



# ZENworks 2020 Update 1

## Software Distribution Reference

June 2020

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# About This Guide

This *ZENworks Software Distribution Reference* includes conceptual and task-based information to help you effectively manage software distribution in your ZENworks system.

## **Audience**

This guide is intended for ZENworks administrators.

## **Feedback**

We want to hear your comments and suggestions about this manual and the other documentation included with this product. Please use the User Comments feature at the bottom of each page of the online documentation.

## **Additional Documentation**

ZENworks is supported by other documentation (in both PDF and HTML formats) that you can use to learn about and implement the product. For additional documentation, see the [ZENworks documentation Web site](#).



# 1 Basic Concepts

ZENworks provides great flexibility in distributing software. You can distribute applications and individual files, or simply make modifications to existing files on a device.

The following sections contain additional information that is important as you begin creating and managing bundles to distribute software:

- ♦ [Section 1.1, “Bundles,” on page 13](#)
- ♦ [Section 1.2, “Bundle Group,” on page 14](#)
- ♦ [Section 1.3, “Folder,” on page 14](#)
- ♦ [Section 1.4, “Actions,” on page 14](#)
- ♦ [Section 1.5, “Action Sets,” on page 15](#)
- ♦ [Section 1.6, “License Tracking,” on page 19](#)
- ♦ [Section 1.7, “Assigning Bundles,” on page 20](#)
- ♦ [Section 1.8, “Packaging Considerations,” on page 20](#)
- ♦ [Section 1.9, “Content,” on page 22](#)

## 1.1 Bundles

Bundles are used to configure and manage applications and to distribute software. A bundle consists of all the files, configuration settings, installation instructions, and so forth required to deploy and manage the application or files on a device.

Bundles are categorized into various types based on the device operating system and the functionality required.

You can use ZENworks Control Center or the zman command line utility to create the following bundles:

- ♦ **Linux Bundle:** Allows you to configure and manage applications on Linux devices.
- ♦ **Linux Dependency Bundle:** Allows the software packages to be available on Linux devices to resolve package dependencies.
- ♦ **Macintosh Bundle:** Allows you to configure and manage applications on Macintosh devices.
- ♦ **Preboot Bundle:** Allows you to perform a set of tasks on a managed or unmanaged device before the operating system boots up on the device.
- ♦ **Windows Bundle:** Allows you to configure and manage applications on Windows devices.
- ♦ **iOS Bundle:** Allows you to configure and manage applications on iOS devices.
- ♦ **Corporate Bundle:** Allows you to distribute corporate resources such as Wi-Fi settings to mobile devices.

ZENworks also supports the following bundles:

- ♦ **Patch Bundle:** Allows you to deploy the patches on Windows devices. This bundle type is created by the ZENworks Patch Management product.
- ♦ **Linux Patch Bundle:** Allows you to deploy the patches on Linux devices. This bundle type is created by the ZENworks Patch Management product.

To create a software bundle, you use the Create New Bundle Wizard in ZENworks Control Center or you use the zman command line utility. For more information on using ZENworks Control Center, see [Chapter 2, “Creating Bundles,” on page 23](#) and for information on using the zman command line utility, see [“Bundle Commands” in the ZENworks Command Line Utilities Reference](#).

The sections in this guide provide conceptual and task-based information to help you effectively manage software distribution in your ZENworks system. You can also use the Online Help system for information about creating bundles.

## 1.2 Bundle Group

A bundle group lets you logically group the bundles. You can add bundles as members of a bundle group. Creating bundle groups eases administration efforts by letting you assign the group, rather than each individual bundle, to devices and users. For more information on bundle groups, see [Chapter 4, “Managing Bundle Groups,” on page 57](#).

## 1.3 Folder

A folder is an organizational object. You can use folders to structure your bundles and bundle groups into a manageable hierarchy. For example, you might want a folder for each type of bundle (Linux Bundles folder, Windows Bundles folder, Preboot Bundles folder, and so forth). Or, if applications are department- specific, you might want a folder for each department (Accounting Department folder, Payroll Department folder, and so forth).

## 1.4 Actions

An action is a part of an activity that is carried out during application management. Actions enable you to perform tasks such as copying files, creating directories, and installing files on managed devices. For more information, see [“Actions” on page 65](#).

**To Create an action during the bundle creation process:** In the Bundle Creation Wizard, select the bundle category based on the action that you want to add to the bundle. For more information, see [“Creating Bundles” on page 23](#).

**To Create an action after a bundle is created:**

- 1 On the Bundles page, click the **Actions** tab
- 2 Click the relevant action set tab (Distribute, Install, Launch, Repair, Uninstall, Terminate, or Preboot).
- 3 Click the **Add** drop-down list, and then select the action you want. For more information, see [“Actions” on page 65](#)

## 1.5 Action Sets

Action sets help users manage the application, based on the operations performed during application lifecycle management. You can group actions under various action sets.

The Actions panel displays the action sets available for the selected bundle. You can use the following action sets, based on the bundle type:

- ♦ [Section 1.5.1, “Distribute,” on page 15](#)
- ♦ [Section 1.5.2, “Install,” on page 15](#)
- ♦ [Section 1.5.3, “Launch,” on page 16](#)
- ♦ [Section 1.5.4, “Repair,” on page 17](#)
- ♦ [Section 1.5.5, “Uninstall,” on page 17](#)
- ♦ [Section 1.5.6, “Terminate,” on page 19](#)
- ♦ [Section 1.5.7, “Preboot,” on page 19](#)

The Distribution, Install, and Launch action sets run in sequence, when a bundle runs. The order of execution is as follows: Distribute, Install and Launch. The Repair, Uninstall, and Terminate action sets are performed based on user requests through bundle options.

### 1.5.1 Distribute

The Distribute action set distributes the content associated with all bundle actions. Within this action set, the default action of **Distribute Files** distributes the content. The actions that can have content are Install MSI, Install MSP, Install RPM, Install Files, Install Directory, and Run Script.

You can add actions to this action set, in addition to the default action of **Distribute Files**. The added actions are executed only after the default action is executed.

When you create or modify a bundle, you can click **Add** on the Distribute page to configure actions to be performed after the distribution of content. Some of the available actions include Launch Executable, Launch Java Application, Prompt User, and Run Script.

The distribution of the content for each assignment is managed through the distribution . For information about the distribution , see [Step 5 on page 176](#).

### 1.5.2 Install

The Install action set installs the application associated with the bundle. When you create or modify a bundle, you can click **Add** on the Install page to configure actions associated with the installation activities of an application. Some of the frequently used actions associated with installation activities include Install MSI, Install MSIX, Install MSP, Install Network MSI, Install Network MSIX, Launch Executable, Run Script, and Install RPM.

Some of the additional actions you can use during installation include Install Files, Install Directory, Registry Edit, Edit INI File, Edit Text File, Start/Stop Service, End Process, and Reboot/Shutdown.

For more information about the Install actions, see [Chapter 6, “Actions,” on page 65](#).

## Install Options

The Install Options dialog box allows you to specify how often the install actions associated with the bundle are performed on the managed devices. If the install action set or its options are modified and the bundle is re-published, then when the bundle is installed or launched, the install action set is invoked again, even if it has been set to install only once.

- 1 When you create or modify a bundle, click **Options** on the Install page.
- 2 Select the **Install Frequency**, based on the number of times you want to execute the Install action set:
  - Install once per device:** Executes the Install action set only once on the managed device. Configuration changes in the action set result in re-execution of this action set.
  - Install once per user per device:** Executes the Install action sets once for each user on each managed device. This option is applicable only for Windows devices.
  - Install always:** Executes the Install action set each time the bundle runs.
- 3 Select **Download Options** to specify whether to allow users to postpone performing the Install actions of the bundle and to specify the number of allowed postponements:
  - ♦ **Always allow postpones:** Allows the user to postpone the installation any number of times.
  - ♦ **Never allow postpones:** Prevents the user from postponing the installation.
  - ♦ **Limit postpones to:** Specify the number of times that the user can postpone the installation.

You manage the execution of the Install action set for each assignment through the **Install Immediately after Distribution** option in the Bundle Distribution dialog box. For information about the distribution, see [“Distribution Schedule:” on page 177](#).

### 1.5.3 Launch

You use the Launch action set to launch an application that is associated with the bundle. When you create or modify a bundle, you can click **Add** on the Launch page to configure actions that launch the application. Some of the most frequently used actions associated with the launch activities include Launch Executable, Run Script, Launch Java Application, and Launch Thin Client Application.

## Launch Options

The Launch Options dialog box allows you to specify how often the Launch actions associated with the bundle are performed on the managed devices. By default, the Launch actions occur based on the bundle's or when the user launches the bundle by using its shortcut from the application window, desktop, and so forth). If the launch action set or its options are modified and the bundle is re-published, then when the bundle is launched, the launch action set will be invoked again even if it has been set to launch once.

- 1 When you create or modify a bundle, click **Options** on the Launch page to navigate to the Launch Options dialog box.
- 2 Select the **Run once** check box to specify the bundle's Launch actions. If you do not select this option, the Launch actions are performed each time a user launches the application contained in the bundle.

When you select the **Run once** check box, other Launch options are enabled.

Select the relevant Launch options:

- ♦ **For each device:** Select this option to launch the bundle's actions once on each managed device.
- ♦ **For the first user that logs in:** Select this option to launch the bundle's actions once on each managed device, when the first user logs in to that device. If subsequent users log in to the device, the action set is not launched. When you select this option, the bundle's icon is removed from the device's application window, desktop, and so forth.

This option is applicable only for Windows devices.

- ♦ **For every user that logs in:** Select this option to launch the bundle's actions once for every user that logs in to the device.

This option is applicable only for Windows devices.

You manage the execution of the Launch action set for each assignment through the Launch or through the **Launch Immediately after Installation** option in the bundle distribution . For information about the Distribution, see [“Distribution Schedule:” on page 177](#).

## 1.5.4 Repair

You use the Repair action set to repair the installation of a specific application. When you execute this action set, the default action of Repair Install Actions triggers the execution of the Install and Launch action sets.

You can add actions such as Repair Bundle to this action set in addition to the default Repair Install Actions. The added actions are executed only after the default action is executed.

---

**NOTE:** The Repair action set has no options.

---

## 1.5.5 Uninstall

You use the Uninstall action set to uninstall an application. When you execute this action set, the install operations of the **Install** action set are reversed by the default uninstall action of Undo Install Actions.

You can add actions such as **Uninstall Bundle** to this action set, apart from the default action **Undo Install Actions**. The added actions are executed only after the default action is executed.

If a bundle contains an MSI-based installation, the uninstallation is simple as ZENworks extracts the uninstall command from the MSI and places it under Uninstall. However, for installations that are not MSI based, you have to create one or more Actions under Uninstall for the Uninstall to happen. The original Undo Install Actions runs the bundle's Install actions in reverse order, which will not function here. You have to mark the action and click on Disable in the menu. Hence, it is recommended that you enable uninstall via Uninstall Options.

## Uninstall Options

You can enable the user on the managed device to uninstall the application. You specify the details in the Uninstall Options dialog box:

- 1 When you create or modify a bundle, click **Options** on the Uninstall Page to navigate to the Uninstall Options dialog box.
- 2 Select the **Enable Uninstall** check box to enable the uninstallation of the application from the device.

For example, if a bundle is already installed on a device, you can select **Enable Uninstall** to uninstall the bundle from the device.

The other uninstall options are enabled only when you select the **Enable Uninstall** check box.

- 3 Select the Uninstall options:
  1. Select one of the following options to specify if the user should be allowed to uninstall or cancel the uninstallation of an application on a device by choosing one of the following:
    - ♦ **Allow user to perform uninstall:** Enables users to remove the application from their devices.
    - ♦ **Display message to the user before uninstalling the application:** displays a message to the warn the user that the application will be uninstalled from the device.  
This option is applicable only on Windows devices.
    - ♦ **Allow user to cancel the uninstallation of the application:** Enables the user to cancel the uninstallation of the application.  
You can enable this option only if the **Display message to the user before uninstalling the application** option is enabled. This option is applicable only on Windows device.
  2. Under **Blocked Assignment Options** select Uninstall application to uninstall a blocked application from the device.
  3. Select any additional uninstallation options that you want:
    - ♦ **Uninstall application if not used within \_days :**Automatically removes the application, if it is not used within the specified number of days (the default period is 30 days).
    - ♦ **Ignore chained dependencies:** Enables uninstallation of a dependent application that is referenced by two or more applications. For example, assume that there are three applications - A, B, and C- where C is the dependent application, A installs application C, and application B uninstalls application C. Application C is uninstalled only if Ignore Chained Dependencies is selected.
    - ♦ **Do not uninstall application on unassignment:** Prevents an application from being uninstalled after it is unassigned from the device or user.

The **Undo Install Actions** option is available, only after you select **Enable Uninstall** in the Uninstall Options dialog box. Click **Undo Install Actions** on the Uninstall page to go to the Undo Install Actions dialog box.

## 1.5.6 Terminate

You use this action set to stop the execution of an application that is running because of actions in the Launch action set. When you execute this action set, the launch operations are reversed by the default Terminate Application action.

You can add actions to this action set, in addition to the default Terminate Application action. The added actions are executed only after the default action.

### Terminate Options

The Terminate Options dialog box allows you to enable or disable the Terminate action set.

- 1 When you create or modify a bundle click **Options** on the Terminate page to go to the Terminate Options dialog box.
- 2 Select the **Enable Terminate** check box to terminate the actions of the bundle.

The Terminate action set is applicable only for Windows bundles. This action set is enabled by default.

The **Terminate Application** option is available only after you select the **Enable Terminate** check box in the Terminate Options dialog box.

1. Click **OK** to undo all operations that are performed in the **Launch** action set.
2. If you want to display a message to users before terminating an application, click **Terminate Application Prompt** on the Terminate page to go to the Terminate Application Prompt dialog box.
3. Specify the information you want users to see before terminating the application, then click OK.

## 1.5.7 Preboot

This action set is associated only with Preboot bundles and is not applicable for Windows or Linux bundles. If you select a Preboot bundle, **Preboot** is the only action set available in the action panel.

- ♦ When you create or modify a bundle, click **Add** on the Preboot page to configure the actions associated with the Preboot bundle.

Some of the frequently used actions associated with the Preboot action set include AutoYaST Bundle, DellDTK Configuration, Imaging Script, Kickstart, Linked Application Bundle, Multicast Image Set, Third Party Image, and ZENworks Image. For more information about the Preboot actions, see [“Preboot Actions”](#) in the *Preboot Services and Imaging Reference* guide.

## 1.6 License Tracking

Using bundle license tracking, you can track the number of installations of the inventory products through a bundle. To enable license tracking, you must first associate an inventory product with the bundle. This is applicable only for Windows bundles.

To enable License Tracking, perform the following:

1. Create a bundle.

For more information on creating a bundle, see [“Creating Bundles” on page 23](#).

2. Select the created bundle, and then click the License tab.
3. In the Inventory Products panel, click Add.
4. In the Select Inventory Products page, select the required inventory product, and then click OK.
5. After adding the inventory products, select the Enable License Tracking check box.

When you publish this bundle to the managed devices, based on the bundle install status the installed quantity will be displayed in the Inventory Products panel. For best practices on Bundle License Tracking, see [Appendix D, “Best Practices,” on page 255](#).

## 1.7 Assigning Bundles

You can assign bundles to users and devices. When you assign a bundle to users, the bundle is available to all assigned users regardless of the device they log on to. When you assign a bundle to a device, the bundle is available to all users who log in to the assigned device.

For more information on assigning bundles and bundle groups to users and devices, see [Chapter 9, “Managing Bundle Assignments,” on page 175](#).

## 1.8 Packaging Considerations

Because of the way that ZENworks handles bundle packaging, be aware of the following considerations when you create bundles:

- ♦ [Section 1.8.1, “Time Required for Packaging,” on page 20](#)
- ♦ [Section 1.8.2, “Space Required for Packaging,” on page 21](#)

### 1.8.1 Time Required for Packaging:

Large MSI, MSIX and MSP bundles might take several hours to package before they are available on ZENworks content servers (ZENworks Servers and Content Distribution Points) in your Management Zone.

Large application files are compressed and encrypted, resulting in smaller bundles that reduce bandwidth during transmission and provide greater security during transmission and on the content server. The encrypted bundles cannot be removed from the content server and inappropriately used.

## 1.8.2 Space Required for Packaging:

Creating bundles that contain content temporarily requires up to twice the amount of disk space as the original files. The bundle creation process uploads copies of the original files from the local machine to a temporary directory on the ZENworks content server. The process then packages those files as encrypted, compressed ZENworks content files. After the ZENworks content files are created, the original uploaded files are automatically deleted.

If you are using ZENworks Control Center to create the bundle, and if you do not log out correctly (for example, if you close your browser before completing the Create New Bundle Wizard, you browse to somewhere else, or your machine crashes), the temporary directory is automatically cleared after the session time-out is reached. The default time out is 30 minutes.

In some circumstances (for example, if the ZENworks Server goes down during processing), the bundle creation process is unable to delete these temporary files. You can manually delete them as necessary.

Depending on the operating system and the utility used to create the bundle, the temporary files are located in the following directories:

**Table 1-1** Location of Temporary Files for Windows

Utility Used to Create the Bundle	Location of the Temporary Files
ZENworks Control Center	<code>zenserver_home\share\tomcat\temp</code>
zman (command line utility)	<code>zenserver_home\work\content-repo\temp</code>
ZENworks Migration Utility	<code>zenserver_home\work\collection\datamodel</code>

**Table 1-2** Location of Temporary Files for Linux

Utility Used to Create Bundle	Location of Temporary Files
ZENworks Control Center	<code>/var/tmp/</code>
zman (command line utility)	<code>/var/opt/microfocus/zenworks/content-repo/tmp/</code>
ZENworks Migration Utility	<code>/var/opt/microfocus/zenworks/collection/ datamodel/</code>

If the space on the temporary location is insufficient, you can specify a different disk drive to be the location of temporary files.

For more information on changing the location of temporary files on a Windows device, see [“Changing the Location of the Temporary Location on a Windows Server”](#) in the *ZENworks Primary Server and Satellite Reference*.

For more information on changing the location of temporary files on a Linux device, see [“Changing the Location of the Temporary Location on a Linux Server”](#) in the *ZENworks Primary Server and Satellite Reference*.

## 1.9 Content

When you create bundles containing content, the content is copied to content servers (ZENworks Servers or Content Distribution Points), replicated to other content servers, and delivered to managed devices.

- ♦ [Section 1.9.1, “Content Replication,” on page 22](#)
- ♦ [Section 1.9.2, “Content Delivery,” on page 22](#)

### 1.9.1 Content Replication

Content replication lets you determine how often content (bundle and policy files) is updated on the ZENworks (primary) Servers and Content Distribution Points. ZENworks Servers and Content Distribution Points are collectively referred to as content servers when discussing them in their roles of hosting content.

When a bundle or policy that contains content is added to the Management Zone, the ZENworks database is updated to reflect the addition of the content. Content servers are responsible for periodically reading the ZENworks database to discover new content. Each content server that does not have the content then retrieves the content from the server where it resides.

If content has been removed from the Management Zone, each content server also removes obsolete content during the update.

Content replication for a bundle can be configured through the Primary Server replication settings or Satellite Server replication settings. For more information on the settings, see [Chapter 11, “Managing Bundle Settings,” on page 205](#).

For more information, see “[Content Replication](#)” in the [ZENworks Primary Server and Satellite Reference](#).

### 1.9.2 Content Delivery

Content delivery, or distribution, refers to the process of transferring bundle and policy content from a content server (ZENworks Server or Content Distribution Point) to a managed device.

There are a variety of settings you can use to determine how content is delivered to managed devices:

- ♦ You can set up Closest Server rules that determine from which content server a managed device downloads its content.
- ♦ You can times, referred to as delivery blackout dates, when content cannot be downloaded by managed devices.
- ♦ You can decide how often you want managed devices to look for new content to download.

For information about performing these tasks, see “[Content Delivery](#)” in the [ZENworks Primary Server and Satellite Reference](#).

# 2 Creating Bundles

A bundle consists of all the files, configuration settings, installation instructions, and so forth required to deploy and manage the application or files on a device.

ZENworks lets you create bundles by using ZENworks Control Center or by using the zman command line utility.

The following sections contain step-by-step instructions about creating bundles by using ZENworks Control Center:

- ♦ [Section 2.1, “Installing ZCC Helper,” on page 23](#)
- ♦ [Section 2.2, “Creating Linux Bundles,” on page 23](#)
- ♦ [Section 2.3, “Creating Macintosh Bundles,” on page 23](#)
- ♦ [Section 2.4, “Creating Preboot Bundles,” on page 28](#)
- ♦ [Section 2.5, “Creating Windows Bundles,” on page 28](#)
- ♦ [Section 2.7, “Creating iOS Bundles,” on page 46](#)

The following section explains how to create bundles by using the zman command line utility:

- ♦ [Section 2.6, “Creating Bundles by Using the zman Command Line Utility,” on page 40](#)

## 2.1 Installing ZCC Helper

For more information, see [Installing ZCC Helper](#) in [ZENworks Control Center Reference](#).

## 2.2 Creating Linux Bundles

You can create two types of bundles on Linux devices - Linux bundles and Linux Dependency bundles. Linux bundles allow you to configure, manage applications, and store the package updates on Linux devices. Linux Dependency bundles allow you to distribute software to Linux devices and provide the dependent packages.

For more information on how to create these bundles, see [“Using Bundles for Linux Devices”](#) in the *ZENworks Linux Package Management Reference*.

## 2.3 Creating Macintosh Bundles

Macintosh bundles allow you to configure, manage applications, and store the package updates on Macintosh devices.

You can use ZENworks Control Center or the zman command line utility to create bundles. The following procedure explains how to create a bundle using ZENworks Control Center. If you prefer the zman command line utility, see [“Bundle Commands”](#) in [“ZENworks Command Line Utilities”](#).

If you are creating Macintosh bundle on a windows device, then you need to install ZCC Helper.

To create a Macintosh bundle:

- 1 In ZENworks Control Center, click the **Bundles** tab.
- 2 In the **Bundle** list, click **New**, then click **Bundle** to display the Select Bundle Type page.
- 3 Select **Macintosh Bundle**, then click **Next** to display the Select Bundle Category page.
- 4 Select the desired bundle category:

**Empty Bundle:** A bundle with no initial tasks. This bundle category is useful to quickly create a bundle without performing all of tasks in the Create New Bundle Wizard. After you create the empty bundle, you can edit its details to add assignments, actions, and so forth, at a later time.

**Copy Directory:** Copies a source directory to the specified location on the managed device.

**Copy Files:** Copies files to the specified location on the managed device.

**Create/Delete Directory:** Creates or Deletes a directory on the managed device.

**Install Directory:** Uploads the contents of a directory and its sub-directories to the ZENworks content system and then installs them to the specified destination path on the managed device. By default, the content is replicated to all primary servers.

**Install Files:** Uploads the files to the ZENworks content system and then installs them to the specified destination path on the managed device. By default, the content is replicated to all primary servers.

---

**NOTE:** To add link or shortcut files, in ZCCHelper, when you enter \*.lnk as the File Name, the available list of link and shortcut files are displayed. After you select the required file, ZENworks uploads only the link file, instead of the executable to which the file links.

---

- 5 Click **Next** to display the Define Details page, then fill in the fields:


**Bundle Name:** Provide a name for the bundle. The bundle name must be different than the name of any other item (bundle, group, folder, and so forth) that resides in the same folder. The name you provide displays in ZENworks Control Center and the ZENworks Agent (on managed devices).

For more information, see “[Naming Conventions in ZENworks Control Center](#)” in the *ZENworks Control Center Reference*.

**Folder:** Type the name or browse to and select the ZENworks Control Center folder where you want the bundle to reside. The default path is the context from where the bundle creation wizard is invoked. For example, if you choose to create a new bundle from the bundles page, the default folder path is /bundles. However, if you choose to create a bundle from with a bundle folder named folder1, the default folder path is /bundles/folder1. You can also create additional folders to organize your bundles.

**Icon:** ZENworks Configuration Management lets you select an icon that users see during installation of a particular bundle. This icon applies only to the icon displayed by ZENworks Agent on the managed device. ZCC uses default icons to represent the different bundles.

Before an icon can be selected, you need to install ZCC Helper.

To select an icon, click , allow browser to launch ZCC Helper, and then browse and select the icon you want to display on managed devices.

If you do not specify an icon, a default icon is used.

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**NOTE:** The icon (.ico file) uploaded while creating a Linux or a Macintosh bundle using a Windows device is not displayed on the agent, instead the default icon is displayed.

---

**Description:** Provide a short description of the bundle's contents. This description displays in ZENworks Control Center and in the ZENworks Agent.

6 Click **Next**, then skip to the appropriate step, depending on which bundle category you chose in [Step 4](#):

- ♦ **Empty Bundle:** Continue with [Step 10 on page 27](#).
- ♦ **Create/Delete Directory:** Continue with [Step 7 on page 25](#).
- ♦ **Install Directory:** Continue with [Step 8 on page 25](#).
- ♦ **Install Files:** Continue with [Step 9 on page 26](#).


7 (Conditional) If you are creating an Create/Delete Directory bundle, follow the wizard prompts until you reach the Summary page, then skip to [Step 18 on page 40](#).

Click **Help** for information about each page or refer to the following table:

Wizard Page and Field	Details
Select Directory page > <b>Action Type</b> field	Select one of the following: <ul style="list-style-type: none"><li>♦ <b>Create Directory:</b> Creates a directory on the managed device when the action is performed.</li><li>♦ <b>Delete Directory:</b> Deletes a directory on the managed device when the action is performed.</li></ul>
Select Directory page > <b>Directory Name</b> field	Specify the complete path of the directory you want to create or delete on the managed device. This path must be resolved by the device on which the bundle is run.

8 (Conditional) If you are creating an Install Directory bundle, follow the wizard prompts until you reach the Summary page, then skip to [Step 18 on page 40](#).

Click **Help** for information about each page or refer to the following table:

Wizard Page and Field	Details
Select Directory page > <b>Source Directory</b> field	Click  , and allow browser to launch ZCC Helper. Select Folder dialog box is displayed, browse and select the file to upload.  The <b>Status</b> field displays each file's upload status.  Select the Upload all files within the source directory as a single package option to enable all the files within the specified source directory to be uploaded as a single content.  If ZCC Helper is not installed on this device, it must be installed before you can browse to and upload files.

Wizard Page and Field	Details
Select Directory page > <b>Upload Files As</b> field	<p>Specifies whether the content has been uploaded as a single content or multiple contents to the ZENworks content repository.</p> <p>If the <b>Upload all files within the source directory as a single package</b> option in the Select Directory dialog box is not selected, then the files are uploaded by packaging in to multiple contents and the value of <b>Upload Files As</b> option is displayed as <b>Multiple Content</b>.</p> <p>If the <b>Upload all files within the source directory as a single package</b> option in the Select Directory dialog box is selected, then the files are uploaded by packaging in to single content and the value of <b>Upload Files As</b> option is displayed as <b>Single Content</b>.</p>
Select Directory page > <b>Destination Directory</b> field	Specify the destination path on the device where you want to install the directory.
Select Directory page > <b>Permissions</b> field	<p>You can configure permissions and set the access for the directory that you have installed.</p> <p><b>Mode:</b> Select this option and enter a 3 digit octal number to specify the permissions for owner, group, and others.</p> <p><b>Owner:</b> Select this option and set the access for Owner, Group, and Others.</p>
Select Directory page > <b>Ownership</b> field	<p>You can configure permissions and set the access for the directory that you have installed.</p> <p><b>Root:</b> Select this option to provide the ownership for the root user.</p> <p><b>User:</b> Select this option to provide the ownership for a particular user. You can also specify the group of the user.</p>
Select Directory page > <b>Copy Option</b>	Select a copy option from the list. For more information on the options, click <b>Help</b> .

- 9 (Conditional) If you are creating an Install Files bundle, follow the wizard prompts until you reach the Summary page, then skip to [Step 18 on page 40](#).

Click **Help** for information about each page or refer to the following table:

Wizard Page and Field	Details
Select Files page > <b>File</b> field	<p>Click <b>Add</b> to display the Select File dialog box, specify the files you want to install on the device, then click <b>Open</b>. Repeat this step as many times as necessary to copy the desired files.</p> <p>Click <b>OK</b> to upload the files to the server. The <b>File</b> option lists all the uploaded files, the size of the files, and how the content is packaged.</p> <p>If ZCC Helper is not installed on this device, you must install it before you can browse for file paths.</p>

Wizard Page and Field	Details
Select Files page > <b>Destination Directory</b> field	Specify the destination directory on the device in which you want to install the file.
Select Directory page > <b>Permissions</b> field	<p>You can configure permissions and set the access for the directory that you have installed.</p> <p><b>Mode:</b> Select this option and enter a 3 digit octal number to specify the permissions for owner, group, and others.</p> <p><b>Owner:</b> Select this option and set the access for Owner, Group, and Others.</p>
Select Directory page > <b>Ownership</b> field	<p>You can configure permissions and set the access for the directory that you have installed.</p> <p><b>Root:</b> Select this option to provide the ownership for the root user.</p> <p><b>User:</b> Select this option to provide the ownership for a particular user. You can also specify the group of the user.</p>
Select Files page > <b>Unpack</b> field	<p>Select this option to indicate that the files that are compressed in GZIP, BZIP2, or ZIP formats should be decompressed and extracted on to the device where you want to install them.</p> <p>By default, <code>ZipperUtil.sh</code> is used to unpack the files. If you want to unpack the files using <code>Java API</code>, in the <code>xplatzmd.properties</code> file, the value of <code>install-file-unpack-with-java-first</code> should be set to <code>True</code>.</p>
Select Files page > <b>Delete After Unpack</b> field	Select this option to indicate that the GZIP, BZIP2 or ZIP files should be deleted after extracting them on to the device where you want to install them.
Select Files page > <b>Copy Option</b>	Select a copy option from the list. For more information on the options, click <a href="#">Help</a> .

- 10 Review the information on the Summary page, making any changes to the bundle settings by using the [Back](#) button as necessary.
- 11 Skip to [Step 13](#) to create the published version of the bundle.
- 12 (Conditional) Select the **Create as Sandbox** option to create a sandbox-only version of the bundle.
 

A sandbox-only version of a bundle enables you to test the bundle on your device before actually deploying it. For more information on a sandbox-only bundle, see [Chapter 7, “Understanding Bundle Change Management,”](#) on page 151.
- 13 (Conditional) Select the **Define Additional Properties** option to display the bundle’s Action page after the wizard completes. You can use the various tabs to edit the bundle’s assignments, [system requirements](#), actions, settings, and content replication settings.
- 14 Click **Finish** to create the bundle as configured per settings on the Summary page.

When you click Finish, the bundle is created but it does not have users or devices assigned, s, and group membership. At some point in the future, you need to configure additional options for the bundle by continuing with [Section 9.1, “Assigning Existing Bundles to Devices,”](#) on page 175 or [Section 9.2, “Assigning Existing Bundles to Users,”](#) on page 179.

For information on the viewing the bundle information, see [Chapter 3, “Viewing the Bundle Information,”](#) on page 49.

## 2.4 Creating Preboot Bundles

Preboot bundles let you performs operations before the operating system boots. The various Imaging bundle types let you install images on one or more devices, or run ZENworks scripts containing any commands that you can issue from the imaging bash prompt.

For more information about Imaging bundles, see the [ZENworks Preboot Services and Imaging Reference](#).

## 2.5 Creating Windows Bundles

A Windows bundle lets you distribute a Microsoft\* Windows Installer (MSI) package, Microsoft Windows Software Patch (MSP) package, thin-client application, or other Windows-based applications to a Windows device.

You can use ZENworks Control Center or the zman command line utility to create bundles. The following procedure explains how to create a bundle using ZENworks Control Center. If you prefer the zman command line utility, see [“Bundle Commands”](#) in [“ZENworks Command Line Utilities”](#).

To create a Windows bundle:

- 1 In ZENworks Control Center, click the **Bundles** tab.
- 2 In the **Bundle** list, click **New**, then click **Bundle** to display the Select Bundle Type page.
- 3 Select **Windows Bundle**, then click **Next** to display the Select Bundle Category page.
- 4 Select the desired bundle category:

**Empty Bundle:** A bundle with no initial tasks. This bundle category is useful to quickly create a bundle without performing all of tasks in the Create New Bundle Wizard. After you create the empty bundle, you can edit its details to add assignments, actions, and so forth, at a later time.

**Copy Directory:** Copies a source directory to the specified location on the managed device.

**Copy Files:** Copies files to the specified location on the managed device.

**Create/Delete Directory:** Creates or Deletes a directory on the managed device.

**Install Directory:** Uploads the contents of a directory and its sub-directories to the ZENworks content system and then installs them to the specified destination path on the managed device. By default, the content is replicated to all primary servers.

**Install Files:** Uploads the files to the ZENworks content system and then installs them to the specified destination path on the managed device. By default, the content is replicated to all primary servers.

---

**NOTE:** To add link or shortcut files, in ZCHelper, when you enter \*.lnk as the File Name, the available list of link and shortcut files are displayed. After you select the required file, ZENworks uploads only the link file, instead of the executable to which the file links.

---

**MSI Application:** An application that is packaged as a .msi file so that it can be installed by the Microsoft Windows Installer program.

For important information about creating MSI Application bundles, see [Section 1.8, “Packaging Considerations,” on page 20](#).

If you have a non-MSI application that is more complex than this, we recommend that you use ZENworks Software Packaging, powered by AdminStudio ZENworks Edition, to create an MSI package for the application and then use the MSI Application option to create a bundle. For more information on installing AdminStudio, see [AdminStudio ZENworks Edition Installation Guide](#).

**MSIX Application:** An application that is packaged as a .msix file so that it can be installed by the Microsoft Windows Installer program.

For important information about creating MSIX Application bundles, see [Section 1.8, “Packaging Considerations,” on page 20](#).

If you have a non-MSIX application that is more complex than this, we recommend that you use ZENworks Software Packaging, powered by AdminStudio ZENworks Edition, to create an MSIX package for the application and then use the MSIX Application option to create a bundle. For more information on installing AdminStudio, see [AdminStudio ZENworks Edition Installation Guide](#).

**MSP Application:** An application patch that is packaged as a .msp file so that it can be applied by the Microsoft Windows Installer program.

For important information about creating MSP Application bundles, see [Section 1.8, “Packaging Considerations,” on page 20](#).

**Simple Application:** An example of a Simple Application would be launching Windows Note pad. Typically, Simple Applications requires ZENworks Agent to copy a few files to the workstation or make a few changes to the workstations registry, INI files, environment variables, and so forth.

If you have a non-MSI application that is more complex than this, we recommend that you use ZENworks Software Packaging, powered by AdminStudio ZENworks Edition, to create an MSI package for the application and then use the MSI Application option to create a bundle. For more information on installing AdminStudio, see [AdminStudio ZENworks Edition Installation Guide](#).

**Thin-Client Application:** An application, running on a terminal server, that is accessed through a terminal server client session (either RDP or ICA).

**Web Application:** An application that is launched by using a URL in a Web browser.

- 5 Click **Next** to display the Define Details page, then fill in the fields:


**Bundle Name:** Provide a name for the bundle. The bundle name must be different than the name of any other item (bundle, group, folder, and so forth) that resides in the same folder. The name you provide displays in ZENworks Control Center and the ZENworks Agent (on managed devices).

For more information, see [“Naming Conventions in ZENworks Control Center”](#) in the [ZENworks Control Center Reference](#).

**Folder:** Type the name or browse to and select the ZENworks Control Center folder where you want the bundle to reside. The default path is the context from where the bundle creation wizard is invoked. For example, if you choose to create a new bundle from the bundles page, the default folder path is `/bundles`. However, if you choose to create a bundle from with a bundle folder named `folder1`, the default folder path is `/bundles/folder1`. You can also create additional folders to organize your bundles.

**Icon:** ZENworks Configuration Management lets you select an icon that users see during installation of a particular bundle. This icon applies only to the icon displayed by ZENworks Agent on the managed device. ZCC uses default icons to represent the different bundles.

Before an icon can be selected, you need to install ZCC Helper.

To select an icon, click , allow browser to launch ZCC Helper, and then browse and select the icon you want to display on managed devices.

If the file contains multiple icons, using ZCC Helper you can select the required icon.

If you do not specify an icon, a default icon is used.

---

**NOTE:** All icons for bundles need to have a color depth of 256. True color depth for icons is not supported.

---

**Description:** Provide a short description of the bundle's contents. This description displays in ZENworks Control Center and in the ZENworks Agent.

6 Click **Next**, then skip to the appropriate step, depending on which bundle category you chose in [Step 4](#):

- ♦ **Empty Bundle:** Continue with [Step 18 on page 40](#).
- ♦ **Copy Directory:** Continue with [Step 7 on page 30](#).
- ♦ **Copy Files:** Continue with [Step 8 on page 31](#).
- ♦ **Create/Delete Directory:** Continue with [Step 9 on page 32](#).
- ♦ **Install Directory:** Continue with [Step 10 on page 32](#).
- ♦ **Install Files:** Continue with [Step 11 on page 33](#).
- ♦ **MSI Application:** Continue with [Step 12 on page 34](#).
- ♦ **MSIX Application:** Continue with [Step 12 on page 34](#).
- ♦ **MSP Application:** Skip to [Step 14 on page 37](#).
- ♦ **Simple Application:** Skip to [Step 15 on page 38](#).
- ♦ **Thin Client Application:** Skip to [Step 16 on page 38](#).
- ♦ **Web Application:** Skip to [Step 17 on page 39](#).

7 (Conditional) If you are creating an Copy Directory bundle, follow the wizard prompts until you reach the Summary page, then skip to [Step 18 on page 40](#).

Click **Help** for information about each page or refer to the following table:

Wizard Page and Field	Details
Select Directory page > <b>Source Directory</b> field	<p>If you have not installed ZCC Helper on this device, you must do so before you can browse for a directory.</p> <p>Click <b>Browse</b>, and allow browser to launch ZCC Helper. The Select Folder dialog box is displayed, click browse and select the directory to copy.</p>
Select Directory page > <b>Destination Directory</b> field	Specify the destination path on the device where you want to copy the directory.
Select Directory page > <b>Copy Option</b>	Select a copy option from the list. For more information on the options, click <b>Help</b> .
Select Directory page > <b>Attributes</b> field	<p>Select one or more of the following attributes:</p> <p><b>Hidden:</b> Select the <b>Hidden</b> check box to specify that the directory is hidden after being copied.</p> <p><b>Read-only:</b> Select the <b>Read-only</b> check box to specify that the directory is read-only after being copied.</p>

- 8 (Conditional) If you are creating an Copy Files bundle, follow the wizard prompts until you reach the Summary page, then skip to [Step 18 on page 40](#).

Click **Help** for information about each page or refer to the following table:

Wizard Page and Field	Details
Select Files page > <b>File</b> field	<p>Click <b>Add</b>, allow browser to launch ZCC Helper. The Select Files dialog box is displayed, specify the files you want to copy to the device, then click <b>OK</b>. Repeat this step as many times as necessary to copy the desired files.</p> <p>If the ZCC Helper is not installed on this device, you must install it before you can browse for file paths.</p>
Select Files page > <b>Destination Directory</b> field	Specify the destination directory on the device in which you want to copy the file.
Select Files page > <b>Create Shortcuts for Source Files</b>	Select the <b>Create Shortcuts for Source Files</b> option to create shortcut icons for the source file on the destination directory. The source files are not copied to the destination directory.
Select Files page > <b>Copy Option</b>	Select a copy option from the list. For more information on the options, click <b>Help</b> .
Select Files page > <b>Attributes</b> field	<p>Select one or more of the following attributes:</p> <p><b>Hidden:</b> Select the <b>Hidden</b> check box to specify that the file is hidden after being copied.</p> <p><b>Read-only:</b> Select the <b>Read-only</b> check box to specify that the file is read-only after being copied.</p>


- 9 (Conditional) If you are creating an Create/Delete Directory bundle, follow the wizard prompts until you reach the Summary page, then skip to [Step 18 on page 40](#).

Click [Help](#) for information about each page or refer to the following table:

Wizard Page and Field	Details
Select Directory page > <b>Action Type</b> field	Select one of the following: <ul style="list-style-type: none"><li>♦ <b>Create Directory:</b> Creates a directory on the managed device when the action is performed.</li><li>♦ <b>Delete Directory:</b> Deletes a directory on the managed device when the action is performed.</li></ul>
Select Directory page > <b>Directory Name</b> field	Specify the complete path of the directory you want to create or delete on the managed device. This path must be resolved by the device on which the bundle is run.

- 10 (Conditional) If you are creating an Install Directory bundle, follow the wizard prompts until you reach the Summary page, then skip to [Step 18 on page 40](#).

Click [Help](#) for information about each page or refer to the following table:

Wizard Page and Field	Details
Select Directory page > <b>Source Directory</b> field	<p>Click , and allow browser to launch ZCC Helper. The Select Directory dialog box is displayed, click browse and select the file to upload. By default, the content is encrypted and compressed before it is distributed to assigned devices. However, If you do not want to compress or encrypt the content, select the <b>Do not compress or encrypt uploaded content</b> option.</p> <p>The <b>Status</b> field displays each file's upload status.</p> <p>Select the <b>Upload all files within the source directory as a single package</b> option to enable all the files within the specified source directory to be uploaded as a single content.</p> <p>If ZCC Helper is not installed on this device, it must be installed before you can browse to and upload files to be copied.</p>
Select Directory page > <b>Upload Files As</b> field	<p>Specifies whether the content has been uploaded as a single content or multiple contents to the ZENworks content repository.</p> <p>If the <b>Upload all files within the source directory as a single package</b> option in the Select Directory dialog box is not selected, then the files are uploaded by packaging in to multiple contents and the value of <b>Upload Files As</b> option is displayed as <b>Multiple Content</b>.</p> <p>If the <b>Upload all files within the source directory as a single package</b> option in the Select Directory dialog box is selected, then the files are uploaded by packaging in to single content and the value of <b>Upload Files As</b> option is displayed as <b>Single Content</b>.</p>

Wizard Page and Field	Details
Select Directory page > <b>Packaging</b> field	<p>Specifies how the content is packaged before it is distributed to assigned devices.</p> <p>If the <b>Do not compress or encrypt uploaded content</b> option in the Select Directory dialog box is not selected, the value of <b>Packaging</b> option is initially displayed as <b>Auto</b> as the content is in the process of being encrypted and compressed. After the content has been encrypted and compressed, the value of Packaging option changes to <b>Compressed, Encrypted</b>.</p> <p>If the <b>Do not compress or encrypt uploaded content</b> option in the Select Directory dialog box is selected, the value of Packaging option is displayed as <b>None</b> because the content is neither compressed nor encrypted.</p>
Select Directory page > <b>Destination Directory</b> field	Specify the destination path on the device where you want to install the directory.
Select Directory page > <b>Copy Option</b>	Select a copy option from the list. For more information on the options, click <b>Help</b> .
Select Directory page > <b>Attributes</b> field	<p>Select one or more of the following attributes:</p> <p><b>Hidden:</b> Select the <b>Hidden</b> check box to specify that the directory is hidden after being copied.</p> <p><b>Read-only:</b> Select the <b>Read-only</b> check box to specify that the directory is read-only after being copied.</p>

- 11** (Conditional) If you are creating an Install Files bundle, follow the wizard prompts until you reach the Summary page, then skip to [Step 18 on page 40](#).



Click **Help** for information about each page or refer to the following table:



Wizard Page and Field	Details
Select Files page > <b>File</b> field	<p>Click <b>Add</b>, allow browser to launch ZCC Helper. The Select Files dialog box is displayed, specify the files you want to install on the device, then click <b>Upload</b>. Repeat this step as many times as necessary to copy the desired files.</p> <p>By default, the content is encrypted and compressed. If you do not want to compress or encrypt the content, select the <b>Do not compress or encrypt uploaded content</b> option.</p> <p>Click <b>OK</b> to upload the files to the server. The <b>File</b> option lists all the uploaded files, the size of the files, and how the content is packaged.</p> <p>If ZCC Helper is not installed on this device, you must install it before you can browse for file paths.</p>
Select Files page > <b>Destination Directory</b> field	Specify the destination directory on the device in which you want to install the file.

Wizard Page and Field	Details
Select Files page > <b>Copy Option</b>	Select a copy option from the list. For more information on the options, click <b>Help</b> .
Select Files page > <b>Attributes</b> field	<p>Select one or more of the following attributes:</p> <p><b>Hidden:</b> Select the <b>Hidden</b> check box to specify that the file is hidden after being copied.</p> <p><b>Read-only:</b> Select the <b>Read-only</b> check box to specify that the file is read-only after being copied.</p>

- 12 (Conditional) If you are creating an MSI Application bundle, follow the wizard prompts until you reach the Summary page, then skip to [Step 18 on page 40](#).

Click **Help** for information about each page or refer to the following table:


Wizard Page and Field	Details
Select .msi File page > <b>Upload .msi file for normal install</b> field	<p>Use this option if you want the .msi file copied to the ZENworks Server and then distributed from the ZENworks Server to assigned users and devices. This is referred to a normal install because ZENworks Agent copies the .msi file to the managed device's local drive and then the Microsoft Windows Installer program installs the application from the local .msi file.</p> <p>Click , allow browser to launch ZCC Helper. The Select .msi File dialog box is displayed. Click <b>Browse</b> to select the .msi file to upload. Select the <b>Include all files in and below the directory of this file</b> option to include all the supporting files that are within the directory containing the .msi file and the subdirectories within it.</p> <p><b>NOTE:</b> By default, ZENworks Control Center has a 30-minute timeout value. If you leave ZENworks Control Center idle on your computer for more than 30 minutes, you are prompted to log in again before continuing. Because the upload process can take considerable time for a large .msi file, the default timeout value does not apply for this page.</p>
Select .msi File page > <b>Enter UNC path of .msi file for network install</b> field	<p>Use this option if you want the Microsoft Windows Installer program to install the application from the .msi file on a network location. You must specify the complete path to the .msi file to use as the source file during distribution to the workstation.</p> <p>You can use a mapped drive or UNC path. If you use a drive mapping, you must ensure that all workstations have the same drive mapped to the source location. For this reason, we recommend that you specify a UNC path.</p> <p>After you create the MSI bundle, you cannot change the .msi filename; however, you can change the path to the .msi file. If you change the .msi filename, the installation fails.</p>
Select .msi File page > <b>Install Parameters</b> field	Click  to display the Install Parameters dialog box, then specify the desired parameters. For more information, click the <b>Help</b> button or see <a href="#">Section A.1, "Install Parameters," on page 241</a> .

Wizard Page and Field	Details
Select .msi File page > <b>Uninstall Parameters</b> field	Click  to display the Uninstall Parameters dialog box, then specify the desired parameters. For more information, click the <b>Help</b> button or see <a href="#">Section A.2, “Uninstall Parameters,” on page 243</a> .
Select .msi File page > <b>Repair Parameters</b> field	Click  to display the Repair Parameters dialog box, then specify the desired parameters. For more information, click the <b>Help</b> button or see <a href="#">Section A.3, “Repair Parameters,” on page 244</a> .
Select .msi File page > <b>MSI Properties</b> field	<p>The MSI package contains the property values that were defined during the administrative installation of the application. These property values determine the way the Microsoft Windows Installer installs the application to the workstation. In some cases, you might want to change one or more of the property values. For example, a property value might define the default location for a user’s work files. By adding the property to the list and changing the property’s value, you can override the default location defined in the MSI package.</p> <p>If necessary, you can add public properties that were not included in the MSI package. When doing so, you should be careful to add only those properties that are valid for the package.</p> <p>To override a property value, you change the property value and add the property to the Properties list so that Application Launcher knows to use that property value rather than the one defined in the MSI package. To do so, click <b>Add</b> to display the <b>MSI Properties</b> dialog box. In the <b>Name</b> field, select the property whose value you want to override, specify the new value in the <b>Value</b> field, then click <b>OK</b> to add the property to the <b>MSI Properties</b> list.</p> <p>To modify a property that is in the <b>MSI Properties</b> list, select the property, click <b>Edit</b>, modify the value data, then click <b>OK</b>.</p> <p>To remove a property from the <b>MSI Properties</b> list, select the property, then click <b>Remove</b>. Deleting the property causes future installations of the application to use the property value defined in the MSI package.</p>
Select .msi File page > <b>Select Transforms File</b> field	<p>Click <b>Add</b> to browse to and select the desired . You can upload the or you can specify its location.</p> <p>Different groups within an organization often use the same application, but that does not mean they require the same feature set. One of the benefits of Windows Installer is that if you have 10 groups needing 10 different feature sets or other alterations for the same application, you can deploy the same MSI package to all 10 user groups, but with a different (MST) applied for each group.</p> <p>A is a collection of changes applied to an MSI installation. It contains all modification information, such as whether features are installed; how they are installed; which files, shortcuts, and registry entries are included; and Add/Remove Programs applet information.</p> <p>If you have vendor-supplied MSI packages, you can use AdminStudio ZENworks Edition to create and manage transforms</p>

Wizard Page and Field	Details
Select Command page > <b>Executable to run</b> field	<p>The Select Command page lets you specify an optional executable to run after the .msi file installs. Click <b>Browse</b> to browse for and select the executable to run.</p> <p>If the executable is installed in the Program Files directory on the managed device, you must use macros as follows:</p> <ul style="list-style-type: none"> <li>♦ <b>On 32-bit managed device:</b> \${ProgramFiles}\filename.</li> <li>♦ <b>On 64-bit managed device:</b> \${ProgramFiles32}\filename.</li> </ul> <p>If you have not installed ZCC Helper on this device, you must do so before you can browse to and upload files.</p>

- 13** (Conditional) If you are creating an MSIX Application bundle, follow the wizard prompts until you reach the Summary page, then skip to [Step 18 on page 40](#).

Click **Help** for information about each page or refer to the following table:

Wizard Page and Field	Details
Select .msix File page > <b>Upload .msix file for normal install</b> field	<p>Use this option if you want the .msix file copied to the ZENworks Server and then distributed from the ZENworks Server to assigned users and devices. This is referred to a normal install because ZENworks Agent copies the .msix file to the managed device's local drive and then the Microsoft Windows Installer program installs the application from the local .msix file.</p> <p>Click , allow browser to launch ZCC Helper. The Select .msix File dialog box is displayed. Click <b>Browse</b> to select the .msix file to upload. Select the <b>Include all files in and below the directory of this file</b> option to include all the supporting files that are within the directory containing the .msix file and the subdirectories within it.</p> <p><b>NOTE:</b> By default, ZENworks Control Center has a 30-minute timeout value. If you leave ZENworks Control Center idle on your computer for more than 30 minutes, you are prompted to log in again before continuing. Because the upload process can take considerable time for a large .msix file, the default timeout value does not apply for this page.</p>
Select .msix File page > <b>Enter UNC path of .msix file for network install</b> field	<p>Use this option if you want the Microsoft Windows Installer program to install the application from the .msix file on a network location. You must specify the complete path to the .msix file to use as the source file during distribution to the workstation.</p> <p>You can use a mapped drive or UNC path. If you use a drive mapping, you must ensure that all workstations have the same drive mapped to the source location. For this reason, we recommend that you specify a UNC path.</p> <p>After you create the MSI bundle, you cannot change the .msix filename; however, you can change the path to the .msix file. If you change the .msix filename, the installation fails.</p>

Wizard Page and Field	Details
Select .msix File page > <b>Select Certificate</b> field	If the application's certificate is not signed by a well-known CA, then you can upload a certificate by clicking the <b>Select Certificate</b> button. It supports the .pem, .crt, .cer, .der, .p7b, or .p7c file formats.
Select .msix File page > <b>Installation Mode</b> field	<p>Select the desired install options:</p> <ul style="list-style-type: none"> <li>♦ <b>For Logged-in User Only:</b> Installs the MSIX application for logged-in user only.</li> <li>♦ <b>For All Users of Device:</b> Installs the MSIX application for all the users (Device wide installation).</li> </ul>
Select Command page > <b>Executable to run</b> field	<p>The Select Command page lets you specify an optional executable to run after the .msix file installs. Click <b>Browse</b> to browse for and select the executable to run.</p> <p>If the executable is installed in the Program Files directory on the managed device, you must use macros as follows:</p> <ul style="list-style-type: none"> <li>♦ <b>On 32-bit managed device:</b> \${ProgramFiles}\filename.</li> <li>♦ <b>On 64-bit managed device:</b> \${ProgramFiles32}\filename.</li> </ul> <p>If you have not installed ZCC Helper on this device, you must do so before you can browse to and upload files.</p>

- 14** If you are creating an MSP Application bundle, follow the wizard prompts until you reach the Summary page, then skip to [Step 18 on page 40](#).

Click **Help** for information about each page or refer to the following table:

Wizard Page and Field	Details
Select .msp File page > <b>Upload .msp file for normal install</b> field	Use this option if you want the .msp file copied to the ZENworks Server and then distributed from the ZENworks Server to assigned users and devices. This is referred to a normal install because ZENworks Agent copies the .msp file to the managed device's local drive and then it is installed from the local .msp file.
Select .msp File page > <b>Enter UNC path of .msp file for network install</b> field	<p>Use this option if you want to install from the .msp file on a network location. You must specify the complete path to the .msp file to use as the source file during distribution to the workstation.</p> <p>You can use a mapped drive or UNC path. If you use a drive mapping, you must ensure that all workstations have the same drive mapped to the source location. For this reason, we recommend that you specify a UNC path.</p> <p>After you create the MSP bundle, you cannot change the .msp filename; however, you can change the path to the .msp file. If you change the .msp filename, the installation fails.</p>

Wizard Page and Field	Details
Select .msp File page > <b>Command Line Parameters</b> field	<p>After you select the .msp file, the <b>Command Line Parameters</b> field is automatically populated, for example <code>/p patch_package /qn</code> where <code>/p</code> designates a patch file, <code>patch_package</code> specifies the .msp file, and <code>/qn</code> specifies an installation with no user interface (silent installation). To install a .msp file, you should normally use the <code>/qn</code> option.</p> <p>You can, however, specify additional options. For more information, see the <a href="http://msdn2.microsoft.com/en-us/library/aa372866.aspx">MSDN Web site (http://msdn2.microsoft.com/en-us/library/aa372866.aspx)</a>.</p>

- 15 If you are creating Simple Application bundle, follow the wizard prompts until you reach the Summary page, then skip to [Step 18 on page 40](#).

Click **Help** for information about each page or refer to the following table:

Wizard Page and Field	Details
Enter the Command to Run page > <b>Command</b> field	<p>Specify the command to launch the application. You should include the full path to the executable in case the executable is not in the device's search path. This path, whether the application is on the device's local drive or a network resource, must be relative to the device.</p> <p>For example, if the executable file is on the device's local drive, you would specify something like <code>c:\winnt\notepad.exe</code>. If the executable file is on a network resource, you would specify something like <code>j:\apps\notepad.exe</code> (if all users will have J: mapped to the location) or <code>\\server1\vol1\apps\notepad.exe</code>.</p>
Enter the Command to Run page > <b>Command Line Parameters</b> field	<p>Specify any command line parameters that need to be passed to the executable.</p> <p>ZENworks Agent passes the parameters exactly as they are specified. Therefore, the parameter syntax you use must exactly match the syntax the executable requires. For example, if <code>word.exe</code> has a <code>/f=filepath</code> parameter that requires paths with spaces to be enclosed in quotation marks, you would specify the following:</p> <pre>/f="c:\my docs\sample.doc"</pre>
Enter the Command to Run page > <b>Working Directory</b> field	<p>Specify the path to the directory you want the application to use for its working files.</p>

- 16 If you are creating a Thin Client Application bundle, follow the wizard prompts until you reach the Summary page, then skip to [Step 18 on page 40](#).

Click **Help** for information about each page or refer to the following table:

Wizard Page and Field	Details
Configure Thin Client Details page > <b>ICA Session: Published Application Name</b> field	Type the published application name exactly as it is defined in Citrix*.
Configure Thin Client Details page > <b>ICA Session: Servers Hosting the Application</b> field	<p>Add the Citrix servers that host the application. To add a server, specify the server's IP address or hostname, then click <b>Add</b>.</p> <p>The order in which the servers are listed is the preferred order for launching. You can use the <b>Move Up</b> and <b>Move Down</b> buttons to change the order if necessary.</p>
Configure Thin Client Details page > <b>RDP Session: Terminal Server Address</b> field	Type the terminal server's IP address or hostname.
Configure Thin Client Details page > <b>RDP Session: Server Port</b> field	If the terminal server is not using the default port 3389, specify the correct port number.
Configure Thin Client Details page > <b>RDP Session: Server Domain</b> field	If the terminal server is part of a Windows NT* domain or an Active Directory* domain, enter the domain name. If the user's name and password in the domain matches the user name and password in Novell eDirectory, the user is not prompted to log in to the terminal server when launching the application.
Configure Thin Client Details page > <b>RDP Session: Application Path</b> field	Specify the path to the application's executable file from the perspective of the terminal server.
Configure Thin Client Details page > <b>RDP Session: Application Working Directory</b> field	Specify the path to the directory you want the application to use for its working files.
Configure Thin Client Details page > <b>RDP Session: Color Depth</b> field	Select the number of colors for the RDP client session. You can select <b>256 Colors</b> , <b>High Color (15 bits)</b> , <b>High Color (16 bits)</b> , or <b>True Color (24 bits)</b> . The default is <b>True Color (24 bits)</b> .
Configure Thin Client Details page > <b>RDP Session: Screen Size</b> field	If you want the RDP client session to use the entire desktop area, select <b>Operate in full screen mode</b> . Otherwise, select <b>Use specified screen size</b> and manually set the width and height (in pixels).
Configure Thin Client Details page > <b>RDP Session: Advanced Settings for redirection</b> field	Select the settings such as drivers, printers, serial ports, and smart cards that you want to map to the remote desktop machine.

- 17** If you are creating a Web Application bundle, follow the wizard prompts until you reach the Summary page, then skip to [Step 18 on page 40](#).

Click **Help** for information about each page or refer to the following table:

Wizard Page and Field	Details
Enter URL page > <b>URL</b> field	Specify the location (URL) of the Web application. The URL should point to the primary file for the Web application or to a Web page that allows access to the Web application.
	Click the <b>Test URL</b> button to test the URL.

- 18 Review the information on the Summary page, making any changes to the bundle settings by using the **Back** button as necessary.
- 19 Skip to [Step 21](#) to create the published version of the bundle.
- 20 (Conditional) Select the **Create as Sandbox** option to create a sandbox-only version of the bundle.  
  
A sandbox-only version of a bundle enables you to test the bundle on your device before actually deploying it. For more information on a sandbox-only bundle, see [Chapter 7, “Understanding Bundle Change Management,” on page 151](#).
- 21 (Conditional) Select the **Define Additional Properties** option to display the bundle’s Action page after the wizard completes. You can use the various tabs to edit the bundle’s assignments, [system requirements](#), actions, settings, and content replication settings.
- 22 Click **Finish** to create the bundle as configured per settings on the Summary page.  
  
When you click Finish, the bundle is created but it does not have users or devices assigned, s, and group membership. At some point in the future, you need to configure additional options for the bundle by continuing with [Section 9.1, “Assigning Existing Bundles to Devices,” on page 175](#) or [Section 9.2, “Assigning Existing Bundles to Users,” on page 179](#).  
  
For information on the viewing the bundle information, see [Chapter 3, “Viewing the Bundle Information,” on page 49](#).

## 2.6 Creating Bundles by Using the zman Command Line Utility

ZENworks Configuration Management allows you to create different types of bundles, such as Windows bundle and Preboot bundle. Each bundle has its own set of data and configuration settings. Because it is complex to pass the data as arguments in the command line, the zman utility takes XML files as an input to create bundles. To use the zman command line utility to create a bundle, you must have a bundle of the same type already created through ZENworks Control Center and export it to XML. For more information on creating bundles by using ZENworks Control Center, see [Chapter 2, “Creating Bundles,” on page 23](#). You can use the exported XML file as a template to create bundles by using zman.

For example, you can export a Windows bundle already created through ZENworks Control Center into an XML file, then use it to create another Windows bundle with zman.

A bundle can have file content associated with it. For example, an MSI file to be installed is a file content associated with a Windows MSI Bundle.

