2B to OpenID Connect, or update your OpenID Connect settings, without having to contact Support.

You must first set up a PM Cloud instance in your OpenID Connect provider. Steps are provided in the section below.

Configure an Authentication Provider

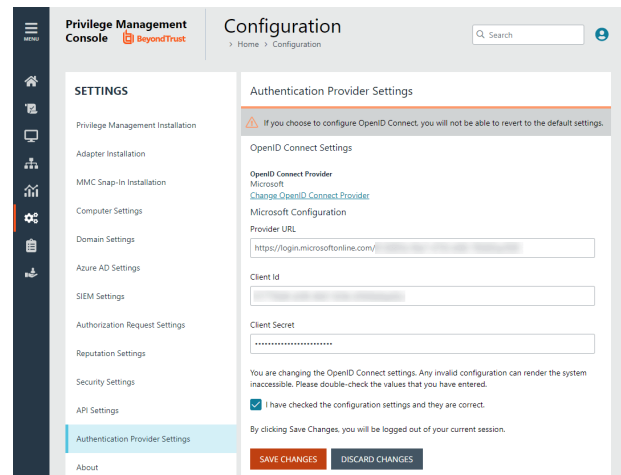
When you start from the default configuration, use this procedure to set up the configuration.

! IMPORTANT!

If you choose to configure OpenID Connect, you will not be able to revert to the default settings.

To set up an OpenID Connect provider:

1. Select the **Configuration** menu, and then click **Authentication Provider Settings**.
2. Click **Enable OpenID Configuration**. After you have completed and saved the OpenID configuration, this switch no longer appears on this page.
3. Enter information for the following:
 - **Provider URL:** Domain for the authentication. Currently supports Microsoft, Okta, and Ping Identity.
 - **Client ID:** The client ID.
 - **Client Secret:** Secret key.
4. **Check the box.** We recommend reviewing the settings you configured. You can potentially lock yourself out of the system if the settings are incorrect. The **Save Changes** button is only available after you check the box.
5. Click **Save Changes**.



! IMPORTANT!

*You will be logged out of the PM Cloud console. Once logged out, you need to log back in within **15 minutes**, because there is a timer on the page. If you do not log in before the timer expires, the authentication provider settings revert to the previous settings and the new settings are **not saved**.*

If you log on before the timer expires, the newly added authentication provider settings are retained.

PMC OpenID Connect Workflow for Existing Customers

Here is the workflow to get up and running with PMC using OpenID Connect authentication.

- You will receive an email from BeyondTrust after the request is processed.
- In the email, click the link to open the **BeyondTrust OpenID Setup** page.
- Enter the OpenID Connect information: domain, client ID, and client secret. Click **Save Setup**. The OpenID credentials are saved.
- The Privilege Management Console login page opens. Click **Log In**.
- PM Cloud opens to the **Home** page.

Add the PM Cloud Application to Microsoft, Okta, or Ping Identity

PM Cloud supports Microsoft Azure AD, Okta OpenID, and Ping Identity Connect providers. The following sections provide a high-level overview on adding the PM Cloud instance to your respective authentication provider. For complete instructions, refer to the provider's documentation.



Note: The migration to OIDC will work when the email address sent from Okta or Azure AD matches for existing users. If email addresses are different or the domain name is not on the list of allowed domains in PM Cloud, then the authentications will fail.

Add PMC Instance to Microsoft Azure AD

1. Start Microsoft Azure AD.
2. In the menu, click **App Registrations**.
3. Click **New Registration**.
4. Enter a **Name**.
5. Under **Supported account types**, select **Accounts in this org directory only**.
6. Enter the **Redirect URI**. While providing this now is optional and can be changed later, a value is required for most authentication scenarios.
 - From the dropdown list, select the **Web** platform.
 - Select <https://<deployment>-services.pm.beyondtrustcloud.com/oauth/signin-oidc>.
7. Click **Register**.
8. After PMC registers, select **Authentication** in the menu.
9. Add the following to the **Redirect URIs**: <https://<deployment>-services.pm.beyondtrustcloud.com/oauth/signout-callback-oidc>.
10. Select **Certificates & secrets** in the menu.
11. Click **New client secret**, and copy the secret ID and value. When generating a new secret, you must select an expiry for the secret. We recommend selecting **Recommended: 6 months**.

After you add PMC to Microsoft Azure AD, you can get the information you need to set up the OpenID Connect authentication. The PMC OpenID connect setup wizard requires these values:

- **OpenID Domain:** [https://login.microsoftonline.com/<Directory \(tenant\) ID>](https://login.microsoftonline.com/<Directory (tenant) ID>). The directory or tenant ID uses the format 31b8dbb9-fb8b-437a-8920-f23c8e0188b1.
 - **OpenID Client ID:** Application (client) ID.
 - **OpenID Client Secret:** Client secret value.
12. On the app registration **Overview** page, copy the client ID and the tenant ID.

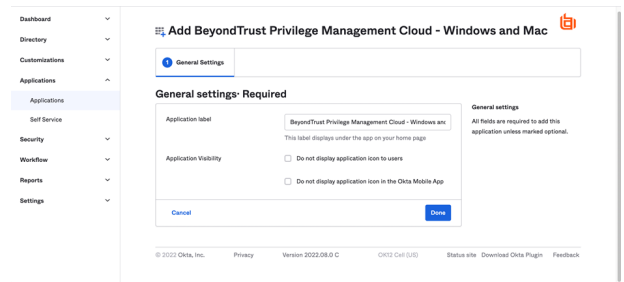
Add PMC Instance to Okta

Supported Features

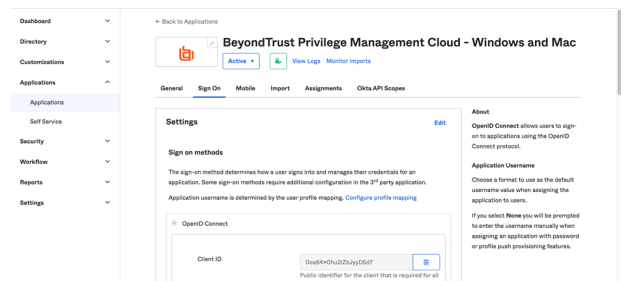
The Privilege Management Cloud for Windows and Mac (also called PM Cloud) - Okta integration allows logging into PM Cloud platform using SP-initiated SSO flow.

Configure the Integration

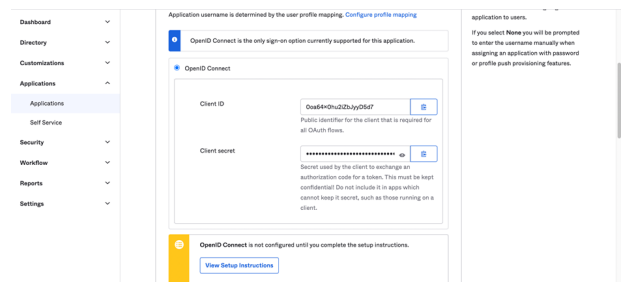
1. Access your Okta instance.
2. Navigate to **Applications**, and then click the **Browse App Catalog** button.
3. Search for an app called **BeyondTrust Privilege Management Cloud - Windows and Mac**.
4. Click **Add Integration**.
5. Click **Done**.



