ivanti

Environment Manager

powered by AppSense

Policy Product Guide

Version 10.1 FR4

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About Environment Manager

Environment Manager provides on-demand personalization of user desktops on-demand and helps protect endpoints with fine-grained contextual policy control.

Environment Manager Personalization provides:

- Fast logon times
- A fully personalized desktop experience, regardless of location or device
- A secure desktop environment that adapts based on user context

Use Environment Manager Policy to:

- Enforce policy real-time throughout the user session, not just at login
- Help meet corporate and industry-based compliance mandates such as HIPAA, FINRA, and PCI
- Run multiple policies in parallel for the best possible user experience.

Licensing

The Licensing console allows you to manage User Workspace Manager product licenses.

The Licensing console allows you to:

- Manage licenses for single products, the User Workspace Manager Suite and Evaluation licenses.
- Export license packages to MSI or LIC file format for saving to the Management Center or other computers which can be remotely accessed.
- Import and manage licenses from LIC file format.

For information about license deployment to endpoints, see Management Center Help.

Managing Licenses

License details are included in the License Agreement which is issued when an order for ther software has been completed.

The License Agreement includes the following information:

- Product, Feature, and Version Details
- Issue Date
- Expiry Date
- Customer Name
- Serial ID

Together with the license agreement you will receive either a TXT file or a LIC file. Use these in the Licensing Console to add or import the license.

Add a License

1. Open the Licensing console.
2. Click **Add**.

   The Add License Key dialog displays.
3. Enter the License Key and click **Add**.

   If you received a TXT file license, open the file and copy the license key, paste it in to the Add License Key dialog.

   If you received a LIC file license, refer to "Import License Files" on page 9.

Details of the license are displayed in the console and the license key is added to the following location:

%ALLUSERSPROFILE%\AppSense\Licenses

Activate a License

Once added, some licenses require activating.

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1. Select a license or add one to the licensing console.
2. Click **Activate**.
3. Type or copy and paste the activation code.
4. Press **Enter** to accept the code.

The license console saves the license key to the MS Windows registry on the local machine. The License Status field updates to show the status of the license and the license details display in the lower part of the console.

ⓘ To check that the license is active on your endpoint, search the registry for the license code. If the search finds the code, then the license is active.

Remove a License

1. Highlight the required license and click **Remove**.

   A confirmation dialog displays.
2. Click **Yes** to confirm.

The selected license is deleted and removed from the console and the MS Windows registry or %ALLUSERSPROFILE%\AppSense\Licenses location, whichever is applicable to the license type.

Export License Files

Export licenses to an MSI or LIC file to create a backup and enable distribution to other endpoints using the Licensing console or the Management Center.

1. Highlight the license you want to export.
2. Click **Export** to display Windows Save As dialog.
3. Browse to the required location to save the license file.
4. Enter a name for the file.
5. Select the file type: MSI or LIC.
6. Click **Save**.

A file is created and saved in the selected location. This file can be copied to any network location and loaded via the Licensing console or in the Management Center console.

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Import License Files

Import a previously exported license to an endpoint using the Licensing console.

1. Open the Licensing console.
2. Click **Import** to display the Windows Open dialog.
3. Navigate to the required LIC file.
4. Click **Open**.

Details of the license are displayed in the console and the license key is added to the following location:

%ALLUSERSPROFILE%\AppSense\Licenses

Troubleshooting

I received a license, what do I do?

If you have received a product license you can load the license by launching the Licensing Console on your client computer and entering the license code.

I have entered a license, but it says it is not activated, why?

Some licenses require activation before they can be used. Activation codes are provided by Ivanti. Activate a license by entering the License and Activation codes into the console.

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Architecture

The Environment Manager system consists of the Environment Manager Console, Environment Manager Agent, Personalization Server and Database.

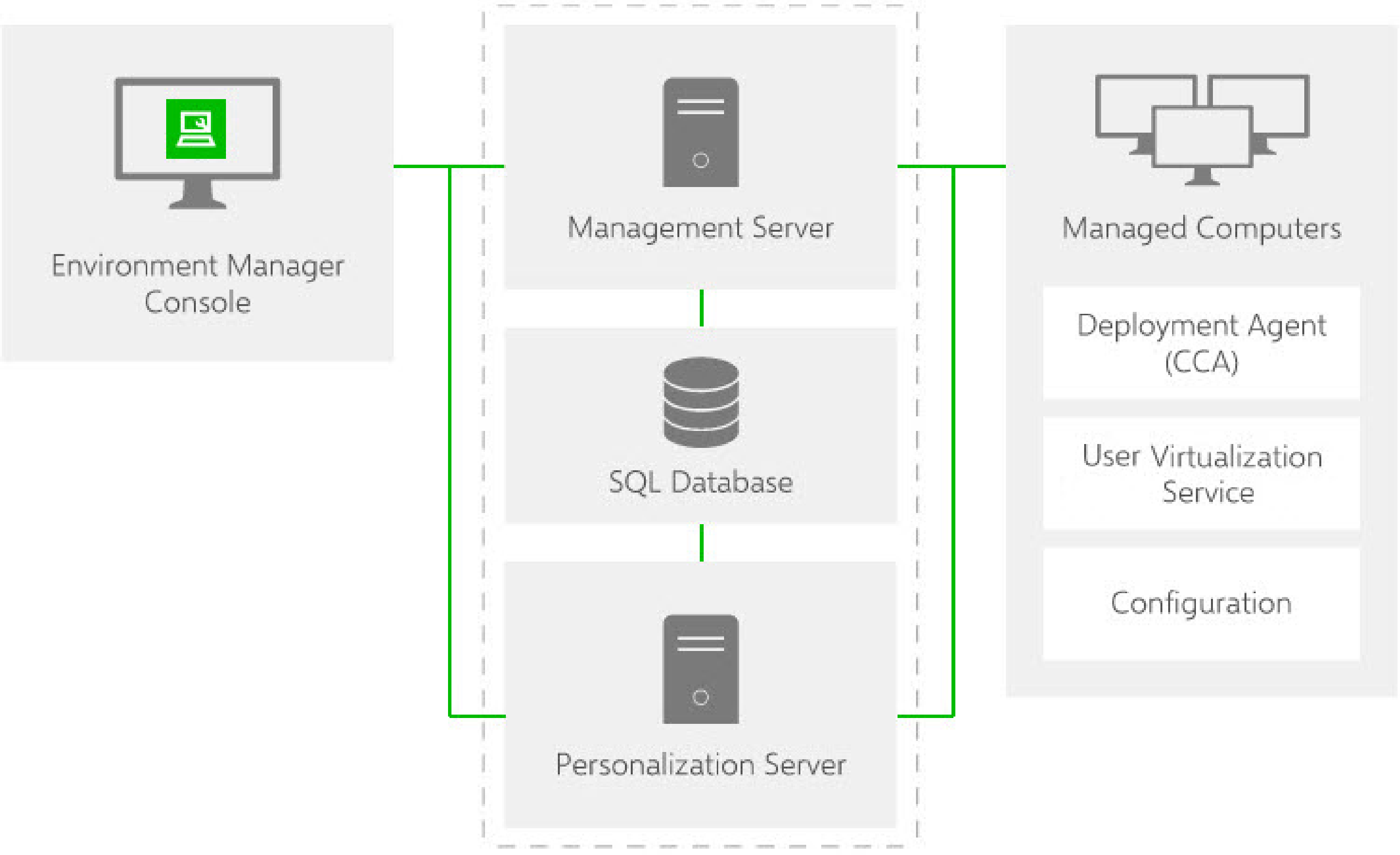
The console is an administrative tool to create and manage configurations. The agent resides on the controlled computers and can receive configurations from the Management Center or third party deployment system to manage the machine and user environment. The console also provides a live connection to the Personalization Database.

The Personalization Server runs as a website, using IIS on either Windows Server 2003 or 2008. Client machines (Tier 1) connect through HTTP(s) handlers, and the Console uses WCF Services.

The Personalization Server acts as a broker between the Client and Database, providing a secure channel to read and write the Personalization data. It is designed to support thousands of users simultaneously and multiple Personalization Servers can be configured in parallel to use a single Database.

Environment Manager can operate either in Standalone or Enterprise mode. In Standalone mode, the console saves its settings directly to the local system. In Enterprise mode, different configurations can be deployed to the controlled computers depending on your system requirements. This help describes the use of Environment Manager in Standalone mode.

For details on centralized management mode please refer to the Management Center Help system.



Policy Configuration and User Personalization work together to provide complementary control of the entire user environment. Inevitably there are some areas of overlap. The profile settings are applied in the following stages:

- Default Settings - Policy Configuration
- Usually occur through the use of mandatory profiles, although Policy Configuration is free to set anything at this stage.
- Virtual Settings - User Personalization
- User specific changes to their own personality settings that are being managed by User Personalization. These are applied on top of the defaults.
- Enforced Settings - Policy Configuration

Any policies that the administrator wants to set regardless of how the user has changed their application previously, so these are applied last. The user may be free to change these whilst the application is running, but they will be reapplied the next time the application runs.

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Console

The Environment Manager Console launches from the start menu:

Start > **All Programs** > **AppSense** > **Environment Manager** > **Environment Manager Console**.

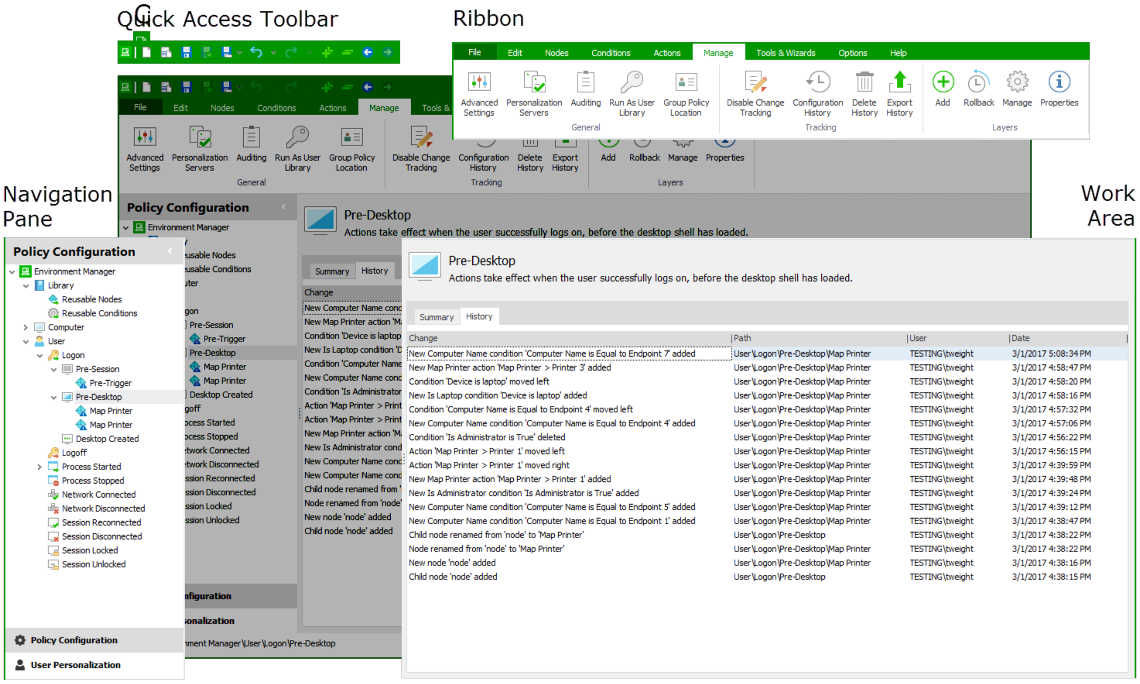
When accessed in this way the console opens with an empty and untitled configuration. The console also starts when a saved configuration is opened.

There are three variants of the Environment Manager console:

- **Personalization** - Installs only the personalization element of Environment Manager
- **Policy** - Installs only the policy element of Environment Manager
- **Both consoles** - Installs the combined console; both personalization and policy are installed.

The choice of which console to install is made during installation.

Elements



Pre-Desktop

Actions take effect when the user successfully logs on, before the desktop shell has loaded.

Change	Path	User	Date
New Computer Name condition 'Computer Name is Equal to Endpoint 7' added	User\Logon\Pre-Desktop\Map Printer	TESTING\tweight	3/1/2017 5:08:34 PM
New Map Printer action 'Map Printer > Printer 3' added	User\Logon\Pre-Desktop\Map Printer	TESTING\tweight	3/1/2017 4:58:47 PM
Condition 'Device is laptop' moved left	User\Logon\Pre-Desktop\Map Printer	TESTING\tweight	3/1/2017 4:58:20 PM
New Is Laptop condition 'Device is laptop' added	User\Logon\Pre-Desktop\Map Printer	TESTING\tweight	3/1/2017 4:58:16 PM
Condition 'Computer Name is Equal to Endpoint 4' moved left	User\Logon\Pre-Desktop\Map Printer	TESTING\tweight	3/1/2017 4:57:32 PM
New Computer Name condition 'Computer Name is Equal to Endpoint 4' added	User\Logon\Pre-Desktop\Map Printer	TESTING\tweight	3/1/2017 4:57:06 PM
Condition 'Is Administrator is True' deleted	User\Logon\Pre-Desktop\Map Printer	TESTING\tweight	3/1/2017 4:56:22 PM
Action 'Map Printer > Printer 1' moved left	User\Logon\Pre-Desktop\Map Printer	TESTING\tweight	3/1/2017 4:56:15 PM
Action 'Map Printer > Printer 1' moved right	User\Logon\Pre-Desktop\Map Printer	TESTING\tweight	3/1/2017 4:39:59 PM
New Map Printer action 'Map Printer > Printer 1' added	User\Logon\Pre-Desktop\Map Printer	TESTING\tweight	3/1/2017 4:39:48 PM
New Is Administrator condition 'Is Administrator is True' added	User\Logon\Pre-Desktop\Map Printer	TESTING\tweight	3/1/2017 4:39:24 PM
New Computer Name condition 'Computer Name is Equal to Endpoint 5' added	User\Logon\Pre-Desktop\Map Printer	TESTING\tweight	3/1/2017 4:39:12 PM
New Computer Name condition 'Computer Name is Equal to Endpoint 1' added	User\Logon\Pre-Desktop\Map Printer	TESTING\tweight	3/1/2017 4:38:47 PM
Child node renamed from 'node' to 'Map Printer'	User\Logon\Pre-Desktop	TESTING\tweight	3/1/2017 4:38:22 PM
Node renamed from 'node' to 'Map Printer'	User\Logon\Pre-Desktop\Map Printer	TESTING\tweight	3/1/2017 4:38:22 PM
New node 'node' added	User\Logon\Pre-Desktop\Map Printer	TESTING\tweight	3/1/2017 4:38:16 PM
Child node 'node' added	User\Logon\Pre-Desktop	TESTING\tweight	3/1/2017 4:38:15 PM

Resolution

Recommended screen resolution for the console is 1024 x 768 pixels.

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Installing the Consoles

The traditional Environment Manager installation, using Setup.exe, automatically installs the combined console. Some administrators may not require access to both. For example, they may only be responsible for configuring personalization and have no need for the policy side of the console. Installing the Personalization or Policy consoles can only be done using the EnvironmentManagerConsole MSIs.

For more information about installation, see the User Workspace Manager help.

Ribbons

Ribbons include buttons for performing actions, arranged in groups, according to the area of the console to which the actions relate. For example, the **Edit** ribbon page includes all common tasks, such as **Cut**, **Copy** and **Paste**.

Split ribbon buttons contain multiple options and are indicated by an arrow just below the button. Click the arrow to display and select the list of options, or simply click the button for the default action.

Help

The **Help** button on the Help ribbon launches the Help for the product and displays the topic relating to the current area of the console in view. A smaller icon for launching the Help displays at the far right of the console, level with the ribbon page tabs.

Navigation Pane

The Navigationpane consists of the navigation tree and navigation buttons. The navigation tree is the area for managing nodes of the configuration. The navigation buttons allow you to view the different areas of the console, i.e. the Policy Configuration and User Personalization.

Work Area

The **Work Area** provides the main area for managing the settings of the configuration and product. The contents of the work area vary according to the selected nodes in the navigation tree and the selected navigation buttons. Sometimes the work area is split into two panes. For example, one pane can provide a summary of the settings in the other pane.

Additional Console Features

- **Shortcut Menu** — right-click shortcuts are available in the navigation tree and some areas of the console.
- **Drag and Drop** — this feature is available in some nodes of the navigation tree.
- **Cut/Copy/Paste** — these actions can be performed using the buttons in the **Edit** ribbon, shortcut menu options and also using keyboard shortcuts.

File Menu

The **File** menu provides options for managing configurations including create new, open existing, save, import and export configurations and print.

Option	Description
New	Creates a new default configuration which is locked for editing.
Open	Opens an existing configuration from one of the following locations: • Live configuration on this computer • Configuration from the Management Center • Configuration file from disk: AppSense Environment Manager Package Files format (AEMP). • Configuration from System Center Configuration Manager ⓘ A live configuration is located on a computer which has Environment Manager Agent installed and running.
Save	Updates the current configuration with any changes made since the last change. Click the arrow by the icon to access the following Management Center Specific options: • **Save and Continue Editing** - Save the configuration and keep it locked and open for editing. The configuration cannot be deployed whilst locked. Use to save your changes whilst continuing to update the configuration. • **Save and Unlock** - Save the configuration and unlock it ready for deployment. • **Unlock without saving** - Unlock the configuration without saving changes. A live configuration is located on a computer which has Environment Manager Agent installed and running.
Save As	Saves the configuration with a new name to one of the following locations: • **Live configuration on this computer** - Save the current configuration on the current computer and apply it as the working configuration. • **Configuration in the Management Center** - Creates the current configuration in the package store on the selected Management Center. • **Configuration in System Center Configuration Manager** - Saves your configuration to the specified System Center Configuration Manager server. • **Configuration file on disk** - Saves the current configuration as a file on a local or network drive in AEMP format.
Import & Export	• **Import configuration from MSI** - Imports a configuration from an existing MSI package, for example, legacy configurations which have been exported and saved from legacy consoles.

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Option	Description
	- **Export Configuration as MSI** - Exports the current configuration as a MSI package.
Exit	Closes the console. You are prompted to save any changes you have made to the current configuration.

Quick Access Toolbar

The **Quick Access**toolbar provides quick functionality for managing the configuration setup, such as **Save**, **Save and Unlock**, **Undo**, **Redo**, and navigation to previously and next displayed views.

Button	Description
🗋	**New** Opens a new, empty default configuration which is locked for editing. If you already have a configuration open, you will be prompted to save it before you open a new one.
🗐	**Open Configuration from the Management Center** Opens an existing configuration from the Management Center.
💾	**Save** Saves changes to the configuration. The configuration will remain locked if opened from the Management Center.
💾	**Save and Unlock** Saves the configuration to the Management Center and unlocks it to allow deployment. The current configuration closes and a new default configuration opens.
💾	**Save As** Saves the configuration with a new name to one of the following locations: • **Live configuration on this computer** - Save the current configuration on the current computer and apply it as the working configuration. • **Configuration in the Management Center** - Creates the current configuration in the package store on the selected Management Center. • **Configuration in System Center Configuration Manager** - Saves your configuration to the specified System Center Configuration Manager server. • **Configuration file on disk** - Saves the current configuration as a file on a local or network drive in AEMP format.
⬅ ➡	**Back and Forward**

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Button	Description
	Cycle through the views you have visited in a session. For example, if you select the Computer trigger and then the User trigger, the Back button takes you to the Computer trigger and a subsequent click of the forward button, takes you to the User trigger. These are navigation tools only and do not affect the action you have performed in the console.
↶	**Undo** Clears the action history. Up to 20 previous actions are listed. Select the point at which you want to clear the actions. The action selected and all preceding actions are undone.
↷	**Redo** Re-applies the cleared action history. Up to 20 cleared actions are listed. Select the point at which you want to redo the actions. The action selected and all preceding actions are redone.
✚	**Expand All** Expand all nodes, actions and conditions in a selected area of the console. Context sensitive to the selected item and works in the navigation tree or the work area. For example, if used when the Computer trigger is highlighted, all triggers and nodes within the Computer trigger are fully expanded. To expand all triggers and nodes in a configuration, select the Environment Manager item at the top of the pane and select Expand All. In the work area, if a condition is highlighted, all sub conditions and actions are fully expanded.
━	**Collapse All** Collapses all nodes, actions and conditions - works as Expand All but in reverse.

Managing the Quick Access Toolbar

The Quick Access Toolbar can be configured to add and remove functions and change its position within the console:

- Right-click on a ribbon button or file menu option and select **Add to Quick Access Toolbar** to add it to the Quick Access Toolbar.
- Right-click on a toolbar item and select **Remove From Quick Access Toolbar** to remove it.
- Right click on a ribbon or the toolbar and select **Show Quick Access Toolbar Below the Ribbon** to display the toolbar below the ribbon.

Find and Replace

Environment Manager configurations can be searched using text strings and regular expressions. The whole of the navigation tree can be searched or individual areas, such as a node or a trigger, can be targeted. Searches include all nodes, child nodes, conditions and actions in a configuration or within the selected area.

Find and Replace could be used, for example, to change the name of a server throughout the configuration, to amend the IP address of a particular endpoint or just to find where in a configuration a particular registry key is referenced.

Perform a Find and Replace

1. In the Edit ribbon, select **Find and Replace**.

   The Find and Replace dialog displays. If you want to target the search, select the required area of the configuration prior to opening the dialog. In the example below, the Computer\Process Started trigger was selected. This can be changed in the dialog as explained in step 4.
2. In the **Find** field, enter the text to search for or the regular expression you want to use for the search.
3. In the **In** field, define which elements of the configuration you want to search - **Actions**, **Conditions**, **Nodes** and/or Reusable Nodes.
4. Check that the **Where** field shows the path to the area of the configuration you want to search. If the path is incorrect:
   - Amend the path manually
   - Delete the path to search the whole configuration
   - Select a previously searched path from the drop-down
5. In the **Replace with** field, enter the replacement text. If you are performing a search, this field can be left blank.
6. Configure the find options by selecting any combination of the check boxes:
   - **Match Case** - Search for only those items which match the capitalization of the text in the Find text
   - **Match Whole Word** - Search for only those items which match the whole word in the Find field.
   - **Use Regular Expressions** - Return any items which match the regular expression entered in the Find field.
7. Click **Find** to display all items that match your search criteria.

Search Results

The search results list any item which matches the query and show where the item is found in the configuration.

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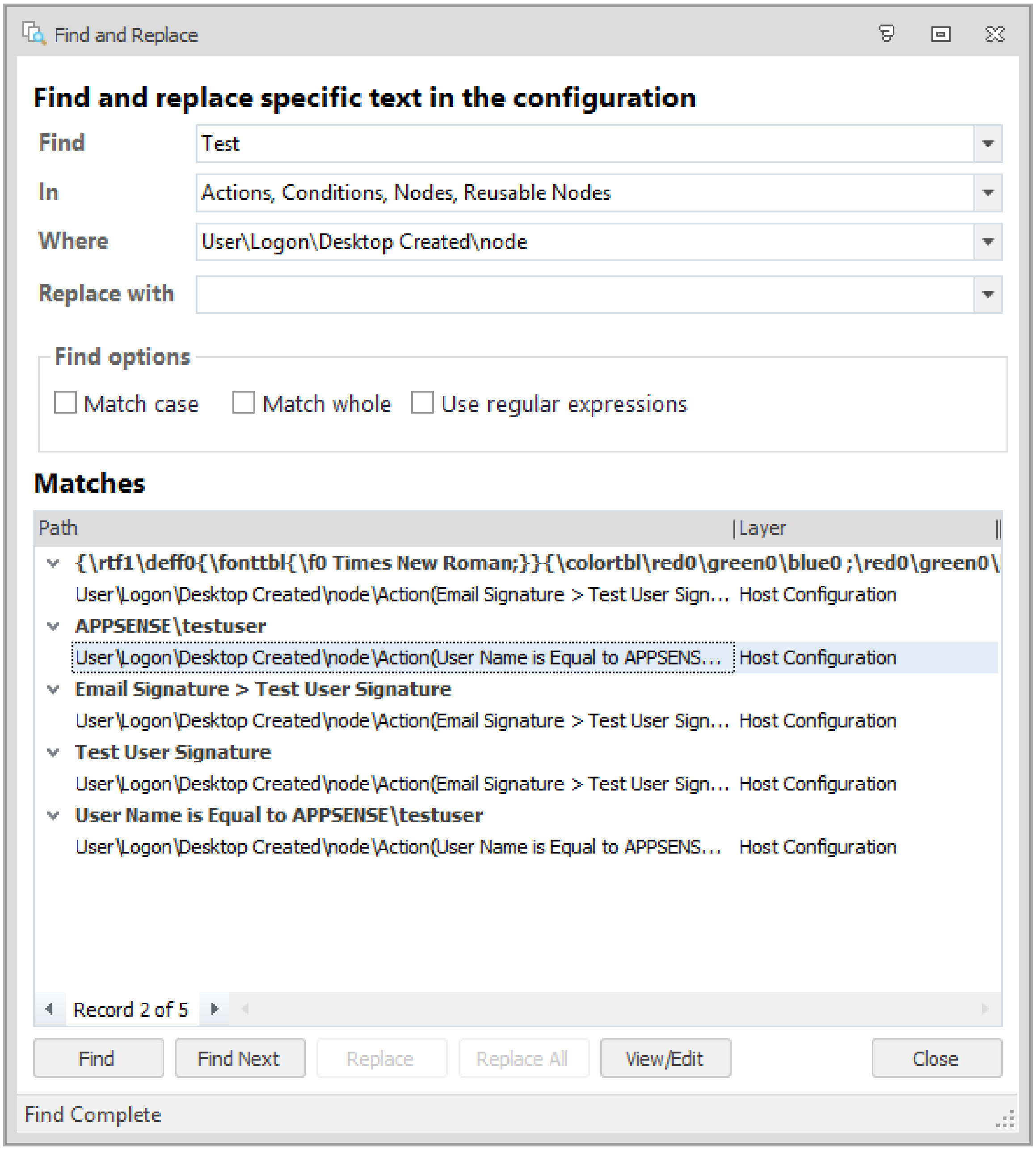
In the example below, the user has searched for "CurrentVersion". The search results include the registry key "Software\Microsoft\Windows\CurrentVersion\Explorer". This registry key is referenced in actions found in two different triggers in the configuration. The path to each of the actions is displayed beneath the match.



Find and replace specific text in the configuration

Find: Test

In: Actions, Conditions, Nodes, Reusable Nodes

Where: User\Logon\Desktop Created\node

Replace with:

Find options

□ Match case □ Match whole □ Use regular expressions

Matches

Path	Layer
{\rtf1\deff0{\fonttbl{\f0 Times New Roman;}}{\colortbl\red0\green0\blue0 ;\red0\green0\	
User\Logon\Desktop Created\node\Action(Email Signature > Test User Sign…	Host Configuration
APPSENSE\testuser	
User\Logon\Desktop Created\node\Action(User Name is Equal to APPSENS…	Host Configuration
Email Signature > Test User Signature	
User\Logon\Desktop Created\node\Action(Email Signature > Test User Sign…	Host Configuration
Test User Signature	
User\Logon\Desktop Created\node\Action(Email Signature > Test User Sign…	Host Configuration
User Name is Equal to APPSENSE\testuser	
User\Logon\Desktop Created\node\Action(User Name is Equal to APPSENS…	Host Configuration

Record 2 of 5

Find Complete

Select a path to automatically navigate to that area of the configuration. To move to the next match, click **Find Next**.

If you want to replace text, select the required match and click **Replace** - to replace all matches click **Replace All**.

You can redefine a search at any time by updating the criteria and clicking **Find** to update the results. For example, you restrict your search to Conditions or focus the search on another area of the configuration.

To view or edit an action or condition in the search results, select the item and click **View/Edit**. The item opens in the relevant dialog.

Environment Manager Administrative Tools

Environment Manager is packaged with standalone utilities that help administrators create configurations and manage the Personalization Database. The tools are run independently from Environment Manager and all our other products.

The Administrative Tools installer is included with the Environment Manager installation media in both 32 and 64-bit versions:

- EnvironmentManagerTools32
- EnvironmentManagerTools64

Once installed to the default location, the following tools are available:

- Environment Manager Monitor (EmMon)
- Personalization Server Log Viewer
- Environment Manager File Conversion
- EMP File Utility
- EMP Migrate Utility
- EMP Migrate Command Line Utility
- EMP Registry Utility
- File Based Registry Explorer

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Service Packs

Service Packs are self-contained packages or patches that are used to update specific files within a User Workspace Manager application without reinstalling the full application. Service packs can be applied more often and reduce the need for system restarts on your endpoints. Service packs are delivered as a Windows Installer patch (MSP) file and are often referred to as patch files.

Install a Service Pack

Service Packs can be installed or deployed using the same technology and techniques used when installing MSIs. Both Microsoft System Center and the Management Center 8 FR4 can deploy MSPs. If neither of these products are available, service packs can be installed using the command line interface.

For example, the command:

```
msiexec.exe /p EnvironmentManagerAgent64.msp
```

installs any files that have been amended as part of the patch for just Environment Manager 64 bit agent.

The following command installs the base version of the Environment Manager Agent (MSI) and the Environment Manager patch file (MSP) simultaneously:

```
msiexec.exe /i EnvironmentManagerAgent64.msi PATCH=c:\fullpath\EnvironmentManagerAgent64.msp
```

A base version must be installed before the patch file can be applied.

If the patch file contains driver or hook files that are currently in use on the machine the patch is being applied to, you are informed that a reboot is required. If you chose to continue, the system is restarted when the patch has been applied.

For information on installing and upgrading service packs using Management Center, see the User Workspace Manager help.

Installation Order and Dependencies

It is recommended that all components of a service pack are installed and that the PersonalizationServerXX.MSP is installed first. All other components have no required install order.

Roll back a Service Pack

You can roll back or install service packs using either the Management Center (8 FR4 onwards) or the Windows Control Panel.

When you uninstall a service pack, the product reverts to the previous latest build - whether a service pack or base version.

With the exception of the Personalization Server component patch file (PersonalizationServerXX.msp) All agent and console service pack components can be uninstalled.

Roll Back a Service Pack Using the Management Center

1. In the Management Center console, select **Overview** > **Deployment Groups tab** > **Deployment Groups**.
2. Highlight the Deployment Group and select **Settings** > **Assigned Packages**.

   The Assigned Packages work area displays a list of all the products and their associated packages.
3. Highlight the required Environment Manager service pack and click **Unassign** from the Actions menu.
4. Click **Review and Submit**.

   The Submit Changes dialog displays.
5. Check the details are correct and click **Submit**.

The patch is unassigned based on the deployment group Installation Schedule.

Roll Back a Service Pack Using the Windows Control Panel

From the Control Panel select Programs and Features and uninstall the required patch.

Best Practices for Configuration

This section outlines the key points for consideration when setting up your Environment Manager configuration.

Mandatory vs Local Profiles

During design and implementation stages, consideration should be given to the type of profile which needs to be used as the base to be loaded for the user before Environment Manager Personalization overlays the user's actual settings.

Typically, Mandatory profiles are used which are very light weight and contribute to faster logon times for users. This profile is ideal for environments where all users are accessing devices which are permanently online.

If users also use laptops to work offline, then you need to look at how their account is managed when the laptop is offline; do they:

- Use an Active Directory account?
- Use a Local Profile and provide Active Directory credentials when accessing company resources?

In these instances, it may be easier to leave the user profile path within Active Directory blank and allow users to load a local profile as a base. The cached copy of the local profile must be deleted using the Microsoft utility, DELPROF.

Another solution is to create the **MAN** file for the Mandatory profile, placed within the location of %SYSTEMDRIVE%\Default User.

This allows two benefits:

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- You do not have to specify a path within the User properties of Active Directory
- As it is a Mandatory profile, the Windows operating system will flush this automatically.

ⓘ This will require some time to copy to each managed device.

Applications that use INI Files

Some applications that are used within an environment require the use of INI files or files of this type to keep certain settings for the user.

If the INI file is kept within the user's profile this is typically not a problem for Environment Manager Personalization.

When the INI file is not kept within the user's profile, but in another location, for example, C:\Windows, then you may not want Environment Manager Personalization to capture information from this location, due to the nature and the amount of files in that location.

At this point, you can use Environment Manager Policy actions to copy down the file or folder to the location during either a Logon or a Process Start trigger for the application and then copy the file or folder back up to the user's home directory during a Logoff or Process Stop trigger.

Personalization Membership Performance

Each condition evaluates matches and queries at different speeds providing different response times. These differences could be due to some conditions evaluating against local data and therefore providing rapid response times. Other conditions may require connection to the network thereby increasing response times and relying on connection speeds.

The conditions in the tables below have been rated by performance speed for carrying out matches and queries. By creating configurations with these response times in mind, performance can be optimized. For example, if a configuration contains OR conditions, place them in order of response time with the quickest evaluating first. If the first condition matches, the configuration is not held up by the slower response time of the second condition.

Directory Services Expressions

Condition	Match	Query
Site Membership	Fast	N/A
Computer OU Membership	Slow	Slow
User OU Membership	Slow	Slow

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User Expressions

Condition	Match	Query
Is Administrator	Fast	N/A
User Name	Fast	Fast
User Group Name	Fast	Medium

Computer Expressions

Condition	Match	Query
Computer IP Address	Fast	Fast
Computer Domain Membership	Fast	Fast
Computer NETBios Name	Fast	Fast
Computer Group	Fast	Medium
Computer Name	Slow	Slow

Enabling Reverse DNS Lookup on the server increases the performance of the Computer Name condition.

Printer Settings for Personalization

If printer settings are required to be kept by the user, then the following keys need to be added to Windows Settings within the Personalization Server:

HKEY_CURRENT_USER\Printers

HKEY_CURRENT_USER\Software\Microsoft\Windows NT\CurrentVersion\Devices

HKEY_CURRENT_USER\Software\Microsoft\Windows NT\CurrentVersion\Windows

Masquerading Applications

To enable managed applications to share user Personalization settings, it is necessary to create an application group. For example, this could be a Microsoft Office group containing Word, Excel, Outlook and PowerPoint.

It may, however, be useful to use a Masquerading Application to allow an application access to another application’s personalization data without having to create an application group. For example, running mlcfg32.cpl against Outlook’s personalization data to view its registry settings on the client.

To do this, create an entry in the Advanced Settings dialog:

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- Name: **MasqueradingApps**
- Value: **rundll32.exe;office12\mlcfg32.cpl;outlook.exe;12.0.0.0:**

This value equates to:

<RealExe>;<RealExe Commandline>;<TargetExe>;<TargetExeVersion>:

For this example, mlcfg32.cpl is grouped with Outlook to share its personalization data.

<TargetExeVersion> matches the version configured in the database for Outlook. If it is set to a wildcard (.*), any version can be supplied here.
These entries can be chained together to provide multiple settings.

Client Specific Masquerading

The MasqueradingApps setting is global and as such, applies on all managed end-point devices. However, to achieve the same behavior, applications can be launched on individual client machines with a special command-line argument: /APPSENSESPECIAL.

The syntax on the client is:

<RealExe> /appsensespecial:<TargetExe>:<TargetExeVersion>

Some applications such as regedit.exe, do not work correctly with extra command-line arguments. These applications should be launched using a command shell which has been run with the APPSENSESPECIAL switch.

For example, cmd.exe /appsensespecial:notepad.exe:1.0.0.0 would launch with the command shell sharing the personalization settings of Notepad. Regedit.exe can now be launched from within the command shell and will have access to Notepad’s settings.

In the above scenario, ensure that regedit.exe is not already defined as a managed application or blacklisted.
There should be no other instances of cmd.exe or regedit.exe running.

Create Personalization Caches Based on Environment Variables

The Advanced setting, *MasqueradeAppByEnvVar* allows the Personalization cache used by Environment Manager to be changed based on the existence of an environment variable on the end point.

This allows greater flexibility where Personalization is required for the same version of an application, across multiple machines where one instance of the application is using different plug-ins.

For example, if Microsoft Excel 2007 is run on three Windows 7 devices, by design it would share Personalization settings between all three. If one of those devices was running different plug-ins to the others, it could be useful for this version of Excel to use separate Personalization settings.

Configure Personalization Caches Based on Environment Variables

The following steps show how to configure the user interface using the Excel scenario.

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1. Create the following entry in the **Advanced Settings** dialog:
    - Name: **MasqueradeAppByEnvVar**
    - Value: **TargetExe>%ENV_VAR%**

    For the Excel scenario, the value would be Excel.exe>%MASQ%.

    MASQ is an environment variable set on the client.
2. Create the following managed applications:

Name	Executable	OS RegEx	Version RegEx
Excel	Excel.exe	.*	.*
Excel MASQ	Excel.exe.masq	.*	.*

The Excel.exe.masq executable entry provides an alternative to excel.exe using a different cache to allow separate Personalization to be used for the same application.

Client Configuration

Add the environment variable called **MASQ** with a value of **masq**.

When Excel is run, its Personalization settings go into a cache called Excel **MASQ**.

If the MASQ variable is removed, Excel settings will go into a cache called Excel.

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Keyboard Shortcuts

Environment Manager uses the following keyboard shortcuts:

Shortcut Key	Function
Ctrl+X	Cut nodes, actions and conditions.
Ctrl+C	Copy nodes, actions and conditions.
Ctrl+V	Paste nodes, actions and conditions.
Insert	Used as multiple Add functions. For example to add a node or trigger in Policy configurations and to add applications to White and Blacklists and personalization groups in User Personalization.
Delete	Delete navigation tree and work area elements such as nodes, actions and application groups.
F2	Rename a navigation tree element such as a node or personalization group.
Ctrl+T	Disable / enable nodes, actions or conditions.
Ctrl+F	Find and replace specific text within a configuration.
Crtl+Arrow keys	Move an element within both Policy Configuration and User Personalization navigation trees.
Enter	Edit a condition or action. When a condition or action is highlighted, press Enter to open the dialog box to edit the element.

Where a keyboard shortcut is available, it will be listed by the appropriate option in a drop-down list.

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Wildcards and Regular Expressions

This section contains examples of wildcards and regular expressions and how they can be used in Environment Manager.

Environment Manager uses **CAtlRegExp** Class regular expressions.

For further information on CAtlRegExp Class regular expressions, refer to www.msdn.microsoft.com.

Expression	Matches
^[a-f]+	"**alice**" matches because her name starts with a letter between a and f "**john**" does not match because his name starts with a letter greater than f "**Alice**" does not match because her name does not start with a lowercase letter
^[a-fA-F]+	"**Alice**" matches because with this expression uppercase letters are allowed
[a-zA-Z]+\d\d\d$	"**UserWithThreeNumbers123**" matches because the user name is made up of alpha numerics followed by 3 numbers "**UserWithFourNumbers1234**" does not match because the user name has four numbers in it

The domain name can also be specified in regular expressions. For example, **appsense\\^[a-f]+** matches all user names which have a first letter a to h. Without a domain name in the regular expression, the query matches any user names which have a first letter from a to h in any domain.

Expression	Matches
(notepad)|(winword)|(calc).exe	**notepad.exe** matches because it is in the list **wordpad.exe** does not match because it is not in the list
^!(notepad.exe)	**notepad.exe** does not match because notepad is specifically excluded **wordpad.exe** matches because it is not notepad
^!((notepad.exe)|(calc.exe)|(winword.exe))	**wordpad.exe** matches because it is not in the list **calc.exe** does not match because it is in the list

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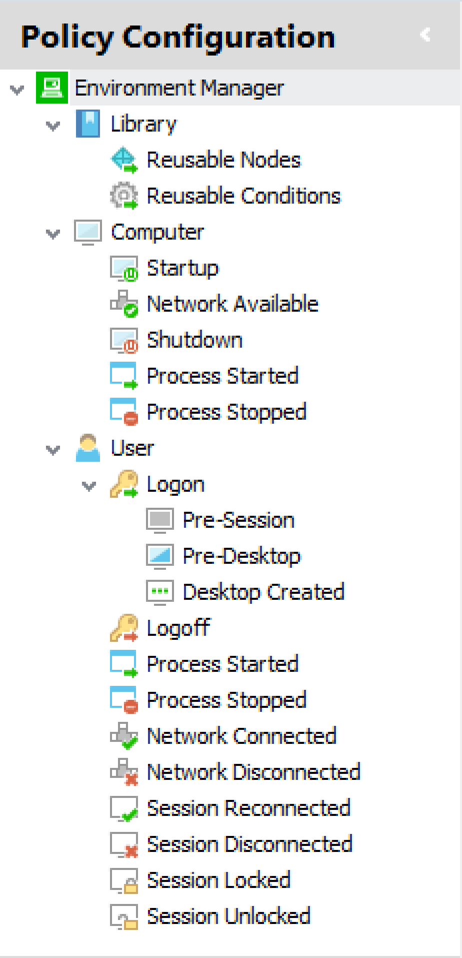
About Policy Configuration

An Environment Manager Policy configuration determines the behavior which applies to a machine or user based on a set of conditions. The conditions are applied to various trigger points, such as a user logging on or a process starting. Once a set of conditions is met, actions are applied to perform the required behavior.

By creating a configuration, a policy of computer usage can be defined, specifying what users have access to, how they access it and what they can subsequently do with it. Using the hierarchical structure allows an execution order to be set for the configuration, creating a logical flow of computer and user actions.

Settings can be applied to whole organizations, setting general preferred behaviors or be more specific; disabling one option in an application for a particular user.

Policy Configurations are built using the framework provided in the Policy Configuration tree within the Environment Manager console.



Policy Configuration

- Environment Manager
  - Library
    - Reusable Nodes
    - Reusable Conditions
  - Computer
    - Startup
    - Network Available
    - Shutdown
    - Process Started
    - Process Stopped
  - User
    - Logon
      - Pre-Session
      - Pre-Desktop
      - Desktop Created
    - Logoff
    - Process Started
    - Process Stopped
    - Network Connected
    - Network Disconnected
    - Session Reconnected
    - Session Disconnected
    - Session Locked
    - Session Unlocked

Managing Configurations

Policy Configurations are built using the framework provided in the Policy Configuration tree within the Environment Manager console.

At the top level, the hierarchy consists of three fixed nodes:

- Library - Contains reusable nodes and conditions referenced in the configuration
- Computer Triggers - Contains triggers relating specifically to the endpoint
- User - Contains triggers relating specifically to user actions
- Configurations are created within the Computer and User nodes by using a combination of the following elements:
- Triggers are static elements found within the Computer and User nodes which represent the events which ultimately trigger actions. Examples of triggers are Computer Startup and Process Stopped.
- Nodes are essentially containers that allow conditions and actions to be associated with triggers. Nodes act as the placeholders to create the hierarchy of the configuration, controlling dependencies and defining processing order.
- Conditions define the rules which specify when actions are carried out. For example, a condition might be created which applies to certain computers or user names. They allow actions to be targeted allowing greater flexibility and customization.
- Actions are applied when conditions are met after a trigger is fired. For example, mapping drives and printers, creating shortcuts and registry keys.
- Lockdown actions are also available. These are provided to disable or remove application items and functionality. For example, disabling a menu option or button in an application or prohibiting the use of certain keyboard shortcuts.

By building up these elements, a configuration is created which controls endpoint usage and user access. For example:

Fixed Node	Trigger	Node	Condition	Action
User	Logon	Map Printer	Computer Name is Equal to Endpoint 1	Map to Printer 1

The simple configuration above maps Printer 1 at logon for the computer *Endpoint 1*. During logon, the Environment Manager agent checks the managed computer against that specified in the condition, *Endpoint 1*. If the condition is met, the action to map the printer to Printer 1 runs. If the managed computer is anything other than *Endpoint 1*, the action is ignored.

In the Environment Manager console, the example would be as follows:

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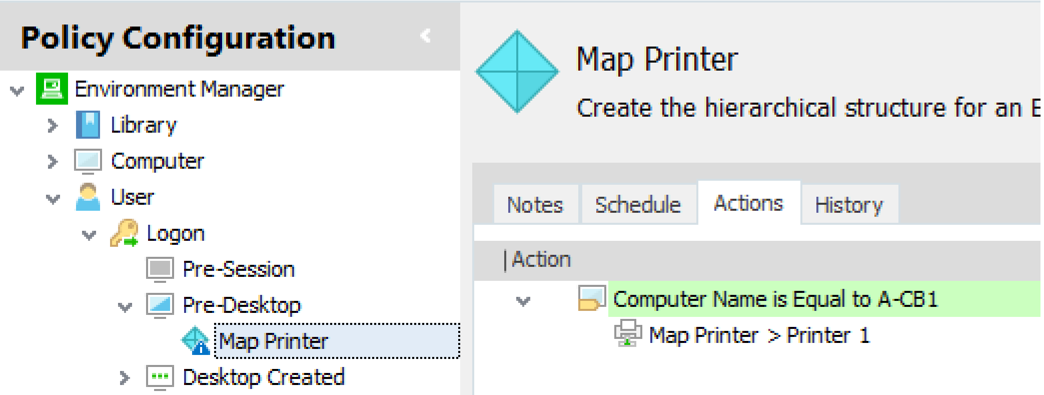

Advanced Configuration Settings

Configuration Settings

Enable Logon Sub-triggers

In Environment Manager 8.5, a new Logon trigger structure was introduced replacing the single Logon trigger with three sub-triggers. This increases efficiency and speeds up logon times as Environment Manager actions can be configured to run at their most appropriate point during the user logon process:

- **Pre-Session** - Actions take effect before terminal services is notified of the logon. Registry, Group Policy and Environment actions are compatible with this sub-trigger. During the upgrade, actions which were previously in the Logon Environment tab are moved here.
- **Pre-Desktop** - Actions take effect when the user logs on to the system but before the desktop shell has started. During the upgrade, actions which were previously in the Logon trigger are moved here.
- **Desktop Created** - Actions take effect after the desktop shell and Explorer has started. To improve efficiency and logon times, any non-critical Logon actions should be added to this trigger, for example, mapping drives and printers.

Change the Logon Sub-trigger Setting

1. Select the **Policy Configuration** navigation button.
2. On the Manage ribbon, select **Advanced Settings**.
3. Select the **Configuration Settings** tab.
4. Apply the **Enable logon sub-triggers** option as required.

For the setting to take effect on managed endpoints, the Environment Manager Agent must be restarted.

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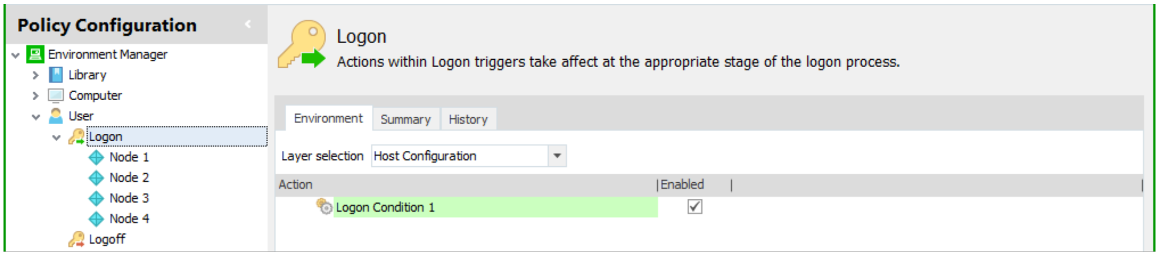
Enable logon sub-triggers is applied by default for new configurations. When upgrading configurations, you are asked if you want to upgrade to the sub-triggers model or keep the single Logon trigger.

The graphic below show a single configuration before and after the Logon trigger upgrade:

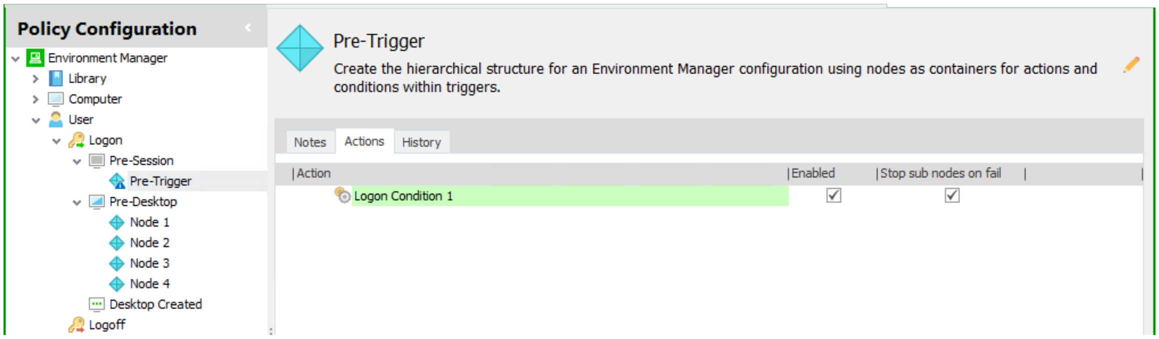


Logon

Actions within Logon triggers take affect at the appropriate stage of the logon process.

Layer selection: Host Configuration

Action	Enabled
Logon Condition 1	☑



Pre-Trigger

Create the hierarchical structure for an Environment Manager configuration using nodes as containers for actions and conditions within triggers.

Action	Enabled	Stop sub nodes on fail
Logon Condition 1	☑	☑

After enabling Logon sub-triggers:

- Logon Condition 1 has been moved from the Logon Environment tab to a new Pre-Trigger node beneath the Pre-Session trigger
- Nodes 1, 2, 3 and 4 have been moved from the Logon node to the Pre-Desktop trigger
- The Desktop Created sub-trigger has been added

For layered configurations, each layer must be upgraded individually or in bulk using the BatchConfigTool before being added back to the upgraded base configuration.

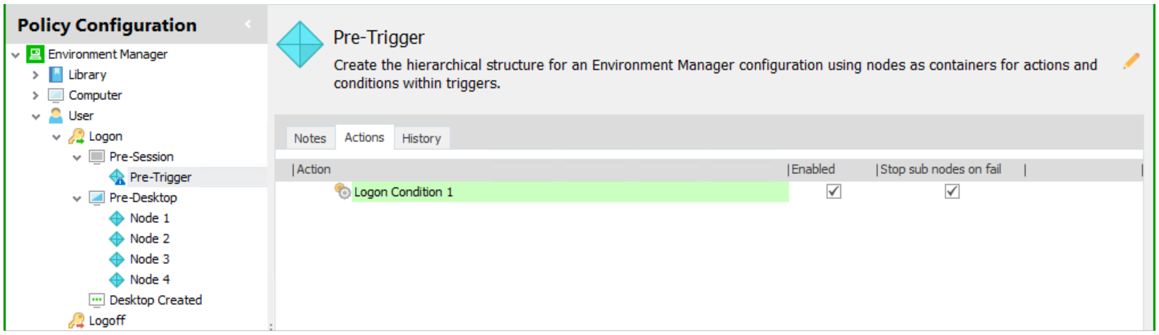
If a configuration already includes nodes converted from triggers, they will revert to sub-triggers when enabled.

The Pre-Session sub-trigger is only compatible with Registry, Group Policy and Environment actions. When a node is converted back to the Pre-Session trigger, non-compatible actions are removed.

When you disable sub-triggers, a node structure is automatically created to replicate the sub-triggers.

The option to use the single logon trigger is included to enable backwards compatibility. Functionality reverts to that of the 8 FR4 release and all changes to this feature made since 8.5 are excluded.

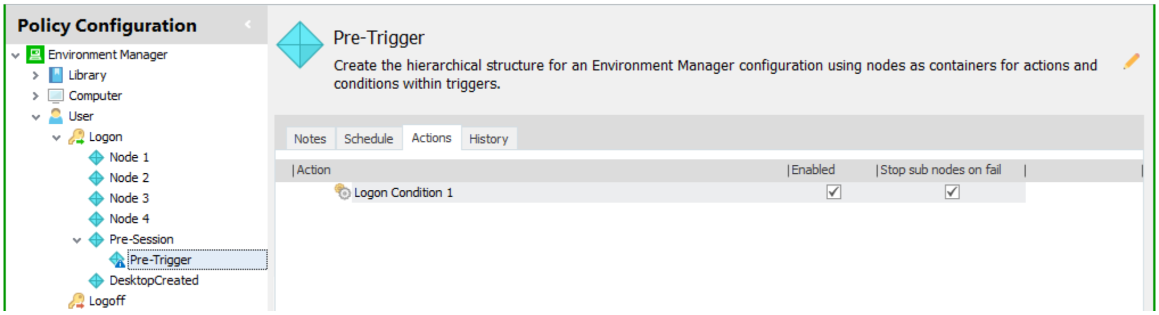
The graphic below show the same configuration before and after Logon sub-nodes have been disabled.



Pre-Trigger

Create the hierarchical structure for an Environment Manager configuration using nodes as containers for actions and conditions within triggers.

Action	Enabled	Stop sub nodes on fail
Logon Condition 1	☑	☑



Pre-Trigger

Create the hierarchical structure for an Environment Manager configuration using nodes as containers for actions and conditions within triggers.

Action	Enabled	Stop sub nodes on fail
Logon Condition 1	☑	☑

After disabling sub-triggers:

- Nodes 1, 2, 3 and 4 have been moved from the Pre-Desktop sub-trigger to being direct child nodes of the Logon trigger.
- Any nodes, actions and conditions in the Pre-Session and Desktop Created sub-triggers are moved to newly created nodes of the same name.
- Any actions which are moved to the newly created DesktopCreated node run before the desktop is displayed to users.

When switching from sub-triggers to the single Logon node, we recommend that you review the actions in the Pre-Session node for Environment actions which would be better placed in the Logon trigger Environment tab.

See Trigger Environment.

Change the Sub-trigger Setting

1. On the Manage ribbon, select **Advanced Settings**.
2. Select the **Configuration Settings** tab.
3. Apply the **Enable logon sub-triggers** option as required.
4. Enable logon sub-triggers is applied by default for new configurations. When upgrading configurations, you are asked if you want to upgrade to the sub-triggers model or keep the single Logon trigger.

For the setting to take effect on managed endpoints, the Environment Manager Agent must be restarted.

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Mid-session Config Changes

Define when changes to the configuration are delivered to users. On the **Manage** ribbon, select **Advanced Settings** > **Configuration Settings**. Apply the **Enable logon sub-triggers** option as required:

- **Immediately** - Changes are implemented as soon as the configuration is pushed out to endpoints. Unapply actions are also executed immediately,
- **At logon** - When the updated configuration is deployed, changes are implemented the next time a user logs on, before the User Logon triggers are fired. Unapply actions work as normal - executed at logoff.
- **At startup** - When the updated configuration is deployed, changes are implemented the next time the endpoint is started, before the Computer Startup trigger is fired. Unapply actions work as normal - executed at the next restart.

For new configurations the default setting is *At logon*. However, for upgraded configurations the Immediate setting will be applied to preserve the behavior of pre-8.5 configurations.

Network Events

Define when the Network Connected and Network Disconnected triggers are fired. The following options are available:

- **Enabled** - The Network Connected and Network Disconnected triggers fire when each network adapter establishes or disconnects a connection, regardless of whether a connection to the same network already exists.
- **Disabled** - The Network Connected trigger fires when the first network adapter establishes a connection to the network. The Network Disconnected trigger fires when the last network adapter disconnects a connection to the network. Each trigger will fire only once for each network.

For new configurations the setting is enabled. However, for upgraded configurations the setting is disabled to preserve the behavior of pre-8.6 configurations.

For the setting to take effect on managed endpoints, the Environment Manager Agent must be restarted

Caution: Enabling this option increases the number of network events. We recommended that conditions are used to restrict actions based upon network connection attributes.

Folder Copy Actions

Define the behavior for Folder Copy actions that are running at logoff. The following options are available:

- **Enabled** - Folder Copy actions that are running at logoff are resumed at the next user logon.
- **Disabled** - Folder Copy actions that are running at logoff are not resumed at the next user logon.

