Novell
ZENworks® Linux Management

7.2

INSTALLATION GUIDE

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Contents

About This Guide

This *Novell ZENworks Linux Management Installation Guide* includes information to help you successfully set up a ZENworks® system. The information in this guide is organized as follows:

Audience

This guide is intended for Novell® ZENworks Linux Management and Dell* PowerEdge* server 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 Comment feature at the bottom of each page of the online documentation, or go to the Novell Documentation Feedback site (http://www.novell.com/documentation/feedback.html) and enter your comments there.

Additional Documentation

ZENworks Linux Management is supported by other documentation (in both PDF and HTML formats) that you can use to learn about and implement the product:

- *Novell ZENworks 7.2 Linux Management Administration Guide*
- *Novell ZENworks 7.2 Linux Management Troubleshooting Guide*

Documentation Conventions

In Novell documentation, a greater-than symbol (>) is used to separate actions within a step and items in a cross-reference path.

A trademark symbol (®, ™, etc.) denotes a Novell trademark. An asterisk (*) denotes a third-party trademark.

When a single pathname can be written with a backslash for some platforms or a forward slash for other platforms, the pathname is presented with a backslash. Users of platforms that require a forward slash, such as Linux* or UNIX*, should use forward slashes as required by your software.

Introduction

1

Novell® ZENworks® 7.2 Linux Management provides comprehensive management of Linux servers and workstations, collectively referred to as devices. Using ZENworks Linux Management, you can:

* Manage Dell PowerEdge servers using ZENworks Linux Management capabilities combined with the Dell OpenManage* toolkit capabilities.
* Manage your device software packages, including dependency resolution, SUSE® patch support, and previous version rollback.
* Manage your device configuration and application settings through the use of policies.
* Automate the application of images and scripted installs using YAST autoinstall and Red Hat* kickstart.
* Remotely manage devices using a secure and fast interface.
* Collect hardware and software inventory, as well as generate inventory reports.

The following sections further introduce you to the capabilities of ZENworks Linux Management and provide a high-level overview of the ZENworks system architecture and administration.

* Section 1.1, "Management Capabilities," on page 11
* Section 1.2, "System Architecture," on page 13
* Section 1.3, "System Administration," on page 15
* Section 1.4, "ZENworks Terms," on page 16

1.1 Management Capabilities

The ZENworks Linux Management capabilities are divided as follows:

* Section 1.1.1, "ZENworks Linux Management Features Specific to Dell PowerEdge Servers," on page 11
* Section 1.1.2, "Software Package Management," on page 12
* Section 1.1.3, "Policy-Based Device Management," on page 12
* Section 1.1.4, "Automated Install and Imaging," on page 12
* Section 1.1.5, "Remote Management," on page 13
* Section 1.1.6, "Inventory Collection," on page 13

1.1.1 ZENworks Linux Management Features Specific to Dell PowerEdge Servers

By combining ZENworks Linux Management capabilities with the Dell OpenManage toolkit capabilities, you can manage your Dell PowerEdge servers from out of the box through the entire

server life cycle. ZENworks Linux Management provides the following features to help you deploy and manage Dell PowerEdge servers in your ZENworks system:

- **Dell Configuration bundles:** Let you configure the BIOS, BMC, RAID, and DRAC settings on Dell PowerEdge servers and create a Dell utility partition. You can also select to run another Preboot Services bundle after these configurations are complete. Dell Configuration bundles let you configure a bare-metal PowerEdge server and quickly and easily put the server into production.

- **Dell Update Package bundles:** Let you update and configure hardware and system settings (including BIOS, DRAC, RAID, BMC, and FRMW configurations) on Dell PowerEdge servers. After you obtain Dell Update Packages from Dell by using the mirroring capabilities of ZENworks Linux Management, you can easily assign the Dell Update Package bundles that are automatically created to PowerEdge servers in your ZENworks system. It is easy for you to determine if an updated Dell Update Package is available for PowerEdge servers in your system and deliver the update.

- **Advanced Dell inventory information:** Lets you display inventory information specific to Dell PowerEdge servers. This advanced inventory information helps you determine when PowerEdge configuration settings need to be updated.

- **Advanced Dell reports:** Let you run reports specific to Dell PowerEdge servers to find devices that do not have valid Dell Update Packages installed or to show devices with Dell applications installed (per device or per device model).

1.1.2 Software Package Management

ZENworks Linux Management lets you install, remove, and roll back software on your Linux devices. This is done through the use of bundles, which are collections of one or more software (RPM) packages. ZENworks automatically resolves dependencies for any software packages it is installing.

When you assign a bundle to a device, it is automatically installed on the device. If you want to give the device's user the choice of whether or not to install a software package, you can use catalogs. A catalog is simply a group of bundles that appears in the ZENworks Linux Management Software Updater client on the device; the user must initiate installation of any of the bundles in the catalog.

1.1.3 Policy-Based Device Management

ZENworks Linux Management provides a number of policies to help you manage the Novell Linux Desktop, Evolution™ e-mail client, Epiphany Web browser, and several other software applications.

Policies enable you to provide consistent operating system and application configuration settings for your devices. You can lock the configuration settings so that users cannot change them.

1.1.4 Automated Install and Imaging

ZENworks Linux Management includes a service called Preboot Services that enables you to perform tasks on devices before their operating systems boot up. Using Preboot Services, you can automatically or manually do the following to a Linux device when it boots up:

- Run scripted installations on the device, such as AutoYaST and kickstart.
- Run ZENworks imaging scripts on the device.

- Make an image of the device's hard drives and other storage devices.
- Restore an image to the device.
- Apply an existing image to multiple devices.
- Update the device's BIOS.

To accomplish these tasks automatically, you simply need to have PXE (Preboot Execution Environment) enabled on your devices, and have prebootable tasks configured and assigned to the devices (configuration is done in the ZENworks Control Center, discussed later). Then, the devices can automatically implement these tasks when they boot. Or, to manually implement the tasks, you can configure devices to require user intervention during bootup.

1.1.5 Remote Management

ZENworks Linux Management provides the ability to use ZENworks Control Center (ZCC) to remotely manage devices by using a graphical Web interface.

1.1.6 Inventory Collection

ZENworks Linux Management can gather extensive software and hardware inventory for all managed devices, and it also enables you to create and export custom reports.

1.2 System Architecture

The ZENworks system architecture consists of two main components, ZENworks Servers and managed devices. These components, organized into management domains, are referred to as ZENworks Management Zones.

Figure 1-1 *ZENworks Management Zone with a Primary Server, a Secondary Server, and Several Managed Devices*
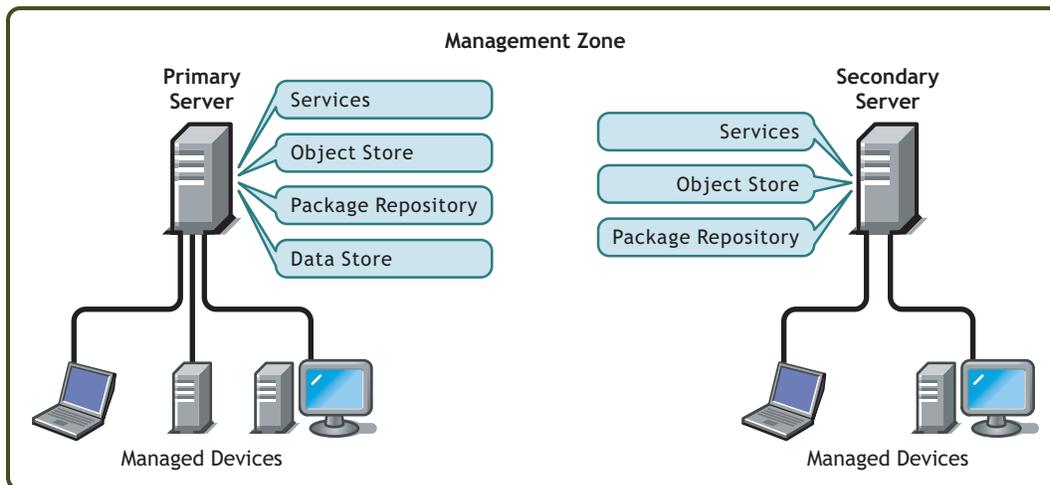
ZENworks Server

The ZENworks Server is the backbone of the ZENworks system. The first ZENworks Server installed is called the ZENworks Primary Server. The primary server contains the following ZENworks components:

- **ZENworks services:** The ZENworks software that provides package management, policy enforcement, inventory collection, imaging, and so forth. The main services are ZENworks Server, ZENworks Loader, ZENworks Imaging Service, ZENworks Preboot Policy Daemon, ZENworks Server Management, and ZENworks Management Daemon.

- **ZENworks Object Store:** The Object Store is the information repository for devices, groups, policies, bundles, and other ZENworks objects defined within the system. The Object Store, which is version 8.7.3 of Novell eDirectory™, is set up and configured during installation. The information in the Object Store is managed through the ZENworks Control Center.

- **Package repository:** The package repository contains the RPM packages that are available for delivery to managed devices within the system.

- **ZENworks Data Store:** The Data Store contains information about the software packages available for delivery, the hardware and software inventory lists collected from devices, and the actions scheduled to take place within the system.

  The Data Store can reside on the ZENworks Primary Server or it can reside on a remote server. All ZENworks Servers require access to the Data Store. For accessibility and reliability purposes, you might want to consider locating the Data Store on a server cluster.

  The Data Store must be either a PostgreSQL or Oracle* database. You can install the PostgreSQL database that is included with ZENworks Linux Management or you can use an existing Oracle 9i database or PostgreSQL database.

Depending on the number and location of the devices you want to manage with ZENworks, you might need additional ZENworks Servers, referred to as ZENworks Secondary Servers. Secondary servers contain the services, package repository, and Object Store, but not the Data Store. Basically, secondary servers are mirrors of the primary server.

The ZENworks services and Object Store are added to a secondary server during installation and configuration of the ZENworks software. Packages are automatically replicated from the ZENworks Primary Server to all secondary servers based upon a schedule you can control (see "Replicating Content in the ZENworks Management Zone" in the *Novell ZENworks 7.2 Linux Management Administration Guide*). Like the primary server, a secondary server must have access to the Data Store, whether the Data Store is located on the primary server or on another server.

Managed Device

A managed device is a server or workstation that you want to manage using ZENworks. The ZENworks Agent must be installed on each device. The ZENworks Agent communicates with the ZENworks Server to enable delivery of software packages, enforcement of configuration policies, inventorying of hardware and software, and remote management of the device.

ZENworks Management Zone

A ZENworks Management Zone consists of one ZENworks Primary Server and one or more managed devices. In addition, the Management Zone can include one or more ZENworks Secondary Servers if required. The ZENworks Servers in the zone work together to manage the devices in the zone.

If necessary, you can have more than one ZENworks Management Zone. There are two main reasons for having multiple zones: 1) you have managed devices that are separated from your ZENworks Servers by a slow WAN link, or 2) you need to have autonomous zones for administrative purposes. These reasons are discussed in more detail in Section 3.4, "Installing a ZENworks Secondary Server," on page 33.

Information is not automatically shared between ZENworks Management Zones. However, you can use the zlmmirror utility to copy software catalogs, bundles, or packages from one Zone's primary server to another zone's primary server. The zlmmirror utility can also be used to pull catalogs, bundles, and packages from the following servers: Dell FTP, YaST Online Updates, Red Hat Network, Red Carpet® Enterprise™, ZENworks 6.x Linux Management, or Novell Updates. For more information, see "Mirroring Software" in the *Novell ZENworks 7.2 Linux Management Administration Guide*.

1.3 System Administration

The ZENworks system is administered at the Management Zone level through the ZENworks Control Center, a task-based Web browser console.

Figure 1-2   *ZENworks Control Center*
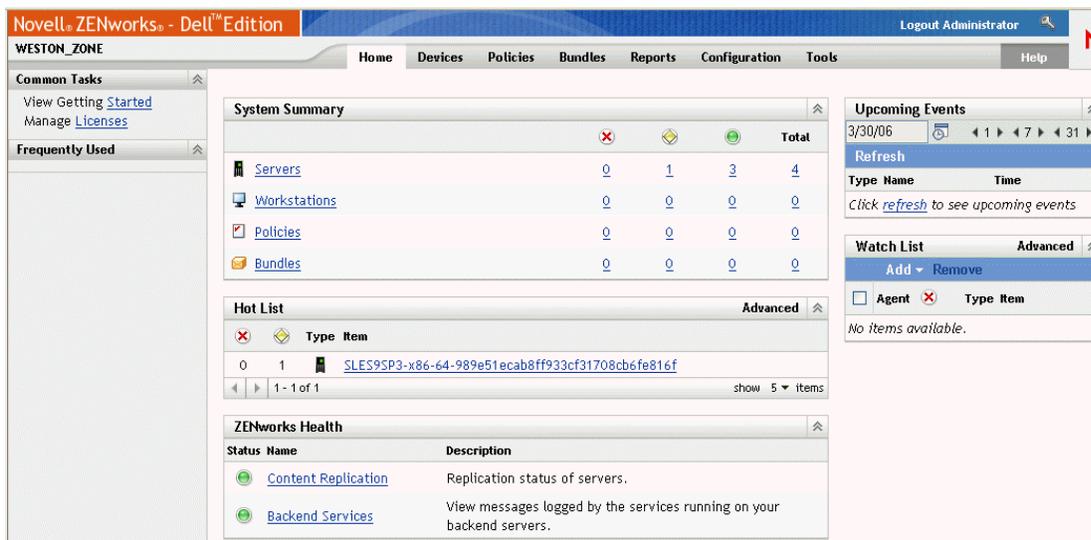
The ZENworks Control Center is installed on all ZENworks Servers in the Management Zone. You can perform all management tasks on the primary server and most management tasks on the secondary servers. The one management exception on secondary servers is the manipulation (adding, deleting, modifying) of RPM or Dell Update Packages in a bundle. This task is not supported because the primary server is the source server for packages, meaning that packages are replicated from the primary server to secondary servers on a regularly scheduled basis. Manipulating a package on a secondary server rather than on the primary server would result in the modified package being replaced (or removed) the next time the secondary server's packages were updated from the primary server.

If you use Novell iManager to administer other Novell products in your network environment, you can enable the ZENworks Control Center to be launched from iManager. For details, see "ZENworks Control Center" in the *Novell ZENworks 7.2 Linux Management Administration Guide*.

In addition to the ZENworks Control Center, you can use a command line utility, zlman, to manage the objects in your ZENworks system. For example, you can add packages to bundles, associate policies with devices, register devices, and assign administrator rights. The main advantage to using the command line utility is the ability to create scripts for handling repetitive or mass operations.

Like the ZENworks Control Center, the zlman utility is installed on all ZENworks Servers. It has the same management restriction as the ZENworks Control Center, meaning that you should not use it to manipulate packages on secondary servers. For more information about zlman, see "Command Line Administration Utilities" in the *Novell ZENworks 7.2 Linux Management Administration Guide*.

1.4 ZENworks Terms

This section contains explanations of the ZENworks Linux Management terms used in this overview.

Table 1-1 *ZENworks Terms*

Term	Description
bundle	ZENworks Linux Management has two types of bundles: RPM package bundles and Preboot bundles. An RPM package bundle is collection of software (RPM) packages. A Preboot bundle is a collection of scripts or images that are applied to a device at bootup.
catalog	A collection of RPM package bundles and Preboot bundles. Catalogs can contain one Preboot bundle and one or more RPM bundles. Bundles assigned to a device are automatically installed, but bundles included in a catalog are optional; the device's user must manually initiate the installation of the bundle.
managed device	A Linux server or workstation that has the ZENworks Agent installed and is registered in the ZENworks Management Zone.
policy	A set of information that defines the operating system and application configuration settings for a managed device.
software package	A collection of software installation files. ZENworks Linux Management supports RPM packages only.
ZENworks Agent	The software installed on a Linux server or workstation that enables it to be managed by a ZENworks Server. The ZENworks Agent consists of multiple components that support software package delivery, policy enforcement, imaging, remote management, and so forth.
ZENworks Control Center	The ZENworks Control Center is the Web-based administrative console used to manage the ZENworks Linux Management system.
ZENworks Data Store or Data Store	The Data Store contains information about the software packages available for delivery, the hardware and software inventory lists collected from devices, and the actions scheduled to take place within the system. The Data Store can reside on the ZENworks Primary Server or it can reside on a remote server. All ZENworks Servers require access to the Data Store.

Term	Description
ZENworks Management Zone or Management Zone	A ZENworks system is divided into one or more ZENworks Management Zones. Each Management Zone consists of at least one ZENworks Server and the devices managed by that server. During installation of a zone's first ZENworks Server, you give the zone a name for identification purposes. For more information, see "ZENworks Management Zone" on page 14.
ZENworks Primary Server or primary server	Each ZENworks Management Zone has one ZENworks Primary Server. The primary server is the first server installed and contains the ZENworks services, ZENworks Object Store, and software packages. Optionally, it might also contain the ZENworks Data Store. Each Managed Device is managed by a single server (either primary or secondary).
ZENworks Object Store or Object Store	The Object Store is the information repository for devices, groups, policies, bundles, and other ZENworks objects defined within the system. The Object Store, which is version 8.7.3 of Novell eDirectory, is set up and configured during installation. The information in the Object Store is managed through the ZENworks Control Center.
ZENworks Secondary Server or secondary server	Each ZENworks Management Zone has one ZENworks Primary Server. All other ZENworks Servers installed in the zone are called ZENworks Secondary Servers. A secondary server has the ZENworks services, the Object Store, and the software packages.
zlman	A command line interface that lets you manage your ZENworks system. The zlman utility is useful for automating tasks (through scripts) and performing mass management tasks that might be tedious to perform in the ZENworks Control Center.

System Requirements

2

The following sections provide the Novell® ZENworks® Linux Management requirements for hardware and software:

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2.1 ZENworks Server Requirements

The network server where you install the ZENworks Server software must meet the requirements listed in the table below.

Table 2-1 *ZENworks Server Requirements*

Item	Requirement
Operating System	◆ SUSE® Linux Enterprise Server 9 (SLES 9), Support Pack 3 (SP3) on the 32-bit (x86) and 64-bit (x86_64) architectures (Intel* EMT64 and AMD* Opteron* processors). When you install SLES 9, we strongly recommend that you perform a Default installation. If you install SLES 9 using a Minimal installation, which does not include X Window System* support, see Section A.4, "Installing ZENworks Linux Management on a SLES 9 Server with a Minimal Installation," on page 82. ◆ SUSE® Linux Enterprise Server 10 (SLES 10) on the 32-bit (x86) and 64-bit (x86_64) architectures (Intel EMT64 and AMD Opteron processors). When you install SLES 10, we strongly recommend that you perform a Default installation. If you install SLES 10 using a Customize installation, some packages are required for ZENworks 7 Linux Management to install successfully. For more information, see Section A.5, "Installing ZENworks Linux Management on a SLES 10 Server with a Customize Installation," on page 82. ◆ Red Hat Enterprise Linux 4 (RHEL4) AS/ES Update 3 or later on the 64-bit Intel (x86_64) architecture. ◆ Additionally, SLES 10 SP1 is supported in the ZENworks 7.2 Linux Management with Interim Release 1 (IR1).
Hardware	◆ Processor: Pentium* III x86 (minimum), AMD64, or Intel EMT64 ◆ RAM: 1 GB minimum ◆ Disk Space: 500 MB minimum; 4 GB recommended. Depending on the number of packages you have to distribute, this number can vary greatly.
Hostname Resolution	The server must resolve device hostnames using a method such as DNS.

