Orchestration Upgrade Guide

Cloud Manager 2.1

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NetIQ

Contents

About This Guide

This *Upgrade Guide* introduces the process of upgrading NetIQ Cloud Manager Orchestration 3.0 components to Cloud Manager Orchestration 3.1 components. The guide provides an introductory overview of the requirements for upgrading and explains which components are compatible. Further, it provides specific instructions for performing the upgrade. The guide is organized as follows:

- Chapter 1, "Orchestration Components Upgrade Overview," on page 7
- Chapter 2, "Upgrading Cloud Manager Orchestration 3.0 Components to Cloud Manager Orchestration 3.1 Components," on page 11
- Chapter 3, "Compatibility Checking Behavior," on page 29
- Appendix A, "How to Recover from a Failed Orchestration Server Upgrade," on page 33

Audience

The information in this guide is intended for anyone who wants to upgrade and configure NetIQ Cloud Manager software. This user should be an experienced system administrator who has the following:

- Experience in Linux and Windows system operation.
- Familiarity with virtual machine technology and data center operations.

Feedback

We want to hear your comments and suggestions about this manual and the other documentation included with this product. Please use the User Comments feature at the bottom of each page of the online documentation, or go to www.novell.com/documentation/feedback.html (http://www.novell.com/documentation/feedback.html) and enter your comments there.

Additional Documentation

For other NetIQ Cloud Manager 2.1 documentation, see the NetIQ Cloud Manager 2.1 documentation site (http://www.novell.com/documentation/cloudmanager2).

1 Orchestration Components Upgrade Overview

With this release, upgrade logic you implement for existing installations uses internal version numbers that might seem incongruent. NetIQ Cloud Manager Orchestration 3.0 components are upgraded to NetIQ Cloud Manager Orchestration Server 3.1 components, as follows:

- NetIQ Cloud Manager Orchestration Server 3.0 upgrades to NetIQ Cloud Manager Orchestration Server 3.1
- NetIQ Cloud Manager Orchestration Console 3.0 upgrades to NetIQ Cloud Manager Orchestration Console 3.1
- NetIQ Cloud Manager Orchestration Agent 3.0 upgrades to NetIQ Cloud Manager Orchestration Agent 3.1
- NetIQ Cloud Manager VM Client 3.0 upgrades to NetIQ Cloud Manager VM Client 3.1
- NetIQ Cloud Manager VM Builder 3.0 upgrades to NetIQ Cloud Manager VM Builder 3.1
- NetIQ Cloud Manager Monitoring Server 3.0 upgrades to NetIQ Cloud Manager Monitoring Server 3.1
- NetIQ Cloud Manager Monitoring Agent 3.0 upgrades to the NetIQ Cloud Manager Monitoring Agent 3.1

This section explains what you can expect from a NetIQ Cloud Manager Orchestration components 3.0 upgrade to NetIQ Cloud Manager Orchestration 3.1 components.

- Section 1.1, "Basic Functions of the Orchestration Components Upgrade," on page 7
- Section 1.2, "Cloud Manager Orchestration Components That Are Not Upgraded," on page 9

1.1 Basic Functions of the Orchestration Components Upgrade

Before you begin the Orchestration components upgrade process, you need to know the underlying assumptions of the process so that you can better understand how to proceed. The following list details the most important of those assumptions:

- To check the installed Cloud Manager Orchestration components for version number, run the following command on a Linux machine where agent, client, or server components are installed.

  ```
  rpm -qa | grep 'novell-zen'
  ```

  To check version numbers on a Windows machine, open the *Add or Remove Programs* console in Windows and look for the agent or client version number in the programs list.

- The upgrade to Cloud Manager Orchestration 3.1 must be done for all Orchestration Servers, Orchestration Consoles, and all Orchestration Agent components. Running older agents with newer server components or running older Orchestration Consoles and interfaces with newer server components (or vice versa) is not supported.

- Upgrading a prior release of a 32-bit Cloud Manager Orchestration Server installation to a newer 64-bit version of Cloud Manager Orchestration Server is not supported. Similarly, upgrading a prior release of a 64-bit Cloud Manager Orchestration Server installation to a newer 32-bit version of Cloud Manager Orchestration Server is not supported.

- The Orchestration Server must be upgraded before Orchestration Agents are upgraded. The Cloud Manager Orchestration Server operates with older agents running, but newer 3.1agents cannot communicate with the Cloud Manager Orchestration Server 3.1. You can upgrade the agents by selecting the Upgrade option on the Resource Registration dialog in the Cloud Manager 3.1 Orchestration Console. For more information, see "Creating a Resource Account" in the *NetIQ Cloud Manager 2.1 Orchestration Installation Guide*.

- After you upgrade the server components, older versions of the Orchestration Agents, the Orchestration Console, and the Cloud Manager VM Client might not work with the newer server components. The Cloud Manager Orchestration Console identifies the managed nodes that have non-compatible agents. For more information about component compatibility, see Chapter 3, "Compatibility Checking Behavior," on page 29.

- After an upgrade to Cloud Manager Orchestration Server 3.1, some specific provisioning adapter jobs (such as vsphere) and existing VMs will not be available for use, even though their files still reside on the Orchestration Server. These provisioning adapter jobs need to be reconfigured.

- The Cloud Manager 3.0 VM Client is not upgraded; it is replaced entirely by the Cloud Manager 3.1 VM Client. Any previous version should be uninstalled before installing Cloud Manager VM Client 3.1.

- If errors occur during the upgrade process, you can attempt to resolve those errors and run the upgrade process again. For more information about how this recovery works, see Section A.1, "Upgrade Failure Scenarios," on page 33.

- After the Cloud Manager Orchestration Server 3.0 is upgraded to Cloud Manager Orchestration Server 3.1, rolling back to Cloud Manager Orchestration Server 3.0 is not supported.

- Step-by-step information about the events occurring during the upgrade process is recorded in `server.log`, located in the `/var/opt/novell/zenworks/zos/server/logs` directory.

  In some situations, the server log might not exist. You can also check the install log at `/var/opt/novell/novell_zenworks_orch_install.log` for upgrade information.

If you understand what to expect from the upgrade, you are ready to proceed to Chapter 2, "Upgrading Cloud Manager Orchestration 3.0 Components to Cloud Manager Orchestration 3.1 Components," on page 11

1.2 Cloud Manager Orchestration Components That Are Not Upgraded

When you upgrade from Cloud Manager Orchestration 3.0 to Cloud Manager Orchestration 3.1, the core components are not upgraded or redeployed. Instead, the old core components are replaced with new core Orchestration components. If you made any changes to the original core components, those changes are saved, so you can manually re-enter the custom configuration you want after the upgrade.

For example, suppose you have deployed the xen provisioning adapter job and you made custom changes to the `xen` policy file. When the Orchestration Server prepares for an upgrade, it repackages the xen provisioning adapter by creating a `.sar` archive and then stores it in `/Orchestration_instance_directory/snapshot/deployment/core/xen.sar`. This `xen.sar` archive contains the current state of the xen provisioning adapter, including your custom changes.

Later, when the Orchestration Server is upgraded, the new xen provisioning adapter for the new server is deployed, but the changes you made previously are not applied. To apply these changes to the new server, you have two choices:

- Use the Cloud Manager Orchestration Console to manually apply the changes to the new server's core component. (You can review what these changes were by looking at the snapshot files in the `xen.sar` archive.)
- (Conditional) If you are migrating between servers of the same version whose core components have not changed, you can use the `zosadmin redeploy` command to manually redeploy the snapshotted core component.

NOTE: After the upgrade to Cloud Manager Orchestration 3.1 components, some earlier-version provisioning adapter jobs (vsphere) and the VMs provisioned by those jobs are not redeployed for use. Any resource or other objects previously managed by these provisioning adapters are no longer manageable, even though they still exist in the Cloud Manager Orchestration Server.

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2 Upgrading Cloud Manager Orchestration 3.0 Components to Cloud Manager Orchestration 3.1 Components

This section provides information about upgrading from NetIQ Cloud Manager 3.0 Orchestration components to NetIQ Cloud Manager 3.1 Orchestration components. It is important that you upgrade the Orchestration components you have installed in the sequence that follows:

2.1 Upgrading the Orchestration 3.0 Components

The following information lists the upgrade steps in the order that they should be performed.