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Custom Settings

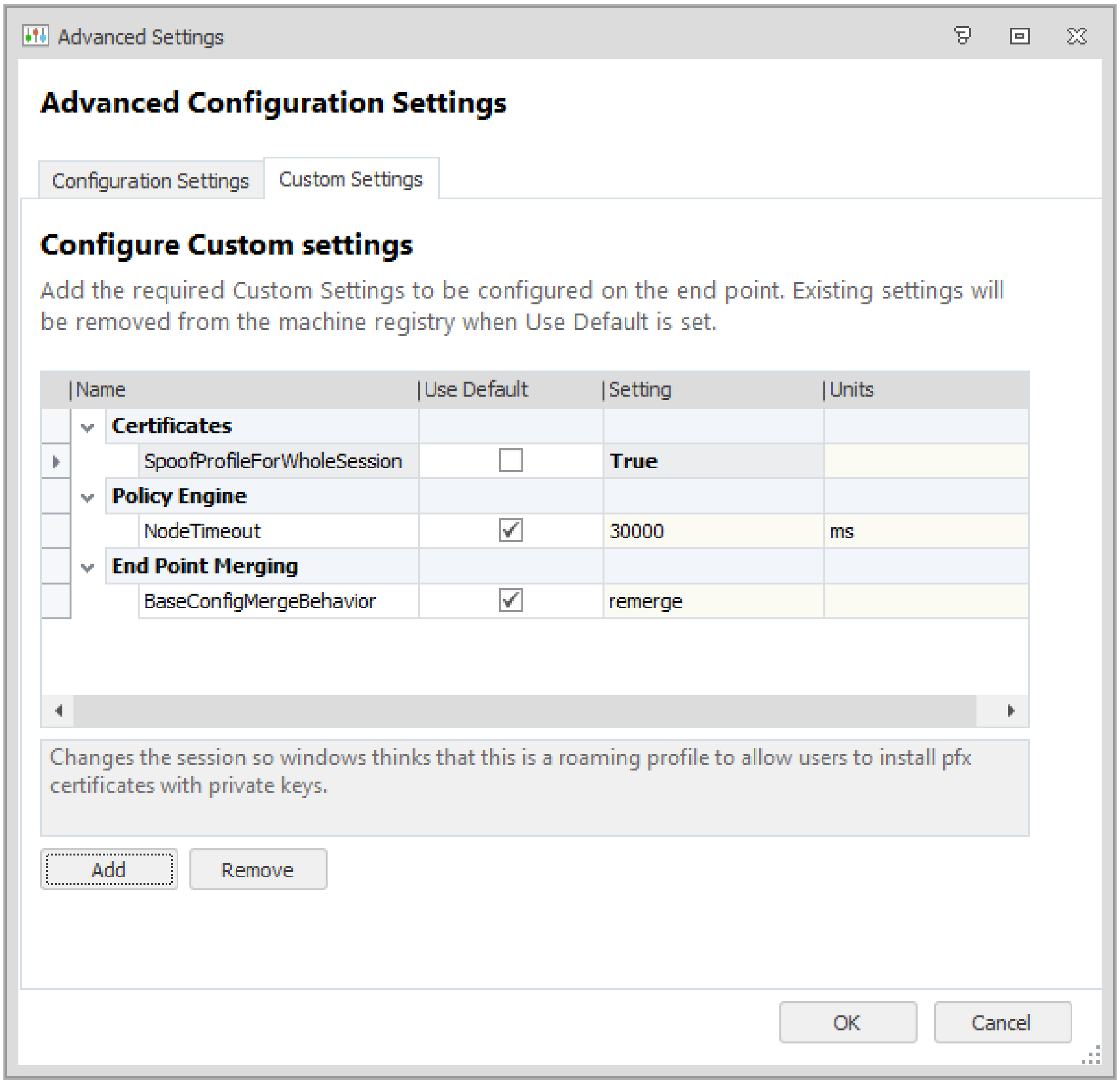
Configure additional settings which will be applied on managed endpoints when an Environment Manager configuration is deployed. Settings such as the default node timeout can be configured in the console, removing the need to manually set the appropriate registry keys.

If a Custom Setting is added, it will be created on endpoints or override any existing setting. Custom Settings can be configured to use apply the default value for that setting or to use the value you assign it; both will override existing settings.

If a Custom Setting is not added, that setting will not exist unless it is already configured on the endpoint, in which case that value is used.

When upgrading a configuration, a setting which already exists on an endpoint will be overwritten by the value of the corresponding Custom Setting.

Manage Custom Settings



Advanced Configuration Settings

Configure Custom settings

Add the required Custom Settings to be configured on the end point. Existing settings will be removed from the machine registry when Use Default is set.

Name	Use Default	Setting	Units
Certificates			
SpoofProfileForWholeSession	□	**True**	
Policy Engine			
NodeTimeout	☑	30000	ms
End Point Merging			
BaseConfigMergeBehavior	☑	remerge	

Changes the session so windows thinks that this is a roaming profile to allow users to install pfx certificates with private keys.

1. Select the **Policy Configuration** navigation button.
2. From the Manage ribbon, select **Custom Settings**.

   The Configure Custom Settings dialog displays.
3. Click **Add** to display the list of custom settings.
4. Select the settings you want to configure and click **OK**. Multiple settings can be selected using the Ctrl and Shift keys or all settings can be added by pressing **Ctrl + A**.

   The selected settings are added to the Configure Custom Settings dialog.

   Settings which are added will be configured on endpoints. Any settings which already exist on an endpoint are used.

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5. Set the values as required. All settings are initially set as **Use Default**, deselect the option to update its value. Any updated settings are displayed in bold. If Use Default is selected for a setting, the corresponding key is removed from the registry as it is not required for the default behavior to apply.
6. Click **OK**.

The settings are applied when the configuration is applied to managed endpoints.

Printer Mapping

Setting	Default	Description
PrinterErrorCodes		List of error codes separated by a comma.
AddPrinterSequential	False	Map printer actions can be performed concurrently or sequentially. Updating this setting to True removes issues created when the AddPrinterConnection API call is hit concurrently.

Certificates

Setting	Default	Description
SpoofProfileForWholeSession	False	Windows mandatory profiles have a limitation restricting users from installing and exporting private keys. PFX certificate types contain embedded private keys and cannot be installed when the profile is set to mandatory. This setting changes the session so Windows thinks a roaming profile is being used, allowing users to install PFX certificates with private keys.

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Policy Engine

Setting	Default	Description
RegexTimeout	2000	Set a timeout limit in milliseconds for invalid regexes which may otherwise evaluate for a long time.
NodeTimeout	30000	Set a limit in milliseconds which is given to nodes to complete before the next node is run.
TriggerTimeout	Infinite	Set the length of time a trigger is given to complete its processing. If the value is -1 or a value is not present, the timeout will wait forever.
ShutdownBailTimeout	Infinite	Timeout value in seconds for actions still running at logoff or shutdown. This applies to all running actions regardless of which trigger originally instigated it. This should only be used in for long running threads at logoff or shutdown.

Active Directory

Setting	Default	Description
UseAlternativeUserGroupTest	False	Specifies that when checking user group membership, it should be dynamic and use the OID_LDAP_MATCHING_RULE_IN_CHAIN filter. If set to true, user group conditions use a more efficient method of lookup which can also reflect group changes during a session. This only works if the Active Directory server is later than Server 2003 R2.
ADUserGroupMembershipTimeout	120	When the UseAlternativeUserGroupTest setting is used, you can specify a timeout value in seconds for the OID_LDAP_MATCHING_RULE_IN_CHAIN query before the request to the personalization server and for policy user group OU Membership conditions.

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System

Setting	Default	Description
LegacyAppInit	False	Set this value to True to use AppInit_DLLs value for injecting Environment Manager components into processes during startup. If set to false, DLLs are loaded by a kernel driver.
EnableNestedComputerGroupQueries	False	Allow the client to query Active Directory for nested computer groups. This setting can affect the performance of the client.

Shell

Setting	Default	Description
CreateSpecialPaths	False	When set to true, the folder exists check is performed on CSIDs.

End Point Merging

Setting	Default	Description
BaseConfigMergeBehavior	Remerge	Controls whether new base configurations override end point layers or are merged with them. **Remerge**- When a new configuration.aemp is deployed to endpoints, a merge with the existing configurations in the MergeConfigs directory is triggered. The new Merged_Configuration.aemp becomes the live configuration. **Replace**- When the new configuration.aemp is deployed to endpoints, it replaces the Merged_Configuration.aemp as the live configuration.

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Custom Scripts

Setting	Default	Description
PowerShellLoadUserProfile	False	This setting allows the PowerShell User Profiles to load when PowerShell Custom actions and conditions execute. When set to False, PowerShell is hosted by Environment Manager and is no longer used natively. ⓘ If the PowerShellRunInHost engineering key is set to set to on, it overrides any setting you have in PowerShellLoadUserProfile and PowerShell will always be hosted by Environment Manager.

Override XenDesktop Session Connect Triggers

Setting	Default	Description
OverrideIcaSessionConnectTriggers	False	When this setting is enabled and set to True, XenDesktop environments execute the Session Lock/Unlock triggers when a user disconnects/reconnects from their session. This applies to XenDesktop versions 7.6 - 7.8 inclusive. This setting has no affect if users are running XenDesktop 7.9 or later because these versions execute the Disconnect/Reconnect triggers anyway.

Desktop Refreshes

Setting	Default	Description
ExcludedRefreshRegistryKeys	N/A	Exclude named registry keys from being parsed during the desktop refresh setting check.

Custom Setting and Engineering Key Interaction

	PowerShellRunInHost=0	PowerShellRunInHost=1
PowerShellLoadUserProfile=0	Hosted	Hosted
PowerShellLoadUserProfile=1	Native	Hosted

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Personalization Servers Policy

Enabling User Personalization is a policy decision and the setting is configured within the Policy Configuration side of the console. It is the deployed configuration which determines whether managed endpoints are subject to User Personalization and to which server endpoints connect.

It is recommended that multiple servers and/or virtual hosts are added to the Select Personalization Server dialog so alternative servers can be easily selected for failover purposes.

Deploy the policy configuration that contains a list of Personalization Servers to the endpoints sending the configuration.aemp to managed computers. The first time a user logs on to a managed endpoint, the Environment Manager agent contacts the first personalization server to request the actual list of servers the endpoint should use (based on the sites configured in the database). The client then contacts the correct server to pull down the User Personalization configuration, containing the list of the applications which should be personalized for the user.

If all attempts to connect to a Personalization Server fail, then the User Personalization configuration is not downloaded and User Personalization does not take place.

For details about configuring Personalization Servers, see the User Workspace Managerhelp.

To cater for such a scenario it is recommended that the **9661 - Timeout Communicating with Personalization Server** auditing event is enabled.

Configure a Personalization Servers List

1. Select the **Policy Configuration** navigation button.
2. From the Manage tab select **Personalization Servers**.

   The Configure Personalization Servers dialog displays.
3. Click the add server button.

   The Add Server dialog displays.
4. Enter the server name or click the ellipsis to search for the required server by specifying locations and searching for server names.

   > Do not select or enter Localhost as the server name. If Localhost is entered as the server name it is added to the configuration.aemp file as the location of the Personalization Server. The client tries connecting to http://localhost/Personalization which is incorrect and User Personalization is disabled.

5. Enter a Friendly Name for the server. This can be any text but should be something which will enable you to identify the server. If no text is entered, the server name is used.
6. Select the required protocol - **http** or **https**.
7. Enter the server name or browse for the required server by specifying locations and searching for server names.

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8. Enter a port number. The port range for Personalization servers is 7771 to 7790 and the default port is 7771.

   Once the server details have been added, the URL for the server is displayed.

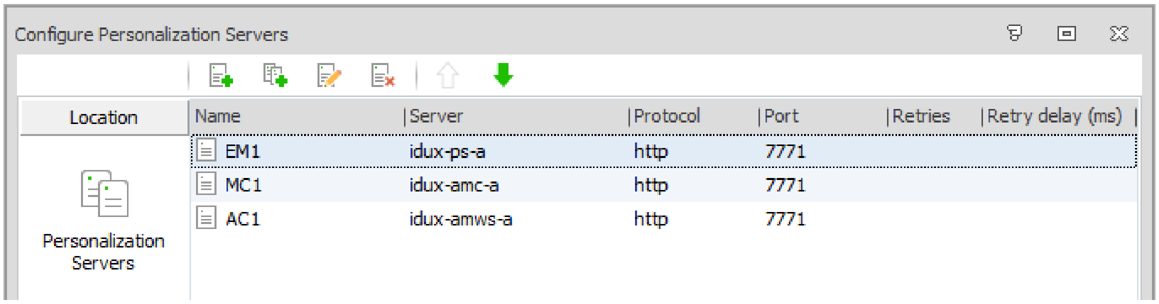
9. Click **OK**.

   The server is listed in the Select Personalization Server dialog.

10. Repeat steps **3** to **9** to add more servers.

    Servers in the list can have their details edited or be deleted from the list using the buttons at the top of the dialog.

11. If you have added more than one server, use the arrow buttons to reorder the list. When the configuration is deployed, endpoints attempt to connect to each server in turn. If a connection cannot be made with any server in the list, Personalization does not occur.



Name	Server	Protocol	Port	Retries	Retry delay (ms)
EM1	idux-ps-a	http	7771		
MC1	idux-amc-a	http	7771		
AC1	idux-amws-a	http	7771		

12. Click **OK** to save the server list.

When the configuration is deployed to endpoints, this list is used to determine which servers managed users connect to.

Auditing

The Auditing option is used to define the rules for the capture of auditing information and the location for storing the local event log. It also displays the events for which data is collected which can be selected for inclusion in the local log. The Audit option is accessible from the Home ribbon. The events available are context sensitive dependent on whether Policy Configuration or User Personalization is selected.

In Enterprise installations, events can be forwarded to the Management Center via the Client Communications Agent (CAA). When using this method for auditing, event data storage and filtering is configured through the Management Center Console.

For more information, see the Management Center Help.

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Configure Auditing Settings

1. Select either the **Policy Configuration** or User **Personalization navigation** buttons.
2. From the Manage ribbon, click **Auditing**.
3. Use the radio buttons to define the required auditing settings:

Option	Description
Send events to the Application event logSend events to the Ivanti event log	Select whether to save the event and associated application data to the Application or Ivanti event log: • Event Viewer > Windows Log > Application • Event Viewer > Applications and Services Logs > Ivanti You can select either Application or Ivanti event log, not both.
Make events anonymous	Anonymous logging searches the file path for any instances where a directory matches the user name and replaces the directory name with the string USERNAME. With this option set to Yes, the computer and user names are not recorded for logged events.
Send events to local file log	Write the events to a local file in either CSV or XML format. Click the ellipsis to select a location for the file. The default location is: %SYSTEMDRIVE%AppSenseLogs\Auditing\EnvironmentManagerEvents_%COMPUTERNAME%.xml (or .csv).
Local file log format	Select whether the local file log is in XML or CSV format.

4. In the Local Event Filter, select the **Log Locally** checkbox for all the events which require logging. When selected, events are displayed in bold.
5. Click **Toggle** selected to change the state between selected and cleared.
6. Click **OK** to save the settings.

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Events

Event ID	Event Name	Event Description	Event Log Type
9300	Self healing process started	A process being monitored for self healing stopped and has been restarted.	Information
9301	Self healing registry key replaced	A registry key being monitored for self healing was changed and has now been reset.	Information
9302	Self healing registry key removed	A registry key being monitored for self healing was inserted and has now been removed.	Information
9303	Self healing file replaced	A file being monitored for self healing was modified or removed and has now been replaced.	Information
9304	Self healing file removed	A file being monitored for self healing was added and has now been removed.	Information
9305	Self healing service stopped	A service being monitored for self healing started and has now been stopped.	Information
9306	Self healing service started	A service being monitored for self healing stopped and has now been restarted.	Information
9307	Self healing registry value replaced	A registry value being monitored for self healing was changed and has now been reset.	Information
9308	Self healing registry removed	A registry value being monitored for self healing was inserted and has now been removed.	Information
9399	Software is not licensed	The Environment Manager software has not been licensed.	Error
9400	Lockdown edit control blocked drive	An edit control has had a blocked drive entered into it.	Information
9401	Lockdown edit control blocked text	An edit control has had blocked text entered into it.	Information
9402	Lockdown accelerator keys blocked	An application has had accelerator keys blocked.	Information
9403	Lockdown dialog blocked	An application has had a dialog box blocked.	Information

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Event ID	Event Name	Event Description	Event Log Type
9404	Lockdown MSAA access blocked	An application has had access blocked for a control using MSAA detection.	Information
9405	User logon action success	A user logon action completed successfully.	Information
9406	User logon action fail	A user logon action failed to complete successfully.	Error
9407	User logoff action success	A user logoff action completed successfully.	Information
9408	User logoff action fail	A user logoff action failed to complete successfully.	Warning
9409	Computer startup action success	A computer startup action completed successfully.	Information
9410	Computer startup action fail	A computer startup action failed to complete successfully.	Warning
9413	Computer network available	A computer network available action completed successfully.	Information
9414	Computer network available action fail	A computer network available action failed to complete successfully.	Information
9420	User session reconnect action success	A user session reconnect action completed successfully.	Information
9421	User session reconnect action fail	A user session reconnect action failed to complete successfully.	Warning
9422	User session disconnect action success	A user session disconnect action completed successfully.	Information
9423	User session disconnect action fail	A user session disconnect action failed to complete successfully.	Warning
9424	User session locked action success	A user session locked action completed successfully.	Information
9425	User session locked action fail	A user session action failed to complete successfully.	Warning
9426	User session unlocked action success	A user session unlocked action completed successfully.	Information

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Event ID	Event Name	Event Description	Event Log Type
9427	User session unlocked action fail	A user session unlocked action failed to complete successfully.	Warning
9428	Process start action success	A process start action completed successfully.	Information
9429	Process start action fail	A process start action failed to complete successfully.	Warning
9430	Process stopped action success	A process stopped action completed successfully.	Information
9431	Process stopped action fail	A process stopped action failed to complete successfully.	Warning
9432	Network connection action success	A network connected action completed successfully.	Information
9433	Network connection action fail	A network connected action failed to complete successfully	Warning
9434	Network disconnected action success	A network disconnected action completed successfully.	Information
9435	Network disconnected action fail	A network disconnected action failed to complete successfully.	Warning
9436	User logon (pre-session) action success	A user logon (pre-session) action completed successfully.	Information
9437	User logon (pre-session) action fail	A user logon (pre-session) action failed to complete successfully.	Information
9438	User logon (pre-desktop) action success	A user logon (pre-desktop) action completed successfully.	Information
9439	User logon (pre-desktop) action fail	A user logon (pre-desktop) action failed to complete successfully.	Information
9440	User logon (desktop created) action success	A user logon (desktop created) action completed successfully.	Information
9441	User logon (desktop created) action fail	A user logon (desktop created) action failed to complete successfully.	Information

Event ID	Event Name	Event Description	Event Log Type
9480	Configuration merge update	The configuration merge folder has been updated.	Information
9481	Configuration merge start	The configuration merge has started.	Information
9482	Configuration merge complete	The configuration merge has completed successfully.	Information
9483	Configuration merge fail	The configuration merge has failed.	Information
9484	Configuration merge timeout	The configuration merge has timed out waiting for expected files.	Information
9495	Not configured	IvantiEnvironment Manager has not been configured.	Warning
9496	Configuration unsupported	An old configuration has been found.	Warning
9650	Managed application start	A managed application has started	Information
9651	Managed application stop	A managed application has stopped	Information
9652	Personalization load error	Personalization settings for a managed application failed to load.	Error
9653	Personalization save error	Personalization settings for a managed application failed to save.	Error
9654	Blacklisted process started	A managed process has launched a blacklisted process.	Information
9655	Personalization not saved	Personalization settings not saved as another group application is running.	Information
9656	Offline resiliency save started	Offline resiliency save has been started for a managed application.	Information
9657	Offline resiliency save complete	Offline resiliency has successfully saved a managed application’s personalization settings.	Information
9658	Personalization settings purged	Personalization settings purged as offline mode is disabled.	Information

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Event ID	Event Name	Event Description	Event Log Type
9659	Personalization settings updated	User personalization settings updated from personalization server.	Information
9660	Personalization failed	Personalization for a managed application failed.	Error
9661	Timeout Communicating with Personalization Server	A timeout occurred while trying to communicate with the Personalization Server.	Warning
9662	Trigger Action Times	All the actions have run for the trigger.	Information
9663	PreCache Application Success	Successfully Precached Managed Application.	Information
9664	PreCache Group Success	Successfully PreCached Managed Application Group.	Information
9665	PreCache Managed Application Failure	Failed to PreCached Managed Application.	Error
9666	PreCache Group Failure	Failed to PreCached Managed Application Group.	Error
9667	Personalization Profile Import	A Profile Import is Active	Information
9680	Endpoint of Self Service start failure	The Endpoint Self-Service process failed to start	Error

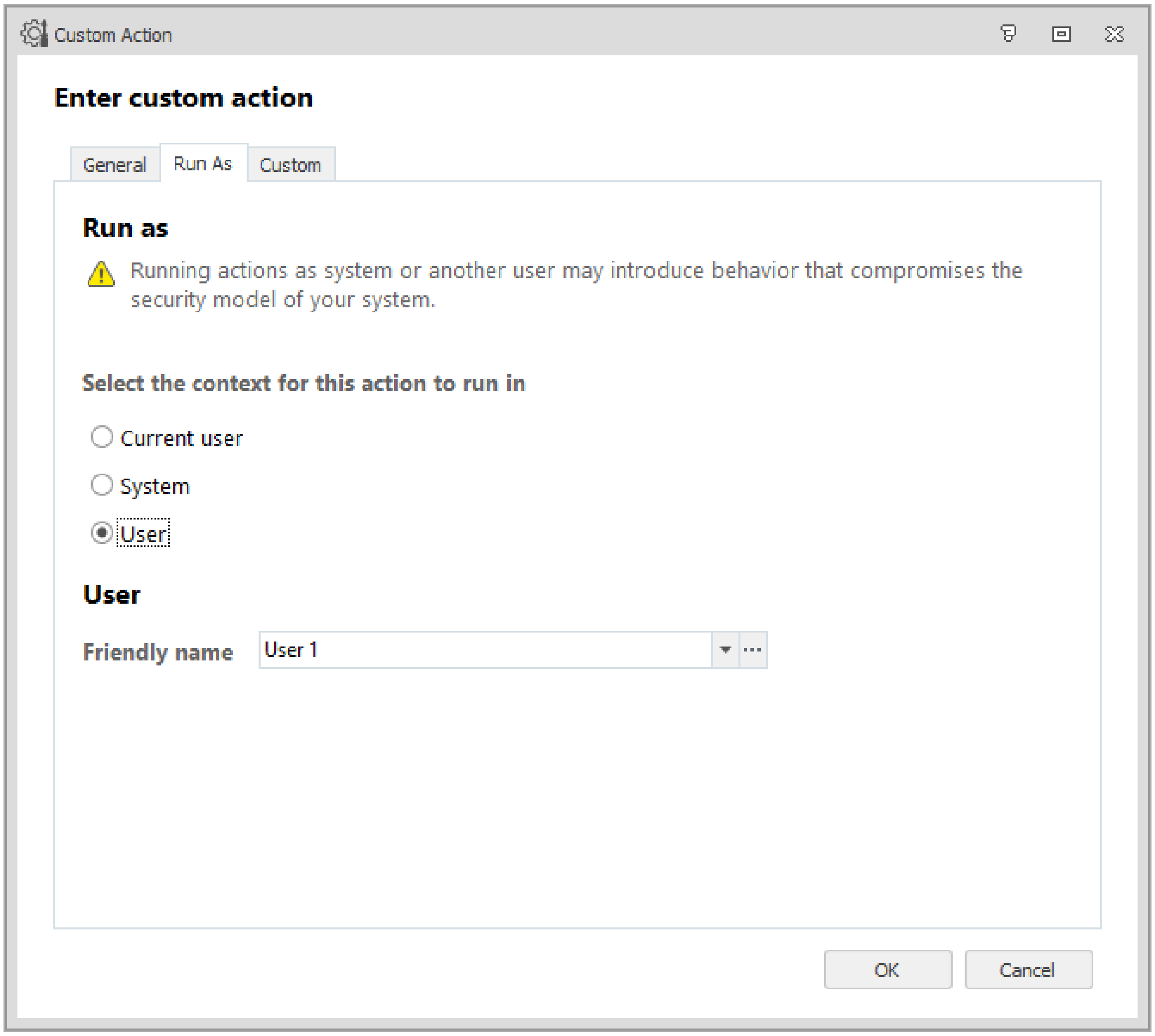
Run As User Library

The **Run As User Library** is used to create and manage user profile information for use in **Run As** or **Connect As** actions. These actions enable actions to be performed using different user credentials. For example, a user may require mapping to a network drive or the ability to launch an application using different credentials.

The users defined in the library are available from the Friendly Name drop-down in the Run As or Connect As tabs in many of the action dialog boxes for user triggers.

As well as being accessed from the Manage tab, the Run As User Library is available by selecting the ellipsis in the Friendly Name field. This allows new users to be added to the library whilst creating actions.

Add a User to the Run As Library



Enter custom action

Run as

Running actions as system or another user may introduce behavior that compromises the security model of your system.

Select the context for this action to run in

○ Current user

○ System

● User

User

Friendly name: User 1

1. Select the **Policy Configuration** navigation button.
2. From the Manage ribbon, select **Run As User Library**.

   The Run As User Library dialog displays.
3. Select **Add**.
4. Enter a Friendly Name which displays in the drop-down list on the action Run As tab.
5. Complete the user name, password and re-enter the password to confirm.
6. Add further users by repeating steps 2 to 4.
7. Select **OK** to save the entry and close the **Run As User Library** dialog box.

Caution: Passwords are stored in configurations using Public Key Encryption. Care should be taken to ensure that security is not compromised.

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Group Policy Location

Group polices are stored in administrative template files (ADM and ADMX files). By default, the files are stored in the following locations:

- ADM - C:\WINDOWS\Inf
- ADMX - C:\WINDOWS\PolicyDefinitions

You can change the default location. If you do, the new location is used for both ADM and ADMX files, and is displayed when you open the dialog to create a Group Policy action. You can overwrite a default location on a per action basis. The setting is stored in both the configuration and the console, which results in the following:

- If multiple administrators access the same configuration, they see the same default location.
- You can access a configuration on multiple devices, and the location remains the same.
- The setting persists; so if you create a new configuration, the default location is as you set it for the previous configuration.

To set a default Group Policy location:

1. In the Manage ribbon, select **Group Policy Location**.

   The Group Policy Location dialog displays.
2. Browse to the location in which you want to store the Group Policy files.
3. Click **OK**.

Configuration Change Tracking

When Change Tracking is enabled, Environment Manager records any activity which occurs within the configuration. The information is stored in a history.sdf file within an Environment Manager AEMP configuration file.

Configuration changes that are recorded include adding and deleting nodes, actions and conditions. Global options, such as adding to the Run As User Library and Personalization Server List, are also recorded.

Change history is available at the following levels:

- **Node** - Each node has its own history which lists changes to that node and any child nodes
- **Trigger** - All triggers include a History tab showing all nodes, actions and conditions within that trigger which have been added or changed.
- **Configuration** - Lists every change made to a configuration including all the node and trigger history as well as any changes to global settings and options

Enable and Disable Change Tracking

Change tracking is disabled by default for a new configuration. When a configuration is saved, so is the setting which becomes the default position.

In the Manage ribbon, select **Enable Change Tracking**. Once enabled, details of each change to the configuration are saved in the history and node version numbers are enabled.

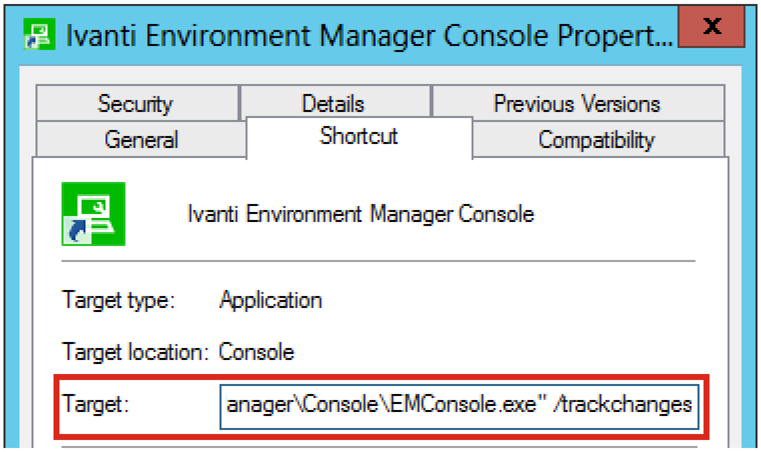
When enabled, select **Disable Change Tracking**. When Change Tracking is disabled, the history remains but no further changes are recorded.

If you disable Change Tracking and make changes to a configuration, when re-enabled, the configuration history shows that changes have been made whilst change tracking was disabled. It will not show any details of what has changed.

Change the Default Position to Enabled

1. Right-click **Ivanti Environment Manager Console** from the Start menu or task bar, and select **Properties**.
2. In the Target field, add **/trackchanges** to the end of the path. Ensure there is a space between the closing quotation marks and the parameter.

   The target should now read: "C:\Program Files\AppSense\Environment Manager\Console\EMConsole.exe" /trackchanges



Ivanti Environment Manager Console

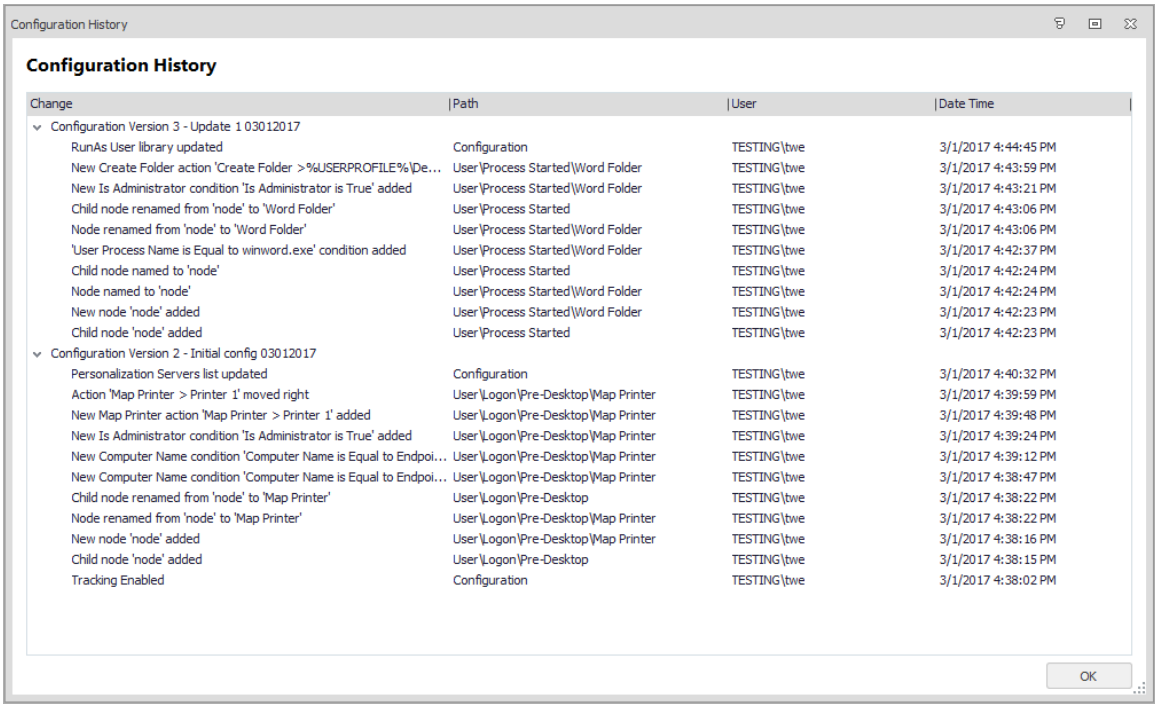
Target type: Application

Target location: Console

Target: anager\Console\EMConsole.exe" /trackchanges

When a new configuration is opened in the console change tracking is enabled. This does not impact saved configurations who keep the setting at the state it was saved.

Configuration History



Configuration History

Change	Path	User	Date Time
Configuration Version 3 - Update 1 03012017			
RunAs User library updated	Configuration	TESTING\twe	3/1/2017 4:44:45 PM
New Create Folder action 'Create Folder >%USERPROFILE%\De...	User\Process Started\Word Folder	TESTING\twe	3/1/2017 4:43:59 PM
New Is Administrator condition 'Is Administrator is True' added	User\Process Started\Word Folder	TESTING\twe	3/1/2017 4:43:21 PM
Child node renamed from 'node' to 'Word Folder'	User\Process Started	TESTING\twe	3/1/2017 4:43:06 PM
Node renamed from 'node' to 'Word Folder'	User\Process Started\Word Folder	TESTING\twe	3/1/2017 4:43:06 PM
'User Process Name is Equal to winword.exe' condition added	User\Process Started\Word Folder	TESTING\twe	3/1/2017 4:42:37 PM
Child node named to 'node'	User\Process Started	TESTING\twe	3/1/2017 4:42:24 PM
Node named to 'node'	User\Process Started\Word Folder	TESTING\twe	3/1/2017 4:42:24 PM
New node 'node' added	User\Process Started\Word Folder	TESTING\twe	3/1/2017 4:42:23 PM
Child node 'node' added	User\Process Started	TESTING\twe	3/1/2017 4:42:23 PM
Configuration Version 2 - Initial config 03012017			
Personalization Servers list updated	Configuration	TESTING\twe	3/1/2017 4:40:32 PM
Action 'Map Printer > Printer 1' moved right	User\Logon\Pre-Desktop\Map Printer	TESTING\twe	3/1/2017 4:39:59 PM
New Map Printer action 'Map Printer > Printer 1' added	User\Logon\Pre-Desktop\Map Printer	TESTING\twe	3/1/2017 4:39:48 PM
New Is Administrator condition 'Is Administrator is True' added	User\Logon\Pre-Desktop\Map Printer	TESTING\twe	3/1/2017 4:39:24 PM
New Computer Name condition 'Computer Name is Equal to Endpoi...	User\Logon\Pre-Desktop\Map Printer	TESTING\twe	3/1/2017 4:39:12 PM
New Computer Name condition 'Computer Name is Equal to Endpoi...	User\Logon\Pre-Desktop\Map Printer	TESTING\twe	3/1/2017 4:38:47 PM
Child node renamed from 'node' to 'Map Printer'	User\Logon\Pre-Desktop	TESTING\twe	3/1/2017 4:38:22 PM
Node renamed from 'node' to 'Map Printer'	User\Logon\Pre-Desktop\Map Printer	TESTING\twe	3/1/2017 4:38:22 PM
New node 'node' added	User\Logon\Pre-Desktop\Map Printer	TESTING\twe	3/1/2017 4:38:16 PM
Child node 'node' added	User\Logon\Pre-Desktop	TESTING\twe	3/1/2017 4:38:15 PM
Tracking Enabled	Configuration	TESTING\twe	3/1/2017 4:38:02 PM

On the Manage ribbon, select **Configuration History** to display details of all the changes made to a configuration whilst change tracking is enabled. Whenever a configuration is saved, a new version of the history is created outlining the changes made since the last save.

In the example below, the configuration contains history for three versions. Each version lists the changes made for that version.

The Configuration History shows the following information for each change:

- Change - An overview of the change, for example New Node Added. More detail about a change can be accessed by double-clicking any entry in the history. See Change Overview for further details.
- Path - If the change relates to a node, the path to the node is displayed. For example, User\Logon\Node A. For changes to global options and settings the path will always show Configuration.
- User - The username and, where appropriate, domain name of the user who made the change.
- Date Time - The date and time the change was made.

Changes can be sorted in ascending or descending order by clicking the column headers.

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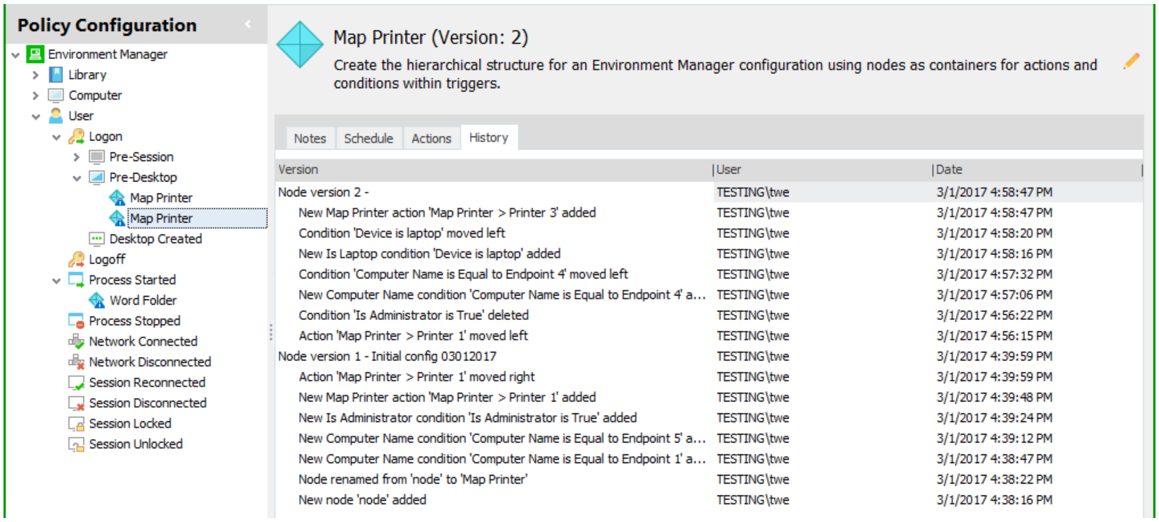
Node History

Once Change Tracking is enabled, every change made to a node is recorded in its History tab which summarizes those changes. When you make changes to a node, it is annotated with an asterisk to show that there are unsaved changes within that node. Once the configuration is saved, the asterisk is removed.

Entries are added to the history as soon as the change is made. However, until the configuration is saved, the changes are not committed. If a configuration is closed without saving, changes are discarded and the history deleted.

For change tracking purposes, nodes are versioned. Each time a node is updated and the configuration is saved, a new history version of the node is created. The node history shows each version with the changes listed below.

In the example below, the configuration has been saved twice since change tracking was enabled. The node is at version two and the history displays the changes made for both versions including who made each change and when.



Map Printer (Version: 2)

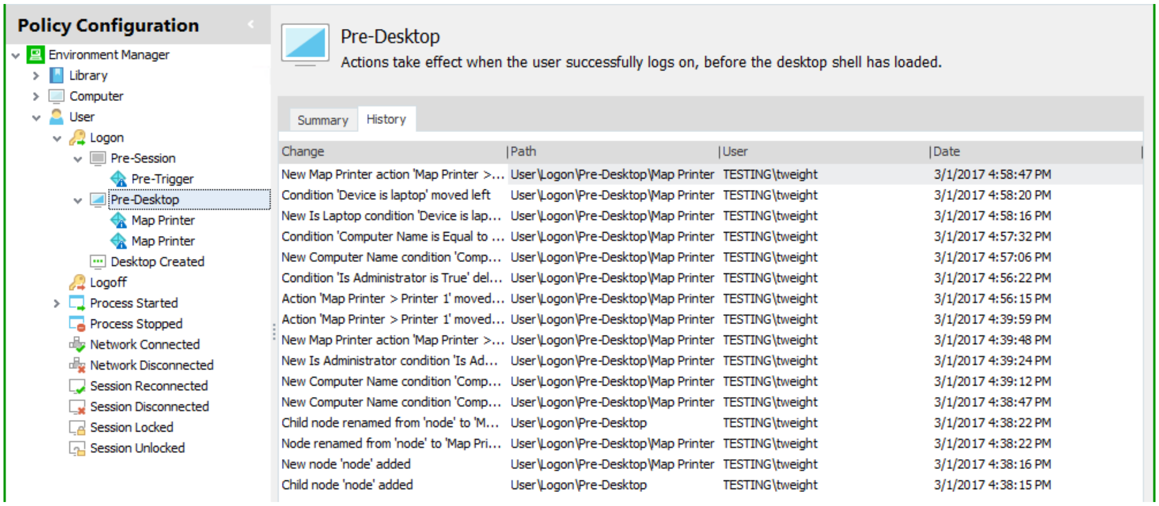
Create the hierarchical structure for an Environment Manager configuration using nodes as containers for actions and conditions within triggers.

Version	User	Date
Node version 2 -	TESTING\twe	3/1/2017 4:58:47 PM
New Map Printer action 'Map Printer > Printer 3' added	TESTING\twe	3/1/2017 4:58:47 PM
Condition 'Device is laptop' moved left	TESTING\twe	3/1/2017 4:58:20 PM
New Is Laptop condition 'Device is laptop' added	TESTING\twe	3/1/2017 4:58:16 PM
Condition 'Computer Name is Equal to Endpoint 4' moved left	TESTING\twe	3/1/2017 4:57:32 PM
New Computer Name condition 'Computer Name is Equal to Endpoint 4' a...	TESTING\twe	3/1/2017 4:57:06 PM
Condition 'Is Administrator is True' deleted	TESTING\twe	3/1/2017 4:56:22 PM
Action 'Map Printer > Printer 1' moved left	TESTING\twe	3/1/2017 4:56:15 PM
Node version 1 - Initial config 03012017	TESTING\twe	3/1/2017 4:39:59 PM
Action 'Map Printer > Printer 1' moved right	TESTING\twe	3/1/2017 4:39:59 PM
New Map Printer action 'Map Printer > Printer 1' added	TESTING\twe	3/1/2017 4:39:48 PM
New Is Administrator condition 'Is Administrator is True' added	TESTING\twe	3/1/2017 4:39:24 PM
New Computer Name condition 'Computer Name is Equal to Endpoint 5' a...	TESTING\twe	3/1/2017 4:39:12 PM
New Computer Name condition 'Computer Name is Equal to Endpoint 1' a...	TESTING\twe	3/1/2017 4:38:47 PM
Node renamed from 'node' to 'Map Printer'	TESTING\twe	3/1/2017 4:38:22 PM
New node 'node' added	TESTING\twe	3/1/2017 4:38:16 PM

The history for version two shows that a child node has been created. Parent nodes only show that the child node has been added, deleted or updated. Full details of the child node can only be viewed by viewing the child node’s history. More detail about a change can be accessed by double-clicking any entry.

See Change Overview for further details.

Trigger Node History



Pre-Desktop

Actions take effect when the user successfully logs on, before the desktop shell has loaded.

Change	Path	User	Date
New Map Printer action 'Map Printer >...	User\Logon\Pre-Desktop\Map Printer	TESTING\tweight	3/1/2017 4:58:47 PM
Condition 'Device is laptop' moved left	User\Logon\Pre-Desktop\Map Printer	TESTING\tweight	3/1/2017 4:58:20 PM
New Is Laptop condition 'Device is lap...	User\Logon\Pre-Desktop\Map Printer	TESTING\tweight	3/1/2017 4:58:16 PM
Condition 'Computer Name is Equal to ...	User\Logon\Pre-Desktop\Map Printer	TESTING\tweight	3/1/2017 4:57:32 PM
New Computer Name condition 'Comp...	User\Logon\Pre-Desktop\Map Printer	TESTING\tweight	3/1/2017 4:57:06 PM
Condition 'Is Administrator is True' del...	User\Logon\Pre-Desktop\Map Printer	TESTING\tweight	3/1/2017 4:56:22 PM
Action 'Map Printer > Printer 1' moved...	User\Logon\Pre-Desktop\Map Printer	TESTING\tweight	3/1/2017 4:56:15 PM
Action 'Map Printer > Printer 1' moved...	User\Logon\Pre-Desktop\Map Printer	TESTING\tweight	3/1/2017 4:39:59 PM
New Map Printer action 'Map Printer >...	User\Logon\Pre-Desktop\Map Printer	TESTING\tweight	3/1/2017 4:39:48 PM
New Is Administrator condition 'Is Ad...	User\Logon\Pre-Desktop\Map Printer	TESTING\tweight	3/1/2017 4:39:24 PM
New Computer Name condition 'Comp...	User\Logon\Pre-Desktop\Map Printer	TESTING\tweight	3/1/2017 4:39:12 PM
New Computer Name condition 'Comp...	User\Logon\Pre-Desktop\Map Printer	TESTING\tweight	3/1/2017 4:38:47 PM
Child node renamed from 'node' to 'M...	User\Logon\Pre-Desktop	TESTING\tweight	3/1/2017 4:38:22 PM
Node renamed from 'node' to 'Map Pri...	User\Logon\Pre-Desktop\Map Printer	TESTING\tweight	3/1/2017 4:38:22 PM
New node 'node' added	User\Logon\Pre-Desktop\Map Printer	TESTING\tweight	3/1/2017 4:38:16 PM
Child node 'node' added	User\Logon\Pre-Desktop	TESTING\tweight	3/1/2017 4:38:15 PM

The History tab for triggers such as Startup, Process Started and Log Off differs to that of nodes. Triggers are not versioned in the history - the history shows a continuous list of all changes made to child nodes and the trigger Environment tab since change tracking was enabled.

To help you easily identify where changes have been made, each history entry displays the configuration path for the relevant node.

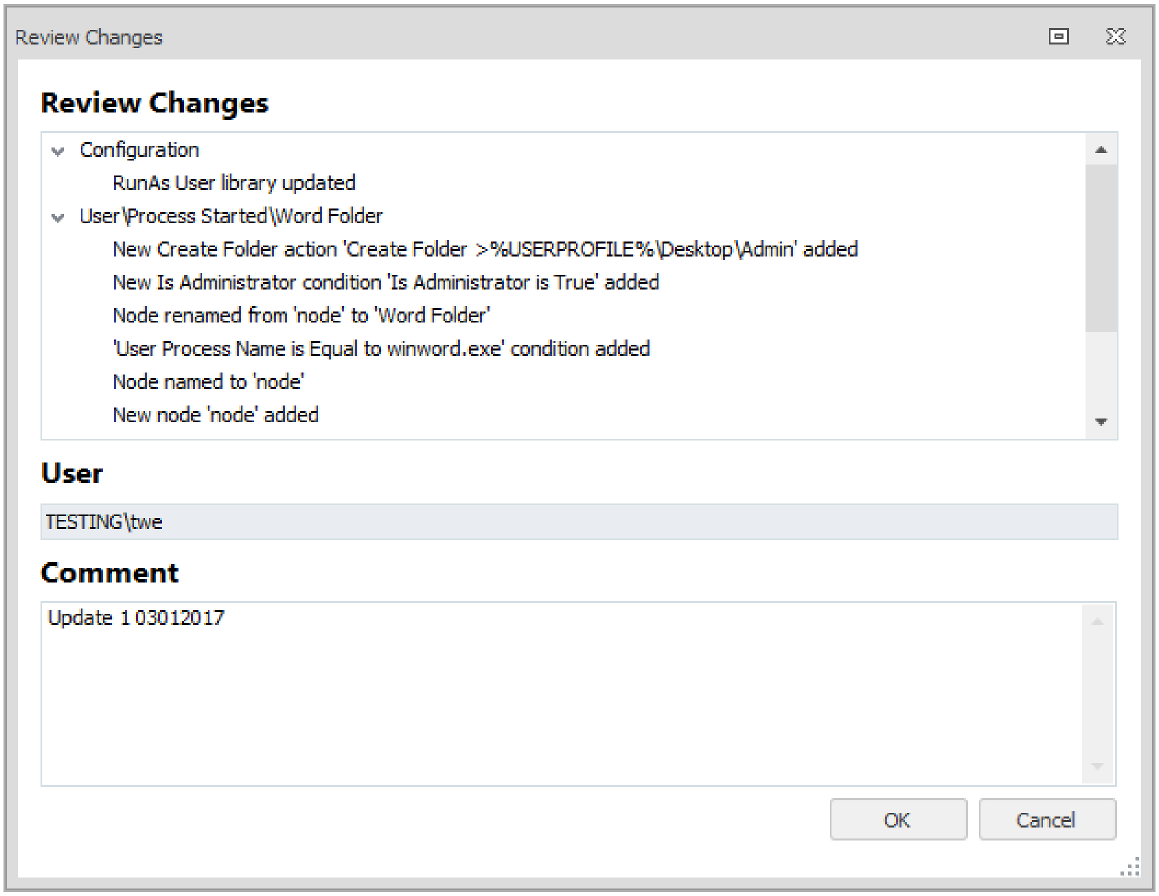
Move, Copy and Import Nodes

When you cut and paste a node into another node, the version number remains unchanged and the entire node history is copied - it is the same node with the same history which has been moved. This behavior applies if a node is moved to reusable nodes.

When you copy and paste a node into another node, the version number of the copied node is set at "1" and the history only shows one entry stating where the node has been copied from. This behavior is the same if a node is cloned or copied to reusable nodes or imported as a policy template.

If copying or cutting a node from one configuration to another, the history is as if the node has been copied - the history tells you from which configuration the node originated.

Save a Configuration



Review Changes

- Configuration
  - RunAs User library updated
- User\Process Started\Word Folder
  - New Create Folder action 'Create Folder >%USERPROFILE%\Desktop\Admin' added
  - New Is Administrator condition 'Is Administrator is True' added
  - Node renamed from 'node' to 'Word Folder'
  - 'User Process Name is Equal to winword.exe' condition added
  - Node named to 'node'
  - New node 'node' added

User

TESTING\twe

Comment

Update 1 03012017

When you save a configuration to disk, the Management Center, SCCM or as the live configuration on an endpoint, an overview of the changes you have made since the last save is displayed. Like node and configuration histories, more detail about a change can be viewed by double-clicking any entry in the history.

See Change Overview for further details.

You can optionally add comments which will be added to the Configuration History for that version of the configuration. Although each new version of a configuration is identified by its own version number, adding comments allows you to add your own identification.

Each time a configuration is saved, its version number is incremented and displayed at the bottom right of the console - regardless of whether change tracking is enabled or not.

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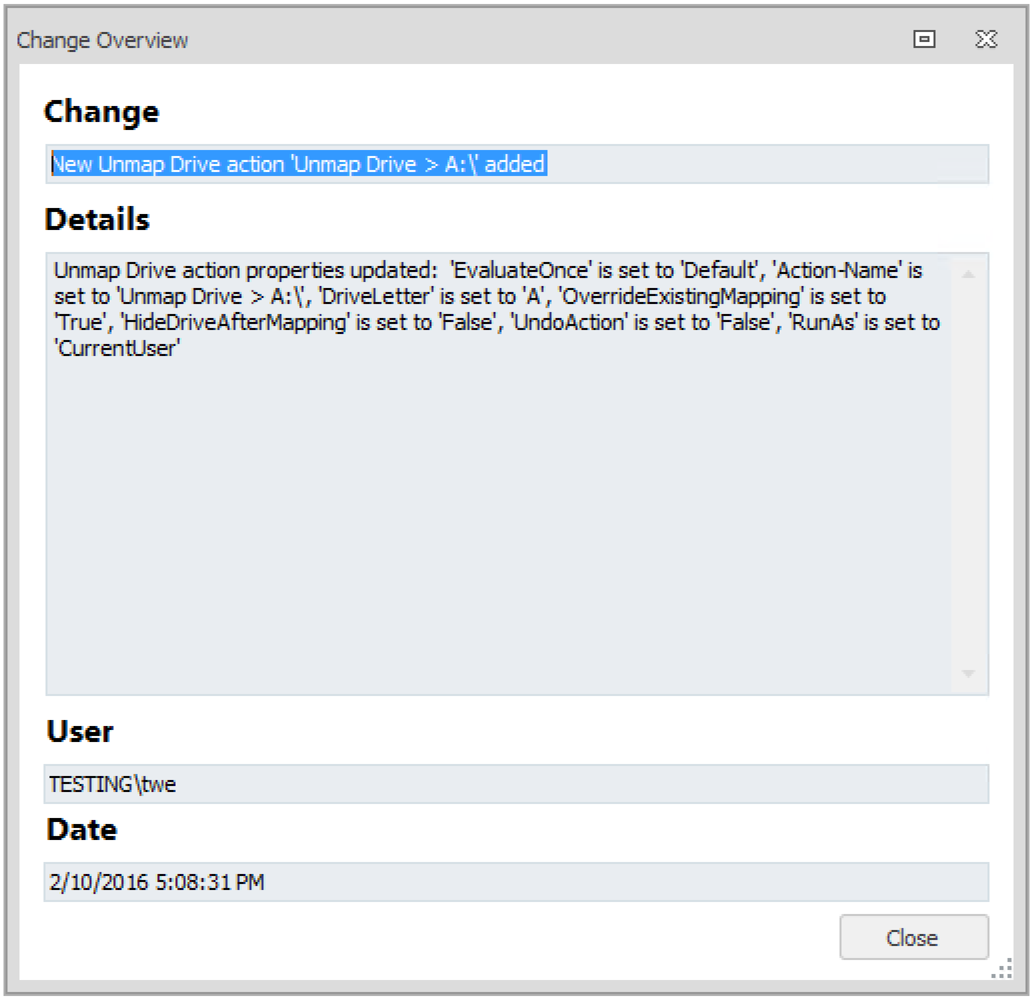
Change Overview



Change

New Unmap Drive action 'Unmap Drive > A:\' added

Details

Unmap Drive action properties updated: 'EvaluateOnce' is set to 'Default', 'Action-Name' is set to 'Unmap Drive > A:\', 'DriveLetter' is set to 'A', 'OverrideExistingMapping' is set to 'True', 'HideDriveAfterMapping' is set to 'False', 'UndoAction' is set to 'False', 'RunAs' is set to 'CurrentUser'

User

TESTING\twe

Date

2/10/2016 5:08:31 PM

More detailed information about each change can be accessed by double-clicking any history item from the following areas:

- Configuration History
- Node History
- Review Changes dialog when saving a configuration

In the example below, the Change field displays a high level overview - a Delete File action has been updated. This is the same text which appears in the history. The Details field shows which property has changed - the Notes for the action were updated and the Run As setting was changed, amongst other parameters.

Undo and Redo Changes

If you undo a configuration change using the buttons in the quick access menu, the history of that change removed. Similarly, if an undone change is redone, the history is restored. This applies to both configuration and node histories.

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Delete the Configuration History

Change history can be deleted when required and the amount of history you delete can be defined by date or version number. You are given the option to export the history prior to deleting.

1. Select the Policy Configuration navigation button.
2. On the Manage ribbon, select **Delete History**.
3. Select and configure the history you want to delete:
    - **All history** - Delete the entire configuration history.
    - **History older than date** - Delete the configuration history up to the entered date.
    - **History up to and including selected version** - Delete the configuration history up to the specified version number.
4. Select whether you want to **Export then Delete** or just **Delete**.

If you export prior to the delete the selected history is exported to CSV file at a selected location.

Deleting the history does not change or remove version numbers of nodes or configurations. When the history is deleted, the version numbers stay the same and increment as normal on future saves.

Export Configuration History

Configuration History can be exported to a CSV file. You can export the whole history of the configuration since change tracking was enabled or you can choose to export the history up to a certain date or configuration version.

By creating a backup you can delete all or part of the history to reduce the configuration file size whilst ensuring that you still have access to the change tracking data. The exported history file can be opened in a spreadsheet so the data can be examined and queries run.

1. Select the **Policy Configuration** navigation button.
2. In the Manage ribbon, click **Export History**.
3. Select and configure the history you want to export:
    - **All history** - Export the entire configuration history.
    - **History older than date** - Export the configuration history up to the entered date.
    - **History up to and including selected version** - Export the configuration history up to the specified version number.
4. Click **OK**.
5. Select a location to save the CSV file and click **Save**.

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Default Timeout Settings

Default timeouts are set for triggers, nodes, conditions and logon actions. If a timeout limit is exceeded, the configuration element still runs to completion but is considered a fail and therefore child nodes do not run.

The default values, in milliseconds, can be changed by editing the following keys, set under:

HKLM\Software\AppSense\Environment Manager

Key	Type	Default	Details
TriggerTimeout	DWORD	Infinite	The maximum time given for all nodes under a trigger to run, for example, Logon or Process Started.
NodeTimeout	DWORD	30000ms	The maximum time given for all the actions and conditions to run.

If a custom action contradicts a default timeout setting, the default setting is overwritten.

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Configuration Tasks

This section describes how to save, create and import/export Environment Manager Configuration file (AEMP) and how to import part configuration in the form of Policy Templates.

Save a Configuration

Users with non-administrative rights operating a product console in Standalone mode can only view configurations with read-only permissions. The user can interact with the configuration settings in the console but the settings cannot be saved and are not implemented or retained after the console is closed. The user can export a configuration to XML format but cannot import a configuration.

When changes are made to a configuration, you have the following options:

Save

This is the default Save action and is the same as Save on the Quick Access toolbar.

- **Save and continue editing** - Save the configuration to the Management Center and keep the configuration locked and open for editing. You cannot deploy the configuration while it is locked.
- **Save and Unlock** - Save the current configuration in the Management Center and unlock it ready for deployment.
- **Unlock without saving** - Unlock the current configuration in the Management Center without saving changes.