Item	Requirement
IP Address	The server must have a static IP address or a permanently leased DHCP address.
TCP Ports	The server must allow traffic on TCP ports 80, 443, 524, 1299, 2544, 5506, 10389, and 10636.
	The server cannot run other services on port 80. If Apache or another service is binding to port 80, remove the service or change the service's port.
Supported Virtual Environments	◆ VMware* ESX running on a supported ZENworks Server platform. The ZENworks Server cannot run on the XEN platform in a guest or host environment.

2.2 Database Requirements

If you choose to use a database for the ZENworks Data Store other than the PostgreSQL database included with ZENworks Linux Management, the database must meet the following requirements:

Table 2-2   *Database Requirements*

Item	Requirement
Database Version	◆ PostgreSQL 7.4.7 or higher
	◆ Oracle 9i Release 2 only
Default Character Set	UTF-8 required
Default Time Zone	UTC required
TCP ports	The server must allow ZENworks Agent and ZENworks Server communication on the database port (if you are using the default PostgreSQL database, port 5432).

2.3 Managed Device Requirements

ZENworks can manage any workstations and servers that meet the requirements listed in the table below.

Table 2-3 *Managed Device Requirements*

Item	Requirement
Operating System	◆ SUSE Linux Enterprise Server 9 (SLES 9), SP3 on the 32-bit (x86) and 64-bit (x86_64) architectures (Intel EMT64 and AMD Opteron processors).

When you install SLES 9, we strongly recommend that you perform a Default installation. If you install SLES 9 using a Minimal installation, which does not include X Window System support, see Section A.4, "Installing ZENworks Linux Management on a SLES 9 Server with a Minimal Installation," on page 82.

◆ SUSE Linux Enterprise Server 10 (SLES 10) on the 32-bit (x86) and 64-bit (x86_64 architectures. The Intel EMT64 and AMD Opteron processors support all ZENworks Linux Management features. The PPC, IPF, and zSeries processors support the Package Management features only.

When you install SLES 10, we strongly recommend that you perform a Default installation. If you install SLES 10 using a Customize installation, some packages are required for ZENworks 7 Linux Management to install successfully. For more information, see Section A.5, "Installing ZENworks Linux Management on a SLES 10 Server with a Customize Installation," on page 82.

◆ SUSE Linux Enterprise Desktop 10 (SLED 10) on the 32-bit (x86) and 64-bit (x86_64) architectures (Intel EMT64 and AMD Opteron processors).

◆ Novell Linux Desktop 9, SP3 on the 32-bit (x86) and 64-bit (x86_64) architectures (Intel EMT64 and AMD Opteron processors).

To ensure successful enforcement of the NLD GNOME* policy, you need Novell Linux Desktop 9 with Support Pack 2 with GNOME.

◆ Novell Open Enterprise Server on the 32-bit (x86) architecture

◆ RHEL3 AS/ES/WS (latest patch) on the 32-bit (x86) and 64-bit (x86_64) architectures.

◆ RHEL4 AS/ES/WS (latest patch) on the 32-bit (x86) and 64-bit (x86_64) architectures.

Dell PowerEdge Servers: If you plan to manage Dell PowerEdge servers using ZENworks 7.2 Linux Management, the Dell PowerEdge Software Support Matrix lets you identify operating systems and Dell OpenManage software that your PowerEdge system supports. You can view the Support Matrix on the Dell Support site (http://support.dell.com/support/edocs/software/smsom/5.1.1/en/peosom/index.htm).

The following versions of the OpenIPMI driver are required to support the Dell Update Package functionality:

◆ SLES 10: openipmi-1.4.26-9.4 or newer

◆ SLES 9.3: openipmi-36.7 or newer

◆ RHEL4: openipmi-33.12 or newer

◆ RHEL3: openipmi-35.12 or newer

Item	Requirement
Operating Systems additionally supported for IR1	The following operating systems are supported in ZENworks 7.2 Linux Management with IR1: • SLES 10 SP1 • SLED 10 SP1 • RHEL5 on 32-bit (x86) architecture
Hardware	The following are minimum hardware requirements. Use these requirements or the hardware requirements provided with your operating system, whichever is greater. For example, NLD recommends Pentium III or higher, so use those requirements rather than the ones listed below. • Processor: Pentium II 266 MHZ, 64-bit AMD Opteron, or 64-bit Intel Xeon EMT • RAM: 128 MB minimum; 256 MB recommended • Disk Space: 800 MB minimum • Display resolution: 800x600 **Dell PowerEdge Servers:** Managed Dell PowerEdge servers must be a 6, 7, 8, or 9 generation server to use the ZENworks Linux Management Dell features (Dell Configuration bundles, Dell Update Package bundles, and advanced reporting and inventory support). You can determine which generation your PowerEdge server is by examining the third number from the right in the model number. If the number is 8, the server is an 8 generation server, and so forth. For example, • **Generation 6 PowerEdge servers:** PowerEdge 650, PowerEdge 6600, etc. **Generation 7 PowerEdge servers:** PowerEdge 750, PowerEdge 1750, etc. **Generation 8 PowerEdge servers:** PowerEdge 800, PowerEdge 1850, etc. **Generation 9 PowerEdge servers:** PowerEdge 2950, PowerEdge 1955, etc. Before you can use the features specific to Dell PowerEdge servers, you must perform the procedure in Section 3.5.3, "Enabling Dell PowerEdge Support," on page 43.
TCP Ports	The device must allow ZENworks Agent and ZENworks Server communication on TCP port 443. You must open port 2544 if you want to be able to perform the following actions: • Use the ZENworks Agent Status icon in the ZENworks Control Center • Refresh the client from the ZENworks Control Center or from the zlman command line utility You must open port 5950 if you want to use remote control operations. You must open port 5951 if you want to use remote log-in operations.
Supported Virtual Environments	• VMware ESX running a supported managed device platform • XEN on SUSE Linux Enterprise Server 10 (SLES 10) and SUSE Linux Enterprise Desktop (SLED 10) managed devices

2.4 Administration Workstation Requirements

Make sure the workstation (or server) where you run the ZENworks Control Center to administer your system meets the requirements listed below:

Table 2-4   *Administration Workstation Requirements*

Item	Requirement
Web Browser	◆ Firefox* 1.0 or higher ◆ Mozilla* 1.7 or higher ◆ Internet Explorer 6.0 SP1 or higher (all Windows* platforms except Windows XP) ◆ Internet Explorer 6.0 SP2 or higher (Windows XP)
Java* 1.4 Web Browser plug-ins	Required to use the Remote Management functionality in the ZENworks Control Center. For information about installing the browser plug-ins on Firefox and Mozilla, see the Java Runtime Engine information at Mozdev.org (http://plugindoc.mozdev.org/linux.html). For information about installing the browser plug-ins on Internet Explorer, visit Java.com (http://www.java.com).
Hardware	◆ Processor: Pentium III, 64-bit AMD Opteron, or 64-bit Intel Xeon EMT ◆ RAM: 512 MB minimum ◆ Disk space: 500 MB minimum ◆ Display resolution: 1024 x 768

Installation

3

The following sections provide instructions for installing the Server and Agent software components of Novell® ZENworks® 7 Linux Management, ZENworks 7.2 Linux Management or ZENworks 7.2 Linux Management with Interim Release 1 (IR1). Complete the tasks in the order listed:

1. If you intend to use an existing PostgreSQL or Oracle database installation for your ZENworks Data Store rather than have ZENworks install a new PostgreSQL database, you need to set up the database correctly. See Section 3.1, "Preparing the Database for the ZENworks Data Store," on page 25.

2. If desired, verify the signatures on the RPM packages. All packages are signed by Novell. You can verify the package signatures to ensure that the packages have not been tampered with. See Section 3.2, "Verifying the RPM Package Signatures," on page 27.

3. Install your first ZENworks Server and create your ZENworks Management Zone. The first ZENworks Server you install is called the ZENworks Primary Server. See Section 3.3, "Installing the ZENworks Primary Server," on page 28.

4. Install additional ZENworks Servers as needed. Any ZENworks Servers you install after the first one are called secondary servers. See Section 3.4, "Installing a ZENworks Secondary Server," on page 33.

5. Prepare managed devices for ZENworks Linux Management and install the ZENworks Agents on devices (servers and workstations) you want to manage, and register the devices in your Management Zone. See Section 3.5, "Setting Up Managed Devices," on page 38.

If you are unfamiliar with any of the ZENworks components or terminology in the above task list, please review Section 1.2, "System Architecture," on page 13.

3.1 Preparing the Database for the ZENworks Data Store

ZENworks Linux Management requires either a PostgreSQL or Oracle database for the ZENworks Data Store. During installation of the ZENworks Primary Server, you are asked whether you want the installation program to create a new PostgreSQL database on the primary server or use an existing PostgreSQL or Oracle database located on either the primary server or another network server.

If you want to create a new PostgreSQL database on the primary server, you can skip the remainder of this section and continue with Section 3.3, "Installing the ZENworks Primary Server," on page 28.

If you plan to use an existing PostgreSQL or Oracle database, you need to complete the tasks in the following sections before you install your primary server.

- Section 3.1.1, "Creating the Database Instance," on page 26
- Section 3.1.2, "Installing the Oracle Database Client," on page 26
- Section 3.1.3, "Gathering the Database Information," on page 27

NOTE: For detailed information on backing up and restoring the ZENworks Data Store using PostgreSQL, and optimizing the server database performance, see "Maintaining the ZENworks Data Store on PostgreSQL" in the *Novell ZENworks 7.2 Linux Management Administration Guide*.

3.1.1 Creating the Database Instance

You need to create a new database instance to use for the ZENworks Data Store. If necessary, refer to your database documentation for instructions. Keep the following in mind when you create the database instance:

- The database version and host server must meet the requirements listed in Section 2.2, "Database Requirements," on page 20.
- The default character set must be UTF-8.
- The default time zone must be UTC.
- For PostgreSQL, you can name the database as desired.
- For Oracle, the SID (System Identifier) can be whatever you want; however, the SID and the service name must be the same.
- The database must require user and password authentication for access.

After you create the database instance for an existing PostgresSQL database, you need to perform some configuration tasks. For more information, see TID 10099586 in the Novell Support Knowledgebase (http://support.novell.com/search/kb_index.jsp). If you create a new PostgresSQL database during installation, additional configuration is not necessary because the ZENworks installation program creates the required database tables and configures the database to support ZENworks data.

3.1.2 Installing the Oracle Database Client

This section applies only if you are using an Oracle database for your ZENworks Data Store. If not, skip to the next section, Gathering the Database Information.

ZENworks Servers require an Oracle client to communicate with the Oracle database. You can obtain the client directly from the Oracle Web site (http://www.oracle.com/technology/tech/oci/instantclient/instantclient.html).

You should download the newest version of the client. On the Oracle web page under the Platform Downloads section, click the appropriate platform link. More information about downloading and installing the client is included in the following sections:

- "Linux x86 32-Bit" on page 26
- "Linux x86 64-Bit" on page 27

Linux x86 32-Bit

Click the Linux x86-32 bit link, then follow the prompts to download the appropriate files. For the Linux x86 32-bit platform, Oracle supplies both `.zip` and `.rpm` files; you must download the `.rpm` files.

Install the following RPMs on the primary server and any secondary servers:

- `oracle-instantclient-basic-`*`version_number`*`.i386.rpm`
- `oracle-instantclient-jdbc-`*`version_number`*`.i386.rpm`
- `oracle-instantclient-sqlplus-`*`version_number`*`.i386.rpm`

Linux x86 64-Bit

The ZENworks Linux Management installation program looks for the Oracle client files in RPM format. Because Oracle currently ships the client in `.zip` files only for the Linux x86 64-bit platform, you must convert the files into the RPM format so that the installation program recognizes them.

Click the Linux x86-64 bit link, then follow the prompts to download the appropriate `.zip` files.

For more information and instructions on converting and installing the Oracle database client for the Linux x86 64-bit platform, see TID 3000493 on the Novell Support site (http://www.novell.com/support/supportcentral/supportcentral.do?id=m1). Click the *Search by TID ID* box before clicking *Search*.

If you do not follow the directions in the TID, the installation on Linux x86-64 bit platforms fails and you receive the following error message: "`The Oracle jdbc driver is not installed. An RPM (oracle-instantclient-jdbc) that contains the Oracle jdbc driver can be downloaded from oracle.com. The install cannot continue.`"

3.1.3 Gathering the Database Information

You must be ready to provide the following information during installation of the primary server:

- The IP address or DNS hostname of the server where the database resides.
- The port that the PostgreSQL or Oracle database server is listening on. The default PostgreSQL port is 5432. The default Oracle port is 1521.
- The name of the PostgreSQL database or the SID (System Identifier) of the Oracle database.
- The user name for an administrative account for the database.
- The password for the administrative account.

3.2 Verifying the RPM Package Signatures

All RPM packages on the *Novell ZENworks 7 Linux Management*, *Novell ZENworks 7.2 Linux Management*, and *Novell ZENworks 7.2 Linux Management with Interim Release 1* CDs are signed by Novell. To ensure that the RPM packages have not been tampered with, you can verify the RPM package signatures.

1 At the Linux machine, mount the product CD of the ZENworks Linux Management version you want to install by using the `mount `*`device mountpoint`* command.

- Use the *Novell ZENworks 7 Linux Management* CD to install ZENworks 7.2 Linux Management.
- Use the *Novell ZENworks 7.2 Linux Management* CD to install ZENworks 7.2 Linux Management.

- Use the *Novell ZENworks 7.2 Linux Management with Interim Release 1* CD to install ZENworks 7.2 Linux Management with IR1.

For example, to install ZENworks 7 Linux Management, mount the product CD by using `mount /dev/cdrom /zlm7`.

If you are using an ISO image rather than a physical CD, copy the ISO to a temporary folder on the Linux machine, then mount the image using the following command:

```
mount -o loop /tempfolderpath/isoimagename.iso mountpoint
```

Replace *tempfolderpath* with the path to the temporary folder and replace *mountpoint* with the path to the file system location you want to mount the image. The path specified by *mountpoint* must already exist.

For example:

```
mount -o loop /zlm7/ZEN7_LinuxMgmt.iso /zlm7/install
```

2 At the command line, change to the mount point.

3 Import the public key using the following command:

```
rpm --import ./zlm7-publickey
```

4 Verify the RPM packages using the following command:

```
rpm -K RPM_file
```

For example:

```
rpm -K mount_point/data/packages/zlm7de-runtime-deps/sles-9-
x86_64/novell-zenworks-server-7.1.0-0.x86_64.rpm
```

Rather than verifying packages individually, you can use the following script to verify all of the RPM packages on the CD:

```
for i in 'find mount_point/data/packages -name *.rpm' ;
do rpm -K $i ;
done
```

3.3 Installing the ZENworks Primary Server

The first ZENworks Server you install is the ZENworks Primary Server. The primary server becomes the administration point for all ZENworks Servers and managed devices within the Management Zone. For more information, see Section 1.2, "System Architecture," on page 13.

To install your primary server, complete the tasks in the following sections:

3.3.1 What the Installation Program Does

During installation of the primary server, the ZENworks installation program does the following:

- Creates the ZENworks Management Zone. You are prompted for a unique name for the zone. This name must be different from any other Management Zone names in your environment. If

you are using Novell eDirectory™ in your environment, the Management Zone name must also be different from any eDirectory tree names.

- Creates a password for the default ZENworks Administrator account. You are prompted to supply the password.

- Creates the ZENworks Data Store. You are prompted to create a new PostgreSQL database or use an existing PostgreSQL or Oracle database. For more information, see Section 3.1, "Preparing the Database for the ZENworks Data Store," on page 25.

- Creates the ZENworks Object Store and installs the ZENworks Control Center.

- Installs and starts the ZENworks services.

3.3.2 Installing the ZENworks Server Software

To install the primary server:

1 Make sure the server meets the requirements. See Section 2.1, "ZENworks Server Requirements," on page 19.

If you are installing to a device that is configured with DHCP, you might encounter the following eDirectory error in zlm-config:

```
eDir failed to start properly. Please ensure that this machine
is configured with a static IP or permanently-leased DHCP
Address.
```

For detailed information on how to resolve the error, see Section A.6, "Installing a ZENworks Server on a Device Configured with DHCP," on page 84.

IMPORTANT: If other services run on port 80, the installation will fail; the server cannot run other services on port 80. If Apache or another service is binding to port 80, remove the service or change the service's port.

For example, change the Apache2 web server's Listen Port (on SLES 9 SP3 as found in `/etc/apache2/ listen.conf`) from 80 to 81. Make sure the Apache service is shut down and then run zlm-config.

---

2 (Conditional) If you plan to use an existing database for the ZENworks Data Store, make sure you've prepared the database. See Section 3.1, "Preparing the Database for the ZENworks Data Store," on page 25.

3 At the Linux server, mount the product CD of the ZENworks Linux Management version you want to install by using the `mount device mountpoint` command.

- Use the *Novell ZENworks 7 Linux Management* CD to install ZENworks 7 Linux Management.

- Use the *Novell ZENworks 7.2 Linux Management Server* CD to install ZENworks 7.2 Linux Management.

- Use the *Novell ZENworks 7.2 Linux Management with Interim Release 1 Server* CD to install ZENworks 7.2 Linux Management with IR1.

For example, to install ZENworks 7 Linux Management, mount the product CD by using `mount /dev/cdrom /zlm7`.

If you are using an ISO image rather than a physical CD, copy the ISO to a temporary folder on the Linux server, then mount the image using the following command:

```
mount -o loop /tempfolderpath/isoimagename.iso mountpoint
```

Replace *tempfolderpath* with the path to the temporary folder and replace *mountpoint* with the path to the file system location you want to mount the image. The path specified by *mountpoint* must already exist.

For example:

```
mount -o loop /zlm7/ZEN7_LinuxMgmt.iso /zlm7/install
```

4 Log in as `root`, then start the installation program from the mount point by running the following command:

```
./zlm-install
```

NOTE: The steps in this procedure perform a standard installation of ZENworks Linux Management. Depending on your situation, additional options can be used with the `zlm-install` command. For more information, see Appendix I, "Appendixes," on page 77.

