ZENworks System Management

The following sections provide information about general Novell® ZENworks® Linux Management - Dell Edition features and procedures:

ZENworks Control Center

3

You use the Novell® ZENworks® Control Center to configure system settings and management tasks in your ZENworks Management Zone. The following sections provide information about the ZENworks Control Center:

ZENworks Linux Management also includes the zlman command line utility to help you manage your ZENworks system. The zlman utility lets you perform the same tasks you can perform in the ZENworks Control Center, with the exception of imaging and preboot tasks. For more information, see Section 4.1, “zlman,” on page 41.

3.1 Where the ZENworks Control Center Is Installed

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 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. For more information about replication of packages, see Chapter 21, “Replicating Content in the ZENworks Management Zone,” on page 251.

3.2 Accessing the ZENworks Control Center

1. Using a Web browser that meets the requirements listed in “Administration Workstation Requirements” in the *Novell ZENworks 7 Linux Management - Dell Edition Installation Guide*, enter the following URL:

   `https://`*`ZENworks_Server_Address`*

   Replace *ZENworks_Server_Address* with the IP address or DNS name of the ZENworks Server.

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

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

3.3 Accessing the ZENworks Control Center through Novell iManager

ZENworks Linux Management includes a Novell plug-in module (`.npm`) that you can use to access the ZENworks Control Center from Novell iManager, which is a management console used by a number of other Novell products.

To install the ZENworks Control Center plug-in for iManager:

1. Copy the plug-in (`zlm7link.npm`) from the *Novell ZENworks 7 Linux Management - Dell Edition* CD to a location on your iManager server.

   The `zlm7link.npm` file is located in the `/ImanagerPlugin` directory.
2. Follow the instructions in the *Novell iManager 2.6 documentation* (http://www.novell.com/documentation/imanager26/) to install and configure the plug-in module.
3. If Tomcat did not restart during the installation and configuration process, restart Tomcat.
4. Log into iManager.
5. Click the *ZENworks* icon at the top of the page.
6. Enter the ZENworks Control Center URL:

   `https://`*`ZENworks_Server_Address`*

   Replace *ZENworks_Server_Address* with the IP address or DNS name of the ZENworks Server.
7. Click the *ZENworks* icon to launch the ZENworks Control Center.

3.4 Changing the Timeout Value for the ZENworks Control Center

By default, the ZENworks Control Center has a 30-minute timeout value. If you leave the ZENworks Control Center idle on your computer for more than 30 minutes, you are prompted to log in again before continuing. You can increase or decrease the timeout value, or you can specify that the ZENworks Control Center never times out.

To change the timeout value:

1. Open the `/var/opt/novell/zenworks/www/tomcat/base/webapps/zenworks/WEB-INF/config.xml` file in a text editor.
2. Increase or decrease the timeout value, as needed.

   or

   Specify -1 to specify that the ZENworks Control Center never times out.
3. Save the `config.xml` file.
4. Run the following command to restart the service:

   ```
   /etc/init.d/novell-zenserver restart
   ```

Command Line Administration Utilities

4

Novell® ZENworks® Linux Management - Dell Edition includes several command line utilities to help you manage your ZENworks system. The primary purpose of the command line utilities is to provide access to the ZENworks management functionality in a scriptable environment.

The following command line utilities are available:

4.1 zlman

The zlman utility lets you perform the same tasks you can perform in the ZENworks Control Center, with the exception of imaging and preboot tasks. It is installed on ZENworks Servers in the following location:

```
/opt/novell/zenworks/bin
```

For more information about zlman, view the zlman man page (man zlman) on the ZENworks Server or view the HTML version (http://www.novell.com/documentation/zlm7_dell/reference/zlman.html) of the man page.

4.2 zlm-debug

The zlm-debug utility lets you gather information to help you troubleshoot and solve problems you encounter using ZENworks Linux Management - Dell Edition. By default, zlm-debug gathers cache, server, client, configuration, hardware, and package data as well as log files. The information is packaged into a tarball file and placed in the location you specify. It is installed on ZENworks Servers in the following location:

```
/opt/novell/zenworks/bin
```

For more information about zlm-debug, view the zlm-debug man page (man zlm-debug) on the ZENworks Server or view the HTML version (http://www.novell.com/documentation/zlm7_dell/reference/zlm-debug.html) of the man page.

4.3 zlmmirror

The zlmmirror utility lets you mirror RPM and Dell Update Packages packages from ZENworks 6.*x* and 7 servers, Dell FTP servers, YaST Online Update (YOU) servers, Red Hat Network, and Red Carpet® Enterprise servers. It is installed on ZENworks Servers in the following location:

```
/opt/novell/zenworks/bin
```

For more information about zlmmirror, view the zlmmirror man page (man zlmmirror) on the ZENworks Server, view the HTML version (http://www.novell.com/documentation/zlm7_dell/reference/zlmmirror.html) of the man page, or see Chapter 22, “Mirroring Software,” on page 253.

4.4 rug

The rug utility lets you perform software and user management through the ZENworks Agent on a managed device. It is installed on managed devices in the following location:

```
/opt/novell/zenworks/bin
```

For more information about rug, view the rug man page (man rug) on a managed device or view the HTML version (http://www.novell.com/documentation/zlm7_dell/reference/rug.html) of the man page.

4.5 zmd

The zmd utility lets you control how the ZENworks Agent runs on a managed device. It is installed on managed devices in the following location:

```
/opt/novell/zenworks/sbin
```

For more information about zmd, view the zmd man page (man zmd) on a managed device or view the HTML version (http://www.novell.com/documentation/zlm7_dell/reference/zmd.html) of the man page.

4.6 zrmservice

The zrmservice utility lets you control how the ZENworks Remote Management Agent (a component of the ZENworks Agent) runs on a managed device. It is installed on managed devices in the following location:

```
/opt/novell/zenworks/sbin
```

For more information about zrmservice, view the zrmservice man page (man zrmservice) on a managed device or view the HTML version (http://www.novell.com/documentation/zlm7_dell/reference/zrmservice.html) of the man page.

ZENworks Server

5

The Novell® ZENworks® Server is the backbone of the ZENworks system. It communicates with the ZENworks Agent on managed devices to deliver software, enforce policies, collect inventory, and perform other management tasks. The following sections provide information about the ZENworks Server:

5.1 ZENworks Services

The ZENworks Server includes the following services:

Table 5-1 *ZENworks Services*

Service	Service Name	Description
eDirectory™	ndsd	Used for the ZENworks Object Store.
PostgreSQL Database	postgresql	Used for the ZENworks Data Store; only needed if the Data Store resides on the ZENworks Server.
ZENworks Server	novell-zenserver	Used for communicating with the ZENworks Agent.
ZENworks Loader	novell-zenloader	Used for loading modules not directly associated with the ZENworks Server. This includes the Content Replication, Inventory Rollup, and QueueRunner modules.
ZENworks Server Management	novell-zented	Used for replicating RPM packages and Dell Update Packages from the primary server to secondary servers.
ZENworks Imaging Service	novell-pbserv	Used to provide imaging services to a device. This includes sending and receiving image files, discovering assigned Preboot bundles, acting as session master for multicast imaging, and so forth.
ZENworks Preboot Policy Daemon	novell-zmgprebootpolicy	Used by PXE-enabled devices to check if there are any Preboot bundles that are assigned to the device.