If Change Tracking is enabled before the save is committed, a summary of the changes you have made will be displayed.

Save As

- **Live configuration on this computer** - Save the current configuration on the current computer and apply it as the working configuration. For a live configuration to work successfully, the EM User Virtualization Service must be installed and running on the endpoint. Administration rights are required to use this option.
- **Configuration in the Management Center** - Create this configuration in the package store on the selected Management Center.
- **Configuration in System Center Configuration Manager** - Saves your configuration to the specified System Center Configuration Manager server.
- **Configuration file on disk** - Save the current configuration as a file on a local or network drive in AEMP format.

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Create a Configuration

1. Launch the Environment Manager console from **Start** > **Programs** > **AppSense** > **Environment Manager**. The Environment Manager console displays.
2. Click **File** > **New**.

   A new configuration displays.

You must save a new configuration before any settings are implemented.

Import a Configuration

Configurations can be imported in to Environment Manager.

1. Select the **Policy Configuration** navigation button.
2. Select **File** > **Import & Export** > **Export Configuration as MSI**.

   The Open dialog displays.
3. Navigate to the location of the MSI, select it and click **Open**.

Export a Configuration

Configurations can be exported from Environment Manager.

1. Select the **Policy Configuration** navigation button.
2. Select **File** > **Import & Export** > **Export Configuration as MSI**.

   The Save As dialog box displays.
3. Navigate to the location to where you want to save the MSI, click **Save**.

Import a Policy Template

A library of partial components can be setup by importing/exporting configurations as XML files to a specified location.

1. In the Policy Configuration navigation tree, select where you want to import a partial configuration.
2. From the Tools & Wizards ribbon, click **AppSense Policy Templates** and select **Import Template**.

   The Open dialog box displays.
3. Locate the .XML file you want to import and click **Open**.
4. The XML file is imported into the configuration.

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Library

The Library node contains two fixed nodes; Reusable Nodes and Reusable Conditions. These are nodes and conditions that can be used multiple times within your configuration. They are ideal for grouping common sets of actions together that will regularly need to run in a variety of circumstances.

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Configuration Layering

Configuration Layering allows complex configurations to be built independently and combined into a single deployable configuration which maintains the origin of each configuration item.

Layering enables separate business units or teams to maintain configurations which together are deployed to endpoints ensuring changes can be implemented quickly and easily.

Components

Host Configuration

A host is the initial configuration to which layers are added. It is the only configuration in a layered configuration which can be edited - nodes and library items can be added, edited and deleted.

A host can be any AEMP file compatible with the version of the Environment Manager you are using. A host is no different to any other configuration - it is the term used to describe a configuration that contains layers.

Layer

A layer is a configuration that has been added to a host. Like hosts, a layer can be any AEMP file compatible with the version of the Environment Manager you are using.

When a layer is added to a host, its nodes and libraries are read-only and cannot be edited or deleted from the layered configuration. They remain part of that layer and independent from the host. Nodes and library items from a layer cannot be deleted or edited in the layered configuration. The layer must be edited independently and added again to update the layered configuration.

There a two types of layer:

- **Library Layer** - Consists of the following:
  - Reusable Nodes
  - Reusable Conditions
  - Blocked Text Library
  - User Messages
  - Run As User Library
- **Full Configuration** - Everything included in the library layer, plus:
  - Computer triggers
  - User triggers
  - Content

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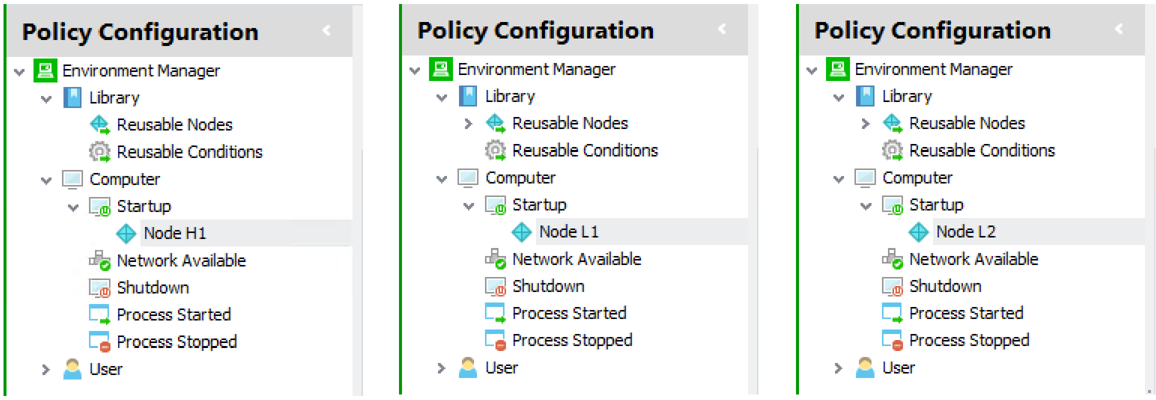
Layered Configuration

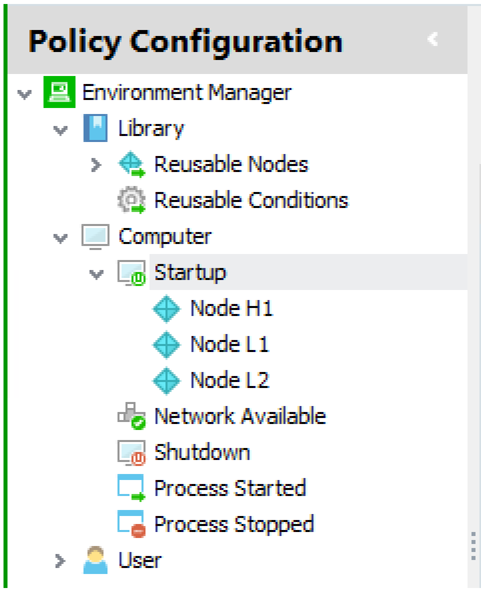
A layered configuration is an AEMP file made up of a host and one or more layers. The layers are independent from the host in that they are read-only and cannot be edited. A layered configurations is no different from any other AEMP file in that it is a collection of nodes and library settings.

Layered configurations provide a way to combine multiple configurations into a single AEMP file, without losing the individual identity of the layers and can also be a layer in another configuration.

In the example below the host configuration contains the Host node in the Computer Startup trigger. Two configurations are to be added as layers, each with a node in the Computer Startup trigger:



Added layers are analyzed and combined with the host:



The layers create a single configuration with each node positioned as they are in their individual layers. Layer 1 and 2 are read only - their nodes cannot be edited or deleted within the layered configuration. The node in the host configuration can be edited and deleted if required and any nodes added to the layered configuration are added to the host. You can also reference nodes from the host as child nodes in a layer.

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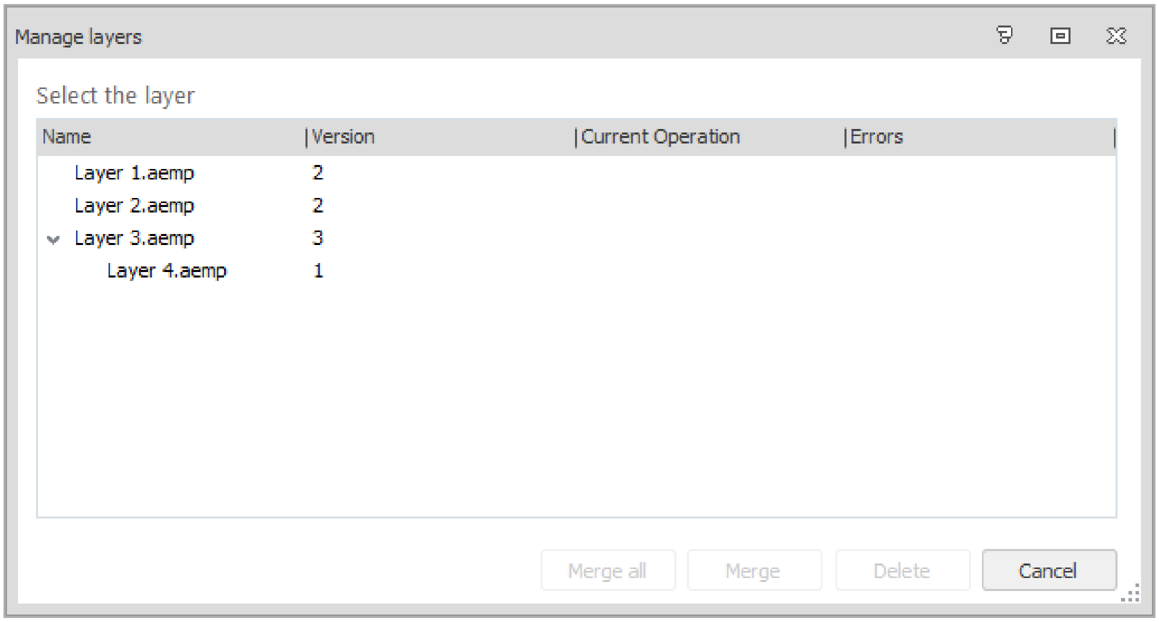
Nested Layers

Layered configurations can be added to other hosts, nested and referenced within other layers multiple times, as shown below:



Name	Version	Current Operation	Errors
Layer 1.aemp	2		
Layer 2.aemp	2		
Layer 3.aemp	3		
Layer 4.aemp	1		

The host configuration contains three layers. Layer 3 is a layered configuration containing Layer 4 creating a dependency between the two layers.

You cannot create this type of dependency directly in the host. In the example above, Layer 1 cannot be moved into Layer 2. To achieve this Layer 1 would first need to be added into Layer 2 before Layer 2 is added to the host.

Excluded from Layering

When a layer is added to a host, the following settings are not included from the layers:

- Custom Settings
- Auditing
- Personalization Servers

In a layered configuration, settings for these sections are set in the host.

Trigger Environment Actions and Conditions

Trigger Environment actions and conditions from the host and each layer are added to layered configurations. There is no change to the behavior of Environment actions and conditions.

To see the Trigger Environment for a layer, highlight a compatible trigger and select the required layer from the drop-down.

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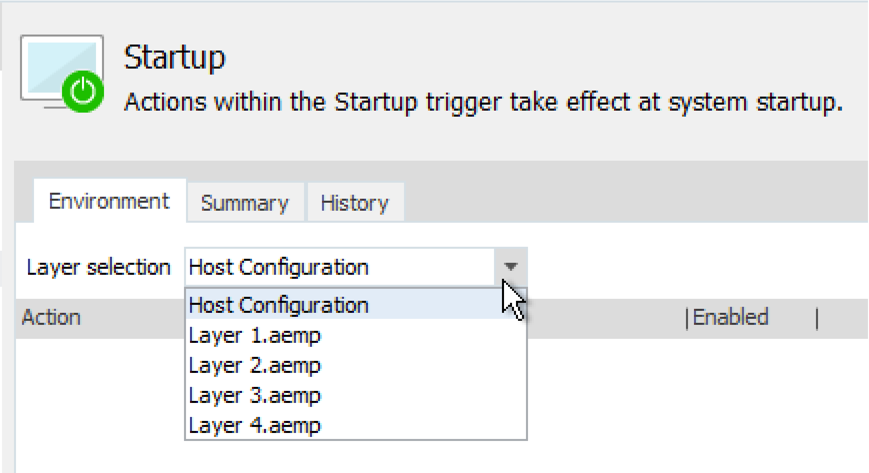

Startup

Actions within the Startup trigger take effect at system startup.

Layer selection: Host Configuration

- Host Configuration
- Layer 1.aemp
- Layer 2.aemp
- Layer 3.aemp
- Layer 4.aemp

Compatible triggers.

- Computer
  - Startup
  - Network Available
  - Shutdown
- User
  - Logoff
  - Network Connected
  - Network Disconnected
  - Session Reconnected
  - Session Disconnected
  - Session Locked
  - Session Locked

User Messages, Blocked Text Libraries and Run As Libraries

A layered configuration includes the entries in User Messages, Blocked Text Libraries and Run As Use libraries from all layers. Their behavior is essentially the same as nodes in layered configurations - the libraries from layers are read-only and when a new item is added in a layered configuration, it is added to the host.

When you view any of the libraries you can see which message belongs to which layer. They cannot be edited or deleted from the layered configuration. The appropriate layer must be removed, edited and added again.

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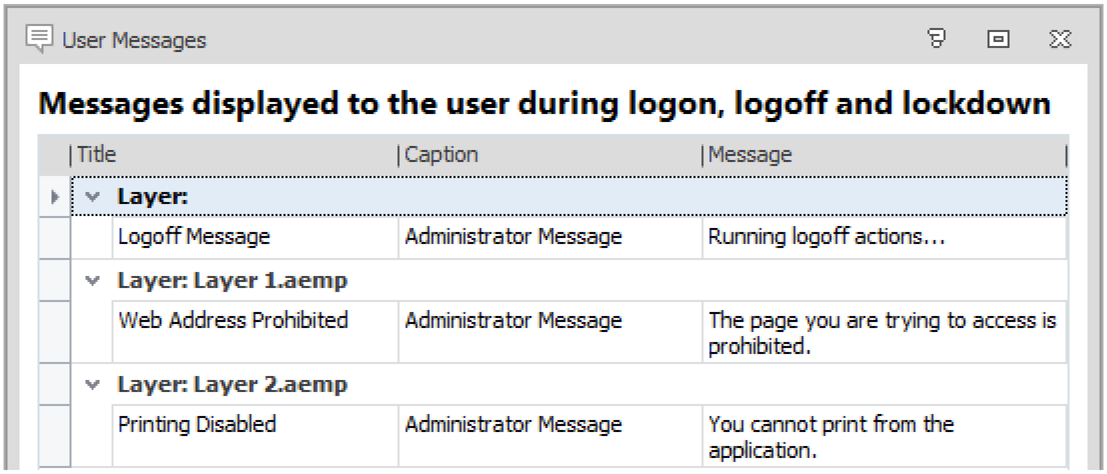
In the example below, the Logoff Message can be edited as it belongs to the Host but the two other messages are part of layers and cannot be edited. Any message can be referenced in Lockdown conditions in the host and any other layer.



Messages displayed to the user during logon, logoff and lockdown

Title	Caption	Message
Layer:		
Logoff Message	Administrator Message	Running logoff actions...
Layer: Layer 1.aemp		
Web Address Prohibited	Administrator Message	The page you are trying to access is prohibited.
Layer: Layer 2.aemp		
Printing Disabled	Administrator Message	You cannot print from the application.

Manage Layered Configurations

Configure a Host

A host can be any AEMP file compatible with the version of the Environment Manager you are using. A host is no different to any other configuration - it is the term used to describe a configuration that contains layers.

1. Open a new or existing AEMP configuration in the Environment Manager console.

   This initial layer will be your host configuration.

   The configuration must have been created in the same version as the console you are using. Older configurations must be upgraded to the console version before they can be added as a layer.

   For further information about Upgrading Configurations, see the User Workspace Manager help.
2. Enable Change Tracking, if required.

   If you want to keep the history of layers being added to a layered configuration, Change Tracking must be enabled on the host.
3. Configure the library and trigger sections you need in the host.
4. Add Custom Settings, Personalization Servers and Auditing options. For a layered configuration, these options must be set in the host - they will not be included from the layers.
5. Save the configuration.

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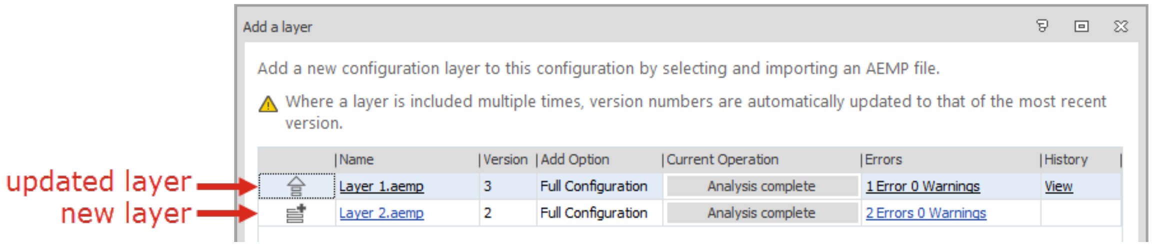
Add a Layer

Once you have a host configuration, multiple AEMP configuration files can be added to create a layered configuration.

When you add a layer, it will either be new to that configuration or an update to an existing layer. When you select a layer to add, the icons denote whether it is a new or update.



Add a layer

Add a new configuration layer to this configuration by selecting and importing an AEMP file.

⚠ Where a layer is included multiple times, version numbers are automatically updated to that of the most recent version.

	Name	Version	Add Option	Current Operation	Errors	History
	Layer 1.aemp	3	Full Configuration	Analysis complete	1 Error 0 Warnings	View
	Layer 2.aemp	2	Full Configuration	Analysis complete	2 Errors 0 Warnings	

1. Before adding a layer, ensure all the Add Layer Rules are satisfied:
    - Layers must be valid configurations for the Environment Manager console they are being added to. For example, you cannot add an 8.3 configuration to an 8.5 console.
    - Layers cannot be added if they are the same version or older than a layer already in the host.
    - For example, Layer A version 2 exists in the layered configuration. You cannot add Layer A version 1 as it is an earlier version.
    - Adding a new version of a layer will update all existing references of that layer to the new version.
    - Configuration History is only added with a layer if Change Tracking is enabled on the host configuration.
2. Open your host configuration.
3. In the Manage ribbon, in the Layers group, select **Add**.

    The Add a layer dialog displays.
4. Click the **Add** drop-down and select one of the following:
    - Configuration file from disk (Default - selected if the Add button is clicked)
    - Configuration file from Management Center
    - Configuration file from SCCM

    Each of these methods adds a layer.

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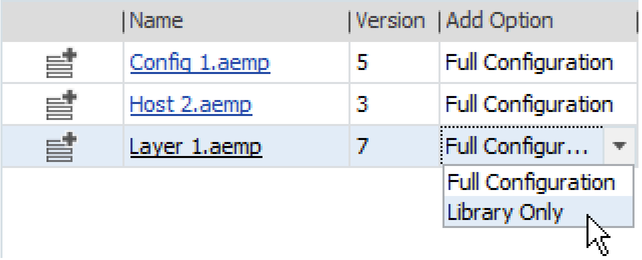
5. Select the configuration(s) you want to add as layers - multiple configurations can be selected.

   The selected layers are added to the dialog and analyzed for compatibility with the host and other layers. When adding layers to a new host, there are rules and conditions which a layer must satisfy.

   If identically named nodes from different layers exist in the same trigger, they will run in parallel. For example, a new layer is added to a host. A node called "Node A" exists in the Process Started trigger at the same level in both configurations. The Process Started trigger in the layered configuration contains two nodes called "Node A" which would run in parallel.

   Once analysis is complete, any errors arising from conflicts between the layers are identified. Click the link in the Errors column to view further details.

6. For each layer, select whether you want to add the full configuration or just the library settings.



	Name	Version	Add Option
	Config 1.aemp	5	Full Configuration
	Host 2.aemp	3	Full Configuration
	Layer 1.aemp	7	Full Configur...

7. Click **OK**.

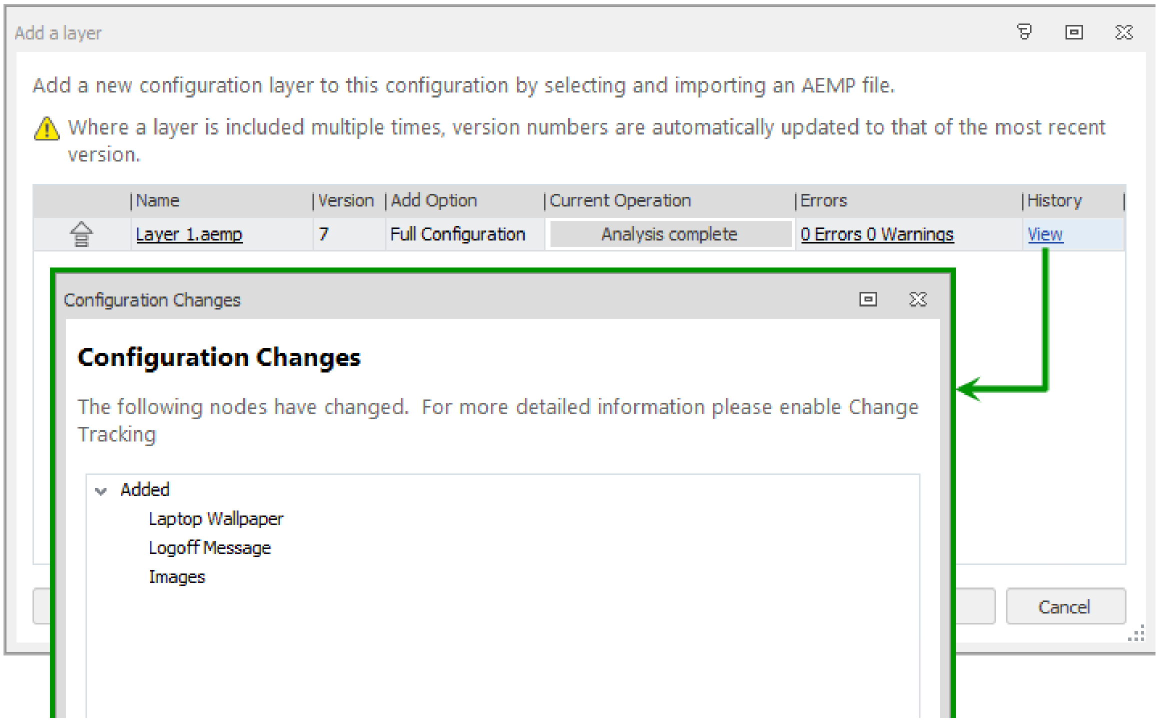
   The nodes and library settings from the layers are added to the configuration.

8. Save the configuration.

The configuration can be distributed to endpoints using the Management Center or other deployment method.

Review Layer Changes

When adding an updated layer, the new and existing versions of the layer are compared to see what changes have been made in the new version. Click the View link in the History column to display a list of added, updated and deleted nodes resulting from the incoming layer. The history will also show details of any layers have been added or removed from that layer.



Add a new configuration layer to this configuration by selecting and importing an AEMP file.

⚠ Where a layer is included multiple times, version numbers are automatically updated to that of the most recent version.

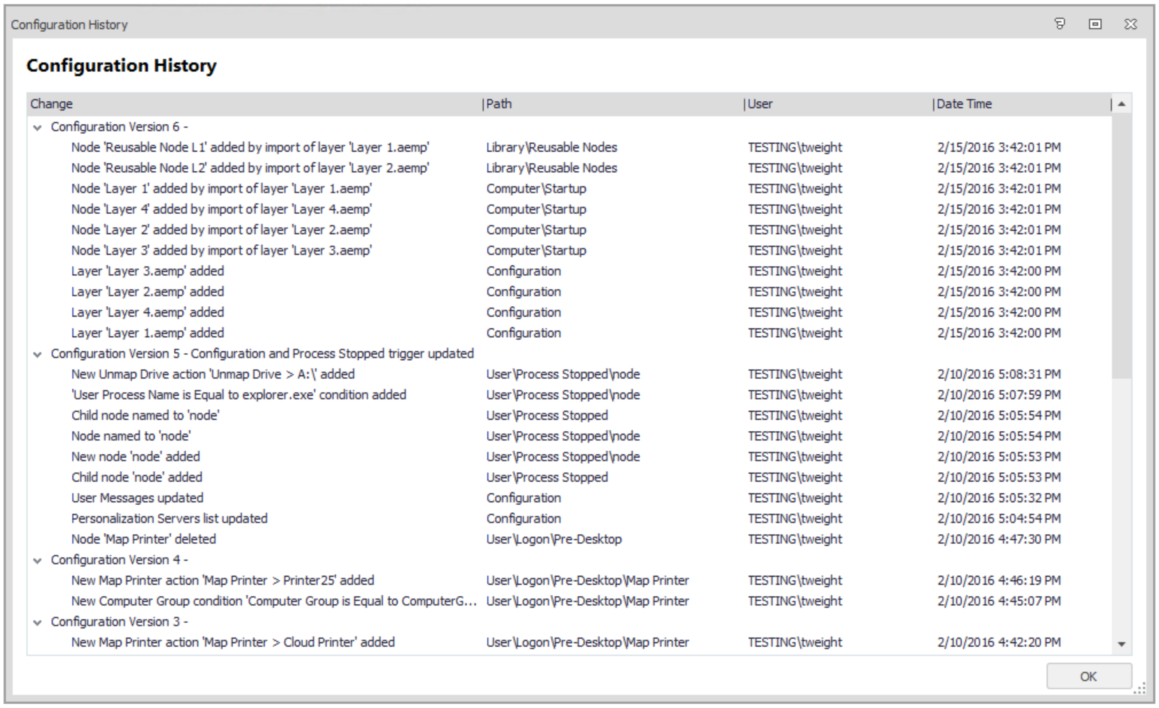
	Name	Version	Add Option	Current Operation	Errors	History
	Layer 1.aemp	7	Full Configuration	Analysis complete	0 Errors 0 Warnings	View

Configuration Changes

The following nodes have changed. For more detailed information please enable Change Tracking

- Added
  - Laptop Wallpaper
  - Logoff Message
  - Images

If Change Tracking is enabled in the configuration being added, the available history for that layer is displayed.



Configuration History

Change	Path	User	Date Time
Configuration Version 6 -			
Node 'Reusable Node L1' added by import of layer 'Layer 1.aemp'	Library\Reusable Nodes	TESTING\tweight	2/15/2016 3:42:01 PM
Node 'Reusable Node L2' added by import of layer 'Layer 2.aemp'	Library\Reusable Nodes	TESTING\tweight	2/15/2016 3:42:01 PM
Node 'Layer 1' added by import of layer 'Layer 1.aemp'	Computer\Startup	TESTING\tweight	2/15/2016 3:42:01 PM
Node 'Layer 4' added by import of layer 'Layer 4.aemp'	Computer\Startup	TESTING\tweight	2/15/2016 3:42:01 PM
Node 'Layer 2' added by import of layer 'Layer 2.aemp'	Computer\Startup	TESTING\tweight	2/15/2016 3:42:01 PM
Node 'Layer 3' added by import of layer 'Layer 3.aemp'	Computer\Startup	TESTING\tweight	2/15/2016 3:42:01 PM
Layer 'Layer 3.aemp' added	Configuration	TESTING\tweight	2/15/2016 3:42:00 PM
Layer 'Layer 2.aemp' added	Configuration	TESTING\tweight	2/15/2016 3:42:00 PM
Layer 'Layer 4.aemp' added	Configuration	TESTING\tweight	2/15/2016 3:42:00 PM
Layer 'Layer 1.aemp' added	Configuration	TESTING\tweight	2/15/2016 3:42:00 PM
Configuration Version 5 - Configuration and Process Stopped trigger updated			
New Unmap Drive action 'Unmap Drive > A:\' added	User\Process Stopped\node	TESTING\tweight	2/10/2016 5:08:31 PM
'User Process Name is Equal to explorer.exe' condition added	User\Process Stopped\node	TESTING\tweight	2/10/2016 5:07:59 PM
Child node named to 'node'	User\Process Stopped	TESTING\tweight	2/10/2016 5:05:54 PM
Node named to 'node'	User\Process Stopped\node	TESTING\tweight	2/10/2016 5:05:54 PM
New node 'node' added	User\Process Stopped\node	TESTING\tweight	2/10/2016 5:05:53 PM
Child node 'node' added	User\Process Stopped	TESTING\tweight	2/10/2016 5:05:53 PM
User Messages updated	Configuration	TESTING\tweight	2/10/2016 5:05:32 PM
Personalization Servers list updated	Configuration	TESTING\tweight	2/10/2016 5:04:54 PM
Node 'Map Printer' deleted	User\Logon\Pre-Desktop	TESTING\tweight	2/10/2016 4:47:30 PM
Configuration Version 4 -			
New Map Printer action 'Map Printer > Printer25' added	User\Logon\Pre-Desktop\Map Printer	TESTING\tweight	2/10/2016 4:46:19 PM
New Computer Group condition 'Computer Group is Equal to ComputerG...	User\Logon\Pre-Desktop\Map Printer	TESTING\tweight	2/10/2016 4:45:07 PM
Configuration Version 3 -			
New Map Printer action 'Map Printer > Cloud Printer' added	User\Logon\Pre-Desktop\Map Printer	TESTING\tweight	2/10/2016 4:42:20 PM

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Remove a Layer

Removing a layer deletes all of that layer's nodes and library items from a layered configuration. You cannot delete a layer which has a dependency in another layer. As you create more complicated configurations, dependencies can be created between layers and between hosts and layers.

For example, Layer A has been added to a host configuration. Layer A contains a reusable node which is referenced by the host configuration on the logon trigger. You cannot delete Layer A without first removing the reference to the reusable node.

1. Open a layered configuration.
2. In the Manage ribbon, in the Layers group, select **Manage**.

   Each layer in the configuration is displayed in the Manage Layers dialog.
3. Select the layer you want to remove from the configuration and click **Delete**.

The action will be analyzed to check that deleting the layer would not break a dependency with another layer. If an error is encountered, you will not be able to remove the layer.

If no errors are encountered, all nodes and library settings from that layer are removed from the layered configuration

Merge a Layer

Merging a layer allows you to take ownership of that layer, breaking any links with the original configuration. This is equivalent to copying every node and library item from the layer and pasting them into the host, making them writable.

1. Open a layered configuration.
2. In the Manage ribbon, in the Layers group, select **Manage**.

   Each layer in the configuration is displayed in the Manage Layers dialog.
3. Select the layer you want to merge with the host and click **Merge** or if you want to combine all the layers in the configuration, click **Merge All**.

All nodes and library settings from the layer are added to the host. They now act as any other item in the host - they can be deleted and edited. The layer no longer exists in the layered configuration.

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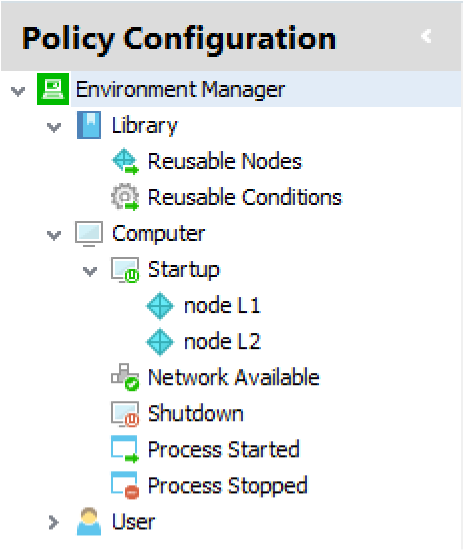
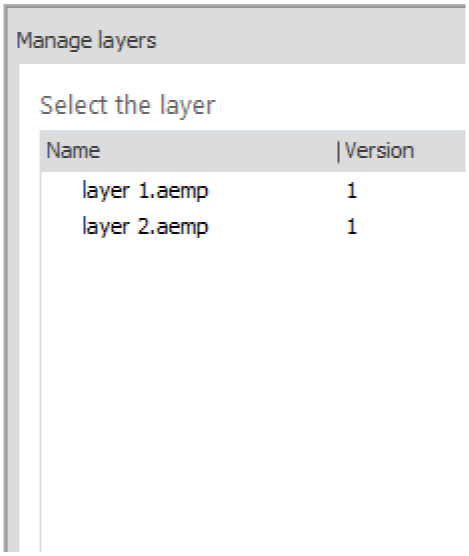
Merging Example

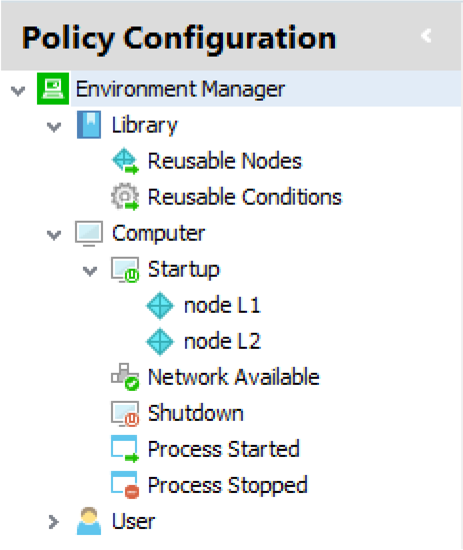
The layered configuration contains Layer 1 and Layer 2. Each contains one Computer Startup node, named Node 1 and Node 2 respectively.

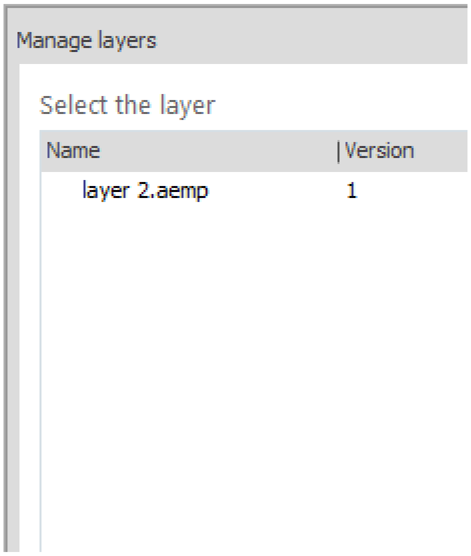




Name	Version
layer 1.aemp	1
layer 2.aemp	1

Layer 1 is merged with the host. Although the layered configuration looks the same, Node 1 is now writable and part of the host configuration. Layer 1 is no longer a layer in the layered configuration.





Name	Version
layer 2.aemp	1

If the layer being merged contains other layers those layers are not merged but become direct dependents of the host. In the example below, Layer 1 contains Layer 3. When Layer 1 is merged with the host, Layer 3 becomes a direct layer of the host.

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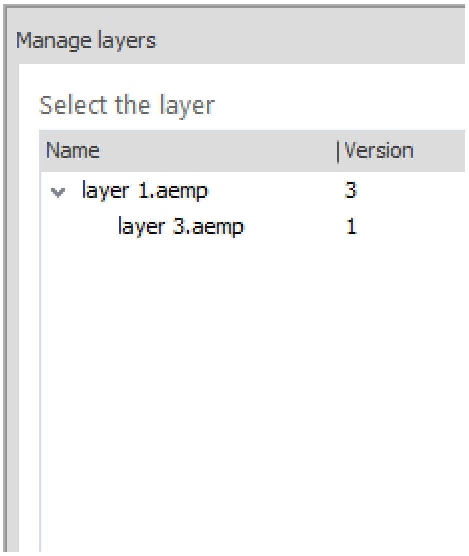
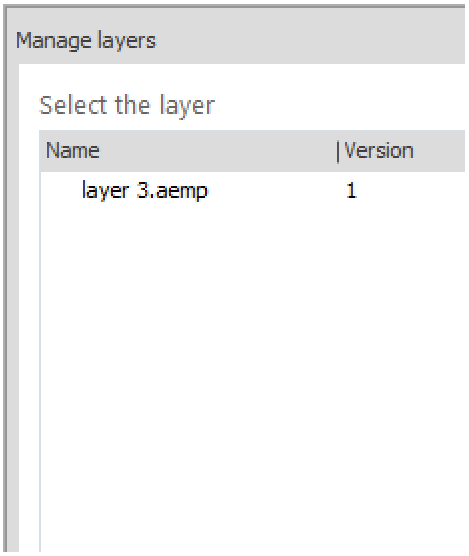


Manage layers

Select the layer

Name	Version
layer 1.aemp	3
layer 3.aemp	1



Manage layers

Select the layer

Name	Version
layer 3.aemp	1

Rollback a Layer

The Rollback function allows you to return a layer to an earlier version. To rollback a layer, you must have the access to the older version of the layer. It is therefore recommended that when using configuration layering, you keep copies of all versions of the layers you use.

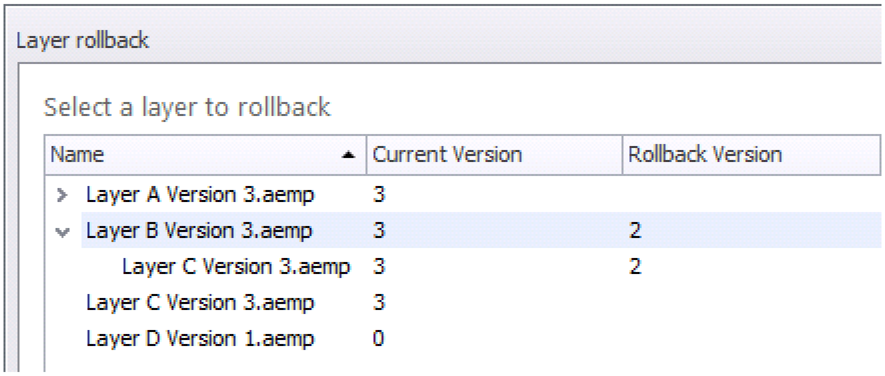
1. Open a layered configuration.
2. In the Manage ribbon, in the Layers group, select **Rollback**.

   Each layer in the configuration is displayed in the Manage Layers dialog.
3. Highlight the layer you want to rollback.
4. Click the **Browse** drop-down and select one of the following:
   - Configuration file from disk (Default - selected if the Browse button is clicked)
   - Configuration file from Management Center
   - Configuration file from SCCM

5. Select the layer you want to roll back to. It must be an older version of the same layer.

   The layers are analyzed to check that performing the rollback would not affect another layer. The larger the configuration, the longer the analysis takes. If an error is encountered the rollback cannot be completed.

   The current and rollback version numbers of the selected layer and its dependencies are displayed so you can ensure the right version of the layer has been selected for rollback.



Layer rollback

Select a layer to rollback

Name	Current Version	Rollback Version
Layer A Version 3.aemp	3	
Layer B Version 3.aemp	3	2
Layer C Version 3.aemp	3	2
Layer C Version 3.aemp	3	
Layer D Version 1.aemp	0	

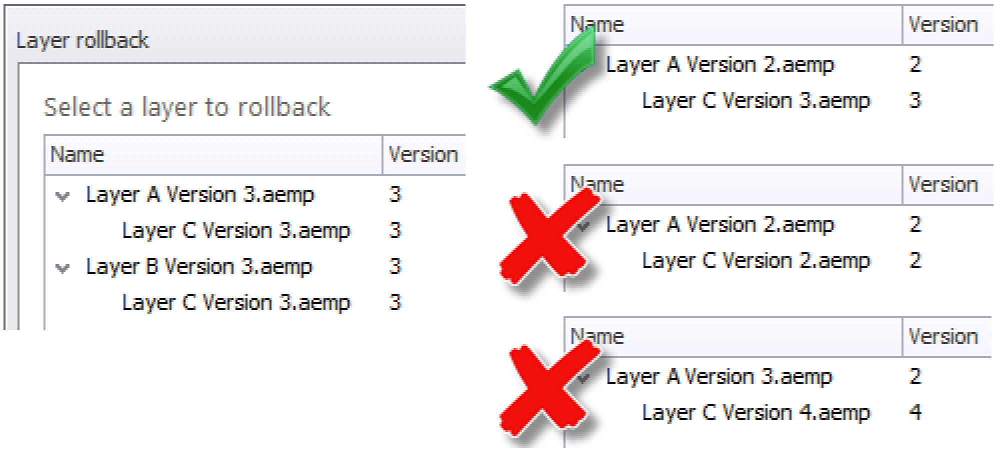
6. If there are no errors, click **OK**.

The layer is rolled back to the selected version.

Rollback Rules

Layers cannot be rolled back if they contain an earlier OR later version of a layer which is referenced in another layer.

In the example below both layers contain Layer C version 3. You could not rollback to a layer which had an earlier or later version of Layer C as version 3 is referenced in the other layer.



Layer rollback

Select a layer to rollback

Name	Version
Layer A Version 3.aemp	3
Layer C Version 3.aemp	3
Layer B Version 3.aemp	3
Layer C Version 3.aemp	3

✓

Name	Version
Layer A Version 2.aemp	2
Layer C Version 3.aemp	3

✗

Name	Version
Layer A Version 2.aemp	2
Layer C Version 2.aemp	2

✗

Name	Version
Layer A Version 3.aemp	2
Layer C Version 4.aemp	4

Layer Properties

In the Manage ribbon, in the Layers group, select **Properties** to see details of the layers within a configuration.

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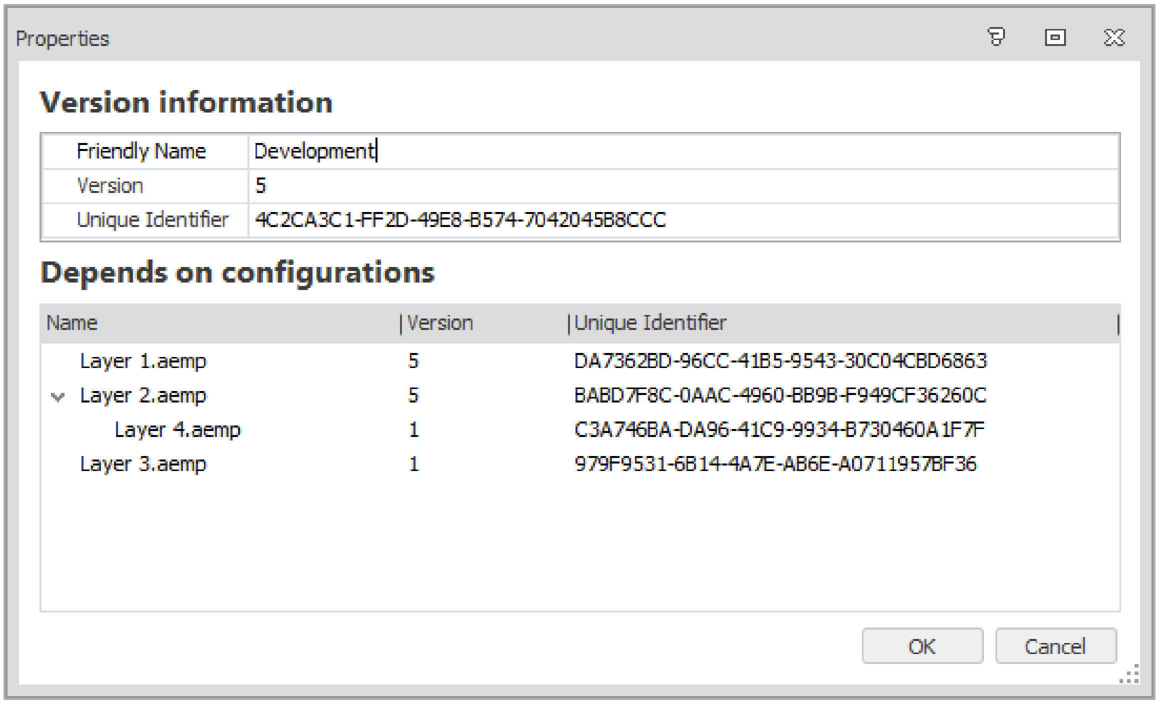
The following information is displayed:

- **Friendly Name** - Use this field to give the configuration a meaningful name which allows you to easily identify it. Replace the AEMP filename in the Name field for a layer when adding, merging and deleting layers or when viewing the layer properties.
- **Version** - The version number of the layered configuration.
- **Unique Identifier** - The configuration ID number unique to each layer.
- **Depends on Configurations** - The configurations included in the layered configuration.



Version information

Friendly Name	Development
Version	5
Unique Identifier	4C2CA3C1-FF2D-49E8-B574-7042045B8CCC

Depends on configurations

Name	Version	Unique Identifier
Layer 1.aemp	5	DA7362BD-96CC-41B5-9543-30C04CBD6863
Layer 2.aemp	5	BABD7F8C-0AAC-4960-BB9B-F949CF36260C
Layer 4.aemp	1	C3A746BA-DA96-41C9-9934-B730460A1F7F
Layer 3.aemp	1	979F9531-6B14-4A7E-AB6E-A0711957BF36

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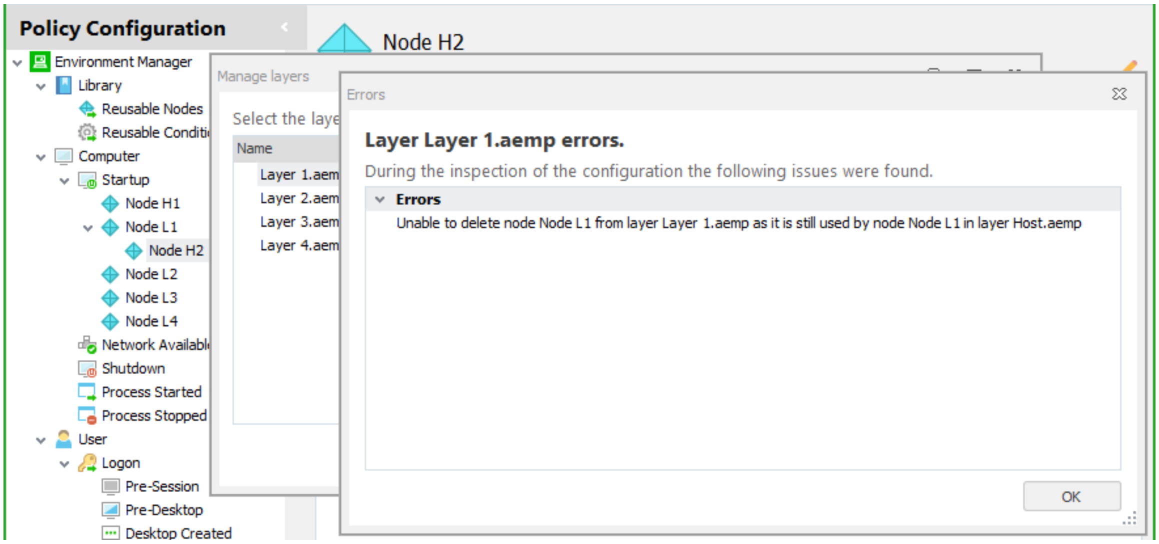
Configuration Dependencies

Dependencies can be created between layers and between the host and another layer which can affect how Configuration Layering works. Nodes, reusable conditions and message library items, from one layer can be referenced in another layer. Nodes may not be able to be deleted or rolled back where a dependency has been created between layers due to shared usage of an item.

Child Node Dependency

If a node is added to a layered configuration as a child of a node in a layer, a dependency is created between the layer and the host.

In the example below, the *Node L1* is part of a layer that has been added to the host. *Node H2* has been added to the layered configuration as a child of *Node L1*. The layer cannot be removed from the configuration because the host is dependent upon it containing the new node.



Layer Layer 1.aemp errors.

During the inspection of the configuration the following issues were found.

Errors

Unable to delete node Node L1 from layer Layer 1.aemp as it is still used by node Node L1 in layer Host.aemp

The layer cannot be removed from the configuration because the host is dependent upon it containing the new node.

Reusable Node Dependency

If a reusable node from a layer is referenced in a layered configuration a dependency is created between the layer and the host. If a reusable node is referenced as a child node of a node of another layer, a dependency is created between the two layers.

In the example below, reusable nodes *RNode L1* and *RNode L2* are contained within layers which have been added to the host. *RNode L2* is referenced in the Computer Startup trigger as part of the host and *RNode L1* referenced as a child of the *Node L1*.

Layers containing the reusable nodes cannot be deleted because the reusable nodes are referenced in the host and in a node from another layer. To delete the layer containing the reusable nodes all references in the host and other layers must be removed.

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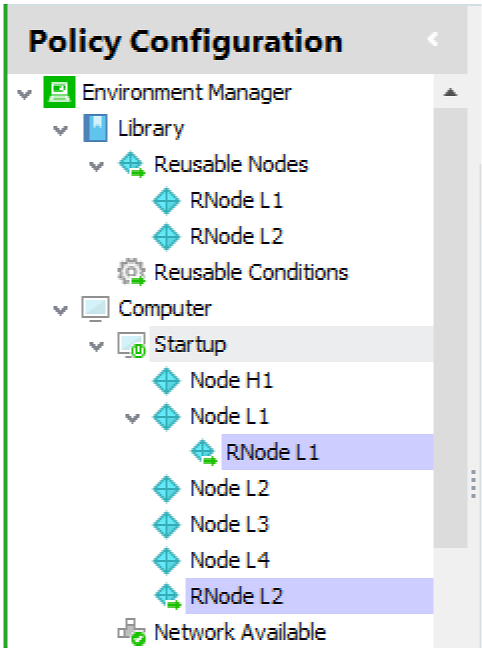
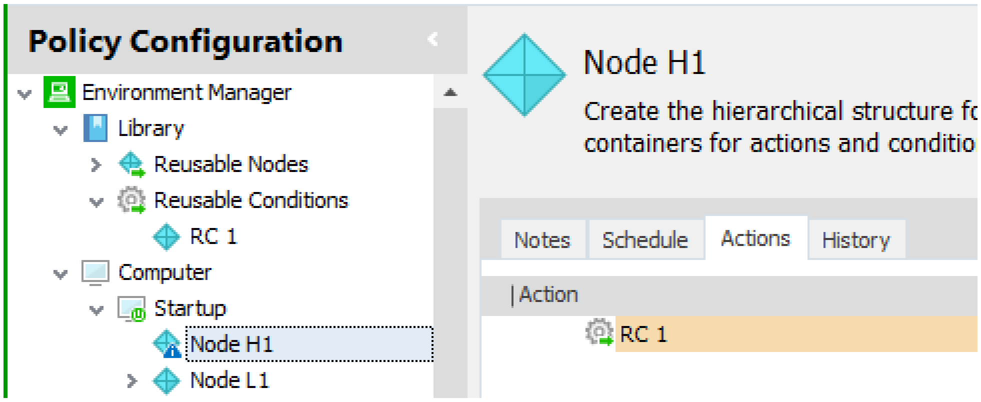


Reusable Condition Dependency

If a reusable condition from a layer is referenced in a layered configuration a dependency is created between the layer and the host. A reusable condition added to a node in another layer creates a dependency between the layers.

In the example below, reusable condition RC 1 is part of a layer which has been added to the host. Node 1 is in the host configuration. The layer containing the reusable condition cannot be deleted because the reusable condition is referenced another configuration.



Create the hierarchical structure fc
containers for actions and conditio

Message Library Dependency

If a message from a layer is used in a lockdown condition added to a layered configuration, a dependency is created between the layer and the host. The same is true if a message from one layer is used in a lockdown condition from a node in another layer.

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Configuration Endpoint Merging

Endpoint Configuration Merging uses the EM Agent to combine multiple AEMP configuration files, saved on one endpoint, into a single configuration. Nodes, reusable conditions and message libraries from each configuration are added to the merged configuration.

The merge is done by adding the individual configurations to a directory on the endpoint and specifying, in a manifest file, the configurations which are to be merged. The EM Agent monitors the merge directory and automatically merges configurations when a manifest file is added to the directory.

Endpoint Configuration Merging allows different areas of a business to work independently on a particular area of a configuration which can then be added to create a single configuration. Where small changes to large configurations are required, a snippet of the area that has changed can be created. The snippet can then be merged on endpoints removing the need to push out large configurations.

Components in a Merge

Configuration merging relies on the following components.

Base Configuration

Every merge must have a base configuration - this is the first configuration in the merge onto which the other configurations are added. A merged configuration takes the global attributes such as Custom Settings, Auditing options and any Personalization settings, from the base configuration.

It is therefore essential that the settings which are not merged are defined in the base.

By default, the base configuration is set as the AEMP file which is created when a live configuration is saved on an endpoint:

%ProgramData%\AppSense\Environment Manager\Configuration.aemp

The base configuration and all component configurations in a merge must be version 10.0 or later of Environment Manager. Upgrade any older version configurations before merging.

Component Configurations

A merged configuration is made up of a base configuration and one or more component configurations. Component configurations are AEMP files which are added to the base configuration during a merge. To be part of a merge, component configurations must be stored in the MergeConfigs directory.

Nodes, pre-triggers, Run-As and User Messages from components are included in a merge. Other settings such as auditing options are taken only from the base configuration. The base configuration and all component configurations in a merge must be version 10.0 or later of Environment Manager. Upgrade any older version configurations before merging.

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MergeConfigs Directory

This directory is where component configurations for merging are stored and where a merge is triggered when a valid manifest is detected.

When you start the EMCoreService on an endpoint, the MergeConfigs directory is created:

%ProgramData%\AppSense\Environment Manager\MergeConfigs

This directory is secured so only administrators can write to it. This ensures that end users cannot affect the merge configurations.

Manifest

The manifest is an XML file that includes details of the configurations to be merged and dictates which configuration is set as the base. The merge is initiated when the agent detects a manifest in the MergeConfigs directory.

Manifests are created using the ManifestGen command line tool.

Below is an example merge_manifest.xml file.

```
<MergeManifest UseSystemBase="true" WaitForConfigs="true">
        <MergeFiles>
                <FileEntry Name="config2.aemp" Checksum="563621a479c06d6d357b327283320288"/>
                <FileEntry Name="config4.aemp" Checksum="4bc481043e6991253de15ec6993ee43f"/>
        </MergeFiles>
</MergeManifest>
```

Manifest Attribute and Tags

Attribute/Tag	Description
`MergeManifest`	The root node of the configuration.
`MergeFiles`	The container tag for the list of AEMP files which are to be included in the merge.
`FileEntry Name`	Identifies a configuration to be included in the merge. The file must be present in the MergeConfigs directory to be included in a merge.
`UseSystemBase` (Optional)	Can be set to "true" or "false" and instructs whether to either include or exclude the default Configuration.aemp in the merge. This is the live Configuration.aemp file found in %ProgramData%\AppSense\Environment Manager. If set to true, the base configuration must already be present on endpoints when the manifest is deployed otherwise the merge will fail. If set to false the first configuration in the MergeFiles list is used as the base configuration unless otherwise defined by the BaseConfig attribute.
`WaitForConfigs` (Optional)	Determines the behavior when a manifest .xml is detected in the MergeConfigs directory and not all named configurations are present. Can be set to:

Attribute/Tag	Description
	• True - The merge will wait indefinitely until all configurations referenced in the manifest are present and then complete the merge. • False - The merge will fail if a manifest is detected in the MergeConfigs directory which references a configuration which is not present. If you are using an installer, such as an MSI, to push out configurations and a manifest to endpoints, it is recommended that you set this to "true" as you cannot guarantee in what order the configurations and manifest will be added. This does not apply if using the SystemBase Configuration.aemp file. If the manifest merge is triggered and the Configuration.aemp is not present, the merge will fail - it will not wait for the base.
`Checksum` (Optional)	An MD5 checksum unique to an AEMP file. If included the manifest, the AEMP file in the MergeConfigs folder must have the same checksum to be included in the merge. Base configurations are not referenced by a checksum.

ManifestGen Tool

The ManifestGen is a command line tool which creates the XML manifest file used to define and trigger a configuration merge. The XML file contains details of the AEMP files to be merged and can dictate whether the default Configuration.aemp or a component configuration is used as the base in the merge.

If a merge_manifest.xml already exists in the output directory, the tool fails and a new manifest is not created - the current one is not overwritten.

To make using the tool easier, add the location to the Path environment variable at Advanced **System Properties** > **Environment Variables** > **Path**: %PROGRAMFILES%\AppSense\Environment Manager\Console

Create a Manifest

1. Save the configurations you want to be merged in the MergeConfigs directory:
2. %ProgramData%\AppSense\Environment Manager\MergeConfigs
3. Open the Command Line Interface.
4. Enter `cd %programdata%\appsense\environment manager` to change the directory.
5. Enter `manifestgen mergeconfigs\*.aemp`.

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If you run manifestgen in the MergeConfigs folder, the agent will pick up the manifest as soon as it is created and immediately start the merge.

If successful, a merge_manifest.xml file is created in: %ProgramData%\AppSense\Environment Manager

The manifest can now be used to trigger the merge and create a configuration.

Additional Commands

Arguments can be used in the ManifestGen tool to alter the manifest and affect the merge. You can specify a different base configuration, output file and create a manifest without checksum values for the configurations.