If you do not have the X Window System installed (for example, you installed a Minimal installation of SUSE® Linux Enterprise Server 9), you need to install the glib2, XFree86-libs-32 bit, and compat-32bit packages to the server before installing ZENworks Linux Management. When you install ZENworks Linux Management on the server, you must use the `-x` switch to avoid dependency problems. Running `./zlm-install -x` skips any packages that require the X Window System. In Step 7 below, you must agree when it says that the installation lacks the zmd-gconfpolicyenforcer, novell-zenworks-zmd-rmagent, and vnc components.

For more information about installing ZENworks Linux Management on a SUSE Linux Enterprise Server with a Minimal installation, see "Operating System" on page 19.

5 When prompted to install ZENworks, enter `Y` to continue.

6 Review the Software License Agreement, pressing Page Down to scroll down the page, then enter `Y` to accept the agreement.

Installation of the software begins. There are ten software components to install. Installation progress is displayed for each component.

If you are installing on a SUSE Linux Enterprise Server 10 (SLES 10) device, a message might display informing you that some packages are already installed (for example, rug, zmd-inventory, or zen-updater). Some packages that ship with ZENworks Linux Management also ship with SLES 10. Depending on the versions of these packages, you might be prompted to re-install these packages, which might overwrite configuration changes you have made. Press `Y` to continue.

7 When installation of the software is complete, enter `Y` to run zlm-config and configure the ZENworks Primary Server and Management Zone.

8 Provide the appropriate responses to the following prompts:

    ◆ **Is this the first server in your system?:** Enter `Y` for Yes.

    ◆ **Enter a unique Management Zone name:** Enter the name you want to use for your ZENworks Management Zone. For example, Novell_Boston. The name cannot be the same as any other ZENworks Management Zone in your network environment. If you use Novell eDirectory, it cannot be the same name as your eDirectory tree name.

    ◆ **Enter an Administrator password:** Enter the password you want assigned to the default ZENworks Administrator account.

◆ **Repeat the Administrator password:** Re-enter the password.

◆ **Do you want ZENworks to install and set up a local PostgreSQL database for you?:**

If you want to use a new PostgreSQL database for the ZENworks Data Store and have it located on the primary server, enter `Y` for Yes. If you want to use an existing PostgreSQL or Oracle database, either on the primary server or on a remote server, enter `N` for No.

9 If you chose to use an existing database, continue with Step 10.

or

If you chose to install and set up a local PostgreSQL database, skip to Step 11.

10 Provide the appropriate responses to the following prompts to configure access to an existing database:

◆ **IP address or hostname of the *database* server:** Enter the IP address or DNS hostname of the server hosting the database.

◆ **Port *database* is listening on:** Enter the listening port being used by the database server. The default PostgreSQL listening port is 5432. The default Oracle listening port is 1521.

◆ **Database name/SID:** For a PostgreSQL database, enter the name of the database. For an Oracle database, enter the SID (System Identifier).

◆ **Database user name:** Enter the user name for an administrative account that provides full access to the database.

◆ **Database user password:** Enter the account password.

11 When configuration of the ZENworks Server components is complete, you should verify the installation. To do so:

11a Confirm that the ZENworks services are running by using the following command:

```
/opt/novell/zenworks/bin/zlm-config --status
```

The screen output should show that all services are running.

```
Novell ZENworks Imaging Service is running
Novell eDirectory is running
Novell ZENworks Server Management is running
Novell ZENworks Imaging Agent is running
Novell ZENworks Server is running
Novell ZENworks Preboot Policy Daemon is running
Novell ZENworks Management Daemon is running
Novell ZENworks Loader is running
```

If a service is not running, use the following command to start it:

```
/etc/init.d/servicename start
```

Replace *servicename* with the name of the service that needs to be started.

Service	Service Name
Novell eDirectory	ndsd
Novell ZENworks Server	novell-zenserver
Novell ZENworks Loader	novell-zenloader
Novell ZENworks Imaging Service	novell-pbserv

Service	Service Name
Novell ZENworks Preboot Policy Daemon	novell-zmgprebootpolicy
Novell ZENworks Server Management	novell-zented
Novell ZENworks Management Daemon	novell-zmd
Novell Imaging Agent	novell-zislnx

For example, if the Novell ZENworks Management Daemon is not running, use the following command to start it:

```
/etc/init.d/novell-zmd start
```

For additional information about the ZENworks services, see "ZENworks Services" in the *Novell ZENworks 7.2 Linux Management Administration Guide*.

11b (Conditional) If you are using the PostgreSQL database, confirm that it is running by using the following command at the database server:

```
/etc/init.d/postgresql status
```

11c Access the ZENworks Control Center using a Web browser that meets the requirements listed in Section 2.4, "Administration Workstation Requirements," on page 23. Use the following URL to access the Control Center:

```
https://ZENworks_Primary_Server_Address
```

Replace *ZENworks_Primary_Server_Address* with the IP address or DNS name of the primary server.

The ZENworks Control Center requires an https:// connection; requests to http:// are redirected to https://.

When prompted for login credentials, use the Administrator user with the password you provided during the installation.

After you are in the Control Center, you can click the *Devices* tab, then click the *Servers* folder to view your ZENworks Primary Server.

12 After successfully installing the ZENworks Server components, take a reliable backup of the following files:

- ◆ `/etc/opt/novell/zenworks/hibernate.cfg.xml`
- ◆ `/etc/opt/novell/zenworks/tomcat/server.xml`
- ◆ `/etc/opt/novell/zenworks/serversecret`

13 (Conditional) Ensure that the ZENworks Linux Management server and the server on which the Oracle or the PostgreSQL database is running are in time sync.

14 Continue with the next section, Supplying Your Product License Code.

3.3.3 Supplying Your Product License Code

Your ZENworks system is installed with a 90-day evaluation license. For your system to continue to work after 90 days, you need to supply your product license. To do so:

1 Access the ZENworks Control Center using the following URL:

```
https://ZENworks_Primary_Server_Address
```

Replace *ZENworks_Primary_Server_Address* with the IP address or DNS name of the primary server.

2 Click the *Configuration* tab.

The Licensing section is located in the lower right corner of the *Configuration* page. The section displays the number of days remaining on the evaluation license.

3 Click *Change* to display the Product Activation box, provide your product license code, then click *OK*.

4 To install a secondary server, continue with the next section, Installing a ZENworks Secondary Server.

or

To set up devices to be managed, skip to Section 3.5, "Setting Up Managed Devices," on page 38.

3.4 Installing a ZENworks Secondary Server

Your ZENworks Management Zone has only one primary server. Any ZENworks Servers that you install after the primary server are called ZENworks Secondary Servers. A secondary server performs all of the same functions as the primary server. Complete the tasks in the following sections to install a secondary server:

- Section 3.4.1, "Determining If a Secondary Server is Needed," on page 33
- Section 3.4.2, "Installing the ZENworks Server Software," on page 34
- Section 3.4.3, "Defining a Content Replication Schedule," on page 37

3.4.1 Determining If a Secondary Server is Needed

There are two main factors that determine whether or not you need secondary servers in your system:

- **Number of devices:** The number of devices you intend to manage is one of the major factors in determining the number of ZENworks Servers you need. How many management tasks you'll be regularly performing on these devices is another contributing factor.

  The Novell SuperLab is continually performing tests to benchmark performance. For the latest performance benchmarks and load recommendations, see the ZENworks Linux Management Web site (http://www.novell.com/products/zenworks/linuxmanagement/index.html).

- **Network speed:** The ZENworks system has three key communication paths that should not be impeded by slow WAN links: 1) the ZENworks Primary Server to a ZENworks Secondary Server, 2) any ZENworks Servers to the ZENworks Data Store, and 3) any managed device to its ZENworks Server.

  In general, this means that to achieve the best performance, you should do the following:

  - Make sure that each managed device resides in the same local area network as its ZENworks Server. For example, if you have devices in a Los Angeles office and devices in a London offices and the two offices have a slow WAN link, you should have ZENworks Servers in both offices.

  - Make sure that all secondary servers reside in the same local area network as the primary server. The primary server replicates software packages and images to each secondary

server in its Management Zone on a regularly scheduled basis. If there is a large amount of data to transfer, this process can consume extensive bandwidth.

 ◆ Make sure that ZENworks Servers reside in the same local area network as the ZENworks Data Store. The servers consistently access the Data Store for ZENworks information.

Overall, you achieve best performance if all ZENworks Servers and managed devices within the same Management Zone are located on the same LAN or have fast WAN links. To facilitate consistency between different Management Zones, you can mirror the software packages between primary servers in the different zones (see "Mirroring Software" in the *Novell ZENworks 7.2 Linux Management Administration Guide*).

3.4.2 Installing the ZENworks Server Software

To install a secondary server:

1 Synchronize the secondary server's system clock with the primary server's system clock to ensure correct operation of the system. If the two servers are not synchronized, the installation fails.

After synchronizing the clocks, restart eDirectory and all ZENworks Linux Management services on the Primary server. To restart the ZENworks Linux Management services, enter the following command:

```
/opt/novell/zenworks/bin/zlm-config --restart
```

2 From the ZENworks Primary Server that you installed by following the steps in Section 3.3, "Installing the ZENworks Primary Server," on page 28, enter the following command:

```
zlm-config --allow-secondary=secondary_server
```

where *secondary_server* is the IP address or DNS name of the intended secondary server. This command identifies each secondary server before it is installed. Repeat this command for each secondary server that you are installing.

If you are installing to a SUSE Linux Enterprise Server 10 (SLES 10) device, see Section A.6, "Installing a ZENworks Server on a Device Configured with DHCP," on page 84.

NOTE: If you add a secondary server that has a router between it and the primary server, you get the following error message:

```
The installer was unable to connect to the specified database.
Please verify the values you entered and try again.
```

Check the `/var/opt/novell/log/zenworks/zlm-config.log` file on the primary server and see which IP address the primary server thinks is trying to connect with it. If the address is the router's address rather than the address of your secondary server, you most likely have masquerading running on the router.

The best solution to remedy this problem is to disable masquerading on the router. You can also use the router address when specifying the IP or DNS name of the secondary server but this causes potential security risks.

---

3 When prompted to restart ZENworks, enter `Y` for Yes.

4 Repeat Step 2 and Step 3 on page 34 each secondary server that you are installing.

5 Make sure the intended secondary server meets the requirements. See Section 2.1, "ZENworks Server Requirements," on page 19.

IMPORTANT: If other services run on port 80, the installation will fail; the server cannot run other services on port 80. If Apache or another service is binding to port 80, remove the service or change the service's port.

For example, change the Apache2 web server's Listen Port (on SLES 9 SP1 as found in `/etc/apache2/ listen.conf`) from 80 to 81. Make sure the Apache service is shut down and then run zlm-config.

6 Make sure the secondary server's system clock is synchronized with the primary server's system clock.

System clock synchronization is required to ensure correct operation of the ZENworks system. If the two servers are not synchronized, the installation fails.

After synchronizing the clocks, restart eDirectory and all ZENworks Linux Management services on each server that had its clock's time changed. To restart the ZENworks Linux Management services, enter the following command:

`/opt/novell/zenworks/bin/zlm-config --restart`

7 At the intended secondary server, mount the product CD of the ZENworks Linux Management version you want to install by using the `mount device mountpoint` command:

  ◆ Use the *Novell ZENworks 7 Linux Management* CD to install ZENworks 7 Linux Management.

  ◆ Use the *Novell ZENworks 7.2 Linux Management Server* CD to install ZENworks 7.2 Linux Management.

  ◆ Use the *Novell ZENworks 7.2 Linux Management with Interim Release 1 Server* CD to install ZENworks 7.2 Linux Management with IR1.

For example, to install ZENworks 7 Linux Management, mount the product CD by using `mount /dev/cdrom /zlm7`.

If you are using an ISO image rather than a physical CD, copy the ISO to a temporary folder on the Linux server, then mount the image using the following command:

`:mount -o loop /tempfolderpath/isoimagename.iso mountpoint`

Replace *tempfolderpath* with the path to the temporary folder and replace *mountpoint* with the path to the file system location you want to mount the image. The path specified by *mountpoint* must already exist.

For example:

`mount -o loop /zlm7/ZEN7_LinuxMgmt.iso /zlm7/install`

8 Log in as `root`, then start the installation program from the mount point by running the following command:

`./zlm-install`

NOTE: The steps in this procedure perform a standard installation of ZENworks Linux Management. Depending on your situation, additional options can be used with the `zlm-install` command. For more information, see .

If you do not have the X Window System installed (for example, you installed a Minimal installation of SUSE Linux Enterprise Server 9), you must install the glib2, XFree86-libs-32 bit, and compat-32bit packages and use the -x option while installing the ZENworks Agent. For more information, see .

For more information about installing ZENworks Linux Management on a SUSE Linux Enterprise Server with a Minimal installation, see .

9 When prompted to install ZENworks, enter `Y` to continue.

10 Review the Software License Agreement, pressing Page Down to scroll down the page, then enter `Y` to accept the agreement.

Installation of the software begins. There are ten software components to install. Installation progress is displayed for each component.

11 When installation of the software is complete, enter `Y` to run zlm-config and configure the ZENworks Secondary Server.

12 Provide the appropriate responses to the following prompts:

- **Is this the first server in your system?:** Enter `N` for No.

- **IP address or DNS name of the primary server:** Enter the IP address or DNS name of the primary server.

- **Is the system clock synchronized with the primary server?:** Enter `Y` to continue ().

- **Administrator Password:** Enter the password for the ZENworks Administrator account.

- **Would you like to continue with installation into the Management Zone?:** The installation program displays the name of the ZENworks Management Zone in which the secondary server will be installed. Enter `Y` to continue.

The zlm-config utility adds the server to the ZENworks system as a ZENworks Secondary Server and then configures the ZENworks Server software components.

13 When configuration of the ZENworks Server software components is complete, you should verify the installation. To do so:

13a Confirm that the ZENworks services are running by using the following command:

```
/opt/novell/zenworks/bin/zlm-config --status
```

The screen output should show that all services are running.

```
log dir: /var/opt/novell/log/zenworks
Novell eDirectory is running
Novell ZENworks Server is running
Novell ZENworks Loader is running
Novell ZENworks Imaging Service is running
Novell ZENworks Preboot Policy Daemon is running
Novell ZENworks Server Management is running
Novell ZENworks Management Daemon is running
```

If a service is not running, use the following command to start it:

```
/etc/init.d/servicename start
```

Replace *servicename* with the name of the service that needs to be started.

Service	Service Name
Novell eDirectory	ndsd
Novell ZENworks Server	novell-zenserver
Novell ZENworks Loader	novell-zenloader

Service	Service Name
Novell ZENworks Imaging Service	novell-pbserv
Novell ZENworks Preboot Policy Daemon	novell-zmgprebootpolicy
Novell ZENworks Server Management	novell-zented
Novell ZENworks Management Daemon	novell-zmd

For example, if the Novell ZENworks Management Daemon is not running, use the following command to start it:

```
/etc/init.d/novell-zmd start
```

For additional information about the ZENworks services, see "ZENworks Services" in the *Novell ZENworks 7.2 Linux Management Administration Guide*.

13b Access the ZENworks Control Center using the following URL:

```
https://ZENworks_Primary_Server_Address
```

Replace *ZENworks_Primary_Server_Address* with the IP address or DNS name of the primary server.

After you are in the Control Center, you can click the *Devices* tab, then click the *Servers* folder to view your ZENworks Secondary Server.

14 Repeat the steps in this section to set up additional secondary servers.

or

Continue with the next section, Defining a Content Replication Schedule.

3.4.3 Defining a Content Replication Schedule

When you define an package for delivery to managed devices within you system, the package is physically added to the package repository on the primary server. To ensure that packages are available on each ZENworks Server, you need to establish a schedule for replicating the packages from your primary server to your secondary servers. By default, no schedule is defined, which means that no replication can take place until you define the schedule.

1 Access the ZENworks Control Center using the following URL:

```
https://ZENworks_Primary_Server_Address
```

Replace *ZENworks_Primary_Server_Address* with the IP address or DNS name of the primary server.

2 Click the *Configuration* tab.

3 In the Management Zone Settings list, click *Content Replication Schedule* to display the Content Replication Schedule page.

The Content Replication Schedule page determines how often bundles are replicated from the primary server to all secondary servers in the Management Zone. During replication of a bundle, only a new packages and updates to existing packages are sent.

4 Select a schedule type from the drop-down list.

The following schedules are available:

Schedule Type	Description
"No Schedule"	Use this option to indicate no schedule. The content is not replicated to the secondary servers.
"Date Specific"	Select one or more dates on which to replicate the content to secondary servers and set other restrictions that might apply.
"Day of the Week Specific"	Select one or more days of the week on which to replicate content to secondary servers and set other restrictions that might apply.
"Monthly"	Select the day of the month on which to replicate content to secondary servers and set other restrictions that might apply.

5 Click *OK*.

6 To set up devices to be managed, continue with the next section, Setting Up Managed Devices.

3.5 Setting Up Managed Devices

Before a workstation or server can be managed by ZENworks Linux Management, it must have the ZENworks Agent installed and be registered in the Management Zone. The following sections provide setup instructions:

- ◆ Section 3.5.1, "Installing the ZENworks Agent and Registering the Device," on page 38
- ◆ Section 3.5.2, "Setting Up the Open Enterprise Server after Installing ZENworks Linux Management," on page 41
- ◆ Section 3.5.3, "Enabling Dell PowerEdge Support," on page 43

For more information about creating a ZENworks Agent ISO image or CD and automating installation of the ZENworks Agent, see Appendix I, "Appendixes," on page 77.

3.5.1 Installing the ZENworks Agent and Registering the Device

The following instructions explain how to manually install the ZENworks Agent. You should follow the instructions on at least one device to become familiar with the installation and registration process. However, before installing the ZENworks Agent on a large number of devices, you should review the following sections:

- ◆ "Organizing Devices: Folders and Groups" and "Creating Registration Keys and Rules" in the *Novell ZENworks 7.2 Linux Management Administration Guide*. The first section explains how to best use folders and groups to minimize your management overhead. The second section explains how to use registration keys and rules to automatically assign a device to a folder and groups when the device is registered.
- ◆ Section A.3, "Automating Installation of the ZENworks Agent," on page 81. You can automate the installation of the ZENworks Agent through the use of a script and a response file.

Dell PowerEdge Servers: If you plan to update Dell PowerEdge servers using Dell Update Packages, we recommend that you mirror the packages from the Dell FTP site before installing the ZENworks Agent on the managed PowerEdge servers. You can also mirror the packages after installing the ZENworks Agent on the managed PowerEdge servers but before registering them in

the ZENworks Management Zone. Mirroring the Dell Update Packages prior to installing the ZENworks Agent or registering the servers in the Management Zone ensures that all Dell model numbers are loaded into the database, the standard reports are run as the servers register, and the Dell Update Packages exist in the ZENworks package repository. For more information, see "Using Dell Update Package Bundles" in the *Novell ZENworks 7.2 Linux Management Administration Guide*.