Bundles can also have dependencies on other bundles.

---

**NOTE:** If you use the `zman bundle-create` command to create a Linux bundle with the Install RPM) action or a Linux Dependency bundle with the Distribute RPM action, ensure that you run the command within a working directory, so the path of the RPM files in the `ActionInfo` XML can be resolved.

For example, assume that you use the `zman bundle-export-to-file` command to export a Linux bundle with the Install RPM action, along with its content. If you want to create a new bundle from the exported bundle XML file and content, you need to ensure that you are running the `zman bundle-create` command within the directory that contains the `ActionInfo` XML file. You need to do this because the exported `ActionInfo` XML file contains the relative path of the RPMs, and the path resolves correctly only if you are running the command from the directory that contains the `ActionInfo` XML file.

---

Review the following sections to create a bundle by using the `zman` command line utility:

- ♦ [Section 2.6.1, “Creating a Simple Bundle,” on page 41](#)
- ♦ [Section 2.6.2, “Creating a Bundle with Content and Dependency on Another Bundle,” on page 42](#)
- ♦ [Section 2.6.3, “Understanding the `zman` Bundle XML File Format,” on page 44](#)

## 2.6.1 Creating a Simple Bundle

To create a bundle that has no content or dependency on another bundle:

- 1 Create a bundle in ZENworks Control Center.

For example, use ZENworks Control Center to create a Web Application bundle called Google, which launches the [Google Web site \(http://www.google.com\)](http://www.google.com).

- 2 Export the bundle to an XML file by using the following command:

```
zman bundle-export-to-file bundle_name bundle_filename.xml
```

For example, export the Google bundle to `google.xml` by using the `zman bundle-export-to-file google google.xml` command.

If you want to create a new bundle with new data, continue with [Step 3](#). If you want to create a new bundle with the same data as the `google` bundle, skip to [Step 4](#).

- 3 Modify the XML file according to your requirements.

For example, change the value of `<URL>` from `http://www.google.com` to `http://www.yahoo.com` in the `Launch URL Action` section of `Launch ActionSet` in the XML file as shown below.

```
<ns2:ActionSets>

  <Id>104e5d74804052eb7ddc4a2f54358d97</Id>

  <Type>Launch</Type>

  <Version>1</Version>

  <Modified>>false</Modified>

  <Data>

    <ns1:Launch/>
```

```

</Data>

<Actions>

  <Id>2ef5c645774759e9868ba2c157301949</Id>

  <Type>Launch URL Action</Type>

  <Data>

    <ns1:LaunchUrlActionData>

      <URL>http://www.yahoo.com</URL>

      <WaitForExit>>false</WaitForExit>

    </ns1:LaunchUrlActionData>

  </Data>

  <ContinueOnFailure>>false</ContinueOnFailure>

  <Enabled>>true</Enabled>

  <Properties />

</Actions>

</ns2:ActionSets>

```

- 4 Create a new bundle by using the following command:

```
zman bundle-create new_bundle_name bundle_xml_filename.xml
```

For example, to create the yahoo bundle, enter the `zman bundle-create yahoo google.xml` command at the console prompt.

## 2.6.2 Creating a Bundle with Content and Dependency on Another Bundle

- 1 Create two bundles in ZENworks Control Center.

For example, use ZENworks Control Center to create two MSI application bundles called officeXP and officeXPSP1. The officeXP bundle installs Microsoft Office XP through an MSI. The officeXPSP1 bundle installs the Service Pack 1 for Microsoft Office XP. In the officeXP bundle, add an Install Bundle action to install officeXPSP1.

- 2 Export the bundle, which has the dependency on another bundle, to an XML file by using the following command:

```
zman bundle-export-to-file bundle_name bundle_filename.xml
```

This creates *bundle\_filename.xml* and *bundle\_filename\_ActionContentInfo.xml* files.

For example, export the officeXP bundle to officeXP.xml by using the `zman bundle-export-to-file officeXP officeXP.xml` command. The officeXP.xml and officeXP\_ActionContentInfo.xml files are created.

Sample xml format templates, `WindowsMSIBundle.xml` and `ActionInfo.xml`, are available at `/opt/microfocus/zenworks/share/zman/samples/bundles` on a Linux server and in `"%ZENSERVER_HOME%\microfocus\Zenworks\share\zman\samples\bundles` on a Windows server. For more information about `ActionContentInfo.xml`, see [Section 2.6.3, "Understanding the zman Bundle XML File Format,"](#) on page 44.

If you want to create a new bundle with new data, continue with [Step 3](#). If you want to create a new bundle with the same data as the officeXP bundle, skip to [Step 4](#).

- 3 Modify the `officeXP.xml` and `officeXP_ActionContentInfo.xml` files according to your requirements.

For example, to create a new bundle to install ApplicationX and its support pack, do the following:

- ♦ Change all references of `officeXP.msi` to `ApplicationX.msi` in the `officeXP_ActionContentInfo.xml` file.
- ♦ Create another bundle called as `ApplicationX-SP1` that installs the support pack for Application X.
- ♦ Change the path of the dependent OfficeXPSP1 bundle to `ApplicationX-SP1` in the `officeXP_ActionContentInfo.xml` to install both `ApplicationX` and its support pack.

A sample `officeXP_ActionContentInfo.xml` is as follows:

```
<ActionInformation>
  <ActionSet type="Install">
    <Action name="Install MSI" index="1">
      <Content>
        <ContentFilePath includeAllFilesinFolder="false"
includeAllFilesinSubFolders="false">E:\files\ApplicationX.msi</
ContentFilePath>
      </Content>
    </Action>
    <Action name="Install Bundle" index="2">
      <DependentBundlePath>bundlefolder/ApplicationX-SP1</
DependentBundlePath>
    </Action>
  </ActionSet>
  <ActionSet type="Uninstall">
    <Action name="Undo Install Actions" index="1">
      <Content>
        <ContentFilePath includeAllFilesinFolder="false"
includeAllFilesinSubFolders="false">E:\files\ApplicationX.msi</
ContentFilePath>
      </Content>
```

```
</Action>

</ActionSet>

</ActionInformation>
```

#### 4 Create a bundle by using the following command:

```
zman bundle-create new_bundle_name bundle_xml_filename.xml
bundle_location --actioninfo bundle_name ActionContentInfo.xml
```

If you do not specify the location of the bundle creation, the bundle is created in the root folder (/Bundles) by default.

For example, use the following command to create a bundle called ApplicationX in the root folder (/Bundles):

```
zman bundle-create ApplicationX officeXP.xml --actioninfo
officeXP_ActionContentInfo.xml
```

You can also specify the folder in which the bundle should be created.

For example, use the following command to create a bundle called ApplicationY in the **Software** folder under the root folder (/Bundles/Software):

```
zman bundle-create ApplicationY officeXP.xml /Bundles/Software --
actioninfo officeXP_ActionContentInfo.xml
```

## 2.6.3 Understanding the zman Bundle XML File Format

The `bundle-export-to-file` command serializes the bundle information, which is stored in the database, into an XML file. Each bundle contains actions that are grouped into action sets such as Install and Launch. An exported bundle XML file contains information for the bundle, such as UID, Name, Path, PrimaryType, SubType, Category, System Requirements, and information on all ActionSets and their actions. The file does not include information about assignment of the bundle to devices or users, and add-on images for the bundle.

A sample XML format template, `WindowsMSIBundle.xml`, is available at `/opt/microfocus/zenworks/share/zman/samples/bundles` on a Linux server and in `"%ZENSERVER_HOME%\microfocus\Zenworks\share\zman\samples\bundles` on a Windows server.

---

**NOTE:** If the exported XML file contains extended ASCII characters, you must open it in an editor by using UTF-8 encoding instead of ANSI encoding, because ANSI encoding displays the extended ASCII characters as garbled.

---

When you create a bundle from the XML file, zman uses the information specified in the `<Description>`, `<SubType>`, `<Category>`, `<ActionSets>`, and `<SysReqs>` elements of the file. The values for the Name and Parent Folder are taken from the command line. For the remaining elements, the default value is used.

Follow the guidelines listed below to work with the XML file:

- ♦ If you want to create a bundle without file content or dependency on another bundle, you need only the bundle XML file to create a bundle.

- ♦ If you want to create a bundle with content or dependency on another bundle, you must provide an additional XML file, which contains the path of the content file or the dependent bundle, as an argument to the `--actioninfo` option of the `bundle-create` command.

A sample XML format template, `ActionInfo.xml`, is available at `/opt/microfocus/zenworks/share/zman/samples/bundles` on a Linux server and in `"%ZENSERVER_HOME%\microfocus\Zenworks\share\zman\samples\bundles` on a Windows server.

- ♦ If you want to modify the `<Data>` element of actions in the exported XMLfile, ensure that the new data is correct and that it conforms to the schema. The `zman` utility does a minimal validation of the data and does not check for the errors in the data. Hence, the bundle might be successfully created, but with invalid data. Such a bundle fails when deployed on a managed device.
- ♦ File content or bundle dependencies are associated with a particular action in `<ActionSet>`. The Action Content Information XML file should contain the path of the file to which the file content is to be associated and the index of the action in the `<ActionSet>`.

For example, the MSI file to be installed when you create the Windows MSI Bundle is associated to the first Install MSI action in the Install action set of the created Windows MSI Bundle.

- ♦ The `<ActionSet>` is specified by the `type` attribute. It should be the same as the Action Set type of the bundle XML file.
- ♦ The `<Action>` element has a `name` attribute, which is optional, for user readability.
- ♦ The `index` attribute is mandatory. It specifies the action to which the content or dependency should be associated. The index value of the first action in `<ActionSet>` is 1.
- ♦ Each action can have multiple `<Content>` elements, each containing a `<ContentFilePath>` element. The `<ContentFilePath>` element contains the path of the file content to be associated with the Action. Ensure that the filename is the same as the filename specified in the bundle XML file in `<Data>` for that action.
- ♦ Ensure that the order of the `<Content>` elements is in accordance with the order in the bundle XML file. For example, the Windows MSI bundle should have the MSI file in the first `<Content>` element, followed by `<Content>` elements with the path to the MST files in the order specified in `<Data>` for that action.
- ♦ For creating Windows MSI bundles, you can include all the files in the folder or subfolders by setting the `includeAllFilesinFolder` and `includeAllFilesinSubFolders` attributes to `True`. The dependency to another bundle can be specified by giving the bundle path as a value of the `<DependentBundlePath>` element. The path of the bundle specified should be relative to `/Bundles` as shown below.

```
<ActionSet type="Install">
<Action name="Install MSI" index="1">
<Content>
<ContentFilePath includeAllFilesinFolder="false"
includeAllFilesinSubFolders="false">E:\files\ApplicationX.msi</
ContentFilePath>
</Content>
<Content>
```

```

<ContentFilePath includeAllFilesinFolder="false"
includeAllFilesinSubFolders="false">E:\files\ApplicationX_MST1.mst</
ContentFilePath>

</Content>

</Action>

<Action name="Install Bundle" index="2">

<DependentBundlePath>bundlefolder/ApplicationX-SP1</
DependentBundlePath>

</Action>

</ActionSet>

```

- ♦ To get the UID of an object, use the `object-get-GUID` command. You must manually edit the object UIDs in the bundle XML file in the following scenarios:
  - ♦ In the Bundle Installed system requirement, the path and the UID of the bundle must be changed in the `<BundleInstalledReq>` element under the `<SysReqs>` element.
  - ♦ In the Imaging bundle, the UID of the server containing the `.img` file must be manually changed in the ZENworks Image and Multicast Image Set actions. Also, the UID of the linked application bundle must be manually changed in the Linked Application Bundle and Multicast Image Set actions. Ensure that the linked bundle already has an add-on image that was created manually, because it is not automatically created when the bundle is linked to the image bundle.

---

**NOTE:** If you export a bundle which has a with string values into an XML file, the string value in it will be in Base 64 encoding format. You cannot use this XML file as a template to create another bundle using `zman`, because the string value which is in Base 64 format in this XML file cannot be changed.

---

## 2.7 Creating iOS Bundles

iOS bundles allow you to configure and manage Apple App Store apps, Apple VPP apps, and Enterprise apps. You can also distribute a configuration profile using the iOS Bundles feature. For more information on these bundles, see [ZENworks Mobile Management Reference](#).

## 2.8 Creating Corporate Bundles

Allows you to configure and manage corporate resources on devices. Using this bundle you can create a Wi-Fi profile that will enable you to configure and distribute Wi-Fi configurations to devices. For more information on these bundles, see [ZENworks Mobile Management Reference](#).

## 2.9 Creating Android Bundles

Android bundles are automatically created when a play store app is approved in Google Play Store. You can create additional bundles for these apps by navigating to the Apps Catalog page. Using the bundles feature, you can also enable or disable system apps on Android devices. For more information on these bundles, see [ZENworks Mobile Management Reference](#).

## 2.10 Creating Windows MDM Bundles

ZENworks lets you deploy and manage applications on Windows 10 devices that are enrolled in the MDM mode. You can deploy MSI packages to Windows MDM Bundles using the EnterpriseDesktopAppManagement Configuration Service Provider (CSP). You can also deploy other CSPs for various configurations to be deployed on the devices. For more information on these bundles, see the [Deploying Applications](#) section in the [Windows MDM Reference](#) guide.

## 2.11 Exporting and Importing Bundles

Using the Export and Import bundles feature, you can copy bundles from one zone to another. This feature helps you to export and import bundles from a test environment to a production environment.

**Use Case:** This feature is useful in a scenario where you want to deploy an application to multiple devices using the bundle feature, and prior to publishing the bundle, you want to test it to ensure that there are no glitches during deployment.

The bundle export and import feature enables you to create a bundle in a test zone and test the functionality of the bundle. After you have tested the bundle, you can export the bundle as a ZIP file to your local drive using the Export feature that is available in ZENworks Control Center (ZCC). The same ZIP file can then be imported to the production zone by using the Import feature.

### 2.11.1 Exporting Bundles

This feature enables you to export bundles to the local drive. If you export bundles using the ZMAN command prompt, only the XML files are exported. However, when you export bundles using this feature the metadata files, icons, settings and XML files are also exported.

#### To Export Bundles:

- 1 Log into ZENworks Control Center, and in the left pane click **Bundles**.
- 2 Select the bundles that you want to export.
- 3 Click **Action > Export**.

Based on the browser settings, you will be either prompted for the download location or the bundle will be automatically saved to the default download location.



## 2.11.2 Importing Bundles

This enables you to import bundles from the local drive into the zone.

Before importing any bundles ensure that you have configured the following bundle settings:

- ♦ Action sets associated with the bundle. For more information, see [Chapter 6, “Actions,” on page 65](#)
- ♦ System requirements. For more information see, ZENworks 2017 System Requirements.
- ♦ The Bundle – Relationships. For more information, see [Section 8.8, “Dependency Bundles,” on page 170](#)

**To import bundles:**

- 1 Click **New > Import Bundle**.
- 2 Upload the bundle in the required format:
  - ♦ **ZIP file:** Click  and allow the browser to launch ZCC Helper. Click **Browse** to select the required file and then click **Upload**.
  - ♦ **A directory:** Click  and allow the browser to launch ZCC Helper. Click **Browse** to select the required folder and then click **Upload**.

---

**NOTE:** To upload files, you need to ensure that ZCC Helper is installed on the device.

---

- 3 Select **Maintain Folder Structure**, to retain the folder structure of the imported bundle.
- 4 Select **Create as Sandbox** to create a sandbox-only version of the bundle that can be tested before being published.
- 5 Click **Next**.
- 6 (Optional) In the **Bundle Configuration** page, double-click the bundle name to edit the name.
- 7 Click **Next**. The **Bundle Summary** page displays the details of the imported bundles.
- 8 Click **Finish**. The **Bundle Import Status** page displays the status of all the bundles that were imported.

---

**NOTE:** To view the import status of the bundles, click the **Import Status** button.

---

# 3 Viewing the Bundle Information

When you create a bundle, the bundle is listed on the Bundles page of the ZENworks Control Center.




For more information on the created bundle, review the following sections:

- ♦ [Section 3.1, “Understanding the Bundle Page,” on page 49](#)
- ♦ [Section 3.2, “Bundle Summary Page,” on page 49](#)

For more information on the Dashboard tab, see [Accessing the Bundle Dashboard](#).

## 3.1 Understanding the Bundle Page

The Bundles page displays the following information:

- ♦ **Status:** Gives a quick indication of message logging and enforcement status of the bundle. The status icons are:
  -  - No warning or error messages; bundle enforcement succeeded
  -  - Warning messages; bundle enforcement succeeded
  -  - Error messages; bundle enforcement failed
- ♦ **Name:** Displays the object’s (bundle, bundle group, or the bundle folder) name. Click the name to view or edit the object’s information.
- ♦ **Type:** Displays the type of the object. For example, a Folder, Bundle Group, Windows Bundle, Linux Bundle, or Preboot Bundle.
- ♦ **Category:** Displays the bundle category selected during the creation of the bundle. For example, Copy Directory.
- ♦ **Enabled:** Displays whether the bundle is enabled to be deployed on a device or not. The possible values are **Yes** and **No**.
- ♦ **Version:** Displays the latest published version of the bundle. However, if the bundle is a sandbox-only bundle, it displays **Sandbox**.
- ♦ **Has Sandbox:** Displays whether the bundle has a sandbox or not. The possible values are **Yes** and **No**.

## 3.2 Bundle Summary Page

The Summary page of a bundle displays the following panels:

- ♦ [Section 3.2.1, “General,” on page 50](#)
- ♦ [Section 3.2.2, “Message Log,” on page 54](#)
- ♦ [Section 3.2.3, “Upcoming Events,” on page 55](#)

## 3.2.1 General

The General panel provides a summary of the bundle's general settings.

### Bundle Type

Displays the type of bundle.

### Size

Click **Compute** to display the size of the content associated with the bundle. To view the correct size of the bundle, check for the bundle size information in the bundle summary page after the content import is complete.

When you create a bundle, the bundle's files are imported to the ZENworks content repository. The import is a server process that can take a while. Until the import is complete, the size of the bundle is displayed as 0 (zero).

### Version

Displays the latest published version of the bundle. However, if the bundle is a sandbox-only bundle or has a sandbox, it displays **Sandbox**.

### Enabled

Displays whether or not the bundle can be deployed to managed devices. If a bundle is enabled, it can be deployed to managed devices.

When you disable a bundle that has already been deployed to a managed device, the bundle icon is removed from all the shortcut locations of the device. However, all the actions performed on the device prior to the disabling of the bundle remain unchanged. If this bundle is assigned to a new device, the bundle shortcut icons are not placed in the device's shortcut locations.

If the bundle is disabled, click **Enable** to allow it to be deployed.

### Number of Errors Not Acknowledged

An error is anything that causes the deployment or installation of the bundle to fail. The number displayed indicates the number of unacknowledged errors, which are any errors that you have not specifically marked as acknowledged. Unacknowledged errors are displayed in the Message Log section.

### Number of Warnings Not Acknowledged

A warning is anything that does not cause the deployment or installation of the bundle to fail, but indicates minor problems with the bundle. The number displayed indicates the number of unacknowledged warnings, which are any warnings that you have not specifically marked as acknowledged. Unacknowledged warnings are displayed in the Message Log section.

## GUID

Displays the bundle's GUID (global unique identifier), a randomly generated string that provides a unique identifier for the bundle. You cannot edit the GUID.

## Display Name

Displays the bundle's name as it appears in ZENworks Control Center (ZCC) and the ZENworks Agent (on managed devices). Click [Edit](#) to change the name. Changing the name does not cause the bundle to be redeployed. It is recommended that you specify a name that is brief and more relevant to the end user.

## Original Created Date

Displays the timestamp (Month, date, year and time) when the bundle was created and saved for the first time. The author of the bundle will also be displayed in this field.

## Version Created Date

Displays the timestamp (Month, date, year and time) when the current version of the bundle was created. The version created date will be updated only when the bundle version is changed.

## Modified Date

Displays the timestamp (Month, date, year and time) when the bundle was modified. The modifier name is also displayed in this field. When the version of the policy is updated, then the modified date will also be updated.

## Description

Displays the bundle's description, if one was provided when the bundle was created. The description appears in ZCC and the ZENworks Agent (on managed devices). Click [Edit](#) to change the description.


It is recommended that you provide enough information to the user by detailing the actions that will be performed when the user double-clicks the bundle icon on the device. To view the description on the device, the user can right-click the bundle icon and select [Properties](#).

## Icon

Determines the shortcut icon that ZENworks Agent displays on managed devices. During creation of the bundle, if you specified a custom icon rather than using the standard ZENworks bundle icon, this field displays the image and name of the custom icon. If you did not specify a custom icon, this field is empty and the standard icon is used.

To easily identify the bundle, you could use an icon that represents the application associated with the bundle. It is recommended that you upload a .JPG, .PNG, or .BMP format and a square image. However, ZENworks automatically converts the uploaded icon images to the correct format and size.

Click **Edit** to change the icon, delete the icon, or add an icon if one is not specified.

To select an icon, click , allow browser to launch ZCC Helper, and then browse to and select the icon you want to display on managed devices.

If you do not specify an icon, a default icon is used.

---

**NOTE:** For Linux bundles, only the PNG and JPEG formats are supported.

---

## Contacts

Displays the contact information (names, phone numbers, and e-mail addresses) of the people who you want users to contact with problems or questions about the bundle. The contact information is displayed by ZENworks Agent on managed devices.

As the contact information can be viewed by all the users to whom the bundle is assigned, ensure that you provide the appropriate contact information.

Click **Edit** to change the contact information, delete contact information, or add contact information.

## Administrator Notes

Displays any information that has been added specifically for ZENworks administrators to view. The notes are displayed only in ZCC.

It is recommended that you provide detailed information related to every aspect of the bundle, thereby providing all the required information for administrators. You can specify information that will enable other ZENworks administrators to decide whether or not they would need to use the bundle. You can also specify information such as what is the OS version, whether it's a 32-bit or 64-bit bundle, where is it installed (especially if the location is not very common), and whether license costs are involved. It is also a good practice to end the note with the date and your name and if you have changed an existing bundle, place your changes at the end of the list.

Click **Edit** to change the notes, add notes, or delete notes. Editing the note does not create a sandbox. You can edit the administrator notes for any version of a bundle.

## ZENworks Explorer Folder Path

Displays the folder path used by ZENworks Agent when displaying the bundle on the **Start** menu.

For example, if you specify `Applications/Accounting` as the path and choose to display the bundle on the **Start** menu, ZENworks Agent creates an `Applications/Accounting` folder on the **Start** menu and adds the bundle to it.

You can place multiple bundles in a single folder by specifying the same folder path for each of the bundles.

Click **Edit** to change the folder path, add a folder path, or delete the folder path.

## Add-On Image File

You can create an image file for the bundle to use as an add-on image to a base image. If you have already created an image file for the bundle, this field displays the name of the image file. Otherwise, click **Create** to create the image file and assign it to image servers.

If the bundle includes any dependent bundles, you can also create and assign an add-on image for the dependent bundles.

## Show Bundle Activity

Click **Yes** to display the bundle activity indicator window during the distribution, installation, repair, and uninstallation of a bundle on the managed device. If set to **Yes**, this window is also displayed for actions defined in the Launch Action set. The user on the managed device cannot close this bundle activity indicator window.

On Windows 2000 devices, the control that indicates the progress of the bundle execution on the managed device is not displayed in the bundle activity indicator window.

## Dependency Bundles

Displays **None** if there are no bundle dependencies for this bundle. If there are dependencies for this bundle, click **Display Bundle Dependencies** to display a list of additional bundles that are required by this bundle.

The list is for viewing only. To change a bundle dependency, switch to the **Actions** tab, click the appropriate action (for example, **Install** or **Launch**), then locate the **Linked Application Bundle** or **Linked Preboot Bundle**. Select the entry and perform the action you want (for example, edit or delete it).

For more information, see [“Dependency Bundles” on page 170](#).


## Severity

This field is available only for Linux bundles. It indicates the severity, such as Security, Recommended or Optional.

## YUM Service

This field is available only for Linux bundles and Linux Dependency bundles.

Click **Create** to create a YUM service and assign it to ZENworks Servers in a Management Zone. You can create a YUM service for a bundle and use it on devices that are not managed by ZENworks. Click **Help** for more information on how to create a YUM service.




When you create the YUM service, the bundle’s Summary page is displayed. The **YUM Service** field displays the relative path of the repository. The In-Progress icon indicates the progress. Click the **Summary** tab to refresh the page. The  icon indicates that the service is hosted on the Primary Server. The relative path of the YUM repository is displayed in the **YUM Service** field.

A yellow  icon is displayed when the repository is not updated with the packages in the bundle.

Click **Edit** to edit the YUM service details. You can edit the YUM service to add or remove Primary Servers.

## 3.2.2 Message Log

The Message Log panel displays all unacknowledged messages generated for the object. An unacknowledged message is one that you have not yet reviewed and marked as acknowledged.

- ♦ **Status:** Displays an icon indicating the type of message:  critical,  warning, and  normal.
- ♦ **Message:** Displays a brief description of the event that occurred.
- ♦ **Date:** Displays the date and time the event occurred.

---


**NOTE:** The Message Log panel on the bundle's sandbox or the older versions page does not display any messages. However, the Message Log panel on the bundle's published version page displays the messages of the bundle's published version, sandbox, and the older versions.

---

A message remains in the Message Log list until you acknowledge it. You can acknowledge individual messages, acknowledge all messages at one time, or view more information about both acknowledged and unacknowledged messages. The following table explains how to do these tasks:


Task	Steps	Additional Details
Acknowledge a message	<ol style="list-style-type: none"><li>1. Click the message to display the Message Detail Information dialog box.</li><li>2. Click <b>Acknowledge</b>.</li></ol>	If you decide that you don't want to acknowledge the message, click <b>Finished</b> to dismiss the dialog box. This causes the message to remain in the Message Log list.
Acknowledge all messages	<ol style="list-style-type: none"><li>1. In the Tasks list located in the left navigation pane, click <b>Acknowledge All Messages</b>.</li></ol>	
View all acknowledged or unacknowledged messages	<ol style="list-style-type: none"><li>1. Click the <b>Advanced</b> button to display the Edit Message Log page.</li></ol>	<p>In addition to viewing all acknowledged and unacknowledged messages, you can also view only those messages with a specific status or date, view more details about messages, and acknowledge messages.</p> <p>Click the <b>Help</b> button on the Edit Message Log page for specific information about performing tasks on that page.</p>
Delete a message	<ol style="list-style-type: none"><li>1. Click the message to display the Message Detail Log dialog box.</li><li>2. Click <b>Delete</b>.</li></ol>	Deleting a message completely removes the message from your ZENworks system.

### 3.2.3 Upcoming Events

The Upcoming Events panel lists all bundles d to deploy or launch today on all managed devices in your ZENworks Management Zone. To view the events for another day, click the  icon to select a specific day or use the 1, 7, and 31 arrows to view events for the previous or next day, week, or month.

Click a bundle to display or edit its details such as summary, relationship, requirement, actions, or settings.

Click a time to view the bundle's details, including the time the event is d to fire, its type (Date Specific, Event, Recurring, etc.), the dates on which the event is d to be performed, and the event's start and end time.

Click  to view the bundle's assignment details, including the bundle's folder and its assignments (devices or workstations).



# 4 Managing Bundle Groups

A bundle group lets you group bundles to ease administration and to provide easier assigning and scheduling of the bundles in the bundle group.

You can use ZENworks Control Center or the zman command line utility to create bundle groups. This section explains how to perform this task using the ZENworks Control Center. If you prefer the zman command line utility, see [“Bundle Commands” in ZENworks Command Line Utilities Reference](#).

For information on assigning a bundle group to a user or device, see [Chapter 9, “Managing Bundle Assignments,” on page 175](#).

The following sections contain more information:

- ♦ [Section 4.1, “Creating Bundle Groups,” on page 57](#)
- ♦ [Section 4.2, “Renaming or Moving Bundle Groups,” on page 58](#)
- ♦ [Section 4.3, “Copying the System Requirements of a Bundle Group,” on page 59](#)
- ♦ [Section 4.4, “Group Members,” on page 59](#)
- ♦ [Section 4.5, “Deleting a Bundle Group,” on page 60](#)
- ♦ [Section 4.6, “Adding a Bundle to a Group,” on page 60](#)
- ♦ [Section 4.7, “Copying a Bundle Group to a Content Server,” on page 62](#)

## 4.1 Creating Bundle Groups

- 1 In ZENworks Control Center, click the **Bundles** tab.
- 2 Click **New > Bundle Group**.
- 3 Fill in the fields:

**Group Name:** Provide a name for the bundle group. The name must be different than the name of any other item (bundle, group, folder, and so forth) that resides in the same folder. The name you provide displays in ZENworks Control Center.

For more information, see [“Naming Conventions in ZENworks Control Center” in the ZENworks Control Center Reference](#).

**Folder:** Type the name or browse to and select the ZENworks Control Center folder where you want the bundle to reside. The default is `/bundles`, but you can create additional folders to organize your bundles.

If you want to create the group in another folder, browse to and select the folder. By default, the group is created in the current folder.

**Description:** Provide a short description of the bundle group's contents. This description displays in ZENworks Control Center.


- 4 Click **Next** to display the Add Group Members page, then specify bundles to be members for the group.

You can add any number of bundles to the group. You cannot add other bundle groups to the group.

**4a** Click **Add** to display the Select Members dialog box.

Because you are adding bundles to the group, the Select Members dialog box opens with the **Bundles** folder displayed.

**4b** Browse for and select the bundles you want to add to the group. To do so:

**4b1** Click  next to a folder to navigate the folders until you find the bundle you want to select.

If you know the name of the bundle you are looking for, you can also use the **Item name** box to search for the bundle.

**4b2** Click the underlined link in the **Name** column to select the bundle and display its name in the **Selected** list.

**4b3** (Optional) Repeat [Step 4a](#) and [Step 4b](#) to add additional bundles to the **Selected** list.

**4b4** Click **OK** to add the selected bundles to the group.

**5** Click **Next** to display the Summary page, review the information and, if necessary, use the **Back** button to make changes to the information.

**6** (Optional) Select the **Define Additional Properties** option to display the group's properties page after the group is created. You can then configure additional bundle properties.

**7** Click **Finish** to create the group.

Before the bundle group's contents are distributed to devices or users, you must continue with [Section 9.3, "Assigning a Bundle Group to Devices," on page 181](#) or [Section 9.4, "Assigning a Bundle Group to Users," on page 182](#).

## 4.2 Renaming or Moving Bundle Groups

Use the **Edit** drop-down list on the Bundles page to edit an existing object. To access the **Edit** drop-down list, you must select an object by clicking the check box next to the object's name in the list.

Depending on the type of object you select, you can rename, copy, or move the selected object. For example, if you select a Bundle object, you can rename, copy, and move the bundle. If you select a Bundle Group object, you can rename or move the Bundle Group object, but not copy it. If the option is dimmed, that option is not available for the selected object type.

Some actions cannot be performed on multiple objects. For example, if more than one check box is selected, the **Rename** option is not available from the **Edit** menu.

**1** In ZENworks Control Center, click the **Bundles** tab.

**2** In the **Bundles** list, select the box next to the bundle group's name, click **Edit**, then click an option:

**Rename:** Click **Rename**, provide a new name for the folder, then click **OK**.

**Move:** Click **Move**, select a destination folder for the selected objects, then click **OK**.

## 4.3 Copying the System Requirements of a Bundle Group

For more information, see [Section 4.3, “Copying the System Requirements of a Bundle Group,”](#) on [page 59](#).

## 4.4 Group Members

This section enables you to manage members in the group.

### 4.4.1 Adding Members to a Group

To add a member to a group

- 1 Click **Add** to display the **Select Members** dialog box.
- 2 Browse and select the bundles you want to assign to the group.  
You can also use the **Item name** box to search for the bundle.
- 3 Click **OK** to add the selected bundle to the group.

### 4.4.2 Removing Members from a Group

Select the check box next to the member you want to delete, and Click **Remove**.

### 4.4.3 Reordering Members in a Group


To reorder the bundle group member:

- 1 Select the check box next to the member you want to move.
- 2 Click **Move Up** or **Move Down** to relocate.

### 4.4.4 Copy Members

Using **Copy Member**, you can:

#### Copy a member to an existing group

1. Select **Add selected items to an existing Group**, and click .  
In the **Select Group** page, select the required group, and then click **OK**.
2. In the **Copy To Group**, click **OK**.

#### Copy a member by creating a new group

1. Select **Create a new Group to contain the selected items**, and specify the following:  
**Group Name:** Specify the group name.

**Folder:** Specify the name, or browse to the ZCC folder where you want to create the group.

2. Click **OK**.

## 4.4.5 Move Members

Using Move Member, you can:

### Move a member to an existing group

1. Select **Add selected items to an existing Group**, and click .

In the **Select Group** page, select the required group, and then click OK.

2. In the Move To Group, click OK.

### Move a member by creating a new group

1. Select **Create a new Group to contain the selected items**, and specify the following:

**Group Name:** Specify the group name.

**Folder:** Specify the name, or browse to the ZCC folder where you want to create the group.

2. Click OK.

## 4.5 Deleting a Bundle Group

Deleting a bundle group does not delete its bundles. It also does not uninstall the bundles from devices where they have already been installed. To uninstall the bundles from devices, you should use the **Uninstall** option for each bundle before deleting the bundle group.

- 1 In ZENworks Control Center, click the **Bundles** tab.
- 2 In the **Bundles** list, select the check box next to the bundle group (or bundle groups).
- 3 Click **Delete**.

---


**NOTE:** Deleting a bundle group does not immediately remove the YUM service that was created for the bundle group. The YUM service is removed when the next YUM Services Refresh is configured. Click the [Click here to Update YUM Service Now](#) link in **YUM Service Settings** to remove the YUM service immediately.

---

## 4.6 Adding a Bundle to a Group

You can add the bundle to any bundle groups that already exist or you can create a new bundle group as part of the assignment process. The bundle inherits the group's assignments and s, which means that you save time by managing one bundle group rather than each individual bundle.

Adding a bundle to a group is not the same as assigning a bundle to a group (user or device). For more information on assigning bundles to devices, see [Assigning Existing Bundles to Devices](#) and assigning bundles to users, see [Assigning Existing Bundles to Users](#).

- 1 In ZENworks Control Center, click the **Bundles** tab.
- 2 In the **Bundles** list, select the check box next to the bundle (or bundles).
- 3 Click **Action > Add to Group**.
- 4 Select **Add selected items to an existing group** if the group to which you want to add the objects already exists.  
or  
Select **Create a new group to contain the selected items** if you need to create a new group for the selected objects.
- 5 (Conditional) If you chose **Add selected items to an existing group** in [Step 4](#), click **Next** to display the Targets page.  
The Targets page lets you select the groups to which you want to add the objects (users, devices, bundles, policies).
  - 5a Click **Add** to display the Select Groups dialog box.
  - 5b Browse for and select the groups to which you want to add the objects. To do so:
    - 5b1 Click  next to a folder to navigate the folders until you find the group you want to select.  
If you know the name of the group you are looking for, you can also use the **Item name** box to search for the group.
    - 5b2 Click the underlined link in the **Name** column to select the group and display its name in the Selected list.
    - 5b3 Repeat [Step 5b1](#) and [Step 5b2](#) to add additional groups to the **Selected** list.
    - 5b4 When you are finished selecting groups, click **OK**.
- 6 (Conditional) If you chose **Create a new group to contain the selected items** in [Step 4](#), click **Next** to display the Basic Information page, then fill in the fields:  
**Name:** Provide a name for the group. The group name must be different than the name of any other object (group, folder, device, user, bundle, policy, and so forth) that resides in the same folder and must conform to the ZENworks object naming conventions.  
For more information, see “[Naming Conventions in ZENworks Control Center](#)” in the [ZENworks Control Center Reference](#).  
**Folder:** By default, the group is created in the current folder. If you want to create the group in another folder, browse to and select the folder.  
**Description:** Provide a short description of the group’s purpose or contents.
- 7 Click **Next** to display the Summary page, review the information and, if necessary, use the **Back** button to make changes to the information.
- 8 Click **Finish** to add the selected objects to the group.

## 4.7 Copying a Bundle Group to a Content Server

By default, a bundle is copied to each content server. If you specify certain content servers as hosts, the bundle is hosted on only those content servers; it is not copied to all content servers.

- 1 In ZENworks Control Center, click the **Bundles** tab.
- 2 In the **Bundles** list, select the check box next to the bundle group (or bundle groups).
- 3 Click **Action > Specify Content Server**.
- 4 On the Content Servers/Distribution Points Where Content Will Be Specifically Included page, select the content servers.


This page lets you identify the content servers (ZENworks Servers and Distribution Points) that you want to host the previously selected content (bundles and policies). The content is hosted only on the content servers you select; it is excluded from all other content servers.

The relationships between content and content servers that you create using this wizard override any existing relationships. For example, if Bundle A is currently hosted on Server 1 and Server 2 and you use this wizard to include it on Server 1 only, Bundle A is no longer available on Server 2.

- 4a In the **Available** list, select the desired ZENworks Servers and Distribution Points.

You can use Shift+click and Ctrl+click to select multiple bundles or policies.

You cannot include content on a Distribution Point without including it on the Distribution Point's parent ZENworks Server. You must select both the Distribution Point and its parent.

- 4b Click the  button to move the selected content servers to the **Selected** list.
- 5 Click **Next** to display the **Finish** page, then review the information and, if necessary, use the **Back** button to make changes to the information.
- 6 Click **Finish** to create the relationships between the content and the content servers. Depending on the relationships created, the content is replicated to or removed from content servers during the next d replication.

# 5 Managing Folders

A folder is an organizational object. You can use folders to structure your bundles and bundle groups into a manageable hierarchy for your ZENworks system. For example, you might want a folder for each type of bundle (Windows Bundles folder, Preboot Bundles folder, and so forth), or, if applications are department-specific, you might want a folder for each department (Accounting Department folder, Payroll Department folder, and so forth).

The following sections contain additional information:

- ♦ [Section 5.1, “Creating Folders,” on page 63](#)
- ♦ [Section 5.2, “Renaming or Moving Folders,” on page 63](#)
- ♦ [Section 5.3, “Deleting a Folder,” on page 64](#)

## 5.1 Creating Folders

1 In ZENworks Control Center, click the **Bundles** tab.

2 Click **New > Folder**.

3 Provide a unique name for your folder. This is a required field.

When you name an object in ZENworks Control Center (folders, bundles, bundle groups, catalogs, and so forth), ensure that the name adheres to the naming conventions not all characters are supported. For more information on naming conventions, see [“Naming Conventions in ZENworks Control Center”](#) in the *ZENworks Control Center Reference*.

4 Type the name or browse to and select the folder that contains this folder in the ZENworks Control Center interface. This is a required field.

5 Provide a short description of the folder's contents.

6 Click **OK**.

## 5.2 Renaming or Moving Folders

Use the **Edit** drop-down list on the Bundles page to edit an existing object. To access the **Edit** drop-down list, you must select an object by clicking the check box next to the object's name in the list.

Depending on the type of object you select, you can rename, copy, or move the selected object. For example, if you select a Bundle object, you can rename, copy, and move the bundle. If you select a Folder object, you can rename or move the Folder object, but not copy it. If the option is dimmed, that option is not available for the selected object type.

Some actions cannot be performed on multiple objects. For example, if more than one check box is selected, the **Rename** option is not available from the **Edit** menu.

1 In ZENworks Control Center, click the **Bundles** tab.

2 In the **Bundles** list, select the box next to the folder's name, then click **Edit**.

3 Select an option:

- ♦ **Rename:** Click **Rename**, provide a new name for the folder, then click **OK**.
- ♦ **Move:** Click **Move**, choose a destination folder for the selected objects, then click **OK**.

## 5.3 Deleting a Folder

Deleting a folder also deletes all of its contents (bundles, bundle groups, subfolders).

- 1 In ZENworks Control Center, click the **Bundles** tab.
- 2 In the **Bundles** list, select the check box next to the folder (or folders).
- 3 Click **Delete**.

# 6 Actions

The **Actions** panel displays the action sets available for the bundle. Depending on the bundle type, the possible action sets are Distribute, Install, Launch, Repair, Uninstall, Terminate, and Preboot. For example, if you select a Windows bundle, six actions sets (Distribute, Install, Launch, Repair, Uninstall, Terminate) are available. If you select a Preboot bundle, Preboot is the only available action set available.

The Actions tab includes all actions that control what a bundle does. As part of the bundle actions, the content is distributed first, then the installation is run, and finally the application is started. The application can also be verified, uninstalled, and terminated if necessary. Also, certain bundles do not need to be distributed, while others do not need to be installed or started. It all depends on what they will do as well as the actions they contain.

You can choose to modify the action sets. For more information on modifying the action set options, see [Section 12.2, “Modifying Action Set Options,” on page 208](#).

The bundle category that you select during bundle creation is listed as an action in the actions page. For example, if you selected the Copy Directory category during the bundle creation, Copy Directory action is listed in the **Install** tab of the actions page. You can also add an action to any of the available action sets. When you do so, that action is also performed whenever the action set is applicable. For example, when you add an action to the Install action set, that action is performed whenever the bundle is installed.

For information on managing the actions, see [Section 12.1, “Managing Actions,” on page 205](#).

To access the action dialog box:

- 1 In ZENworks Control Center, click the **Bundles** tab.
- 2 Click the underlined link of a bundle in the **Name** column of the **Bundles** list.
- 3 Click the **Actions** tab.
- 4 Click one of the action set tabs (Distribute, Install, Launch, Repair, Uninstall, Terminate, or Preboot), click the **Add** drop-down list, then select an available action.

---

**NOTE:** It is recommended that you provide an Action Name that clearly explains what the action does. For example, if the action copies an installation file, then instead of the default action name (Install File(s)), you can name the action as *Copy <application name> installer*. Also, it is recommended that you never use an explicit catalogue name in actions. If an application is to be portable, it is better to refer to %INSTALL\_PATH% instead of C:\tmp.

---

The following sections contain information about the actions you can configure for the Distribute, Install, Launch, Repair, and Terminate action sets.

---

**IMPORTANT:** While naming an action, it is recommended that you specify a name that states the action that is being performed. For example, if you have defined an action to install Visual C++ at runtime, then you can name the action as *Install Visual C++ Runtime Bundle*.

---

For more information about the actions you can configure for the Preboot action set, see the *ZENworks Preboot Services and Imaging Reference*.

- ♦ [Section 6.1, “Action - Copy Directory,” on page 67](#)
- ♦ [Section 6.2, “Action - Copy Files,” on page 69](#)
- ♦ [Section 6.3, “Action - Create/Delete Directory,” on page 71](#)
- ♦ [Section 6.4, “Action - Delay,” on page 73](#)
- ♦ [Section 6.5, “Action - Display Message,” on page 74](#)
- ♦ [Section 6.6, “Action - Distribute Files,” on page 75](#)
- ♦ [Section 6.7, “Action - Edit INI File,” on page 75](#)
- ♦ [Section 6.8, “Action - Edit Text File,” on page 78](#)
- ♦ [Section 6.9, “Action - End Process,” on page 81](#)
- ♦ [Section 6.10, “Action - File Removal,” on page 81](#)
- ♦ [Section 6.11, “Action - Install Bundle,” on page 83](#)
- ♦ [Section 6.12, “Action - Install Directory,” on page 83](#)
- ♦ [Section 6.13, “Action - Install Files,” on page 88](#)
- ♦ [Section 6.14, “Action - Install MSI,” on page 91](#)
- ♦ [Section 6.15, “Action - Install MSP,” on page 94](#)
- ♦ [Section 6.16, “Action - Install Network MSI,” on page 96](#)
- ♦ [Section 6.17, “Action - Launch Bundle,” on page 99](#)
- ♦ [Section 6.18, “Action - Launch Java Application,” on page 100](#)
- ♦ [Section 6.19, “Action - Launch URL,” on page 103](#)
- ♦ [Section 6.20, “Action - Launch Executable,” on page 104](#)
- ♦ [Section 6.21, “Action - Launch Macintosh Executable,” on page 109](#)
- ♦ [Section 6.22, “Action - Install Executable,” on page 111](#)
- ♦ [Section 6.23, “Action - Install Linux Executable,” on page 116](#)
- ♦ [Section 6.24, “Action - Install Macintosh Executable,” on page 118](#)
- ♦ [Section 6.25, “Action - Launch Windows Thin Client Application,” on page 120](#)
- ♦ [Section 6.26, “Action - Prompt User,” on page 122](#)
- ♦ [Section 6.27, “Action - Reboot/Shutdown,” on page 124](#)
- ♦ [Section 6.28, “Action - Registry Edit,” on page 126](#)
- ♦ [Section 6.29, “Action - Run Script,” on page 131](#)
- ♦ [Section 6.30, “Action - Start/Stop Service,” on page 134](#)
- ♦ [Section 6.31, “Action - Terminate Application,” on page 135](#)
- ♦ [Section 6.32, “Action - Terminate Application Prompt,” on page 136](#)
- ♦ [Section 6.33, “Action - Undo Install Actions,” on page 137](#)
- ♦ [Section 6.34, “Action - Uninstall Bundle,” on page 137](#)
- ♦ [Section 6.35, “Action - Repair Bundle,” on page 138](#)

- [Section 6.36, “Action - Repair Install Actions,” on page 139](#)
- [Section 6.37, “Requirements,” on page 139](#)

## 6.1 Action - Copy Directory

The Action - Copy Directory dialog box lets you specify the directory to be copied and its destination directory. You can also specify the executable security level and the specific requirements that a device must meet for the action to be executed on the device.

---

**NOTE:** Copying a file or directory copies the file or directory from one location to another without uploading the files into the ZENworks content repository. Copying a file or directory is described as copying without using content. When copying a file or directory, the managed device performs the copy operation and must be able to resolve both the source and destination paths. Also, when copying a file or directory, the file or directory is not cached on the managed device.

Installing a file or directory uploads the file or directory to the ZENworks content repository before it is distributed to assigned devices. Installing a file or directory is described as copying using content. When installing a file or directory, the file or directory is cached on the managed device.

Installing an executable file does not launch or execute the file. To launch or execute the file, you must add a launch executable action (Launch Windows Executable, Launch Java Application, and so forth) to the bundle.

---

You can access this information by using the following methods:

- As part of the process of creating a Windows bundle by using the **Copy Directory** bundle category. For more information, see [Section 2.5, “Creating Windows Bundles,” on page 28](#).
- In ZENworks Control Center, click the **Bundles** tab, click the underlined link of a bundle in the **Name** column of the **Bundles** list, click the **Actions** tab, click one of the action set tabs (Distribute, Install, Launch, Repair, Uninstall, Terminate, or Preboot), click the **Add** drop-down list, then select an available action.

The following sections contains additional information:

- [Section 6.1.1, “General,” on page 67](#)
- [Section 6.1.2, “Requirements,” on page 69](#)

### 6.1.1 General

The General page lets you specify the source directory, destination directory, copy option, and the executable security level.

#### Source Directory

If you have not installed ZCC Helper on this device, you must do so before you can browse for a directory.

Click **Browse**, and allow browser to launch ZCC Helper. The Select Folder dialog box is displayed, select the directory to copy.

## Destination Directory

Specify the destination path on the device where you want to copy the directory.

## Copy Option

Select a copy option from the list:

**Copy Always:** Copies the content of the directory regardless of whether the files currently exist on the workstation.

**Copy If Exists:** Copies the content of the directory only if the files currently exist on the workstation.

**Copy If Does Not Exist:** Copies the content of the directory only if the files does not currently exist on the workstation.

**Copy If Newer:** Copies the content of the directory only if the modified date and time of the file is newer than the existing file's date and time, or if the files do not currently exist on the workstation.

**Copy If Newer and Exists:** Copies the content of the directory only if it already exists on the workstation and the existing file has an older modification date or time.

**Copy if Newer Version:** Copies the content of the directory only if the internal version of the file is newer than the existing file's version (if version information is present).

**Request Confirmation:** Prompts the user to confirm that the content of the directory should be copied when the directory already exists on the workstation.

**Copy If Different:** Copies the content of the directory if the creation date, creation time, or size of the file is different than the existing file's date, time, or size.

## Attributes

Select one or more of the following attributes:

**Hidden:** Select the **Hidden** check box to specify that the directory is hidden after being copied.

**Read-only:** Select the **Read-only** check box to specify that the directory is read-only after being copied.

## Executable Security Level

On Windows 2000, Windows XP, Windows Vista, or Windows 7 device the application executable can run in either the "user" space or the "system" space. By default, the **Run normal** option is selected, which causes the application to run in the "user" space and inherit the same workstation security level as the logged-in user.

If the logged-in user's security level does not provide sufficient rights and file access to run the application, you can configure the application to run in the "system" space or as a dynamic administrator, as described below:

**Run as logged in user:** The action uses the logged-in user's credentials. For example, the action has the same rights to the registry and the file system as the logged-in user.

**Run as secure system user (Don't allow system to interact with desktop):** The application is run under the Local System user and inherits Administrator-level credentials. For example, the application has full rights to the registry and the file system. Because the security level is set to **Secure**, the application's interface is not displayed to the user and the application is only visible in the Task Manager. This option is useful when running applications that require full access to the workstation but require no user intervention. If you use mapped network drives to specify files and directories, the action fails because system users do not have access to user mapped drives.

**Run as dynamic administrator:** A dynamic administrator is an administrator account that is created on the fly to perform certain procedures, such as installing applications. Using a dynamic administrator is helpful when installing applications (some MSI applications, for example) that cannot be installed in the system space. When you select this action, the dynamic administrator is created, it performs the required tasks, and then the account is deleted.

You cannot use mapped network drives to specify files and directories because dynamic administrators do not have access to mapped drives.

**Select credential for network access:** If the file or directory specified in the action are a part of the UNC path or network share that can be accessed only through credentials, then browse through the credential vault to select a credential that has access to the network.

For more information on Credential Vault and adding credential to the Credential Vault, see “[Using the Credential Vault](#)” in the *ZENworks Control Center Reference*.

---

**NOTE:** Performing this action as dynamic administrator on a Windows domain controller fails because Microsoft does not allow the use of local administrator accounts on domain controllers.

---

## 6.1.2 Requirements

The Requirements page lets you define specific requirements that a device must meet for the action to be enforced on it. For information about the requirements, see [Requirements](#).

## 6.2 Action - Copy Files

The Action - Copy Files dialog box lets you specify files to copy to the device and the specific requirements that a device must meet for the action to be executed on the device.

You can access this information by using the following methods:

- ♦ As part of the process of creating a Windows bundle by using the **Copy Files** bundle category. For more information, see [Section 2.5, “Creating Windows Bundles,” on page 28](#).
- ♦ In ZENworks Control Center, click the **Bundles** tab, click the underlined link of a bundle in the **Name** column of the **Bundles** list, click the **Actions** tab, click one of the action set tabs (Distribute, Install, Launch, Repair, Uninstall, Terminate, or Preboot), click the **Add** drop-down list, then select an available action.

The following sections contains additional information:

- ♦ [Section 6.2.1, “General,” on page 70](#)
- ♦ [Section 6.2.2, “Requirements,” on page 71](#)

## 6.2.1 General

The General page lets you specify the files to copy to the device and the executable security level.

### File Details

Click **Add** to display the Select Files dialog box. In the **Select Files** dialog box, click Add, allow browser to launch ZCC Helper. In the **Select File** dialog box, browse for the file path and click **OK**. Click the **Help** button for more information.

### Edit File Details

The Edit File Details dialog box page lets you specify a copy option, the complete path of the source file to be copied, the path of the destination file, and whether the file is hidden or read-only after being copied to the device. Click any of the file names in the File Details dialog box to go to the Edit File Details dialog box.

**Renaming the source file:** To copy the source file to the destination directory with a different name, specify the new name along with the destination path in the **Destination File Name** field in the Edit File Details dialog box.

For example, to copy `run.exe` from `C:\Program Files\Internet Explorer\` to `D:\My Applications\Internet Explorer\ie.exe`, use `ie.exe` as the new name you specify in the **Destination File Name** field in the Edit File Details dialog box.

**Copy Option:** Select a copy option from the list. For details, see [Copy Option](#) in the [Action - Copy Directory](#) section.

**Attributes:** Select one or more of the following attributes:

- ♦ Hidden: Select the Hidden check box to specify that the directory is hidden after being copied.
- ♦ Read-only: Select the Read-only check box to specify that the directory is read-only after being copied.

### Executable Security Level

On Windows 2000, Windows XP, Windows Vista, or Windows 7 device, the application executable can run in either the “user” space or the “system” space. By default, the **Run normal** option is selected, which causes the application to run in the “user” space and inherit the same workstation security level as the logged-in user.

If the logged-in user's security level does not provide sufficient rights and file access to run the application, you can configure the application to run in the “system” space or as a dynamic administrator, as described below:

**Run as logged in user:** The action uses the logged-in user's credentials. For example, the action has the same rights to the registry and the file system as the logged-in user.

**Run as secure system user (Don't allow system to interact with desktop):** The application is run under the Local System user and inherits Administrator-level credentials. For example, the application has full rights to the registry and the file system. Because the security level is set to **Secure**, the application's interface is not displayed to the user and the application is only visible in

the Task Manager. This option is useful when running applications that require full access to the workstation but require no user intervention. If you use mapped network drives to specify files and directories, the action fails because system users do not have access to user mapped drives.

**Run as dynamic administrator:** A dynamic administrator is an administrator account that is created on the fly to perform certain procedures, such as installing applications. Using a dynamic administrator is helpful when installing applications (some MSI applications, for example) that cannot be installed in the system space. When you select this action, the dynamic administrator is created, it performs the required tasks, and then the account is deleted.

You cannot use mapped network drives to specify files and directories because dynamic administrators do not have access to mapped drives.

**Select credential for network access:** If the file or directory specified in the action are a part of the UNC path or network share that can be accessed only through credentials, then browse through the credential vault to select a credential that has access to the network.

For more information on Credential Vault and adding credential to the Credential Vault, see “[Using the Credential Vault](#)” in the *ZENworks Control Center Reference*.

---

**NOTE:** Performing this action as dynamic administrator on a Windows domain controller fails because Microsoft does not allow the use of local administrator accounts on domain controllers.

---

## 6.2.2 Requirements

The Requirements page lets you define specific requirements that a device must meet for the action to be enforced on it. For information about the requirements, see [Requirements](#).

## 6.3 Action - Create/Delete Directory

The Action - Create/Delete Directory dialog box lets you create or delete a directory on the managed device and define the specific requirements that a device must meet for the action to be executed on the device.

The **Delete Directory** action deletes the entire folder along with its inner files and folders; it also deletes the folders that are in the hidden mode.

You can access this information by using the following methods:

- ♦ As part of the process of creating a Windows bundle by using the **Create/Delete Directory** bundle category. For more information, see [Section 2.5, “Creating Windows Bundles,” on page 28](#).
- ♦ In ZENworks Control Center, click the **Bundles** tab, click the underlined link of a bundle in the **Name** column of the **Bundles** list, click the **Actions** tab, click one of the action set tabs (Distribute, Install, Launch, Repair, Uninstall, Terminate, or Preboot), click the **Add** drop-down list, then select an available action.

The following sections contains additional information:

- ♦ [Section 6.3.1, “General,” on page 72](#)
- ♦ [Section 6.3.2, “Requirements,” on page 73](#)

## 6.3.1 General

The General page lets you specify the name of the directory to create or delete from the managed device and the executable security level.

### Create Directory

Creates a directory on the managed device when the action is performed.

### Delete Directory

Deletes a directory on the managed device when the action is performed.

### Delete readonly directory

Deletes read-only directory on the managed device when the action is performed.

### Directory Name

Specify the complete path of the directory you want to create or delete on the managed device. This path must be resolved by the device on which the bundle is run.

### Executable Security Level

On Windows 2000, Windows XP, Windows Vista, or Windows 7 device, the application executable can run in either the “user” space or the “system” space. By default, the **Run normal** option is selected, which causes the application to run in the “user” space and inherit the same workstation security level as the logged-in user.

If the logged-in user's security level does not provide sufficient rights and file access to run the application, you can configure the application to run in the “system” space or as a dynamic administrator, as described below:

- ♦ **Run as logged in user:** The action uses the logged-in user's credentials. For example, the action has the same rights to the registry and the file system as the logged-in user.
- ♦ **Run as secure system user (Don't allow system to interact with desktop):** The application is run under the Local System user and inherits Administrator-level credentials. For example, the application has full rights to the registry and the file system. Because the security level is set to **Secure**, the application's interface is not displayed to the user and the application is only visible in the Task Manager. This option is useful when running applications that require full access to the workstation but require no user intervention. If you use mapped network drives to specify files and directories, the action fails because system users do not have access to user mapped drives.
- ♦ **Run as dynamic administrator:** A dynamic administrator is an administrator account that is created on the fly to perform certain procedures, such as installing applications. Using a dynamic administrator is helpful when installing applications (some MSI applications, for example) that cannot be installed in the system space. When you select this action, the dynamic administrator is created, it performs the required tasks, and then the account is deleted.

You cannot use mapped network drives to specify files and directories because dynamic administrators do not have access to mapped drives.

**Select credential for network access:** If the file or directory specified in the action are a part of the UNC path or network share that can be accessed only through credentials, then browse through the credential vault to select a credential that has access to the network.

For more information on Credential Vault and adding credential to the Credential Vault, see [Using the Credential Vault](#) in the *ZENworks Control Center Reference*.

---

**NOTE:** Performing this action as dynamic administrator on a Windows domain controller fails because Microsoft does not allow the use of local administrator accounts on domain controllers.

---

## 6.3.2 Requirements

The Requirements page lets you define specific requirements that a device must meet for the action to be enforced on it. For information about the requirements, see [Requirements](#).

## 6.4 Action - Delay

The Action - Delay dialog box lets you specify a system delay between two actions in the action set and the specific requirements that a device must meet for the action to be executed on the device.

To access this dialog box in ZENworks Control Center, click the **Bundles** tab. Click the underlined link of a bundle in the **Name** column of the **Bundles** list, click the **Actions** tab, click one of the action set tabs (Distribute, Install, Launch, Repair, Uninstall, Terminate, or Preboot), click the **Add** drop-down list, then select an available action.

The following sections contains additional information:

- ♦ [Section 6.4.1, “General,” on page 73](#)
- ♦ [Section 6.4.2, “Requirements,” on page 74](#)

### 6.4.1 General

The General page lets you specify a system delay between two actions in the action set.

#### Delay for a Specific Time

Specify the desired time delay, in seconds. After completing the action, the system delays for the specified amount of time before performing the next action.

## Wait for Processes or Services to Start

Specify the processes or services that must start before the next action in the action set is performed.

To add a process or service to the list:

- 1 Click **Add** to display the **Add Service/Process** dialog box.
- 2 Select **Process**, specify the process that must start before performing the next action, then click **OK**. You can specify either the name of the process or its full path. For example, you can specify `notepad.exe` or `${SystemRoot}\system32\notepad.exe`.  
or  
Select **Service**, specify the service that must start before performing the next action, then click **OK**.
- 3 Repeat Step 2 as needed.
- 4 Specify the maximum amount of time to wait for the process or service to start before performing the next action in the action set. If the process or service does not start in the specified amount of time, the next action is performed.
- 5 Click **OK**.

Click **Edit** to change a process or service, or click **Remove** to delete a process or service.

### 6.4.2 Requirements

The Requirements page lets you define specific requirements that a device must meet for the action to be enforced on it. For information about the requirements, see [Requirements](#).

## 6.5 Action - Display Message

The Action - Display Message dialog box lets you specify a message to display on devices when the action is performed and the specific requirements that a device must meet for the action to be executed on the device.

To access this dialog box in ZENworks Control Center, click the **Bundles** tab. Click the underlined link of a bundle in the **Name** column of the **Bundles** list, click the **Actions** tab, click one of the action set tabs (Distribute, Install, Launch, Repair, Uninstall, Terminate, or Preboot), click the **Add** drop-down list, then select an available action.

The following sections contains additional information:

- ♦ [Section 6.5.1, “General,” on page 74](#)
- ♦ [Section 6.5.2, “Requirements,” on page 75](#)

### 6.5.1 General

The General page lets you specify a message to display on devices when the action is performed.

## Define Prompts

Define the prompt that you want to display on the device. Additionally, you can specify different locales with different messages.