Suffix	Description and Usage
`-o`	Output folder- Specify where the manifest.xml file is created, for example, `manifestgen mergeconfigs\*.aemp -o c:\configs` creates a manifest in the Configs folder on the C drive.
`-b`	Base configuration - Identify the base configuration and exclude the default base configuration. For example, `manifestgen mergeconfigs\*.aemp -b config1.aemp` creates a manifest that will create a merged configuration with Config1.aemp set as the base configuration.
`-nc`	No checksum entries - By default, each configuration listed in the manifest has an MD5 checksum which allows unique identification of a configuration. If the checksum in the manifest does not match that of the configuration the merge will fail or wait for a configuration with the correct checksum. Using the -nc suffix with the ManifestGen tool will not list checksums in the manifest and means that merges will succeed if the configuration file names are correct, regardless of the checksum value. For example: `manifestgen mergeconfigs\*.aemp -nc`
`-nw`	The default behavior when a manifest is added to the MergeConfigs directory is to wait indefinitely until all configurations in the manifest are present and then perform the merge. Using the -nw suffix, a merge will fail if the configurations listed are not present when the manifest is added to the MergeConfigs directory. For example: `manifestgen mergeconfigs\*.aemp -nw` If the manifest lists five configurations and only four are present when the manifest is added to the MergeConfigs directory, the merge will fail. If you are using an installer, such as an MSI, to push out configurations and a manifest to endpoints, it is recommended that you do not use this suffix as you cannot guarantee in what order the configurations and manifest will be added.

Edit a Manifest

Although manifests can be edited and created in a text editor, it is recommended that you use the ManifestGen tool as it ensures the merge_manifest.xml file is in the correct format. If, for example, you have an "&" in a file name, the ManifestGen tool will escape this to make sure it is a valid XML file.

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Once created, a manifest file can be edited to change the attributes such as the base configuration and the order in which the merge should take place.

For example, the command:

```
manifestgen mergeconfigs\*.aemp -b mergeconfigs\config3.aemp -nc
```

creates a manifest in which the default base configuration is not included and config3.aemp is set as the base. The WaitForConfigs attribute is set to the default of "true" and checksums are not included.

```
<MergeManifest UseSystemBase="false" WaitForConfigs="true">
        <MergeFiles>
                <FileEntry Name="config3.aemp" BaseConfig="true"/>
                <FileEntry Name="config1.aemp"/>
        </MergeFiles>
</MergeManifest>
```

To edit the manifest, open the manifest in a text editor, make the required changes and save the file.

In this example, UseSystemBase is set to "true" and the BaseConfig command has been removed from Config3.aemp. The order of the merge has also been changed.

```
<MergeManifest UseSystemBase="true" WaitForConfigs="true">
        <MergeFiles>
                <FileEntry Name="config1.aemp"/>
                <FileEntry Name="config3.aemp"/>
        </MergeFiles>
</MergeManifest>
```

When merged, the default base Configuration.aemp file is included in the merge as the base configuration and the order in which the component configurations are merged onto the base is reversed. Note that the configuration set as the base, includes the global configuration settings such as the Custom Settings that you want including in the merge. Therefore, care should be taken when selecting a different configuration as the base.

Setting `BaseConfig="true"` for a configuration and `UseSystemBase="true"` in the same manifest will cause a conflict and the merge will fail.

BatchConfig Tool

Only AEMP files which are at the latest version can be included in a merge. The BatchConfig tool converts old AEMP files and XML snippets to AEMP files of the correct version.

Multiple files can be converted at the same time, producing one output file per input.

If one or more configurations from the source already exist in the output directory, the tool fails and none of the configurations are converted.

To make using the tool easier, add the location to the Path environment variable at Advanced **System Properties** > **Environment Variables** > **Path**:
%PROGRAMFILES%\AppSense\Environment Manager\Console

Batch Convert Configuration Files

1. Save or copy the AEMP and XML files you want to convert to a single folder.
2. Open the Command Line Interface.

3. Enter `BatchConfigTool` followed by details of the source and destination folders in the following format:

   BatchConfigTool <source directory\file type> -o <output directory>

Batch Convert Examples

```
BatchConfigTool C:\Configs\Source\*.xml -o C:\Configs\Output
```

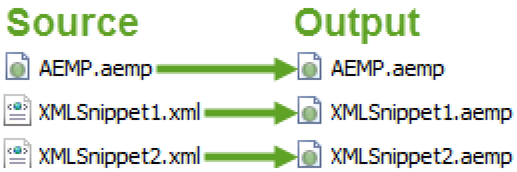
This example converts XML snippets found in the source directory to current version AEMP files saved in the output directory. The same format can be used to update old AEMP files to the current version:

```
BatchConfigTool C:\Configs\Source\*.aemp -o C:\Configs\Output
```

You can also convert both file types simultaneously:

```
BatchConfigTool C:\Configs\Source\*.aemp C:\Configs\Source\*.xml -o C:\Configs\Output
```

In the example below, the Source directory contained an 8.3 AEMP file and two XML snippets. Following conversion, the output directory contains three current version AEMP files.



The BatchConfig tool installs with the Environment Manager Console. However, it can be installed independently using the EnvironmentManagerPolicyTools 32 and 64 bit installers which are included in the User Workspace Manager media.

Auditing Events - Configuration Endpoint Merging

New auditing events for Configuration Endpoint Merging have been added to Environment Manager. When viewed in Windows Event Viewer (select **Windows Log** > **Applications**), the events provide further details such as what has caused a merge failure.

Merging Configurations

Once a manifest is created and the component configurations are present on the endpoints, you can trigger the merge and create a new configuration.

A merge is triggered when a merge_manifest.xml is detected in the MergeConfigs directory which should contain all the configurations you want to merge.

If the manifest lists configurations which are not in the MergeConfigs directory, the merge will be delayed until all configurations are present. The base configuration and all component configurations in a merge must be version 10.0 of Environment Manager. Upgrade any older version configurations before merging.

To upgrade a configuration, open it in the required version of the Environment Manager and save. For example, open an 8.6 configuration in the10.0 console to upgrade.

Using the -nw tag, a manifest can be created which will fail a merge if all configurations are not present.

Empty Manifest

Adding an empty manifest to the MergeConfigs directory automatically merges all AEMP configurations within that directory. It will merge all configurations in alphabetical order and set the base as the Configuration.aemp found in:

%ProgramData%\AppSense\Environment Manager

If this AEMP is not present, the merge will fail.

To create an empty manifest, open a new file in a text editor, create a zero-byte file and save as **merge_manifest.xml**.

The same merge can be achieved using a manifest that, whilst not totally empty, does not include details of the AEMP files to be merged:

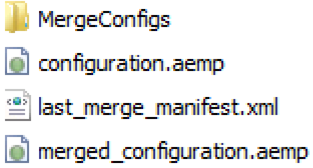
```
<MergeManifest UseSystemBase="true"
  <MergeFiles>
  </MergeFiles>
</MergeManifest>
```

This provides the same results as a blank manifest but allows you to use the UseSystemBase attribute. If you set this to "false" the merge will use the configuration which is first alphabetically in the MergeConfigs directory, as the base.

Successful Merges

If the manifest is correct and the configurations listed are present in the MergeConfigs directory, the Merged_Configuration.aemp is created and used as the live configuration on the endpoint.

In addition to the new configuration (Merged_Configuration.aemp) a copy of the successful manifest is created, renamed as last_merge_manifest.xml, to provide a record of the merge and a backup of the manifest. If present, the original merge_manifest.aemp file is deleted when the merge is complete.



MergeConfigs
configuration.aemp
last_merge_manifest.xml
merged_configuration.aemp

The Configuration.aemp file is not altered during a merge and is no longer used by the agent unless updated or the Merged_Configuration.aemp is not present.

Unsuccessful Merges

If an error occurs during the merge, it will fail and a new configuration file will not be created. Merges can fail if:

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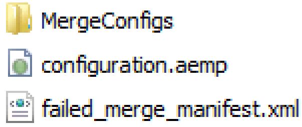
- The checksums specified in the manifest do not match those of the actual configurations and WaitForConfigs is set to "false"
- The manifest includes the -nw command and one or more configurations listed in the manifest are not present in the MergeConfigs directory when it is added
- Friendly names in the Run As Library are the same in two of the configurations being merged.
- UseSystemBase is set to "true" and a base Configuration.aemp is not present when the merge is triggered.
- A manifest is invalid.
- One or more configurations are corrupt.

Following an unsuccessful merge, the merge_manifest.xml file is deleted and a copy of the unsuccessful manifest (failed_merge_manifest.xml) is added to the directory.


MergeConfigs
configuration.aemp
failed_merge_manifest.xml

Merged Behavior

The table below lists the areas of a configuration and gives an explanation of their behavior during a merge.

Area	Merged	Behavior
Nodes	Yes	The merged configuration contains all the nodes from each of the component configurations. If two nodes which affect the same application exist in the same trigger, they will run in parallel. The contents of individual nodes are not merged.
Action and Conditions	Yes	Actions and conditions are not analyzed - the merged configuration will contain all actions and conditions from the merged configuration. If two configurations both contain actions which affect the same registry key for example, the merged configuration will contain both actions. For such conflicts, last write wins. This is standard conflict behavior in Environment Manager.
Auditing	No	The events from the base are used in the merged configuration whilst the events from the component configurations are ignored.
Custom Settings	No	Merged configurations inherit their Custom Settings from the base configuration. Settings from any component configuration in the merge are discarded. It is therefore important that the Custom Settings you require in the merged configuration are added to the base configuration. This includes the BaseConfigMergeBehavior Custom Setting. See Live Configuration Update Behavior.
Run As Library	Yes	Entries in the Run As libraries for all configurations are added to the merged configuration to create a single list. All friendly names must be unique. If two configurations in the merge contain a user with the same friendly name, the merge will fail.
Block Message Library	Yes	The Block Message libraries from all configurations are merged. The merged configuration contains all messages from the base and merged configurations including any duplicates.
Pre-triggers	Yes	When configurations are merged the pre-trigger actions from all configurations are added to the merged configuration. There is no validation for pre-triggers enabling duplicate and conflicting actions to be merged.
Personalization Settings	No	Personalization settings, such as the server list, are not merged. The merged configuration takes these settings from the base configuration. Therefore any Personalization settings required in the merged configuration should be defined in the base configuration.

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Live Configuration Rules

When a live configuration is opened or saved on an endpoint, it is referred to:

%ProgramData%\AppSense\Environment Manager\Configuration.aemp

To allow for configuration merging, the live configuration can also refer to:

%ProgramData%\AppSense\Environment Manager\Merged_Configuration.aemp

The agent monitors the %ProgramData%\AppSense\Environment Manager directory for new configurations. When a change is detected the agent loads a new configuration using the following order of precedence:

- Merged_Configuration.aemp
- Configuration.aemp

If a Merged_Configuration.aemp exists in the directory, it will be the live configuration. If removed, the agent continues to use the in-memory version - when the agent is restarted, the Configuration.aemp file will become the live configuration.

Live Configuration Update Behavior

The BaseConfigMergeBehavior custom setting allows you to define how the live configuration is affected when a Configuration.aemp file is pushed out to endpoints by the Management Center or other deployment method.

You might be deploying a new Configuration.aemp file and want it to be the live configuration on endpoints. Or the Configuration.aemp file might contain updates which you want to add to the current live configuration. The Custom Setting can initiate both scenarios:

- **Remerge** - When the configuration is detected on an endpoint by the agent, a merge, based on the last_merge_manifest.xml, is triggered and includes the new Configuration.aemp. The merge creates a new Merged_Configuration.aemp which replaces the current live configuration. A last_merge_manifest.xml must be present otherwise the merge will fail. This is the default value for the Custom Setting and is also the behavior if BaseConfigMergeBehavior is not added to a configuration as a Custom Setting.
- **Replace** - When the configuration is detected on an endpoint by the agent, it replaces the Merged_Configuration.aemp as the live configuration. Following the successful deployment of the new Configuration.aemp, the Merged_Configuration.aemp is deleted from the directory.

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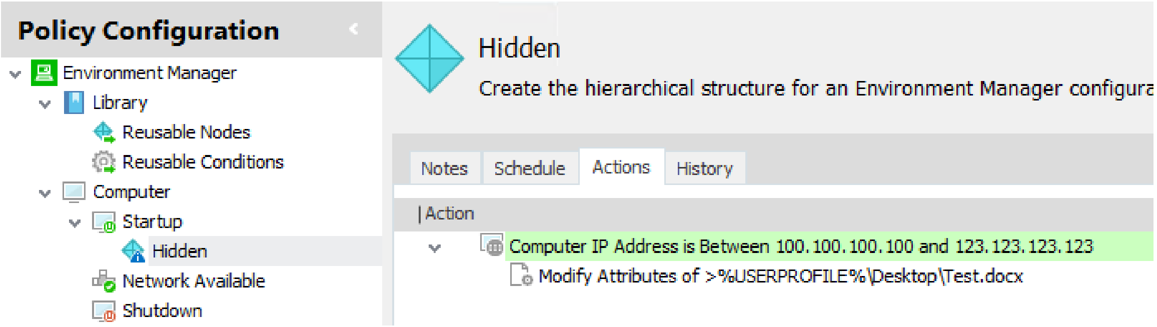
Triggers

Triggers in the Environment Manager console represent common computer and user events such as Startup, Logon and Session Disconnected. They are static elements in the Policy Configuration navigation tree; they cannot be edited, moved or deleted. An Environment Manager configuration is built around the events to which the triggers relate. Nodes are created within triggers containing conditions and actions. This creates a dependency between the trigger, condition and action. When the trigger is fired, any conditions present are validated and if met, the action is carried out.

For example:

Trigger	Condition	Action
Computer Startup	Computer > Computer IP Address	File & Folder > Modify File Attributes

In the example below, the "Hidden" node, which contains a condition and associated action, has been added to the Startup trigger. When a managed endpoint is booted up, the Environment Manager agent checks to see if the IP address is between 100.100.100.100 and 123.123.123.123. If it is, the Word document Test.docx becomes a hidden file. If the endpoint does not meet the condition, the Word document properties remain unchanged.



Hidden

Create the hierarchical structure for an Environment Manager configura

Computer IP Address is Between 100.100.100.100 and 123.123.123.123

Modify Attributes of >%USERPROFILE%\Desktop\Test.docx

When selected, each trigger, displayed in the work area, contains two tabs: Environment and Summary. The Summary tab contains an overview of the contents of the trigger, showing each node, its state (enabled or disabled) and the number of associated actions.

Triggers fall under two fixed nodes in the Policy Configuration navigation tree; Computer and User.

Computer Triggers

Trigger	Description
Startup	Executes actions when a computer is started. Useful to help create a common image for all standard computers within an organization.
Network Available	Actions execute once the network is available. This is useful for items such as conditions that perform AD lookups or actions that copy files from network locations. These items may not function correctly in the

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Trigger	Description
	Startup trigger as the network is not always available at that point.
Shutdown	Executes actions when a computer is switched off.
Process Started	Actions within this trigger are executed when a process is started.
Process Stopped	Actions within this trigger are executed when a process is stopped.

User Triggers

Trigger	Description
Logon	Actions take effect when the user logs on to the system but before the desktop shell has started. ℹ Due to a compatibility issue with smart card readers, logon actions do not run when logging on with smart cards. This affects Windows 7 and Windows 2008 R2 operating systems. For further information, see document 4747.
Logon > Pre-Session	Actions take effect before terminal services is notified of the logon. Registry, Group Policy and Environment actions are compatible with this sub-trigger. During the upgrade, actions which were previously in the Environment tab of the Logon trigger are moved here.
Logon > Pre-Desktop	Actions take effect when the user logs on to the system but before the desktop shell has started. During the upgrade, actions which were previously in the Logon trigger are moved here.
Logon > Desktop Created	Actions take effect after the desktop shell and Explorer has started. To improve efficiency and logon times, any non-critical Logon actions should be added to this trigger, for example, mapping drives and printers.
Logoff	The associated actions are executed when a user logs off. Environment Manager Logoff actions run after Group Policy scripts and all post-logon actions have completed. Following a forced logoff post-logon actions still run to completion followed by any Logoff actions. ℹ If using Remote Desktop Protocol v6.0, use the Session Disconnect trigger for logoff actions as the remote application procedure does not logoff, it disconnects.

Trigger	Description
Process Started	Actions within this trigger are executed when a process is started. ⓘ If using Environment Manager and Streamed Applications, refer to Streamed Applications.
Process Stopped	Actions within this trigger are executed when a process is stopped.
Network Connected	Actions and conditions within this trigger are executed when each physical or virtual network adapter establishes a connection. If a Personalization Server is defined within the configuration, a Personalization configuration poll is also performed when the trigger is fired. The trigger fires when a network is detected. The trigger will not fire if the network is categorized as “unknown”.
Network Disconnected	Actions and conditions within this trigger are executed when each physical or virtual network adapter disconnects a connection. The trigger also fires when the network is categorized as “unknown”. For example, this could be because the domain controller has stopped functioning or the wireless connection is out of range.
Session Reconnected	Actions within this trigger are executed when a user’s disconnected session is reconnected.
Session Disconnected	Actions within this trigger are executed when a user’s live session is disconnected.
Session Locked	Actions within this trigger are executed when a user’s desktop is locked.
Session Unlocked	Actions within this trigger are executed when a user’s desktop is unlocked.

ⓘ Session Locked and Session Unlocked triggers will not apply to published applications. They only apply to the session in which the application is running.

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Triggers for XenDesktop Connections and Backwards Compatibility

Prior to Environment Manger 10.1, when using XenDesktop versions 7.8 or earlier, if you logged on, disconnected , reconnected, locked, and unlocked, the following triggers were fired:

User Behavior	Actual Trigger (RDP)	Actual Trigger (ICA)
Logon	Logon	Logon
Disconnect	Disconnect	Lock
Reconnect	Reconnect	Unlock
Lock	Lock	Lock
Unlock	Unlock	Unlock

This was because for ICA sessions , Lock and Unlock actions were triggered when the user disconnected and reconnected. This behavior is corrected for XenDesktop 7.9 and later, but for users running earlier versions, Environment Manager can now detect disconnections and reconnections in XenDesktop 7.6 - 7.8 environments. This detection is enabled by default for version 10.1 configurations. When upgrading older version configurations (version 10.0 and older), the detection mechanism is disabled by default. If you are using XenDesktop versions 7.6 - 7.8 inclusive, you can override this using the IcaSessionConnectionOverride setting in Advanced Settings.

For more information, see Advanced Configuration Settings.

Logon Trigger

In Environment Manager 8.5, a new Logon trigger structure was introduced. The single Logon trigger and Environment tab was replaced by three sub-triggers - Pre-Session, Pre-Desktop and Desktop Created.

A new configuration opened in the 8.5 console uses the Logon sub-triggers. However to ensure backwards compatibility, when upgrading a configuration you can select whether to use the new or old logon trigger methods. You can switch between methods using the Advanced Options in the Manage tab.

For further information about the Logon Trigger see Enable Logon Sub-triggers.

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Process Start and Stop Triggers

When creating top level nodes within both Computer and User Process Start and Stop triggers, different behavior applies:

- Nodes must have a Process Name condition applied - When adding a node to a Process Start or Stop trigger the Process Name condition dialog box is automatically displayed. A condition must be specified for the node. Pressing Cancel deletes the node.
- Actions and conditions can only be added by selecting the process condition within the work area. Unlike other triggers, actions and conditions cannot be added by highlighting the trigger in the navigation tree. The exception to this is other Process Name conditions which can be added by selecting the process trigger.
- The initial Process Name condition cannot be deleted from within the node. To remove, the node must be deleted.
- Stop if fails cannot be disabled for the Process Name condition. If the condition fails, nothing within the condition will run.
- Any reusable node can be added to a Process Start/Stop trigger proving the actions contained are compatible with the trigger.
- When entering an application into the Match field, the file extension must be added; calc does not work but calc.exe does.
- Prior to 8.1 a Process Name condition did not have to be applied to a Process Start/Stop trigger. On upgrade, any actions and conditions are still created but in the absence of a Process Name Condition, all top level actions and conditions in node will run for every process that starts during the user/computer session. This could have a detrimental effect on performance.
  To ensure performance is not affected, add a process name condition and add the existing actions and conditions.

These behaviors do not apply to child nodes created in Process Start and Stop conditions.

ⓘ Computer Process Start and Stop triggers only detect system processes and User Process Start and Stop triggers only detect user processes.

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Network Triggers

The Network Connected and Network Disconnected triggers fire when each individual network adapter connects or disconnects.

Session Variables can be used within the Network Available, Network Connected and Network Disconnected triggers to determine attributes of the network connection. The built-in Session Variables persist for the duration of the network trigger and will not be available after the trigger has completed executing all of its nodes.

The following built-in Session Variables are available on the Network Available triggers:

Session Variable	Description	Example
Network.Domain	DNS suffix of the adapter, specific to the connection. Note: This is the domain name of the connection, rather than the domain to which the machine is joined.	domain.local
Network.DomainType	Domain type of the connected network. The possible values are as follows: **0** - Workgroup machine connected to a private network **1** - Workgroup machine connected to a domain network **2** - Domain-joined machine connected to a domain network	2
Network.Id	GUID to uniquely identify the network.	{9A445C40-B550-4B79-8F4F-94475BCB5FCA}

The following built-in Session Variables are available on the Network Available, Network Connected and Network Disconnected triggers:

Session Variable	Description	Example
Network.Domain	DNS suffix of the adapter, specific to the connection. Note: This is the domain name of the connection, rather than the domain to which the machine is joined.	domain.local
Network.DomainType	Domain type of the connected network. The possible values are as follows: **0** - Workgroup machine connected to a private network	2

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Session Variable	Description	Example
	1 - Workgroup machine connected to a domain network **2** - Domain-joined machine connected to a domain network	
Network.Id	GUID to uniquely identify the network.	{9A445C40-B550-4B79- 8F4F-94475BCB5FCA}
Network.Adapter.BSSID	Media Access Control (MAC) address of the access point.	6E:DD:3A:91:F2:8D
Network.Adapter.Description	Description of the network adapter. This is usually the manufacturer or type of the network adapter	Intel(R) 82577LC Gigabit Network Connect
Network.Adapter.FriendlyName	Friendly name of the network adapter This is the name of the adapter as displayed in the Network and Sharing Center.	Local Area Connection
Network.Adapter.Id	GUID to uniquely identify the network adapter.	{F2DD3B93-5BD8-489CA7C7-32E2964AA0D5}
Network.Adapter.IPv4Address	IPv4 address of the network adapter.	192.168.1.1
Network.Adapter.IPv4SubnetMask	IPv6 address of the network adapter in a shorthand notation ℹ If the network is not an IPv6 network, then the address is a local-link address starting “fe80:” and is non-routable.	255.255.255.0
Network.Adapter.IPv6Address	IPv6 prefix length of the network adapter	64
Network.Adapter.IsVirtual	Returns True if the network adapter is software-based or False if the network adapter is physical.	True
Network.Adapter.IsWireless	Returns True if the network adapter is IEEE 802.11 wireless or False if the	False

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Session Variable	Description	Example
	network adapter is wired.	
Network.Adapter.MAC	Media Access Control (MAC) address of the network adapter.	3D:C5:DB:AC:46:B6

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Trigger Environment

The trigger Environment optimizes efficiency when running configurations containing Environment actions. Prior to version 8.1, environment variable actions were added to nodes in the same way as other actions. When environment variables were run in this way, environment refreshes had a potential impact on the running of the other actions in the trigger.

It is recommended that all environment and session variables are added to the required trigger environments when upgrading a configuration to from a pre-8.1 version to 8.1 or later.

Environment actions which are in nodes within a trigger will not run or be refreshed until after all the other actions in that trigger have run.

Actions within the Environment tab will not execute unless a node exists within the trigger.

The trigger environment behaves in much the same way as nodes in that any condition appropriate to the trigger can be added. However, only **Environment** actions can be added; all other actions are unavailable for selection.

The trigger Environment is available for the following triggers:

- Computer
    - Startup
    - Network Available
    - Shutdown
- User
    - Logoff
    - Network Connected
    - Network Disconnected
    - Session Reconnected
    - Session Disconnected
    - Session Locked
    - Session Locked

The example below shows the Startup Environment tab containing one condition with an Environment action and three further Environment actions.

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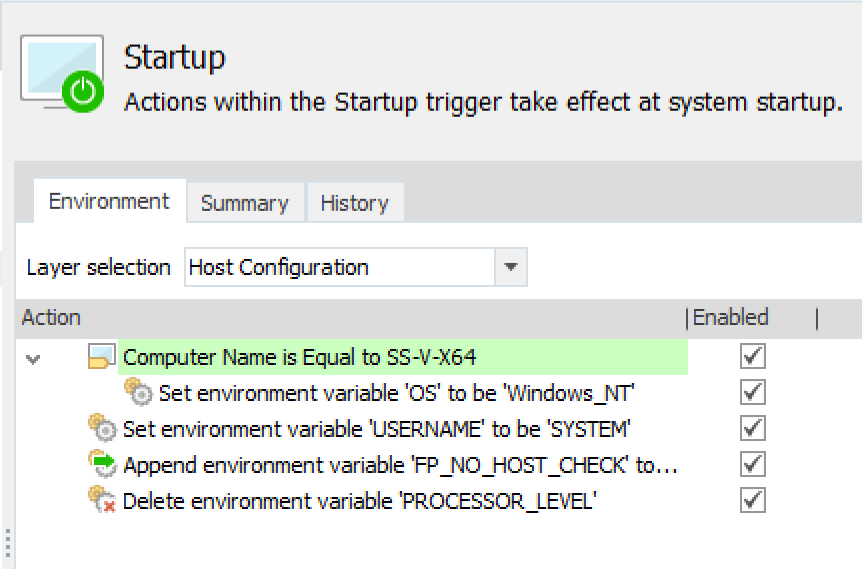

Startup

Actions within the Startup trigger take effect at system startup.

Layer selection: Host Configuration

Action	Enabled
Computer Name is Equal to SS-V-X64	☑
Set environment variable 'OS' to be 'Windows_NT'	☑
Set environment variable 'USERNAME' to be 'SYSTEM'	☑
Append environment variable 'FP_NO_HOST_CHECK' to...	☑
Delete environment variable 'PROCESSOR_LEVEL'	☑

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Configure the Trigger Environment

1. In the Policy Configuration navigation tree, select a trigger.
2. Select the Environment tab.
3. Select the Conditions tab and add any required conditions. It is not mandatory to use conditions in the environment tab; Environment actions can be added directly.
4. Click **Actions** > **Environment** and select the required action:
    - Set Environment Variable
    - Append Environment Variable
    - Delete Environment Variable
    - Set Session Variable
    - Delete Session Variable

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Node Management

Nodes are used to help build up the structure of an Environment Manager configuration. They provide containers which house conditions and actions within triggers. By creating a hierarchy of nodes controlling the relationship between actions and the events which trigger those actions, a policy of computer usage is defined.

Nodes provide extra flow control to the configuration by forming the bridge between triggers and actions, allowing the dependency between trigger and action to be set.

Configuring Nodes

Nodes are configured using the Nodes ribbon. The options are also available from the node shortcut menu and by using Keyboard Shortcuts.

Add Node

Nodes can be added to any trigger or existing node in the Policy Configuration navigation tree. The **Add Node** option creates a new node as a child of the selected trigger or node in a configuration.

Delete Node

Select a node, condition or action, click **Delete** from the **Edit** tab, the shortcut menu or press the **Delete** key and confirm.

Rename

Select a node, condition or action, click **Rename** from the **Edit** tab, the shortcut menu or press the **F2** key. Enter the new name and press **Enter**.

Disable/Enable

When a node is disabled, it remains present in the configuration but is not passed to the Environment Manager agent at run-time. This is useful when troubleshooting to help discover errors in a configuration.

To disable a node, condition or action, click **Disable** from the **Edit** tab, the shortcut menu or press **Ctrl+T**.

A banner displays at the top of the work area when a node is disabled. The node icon is faded and associated conditions and actions are displayed in gray, italic text.

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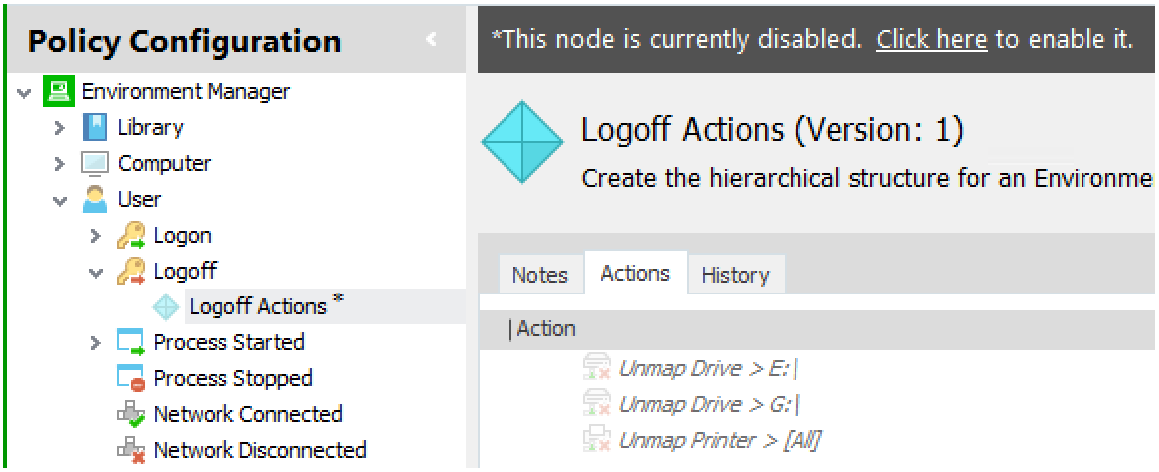

*This node is currently disabled. Click here to enable it.

To enable a node, condition or action, click **Enable** from the **Edit** tab, the shortcut menu or press **Ctrl+T**. A node can also be enabled by clicking the link in the yellow banner at the top of the work area.

When a node is disabled or enabled, any child nodes, actions and conditions, automatically match the state of the parent.

Individual actions and conditions can be enabled and disabled using the same ribbon button, shortcut menu option and keys.

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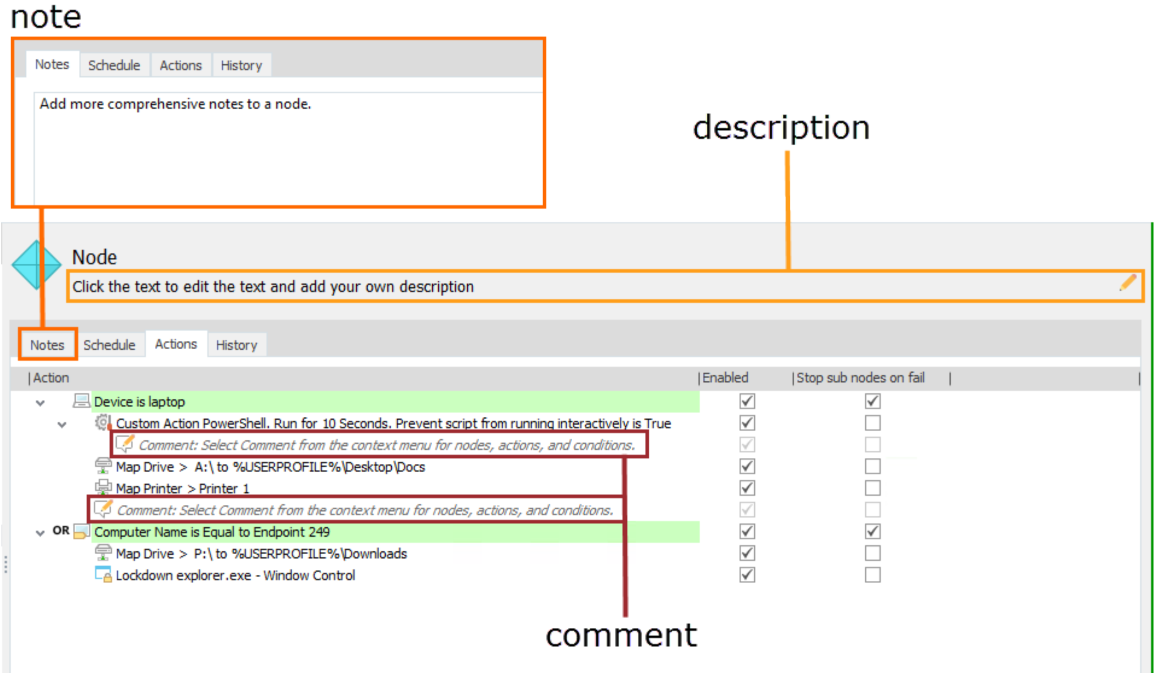
Node Descriptions

In large environments, where multiple administrators need to view and edit configurations, node descriptions provide a versatile method of adding free-text annotations. The feature is useful for documenting configuration changes and describing node behavior.

Video: Node Descriptions

There are three types of node descriptions:

- **Descriptions** - Click the text to add further information to a node, which can be viewed at a glance.
- **Comments** - Highlight a node, action or condition in the Action tab of a node and select **Comment** from the shortcut menu.
- **Notes** - Select the **Node** tab of a node to add more comprehensive text descriptions.



Add more comprehensive notes to a node.

Click the text to edit the text and add your own description

Action	Enabled	Stop sub nodes on fail
Device is laptop	☑	☑
Custom Action PowerShell. Run for 10 Seconds. Prevent script from running interactively is True	☑	□
Comment: Select Comment from the context menu for nodes, actions, and conditions.	☑	□
Map Drive > A:\ to %USERPROFILE%\Desktop\Docs	☑	□
Map Printer > Printer 1	☑	□
Comment: Select Comment from the context menu for nodes, actions, and conditions.	☑	□
OR Computer Name is Equal to Endpoint 249	☑	☑
Map Drive > P:\ to %USERPROFILE%\Downloads	☑	□
Lockdown explorer.exe - Window Control	☑	□

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Node Scheduling

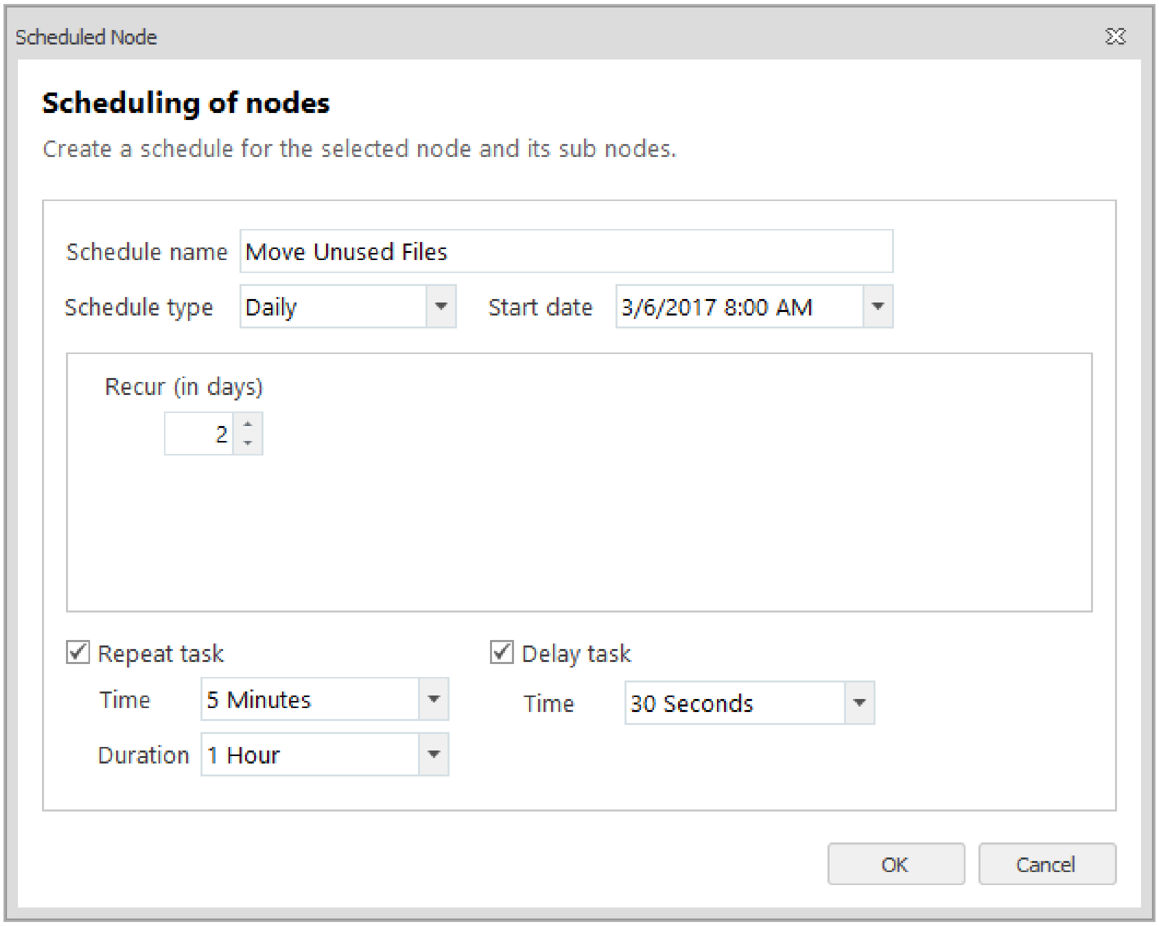
Schedule Environment Manager policy actions to occur at specified times and frequencies. This allows tasks to run without specific triggers being met and at regular intervals so policies can be reapplied. The actions in a scheduled node are added as a task in Windows Task Scheduler, run at a time and frequency specified in the node. Using node scheduling, tasks that are deployed with Group Policy Objects can be managed by Environment Manager.

Video: Node Scheduling

This feature can be used on the following triggers:

- Computer > Startup
- User Logon > Pre-Desktop
- User Logon > Desktop Created

Select the **Schedule** tab in a node under a compatible trigger and select **Create as a scheduled task** to configure the schedule. To run the node's tasks when the trigger fires, select **Execute the node and all sub nodes immediately** - otherwise the tasks will run only when scheduled and not when the trigger is fired.



Scheduling of nodes

Create a schedule for the selected node and its sub nodes.

Schedule name: Move Unused Files

Schedule type: Daily

Start date: 3/6/2017 8:00 AM

Recur (in days): 2

☑ Repeat task

Time: 5 Minutes

Duration: 1 Hour

☑ Delay task

Time: 30 Seconds

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Option	Description
Schedule name	The name that appears in the Windows Task Scheduler. Use a description of the node functionality to make it easy to identify tasks.
Schedule type	The schedule type is used in conjunction with the schedule date to define when the task will occur. Select one of the following: • **One time** - The task will run at the scheduled start date and time. • **Daily** - The task will run daily, from the start date and time and at the specified recurrence interval. For example, if Recur is set to 1, the task will occur daily - if set to 2, the task will run every other day at the scheduled time. • **Weekly** - The task will run on the selected days of the week from the start date and time and at the specified recurrence interval. For example, if Recur set to 1, the task will run on the selected days every week - if set to 2 the task will run on those days every other week. • **Monthly** - The task will run from the start date on the selected days each month. You can specify the dates for the selected months or schedule the task to run on particular days. For example, the first Monday of each selected month.
Schedule date	Select the date and time from which the schedule will start.
Recur	Select the recurrence interval for daily and weekly schedules.
Repeat task	Select the interval between task repeats and for how long the task will repeat. The task will run on the start date and repeat at the set time interval for the specified duration.
Delay task	Select how long to delay the task from running after the task is triggered. The delay time will be a random time between the time the task is triggered and the specified delay time. For example, if the task is scheduled to run at 3.00 AM with a delay time of 10 minutes, the task will start between 3.00 and 3.10 AM.

Windows Task Scheduler Default Values

Creating tasks in Windows Task Scheduler with Environment Manager is subject to the following registry keys that can limit the number of queued and concurrent tasks:

- TasksInMemoryQueue [Default = 75, Max = 1000]
- TasksPerLeastPrivEngine [Default = 50, Max = 1000]

For further information see Microsoft article 269472.

Add New Node to a Configuration or Process Trigger

Add a new node to a configuration

1. In the Policy Configuration navigation tree, select the trigger or node that you want to add a new node to.
2. In the Nodes ribbon, select **Node**.

A new child node is added to the highlighted node or trigger.

Add a new node to a process trigger

1. There are two process triggers within the Computer and User fixed nodes: Process Started and Process Stopped. Any nodes added to a process trigger must have a condition applied which specifies a process or application for conditions and actions within the node
2. Select one of the process triggers, or a node within a process trigger.
3. In the Nodes ribbon, select **Node**. The Computer Process Name dialog displays.
4. Select a Condition to apply to the application or process; **Equal**, **Not Equal**, **Query** or **Regular Expression**.
5. In the **Match** field:
    - Use the ellipsis to select the EXE file for the required application or process.
    - Manually enter the file path or EXE name.
    - Enter a regular expression to match the required applications and processes.

      For example:%PROGRAMFILES%\\Microsoft Office\\Office\d\d\\winword\.exe

      The regular expression \d matches any single digit. Microsoft Office uses different default installation paths for each version - Office 2003 uses Office11 and Office 2013 uses Office15. Including Office\d\d in the file path ensures all versions of Word are found.
6. Select whether you want to only target those processes that are the same case as the letters in the Match field.
7. Select **Match case** to only search for processes with the same capitalization as the text in the Match field.
8. If required, select the **Match Parameters** checkbox to enable further validation to be added to the match in the Parameters field.
9. Click **OK** to create the node with the condition applied. Any actions attached to the node will only apply when triggered by the defined application or process.

Field Reference

Option	Usage
Equal	Actions are applied for the application or process defined in the **Match** field. The

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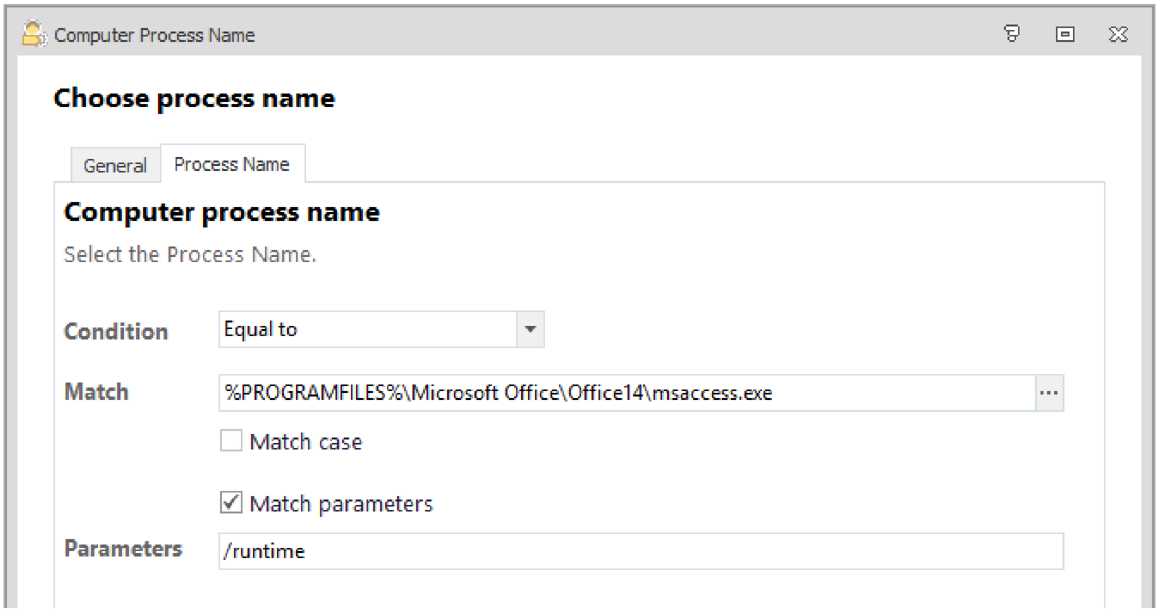
Option	Usage
	Equal condition can also be used in conjunction with the **Parameters** field to apply further validation.
Not Equal	Actions are applied for all applications or processes other than that specified in the **Match** field. For example, enter **excel.exe** in the match field to apply the associated actions to all applications other than Microsoft Excel.
Query	Targets all processes and applications which match the criteria specified in the **Match** field. Wildcards can be used to target a range of applications and processes.
Regular Expression	Use regular expressions to specify processes and applications.
Parameters	Further validation can be added for **Equal** conditions by selecting the **Match Parameters** checkbox and adding extra definition in the **Parameters** field. For example, you might want to apply different conditions and actions for users who use Microsoft Access 2010 Retail and Runtime versions. To target the runtime version: **Match** field: **C:\Program Files\Microsoft Office\Office14\msaccess.exeParameters** field: **/runtime** Any actions applied to the process condition will only be applicable to the Runtime version of access.

Example

You have a requirement to apply different conditions and actions for users who use Microsoft Access 2010 Retail and Runtime versions. To create a condition to target the Runtime version:

- **Match:** %PROGRAMFILES%\Microsoft Office\Office14\msaccess.exe
- **Parameters:** /runtime



Choose process name

Computer process name

Select the Process Name.

Condition: Equal to

Match: %PROGRAMFILES%\Microsoft Office\Office14\msaccess.exe

□ Match case

☑ Match parameters

Parameters: /runtime

Actions applied to the process condition will only be applicable to the Runtime version of access.

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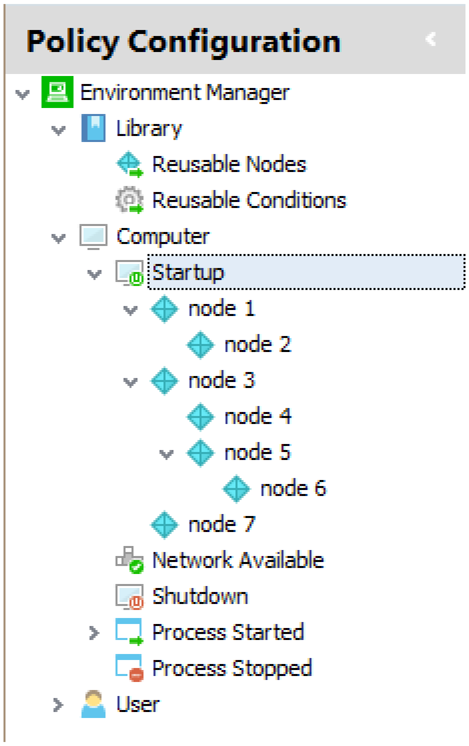
Arrange Nodes

The order in which the nodes are displayed in the Policy Configuration navigation tree determines the level of dependency. If all the nodes are at the same level in the hierarchy then their configured contents are executed in parallel. However, if the nodes are at different levels in the hierarchy, a dependency on the node above is created and actions are executed in sequence.



In the example above, Nodes 1, 3 and 7 will execute simultaneously. Node 2 and Nodes 4 and 5, will only execute once Nodes 1 and 3 respectively, are complete. Likewise, Node 6 will only execute once Node 5 is complete.

All nodes have a default timeout setting of 30 seconds. Child nodes will start automatically after the 30 second timeout, regardless of whether the actions within the parent node are complete or not. The default timeout can be amended by editing the appropriate key in the registry.

The default timeout is overridden by any Custom Action or Custom Condition which contradict the value. Custom Actions and Conditions enable a maximum time for running the script to be set, which takes priority over the default setting for the node timeout.

To arrange nodes, highlight and use one of the following methods:

- Press **Ctrl** and the appropriate arrow key.
- Drag and drop.
- Click the arrow buttons on the **Nodes** ribbon.
- Right-click to display the context menu and select **Move Left**, **Move Right**, **Move Up**, or **Move Down**.

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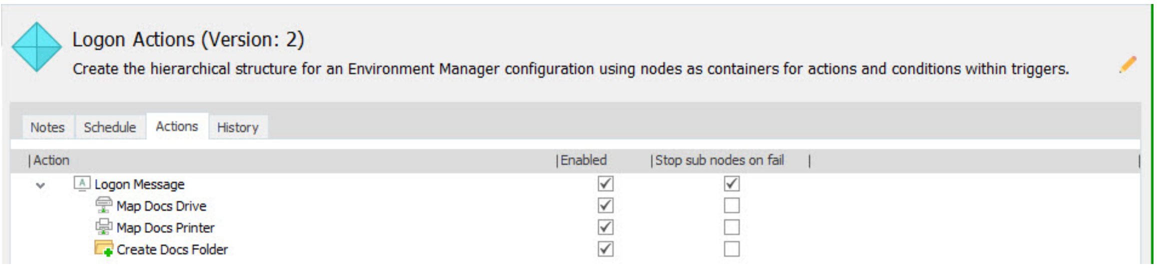
- Click **Cut**, **Copy** and **Paste** from the Edit ribbon or use the corresponding shortcut menu options or keyboard shortcut.

Stop Sub Nodes on Fail

When applied, the *Stop sub nodes on fail* setting prevents any dependent sub nodes executing if a condition is not met or an action fails to run to completion. The setting can be applied to any action or condition and is enabled for new conditions by default.

To apply, select a node and set the *Stop sub nodes on fail* checkbox for each action and condition as required.

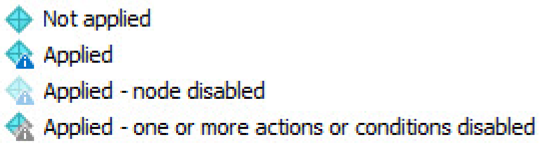


Logon Actions (Version: 2)

Create the hierarchical structure for an Environment Manager configuration using nodes as containers for actions and conditions within triggers.

Action	Enabled	Stop sub nodes on fail
Logon Message	☑	☑
Map Docs Drive	☑	□
Map Docs Printer	☑	□
Create Docs Folder	☑	□

You can see the *Stop if sub nodes on fail* status of each node in the navigation tree:



Not applied
Applied
Applied - node disabled
Applied - one or more actions or conditions disabled

Node Groups

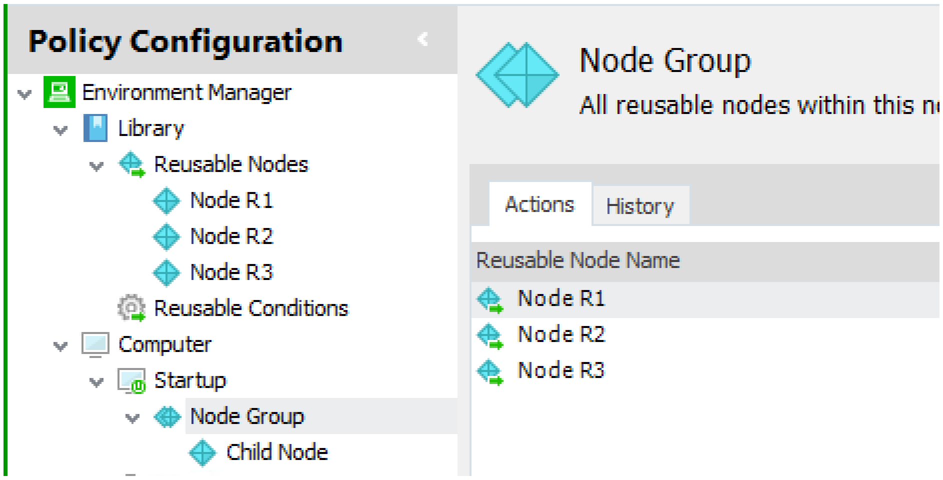
The Node Group option creates a node to which multiple reusable nodes can be added that must run to a successful conclusion before any associated child nodes are run. Essentially, this means that child nodes can be dependent on multiple parent nodes. Without node groups the dependency can only be created between one parent and its child nodes.

Node group behavior is defined by the following rules:

- Only reusable nodes can be used within a node group but child nodes can be any appropriate to the trigger.
- Reusable nodes within a node group run in parallel.
- If any of the reusable nodes within the group fail, the child nodes will not run

Example

The node group in the **Computer** > **Startup** trigger contains three reusable nodes; seen in the work area by selecting the node group. For the child node to run, all three of the reusable nodes must successfully complete.



Node Group

All reusable nodes within this n

Reusable Node Name
Node R1
Node R2
Node R3

Create all required Reusable Nodes prior to setting up a node group. Only nodes which exist in **Library** > **Reusable Nodes** can be added to the work area.

Create a Node Group

1. In the Policy Configuration navigation tree, select a trigger, or node within a trigger, within which the node group is to be created.
2. In the Node ribbon, select **Node Group**. A node is created in the Policy Configuration navigation tree.
3. Highlight the new node and click in the console work area.
4. On the **Node** tab, in the **Add** group, select **Node Group Member** and choose the required reusable nodes.
5. Select a Reusable Node. The node is added to the node group node. Each added node can be Enabled or Disabled as required, using the corresponding checkbox in the work area.
6. Repeat steps 4 and 5 to add further nodes.
7. When all required reusable nodes have been added, create the dependent child nodes.

Clone

The Clone feature allows nodes, with or without their child nodes, to be copied, moved and used as reusable nodes.

Clone nodes with child nodes

Select the node you want to copy and on the Node ribbon, select **Clone** > **Clone Node with Child Nodes**.

The node, its child nodes and associated actions and conditions are copied to the same location as the original and renamed with a prefix of "Clone of".

Move to reusable nodes

Select the node you want to move and on the Node ribbon, select **Clone** > **Move to reusable nodes**.

The node, its child nodes and associated actions and conditions are move to reusable nodes

Copy to reusable nodes

Select the node you want to move and on the Node ribbon, select **Clone** > **Copy to reusable nodes**.

The node and any associated actions and conditions are copied to reusable nodes and renamed with a prefix of "Clone of". Child nodes are not copied.

Copy to reusable nodes with child nodes

Select the node you want to move and on the Node ribbon, select **Clone** > **Copy to reusable nodes**.

The node, its child nodes and associated actions and conditions are copied to the same location as the original and renamed with a prefix of "Clone of".

Copy to reusable conditions

Select the condition you want to move and on the Node ribbon, select **Clone** > **Copy to reusable conditions**.

The condition is copied to reusable conditions and renamed 'Reusable Condition'.

ⓘ *Stop sub nodes on fail* is not supported for reusable conditions. If *Stop Sub Nodes on Fail* is enabled on the condition being copied, it will be removed in the Reusable Conditions node.

Reusable Nodes

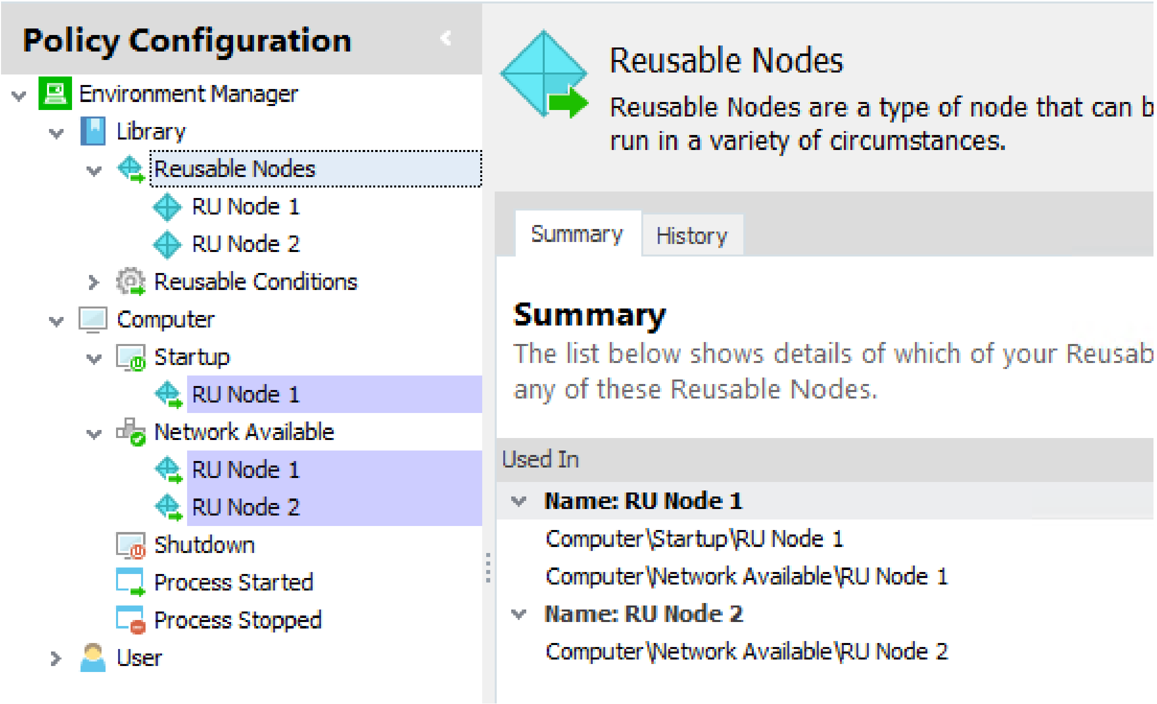
The Reusable Node functionality in the Environment Manager console changed in version 8.1 of Environment Manager. However, when upgrading a configuration for use in the 8.1 or later version consoles, the previous Run Node functionality is enabled.

See Reusable Nodes and Pre-8.1 Configurations.