To manually install the ZENworks Agent and register it in the Management Zone:

1 Make sure the device meets the necessary requirements. See Section 2.3, "Managed Device Requirements," on page 20.

2 At the Linux device, mount the media you are using for the install: the *Novell ZENworks 7 Linux Management Agent* CD, the *Novell ZENworks 7.2 Linux Management Agent* CD, the *Novell ZENworks 7.2 Linux Management with Interim Release 1 Agent* CD, the ZENworks Agent CD, or the ISO image.

To mount a CD, use the following command:

```
mount device mountpoint
```

For example:

```
mount /dev/cdrom /zlm7
```

If you are using an ISO image rather than a physical CD, copy the ISO to a temporary folder on the Linux device, then mount the image using the following command:

```
mount -o loop /tempfolderpath/isoimagename.iso mountpoint
```

Replace *tempfolderpath* with the path to the temporary folder and replace *mountpoint* with the path to the file system location you want to mount the image. The path specified by *mountpoint* must already exist.

For example:

```
mount -o loop /zlm7/ZENworks_Agent.iso /zlm/install
```

3 Log in as root, then start the installation program:

- ◆ **For Workstations and Servers that are Not Dell PowerEdge Servers:** If you are installing the ZENworks Agent on a workstation or a server that you do not want to manage using the ZENworks Linux Management features specific to PowerEdge servers (on a server that is not a Dell PowerEdge server, for example), start the installation from the mount point using the following command:

  ```
  ./zlm-install
  ```

  The -a option installs only agent portions of ZENworks Linux Management.

- ◆ **For Dell PowerEdge Servers:** If you are installing the ZENworks Agent on a Dell PowerEdge server that you want to manage using the ZENworks Linux Management features specific to PowerEdge servers, start the installation program from the mount point using the following command:

  ```
  ./zlm-install -o
  ```

  The -o option installs the OEM module for Dell hardware required to use the features specific to Dell PowerEdge servers in ZENworks Linux Management.

  If you install the ZENworks Agent using the using the -o option, you cannot use the ZENworks Linux Management Dell functionality until you have completed the configuration steps in Section 3.5.3, "Enabling Dell PowerEdge Support," on page 43.

4 When prompted to install ZENworks, enter Y to continue.

5 Review the Software License Agreement, pressing Page Down to scroll down the page, then enter Y to accept the agreement.

Installation of the ZENworks Agent software begins.

After the ZENworks Agent software installation is complete, do the following:

- If you are installing the ZENworks 7.2 Linux Management Agent, skip to Step 7.

- If you are installing the ZENworks 7.2 Linux Management with IR1 Agent, continue with Step 6.

6 (Conditional) If you are installing the ZENworks 7.2 Linux Management with IR1 Agent, the installation checks whether the device is already registered to a ZENworks service, and prompts you to retain the existing registered ZENworks service.

- If you enter y, the installation is completed. Skip to Step 8.

- If you enter n, continue with Step 7.

7 Provide the appropriate responses to the following prompts to register the device:

- **Registration Server Address:** Enter the IP address or DNS name of the ZENworks Server that you want to manage this device. This can be the primary server or a secondary server, and should be the server that has best network access to the device.

  If you leave this field blank, no service is added. You can register the device at a later time using the rug command line interface.

  For SUSE Linux Enterprise Server 10 (SLES 10) and SUSE Linux Enterprise Desktop 10 (SLED 10) devices:

  `/usr/bin/rug sa https://ZEN_Server_address`

  For other managed devices:

  `/opt/novell/zenworks/bin/rug sa https://ZEN_Server_address`

- **(Optional) Registration Server Key:** You can leave this field blank. ZENworks has two default registration rules, one for servers and one for workstations. If you leave this field blank, ZENworks uses one of the two default registration rules to register the device. The rules cause the device to be added to either the `/Servers` folder or the `/Workstations` folder with the device's hostname used for its device name.

  Before installing the ZENworks Agent on a large number of devices and registering them, you should create registration keys and rules that enable you to place devices in specific folders and groups. Using folders and groups reduces the effort required to manage a large number of devices. Registration keys and rules, as well as folders and groups, are discussed in "Understanding ZENworks Linux Management" in the *Novell ZENworks 7.2 Linux Management Administration Guide*.

8 After installation is complete, confirm that the ZENworks Agent is running by using the following command:

```
/etc/init.d/novell-zmd status
```

9 Confirm that the device has been added to the ZENworks Object Store by accessing the ZENworks Control Center:

```
https://ZENworks_Primary_Server_Address
```

Replace *ZENworks_Primary_Server_Address* with the IP address or DNS name of the primary server.

After you are in the Control Center, you can click the *Devices* tab, then click the *Servers* folder or *Workstation* folder to view the device.

The ZENworks Agent installation removes all the existing services that are registered through zmd on the managed device so that the managed devices with ZENworks 7.2 Linux Management installed contacts the ZENworks server for all its management needs.

If you've installed the ZENworks Agent on the Open Enterprise Server, continue with . To deploy and manage Dell PowerEdge servers, skip to .

3.5.2 Setting Up the Open Enterprise Server after Installing ZENworks Linux Management

If you want to configure any other Novell products on the Novell Open Enterprise Server after installing the ZENworks 7.2 Linux Management Agent, you must first remove the entries for the earlier version of rug, rcd, and red-carpet from `/opt/novell/oes_install/selections/novell-base.sel` by using a Text File policy.

1 Log into ZENworks Control Center.

2 Click the *Policies* tab.

3 In the *Policies* list, click *New*, then click *Policy* to display the Create New Policy page.

4 In the *Policy Type* list, click *Text File Policy*, then click *Next* to display the Policy Name page.

5 Fill in the fields:

- **Policy name:** (Required) Provide a unique name for the policy. The name you provide displays in the ZENworks Control Center interface, which is the administrative tool for ZENworks Linux Management.

- **Folder:** (Required) Type the name or browse to the folder that this policy will be created in. Folders display in the ZENworks Control Center.

- **Description:** Provide a short description of the policy. This description displays on the policy's Summary page in the ZENworks Control Center interface.

6 Click *Next* to display the General page.

7 Configure the following settings:

File Name: Specify `/opt/novell/oes_install/selections/novell-base.sel` as the filename.

Maximum number of versions to retain: Specify the maximum number of backups to be maintained for a file that has been changed. If the maximum limit of backups is reached, the oldest backup of a file is deleted. The backup is created in the same location as the specified file.

Change name: Specify `rug` as the change name.

Change mode: Select *Search file* from the drop-down list.

Search string: Specify `rug` as the search string

Case sensitive: Select this option to distinguish between uppercase and lowercase characters. When *Case sensitive* is selected, the system finds only those instances in which the capitalization matches the text you have specified in the search string.

Search occurrence: Select *First Occurrence* from the drop-down list. The system finds the first occurrence of the search string and performs the specified action on it.

Result action: Select *Delete line* from the drop-down list.

8 Click *Next* to display the Script page.

9 Fill in the fields:

Pre-change action: Specify the actions to perform before modifying the text files:

- **Executable type:** Select *Script* from the drop-down list.

- **Script to run:** Select *Define Your Own Script* from the drop-down list.

- **Define your own script:** Type the following in the box:
  ```
  #!/bin/bash
  INSTALLFILE=/opt/novell/oes_install/selections/novell-base.sel
  if [ -f $INSTALLFILE ]; then
   chmod +w $INSTALLFILE
  fi
  ```

- **Action when the execution fails:** Select an action you want the system to perform when an execution fails. You can continue modifying the file by selecting *Continue modifying the text file* or you can stop the modifications in the file by selecting *Do not modify the text file*.

  NOTE: The backup of the text file is taken after the pre-change action completes the execution and before the text file modification starts.

Post-change action: Specify the actions to perform after the actual changes are done in the file.

- **Executable type:** Select *Script* from the drop-down list.

- **Script to run:** Select *Define Your Own Script* from the drop-down list.

- **Define your own script:** Type the following in the box:
  ```
  #!/bin/bash
  INSTALLFILE=/opt/novell/oes_install/selections/novell-base.sel
  if [ -f $INSTALLFILE ]; then
   chmod -w $INSTALLFILE
  fi
  ```

10 Click *Next* to display the Summary page.

11 Click *Finish* to create the policy as configured according to the settings on the Summary page. The policy is created but not assigned to any devices.

12 In the Policies page, click the newly created policy.

13 Click the *Details* tab to add two new changes to `/opt/novell/oes_install/selections/novell-base.sel`, one for removing rcd and the other for removing redcarpet from the file.

13a Select */opt/novell/oes_install/selections/novell-base.sel*.

13b Click *New*, then click *Change* to display the Add New Change to File dialog box.

13c Configure the following options:

> **Change Name:** Specify `rcd` as the change name

> **Change Mode:** Select *Search file* from the drop-down list.

> **Search String:** Specify `rcd` as the search string.

> **Case sensitive:** Select this option to distinguish between uppercase and lowercase characters. When *Case sensitive* is selected, the system finds only those instances in which the capitalization matches the text you have specified in the search string.

> **Result Action:** Select *Delete line* from the drop-down list.

13d Click *OK*.

13e Repeat Step 13a through Step 13d to create a change for the red-carpet entry.

14 Click the Summary tab, and increment the revision number so that the changes made to the policy are applied during the next device refresh.

15 Assign the policy to device and set the policy enforcement schedule. For more information on how to assign the policy to a device, see "Assigning Policies" in the *Novell ZENworks 7.2 Linux Management Administration Guide*.

16 Refresh the managed device.

The policy is successfully applied to the device, and the entries for the earlier version of rug, red and red-carpet are removed from `/opt/novell/oes_install/selections/novell-base.sel`.

You can update the OES Linux server having ZENworks 7.2 Linux Management Agent installed by using the OES patch bundles. For detailed information, see TID 3738735 at Novell Support web site (http://www.novell.com/support/supportcentral/supportcentral.do?id=m1).

3.5.3 Enabling Dell PowerEdge Support

Novell ZENworks Linux Management provides advanced features to deploy and manage Dell PowerEdge servers. Before you can use these features, you must install a newer release of the OpenIPMI driver than that included in the currently supported Linux distributions.

The following features are available for Dell PowerEdge servers in ZENworks Linux Management:

- **Dell Configuration bundles:** Let you use Preboot Services to configure a Dell PowerEdge server's BIOS, BMC, RAID, and DRAC settings and to create a Dell utility partition. For more information, see "Using Dell Configuration Bundles" in the *Novell ZENworks 7.2 Linux Management Administration Guide*.

- **Dell Update Package bundles:** Let you update and configure hardware and system settings on Dell PowerEdge servers. For more information, see "Using Dell Update Package Bundles" in the *Novell ZENworks 7.2 Linux Management Administration Guide*.

- **Dell inventory:** Lets you display inventory information specific to Dell PowerEdge servers. After discovering the hardware information about your Dell PowerEdge servers, you can use Dell Update Packages to update them, if necessary. For more information, see "Hardware and Software Inventory" in the *Novell ZENworks 7.2 Linux Management Administration Guide*.

- **Dell reports:** Let you run reports specific to Dell PowerEdge servers to find devices that do not have valid Dell Update Packages installed or to show devices with Dell applications installed (per device or per device model). For more information, see "Dell Reports" in the *Novell ZENworks 7.2 Linux Management Administration Guide*.

Dell provides the updated OpenIPMI driver as well as the Dynamic Kernel Module Support (DKMS) package to assist in compiling and installing the driver.

OpenIPMI is an open-source project to develop an Intelligent Platform Management Interface manager implementation for servers. Dell servers depend on OpenIPMI to collect low-level system information about the Backplane device, the Baseboard Management Controller, and so forth.

To install OpenIPMI and DKMS:

1 On a "golden client" system that has an identical setup to your managed Dell PowerEdge servers, install the kernel source and a development environment (gcc, make, and glibc-devel.).

A "golden client" system is a Dell PowerEdge server you want to configure manually and then use ZENworks Linux Management to configure a larger number of PowerEdge servers in your ZENworks system the same way. The "golden client" system must have the same operating system installed as the servers that you intend to manage. You perform these configuration steps on one representative device and then use ZENworks Linux Management to automate the installation of the other servers. The purpose of the "golden client" system is to eliminate the need to install the kernel source and the development environment on every managed PowerEdge server in your ZENworks system.

The kernel source and development environment (gcc, make, and glibc-devel) can be found on the CD that you used to install SUSE Linux Enterprise Server or Red Hat Enterprise Linux. Use the package management software specific to your Linux operating system to install the necessary build tools. On SUSE Linux Enterprise Server, for example, you use YaST to install the kernel source and development environment.

2 Download DKMS and the latest OpenIPMI driver for your specific operating system from the Dell Linux Community Web (http://linux.dell.com/files/openipmi/). Both files are included in the appropriate tarball for your server's operating system.

3 Install the DKMS and the latest OpenIPMI packages on your "golden client" system using the provided install shell script (`install.sh`). Detailed instructions are included in the Readme file (named `README`).

4 Use the `mkrpm` parameter to DKMS to build the RPM package of the OpenIPMI driver tailored to your "golden client" system setup. Detailed instructions are included in the DKMS man page (`man dkms`).

For example,

```
dkms mkrpm -m openipmi -v version_number.os
```

Where *version_number.os* represents the version number and operating system of the file that you downloaded in . For example, if you downloaded the `openipmi-36.8.SLES9-1dkms.tar.gz` file, you would run the following command:

```
dkms mkrpm -m openipmi -v 36.8.SLES9
```

5 Using the ZENworks Control Center, create a bundle that has the DKMS, the OpenIPMI driver, and the novell-zenworks-zmd-oem package from the *Novell ZENworks 7 Linux Management* CD.

You can find the individual packages in the following locations:

- **DKMS:** In the directory that you extracted the tarball to, `dkms-version_number.noarch.rpm`

  Where *version_number* is the version number of DKMS that you downloaded in .

- **OpenIPMI driver:** `/usr/scr/packages/RPMS/noarch/openipmi-version_number.os-package_release_number`dkms.noarch.rpm

  Where *version_number.os* is the version number and operating system of the file that you downloaded in . For example, if you downloaded the `openipmi-36.8.SLES9-1dkms.tar.gz` file, the *version_number* is 36.8.SLES9. *Package_release_number*dkms refers to the package release number of DKMS. For example, 1dkms in the previous file example.

- **novell-zenworks-zmd-oem:** In the directory that you mounted the CD to, data/packages/*distribution*/zlm7de-snapshots/novell-zenworks-zmd-oem-7.1.0-0.*architecture*.rpm.

For more information, see "Creating RPM Bundles" in the *Novell ZENworks 7.2 Linux Management Administration Guide*.

6 Use ZENworks Linux Management to deploy the bundle containing DKMS, OpenIPMI driver, and the novell-zenworks-zmd-oem package to your Dell PowerEdge servers where you have installed the ZENworks Agent. For more information, see "Creating RPM Bundles" in the *Novell ZENworks 7.2 Linux Management Administration Guide*.

3.6 What's Next

After you complete the setup of your ZENworks Servers and a few managed devices, you should become familiar with general ZENworks administration concepts and tasks. "Understanding ZENworks Linux Management" in the *Novell ZENworks 7.2 Linux Management Administration Guide* introduces these concepts and tasks while helping you understand the ZENworks approach to successfully managing workstations and servers.

In particular, the tutorial explains how you can use folders and groups to minimize your management overhead and why you should create folders and groups before you register the devices in your system. It also provides brief instructions for delivering software packages, creating policies, collecting inventory, performing tasks prior to a device booting to its operating system, and monitoring events that occur within the system.

Security

4

The following sections provide information you should be aware of as you consider the security of your Novell® ZENworks® Linux Management system:

4.1 Clear Text Passwords

The following files contain the ZENworks Data Store password in clear text. All of the files are located on the ZENworks Server and are accessible only as `root`.

```
/etc/opt/novell/zenworks/hibernate.cfg.xml
/etc/opt/novell/zenworks/tomcat/base/server.xml
```

We recommend that you do not grant users additional permissions to the following directories:

- `/etc/opt/novell/zenworks`
- `/var/opt/novell/zenworks`
- `/opt/novell/zenworks`

4.2 Self-Signed Certificates

ZENworks Linux Management uses self-signed certificates. The certificates' private keys are of type RSA and the key size is 1024 bits. The certificates are created during installation through the use of the Java keytool utility, which is part of the JDK* 1.4 JSSE module.

The certificate can be replaced with a certificate signed by a trusted authority, at the user's discretion.

4.3 ZENworks Agent

The ZENworks Agent, which is installed on all ZENworks Servers and all managed devices, runs as `root`. By default, remote services are enabled for the agent (allowing it to be controlled from another device).

IMPORTANT: The default setting for remote services on SUSE® Linux Enterprise Server 10 is set to false (remote-enabled=false). After you install the ZENworks agent on a SLES 10 device, the remote services setting is changed to true (remote-enabled=true).

For remote services, the agent listens on port 2544. If you want to secure the ZENworks Agent so that it can only be controlled from the local device, use the `novell-zmd no-remote` command. If you want to change the listening port, use the `rug set remote-port port_number` command, then restart the agent (`novell-zmd restart`).

On Intel Itanium IA64 managed devices, the privileges of the user application connecting to the XLM-RPC socket (`/var/run/zmd/zmd-web.socket`) is not checked.

4.4 Database Connections

All connections to the ZENworks Object Store are secured through SSL. However, all connections from the ZENworks Server to the ZENworks Data Store are not secure because they use an unencrypted JDBC* connection. You might want to take precautions to ensure that the connections between all ZENworks Servers and the ZENworks Data Store are as secure as possible. For example, you might want to use a private network for all communications between the ZENworks Server and its Data Store.

ZENworks administrator credentials are stored in the ZENworks Object Store. No administrator credentials are stored in the Data Store, which ensures that they are not passed as clear text.

4.5 Device Ports

The ZENworks Agent listens on ports 2544, 5950, and 5951. The ZENworks Server listens on ports 80, 443, 1229, 5506, 5432 (PostgreSQL), 5950, and 5951.

4.6 Denial-of-Service Attacks

ZENworks Linux Management software has no mechanism for protecting against Denial-of-Service (DOS) attacks. This is typically not an issue within the confines of a corporate network; however, appropriate network monitoring should be in place in networks where this a concern.

4.7 Root

The ZENworks Linux Management software, on both ZENworks Servers and managed devices, considers the `root` user to be a trusted user. No attempt is made to secure the ZENworks software or credentials used by the software from the `root` user.

