

Installation Guide

Open Enterprise Server 2 SP3

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Novell.

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About This Guide

This guide describes how to install, upgrade, and update Novell Open Enterprise Server (OES) 2 SP3. Except where specifically stated, the content of this guide applies to installing OES on a computer's physical hardware rather than on a Xen virtual machine host server.

- ♦ "What's New in the OES 2 Install" on page 11
- ♦ "Preparing to Install OES 2 SP3" on page 17
- ♦ "Installing OES 2 SP3 as a New Installation" on page 47
- ♦ "Installing or Configuring OES 2 SP3 on an Existing Server" on page 111
- ♦ "Upgrading to OES 2 SP3" on page 117
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- ♦ "Documentation Updates" on page 259

Audience

This guide is intended for system administrators.

Feedback

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

Documentation Updates

The latest version of the *OES 2 SP3: Installation Guide* is available at the [Open Enterprise Server 2 documentation Web site](http://www.novell.com/documentation/oes2/inst_oes_1x/data/front.html) (http://www.novell.com/documentation/oes2/inst_oes_1x/data/front.html).

Additional Documentation

For more information about	See
Planning and implementing OES 2 SP3	OES 2 SP3: Planning and Implementation Guide
Migration from and coexistence with other products	“Different Migration Tools” in the OES 2 SP3: Migration Tool Administration Guide
Installing OES 2 SP3 on a Xen Virtual Host Server	Chapter 10, “Installing, Upgrading, or Updating OES on a Xen-based VM,” on page 189
SLES 10 Installation and Administration details	SUSE LINUX Enterprise Server 10 Installation and Administration Guide (http://www.novell.com/documentation/sles10/book_sle_reference/data/book_sle_reference.html)

1 What's New in the OES 2 Install

This section summarizes the features that have been updated with each release of Novell Open Enterprise Server (OES) 2 Linux.

- ♦ Section 1.1, “What’s New (OES 2 SP3 April 2013 Patches),” on page 11
- ♦ Section 1.2, “What’s New (OES 2 SP3 January 2013 Patches),” on page 11
- ♦ Section 1.3, “New or Changed with the September 2011 Patch Release,” on page 13
- ♦ Section 1.4, “What’s New in the OES 2 SP3 Install,” on page 13
- ♦ Section 1.5, “What’s New in the OES 2 SP2 Install,” on page 14
- ♦ Section 1.6, “What’s New in the OES 2 SP1 Install,” on page 14
- ♦ Section 1.7, “What’s New in the OES 2 Install,” on page 15

1.1 What’s New (OES 2 SP3 April 2013 Patches)

Upgrade to eDirectory 8.8.7

An upgrade to Novell eDirectory 8.8 SP7 is available in the April 2013 Scheduled Maintenance for OES 11. For information about the eDirectory upgrade, see [TID 7011599 \(http://www.novell.com/support/kb/doc.php?id=7011599\)](http://www.novell.com/support/kb/doc.php?id=7011599) in the Novell Knowledgebase.

There will be no further eDirectory 8.8 SP6 patches for the OES platform. Previous patches for Novell eDirectory 8.8 SP6 are available on [Novell Patch Finder \(http://download.novell.com/patch/finder/#familyId=112&productId=29503\)](http://download.novell.com/patch/finder/#familyId=112&productId=29503).

Ensure to extend the eDirectory schema in the eDirectory tree before applying the April 2013 patches, or run the `ndsconfig upgrade` command on all the OES servers after applying the April 2013 patches. For more information on extending the eDirectory schema, see [Section 2.6.4, “Extending the Schema,” on page 27](#), and for `ndsconfig upgrade`, see [Novell eDirectory 8.8 SP7 Installation Guide \(https://www.netiq.com/documentation/edir88/#installation\)](https://www.netiq.com/documentation/edir88/#installation)

1.2 What’s New (OES 2 SP3 January 2013 Patches)

- ♦ Section 1.2.1, “Upgrade to Novell iManager 2.7.6,” on page 12
- ♦ Section 1.2.2, “Novell Client Support for Windows 8 and Server 2012,” on page 12
- ♦ Section 1.2.3, “New Novell Cluster Services Plug-in for iManager 2.7.5 and Later,” on page 12
- ♦ Section 1.2.4, “OES Client Services Support for Windows 8 and IE 10,” on page 12
- ♦ Section 1.2.5, “OES Client Services Do Not Support Windows Server 2012,” on page 13
- ♦ Section 1.2.6, “OES Client Services Support for Mac OS X 10.8 and Safari 6.0,” on page 13

1.2.1 Upgrade to Novell iManager 2.7.6

The January 2013 Scheduled Maintenance for OES 2 SP3 includes a channel upgrade from Novell iManager 2.7.5 to Novell iManager 2.7.6.

Novell iManager 2.7.6 provides the following enhancements:

- ♦ Microsoft Internet Explorer 10 certification in the desktop user interface view on Windows 8 (excluding Windows 8 RT) and Windows Server 2012.
- ♦ Apple Safari 6.0 certification on Mac OSX Mountain Lion (version 10.8).
- ♦ iManager Workstation certification on Windows 8 Enterprise Edition (32-bit and 64-bit).
- ♦ Manager 2.7.6 support for Tomcat 7.0.32, and Java 1.7.0_04 versions.

iManager documentation links in this guide have been updated to reflect this change.

iManager 2.7.6 documentation is available on the [Web \(https://www.netiq.com/documentation/imanager/\)](https://www.netiq.com/documentation/imanager/). For earlier iManager versions, see [Previous Releases \(https://www.netiq.com/documentation/imanager27/#prev\)](https://www.netiq.com/documentation/imanager27/#prev).

1.2.2 Novell Client Support for Windows 8 and Server 2012

The January 2013 Scheduled Maintenance for OES 2 SP3 announces the availability of Novell Client2 SP3 for Windows with support for:

- ♦ Windows 8 (32-bit and 64-bit) excluding Windows 8 RT
- ♦ Windows Server 2012 (64-bit)

Novell Client 2 documentation links in this guide have been updated to reflect the release of SP3.

Novell Client 2 SP3 for Windows documentation is available on the [Web \(http://www.novell.com/documentation/windows_client/\)](http://www.novell.com/documentation/windows_client/). Documentation for earlier versions is available under [Previous Releases \(http://www.novell.com/documentation/windows_client/#previous\)](http://www.novell.com/documentation/windows_client/#previous).

1.2.3 New Novell Cluster Services Plug-in for iManager 2.7.5 and Later

The Clusters plug-in for Novell iManager 2.7.5 or later supports the management of OES and NetWare clusters and resources. The availability of different cluster management features depends on the version of Novell Cluster Services and the server platform that are installed on the cluster being managed. A comparison of the old and new interface is available in [What's New \(January 2013 Patches\) \(http://www.novell.com/documentation/oes2/clus_admin_lx/data/ncs_new_jan2013.html\)](http://www.novell.com/documentation/oes2/clus_admin_lx/data/ncs_new_jan2013.html) in the [OES 2 SP3: Novell Cluster Services 1.8.8 Administration Guide for Linux \(http://www.novell.com/documentation/oes2/clus_admin_lx/data/h4hgu4hs.html\)](http://www.novell.com/documentation/oes2/clus_admin_lx/data/h4hgu4hs.html).

1.2.4 OES Client Services Support for Windows 8 and IE 10

In the January 2013 Scheduled Maintenance for OES 2 SP3, OES client services added support for user access from Windows 8 clients (excluding Windows 8 RT), with the exception of Domain Services for Windows (DSfW). DSfW was not tested with Windows 8 clients and does not support them.

Client applications are supported to run on Windows 8 clients in the desktop user interface view.

Web-based client access is supported for the Internet Explorer 10 Web browser in the desktop user interface view for Windows 7 clients and Windows 8 clients.

1.2.5 OES Client Services Do Not Support Windows Server 2012

In the January 2013 Scheduled Maintenance for OES 2 SP3, OES client services were not tested with Windows Server 2012 servers. Client access support for Windows Server 2012 is not planned for OES 2 SP3.

1.2.6 OES Client Services Support for Mac OS X 10.8 and Safari 6.0

In the January 2013 Scheduled Maintenance for OES 2 SP3, OES client services added support for user access from Mac OS X Mountain Lion (version 10.8) clients, with the exception of Domain Services for Windows (DSfW) and Novell iFolder:

- DSfW was not tested with Mac OS X 10.8 clients and does not support them. DSfW support for Mac OS X 10.8 clients is planned for a future release.
- The iFolder client does not run on Mac OS X 10.8 clients and does not support them.

Web-based client access is supported for the Apple Safari 6.0 Web browser on Mac OS X 10.8 clients. Safari 6.0 is not supported by DSfW and iFolder.

1.3 New or Changed with the September 2011 Patch Release

With the release of the September 2011 patches for OES 2 SP3, the base platform has been upgraded to SLES 10 SP4.

SLES 10 SP4 support is enabled by updating OES 2 SP3 servers with the *move-to-sles10-sp4* patch. Novell encourages customers to update to this latest set of patches. For more information, see [“Updating \(Patching\) an OES 2 SP3 Server”](#) in the *OES 2 SP3: Installation Guide*.

SLES 10 SP4 is considered a lower-risk update that contains a set of consolidated bug fixes and support for newer hardware. It does not impact the kernel ABI or third-party certifications.

With the release of the September 2011 patches, OES 2 SP2 customers who upgrade to OES 2 SP3 via the *move-to* patch will receive the SLES 10 SP4 updates. New installations of OES 2 SP3, migrations to OES 2 SP3, and down-server upgrades to OES 2 SP3, should all be performed using SLES 10 SP4 media.

1.4 What’s New in the OES 2 SP3 Install

The following features were added or modified from the SP2 release installation:

Table 1-1 OES 2 SP3 Release

Functionality	Description
SLP Services List Backup and Sync	The OpenSLP configuration in OES 2 SP3 lets you specify that the list of services is backed up on the server. You can also configure SLP to query other Directory Agents for their service lists in cases where SLP has been restarted. See “Specifying SLP Configuration Options” on page 75.

Functionality	Description
Common Proxy User Support	OES 2 SP3 includes support for a common proxy user. See “Specifying OES Common Proxy User Information” on page 77.

1.5 What’s New in the OES 2 SP2 Install

The following features were added or modified from the SP1 release installation:

Table 1-2 OES 2 SP2 Release

Functionality	Description
Create an EVMS Based Proposal	In the YaST install, an option is available to automatically create an EVMS based proposal for the system device. See Section A.2, “Configuring the System Device to Use EVMS,” on page 234.
Upgrade through the Patch Channel	You can now upgrade an OES 2 SP1 server to OES 2 SP2 through the update (patch) channel. See Section 5.4.5, “Using the Patch Channel to Upgrade (Online),” on page 127.

1.6 What’s New in the OES 2 SP1 Install

The following features were added or modified from the initial release installation:

Table 1-3 OES 2 SP1 Release

Functionality	Description
Unsupported packages are no longer removed by default.	Installing OES 2 while installing SLES 10 SP1: See “Specifying the Add-On Product Installation Information” on page 51. Installing OES 2 services on a server that is already running SLES 10 SP1: See “Installing or Configuring OES 2 SP3 on an Existing Server” on page 111.
OES servers are now configured to use eDirectory certificates for all HTTPS services by default in every installation/upgrade scenario except an upgrade from OES 2, where the option used during the initial server install/upgrade is retained.	Certificate management in OES 2: See “Certificate Management” in the <i>OES 2 SP3: Planning and Implementation Guide</i> .
Updating through the Novell patch channels now requires registering the server with the Novell Customer Center using either purchased activation codes or 60-day evaluation codes.	This change is reflected in various instructions throughout this and other guides.

1.7 What's New in the OES 2 Install

In the initial release of OES 2, the following features were added to the OES installation:

Table 1-4 OES 2 Initial Release

Functionality	Description
Open Enterprise Server 2 Linux is an add-on product that can be installed with SUSE Linux Enterprise Server 10 SP1 or added to a server running SLES 10 SP1 with updates.	Installing OES 2 while installing SLES 10 SP1: See “Specifying the Add-On Product Installation Information” on page 51. Installing OES 2 services on a server that is already running SLES 10 SP1: See “Installing or Configuring OES 2 SP3 on an Existing Server” on page 111.
DVD media is now also available to perform the installation.	See “Preparing Physical Media for a New Server Installation or an Upgrade” on page 39.
OES 2 can be installed on x86-64 bit hardware.	See Table 2-1 on page 19.
Configuring OES services is easier to find and perform on multiple services.	See “Configuring OES Services” on page 78 and “Installing or Configuring OES 2 SP3 on an Existing Server” on page 111.
A specific tool for extending the schema is available in YaST.	See “Extending the Schema” on page 27.
You can install OES 2 Linux on a Xen-based virtual machine host server.	See “Chapter 10, “Installing, Upgrading, or Updating OES on a Xen-based VM,” on page 189.”
You can install OES 2 Linux as a Xen-based virtual machine host server.	See “Chapter 9, “Installing OES as a Xen VM Host Server,” on page 187.”
The method for updating OES matches the method for updating SLES 10 SP1.	“Updating (Patching) an OES 2 SP3 Server” on page 157.

2 Preparing to Install OES 2 SP3

You should perform the tasks and understand the information outlined in the following sections:

- ◆ [Section 2.1, “Before You Install,” on page 17](#)
- ◆ [Section 2.2, “32-Bit vs. 64-Bit,” on page 17](#)
- ◆ [Section 2.3, “Meeting All Server Software and Hardware Requirements,” on page 18](#)
- ◆ [Section 2.4, “eDirectory Rights Needed for Installing OES,” on page 20](#)
- ◆ [Section 2.5, “Installing and Configuring OES as a Subcontainer Administrator,” on page 20](#)
- ◆ [Section 2.6, “Preparing eDirectory for OES 2 SP3,” on page 23](#)
- ◆ [Section 2.7, “Deciding What Patterns to Install,” on page 29](#)
- ◆ [Section 2.8, “Obtaining OES 2 Software,” on page 39](#)
- ◆ [Section 2.9, “Preparing Physical Media for a New Server Installation or an Upgrade,” on page 39](#)
- ◆ [Section 2.10, “Setting Up a Network Installation Source,” on page 41](#)
- ◆ [Section 2.11, “Always Install OES as an Add-On Product,” on page 45](#)
- ◆ [Section 2.12, “Install Only One Server at a Time,” on page 46](#)
- ◆ [Section 2.13, “What’s Next,” on page 46](#)

2.1 Before You Install

Before you install Novell Open Enterprise Server (OES) 2 SP3, you should review the information in the following sections:

- [“Planning Your OES 2 Implementation” in the *OES 2 SP3: Planning and Implementation Guide*](#)
- [“Before You Install” in the *OES 2 SP3 Readme*](#)

2.2 32-Bit vs. 64-Bit

OES 2 and SUSE Linux Enterprise Server (SLES) 10 are available in both 32-bit (i386) and 64-bit (x86-64) architectural versions.

- ◆ [Section 2.2.1, “64-Bit eDirectory,” on page 18](#)
- ◆ [Section 2.2.2, “64-Bit NCP Server,” on page 18](#)
- ◆ [Section 2.2.3, “Matching Software with Server Hardware,” on page 18](#)
- ◆ [Section 2.2.4, “Don’t Mix 32-Bit and 64-Bit OES and SLES,” on page 18](#)

2.2.1 64-Bit eDirectory

Selecting *Novell eDirectory* automatically installs the correct version of eDirectory.

- ♦ OES 2 SP3 64-bit media installs 64-bit eDirectory.
- ♦ OES 2 SP3 32-bit media installs 32-bit eDirectory.

2.2.2 64-Bit NCP Server

Selecting *NCP Server* automatically installs the correct version of NCP Server.

- ♦ OES 2 SP3 64-bit media installs 64-bit NCP server.
- ♦ OES 2 SP3 32-bit media installs 32-bit NCP server.

2.2.3 Matching Software with Server Hardware

Make sure that you understand which software can be installed on which server hardware.

- ♦ **64-Bit Server Hardware:** Supports either the 32-bit versions of OES and SLES or the 64-bit versions of OES and SLES.
- ♦ **32-Bit Server Hardware:** Supports only the 32-bit versions of OES and SLES.

2.2.4 Don't Mix 32-Bit and 64-Bit OES and SLES

The 32-bit and 64-bit versions of OES and SLES are not compatible with each other. In other words, you cannot install 32-bit OES with 64-bit SLES on the same server hardware, and the reverse is also true.

2.3 Meeting All Server Software and Hardware Requirements

Before installing OES 2 SP3, ensure that your system meets the following requirements.

- ♦ [Section 2.3.1, "Server Software," on page 18](#)
- ♦ [Section 2.3.2, "Server Hardware," on page 19](#)

2.3.1 Server Software

As part of the OES 2 SP3 installation, you install SUSE Linux Enterprise Server 10 SP4.

IMPORTANT: OES 2 SP3 services were developed and tested on a default SLES 10 SP4 server base.

As you install OES 2 SP3, do not change any of the SLES 10 Base Technologies package selections, such as Java support. Doing so can cause various problems, such as the installation failing or one or more OES 2 SP3 services not working properly.

If you are installing on an existing SLES 10 SP4 server, be sure to verify that all of the default SLES 10 SP4 components are installed before attempting to install OES 2 SP3 services.

2.3.2 Server Hardware

Table 2-1 Server Hardware Requirements

System Component	Minimum Requirements	Recommended Requirements
Computer	Server-class computer with Pentium II or AMD K7 450 MHz processor	<p>IMPORTANT: Although OES 2 is an add-on product to SLES 10, it only runs on the processors indicated below, which are generically referred to as i386 and x86_64. Other processors that are supported by SLES 10, such as Itanium (IA64), are not supported for running OES services.</p> <p>Server-class computer with Pentium III, Pentium III Xeon, Pentium 4, Intel Xeon 700 MHz, AMD K8 CPUs (Athlon64 and Opteron), Intel EM64T or higher processor.</p> <p>NOTE: Some OES services run in 32-bit mode only.</p>
Memory	1 GB of RAM	2 GB of RAM for the base system. Additional RAM might be required depending on which OES components are selected and how they are used.
Free Disk Space	7 GB of available, unpartitioned disk space	10 GB of available, unpartitioned disk space. Additional disk space might be required, depending on which OES components are selected and how they are used.
CD-ROM or DVD Drive	4X CD-ROM or DVD drive if installing from physical media	48X CD-ROM or DVD drive if installing from physical media
Hard Drive	20 GB	
Network Board	Ethernet 100 Mbps	
IP address	<ul style="list-style-type: none"> ◆ One IP address on a subnet ◆ Subnet mask ◆ Default gateway 	
Mouse	N/A	USB or PS/2
Server computer BIOS	Using a CD-ROM or DVD installation source, prepare the BIOS on your server computer so that it boots from the CD-ROM or DVD drive first.	
Video Card and Monitor	1024 X 768 resolution or higher with a minimum color depth of 8 bits (256 colors)	Although it is technically possible to run the ncurse installation at a lower resolution, some informational messages aren't displayed because text strings don't wrap to the constraints of the window.

NOTE: The RAM and disk space amounts shown here are for system components only. The OES service components you install might require additional RAM and disk space.

Be sure to complete the planning instructions found in the [OES 2 SP3: Planning and Implementation Guide](#) for each component you install.

2.4 eDirectory Rights Needed for Installing OES

The following eDirectory rights are discussed in this section:

- ♦ [Section 2.4.1, “Rights to Install the First OES Server in a Tree,” on page 20](#)
- ♦ [Section 2.4.2, “Rights to Install the First Three Servers in an eDirectory Tree,” on page 20](#)
- ♦ [Section 2.4.3, “Rights to Install the First Three Servers in any eDirectory Partition,” on page 20](#)

2.4.1 Rights to Install the First OES Server in a Tree

To install an OES server in a tree, you must have rights to extend the schema, meaning that you need Supervisor rights to the [Root] of the tree.

You can extend the schema by using the Novell Schema Tool in YaST or by having a user with Supervisor rights to the [Root] of the eDirectory tree install the first OES server and the first instance of each OES service that will be used into the tree. For more information, see [Section 2.6.4, “Extending the Schema,” on page 27](#).

2.4.2 Rights to Install the First Three Servers in an eDirectory Tree

If you are installing the server into a new tree, the Admin user that is created during the OES installation has full rights to the root of the tree. Using the account for user Admin allows the installer to extend the eDirectory schema for OES as necessary. To install the first OES server in an eDirectory tree, you must have the Supervisor right at the [Root] of the eDirectory tree.

2.4.3 Rights to Install the First Three Servers in any eDirectory Partition

By default, the first three servers installed in an eDirectory partition automatically receive a replica of that partition. To install a server into a partition that does not already contain three replica servers, the user must have either the Supervisor right at the [Root] of the tree or the Supervisor right to the container in which the server holding the partition resides.

2.5 Installing and Configuring OES as a Subcontainer Administrator

IMPORTANT: The information explained in [Section 2.4, “eDirectory Rights Needed for Installing OES,” on page 20](#) is prerequisite to the information contained in this section.

This section outlines the required eDirectory rights and explains how a subcontainer administrator approaches various installation tasks.

- ♦ [Section 2.5.1, “Rights Required for Subcontainer Administrators,” on page 21](#)
- ♦ [Section 2.5.2, “Starting a New Installation as a Subcontainer Administrator,” on page 23](#)
- ♦ [Section 2.5.3, “Adding/Configuring OES Services as a Different Administrator,” on page 23](#)

2.5.1 Rights Required for Subcontainer Administrators

For security reasons, you might want to create one or more subcontainer administrators (administrators that are in a container that is subordinate to the container that user Admin is in) with sufficient rights to install additional OES servers, without granting them full rights to the entire tree.

A subcontainer administrator needs the rights listed in [Table 2-2](#) to install an OES server into the tree. These rights are typically granted by placing all administrative users in a Group or Role in eDirectory, and then assigning the rights to the Group or Role. Sample steps for assigning the rights to a single subcontainer administrator are provided as a general guide.

Table 2-2 *Subcontainer Administrator Rights Needed to Install*

Rights Needed	Sample Steps to Follow
Supervisor right to itself	<ol style="list-style-type: none"> 1. In iManager > <i>View Objects</i> > the <i>Browse</i> tab, browse to and select the subcontainer administrator. 2. Click the administrator object, then select <i>Modify Trustees</i>. 3. Click the <i>Assigned Rights</i> link for the administrator object. 4. For the [All Attributes Rights] property, select <i>Supervisor</i>, then click <i>Done > OK</i>.
Supervisor right to the container where the server will be installed	<ol style="list-style-type: none"> 1. Browse to the container where the subcontainer administrator will install the server. 2. Click the container object and select <i>Modify Trustees</i>. 3. Click <i>Add Trustee</i>, browse to and select the subcontainer administrator, then click <i>OK</i>. 4. Click the <i>Assigned Rights</i> link for the administrator object. 5. For the [All Attributes Rights] and [Entry rights] properties, select <i>Supervisor</i>, then click <i>Done > OK > OK</i>.
Supervisor right to the W0 object located inside the KAP object in the Security container	<ol style="list-style-type: none"> 1. Browse to <i>Security > KAP</i>. 2. In KAP, click <i>W0</i> and select <i>Modify Trustees</i>. 3. Click <i>Add Trustee</i>, browse to and select the subcontainer administrator, then click <i>OK</i>. 4. Click the <i>Assigned Rights</i> link for the administrator object. 5. For the [All Attributes Rights] and [Entry rights] properties, select <i>Supervisor</i>, then click <i>Done > OK > OK</i>.

Rights Needed	Sample Steps to Follow
Supervisor right to the Security container when installing the NMAS login methods	<p>If the subcontainer administrator will install the NMAS login methods:</p> <ol style="list-style-type: none"> 1. Browse to and select <i>Security</i> 2. Select <i>Modify Trustees</i>. 3. Click <i>Add Trustee</i>, browse to and select the subcontainer administrator, then click <i>OK</i>. 4. Click the <i>Assigned Rights</i> link for the administrator object. 5. For the [All Attributes Rights] and [Entry rights] properties, select <i>Supervisor</i>, then click <i>Done > OK > OK</i>.
Create right to its own container (context)	<ol style="list-style-type: none"> 1. Browse to and select the container where you created the subcontainer administrator. 2. Select <i>Modify Trustees</i>. 3. Click <i>Add Trustee</i>, browse to and select the subcontainer administrator, then click <i>OK</i>. 4. Click the <i>Assigned Rights</i> link for the administrator object. 5. For the [Entry Rights] property, select <i>Create</i>, then click <i>Done > OK > OK</i>.
Create right to the container where the UNIX Config object is located.	<ol style="list-style-type: none"> 1. Browse to and select the container where the UNIX Config object is located. By default, this is the Organization object. 2. Select <i>Modify Trustees</i>. 3. Click <i>Add Trustee</i>, browse to and select the subcontainer administrator, then click <i>OK</i>. 4. Click the <i>Assigned Rights</i> link for the administrator object. 5. For the [Entry Rights] property, select <i>Create</i>, then click <i>Done > OK > OK</i>.
Read right to the Security container object for the eDirectory tree	<p>This is not needed if the Supervisor right was assigned because of NMAS.</p> <p>If the subcontainer administrator won't install the NMAS login methods, do the following:</p> <ol style="list-style-type: none"> 1. Browse to and select <i>Security</i> 2. Select <i>Modify Trustees</i>. 3. Click <i>Add Trustee</i>, browse to and select the subcontainer administrator, then click <i>OK</i>. 4. Click the <i>Assigned Rights</i> link for the administrator object. 5. For the [All Attributes Rights] property, select <i>Read</i>, then click <i>Done > OK > OK</i>.
Read right to the NDSPKI:Private Key attribute on the Organizational CA object (located in the Security container)	<ol style="list-style-type: none"> 1. Browse to <i>Security</i> and select the Organizational CA object. 2. Select <i>Modify Trustees</i>. 3. Click <i>Add Trustee</i>, browse to and select the subcontainer administrator, then click <i>OK</i>. 4. Click the <i>Assigned Rights</i> link for the administrator object. 5. Click the <i>Add Property</i> button. 6. Select <i>NDSPKI:Private Key</i> and click <i>OK</i>. <p>The Read right should be automatically assigned.</p> <ol style="list-style-type: none"> 7. Click <i>Done > OK > OK</i>.

Rights Needed	Sample Steps to Follow
Read and Write rights to the UNIX Config object.	<ol style="list-style-type: none"> 1. Browse to and select the UNIX Config object. 2. Select <i>Modify Trustees</i>. 3. Click <i>Add Trustee</i>, browse to and select the subcontainer administrator, then click <i>OK</i>. 4. Click the <i>Assigned Rights</i> link for the administrator object. 5. For the [All Attributes Rights] property, select <i>Write</i> (<i>Read</i> is already selected), then click <i>Done > OK > OK</i>.
Write right to the [All Attribute Rights] property for the admingroup object.	<ol style="list-style-type: none"> 1. Browse to and select the admingroup object. 2. Select <i>Modify Trustees</i>. 3. Click <i>Add Trustee</i>, browse to and select the subcontainer administrator, then click <i>OK</i>. 4. Click the <i>Assigned Rights</i> link for the administrator object. 5. For the [All Attributes Rights] property, select <i>Write</i> (<i>Compare and Read</i> are already selected), then click <i>Done > OK > OK</i>.

When you install DNS/DHCP into an existing tree with DNS/DHCP, see the following additional guidelines:

- ♦ For DNS, see “[eDirectory Permissions](#)” in the *OES 2 SP3: Novell DNS/DHCP Administration Guide*.
- ♦ For DHCP, see “[eDirectory Permissions](#)” in the *OES 2 SP3: Novell DNS/DHCP Administration Guide*.

2.5.2 Starting a New Installation as a Subcontainer Administrator

You can install a new OES server into an existing tree as a subcontainer administrator if you have:

- ♦ The rights described in “[Rights Required for Subcontainer Administrators](#)” on page 21
- ♦ (If applicable) The rights described for the server installations in “[eDirectory Rights Needed for Installing OES](#)” on page 20.

When you reach the eDirectory Configuration - Existing Tree page, enter your fully distinguished name (FDN) and password. After verifying your credentials, the installation proceeds normally.

2.5.3 Adding/Configuring OES Services as a Different Administrator

To add or configure OES services on an OES server that another administrator installed, see “[Adding/Configuring OES Services on a Server That Another Administrator Installed](#)” on page 115.

2.6 Preparing eDirectory for OES 2 SP3

- ♦ Section 2.6.1, “[If Your Directory Tree Is Earlier than eDirectory 8.6,](#)” on page 24
- ♦ Section 2.6.2, “[If Your LDAP Server Is Running NetWare 6.5 SP2 or Earlier,](#)” on page 24
- ♦ Section 2.6.3, “[If Your Tree Has Ever Contained an OES 1 Linux Server with LUM and NSS Installed,](#)” on page 24
- ♦ Section 2.6.4, “[Extending the Schema,](#)” on page 27

2.6.1 If Your Directory Tree Is Earlier than eDirectory 8.6

If you are installing an OES 2 server into an eDirectory tree that is earlier than eDirectory 8.6, do the following before installing your first OES server in an existing NetWare tree:

- 1 Extend the schema by using Deployment Manager. See [“Schema Update”](#) in the *NW65 SP8: Installation Guide*.
- 2 Ensure that the schema is synchronized throughout the tree from [ROOT]:
 - 2a Enter the following commands at the System Console prompt of the NetWare server with the Master of [ROOT]:

```
set DSTRACE=on
set DSTRACE=nodebug
set DSTRACE+=Schema
set DSTRACE=*SSD
set DSTRACE=*SSA
```

- 2b Toggle to the Directory Services screen and look for the message `All Processed = YES`.
 - 2c On each server that holds a Master of a partition, enter the following commands at the System Console prompt:

```
set DSTRACE=off
set DSTRACE=nodebug
set DSTRACE+=Schema
set DSTRACE=*SS
```

- 2d Toggle to the Directory Services screen and look for the message `All Processed = YES`.

2.6.2 If Your LDAP Server Is Running NetWare 6.5 SP2 or Earlier

If you are installing into an eDirectory tree that is using a NetWare server to supply LDAP, you should upgrade the LDAP server that the OES installation will communicate with to NetWare 6.5 SP3 or later. A server running NetWare 6.5 SP2 or earlier will probably abend.

2.6.3 If Your Tree Has Ever Contained an OES 1 Linux Server with LUM and NSS Installed

Having NSS volumes on OES servers requires certain system-level modifications, most of which are automatic. For more information, see [“System User and Group Management in OES 2 SP3”](#) in the *OES 2 SP3: Planning and Implementation Guide*

- ♦ [“NetStorage, X-Tier, and Their System Users”](#) on page 25
- ♦ [“An NSS Complication”](#) on page 25
- ♦ [“eDirectory Solves the Basic Problem”](#) on page 25
- ♦ [“ID Mismatches on OES 1”](#) on page 25
- ♦ [“The OES 1 Solution: the nssid.sh Script”](#) on page 25
- ♦ [“OES 2 SP1 and Later Require a New Approach”](#) on page 26
- ♦ [“The OES 2 Solution: Standardizing the UIDs on all OES servers”](#) on page 26

NetStorage, X-Tier, and Their System Users

By default, certain OES services, such as NetStorage, rely on a background Novell service named X-Tier.

To run on an OES server, X-Tier requires two system-created users (named `novlxsrvd` and `novlxregd`) and one system-created group that the users belong to (named `novlxtier`).

An NSS Complication

The two X-Tier users mentioned above, and their group, are created on the local system when X-Tier is installed. For example, they are created when you install NetStorage, and their respective UIDs and GID are used to establish ownership of the service's directories and files.

For NetStorage to run, these X-Tier users and group must be able to read data on all volume types that exist on the OES server.

As long as the server has only Linux traditional file systems, such as Ext3 and Reiser, NetStorage runs well.

However, if the server has NSS volumes, an additional requirement is introduced. NSS data can only be accessed by eDirectory users. Consequently, the local X-Tier users can't access NSS data, and NetStorage can't run properly.

eDirectory Solves the Basic Problem

When NSS volumes are created on the server, the two X-Tier system users and their group are moved to eDirectory and enabled for Linux User Management (LUM). (See "[Linux User Management: Access to Linux for eDirectory Users](#)" in the *OES 2 SP3: Planning and Implementation Guide*.)

After the move to eDirectory, they can function as both eDirectory and POSIX users, and they no longer exist on the local system.

ID Mismatches on OES 1

On OES 1, problems occur when additional OES NetStorage servers with NSS volumes are installed in the same eDirectory container. Because the UIDs and GID are assigned by the system, unless the installation process is exactly the same for each OES 1 server, the UIDs and GID don't match server-to-server.

When the local X-Tier UIDs and GID on subsequently installed servers don't match the X-Tier UIDs and GID in eDirectory, NetStorage can't access the NSS volumes on the server.

