Software Distribution Reference
ZENworks® 11 Support Pack 2

October 2013

Novell®

Legal Notices

Novell, Inc., makes no representations or warranties with respect to the contents or use of this documentation, and specifically disclaims any express or implied warranties of merchantability or fitness for any particular purpose. Further, Novell, Inc., reserves the right to revise this publication and to make changes to its content, at any time, without obligation to notify any person or entity of such revisions or changes.

Further, Novell, Inc., makes no representations or warranties with respect to any software, and specifically disclaims any express or implied warranties of merchantability or fitness for any particular purpose. Further, Novell, Inc., reserves the right to make changes to any and all parts of Novell software, at any time, without any obligation to notify any person or entity of such changes.

Any products or technical information provided under this Agreement may be subject to U.S. export controls and the trade laws of other countries. You agree to comply with all export control regulations and to obtain any required licenses or classification to export, re-export or import deliverables. You agree not to export or re-export to entities on the current U.S. export exclusion lists or to any embargoed or terrorist countries as specified in the U.S. export laws. You agree to not use deliverables for prohibited nuclear, missile, or chemical biological weaponry end uses. See the Novell International Trade Services Web page (http://www.novell.com/info/exports/) for more information on exporting Novell software. Novell assumes no responsibility for your failure to obtain any necessary export approvals.

Copyright © 2007 - 2013 Novell, Inc. All rights reserved. No part of this publication may be reproduced, photocopied, stored on a retrieval system, or transmitted without the express written consent of the publisher.

Novell, Inc.
1800 South Novell Place
Provo, UT 84606
U.S.A.
www.novell.com

Online Documentation: To access the latest online documentation for this and other Novell products, see the Novell Documentation Web page (http://www.novell.com/documentation).

Novell Trademarks

For Novell trademarks, see the Novell Trademark and Service Mark list (http://www.novell.com/company/legal/trademarks/tmlist.html).

Third-Party Materials

All third-party trademarks are the property of their respective owners.

Contents

About This Guide

This *ZENworks 11 Software Distribution Reference* includes conceptual and task-based information to help you effectively manage software distribution in your Novell ZENworks 11 system. This guide is organized as follows:

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 11 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 11 documentation Web site (http://www.novell.com/documentation/zenworks11)

1 Basic Concepts

Novell 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:

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.
- **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.

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 25 and for information on using the zman command line utility, see "ZENworks Command Line Utilities" in the *ZENworks 11 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   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 1.4.1, "Distribute," on page 13
- Section 1.4.2, "Install," on page 13
- Section 1.4.3, "Launch," on page 14
- Section 1.4.4, "Verify," on page 16
- Section 1.4.5, "Uninstall," on page 16
- Section 1.4.6, "Terminate," on page 19
- Section 1.4.7, "Preboot," on page 21

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 Verify, Uninstall, and Terminate action sets are performed based on user requests through bundle options.

1.4.1　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 schedule. For information about the distribution schedule, see Step 5 on page 177.

1.4.2　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 MSP, Install Network MSI, 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.

Install Options

Install Frequency
- Install once per device
- Install once per user per device
- Install always

User Download Options

Actions allowed when content is being downloaded:

- Always allow postpones
- Never allow postpones
- Limit postpones to   3

OK   Cancel
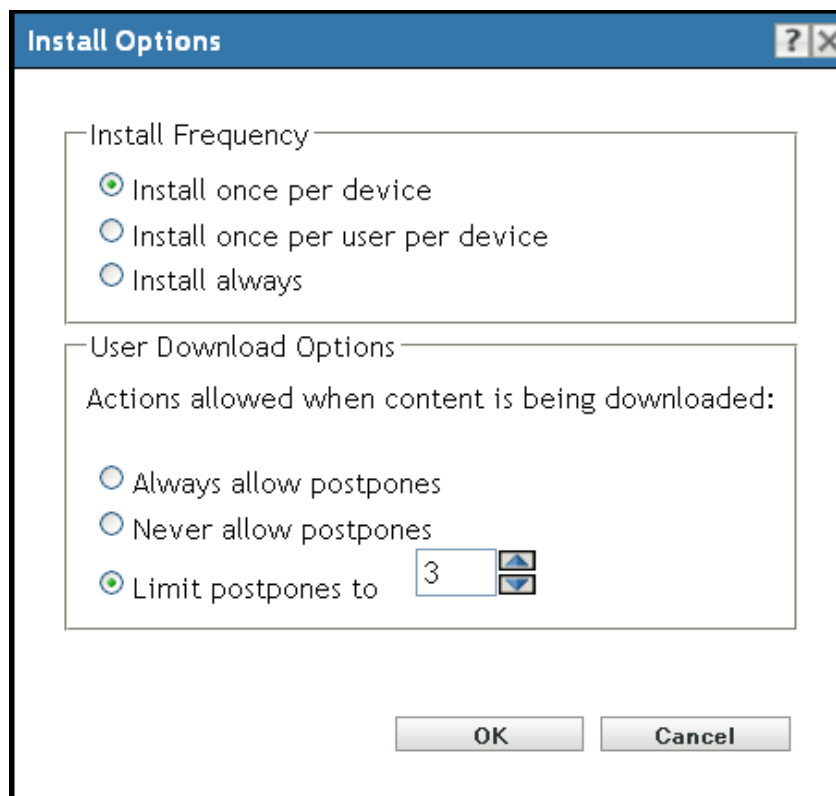
2 Select the *Install Frequency*, based on the number of times you want to execute the Install action set:

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 Schedule dialog box.

.For information about the distribution schedule, see "Distribution Schedule:" on page 177.

1.4.3 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 schedule 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 Schedule or through the *Launch Immediately after Installation* option in the bundle distribution schedule. For information about the Distribution Schedule, see "Distribution Schedule:" on page 177.

1.4.4 Verify

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

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

NOTE: The Verify action set has no options.

1.4.5 Uninstall

You use the Uninstall action set to un install 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.

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.
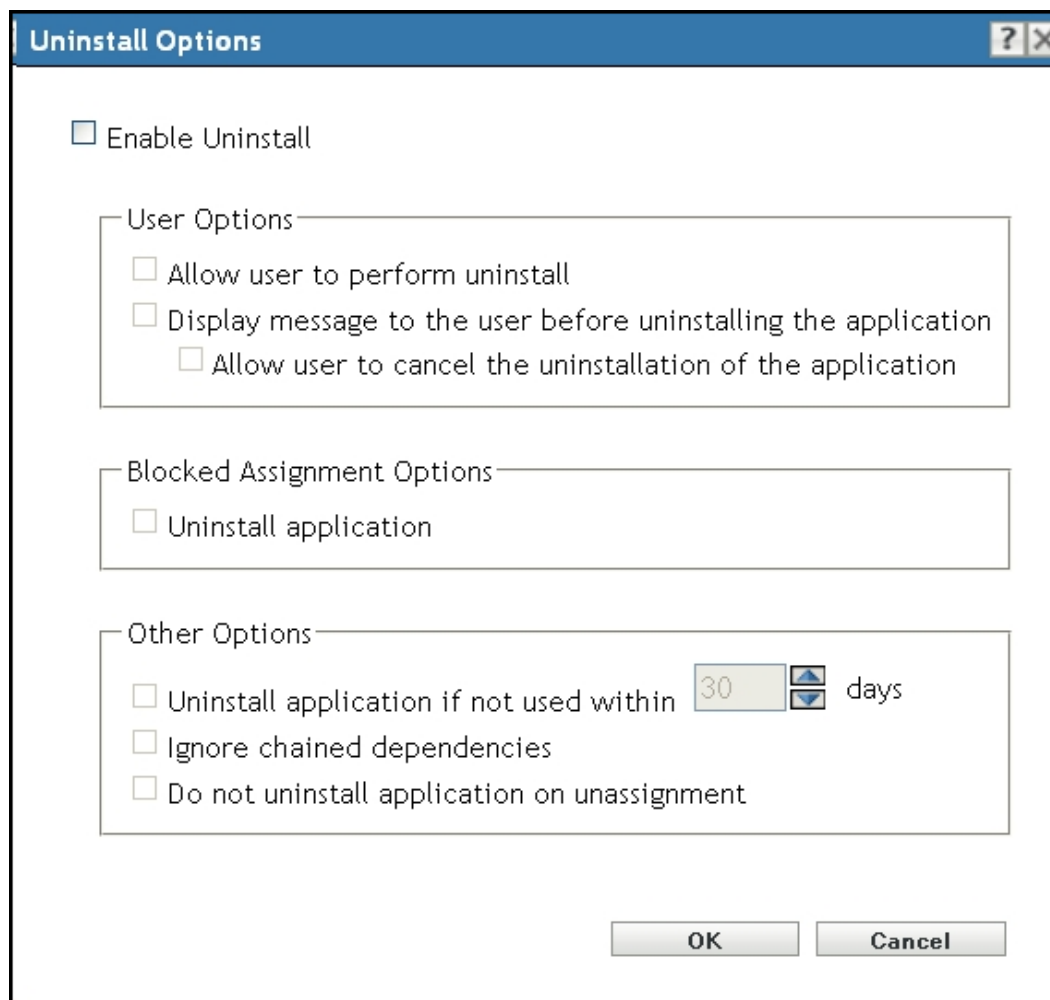
2 Select the *Enable Uninstall* check box to enable the uninstallation of the application from the device.

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 Option*s 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.

| **View Action - Undo Install Actions** | | ?☒ |

Action Name: * [Undo Install Actions]

This task will undo all operations that are performed in the install action set. These are the operations which will be reversed:

Name	Type	State
InstallGroupWise2012beta	Install Bundle	Enabled
Install LibreOffice	Install Bundle	Enabled

[Close]
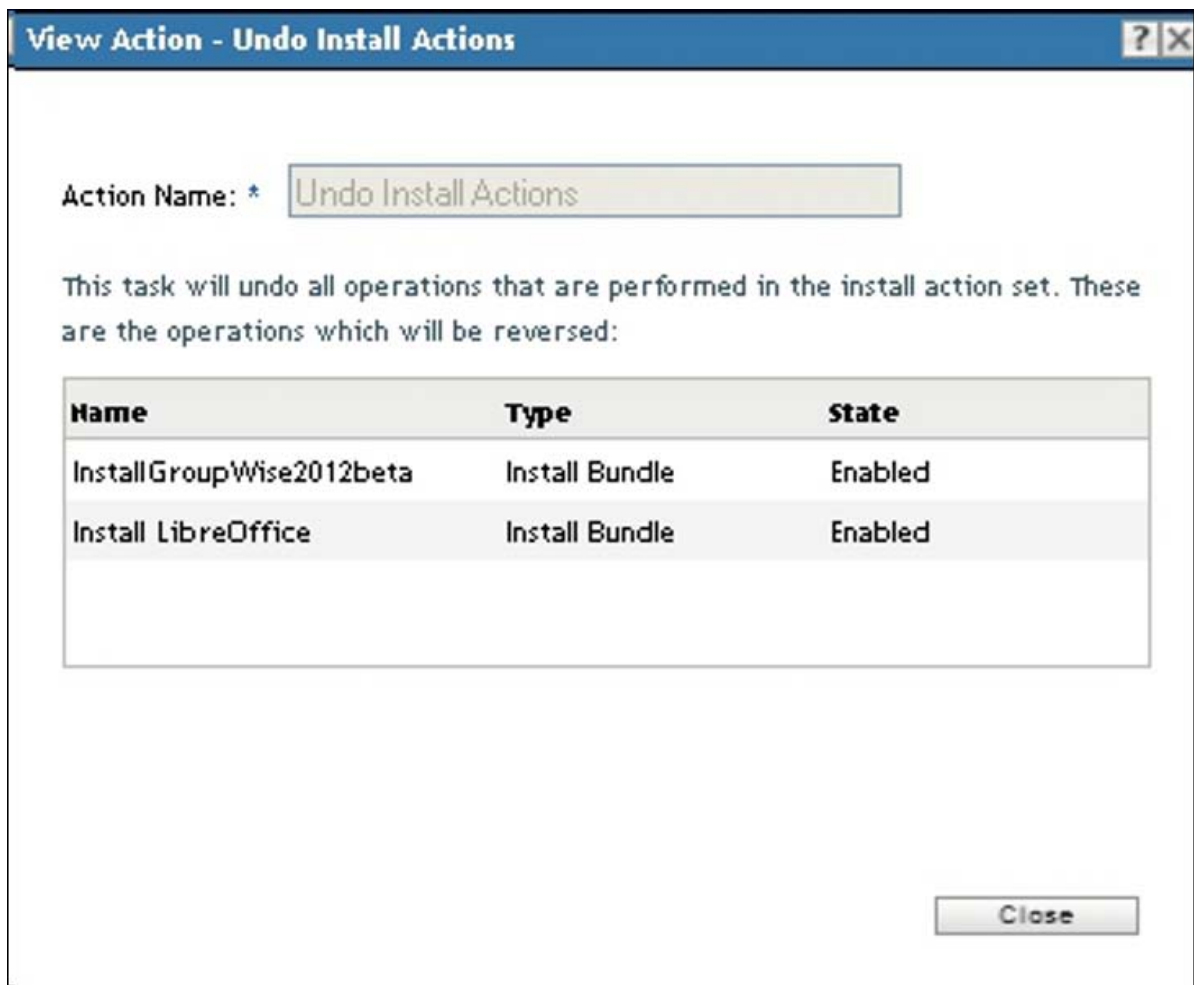
1.4.6 Terminate

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.
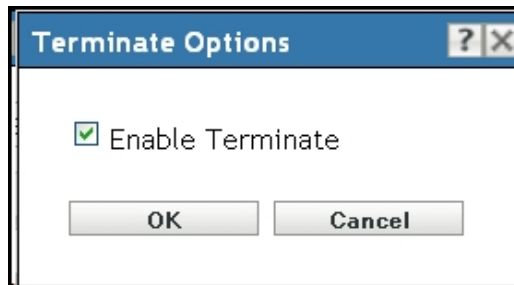
2 Select the *Enable Terminate* check box to terminate the actions of the bundle.
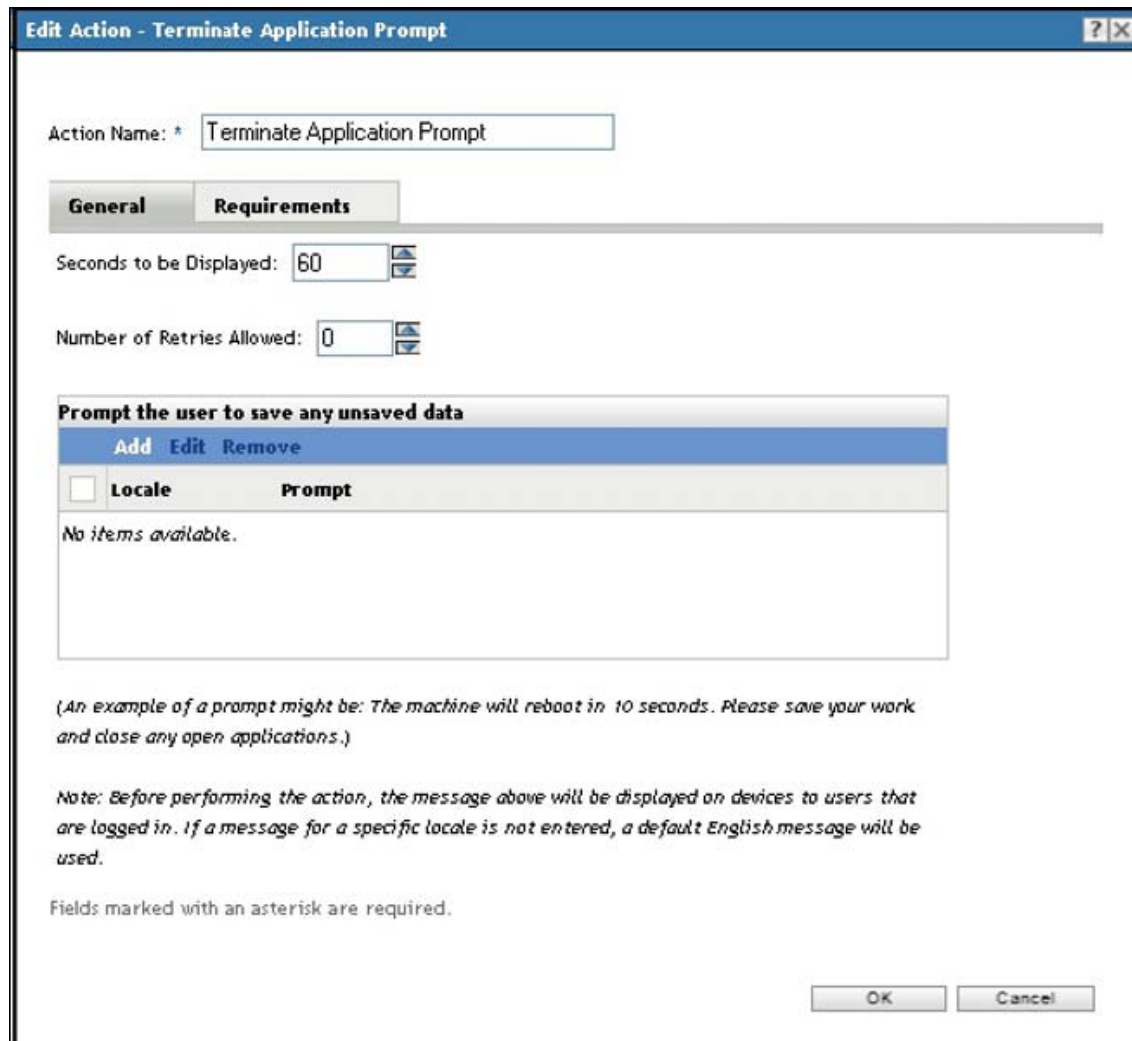
The Terminate action set is applicable only for Windows bundles. This action set is enabled by default.

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

Edit Action - Terminate Application

Action Name: * [Terminate Application]

General | **Requirements**

This task will undo all operations that are performed in the launch action set. These are the operations which will be reversed:

Name	Type	State
Launch LibreOffice	Launch Bundle	Enabled
Launch Groupwise	Launch Bundle	Enabled

Notify the user of termination

Add   Edit   Remove

	Locale	Prompt

No items available.

(An example of a prompt might be: The machine will reboot in 10 seconds. Please save your work and close any open applications.)

Note: Before performing the action, the message above will be displayed on devices to users that are logged in. If a message for a specific locale is not entered, a default English message will be used.

Fields marked with an asterisk are required.

OK   Cancel

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.

1.4.7 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.
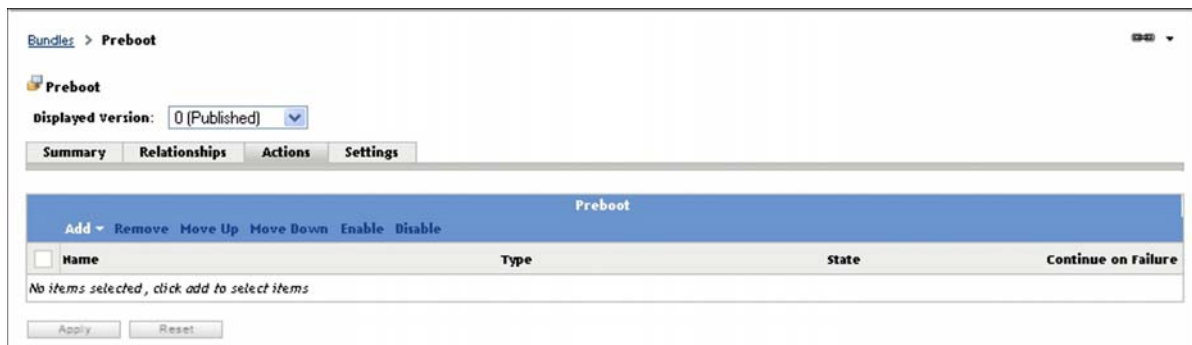
1 When you create or modify a bundle, click *Add* on the Preboot page to configure the actions associated with the Preboot bundle.

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.

1.5   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.

1.6   Packaging Considerations

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

- Section 1.6.1, "Time Required for Packaging:," on page 22
- Section 1.6.2, "Space Required for Packaging:," on page 23

1.6.1   Time Required for Packaging:

Large MSI 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.

1.6.2 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	`zenworks_home\share\tomcat\temp`
zman (command line utility)	`zenworks_home\work\content-repo\tmp`
ZENworks Migration Utility	`zenworks_home\work\collection\datamodel`

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

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

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 .

For more information on changing the location of temporary files on a Linux device, see .

1.7 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.

1.7.1 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 195.

For more information, see .

1.7.2 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 schedule 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 .

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.

Novell 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, "Creating Linux Bundles," on page 25
- Section 2.3, "Creating Preboot Bundles," on page 30
- Section 2.4, "Creating Windows Bundles," on page 30

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

- Section 2.5, "Creating Bundles by Using the zman Command Line Utility," on page 42

2.1 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 11 Linux Package Management Reference*.

2.2 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".

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.

Create New Bundle

Step 1: Select Bundle type

Select the type of Bundle you wish to create from the list of options.

New Bundle Type:
- Linux Bundle
- Linux Dependency Bundle
- Macintosh Bundle
- Preboot Bundle
- Windows Bundle

Description:
Macintosh Bundle - This allows you to configure and manage applications on Macintosh devices.