Upgrade

5

Novell® ZENworks® 7.2 Linux Management introduces an expanded architecture with many new features not available in previous ZENworks Linux Management versions. This section includes information about new enhancements in ZENworks 7.2 Linux Management and ZENworks 7.2 Linux Management with IR1, and information about how to upgrade to ZENworks 7.2 Linux Management or ZENworks 7.2 Linux Management with IR1.

5.1 What's New in ZENworks 7.2 Linux Management

The following sections describe the new features and enhancements in Novell ZENworks 7.2 Linux Management:

5.1.1 ZENworks Linux Management Server Support for SLES 10 Devices

Support for the ZENworks Linux Management Server on SUSE® Linux Enterprise Server 10 (SLES 10) on the 32-bit (x86) and 64-bit (x86_64) architectures (Intel EMT64 and AMD Opteron processors).

For more information, see Section 2.1, "ZENworks Server Requirements," on page 19.

5.1.2 Support for SLES 10 and SLED 10 As Managed Devices

ZENworks Linux Management lets you manage SUSE Linux Enterprise Server 10 (SLES 10) and SUSE Linux Enterprise Desktop 10 (SLED 10) devices. For more information, see Section 2.3, "Managed Device Requirements," on page 20.

ZENworks Linux Management offers the following features for managing SLES 10 and SLED 10 devices:

- **Policy Management:** The SUSE Linux Enterprise Desktop (SLED) policy in ZENworks 7.2 Linux Management lets you configure the SUSE Linux Enterprise Desktop GNOME settings on a managed device. Use the SLED policy to configure desktop features such as Main Menu, Favorite Applications, System Area, Control Center, and those items that appear on the user's desktop and background settings. For more information, see "SUSE Linux Enterprise Desktop Policy" in the *Novell ZENworks 7.2 Linux Management Administration Guide*.

- **Package and Content Management:** ZENworks Linux Management lets you install packages or files on managed devices by using either a bundle or a catalog. It has the capability to mirror and manage SLES 10 and SLED 10 updates from public repositories. For more information, see "Package and Content Management" in the *Novell ZENworks 7.2 Linux Management Administration Guide*.

- **Preboot Services:** ZENworks Linux Management Preboot Services (also known as imaging) lets you perform tasks on devices before their operating systems boot. Preboot Services allows you to automatically or manually run AutoYaST and kickstart installations, run ZENworks script devices, make an image of device hard drives, restore images to devices, and apply existing images to multiple devices. For more information, see "Preboot Services" in the *Novell ZENworks 7.2 Linux Management Administration Guide*.

- **Hardware and Software Inventory:** ZENworks Linux Management lets you collect hardware and software inventory information from each managed device. This inventory information is collected and stored in a database that can be viewed in the ZENworks Control Center and is available through the ZENworks Linux Management Reporting module. For more information, see "Hardware and Software Inventory" in the *Novell ZENworks 7.2 Linux Management Administration Guide*.

- **Remote Management:** ZENworks Linux Management lets you remotely manage devices from the ZENworks Control Center. You can remotely control managed devices, remotely view managed devices, remotely log in to managed devices, and view log information about any Remote Management sessions performed on any managed device from anywhere in your network. For more information, see "Remote Management" in the *Novell ZENworks 7.2 Linux Management Administration Guide*.

5.1.3 Support for Dell Update Package Bundles

ZENworks 7.2 Linux Management lets you mirror Dell Update Packages (DUPs) from the Dell FTP site or from a CD to your ZENworks server. Dell Update Packages let you update and configure hardware and system settings (including BIOS, DRAC, RAID, BMC, and FRMW configurations) on Dell PowerEdge servers.

For more information, see "Using Dell Update Package Bundles" in the *Novell ZENworks 7.2 Linux Management Administration Guide*.

5.1.4 Support for Dell Configuration Bundles

When a server boots, the ZENworks Dell Configuration bundle is executed on the server before the operating system boots. The Dell Configuration bundle is used in server provisioning to do the following:

- Use scripts and files to configure the BIOS, BMC, RAID, and DRAC
- Install a Dell utility partition
- Overwrite an existing Dell utility partition
- Update the files in an existing Dell utility partition
- Execute another Preboot bundle to install an operating system after updating the Dell device

For more information, see "Using Dell Configuration Bundles" in the *Novell ZENworks 7.2 Linux Management Administration Guide*.

5.1.5 New Package Management Features

- **Support for File Bundles:** A file bundle lets you create a bundle containing one or more files of any type and distribute them to assigned devices. For example, you can include configuration files or data files in file bundles. A file bundle is useful to distribute any files that are not part of an RPM package. For more information, see "Creating File Bundles" in the *Novell ZENworks 7.2 Linux Management Administration Guide*.

- **Best Package Support:** SLES 10 and SLED 10 users have the option of choosing the best package to install on their devices. This feature helps solve the incompatibility issues related to some key packages in the latest versions of SLES 10 and SLED 10, such as Kernel Modules, ATI, and XGL enabling.

- **Bundle Locking:** Bundle locking options are available for SLES 10 and SLED 10 managed devices. The rug command line utility provides the following new bundle locking commands:

  bundle-lock-add
  bundle-lock-delete
  bundle-lock-list

  For more information, see "rug (1)" in the *Novell ZENworks 7.2 Linux Management Administration Guide*.

5.1.6 Package Management for PPC, Itanium, and zSeries Devices

In addition to x86 and x86_64, support is provided for PPC, Itanium*, and zSeries* in ZENworks 7.2 Linux Management.

For more information, see Section 2.3, "Managed Device Requirements," on page 20.

5.1.7 Updates to the Imaging Functionality

The imaging kernel has been updated to base 10 to provide better driver support and support for taking and restoring SLES 10 and SLED 10 images.

5.1.8 Mirroring

ZENworks Linux Management lets you connect to a remote server and copy software catalogs, bundles, or packages (including Dell Update Packages) from the remote server to your server by using a few simple commands. ZENworks 7.2 Linux Management lets you mirror the following new sources:

- **YUM repository:** Yum (Yellow dog Updater, Modified) is an automatic updater and package installer/remover for RPM systems. It automatically computes dependencies and indicates what should occur to install packages, which makes it easier to maintain groups of machines without using an RPM to manually update each machine.

- **Dell repository:** ZENworks Linux Management mirroring can be used to mirror Dell updates from ftp.dell.com and distribute them to all Dell PowerEdge devices using package management.

- **SLES 10 and SLED 10 repository:** ZENworks Linux Management mirroring can be used to mirror SLES 10 and SLED 10 updates from http://update.novell.com and distribute them to all managed devices using package management.

For more information, see "Mirroring Software" in the *Novell ZENworks 7.2 Linux Management Administration Guide*.

5.1.9 ZENworks Linux Management Agent

Enhancements to the ZENworks Linux Management client let you do the following:

- **Software Updater, Installer, and Remover:** The ZENworks Linux Management Software Updater, Software Installer, and Software Remover applets are components of the desktop that work through the ZENworks Agent.

  In ZENworks 7.2 Linux Management, these three easy-to-use desktop applets provide users with the ability to update existing software, install new software, remove existing software from their managed devices, and view and edit system preferences. These three desktop applets replace the user interface clients used in previous versions of ZENworks Linux Management. Software Updater, Installer, and Remover provide users with a simple way to manage software, and the process is integrated into the managed device's desktop.

  For more information, see "Using the Software Updater, Installer, and Remover from Users' Managed Devices" in the *Novell ZENworks 7.2 Linux Management Administration Guide*.

- **Change Settings by Using the Software Updater:** The ZENworks Linux Management Agent is configurable and the settings that define the configuration can be modified using the ZENworks Linux Management Software Updater. For more information, see "Using the Software Updater, Installer, and Remover from Users' Managed Devices" in the *Novell ZENworks 7.2 Linux Management Administration Guide*.

- **rug:** The rug command line utility (a component of the ZENworks Linux Management Agent) lets you perform software and user management on a managed device. ZENworks 7.2 Linux Management provides the following new rug commands:

  - **Bundle Locking:** Bundle locking options are now available. If a bundle is locked, the packages it contains cannot be updated after they are installed. If an attempt to update the package or bundle is made, an error "`bundle xxx is locked and cannot be updated`" displays.

- **Bundle Installing/Updating/Removing:** When you use the rug command line interface to install, update, or remove bundles, the software informs users of dependencies that are installed, updated, or removed. This is the same behavior that the GUI ZENworks Linux Management Software Updater uses (`zen-updater`).

- **Upgrade Only:** You use this option when installing a bundle. The installation is performed only if given packages are already installed.

- **Install:** Advanced format for the `rug install` command. You can specify resolvables in the following formats:

  name
  name-arch
  name-version
  name-version-release
  name-version-release-arch
  name-epoc-version-release-arch
  epoch:name-version-release-arch
  /path/to/local/package.rpm

For more information, see "rug (1)" in the *Novell ZENworks 7.2 Linux Management Administration Guide*.

5.1.10 ZENworks Control Center

ZENworks 7.2 Linux Management provides the following enhancements to the ZENworks Control Center (ZCC):

- **Bundle Details:** ZENworks 7.2 Linux Management lets you view a device's assigned bundles and packages. Click a device object, click the *Inventory* tab, then click *Bundle Details*. The Installed Bundles page provides a list of bundles that, when clicked, shows a detailed list of packages for the bundle.

- **Bundle Persistence:** With ZENworks Linux Management, bundles persist. After the initial installation of the bundle, the ZENworks Linux Management Agent running on the managed device checks each time it refreshes to see if the bundle is installed. If it is not, it re-installs the bundle. This is the default behavior.

  With ZENworks Linux Management 7.2, there is an added option to make a bundle not persist. After the bundle's initial installation, the ZENworks Linux Management Agent does not check when the device refreshes to verify that the bundle is still installed.

  For more information, see Step 4 under "Creating RPM Bundles" in the *Novell ZENworks 7.2 Linux Management Administration Guide*.

- **Deploy and Install Immediately (When this Wizard Completes):** The *Deploy and install immediately* option lets you immediately send a bundle to a managed device.

  This option is available from the following pages:

  - From the Bundle Options page when assigning a bundle to a device. For more information, see Step 15 under "Creating RPM Bundles" in the *Novell ZENworks 7.2 Linux Management Administration Guide*.

  - From the device object > *Effective Bundles* snapshot > *Advanced* link (select a bundle, click *Action*, then click *Deploy and Install Now*).

- From the bundle object > *Assignments* snapshot > select a device or folder > click *Action* > then click *Deploy and Install Now*.

- **Replicate Repositories Now:** All RPM packages, Dell Update Packages (DUPs), and files contained in bundles reside in the package repository on the primary server. ZENworks Linux Management uses content replication to copy the package repository to each secondary ZENworks Linux Management server in your system. A Quick Task has been added that allows the user to trigger replication at will, outside the replication schedule. For more information, see "Replicating the Content Immediately" in the *Novell ZENworks 7.2 Linux Management Administration Guide*.

- **ZENworks Linux Management Agent Settings Available from the ZENworks Control Center:** You can configure the ZENworks Management Daemon (zmd) settings for your ZENworks Management Zone. These settings apply to all devices in your ZENworks Management Zone unless they are changed on a device folder or individual device.

  ZENworks 7.2 Linux Management lets you configure these settings from the ZENworks Control Center in the following pages:

  - To change the zmd settings for your ZENworks Management Zone, click the *Configuration* tab, then click *ZMD Settings* in the *Management Zone Settings* list.

  - To change the zmd settings for a device or for the devices in a folder, click the *Devices* tab, click the link for a device or folder, click the *Settings* tab, then click *ZMD Settings* in the *Settings* list.

  For more information, see "Configuring Management Zone Settings" in the *Novell ZENworks 7.2 Linux Management Administration Guide*.

- **View Printable Inventory:** Available from Server/Workstation Tasks section in the upper left corner of the ZENworks Control Center while viewing the properties of a device.

- **View Bundle Locking Status using the ZENworks Control Center:** If you use the new bundle locking features, the 🔒 icon in the ZENworks Control Center indicates that the bundle is locked. You can view the bundle's lock status from the *Devices* tab > server or workstation object > *Effective Policies* section or from the *Devices* tab > server or workstation object > *Inventory* tab > *Bundles (Details)* link.

- **Visual Icon to Determine if Newer Packages are Available** If the updates available icon ✉ displays in the Updates column of a device list, packages and bundles are available to be installed on the device. Click the ✉ icon to display the Updates Available dialog box. Click the *Help* button ❓ for more information.

  If the column is empty, all packages and bundles installed on the device are up-to-date with the packages and bundles in the ZENworks package repository (the `/var/opt/novell/zenworks/pkg-repo` directory on the ZENworks Server). Additionally, if this column is empty and the selected device is a Dell PowerEdge server, it is assigned to the correct Dell system set (assuming that the system set exists in the repository for the device's model).

  For more information, see "Determining If Newer Dell Package Updates Are Available for PowerEdge Servers" in the *Novell ZENworks 7.2 Linux Management Administration Guide*.

5.1.11 Reporting

ZENworks 7.2 Linux Management provides the following new reporting features:

- **Scheduled Reports:** The zlman utility now has options that allow users to run a report at the command line, specify the report format, and direct the output to a location in the file system. This lets users automate the running of reports.

For more information, see "zlman (1)" in the *Novell ZENworks 7.2 Linux Management Administration Guide*.

 ◆ **Dell Update Package Reports:** ZENworks 7.2 Linux Management lets you create reports to help you effectively manage your Dell PowerEdge servers. Reports allow grouping of Dell Update Packages (DUPs) by Platform (Dell Model); Component Type (BIOS, Firmware, etc.), and Operating System.

   For more information, see "Dell Reports" in the *Novell ZENworks 7.2 Linux Management Administration Guide*.

5.1.12 Integration with the Novell Customer Center

For more information, go to the ZENworks Control Center, click the *Configuration* tab, then click *Novell Customer Center* in the *Management Zone Settings* list. Click the [?] icon for more information.

5.2 What's New in ZENworks 7.2 Linux Management with IR 1

The following sections describe the new features and enhancements in Novell ZENworks 7.2 Linux Management with IR1:

 ◆ Section 5.2.1, "ZENworks Linux Management Server Support for SLES 10 SP1," on page 55
 ◆ Section 5.2.2, "Support for New Platforms As Managed Devices," on page 55
 ◆ Section 5.2.3, "Support for the NU Type in zlmmirror," on page 55

5.2.1 ZENworks Linux Management Server Support for SLES 10 SP1

ZENworks 7.2 Linux Management with IR1 supports the server components on SLES 10 SP1 on the 32-bit (x86) and 64-bit (x86_64) architectures (Intel EMT64 and AMD Opteron processors).

For more information, see Section 2.1, "ZENworks Server Requirements," on page 19.

5.2.2 Support for New Platforms As Managed Devices

ZENworks 7.2 Linux Management with IR1 lets you manage the SLES 10 SP1, SLED 10 SP1, and RHEL5 32-bit (x86) devices.

For more information, see Section 2.3, "Managed Device Requirements," on page 20.

5.2.3 Support for the NU Type in zlmmirror

The NU type enables zlmmirror to mirror updates located in https://nu.novell.com/repo.

5.3 Upgrading to ZENworks 7.2 Linux Management

ZENworks 7.2 Linux Management provides upgrade paths from the following previous versions:

- **ZENworks 7 Linux Management with IR1:** Your current ZENworks 7 Linux Management system must have IR1 installed.
- **ZENworks 7 Linux Management - Dell Edition:** Your current ZENworks 7 Linux Management - Dell Edition system must have the latest patches installed. This release was available as an OEM release to Dell PowerEdge customers only.

You cannot upgrade from ZENworks 6.6.*x* Linux Management directly to ZENworks 7.2 Linux Management.

If you have ZENworks 6.6.*x* Linux Management systems that you want to migrate to ZENworks 7.2 Linux Management, you must first migrate to ZENworks 7 Linux Management with IR1 and then upgrade to ZENworks 7.2 Linux Management. Be aware that because of the expanded architecture between ZENworks 6.6.*x* Linux Management and ZENworks 7 Linux Management, there is limited upgrade support between the two versions.

The following sections provide more information:

- Section 5.3.1, "Upgrading the ZENworks Servers and the Managed Devices to ZENworks 7.2 Linux Management," on page 56
- Section 5.3.2, "Increasing the Security Level After Upgrading a ZENworks Server from ZENworks 7 Linux Management with IR1," on page 63
- Section 5.3.3, "Changes to Bundle Schedules in ZENworks 7.2 Linux Management," on page 63
- Section 5.3.4, "Upgrade Options," on page 64

5.3.1 Upgrading the ZENworks Servers and the Managed Devices to ZENworks 7.2 Linux Management

You can upgrade the ZENworks Linux Management Server to ZENworks 7.2 Linux Management by performing an in-place upgrade over the previous version.

Before performing any type of upgrade, do the following:

- Take a reliable backup of your object and data stores, and eDirectory. For more information, see "ZENworks Database Maintenance" in the *Novell ZENworks 7.2 Linux Management Administration Guide*.
- Ensure that eDirectory is listening on port 10389.
- Take an image of the ZENworks servers.
- Ensure that the ZENworks Linux Management server and the server on which the Oracle or the PostgresSQL database is running are in time sync.
- Remove OpenLDAP 2 from the ZENworks Server, if it is installed.

    1. To verify whether OpenLDAP 2 has been installed, execute `rpm -qa |grep openldap2` at the server console prompt. This displays the installed package version.
    2. To remove Open LDAP 2, execute `rpm -e openldap2`.

Performing an in-place upgrade lets you upgrade from a previous ZENworks Linux Management release to ZENworks 7.2 Linux Management using the same ZENworks Primary Server. For example, suppose your primary server on your ZENworks 7 Linux Management IR1 system is installed on a SLES 9 32-bit device and you want to upgrade to ZENworks 7.2 Linux Management. Using an in-place upgrade results in the previously described ZENworks Linux Management system being upgraded to ZENworks 7.2 Linux Management on that same SLES 9 32-bit device.

The upgrade process upgrades the ZENworks Server and lets you create upgrade bundles for each supported platform. The individual upgrade bundles are then pushed to assigned devices to install the new ZENworks Agent on each device.

An in-place upgrade is best suited for smaller ZENworks Linux Management systems consisting of fewer than 100 devices managed by a single ZENworks Primary Server. An in-place upgrade allows for an upgrade without scheduling down-time for the system because the server and devices are upgrading relatively quickly.

Perform the following procedures in the order listed to upgrade the ZENworks servers and ZENworks Agent software components.

1. "Performing an In-Place Upgrade on the ZENworks Primary Server" on page 57

2. "Performing an In-Place Upgrade on a ZENworks Secondary Server" on page 58

3. "Upgrading Managed Devices Manually" on page 59 or "Upgrading Managed Devices by Using Upgrade Bundles" on page 60

Performing an In-Place Upgrade on the ZENworks Primary Server

1 Make sure the server meets the requirements. See Section 2.1, "ZENworks Server Requirements," on page 19.

2 At the Linux server, mount the *Novell ZENworks 7.2 Linux Management Server* CD by using the `mount device mountpoint` command.