The ZENworks Agent automatically detects the locale of the operating system and displays the prompt defined in the same locale as the operating system locale. However, if the operating system locale does not match any of the specified locales, then ZENworks displays the prompt defined by the first locale in the list.

To create a message:

- 1 Click **Add** to display the **Select Locale and Prompt** dialog box.
- 2 Select a language from the **Locale** drop-down list. The message displays only on devices in the specified locale. You can create different messages, each with its own locale setting.
- 3 Specify the text you want to display on the device.

---

**NOTE:** On a Macintosh and a Linux device, the new line character does not work. To display a message on a new line, you must use a <br> tag before the message.

---

- 4 Click **OK**.

Click **Edit** to change the prompt, or click **Remove** to delete the prompt.

## 6.5.2 Requirements

The Requirements page lets you define specific requirements that a device must meet for the action to be enforced on it. For information about the requirements, see [Requirements](#).

## 6.6 Action - Distribute Files

The Distribute Files Action distributes the content of the bundle from the ZENworks Server to the managed device or user. There are no configuration tasks that you need to perform for this action.

## 6.7 Action - Edit INI File

The Action - Edit INI File dialog box lets you specify a configuration file and configure the list of changes to be performed on the file. You can also create a file, if one does not exist. You can also specify the specific requirements that a device must meet for the action to be executed on the device.

To access this dialog box in ZENworks Control Center, click the **Bundles** tab. Click the underlined link of a bundle in the **Name** column of the **Bundles** list, click the **Actions** tab, click one of the action set tabs (Distribute, Install, Launch, Repair, Uninstall, Terminate, or Preboot), click the **Add** drop-down list, then select an available action.

The following sections contain additional information:

- ♦ [Section 6.7.1, “General,” on page 76](#)
- ♦ [Section 6.7.2, “Advanced,” on page 78](#)
- ♦ [Section 6.7.3, “Requirements,” on page 78](#)

## 6.7.1 General

The General page lets you specify a configuration file and configure the list of changes to be performed on the file. You can also create a file, if one does not exist.

### Filename

Specify the file that you want to change. For example, `C:\Program Files\OpenOffice.org 2.0\program\setup.ini`.

### Encoding

Specify the encoding that you want to use:

**Auto detect:** Use the encoding used in the original file that you specified in the Filename field. This is the default option.

**ASCII:** Use ASCII encoding.

**Unicode:** Use Unicode encoding.

**UTF-8:** Use UTF-8 (8-bit UCS/Unicode Transformation Format) encoding.

### Create File, If Does Not Exist

Specify whether you want to create the file specified in the Filename field, if it does not exist. The file is created with the same name and the extension as specified in **File Path**. If the file specified in **File Path** does not have an extension, then the created file also does not have any extension.

If this option is selected and **Encoding** is set to **Auto detect**, the file is created in UTF-8 format with the same name and the extension as specified in File Path.

### INI Changes

The INI Changes page lets you specify the INI file to change, add sections to the file, add keys to a section in the file, and import changes from another INI file.

To access this dialog box in ZENworks Control Center, click the **Bundles** tab. Click the underlined link of a bundle in the **Name** column of the **Bundles** list, click the **Actions** tab, click one of the action set tabs (Distribute, Install, Launch, Repair, Uninstall, Terminate, or Preboot), click the **Add** drop-down list, then select an available action.

The following table lists the tasks you can perform to manage INI changes.

**Table 6-1** INI Tasks

Task	Steps	Additional Details
Specify the INI file to change	1. Specify the file that you want to change.	For example, C:\Program Files\OpenOffice.org 2.0\program\setup.ini.
Add a section	<ol style="list-style-type: none"> <li>Click <b>Add</b>, then click <b>New Section Change</b> to open the Add a Change dialog box.</li> <li>Fill in the fields, then click <b>OK</b>. Click the <b>Help</b> button for additional information.</li> </ol>	If you specify an existing section and add new keys to the list, then the existing section is updated with the newly added keys. For example, if a section sect1 with <b>k1=v1</b> already exists and if you specify a new section sect1 with <b>k1=v1</b> , <b>k2=v2</b> , then the newly added key <b>k2=v2</b> is added to sect1.
Add keys to a section	<ol style="list-style-type: none"> <li>Click the section to which you want to add the keys.</li> <li>Specify the keys to be added to the section in the INI file. Type the key, such as <b>key1</b> or <b>key1=value1</b>, then click <b>Add</b> to move the key to the list.  You can edit or remove an entry, or you can use the <b>Move Up</b> and <b>Move Down</b> buttons to order the list. The changes to the file are made in the order listed.</li> </ol>	
Edit an INI Change	1. Click the desired item you want to edit. The Add a Change dialog box is displayed.	The <b>Section Change Type</b> configured for the section is displayed by default in the Add Change dialog box.
Remove a section or keys	1. Select the check box next to the desired item, then click <b>Delete</b> .	
Import INI changes from another file	<ol style="list-style-type: none"> <li>Click <b>Import</b> to display the Import INI Changes from File dialog box.</li> <li>Specify the file from which you want to import changes, then click <b>OK</b>.</li> </ol>	
Change the order of items	1. Select the check box next to an item, click <b>Edit</b> , then select an option ( <b>Sort</b> , <b>Move Up</b> , <b>Move Down</b> ).	
Select all the objects of a parent folder	1. Select the check box next to the parent folder, then click <b>Edit &gt; Select All Children</b> .	
Deselect all the objects of a parent folder	1. Select the check box next to the parent folder, then click <b>Edit &gt; Deselect All Children</b> .	

Task	Steps	Additional Details
Clear Selection	1. Click <a href="#">Edit</a> > <a href="#">Clear Selection</a> .	

**Run Action As:** Specify **System** (the default) or **User** from the **Run Action As** list. Specify **System** if removing files requires access to all areas of the device's file system. If you use mapped network drives to specify files and directories, you must run the action as **User**.

## 6.7.2 Advanced

The Advanced page lets you create the file (if it does not exist), specify the number of backup files to retain, and specify key-value separators and comment characters.

**Create File, If Does Not Exist:** Specify whether you want to create the file specified in the **Filename** field, if it does not exist.

**Number of File Backup(s) to Retain:** Specify the number of backups of the INI file to retain. The default is 5 backup copies, but you can specify any number between 1 and 25. When the number of backup copies of the file exceeds the number specified here, the oldest backup file is overwritten.

**Key-Value Separator:** Specify the character you want to separate key values. You can use an equals sign (=) or a colon (:).

**Value Separator:** Specify the character you want to separate the multiple values. You can use characters such as equals sign (=), comma(,), space( ), hash (#), semicolon (;) or a colon (:).

**Comment Character:** Specify the character you want precede comments in the INI file. You can use a semicolon (;) or a pound sign (#).

**Append key-value separator to the key when value is not available:** Select this option to append the key-value separator to the key even if the value is not available. For example, in the **setup.ini** file used by Acrobat Reader\*, the **CmdLine** key does not have a value but requires a key-value separator.

## 6.7.3 Requirements

The Requirements page lets you define specific requirements that a device must meet for the action to be enforced on it. For information about the requirements, see [Requirements](#).

## 6.8 Action - Edit Text File

The Action - Edit Text File dialog box lets you specify a file and configure the list of changes to be performed on the file. You can also create a file, if one does not exist. You can also specify the specific requirements that a device must meet for the action to be executed on the device.

To access this dialog box in ZENworks Control Center, click the **Bundles** tab. Click the underlined link of a bundle in the **Name** column of the **Bundles** list, click the **Actions** tab, click one of the action set tabs (Distribute, Install, Launch, Repair, Uninstall, Terminate, or Preboot), click the **Add** drop-down list, then select an available action.

The following sections contains additional information:

- ♦ [Section 6.8.1, “General,” on page 79](#)
- ♦ [Section 6.8.2, “Requirements,” on page 80](#)

## 6.8.1 General

The General page lets you specify a file and configure the list of changes to be performed on the file. You can also create a file, if one does not exist.

### Filename

Specify the file that you want to change. For example, `${SystemDrive}\Program Files\myfile.txt`.

### File Backup(s) to Retain

Specify the number of backups of the text file to retain. The default is 5 backup copies, but you can specify any number between 1 and 25. When the number of backup copies of the file exceeds the number specified here, the oldest backup file is overwritten.

### Encoding

Specify the encoding that you want to use:

- ♦ **Auto detect:** Use the encoding used in the original file that you specified in the **Filename** field. This is the default option.
- ♦ **ASCII:** Use ASCII encoding.
- ♦ **Unicode:** Use Unicode\* encoding.
- ♦ **UTF-8:** Use UTF-8 (8-bit UCS/Unicode Transformation Format) encoding.

## File Operation > Specify Contents of the File

Use this option to specify the contents of the text file.

- ♦ **Import Contents from an Existing File on this Device:** Browse to and select the text file from which you want to import its contents.
- ♦ **Contents of the File:** Specify the contents of the newly created file. If an Environment Variable is specified, then ZENworks will resolve that variable to the associated value. For example, if `%USERNAME%` is provided as the Environment Variable, then the variable will be resolved to the value of the logged-in user.

However, if you do not want the variable to be resolved and want it to be displayed as is, then you need to add additional percent signs before and after the variable. For example, if you want the output to be displayed as `%USERNAME%`, specify `%%USERNAME%%` or if you want the output to be displayed as `%%USERNAME%%`, specify `%%%USERNAME%%%`.

- ♦ **Create File, If Does Not Exist:** Specify whether you want to create the file specified in the **Filename** field, if it does not exist. If this option is selected and **Encoding** is set to **Auto detect**, the file is created in UTF-8 format with the same name and the extension as specified in File Path.

## File Operation > Specify Changes to the File

Use this option to specify the changes to the text file.

- ♦ **Change List:** Specify the changes that you want to make to the text file. Click **Add** to open the Add a Change dialog box, fill in the fields, then click **OK**. Click the **Help** button for additional information.

You can edit or remove an entry, or you can use the **Move Up** and **Move Down** buttons to order the list. The changes to the file are made in the order listed.

- ♦ **Create File, If Does Not Exist:** Specify whether you want to create the file specified in the **Filename** field, if it does not exist.
- ♦ **Contents of the File:** If you selected the **Create File, If Does Not Exist** check box, specify the contents of the newly created file that is created if the specified file does not exist. If an Environment Variable is specified, then ZENworks will resolve that variable to the associated value. For example, if %USERNAME% is provided as the Environment Variable, then the variable will be resolved to the value of the logged-in user.

However, if you do not want the variable to be resolved and want it to be displayed as is, then you need to add additional percent signs before and after the variable. For example, if you want the output to be displayed as %USERNAME%, specify %%USERNAME%% or if you want the output to be displayed as %%%USERNAME%%, specify %%%USERNAME%%.

- ♦ **Apply Changes Configured in the Change List:** Specify whether you want to apply the changes that you added to the **Change List** box to the newly created file.

## Run Action As

On Windows, specify **System** (the default) or **User** from the **Run Action As** list. Specify **System** if removing files requires access to all areas of the device's file system. If you use mapped network drives to specify files and directories, you must run the action as **User**.

On Linux, specify **root** (the default) or **User** from the list. Specify **root** only if the managed devices are run by the root user.

## 6.8.2 Requirements

The Requirements page lets you define specific requirements that a device must meet for the action to be enforced on it. For information about the requirements, see [Requirements](#).

## 6.9 Action - End Process

The Action - End Process dialog box lets you specify the executable name of the process that you want to stop (for example, `notepad`, `mspaint`, `winword`, and so forth). If the process is not running on the device, the End Process task completes. You can also specify the specific requirements that a device must meet for the action to be executed on the device.

To access this information in ZENworks Control Center, click the **Bundles** tab. Click the underlined link of a bundle in the **Name** column of the **Bundles** list, click the **Actions** tab, click one of the action set tabs (Distribute, Install, Launch, Repair, Uninstall, Terminate, or Preboot), click the **Add** drop-down list, then select an available action.

The following sections contains additional information:

- ♦ [Section 6.9.1, “General,” on page 81](#)
- ♦ [Section 6.9.2, “Requirements,” on page 81](#)

### 6.9.1 General

The General page lets you specify the executable name of the process that you want to stop (for example, `notepad`, `mspaint`, `winword`, and so forth). If the process is not running on the device, the End Process task completes.

### 6.9.2 Requirements

The Requirements page lets you define specific requirements that a device must meet for the action to be enforced on it. For information about the requirements, see [Requirements](#).

## 6.10 Action - File Removal

The Action - File Removal dialog box lets you specify files or directories to remove from the device and the specific requirements that a device must meet for the action to be executed on the device.

To access this dialog box in ZENworks Control Center, click the **Bundles** tab. Click the underlined link of a bundle in the **Name** column of the **Bundles** list, click the **Actions** tab, click one of the action set tabs (Distribute, Install, Launch, Repair, Uninstall, Terminate, or Preboot), click the **Add** drop-down list, then select an available action.

You can use this action to perform an automated system cleanup. For example, you can specify that the `c:\windows\Temp\Temporary Internet Files` directory and all files matching `c:\windows\Temp\*.log` in are removed from the device.

On a Windows managed device, you cannot remove read-only files. If you specify a directory that contains several files (including some read-only files), the directory and the read-only files are not removed when the File Removal action runs. The files that are not read-only, however, are removed from the Windows device.

The following sections contains additional information:

- ♦ [Section 6.10.1, “General,” on page 82](#)
- ♦ [Section 6.10.2, “Requirements,” on page 82](#)

## 6.10.1 General

The General page lets you specify files or directories to remove from the device.

### Full Path to Source Files/Directories

Specify the full path to the file or directory that you want to remove, then click **Add** to add the file or directory to the list. You can use wildcard characters. If you use a mapped network drive to specify the path, you must select **User** from the **Run Action As** list.

### Include System Files

Select this option to remove system files. If you specify a directory for removal that includes both system and non-system files, only non-system files are deleted, unless you specify this option.

### Delete Folder Only if Empty

Select this option if you want to remove the specified folders only if they are empty.

### When a File is Locked, Retry \_ Times, Every \_ Seconds

If a file is locked when the action is performed, the file cannot be removed. Select the check box and then specify the number of retry attempts and the time interval between attempts. By default, the action is retried 3 times with 5 seconds between each attempt.

### Run Action As

On Windows, specify **System** (the default) or **User** from the **Run Action As** list. Specify **System** if removing files requires access to all areas of the device's file system. If you use mapped network drives to specify files and directories, you must run the action as **User**, else the action fails because system users do not have access to user mapped drive.

On Linux, specify **root** (the default) or **User** from the list. Specify **root** only if the managed devices are run by the `root` user.

## 6.10.2 Requirements

The Requirements page lets you define specific requirements that a device must meet for the action to be enforced on it. For information about the requirements, see [Requirements](#).

## 6.11 Action - Install Bundle

The Action - Install Bundle dialog box lets you browse to and select the bundle to install on the device. The bundle is installed on the device even if it has not been previously assigned to that device. You can also specify the specific requirements that a device must meet for the action to be executed on the device.


To access this dialog box in ZENworks Control Center, click the **Bundles** tab. Click the underlined link of a bundle in the **Name** column of the **Bundles** list, click the **Actions** tab, click one of the action set tabs (Distribute, Install, Launch, Repair, Uninstall, Terminate, or Preboot), click the **Add** drop-down list, then select an available action.

The following sections contains additional information:

- ♦ [Section 6.11.1, “General,” on page 83](#)
- ♦ [Section 6.11.2, “Requirements,” on page 83](#)

### 6.11.1 General

The General page lets you browse to and select the bundle to install on the device. The bundle is installed on the device even if it has not been previously assigned to that device.

Click  to browse to and select the bundle to install on the device.

The **Look in** list defaults to `/Bundles`. If you have created subfolders to hold your bundles, use the down arrow to select the appropriate folder. The **Items of type** list defaults to **All Types** so that all types of bundles are displayed. If you know the name of the bundle you are looking for, you can use the **Item name** box to search for the bundle.

Creating this action creates a bundle dependency. For more information, see [Section 8.8, “Dependency Bundles,” on page 166](#).

### 6.11.2 Requirements

The Requirements page lets you define specific requirements that a device must meet for the action to be enforced on it. For information about the requirements, see [Requirements](#).

## 6.12 Action - Install Directory

The Action - Install Directory dialog box lets you specify the directory to be installed, specify a destination path, specify whether the directory is hidden or read-only after being installed on the device (applicable only for Windows), and specify a copy option. You can also specify the requirements that a device must meet for the action to be executed on the device

Copying a file or directory copies the file or directory from one location to another without uploading the files into the ZENworks content repository. Copying a file or directory is described as copying without using content. When copying a file or directory, the managed device performs the copy operation and must be able to resolve both the source and destination paths. Also, when copying a file or directory, the file or directory is not cached on the managed device.

Installing a file or directory uploads the file or directory to the ZENworks content repository before it is distributed to assigned devices. Installing a file or directory is described as copying using content. When installing a file or directory, the file or directory is cached on the managed device. If a directory does not have any content, it is not uploaded to the content repository. This causes any successive action depending on this empty directory to fail.

Installing an executable file does not launch or execute the file. To launch or execute the file, you must add a launch executable action (Launch Executable, Launch Java Application, and so forth) to the bundle.

You can access this information by using the following methods:

- ♦ As part of the process of creating a Windows bundle by using the **Install Directory** bundle category. For more information, see [Section 2.5, “Creating Windows Bundles,” on page 28](#).
- ♦ In ZENworks Control Center, click the **Bundles** tab, click the underlined link of a bundle in the **Name** column of the **Bundles** list, click the **Actions** tab, click one of the action set tabs (Distribute, Install, Launch, Repair, Uninstall, Terminate, or Preboot), click the **Add** drop-down list, then select an available action.


The following sections contains additional information:

- ♦ [Section 6.12.1, “General,” on page 84](#)
- ♦ [Section 6.12.2, “Requirements,” on page 87](#)

## 6.12.1 General

The General page lets you specify the directory to be installed, specify a destination path, specify whether the directory is hidden or read-only after being installed on the device (applicable for Windows only), and specify a copy option.

### Source Directory

Click , allow browser to launch ZCC Helper. In the Select Directory dialog box, browse and select the directory you want to install on the device.

If you have not installed ZCC Helper on this device, you must do so before you can browse to and upload directories to be installed.

By default, the content uploaded to the ZENworks content repository is encrypted and compressed before it is distributed to assigned devices. However, if you do not want the content to be encrypted and compressed, then select the **Do not compress or encrypt uploaded content** option.

Select the **Upload all files within the source directory as a single package** option to enable all the files within the specified source directory to be uploaded as a single content. This option is helpful in scenarios where you choose to upload a large number of files. For example, selecting a Microsoft Office application as a source directory.

---

**NOTE:** You cannot upload an empty directory.

---

## Upload Files As

Specifies whether the content has been uploaded as a single content or multiple contents to the ZENworks content repository.

- ♦ If the **Upload all files within the source directory as a single package** option in the Select Directory dialog box is not selected, then the files are uploaded by packaging in to multiple contents and the value of **Upload Files As** option is displayed as **Multiple Content**.
- ♦ If the **Upload all files within the source directory as a single package** option in the Select Directory dialog box is selected, then the files are uploaded by packaging in to single content and the value of **Upload Files As** option is displayed as **Single Content**.

---

### NOTE

When you select the **Upload all files within the source directory as a single package** option, if there are an empty sub directories with the directory, they will be ignored.

---

## Packaging

Specifies how the content is packaged before it is distributed to assigned devices.

If the **Do not compress or encrypt uploaded content** option in the Select Directory dialog box is not selected, the value of **Packaging** option is initially displayed as **Auto** as the content is in the process of being encrypted and compressed. After the content has been encrypted and compressed, the value of **Packaging** option changes to **Compressed, Encrypted**.

If the **Do not compress or encrypt uploaded content** option in the Select Directory dialog box is selected, the value of **Packaging** option is displayed as **None** because the content is neither compressed nor encrypted.

## Destination Directory

Specify the destination directory on the device in which you want to install the directory. The destination directory should be the folder where the files are installed from the uploaded source folder. For example: If you upload a source directory `zen` with files that should be copied to directory `/tmp/zen` on the Linux device, then the Destination Directory should be `/tmp/zen`.

## Permissions

You can configure permissions and set the access for the directory that you have installed. This option is applicable for the destination directory as well as the underlying files.

## Mode

Select this option and enter a 3 digit octal number to specify the permissions for owner, group, and others. This option is applicable for Linux bundles.

## Owner

Select this option and set the access for Owner, Group, and Others. When you select this option, save the changes, and click the Install Directory action that you have created, then the Owner option is no longer selected and the option Mode is selected by default. However, this does not affect the selected options and is another way of setting permissions in ZCC. This option is applicable for Linux bundles only.

## Hidden

Applicable for Windows only. Select the **Hidden** check box to specify that the directory is hidden after installation.

## Read-Only

Applicable for Windows only. Select the **Read-only** check box to specify that the directory is read-only after installation.

## Copy Option

Select a copy option from the list:

- ♦ **Copy Always:** Copies the contents of the directory regardless of whether the files currently exists on the workstation.
- ♦ **Copy If Exists:** Copies the contents of the directory only if the files currently exists on the workstation.
- ♦ **Copy If Does Not Exist:** Copies the contents of the directory only if the files does not currently exist on the workstation.
- ♦ **Copy If Newer:** Copies the contents of the directory only if the modified date and time of the file is newer than the existing file's date and time, or if the files does not currently exist on the workstation.
- ♦ **Copy If Newer and Exists:** Copies the contents of the directory only if it already exists on the workstation and the date and time of the file is newer than the existing file's date and time.
- ♦ **Copy if Newer Version:** Copies the contents of the directory only if the internal version of the file is newer than the existing file's version (if version information is present).
- ♦ **Request Confirmation:** Prompts the user to confirm that the content of the directory should be copied when the directory already exists on the workstation.
- ♦ **Copy If Different:** Copies the contents of the directory if the creation date, creation time, or size is different than the existing file's date, time, or size.

---

**NOTE:** It is recommended that when you copy files to the local disk, you use the ZENworks Repository to store the files. This ensures that the entire package is available wherever the computer is located. This makes the application portable, since the user's computer needs to have neither a UNC/SMB connection to a server nor some other means for transferring files to the local hard drive before they can be used by the bundle. The computer will not even need to have an Internet connection for the installation if the configuration is correct.

---

## Executable Security Level

On Windows 2000, Windows XP, Windows Vista, or Windows 7 device, the application executable can run in either the “user” space or the “system” space. By default, the **Run normal** option is selected, which causes the application to run in the “user” space and inherit the same workstation security level as the logged-in user.

If the logged-in user's security level does not provide sufficient rights and file access to run the application, you can configure the application to run in the “system” space or as a dynamic administrator, as described below:

- ♦ **Run as logged in user:** The action uses the logged-in user's credentials. For example, the action has the same rights to the registry and the file system as the logged-in user.
- ♦ **Run as secure system user (Don't allow system to interact with desktop):** The application is run under the Local System user and inherits Administrator-level credentials. For example, the application has full rights to the registry and the file system. Because the security level is set to **Secure**, the application's interface is not displayed to the user and the application is only visible in the Task Manager. This option is useful when running applications that require full access to the workstation but require no user intervention. If you use mapped network drives to specify files and directories, the action fails because system users do not have access to user mapped drives.
- ♦ **Run as dynamic administrator:** A dynamic administrator is an administrator account that is created on the fly to perform certain procedures, such as installing applications. Using a dynamic administrator is helpful when installing applications (some MSI applications, for example) that cannot be installed in the system space. When you select this action, the dynamic administrator is created, it performs the required tasks, and then the account is deleted.

You cannot use mapped network drives to specify files and directories because dynamic administrators do not have access to mapped drives.

**Select credential for network access:** If the file or directory specified in the action are a part of the UNC path or network share that can be accessed only through credentials, then browse through the credential vault to select a credential that has access to the network.

For more information on Credential Vault and adding credential to the Credential Vault, see [“Using the Credential Vault”](#) in the *ZENworks Control Center Reference*.

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**NOTE:** Performing this action as dynamic administrator on a Windows domain controller fails because Microsoft does not allow the use of local administrator accounts on domain controllers.

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### 6.12.2 Requirements

The Requirements page lets you define specific requirements that a device must meet for the action to be enforced on it. For information about the requirements, see [Requirements](#).

## 6.13 Action - Install Files

The Action - Install Files dialog box lets you specify the file to copy to the content server and from content server to the device, the destination directory and filename, and the copy options. You can also specify the specific requirements that a device must meet for the action to be executed on the device.

You can access this information by using the following methods:

- ♦ As part of the process of creating a Windows bundle by using the **Install Files** bundle category. For more information, see [Section 2.5, “Creating Windows Bundles,” on page 28](#).
- ♦ In ZENworks Control Center, click the **Bundles** tab, click the underlined link of a bundle in the **Name** column of the **Bundles** list, click the **Actions** tab, click one of the action set tabs (Distribute, Install, Launch, Repair, Uninstall, Terminate, or Preboot), click the **Add** drop-down list, then select an available action.

The following sections contains additional information:

- ♦ [Section 6.13.1, “General,” on page 88](#)
- ♦ [Section 6.13.2, “Requirements,” on page 90](#)

### 6.13.1 General

The General page lets you specify the file to copy to the content server and from content server to the device, the destination directory and filename, and the copy options. Click **Add** to display the Select Files dialog box.

The Select Files dialog box lets you specify the files to be copied, specify a destination and source directory, specify whether the files are hidden or read-only after being copied to the device, and specify a copy option.

Copying a file or directory copies the file or directory from one location to another without uploading the files into the ZENworks content repository. Copying a file or directory is described as copying without using content. When copying a file or directory, the managed device performs the copy operation and must be able to resolve both the source and destination paths. Also, when copying a file or directory, the file or directory is not cached on the managed device.

Installing a file or directory uploads the file or directory to the ZENworks content repository before it is distributed to assigned devices. Installing a file or directory is described as copying using content. When installing a file or directory, the file or directory is cached on the managed device.

Installing an executable file does not launch or execute the file. To launch or execute the file, you must add a launch executable action (Launch Executable, Launch Java Application, and so forth) to the bundle.

#### File

Click **Add**, allow browser to launch ZCC Helper. The Select Files dialog box is displayed, click **Add**, select the files you want to copy to the device, and then click **Upload**. Repeat this step as many times as necessary to copy the desired files.

If ZCC Helper is not installed on this device, you must install it before you can browse for file paths.

By default, the content uploaded to the ZENworks content repository is encrypted and compressed before it is distributed to assigned devices. However, if you do not want the content to be encrypted and compressed, then select the **Do not compress or encrypt uploaded content** option.

## Destination Directory

Specify the destination directory on the device in which you want to install the file.

## Copy Option

Select a copy option from the list:

- ♦ **Copy Always:** Copies the file regardless of whether the file currently exists on the workstation.
- ♦ **Copy If Exists:** Copies the file only if the file currently exists on the workstation.
- ♦ **Copy If Does Not Exist:** Copies the file only if the file does not currently exist on the workstation.
- ♦ **Copy If Newer:** Copies the file only if its modified date and time is newer than the existing file's date and time, or if the file does not currently exist on the workstation.
- ♦ **Copy If Newer and Exists:** Copies the file only if it already exists on the workstation and the date and time of the file is newer than the existing file's date and time.
- ♦ **Copy if Newer Version:** Copies the file only if its internal version is newer than the existing file's version (if version information is present).
- ♦ **Request Confirmation:** Prompts the user to confirm that the file should be copied when the file already exists on the workstation.
- ♦ **Copy If Different:** Copies the file if its creation date, creation time, or size is different than the existing file's date, time, or size.

---

**NOTE:** It is recommended that when you copy files to the local disk, you use the ZENworks Repository to store the files. This ensures that the entire package is available wherever the computer is located. This makes the application portable, since the user's computer needs to have neither a UNC/SMB connection to a server nor some other means for transferring files to the local hard drive before they can be used by the bundle. The computer will not even need to have an Internet connection for the installation if the configuration is correct.

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## Hidden

Select the **Hidden** check box to specify that the file is hidden after installation.

## Read-Only

Select the **Read-only** check box to specify that the file is read-only after installation.

## Executable Security Level

On Windows 2000, Windows XP, Windows Vista, or Windows 7 device, the application executable can run in either the “user” space or the “system” space. By default, the **Run normal** option is selected, which causes the application to run in the “user” space and inherit the same workstation security level as the logged-in user.

If the logged-in user's security level does not provide sufficient rights and file access to run the application, you can configure the application to run in the “system” space or as a dynamic administrator, as described below:

- ♦ **Run as logged in user:** The action uses the logged-in user's credentials. For example, the action has the same rights to the registry and the file system as the logged-in user.
- ♦ **Run as secure system user (Don't allow system to interact with desktop):** The application is run under the Local System user and inherits Administrator-level credentials. For example, the application has full rights to the registry and the file system. Because the security level is set to **Secure**, the application's interface is not displayed to the user and the application is only visible in the Task Manager. This option is useful when running applications that require full access to the workstation but require no user intervention. If you use mapped network drives to specify files and directories, the action fails because system users do not have access to user mapped drives.
- ♦ **Run as dynamic administrator:** A dynamic administrator is an administrator account that is created on the fly to perform certain procedures, such as installing applications. Using a dynamic administrator is helpful when installing applications (some MSI applications, for example) that cannot be installed in the system space. When you select this action, the dynamic administrator is created, it performs the required tasks, and then the account is deleted.

You cannot use mapped network drives to specify files and directories because dynamic administrators do not have access to mapped drives.

**Select credential for network access:** If the file or directory specified in the action are a part of the UNC path or network share that can be accessed only through credentials, then browse through the credential vault to select a credential that has access to the network.

For more information on Credential Vault and adding credential to the Credential Vault, see [“Using the Credential Vault”](#) in the *ZENworks Control Center Reference*.

---

**NOTE:** Performing this action as dynamic administrator on a Windows domain controller fails because Microsoft does not allow the use of local administrator accounts on domain controllers.

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### 6.13.2 Requirements

The Requirements page lets you define specific requirements that a device must meet for the action to be enforced on it. For information about the requirements, see [Requirements](#).

## 6.14 Action - Install MSI

The Action - Install MSI dialog box lets you specify the location of the MSI file; its Install, Uninstall, and Repair parameters; the transform file; and the executable security level. You can also specify the specific requirements that a device must meet for the action to be executed on the device.

You can access this information by using the following methods:

- ♦ As part of the process of creating a Windows bundle by using the **MSI Application** bundle category. For more information, see [Section 2.5, “Creating Windows Bundles,” on page 28](#).
- ♦ In ZENworks Control Center, click the **Bundles** tab, click the underlined link of a bundle in the **Name** column of the **Bundles** list, click the **Actions** tab, click one of the action set tabs (Distribute, Install, Launch, Repair, Uninstall, Terminate, or Preboot), click the **Add** drop-down list, then select an available action.

The following sections contains additional information:

- ♦ [Section 6.14.1, “General,” on page 91](#)
- ♦ [Section 6.14.2, “Advanced,” on page 92](#)
- ♦ [Section 6.14.3, “Requirements,” on page 94](#)

### 6.14.1 General

The General page lets you specify the location of the MSI file; its Install, Uninstall, and Repair parameters; the transform file; and the executable security level.


#### .msi File

Click , allow browser to launch ZCC Helper. The Select .msi File dialog box is displayed, click browse and select the .msi file to install.

Select the **Include all files in and below the directory of this file** option to include all the supporting files that are within the directory containing the .msi file and the subdirectories within it.

If you have not installed the ZCC Helper on this device, you must do so before you can browse to and upload files.

#### Install Parameters

Click  to display the [Install Parameters dialog box](#), then specify the desired parameters. Click the **Help** button for additional information.

#### Uninstall Parameters

Click  to display the [Uninstall Parameters dialog box](#), then specify the desired parameters. Click the **Help** button for additional information.

## Repair Parameters

Click  to display the [Repair Parameters dialog box](#), then specify the desired parameters. Click the [Help](#) button for additional information.

## MSI Properties

The MSI package contains the property values that were defined during the administrative installation of the application. These property values determine the way the Microsoft Windows Installer installs the application to the workstation. In some cases, you might want to change one or more of the property values. For example, a property value might define the default location for a user's work files. By adding the property to the list and changing the property's value, you can override the default location defined in the MSI package.

If necessary, you can add public properties that were not included in the MSI package. When doing so, you should be careful to add only those properties that are valid for the package. The following options are available:

- ♦ **Add:** To override a property value, you change the property value and add the property to the Properties list so that Application Launcher knows to use that property value rather than the one defined in the MSI package. To do so, click **Add** to display the [MSI Properties](#) dialog box. In the **Name** field, select the property whose value you want to override, specify the new value in the **Value** field, then click **OK** to add the property to the [MSI Properties](#) list.
- ♦ **Edit:** To modify a property that is in the [MSI Properties](#) list, select the property, click **Edit**, modify the value data, then click **OK**.
- ♦ **Remove:** To remove a property from the [MSI Properties](#) list, select the property, then click **Remove**. Deleting the property causes future installations of the application to use the property value defined in the MSI package.


---

**IMPORTANT:** The total length of the [MSI Properties](#) and the [Install Parameters](#) should not exceed 1024 characters.

---

## 6.14.2 Advanced

### Transform File

Click **Add**, in the Select Transform File dialog box click , allow browser to launch ZCC Helper. In the [Select Transform File](#) dialog box, click **Browse**, select the desired transform file, and then click **Upload**. You can upload the transform file or you can specify its location.

If you have not installed ZCC Helper on this device, you must do so before you can browse for a file.

Different groups within an organization often use the same application, but they might not require the same feature set. One of the benefits of Windows Installer is that if you have 10 groups needing 10 different feature sets or other alterations for the same application, you can deploy the same MSI package to all 10 user groups, but with a different transform file (MST) applied for each group.

A transform file is a collection of changes applied to an MSI installation. It contains all modification information, such as whether features are installed; how they are installed; which files, shortcuts, and registry entries are included; and Add/Remove Programs applet information.

If you have vendor-supplied MSI packages, you can use AdminStudio ZENworks Edition to create and manage transforms.

## Executable Security Level

On Windows 2000, Windows XP, Windows Vista, or Windows 7 device, the application executable can run in either the “user” space or the “system” space. By default, the **Run normal** option is selected, which causes the application to run in the “user” space and inherit the same workstation security level as the logged-in user.

If the logged-in user's security level does not provide sufficient rights and file access to run the application, you can configure the application to run in the “system” space or as a dynamic administrator, as described below:

- ♦ **Run as logged in user:** The MSI application inherits the logged-in user's credentials. For example, the application has the same rights to the registry and the file system as the logged-in user.

Select the application's display mode: **Normal**, **Minimized**, **Maximized**, or **Hidden**. In Hidden mode, the application runs normally without a user interface available. This is useful if you want the application to process something, then go away without user intervention.

Select **Grant administrator privilege to user during installation** to provide administrator privileges to the logged-in user. However, providing administrator privileges to a user might pose security risks. If this option is selected, the user on the managed device is prompted to enter the password when the MSI is installed on the device. To install the MSI, the user must log in to the device with a user account that has a password configured.

---

**NOTE:** On a Vista device, if the administrator is logged in to the device and the **Grant administrator privilege to user during installation** is selected, the action is performed in the quiet mode.

---

- ♦ **Run as secure system user (Don't allow system to interact with desktop):** The application is run under the Local System user and inherits Administrator-level credentials. For example, the application has full rights to the registry and the file system. Because the security level is set to **Secure**, the application's interface is not displayed to the user and the application is only visible in the Task Manager. This option is useful when running applications that require full access to the workstation but require no user intervention.
- ♦ **Run as dynamic administrator:** A dynamic administrator is an administrator account that is created on the fly to perform certain procedures, such as installing applications. Using a dynamic administrator is helpful when installing applications (some MSI applications, for example) that cannot be installed in the system space. When you select this action, the dynamic administrator is created, it performs the required tasks, and then the account is deleted.

You cannot use mapped network drives to specify files and directories because dynamic administrators do not have access to mapped drives.

---

**NOTE:** Performing this action as dynamic administrator on a Windows domain controller fails because Microsoft does not allow the use of local administrator accounts on domain controllers.

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### 6.14.3 Requirements

The Requirements page lets you define specific requirements that a device must meet for the action to be enforced on it. For information about the requirements, see [Requirements](#).

## 6.15 Action - Install MSP

The Action - Install MSP dialog box lets you specify the location of the MSP file, command line parameters, and executable security level. You can also specify the specific requirements that a device must meet for the action to be executed on the device.

You can access this information by using the following methods:

- ♦ As part of the process of creating a Windows bundle by using the **MSP Application** bundle category. For more information, see [Section 2.5, “Creating Windows Bundles,” on page 28](#).
- ♦ In ZENworks Control Center, click the **Bundles** tab, click the underlined link of a bundle in the **Name** column of the **Bundles** list, click the **Actions** tab, click one of the action set tabs (Distribute, Install, Launch, Repair, Uninstall, Terminate, or Preboot), click the **Add** drop-down list, then select an available action.


The following sections contains additional information:

- ♦ [Section 6.15.1, “General,” on page 94](#)
- ♦ [Section 6.15.2, “Requirements,” on page 95](#)

### 6.15.1 General

The Action - Install MSP dialog box lets you specify the location of the MSP file, command line parameters, and executable security level.

#### **.msp File**

Click , allow browser to launch ZCC Helper. In the **Select .msp File** dialog box, click **browse** and select the MSP file, and then click **Upload**. You can also enter the UNC path of the .msp file for a network install.

If you have not installed ZCC Helper on this device, you must do so before you can browse for a file path.

#### **Command Line Parameters**

Specify the command line parameters that you want to run when the MSP file is installed.

## Executable Security Level

On Windows 2000, Windows XP, Windows Vista, or Windows 7 device, the application executable can run in either the “user” space or the “system” space. By default, the **Run normal** option is selected, which causes the application to run in the “user” space and inherit the same workstation security level as the logged-in user.

If the logged-in user's security level does not provide sufficient rights and file access to run the application, you can configure the application to run in the “system” space or as a dynamic administrator, as described below:

- ♦ **Run as logged in user:** The MSI application inherits the logged-in user’s credentials. For example, the application has the same rights to the registry and the file system as the logged-in user.

Select the application’s initial window size: **Normal**, **Minimized**, **Maximized**, or **Hidden**. In Hidden mode, the application runs normally without a user interface available. This is useful if you want the application to process something then go away without user intervention.

- ♦ **Run as secure system user (Don't allow system to interact with desktop):** The application is run under the Local System user and inherits Administrator-level credentials. For example, the application has full rights to the registry and the file system. Because the security level is set to **Secure**, the application's interface is not displayed to the user and the application is only visible in the Task Manager. This option is useful when running applications that require full access to the workstation but require no user intervention.
- ♦ **Run as dynamic administrator:** A dynamic administrator is an administrator account that is created on the fly to perform certain procedures, such as installing applications. Using a dynamic administrator is helpful when installing applications (some MSI applications, for example) that cannot be installed in the system space. When you select this action, the dynamic administrator is created, it performs the required tasks, and then the account is deleted.

You cannot use mapped network drives to specify files and directories because dynamic administrators do not have access to mapped drives.

---

**NOTE:** Performing this action as dynamic administrator on a Windows domain controller fails because Microsoft does not allow the use of local administrator accounts on domain controllers.

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## 6.15.2 Requirements

The Requirements page lets you define specific requirements that a device must meet for the action to be enforced on it. For information about the requirements, see [Requirements](#).

## 6.16 Action - Install Network MSI

The Action - Install Network MSI dialog box lets you specify the location of the MSI file; its Install, Uninstall, and Repair parameters; transform file; and executable security level. You can also specify the specific requirements that a device must meet for the action to be executed on the device.

To access this dialog box in ZENworks Control Center, click the **Bundles** tab. Click the underlined link of a bundle in the **Name** column of the **Bundles** list, click the **Actions** tab, click one of the action set tabs (Distribute, Install, Launch, Repair, Uninstall, Terminate, or Preboot), click the **Add** drop-down list, then select an available action.

The following sections contains additional information:

- ♦ [Section 6.16.1, “General,” on page 96](#)
- ♦ [Section 6.16.2, “Advanced,” on page 97](#)
- ♦ [Section 6.16.3, “Requirements,” on page 99](#)

### 6.16.1 General


The Action - Install Network MSI dialog box lets you specify the location of the MSI file; its Install, Uninstall, and Repair parameters; the transform file; and the executable security level.

#### .msi File

Click **Browse**, allow browser to launch ZCC Helper. In the **Select File** dialog box, click **Browse**, select the `.msi` file to install, and then click **OK**.

If you have not installed ZCC Helper on this device, you must do so before you can browse for a file.

#### Install Parameters

Click  to display the **Install Parameters dialog box**, then specify the desired parameters. Click the **Help** button for additional information.

#### Uninstall Parameters

Click  to display the **Uninstall Parameters dialog box**, then specify the desired parameters. Click the **Help** button for additional information.

#### Repair Parameters

Click  to display the **Repair Parameters dialog box**, then specify the desired parameters. Click the **Help** button for additional information.

#### MSI Properties

The MSI package contains the property values that were defined during the administrative installation of the application. These property values determine the way the Microsoft Windows Installer installs the application to the workstation. In some cases, you might want to change one or


more of the property values. For example, a property value might define the default location for a user's work files. By adding the property to the list and changing the property's value, you can override the default location defined in the MSI package.

If necessary, you can add public properties that were not included in the MSI package. When doing so, you should be careful to add only those properties that are valid for the package. The following options are available:

- ♦ **Add:** To override a property value, you change the property value and add the property to the **Properties** list so that Application Launcher knows to use that property value rather than the one defined in the MSI package. To do so, click **Add** to display the **MSI Properties** dialog box. In the **Name** field, select the property whose value you want to override, specify the new value in the **Value** field, then click **OK** to add the property to the **MSI Properties** list.
- ♦ **Edit:** To modify a property that is in the **MSI Properties** list, select the property, click **Edit**, modify the value data, then click **OK**.
- ♦ **Remove:** To remove a property from the **MSI Properties** list, select the property, then click **Remove**. Deleting the property causes future installations of the application to use the property value defined in the MSI package.

## 6.16.2 Advanced

### Transform File

Click **Add**, in the Select Transform File dialog box click , allow browser to launch ZCC Helper. In the **Select Transform File** dialog box, click **Browse**, select the desired transform file, and then click **Upload**. You can upload the transform file or you can specify its location.

If you have not installed ZCC Helper on this device, you must do so before you can browse to for a file path.

Different groups within an organization often use the same application, but that doesn't mean they require the same feature set. One of the benefits of Windows Installer is that if you have 10 groups needing 10 different feature sets or other alterations for the same application, you can deploy the same MSI package to all 10 user groups, but with a different transform file (MST) applied for each group.

A transform file is a collection of changes applied to an MSI installation. It contains all modification information, such as whether features are installed; how they are installed; which files, shortcuts, and registry entries are included; and Add/Remove Programs applet information.

If you have vendor-supplied MSI packages, you can use AdminStudio ZENworks Edition to create and manage transforms.

## Executable Security Level

On Windows 2000, Windows XP, Windows Vista, or Windows 7 device, the application executable can run in either the “user” space or the “system” space. By default, the **Run normal** option is selected, which causes the application to run in the “user” space and inherit the same workstation security level as the logged-in user.

If the logged-in user's security level does not provide sufficient rights and file access to run the application, you can configure the application to run in the “system” space or as a dynamic administrator, as described below:

- ♦ **Run as logged in user:** The MSI application inherits the logged-in user's credentials. For example, the application has the same rights to the registry and the file system as the logged-in user.

Select the application's display mode: **Normal**, **Minimized**, **Maximized**, or **Hidden**. In Hidden mode, the application runs normally without a user interface available. This is useful if you want the application to process something, then go away without user intervention.

Select **Grant administrator privilege to user during installation** to provide administrator privileges to the logged-in user. However, providing administrator privileges to a user might pose security risks. If this option is selected, the user on the managed device is prompted to enter the password when the MSI is installed on the device. To install the MSI, the user must log in to the device with a user account that has a password configured.

---

**NOTE:** On a Vista device, if the administrator is logged in to the device and the **Grant administrator privilege to user during installation** is selected, the action is performed in the quiet mode.

---

- ♦ **Run as secure system user (Don't allow system to interact with desktop):** The application is run under the Local System user and inherits Administrator-level credentials. For example, the application has full rights to the registry and the file system. Because the security level is set to **Secure**, the application's interface is not displayed to the user and the application is only visible in the Task Manager. This option is useful when running applications that require full access to the workstation but require no user intervention.
- ♦ **Run as dynamic administrator:** A dynamic administrator is an administrator account that is locally created on the fly to perform certain procedures, such as installing applications. Using a dynamic administrator is helpful when installing applications (some MSI applications, for example) that cannot be installed in the system space. Because the dynamic administrator does not have access to the network, the network shares on which the MSI is available must be made publicly accessible. When you select this action, the dynamic administrator is created, it performs the required tasks, and then the account is deleted.

You cannot use mapped network drives to specify files and directories because dynamic administrators do not have access to mapped drives.

**Select credential for network access:** If the file or directory specified in the action are a part of the UNC path or network share that can be accessed only through credentials, then browse through the credential vault to select a credential that has access to the network.

For more information on Credential Vault and adding credential to the Credential Vault, see [Using the Credential Vault](#) in the *ZENworks Control Center Reference*.

---

**NOTE:** Performing this action as a dynamic administrator on a Windows domain controller fails because Microsoft does not allow the use of local administrator accounts on domain controllers.

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### 6.16.3 Requirements

The Requirements page lets you define specific requirements that a device must meet for the action to be enforced on it. For information about the requirements, see [Requirements](#).

## 6.17 Action - Launch Bundle

The Action - Launch Bundle dialog box lets you specify the bundle to launch on the device. You can also specify the specific requirements that a device must meet for the action to be executed on the device.

To access this dialog box in ZENworks Control Center, click the **Bundles** tab. Click the underlined link of a bundle in the **Name** column of the **Bundles** list, click the **Actions** tab, click one of the action set tabs (Distribute, Install, Launch, Repair, Uninstall, Terminate, or Preboot), click the **Add** drop-down list, then select an available action.

---


**NOTE:** When you create a bundle with one or more child bundles, then irrespective of the state of the child bundles (enabled or disabled), all the child bundles will be launched/executed if the parent bundle is enabled.

---

The following sections contains additional information:

- ♦ [Section 6.17.1, “General,” on page 99](#)
- ♦ [Section 6.17.2, “Requirements,” on page 99](#)

### 6.17.1 General

The General page lets you specify the bundle to launch on the device. Click  to display the Select the Bundle to Launch dialog box.

The **Look in** list defaults to `/Bundles`. If you have created subfolders to hold your bundles, use the down- arrow to select the appropriate folder. The **Items of type** list defaults to **All Types** so that all types of bundles are displayed (Linux, Preboot, and Windows bundles). Also, if you know the name of the bundle you are looking for, you can use the **Item name** box to search for the bundle.

Creating this action creates a bundle dependency. For more information, see [Section 8.8, “Dependency Bundles,” on page 166](#).

### 6.17.2 Requirements

The Requirements page lets you define specific requirements that a device must meet for the action to be enforced on it. For information about the requirements, see [Requirements](#).

## 6.18 Action - Launch Java Application

The Action - Launch Java Application dialog box lets you configure a Java program to be executed on the managed device. You can also specify the specific requirements that a device must meet for the action to be executed on the device.

To access this dialog box in ZENworks Control Center, click the **Bundles** tab. Click the underlined link of a bundle in the **Name** column of the **Bundles** list, click the **Actions** tab, click one of the action set tabs (Distribute, Install, Launch, Repair, Uninstall, Terminate, or Preboot), click the **Add** drop-down list, then select an available action.

The following sections contains additional information:

- ♦ [Section 6.18.1, “General,” on page 100](#)
- ♦ [Section 6.18.2, “Advanced,” on page 101](#)
- ♦ [Section 6.18.3, “Requirements,” on page 103](#)

### 6.18.1 General

The General page lets you configure a Java program to be executed on the managed device.

#### Java Program Name

Specify the Java program name. For example, `com.novell.TestProg`.

#### Program Parameters

Specify the program parameters.

#### Path to Java Runtime Executable (JRE)

Specify the path to the Java Runtime Executable (JRE).

#### JRE Parameters

Specify the JRE parameters.

#### Wait Before Proceeding to Next Action

Specify what happens after the Java application launches:

- ♦ **No wait:** The next action in the list is immediately performed.
- ♦ **When launch action is complete:** The next action in the list is performed after the launch action completes.
- ♦ **Wait for \_ seconds:** Wait the specified number of seconds before proceeding to the next action.
  - ♦ **Terminate action if wait period exceeded:** If you select the **Wait for \_ seconds** option, this option is enabled. If the specified number of seconds is exceeded and the action is not successfully performed, the action is terminated.

## Run As

Click **More Options** to specify the Java application's **Run As** settings.

- ♦ **System:** Runs the application as the system account (as a service).
- ♦ **Administrator:** Runs the application as a dynamic administrator user. A dynamic administrator is an administrator account that is created on the fly to perform certain procedures, such as installing applications or running scripts. Using a dynamic administrator is helpful when installing applications (some MSI applications, for example) that cannot be installed in the system space. When you select this action, the dynamic administrator is created, it performs the required tasks, and then the account is deleted.

---

**NOTE:** Performing this action as dynamic administrator on a Windows domain controller fails because Microsoft does not allow the use of local administrator accounts on domain controllers.

---

- ♦ **User:** The application runs using the logged-in user's credentials. For example, the application has the same rights to the registry and the file system as the logged-in user.

The following options are available for Linux:

- ♦ **Root:** The application runs only if the root user is logged in to the device.
- ♦ **User:** The application runs using the logged-in user's credentials. For example, the application has the same rights to the registry and the file system as the logged-in user.

## 6.18.2 Advanced

### Working Directory

Click **More Options** to specify the Java application's working directory.

Specify the initial working directory for the application.

### Success Return Codes

Specify the non-zero success codes that the executable returns. You can specify multiple success codes separated by commas.

If an executable returns non-zero success codes, you should specify these non-zero success codes while launching the action. For example, explorer.exe in Windows returns a success code of 1. To successfully launch the Explorer application, you should add 1 as the success code while launching the action.

If you leave this field blank, zero will be considered as the success code. Specify the Success Return Code as \* to enable any non-zero code returned by a script to be treated as success.

## Priority

Click **More Options** to specify the Java application's priority.

Specify the priority of the process that runs the application. This option lets you configure how much of the CPU usage the application process consumes. Select from the following priorities: Real Time, High, Above Normal, Normal, Below Normal, and Low.

## Executable Security Level

On Windows 2000, Windows XP, Windows Vista, or Windows 7 device, the application executable can run in either the "user" space or the "system" space. By default, the **Run normal** option is selected, which causes the application to run in the "user" space and inherit the same workstation security level as the logged-in user.

If the logged-in user's security level does not provide sufficient rights and file access to run the application, you can configure the application to run in the "system" space or as a dynamic administrator, as described below:

- ♦ **Run as logged in user:** The MSI application inherits the logged-in user's credentials. For example, the application has the same rights to the registry and the file system as the logged-in user.

Select the application's display mode: **Normal**, **Minimized**, **Maximized**, or **Hidden**. In Hidden mode, the application runs normally without a user interface available. This is useful if you want the application to process something, then go away without user intervention.

Select **Grant administrator privilege to user during installation** to provide administrator privileges to the logged-in user. However, providing administrator privileges to a user might pose security risks. If this option is selected, the user on the managed device is prompted to enter the password when the MSI is installed on the device. To install the MSI, the user must log in to the device with a user account that has a password configured.

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**NOTE:** On a Vista device, if the administrator is logged in to the device and the **Grant administrator privilege to user during installation** is selected, the action is performed in the quiet mode.

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- ♦ **Run as secure system user (Don't allow system to interact with desktop):** The application is run under the Local System user and inherits Administrator-level credentials. For example, the application has full rights to the registry and the file system. Because the security level is set to **Secure**, the application's interface is not displayed to the user and the application is only visible in the Task Manager. This option is useful when running applications that require full access to the workstation but require no user intervention.
- ♦ **Run as dynamic administrator:** A dynamic administrator is an administrator account that is locally created on the fly to perform certain procedures, such as installing applications. Using a dynamic administrator is helpful when installing applications (some MSI applications, for example) that cannot be installed in the system space. Because the dynamic administrator does not have access to the network, the network shares on which the MSI is available must be made publicly accessible. When you select this action, the dynamic administrator is created, it performs the required tasks, and then the account is deleted.

You cannot use mapped network drives to specify files and directories because dynamic administrators do not have access to mapped drives.

**Select credential for network access:** If the file or directory specified in the action are a part of the UNC path or network share that can be accessed only through credentials, then browse through the credential vault to select a credential that has access to the network.

For more information on Credential Vault and adding credential to the Credential Vault, see [“Adding a Credential”](#) in the *ZENworks Control Center Reference*.

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**NOTE:** Performing this action as a dynamic administrator on a Windows domain controller fails because Microsoft does not allow the use of local administrator accounts on domain controllers.

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## 6.18.3 Requirements

The Requirements page lets you define specific requirements that a device must meet for the action to be enforced on it. For information about the requirements, see [Requirements](#).

## 6.19 Action - Launch URL

The Action - Launch URL dialog box lets you specify the URL to launch on the device. You can also specify the specific requirements that a device must meet for the action to be executed on the device.

To access this dialog box in ZENworks Control Center, click the **Bundles** tab. Click the underlined link of a bundle in the **Name** column of the **Bundles** list, click the **Actions** tab, click one of the action set tabs (Distribute, Install, Launch, Repair, Uninstall, Terminate, or Preboot), click the **Add** drop-down list, then select an available action.

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**NOTE:** When you create a bundle and select the **Launch URL** action, then assign the bundle to a device, each action launches the URL in a new tab in the same window.

In a whitelisted environment, the **Launch URL** action might not work as expected. By default, the whitelisting feature is disabled for the **Launch URL** action. To enable the **Launch URL** action to work in a whitelisted environment, you need to add a registry **String** value named `UseShellExecute`, to `HKLM\Software\Novell\ZCM\AgentSettings`, and set the value data to false. However, when the whitelisting feature is enabled, the action launches the URL in a new browser window instead of a new tab.

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The following sections contains additional information:

- ♦ [Section 6.19.1, “General,” on page 103](#)
- ♦ [Section 6.19.2, “Requirements,” on page 104](#)

### 6.19.1 General

The General page lets you specify the URL to launch on the device. Click **Test URL** to open a Web browser to verify that the URL is correct.

## 6.19.2 Requirements

The Requirements page lets you define specific requirements that a device must meet for the action to be enforced on it. For information about the requirements, see [Requirements](#).

## 6.20 Action - Launch Executable

The Add Actions - Launch Executable dialog box lets you specify the Windows executable, command line parameters, and additional optional settings. You can also specify the specific requirements that a device must meet for the action to be executed on the device.

To access this dialog box in ZENworks Control Center, click the **Bundles** tab. Click the underlined link of a bundle in the **Name** column of the **Bundles** list, click the **Actions** tab, click one of the action set tabs (Distribute, Install, Launch, Repair, Uninstall, Terminate, or Preboot), click the **Add** drop-down list, then select an available action.

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**NOTE:** It is recommended that you do not place an installation under the Launch Executable tab - only the command that starts an installed application. Applications start faster when there are less actions under Launch.

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The following sections contains additional information:

- [Section 6.20.1, "General," on page 104](#)
- [Section 6.20.2, "Advanced," on page 105](#)
- [Section 6.20.3, "Launch Options," on page 108](#)
- [Section 6.20.4, "Requirements," on page 109](#)

### 6.20.1 General

The General page lets you specify the location of the Windows executable, the command line parameters to run when the executable launches, the working directory for the executable, and the non-zero success codes that the executable returns.

Field	Description
Command	<p>Specify the location of the Windows executable, including its filename.</p> <p>You can specify a local path or a network drive. If you specify the local path, you must include the executable's full path, unless the executable is included in the workstation's search path. If you specify a network drive, you can use a mapped drive or a UNC path, if the workstation can resolve the path.</p> <p>If you have not installed ZCC Helper on this device, you must do so before you can browse for a file path.</p>
Command Line Parameters	<p>Specify the command line parameters that you want to run when the executable launches.</p> <p><b>NOTE:</b> As a best practice, you can add a space at the beginning of the field to ensure that there is a space between the command and the parameters when the command is run by the client.</p>

Field	Description
Working Directory	Specify the working directory for the executable.
Success Return Codes	<p>Specify the non-zero success codes that the executable returns. You can specify multiple success codes separated by commas.</p> <p>If an executable returns non-zero success codes, you should specify these non-zero success codes while launching the action. For example, explorer.exe in Windows returns a success code of 1. To successfully launch the Explorer application, you should add 1 as the success code while launching the action.</p> <p>If you leave this field blank, zero will be considered as the success code. Specify the Success Return Code as * to enable any non-zero code returned by a script to be treated as success.</p>
Environment Variables	<p>Lets you add, edit or remove the environment variables as follows:</p> <ul style="list-style-type: none"> <li>♦ <b>Add:</b> Click <b>Add</b> to display the Add Environment Variable dialog box. Specify the name and value of the environment variable you want to add. For example, <b>Name</b> = JAVA_HOME; <b>Value</b> = C:\java1.4\.</li> </ul> <p><b>NOTE:</b> Add the ZENPREDEF_REDIRECTSTANDARDOUTPUT predefined environment variable and set it to true to redirect the standard output of a variable or command to the specified file or location. For example, if the command line parameter is /c echo%var% &gt; c:\temp\test.txt, the standard output of <i>var</i> will be redirected to c:\temp\test.txt file.</p> <ul style="list-style-type: none"> <li>♦ <b>Remove:</b> Select the environment variables to remove and click <b>Remove</b>.</li> <li>♦ <b>Edit:</b> Select the environment variable you want to edit, then click <b>Edit</b>. In the Edit Environment Variable dialog box, specify the new value for the variable. For example, <b>Name</b> = JAVA_HOME; <b>Value</b> = C:\Program Files\Java\jdk1.6.0_06.</li> </ul>

## 6.20.2 Advanced

The Advanced page lets you specify the Window executable's security level and the wait time after launch of windows executable and before proceeding to the next action.