<< Back   Next >>   Cancel
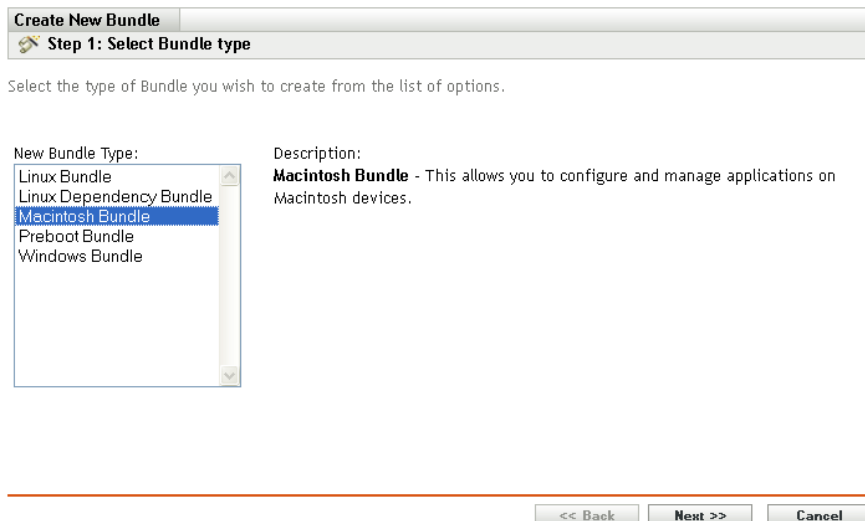
3 Select *Macintosh Bundle*, then click *Next* to display the Select Bundle Category page.
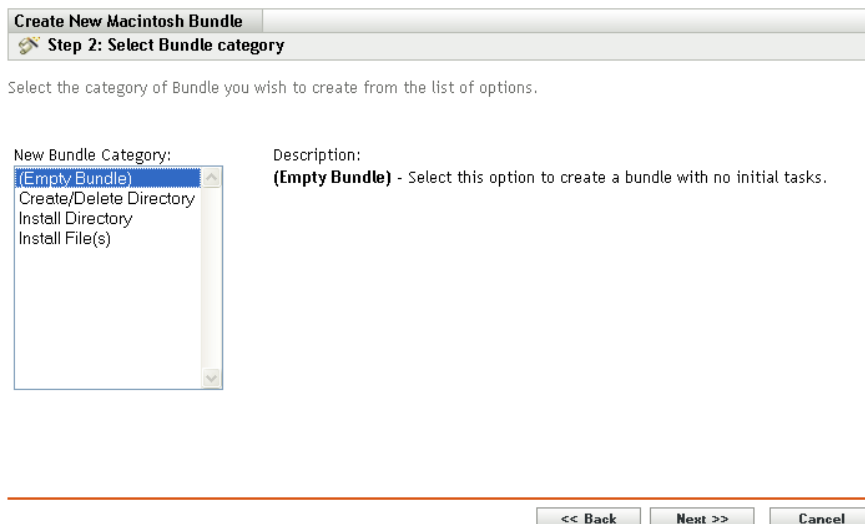
Create New Macintosh Bundle

Step 2: Select Bundle category

Select the category of Bundle you wish to create from the list of options.

New Bundle Category:
- (Empty Bundle)
- Create/Delete Directory
- Install Directory
- Install File(s)

Description:
(Empty Bundle) - Select this option to create a bundle with no initial tasks.

<< Back   Next >>   Cancel

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.

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.

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 Adaptive Agent (on managed devices).

For more information, see .

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 Adaptive Agent on the managed device. ZCC uses default icons to represent the different bundles (Linux, Macintosh, Preboot, and Windows).

To select an icon, click *Browse*, then browse to and select the icon you want to display on managed devices.

If the desired icon is embedded in a `.exe`, `.dll`, or `.ico` file that has multiple icons from which to choose, you must install additional items before you can browse to and select the desired icon.

For Mozilla Firefox, if you have not already installed the Novell File Upload extension on this device, you must do so before you can download and install the download plugin or browse to and upload the icon. For more information, see "Novell File Upload Extension" on page 227.

After you install the Novell File Upload extension, you must also install the download plugin. To do so, click the *Click here to download plugin* message box that displays in the Select Icon dialog box (if you have already installed the plugin on this device, the plugin box does not display), click *Manual Install*, then click *Install Now*.

For Microsoft Internet Explorer, you must install the Novell File UploadActiveX control only; there is no download plugin for Internet Explorer. For more information, see "Novell File Upload Extension" on page 227.

After you have downloaded and installed the necessary extensions and plugin, click 🔍 to browse to and select the icon you want ZENworks Adaptive Agent to display to represent the bundle. If the icon in embedded in a `.exe`, `.dll`, or `.ico` file that contains multiple icons, an additional dialog box displays to let you select the desired icon.

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

Description: Provide a short description of the bundle's contents. This description displays in ZENworks Control Center and in the ZENworks Adaptive 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 30.
- ◆ **Create/Delete Directory:** Continue with Step 7 on page 27.
- ◆ **Install Directory:** Continue with Step 8 on page 28.
- ◆ **Install Files:** Continue with Step 9 on page 29.

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 19 on page 42.

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

Wizard Page and Field	Details
Select Directory page > *Action Type* field	Select one of the following: ◆ **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.
Select Directory page > *Directory Name* 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 .

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

Wizard Page and Field	Details
Select Directory page > *Source Directory* field	Click 🔍 to display the Select Directory dialog box. Browse to and select the file to upload. The *Status* 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 the Novell File Upload extension is not installed on this device, it must be installed before you can browse to and upload files to be copied. For more information, see Installing the Novell File Upload Extension.
Select Directory page > *Upload Files As* field	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*.
Select Directory page > *Destination Directory* field	Specify the destination path on the device where you want to install the directory.
Select Directory page > *Permissions* field	You can configure permissions and set the access for the directory that you have installed. **Mode:** Select this option and enter a 3 digit octal number to specify the permissions for owner, group, and others. **Owner:** Select this option and set the access for Owner, Group, and Others.

Wizard Page and Field	Details
Select Directory page > *Ownership* field	You can configure permissions and set the access for the directory that you have installed.
	Root: Select this option to provide the ownership for the root user.
	User: Select this option to provide the ownership for a particular user. You can also specify the group of the user.
Select Directory page > *Copy Option*	Select a copy option from the list. For more information on the options, click *Help*.

9 (Conditional) If you are creating an Install Files bundle, follow the wizard prompts until you reach the Summary page, then skip to .

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

Wizard Page and Field	Details
Select Files page > *File* field	Click *Add* to display the Select Files dialog box, specify the files you want to install on the device, then click *Open*. Repeat this step as many times as necessary to copy the desired files.
	Click *OK* to upload the files to the server. The *File* option lists all the uploaded files, the size of the files, and how the content is packaged.
	If the Novell File Upload extension is not installed on this device, you must install it before you can browse for file paths. For more information, see Installing the Novell File Upload Extension.
Select Files page > *Destination Directory* field	Specify the destination directory on the device in which you want to install the file.
Select Directory page > *Permissions* field	You can configure permissions and set the access for the directory that you have installed.
	Mode: Select this option and enter a 3 digit octal number to specify the permissions for owner, group, and others.
	Owner: Select this option and set the access for Owner, Group, and Others.
Select Directory page > *Ownership* field	You can configure permissions and set the access for the directory that you have installed.
	Root: Select this option to provide the ownership for the root user.
	User: Select this option to provide the ownership for a particular user. You can also specify the group of the user.
Select Files page > *Unpack* field	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.
Select Files page > *Delete After Unpack* 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 > *Copy Option*	Select a copy option from the list. For more information on the options, click *Help*.

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 155.

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, schedules, 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.

2.3 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 11 Preboot Services and Imaging Reference*.

2.4 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.
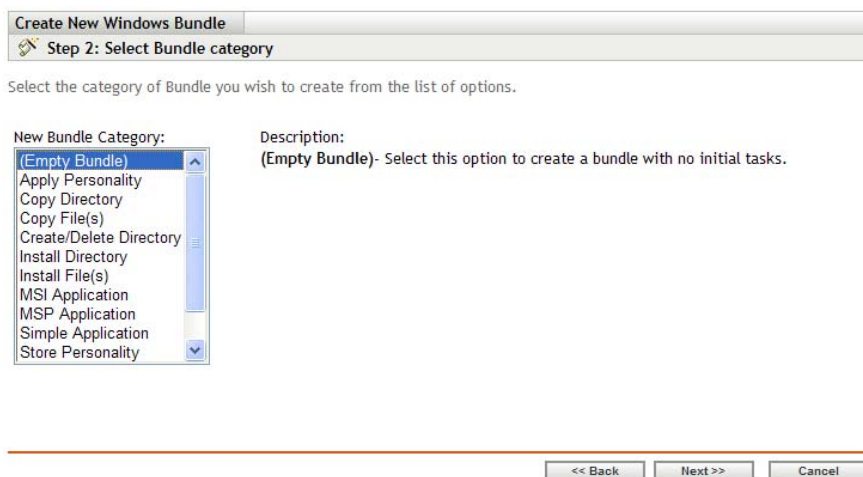
Create New Windows Bundle
Step 2: Select Bundle category

Select the category of Bundle you wish to create from the list of options.

New Bundle Category:
- (Empty Bundle)
- Apply Personality
- Copy Directory
- Copy File(s)
- Create/Delete Directory
- Install Directory
- Install File(s)
- MSI Application
- MSP Application
- Simple Application
- Store Personality

Description:
(Empty Bundle)- Select this option to create a bundle with no initial tasks.

<< Back   Next >>   Cancel

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.

Apply Personality: Applies the personality of one or more users on the managed device from a personality file located on a local or network path.

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.

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 1.6, "Packaging Considerations," on page 22.

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 AdminStudio12 ZENworks Edition Installation Guide (https://www.novell.com/documentation/zenworks11/pdfdoc/adminstudio/AS12InstallGuide.pdf).

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 1.6, "Packaging Considerations," on page 22.

Simple Application: An example of a Simple Application would be launching Windows Note pad. Typically, Simple Applications requires ZENworks Adaptive 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 12 ZENworks Edition Installation Guide (https://www.novell.com/documentation/zenworks11/pdfdoc/adminstudio/AS12InstallGuide.pdf).

Store Personality: Stores the personality of one or more users on the managed device to a local or network path.The personality files are not uploaded to the ZENworks content system.

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 Adaptive Agent (on managed devices).

For more information, see .

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 Adaptive Agent on the managed device. ZCC uses default icons to represent the different bundles (Linux, Preboot, and Windows).

To select an icon, click *Browse*, then browse to and select the icon you want to display on managed devices.

If the desired icon is embedded in a .exe, .dll, or .ico file that has multiple icons from which to choose, you must install additional items before you can browse to and select the desired icon.

For Mozilla Firefox, if you have not already installed the Novell File Upload extension on this device, you must do so before you can download and install the download plugin or browse to and upload the icon. For more information, see "Novell File Upload Extension" on page 227. After you install the Novell File Upload extension, you must also install the download plugin. To do so, click the *Click here to download plugin* message box that displays in the Select Icon dialog box (if you have already installed the plugin on this device, the plugin box does not display), click *Manual Install*, then click *Install Now*.

For Microsoft Internet Explorer, you must install the Novell File Upload ActiveX control only; there is no download plugin for Internet Explorer. For more information, see "Novell File Upload Extension" on page 227.

After you have downloaded and installed the necessary extensions and plugin, click 🔍 to browse to and select the icon you want ZENworks Adaptive Agent to display to represent the bundle. If the icon in embedded in a .exe, .dll, or .ico file that contains multiple icons, an additional dialog box displays to let you select the desired 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 Adaptive 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 19 on page 42.
- ◆ **Apply Personality:** Continue with Step 7 on page 33.
- ◆ **Copy Directory:** Continue with Step 8 on page 33.
- ◆ **Copy Files:** Continue with Step 9 on page 34.
- ◆ **Create/Delete Directory:** Continue with Step 10 on page 34.
- ◆ **Install Directory:** Continue with Step 11 on page 35.
- ◆ **Install Files:** Continue with Step 12 on page 36.
- ◆ **MSI Application:** Continue with Step 13 on page 37.
- ◆ **MSP Application:** Skip to Step 14 on page 39.
- ◆ **Simple Application:** Skip to Step 15 on page 40.
- ◆ **Store Personality:** Skip to Step 16 on page 40.
- ◆ **Thin Client Application:** Skip to Step 17 on page 41.
- ◆ **Web Application:** Skip to Step 18 on page 42.

7 (Conditional) If you are creating an Apply Personality bundle, follow the wizard prompts until you reach the Summary page, then skip to Step 19 on page 42.

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

Wizard Page and Field	Details
Apply Personality page > *Upload a template from this device* field	Select this option and click 🔍 to display the Upload content dialog box. Browse to and select the template to upload.
Apply Personality page > *Specify a template on the managed device* field	Select this option to specify the path of personality migration template file on the managed device. You can also specify the UNC path of the file.
Apply Personality page > *Path from where the PNP file is to be loaded*	Specify the path of the PNP file containing the migration settings and data on the managed device. You can also specify the UNC path of the file.
Apply Personality page > Password to decrypt the PNP file field	Select this check box to enter the password to decrypt the PNP file. **NOTE:** If you spanned the PNP file, be sure to keep the spanned files and the PNP file in the same folder.

8 (Conditional) If you are creating an Copy Directory bundle, follow the wizard prompts until you reach the Summary page, then skip to Step 19 on page 42.

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

Wizard Page and Field	Details
Select Directory page > *Source Directory* field	If you have not installed the Novell File Upload extension on this device, you must do so before you can browse for a directory. For more information, see Section C.1, "Installing the Novell File Upload Extension," on page 227.
	Click *Browse* to display the Browse for Folder dialog box. Browse to and select the directory to copy.
Select Directory page > *Destination Directory* field	Specify the destination path on the device where you want to copy the directory.
Select Directory page > *Copy Option*	Select a copy option from the list. For more information on the options, click *Help*.
Select Directory page > *Attributes* field	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.

9 (Conditional) If you are creating an Copy Files bundle, follow the wizard prompts until you reach the Summary page, then skip to Step 19 on page 42.

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

Wizard Page and Field	Details
Select Files page > *File* field	Click *Add* to display the Select Files dialog box, specify the files you want to copy to the device, then click *Open*. Repeat this step as many times as necessary to copy the desired files.
	If the Novell File Upload extension is not installed on this device, you must install it before you can browse for file paths. For more information, see Installing the Novell File Upload Extension.
Select Files page > *Destination Directory* field	Specify the destination directory on the device in which you want to copy the file.
Select Files page > *Create Shortcuts for Source Files*	Select the *Create Shortcuts for Source Files* 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 > *Copy Option*	Select a copy option from the list. For more information on the options, click *Help*.
Select Files page > *Attributes* field	Select one or more of the following attributes:
	Hidden: Select the *Hidden* check box to specify that the file is hidden after being copied.
	Read-only: Select the *Read-only* check box to specify that the file is read-only after being copied.

10 (Conditional) If you are creating an Create/Delete Directory bundle, follow the wizard prompts until you reach the Summary page, then skip to Step 19 on page 42.

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

Wizard Page and Field	Details

Select Directory page > *Action Type* field	Select one of the following:
	
	    ◆ **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.

Select Directory page > *Directory Name* 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.

11 (Conditional) If you are creating an Install Directory bundle, follow the wizard prompts until you reach the Summary page, then skip to .

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

Wizard Page and Field	Details
Select Directory page > *Source Directory* field	Click 🔍 to display the Select Directory dialog box. Browse to 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 *Do not compress or encrypt uploaded content* option. The *Status* 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 the Novell File Upload extension is not installed on this device, it must be installed before you can browse to and upload files to be copied. For more information, see Installing the Novell File Upload Extension.
Select Directory page > *Upload Files As* field	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*.

Wizard Page and Field	Details
Select Directory page > *Packaging* field	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.
Select Directory page > *Destination Directory* field	Specify the destination path on the device where you want to install the directory.
Select Directory page > *Copy Option*	Select a copy option from the list. For more information on the options, click *Help*.
Select Directory page > *Attributes* field	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.

12 (Conditional) If you are creating an Install Files bundle, follow the wizard prompts until you reach the Summary page, then skip to .

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

Wizard Page and Field	Details
Select Files page > *File* field	Click *Add* to display the Select Files dialog box, specify the files you want to install on the device, then click *Open*. Repeat this step as many times as necessary to copy the desired files.
	By default, the content is encrypted and compressed. If you do not want to compress or encrypt the content, select the *Do not compress or encrypt uploaded content* option.
	Click *OK* to upload the files to the server. The *File* option lists all the uploaded files, the size of the files, and how the content is packaged.
	If the Novell File Upload extension is not installed on this device, you must install it before you can browse for file paths. For more information, see Installing the Novell File Upload Extension.
Select Files page > *Destination Directory* field	Specify the destination directory on the device in which you want to install the file.
Select Files page > *Copy Option*	Select a copy option from the list. For more information on the options, click *Help*.

Wizard Page and Field	Details
Select Files page > *Attributes* field	Select one or more of the following attributes:
	Hidden: Select the *Hidden* check box to specify that the file is hidden after being copied.
	Read-only: Select the *Read-only* check box to specify that the file is read-only after being copied.

13 (Conditional) If you are creating an MSI Application bundle, follow the wizard prompts until you reach the Summary page, then skip to .

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

Wizard Page and Field	Details
Select .msi File page > *Upload .msi file for normal install* field	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 Adaptive 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.
	Click 🔍 to display the Select .msi File dialog box. Click *Browse* to select the .msi file to upload. 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.
	NOTE: 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.
Select .msi File page > *Enter UNC path of .msi file for network install* field	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.
	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.
	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.
Select .msi File page > *Install the Novell File Upload extension* link	If you have not installed the Novell File Upload extension on this device, you must do so before you can browse to and upload files. For more information, see Appendix C, "Novell File Upload Extension," on page 227.
Select .msi File page > Install Parameters field	Click 🔳 to display the Install Parameters dialog box, then specify the desired parameters. For more information, click the *Help* button or see Section A.1, "Install Parameters," on page 217.

Wizard Page and Field	Details
Select .msi File page > *Unistall Parameters* field	Click 🗔 to display the Uninstall Parameters dialog box, then specify the desired parameters. For more information, click the *Help* button or see Section A.2, "Uninstall Parameters," on page 219.
Select .msi File page > *Repair Parameters* field	Click 🗔 to display the Repair Parameters dialog box, then specify the desired parameters. For more information, click the *Help* button or see Section A.3, "Repair Parameters," on page 221.
Select .msi File page > *MSI Properties* field	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.

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.

To modify a property that is in the *MSI Properties* list, select the property, click *Edit*, modify the value data, then click *OK*.

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. |
| Select .msi File page > *Select Transforms File* field | Click *Add* to browse to and select the desired transform file. You can upload the transform file or you can specify its location.

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 |

Wizard Page and Field	Details
Select Command page > *Executable to run* field	The Select Command page lets you specify an optional executable to run after the `.msi` file installs. Click *Browse* to browse for and select the executable to run. If the executable is installed in the `Program Files` directory on the managed device, you must use macros as follows: ◆ **On 32-bit managed device:** `${ProgramFiles}\filename`. ◆ **On 64-bit managed device:** `${ProgramFiles32}\filename`. If you have not installed the Novell File Upload extension on this device, you must do so before you can browse to and upload files. For more information, see Appendix C, "Novell File Upload Extension," on page 227.

14 If you are creating an MSP Application bundle, follow the wizard prompts until you reach the Summary page, then skip to .

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

Wizard Page and Field	Details
Select .msp File page > *Upload .msp file for normal install* 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 Adaptive 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 > *Enter UNC path of .msp file for network install* field	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. 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. 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.
Select .msp File page > *Install the Novell File Upload extension* link	If you have not installed the Novell File Upload extension on this device, you must do so before you can browse to and upload files. For more information, see Appendix C, "Novell File Upload Extension," on page 227.
Select .msp File page > *Command Line Parameters* field	After you select the `.msp` file, the *Command Line Parameters* field is automatically populated, for example */p patch_package /qn* where `/p` designates a patch file, `patch_package` specifies the `.msp` file, and `/qn` specifies an installation with no user interface (silent installation). To install a `.msp` file, you should normally use the `/qn` option. You can, however, specify additional options. For more information, see the MSDN Web site (http://msdn2.microsoft.com/en-us/library/aa372866.aspx).

15 If you are creating Simple Application bundle, follow the wizard prompts until you reach the Summary page, then skip to .

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

Wizard Page and Field	Details
Enter the Command to Run page > *Command* field	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.
	For example, if the executable file is on the device's local drive, you would specify something like `c:\winnt\notepad.exe`. If the executable file is on a network resource, you would specify something like `j:\apps\notepad.exe` (if all users will have J: mapped to the location) or `\\server1\vol1\apps\notepad.exe`.
Enter the Command to Run page > *Install the Novell File Upload extension* link	If you have not installed the Novell File Upload extension on this device, you must do so before you can browse to and upload files. For more information, see Appendix C, "Novell File Upload Extension," on page 227.
Enter the Command to Run page > *Command Line Parameters* field	Specify any command line parameters that need to be passed to the executable.
	ZENworks Adaptive 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 `word.exe` has a `/f=filepath` parameter that requires paths with spaces to be enclosed in quotation marks, you would specify the following:
	`/f="c:\my docs\sample.doc"`
Enter the Command to Run page > *Working Directory* field	Specify the path to the directory you want the application to use for its working files.

16 (Conditional) If you are creating an Store Personality bundle, follow the wizard prompts until you reach the Summary page, then skip to .

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

Wizard Page and Field	Details
Store Personality page > *Upload a template from this device* field	Select this option and click 🔍 to display the Upload content dialog box. Browse to and select the template to upload.
Store Personality page > *Specify a template on the managed device* field	Select this option to specify the path of personality migration template file on the managed device. You can also specify the UNC path of the file.
Store Personality page > *Path from where the PNP file is to be created*	Specify the path of the PNP file on the managed device for storing the migration settings and data. You can also specify the UNC path of the file.

Wizard Page and Field	Details
Store Personality page > Password to encrypt the PNP file field	Select this check box to enter the password to encrypt the PNP file. In the *Re-enter the password* field, re-enter the password to confirm it.
Store Personality page > Span to mutilple files field	You can choose to span the personality migration data across multiple files to enable you to store data in removable media. The available options are. ◆ **Never span:** Select this option to migrate personalities without spanning the files. ◆ **Span at the size:** Select this option to specify a span size for the files. The default span size is 650 MB, and the maximum span size is 2 GB.

17 If you are creating a Thin Client Application bundle, follow the wizard prompts until you reach the Summary page, then skip to .

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

Wizard Page and Field	Details
Configure Thin Client Details page > *ICA Session: Published Application Name* field	Type the published application name exactly as it is defined in Citrix*.
Configure Thin Client Details page > *ICA Session: Servers Hosting the Application* field	Add the Citrix servers that host the application. To add a server, specify the server's IP address or hostname, then 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.
Configure Thin Client Details page > *RDP Session: Terminal Server Address* field	Type the terminal server's IP address or hostname.
Configure Thin Client Details page > *RDP Session: Server Port* field	If the terminal server is not using the default port 3389, specify the correct port number.
Configure Thin Client Details page > *RDP Session: Server Domain* 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 > *RDP Session: Application Path* field	Specify the path to the application's executable file from the perspective of the terminal server.
Configure Thin Client Details page > *RDP Session: Application Working Directory* field	Specify the path to the directory you want the application to use for its working files.
Configure Thin Client Details page > *RDP Session: Color Depth* field	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)*.