NOTE: To perform a mass upgrade of NetIQ Cloud Manager 3.0 Orchestration components, we recommend that you use a reputable application software distribution method to upgrade to the newer Orchestration 3.1 versions that ship with Cloud Manager 2.1. For example, you can use Novell ZENworks Linux Management to distribute new agents and clients to Linux servers.

If you choose to use ZENworks Linux Management, you should enable the rollback command. This will let you easily roll back to the prior version of Cloud Manager Orchestration if the upgrade to NetIQ Cloud Manager 3.1 Orchestration components is unsuccessful.

For more information, see Section 2.3, "Running the Upgrade Configuration on an Enterprise Scale," on page 27.

2.1.1 Backing Up the Orchestration Components Prior to Upgrading

As with the installation of any software, it is always a wise precaution to back up a working copy of Cloud Manager 3.0 components before you install Cloud Manager 3.1 Orchestration components. To back up the old version, make a copy of the `/var/opt/novell/zenworks/zos/<component>` directory.

When you want to use the older version of Cloud Manager Orchestration, stop any instance of the Orchestration Server or the Cloud Manager Monitoring server, copy the backup directory you made earlier to its original location, then start the server from this location. Follow this same procedure for the Orchestrate Agents.

2.1.2 Checking the Current Version of Cloud Manager Orchestration Components

Before you upgrade the Cloud Manager Orchestration packages from version 3.0 to the Cloud Manager Orchestration 3.1 packages, you should check which 3.0 packages need to be upgraded and which non-Orchestration packages are included in the product packages.

To do this, run the following command:

```
rpm -qa | grep 'novell-zen'
```

We recommend that you record the results of this command so that you can compare it with the results of a similar task following the upgrade (see).

Orchestration Agents must be the same version as the Orchestration Server in order to facilitate full functionality of the product. When you upgrade an Orchestration Server, you must upgrade its agents.

2.1.3 Snapshotting the Existing Orchestration Server Installation

Before you begin the upgrade process of the Orchestration Server, make sure that all running jobs are complete. If the jobs have not completed on their own, the upgrade processes forcibly cancels them, which is the normal behavior when the server is shut down. The effect on the jobs is that they are terminated abruptly before they finish running. The specific consequence of this termination depends on the job that is terminated.

When you are sure that the jobs are complete, you need to run a specific shutdown command to prepare a snapshot of the current configuration of the server so that a new version of a server can be started with the configuration of the old server.

When an upgrade of server components occurs, all of the current server settings (configuration) and state (model) for the current instance is written to a platform-independent XML encoded snapshot. This snapshot is read in by a newly upgraded server instance to initialize its settings and state to that of the previous server instance.

The snapshot data is read when a newly upgraded server instance is first started, initializing its settings and its state to that of the previous server instance. The snapshot files must exist in `/var/opt/novell/zenworks/zos/server/snapshot`.

Use the following steps to perform the snapshot:

1 Check the running status of the server:

```
/etc/init.d/netiq-cmosserver status
```

If the Orchestration Server is already stopped, you must start it before a snapshot can be created:

```
/etc/init.d/netiq-cmosserver start
```

2 Create a snapshot of the server's current configuration with the following command:

```
/etc/init.d/netiq-cmosserver stop --snapshot
```

You can also create the snapshot by using the Orchestration Console to shut down the server. To do so, select *Server > Shutdown Server* to display the Server Shutdown Confirmation dialog box.

Select *Perform Snapshot of Server State*, then click *Shutdown*.

2.1.4 Upgrading the Orchestration Packages

There are two methods for upgrading Orchestration Server packages.

- If you want to use a graphical user interface (GUI) see "Upgrading Orchestration Packages Using YaST2" on page 13.
- If you want to use the command line to upgrade the packages, see "Upgrading Orchestration Packages Using the rug Command (SLES 10x Machines Only)" on page 17 or "Upgrading Orchestration Packages Using the zypper Command (SLES 11x Machines Only)" on page 18.
- If you use ZENworks Linux Management tools to upgrade the packages, we recommend that you use the same tools to clean up the environment, see the ZENworks Linux Management documentation Web site (http://www.novell.com/documentation/zlm72/) for more information.

Upgrading Orchestration Packages Using YaST2

Use the following procedure if you want to use YaST, a graphical user interface, to upgrade the Cloud Manager Orchestration packages. If you want to use the command line to upgrade, see "Upgrading Orchestration Packages Using the rug Command (SLES 10x Machines Only)" on page 17 or "Upgrading Orchestration Packages Using the zypper Command (SLES 11x Machines Only)" on page 18.

1 Download the appropriate Cloud Manager 2.1 ISO (32-bit or 64-bit), then prepare it for installation:

TIP: The NetIQ Cloud Manager 2.1 product ISO includes the packages for Cloud Manager Orchestration components, which carry the 3.0 version.

1a (Optional) Burn a DVD of the ISO image and load it into the DVD drive of the target machine.

1b (Optional) Copy the ISO image to the local file system.

To mount the ISO image file on a particular machine,

1b1 Log in to the target server as `root`.

1b2 Open YaST2.

1b3 In the YaST Control Center, click *Software*, then click *Installation Source* to display the Configured Software Catalogs view.

1b4 In the Configured Software Catalogs view, click *Add* to open the Media Type view.

1b5 In the Media Type view, select *Local Directory*, then click *Next* to open the Local Directory or ISO view.

1b6 In the *Path to Directory or ISO Image* field of the Local Directory or ISO view, select *ISO Image*, browse to the path where you copied the ISO image file, then click *Next*.

1c (Optional) Mount the ISO image file on the machine where Cloud Manager Orchestration is to be installed (the "target" machine).

If you want to mount the ISO image file on a particular machine,

1c1 Log in to the target server as root.

1c2 From the command line of the target machine, enter the following commands

```
mkdir /mnt/iso
```

```
mount -o loop NetIO_Cloud_Manager-2.1.0-SLE11-<architecture>.iso /mnt/iso
```

(where you substitute the name of the ISO (32-bit or 64-bit) that you are using).

1c3 Open YaST2.

1c4 In the YaST Control Center, click *Software*, then click *Installation Source* to display the Configured Software Catalogs view.

1c5 In the Configured Software Catalogs view, click *Add* to open the Media Type view.

1c6 In the Media Type view, select *Local Directory*, then click *Next* to open the Local Directory or ISO view.

1c7 In the *Path to Directory or ISO Image* field of the Local Directory or ISO view, enter the mount point:

```
/mnt/iso
```

1d (Optional) If you are installing the ISO image to a large network, extract the product files from the ISO image to a Web server / FTP server that can be accessed by the target machine without the need for authentication or anonymous login.

To add an `.iso` file or Web URL as an installation source in YaST,

1d1 Log in to the target SLES server as root, then open YaST2.

1d2 In the YaST Control Center, click *Software*, then click *Installation Source* to display the Configured Software Catalogs view.

1d3 In the Configured Software Catalogs view, then click *Add* to open the Media Type view.

1d4 In the Media Type view, select an installation media type.

1d4a (Example) If you extracted the ISO image to a Web Server or FTP Server, select *HTTP* (or *FTP*), then click *Next* to open the Server and Directory view.

1d4b In the *Server Name* field of the Server and Directory view, enter the Server Name (IP Address or DNS Name), in the *Directory on Server Field*, enter the directory name where you extracted the ISO, then click *Next*.

2 Upgrade Orchestration Server software packages to Orchestration Server software packages:

2a Log in to the target SLES server as `root`, then open YaST2.

2b In YaST2, select *Software > Software Management*, select the method to open the product ISO on your machine, click *Next*, then follow the procedures to mount the ISO.

2c From the License Agreement page, select the option to agree to the license terms, then click *Next*.

2d In YaST2, open the *Filter* drop-down list, select *Patterns* or *Install Sources* to display the Patterns and Packages view, then click *Details* to close the information pane and open the Package frame.

2e In the *Patterns* frame (left-hand side of the view), select a Cloud Manager Orchestration pattern already installed on this server. The *Package* frame lists the packages either installed or not yet installed for this pattern.

Component packages already installed to the server are checked.

NOTE: Package names for this release of Cloud Manager Orchestration continue to use "novell-zenworks" in the prefix or "Cloud Manager Orchestration" in the summary description.