Reusable nodes enable a single node to be referenced multiple times within a configuration. They can be added to any trigger which supports its actions and conditions. Reusable nodes are stored in the Library and any change here reflects in each occurrence within the configuration.

To view where reusable nodes are referenced in the configuration, click Reusable Nodes in the Library. Each reusable node is listed together with the path within the navigation tree of each instance.

In the configuration below, nodes RU Node 1 and RU Node 2 are reusable and have been referenced within the Computer Startup and Desktop Created nodes. The Summary, lists the nodes and where they are referenced in the configuration.



Reusable Nodes

Reusable Nodes are a type of node that can b
run in a variety of circumstances.

Summary

The list below shows details of which of your Reusab
any of these Reusable Nodes.

Used In

Name: RU Node 1

Computer\Startup\RU Node 1

Computer\Network Available\RU Node 1

Name: RU Node 2

Computer\Network Available\RU Node 2

Click on a reference to a reusable node in the Summary to select the reference in the navigation tree and view its contents.

New reusable nodes can be created directly in the Library or existing nodes in the configuration can be cloned and automatically added to the Library.

Actions and conditions within reusable nodes cannot be referenced to run in triggers which do not allow that action or condition. For example, Drive & Printers actions do not run in Computer triggers. A reusable node containing Drive & Printers actions will not be available from the Reusable Node or Run Node drop-down with a Computer trigger selected.

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Create Reusable Nodes

Create a reusable node

1. In the Policy Configuration navigation tree, select **Library** > **Reusable Nodes**.
2. In the Nodes ribbon, select **Node**.
3. Highlight the new node and create the required conditions and actions.

The node is now available as a Reusable Node in the configuration.

Create a reusable node from an existing node

When a node has been moved to Reusable Nodes, it is removed from its position in the configuration and a reference to the reusable node must be created in its place if required.

1. In the Policy Configuration navigation tree, select the node you want to make reusable.
2. In the Nodes ribbon, select **Clone** and select one of the sub options:
    - **Move to Reusable Nodes** - The node, its actions, conditions and all child nodes are moved to Reusable Nodes.
    - **Copy to Reusable Nodes** - The node is copied, with associated conditions and actions but without child nodes, to Reusable Nodes and renamed with a prefix of "Clone of".
    - **Copy to Reusable Nodes with Child Nodes** - The node, its actions, conditions and all child nodes are copied to Reusable Nodes. The node and all child nodes are prefixed with "Clone Of".

   If either of the **Copy to** options is selected, the node in its original position will not be a reusable node. If required, delete the original and replace with the reusable node.

The node, or an exact copy of the node, is available as a Reusable Node in the configuration.

Reference a reusable node in a configuration

1. In the Policy Configuration navigation tree, select the trigger or node to which you want to add a reusable node.
2. In the Nodes ribbon, in the **Add** group, select **Reusable** Node.
3. Select a reusable node from the list of those available.

The actions in the reusable node are referenced to run from within the selected node.

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Convert a Reusable Node to a Normal Node

1. Select a reference to a reusable node in the navigation tree.
2. In the Nodes ribbon, in the **Edit** group, select **Convert to Normal**.

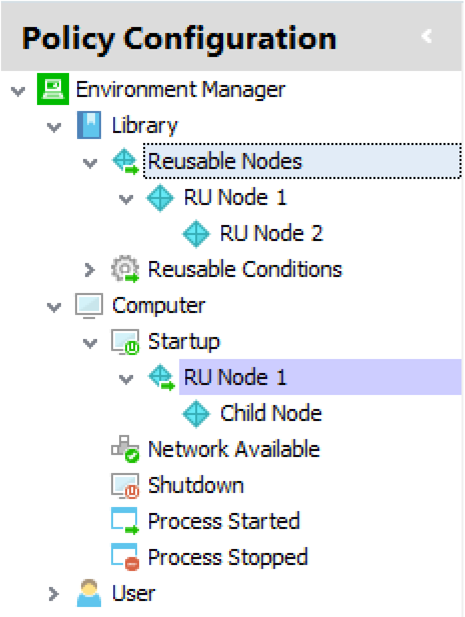
All links to the reusable node are removed. The node can be edited independently without affecting the reusable node and its references.

Stop Sub Nodes on Fail for Reusable Nodes

The **Stop Sub Nodes on Fail** instruction for actions and conditions in reusable nodes is enabled and disabled within the Library. The setting is applied uniformly to each reference of that reusable node in the configuration and cannot be changed for individual references within the configuration.

If a reusable node contains multiple actions or conditions with the **Stop Sub Nodes on Fail** setting applied, when referenced in a configuration, any child nodes will only run if each node and condition is successful. If one action with **Stop Sub Nodes on Fail** applied does fail, the child node will not run.

In the example below, the Reusable Node (RU Node 1) has one dependent nodes: Node 1. Both nodes contain one action, each with **Stop Sub Nodes on Fail** enabled. The reusable node is referenced in a configuration and a dependent child is added at the level below. The Child Node will only run if all actions in RU Node, Node 1 and Node 2 are successful. If any action fails, it will not run.



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Stop Sub Nodes on Fail for Reusable Nodes on Upgrade

Prior to 8.1 reusable nodes were executed as actions configured within the actions work area of a node. For 8.1and later versions of Environment Manager, reusable nodes can only be referenced as nodes under a trigger. They can be added directly to triggers in a configuration. This affects the way *Stop sub nodes on fail* works for reusable nodes and this must be considered when upgrading configurations to 8.1 and later versions.

In pre-8.1 consoles, *Stop sub nodes on fail* could not be applied to actions and conditions within the Reusable Nodes library. *Stop sub nodes on fail* was only available at reusable node reference level for reusable nodes referenced within a configuration.

For 8.1 and later versions, each action and condition in a reusable node within the library has a *Stop sub node on fail* instruction. When an 8.0 configuration is upgraded, all actions and conditions within reusable nodes have *Stop sub node on fail* enabled. Therefore, if any action fails within a reusable node, child nodes will not run.

As this could potentially change the behavior in a configuration, consideration must be given to the impact an upgrade may have. Although, *Stop sub node on fail* can be disabled for each action or condition as required, this may not create the desired behavior and the configuration may require a more comprehensive update.

Reusable Nodes and Pre-8.1 Configurations

Configurations are upgraded by importing the MSI or XML files created in a previous version of Environment Manager, into the 8.1 console. AppSense Environment Manager Package (AEMP) files are also upgraded in the same way.

In older versions of the console, a reference to a reusable node is added to a configuration using the **Run Node** button on the **Actions** ribbon. In 8.x consoles, the **Run Node** button has been removed and replaced with the **Reusable Nodes** button in the **Nodes** ribbon.

When a configuration is upgraded and opened in an 8.x console the **Reusable Node** button is added to the **Actions** ribbon to replicate the functionality of previous versions.

Condition Management

Conditions are used to create rules which enable actions to be executed based on who, where from or how a user is connecting to a computer or application. Conditions based on Directory Membership, User, Computer, Session and Client can be used to create a configuration which can define computer usage throughout an organization.

They are the bridge between triggers and actions to provide context for applying the action. For example:

Trigger	Condition	Action
User > Logon	User > User Name	Map Drive

The action is to map a drive when a user logs on. The condition allows a user to be specified so the drive is mapped only for that particular user. Without the condition, the drive would be mapped for all users at logon.

Actions can be set to execute when the criteria within the condition is true or false for the user or their computer. For example, a condition can be created which applies the associated actions to a specified computer or the actions could be set to execute for any computer other than that specified. **Regular expressions** and ranges can also be used to create advanced conditions which apply to multiple matches.

Simple regular expressions can be used such as entering **[abc]** will match anything which includes any of the characters within the brackets. More complex queries can also be used, for example, **^[a-f]+** will match any user name which begins with a letter from **a** to **f**.

For further information see Wildcards and Regular Expressions.

The positioning of a condition within the Policy Configuration navigation tree determines how it is applied. Conditions at the same level within in the tree are evaluated simultaneously. A condition which is a child of another condition, will only evaluate once the parent condition has been successfully executed. All conditions, with the exception of Counter, can also be added to the Environment tab in most triggers.

For any condition which queries the Active Directory, the Environment Manager administrator must be a member of the target domain or have sufficient permissions to access and query the domain.

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Create a Condition

This section applies to creating **Directory Membership**, **User**, **Computer** and **Session & Client** conditions only as the dialog boxes these conditions use follow the same format.

1. In the Policy Configuration navigation tree, select a node or create a new node within the trigger you want to apply the condition to.

   The condition can be added directly to the trigger in the **Environment** tab.
2. In the Conditions ribbon, select the required condition.

   The condition tab, specific to the condition type displays by default. This tab allows the parameters to be set using a common group of options and fields. See Condition Variables for further details.
3. Define the condition using the available fields and checkboxes.
4. Select the **General** tab.
5. Enter a description and any optional notes. The description is used as the display name for conditions. If this field is left blank the display name is automatically set from the configured condition.
6. Click **OK** to save the condition.

The Environment Manager agent uses the condition to find a match with the same criteria for a logged on user. If a match is found, any actions attached to the condition are executed.

Once created you can prevent a failed action from continuing to execute any dependent sub nodes by selecting the *Stop sub node on fail* check box in the node work area. By default, *Stop sub node on fail* is enabled for new conditions.

Condition Variables

Each type of condition can be specified using variations of the following fields, drop-downs and checkboxes:

- **Equal** - A comparison is made against the contents of the **Match** field to target the users or computers which fulfill those criteria. Enter the criteria into the **Match** field or use the ellipsis (**...**) to search or select as required.
- **Not Equal** - Targets all users or computers which do not fulfill the criteria in the **Match** field. Enter the criteria in the **Match** field or use the ellipsis to search or select as required.
- **Query** - Targets all users or computers which match the criteria specified in the **Query** field. Using wildcards in the query allows a wide range of matches, for example:
  - **Windows* - target users or computers ending in the text Windows.
  - *Windows** - target users or computers starting with the text Windows.
  - **Windows** - target users or computers containing the text Windows.
- **Regular Expression** - Use regular expressions to specify advanced queries for users or computers.

- **Between** - Used for conditions where a range of values can be set. For example, a condition could be created to apply to a selected range of IP addresses.
- **Evaluate once per session** - When selected, a condition is evaluated and the result is cached. If the condition is run again, the result is obtained from the cache rather than evaluating the condition again. If you want multiple instances of the same condition to evaluate only once, a reusable condition must be created and referenced multiple times. If you create multiple conditions, they will each be run one. If a reusable node is referenced multiple times, evaluation only occurs once in the session.
- This option is not available for conditions within **Process Start** and **Process Stop** triggers.

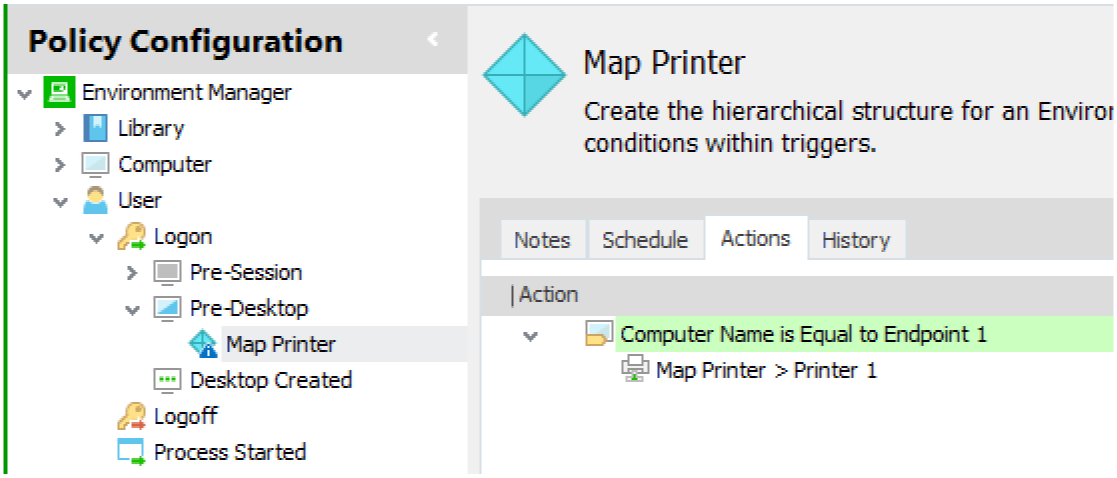
The behavior surrounding this option changed in 8.1. Prior to 8.1 the option was evaluated when the configuration was parsed and cached for the session. In 8.1 and later versions, the option is not evaluated until the trigger is fired when the result is cached for the whole session.

For example, a **Process Start** condition is created for calc.exe with the **Evaluate once per session** checkbox selected. In 8.0 the result would be cached for the session when the configuration is parsed at logon. In 8.x the result is not cached until calc.exe is run.

Condition Configuration Examples

The simple configuration below maps Printer 1 at logon for Endpoint 1. During logon, the Environment Manager agent checks the managed computer against that specified in the condition; Endpoint 1. If the condition is met, the action to map the printer to Printer 1 runs. If the managed computer is anything other than Endpoint 1, the action is ignored.

In the Environment Manager console, the example would be as follows:



Map Printer

Create the hierarchical structure for an Enviror conditions within triggers.

Computer Name is Equal to Endpoint 1

Map Printer > Printer 1

Adding a further condition at the same level creates an OR condition. This configuration maps Printer 1 at logon for Endpoint 1 OR Endpoint 5. If the computer is one of those specified, the action to map the printer to Printer 1 runs. If the managed computer is anything other than Endpoint 1 or Endpoint 5, the action is ignored.

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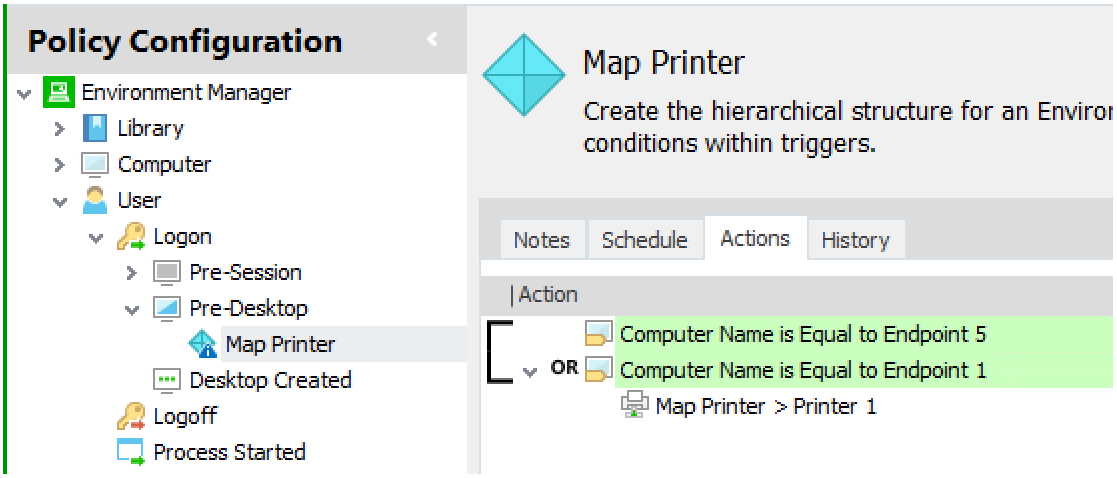
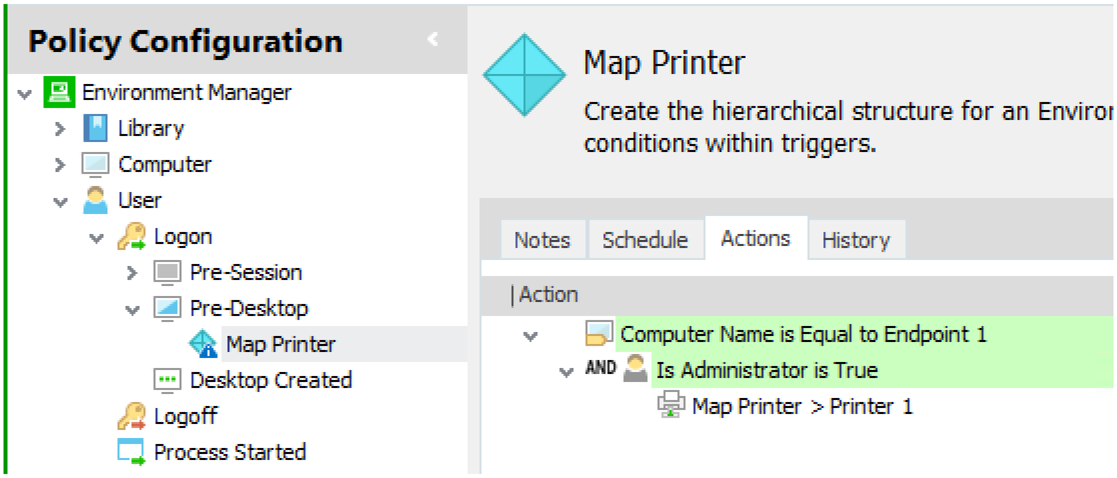


Map Printer

Create the hierarchical structure for an Enviro
conditions within triggers.

Computer Name is Equal to Endpoint 5
OR Computer Name is Equal to Endpoint 1
Map Printer > Printer 1

If a condition is a child of another, an AND condition is created. A condition which checks if the user is an administrator has been added as a child of another condition. By adding this, the action will run for the computers specified AND the user is an administrator.



Map Printer

Create the hierarchical structure for an Enviro
conditions within triggers.

Computer Name is Equal to Endpoint 1
AND Is Administrator is True
Map Printer > Printer 1

AND and OR statements can be combined to create AND OR conditions. This configuration maps Printer 1 at logon for Endpoint 1 OR Endpoint 5 for users which have administrator rights.

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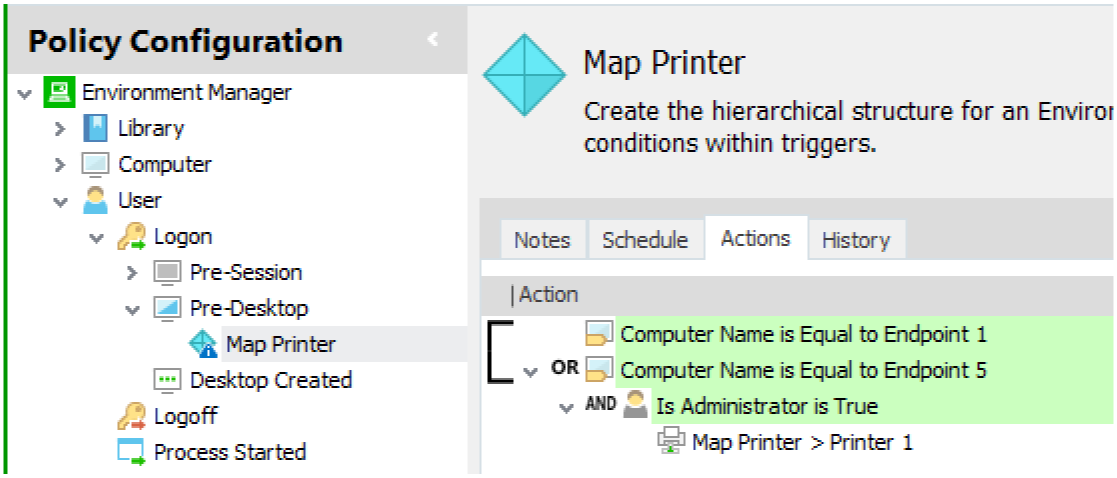

Map Printer

Create the hierarchical structure for an Enviror
conditions within triggers.

Computer Name is Equal to Endpoint 1
OR Computer Name is Equal to Endpoint 5
AND Is Administrator is True
Map Printer > Printer 1

There is no limit to the number of conditions you can add to AND and OR conditions or the number of AND OR conditions that can be used.

The AND OR labels and the item background colors can be turned on and off in the Options Ribbon.

Field Validation

The table below lists the strings which are acceptable in the fields of the various conditions.

Condition	Field	Allowed String	Example
User Group	Match	domain\group	**appsense/sales** matches the group 'sales' in the 'appsesnse' domain.
		LDAP	**CN=sales, DC=appsense, DC=com** matches the 'sales' group in the appsense.com domain.
	Query	domain\gro*	**appsense\sal*** matches group names starting with "sal" in the appsense domain.
		domain*gro	**appsense*les** matches group names ending with "les" in the appsense domain.
		domain*gro*	**appsense*ale*** matches group names containing "ale" in the appsense domain.
User Name	Match	domain\user	**appsense\smithj** matches the user name "smithj" in the appsense domain
	Query	domain\use*	**appsense\smit*** matches group names starting with "smit", in the appsense domain.

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Condition	Field	Allowed String	Example
		domain*use	**appsense*ith** matches group names ending with "ith", in the appsense domain.
		domain*use*	**appsense*ith*** matches group names containing "ith", in the appsense domain.
Computer Group	Match	domain\group	appsense/sales matches the group 'sales' in the 'appsesnse' domain.
		LDAP	**CN=sales, DC=appsense, DC=com** matches the 'sales' group in the appsense.com domain.
	Query	domain\gro*	**appsense\sal*** matches group names starting with "sal" in the appsense domain.
		domain*gro	**appsense*les** matches group names ending with "les" in the appsense domain.
		domain*gro*	**appsense*ale*** matches group names containing "ale" in the appsense domain.
Computer Name	Match	computer	**SalesDesk01** matches the computer name "SalesDesk01"
	Query	comp*	**SalesDesk*** matches all computer names starting "SalesDesk"
		*comp	**Desk01*** matches all computer names ending with "Desk01"
		comp	**Desk*** matches all computer names containing "Desk"
Computer Domain	Match	domain	**appsense** matches the domain name "appsense".
		domain	**appsense.com** matches the domain name "appsense.com"
	Query	dom*	**app*** matches all computer domains starting "app"
		*dom	***sense** matches all computer domains ending "sense"
		dom	***sen*** matches the domains containing "sen".
Computer	Match	computer	**SalesDesk01** matches the computer NETBIIOS

Condition	Field	Allowed String	Example
NETBIOS			name "SalesDesk01".
	Query	comp*	**SalesDesk*** matches all computer names starting "SalesDesk"
		*comp	**Desk01*** matches all computer names ending with "Desk01"
		comp	**Desk*** matches all computer names containing "Desk"
Computer IP Address	Match	xxxx.xxxx.xxxx.xxxx	**192.168.0.1** matches the IP address 192.168.0.1
	Between	xxxx.xxxx.xxxx.xxxx yyyy.yyyy.yyyy.yyyy	IP Address **1: 192.168.0.1**, IP Address 2: **192.168.0.254** matches all IP addresses between "192.168.0.1" and "192.168.0.254".
User OU Membership	Match	LDAP	**CN=sales, DC=appsense, DC=com** matches the directory membership of user OU "sales" in the appsense.com domain.
	Query	ou*	**sales*** matches user OU names starting with "sales"
		*ou	***sales** matches user OU names ending with "sales"
		ou	***sales*** matches user OU names containing "sales"
Computer OU Membership	Match	LDAP	**CN=sales, DC=appsense, DC=com** matches the directory membership of computer OU "sales" in the appsense.com domain.
	Query	ou*	**sales*** matches computer OU names starting with "sales"
		*ou	***sales** matches computer OU names ending with "sales"
		ou	***sales*** matches computer OU names containing "sales"
Directory Site	Match	sitename	**testsite** matches the site name "testsite"

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Active Directory Based Conditions for Devices in Child Domains

Active Directory (AD) based client conditions convert the NetBIOS name of the client, obtained from Windows Terminal Server (or Citrix equivalent), to a FQDN used to query AD. The FDQN cannot be resolved if the terminal server is in the parent domain and is trying to resolve the FQDN of a connecting device in a child domain. This impacts Device and Custom rules, with Active Directory based client conditions, that are applied to terminal servers and VDIs in a root domain.

The terminal server must be configured with the DNS suffix of all child domains. The search list must be configured on all terminal servers wanting to resolve names for connecting in child domains.

For example, for the parent domain.local, the child domains, childa.domain.local and childb.domain.local, must be configured on the terminal server in order for AD based conditions to evaluate correctly.

For information about configuring domain suffix search lists, see: https://support.microsoft.com/en-gb/kb/275553

Registry Conditions

Registry conditions check whether or not registry keys and values exist on managed endpoints before applying any associated actions.

Condition	Description	Computer Trigger	User Trigger
Registry Key Exists	A condition which checks for the existence of specified registry keys on managed endpoints and applies associated actions accordingly. The registry can be browsed to find keys and sub keys can be identified if required. The **Comparison** drop-down allows the condition to check whether any specified key and sub key exists or does not exist.	Yes	Yes
Registry Value Exists	A condition which checks for registry values on managed endpoints and applies associated actions accordingly. Define the main and sub keys to be searched for the entered value. The value can be set using parameters to define the value name, type and actual value.	Yes	Yes

Create a Registry Value Exists Condition

The Registry Key Exists condition is created in a similar dialog to the Registry Value Exists condition but with fewer fields; Main Key, Sub Key and Comparison.

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1. In the Policy Configuration navigation tree, select the node or trigger to which you want to add the condition. This can be:
   - A new node
   - An existing node
   - The Environment tab of a trigger
2. In the Conditions ribbon, select **Registry > Registry Value Exists** to display the Registry Value Exists dialog.

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3. Complete the following fields:
    - **Hive** - Browse to the required registry value. A standard registry browser is used to select the value.
    - The **Key**, **Value name**, **Value type** and **Value** are automatically populated from the selected registry item but can be manually edited.
    - **Comparison** - Select the required option from the drop-down list:

Option	Description
Exists	Checks if a registry value name exists regardless of type and value. The sub key can be set or left blank so that the user can check for a value name set under the main key only.
Does Not Exist	Checks if a registry value does not exist. Uses the same behavior as the Exists comparison.
Value Type Exists	Checks the existence of a value name of a specific type e.g. REG_SZ, REG_DWORD etc. The **Value type** is available for selection and the main and sub key behavior is the same as **Exists**.
Equal To	Checks if the registry value is equal to a specific value. The sub key can be set or left blank so that the user can check for a value name set under the main key only. The value type can be set, different value editors are displayed dependent on the selection. The **Value** field can be left blank as empty values are allowed in the registry.
Not Equal To	Checks if the registry value is not equal to that which is specified. Uses the same behavior as the **Equal to** comparison.
Less Than Less Than or Equal To Greater Than Greater Than or Equal To	Checks the registry value against the selected comparison. These are only available on the REG_DWORD & REG_QWORD value types. Uses the same behavior as the **Equal to** comparison.

4. Select the required numerical system for the registry value - this can be either **Hexadecimal** or **Decimal**.
5. Click **OK** to save the condition.

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File and Folder Conditions

File and Folder conditions check whether or not specific files and folders exist on managed endpoints before applying the associated actions. In addition to a search for the existence of files, a condition can be set up to apply actions if a text file contains specific text.

Condition	Description	Computer Trigger	User Trigger
File Exists	A condition which checks whether a file does or does not exist on managed endpoints based on the name and location of the file, the date the file was created, modified or accessed and its size	Yes	Yes
Text File Search	A condition which searches for files on managed endpoints which do or do not contain a specified text string. Set the file location and enter the text to search the file for. The Text File Search condition supports searching for both expanded and unexpanded environment variables. On upgrade, single % environment variables are replaced by double % environment variables, for example, %UserName% is changed to %%UserName%% following an upgrade. This ensures existing behavior is maintained following an upgrade.	Yes	Yes
Folder Exists	A condition which checks whether a folder does or does not exist on managed endpoints based on the name and location of the folder, the date the folder was created, modified or accessed and its size.	Yes	Yes

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Create a File or Folder Exists Condition

1. In the Policy Configuration navigation tree, select the node or trigger to which you want to add the condition. This can be:
   - A new node
   - An existing node
   - The Environment tab of a trigger
2. On the **Conditions** tab, select **File & Folder > File Exist** or **Folder Exists** to display the corresponding dialog.
3. Complete the following fields:
   - **Condition** - Select **Exists** or **Does Not Exist**.
   - **File or Folder** - Browse to the required file or folder or manually enter the path and file or folder name.
   - **Date** - Select the checkbox and define the date criteria for the file or folder.
   - **Size** - Select the checkbox and define the size criteria for the file or folder.
4. Click **OK** to save the condition.

Create a Text File Search Condition

1. In the Policy Configuration navigation tree, select the node or trigger to which you want to add the condition. This can be:
   - A new node
   - An existing node
   - The Environment tab of a trigger
2. On the **Conditions** tab, select **File & Folder > Text File Search** to display the Text File Search dialog.
3. Complete the following fields:
   - **File** - Browse to the required text file or folder or manually enter the path and file name.
   - **Condition** - Select whether the condition will look for the existence or absence of the text.
   - **Text** - Enter the text for the condition to evaluate against.
4. Select the required checkboxes:
   - **Match Case** - To match the condition, the text must have the same capitalization.
   - **Use Regular Expressions** - Regular expressions can be used in the Text field.
5. Click **OK** to save the condition.

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Directory Membership Conditions

These conditions check Organizational Unit (OU) membership, within Active Directory. Environment Manager connects to Active Directory and compares the OU specified in the condition with that of the current user or computer. If a match is made, any associated actions are executed. Match criteria is selected using the browse button which browses for OU containers. You must be a member of an Active Directory domain to browse for an OU container.

This condition could be used to ensure that only users in certain OUs can undertake certain actions.

Select the **Include sub-OUs in match** checkbox to search all sub-OUs of any specified OU. Without this checkbox selected, the sub-OUs are ignored and only the OU in question is included in the condition.

Condition	Description
User OU Membership	A condition based on a user’s membership of a specified OU. Select whether the condition should equal or not equal the entered OU or enter a query to apply the condition to OUs.
Computer OU Membership	A condition based on a computer’s membership of a specified OU. Uses the same criteria as User OU Membership.
Client Computer OU Membership	A condition based on the membership of a specified OU for a server based or virtual client computer. Uses the same criteria as User OU Membership.
Site Membership	A condition based on the membership of a specific Active Directory Domain Site. This typically relates to an organization’s departments or a geographical location which hosts networks. Environment Manager interrogates the domain to locate sites, providing them for selection from the browse button in the **Match** field. To browse for sites, your location must be associated with an Active Directory domain.

The OU name in the **Match** field for the **User**, **Computer** and **Client Computer OU Membership** conditions are case sensitive. OU names entered with incorrect case will not match.

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User Conditions

Create conditions for particular users or groups of users identified using Active Directory account name. The defined criteria are compared to that of the logged on user and the associated actions are executed. By doing this you can target actions to users or groups of users to ensure that they can only perform the actions which that user or group requires.

Condition	Description	Computer Trigger	User Trigger
User Name	A condition for an individual user based on user name. The user name must be prefixed by the appropriate domain name: **domain\user name**.	No	Yes
User Group	A condition for a specific group of users such as Power Users or Guests. The agent connects to the Active Directory specified in the condition criteria and collates a list of Security Identifiers (SID) for all the groups the user is a member. A comparison is made with the list against the SID for the configuration.	No	Yes
Is Administrator	A condition based on the administrator rights of the user.	No	Yes
Primary Group	A condition based on membership of an Active Setup Primary Group. All Active Directory users have a Primary Group, used to support certain products. The default setting for Primary Group is Domain Users for all Active Directory users.	No	Yes
User Process Name	A condition to specify a process. Enter, browse or use a regular expression to target the executable for the process you want to create actions for. Can only be used in User Process Started and Process Stopped triggers.	No	Yes

Computer Conditions

These conditions target individual computers or groups of computers using various identifiers. Actions can be applied to a computer regardless of who is using it. The Environment Manager agent checks the specified criteria against that of the managed computer and applies any associated conditions to the computer or group of computers.

ⓘ LSA support is not available on Computer conditions.

Condition	Description	Computer Trigger	User Trigger
Is Laptop	A condition to check if the endpoint is a laptop. The agent checks the endpoint for a battery. If one exists, any laptop specific actions are performed.	Yes	Yes
Computer Name	A condition for a specific computer. The computer name can be entered directly or searched for using specified criteria on selected locations.	Yes	Yes
Computer Domain	A condition for a defined network of computers. Use the **Name Resolution Type** drop-down to specify whether the condition uses the DNS Domain or Windows Domain naming conventions. The domain entered in the **Match** field must be in the format used in your organization for the selected naming convention. For example, a DNS domain name could be testing.xyz.local whereas the Windows domain name would just be testing.	Yes	Yes
Computer NETBIOS Name	A condition for a computer identified by its NETBIOS name.	Yes	Yes
Computer Group	A condition based on a user group for a particular computer. The agent checks the specified active directory group or groups exist and compares the Security Identifier (SID) against the SID of the user's computer for a match. The condition only matches computers in the specified group - to include nested groups, select the **Search nested groups** checkbox.	Yes	Yes
Computer IP Address	A condition based on an IP address entered into the IP Address1 field. A range of IP addresses can be defined using the Between radio button and IP Address 2 field.	Yes	Yes

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Condition	Description	Computer Trigger	User Trigger
	ⓘ For ranges, the IP address is not treated as a whole number but based upon the value of each octet. For example, if the range was from 190.190.190.190 to 200.200.200.200, 198.198.198.198 would pass but 198.198.210.198 would not as the third octet is not within the set range.		
MAC Address	A condition defined by the Media Access Control (MAC) address of the network cards within a computer.	Yes	Yes
Computer Process Name	A condition to specify a process. Enter, browse or use a regular expression to target the executable for the process you want to create actions for. This can only be used in Computer **Process Started** and **Process Stopped** triggers.	No	No
Operating System	A condition that applies actions only when the specified operating system is matched. The operating system can be further defined to version, service pack, build number, edition, CPU architecture and Terminal Services enabled. The **Version** text box provides a drop-down to select the operating system version. It also supports free text, allowing you to enter any RTM number. For example, if you wanted to specify Windows 8, enter the RTM number - 6.2.9200. For **Build Number**, select a condition, such as **Greater than** or **Equal to** in the drop-down, then enter a build number in the field. You cannot include a dot character (**.**) in the build number. If the build number is 10240.17113, for example, you enter 10240. To ensure you have the correct build number, you can check the relevant Microsoft release information. For example, to view build numbers for Windows 10 releases, go to https://technet.microsoft.com/en-us/windows/release-info.	Yes	Yes
Is VDI	A condition which applies actions only when the endpoint is one of the following virtual desktops:	Yes	Yes

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Condition	Description	Computer Trigger	User Trigger
	- Xen Desktop 5 - Xen Desktop 7 - VMware view - Quest vWorkspace		

Session & Client Conditions

These conditions use client and session attributes to target actions. These conditions look for a match within the logged on user's session or client. For example, a client Screen Resolution condition could be configured so that a particular application can only be used on all clients with a screen resolution of 1024x768 and above.

Condition	Description	Computer Trigger	User Trigger
Published Application Name	A condition based on the use of a particular published application.	No	Yes
Client Connection Protocol	A condition based on whether the user connection is by console, Independent Computing Architecture (ICA), Remote Desktop Protocol (RDP) or PC over IP (PCoIP).	No	Yes
Client IP Address	A condition defined by the endpoint's IP address entered into the IP Address 1 field. A range of IP addresses can be defined using the Between radio button and IP Address 2 field. ℹ For ranges, the IP address is not treated as a whole number but based upon the value of each octet. For example, if the range was from 190.190.190.190 to 200.200.200.200, 198.198.198.198 would pass but 198.198.210.198 would not as the third octet is not within the set range.	No	Yes
Client NETBIOS Name	A condition for the connecting device identified by its NETBIOS name.	No	Yes
Client Screen Resolution	A condition based on the screen resolution of the	No	Yes

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Condition	Description	Computer Trigger	User Trigger
	connecting device. A specific resolution or a range can be used to define when an action applies. This condition is available for Remote Desktop Protocol (RDP) and Independent Computing Architecture (IDP) clients only. It will not work on the console.		
Client Color Screen Depth	A condition based on the color screen depth of the connecting device. Use the slider and radio buttons to select the required value or range of values. This condition is available for Remote Desktop Protocol (RDP) and Independent Computing Architecture (IDP) clients only. It will not work on the console.	No	Yes
Client Computer Domain	A condition for a defined network of client computers. Use the Name Resolution Type drop-down to specify whether the condition uses the DNS Domain or Windows Domain naming conventions. The domain entered in the Match field must be in the format used in your organization for the selected naming convention. For example, a DNS domain name could be testing.xyz.local whereas the Windows domain name would just be testing.	No	Yes
Client Computer Group	A condition based on an Active Directory client computer group.	No	Yes
Citrix Client Settings	A condition based on attributes of the connecting client. Notes The Client OS condition is not compatible with the Network Disconnected trigger. The Client Version condition uses the version number used in the marketplace, rather than the build version number. For example, Citrix Receiver 14.1.0.0 relates to build version number 4.1.0.56461. The Client Encryption attribute condition is not compatible with Citrix XenDesktop. The NetScaler Session Policies and NetScaler Hostname conditions are not compatible with Citrix XenApp.	No	Yes

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Condition	Description	Computer Trigger	User Trigger
	The Client Version, Client Encryption, NetScaler Session Policies and NetScaler Hostname conditions require the following to be installed: The Citrix PowerShell Broker Snap-in on the client. This snap-in can be installed on the client by running Broker_PowerShellSnapIn_x86.msi or Broker_PowerShellSnapIn_x64.msi from the Citrix installation media. For Citrix XenApp, PowerShell 3.0 or later on the server. For Citrix XenDesktop, PowerShell 3.0 or later on the Virtual Desktop Agent client. For further information see Add a Citrix_ Client Settings Condition.		
Citrix vDisk Client Settings	A condition to determine whether a Citrix vDisk is in use and, if so, whether it is running in Standard or Private mode.	No	Yes
VMware Variables	A condition based on attributes of the broker or connecting client. This condition is available on all User triggers, except Pre-Session and Pre-Desktop triggers.	No	Yes

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Add a Citrix Client Settings Condition

1. In the Policy Configuration navigation tree, create a new node or select an existing node under the Logon Pre-Desktop sub-trigger.
2. Click **Conditions** > **Session & Client** > **Citrix Client Settings**.

   The Citrix Client Settings dialog displays. If required, enter a description and any additional information relating to the Citrix Client Setting in the fields provided on the General tab.
3. Select the **Client Settings** tab.
4. Select the Citrix Client Settings condition criteria from the following:

Attributes	Description
Clients OS	Match the client's operating system, such as Android, iOS, Mac or Windows.
Client Type	Match the type of client, such as a phone, tablet or other device
Client Version	Match the version number of the Citrix Receiver client. This uses the build version number, rather than the version number used in the marketplace. For example, Citrix Receiver 14.1.0.0 relates to build version number 4.1.0.56461. To view the build version number, see the About box within the Citrix Receiver.
Client Encryption	Match the client encryption type from Basic, Logon Only, RC5 (40 bit), RC5 (56 bit) and RC5 (128 bit). The encryption levels available for XenApp and XenDesktop are Basic and RC5 (128 bit) only.
NetScaler Session Policies	Match NetScaler session policies. Separate multiple policies with commas
NetScaler Hostname	Match the hostname of the NetScaler.

The Citrix PowerShell Broker Snap-in is required for the Client Version, Client Encryption, NetScaler Session Policies and NetScaler Hostname conditions. This snap-in can be installed on the client by running Broker_PowerShellSnapIn_x86.msi or Broker_PowerShellSnapIn_x64.msi from the Citrix installation media.

5. Click **OK**.

Custom Conditions

Use the Custom condition to create, import and export conditions using PowerShell, Visual Basic or Java Script. Custom conditions can be used to cater for scenarios which are not available as standard from the Environment Manager console. For example, to check if the Windows Firewall is switched on.

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The scripts are held within the AEMP configuration, copied to disk at runtime, executed and then deleted upon completion. Scripts can be imported and exported to enable reuse.

Large scripts and high numbers of scripts increase the size of an AEMP configuration which can impact the time required to deploy configurations to end points and affect configuration execution time.
It is recommended that custom conditions using PowerShell scripts should not be used on the Logon trigger as running these scripts can cause slow logon times.

As Custom condition scripts are run in batch mode, any prompts or message boxes are not displayed and the script times-out without being executed. To ensure that a condition script runs correctly, remove or comment out any prompts or message boxes from the script.

Custom conditions can be applied to both computer and user triggers.

Exit Codes

All custom scripts must specify an exit code which when returned, is used by the Environment Manager agent to determine whether the script has passed or failed. For scripts without an exit code a success (0 value) is assumed by the agent. Each script type must use a specific exit statement.

Language	Exit Statement
VBScript	**WScript.Quit** [value]
JScript	**WScript.Quit(**[value]**)**
PowerShell	**exit (**[value]**)**

Replace [value] with the exit code for the script: 0 for success and 1 for failure. For example: WScript.Quit 0, WScript.Quit(0), exit (0).

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PowerShell Scripts

Windows PowerShell scripts use various execution policies which can prevent the scripts from running or only allow those signed by trusted publishers to run. Environment Manager overrides execution policies and bypasses any restrictions to enable the PowerShell scripts to run.

Execution polices for users and computers can also be set through Group Policy which override all PowerShell execution policies. A user policy which does not allow any scripts, or only those which are signed, will not affect the running of PowerShell Custom conditions if they are run as System. However, if run as the current user the user policy will not allow the scripts and the Custom condition will fail. A computer policy which does not allow any scripts, or only those which are signed, will not allow the running of any PowerShell Custom conditions.

Therefore, to successfully run Custom conditions which use PowerShell, your Group Policy must be set to allow these scripts to run for users and computers.

ℹ Environment Manager is compatible with PowerShell versions 1.0, 2.0 and 3.0.

Create a Custom Condition

1. In the Policy Configuration navigation tree, select the node or trigger to which you want to add the condition. This can be:
   - A new node
   - An existing node
   - The Environment tab of a trigger
2. In the Conditions ribbon, select **Custom** to display the Custom Condition dialog.
3. Select the **Type** of scripting; **PowerShell**, **VBScript** or **JScript**.
4. Set the Time allowed to run. This is the number of seconds after which the script is terminated. Setting the value to zero or leaving the field blank gives the script infinite time to complete.

   ℹ Custom conditions override default node and condition timeouts.
5. Click the **Options** drop-down and configure the following options as required:
   - **Evaluate Once Per Session** - Select this option to run the condition once and cache the result for the duration of the session. Otherwise the condition is evaluated each time it is called upon within a configuration.
   - **Run As System User** - Select this option to enable the script to use functionality which would not otherwise be accessible to the currently logged on user. For user triggers, if this option is not selected, the script runs in the context of the logged on user.

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6. Enter the script using one of the following methods:
   - Type directly into the field
   - Drag and drop or copy and paste from another location.
   - Click the import button and select a file to open and use in the script field.

   Session Variables can be added to the script from the Insert menu. The drop-down contains any user-defined Session Variables and the following inbuilt variables:
   - **SessionID** - The current Session ID
   - **UserSID** - The user’s Security Identifier
   - **UserTemp** - The location of user’s Temporary Directory
7. On the Network Available, Network Connected and Network Disconnected triggers, further built-in Session Variables can be added to the script to determine connection attributes. These built-in Session Variables cannot be amended or deleted.
8. Click **OK** to save the script.

When triggered, the script runs to its completion and the resulting success or failure of the condition is detailed in the debug log files.

Custom scripts which timeout are classed as failing and any child nodes and their associated actions will not run.

Export Custom Scripts

Scripts can be exported and saved from the Custom Action dialog and imported into other conditions and configurations.

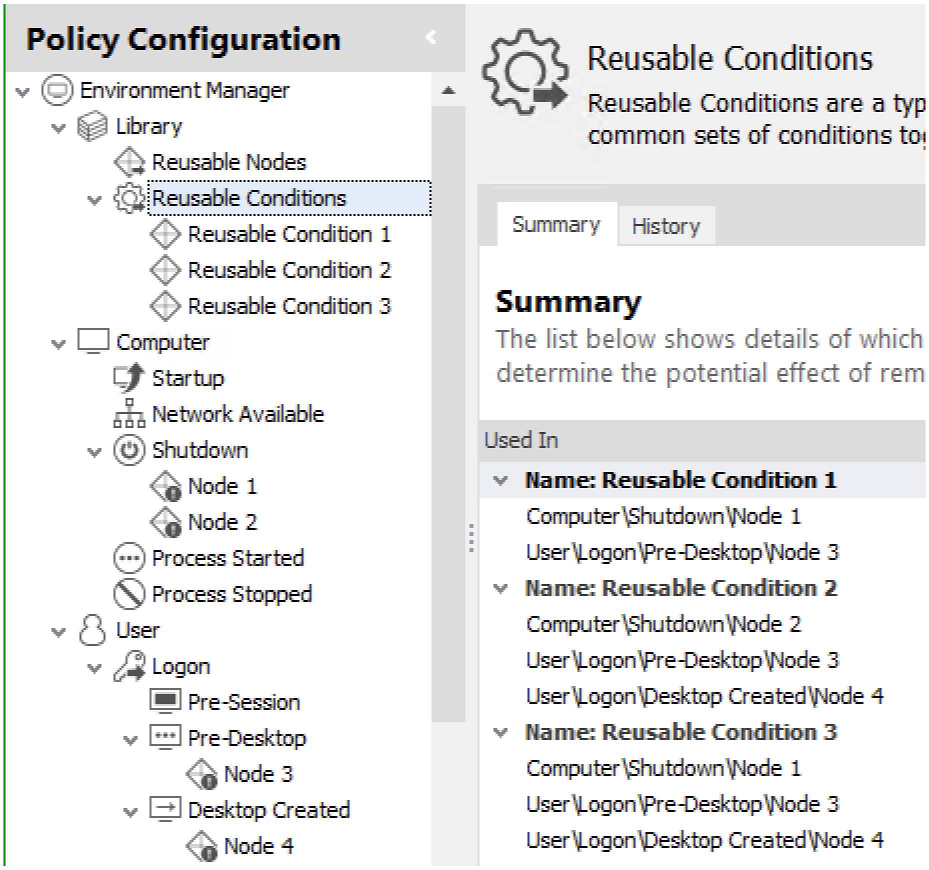
1. Open a Custom condition.
2. Click the export button and select a location to save the PowerShell, VBS or JS file.
3. Click **Save** to complete the export.

Reusable Conditions

Reusable conditions enable common conditions to be applied multiple times within a configuration, without the need to create a new condition for each occurrence. The properties and settings for a reusable condition are identical to every instance of that condition in the configuration and any changes made to the reusable condition are reflected throughout the configuration.

This could be used for a condition which identifies a commonly used application or which uses the **Is Administrator** condition; any condition which is required for repeated use. Reusable conditions can be created as a new condition or existing conditions can be saved as reusable conditions.

Click the **Reusable Conditions** trigger to see where reusable conditions have been referenced in the Policy Configuration navigation tree. Each reusable condition is listed with the path of each usage instance displayed beneath.



Reusable Conditions

Reusable Conditions are a typ
common sets of conditions to

Summary

The list below shows details of which
determine the potential effect of rem

Used In

Name: Reusable Condition 1
Computer\Shutdown\Node 1
User\Logon\Pre-Desktop\Node 3

Name: Reusable Condition 2
Computer\Shutdown\Node 2
User\Logon\Pre-Desktop\Node 3
User\Logon\Desktop Created\Node 4

Name: Reusable Condition 3
Computer\Shutdown\Node 1
User\Logon\Pre-Desktop\Node 3
User\Logon\Desktop Created\Node 4

The *Stop sub nodes on fail* setting is applied individually for each instance of a reusable condition in the Policy Configuration and cannot be applied universally to all instances.

The setting only becomes available when a reusable condition is added to a trigger.

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Create a reusable condition

1. In the Policy Configuration navigation tree, select **Library** > **Reusable Conditions**.
2. Create a new node and name the node relevant to the condition.
3. Highlight the new node and create the required condition(s) from the **Conditions** ribbon.

The condition is now available for use in other triggers and nodes from the **Reusable Conditions** button in the **Conditions** tab.

Create a reusable condition from an existing condition

In the Policy Configuration navigation tree, select the node containing the condition you want to make reusable.

Highlight the required condition in the actions work area and select **Copy to Reusable Conditions** from the shortcut menu. The option is also available from the **Clone** button in the **Nodes** tab.

If the condition you are copying has **Stop if fails** enabled, you are prompted that this option is not available in the reusable conditions library. As references to reusable conditions contain the **Stop Sub Nodes on Fail** feature, it is not required in the library.

A new node is automatically created in the Reusable Conditions trigger containing a duplicate condition which is now available as a Reusable Condition.

When a reusable condition is created from an existing condition, a copy is made of the original condition which is identical for every subsequent use. However, this action does not link the original and it is independent to the reusable condition.

Add a reusable condition to a configuration

1. In the Policy Configuration navigation tree, select the node to which you want to add the condition.
2. In the Conditions ribbon, select **Reusable Conditions** and choose a reusable condition.

The condition is added to the node and highlighted in orange.

Environment Conditions

Environment conditions allow actions to be carried out when specified Environment and Session variables exist, do not exist or match a defined value on an endpoint.

Session variables provide an alternative to Environment variables, enabling data to be passed through a configuration more efficiently as they take less time to set and are internal to Environment Manager. Session variables set in computer triggers are run in the System Session and are only available for computer triggers. Likewise, those set in user triggers are run in the User Session and are only available for user triggers.

A further Environment condition can also be set to run actions on an endpoint on specified days, times and dates.

Condition	Description
Environment Variable	A condition based on matching environment variables. The condition could be to check for the existence of the environment variable on endpoints or to match the value of the variable.
Session Variable	A condition based on matching session variables. Input the session variable name and create a condition which matches or does not match the specified value.
Time and Date	A condition which defines a time frame used to set when actions will apply on endpoints. Individual days can be selected and date and time ranges can be specified.

Create an Environment Variable Condition

1. In the Policy Configuration navigation tree, create a new node or select an existing node to which you want to add the condition.
2. In the Conditions ribbon, select **Environment** > **Environment Variable** to display the Environment Variable dialog displays.
3. Enter the Environment Variable Name.
4. Select a Condition from the drop-down to govern whether or not associated actions will run:
   - **Exists** - The entered environment variable is found on managed endpoints
   - **Does Not Exist** - The environment variable is not found on managed endpoints
   - **Equal To** - The environment variable exists on the endpoint and matches the **Value** field
   - **Not Equal To** - The environment variable exists on the endpoint but does not match the **Value** field
   - **Contains** - The environment variable exists on the endpoint and includes the string in the **Value** field
5. For Equal To, Not Equal To and Contains conditions, enter the **Value** which will be used for the match.
6. Click **OK** to save.

Create a Session Variable Condition

1. In the Policy Configuration navigation tree, create a new node or select an existing node to which you want to add the condition.
2. In the Conditions ribbon, select **Environment** > **Session Variable**.

   The Session Variable dialog displays.
3. Enter the Session variable **Name**.

4. Select a **Condition** from the drop-down box which will govern whether or not associated actions will run:
   - **Equal To** - The session variable exists on the endpoint and matches the **Value** field
   - **Not Equal To** - The session variable exists on the endpoint but does not match the **Value** field
5. Enter the Value which will be used validate the condition conditions.
6. Click **OK** to save.

Create a Date and Time Condition

1. In the Policy Configuration navigation tree, create a new node or select an existing node to which you want to add the condition.
2. In the Conditions ribbon, select **Environment** > **Date and Time** to display the Date and Time condition dialog displays.
3. Use a combination of the checkboxes and drop-downs to define the days, dates and times on which any dependent actions will run.
4. Click **OK** to save the condition.

Flow Control Conditions

The Flow Control condition group contains the following conditions:

Condition	Description	Computer Trigger	User Trigger
If Condition (and Else If Conditions)	These create containers for conditions within an If Else group that enable advanced flow control by allowing standard If/Else If/Else logic found in most programming languages	Yes	Yes
Counter	A condition to control the number of times child actions and conditions are run or evaluated in a single session. Use the counter field to select the required number; the minimum value that can be added is **1**; there is no maximum value.	Yes	Yes

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If Conditions

An *If* condition creates a logical container in which a group of conditions can be configured together and evaluated in turn. When one of the conditions is met, any associated conditions and actions are run and evaluation of the group stops. A final, default action can be configured to apply if none of the conditions are met.

The condition is created using an expression builder which by default contains an *If* condition and an *Else* section. Optional *Else If* conditions can be added as required.

Create an *If* Condition

1. In the Policy Configuration navigation tree, create a new node or select an existing node to which you want to add the condition.

   ⓘ *If* conditions cannot be created within Reusable conditions.

2. On the Conditions ribbon, select **Flow Control** > **If Condition**.

   The Expression Builder is displayed in the If Condition dialog.

   The Expression Builder is used when creating *If* and *Else if* containers to configure the conditions which the user or endpoint is evaluated against.

   Conditions and Reusable Conditions are added to the Expression Builder and configured using the same dialogs and in the same way as conditions are in any node. Any number of conditions can be added to the Expression builder and the same AND and OR rules which apply to conditions in any other nodes. Normal rules also apply as to which triggers conditions can be applied. For example, User conditions cannot be created in Computer Startup triggers.
3. Select the **Conditions** or **Reusable Conditions** drop-down and choose the required conditions to be added to the Expression Builder.
4. Select the **Stop Sub Nodes on Fail** and the **Enabled** checkboxes to the condition as required. At least one condition must be enabled.
5. Repeat steps 3 and 4 to add more conditions.
6. Enter a Description in the Expression Builder. This text is used to name the first (*If*) condition in the configuration and is mandatory.
7. Enter an *If Group* Description. This text is used to name the group of conditions in the configuration.

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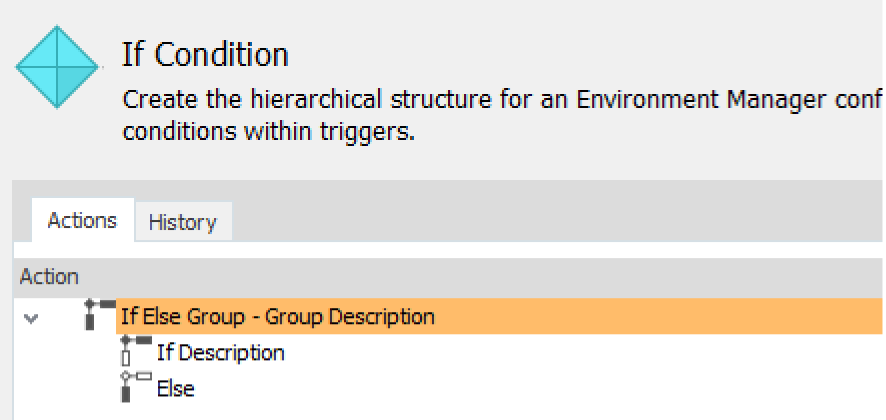
8. Click **OK**.

   An *If Else Group* is created in the selected node. The group contains the *If* condition as configured in the Expression Builder and an *Else* section which is automatically created.



If Condition

Create the hierarchical structure for an Environment Manager conf
conditions within triggers.

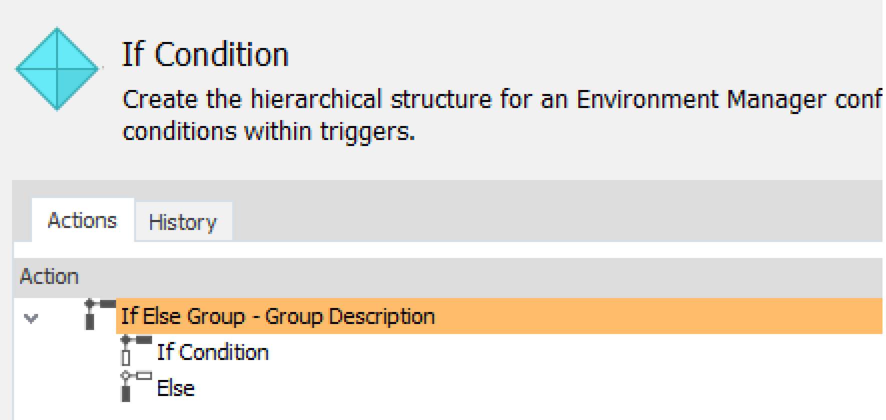
If Else Group - Group Description
If Description
Else

9. Select the *If* condition and add the required action(s) and condition(s) from the appropriate tab. Multiple actions and conditions can be added at the same level or nested to as many levels as required.
10. Select the *Else* section and add the required action(s) and condition(s). Multiple actions and conditions can be added at the same level or nested to as many levels as required or the section can be left empty. If the *Else* section is left empty and none of the *If* or *Else If* conditions are met, processing for the group completes without an action being carried out.
11. Select the **Stop Sub Nodes on Fail** and the **Enabled** checkboxes for added actions and conditions as required.