Field	Description
Wait Before Proceeding to Next Action	<p>Click <b>More Options</b> to specify how long to wait after launching the Windows executable and before proceeding to the next action.</p> <p>Specify what happens after the executable launches:</p> <p><b>No wait:</b> The next action in the list is immediately performed.</p> <p><b>When launch action is complete:</b> The next action in the list is performed after the launch action completes. For example, enable this option if you are running the action as a dynamic administrator and you want the profile cleaned up and deleted immediately. If you do not enable this option, the profile is cleaned up and deleted at the device's next reboot.</p> <p>This option can be used in a scenario in which you want to run an inventory after the installation of program and you have to wait until the installation is finished before running the <code>zac inv scannow</code> action since the new applications will otherwise not be inventoried.</p> <p><b>Wait for _ seconds:</b> Wait the specified number of seconds before proceeding to the next action.</p> <ul style="list-style-type: none"> <li>♦ <b>Terminate action if wait period exceeded:</b> If you select the <b>Wait for _ seconds</b> option, this option is enabled. If the specified number of seconds is exceeded and the action is not successfully performed, the action terminates.</li> </ul>

Field	Description
Executable Security Level	<p>The executable can run in either the “user” space or the “system” space. By default, the <b>Run normal</b> option is selected, which causes the application to run in the “user” space and inherit the same workstation security level as the logged-in user.</p> <p>If the logged-in user's security level does not provide sufficient rights and file access to run the executable, you can configure the executable to run in the “system” space or as a dynamic administrator, as described below:</p> <ul style="list-style-type: none"> <li>♦ <b>Run as logged in user:</b> The executable inherits the logged-in user's credentials. For example, the executable has the same rights to the registry and the file system as the logged-in user.</li> </ul> <p>Select this option if the user has sufficient rights to execute the action.</p> <p>Select the executable's initial window size: <b>Normal</b>, <b>Minimized</b>, <b>Maximized</b>, or <b>Hidden</b>. In Hidden mode, the executable runs normally without a user interface available. This is useful if you want the executable to process something, then go away without user intervention.</p> <ul style="list-style-type: none"> <li>♦ <b>Run as secure system user (Don't allow system to interact with desktop):</b> The executable is run under the Local System user and inherits Administrator-level credentials. For example, the executable has full rights to the registry and the file system. Because the security level is set to <b>Secure</b>, the executable's interface is not displayed to the user and the executable is only visible in the Task Manager. This option is useful when running executables that require full access to the workstation but require no user intervention.</li> </ul> <p>If the installer displays a progress window or tries to interact with the user, the action will fail.</p> <ul style="list-style-type: none"> <li>♦ <b>Run as dynamic administrator:</b> A dynamic administrator is an administrator account that is created on the fly to perform certain procedures, such as installing applications. Using a dynamic administrator is helpful when installing applications (some MSI applications, for example) that cannot be installed in the system space. When you select this action, the dynamic administrator is created, it performs the required tasks, and then the account is deleted.</li> </ul> <p>This option will fail if an installation makes changes in the Registry's HKCU hive (Current user) for the logged in user.</p> <p>When performing actions as a dynamic administrator, ensure that you select the <b>When action is complete</b> option in the <b>Wait before proceeding to next action</b> group box. Selecting this option ensures that the action is completed and the process has terminated and released its resources before ZENworks begins cleaning up and deleting the dynamic administrator account.</p> <p>You cannot use mapped network drives to specify files and directories because dynamic administrators do not have access to mapped drives.</p> <p><b>Select credential for network access:</b> If the file or directory specified in the action are a part of the UNC path or network share that can be accessed only through credentials, then browse through the credential vault to select a credential that has access to the network.</p> <p>For more information on Credential Vault and adding credential to the Credential Vault, see “<a href="#">Using the Credential Vault</a>” in the <a href="#">ZENworks Control Center Reference</a>.</p> <p><b>NOTE:</b> Performing this action as dynamic administrator on a Windows domain controller fails because Microsoft does not allow the use of local administrator accounts on domain controllers.</p>

## 6.20.3 Launch Options

The Launch Options page lets you specify the Window executable's compatibility mode, display settings, and the input settings.

Field	Description
Compatibility Mode	<p>Click <b>More Options</b> to specify the Window executable's compatibility mode.</p> <p>Launches the executable in a contained environment. Some executables cannot run on workstations with newer versions of Microsoft* Windows because of incompatibility issues. The drop-down list is available after you select the <b>Compatibility mode</b> option.</p> <p>Select this option if you successfully ran an executable on a previous Windows version but you are unable to run the executable on the device's current Windows version. Select the desired platform from the list.</p>
Display	<p>Click More Options to specify the Window executable's display settings. Select the desired display options: Run in 256 colors: Sets the color quality setting to 256 colors while this executable is running. The color quality setting reverts back to your default setting when you close the executable. Run in 640 × 480 screen resolution: Sets the screen resolution setting to 640 × 480 while this executable is running. The color quality setting reverts back to your default setting when you close the executable. Disable visual themes: Disables visual themes from being applied to the executable. If you are experiencing problems with menus or buttons on the title bar of the executable, this setting might solve these problems. The theme settings revert back to your default setting when you close the executable.</p>
Input Settings	<p>Click <b>More Options</b> to specify the Window executable's input settings.</p> <p>Temporarily turns off handwriting recognition, speech recognition, and some accessibility features. Turning off text services does not affect multiple languages or keyboards that you have added.</p>

Field	Description
Use the operating system shell to start the process	<p>This option is enabled by default and allows the executable specified in the action to be launched through the operating system shell.</p> <p>Deselect this option to prevent the executable specified in the action from being launched through the operating system shell. Consequently, the executable can now be launched only through the applications configured in the system's list of allowed applications.</p> <p>To add applications to the system's list of the allowed applications:</p> <ol style="list-style-type: none"> <li>1. In the ZENworks Control Center, create a new Windows Group Policy.</li> <li>2. In the Windows Group Policy settings page, select <b>Local Group Policy</b> and click <b>Configure</b>.</li> <li>3. In the Group Policy window, navigate to <b>User Configuration &gt; Administrative Templates &gt; System</b>.</li> <li>4. Double-click <b>Run only allowed Windows applications</b>.</li> <li>5. In the <b>Settings</b> tab, select <b>Enabled</b> and click <b>Show</b>.</li> <li>6. In the Show Contents window, click <b>Add</b> and enter the name of the application as <b>zapp-launcher.exe</b> and click <b>OK</b>.</li> <li>7. Click <b>Apply</b>, then <b>OK</b>.</li> </ol> <p>You can now launch the executable only if it is available in the NAL window.</p>

## 6.20.4 Requirements

The Requirements page lets you define specific requirements that a device must meet for the action to be enforced on it. For information about the requirements, see [Requirements](#).

## 6.21 Action - Launch Macintosh Executable

The Add Action - Launch Macintosh Executable dialog box lets you to specify the filename, parameters, security level, and environment variables. You can also specify the specific requirements that a device must meet for the action to be executed on the device.

To access this dialog box in ZENworks Control Center, click the **Bundles** tab. Click the underlined link of a bundle in the **Name** column of the **Bundles** list, click the **Actions** tab, click one of the action set tabs (Distribute, Install, Launch, Repair, Uninstall), click the **Add** drop-down list, then select an available action.

The following sections contains additional information:

- ♦ [Section 6.21.1, "General," on page 109](#)
- ♦ [Section 6.21.2, "Requirements," on page 111](#)

### 6.21.1 General

The General page lets you specify the filename, parameters, security level, and environment variables.

Field	Description
Executable File Name	Specify the filename of the Macintosh executable.
Executable File Parameters	Specify the parameters that you want to run while launching the executable.
Executable Security Level	<p>Specify the Macintosh executable's security level.</p> <p>You can choose any of the following options and configure the executable:</p> <p><b>Run normal (as logged in user):</b> The executable is launched only if the user logs in to the device.</p> <p><b>Run as root:</b> The executable is launched only if the root user is logged in to the device.</p>
Wait before proceeding to next action	<p>Specify the wait time before proceeding to the next action after launching the Macintosh executable.</p> <p><b>No wait:</b> Select this option to immediately perform the next action in the list.</p> <p><b>When action is complete:</b> Select this option to perform the next action in the list after the launch action finishes.</p> <p><b>Wait for _ seconds:</b> Select this option to proceed to the next action after the specified number of seconds.</p> <ul style="list-style-type: none"> <li>♦ <b>Terminate action if wait period is exceeded:</b> <p>This check box is enabled only if you select the <b>Wait for _ seconds</b> option. Select this check box to terminate the action if the action is not performed after the wait time exceeds the specified number of seconds.</p> </li> </ul>

Field	Description
Environment Variables	<p>Lets you to add, edit, or remove the environment variables as follows:</p> <ul style="list-style-type: none"> <li>♦ <b>Add:</b> Click <b>Add</b> to display the Add Environment Variable dialog box. Specify the name and value of the environment variable you want to add.</li> </ul> <p>Select the <b>Add to existing data</b> check box to append or prepend the environment variable to the existing data.</p> <ul style="list-style-type: none"> <li>♦ <b>Append:</b> Adds the environment variable at the end of the existing data.</li> <li>♦ <b>Prepend:</b> Adds the environment variable at the beginning of the existing data.</li> <li>♦ <b>Use Separator Character:</b> Specify a character to separate the appended or prepended environment variable from the existing data.</li> <li>♦ <b>Remove:</b> Select the check box next to the environment variables you want to remove, then click <b>Remove</b>.</li> <li>♦ <b>Edit:</b> Select the environment variable you want to edit, then click <b>Edit</b>. In the Edit Environment Variable dialog box, specify the new value for the variable.</li> </ul>

## 6.21.2 Requirements

The Requirements page lets you define specific requirements that a device must meet for the action to be enforced on it. For information about the requirements, see [Requirements](#).

## 6.22 Action - Install Executable

The Add Actions - Install Executable dialog box lets you upload a Windows executable, specify the launching options of the executable, and other additional parameters. You can also specify the requirements that a device must meet for the action to be executed on the device. When the Install Executable action is executed, the content is downloaded to ZENworks cache and the executable is run directly from cache, therefore both the install and launch actions are performed by this action set.

To access this dialog box in ZENworks Control Center, click the **Bundles** tab. Click the underlined link of a bundle in the **Name** column of the **Bundles** list, click the **Actions** tab, click one of the action set tabs (Distribute, Install, Launch, Repair, Uninstall, Terminate, or Preboot), click the **Add** drop-down list, then select an available action.

The following sections contains additional information:

- ♦ [Section 6.22.1, “General,” on page 112](#)
- ♦ [Section 6.22.2, “Advanced,” on page 113](#)
- ♦ [Section 6.22.3, “Launch Options,” on page 115](#)
- ♦ [Section 6.22.4, “Requirements,” on page 116](#)

## 6.22.1 General

The General page lets you upload the Windows executable, the command line parameters to run when the executable launches, the working directory for the executable, and the non-zero success codes that the executable returns.

Field	Description
Executable File	<p>Upload the Windows executable. You can also upload all the files in the same directory in which the executable is present.</p> <p>If you have not installed ZCC Helper on this device, you must do so before you can browse for a file path.</p>
Command Line Parameters	<p>Specify the command line parameters that you want to run when the executable launches.</p>
Success Return Codes	<p>Specify the non-zero success codes that the executable returns. You can specify multiple success codes separated by commas.</p> <p>If an executable returns non-zero success codes, you should specify these non-zero success codes while launching the action. For example, explorer.exe in Windows returns a success code of 1. To successfully launch the Explorer application, you should add 1 as the success code while launching the action.</p> <p>If you leave this field blank, zero will be considered as the success code. Specify the Success Return Code as * to enable any non-zero code returned by a script to be treated as success.</p>
Environment Variables	<p>Lets you add, edit or remove the environment variables as follows:</p> <ul style="list-style-type: none"><li>♦ <b>Add:</b> Click <b>Add</b> to display the Add Environment Variable dialog box. Specify the name and value of the environment variable you want to add. For example, <b>Name</b> = JAVA_HOME; <b>Value</b> = C:\java1.4\.</li></ul> <p><b>NOTE:</b> Add the ZENPREDEF_REDIRECTSTANDARDOUTPUT predefined environment variable and set it to true to redirect the standard output of a variable or command to the specified file or location. For example, if the command line parameter is /c echo%var% &gt; c:\temp\test.txt, the standard output of var will be redirected to c:\temp\test.txt file.</p> <ul style="list-style-type: none"><li>♦ <b>Remove:</b> Select the environment variables to remove and click <b>Remove</b>.</li><li>♦ <b>Edit:</b> Select the environment variable you want to edit, then click <b>Edit</b>. In the Edit Environment Variable dialog box, specify the new value for the variable. For example, <b>Name</b> = JAVA_HOME; <b>Value</b> = C:\Program Files\Java\jdk1.6.0_06.</li></ul>

## 6.22.2 Advanced

The Advanced page lets you specify the Window executable's security level and the wait time after launch of windows executable and before proceeding to the next action.

Field	Description
Wait Before Proceeding to Next Action	<p>Click <b>More Options</b> to specify how long to wait after launching the Windows executable and before proceeding to the next action.</p> <p>Specify what happens after the executable launches:</p> <p><b>Do not wait:</b> The next action in the list is immediately performed.</p> <p><b>Proceed when an action is complete:</b> The next action in the list is performed after the launch action completes. For example, enable this option if you are running the action as a dynamic administrator and you want the profile cleaned up and deleted immediately. If you do not enable this option, the profile is cleaned up and deleted at the device's next reboot.</p> <p><b>Wait for _ seconds:</b> Wait the specified number of seconds before proceeding to the next action.</p> <ul style="list-style-type: none"><li>♦ <b>Terminate an action if it has exceeded the wait duration:</b> If you select the <b>Wait for _ seconds</b> option, this option is enabled. If the specified number of seconds is exceeded and the action is not successfully performed, the action terminates.</li></ul>

Field	Description
Executable Security Level	<p>The executable can run in either the “user” space or the “system” space. By default, the <b>Run normal</b> option is selected, which causes the application to run in the “user” space and inherit the same workstation security level as the logged-in user.</p> <p>If the logged-in user's security level does not provide sufficient rights and file access to run the executable, you can configure the executable to run in the “system” space or as a dynamic administrator, as described below:</p> <ul style="list-style-type: none"> <li>♦ <b>Run as logged in user:</b> The executable inherits the logged-in user's credentials. For example, the executable has the same rights to the registry and the file system as the logged-in user.</li> </ul> <p>Select the executable's initial window size: <b>Normal</b>, <b>Minimized</b>, <b>Maximized</b>, or <b>Hidden</b>. In Hidden mode, the executable runs normally without a user interface available. This is useful if you want the executable to process something, then go away without user intervention.</p> <ul style="list-style-type: none"> <li>♦ <b>Run as secure system user (Don't allow system to interact with desktop):</b> The executable is run under the Local System user and inherits Administrator-level credentials. For example, the executable has full rights to the registry and the file system. Because the security level is set to <b>Secure</b>, the executable's interface is not displayed to the user and the executable is only visible in the Task Manager. This option is useful when running executables that require full access to the workstation but require no user intervention.</li> <li>♦ <b>Run as dynamic administrator:</b> A dynamic administrator is an administrator account that is created on the fly to perform certain procedures, such as installing applications. Using a dynamic administrator is helpful when installing applications (some MSI applications, for example) that cannot be installed in the system space. When you select this action, the dynamic administrator is created, it performs the required tasks, and then the account is deleted.</li> </ul> <p>When performing actions as a dynamic administrator, ensure that you select the <b>When action is complete</b> option in the <b>Wait before proceeding to next action</b> group box. Selecting this option ensures that the action is completed and the process has terminated and released its resources before ZENworks begins cleaning up and deleting the dynamic administrator account.</p> <p>You cannot use mapped network drives to specify files and directories because dynamic administrators do not have access to mapped drives.</p> <p><b>Select the network access credentials:</b> If the file or directory specified in the action are a part of the UNC path or network share that can be accessed only through credentials, then browse through the credential vault to select a credential that has access to the network.</p> <p>For more information on Credential Vault and adding credential to the Credential Vault, see “<a href="#">Using the Credential Vault</a>” in the <i>ZENworks Control Center Reference</i>.</p> <p><b>NOTE:</b> Performing this action as dynamic administrator on a Windows domain controller fails because Microsoft does not allow the use of local administrator accounts on domain controllers.</p>

## 6.22.3 Launch Options

The Launch Options page lets you specify the Window executable's compatibility mode, display settings, and the input settings.

Field	Description
Compatibility Mode	<p>Click <b>More Options</b> to specify the Window executable's compatibility mode.</p> <p>Launches the executable in a contained environment. Some executables cannot run on workstations with newer versions of Microsoft* Windows because of incompatibility issues. The drop-down list is available after you select the <b>Compatibility mode</b> option.</p> <p>Select this option if you successfully ran an executable on a previous Windows version but you are unable to run the executable on the device's current Windows version. Select the desired platform from the list.</p>
Display	<p>Click More Options to specify the Window executable's display settings. Select the desired display options: Run in 256 colors: Sets the color quality setting to 256 colors while this executable is running. The color quality setting reverts back to your default setting when you close the executable. Run in 640 × 480 screen resolution: Sets the screen resolution setting to 640 × 480 while this executable is running. The color quality setting reverts back to your default setting when you close the executable. Disable visual themes: Disables visual themes from being applied to the executable. If you are experiencing problems with menus or buttons on the title bar of the executable, this setting might solve these problems. The theme settings revert back to your default setting when you close the executable.</p>
Input Settings	<p>Click <b>More Options</b> to specify the Window executable's input settings.</p> <p>Temporarily turns off handwriting recognition, speech recognition, and some accessibility features. Turning off text services does not affect multiple languages or keyboards that you have added.</p>

Field	Description
Use the operating system shell to start the process	<p>This option is enabled by default and allows the executable specified in the action to be launched through the operating system shell.</p> <p>Deselect this option to prevent the executable specified in the action from being launched through the operating system shell. Consequently, the executable can now be launched only through the applications configured in the system's list of allowed applications.</p> <p>To add applications to the system's list of the allowed applications:</p> <ol style="list-style-type: none"> <li>1. In the ZENworks Control Center, create a new Windows Group Policy.</li> <li>2. In the Windows Group Policy settings page, select <b>Local Group Policy</b> and click <b>Configure</b>.</li> <li>3. In the Group Policy window, navigate to <b>User Configuration &gt; Administrative Templates &gt; System</b>.</li> <li>4. Double-click <b>Run only allowed Windows applications</b>.</li> <li>5. In the <b>Settings</b> tab, select <b>Enabled</b> and click <b>Show</b>.</li> <li>6. In the Show Contents window, click <b>Add</b> and enter the name of the application as <b>zapp-launcher.exe</b> and click <b>OK</b>.</li> <li>7. Click <b>Apply</b>, then <b>OK</b>.</li> </ol> <p>You can now launch the executable only if it is available in the NAL window.</p>

## 6.22.4 Requirements

The Requirements page lets you define specific requirements that a device must meet for the action to be enforced on it. For information about the requirements, see [Requirements](#).

## 6.23 Action - Install Linux Executable

The Add Action - Install Linux Executable dialog box lets you to upload the Linux executable and specify the parameters, security level, and environment variables. You can also specify the specific requirements that a device must meet for the action to be executed on the device. When the Install Executable action is executed, the content is downloaded to ZENworks cache and the executable is run directly from cache, therefore both the install and launch actions are performed by this action set.

To access this dialog box in ZENworks Control Center, click the **Bundles** tab. Click the underlined link of a bundle in the **Name** column of the **Bundles** list, click the **Actions** tab, click one of the action set tabs (Distribute, Install, Launch, Repair, Uninstall, Terminate, or Preboot), click the **Add** drop-down list, then select an available action.

The following sections contains additional information:

- ♦ [Section 6.23.1, "General," on page 117](#)
- ♦ [Section 6.23.2, "Requirements," on page 118](#)

## 6.23.1 General

The General page lets you upload the executable, the command line parameters to run when the executable launches, the working directory for the executable, and the non-zero success codes that the executable returns.

Field	Description
Executable File	<p>Upload the executable file. You can also upload all the files in the same directory in which the executable is present.</p> <p>If you have not installed ZCC Helper on this device, you must do so before you can browse for a file path.</p>
Command Line Parameters	<p>Specify the command line parameters that you want to run when the executable launches.</p>
Executable Security Level	<p>Specify the Linux executable's security level.</p> <p>You can choose any of the following options and configure the executable:</p> <p><b>Run as logged in user:</b> The executable is launched only if the user logs in to the device.</p> <p><b>Run as root:</b> The executable is launched only if the root user is logged in to the device.</p>
Wait before proceeding to next action	<p>Specify the wait time before proceeding to the next action after launching the Linux executable.</p> <p><b>Do Not wait:</b> Select this option to immediately perform the next action in the list.</p> <p><b>Proceed when an action is complete:</b> Select this option to perform the next action in the list after the install and launch action finishes.</p> <p><b>Wait for _ seconds:</b> Select this option to proceed to the next action after the specified number of seconds.</p> <ul style="list-style-type: none"><li>♦ <b>Terminate an action if it has exceeded the wait duration:</b> This check box is enabled only if you select the <b>Wait for _ seconds</b> option. Select this check box to terminate the action if the action is not performed after the wait time exceeds the specified number of seconds.</li></ul>

Field	Description
Environment Variables	<p>Lets you to add, edit, or remove the environment variables as follows:</p> <ul style="list-style-type: none"> <li>♦ <b>Add:</b> Click <b>Add</b> to display the Add Environment Variable dialog box. Specify the name and value of the environment variable you want to add.</li> </ul> <p>Select the <b>Add to existing data</b> check box to append or prepend the environment variable to the existing data.</p> <ul style="list-style-type: none"> <li>♦ <b>Append:</b> Adds the environment variable at the end of the existing data.</li> <li>♦ <b>Prepend:</b> Adds the environment variable at the beginning of the existing data.</li> <li>♦ <b>Use Separator Character:</b> Specify a character to separate the appended or prepended environment variable from the existing data.</li> <li>♦ <b>Remove:</b> Select the check box next to the environment variables you want to remove, then click <b>Remove</b>.</li> <li>♦ <b>Edit:</b> Select the environment variable you want to edit, then click <b>Edit</b>. In the Edit Environment Variable dialog box, specify the new value for the variable.</li> </ul>

## 6.23.2 Requirements

The Requirements page lets you define specific requirements that a device must meet for the action to be enforced on it. For information about the requirements, see [Requirements](#).

## 6.24 Action - Install Macintosh Executable

The Add Action - Install Macintosh Executable dialog box lets you upload the Macintosh executable, specify the parameters, security level, and environment variables. You can also specify the specific requirements that a device must meet for the action to be executed on the device. When the Install Executable action is executed, the content is downloaded to ZENworks cache and the executable is run directly from cache, therefore both the install and launch actions are performed by this action set.

To access this dialog box in ZENworks Control Center, click the **Bundles** tab. Click the underlined link of a bundle in the **Name** column of the **Bundles** list, click the **Actions** tab, click one of the action set tabs (Distribute, Install, Launch, Repair, Uninstall), click the **Add** drop-down list, then select an available action.

The following sections contains additional information:

- ♦ [Section 6.24.1, “General,” on page 118](#)
- ♦ [Section 6.24.2, “Requirements,” on page 120](#)

### 6.24.1 General

The General page lets you specify the filename, parameters, security level, and environment variables.

Field	Description
Executable File Name	Specify the filename of the Macintosh executable.
Command Line Parameters	Specify the parameters that you want to run while launching the executable.
Executable Security Level	<p>Specify the Macintosh executable's security level.</p> <p>You can choose any of the following options and configure the executable:</p> <p><b>Run normal (as logged in user):</b> The executable is launched only if the user logs in to the device.</p> <p><b>Run as root:</b> The executable is launched only if the root user is logged in to the device.</p>
Wait before proceeding to next action	<p>Specify the wait time before proceeding to the next action after launching the Macintosh executable.</p> <p><b>No wait:</b> Select this option to immediately perform the next action in the list.</p> <p><b>When action is complete:</b> Select this option to perform the next action in the list after the launch action finishes.</p> <p><b>Wait for _ seconds:</b> Select this option to proceed to the next action after the specified number of seconds.</p> <ul style="list-style-type: none"> <li>♦ <b>Terminate action if wait period is exceeded:</b> <p>This check box is enabled only if you select the <b>Wait for _ seconds</b> option. Select this check box to terminate the action if the action is not performed after the wait time exceeds the specified number of seconds.</p> </li> </ul>

Field	Description
Environment Variables	<p>Lets you to add, edit, or remove the environment variables as follows:</p> <ul style="list-style-type: none"> <li>♦ <b>Add:</b> Click <b>Add</b> to display the Add Environment Variable dialog box. Specify the name and value of the environment variable you want to add.</li> </ul> <p>Select the <b>Add to existing data</b> check box to append or prepend the environment variable to the existing data.</p> <ul style="list-style-type: none"> <li>♦ <b>Append:</b> Adds the environment variable at the end of the existing data.</li> <li>♦ <b>Prepend:</b> Adds the environment variable at the beginning of the existing data.</li> <li>♦ <b>Use Separator Character:</b> Specify a character to separate the appended or prepended environment variable from the existing data.</li> <li>♦ <b>Remove:</b> Select the check box next to the environment variables you want to remove, then click <b>Remove</b>.</li> <li>♦ <b>Edit:</b> Select the environment variable you want to edit, then click <b>Edit</b>. In the Edit Environment Variable dialog box, specify the new value for the variable.</li> </ul>

## 6.24.2 Requirements

The Requirements page lets you define specific requirements that a device must meet for the action to be enforced on it. For information about the requirements, see [Requirements](#).

## 6.25 Action - Launch Windows Thin Client Application

The Action - Launch Windows Thin Client Application dialog box lets you specify to launch an ICA (Independent Computing Architecture) or RDP (Remote Desktop Protocol) client session and configure the appropriate settings.

You can also specify the specific requirements that a device must meet for the action to be executed on the device.

You can access this information by using the following methods:

- ♦ As part of the process of creating a Windows bundle by using the **Thin Client Application** bundle category. For more information, see [Section 2.5, "Creating Windows Bundles," on page 28](#).
- ♦ In ZENworks Control Center, click the **Bundles** tab, click the underlined link of a bundle in the **Name** column of the **Bundles** list, click the **Actions** tab, click one of the action set tabs (Distribute, Install, Launch, Repair, Uninstall, Terminate, or Preboot), click the **Add** drop-down list, then select an available action.

The following sections contain additional information:

- ♦ [Section 6.25.1, “General,” on page 121](#)
- ♦ [Section 6.25.2, “Requirements,” on page 122](#)

## 6.25.1 General

The General page lets you specify to launch an ICA (Independent Computing Architecture) or RDP (Remote Desktop Protocol) client session and configure the appropriate settings.

### ICA Session

Select this option if the terminal server requires the application to run in an ICA client session. Citrix MetaFrame requires ICA client sessions.

**Published Application Name:** Type the published application name exactly as it is defined in Citrix.

**Servers Hosting the Application:** Add the Citrix servers that host the application.

- 1 Type the server’s IP address or hostname.
- 2 Click **Add**.

The order in which the servers are listed is the preferred order for launching. You can use the **Move Up** and **Move Down** buttons to change the order if necessary.

**To set user domain name:**

When creating a windows bundle, you should create the **Edit INI Files** action, add `Domain=[CustomerDomain]` as key, and then add the **Launch Windows Thin Client Application** action to set the user domain name.

For more information on Edit INI files, see [Section 6.7, “Action - Edit INI File,” on page 75](#).

If the **Selecting the Append key-value separator to the key when value is not available** option is selected, then the thin client bundle action enables you to pass-through a user domain name.

### RDP Session

Select this option if the terminal server requires the application to run in an RDP client session. Microsoft Windows Terminal Server requires RDP client sessions.

**Terminal Server Address:** Specify the terminal server’s IP address or hostname.

**Server Port:** If the terminal server is not using default port 3389, specify the correct port number.

**Server Domain:** If the terminal server is part of a Windows NT domain or an Active Directory domain, specify the domain name. If the user’s name and password in the domain matches the user name and password in Novell eDirectory, the user is not prompted to log in to the terminal server when launching the application.

**Application Path:** Specify the path to the application’s executable file from the perspective of the terminal server.

**Application Working Directory:** Specify the path to the directory you want the application to use for its working files.

**Color Depth:** Select the number of colors for the RDP client session. You can select **256 Colors**, **High Color (15 bits)**, **High Color (16 bits)**, or **True Color (24 bits)**. The default is **True Color (24 bits)**.

**Screen Size:** If you want the RDP client session to use the entire desktop area, select **Operate in full screen mode**. Otherwise, select **Use specified screen size** and manually set the width and height (in pixels).

**Advanced Settings for redirection:** Select the settings, such as drivers, printers, serial ports, and smart cards, that you want to map to the remote desktop machine.

## 6.25.2 Requirements

The Requirements page lets you define specific requirements that a device must meet for the action to be enforced on it. For information about the requirements, see [Requirements](#).

## 6.26 Action - Prompt User

The Action - Prompt User dialog box lets you specify that a prompt displays on the device and configure its settings. You can also specify the specific requirements that a device must meet for the action to be executed on the device.

To access this dialog box in ZENworks Control Center, click the **Bundles** tab. Click the underlined link of a bundle in the **Name** column of the **Bundles** list, click the **Actions** tab, click one of the action set tabs (Distribute, Install, Launch, Repair, Uninstall, Terminate, or Preboot), click the **Add** drop-down list, then select an available action.

The following sections contains additional information:

- ♦ [Section 6.26.1, “General,” on page 122](#)
- ♦ [Section 6.26.2, “Requirements,” on page 124](#)

### 6.26.1 General

The General page lets you specify that a prompt displays on the device and configure its settings.

#### User Cancels Allowed

Specify the number of times that you can cancel the remaining actions in the action set.

Set the value of the `CancelOnNoResponse` registry key to 1 to cancel the remaining actions in the action set. See [CancelOnNoResponse](#) in the *ZENworks Registry Keys Reference*.

In addition to the prerequisite above, you need to define the prompts in the Add Action - Prompt User page. In the **Define Prompt(s)** table, click **Add** to select the locale and the prompt. In the **Prompt** field, in the Select Locale and Prompt dialog box, do the following:

- ♦ Include {0} in your text to provide a running counter that counts down the number of seconds to 0.

- ♦ Include {1} for prompting the number of cancels or postpones allowed.
- ♦ Include {2} for prompting the remaining cancels or postpones allowed.

For example, you can specify the following text:

Scheduled Updates: Updates will be applied if there is no response within {0} time. You have {2} attempts left out of {1} to postpone this activity.

If the action set installs an application that requires a reboot, and you select this option, you can cancel the reboot. This will in turn, cancel the installation. The install action set is performed again according to its schedule. For this reason, use this option carefully. There is no **Cancel** button on the dialog box if you use the default setting of 0.

If the value of the **User Cancels Allowed** field is 5, you can cancel the install up to 5 times. The number of cancels remaining is also displayed.

---

**NOTE:** If you configure the Prompt User action, with the **User Cancels Allowed** value set as 1 or more, the **Cancel** or **Postpone** button is displayed depending on the `ShowCancelInPrompt` registry key. If the value of this registry key is set to `True` then the Prompt User action, configured with the **User Cancels Allowed** option will display the **Cancel** button, else it will display the **Postpone** button. For more information, see [ShowCancelInPrompt](#) in the *ZENworks Registry Keys Reference*.

---

## Seconds to be Displayed

Specify the number of seconds that the prompt is displayed before the action is performed. For example, you configure a prompt that appears during an application installation before the device performs a required reboot. If you specify that the user can cancel the action set and you enter 10 seconds as the value of the **Seconds to be Displayed** field, the prompt displays for 10 seconds and then the device reboots.

The reboot control and the prompt control messages display the time in hours, minutes and seconds.

For example, if you define the option {0} in the **Prompt** field and enter 3606 as the value in the **Seconds to be Displayed** field, then the message displays the time as 1:00:06.

## How Often to Prompt

Select the desired option:

- ♦ **Always:** Display the prompt every time the action is performed.
- ♦ **Once per device:** Display the prompt once on the device, regardless of how many users log in.
- ♦ **Once per user:** Display the prompt once per user, regardless of how many devices the user logs in to.

## Define Prompts

Define the prompt that you want to display on the device. Additionally, you can specify different locales with different messages.

The ZENworks Agent automatically detects the locale of the operating system and displays the prompt defined in the same locale as the operating system locale. However, if the operating system locale does not match any of the specified locales, then ZENworks displays the prompt defined by the first locale in the list.

To create a message:

- 1 Click **Add** to display the **Select Locale and Prompt** dialog box.
- 2 Select a language from the **Locale** drop-down list. The message displays only on devices in the specified locale. You can create different messages, each with its own locale setting.
- 3 Type the text you want to display on the device.

---

**NOTE:** On a Macintosh and a Linux device, the new line character does not work. To display a message on a new line, you must use a `<br>` tag before the message.

---

You can include `{0}` in your text to provide a running counter that counts down the number of seconds to 0, after which the prompt is auto-accepted. For example, you could specify the following text:

The machine will reboot in `{0}` seconds. Please save your work and close any open applications.

The message displays for the number of seconds specified in the **Seconds to be Displayed** field.

- 4 Click **OK**.

### 6.26.2 Requirements

The Requirements page lets you define specific requirements that a device must meet for the action to be enforced on it. For information about the requirements, see [Requirements](#).

## 6.27 Action - Reboot/Shutdown

The Action - Reboot/Shutdown dialog box lets you specify the reboot or shutdown action for the device. You can also specify the specific requirements that a device must meet for the action to be executed on the device.

To access this dialog box in ZENworks Control Center, click the **Bundles** tab. Click the underlined link of a bundle in the **Name** column of the **Bundles** list, click the **Actions** tab, click one of the action set tabs (Distribute, Install, Launch, Repair, Uninstall, Terminate, or Preboot), click the **Add** drop-down list, then select an available action.

---

**NOTE:** The Reboot action should not normally be used in conjunction with a Recurring launch set to **When a device is refreshed**. Although there are some valid use scenarios for this configuration, scheduling a device to reboot upon refresh can cause a continuous loop.

---

The following sections contains additional information:

- ♦ [Section 6.27.1, “General,” on page 125](#)
- ♦ [Section 6.27.2, “Requirements,” on page 126](#)

## 6.27.1 General

The General page lets you specify the reboot or shutdown action for the device.

### Reboot

Reboot the device when this action is performed.

### Shutdown

Shut down the device when this action is performed.

### Time to Wait Before Reboot/Shutdown

Specify the number of seconds (between -1 and 1800) before the device reboots or shuts down. When the number of seconds specified passes, the device reboots or shuts down, regardless of whether the user clicks **OK** or not. Clicking **OK** does not cause the device to immediately reboot or shut down.

A value of -1 causes the device to wait an indefinite period of time, essentially preventing the device from rebooting or shutting down. You should use a value of -1 in conjunction with the **Display a warning message before doing Reboot/Shutdown** and, optionally, the **Allow user to cancel** options. If you specify -1 and select the **Display a warning message before doing Reboot/Shutdown** option, a message displays indefinitely until the user clicks **OK** to perform the reboot or shutdown process. If you select both this option and the **Allow user to cancel** option, a message displays indefinitely until the user clicks **OK** or **Cancel**.

A value of -1 causes the device to wait an indefinite period of time, essentially preventing the device from rebooting or shutting down. You should use a value of -1 in conjunction with the **Display a warning message before doing Reboot/Shutdown** and, optionally, the **Allow user to cancel** options. If you specify -1 and select the **Display a warning message before doing Reboot/Shutdown** option, a message displays indefinitely until the user clicks **OK** to perform the reboot or shutdown process. If you select this option and the **Allow user to cancel** option, a message displays indefinitely until the user clicks **OK** or **Cancel**.

### Display a Warning Message Before Doing Reboot/Shutdown

Specify that a message displays on the device, warning the user that the device is going to reboot or shut down.

For example, you could provide the following prompt:

```
The machine will reboot in _ seconds. Please save your work and close any open applications.
```

Before performing the action, the message displays on the device only if the user is logged in.

## Allow User to Cancel

Specify whether the user can cancel the reboot or shutdown procedure.

## Define Prompts

Define the prompt that you want to display on the device. Additionally, you can specify different locales with different messages. If you do not specify another locale, a default English message displays.

To create a message:

- 1 Click **Add** to display the **Select Locale and Prompt** dialog box.
- 2 Select a language from the **Locale** drop-down list. The message displays only on devices in the specified locale. You can create different messages, each with its own locale setting.
- 3 Type the text you want to display on the device.

---

**NOTE:** On a Macintosh and a Linux device, the new line character does not work. To display a message on a new line, you must use a `<br>` tag before the message.

---

You can include `{0}` in your text to provide a running counter that counts down the number of seconds to 0, after which the prompt is auto-accepted. For example, you could specify the following text:

The machine will reboot in `{0}` seconds. Please save your work and close any open applications.

The message displays for the number of seconds specified in the **Seconds to be Displayed** field.

- 4 Click **OK**.

## 6.27.2 Requirements

The Requirements page lets you define specific requirements that a device must meet for the action to be enforced on it. For information about the requirements, see [Requirements](#).

## 6.28 Action - Registry Edit

The Action - Registry Edit dialog box lets you configure the registry file to apply. We recommend that you back up the registry before applying the specified registry file, and ensure that the file is properly formatted and well tested. You can also specify the specific requirements that a device must meet for the action to be executed on the device.

To access this dialog box in ZENworks Control Center, click the **Bundles** tab. Click the underlined link of a bundle in the **Name** column of the **Bundles** list, click the **Actions** tab, click one of the action set tabs (Distribute, Install, Launch, Repair, Uninstall, Terminate, or Preboot), click the **Add** drop-down list, then select an available action.

The following sections contain additional information:

- [Section 6.28.1, “General,” on page 127](#)
- [Section 6.28.2, “Advanced,” on page 129](#)
- [Section 6.28.3, “Requirements,” on page 130](#)

## 6.28.1 General

The General page lets you configure the registry file to apply. You can select hives in the tree to which you want to add values and keys, rename or remove sections, or import a registry file. We recommend that you back up the registry before applying the specified registry file, and ensure that the file is properly formatted and well tested.

---

**NOTE:** It is recommended that you do not create a registry key with `Default` as value. If you create a registry key with `Default` as value and try to perform a registry update, then the registry edit action will update the Windows `Default` registry value and not the user created `Default` registry value.

---

The following table lists the tasks you can perform to manage registry tree changes:

Task	Steps
Add a registry key	<ol style="list-style-type: none"><li>1. Select a registry hive, click <b>New</b>, then click <b>Key</b>.</li><li>2. Specify the key's name. For example, Software.  You can also specify multiple levels of keys by separating them with a backslash (\). For example, Novell\ZENworks\Zfd.  Do not use the forward slash (/) as a separator.</li><li>3. Select one of the following registry operations:<ul style="list-style-type: none"><li>♦ <b>Create Always:</b> Creates the key regardless of whether the key currently exists in the workstation's registry.</li><li>♦ <b>Create If Does Not Exist:</b> Creates the key only if the key does not currently exist in the workstation's registry.</li><li>♦ <b>Rename:</b> Renames the key if it currently exists in the workstation's registry.</li><li>♦ <b>Delete:</b> Deletes the key if it currently exists in the workstation's registry.</li><li>♦ <b>Delete and Recreate:</b> Deletes the key if it currently exists in the workstation's registry and then recreates the key.</li><li>♦ <b>Delete if Empty:</b> Deletes the key if it currently exists in the workstation's registry and the key is empty.</li><li>♦ <b>None:</b> Does not perform any registry operation.</li></ul></li></ol>

Task	Steps
Add a Value	<ol style="list-style-type: none"> <li>1. Select the check box next to the desired item, then click <b>Value</b> to display the Add Value To dialog box.</li> <li>2. Select one of the following options from the <b>Value Type</b> list: <ul style="list-style-type: none"> <li>♦ <b>Default:</b> Adds a default string value to the selected key.</li> <li>♦ <b>String:</b> Adds a string value to the selected key.</li> <li>♦ <b>Binary:</b> Adds a binary value to the selected key. Most hardware component information is stored as binary data and is displayed in hexadecimal format.</li> <li>♦ <b>Dword:</b> Adds a DWORD value to the selected key. DWORD values are represented by a number that is 4 bytes long. Many parameters for device drivers and services are this type and are displayed in binary, hexadecimal, or decimal format.</li> <li>♦ <b>Expandable String:</b> Adds an expand string value to the selected key. An expandable string is a variable-length data string. This data type includes variables that are resolved when a program or service uses the data.</li> <li>♦ <b>Multiple String:</b> Adds a multi-value string to the selected key. Multiple string values contain lists or multiple values in a form that people can read. Entries are separated by spaces, commas, or other marks.</li> <li>♦ <b>Qword:</b> Adds a Qword string to the selected key. A Qword value is data represented by a number that is a 64-bit integer. This data is displayed in Registry Editor as a Binary Value.</li> <li>♦ <b>Link:</b> Adds a link string value to the selected key. A link string value is a Unicode string naming a symbolic link.</li> <li>♦ <b>None:</b> Does not perform any registry operation.</li> <li>♦ <b>Full Resource Descriptor:</b> Adds a full resource descriptor value to the selected key. A full resource descriptor is a series of nested arrays designed to store a resource list for a hardware component or driver.</li> <li>♦ <b>Resource List:</b> Adds a resource list to the selected key. A resource list is a series of nested arrays that is designed to store a resource list that is used by a hardware device driver or one of the physical devices it controls.</li> <li>♦ <b>Resource Requirement List:</b> Adds a resource requirements list to the selected key. A resource requirements list is a series of nested arrays designed to store a device driver's list of possible hardware resources the driver or one of the physical devices it controls can use.</li> </ul> </li> <li>3. Specify the data. Depending on which value type you selected in the previous step, the type of data varies.</li> <li>4. Select one of the following registry operations: <ul style="list-style-type: none"> <li>♦ <b>Create Always:</b> The setting is always created in the registry, even if it already exists. If it exists, the setting's current values are overwritten. For example, if <code>PATH=C:\</code> already exists, <code>PATH=C:\TEMP</code> replaces it.</li> <li>♦ <b>Create If Exists:</b> The setting is created only if it already exists. The setting's current values are overwritten. For example, if <code>PATH=C:\</code> already exists, <code>PATH=C:\TEMP</code> replaces it.</li> <li>♦ <b>Create If Does Not Exist:</b> The setting is created only if it does not already exist.</li> </ul> </li> </ol>

Task	Steps
	<ul style="list-style-type: none"> <li>♦ <b>Delete:</b> The setting is deleted. If the registry setting has subordinate settings, the subordinate settings are also deleted.</li> <li>♦ <b>Append If Exists, Otherwise Create:</b> Appends the Value if the value currently exists in the workstation's registry. If the Value does not exist, it is created.</li> <li>♦ <b>Prepend If Exists, Otherwise Create:</b> Prepends the Value if the value currently exists in the workstation's registry. If the Value does not exist, it is created.</li> </ul>
Rename an entry	<ol style="list-style-type: none"> <li>1. Select the check box next to the desired item, then click <b>Edit &gt; Rename</b>.</li> <li>2. Specify the new name.</li> </ol>
Select all the objects of a parent folder	<ol style="list-style-type: none"> <li>1. Select the check box next to the parent folder, then click <b>Edit &gt; Select All Children</b>.</li> </ol>
Deselect all the objects of a parent folder	<ol style="list-style-type: none"> <li>1. Select the check box next to the parent folder, then click <b>Edit &gt; Deselect All Children</b>.</li> </ol>
Clear Selection	<ol style="list-style-type: none"> <li>1. Click <b>Edit &gt; Clear Selection</b>.</li> </ol>
Remove an entry	<ol style="list-style-type: none"> <li>1. Select the check box next to the desired item, then click <b>Delete</b>.</li> </ol>
Import the contents of a registry file	<ol style="list-style-type: none"> <li>1. Click <b>Import</b>, then specify the registry file whose contents you want to import.</li> </ol> <p><b>NOTE:</b> A <code>.reg</code> file does not allow you to store the Data Type information of the value being deleted. For more information, see <i>Deleting Registry Keys and Values</i> at <a href="http://support.microsoft.com/kb/310516">Microsoft Support Site (http://support.microsoft.com/kb/310516)</a>.</p> <p>Consequently, when you import a registry file that has a value marked for deletion in the file, the value defaults to a String Data Type. However, this behavior does not affect the deletion of values from the Windows Registry of the managed device.</p>
Export the contents to a registry file	<ol style="list-style-type: none"> <li>1. Click <b>Export</b> to export the contents to a registry file named by default as <code>bundle_name.reg</code>. For example, if the name of the bundle is win, then the contents are exported to a <code>win.reg</code> file.</li> </ol> <p>You can choose to rename the file.</p>
Search for a Value name, registry key, or both.	<ol style="list-style-type: none"> <li>1. Specify the name of the value or key that you want to search for.</li> <li>2. Select <b>Registry Key/Value, Registry Value Data, or Both</b>.</li> <li>3. Select the <b>Search within the selected nodes only</b> check box to limit the search to the node you selected in the <b>Registry Tree</b> list.</li> <li>4. Click <b>Search</b>.</li> </ol>

## 6.28.2 Advanced

The Advanced page lets you specify how you want the action to run (as system or user) and to back up the registry file before applying the modified registry file

## Backup Registry Before Applying the Changes

Select the check box, then specify the path to the backup file, for example, `c:\BackupFile.reg`.

If you select this option, the entire registry is backed up before importing the configured registry file. The backup process is performed every time this action executes. This can be a time-consuming operation and the backup file can be large.

Before you edit the registry, export the keys in the registry that you plan to edit, or back up the entire registry by selecting this option. If a problem occurs, you can then restore the registry to its previous state.

---

**NOTE:** On a non-XP Windows device, if you apply a bundle for which **Backup registry before applying changes** is selected and **Run Action As** is set to **User**, then the following occurs:

- ♦ The registry backup action fails.
  - ♦ The bundle execution fails.
- 

## Run Action As

Specify how you want the action to run:

- ♦ **System:** The action is run under the Local System user and inherits Administrator-level credentials. For example, the action has full rights to the `HKEY_LOCAL_MACHINE` hive.
  - ♦ Select the **Apply HKEY\_CURRENT\_USER changes to the logged in user's hive instead of .DEFAULT** option to enable the changes to be made in the user's hive instead of the `DEFAULT` hive of `HKEY_USERS`.
  - ♦ Select the **Resolve the environment variables specified in registry edit value in the user context** option to resolve the environment variables that you have specified in the registry edit value, in the user context. If there are no logged in users available, then the environment variables will be resolved in the system context.
- ♦ **User:** The registry file is applied using the logged-in user's credentials. For example, the action has the same rights to the registry and the file system as the logged-in user. If you are changing keys in the `HKEY_CURRENT_USER` hive, you must run the action as **User**. Depending on the rights assigned to the user, the action might or might not have rights to the `HKEY_LOCAL_MACHINE` hive. If you select **User**, the user must be logged in to the device or the action fails.

### 6.28.3 Requirements

The Requirements page lets you define specific requirements that a device must meet for the action to be enforced on it. For information about the requirements, see [Requirements](#).

## 6.29 Action - Run Script

The Action - Run Script dialog box lets you configure a script to be executed on the managed device. For the Run Script action to successfully complete, ensure that the script is silent (requires no user intervention). You can also specify the specific requirements that a device must meet for the action to be executed on the device.

To access this dialog box in ZENworks Control Center, click the **Bundles** tab. Click the underlined link of a bundle in the **Name** column of the **Bundles** list, click the **Actions** tab, click one of the action set tabs (Distribute, Install, Launch, Repair, Uninstall, Terminate, or Preboot), click the **Add** drop-down list, then select an available action.

The following sections contains additional information:

- ♦ [Section 6.29.1, “General,” on page 131](#)
- ♦ [Section 6.29.2, “Requirements,” on page 134](#)

### 6.29.1 General

The General page lets you configure a script to be executed on the managed device. For the Run Script action to successfully complete, ensure that the script is silent (requires no user intervention).

The settings vary, depending on the type of script you select from the **Script to run** list. The following options are available:

- ♦ [“Specify a File on a Managed Device” on page 131](#)
- ♦ [“Define Your Own Script” on page 132](#)
- ♦ [“Select From This Device” on page 133](#)

### Specify a File on a Managed Device

Select this option to run a script that exists on the managed device.

**Script Filename:** Specify the path to the script file on the target device, for example, `C:\scripts\xyz.pl`.

**Script Parameters:** Specify any additional parameters you want to place on the command line after the script filename is specified. This results in parameters being passed to your executable script.

**Path to Script Engine:** Specify the interpreter that launches to run your script. For example, `C:\Program Files\Perl\bin\Perl.exe`.

For Windows scripts other than batch scripts (for example, VBScript), the **Path to Script Engine** field should specify the path to the Windows Based Script Host, such as `(C:\Windows\System32\wscript.exe)`

**Script Engine Parameters:** Specify any parameters you want included on the command line when the script engine launches.

**Wait Before Proceeding to Next Action:** Specify what happens after the script is run:

- ♦ **Do not wait:** The next action in the list is immediately performed.

- ♦ **Proceed when an action is complete:** The next action in the list is performed after the launch action completes.
- ♦ **Wait for \_ seconds:** Wait the specified number of seconds before proceeding to the next action.
  - ♦ **Terminate action if it has exceeded its wait duration:** If you select the **Wait for \_ seconds** option, this option is enabled. If the specified number of seconds is exceeded and the action is not successfully performed, the action is terminated.

## Define Your Own Script

Select this option to type a script in ZENworks Control Center.

**Script Content:** Click **Edit** to display a text box where you type your script. This script is delivered to the assigned devices and is executed in the standard device shell environment.

For example, you can automate drive mapping using the script capabilities of bundles. Your bundle's script could read:

```
net use m: \\server\sys
net use w: \\server\vol1
```

If the user is logged in as an eDirectory user with rights, then the mapping works. They can map a drive to a Windows share using a domain account by putting the username / password on the script line. If they are a logged in as an Active Directory user and have rights, the username / password is not required. If an Environment Variable is specified, then ZENworks will resolve that variable with the associated value. For example, if %USERNAME% is provided as the Environment Variable, then the variable will be resolved to the value of the logged-in user.

However, if you do not want the variable to be resolved and want it to be displayed as is, then you need to add additional percent signs before and after the variable. For example, if you want the output to be displayed as %USERNAME%, specify %%USERNAME%% or if you want the output to be displayed as %%%USERNAME%%, specify %%%USERNAME%%.

**Script File Extension:** Specify the extension that you want appended to the script when it is saved. For example, .bat.

**Path to Script Engine:** Specify the interpreter that will run your script. This field is mandatory for PowerShell scripts and is auto populated if .ps1 is selected in the **Script File Extension** field. However, you can modify the path and provide the correct version of the interpreter, if required. If you have multiple versions of PowerShell installed, then it is recommended that you modify the path to the version that is compatible with the script defined in the **Script Content**.

**Script Engine Parameters:** Specify any parameters you want included on the command line when the script engine launches. This field is mandatory for PowerShell scripts and is auto populated if .ps1 is selected in the **Script File Extension** field. However, you can modify the parameters, if required.

**Wait Before Proceeding to Next Action:** Specify what happens after the script is run:

- ♦ **Do not wait:** The next action in the list is immediately performed.
- ♦ **Proceed when an action is complete:** The next action in the list is performed after the launch action completes.

- ♦ **Wait for \_ seconds:** Wait the specified number of seconds before proceeding to the next action.
  - ♦ **Terminate action if it exceeds its wait duration:** If you select the **Wait for \_ seconds** option, this option is enabled. If the specified number of seconds is exceeded and the action is not successfully performed, the action is terminated.

## Select From This Device

Select this option to specify a script file that is already on the device on which you are running ZENworks Control Center.

**Select From This Device:** Browse to and select the script file.

**Script Parameters:** Specify any additional parameters you want to place on the command line after the script filename is specified. This results in parameters being passed to your executable script.

**Path to Script Engine:** Specify the interpreter that launches to run your script.

**Script Engine Parameters:** Specify any parameters you want included on the command line when the script engine launches.

**Wait Before Proceeding to Next Action:** Specify what happens after the script is run:

- ♦ **Do not wait:** The next action in the list is immediately performed.
- ♦ **Proceed when an action is complete:** The next action in the list is performed after the launch action completes.
- ♦ **Wait for \_ seconds:** Wait the specified number of seconds before proceeding to the next action.
  - ♦ **Terminate action if it has exceeded its wait duration:** If you select the **Wait for \_ seconds** option, this option is enabled. If the specified number of seconds is exceeded and the action is not successfully performed, the action is terminated.

**Working Directory:** Click **More Options** to specify the script's working directory. Specify the initial working directory for the script.

**Priority:** Click **More Options** to specify the script's priority. Specify the priority of the process that runs the script. This option lets you configure how much of the CPU usage the script process consumes. Select from the following priorities: **Real Time**, **High**, **Above Normal**, **Normal**, **Below Normal**, and **Low**.

**Run As:** Click **More Options** to specify the script's run as setting. Specify an option:

- ♦ **System:** Runs the script as the system account (as a service).
- ♦ **Administrator:** Runs the script as a dynamic administrator user. A dynamic administrator is an administrator account that is created on the fly to perform certain procedures, such as installing applications or running scripts. Using a dynamic administrator is helpful when installing applications (some MSI applications, for example) that cannot be installed in the system space. When you select this action, the dynamic administrator is created, it performs the required tasks, and then the account is deleted.
- ♦ **User:** The script runs, using the logged-in user's credentials. For example, the script has the same rights to the registry and the file system as the logged-in user.

The following options are available for Linux:

- ♦ **Root:** The script runs by using the credentials of the root user.

- ♦ **User:** The script runs by using the logged-in user's credentials. For example, the script has the same rights to the registry and the file system as the logged-in user.

## 6.29.2 Requirements

The Requirements page lets you define specific requirements that a device must meet for the action to be enforced on it. For information about the requirements, see [Requirements](#).

## 6.30 Action - Start/Stop Service

The Action - Start/Stop Service dialog box lets you specify the service that you want to start or stop. You can also specify the specific requirements that a device must meet for the action to be executed on the device.

To access this dialog box in ZENworks Control Center, click the **Bundles** tab. Click the underlined link of a bundle in the **Name** column of the **Bundles** list, click the **Actions** tab, click one of the action set tabs (Distribute, Install, Launch, Repair, Uninstall, Terminate, or Preboot), click the **Add** drop-down list, then select an available action.

The following sections contains additional information:

- ♦ [Section 6.30.1, "General," on page 134](#)
- ♦ [Section 6.30.2, "Requirements," on page 134](#)

### 6.30.1 General

The General page lets you specify the service that you want to start or stop.

**Service Name:** Specify a service and indicate whether you want to start or stop that service.

**Select Action:** Select one of the following actions:

- ♦ **Start Service:** Starts the specified service. If the service is already running on the device, the Start Service task completes.
- ♦ **Stop Service:** Stops the specified service. If the service is not running on the device, the Stop Service task completes.

### 6.30.2 Requirements

The Requirements page lets you define specific requirements that a device must meet for the action to be enforced on it. For information about the requirements, see [Requirements](#).

## 6.31 Action - Terminate Application

The Action - Terminate Application dialog box is displayed when you add a Terminate Application Prompt action. This dialog box lets you undo all operations that are performed in the launch action set. You can also configure a prompt to notify users of the termination. You can also specify the specific requirements that a device must meet for the action to be executed on the device. However, you are allowed to add the Terminate Application action only if it is not already added.

To access this dialog box, click the **Bundles** tab in ZENworks Control Center. Click the underlined link of a bundle in the **Name** column of the **Bundles** list, click the **Actions > Terminate**. Click **Add > Terminate Application**.

The following sections contains additional information:

- [Section 6.31.1, “General,” on page 135](#)
- [Section 6.31.2, “Requirements,” on page 136](#)

### 6.31.1 General

The General page lets you undo all operations that are performed in the launch action set. You can also configure a prompt to notify users of the termination.

The name and type of each process that is reversed displays in the list.

#### Notify the User of Termination

Define the prompt that you want to display on the device. You can also specify different locales with different messages.

The ZENworks Agent automatically detects the locale of the operating system and displays the prompt defined in the same locale as the operating system locale. However, if the operating system locale does not match any of the specified locales, then ZENworks displays the prompt defined by the first locale in the list.

To create a message:

- 1 Click **Add** to display the **Select Locale and Prompt** dialog box.
- 2 Select a language from the **Locale** drop-down list. The message displays only on devices in the specified locale. You can create different messages, each with its own locale setting.
- 3 Specify the text you want to display on the device.  
You can include `{0}` in your text to provide a running counter that counts down the number of seconds to 0, after which the prompt is auto-accepted. For example, you could specify the following text:  
`The application will terminate in {0} seconds. Please save your work.`  
The message displays for the number of seconds specified in the **Seconds to be Displayed** field.
- 4 Click **OK**.

To remove a prompt, select the check box, then click **Remove**.

## 6.31.2 Requirements

The Requirements page lets you define specific requirements that a device must meet for the action to be enforced on it. For information about the requirements, see [Requirements](#).

## 6.32 Action - Terminate Application Prompt

The Action - Terminate Application Prompt dialog box is displayed when you add a Terminate Application Prompt action. This dialog box lets you configure a prompt to notify users before the application terminates, including the number of seconds to notify the user, the number of times the prompt retries, and different messages for different locales. You can also specify the specific requirements that a device must meet for the action to be executed on the device. However, you are allowed to add the Terminate Application Prompt action only if it is not already added.

To access this dialog box, click the **Bundles** tab in ZENworks Control Center. Click the underlined link of a bundle in the **Name** column of the **Bundles** list, click the **Actions** > **Terminate**. Click **Add** > **Terminate Application Prompt**.

The following sections contains additional information:

- ♦ [Section 6.32.1, “General,” on page 136](#)
- ♦ [Section 6.32.2, “Requirements,” on page 137](#)

### 6.32.1 General

The Action - Terminate Application Prompt dialog box lets you configure a prompt to notify users before the application terminates, including the number of seconds to notify the user, the number of times the prompt retries, and different messages for different locales.

#### Seconds to be Displayed

Specify the number of seconds that the prompt is displayed before the action is performed. For example, suppose you configure a prompt to notify the user that an application is in the process of terminating. If you specify that the prompt display for 10 seconds, the prompt displays for 10 seconds, then the application terminates.

#### Number of Retries Allowed

Specify the number of times the prompt displays before performing the next action.

#### Prompt the User to Save Any Unsaved Data

Define the prompt that you want to display on the device. You can also specify different locales with different messages.

The ZENworks Agent automatically detects the locale of the operating system and displays the prompt defined in the same locale as the operating system locale. However, if the operating system locale does not match any of the specified locales, then ZENworks displays the prompt defined by the first locale in the list.

To create a message:

- 1 Click **Add** to display the **Select Locale and Prompt** dialog box.
- 2 Select a language from the **Locale** drop-down list. The message displays only on devices in the specified locale. You can create different messages, each with its own locale setting.
- 3 Type the text you want to display on the device.

---

**NOTE:** On a Macintosh and a Linux device, the new line character does not work. To display a message on a new line, you must use a `<br>` tag before the message.

---

You can include `{0}` in your text to provide a running counter that counts down the number of seconds to 0, after which the prompt is auto-accepted. For example, you could specify the following text:

The application will terminate in `{0}` seconds. Please save your work.

The message displays for the number of seconds specified in the **Seconds to be Displayed** field.

- 4 Click **OK**.

## 6.32.2 Requirements

The Requirements page lets you define specific requirements that a device must meet for the action to be enforced on it. For information about the requirements, see [Requirements](#).

## 6.33 Action - Undo Install Actions

The Action - Undo Install Actions dialog box lets you undo all operations that are performed in the install action set. The list displays the name and type of each operation that is reversed. There are no configuration tasks that you need to perform for this action.

To access this dialog box in ZENworks Control Center, click the **Bundles** tab. Click the underlined link of a bundle in the **Name** column of the **Bundles** list, click the **Actions** tab, click one of the action set tabs (Distribute, Install, Launch, Repair, Uninstall, Terminate, or Preboot), click the **Add** drop-down list, then select an available action.

## 6.34 Action - Uninstall Bundle


The Action - Uninstall Bundle dialog box lets you select a bundle to remove from the device. You can also specify the specific requirements that a device must meet for the action to be executed on the device.

To access this dialog box in ZENworks Control Center, click the **Bundles** tab. Click the underlined link of a bundle in the **Name** column of the **Bundles** list, click the **Actions** tab, click one of the action set tabs (Distribute, Install, Launch, Repair, Uninstall, Terminate, or Preboot), click the **Add** drop-down list, then select an available action.

The following sections contains additional information:

- ♦ [Section 6.34.1, “General,” on page 138](#)
- ♦ [Section 6.34.2, “Requirements,” on page 138](#)

## 6.34.1 General

The General page lets you select a bundle to remove from the device. Click  to browse to and select the bundle to uninstall from the device.

The **Look in** list defaults to `/Bundles`. If you have created subfolders to hold your bundles, use the down-arrow to select the appropriate folder. The **Items of type** list defaults to **All Types** so that all types of bundles are displayed (Preboot bundle, Windows bundles). If you know the name of the bundle you are looking for, you can use the **Item name** box to search for the bundle.

Creating this action creates a bundle dependency. For more information, see [Section 8.8, “Dependency Bundles,” on page 166](#).

## 6.34.2 Requirements

The Requirements page lets you define specific requirements that a device must meet for the action to be enforced on it. For information about the requirements, see [Requirements](#).

## 6.35 Action - Repair Bundle

The Action - Repair Bundle dialog box lets you repair a bundle on the device. You can also specify the specific requirements that a device must meet for the action to be executed on the device.

Repairing a bundle ensures that the specified bundle or bundle group has been properly installed on the device.

For example, for an MSI bundle, repairing the bundle results in the task running an MSI `/repair` process against the bundle.


It is a best practice to ensure that the actions under Repair perform a basic re-installation of the program, and that they are Enabled. Repair is usually displayed as Repair install actions, which means that the actions under Install are run again when users select **Repair** from the action menu of the icon on their computer. This raises the service level considerably for the end user – the program can be reinstalled without help from the IT service.