6. While in the new application, navigate to **Sign On**, and then click **Edit**.




7. Navigate to the **Advanced Sign-on Settings** and provide the **Base Service URL** which follows the format <https://{{dns}}-services.pm.beyondtrustcloud.com/>. Click **Save**.
8. After you add the PMC App to Okta, you can get the information you need to set up the OpenID Connect authentication.

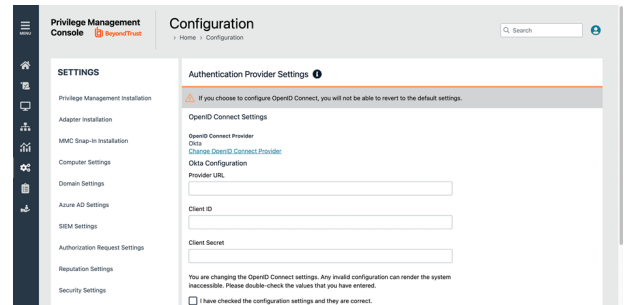


9. You must get the following information from the **Edit** page:
 - **Domain or Issuer**, for example, <https://dev-12345.okta.com>
 - **Client ID**

- **Client Secret**

 **Note:** Confirm the domain name configured in Okta. This domain name might be different than the domain configured for your email address. For example, while the domain managed in Okta might be domain.com, the email address might be user@email.com. Both pieces of information are required.

10. Log in to your PM Cloud instance to complete the configuration. Navigate to **Configuration** and then **Authentication Provider Settings**.
11. Select **Okta** for the OpenID Connect Provider.
12. Provide the domain or issuer URL, client ID, and client secret.
13. Save and test the configuration.



Add PMC Instance to Ping Identity

 **Note:** We currently support PingOne, the SaaS service from Ping Identity.

1. Start up your Ping Identity instance.
2. In the menu, click **Connections**, and then click **Applications**.
3. At the right of the **Applications** title, click the plus sign (+) to add an application.
4. Enter a name for the application (required), and then add a short description (optional).
5. Select **OIDC Web App** and click **Save**.
6. Click the **Configuration** tab.
7. To edit the configuration, click the **pencil/edit** icon.
8. Under **Redirect URLs**, click **+ Add**, and then add the sign-in and sign-out URLs. If you are modifying an existing instance, you might need to open the **General** section dropdown first.
 - **Sign-in redirect URL:** <https://{dns}-services.pm.beyondtrustcloud.com/oauth/signin-oidc>
 - **Sign-out redirect URL:** <https://{dns}-services.pm.beyondtrustcloud.com/oauth/signout-callback-oidc>
9. Under **Token Endpoint Authentication Method**, select **Client Secret Post**, and then click **Save**.
10. Click the **Resources** tab.
11. To edit the resource, click the **pencil/edit** icon.
12. In the **Scopes** list, click the **+** next to **profile openID** to add it to the **Allowed Scopes**. You can also filter the list of options by **OpenID** to access this option.
13. Click **Save**.
14. To close the panel, at the top right of the **Edit** panel, click the **X**.

15. At the right of the new application entry, toggle the switch to **on** to give access to users.
16. Click the **Configuration** tab again. For the PMC OpenID Connect set-up wizard, you need to copy the following information from the **Configuration** page:
 - **Issuer:** Prefix the protocol HTTPS://
 - **Client ID**
 - **Client Secret**

Change the PM Cloud OpenID Connect Settings

Once you have set up your OpenID Connect Settings to use Microsoft, Okta, or Ping Identity, you might need to switch to another one at some point.

To change your existing OpenID Connect settings:

1. Click the **Configuration** menu, and then select **Authentication Provider Settings**.
2. Click **Change OpenID Connect Provider**.
3. Select a different provider, and then enter the **Provider URL (or Issuer)**, **Client ID**, and **Client Secret** information.
4. Review your settings, and then check the verification box.
5. Click **Save Changes**.



IMPORTANT!

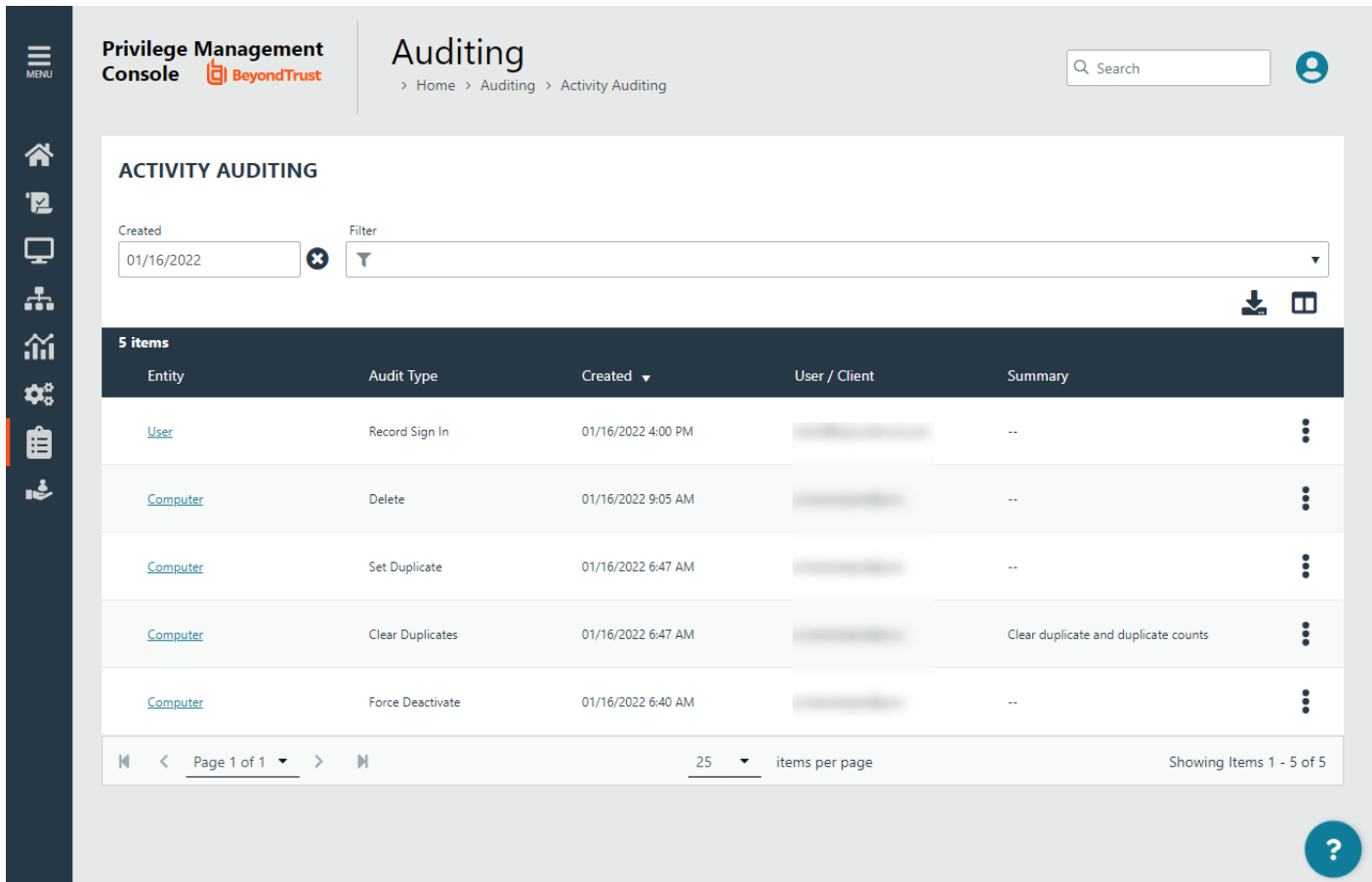
*You will be logged out of the PM Cloud console. Once logged out, you need to log back in within **15 minutes**, because there is a timer on the page. If you do not log in before the timer expires, the authentication provider settings revert to the previous settings and the new settings are **not saved**.*

If you log on before the timer expires, the newly added authentication provider settings are retained.