    If conditions and *Else* sections cannot be cut, copied or pasted. However, the conditions and actions within can be cut, copied and pasted as normal behavior for actions and conditions.

If Condition Example Configurations

The configuration below shows a default *If Else* group with one *If* condition and one *Else* section:



If Condition

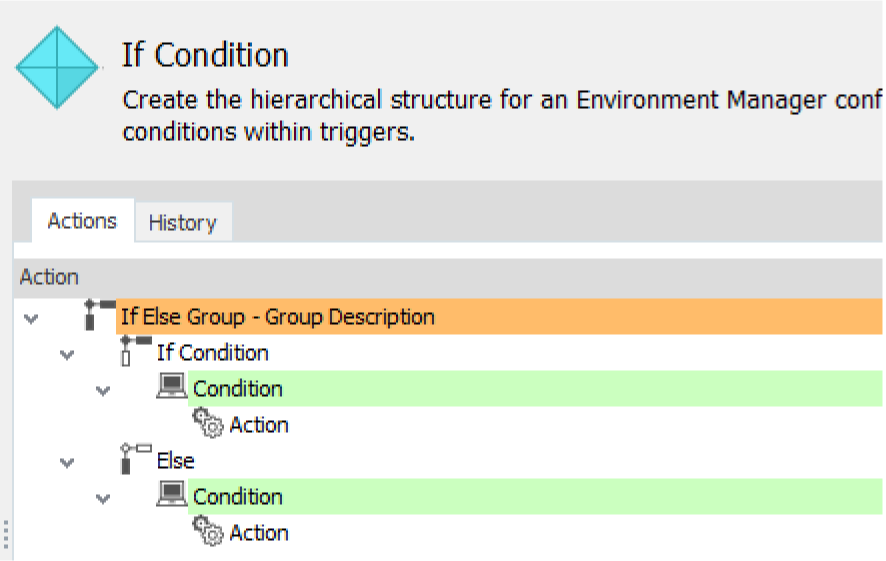
Create the hierarchical structure for an Environment Manager conf
conditions within triggers.

If Else Group - Group Description
If Condition
Else

When the trigger is fired the group is evaluated as follows:

- The *If* condition is met - The associated action is carried out and evaluation of the processing of this group stops.
- The *If* condition is not met - The action is ignored and the *Else* action is carried out.
- An action is not associated with the *Else* section - No action is carried out for the whole group.

Further conditions can be added to *If* conditions and the *Else* section to add extra levels of evaluation:



If Condition

Create the hierarchical structure for an Environment Manager conf conditions within triggers.

When the trigger is fired, the group is evaluated as follows:

- The *If* condition is met - The child condition is evaluated. If this condition is met the associated action is carried out and group processing stops. If the child condition is not met the *Else* section is evaluated.
- The *Else* child condition is met - The associated action is carried out and processing stops.
- The *Else* child condition is not met - No actions are carried out for the entire group.

Create an *Else If* Condition

An *Else If* condition is an optional *If* condition which can be added between an *If* condition and an *Else* section. *Else If* conditions function in exactly the same as an *If* condition in that any number of conditions and actions can be applied.

1. Select an *If* or an existing *Else If* condition.
2. On the Conditions ribbon, select **Flow Control** > **Else If Condition**.
3. Click the **Conditions** or **Reusable Conditions** drop-down and select the required condition. As many conditions can be added to the Expression Builder as required.
4. Enter a Description. This text is used to name the *Else If* expression in the group and is mandatory.
5. Click **OK**.

   The *Else If* condition is created.

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6. Select the *Else If* condition and add the required action(s) from the Actions tab. Multiple actions can be added as required.

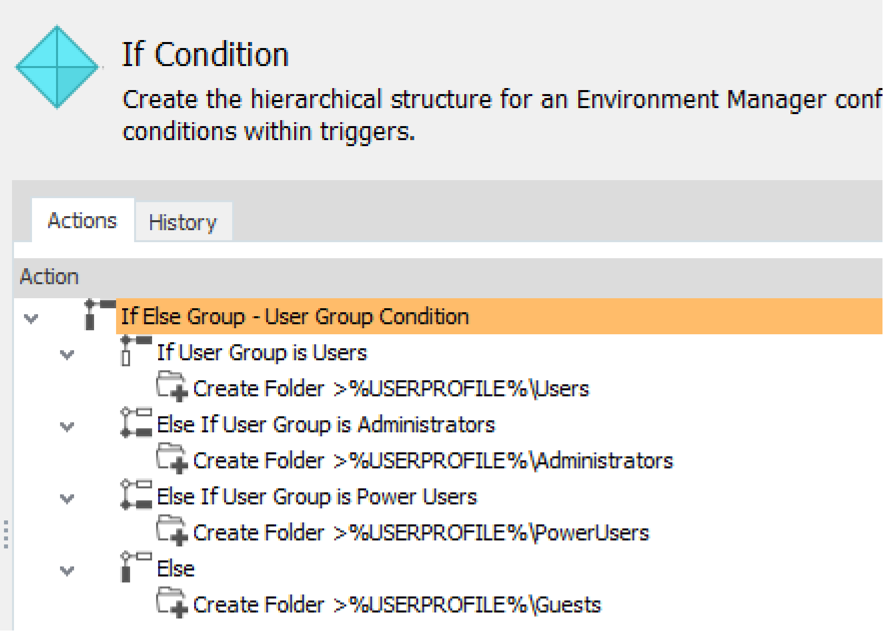
Multiple *Else If* conditions can be added at the same level in the configuration. Repeat the above process to add further *Else If* conditions.

Else If conditions work in the same way as If conditions; if the condition is met the associated action is carried out and evaluation of the group ceases and if the condition is not met, the action is ignored and the next *Else If* condition or *Else* section is evaluated.

Else If conditions and the actions and conditions within, can be cut, copied and pasted.

Else If Condition Example Configurations

The example group below evaluates the user group at logon and creates a relevant folder on their C drive.



If Condition

Create the hierarchical structure for an Environment Manager conf conditions within triggers.

```
If Else Group - User Group Condition
    If User Group is Users
        Create Folder >%USERPROFILE%\Users
    Else If User Group is Administrators
        Create Folder >%USERPROFILE%\Administrators
    Else If User Group is Power Users
        Create Folder >%USERPROFILE%\PowerUsers
    Else
        Create Folder >%USERPROFILE%\Guests
```

When a user in the Administrators user group logs onto a managed endpoint, the following evaluation takes place:

- Is the user a member of the Users group? **No**.

  The related action is not applied and the next condition is evaluated.
- Is the user a member of the Administrators group? **Yes**.

  The action associated with that condition is carried out; a folder called Administrators is created on the user’s C drive. As a condition has been met, no further evaluation occurs for this group.

When a user in the Developers user group logs onto a managed endpoint, the following evaluation takes place:

- Is the user a member of the Users group? **No**.

  The related action is not applied and the next condition is evaluated.
- Is the user a member of the Administrators group? **No**.

  The related action is not applied and the next condition is evaluated.
- Is the user a member of the Power Users group? **No**.

  The related action is not applied and the next condition is evaluated.
- The user is not a member of any of the user groups specified in the conditions.

  The Else action applies by default and a folder called Guests is created on the user's C drive.

Stop Sub Nodes on Fail and If Conditions

The *Stop sub nodes on fail* option prevents a failed action continuing to execute any dependent sub actions or conditions. Normal *Stop sub nodes on fail* behavior applies to actions and conditions within *If* conditions. However, *Stop sub nodes on fail* cannot be applied at the group level or to any of the following:

- *If* conditions
- *Else if* conditions
- The *Else* section

The Stop Sub Nodes on Fail checkbox for these conditions and containers cannot be selected.

Delete If Conditions

The following deletion rules apply for *If* conditions:

- *If* conditions cannot be deleted from a group
- The *Else* section cannot be deleted from a group
- *Else If* conditions can be deleted and multiple *Else If* conditions can be deleted when selected using Ctrl or Shift. The delete will not work if an *If* condition or the *Else* section is included in the selection

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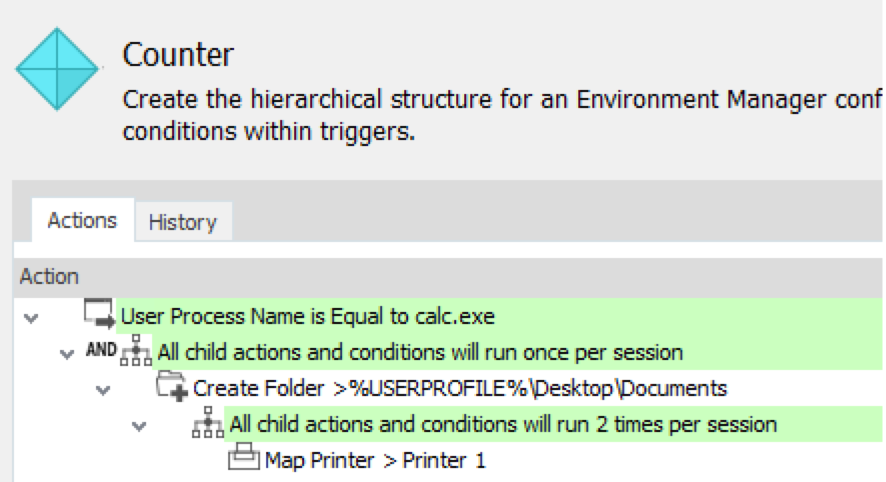
Counter

The Counter condition allows the child actions and conditions to be run a specified number of times within a single session. For example, an action could be set to run only for the first three times an application is used in a session. If the application is run again, the action will not run.

Where multiple Counter conditions exist within a single trigger, the uppermost condition in a hierarchy overrides any child conditions.

In the example below, all actions run once as defined by the first condition. The child condition to run twice per session is ignored.



Counter

Create the hierarchical structure for an Environment Manager conf conditions within triggers.

User Process Name is Equal to calc.exe

AND All child actions and conditions will run once per session

Create Folder >%USERPROFILE%\Desktop\Documents

All child actions and conditions will run 2 times per session

Map Printer > Printer 1

Flow Control replaces the Run Once condition in the 8.0 console which can be replicated by setting the counter to 1. On upgrade from 8.0, any Run Once conditions are upgraded to Flow Control conditions automatically.

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Create a Counter Condition

1. In the Policy Configuration navigation pane, select a node or create a new one.
2. Counter conditions can be added to all triggers except the following as these only run once per user session or on endpoint startup:
   - Computer Startup
   - Computer Shutdown
   - User Logon
   - User Logoff
3. In the work area, select an action or condition.
4. In the Conditions ribbon, select **Flow Control** > **Counter** and select the number of times child conditions and actions will run. The minimum value that can be added is 1; there is no maximum value.
5. Click **OK**.

Action Management

Actions are the behaviors which are applied on managed endpoints when conditions are met upon user and computer triggers. Within the Policy Configuration navigation tree actions can be added to nodes directly beneath a trigger or to a condition within a trigger. When added directly to a trigger, the action executes for all computers or users. Applied to a condition, the action can be targeted to execute only when that condition is satisfied.

The placement of actions determines whether they run sequentially or concurrently and dictates dependencies between them.

Actions at the same level in the hierarchy within a node run simultaneously.

Child actions run in sequence. A child action will run upon the successful completion of the parent or when a timeout elapses; whichever event occurs first.

Configuring Actions

Selecting an action displays a dialog for defining the parameters and for that action. For most actions you click Add to create a row in the dialog with which to define the action. Multiple rows can be added, each of which create an individual action in the node. This behavior applies to the majority of actions. Where this is not the case it is detailed in the sections for the specific actions in this chapter.

Each action dialog contains a tab specific to configuring that action. For example, the Copy File action contains the Files to Copy tab and the Set Printer contains the Printer tab. In addition, the following tabs are standard across multiple actions dialogs.

General

This tab contains optional Description and Notes fields and enables you to identify the specific instance of an action. The text entered in the Description field becomes the name of the action in the work area. If the field is left blank, a default name is created. The Note field can be used to add any additional text for the action. This could be to add a more detailed description about what the action does or any other relevant information.

Run As

Enables actions to run using different user credentials. For example, a user may require mapping to a network drive or the ability to launch an application using different credentials. The user can be the Current User, System or a User can be selected from the Run As User Library.

For further information on configuring the Run As User Library see Run As.

Personalization

Policy actions can be configured at process start that conflict with personalization behavior. For example, setting a registry key that is applied to the native registry that is also being managed by Personalization in the virtual cache for the application.

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In such cases, it is necessary to determine which behavior takes precedence. This is configured in relevant Policy action dialogs using the Personalization tab. The tab gives the following two options:

- **Policy Configuration takes precedence over User Personalization** - When this option is selected, Environment Manager applies the Policy setting to the real registry or file system and the virtual cache. Therefore the process always applies the policy setting even if the registry key or file path is virtualized. Although not seen in the user interface, this is achieved by adding the virtual actions to the configuration.

- **User Personalization takes precedence over Policy Configuration** - When this option is selected, the Policy setting is applied to the native registry or file system but not to the virtual cache. As Personalization settings are applied to the endpoint after policy is applied, they are read in preference to the native settings for any managed paths.

The Personalization tab is only available for the following actions and only when those actions are in a node beneath the Process Started trigger.

Registry	File and Folder	Group Policy
Create Key Delete Key Set Value Delete Value Set Default Value	Copy File Delete File Move File Rename File Create Folder Copy Folder Delete Folder	Set ADM Policy Set ADMX Policy

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Conditions

Specify criteria relating to file and folder dates and size. The action will not take place if the selected condition is not met:

- **Date** - Specify a modified, accessed, or created date for the identified file or folder. For example, only files that were created before a certain date are deleted. For file and folder delete actions, you can use the **Is Older Than** option to specify that files and folders can be deleted if a certain number of days have passed since they were created, last accessed, or modified. In this case, you don't enter a date. You specify a whole number of days from 1 - 999. For example, folders that have not been accessed in the last 100 days are deleted.
- **Size** - Set a condition based on the size of the file or folder. For example, only folders which are below 1mb will be copied.

These file conditions cannot be used simultaneously.

For Copy File, Move File and Copy Folder this tab contains checkboxes for Compare to destination timestamp and Compare to destination size. These options enable a comparison between the source and destination files of the same name. This could be used to set up a condition which will only copy the file if it was created at a later date than the one in the target location or is of a bigger size. This removes the need to set a specific date or file size.

File Extension Exclusions

This tab is specific to File and Folder actions and enables a list of file extensions to be defined which will not be included in the action. Any files which are of an excluded type are ignored.

File extensions can be entered with or without the preceding full stop. For example, both txt and .txt are correct.

Wildcards can also be used to define multiple file extensions. For example, doc* would exclude all types of Microsoft Word documents such as .doc, .docx, .docm.

Path Exclusion

Select specific folders or individual files which will not be included in the action. This tab is only available to the Copy Folder action.

Applies to the Copy Folder action only and can only be defined once the source and target folders have been selected.

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Registry Actions

Registry manipulation enables registry keys and values to be setup for the user for the delivered application set. Most applications require some form of default configuration to be present in order for correct operation.

Registry Key actions allow registry keys to be created or deleted and enable registry key values to be set, created and deleted.

Importing a registry file enables an area of the registry of a local or remote endpoint to be added to the registry of managed endpoints. This enables multiple registry keys and values to be created and deleted without having to create each action individually.

Additionally, it is possible to import desired state settings from an existing machine or exported registry file or even manipulate registry settings using registry hiving.

Create Registry Actions

1. In the Policy Configuration navigation tree, create a new node or select an existing node.
2. In the Actions ribbon, select **Registry** and choose the required option:
    - **Create Key** - Configure a list of registry keys which will be created on managed endpoints when triggers and conditions apply. Keys are identified by selecting the relevant hive and browsing to or entering the key.
    - **Delete Key** - Configure a list of registry keys to delete on managed endpoints.
    - **Set Value** - Identify a registry key and enter a value which will be set for that key.
    - **Delete Value** - Delete the value entered for the selected key on managed endpoints.
    - **Set Default Value** - Identify a registry key and enter a value which will be set as the default value for that key.
3. Click **Add**.
4. Complete the fields as required. Each of these conditions uses as combination of the following fields:
    - **Hive** - Select the hive containing the registry key.
    - **Key** - Enter or browse to the key within the registry.
    - **Value Name** - Enter or browse to the required value for the key.
5. Click **OK** to create the action.
6. Keys and values can be removed from the dialog boxes by selecting and clicking **Remove**.

The Create Registry Key and Delete Registry Key actions only include the Hive and Key fields.

Registry Value Actions

The Registry Value actions use the same fields as the Set Default Value dialog box above.

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Import a Registry File

1. In the Policy Configuration navigation tree, create a new node or select an existing node.
2. In the Actions ribbon, select **Registry > Import a Registry File** to display the Registry Import dialog.
3. Select the required option:
   - **Import File** - Add the registry keys and values from a registry file exported from an endpoint using *Regedit* or other registry tool.
   - **Browse** - Examine the registry of the local or a remote endpoint to select an area of the registry to be imported into managed endpoints when triggered.

   Keys and sub keys are displayed on the left side of the dialog box and any values for a selected key are displayed on the right.
4. Select the **Delete** checkbox for all those keys, sub keys and values you wish to delete on managed endpoints. Those not selected will be created and have values and default values set.
5. Click **OK**.

Actions are created for each create, delete and set value defined in the registry import.

Create a User Logoff Registry Hive Action

1. In the Policy Configuration navigation tree, create a new node in the **User** > **Logoff** trigger.
2. Rename the node to *Export Registry Settings* or similar.
3. In the Actions ribbon, select **Registry > Registry Hiving** to display the Registry Hiving dialog.
4. Enter a **Title** for example, Save User Profile Settings.
5. Enter or browse to the location where the settings will be saved, preferably on a network share so that settings can be accessed from multiple computers. It is not necessary to create separate folders for each user as Environment Manager will separate the user information being saved using the following format:

   <registry key name>.<domain>_<username>
6. Select **Export the hive from the registry to file**.
7. Click **Add**. The **Registry Key** dialog box displays.
8. Enter the key or select the ellipsis in the **Key** box to display the **Browse Registry** dialog box.
9. Select the areas of the HKCU registry you want to hive out. This can be from the local computer registry or a registry on another machine.

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10. Enter the **Value** for the key and select the required options:
    - **Use default value name** - Use the default value name from the registry for the key. If selected and the value does not contain any data, the hive will fail.
    - Restore Format:
    - **Replace** - Exports as a binary file which replaces any existing values or sub-keys on import.
    - **Merge** - Exports as a Microsoft Regedit 5 file which merges with any existing values or sub-keys on import.
    - **Override File Name** - Deselect **Use registry key as file name** to edit the default file path in the File Name field set when selecting the key.
11. Click **OK** to add the registry key to the **Registry Hiving** dialog box.
12. Repeat the **Add** process for each registry key you want to hive out.
13. Click **OK** to save the action.

Once you have created the registry hive actions that will apply at logoff, you must configure Environment Manager to import these registry settings when the user next logs on.

Create a User Logon Registry Hive Action

1. Prior to using this procedure, you first need to create the registry hive actions that will apply at logoff. Use the link below to access that procedure.
2. In the Policy Configuration navigation tree, create a new node in the **User** > **Logoff** node.
3. Rename the node *Import Registry Settings* or similar.
4. In the Actions ribbon, select **Registry > Registry Hiving** to display the Registry Hiving dialog.
5. Navigate back to **User > Logoff >***Export Registry Settings* node created earlier.
6. Right-click on the *Save User Profile Settings* action and select Copy.
7. Navigate back to **User > Logon >***Import Registry Settings* node.
8. Right-click in the **Actions** list in the **Node** work area and select **Paste**.
9. Double-click the **Hive Registry** action that has just been copied. The **Registry Hiving** dialog box displays.
10. Rename the title to *Load User Profile Setting*s.
11. Select **Import the hive from file to the registry** and click **OK.**

The action is saved and renamed.

Registry Key Manipulation

Registry settings can be used to personalize applications and Windows Settings. This can be done in Policy Configuration and User Personalization. However, it is recommended you only use Policy Configuration or User Personalization to manage personalization to ensure optimum performance.

The Windows registry is divided into five separate keys:

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- **HKEY_CLASSES_ROOT** - Contains information relating to file associations and for object linking and embedding.
- **HKEY_CURRENT_USER** - Contains the profile settings for the current user.
- **HKEY_LOCAL_MACHINE** - Contains configuration settings for the computer itself.
- **HKEY_USERS** - Contains all the actively loaded user profiles on the computer.
- **HKEY_CURRENT_CONFIG** - Contains settings related to installed software and device drivers.

Whenever a user makes any changes to their personal settings, the information is stored in the HKEY_ CURRENT_USER (HKCU) hive area of the registry. Therefore, if the registry settings are saved out when the user logs off and re-imported the next time the user logs on, the user's personal settings are available to roam with them, even if they are using a mandatory profile.

This is achieved using the Registry Hiving action within Environment Manager.

Registry Hiving

Whenever a user makes any changes to their personal settings, the information is stored in the HKEY_ CURRENT_USER (HKCU) hive area of the registry. Therefore, if the registry settings are saved out when the user logs off and re-imported the next time the user logs on, the user’s personal settings are available to roam with them, even if they are using a mandatory profile.

This is achieved using the Registry Hiving action within Environment Manager.

This section describes how to create a User Logoff Registry Action and a User Logon Registry Action to hive out and back in user profile settings.

You first need to create the registry hive actions that will apply at logoff, and then you need to configure Environment Manager to import these registry settings when the user next logs on.

Merge and Replace Restore Formats

Registry hives can be exported in one of two formats using the Registry Hive action: Replace or Merge. It is important to select the right format for each key as some keys may not be suitable for a particular format due to the different behavior of the formats.

The Replace format is a binary file whereas an export in Merge format produces a text file in the Microsoft Regedit 5 format. Both contain the data for the exported registry key, all sub-keys and values.

When importing a binary file exported in Replace mode, the entire key is replaced with the contents of the file. As a result, any values or sub-keys which have been added since the export, are deleted.

When a Merge mode text file is imported, only the keys and values present in the export are applied to the registry. As a result, any values or sub-keys which have been added since the export, will still be present in the registry following the import.

Registry values, if individually selected, are always exported as a text file regardless of the mode.

Example 1

HKCU\Software\AppSense is exported in Replace mode.

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Sub-key HKCU\Software\AppSense\Settings is added after the export.

On import, the sub-key is deleted.

Example 2

HKCU\Software\AppSense is exported in Merge mode.

Sub-key HKCU\Software\AppSense\Settings is added after the export.

On import, the sub-key is not deleted.

File and Folder Actions

Use these actions to manage files and folders on user endpoints. Folders can be created, copied and deleted at any of the defined trigger points. Files can be copied, deleted, moved, renamed and have certain attributes amended. When used in conjunction with triggers and condition, these actions enable user access to be controlled ensuring they have access to those files and folders they require and restrict access to those they do not require.

Using triggers and conditions, a folder policy can be created for different types of user, tailoring a session to their specific needs.

In the Actions ribbon, select **File & Folder** and choose one of the action types.

Copy File Action

Copy a file from one location to another when a trigger or condition is satisfied. For example, copy an updated file from the user’s C drive to a network drive at shutdown.

Use the **Files to Copy** tab to select where to copy the files from and to. The source file can be renamed on copy by adding a new filename and extension to the target path. For example:

Field	Value
Source	%USERPROFILE%\Documents\AppSense\config.aemp
Target	%USERPROFILE%\Desktop
Change the target to	%USERPROFILE%\Desktop\AppSense.aemp

The source file is copied to the user’s desktop but will be named AppSense.aemp.

If multiple files are added in the **Files to Copy** tab a separate action is automatically created for each in the work area. Select the **Fail if Exists** checkbox to stop the action for endpoints where the file already exists.

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Create a Copy File Action

1. In the Policy Configuration navigation tree, select a node or condition.
2. In the Actions ribbon, select **File & Folder** > **Copy File**. The Copy File dialog displays showing the **Files to Copy** tab.
3. Click **Add**.
4. In the **Source** field, use the ellipsis (**...**) to navigate to the file you want to copy.
5. In the **Target** field, navigate to the folder to which the source file will be copied when the action is triggered. If the target path is followed by a backslash, the target folder is created if it does not exist.

   The source file can be renamed on copy by adding a new filename with extension to the target path. For example,

   - **Source** - %SystemDrive%\Documents\Work\Today.doc
   - **Target** - \\Server01\Update\Archive1.doc

   The source file, Today.doc, is copied but renamed to Archive1 in the target folder.
6. If required, select the **Fail if Exists** checkbox. This stops the action for endpoints where the folder already exists at the target.
7. Repeat steps **3** to **6** to create further actions within the dialog. A separate action is created for each action in the selected node. Highlight an action and click **Remove** to delete an action from the dialog box.
8. Complete the optional tabs as required.

   - General
   - Run As
   - Personalization
   - Conditions
   - File Extension Exclusions

   See "Configuring Actions" on page 147.
9. Click **OK**.
10. Each action configured in the dialog is created in the selected node.

Delete File Action

Specify a path and file name to delete when a trigger and/or condition is satisfied. For example, this condition could be used to delete a file containing sensitive information, when any user without Administrator rights logs on.

Conditions and **File Exclusions** can be configured using the appropriate standard tabs.

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Create a Delete File Action

1. Select the **Policy Configuration** navigation button.
2. Select a node or condition.
3. In the Actions ribbon, select **File & Folder** > **Delete File**.

   The Delete File dialog displays showing the Select File tab.
4. Click **Add**.
5. In the Source field, use the ellipsis (**...**) to navigate to the file you want to delete.
6. If required, select the **Force delete** checkbox. This ignores the Read-only attribute enabling the file to be deleted. If this option is not selected, read-only files are not deleted.
7. Repeat steps **3** to **6** to create further actions within the dialog. A separate action is created for each action in the selected node. Highlight an action and click **Remove** to delete an action from the dialog box.
8. Complete the optional tabs as required:
   - General
   - Run As
   - Personalization
   - Conditions
   - File Extension Exclusions

   See Configuring Actions
9. Click **OK**.

Each action in the dialog is created in the selected node.

Example: Delete a file if it was last accessed more than a year ago

1. Select the **Policy Configuration** navigation button.
2. Select a node or condition.
3. In the Actions ribbon, select **File & Folder** > **Delete File**.

   The Delete File dialog displays showing the Select File tab.
4. Click **Add**.
5. In the Source field, click the ellipsis (**...**) and navigate to the file you want to delete.
6. If required, select the **Force delete** checkbox.

   This ignores the Read-only attribute enabling the file to be deleted. If this option is not selected, read-only files are not deleted.
7. Select the **Condition** tab.
8. Select **Use file conditions**.

   The condition options in the dialog become active.
9. In the Property drop-down, select **Last Modified Time**.

10. In the When drop-down, select **Is Older Than**.

    The Date/Time boxes become inactive.

11. In the Days spinbox, enter a time period in whole days, in this case 365.

    You can enter between 1 - 999 days. You cannot enter fractions of days.

12. Click **OK**.

    The action is added to the selected node.

13. Save the configuration.

Move File Action

This action uses the same features and options as the **Copy File** action to move a file from one location to another when a trigger or condition is satisfied.

Create a Move File Action

1. Select the **Policy Configuration** navigation button.
2. Select a node or condition.
3. In the **Actions** ribbon, select **File & Folder** > **Move File**.

   The **Move File** dialog displays showing the **Files to Move** tab.

4. Click **Add**.
5. In the **Source** field, use the ellipsis (**...**) to navigate to the file you want to move.
6. In the **Target** field, navigate to the folder to which the source file will be moved when the action is triggered.

   The source file can be renamed by adding a new filename and extension to the target path. For example,

   - **Source** - %SystemDrive%\Documents\Work\Today.doc
   - **Target** - \\Server01\Update\Archive1.doc

   The source file, Today.doc, is moved but renamed to Archive1 in the target folder.

7. If required, select the **Fail if Exists** checkbox. This stops the action for endpoints where the folder already exists at the target.
8. Repeat steps **3** to **6** to create further actions within the dialog. A separate action is created for each action in the selected node.

   Highlight an action and click **Remove** to delete an action from the dialog box. The action will not be created.

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9. Complete the optional tabs as required:
    - General
    - Run As
    - Personalizaton
    - Conditions
    - File Extension Exclusions

    See Configuring Actions.
10. Click **OK**.

Each action in the dialog is created in the selected node.

Rename File Action

Rename a file at a specified location when a trigger or condition is satisfied.

Create a Rename File Action

1. Select the **Policy Configuration** navigation button.
2. Select a node or condition.
3. In the Actions ribbon, select **File & Folder** > **Rename File**. The **Rename File** dialog displays showing the **File to Rename** tab.
4. Click **Add**.
5. In the **Rename From** field, use the ellipsis (**...**) to navigate to the file you want to rename.
6. In the **Rename To** field, enter the new name for the file including the file extension.
7. Repeat steps **3** to **6** to create further actions within the dialog. A separate action is created for each action in the selected node.

    Highlight an action and click **Remove** to delete an action from the dialog box. The action will not be created.
8. Complete the optional tabs as required:
    - General
    - Run As
    - Personalization

    See "Configuring Actions" on page 147.
9. Click **OK**.
10. Each action in the dialog is created in the selected node.

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Modify File Attributes Action

Change the attributes, commonly found within the properties of an existing file. For example, you could make a file writable for administrators but read only for all other users, at logon. Each attribute can be **Set**, **Unset** or **Ignored**. When the action is triggered on a user's endpoint, those attributes defined, will be applied to the selected file.

Create a Modify File Attribute Action

1. Select the **Policy Configuration** navigation button.
2. Select the node or condition.
3. In the Actions ribbon, select **File & Folder** > **Modify File Attributes**. The **Modify File Attributes** dialog displays showing the **Set File Attribute** tab.
4. In the **File** field, use the ellipsis (**...**) to navigate to the file you want to update.
5. Select an action for each of the following attributes:
    - Read-Only
    - Hidden
    - System
    - Archive
    - Temporary

   Each attribute can be set to one of the following:

    - **Set** - Applies the attribute
    - **Unset** - Does not alter the attribute
    - **Ignore** - Does not alter the current setting
6. Complete the optional tabs as required:
    - General
    - Run As

   See Configuring Actions.
7. Click **OK**.
8. The action is created in the selected node. When the action is triggered on a user's endpoint, the attributes defined, are applied to the selected file.

File Type Associations Action

This action sets default file extensions for selected applications. File associations created from this action overwrite default associations but users maintain the ability to override using the *Open with...* command or the *Default Programs* Control Panel settings. When an association is made, files use the icon associated with the executable when displayed in Windows.

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1. In the Policy Configuration navigation tree, select or create a node or condition on the Pre-Desktop, Session Unlock or Session Reconnect trigger.
2. From the Actions ribbon, select **File & Folder** > **File Type Associations**.
3. Enter a valid application path or use the ellipsis to navigate to the required application.

   When the action runs, clients do not check that applications exists. File type associations are created regardless of whether an application exists on endpoints.

4. Click **Add**.
5. Enter an extension or use the ellipsis to navigate to one.
6. Multiple file extensions can be associated with an application. Use CTRL to select multiple file extensions from the list or repeat steps 3 and 4.
7. Click **OK** to save the action.

Create Text File Action

When triggered, this action creates a text file at a specified location. This could be any type of plain text file such as LOG, CSV, TXT or JS.

1. In the Policy Configuration navigation tree, select or create a node or condition.
2. In the Actions ribbon, select **File & Folder** > **Create Text File**.
3. In the File field, enter the required path and filename or use the ellipsis (**...**) to navigate to the text file to create on managed endpoints. If the path does not already exist on an endpoint, it will be created.
4. Apply the required behavior if the file already exists on an endpoint:
   - **Fail if file already exists** - The action fails and the existing file remains on endpoints. A fail event is reported to any configured log. If the option is not selected, the action fails but does not record an error.
   - **Overwrite existing file** - The existing file is replaced by the file defined in this action.
5. In the Editor field, enter any text or script to populate the file with.
6. Select the file attributes to apply to the created file:
   - Read-only
   - Hidden
   - System
   - Archive
   - Temporary
7. Select the required character encoding for the file:
   - ANSI
   - UTF-8
   - Unicode (UTF-16)

8. Complete the optional tabs as required:
   - General
   - Run As

   See "Configuring Actions" on page 147.
9. Click **OK** to create the action.

Update Text File Action

When triggered, this action replaces text in an editable text file. This could be any type of plain text file such as LOG, CSV, TXT or JS.

Create an Update Text File Action

1. Select the node or condition to add the action.
2. In the Actions ribbon, select **File & Folder** > Text File **Update**.
3. In the **File** field, use the ellipsis (**...**) to navigate to the text file you want to update.
4. In the **Search For** field, enter the text which you want to update. The search will look for the exact sequence of words entered.
5. Use the checkboxes to apply the following settings.
   - **Match Case** - Will only match text which has the same case as the Search For text
   - **Use Regular Expressions** - Allows regular expressions to be used to broaden the search criteria
   - **Multi-Line Mode** - Select if either text field contains more than one line of text.
6. In the **Replace With** field, enter the text you want to update the file with.
7. Complete the optional tabs as required.
   - General
   - Run As

   See "Configuring Actions" on page 147.
8. Click **OK** to create the action.

Create Folder Action

When triggered, creates a folder at a defined location on a user’s endpoint.

Copy Folder Actions

There are three different actions which can be used to copy folders.

Copy

Copy the contents of a folder from the source to the target folder as defined in the Copy Existing Folder tab.

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Only the contents of the folder are copied, the actual folder is not recreated at the destination location. For example, if the folder **%USERPROFILE%\Documents\Information** is specified as the source folder and **%USERPROFILE%\Desktop** is set as the target, the contents of the Information folder are copied directly to the desktop. In order to place them in a corresponding folder, manually amend the target field to:

%USERPROFILE%\Desktop\Information.

If a folder copy action contains files and all those files fail to match the conditions set in the action, the files are not copied but the folder is still created. Prior to Environment Manager 8.1 the target folder is not created if the files fail the conditions.

Mirror

The Mirror Copy Folder action creates an exact copy of a folder or folder structure and all the files contained within, at the target location specified in the Copy Folder dialog. Files which already exist in the target are overwritten from the source and any supplementary files in the target are deleted.

Synchronize

The Synchronize Copy Folder action combines the contents of two folders to produce a file and folder structure which is identical in both locations. If two files of the same name, type and location are encountered, the most recently modified is synchronized.

Use the Copy Folder dialog to specify the source and target folders to be synchronized when triggered.

Create a Copy Folder Action

1. Select the **Policy Configuration navigation** button.
2. On the Actions ribbon, select **File & Folder** > **Copy Folder**.

   The Copy Folder dialog displays showing the Copy Existing Folder tab.

   When using Copy Folder actions, Read-only and Hidden attributes of folders and files are copied - if a file being copied is read-only in the source, it will be read-only when copied to the target. Advanced attributes for archiving, indexing, compressing and encrypting are not copied and revert to their default settings.

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3. Select the type of copy you want to perform:
   - **Copy** - Copy the contents of a folder from the source to the target folder as defined in the Copy Existing Folder tab. Only the contents of the folder are copied, the actual folder is not recreated at the destination location.
   - **Mirror** - The Mirror Folder action creates an exact copy of a folder or folder structure and all the files contained within, at the target location specified in the Mirror Folder dialog. Files which already exist in the target are overwritten from the source and any supplementary files in the target are deleted.
   - **Sync** - The Synchronize Folder action combines the contents of two folders to produce a file and folder structure which is identical in both locations. If two files of the same name, type and location are encountered, the most recently modified is synchronized.
     Use the Synchronize Folder dialog to specify the source and target folders to be synchronized when triggered.
4. From the **Copy sub-folders** drop-down, select the required behavior:
   - **None** - Only the top level folder and its contents are copied.
   - **All** - All sub folders are copied.
   - **Specify the number of sub-folder levels** - Sub-folders and their contents are copied to the level selected.
5. Click **Add**.
6. In the Source field, use the ellipsis (**...**) to navigate to the folder you want to copy.
7. In the Target field, navigate to the folder to which the source folder will be copied when the action is triggered.
8. Files which already exist in the target folder are copied if the same file in the source folder has changed. Environment Manager uses the file size and time stamp to determine whether a file has changed. Updated file attributes, such as Read-only, do not denote a changed file.
9. Click the Options field and select as required. The available options are dependent on the type of Copy Folder action selected. See Copy Folder Options for details.
10. Repeat steps **3** to **7** to create further actions within the dialog.

    Highlight an action and click **Remove** to delete an action from the dialog box. The action will not be created.
11. Complete the optional tabs as required:
    - General
    - Run As
    - Personalization
    - Conditions
    - File Extension Exclusions
    - Path Exclusion

    See "Configuring Actions" on page 147.

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12. Click **OK**.

    Each action configured in the dialog is created in the selected node.

    If a folder copy action contains files and all those files fail to match the conditions set in the action, the files are not copied but the folder is still created.

Copy Folder Options

Depending on the type of copy, a combination of the following options are available from the Options column for the action:

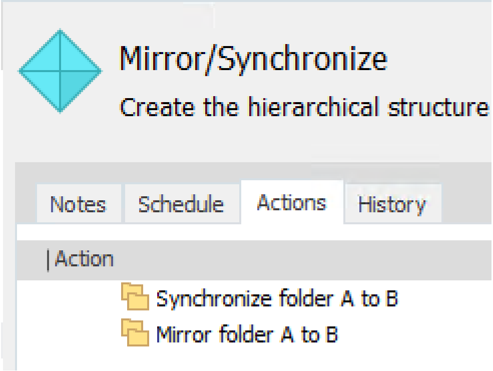
Option	Copy	Mirror	Sync
Continue on error - If selected and an error occurs during execution, the copy action continues. With this option checked and multiple files selected for copying, if one file fails to copy the action continues and the action is attempted for the remaining files. Failed copies are not retried. If the option is not checked, an error will be thrown and the action stops. The overall status of the action will still be a fail if this option is selected and an error occurs.	✓	✓	✓
Overwrite newer files - Use this option to determine the behavior when attempting to copy files which already exist in the Destination folder. If the option is selected and a newer version of a file exists in the Source folder, the version in the Destination folder is overwritten. If the option is not selected, the version of the file in the Destination folder is not overwritten. This does not cause the action to fail but to move on to the next file in the copy action. This option is selected by default.	✓	–	–
Fail if folder exists - Select to ignore the operation if a corresponding folder exists in the target. The action fails if the target folder already exists.	✓	–	–
Exclude junction points - Select whether to include or exclude folders and files identified as NTFS junction points or symbolic links in copy folder actions. For further information about junction points, see http://support.microsoft.com/kb/205524	✓	✓	✓
Copy file attributes - Includes the Read-only and Hidden attributes of the source folder in the copy - if a file being copied as part of a Copy Folder action is read-only in the source, it will be read-only when copied to the target. Advanced attributes for archiving, indexing, compressing and encrypting are not copied and revert to their default settings.	✓	✓	✓
Copy security attributes - Include the security permissions settings for each user and group that has been assigned access rights for the folder being copied. Note: The account executing the action must have the appropriate security permissions for this setting.	✓	✓	✓

Option	Copy	Mirror	Sync
Copy owner information - Copy owner information from the source. **Note** The account executing the action must have the appropriate security permissions for this setting.	✓	✓	✓
Include deleted files - When folders are synchronized, any files which have been removed from either the source or the target folder since the last sync, are removed from the corresponding location. This option is selected by default.	−	−	✓

For Copy Folder actions, exclusions and conditions can be applied using the standard action tabs.

Mirror and Synchronize Folder Actions Configuration

Parallel copy actions between the same folder should be avoided. For example:



Mirror/Synchronize

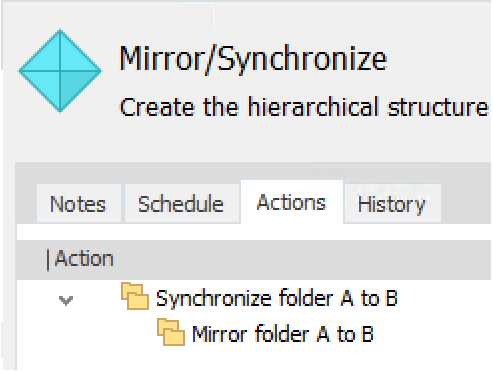
Create the hierarchical structure

Synchronize folder A to B

Mirror folder A to B

When a node containing the above actions is run, unexpected behavior could occur as it is not clear whether folders A and B should be mirrored or synchronized first.

In such scenarios the actions should be configured sequentially to clearly define the action:



Mirror/Synchronize

Create the hierarchical structure

Synchronize folder A to B

Mirror folder A to B

The folders have been synchronized prior to the mirror.

Parallel copy actions between unrelated folders function as normal.

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Synchronize Folder Behavior

The sections below explain Synchronize Folder behavior in various circumstances.

Delete Behavior

Following synchronization, the source and target folders contain the same files. If a file is deleted from one of the locations, it will be copied back when the folders are next synchronized - files are always synchronized, never deleted.

Action	Source	Target
Create file in Source folder	File A	
Synchronize Source and Target	File A	File A
Delete file from Target folder	File A	
Synchronize Target and Source	File A	File A

However, if you select the Include deleted files option, when synchronized, the deletion of File A from the target folder would be reflected in the source:

Action	Source	Target
Create file in Source folder	File A	
Synchronize Source and Target	File A	File A
Delete file from Target folder	File A	
Synchronize Target and Source		

Rename Behavior

Following a folder synchronize, if a file is renamed in either the source or target folder, when the folders are next synchronized, the original file and the renamed file will be present in both locations.

Action	Source	Target
Create file in Source folder	File A	
Synchronize Source and Target	File A	File A
Rename file in Target Folder	File A	File B
Synchronize Target and Source	File A File B	File A File B

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As with deletes, the results are different if you select the Include deleted files option. When synchronized, a file renamed in either the source or target folder, will be renamed in the opposite location. In the example below, in the target location, File A is renamed to the File B. When the locations are synchronized, the file is renamed in the source.

Action	Source	Target
Create file in Source folder	File A	
Synchronize Source and Target	File A	File A
Rename file in Target Folder	File A	File B
Synchronize Target and Source	File B	File B

Delete Folder Action

Delete a selected folder from the user's endpoint. The folder and all contents are deleted when the associated trigger and/or condition is satisfied.

Create a Delete Folder Action

1. Select the **Policy Configuration** navigation button.
2. Select a node or condition.
3. In the Actions ribbon, select **File & Folder** > **Delete Folder**. The **Delete Folder** dialog displays showing the Delete Folder tab.
4. Click **Add**.
5. In the Source field, use the ellipsis (**...**) to navigate to the file you want to delete.
6. If required, select the **Force delete** checkbox. This ignores the Read-only attribute enabling the file to be deleted. If this option is not selected, read-only files are not deleted.
7. Repeat steps **3** to **6** to create further actions within the dialog. A separate action is created for each action in the selected node.;

   Highlight an action and click **Remove** to delete an action from the dialog box. The action will not be created.
8. Complete the optional tabs as required:
   - General
   - Run As
   - Personalization
   - Conditions

   See Configuring Actions.
9. Click **OK**.

Each action in the dialog is created in the selected node.

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Folder Redirection Action

Folder redirection allows a user’s personal files and settings to be saved to another location at logon. Folders can be redirected to any available location including a local folder, a network drive or the user’s home drive, which is outside the profile itself. This helps users maintain access to their files and settings when roaming between machines and improves loading times during logon.

Create a Folder Redirection Action

1. Select the **Policy Configuration** navigation button.
2. Create a new node or select and existing node in the **User** > **Logon** trigger.
3. Select **File & Folder** > **Folder Redirection** from the Actions ribbon.

   The Folder Redirection dialog displays.
4. From the **Source** drop-down, select the folder you want to redirect.
5. Select the destination for the redirection or use the ellipses (**...**) to navigate to the required folder.

   > UNC paths (including mapped drives which point to a network location) are not supported as destinations for the *History*, *Temporary Burn Folder (CD Burning)* and *Temporary Internet Files (Cache)* folders.
6. Select the copy method:
   - **Do Not Copy** - Files are not copied from the original folder to the redirected folder.
   - **Use Folder Redirection Copy** - Files are copied from the original folder to the redirected folder using the Windows folder redirection action.
   - **Use Environment Manager Copy** - Files are copied from the original folder to the redirected folder using an Environment Manager Folder Copy action.

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7. Select the Options to apply to the redirection:
    - **Only copy modified files** - Copy files that have been modified in the original folder since the previous copy. Available only if Use Environment Manager Copy is selected.
    - **Do not redirect if copy fails** - Do not apply the folder redirection if the copy action fails. Available only if Use Environment Manager Copy is selected.
    - **Delete contents from original folder after copying** - Delete files and subfolders from the original folder after the copy is complete and the redirection is applied. Available only if Use Folder Redirection Copy or Use Environment Manager Copy is selected.
    - **Only user has permission to access redirected folder** - Permissions are set on the redirected folder to allow only the logged on user to access the folder.
    - **Maintain access permissions to the source folder** - Following the redirection, access to the original folder is maintained for the logged on user.
    - **Make redirected folder available offline** - The redirected folder is available if the end point enters an offline state after the redirection.
    - **Remove the folder redirection at log off or configuration change** - The folder redirection is not applied permanently and is removed at user log off or when the configuration changes.
8. The *Only user has permission to access the redirected folder* and *Maintain access permissions to the source folder* cannot be enabled in the same action.
9. Click **OK** to save the action.

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Folder Redirection Sources

The following folders can be used in the Folder Redirection action and are compatible with the operating systems as shown.

Source	Win7	Win8	Win10
Administrative Tools	✓	✓	✓
AppData (Roaming)	✓	✓	✓
Contacts	✓	✓	✓
Cookies	✓	✓	✓
Desktop	✓	✓	✓
Documents (My Documents)	✓	✓	✓
Downloads	✓	✓	✓
Favorites	✓	✓	✓
History	✓	✓	✓
Links	✓	✓	✓
Music (My Music)	✓	✓	✓
Network Shortcuts (NetHood)	✓	✓	✓
Pictures (My Pictures)	✓	✓	✓
Printer Shortcuts (PrintHood)	✓	✓	✓
Programs	✓	✓	✓
Quick Launch	✓	✓	✓
Recent Items (My Recent Documents)	✓	✓	✓
Saved Games	✓	✓	✓
Searches	✓	✓	✓
SendTo	✓	✓	✓
Slide Shows	✓	✓	✓
Start Menu	✓	✓	✓
Startup	✓	✓	✓

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Source	Win7	Win8	Win10
Templates	✓	✓	✓
Temporary Burn Folder (CD Burning)	✓	✓	✓
Temporary Internet Files (Cache)	✓	✓	✓
Videos (My Videos)	✓	✓	✓

Drives and Printers Actions

These actions map and unmap printers and drives as specified. They are useful for setting printers and mapping drives when users log on to a specific computer, giving access to printers and drives appropriate to their location.

Map Drive

Create an action to map a drive on managed endpoints when triggered. For example, mapping users to a shared drive at logon so they have access to required resources. Drives are automatically unmapped at the end of a user session or following a configuration change unless the action is created under compatible triggers and the Permanent option is selected. Any drive can be mapped including SharePoint drives and local folders.

1. In the Policy Configuration navigation tree, select or create a node or condition.
2. In the Actions ribbon, select **Drives & Printers** > **Map Drive**.

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3. Click **Add** and configure the following settings:

Field/Setting	Description
Drive	Select which letter the drive maps to. The **Next** option is available on the Pre-Desktop and Desktop Created Logon triggers. This will attempt to map to the next unused drive letter. If you are using a mixture of actions that set specific drives and actions that use 'Next' drive setting, run the specific drive mappings first. This ensures all drives map correctly. To do this, make 'Next' map drive actions dependent children of specific drive mappings or create them in dependent child nodes.
Exclude	Select which drive letters are ignored when the next available drive option is selected. The next available drive which is not on the exclude list is mapped. This is available on the Pre-Desktop and Desktop Created Logon triggers if **Next** has been selected as the drive.
Path	Enter the path or use the ellipsis to navigate to the required location.
Friendly Name	A name that will be displayed instead of the path on managed endpoints. The friendly name persists on endpoints unless explicitly cleared by mapping the same drive without a friendly name. Unmapping the drive does not clear the name.
Override	Removes existing mapping to the specified drive on endpoints and remaps the drive based on the settings defined in the action.
Hide	The drive is mapped but is not visible in Windows Explorer on endpoints. Hidden drives can still be accessed by entering the drive letter in the Windows Explorer address bar or in a command window. This option is only available if the action is added to the Pre-Destop Logon trigger.
Permanent	The drive mapping persists on managed endpoints beyond the current session. If not selected, the drive is unmapped at logoff or following a configuration change. This option is only available on compatible triggers. ⓘ The Permanent option is not available on the following triggers: Pre-Desktop, Process Started, Network Connected, Session Reconnected, Session Locked, and Session Unlocked.

4. Complete the optional tabs as required:
   - General
   - Connect As

   See "Configuring Actions" on page 147.

5. Click **OK** to save the action.

Unmap Drive

Create an action which unmaps a drive when triggered. For example, unmapping a drive when a user disconnects from the network.

1. In the Policy Configuration navigation tree, select or create a node or condition.
2. In the Actions ribbon, select **Drives & Printers** > **Unmap Drive**.
3. Select the drive to disconnect.
4. Complete the optional tabs as required.
   - General
   - Run As

   See "Configuring Actions" on page 147.

5. Click **OK** to save the action.

Map Printer

Create an action to map a printer for users. For example, by combining this action with Computer IP Address conditions, users are automatically connected to the correct printer for their location.

1. In the Policy Configuration navigation tree, select or create a node or condition.
2. In the Actions ribbon, select **Drives & Printers** > **Map Printer**.

   The Map Printer dialog displays.
3. Complete the following fields and apply the required settings:

Field/Setting	Description
Remote printer path	Enter the printer address or click the ellipses and select the required printer. The address can be in UNC, Direct IP or HTTP. If using an IP address, the default port, 9100, is used. To use an alternative port, add it to the end of the IP address, separated by a colon, for example, 123.456.789.012:9101.
Friendly Name	If using an IP address for a printer, enter an optional friendly name. This allows you to easily identify the printer.
Unmap at logoff	Apply as required to determine whether the printer mapping persists beyond the user's current session or is unmapped when the user logs off.
Set as default printer	Select to make this printer the users' default.
Retries	Enter the number of times endpoints will attempt to connect to the selected printer. If the number of retries is exceeded, the printer is not mapped.
Timeout (secs)	Enter the time, in seconds, to wait between connection attempts.
Driver Location	If using an IP address for a printer, enter or select the location of the relevant printer driver INF file. If the driver specified in the Driver Name field does not already exist on an endpoint, the driver installs from the specified location. If the driver fails to install, the printer is not mapped.
Driver Name	If using an IP address for a printer, enter the name of the required driver. If already installed on endpoints, the printer is mapped. If not installed, the driver is installed from the specified driver location.

4. Complete the optional tabs as required.
   - General
   - Connect As

   See "Configuring Actions" on page 147.

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5. Click **OK** to save the action.

Set Default Printer

Create an action to set the default printer for users. For example, by combining this action with Computer IP Address conditions, users are automatically connected to the correct printer for their location.

1. In the Policy Configuration navigation tree, select or create a node or condition.
2. In the Actions ribbon, select **Drives & Printers** > **Set Default Printer**.
3. Enter the **Remote printer path** or click the ellipses and select the required printer.
4. The address can be in UNC, Direct IP or HTTP. If using an IP address, the default port, 9100, is used. To use an alternative port, add it to the end of the IP address, separated by a colon, for example, 123.456.789.012:9101.
5. Apply the **Unmap at logoff** setting as required to determine whether the printer mapping persists beyond the user's current session or is unmapped when the user logs off.
6. Complete the optional tabs as required.
   - General
   - Connect As

   See "Configuring Actions" on page 147.
7. Click **OK** to save the action.

Unmap Printer

Create an action to unmap a specific printer or all existing printer connections when triggered.

1. In the Policy Configuration navigation tree, select or create a node or condition.
2. In the Actions ribbon, select **Drives & Printers** > **Unmap Printer**.
3. Do one of the following:
   - To unmap all existing printer connections, select **Unmap All**.
   - To unmap a specific printer, enter the **Remote printer path** or click the ellipses and select the required printer.

     The address can be in UNC, Direct IP or HTTP. If using an IP address, the default port, 9100, is used. To use an alternative port, add it to the end of the IP address, separated by a colon, for example, 123.456.789.012:9101.
4. Click **OK** to save the action.

ODBC (Open Database Connectivity) Actions

Create, Amend and Delete ODBC actions. An action could be triggered when a user opens a particular application, enabling access to a database containing relevant data.

ODBC connections enable a computer to access data from any application, regardless of the database management system (DBMS). Use this action to establish a connection between a computer and a database stored on another system. The following actions are available:

- Create ODBC Connection
- Amend ODBC Connection
- Delete ODBC Connection

To specify an ODBC connection for any of the three actions select the **Connection Detail**s tab and complete the following fields:

Field	Description
Connection Name	A unique name to identify the connection.
Driver Type	A drop down list containing the available driver types
Current Connections	The list is automatically populated with all available connections on the current computer, based on the driver type selected.

Once the connection is defined, specific programs can be told to use the connection to access information on that database.

Custom and Execute Actions

Custom Action

Custom Actions can be created using PowerShell, Visual Basic or Java Script to allow processing not available from other Environment Manager actions. The scripts are held within the XML configuration, copied to disk at runtime, executed and then deleted upon completion.

Actions with invalid scripts return a fail and any child actions do not run. Prior to Environment Manager 8.1 custom actions passed whether the script was valid or not.

Separate auditing events are created for successful and unsuccessful actions, these can be viewed through the **Auditing** button in the **Manage** ribbon.

Example script

```
' ==========================================================
' Checks to see if a process (EMCoreService.exe) is running
' =========================================================
strComputer = "."
Set objWMIService = GetObject("winmgmts:\\" & strComputer & "\root\cimv2")
Set objShell = CreateObject("Wscript.Shell")
Set colProcesses = objWMIService.ExecQuery _
("Select * from Win32_Process Where Name = 'EMCoreService.exe'")
If colProcesses.Count =0 Then
 Wscript.Echo "There are no instances of EMCoreService.exe running"
 Wscript.Quit 0
Else
```

```
 Wscript.Echo "EMCoreService.exe is running"
 Wscript.Quit 1
End If
```

Separate auditing events are created for successful and unsuccessful actions. These can be viewed through the **Auditing** button in the **Manage** ribbon.

Select the Type of script required; PowerShell, Visual Basic or Java Script and enter the script directly into the dialog. Scripts can also be added using copy and paste or imported using the import button.

The following settings can be applied which affect the behavior of the action:

- **Timeout** - Set a timeout for the completion of the script. If the time set is reached the action will fail. The maximum value that can be set is 60 seconds unless set to 0 which is infinite. Timeouts set in Custom Actions overwrite the default node settings.

  See Configuring Nodes and Default Timeout Settings for further details.
- **Prevent script from running interactively** - This option is selected by default and means that scripts will run without pop-ups that require user interaction.
- **Apply environment variables to configuration** - With this option selected, any environment variable set in the script is also set in the registry and EM Client enabling it to be used outside of the script.
- **Insert** - Select a Session Variable to add to the script. The list includes the following built-in variables:
  - **SessionID** - The current Session ID
  - **UserSID** - The user's Security Identifier
  - **UserTemp** - The location of user's Temporary Directory

In the Network Available, Network Connected and Network Disconnected triggers, further built-in Session Variables can be added to the script to determine connection attributes.

Exit Codes

All custom scripts must specify an exit code which when returned, is used by the Environment Manager agent to determine whether the script has passed or failed. For scripts without an exit code a success (0 value) is assumed by the agent.

Each script type must use a specific exit statement:

- VBScript: **WScript.Quit** [value]
- JScript - **WScript.Quit(**[value]**)**
- PowerShell: **exit (**[value]**)**

Replace [value] with the exit code for the script: 0 for success and 1 for failure. For example: **WScript.Quit 0**, **WScript.Quit(0)**, **exit (0)**

PowerShell Scripts

Windows PowerShell scripts use various execution policies which can prevent the scripts from running or only allow those signed by trusted publishers to run. Environment Manager overrides execution policies and bypasses any restrictions to enable the PowerShell scripts to run.