Service	Service Name	Description
Proxy DHCP Daemon	novell-proxydhcp	Used with a standard DHCP server to inform PXE-enabled devices of the IP address of the Novell TFTP server. It also responds to PXE devices to indicate which bootstrap program (`nvlnbp.sys`) to use.
TFTP Daemon (TFTP Server)	novell-tftp	Used by PXE-enabled devices to request files that are needed to perform imaging tasks. It also provides a central repository for these imaging files, such as the Linux kernel and initrd. A PXE-enabled device uses this server to download the bootstrap program (`nvlnbp.sys`).
ZENworks Management Daemon (ZENworks Agent)	novell-zmd	Used to enable the server as a managed device.
ZENworks Imaging Agent	novell-zislnx	Used to save and restore image-safe data on the server (as a managed device). Only runs when launched by the ZENworks Agent.

The services reside in the `/etc/init.d` directory on the ZENworks Server. Refer to the following sections for instructions to help you control the ZENworks services:

- Section 5.1.1, “Checking the Status of a ZENworks Service,” on page 44
- Section 5.1.2, “Starting a ZENworks Service,” on page 44
- Section 5.1.3, “Stopping a ZENworks Service,” on page 45
- Section 5.1.4, “Restarting a ZENworks Service,” on page 45

5.1.1 Checking the Status of a ZENworks Service

To check the current status of a service, use the following command:

```
/etc/init.d/servicename status
```

Replace *servicename* with the name of the service as listed in Table 5-1 on page 43.

To check the current status of all services, use the following command:

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

5.1.2 Starting a ZENworks Service

To start a service, use the following command:

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

Replace *servicename* with the name of the service as listed in Table 5-1 on page 43.

To start all services, use the following command:

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

To ensure that all services start in the correct order, we recommend that you use the `zlm-config --start` option to start all services rather than starting them one at a time.

5.1.3 Stopping a ZENworks Service

To stop a service, use the following command:

```
/etc/init.d/servicename stop
```

Replace *servicename* with the name of the service as listed in Table 5-1 on page 43.

To stop all services, use the following command:

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

5.1.4 Restarting a ZENworks Service

To restart a service that is already running, use the following command:

```
/etc/init.d/servicename restart
```

Replace *servicename* with the name of the service as listed in Table 5-1 on page 43.

To restart all services, use the following command:

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

To ensure that all services start in the correct order, we recommend that you use the `zlm-config --restart` option to restart all services rather than restarting only one service.

5.2 RPM Package Repository

The ZENworks Server contains all of the RPM packages and Dell Update Packages that are included in bundles defined within your Management Zone.

The following sections contain more information:

5.2.1 Package Repository Location

The package repository is the `/var/opt/novell/zenworks/pkg-repo` directory on the ZENworks Server. When you add an RPM package to a bundle, the package is automatically uploaded to the package repository. When you mirror Dell Update Packages, the packages are automatically bundled and uploaded to the package repository.

5.2.2 Package Replication

To ensure that all ZENworks Servers have the same RPM packages and Dell Update Package bundles to distribute, the ZENworks Primary Server can replicate all packages to any ZENworks Secondary Servers in the Management Zone. To enable replication, you need to establish a replication schedule (see Chapter 21, "Replicating Content in the ZENworks Management Zone," on page 251).

During replication of packages to a secondary server, only new packages and updates to existing packages are sent.

5.2.3 Package Administration

Because of the way that packages are replicated from the primary server to secondary servers, you must run the ZENworks Control Center or zlman utility from the primary server to add a package to a bundle. Doing so causes the package to be added to the primary server's package repository and then be replicated to all secondary servers.

If you add a package to a secondary server, the package does not exist on the primary server and is therefore removed the next time the primary server replicates its packages to the secondary server.

The same limitation applies to all package management tasks, such as modifying and deleting a package from a bundle. These tasks must be performed on the primary server.

During the bundle creation process, when you use the *Upload RPM* option, the RPM packages are copied to a temporary directory. When you finish creating the bundle by clicking *Finish*, the packages are moved from this temporary directory to the package repository. If, for some reason, you do not complete the process of creating the bundle, those unused packages remain in the temporary directory until you delete them. For more information, see Section 18.16, "Cleaning Orphaned Files from the Package Repository," on page 226.

5.3 Uninstalling a ZENworks Server

ZENworks includes a uninstall program (zlm-uninstall) to remove the ZENworks services, Object Store, and other files from a server. If for some reason the uninstall program cannot remove the ZENworks server software, you can manually uninstall the software. The following sections provide instructions for uninstalling the software with the uninstall program or manually.

If your ZENworks Linux Management system has secondary servers, you must uninstall the secondary servers before uninstalling the primary ZENworks server. Otherwise, during uninstallation of the secondary servers, you receive an error message concerning eDirectory that is not applicable because eDirectory was already removed during uninstallation of the primary ZENworks server.

The following sections contain more information:

- Section 5.3.1, "Uninstalling a Primary ZENworks Server Using zlm-uninstall," on page 47
- Section 5.3.2, "Uninstalling a Secondary ZENworks Server Using zlm-config," on page 47
- Section 5.3.3, "Manually Uninstalling a Primary or Secondary ZENworks Server," on page 47

5.3.1 Uninstalling a Primary ZENworks Server Using zlm-uninstall

1. Make sure you know the password for the ZENworks Administrator account.
2. Log in to the ZENworks Server as `root`.
3. Run the following command:

   ```
   /opt/novell/zenworks/bin/zlm-uninstall
   ```
4. Follow the prompts.

5.3.2 Uninstalling a Secondary ZENworks Server Using zlm-config

1. Make sure you know the password for the ZENworks Administrator account.
2. Log in to the Secondary ZENworks Server as `root`.
3. Run the following command:

   ```
   /opt/novell/zenworks/bin/zlm-config --remove-secondary-server=secondary_server
   ```

   where *secondary_server* is the full NDS context of the secondary server.

   The server is usually in the system context. For example, if your server name is ZEN216, the full command is:

   ```
   /opt/novell/zenworks/bin/zlm-config --remove-secondary-server=zen216.system
   ```

5.3.3 Manually Uninstalling a Primary or Secondary ZENworks Server

1. Stop the services on the ZENworks Server. If necessary, see Section 5.1.3, “Stopping a ZENworks Service,” on page 45.
2. Remove the following directories:

   ```
   /opt/novell/zenworks/share/keystore
   /opt/novell/zenworks/datamodel/share/ldap-certs
   /etc/opt/novell/zenworks/serverid
   /etc/opt/novell/zenworks/serversecret
   ```
3. Edit `/etc/crontab` to remove the lines that contain ZENworks.
4. (Conditional) If you are removing a secondary server, remove the secondary server object from the Object Store and Data Store. To do so:

   4a Create a script file like the following one to create a CLASSPATH variable that includes all of the paths to the ZENworks classes:

   ```
   #!/bin/sh
   CLASSPATH=''
   for i in `ls /opt/novell/zenworks/java/lib/*.jar` ;
   do CLASSPATH="$i:$CLASSPATH" ;
   done ;
   for i in `ls /opt/novell/extend/Common/WSSKD/lib/*.jar` ;
   ```

```
do CLASSPATH=$i:$CLASSPATH" ;
done ;
echo $CLASSPATH
```

4b Use the following command to remove the ZENworks secondary server object:

```
/opt/novell/zenworks/lib/java/bin/java -classpath $CLASSPATH
com.novell.zenworks.datamodel.extensions.installer.LDAPInsta
ller uninstall admin_password
```

Replace *admin_password* with the ZENworks Administrator account password.

5 (Conditional) If you are removing the primary server and are using a local PostgreSQL database for the ZENworks Data Store, remove the database. To do so, use the following commands:

```
/etc/init.d/postgresql startsu - postgresqldropdb
zenworksdropuser zenadmin/etc/init.d/postgressql stop
```

6 Remove the ZENworks Object Store. To do so, use the following commands:

```
ndsconfig rm -F -a admin.system -w admin_passwordrm -rf /var/
nds/dibrm /etc/nds.conf
```

Replace *admin_password* with the ZENworks Administrator account password.