Activity Auditing


The **Activity Auditing** page provides detailed auditing information on user, group, and policy actions.

To access the **Activity Auditing** page, on the sidebar menu, select **Auditing**, and then select **Activity Auditing**.







Privilege Management Console BeyondTrust






Auditing
> Home > Auditing > Activity Auditing




Q Search 

ACTIVITY AUDITING

Created: 01/16/2022  Filter: 

5 items  

Entity	Audit Type	Created	User / Client	Summary
User	Record Sign In	01/16/2022 4:00 PM		--
Computer	Delete	01/16/2022 9:05 AM		--
Computer	Set Duplicate	01/16/2022 6:47 AM		--
Computer	Clear Duplicates	01/16/2022 6:47 AM		Clear duplicate and duplicate counts
Computer	Force Deactivate	01/16/2022 6:40 AM		--

Page 1 of 1   25 items per page Showing Items 1 - 5 of 5 

Some of the audited information includes:

- User logon details
- Modify settings
- Set duplicate agents
- Assign role to users
- Modify user
- Resend user invite
- Disable user
- Create group
- Abort open policy draft
- Create user

A **Summary** column highlights the changes on an audited activity.

Audited activities include the user who initiated the action and timestamps on when the activity started and ended.

Choose Activity Auditing Columns to Display

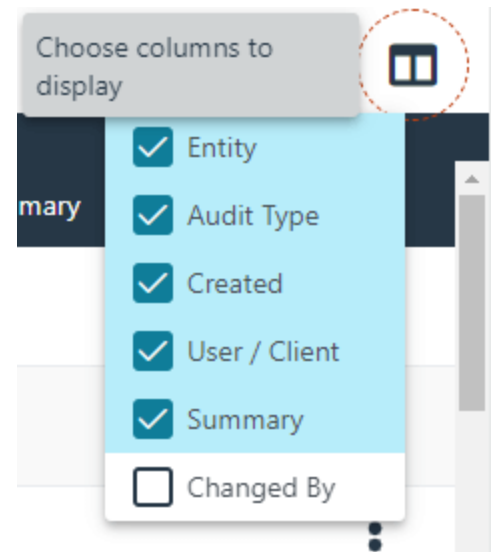
You can choose which columns to display in the grid.

To select which columns to display, at the top-right of the grid, click the **Choose Columns to Display** icon and select one or more columns to display.

The columns appear from left to right in the grid, in the order that you select them.

The following columns can be displayed:

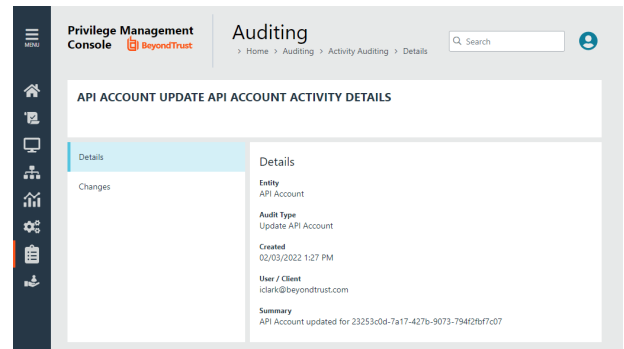
- Entity
- Audit Type
- Created
- User / Client
- Summary
- Changed By



View Activity Details

To view **Activity Details** and **Changes** for an item, at the right of the item row, click the vertical ellipsis icon, and then select **Activity Details**. The **Details** are shown by default.

To view *before* and *after* changes that have occurred for an item, in the left panel, select **Changes**.

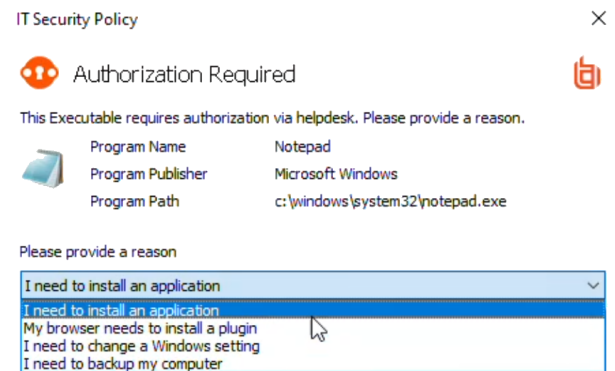


ServiceNow User Request Integration

Integrate Privilege Management with ServiceNow to manage user requests. In a typical Privilege Management scenario, the end user tries to launch an application that requires elevated privileges or falls outside of existing policy rules. With this integration, the user sends a request to run the application from PM Cloud to their existing ServiceNow instance as a ticket.

The following ServiceNow ticket types are supported in the PM Cloud integration: Incident, Change Request, Service Catalog - Task, and Service Catalog - Requested Item.

The screen capture shown here is an example of how the messages appear for the end user in a ServiceNow integration. Similar to other Application Rules in Privilege Management, the user can select from a list of reasons for the request, or use free-form text.



Configuration includes:

- Download the BeyondTrust Privilege Management Integration app from the ServiceNow store.
- Create a user account in ServiceNow, with required role.
- Activate and configure a connection to ServiceNow in PMC.
- Configure the connection details to PMC in ServiceNow.
- Create an Application Rule in the Policy Editor and apply messages to the rule that are specific to ServiceNow authorization.

Download and Install the Privilege Management App

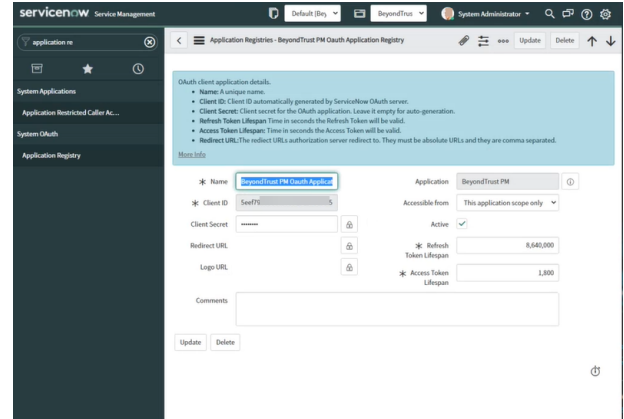
1. Go to the [ServiceNow Store](#).
2. Search for *BeyondTrust*. The search displays all BeyondTrust products that integrate with ServiceNow.
3. Find the **BeyondTrust Privilege Management Integration** app.
4. Download and install the app into your ServiceNow tenant.

Create an OAuth Client for PM Cloud

Note: If the OAuth Client for PM Cloud has not been created automatically, then install it using these steps. Otherwise, proceed to creating a user account in ServiceNow.

PM Cloud must be added as an OAuth client in ServiceNow.