Wizard Page and Field	Details
Configure Thin Client Details page > *RDP Session: Screen Size* field	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).
Configure Thin Client Details page > *RDP Session: Advanced Settings for redirection* field	Select the settings such as drivers, printers, serial ports, and smart cards that you want to map to the remote desktop machine.

18 If you are creating a Web Application bundle, follow the wizard prompts until you reach the Summary page, then skip to Step 19 on page 42.

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

Wizard Page and Field	Details
Enter URL page > *URL* 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 *Test URL* button to test the URL.

19 Review the information on the Summary page, making any changes to the bundle settings by using the *Back* button as necessary.

20 Skip to Step 22 to create the published version of the bundle.

21 (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 155.

22 (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.

23 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, schedules, 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.

2.5   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 25. 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 2.5.1, "Creating a Simple Bundle," on page 43
- Section 2.5.2, "Creating a Bundle with Content and Dependency on Another Bundle," on page 44
- Section 2.5.3, "Understanding the zman Bundle XML File Format," on page 46

2.5.1 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).

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.

2.5.2 Creating a Bundle with Content and Dependency on Another Bundle

1 Create two bundles in ZENworks Control Center.

For example, use ZENworks Control Cener 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/novell/zenworks/share/zman/samples/bundles` on a Linux server and in `"%ZENWORKS_HOME%\Novell\Zenworks\share\zman\samples\bundles` on a Windows server. For more information about `ActionContentInfo.xml`, see Section 2.5.3, "Understanding the zman Bundle XML File Format," on page 46.

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
```

2.5.3   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/novell/zenworks/ share/zman/samples/bundles` on a Linux server and in `"%ZENWORKS_HOME%\Novell\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 XMLfile, 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/novell/zenworks/ share/zman/samples/bundles` on a Linux server and in `"%ZENWORKS_HOME%\Novell\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 Registry Edit Action 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.

---

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:

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:

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.

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 Adaptive Agent (on managed devices). Click *Edit* to change the name. Changing the name does not cause the bundle to be redeployed.

Description

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

Icon

Determines the shortcut icon that ZENworks Adaptive 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.

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

To select an icon, click , then browse to and select the icon you want to display on managed devices.

If the desired icon is embedded in a `.exe`, `.dll`, or `.ico` file that has multiple icons from which to choose, you must install additional items before you can browse to and select the desired icon.

For Mozilla Firefox, if you have not already installed the Novell File Upload extension on this device, you must do so before you can download and install the download plug-in or browse to and upload the icon. For more information, see Novell File Upload Extension. After you install the Novell File Upload extension, you must also install the download plug-in. To do so, click the *Click here to download plug-in* message box that displays in the Select Icon dialog box (if you have already installed the plug-in on this device, the plug-in box does not display), click *Manual Install*, then click *Install Now*.

For Microsoft Internet Explorer, you must install the Novell File Upload ActiveX control only; there is no download plug-in for Internet Explorer. For more information, see Novell File Upload Extension.

After you have downloaded and installed the necessary extensions and plug-in, click to browse to and select the icon you want ZENworks Adaptive Agent to display to represent the bundle. If the icon in embedded in a `.exe`, `.dll`, or `.ico` file that contains multiple icons, an additional dialog box displays to let you select the desired icon.

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 Adaptive Agent on managed devices.

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.

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 Adaptive 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 Adaptive 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, verification, and uninstallation of a bundle on the managed device. 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

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 InProgress 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 Bundle Status

The Bundle Status panel displays a summary of the bundle's assignment, deployment, and launch status. The *User* row displays the status of the bundle through assignment to users; the *Device* row displays the status of the bundle through assignment to devices. A bundle can be directly assigned or assigned through membership in a folder or group. You can click an underlined link in any column to view the status of the individual users and devices to which the bundle is assigned, retry a failed bundle, or export the data to a CSV file.

A bundle's status is calculated using the status of many events. For example, a device might indicate that the bundle failed when the distribution was successful, but the installation failed. The numbers in the various columns represent an overall view of the bundle's status.

NOTE: The Bundle Status panel on the bundle's sandbox or the older versions page does not display the status. However, the Bundle Status panel on the bundle's published version page displays the status of the bundle's published version, sandbox, and the older versions.

The bundle status information is separated into the follow groups listed below, which are independent of each other. For example, it is possible for an installation to be successful, but the launch to be unsuccessful.

Assignment Status

The following status information is available:

Targeted: Displays the number of users and devices to which the bundle is assigned.

Devices Effective: Displays the number of devices on which the bundle is effective through a user or device assignment. A bundle is effective for a device if the device meets the system requirements of the bundle. The number of users or devices in the *Devices Effective* column might be less than the

number in the *Targeted* column because the bundle might be assigned to a device that does not meet the bundle's system requirements. For example, you might have a Windows bundle assigned to a Linux device, but the bundle is not effective for that device.

Devices Not Effective: Displays the number of devices on which the bundle is not effective through a user or device assignment. If a bundle is not effective for the device, it means that the device does not meet the bundle's system requirements.

Pending: The pending status for the device displays the number of devices on which the bundle is not yet distributed or executed, such as devices that are switched off. Click the underlined link to display the list of such devices.

Blocked/Targeted: Displays the number of users or devices on which the bundle is blocked from being used out of the targeted number of the users or devices. Click the underlined link to display the list of such users or devices.

Deployment Status

The following status information is available:

Devices Pending: Displays the number of devices on which the bundle is pending. A bundle's status is pending if the bundle has met the device's system requirements, but the bundle has not been distributed to the device or the bundle has been distributed to the device but the bundle has not been installed.

Devices Succeeded: Displays the number of devices on which the bundle was successfully distributed and installed.

Devices Failed: Displays the number of devices on which the bundle's distribution or installation failed.

Launch Status

The following status information is available:

Succeeded: Displays the number of devices on which the application in the bundle was successfully launched.

Failed: Displays the number of devices on which the application in the bundle was not successfully launched.

3.2.3 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	1. Click the message to display the Message Detail Information dialog box. 2. Click *Acknowledge*.	If you decide that you don't want to acknowledge the message, click *Finished* to dismiss the dialog box. This causes the message to remain in the Message Log list.
Acknowledge all messages	1. In the Tasks list located in the left navigation pane, click *Acknowledge All Messages*.	
View all acknowledged or unacknowledged messages	1. Click the *Advanced* button to display the Edit Message Log page.	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. Click the *Help* button on the Edit Message Log page for specific information about performing tasks on that page.
Delete a message	1. Click the message to display the Message Detail Log dialog box. 2. Click *Delete*.	Deleting a message completely removes the message from your ZENworks system.

3.2.4 Upcoming Events

The Upcoming Events panel lists all bundles scheduled 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 schedule details, including the time the event is scheduled to fire, its schedule type (Date Specific, Event, Recurring, etc.), the dates on which the event is scheduled 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".

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, "Deleting a Bundle Group," on page 59
- Section 4.5, "Adding a Bundle to a Group," on page 59
- Section 4.6, "Copying a Bundle Group to a Content Server," on page 60

4.1 Creating Bundle Groups

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

2 Click *New > Bundle Group*.
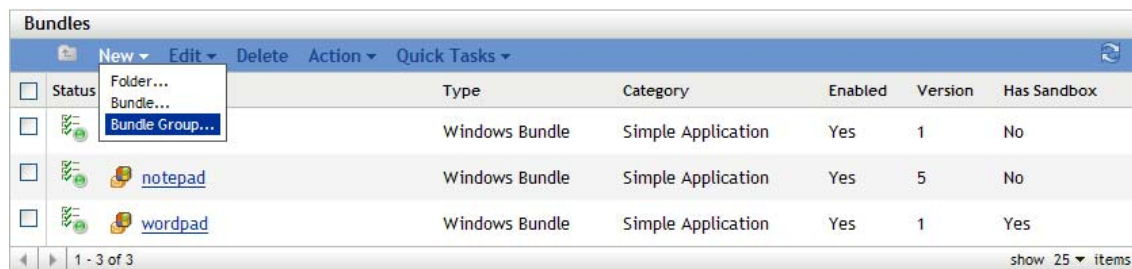
3 Fill in the fields:

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 .

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 182 or Section 9.4, "Assigning a Bundle Group to Users," on page 184.

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 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 Schedule is configured. Click the *Click here to Update YUM Service Now* link in *YUM Service Settings* to remove the YUM service immediately.

4.5 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 schedules, 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*.
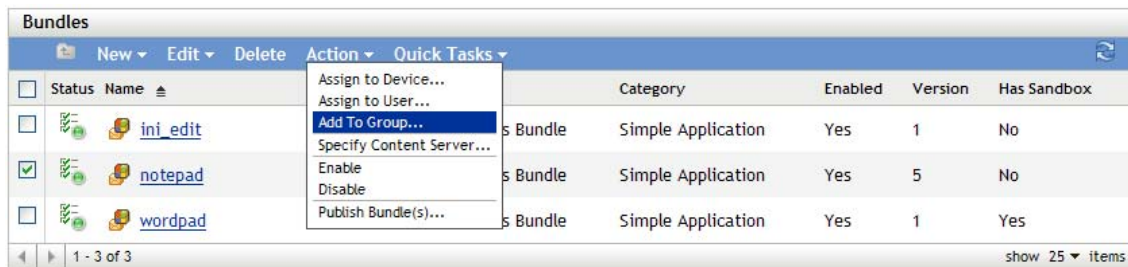
4 Select *Add selected items to an existing group* if the group to which you want to add the objects already exists.

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 .

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.

4.6 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 scheduled 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 64
- 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*.
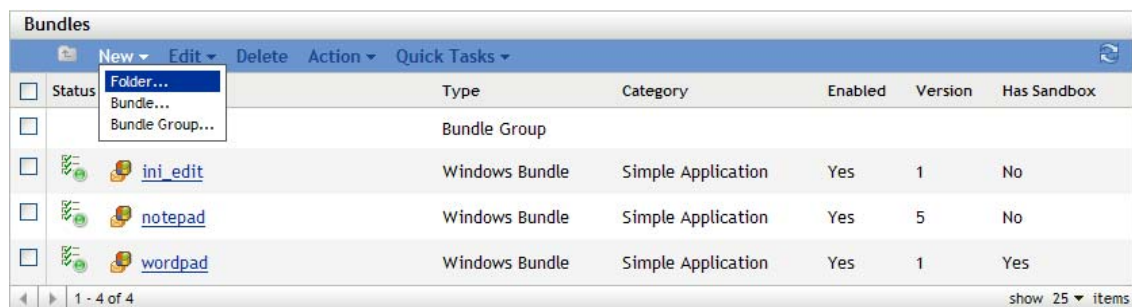
3 Provide a unique name for your folder. This is a required field.

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 .

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*.
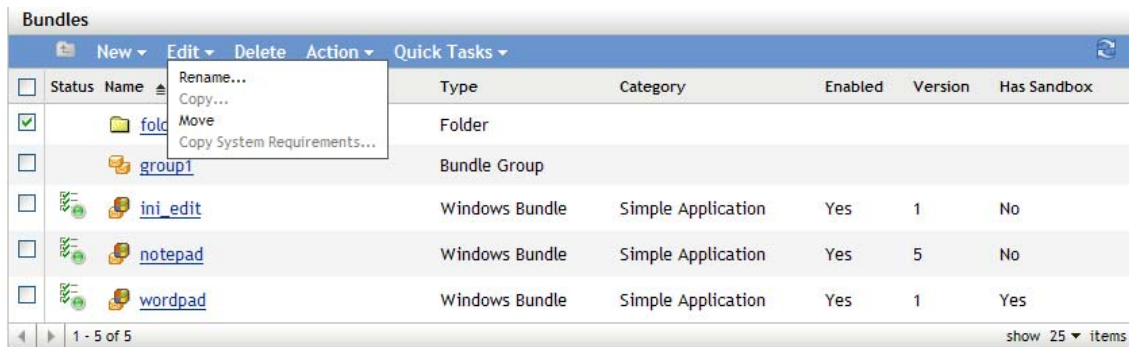
3 Select an option:

- ◆ **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, Verify, Uninstall, Terminate, and Preboot. For example, if you select a Windows bundle, six actions sets (Distribute, Install, Launch, Verify, Uninstall, Terminate) are available. If you select a Preboot bundle, Preboot is the only available action set available.

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 201.

The bundle category that you select during bundle creation is listed as an action in the actions page. For example, if you selected 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 199.

You can access the action dialog box as follows:

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, Verify, Uninstall, Terminate, or Preboot), click the *Add* drop-down list, then select an available action.

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

For more information about the actions you can configure for the Preboot action set, see the *ZENworks 11 Preboot Services and Imaging Reference*.

- Section 6.1, "Action - Apply Personality," on page 66
- Section 6.2, "Action - Copy Directory," on page 68
- Section 6.3, "Action - Copy Files," on page 71
- Section 6.4, "Action - Create/Delete Directory," on page 74
- Section 6.5, "Action - Delay," on page 77
- Section 6.6, "Action - Display Message," on page 78
- Section 6.7, "Action - Distribute Files," on page 80
- Section 6.8, "Action - Edit INI File," on page 80
- Section 6.9, "Action - Edit Text File," on page 85
- Section 6.10, "Action - End Process," on page 87
- Section 6.11, "Action - File Removal," on page 89

6.1   Action - Apply Personality

The Apply Personality page lets you specify the personality migration template and the Platform Neutral Package (PNP) file to be used for the migration. You can also specify the specific requirements that a device must meet for the action to be executed on the device

For more information on personality migration template, see *ZENworks 11 Personality Migration Reference*.

Figure 6-1   *Action - Apply Personality Dialog Box*

You can access this information by using the following methods:

- As part of the process of creating a Window bundle by using the *Apply Personality* bundle category. For more information, see Section 2.4, "Creating Windows Bundles," on page 30.

- 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 the *Add* drop-down list, then select the *Apply Personality* action.

The following sections contains additional information:

- Section 6.1.1, "General," on page 67
- Section 6.1.2, "Requirements," on page 68

6.1.1   General

The General page lets you specify the personality migration template and the Platform Neutral Package (PNP) file to be used for the migration.

Upload a template from this device

Select this option and click 🔍 to display the Upload content dialog box. Browse to and select the template to upload.

Specify a template on the managed device

Select this option to specify the path of personality migration template file on the managed device. You can also specify the UNC path of the file.

Path from where the PNP file is to be loaded

Specify the path of the PNP file containing the migration settings and data on the managed device. You can also specify the UNC path of the file.

Password to decrypt the PNP file

Select this check box to enter the password to decrypt the PNP file.

NOTE: If you spanned the PNP file, be sure to keep the spanned files and the PNP file in the same folder.

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 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.

Figure 6-2 *Action - Copy Directory Dialog Box*

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 2.4, "Creating Windows Bundles," on page 30.

- 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, Verify, 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 69
- Section 6.2.2, "Requirements," on page 71

6.2.1 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 the Novell File Upload extension on this device, you must do so before you can browse for a directory. For more information, see Section C.1, "Installing the Novell File Upload Extension," on page 227.

Click *Browse* to display the Browse for Folder dialog box. Browse to and 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.

NOTE: ZENworks does not support Windows Distributed File System (DFS) share.

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 - 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.

Figure 6-3 *Action - Copy Files Dialog Box*

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 2.4, "Creating Windows Bundles," on page 30.

- 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, Verify, 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 74

6.3.1 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. 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.

Figure 6-4 *Action - Edit File Details Dialog Box*
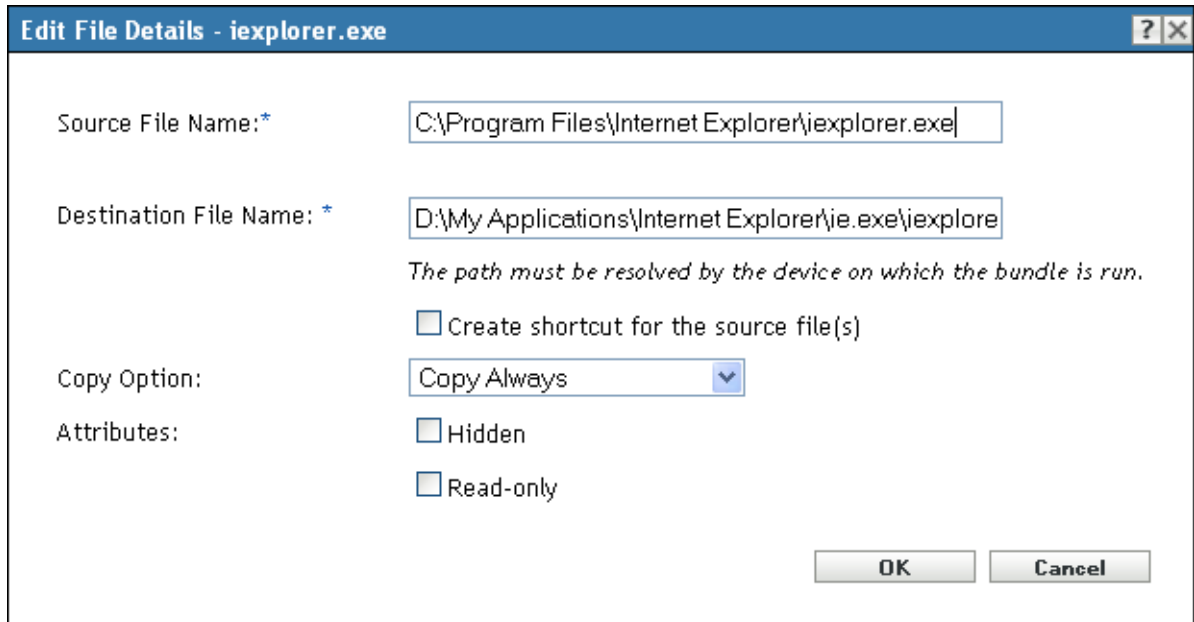
Renaming the source file: To copy the source file to the destination directory with a different name, specify the new name along with the destination path in the *Destination File Name* field in the Edit File Details dialog box.

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.

NOTE: ZENworks does not support Windows Distributed File System (DFS) share.

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 - 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.

Figure 6-5 *Action - Create/Delete Directory Dialog Box*

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 2.4, "Creating Windows Bundles," on page 30.

- 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, Verify, 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 75
- Section 6.4.2, "Requirements," on page 76

6.4.1 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.

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.

   NOTE: ZENworks does not support Windows Distributed File System (DFS) share.

   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.

6.4.2 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 - 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.

Figure 6-6 *Action - Delay Dialog Box*

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, Verify, 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 77
- Section 6.5.2, "Requirements," on page 78

6.5.1 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.

6.5.2 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 - 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.

Figure 6-7
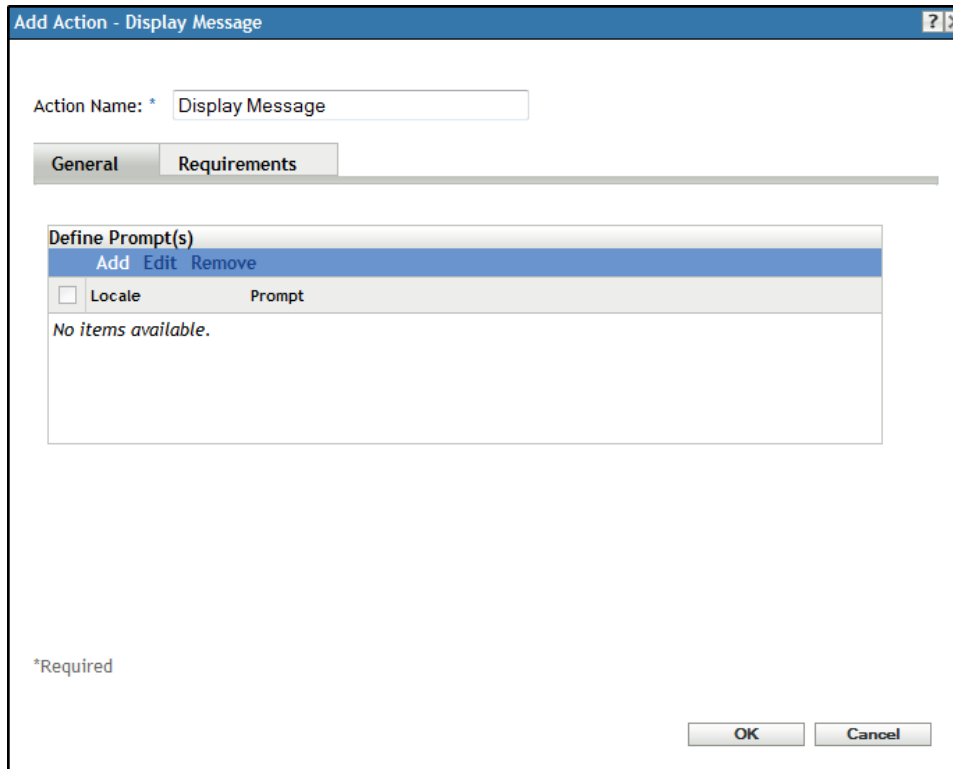
To access this dialog box in ZENworks Control Center, click the *Bundles* tab. Click the underlined link of a bundle in the *Name* column of the *Bundles* list, click the *Actions* tab, click one of the action set tabs (Distribute, Install, Launch, Verify, Uninstall, Terminate, or Preboot), click the *Add* drop-down list, then select an available action.

The following sections contains additional information:

- Section 6.6.1, "General," on page 79
- Section 6.6.2, "Requirements," on page 80

6.6.1 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.

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:

```
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*.

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

6.6.2 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.

6.7 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.

6.8 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, Verify, Uninstall, Terminate, or Preboot), click the *Add* drop-down list, then select an available action.

The following sections contain additional information:

- Section 6.8.1, "General," on page 80
- Section 6.8.2, "Advanced," on page 84
- Section 6.8.3, "Requirements," on page 85

6.8.1 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.