7 Remove the ZENworks RPM packages and the Dell Update Packages, if necessary. To do so:

7a Use the following command to list the package names:

```
rpm -qa | grep novell-zenworks
```

7b Remove each of the packages individually using the following command:

```
rpm -e | package_name
```

or

Use the following simple script to remove multiple packages:

```
for i in `rpm -qa | grep novell-zenworks` ; do rpm -e $i ; done
```

Because of package dependencies, you might need to run this script multiple times to remove all packages. You can verify that all packages have been removed by running the command in Step 7a.

8 Remove the following directories:

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

ZENworks Agent

6

The Novell® ZENworks® Agent is installed on each managed device within your ZENworks Management Zone. The agent communicates with the ZENworks Server to deliver software, enforce policies, and perform other management tasks. The following sections provide information about the ZENworks Agent:

6.1 ZENworks Agent (zmd)

The ZENworks Agent is named zmd. It is sometimes referred to as the ZENworks Management Daemon (zmd).

The ZENworks Agent performs software management functions on the ZENworks managed device, including updating, installing, and removing software and performing basic queries of the device's package management database. Typically, these management tasks are initiated through the ZENworks Control Center or the `rug` utility, which means you should not need to interact directly with the ZENworks Agent.

The ZENworks Agent is installed to the following directory:

```
/opt/novell/zenworks/sbin
```

6.1.1 ZENworks Agent (zmd) Cache Settings

As the ZENworks Agent (zmd) performs its duties, it maintains a cache that stores the content of bundles that are downloaded for installation on that managed device. You can control the age of contents in the cache and its size by using cache settings. Cache cleanup is enforced on both client startup and refresh.

The cleaning of cached information is always enabled. You can configure the following settings using the `rug set` command in the `rug` utility to manage the cache. For more information about the rug utility, see Section 4.4, “rug,” on page 42.

Table 6-1 *ZENworks Management Daemon Cache Settings*

Setting	Description
max-cache-age	Defines the number of days the contents of the cache are retained, after which the contents are deleted. The default is 30 days. If this setting specifies 0 days, the cache content never expires. The cache cleanup is enforced on client startup and refresh. The contents of the cache are sorted by date (oldest to newest) and deleted by applying the *max-cache-age* setting, starting with the oldest content. To change the *max-cache-age* setting from the default of 30 days to 60 days, for example, you enter the following command from the managed device: `rug set max-cache-age 60`
cache-max-size-in-mb	This setting is only enforced at cleanup time; not during bundle download. The default is 300 MB. If this is set to 0, there is no limit to the size of the cache; however, the max-cache-age setting still applies. If the cache size exceeds the maximum size specified with this setting, the cache contents are sorted by date and the oldest contents are deleted until the cache size is within the specified size limit. If this size limit is exceed while downloading bundles, the bundle contents are downloaded; however, the next time the device restarts or refreshes, the cache is cleaned until its size is within the specified size limit. The cache cleanup process will not delete files downloaded within the last 24 hours to get within the specified limit. To change the *cache-max-size-in-mb* setting from the default of 300 MB to 500 MB, for example, you enter the following command from the managed device: `rug set cache-max-size-in-mb 500`

6.2 File System Access

The ZENworks Agent runs as `root`. This provides it with the file system access required to perform its management functions on the device.

On managed devices, do not mount the following directories over NFS: `/etc`, `/opt`, `/usr`, `/home`, `/var`, and `/root`. The ZENworks Agent (zmd) is not designed to work with these directories mounted over NFS, so this configuration is not supported.

6.3 Using the Software Updater, Installer, and Remover from Users' Managed Devices

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 Linux Management - Dell Edition, these three easy-to-use desktop applets provide users with the ability to update existing software, install new software, or remove existing software from their managed devices. 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. If a rich user interface is required, you should use the `rug` command line interface to accomplish these same tasks. For more information, see Section 4.4, "rug," on page 42.

In previous versions of ZENworks Linux Management, these three applets were combined in one user interface. In ZENworks Linux Management 6.*x*, the client interface was called Red Carpet®. In ZENworks 7 Linux Management, the client interface was called the ZENworks Linux Management Update Client. Software Updater, Installer, and Remover replace Red Carpet and the ZENworks Linux Management Update Client.

The following sections contain information about each applet:

- Section 6.3.1, "Updating Software," on page 51
- Section 6.3.2, "Installing Software," on page 55
- Section 6.3.3, "Removing Software," on page 59

6.3.1 Updating Software

With the Software Updater, you can easily apply updates to your software with just a few clicks. At startup, the Software Updater automatically checks for updates to your system from the sources specified in the Software Updater configuration.

The following sections contain additional information:

- "Launching the Software Updater" on page 51
- "Configuring Package Sources" on page 51
- "Selecting Update Catalogs" on page 53
- "Selecting and Applying Updates" on page 54

Launching the Software Updater

1. Launch the Software Updater by navigating to `/opt/novell/zenworks/bin` and running `zen-updater` with root privileges. To run it as a daemon, run `zen-updater &`.

   The Software Updater icon appears in the notification area (GNOME) or the system tray (KDE) of your panel as an icon depicting a globe, which changes to an orange circle with an exclamation point in it when updates are available.

   The first time you exit the Software Updater, you will be asked if you want it to load on startup. If you choose *Yes*, you can access the Software Updater from the notification area or system tray rather than by running `zen-updater` from the command line each time you want to launch the applet.

The rug command-line utility also lets you perform software and user management through the ZENworks Agent on a managed device. For background information on the underlying rug command and its configuration options, see Section 4.4, "rug," on page 42.

Configuring Package Sources

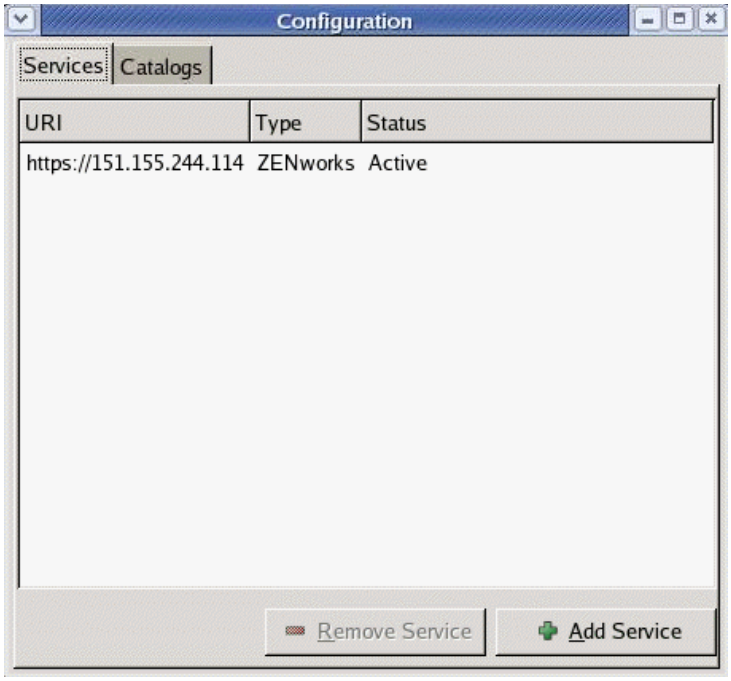
Before you can use the use the Software Updater, you need to configure it to check package sources for updates. Ask your system administrator for package sources that are available for your product and for connection details.

NOTE: The Software Updater and the Software Installer use the same configurations. If you add a service using the Software Updater configuration screen, that service will appear in the Software Installer configuration and vice versa.

To add new services:

1. Right-click the *Software Updater* icon, then click *Configure*.

   If the Software Updater icon is not in the system tray, you need to launch the program. See "Launching the Software Updater" on page 51.