1. In ServiceNow, go to **Application Registry**.
2. Configure the settings as shown.



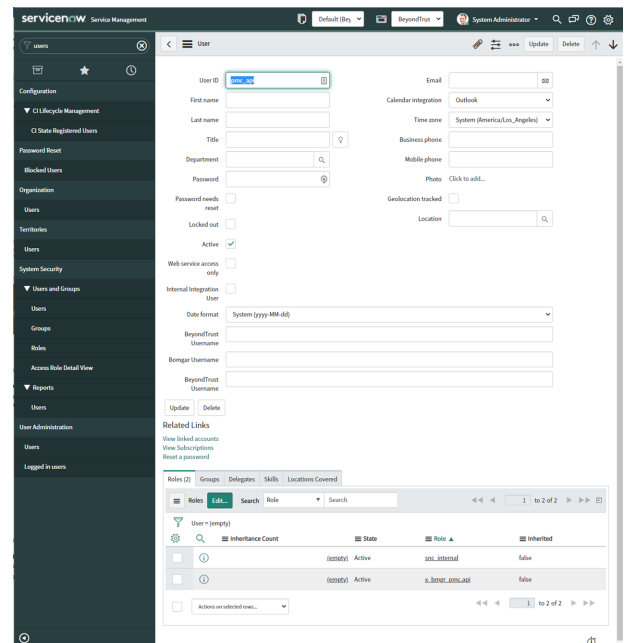
Create a User Account in ServiceNow

The **API Account** is used by BeyondTrust Privilege Management to submit requests via the inbound integration. An OAuth token is also created as an extra layer of security.

IMPORTANT!

When setting up the user account, the `x_bmgr_pmc.api` role is required.

1. Go to **User Administration > Users**.
2. Enter a **User ID** (`pmc_api`).
3. Enter a password.
4. Select **Web service access only** and click **Submit**.
5. Browse again to **User Administration > Users**.
6. Select the API user.
7. Click the **Roles** tab, and then click the **Edit...** button.
8. From the **Collection** list, add the `x_bmgr_pmc.api` role to the **Roles** list, and then click **Save**.



Assign Users Appropriate Roles

The following roles must be assigned to specific users in the ServiceNow integration:

- **x_bmgr_pmc.itil**: Assign to any users that will be providing technical support for the integration.
- **x_bmgr_pmc.admin**: Assign to any administrator users that you want to manage the ServiceNow integration.
- **x_bmgr_pmc.api**: Assign to API accounts that are used by BeyondTrust Privilege Management to submit requests via the inbound integration.



Note: You must elevate the admin role to assign roles.

To assign a role to a user:

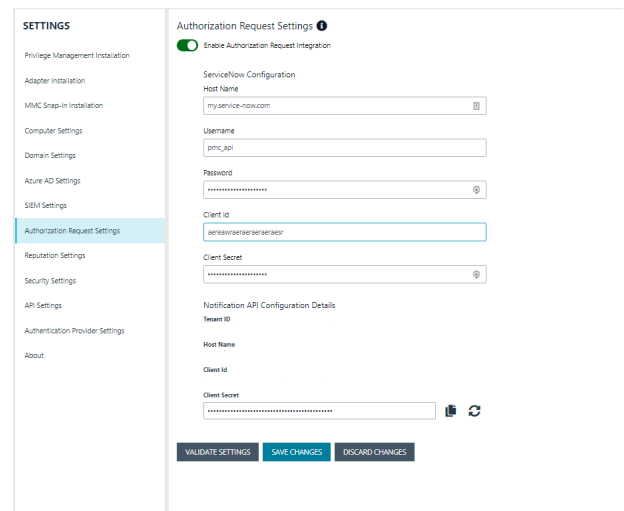
1. Go to **User Administration > Users**.
2. Select a user.
3. Click the **Roles** tab, and then click the **Edit...** button.
4. From the **Collection** list, add the appropriate role for that user to the **Roles** list:
 - **x_bmgr_pmc.itil**
 - **x_bmgr_pmc.admin**
 - **x_bmgr_pmc.api**
5. Click **Save**.

Configure the ServiceNow Integration in PM Cloud

Before you can configure the Connection to PM Cloud in ServiceNow, you must generate the Client ID and Client Secret in the PM Cloud console. You need this information to complete the configuration in ServiceNow.

To configure the Authorization Request Integration:

1. Go to **Configuration > Authorization Request Settings**.
2. To activate the integration, select **Enable Authorization Request Integration**.
3. Under **ServiceNow Configuration**, enter the following:
 - **Host name**: The host name provided on the **Configuration** page in ServiceNow.
 - **Username** and **Password**: Enter the user account information you created in ServiceNow.
4. Under **Notification API Configuration Details**, the **Tenant ID** and **Host Name** are auto-generated.
5. To create the **Client ID** and **Client Secret** used by the Integration in ServiceNow, click the **Generate** button.
6. To confirm the connection, click **Validate Settings**.
7. Click **Save Changes**.
8. To copy the **Client Secret** information, at the right of the **Client Secret** field, click the **Copy** button.



The screenshot shows the 'SETTINGS' page in the PM Cloud console. The 'Authorization Request Settings' section is active, indicated by a blue highlight in the left sidebar. The 'Enable Authorization Request Integration' toggle is turned on. Under 'ServiceNow Configuration', the 'Host Name' field contains 'my.service-now.com', the 'Username' is 'pmc_api', and the 'Password' is masked. The 'Client ID' is 'xxxxxxxxxxxxxxxx' and the 'Client Secret' is 'xxxxxxxxxxxxxxxx'. Under 'Notification API Configuration Details', the 'Tenant ID' and 'Host Name' are auto-generated. At the bottom, there are buttons for 'VALIDATE SETTINGS', 'SAVE CHANGES', and 'DISCARD CHANGES'. A 'Generate' button is located to the right of the 'Client Secret' field.

You can then proceed with configuring the connection to PM Cloud in ServiceNow, and paste the Client Secret information you just copied.



Note: You must also manually copy and paste the Client ID information from PM Cloud to the ServiceNow BeyondTrust Privilege Management Configuration page.

Configure the Connection to PMC in ServiceNow

A Privilege Management instance is required for full operation. The appliance is setup in ServiceNow to connect ServiceNow with a PMC instance.

1. Go to **BeyondTrust Privilege Management > Configuration**.
2. To turn on the integration to PMC, select **Yes**.
3. To configure the outbound integration, enter the following:
 - **PMC Tenant ID:** The Tenant ID of the Privilege Management appliance.
 - **PMC Client ID:** The OAuth client ID that is used to authenticate to the Privilege Management appliance. Copy and paste this from the PMC **Authorization Request Settings** page.
 - **PMC Client Secret:** The OAuth client secret that is used to authenticate to the Privilege Management appliance. Copy and paste this from the PMC **Authorization Request Settings** page.
 - **PMC Service Host Name:** The hostname of the Privilege Management appliance.
 - **Ticket Type:** The ticket type that is generated with a user authorization request. The ticket can be one of four types: **Incident**, **Change Request**, **Service Catalog - Task**, or **Service Catalog - Requested Item**.
4. To configure the application defaults (optional), enter the following:
 - **Default Assignment Group:** The default group assigned.
 - **Default Category for Task:** The default category for tasks created by the application. The default is **Software**.
 - **Default Short Description for Incidents and Change Requests:** The default short description created by the application when attempting to create an incident or change request based on the task type.
 - **Default Service Catalog Item Name:** The name of the service catalog item used when creating service catalog requests.
 - **Active State Codes for Change Request:** A comma-separated list of states in which the integration actions are available to users. This list is for change requests only. (For example, **Implement**).
 - **Active State Codes for Incidents:** A comma-separated list of states in which the integration actions are available to users. This list is for incidents only. (For example, **New**, **In Progress**).
 - **Active States for Service Catalog Tasks:** A list of states in which the integration actions are available to users. This list is for Service Catalog tasks only.
 - **Short Description for Service Catalog Task used to approve request:** The default short description, which is matched to place the custom form on the created application request.
5. Click **Save**.