Figure 6-8   *Action - Edit INI File Dialog Box - General Tab*
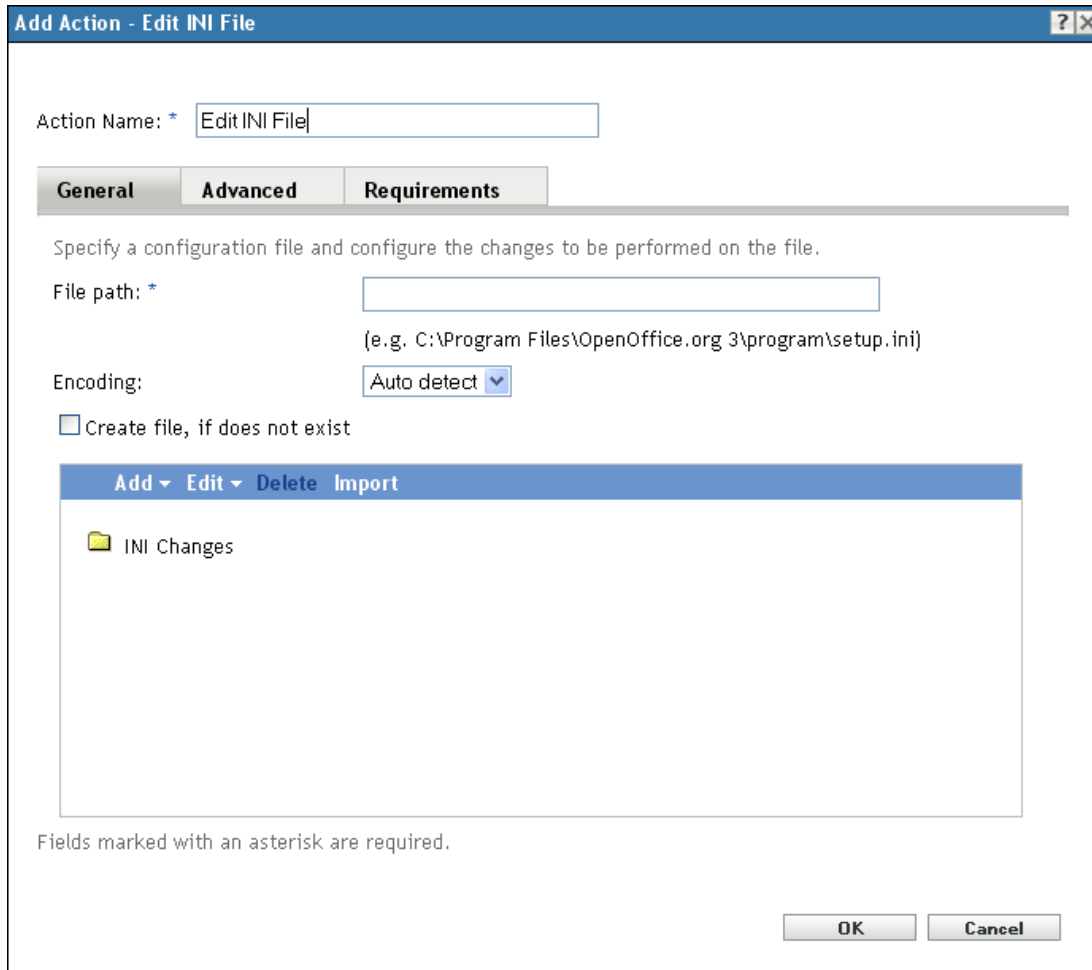
To access this dialog box in ZENworks Control Center, click the *Bundles* tab. Click the underlined link of a bundle in the *Name* column of the *Bundles* list, click the *Actions* tab, click one of the action set tabs (Distribute, Install, Launch, Verify, Uninstall, Terminate, or Preboot), click the *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`.

Task	Steps	Additional Details
Add a section	1. Click *Add*, then click *New Section Change* to open the Add a Change dialog box. 2. Fill in the fields, then click *OK*. Click the *Help* button for additional information.	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 *k1=v1* already exists and if you specify a new section sect1 with *k1=v1*, *k2=v2*, then the newly added key *k2=v2* is added to sect1.
Add keys to a section	1. Click the section to which you want to add the keys. 2. Specify the keys to be added to the section in the INI file. Type the key, such as *key1* or *key1=value1*, then click *Add* to move the key to the list. 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.	
Edit an INI Change	1. Click the desired item you want to edit. The Add a Change dialog box is displayed.	The *Section Change Type* 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 *Delete*.	
Import INI changes from another file	1. Click *Import* to display the Import INI Changes from File dialog box. 2. Specify the file from which you want to import changes, then click *OK*.	
Change the order of items	1. Select the check box next to an item, click *Edit*, then select an option (*Sort*, *Move Up*, *Move Down*).	
Select all the objects of a parent folder	1. Select the check box next to the parent folder, then click *Edit > Select All Children*.	
Deselect all the objects of a parent folder	1. Select the check box next to the parent folder, then click *Edit > Deselect All Children*.	
Clear Selection	1. Click *Edit > Clear Selection*.	

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*.

6.8.2 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.

Figure 6-9 *Action - Edit INI File Dialog Box - Advanced Tab*

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.

6.8.3 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.

6.9 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.

Figure 6-10 Action - Edit Text File Dialog Box

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, Verify, Uninstall, Terminate, or Preboot), click the *Add* drop-down list, then select an available action.

The following sections contains additional information:

6.9.1 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.
- **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.

◆ **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.

6.9.2 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 - 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.

Figure 6-11   *Action - End Process Dialog Box*

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, Verify, Uninstall, Terminate, or Preboot), click the *Add* drop-down list, then select an available action.

The following sections contains additional information:

6.10.1   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.

6.10.2   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 - 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.

Figure 6-12 *Action - File Removal Dialog Box*

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, Verify, 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:

6.11.1 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.
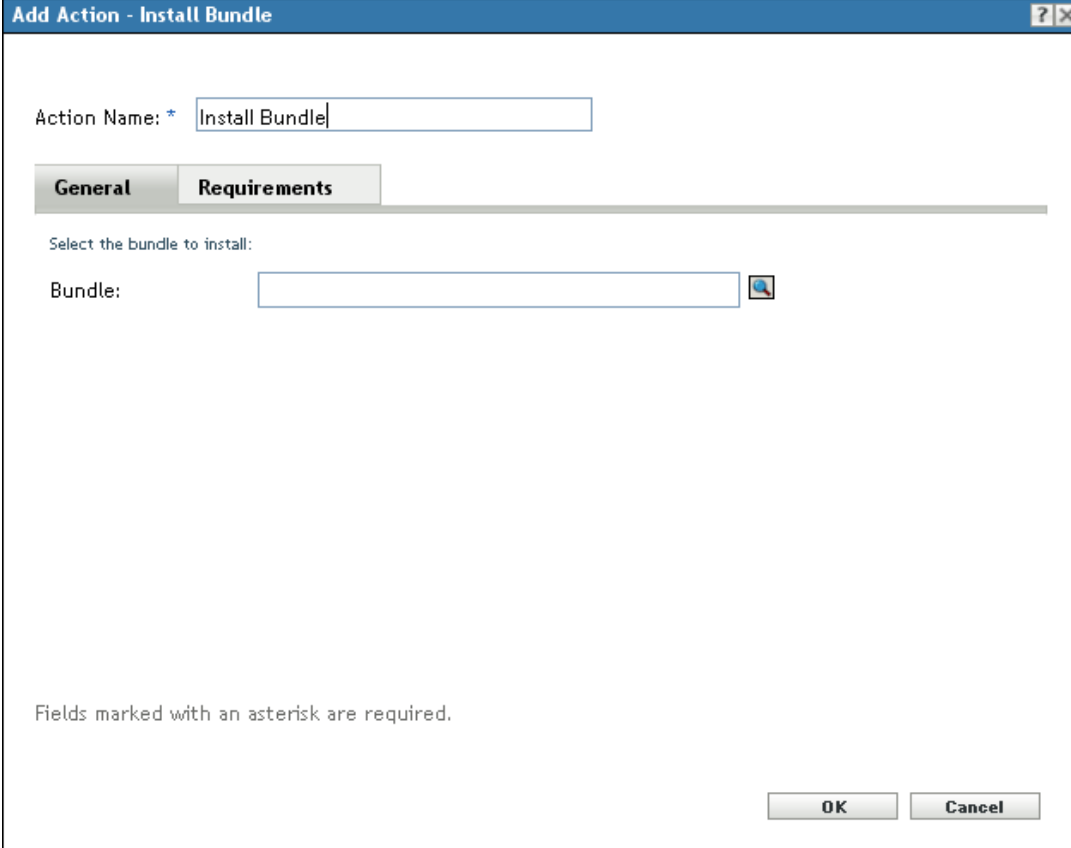
6.11.2 Requirements

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 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.

Figure 6-13 *Action - Install Bundle Dialog Box*

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, Verify, Uninstall, Terminate, or Preboot), click the *Add* drop-down list, then select an available action.

The following sections contains additional information:

6.12.1 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 8.7, "Dependency Bundles," on page 170.

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 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, and specify a copy option. You can also use this page to install the Novell File Upload extension, which allows you to browse for directories. You can also specify the specific 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.

Figure 6-14 *Action - Install Directory Dialog Box*
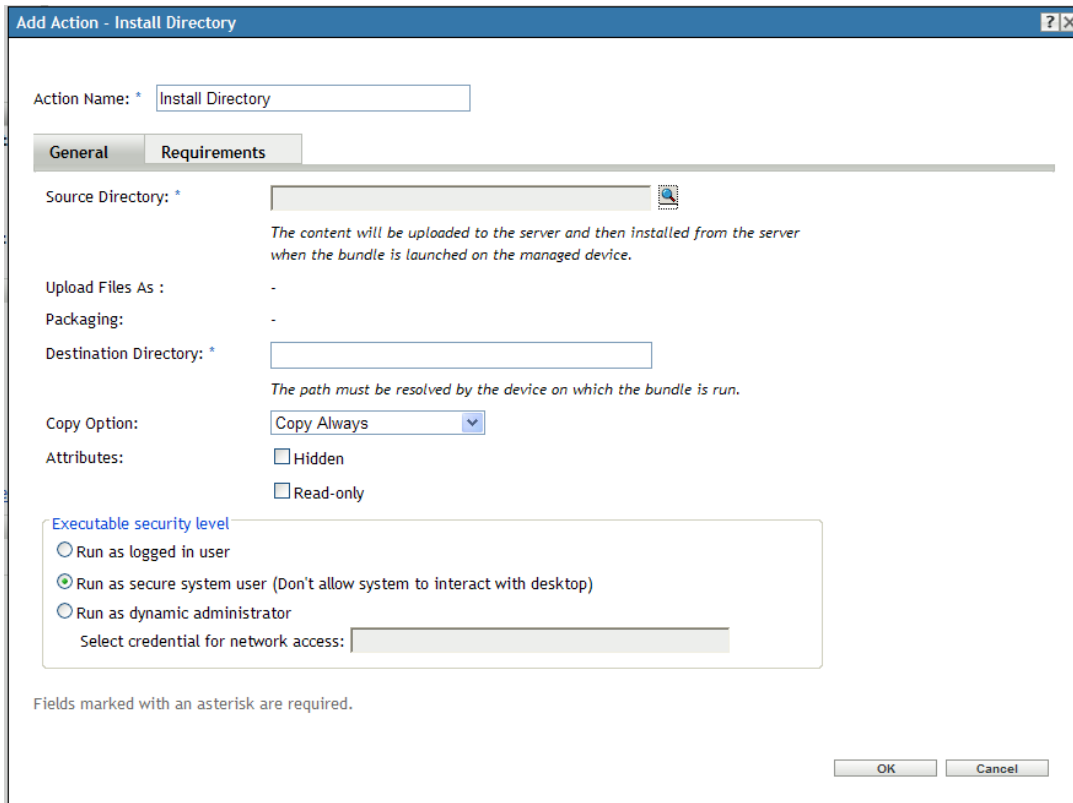
You can access this information by using the following methods:

◆ As part of the process of creating a Windows bundle by using the *Install Directory* bundle category. For more information, see Section 2.4, "Creating Windows Bundles," on page 30.

◆ 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, Verify, 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 93
◆ Section 6.13.2, "Requirements," on page 95

6.13.1 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, and specify a copy option. You can also use this page to install the Novell File Upload extension, which allows you to browse for directories.

Source Directory

Click 🔍 to browse to and select the directory you want to install on the device.

If you have not installed the Novell File Upload extension on this device, you must do so before you can browse to and upload directories to be installed. For more information, see Novell File Upload Extension.

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.

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.

Hidden

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

Read-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.

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.

  NOTE: ZENworks does not support Windows Distributed File System (DFS) share.

  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.

6.13.2 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 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.

Figure 6-15 *Action - Install Files Dialog Box*
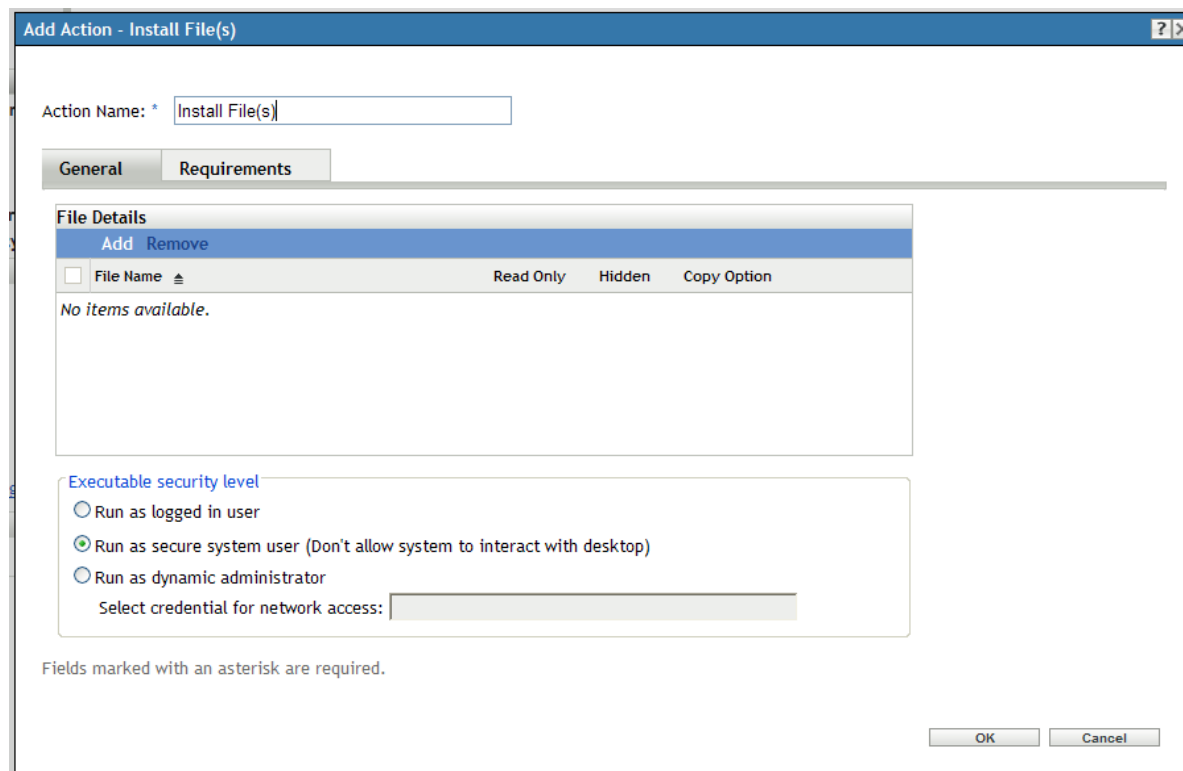
You can access this information by using the following methods:

 - As part of the process of creating a Windows bundle by using the *Install Files* bundle category. For more information, see Section 2.4, "Creating Windows Bundles," on page 30.
 - 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, Verify, 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 96
 - Section 6.14.2, "Requirements," on page 99

6.14.1 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.
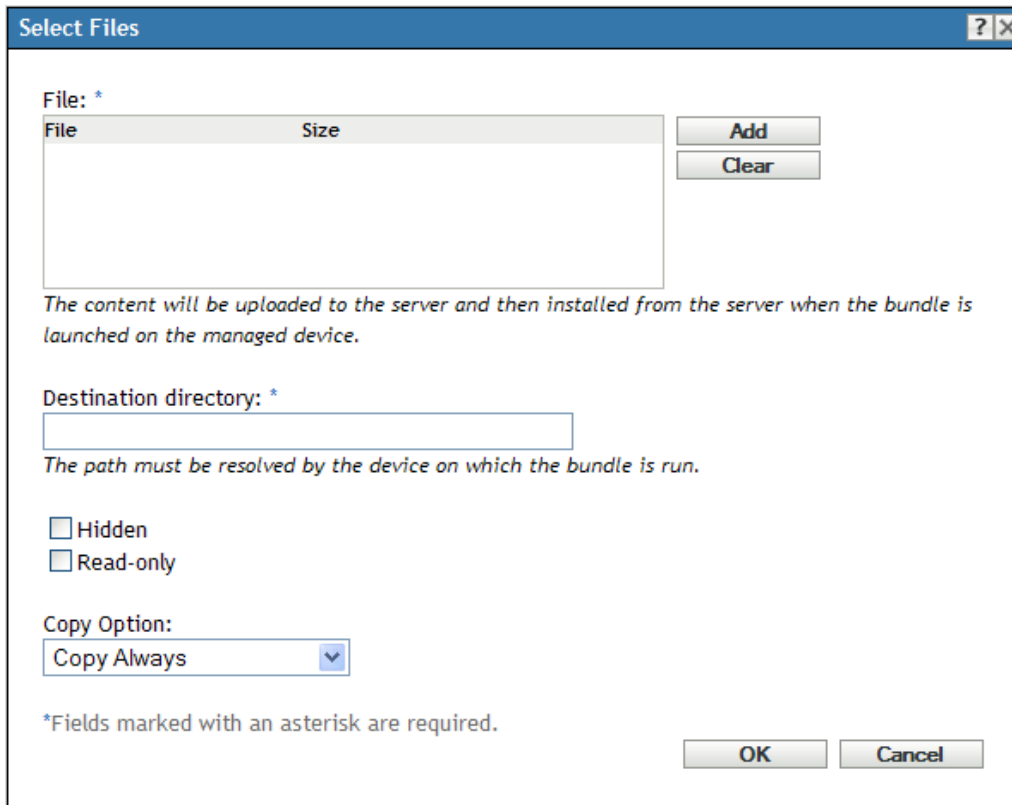
The Select Files dialog box lets you specify the files to be copied, specify a destination and source directory, specify whether the files are hidden or read-only after being copied to the device, and specify a copy option. You can also use this page to install the Novell File Upload extension, which must be installed before you can browse for and upload files.

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* to display the Select Files dialog box, specify the files you want to copy to the device, then click *Open*. Repeat this step as many times as necessary to copy the desired files.

If the Novell File Upload extension is not installed on this device, you must install it before you can browse for file paths. For more information, see .

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.

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.

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.

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.

NOTE: ZENworks does not support Windows Distributed File System (DFS) share.

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.

6.14.2 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.

6.15 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.

Figure 6-17 *Action - Install MSI Dialog Box*

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 2.4, "Creating Windows Bundles," on page 30.

 ◆ 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, Verify, 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 101
 ◆ Section 6.15.2, "Requirements," on page 103

6.15.1 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 🔍 to display the Select .msi File dialog box. Browse to 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 Novell File Upload extension on this device, you must do so before you can browse to and upload files. For more information, see "Novell File Upload Extension" on page 227.

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.

Transform File

Click *Add* to browse to and select the desired transform file. You can upload the transform file or you can specify its location.

If you have not installed the Novell File Upload extension on this device, you must do so before you can browse for a file path. For more information, see "Novell File Upload Extension" on page 227.

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.

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.

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.

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 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.

Figure 6-18   *Action - Install MSP Dialog Box*

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 2.4, "Creating Windows Bundles," on page 30.

- 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, Verify, 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 104
- Section 6.16.2, "Requirements," on page 105

6.16.1 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 🔍 to display the Select .msp File dialog box. Browse to and select the MSP file. You can also enter the UNC path of the `.msp` file for a network install.

If you have not installed the Novell File Upload extension on this device, you must do so before you can browse for a file path. For more information, see "Novell File Upload Extension" on page 227.

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.

6.16.2 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.

6.17 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.

Figure 6-19 *Action - Install Network MSI Dialog Box*

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, Verify, Uninstall, Terminate, or Preboot), click the *Add* drop-down list, then select an available action.

The following sections contains additional information:

6.17.1 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

Specify the `.msi` file to install.

If you have not installed the Novell File Upload extension on this device, you must do so before you can browse for a file path. For more information, see "Novell File Upload Extension" on page 227.

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.

Transform File

Click *Add* to browse to and select the desired transform file. You can upload the transform file or you can specify its location.

If you have not installed the Novell File Upload extension on this device, you must do so before you can browse to for a file path. For more information, see "Novell File Upload Extension" on page 227.

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.

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.

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.

  NOTE: ZENworks does not support Windows Distributed File System (DFS) share.

  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.

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 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.

Figure 6-20 *Action - Launch Bundle Dialog Box*
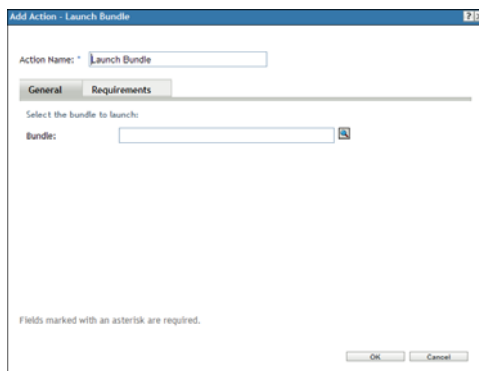
To access this dialog box in ZENworks Control Center, click the *Bundles* tab. Click the underlined link of a bundle in the *Name* column of the *Bundles* list, click the *Actions* tab, click one of the action set tabs (Distribute, Install, Launch, Verify, Uninstall, Terminate, or Preboot), click the *Add* drop-down list, then select an available action.

The following sections contains additional information:

- Section 6.18.1, "General," on page 110
- Section 6.18.2, "Requirements," on page 110

6.18.1 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 8.7, "Dependency Bundles," on page 170.

6.18.2 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.

6.19 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.

Figure 6-21 *Action - Launch Java Application Dialog Box*

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, Verify, Uninstall, Terminate, or Preboot), click the *Add* drop-down list, then select an available action.

The following sections contains additional information:

6.19.1   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.

Working Directory

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

Specify the initial working directory for the application.

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.

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.

6.19.2 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 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.