2f Right-click on any of the installed package names, click *All in This List > Update if newer version available*, then click *Accept* to install the upgraded packages.

2g Repeat Step 2e and Step 2f for each installed pattern you are upgrading.

After the RPMs are upgraded, scripts are run that do the following:

- Back up the existing server instance directory
- Upgrade the RPMs for the selected Orchestration patterns

3 Configure the Cloud Manager Orchestration Server. You can use one of two information gathering methods to perform the configuration:

- Run the Orchestration Server product configuration script. If you use this method, continue with the steps in "Configuring the Upgraded Packages" on page 19.
- Run the GUI Configuration Wizard. If you use this method, skip to the steps in "Configuring the Upgraded Packages" on page 19.

Upgrading Orchestration Packages Using YaST2

Use the following procedure if you want to use YaST, a graphical user interface, to upgrade the Cloud Manager Orchestration packages. If you want to use the command line to upgrade, see "Upgrading Orchestration Packages Using the rug Command (SLES 10x Machines Only)" on page 17 or "Upgrading Orchestration Packages Using the zypper Command (SLES 11x Machines Only)" on page 18.

1 Download the appropriate Cloud Manager 2.1 ISO (32-bit or 64-bit), then prepare it for installation:

TIP: The NetIQ Cloud Manager 2.1 product ISO includes the packages for Cloud Manager Orchestration components, which carry the 3.0 version.

1a (Optional) Burn a DVD of the ISO image and load it into the DVD drive of the target machine.

1b (Optional) Copy the ISO image to the local file system.

To mount the ISO image file on a particular machine,

1b1 Log in to the target server as `root`.

1b2 Open YaST2.

1b3 In the YaST Control Center, click *Software*, then click *Installation Source* to display the Configured Software Catalogs view.

1b4 In the Configured Software Catalogs view, click *Add* to open the Media Type view.

1b5 In the Media Type view, select *Local Directory*, then click *Next* to open the Local Directory or ISO view.

1b6 In the *Path to Directory or ISO Image* field of the Local Directory or ISO view, select *ISO Image*, browse to the path where you copied the ISO image file, then click *Next*.

1c (Optional) Mount the ISO image file on the machine where Cloud Manager Orchestration is to be installed (the "target" machine).

If you want to mount the ISO image file on a particular machine,

1c1 Log in to the target server as root.

1c2 From the command line of the target machine, enter the following commands

```
mkdir /mnt/iso
```

```
mount -o loop NetIO_Cloud_Manager-2.1.0-SLE11-<architecture>.iso /mnt/iso
```

(where you substitute the name of the ISO (32-bit or 64-bit) that you are using).

1c3 Open YaST2.

1c4 In the YaST Control Center, click *Software*, then click *Installation Source* to display the Configured Software Catalogs view.

1c5 In the Configured Software Catalogs view, click *Add* to open the Media Type view.

1c6 In the Media Type view, select *Local Directory*, then click *Next* to open the Local Directory or ISO view.

1c7 In the *Path to Directory or ISO Image* field of the Local Directory or ISO view, enter the mount point:

```
/mnt/iso
```

1d (Optional) If you are installing the ISO image to a large network, extract the product files from the ISO image to a Web server / FTP server that can be accessed by the target machine without the need for authentication or anonymous login.

To add an `.iso` file or Web URL as an installation source in YaST,

1d1 Log in to the target SLES server as root, then open YaST2.

1d2 In the YaST Control Center, click *Software*, then click *Installation Source* to display the Configured Software Catalogs view.

1d3 In the Configured Software Catalogs view, then click *Add* to open the Media Type view.

1d4 In the Media Type view, select an installation media type.

1d4a (Example) If you extracted the ISO image to a Web Server or FTP Server, select *HTTP* (or *FTP*), then click *Next* to open the Server and Directory view.

1d4b In the *Server Name* field of the Server and Directory view, enter the Server Name (IP Address or DNS Name), in the *Directory on Server Field*, enter the directory name where you extracted the ISO, then click *Next*.

2 Upgrade Orchestration Server software packages to Orchestration Server software packages:

    2a Log in to the target SLES server as `root`, then open YaST2.

    2b In YaST2, select *Software > Software Management*, select the method to open the product ISO on your machine, click *Next*, then follow the procedures to mount the ISO.

    2c From the License Agreement page, select the option to agree to the license terms, then click *Next*.

    2d In YaST2, open the *Filter* drop-down list, select *Patterns* or *Install Sources* to display the Patterns and Packages view, then click *Details* to close the information pane and open the Package frame.

    2e In the *Patterns* frame (left-hand side of the view), select a Cloud Manager Orchestration pattern already installed on this server. The *Package* frame lists the packages either installed or not yet installed for this pattern.

       Component packages already installed to the server are checked.

       NOTE: Package names for this release of Cloud Manager Orchestration continue to use "novell-zenworks" in the prefix or "Cloud Manager Orchestration" in the summary description.

    2f Right-click on any of the installed package names, click *All in This List > Update if newer version available*, then click *Accept* to install the upgraded packages.

    2g Repeat Step 2e and Step 2f for each installed pattern you are upgrading.

       After the RPMs are upgraded, scripts are run that do the following:

           ◆ Back up the existing server instance directory

           ◆ Upgrade the RPMs for the selected Orchestration patterns

3 Configure the Cloud Manager Orchestration Server. You can use one of two information gathering methods to perform the configuration:

    ◆ Run the Orchestration Server product configuration script. If you use this method, continue with the steps in "Configuring the Upgraded Packages" on page 19.

    ◆ Run the GUI Configuration Wizard. If you use this method, skip to the steps in "Configuring the Upgraded Packages" on page 19.

Upgrading Orchestration Packages Using the rug Command (SLES 10*x* Machines Only)

Use the following procedure if you want to use rug commands to upgrade the Cloud Manager Orchestration packages on SLES 10*x* machines. If you want to use the GUI Configuration Wizard to upgrade, see "Configuring an Upgraded Orchestration Agent Installed on the Server" on page 23.

1 Download the appropriate Cloud Manager 2.1 ISO (32-bit or 64-bit, SLES 10 only), then prepare it for installation:

    ◆ (Optional) Burn a DVD of the ISO image, mount the DVD, then extract the contents of the `.iso` folder to the local file system of the server.

    ◆ (Optional) Extract the contents of the `.iso` folder to the local file system of the server.

2 At the command line, change to the directory where the Cloud Manager 2.1 `.iso` folder was extracted, then run the commands to upgrade Cloud Manager Orchestration components:

    2a Run the following command:

```
rug sa -t zypp "http://<ip_address_of_local_server>/
<directory_location_of_extracted_iso_files>" $SERVICENAME
```

> **Alternative:** If you have chosen not to extract the files and you want to use the .iso image to upgrade, use the following command:

```
rug sa -t zypp "iso:///?iso=$ISO_FILE_NAME&url=dir:///$PATH_TO_ISO/" $SERVICENAME
```

> For example, for the ISO located at /root/Desktop/NetIQ_Cloud_Manager-2.1.0-SLE10.x86_64.iso, you could use this command:

> ```
> rug sa -t zypp "iso:///?iso=/root/Desktop/NetIQ_Cloud_Manager-2.1.0-SLE10.x86_64.iso&url=dir:///root/Desktop/" netiq
> ```

> **2b** Run the following command:

> ```
> rug sub netiq
> ```

> **2c** Run the following command:

> ```
> rug up -y
> ```

Upgrading Orchestration Packages Using the zypper Command (SLES 11*x* Machines Only)

Use the following procedure if you want to use rug commands to upgrade the Cloud Manager Orchestration packages on SLES 10*x* machines. If you want to use the GUI Configuration Wizard to upgrade, see "Configuring an Upgraded Orchestration Agent Installed on the Server" on page 23.

For more zypper commands, see "Other Useful zypper Commands for Upgrade" on page 19.

1 Download the appropriate Cloud Manager 2.1 ISO (32-bit or 64-bit, SLES 10 only), then prepare it for installation:

   ◆ (Optional) Burn a DVD of the ISO image, mount the DVD, then extract the contents of the .iso folder to the local file system of the server.

   ◆ (Optional) Extract the contents of the .iso folder to the local file system of the server.