BeyondTrust Privilege Management Configuration

Integration Enabled [?]

Yes | No

PMC Tenant ID [?]

PMC Client ID [?]

PMC Client Secret [?]

PMC Services Hostname [?]

Ticket Type [?]

Default Assignment Group [?]

Default Category for Task [?]

Default Short Description for Incidents and Change Requests [?]

Default Service Catalog Item Name [?]

Active State Codes for Change Request (active for all states by default) [?]

Active State Codes for Incidents (active for all states by default) [?]

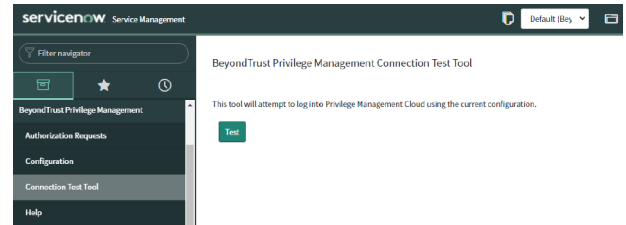
Active States for Service Catalog Tasks (active for all states by default) [?]

Short Description for Service Catalog Task used to approve request [?]

Testing the Configuration

The ServiceNow Connection Test Tool verifies connectivity to the Privilege Management host. It tests the Client ID and Client Secret.

1. Go to **BeyondTrust Privilege Management > Connection Test Tool**.
2. Click **Test**.



Restrict Access to Applications

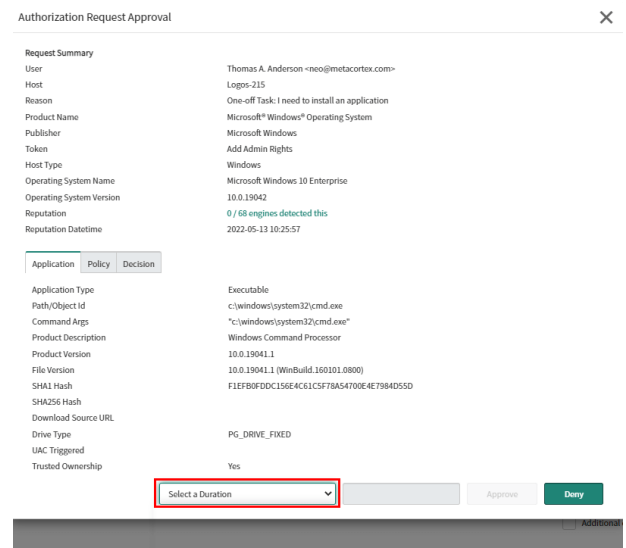
In the ServiceNow authorization request workflow, you can restrict access to application requests. On an approved request, Help Desk can set a time limit in the ServiceNow ticket. The time limit is the length of time the user can use the application before the approval automatically expires.

Under the **Application**, **Policy**, or **Decision** tab, select a Duration.

Access time limit can be one of the following:

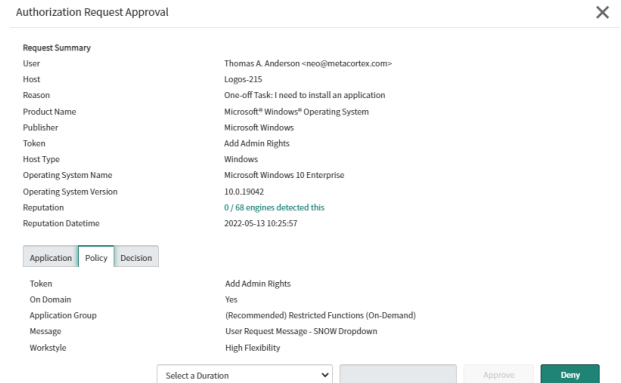
- **Once:** Permits access to the application only one time.
- **Hour:** Enter the number of hours the user will be permitted access, between 1 and 24.
- **Day:** Enter a day between 1 and 31.
- **Month:** Enter a month between 1 and 12.

Click **Approve**.



After the time expires, the user can no longer access that application. The user must go through the request workflow again, with the Help Desk personnel approving and selecting a duration time for access.

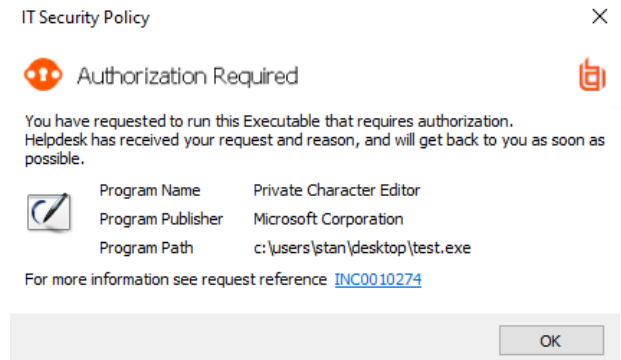
Duration settings are included in the authorization auditing.



The client checks an application's authorization access when the end user attempts to run the program. If the duration settings have been correctly configured, a message appears indicating the outcome of the ServiceNow request. The user receives a new message indicating that the application has been either Denied or Approved once the policy has been updated or when they attempt to run the application again.

A pending message displays to the end user until a decision on their request is made in ServiceNow.

To view the status on their ServiceNow ticket, the end user can click the request reference [link](#).

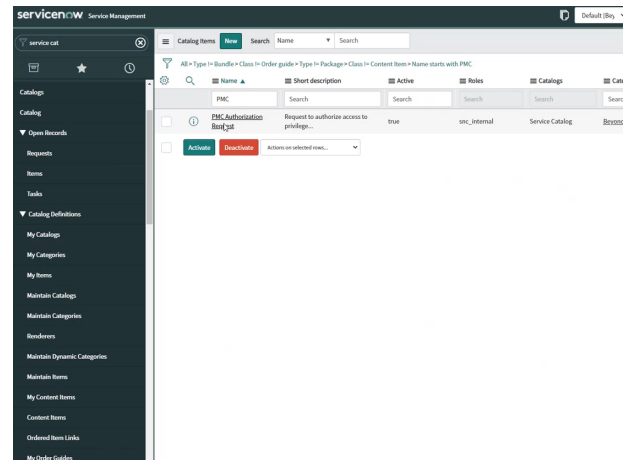


Use Service Catalog as the Task Type

You must configure the following if your ServiceNow infrastructure uses Service Catalog to manage user requests.

- In ServiceNow, select **Service Catalog - Requested Item** (or **Service Catalog - Task**) as the **Task Type** on the **Authorization Request Settings** page.

- In ServiceNow, you must add PM Cloud as a Catalog item.
Specific details on configuring the catalog item depend on your Service Catalog implementation.



Enable VirusTotal Reputation Score

You can enable the VirusTotal Reputation score on ServiceNow tickets to assist with identifying potential malware and malicious content.

1. Go to **BeyondTrust Privilege Management > Configuration**.
2. Select **Reputation Settings** from the menu.
3. Click the toggle switch **Enable VirusTotal Reputation Integration** to turn on the feature.
4. Enter the VirusTotal API key.