The OES 1 Solution: the `nssid.sh` Script

To solve the problem of mismatched IDs, the OES 1 installation program looks for X-Tier ID conflicts, and if the IDs on a newly installed server don't match the IDs in eDirectory, the program generates a script file named `nssid.sh`. The OES 1 documentation instructs installers to always check for an `nssid.sh` file on a newly installed server, and if the file is found, to run it. The `nssid.sh` script synchronizes all of the X-Tier IDs with those in eDirectory.

However, this solution is only viable through the first release of OES 2.

OES 2 SP1 and Later Require a New Approach

System-level changes in SUSE Linux Enterprise Server 10 SP2 and later invalidate the `nssid.sh` script solution for mismatched IDs. Synchronizing the X-Tier IDs with an OES 1 installation can now cause instability in other non-OES components. Therefore, starting with OES 2 SP1, you should standardize all X-Tier IDs on existing servers before installing a new server with X-Tier-dependent services.

The OES 2 Solution: Standardizing the UIDs on all OES servers

If your eDirectory tree has ever contained an OES 1 Linux server with NSS and LUM installed, do the following on each server (including OES 2) that has NSS and LUM installed:

- 1 Log in as `root` and open a terminal prompt. Then enter the following commands:

```
id novlxregd
```

```
id novlxsrvd
```

The standardized X-Tier IDs are UID 81 for `novlxregd`, UID 82 for `novlxsrvd`, and GID 81 for `novlxtier`.

- 2 If you see the following ID information, the X-Tier IDs are standardized and you can move to the next server:

```
uid=81(novlxregd) gid=81(novlxtier) groups=81(novlxtier)
uid=82(novlxsrvd) gid=81(novlxtier) groups=81(novlxtier),8(www)
```

If you see different IDs than those listed above, such as 101, 102, 103, etc., record the numbers for both X-Tier users and the `novlxtier` group. You need these IDs to standardize the IDs on the server.

- 3 Download the following script file:

- ♦ [fix_xtier_ids.sh](http://www.novell.com/documentation/oes2/scripts/fix_xtier_ids.sh) (http://www.novell.com/documentation/oes2/scripts/fix_xtier_ids.sh)

- 4 Customize the template file by replacing the variables in angle brackets (<>) as follows:

- ♦ **<server_name>**: The name of the server object in eDirectory.

Replace this variable with the server name.

For example, if the server name is `myserver`, replace `<server_name>` with `myserver` so that the line in the settings section of the script reads

```
server=myserver
```

- ♦ **<context>**: The context of the X-Tier user and group objects.

Replace this variable with the fully distinguished name of the context where the objects reside.

For example, if the objects are an Organizational Unit object named `servers`, replace `ou=servers,o=company`.

- ♦ **<admin_fdn>**: The full context of an eDirectory admin user, such as the Tree Admin, who has rights to modify the X-Tier user and group objects.

Replace this variable with the admin name and context, specified with comma-delimited syntax.

For example, if the tree admin is in an Organization container named `company`, the full context is `cn=admin,o=company` and the line in settings section of the script reads

```
admin_fdn="cn=admin,o=company"
```

- ♦ **<novlxd_uid>**: The UID that the system assigned to the local novlxd user. It might not be the same on each server, depending on whether the `nssid.sh` script ran successfully.

Replace this variable with the UID reported for the novlxd user on this server as listed when you ran the commands in [Step 1 on page 26](#).

In the example script, the original UID is 101. It is changed to 81 in the third line of the script. The sixth line changes the UID on all of the files and directories on the server that are owned by the novlxd user from 101 to 81.

- ♦ **<novlxsvd_uid>**: The UID that the system assigned to the local novlxsvd user. It might not be the same on each server, depending on whether the `nssid.sh` script ran successfully.

Replace this variable with the UID reported for the novlxsvd user on this server as listed when you ran the commands in [Step 1 on page 26](#).

In the example script, the original UID is 103. It is changed to 82 in the fourth line of the script. The seventh line changes the UID on all of the files and directories on the server that are owned by the novlxsvd user from 103 to 82.

- ♦ **<novlxtier_gid>**: The GID that the system assigned to the local novlxtier group. It might not be the same on each server, depending on whether the `nssid.sh` script ran successfully.

Replace this variable with the GID reported for the novlxtier group on this server as listed when you ran the commands in [Step 1 on page 26](#).

In the example script, the original GID is 101. It is changed to 81 in the second line of the script. The six and seventh lines change the GID from 101 to 81 for all of the files and directories on the server that are owned by the novlxtier group.

- 5 Make the script executable and run it on the server.

IMPORTANT: Changes to the X-Tier files are not reported on the terminal.

Error messages are reported, but you can safely ignore them. The script scans the entire file system, and some files are locked because the system is running.

- 6 Repeat from [Step 1](#) for each of the other servers in the same context.

2.6.4 Extending the Schema

An eDirectory tree must have its schema extended to accommodate OES 2 servers and services as explained in the following sections.

- ♦ [“Who Can Extend the Schema?” on page 27](#)
- ♦ [“Which OES 2 SP3 Services Require a Schema Extension?” on page 28](#)
- ♦ [“Extending the Schema While Installing OES 2” on page 28](#)
- ♦ [“Using the YaST Plug-In to Extend the Schema” on page 28](#)
- ♦ [“Extending the Schema for Novell Cluster Services” on page 29](#)

Who Can Extend the Schema?

Only an administrator with the Supervisor right at the [Root] of an eDirectory tree can extend the tree's schema.

Which OES 2 SP3 Services Require a Schema Extension?

The following service schema extensions are included with OES 2 SP3.

A single asterisk (*) indicates a service that is either required for OES 2 servers or for the default services that are installed on every OES 2 server. They are implemented when the first OES 2 SP1 or later server is installed in the tree.

Unmarked extensions are implemented the first time their respective services are installed, unless the schema was previously extended using another method, such as the YaST plug-in (see [“Using the YaST Plug-In to Extend the Schema” on page 28](#)).

- ◆ CIFS
- ◆ Directory Services*
- ◆ iFolder
- ◆ iPrint
- ◆ DHCP
- ◆ DNS
- ◆ Domain Services for Windows
- ◆ Linux User Management*
- ◆ NCP
- ◆ NCS

Novell Cluster Services requires you to extend the schema manually. Follow the instructions in [“Extending the eDirectory Schema to Add Cluster Objects”](#) in the *OES 2 SP3: Novell Cluster Services 1.8.8 Administration Guide for Linux*.

- ◆ NetStorage
- ◆ NMAS*
- ◆ Novell Storage Services
- ◆ Storage Management Services*

Extending the Schema While Installing OES 2

The simplest way to extend the schema for OES 2 servers is to have a tree admin install the first OES 2 server and the first instance of each OES 2 service that you plan to run on your network.

After this initial installation, you can assign subcontainer admins with the required rights to install additional servers and services. For more information on the required rights for the various OES services, see [“Rights Required for Subcontainer Administrators” on page 21](#).

Using the YaST Plug-In to Extend the Schema

If you want a subcontainer admin to install the first OES 2 server or the first instance of an OES 2 service in an existing tree, and you don't want to grant that admin the Supervisor right to the [Root] of the tree, someone with the Supervisor right to [Root] can extend the schema by using YaST from any of the following locations:

- ◆ An OES 2 SP3 server running in another tree
- ◆ An OES 2 SP3 server that was installed without any OES 2 services added (the YaST plug-in is a default OES 2 component)

or

- ♦ A SLES 10 SP4 server with the `yast2-novell-schematool.rpm` installed. The RPM is available on the OES 2 SP3 installation media and can be launched at a terminal prompt following installation by entering `yast2 novell-schematool`.

To run the Novell Schema Tool:

- 1 On the server's desktop, click *Computer* and open the *YaST Control Center*.
- 2 Click *Open Enterprise Server > Novell Schema Tool*.
- 3 Depending on the installation method you used, you might be required to insert your OES 2 installation media.
- 4 On the Novell eDirectory Extension Utility page, specify the information for an eDirectory server with a Read/Write replica of the Root partition.

Be sure to provide the correct information to authenticate as an admin user with the Supervisor right at the [Root] of the target tree. Otherwise, the schema extension fails.

- 5 If you are preparing the tree so that a subcontainer admin can install the first OES 2 SP1 or later server, select the services marked with an asterisk (*) in "[Which OES 2 SP3 Services Require a Schema Extension?](#)" on page 28.

Although this step is not required if the tree already has an OES 2 SP1 or later server installed, selecting the marked services won't cause any problems.

- 6 Select all of the other services you plan to run on any of the OES 2 servers in the tree.
- 7 Click *Next*.

The schema is extended.

The YaST2 `novell-schematool` utility writes the schema event messages to the `/var/opt/novell/eDirectory/log/oes_schema.log` file on the server where the utility is running.

Extending the Schema for Novell Cluster Services

If you want a subcontainer administrator to install the first instance of Novell Cluster Services in a tree, you can extend the schema by following the instructions in "[Extending the eDirectory Schema to Add Cluster Objects](#)" in the *OES 2 SP3: Novell Cluster Services 1.8.8 Administration Guide for Linux*.

2.7 Deciding What Patterns to Install

A default SLES 10 SP4 installation has the following base technology, graphical environment, and primary function patterns selected for installation. With the exception explained in the two Important notes below, you can accept or deselect these patterns and install additional patterns as desired.

Table 2-3 Standard SLES 10 SP4 Installation Patterns

Pattern	Description
Server Base System	Consists of all packages that are common to all Novell SUSE Linux Enterprise products. Also provides a Linux Standard Base 3.0 compliant runtime environment. This pattern is selected for installation by default. IMPORTANT: You must either install this pattern or the Common Code Base pattern.

Pattern	Description
Common Code Base	<p>The largest system. It includes all packages available with SUSE Linux, except those that would result in dependency conflicts.</p> <p>IMPORTANT: You must either install this pattern or the Server Base System pattern.</p>
Novell AppArmor	<p>Novell AppArmor is an open source Linux application security framework that provides mandatory access control for programs, protecting against the exploitation of software flaws and compromised systems. AppArmor includes everything you need to provide effective containment for programs (including those that run as <code>root</code>) to thwart attempted exploits and even zero-day attacks. AppArmor offers an advanced tool set that largely automates the development of per-program application security so that no new expertise is required.</p> <p>This pattern is selected for installation by default.</p>
GNOME Desktop Environment	<p>The GNOME desktop environment is an intuitive and attractive desktop for users. The GNOME development platform is an extensive framework for building applications that integrate into the rest of the desktop.</p> <p>This pattern is selected for installation by default.</p>
X Window System	<p>In continuous use for over 20 years, the X Window System provides the only standard platform-independent networked graphical window system bridging the heterogeneous platforms in today's enterprise: from network servers to desktops, thin clients, laptops, and handhelds, independent of operating system and hardware.</p> <p>This pattern is selected for installation by default.</p>
Print Server	<p>Sets up a print server to host print queues so that they can be accessed by other computers on the same network, including machines running Microsoft Windows operating systems. The print server can accept print jobs from client computers and direct them to locally attached printers or to network printers. LPD, CUPS, and SMB print servers and queues are supported.</p> <p>This pattern is selected for installation by default.</p>

The OES add-on installation includes the following OES Services patterns:

Table 2-4 OES Services Pattern Descriptions

Pattern	Description
Novell AFP	<p>A Novell AFP server allows Macintosh clients to access data stored on NSS volumes in the same way they access data on a Mac OS X server.</p> <p>This pattern selects and installs these services:</p> <ul style="list-style-type: none">◆ Novell Backup / Storage Management Services (SMS)◆ Novell eDirectory◆ Novell Storage Services (NSS)◆ Novell Linux User Management (LUM)◆ Novell Remote Manager (NRM) <p>This pattern cannot be installed on the same server as these services:</p> <ul style="list-style-type: none">◆ Novell Domain Services for Windows
Novell Archive and Version Services	<p>Novell Archive and Version Services systematically captures and stores versions of your network files in an archive database, on a schedule that you determine. Users can search for a previous version of a file and quickly restore it.</p> <p>This pattern selects and installs these services:</p> <ul style="list-style-type: none">◆ Novell Backup/Storage Management Services (SMS)◆ Novell eDirectory◆ Novell Linux User Management (LUM)◆ Novell Remote Manager (NRM)◆ Novell Storage Services (NSS) <p>This pattern cannot be installed on the same server as these services:</p> <ul style="list-style-type: none">◆ Novell Domain Services for Windows
Novell Backup/Storage Management Services (SMS)	<p>The Novell backup infrastructure (called Storage Management Services or SMS) provides backup applications with the framework to develop a complete backup and restore solution.</p> <p>SMS helps back up file systems (such as NSS) or application data (such as data from GroupWise) on NetWare and SUSE Linux Enterprise Server (SLES) to removable tape media or other media for off-site storage. It provides a single consistent interface for all file systems and applications across NetWare and SLES.</p> <p>This pattern selects and installs these services:</p> <ul style="list-style-type: none">◆ Novell Linux User Management (LUM)◆ Novell Remote Manager (NRM)

Pattern	Description
Novell CIFS	<p>CIFS (Common Internet File System) is a network sharing protocol. Novell CIFS enables Windows, Linux, and UNIX client workstations to copy, delete, move, save, and open files on an OES 2 server. CIFS allows read and write access from multiple client systems simultaneously.</p> <p>This pattern selects and installs these services:</p> <ul style="list-style-type: none"> ◆ Novell Backup / Storage Management Services (SMS) ◆ Novell eDirectory ◆ Novell Storage Services (NSS) ◆ Novell Linux User Management (LUM) ◆ Novell Remote Manager (NRM) <p>This pattern cannot be installed on the same server as these services:</p> <ul style="list-style-type: none"> ◆ Novell Domain Services for Windows ◆ Novell Samba
Novell Cluster Services (NCS)	<p>Novell Cluster Services is a server clustering system that ensures high availability and manageability of critical network resources including data, applications, and services. It is a multinode clustering product for Linux that is enabled for Novell eDirectory and supports failover, failback, and migration (load balancing) of individually managed cluster resources.</p> <p>Novell Cluster Services lets you add Linux nodes to an existing NetWare 6.5 cluster without bringing down the cluster, or it lets you create an all-Linux cluster. With a mixed cluster, you can migrate services between OS kernels, and if services are alike on both platforms (such as NSS), you can set the services to fail over across platforms.</p> <p>Using Novell Cluster Services with iSCSI technologies included in OES, you can build inexpensive clustered SANs on commodity gigabit Ethernet hardware. You can leverage existing hardware into a high availability solution supporting Linux and NetWare clusters.</p> <p>This pattern selects and installs these services:</p> <ul style="list-style-type: none"> ◆ Novell Backup/Storage Management Services (SMS) ◆ Novell Linux User Management (LUM) ◆ Novell Remote Manager (NRM) <p>This pattern cannot be installed on the same server with these services:</p> <ul style="list-style-type: none"> ◆ High Availability

Pattern	Description
Novell DHCP	<p data-bbox="574 218 1414 275">Novell DHCP (Dynamic Host Configuration Protocol) uses eDirectory to provide configuration parameters to client computers and integrate them into a network.</p> <p data-bbox="574 300 1414 380">The eDirectory integration lets you have centralized administration and management of DHCP servers across the enterprise and lets you set up DHCP subnet replication via Novell eDirectory.</p> <p data-bbox="574 405 1073 426">This pattern selects and installs these services:</p> <ul data-bbox="602 457 1187 617" style="list-style-type: none"> <li data-bbox="602 457 1187 485">◆ Novell Backup/Storage Management Services (SMS) <li data-bbox="602 499 813 527">◆ Novell eDirectory <li data-bbox="602 541 1036 569">◆ Novell Linux User Management (LUM) <li data-bbox="602 583 964 611">◆ Novell Remote Manager (NRM)
Novell DNS	<p data-bbox="574 642 1442 699">Novell DNS uses Novell eDirectory to deliver information associated with domain names, in particular the IP address.</p> <p data-bbox="574 724 1442 804">This eDirectory integration lets you have centralized administration and management of DNS servers across the enterprise and lets you set up a DNS zone via Novell eDirectory.</p> <p data-bbox="574 829 1073 850">This pattern selects and installs these services:</p> <ul data-bbox="602 882 1187 1041" style="list-style-type: none"> <li data-bbox="602 882 1187 909">◆ Novell Backup/Storage Management Services (SMS) <li data-bbox="602 924 813 951">◆ Novell eDirectory <li data-bbox="602 966 1036 993">◆ Novell Linux User Management (LUM) <li data-bbox="602 1008 964 1035">◆ Novell Remote Manager (NRM)

Pattern	Description
Novell Domain Services for Windows	<p>Novell Domain Services for Windows provides seamless cross-authentication capabilities between Windows/Active Directory and Novell OES 2 servers. It is a suite of integrated technologies that removes the need for the Novell Client when logging on and accessing data from Windows workstations in eDirectory trees. This technology simplifies the management of users and workstations in mixed Novell-Microsoft environments.</p> <p>This pattern selects and installs these services:</p> <ul style="list-style-type: none"> ◆ Novell Backup / Storage Management Services (SMS) ◆ Novell eDirectory ◆ Novell DNS ◆ Novell iManager ◆ Novell iPrint ◆ Novell Linux User Management (LUM) ◆ Novell Remote Manager (NRM) ◆ Novell Storage Services (NSS) ◆ Novell NCP Server <p>This pattern cannot be installed on the same server as these services:</p> <ul style="list-style-type: none"> ◆ Novell Samba ◆ Novell CIFS ◆ Novell AFP ◆ Novell Archive and Version Services ◆ Novell FTP ◆ Novell iFolder ◆ Novell NetStorage ◆ Novell Pre-Migration Server ◆ Novell QuickFinder
Novell eDirectory	<p>Novell eDirectory services are the foundation for the world's largest identity management, high-end directory service that allows businesses to manage identities and security access for employees, customers, and partners. More than just an LDAP data store, eDirectory is the identity foundation for managing the relationships that link your users and their access rights with corporate resources, devices, and security policies.</p> <p>This pattern selects and installs these services:</p> <ul style="list-style-type: none"> ◆ Novell Backup/Storage Management Services (SMS) ◆ Novell Linux User Management (LUM) ◆ Novell Remote Manager (NRM) <p>This pattern cannot be installed on the same server as these services:</p> <ul style="list-style-type: none"> ◆ OpenLDAP

Pattern	Description
Novell FTP	<p data-bbox="574 218 1398 275">Novell FTP (File Transfer Protocol) is integrated with Novell eDirectory so that users can securely transfer files to and from OES volumes.</p> <p data-bbox="574 300 1073 321">This pattern selects and installs these services:</p> <ul data-bbox="602 352 1187 510" style="list-style-type: none"> ◆ Novell Backup/Storage Management Services (SMS) ◆ Novell eDirectory ◆ Novell Linux User Management (LUM) ◆ Novell Remote Manager (NRM) <p data-bbox="574 535 1312 556">This pattern cannot be installed on the same server as these services:</p> <ul data-bbox="602 588 1019 611" style="list-style-type: none"> ◆ Novell Domain Services for Windows
Novell iFolder	<p data-bbox="574 642 1442 722">Novell iFolder 3.8 is a simple and secure storage solution that increases user productivity by enabling users to back up, access, and manage their personal files from anywhere, at any time.</p> <p data-bbox="574 747 1073 768">This pattern selects and installs these services:</p> <ul data-bbox="602 800 1187 957" style="list-style-type: none"> ◆ Novell Backup/Storage Management Services (SMS) ◆ Novell eDirectory ◆ Novell Linux User Management (LUM) ◆ Novell Remote Manager (NRM) <p data-bbox="574 982 1312 1003">This pattern cannot be installed on the same server as these services:</p> <ul data-bbox="602 1035 1019 1058" style="list-style-type: none"> ◆ Novell Domain Services for Windows
Novell iManager	<p data-bbox="574 1094 1398 1173">Novell iManager is a Web-based administration console that provides secure, customized access to network administration utilities and content from virtually anywhere you have access to the Internet and a Web browser.</p> <p data-bbox="574 1199 1003 1220">iManager provides the following benefits:</p> <ul data-bbox="602 1251 1344 1440" style="list-style-type: none"> ◆ Single point of administration for Novell eDirectory objects, schema, partitions, and replicas ◆ Single point of administration for many other network resources ◆ Management of many Novell products by using iManager plug-ins ◆ Role-Based Services (RBS) for delegated administration <p data-bbox="574 1465 1073 1486">This pattern selects and installs these services:</p> <ul data-bbox="602 1518 1187 1629" style="list-style-type: none"> ◆ Novell Backup/Storage Management Services (SMS) ◆ Novell Linux User Management (LUM) ◆ Novell Remote Manager (NRM)

Pattern	Description
Novell iPrint	<p>Novell iPrint lets employees, partners, and customers access printers from a variety of locations across the network and the Internet. From a Web browser, users can easily install any printer on the network from any location.</p> <p>This pattern selects and installs these services:</p> <ul style="list-style-type: none"> ◆ Novell Backup/Storage Management Services (SMS) ◆ Novell eDirectory ◆ Novell Linux User Management (LUM) ◆ Novell Remote Manager (NRM) <p>This pattern cannot be installed on the same server as these services:</p> <ul style="list-style-type: none"> ◆ CUPS
Novell Linux User Management (LUM)	<p>Linux User Management (LUM) enables eDirectory users to function as local POSIX users on Linux servers. This functionality lets administrators use eDirectory to centrally manage remote users for access to one or more OES servers.</p> <p>This pattern selects and installs these services:</p> <ul style="list-style-type: none"> ◆ Novell Backup/Storage Management Services (SMS) ◆ Novell Remote Manager (NRM)
Novell NCP Server / Dynamic Storage Technology	<p>Novell NCP Server for Linux enables support for login scripts, mapping drives to OES servers, and other services commonly associated with Novell Client access. This means that Windows users with the Novell Client installed can be seamlessly transitioned to file services on OES.</p> <p>NCP Server includes Novell Dynamic Storage Technology, which allows seldom-accessed files on NSS volumes to be automatically moved, according to policies set by the administrator, from faster-access storage to lower-cost storage media where the files can be more easily managed and backed up.</p> <p>Services included with NCP (NetWare Core Protocol) are file access, file locking, security, tracking of resource allocation, event notification, synchronization with other servers, connection and communication, print services and queue management, and network management.</p> <p>This pattern selects and installs these services:</p> <ul style="list-style-type: none"> ◆ Novell Backup/Storage Management Services (SMS) ◆ Novell eDirectory ◆ Novell Linux User Management (LUM) ◆ Novell Remote Manager (NRM)

Pattern	Description
Novell NetStorage	<p data-bbox="574 218 1443 331">Novell NetStorage provides the solution for simple, Internet-based access to file storage. NetStorage is a bridge between a company's protected Novell storage network and the Internet. It lets users access files securely from any Internet location, with nothing to download or install on the user's workstation.</p> <p data-bbox="574 359 1443 527">With Novell NetStorage, a user can securely access files from any Internet-enabled machine. Users can copy, move, rename, delete, read, write, recover, and set trustee assignments (based on their privilege level) on files between a local workstation and a Novell storage network. Access is available from any Internet-attached workstation, anywhere in the world. There is no need to e-mail or copy data from one machine to another.</p> <p data-bbox="574 554 1073 575">This pattern selects and installs these services:</p> <ul data-bbox="602 604 1187 762" style="list-style-type: none"> ◆ Novell Backup/Storage Management Services (SMS) ◆ Novell iManager ◆ Novell Linux User Management (LUM) ◆ Novell Remote Manager (NRM) <p data-bbox="574 789 1313 810">This pattern cannot be installed on the same server as these services:</p> <ul data-bbox="602 840 1021 863" style="list-style-type: none"> ◆ Novell Domain Services for Windows
Novell Pre-Migration Server	<p data-bbox="574 894 1443 947">A Novell Pre-Migration Server is not actually a service. Rather, it is a special-purpose server—the target of a Server ID Transfer Migration.</p> <p data-bbox="574 974 1443 1087">Selecting this option causes this server to be installed without an eDirectory replica, thus preparing it to assume the identity of another server that you plan to decommission. For more information, see the OES 2 SP3: Migration Tool Administration Guide.</p> <p data-bbox="574 1115 1443 1192">You should also select and install all the services that you plan to migrate from the other server. Services that are not installed on this server prior to the migration cannot be migrated.</p> <p data-bbox="574 1220 1073 1241">This pattern selects and installs these services:</p> <ul data-bbox="602 1270 1203 1428" style="list-style-type: none"> ◆ Novell Backup / Storage Management Services (SMS) ◆ Novell eDirectory (without a replica) ◆ Novell Linux User Management (LUM) ◆ Novell Remote Manager (NRM) <p data-bbox="574 1455 1313 1476">This pattern cannot be installed on the same server as these services:</p> <ul data-bbox="602 1505 1021 1528" style="list-style-type: none"> ◆ Novell Domain Services for Windows

Pattern	Description
Novell QuickFinder	<p>QuickFinder lets your users find the information they're looking for on any of your public and private Web sites, your partners' sites, and any number of additional Web sites across the Internet or internal file servers, all from a single search form on your Web page.</p> <p>You can easily modify the look and feel of any of the sample search results pages to match your corporate design.</p> <p>You can create full-text indexes of HTML, XML, PDF, Word, OpenOffice.org, and many other document formats in almost any language with the QuickFinder Unicode indexing engine.</p> <p>You can configure and maintain your indexes remotely from anywhere on the network with the QuickFinder Web-based administration module.</p> <p>This pattern selects and installs these services:</p> <ul style="list-style-type: none"> ◆ Novell Backup/Storage Management Services (SMS) ◆ Novell Linux User Management (LUM) ◆ Novell Remote Manager (NRM) <p>This pattern cannot be installed on the same server as these services:</p> <ul style="list-style-type: none"> ◆ Novell Domain Services for Windows
Novell Remote Manager (NRM)	<p>Novell Remote Manager lets you securely access and manage one or more servers from any location through a standard Web browser. You can use Novell Remote Manager to monitor your server's health, change the configuration of your server, or perform diagnostic and debugging tasks.</p> <p>This pattern selects and installs these services:</p> <ul style="list-style-type: none"> ◆ Novell Backup/Storage Management Services (SMS) ◆ Novell Linux User Management (LUM)
Novell Samba	<p>Novell Samba provides Windows (CIFS and HTTP-WebDAV) access to files stored on an OES server's file system using an eDirectory username and password.</p> <p>This pattern selects and installs these services:</p> <ul style="list-style-type: none"> ◆ Novell Backup/Storage Management Services (SMS) ◆ Novell Linux User Management (LUM) ◆ Novell Remote Manager (NRM) <p>This pattern cannot be installed on the same server as these services:</p> <ul style="list-style-type: none"> ◆ Novell CIFS ◆ Novell Domain Services for Windows

Pattern	Description
Novell Storage Services (NSS)	<p>The Novell Storage Services (NSS) file system provides many unique and powerful file system capabilities. It is especially suited for managing file services for thousands of users in an organization. It also includes Novell Distributed File Services for NSS volumes.</p> <p>Unique features include visibility, trustee access control model, multiple simultaneous namespace support, native Unicode, user and directory quotas, rich file attributes, multiple data stream support, event file lists, and a file salvage subsystem.</p> <p>NSS volumes are cross-compatible between kernels. You can mount a non-encrypted NSS data volume on either the Linux or NetWare kernel and move it between them. In a clustered SAN, volumes can fail over between kernels, allowing for full data and file system feature preservation when migrating data to Linux.</p> <p>IMPORTANT: If you select this service, you might need to reconsider the disk partition setup you have chosen. For information, see Appendix A, “Installing with EVMS as the Volume Manager of the System Device,” on page 233.</p> <p>This pattern selects and installs these services:</p> <ul style="list-style-type: none"> ◆ Novell Backup/Storage Management Services (SMS) ◆ Novell eDirectory ◆ Novell NCP Server ◆ Novell Linux User Management (LUM) ◆ Novell Remote Manager (NRM) <p>This pattern cannot be installed on the same server as these services:</p> <ul style="list-style-type: none"> ◆ Xen Virtual Machine Host Server

If you want to install these services, you can select them to install with most other patterns during the initial server installation by customizing the installation or you can install them after installing your initial Open Enterprise Server. For more information, see [“Customizing the Software Selections”](#) on page 56 and [“Installing or Configuring OES 2 SP3 on an Existing Server”](#) on page 111.

2.8 Obtaining OES 2 Software

For information on obtaining OES software, see [“Getting and Preparing OES 2 Software”](#) in the *OES 2 SP3: Planning and Implementation Guide*.

2.9 Preparing Physical Media for a New Server Installation or an Upgrade

To prepare physical media for an installation or upgrade, you must first download ISO image files and then burn the CDs or DVDs that you need for your server. Detailed download instructions are available in [“Getting and Preparing OES 2 Software”](#) in the *OES 2 SP3: Planning and Implementation Guide*.

[Table 2-5](#) lists the image files you need, depending on whether your server has a CD drive or a CD/DVD combo drive.

Table 2-5 Files to Download

Platform	Files needed
32-bit server with CD drive	<ul style="list-style-type: none">◆ SLES-10-SP4-CD-i386-GM-CD1.iso◆ SLES-10-SP4-CD-i386-GM-CD2.iso◆ SLES-10-SP4-CD-i386-GM-CD3.iso◆ SLES-10-SP4-CD-i386-GM-CD4.iso◆ OES2-SP3-i386-CD1.iso
32-bit server with CD/DVD drive	<ul style="list-style-type: none">◆ SLES-10-SP4-DVD-i386-GM-DVD1.iso◆ OES2-SP3-i386-CD1.iso
64-bit server with CD drive	<ul style="list-style-type: none">◆ SLES-10-SP4-CD-x86_64-GM-CD1.iso◆ SLES-10-SP4-CD-x86_64-GM-CD2.iso◆ SLES-10-SP4-CD-x86_64-GM-CD3.iso◆ SLES-10-SP4-CD-x86_64-GM-CD4.iso◆ OES2-SP3-x86_64-CD1.iso
64-bit server with CD/DVD drive	<ul style="list-style-type: none">◆ SLES-10-SP4-DVD-x86_64-GM-DVD1.iso◆ OES2-SP3-x86_64-CD1.iso
32-bit server with CD drive	<ul style="list-style-type: none">◆ SLES-10-SP4-CD-i386-GM-CD1.iso◆ SLES-10-SP4-CD-i386-GM-CD2.iso◆ SLES-10-SP4-CD-i386-GM-CD3.iso◆ SLES-10-SP4-CD-i386-GM-CD4.iso◆ OES2-SP3-i386-CD1.iso

IMPORTANT: You can download the OES 2 CD and the SLES 10 DVD ISO files listed in [Table 2-5](#) from the [OES 2 SP3 download page \(http://download.novell.com/Download?buildid=vU8lidWAgvY~\)](http://download.novell.com/Download?buildid=vU8lidWAgvY~).

The SLES 10 SP4 CD ISO files listed in [Table 2-5](#) are only available on the [SLES 10 SP4 download page \(http://download.novell.com/Download?buildid=Z4ysu62Q4gw~\)](http://download.novell.com/Download?buildid=Z4ysu62Q4gw~).

- 1 Download the ISO files you need for your hardware capabilities.
- 2 Insert a blank, writable CD or DVD into your CD or DVD burner.
- 3 Select the option to create a CD or DVD from an image file.
- 4 Select *ISO* as the file type.
- 5 Select the first image file (see [Table 2-5](#)) from the location you downloaded it to.
- 6 Complete the CD or DVD creation process.
- 7 Label the disk.
- 8 Repeat this process for each of the ISO image files you downloaded.

2.10 Setting Up a Network Installation Source

The YaST install lets you use installation sources files that are hosted on the network to install a new server or upgrade an existing server. The following sections describe how to set up a network installation source server on the following platforms:

- ◆ [Section 2.10.1, “SUSE Linux as a Network Installation Source Server,” on page 41](#)
- ◆ [Section 2.10.2, “NetWare as a Network Installation Source Server,” on page 43](#)
- ◆ [Section 2.10.3, “Windows as a Network Installation Source Server,” on page 45](#)

2.10.1 SUSE Linux as a Network Installation Source Server

To prepare a network installation source on a SUSE Linux server, see:

- ◆ [“Setting Up the Server Holding the Installation Sources” \(http://www.novell.com/documentation/sles10/book_sle_reference/data/sec_deployment_remoteinst_instserver.html\)](http://www.novell.com/documentation/sles10/book_sle_reference/data/sec_deployment_remoteinst_instserver.html) in the *SLES 10 SP4 Installation and Administration Guide* (http://www.novell.com/documentation/sles10/book_sle_reference/data/book_sle_reference.html)
- ◆ The instructions in the following sections:
 - ◆ [“Requirements” on page 41](#)
 - ◆ [“Procedure” on page 41](#)
 - ◆ [“NFS Protocol Configuration” on page 42](#)
 - ◆ [“FTP Protocol Configuration” on page 42](#)
 - ◆ [“HTTP Protocol Configuration” on page 43](#)

Requirements

To set up a network installation source, you need the following:

- A YaST Network Installation source server

This source server can be SLES 9, SLES 10, SUSE Linux 9.3 or later, OES 1 or OES 2, Windows, or NetWare 6.5.