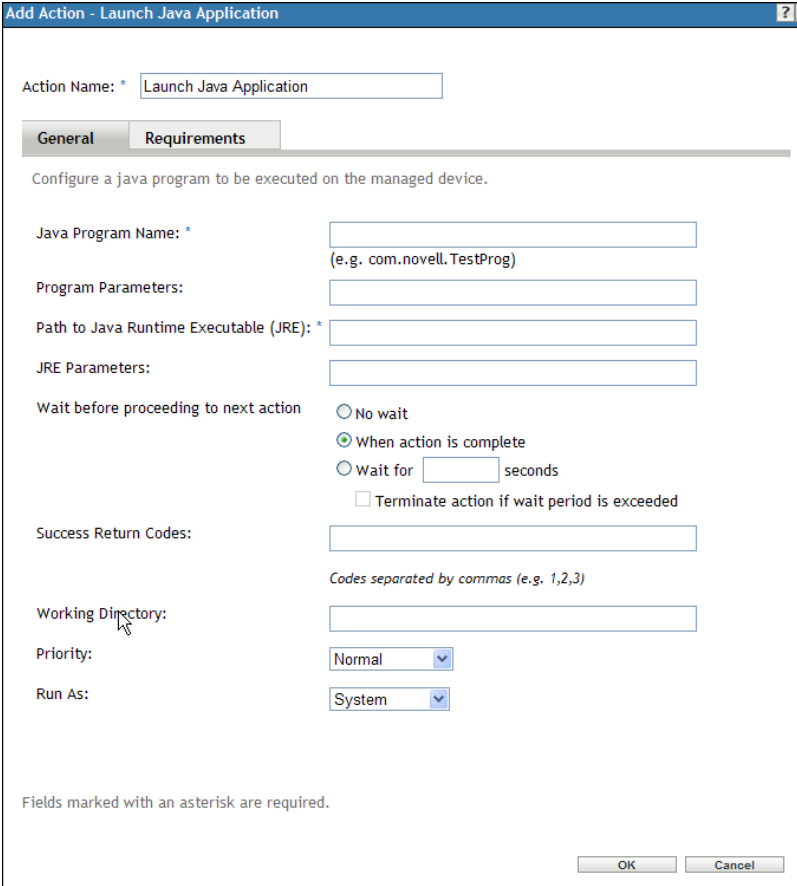**Figure 6-22**   *Action - Launch URL Dialog Box*
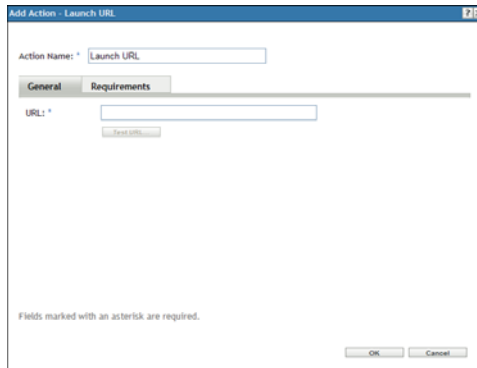
To access this dialog box in ZENworks Control Center, click the *Bundles* tab. Click the underlined link of a bundle in the *Name* column of the *Bundles* list, click the *Actions* tab, click one of the action set tabs (Distribute, Install, Launch, Verify, Uninstall, Terminate, or Preboot), click the *Add* drop-down list, then select an available action.

The following sections contains additional information:

- Section 6.20.1, "General," on page 113
- Section 6.20.2, "Requirements," on page 113

6.20.1   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.

6.20.2   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.

6.21   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.

Figure 6-23   *Actions - Launch Executable Dialog Box*

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, Verify, Uninstall, Terminate, or Preboot), click the *Add* drop-down list, then select an available action.

The following sections contains additional information:

- Section 6.21.1, "General," on page 114
- Section 6.21.2, "Advanced," on page 115
- Section 6.21.3, "Launch Options," on page 117
- Section 6.21.4, "Requirements," on page 118

6.21.1   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	Specify the location of the Windows executable, including its filename.
	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.
	Click *Add* to browse to and select the desired transform file. You can upload the transform file or you can specify its location.
	If you have not installed the Novell File Upload extension on this device, you must do so before you can browse for a file path. For more information, see Novell File Upload Extension.
Command Line Parameters	Specify the command line parameters that you want to run when the executable launches.
Working Directory	Specify the working directory for the executable.
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.
Environment Variables	Lets you add, edit or remove the environment variables as follows:
	◆ **Add:** Click *Add* to display the Add Environment Variable dialog box. Specify the name and value of the environment variable you want to add. For example, *Name* = JAVA_HOME; *Value* = C:\java1.4\.
	◆ **Remove:** Select the environment variables to remove and click *Remove*.
	◆ **Edit:** Select the environment variable you want to edit, then click *Edit*. In the Edit Environment Variable dialog box, specify the new value for the variable. For example, *Name* = JAVA_HOME; *Value* = C:\Program Files\Java\jdk1.6.0_06.

6.21.2 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
Executable Security Level	The 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 executable, you can configure the executable to run in the "system" space or as a dynamic administrator, as described below:
	◆ **Run as logged in user:** 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.
	Select the executable's initial window size: *Normal*, *Minimized*, *Maximized*, or *Hidden*. 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.
	◆ **Run as secure system user (Don't allow system to interact with desktop):**
	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 *Secure*, 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.
	◆ **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.
	When performing actions as a dynamic administrator, ensure that you select the *When action is compete* option in the *Wait before proceeding to next action* 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.
	You cannot use mapped network drives to specify files and directories because dynamic administrators do not have access to mapped drives.
	NOTE: ZENworks does not support Windows Distributed File System (DFS) share.
	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.

Field	Description
Wait Before Proceeding to Next Action	Click *More Options* to specify how long to wait after launching the Windows executable and before proceeding to the next action.
	Specify what happens after the executable 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. 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.
	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 terminates.

6.21.3 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	Click *More Options* to specify the Window executable's compatibility mode.
	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 *Compatibility mode* option.
	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.
Display	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.

Field	Description
Input Settings	Click *More Options* to specify the Window executable's input settings.
	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.

6.21.4 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.

6.22 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.

Figure 6-24 *Actions - Launch Macintosh Executable Dialog Box*

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, Verify, Uninstall), click the *Add* drop-down list, then select an available action.

The following sections contains additional information:

- Section 6.22.1, "General," on page 119
- Section 6.22.2, "Requirements," on page 121

6.22.1 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	Specify the Macintosh executable's security level. You can choose any of the following options and configure the executable: **Run normal (as logged in user):** The executable is launched only if the user logs in to the device. **Run as root:** The executable is launched only if the root user is logged in to the device.
Wait before proceeding to next action	Specify the wait time before proceeding to the next action after launching the Macintosh executable. **No wait:** Select this option to immediately perform the next action in the list. **When action is complete:** Select this option to perform the next action in the list after the launch action finishes. **Wait for _ seconds:** Select this option to proceed to the next action after the specified number of seconds. ♦ **Terminate action if wait period is exceeded:** This check box is enabled only if you select the *Wait for _ seconds* 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.

Field	Description
Environment Variables	Lets you to add, edit, or remove the environment variables as follows:

        ◆ **Add:** Click *Add* to display the Add Environment Variable dialog box. Specify the name and value of the environment variable you want to add.

        Select the *Add to existing data* check box to append or prepend the environment variable to the existing data.

            ◆ **Append:** Adds the environment variable at the end of the existing data.

            ◆ **Prepend:** Adds the environment variable at the beginning of the existing data.

            ◆ **Use Separator Character:** Specify a character to separate the appended or prepended environment variable from the existing data.

        ◆ **Remove:** Select the check box next to the environment variables you want to remove, then click *Remove*.

        ◆ **Edit:** Select the environment variable you want to edit, then click *Edit*. In the Edit Environment Variable dialog box, specify the new value for the variable.

6.22.2 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.

6.23 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 2.4, "Creating Windows Bundles," on page 30.

◆ 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, Verify, Uninstall, Terminate, or Preboot), click the *Add* drop-down list, then select an available action.

The following sections contain additional information:

◆ Section 6.23.1, "General," on page 122
◆ Section 6.23.2, "Requirements," on page 124

6.23.1 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.

Figure 6-25   Action - Launch Windows Thin Client Application Dialog Box: ICA Session

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.

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.

Figure 6-26   *Action - Launch Windows Thin Client Application Dialog Box: RDP Session*

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.

6.23.2 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 - 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.

Figure 6-27 *Action - Prompt User Dialog Box*

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, Verify, Uninstall, Terminate, or Preboot), click the *Add* drop-down list, then select an available action.

The following sections contains additional information:

6.24.1 General

The General page lets you specify that a prompt displays on the device and configure its settings.

User Cancels Allowed

Specify whether the user can cancel the remaining actions in the action set. For example, if the action set installs an application that requires a reboot, and you select this option, the user can cancel the reboot, which, cancels 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.

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 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 specify that the prompt displays for 10 seconds, the prompt displays for 10 seconds and then the device reboots.

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.

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*.

6.24.2 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 - 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.

Figure 6-28   *Action - Reboot/Shutdown Dialog Box*

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, Verify, 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 schedule 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 6.25.1, "General," on page 127
- Section 6.25.2, "Requirements," on page 128

6.25.1 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.

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*.

6.25.2 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 - 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, Verify, Uninstall, Terminate, or Preboot), click the *Add* drop-down list, then select an available action.

The following sections contain additional information:

6.26.1 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.

The following table lists the tasks you can perform to manage registry tree changes:

Task	Steps
Add a registry key	1. Select a registry hive, click *New*, then click *Key*.
	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.
	3. Select one of the following registry operations:
	◆ **Create Always:** Creates the key regardless of whether the key currently exists in the workstation's registry.
	◆ **Create If Does Not Exist:** Creates the key only if the key does not currently exist in the workstation's registry.
	◆ **Rename:** Renames the key if it currently exists in the workstation's registry.
	◆ **Delete:** Deletes the key if it currently exists in the workstation's registry.
	◆ **Delete and Recreate:** Deletes the key if it currently exists in the workstation's registry and then recreates the key.
	◆ **Delete if Empty:** Deletes the key if it currently exists in the workstation's registry and the key is empty.
	◆ **None:** Does not perform any registry operation.

Task	Steps

Add a Value	1. Select the check box next to the desired item, then click *Value* to display the Add Value To dialog box.
	
	2. Select one of the following options from the *Value Type* list:
	
	    ◆ **Default:** Adds a default string value to the selected key.
	
	    ◆ **String:** Adds a string value to the selected key.
	
	    ◆ **Binary:** Adds a binary value to the selected key. Most hardware component information is stored as binary data and is displayed in hexadecimal format.
	
	    ◆ **Dword:** 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.
	
	    ◆ **Expandable String:** 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.
	
	    ◆ **Multiple String:** 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.
	
	    ◆ **Qword:** 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.
	
	    ◆ **Link:** Adds a link string value to the selected key. A link string value is a Unicode string naming a symbolic link.
	
	    ◆ **None:** Does not perform any registry operation.
	
	    ◆ **Full Resource Descriptor:** 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.
	
	    ◆ **Resource List:** 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.
	
	    ◆ **Resource Requirement List:** 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.
	
	3. Specify the data. Depending on which value type you selected in the previous step, the type of data varies.
	
	4. Select one of the following registry operations:
	
	    ◆ **Create Always:** 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 PATH=C:\ already exists, PATH=C:\TEMP replaces it.
	
	    ◆ **Create If Exists:** The setting is created only if it already exists. The setting's current values are overwritten. For example, if PATH=C:\ already exists, PATH=C:\TEMP replaces it.
	
	    ◆ **Create If Does Not Exist:** The setting is created only if it does not already exist.

Task	Steps
	◆ **Delete:** The setting is deleted. If the registry setting has subordinate settings, the subordinate settings are also deleted.
	◆ **Append If Exists, Otherwise Create:** Appends the Value if the value currently exists in the workstation's registry. If the Value does not exist, it is created.
	◆ **Prepend If Exists, Otherwise Create:** Prepends the Value if the value currently exists in the workstation's registry. If the Value does not exist, it is created.
Rename an entry	1. Select the check box next to the desired item, then click *Edit > Rename*. 2. Specify the new name.
Select all the objects of a parent folder	1. Select the check box next to the parent folder, then click *Edit > Select All Children*.
Deselect all the objects of a parent folder	1. Select the check box next to the parent folder, then click *Edit > Deselect All Children*.
Clear Selection	1. Click *Edit > Clear Selection*.
Remove an entry	1. Select the check box next to the desired item, then click *Delete*.
Import the contents of a registry file	1. Click *Import*, then specify the registry file whose contents you want to import. **NOTE:** A `.reg` file does not allow you to store the Data Type information of the value being deleted. For more information, see *Deleting Registry Keys and Values* at Microsoft Support Site (http://support.microsoft.com/kb/310516). 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.
Export the contents to a registry file	1. Click *Export* to export the contents to a registry file named by default as *bundle_name*`.reg`. For example, if the name of the bundle is win, then the contents are exported to a `win.reg` file. You can choose to rename the file.
Search for a Value name, registry key, or both.	1. Specify the name of the value or key that you want to search for. 2. Select *Registry Key*/Value, *Registry Value Data*, or *Both*. 3. Select the *Search within the selected nodes only* check box to limit the search to the node you selected in the *Registry Tree* list. 4. Click *Search*.

6.26.2 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

Figure 6-29   *Action - Registry Edit Dialog Box: Advanced Settings Page*
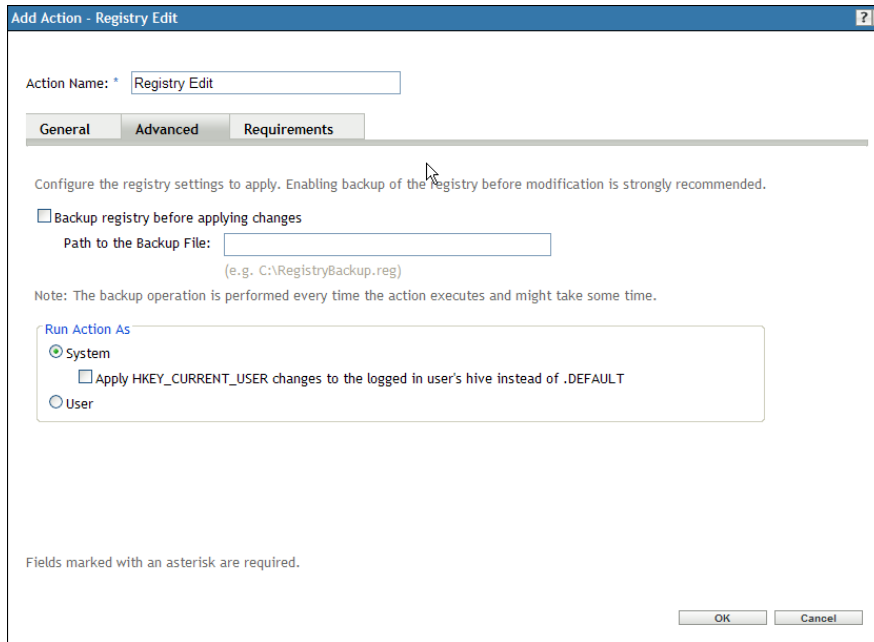
Backup Registry Before Applying the Changes

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.

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`.

- **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.

6.26.3 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.

6.27   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, Verify, Uninstall, Terminate, or Preboot), click the *Add* drop-down list, then select an available action.

The following sections contains additional information:

- Section 6.27.1, "General," on page 133
- Section 6.27.2, "Requirements," on page 139

6.27.1 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 133
- "Define Your Own Script" on page 135
- "Select From This Device" on page 137

Specify a File on a Managed Device

Select this option to run a script that exists on the managed device.

Figure 6-30   *Action - Run Script Dialog Box with the Specify a File on a Managed Device option selected*
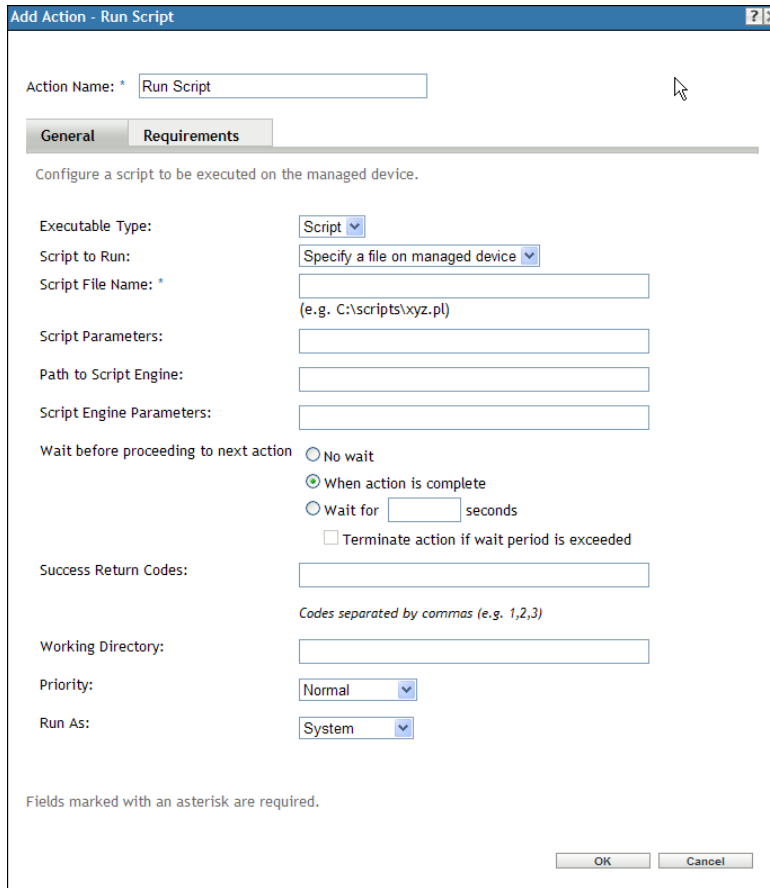
Script Filename: Specify the path to the script file on the target device, for example, `C:\scripts\xyz.pl`.

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:

  ◆ **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.

Success Return Codes: Specify the non-zero success codes that the script returns. You can specify multiple success codes separated by commas.

If a script 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.

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.

Define Your Own Script

Select this option to type a script in ZENworks Control Center.

Figure 6-31 *Action - Run Script Dialog Box with the Define Your Own Script option selected*
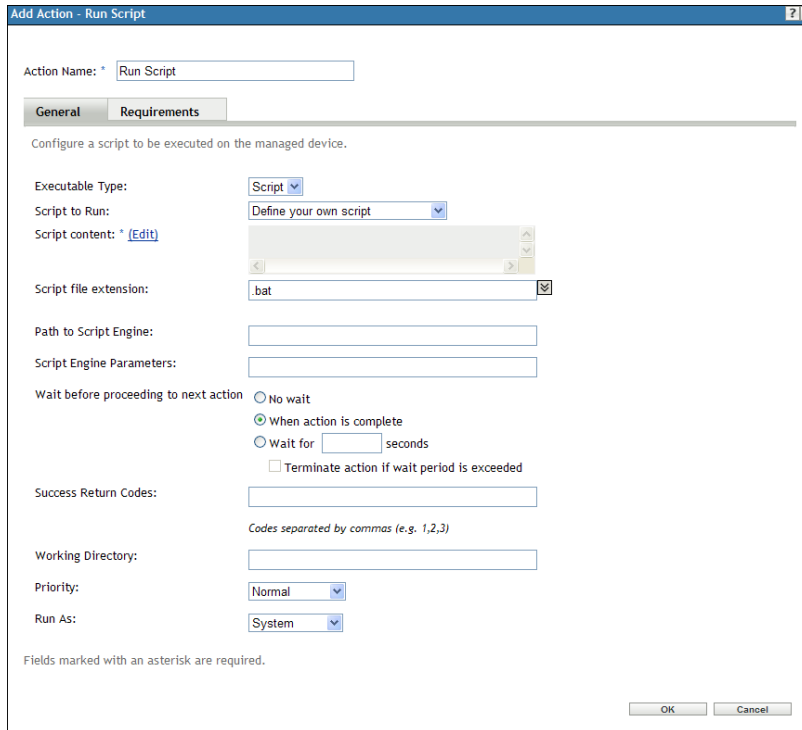
Script Content: Click *Edit* to display a text box where you type your script. This script is delivered to the assigned devices and is executed in the standard device shell environment.

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.

Save File with 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 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:

- **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.

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.

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.

Figure 6-32 *Action - Run Script Dialog Box with the Select From This Device option selected*
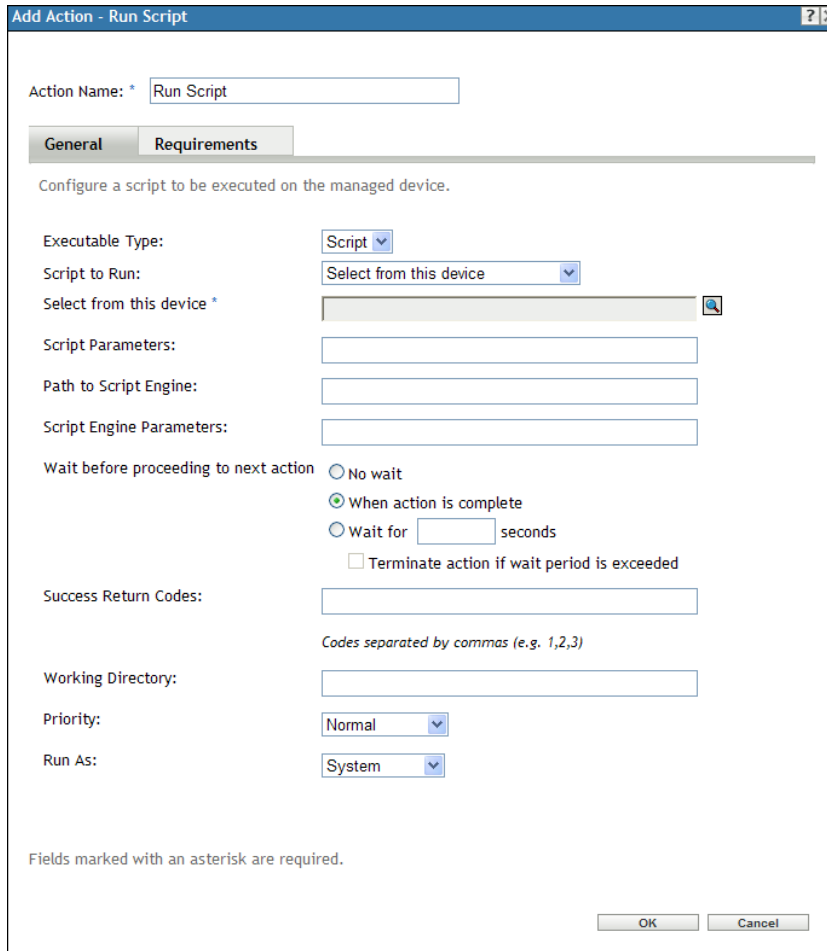
Select From This Device: Browse to and select the script file.