2 At the command line, change to the directory where the Cloud Manager .iso folder was extracted, then run the commands to upgrade Cloud Manager 2.0 to Cloud Manager 2.1:

> **2a** Run the following command:

```
zypper sa -t yast2 "http://<ip_address_of_local_server>/
<directory_location_of_iso_files>"
```

> **Alternative 1:** If you have chosen not to extract the files and you want to use the .iso image to upgrade, use the following command:

```
zypper sa -t yast2 "iso:/?iso=$PATH_TO_ISO/$ISO_NAME" $SERVICENAME
```

> or

```
zypper sa -t yast2 "iso:/?iso=$PATH_TO_ISO/$ISO_NAME" "$REPO_ALIAS"
```

> For example, for the ISO located at /root/Desktop/NetIQ_Cloud_Manager-2.1.0-SLE11.x86_64.iso, you could use this command:

> ```
> zypper sa -t yast2 "iso:/?iso=/root/Desktop/NetIQ_Cloud_Manager-2.1.0-SLE11.x86_64.iso" "CMOS_Server"
> ```

> **Alternative 2:** If you are using an ftp server and you want to use the .iso image to upgrade, use the following command:

```
zypper sa -t yast2 "ftp://<ip_address_of_local _server>/
<directory_location_of_iso_files>"
```

    2b Run the following command:

```
zypper ref $REPO_ALIAS
```

    2c Run the following command:

```
zypper dup -r $REPO_ALIAS
```

Other Useful zypper Commands for Upgrade

You might find the other zypper commands listed in the table below to be useful during the server upgrade process.

Table 2-1   *zypper Commands That Might Be Useful During Server Upgrade*

Command	Description
zypper refresh $REPO_ALIAS	Builds metadata and cache.
zypper pa $REPO_ALIAS	Displays all packages in the repository.

2.1.5 Checking the Upgraded Version of the Orchestration Components

After you upgrade the Cloud Manager Orchestration 3.0 packages to Cloud Manager Orchestration 3.1 components, you should check the upgraded software packages to confirm that all of the earlier versions of the product components are now updated and which of the non-Novell packages have been updated.

To do this, change to the directory where the current version of Cloud Manager Orchestration components were extracted, then run the following command:

```
rpm -qa | grep 'novell-zen'
```

Compare the results of this command with the results you had with the check you performed before the upgrade (see Section 2.1.2, "Checking the Current Version of Cloud Manager Orchestration Components," on page 12). If some of the components have not been upgraded from the earlier version, the incompatibility between the components could cause unexpected behavior.

2.1.6 Configuring the Upgraded Packages

This section discusses the basic upgrade configuration of all NetIQ Cloud Manager Orchestration components after each is upgraded. Component configuration is done either with a text-based configuration tool or with a GUI Wizard configuration tool.

The text-based configuration script detects which RPM patterns are installed, but the GUI Configuration Wizard requires that you specify the components to be configured, whether the patterns have been installed on the server or not.

Both the text-based tool and the GUI Wizard tool produce a configuration file (/etc/opt/novell/ novell_zenworks_orch_install.conf).

The section includes the following information:

Some Considerations When Configuring with the GUI Wizard

If you have only a keyboard to navigate through the pages of the GUI Configuration Wizard, use the Tab key to shift the focus to a control you want to use (for example, a *Next* button), then press the Spacebar to activate this control.

When you have finished answering the configuration questions in the wizard, the Cloud Manager Orchestration Configuration Summary page displays. Although this page of the wizard lets you navigate by using the Tab key and the Spacebar, you need to use the Ctrl+Tab combination to navigate past the summary list. Click *Back* if you accidentally enter the summary list, and re-enter the page to navigate to the control buttons.

By default, the *Configure now* check box on the page is selected. If you accept this default, the wizard starts the Orchestration Server and applies the configuration settings. If you deselect the check box, the wizard writes out the configuration file to /etc/opt/novell/ novell_zenworks_orch_install.conf without starting the Orchestration Server or applying the configuration settings. For more information, see "Using the GUI Configuration Wizard to Run a Delayed Upgrade of the Orchestration Server" on page 22.

Configuring the Upgraded Orchestration Server

Because so much of Cloud Manager's operations depends on the Orchestration Server, we recommend that you configure it before you configure any other Cloud Manager component.

1 Make sure you are ready with the information that you will be prompted for during the configuration procedure (GUI or text-based):

Server Upgrade Configuration Requirement	Explanation and Action
Configuration Selection	This section discusses upgrade, so specify u (for upgrade) in the configuration script, or select the *Upgrade* check box in the wizard.
Configuration Type	Your answer here determines whether this configuration takes place on a standard installation or on a High Availability installation. This section discusses standard installation, so specify s (for standard) or press Enter to accept the default. For more information about High Availability configuration, see the *NetIQ Cloud Manager 2.1 Orchestration Server High Availability Configuration Guide*.
Administrator User	Enter the name of the Cloud Manager Orchestration Server administrator you used in the previous installation (for Cloud Manager 2.0/Orchestration Server 3.0). **IMPORTANT**: Do not change the administrator name from the name you used in the original installation.

Server Upgrade Configuration Requirement	Explanation and Action
Administrator Password	Enter the password of the Cloud Manager Orchestration Server administrator you used in the previous installation (for Cloud Manager 2.0/Orchestration Server 3.0). **IMPORTANT**: Do not change the administrator password from the password you used in the original installation.
Confirm Password / Retype Password	Re-enter the administrator password.
Automatic Agent Upgrade	If there are existing Orchestration Agents configured to use this server, they will normally be placed on a pending upgrade list to be approved for automatic upgrade by the administrator. You can enable automatic upgrade of old agents to avoid this approval step if you enter `yes` or check the *Automatic Agent Upgrade* check box (wizard). If you choose to automatically upgrade the agents later, you can do so in the Orchestration Console. For more information, see "Resources Panel" in the "Server Admin Object" section of the *NetIQ Cloud Manager 2.1 Orchestration Console Reference*.
Upgrade Auditing Database	If you previously enabled auditing, you need to upgrade the database schema. If you use a PostgreSQL database, you can use the configuration utility to upgrade it. If you use a different RDBMS, you need configure it separately. If you select the *Upgrade Audit Database* check box (wizard), or if you enter `yes` for this prompt, you must specify ◆ the JDBC URL you used previously to connect to the audit database. Do not include a database name after the trailing forward slash (/). ◆ the database name you used previously to create the audit database. ◆ the user name for the PostgreSQL audit database your created previously for logging in. ◆ the password for the PostgreSQL audit database you created previously for logging in. You are required to verify this password. If you want to manually configure the database after upgrade, see Section 2.1.7, "Manually Configuring the Remote Audit Database after Orchestration Components Are Upgraded," on page 23.
User Portal	This utility is no longer supported. Select the default and continue.
Admin Info Port	You need to verify the port you previously configured for access to the Administration Information page. Ensure that you specify the port used previously, not necessarily the default.
Orchestration Agent Port	You need to verify the port you previously configured for communication between the Orchestration Server and the Orchestration Agent. Ensure that you specify the port used previously, not necessarily the default.

Server Upgrade Configuration Requirement	Explanation and Action
Path to License File	As you upgrade, you need a license key (90-day evaluation license or a full license) to use this product. Depending on your arrangements with NetIQ, you either received a new key or you were given permission to reuse your old key. Specify the path to the network location of either your existing key or the new key that was issued to you.

2 At the computer where you installed the upgraded Cloud Manager Orchestration Server pattern, run the Cloud Manager Orchestration configuration utility of your choice:

`/opt/novell/zenworks/orch/bin/config`

or

`/opt/novell/zenworks/orch/bin/guiconfig`

3 Follow the prompts to complete the configuration.

Using the GUI Configuration Wizard to Run a Delayed Upgrade of the Orchestration Server

If you want to delay the upgrade of an Orchestration Server, you can capture the configuration parameters in the Cloud Manager Orchestration GUI Configuration Wizard and apply them at your discretion.

To run the delayed configuration

1 Run the script for the Orchestrate Configuration Wizard as follows:

`/opt/netiq/ncm/orch/bin/guiconfig`

2 Configure the parameters of the server upgrade as described in "Configuring the Upgraded Orchestration Server" on page 20.