- An active network connection between the installation source server and the OES server you are installing or upgrading.

Procedure

- 1 Download or copy the ISO image files to a directory of your choice. See [“Getting and Preparing OES 2 Software”](#) in the *OES 2 SP3: Planning and Implementation Guide*.
- 2 Configure your Linux server to be a YaST installation server and select the location for the root of the network installation.

The three protocol options to choose from for configuring the YaST installation server are NFS, FTP, and HTTP. For the protocol configuration procedures, see the following:

- ◆ [“NFS Protocol Configuration” on page 42](#)
- ◆ [“FTP Protocol Configuration” on page 42](#)
- ◆ [“HTTP Protocol Configuration” on page 43](#)

FTP and HTTP do not allow you to serve the files without possible modifications to `.conf` files. NFS is the simplest protocol to configure and is recommended.

- 3 Create a boot CD using the `.iso` image file for *SUSE Linux Enterprise Server SP4 CD 1* and label it with that name.

For information on creating this CD, see [“Preparing Physical Media for a New Server Installation or an Upgrade” on page 39](#).

This CD will be the network installation boot CD.

With these steps completed, you are ready to perform a new installation or upgrade using a network installation source. See [“Starting the OES 2 SP3 Installation” on page 47](#) or [“Upgrading to OES 2 SP3” on page 117](#).

NFS Protocol Configuration

An NFS share can be shared easily from almost any location on your file system. Use the following procedure if you choose to use this protocol:

- 1 At your network installation server, launch YaST.
- 2 Select *Network Services*, then click *NFS Server*.
You might be prompted to install the NFS server.
- 3 On the NFS Server configuration screen, select *Start* in the NFS Server section, select *Open Port in Firewall* in the Firewall section, then click *Next*.
- 4 In the Directories section, click *Add Directory* and specify or browse to the directory where you have created the install root (source directory), then click *OK*.
- 5 Accept the defaults in the pop-up window for adding a Host.
If you are experienced with NFS configurations, you can customize the configuration.
- 6 Click *Finish*.

FTP Protocol Configuration

These instructions use Pure-FTPd and can be implemented through YaST. Depending on the FTP server you use, the configuration might be different.

If you have created your install root (source directory) within your FTP root, you can forego the following procedure and simply start Pure-FTPd.

The default configuration of Pure-FTPd runs in chroot jail, so symlinks cannot be followed. In order to allow FTP access to the install root created outside of the FTP root, you must mount the install root directory inside of the FTP root.

If you have not created your install root within your FTP root and you choose to use this protocol:

- 1 Create a directory inside of your FTP root.
- 2 Run the following command:

```
mount --bind /path_to_install_root /path_to_directory_in_ftp_root
```


For example,

```
mount --bind /tmp/OES /srv/ftp/OES
```
- 3 (Optional) If you want to make this install root permanent, add this command to the `/etc/fstab` file.
- 4 Start Pure-FTPd.

HTTP Protocol Configuration

These instructions use Apache2 as provided by SLES 10.

If you choose to use this protocol:

- 1 Modify the `default-server.conf` file of your HTTP server to allow it to follow symlinks and create directory indexes.

The `default-server.conf` file is located in the `/etc/apache2` directory. In the `Directory` tag of the `default-server.conf` file, remove `None` if it is there, add `FollowSymLinks` and `Indexes` to the `Options` directive, then save the changes.

- 2 (Conditional) If the install root is outside of the HTTP root, create a symbolic link to the install root with the following command:

```
ln -s /path_to_install_root /path_to_link
```

For example,

```
ln -s /tmp/OES /srv/www/htdocs/OES
```

- 3 Restart Apache.

2.10.2 NetWare as a Network Installation Source Server

Complete the instructions in this section to set up an Novell Open Enterprise Server (OES) 2 installation source on an existing NetWare 6.5 server.

- ♦ [“Prerequisites” on page 43](#)
- ♦ [“Copy the Files and Mount Them as NSS Volumes” on page 44](#)
- ♦ [“Create the Boot CDs” on page 45](#)

Prerequisites

You need the following:

- A NetWare 6.5 server accessible on the network where you plan to install the OES 2 SP3 servers with the following:
 - ♦ 6 GB free disk space on the server
 - ♦ The Apache Web Server for NetWare installed and running
- The following ISO image files from Novell:

These will set up installation sources for both i386 (32-bit) and x86_64 (64-bit) servers. If you plan to install only one of the platforms, then you need only the images associated with that platform.

Image File	Purpose
SLES-10-SP4-CD-i386-GM-CD1.iso	Boot CD for i386 (32-bit) SUSE Linux Enterprise Server (SLES) 10 SP4 installations
SLES-10-SP4-CD-x86_64-GM-CD1.iso	Boot CD for x86_64 (64-bit) SLES 10 SP4 installations
SLES-10-SP4-DVD-i386-GM-DVD1.iso	Install source for i386 (32-bit) SLES 10 SP4
SLES-10-SP4-DVD-x86_64-GM-DVD1.iso	Install source for x86_64 (64-bit) SLES 10 SP4
OES2-SP3-i386-CD1.iso	Install source for i386 (32-bit) OES 2 SP3 services
OES2-SP3-x86_64-CD1.iso	Install source for x86_64 (64-bit) OES 2 SP3 services

For information on downloading these image files, see the [Novell Open Enterprise Server 2 Download Instructions \(http://www.novell.com/documentation/oes2/esd/di_oes2_sp2.html\)](http://www.novell.com/documentation/oes2/esd/di_oes2_sp2.html).

Copy the Files and Mount Them as NSS Volumes

The following instructions create unrestricted access to OES 2 SP3 installation files on a NetWare server on your network. Restricting access to the installation files requires additional configuration through Apache Manager or requires manual editing of the Apache configuration files.

For more information on restricting access, see information about the Options, Order, Deny, Allow, and other directives on the [Apache.org Web Site \(http://httpd.apache.org/docs-2.0/mod/directives.html\)](http://httpd.apache.org/docs-2.0/mod/directives.html).

To provide unrestricted access to the OES 2 SP3 image files:

- 1 Create a directory at the root of a server volume with at least 6 GB of free disk space.
For example, you might create a directory named OES2_INSTALL in a volume named TOOLS.
- 2 Restrict access to the directory to only those administrators who copy image files to the directory.

This is important because if someone attempts to access these files after they are mounted as NSS volumes, the volumes are immediately dismounted and are no longer available.
- 3 Copy the DVD image files listed in “Prerequisites” on page 43 to the directory you just created.
- 4 At the server console, mount each image file as an NSS volume:

- 4a Enter the following command:

```
nss /MountImageVolume=volume:directory/filename.iso
```

Replace *volume* with the NSS volume name, *directory* with the directory you created in [Step 1](#), and *filename* with the name of the ISO file.

For example:

```
nss /MountImageVolume=TOOLS:OES2_INSTALL/SLES-10-SP4-i386-DVD1.iso
```

- 4b Note the assigned volume name.

For the first SLES DVD you mount (either 32-bit or 64-bit), the name is SLES10SP_001, which is the actual volume name in the image file. For the second image you mount, the assigned name is CD_ followed by a four-digit number, starting with 0000.

The same principle applies to the OES 2 SP3 image files. The first file mounted is the actual OES 2 SP3 volume name, but the second image is assigned a *CD_xxxx* name.


Knowing which volume is for which platform is critical as you create an access URL to the volume in Apache Manager.

- 5 In a supported browser, start Apache Manager by entering the following URL:

`https://server_ip_address:2200/apacheadmin/login.jsp`

Replace *server_ip_address* with the IP address of the NetWare server.

- 6 Log in as the Admin user or a user with administrative rights to the Apache server.

- 7 Click the *Content Manager* icon .

- 8 Click *Additional Document Directories*.

- 9 In the *URL Prefix* field, specify an alias name you want people to use to access one of the mounted volumes.

For example, if you are mounting the volume with the SLES 10 i386 installation files, you might name the alias, `sles10sp1-i386`.

- 10 Click the *Search* icon next to the *File Path* field.

- 11 Click the volume name that matches the alias name you specified in [Step 9](#), then click *Finish*.

For example, if `CD_0001` is the volume name that NetWare assigned to ISO image of the SLES 10 i386 installation source, you would click `CD_0001`.

- 12 Click *Save > Save and Apply > OK*.

The path to the volume is added as an additional document.

- 13 Repeat from [Step 9](#) for the other three volumes.

All of the ISO files are now available for access through the Apache Web Server running on the NetWare server.

Create the Boot CDs

See [Section 2.9, “Preparing Physical Media for a New Server Installation or an Upgrade,”](#) on page 39.

2.10.3 Windows as a Network Installation Source Server

To prepare a network installation source on a Windows server, see [“Managing an SMB Installation Source”](#) (http://www.novell.com/documentation/sles10/book_sle_reference/data/sec_deployment_remoteinst_instserver.html#sec_deployment_remoteinst_instserver_smb) in the *SLES 10 SP4 Installation and Administration Guide* (http://www.novell.com/documentation/sles10/book_sle_reference/data/book_sle_reference.html).

2.11 Always Install OES as an Add-On Product

You must always install OES by adding it as an add-on product while running the YaST install. This is not the same as adding the OES installation media as an installation source.

Failure to do this will prevent the server from registering as an OES 2 server with the Novell Customer Center.

2.12 Install Only One Server at a Time

You should install one server at a time into a tree, then wait for the installation program to complete before installing an additional server into the same tree.

2.13 What's Next

Proceed to one of the following sections, depending on the task that you want to perform:

- ♦ [“Installing OES 2 SP3 as a New Installation” on page 47](#)
- ♦ [“Upgrading to OES 2 SP3” on page 117](#)
- ♦ [“Updating \(Patching\) an OES 2 SP3 Server” on page 157](#)
- ♦ [“Using AutoYaST to Install and Configure Multiple OES Servers” on page 179](#)
- ♦ [“Installing, Upgrading, or Updating OES on a Xen-based VM” on page 189](#)
- ♦ [“Installing and Managing NetWare on a Xen-based VM” on page 203](#)
- ♦ [“Installing with EVMS as the Volume Manager of the System Device” on page 233](#)

3 Installing OES 2 SP3 as a New Installation

Novell Open Enterprise Server (OES) 2 SP3 is an add-on product to SUSE Linux Enterprise Server (SLES) 10 SP4. When you install and configure OES, you can also install and configure SLES 10 SP4. Therefore, it is helpful to understand how to perform a SLES 10 SP4 installation.

For detailed information on performing a SLES installation, see the *SLES 10 SP4 Installation and Administration Guide* (http://www.novell.com/documentation/sles10/book_sle_reference/data/book_sle_reference.html).

This section does not provide step-by-step installation instructions because the installation interface is mostly self-explanatory. It does, however, provide information about important steps in the process that you might need help with.

- ♦ Section 3.1, “Starting the OES 2 SP3 Installation,” on page 47
- ♦ Section 3.2, “Specifying the Installation Mode,” on page 50
- ♦ Section 3.3, “Specifying the Add-On Product Installation Information,” on page 51
- ♦ Section 3.4, “Setting Up the Clock and Time Zone,” on page 52
- ♦ Section 3.5, “Specifying the Installation Settings for the SLES Base and OES Installation,” on page 52
- ♦ Section 3.6, “Specifying Configuration Information,” on page 59
- ♦ Section 3.7, “Finishing the Installation,” on page 107
- ♦ Section 3.8, “Verifying That the Installation Was Successful,” on page 108
- ♦ Section 3.9, “What’s Next,” on page 109

3.1 Starting the OES 2 SP3 Installation

- 1 Insert the first disc of the *SUSE Linux Enterprise Server 10 SP4* installation media that you created into the CD-ROM or DVD drive of the computer that you want to be your OES server
- 2 Boot the machine.
- 3 Continue with one of the following procedures:
 - ♦ “Installing from a Network Source with DHCP” on page 48
 - ♦ “Installing from a Network Source without DHCP” on page 49
 - ♦ “Installing from Physical Media” on page 47

3.1.1 Installing from Physical Media

- 1 From the CD boot menu, select the second option (*Installation*), then press Enter.
- 2 Select the language that you want to use, then click *Next*.

- 3 Read and accept the license agreement, then click *Next*.
- 4 (Conditional) If you haven't already verified that the media you burned is valid, you can check it by using the *Media Check* option; otherwise, click *Next* to continue with the installation.
The installation process prompts you for each CD at the appropriate time. The progress status at the bottom of the screen indicates which CD will be requested next.
- 5 Follow the prompts, using the information contained in the following sections:
 - 5a "Specifying the Installation Mode" on page 50.
 - 5b "Specifying the Add-On Product Installation Information" on page 51.
 - 5c "Setting Up the Clock and Time Zone" on page 52.
 - 5d "Specifying the Installation Settings for the SLES Base and OES Installation" on page 52.
 - 5e "Specifying Configuration Information" on page 59.
 - 5f "Finishing the Installation" on page 107.
- 6 Complete the server setup by following the procedures in "Completing OES Installation or Upgrade Tasks" on page 153.

3.1.2 Installing from a Network Source with DHCP

- 1 From the CD boot menu, select one of the following Installation options that matches your environment, but do not press Enter.
 - ♦ **Installation:** The normal installation mode. All modern hardware functions are enabled.
 - ♦ **Installation—ACPI Disabled:** If the normal installation fails, it might be because the system hardware does not support ACPI (advanced configuration and power interface). If this seems to be the case, use this option to install without ACPI support.
 - ♦ **Installation—Local APIC Disabled:** If the normal installation fails, it might be because the system hardware does not support local APIC (advanced programmable interrupt controllers). If this seems to be the case, use this option to install without local APIC support.
If you are not sure, try *Installation—ACPI Disabled* or *Installation—Safe Settings* first.
 - ♦ **Installation—Safe Settings:** Boots the system with the DMA mode (for CD-ROM drives) and power management functions disabled. Experts can also use the command line to enter or change kernel parameters.

At this point you can either

- ♦ Skip to with [Step 4](#) and input everything as the install prompts you.
or
 - ♦ Pre-specify the IP address information and/or the boot options parameters on the *Boot Options* line (see "Using Custom Boot Options" in the *SUSE Linux Enterprise Server Installation and Administration Guide* (http://www.novell.com/documentation/sles10/book_sle_reference/data/sec_deployment_remoteinst_bootinst.html#sec_deployment_remoteinst_bootinst_custom))
- 2 (Optional) If you want to specify the IP address information, do it now.
Otherwise, continue with [Step 3](#).
 - 3 (Optional) If you want to specify boot options parameters, do it now. Then press Enter and continue with [Step 7](#).
Otherwise, continue with [Step 4](#).

- 4 Press F4, and then select the network installation type (SLP, FTP, HTTP, NFS, SMB/CIFS) that you set up on your network installation server.
See [Step 2 on page 41](#) of the [SUSE Linux as a Network Installation Source Server](#) procedure.
- 5 Specify the required information (server name and installation path), then select *OK*.
- 6 Press Enter to begin the installation.
- 7 Follow the screen prompts, referring to the information in the following sections as needed (remember that not all required selections are documented):
 - 7a [“Specifying the Installation Mode” on page 50.](#)
 - 7b [“Specifying the Add-On Product Installation Information” on page 51.](#)
 - 7c [“Setting Up the Clock and Time Zone” on page 52.](#)
 - 7d [“Specifying the Installation Settings for the SLES Base and OES Installation” on page 52.](#)
 - 7e [“Specifying Configuration Information” on page 59.](#)
 - 7f [“Finishing the Installation” on page 107.](#)
- 8 Complete the server setup by following the procedures in [“Completing OES Installation or Upgrade Tasks” on page 153.](#)

3.1.3 Installing from a Network Source without DHCP

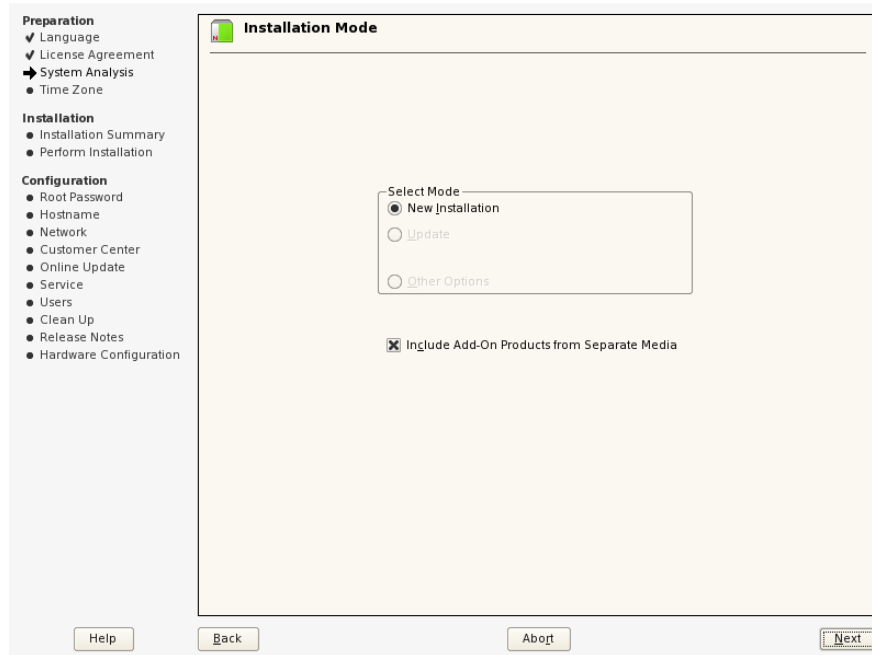
- 1 From the CD boot menu, select one of the following Installation options that matches your environment.
 - ♦ **Installation:** The normal installation mode. All modern hardware functions are enabled.
 - ♦ **Installation—ACPI Disabled:** If the normal installation fails, this might be because of the system hardware not supporting ACPI (advanced configuration and power interface). If this seems to be the case, use this option to install without ACPI support.
 - ♦ **Installation—Local APIC Disabled:** If the normal installation fails, this might be because of the system hardware not supporting local APIC (advanced programmable interrupt controllers). If this seems to be the case, use this option to install without local APIC support.
If you are not sure, try *Installation—ACPI Disabled* or *Installation—Safe Settings* first.
 - ♦ **Installation—Safe Settings:** Boots the system with the DMA mode (for CD-ROM drives) and power management functions disabled. Experts can also use the command line to enter or change kernel parameters.
- 2 At this point you can pre-specify the IP address information, etc. on the *Boot Options* line (see [“Using Custom Boot Options” in the SUSE Linux Enterprise Server Installation and Administration Guide](#) (http://www.novell.com/documentation/sles10/book_sle_reference/data/sec_deployment_remoteinst_bootinst.html#sec_deployment_remoteinst_bootinst_custom)),
If you want to specify the IP address information, etc., do it now. Then press Enter and continue with [Step 19 on page 50](#).
Otherwise, press Enter, continue with [Step 3](#), and input everything as the install prompts you.
- 3 When you receive the following error, select *OK* and press Enter:
Could not find the SUSE Linux Enterprise Server 10 Installation source.
Activating manual set up program.
- 4 Select the language, then select *OK* and press Enter.
- 5 Select a keyboard map, then select *OK* and press Enter.
- 6 Select *Start Installation or System*, then select *OK* and press Enter.

- 7 Select *Start Installation or Update*, then select *OK* and press Enter.
- 8 Select *Network*, press Enter, then select *OK* and press Enter.
- 9 Select the network protocol that matches the configured protocol on your network installation server, then press Enter.
- 10 (Conditional) If you have more than one network interface card, select one of the cards, then press Enter.
We recommend eth0.
- 11 When prompted whether you want to use DHCP, select *No*, then press Enter.
- 12 Specify the IP address for the server, then press Enter.
- 13 Specify the subnet mask, then press Enter.
- 14 Specify the gateway, then press Enter.
- 15 Specify the IP address of a name server, then press Enter.
- 16 Specify the IP address of the network installation server, then press Enter.
- 17 (Conditional) Depending on the protocol you specified, you might see additional screens for FTP or HTTP. Select the options that are appropriate for your network, then continue with [Step 18](#).
- 18 Specify the path to your installation source on the network installation server, then press Enter.
- 19 Follow the prompts, using the information contained in the following sections:
 - 19a [“Specifying the Installation Mode”](#) on page 50.
 - 19b [“Specifying the Add-On Product Installation Information”](#) on page 51.
 - 19c [“Setting Up the Clock and Time Zone”](#) on page 52.
 - 19d [“Specifying the Installation Settings for the SLES Base and OES Installation”](#) on page 52.
 - 19e [“Specifying Configuration Information”](#) on page 59.
 - 19f [“Finishing the Installation”](#) on page 107.
- 20 Complete the server setup by following the procedures in [“Completing OES Installation or Upgrade Tasks”](#) on page 153.

3.2 Specifying the Installation Mode

- 1 When the Installation Mode page displays, select the following two menu options, then click *Next*:
 - ◆ *New Installation*

- ◆ *Include Add-On Products from Separate Media*



- 2 Continue with [Section 3.3, “Specifying the Add-On Product Installation Information,”](#) on page 51.

3.3 Specifying the Add-On Product Installation Information

- 1 When the Add-On Product Installation page displays, click *Add*.
- 2 If you are installing OES 2 from a CD, do the following:
 - 2a On the Add-On Product Media page, click *CD*, then click *Next*.
 - 2b On the Insert the Add-On Product CD page, select the appropriate drive where you want to insert the OES CD.
 - 2c Click *Eject*.
 - 2d Insert the CD labeled *Novell Open Enterprise Server 2 SP3 CD 1*, then click *Continue*.
- 3 If you are using an alternate installation source, such as a network installation source, click the appropriate option for your situation, then click *Next* and supply the required information.
- 4 Read and accept the Novell Open Enterprise Server 2 license agreement, then click *Next*.
- 5 Confirm that the Add-On Product Installation page shows the correct path to the OES media, then click *Next*.
- 6 Continue with [Section 3.4, “Setting Up the Clock and Time Zone,”](#) on page 52.

3.4 Setting Up the Clock and Time Zone

- 1 Make sure the *Clock*, *Region*, *Timezone*, and *Time and Date* settings are what you want, then click *Next*.

You can configure this information after the installation is complete, but it is easier to do it during the installation.

- 2 Continue with [Section 3.5, “Specifying the Installation Settings for the SLES Base and OES Installation,”](#) on page 52.

3.5 Specifying the Installation Settings for the SLES Base and OES Installation

The Installation Settings page lets you specify which software and services are installed on your server.

- ♦ **Overview tab:** This lets you specify everything that is normally required for an OES installation.
- ♦ **Expert tab:** This lets you fully customize your SLES installation settings. For detailed information, see “Deployment” (http://www.novell.com/documentation/sles10/book_sle_reference/data/part_setup.html) in the *SLES 10 SP4 Installation and Administration Guide* (http://www.novell.com/documentation/sles10/book_sle_reference/data/book_sle_reference.html). Keep in mind, however, that the SLES guide does not contain instructions for OES-specific components or configurations.

IMPORTANT: If you accept the defaults at this point in the installation process, only the base OES components are installed.

You can add OES services later, but you should at least read the guidelines and follow the applicable procedures in the following sections:

- ♦ “Setting Up Disk Partitions” on page 52
 - ♦ “Customizing the Software Selections” on page 56
 - ♦ “Accepting the Installation Settings” on page 58
-

3.5.1 Setting Up Disk Partitions

In most cases, YaST proposes a reasonable partitioning scheme that can be accepted without change. You can also use YaST to customize the partitioning.

- ♦ “Guidelines” on page 53
- ♦ “NSS on the System Disk” on page 54
- ♦ “Security Flag Recommendations” on page 54
- ♦ “Partitioning X86 Machines” on page 55
- ♦ “Disk Partition Statistics” on page 55
- ♦ “Combining Hard Disk Partitions” on page 56

Guidelines

Table 3-1 presents guidelines for setting up disk partitions on your OES server. For more information, see “Installation Settings” (http://www.novell.com/documentation/sles10/book_sle_reference/data/sec_i_yast2_proposal.html) in the *SLES 10 SP4 Installation and Administration Guide* (http://www.novell.com/documentation/sles10/book_sle_reference/data/book_sle_reference.html)

Table 3-1 Partition Guidelines

Partition to Create	Other Considerations
<code>/boot</code>	<p>Depending on the hardware, it might be useful to create a boot partition (<code>/boot</code>) to hold the boot mechanism and the Linux kernel.</p> <p>You should create this partition at the start of the disk and make it at least 8 MB or 1 cylinder. As a rule of thumb, always create such a partition if it was included in the YaST original proposal. If you are unsure about this, create a boot partition to be on the safe side.</p> <p>IMPORTANT: In a Xen VM installation, format the <code>/boot</code> partition using <i>Ext2</i> as the file system. For a technical explanation of why this is necessary, see “Paravirtual Mode and Journaling File Systems (http://www.novell.com/documentation/sles10/book_virtualization_xen/data/sec_xen_filesystem.html)” in the <i>Virtualization with Xen</i> (http://www.novell.com/documentation/sles10/book_virtualization_xen/data/book_virtualization_xen.html) guide.</p>
<code>swap</code>	<p>This should normally be twice the size of the RAM installed on your server, up to 1 GB. If you create a <code>/boot</code> partition, create the <code>swap</code> partition second. Otherwise, create the <code>swap</code> partition first.</p>
<code>/</code>	<p>Define this partition as 3 GB or more. In all cases, create this partition after you create the <code>swap</code> partition. Keep in mind that this root (<code>/</code>) partition contains all of the partitions listed below that you don't specifically create.</p>
<code>/var</code>	<p>This contains system logs and should therefore be a separate partition to avoid impacting system and service stability because of a disk-full condition.</p> <p>Define this partition as 4 GB or more.</p>
<code>/opt</code>	<p>Some (mostly commercial) programs install their data in <code>/opt</code>.</p> <p>Define this partition as 4 GB or more.</p>
<code>/usr</code>	<p>Creating this as a separate partition makes updating the server easier if you need to reinstall the system from the beginning because you can keep the partition intact.</p> <p>Define this partition as 4 GB or more.</p>
<code>/srv</code>	<p>This contains the Web and FTP servers.</p> <p>Consider making this a separate partition to avoid having someone flood the disk by accident or on purpose, which impacts system and service stability.</p>
<code>/home</code>	<p>User Home directories go here.</p> <p>Consider making this a separate partition to avoid having someone flood the disk by accident or on purpose, which impacts system and service stability.</p> <p>You can allocate the rest of the disk space to this partition.</p>

Partition to Create	Other Considerations
/tmp	Creating this as a separate partition is optional. However, because it is writable by everyone, best practices suggest creating a separate partition to avoid having someone flood the disk by accident or on purpose, which impacts system and service stability.
	Place application-specific files on a separate partition.
	If you are building a mail server, note where the mail spools reside because they can grow quite large, and you need to anticipate this when you are defining partition sizes.

NSS on the System Disk

For OES, Novell Storage Services (NSS) volumes can be used only as data volumes, not as system volumes.

Additionally, they cannot be created as part of the install process.

However, you must consider whether you will be creating them in the future *on the storage device where you are installing Linux*. (Creating NSS volumes on storage devices that don't contain Linux system partitions requires no special handling.)

The default volume manager for Linux POSIX volumes on SUSE Linux is LVM (Linux Volume Manager). However, NSS volumes cannot be created on devices managed by LVM; they require EVMS (Enterprise Volume Management System) instead.

IMPORTANT: If you have only a single storage device on the server (such as a single physical disk or a hardware RAID 1 or RAID 5 device) and you plan to use NSS volumes for storing data, you must follow the instructions in [“Installing with EVMS as the Volume Manager of the System Device” on page 233](#) to partition that storage device before proceeding.

You must also follow the EVMS setup instructions if you are creating Linux system partitions on other storage devices that you also want to contain NSS volumes.

Security Flag Recommendations

The following table indicates the recommended security flags for each partition. A question mark indicates that some software might not work if this flag is set.

Mount Point	Mount Options
/	
/var	nosuid
/tmp	nosuid
/home	nosuid, nodev, noexec?
/srv	nosuid?, nodev?, noexec?, ro? (after installation)
/usr/local	nosuid?, nodev?, ro? (after installation)

IMPORTANT: Proprietary software installations might fail if executables in /tmp cannot run as the file owner (suid), and devices might not work in /usr/local, etc. In such cases, remount those partitions temporarily with security deactivated.

Partitioning X86 Machines

- ◆ There can be a maximum of four primary partitions or three primary partitions and one extended partition. An extended partition can hold 15 (SCSI) or 63 (IDE) logical partitions.
- ◆ Each partition is assigned a partition type, depending on the file system planned for the partition.
- ◆ Each partition holds its own file system.
- ◆ Partitions are mounted into the file system tree at mount points. The content of the partition is visible to users with sufficient access privileges below the mount point.
- ◆ One of the partitions must hold the root (/) file system. Other partitions can be integrated into the root file system by using the mount command.
- ◆ The /etc/fstab file holds partition and mount point information to allow automatic mounting at boot time.
- ◆ Device files in the “device” (/dev) partition are used to represent and address partitions; for example:

/dev/hda	Master disk on the first IDE channel
/dev/hda1	First primary partition on the IDE channel disk
/dev/hda5	First logical partition within the extended partition on that disk
/dev/sdb	Second SCSI disk
/dev/sdb3	Third primary partition on the second SCSI disk

Disk Partition Statistics

Use the following commands to get information about system storage usage:

df	Displays information about partitions
df -h	Displays information in megabytes or gigabytes as applicable (human readable format)
du	Displays disk usage
du /dirA	Displays the size of each file and directory in dirA
du -sh	Prints a summary of information in megabytes or gigabytes

Combining Hard Disk Partitions

- ◆ Partitions from two or more hard disks can be combined by using the logical volume manager (LVM).
- ◆ Partitions (physical volumes) can be combined into a volume group, which in turn can be divided into logical volumes that contain their own file systems.

Doing this increases flexibility because physical volumes can be easily added to the volume group if more storage space is needed. Logical volumes can be added while the machine is up and running.

3.5.2 Customizing the Software Selections

IMPORTANT: To install any of the OES patterns, you must customize the software selections. If you don't make any selections, only the base SLES 10 and base OES packages are installed. However, you can install any of the patterns after the base SLES installation is complete. See [“Installing or Configuring OES 2 SP3 on an Existing Server” on page 111](#).

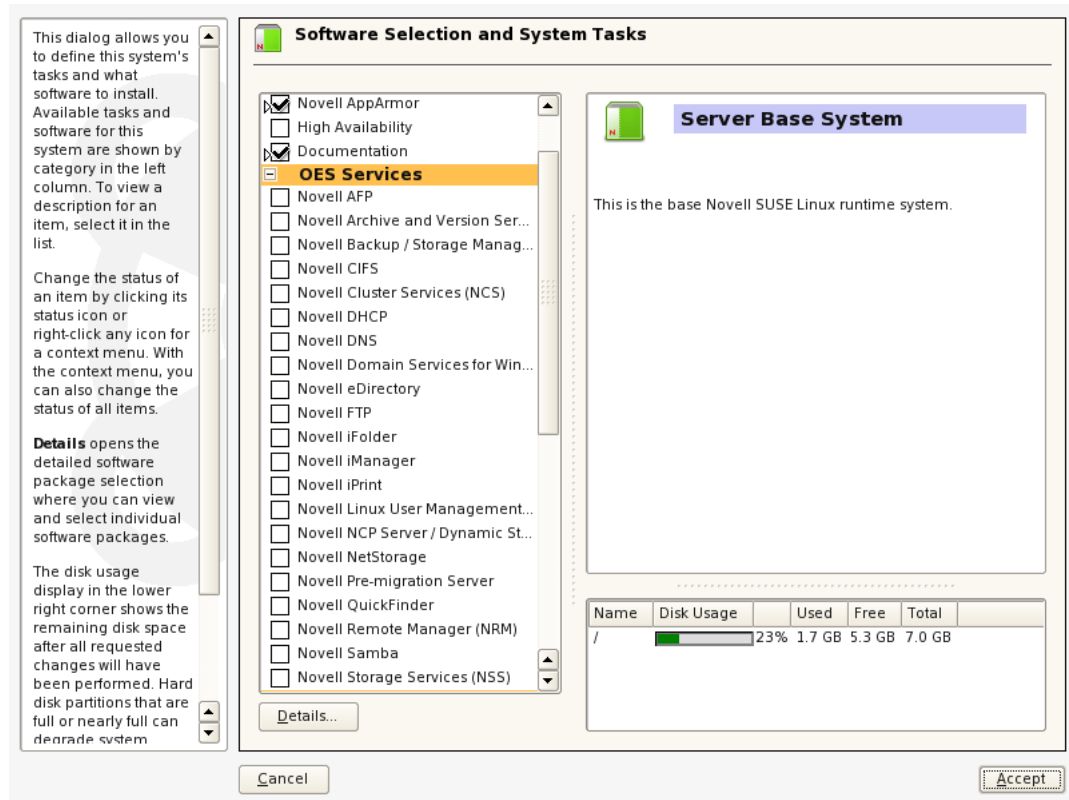
To customize which software packages are installed on the server:

- 1 On the Installation Settings page, click *Software*.