Note: You will need a VirusTotal license before you can generate an API key.

5. Click **Validate Settings** to confirm that the key is valid.



Tip: To view the VirusTotal score on a request, select the ticket in ServiceNow and then click **Authorization Request Approval** at the top of the incident grid. The VirusTotal reputation score is displayed under the **Request Summary**.

You can click the score **link** to go to the engine that determined the score.

Authorization Request Approval

Request Summary

User	SL\Sankar
Host	SL-QAProds1
Reason	TestRequest
Product Name	Microsoft® Windows® Operating System
Publisher	Microsoft Windows
Token	Add Admin Rights
Host Type	Windows
Operating System Name	Microsoft Windows Server 2016 Standard
Operating System Version	10.0.14393
Reputation	0 / 65 engines detected this
Reputation Datetime	2022-03-31 11:43:20

Application	Policy	Decision
-------------	--------	----------

Application Type	Executable
Path/Object Id	c:\windows\system32\win32calc.exe
Command Args	"C:\Windows\system32\win32calc.exe"
Product Description	Windows Calculator
Product Version	10.0.14393.0
File Version	10.0.14393.0 (rs1_release.160715-1616)
SHA1 Hash	B832B7A1E333EB4FD88B11422E363F51805F480D
Download Source URL	
Drive Type	PG_DRIVE_FIXED
UAC Triggered	
Trusted Ownership	Yes

User Request Configuration

Users generate requests when they attempt to access blocked applications from an endpoint through the Privilege Management Client. If configured correctly, PM Cloud transfers the requests to ServiceNow where the technician further manages the application.

i For more information, please see *"ServiceNow User Request Integration" on page 165.*

Configure the user request message content, along with other policy rules and applications, in the PM Cloud *Policy Editor*.

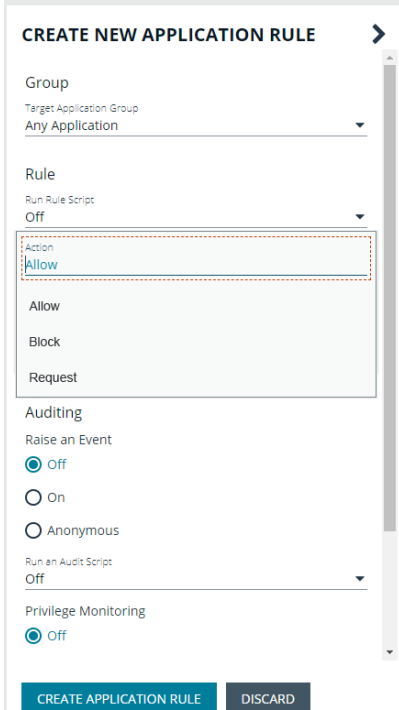
Access Policy Editor

1. Log in to PM Cloud and select **Policies** on the sidebar menu.
2. Click a policy in the list, and then select **Edit and Lock Policy**.

i For more information, please see *"Get Started With the Policy Editor" on page 52.*

Create User Request Rule

1. Select **Workstyles > (Workstyle Name) > Application Rules**.
2. Click **Create New** at the top of the Application Rules grid.
3. Enter the new rule information in the available fields.
4. Go to the **Rule** section and select the dropdown for the **Action** field. Choose **Request**.



CREATE NEW APPLICATION RULE

Group
 Target Application Group
 Any Application

Rule
 Run Rule Script
 Off

Action
 Request

Allow
 Block
 Request

Auditing
 Raise an Event
 Off
 On
 Anonymous

Run an Audit Script
 Off

Privilege Monitoring
 Off

CREATE APPLICATION RULE **DISCARD**

Note: If a message box has not already been created, you will need to create one before the Request option is available.

Tip: If you would like to prompt the group to request permission for all applications, select Any Application under the Target Application Group dropdown.

Create User Request Message

In the Policy Editor, go to **Messages > Create New Message**. Configure the following settings:

- Template
- Name
- Description
- Message Window Title
- Message Header Request
- Message Body Request

i For more information, please see "**Messages**" on page 95.

Once a message has been created, you can find further customization in **Message Options**. Click the vertical ellipsis beside the message that was created and select **Edit** to reveal additional options:

- Title Text
- Header Type
- Header Background Type
- Select Image
- Header Request Text
- Header Pending Text
- Header Approved Text
- Header Denied Text
- Header Text Color
- Body Request Text
- Body Pending Text
- Body Approved Text
- Body Denied Text
- Refer URL Text
- Request Button Text

CREATE NEW MESSAGE ➤

Use a Message Box Template

Use a Notification (Balloon) Template

Template
User Request Message

Name
User Request Message

Description
Request Message with helpdesk integration

Message Window Title
IT Security Policy

Message Header Request
Authorization Required


Message Body Request
This [PG_PROG_TYPE] requires authorization via helpdesk. Please provide a reason.

Show Message On Secure Desktop

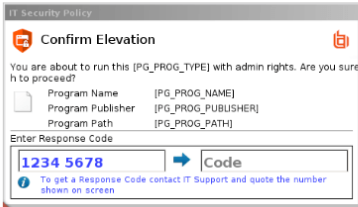
Show the details of application being executed

CREATE NEW MESSAGE

DISCARD


AuthRequest Message (test purposes)

⋮
⬆



Request Message for test purposes only

- Request Message
- Will be shown on secure desktop
- Challenge / Response: One time password
- No authorization

✎ Edit

🗑 Delete

ServiceNow Authorization Requests Auditing

ServiceNow user authorization requests are audited for troubleshooting and logging purposes.

Select the **Auditing** menu to access the **Authorization Request Auditing** tile.



Note: You only see the **Authorization Request Auditing** tile if authorization request management is set up on the **Configuration > Authorization Request Settings** page.

Some of the key elements captured in the audit include:

- **User:** The user requesting authorization.
- **Time of Request:** The time the ticket is created.
- **Decision Performed By:** The ServiceNow user approving or denying the action.
- **Decision Time:** The time approval or denial occurs.
- **Decision Duration:** The time allotted for the authorized request.
- **Decision Start Time:** The time the decision duration started.

AUTHORIZATION REQUEST AUDITING

Ticket ID	Product Name	User	Computer Name	Reason	Decision Performed By	Time of Request	Decision Time	Decision
CHG0030052	Microsoft® Windows® Operating System	\Admin	-64-01		--	06/24/2021 5:50 AM		Pending
CHG0030053	Process Explorer	\Admin	-64-01		--	06/24/2021 5:52 AM		Pending
CHG0030053	Process Explorer	\Admin	-64-01		pmc_helpdesk	06/24/2021 5:52 AM	06/24/2021 5:54 AM	Approved
CHG0030054	Process Explorer	\Admin	-64-01		--	06/24/2021 5:55 AM		Pending
CHG0030052	Microsoft® Windows® Operating System	\Admin	64-01		pmc_helpdesk	06/24/2021 5:50 AM	06/24/2021 5:55 AM	Approved
CHG0030050	Microsoft® Windows® Operating System	\Admin	-64-01		--	06/24/2021 5:33 AM		Pending
CHG0030058	Microsoft® Windows® Operating System	\Admin	64-01		--	06/24/2021 9:00 AM		Pending
INC0010332	App for Instagram	admin			--	06/25/2021 12:08 AM		Pending
INC0010333	--	admin			--	06/25/2021 12:12 AM		Pending

Web Policy Editor: Additional Guidance

Power Rules

A Power Rule is a PowerShell based framework that lets you change the outcome of an Application Rule, based on the outcome of a PowerShell script.