2. Click *Add Service*.

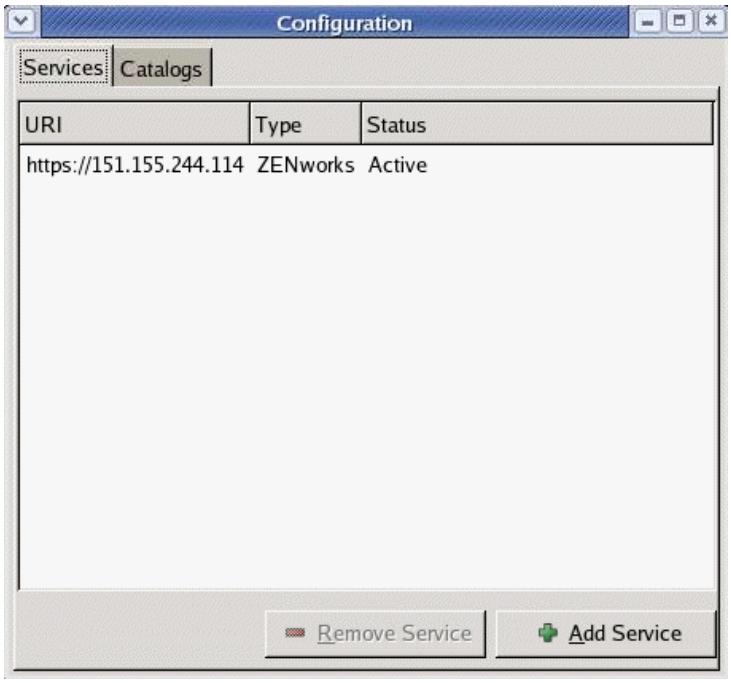
3. Select the type of update repository from the drop-down list. The Software Updater supports the following service types: YUM, RCE, ZENworks, and user-mounted sources.
4. Add the connection details for the source type you selected (server URI and registration key), then click *Add*. The service URI is the URL of the service. Registration keys are optional and are made available by the administrator of the service. Only ZENworks and RCE services have registration keys.

The source is listed in the *Services* tab and is ready to be used and checked for available update packages.

To remove a service:

1 Right-click the *Software Updater* icon, then click *Configure*.

If the Software Updater icon is not in the system tray, you need to launch the program. See "Launching the Software Updater" on page 51.



2 Select the service or services you want to delete, then click *Remove Service*.

Selecting Update Catalogs

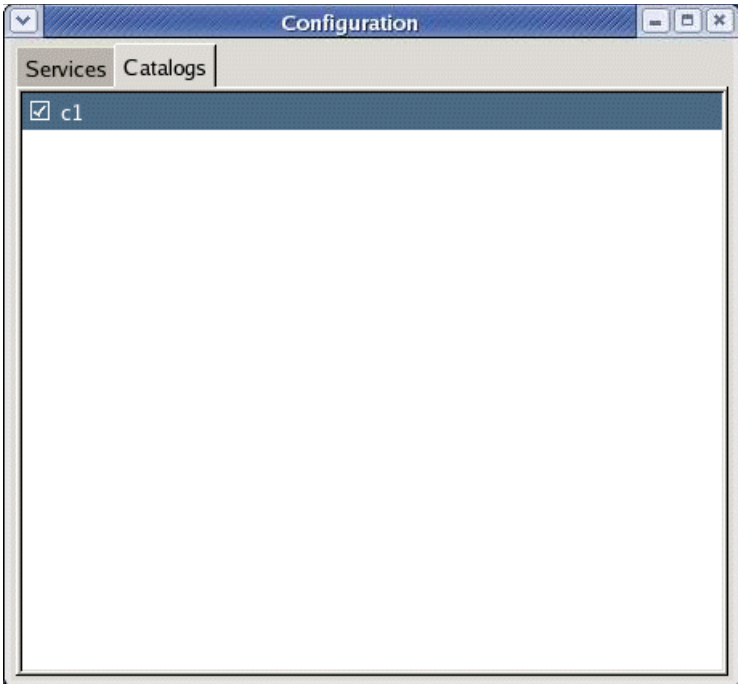
Once you have configured one or more services, you can select a set of catalogs from those sources to be checked. There may be, for example, a catalog containing all the software that came with the original release of the product and another one containing all the update packages released since.

To select additional update catalogs:

1 Right-click *Software Updater*, then click *Configure*.

If the Software Updater icon is not in the system tray, you need to launch the program. See "Launching the Software Updater" on page 51.

2 Click the *Catalogs* tab.



3 Select the catalogs you want or deselect those you don't need and close the configuration window by clicking the X in the upper right corner of the Software Updater.

Selecting and Applying Updates

When updates are available, the panel icon changes to an orange circle with an exclamation point in it. When you mouse over the icon, a message pops up indicating that updates are available.

To review and apply updates:

1 Click the Software Updater icon.

If the Software Updater icon is not in the system tray, you need to launch the program. See “Launching the Software Updater” on page 51.

2 Select the updates you want to apply, then click *Update*. Click *Details* for more information about the selected update.

NOTE: Right-click the Software Updater icon, then click *Refresh* to poll the services for updates.

6.3.2 Installing Software

Using ZENworks Linux Management - Dell Edition, your administrator can create catalogs containing optional software and assign them to users’ devices. Because software packages contained in catalogs are usually considered optional, users can choose whether or not to install the software. If an administrator has assigned catalogs to users’ devices, the catalogs display in the Software Installer.

- “Configuring Package Sources” on page 56
- “Selecting Installation Catalogs” on page 57
- “Installing Software by Using the Software Installer” on page 58

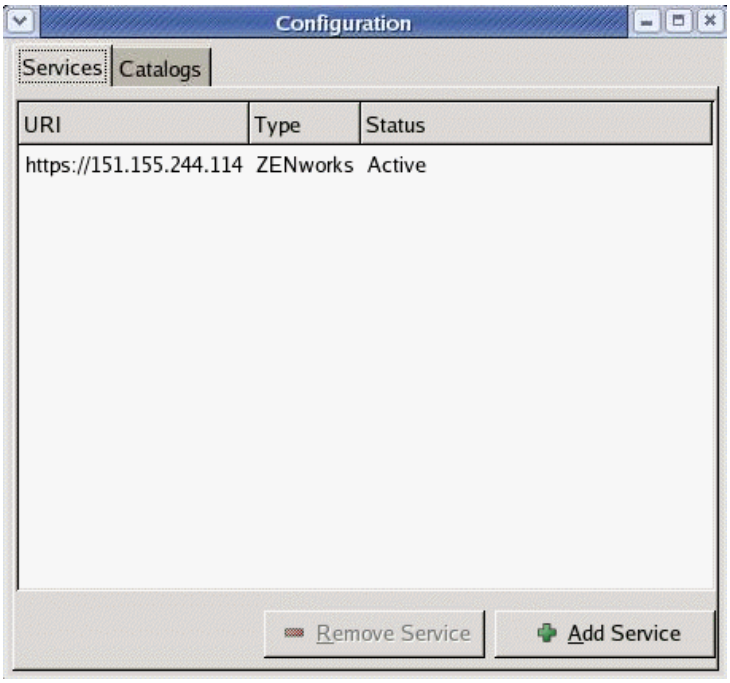
Configuring Package Sources

Before you can use the Software Installer, you need to add package sources from which you can install software.

NOTE: The Software Updater and the Software Installer use the same configurations. If you add a service using the Software Updater configuration screen, that service will appear in the Software Installer configuration and vice versa.

To add a package source:

1. Launch the Software Installer by navigating to `/opt/novell/zenworks/bin` and running `zen-installer` with `root` privileges.
2. Click *Configure*.