The Open Enterprise Server add-on adds the OES Services category of patterns to the base software selection categories offered by the SLES 10 installation. OES Services include patterns that contain Novell services or products such as Novell DNS and DHCP services, iPrint, or iManager.

None of the OES Services is selected by default. This lets you fully customize your OES server.

- 2 At this point, you can do the following to customize your software selections:
 - ◆ **Select OES Services:** You can select any number of the OES Services patterns as long as you avoid unsupported service combinations (see [“Unsupported Service Combinations”](#) in the *OES 2 SP3: Planning and Implementation Guide*).



A description of each pattern displays to the right of the pattern when it is selected. For a description of OES Services patterns and the components selected with each pattern, see [Table 2-4 on page 31](#).

You can manually change the default SLES selections by changing the install status and selecting the patterns offered in each category.

IMPORTANT: If you deselect a pattern after selecting it, you are instructing the installation program to not install that pattern and all of its dependent patterns. Rather than deselecting a pattern, click *Cancel* to cancel your software selections, then click the *Software* heading again to choose your selections again.

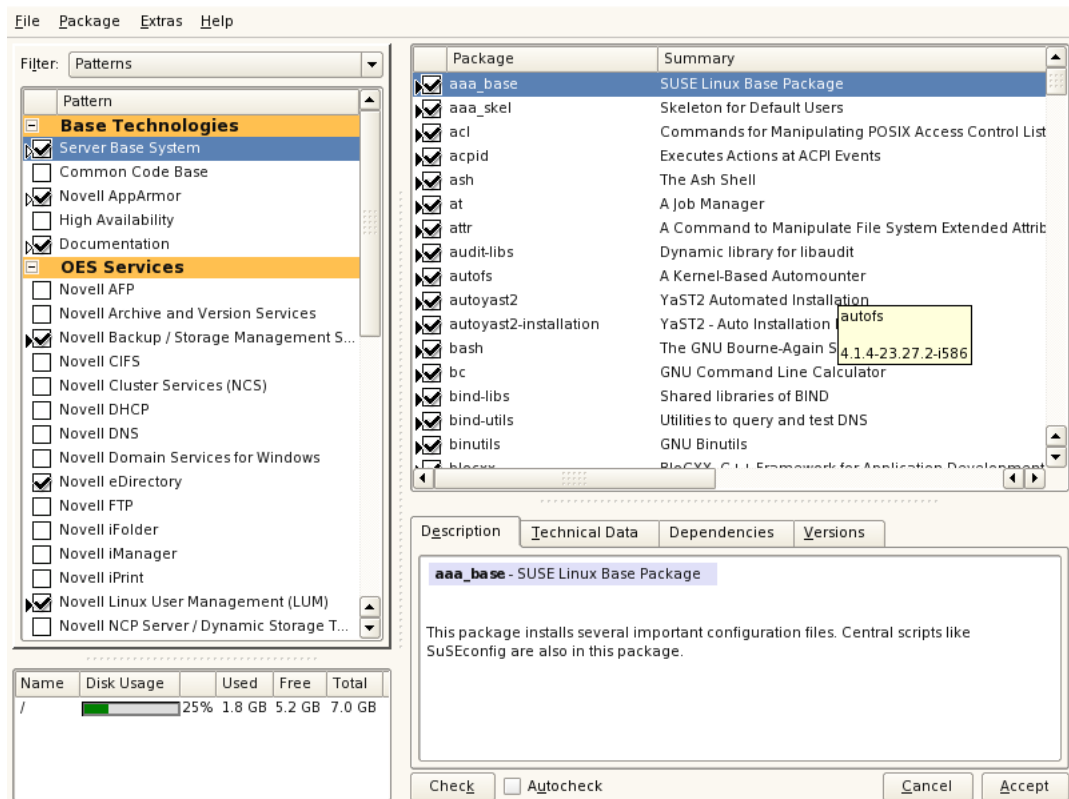
Selecting only the patterns that you want to install ensures that the patterns and their dependent patterns and packages are installed.

If you click *Accept*, then return to software pattern selection page, the selections that you made become your base selections and must be deselected if you want to remove them from the installation proposal.

You must install at least one of the SLES Base Technologies patterns.

Selecting a pattern automatically selects the other patterns that it depends on to complete the installation.

- ◆ **Customize Your Selections:** You can view the details of your selection and add or remove specific packages for the installation by clicking *Details*.



- 3 When you have selected the software components that you want to install, click *Accept*.
- 4 If you are prompted with the license agreement for *Professional TrueType Fonts*, click *Accept*.
- 5 (Conditional) If the prompt for *Automatic Changes* displays, click *Continue*.
- 6 (Conditional) If prompted, resolve any dependency conflicts.

3.5.3 Accepting the Installation Settings

- 1 Review the final Installation Summary page to ensure that you have all the Installation settings you desire.
- 2 After you have changed all the Installation Settings as desired, click *Accept*.
- 3 On the Confirm Installation page, click *Install*.

The base installation settings are applied and the packages are installed.

- 4 For installations using a network installation source, you can remove the network boot CD (*SLES 10 SP4 CD 1*) from the CD drive.

or

For installations using a CD or DVD installation source, leave the CD or DVD in the CD-ROM or DVD drive.

- 5 After the server reboot, proceed with [“Specifying Configuration Information”](#) on page 59.

3.6 Specifying Configuration Information

When the server reboots, you are required to complete the following configuration information:

- ◆ Section 3.6.1, “Specifying the Password for the System Administrator “root”,” on page 59
- ◆ Section 3.6.2, “Specifying the Hostname and Domain Name,” on page 59
- ◆ Section 3.6.3, “Specifying Network Configuration Settings,” on page 59
- ◆ Section 3.6.4, “Testing the Connection to the Internet,” on page 62
- ◆ Section 3.6.5, “Specifying Novell Customer Center Configuration Settings,” on page 63
- ◆ Section 3.6.6, “Updating the Server Software,” on page 65
- ◆ Section 3.6.7, “Specifying Service Configuration Settings,” on page 68
- ◆ Section 3.6.8, “Specifying LDAP Configuration Settings,” on page 70
- ◆ Section 3.6.9, “Specifying eDirectory Configuration Settings,” on page 72
- ◆ Section 3.6.10, “Configuring OES Services,” on page 78
- ◆ Section 3.6.11, “Configuration Guidelines for OES Services,” on page 79

3.6.1 Specifying the Password for the System Administrator “root”

In the Password for the System Administrator root page:

- 1 Specify the password for the `root` administrator.

For security reasons, the `root` user’s password should be at least five characters long and should contain a mixture of both uppercase and lowercase letters and numbers. Passwords are case sensitive.

The default password length limit is 8 characters. The maximum possible length for passwords is 72 characters. If you have a password longer than eight characters, click *Expert Options > Blowfish > OK*.

- 2 Confirm the password.
- 3 Click *Next*.

3.6.2 Specifying the Hostname and Domain Name

On the Hostname and Domain Name page:

- 1 Specify the DNS hostname associated with the IP address you have or will assign to the server.
- 2 Specify the DNS domain name for the server.
- 3 Deselect *Change Hostname via DHCP*.
- 4 Click *Next*.

3.6.3 Specifying Network Configuration Settings

On the Network Configuration page, you can change the configuration for the following, most of which do not apply in an OES server installation scenario:

- ◆ Network Mode
- ◆ Firewall
- ◆ IPv6

- ◆ Network Interfaces
- ◆ DSL Connections
- ◆ ISDN Adapters
- ◆ Modems
- ◆ VNC Remote Administration
- ◆ Proxy

In this section, we give details only for the components that apply to OES servers.

- ◆ [“Network Interface” on page 60](#)
- ◆ [“Firewall” on page 60](#)

Network Interface

Configuration success is directly tied to specific networking configuration requirements. Make sure that the settings covered in the steps that follow are configured exactly as specified.

Specify the setting for each network board on the server:

- 1 On the Network Configuration page, click *Network Interfaces*.
- 2 On the Network Card Configuration Overview page, select the network card you want to configure, then click *Edit*.
- 3 Select *Static Address Setup*, then specify the IP address and the subnet mask for the interface. OES requires a static IP address.
- 4 In the *Detailed Settings* list, select *Hostname and Name Server*.
 - 4a In the *Name Servers and Domain Search List* panel, specify from one to three DNS server IP addresses.
 - 4b Click *OK* to return to the *Detailed Settings* list.
- 5 In the *Detailed Settings* list, select *Routing*.
 - 5a Specify the IP address of the default gateway on the subnet where you are installing the OES server.
 - 5b Click *OK* to return to the *Detailed Settings* list.
- 6 Click *Next* to return to the Network Card Configuration Overview page.
- 7 Complete [Step 2](#) through [Step 6](#) for each network board, then click *Next* to return to the main Network Configuration page.

Firewall

For security reasons, a firewall is started automatically on each configured interface. The configuration proposal for the firewall is updated automatically every time the configuration of the interfaces or services is modified.

Many of the OES services require an open port in the firewall. [Table 3-2](#) shows the ports that are automatically opened when each listed OES service is configured.

Table 3-2 Open Enterprise Server Services and Ports

Service	Default Ports
Domain Services for Windows	<ul style="list-style-type: none"> ◆ 1636
eDirectory	<ul style="list-style-type: none"> ◆ 389 (LDAP) ◆ 636 (secure LDAP) <p>IMPORTANT: The scripts that manage the common proxy user introduced in OES 2 SP3 require port 636 for secure LDAP communications.</p> <ul style="list-style-type: none"> ◆ 8028 (HTTP for iMonitor) ◆ 8030 (secure HTTP for iMonitor) ◆ 524 (NCP)
iManager	<ul style="list-style-type: none"> ◆ 80 (HTTP) ◆ 443 (secure HTTP)
iPrint	<ul style="list-style-type: none"> ◆ 80 (HTTP) ◆ 443 (secure HTTP) ◆ 631 (IPP)
Novell AFP	<ul style="list-style-type: none"> ◆ 548
Novell Archive and Version Services	<ul style="list-style-type: none"> ◆ 26029
Novell CIFS	<ul style="list-style-type: none"> ◆ 636 (secure LDAP) <p>IMPORTANT: The scripts that manage the common proxy user introduced in OES 2 SP3 require port 636 for secure LDAP communications.</p>
Novell DHCP	<ul style="list-style-type: none"> ◆ 67
Novell DNS	<ul style="list-style-type: none"> ◆ 53 (HTTP) ◆ 953 (secure HTTP)
Novell FTP	<ul style="list-style-type: none"> ◆ 21
Novell Information Portal	<ul style="list-style-type: none"> ◆ 80 (HTTP) ◆ 443 (secure HTTP)
Novell NetWare Core Protocol (NCP)	<ul style="list-style-type: none"> ◆ 524
Novell Remote Manager	<ul style="list-style-type: none"> ◆ 8008 (HTTP) ◆ 8009 (secure HTTP)
OpenWBEM	<ul style="list-style-type: none"> ◆ 5988 (HTTP) ◆ 5989 (secure HTTP)
QuickFinder	<ul style="list-style-type: none"> ◆ 80 (HTTP) ◆ 443 (secure HTTP)
Samba	<ul style="list-style-type: none"> ◆ 139 (Netbios) ◆ 445 (Microsoft-ds)

Service	Default Ports
Secure Shell	♦ 22
Storage Management Services (Backup)	♦ 40193 (smdr daemon)
UDP	♦ 524

To adapt the automatic settings to your own preferences:

- 1 Click *Change > Firewall*.
- 2 In the left panel, select the settings you want to change, then make the changes in the right panel.
- 3 When you are finished, click *Accept*.

For more information about the firewall, see [Section 44.4.1, “Configuring the Firewall with YaST” in the SUSE Linux Enterprise Server Installation and Administration Guide](#) (http://www.novell.com/documentation/sles10/book_sle_reference/data/sec_fire_suse.html#sec_fire_suse_yast).

To disable the firewall:

- 1 On the Network Configuration page, under *Firewall*, click *enabled* on the *Firewall is enabled* status line.
When the firewall is disabled, the status for Firewall should read *Firewall is disabled*.
- 2 Verify that the settings on the Network Configuration page are set as desired, then click *Next* to save the configuration, then continue with [“Testing the Connection to the Internet” on page 62](#).

3.6.4 Testing the Connection to the Internet

On the Test Internet Connection page:

- 1 Select *Yes, Test Connection to the Internet*, then click *Next*.

Obtaining the latest SUSE release notes might fail at this point. If it does, view the log to verify that the network configuration is correct, then, click *Next*.

If the network configuration is not correct, click *Back > Back* and fix your network configuration. See [“Network Interface” on page 60](#).

IMPORTANT: Do not skip this test. For a successful install, you must configure the Novell Customer Center and update SLES 10 SP4 from the patch channel before configuring OES services.

- 2 Continue with [“Specifying Novell Customer Center Configuration Settings” on page 63](#).

3.6.5 Specifying Novell Customer Center Configuration Settings

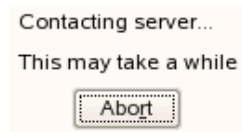
In contrast to OES 2 SP2, OES 2 SP3 requires that the SLES 10 SP4 base be updated prior to installing and configuring OES 2 SP3 services. If not, some OES services, such as Novell FTP, will not function properly after the installation and will need to be configured again after the SLES patches are applied.

Therefore, when you are entering the Novell Customer Center configuration information, it is critical that you enter either your purchased SLES 10 SP4 code or the 60-day evaluation code available with your SLES 10 SP4 download.

- 1 On the Novell Customer Center Configuration configuration page, select all of the following options, then click *Next*.

Option	What it Does
Configure Now	Proceeds with registering this server and the SLES 10 SP4 and OES 2 SP3 product in the Novell Customer center.
Hardware Profile	Sends the information to the Novell Customer Center about the hardware that you are installing SLES 10 SP4 and OES 2 SP3 on.
Optional Information	Sends optional information to the Novell Customer Center for your registration. For this release, this option doesn't send any additional information.
Registration Code	Makes the registration with activation codes mandatory.
Regularly Synchronize with the Customer Center	Keeps the installation sources for this server valid. It does not remove any installation sources that were manually added.

- 2 After you click *Next*, the following message is displayed.

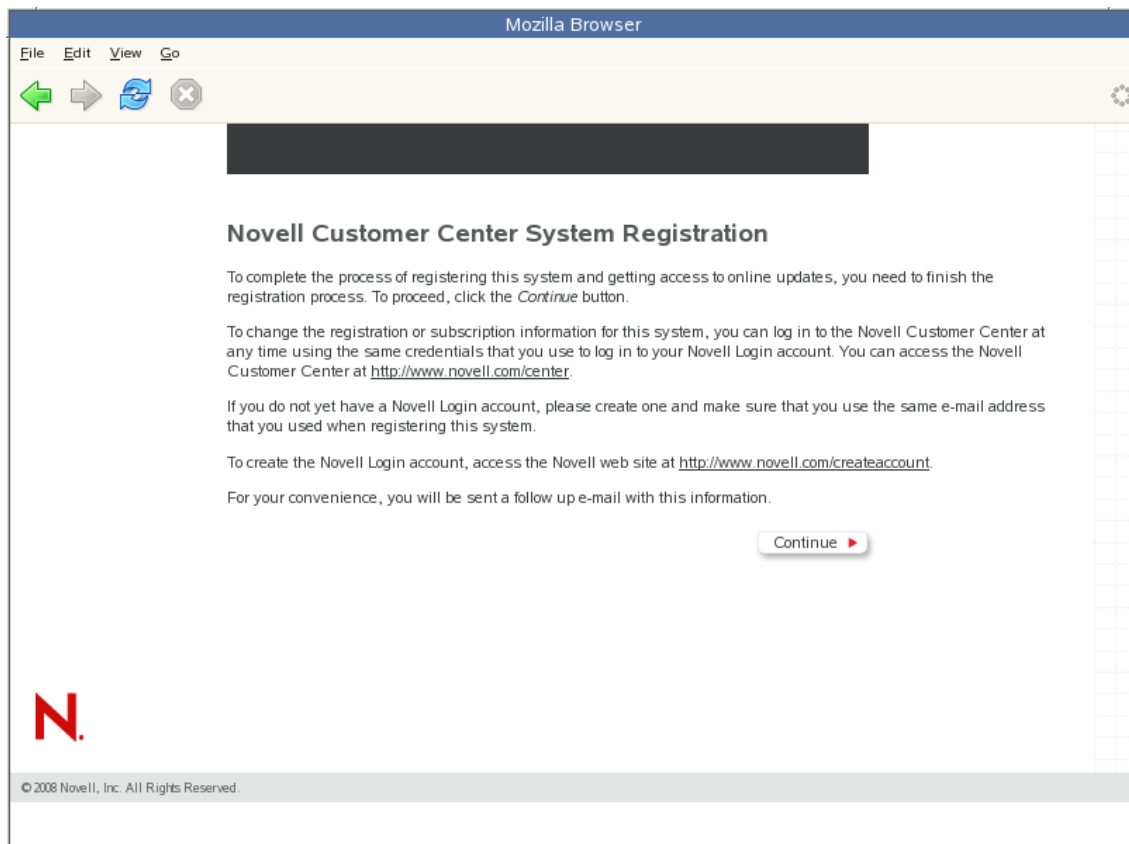


Wait until this message disappears and the Manual Interaction Required page displays.

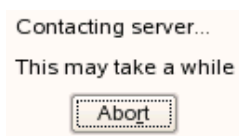
- 3 On the Manual Interaction Required page, note the information that you will be required to specify, then click *Continue*.
- 4 On the Novell Customer Center Registration page, specify the required information in the following fields, then click *Submit*:

Field	Information to Specify
Email Address	The e-mail address for your Novell Login account.
Confirm Email Address	The same e-mail address for your Novell Login account
Activation Code for SLES Components (optional):	Specify your purchased or 60-day evaluation registration code for the SLES 10 product. If you don't specify a code, the server cannot receive any updates or patches.
Activation Code for OES Components (optional):	Specify your purchased or 60-day evaluation registration code for the OES 2 product. If you don't specify a code, the server cannot receive any updates or patches.
System Name or Description (optional):	Specify a description to identify this server.

- When the message to complete the registration displays, click *Continue*.

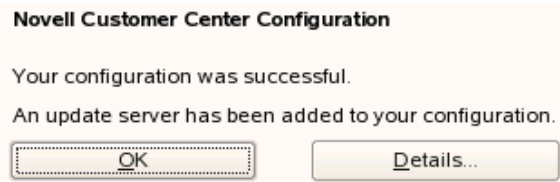


- After you click *Continue*, the following message is displayed with the Manual Interaction Required screen.



Wait until this message disappears and Novell Customer Center Configuration page displays.

- 7 When you see the message *Your configuration was successful* on the Novell Customer Center Configuration page, click *OK*.

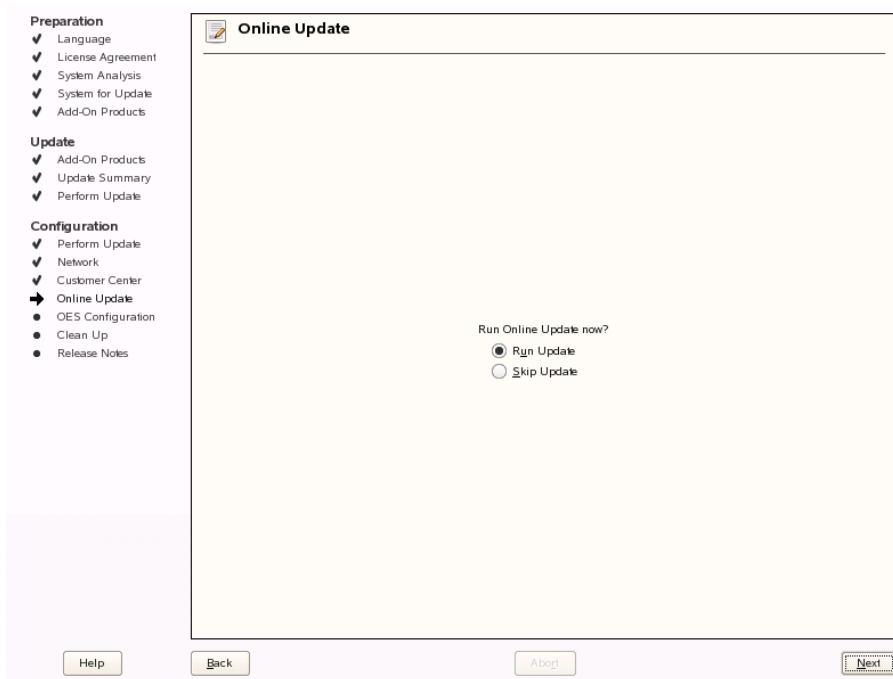


- 8 Continue with [“Updating the Server Software”](#) on page 65.

3.6.6 Updating the Server Software

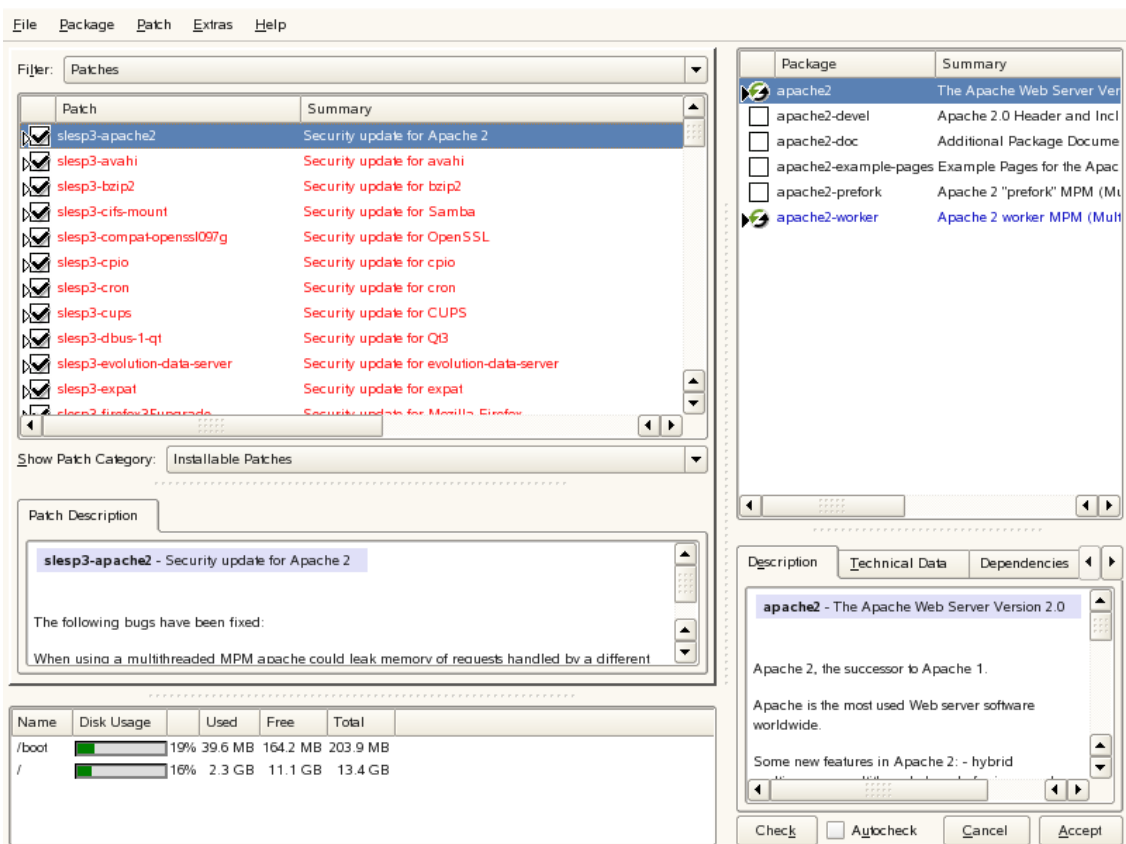
When you have a successful connection to the Internet and have registered the server in the Novell Customer Center, the server displays the Online Update page. You must run the online update now for a successful OES installation.

- 1 On the Online Updates page, click *Run Update > Next*.

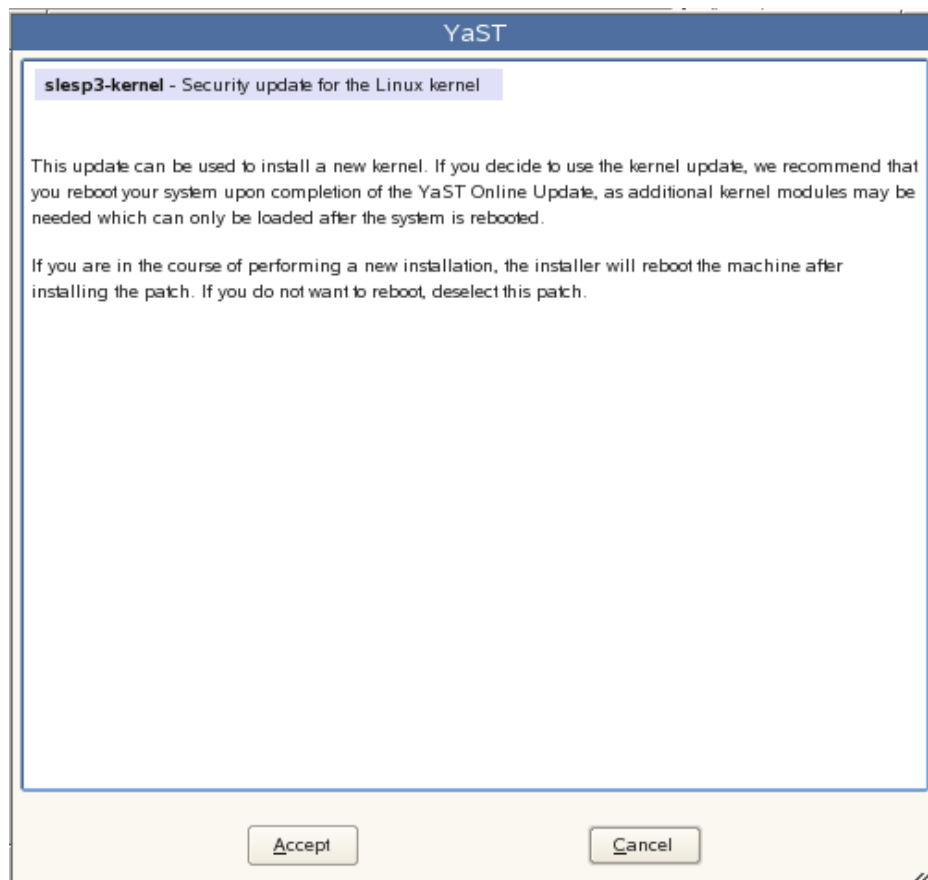


- 2 On the page that shows that updates are available, click *Accept*.

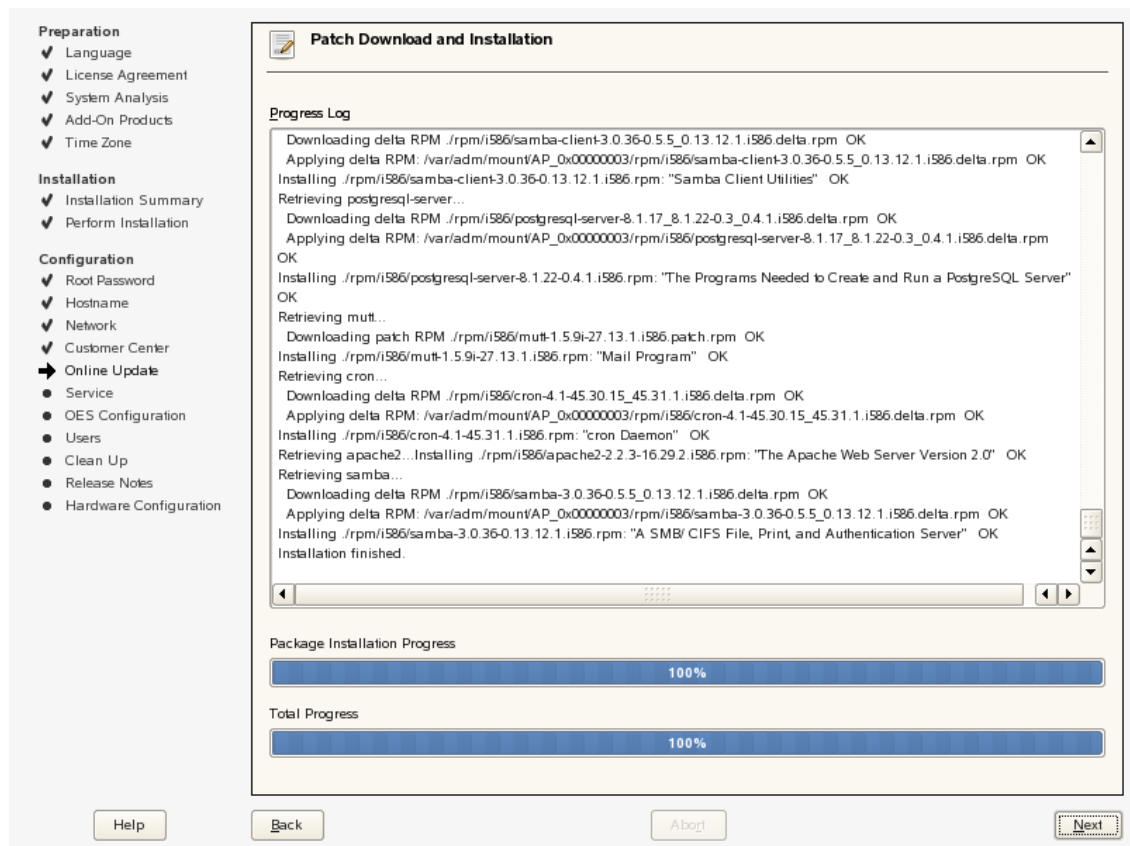
The check marks that are shown on the summary portion of the page are patches that have already been installed on your system.



3 When you see the following message, click *Accept*.



- 4 When you see the following message, click *Next*.

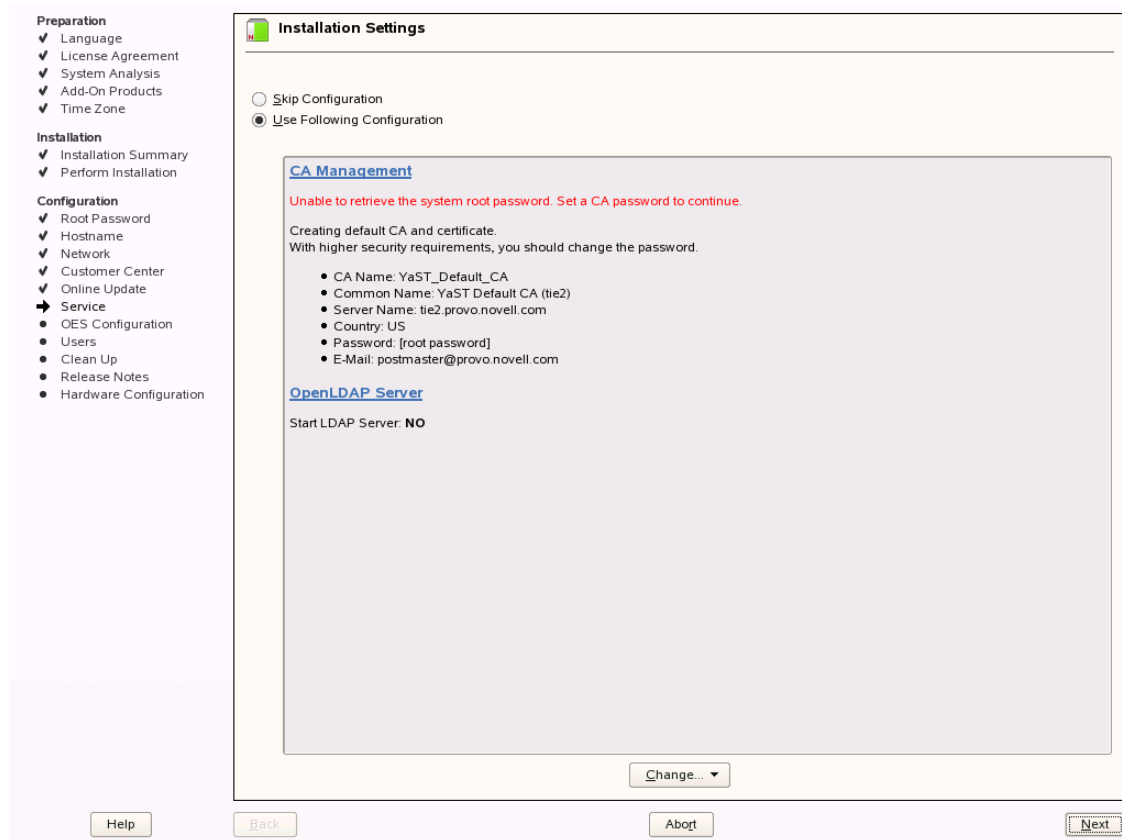


- 5 In the pop-up that informs you about the kernel update, click *OK*.
The system reboots before continuing the installation.
- 6 Continue with [“Specifying Service Configuration Settings” on page 68](#).