Instead of a fixed Default Rule that can either be set to Allow, Elevate, Audit, or Block for the applications in the targeted Application Group, a Power Rule lets you determine your own outcome based on any scenario you can build into a PowerShell script.

Any existing Default Rule within a Workstyle can be updated to a Power Rule by setting the action to a Power Rule script, and importing the PowerShell script you want to use. PMC provides a PowerShell module with an interface to collect information about the user, application, and policy. The module can then send a resulting action back to PMC to apply.

The Power Rules module also provides a variety of message options that allow you to collect additional information to support your PowerShell script logic and provide updates to the user as to the status, progress, or outcome of your rule. The messages that are supported include:

- Authentication message
- Business Justification message
- Information message
- Pass code message
- Vaulted credential message
- Asynchronous progress dialog for long running tasks

Power Rules is a highly flexible feature with unlimited potential. If you can do it in PowerShell, you can do it in a Power Rule. Here are some example use cases for Power Rules:

- Environmental Factors: Collecting additional information about the application, user, computer, or network status to influence whether an application should be allowed to run, or run with elevated privileges.
- Service Management: Automatically submitting tickets to IT Service Management solutions, and determining the outcome of a service ticket.
- File Reputation: Performing additional checks on an application by looking up the file hash in an application store, reputation service, or a vulnerability database.
- Privileged Access Management: Checking out credentials from a password safe or vault, and passing them back to Privilege Management to run the application in that context.



For information on creating your own Power Rule, please see the [Core Scripting Guide](https://www.beyondtrust.com/docs/privilege-management/integration/core-scripting/index.htm), at <https://www.beyondtrust.com/docs/privilege-management/integration/core-scripting/index.htm>.

Windows Workstyle Parameters

The Privilege Management for Windows settings include a number of features allowing customization of text and strings used for end user messaging and auditing. If you want to include properties relating to the settings applied, the application being used, the user, or the installation of Privilege Management for Windows, then parameters may be used which are replaced with the value of the variable at runtime.

Parameters are identified as any string surrounded by brackets ([]), and if detected, the Privilege Management client attempts to expand the parameter. If successful, the parameter is replaced with the expanded property. If unsuccessful, the parameter remains part of the string. The table below shows a summary of all available parameters and where they are supported.

Parameter	Description
[PG_AGENT_VERSION]	The version of Privilege Management for Windows
[PG_APP_DEF]	The name of the Application Rule that matched the application
[PG_APP_GROUP]	The name of the Application Group that contained a matching Application Rule
[PG_AUTH_METHODS]	Lists the authentication and/or authorization methods used to allow the requested action to proceed
[PG_AUTH_USER_DOMAIN]	The domain of the designated user who authorized the application
[PG_AUTH_USER_NAME]	The account name of the designated user who authorized the application
[PG_COM_APPID]	The APPID of the COM component being run
[PG_COM_CLSID]	The CLSID of the COM component being run
[PG_COM_NAME]	The name of the COM component being run
[PG_COMPUTER_DOMAIN]	The name of the domain that the host computer is a member of
[PG_COMPUTER_NAME]	The NetBIOS name of the host computer
[PG_DOWNLOAD_URL]	The full URL from which an application was downloaded
[PG_DOWNLOAD_URL_DOMAIN]	The domain from which an application was downloaded
[PG_EVENT_TIME]	The date and time that the policy matched
[PG_EXEC_TYPE]	The type of execution method: Application Rule or shell rule
[PG_GPO_DISPLAY_NAME]	The display name of the GPO (Group Policy Object)
[PG_GPO_NAME]	The name of the GPO that contained the matching policy
[PG_GPO_VERSION]	The version number of the GPO that contained the matching policy
[PG_IDP_AUTH_USER_NAME]	The value given by the Identify Provider as the user who successfully authenticated to allow the requested action to proceed. Maps to the OIDC "email" scope.
[PG_MESSAGE_NAME]	The name of the custom message that was applied
[PG_POLICY_NAME]	The name of the policy
[PG_PROG_CLASSID]	The ClassID of the ActiveX control
[PG_PROG_CMD_LINE]	The command line of the application being run
[PG_PROG_DRIVE_TYPE]	The type of drive where application is being executed
[PG_PROG_FILE_VERSION]	The file version of the application being run
[PG_PROG_HASH]	The SHA-1 hash of the application being run
[PG_PROG_HASH_SHA256]	The SHA-256 hash of the application being run
[PG_PROG_NAME]	The program name of the application
[PG_PROG_PARENT_NAME]	The file name of the parent application
[PG_PROG_PARENT_PID]	The process identifier of the parent of the application
[PG_PROG_PATH]	The full path of the application file
[PG_PROG_PID]	The process identifier of the application
[PG_PROG_PROD_VERSION]	The product version of the application being run

Parameter	Description
[PG_PROG_PUBLISHER]	The publisher of the application
[PG_PROG_TYPE]	The type of application being run
[PG_PROG_URL]	The URL of the ActiveX control
[PG_STORE_PACKAGE_NAME]	The package name of the Windows Store App
[PG_STORE_PUBLISHER]	The package publisher of the Windows Store app
[PG_STORE_VERSION]	The package version of the Windows Store app
[PG_TOKEN_NAME]	The name of the built-in token or Custom Token that was applied
[PG_USER_DISPLAY_NAME]	The display name of the user
[PG_USER_DOMAIN]	The name of the domain that the user is a member of
[PG_USER_NAME]	The account name of the user
[PG_WORKSTYLE_NAME]	The name of the Workstyle

Regular Expression Syntax

PM Cloud can control applications at a granular level by using regular expression syntax. PM Cloud uses the ATL regular expression library **CAatlRegExp**. Below is a summary of the regular expression syntax used by this library.

Metacharacter	Meaning	Example
Any character except <code>[^\\$. ?*\+()</code>	All characters except the listed special characters match a single instance of themselves. To match one of these listed characters use a backslash escape character (see below).	abc matches abc
<code>\</code> (backslash)	Escape character: interpret the next character literally.	a\b matches a+b
<code>.</code> (dot)	Matches any single character.	a.b matches aab , abb or acb , etc.
<code>[]</code>	Indicates a character class. Matches any character inside the brackets (for example, [abc] matches a , b , and c).	[abc] matches a , b , or c
<code>^</code> (caret)	If this metacharacter occurs at the start of a character class, it negates the character class. A negated character class matches any character except those inside the brackets (for example, [^abc] matches all characters except a , b , and c). If ^ is at the beginning of the regular expression, it matches the beginning of the input (for example, ^[abc] will only match input that begins with a , b , or c).	[^abc] matches all characters except a , b , and c
<code>-</code> (minus character)	In a character class, indicates a range of characters (for example, [0-9] matches any of the digits 0 through 9).	[0-9] matches any of the digits 0 through 9
<code>?</code>	Indicates that the preceding expression is optional: it matches once or not at all (for example, [0-9][0-9]? matches 2 and 12).	ab?c matches ac or abc
<code>+</code>	Indicates that the preceding expression matches one or more times (for example, [0-9]+ matches 1 , 13 , 999 , and so on).	ab+c matches abc and abbc , abbbc , etc.
<code>*</code> (asterisk)	Indicates that the preceding expression matches zero or more times	ab*c matches ac and abc , abbc , etc.
<code> </code> (vertical pipe)	Alternation operator: separates two expressions, exactly one of which matches.	a b matches a or b