3. Click *Add Service*.

4. Select the type of the service repository from the drop-down list. The Software Updater supports the following service types: YUM, RCE, ZENworks, and user-mounted sources.

5 Add the connection details for the source type you selected (server URI and registration key), then click *Add*. The service URI is the URL of the service. Registration keys are optional and are made available by the administrator of the service. Only ZENworks and RCE services have registration keys.

   The source is listed in the *Services* tab and is ready to be used and checked for available packages.

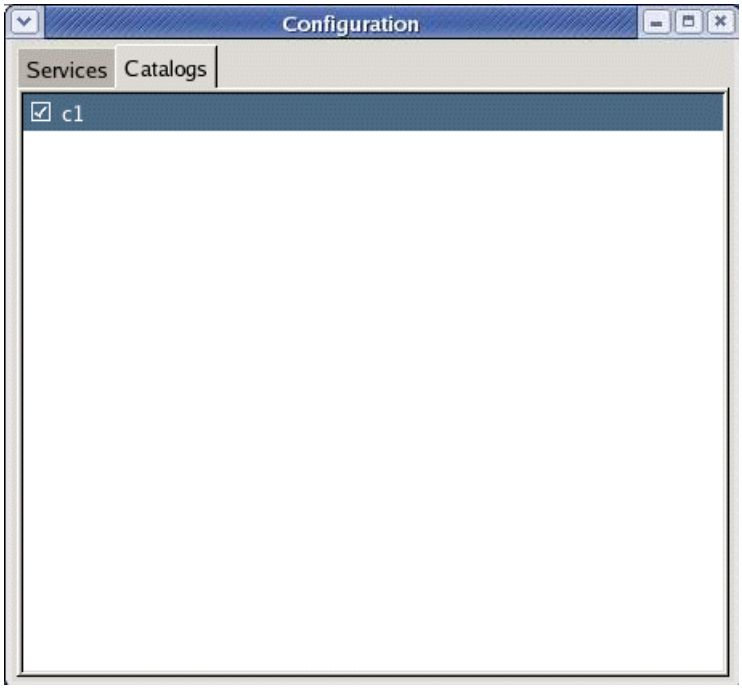
Selecting Installation Catalogs

You can configure the Software Installer to accept various catalogs:

1 Launch the Software Installer by navigating to `/opt/novell/zenworks/bin` and running `zen-installer` with root privileges.

2 Click *Configure*.

3 Click the *Catalogs* tab.

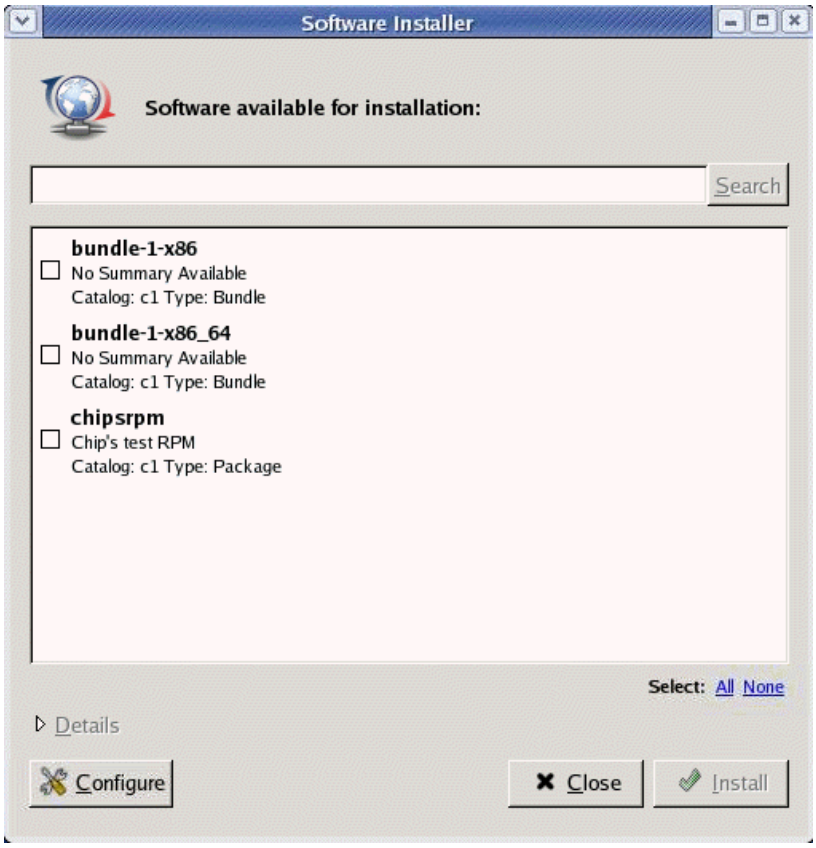


4 Select the catalogs you want or deselect those you don't need and close the configuration window by clicking the X in the upper right corner of the Software Installer.

Installing Software by Using the Software Installer

To install software:

1. Launch the Software Installer by navigating to `/opt/novell/zenworks/bin` and running `zen-installer` with `root` privileges.

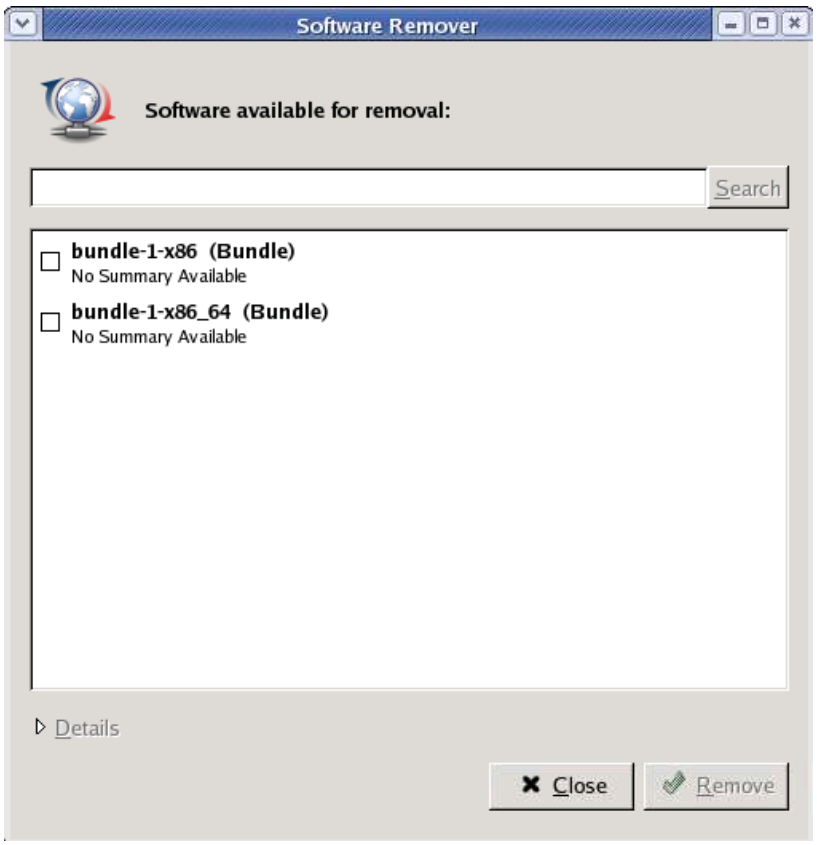


2. Select the software that you want to install or search for software by typing a search term in the search field, then click *Search*. Click *Details* for information about the selected software. You can select all available software by clicking *All*.
3. Click *Install*.

6.3.3 Removing Software

The Software Remover lets you remove software on a managed device. The utility is in the `/opt/novell/zenworks/bin` directory.