3.6.7 Specifying Service Configuration Settings

Because the server was rebooted during the installation, the default settings for CA management lost the root password as indicated by the red text under *CA Management*.

- 1 Reset the password for root.



- 1a On the Installation Settings page, click the *CA Management* link.
- 1b On the Managing CA and Certificates page, click *Edit Default Settings*.
- 1c On the Edit Default Settings page, specify the password for `root` in the Password and Confirm Password fields, then click *Next*.

The Installation Settings page reappears with no red text.

- 2 Observe the settings on the Installation Settings page.
 - ♦ **CA Management:** This indicates the certificate that is used by the Apache Web server if another certificate is not specified.

By default, OES creates and installs a replacement eDirectory certificate later in the installation process. We recommend that you accept the eDirectory certificate option because it is much more secure than the certificate that is proposed.

Alternatively, you can install a third-party certificate.

In all cases, do not disable the configuration at this point because the services that use Apache will not work if you do.

For more information about OES certificate management, see “[Certificate Management](#)” in the *OES 2 SP3: Planning and Implementation Guide*.

- ♦ **OpenLDAP Server:** Do not enable this option. On OES servers, Novell eDirectory LDAP server replaces the SLES 10 OpenLDAP server.
- 3 If you are not installing a third-party certificate, click *Next*.

or

If you are installing a third-party certificate, click *CA Management* and refer to the information about Certificate Authority Management on SLES, see in the “[Managing X.509 Certification](http://www.novell.com/documentation/sles10/book_sle_reference/data/cha_yast_ca.html)” in the *SUSE LINUX Enterprise Server 10 Installation and Administration Guide* (http://www.novell.com/documentation/sles10/book_sle_reference/data/cha_yast_ca.html). Then return to these instructions to continue your OES installation.

- 4 If you did not select the Novell eDirectory pattern for this server, continue with “[Specifying LDAP Configuration Settings](#)” on page 70.

Otherwise, skip the next section and continue with “[Specifying eDirectory Configuration Settings](#)” on page 72.

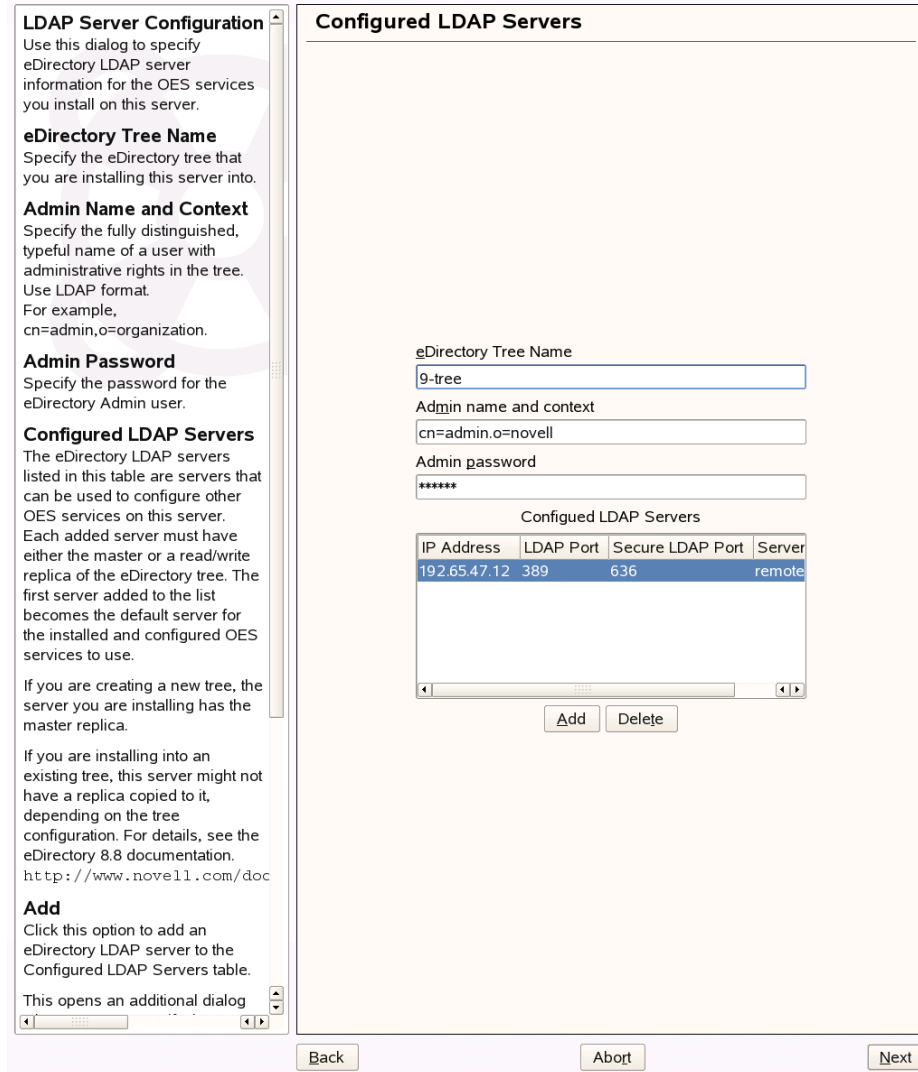
3.6.8 Specifying LDAP Configuration Settings

Many of the OES services require eDirectory. If eDirectory was not selected as a product to install on this server but other OES services that do require LDAP services were installed, the LDAP Configuration service displays, so that you can complete the required information.

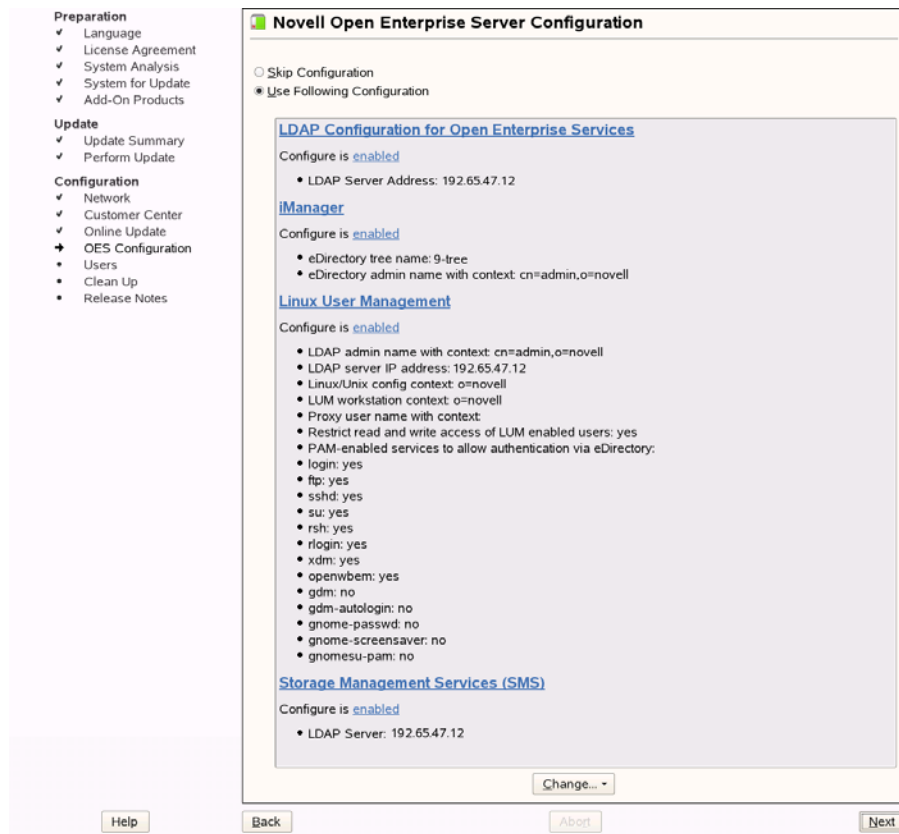
To specify the required information on the Configured LDAP Server page:

- 1 In the *eDirectory Tree Name* field, specify the name for the existing eDirectory tree that you are installing this server into.
- 2 In the *Admin Name and Context* field, specify the name and context for user Admin in the existing tree.
- 3 In the *Admin Password Name* field, specify a password for user Admin in the existing tree.
- 4 Add the LDAP servers that you want the services on this server to use. The servers that you add should hold the master or a read/write replica of eDirectory. Do the following for each server you want to add:
 - 4a Click *Add*.
 - 4b On the next page, specify the following information for the server to add, then click *Add*.
 - ♦ IP address

- ◆ LDAP port and secure LDAP port



- 5 When all the LDAP servers that you want to specify are listed, click *Next*.
- 6 Verify that the Novell Open Enterprise Server Configuration page displays the settings that you expected, then click *Next*.



7 Continue with “Configuring OES Services” on page 78.

3.6.9 Specifying eDirectory Configuration Settings

When you specify the eDirectory configuration settings, you can specify information to create a new tree and install the server in that new tree or you can install the server into an existing tree by specifying the information for it. Use the following instructions as applicable:

- ♦ “Creating a New eDirectory Tree and Installing the Server in It” on page 72
- ♦ “Installing the Server into an Existing eDirectory Tree” on page 73
- ♦ “Specifying Synchronizing Server Time Options” on page 74
- ♦ “Specifying SLP Configuration Options” on page 75
- ♦ “Selecting the Novell Modular Authentication Services (NMAS) Login Method” on page 76
- ♦ “Specifying OES Common Proxy User Information” on page 77

Creating a New eDirectory Tree and Installing the Server in It

- 1 On the eDirectory Configuration - New or Existing Tree page, select *New Tree*.
- 2 In the *eDirectory Tree Name* field, specify a name for the eDirectory tree that you want to create.

On OES servers, services that provide HTTPS connectivity are configured to use one of the following certificates:

- ♦ An eDirectory certificate issued by the Novell International Cryptographic Infrastructure (NICI),

- ◆ A third-party server certificate,
- ◆ The YaST self-signed common server certificate created in [Step 2 on page 69](#).

Self-signed certificates provide minimal security and limited trust. Unless you have invested in a third-party certificate, we recommend that you use the eDirectory certificates instead.

By default, the *Use eDirectory Certificates for HTTPS Services* check box is selected. This means that the existing server certificate and key files (YaST or third-party) will be replaced with eDirectory server certificate and key files.

The default YaST server certificate and key files are:

- ◆ Key file: `/etc/ssl/servercerts/serverkey.pem`
- ◆ Certificate file: `/etc/ssl/servercerts/servercert.pem`

The eDirectory server certificate and key files are:

- ◆ Key file: `/etc/ssl/servercerts/eDirkey.pem`
- ◆ Certificate file: `/etc/ssl/servercerts/eDircert.pem`

For more information on certificate management, see “[Certificate Management](#)” in the *OES 2 SP3: Planning and Implementation Guide*.

- 3 On the eDirectory Configuration - New Tree Information page, specify the required information:
 - ◆ The fully distinguished name and context for the user Admin on the existing server
 - ◆ The password for user Admin on the existing server.
- 4 Click *Next*.
- 5 On the eDirectory Configuration - Local Server Configuration page, specify the following information:
 - ◆ The context for the server object in the eDirectory tree.
 - ◆ A location for the eDirectory database.
The default path is `/var/opt/novell/eDirectory/data/dib`, but you can use this option to change the location if you expect to have a large number of objects in your tree and if the current file system does not have sufficient space.
 - ◆ The ports to use for servicing LDAP requests.
The default ports are 389 (non-secure) and 636 (secure).

IMPORTANT: The scripts that manage the common proxy user introduced in OES 2 SP3 require port 636 for secure LDAP communications.

 - ◆ The ports to use for providing access to the iMonitor application.
The default ports are 8028 (non-secure) and 8030 (secure).
- 6 Click *Next* and continue with “[Specifying Synchronizing Server Time Options](#)” on page 74.

Installing the Server into an Existing eDirectory Tree

- 1 On the eDirectory Configuration - New or Existing Tree page, select *Existing Tree*.
- 2 In the *eDirectory Tree Name* field, specify a name for the eDirectory tree you want to join.

On OES servers, services that provide HTTPS connectivity are configured to use either of the following:

- ◆ An eDirectory certificate issued by the Novell International Cryptographic Infrastructure (NICI)

- ♦ The YaST self-signed common server certificate created in [Step 2 on page 69](#).
Self-signed certificates provide minimal security and limited trust, we recommend that you use the eDirectory certificates instead.

By default, the *Use eDirectory Certificates for HTTPS Services* check box is selected. This means that the existing YaST server certificate and key files will be replaced with eDirectory server certificate and key files.

The default YaST server certificate and key files are:

- ♦ Key file: `/etc/ssl/servercerts/serverkey.pem`
- ♦ Certificate file: `/etc/ssl/servercerts/servercert.pem`

The eDirectory server certificate and key files are:

- ♦ Key file: `/etc/ssl/servercerts/eDirkey.pem`
- ♦ Certificate file: `/etc/ssl/servercerts/eDircert.pem`

For more information on certificate management, see “[Certificate Management](#)” in the [OES 2 SP3: Planning and Implementation Guide](#).

- 3 On the eDirectory Configuration - Existing Tree Information page, specify the required information:
 - ♦ The IP address of an existing eDirectory server with a replica
 - ♦ The NCP port on the existing server
 - ♦ The LDAP and secure LDAP port on the existing server.
 - ♦ The fully distinguished name and context for the user Admin on the existing server
 - ♦ The password for user Admin on the existing server.
- 4 Click *Next*.
- 5 On the eDirectory Configuration - Local Server Configuration page, specify the following information:
 - ♦ The context for the server object in the eDirectory tree.
 - ♦ A location for the eDirectory database.
The default path is `/var/opt/novell/eDirectory/data/dib`, but you can use this option to change the location if you expect to have a large number of objects in your tree and if the current file system does not have sufficient space.
 - ♦ The ports to use for servicing LDAP requests.
The default ports are 389 (non-secure) and 636 (secure).

IMPORTANT: The scripts that manage the common proxy user introduced in OES 2 SP3 require port 636 for secure LDAP communications.

 - ♦ The ports to use for providing access to the iMonitor application.
The default ports are 8028 (non-secure) and 8030 (secure).
- 6 Click *Next* and continue with “[Specifying Synchronizing Server Time Options](#)” on page 74.

Specifying Synchronizing Server Time Options

eDirectory requires that all OES and NetWare servers are time-synchronized.

- 1 On the eDirectory Configuration - NTP & SLP page, in the *Network Time Protocol (NTP) Server* field, specify the IP address or DNS hostname of an NTP server.
For the first server in a tree, we recommend specifying a reliable external time source.

When you install multiple servers into the same eDirectory tree, make sure that all servers point to the same time source and not to the server holding the master replica.

For servers joining a tree, specify the same external NTP time source that the tree is using, or specify the IP address of a configured time source in the tree. A time source in the tree should be running time services for 15 minutes or more before connecting to it, or the time synchronization request for the installation fails.

If the time source server is NetWare 5.0 or earlier, you must specify an alternate NTP time source, or the time synchronization request fails.

- 2 If you want to use the server's hardware clock, select *Use Local Clock*.

For servers joining a tree, the installation does not let you proceed if you select this option. You must specify the same external NTP time source that the tree is using, or specify the IP address of a configured time source in the tree that has been running time services for 15 minutes or more.

- 3 Continue with [“Specifying SLP Configuration Options” on page 75](#).

For more information on time synchronization, see [Implementing Time Synchronization](#) in the *OES 2 SP3: Planning and Implementation Guide*.

Specifying SLP Configuration Options

- 1 On the eDirectory Configuration - NTP & SLP page, specify the SLP options as desired.

You have the following options for configuring SLP:

- ♦ **Do Not Configure SLP:** This option is good for eDirectory trees with three or fewer eDirectory servers.

Without SLP, users can't see a tree list, but they should still be able to attach to a tree by name. Users can configure the Novell Client to use DNS, or they can configure the local host file (%SystemDrive%\windows\system32\drivers\etc\hosts on WinXP) to resolve tree and server names. Users can also specify preferred tree and context information in the DHCP Settings page of the Novell Client.

- ♦ **Use Multicast to Access SLP:** This option allows the server to request SLP information by using multicast packets. Use this in environments that have not established SLP DAs (Directory Agents).

IMPORTANT: If you select this option, you must disable the firewall for SLP to work correctly. Multicast creates a significant amount of network traffic and can reduce network throughput.

- ♦ **Configure SLP to use an existing Directory Agent:** This option configures SLP to use an existing Directory Agent (DA) in your network. Use this in environments that have established SLP DAs. When you select this option, you configure the servers to use by adding or removing them from the SLP Directory Agent list.
- ♦ **Configure as Directory Agent:** This option configures this server as a Directory Agent (DA). This is useful if you plan to have more than three servers in the tree and want to set up SLP during the installation.
 - ♦ **DASyncReg:** This option causes SLP, when it starts, to query the Directory Agents listed under Configured SLP Directory Agents for their current lists of registered services. It also causes the DA to share service registrations that it receives with the other DAs in the SLP Directory Agent list.
 - ♦ **Backup SLP Registrations:** This option causes SLP to back up the list of services that are registered with this Directory Agent on the local disk.

- ♦ **Backup Interval in Seconds:** This specifies how often the list of registered services is backed up.
 - ♦ **Service Location Protocols and Scope:** This option configures the scopes that a user agent (UA) or service agent (SA) is allowed when making requests or when registering services, or specifies the scopes a directory agent (DA) must support. The default value is DEFAULT. Use commas to separate each scope. For example, net.slp.useScopes = myScope1,myScope2,myScope3.
 - ♦ **Configured SLP Directory Agents:** This option lets you manage the list of hostname or IP addresses of one or more external servers on which an SLP Directory Agent is running.
- 2 Click *Next* and confirm your selection if necessary, then continue with [Selecting the Novell Modular Authentication Services \(NMAS\) Login Method](#).

Selecting the Novell Modular Authentication Services (NMAS) Login Method

- 1 On the *Novell Modular Authentication Services* page, select all the login methods you want to install.

IMPORTANT: The NMAS client software must be installed on each client workstation where you want to use the NMAS login methods. The NMAS client software is included with the Novell Client software.

The following methods are available:

- ♦ **CertMutual:** The Certificate Mutual login method implements the Simple Authentication and Security Layer (SASL) EXTERNAL mechanism, which uses SSL certificates to provide client authentication to eDirectory through LDAP.
- ♦ **Challenge Response:** The Challenge-Response login method works with the Identity Manager password self-service process. This method allows either an administrator or a user to define a password challenge question and a response, which are saved in the password policy. Then, when users forget their passwords, they can reset their own passwords by providing the correct response to the challenge question.
- ♦ **DIGEST-MD5:** The Digest MD5 login method implements the Simple Authentication and Security Layer (SASL) DIGEST-MD5 mechanism as a means of authenticating the user to eDirectory through LDAP.
- ♦ **NDS:** The NDS login method provides secure password challenge-response user authentication to eDirectory. This method is installed by default and supports the traditional NDS password when the NMAS client is in use. Reinstallation is necessary only if the NDS login method object has been removed from the directory.
- ♦ **Simple Password:** The Simple Password NMAS login method provides password authentication to eDirectory. The Simple Password is a more flexible but less secure alternative to the NDS password. Simple Passwords are stored in a secret store on the user object.
- ♦ **SASL GSSAPI:** The SASL GSSAPI login method implements the Generic Security Services Application Program Interface (GSSAPI) authentication. It uses the Simple Authentication and Security Layer (SASL), which enables users to authenticate to eDirectory through LDAP by using a Kerberos ticket.

For more information about installing and configuring eDirectory, see [“Installing or Upgrading Novell eDirectory on Linux in Novell eDirectory 8.8 Installation Guide](#).

For more information on these login methods, see the online help and [“Managing Login and Post-Login Methods and Sequences”](#) in the *Novell Modular Authentication Services 3.3.1 Administration Guide*.

- 2 Click *Next*, then continue with [“Specifying OES Common Proxy User Information”](#) on page 77.

Specifying OES Common Proxy User Information

For information about this option introduced with OES 2 SP3, see [“Common Proxy User - New in SP3”](#) in the *OES 2 SP3: Planning and Implementation Guide*.

- 1 On the OES Common Proxy User Information page, specify the configuration settings for this user.

eDirectory Configuration - OES Common Proxy User Information

Use Common Proxy User as default for OES Products

OES Common Proxy User Name (e.g. cn=OESCommonProxy_hostname,o=novell)

cn=OESCommonProxy_hostname,ou=servers,ou=lab,o=company

OES Common Proxy User Password

.....

Verify OES Common Proxy User Password

.....

Assign Common Proxy Password Policy to Proxy User

- ◆ **Use Common Proxy User as Default for OES Products:** Selecting this option configures the specified common proxy user for the following services: CIFS, DNS, DHCP, iFolder, NetStorage, and NCS. Optionally, you can specify that LUM uses it.
- ◆ **OES Common Proxy User Name:** By default, the common proxy user’s name is `OESCommonProxy_hostname`, but you can specify any name that fits your naming methodology. For more information, see [“Can I Change the Common Proxy User Name and Context?”](#) in the *OES 2 SP3: Planning and Implementation Guide*.

IMPORTANT: Do not change the context of the common proxy user object until you read and understand the information in [“New Container Creation Not Possible During a New Install”](#) in the *OES 2 SP3 Readme*.

- ♦ **OES Common Proxy User Password:** You can accept the default system-generated password or specify a new password for the common proxy user.

IMPORTANT: Unless you have specific requirements to know the password of this system user, we recommend that you leverage the automatic password functionality that is newly introduced in SP3.

- ♦ **Verify OES Common Proxy User Password:** If you specified a different password, type the same password in this field. Otherwise, the system-generated is automatically included.
- ♦ **Assign Common Proxy Password Policy to Proxy User:** The initial common proxy password policy is a simple password policy created with default rules. If desired, you can modify this policy after the installation to enforce stricter rules regarding password length, characters supported, expiration intervals, etc.

2 Continue with [“Configuring OES Services” on page 78](#).

3.6.10 Configuring OES Services

After you complete the LDAP configuration or the eDirectory configuration, the Novell Open Enterprise Server Configuration summary page is displayed, showing all the OES components you installed and their configuration settings.

- 1 Review the setting for each component and click the component heading to change any settings. For help with specifying the configuration information for OES services, see the information in [“Configuration Guidelines for OES Services” on page 79](#).
- 2 When you are satisfied with the settings for each component, click *Next*.
- 3 When you confirm the OES component configurations, you might receive the following error:

The proposal contains an error that must be resolved before continuing.

If this error is displayed, check the summary list of configured products for any messages immediately below each product heading. These messages indicate products or services that need to be configured. If you are running the YaST graphical interface, the messages are red text. If you are using the YaST text-based interface, they are not red.

For example, if you selected Linux User Management in connection with other OES products or services, you might see a message similar to the following:

Linux User Management needs to be configured before you can continue or disable the configuration.

If you see a message like this, do the following:

- 3a** On the summary page, click the heading for the component.
- 3b** Supply the missing information in each configuration page.

When you specify the configuration information for OES services, see the information in [“Configuration Guidelines for OES Services” on page 79](#); or, if you are reading online, click a link below:

- ♦ [AFP](#)
- ♦ [Archive and Version Services](#)
- ♦ [Backup/Storage Management Services \(SMS\)](#)

- ♦ CIFS
- ♦ Clustering (NCS)
- ♦ DHCP
- ♦ DNS
- ♦ Domain Services for Windows (DSfW)
- ♦ eDirectory
- ♦ FTP
- ♦ iFolder
- ♦ iManager
- ♦ iPrint
- ♦ Linux User Management (LUM)
- ♦ NCP Server/Dynamic Storage Technology
- ♦ NetStorage
- ♦ Pre-Migration Server
- ♦ QuickFinder
- ♦ Novell Remote Manger (NRM)
- ♦ Novell Samba
- ♦ Novell Storage Services

When you have finished the configuration of a component, you are returned to the Novell Open Enterprise Server Configuration summary page.

- 3c** If you want to skip the configuration of a specific component and configure it later, click *Enabled* in the *Configuration is enabled* status to change the status to *Configuration is disabled*.

If you change the status to *Configuration is disabled*, you need to configure the OES components after the installation is complete. See [“Installing or Configuring OES 2 SP3 on an Existing Server”](#) on page 111.

- 4 After resolving all product configuration problems, click *Next* to proceed with the configuration of all components.
- 5 When the configuration is complete, continue with [Section 3.7, “Finishing the Installation,”](#) on page 107.

3.6.11 Configuration Guidelines for OES Services

- ♦ [“Service Configuration Caveats”](#) on page 80
- ♦ [“LDAP Configuration for Open Enterprise Services”](#) on page 81
- ♦ [“Novell AFP Services”](#) on page 82
- ♦ [“Novell Archive and Version Services”](#) on page 82
- ♦ [“Novell Backup/Storage Management Services \(SMS\)”](#) on page 83
- ♦ [“Novell CIFS for Linux”](#) on page 83
- ♦ [“Novell Cluster Services”](#) on page 84
- ♦ [“Novell DHCP Services”](#) on page 86
- ♦ [“Novell DNS Services”](#) on page 88
- ♦ [“Novell Domain Services for Windows”](#) on page 90

- ♦ “Novell eDirectory Services” on page 90
- ♦ “Novell FTP Services” on page 95
- ♦ “Novell iFolder” on page 95
- ♦ “Novell iManager” on page 100
- ♦ “Novell iPrint” on page 101
- ♦ “Novell Linux User Management” on page 101
- ♦ “Novell NCP Server / Dynamic Storage Technology” on page 103
- ♦ “Novell NetStorage” on page 104
- ♦ “Novell Pre-Migration Server” on page 104
- ♦ “Novell QuickFinder” on page 104
- ♦ “Novell Remote Manager” on page 105
- ♦ “Novell Samba” on page 105
- ♦ “Novell Storage Services (NSS)” on page 107

Service Configuration Caveats

Keep the following items in mind as you configure the OES 2 SP3:

Table 3-3 *Caveats for Configuring OES Services*

Issue	Guideline
Software Selections When Using Text-Based YaST	<p>Some older machines, such as a Dell 1300, use the text mode install by default when the video card does not meet SLES 10 specifications. When you go to the <i>Software Selection</i>, and then to the details of the OES software selections, YaST doesn't bring up the OES selections like it does when you use the graphical YaST (YaST2).</p> <p>To view the Software Selection and System Task screen, select <i>Filter > Pattern</i> (or press Alt+F > Alt+I).</p>
Specifying a State identifier for a Locality Class object	<p>If you to specify a state identifier, such as California, Utah, or Karnataka, as a Locality Class object in your eDirectory tree hierarchy, you must make sure to use the correct abbreviation in your LDAP (comma-delimited) or NDAP (period-delimited) syntax.</p> <p>When using LDAP syntax, use “st” to specify a state. For example:</p> <pre>ou=example_organization,o=example_company,st=utah,c=us</pre> <p>When using NDAP syntax, use “s” to specify a state. For example:</p> <pre>ou=example_organization.o=example_company.s=utah.c=us</pre>
Specifying Typeful Admin Names	<p>When you install OES, you must specify a fully distinguished admin name by using the typeful, LDAP syntax that includes object type abbreviations (cn=, ou=, o=, etc.). For example, you might specify the following:</p> <pre>cn=admin,ou=example_organization,o=example_company</pre>

Issue	Guideline
Using Dot-Delimited or Comma-Delimited Input for All Products	<p>For all parameters requiring full contexts, you can separate the names by using comma-delimited syntax; you must be consistent in your usage within the field.</p> <p>The OES installation routine displays all input in the comma-delimited (LDAP) format. However, it converts the name separators to dots when this is required by individual product components.</p> <p>IMPORTANT: After the OES components are installed, be sure to follow the conventions specified in the documentation for each product. Some contexts must be specified using periods (.) and others using commas (,). However, eDirectory supports names like <code>cn=juan\garcia.ou=users.o=novell</code>. The period (.) inside a name component must be escaped.</p> <p>When using NDAP format (dot), you must escape all embedded dots. For example: <code>cn=admin.o=novell\.provo</code></p> <p>When using LDAP format (commas), you must escape all embedded commas. For example: <code>cn=admin,o=novell\,provo</code></p> <p>The installation disallows a backslash and period (\.) in the CN portion of the admin name.</p> <p>For example, these names are supported:</p> <pre>cn=admin.o=novell cn=admin.o=novell\.provo cn=admin.ou=deployment\.linux.o=novell\.provo</pre> <p>These names are not supported:</p> <pre>cn=admin\.first.o=novell cn=admin\.root.o=novell</pre> <p>Before LUM-enabling users whose <code>cn</code> contains a period (.), you must remove the backslash (\) from the <code>unique_id</code> field of the User object container.</p> <p>For example, <code>cn=juan.garcia</code> has a <code>unique_id</code> attribute = <code>juan\garcia</code>. Before such a user can be LUM-enabled, the backslash (\) must be removed from the <code>unique_id</code> attribute.</p>

LDAP Configuration for Open Enterprise Services

Table 3-4 LDAP Configuration for Open Enterprise Services Values

Page and Parameters
Configured LDAP Servers
<ul style="list-style-type: none"> ◆ eDirectory Tree Name: The eDirectory tree name that you specified when configuring eDirectory. The tree you are installing this server into.
<ul style="list-style-type: none"> ◆ Admin Name and Context: The eDirectory Admin name you specified when configuring eDirectory.
<ul style="list-style-type: none"> ◆ Admin Password: The password of the eDirectory Admin user.

Page and Parameters

- ◆ **Configured LDAP Servers:** You can specify a list of servers that can be used to configure other OES services on this server.

Each added server must have either the master or a read/write replica of the eDirectory tree. The first server added to the list becomes the default server for the installed and configured OES services to use.

For each server you must specify an IP Address, LDAP Port, Secure LDAP Port, and Server Type.

For information about specifying multiple LDAP servers for Linux User Management (LUM), see “[Configuring a Failover Mechanism](#)” in the *OES 2 SP3: Novell Linux User Management Administration Guide*.

Default: The eDirectory server you specified when configuring eDirectory.

Novell AFP Services

Table 3-5 *Novell Apple Filing Protocol Parameters and Values*

Page and Parameters

AFP Configuration - Mac Client Access to NSS Volumes

- ◆ **eDirectory Contexts:** Specify the FQDN of the eDirectory containers that contain AFP users, for example ou=afp_users.o=novell.
-

For additional configuration instructions, see “[Installing and Setting Up AFP](#)” in the *OES 2 SP3: Novell AFP For Linux Administration Guide*.

Novell Archive and Version Services

Table 3-6 *Novell Archive and Version Services Parameters and Values*

Page and Parameters

Archive and Version Services Configuration

- ◆ **Database Port Number:** Specify a port number to use for the archive database communications.

Default: 5432

- ◆ **Database Username:** Specify a username for the administrator of the archive database (the PostgreSQL database for the archived data).

IMPORTANT: The Postgres user must be an unprivileged user, not the root user.

Default: arkuser

- ◆ **Database Password:** Specify and validate a password for the database user.

Default: The password for the eDirectory Admin user.

For additional configuration instructions, see “[Setting Up Archive and Version Services](#)” in the *OES 2 SP3: Novell Archive and Version Services 2.1 Administration Guide for Linux*.

Novell Backup/Storage Management Services (SMS)

Table 3-7 Novell Backup/Storage Management Services Parameters and Values

Page and Parameters

SMS Configuration

- ◆ **Directory Server Address:** If you do not want to use the default shown, select a different LDAP server in the list.

If you are installing into an existing tree, ensure that the server you select has a master replica or read/write replica of eDirectory. If you need to add another LDAP server to the list, add it by using the LDAP Configuration for Open Enterprise Services dialog box.

Default: The first server selected in the *LDAP Configuration* list of servers.

For additional configuration instructions, see “[Installing and Configuring SMS](#)” in the *Installing and Configuring SMS*.

Novell CIFS for Linux

Table 3-8 Novell CIFS Parameters and Values

Page and Parameters

Novell CIFS Service Configuration

- ◆ **eDirectory server address or host name:** Leave the default or select from the drop-down list to change to a different server.
 - ◆ **LDAP port for CIFS Server:** Displays the port value.
 - ◆ **Local NCP Server context:** Displays the NCP Server context.
-

- ◆ **CIFS Proxy User**

- ◆ **Use existing user as CIFS Proxy User:** Select this option to use an existing proxy user for the CIFS service.

If you specified the server’s common proxy user, this option is selected.

- ◆ **Create a new CIFS Proxy User:** Select this option to create a new proxy user for the CIFS service.

- ◆ **CIFS Proxy User Name:** Specify the FQDN (fully qualified distinguished name) of the CIFS proxy user.

For example: cn=user, o=novell

NOTE: This user is granted rights to read the passwords of any users, including non-CIFS users, that are governed by any of the password policies you select in the Novell CIFS Service Configuration page.

- ◆ **CIFS Proxy User Password:** Specify a password for the CIFS proxy user to use when authenticating to the CIFS server, and verify the password if you are specifying an existing proxy user.