For example, `mount /dev/cdrom /zlm72`.

If you are using an ISO image rather than a physical CD, copy the ISO to a temporary folder on the Linux server, then mount the image using the following command:

`mount -o loop /tempfolderpath/isoimagename.iso mountpoint`

Replace *tempfolderpath* with the path to the temporary folder and replace *mountpoint* with the path to the file system location where you want to mount the image. The path specified by *mountpoint* must already exist.

For example:

`mount -o loop /zlm72/ZEN72_LinuxMgmt.iso /zlm72/install`

3 Log in as `root`, then start the upgrade program from the mount point by running the following command:

`./zlm-upgrade`

4 When prompted to upgrade ZENworks Linux Management, enter `Y` to continue.

5 Review the Software License Agreement, pressing Page Down to scroll down the page, then enter `Y` to accept the agreement.

6 Enter `Y` when you are asked if you are upgrading a ZENworks Primary Server.

Make sure all ZENworks services on secondary servers are stopped. You can execute `/opt/novell/zenworks/bin/zlm-config --stop` to shut down the services on secondary servers.

7 Press Enter to continue.

The upgrade program stops ZENworks services, subscribes to the upgrade channels, upgrades RPMs, upgrades zmd, runs upgrade scripts, and then upgrades the database schema.

8 Enter the ZENworks administrator password.

The ZENworks services are restarted.

9 When prompted to create bundles that can be used to upgrade zlm clients (managed devices), enter `Y` to continue.

If you choose to not create upgrade bundles at this time, you can execute the `zlm-upgrade -b` command using the *ZENworks 7.2 Linux Management Agent* CD at a later time to create the bundles.

10 Specify a folder that you want to create to hold the upgrade bundles.

11 After the upgrade completes, refer to `/var/opt/novell/log/zenworks/zlm-upgrade.log` to ensure that the upgrade is successful.

12 (Conditional) If you have ZENworks Secondary Servers to upgrade, continue with "Performing an In-Place Upgrade on a ZENworks Secondary Server" on page 58.

13 Continue with "Upgrading Managed Devices Manually" on page 59.

or

Continue with "Upgrading Managed Devices by Using Upgrade Bundles" on page 60.

Performing an In-Place Upgrade on a ZENworks Secondary Server

You must upgrade the ZENworks Primary Server before upgrading ZENworks Secondary Servers. For step-by-step information, see "Performing an In-Place Upgrade on the ZENworks Primary Server" on page 57.

1 Make sure the server meets the requirements. See Section 2.1, "ZENworks Server Requirements," on page 19.

2 At the Linux server, mount the *Novell ZENworks 7.2 Linux Management Server* CD by using the `mount` *device mountpoint* command.

For example, `mount /dev/cdrom /zlm72`.

If you are using an ISO image rather than a physical CD, copy the ISO to a temporary folder on the Linux server, then mount the image using the following command:

```
mount -o loop /tempfolderpath/isoimagename.iso mountpoint
```

Replace *tempfolderpath* with the path to the temporary folder and replace *mountpoint* with the path to the file system location where you want to mount the image. The path specified by *mountpoint* must already exist.

For example:

```
mount -o loop /zlm72/ZEN72_LinuxMgmt.iso /zlm72/install
```

3 Log in as `root`, then start the upgrade program from the mount point by running the following command:

```
./zlm-upgrade
```

4 When prompted to upgrade ZENworks Linux Management, enter `Y` to continue.

5 Review the Software License Agreement, pressing Page Down to scroll down the page, then enter `Y` to accept the agreement.

The install program stops ZENworks services, subscribes to the upgrade channels, upgrades RPMs, upgrades zmd, runs upgrade scripts, and then restarts the ZENworks services.

6 Enter `N` when you are asked if you are upgrading a ZENworks Primary Server.

7 Enter `Y` when you are asked if you have upgraded the ZENworks Primary Server.

Ignore any "failed to stop" errors that you receive. For example, you receive an error indicating that eDirectory could not be stopped, but it was already stopped when you executed `/opt/novell/zenworks/bin/zlm-config --stop` in Step 6 on page 57.

The upgrade program stops ZENworks services, subscribes to the upgrade channels, upgrades RPMs, upgrades zmd, and runs upgrade scripts.

After the upgrade is complete, the ZENworks services are restarted. This might take a few minutes.

8 (Conditional) Repeat Step 1 through Step 7 f or each ZENworks Secondary Server that you want to upgrade.

9 Continue with "Upgrading Managed Devices Manually" on page 59.

or

Continue with "Upgrading Managed Devices by Using Upgrade Bundles" on page 60.

Upgrading Managed Devices Manually

1 Make sure the managed device meets the requirements. See Section 2.3, "Managed Device Requirements," on page 20.

2 At the Linux managed device, mount the *Novell ZENworks 7.2 Linux Management Agent* CD by using the `mount device mountpoint` command.

For example, `mount /dev/cdrom /zlm72`.

If you are using an ISO image rather than a physical CD, copy the ISO to a temporary folder on the Linux managed device, then mount the image using the following command:

`mount -o loop /tempfolderpath/isoimagename.iso mountpoint`

Replace *tempfolderpath* with the path to the temporary folder and replace *mountpoint* with the path to the file system location you want to mount the image. The path specified by *mountpoint* must already exist.

For example:

`mount -o loop /zlm72/ZEN72_LinuxMgmt.iso /zlm72/install`

3 Log in as `root`, then start the upgrade program from the mount point by running the following command:

`./zlm-upgrade`

4 When prompted to upgrade ZENworks Linux Management, enter `Y` to continue.

5 Review the Software License Agreement, pressing Page Down to scroll down the page, then enter `Y` to accept the agreement.

The install program stops ZENworks services, subscribes to the upgrade channels, upgrades RPMs, upgrades zmd, runs upgrade scripts, and then restarts the ZENworks services.

Upgrading Managed Devices by Using Upgrade Bundles

Upgrading managed devices to ZENworks 7.2 Linux Management installs the new ZENworks Agent.

Make sure the managed device meets the requirements. See Section 2.3, "Managed Device Requirements," on page 20.

Complete the following tasks in the order listed:

1. "Creating a Script for Upgrade Bundles" on page 60
2. "Creating Catalogs for Upgrade Bundles" on page 61
3. "Upgrading Managed Devices Other Than SLES 10 and SLED 10 by Using an Upgrade Bundle" on page 61 or "Upgrading SLES 10 or SLED 10 Managed Devices by Using an Upgrade Bundle" on page 62.

Creating a Script for Upgrade Bundles

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

2 Click the folder that you created while performing an in-place upgrade on the ZENworks Primary Server (Step 10 on page 58) to hold the upgrade bundles.

3 Click the underlined name of the desired upgrade bundle to display its details.

4 Click the *Details* tab.

5 In the *Scriptable Actions* section at the bottom of the Details page, click *New* to display the New Scriptable Action dialog box.

6 In the *Scriptable action* drop-down list, select *Pre-Installation*.

7 In the *Script to run* drop-down list, select *Define your own script*.

8 Paste the contents of the `pre-install.sh` script file into the *Script content* box. You can access the script file from the `/data` directory located within the directory on which ZENworks 7.2 Linux Management is mounted. For example, if ZENworks 7.2 Linux Management is mounted on `/zlm72/install`, the `pre-install.sh` script file resides in the `/zlm72/install/data` directory.

If the managed device has bundle locks or package locks (`package-locks.xml`), the Pre-Installation script takes a backup of the bundle locks or package locks and places the backup in the `/tmp/zmd` directory.

9 Click *OK*.

10 In the *Scriptable Actions* section at the bottom of the Details page, click *New* to display the New Scriptable Action dialog box.

11 In the *Scriptable action* drop-down list, select *Post-Installation*.

12 In the *Script to run* drop down list, select *Define your own script*.

13 Paste the contents of the `post-install.sh` script file into the *Script content* box. You can access the script file from the `/data` directory located within the directory on which ZENworks 7.2 Linux Management is mounted. For example, if ZENworks 7.2 Linux Management is mounted on `/zlm72/install`, the `post-install.sh` script file resides in the `/zlm72/install/data` directory

NOTE: In the `post-install.sh` script file, the messages indicating the progress of the upgrade are commented out by default. If you want the messages to be displayed on the managed device, uncomment the messages.

The Post Installation script performs the following tasks:

- ◆ Restores the bundle locks and package locks backup from the `/tmp/zmd` directory to the appropriate directories.
- ◆ Creates the `/tmp/zmd/upgrade_final.sh` shell script that automatically stops the zmd service, removes the system catalogs, and restarts the service.
- ◆ Uses the atd server to assign a scheduled task and execute the `upgrade_final.sh` shell script two minutes after the `post-install.sh` has completed execution.

14 Click *OK*.

15 Click *Apply* at the bottom of the Details page.

16 In the RPM Package Bundle Settings section of the Details page, click *Deploy* to deploy the new version of the bundle.

17 Continue with .

Creating Catalogs for Upgrade Bundles

1 Click the *Bundles* tab.

2 Click *New*, then click *Catalog* to open the Create New Catalog Wizard.

3 Specify a name for the catalog, then click *Next* to display the Catalog Attributes page.

4 Click *Next* to display the Summary page.

5 On the Summary page, click *Next*.

6 Click *Add* to display the Select Bundles dialog box.

7 Navigate to and click the desired upgrade bundle to move it to the *Selected* list, then click *OK*.

8 Click *Next* to display the Catalog Assignments page.

9 Click *Add*, navigate to and click the desired devices to move them to the *Selected* list, then click *OK* to display the Bundles Options page.

10 Click *Next* to display the Finish page, review the information, then click *Finish*.

11 Depending on your needs, continue with or .

Upgrading Managed Devices Other Than SLES 10 and SLED 10 by Using an Upgrade Bundle

1 Click the *Policies* tab.

2 Click *New*, then click *Policy* to display the Policy Type page.

3 Select *Remote Execute Policy*, then click *Next* to display the Policy Name page.

4 Specify a name for the policy, then click *Next* to display the Remote Execute Policy page.

5 From the *Script to run* drop-down list, choose *Define your own script*.

6 Paste the contents of the `policy.sh` script file into the *Script content* box. You can access the script file from the mount point `/data` directory.

The Policy script performs the following tasks:

- ◆ Subscribes to the catalog containing the upgrade bundle.
- ◆ Installs the upgrade bundle on the managed device.

7 Edit the script so that *catalog_name* is the catalog you created in "Creating Catalogs for Upgrade Bundles" on page 61 and *bundle* is the bundle that you specified while creating the catalog (Step 7 on page 61).

8 Click *Next* to display the Summary page, then click *Next* to display the Policy Assignments page.

9 Click *Add* to display the Select Assignments dialog box, browse to and select the devices to which you want to assign the Remote Execute policy, then click *OK*.

10 Click *Next* to display the Policy Schedule page.

11 In the *Schedule Type* drop-down list, select *Date Specific*, specify a start date and time to apply the policy, then click *Next* to display the Policy Groups page.

> **NOTE:** If you want to verify the upgrade immediately, set the start date to today and the start time to 12 a.m. The Remote Execute policy is executed at the next scheduled refresh for the devices. Alternately, you can manually refresh the devices.

12 Click *Next* to display the Finish page, then click *Finish*.

The Remote Execute policy is enforced as scheduled, after the managed devices' next scheduled refresh. If the time you specified in Step 11 occurs before the next scheduled refresh, the policy is enforced on the next refresh.

> **IMPORTANT:** It takes approximately five minutes for the upgrade bundle to be installed and for the upgrade process to be performed. Do not perform any rug commands such as `rug ref` during the upgrade process. Executing rug commands during the upgrade process might cause the process to fail.

> After the upgrade completes, you can verify that the upgrade was successful by executing the `rug ping` command or refer to `upgrade.log`. The upgrade was successful if the version of zmd is 7.2.0. If you perform the `rug ping` command prematurely, you receive an exception message. You can recover by stopping and restarting zmd. The `/tmp/zmd/upgrade.log` must contain the "`Starting ZENworks Management Daemon...`" message in the last line.

> **NOTE:** Bundle and Package history is not migrated.

Upgrading SLES 10 or SLED 10 Managed Devices by Using an Upgrade Bundle

Perform the following steps on the SLES 10 or SLED 10 managed device:

1 Execute the `/usr/bin/rug sub` *catalog_name* command, where *catalog_name* is the catalog assigned to the managed device.

2 Execute the `/usr/bin/rug bin -y` *upgrade_bundle_name* command, where *upgrade_bundle_name* is the upgrade bundle in the catalog assigned to the managed device.

> **IMPORTANT:** It takes approximately five minutes for the upgrade bundle to be installed and for the upgrade process to be performed. Do not perform any rug commands such as `rug ref` during the upgrade process. Executing rug commands during the upgrade process might cause the process to fail.

After the upgrade completes, you can verify that the upgrade was successful by executing the `rug ping` command or refer to upgrade.log. The upgrade was successful if the version of zmd is 7.2.0. If you perform the `rug ping` command prematurely, you receive an exception message. You can recover by stopping and restarting zmd. The `/tmp/zmd/upgrade.log` must contain the "`Starting ZENworks Management Daemon...`" message in the last line.

3 If the device does not have the X Window System installed:

   3a In ZENworks Control Center, click the upgrade bundle.

   3b Click the *Details* tab.

   3c In the *Packages* panel, select the following packages:

      novell-zenworks-x11vnc-0.6.1-2

      novell-zenworks-zmd-gconfpolicyenforcers-7.2.1-0

      novell-zenworks-tightvnc-1.2.9-6, zen-updater-7.2.1-0.1

   3d Click *Action > Set Freshen*.

4 (Optional) If SLES 10 or SLED 10 are running on DELL server and the managed devices have the default zmd agent installed, do the following if you want to collect the Dell inventory of the devices:

   4a In the *Packages* panel, select novell-zenworks-zmd-oem.

   4b Click *Action > Unset Freshen*.

5.3.2 Increasing the Security Level After Upgrading a ZENworks Server from ZENworks 7 Linux Management with IR1

If you upgrade a ZENworks Server from ZENworks 7 Linux Management with IR1 to ZENworks 7.2 Linux Management, the default PostgreSQL database security level requires authentication, but you can optionally increase the security level of the database. In most corporate settings, the PostgreSQL database resides on a corporate LAN with firewall protection. If you want to increase the security level of the database, edit the `/var/lib/pgsql/pg_hba.conf` file to add the IP address and subnet mask for the ZENworks Primary Server and for all ZENworks Secondary Servers as well as for the local host. An unedited file has a series of zeroes in place of the IP addresses and subnet masks; you replace the zeroes with the information for your primary and secondary ZENworks servers.

If you upgrade from ZENworks 7 Linux Management - Dell* Edition, this process is not necessary. Consult your PostgreSQL documentation for more information.

5.3.3 Changes to Bundle Schedules in ZENworks 7.2 Linux Management

Because of the elimination of certain schedule types for bundles in ZENworks 7.2 Linux Management, the deployment and installation schedules for bundles that existed in your ZENworks system prior to upgrading might behave differently.

ZENworks 7.2 Linux Management supports the following schedule types for bundles:

◆ "Date Specific"

- ◆ "Event"
- ◆ "Relative to Refresh"

The following schedule types are no longer supported for bundles in ZENworks 7.2 Linux Management, although they are still supported for certain policies:

- ◆ "Day of the Week Specific"
- ◆ "Monthly"

In an upgrade from ZENworks 7 Linux Management with IR1 or ZENworks 7 Linux Management - Dell Edition, any bundles that were configured using the Day of the Week or Monthly schedules are treated as Relative to Refresh after the upgrade.

If you look at a bundle's properties in the ZENworks Control Center after the upgrade, an upgraded bundle that was originally configured using the Day of the Week Specific or Monthly schedule has the eliminated schedule type listed, but deploys or installs using the Relative to Refresh schedule. You can manually change the bundle's displayed schedule type to one of the three valid schedule types at your convenience.

5.3.4 Upgrade Options

The following options can be used with the `zlm-upgrade` command:

Option	Description
-a	Upgrades the ZENworks Agent on a managed device.
-b	Creates bundles that can be used to upgrade ZENworks Linux Management devices.
	This option must be executed only on the ZENworks Primary Server.

If you are installing ZENworks Linux Management rather than performing an upgrade from a previous version, installation options are available for use with the `zlm-install` command. For more information, see Section A.1, "Installation Options," on page 79.

5.4 Upgrading to ZENworks 7.2 Linux Management with IR1

You can upgrade to ZENworks 7.2 Linux Management with IR1 from the following previous versions:

- ◆ **ZENworks 7 Linux Management with IR1:** Your current system must have ZENworks 7 Linux Management with IR1 installed.
- ◆ **ZENworks 7 Linux Management - Dell Edition:** Your current ZENworks 7 Linux Management - Dell Edition system must have the latest patches installed. This release was available as an OEM release to Dell PowerEdge customers only.
- ◆ **ZENworks 7.2 Linux Management**

You cannot upgrade from ZENworks 6.6.*x* Linux Management directly to ZENworks 7.2 Linux Management with IR1.

If you have ZENworks 6.6.*x* Linux Management systems that you want to migrate to ZENworks 7.2 Linux Management with IR1, you must first migrate to ZENworks 7 Linux Management with IR1 and then upgrade to ZENworks 7.2 Linux Management with IR1. Be aware that because of the expanded architecture between ZENworks 6.6.*x* Linux Management and ZENworks 7 Linux Management, there is limited upgrade support between the two versions.

IMPORTANT: You must upgrade the ZENworks server and ZENworks Agent software components in the order listed below:

1. Upgrade the ZENworks Primary Server.
2. Upgrade the ZENworks Secondary Server.
3. Upgrade the managed devices.

The following sections provide more information:

- Section 5.4.1, "Upgrading the ZENworks 7 Linux Management with IR1 or ZENworks 7 Linux Management - Dell Edition Servers to ZENworks 7.2 Linux Management with IR1," on page 65
- Section 5.4.2, "Upgrading the ZENworks 7.2 Linux Management Servers to ZENworks 7.2 Linux Management with IR1," on page 68
- Section 5.4.3, "Upgrading the Managed Device to ZENworks 7.2 Linux Management with IR1," on page 69
- Section 5.4.4, "Increasing the Security Level After Upgrading a ZENworks Server from ZENworks 7 Linux Management with IR1," on page 73
- Section 5.4.5, "Changes to Bundle Schedules in ZENworks 7.2 Linux Management with IR1," on page 74
- Section 5.4.6, "Upgrade Options," on page 74

5.4.1 Upgrading the ZENworks 7 Linux Management with IR1 or ZENworks 7 Linux Management - Dell Edition Servers to ZENworks 7.2 Linux Management with IR1

You can upgrade the ZENworks 7 Linux Management with IR1 or ZENworks 7 Linux Management - Dell Edition server to ZENworks 7.2 Linux Management with IR1 by performing an in-place upgrade over the previous version.