1. Launch Software Remover by navigating to `/opt/novell/zenworks/bin` and running `zen-remover` with root privileges.



2. Select the software you want to remove. You can click *Details* for more information about the selected software.
3. Click *Remove*.

6.4 Uninstalling the ZENworks Agent

ZENworks includes a uninstall program (zlm-uninstall) to remove the ZENworks Agent from a device. If for some reason the uninstall program is unable to remove the ZENworks Agent, you can manually uninstall the agent. The following sections provide instructions for removing the software with the uninstall program or manually.

Using zlm-uninstall to Uninstall the ZENworks Agent

1. Make sure you have unregistered the device. See Chapter 12, "Unregistering and Reregistering Devices," on page 95.
2. Log in to the managed device as `root`.

3 Run the following command:

```
/opt/novell/zenworks/bin/zlm-uninstall
```

4 Follow the prompts.

Manually Uninstalling the ZENworks Agent

1 Use the following command to list the ZENworks package names:

```
rpm -qa | grep novell-zenworks
```

2 Remove each of the packages individually using the following command:

rpm -e | *package_name*

or

Use the following simple script to remove multiple packages:

```
for i in `rpm -qa | grep novell-zenworks` ; do rpm -e $i ; done
```

Because of package dependencies, you might need to run this script multiple times to remove all packages. You can verify that all packages have been removed by running the command in Step 1.

3 Remove the following directories:

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

ZENworks Administrator Accounts

7

During installation, a default Administrator account is created. This account provides rights to administer all of your Novell® ZENworks® system.

You can create additional administrator accounts that provide full access to your ZENworks system. You can also create accounts that limit administrative rights to specific device folders, policy folders, bundle folders, and report folders.

The following sections provide information to help you create administrator accounts and manage administrator rights:

7.1 Creating an Administrator Account

1. Log in to the ZENworks Control Center using an administrator account that has rights to create other administrator accounts.

   The default account, Administrator, has rights to create additional accounts.

2. In the ZENworks Control Center, click the *Configuration* tab.

   The Administrators section of the Configuration page lists the current accounts.

3. In the *Administrators* list, click *New* to display the Add new Administrator dialog box.
4. Provide a username and password for the account, then click *OK* to add the account to the *Administrators* list.

   The administrator can change the password the first time he or she logs in by clicking the key icon located next to the *Logout* link in the upper-right corner of the ZENworks Control Center.

   The newly created administrator account is granted View rights to all objects in the Management Zone. To grant additional rights, or to limit the administrator's rights to specific folders only, you need to modify the rights.

5. To change the administrator's rights, see the next section, Modifying Account Rights.

7.2 Modifying Account Rights

By default, newly created accounts are granted View rights to all objects in the Management Zone. You can modify an administrator's rights so that the administrator can:

- Change the Management Zone configuration settings.
- Create or modify other administrator accounts.
- Create, modify, and delete all objects in the Management Zone or in a specific folder only.
- Modify all objects in the Management Zone or in a specific folder only.

To modify an administrator's rights:

1. Log in to the ZENworks Control Center using an administrator account that has rights to create and modify other administrator accounts.

   The default account, Administrator, has rights to create and modify additional accounts.

2. In the ZENworks Control Center, click the *Configuration* tab.

   The Administrators section of the Configuration page lists the current accounts.

3. Click the account you want to modify.
4. Set the General options as desired:
   - **Can create and manage other administrators:** Select this option to enable the administrator to create additional administrator accounts, or to change the settings for existing administrator accounts.
   - **Can modify zone settings:** Select this option to enable the administrator to change the Management Zone settings, registration keys, registration rules, and licensing information included on the Configuration page.
5. Set the bundle, device, policy, and report rights as desired.

   You use the Assigned Rights sections to control the administrator's rights to manage bundles, devices, policies, and reports. You can give the administrator All rights (Create, Delete, Modify), Modify rights only, or View rights only.

   You assign rights at the folder level. The root folders are `/Bundles`, `/Devices`, `/Policies`, and `/Reports`. Rights assigned at a root folder are effective in all subfolders (for example, `/Bundles/Workstations`) unless specifically overridden at the subfolder level.

   For example, if you want the administrator to be able to view bundles that are located in the `/Bundles` folder and create, delete, or modify bundles in the `/Bundles/Workstations` folder, you would assign the administrator View rights to the `/Bundles` folder and All rights to the `/Bundles/Workstation` folder.

The following options are available to add folders and modify the administrator's rights to folders:

- **Add:** By default, the Assigned Rights sections display only the root folders (`/Bundles`, `/Devices`, `/Policies`, and `/Reports`). To assign rights to a folder that is not listed, you need to add the folder to the list. To do so, click *Add* to display the Add Rights Folder dialog box. In the Folders field, click  to browse for and select the folder. After you select the folder, select the desire rights assignment (All, Modify, or View), then click *OK*.
- **Edit:** To modify the administrator's rights to a folder that already appears in the list (for example, the `/Bundles` folder), select the folder by clicking the box in front of its name, then click *Edit*. Select the rights assignment you want (All, Modify, or View), then click *OK*.
- **Delete:** To delete a folder from the list, select the folder by clicking the box in front of its name, then click *Delete*. This deletes the administrator's directly assigned rights to the folder. The administrator still inherits the rights assigned to the folder's parent. For example, assume the administrator has View rights in the `/Bundles` folder and All rights in the `/Bundles/Workstations` folder. You delete the `/Bundles/Workstations` folder from the list. The administrator's rights in the `/Bundles/Workstations` folder revert to the rights inherited from the `/Bundles` folders. Therefore, in this example, the administrator goes from having All rights in the `/Bundles/Workstation` folder to having View rights only.

  You cannot delete the root folders (`/Bundles`, `/Devices`, `/Policies`, and `/Reports`).

6 When finished modifying rights, click *Apply* to apply the changes.

ZENworks Database Maintenance

8

Under normal conditions, the data in the Novell® ZENworks® Object Store and Data Store is always consistent. However, inconsistencies can occur due to database corruption, hardware failures, or even natural disasters. Therefore, we recommend that you back up and restore the Object Store and Data Store on a periodic basis.

ZENworks Linux Management provides tools to back up and restore the ZENworks Object Store. Tools for backing up and restoring a PostgreSQL Data Store are also supplied. If you are using Oracle for the Data Store, we recommend using a tool like RMAN. Basic instructions for using RMAN are included.

IMPORTANT: To restore a ZENworks Linux Management system after the failure of a ZENworks Primary Server, you need backups of the Object Store, Data Store, package repository, and zlmmirror configuration files. Therefore, it is important that you complete the instructions in this section. For more information, see "Disaster Recovery" in the *Novell ZENworks 7 Linux Management - Dell Edition Troubleshooting Guide*.

The following sections provide information about the maintenance tasks you can perform.

8.1 Maintaining the ZENworks Object Store

The ZENworks Object Store is Novell eDirectory™ 8.7.3. The following sections provide information for backing up and restoring the Object Store:

8.1.1 Backing Up the ZENworks Object Store

You use `zlm_ndsbackup.sh`, located in `/opt/novell/zenworks/sbin`, to back up the Object Store.

1. Make sure you are logged in as root to the ZENworks Server.
2. Enter the following command at the command prompt:

   ```
   # zlm_ndsbackup.sh -U admin.system
   ```

3. Enter the password to authenticate to the Object Store.

   This is the password for the ZENworks Administrator account.

The backup program creates a directory in `/var/opt/novell/zenworks/backup/nds/`*`month-yyyy/yyyy-mm-dd`*. The directory name is the date on which the backup is taken. The

backup file is saved in this directory. The name of the backup file has the format *timestamp*-backup, and the time stamp indicates the time when the backup was taken. For example:

```
/var/opt/novell/zenworks/backup/nds/August-2005/2005-08-23/
10:12:23-backup
```

NDS® Backup creates a directory with the current date in `/var/opt/novell/zenworks/backup/nds`. The backup file is saved in this directory.