For more information on proxy user and password management, see “[Planning Your Proxy Users](#)” in the *OES 2 SP3: Planning and Implementation Guide*.

Page and Parameters

- ◆ **Credential Storage Location:** Accept CASA or specify the *Local File* option.

The CIFS proxy user password is encrypted and encoded in the credential storage location.

Default: CASA

Novell CIFS Service Configuration (2)

- ◆ **eDirectory Contexts:** Provide a list of contexts that are searched when the CIFS User enters a username. The server searches each context in the list until it finds the correct user object.
-

Novell CIFS Service Configuration (3)

- ◆ **Select the Password Policies Assigned to CIFS Users:** The specified CIFS Proxy User is granted rights to read the passwords of all users assigned to the password policies you select.

If you are installing in a new tree, the list is blank. The install creates a policy named CIFS Default Policy for you.

For more information about proxy users and password policies, see “[System User and Group Management in OES 2 SP3](#)” and “[Coordinating Password Policies Among Multiple File Services](#)” in the *OES 2 SP3: Planning and Implementation Guide*.

For additional configuration instructions, see “[Installing Upgrading and Setting Up CIFS](#)” in the *OES 2 SP3: Novell CIFS for Linux Administration Guide* and the *OES 2 SP3: Novell AFP For Linux Administration Guide*

Novell Cluster Services

Table 3-9 *Novell Cluster Services Parameters and Values*

Page and Parameters

Novell Cluster Services (NCS) Configuration

- ◆ **New or Existing Cluster:** Specify whether the server is part of a new cluster or is joining an existing cluster.

Default: New Cluster

- ◆ **Directory Server Address:** The IP address shown is the default LDAP server for this service. If you do not want to use the default, select a different LDAP server in the list.

If you are installing into an existing tree, ensure that the server you select has a master replica or read/write replica of eDirectory. If you need to add another LDAP server to the list, add it by using the LDAP Configuration for Open Enterprise Services dialog box.

Default: The first server selected in the *LDAP Configuration* list of servers.

Page and Parameters

- ◆ **Cluster FDN:** Specify or browse to the fully distinguished name (FDN) of the cluster. Use the comma format illustrated in the example. Do not use dots.

If you are creating a new cluster, this is the name of the new cluster and the eDirectory context where the new cluster object will reside. You must specify an existing context. Specifying a new context does not create a new context.

If you are adding a server to an existing cluster, this is the name and eDirectory context of the cluster that you are adding this server to.

Cluster names must be unique. You cannot create two clusters with the same name in the same eDirectory tree. Cluster names are case sensitive on Linux.

- ◆ **Cluster IP Address:** If you are creating a new cluster, specify a unique IP address for the cluster.

The cluster IP address is separate from the server IP address and is required to be on the same IP subnet as the other servers in the cluster.

- ◆ **Storage Device With Shared Media:** If you are creating a new cluster, select the device where the Split Brain Detector (SBD) partition will be created.

If you have a shared disk system attached to your cluster servers, Novell Cluster Services creates a small cluster partition on that shared disk system. This small cluster partition is referred to as the Split Brain Detector (SBD) partition. Specify the drive or device where you want the small cluster partition created.

You must have at least 20 MB of free space on one of the shared disk drives to create the cluster partition. If no free space is available, the shared disk drives cannot be used by Novell Cluster Services.

If you do not have a shared disk system connected to your cluster servers, accept the default (none). You must create the SBD manually before adding a second server to the cluster.

Default: none

- ◆ **Optional Device for Mirrored Partitions:** If you want to mirror the SBD partition for greater fault tolerance, select the device where you want the mirror to be.

You can also mirror SBD partitions after installing Novell Cluster Services.

Novell Cluster Services (NCS) Configuration (2)

- ◆ **IP Address of this Node:** This field contains the IP address of this node. If this server has multiple IP addresses, you can change the default address to another value if desired.
-

- ◆ **Start Cluster Services Now:** Select this box if you want clustering to start now. If you want clustering to start after rebooting, or if you want to manually start it later, deselect this box.

This option applies only to installing Novell Cluster Services after the OES installation because it starts automatically when the server initializes during the installation.

If you choose to not start Novell Cluster Services software, you need to either manually start it after the installation, or reboot the cluster server to automatically start it.

You can manually start Novell Cluster Services by going to the `/etc/init.d` directory and entering `./novell-ncs start` at the server console of the cluster server.

Default: Selected

Proxy User Configuration

Page and Parameters

Specify one of the following users as the NCS Proxy user.

- ◆ **OES Common Proxy User:** If the OES common proxy User is enabled in eDirectory, the *Use OES Common Proxy User* check box is automatically selected and the *NCS Proxy User Name* and *Specify NCS Proxy User Password* fields are populated with the credentials of the OES common proxy User.
 - ◆ **LDAP Admin User:** If the OES common proxy User is disabled in eDirectory, the *Use OES Common Proxy User* check box is automatically deselected and the *NCS Proxy User Name* and *Specify NCS Proxy User Password* fields are populated with the credentials of the LDAP Admin user. The fields are also automatically populated with the LDAP Admin credentials if you deselect the *Use OES Common Proxy User* check box.
 - ◆ **Another Administrator User:** Deselect the *Use OES Common Proxy User* check box, then specify the credentials of an administrator user.
-

For additional instructions, see the [OES 2 SP3: Novell Cluster Services 1.8.8 Administration Guide for Linux](#).

Novell DHCP Services

Table 3-10 *Novell DHCP Services Parameters and Values*

Page and Parameters

Novell DHCP Services Configuration

- ◆ **DHCP Server Context:** Specify a context for the DHCP Server object.
Default: o=example
 - ◆ **DHCP Server Object Name:** Specify the name of the Server object that these DHCP services will be running on.

This is the DHCP server object that contains a list of DHCP Services (configuration) served by the DHCP Server.
Default: DHCP_example_server
 - ◆ **Common DHCP Configuration Object Contexts**
 - ◆ **DHCP Locator Object:** Specify the context for the DHCP Locator object.
The DHCP Locator object has references to dhcpServer and dhcpService objects.
 - ◆ **Group Context:** Specify the context for the DHCP Group object.
This object is used to grant the necessary rights to the eDirectory user used by the DHCP server to access the DHCP objects.**Default:** o=example
 - ◆ **Log File Location:** Specify the path and filename for the DHCP Services log file. You can type the path manually or click *Browse* to locate the log.
Default: Usually /var/log/
-

Page and Parameters

- ◆ **LDAP Method**

- ◆ **Static:** Select this option if you do not want the DHCP server to query the LDAP server for host details.
- ◆ **Dynamic:** Select this option if you want the DHCP server to query the LDAP server on every request for host details.

Selecting the dynamic LDAP method ensures that the responses you receive to queries are accurate, but the server takes a longer time to respond.

Default: Static

- ◆ **Referrals**

A referral is a message that the LDAP server sends to the LDAP client informing it that the server cannot provide complete results and that more data might be on another LDAP server.

- ◆ **Chase Referral:** Select this option if you want the DHCP server to follow referrals.
 - ◆ **Do Not Chase Referral:** Select this option to ignore LDAP referrals.
-

Novell DHCP LDAP and Secure Channel Configuration

- ◆ **eDirectory Server Address or Host Name:** The IP address shown is the default LDAP server for this service. If you do not want to use the default, select a different LDAP server in the list.

If you are installing into an existing tree, ensure that the server you select has a master replica or read/write replica of eDirectory. If you need to add another LDAP server to the list, add it by using the LDAP Configuration for Open Enterprise Services dialog box.

Default: The first server selected in the *LDAP Configuration* list of servers.

- ◆ **Use Secure Channel for Configuration:** Leaving this option selected causes DHCP configuration information to be transferred over a secure channel.

Deselecting the option lets a user with fewer privileges configure LDAP services and allows configuration information to be transferred over a non-secure channel.

Default: Selected

- ◆ **LDAP User Name with Context:** Specify a typeful, distinguished name and context for an LDAP user.

This user should be an eDirectory user that can access the DHCP server.

Default: If you specified a common proxy user, it is used by default. If you didn't specify a common proxy user, the eDirectory Admin name and context that you specified when configuring eDirectory is specified.

- ◆ **LDAP User Password:** Type a password for the LDAP user.
-

- ◆ **LDAP Port for DHCP Server:** Select a port for the LDAP operations to use.

IMPORTANT: The scripts that manage the common proxy user introduced in OES 2 SP3 require port 636 for secure LDAP communications.

Default: 636

Page and Parameters

- ◆ **Use Secure LDAP Channel:** Selecting this option ensures that the data transferred between the DHCP server and the LDAP server is secure and private.

If you deselect this option, the data transferred is in clear text format.

Default: Selected

- ◆ **Certificates (optional)**

- ◆ **Request Certificate:** Specifies what checks to perform on a server certificate in a SSL/TLS session. Select one of the following options:

- ◆ *Never:* The server does not ask the client for a certificate. This is the default
- ◆ *Allow:* The server requests a client certificate, but if a certificate is not provided or a wrong certificate is provided, the session still proceeds normally.
- ◆ *Try:* The server requests the certificate. If none is provided, the session proceeds normally. If a certificate is provided and it cannot be verified, the session is immediately terminated
- ◆ *Hard:* The server requests a certificate. A valid certificate must be provided, or the session is immediately terminated.

- ◆ **Paths to Certificate Files:** Specify or browse the path for the certificate files.

- ◆ The LDAP CA file contains CA certificates
 - ◆ The LDAP client certificate contains the client certificate.
 - ◆ The LDAP client key file contains the key file for the client certificate.
-

Novell DHCP Services Interface Selection

- ◆ **Network Boards for the Novell DHCP Server:** From the available interfaces, select the network interfaces that the Novell DHCP server should listen to.
-

For additional configuration instructions, see “[Installing and Configuring DHCP](#)” in the *OES 2 SP3: Novell DNS/DHCP Administration Guide*.

Novell DNS Services

Table 3-11 Novell DNS Services Parameters and Values

Page and Parameters

Novell DNS Configuration

- ◆ **Directory server address:** If you have specified multiple LDAP servers by using the LDAP Configuration for Open Enterprise Services dialog box, you can select a different LDAP server than the first one in the list.

If you are installing into an existing tree, you must ensure that the selected server has a master or read/write replica of eDirectory.

Default: The first LDAP server in the *LDAP Server Configuration* dialog box.

◆ **Common DNS Configuration Object and User Contexts:**

- ◆ **Get Context and Proxy User Information from Existing DNS Server:** Select this option if you are configuring DNS in an existing tree where DNS is already configured, and you want to use the existing Locator, Root Server Info, Group and Proxy User contexts.

- ◆ **Existing Novell DNS Server Address:** If you have enabled the previous option, you can type the IP address of an NCP server (must be up and running) that is hosting the existing DNS server.

To automatically retrieve the contexts of the objects that follow, click *Retrieve*.

If you do not want to use the retrieved contexts, you can change them manually.

- ◆ **Novell DNS Services Locator Object Context:** Specify the context for the DNS Locator object.

The Locator object contains global defaults, DHCP options, and a list of all DNS and DHCP servers, subnets, and zones in the tree.

Default: The context you specified for the OES server you are installing.

- ◆ **Novell DNS Services Root Server Info Context:** Specify the context for the DNS Services root server.

The RootSrvrInfo Zone is an eDirectory container object that contains resource records for the DNS root servers.

Default: The context you specified for the OES server you are installing.

- ◆ **Novell DNS Services Group Object Context:** Specify the context for the DNS Group object.

This object is used to grant DNS servers the necessary rights to other data within the eDirectory tree.

Default: The context you specified for the OES server you are installing.

- ◆ **Proxy User for DNS Management:** Specify the FDN of the DNS proxy user.

An existing user must have eDirectory read, write, and browse rights under the specified context. If the user doesn't exist, it is created in the context specified.

Default: If you specified a common proxy user, it is used by default. If you didn't specify a common proxy user, the eDirectory Admin name and context that you specified when configuring eDirectory is specified.

- ◆ **Specify Password for eDirectory User:** Specify the password for the DNS proxy user.

For more information on proxy user and password management, see "[Planning Your Proxy Users](#)" in the *OES 2 SP3: Planning and Implementation Guide*.

Default: The password that you specified for the OES server you are installing.

- ◆ **Local NCP Server Context:** Specify a context for the local NCP Server object.

Default: The eDirectory context specified for this OES server.

- ◆ **Use Secure LDAP Port:** Selecting this option ensures that the data transferred by this service is secure and private.

If you deselect this option, the transferred data is in clear text format.

Default: Selected

- ◆ **Credential Storage Location:** Specify where the DNS proxy user's credentials are to be stored.

Default: For security reasons, the default and recommended method of credential storage is CASA.

For additional configuration instructions, see “[Installing and Configuring DNS](#)” in the *OES 2 SP3: Novell DNS/DHCP Administration Guide*.

Novell Domain Services for Windows

There are multiple configuration scenarios, depending on your deployment. For information, see “[Installing Domain Services for Windows](#)” in the *OES 2 SP3: Domain Services for Windows Administration Guide*.

Novell eDirectory Services

IMPORTANT: You specified the eDirectory configuration for this server in either “[Specifying LDAP Configuration Settings](#)” on page 70 or “[Specifying eDirectory Configuration Settings](#)” on page 72, and the settings you specified were extended to your OES service configurations by the OES install.

If you change the eDirectory configuration at this point in the install, your modifications might or might not extend to the other OES services. For example, if you change the server context from o=example to ou=servers.o=example, the other service configurations might or might not reflect the change.

Be sure to carefully check all of the service configuration summaries on the Novell Open Enterprise Server Configuration summary screen. If any of the services don’t show the eDirectory change you made, click the service link and modify the configuration manually. Otherwise your installation will fail.

Table 3-12 *Novell eDirectory Parameters and Values*

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eDirectory Configuration - New or Existing Tree

- ◆ **New or Existing Tree**

- ◆ **New Tree:** Creates a new tree.

Use this option if this is the first server to go into the tree or if this server requires a separate tree. Keep in mind that this server will have the master replica for the new tree, and that users must log into this new tree to access its resources.

- ◆ **Existing Tree:** Incorporates this server into an existing eDirectory tree.

This server might not have a replica copied to it, depending on the tree configuration. For details, see the “[Guidelines for Replicating Your Tree \(http://www.novell.com/documentation/edir88/edir88/data/a2iii1.html#a2iii1\)](http://www.novell.com/documentation/edir88/edir88/data/a2iii1.html#a2iii1)” in the *Novell eDirectory 8.8 Administration Guide (http://www.novell.com/documentation/edir88/edir88/data/a2iii88.html#a2iii88)*.

Default: New Tree

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- ◆ **eDirectory Tree Name:** Specify a unique name for the eDirectory tree you want to create or the name of the tree you want to install this server into.
 - ◆ **Use eDirectory Certificates for HTTPS Services:** Selecting this option causes eDirectory to automatically back up the currently installed certificate and key files and replace them with files created by the eDirectory Organizational CA (or Tree CA).

Most OES services that provide HTTPS connectivity are configured by default to use the self-signed common server certificate created by YaST. Self-signed certificates provide minimal security and limited trust, so you should consider using eDirectory certificates instead.

For all server installations, this option is enabled by default and is recommended for the increased security it provides.

To prevent third-party CA certificates from being accidentally backed up and overwritten, deselect this option.

For more information on certificate management and this option, see “[Security](#)” in the *OES 2 SP3: Planning and Implementation Guide*.
 - ◆ **Require TLS for Simple Binds with Password:** Select this option to make connections encrypted in the Session layer.
 - ◆ **Install SecretStore:** Select this option to install Novell SecretStore (SS), an eDirectory-based security product.

eDirectory Configuration - New/Existing Tree Information

- ◆ **IP Address of an Existing eDirectory Server with a Replica:** Specify the IP address of a server with an eDirectory replica.

This option appears only if you are joining an existing tree.

- ◆ **NCP Port on the Existing Server:** Specify the NCP port used by the eDirectory server you specified.

This option appears only if you are joining an existing tree.

Default: 524

- ◆ **LDAP and Secure LDAP Ports on the Existing Server:** Specify the LDAP ports used by the eDirectory server you specified.

This option appears only if you are joining an existing tree.

IMPORTANT: The scripts that manage the common proxy user introduced in OES 2 SP3 require port 636 for secure LDAP communications.

Default: 389 (LDAP), 636 (Secure LDAP)

- ◆ **FDN Admin Name with Context:** Specify the name of the administrative user for the new tree.

This is the fully distinguished name of a User object that will be created with full administrative rights in the new directory.

Default: The eDirectory Admin name and context that you specified when initially configuring eDirectory.

- ◆ **Admin Password:** Specify the eDirectory administrator's password.

This is the password of the user specified in the prior field.

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- ◆ **Verify Admin Password:** Retype the password to verify it.

This option only appears if you are creating a new tree.

eDirectory Configuration - Local Server Configuration

- ◆ **Enter Server Context:** Specify the location of the new server object in the eDirectory tree.
-

- ◆ **Enter Directory Information Base (DIB) Location:** Specify a location for the eDirectory database.

Default: The default path is `/var/opt/novell/eDirectory/data/dib`, but you can use this option to change the location if you expect the number of objects in your tree to be large and the current file system does not have sufficient space.

- ◆ **Enter LDAP Port:** Specify the LDAP port number this server will use to service LDAP requests.

Default: 389

- ◆ **Enter Secure LDAP Port:** Specify secure LDAP port number this server will use to service LDAP requests.

IMPORTANT: The scripts that manage the common proxy user introduced in OES 2 SP3 require port 636 for secure LDAP communications.

Default: 636

- ◆ **Enter iMonitor Port:** Specify the port this server will use to provide access to the iMonitor application.

iMonitor lets you monitor and diagnose all servers in your eDirectory tree from any location on your network where a Web browser is available.

Default: 8028

- ◆ **Enter Secure iMonitor Port:** Specify the secure port this server will use to provide access to the iMonitor application.

Default: 8030

eDirectory Configuration - NTP and SLP

- ◆ **Network Time Protocol (NTP) Server:** Specify the IP address or DNS hostname of an NTP server.

- ◆ For the first server in a tree, we recommend specifying a reliable external time source.
- ◆ For servers joining a tree, specify the same external NTP time source that the tree is using, or specify the IP address of a configured time source in the tree. A time source in the tree should be running time services for 15 minutes or more before connecting to it, or the time synchronization request for the installation fails.

If the time source server is NetWare 5.0 or earlier, you must specify an alternate NTP time source, or the time synchronization request fails. For more information, see "[Time Services](#)" in the *OES 2 SP3: Planning and Implementation Guide*.

- ◆ **Use Local Clock:** Alternatively, you can select *Use Local Clock* to designate the server's hardware clock as the time source for your eDirectory tree.

This is not recommended if there is a reliable external time source available.

◆ (SLP Options)

- ◆ **Do Not Configure SLP:** Is sufficient for eDirectory trees with three or fewer eDirectory servers.

Without SLP, users can't see a tree list, but they should still be able to attach to a tree by name. Users can configure the Novell Client to use DNS, or they can configure the local host file (%SystemDrive%\windows\system32\drivers\etc\hosts on WinXP) to resolve tree and server names. Users can also specify preferred tree and context information in the DHCP Settings page of the Novell Client.

IMPORTANT: If the tree where you are installing this server has or will have more than three servers, you must configure SLP.

- ◆ **Use Multicast to Access SLP:** Allows the server to request SLP information by using multicast packets. Use this in environments that have not established SLP DAs (Directory Agents).

IMPORTANT: If you select this option, you must disable the firewall for SLP to work correctly. Multicast creates a significant amount of network traffic and can reduce network throughput.

- ◆ **Configure as Directory Agent:** Configures this server as a Directory Agent (DA). This is useful if you plan to have more than three servers in the tree and want to set up SLP during the installation.

- ◆ **DASyncReg:** Causes SLP, when it starts, to query the Directory Agents listed under Configured SLP Directory Agents for their current lists of registered services. It also causes the DA to share service registrations that it receives with the other DAs in the SLP Directory Agent list.

- ◆ **Backup SLP Registrations:** Causes SLP to back up the list of services that are registered with this Directory Agent on the local disk.

- ◆ **Backup Interval in Seconds:** Specifies how often the list of registered services is backed up.

- ◆ **Configure SLP to use an existing Directory Agent:** Configures SLP to use an existing Directory Agent (DA) in your network. Use this in environments that have established SLP DAs. When you select this option, you configure the servers to use by adding or removing them from the SLP Directory Agent list.

-
- ◆ **Service Location Protocols and Scope:** Configures the scopes that a user agent (UA) or service agent (SA) is allowed when making requests or when registering services, or specifies the scopes a directory agent (DA) must support. The default value is DEFAULT. Use commas to separate each scope. For example, net.slp.useScopes = myScope1,myScope2,myScope3.

This information is required when selecting the *Use Multicast to Access SLP* or *Configure SLP to Use an Existing Directory Agent* option is selected.

Default: Default

-
- ◆ **Configured SLP Directory Agents:** Lets you manage the list of hostname or IP addresses of one or more external servers on which a SLP Directory Agent is running.

It is enabled for input only when you configure SLP to use an existing Directory Agent.

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IMPORTANT: NMAS client software (included with Novell Client software) must be installed on each client workstation where you want to use the NMAS login methods.

- ◆ **CertMutual:** The Certificate Mutual login method implements the Simple Authentication and Security Layer (SASL) EXTERNAL mechanism, which uses SSL certificates to provide client authentication to eDirectory through LDAP.
- ◆ **Challenge Response:** The Challenge-Response login method works with the Identity Manager password self-service process. This method allows either an administrator or a user to define a password challenge question and a response, which are saved in the password policy. Then, when users forget their passwords, they can reset their own passwords by providing the correct response to the challenge question.
- ◆ **DIGEST-MD5:** The Digest MD5 login method implements the Simple Authentication and Security Layer (SASL) DIGEST-MD5 mechanism as a means of authenticating the user to eDirectory through LDAP.
- ◆ **NDS:** The NDS login method provides secure password challenge-response user authentication to eDirectory. This method supports the traditional NDS password when the NMAS client is in use. Reinstallation is necessary only if the NDS login method object has been removed from the directory.
- ◆ **Simple Password:** The Simple Password NMAS login method provides password authentication to eDirectory. The Simple Password is a more flexible but less secure alternative to the NDS password. Simple Passwords are stored in a secret store on the user object.
- ◆ **SASL GSSAPI:** The SASL GSSAPI login method implements the Generic Security Services Application Program Interface (GSSAPI) authentication by using the Simple Authentication and Security Layer (SASL) that enables users to authenticate to eDirectory through LDAP by using a Kerberos ticket.

If you want to install all of the login methods into eDirectory, click *Select All*.

If you want to clear all selections, click *Deselect All*.

For more information on these login methods, see “[Managing Login and Post-Login Methods and Sequences](#)” in the *Novell Modular Authentication Services 3.3.1 Administration Guide*.

Defaults: Challenge Response and NDS

OES Common Proxy User Information

Page and Parameters

- ◆ **Use Common Proxy User as Default for OES Products:** Selecting this option configures the specified common proxy user for the following services: CIFS, DNS, DHCP, iFolder, NetStorage, and NCS. Optionally, you can specify that LUM use it.
- ◆ **OES Common Proxy User Name:** By default, the common proxy user's name is `OESCommonProxy_hostname`, but you can specify any name that fits your naming methodology.

By default, the common proxy user is created in the container that you specify for the server object.

You can specify a different container, but it must meet one of the following qualifications:

- ◆ **New Tree Installation:** The container must be included in either the path specified for the eDirectory Admin user or the path for Server object.
- ◆ **Existing Tree Installation:** The container must already exist in eDirectory.

IMPORTANT: You cannot create a new container by specifying a non-qualifying path. If you attempt this, the installation program will appear to proceed normally until the eDirectory Configuration (`ndsconfig`) runs. At that point the installation will fail with an `Error creating Common Proxy User: 32` error, and you will need to install the server again.

- ◆ **OES Common Proxy User Password:** You can accept the default system-generated password or specify a new password for the common proxy user.
- ◆ **Verify OES Common Proxy User Password:** If you specified a different password, type the same password in this field. Otherwise, the system-generated password is automatically included.
- ◆ **Assign Common Proxy Password Policy to Proxy User:** The initial common proxy password policy is a simple password policy created with default rules. You can modify this policy after the installation to enforce stricter rules regarding password length, characters supported, expiration intervals, etc.

For additional configuration instructions, see [“Installing or Upgrading Novell eDirectory on Linux”](#) in the *Novell eDirectory 8.8 Installation Guide*.

Novell FTP Services

No additional configuration is required.

Novell iFolder

When you configure iFolder as part of the OES install and configuration, you can specify only an EXT3 or ReiserFS volume location for the System Store Path, which is where you store iFolder data for all your users. You cannot create NSS volumes during the system install.

If you want to use an NSS volume to store iFolder data, you must reconfigure iFolder after the initial OES installation. To reconfigure, use Novell iManager to create an NSS volume, then go to *YaST > Open Enterprise Server > Install and Configure Open Enterprise Services* and select *iFolder 3.8* to enter new information. All previous configuration information is removed and replaced.

Table 3-13 *Novell iFolder 3.8 Parameters and Values*

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Novell iFolder System Configuration Options

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◆ iFolder Component to Be Configured

- ◆ **iFolder Server:** Lets you configure the settings for the iFolder server that is the central repository for storing user iFolders and synchronizing files for enterprise users.

- ◆ **iFolder Web Admin:** Lets you create and configure settings for the administrator user.

The iFolder Admin user is the primary administrator of the iFolder Enterprise Server. The Web Admin server does not need to be configured on the iFolder Enterprise Server. Devoting a separate server to the Web Admin application improves the performance of the iFolder Enterprise Server by reducing the admin traffic.

- ◆ **iFolder Web Access:** Lets you configure the Web Access server, which is an interface that lets users have remote access to iFolders on the enterprise server.

The Web Access server lets users perform all the operations equivalent to those of the iFolder client through using a standard Web browser.

The Web Access server does not need to be configured in the same iFolder Enterprise Server. Directing the user tasks to a separate server and thereby reducing the HTTP requests helps to improve the performance of the iFolder Enterprise Server.

Default: All three items are selected.

Novell iFolder System Configuration

- ◆ **Name Used to Identify the iFolder System to Users:** Specify a unique name to identify your iFolder Enterprise Server.

Default: iFolder

- ◆ **System Description (optional):** Specify a descriptive label for your iFolder Enterprise Server to identify it to the users.

Default: iFolder Enterprise System

- ◆ **Path to Server's Data Files:** Specify the case-sensitive address of the location where the iFolder Enterprise Server stores iFolder application files as well as the user iFolders and files.

IMPORTANT: This location cannot be modified after iFolder is installed.

Default: `/var/simias/data/`

- ◆ **Path to the Recovery Agent Certificates (optional):** Specify the path to the recovery agent certificates that are used for recovering the encryption key.

Default: `/var/simias/data/simias`

Novell iFolder System Configuration (2)

- ◆ **Name of iFolder Server:** Specify a unique name to identify your iFolder Enterprise Server. For example: Host1.

Default: The name of the OES server

- ◆ **iFolder Public URL:** Specify the public URL for users to reach the iFolder Enterprise Server.

Default: The OES server's IP address

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- ◆ **iFolder Private URL:** Specify the private URL corresponding to the iFolder Enterprise Server to allow communication between the servers within the iFolder domain. The private URL and the public URL can be the same.

Default: The OES server's IP address

- ◆ **Select SSL Option for iFolder:** Select the SSL option you want to set up a secure connection between the iFolder server and the iFolder clients.

There are three options for the channel for data transfer: SSL, Non SSL, and Both. However, authentication is always over SSL (not optional).

- ◆ *Both:* (default) This option lets you select a secure or a non-secure channel for communication among the iFolder server, Web Admin server, Web Access server and the clients. By default, these components use the HTTPS (secure) communication channel. However, all components can also be configured to use HTTP.
- ◆ *Non SSL:* Select this option to enable non-secure communication between the iFolder server, Web Admin server, Web Access server and the clients. The iFolder uses the HTTP channel for communication.
- ◆ *SSL:* Select this option to enable a secure connection among the iFolder server, iFolder Web Admin server, iFolder Web Access server, and the iFolder clients. The iFolder uses the HTTPS channel for communication.

Default: Both

- ◆ **iFolder Port to Listen On:** Specify the port for the iFolder to listen on.

Default: 443

- ◆ **Install into Existing iFolder Domain:** Select this option when you want to attach to an existing iFolder domain.

If this option is not selected, this server becomes the Master iFolder server.

Default: Deselected

- ◆ **Private URL of the Master Server:** Specify the private URL of the Master iFolder server that holds the master iFolder data for synchronization to the current iFolder Enterprise Server.

- ◆ **Configure LDAP Groups Plugin:** Select this option to configure the LDAP Groups plug-in.

If this option is left unselected, iFolder does not have LDAP Group support enabled.

Novell iFolder LDAP Configuration

- ◆ **Directory server address:** The IP address shown is the default LDAP server for this service. If you do not want to use the default, select a different LDAP server in the list.

If you need to add another eDirectory LDAP server to the list, use the LDAP Configuration for Open Enterprise Services dialog box.

If you are installing into an existing tree, ensure that the server you select has a master replica or read/write replica of eDirectory.

If you are installing into an existing tree, you must enter the password of an admin user in the tree.

Default: The first server selected in the *LDAP Configuration* list of servers

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- ◆ **Use Alternate LDAP server:** If you need to add another LDAP server to the list, select this option and enter the following information:
 - ◆ **Alternate Directory Server Address:** Specify the host or IP address of the alternate LDAP server that iFolder will use.
 - ◆ **LDAP Port:** Specify the LDAP port to use for this alternate server.
 - ◆ **LDAP Secure Port:** Specify the LDAP secure port to use for this alternate server.
 - ◆ **Admin Name and Context:** Specify the administrator name and context for the alternate LDAP server.
 - ◆ **Admin Password:** Type the specified administrator's password.
-

Novell iFolder System Configuration

- ◆ **The iFolder Default Administrator:** Specify the username for the default iFolder administrative user. Use the full distinguished name of the iFolder administrative user.

Default: The eDirectory Admin user you specified while configuring eDirectory.

- ◆ **iFolder Admin Password:** Specify a password for the iFolder administrative user.
-

- ◆ **Verify iFolder Admin Password:** Type the password for the iFolder administrative user again.
-

- ◆ **LDAP Proxy User:** Specify the full distinguished name of the LDAP Proxy user.

This user must have the Read right to the LDAP service. This user is used to provision the users between iFolder Enterprise Server and the LDAP server. If it does not already exist, this user is created and granted the Read right to the root of the tree. The LDAP proxy user's domain name (DN) and password are stored by iFolder.

Default: If you specified a common proxy user, it is used by default if possible. If you didn't specify the common proxy user, a user object named iFolderProxy is created in the server context you specified.

The common proxy user cannot be used if iFolder is running on a cluster node. If the NCS pattern is selected along with iFolder, this field will be populated with the iFolderProxy by default.

- ◆ **LDAP Proxy User Password:** Specify a password for the LDAP Proxy user.

For more information on proxy user and password management, see "[Planning Your Proxy Users](#)" in the *OES 2 SP3: Planning and Implementation Guide*.

Default: A system-generated password

- ◆ **Verify LDAP Proxy User Password:** Type the password for the LDAP Proxy user again.
-

- ◆ **LDAP Search Context:** Click *Add*, then specify an LDAP tree context to be searched for users to provision them in iFolder. For example, o=acme, o=acme2, or o=acme3

If no context is specified, only the iFolder administrative user is provisioned for services during the install.

Default: The server context you specified while configuring eDirectory.

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- ◆ **LDAP Naming Attribute:** Select which LDAP attribute of the User account to apply when authenticating users. This setting cannot be changed after the install.

Each user enters a username in this specified format at login time. Common Name (CN) is the default, and an e-mail address (email) is the other option.

For example, if a user named John Smith has a common name of jsmith and e-mail of john.smith@example.com, this field determines whether the user enters jsmith or john.smith@example.com as the username when logging in to the iFolder Enterprise Server.

Default: Common Name (CN)

- ◆ **Require a Secure Connection Between the LDAP server and the iFolder Server:** If the LDAP server co-exists on the same computer as the iFolder Enterprise Server, you can deselect this option, which increases the performance of LDAP authentications.

Default: Selected

Novell iFolder Web Access Configuration

- ◆ **An Apache Alias That Will Point to the iFolder Web Access Application:** This is a user-friendly pointer for the Apache service.

Default: /ifolder

- ◆ **The Host or IP Address of the iFolder Server That Will Be Used by the iFolder Web Access Application:** This Web Access application performs all the user-specific iFolder operations on the host that runs the iFolder Enterprise Server.

Default: The IP address of the OES server you are installing

- ◆ **Redirect URL for iChain/Access Gateway (optional):** Specify the redirect URL for iChain/Access Gateway that will be used by the iFolder Web Access application. This URL is used for the proper logout of iChain/Access Gateway sessions along with the iFolder session.
-

- ◆ **Connect to the iFolder Server Using SSL:** Select the check box to establish a secure connection between the iFolder enterprise server and the iFolder Web Admin application.