To access this dialog box in ZENworks Control Center, click the **Bundles** tab. Click the underlined link of a bundle in the **Name** column of the **Bundles** list, click the **Actions** tab, click one of the action set tabs (Distribute, Install, Launch, Repair, Uninstall, Terminate, or Preboot), click the **Add** drop-down list, then select an available action.

The following sections contains additional information:

- ♦ [Section 6.35.1, “General,” on page 139](#)
- ♦ [Section 6.35.2, “Requirements,” on page 139](#)

## 6.35.1 General

The General page lets you repair a bundle on the device. Click  to browse to and select the bundle to repair on the device.

The **Look in** list defaults to `/Bundles`. If you have created subfolders to hold your bundles, use the down-arrow to select the appropriate folder. The **Items of type** list defaults to **All Types** so that all types of bundles are displayed (Preboot bundles, Windows bundles). If you know the name of the bundle you are looking for, you can use the **Item name** box to search for the bundle.

Creating this action creates a bundle dependency. For more information, see [Section 8.8, “Dependency Bundles,” on page 166](#).

## 6.35.2 Requirements

The Requirements page lets you define specific requirements that a device must meet for the action to be enforced on it. For information about the requirements, see [Requirements](#).

## 6.36 Action - Repair Install Actions

The Repair Install Actions action repairs all operations that are performed in the Install action set. This action does not require any configuration.

To access this dialog box in ZENworks Control Center, click the **Bundles** tab. Click the underlined link of a bundle in the **Name** column of the **Bundles** list, click the **Actions** tab, click one of the action set tabs (Distribute, Install, Launch, Repair, Uninstall, Terminate, or Preboot), click the **Add** drop-down list, then select an available action.

## 6.37 Requirements

The Requirements panel lets you define specific requirements that a device must meet for the action to be enforced on it.

You define requirements through the use of filters. A filter is a condition that must be met by a device in order for the bundle to be applied. For example, you can add a filter to specify that the device must have exactly 512 MB of RAM in order for the bundle to be applied, and you can add another filter to specify that the hard drive be at least 20 GB in size.

Some of the best practices that you can follow while using the Requirements tab are as follows:

- ♦ Create general filters under Requirements if you do not want the device to utilize CPU time evaluating conditions for individual actions under Actions. For example, you can set an Architecture filter at this level if an application runs on only 32-bit or 64-bit operating systems. It is especially important to set a filter for the architecture when you associate bundles with users because the application will otherwise follow the user to all operating systems that they use, regardless of whether or not it can be installed and run.
- ♦ You can filter out certain environments by means of variables and conditions. For example, if you want an application to be visible only if a computer is connected to your network, you can configure a filter for that.

As you construct filters, you need to know the conditions you can use and how to organize the filters to achieve the desired results. Refer to the following sections for details.

- ♦ [Section 6.37.1, “Filter Conditions,” on page 140](#)
- ♦ [Section 6.37.2, “Filter Logic,” on page 145](#)
- ♦ [Section 6.37.3, “Fail the action if these requirements fail,” on page 145](#)

## 6.37.1 Filter Conditions

You can choose from any of the following conditions when creating a filter. Place your mouse pointer over fields that require input to display a tooltip containing example usage.

**Architecture:** Determines the architecture of Windows running on the device. The condition you use to set the requirement includes a property, an operator, and a property value. The possible operators are equals (=) and does not equal (<>). For example, if you set the condition to `architecture = 32`, the device’s Windows operating system must be 32-bit to meet the requirement.

**Associated On:** Determines the number of users or devices to which the bundle is assigned. The possible operators are equals (=) and does not equal (<>). The possible values are **Users** and **Devices**. For example, if you set the condition to `=100 users`, the total number of users must be 100 to meet the requirement.

**Bundle Installed:** Determines if a specific bundle is installed. After specifying the bundle, the two conditions you can use to set the requirement are **Yes** and **No**. If you select **Yes**, the specified bundle must already be installed to meet the requirement. If you select **No**, the bundle must not be installed.

**Connected:** Determines if the device is connected to the network. The two conditions you can use to set the requirement are **Yes** and **No**. If you select **Yes**, the device must be connected to the network to meet the requirement. If you select **No**, it must not be connected.

**Connection Speed:** Determines the speed of the device’s connection to the network. The condition you use to set the requirement includes an operator and a value. The possible operators are equals (=), does not equal (<>), is greater than (>), is greater than or equal to (>=), is less than (<), and is less than or equal to (<=). The possible values are bits per second (**bps**), kilobits per second (**Kbps**), megabits per second (**Mbps**), and gigabits per second (**Gbps**). For example, if you set the condition to `>= 100 Mbps`, the connection speed must be greater than or equal to 100 megabits per second to meet the requirement.

**Disk Space Free:** Determines the amount of free disk space on the device. The condition you use to set the requirement includes a disk designation, an operator, and a value. The disk designation can be a local drive map (for example, c: or d:). The possible operators are equals (=), does not equal (<>), is greater than (>), is greater than or equal to (>=), is less than (<), and is less than or equal to (<=). The possible values are bytes (**Bytes**), kilobytes (**KB**), megabytes (**MB**), and gigabytes (**GB**). For example, if you set the condition to `c: >= 80 MB`, the free disk space must be greater than or equal to 80 megabytes to meet the requirement.

**Disk Space Total:** Determines the amount of total disk space on the device. The condition you use to set the requirement includes a disk designation, an operator, and a value. The disk designation can be a local drive map (for example, c: or d:). The possible operators are equals (=), does not equal (<>), is greater than (>), is greater than or equal to (>=), is less than (<), and is less than or equal to (<=).

(**<=**). The possible values are bytes (**Bytes**), kilobytes (**KB**), megabytes (**MB**), and gigabytes (**GB**). For example, if you set the condition to `c: >= 40 GB`, the total disk space must be greater than or equal to 40 gigabytes to meet the requirement.

**Disk Space Used:** Determines the amount of used disk space on the device. The condition you use to set the requirement includes a disk designation, an operator, and a value. The disk designation can be a local drive map (for example, `c:` or `d:`). The possible operators are equals (**=**), does not equal (**<>**), is greater than (**>**), is greater than or equal to (**>=**), is less than (**<**), and is less than or equal to (**<=**). The possible values are bytes (**Bytes**), kilobytes (**KB**), megabytes (**MB**), and gigabytes (**GB**). For example, if you set the condition to `c: <= 10 GB`, the used disk space must be less than or equal to 10 gigabytes to meet the requirement.

**Environment Variable Exists:** Determines if a specific environment variable exists on the device. After specifying the environment variable, the two conditions you can use to set the requirement are **Yes** and **No**. If you select **Yes**, the environment variable must exist on the device to meet the requirement. If you select **No**, it must not exist.

**Environment Variable Value:** Determines if an environment variable value exists on the device. The condition you use to set the requirement includes the environment variable, an operator, and a variable value. The environment variable can be any operating system supported environment variable. The possible operators are **equal to**, **not equal to**, **contains**, and **does not contain**. The possible variable values are determined by the environment variable. For example, if you set the condition to `Path contains c:\windows\system32`, the Path environment variable must contain the `c:\windows\system32` path to meet the requirement.

**File Date:** Determines the date of a file. The condition you use to set the requirement includes the filename, an operator, and a date. The filename can be any filename supported by the operating system. The possible operators are **on**, **after**, **on or after**, **before**, and **on or before**. The possible dates are any valid dates. For example, if you set the condition to `app1.msi on or after 6/15/07`, the `app1.msi` file must be dated 6/15/2007 or later to meet the requirement.

**File Exists:** Determines if a file exists. After specifying the filename, the two conditions you can use to set the requirement are **Yes** and **No**. If you select **Yes**, the specified file must exist to meet the requirement. If you select **No**, the file must not exist.

**File Size:** Determines the size of a file. The condition you use to set the requirement includes the filename, an operator, and a size. The filename can be any file name supported by the operating system. The possible operators are equals (**=**), does not equal (**<>**), is greater than (**>**), is greater than or equal to (**>=**), is less than (**<**), and is less than or equal to (**<=**). The possible sizes are designated in bytes (**Bytes**), kilobytes (**KB**), megabytes (**MB**), and gigabytes (**GB**). For example, if you set the condition to `doc1.pdf <= 3 MB`, the `doc1.pdf` file must be less than or equal to 3 megabytes to meet the requirement.

**File Version:** Determines the version of a file. The condition you use to set the requirement includes the filename, an operator, and a version. The filename can be any file name supported by the operating system. The possible operators are equals (**=**), does not equal (**<>**), is greater than (**>**), is greater than or equal to (**>=**), is less than (**<**), and is less than or equal to (**<=**).

Be aware that file version numbers contain four components: Major, Minor, Revision, and Build. For example, the file version for `calc.exe` might be 5.1.2600.0. Each component is treated independently. For this reason, the system requirements that you set might not provide your expected results. If you do not specify all four components, wildcards are assumed.

For example, if you set the condition to `calc.exe <= 5`, you are specifying only the first component of the version number (Major). As a result, versions 5.0.5, 5.1, and 5.1.1.1 also meet the condition.

However, because each component is independent, if you set the condition to `calc.exe <= 5.1`, the `calc.exe` file must be less than or equal to version 5.1 to meet the requirement.

**IP Segment:** Determines the device's IP address. After specifying the IP segment name, the two conditions you can use to set the requirement are **Yes** and **No**. If you select **Yes**, the device's IP address must match the IP segment. If you select **No**, the IP address must not match the IP segment.

**Linux Distribution:** Determines the platform on which you want to distribute the bundles or the external services. The condition you use to set the requirement includes an operator and a property value. The possible properties are **server type** or **desktop type**, **version**, and **architecture**. The possible operators are equals (=) and does not equal (<>). For example, if you set the property value to `SUSE Linux Enterprise Desktop 11 - i586`, the distribution will be only on SLED 11 - i586 devices.

**Linux Kernel Version:** Determines the version of the Linux kernel. The condition you use to set the requirement includes an operator, and a version. The possible operators are equals (=), does not equal (<>), is greater than (>), is greater than or equal to (>=), is less than (<), and is less than or equal to (<=). For example, if you set the condition as `Linux Kernel Version > 2.6`, the requirement is met only on Linux devices that have a kernel version greater than 2.6.

**Linux Service Pack:** Determines the Linux service pack level running on the device. The condition you use to set the requirement includes a property and an operator, and a property value. The possible properties are **service pack**, **server type**, and **version**. The possible operators are equals (=), does not equal (<>), is greater than (>), is greater than or equal to (>=), is less than (<), and is less than or equal to (<=). For example, if you set the condition as `Linux Service Pack = SLES 10 SP1`, the requirement is met only on devices that are installed with SLES 10 SP1.

**Logged on to Primary Workstation:** Determines whether the user is logged on to his or her primary workstation. The two conditions you can use to set the requirement are **Yes** and **No**. If you select **Yes**, the user must be logged on to his or her primary workstation to meet the requirement. If you select **No**, if no user is logged on to the workstation, the requirement is not met. However, if a user other than the primary user is logged on to the workstation, the requirement is met.

**Memory:** Determines the amount of memory on the device. The condition you use to set the requirement includes an operator and a memory amount. The possible operators are equals (=), does not equal (<>), is greater than (>), is greater than or equal to (>=), is less than (<), and is less than or equal to (<=). The memory amounts are designated in megabytes (**MB**) and gigabytes (**GB**). For example, if you set the condition to `>= 2 GB`, the device must have at least 2 gigabytes of memory to meet the requirement.

**Novell Client Installed:** Determines if the device is using the Novell Client for its network connection. The two conditions you can use to set the requirement are **Yes** and **No**. If you select **Yes**, the device must be using the Novell Client to meet the requirement. If you select **No**, it must not be using the Novell Client.

**Operating System - Windows:** Determines the service pack level, server type, and version of Windows running on the device. The condition you use to set the requirement includes a property, an operator, and a property value. The possible properties are **service pack**, **server type**, and **version**. The possible operators are equals (=), does not equal (<>), is greater than (>), is greater than or equal

to ( $\geq$ ), is less than ( $<$ ), and is less than or equal to ( $\leq$ ). The property values vary depending on the property. For example, if you set the condition to `version = Windows XP Versions`, the device's Windows version must be XP to meet the requirement.

---

**NOTE:** Be aware that operating system version numbers contain four components: Major, Minor, Revision, and Build. For example, the Windows 2000 SP4 release's number might be 5.0.2159.262144. Each component is treated independently. For this reason, the system requirements that you set might not provide your expected results.

For example, if you specify **Operating System - Windows** in the first field, **Version** in the second field, **>** in the third field, and **5.0 -Windows 2000 Versions** in the last field, you are specifying only the first two components of the version number: Major (Windows) and Minor (5.0). As a result, for the requirement evaluated to true, the OS will have to be at least 5.1 (Windows XP). Windows 2003 is version 5.2, so specifying **> 5.2** will also evaluate to true.

However, because each component is independent, if you specify the version **> 5.0**, Windows 2000 SP4 evaluates to false because the actual version number might be 5.0.2159.262144. You can type 5.0.0 to make the requirement evaluate as true because the actual revision component is greater than 0.

When you select the OS version from the drop-down, the Major and Minor components are populated. The Revision and Build components must be typed in manually.

---

**Primary User Is Logged In:** Determines if the device's primary user is logged in. The two conditions you can use to set the requirement are **Yes** and **No**. If you select **Yes**, the primary user must be logged in to meet the requirement. If you select **No**, the user must not be logged in.

**Process Running:** Determines if a process is running. After specifying the process name, the two conditions you can use to set the requirement are **Yes** and **No**. If you select **Yes**, the specified process must be running to meet the requirement. If you select **No**, the process must not be running.

---

**NOTE:** This system requirement is applicable only for servers and agents with ZENworks 2017 Update 4 or later versions.

---

**Processor Family:** Determines the device's processor type. The condition you use to set the requirement includes an operator and a processor family. The possible operators are equals (**=**) and does not equal (**<>**). The possible processor families are **Pentium**, **Pentium Pro**, **Pentium II**, **Pentium III**, **Pentium 4**, **Pentium M**, **WinChip**, **Duron**, **BrandID**, **Celeron**, and **Celeron M**. For example, if you set the condition to **<> Celeron**, the device's processor can be any processor family other than Celeron to meet the requirement.

**Processor Speed:** Determines the device's processor speed. The condition you use to set the requirement includes an operator and a processor speed. The possible operators are equals (**=**), does not equal (**<>**), is greater than (**>**), is greater than or equal to (**>=**), is less than (**<**), and is less than or equal to (**<=**). The possible processor speeds are hertz (**Hz**), kilohertz (**KHz**), megahertz (**MHz**), and gigahertz (**GHz**). For example, if you set the condition to **>= 2 GHz**, the device's speed must be at least 2 gigahertz to meet the requirement.

**Registry Key Exists:** Determines if a registry key exists. After specifying the key name, the two conditions you can use to set the requirement are **Yes** and **No**. If you select **Yes**, the specified key must exist to meet the requirement. If you select **No**, the key must not exist.

**Registry Key Value:** Determines if a registry key value meets a defined condition. The condition you use to set the requirement includes the key name, the value name, an operator, a value type, and a value data. The key and value names must identify the key value you want to check. The possible operators are equals (=), does not equal (<>), is greater than (>), is greater than or equal to (>=), is less than (<), is less than or equal to (<=) and contains (). The possible value types are **Integer Type** (specify a decimal value) **String Type**, **IP address**, and **Version**. The possible value data is determined by the key, value name, and value type.

If the value type is **String Type**, ZCM compares only those values in the registry if the actual type in the registry is REG\_STRING or REG\_EXPANDED\_STRING.

If the value type is **Integer**, ZCM compares only those values in the registry if the actual type in the registry is REG\_DWORD.

Leave the key value field blank to use the default value. The default value of a registry key has no name and is displayed in regedit as (Default).

If the value type is **IP Address**, ZCM compares only those values in the registry if the actual type in the registry is REG\_STRING.

If the value type is **Version**, ZCM compares only those values in the registry if the actual type in the registry is REG\_STRING or REG\_EXPANDED\_STRING.

For more details, see **Registry Key Value** information in the [Adding System Requirements for a Bundle](#) section of this guide.

**Registry Key and Value Exists:** Determines if a registry key and value exist. After specifying the key name and value, the two conditions you can use to set the requirement are **Yes** and **No**. If you select **Yes**, the specified key and value must exist to meet the requirement. If you select **No**, the key and value must not exist.

**Service Exists:** Determines if a service exists. After specifying the service name, the two conditions you can use to set the requirement are **Yes** and **No**. If you select **Yes**, the service must exist to meet the requirement. If you select **No**, the service must not exist.

**Service Running:** Determines if a service is running. After specifying the service name, the two conditions you can use to set the requirement are **Yes** and **No**. If you select **Yes**, the specified service must be running to meet the requirement. If you select **No**, the service must not be running.

---

**NOTE:** This system requirement is applicable only for servers and agents with ZENworks 2017 Update 4 or later versions.

---

**Specified Devices:** Determines if the device is one of the specified devices. After specifying the devices, the two conditions you can use to set the requirement are **Yes** and **No**. If you select **Yes**, the device must be included in the specified devices list to meet the requirement (an inclusion list). If you select **No**, the device must not be included in the list (an exclusion list).

**Version of RPM:** Determines the version of the RPM name provided if installed. For example, if you add a system requirement, `Version of RPM cups > 1.0`, then the requirement evaluates to true, if cups rpm is installed and the version of the installed cups rpm is greater than 1.0. If cups rpm is not installed, the requirement is evaluated to be false. The possible operators are equals (=), does not equal (<>), is greater than (>), is greater than or equal to (>=), is less than (<), and is less than or equal to (<=).

## 6.37.2 Filter Logic

You can use one or more filters to determine whether the bundle should be distributed to a device. A device must match the entire filter list (as determined by the logical operators that are explained below) for the bundle to be applied to the device.

There is no technical limit to the number of filters you can use, but there are practical limits, such as:

- ♦ Designing a filter structure that is easy to understand
- ♦ Organizing the filters so that you do not create conflicting filters

### Filters, Filter Sets, and Logical Operators

You can add filters individually or in sets. Logical operators, either **AND** or **OR**, are used to combine each filter and filter set. By default, filters are combined using **OR** (as determined by the **Combine Filters Using** field) and filter sets are combined using **AND**. You can change the default and use **AND** to combined filters, in which case filter sets are automatically combined using **OR**. In other words, the logical operator that is to combine individual filters (within in a set) must be the opposite of the operator that is used between filter sets.

You can easily view how these logical operators work. Click both the **Add Filter** and **Add Filter Set** options a few times each to create a few filter sets, then switch between **AND** and **OR** in the **Combine Filters Using** field and observe how the operators change.

As you construct filters and filter sets, you can think in terms of algebraic notation parentheticals, where filters are contained within parentheses, and sets are separated into a series of parenthetical groups. Logical operators (**AND** and **OR**) separate the filters within the parentheses, and the operators are used to separate the parentheticals.

For example, “(u AND v AND w) OR (x AND y AND z)” means “match either uvw or xyz.” In the filter list, this looks like:

```
u AND
v AND
w
OR
x AND
y AND
z
```

### Nested Filters and Filter Sets

Filters and filter sets cannot be nested. You can only enter them in series, and the first filter or filter set to match the device is used. Therefore, the order in which they are listed does not matter. You are simply looking for a match to cause the bundle to be applied to the device.

## 6.37.3 Fail the action if these requirements fail

If you check this box, the selected action will be marked as failed if the system requirements fail. As a result you cannot bypass the action that fails and move to the next action for completing the bundle execution.

---

**NOTE:** However you can bypass the action that fails and move to the next action, only if you have selected the check box in the Continue on Failure column.

---

# 7 Understanding Bundle Change Management

ZENworks provides a change management capability for bundles allowing you to make changes to them with minimum disruption to IT services.

A sandbox contains changes made to a bundle and is available only to devices or users that have been flagged as test. This allows you to test the changes made to the bundle in a testing environment before rolling out the changes into the production environment. If the test results are satisfactory then you can publish the sandbox, else discard the changes by reverting the sandbox.

The published version is available to all the assigned devices and users that have been flagged as a non-test. This ensures that all the devices in the network always receive the same version of a bundle.

You can now create a bundle as a sandbox-only bundle or published version of the bundle. If you select the **Create as Sandbox** option on the Summary page of the bundle creation wizard, the bundle is created as a sandbox-only bundle, else a published version of the bundle is created. For more information on creating a bundle, see [Chapter 2, “Creating Bundles,” on page 23](#).

If you create a bundle as a sandbox, the bundle content replication schedule is modified for that bundle, so that the content is excluded from all Primary and Satellite servers and is replicated only on the Primary server that was used to upload the content. For details, see [Publishing Sandbox](#) and [Bundle Behavior Based on Content Pre-cache Settings](#)

Also, any change made to the published version of the bundle creates a sandbox. For more information on managing the bundles versions, see [Section 8.4.2, “Managing Bundle Versions,” on page 161](#).

You can choose to publish a sandbox either as a new version or a new bundle. For more information on publishing a sandbox, see [Section 8.4.4, “Publishing Sandbox,” on page 163](#)



# 8

## Managing Bundles

The Novell ZENworks Configuration Management Software Management features let you effectively manage software and content in your ZENworks system.

For more information about creating Preboot bundles, see the [ZENworks Preboot Services and Imaging Reference](#).

The following sections contain information to help you manage existing bundles:

- ♦ [Section 8.1, “Bundle Quick Tasks,” on page 153](#)
- ♦ [Section 8.2, “Bundle Tasks,” on page 156](#)
- ♦ [Section 8.3, “Editing Bundles,” on page 160](#)
- ♦ [Section 8.4, “Bundle Change Management,” on page 160](#)
- ♦ [Section 8.5, “Copying a Bundle to a Content Server,” on page 166](#)
- ♦ [Section 8.6, “Bundle Behavior Based on Content Pre-cach Settings,” on page 167](#)
- ♦ [Section 8.7, “Export and Import Bundles,” on page 169](#)
- ♦ [Section 8.8, “Dependency Bundles,” on page 170](#)
- ♦ [Section 8.9, “Retaining Older Bundle Version,” on page 173](#)

### 8.1 Bundle Quick Tasks

Review the following sections for the bundle related tasks that you can quickly perform on one or more devices

- ♦ [Section 8.1.1, “Installing a Bundle,” on page 153](#)
- ♦ [Section 8.1.2, “Launching a Bundle,” on page 154](#)
- ♦ [Section 8.1.3, “Uninstalling a Bundle,” on page 155](#)


#### 8.1.1 Installing a Bundle

The **Install Bundle** option in the Bundle Tasks list in the left navigation pane of ZENworks Control Center lets you immediately install a bundle to one or more devices.

- 1 In ZENworks Control Center, click the **Bundles** tab.
- 2 In the **Bundles** list, select the check box next to the bundle (or bundles).
- 3 In the **Bundle Tasks** list in the left navigation pane, select **Install Bundle**.
- 4 In the **Devices** section, click **Add** to select the devices where you want to install the bundle.
- 5 In the Select Objects dialog box, browse to and select the objects on which you want to install the bundle.

The Select Objects dialog box opens with the **Devices** folder as the root folder. By default, the **Servers** and **Workstations** folders are displayed along with any custom folders that you have created in the **Devices** folder.

Browse for and select the devices, groups, and folders to which you want to assign the bundle. To do so:

- 5a** Click  next to a folder (for example, the **Workstations** folder or **Servers** folder) to navigate through the folders until you find the device, user, group, or folder you want to select.

If you are looking for a specific item, such as a Workstation or a Workstation Group, you can use the **Items of type** list to limit the types of items that are displayed. If you know the name of the item you are looking for, you can also use the **Name filter** box to search for the item.

- 5b** Click the underlined link in the **Name** column to select the device, group, or folder and display its name in the **Selected** list box.

- 5c** Click **OK** to add the selected devices, folders, and groups to the **Devices** list.

- 6** Click **OK**.

If the bundle has not already been assigned to a device, then the bundle's icon is placed in the application window of the device.


## 8.1.2 Launching a Bundle

The **Launch Bundle** option lets you immediately launch a bundle to one or more devices. If the bundle is not already installed, it is installed and then launched.

- 1** In ZENworks Control Center, click the **Bundles** tab.
- 2** In the **Bundles** list, select the check box next to the bundle (or bundles).
- 3** Click **Quick Tasks > Launch Bundle**.
- 4** In the **Devices** section, click **Add** to select the devices where you want to launch the bundle.
- 5** In the Select Objects dialog box, browse to and select the objects on which you want to launch the bundle.

The Select Objects dialog box opens with the **Devices** folder as the root folder. By default, the **Servers** and **Workstations** folders are displayed along with any custom folders that you have created in the **Devices** folder.

Browse for and select the devices, groups, and folders to which you want to assign the bundle. To do so:

- 5a** Click  next to a folder (for example, the **Workstations** folder or **Servers** folder) to navigate through the folders until you find the device, user, group, or folder you want to select.

If you are looking for a specific item, such as a Workstation or a Workstation Group, you can use the **Items of type** list to limit the types of items that are displayed. If you know the name of the item you are looking for, you can also use the **Name filter** box to search for the item.

- 5b Click the underlined link in the **Name** column to select the device, group, or folder and display its name in the **Selected** list box.
- 5c Click **OK** to add the selected devices, folders, and groups to the **Devices** list.
- 6 Click **OK**.

If the bundle has not earlier been assigned to a device, then the bundle's icon is placed in the application window of the device.

### 8.1.3 Uninstalling a Bundle


The Uninstall Bundle quick task lets you uninstall a bundle from one or more devices. Uninstalling a bundle does not, however, remove its assignments nor prevent the bundle from being reinstalled.

---

**NOTE:** To use the Uninstall Bundle quick task, you must enable the bundle's uninstall options that is disabled by default. For more information, see [Section 12.2.3, "Uninstall Action Set Options," on page 213](#).


---

To uninstall a bundle:

- 1 In ZENworks Control Center, click the **Bundles** tab.
- 2 In the **Bundles** list, select the check box next to the bundle (or bundles).
- 3 Click Quick Tasks > Uninstall Bundle.
- 4 In the **Bundles** section, click  to browse to and select the desired bundle (if necessary).
- 5 In the **Devices** section, click **Add** to select the devices where you want to uninstall the bundle.
- 6 In the Select Objects dialog box, browse to and select the objects on which you want to uninstall the bundle.

The Select Objects dialog box opens with the **Devices** folder as the root folder. By default, the **Servers** and **Workstations** folders are displayed along with any custom folders that you have created in the **Devices** folder.

Browse for and select the devices, groups, and folders to which you want to assign the bundle. To do so:

- 6a Click  next to a folder (for example, the **Workstations** folder or **Servers** folder) to navigate through the folders until you find the device, user, group, or folder you want to select.

If you are looking for a specific item, such as a Workstation or a Workstation Group, you can use the **Items of type** list to limit the types of items that are displayed. If you know the name of the item you are looking for, you can also use the **Name filter** box to search for the item.
  - 6b Click the underlined link in the **Name** column to select the device, group, or folder and display its name in the **Selected** list box.
  - 6c Click **OK** to add the selected devices, folders, and groups to the **Devices** list.
- 7 Click **OK**, then click **Apply**.

If ZENworks Control Center shows that the uninstall fails, examine the device's log file for more information.

## 8.2 Bundle Tasks

Review the following sections for the tasks that you can perform on one or more bundles.

- ♦ [Section 8.2.1, “Renaming, Copying, or Moving Bundles,” on page 156](#)
- ♦ [Section 8.2.2, “Deleting a Bundle,” on page 157](#)
- ♦ [Section 8.2.3, “Preventing a Bundle from Being Deployed,” on page 157](#)
- ♦ [Section 8.2.4, “Enabling a Bundle to Be Deployed,” on page 157](#)
- ♦ [Section 8.2.5, “Enabling Bundle Ordering,” on page 157](#)
- ♦ [Section 8.2.6, “Blocking a Bundle that is Assigned to a Device,” on page 158](#)
- ♦ [Section 8.2.7, “Blocking a Bundle that is Assigned to a User,” on page 159](#)
- ♦ [Section 8.2.8, “Uninstalling a Blocked Bundle,” on page 159](#)
- ♦ [Section 8.2.9, “Unblocking a Bundle That has been Blocked for a Device,” on page 159](#)
- ♦ [Section 8.2.10, “Unblocking a Bundle That has been Blocked for a User,” on page 160](#)

### 8.2.1 Renaming, Copying, or Moving Bundles

Use the **Edit** drop-down list on the Bundles page to edit an existing object. To access the **Edit** drop-down list, you must select an object by clicking the check box next to the object's name in the list.

Depending on the type of object you select, you can rename, copy, or move the selected object. For example, if you select a Bundle object, you can rename, copy, and move the bundle. If you select a Bundle Group object, you can rename or move the Bundle Group object, but not copy it. If the option is dimmed, that option is not available for the selected object type.

Some actions cannot be performed on multiple objects. For example, if more than one check box is selected, the **Rename** option is not available from the **Edit** menu.

- 1 In ZENworks Control Center, click the **Bundles** tab.
- 2 In the **Bundles** list, select the box next to the bundle's name, click **Edit**, then click an option:  
**Rename:** Click **Rename**, provide a new name for the bundle, then click **OK**.

---

**IMPORTANT:** Do not rename Windows MSP bundles.

---

**Copy:** Click **Copy**, provide a new name for the copy, then click **OK**.

The copy option is useful to create a new bundle that is similar to an existing bundle. You can copy a bundle and then edit the new bundle's settings.

**Move:** Click **Move**, select a destination folder for the selected objects, then click **OK**.

If you rename or move a bundle, its assignments are still in place and ZENworks Configuration Management does not redistribute the bundle to devices or users because of the name or location change. However, the changes are effective when the subsequent versions of the bundle are distributed to the devices or users.

## 8.2.2 Deleting a Bundle

Deleting a bundle removes the bundle content from the ZENworks content servers but does not uninstall it from devices where it has already been installed. To uninstall it from devices, you should use the Uninstall options before deleting the bundle.

- 1 In ZENworks Control Center, click the **Bundles** tab.
- 2 In the **Bundles** list, select the check box next to the bundle (or bundles).
- 3 Click **Delete**.

---

**NOTE:** Deleting a Linux or Linux dependency bundle does not immediately remove the YUM service that was created for the bundle. The YUM service is removed when the next YUM Services Refresh is configured. Click the [Click here to Update YUM Service Now](#) link in **YUM Service Settings** to remove the YUM service immediately.

---

## 8.2.3 Preventing a Bundle from Being Deployed

A disabled bundle is not deployed to new managed devices or replicated to content servers. It remains on the device and content server to which it has already been deployed until the next device refresh.

- 1 In ZENworks Control Center, click the **Bundles** tab.
- 2 In the **Bundles** list, select the check box next to the bundle (or bundles).
- 3 Click **Action > Disable**.

---

**NOTE:** For iOS bundles created through Apple VPP subscriptions, the **Disable** option will uninstall the app from the device and the app license will be revoked.

---

## 8.2.4 Enabling a Bundle to Be Deployed

- 1 In ZENworks Control Center, click the **Bundles** tab.
- 2 In the **Bundles** list, select the check box next to the bundle (or bundles).
- 3 Click **Action > Enable**.

## 8.2.5 Enabling Bundle Ordering

- ♦ [“Enabling Ordering” on page 158](#)
- ♦ [“Configuring Time Slice on the Agent” on page 158](#)

## Enabling Ordering

You can use Bundle Ordering to prioritize the way bundles are executed. When you assign an order value to a bundle, the bundles are executed based on the value assigned. Multiple bundles can be executed simultaneously, or the order of execution can be prioritized.

- 1 In ZENworks Control Center, click the **Bundles** tab.
- 2 Select an existing bundle or create a new Windows or Linux bundle.  
For more information, see [Chapter 2, “Creating Bundles,” on page 23](#).
- 3 In the **General** tab of the Summary page, click **Yes** next to the **Enable Bundle Ordering** field. This activates the **Bundle Order** field.
- 4 Click **Edit** next to the **Bundle Order** field.
- 5 In the Bundle Order dialog box that appears, specify a value and then click **OK**.  
Values can range from 0 to 9999999. The default value 0, has the highest priority. Bundles are executed in the ascending order of the values assigned.
- 6 (Optional) Click **Yes** next to **Wait for previous Bundle execution to complete**, if you want bundles with lower priorities to wait for bundles with higher priority to complete execution.
- 7 Click **Publish**.

## Configuring Time Slice on the Agent

Time slice configuration sets the amount of time that the agent waits before reordering the assigned bundles. The time slice duration is configurable on the agent; the default is 5 seconds. This value can be changed. It should be an integer value and is calculated in seconds.

To change the default time slice value of the ZENworks Agent on a Windows managed device:

- 1 Open the Registry Editor.
- 2 Go to HKLM\Software\Novell\ZCM\.
- 3 Add the `BundleOrderingTimeSlice` parameter as any value greater than 0, in seconds.

To change the default time slice value of the ZENworks Agent on a Linux managed device:

- 1 Open `/etc/opt/novell/zenworks/conf/xplatzmd.properties` in a text editor.
- 2 Add the `BUNDLE_ORDERING_TIME_LAG_SEC` parameter as any value greater than 0, in seconds.

### 8.2.6 Blocking a Bundle that is Assigned to a Device

In scenarios where the behavior of a bundle is not as per expectation, you can choose to block the bundle from being executed on a device. This eliminates the need of altering the bundle assignment.

- 1 In ZENworks Control Center, click the **Devices** tab.
- 2 Navigate to the device for which you want to block the bundle.
- 3 Click **Assignments**.
- 4 In the Assigned Bundles panel, select the bundles you want to block on the device.

- 5 Click **Block**.

---

**NOTE:** For iOS bundles created through Apple VPP subscriptions, the **Block** option will uninstall the bundle from the device and the app license will be revoked.

---

## 8.2.7 Blocking a Bundle that is Assigned to a User

In scenarios where the behavior of a bundle is not as per expectation, you can choose to block the bundle from being executed on a device that the user has logged in. This eliminates the need of altering the bundle assignment.

- 1 In ZENworks Control Center, click the **Users** tab.
- 2 Navigate to the user for which you want to block the bundle.
- 3 Click **Assignments**.
- 4 In the Assigned Bundles panel, select the bundles you want to block on the device that the user has logged in.
- 5 Click **Block**.

---

**NOTE:** For iOS bundles created through Apple VPP subscriptions, the **Block** option will uninstall the bundle from the device and the app license will be revoked.

---

## 8.2.8 Uninstalling a Blocked Bundle

- 1 In ZENworks Control Center, click the blocked bundle that you want to uninstall.
- 2 Click **Actions > Uninstall**.
- 3 Click **Options** to display the Uninstall Options dialog box.
- 4 Click **Enable Uninstall**.
- 5 In the Blocked Assignment Options section, select **Uninstall application** and click **OK**.
- 6 Click **Apply**.
- 7 Click **Publish** to publish the bundle to next version.

The bundle uninstalls by running the actions listed within the Uninstall action set.

## 8.2.9 Unblocking a Bundle That has been Blocked for a Device

- 1 In ZENworks Control Center, click the blocked bundle that you want to unblock.
- 2 In the Bundle Status panel, click **Refresh**.
- 3 Click the underlined link in the Blocked column for the device.
- 4 In the Bundle Status (Device assignments-Blocked) page, select the devices for which you want to unblock the bundle and click **Unblock**.

---

**NOTE:** For iOS bundles created through Apple VPP subscriptions, the **Unblock** option, will install the app on the device and the license information will be considered as consumed.

---

## 8.2.10 Unblocking a Bundle That has been Blocked for a User

- 1 In ZENworks Control Center, click the blocked bundle that you want to unblock.
- 2 In the Bundle Status panel, click **Refresh**.
- 3 Click the underlined link in the Blocked column for the user.
- 4 In the Bundle Status (User assignments-Blocked) page, select the user for whom you want to unblock the bundle and click **Unblock**.

---

**NOTE:** For iOS bundles created through Apple VPP subscriptions, the **Unblock** option, will install the app on the device and the license information will be considered as consumed.

---

## 8.3 Editing Bundles

After you have assigned a bundle to a device or user, you can choose to edit the bundle :

- 1 In ZENworks Control Center, click the **Bundles** tab.
- 2 Click the desired bundle for which you want to edit.
- 3 Click the **Relationships** tab.
- 4 Click the Assignment Details link of the assignment.
- 5 In the View Assignment Details dialog box, click the link next to the type you want to edit.
- 6 In the dialog box that displays, edit the bundle as desired.

## 8.4 Bundle Change Management

ZENworks provides a change management capability for bundles allowing you to make changes to them with minimum disruption to IT services.

To understand bundle change management, see [Chapter 7, “Understanding Bundle Change Management,” on page 151](#).

Review the following sections:

- ♦ [Section 8.4.1, “Understanding Bundle Versions,” on page 160](#)
- ♦ [Section 8.4.2, “Managing Bundle Versions,” on page 161](#)
- ♦ [Section 8.4.3, “Older Bundle Versions Retain Settings,” on page 162](#)
- ♦ [Section 8.4.4, “Publishing Sandbox,” on page 163](#)

### 8.4.1 Understanding Bundle Versions

Bundle Change Management allows you to create either a sandbox-only bundle or a published version of the bundle. If you edit a published version of the bundle, a sandbox is created. You can choose to publish the sandbox either as a new version of the bundle or a new bundle.

For more information on the bundle versions, see [Section 8.4.2, “Managing Bundle Versions,” on page 161](#).

For more information on publishing the sandbox, see [Section 8.4.4, “Publishing Sandbox,” on page 163](#).

The **Displayed Version** option on the bundle’s page lists all the existing versions of the bundle, and the latest version of the bundle is selected by default. However, if a sandbox exists, the sandbox is selected by default.

### Scenario:

- 1 Consider a bundle named `sos1` that is created as a sandbox. The **Displayed Version** option on the bundle page lists **Sandbox** and it is selected by default.
- 2 Click **Publish** to publish the sandbox to a new version. The **Displayed Version** option on the bundle page now lists **0(Published)** and it is selected by default.
- 3 Edit the bundle’s description to create a sandbox. The **Displayed Version** option on the bundle page now lists **0(Published)** and **Sandbox**. **Sandbox** is selected by default.
- 4 Click **Publish** to publish the sandbox to a new version. The **Displayed Version** option on the bundle page now lists **0(Published)**, and **1(Published)**. The bundle’s latest version, **1(Published)**, is selected by default.  
**0** is the older version of the bundle.
- 5 Edit the bundle’s description again to create a sandbox. The **Displayed Version** option on the bundle page now lists **0(Published)**, **1(Published)**, and **Sandbox**. **Sandbox** is selected by default.  
**0** is the older version of the bundle and **1(Published)** is the latest version of the bundle.
- 6 Click **Publish** to publish the sandbox to a new version. The **Displayed Version** option on the bundle page now lists **0(Published)**, **1(Published)**, **2(Published)**. The bundle’s latest version, **2(Published)**, is selected by default.  
**0** and **1** are the older versions of the bundle; and **2(Published)** is the latest version of the bundle.

## 8.4.2 Managing Bundle Versions

The **Displayed Version** option on the bundle’s page lists all existing versions of the bundle, and the latest version of the bundle is selected by default. However, if a sandbox exists, the sandbox is selected by default.

For more information on the bundle versions, see [Section 8.4.1, “Understanding Bundle Versions,” on page 160](#).

Select the version of the bundle whose details you want to view or edit.

Task	Steps	Additional Details
Create a sandbox from the published version of the bundle	<ol style="list-style-type: none"> <li>1. Select the published version of the bundle.</li> <li>2. Edit the bundle.</li> </ol>	<p>A single modification made to the bundle creates a sandbox. The created sandbox is a copy of the bundle and also includes the additional edit. However, the change is not made to the published version of the bundle.</p> <p>The sandbox flows to the test devices and users to whom the bundle is assigned.</p> <p>Changes can now be made to the sandbox.</p> <p>You can revert a sandbox to the original version of the bundle or publish a sandbox to create a new version or a new bundle.</p>
Create a sandbox from an older version of the bundle	<ol style="list-style-type: none"> <li>1. Select an older version of the bundle.</li> <li>2. Click <b>Create Sandbox</b>.</li> </ol>	<p>The created sandbox is an exact copy of the bundle version.</p> <p>Changes can now be made to the sandbox.</p>
Publish a sandbox	<ol style="list-style-type: none"> <li>1. Select <b>Sandbox</b>.</li> <li>2. Click <b>Publish</b> to display the Publish Option page.</li> </ol>	<p>The sandbox must be published for the changes to be effective on the non-test devices and users to whom the bundle is assigned.</p>
Revert a sandbox	<ol style="list-style-type: none"> <li>1. Select <b>Sandbox</b>.</li> <li>2. Click <b>Revert</b> to delete the sandbox.</li> </ol>	<p>All the changes made are discarded. The sandbox no longer exists.</p> <p>The published version of the bundle is displayed in the <b>Displayed Version</b> option.</p>
Delete an older version of the bundle	<ol style="list-style-type: none"> <li>1. Select an older version of the bundle.</li> <li>2. Click <b>Delete Selected Version</b>.</li> </ol>	<p>To delete all older versions of a bundle or delete all versions older than a particular version, click <b>Delete Older Versions</b> under the <b>Bundle Tasks</b> list located in the ZENworks Control Center left navigation pane.</p>

### 8.4.3 Older Bundle Versions Retain Settings

Using the Bundle Version Retain settings, you can configure the number of older bundle versions that should be retained. This setting can be configured at the zone, folder and bundle levels. The order of precedence is bundle, folder and then zone.

To configure the bundle version retain settings, perform the following steps:

In ZCC, go to **Configuration > Management Zone Settings > Bundle, Policy and Content > Older Bundle Version Retain Setting**.

Following are the available options to retain the version:

- ♦ **Retain all versions:** Select this option to retain all versions of the bundle. This includes the published and sandbox versions.
- ♦ **Retain the specified number of older versions:** Select this option to specify the number of older versions of the bundle to be retained.

The number that you specify should be a positive integer and it should not include the Published and Sandbox versions as they are retained by default. For example: If a bundle has 5 versions and if you specify 2, then only the 2 versions prior to the currently published version will be retained along with Published and Sandbox versions. The remaining versions will be deleted.

- ♦ **Do not retain any older versions:** Select this option if you do not want to retain any older versions of bundles in ZENworks. This option retains only the Published and Sandbox versions.

## 8.4.4 Publishing Sandbox

The sandbox must be published for the changes to be effective on the devices and users to whom the bundle is assigned. You can choose to publish the sandbox either as a new version or as a new bundle.

Review the following sections:

- ♦ [“Publishing a Sandbox as a New Version” on page 163](#)
- ♦ [“Publishing a Sandbox as a New Bundle” on page 164](#)
- ♦ [“Publishing Multiple Sandbox as New Versions” on page 165](#)

### Publishing a Sandbox as a New Version

Publishing a sandbox as a new version lets you create a new version of the bundle that has a version number incremented by one from the latest available version of the bundle.

Perform the following steps in the ZENworks Control Center:

- 1 On the page of the bundle that you want to publish, select **Sandbox** in the **Displayed Version** option.
- 2 Click **Publish** to display the Publish Option page.
- 3 Click **Publish as New Version**.
- 4 (Conditional) If the bundle has any dependencies, the Publish Dependent Bundles Page is displayed.

This page lists all the bundles that the sandbox you want to publish depends on. These can include sandbox-only bundles (bundles that were directly created as a sandbox), or sandbox bundles (bundles that were edited to create a sandbox). To publish the sandbox, you must publish all the dependent sandbox-only bundles. However, you can choose to publish all the dependent sandbox bundles.

- 4a** You must select the **Publish sandbox only bundle(s) that this bundle depends on** option to publish all the dependent child bundles that have a sandbox-only version.
  - 4b** Select the **Publish sandbox for all bundle(s) that this bundle depends on** option to publish all the dependent child bundles that have a sandbox.
  - 4c** On the Summary Page, review the information and, if necessary, use the **Back** button to make changes to the information
- 5** Click **Finish** to create a new published version.

For example, if the **Displayed Version** option on the bundle page lists **0(Published)**, **1(Published)**, and **Sandbox**, publishing the sandbox as a new version creates a version 2. The **Displayed Version** option on the bundle page now lists **0(Published)**, **1(Published)**, and **2(Published)**.

## Publishing a Sandbox as a New Bundle

Publishing a sandbox as a new bundle creates a new bundle. Perform the following steps in the ZENworks Control Center:

- 1** On the page of the bundle that you want to publish, select **Sandbox** in the **Displayed Version** option.
- 2** Click **Publish** to display the Publish Option page.
- 3** Click **Publish as New Bundle**.
- 4** Specify a name for the bundle.

The bundle name must be different from the name of any other item (bundle, group, folder, and so forth) that resides in the same folder. The name you provide displays in ZENworks Control Center and the ZENworks Agent (on managed devices).

For more information, see “[Naming Conventions in ZENworks Control Center](#)” in the *ZENworks Control Center Reference*.
- 5** Specify the folder name or browse to the ZENworks Control Center folder where you want the bundle to reside. The default is `/bundles`, but you can create additional folders to organize your bundles.
- 6** Select the **Create as Sandbox** option to create a sandbox-only version of the bundle and deploy the bundle as a sandbox. The sandbox version of a bundle enables you to test it on your device before actually deploying it.
- 7** Select the bundle groups that the new bundle should be a member of.
- 8** Click **Next** to display the **Select Assignments** page.
- 9** Select the device and user assignments that you want to apply to the new bundle.
- 10** Click **Next**.
- 11** (Conditional) If the bundle has any dependencies, the Publish Dependent Bundles Page is displayed.

This page lists all the bundles that the sandbox you want to publish depends on. These can include sandbox-only bundles (bundles that were directly created as a sandbox), or sandbox bundles (bundles that were edited to create a sandbox). To publish the sandbox, you must publish all the dependent sandbox-only bundles. However, you can choose to publish all the dependent sandbox bundles.

- 11a** You must select the **Publish sandbox only bundle(s) that this bundle depends on** option to publish all the dependent child bundles that have a sandbox-only version.
  - 11b** Select the **Publish sandbox for all bundle(s) that this bundle depends on** option to publish all the dependent child bundles that have a sandbox.
  - 11c** By default, the dependent bundles are published to the next version. You can choose to select the **Publish the dependent bundles as new bundles** option to publish the dependent bundles as new bundles.  
  
Specify the name or browse to the folder where you want the new bundles to reside. If a bundle that has the same name as the new bundle already exists in the specified folder, then the new bundle is saved with a random GUID appended to its name.
- 12** On the Summary Page, review the information and, if necessary, use the **Back** button to make changes to the information.
  - 13** Click **Finish** to create the bundle.

## Publishing Multiple Sandbox as New Versions

Perform the following steps in the ZENworks Control Center:

- 1** Select a few bundle folders, bundle groups and bundles.
- 2** Click **Action > Publish Bundle(s)** to display the Publish Options page.
- 3** (Conditional) Select the **Include bundles from subfolders also** option to publish all the bundles within the selected folders as new versions of the bundles. This option is displayed only if you have selected a bundle folder in [Step 1](#).
- 4** Click **Next**. On the Select Bundles page, select the bundles you want to publish to next version, then click **Next**.
- 5** (Conditional) If the bundle has any dependencies, the Publish Dependent Bundles Page is displayed.

This page lists all the bundles that the sandbox you want to publish depends on. These can include sandbox-only bundles (bundles that were directly created as a sandbox), or sandbox bundles (bundles that were edited to create a sandbox). To publish the sandbox, you must publish all the dependent sandbox-only bundles. However, you can choose to publish all the dependent sandbox bundles.

- 5a** You must select the **Publish sandbox only bundle(s) that this bundle depends on** option to publish all the dependent child bundles that have a sandbox-only version.
- 5b** Select the **Publish sandbox for all bundle(s) that this bundle depends on** option to publish all the dependent child bundles that have a sandbox.
- 5c** On the Summary Page, review the information and, if necessary, use the **Back** button to make changes to the information

- 6 Click **Finish** to create a new published version.

For example, if the **Displayed Version** option on the bundle page lists **0(Published)**, **1(Published)**, and **Sandbox**, publishing the sandbox as a new version creates a version 2. The **Displayed Version** option on the bundle page now lists **0(Published)**, **1(Published)**, and **2(Published)**.

## 8.5 Copying a Bundle to a Content Server

By default, a bundle's content is copied to primary content server. If you specify certain content servers as hosts, the bundle is hosted on only those content servers; it is not copied to all content servers. You can also specify whether the selected bundle is replicated to new content servers (ZENworks Servers and satellite servers) that are added to the Management Zone.


To specify a content server:

- 1 In ZENworks Control Center, click the **Bundles** tab.
- 2 In the **Bundles** list, select the check box next to the bundle (or bundles).
- 3 Click **Action > Specify Content Server**.
- 4 The Configure Primary Server Content Replication page lets you specify on which content servers (ZENworks Servers) the content is hosted.

The relationships between content and content servers that you create using this wizard override any existing relationships. For example, if Bundle A is currently hosted on Server 1 and Server 2 and you use this wizard to host it on Server 1 only, Bundle A is excluded from Server 2 and is removed during the next d replication.

- 4a In the **Excluded Primary Servers** list, select the desired content server.

You can use Shift+click and Ctrl+click to select multiple content servers.

- 4b Click the  button to move the selected content server to the **Included Primary Servers** list.

- 4c Specify the default replication behavior for new ZENworks Primary Servers added to the system:

- ♦ **Include This Content:** Replicates the content to any servers created in the future.
- ♦ **Exclude This Content:** Excludes the content from being replicated to any servers created in the future.

Be aware that any content replication relationships previously set between the content and servers are lost upon completion of this wizard.

- 5 Click **Next** to display the Configure Satellite Server Content Replication page:


This page lets you specify on which content servers (satellite servers) the content is hosted.

The relationships between content and content servers that you create using this wizard override any existing relationships. For example, if Bundle A is currently hosted on Server 1 and Server 2 and you use this wizard to host it on Server 1 only, Bundle A is excluded from Server 2 and is removed during the next d replication.

- 5a In the **Excluded Satellite Servers** list, select the desired content server.

You can use Shift+click and Ctrl+click to select multiple content servers.

You cannot include content on a satellite server without including it on the satellite server's parent ZENworks Server. You must select both the satellite server and its parent.

5b Click the  button to move the selected content server to the **Included Satellite Servers** list.

5c Specify the default replication behavior for new ZENworks satellite servers added to the system:

- ♦ **Include This Content:** Replicates the content to any servers created in the future.
- ♦ **Exclude This Content:** Excludes the content from being replicated to any servers created in the future.

Be aware that any content replication relationships previously set between the content and servers are lost upon completion of this wizard.

6 Click **Next** to display the **Finish** page, then review the information and, if necessary, use the **Back** button to make changes to the information.

7 Click **Finish** to create the relationships between the content and the content servers. Depending on the relationships created, the content is replicated to or removed from content servers during the next d replication.

## 8.6 Bundle Behavior Based on Content Pre-cach Settings

When you created a bundle in earlier versions of ZENworks, the bundle inherited the content replication settings from its parent folder by default. However, with the introduction of Bundle Change Management, the behavior has been changed. For more information on this change, see the following table:

Task	Information
Creating a bundle (not as a sandbox)	The new bundle inherits the settings from its parent folder by default.
Creating a bundle as a sandbox	<p>The new bundle neither inherits settings from its parent folder nor does it replicate content by default.</p> <p>To replicate the content on new Primary Servers:</p> <ol style="list-style-type: none"><li>1. In ZENworks Control Center, click the bundle.</li><li>2. Click the <b>Settings</b> tab.</li><li>3. Click <b>Pre-Cached Content</b>.</li><li>4. In the Pre-Cached Content panel, select the required Primary or Satellite Servers.</li></ol> <p>To replicate the content on new Satellite Servers:</p> <ol style="list-style-type: none"><li>1. In ZENworks Control Center, click the bundle.</li><li>2. Click the <b>Settings</b> tab.</li><li>3. Click <b>Pre-Cached Content</b>.</li><li>4. In the Pre-Cached Content panel, select the required Primary or Satellite Servers.</li></ol>

Task	Information
Creating a sandbox from a published version or an older version of the bundle	<p>The sandbox version of the bundle neither inherits settings from its parent folder nor does it replicate content by default.</p> <p>To replicate the content on new Primary and Satellite Servers:</p> <ol style="list-style-type: none"> <li>1. In ZENworks Control Center, click the bundle.</li> <li>2. Click the <b>Settings</b> tab.</li> <li>3. Click <b>Sandbox Settings</b>.</li> <li>4. In the Sandbox Content Replication panel, select the <b>Sync Sandbox Content to Content Servers</b> option.</li> </ol> <p><b>NOTE:</b> If precaching is disabled in the zone, or bundle level, then irrespective of the status of the Sync Sandbox Content to Content Servers option under Bundles Level, the content will not be replicated and will be served using the ondemand method.</p>
Publishing a bundle to create a new bundle as a sandbox	<p>If you publish a bundle to create a new bundle with the <b>Create as Sandbox</b> option selected then the new bundle is created as a sandbox. The new bundle neither inherits settings from its parent folder nor does it replicate content by default.</p> <p>To replicate the content on new Primary Servers:</p> <ol style="list-style-type: none"> <li>1. In ZENworks Control Center, click the bundle.</li> <li>2. Click the <b>Settings</b> tab.</li> <li>3. Click <b>Pre-Cached Content</b>.</li> <li>4. In the Pre-Cached Content panel, select the required Primary or Satellite Servers.</li> </ol> <p>If you want to replicate the content on new Satellite Servers, do the following:</p> <ol style="list-style-type: none"> <li>1. Click the Bundle.</li> <li>2. Click the <b>Settings</b> tab.</li> <li>3. Click <b>Pre-Cached Content</b>.</li> <li>4. In the Pre-Cached Content panel, select the required Primary or Satellite Servers.</li> </ol> <p><b>NOTE:</b> If precaching is disabled in the zone, or bundle level, then irrespective of the status of the Sync Sandbox Content to Content Servers option under Bundles Level, the content will not be replicated and will be served using the ondemand method.</p>

Task	Information
Publishing a bundle to create a new bundle (not as a sandbox)	<p>The settings of the new bundle depend on the source bundle from which it has been created.</p> <ul style="list-style-type: none"> <li>♦ If you publish a sandbox-only bundle whose replication settings have not been modified, the new bundle inherits settings from the parent folder.</li> <li>♦ If you publish a sandbox-only bundle whose replication settings have been modified, the modified replication settings are copied to the new bundle.</li> <li>♦ If you publish a sandbox that has been created from a published version or an older version of a bundle, the content replication settings from the published version of the source bundle are copied to new bundle.</li> </ul>

## 8.7 Export and Import Bundles

Using the Export and Import bundles feature, you can copy bundles from one zone to another. This feature helps you to export and import bundles from a test environment to a production environment.

- ♦ [Section 8.7.1, “Export Bundles,” on page 169](#)
- ♦ [Section 8.7.2, “Import Bundles,” on page 170](#)

**Use Case:** This feature is useful in a scenario where you want to deploy an application to multiple devices using the bundle feature, and prior to publishing the bundle, you want to test it to ensure that there are no glitches during deployment.

The bundle export and import feature enables you to create a bundle in a test zone and test the functionality of the bundle. After you have tested the bundle, you can export the bundle as a ZIP file to your local drive using the **Export** feature that is available in ZENworks Control Center (ZCC). The same ZIP file can then be imported to the production zone by using the **Import** feature.

### 8.7.1 Export Bundles

This feature enables you to export bundles to the local drive. When you export bundles using this feature, metadata files, icons, settings and content files are exported. If you export bundles using the `zman bundle-export-to-file` command, only the bundle metadata (optionally bundle content) files are exported.

To export bundles:



- 1 Log into ZENworks Control Center, and in the left pane click **Bundles**.
- 2 Select the bundles that you want to export.
- 3 Click **Action > Export Bundle**.

Based on the browser settings, you will be either prompted for the download location or the bundle will be automatically saved to the default download location.

## 8.7.2 Import Bundles

This feature enables you to import bundles from the local drive into the zone.

To import bundles:

- 1 Click **New > Import Bundle**.
- 2 Upload the bundle in the required format:
  - ♦ **ZIP file** - Click , click **Browse** to select the required file and then click **Upload**.
  - ♦ **A directory** - Click , and allow the browser to launch ZCC Helper. Click **Browse** to select the required folder and then click **Upload**.

---

**NOTE:** To upload a directory, ensure that ZCC Helper is installed on the device.

---

- 3 Select **Maintain Folder Structure**, to retain the folder structure of the imported bundle.
- 4 Select **Create as Sandbox** to create a sandbox-only version of the bundle that can be tested before being published.
- 5 Click **Next**.
- 6 (Optional) In the **Bundle Configuration** page, double-click the bundle name to edit the name.
- 7 (Optional) The **Resolve Bundle Issues** page is displayed only if there are any issues while importing bundles.

You can either resolve the issues, or select the issues for deletion.
- 8 Click **Next**. The **Bundle Summary** page displays the details of the imported bundles.
- 9 Click **Finish**. The **Bundle Import Status** page displays the status of all the bundles that were imported.

## 8.8 Dependency Bundles

When you create the following actions for a bundle, you create bundle dependencies:

- ♦ [Action - Install Bundle](#)
- ♦ [Action - Launch Bundle](#)
- ♦ [Action - Uninstall Bundle](#)
- ♦ [Action - Repair Bundle](#)

A bundle's Dependency Bundles tree shows the chaining information of that bundle and the action sets that each dependency is in. To view the Dependency Bundles tree in ZENworks Control Center, click the **Bundles** tab, click a bundle that has dependent bundles, then on the **Summary** tab, click the **Display Bundle Dependencies** link in the **Dependency Bundles** row. If the selected bundle does not have dependent bundles, the link displays **None** instead of **Display Bundle Dependencies**.

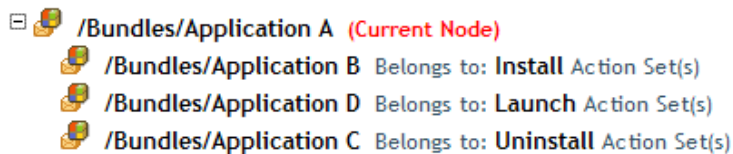
The following sections contain additional information:

- ♦ [Section 8.8.1, “Primary Applications vs. Dependent Applications,” on page 171](#)
- ♦ [Section 8.8.2, “Bundle Chains,” on page 171](#)
- ♦ [Section 8.8.3, “Distributing, Installing, and Launching a Bundle That Has Dependencies,” on page 172](#)

## 8.8.1 Primary Applications vs. Dependent Applications

When working with bundle dependencies, the primary bundle is the bundle for which you are establishing dependencies. The bundles that are defined as dependencies are called the dependent bundles. The following illustration shows this relationship. Application A as the primary bundle with Applications B, C, and D as dependent bundles.

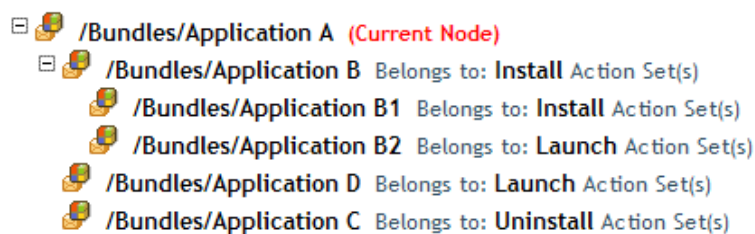
**Figure 8-1** *Dependency Bundle Tree*



A primary bundle can have one dependent application or, as shown in the above example, it can have multiple dependent applications.

In addition, a bundle can be both a primary bundle and a dependent bundle, as shown in the following illustration. Application A as the primary bundle, with Applications B, B1, B2, C, and D as dependent bundles.

**Figure 8-2** *Dependency Bundle Tree*

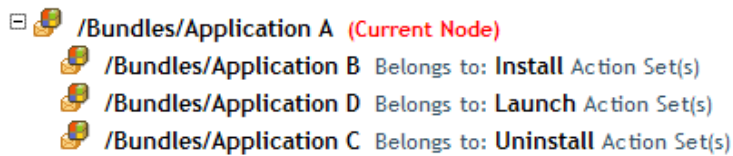


In the above example, Application B is one of Application A's dependent bundles. At the same time, Application B has dependencies on two bundles, Application B1 and Application B2.