Metacharacter	Meaning	Example
??, +?, *?	Non-greedy versions of ?, +, and *. These match as little as possible, unlike the greedy versions which match as much as possible. Example: given the input <code><abc><def></code> , <code><.*?></code> matches <code><abc></code> while <code><.*></code> matches <code><abc><def></code> .	Given the input <code><abc><def></code> , <code><.*?></code> matches <code><abc></code> while <code><.*></code> matches <code><abc><def></code> .
()	Grouping operator. Example: <code>(\d+)*\d+</code> matches a list of numbers separated by commas, such as <code>1</code> or <code>1,23,456</code> .	<code>(One) (Two)</code> matches <code>One</code> or <code>Two</code>
{ }	Indicates a match group. The actual text in the input that matches the expression inside the braces can be retrieved through the <code>CAtIREMatchContext</code> object.	
\	Escape character: interpret the next character literally. For example, <code>[0-9]+</code> matches one or more digits, but <code>[0-9]\+</code> matches a digit followed by a plus character. Also used for abbreviations, such as <code>\a</code> for any alphanumeric character; see table below. If <code>\</code> is followed by a number <code>n</code> , it matches the <code>n</code> th match group (starting from 0). Example: <code><{.*?}>.*?</\0></code> matches <code>"<head>Contents</head>"</code> . Note that in C++ string literals, two backslashes must be used: <code>"\\+", "\\a", "<{.*?}>.*?</\\0>"</code> .	<code><{.*?}>.*?</\0></code> matches <code><head>Contents</head></code>
\$	At the end of a regular expression, this character matches the end of the input. Example: <code>[0-9]\$</code> matches a digit at the end of the input.	<code>[0-9]\$</code> matches a digit at the end of the input
	Alternation operator: separates two expressions, exactly one of which matches. For example, <code>T the</code> matches <code>The</code> or <code>the</code> .	<code>T the</code> matches <code>The</code> or <code>the</code>
!	Negation operator: the expression following <code>!</code> does not match the input. Example: <code>a!b</code> matches <code>a</code> not followed by <code>b</code> .	<code>a!b</code> matches <code>a</code> not followed by <code>b</code>

Register an Azure Tenant

For PMC to query Azure AD groups, a communication channel between PMC and Azure AD must exist.

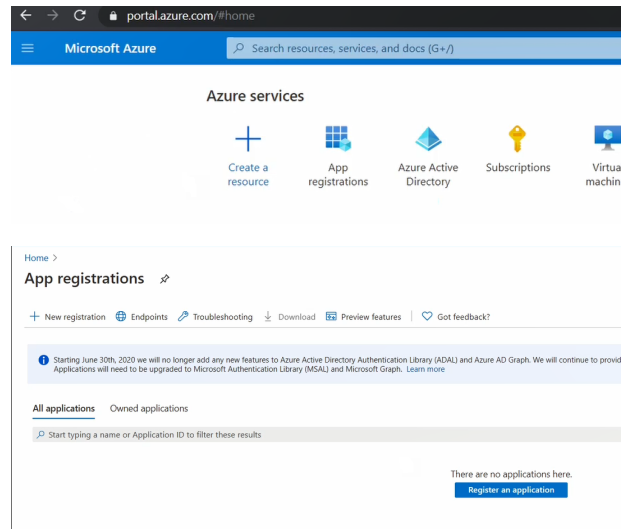
There are two key steps to create a channel:

- Create an app registration in Azure and grant the appropriate permissions. You must also set up an authentication method.
- Configure PMC with the app registration.

This section details the steps to register an Azure tenant.

Register a Tenant

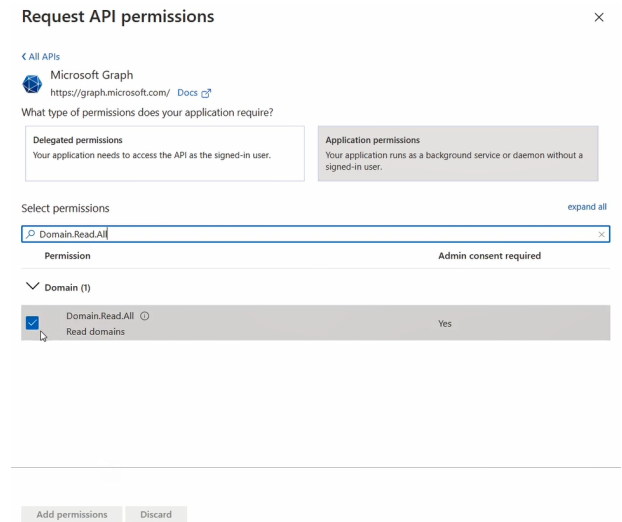
1. Go to <https://portal.azure.com>.
2. Select the directory that contains the Azure AD you want to register with PMC.
3. Search for the **App registrations** service and select it.



4. Click **New registration**.
5. Give the registration a name. For example, **PM Cloud Registration**.
6. Select the **Supported account types** you require for your business needs.
7. Ignore the setting **Redirect URI**.
8. Click **Register an application**.
9. Go to **Manage > API Permissions** and click **Add a permission**.
10. Click **Microsoft Graph**, and then **Application permissions**.

11. Add the following permissions. Search by name, and then select the permission when it displays.

- **Domain.Read.All**
- **GroupMembers.Read.All**
- **User.Read.All**



12. After all 3 permissions are selected, click **Add permissions**.

13. Finally, you must grant the permissions. Click **Grant admin consent for (Directory Name)**.

Configure Authentication

You need to choose an authentication method to create a trust relationship between PMC and Azure. There are two authentication methods available:

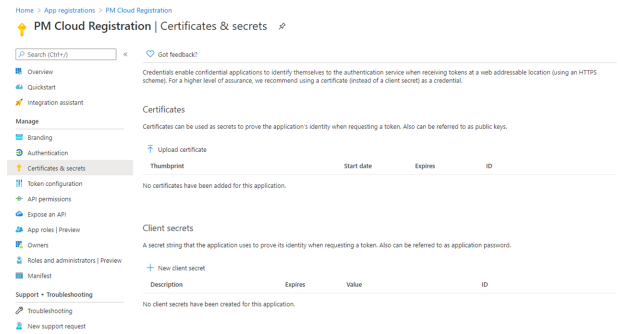
- Certificate authentication
- Client-secret authentication

Use Certificate Authentication

1. In the PMC console, select **Configuration > Azure AD Settings**.
2. Click **Download Certificate**.
3. Go to the Azure app registrations portal, and then select **Certificates & secrets**.
4. Click **Upload certificate**.

Use Clients-Secret Authentication

1. In the Azure app registrations portal, select **Certificates & secrets**.



2. Select **Client-Secret Authentication**.

3. Click **New Client Secret**.

4. Select an appropriate expiry time, and click **Add**.

5. Copy the value to your clipboard.

6. Go to the PMC console, select **Administration > Access Settings > Azure AD Settings**.

7. Paste the client secret value into the **Application Client Secret** box.

8. Click **Save Changes**.

Client and Tenant IDs

Go to the **Overview** node and note the **Application (client) ID** and the **Directory (tenant) ID**. These are used in the PMC administration console.