The log information about the backup operation is saved to `/var/opt/novell/log/zenworks/ndsbackup.log`.

8.1.2 Restoring the ZENworks Object Store

If necessary, you can restore the ZENworks Object Store from a backup you created. You use `zlm_ndsrestore.sh`, located in `/opt/novell/zenworks/sbin`, to restore the Object Store from a backup.

1. Make sure you are logged in as root to the ZENworks Server.
2. Enter the following command on the command prompt:

   `zlm_ndsrestore.sh -U admin.system -F` *`path_to_the_backup_file`*

   Make sure that the -F option includes the backup file's complete path.
3. Enter the password to authenticate to the Object Store.

   This is the password for the ZENworks Administrator account.

   The log information about the restore operation is saved in `/var/opt/novell/log/zenworks/ndsrestore.log`.
4. After the restore is complete, you need to ensure that the Data Store is synchronized with the Object Store. For instructions, see Section 8.4, “Synchronizing the Object Store and Data Store,” on page 73.

8.2 Maintaining the ZENworks Data Store on PostgreSQL

The following sections provide instructions for backing up and restoring the ZENworks Data Store using PostgreSQL:

8.2.1 Understanding Automated Database Maintenance

If you are using a PostgreSQL database, there are some automated maintenance tasks that are performed both daily and monthly.

Daily Maintenance: Once a day, old versions are flagged, allowing the space used by these records to be used for new data; the statistics used by the query engine are updated to achieve the best possible performance. This maintenance runs every day at 2:15 a.m.

Monthly Maintenance: Unlike the daily maintenance, the monthly maintenance actually frees the space used by the old flagged records; this prevents a large disparity between the allocated disk space for the database and the actual space used by the database. Because this is an intensive process, it is scheduled monthly instead of daily. It runs at 3:15 a.m. on the first day of each month.

8.2.2 Backing Up the ZENworks Data Store

This section applies only if you are using the PostgreSQL database for your Data Store.

You can use `zlm_dbbackup.sh` to make a backup of the Data Store. This backup utility is located in `/opt/novell/zenworks/sbin`.

1. Make sure you are logged in as root to a ZENworks Server.
2. Enter the following at the command prompt:

   ```
   zlm_dbbackup.sh
   ```

A directory with the current date is created at `/var/opt/novell/zenworks/backup/db`. The backup file, named *`timestamp`*`-zenworks-backup.tar.gz`, is saved in this directory. For example, if the backup is taken on August 23, 2005 at 11:30 p.m., the following directory and file are created:

```
/var/opt/novell/zenworks/backup/db/2005-08-23/23:30:00-zenworks-
backup.tar.gz
```

Log information about the backup operation is saved in the `/var/opt/novell/log/zenworks/dbbackup.log` file.

The utility does not require any user interaction. If desired, you can schedule the database backup operation as a cron job.

8.2.3 Restoring the ZENworks Data Store

This section applies only if you are using the PostgreSQL database for your Data Store.

If necessary, you can restore the ZENworks Data Store from a backup you created. You use `zlm_dbrestore.sh`, located in `/opt/novell/zenworks/sbin`, to restore the Data Store from a backup.

The restore operation drops the existing database and creates a new one.

To restore the ZENworks Data Store:

1. On all ZENworks Servers, stop the ZENworks Server (novell-zenserver) and the ZENworks Loader (novell-zenloader) by using the following commands:

   ```
   /etc/init.d/novell-zenserver stop/etc/init.d/novell-zenloader
   stop
   ```

   Because all ZENworks Servers access the Data Store, you need to stop these services on all ZENworks Servers in your system.

2 Make sure you are logged in as root to a ZENworks Server.

3 Enter the following at command prompt:

```
zlm_dbrestore.sh -F path_to_the_backup_file
```

Make sure that the -F option includes the backup file's complete path. For example:

```
zlm-dbrestore.sh -F /var/opt/novell/zenworks/backup/db/2005-08-23/23:30:00-zenworks-backup.tar.gz
```

4 If prompted, enter `Y` to stop the ZENworks Server (novell-zenserver).

5 If prompted, enter `Y` to stop the ZENworks Loader (novell-zenloader).

6 When prompted to supply a password to drop the database, enter the Administrator password.

7 When prompted to supply a password to create the new database, enter the Administrator password.

The log information about the restore operation is saved in the file `/var/opt/novell/log/zenworks/dbrestore.log`.

8 After the restore is complete, you need to ensure that the Data Store is synchronized with the Object Store. For instructions, see Section 8.4, “Synchronizing the Object Store and Data Store,” on page 73.

8.2.4 Optimizing the Server Database

To improve performance, use the `zlm-pgsql-vacuum` example script, found in the `/opt/novell/zenworks/bin` directory on the ZENworks Server. When you install a primary ZENworks Server using a local PostgreSQL database, the installation program creates a script that runs on a monthly basis.

The `zlm-pgsql-vacuum` script runs the `vacuumdb` command, which has a significant impact on database performance. For optimal performance, run the script once a week on a lightly loaded server and once a day on a heavily loaded server.

You must log in as root before running the `zlm-pgsql-vacuum` script.

8.2.5 Restarting Novell Zenworks Server Services After Restarting the Database

After restarting the PostgresSQL database on the ZENworks Linux Management Server, the database connections will be restored in approximately 15 minutes. During this time, the ZENworks Control Center and zlman utility might display database-connection errors.

To restore the connections immediately, restart the novell zenworks services by running the following command:

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

8.3 Maintaining the ZENworks Data Store on Oracle

The following sections provide instructions for backing up and recovering a ZENworks Data Store using Oracle:

8.3.1 Backup and Recovery Solutions

Oracle provides two methods of backup and recovery:

- Recovery Manager (RMAN)
- User-managed backup and recovery.

The RMAN utility is automatically installed with the database. It can back up an Oracle8 database and all later versions of an Oracle* database. RMAN uses server sessions on the database to perform backup and recovery. RMAN has its own syntax and is accessible either through a command-line interface or through the Oracle Enterprise Manager GUI. RMAN also provide APIs to interface with third-party media managers.

The advantage of RMAN is that it obtains and stores metadata about its operations in the control file of the database. An independent recovery catalog can be set up, which is a schema that contains metadata imported from the control file, in a separate recovery catalog database. RMAN performs the necessary record keeping for backups, archived logs, and so forth using the metadata, so restoration and recovery is greatly simplified.

An alternative method of performing recovery is to use operating system commands for backups and SQL*Plus for recovery. This method is called User-managed backup and recovery.

RMAN automates backup and recovery, but the User-managed method requires keeping track of all database files and backups. Therefore, because of its robustness and simplified database administration abilities, RMAN is a highly recommended tool for backup operations. The subsequent sections of this document explain the steps for using RMAN to perform a complete database backup and recovery.

8.3.2 Setting Environment Variables

1 Set the following environment variables to the appropriate values before using RMAN:
   - ORACLE_HOME: The directory where the Oracle software is installed. For example:

     ```
     ORACLE_HOME=/home/oracle/product/9ir2
     ```
   - CLASSPATH: The paths to the libraries installed by Oracle. For example:

```
CLASSPATH=$CLASSPATH:/oracle/opt/oracle/product/9ir2/JRE:/
oracle/opt/oracle/product/9ir2/jlib:/oracle/opt/oracle/
product/9ir2/rdbms/jlib:/oracle/opt/oracle/product/9ir2/
network/jlib
```

- PATH: The Oracle installation's bin directory. For example:

  ```
  PATH=$PATH:/home/oracle/product/9ir2/bin
  ```

8.3.3 Connecting to the Database

You can use either of the following methods to connect to the Oracle database being used for the Data Store:

- Start RMAN at the operating system command line without connecting to a database, by issuing the RMAN command without any connection options:

  ```
  $ rmanRMAN> CONNECT TARGET /
  ```

- Start the RMAN executable at the operating system command line while connecting to the database:

  ```
  $ rman TARGET /
  ```

If the database is already mounted or open, RMAN displays output similar to the following:

```
      Recovery Manager: Release 9.2.0.0.0
connected to target database: RMAN (DBID=1237603294)
```

The DBID value displayed is the database identifier for the target database.