## 8.8.2 Bundle Chains

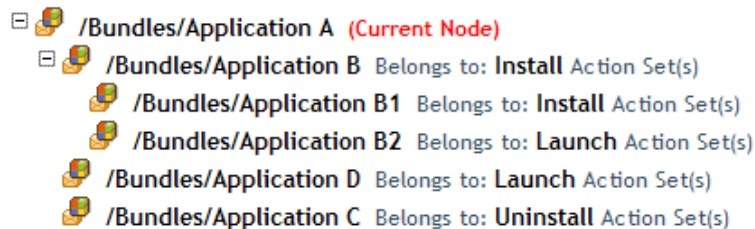
A bundle chain is two or more bundles linked together by dependencies. In its simplest form, a application chain consists of two levels, as shown in the following illustration.

**Figure 8-3** Dependency Bundle Tree



However, when bundle dependencies are nested, a bundle chain can grow to include many levels. In the following example, Application A has a dependency on Application B. Application B, in turn, has dependencies on Application B1 and Application B2. As a result, all three bundles (B, B1, B2), in addition to applications C and D, must be present in order for Application A to run.

**Figure 8-4** Dependency Bundle Tree



In some cases, a bundle might belong to more than one bundle chain, as in the following example where Application D is a dependent application for both Application A and Application E.

### 8.8.3 Distributing, Installing, and Launching a Bundle That Has Dependencies

When setting up bundle dependencies, you should be aware of the following:

**Bundle Assignment:** A dependent bundle does not need to be assigned to devices or users. The primary bundle, however, must be assigned to one or more devices or users for it to function properly.

**Distribution and Installation:** If dependent bundles have not already been distributed to or installed on the user's workstation, when a user launches or installs a bundle, ZENworks Agent distributes and installs them. If ZENworks Agent is unable to distribute or install a dependent bundle (for example, the user's workstation does not meet the dependent bundle's system requirements), the primary bundle is not launched or installed.

**Distribution Through an Add-On Image:** If you distribute a bundle through an image add-on, its dependent bundles must be included as another image add-on. Otherwise, the distribution of the primary bundle fails.

**Distribution to Disconnected Workstations:** For disconnected workstations, the bundles must be force cached to the workstation before it becomes disconnected. If changes are made to dependent bundles after the bundles have been cached to workstations, the version number of the primary bundle must be updated in order to force a re-cache of the bundles.

**Launch:** Each time a bundle is launched, ZENworks Agent performs any launch operations, such as other actions, defined for its dependent bundles.

**Reboot/Shutdown:** Ensure that the dependent bundle does not include a Reboot / Shutdown action.

**Redeploying a Bundle to Refresh Its Dependencies:** ZENworks Agent distributes a dependent bundle only once, unless the dependent bundle's version is updated or the distribution or installation is unsuccessful. If you include a dependent bundle in a primary bundle through the Install action set, and if there are changes in the dependent bundle, you need to change the primary bundle to reflect the dependent bundle changes. If you include a dependent bundle in a primary bundle through the launch action set, and if there are changes in the dependent bundle, you need to launch the primary bundle again to reflect the dependent bundle changes.

## 8.9 Retaining Older Bundle Version

You can configure the number of older bundle versions that you want to retain in ZENworks at the zone, folder and individual bundle levels. The order of precedence is bundle, folder and then zone. To navigate to the setting:

- ♦ Management Zone Level: Click **Configuration > Management Zone > Bundle, Policy and Content > Older Bundle Versions Retain Setting**
- ♦ Bundle Folder level: Click **Details** displayed on the bundle folder. Click **Settings > Older Bundle Version Retain Setting**.
- ♦ Bundle: Click a bundle. Click **Settings > Older Bundle Version Retain Setting**.

The available options include:

- ♦ **Retain all versions:** Select this option to retain all versions of the bundle. This includes the Published and Sandbox versions.
- ♦ **Retain the specified number of older versions:** Select this option to specify the number of older versions of the bundle to be retained. The number that you specify should be a positive integer and it should not include the Published and Sandbox versions as they are retained by default.

For example: If a bundle has 5 versions and if you specify 2, then only the 2 versions prior to the currently published version will be retained along with Published and Sandbox versions. The remaining versions will be deleted.

- ♦ **Do not retain any older versions:** Select this option if you do not want to retain any older versions. This option retains only the Published and Sandbox versions.



# 9 Managing Bundle Assignments

ZENworks lets you assign bundles to users as well as devices. Device-assigned bundles are available whenever the device is running; user-assigned bundles are available only when the user is logged in to the Management Zone. For example, if you assign a bundle to a user, the bundle is available only after the user logs in. Unlike devices, users are not defined in your Management Zone. Instead, you connect to the LDAP directory that you want to use as your authoritative user source. If necessary, you can connect to multiple directories. For more information on the user source, see the ZENworks User Sources Reference.

You can manage a bundle assignment from the bundle's Relationships page (Click the bundle and then the **Relationship** tab). The Relationships page is not affected by the bundle change management capability.

---

**NOTE:** If you have different schedules configured for a bundle that is assigned to multiple objects such as users, devices, or their groups and folder assignments:

- ♦ All the assigned schedules are applicable.
  - ♦ The Shortcut Location assignments, which are configured to specify the locations on the managed device where ZENworks Agent displays the bundle's icon, are merged and the shortcut is displayed in all configured locations.
- 

Review the following sections:

- ♦ [Section 9.1, "Assigning Existing Bundles to Devices," on page 175](#)
- ♦ [Section 9.2, "Assigning Existing Bundles to Users," on page 179](#)
- ♦ [Section 9.3, "Assigning a Bundle Group to Devices," on page 181](#)
- ♦ [Section 9.4, "Assigning a Bundle Group to Users," on page 182](#)
- ♦ [Section 9.5, "Copying Relationships," on page 184](#)
- ♦ [Section 9.6, "Execution of Scheduled Bundles," on page 193](#)

## 9.1 Assigning Existing Bundles to Devices

When you create bundles, the object is created without assigning devices or users to it, or specifying distribution, launch, or availability schedules. Before the bundle can be used on assigned devices, you must complete the steps in the following procedure. You can assign bundles to devices, device groups, or device folders.

You can use ZENworks Control Center or the zman command line utility to assign bundles. The following procedure explains how to assign a bundle using ZENworks Control Center. If you prefer the zman command line utility, see the "[Bundle Commands](#)" in "[ZENworks Command Line Utilities](#)".

- 1 In ZENworks Control Center, click the **Bundles** tab.
- 2 Select the desired bundle in the **Bundles** list by clicking the box next to its name, click **Action**, then click **Assign to Device**.

or


A bundle must be assigned to devices and users before it can be distributed to them.

You can assign the bundle to individual devices, users, folders, or groups. Assigning a bundle to a folder or group is the preferred method of assigning bundles. This allows for easier management of the bundle assignments and can decrease the possibility of high server utilization caused by assigning the bundle to a large number of items (for example, more than 250).

- 3 In the Select Objects dialog box, browse to and select the objects to which you want to assign the bundle.

The Select Objects dialog box opens with the `Devices` folder as the root folder. By default, the `Servers` and `Workstations` folders are displayed along with any custom folders that you have created in the `Devices` folder.

Browse for and select the devices or users, groups, and folders to which you want to assign the bundle. To do so:

- 3a Click  next to a folder (for example, the `Workstations` folder or `Servers` folder) to navigate through the folders until you find the device, group, or folder you want to select.

If you are looking for a specific item, such as a Workstation or a Workstation Group, you can use the **Items of type** list to limit the types of items that are displayed. If you know the name of the item you are looking for, you can also use the **Item name** box to search for the item.

- 3b Click the underlined link in the **Name** column to select the device, group, or folder and display its name in the **Selected** list box.

- 3c Click **OK** to add the selected devices, folders, and groups to the **Devices** list.

- 4 Specify the bundle's shortcut location.

You can use the Shortcut Location assignments to specify the locations on the managed device where ZENworks Agent displays the bundle's icon.

The possible locations include the following:

**Application Window:** Places the icon in the Application window. This location is selected by default.

**Quick Launch:** Places the icon on the Quick Launch area of the Windows taskbar.

**Desktop:** Places the icon on the device's desktop.

**System Tray:** Places the icon in the system tray (notification area) of the Windows taskbar.

**Start Menu:** Places the icon on the **Start** menu on all Windows devices except for Windows Vista and later. It places the icon in **Start > All Programs** on Windows Vista and later.

**Taskbar:** Places the icon on the taskbar.

**Start Menu Tiles:** Places the icon on the Start menu tiles. This is applicable only for Windows 10 and later versions.

On a Windows Vista devices, if you want to change the look and feel of the **Start** menu or pin applications to the **Start** menu, see [Appendix D, "Best Practices," on page 255](#).

- 5 Click **Next** to display the Schedules page.

In the Schedules page select the schedules you want to define:

**Distribution Schedule:** Defines the dates and times when the content of the bundle is distributed from the ZENworks Server to the managed device or user. If you do not establish a schedule, the bundle's content is distributed to the device or user when it is first launched. However, the schedule does not define the date and time when the action in the bundle runs.

**Installation Schedule:** Defines the date and time when the bundle is installed from the ZENworks Server to the managed device or user. If you do not configure a schedule, the bundle is installed to the device when it is first launched.

**Launch Schedule:** Defines the dates and times when the ZENworks Agent automatically launches the bundle. If you do not establish a schedule, the bundle is launched only when the user launches it. Before launching the bundle, the ZENworks Agent checks if the bundle is distributed and installed. If the bundle is not yet distributed, the agent first distributes the bundle, performs the bundle's install actions to install the bundle, then performs the bundle's launch actions to launch it.

---

**IMPORTANT:** If **Install Immediately after Distribution** and **Launch Immediately after Installation** options are set for the distribution schedule of a bundle, the content of the bundle is distributed as per the schedule and, then the bundle is installed and launched.

The Bundle that is distributed once will not be distributed again on the next schedule. Hence, the **Install Immediately after Distribution** and **Launch Immediately after Installation** options which are specified in the distribution schedule are not considered on subsequent schedules.

To launch the same bundle repeatedly on subsequent schedules, you need to configure the launch schedule.

---

**Availability Schedule:** Defines the dates and times when the bundle is available to the device or user. The ZENworks Agent displays the bundle icon only during the times defined by the schedule. If you do not establish a schedule, the bundle is available at all times.

---

**NOTE:** If a bundle with an assignment schedule fails to execute on a device, an attempt to execute the bundle on the device is made five times, by default.

To change the default value:

1. Open the Registry Editor.
2. Go to HKLM\Software\Novell\ZCM\.
3. Create a STRING called ScheduleRetries, and set its value as desired.

For example, if you do not want the failed bundle to be executed again on the device, set the value of the ScheduleRetries to 0.

- 
- 6 (Conditional) If you selected **Distribution Schedule** in [Step 5](#), click **Next** to display the Bundle Distribution Schedule page.

The distribution schedule defines the dates and times when the bundle is distributed from the ZENworks Server to the managed device. The default schedule (no schedule) causes the bundle to be distributed to the device when it is first launched.

- 7 In the **Schedule Type** field, select one of the following schedules, then fill in the fields. For detailed information, click the **Help** button on the wizard page or see the following sections in the [ZENworks Primary Server and Satellite Reference](#):
- ♦ "Date Specific"
  - ♦ "Recurring"

- ♦ “Event”
- ♦ “Now”

For the 'Now' schedule to be effective during bundle assignment, ensure that the number of devices to which you want to assign a bundle does not exceed 30. The Now schedule sets a refresh device schedule and triggers a bundle quick task. To assign bundles randomly to more than 30 devices, use the Quick Tasks option in ZENworks Control Center.

For more information on the quick tasks, see “Using Quick Tasks” in the *ZENworks Control Center Reference*.

- 8 Select the following options as desired:

**Wake-on-LAN:** If the device is not on at the scheduled time, ZENworks attempts to use Wake-on-LAN (WOL) technology to power on the device. The device must support WOL.

---

**NOTE:** If you are assigning bundles to Wake-on-Lan devices with **Date Specific** scheduling option, you need to enable the **Process immediately if device unable to execute on schedule** option. This is required for the distribution to occur on schedule after the device wakes and receives the bundle distribution schedule.

---

**Install Immediately After Distribution:** Performs any installation actions immediately after the bundle is distributed to the device.

**Launch Immediately After Installation:** Performs any launch actions immediately after the bundle is installed. This option is available only if the **Install Immediately After Distribution** option is enabled.

- 9 (Conditional) If you selected **Launch Schedule** in [Step 5](#), click **Next** to display the Bundle Launch Schedule page.

The launch schedule determines the dates and times when ZENworks Agent automatically launches the bundle. The default schedule (no schedule) results in the bundle only being launched if the user launches it.

- 10 In the **Schedule Type** field, select one of the following schedules, then fill in the fields. For detailed information, click the **Help** button on the wizard page or see the following sections in the *ZENworks Primary Server and Satellite Reference*:

- ♦ “Date Specific”
- ♦ “Recurring”
- ♦ “Event”

- 11 (Conditional) If you selected **Availability Schedule** in [Step 5](#), click **Next** to display the Bundle Availability Schedule page.

The availability schedule defines the dates and times when the bundle is available on the managed device. ZENworks Agent displays the bundle icon only during the times defined by the schedule. The default schedule (no schedule) makes the bundle available at all times.

The schedule applies regardless of whether or not the bundle is installed. For example, if a user has not yet installed the bundle, it is only available for installation at the times specified by the schedule. If a user has already installed the bundle, it is only available for running during the scheduled times.

- 12 In the **Schedule Type** field, select one of the following schedules, then fill in the fields. For detailed information, click the **Help** button on the wizard page or see the following sections in the *ZENworks Primary Server and Satellite Reference*:
  - ♦ “Date Specific”
  - ♦ “Recurring”
- 13 Click **Next** to display the Finish page, review the information and, if necessary, use the **Back** button to make changes to the information.
- 14 Click **Finish**.

## 9.2 Assigning Existing Bundles to Users

When you create bundles, the object is created without assigning devices or users to it, or specifying distribution, launch, or availability schedules. Before the bundle can be used on assigned devices, you must complete the steps in the following procedure. You can assign bundles to users, user groups, or user folders.

You can use ZENworks Control Center or the zman command line utility to assign bundles. The following procedure explains how to assign a bundle using ZENworks Control Center. If you prefer the zman command line utility, see the “[Bundle Commands](#)” in *ZENworks Command Line Utilities Reference*.

- 1 In ZENworks Control Center, click the **Bundles** tab.
- 2 Select the desired bundle in the **Bundles** list by clicking the box next to its name, click **Action**, then click **Assign to User**.

or


A bundle must be assigned to devices and users before it can be distributed to them.

You can assign the bundle to individual devices, users, folders, or groups. Assigning a bundle to a folder or group is the preferred method of assigning bundles. This allows for easier management of the bundle assignments and can decrease the possibility of high server utilization caused by assigning the bundle to a large number of items (for example, more than 250).

- 3 In the Select Objects dialog box, browse to and select the objects to which you want to assign the bundle.

The Select Objects dialog box opens with the **Users** folder as the root folder. By default, the user sources that have been defined are displayed, as well as the ZENworks User Groups folder.

Browse for and select the users, groups, and folders to which you want to assign the bundle. To do so:

- 3a Click  next to a folder to navigate through the folders until you find the user, group, or folder you want to select.

If you are looking for a specific item, such as a User or a User Group, you can use the **Items of type** list to limit the types of items that are displayed. If you know the name of the item you are looking for, you can also use the **Item name** box to search for the item.

- 3b Click the underlined link in the **Name** column to select the user, group, or folder and display its name in the **Selected** list box.
- 3c Click **OK** to add the selected users, folders, and groups to the **Devices** list.

**4** Specify the bundle's shortcut location.

You can use the Shortcut Location assignments to specify the locations on the managed device where ZENworks Agent displays the bundle's icon. The possible locations include the following:

**Application Window:** Places the icon in the Application window. This location is selected by default.

**Quick Launch:** Places the icon on the Quick Launch toolbar area of the Windows taskbar.

**Desktop:** Places the icon on the device's desktop.

**System Tray:** Places the icon in the system tray (notification area) of the Windows taskbar.

**Start Menu:** Places the icon on the **Start** menu on all Windows devices except for Windows Vista and later. On Windows Vista and later, it places the icon in **Start > All Programs**.

On Windows Vista devices, if you want to change the look and feel of the **Start** menu or pin applications to the **Start** menu, see [Appendix D, "Best Practices," on page 255](#).

**5** Click **Next** to display the Schedules page, then select the schedules you want to define. For information, see [Step 5 in Assigning Existing Bundles to Devices \(page 175\)](#).

**6** (Conditional) If you selected **Distribution Schedule** in [Step 5](#), click **Next** to display the Bundle Distribution Schedule page.

The distribution schedule defines the dates and times when the bundle is distributed from the ZENworks Server to the managed device. The default schedule (no schedule) causes the bundle to be distributed to the device when it is first launched.

**7** In the **Schedule Type** field, select one of the schedules, then fill in the fields. For more information, see [Step 7 in Assigning Existing Bundles to Devices](#).

**8** Select the following options as desired:

**Wake on LAN:** If the device is not on at the scheduled time, ZENworks attempts to use Wake on LAN (WoL) technology to power on the device. The device must support Wake on LAN.

**Install Immediately After Distribution:** Performs any installation actions immediately after the bundle is distributed to the device.

**Launch Immediately After Installation:** Performs any launch actions immediately after the bundle is installed. This option is available only if the **Install Immediately After Distribution** option is enabled.

**9** (Conditional) If you selected **Launch Schedule** in [Step 5](#), click **Next** to display the Bundle Launch Schedule page.

The launch schedule determines the dates and times when ZENworks Agent automatically launches the bundle. The default schedule (no schedule) results in the bundle only being launched if the user launches it.

**10** In the **Schedule Type** field, select one of the following schedules, then fill in the fields. For information, see [Step 10 in Assigning Existing Bundles to Devices](#).

**11** (Conditional) If you selected **Availability Schedule** in [Step 5](#), click **Next** to display the Bundle Availability Schedule page.

The availability schedule defines the dates and times when the bundle is available on the managed device. ZENworks Agent displays the bundle icon only during the times defined by the schedule. The default schedule (no schedule) makes the bundle available at all times.


The schedule applies regardless of whether or not the bundle is installed. For example, if a user has not yet installed the bundle, it is only available for installation at the times specified by the schedule. If a user has already installed the bundle, it is only available for running during the scheduled times.

- 12 In the **Schedule Type** field, select one of the following schedules, then fill in the fields. For more information, see [Step 12 in Assigning Existing Bundles to Devices](#).
- 13 Click **Next** to display the Finish page, review the information and, if necessary, use the **Back** button to make changes to the information.
- 14 Click **Finish**.

If you assign bundles to Active Directory users, the assignments are available to the users only if the ZENworks server is able to resolve the DNS name of the Active Directory.

## 9.3 Assigning a Bundle Group to Devices

You can assign bundle group to devices, device groups, or device folders.

- 1 In ZENworks Control Center, click the **Bundles** tab.
- 2 In the **Bundles** list, select the check box next to the bundle group (or bundle groups).
- 3 Click **Action > Assign to Device**.
- 4 Browse for and select the devices, device groups, and device folders to which you want to assign the group. To do so:
  - 4a Click  next to a folder (for example, the **Workstations** folder or **Servers** folder) to navigate through the folders until you find the device, group, or folder you want to select.  
If you are looking for a specific item, such as a Workstation or a Workstation Group, you can use the **Items of type** list to limit the types of items that are displayed. If you know the name of the item you are looking for, you can use the **Item name** box to search for the item.
  - 4b Click the underlined link in the **Name** column to select the device, group, or folder and display its name in the **Selected** list box.
  - 4c Click **OK** to add the selected devices, folders, and groups to the **Devices** list.
- 5 Specify the locations on the managed device where ZENworks Agent displays the bundle group's icons. The possible locations are:
  - Application Window:** Places the icons in the Application window.
  - Desktop:** Places the icons on the device's desktop.
  - Quick Launch:** Places the icons on the Quick Launch area of the Windows taskbar.
  - Start Menu:** Places the icons on the **Start** menu on all Windows devices except for Windows Vista and later. It places the icon in **Start > All Programs** on Windows Vista and later.
  - System Tray:** Places the icons in the system tray (notification area) of the Windows taskbar.
- 6 Click **Next** to display the Schedules Page, then select the schedules you want to define. For information on schedules, see [Step 5 in Assigning Existing Bundles to Devices \(page 175\)](#).
- 7 (Conditional) If you selected **Distribution Schedule** in [Step 6](#), click **Next** to display the Bundle Distribution Schedule page.

The distribution schedule defines the dates and times when the bundle is distributed from the ZENworks Server to the managed device. The default schedule (no schedule) causes the bundle to be distributed to the device when it is first launched.

- 8 In the **Schedule Type** field, select one of the following schedules, then fill in the fields. For information, see [Step 7 in Assigning Existing Bundles to Devices](#).

- 9 Select the following options as desired:

**Wake on LAN:** If the device is not on at the scheduled time, ZENworks attempts to use Wake on LAN (WOL) technology to power on the device. The device must support Wake on LAN.

**Install Immediately After Distribution:** Performs any installation actions immediately after the bundle is distributed to the device.

**Launch Immediately After Installation:** Performs any launch actions immediately after the bundle is installed. This option is available only if the **Install Immediately After Distribution** option is enabled.

- 10 (Conditional) If you selected **Launch Schedule** in [Step 6](#), click **Next** to display the Bundle Launch Schedule page.

The launch schedule determines the dates and times when ZENworks Agent automatically launches the bundle. The default schedule (no schedule) results in the bundle only being launched if the user launches it.

- 11 In the **Schedule Type** field, select one of the following schedules, then fill in the fields. For information, see [Step 10 in Assigning Existing Bundles to Devices](#).

- 12 (Conditional) If you selected **Availability Schedule** in [Step 6](#), click **Next** to display the Bundle Availability Schedule page.

The availability schedule defines the dates and times when the bundle is available on the managed device. ZENworks Agent displays the bundle icon only during the times defined by the schedule. The default schedule (no schedule) makes the bundle available at all times.

The schedule applies regardless of whether or not the bundle is installed. For example, if a user has not yet installed the bundle, it is only available for installation at the times specified by the schedule. If a user has already installed the bundle, it is only available for running during the scheduled times.

- 13 In the **Schedule Type** field, select one of the following schedules, then fill in the fields. For more information, see [Step 12 in Assigning Existing Bundles to Devices](#).


- 14 Click **Next** to display the Finish page, review the information and, if necessary, use the **Back** button to make changes to the information.

- 15 Click **Finish**.

## 9.4 Assigning a Bundle Group to Users

You can assign bundle group to users, user groups, or user folders.

- 1 In ZENworks Control Center, click the **Bundles** tab.
- 2 In the **Bundles** list, select the check box next to the bundle group (or bundle groups).
- 3 Click **Action > Assign to User**.

- 4 Browse for and select the user, user groups, and user folders to which you want to assign the group. To do so:
  - 4a Click  next to a folder to navigate through the folders until you find the user, group, or folder you want to select.  
If you are looking for a specific item, such as a User or a User Group, you can use the **Items of type** list to limit the types of items that are displayed. If you know the name of the item you are looking for, you can use the **Item name** box to search for the item.
  - 4b Click the underlined link in the **Name** column to select the user, group, or folder and display its name in the **Selected** list box.
  - 4c Click **OK** to add the selected devices, folders, and groups to the **Users** list.
- 5 Specify the locations on the managed device where ZENworks Agent displays the bundle group's icons. The possible locations are:
 

**Application Window:** Places the icons in the Application window.

**Desktop:** Places the icons on the device's desktop.

**Quick Launch:** Places the icons on the Quick Launch area of the Windows taskbar.

**Start Menu:** Places the icons on the **Start** menu on all Windows devices except for Windows Vista and later. It places the icon in Start > All Programs on Windows Vista and later.

**System Tray:** Places the icons in the system tray (notification area) of the Windows taskbar.
- 6 Click **Next** to display the Schedules Page, then select the schedules you want to define. For information on schedules, see [Step 5 in Assigning Existing Bundles to Devices \(page 175\)](#).
- 7 (Conditional) If you selected **Distribution Schedule** in [Step 6](#), click **Next** to display the Bundle Distribution Schedule page.  
The distribution schedule defines the dates and times when the bundle is distributed from the ZENworks Server to the managed device. The default schedule (no schedule) causes the bundle to be distributed to the device when it is first launched.
- 8 In the **Schedule Type** field, select one of the following schedules, then fill in the fields. For information, see [Step 7 in Assigning Existing Bundles to Devices](#).
- 9 Select the following options as desired:
 

**Wake on LAN:** If the device is not on at the scheduled time, ZENworks attempts to use Wake on LAN (WoL) technology to power on the device. The device must support Wake on LAN.

**Install Immediately After Distribution:** Performs any installation actions immediately after the bundle is distributed to the device.

**Launch Immediately After Installation:** Performs any launch actions immediately after the bundle is installed. This option is available only if the **Install Immediately After Distribution** option is enabled.
- 10 (Conditional) If you selected **Launch Schedule** in [Step 6](#), click **Next** to display the Bundle Launch Schedule page.  
The launch schedule determines the dates and times when ZENworks Agent automatically launches the bundle. The default schedule (no schedule) results in the bundle only being launched if the user launches.
- 11 In the **Schedule Type** field, select one of the following schedules, then fill in the fields. For information, see [Step 10 in Assigning Existing Bundles to Devices](#).

- 12 (Conditional) If you selected **Availability Schedule** in [Step 6](#), click **Next** to display the Bundle Availability Schedule page.

The availability schedule defines the dates and times when the bundle is available on the managed device. ZENworks Agent displays the bundle icon only during the times defined by the schedule. The default schedule (no schedule) makes the bundle available at all times.

The schedule applies regardless of whether or not the bundle is installed. For example, if a user has not yet installed the bundle, it is only available for installation at the times specified by the schedule. If a user has already installed the bundle, it is only available for running during the scheduled times.

- 13 In the **Schedule Type** field, select one of the following schedules, then fill in the fields. For information, see [Step 12](#) in [Assigning Existing Bundles to Devices](#).
- 14 Click **Next** to display the Finish page, review the information and, if necessary, use the **Back** button to make changes to the information.
- 15 Click **Finish**.

## 9.5 Copying Relationships

This section includes the following information:

- ♦ [Section 9.5.1, “Terminology,” on page 184](#)
- ♦ [Section 9.5.2, “Overview,” on page 185](#)
- ♦ [Section 9.5.3, “Procedure,” on page 185](#)
- ♦ [Section 9.5.4, “Understanding the Results,” on page 187](#)
- ♦ [Section 9.5.5, “Handling Failures,” on page 188](#)
- ♦ [Section 9.5.6, “Selecting the Target Object,” on page 190](#)
- ♦ [Section 9.5.7, “Resolving Conflicts,” on page 191](#)
- ♦ [Section 9.5.8, “Copying Groups,” on page 192](#)
- ♦ [Section 9.5.9, “Exporting the Copy Relationship Results as a CSV File,” on page 192](#)
- ♦ [Section 9.5.10, “Using zman to Copy Relationships,” on page 193](#)

### 9.5.1 Terminology

To enable you to understand the terminology used while describing the Copying Relationships procedure, all the commonly used terms are detailed in the following list:

- ♦ **Assignments:** Includes both bundle and policy assignments.
- ♦ **Relationships:** Includes both assignments and group memberships
- ♦ **Selected or Source Device:** The device with the set of assignments and group memberships that need to be copied to other devices. The selected source object can only be a device and not a folder or group.
- ♦ **Target objects:** The objects on which the assignments or memberships will be applied from the source device. The Target objects can only be devices, device folders, device groups or a combination of these objects.

- ♦ **Continue on Failure:** Indicates that the operation should continue even when a copy relationships operation fails.
- ♦ **Terminate on Failure:** Indicates that the operation should be terminated when the copy relationship operation fails.

## 9.5.2 Overview

As part of copying relationships, you can copy bundle assignments, policy assignments or group memberships from a selected device to target objects which includes devices, folders or groups. After the Copy Relationships operation is completed, the target object will have the assignments or memberships of the selected source device.

To understand how Copy Relationships works, consider a scenario in which the selected source device S has a bundle assignment B, a policy assignment P and it belongs to a group G. You want to copy all these relationships from the selected device S to the target device T, which does not have any existing assignments and does not belong to any group. After the Copy Relationship operation is completed, the target device T will have the bundle assignment B, the policy assignment P and it will be part of group G.

## 9.5.3 Procedure

To perform the Copy Relationships operation:

- 1 In ZENworks Control Center, click the **Devices** tab.
- 2 In the Devices page, select the check box next to a device whose relationships you want to copy.  
For the Copy Relationships operation, you need to select a device that has existing relationships to copy, else, the following error message is displayed:  
  
The selected target object has no relationships to perform copy operation
- 3 Click **Action > Copy Relationships**.
- 4 Select the required bundles, policies, and groups that you want to copy.
- 5 Click **Next**.
- 6 In the Select Target Objects page, select the devices, folders, or groups to which you want to copy the relationships. If you select a folder or a group, the relationships, by default, are copied only to the objects within the folder or the group.  
For more information, see [Section 9.5.6, “Selecting the Target Object,” on page 190](#)
- 7 Select **Continue on Failure** to continue with the operation even if some relationships fail to get copied to the target objects.

For more information on this option, see [Section 9.5.5, “Handling Failures,” on page 188](#).

- 8 Select the relevant Direct Assignment Options to copy relationships when the target devices are members of a folder or members of a group. The options include:
- 8a Copy selected assignments to members of the target groups:** If you select this option, the relationships will be copied to the devices within the selected target groups.
  - 8b Copy selected assignments to objects inside the target folder:** If you select this option, the relationships will be copied to the devices within the selected target folders. The assignments will not be copied to the sub folders and their contents.
  - 8c Copy selected assignments to objects inside the target folders and its subfolders:** If you select this option, the relationships will be copied to the devices within the sub-folders of the selected target folders.

---

**NOTE:** For more information on these options, see [Section 9.5.6, “Selecting the Target Object,”](#) on page 190.

---

- 9 (Applicable only for assignments and not groups) Select the relevant Conflict Resolution Options to resolve the conflicts that might arise due to a conflict between the existing assignments of the target device and that of the selected device. The options include:
- 9a Retain the conflicting assignments on the target devices:** If you select this option, the existing assignments of the target device that are in conflict with the selected assignments of the source device, will be retained and the conflicted source assignments will not be copied on the target device.
  - 9b Delete all existing assignments on the target devices:** If you select this option, the existing assignments of the target device will be deleted and the selected assignments of the source device will be copied to the target devices.
  - 9c Replace the conflicting assignments on the target devices:** If you select this option, the existing assignments of the target device that are in conflict with the selected assignments of the source device, will be replaced with the source assignments.

---

**NOTE:** For more information on the Conflict Resolution options, see [Section 9.5.7, “Resolving Conflicts,”](#) on page 191.

---

- 10 Group Membership Options allow you to:
- ♦ **Add objects inside the target folders and their subfolders as members of the selected groups:** If the target objects have groups, then all the members of the groups will be added to the selected group and if the target devices have folders, then all the devices within the folders will be added to the selected group, recursively.
  - ♦ **Delete all existing group memberships of the target devices:** Deletes all the group memberships of the target devices.
- For more information on the group membership options, see [Section 9.5.8, “Copying Groups,”](#) on page 192.

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**NOTE**

- ♦ If the target group B has b1, b2, and b3 as members and if the selected source device is a part of group A. You cannot add group B to group A. However you can add b1, b2 and b3 as members of group A.




- ♦ If a target folder has a group inside it, the group will not be considered for copy relationships. If you want to copy relationship to that group, it needs to be included explicitly as a target. This is to avoid accidentally making assignments to unintended devices.
- ♦ If the selected device is not a member of any group, the Group Membership Option will not be available on this page.

---

**11** Click **Next** to display the Summary page. In the Summary page, review the information, if required, use the Back button to make changes to the configured settings, else Click **Finish**. The Copy Relationships operation is performed and the results are displayed.

## 9.5.4 Understanding the Results

The Copy Relationships Results page confirms the completion of the Copy Relationship operation and displays the relevant results:




- ♦  Success: Indicates that all the copy relationship operations were completed successfully.
- ♦  Partial Success: Indicates that only some of the copy relationship operations were completed successfully and the rest failed.
- ♦  Failure: Indicates that all the copy relationship operations failed.







This page displays the following information for each Copy Relationships operation that was performed on the target devices. Review the information and then click **OK**.

---

**NOTE:** To export the results of the copy relationships operation as a CSV file, click **Export as CSV**. For more information on this option, see [Section 9.5.9, “Exporting the Copy Relationship Results as a CSV File,” on page 192](#).

---

- ♦ Bundle Assignments pane: Provides the following information:
  - ♦ Bundle: The name of the bundle that was selected on the source device.
  - ♦ Device: The target device to which the bundle was copied.
  - ♦ Operation: Status of the Copy Relationships operation. The status information is displayed using the following icons:
    - ♦ : Indicates that the bundle is assigned to the target device.
    - ♦ : Indicates that the bundle is unassigned from the target device.
    - ♦ : Indicates that the Copy Relationships operation could not be completed due to an error.
  - ♦ Details: Displays information related to the status of the Copy Relationships operation. If there was an error, additional details related to the error are displayed.
- ♦ Policy Assignments pane: Provides the following information:
  - ♦ Policy: The name of the policy that was selected on the source device.
  - ♦ Device: The target device to which the policy was copied.

- ♦ Operation: Status of the Copy Relationships operation. The status information is displayed using the following icons:
  - ♦ : Indicates that the policy is assigned to the target device.
  - ♦ : Indicates that the policy is un-assigned from the target device.
  - ♦ : Indicates that the Copy Relationships operation could not be completed due to an error.
- ♦ Details: Displays information related to the status of the Copy Relationships operation. If there was an error, additional details related to the error are displayed.
- ♦ Group Memberships pane: Provides the following information:
  - ♦ Group: The name of the group to which the target devices are added.
  - ♦ Member: The target devices that are added as members to the selected group.
  - ♦ Operation: Status of the Copy Relationships operation. The status information is displayed using the following icons:
    - ♦ : Indicates that the target devices are added to the selected group.
    - ♦ : Indicates that the target devices are removed from the selected group.
    - ♦ : Indicates that the Copy Relationships operation could not be completed due to an error.
  - ♦ Details: Displays information related to the status of the Copy Relationships operation. If there was an error, additional details related to the error are displayed. If the error is a “Dependency Error”, it indicates that the **Continue on failure option** was not selected and that the operation has failed because you do not have rights on some objects. For more information, see [Section 9.5.9, “Exporting the Copy Relationship Results as a CSV File,” on page 192](#)

## 9.5.5 Handling Failures

As part of the Copy Relationships operation, when bundles and policies cannot be assigned or unassigned and when group memberships cannot be added or removed from the target objects, it is considered as a failure of the operation. This section provides more information on:

- ♦ [“Reasons for Failures” on page 188](#)
- ♦ [“Operation Modes” on page 190](#)

### Reasons for Failures

Reasons for the failure of the Copy Relationships operation include administrator having inadequate rights to the involved objects, database related issues, and missing objects. Hence, to minimize failures, it is useful to first understand the following:

- ♦ [“Required Rights” on page 189](#)
- ♦ [“Transaction Boundary” on page 189](#)

## Required Rights

To perform the Copy Relationships operation, you need the following rights on the objects involved in the procedure:

- ♦ For assignments: You need the Assign Bundles and Assign Policies rights on the target objects to successfully copy bundle or policy assignments respectively
- ♦ For groups: You need the Modify Group Membership rights on all the objects involved in the Copy Relationships procedure. Consider a scenario in which the source device is part of group SG1, and the target device is part of group TG1, and you have selected the **Delete all existing group memberships of the target devices** option with the expectation that the target device will be added to SG1 and removed from TG1. In this case, you need the Modify Group Membership right on the target device (to add the device to another group), TG1 (to remove the device from this group) and SG1 (to add the device to this group). As rights cannot be given to the individual device, it should be given to the folder that contains the device.

---

**NOTE:** If you do not have the required rights on all the involved objects, the Copy Relationships operation will fail.

---

## Transaction Boundary

The Transaction Boundary is defined with respect to the target object and the relationship type that is being copied.

While copying bundles or policies to a target folder, if the assignment is made to the folder, the number of transactions is two. This includes the bundles to target folder assignment and the policies to the target folder assignment. If you only copy the bundles, then the number of transactions is one.

If you copy bundles and policies to the members of a target folder, then the number of transactions is 2 times (one for bundles and one for policies) the number of members inside the target folder. If the target folder has devices A, B, C, then the number of transactions will be 6.

Transaction Boundary can be further explained with the following example:

### Example

- ♦ Scenario: The target folder has devices D1, D2 and a sub folder SF1. The sub folder SF1 contains three devices SFD1, SFD2, and SFD3.
- ♦ Transaction Boundary Calculation:
  - ♦ If the bundle assignment is made to the parent folder F, then the number of transactions is 1.

---

**NOTE:** Bundle assignments can include one or more bundles.

---

- ♦ If the bundle assignment is made to the members of the parent folder F, then the number of transactions is 2, which includes the assignments to devices D1 and D2.
- ♦ If the assignment is made recursively to all the members of the parent folder F, then the number of transactions is 5, which includes the assignments to devices D1, D2, SFD1, SFD2, and SFD3.

If policies are also copied, the number of transactions are doubled.

## Operation Modes

Copy Relationships can be performed in the following two modes:

- ♦ [“Terminate on Failure” on page 190](#)
- ♦ [“Continue on Failure” on page 190](#)

### Terminate on Failure

The Copy Relationship operation will be performed in transactions. A transaction will succeed **ONLY** if you have rights on all the objects involved in the transaction boundary. In case you do not have rights on any of the objects involved in a transaction boundary, the complete transaction will fail.

For example, if you try to copy 10 bundles and 5 policies to a target T1, and you do not have rights on one bundle. In this case, the entire bundle assignment will be fail. However, the entire policy assignment will succeed. This is the default behavior.

### Continue on Failure

If you do not have rights on all the objects, the operations related to the objects on which you have rights, will succeed. The remaining will fail. For example, if you try copying 10 bundles and 5 policies to a target T1, and you do not have rights on one bundle. When this option is selected, the 9 bundles will be assigned to the target and all the policies will be assigned to the target. Only one bundle assignment will fail.

## 9.5.6 Selecting the Target Object

The target object can be a device or a group or a folder. When the target is a device, the steps are straight forward. However, if the target is a group or a folder, when you copy the assignments, there are multiple options to determine to which object the assignment has to be made:

- ♦ [“When the Target is a Folder” on page 190](#)
- ♦ [“When the Target is a Group” on page 191](#)

### When the Target is a Folder

When the target is a folder, you can chose to make the assignments to only the devices within the target folder or you can choose to make the assignments to the devices within the target folder and its sub folders as well. Consider the following scenario for additional clarity on these options:

Scenario: The target folder F contains a device T1, and a sub folder SF1, which contains a device T2.

- ♦ **Copy selected assignments to objects inside the target folder:** All the members of the target folder will get the selected assignments as direct assignments. This procedure will not be done recursively. Based on the scenario above, if this option is selected, the assignment will be made to the device T1 within the target folder and not to the device T2 within its sub folder.

- ♦ **Copy selected assignments to objects inside the target folders and its subfolders:** All the devices within the target folder and its sub folders will get the assignment. Based on the above scenario, if this option is selected, the assignment will be made to devices T1 and T2.
- ♦ If neither of the above two options are selected, then, by default, the assignment will be made to the target folder and all the members of the folder will get the assignment as inherited assignments. Based on the above scenario, the devices T1 and T2 will receive the assignments as inherited assignments.

## When the Target is a Group

If the target is a group, then the assignments can be made using the following options:

- ♦ **Copy selected assignments to members of the target groups:** The assignment will be copied to all the members of the target group.
- ♦ If the above option is not selected, then, by default, the assignment will be made to the group. All the members of the group will get the assignments as inherited assignments.

---

**NOTE:** A device group can ONLY contain devices. Folders and groups cannot be a part of device groups.

---

## 9.5.7 Resolving Conflicts

When the target device has relationships that are also present on the source device, a conflict might arise. Using the Conflict Resolution Options, you can resolve these conflicts. To understand these options better, consider the following scenario: Bundles B1, B2, and B3 are assigned to the Target device and B3 has a weekly launch schedule. Bundle B3, having a daily launch schedule, and bundle B4 are assigned to the source device. As bundle B3 exists on the source and the target devices, it will cause a conflict. To resolve the conflict you can use one of the following options:

- ♦ [“Delete existing assignments on the target devices” on page 191](#)
- ♦ [“Replace existing assignments on the target devices” on page 191](#)
- ♦ [“Retain the conflicting assignments on the target devices” on page 192](#)

### Delete existing assignments on the target devices

If this option is selected, all the assignments on the target device will be deleted and the selected source assignments will be copied to the target device. Based on the scenario described above, bundles B1 and B2 and B3 (Weekly Schedule) will be removed from the target device, and B3 (Daily Schedule) and B4 will be assigned to the target device. Hence, the final assignment list will include B3 (Daily Schedule) and B4. The bundle assignment, B1 and B2, will be removed. This option is only applicable for assignments.

### Replace existing assignments on the target devices

If this option is selected, the existing assignments on the target device T that are not in conflict with assignments on the source device, will be retained and the assignments that are in conflict with the assignments on the source device will get replaced with the source assignments. Based on the

scenario described above, bundle B3 (Weekly Schedule) will be replaced by bundle B3 (Daily Schedule), bundles B1 and B2 will be retained and. bundle B4 will be added. This option is only applicable for assignments.

## Retain the conflicting assignments on the target devices

If this option is selected, all the assignments on the target device will be retained and only the bundles from the source device that are not in conflict with the bundles on the target device, will get assigned to the target device. Based on the scenario described above, B1, B2 and B3 (Weekly Schedule) will be retained on the target device and B4 will be assigned to the target device. However B3 (Daily Schedule) will not be assigned to the target device as this bundle is in conflict with B3 (Weekly Schedule), which is already assigned to the target device. Hence, the final assignment list will include B1, B2, B3 (Weekly Schedule) and B4.

## 9.5.8 Copying Groups

For more clarity on the Copying Group options, consider the following two scenarios:

- ♦ Scenario 1: The selected source device S is a member of group G and the target device T is a member of a group G1.
- ♦ Scenario 2: The selected source device S is a member of Group G and the target device T is a member of group G and G1.

Based on the above scenarios, you can use the following conflict resolution options:

- ♦ **Delete all existing group memberships of the target devices:** If this option is selected:
  - ♦ In Scenario 1: As the target device T is part of group G1, at the end of the Copy Relationships operation, the target device T will be a part of group G. The group membership of this device from group G1 will be removed.
  - ♦ In Scenario 2: At the end of the Copy Relationships operation, the target device will only be part of Group G. G1 will be removed and, as the device is already part of G, it will be skipped.
- ♦ Default Behavior (if the above option is not selected):
  - ♦ In Scenario 1: The target device will be part of both groups G and G1. The displayed result will indicate that G is an added group assignment.
  - ♦ In Scenario 2: The target device will be part of both groups, G and G1. The displayed result will indicate that G is an unchanged group assignment.

## 9.5.9 Exporting the Copy Relationship Results as a CSV File

The results of Copy Relationships operation can be exported as a CSV file from the Results page. The CSV file includes the following fields:

- ♦ Assignment Type: The assignment type that is copied from the source to the target object. Indicates if the assignment is a Bundle, Policy, or Group.
- ♦ Assignment Object: The name of the assignment of the source device that is getting assigned to the target device. Indicates the name of the bundle, policy or group.
- ♦ Device: The target device that is receiving the selected source assignment.

- ♦ Source Object GUID: The GUID of the selected source object.
- ♦ Target Object GUID: The GUID of the target object.
- ♦ Operation: The status of the assignment. Indicates if the assignment to the target device got Assigned, Unassigned or it Failed.
- ♦ Error Message: In case of any failures, the reason for the failure will be displayed in this field. If a “Dependency Error” is displayed, it indicates that the **Continue on failure** option was not selected and that the operation has failed because you do not have rights on some objects.

Consider a scenario in which the source device S has bundle assignments SB1 and SB2 and target device T doesn't have any assignments. The administrator has rights only on bundle SB1. When the Copy Relationships operation is performed without selecting the **Configure on Failure** option, assignment SB2 fails with an Insufficient Rights error, and assignment SB1 fails with a Dependency error because another assignment failed in the transaction. For more information on transactions, see [“Transaction Boundary” on page 189](#).

Consider another scenario related to groups. The source device S is a part of group SG1 and the target device T is a part of groups TG1 and TG2. The administrator does not have rights on device TG2 and the administrator has chosen the Delete existing group membership option. When the Copy Relationships operation is performed, the removal of device T from the group TG2 will fail with the Insufficient Rights error and, the addition of device T to group SG1, and removal of device T from group TG1 will fail with the Dependency error.

So, the Dependency errors are not due to insufficient rights. They occur due to the failure of some other operation within the transaction. Hence, if the administrator wants to correct the problems by reviewing the results, the administrator should resolve errors other than the Dependency errors.

### 9.5.10 Using zman to Copy Relationships

The Copy Relationships operation can be performed using zman commands as well. For more information, see the `zman wcr` and `zman scr` commands in the [ZENworks Command Line Utilities Reference](#).

## 9.6 Execution of Scheduled Bundles

Scheduled bundles run in a serial manner. All scheduled bundle actions are added to a run queue on the agent side. The bundle actions are added to the queue according to the bundle schedule. However, the bundle actions are then executed in the order in which they were added to the queue. This design can result in bundles seeming to run off the schedule, if prior scheduled bundles have not finished their action sets by the time the next bundle schedule is reached.

Consider the following scenario:

- ♦ Bundle A is scheduled to launch at 10:00 AM and Bundle B is scheduled to launch at 10:30 AM.
- ♦ The launch action set for Bundle A takes 1 hour to complete.
- ♦ Bundle B launches at 10:30 AM according to the schedule.
- ♦ However, the launch actions for Bundle B will start only at 11:00 AM after Bundle A's launch actions have been completed.

Now consider that Bundle B performs a reboot that should only have been performed at the scheduled time. In this case, to prevent the reboot from running at unwanted times, you would have to set action level system requirements. For example, an action level system requirement could be either to perform the reboot if a user is not logged into the workstation or to show a prompt allowing the user to cancel the reboot.

---

**NOTE:** The option **Process immediately if device unable to execute on schedule** does not apply in the above scenario. This option is only meant for scenarios where the workstation is not running when the scheduled time occurs.

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# 10 Managing System Requirements

The System Requirements panel lets you define specific requirements that a device must meet for the bundle to be distributed to it.

You define requirements through the use of filters. A filter is a condition that must be met by a device in order for the bundle to be applied. For example, you can add a filter to specify that the device must have exactly 512 MB of RAM in order for the bundle to be applied, and you can add another filter to specify that the hard drive be at least 20 GB in size.

Review the following sections:

- [Section 10.1, “Adding System Requirements for a Bundle,” on page 191](#)
- [Section 10.2, “Copying a Bundle’s System Requirements,” on page 198](#)
- [Section 10.3, “Copying a Bundle Group’s System Requirements,” on page 198](#)

## 10.1 Adding System Requirements for a Bundle

- 1 In ZENworks Control Center, click the **Bundles** tab.
- 2 Click the underlined link for the desired bundle to display the bundle’s Summary page.
- 3 Click the **Requirements** tab.
- 4 Click **Add Filter**, select a filter condition from the drop-down list, then fill in the fields.

As you construct filters, you need to know the conditions you can use and how to organize the filters to achieve the desired results. For more information, see [Section 10.1.1, “Filter Conditions,” on page 191](#) and [Section 10.1.2, “Filter Logic,” on page 197](#).

- 5 (Conditional) Add additional filters and filter sets.
- 6 Click **Apply** to save the settings.

---

**NOTE:** After defining a bundle’s system requirements, you can copy its requirements and apply it to other bundles or policies. To do so, click the **Bundles** tab, select the check box in front of the bundle, click **Edit**, click **Copy System Requirements**, select **Bundles** or **Policies**, then click **Add** to select the bundles or policies to which you want to copy the selected bundle’s system requirements.

---

### 10.1.1 Filter Conditions

You can choose from any of the following conditions when creating a filter. Place your mouse pointer over fields that require input to display a tooltip containing example usage.

**Architecture:** Determines the architecture of Windows\* running on the device. The condition you use to set the requirement includes a property, an operator, and a property value. The possible operators are equals (=) and does not equal (<>). For example, if you set the condition to `architecture = 32`, the device’s Windows operating system must be 32-bit to meet the requirement.

**Bundle Installed:** Determines if a specific bundle is installed. After specifying the bundle, the two conditions you can use to set the requirement are **Yes** and **No**. If you select **Yes**, the specified bundle must already be installed to meet the requirement. If you select **No**, the bundle must not be installed.

**Configuration Location:** Determines if the bundle is applicable to a specific location. The condition you use to set the requirement includes an operator and a value. The possible operators are equals (=) and does not equal (<>). The values are the existing locations in the Management Zone. For example, if you set the condition to `=location_name`, the selected location must match the device's location to meet the requirement.

**Configuration Network Environment:** Determines if the bundle is applicable to a specific network environment. The condition you use to set the requirement includes an operator and a value. The possible operators are equals (=) and does not equal (<>). The values are the existing network environments in the Management Zone. For example, if you set the condition to `=network_environment_name`, the selected network environment must match the device's current network environment to meet the requirement.

**Connected:** Determines if the device is connected to the network. The two conditions you can use to set the requirement are **Yes** and **No**. If you select **Yes**, the device must be connected to the network to meet the requirement. If you select **No**, it must not be connected.

**Connection Speed:** Determines the speed of the device's connection to the network. The condition you use to set the requirement includes an operator and a value. The possible operators are equals (=), does not equal (<>), is greater than (>), is greater than or equal to (>=), is less than (<), and is less than or equal to (<=). The possible values are bits per second (**bps**), kilobits per second (**Kbps**), megabits per second (**Mbps**), and gigabits per second (**Gbps**). For example, if you set the condition to `>= 100 Mbps`, the connection speed must be greater than or equal to 100 megabits per second to meet the requirement.

**Disk Space Free:** Determines the amount of free disk space on the device. The condition you use to set the requirement includes a disk designation, an operator, and a value. The disk designation can be a local drive map (for example, c: or d:). The possible operators are equals (=), does not equal (<>), is greater than (>), is greater than or equal to (>=), is less than (<), and is less than or equal to (<=). The possible values are bytes (**Bytes**), kilobytes (**KB**), megabytes (**MB**), and gigabytes (**GB**). For example, if you set the condition to `c: >= 80 MB`, the free disk space must be greater than or equal to 80 megabytes to meet the requirement.

**Disk Space Total:** Determines the amount of total disk space on the device. The condition you use to set the requirement includes a disk designation, an operator, and a value. The disk designation can be a local drive map (for example, c: or d:). The possible operators are equals (=), does not equal (<>), is greater than (>), is greater than or equal to (>=), is less than (<), and is less than or equal to (<=). The possible values are bytes (**Bytes**), kilobytes (**KB**), megabytes (**MB**), and gigabytes (**GB**). For example, if you set the condition to `c: >= 40 GB`, the total disk space must be greater than or equal to 40 gigabytes to meet the requirement.

**Disk Space Used:** Determines the amount of used disk space on the device. The condition you use to set the requirement includes a disk designation, an operator, and a value. The disk designation can be a local drive map (for example, c: or d:). The possible operators are equals (=), does not equal (<>), is greater than (>), is greater than or equal to (>=), is less than (<), and is less than or equal to (<=). The possible values are bytes (**Bytes**), kilobytes (**KB**), megabytes (**MB**), and gigabytes (**GB**). For example, if you set the condition to `c: <= 10 GB`, the used disk space must be less than or equal to 10 gigabytes to meet the requirement.

**Environment Variable Exists:** Determines if a specific environment variable exists on the device. After specifying the environment variable, the two conditions you can use to set the requirement are **Yes** and **No**. If you select **Yes**, the environment variable must exist on the device to meet the requirement. If you select **No**, it must not exist.

**Environment Variable Value:** Determines if an environment variable value exists on the device. The condition you use to set the requirement includes the environment variable, an operator, and a variable value. The environment variable can be any operating system supported environment variable. The possible operators are **equal to**, **not equal to**, **contains**, and **does not contain**. The possible variable values are determined by the environment variable. For example, if you set the condition to `Path contains c:\windows\system32`, the Path environment variable must contain the `c:\windows\system32` path to meet the requirement.

**File Date:** Determines the date of a file. The condition you use to set the requirement includes the filename, an operator, and a date. The filename can be any filename supported by the operating system. The possible operators are **on**, **after**, **on or after**, **before**, and **on or before**. The possible dates are any valid dates. For example, if you set the condition to `app1.msi on or after 6/15/07`, the `app1.msi` file must be dated 6/15/2007 or later to meet the requirement.

**File Exists:** Determines if a file exists. After specifying the filename, the two conditions you can use to set the requirement are **Yes** and **No**. If you select **Yes**, the specified file must exist to meet the requirement. If you select **No**, the file must not exist.

**File Size:** Determines the size of a file. The condition you use to set the requirement includes the filename, an operator, and a size. The filename can be any file name supported by the operating system. The possible operators are **equals (=)**, **does not equal (<>)**, **is greater than (>)**, **is greater than or equal to (>=)**, **is less than (<)**, and **is less than or equal to (<=)**. The possible sizes are designated in bytes (**Bytes**), kilobytes (**KB**), megabytes (**MB**), and gigabytes (**GB**). For example, if you set the condition to `doc1.pdf <= 3 MB`, the `doc1.pdf` file must be less than or equal to 3 megabytes to meet the requirement.

**File Version:** Determines the version of a file. The condition you use to set the requirement includes the filename, an operator, and a version. The filename can be any file name supported by the operating system. The possible operators are **equals (=)**, **does not equal (<>)**, **is greater than (>)**, **is greater than or equal to (>=)**, **is less than (<)**, and **is less than or equal to (<=)**.

Be aware that file version numbers contain four components: Major, Minor, Revision, and Build. For example, the file version for `calc.exe` might be 5.1.2600.0. Each component is treated independently. For this reason, the system requirements that you set might not provide your expected results. If you do not specify all four components, wildcards are assumed.

For example, if you set the condition to `calc.exe <= 5`, you are specifying only the first component of the version number (Major). As a result, versions 5.0.5, 5.1, and 5.1.1.1 also meet the condition.

However, because each component is independent, if you set the condition to `calc.exe <= 5.1`, the `calc.exe` file must be less than or equal to version 5.1 to meet the requirement.

---

**NOTE:** If the file is missing and the 'less than' (<) operator is used, the system requirement will still be evaluated as true.

---

**IP Segment:** Determines the device's IP address. After specifying the IP segment name using CIDR (Classless Inter-Domain Routing) format, the two conditions you can use to set the requirement are **Yes** and **No**. If you select **Yes**, the device's IP address must match the IP segment. If you select **No**, the IP address must not match the IP segment.

You must specify the IP address using CIDR format. The number following the slash (/n) is the prefix length, which is the number of shared initial bits, counting from the left side of the address. The /n number can range from 0 to 32, with 8, 16, 24, and 32 being commonly used numbers.

Examples:

123.45.67.12/16: Matches all IP addresses that start with 123.45.

123.45.67.12/24: Matches all IP addresses that start with 123.45.67.

The IPv6 block 2001:db8::/48 represents range of IPv6 addresses from 2001:db8:0:0:0:0:0:0 to 2001:db8:0:ffff:ffff:ffff:ffff:ffff.

**Logged on to Primary Workstation:** Determines whether the user is logged on to his or her primary workstation. The two conditions you can use to set the requirement are **Yes** and **No**. If you select **Yes**, the user must be logged on to his or her primary workstation to meet the requirement. If you select **No**, if no user is logged on to the workstation, the requirement is not met. However, if a user other than the primary user is logged on to the workstation, the requirement is met.

**Memory:** Determines the amount of memory on the device. The condition you use to set the requirement includes an operator and a memory amount. The possible operators are equals (=), does not equal (<>), is greater than (>), is greater than or equal to (>=), is less than (<), and is less than or equal to (<=). The memory amounts are designated in megabytes (**MB**) and gigabytes (**GB**). For example, if you set the condition to >= 2 GB, the device must have at least 2 gigabytes of memory to meet the requirement.

**Novell Client Installed:** Determines if the device is using the Novell Client for its network connection. The two conditions you can use to set the requirement are **Yes** and **No**. If you select **Yes**, the device must be using the Novell Client to meet the requirement. If you select **No**, it must not be using the Novell Client.

**Operating System - Windows:** Determines the service pack level, server type, and version of Windows\* running on the device. The condition you use to set the requirement includes a property, an operator, and a property value. The possible properties are **service pack**, **server type**, and **version**. The possible operators are equals (=), does not equal (<>), is greater than (>), is greater than or equal to (>=), is less than (<), and is less than or equal to (<=). The property values vary depending on the property. For example, if you set the condition to version = Windows XP Versions, the device's Windows version must be XP to meet the requirement.

---

**NOTE:** Be aware that operating system version numbers contain four components: Major, Minor, Revision, and Build. For example, the Windows 2000 SP4 release's number might be 5.0.2159.262144. Each component is treated independently. For this reason, the system requirements that you set might not provide your expected results.

For example, if you specify **Operating System - Windows** in the first field, **Version** in the second field, **>** in the third field, and **5.0 -Windows 2000 Versions** in the last field, you are specifying only the first two components of the version number: Major (Windows) and Minor (5.0). As a result, for the requirement evaluated to true, the OS will have to be at least 5.1 (Windows XP). Windows 2003 is version 5.2, so specifying > 5.2 will also evaluate to true.

However, because each component is independent, if you specify the version > 5.0, Windows 2000 SP4 evaluates to false because the actual version number might be 5.0.2159.262144. You can type 5.0.0 to make the requirement evaluate as true because the actual revision component is greater than 0.

When you select the OS version from the drop-down, the Major and Minor components are populated. The Revision and Build components must be typed in manually.

---

**Primary User Is Logged In:** Determines if the device's primary user is logged in. The two conditions you can use to set the requirement are **Yes** and **No**. If you select **Yes**, the primary user must be logged in to meet the requirement. If you select **No**, the user must not be logged in.

**Process Running:** Determines if a process is running. After specifying the process name, the two conditions you can use to set the requirement are Yes and No. If you select Yes, the specified process must be running to meet the requirement. If you select No, the process must not be running.

---

**NOTE:** This system requirement is applicable only for servers and agents with ZENworks 2017 Update 4 or later versions.

---

**Processor Family:** Determines the device's processor type. The condition you use to set the requirement includes an operator and a processor family. The possible operators are equals (=) and does not equal (<>). The possible processor families are **Pentium**, **Pentium Pro**, **Pentium II**, **Pentium III**, **Pentium 4**, **Pentium M**, **WinChip**, **Duron**, **BrandID**, **Celeron**, and **Celeron M**. For example, if you set the condition to <> Celeron, the device's processor can be any processor family other than Celeron to meet the requirement.

**Processor Speed:** Determines the device's processor speed. The condition you use to set the requirement includes an operator and a processor speed. The possible operators are equals (=), does not equal (<>), is greater than (>), is greater than or equal to (>=), is less than (<), and is less than or equal to (<=). The possible processor speeds are hertz (**Hz**), kilohertz (**KHz**), megahertz (**MHz**), and gigahertz (**GHz**). For example, if you set the condition to >= 2 GHz, the device's speed must be at least 2 gigahertz to meet the requirement.

**Registry Key Exists:** Determines if a registry key exists. After specifying the key name, the two conditions you can use to set the requirement are **Yes** and **No**. If you select **Yes**, the specified key must exist to meet the requirement. If you select **No**, the key must not exist. For example, if you specify HKEY\_LOCAL\_MACHINE\SOFTWARE\Novell\Messenger\Login and set the requirement to **Yes**, the specified registry key must exist to meet the requirement.