3 When you are ready to commit the configuration, deselect the *Configure now* check box so that the wizard can write the configuration file to `/etc/opt/netiq/netiq_ncm_orch_install.conf` without starting Orchestrate or applying the configuration settings.

NOTE: You can use this `.conf` file to start the Orchestrate Agent and apply the settings either manually or with an installation script. Use the following command to run the configuration:

`/opt/netiq/ncm/orch/bin/config -rs`

4 Click *Next* to display a message asking whether you want to overwrite the `.conf` response file.

5 To upgrade, you need to overwrite the existing file. When prompted, click *Yes* to overwrite the file and display the configuration page.

6 Click *Next* to begin the upgrade configuration for the Cloud Manager Orchestration Server 3.0 to the Orchestration Server 3.1.

Configuring the Upgraded Monitoring Server

The configuration does not require any input from you as you upgrade the Cloud Manager Monitoring Server.

1 At the computer where you installed the Cloud Manager Monitoring Server pattern, run the configuration utility of your choice:

```
/opt/novell/zenworks/orch/bin/config
```

or

```
/opt/novell/zenworks/orch/bin/guiconfig
```

2 Select the Monitoring Server as the component that you want to upgrade.

3 Follow the prompts to complete the configuration of the Monitoring Server.

Configuring an Upgraded Orchestration Agent Installed on the Server

The configuration does not require any input from you if you are upgrading Cloud Manager Orchestration Agent on the same machine where the Orchestration Server is installed.

1 At the computer where you installed the Cloud Manager Orchestration Agent pattern, run the configuration utility of your choice:

```
/opt/novell/zenworks/orch/bin/config
```

or

```
/opt/novell/zenworks/orch/bin/guiconfig
```

2 Select the Orchestration Agent as the component that you want to upgrade.

3 Follow the prompts to complete the configuration of the Orchestration Agent.

2.1.7 Manually Configuring the Remote Audit Database after Orchestration Components Are Upgraded

When you have upgraded the Orchestration Server, you can manually configure the existing audit database using the `audit_db_upgrade.sql` script. This script creates an `actions` table in the database. Use the following procedure to manually upgrade the audit database:

1 On the Orchestration Server host machine, use your favorite editor to edit the script `/opt/novell/zenworks/zos/server/conf/audit_db_upgrade.sql`.

  1a Replace the `${DB_NAME}` variable with the PostgreSQL database name (for example, `zos_db`).

  1b Replace the `${DB_USER}` variable with the PostgreSQL schema owner name (for example, `zos`).

2 Use the following commands to run the modified script as the PostgreSQL database administrator for the remote database:

```
su - postgres
```

```
psql -h <psql-server-addr> -d postgres -U postgres -f audit_db_upgrade.sql
```
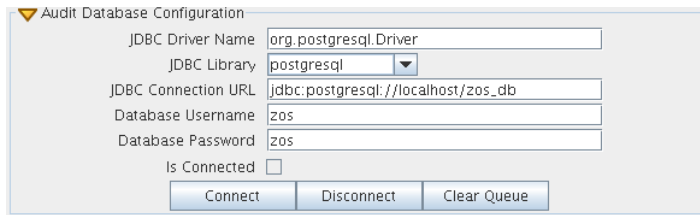
3 Use the following command to log into PostgreSQL, using the database name and schema owner substituted in Step 1 above:

```
su - postgres
```

```
psql -h <psql-server-addr> -d zos_db -U zos -f audit_db_upgrade.sql
```

4 Confirm that the database username and password match the values used when creating the schema owner database user in "Configuring the Orchestration Server" in the *NetIQ Cloud Manager 2.1 Orchestration Installation Guide*. In this example, the username is zos and the password is zos.

5 Confirm that the database username and password match the values you replaced in the variables of the .sql script. In this example, the username is zos and the password is zos.

6 Click *Connect*.

The *Is Connected* check box is selected: the Orchestration Server is connected to the database so that any queued data and subsequent job, user, and resource events are written there.

2.1.8 Running Discovery on VM Hosts and Images

Because some new facts have been added to Orchestration VMs for Cloud Manager Orchestration Server 3.1, you need to re-discover all of the VMs in the grid so that the new facts are added to the VMs.

To do this from the Orchestration Console *Tools* menu,

1 Click *Provision > Discover VM Hosts and Repositories*, select the provisioning adapter you want to run for the discovery, then click *OK*.

2 Click *Provision > Discover VM Images*, select the provisioning adapter you want to run for the discovery, then click *OK*.

2.2   Alternate Methods for Upgrading Older Agents and Clients

It is likely that you have installed 3.0 Agents and Clients on machines other than where the Cloud Manager Orchestration 3.0 components were installed. This section includes information that helps you to walk through the upgrade of those agents and clients.

NOTE: To perform a mass upgrade of Cloud Manager Orchestration 3.0 Agents, we recommend that you use a reputable application software distribution method to upgrade to the newer versions that ship with Cloud Manager 2.1. For example, you can use ZENworks Linux Management to distribute new agents and clients to Linux servers.

For more information, see Section 2.3, "Running the Upgrade Configuration on an Enterprise Scale," on page 27.

2.2.1 Automatically Upgrading the Orchestration Agent from the Cloud Manager Orchestration Console

The Cloud Manager Orchestration Console includes a feature that lets you automatically upgrade older Orchestration Agents on resources (virtual or physical) that connect to the Orchestration Server.

If your grid includes older (that is, older than Cloud Manager version 2.1) Resource objects, their Orchestration Agents cannot connect to a recently upgraded Orchestration Server. This is shown when the Resource Registration icon in the Resource Monitor of the Orchestration Console displays a "flag up" 🚩 status.

When you click the Resource Registration icon, the Resource Registration Monitor dialog box displays all of the older resource objects attempting to connect. The *Upgrade* option is also available in the dialog box. You can select this option, along with all of the older agents that you want to upgrade.

When you use this automatic upgrade method, only the agent rpm (that is, the `zw_zos_agent` pattern) is upgraded, but other Orchestration components that might be present on the resource machine are not upgraded. These include the following components (listed by pattern names):

- `zw_zos_clients`
- `zw_mon_agent`
- `zw_vm_builder`
- `cabextract` (on Xen hosts where you plan to use Windows sysprep)

To separately upgrade these components, you need to use the YaST upgrade from the product ISO (see "Upgrading the Orchestration Packages" on page 13) the rug upgrade method (for each component on a SLES 10x Server), or the zypper upgrade method, both of which are executed from the bash prompt. For more information, see "Upgrading Orchestration Packages Using the rug Command (SLES 10x Machines Only)" on page 17 and "Upgrading Orchestration Packages Using the zypper Command (SLES 11x Machines Only)" on page 18.

2.2.2 Using the ISO to Upgrade the Orchestration Agent on Red Hat Enterprise Linux 5 Machines

Use the following procedure if you want to use the Add-on method to upgrade the Cloud Manager 3.0 Orchestration Console to a Cloud Manager 3.1 Orchestration Console running on a Red Hat Enterprise Linux (RHEL) 5 machine.

1 Shut down the old Orchestration Console on the machine where you intend to install the new Cloud Manager 3.1 Orchestration Console.

2 Download the appropriate Cloud Manager 2.1 ISO (32-bit or 64-bit) to an accessible network location.

3 Mount the Cloud Manager ISO as a loopback device as in the following example:

```
mount -o loop netIQ_Cloud_Manager-2.1.0-SLE11.x86_64.iso /mnt
```

This mounts the ISO in the `/mnt` folder.

4 Navigate to the directory path where the RHEL 5 packages reside. For example:

```
cd /mnt/RHEL5
```

There are five packages in the `/RHEL5` directory:

```
netiq-ncm-monitor-gmond-3.1.4-50.x86_64.rpm
netiq-ncm-orch-config-2.1.0-141.noarch.rpm
netiq-ncm-orch-config-gui-2.1.0-57039.noarch.rpm
netiq-ncm-cmos-agent-2.1.0-57039.i586.rpm
netiq-ncm-cmos-java-1.6.0_sun_update14-1.x86_64.rpm
```

5 Use the `rpm` command to install the packages:

```
rpm -Uvh *.rpm
```

If you encounter an issue regarding missing dependencies, you can use the `up2date` command to download and install those. For example, if you were missing `libcaplso` or `libcap.so.1`, you would run the following:

```
up2date --solvedeps=libcp.so,libcap.so.1
```

6 (Optional) Increase the heap size that the JVM handles to enable the console to manage a large number of objects.