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Execution polices for users and computers can also be set through Group Policy which override all PowerShell execution policies. A user policy which does not allow any scripts, or only those which are signed, will not affect the running of PowerShell Custom actions if they are run as System. However, if run as the current user the user policy will not allow the scripts and the Custom action will fail. A computer policy which does not allow any scripts, or only those which are signed, will not allow the running of any PowerShell Custom actions.

Therefore, to successfully run Custom actions which use PowerShell, your Group Policy must be set to allow these scripts to run for users and computers.

Environment Manager is compatible with PowerShell versions 1.0, 2.0 and 3.0.

Execute Action

These actions execute an application or process when triggered. Browse to the application from the **Filename** field. The **Working Directory** is automatically added when the application is selected. Additional **Parameters** can be added to pass to the program.

To enable the process to run using different user credentials, select the **Run As** tab and select the user as required.

If the **Do not create window (Console based applications)** checkbox is selected, any command windows associated with an application or process are hidden from the user.

Avoid including **Execute** actions at logon in nodes set to execute in sequence for files which require user interaction to complete, such as program files. Otherwise, the logon process is halted indefinitely as the logon script waits for the execute script to complete. For example, if the **Execute** action launches notepad.exe, the logon script waits for Notepad to end before proceeding with the logon process.

If the **Do not execute children of this action until the process has exited** option is unchecked this scenario will not be held up as user interaction is turned off.

Group Policy Actions

Group policy is a set of configuration rules relating to the working environment of users and computers. You can add Group Policy rules to actions in a configuration. Settings for operating systems, applications, and users can restrict or allow user functionality. For example, you can use Group Policy to prohibit access to the Control Panel or to limit user profiles to a specific size.

Group polices are stored in administrative template files that describe where the registry-based settings are stored. There are two types of files:

- ADM - Administrative template files that store settings for Windows XP and Windows Server 2003.
- ADMX - Administrative template XML files that store the settings for Windows Vista and Windows Server 2008 and higher.

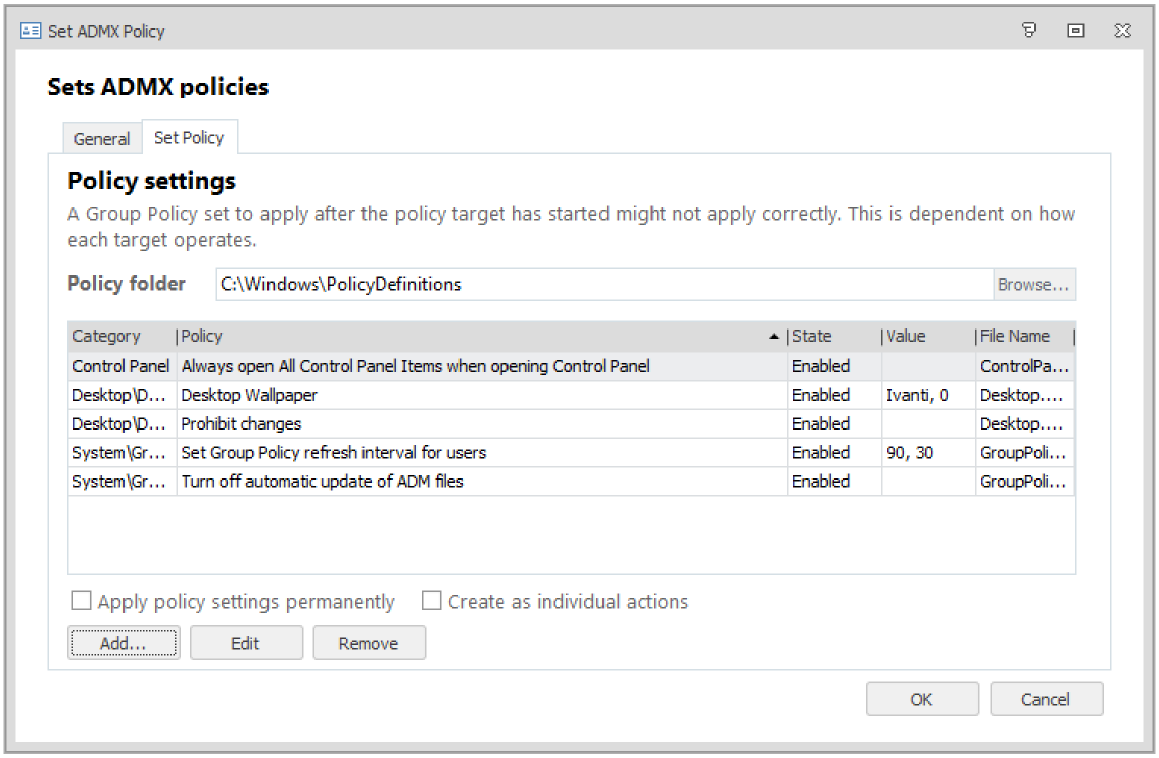
By default, Group Policy files are stored in the following locations:

- ADM - C:\WINDOWS\Inf
- ADMX - C:\WINDOWS\PolicyDefinitions

You can change the default location for storing Group Policy files in the Group Policy Location dialog, which you access in the Manage ribbon.

For more information, see Group Policy Location.

You create Group Policy Actions in the Set Policy dialog.



Sets ADMX policies

Policy settings

A Group Policy set to apply after the policy target has started might not apply correctly. This is dependent on how each target operates.

Policy folder: C:\Windows\PolicyDefinitions

Category	Policy	State	Value	File Name
Control Panel	Always open All Control Panel Items when opening Control Panel	Enabled		ControlPa...
Desktop\D...	Desktop Wallpaper	Enabled	Ivanti, 0	Desktop....
Desktop\D...	Prohibit changes	Enabled		Desktop....
System\Gr...	Set Group Policy refresh interval for users	Enabled	90, 30	GroupPoli...
System\Gr...	Turn off automatic update of ADM files	Enabled		GroupPoli...

☐ Apply policy settings permanently ☐ Create as individual actions

The dialog lists information about Group Policy settings in the following columns:

- Category - The parent path of the Group Policy setting according to the hierarchy in which settings are organized in the dialog, for example Windows Components\FileExplorer\Explorer Frame Pane.
- Policy - The name of the policy, for example Hide specified Control Panel items.
- State - A policy can be Enabled, Disabled, or Not Configured.
- Value - Some policy settings need a value setting, such as a date or file size.
- File Name - The name of the ADM or ADMX file within the policy itself.

You can use the columns' shortcut menu to choose which columns to display and how:

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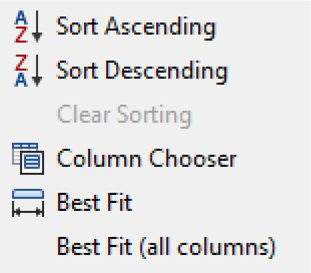
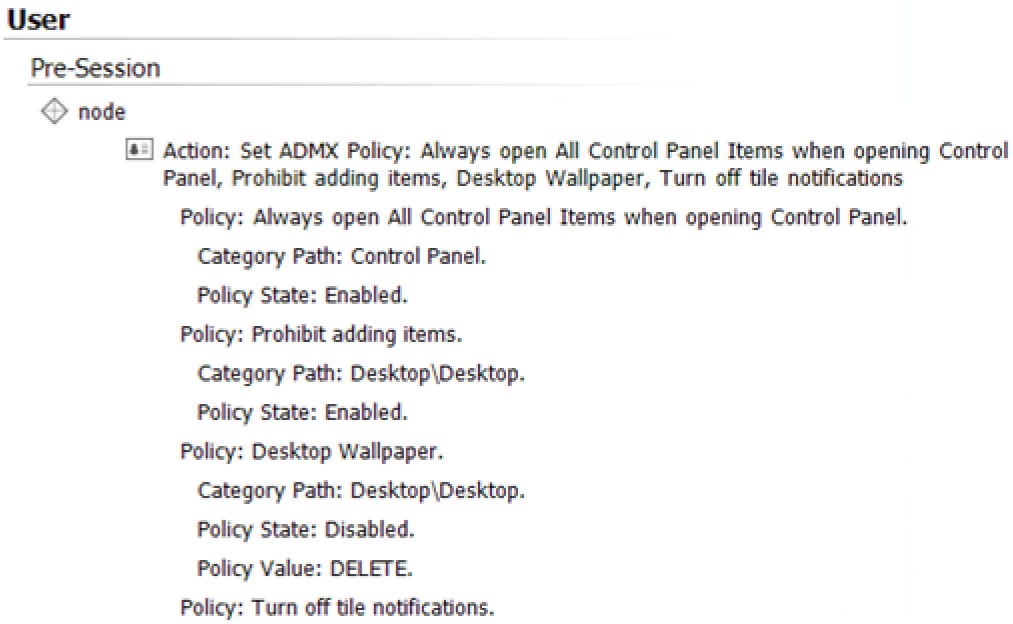


The policy details listed in the dialog are also included in the report produced by the Configuration Profiler:



User

Pre-Session

node

Action: Set ADMX Policy: Always open All Control Panel Items when opening Control Panel, Prohibit adding items, Desktop Wallpaper, Turn off tile notifications

Policy: Always open All Control Panel Items when opening Control Panel.

Category Path: Control Panel.

Policy State: Enabled.

Policy: Prohibit adding items.

Category Path: Desktop\Desktop.

Policy State: Enabled.

Policy: Desktop Wallpaper.

Category Path: Desktop\Desktop.

Policy State: Disabled.

Policy Value: DELETE.

Policy: Turn off tile notifications.

When you create a Group Policy action, you can add multiple Group Policy settings to a single action. You can use the **Create as individual actions** option to convert each policy setting into an action of its own. Splitting multiple Group Settings into separate actions is irreversible. You cannot regroup the new actions. However, once the actions are created, you can edit an individual action and add additional Group Policy settings to it.

Policy settings applied though Environment Manager are automatically removed from managed endpoints at logoff or when a configuration changes. If the **Apply policy settings permanently** checkbox is selected, the remove is not applied and the policy setting remains active on the endpoint.

Group policy administrative templates such as Site to Zone Assignment List for Internet Explorer, require Client Side Extensions (CSE) to run. In previous versions of Environment Manager, these policies could be configured but the agent was unable to run the CSEs.

The Environment Manager agent now supports these CSEs.

Folder Redirection using CSEs is not supported, as the CSE cannot be configured through ADMX.

Create a Group Policy Action

1. In the Policy Configuration navigation tree, create a new node or select an existing node.
2. In the Actions tab, select **Group Policy** > **Set ADMX Policy** or **Set ADM Policy**.

   The Set ADMX Policy dialog displays.
3. In the Policy folder text box, accept the default policy folder. Or click **Browse** to navigate to a folder from which to select ADMX policy templates.
4. To add a policy setting, click **Add**.

   The Policies dialog displays.
5. In the navigation tree in the left-hand pane, select a category. You can use the Filter locate the required category more quickly.

   The individual policies for that category display in the right-hand pane.
6. Double-click the required policy in the right-hand pane to configure its settings.

   The Set Policy Values dialog box displays. It has two tabs: Options and Help.

   Click **Help** to view a description of the policy setting. Click **Previous Setting** and **Next Setting** to scroll through the settings in the selected policy folder.
7. In the Options tab, configure the setting as required: **Enabled**, **Disabled**, or **Not Configured**.

   When **Enabled** is selected, some policies have additional settings to enter, such as a date or file size.
8. Click **OK** to add the policy to the Set ADMX Policy dialog.
9. Repeat steps 4 - 9 to add more policies.

   You can use the Edit and Remove buttons to adjust the settings.
10. If required, select the **Apply policy settings permanently** checkbox.

    Policy settings applied though Environment Manager are automatically removed from managed endpoints at logoff or when a configuration changes. If you select the checkbox, the remove is not applied and the policy setting remains active on the endpoint.
11. To split multiple settings into single actions, select the **Create as individual actions** checkbox.

    Polices cannot be regrouped once you split them.
12. Click **OK**.

    An action is created containing all the configured group policy settings.

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Environment Actions

Environment actions enable both Environment Variables and Session Variables to be configured on managed endpoints. When triggered, both types of variables can be set or deleted whilst Environment Variables can also be appended.

Environment Variables

There are two common types of environment variables – user environment and system environment variables. User environment variables are set on the User triggers in Environment Manager, and system environment variables on Computer triggers.

Environment variables set in actions are available to all child actions or triggers and on any future triggers. Variables are also available to other applications, such as Windows Explorer, but only after the trigger containing the action completes.

- User environment variables typically store information related to resources and settings owned by the user.

  Examples of user environment variables include %TEMP% which points to a specific user’s folder for storing temporary files or %HOMEPATH% which points to a user’s profile directory.
- System environment variables typically refer to locations of critical operating system resources or architecture.

  Examples of system environment variables include %windir% which is the path to the Windows directory or %ProgramFiles% which points to the location of the Program Files directory

Session Variables

Session variables provide an alternative to environment variables, allowing data to be passed through an Environment Manager configuration without the limitations on lifetime and scope that apply to environment variables - session variables extend across multiple processes for a given user and session.

Session variables can be used and expanded anywhere within Environment Manager where environment variables can be used. They can be used for applying bespoke file paths for map drive and folder redirection actions and are particularly useful when used in the scripts within Custom actions and conditions.

Environment Variable and Session Variable Actions

Set Environment Variable

Enter the **Variable Name** and **Variable Value**.

A list of existing environment variables available on the computer on which the Environment Manager Console is running is displayed. These can be selected and their variable values edited as required.

The Environment Variable is set on managed endpoints with the value as entered.

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Append Environment Variable

Enter the **Variable Name**, **Variable Value** to be appended and select the **Separator** to be used between the existing **Variables** and **Append** values. The selected environment variable is updated to include the append value using the entered separator.

A list of existing environment variables available on the computer on which the Environment Manager Console is running is displayed. These can be selected and appended to by entering the **Variable Value** to be appended and the **Separator**.

For example, you could append the PATH Environment Variable with a new location, specifying the separator as a semi-colon.

Delete Environment Variable

Enter the **Variable Name** to be deleted from managed endpoints.

A list of existing environment variables available on the computer on which the Environment Manager console is running is displayed. These can be selected for deletion.

Set Session Variable

Enter the **VariableName** and **VariableValue** to be used within the Environment Manager configuration.

The Session variable is set on managed endpoints with the value as entered.

Delete Session Variable

Enter the Session **VariableName** to be deleted from use within the Environment Manager configuration.

Session Variable Format

Session variables are case insensitive and are referenced by enclosing round brackets and a preceding $. For example:

$(SessionVariable)

Incorrectly formatted session variables do not expand. The table below gives some examples of successful and unsuccessful expansions.

In these examples, the variable ‘valid_variable’ has been set to ‘SessionVariableValue’.

Reference	Expansion
$(valid_variable)	SessionVariableValue
$(variable_does_not_exist)	$(variable_does_not_exist)
$()	$()

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Reference	Expansion
$no_brackets_defined	$no_brackets_defined
$(missing_closing_bracket	$(missing_closing_bracket
$missing_opening_bracket)	$missing_opening_bracket)
$(valid_variable) $(Valid_Variable) $(vALID_vARIABLE) $(VALID_VARIABLE)	SessionVariableValue
$(valid_variable$(valid_variable))	$(valid_variable$(valid_variable))
$(valid_variable))	SessionVariableValue)
$((valid_variable)	$((valid_variable)

Default Session Variables

Environment Manager includes three in-built session variables:

- **SessionID** - The current Session ID
- **UserSID** - The user’s Security Identifier
- **UserTemp** - The location of user’s Temporary Directory

These can used in actions and conditions and in particular, can be quickly added to custom scripts using the Insert function.

Session Variable Examples

Using Session Variables in Policy Actions

In the example below a session variable is used to map a drive when users open Word. The session variable is set at logon and is dependent on their Active Directory Organizational Unit (OU) membership.

An *If Else* condition, run at logon, checks the OU of a user and sets a UserGroup session variable relative to that group. For example, if the user is a member of Sales, UserGroup session variable is set to ’sales’.

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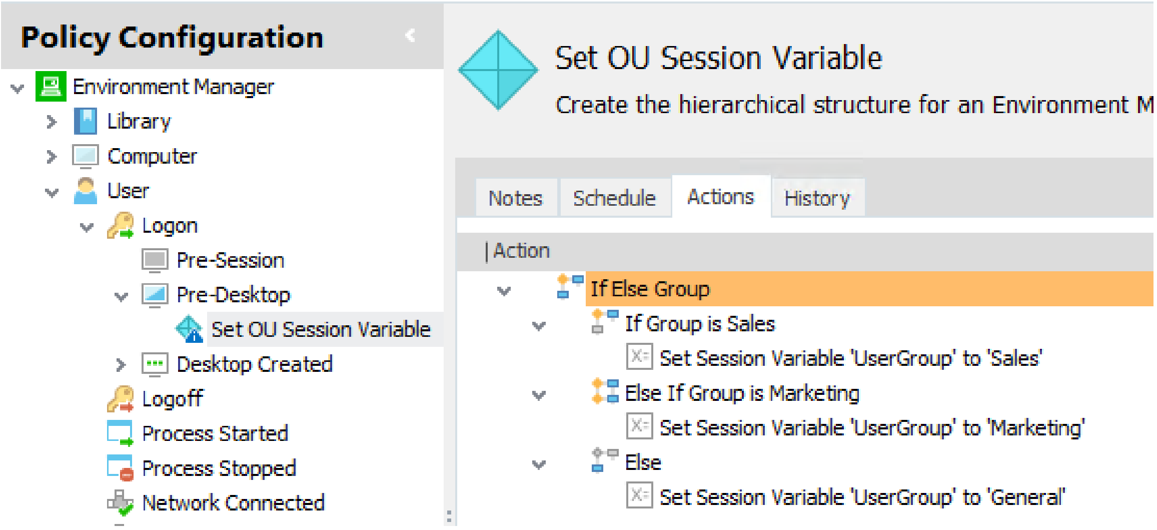


Policy Configuration

- Environment Manager
  - Library
  - Computer
  - User
    - Logon
      - Pre-Session
      - Pre-Desktop
        - Set OU Session Variable
      - Desktop Created
    - Logoff
    - Process Started
    - Process Stopped
    - Network Connected

Set OU Session Variable

Create the hierarchical structure for an Environment M

Notes | Schedule | Actions | History

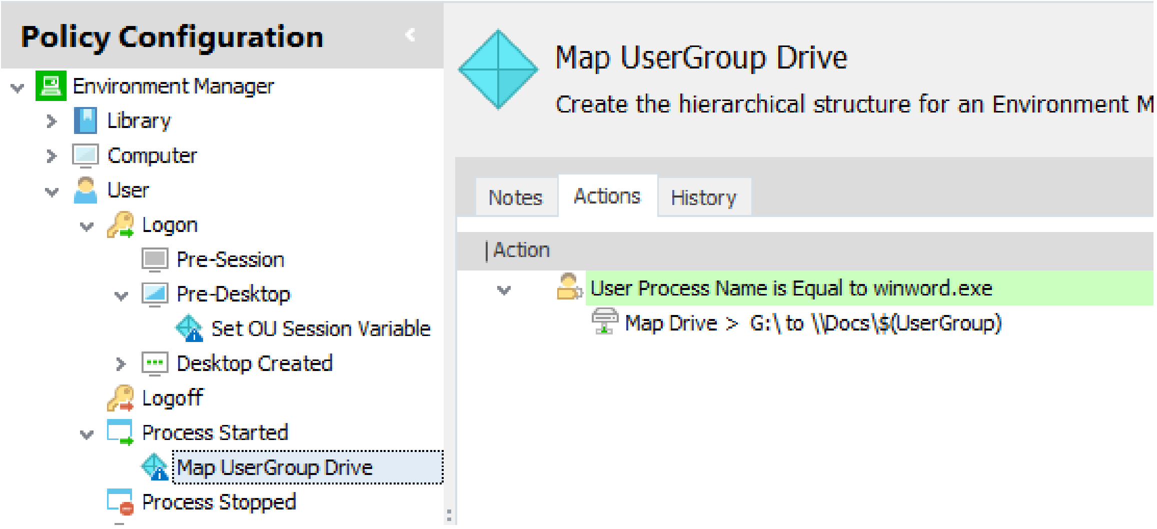
Action
If Else Group
If Group is Sales
Set Session Variable 'UserGroup' to 'Sales'
Else If Group is Marketing
Set Session Variable 'UserGroup' to 'Marketing'
Else
Set Session Variable 'UserGroup' to 'General'

A Map Drive action runs when a user opens Word mapping a drive to the following location:

\\Docs\$(UserGroup)

The $(UserGroup) expands to the value set at logon. For example, if the user is a member of Sales, the session variable will expand mapping the drive to:

\\Docs\Sales



Policy Configuration

- Environment Manager
  - Library
  - Computer
  - User
    - Logon
      - Pre-Session
      - Pre-Desktop
        - Set OU Session Variable
      - Desktop Created
    - Logoff
    - Process Started
      - Map UserGroup Drive
    - Process Stopped

Map UserGroup Drive

Create the hierarchical structure for an Environment M

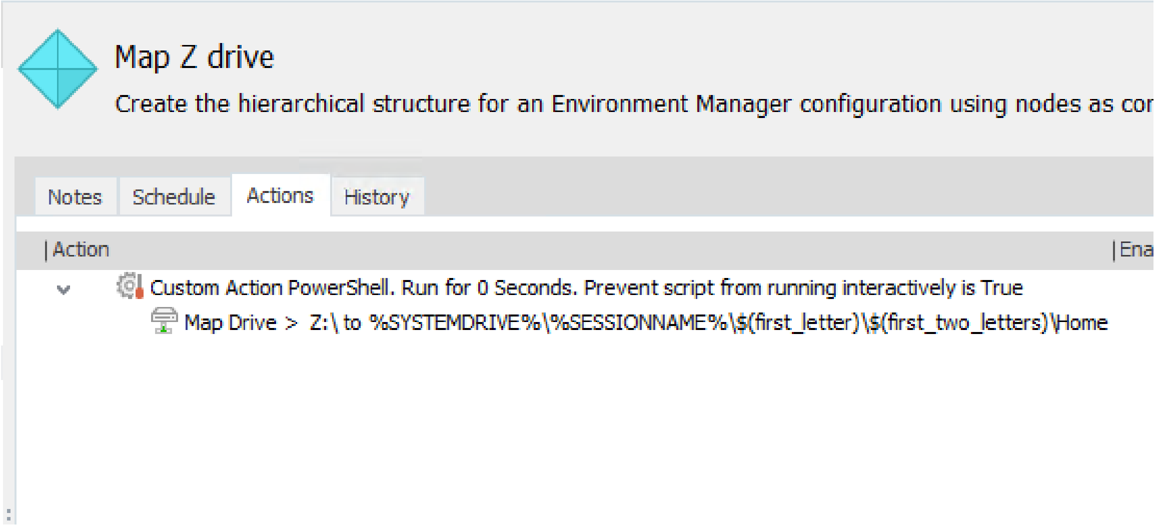
Notes | Actions | History

Action
User Process Name is Equal to winword.exe
Map Drive > G:\ to \\Docs\$(UserGroup)

Using Session Variables in Custom Actions

This example demonstrates how session variables can be used in scripts with Environment Manager custom actions.

Two actions have been added to the Logon > Pre-Desktop trigger - one which sets two session variables and the other which maps a drive using those variables.



Map Z drive

Create the hierarchical structure for an Environment Manager configuration using nodes as cor

Custom Action PowerShell. Run for 0 Seconds. Prevent script from running interactively is True

Map Drive > Z:\ to %SYSTEMDRIVE%\%SESSIONNAME%\$(first_letter)\$(first_two_letters)\Home

Custom Action

The following script in a Custom action obtains the user name from the environment and sets two session variables - $(first_letter) and $(first_two_letters).

```
$user = $env:USERNAME
if ($user.Length -gt 1)
{
 $first_letter = $user[0]
 $first_obj = New-Object -ComObject "EmClient.SetValue"
 $first_obj.Name = "first_letter"
 $first_obj.Value = $first_letter
 $first_obj.Apply("")

 $first_two_letters = $user[0] + $user[1]
 $second_obj = New-Object -ComObject "EmClient.SetValue"
 $second_obj.Name = "first_two_letters"
 $second_obj.Value = $first_two_letters
 $second_obj.Apply("")
}
```

Map File Action

The session variables set in the Custom action are used in the Map Drive action to map a drive for each managed user:

%SYSTEMDRIVE%\%SESSIONNAME%\$(first_letter)\$(first_two_letters)\Home

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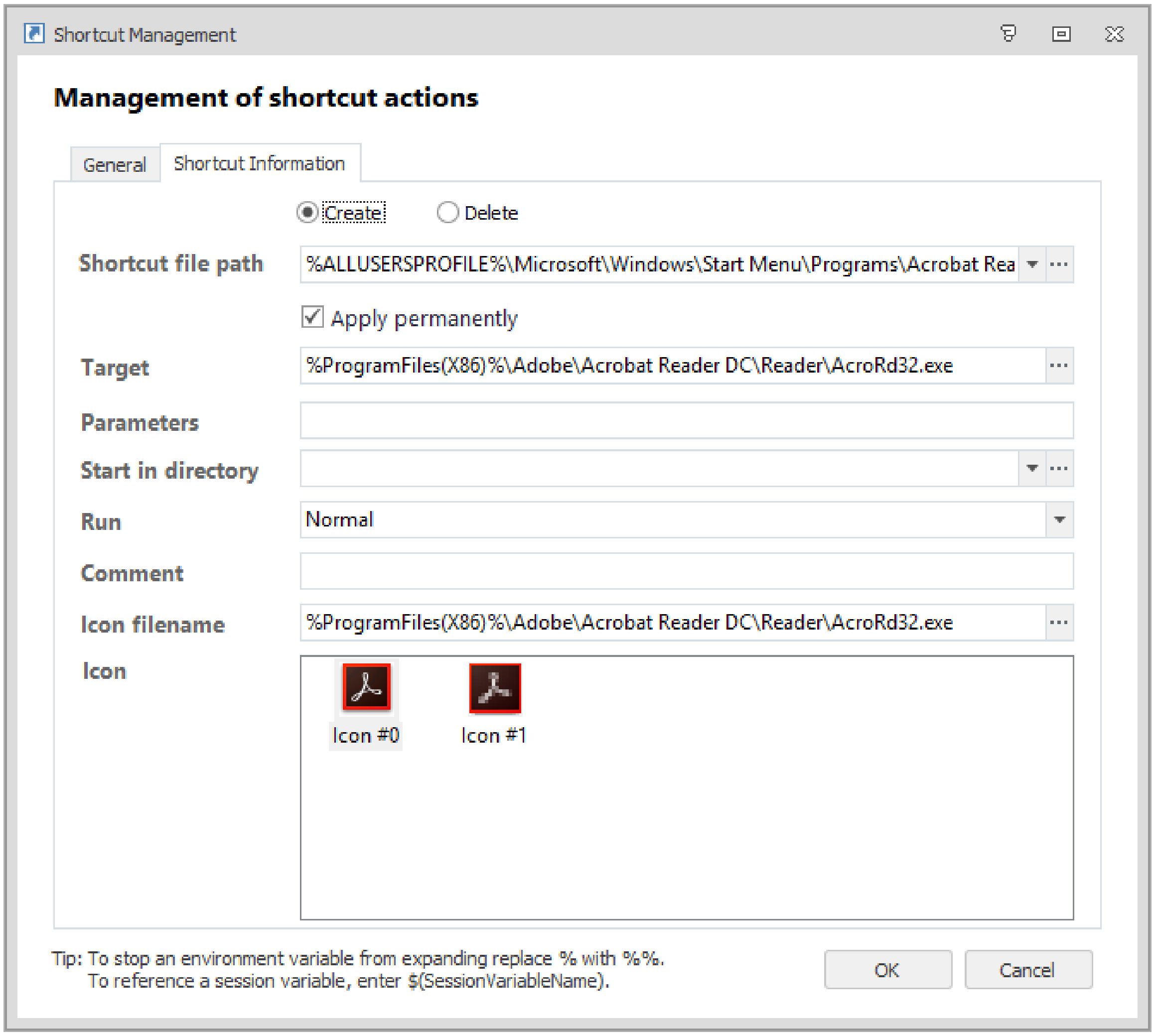
Shortcut Actions

When triggered, these actions create shortcuts on managed endpoints. The shortcuts can be those that are created in Windows Explorer or those that are pinned to the Windows Start menu or taskbar.

Create a Shortcut Action



Shortcut Management

Management of shortcut actions

● Create ○ Delete

Shortcut file path: %ALLUSERSPROFILE%\Microsoft\Windows\Start Menu\Programs\Acrobat Rea

☑ Apply permanently

Target: %ProgramFiles(X86)%\Adobe\Acrobat Reader DC\Reader\AcroRd32.exe

Parameters:

Start in directory:

Run: Normal

Comment:

Icon filename: %ProgramFiles(X86)%\Adobe\Acrobat Reader DC\Reader\AcroRd32.exe

Icon: Icon #0, Icon #1

Tip: To stop an environment variable from expanding replace % with %%.
To reference a session variable, enter $(SessionVariableName).

1. Configure an action to create a shortcut on endpoints.
2. In the Policy Configuration navigation tree, select or create a node or condition.
3. In the Actions ribbon, select **Shortcut** > **Shortcut Management** to display the Shortcut Management dialog.
4. Select whether the action will **Create** or **Delete** a shortcut from endpoints.
5. In the **Shortcut file path** field, use the ellipsis to navigate to the required shortcut or enter the path and filename.

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6. Select whether the shortcut remains on managed endpoints after log off. The default setting is **Apply Permanently**. Deselect this option to remove shortcuts from managed endpoints at logoff.

   The following fields are automatically populated from the **Shortcut file path** but you can edit them if required:

   - **Target** - The location of the program that the shortcut accesses.
   - **Parameters** - Define further parameters for the target program. For example, the program could be Microsoft Word. If you enter a particular document in the target parameters, that document will open in Word.
   - **Start in Directory** - The working directory of the program.
   - **Run** - Select whether the associated program should open, maximized, minimized, or using the default view.
   - **Comment** - The text that displays when you hover over the shortcut icon.
   - **Icon Filename** - The location of the shortcut icon.
   - **Icon** - The icon used for the shortcut.
7. Click **OK** to save the action.

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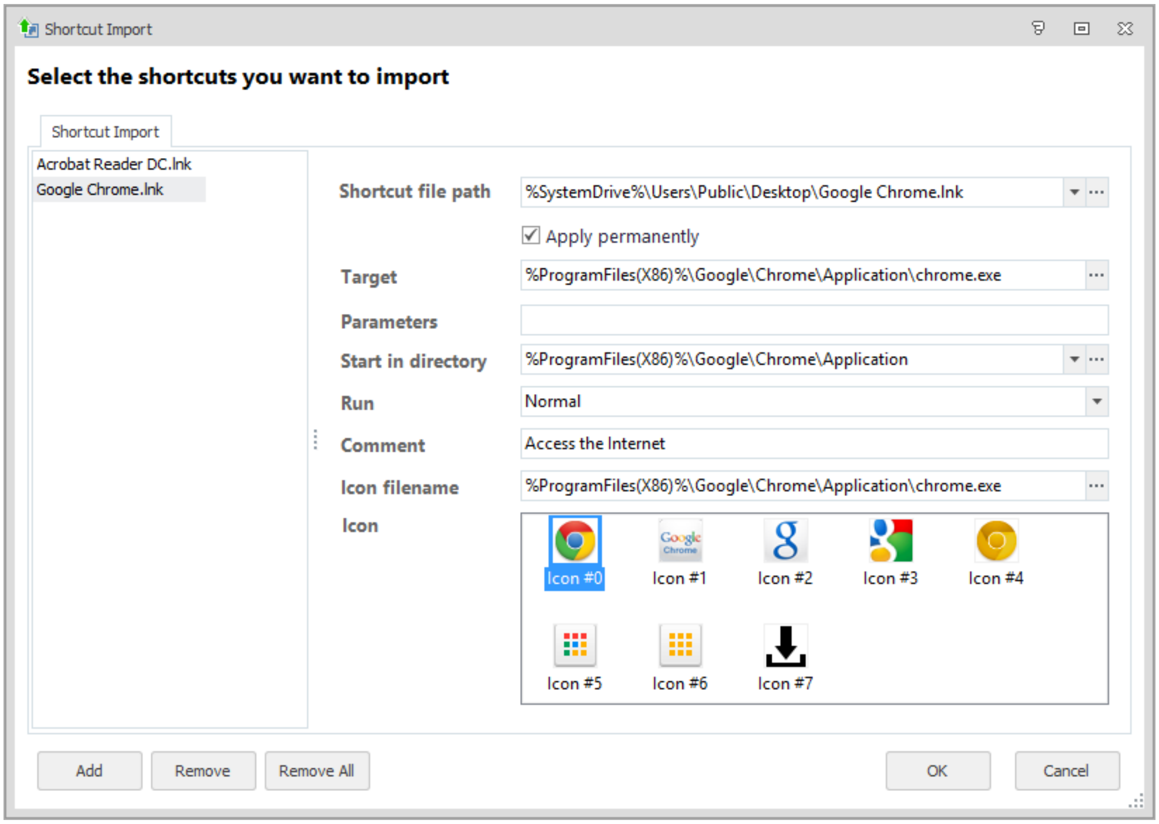
Import Multiple Shortcuts



Shortcut Import

Select the shortcuts you want to import

Shortcut Import

Acrobat Reader DC.lnk
Google Chrome.lnk

Shortcut file path: %SystemDrive%\Users\Public\Desktop\Google Chrome.lnk

☑ Apply permanently

Target: %ProgramFiles(X86)%\Google\Chrome\Application\chrome.exe

Parameters:

Start in directory: %ProgramFiles(X86)%\Google\Chrome\Application

Run: Normal

Comment: Access the Internet

Icon filename: %ProgramFiles(X86)%\Google\Chrome\Application\chrome.exe

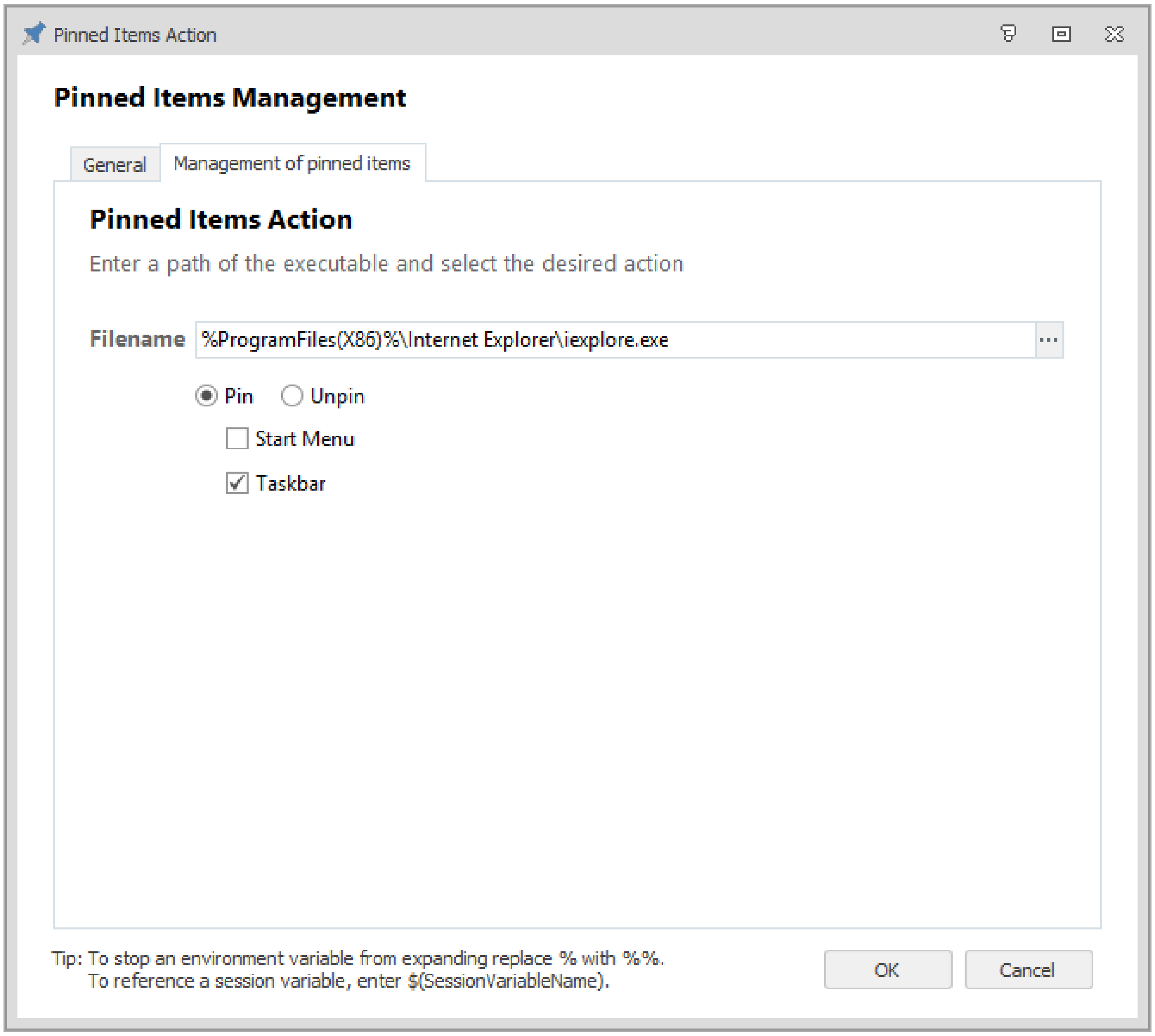
Icon: Icon #0

1. Import existing shortcuts into the wizard to create multiple shortcuts on managed endpoints.
2. Select or create a node or condition.
3. From the Actions ribbon, click **Shortcut** > **Import Shortcut Wizard**.
4. Click **Add**.
5. Select a shortcut file (LNK format).

   The remaining fields are automatically populated and you can edit them as required.
6. Select whether the shortcut remains on managed endpoints after logoff. Shortcuts created though Environment Manager are automatically removed from endpoints at logoff unless you select **Apply Permanently**.
7. Click **Add** to add more shortcuts. To remove shortcuts, either select and click **Remove** or click **Remove All**.
8. Click **OK**.

Each shortcut listed creates an individual Create Shortcut action in the work area.

Create a Pinned Items Action



Pinned Items Management

Pinned Items Action

Enter a path of the executable and select the desired action

Filename %ProgramFiles(X86)%\Internet Explorer\iexplore.exe

● Pin ○ Unpin

□ Start Menu

☑ Taskbar

Tip: To stop an environment variable from expanding replace % with %%.
To reference a session variable, enter $(SessionVariableName).

Pin or unpin applications to the Windows Start menu or taskbar on managed endpoints. The action compares the existing pinned items on endpoints against the items that the action is configured to pin.

1. Select or create a node or condition on the Pre-Desktop trigger.
2. On the Actions ribbon, select **Shortcut** > **Pinned Items Action**.
3. Enter the path, or navigate to, the executable for the required application.

   Shortcuts with parameters cannot be pinned. For example, notepad.exe can be pinned but notepad.exe abc.txt cannot.

   Executables with switches cannot be pinned. For example, an application with the /prefetch:# switch cannot be pinned.
4. Select whether to **Pin** or **Unpin** the application.

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5. Select whether the action applies to the **Start Menu** or the **Taskbar**.
6. Click **OK** to save the action.

Shortcut Management for Roaming Users

As a user moves between managed endpoints with different operation systems and applications, some configured shortcuts are not valid for all environments. When this happens, Environment Manager manages the following temporarily invalid shortcuts:

Shortcut or Link	Supported Operating System
Standard shortcuts in the Windows file system that point to a target does not exist	All supported operating systems
Items pinned to the taskbar that point to nonexistent paths	All supported operating systems
Items pinned to the Start menu that point to nonexistent paths	Windows 7, Windows Server 2008 R2

Environment Manager either hides the temporarily invalid shortcuts or - if possible - resolves the links to point to an equivalent path, such as when a user moves between 32-bit and 64-bit environments. If items pinned to the taskbar or Start menu are removed, the order of the pinned items is retained. When a user returns to an environment where the shortcuts are valid, the shortcuts and pinned items - and the order in which they are arranged - are restored.

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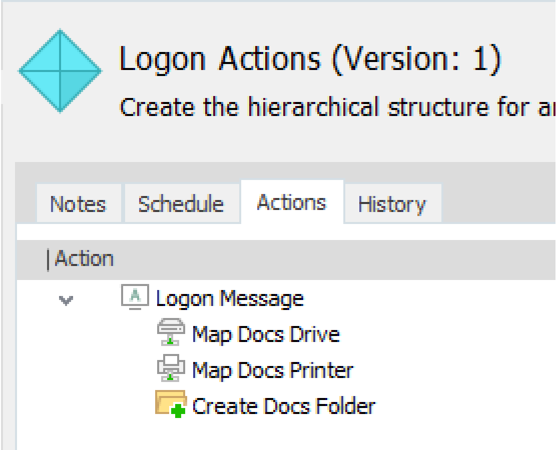
Logon/Logoff Message

Configure the text displayed when actions in the Logon or Logoff triggers are running. Multiple messages can be configured to display text specific to the related actions.

In the example below, the Logon Message is displayed for the duration of the three child actions.



Logon Actions (Version: 1)

Create the hierarchical structure for a

- Logon Message
  - Map Docs Drive
  - Map Docs Printer
  - Create Docs Folder

Nodes could be created for related groups of actions with a Logon/Logoff Message action as the parent for the actions within that node. For example, you could put all Map Drive actions as children of a Logon/Logoff Message to display the message “Mapping Drives” whilst the actions run. In another node, you could run all your Session Variable actions whilst the message “Setting Session Variables” displays.

Depending on the operating system and screen resolution settings, longer messages may be truncated on some endpoints.

Fast Logoff Action

When triggered, users on managed endpoints in Terminal Services environments can end sessions immediately whilst any remaining Environment Manager logoff actions run to completion. Depending on the operating system, either the logoff screen or a blank screen is displayed on endpoints whilst the logoff actions run.

This action can be added multiple times to the Logoff trigger with conditions applied to target the action as required. For example, you could set the action only to apply to specific endpoints or user groups which would benefit from Fast Logoff.

Add the action from the Actions tab and enable by selecting the **Enable Fast Logoff** checkbox.

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Self Heal Actions

When triggered, the Self Heal action restores environment items including files, processes, services and registry keys. Using Self Heal, computer and user settings can be restored to their original state in the event of software failure or when unauthorized changes have been made. The self healing mechanism restores settings in real-time. For example, if a Trojan virus is added to any of the Windows start up keys, Self Healing immediately removes the threat.

Self Healing can be used to ensure critical applications, such as security software, are restarted or repaired immediately following any failure resulting from malicious or accidental actions and provides security against the threat of malicious software attempting to infiltrate and alter registry settings or modify content.

Although the option to self heal the whole registry is available, it is resource intensive and is likely to impact performance. Therefore, when configuring Self Healing Registry actions, it is recommended that only those relevant sections of the registry are configured to be self healed.

Targeting only specific portions of the registry reduces the resource load on the Environment Manager Agent during run-time. Self Heal is particularly useful for healing important processes, files, services and registry keys that are critical to the day-to-day running of the system. Care should be taken to ensure that critical items remain unaltered by the Self Heal function.

Caution: Stability issues may arise if software patches or upgrades to areas of your system which you have chosen to self heal as Environment Manager automatically self heals these changes and removes them.

Currently only 32-bit and 64-bit applications are fully supported by the self healing process mechanism. It is not recommended to self heal DOS or 16-bit applications using this method. Attempting to self heal a DOS or 16-bit application process may present multiple instances of the same application in a short period of time.

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Create a Self Heal Service Action

1. In the Policy Configuration navigation tree, create a new node or select an existing node from within the Computer trigger.

   The Self Heal Service action is only available for Computer triggers.
2. In the Actions ribbon, select **Self Heal > Self Heal Service** to display the Self Heal Services dialog.
3. Click **Add > Browse Services** to open a Service Browser listing the services on the local machine. The service list for other machines in the Active Directory can be selected if required.

   Services can be entered manually by selecting **Add > Add Entry** and completing the fields with the service details.
4. Select the required service and click **OK**. Multiple applications can be selected using the **Ctrl** or **Shift** keys.

   The services are added to the Self Heal Service dialog box.
5. Set the **Status** for the service:
   - Always running
   - Never starts
6. Click **OK**.

Each service creates an individual action in the node work area based on the status selected.

Each action can be edited by double-clicking to open the Self Heal Service dialog box.

Create a Self Heal Registry Action

1. In the Policy Configuration navigation tree, create a new node or select an existing node.
2. In the Actions ribbon, select **Self Heal > Self Heal Registry** to display the Self Heal Registry dialog.
3. Select the ellipsis in the Main Key field to open a registry browser and select a registry key. The browser defaults to the registry of the local machine. This can be changed to the registry of remote machines using the **Connect** button.
4. Click **OK**.
5. The **Main Key**, **Sub Key** and **Value Name** (if applicable) fields are automatically populated. The fields can be completed and edited manually if required.
6. Select the behavior required for the action:
   - **Use default value** - Select to maintain the default value for the registry keys on managed endpoints satisfying any associated conditions when triggered. This disables the **Value Name** field so it cannot be edited.
   - **Ensure the registry item remains unchanged** OR **Ensure the registry item never exists** - The action will not allow changes to the registry item or not allow it to be created.
7. Click **OK** to create the action for the registry key selected using the defined criteria.

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Create a Self Heal File Action

1. In the Policy Configuration navigation tree, create a new node or select an existing node.
2. In the Actions ribbon, select **Self Heal > Self Heal File** to display the Self Heal Registry dialog.
3. Select the ellipsis (**...**) in the **Filename** field to open a Windows browser and select the required file. The file path and name can be entered manually if required.
4. Select the behavior required for the action:
   - **Make sure the file is always present** - The action ensures that the file exists when triggered on managed endpoints which satisfy any associated conditions. Select the sub option **Ensure the file is never changed** to stop the file from being modified.
   - **Make sure the file is not present** - The action will not allow the file to be created.
5. Click **OK** to create the action for the file using the defined criteria.

Create a Self Heal Process Action

1. In the Policy Configuration navigation tree, create a new node or select an existing node.
2. In the Actions tab, select **Self Heal > Self Heal Process** to display the Self Heal Process dialog.
3. Select a process by navigating to the appropriate executable using the ellipsis in either the **Process Name** or **Process Directory** fields.
4. In the Parameters field, enter any parameters, separated by spaces, which the service needs to run. For example, Auditing can take the name of a file in which it logs data. This can be entered as follows: **-log C:\Temp\MyLogFilename.txt**.
5. Select the **Run the process as SYSTEM user** if required. This option is only available for actions in **User** triggers.
6. Click **OK** to save the action.

DataNow Action

DataNow User Settings

The DataNow User Settings action allow user-level DataNow settings to be set and Session Variables to DataNow paths to be created.

At logon, if the user is logged into the DataNow client, Environment Manager sets the $(DataNowHome) Session Variable to the user’s DataNow directory appended with ’\Home’. If the map point name for the home drive is not Home, an alternative map point name can be specified within the DataNow User Settings action.

Further Session Variables can be set to DataNow paths, such as the Documents and Favorites directories. Environment Manager Actions and conditions can be created easily using these Session Variables.

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Enable DataNow User Single Sign On

1. In the Policy Configuration navigation tree, create a new node or select an existing node from within the Pre-Session or Pre-Desktop Logon sub-triggers.
2. In the Actions ribbon, select **DataNow** > **DataNow User Settings**.

   The DataNow User Settings dialog displays.
3. Select **Enable User Single Sign On** to enable single sign on for the user.

   Single Sign On must also be enabled for the machine.

Set Session Variables to DataNow Paths

1. In the Policy Configuration navigation tree, create a new node or select an existing node from within the Pre-Session or Pre-Desktop Logon sub-triggers.
2. In the Actions ribbon, select **DataNow** > **DataNow User Settings**.

   The DataNow User Settings dialog displays.
3. If the map point name for the home drive is not *Home*, select **Specify alternative map point name used by $(DataNowHome) Session Variable** and enter the map point name.
4. To set further Session Variables to DataNow paths, click **Add**.

   The Select a DataNow Session Variable dialog displays.
5. Select one or more Session Variables to add to the action. Multiple Session Variables can be selected using the **Ctrl** or **Shift** keys.
6. Click **OK** to add the Session Variables.

   The selected Session Variables are added to the DataNow User Settings dialog.
7. If necessary, modify the Value field to amend the path for each Session Variable.
8. Click **OK** to create the action.

DataNow Custom Settings

The DataNow Custom Settings action allows DataNow behavior to be modified for all users. Environment Manager sets the specified endpoint-level settings at computer startup and subsequently starts the DataNow service.

The settings below are available.

Caution: Setting values outside of the expected range may introduce unexpected behavior in DataNow.

Value	Description	Unit	Range	Default	DataNow
Authentication > Enable Single	Enable Single Sign On for the machine. Single Sign On must be	N/A	Enabled or	Disabled	3.0 and 3.5

Value	Description	Unit	Range	Default	DataNow
Sign On	enabled for the endpoint and user.		Disabled		
Logging > Circular Logging	Enable circular logging. Log files are written to %LOCALAPPDATA%\DataNowLogs.	N/A	Enabled or Disabled	Disabled	3.0 and 3.5
Networking > Auto Throttle Minimum	Set the minimum limit for DataNow throttling.	KBps	Any positive value	30	3.0 and 3.5
Networking > Auto Throttle Percentage	Set the percentage of the estimated upload pipe that DataNow uses.	%	0 to 100	100	3.0 and 3.5
Networking > Auto Throttle Retest Interval	Set how frequently DataNow retests its available upload throttle. The throttle is briefly removed during the test.	ms	Any positive value	36,000,000	3.0 and 3.5
Network > Advanced > HTTP Connection Request Timeout	Set the timeout value for HTTP connection requests.	ms	Any positive value	60,000	3.0 and 3.5
Network > Advanced > HTTP Name Resolution Timeout	Set the timeout for HTTP name resolution.	ms	Any positive value	0	3.0 and 3.5
Network > Advanced > HTTP Receive Response Timeout	Set the timeout for receiving HTTP response to requests.	ms	Any positive value	60,000	3.0 and 3.5
Network > Advanced > HTTP Send Request Timeout	Set the timeout for HTTP send requests.	ms	Any positive value	60,000	3.0 and 3.5

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Value	Description	Unit	Range	Default	DataNow
Sync > Disable Default File Exclusions	Disable the default file exclusions.	N/A	Enabled or Disabled	Enabled	3.0 and 3.5
Sync > Disable Default Folder Exclusions	Disable the default folder exclusions.	N/A	Enabled or Disabled	Enabled	3.0 and 3.5
Sync > Advanced > Cache Expiry Time	Set the default cache expiry time for a folder listing.	ms	Any positive value	2,000	3.0 and 3.5
Sync > Advanced > Failed Upload Retry Time Max	Set the maximum time to wait before retrying failed uploads.	ms	Any positive value	20,000	3.0 and 3.5
Sync > Advanced > Failed Upload Retry Time Min	Set the minimum time after an upload fails before it is retried. The retry will not occur if the network is unavailable.	ms	Any positive value	5,000	3.0 and 3.5
Sync > Advanced > Offline Mapppoint Timeout	Set the map point timeout before it appears offline.	s	Any positive value	30	3.0 and 3.5
Sync > Advanced > Recycle Server Side Deletions	Set whether DataNow reflects server side changes by sending local files to the Recycle Bin.	N/A	Enabled or Disabled	Disabled	3.0 and 3.5
Developer > Logon Token Wait Period	Set the time at logon that DataNow waits for the session token.	s	Any positive value	60	3.0 and 3.5
Developer > Session Startup Wait Time	Set the time that the service waits while trying to initialize a user after logon.	s	Any positive value	90	3.0 and 3.5

Create a DataNow Custom Settings Action

1. In the Policy Configuration navigation tree, create a new node or select an existing node from within the Computer Startup trigger.

   The DataNow Custom Settings action is only available on the Computer Startup trigger.

2. In the Actions ribbon, select **DataNow** > **DataNow Custom Settings**.

   The DataNow Custom Settings dialog displays.

3. Click **Add**.

   The Select a DataNow Custom Setting dialog displays.

4. Select one or more custom settings to add and click **OK**. Multiple settings can be selected using the **Ctrl** or **Shift** keys.

   The selected settings are added to the DataNow Custom Settings dialog.

5. To set the value, deselect **Use Default** and enter a new value.

   Updated settings are displayed in bold.

6. Click **OK** to create the action.

Set Desktop Wallpaper

1. Set the background to be displayed on user endpoints.
2. In the Policy Configuration navigation tree, select or create a node or condition.
3. In the Actions ribbon, select **Set Desktop Wallpaper**.
4. Enter a folder path and filename or click the ellipsis to select the required image. The following file types are compatible with this action:
   - Bitmap (*.bmp *.dib *.rle)
   - Jpeg (*.jpg *.jpeg *.jpe *.jfif)
5. Select how the wallpaper is displayed:
   - Center
   - Fill
   - Fit
   - Span
   - Stretch
   - Tile
6. Select **Copy to** to save the image on endpoints and enter or navigate to the required location.
7. Click **OK** to save the action.

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For local Windows 7 users who have the Windows theme set and have not previously logged onto a client, the wallpaper set by this action is overwritten by the Windows theme. This only affects the initial logon - for all subsequent logons, the wallpaper defined in this action is applied.

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Outlook Actions

The Create Profile and Create 365 Profile actions use functionality and configuration tasks similar to those involved in configuring Outlook Exchange Accounts using the Office Customization Tool (OCT).

For further information about the OCT, see: https://technet.microsoft.com/en-us/library/cc179097.aspx

Configure a Create Profile Action

This action creates an Outlook mail profile for managed users and is primarily used for on-premises Exchange accounts. To add this action, select or create a node or condition on a User trigger and select **Outlook** > **Create Profile** from the Actions ribbon. There are three main tabs to configure: Profile, Cached Mode and Outlook Anywhere.

Profile

Complete the following fields:

- **Profile Name** - The display name for the profile on endpoints, visible through the Mail Properties Control Panel or through Outlook when selecting a profile from startup. A profile is not created if one of the same name exists on the endpoint.
- **Mailbox Name** - The name of the Mailbox Account for the given user. This is typically the username of the logged on user and so is initially populated with the %USERNAME% environment variable as a placeholder.
- **Exchange Server** - The name of the computer running the Exchange server.
- Configure any additional mail boxes to which users require access. Click **Add** and enter the **Display Name** and **Mailbox Distinguished Name** for the required mailbox. The Mailbox Distinguished Name looks up the LegacyExchangeDN attribute from the users AD account. Repeat to add further mailboxes.

Cached Mode

Select **Use Cached Exchange Mode** and configure the following properties:

- **Download shared folders** - Synchronize shared mail and non-mail folders.
- **Download public folder favorites** - Synchronize public folder favorites.
- **Path and filename of the Outlook data file** - The location of the offline data file (OST) on endpoints. This is optional and if left blank is saved to the default location for the operating system in the profile.
- **Directory path to store Offline Address Book files** - The location of the offline address book. This is optional and if left blank is saved to the default location for the operating system in the profile.
- **Mail to keep offline** - The amount of data that is saved offline. Any mail older than the selected period is not synchronized.

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Outlook Anywhere

Configure the following properties:

- **Configure Outlook Anywhere** - Enable users to connect with Outlook Anywhere.
- **Use this URL to connect to my proxy server for Exchange** - The URL of the required Exchange server.
- **Connect using SSL only** - Users can only connect using Secured Sockets Layer (SSL).
- **Mutually authenticate the session when connecting with SSL** - The server and client must authenticate each other before a connection can be made using SSL.
- **Principal name for the proxy server** - The name of the proxy server to which clients connect.

  > The principal name for the proxy server must be prefixed with *msstd:*. For example, msstd:mail.company.local.

- **On fast networks, connect using HTTP first then connect using TCP/IP** - On fast networks clients attempt to connect using HTTP. If this is unsuccessful, they attempt to connect using TCP/IP.
- **On slow networks, connect using HTTP first then connect using TCP/IP** - On slow networks clients attempt to connect using HTTP. If this is unsuccessful, they attempt to connect using TCP/IP.
- **Use this authentication when connecting to the proxy server for Exchange** - Select the authentication type:
- **Password Authentication (NTLM)**
- **BasicPassword Authentication**

Configure a Create 365 Profile Action

This action creates a mail profile specifically for connection to Outlook 365 accounts. To add this action, select or create a node or condition on a User trigger and select **Outlook** > **Create 365 Profile** from the Actions ribbon. There are two main tabs to configure: Profile and Cached Mode.