If the target database is not started, RMAN shows the following message:

```
      connected to target database (not started)
RMAN>   # the RMAN prompt is displayed
```

8.3.4 Starting the Database

1. Start the database using the following command:

   ```
   RMAN> startup mount
   ```

   This command starts an Oracle instance if it is not already started, and mounts the database but does not open it.

   If the mount was successful, then the following output is displayed:

   ```
         Oracle instance started
   database mounted
   ```

   Otherwise, appropriate error messages are displayed, indicating the causes of failure and suitable solutions.

8.3.5 Backing Up the Database

You can back up the database to the default disk location. The default location is OS-specific. On Linux, the default path where backup files are stored is `$ORACLE_HOME/dbs`.

To make a full backup of the data files, control files, and the current server parameter file to the default device type (which is the disk), use the following backup command at the RMAN prompt:

```
RMAN> BACKUP DATABASE;
```

In the above command, the FORMAT parameter is not specified, so RMAN automatically gives each backup piece a unique name and stores it in the OS-specific default location (`$ORACLE_HOME/dbs` on Linux).

To specify a filename for the backup piece, use the backup command with the FORMAT parameter:

```
RMAN> BACKUP DATABASE FORMAT '/tmp/%U';
```

%U generates a unique filename.

The RMAN backup command creates a backup set, which is a logical object that contains one or more backup pieces.

The backup command output contains the essential information about the backup, as shown in the following example:

```
Starting backup at OCT 12 2001 19:09:48
using target database controlfile instead of recovery catalogal
located channel: ORA_DISK_1
channel ORA_DISK_1: sid=10 devtype=DISK
channel ORA_DISK_1: starting full datafile backupset
channel ORA_DISK_1: specifying datafile(s) in backupset
including current SPFILE in backupset
including current controlfile in backupset
input datafile fno=00001 name=/oracle/oradata/zenworks/system01.dbf
input datafile fno=00002 name=/oracle/oradata/zenworks/undotbs01.dbf
input datafile fno=00003 name=/oracle/oradata/zenworks/cwmlite01.dbf
input datafile fno=00004 name=/oracle/oradata/zenworks/drsys01.dbf
input datafile fno=00005 name=/oracle/oradata/zenworks/example01.dbf
input datafile fno=00006 name=/oracle/oradata/zenworks /indx01.dbf
input datafile fno=00007 name=/oracle/oradata/zenworks/tools01.dbf
input datafile fno=00008 name=/oracle/oradata/zenworks/users01.dbf
channel ORA_DISK_1: starting piece 1 at OCT 12 2001 19:09:56
channel ORA_DISK_1: finished piece 1 at OCT 12 2001 19:10:31
piece handle=/oracle/dbs/lvd6dtk1_1_1 comment=NONE
channel ORA_DISK_1: backup set complete, elapsed time: 00:00:39
Finished backup at OCT 12 2001 19:10:33
```

8.3.6 Recovering the Database

You can recover a restored data file by applying archived redo logs and online redo logs; that is, records of changes made to the database after the backup was taken. The following sections provide instructions for two methods you can use to recover the database:

- “Complete Recovery” on page 72
- “Incomplete Recovery” on page 72

Complete Recovery

Complete recovery involves using redo data or incremental backups combined with a backup of a database, tablespace, or data file, to update it to the most current point in time. This is called a complete recovery because Oracle applies all of the redo changes contained in the archived and online logs to the backup. Typically, a complete media recovery is performed after a media failure damages data files or the control file.

1. Use the following sequence of commands to perform a complete recovery of the database:

   ```
   RMAN> connect target /RMAN> run { 2> startup mount;3> restore
   database;4> recover database;5> alter database open;6> }
   ```

   This results in all data files being restored and then recovered. RMAN applies archive logs as necessary until the recovery is complete.

2. After the restore is complete, you need to ensure that the Data Store is synchronized with the Object Store. For instructions, see Section 8.4, “Synchronizing the Object Store and Data Store,” on page 73.

Incomplete Recovery

RMAN can perform recovery of the whole database to a specified non-current time, SCN, or log sequence number. This type of recovery is called incomplete recovery because it does not completely use all of the available redo logs. Incomplete recovery of the whole database is also called database point-in-time recovery (DBPITR).

You should perform an incomplete recovery of the database in the following situations:

- Media failure destroys some or all of the online redo logs.
- A user error causes data loss, for example, a user inadvertently drops a table.
- You cannot perform a complete recovery because an archived redo log is missing.

To perform an incomplete recovery, restore all data files from backups created prior to the time when a recovery is needed, and then open the database with the RESETLOGS option after recovery completes. The RESETLOGS operation creates a new instance of the database—in other words, a database with a new stream of log sequence numbers starting with log sequence 1.

The database must be closed to perform an incomplete recovery.

To perform an incomplete recovery:

1. Set the time format environment variable:

   ```
   $ NLS_DATE_FORMAT="Mon DD YYYY HH24:MI:SS"
   ```

2. Use the following sequence of steps:

   ```
   $ rman target /RMAN> startup mount;RMAN> run {2> set until time
   "to_date('Mar 16 2005 10:24:00', 'MM DD YYYY HH24:MI:SS')";3>
   restore database;4> recover database;5> }
   ```

   RMAN uses the last backup created before the time mentioned in the set until command to restore the files to their default locations. Then, it uses archived redo logs (if needed) to recover the database.

Two other parameters that can be used with the `set until` command are SCN and log sequence numbers. You obtain SCNs from the alert logs. Find the SCN of an event and recover to a prior SCN. For example:

```
SET UNTIL SCN 1000
```

3 If recovery was successful, open the database and reset the online logs:

```
ALTER DATABASE OPEN RESETLOGS;
```

4 After the restore is complete, you need to ensure that the Data Store is synchronized with the Object Store. For instructions, see Section 8.4, "Synchronizing the Object Store and Data Store," on page 73.

We recommend that you back up the database immediately, preferably with the database mounted (to avoid possible data loss in an open database). Because the database is a new instance, the backups made before the RESETLOGS are not easily usable.

8.3.7 Shutting Down the Database

1 Use the following command to shut down the database:

```
RMAN> SHUTDOWN NORMAL;
```

This command dismounts the database and stops the running Oracle instance.

8.4 Synchronizing the Object Store and Data Store

If you've restored either the Object Store or the Data Store from backup, you need to make sure the two are synchronized. The dbsync.sh utility lets you synchronize the Data Store with the Object store by removing all devices and bundles that are found in the Data Store but not in the Object Store.

1 Make sure you are logged in as root to the ZENworks Server.

2 Enter the following command on the command prompt:

```
dbsync.sh [--force]
```

The utility has one option, --force or -f. The synchronization operation compares the list of devices and bundles in the two databases. When you use the --force option, dbsync.sh logs the GUIDs and names of the devices and bundles found in the Data Store but not in the Object Store. When you use the --force option, dbsync.sh deletes all devices and bundles that are found in the Data Store but not in the Object Store.

3 Enter the password to authenticate to the Object Store.

The GUIDs and names of the devices and bundles that are in the Data Store but not in the Object Store are logged in the `/var/opt/novell/log/zenworks/dbsync-message.log` file.