   6a Open the `cmoc` bash shell script at `/opt/netiq/ncm/cmos/server/bin`.

   6b Inside the script, find the following line where the JVM parameters are defined:

```
JVMARGS="-Xmx256m -Xms256m -Xmn64m -XX:NewSize=64m -XX:MaxNewSize=64m"
```

    The `-Xmx` argument specifies the maximum heap size for the JVM. Increasing the heap size prevents a JVM out of memory condition.

   6c Change the value in the `-Xmx` argument from 256MB to 512MB.

   6d Save the script.

NOTE: Upgraded agent and client software does not require you to execute the configuration script on RHEL 5 machines.

2.2.3 Using the ISO to Upgrade the Old Orchestration Agent or the Orchestration Clients on Windows Machines

The Orchestration Agent and the Orchestration Console are supported on Windows XP, Windows Vista and Windows 7 desktops. To upgrade, install the new Cloud Manager 2.1 release of the Orchestration Agent or the Orchestration Console.

IMPORTANT: When upgrading the Cloud Manager Orchestration Console on a Windows machine, you must uninstall the prior version first, then install the new version of Cloud Manager Orchestration Console.

Use the following steps to download the Orchestration component you want to install:

1 Download the appropriate Cloud Manager ISO (32-bit or 64-bit) to an accessible network location.

2 Create a DVD from the ISO or use a tool that will mount the ISO.

3 Navigate to the directory path where the Windows packages (Windows XP, Windows Vista, or Windows 7) reside.

4 Double-click the appropriate file (`.exe`) to launch an installation and configuration wizard for the Orchestration Console.

2.2.4 Using the Administrator Information Page to Upgrade the Agents and Clients

The Administrator Information Page includes installers for the Cloud Manager Orchestration Agents and Clients for Windows and various Linux/UNIX machines (see "Alternative Installation Methods for the Orchestration Agent" in the *NetIQ Cloud Manager 2.1 Orchestration Installation Guide*). The page has no facility for upgrading an agent or client.

To upgrade, we recommend that you use the methods native to the OS to install the new Cloud Manager release of the Orchestration Agent or Orchestration Console.

IMPORTANT: When upgrading the Cloud Manager Orchestration Console on a Windows machine, you must uninstall the prior version first, then install the new version.

2.3 Running the Upgrade Configuration on an Enterprise Scale

If you have a number of 3.0 Server or Agent components to upgrade in an enterprise environment, you might want to follow these general steps to accomplish the upgrade.

1 Use a reputable configuration management tool to distribute and install the upgrade software. Examples include ZENworks Linux Management, ZENworks Configuration Management, and the Red Hat Network.

2 Configure the upgraded components on a base machine, then, use the configuration software to distribute the respective `.conf` files to the servers or nodes being upgraded.

2.4 Upgrading a Cloud Manager 3.0 High Availability Configuration

This section provides the steps you need to follow to upgrade a Cloud Manager 3.0 environment to a Cloud Manager 3.1 high availability configuration. Use the following steps for the upgrade:

1 Using the high availability manager (such as Heartbeat 2), shut down the Cloud Manager Orchestration service.

2 Manually bind the cluster IP address using the following command:

```
ip addr add {CIDR_IP_ADDRESS} dev {Ethernet Device}
```

3 Manually start a Cloud Manager Orchestration Server instance on the first node in the cluster (this should be a node that does not include high-availability components) using the following command:

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

4 Manually stop the instance with snapshot. See Section 2.1.3, "Snapshotting the Existing Orchestration Server Installation," on page 12 for more information.

5 Manually unbind the IP address using the following command:

```
ip addr del {CIDR_IP_ADDRESS} dev {Ethernet Device}
```

6 Upgrade the RPMs on the first node (the one you started in Step 3) of the cluster. For more information, see Section 2.1.4, "Upgrading the Orchestration Packages," on page 13.

7 Run the configuration script. For more information, see "Configuring the Upgraded Packages" on page 19.

8 Manually bind the IP address using the following command:

```
ip addr add {CIDR_IP_ADDRESS} dev {Ethernet Device}
```

9 Start the Orchestration Server instance on the upgraded node (see Step 3 and Step 6).

10 Verify the upgraded server state by attempting to connect to the server (with the Orchestration Console, for instance).

11 Manually stop the following services using the `/etc/init.d/<service_name> stop` command:

   - novell-zosserver
   - apache2
   - novell-gmond
   - novell-gmetad

where `<service_name>` is `novell-zosserver`, `novell-gmond`, `novell-gmetad`, or `apache2`, and `stop` is the action you want to perform.

IMPORTANT: Do not snapshot to stop the server instance.

---

12 Manually unbind IP address using the following command:

```
ip addr del {CIDR_IP_ADDRESS} dev {Ethernet Device}
```

13 Upgrade the RPMs on the second node of the cluster.

14 Using the high availability manager (see Step 1), start the Orchestration Server instance.

3 Compatibility Checking Behavior

Managed agents (nodes) report version incompatibility in the agent log file. On the server, the attempted connection by an incompatible agent is detected, and the agent is listed on the Cloud Manager Orchestration Console as incompatible and in need of either an upgrade or downgrade to the correct version. Also, an incompatible agent connection attempt causes the node manager on the server to raise a NEED_UPGRADE event that can be caught to provide custom handling of agents in need of upgrade.

3.1 Cloud Manager VM Client Behavior When Detecting Incompatibility

The information in this section lists the known behaviors exhibited when the NetIQ Cloud Manager 3.0 VM Client is upgraded to Cloud Manager 3.1 VM Client when other Orchestration components are not upgraded.

During upgrade, if the Orchestration Monitoring Server is newer or older than the installed VM Client, it is not necessarily incompatible with the VM Client, because the VM Client does not detect or display the version of the Monitoring Server, and the Monitoring Server uses Internet browser capabilities to display its information in HTML format, so monitored information is still available.

3.2 Orchestration Console Behavior When Detecting Incompatibility

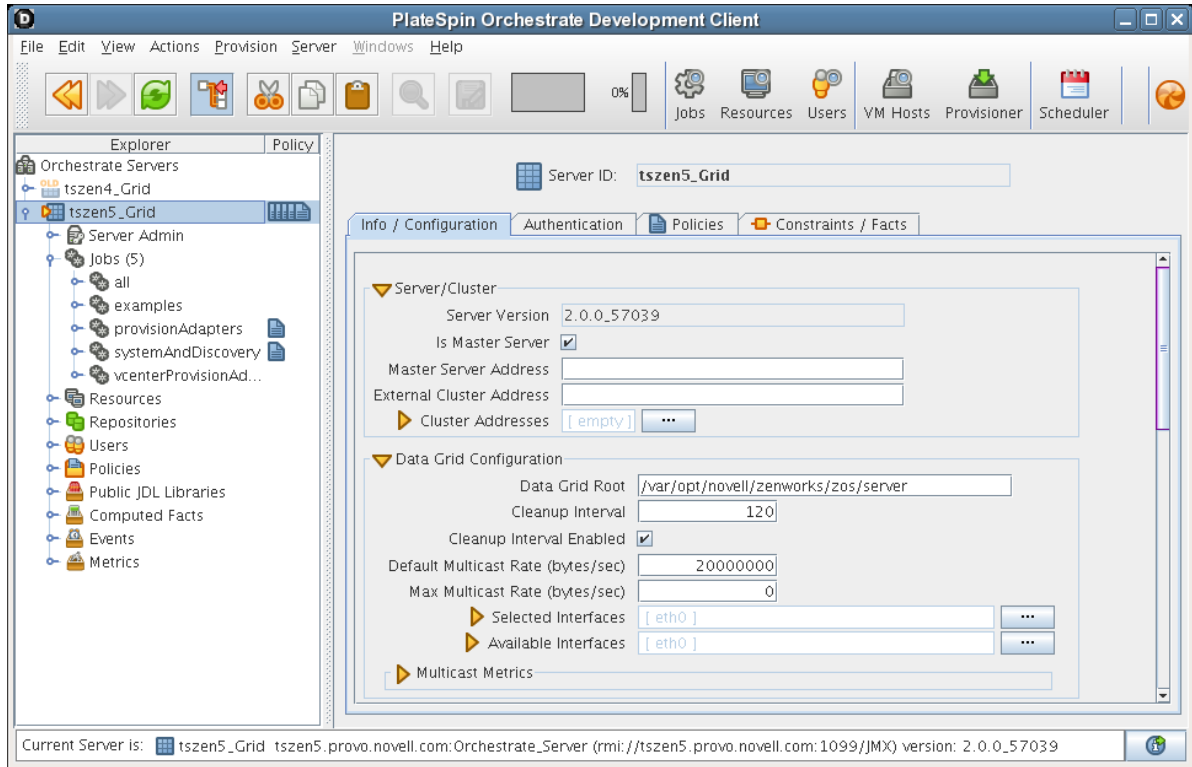The Orchestration Console detects incompatibility only in the Orchestration Agent. The information in the following sections details that behavior.