Profile

Complete the following fields:

- **Profile Name** - The display name for the profile on endpoints, visible through the Mail Properties Control Panel or through Outlook when selecting a profile from startup. A profile is not created if one of the same name exists on the endpoint.
- **User Email** - The email address for the given user. This field is blank by default which uses the autodiscover service to look up domain users' mail connection.

Configure any additional mail boxes to which users require access. Click **Add** and enter the **Display Name** and **Mailbox Distinguished Name** for the required mailbox. The Mailbox Distinguished Name looks up the LegacyExchangeDN attribute from the users AD account. Repeat to add further mailboxes.

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Cached Mode

Select **Use Cached Exchange Mode** and configure the following properties:

- **Download shared folders** - Synchronize shared mail and non-mail folders.
- **Download public folder favorites** - Synchronize public folder favorites.
- **Path and filename of the Outlook data file** - The location of the offline data file (OST) on endpoints. This is optional and if left blank is saved to the default location for the operating system in the profile.
- **Directory path to store Offline Address Book files** - The location of the offline address book. This is optional and if left blank is saved to the default location for the operating system in the profile.
- **Mail to keep offline** - The amount of data that is saved offline. Any mail older than the selected period is not synchronized.

Configure an Update Mailboxes Action

1. This action adds and deletes additional mailboxes for existing Outlook profiles.
2. In the Policy Configuration navigation tree, select or create a node or condition on a User trigger.
3. In the Actions ribbon, select **Outlook** > **Update Mailboxes**.
4. Enter the **Profile Name** to be modified. This is the display name for the profile on endpoints, visible through the Mail Properties Control Panel or through Outlook when selecting a profile from startup.

   The configuration steps for opening and removing mailboxes are the same.
5. Click **Add**.
6. Enter a **Display Name** and the **Mailbox Distinguished Name** for the mailbox. The display name must be unique within the action. If more than one mailbox has the same display name, only the first will be added to the profile.
7. Repeat steps 4 and 5 to configure further mailboxes to add or remove.
8. Click **OK** to save the action.

When the action is triggered, the selected profile opens and the mailboxes specified are added or removed as configured in the action. If the entered profile does not exist the action fails.

Configure an Email Signature Action

Configure an Outlook signature file for managed users.

1. In the Policy Configuration navigation tree, select or create a node or condition on a User trigger.
2. In the Actions ribbon, select **Outlook** > **Email Signature**.
3. Enter a **Name** to identify the signature.

4. Configure the text for the signature. You can configure different signatures for **New Messages** and **Replies and Forwards** or select **Also use this signature for replies and forwarding** to use the same message for all.
5. Click **OK** to save the action.

Cache Roaming for Virtual Sessions

Cache Roaming introduces capabilities to roam user application caches between sessions in non-persistent environments. The VHD container is attached to the user's virtual desktop or session allowing the necessary folders within the user profiles to be redirected here. The feature is suitable for supported VDI infrastructures in virtual desktop environments, such as XenDesktop, or Remote Desktop Session Host (RDSH) scenarios, such as XenApp. Applications do not require any reconfiguration and no changes are made to user profiles.

The feature uses two actions to achieve this:

- **Manage VHD** - Mount an existing Virtual Hard Disk (VHD) or create and mount a new VHD.
- **Cache Roaming** - Redirect a user profile cache to the VHD.

The two actions can be used independently but most commonly, they will be used in together - roaming the VHD specified or created using the Manage VHD action, to the location defined in the Cache Roaming action. The actions are available on Pre-Desktop and Desktop Created triggers and automatically detach on logoff and network disconnect. This allows users to reconnect when they log on to another endpoint or start a new VDI session. VHDs can optionally be detached on session locked and session disconnected and can be added to reusable nodes for use on the compatible triggers.

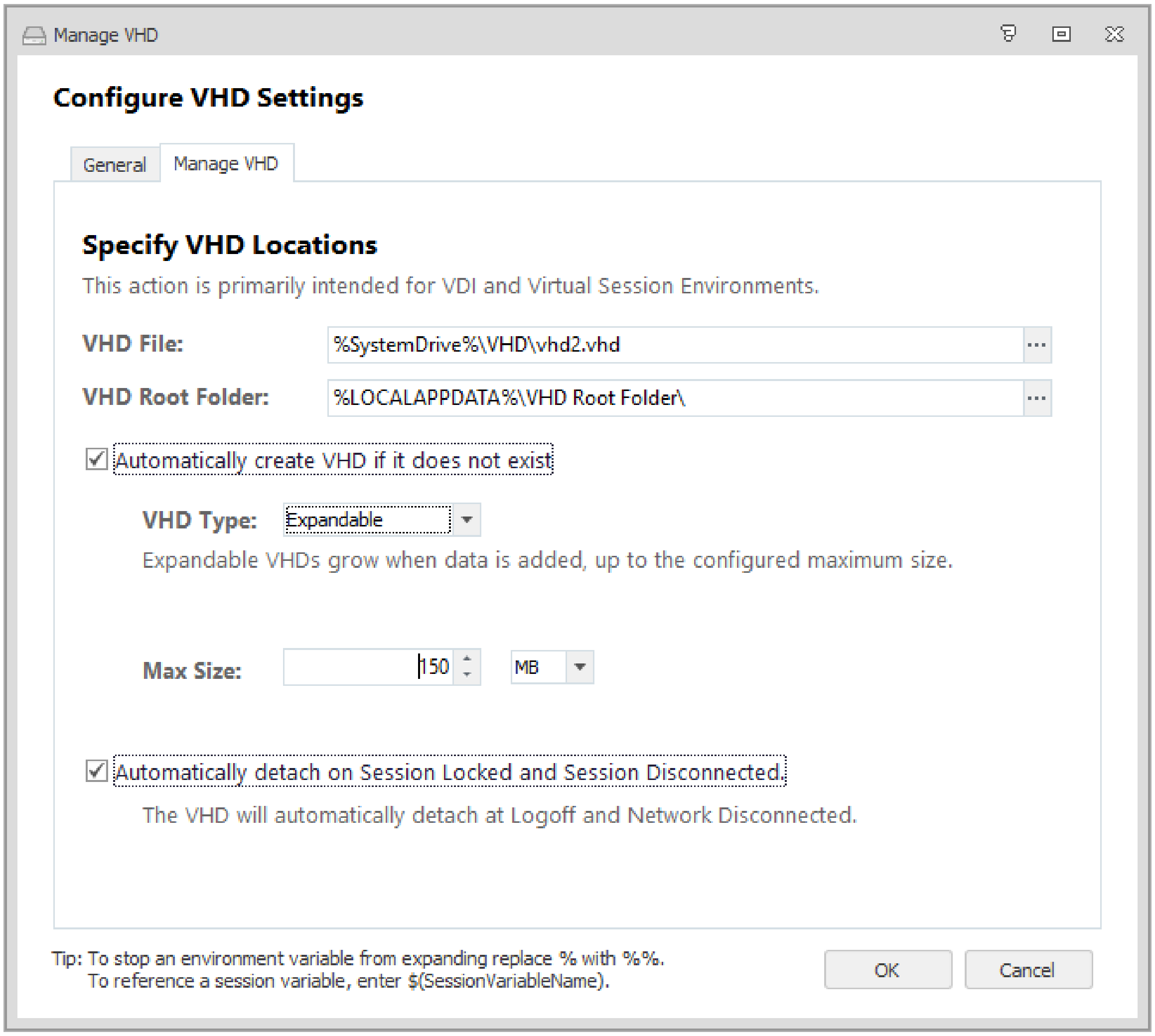
One of the main use cases for this feature is roaming Outlook OST Cache files, providing users instant access to their Office 365 mailboxes. Outlook Cached Exchange requires large OST files to remain resident within a user’s profile. In Non-Persistent VDI and RDSH environments, the profile is typically rebuilt at logon, resulting in the loss of user's OST files. Consequently, at the next logon, Outlook has limited functionality while it downloads and rebuilds the OST cache, which can be multiple gigabytes in size. Using this feature means that users with non-persistent VDI setups do not need to be in ‘Exchange Online Mode’ - they can be in ‘Cached Exchange Mode’, persisting their entire mailbox between sessions. This provides a much better user experience and can make users instantly productive following migration to Windows 10 or Office 365 migration.

In addition to Outlook OST Cache files, the Manage VHD action includes built in settings for OneDrive for Business, OneNote Cache, and Skype for Business 2016/365 Global Address List. Additionally, you can also create your own custom redirections. Example locations that would be potential candidates are areas within the user profile that are too large for synchronization via EM Personalization, but are key to providing an optimal user experience.

Manage VHD

1. Select or add a node on the Pre-Desktop or Desktop Created triggers.
2. From the Actions ribbon, select **VHD** > **Manage VHD**.

   The Manage VHD dialog displays.



Configure VHD Settings

Specify VHD Locations

This action is primarily intended for VDI and Virtual Session Environments.

VHD File: %SystemDrive%\VHD\vhd2.vhd

VHD Root Folder: %LOCALAPPDATA%\VHD Root Folder\

☑ Automatically create VHD if it does not exist

VHD Type: Expandable

Expandable VHDs grow when data is added, up to the configured maximum size.

Max Size: 150 MB

☑ Automatically detach on Session Locked and Session Disconnected.

The VHD will automatically detach at Logoff and Network Disconnected.

Tip: To stop an environment variable from expanding replace % with %%.
To reference a session variable, enter $(SessionVariableName).

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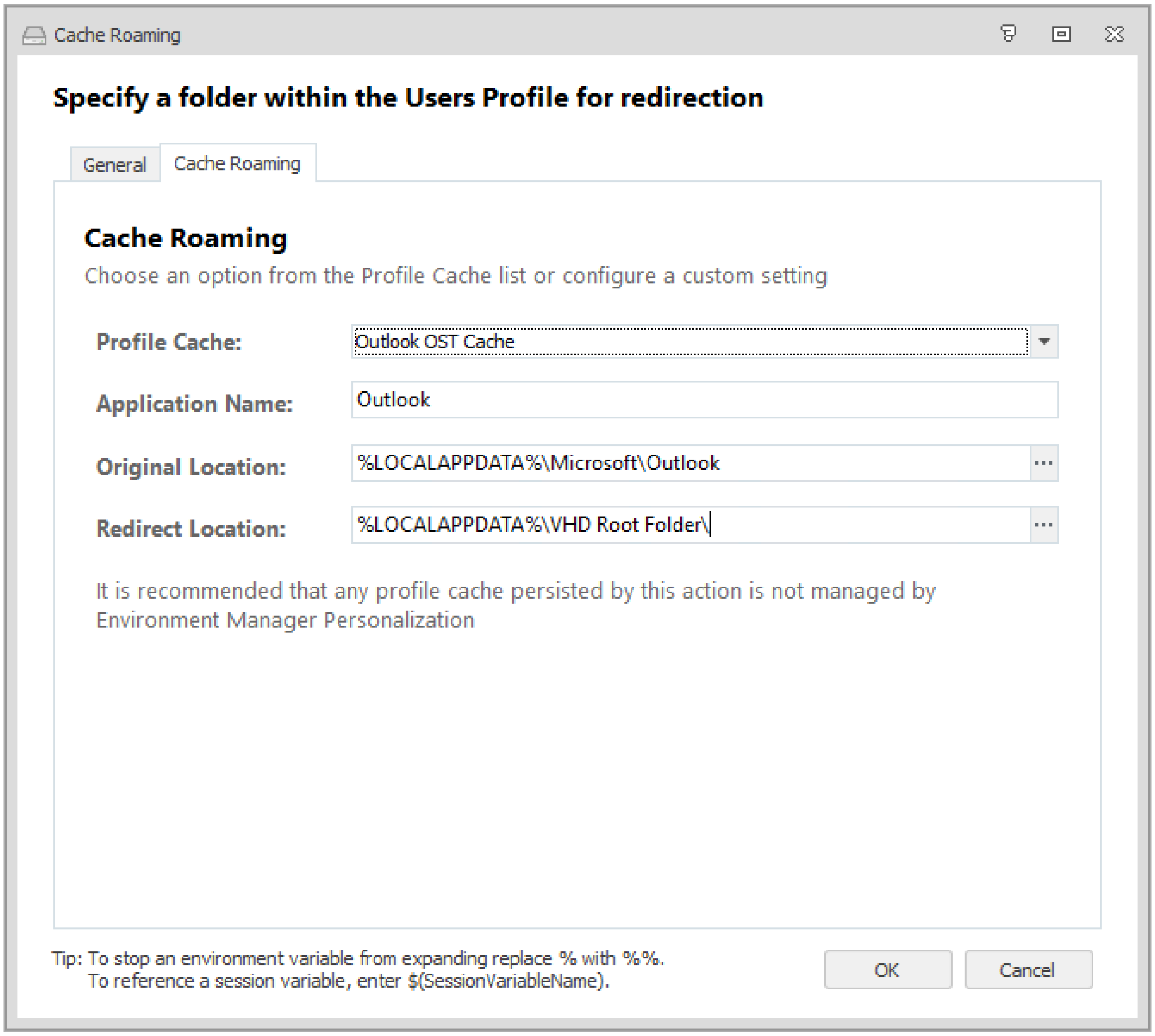
3. Complete the fields to set up the action:

Setting	Properties
VHD File	Select or enter the path and filename of the VHD to be mounted. If the VHD does not exist on an endpoint and the **Automatically create VHD if it does not exist** option is selected, a VHD will be created in accordance with the settings configured in this dialog. ⓘ VHDs should not be created on pre-existing mapped drives.
VHD Root Folder	The root directory of where the VHD will be mounted. The folder will contain the VHD contents such as Outlook PST files and can be accessed like any other folder. This enables redirected folders to be managed in a common location.
Automatically create VHD if it does not exist	If the specified VHD does not exist on an endpoint, one will be created with the settings defined in this dialog.
VHD Type	**Fixed** - The size of the disc is determined on creation - it will always be the size set in the Max Size field. This offers better performance than Expandable VHDs but can have a negative impact on logon times. **Expandable** - The size of the disc is variable and will grow to the maximum size as data is added.
Max Size	The maximum size of the VHD between 3MB and 2TB.
Automatically detach on Session Locked and Session Disconnected	VHDs automatically detach at logoff and network disconnect. Select this option to extend to session lock and disconnect.

Cache Roaming

1. Select or add a node on the Pre-Desktop or Desktop Created triggers.
2. From the Actions ribbon, select **VHD** > **Cache Roaming**.

   The Cache Roaming dialog displays.



Specify a folder within the Users Profile for redirection

Cache Roaming

Choose an option from the Profile Cache list or configure a custom setting

Profile Cache: Outlook OST Cache

Application Name: Outlook

Original Location: %LOCALAPPDATA%\Microsoft\Outlook

Redirect Location: %LOCALAPPDATA%\VHD Root Folder\

It is recommended that any profile cache persisted by this action is not managed by Environment Manager Personalization

Tip: To stop an environment variable from expanding replace % with %%.
To reference a session variable, enter $(SessionVariableName).

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3. Complete the fields to set up the action:

Setting	Properties
Profile Cache	Select a cache type from the drop-down: • Outlook OST Cache • OneDrive for Business • OneNote Cache • Skype for Business 2016/365 Global Address List Selecting on of the well-known application caches automatically populates the Application Name and Original Location fields, though these can be overwritten if required. To create custom cache settings, leave the Profile Cache option as **Select or Create New...** and complete the remaining fields as required.
Application Name	The name for the cache action that will display in the node work area. This is automatically populated if you select a Profile Cache from the drop-down but can be overwritten if required.
Original Location	The source folder of the cache files to be roamed. This is automatically populated if you select a Profile Cache from the drop-down but can be overwritten if required. This folder should not be personalized as it will cause issues when personalization attempts to capture the folder at user log off. Local, Network (including UNC paths) and DFS paths can be used and environment and session variables are supported. For this action to be successful, the specified folder must not already be present within the profile. Where the folder is present, additional actions are required within the configuration. For example, if data is required post production in a migration scenario, actions to either copy the data and delete the folder are required. Alternatively, remove the folder, allowing the action to complete successfully.
Redirect Location	The folder to which the cache is redirected to. If using with a VHD manage action, this should be the path used in the VHD Route Folder. Local, Network (including UNC paths) and DFS paths can be used and environment and session variables are supported.

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Tools and Wizards

Policy Templates

Policy Templates enable partial configurations, saved as XML files, to be exported and imported to other configurations. Rather than export an entire configuration, Policy Templates enable them to be broken down by trigger or individual node and used as required. Exporting at trigger level saves all the nodes in that trigger and when imported, each of those nodes is added to the selected trigger.

Any node or the contents of any trigger can be exported and imported. A reusable node imported into a trigger is also created in the Reusable Nodes Library. Similarly, any reusable condition imported as part of a node, is created in the Reusable Conditions Library. Templates created at trigger level can be imported to a node and to reusable nodes.

Some conditions and actions are not compatible with all triggers but can still be imported into those triggers. In these cases, although added to the trigger, the condition or action will not function. On import, a message box displays showing the path of the incompatible action or condition.

Export a Policy Template

1. In the Policy Configuration navigation tree, select the node or trigger from which you want to create a template.
2. In the Tools & Wizards ribbon, select **AppSense Policy Template** > **Export Template**.

   A browser dialog displays.
3. Navigate to a location to save the template.
4. Click **Save**.

The template is saved in the selected location and can be imported into the Environment Manager console.

Import a Policy Template

1. In the Policy Configuration navigation tree, select a node or trigger to which you want to add the partial configuration.
2. In the Tools & Wizards ribbon, select **AppSense Policy Template > Import Template**.

   A browser dialog displays.
3. Navigate to, and select the XML template file.
4. Click **Open**.

The nodes in the template are added to the selected trigger or node. Any reusable nodes and/or reusable conditions created as part of the import are added to the appropriate reusable Library.

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Configuration Profiler

The Configuration Profiler allows reports to be created which interrogate the local loaded configuration in the console.

General reports can be produced which deliver a comprehensive record of the whole configuration, providing full details of each action and condition.

Reports can also be created which are refined based on condition values. For example, a report could be run showing all the areas of the configuration which relate to a particular user group.

Once created, reports can be manipulated to change display attributes, such as page orientation and watermarks. Reports can also be output for PDF, image and email formats.

Create a Configuration Profiler Report

1. Select the Policy Configuration navigation button.
2. In the Tools & Wizards tab, select **Configuration Profiler** to display the Configuration Profiler dialog.
3. Select the required report type by selecting the appropriate radio button:
    - **Complete Report** (go to step 6)
    - **Report based on specific criteria**
4. From the **Report Criteria** list, click the **Enter value to match** field for the required criteria.
5. Enter a value for the criterion to report on. For example, entering a value of "Users1" for the **Computer Group** criteria produces a report containing only those elements with a reference to the Users1 computer group.
6. Repeat steps **3** and **4** to add further criteria.

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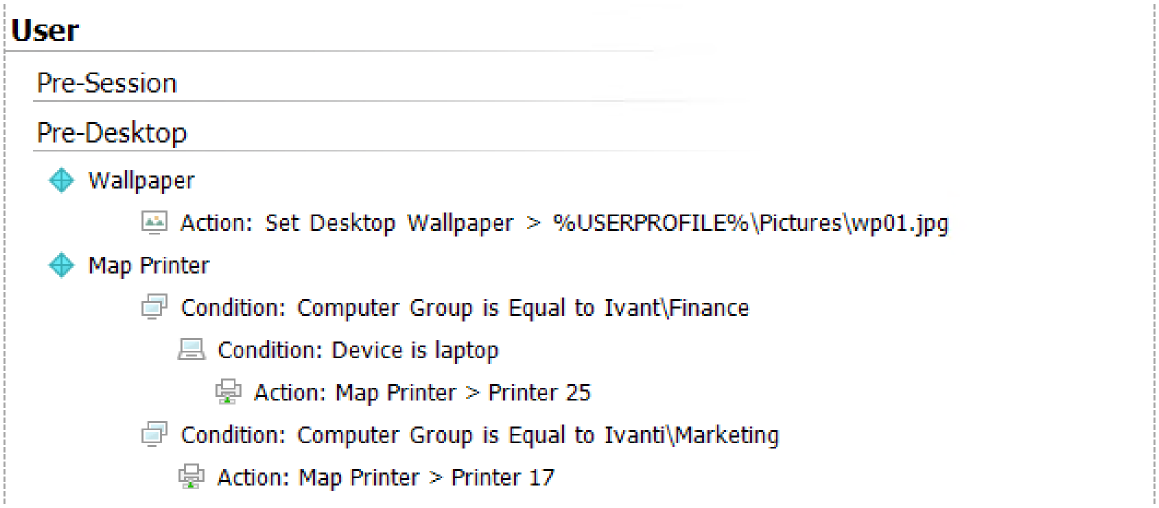
7. Using the **Create indented report** checkbox, choose a report display. If selected, the layout of the report is based upon the Policy Configuration navigation tree. Each node, condition and action is at the same hierarchical level as in the navigation tree.



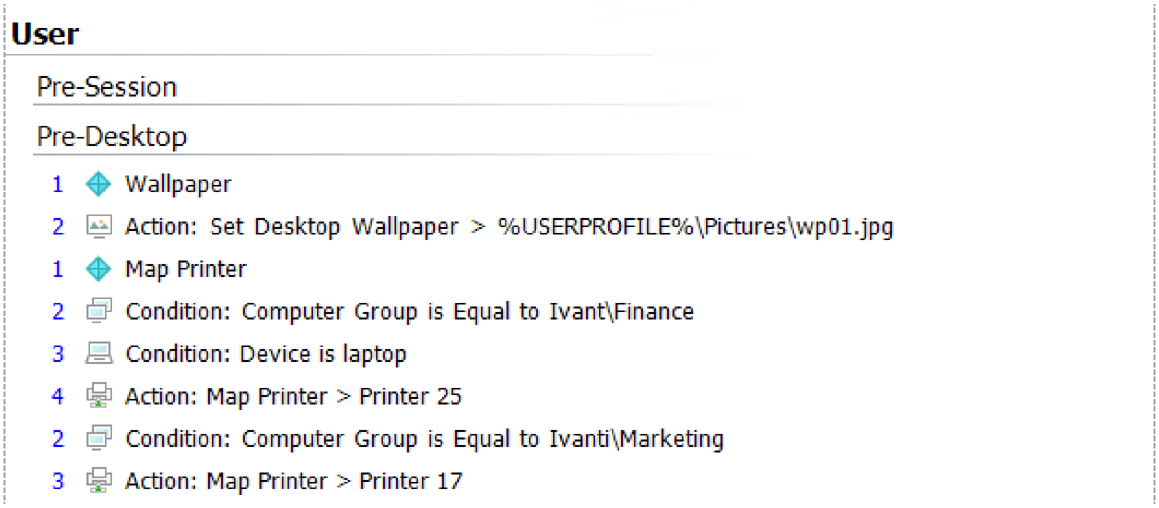
User

Pre-Session

Pre-Desktop

- Wallpaper
  - Action: Set Desktop Wallpaper > %USERPROFILE%\Pictures\wp01.jpg
- Map Printer
  - Condition: Computer Group is Equal to Ivant\Finance
    - Condition: Device is laptop
      - Action: Map Printer > Printer 25
  - Condition: Computer Group is Equal to Ivanti\Marketing
    - Action: Map Printer > Printer 17

If not selected, the report is flat with all items at the same level. The position in the hierarchy is shown by a preceding blue number; level 1 being top of the hierarchy.



User

Pre-Session

Pre-Desktop

1 Wallpaper
2 Action: Set Desktop Wallpaper > %USERPROFILE%\Pictures\wp01.jpg
1 Map Printer
2 Condition: Computer Group is Equal to Ivant\Finance
3 Condition: Device is laptop
4 Action: Map Printer > Printer 25
2 Condition: Computer Group is Equal to Ivanti\Marketing
3 Action: Map Printer > Printer 17

8. Click **OK** to run the report.
9. The report is generated and displayed in a document viewer within Environment Manager.

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10. Within the document viewer, the following options are available:
    - **Search** - Find specific text within the report
    - **Save** - Saves the report in a PRNX file
    - **Print** - Send the report to a printer
    - **Page Setup** - Define the margins and orientation of the report
    - **Color** - Change the color of the report background
    - **Watermark** - Define and add a watermark to the report
    - **Export Document** - Save the report as a PDF document or as an image file
    - **Send via Email** - Save the reports as a PDF or image file and attach to an email

Group SID Refresh

The Group SID Refresh option allows you to replace group and user domain names in a configuration and refresh Security Identifier (SID) values in membership conditions.

This is useful when working across multiple environments where the SIDs are of different values. For example, if you have been working in a test environment and want to move to a live environment, the SID values in each environment will be different. Using the Group SID Refresh function, the SIDs in the configuration can be quickly updated to match those in the live environment. In addition to refreshing the SIDs, user and group domain names can be replaced in the configuration so they are correct for the live environment.

Refresh SIDs

1. Select the Policy Configuration navigation button.
2. In the Tools & Wizards tab, select **Group SID Refresh**.
3. In the Find what field, enter a domain name or group query string.
4. Select the **Update SID only** checkbox as required:
    - If selected, the SIDs in relevant conditions are updated in the configuration
    - If not selected the Replace with field is enabled. In addition to the SIDs being refreshed, domain names are changed to the value specified. Find options can be set for matching case and whole words.
5. Click **OK**.

The SIDs for any matching domain are updated in the configuration

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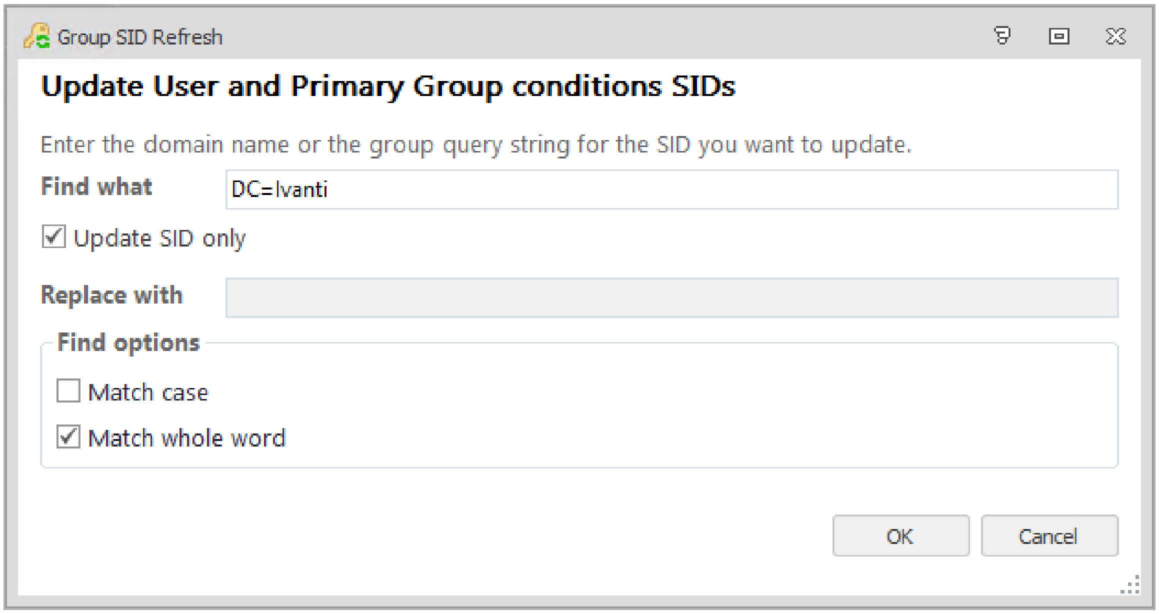
Example - Update SID Only



Update User and Primary Group conditions SIDs

Enter the domain name or the group query string for the SID you want to update.

Find what: DC=Ivanti

☑ Update SID only

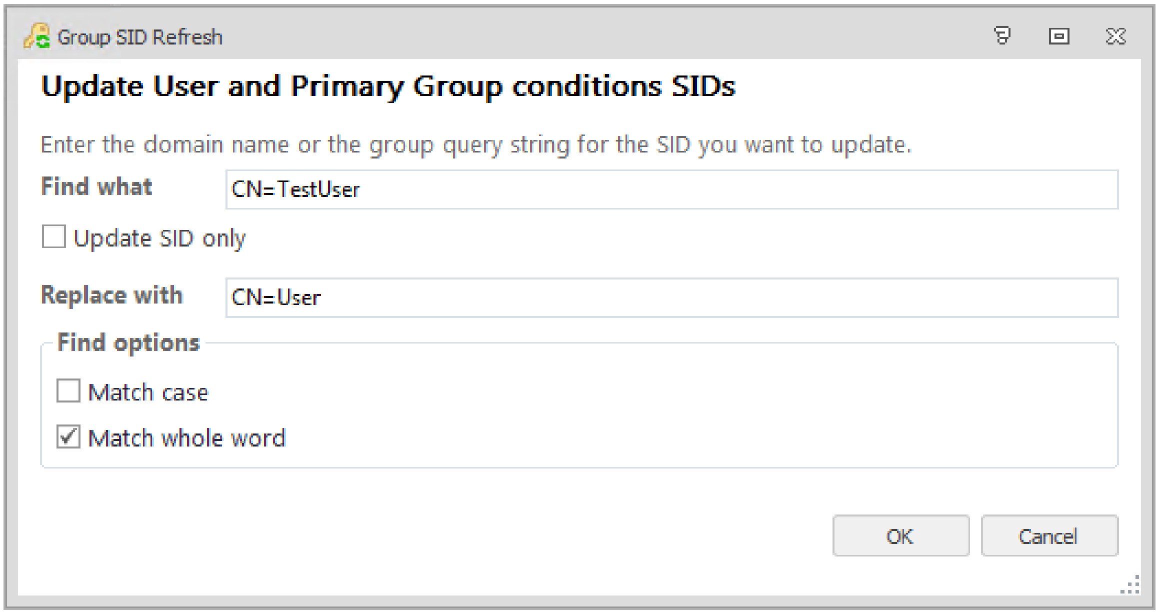
Replace with:

Find options

☐ Match case

☑ Match whole word

Example - Replace



Update User and Primary Group conditions SIDs

Enter the domain name or the group query string for the SID you want to update.

Find what: CN=TestUser

☐ Update SID only

Replace with: CN=User

Find options

☐ Match case

☑ Match whole word

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Lockdown Management

Lockdown is a mechanism to restrict or disable access to application and operating system functionality, keyboard shortcuts and Microsoft Office application menus, toolbars and ribbons. By applying conditions to triggers, user actions and application usage can be controlled. For example:

Prevent users deleting browsing history using Internet Explorer Settings

- Stop users from changing network settings
- Lockdown shortcut keys, such as Print Screen
- Lockdown actions can only be applied to nodes within User triggers and are not available for Computer triggers.

Using a combination of settings an overall policy of computer usage within an organization can be defined to ensure computers are used appropriately and systems are not compromised.

The functionality is accessed from the Tools & Wizards ribbon or from the work area shortcut menu.

Create a Lockdown Using the General Wizard

1. Open the application which you want to lockdown and navigate to the item you want to block. For example, to lockdown the security options in Internet Explorer, open the Internet Options dialog.
2. In the Environment Manager console, select the **Policy Configuration** navigation button.
3. In one of the User triggers, create a new node or select an existing node to which you want to add the lockdown action.
4. In the Tools & Wizards ribbon Lockdown group, select **General Wizard**.
5. In the **General** tab, enter a name and optional description for the lockdown.
6. In the **Lockdown** tab click and hold the **Spy Tool** button.

   ⌖

   The Environment Manager console is minimized exposing the open application.
7. Drag the cursor onto the control in the application requiring lockdown. A red border indicates the control selected and the available lockdown options are displayed.
8. Release the mouse button to select.

Control returns to the Environment Manager console, enabling options for the lockdown to be defined. When the configuration is deployed to users, the lockdown is applied.

There are different control types for lockdown relating to various application and operating system functionality. Each control type has different characteristics and settings. See General Wizard.

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Configure an Edit or Combo Box Control Lockdown

1. Use the Spy Tool in the General Wizard to select an Edit or Combo Box control.
2. Select **edit control filtered**.
3. In the **General** tab of the **Edit Control** dialog box, give the lockdown a Description and add any optional Notes.
4. Select the **Lockdown** tab.
5. Select a message which will display when the lockdown is breached. Existing messages can be added from the drop-down list or new messages created by clicking the ellipsis (...).
6. Click **Add** to configure block text libraries.
7. Click **OK** to save.

To set up Block Text and Blocked Message libraries, see Message Libraries.

Keyboard Wizard

The Keyboard Wizard prevents keys or a combination of keys, being used on the keyboards of managed computers. The keys can be locked down across the whole computer or restricted to certain applications.

1. Select the **Policy Configuration** navigation button.
2. In one of the User nodes, create a new node or select an existing node to which you want to add the lockdown.
3. In the Tools & Wizards ribbon Lockdown group, select **Keyboard Wizard**.
4. The Keyboard Lockdown dialog displays.
5. Configure the following information:
   - The key or combination of keys to be locked down - with the cursor in the first field, press the key or combination of keys to be locked down.
   - Define whether left and right versions of the same key are treated independently - select the checkbox to identify the keys separately. For example, **Left Ctrl** and **Right Ctrl**.
   - Select a radio button to control whether the lockdown should apply to **All Applications** or a **Selected Application**. Use the ellipsis (**...**) to browse to the application or drag-and-drop the spy tool onto the required application.
6. Click **OK**.

The key or key combination is disabled as defined once the configuration is saved and deployed.

Office Wizard

The Office Wizard is used to lockdown specific Microsoft Office functions. Toolbar, menu and ribbon items can be disabled in Microsoft Office applications.

1. Select the **Policy Configuration** navigation button.
2. In one of the User nodes, create a new node or select an existing node to which you want to add the lockdown.
3. In the Tools & Wizards ribbon Lockdown group, select **Office Wizard**.
4. Click **Next** in the **Welcome** screen. All supported, installed Microsoft Office applications are listed.
5. Select the application you want to lockdown and click **Next** to open the application and display a list of all menu options.
6. Select the menu items you want to disable. Use the search facility to find specific items.
7. Click **Next** to display a list of Toolbar or Ribbon items.
8. Select the Toolbar or Ribbon options which you want to disable. A search facility is available to find specific options.
9. Once all Menu and Toolbar or Ribbon items for lockdown have been selected, click **Next**. The Summary screen displays details of the number of controls selected for lockdown.
10. Select the **Do not apply lockdown settings permanently** checkbox as required.

Lockdown General Wizard

The General Wizard allows you to block or remove Windows objects in the operating system and application interfaces. The wizard uses a drag-and-drop Spy tool to identify objects for lockdown.

The Environment Manager agent blocks or removes controls based on the basic attributes of standard window controls

Control	Description
Process Name	The executable for the application to which the lockdown relates.
Control Text	The text displayed by a Windows control, where relevant. For example, if you are locking down a button, the control text will be whatever is written on that button. For example, the control text for a Save as button will be Save as. For checkboxes, the control text is the associated label.
Parent Text	The text associated with the parent window of the Windows control and appears in the header text of a dialog box. If you are locking down the OK button in a Font dialog box, the parent text will be Font.
Control ID	The ID assigned and used to identify a Windows control. The ID is common between applications. For example, the Cancel button in the Save as dialog in Microsoft Word has a Control ID of 2, as does the same button in the Save as dialog box of Application Control. The Cancel button in the Print dialog box in Notepad also has a Control ID of 2.

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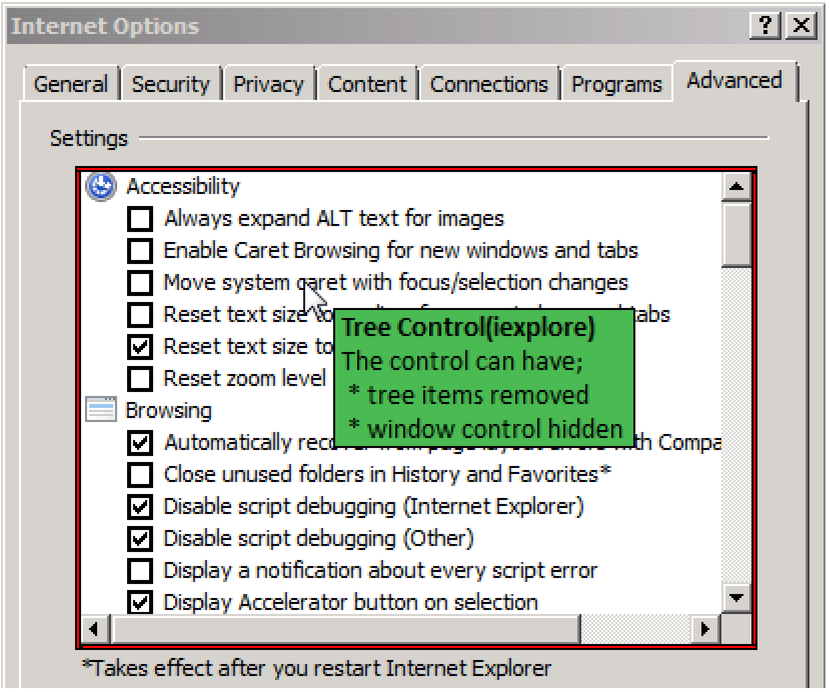
Control	Description
Class Name	The specific type or class to which a Windows control belongs, class such as Edit, Button or SysListView32.
MSAA Type	Application or operating system element types used for Microsoft Active Accessibility. Each element type has a name and numerical identifier. For example, Scroll Bar (3) and Radio Button (45).
Window Style	The Microsoft Windows Style reference number for the object. As with the Control ID, this reference is common to the same objects in different applications.

When a control has been selected using the Spy tool, the controls are displayed in the General Wizard dialog box. The Window Controls captured depend on the control or type of control selected.

There are different control types for lockdown relating to various application and operating system functionality, for example, Tree Control and Window Control. Each control type has different characteristics and settings.

Some applications, such as Adobe Reader, use custom controls which might not be recognized by the Spy tool. These controls cannot be locked down by Environment Manager.

Tree Control



Accessibility

- □ Always expand ALT text for images
- □ Enable Caret Browsing for new windows and tabs
- □ Move system caret with focus/selection changes
- □ Reset text size to ... tabs
- ☑ Reset text size to
- □ Reset zoom level

Browsing

- ☑ Automatically rec... th Compa
- □ Close unused folders in History and Favorites*
- ☑ Disable script debugging (Internet Explorer)
- ☑ Disable script debugging (Other)
- □ Display a notification about every script error
- ☑ Display Accelerator button on selection

Tree Control(iexplore)
The control can have;
* tree items removed
* window control hidden

*Takes effect after you restart Internet Explorer

Relates to hierarchical structures such as the folder structure in Windows Explorer Advanced Internet Options.

Two methods of lockdown can be applied:

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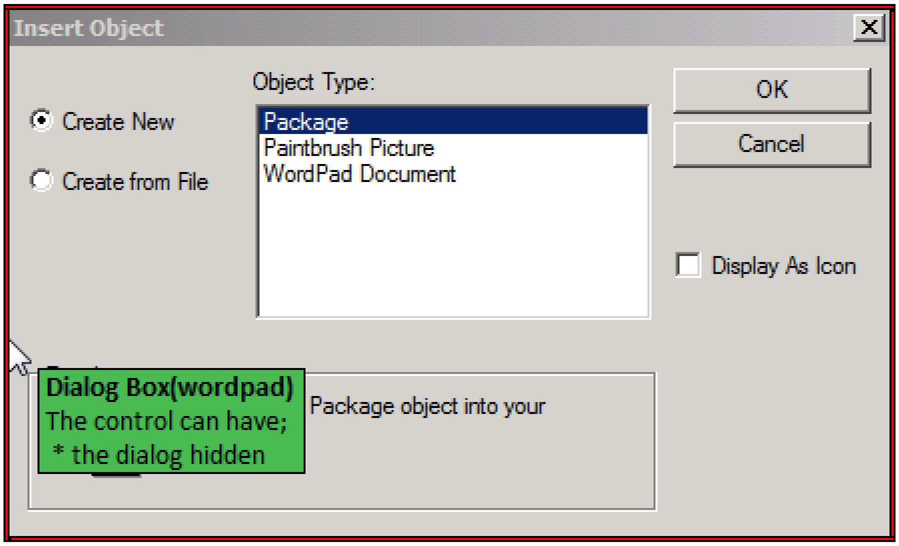
- **Tree items removed** - A dialog box lists each node in the tree. By selecting the appropriate checkbox, nodes are removed from the tree in the application, when the configuration is deployed.

> Removing some list items can cause undefined behavior in applications.
> Ensure that any item removed does not disable functionality which is vital to the running of the application.

- **Window control hidden** - The entire window control containing the tree is removed from view.

Dialog Box

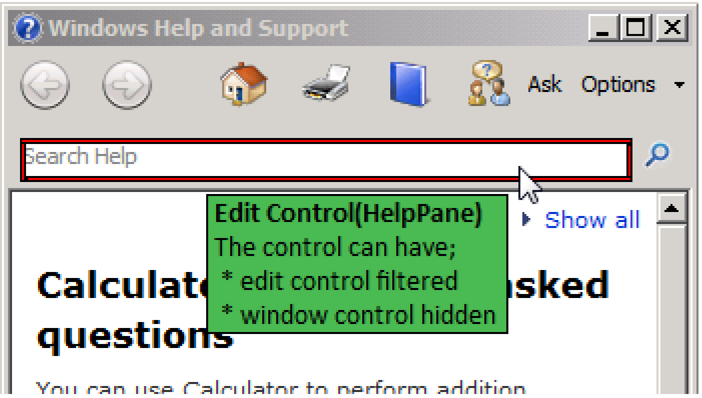


Dialog Box(wordpad)
The control can have;
* the dialog hidden

Relates to windows which open separate to the application such as the **Insert Object** dialog box in WordPad.

When the **dialog hidden** lockdown is applied, the dialog does not display. The relating menu option appears but its use is redundant.

Edit Control



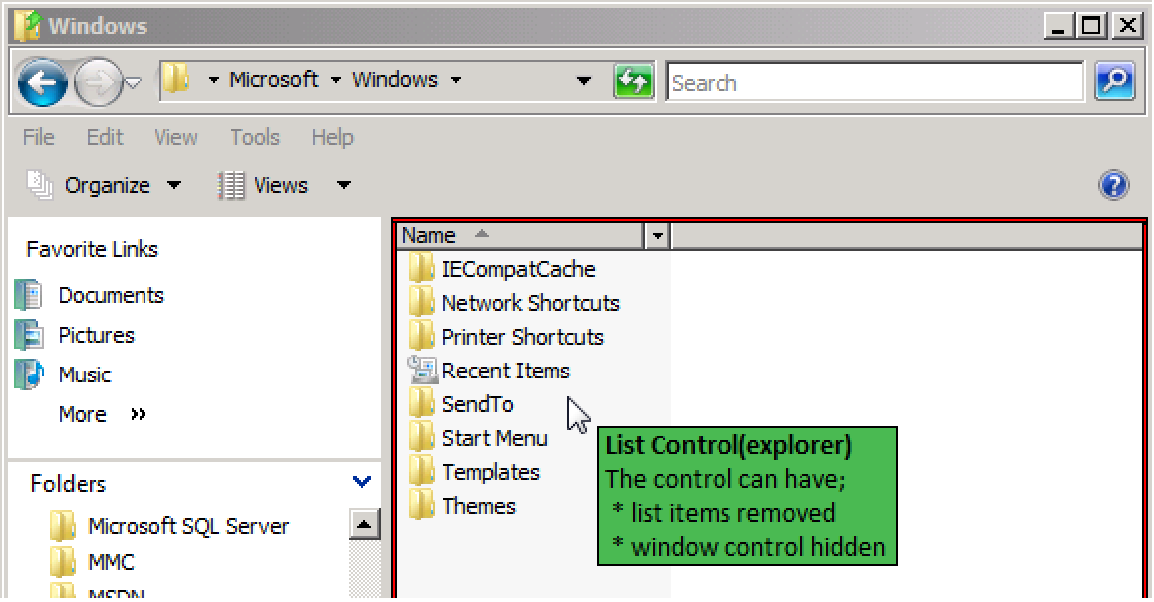
Edit Control(HelpPane)
The control can have;
* edit control filtered
* window control hidden

Relates to fields in which text can be entered such as the **Search** field in help systems. Whole fields can be locked-down or individual words can be prohibited and/or replaced with appropriate information messages displayed to users.

Two methods of lockdown can be applied:

- **Edit control filtered** - Block or replace specified words and phrases and define warning box content
- **Window control hidden** - The whole field is removed from view

List Control



List Control(explorer)
The control can have;
* list items removed
* window control hidden

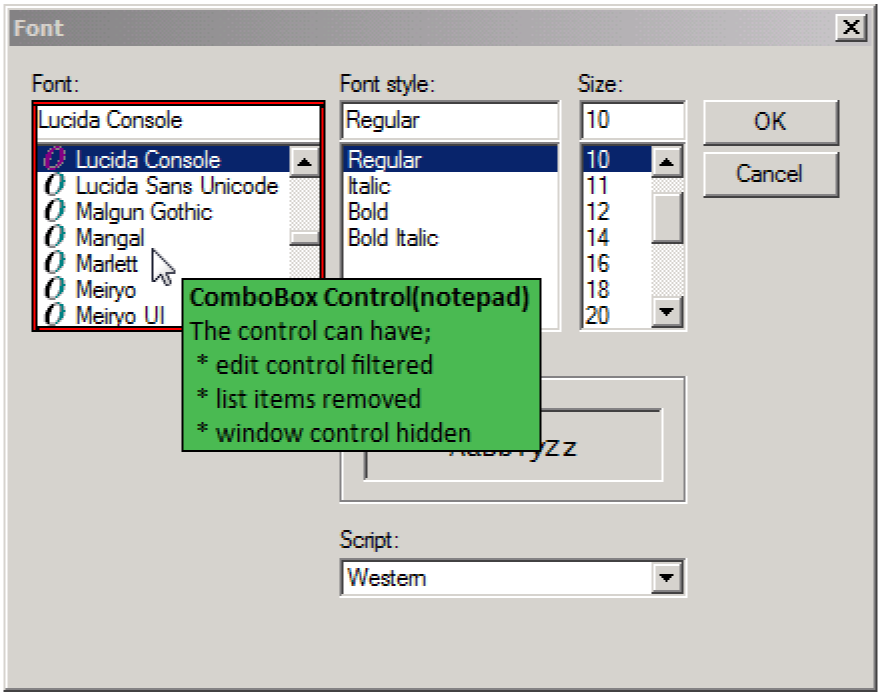
Relates to any list of items such as Internet Explorer Security Settings or a list of files and folders in the main window of Windows Explorer. List control also relates to the Desktop enabling icons to be locked down.

- **List items removed** - A dialog lists each item in the list. By selecting the appropriate checkbox, nodes are removed from the tree in the application.

  Removing some list items can cause undefined behavior in applications. Ensure that any item removed does not disable functionality which is vital to the running of the application.

- **Window control hidden** - The entire window control containing the list is removed from view.

Combo Box Control



ComboBox Control(notepad)
The control can have;
* edit control filtered
* list items removed
* window control hidden

Relates to list boxes which allow text to be entered to assist navigation. For example the Font combo box in Notepad. Enter text in the field and the list automatically displays fonts matching the entered text.

- **Edit control filtered** - Block or replace specified words and phrases and define warning box content.
- **List items removed** - A dialog lists each item in the combo box. By selecting the appropriate checkbox, items are removed from the box in the application.

  Removing some list items can cause undefined behavior in applications. Ensure that any item removed does not disable functionality which is vital to the running of the application.
- **Window control hidden** - The entire combo box control is removed from view.

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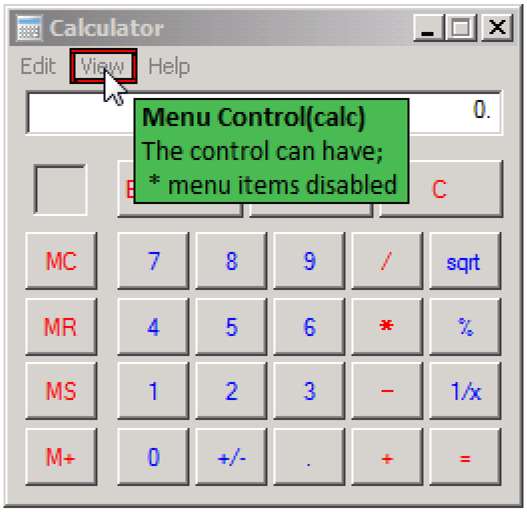
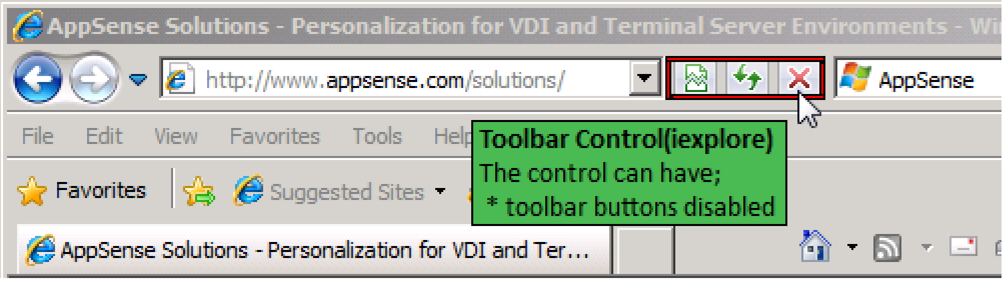
Menu Control



Relates to application menus such as **File**, **Edit** and **View**. Drag the cursor onto a specific menu or highlight the menu bar to select all menus.

A dialog box lists each menu selected and their available options. Lockdown an entire menu or select individual menu options. Menus and option are displayed but do not function.

Toolbar Control


AppSense Solutions - Personalization for VDI and Terminal Server Environments - Wi
http://www.appsense.com/solutions/
AppSense
File
Edit
View
Favorites
Tools
Help
Toolbar Control(iexplore)
The control can have;
* toolbar buttons disabled
Favorites
Suggested Sites
AppSense Solutions - Personalization for VDI and Ter...

Relates to toolbars and toolbar options in applications such as any of the selected toolbars in Internet Explorer or the **Back** button.

A dialog box lists each option or icon in the toolbar. The whole toolbar can be locked down or individual options disabled. Locked down options are visible but do not function.

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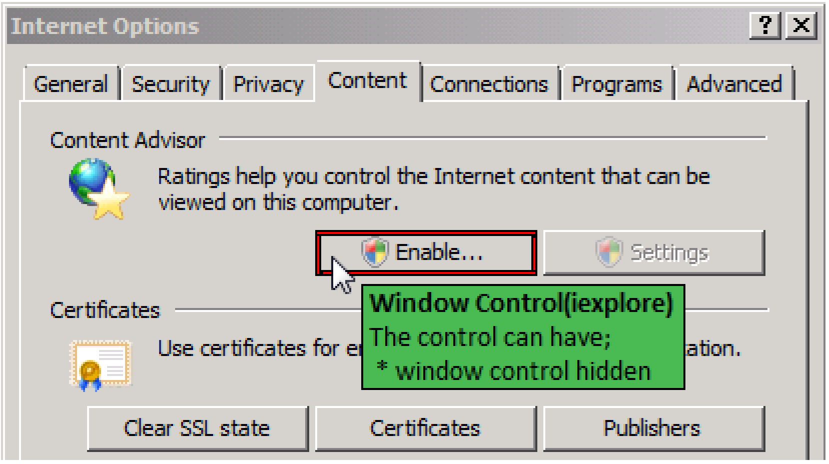
Window Control



Ratings help you control the Internet content that can be viewed on this computer.

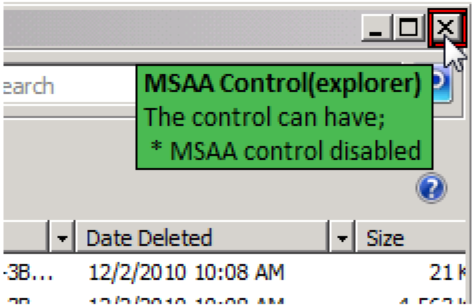
Use certificates for e ation.

Window Control(iexplore)
The control can have;
* window control hidden

Relates to Windows elements such as buttons, check boxes and radio buttons. Window Control can also be applied to static items such as text and icons.

Applying the window control hidden lockdown to an element of a window, removes the option entirely. In the screen graphic above, when the configuration is saved and deployed, the Enable button will not appear.

MSAA Control



MSAA Control(explorer)
The control can have;
* MSAA control disabled

Relates to Microsoft Active Accessibility (MSAA) technology which is designed to help Assistive Technology products interact with standard and custom user interface elements of an application. This control locks down various application elements such as hyper links and Windows maximize and minimize buttons.

MSAA control disabled items are disabled but still visible to the user.

Message Libraries

Blocked Text Library

Blocked text allows you to configure a list of words or expressions which will be used to delete or replace text entered into Edit and Combo controls. The Blocked Text Library controls the behavior for any words which are added to it.

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The message libraries are used and can be configured when using the General Wizard to create a Combo Box or Edit Control type lockdown, with the **edit control filtered** lockdown option.

User Messages

Messages can be configured so that they display when a user attempts to select an option or other application element, which has been locked down. User-defined messages can be set to display for Edit, Combo Box and certain MSAA controls.

Apply a message to a lockdown by selecting one from the Message drop-down in the appropriate Edit Control dialog box.

The Blocked Message Library includes a default Logoff Message. The message displays when the logoff process is delayed due to the Environment Manager Agent completing actions.

The message can be customized by overwriting the text in the **Message** box. The **Title** must not be altered from Logoff Message.

To disable the Logoff message, delete the Message text and the message box will not be displayed.

Configure the Blocked Text Library

1. Select the **Policy Configuration** navigation button.
2. In the Tools & Wizards ribbon Lockdown group, select **Blocked Text Library**.

   ⓘ The Blocked Text Library can also be configured when creating Edit and Combo Box controls by following this procedure.

   The **Text List** sets the behavior for the **Text Items** within.
3. Select **Add > Add Blocked Text List**
4. Enter a Description for the Text List.
5. Select a behavior:
   - **Use regular expressions** - Use wildcards to define the blocked text. See Wildcards and Regular Expressions . Some programs do not support the ^ when used at the start of regular expressions.
   - **Remove all text if blocked** - Removes or replaces all text in the field when blocked text is entered.
   - **Remove blocked text** - Removes or replaces only the blocked text item from the field. Unblocked text is unaffected.
6. In the **Replace With** field, enter the text you want to replace the blocked text with. If no alternative text is specified, the blocked text will be deleted.
7. Select the **Block Drive Letter** checkbox if required. This blocks any drive names (e.g. C:) which have been disallowed by group policy from being entered in the selected edit control or combo box.

   Once the Text List has been defined, the Blocked Text Items (the words or phrases you want to prohibit) must be added.

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8. Click **Add > Add Blocked Text Item**.
9. Enter a word or phrase to be blocked.
10. Repeat steps **7** and **8** to add more text items.
11. Click **OK** to close the library.

The library is then used when enforcing Combo Box or Edit Control lockdowns to delete or replace the word or words listed.

Configure User Messages

1. Select the **Policy Configuration** navigation button.
2. In the Tools & Wizards ribbon Lockdown group, select **User Messages**.

   > ℹ The Blocked Text Library can also be configured when creating Edit and Combo Box controls by following this procedure.

3. Click **Add** to create a new message with the following elements:
   - **Title** - A name for the message, displayed in the library and when configuring messages for controls.
   - **Caption** - The text used in the header of the message.
   - **Message** - The body of the message.
4. Click **OK** to add the message. It can now be used when configuring Lockdown actions.

App-V 4.x Wizard

The App-V 4.x Wizard guides you through the steps required to extend an Open Software Description (OSD) file.

> ℹ The wizard is not compatible with App-V 5.

An OSD file is generated by App-V to define how an application is launched and configured. The App-V action is designed to extend the capabilities of application delivery offered by Microsoft App-V. It can be used to manipulate an OSD configuration file for an App-V sequenced application to configure associated settings including environment variables, registry keys, pre and post launch scripts and policies.

This allows the App-V delivered application to be tailored based on how or where the user is accessing the streamed application.

The following OSD script types are supported:

- JScript
- Batch
- Perl
- HREF

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The wizard guides you through the steps required to roll out an App-V Streamed Application to managed endpoints:

- Select Source OSD
- Update OSD Details
- OSD Target File Location
- Summary