**Registry Key Value:** Determines if a registry key value meets a defined condition. The condition you use to set the requirement includes the key name, the value name, an operator, a value type, and a value data. The key and value names must identify the key value you want to check. The possible operators are equals (=), does not equal (<>), is greater than (>), is greater than or equal to (>=), is less than (<), is less than or equal to (<=), and contains (()). The possible value types are **Integer Type** (specify a decimal value) **String Type**, **IP Address**, and **Version**. The possible value data is determined by the key, value name, and value type.

The \${EMPTY\_VALUE} variable enables you to check for empty strings in the Registry Key Value requirements, on Windows devices.

If the value type is **String Type**, ZCM compares only those values in the registry if the actual type in the registry is REG\_STRING or REG\_EXPANDED\_STRING.

If the value type is **Integer**, ZCM compares only those values in the registry if the actual type in the registry is REG\_DWORD.

Leave the key value field blank to use the default value. The default value of a registry key has no name and is displayed in regedit as (Default).

For example, if you specify HKEY\_LOCAL\_MACHINE\SOFTWARE\Novell\Messenger\Login as the key name, Port as the value name, select = as the operator, select **Integer Type** as the value type, and specify 443 as the value data, the port specified as the value data must match with the port specified in the registry key to meet the requirement.

If the value type is **IP Address**, ZCM compares only those values in the registry if the actual type in the registry is REG\_STRING.

If the value type is **Version**, ZCM compares only those values in the registry if the actual type in the registry is REG\_STRING or REG\_EXPANDED\_STRING.

---

**NOTE:** Alphanumeric characters are not supported for value type Version. For example: version number V13.0 will not be supported.

The filter condition **Registry Key Value** is available only for Windows bundles. The value type **IP Address** for Registry Key Value is applicable only in VDI environments (VMwareVDI and CitrixVDI).

---

If you have set the condition to **Registry Key Value** and selected **IP Address** as the value type, then the two conditions that you can use to set the requirements are **Is in Subnet** and **Is not in Subnet**. If you select **Is in Subnet**, then the thin-client IP address of the device must be within a specific subnet. If you select **Is not in Subnet**, then the thin-client IP address of the device must be outside the subnet.

Specify the following in the text fields:

- ♦ Path of the registry key that should be compared
- ♦ Name of the registry value, for example: ViewClient\_IP\_Address
- ♦ IP Address of the network and a subnet mask to compare in order to determine if the device is within the segment (Example: 10.0.0.0/24)

#### **For the VMware-VDI Environment**

If you are connected to a VMware desktop from any thin client, the following registry key will be created automatically in the VMware desktop, indicating the thin-client IP address through which it is connected. You can use the same Registry key as a filter to specify the filter requirement.

##### **Example 10-1 Example:**

Registry key Path: HKEY\_CURRENT\_USER\Volatile Environment

Registry key Name: ViewClient\_IP\_Address

Value: This specifies the thin-client IP address through which you are connected to the VMware desktop. This value should be in the CIDR format for both **Is in Subnet** and **Is not in Subnet** (Example: 10.0.0.0/24).

#### **For the Citrix- VDI Environment**

If you are connected to a Citrix desktop from any thin client, the following registry key will be created automatically in the Citrix desktop, indicating the thin-client IP address through which it is connected. You can use the same registry key as a filter to specify the filter requirement.

**Example 10-2** Example:

Registry key path: HKEY\_LOCAL\_MACHINE\SOFTWARE\Citrix\Ica\Session

Registry key name: ClientAddress

Value: This specifies the thin client address through which you are connected to the Citrix desktop (Example: 10.0.0.0/24).

**Registry Key and Value Exists:** Determines if a registry key and value exist. After specifying the key name and value, the two conditions you can use to set the requirement are **Yes** and **No**. If you select **Yes**, the specified key and value must exist to meet the requirement. If you select **No**, the key and value must not exist.

For example, if you specify HKEY\_LOCAL\_MACHINE\SOFTWARE\Novell\Messenger>Login as the key name, Port as the value name, and set the requirement to **Yes**, then the HKEY\_LOCAL\_MACHINE\SOFTWARE\Novell\Messenger>Login key having Port as its value, must exist to meet the requirement.

**Service Exists:** Determines if a service with the given name exists in the **Services** list of the system. Specify a service name and ensure that the service name is not enclosed in quotes. After specifying the service name, the two conditions you can use to set the requirement are **Yes** and **No**. If you select **Yes**, the service must exist to meet the requirement. If you select **No**, the service must not exist.

**Service Running:** Determines if a service is running. After specifying the service name, the two conditions you can use to set the requirement are **Yes** and **No**. If you select **Yes**, the specified service must be running to meet the requirement. If you select **No**, the service must not be running.

---

**NOTE:** This system requirement is applicable only for servers and agents with ZENworks 2017 Update 4 or later versions.

---

**Specified Devices:** Determines if the device is one of the specified devices. After specifying the devices, the two conditions you can use to set the requirement are **Yes** and **No**. If you select **Yes**, the device must be included in the specified devices list to meet the requirement (an inclusion list). If you select **No**, the device must not be included in the list (an exclusion list).

## 10.1.2 Filter Logic

You can use one or more filters to determine whether the bundle should be distributed to a device. A device must match the entire filter list (as determined by the logical operators that are explained below) for the bundle to be applied to the device.

There is no technical limit to the number of filters you can use, but there are practical limits, such as:

- ♦ Designing a filter structure that is easy to understand
- ♦ Organizing the filters so that you do not create conflicting filters

## Filters, Filter Sets, and Logical Operators

You can add filters individually or in sets. Logical operators, either **AND** or **OR**, are used to combine each filter and filter set. By default, filters are combined using **OR** (as determined by the **Combine Filters Using** field) and filter sets are combined using **AND**. You can change the default and use **AND** to combined filters, in which case filter sets are automatically combined using **OR**. In other words, the logical operator that is to combine individual filters (within in a set) must be the opposite of the operator that is used between filter sets.

You can easily view how these logical operators work. Click both the **Add Filter** and **Add Filter Set** options a few times each to create a few filter sets, then switch between **AND** and **OR** in the **Combine Filters Using** field and observe how the operators change.

As you construct filters and filter sets, you can think in terms of algebraic notation parentheticals, where filters are contained within parentheses, and sets are separated into a series of parenthetical groups. Logical operators (**AND** and **OR**) separate the filters within the parentheses, and the operators are used to separate the parentheticals.

For example, “(u AND v AND w) OR (x AND y AND z)” means “match either uvw or xyz.” In the filter list, this looks like:

```
u  AND
v  AND
w
OR
x  AND
y  AND
z
```

## Nested Filters and Filter Sets

Filters and filter sets cannot be nested. You can only enter them in series, and the first filter or filter set to match the device is used. Therefore, the order in which they are listed does not matter. You are simply looking for a match to cause the bundle to be applied to the device.

## 10.2 Copying a Bundle’s System Requirements

- 1 In ZENworks Control Center, click the **Bundles** tab.
- 2 In the **Bundles** list, select the check box next to the bundle.
- 3 Click **Edit > Copy System Requirements**.

If more than one check box is selected, the **Copy System Requirements** option is not available on the **Edit** menu.

- 4 Select **Bundles** or **Policies**, then click **Add** to select the bundles or policies to which you want to copy the selected bundle’s system requirements.

## 10.3 Copying a Bundle Group’s System Requirements

- 1 In ZENworks Control Center, click the **Bundles** tab.
- 2 In the **Bundles** list, select the check box next to the bundle group.

**3** Click **Edit > Copy System Requirements**.

If more than one check box is selected, the **Copy System Requirements** option is not available on the **Edit** menu.

**4** Select **Bundles** or **Policies**, then click **Add** to select the bundles or policies to which you want to copy the selected bundle group's system requirements.



# 11 Managing Bundle Settings

The Settings page lets you manage bundle settings, including the variables that are available for use on bundles and content replication settings for ZENworks Primary Servers and Satellite devices.

Settings can be inherited from the following locations:

- ♦ **(System):** The bundle is inheriting the setting established for the Management Zone (**Configuration** tab > **Management Zone Settings**).
- ♦ **Folder:** The bundle is inheriting the setting established for one of its parent folders.
- ♦ **Device:** The bundle is not inheriting the setting, but the setting is configured directly on the bundle. In other words, the setting is not configured at the system level, the folder level, or the bundle level.

To configure a setting for the bundle:

- 1 Click **Bundle Management**.
- 2 Click the setting name.
- 3 If the setting is configured at the system or folder level, click **Override settings** to enable you to configure the setting at the bundle level.
- 4 Fill in the fields.

To get information about the fields, click the **Help** button or review the following sections:

- ♦ [Section 11.1, “Managing System Variables,” on page 205](#)
- ♦ [Section 11.2, “Primary Server Replication,” on page 207](#)
- ♦ [Section 11.3, “Satellite Server Replication,” on page 208](#)
- ♦ [Section 11.4, “Sandbox Settings,” on page 208](#)
- ♦ [Section 11.5, “End Point Throttle,” on page 208](#)
- ♦ [Section 11.6, “Image Bundle Flag Settings,” on page 208](#)

## 11.1 Managing System Variables

The Bundles Settings page lets you manage the variables that are available for use on bundles.

The Inherited Variables panel displays all system variables that are inherited from the ZENworks Management Zone or parent folders. You cannot delete or modify inherited variables. However, if you add the same system variable, but give it a different value, the new variable value overrides the inherited variable value.

When specifying the variable in a field, use the following syntax:

```
${VAR_NAME}
```

Replace `VAR_NAME` with the name of the variable.

The System Variables panel lets you define variables that can be used to replace paths, names, and so forth as you enter information. For more information on the system variables supported in ZENworks Configuration Management, see “[Using System Variables](#)” and “[Using Special System Variables](#)” in the *ZENworks Control Center Reference*.

You can define system variables at three levels:

- ♦ **Management Zone:** The system variables are inherited by the following: device folders, devices, and bundles.
- ♦ **Device Folder:** The system variables are inherited by all devices contained within the folder or its subfolders.
- ♦ **Device or Bundle:** The system variables apply only to the device or bundle for which they are configured.

---

**NOTE:** Certain user-specific variables should not be used if no user has logged in to the device. Example: For device-associated bundles, user-specific variables such as `Cookies`, `Desktop`, `Favorites`, `Fonts`, `NetHood`, `History`, `Personal`, `Programs`, `Recent`, `SendTo`, `StartMenu`, `StartUp`, `TempDir`, `Templates`, `WinDesktop`, `AdminTools`, `My Pictures`, and `PrintHood` should not be used when no user has logged in. If these variables are used, they will not be resolved.

---

The following table lists the tasks you can perform to manage the system variables:

Task	Steps	Additional Details
Add a variable	<ol style="list-style-type: none"> <li>1. If you are configuring system variables for an object (not for the entire Management Zone), click <b>Override settings</b> to activate the System Variables panel.</li> <li>2. Click <b>Add</b>, provide the name and value for the variable, then click <b>OK</b>.</li> <li>3. Click <b>Apply</b>.</li> </ol>	<p>When configuring system variables for an object, you can override an inherited variable by defining a new variable with the same name but a different value. For example, if <code>Var1=c:\</code> is inherited, you can override it by defining <code>Var1=d:\</code>.</p> <p>Variable names cannot include spaces and must be unique at the level where they are defined. For example, you cannot have two variables named <code>Var1</code> defined at the device level (unless one is inherited, in which case the device level variable overrides the inherited variable).</p> <p>Variable values cannot include the characters <code>&amp;</code> and <code>&lt;</code>.</p>
Remove a variable	<ol style="list-style-type: none"> <li>1. Select the check box next to the variable (or variables).</li> <li>2. Click <b>Remove</b>.</li> <li>3. Click <b>Apply</b>.</li> </ol>	

Task	Steps	Additional Details
Edit a variable	<ol style="list-style-type: none"> <li>1. Select the check box next to the variable.</li> <li>2. Click <b>Edit</b>.</li> <li>3. Modify the <b>Name</b> and <b>Value</b> fields as desired, then click OK.</li> <li>4. Click <b>Apply</b>.</li> </ol>	<p>Variable names cannot include spaces and must be unique at the level where they are defined. For example, you cannot have two variables named Var1 defined at the device level (unless one is inherited, in which case the device level variable overrides the inherited variable).</p> <p>Variable values cannot include the characters &amp; and &lt;.</p>
Use a variable	<ol style="list-style-type: none"> <li>1. Use the following syntax:   <code>\${VAR_NAME}</code>             Replace <i>VAR_NAME</i> with the name of the variable.</li> </ol>	

---

**NOTE:** The `${ZENUSER}` system variable maps to the user logged into the graphical session on the Linux or Macintosh device. For example, if user 'bob' is logged into the display:0 of a Linux device, then any bundle that references the `${ZENUSER}` variable resolves to 'bob'. There are various applications to do this. For example, the `${ZENUSER}` variable can be used to install Desktop icons in the home directory of the logged-in user by setting the path of the icon file to `/home/${ZENUSER}/Desktop/`. The `${ZENUSER}` variable is applicable for only Linux and Macintosh bundles, not for Windows bundles. A system variable could also be used to set the permission of a installed file to the logged-in user.

---

The following are some best practices that you could consider while using system variables:

- Name the variable that identifies the target catalogue for an installed program as `TARGET_PATH`.
- Name a catalogue in which an installation file will be executed as, `INSTALL_PATH`.
- If you need to distinguish between 32-bit and 64-bit versions of variables, you can add a suffix to the 32-bit variable so that it becomes `TARGET_PATH_x86` and you can keep a shorter name for the 64-bit variable without adding the 64 or x64 suffix to the end of it. In this manner, you won't have to remember whether you should use 64 or x64, and you won't forget to add the x86 suffix to the 32-bit variable.

## 11.2 Primary Server Replication

Lets you manage content replication to Primary Servers. You can specify whether or not new Primary Servers added to the system are assigned to host the bundle. You can also specify that the bundle is included or excluded from being hosted on a specified Primary Server. For more information on this page, click [Help](#).

It is recommended that you replicate a bundle to at least one server (for redundancy), and it should also be replicated to the servers in the location where it is required. For example, if a bundle will be used in Location A and at Location B, it should be replicated to servers in those locations since those

locations can then use their own server as the content server, and the content will be retrieved from the nearest server. However, you need to also ensure that you do not overload servers with unneeded content by replicating a given bundle to more servers than actually required.

For more information on content replication, see “[Content Replication](#)” in the *ZENworks Primary Server and Satellite Reference*.

## 11.3 Satellite Server Replication

Lets you manage content replication to Satellite devices. You can specify whether or not new Satellites added to the system are assigned to host the bundle. You can also specify that the bundle is included or excluded from being hosted on a specified Satellite. For more information on this page, click [Help](#).

For more information on content replication, see “[Content Replication](#)” in the *ZENworks Primary Server and Satellite Reference*.

## 11.4 Sandbox Settings

Lets you configure the settings for the sandbox version of the bundle. You can enable the Primary Server Replication settings and Satellite Server Replication settings of the published version of the bundle to be applied to the sandbox version of the bundle. You can also enable a device to receive the sandbox version of the dependent bundles if any exists when the parent bundle is assigned to the device. For details, see [Bundle Behavior Based on Content Pre-cache Settings](#) and [Publishing Sandbox](#).

## 11.5 End Point Throttle

Allows you to override the throttle rate settings that have been set for the location or network environment of the target device.

A specific bundle or bundles in a folder can be delivered at maximum speed, by selecting the Ignore endpoint throttle value option at the bundle or the bundle folder level.

For more information on this page, click [Help](#).

## 11.6 Image Bundle Flag Settings

Lets you configure Image bundle settings that are used when restoring an image by applying a bundle.

For more information on Image bundle settings, see the *ZENworks Preboot Services and Imaging Reference*.

# 12 Managing Action and Action Sets

The Actions panel displays the action sets available for the bundle. Depending on the bundle type, the possible action sets are Distribute, Install, Launch, Repair, Uninstall, Terminate, and Preboot. For example, if you select a Windows bundle, all five actions sets are available. If you select an Preboot bundle, Preboot is the only available action set.

You can add an action to any of the available action sets. When you do so, that action is performed whenever the action set is applicable. For example, when you add an action to the Install action set, that action is performed whenever the bundle is installed.

- ♦ [Section 12.1, “Managing Actions,” on page 209](#)
- ♦ [Section 12.2, “Modifying Action Set Options,” on page 212](#)

## 12.1 Managing Actions

When you create a bundle, all [actions](#) are enabled by default, meaning that after you add them to a action set, they run according to the action set’s options. However, not all action sets are enabled by default. You can choose to modify the action sets. For more information on modifying the action set options, see [Section 12.2, “Modifying Action Set Options,” on page 212](#).

The following table lists the tasks you can perform to manage actions associated with the bundle. For more information on the different actions, see [“Actions” on page 65](#).

Task	Steps	Additional Details
Add an action	<ol style="list-style-type: none"><li>1. If you are not already on the appropriate action set tab, click <b>Distribute, Install, Launch, Repair, Uninstall, Terminate, or Preboot</b>.</li><li>2. Click <b>Add</b>, then click the action you want to add.</li><li>3. Fill in the appropriate fields. Click the <b>Help</b> button in the Add Action dialog box for details.</li><li>4. Click <b>Apply</b>.</li></ol>	
Remove an action	<ol style="list-style-type: none"><li>1. If you are not already on the appropriate action set tab, click <b>Distribute, Install, Launch, Repair, Uninstall, Terminate, or Preboot</b>.</li><li>2. Select the check box next to the action (or actions).</li><li>3. Click <b>Remove</b>.</li></ol>	

Task	Steps	Additional Details
Edit an action	<ol style="list-style-type: none"> <li>1. If you are not already on the appropriate action set tab, click <b>Distribute</b>, <b>Install</b>, <b>Launch</b>, <b>Repair</b>, <b>Uninstall</b>, <b>Terminate</b>, or <b>Preboot</b>.</li> <li>2. Click the action's name to display the edit page.</li> <li>3. Modify the desired settings. Click the <b>Help</b> button in the Edit Action dialog box for details.</li> <li>4. After returning to the action set page, click <b>Apply</b>.</li> </ol>	
Reorder the actions	<ol style="list-style-type: none"> <li>1. If you are not already on the appropriate action set tab, click <b>Distribute</b>, <b>Install</b>, <b>Launch</b>, <b>Repair</b>, <b>Uninstall</b>, <b>Terminate</b>, or <b>Preboot</b>.</li> <li>2. Select the check box next to the action you want to move.</li> <li>3. Click <b>Move Up</b> and <b>Move Down</b> to relocate it.</li> <li>4. Click <b>Apply</b>.</li> </ol>	The actions are performed in the order they are listed.
Enable an action to be performed	<ol style="list-style-type: none"> <li>1. If you are not already on the appropriate action set tab, click <b>Distribute</b>, <b>Install</b>, <b>Launch</b>, <b>Repair</b>, <b>Uninstall</b>, <b>Terminate</b>, or <b>Preboot</b>.</li> <li>2. Select the check box next to the action (or actions).</li> <li>3. Click <b>Enable</b>.</li> <li>4. Click <b>Apply</b>.</li> </ol>	
Prevent an action from being performed	<ol style="list-style-type: none"> <li>1. If you are not already on the appropriate action set tab, click <b>Distribute</b>, <b>Install</b>, <b>Launch</b>, <b>Repair</b>, <b>Uninstall</b>, <b>Terminate</b>, or <b>Preboot</b>.</li> <li>2. Select the check box next to the action (or actions).</li> <li>3. Click <b>Disable</b>.</li> <li>4. Click <b>Apply</b>.</li> </ol>	

Task	Steps	Additional Details
Bypass an action that fails	<ol style="list-style-type: none"> <li>1. If you are not already on the appropriate action set tab, click <b>Distribute</b>, <b>Install</b>, <b>Launch</b>, <b>Repair</b>, <b>Uninstall</b>, <b>Terminate</b>, or <b>Preboot</b>.</li> <li>2. Select the check box next to the action (or actions) you want to bypass on failure</li> <li>3. Select the check box in the <b>Continue on Failure</b> column.</li> <li>4. Click <b>Apply</b>.</li> </ol>	
Configure an action set's options	<ol style="list-style-type: none"> <li>1. If you are not already on the appropriate action set tab, click <b>Distribute</b>, <b>Install</b>, <b>Launch</b>, <b>Repair</b>, <b>Uninstall</b>, <b>Terminate</b>, or <b>Preboot</b>.</li> <li>2. Click <b>Options</b>.</li> <li>3. Modify the desired settings, then click <b>OK</b> to return to the action set page.</li> <li>4. Click <b>Apply</b>.</li> </ol>	
Duplicate an action	<p>Enables you to create another action with similar configuration but with a small change.</p> <ol style="list-style-type: none"> <li>1. Select the check box next to the action.</li> <li>2. Click <b>Duplicate</b>.</li> </ol>	
Relocate an action	<p>Enables you to relocate a selected action to a different action set.</p> <ol style="list-style-type: none"> <li>1. Select the check box next to the action.</li> <li>2. Click <b>Relocate</b>.</li> <li>3. Choose the required action set, then click <b>OK</b>.</li> </ol>	
Requirements	<p>The Requirements column displays whether you have configured the requirements or not. If you have not configured the requirements, click the icon in the column and then configure the requirements.</p>	

## 12.2 Modifying Action Set Options

When you create a bundle, all [actions](#) are enabled by default, meaning that after you add them to a action set, they run according to the action set's options. However, not all action sets are enabled by default. The Install, Launch, and Terminate action sets are enabled, meaning that after you add an action, it runs on assigned devices according to its action set's options. The Uninstall action set is not enabled by default.

The following sections contain information about modifying action set options and enabling the Uninstall action set:

- ♦ [Section 12.2.1, "Install Action Set Options," on page 212](#)
- ♦ [Section 12.2.2, "Launch Action Set Options," on page 213](#)
- ♦ [Section 12.2.3, "Uninstall Action Set Options," on page 213](#)
- ♦ [Section 12.2.4, "Terminate Action Set Options," on page 214](#)

### 12.2.1 Install Action Set Options

The Install Options dialog box lets you specify the how often the bundle's install actions are performed on managed devices and to specify if users can postpone the bundle's installation. If the install action set or its options are modified and the bundle is re-published, then when the bundle is installed or launched, the install action set is invoked again, even if it has been set to install only once.

Bundle Change Management causes a change in the behavior of the Install action set on a device. For more information on the changed behavior, see [Appendix C, "How Bundle Versions Affect an Install Action Set," on page 251](#).

- 1 In the ZENworks Control Center, click the **Bundles** tab.
- 2 In the **Bundles** list, click a bundle's underlined link in the **Name** column to display its Summary page.
- 3 Click the **Actions** tab, then click the **Install** tab.
- 4 Click **Options** to display the Install Options dialog box.
- 5 Specify how often you want the bundle's install actions performed:
  - Install once per device:** Performs the bundle's install actions once on each managed device.
  - Install once per user per device:** Performs the bundle's install actions once for each user on each managed device.
  - Install always:** Performs the bundle's install action each time the bundle is run on the managed device.
- 6 Specify whether to allow users to postpone performing the bundle's install actions and specify the number of postpones to allow.
  - Always allow postpones:** Allow the user to postpone the installation an unlimited number of times.
  - Never allow postpones:** Do not allow the user to postpone the installation.
  - Limit postpones to:** Specify the number of times that the user can postpone the installation.
- 7 Click **OK**, then click **Apply**.

## 12.2.2 Launch Action Set Options

The Launch Options dialog box lets you configure how often the bundle's launch actions are performed on managed devices. By default, the launch actions are performed according to the bundle's or when the user launches the bundle using its shortcut (from the Application Window, desktop, and so forth). If the launch action set or its options are modified and the bundle is re-published, then when the bundle is launched, the launch action set will be invoked again even if it has been set to launch once.

As a part of the Launch Action, it is recommended that you only add an action that starts an installed application and not an action required to install an application.

- 1 In the ZENworks Control Center, click the **Bundles** tab.
- 2 In the **Bundles** list, click a bundle's underlined link in the **Name** column to display its Summary page.
- 3 Click the **Actions** tab, then click the **Launch** tab.
- 4 Click **Options** to display the Launch Options dialog box.
- 5 Fill in the fields:

Select this option to configure the bundle's launch actions, then select one of the following options. If you do not select this option (the default), the launch actions are performed each time a user launches the application contained in the bundle.

- ♦ **For each device:** Launches the bundle's actions once on each managed device.
- ♦ **For the first user that logs in:** Launches the bundle's actions once on each managed device when the first user logs in to that device. If subsequent users log in to the device, the action set is not launched. If you select this option, the bundle's icon is removed from the device's Application Window, desktop, and so forth.
- ♦ **For every user that logs in:** Launches the bundle's actions for every user that logs in to the device.

- 6 Click **OK**, then click **Apply**.

## 12.2.3 Uninstall Action Set Options

The Uninstall Options dialog box lets you enable the application to be uninstalled, allow the user to perform the uninstall, and specify that the application is uninstalled if it is not used with in a specified number of days.

When you create a bundle, the Undo Install action is enabled by default; however, the Uninstall Action Set is not enabled. Therefore, in order for any actions in the action set to run (including the Undo Install action), you must enable the action set.

- 1 In the ZENworks Control Center, click the **Bundles** tab.
- 2 In the **Bundles** list, click the bundle's underlined link in the **Name** column to display its Summary page.
- 3 Click the **Actions** tab, then click the **Uninstall** tab.
- 4 Click **Options** to display the Uninstall Options dialog box.
- 5 Select the **Enable Uninstall** option. The following uninstall options are available only if **Enable Uninstall** option is selected:

### User Options:

Specify whether the user should be allowed to uninstall or cancel the uninstallation of an application from a device:

**Allow User to perform uninstall:** Select this option to enable users to remove the application from their devices.

**Display message to the user before uninstalling the application:** Select this option to specify that a message warning the user that the application is going to be uninstalled from the device is displayed.

**Allow user to cancel the uninstallation of the application:** Select this option to specify whether the user can cancel the uninstallation of the application. You can enable this option only if the **Display message to the user before uninstalling the application** option is enabled.

### Blocked Assignment Option:

**Uninstall application:** Select this option to uninstall the blocked application from the device.

### Other Options:

Specify additional options to enable the uninstallation of the application from the device:

**Uninstall application if not used within \_ days:** Select this option to automatically remove the application if the user has not run it within the specified number of days (the default is 30).

**Ignore Chained Dependencies:** Select this option to enable the uninstallation of a dependent application that is referenced by two or more applications. For example, consider three applications (A, B, and C), where C is the dependent application. Assume application A installs application C, and application B uninstalls application C. Application C is uninstalled only if **Ignore Chained Dependencies** is selected.

**Do not uninstall application on unassignment:** Select this option to prevent the application from being uninstalled after it is unassigned from the device or user.

- 6 Click **OK**, then click **Apply**.

## 12.2.4 Terminate Action Set Options

The Terminate Options dialog box lets you specify that the bundle's actions can be terminated. This setting is used if a bundle has an availability . For example, if a bundle can be installed only between 1 p.m. and 5 p.m. and the bundle is in the process of being installed at 5 p.m., the installation process terminates.

- 1 In the ZENworks Control Center, click the **Bundles** tab.
- 2 In the **Bundles** list, click the bundle's underlined link in the **Name** column to display its Summary page.
- 3 Click the **Actions** tab, then click the **Terminate** tab.
- 4 Click **Options** to display the Terminate Options dialog box.
- 5 Select or deselect the **Enable Terminate** check box.
- 6 Click **OK**, then click **Apply**.

# 13 Accessing the Bundle Dashboard

The bundle dashboard consists of 5 default dashlets that display a summary of the assignment status and deployment status (distribute status, install status, and launch status) of an individual bundle. The dashlets can be grouped into 3 main categories:

- ♦ **Device Assignment Status:** Displays the assignment status of a bundle to devices.
- ♦ **User Assignment Status:** Displays the assignment status of a bundle to users.
- ♦ **Deployment Status:** A set of dashlets that displays the distribution, install and launch status of a bundle across both user and device assignments.

These dashlets also enable you to perform certain quick tasks such as uninstalling a bundle and blocking a bundle. For more information on pinning, unpinning and other dashboard actions, see [ZENworks 2020 Update 3 Dashboard Reference](#).

To navigate to the bundle dashlets, you need to click **Bundles** in the left pane in ZCC, select a bundle and then click the **Dashboard** tab. You can pin these individual dashlets to the Bundle Home page, which is the Dashboard tab displayed when you click the **Bundles** menu in ZCC. You can also pin the dashlet to the main Home Dashboard page.

This chapter includes the following information:

- ♦ [Section 13.1, “Device Assignment Status,” on page 215](#)
- ♦ [Section 13.2, “User Assignment Status,” on page 219](#)
- ♦ [Section 13.3, “Bundle Deployment Status,” on page 222](#)
- ♦ [Section 13.4, “Obtaining Data from Vertica,” on page 231](#)
- ♦ [Section 13.5, “Reduce High CPU Utilization while Computing User Assignment Dashlet Data,” on page 231](#)

## 13.1 Device Assignment Status

This dashlet displays the device assignment status for an individual bundle. Data in the device assignment status dashlet is displayed based on the effective assignment calculation that is periodically computed by the ZENworks server. The dashlet data is also displayed based on the information reported back by the device on whether the assignment is effective on the device or not.

When you access this dashlet immediately after assigning a bundle to a device, then no data will be displayed, as the effective assignment calculation is not yet computed by the ZENworks server. To trigger effective assignments immediately, click the Refresh dashlet icon, after which you can view the assignment status in the dashlet.

The assignment status information is categorized as:

- ♦ **Effective:** Indicates that the device meets the system requirements set for the bundle and the assignment is effective for the device.

- ♦ **Not Effective:** Indicates that the device does not meet the system requirements set for the bundle and the assignment is not effective for the device.
- ♦ **Blocked:** Indicates that the bundle has been blocked from executing on the device.
- ♦ **Pending:** Indicates that the assignment status of the bundle is yet to be determined due to reasons such as, the bundle is just assigned to the device, the device has not yet reported the status of the assignment, or the version of the agent is older than the ZENworks 2020 version.
- ♦ **Unknown:** Indicates that the server is unable to determine the status of the bundle.

To determine how best to configure the dashlet for your organization's needs, you can ask questions such as:

- ♦ How many devices to which the bundle is assigned, do not meet the system requirements of the bundle?
- ♦ How many duplicate assignments have been made to the device?

**Filter the data displayed:** To filter the data that the dashlet displays, expand and modify any of the sections in the Filter panel. The filters include Device Folders, Device Groups, Operating System, Device Type, and the Agent Version. Additionally, the following filters are also available based on which the displayed data can be modified:

Filter	Description
Device Folders	View devices based on the device folder to which the devices belong.
Device Groups	View devices based on the device group to which the devices belong.
Operating System	View devices based on the operating system version on the device.
Device Type	View devices based on whether the device is a server, workstation or a mobile device.
Agent Version	View devices based on the agent version installed on the device.
Bundle Version	View devices based on the version of the bundle assigned to the device: <ul style="list-style-type: none"> <li>♦ Published</li> <li>♦ Sandbox version</li> </ul>
Assignment Status	View devices based on the assignment status of the bundle: <ul style="list-style-type: none"> <li>♦ Unknown</li> <li>♦ Effective</li> <li>♦ Not Effective</li> <li>♦ Pending</li> <li>♦ Blocked</li> </ul>

Filter	Description
Assignment Status Time	View devices based on the time at which the assignment status of the bundle was last updated or modified.
Bundle Assignment	<p>View devices based on the manner in which the bundle was assigned, that is, whether the bundle was assigned directly or through a bundle group. On selecting the bundle name, only those devices to which the bundle was directly assigned, are displayed.</p> <p>On selecting the bundle group, all devices to which the bundle was assigned through a group are displayed.</p>
Device Assignment	<p>View devices based on the manner in which the device was assigned, that is, whether the device was assigned directly or whether the bundle was assigned to a device group or folder. On selecting the device name, only those devices that were direct assignments, are displayed.</p> <p>On selecting the device group or device folder, only those devices that were part of the device group or folder to which the bundle was assigned, are displayed.</p>

**The Device Assignment Status panel:** Displays the devices that meet the criteria defined in the Filter panel. You can also filter the list by searching for a device name. The columns listed in this panel are:

Column Name	Description
Device	The name of the device to which the bundle is assigned.
Agent Version	The ZENworks agent version installed on the device.
Bundle Version	The version of the bundle assigned to the device is displayed. By default the latest published version is displayed. The bundle version might be displayed as unknown, if the bundle is yet to be processed on the device.
Assignment Status	<p>The status of the assignment based on the selected bundle version assigned to the device is displayed. The statuses are:</p> <ul style="list-style-type: none"> <li>♦ Unknown</li> <li>♦ Effective</li> <li>♦ Not Effective</li> <li>♦ Pending</li> <li>♦ Blocked</li> </ul>

Column Name	Description
Assignment Status Time	View devices based on the time at which the assignment status of the bundle was last updated or modified.
Status Processed Time	View devices based on the time at which the status of the bundle, such as the assignment status or the deployment status, was last updated or modified
Not Effective Reason	The reason for the bundle to be not effective on the device. Click the link to get more information on the status.
Bundle Assignment	The manner in which the bundle is assigned. If the bundle is directly assigned to the device and a bundle group, to which the bundle belongs, is assigned to the device, then 2 is displayed. It determines the different ways in which the bundle is assigned to the device and helps in identifying duplicate assignments made for the device.
Device Assignment	The manner in which the device is assigned. If the bundle is assigned directly to the device and the bundle is assigned to a device group to which the device belongs, then 2 is displayed. It determines the different ways in which the bundle is assigned to the device and helps in identifying duplicate assignments made for the device.
Blocked Time	The time at which the bundle was blocked from executing on the device. The time displayed is based on the local time on the server from which the bundle was blocked.
Device Folder	The device folder to which the device belongs is displayed.
Device Type	The type of device, that is, Servers, Workstation or Mobile Device.
Operating System	The operating system version on the device.

**Execute actions in the Device Assignment Status panel:** The actions that you can execute on this panel are:

Task	Description
Block Bundle	Blocks the assignment from executing on the device. If the blocked bundle uninstalls from the device, the assignment status changes to Pending after the server side computation.
Unblock Bundle	Unblocks a bundle assignment of a blocked bundle. The bundle assignment is reinstated and the bundle is executed on the device.

Task	Description
Refresh Device	Refreshes the device so that any pending actions can immediately be initiated on the device. This quick task updates all information (bundle, policy, configuration settings, registration, and so forth) on the selected devices.
Retrieve Bundle Status	Obtains the latest bundle status from the selected devices and rolls up this information to the server. You can select from one of the following options: <ul style="list-style-type: none"> <li>♦ <b>Differential scan:</b> obtains the change in status of the bundles on the device since the last complete scan.</li> <li>♦ <b>Complete scan:</b> runs a full scan to obtain the current status of all the bundles on the device.</li> </ul>

## 13.2 User Assignment Status

This dashlet displays the assignment status of an individual bundle assigned to users. Along with the assignment status, the dashlet chart also displays the total number of users to whom the bundle is assigned and the number of unique devices into which the users are logged-in.

For example:

Scenario 1: A bundle is assigned to 2 users who have logged-into to the same device, Device 1. The dashlet chart will display the Assigned Users count as 2 and the Logged-in Devices count as 1. The number of records displayed in the **Status Details** panel will be 2.

Scenario 2: A bundle is assigned to 2 users, User A and User B. User A has logged-into Device 1 and Device 2. User B has logged-into Device 2. The dashlet chart will display the Assigned Users count as 2 and the Logged-in Devices count as 2. The number of records displayed in the **Status Details** panel will be 3.

The assignment status information of a bundle is categorized as:

- ♦ **Effective:** Indicates that the system requirements have met on a user-assigned bundle for a given device. This is determined only when the user logs-in to the device.
- ♦ **Not Effective:** Indicates that the system requirements have not met on a user-assigned bundle for a given device. This is determined only when the user logs-in to the device.
- ♦ **Blocked:** Indicates that the bundle assignment has been blocked for a specific user.
- ♦ **Unknown:** Indicates that the bundle assignment for a user exists but the server is unable to determine the status of the bundle as the user might not have logged into the device or the bundle has not been used on the device.

To determine how best to configure the dashlet for your organization's needs, you can ask questions such as:

- ♦ How many devices to which the user is logged-in, do not the meet the system requirements of the bundle?
- ♦ How many users are yet to log-in to their devices and install the bundle?

**Filter the data displayed:** To filter the data that the dashlet displays, expand and modify any of the sections in the Filter panel. The filters include Device Folders, Device Groups, Operating System, Device Type, and Agent Version. Additionally, the following filters are also available based on which the displayed data can be modified:

Filter	Description
Device Folders	View users based on the device folder to which their logged-in devices belong.
Device Groups	View users based on the device group to which their logged-in devices belong.
Operating System	View users based on the operating system version on their logged-in device.
Device Type	View users based on whether the logged-in device is a server, workstation or a mobile device.
Agent Version	View users based on the agent version installed on the logged-in device.
Status Processed Time	View users based on the time at which the status of the bundle, such as the assignment status or the deployment status, was last updated or modified.
Bundle Assignment	<p>View users based on the manner in which the bundle was assigned, that is, whether a bundle was assigned directly or through a bundle group. On selecting the bundle name, only those users to whom the bundle was directly assigned, are displayed.</p> <p>On selecting the bundle group (if any) then all users to whom the bundle was assigned through a group are displayed.</p> <p>Also, based on your selection, the number of users displayed in the dashlet chart will also be updated.</p>
Bundle Version	<p>View users based on the version of the bundle assigned:</p> <ul style="list-style-type: none"> <li>◆ Published version</li> <li>◆ Sandbox version</li> </ul>
Show Logged-in Users Only	Select <b>Yes</b> if you want to view only those users who are either currently logged-in or had logged-in to their devices at some point in time. By default, all the users to whom the bundle is assigned, are displayed.
Assignment Status	<p>The assignment status of the bundle:</p> <ul style="list-style-type: none"> <li>◆ Effective</li> <li>◆ Not Effective</li> <li>◆ Blocked</li> <li>◆ Unknown</li> </ul>

**The User Assignment Status panel:** displays the devices that meet the criteria defined in the Filter panel. This panel also displays the reason for a bundle to be not effective on the device. You can also filter the list by searching for a user name.

Column Name	Description
User	The name of the user to whom the bundle is assigned.
Device	The name of the device. This is displayed only if the user has logged-in to the device.
Status Processed Time	The time at which the status of the bundle, such as the assignment status or the deployment status, was last updated or modified.
Bundle Version	The version of the bundle for which the record is displayed. By default the latest published version is displayed. The bundle version might be displayed as Unknown, if the bundle is yet to be processed on the device.
Assignment Status	<p>The status of the assignment based on the selected bundle version assigned to the device is displayed. The statuses are:</p> <ul style="list-style-type: none"> <li>♦ Unknown</li> <li>♦ Effective</li> <li>♦ Not Effective</li> <li>♦ Blocked</li> </ul>
Not Effective Reason	The reason for the bundle to be not effective for a user logged-into a given device.
Blocked Time	The time at which the bundle was blocked from executing on the device.
Bundle Assignment	<p>The manner in which the bundle is assigned. If the individual bundle is directly assigned to the user and a bundle group, to which the bundle belongs, is assigned to the user then the value 2 is displayed.</p> <p>It determines the different ways in which the bundle is assigned to the device and helps in identifying duplicate assignments made for the device.</p>

**Execute action from the User Assignment Status panel:** The actions that you can execute from this panel are:

Task	Description
Block Bundle	To block the bundle for the selected user. This would block the execution of the bundle on all devices to which the user logs in. If the blocked bundle uninstalls from the device to which the user logs-in, the assignment status of the bundle changes to Pending after the server side computation.

Task	Description
Unblock Bundle	To unblock an already blocked bundle for selected users.
Refresh Device	To refresh the device so that any pending actions can immediately be initiated on the device. This quick task updates all information (bundle, policy, configuration settings, registration, and so forth) on the selected devices.
Retrieve Bundle Status	Obtains the latest bundle status from the selected devices and rolls up this information to the server. You can select from one of the following options: <ul style="list-style-type: none"> <li>♦ <b>Differential scan:</b> obtains the change in status of all the bundles in the selected device since the last complete scan.</li> <li>♦ <b>Complete scan:</b> runs a full scan to obtain the current status of all the bundles in the selected device.</li> </ul>

## 13.3 Bundle Deployment Status

Bundle deployment status is a set of dashlets that provide a summary of the bundle status for the distribute, install and launch action sets across both user and device assignments. The Dashboard feature provides default views for each of these action sets. However, you can configure and view each of these action sets within a single dashlet. The status of the deployment status dashlets is gathered when the devices reports the bundle status information to the server. Therefore, when you immediately access one of the deployment status dashlets, after assigning a bundle to a device or a user, no data will be displayed for that version of the bundle, till the bundle is distributed, installed or launched on the device and the device reports this information back to the server. If you want this information to be reported back to the server immediately, click the **Retrieve Bundle Status** quick task.

The bundle status information for the distribute, install and launch action set is categorized as:

- ♦ **Success:** Indicates that the contents of the bundle are successfully distributed, installed or launched on the device.
- ♦ **Failure:** Indicates that the contents of the bundle have failed to distribute, install or launch on the device.
- ♦ **Partial Success:** Indicates that the distribute, install or launch of the bundle is partially successful if the bundle is executed, even though one or more of the bundle actions that was set to **Continue on Failure** have failed.
- ♦ **Unknown:** Indicates that the distribute, install or launch status of the bundle could not be determined by the ZENworks Server. For example, the status will be unknown if the agent did not contact the ZENworks Server after the bundle is assigned to the device. For more information on the scenarios in which the deployment status will be Unknown, see [Unknown Status Scenarios](#).

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**NOTE:** The Launch status will not be displayed for mobile bundles in the Launch Status dashlet, as no Launch action set exists for mobile bundles.

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To determine how best to configure the dashlet for your organization's needs, you can ask questions such as:

- ♦ How many instances of bundle failures exist and need to be addressed?

- ♦ How many instances of the bundle assignment made to the device are currently not active but the bundle is still installed on the device?
- ♦ How many devices do not have the latest published version of the bundle deployed on them?
- ♦ What is the time period for which you want to view the bundles that have failed to deploy?

**Group the data displayed:** You can group data to be displayed in the chart based on the action set, that is, distribute, install, or launch. For example, in the Bundle Distribution Status dashlet, you can change the **Group Chart Data By** value to **Install**, to view the install status of the bundle in the dashlet chart. However, by changing the **Group Chart Data By** value, the columns in the Status panel will not be updated. You will have to manually select the relevant columns associated with the **Group Chart Data By** value.

The dashlet chart will display the instances of success, failure and other statuses for the selected action set. Therefore, for a given bundle-device combination, multiple records might be displayed in the chart.

**Filter the data displayed:** To filter the data that the dashlet displays, expand and modify any of the sections in the Filter panel. Along with general filters, this panel also includes tabs that contain filters specific to each action set (Distribute, Install, and Launch).

The default dashlets for each action set displays data based on the latest published version of the bundle. If you update the **Group Chart Data By** field to another action set in any of the default dashlets, to ensure accuracy of data, select the appropriate bundle version and other values in the corresponding filter of the updated action set. For example, in the Bundle Distribution Status dashlet, if you change the **Group Chart Data By** value to **Install**, select the **Installed Version as Published (Latest Version)** in the Install tab, which will enable you to view the install status of the current published version of the bundle.

If you apply filters in each of the action set tabs, the deployments that meet the conditions selected in each tab, are displayed.

For example:

Scenario 2: Consider you have 2 versions of a bundle of which version 2 is the published version of the bundle. In the default distribution status dashlet, you modify the **Group Chart Data By** to **Install**. In the filters, you select the **Distribution Status** in the **Distribute** filter as success, specify the **Install Version** in the **Install** filter as 1 and **Install Status** in the **Install** filter as **Success**. The **Status Details** panel will display those deployments for which the distribution status was successful for the latest published version of the bundle and the install status was successful for version 1 of the bundle. The dashlet chart will display the status based on the Install action set selected in the **Group Chart Data By** section.

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**NOTE:** You need to have relevant device rights to view deployments in this dashlet, even if the bundle is a user assigned bundle. The results are displayed based on the rights that you have on devices. Thus 2 administrators might see different sets of devices based on their rights.

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## General

The filters in this tab include Device Folders, Device Groups, Device Type, Platform, Operating System and Agent Version. Additionally, this tab also includes the following filters:

Filter	Description
Device Folders	View deployments based on the device folder to which the devices belong.
Device Groups	View deployments based on the device group to which the devices belong.
Device Type	View deployments based on whether the device is a server, workstation or a mobile device.
Operating System	View deployments based on the operating system version on the device.
Platform	View deployments based on the operating system on the device.
Agent Version	View deployments based on the agent version installed on the device.
Status Processed Time	View deployments based on the time at which the bundle status was last processed by the ZENworks Server.
Assignment Source	View deployments based on user or device assignments.

## Distribute

Filter	Description
Distributed Version	<p>View deployments based on any of the following versions of the bundle.</p> <ul style="list-style-type: none"><li>♦ All lets you view the distribution status for all the versions of the bundle</li><li>♦ Published (Latest Version) lets you view the distribution status of the current published version of the bundle. This is the default value.</li><li>♦ Published (Older Version) lets you view the distribution status of the older versions of the bundle.</li><li>♦ Sandbox version lets you view the deployments of the sandbox version of the bundle.</li><li>♦ Custom lets you view the deployment status of a specified version of the bundle. You can specify a comma separated list of versions. The Sandbox version can be represented with value -1.</li><li>♦ Unknown lets you view the status for those deployments whose bundle version could not be determined. If this filter is selected, then the Distributed Version with empty values are displayed in the Status Details panel.</li></ul>
Distribution Time	<p>View deployments based on the date or time at which the action to distribute was performed on the device.</p>
Distribution Status	<p>View deployments based on the following statuses:</p> <ul style="list-style-type: none"><li>♦ Success</li><li>♦ Partial Success</li><li>♦ Failure</li><li>♦ Unknown</li></ul>

## Install

Filter	Description
Installed Version	<p>View deployments based on any of the following versions of the bundle:</p> <ul style="list-style-type: none"><li>♦ All lets you view the install status for all the versions of the bundle.</li><li>♦ Published (Latest Version) lets you view the install status of the current published version of the bundle. This is the default value.</li><li>♦ Published (Older Version) lets you view the install status of the older versions of the bundle.</li><li>♦ Sandbox version lets you view the deployments of the sandbox version of the bundle.</li><li>♦ Custom lets you view the deployment status of a specified version of the bundle. You can specify a comma separated list of versions. The Sandbox version can be represented with value -1.</li><li>♦ Unknown lets you view the status for those deployments whose bundle version could not be determined by the server. If this filter is selected, then the Installed Version with empty values are displayed in the Status Details panel.</li></ul>
Install Time	<p>View deployments based on the date or time at which the action to install the bundle was performed on the device.</p>
Install Status	<p>View deployments based on the following statuses:</p> <ul style="list-style-type: none"><li>♦ Success</li><li>♦ Partial Success</li><li>♦ Failure</li><li>♦ Unknown</li></ul>
Installing Parent Bundle	<p>View deployments based on the parent bundle that last installed the bundle. Click <a href="#">Add or Remove</a> to specify the parent bundle.</p>

## Launch

Filter	Description
Launched Version	<p>View deployments based on any of the following versions of the bundle:</p> <ul style="list-style-type: none"><li>♦ All lets you view the launch status for all the versions of the bundle</li><li>♦ Published (Latest Version) lets you view the launch status of the current published version of the bundle. This is the default value.</li><li>♦ Published (Older Version) lets you view the launch status of the older versions of the bundle.</li><li>♦ Sandbox version lets you view the deployments of the sandbox version of the bundle.</li><li>♦ Custom lets you view the deployment status of a specified version of the bundle. You can specify a comma separated list of versions. The Sandbox version can be represented with value -1.</li><li>♦ Unknown lets you view the status for those deployments whose bundle version could not be determined by the server. If this filter is selected, then the Launch Version with empty values are displayed in the Status Details panel.</li></ul>
Launch Time	<p>View deployments based on the date or time at which the action to launch the bundle was performed on the device.</p>
Launch Status	<p>View deployments based on the following statuses:</p> <ul style="list-style-type: none"><li>♦ Success</li><li>♦ Partial Success</li><li>♦ Failure</li><li>♦ Unknown</li></ul>
Launching Parent Bundle	<p>View deployments based on the parent bundle that last launched the bundle. Click <b>Add or Remove</b> to specify the bundles.</p>

## Unknown Status Scenarios

The scenarios in which the deployment status will be displayed as Unknown are:

**Scenario 1:** When you access one of the Deployment Status dashlets, immediately after assigning a bundle to a device or user, no data will be displayed till the device reports the bundle status information. In the meantime, if you click the Refresh Dashlet icon, the status of the record will change to Unknown. However, you can view this record only if you change the bundle version filter from the default **Published (Latest Version)** to **All** or **Unknown**.

**Scenario 2:** A bundle is assigned to a Device Group that contains three devices. The bundle is scheduled to deploy at a specific time. However, since all three devices are in different time zones, the deployment status is rolled back for Device 1. The deployment status dashlet will display only one record for the latest published version of the bundle. If you modify the bundle version filter to All, then all three records will be displayed and the status for Device 2 and Device 3 will be Unknown till the deployment status information is reported back by these devices.

**The Status Details panel:** The Status Details panel displays the devices that meet the criteria that you defined in the Filter panel. You can also use the search option to further filter the displayed records, based on the device name, user name, distribution message, install message, and launch message. However, as some of these columns, such as distribution message and install message, might be hidden based on the selected dashlet type, no records will be displayed if a search is performed on the columns that are not visible in the **Status Details** panel.

The Status Details panel displays only those columns that are relevant to the dashlet and all other columns are hidden in the default view. For example, in the default Bundle Distribution Status dashlet, the columns relevant to distribution status are displayed. To view the install and launch status related columns within this dashlet, you can click the hamburger menu appearing in the right corner Status Details panel and select the relevant columns.

Column Name	Description
Device	Indicates the name of the device.
Device Folder Path	The device folder to which the device belongs, is displayed.
Operating System	Indicates the operating system version on the device.
Agent Version	Indicates the ZENworks agent version installed on the device.
User Name	Indicates the name of the user, if the user has logged-in to the device at the time the bundle was executed. The user name is displayed only when the bundle is assigned to a user.
Status Processed Time	View deployments based on the time at which the bundle status was last processed by the ZENworks Server.
Distributed Version	Indicates the distributed version of the bundle.
Distribution Status	Indicates the distribution status for a specific distributed version of the bundle. The statuses can be Success, Partial Success, Failure or Unknown.
Distribution Time	Indicates the date or time at which the action to distribute was performed.
Distribution Message	Indicates the reason (if any) for failed or partially distributed bundles. This message is also displayed on the successful distribution of a mobile bundle.
Distribution Duration	Indicates the time taken to distribute the bundle on the device.

Column Name	Description
Installed Version	Indicates the installed version of the bundle.
Install Status	Indicates the installation status for the specific installed version of the bundle. The statuses can be Success, Partial Success, Failure or Unknown.
Installation Time	Indicates the date or time at which the action to distribute was performed.
Install Message	Indicates the reason (if any) for failed or partially installed bundles. This message is also displayed on the successful installation of a mobile bundle.
Installing Parent	Indicates the parent bundle (if any) to which the bundle belongs that last installed the bundle.
Install Duration	Indicates the time taken to install the bundle on the device.
Launched Version	Indicates the launch version of the bundle.
Launch Status	Indicates the launch status for the specific launch version of the bundle. The statuses can be Success, Partial Success, Failure or Unknown.
Launch Time	Indicates the date or time at which the action to launch was performed.
Launch Message	Indicates the reason (if any) for failed or partially launched bundles. This message is also displayed on the successful launch of a mobile bundle.
Launching Parent	Indicates the parent bundle (if any) to which the bundle belongs that last launched the bundle.
Launch Duration	Indicates the time taken to launch the bundle on the device.
Device Type	Indicates the type of device, that is, server, workstation or mobile devices.
Platform	Indicates the operating system on the device.
Assignment Source	Indicates whether the assignment is a user or device assignment.
Effective Assignment Exists	Indicates whether the assignment is an active and an effective assignment. For example: If a bundle that is deployed to the device is disabled, the column will display <b>No</b> as the value, as the assignment is currently not effective on the device.

For information about other actions and options you have in the Status Details panel, see the following table:

---

**NOTE:** After implementing the quick tasks, it is recommended that you click the Refresh Dashlet icon to view the updated data in the dashlet grid.

---

Task	Description
Install Bundle	This quick task installs the bundle immediately on one or more devices. For more information, see <a href="#">Bundle Quick Tasks</a> .
Uninstall Bundle	Uninstalls the bundle immediately on one or more devices. For more information, see <a href="#">Bundle Quick Tasks</a> .
Launch Bundle	Launches the bundle immediately on one or more devices. For more information, see <a href="#">Bundle Quick Tasks</a> .
Block Assignment	Blocks the bundle assignment from executing on the device. For a blocked bundle, the Deployment Status dashlet will display the last known status of the bundle and the Assignment Exists column will display 'No' as the value. If the blocked bundle uninstalls from the device, then the Deployment Status will change to Unknown, which can be viewed only if the Bundle Version filter is selected as Unknown or All.
Unblock Assignment	Unblocks an already blocked bundle on the device.
Refresh Device	Refreshes the device so that any pending actions can immediately be initiated on the device. This quick task updates all information (bundle, policy, configuration settings, registration, and so forth) on the selected devices.
Retrieve Bundle Status	Obtains the latest bundle status from the selected devices and rolls up this information to the server. You can select from one of the following options: <ul style="list-style-type: none"><li>♦ <b>Differential scan:</b> obtains the change in bundle status for all the bundles on the selected device since the last complete scan.</li><li>♦ <b>Complete scan:</b> runs a full scan to obtain the current status of all the bundles on the selected device.</li></ul>

---

**NOTE:** A message displayed in the collapsed and expanded views of the bundle dashlets, indicates the time at which the bundle status was last computed by the ZENworks server. There might be discrepancies with the time displayed in the message in scenarios where the device has rolled back status information before bundle status computation on the server.

To resolve these discrepancies and to view the latest bundle status for the selected bundle, click the Refresh Dashlet icon on any one of the dashlets of the selected bundle.

Also, if the bundle dashlets are configured to read data from the Vertica database, then the data displayed in the bundle dashlets might not be the latest, as data from the existing RDBMS syncs with the Vertica database at an interval of 10 minutes. To view the latest data, click the Refresh Dashlet icon, wait for 10 minutes and click the Refresh Dashlet icon again.

---

## 13.4 Obtaining Data from Vertica

The Vertica database enables you to process data for the dashlets at much faster speeds compared to a traditional RDBMS. You can configure Vertica, if you want to reduce any delays that you might face while querying large volumes of data in the dashlets. For more information on configuring Vertica, see the [Vertica Reference](#) documentation.

After configuring Vertica in the zone, data for the bundle dashlets will continue to be processed from the RDBMS. However, if you want the Device Assignment Status dashlet and Deployment Status dashlets (Distribution, Launch, and Install) to read data from the Vertica database, run the following queries based on the dashlet type:

- ♦ For Deployment Status dashlets:

```
INSERT INTO ZOPAQUEDATA VALUES ((SELECT zuid FROM
zzone), 'use.vertica.for.bundle.deployment.status', 'true')
```

- ♦ For Device Assignment Status dashlet:

```
INSERT INTO ZOPAQUEDATA VALUES ((SELECT zuid FROM
zzone), 'use.vertica.for.bundle.device.assignment.status', 'true')
```

## 13.5 Reduce High CPU Utilization while Computing User Assignment Dashlet Data

To compute data for the User Assignment dashlet, common user source related data is obtained in advance from the LDAP and stored in the memory. This data is collected when the User Assignment dashlet is loaded or when it is refreshed. However, this might lead to high CPU utilization and subsequently the User Assignment dashlet might take a while to load.

You can exclude obtaining data related to groups other than those of user groups from the LDAP, for example, you can exclude workstation groups. This might reduce the computation time and high CPU utilization. To exclude the groups, you need to add exclusion filters in the file BUADashlet-LDAPExclusions.xml available in the following locations:

On a Windows Server: %ZENSERVER\_HOME%\conf\buaDashlet\BUADashlet-LDAPExclusions.xml

On a Linux Server: /etc/opt/microfocus/zenworks/buaDashlet/BUADashlet-LDAPExclusions.xml

By default, the file does not have any filters:

```
<LDAPExclusions>
  <GroupExclusions>
    <CNFilters>
      <CNFilter></CNFilter>
    </CNFilters>
  </GroupExclusions>
</LDAPExclusions>
```

For example, if all workstation groups in the zone follow a specific naming convention and it ends with \*GP C and then edit the file and add the following filter:

```
<LDAPExclusions>
  <GroupExclusions>
    <CNFilters>
      <CNFilter>*GP C</CNFilter>
    </CNFilters>
  </GroupExclusions>
</LDAPExclusions>
```

All groups that match with the common name ending with \*GP C are excluded from being queried from the LDAP. You can also add multiple filters in this file:

```
<LDAPExclusions>
  <GroupExclusions>
    <CNFilters>
      <CNFilter>*GP C</CNFilter>
      <CNFilter>*GP W</CNFilter>
    </CNFilters>
  </GroupExclusions>
</LDAPExclusions>
```

# 14 Accessing Bundles on a Managed Device

The ZENworks Agent is part of the ZENworks Configuration Management software that lets your administrator manage devices over the network.

---

**NOTE:** This section contains information from the Agent online Help system and is written from the perspective of the end-user.

---

The ZENworks Agent, commonly referred to as the Agent, provides services that help your administrator do the following without visiting devices:

- ♦ Deliver software, patches, and other files to your device
- ♦ Manage policies that determine the behavior of your device.
- ♦ Take inventory of your device's hardware and software.
- ♦ Access your device from a remote location to troubleshoot and fix problems with hardware and software.

Software applications and other files are distributed to your device as bundles. A bundle contains all of the content (files, etc.) and instructions (registry modifications, shortcut information, etc.) required to install the software on the device.

The following information discusses how to manage bundles by using the ZENworks Agent:

- ♦ [Section 14.1, "Bundles vs. Applications," on page 233](#)
- ♦ [Section 14.2, "User-Assigned vs. Device-Assigned Bundles," on page 234](#)
- ♦ [Section 14.3, "Accessing Bundles," on page 234](#)
- ♦ [Section 14.4, "Understanding Bundle Icons," on page 238](#)
- ♦ [Section 14.5, "Launching a Bundle," on page 239](#)
- ♦ [Section 14.6, "Postponing a Bundle Download," on page 239](#)
- ♦ [Section 14.7, "Repairing a Bundle," on page 239](#)
- ♦ [Section 14.8, "Viewing a Bundle's Properties," on page 240](#)
- ♦ [Section 14.9, "Uninstalling a Bundle," on page 240](#)

## 14.1 Bundles vs. Applications


Bundles are different than standard applications, such as Windows Notepad, that already reside on your device. When you double-click a bundle to launch it, the ZENworks Agent might first complete a variety of distribution tasks before the application is launched, including installing the application

files, running scripts, and changing the device's registry, specific INI files, or environment variables. These tasks are all configured by your administrator to ensure that the application runs correctly on your device.

In some instances, a bundle's icon appears dimmed or grayed out. This indicates that your device does not meet the requirements that the administrator defined for the application, or the bundle is not d to be available to you at that time. The Agent does not distribute the application to your device until the requirements are met or the is appropriate.

## 14.2 User-Assigned vs. Device-Assigned Bundles

The bundles that you see on your device might be assigned to you or they might be assigned to the device. Bundles assigned to you are referred to as user-assigned bundles, and bundles assigned to your device are referred to as device-assigned bundles.

The ZENworks Agent displays your user-assigned bundles only when you are logged in to your user directory (Microsoft Active Directory or Novell eDirectory). If you are not logged in, you can log in through the ZENworks Configuration Management login screen. To do so, right-click the  icon in the notification area, then click Login.

The Agent always displays the device-assigned bundles regardless of whether or not you are logged in. Device-assigned bundles can be launched by anyone who uses your device.