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:

* **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.

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.

6.27.2 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 - 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.

Figure 6-33   *Action - Start/Stop Service Dialog Box*

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, Verify, Uninstall, Terminate, or Preboot), click the *Add* drop-down list, then select an available action.

The following sections contains additional information:

6.28.1 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.

6.28.2 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.

6.29 Action - Store Personality

The Store Personality page lets you specify the personality migration template and the path where the Platform Neutral Package (PNP) file is to be created. You can also specify the specific requirements that a device must meet for the action to be executed on the device.

Figure 6-34   *Action - Store Personality Dialog Box*

You can access this information by using the following methods:

◆ As part of the process of creating a Windows bundle by using the *Store Personality* bundle category. For more information, see Section 2.4, "Creating Windows Bundles," on page 30.

◆ 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 the *Add* drop-down list, then select the *Store Personality* action.

The following sections contains additional information:

◆ Section 6.29.1, "General," on page 141
◆ Section 6.29.2, "Requirements," on page 142

6.29.1 General

The General page lets you specify the personality migration template and the path where the Platform Neutral Package (PNP) file is to be created.

Upload a template from this device

Select this option and click 🔍 to display the Upload content dialog box. Browse to and select the template to upload.

Specify a template on the managed device

Select this option to specify the path of personality migration template file on the managed device. You can also specify the UNC path of the file.

Path where the PNP file is to be created

Specify the path of the PNP file on the managed device for storing the migration settings and data. You can also specify the UNC path of the file.

Password to encrypt the PNP file

Select this check box to enter a password to protect the PNP file.

In the *Re-enter the password* field, re-enter the password to confirm it.

Span to multiple files

You can choose to span the personality migration data across multiple files to enable you to store data in removable media. The available options are:

◆ **Never span.** Select this option to migrate personalities without spanning the files.

◆ **Span at the size.** Select this option to specify a span size for the files. The default span size is 650 MB.

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 - 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.

Figure 6-35 *Action - Terminate Application Dialog Box*

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 6.30.1, "General," on page 142
- Section 6.30.2, "Requirements," on page 143

6.30.1 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*.

6.30.2 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 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.

Figure 6-36 *Action - Terminate Application Prompt Dialog Box*

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 6.31.1, "General," on page 144
- Section 6.31.2, "Requirements," on page 145

6.31.1 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.

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*.

6.31.2 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 - 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, Verify, Uninstall, Terminate, or Preboot), click the *Add* drop-down list, then select an available action.

6.33 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.

Figure 6-37 *Action - Uninstall Bundle Dialog Box*
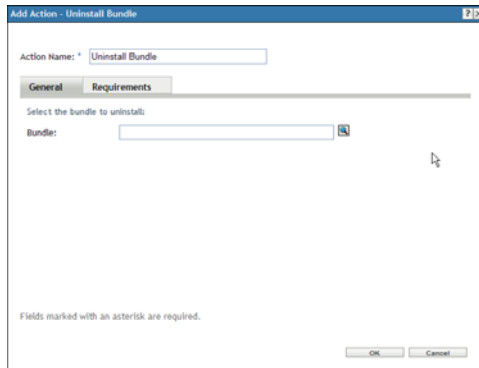
To access this dialog box in ZENworks Control Center, click the *Bundles* tab. Click the underlined link of a bundle in the *Name* column of the *Bundles* list, click the *Actions* tab, click one of the action set tabs (Distribute, Install, Launch, Verify, Uninstall, Terminate, or Preboot), click the *Add* drop-down list, then select an available action.

The following sections contains additional information:

- Section 6.33.1, "General," on page 146
- Section 6.33.2, "Requirements," on page 146

6.33.1 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 8.7, "Dependency Bundles," on page 170.

6.33.2 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.

6.34 Action - Verify Bundle

The Action - Verify Bundle dialog box lets you verify 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.

Verifying a bundle ensures that the specified bundle or bundle group has been properly installed on the device.

For example, for an MSI bundle, verifying the bundle results in the task running an MSI /repair process against the bundle.

Figure 6-38   *Action - Verify Bundle Dialog Box*
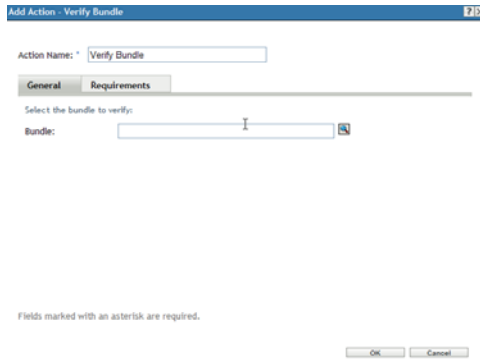
To access this dialog box in ZENworks Control Center, click the *Bundles* tab. Click the underlined link of a bundle in the *Name* column of the *Bundles* list, click the *Actions* tab, click one of the action set tabs (Distribute, Install, Launch, Verify, Uninstall, Terminate, or Preboot), click the *Add* drop-down list, then select an available action.

The following sections contains additional information:

6.34.1   General

The General page lets you verify a bundle on the device. Click 🔍 to browse to and select the bundle to verify 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 8.7, "Dependency Bundles," on page 170.

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 - Verify Install Actions

The Verify Install Actions action verifies 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, Verify, Uninstall, Terminate, or Preboot), click the *Add* drop-down list, then select an available action.

6.36 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.

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.

6.36.1 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 (>=), 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.

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 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 (<), and is less than or equal to (<=). The possible value types are *Integer Type* and *String Type*. 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).

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.

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 (<=).

6.36.2 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.

6.36.3 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 11 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 25.

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 Replication 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 163.

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 8.4.3, "Publishing Sandbox," on page 165

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 11 Preboot Services and Imaging Reference*.

The following sections contain information to help you manage existing bundles:

- Section 8.1, "Bundle Quick Tasks," on page 157
- Section 8.2, "Bundle Tasks," on page 160
- Section 8.3, "Editing Bundle Schedules," on page 162
- Section 8.4, "Bundle Change Management," on page 162
- Section 8.5, "Copying a Bundle to a Content Server," on page 167
- Section 8.6, "Bundle Behavior Based on Content Replication Settings," on page 169
- Section 8.7, "Dependency Bundles," on page 170
- Section 8.8, "Viewing the Predefined Reports," 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 157
- Section 8.1.2, "Launching a Bundle," on page 158
- Section 8.1.3, "Uninstalling a Bundle," on page 159

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*.

Bundle Tasks
- New Folder
- New Bundle
- New Bundle Group
- Assign Bundle to Device
- Assign Bundle to User
- Install Bundle
- Specify Content
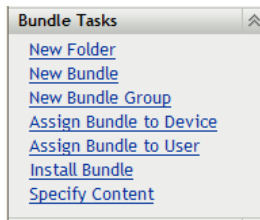
4 In the *Devices* section, click *Add* to select the devices where you want to install the bundle.

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*.

Bundles

	Status	Name ▲		Category	Enabled	Version	Has Sandbox
☐		ini_edit	Install Bundle... Uninstall Bundle...	Simple Application	Yes	1	No
☑		notepad	Launch Bundle... Distribute Bundle Now...	Simple Application	Yes	5	No
			Windows Bundle				
☐		wordpad	Windows Bundle	Simple Application	Yes	1	Yes

New ▾   Edit ▾   Delete   Action ▾   Quick Tasks ▾

1 - 3 of 3   show 25 ▾ items

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 203.

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:
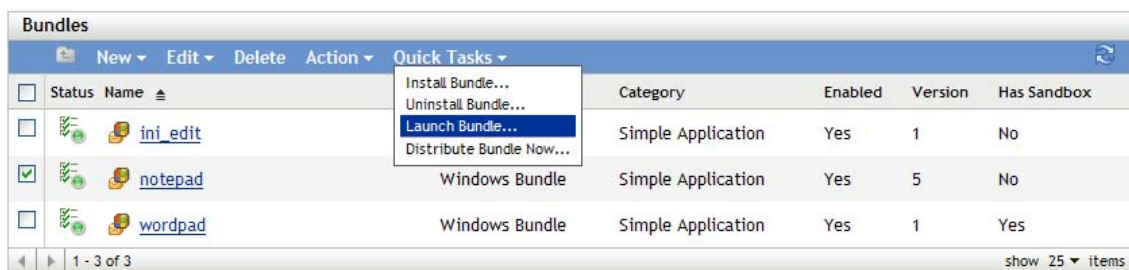
6a Click 🡇 next to a folder (for example, the `Workstations` folder or `Servers` folder) to navigate through the folders until you find the device, user, group, or folder you want to select.

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 160
- Section 8.2.2, "Deleting a Bundle," on page 161
- Section 8.2.3, "Preventing a Bundle from Being Deployed," on page 161
- Section 8.2.4, "Enabling a Bundle to Be Deployed," on page 161

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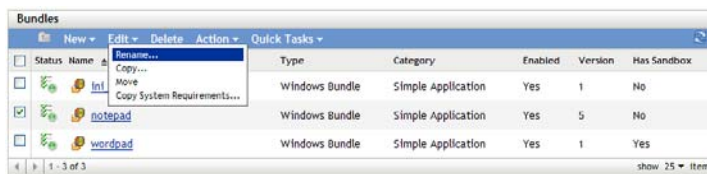
Rename: Click *Rename*, provide a new name for the bundle, then click *OK*.

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 Schedule 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*.
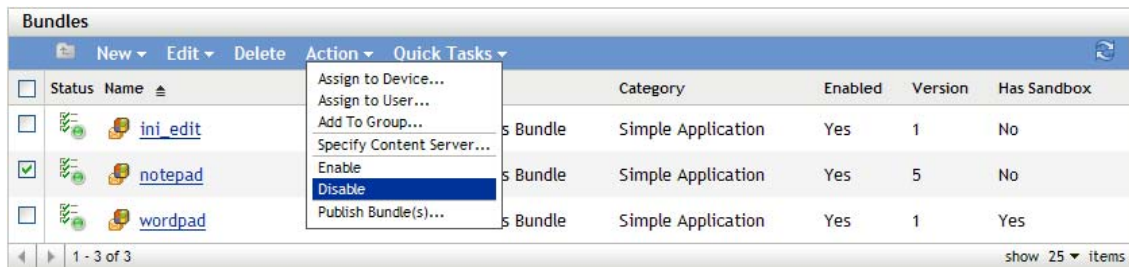
8.2.4 Enabling a Bundle to Be Deployed

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*.
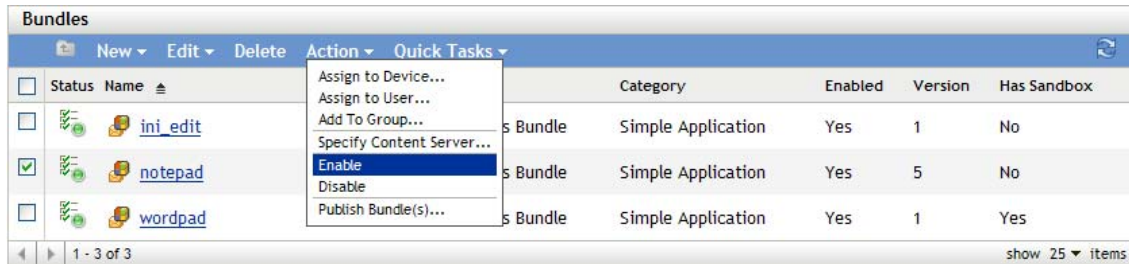
8.3 Editing Bundle Schedules

After you have assigned a bundle to a device or user, you can choose to edit the bundle schedule:

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

2 Click the desired bundle for which you want to edit the schedule.

3 Click the *Relationships* tab.

4 Click the Assignment Details link of the assignment for which you want to edit the schedule.

5 In the View Assignment Details dialog box, click the link next to the schedule type you want to edit.

6 In the dialog box that displays, edit the schedule as desired. For more information on how to edit the schedule, click *Help*.

8.4 Bundle Change Management

ZENworks 11 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 155.

Review the following sections:

 • Section 8.4.1, "Understanding Bundle Versions," on page 162
 • Section 8.4.2, "Managing Bundle Versions," on page 163
 • Section 8.4.3, "Publishing Sandbox," on page 165

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 163.

For more information on publishing the sandbox, see Section 8.4.3, "Publishing Sandbox," on page 165Section 8.4.3, "Publishing Sandbox," on page 165.

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 162.

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	1. Select the published version of the bundle. 2. Edit the bundle.	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. The sandbox flows to the test devices and users to whom the bundle is assigned. Changes can now be made to the sandbox. 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.
Create a sandbox from an older version of the bundle	1. Select an older version of the bundle. 2. Click *Create Sandbox*.	The created sandbox is an exact copy of the bundle version. Changes can now be made to the sandbox.
Publish a sandbox	1. Select *Sandbox*. 2. Click *Publish* to display the Publish Option page.	The sandbox must be published for the changes to be effective on the non-test devices and users to whom the bundle is assigned.
Revert a sandbox	1. Select *Sandbox*. 2. Click *Revert* to delete the sandbox.	All the changes made are discarded. The sandbox no longer exists. The published version of the bundle is displayed in the *Displayed Version* option.
Delete an older version of the bundle	1. Select an older version of the bundle. 2. Click *Delete Selected Version*.	To delete all older versions of a bundle or delete all versions older than a particular version, click *Delete Older Versions* under the *Bundle Tasks* list located in the ZENworks Control Center left navigation pane.

8.4.3 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

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 Adaptive Agent (on managed devices).

For more information, see .

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 scheduled 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 scheduled 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 scheduled replication.

8.6 Bundle Behavior Based on Content Replication 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	The new bundle neither inherits settings from its parent folder nor does it replicate content by default.
	To replicate the content on new Primary Servers:
	1. In ZENworks Control Center, click the bundle.
	2. Click the *Settings* tab.
	3. Click *Primary Server Replication*.
	4. In the Primary Server Replication Status panel, select the *New Primary Servers added to the system will include this content by default* option.
	To replicate the content on new Satellite Servers:
	1. In ZENworks Control Center, click the bundle.
	2. Click the *Settings* tab.
	3. Click *Satellite Server Replication*.
	4. In the Satellite Server Replication Status panel, select the *New Satellite Servers added to the system will include this content by default* option.
	NOTE: The *Sync Sandbox Content to Content Servers* option on the Sandbox Settings page of the bundle is deselected and is not editable.
Creating a sandbox from a published version or an older version of the bundle	The sandbox version of the bundle neither inherits settings from its parent folder nor does it replicate content by default.
	To replicate the content on new Primary and Satellite Servers:
	1. In ZENworks Control Center, click the bundle.
	2. Click the *Settings* tab.
	3. Click *Sandbox Settings*.
	4. In the Sandbox Content Replication panel, select the *Sync Sandbox Content to Content Servers* option.

Task	Information
Publishing a bundle to create a new bundle as a sandbox	If you publish a bundle to create a new bundle with the *Create as Sandbox* 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. To replicate the content on new Primary Servers: 1. In ZENworks Control Center, click the bundle. 2. Click the *Settings* tab. 3. Click *Primary Server Replication*. 4. In the Primary Server Replication Status panel, select the *New Primary Servers added to the system will include this content by default*. If you want to replicate the content on new Satellite Servers, do the following: 1. Click the Bundle. 2. Click the *Settings* tab. 3. Click *Satellite Server Replication*. 4. In the Satellite Server Replication Status panel, select the *New Satellite Servers added to the system will include this content by default* option. **NOTE:** The *Sync Sandbox Content to Content Servers* option on the Sandbox Settings page of the bundle is deselected and is not editable.
Publishing a bundle to create a new bundle (not as a sandbox)	The settings of the new bundle depend on the source bundle from which it has been created. ◆ If you publish a sandbox-only bundle whose replication settings have not been modified, the new bundle inherits settings from the parent folder. ◆ If you publish a sandbox-only bundle whose replication settings have been modified, the modified replication settings are copied to the new bundle. ◆ 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.

8.7 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 - Verify 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 8.7.1, "Primary Applications vs. Dependent Applications," on page 171
- Section 8.7.2, "Bundle Chains," on page 171
- Section 8.7.3, "Distributing, Installing, and Launching a Bundle That Has Dependencies," on page 172

8.7.1 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*
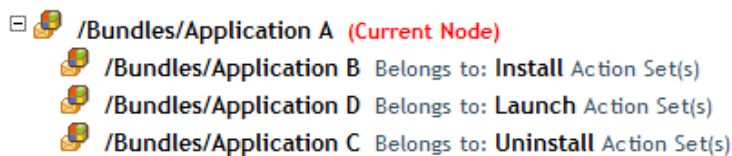
A primary bundle can have one dependent application or, as shown in the above example, it can have multiple dependent applications.

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*
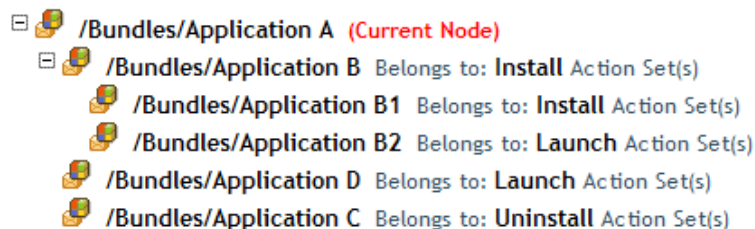
In the above example, Application B is one of Application A's dependent bundles. At the same time, Application B has dependencies on two bundles, Application B1 and Application B2.

8.7.2 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*

- /Bundles/Application A (Current Node)
  - /Bundles/Application B Belongs to: **Install** Action Set(s)
  - /Bundles/Application D Belongs to: **Launch** Action Set(s)
  - /Bundles/Application C Belongs to: **Uninstall** Action Set(s)
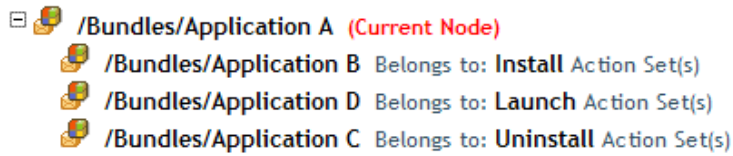
However, when bundle dependencies are nested, a bundle chain can grow to include many levels. In the following example, Application A has a dependency on Application B. Application B, in turn, has dependencies on Application B1 and Application B2. As a result, all three bundles (B, B1, B2), in addition to applications C and D, must be present in order for Application A to run.

Figure 8-4   *Dependency Bundle Tree*

- /Bundles/Application A (Current Node)
  - /Bundles/Application B Belongs to: **Install** Action Set(s)
    - /Bundles/Application B1 Belongs to: **Install** Action Set(s)
    - /Bundles/Application B2 Belongs to: **Launch** Action Set(s)
  - /Bundles/Application D Belongs to: **Launch** Action Set(s)
  - /Bundles/Application C Belongs to: **Uninstall** Action Set(s)
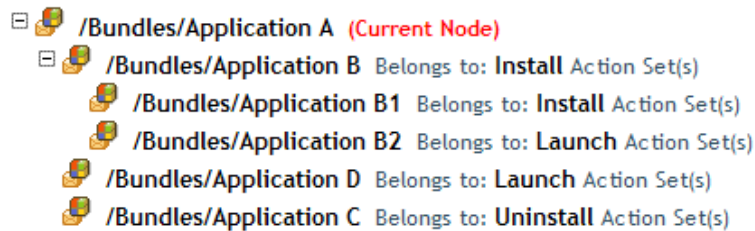
In some cases, a bundle might belong to more than one bundle chain, as in the following example where Application D is a dependent application for both Application A and Application E.

- /Bundles/Application A
  - /Bundles/Application B Belongs to: **Install** Action Set(s)
    - /Bundles/Application B1 Belongs to: **Launch** Action Set(s)
      - /Bundles/Application B3 Belongs to: **Launch** Action Set(s)
    - /Bundles/Application B2 Belongs to: **Launch** Action Set(s)
  - /Bundles/Application D Belongs to: **Launch** Action Set(s) (Current Node)
  - /Bundles/Application C Belongs to: **Uninstall** Action Set(s)
- /Bundles/Application E
  - /Bundles/Application D Belongs to: **Launch** Action Set(s) (Current Node)

8.7.3   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 Adaptive Agent distributes and installs them. If ZENworks Adaptive 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 Adaptive 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 Adaptive 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.

8.8 Viewing the Predefined Reports

You must have installed ZENworks Reporting Server to view the predefined reports. For more information on how to install ZENworks Reporting Server, see the *ZENworks 11 Server Installation Guide*.

To view the predefined reports for bundles:

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

2 In the ZENworks Reporting Server Reporting panel, click *ZENworks Reporting Server InfoView* to launch the ZENworks Reporting Server InfoView.

3 Navigate to the *Novell ZENworks Reports > Predefined Reports > Bundles and Policies* folder.

4 The following predefined reports are included for bundles:

   ◆ **Assigned Bundles and Policies by Device:** Displays information on all the bundles and policies that are assigned to a particular device.

   ◆ **Bundle Deployment Status:** Prompts for the device name, deployment status, and bundle name and displays the deployment details of the bundle.

   ◆ **Bundle Information:** Displays the bundle's details such as name, type, path, version, and the information of the device to which it is assigned.

   ◆ **Content By Server:** Displays the content information for the selected server. The information includes the content name, content type, replication state, and the disk space.

   ◆ **Content By Bundles and Policies:** Displays the content information for the bundles. This information includes the content server, content type, replication state, and disk space.

For more information on creating and managing reports, see the *ZENworks 11 System Reporting Reference* documentation.

9 Managing Bundle Assignments

Novell ZENworks 11 lets you assign bundles to users as well as devices. Device-assigned bundles are available whenever the device is running and connected to the network; 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 .

NOTE: Bundles can have a priority configured to determine the bundle assignment that is effective for a device or a user. Bundles can be assigned to a user or a device through direct association or through inheritance.