3.2.1 If the Orchestration Server Is Not Compatible with the Orchestration Console

When the Cloud Manager Orchestration Console detects an older version of the Orchestration Server, the console displays an "old" icon overlay over the grid object.

Figure 3-1 *Orchestration Console Displaying an "Old" Icon*

The Orchestration Console displays a "new" icon overlay on the Grid Object if the Grid Object is newer than the console. The version of the server is included in the tool tip display of the grid object in the Explorer tree view. The logged-in server shows the version at the bottom of the view.

3.2.2 When an Agent Version Does Not Match the Server Version

When an older, incompatible version of the agent communicates with the server, the server detects it and flags the agent as "old." This incompatibility is displayed in the Orchestration Console, where an older version of the agent is shown in the Tree view with an "old" icon or in the Monitor view with an "old" icon. At this point, the agent also logs a fatal connection error.

Figure 3-2   *Old Orchestration Agent Resource Displayed in Tree View*
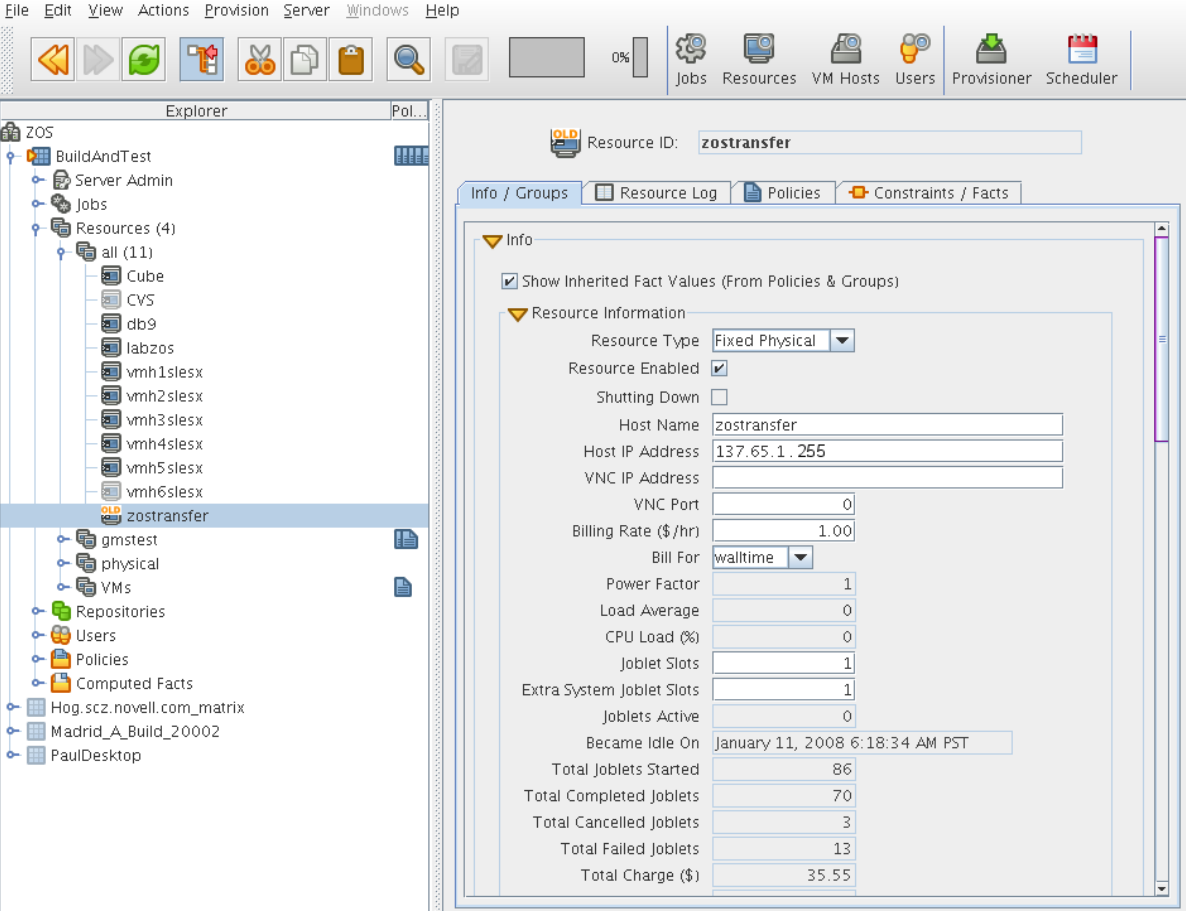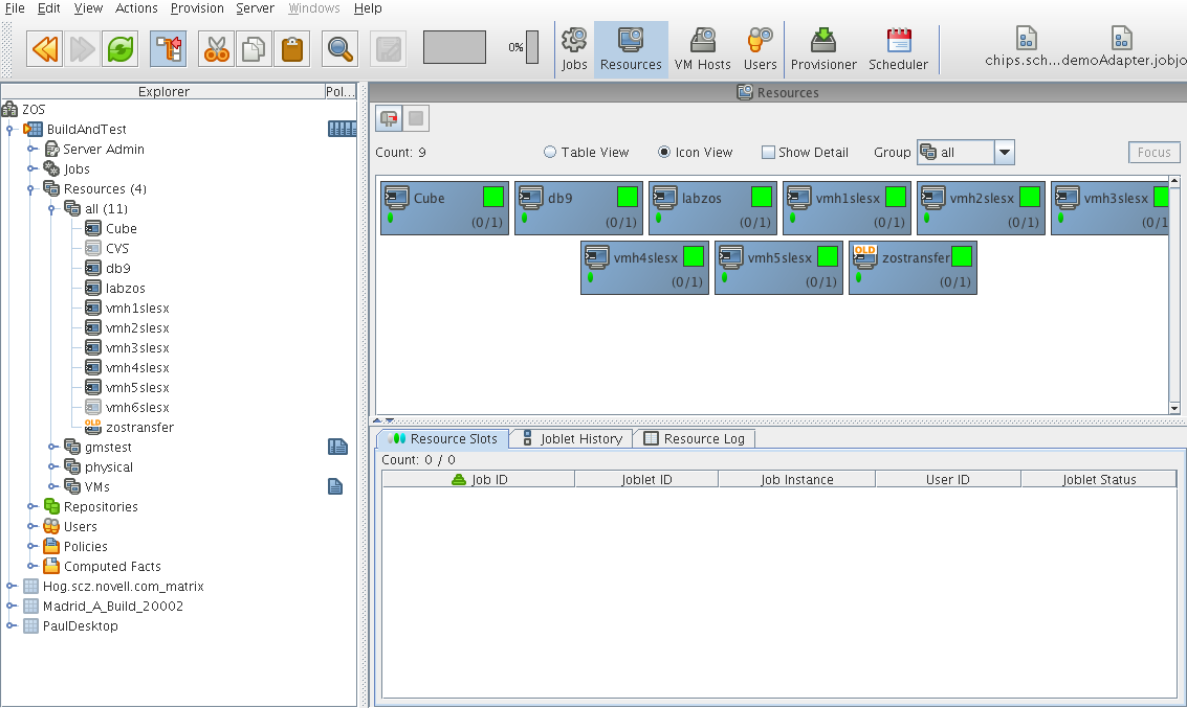
Figure 3-3 *Old Orchestration Agent Resource Displayed in Tree View and Monitor View*

A How to Recover from a Failed Orchestration Server Upgrade

The information in this section can help you to recover from a failed Orchestration Server upgrade.