## 14.3 Accessing Bundles

The ZENworks Agent provides three ways for you to access the bundles that are assigned to you:

- ♦ [Section 14.3.1, “ZENworks Window,” on page 234](#)
- ♦ [Section 14.3.2, “ZENworks Explorer,” on page 237](#)
- ♦ [Section 14.3.3, “ZENworks Icon,” on page 238](#)

### 14.3.1 ZENworks Window

The ZENworks Window is a standalone window that you can launch from the **Start** menu or the command prompt.

- ♦ [“Using the Start Menu” on page 234](#)
- ♦ [“Using the Command Prompt” on page 235](#)
- ♦ [“Using the ZENworks Window as the Windows Shell” on page 236](#)

#### Using the Start Menu

- 1 Click **Start > Programs > Novell ZENworks > ZENworks Application Window**

The ZENworks Window left pane displays the following:

- ♦ **[All] folder:** Contains all bundles that have been distributed to you, regardless of the folder in which they are located.

- ♦ **ZENworks folder:** Contains all bundles that have not been assigned to a different folder. The ZENworks folder is the default folder for bundles; however, your administrator can create additional folders to organize bundles, and can even rename the ZENworks folder.

When you select a folder in the left pane, the right pane displays the bundles that are contained within the folder. You can:

- ♦ Install a bundle or launch an application for an already installed bundle.
- ♦ View the properties of a bundle. The properties include a description of the bundle, information about people to contact for help with the bundle, the times when the bundle is available for use, and the system requirements established for the bundle.
- ♦ Repair an installed application.
- ♦ Uninstall an application. This is an administrator-controlled feature that might not be enabled.

## Using the Command Prompt

- 1 Open the command prompt and execute the following command:

```
zapp-launcher
```

The following command line switches can be used when starting the Application Window using `zapp-launcher`.

**Table 14-1** Application Window Command Line Switches

Switch	Description
:	Hides the initial splash screen.
EXAMPLE: <code>zapp-launcher :</code>	
/?	Displays the help.
EXAMPLE: <code>zapp-launcher /?</code>	
/max	Displays the Application Window maximized when first loaded, overriding the window state (size and position) that was saved when exiting the previous Application Window session.
EXAMPLE: <code>zapp-launcher /max</code>	
/min	Displays the Application Window minimized when first loaded, overriding the window state (size and position) that was saved when exiting the previous Application Window session.
EXAMPLE: <code>zapp-launcher /min</code>	
/runonce	This command is used for internal purposes and it is located at <code>HKLM\SOFTWARE\Microsoft\Windows\CurrentVersion\Run</code> . Ensure that you do not delete it.
EXAMPLE: <code>zapp-launcher /runonce</code>	

Switch	Description
/s EXAMPLE: <code>zapp-launcher /s</code>	<p>Makes the Application Window act like the Windows shell. For example, on the File menu, the <b>Exit Application Launcher</b> option changes to <b>Shutdown</b> and gives the user the standard Windows shutdown options.</p> <p>The <b>Contents</b> option on the <b>Help</b> menu is disabled. So, you cannot view the help.</p> <p>This is not a true replacement for the Windows shell. If users minimize the Application Window, they have access to the normal desktop.</p>
/d EXAMPLE: <code>zapp-launcher /d</code>	<p>Displays the Application Window with the <b>Contents</b> option on the <b>Help</b> menu disabled. So, you cannot view the help.</p>
/norm Example: <code>zapp-launcher /norm</code>	<p>Displays the ZENworks Application window in its original state when first loaded, and maintains the window state (size and position) that was saved when exiting the previous ZENworks Application window session.</p>

## Using the ZENworks Window as the Windows Shell

If the ZENworks Window is used as a Windows shell, only the ZENworks Window is visible on the device. You do not have access to the device desktop so the Start menu, Quick Launch toolbar, and the ZENworks Icon are also not visible. Also, help is disabled on the device.

Using the ZENworks Window as a Windows shell is useful in scenarios where you want to restrict the user on the managed device to access only the applications displayed in the ZENworks Window. For example, if you want the user to access only applications such as Notepad and Calculator, ensure that the ZENworks Windows displays only these applications. To shut down the device, click **File > Shutdown**.

To use the ZENworks Window as a shell:

- 1 On the Windows device, run `regedit.exe` and locate the following setting:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Windows
NT\CurrentVersion\Winlogon
```

- 2 Change the SHELL value from `explorer.exe` to:

```
%zenworks_home%\bin\zapp-launcher.exe
```

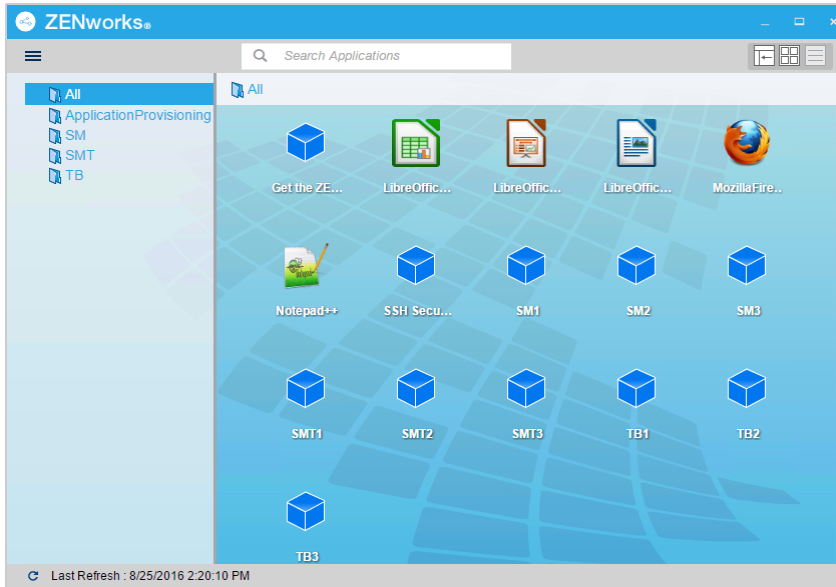
If you want the ZENworks Window to be maximized when it comes up, add the `/max` switch to `zapp-launcher.exe` (for example, `zapp-launcher.exe /max`).

- 3 Close `regedit.exe`.
- 4 Restart Windows.

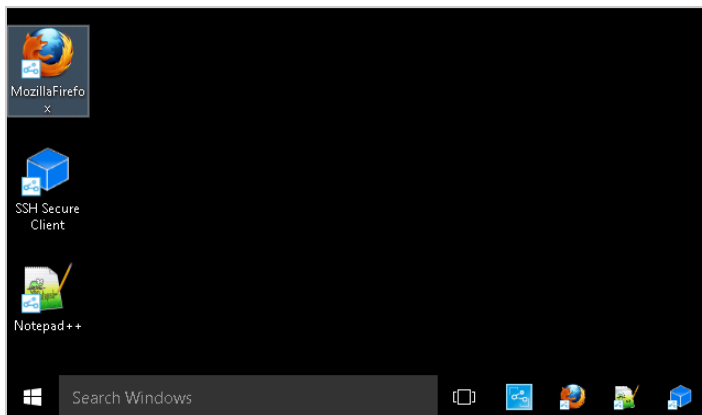
## 14.3.2 ZENworks Explorer

ZENworks Explorer is an extension to Windows Explorer that enables bundles to be displayed in Windows Explorer, on the desktop, on the Start menu, on the Quick Launch toolbar, and in the notification area.

**Figure 14-1** Bundles Displayed in Windows Explorer



**Figure 14-2** Bundles Displayed on the Desktop




You can perform the same tasks on the bundles in the ZENworks Explorer as you can in the ZENworks Window.

---


**NOTE:** Windows does not allow certain characters in folder paths ( \ / : \* ? " < > | ). If you use any of these characters as part of the name of the ZENworks Explorer folder path, each character displays as an underscore ( \_ ) in the Start menu. The characters display correctly in the ZENworks Window.

---

### 14.3.3 ZENworks Icon



The ZENworks Icon  is located in the Windows notification area. You can double-click the icon to display the ZENworks Agent properties. Located in the left navigation pane, the Bundles link lets you view the bundles that are assigned to you and to your device.










The bundle list includes the following information:

- ♦ **Name:** Displays the name of the bundle. Click the name to display the properties for the bundle, including such information as the version, folder and icon locations, and help contacts.
- ♦ **Status:** Displays the installation status for the bundle.
- ♦ **Effective:** Displays whether or not the bundle can be used on the device. If the **Effective** box is selected, the bundle meets all system requirements and constraints to be used. You can click the bundle icon  to launch the bundle.

If the box is not selected, it cannot be used; to find out why, click the bundle name to display the system requirements and properties.

## 14.4 Understanding Bundle Icons

A bundle icon changes to reflect the current status of the bundle. The following table shows the bundle icons with the default light blue background icon. Your administrator might choose to use a different background icon; however, the status icons such as  and , remain the same.

Icon	Status
	Available. You can launch the bundle.
	Not Installed.
	The bundle failed to install. Right-click the icon, then click <b>Repair</b> to repair the bundle.
	Unavailable. You cannot launch the bundle. Either the device does not meet the system requirements established for the bundle.
	Installing. The bundle is installing to the device.
	Downloading. The bundle is downloading from the network location where it is stored.
	Uninstalling. The bundle is being removed from the device.
	Running. The bundle is currently running.
	Blocked. The bundle is blocked on the device. You cannot perform any of the actions on the bundle other than viewing its properties.


## 14.5 Launching a Bundle


By default, the ZENworks Agent does not distribute (download and install) a bundle to your device until the first time you launch it. The distribution process might include installing the bundle's files, running scripts, and changing the device's registry, specific INI files, or environment variables. Or, the process might include nothing more than providing a shortcut to the application's executable file on your local device or a network server.

To launch a bundle:

- 1 Access the bundle in one of the following locations:

**ZENworks Window:** From the **Start** menu, click **Programs > Novell ZENworks > ZENworks Window**.

**ZENworks Explorer:** Open Windows Explorer and find the  ZENworks Agent entry. Depending on how your ZENworks administrator configured the bundle, the bundle icon might also be displayed on the desktop, Start menu, Quick Launch toolbar, or notification area.

**ZENworks Icon:** In the notification area, double-click the  icon, then click **Bundles**.


- 2 Double-click the bundle icon.

## 14.6 Postponing a Bundle Download

If, after you launch a bundle, it begins to download and you need to stop the download, you can postpone the download to a later time. When you resume the download, it continues from the point where it previously stopped.

- 1 Access the bundle in one of the following locations:

**ZENworks Window:** From the **Start** menu, click **Programs > Novell ZENworks > ZENworks Window**.

**ZENworks Explorer:** Open Windows Explorer and find the  ZENworks Agent entry. Depending on how your ZENworks administrator configured the bundle, the bundle icon might also be displayed on the desktop, Start menu, Quick Launch toolbar, or notification area.


- 2 Right-click the bundle icon, then click **Postpone**.

## 14.7 Repairing a Bundle

If an installed application is not functioning correctly or you think it might be outdated, you can repair that the application's bundle information is still correct. If it is not, the ZENworks Agent reinstalls the bundle to your workstation.

- 1 Access the bundle in one of the following locations:

**ZENworks Window:** From the **Start** menu, click **Programs > Novell ZENworks > ZENworks Window**.

**ZENworks Explorer:** Open Windows Explorer and find the  ZENworks Agent entry. Depending on how your ZENworks administrator configured the bundle, the bundle icon might also be displayed on the desktop, Start menu, Quick Launch toolbar, or notification area.


- 2 Right-click the bundle icon, then click **Repair**.

## 14.8 Viewing a Bundle's Properties

You can view a bundle's properties to see its version number, current installation status, and help contacts. In addition, if the bundle is unavailable, you can see if it is unavailable because of system requirements or restrictions.

- 1 Access the bundle in one of the following locations:

**ZENworks Window:** From the **Start** menu, click **Programs > Novell ZENworks > ZENworks Window**.

**ZENworks Explorer:** Open Windows Explorer and find the  ZENworks Agent entry. Depending on how your ZENworks administrator configured the bundle, the bundle icon might also be displayed on the desktop, Start menu, Quick Launch toolbar, or notification area.

- 2 Right-click the bundle icon, then click **Properties**.

## 14.9 Uninstalling a Bundle

Uninstall is an administrator-controlled feature. By default, uninstall is not enabled, which means that you can only uninstall bundles if your administrator has enabled the feature. Uninstall is enabled on a per-bundle basis. Depending on what your administrator enables, you might be able to uninstall some bundles but not others.


When you uninstall a bundle, the ZENworks Agent removes all files from your device and undoes all configuration settings made to your device during the bundle installation. Only files that the Agent installs specifically for the bundle are removed. For example, the Agent does not remove any shared files (files used by another application) or any user-created files such as word processing documents or spreadsheets.

After you uninstall a bundle, the bundle's icon remains on your device. This enables you to install the bundle again whenever necessary.

To uninstall a bundle:

- 1 Access the bundle in one of the following locations:

**ZENworks Window:** From the **Start** menu, click **Programs > Novell ZENworks > ZENworks Window**.

**ZENworks Explorer:** Open Windows Explorer and find the  ZENworks Agent entry. Depending on how your ZENworks administrator configured the bundle, the bundle icon might also be displayed on the desktop, Start menu, Quick Launch toolbar, or notification area.

- 2 Right-click the bundle icon, then click **Uninstall**.

# A

## Install, Uninstall, and Repair MSI Bundle Parameters

While creating Windows MSI bundles, you can select install, uninstall, and repair parameters. The following sections contain information to help you select the desired options:

- ♦ [Section A.1, “Install Parameters,” on page 241](#)
- ♦ [Section A.2, “Uninstall Parameters,” on page 243](#)
- ♦ [Section A.3, “Repair Parameters,” on page 244](#)

### A.1 Install Parameters

The Install Parameters dialog box lets you specify the desired parameters.

**Figure A-1** *Install Parameters Dialog Box*

The screenshot shows the 'Install Parameters' dialog box. It has a title bar with the text 'Install Parameters' and a question mark icon. The dialog is divided into three main sections: 'Restart Options', 'Display Options', and 'Install Options'. Each section contains a group of radio buttons. The 'Restart Options' section has four options: 'None (default)', 'Do not restart (/norestart)', 'Prompt for restart (/promptrestart)', and 'Always restart (/forcerestart)'. The 'Display Options' section has five radio button options: 'No UI (/qn)', 'Full UI (/qf)', 'Reduced UI (/qr)', 'Basic UI (/qb)', and 'Unattended mode (/passive)'. Below these are three checkboxes: 'No modal dialog at end (-)', 'Modal dialog at end (+)', and 'Hide Cancel button (!)'. The 'Install Options' section has three radio button options: 'Install (/i)', 'Administrative Install (/a)', and 'Advertise'. Below 'Advertise' are two more radio button options: 'For all users (/jm)' and 'For logged in user only (/ju)'. At the bottom of the dialog is a text box labeled 'Command Line Parameters:' containing the text '/i /qn'. Below the text box are two buttons: 'OK' and 'Cancel'.

The following sections contain additional information:

- ♦ [Section A.1.1, “Restart Options,” on page 242](#)
- ♦ [Section A.1.2, “Display Options,” on page 242](#)
- ♦ [Section A.1.3, “Install Options,” on page 243](#)
- ♦ [Section A.1.4, “Command Line Parameters,” on page 243](#)

## A.1.1 Restart Options

In some cases, installing an application requires restarting the workstation.

In the Install Parameters dialog box, select the desired Restart option:

**None (default):** Uses the MSI application’s settings to determine whether or not a restart occurs. ZENworks does not force a Restart option.

**Do Not Restart (/norestart):** Never restarts the workstation during the install process. The installation is not completed until the next time the workstation starts.

**Prompt For Restart (/promptrestart):** Prompts users before restarting the workstation. If users answer No, the installation is not completed until the next time they manually restart.

**Always Restart (/forcerestart):** Forces the workstation to restart without prompting users.

## A.1.2 Display Options

In the Install Parameters dialog box, select the desired Display options. You can choose to perform the installation with or without a user interface, whether to display a modal dialog box at the end of the install process (a modal dialog box demands a response from the user before the installation is complete), or to hide the **Cancel** button so that users cannot cancel the installation.

**No UI (/qn):** Installs the application with no user interface (silent installation).

---

**NOTE:** This is the default installation option. If you want users to be aware that ZENworks Configuration Management is installing an application to help prevent them from rebooting or calling the help desk, change the display options to **Basic UI (/qb)** with **No modal dialog at end (-)** and **Hide Cancel button (!)**.

You can select the options in the dialog box or you can type `/i /qb-!` in the **Command Line Parameters** field.

---

**Full UI (/qf):** Installs the application with the full user interface and a modal dialog box displayed at the end of the installation.

**Reduced UI (/qr):** Installs the application with a reduced user interface and a modal dialog box displayed at the end of the installation.

**Basic UI (/qb):** Installs the application with a basic user interface consisting of a progress bar. The following settings are available with this option:

- ♦ **No modal dialog at end (-):** Displays a basic user interface with no modal dialog box displayed at the end of the installation.

- ♦ **Modal dialog at end (+):** Displays a basic user interface with a modal dialog box displayed at the end of the installation.
- ♦ **Hide Cancel button (!):** Displays a basic user interface without a **Cancel** button, so the user cannot cancel the installation process.

### A.1.3 Install Options

In the Install Parameters dialog box, select the desired Install options:

**Install (/i):** Installs the application.

**Administrative Install (/a):** Creates an administrative installation point for the application. This option is useful for a network installation.

**For All Users (/im):** Advertises the application on the computer and installs the application for all users on first use.

**For Logged In User Only (/iu):** Advertises the application on the computer for the logged-in (current) user and installs the application on first use. Do not use this option when performing a System installation or when using a dynamic administrator to install the application.

A dynamic administrator is an administrator account that is created on the fly to perform certain procedures, such as installing applications. Using a dynamic administrator is helpful when installing applications (some MSI applications, for example) that cannot be installed in the system space. When you select this action, the dynamic administrator is created, it performs the required tasks, and then the account is deleted.

### A.1.4 Command Line Parameters

Displays the install command line parameters used during the application's installation. As you select Restart, Display, and Install options, the command line parameters in this field are automatically populated.

## A.2 Uninstall Parameters

The Uninstall Parameters dialog box lets you specify the desired parameters.

The following sections contain additional information:

- ♦ [Section A.2.1, "Restart Options," on page 243](#)
- ♦ [Section A.2.2, "Display Options," on page 244](#)
- ♦ [Section A.2.3, "Command Line Parameters," on page 244](#)

### A.2.1 Restart Options

In some cases, uninstalling an application requires restarting the workstation.

In the Uninstall Parameters dialog box, select the desired Restart option:

**None (default):** Uses the MSI application's settings to determine whether or not a restart occurs. ZENworks does not force a Restart option.

**Do Not Restart (/norestart):** Never restarts the workstation during the uninstall process. The uninstallation is not completed until the next time the workstation starts.

**Prompt For Restart (/promptrestart):** Prompts users before restarting the workstation. If users answer No, the uninstallation is not completed until the next time they manually restart.

**Always Restart (/forcerestart):** Forces the workstation to restart without prompting users.

## A.2.2 Display Options

In the Uninstall Parameters dialog box, select the desired Display options. You can choose to perform the uninstallation with or without a user interface, whether to display a modal dialog box at the end of the uninstallation process (a modal dialog box demands a response from the user before the uninstallation is complete), or to hide the **Cancel** button so that users cannot cancel the uninstallation.

**No UI (/qn):** Uninstalls the application with no user interface (silent uninstallation).

**Full UI (/qf):** Uninstalls the application with the full user interface and a modal dialog box displayed at the end of the uninstallation.

**Reduced UI (/qr):** Uninstalls the application with a reduced user interface and a modal dialog box displayed at the end of the uninstallation.

**Basic UI (/qb):** Uninstalls the application with a basic user interface consisting of a progress bar. The following settings are available with this option:

- ♦ **No modal dialog at end (-):** Displays a basic user interface with no modal dialog box displayed at the end of the uninstallation.
- ♦ **Modal dialog at end (+):** Displays a basic user interface with a modal dialog box displayed at the end of the uninstallation.
- ♦ **Hide Cancel button (!):** Displays a basic user interface without a **Cancel** button, so the user cannot cancel the uninstallation process.

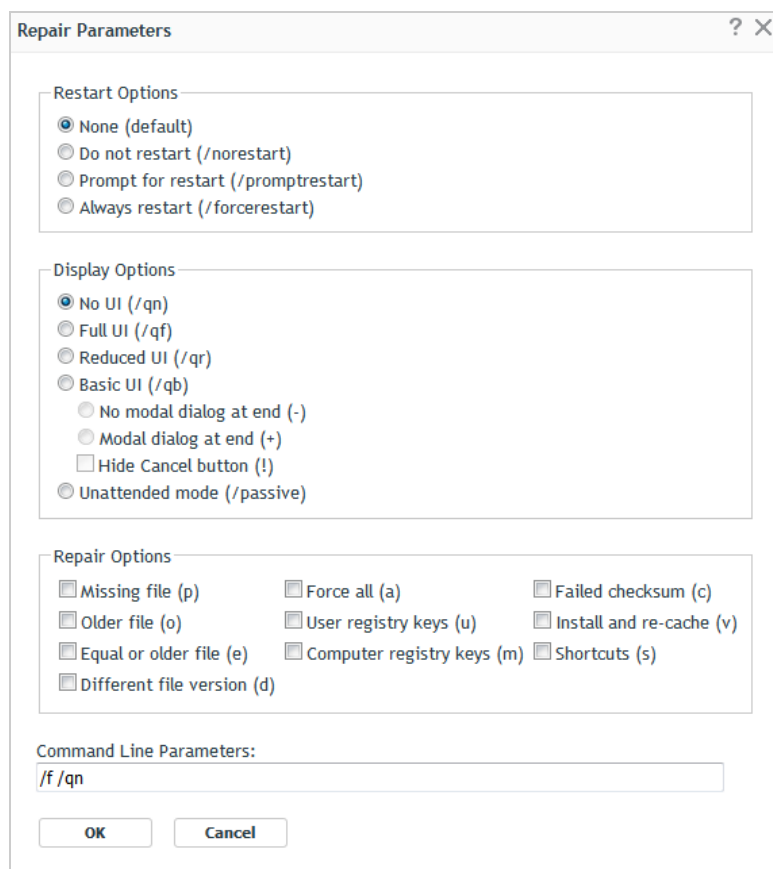
## A.2.3 Command Line Parameters

Displays the command line parameters used during the application's uninstallation. As you select Restart and Display options, the command line parameters in this field are automatically populated.

## A.3 Repair Parameters

The Repair Parameters dialog box lets you specify the desired parameters.

**Figure A-2** Repair Parameters Dialog Box



The following sections contain additional information:

- ♦ [Section A.3.1, “Restart Options,” on page 245](#)
- ♦ [Section A.3.2, “Display Options,” on page 246](#)
- ♦ [Section A.3.3, “Repair Options,” on page 246](#)
- ♦ [Section A.3.4, “Command Line Parameters,” on page 247](#)

## A.3.1 Restart Options

In some cases, repairing an application requires restarting the workstation.

In the Repair Parameters dialog box, select the desired Restart option:

**None (default):** Uses the MSI application’s settings to determine whether or not a restart occurs. ZENworks does not force a Restart option.

**Do Not Restart (/norestart):** Never restarts the workstation during the repair process. The repair process is not completed until the next time the workstation starts.

**Prompt For Restart (/promptrestart):** Prompts users before restarting the workstation. If users answer No, the repair process is not completed until the next time they manually restart.

**Always Restart (/forcerestart):** Forces the workstation to restart without prompting users.

## A.3.2 Display Options

In the Repair Parameters dialog box, select the desired Display options. You can choose to perform the repair process with or without a user interface, whether to display a modal dialog box at the end of the repair process (a modal dialog box demands a response from the user before the repair process is complete), or to hide the **Cancel** button so that users cannot cancel the repair process.

**No UI (/qn):** Repairs the application with no user interface (silent repair process).

**Full UI (/qf):** Repairs the application with the full user interface and a modal dialog box displayed at the end of the repair process.

**Reduced UI (/qr):** Repairs the application with a reduced user interface and a modal dialog box displayed at the end of the repair process.

**Basic UI (/qb):** Repairs the application with a basic user interface consisting of a progress bar. The following settings are available with this option:

- ♦ **No modal dialog at end (-):** Displays a basic user interface with no modal dialog box displayed at the end of the repair process.
- ♦ **Modal dialog at end (+):** Displays a basic user interface with a modal dialog box displayed at the end of the repair process.
- ♦ **Hide Cancel button (!):** Displays a basic user interface without a **Cancel** button, so the user cannot cancel the repair process.

## A.3.3 Repair Options

In the Repair Parameters dialog box, select the desired Repair options:

**Missing File (p):** Instructs Windows Installer to repair a file only if it is missing.

**Older File (o):** Instructs Windows Installer to repair a file if it is missing or if the installed file's version is older than the file in the MSI package.

**Equal or Older File (e):** Instructs Windows Installer to repair a file if it is missing or if the installed file's version is the same as or older than the file in the MSI package.

**Different File Version (d):** Instructs Windows Installer to repair a file if it is missing or if the installed file's version is not exactly the same as the file in the MSI package.

**Force All (a):** Instructs Windows Installer to repair all files.

**User Registration Keys (u):** Instructs Windows Installer to repair all per-user entries from the MSI package to the Windows system registry. Per-user entries are those entries contained in the `HKEY_CURRENT_USER` and `HKEY_USERS` registry hives.

**Computer Registry Keys (m):** Instructs Windows Installer to repair all per-machine entries from the MSI package to the Windows system registry. Per-machine entries are those entries contained in the `HKEY_LOCAL_MACHINE` and `HKEY_CLASSES_ROOT` registry hives.

**Failed Checksum (c):** Instructs Windows Installer to perform a checksum on all executable files and to repair a file if it is missing or if the checksum verifies that the file is corrupt. Only files that have `msiDbFileAttributesChecksum` in the **Attributes** column of the MSI package's File Table are repaired.

**Install and Re-Cache (v):** Instructs Windows Installer to repair files from the re-cache (local) source rather than the source package.

**Shortcut(s):** Instructs Windows Installer to repair the MSI application's shortcuts, overwriting any existing shortcuts and icons.

### A.3.4 Command Line Parameters

Displays the command line parameters used during the application's repair process. As you select the Restart, Display, and Repair options, the command line parameters in this field are automatically populated.



# B Authentication Hook

An authentication hook enables you to control the installation or launching of the bundle.

Create an executable file containing your authentication logic and begin its name with `authhook`. For example, `authhookinstall.exe`. During the installation or launching of the bundle, the bundle manager searches for a file matching `authhook*.*` in the `bin` directory of ZENworks. If the file is found, the bundle manager passes four arguments: zone name, bundle ID, bundle name, and username of the current bundle to the file. On execution, the file returns a code. The bundle manager installs or launches the bundle only if the returned error code matches 264.



# C How Bundle Versions Affect an Install Action Set

Bundle Change Management results in a change in the behavior of the Install action set on a device if the install frequency option of the action set is configured either to install once per device or install once per user per device.

- ♦ [Section C.1, “Triggers that Cause an Install Action Set to Run,” on page 251](#)
- ♦ [Section C.2, “Sample Scenario,” on page 251](#)
- ♦ [Section C.3, “Additional Scenarios,” on page 252](#)

## C.1 Triggers that Cause an Install Action Set to Run

If you assign a bundle to a device or user, the Install action set runs on the device only in the following circumstances:

- ♦ If the Install action set has never run on the device.
- ♦ If the version of the Install action set is different from the version of the Install action set that has previously run on the device

The Install action set of a bundle is internally associated with a global version identifier and the Install action set of every bundle version is internally associated with a local version identifier.

If you make any modifications to a bundle other than modifying its Install action set, the Install action set of the sandbox that is created has the same local version identifier as the bundle version you modified. However, if you modify the Install action set of a bundle, the global version identifier of the bundle’s Install action set is incremented by one and the modified Install action set’s local version identifier is set to the new value of the global version identifier.

If the install action set or its options are modified and the bundle is re-published, then when the bundle is installed or launched, the install action set is invoked again, even if it has been set to install only once.

## C.2 Sample Scenario

For example, consider the following scenario:

1. In ZENworks Control Center, create a bundle (not as a sandbox).

The bundle version, the global version identifier of the bundle’s Install action set, and the local version identifier of the created bundle version are all set to 0 (zero).

2. In the Install action set of the bundle, add one or more actions and then click **Apply**.

The global version identifier for the Install action set is incremented to 1.

3. Click **Publish** to publish the sandbox as version, 1.

The local version identifier of this published version also changes to 1.

4. Assign the bundle to Device A.

The bundle runs on Device A and the actions in the Install action set of the latest published version of the bundle, which has the local version identifier set to 1, are executed on the device.

5. Modify the Install action set of the bundle and click **Apply**.

The global version identifier is incremented to 2.

6. Repeat Step 5 twice more.

The global version identifier is incremented to 4.

7. Click **Publish** to publish the sandbox as version, 2

The local version identifier of this published version also changes to 4.

8. Assign the bundle to Device B.

The bundle runs on Device B and the actions in the Install action set of the latest published version of the bundle, which has the local version identifier set to 4, are executed on the device.

## C.3 Additional Scenarios

Perform the tasks listed in the following table to understand the subsequent behavior of the Install action set on Device A and Device B. When you begin, Device A has an Install action set with version 1 (see Step 4) and Device B has an Install action set with version 4 (see Step 6) in [Section C.2, “Sample Scenario,” on page 251](#).

Task	Device A	Device B
Modify the Install action set of the latest published version to create a sandbox and then publish the sandbox.	The actions in the Install action set of the latest published version of the bundle, which has the local version identifier set to 5, are executed on the device.	The actions in the Install action set of the latest published version of the bundle, which has the local version identifier set to 5, are executed on the device.
Starting value of the local version identifier: 4		
New value of the local version identifier: 5		
Modify a property of bundle other than the Install action set of the latest published version to create a sandbox and then publish the sandbox.	The actions in the Install action set of the latest published version of the bundle, which has the local version identifier set to 4, are executed on the device.	Because the version of the previously run Install action set on the device is the same as the value of the local version identifier, the Install action set does not run on the device.
Starting value of the local version identifier: 4		
New value of the local version identifier: 4		

Task	Device A	Device B
Create a sandbox from an older version of the bundle, modify the Install action set to create a sandbox, and then publish the sandbox.	The actions in the Install action set of the latest published version of the bundle, which has local version identifier set to 5, are executed on the device.	The actions in the Install action set of the latest published version of the bundle, which has local version identifier set as 5, are executed on the device.
Starting value of the local version identifier: 4		
New value of the local version identifier: 5		
Create a sandbox from an older version of the bundle, modify a property of the bundle other than the Install action set to create a sandbox, and then publish the sandbox.	Because the version of the previously run Install action set on the device is the same as the value of the local version identifier, the Install action set does not run on the device.	The actions in the Install action set of the latest published version of the bundle, which has the local version identifier set to 1, are executed on the device.
Starting value of the local version identifier: 4		
New value of the local version identifier: 4		
If a sandbox version of a bundle is assigned to a test device or user, the execution of the Install action set depends on whether the action set is modified or not. Even though there is no change in the bundle version, the action set runs on the device if it has been modified.		
<b>NOTE:</b> When you have a bundle that references a file on a share and if the file in the share location has changed, you need to modify the action set in which you are referring the file, if you want the bundle to be reinstalled with the new file.		



# D Best Practices

The following sections contain information on the best practices to follow while using the Bundles component of ZENworks:

- ♦ [Section D.1, “Tracking Licenses Using a Bundle,” on page 255](#)
- ♦ [Section D.2, “Changing the Look and Feel of the Start Menu on a Windows Vista Device,” on page 256](#)
- ♦ [Section D.3, “Pinning Applications to the Start Menu on a Windows Vista Device,” on page 256](#)
- ♦ [Section D.4, “Assigning Bundles to a Device or User,” on page 256](#)
- ♦ [Section D.5, “ZENworks Explorer Folder Naming Convention,” on page 256](#)
- ♦ [Section D.6, “Creating Bundles with Large Content,” on page 257](#)

## D.1 Tracking Licenses Using a Bundle

ZENworks Bundle License Tracking feature enables you to track the number of installations of inventory products through a bundle. Following are some of the guidelines that you should know before enabling license tracking:

- ♦ The installed quantity is tracked only for the products that are added in the Inventory Product list.
- ♦ Once the bundle is modified (i.e. in a sandbox version), the displayed installed quantity is of the previously published bundle.
- ♦ By default, every hour the calculation of installed quantity is triggered for all the bundles in the zone. However, if you add or remove inventory products in the Inventory Product list, then the calculation is triggered only for this bundle.

---

### NOTE

- ♦ The Inventory Product mapping and License Tracking settings are not copied when you import or export a bundle
- ♦ The Inventory Product mapping and License Tracking settings are not replicated while using Multi-Zone Content Sharing.

For more information, see [Section 2.11, “Exporting and Importing Bundles,” on page 47](#)

---

## D.2 Changing the Look and Feel of the Start Menu on a Windows Vista Device

On a Windows Vista device, the folders on the **Start** menu have a cascading effect. To have the same look and feel as the Windows XP **Start** menu:

1. Right-click **Start**.
2. Click **Properties**.
3. Select **Classic Start Menu**.
4. Click **OK**.

## D.3 Pinning Applications to the Start Menu on a Windows Vista Device

On a Windows Vista device, you can choose to have the folders pinned to the **Start** menu to have the same look and feel as the pinned folders on the Windows XP **Start** menu.

1. Right-click **Start**.
2. Click **Properties**.
3. Select **Classic Start Menu**.
4. Click **OK**.
5. Restart the system.

## D.4 Assigning Bundles to a Device or User

Do not assign more than two bundles that has the same name to a Windows managed device because only the first two bundles that are assigned to the device are displayed on the device.

Sample Scenario: Assume that bundles named test, Test, TEST are assigned to a Windows managed device. The first bundle that is assigned to the device has the specified name. The second bundle that is assigned to the device has the management zone name appended to the specified name. However, the third bundle is not displayed on the device.

## D.5 ZENworks Explorer Folder Naming Convention

If the ZENworks Explorer Folder name for two or more bundles is the same but has a different case, then only one folder and containing all the bundle's shortcuts is displayed in the start menu and the ZENworks Explorer window.

## D.6 Creating Bundles with Large Content

By default, ZENworks Control Center has a 30-minute timeout value. If you choose to create bundles with a large amount of content, you must change the ZENworks Control Center timeout value as required. For information on the changing the timeout value for ZENworks Control Center, see [“Changing the Timeout Value for ZENworks Control Center”](#) in the *ZENworks Control Center Reference*.



# E Troubleshooting

The following sections explain the scenarios that you might encounter while using the Bundles component of Novell ZENworks.

- ♦ [“In a Zone with PostgreSQL Unable to Delete Objects with Cyrillic Characters” on page 260](#)
- ♦ [“Installation of MSIx bundle using Quick Tasks fails” on page 260](#)
- ♦ [“Bundles exported using the zman command might create empty ZIP files” on page 260](#)
- ♦ [“High memory utilization by ZENworks” on page 261](#)
- ♦ [“Uploading content from a text file that contains extended characters corrupts the content” on page 261](#)
- ♦ [“While launching applications, the window prompting for user input might not be displayed” on page 261](#)
- ♦ [“Unable to execute the Install MSI action on a Windows 2000 device” on page 262](#)
- ♦ [“Cannot back up the registry and edit the HKEY\\_CURRENT\\_USER by using a single registry action on a Windows Vista device” on page 262](#)
- ♦ [“The Undo Install Actions fails to uninstall a directory” on page 262](#)
- ♦ [“Unable to launch a RDP session from a 64-bit device” on page 262](#)
- ♦ [“If the Wake-on-LAN on the managed device is behind the server’s time zone, the device fails to wake up” on page 263](#)
- ♦ [“Bundle shortcut icon is not visible in the Quick Launch area of a Windows 7 device taskbar” on page 263](#)
- ♦ [“Repairing an MSI that is installed on a device might reboot the device even if the norestart parameter is specified” on page 263](#)
- ♦ [“Unable to install or launch a bundle on a Linux or Macintosh device” on page 264](#)
- ♦ [“Unable to import an exported registry file into the Windows registry” on page 264](#)
- ♦ [“Unable to use the uninstall option for ZENworks bundle in the start screen on a Windows 8 machine” on page 265](#)
- ♦ [“After the upgrade, unable to uninstall a bundle that is set to uninstall prior to upgrade” on page 265](#)
- ♦ [“Bundle distribution fails when you assign a bundle to be launched during Wake- on - Lan with date specific - schedule” on page 265](#)
- ♦ [“Unable to create a bundle due to internal data model exception” on page 266](#)
- ♦ [“Bundle icons are not visible on the desktop when the desktop folder is redirected to a network share for agents running on Windows 7 and Windows 2008” on page 266](#)
- ♦ [“Bundle shortcut icon is not visible in the Start Menu of a Windows 7 device” on page 266](#)
- ♦ [“On a Windows device, NAL icons are not displayed even after enabling the disabled bundle management” on page 267](#)

- ♦ “When a Mac patch policy bundle fails, the xauth messages that are launched are not terminated” on page 267
- ♦ “When you select either the Sandbox or an old version of a bundle or policy, the status is not displayed in the summary page of the bundle or policy” on page 267
- ♦ “An error is displayed when certain user-specific variables are used when there is no user session available” on page 268
- ♦ “An error is displayed when you copy relationships of one device to another” on page 268
- ♦ “Files that are several weeks old are not cleaned up from the Tomcat Temp folder on Linux Servers” on page 268

## In a Zone with PostgreSQL Unable to Delete Objects with Cyrillic Characters

**Explanation:** In a zone with the PostgreSQL database, if you have created any objects such as Folders, Bundles, or Policies and try to delete the object. The object deletion fails.

**Action:** Try renaming objects to non-Cyrillic characters and then delete them from ZCC.  
Use non-Cyrillic characters to name the object.

## Installation of MSIX bundle using Quick Tasks fails

**Explanation:** When you try to install an MSIX bundle on a device using Quick Tasks > Install Bundle, the installation of the MSIX bundle fails.

**Possible Cause:** This issue occurs because the MSIX action runs in the ‘user’ space, while the quick task runs in the ‘system’ space.

**Action:** None

## Bundles exported using the zman command might create empty ZIP files

**Source:** ZENWorks 2017

**Explanation:** When you export a bundle using the bundle-export-actions command, the bundle might be exported as an empty ZIP file.

**Possible Cause:** This issue occurs if the database contains Satellite Server entries that are removed from the zone.

**Action:** Run the following queries to delete the Satellite Server entries from the database:

- ♦ `DELETE FROM zZENServer WHERE zZENServer.ZUID IN (select SatelliteServers from zACOSatelliteServers where id=<BundleGUID>)`
- ♦ `DELETE FROM zACOContentServers WHERE zACOContentServers.id=<BundleGUID>`
- ♦ `DELETE FROM zACOSatelliteServers WHERE zACOSatelliteServers.id=<BundleGUID>`

## High memory utilization by ZENworks

Source: ZENworks

Possible Cause: Bundle Action data is loaded and fetched from the `AppDataLRUCacheConfig.xml` file. Hence, due to excess accumulation of data, you might experience high memory utilization.

Action: If you are experiencing high memory utilization, and if the LRU cache is available, then you can modify the `MaxSize` attribute of `LRUCacheConfig` in the `AppDataLRUCacheConfig.xml` file to limit the bundle appdata entries.

To modify `LRUCacheConfig`, do the following:

1. Navigate to `C:\Program Files (x86)\Novell\ZENworks\conf`
2. Open the `AppDataLRUCacheConfig.xml` file and modify the `MaxSize` attribute.

For example:

```
<LRUCacheConfig CacheType="CLEAN" MaxSize="400"
TimerRefreshInterval="10000" Expiry="300000" />
```

Using this configuration, the LRU entries can be controlled.

---

**NOTE:** If the bundle appdata is not available in the LRU, then during execution, the appdata will be serialized from the disk and loaded into the LRU cache, so you can expect some delay.

---

## Uploading content from a text file that contains extended characters corrupts the content

Source: ZENworks; Software Distribution.

Explanation: If you use the Edit Text File action to upload a text file containing extended characters, the content is corrupted.

Action: Open the text file, save it as UTF-8, then upload the file.

## While launching applications, the window prompting for user input might not be displayed

Source: ZENworks; Software Distribution.

Explanation: If you use bundles to launch applications that require user input, the window prompting for the input might be hidden behind the application. This problem might occur if the applications are launched for the first time for each user login.

Action: If you want to immediately view the window, minimize the application. To fix the problem, restart the system.

## Unable to execute the Install MSI action on a Windows 2000 device

Source: ZENworks; Software Distribution.

Explanation: If **Grant administrator privilege to user during installation** is selected in the Install MSI dialog box to provide administrator privileges to the logged in user, the user is prompted to provide the log in credentials when the Install MSI action is executed on the device. The action fails to execute even if the user has provided the correct password.

Action: Add the user as a part of the operating system as follows:

- 1 Run MMC.
- 2 Click **File > Add/Remove Snap-in**, click **Add**.
- 3 In the Add Standalone Snap-in dialog box, select **Group Policy Object Editor**, click **Add > Finish**.
- 4 Click **Close** to close the Add Standalone Snap-in dialog box.
- 5 Click **OK**.
- 6 In the Console Root window, double-click **Computer Configuration > Windows Settings > Security Settings > Local Policies > User Rights Assignment > Act as part of the operating system**
- 7 Click **Add User or Group**.
- 8 In **Enter the object names to select**, specify the user name. Click **OK**.
- 9 Click **OK**.

## Cannot back up the registry and edit the HKEY\_CURRENT\_USER by using a single registry action on a Windows Vista device

Source: ZENworks; Software Distribution.

Explanation: If you set up an action to both back up the registry and edit the HKEY\_CURRENT\_USER registry entry on Windows Vista\*, the action fails because all user-initiated processes in Vista run as the lowest privileged user.

Action: Use two different registry actions, one to back up the registry in the system context, and another to edit HKEY\_CURRENT\_USER in the user context.

## The Undo Install Actions fails to uninstall a directory

Source: ZENworks; Software Distribution.

Explanation: When you create an Install Directory File bundle, the directory is installed even if its name contains spaces; however, it cannot currently be uninstalled by using the Undo Install Actions action.

Action: Avoid spaces in directory names if you want to enable the uninstallation of that directory.

## Unable to launch a RDP session from a 64-bit device

Source: ZENworks; Software Distribution.

Explanation: If you launch a Launch Windows Thin Client Application action configured with the RDP Session on a 64-bit managed device, the action might fail.

Action: Apply the KB925876 patch (<http://support.microsoft.com/kb/925876>).

## **If the Wake-on-LAN on the managed device is behind the server's time zone, the device fails to wake up**

Source: ZENworks; Software Distribution.

Explanation: If a bundle having the distribution configured is assigned to a managed device such that the Wake-on-LAN is behind the server's time zone, the device fails to wake up.

Action: Ensure that the Wake-on-LAN on the managed device is not behind the server's time zone.

## **Bundle shortcut icon is not visible in the Quick Launch area of a Windows 7 device taskbar**

Source: ZENworks; Software Distribution.

Explanation: If you assign a bundle to a Windows 7 managed device and choose to place the bundle shortcut icon in the Quick Launch area of the device, the bundle shortcut icon is not visible because Quick Launch is disabled by default on a Windows 7 device.

Action: To enable Quick Launch on a Windows 7 device taskbar:

- 1 Right-click the taskbar and click **Toolbars**.
- 2 Click **New Toolbar** to open the New Toolbar window.
- 3 In the **Folder** option, specify the following:  
%UserProfile%\AppData\Roaming\Microsoft\Internet Explorer\Quick Launch.
- 4 Click **Select Folder**.

To customize Quick Launch on a Windows 7 device taskbar:


- 1 Right-click the taskbar and deselect **Lock the Taskbar**.
- 2 (Optional) Click and drag the Quick Launch to the desired position on the taskbar.
- 3 Right-click Quick Launch and deselect **Show Title** and **Show Text** to disable title or text display.
- 4 Right-click Quick Launch. Click **View > Small Icons** to enable small icons.

## **Repairing an MSI that is installed on a device might reboot the device even if the norestart parameter is specified**

Source: ZENworks; Software Distribution.

**Explanation:** If you run the Install MSI action to repair an MSI that has already been installed on a device, the device might reboot. This is because /f option that repairs a product can reboot the device. For more information, see [Microsoft Support Site \(http://support.microsoft.com/kb/961883/EN-US\)](http://support.microsoft.com/kb/961883/EN-US).

**Action:** Perform the following steps to repair a package without a reboot:

- 1 In ZENworks Control Center, click the MSI Application Bundle you want to repair.
- 2 Click **Actions > Install**.
- 3 Click the Install MSI action to display the Edit Action - Install MSI dialog box.
- 4 In the **Repair Parameters** option, Click  to display the Repair Parameters dialog box.
- 5 In the **Command Line Parameters** option, specify /i instead of /f, then click **OK**.
- 6 In the MSI Properties panel, add the following properties:
  - ♦ **Name** = REINSTALLMODE ; **Value** = omus
  - ♦ **Name** = REBOOT ; **Value** = ReallySupress
- 7 Click **OK**.

## Unable to install or launch a bundle on a Linux or Macintosh device

**Source:** ZENworks; Software Distribution.

**Explanation:** On a Linux or Macintosh device, if you choose to run the `zac` command to install or launch a bundle that has special characters such as @ or \$ in its name, the bundle fails to install or launch on the device.

**Action:** Run the `zac` command and use `\\` to escape the special characters in the bundle name. For example, to install a bundle named `mac@`, run the command as follows:

```
zac bin mac\\@
```

## Unable to import an exported registry file into the Windows registry

**Source:** ZENworks; Software Distribution.

**Explanation:** On platforms that use non-Western European languages, a registry file exported by using the ZENworks Registry Edit action might contain values that prevent the registry file from being imported into the Windows registry.

**Action:** To export the registry file:

- 1 In ZENworks Control Center, click a bundle.
- 2 Click **Actions > Registry Edit**.
- 3 Click **Export** to export the registry file.

To import the registry file into the Windows registry:

- 1 Edit the exported registry file to remove values such as `ffffffffffffffffb0` from the file.
- 2 Import the file into the Windows registry.
- 3 Use the Windows Regedit utility to reenter the values that you removed in Step 1.

For more information on reentering the values, refer to the Registry Edit Action page of ZENworks Control Center.

## **Unable to use the uninstall option for ZENworks bundle in the start screen on a Windows 8 machine**

Source: ZENworks; Software Distribution.

Explanation: On a Windows 8 machine if you right click on the ZENworks bundle shortcut and choose the uninstall option in the charms bar, the ZENworks bundle shortcut fails to point at the underlying application or `msi` installer in the add remove screen of the control panel.

Possible Cause: The uninstall option that is in the charms bar of the start screen on a Windows 8 machine is not supported for ZENworks bundle.

Action: Won't fix.

## **After the upgrade, unable to uninstall a bundle that is set to uninstall prior to upgrade**

Source: ZENworks; Software Distribution.

Explanation: If you have set a bundle to uninstall on unassignment, and after the upgrade the bundle is unassigned, the bundle might not get uninstalled.

Possible Cause: After the upgrade only the new cache entries are referenced. The old cache entries of the unassigned items are not referenced.

Action: Won't fix.

## **Bundle distribution fails when you assign a bundle to be launched during Wake- on - Lan with date specific - schedule**

Source: ZENworks; Software Distribution.

Explanation: When you assign a bundle to be launched on a device during Wake-on-Lan (WOL) with the date-specific schedule, the contents of the bundle are not distributed.

Possible Cause: By the time the device wakes up (based on the Wake-on-LAN schedule) and receives the bundle assignment, the scheduled distribution time has passed, so the bundle is not distributed on the device. The primary cause of this issue is setting the same time for both the Wake-on-Lan schedule and the bundle distribution schedule.

Action: When assigning bundles to Wake-on-Lan devices, if you select a Schedule Type of Date Specific, you also need to enable the **Process immediately if device unable to execute on schedule** option. This option forces the bundle distribution to occur after the device wakes and receives the bundle distribution schedule.

## Unable to create a bundle due to internal data model exception

Source: ZENworks; Software Distribution.

Explanation: When you try to create a bundle or any ZENworks object, the bundle or object throws the following data model exception:

```
com.novell.zenworks.datamodel.exceptions.InternalDataModelException: org.hibernate.QueryTimeoutException: ORA-01658:
unable to create INITIAL extent for segment in tablespace
CCT_XA_TAB
```

Possible Cause: This failure is because the allocated file size for the data file is used and has exceeded.

Action: Increase the tablespace to ensure sufficient disk space availability for data files in the tablespace.

## Bundle icons are not visible on the desktop when the desktop folder is redirected to a network share for agents running on Windows 7 and Windows 2008

Source: ZENworks; Software Distribution.

Explanation: When the desktop folder for a ZENworks Configuration Management Agent running on Windows 7 or Windows 2008 is redirected to a network share, the shortcut icons for ZENworks Configuration Management bundles do not appear.

Action: To create the shortcut icons for bundles:

- 1 Open the Registry Editor.
- 2 Go to `HKLM\Software\Novell\ZCM\NAL`.
- 3 Create a DWORD called `SetIconOnDesktop` and set the value to 1.
- 4 Reboot the workstation.

## Bundle shortcut icon is not visible in the Start Menu of a Windows 7 device

Source: ZENworks; Software Distribution.

Explanation: After assigning a bundle to a Windows 7 managed device, if you choose to place the bundle shortcut icon in the Start Menu of the device, the bundle shortcut icon is not visible.

Possible Cause: The **Remove User's folders from the Start Menu** GPO setting is enforced on a Windows 7 device.

Action: Disable the **Remove User's folders from the Start Menu** GPO setting on a Windows 7 device:

- 1 Run `gpedit.msc`
- 2 Click **User Configuration > Administrative Templates > Start Menu and Task Bar**.
- 3 Double click **Remove user's folders from the Start Menu**.
- 4 In the **Remove User's folders from the Start Menu** dialog, select **Disabled**.
- 5 Click **Apply > OK**.

## **On a Windows device, NAL icons are not displayed even after enabling the disabled bundle management**

Source: ZENworks; Software Distribution.

Explanation: If you log in to a Windows device for which bundle management is disabled, the NAL explorer shell extension (`NalShell.dll`) that is required for enabling bundle explorer icons is not loaded by Windows Explorer. As a result, even if you enable bundle management on the device, the NAL explorer icons do not get enabled.

Possible Cause: NAL explorer shell extension (`NalShell.dll`) is not loaded by Windows Explorer.

Action: To restart the `explorer.exe`, which loads `Nalshell.dll`, logoff, and then log in to the workstation again.

## **When a Mac patch policy bundle fails, the xauth messages that are launched are not terminated**

Source: ZENworks; Software Distribution

Explanation: If you launch a Mac patch policy bundle several times, the policy fails each time with a pop-up message to install xauth. These xauth messages are not terminated even after the bundle error messages disappear. This is because X11 is no longer included as a default install, starting with OS X Mountain Lion 10.8.3.

Action: Before upgrading a ZENworks agent to an OS X Mountain Lion 10.8.3 (or later) device, or before installing ZENworks agent on an OS X Mountain Lion 10.8.3 (or later) device, you need to install the X11 application.

## **When you select either the Sandbox or an old version of a bundle or policy, the status is not displayed in the summary page of the bundle or policy**

Source: ZENworks; Software Distribution

Explanation: After assigning a bundle that has the sandbox and the published versions to a device, if you select either an old version or a sandbox version of the bundle, the **Bundle Status** information is not displayed in the summary page of the bundle or policy.

Action: There is no workaround.

## **An error is displayed when certain user-specific variables are used when there is no user session available**

Source: ZENworks; Software Distribution

Explanation: Certain user-specific variables should not be used if there is no user session available. For example, for device associated bundles, user-specific variables such as `TEMPDIR`, `DESKTOP`, and `FONTS` should not be used when there is no user session available. If these variables are used, then the bundle will fail with the following error: `The directory name is invalid.`

Action: There is no workaround.

## **An error is displayed when you copy relationships of one device to another**

Source: ZENworks; Software Distribution

Explanation: When a ZENworks administrator tries to copy relationships of one device to another, the Summary page of the Copy Relationships wizard lists the operations performed (assignments added or assignments removed). If the operation fails due to insufficient rights or any other reason, then an error icon is displayed in the Summary page.

Action: Perform the relevant action:

- ♦ If the issue is related to insufficient rights, ensure that the administrator has the required rights to perform the copy relationships operation on the relevant ZENworks objects.
- ♦ If the issue is related to any other reason, you need to refer the `zcc.log` file for more details.

## **Files that are several weeks old are not cleaned up from the Tomcat Temp folder on Linux Servers**

Source: ZENworks; Software Distribution

Explanation: On Linux devices, the Tomcat Temp folder is not cleaned up completely during a zone cleanup. Files that are several weeks old are still displayed in the folder.

Action: To cleanup the Tomcat Temp directory(`/var/tmp`), run the `microfocus-zenworks-configure -z TomcatTempCleanupConfigureAction` configure action.

# F

## Documentation Updates

This section contains information on documentation content changes that were made in this Software Distribution for ZENworks Configuration Management. The information can help you to keep current on updates to the documentation.

The documentation for this product is provided on the Web in two formats: HTML and PDF. The HTML and PDF documentation are both kept up-to-date with the changes listed in this section.

If you need to know whether a copy of the PDF documentation that you are using is the most recent, the PDF document includes a publication date on the title page.

The documentation was updated on the following date:

Location	Changes
<a href="#">Section 9.5, “Copying Relationships,” on page 184</a>	Updated section with Continue on Failure action.





# Verifying Invalid Objects and Indexes

To verify if there are any Invalid objects and Indexes in ZENworks or Audit schema, you need to run the following queries:

---

## NOTE

- ♦ Do NOT use Squirrel
  - ♦ The following SQL queries is applicable only for the ORACLE database.
- 

```
SELECT * FROM USER_OBJECTS WHERE STATUS='INVALID';SELECT * FROM
USER_INDEXES WHERE FUNCIDX_STATUS='DISABLED';SELECT * FROM USER_INDEXES
WHERE STATUS='INVALID';SELECT * FROM USER_IND_PARTITIONS WHERE STATUS NOT
IN ('N/A','USABLE');SELECT * FROM USER_IND_SUBPARTITIONS WHERE STATUS NOT
IN ('USABLE');SELECT * FROM USER_CONSTRAINTS WHERE STATUS!='ENABLED';
```

```
SELECT * FROM USER_OBJECTS WHERE STATUS='\INVALID\';SELECT * FROM
USER_INDEXES WHERE FUNCIDX_STATUS='\DISABLED\';SELECT * FROM USER_INDEXES
WHERE STATUS='\INVALID\';SELECT * FROM USER_IND_PARTITIONS WHERE STATUS NOT
IN ('\N/A\','\USABLE\');SELECT * FROM USER_IND_SUBPARTITIONS WHERE STATUS
NOT IN ('\USABLE\');SELECT * FROM USER_CONSTRAINTS WHERE
STATUS!='\ENABLED\';
```

The above queries should NOT return any records.If these queries return any records, you need to run the below scripts in the respective schema:

```
DECLARE V_CNT NUMBER;BEGIN SELECT COUNT(1) INTO V_CNT FROM USER_OBJECTS
WHERE STATUS ='INVALID' AND OBJECT_TYPE IN
('PROCEDURE','TRIGGER','FUNCTION','VIEW'); WHILE V_CNT > 0 LOOP FOR REC IN
(SELECT * FROM USER_OBJECTS WHERE STATUS ='INVALID' AND OBJECT_TYPE IN
('PROCEDURE','TRIGGER','FUNCTION','VIEW')) LOOP BEGIN EXECUTE IMMEDIATE
'ALTER '||REC.OBJECT_TYPE||' ' ' '||REC.OBJECT_NAME||'" COMPILE'; EXCEPTION
WHEN OTHERS THEN NULL; END; END LOOP; SELECT COUNT(1) INTO V_CNT FROM
USER_OBJECTS WHERE STATUS ='INVALID' AND OBJECT_TYPE IN
('PROCEDURE','TRIGGER','FUNCTION','VIEW'); END LOOP;END;/DECLARE V_CNT
NUMBER;BEGIN SELECT COUNT(1) INTO V_CNT FROM USER_INDEXES WHERE
FUNCIDX_STATUS='DISABLED' AND TEMPORARY ='N' AND INDEX_TYPE!= 'LOB' AND
PARTITIONED ='NO' AND TABLE_NAME IN (SELECT TABLE_NAME FROM USER_TABLES
WHERE TEMPORARY='N' ) AND TABLE_NAME NOT IN
('PLAN_TABLE','ZENUPGRADELOG','ZENUPG_INDEX'); WHILE V_CNT > 0 LOOP FOR REC
IN (SELECT * FROM USER_INDEXES WHERE FUNCIDX_STATUS='DISABLED' AND
TEMPORARY ='N' AND INDEX_TYPE!= 'LOB' AND PARTITIONED ='NO' AND TABLE_NAME
IN (SELECT TABLE_NAME FROM USER_TABLES WHERE TEMPORARY='N' ) AND TABLE_NAME
NOT IN ('PLAN_TABLE','ZENUPGRADELOG','ZENUPG_INDEX')) LOOP EXECUTE
IMMEDIATE 'ALTER INDEX '||REC.INDEX_NAME||' ENABLE'; END LOOP; SELECT
COUNT(1) INTO V_CNT FROM USER_INDEXES WHERE FUNCIDX_STATUS='DISABLED' AND
TEMPORARY ='N' AND INDEX_TYPE!= 'LOB' AND PARTITIONED ='NO' AND TABLE_NAME
IN (SELECT TABLE_NAME FROM USER_TABLES WHERE TEMPORARY='N' ) AND TABLE_NAME
NOT IN ('PLAN_TABLE','ZENUPGRADELOG','ZENUPG_INDEX'); END LOOP;END;/BEGIN
```

```

FOR REC1 IN (SELECT * FROM USER_INDEXES WHERE PARTITIONED='YES' AND
TABLE_NAME IN (SELECT TABLE_NAME FROM USER_TABLES WHERE TEMPORARY='N' ) AND
TABLE_NAME NOT IN ( 'PLAN_TABLE','ZENUPGRADELOG','ZENUPG_INDEX' ) ) LOOP IF
REC1.STATUS='N/A' THEN FOR REC2 IN (SELECT * FROM USER_IND_PARTITIONS WHERE
INDEX_NAME=REC1.INDEX_NAME AND STATUS! ='USABLE' ) LOOP IF REC1.STATUS='N/
A' THEN FOR REC3 IN (SELECT * FROM USER_IND_SUBPARTITIONS WHERE INDEX_NAME
=REC2.INDEX_NAME AND PARTITION_NAME=REC2.PARTITION_NAME AND STATUS!
='USABLE' ) LOOP EXECUTE IMMEDIATE 'ALTER INDEX '||REC3.INDEX_NAME||'
REBUILD SUBPARTITION '||REC3.SUBPARTITION_NAME; END LOOP; ELSE EXECUTE
IMMEDIATE 'ALTER INDEX '||REC2.INDEX_NAME||' REBUILD PARTITION
' ||REC2.PARTITION_NAME; END IF; END LOOP; END IF; END LOOP; FOR REC IN
(SELECT * FROM USER_INDEXES WHERE FUNCIDX_STATUS!='ENABLED' ) LOOP EXECUTE
IMMEDIATE 'ALTER INDEX '||REC.INDEX_NAME||' ENABLE'; END LOOP;END;/

```

Verify the invalid objects after executing above scripts. The following queries should NOT return any records:

```

SELECT * FROM USER_OBJECTS WHERE STATUS='INVALID';SELECT * FROM
USER_INDEXES WHERE FUNCIDX_STATUS='DISABLED';SELECT * FROM USER_INDEXES
WHERE STATUS='INVALID';SELECT * FROM USER_IND_PARTITIONS WHERE STATUS NOT
IN ( 'N/A','USABLE' );SELECT * FROM USER_IND_SUBPARTITIONS WHERE STATUS NOT
IN ( 'USABLE' );SELECT * FROM USER_CONSTRAINTS WHERE STATUS!='ENABLED';

```