A bundle can be assigned to a user or a device, a user or device group, or a user or device folder. Each of these assignments also supports scheduling, so you can set a schedule for the deployment of a bundle. If you have different schedules configured for users, devices, or their groups and folder assignments, the priority of the schedules is as follows:

1. Bundles assigned through direct association (device or user)
2. Bundles assigned through a group (device group or user group)
3. Bundles assigned through a folder (device folder or user folder).

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.

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 182
- Section 9.4, "Assigning a Bundle Group to Users," on page 184

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

Click the desired bundle, click *Relationships*. In the Device Assignments panel, click Add.

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 Adaptive 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*. On Windows Vista, it places the icon in *Start > All Programs*.

On a Windows Vista device, if you want to change the look and feel of the *Start* menu or pin applications to the *Start* menu, see Appendix E, "Best Practices," on page 235.

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.

Launch Schedule: Defines the dates and times when the ZENworks Adaptive 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 Adaptive 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.

Availability Schedule: Defines the dates and times when the bundle is available to the device or user. The ZENworks Adaptive 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 :

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. For more information on Wake on LAN options, see "Waking Up a Remote Device" in *ZENworks 11Remote Management Reference*.

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 Adaptive 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 :

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 Adaptive 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 :

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".

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

Click the desired bundle, click *Relationships*. In the Device Assignments panel, click Add.

Bundles								
	New ▾ Edit ▾ Delete Action ▾ Quick Tasks ▾							⟳
☐	Status Name ▲	Assign to Device...		Category	Enabled	Version	Has Sandbox	
☐	ini_edit	Assign to User...	s Bundle	Simple Application	Yes	1	No	
☑	notepad	Add To Group...	s Bundle	Simple Application	Yes	5	No	
		Specify Content Server...						
		Enable						
☐	wordpad	Disable	s Bundle	Simple Application	Yes	1	Yes	
		Publish Bundle(s)...						
◀ ▶ 1 - 3 of 3							show 25 ▾ items	

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 Adaptive 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. On Windows Vista, it places the icon in *Start > All Programs*.

On Windows Vista device, if you want to change the look and feel of the *Start* menu or pin applications to the *Start* menu, see Appendix E, "Best Practices," on page 235.

5 Click *Next* to display the Schedules page, then 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.

Launch Schedule: Defines the dates and times when the ZENworks Adaptive 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 Adaptive 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.

Availability Schedule: Defines the dates and times when the bundle is available to the device or user. The ZENworks Adaptive 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 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 :

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 Adaptive 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 :

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 Adaptive 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 :

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*.
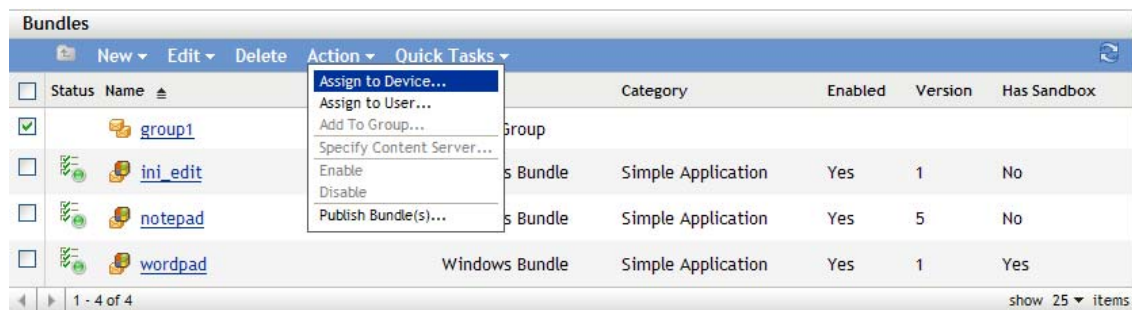
4 Browse for and select the devices, device groups, and device folders to which you want to assign the group. To do so:

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 Adaptive 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.

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:

- **Distribution Schedule:** Defines the dates and times when the bundle is distributed from the ZENworks Server to the managed device or user. If you do not establish a schedule, the bundle is distributed to the device or user when it is first launched.

- **Launch Schedule:** Defines the dates and times when the ZENworks Adaptive Agent automatically launches the bundle. If you do not establish a schedule, the bundle is launched only when the user launches it.

- **Availability Schedule:** Defines the dates and times when the bundle is available to the device or user. The ZENworks Adaptive 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.

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 detailed information, click the *Help* button on the wizard page or see the following sections in the :

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 Adaptive 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 detailed information, click the *Help* button on the wizard page or see the following sections in the :

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 Adaptive 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 detailed information, click the *Help* button on the wizard page or see the following sections in the :

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*.
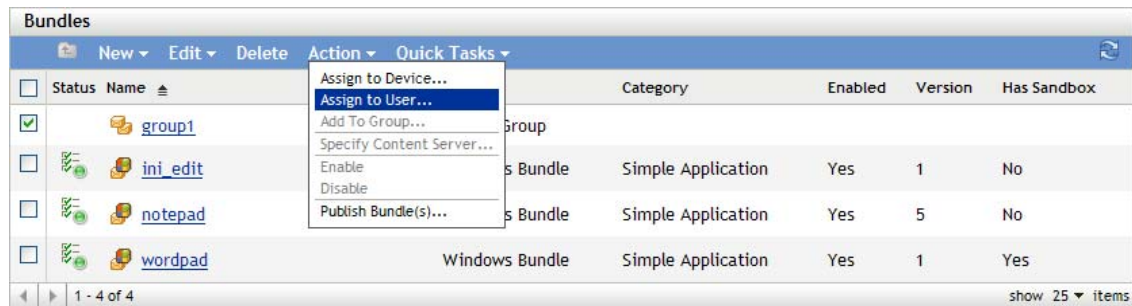
4 Browse for and select the user, user groups, and user folders to which you want to assign the group. To do so:

   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 Adaptive 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.

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:

- ◆ **Distribution Schedule:** Defines the dates and times when the bundle is distributed from the ZENworks Server to the managed device or user. If you do not establish a schedule, the bundle is distributed to the device or user when it is first launched.

- ◆ **Launch Schedule:** Defines the dates and times when the ZENworks Adaptive Agent automatically launches the bundle. If you do not establish a schedule, the bundle is launched only when the user does so.

- ◆ **Availability Schedule:** Defines the dates and times when the bundle is available to the device or user. The ZENworks Adaptive 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.

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 detailed information, click the *Help* button on the wizard page or see the following sections in the :

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 Adaptive 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 detailed information, click the *Help* button on the wizard page or see the following sections in the :

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 Adaptive 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 detailed information, click the *Help* button on the wizard page or see the following sections in the :

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*.

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.

IMPORTANT: During bundle assignment to a device, if the bundle has linux distribution as one of the system requirements, and if that is not met, then the bundle assignment will not be flowing down to the device.

Review the following sections:

- Section 10.1, "Adding System Requirements for a Bundle," on page 187
- Section 10.2, "Copying a Bundle's System Requirements," on page 192
- Section 10.3, "Copying a Bundle Group's System Requirements," on page 193

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 187 and Section 10.1.2, "Filter Logic," on page 192.

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.

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. With CIDR, the dotted decimal portion of the IP address is interpreted as a 32-bit binary number that has been broken into four 8-bit bytes. 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.

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.

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 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 (<), and is less than or equal to (<=). The possible value types are *Integer Type* (specify a decimal value) and *String Type*. 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)`.

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.

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 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.

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:
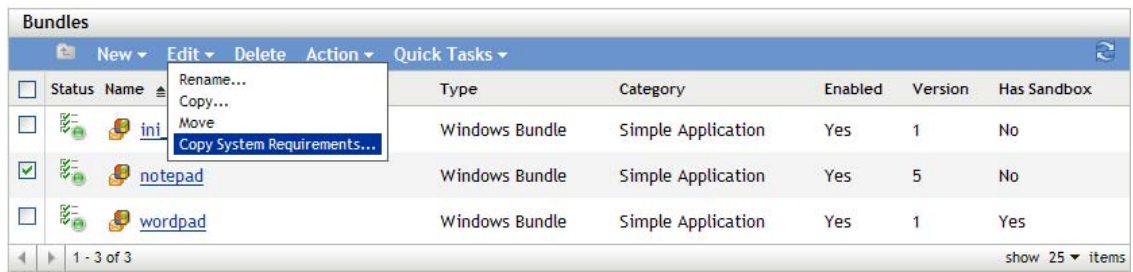
```
u AND
v AND
w
OR
x AND
y AND
z
```

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*.

Bundles								
	New ▾ Edit ▾ Delete Action ▾ Quick Tasks ▾							⟳
☐ Status	Name ▴	Rename... Copy... Move Copy System Requirements...	Type	Category	Enabled	Version	Has Sandbox
☐	ini		Windows Bundle	Simple Application	Yes	1	No
☑	notepad		Windows Bundle	Simple Application	Yes	5	No
☐	wordpad		Windows Bundle	Simple Application	Yes	1	Yes
◀ ▶ 1 - 3 of 3						show 25 ▾ items	

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 195
- Section 11.2, "Primary Server Replication," on page 197
- Section 11.3, "Satellite Server Replication," on page 197
- Section 11.4, "Sandbox Settings," on page 197
- Section 11.5, "End Point Throttle," on page 197
- Section 11.6, "Image Bundle Flag Settings," on page 198

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 Novell ZENworks Configuration Management, see .

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.

The following table lists the tasks you can perform to manage the system variables:

Task	Steps	Additional Details
Add a variable	1. If you are configuring system variables for an object (not for the entire Management Zone), click *Override settings* to activate the System Variables panel. 2. Click *Add*, provide the name and value for the variable, then click *OK*. 3. Click *Apply*.	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 $Var1=c:\backslash$ is inherited, you can override it by defining $Var1=d:\backslash$. 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). Variable values cannot include the characters & and <.
Remove a variable	1. Select the check box next to the variable (or variables). 2. Click *Remove*. 3. Click *Apply*.	
Edit a variable	1. Select the check box next to the variable. 2. Click *Edit*. 3. Modify the *Name* and *Value* fields as desired, then click OK. 4. Click *Apply*.	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). Variable values cannot include the characters & and <.

Task	Steps	Additional Details
Use a variable	1. Use the following syntax: `${VAR_NAME}` Replace `VAR_NAME` with the name of the 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*.

For more information on content replication, see .

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 .

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 Replication 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 11 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, Verify, 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 199
- ◆ Section 12.2, "Modifying Action Set Options," on page 201

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 201.

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	1. If you are not already on the appropriate action set tab, click *Distribute*, *Install*, *Launch*, *Verify*, *Uninstall*, *Terminate*, or *Preboot*.	
	2. Click *Add*, then click the action you want to add.	
	3. Fill in the appropriate fields. Click the *Help* button in the Add Action dialog box for details.	
	4. Click *Apply*.	
Remove an action	1. If you are not already on the appropriate action set tab, click *Distribute*, *Install*, *Launch*, *Verify*, *Uninstall*, *Terminate*, or *Preboot*.	
	2. Select the check box next to the action (or actions).	
	3. Click *Remove*.	

Task	Steps	Additional Details
Edit an action	1. If you are not already on the appropriate action set tab, click *Distribute*, *Install*, *Launch*, *Verify*, *Uninstall*, *Terminate*, or *Preboot*. 2. Click the action's name to display the edit page. 3. Modify the desired settings. Click the *Help* button in the Edit Action dialog box for details. 4. After returning to the action set page, click *Apply*.	
Reorder the actions	1. If you are not already on the appropriate action set tab, click *Distribute*, *Install*, *Launch*, *Verify*, *Uninstall*, *Terminate*, or *Preboot*. 2. Select the check box next to the action you want to move. 3. Click *Move Up* and *Move Down* to relocate it. 4. Click *Apply*.	The actions are performed in the order they are listed.
Enable an action to be performed	1. If you are not already on the appropriate action set tab, click *Distribute*, *Install*, *Launch*, *Verify*, *Uninstall*, *Terminate*, or *Preboot*. 2. Select the check box next to the action (or actions). 3. Click *Enable*. 4. Click *Apply*.	
Prevent an action from being performed	1. If you are not already on the appropriate action set tab, click *Distribute*, *Install*, *Launch*, *Verify*, *Uninstall*, *Terminate*, or *Preboot*. 2. Select the check box next to the action (or actions). 3. Click *Disable*. 4. Click *Apply*.	
Bypass an action that fails	1. If you are not already on the appropriate action set tab, click *Distribute*, *Install*, *Launch*, *Verify*, *Uninstall*, *Terminate*, or *Preboot*. 2. Select the check box next to the action (or actions) you want to bypass on failure 3. Select the check box in the *Continue on Failure* column. 4. Click *Apply*.	

Task	Steps	Additional Details
Configure an action set's options	1. If you are not already on the appropriate action set tab, click *Distribute*, *Install*, *Launch*, *Verify*, *Uninstall*, *Terminate*, or *Preboot*.	
	2. Click *Options*.	
	3. Modify the desired settings, then click *OK* to return to the action set page.	
	4. Click *Apply*.	

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 201
- Section 12.2.2, "Launch Action Set Options," on page 202
- Section 12.2.3, "Uninstall Action Set Options," on page 203
- Section 12.2.4, "Terminate Action Set Options," on page 205

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.

 a change in the behavior of the Install action set on a device. For more information on the changed behavior, see Appendix D, "How Bundle Versions Affect an Install Action Set," on page 231.

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.
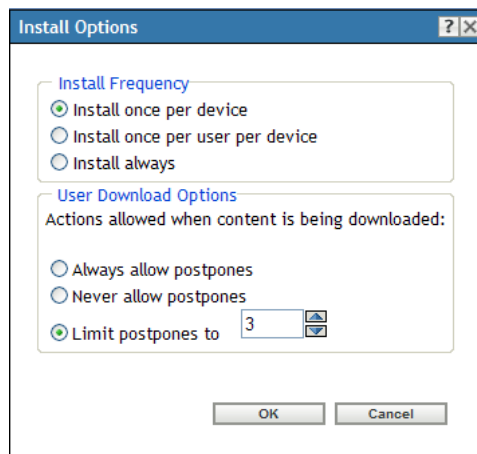
5 Specify how often you want the bundle's install actions performed:

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 schedule 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.

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.
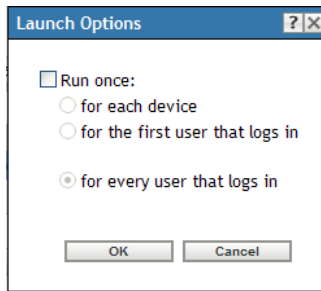
5 Fill in the fields:

: 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.
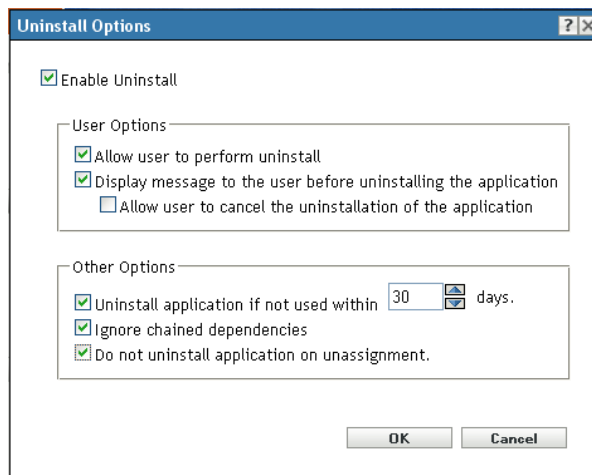
5 Select the *Enable Uninstall* option. The following uninstall options are available only if *Enable Uninstall* option is selected:

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.

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 schedule. 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 Bundles on a Managed Device

The ZENworks Adaptive Agent is part of the Novell ZENworks Configuration Management software that lets your administrator manage devices over the network.

NOTE: This section contains information from the Adaptive Agent online Help system and is written from the perspective of the end-user.

The ZENworks Adaptive Agent, commonly referred to as the Adaptive 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 Adaptive Agent:

13.1 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 Adaptive 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 scheduled to be available to you at that time. The Adaptive Agent does not distribute the application to your device until the requirements are met or the schedule is appropriate.

13.2 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 Adaptive 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 Adaptive 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.

13.3 Accessing Bundles

The ZENworks Adaptive Agent provides three ways for you to access the bundles that are assigned to you:

- Section 13.3.1, "ZENworks Window," on page 208
- Section 13.3.2, "ZENworks Explorer," on page 211
- Section 13.3.3, "ZENworks Icon," on page 212

13.3.1 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 209
- "Using the Command Prompt" on page 209
- "Using the ZENworks Window as the Windows Shell" on page 210

Using the Start Menu

1 Click *Start > Programs > Novell ZENworks > ZENworks Application Window*
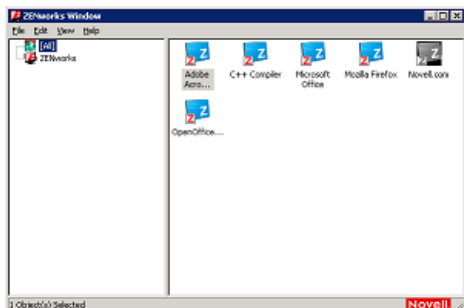
The ZENworks Window left pane displays the following:

- ◆ **[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:

```
nalwin
```

The following command line switches can be used when starting the Application Window using `nalwin`.

Table 13-1 *Application Window Command Line Switches*

Switch	Description
:	Hides the initial splash screen.
EXAMPLE: `nalwin :`	
/?	Displays the help.
EXAMPLE: `nalwin /?`	

Switch	Description
/c="*window_title*" EXAMPLE: `nalwin / c="%Username%'s Apps"`	Uses the specified text as the title for the Application Window. The default window title is "ZENWorks Window for *User*," where *User* is the distinguished name of the user. The text specified can contain macros (variables) to display eDirectory information. The example, `c="%Username%'s Apps"` substitutes the user's common name in the title (for example, JSmith's Apps). **NOTE:** The quotation marks are required only if a space is used in the window title.
/max EXAMPLE: `nalwin /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.
/min EXAMPLE: `nalwin /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.
/r EXAMPLE: `nalwin /r`	Resets the Application Launcher launch flag to 0. This occurs automatically when Application Launcher terminates normally. However, if Application Launcher terminates abnormally (for example, a user uses Ctrl+Alt+Del to shut down `nalwin.exe`), the launch flag is not reset and Application Launcher cannot be restarted until the workstation is rebooted or this switch is used.
/s EXAMPLE: `nalwin /s`	Makes the Application Window act like the Windows shell. For example, on the File menu, the *Exit Application Launcher* option changes to *Shutdown* and gives the user the standard Windows shutdown options. The *Content*s option on the *Help* menu is disabled. So, you cannot view the help. This is not a true replacement for the Windows shell. If users minimize the Application Window, they have access to the normal desktop.
/d EXAMPLE: `nalwin /d`	Displays the Application Window with the *Content*s option on the *Help* menu disabled. So, you cannot view the help.

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\NalWin.exe`

If you want the ZENworks Window to be maximized when it comes up, add the `/max` switch to `nalwin.exe` (for example, `nalwin.exe /max`).

3 Close `regedit.exe`.

4 Restart Windows.

13.3.2 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 13-1 *Bundles Displayed in Windows Explorer*
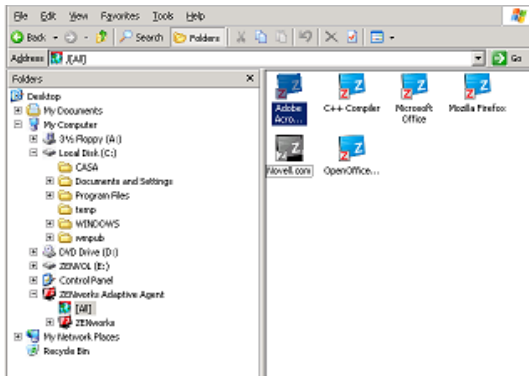
Figure 13-2 *Bundles Displayed on the Desktop*
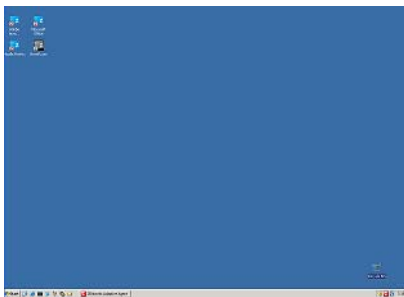
You can perform the same tasks on the bundles in the ZENworks Explorer as you can in the ZENworks Window.

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.
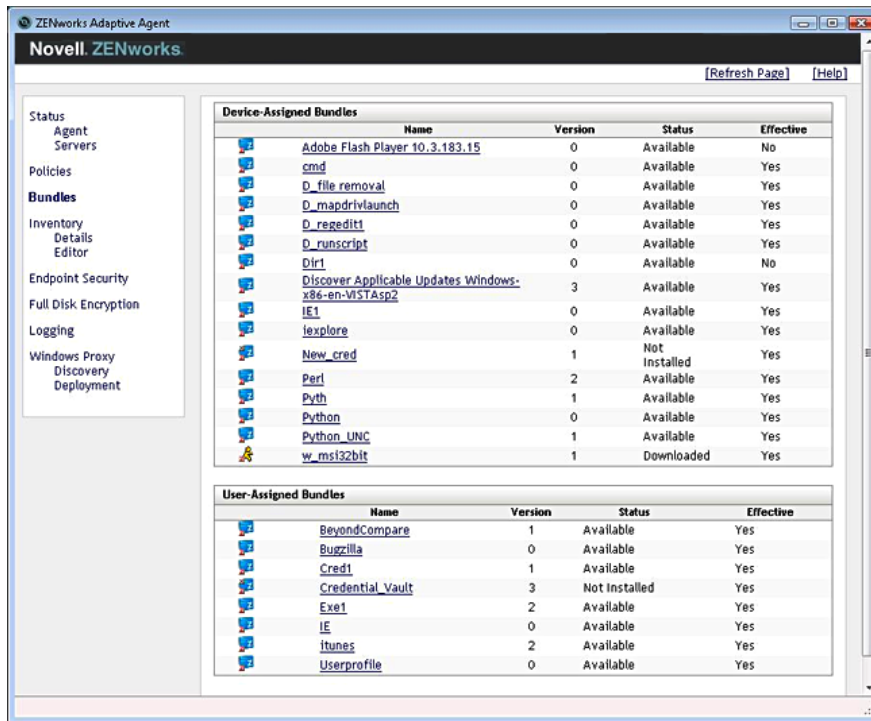
13.3.3 ZENworks Icon

The ZENworks Icon 🔵 is located in the Windows notification area. You can double-click the icon to display the ZENworks Adaptive 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.