Before performing any type of upgrade, do the following:

- Take a reliable backup of your object and data stores, and eDirectory. For more information, see "ZENworks Database Maintenance" in the "Novell ZENworks 7.2 Linux Management Administration Guide".
- Ensure that eDirectory is listening on port 10389.
- Take an image of the ZENworks servers.
- Ensure that the ZENworks Linux Management server and the server on which the Oracle or the PostgresSQL database is running are in time sync.
- Remove OpenLDAP 2 from the ZENworks Server, if it is installed.

1. To verify whether OpenLDAP 2 has been installed, execute `rpm -qa |grep openldap2` at the server console prompt. This displays the installed package version.

2. To remove Open LDAP 2, execute `rpm -e openldap2`.

Performing an in-place upgrade lets you upgrade from the ZENworks 7 Linux Management with IR1 or ZENworks 7 Linux Management - Dell Edition release to ZENworks 7.2 Linux Management with IR1 using the same ZENworks Primary Server. For example, suppose your ZENworks Primary Server on your ZENworks 7 Linux Management with IR1 system is installed on a SLES 9 32-bit device and you want to upgrade to ZENworks 7.2 Linux Management with IR1. Using an in-place upgrade results in the previously described ZENworks Linux Management system being upgraded to ZENworks 7.2 Linux Management with IR1 on that same SLES 9 32-bit device.

The upgrade process upgrades the ZENworks Server and lets you create upgrade bundles for each supported platform. The individual upgrade bundles are then pushed to assigned devices to install the new ZENworks Agent on each device.

An in-place upgrade is best suited for smaller ZENworks Linux Management systems consisting of fewer than 100 devices managed by a single ZENworks Primary Server. An in-place upgrade allows for an upgrade without scheduling down-time for the system because the server and devices are upgrading relatively quickly.

Perform the following procedures in the order listed to upgrade the ZENworks servers and.

1. "Performing an In-Place Upgrade on the ZENworks Primary Server" on page 66

2. "Performing an In-Place Upgrade on a ZENworks Secondary Server" on page 67

IMPORTANT: The ZENworks server cannot be upgraded from ZENworks 7 Linux Management with IR1 to ZENworks 7.2 Linux Management with IR1 if the upgrade is interrupted. If the upgrade process is interrupted, contact Novell Support (http://www.novell.com/support).

Performing an In-Place Upgrade on the ZENworks Primary Server

1 Make sure the server meets the requirements. See Section 2.1, "ZENworks Server Requirements," on page 19.

2 Apply the TID 3160279. For more information about applying the TID, see Novell Support (http://www.novell.com/support).

3 At the Linux server, mount the *Novell ZENworks 7.2 Linux Management with Interim Release 1* CD by using the `mount device mountpoint` command.

For example, `mount /dev/cdrom /zlm72`.

If you are using an ISO image rather than a physical CD, copy the ISO to a temporary folder on the Linux server, then mount the image using the following command:

`mount -o loop /tempfolderpath/isoimagename.iso mountpoint`

Replace *tempfolderpath* with the path to the temporary folder and replace *mountpoint* with the path to the file system location where you want to mount the image. The path specified by *mountpoint* must already exist.

For example:

`mount -o loop /zlm72/ZEN72_LinuxMgmt.iso /zlm72/install`

4 Log in as `root`, then start the upgrade program from the mount point by running the following command:

```
./zlm-upgrade
```

5 When prompted to upgrade ZENworks Linux Management, enter `Y` to continue.

6 Review the Software License Agreement, pressing Page Down to scroll down the page, then enter `Y` to accept the agreement.

7 Enter `Y` when you are asked if you are upgrading a ZENworks Primary Server.

Make sure all ZENworks services on secondary servers are stopped. You can execute `/opt/novell/zenworks/bin/zlm-config --stop` to shut down the services on secondary servers.

8 Press Enter to continue.

The upgrade program stops ZENworks services, subscribes to the upgrade channels, upgrades RPMs, upgrades zmd, runs upgrade scripts, and then upgrades the database schema.

9 Enter the ZENworks administrator password.

The ZENworks services are restarted.

10 When prompted to create bundles that can be used to upgrade zlm clients (managed devices), enter `Y` to continue.

If you choose to not create upgrade bundles at this time, you can execute the `zlm-upgrade -b` command using the *ZENworks 7.2 Linux Management Agent* CD at a later time to create the bundles.

11 Specify a folder that you want to create to hold the upgrade bundles.

12 After the upgrade completes, refer to `/var/opt/novell/log/zenworks/zlm-upgrade.log` to ensure that the upgrade is successful.

13 (Conditional) If you have ZENworks Secondary Servers to upgrade, continue with "Performing an In-Place Upgrade on a ZENworks Secondary Server" on page 67.

14 Continue with "Upgrading the Managed Device to ZENworks 7.2 Linux Management with IR1" on page 69.

Performing an In-Place Upgrade on a ZENworks Secondary Server

You must upgrade the ZENworks Primary Server before upgrading ZENworks Secondary Servers. For step-by-step information, see "Performing an In-Place Upgrade on the ZENworks Primary Server" on page 66.

1 Make sure the server meets the requirements. See Section 2.1, "ZENworks Server Requirements," on page 19.

2 Apply the TID 3160279. For more information about applying the TID, see Novell Support (http://www.novell.com/support).

3 At the Linux server, mount the *Novell ZENworks 7.2 Linux Management with Interim Release 1* CD by using the `mount device mountpoint` command.

For example, `mount /dev/cdrom /zlm72`.

```
mount device mountpoint
```

If you are using an ISO image rather than a physical CD, copy the ISO to a temporary folder on the Linux server, then mount the image using the following command:

```
mount -o loop /tempfolderpath/isoimagename.iso mountpoint
```

Replace *tempfolderpath* with the path to the temporary folder and replace *mountpoint* with the path to the file system location where you want to mount the image. The path specified by *mountpoint* must already exist.

For example:

```
mount -o loop /zlm72/ZEN72_LinuxMgmt.iso /zlm72/install
```

4 Log in as `root`, then start the upgrade program from the mount point by running the following command:

```
./zlm-upgrade
```

5 When prompted to upgrade ZENworks Linux Management, enter `Y` to continue.

6 Review the Software License Agreement, pressing Page Down to scroll down the page, then enter `Y` to accept the agreement.

The install program stops ZENworks services, subscribes to the upgrade channels, upgrades RPMs, upgrades zmd, runs upgrade scripts, and then restarts the ZENworks services.

7 Enter `N` when you are asked if you are upgrading a ZENworks Primary Server.

8 Enter `Y` when you are asked if you have upgraded the ZENworks Primary Server.

Ignore any "failed to stop" errors that you receive. For example, you receive an error indicating that eDirectory could not be stopped, but it was already stopped when you executed `/opt/novell/zenworks/bin/zlm-config --stop` in Step 7 on page 67.

The upgrade program stops ZENworks services, subscribes to the upgrade channels, upgrades RPMs, upgrades zmd, and runs upgrade scripts.

After the upgrade is complete, the ZENworks services are restarted. This might take a few minutes.

9 Delete `ostargets.xml` by executing `rm /var/opt/novell/zenworks/lib/www/ostargets.xml` at the server console prompt.

10 Manually copy `ostargets.xml` from `/var/opt/novell/zenworks/lib/www/` on the ZENworks Primary Server to `/var/opt/novell/zenworks/lib/www/` on the Secondary server.

11 Change the ownership of `ostargets.xml` to `zenworks` by executing `chown zenworks:zenworks /var/opt/novell/zenworks/lib/www/ostargets.xml` at the server console prompt.

12 (Conditional) Repeat Step 1 through Step 11 f or each ZENworks Secondary Server that you want to upgrade.

13 Continue with "Upgrading the Managed Device to ZENworks 7.2 Linux Management with IR1" on page 69.

5.4.2 Upgrading the ZENworks 7.2 Linux Management Servers to ZENworks 7.2 Linux Management with IR1

1 Before performing the upgrade, do the following:

- Take a reliable backup of your object and data stores, and eDirectory. For more information, see "ZENworks Database Maintenance" in the *Novell ZENworks 7.2 Linux Management Administration Guide*.
- Ensure that eDirectory is listening on port 10389.
- Take an image of the ZENworks servers.

- ◆ Ensure that the ZENworks Linux Management server and the server on which the Oracle or the PostgresSQL database is running are in time sync.

- ◆ Remove OpenLDAP 2 from the ZENworks Server, if it is installed.

  1. To verify whether OpenLDAP 2 has been installed, execute `rpm -qa |grep openldap2` at the server console prompt. This displays the installed package version.
  2. To remove Open LDAP 2, execute `rpm -e openldap2`.

2 Install ZENworks 7.2 Linux Management Hot Patch 5. For more information on how to obtain and install the Hot Patch, contact Novell Support (http://www.novell.com/support).

3 Apply the TID 3859039. For more information about applying the TID, see Novell Support (http://www.novell.com/support).

5.4.3 Upgrading the Managed Device to ZENworks 7.2 Linux Management with IR1

Upgrading managed devices to ZENworks 7.2 Linux Management with IR1 installs the new ZENworks Agent.

To upgrade the managed device from the ZENworks 7 Linux Management with IR or ZENworks 7 Linux Management - Dell Edition to ZENworks 7.2 Linux Management with IR1, use one of the following ways:

- ◆ "Upgrading Managed Devices by Using Upgrade Bundles" on page 69
- ◆ "Manually Upgrading the ZENworks 7 Linux Management with IR1 or ZENworks 7 Linux Management - Dell Edition Managed Device to ZENworks 7.2 Linux Management with IR1" on page 73

To upgrade the managed device from ZENworks 7.2 Linux Management to ZENworks 7.2 Linux Management with IR1, use one of the following ways:

- ◆ "Upgrading Managed Devices by Using Upgrade Bundles" on page 69
- ◆ "Upgrading the ZENworks 7.2 Linux Management Managed Device to ZENworks 7.2 Linux Management with IR1 by Using the Hot Patch 5 Channel" on page 73

Upgrading Managed Devices by Using Upgrade Bundles

You can upgrade the managed devices from ZENworks 7 Linux Management with IR, ZENworks 7 Linux Management - Dell Edition, or ZENworks 7.2 Linux Management to ZENworks 7.2 Linux Management with IR1 by using upgrade bundles.

Make sure the managed device meets the requirements. See Section 2.3, "Managed Device Requirements," on page 20.

Complete the following tasks in the order listed:

1. "Creating a Script for Upgrade Bundles" on page 70
2. "Creating Catalogs for Upgrade Bundles" on page 71
3. "Upgrading Managed Devices Other Than SLES 10 and SLED 10 by Using an Upgrade Bundle" on page 71 or "Upgrading SLES 10 or SLED 10 Managed Devices by Using an Upgrade Bundle" on page 72.

Creating a Script for Upgrade Bundles

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

2 Click the folder that you created while performing an in-place upgrade on the ZENworks Primary Server (Step 11 on page 67) to hold the upgrade bundles.

3 Click the underlined name of the desired upgrade bundle to display its details.

4 Click the *Details* tab.

5 In the *Scriptable Actions* section at the bottom of the Details page, click *New* to display the New Scriptable Action dialog box.

6 In the *Scriptable action* drop-down list, select *Pre-Installation*.

7 In the *Script to run* drop-down list, select *Define your own script*.

8 Paste the contents of the `pre-install.sh` script file into the *Script content* box. You can access the script file from the `/data` directory located within the directory on which ZENworks 7.2 Linux Management with IR1 is mounted. For example, if ZENworks 7.2 Linux Management with IR1 is mounted on `/zlm72/install`, the `pre-install.sh` script file resides in the `/zlm72/install/data` directory.

If the managed device has bundle locks or package locks (`package-locks.xml`), the Pre-Installation script takes a backup of the bundle locks or package locks and places the backup in the `/tmp/zmd` directory.

9 Click *OK*.

10 In the *Scriptable Actions* section at the bottom of the Details page, click *New* to display the New Scriptable Action dialog box.

11 In the *Scriptable action* drop-down list, select *Post-Installation*.

12 In the *Script to run* drop down list, select *Define your own script*.

13 Paste the contents of the `post-install.sh` script file into the *Script content* box. You can access the script file from the `/data` directory located within the directory on which ZENworks 7.2 Linux Management with IR1 is mounted. For example, if ZENworks 7.2 Linux Management with IR1 is mounted on `/zlm72/install`, the `post-install.sh` script file resides in the `/zlm72/install/data` directory.

NOTE: In the `post-install.sh` script file, the messages indicating the progress of the upgrade are commented out by default. If you want the messages to be displayed on the managed device, uncomment the messages.

The Post Installation script performs the following tasks:

- Restores the bundle locks and package locks backup from the `/tmp/zmd` directory to the appropriate directories.

- Creates the `/tmp/zmd/upgrade_final.sh` shell script that automatically stops the zmd service, removes the system catalogs, and restarts the service.

- Uses the atd server to assign a scheduled task and execute the `upgrade_final.sh` shell script two minutes after the `post-install.sh` has completed execution.

14 Click *OK*.

15 Click *Apply* at the bottom of the Details page.

16 In the RPM Package Bundle Settings section of the Details page, click *Deploy* to deploy the new version of the bundle.

17 Continue with "Creating Catalogs for Upgrade Bundles" on page 71.

Creating Catalogs for Upgrade Bundles

1 Click the *Bundles* tab.

2 Click *New*, then click *Catalog* to open the Create New Catalog Wizard.

3 Specify a name for the catalog, then click *Next* to display the Catalog Attributes page.

4 Click *Next* to display the Summary page.

5 On the Summary page, click *Next*.

6 Click *Add* to display the Select Bundles dialog box.

7 Navigate to and click the desired upgrade bundle to move it to the *Selected* list, then click *OK*.

8 Click *Next* to display the Catalog Assignments page.

9 Click *Add*, navigate to and click the desired devices to move them to the *Selected* list, then click *OK* to display the Bundles Options page.

10 Click *Next* to display the Finish page, review the information, then click *Finish*.

11 Depending on your needs, continue with "Upgrading Managed Devices Other Than SLES 10 and SLED 10 by Using an Upgrade Bundle" on page 71 or "Upgrading SLES 10 or SLED 10 Managed Devices by Using an Upgrade Bundle" on page 72.

Upgrading Managed Devices Other Than SLES 10 and SLED 10 by Using an Upgrade Bundle

1 Click the *Policies* tab.

2 Click *New*, then click *Policy* to display the Policy Type page.

3 Select *Remote Execute Policy*, then click *Next* to display the Policy Name page.

4 Specify a name for the policy, then click *Next* to display the Remote Execute Policy page.

5 From the *Script to run* drop-down list, choose *Define your own script*.

6 Paste the contents of the `policy.sh` script file into the *Script content* box. You can access the script file from the mount point `/data` directory.

The Policy script performs the following tasks:

   ◆ Subscribes to the catalog containing the upgrade bundle.

   ◆ Installs the upgrade bundle on the managed device.

7 Edit the script so that *`catalog_name`* is the catalog you created in "Creating Catalogs for Upgrade Bundles" on page 71 and *`bundle`* is the bundle that you specified while creating the catalog (Step 7 on page 71).

8 Click *Next* to display the Summary page, then click *Next* to display the Policy Assignments page.

9 Click *Add* to display the Select Assignments dialog box, browse to and select the devices to which you want to assign the Remote Execute policy, then click *OK*.

10 Click *Next* to display the Policy Schedule page.

11 In the *Schedule Type* drop-down list, select *Date Specific*, specify a start date and time to apply the policy, then click *Next* to display the Policy Groups page.

NOTE: If you want to verify the upgrade immediately, set the start date to today and the start time to 12 a.m. The Remote Execute policy is executed at the next scheduled refresh for the devices. Alternately, you can manually refresh the devices.

12 Click *Next* to display the Finish page, then click *Finish*.

The Remote Execute policy is enforced as scheduled, after the managed devices' next scheduled refresh. If the time you specified in occurs before the next scheduled refresh, the policy is enforced on the next refresh.

IMPORTANT: It takes approximately five minutes for the upgrade bundle to be installed and for the upgrade process to be performed. Do not perform any rug commands such as `rug ref` during the upgrade process. Executing rug commands during the upgrade process might cause the process to fail.

After the upgrade completes, you can verify that the upgrade was successful by executing the `rug ping` command or refer to `upgrade.log`. The upgrade was successful if the version of zmd is 7.2.0. If you perform the `rug ping` command prematurely, you receive an exception message. You can recover by stopping and restarting zmd. The `/tmp/zmd/upgrade.log` must contain the "`Starting ZENworks Management Daemon...`" message in the last line.

NOTE: Bundle and Package history is not migrated.

Upgrading SLES 10 or SLED 10 Managed Devices by Using an Upgrade Bundle

Perform the following steps on the SLES 10 or SLED 10 managed device:

1 Execute the `/usr/bin/rug sub` *catalog_name* command, where *catalog_name* is the catalog assigned to the managed device.

2 Execute the `/usr/bin/rug bin -y` *upgrade_bundle_name* command, where *upgrade_bundle_name* is the upgrade bundle in the catalog assigned to the managed device.

IMPORTANT: It takes approximately five minutes for the upgrade bundle to be installed and for the upgrade process to be performed. Do not perform any rug commands such as `rug ref` during the upgrade process. Executing rug commands during the upgrade process might cause the process to fail.

After the upgrade completes, you can verify that the upgrade was successful by executing the `rug ping` command or refer to upgrade.log. The upgrade was successful if the version of zmd is 7.2.0. If you perform the `rug ping` command prematurely, you receive an exception message. You can recover by stopping and restarting zmd. The `/tmp/zmd/upgrade.log` must contain the "`Starting ZENworks Management Daemon...`" message in the last line.

3 If the device does not have the X Window System installed:

3a In ZENworks Control Center, click the upgrade bundle.

3b Click the *Details* tab.

3c In the *Packages* panel, select the following packages:

novell-zenworks-x11vnc-0.6.1-2
novell-zenworks-zmd-gconfpolicyenforcers-7.2.1-0

novell-zenworks-tightvnc-1.2.9-6, zen-updater-7.2.1-0.1

3d Click *Action > Set Freshen*.

4 (Optional) If SLES 10 or SLED 10 are running on DELL server and the managed devices have the default zmd agent installed, do the following if you want to collect the Dell inventory of the devices:

4a In the *Packages* panel, select novell-zenworks-zmd-oem.

4b Click *Action > Unset Freshen*.