Default: Selected

- ◆ **iFolder Server Port to Connect on:** Specify the port for the iFolder server to connect to the Web Access application.

Default: 443 (SSL communications), 80 (non-SSL communication)

- ◆ **Require a secure connection between the Web browser and the iFolder Web Access application:** Select the check box to establish a secure connection between the Web browser and the iFolder Web Access application.

Default: Selected

Novell iFolder Web Admin Configuration

- ◆ **An Apache Alias That Will Point to the iFolder Web Admin Application:** This is an admin-friendly pointer for the Apache service.

Default: /admin

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- ◆ **The Host or IP Address of the iFolder Server That Will Be Used by the iFolder Web Application:** The iFolder Web admin application manages this host.
Default: The IP address of the OES server you are installing

 - ◆ **Redirect URL for iChain/Access Gateway (optional):** Specify the redirect URL for iChain/Access Gateway that will be used by the iFolder Web Admin application. This URL is used for the proper logout of iChain/Access Gateway sessions along with the iFolder session.

 - ◆ **Connect to the iFolder Server Using SSL:** Select the check box to establish a secure connection between the iFolder Enterprise Server and the iFolder Web Admin application.

 - ◆ **iFolder Server Port to Connect on:** Specify the port for the iFolder server to connect to the Web Admin application. Port 443 is the default. Port 80 is the default value for non-SSL communication.

 - ◆ **Require a secure connection between the Web browser and the iFolder Web Access application:** Select the check box to establish a secure connection between the Web browser and the iFolder Web Admin application.
-

For additional configuration instructions, see “Installing and Configuring iFolder Services” in the [Novell iFolder 3.8.4 Administration Guide \(http://www.novell.com/documentation/ifolder3/\)](http://www.novell.com/documentation/ifolder3/).

Novell iManager

Table 3-14 Novell iManager Parameters and Values

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iManager Configuration

- ◆ **eDirectory Tree:** Shows the name of a valid eDirectory tree that you specified when configuring eDirectory.
To change this configuration, you must change the eDirectory configuration.

 - ◆ **FDN Admin Name with Contextt:** Shows the eDirectory Admin name and context that you specified when configuring eDirectory. This is the user that has full administrative rights to perform operations in iManager.
To change this configuration, you must change the eDirectory configuration.
-

For additional configuration instructions, see “Installing iManager” in the [Novell iManager 2.7.4 Installation Guide \(https://www.netiq.com/documentation/imanager27/\)](https://www.netiq.com/documentation/imanager27/).

Novell iPrint

Table 3-15 *Novell iPrint Parameters and Values*

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iPrint Configuration
<ul style="list-style-type: none">◆ Directory server address: The IP address shown is the default LDAP server for this service. If you do not want to use the default, select a different LDAP server in the list. If you are installing into an existing tree, ensure that the server you select has a master replica or read/write replica of eDirectory. If you need to add another LDAP server to the list, add it by using the LDAP Configuration for Open Enterprise Services dialog box.
<ul style="list-style-type: none">◆ Top-Most Container of eDirectory Tree: iPrint uses LDAP to verify rights to perform various iPrint operations, including authenticating users for printing and performing management tasks such as uploading drivers. During the installation of the iPrint software, iPrint attempts to identify the topmost container of the eDirectory tree and sets the base dn to this container for the AuthLDAPURL entry in <code>/etc/opt/novell/iprint/httpd/conf/iprint_ssl.conf</code>. For most installations, this is adequate because users are often distributed across containers. IMPORTANT: If you have multiple peer containers at the top of your eDirectory tree, leave this field blank so that the LDAP search begins at the root of the tree.

For additional configuration instructions, see “[Installing and Setting Up iPrint on Your Server](#)” in the *OES 2 SP3: iPrint for Linux Administration Guide*.

Novell Linux User Management

Table 3-16 *Novell Linux User Management Parameters and Values*

Page and Parameters
Linux User Management Configuration
<ul style="list-style-type: none">◆ Directory Server Address: The IP address shown is the default LDAP server for this service. If you do not want to use the default, select a different LDAP server in the list. If you are installing into an existing tree, ensure that the server you select has a master replica or read/write replica of eDirectory. If you need to add another LDAP server to the list, add it by using the LDAP Configuration for Open Enterprise Services dialog box. For information about specifying multiple LDAP servers for Linux User Management (LUM), see “Configuring a Failover Mechanism” in the <i>OES 2 SP3: Novell Linux User Management Administration Guide</i>. Default: The first server selected in the <i>LDAP Configuration</i> list of servers

Page and Parameters

- ♦ **Unix Config Context:** The UNIX Config object holds a list of the locations (contexts) of UNIX Workstation objects in eDirectory. It also controls the range of numbers to be assigned as UIDs and GIDs when User objects and Group objects are created.

Specify the eDirectory context (existing or created here) where the UNIX Config object will be created. An LDAP search for a LUM User, a LUM Group, or a LUM Workstation object begins here, so the context must be at the same level or higher than the LUM objects searched for.

If the UNIX Config Object is placed below the location of the User objects, the `/etc/nam.conf` file on the target computer must include the `support-outside-base-context=yes` parameter.

Geographically dispersed networks might require multiple UNIX Config objects in a single tree, but most networks need only one UNIX Config object in eDirectory.

Default: The Organization object you specified in the eDirectory configuration

- ♦ **Unix Workstation Context:** Computers running Linux User Management (LUM) are represented by UNIX Workstation objects in eDirectory. The object holds the set of properties and information associated with the target computer, such as the target workstation name or a list of eDirectory groups that have access to the target workstation.

Specify the eDirectory context (existing or created here) for the UNIX Workstation object created by the install for this server. The context should be the same as or below the UNIX Config Context specified above.

Default: The context you specified for this OES server in the eDirectory configuration

- ♦ **Proxy User Name with Context (Optional):** If you specified a common proxy user, and you select the *Use OES Common Proxy User* option (below) it is used by default. If you didn't specify a common proxy user, you can specify a user (existing or created here) with rights to search the LDAP tree for LUM objects.

- ♦ **Proxy User Password:** If you are using the common proxy user, the password is automatically entered for you. Otherwise, you can specify a password (existing or created here) for the Proxy user.

For more information on proxy user and password management, see "[Planning Your Proxy Users](#)" in the *OES 2 SP3: Planning and Implementation Guide*.

- ♦ **Use OES Common Proxy User:** Check this option if you specified a common proxy user and want to use it as the proxy user for LUM.
-

- ♦ **Restrict Access to the Home Directories of Other Users:** This option is selected by default to restrict read and write access for users other than the owner to home directories.

Using the default selection changes the `umask` setting in `/etc/login.defs` from 022 to 077.

Default: Selected

Linux User Management Configuration (2)

Page and Parameters

IMPORTANT: Before you change the PAM-enabled service settings, be sure you understand the security implications explained in “[User Restrictions: Some OES 2 Limitations](#)” in the [OES 2 SP3: Planning and Implementation Guide](#).

- ◆ **Services to LUM-enable for authentication via eDirectory:** Select the services to LUM-enable on this server. The services marked *yes* are available to authenticated LUM users.

- ◆ *login:* no

- ◆ *ftp:* no

- ◆ *sshd:* no

If you want to use the SSH protocol to define a NetStorage storage location object, you must select SSHD as a LUM-enabled service.

If do not select *SSHD*, users cannot to log in to NetStorage through SSH to access their files.

- ◆ *su:* no

- ◆ *rsh:* no

- ◆ *rlogin:* no

- ◆ *xdm:* no

- ◆ *openwbem:* yes

This is selected by default because it is used by many of the OES services such as iPrint, NSS, SMS, Novell Remote Manager, and Samba. To access iManager, you must enable OpenWBEM.

- ◆ *gdm:* no

- ◆ *gdm-autologin:* no

- ◆ *gnome-passwd:* no

- ◆ *gnome-screensaver:* no

- ◆ *gnomesu-pam:* no

For additional configuration instructions, see “[Setting Up Linux User Management](#)” in the [OES 2 SP3: Novell Linux User Management Administration Guide](#).

Novell NCP Server / Dynamic Storage Technology

Table 3-17 *Novell NCP Server Parameters and Values*

Page and Parameters

NCP Server Configuration

- ◆ **Admin Name with Context:** The eDirectory Admin user you specified in the eDirectory configuration.

For additional configuration instructions, see “[Installing and Configuring NCP Server for Linux](#)” in the [OES 2 SP3: NCP Server for Linux Administration Guide](#).

Novell NetStorage

Table 3-18 *Novell NetStorage Parameters and Values*

Page and Parameters
NetStorage Configuration
<ul style="list-style-type: none">◆ Authentication Domain Host: The IP address shown is the default LDAP server for this service. If you do not want to use the default, select a different LDAP server in the list. If you are installing into an existing tree, ensure that the server you select has a master replica or read/write replica of eDirectory. If you need to add another LDAP server to the list, add it by using the LDAP Configuration for Open Enterprise Services page. Default: The first server selected in the <i>LDAP Configuration</i> list of servers.
<ul style="list-style-type: none">◆ Proxy User Name with Context: Specify the proxy user name including the context, or accept the default. This user performs LDAP searches for users logging into NetStorage. Default: If you specified a common proxy user, it is used by default. If you didn't specify a common proxy user, the eDirectory Admin name and context that you specified when configuring eDirectory is specified.
<ul style="list-style-type: none">◆ Proxy User Password: Specify a password for the proxy user. For more information on proxy user and password management, see "Planning Your Proxy Users" in the <i>OES 2 SP3: Planning and Implementation Guide</i>.
<ul style="list-style-type: none">◆ User Context: Specify the NetStorage user context, or accept the default. This is the eDirectory context for the users that will use NetStorage. NetStorage searches the eDirectory tree down from the specified context for User objects. If you want NetStorage to search the entire eDirectory tree, specify the root context. Default: The Organization object you specified while configuring eDirectory

For additional configuration instructions, see "[Installing NetStorage](#)" in the *OES 2 SP3: NetStorage Administration Guide*.

Novell Pre-Migration Server

No additional configuration is required. For information, see "[Preparing the Source Server for Migration](#)" in the *OES 2 SP3: Migration Tool Administration Guide*.

Novell QuickFinder

Table 3-19 *Novell QuickFinder Parameters and Values*

Page and Parameters
Novell QuickFinder Admin User

Page and Parameters

- ◆ **Novell QuickFinder Admin User Type:** Make the QuickFinder administrator a LUM-enabled eDirectory user or a local Linux user.
 - ◆ *Local:* Select this option to give QuickFinder Server administration rights to a local Linux user (the default is the `root` user if no other local users exist).
 - ◆ *Directory LUM Enabled:* Gives QuickFinder Server administration rights to an eDirectory user.

Default: Directory LUM enabled

- ◆ **QuickFinder Admin Name:** Specify the QuickFinder administrator name.

If you selected *Directory LUM enabled* as the user type, include the full context (such as `cn=admin,o=novell`).

If you selected *Local* as the user type, specify only the admin name (such as `root`). If the user does not already exist, it is created.

Default: The eDirectory Admin user you specified while configuring eDirectory

- ◆ **Add `novlwww` User to the Shadow Group:** If only LUM-enabled eDirectory users will use QuickFinder, this option does not need to be set.

QuickFinder uses Pluggable Authentication Modules (PAM) to authenticate users for both administration and rights-based searching. Because QuickFinder is a servlet under Tomcat, it has the same rights to the system as the Tomcat user (`wwwrun`).

For QuickFinder to verify user credentials for local users (including `root`), the `wwwrun` user must be added to the local shadow group.

Default: Yes

Novell QuickFinder Admin Password

- ◆ **eDirectory Admin Name:** Specified on the previous page.
 - ◆ **Novell QuickFinder Admin User Type:** If a different admin user was created, specify a password.
-

For additional configuration instructions, see “[Installing QuickFinder Server](#)” in the *OES 2 SP3: Novell QuickFinder Server 5.0 Administration Guide*.

Novell Remote Manager

No additional configuration for the installation is required. To change the configuration after the installation, see “[Changing the Configuration](#)” in the *OES 2 SP3: Novell Remote Manager for Linux Administration Guide*.

Novell Samba

Table 3-20 *Novell Samba Parameters and Values*

Page and Parameters

Novell Samba Configuration

Page and Parameters

- ◆ **Directory server address:** The IP address shown is the default LDAP server for this service. If you do not want to use the default, select a different LDAP server in the list.

If you are installing into an existing tree, ensure that the server you select has a master replica or read/write replica of eDirectory. If you need to add another LDAP server to the list, add it by using the LDAP Configuration for Open Enterprise Services dialog box.

This is the primary IP address of the LDAP server to which CIFS client users (such as Windows users) authenticate, to use LDAP for access to the directories and files on this OES server.

Default The first server selected in the *LDAP Configuration* list of servers.

- ◆ **Base Context for Samba Users:** The eDirectory context (existing or created here) where the default Samba group is created.

Default: The Organization object you specified for your tree. Do not change the default unless you are altering the standard Samba configuration.

- ◆ **Proxy User Name with Context:** A user on the specified LDAP server that has rights to search the LDAP tree for Samba users.

The name and context must be specified by using typeful syntax.
(cn=name,ou=organizational_unit,o=organization)

Default: cn=servername-sambaProxy.o=organization

- ◆ **Proxy User Password:** The password of the Proxy User specified above.

For more information on proxy user and password management, see “[Planning Your Proxy Users](#)” in the *OES 2 SP3: Planning and Implementation Guide*.

For additional configuration instructions, see “[Installing the Novell Samba Components](#)” in the *OES2 SP3: Samba Administration Guide*.

Novell Storage Services (NSS)

Table 3-21 *Novell Storage Services Parameters and Values*

Page and Parameters

NSS Unique Admin Object

- ◆ **Directory Server Address:** The IP address shown is the default LDAP server for this service. If you do not want to use the default, select a different LDAP server in the list.

If you are installing into an existing tree, ensure that the server you select has a master replica or read/write replica of eDirectory. If you need to add another LDAP server to the list, add it by using the LDAP Configuration for Open Enterprise Services dialog box.

Default The first server selected in the *LDAP Configuration* list of servers.

- ◆ **FD NSS Admin Name with Context:** Specify the NSS Admin name and context or accept the default.

This is the fully distinguished name of a User object with administrative rights to NSS. You must have a unique NSS admin name for each server that uses NSS.

For more information, see “[Planning Your Proxy Users](#)” in the *OES 2 SP3: Planning and Implementation Guide*.

Default: The server hostname concatenated with the LDAP Admin Name you entered for this server, . cn=*myserveradmin*,o=*organization*.

For additional configuration instructions, see “[Installing and Configuring Novell Storage Services](#)” in the *OES 2 SP3: NSS File System Administration Guide for Linux*.

3.7 Finishing the Installation

The installation concludes with the following steps:

1. User Authentication Method
2. Clean Up
3. Release Notes
4. Hardware Configuration

After a successful configuration, YaST shows the Installation Completed dialog box. Do the following:

- 1 (Optional) Select whether to clone your newly installed system for AutoYaST. To clone your system, select *Clone This System for AutoYaST*.

The profile of the current system is stored in `/root/autoinst.xml`. Cloning is selected by default.

AutoYaST is a system for automatically installing one or more SUSE Linux Enterprise systems without user intervention. AutoYaST installations are performed by using a control file with installation and configuration data. For detailed information, see [Chapter 8, “Using AutoYaST to Install and Configure Multiple OES Servers,”](#) on page 179.

- 2 Finish the installation by clicking *Finish* in the Installation Completed page.
- 3 After the server reboots, continue with [Section 3.8, “Verifying That the Installation Was Successful,”](#) on page 108.

3.8 Verifying That the Installation Was Successful

One way to verify that your OES server installation was successful and that the components are loading properly is to watch the server reboot. As each component is loaded, the boot logger provides a status next to it indicating if the component is loading properly.

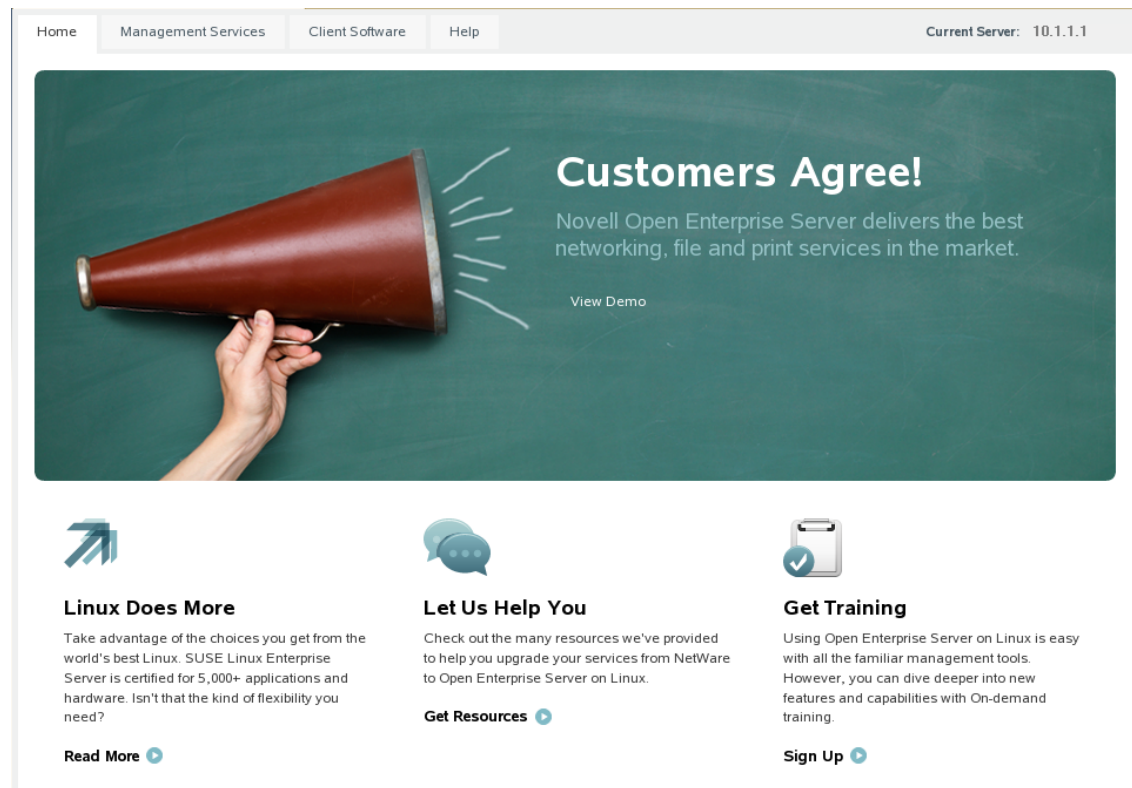
You can also quickly verify a successful installation by accessing the server from your Web browser.

- 1 In the Address field of your Web browser, enter the following URL:

`http://IP_or_DNS`

Replace *IP_or_DNS* with the IP address or DNS name of your OES server.

You should see a Web page similar to the following:



IMPORTANT: If you see the statement “It Works!” instead of the OES Welcome Page, that means that the Web and LAMP Server option was selected and installed as a SLES component on the server. The default OES behavior can be restored by deleting the `/srv/www/htdocs/index.html` file from the server.

You can also view the OES Welcome Page by using `http://IP_or_DNS/welcome` to access the server.

- 2 (Optional) If you want to look at the eDirectory tree and begin to see how iManager works, go to the OES Information and Management Web page, click *Management Tools > iManager*, then log in as user Admin (the user you created during product installation).

You can also access iManager by typing the following URL in a browser window and logging in as user Admin:

`http://IP_or_DNS_name/nps/iManager.html`

- 3 Continue with [“What's Next” on page 109](#).

3.9 What's Next

After you complete the initial installation, complete any additional tasks you might need to perform. See [“Completing OES Installation or Upgrade Tasks” on page 153](#) and [“Updating \(Patching\) an OES 2 SP3 Server” on page 157](#).

4 Installing or Configuring OES 2 SP3 on an Existing Server

After installing or upgrading to Novell Open Enterprise Server (OES 2 SP3), you can also install additional products or services and configure them to work in the new environment. If you have installed or upgraded a server to SUSE Linux Enterprise Server (SLES) 10 SP4, you can also add OES 2 SP3 services to the server.

- ♦ [Section 4.1, “Before You Install OES Services on an Existing Server,” on page 111](#)
- ♦ [Section 4.2, “Adding/Configuring OES Services on an Existing Server,” on page 112](#)
- ♦ [Section 4.3, “Adding/Configuring OES Services on a Server That Another Administrator Installed,” on page 115](#)
- ♦ [Section 4.4, “What’s Next,” on page 116](#)

IMPORTANT: If you have updated a server with a Support Pack, make sure the installation source is pointing to the latest Support Pack media.

4.1 Before You Install OES Services on an Existing Server

In addition to the information in [“Planning Your OES 2 Implementation”](#) in the *OES 2 SP3: Planning and Implementation Guide*, the following apply when you install OES on an existing server.

- ♦ [Section 4.1.1, “Always Use YaST to Install and Initially Configure OES Services,” on page 111](#)
- ♦ [Section 4.1.2, “Don’t Install OES While Running the Xen Kernel,” on page 112](#)
- ♦ [Section 4.1.3, “If You Want eDirectory to Use a Local Database on the Server,” on page 112](#)

4.1.1 Always Use YaST to Install and Initially Configure OES Services

Linux administrators sometimes wrongly assume that OES services can be installed or uninstalled by simply installing the associated RPMs. OES services require additional configuration that is only supported as an add-on product installation in YaST.

IMPORTANT: You must always install OES as an add-on product using the YaST install. For more information, see [Section 2.11, “Always Install OES as an Add-On Product,” on page 45](#).

4.1.2 Don't Install OES While Running the Xen Kernel

If you are adding supported OES 2 components to a server that is running the Xen kernel, you must reset the boot loader to boot the standard kernel before adding the OES 2 SP3 components.

- 1 In YaST, select *System > Boot Loader > SuSE Linux Enterprise Server 10 SP4 > Set As Default > Finish*.
- 2 Reboot the server.

After adding the supported OES 2 components, reset the boot loader option to Xen.

- 1 In YaST, select *System > Boot Loader > XEN > Set As Default > Finish*.
- 2 Reboot the server.

Be sure to add only those OES 2 SP3 components that are supported on a VM host server. For more information, see [Step 3 on page 187](#).

4.1.3 If You Want eDirectory to Use a Local Database on the Server

If you want the OES components to use a local eDirectory database, you should install eDirectory by itself first, then rerun the installation for the other OES components.

4.2 Adding/Configuring OES Services on an Existing Server

IMPORTANT: If you are not using the administrator account that originally installed the OES server you are adding services to, see [Section 2.5, “Installing and Configuring OES as a Subcontainer Administrator,” on page 20](#) and then follow the instructions in [Section 4.3, “Adding/Configuring OES Services on a Server That Another Administrator Installed,” on page 115](#).

To add/configure OES 2 SP3 services on an existing OES 2 SP3 server or SLES 10 SP4 server:

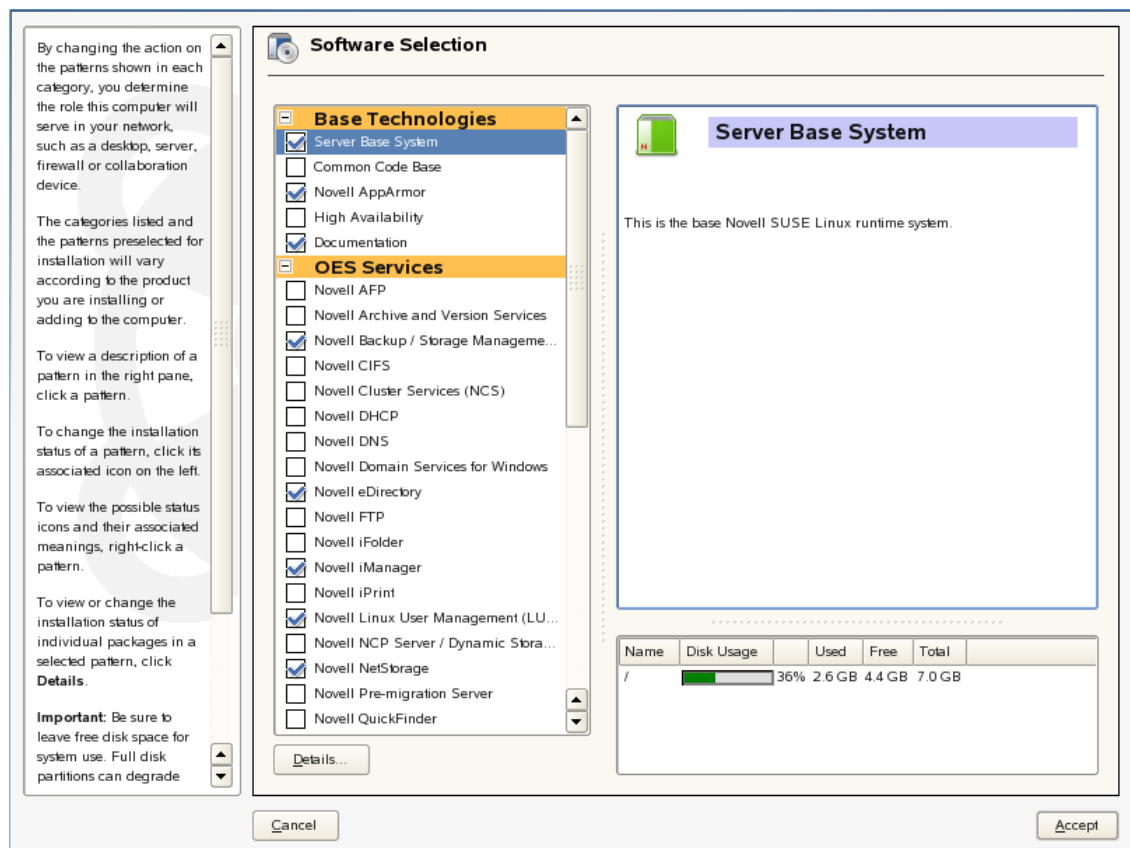
- 1 Open YaST.
- 2 If an OES 2 SP3 installation source has not been added to the server, continue with this step. Otherwise, skip to [Step 3](#).
 - 2a Click *Software > Add-on Product*.
 - 2b Click *Add*.
 - 2c In the Add-On Product Media dialog box, click *CD > Next*.

If you are using an alternate installation source, click the appropriate option that matches your installation source selection.
 - 2d In the Insert the Add-On Product CD dialog box, select the appropriate drive where you want to insert the CD labeled *Open Enterprise Server 2 SP3 CD 1*.
 - 2e Click *Eject*.
 - 2f Insert the CD labeled *Open Enterprise Server 2 SP3 CD 1*, then click *Continue*.
 - 2g Read and accept the Novell Open Enterprise Server 2 license agreement, then click *Next*.
 - 2h Confirm that the Add-On Product Installation page shows the correct path to the OES media, then click *Next*.
 - 2i Skip to [Step 4](#).
- 3 If an OES installation source has already been added to the server, click *Open Enterprise Server > OES Install and Configuration*.

- 4 On the Software Selection page, select the OES components that you want to install or configure. Services that you have already installed are indicated by a blue check mark in the status check box next to the service.

IMPORTANT: You cannot uninstall an OES service by deselecting it. For more information about removing service functionality from the server, see [Chapter 13, “Disabling OES 2 Services,”](#) on page 221.

- 5 If you are only configuring or reconfiguring services that are already installed, click *Accept*, then skip to [Step 9](#).



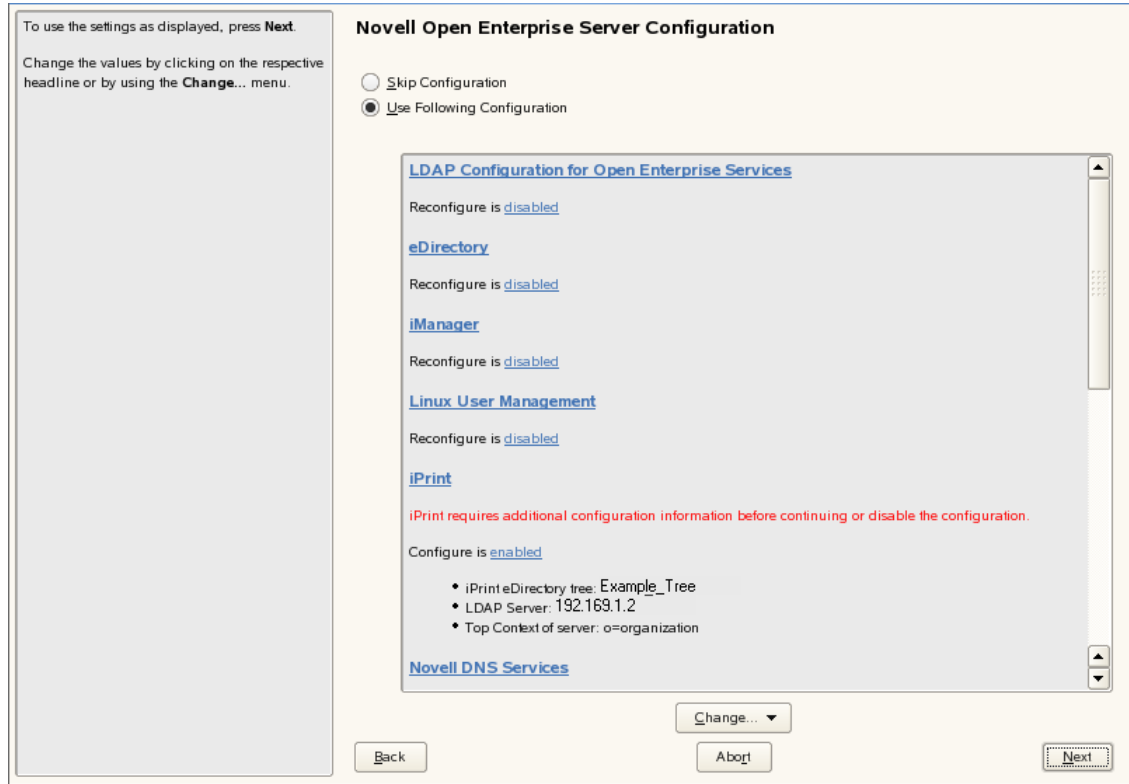
Not all OES components require eDirectory to be installed on the local server. Components that have a dependency on eDirectory being installed locally will prompt you to install eDirectory if it is not already installed.

IMPORTANT: If you need to reconfigure eDirectory, we recommend that you use tools provided by eDirectory, such as iMonitor or iManager, rather than using YaST to change the configuration. The configuration provided in YaST is only for the initial eDirectory installation and configuration.

If you need to reconfigure eDirectory and OES services due to database corruption, go to [Chapter 14, “Reconfiguring eDirectory and OES Services,”](#) on page 223 and follow the instructions there.

- 6 After selecting the services to install, click *Accept*.
- 7 If package changes are required for your selections, select *Continue*.
- 8 Insert any media required to install the new packages.

9 Change the default configuration information as required.



In most cases, the default configuration is acceptable. You need to change the configuration at the following times:

- ◆ When the installation displays the following message to indicate that more information (often the administrator password) is required:

```
service_name service requires additional configuration information before
continuing or disable the configuration.
```

- ◆ When you want to change the default configuration settings, such as enabling services for LUM.
- ◆ When you want to reconfigure a service that has already been configured.

- 9a** To change the configuration of a newly installed service or a service that has already been configured, change its configuration status to *Enabled*, then click the service heading link to access the configuration dialog box for that service.

Newly installed services that have not been configured have the status of *Configure is enabled*.

Services that have already been configured have a status of *Reconfigure is disabled*.

- 9b** To enable the configuration status of any disabled service configuration, click the *Disabled* link to change the status to *Enabled*.

- 9c** To delay the configuration of newly installed services to a later time, click the *Enabled* link to change the status to *Configure is disabled*.

For configuration guidelines, see [Section 3.6.11, "Configuration Guidelines for OES Services," on page 79](#); or, if you are reading online, click a link below:

- ◆ [AFP](#)
- ◆ [Archive and Version Services](#)

- ♦ Backup/Storage Management Services (SMS)
 - ♦ CIFS
 - ♦ Clustering (NCS)
 - ♦ DHCP
 - ♦ DNS
 - ♦ Domain Services for Windows (DSfW)
 - ♦ eDirectory
 - ♦ FTP
 - ♦ iFolder
 - ♦ iManager
 - ♦ iPrint
 - ♦ Linux User Management (LUM)
 - ♦ NCP Server/Dynamic Storage Technology
 - ♦ NetStorage
 - ♦ Pre-Migration Server
 - ♦ QuickFinder
 - ♦ Novell Remote Manager (NRM)
 - ♦ Novell Samba
 - ♦ Novell Storage Services
- 10** When all the services have complete configuration information and the configuration or reconfiguration status is set to *Enabled* for the services that you want to configure, click *Next* to continue with the configuration process.
- 11** After the service configuration process has run and is finalized, click *Finish*.
- 12** If you are installing on an existing OES server, you can quit the installation at this point.
If you are installing OES services for the first time on this server, see [Section 3.6.5, “Specifying Novell Customer Center Configuration Settings,”](#) on page 63 for help with registering OES and updating the software.