- Section A.1, "Upgrade Failure Scenarios," on page 33
- Section A.2, "Restoring the Orchestration Server If the Upgrade Fails," on page 34

A.1 Upgrade Failure Scenarios

It is possible that the upgrade process could have problems. If this should occur, we suggest you follow these general steps to recover from those errors and "roll back" to the previous version of Cloud Manager Orchestration.

- Section A.1.1, "Failure Scenario 1: Error Resolution," on page 33
- Section A.1.2, "Failure Scenario 2: Cannot Resolve Error," on page 33

A.1.1 Failure Scenario 1: Error Resolution

Follow these steps if you can resolve the error.

1 Open the upgrade log file to learn about the reason for the error, then resolve it.

2 Re-run the configuration

A.1.2 Failure Scenario 2: Cannot Resolve Error

Follow these steps if you cannot resolve the error:

1 Remove the new instance directory for the Cloud Manager Orchestration Server, not including the datagrid.

2 Copy the old instance directory `/var/opt/novell/zenworks/zos.bak` and the license key file to restore the Orchestration Server 3.0 data from the snapshot.

3 Restore the previous version RPMs of the Orchestration Server 3.0 software.

A.2 Restoring the Orchestration Server If the Upgrade Fails

If you use ZENworks Linux Management in your network, you can use it to restore an older version of the Cloud Manager Orchestration Server if an upgrade has failed. This section contains information that can help you roll back a failed upgrade of Cloud Manager Orchestration Server 3.1 back to Cloud Manager Orchestration Server 3.0.

- Section A.2.1, "Requirements," on page 34
- Section A.2.2, "Rollback Procedure Using the rug Command," on page 34

A.2.1 Requirements

This scenario requires that you have already installed the Cloud Manager 2.0 ISO. That is, the 3.0 version of the Orchestration Server should be running with exactly the same packages you originally installed and configured.

The scenario also requires that you have a Cloud Manager 2.1 ISO on hand. It is important that you enable rollback through ZENworks Linux Management before you actually execute the rollback. ZENworks Linux Management records the changes you make to the RPM database when you enable rollback.

Rollback works only if you previously installed 3.0 packages using ZENworks Linux Management. ZENworks Linux Management records data about each package that it installs, deletes, or upgrades.

For more information about using ZENworks Linux Management for rollback, see Reverting to a Previously Installed Software Configuration State (http://www.novell.com/documentation/zlm73/lm7admin/data/b94fftd.html) in the *ZENworks 7.3 Linux Management Administration Guide*.

A.2.2 Rollback Procedure Using the rug Command

Use the following steps to roll back a Cloud Manager Orchestration Server 3.0 upgrade to Cloud Manager Orchestration Server 3.0 on SLES 10*x* machines or SLES 11*x* machines where the ZENworks Linux Management Daemon is also installed.

1 Use the following command to make sure that you have the ZENworks Management Daemon installed, with rollback tools enabled.

```
rug get rollback
```

2 Check repositories to ensure that they are disabled. You want only 3.1 upgrades.

2a Run the following command to list the repositories:

```
rug sl
```

2b Run the following command to list the catalogs of subscribed repositories:

```
rug ca
```

2c Run the following command to unsubscribe from each subscribed repository:

```
rug unsub "<name_of repository>"
```

3 Add a Cloud Manager Orchestration Server 3.0 ISO as a repository.

3a Run the following command, followed by the local path of the ISO, the ftp or http addresses, or the path to the CD or DVD media where the installation source of Cloud Manager Orchestration Server 0.0 currently resides.

```
rug sa -t zypp <installation_source_of_Orchestation_Server_3.1.0> cmos30
```

This command adds the Orchestration Server 3.0 repository to the ZENworks Management Daemon. The daemon uses the RPMs in the repository to roll back the server to its former state. For this reason, the repository (the `cmos30` shown in the example) must have the same RPM package versions as Orchestration Server 3.0.

For more information about adding repositories, see the *ZENworks 7.3 Linux Management Administration Guide* (http://www.novell.com/documentation/zlm73/lm7admin/data/front.html).

3b Run the following command to list and confirm existing repositories:

```
rug sl
```

3c Run the following command to list and confirm the catalogs of subscribed repositories:

```
rug ca
```

4 Subscribe to the cmos30 repository.

4a Run the following command to subscribe to the cmos30 repository:

```
rug sub cmos30
```

4b Run the following command to list the catalogs and confirm the catalogs of subscribed repositories:

```
rug ca
```

The new repository shows `Yes` in the `Sub'd` (subscribed) column.

4c Run the following command to list and confirm updates:

```
rug lu
```

The message, `No updates are available`, is displayed, which indicates that no new updates to the repository are available–the RPMs match those in the `ncm20` catalog.

5 Add a Cloud Manager 2.1 ISO as a repository.

5a Run the following command, followed by the local path of the ISO, the ftp or http addresses, or the path to the CD or DVD media where the installation source of Cloud Manager 2.1 currently resides.

```
rug sa -t zypp <installation_source_of_Cloud Manager_2.1_Orchestration_Server>
cmos31
```

This command adds the Orchestration Server 3.1 repository to the ZENworks Management Daemon. The daemon uses the RPMs in the repository to roll back the server to its former state. For this reason, the repository (the `cmos31` shown in the example) must have the same RPM package versions as Orchestration Server 3.1.

For more information about adding repositories, see the *ZENworks 7.3 Linux Management Administration Guide* (http://www.novell.com/documentation/zlm73/lm7admin/data/front.html).

5b Run the following command to list and confirm existing repositories:

```
rug sl
```

5c Run the following command to list and confirm the catalogs of subscribed repositories:

```
rug ca
```

6 Subscribe to the `cmos31` repository.

6a Run the following command to subscribe to the `cmos31` repository:

```
rug sub cmos31
```

6b Run the following command to list the catalogs and confirm the catalogs of subscribed repositories:

```
rug ca
```

The new repository shows `Yes` in the `Sub'd` (subscribed) column for both the cmos30 and cmos31 repositories.

6c Run the following command to list and confirm the updated Orchestration Server 3.1 packages:

```
rug lu
```

7 Run the following command to verify that the 3.0 Server and the 3.0 Agent are in a running state:

```
ps ax | grep java
```

8 Run the following command to perform the package upgrade (while the server is in a running state).

```
rug up
```

The upgrade scripts of the Orchestration Server 3.1 RPM packages stop the Orchestration Server 3.0 and the 3.0 Agent before the upgrade, then take a snapshot of the 3.0 Server that is required for the upgrade.

9 When the package upgrade is complete, run the following command to launch the configuration script to upgrade the 3.0 Server.

```
/opt/novell/zenworks/orch/bin/config
```

NOTE: For details on running the configuration script, see "Configuring Cloud Manager Orchestration Components" in the *NetIQ Cloud Manager 2.1 Orchestration Installation Guide*.

If the upgrade configuration fails, error information is displayed in the terminal.

Because of the configuration upgrade failure, you need to use the ZENworks Management Daemon to roll back to the former (that is, the Orchestration Server 3.0) running state without losing data.

10 Run the following command to confirm that Cloud Manager Orchestration Server 3.1 packages are installed:

```
rpm -qa | grep zos
```

Because the Orchestration Server 3.1 packages are installed but not configured, you cannot use them to start the Orchestration Server.

11 Run the follow command to confirm that an instance of the Orchestration Server 3.1 was created:

```
ls /var/opt/novell/zenworks/zos/
```

The `/agent`, `/server` and `/server.save` folders should be listed.

12 Run the following command to launch the ZENworks Linux Management (that is, the ZENworks Management Daemon) for rolling back to Orchestration Server 3.0:

```
rug ro 1 hour ago
```

NOTE: The rollback parameter, `1 hour ago`, is conditional: it specifies the state of the packages on the SLES server at a given time in the past. You need to specify the time when you are sure that 3.0 packages were installed and running so that you can roll back the current Orchestration Server 3.1 packages to Orchestration Server 3.0 packages.

13 Run the following commands to confirm that the system has been rolled back to version 2.6 and that a server instance exists:

```
rpm -qa | grep zos
ls /var/opt/novell/zenworks/zos/
```

14 Run the following command to start the Orchestration Agent:

```
/etc/init.d/netiq-cmosagent start
```