Manually Upgrading the ZENworks 7 Linux Management with IR1 or ZENworks 7 Linux Management - Dell Edition Managed Device to ZENworks 7.2 Linux Management with IR1

1 Make sure the managed device meets the requirements. See Section 2.3, "Managed Device Requirements," on page 20.

2 At the Linux managed device, mount the *Novell ZENworks 7.2 Linux Management Agent with Interim Release 1* CD by using the `mount device mountpoint` command.

For example, `mount /dev/cdrom /zlm7`.

If you are using an ISO image rather than a physical CD, copy the ISO to a temporary folder on the Linux managed device, then mount the image using the following command:
`mount -o loop /tempfolderpath/isoimagename.iso mountpoint`

Replace *tempfolderpath* with the path to the temporary folder and replace *mountpoint* with the path to the file system location you want to mount the image. The path specified by *mountpoint* must already exist.

For example:

`mount -o loop /zlm72/ZEN72_LinuxMgmt.iso /zlm72/install`

3 Log in as `root`, then start the upgrade program from the mount point by running the following command:

`./zlm-upgrade`

4 When prompted to upgrade ZENworks Linux Management, enter `Y` to continue.

5 Review the Software License Agreement, pressing Page Down to scroll down the page, then enter `Y` to accept the agreement.

The install program stops ZENworks services, subscribes to the upgrade channels, upgrades RPMs, upgrades zmd, runs upgrade scripts, and then restarts the ZENworks services.

Upgrading the ZENworks 7.2 Linux Management Managed Device to ZENworks 7.2 Linux Management with IR1 by Using the Hot Patch 5 Channel

1 Install ZENworks 7.2 Linux Management Hot Patch 5. For more information on how to obtain and install the Hot Patch, contact Novell Support (http://www.novell.com/support).

5.4.4 Increasing the Security Level After Upgrading a ZENworks Server from ZENworks 7 Linux Management with IR1

If you upgrade a ZENworks Server from ZENworks 7 Linux Management with IR1 to ZENworks 7.2 Linux Management with IR1, the default PostgreSQL database security level requires authentication, but you can optionally increase the security level of the database. In most corporate

settings, the PostgreSQL database resides on a corporate LAN with firewall protection. If you want to increase the security level of the database, edit the `/var/lib/pgsql/pg_hba.conf` file to add the IP address and subnet mask for the ZENworks Primary Server and for all ZENworks Secondary Servers as well as for the local host. An unedited file has a series of zeroes in place of the IP addresses and subnet masks; you replace the zeroes with the information for your primary and secondary ZENworks servers.

If you upgrade from ZENworks 7 Linux Management - Dell* Edition, this process is not necessary. Consult your PostgreSQL documentation for more information.

5.4.5 Changes to Bundle Schedules in ZENworks 7.2 Linux Management with IR1

Because of the elimination of certain schedule types for bundles in ZENworks 7.2 Linux Management with IR1, the deployment and installation schedules for bundles that existed in your ZENworks system prior to upgrading might behave differently.

ZENworks 7.2 Linux Management with IR1 supports the following schedule types for bundles:

- "Date Specific"
- "Event"
- "Relative to Refresh"

The following schedule types are no longer supported for bundles in ZENworks 7.2 Linux Management with IR1, although they are still supported for certain policies:

- "Day of the Week Specific"
- "Monthly"

In an upgrade from ZENworks 7 Linux Management with IR1 or ZENworks 7 Linux Management - Dell Edition, any bundles that were configured using the Day of the Week or Monthly schedules are treated as Relative to Refresh after the upgrade.

If you look at a bundle's properties in the ZENworks Control Center after the upgrade, an upgraded bundle that was originally configured using the Day of the Week Specific or Monthly schedule has the eliminated schedule type listed, but deploys or installs using the Relative to Refresh schedule. You can manually change the bundle's displayed schedule type to one of the three valid schedule types at your convenience.

5.4.6 Upgrade Options

The following options can be used with the `zlm-upgrade` command:

Option	Description
-a	Upgrades the ZENworks Agent on a managed device.
-b	Creates bundles that can be used to upgrade ZENworks Linux Management devices.
	This option must be executed only on the ZENworks Primary Server.

If you are installing ZENworks Linux Management rather than performing an upgrade from a previous version, installation options are available for use with the `zlm-install` command. For more information, see Section A.1, "Installation Options," on page 79.

5.5 What's Next

After you complete the setup of your ZENworks Servers and a few managed devices, you should become familiar with general ZENworks administration concepts and tasks. "Understanding ZENworks Linux Management" in the *Novell ZENworks 7.2 Linux Management Administration Guide* introduces these concepts and tasks while helping you understand the ZENworks approach to successfully managing workstations and servers.

In particular, the tutorial explains how you can use folders and groups to minimize your management overhead and why you should create folders and groups before you register the devices in your system. It also provides brief instructions for delivering software packages, creating policies, collecting inventory, performing tasks prior to a device booting to its operating system, and monitoring events that occur within the system.

Appendixes

The following sections are referenced from other sections in this *Novell*® *ZENworks*® *7.2 Linux Management Installation Guide*:

Additional Installation Information

A

The following sections contain additional information to help you install Novell® ZENworks® Linux Management:

- Section A.1, "Installation Options," on page 79
- Section A.2, "Creating a ZENworks Agent ISO Image or CD," on page 80
- Section A.3, "Automating Installation of the ZENworks Agent," on page 81
- Section A.4, "Installing ZENworks Linux Management on a SLES 9 Server with a Minimal Installation," on page 82
- Section A.5, "Installing ZENworks Linux Management on a SLES 10 Server with a Customize Installation," on page 82
- Section A.6, "Installing a ZENworks Server on a Device Configured with DHCP," on page 84

A.1 Installation Options

When you installed Novell® ZENworks® Linux Management on a ZENworks Primary Server or on secondary ZENworks servers as described in Section 3.3, "Installing the ZENworks Primary Server," on page 28 or Section 3.4, "Installing a ZENworks Secondary Server," on page 33, you performed a standard installation without using additional installation options.

When you installed ZENworks Agent on managed devices as described in Section 3.5.1, "Installing the ZENworks Agent and Registering the Device," on page 38, you used the -a or -o installation options.

NOTE: If you are performing an upgrade from a previous version of ZENworks Linux Management, as explained in Chapter 5, "Upgrade," on page 49, you can use upgrade options with the zlm-upgrade command. For more information, see Section 5.3.4, "Upgrade Options," on page 64.

The following options can be used with the zlm-install command:

Option	Description
-p	Prompt before adding each package.
-s	Run silently using data from a previous configuration. Specify the response file that you want to use. This is the response file that you recorded user input to using the -r command. The following command shows the option's usage: `zlm-install -s config_file`
-r	Record user input, including passwords, to be used in future silent-configuration installations. Specify the response file that you want to record the user input to. This is the response file that you use with the -s command to run a silent configuration. The following command shows the option's usage: `zlm-install -r config-file`
-a	Install only agent portions of ZENworks Linux Management.

Option	Description
-x	Skip packages that require the X Window System.
	If you do not have the X Window System installed (for example, you installed a Minimal installation of SUSE Linux Enterprise Server 9), you need to install the glib2, XFree86-libs-32 bit, and compat-32bit packages to the device before installing ZENworks Linux Management. When you install ZENworks Linux Management on the device, you must use the -x switch to avoid dependency problems. Running ./zlm-install -a -x skips any packages that require the X Window System. During the installation process, you must agree when it says that the installation lacks the zmd-gconfpolicyenforcer, novell-zenworks-zmd-rmagent, and vnc components.
-i	Skip imaging packages.
-o	Install the OEM module specific to Dell PowerEdge servers.
	If you do not install the OEM module using the -o option, you cannot use the following features:
	◆ **Dell Configuration Bundles:** Lets you use Preboot Services to configure a Dell PowerEdge server's BIOS, BMC, RAID, and DRAC settings and to create a Dell utility partition.
	◆ **Dell Update Bundles:** Let you update and configure hardware and system settings on Dell PowerEdge servers.
	◆ **Dell Inventory:** Lets you display inventory information specific to Dell PowerEdge servers.
	◆ **Dell Reports:** Lets you run reports specific to Dell PowerEdge servers to find devices that do not have valid Dell Update Packages installed or to show devices with Dell applications installed (per device or per device model).
	You can run the -o option during the installation of the ZENworks Agent on a managed device by running zlm-install -a -o, as explained in , or you can install the OEM module on a device after installing the ZENworks Agent by running zlm-install -o.
-h	Print these options.

A.2 Creating a ZENworks Agent ISO Image or CD

The ZENworks Agent is installed using the same program (zlm-install) as the ZENworks Server. You can install from the *Novell ZENworks 7 Linux Management* CD, or you can create a ZENworks Agent ISO image or CD.

To create a ZENworks Agent ISO image or CD:

1 At a Linux machine, mount the *Novell ZENworks 7 Linux Management* CD using the following command:

```
mount device mountpoint
```

For example:

```
mount /dev/cdrom /zlm7
```

If you are using an ISO image rather than a physical CD, copy the ISO to a temporary folder on the Linux machine, then mount the image using the following command:

```
mount -o loop /tempfolderpath/isoimagename.iso mountpoint
```

Replace *tempfolderpath* with the path to the temporary folder and replace *mountpoint* with the path to the file system location where you want to mount the image. The path specified by *mountpoint* must already exist.

For example:

```
mount -o loop /zlm7/ZEN7_LinuxMgmt.iso /zlm7/install
```

2 Log in as `root`, then start the Create Client ISO program from the mount point using the following command:

```
./zlm-create-client-iso isoimagename
```

replace *isoimagename* with the path and ISO filename. For example:

```
zlm-create-client-iso /zlm7agent/ZENworks7-Agent.iso
```

The list of possible distributions is displayed. You can make separate ISOs for each distribution, or you can combine one or more distributions in one ISO.

3 Enter the number of the distribution you want added to the ISO. If desired, after the distribution is added, repeat this process to add other distributions to the ISO.

4 Enter `5` to make the ISO image and exit.

5 (Optional) Burn the ISO image to a CD.

A.3 Automating Installation of the ZENworks Agent

You can automate the installation of the ZENworks Agent. The level of automation depends on what you want to accomplish. You can simply create a response file that enables users to manually run the install without being prompted for information. Or, you can create the response file and add the installation commands to a script so that users aren't even required to run the install.

To automate installation of the ZENworks Agent:

1 Create the response file. To do so:

  1a At the Linux device, mount the media you are using for the install: the *Novell ZENworks 7 Linux Management* CD, the ZENworks Agent CD, or the ISO image.

    For mount instructions, see Step 2 under Section 3.5.1, "Installing the ZENworks Agent and Registering the Device," on page 38.

  1b Run the ZENworks Agent installation program on a device using the following command:

```
./zlm-install -a -r path_to_response_file.txt
```

    Replace *response_file.txt* with a filename you want. For example:

```
./zlm-install -a -r /zlm7-agent/zenworks-agent.txt
```

    The steps in this procedure perform a standard installation of ZENworks Linux Management. Depending on your situation, additional options can be used with the `zlm-install` command. For more information, see Appendix I, "Appendixes," on page 77.

  1c Follow the prompts to install the ZENworks Agent on the device.

    Your answers to the prompts are stored in the response file.

2 Perform the scripted installation on a device using the following command:

```
./zlm-install -a -s path_to_response_file.txt
```

3 If desired, place the above command in a script (for example, a login script).

Make sure the installation program and files are available to the device. For example, copy the installation files to a network location, mount the CD as a network drive, or copy the files to the device's local drive.

A.4 Installing ZENworks Linux Management on a SLES 9 Server with a Minimal Installation

When you install SLES 9, we strongly recommend that you perform a Default installation.

If you install SLES 9 using a Minimal installation, which does not include X Window System support, ensure that you do the following:

- ◆ Before installing ZENworks Linux Management on the server, install the glib2, XFree86-libs, and compat packages to the device.
- ◆ Use the `-x` option when you install ZENworks Linux Management. Running `./zlm-install -x` skips any packages that require the X Window System. For more information about installing ZENworks Linux Management on a ZENworks Primary Server, see . For more information about installing ZENworks Linux Management on a secondary ZENworks server, see .

A.5 Installing ZENworks Linux Management on a SLES 10 Server with a Customize Installation

When you install SLES 10, we strongly recommend that you perform a Default installation.

If you install SLES 10 using a Customize installation, the following packages must be installed before ZENworks Linux Management can be successfully installed:

aaa_base (postgresql)
atk (gtk-sharp)
bash (multiple)
binutils (postgresql)
boost (libzypp-zmd-backend)
bzip2 (libzypp)
cabextract (mirroring)
compat (eDir)
compat-32bit (eDir on x86_64)
coreutils
curl (libzypp)
db (python)
dbus-1 (libzypp)
dbus-1-glib (libzypp)
fillup (postgres)
gconf2 (policyenforcers)
gdbm (python)

gettext (multiple)
glib2 (multiple)
glibc (multiple)
glibc-locale (multiple)
grep (eDirectory)
gtk2 (gtk-sharp)
hal (libzypp)
insserv (postgres)
krb5 (postgres)
libacl (policyenforcers)
libcom_err (postgres)
libgcc (libzypp)
libidn (libzypp)
libjpeg (x11vnc)
libjpeg-32bit
libstdc++ (libzypp)
libxml2 (multiple)
libzypp-zmd-backend
mktemp (multiple)
mono-core
ncurses (python)
openssl (libzypp)
orbit2 (policyenforcers)
pam (postgresql)
pango (gtk-sharp)
popt (libzypp)
pwdutils (multiple)
python (we install)
readline (postgres, python)
rpm
sed (postgres)
sqlite (zmd, libzypp)
xinetd (remote management)
xorg-x11-libs (eDir, vnc)
xorg-x11-libs-32bit
zlib (libzypp, remote management)
zlib-32bit
zmd

NOTE: Make sure that yast2-core-devel, yast2-devel, and zmd-devel packages are not installed on SLES 10.

A.6 Installing a ZENworks Server on a Device Configured with DHCP

Installing a ZENworks Linux Management server on a device that is configured with DHCP causes the installation to fail. As noted in Chapter 2, "System Requirements," on page 19, the ZENworks server must have a static IP address or a permanently leased DHCP address.

If the ZENworks Linux Management installation program detects that you are installing on a device configured with DHCP, the following error displays:

```
eDir failed to start properly. Please ensure that this machine is
configured with a static IP or permanently-leased DHCP Address.
```

To resolve this error:

1 Make sure that the following entry is present in `/etc/hosts` before installing ZENworks Linux Management:

`127.0.0.1 localhost.localdomain localhost`

If the entry 127.0.0.2 *hostname*.localdomain *hostname* is present in the file, add 127.0.0.1 *hostname*.localdomain *hostname* before the entry to look similar to the following:

127.0.0.1 *hostname*.localdomain *hostname*

127.0.0.2 hostname.localdomain *hostname*

This change might affect other network applications. You might want to delete this change after the installation is completed. Changing back to the original setting does not impact ZENworks Linux Management.

NOTE: If you failed to change the `hosts` file prior to installing ZENworks Linux Management, make the previously mentioned changes in the `hosts` file and then run `zlm-config`. You do not need to restart the installation program.

You might also receive this error with a static IP address if you have more than one loopback address in your `/etc/hosts` file. The same resolution fixes this problem.

2 Run `zlm-config`.

Documentation Updates

<div style="text-align: right;">B</div>

This section contains information on documentation content changes that were made in this *Installation Guide* after the initial release of Novell® ZENworks® 7.2 Linux Management. The information can help you to keep current on updates to the documentation.

All changes that are noted in this section are also made in the documentation. The documentation is provided on the Web in two formats: HTML and PDF. The HTML and PDF documentation are both kept up-to-date with the documentation changes listed in this section.

The documentation update information is grouped according to the date the changes are published. Within a dated section, the changes are alphabetically listed by the names of the main table of contents sections in the guide.

If you need to know whether a copy of the PDF documentation you are using is the most recent, the PDF document contains its publish date on the front title page.

The documentation was updated on the following dates:

B.1 August 23, 2007 (Interim Release 1)

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

B.1.1 System Requirements

The following changes were made in this section:

Location	Change
Section 2.1, "ZENworks Server Requirements," on page 19	Added SLES 10 SP1 to list of operating systems supported for IR1.
Section 2.3, "Managed Device Requirements," on page 20	Added SLES 10 SP1, SLED 10 SP1, and RHEL5 on 32-bit (x86) architecture to list of operating systems supported for IR1.

B.1.2 Installation

The following changes were made in this section:

Location	Change
	Updated the chapter with IR1 information.

B.1.3 Upgrade

The following changes were made in this section:

Location	Change
	.Added this section for IR1.
	Added this section for IR1.

B.2 July 17, 2007

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

-
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B.2.1 System Requirements

The following changes were made in this section:

Location	Change
	Added Novell Open Enterprise Server to the Operating System list.

B.2.2 Installation

The following changes were made in this section:

Location	Change
	Added this section the explain the steps to be performed for configuring any other Novell products on the Novell Open Enterprise Server after installing the ZENworks 7.2 Linux Management Agent.

B.3 June 11, 2007

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

-

B.3.1 System Requirements

The following changes were made in this section:

Location	Change
Section 2.3, "Managed Device Requirements," on page 20	Removed Novell Open Enterprise Server from the Operating System list.

B.4 May 21, 2007

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

- Section B.4.1, "Upgrade," on page 87

B.4.1 Upgrade

The following changes were made in this section:

Location	Change
Section 5.3.1, "Upgrading the ZENworks Servers and the Managed Devices to ZENworks 7.2 Linux Management," on page 56	Replaced the following para: "Depending on your needs, you can perform an in-place upgrade from a previous version of ZENworks Linux Management to ZENworks 7.2 Linux Management or you can perform an upgrade by backing up your ZENworks object and data stores, performing the upgrade, and then restoring your ZENworks object and data stores." with "You can upgrade the ZENworks Linux Management Server to ZENworks 7.2 Linux Management by performing an in-place upgrade over the previous version"

B.5 April 20, 2007

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

- Section B.5.1, "Installation," on page 87
- Section B.5.2, "Upgrade," on page 88

B.5.1 Installation

The following changes were made in this section:

Location	Change
Section 3.3.2, "Installing the ZENworks Server Software," on page 29	1. Rephrased the following para in Step 1 to include the eDirectory error message: If you are installing to a device that is configured with DHCP, you might encounter the following eDirectory error in zlm-config: `eDir failed to start properly. Please ensure that this machine is configured with a static IP or permanently-leased DHCP Address.` For detailed information on how to resolve the error, see Section A.6, "Installing a ZENworks Server on a Device Configured with DHCP," on page 84. 2. Added Step 12.

B.5.2 Upgrade

The following changes were made in this section:

Location	Change
Section 5.3.1, "Upgrading the ZENworks Servers and the Managed Devices to ZENworks 7.2 Linux Management," on page 56	Added the tasks to be performed before upgrade.
"Performing an In-Place Upgrade on the ZENworks Primary Server" on page 57	Added Step 11.