Figure 13-3

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 schedule 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 schedule properties.

13.4   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	Description
	Available	The bundle is available on the device. You can launch the bundle. Installed bundles can be verified. To verify the bundle, right-click the icon and click *Verify*. For more information on verifying the bundle, see Verifying a Bundle.
	Unavailable	You cannot launch the bundle. Either the device does not meet the system requirements established for the bundle or the bundle is not scheduled to be available at the current time.
	Downloading	The bundle is downloading from the network location where it is stored.
	Installing	The bundle is installing to the device.
	Running	The bundle is currently running.
	Uninstalling	The bundle is being removed from the device.
	Not Installed	The bundle failed to install or is not yet installed.

13.5 Launching a Bundle

By default, the ZENworks Adaptive 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 Adaptive 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.

NOTE: You must not launch multiple personality migration bundles at the same time. If you do so, the bundles are not launched correctly, and the logs of only the bundle that was launched first is stored in the personalitylog.xml file. Also, the dynamic administrator user profile of only the bundle that was launch first is deleted. The dynamic administrator user profiles of the remaining bundles must be manually deleted.

13.6 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 Adaptive 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*.

13.7 Verifying a Bundle

If an installed application is not functioning correctly or you think it might be outdated, you can verify that the application's bundle information is still correct. If it is not, the ZENworks Adaptive 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 Adaptive 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 *Verify*.

13.8 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 schedule 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 Adaptive 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*.

13.9 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 Adaptive Agent removes all files from your device and undoes all configuration settings made to your device during the bundle installation. Only files that the Adaptive Agent installs specifically for the bundle are removed. For example, the Adaptive 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 Adaptive 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:

A.1 Install Parameters

The Install Parameters dialog box lets you specify the desired parameters.

Figure A-1 *Install Parameters Dialog Box*
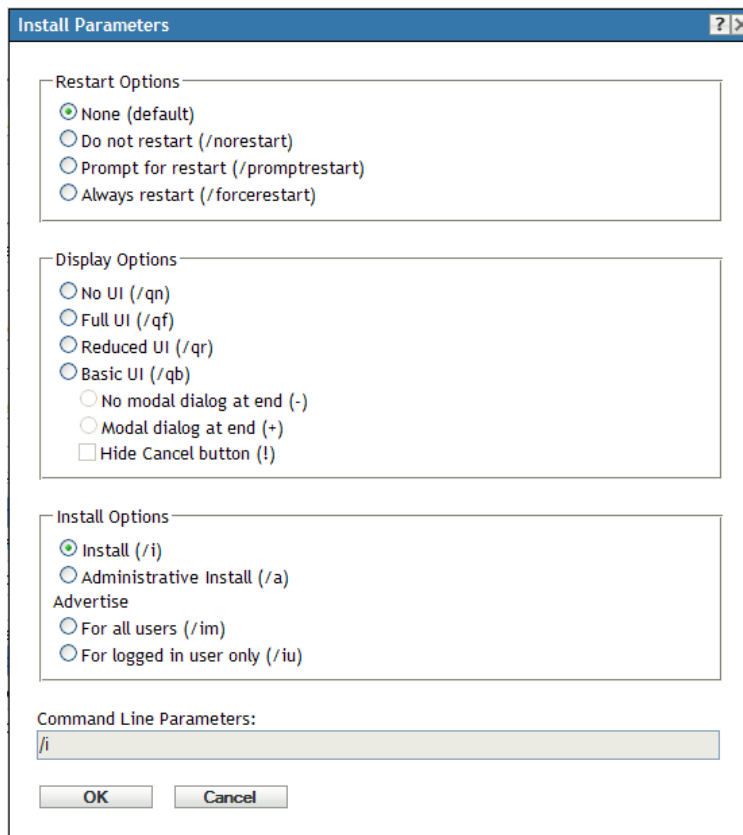
The following sections contain additional information:

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.
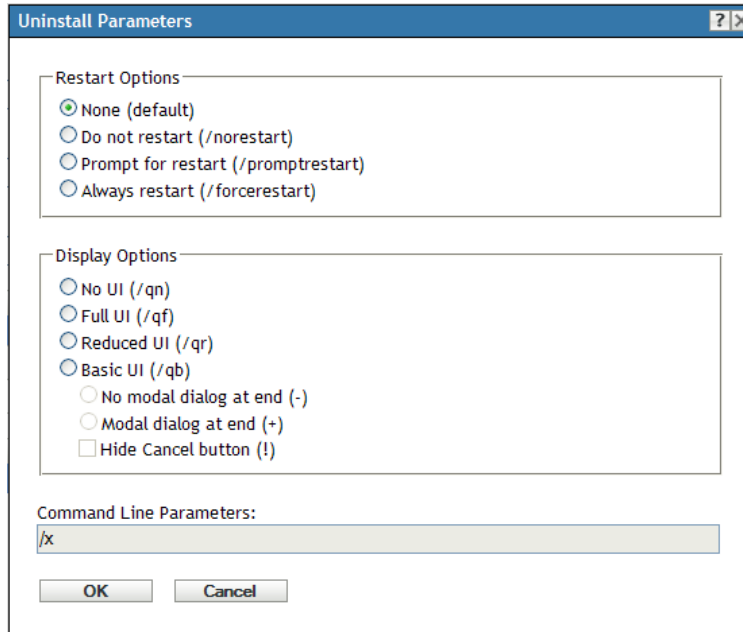
A.1.4   Command Line Parameters

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.

Figure A-2   *Uninstall Parameters Dialog Box*

The following sections contain additional information:

- Section A.2.1, "Restart Options," on page 220
- Section A.2.2, "Display Options," on page 220
- Section A.2.3, "Command Line Parameters," on page 221

A.2.1   Restart Options

In some cases, uninstalling an application requires restarting the workstation.

SIn 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.
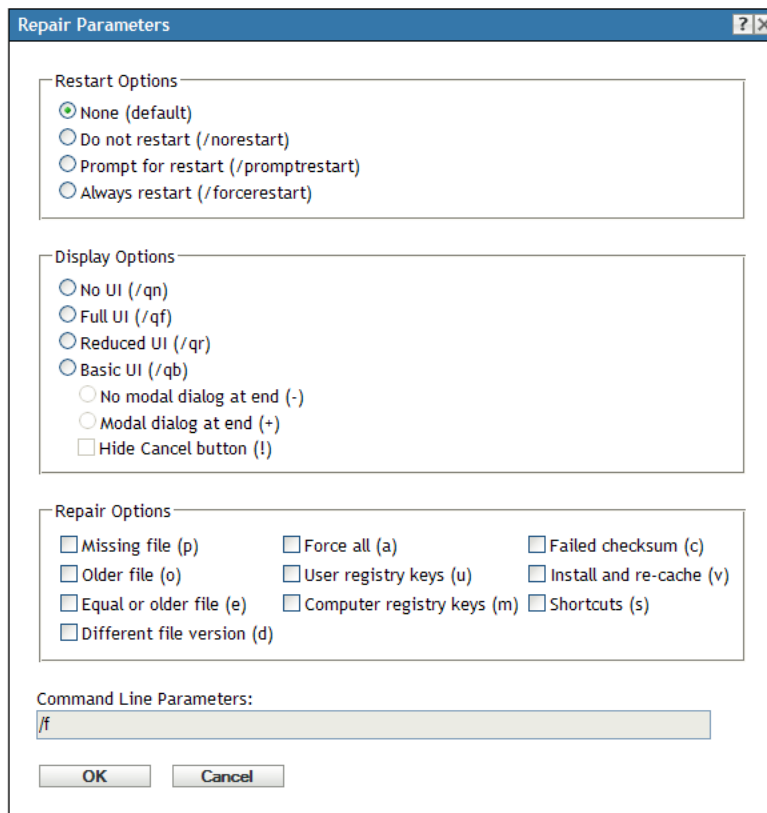
A.2.3 Command Line Parameters

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-3 *Repair Parameters Dialog Box*

The following sections contain additional information:

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
 Novell File Upload Extension

The software included with a bundle is uploaded to the ZENworks Server repository. This enables the ZENworks Server and ZENworks Adaptive Agent to distribute the software without requiring access to any other network locations. If the Novell File Upload extension is not installed on this device, it must be installed before you can browse for file paths and upload files.

After installing the Novell File Upload extension, you do not need to perform this procedure again on this device, assuming you use the same Web browser (Mozilla Firefox or Microsoft Internet Explorer, for example) to upload files. However, an update to the Novell File Upload extensions in the subsequent release requires you to reinstall them on the device. For more information on reinstalling the Novell File Upload extension, see Section C.3, "Reinstalling the Novell File Upload Extension," on page 229.

NOTE:

- You can use Mozilla Firefox browser to install Novell File Upload extension on a Linux device, but certain Windows-specific feature such as extracting icons from Windows executables will not function on the device.
- You cannot use a 64-bit version of Internet Explorer browser to install Novell File Upload extension on a device.

The following sections contain browser-specific information:

- Section C.1, "Installing the Novell File Upload Extension," on page 227
- Section C.2, "Uninstalling the Novell File Upload Extension," on page 229
- Section C.3, "Reinstalling the Novell File Upload Extension," on page 229

C.1 Installing the Novell File Upload Extension

The Novell File Upload extension must be installed on the device before you can browse for file paths and upload files.

C.1.1 On Mozilla Firefox

Perform the following steps:

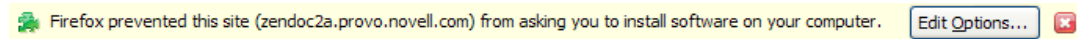**1** Click the *Install the Novell File Upload extension* link.

Depending on your Web browser's security settings, you might receive a message indicating that your browser has prevented installation of the Novell File Upload extension.

You receive the following message at the top of your browser window:

```
Firefox prevented this site from asking you to install software on your
computer.
```

Figure C-1   *Firefox Message*

> 🐾 Firefox prevented this site (zendoc2a.provo.novell.com) from asking you to install software on your computer.   [Edit Options...]   ❌
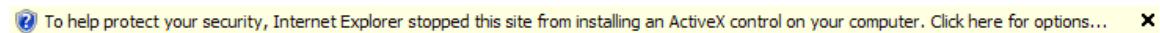
2 Click *Allow*.

3 Click the *Install the Novell File Upload extension* link again.

4 Click *Install Now*, then restart your Web browser.

C.1.2   On Microsoft Internet Explorer

When a Web page refers to an ActiveX control that is not currently on the workstation, users are asked whether or not they want the ActiveX control to be downloaded. This prompt is displayed in the information bar. The information bar displays in between the Internet Explorer toolbars and the Web page when a notification is present, and disappears on the next navigation.

Figure C-2   *Internet Explorer Message*

> ⓘ To help protect your security, Internet Explorer stopped this site from installing an ActiveX control on your computer. Click here for options...   ✕

Displaying the information bar is enabled by default; however, the user can change the default setting so that the information bar does not display. Additionally, the ActiveX controls are installed automatically, without the information bar being displayed, if the publisher of the control (such as Novell) has been previously marked by the user as trusted.

If you are running Internet Explorer (assuming that you are using the default settings and have not marked Novell as trusted), the following message displays in the information bar:

```
To help protect your security, Internet Explorer stopped this site from installing
an ActiveX control on your computer. Click here for options.
```

1 Click the information bar, then click *Install ActiveX Control*.

2 If you are prompted that Internet Explorer needs to resend information that you have previously submitted, click *Retry*.

3 Click *OK* to install the Novell File Upload extension.

You do not need to restart Internet Explorer.

On Windows 2008 R2

To install the Novell ZENworks File Upload Plug-in on a Windows 2008 R2 device by using Internet Explorer 9, you need to disable the Internet Explorer Enhanced Security Configuration (IE ESC) settings from the Server Manager.

1 Click *Start > Administrative Tools*, then select *Server Manager*.

2 Click *Server Manager*, then click the plus sign to expand the Server Manager tree view structure.

3 On the right, click the *Configure IE ESC* link in the Security Information section. The Internet Explorer Enhanced Security Configuration window appears.

4 Select the *Off* radio button to disable the IE ESC settings for the Administrators group and the User group.

5 Press *OK*, then close the Server Manager when you have finished configuring the IE ESC.

C.2 Uninstalling the Novell File Upload Extension

To uninstall the Novell File Upload Extension, perform the following steps:

On Internet Explorer:

1. Close all instances of the Internet Explorer browser.
2. Start a new instance of the browser.
3. Click *Tools > Internet Options > General*.
4. In the *Browsing History* panel, click *Settings*.
5. In the Temporary Internet Files and History Settings window, click *View Objects*.
6. In the Downloaded Program Files window, right-click `NFileUpload Class`, then click *Remove*.

On Firefox:

1. Click *Tools > Add-ons*.
2. In the *Add-ons* window, click `Novell ZENworks File Upload Extension 11.`*`x`*`.`*`x`*, then click *Uninstall*.
3. Close the Firefox* browser.
4. Locate the *`Firefox_Install_directory`*`/plugins` directory and delete the `npzenworks.dll` and `nsINZENScriptablePlugin.xpt` files from the directory.
5. Restart Firefox.

C.3 Reinstalling the Novell File Upload Extension

To update the File Upload extension that is already installed on the device which is running ZENworks Control Center, do the following:

1 Uninstall the Novell File Upload extension.

For more information on uninstalling the Novell File Upload Extension, see Section C.2, "Uninstalling the Novell File Upload Extension," on page 229.

2 Install the File Upload extension. You are prompted to install the latest Novell File Upload Extension the next time you use ZENworks Control Center to browse for file paths and upload files. Follow the prompts to install the Novell File Upload extension. For more information on installing the Novell File Upload Extension, see Section C.1, "Installing the Novell File Upload Extension," on page 227.

D How Bundle Versions Affect an Install Action Set

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.

D.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.

D.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.

D.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 .

Task	Device A	Device B
Modify the Install action set of the latest published version to create a sandbox and then publish the sandbox. Starting value of the local version identifier: 4 New value of the local version identifier: 5	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.
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. Starting value of the local version identifier: 4 New value of the local version identifier: 4	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.

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. Starting value of the local version identifier: 4 New value of the local version identifier: 5	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.
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. Starting value of the local version identifier: 4 New value of the local version identifier: 4	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.

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.

NOTE: 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.

E Best Practices

The following sections contain information on the best practices to follow while using the Bundles component of Novell ZENworks 11:

- Section E.1, "Changing the Look and Feel of the Start Menu on a Windows Vista Device," on page 235
- Section E.2, "Pinning Applications to the Start Menu on a Windows Vista Device," on page 235
- Section E.3, "Assigning Bundles to a Device or User," on page 236
- Section E.4, "ZENworks Explorer Folder Naming Convention," on page 236
- Section E.5, "Creating Bundles with Large Content," on page 236
- Section E.6, "Enabling the Loading of Application Data in to the Device Memory on Demand," on page 236

E.1 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*.

E.2 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.

E.3 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.

E.4 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.

E.5 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, see "Changing the Timeout Value for ZENworks Control Center"in the *ZENworks 11 SP2 ZENworks Control Center Reference*.

E.6 Enabling the Loading of Application Data in to the Device Memory on Demand

You can choose to enable the loading of application data in to the device memory as and when required by setting the `LoadAppdataIntoMemoryOndemand` registry key to true. This helps significantly on low memory devices:

1 Open the Registry Editor.

2 Go to `HKEY_LOCAL_MACHINE\Software\Novell\ZCM`.

3 (Conditional) If the registry key named `LoadAppdataIntoMemoryOndemand` already exists, ensure that its value is set to True, else create a String named `LoadAppdataIntoMemoryOndemand` and set its value to True.

For more information on the Registry keys used in ZENworks, see "Registry Keys" in the *ZENworks 11 SP2 Registry Keys Reference*.

F Troubleshooting

The following sections explains the scenarios that you might encounter while using the Bundles component of Novell ZENworks 11.

Unable to locate the active text box in the user interface of ZENWorks Control Center

Source: ZENworks 11; Software Distribution.

Explanation: If you use Firefox 2.0 to open ZENworks Control Center, the cursor might fail to appear in the active text box.

Action: Use Internet Explorer.

Uploading content from a text file that contains extended characters corrupts the content

Source: ZENworks 11; 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 11; 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 select a large number of files to upload to the content server while performing the Install Directory or Install Files action with the Firefox browser

Source: ZENworks 11; Software Distribution.

Explanation: You cannot select a large number of files to upload to the content server while performing the Install Directory or Install Files action with the Firefox browser.

Action: Upload a smaller number of files with the Firefox browser, or use the Internet Explorer browser to perform the action.

Unable to execute the Install MSI action on a Windows 2000 device

Source: ZENworks 11; 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 11; 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 11; 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 11; 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).

Unable to select an icon with the 64-bit Internet Explorer

Source: ZENworks 11; Software Distribution.

Explanation: If you use the 64-bit Internet Explorer to launch ZENworks Control Center, then click the browse icon to browse to and select an icon from the icon resources such as an .exe, .dll, or .ico file, one of the icons from the resource file is selected by default. You cannot select any other icon.

Action: Use the 32-bit Internet Explorer to launch ZENworks Control Center.

If the Wake-on-LAN schedule on the managed device is behind the server's time zone, the device fails to wake up

Source: ZENworks 11; Software Distribution.

Explanation: If a bundle having the distribution schedule configured is assigned to a managed device such that the Wake-on-LAN schedule is behind the server's time zone, the device fails to wake up.

Action: Ensure that the Wake-on-LAN schedule 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 11; 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 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 11; 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).

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 11; 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 11; 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 `ffffffffffffffb0` 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.

The File Upload plug-in does not upload all of the selected files in Internet Explorer, or the browser is not responsive after files are uploaded in Firefox

Source: ZENworks 11; Software Distribution.

Explanation: When you use the Novell File Upload plug-in to upload multiple files, if a file name exceeds the maximum limit supported by the browser or the operating system, the following issues might arise:

- Internet Explorer: The long filenames are truncated and some of the files are not uploaded.
- Firefox: The browser becomes un-responsive.

Action: Upload the files in smaller batches using the Novell File Upload plugin.

Bundle Actions fail to launch due to XML file corruption in the local file system

Source: ZENworks 11; Software Distribution.

Explanation: ZENworks stores the bundle metadata in XML files in the local file system. Sometimes an attempt to launch a bundle on a managed device might fail if the Java XML library throws an exception.

Possible Cause: The XML file is corrupt in the local file system.

Action: Delete the cached metadata:

1 Stop the ZENworks agent.

2 Delete the `Bundle Guid` folder from the following path:

`/var/opt/novell/zenworks/apps/metadata/<Bundle Guid> folder`

3 Restart the agent.

After the upgrade, unable to uninstall a bundle that is set to uninstall prior to upgrade

Source: ZENworks 11; Software Distribution.

Explanation: Before upgrading a device if you have set a bundle to uninstall on that device, the bundle might not get uninstalled after you have upgraded the device.

Possible Cause: After the upgrade only the new cache entries are referenced and the old cache entries of the unassigned items are not referenced. Thus the old and the new cache entries are not synchronized.

Action: Won't fix.

G ^{Documentation Updates}

This section contains information on documentation content changes that were made in this *ZENworks Software Distribution Guide* for Novell ZENworks 11. 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 following updates were made to the document:

- Section G.1, "October 2013: Update for ZENworks 11SP2 (11.2.4)," on page 243
- Section G.2, "March 2013:Update for ZENworks 11 SP2 (11.2.3)," on page 243
- Section G.3, "March 2012: 11 SP2," on page 244)

G.1 October 2013: Update for ZENworks 11SP2 (11.2.4)

Updates were made to the following sections:

Location	Update
Appendix F, "Troubleshooting," on page 237	Added the following troubleshooting section:
	"Bundle Actions fail to launch due to XML file corruption in the local file system" on page 242.
Appendix D, "How Bundle Versions Affect an Install Action Set," on page 231.	Added a note in the following section:
	Section D.3, "Additional Scenarios," on page 232
Appendix C, "Novell File Upload Extension," on page 227	Added a sub section on Windows 2008 R2 under:
	Section C.1.2, "On Microsoft Internet Explorer," on page 228.
Chapter 6, "Actions," on page 65.	Made changes in the following section:
	Section 6.6, "Action - Display Message," on page 78

G.2 March 2013:Update for ZENworks 11 SP2 (11.2.3)

Updates were made to the following sections:

Location	Update
Chapter 2, "Creating Bundles," on page 25	Added a note at the end of Section 2.5.3, "Understanding the zman Bundle XML File Format," on page 46.
Chapter 8, "Managing Bundles," on page 157	Made changes in the following sections: ♦ "Distribution and Installation:" on page 172. ♦ "Redeploying a Bundle to Refresh Its Dependencies:" on page 173.
Chapter 2, "Creating Bundles," on page 25	Rewrapped the two commands with the new format in the following location: ♦ "On 32-bit managed device:" on page 39. ♦ "On 64-bit managed device:" on page 39.

G.3 March 2012: 11 SP2

Updates were made to the following sections. The changes are explained below:

Location	Update
Chapter 1, "Basic Concepts," on page 11	Added content, see Section 1.4, "Action Sets," on page 12.
Chapter 2, "Creating Bundles," on page 25	Added the section,
Chapter 6, "Actions," on page 65	Updated the following sections: ♦ Section 6.3, "Action - Copy Files," on page 71. ♦ Section 6.6, "Action - Display Message," on page 78. ♦ Section 6.22, "Action - Launch Macintosh Executable," on page 118. ♦ Section 6.25, "Action - Reboot/Shutdown," on page 126. ♦ Section 6.31, "Action - Terminate Application Prompt," on page 143.
Chapter 12, "Managing Action and Action Sets," on page 199	Added a Note in Section 12.2.1, "Install Action Set Options," on page 201 and Section 12.2.2, "Launch Action Set Options," on page 202.
Appendix D, "How Bundle Versions Affect an Install Action Set," on page 231	Added an update on invoking the install action set.
Appendix E, "Best Practices," on page 235	Added the following best practice: "Enabling the Loading of Application Data in to the Device Memory on Demand" on page 236.

Location	Update
Appendix F, "Troubleshooting," on page 237	Updated the section with the following troubleshooting scenarios: ◆ "Unable to install or launch a bundle on a Linux or Macintosh device" on page 241. ◆ "Unable to import an exported registry file into the Windows registry" on page 241. ◆ "The File Upload plug-in does not upload all of the selected files in Internet Explorer, or the browser is not responsive after files are uploaded in Firefox" on page 241.