4.3 Adding/Configuring OES Services on a Server That Another Administrator Installed

To add or configure OES services on an OES server that another administrator installed, you must have the rights described in [“Rights Required for Subcontainer Administrators”](#) on page 21.

- 1** On the OES server, launch YaST. Then click *Open Enterprise Server > OES Install and Configuration*.
- 2** On the Software Selection page, select the additional OES services you want to install, then click *Accept*.
The required packages are installed.
- 3** When the Novell Open Enterprise Server Configuration summary screen appears, click the *disabled* link under *LDAP Configuration for Open Enterprise Services*.
The link changes to *enabled*.
- 4** Click *LDAP Configuration for Open Enterprise Services*.

- 5 Change the Admin Name and Context.

IMPORTANT: Make sure all field delimiters are consistent. For example, if you are adding to the context already displayed, either use comma-delimited syntax or change all other delimiters to periods.

- 6 Type the subcontainer admin password in the *Admin Password* field, then click *Next*.
- 7 Go to [Step 9 on page 114](#) and continue from there.

4.4 What's Next

After you complete the configuration process, complete any additional tasks you might need to perform. See [“Completing OES Installation or Upgrade Tasks” on page 153](#) and [“Updating \(Patching\) an OES 2 SP3 Server” on page 157](#).

5 Upgrading to OES 2 SP3

Novell Open Enterprise Server (OES) 2 provides the option of updating an existing system to the new version without completely reinstalling it. No new installation is needed. Existing data such as home directories and system configuration is kept intact. During the life cycle of the product, you can apply Service Packs to increase system security and correct software defects.

NOTE: To upgrade an OES 2 VM guest running on Xen, see the additional instructions and information in [Section 10.5, “Upgrading an OES 2 VM Guest to OES 2 SP3,”](#) on page 196.

- ◆ [Section 5.1, “Supported Upgrade Paths,”](#) on page 117
- ◆ [Section 5.2, “Planning for the Upgrade to OES 2 SP3,”](#) on page 118
- ◆ [Section 5.3, “Meeting the Upgrade Requirements,”](#) on page 120
- ◆ [Section 5.4, “Upgrading to OES 2 SP3,”](#) on page 123
- ◆ [Section 5.5, “Finishing the Upgrade,”](#) on page 149
- ◆ [Section 5.6, “Post-Migration iManager Configuration,”](#) on page 150
- ◆ [Section 5.7, “Verifying That the Upgrade Was Successful,”](#) on page 150
- ◆ [Section 5.8, “What’s Next,”](#) on page 151

5.1 Supported Upgrade Paths

[Table 5-1](#) outlines the supported paths for upgrading to OES 2 SP3.

All other OES releases can be upgraded by installing the interim support packs in order. For example, you can upgrade from OES 2 to OES 2 SP1, then from OES 2 SP1 to OES 2 SP2, and finally from OES 2 SP2 to OES 2 SP3. Cross-architecture upgrades (32-bit to 64-bit and 64-bit to 32-bit) are not supported.

Table 5-1 *Supported OES 2 SP3 Upgrade Paths*

Source	Destination	Upgrade Methods Supported
OES 1 SP2 (32-bit)	OES 2 SP3 (32-bit)	Network-based media (offline) Physical media (offline)
OES 2 SP2 (32-bit)	OES 2 SP3 (32-bit)	Network-based media (offline) Physical media (offline) Update Channel (online)
OES 2 SP2 (64-bit)	OES 2 SP3 (64-bit)	Network-based media (offline) Physical media (offline) Update Channel (online)

IMPORTANT: Source servers must have all patches applied from the appropriate SUSE Linux Enterprise Server (SLES) and OES patch channels prior to an upgrade.

5.2 Planning for the Upgrade to OES 2 SP3

- ♦ [Section 5.2.1, “Be Sure to Check the Readme,” on page 118](#)
- ♦ [Section 5.2.2, “Always Upgrade SLES and OES at the Same Time,” on page 118](#)
- ♦ [Section 5.2.3, “Understanding the Implications for Other Products Currently Installed on the Server,” on page 118](#)

5.2.1 Be Sure to Check the Readme

The “[Common Proxy Install Issues](#)” section documents issues that Novell plans to address in a future release.

5.2.2 Always Upgrade SLES and OES at the Same Time

You must upgrade SLES 10 and OES 2 at the same time.

5.2.3 Understanding the Implications for Other Products Currently Installed on the Server

- ♦ [“OES 1 Server Upgrades: Non-OES 2 Packages Are Deleted by Default” on page 118](#)
- ♦ [“OES 2 Server Upgrades: Non-OES 2 Packages Are Retained but Might Not Work After Upgrading” on page 119](#)

OES 1 Server Upgrades: Non-OES 2 Packages Are Deleted by Default

During the upgrade process from OES 1 to OES 2 SP3, packages that are not part of the SLES 10 and OES 2 distributions are automatically selected for deletion.

Examples include:

- ♦ **OES 1 services not included in OES 2:** This includes services such as iFolder 2, eGuide, and Virtual Office.
- ♦ **Other Novell products:** This includes services such as GroupWise, ZENworks, and Identity Manager.

For Information About This Novell Product	See This Documentation
GroupWise	GroupWise online documentation (http://www.novell.com/documentation/groupwise.html)
ZENworks	ZENworks online documentation (http://www.novell.com/documentation/zenworks.html)
Identity Manager	Identity Management online documentation (http://www.novell.com/documentation/secure_identity_management.html)

For Information About This Novell Product	See This Documentation
Other Products	All Novell online documentation (http://www.novell.com/documentation/)

- ♦ **SLES 9 services not included in SLES 10:** If you installed open source products that were included with the SLES 9 distribution, it is possible although unlikely that they have been removed in SLES 10.
- ♦ **Third-party products:** If you have installed third-party products, be sure to check that a product is supported on SLES 10 and follow the upgrade instructions that should be included with it.

IMPORTANT: To manually retain packages, you must follow the steps outlined in [Section 5.4.9, “Reviewing the Delete Unmaintained Packages Notification,”](#) on page 133.

There is no guarantee that packages you have manually retained will run on the SLES 10 kernel. For specific compatibility information, see the documentation for the impacted product.

OES 2 Server Upgrades: Non-OES 2 Packages Are Retained but Might Not Work After Upgrading

During the upgrade process from earlier OES 2 releases to OES 2 SP3, packages that are not part of the SLES 10 SP4 and OES 2 SP3 distributions are automatically retained unless you select them for deletion.

This includes third-party products you have installed, as well as other Novell products such as GroupWise, ZENworks, and Identity Manager.

There is no guarantee that these products will continue to work after you upgrade. Therefore, it is critical that you check the product documentation for compatibility information before you upgrade servers with any Novell product installed.

For Information About This Novell Product	See This Documentation
GroupWise	GroupWise online documentation (http://www.novell.com/documentation/groupwise.html)
ZENworks	ZENworks online documentation (http://www.novell.com/documentation/zenworks.html)
Identity Manager	Identity Management online documentation (http://www.novell.com/documentation/secure_identity_management.html)
Other products	All Novell online documentation (http://www.novell.com/documentation/)

If you have installed a third-party product, be sure to check that it is supported on SLES 10 SP4 and follow the upgrade instructions that should be included with it.

5.3 Meeting the Upgrade Requirements

Meet the following requirements before you upgrade and install any OES 2 components:

- ◆ [Section 5.3.1, “Securing Current Data,” on page 120](#)
- ◆ [Section 5.3.2, “Ensuring That There Is Adequate Storage Space on the Root Partition,” on page 120](#)
- ◆ [Section 5.3.3, “Preparing the Server You Are Upgrading,” on page 120](#)
- ◆ [Section 5.3.4, “Checking the Server’s IP Address,” on page 122](#)
- ◆ [Section 5.3.5, “Checking the Server’s DNS Name,” on page 122](#)
- ◆ [Section 5.3.6, “Ensuring That the Server Has a Server Certificate,” on page 122](#)
- ◆ [Section 5.3.7, “Preparing an Installation Source,” on page 123](#)

5.3.1 Securing Current Data

Before upgrading, secure the current data on the server. For example, make a backup copy of the data, so you can restore the data volumes later if needed.

Save your configuration files. Copy all configuration files to a separate medium, such as a streamer, removable hard disk, or USB stick, to secure the data. This primarily applies to files stored in `/etc` as well as some of the directories and files in `/var` and `/opt`. You might also want to write the user data in `/home` (the Home directories) to a backup medium. Back up this data as `root`. Only `root` has read permission for all local files.

5.3.2 Ensuring That There Is Adequate Storage Space on the Root Partition

Before starting your upgrade, make note of the root partition and space available.

If you suspect you are running short of disk space, secure your data before updating, and repartition your system. There is no general rule regarding how much space each partition should have. Space requirements depend on your particular partitioning profile and the software selected.

WARNING: If your root partition resides in an EVMS container, you might not be able to repartition or expand the size of the root partition without destroying data elsewhere on the device.

The `df -h` command lists the device name of the root partition. In the following example, the root partition to write down is `/dev/hdb2` (mounted as `/`) with 183 GB available.

```
ti:~ # df -h
Filesystem      Size  Used Avail Use% Mounted on
/dev/hdb2       186G  2.9G  183G   2% /
udev            506M  204K  506M   1% /dev
ti:~ # █
```

5.3.3 Preparing the Server You Are Upgrading

Complete the steps in [Table 5-2](#) for your target server.

Table 5-2 *Preparing the Server You Are Upgrading*

If the Server Is Running	Do This Before Upgrading the Server
SLES 10 SP1	<ol style="list-style-type: none">1. Ensure that the products and services you have running on the server can run on the new SLES 10 SP4 kernel.2. Make sure the server meets the hardware requirements for SLES 10 SP4. See “System Requirements for Operating Linux” in the <i>Architecture-Specific Information Guide</i> (http://www.novell.com/documentation/sles10/book_x86_prep/data/book_x86_prep.html). Itanium is not a supported platform for OES 2 SP3.3. Upgrade the server to SLES 10 SP2 first and then to SLES 10 SP4.4. See the SLES 10 SP4 entry.
SLES 10 SP2	<ol style="list-style-type: none">1. Ensure that the products and services you have running on the server can run on the new SLES 10 SP4 kernel.2. Make sure the server meets the hardware requirements for SLES 10 SP4. See “System Requirements for Operating Linux” in the <i>Architecture-Specific Information Guide</i> (http://www.novell.com/documentation/sles10/book_x86_prep/data/cha_sysreqs.html). Itanium is not a supported platform for OES 2 SP3.3. Upgrade the server to SLES 10 SP4.4. See Chapter 4, “Installing or Configuring OES 2 SP3 on an Existing Server,” on page 111.
SLES 10 SP4	<ol style="list-style-type: none">1. See Chapter 4, “Installing or Configuring OES 2 SP3 on an Existing Server,” on page 111.
OES 1 or OES 1 SP1	<ol style="list-style-type: none">1. Upgrade your server to OES 1 SP2 first then see the instructions in OES 1 SP2. For assistance, see the <i>OES 1 Documentation on the Web</i> (http://www.novell.com/documentation/oes).
OES 1 SP2	<ol style="list-style-type: none">1. Verify the OES 1 server version by using the following command at a terminal prompt: <pre>cat /etc/novell-release</pre>2. Patch the OES 1 SP2 server to the latest patch level and ensure that the server and services are still running as desired. For procedures, see “Patching an OES Server” in the <i>OES 1 Linux Installation Guide</i>. (http://www.novell.com/documentation/oes/install_linux/data/bxlu3xc.html#bxlu3xc).3. Upgrade the server to OES 2 SP3 by following the instructions in this section.
OES 2	<ol style="list-style-type: none">1. Run <i>YaST > Software > Online Update</i> to patch the OES 2 server to the latest patch level. TIP: Documentation for earlier OES 2 releases is available for downloading from the <i>OES 2 Online Documentation Previous Releases page</i> (http://www.novell.com/documentation/oes2/previous-releases.html#previous-releases).2. Ensure that the server and services are still running as desired.3. Upgrade to OES 2 SP1, apply all patches, and verify services.4. Upgrade to OES 2 SP2, apply all patches, and verify services.5. See the instructions in OES 2 SP2.

If the Server Is Running	Do This Before Upgrading the Server
OES 2 SP1	<ol style="list-style-type: none"> 1. Run <i>YaST > Software > Online Update</i> to patch the OES 2 SP1 server to the latest patch level. TIP: Documentation for earlier OES 2 releases is available for downloading from the OES 2 Online Documentation Previous Releases page (http://www.novell.com/documentation/oes2/previous-releases.html#previous-releases). 2. Ensure that the server and services are still running as desired. 3. Upgrade to OES 2 SP2, apply all patches, and verify services. 4. See the instructions in OES 2 SP2.
OES 2 SP2	<ol style="list-style-type: none"> 1. Run <i>YaST > Software > Online Update</i> to patch the OES 2 SP2 server to the latest patch level. 2. Ensure that the server and services are still running as desired. 3. Upgrade to OES 2 SP3 using the instructions in this section, then apply all patches and verify services.

5.3.4 Checking the Server's IP Address

Make sure the server has a static IP address.

5.3.5 Checking the Server's DNS Name

Make sure that DNS returns the correct static IP address when you ping the server's full DNS name. For example

```
ping myserver.example.com
```

5.3.6 Ensuring That the Server Has a Server Certificate

IMPORTANT: Most OES servers have either an eDirectory certificate or a third-party certificate installed.

These instructions only apply when that is not the case.

Ensure that the server has a server certificate that has been generated and exported as a Common Server certificate.

To check for or add a certificate:

- 1 Launch YaST.
- 2 Click *Security and Users > CA Management*.
- 3 If no certificate authorities (CAs) are listed, create one by clicking *Create Root CA*.
If a CA is listed, you can use it by selecting the CA and clicking *Enter CA*.
- 4 If you are using a listed CA, you must provide the CA password (generally the root password).
- 5 Click *Certificates > Add*.
- 6 Fill out the forms required for a server certificate. After the last form is complete, a server certificate is created and listed in the certificate list.

- 7 Select the certificate you just created.
- 8 Click the *Export* button, then select *Export as Common Server Certificate*.

5.3.7 Preparing an Installation Source

Review and complete the instructions for “[Setting Up a Network Installation Source](#)” on page 41. We recommend using the network installation option, especially if you are upgrading multiple servers.

5.4 Upgrading to OES 2 SP3

Use the following instructions to complete the upgrade applicable to the installation source you are using:

- ♦ [Section 5.4.1, “For Servers with EVMS and NSS on the System Device,”](#) on page 123
- ♦ [Section 5.4.2, “To Upgrade Using a Network Installation Source with DHCP \(Offline\),”](#) on page 124
- ♦ [Section 5.4.3, “Upgrading Using a Network Installation Source without DHCP \(Offline\),”](#) on page 125
- ♦ [Section 5.4.4, “Using Physical Media to Upgrade \(Offline\),”](#) on page 126
- ♦ [Section 5.4.5, “Using the Patch Channel to Upgrade \(Online\),”](#) on page 127
- ♦ [Section 5.4.6, “Selecting the Installation Mode Options,”](#) on page 130
- ♦ [Section 5.4.7, “Specifying the Partition to Update,”](#) on page 130
- ♦ [Section 5.4.8, “Specifying the Add-On Product Installation Information,”](#) on page 133
- ♦ [Section 5.4.9, “Reviewing the Delete Unmaintained Packages Notification,”](#) on page 133
- ♦ [Section 5.4.10, “Verifying and Customizing the Update Options in Installation Settings,”](#) on page 134
- ♦ [Section 5.4.11, “Accepting the Installation Settings,”](#) on page 138
- ♦ [Section 5.4.12, “Specifying Configuration Information,”](#) on page 139

5.4.1 For Servers with EVMS and NSS on the System Device

NOTE: This section doesn't apply if you are upgrading through the patch channel as explained in “[Using the Patch Channel to Upgrade \(Online\)](#)” on page 127.

If you are upgrading a server that has EVMS as the volume manager for the system device, you need to enable `boot.lvm` and `boot.md`. (The system device contains the `/boot`, `swap`, and `/ (root)` partitions) and might also have Novell Storage Services (NSS) pools and volumes.)

Do the following just before you begin the upgrade:

- 1 In YaST, click *System > System Services (Runlevel)*.
- 2 Select *Expert Mode*.
- 3 Select *boot.lvm*.
- 4 If the boot level (column B) is not marked with a B, then click *Set/Reset > Enable the Service*.
- 5 Select *boot.md*.

- 6 If the boot level (column B) is not marked with a B, then click *Set/Reset > Enable the Service*.
- 7 Click *Finish*, then click *Yes*.

5.4.2 To Upgrade Using a Network Installation Source with DHCP (Offline)

- 1 Ensure that the server meets the upgrade requirements. See [“Meeting the Upgrade Requirements” on page 120](#).
- 2 Insert the *SUSE Linux Enterprise Server 10 SP4 CD 1* into the CD-ROM drive (or the SP4 DVD in a compatible drive) of the server you want to upgrade to OES 2 SP3, then reboot the server.
- 3 From the boot menu, select the following Installation option that matches your environment, but do not press Enter.
 - ♦ **Installation:** The normal installation mode. All modern hardware functions are enabled.
 - ♦ **Installation—ACPI Disabled:** If the normal installation fails, it might be because the system hardware does not support ACPI (advanced configuration and power interface). If this seems to be the case, use this option to install without ACPI support.
 - ♦ **Installation—Local APIC Disabled:** If the normal installation fails, it might be because the system hardware does not support local APIC (advanced programmable interrupt controllers). If this seems to be the case, use this option to install without local APIC support.

If you are not sure, try *Installation—ACPI Disabled* or *Installation—Safe Settings* first.
 - ♦ **Installation—Safe Settings:** Boots the system with the DMA mode (for CD-ROM drives) and power management functions disabled. Experts can also use the command line to enter or change kernel parameters.
- 4 Specify the network installation source.

Because your network has DHCP, you don't need to specify an IP address for the server. However, you do need to specify the path to your network installation source.

Do one of the following:

- ♦ Press F4. Select the network installation type (NFS, FTP, HTTP). Type the server name and installation path of your network installation source, then click OK.

For information on setting up a network installation source, see [“Setting Up a Network Installation Source” on page 41](#).

or
- ♦ Specify the network installation type and path using the *Boot Options* line (see [“Using Custom Boot Options” in the SUSE Linux Enterprise Server Installation and Administration Guide](#) (http://www.novell.com/documentation/sles10/book_sle_reference/data/sec_deployment_remoteinst_bootinst.html#sec_deployment_remoteinst_bootinst_custom))

- 5 Press Enter to begin the upgrade.
- 6 Select a language, then click *Next*.
- 7 On the License Agreement page, click *Yes, I Agree to the License Agreement > Next*.
- 8 Follow the prompts, using the information contained in the following sections:
 - 8a [“Selecting the Installation Mode Options” on page 130](#).
 - 8b [“Specifying the Partition to Update” on page 130](#).
 - 8c [“Specifying the Add-On Product Installation Information” on page 133](#).
 - 8d [“Verifying and Customizing the Update Options in Installation Settings” on page 134](#).

- 8e “Accepting the Installation Settings” on page 138.
 - 8f “Specifying Configuration Information” on page 139.
 - 8g “Finishing the Upgrade” on page 149.
- 9 Verify that the upgrade was successful. See the procedures in “Verifying That the Installation Was Successful” on page 108.
 - 10 Complete the server setup by following the procedures in “Completing OES Installation or Upgrade Tasks” on page 153.

5.4.3 Upgrading Using a Network Installation Source without DHCP (Offline)

- 1 Ensure that the server meets the upgrade requirements. See “Meeting the Upgrade Requirements” on page 120.
- 2 Insert *SUSE Linux Enterprise Server 10 SP4 CD 1* into the CD-ROM drive (or the SP4 DVD in a compatible drive) of the server that you are upgrading to OES 2 SP3, then reboot the machine.
- 3 From the CD boot menu, select one of the following Installation options that matches your environment, but do not press Enter.
 - ♦ **Installation:** The normal installation mode. All modern hardware functions are enabled.
 - ♦ **Installation—ACPI Disabled:** If the normal installation fails, it might be because the system hardware does not support ACPI (advanced configuration and power interface). If this seems to be the case, use this option to install without ACPI support.
 - ♦ **Installation—Local APIC Disabled:** If the normal installation fails, this might be because the system hardware does not support local APIC (advanced programmable interrupt controllers). If this seems to be the case, use this option to install without local APIC support.

If you are not sure, try *Installation—ACPI Disabled* or *Installation—Safe Settings* first.

- ♦ **Installation—Safe Settings:** Boots the system with the DMA mode (for CD-ROM drives) and power management functions disabled. Experts can also use the command line to enter or change kernel parameters.
- 4 To proceed with the upgrade, your server must have the following:
 - ♦ An IP address assigned.
 - ♦ The location of your network installation source.

To specify this information on the *Boot Options* line, proceed with [Step 5](#).

To supply the information in a series of dialog boxes, skip to [Step 7](#).

- 5 Specify the server’s IP address information and the path to the installation source on the *Boot Options* line (see “Using Custom Boot Options” in the *SUSE Linux Enterprise Server Installation and Administration Guide* (http://www.novell.com/documentation/sles10/book_sle_reference/data/sec_deployment_remoteinst_bootinst.html#sec_deployment_remoteinst_bootinst_custom)).
- 6 Press Enter and continue with [Step 24](#).
- 7 Continuing from [Step 4](#), press Enter.

The following error displays.

```
Could not find the SUSE Linux Enterprise Server 10 Installation source.
Activating manual set up program.
```
- 8 Press Enter.
- 9 Select the language, then select *OK* and press Enter.

- 10 Select a keyboard map, then select *OK* and press Enter.
- 11 Select *Start Installation or System*, then select *OK* and press Enter.
- 12 Select *Start Installation or Update*, then select *OK* and press Enter.
- 13 Select *Network*, then select *OK* and press Enter.
- 14 Select the network protocol that matches the configured protocol on your network installation server, then press Enter.
- 15 (Conditional) If you have more than one network interface card, select one of the cards, then press Enter.
We recommend `eth0`, if it is connected to the subnet for the primary static IP address used by the server you are upgrading.
- 16 When you are prompted whether you want to use DHCP, select *No*, then press Enter.
- 17 Specify the static IP address of the server you are upgrading, then press Enter.
- 18 Specify the subnet mask, then press Enter.
- 19 Specify the gateway, then press Enter.
- 20 Specify the IP addresses of a name server, then press Enter.
- 21 Specify the IP address of the network installation server, then press Enter.
- 22 (Conditional) Depending on the protocol you specified, you might see additional screens for FTP or HTTP. Select the options that are appropriate for your network, then continue with [Step 23](#).
- 23 Specify the path to your installation source on the network installation server, then press Enter.
The installation system loads and the YaST install starts.
- 24 Select the language, then click *Next*.
- 25 On the License Agreement page, click *Yes, I Agree to the License Agreement > Next*.
- 26 Follow the prompts, using the information contained in the following sections:
 - 26a [“Selecting the Installation Mode Options”](#) on page 130.
 - 26b [“Specifying the Partition to Update”](#) on page 130.
 - 26c [“Specifying the Add-On Product Installation Information”](#) on page 133.
 - 26d [“Verifying and Customizing the Update Options in Installation Settings”](#) on page 134.
 - 26e [“Accepting the Installation Settings”](#) on page 138.
 - 26f [“Specifying Configuration Information”](#) on page 139.
 - 26g [“Finishing the Upgrade”](#) on page 149.
- 27 Verify that the upgrade was successful. See the procedures in [“Verifying That the Installation Was Successful”](#) on page 108.
- 28 Complete the server setup by following the procedures in [“Completing OES Installation or Upgrade Tasks”](#) on page 153.

5.4.4 Using Physical Media to Upgrade (Offline)

- 1 Ensure that the server meets the upgrade requirements. See [“Meeting the Upgrade Requirements”](#) on page 120.
- 2 Insert the *SUSE Linux Enterprise Server 10 SP4 CD 1* or *SUSE Linux Enterprise Server 10 SP4 DVD 1* into the CD-ROM or DVD drive of the server that you are upgrading to OES 2 SP3, then reboot the machine.

- 3 From the CD boot menu, select the *Installation* option that best fits your environment, then press Enter.
- 4 Select the language that you want to use.
- 5 On the License Agreement page, click *Yes, I Agree to the License Agreement > Next*.
- 6 Follow the prompts, using the information contained in the following sections:
 - 6a [“Selecting the Installation Mode Options”](#) on page 130.
 - 6b [“Specifying the Partition to Update”](#) on page 130.
 - 6c [“Specifying the Add-On Product Installation Information”](#) on page 133.
 - 6d [“Verifying and Customizing the Update Options in Installation Settings”](#) on page 134.
 - 6e [“Accepting the Installation Settings”](#) on page 138.
 - 6f [“Specifying Configuration Information”](#) on page 139.
 - 6g [“Finishing the Upgrade”](#) on page 149.
- 7 Verify that the upgrade was successful. See the procedures in [“Verifying That the Installation Was Successful”](#) on page 108.
- 8 Complete the server setup by following the procedures in [“Completing OES Installation or Upgrade Tasks”](#) on page 153.

5.4.5 Using the Patch Channel to Upgrade (Online)

NOTE: If you want to use ZENworks Linux Management to upgrade your OES 2 SP2 servers, see [Section C.1, “Using a ZLM Server and the Patch Channel to Upgrade,”](#) on page 245.

- ♦ [“Before You Start the Upgrade”](#) on page 127
- ♦ [“Creating a Password Answer File”](#) on page 128
- ♦ [“Performing the Upgrade”](#) on page 128

Before You Start the Upgrade

- ♦ You might notice that the SLES documentation refers to this upgrade method as an “online migration.” In OES, “migration” implies moving to a new architecture or platform.

Don’t be confused by the SLES terminology when, for example, you add “migration” products to your upgrade channels.
- ♦ The SLES “move-to-sles10-sp4” patch cannot be used to migrate OES 2 SP3.
- ♦ The OES server being upgraded must be running OES 2 SP2 with the latest patches applied. For help, refer to the patching instructions for SP3 in [Chapter 7, “Updating \(Patching\) an OES 2 SP3 Server,”](#) on page 157. The patching process is fundamentally the same for both versions.
- ♦ You can perform a “silent” patch channel upgrade by creating an answer file that contains the LDAP (eDirectory) Admin user password and, if you are installing Domain Services for Windows, the optional Domain Administrator password. Instructions for doing this are in [“Creating a Password Answer File”](#) on page 128.

If you prefer to enter the passwords manually after the software has been updated, skip to [“Performing the Upgrade”](#) on page 128.

Creating a Password Answer File

If you want the upgrade process to run without user intervention after the software is updated, you can create an answer file for the YaST install.

IMPORTANT: The answer file can only be created on an OES 2 SP2 or later server.

1 As root, open a terminal prompt.

2 Enter the following command:

```
sudo yast2 create-answer-file ldap_password optional_domain_admin_password
```

Replace *ldap_password* with the LDAP (eDirectory) Admin password and *optional_domain_admin_password* with the DSfW Domain Administrator's password (if applicable).

If your password contains special characters, such as !, \$, #, etc., be aware of the following:

- ◆ In most cases you can surround the password with single quotes. For example, if the password is pa\$word, enter it as 'pa\$word'.
- ◆ Alternatively, you can escape each special character, for example pa\\$\\$word.
- ◆ If your password contains a single quote, use the second method.

For more information, see the man page for your shell. Enter `man bash` at a terminal prompt.

3 Copy the resulting answer file from the current working directory to `/opt/novell/oes-install`.

4 Continue with [Performing the Upgrade](#).

Performing the Upgrade

Prerequisites

- ◆ Ensure you have enough disk space in `/var/cache/zmd` where the update process downloads all the updates to.
- ◆ Register the SLES 10 SP 3 server in the Novell Customer Center.

1 Ensure that the server meets the upgrade requirements. See [“Meeting the Upgrade Requirements” on page 120](#).

2 Install the `move-to-oes2-sp3` patch on the server. This is an optional patch and will never be installed automatically.

- ◆ If you are using `rug`, enter the following command at a terminal prompt:

```
rug in -t patch move-to-oes2-sp3 && rug ping -a
```

NOTE: If you get the error `Dependency resolution failure`, follow these steps to resolve it, but `SPident` tool will not work.

1. Remove all the OES2-SP2 installation source in YaST.
2. Remove the migration product marker from `/var/lib/zybb/db/products`.

NOTE: The marker starts with 321.

3. Stop `rug` using `rczmd stop`.
4. Delete the `rug` database using `rm /var/lib/zmd/zmd.db`.

5. Start the rug using `rczmd start`.

NOTE: Run `rug ca` to make sure there are no SP2 catalogs present, and OES2SP3 (update and pool) and SLES-10-SP4 (update, pool and online) catalogs are subscribed. If they are not subscribed, use the following command `rug sub <catalog name>` and subscribe them one by one.

- ♦ If you are using the GUI Software Updater, click the *Software Updater*, select the *move-to-oes2-sp3 patch*, then click *Update*.

NOTE: If you get the error *Dependency resolution failure*, click *Resolve conflicts via YaST*, and the dependency will be resolved and the upgradation will be completed.

- 3 Answer all of the prompts in the affirmative until the `move-to-oes2-sp3` patch is installed.
- 4 Verify that the Novell-Open-Enterprise-Server-SP3-migration, `OPEN_ENTERPRISE_SERVER_SP2` and `SUSE_SLES_SP3` packages are installed along with their associated channels by entering the following command at a terminal prompt:

```
rug pd -i
```
- 5 Install the recommended patches that are in the channels using `rug up -t patch -g recommended && rug ping -a`.
- 6 Repeat [Step 5](#), answering all of the prompts in the affirmative until you are prompted to reboot the server.
- 7 (Optional) Create an answer file. See [“Creating a Password Answer File” on page 128](#).
- 8 Reboot the server.
- 9 If you did not provide a password answer file ([“Creating a Password Answer File” on page 128](#)), you must enter the passwords for the LDAP (eDirectory) Admin user and (if applicable) the DSfW Domain Administrator to start the configuration process.
If you provided an answer file, the service configuration process continues automatically.
If an error occurs, for example if the wrong password is entered, you can rerun the configuration phase again by either
 - ♦ Rebooting the server
or
 - ♦ Entering the following command at a terminal prompt:

```
sudo yast2 channel-upgrade-oes
```
- 10 Various messages indicate the services that are being configured. When the Login prompt appears, verify that the upgrade was successful. See the procedures in [“Verifying That the Installation Was Successful” on page 108](#).
- 11 Verify that the base has changed to SLES 10 SP4 by using the `SPident --vv` command. Ensure that the output does not throw up any conflicts.

NOTE: If the message `NOT upto date` is displayed when you run the `SPident` (Service Pack Identification) tool, then install the latest rpms of `fuse`, `libfuse2`, and `ruby` using the following commands:

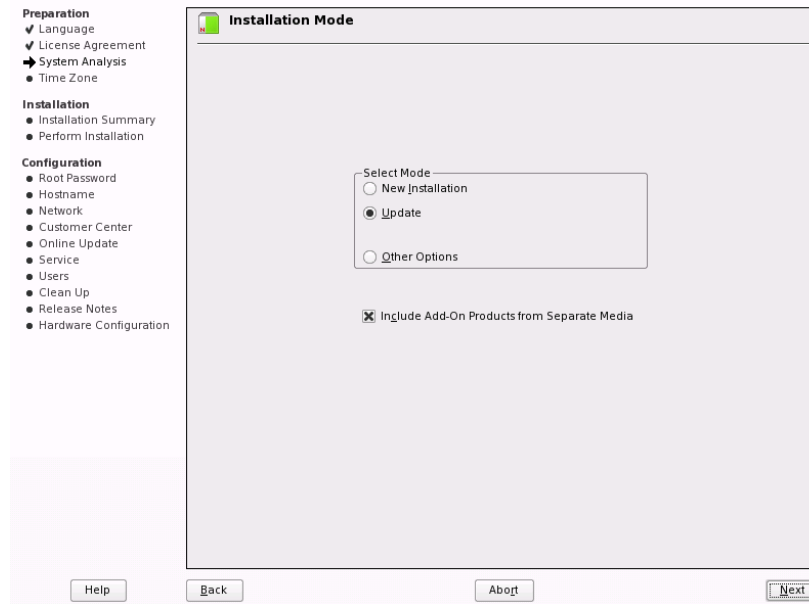
1. `rug in fuse`
 2. `rug in libfuse2`
 3. `rug in ruby`
-

- 12 Complete the server setup by following the procedures in [“Completing OES Installation or Upgrade Tasks” on page 153](#).

5.4.6 Selecting the Installation Mode Options

- 1 When the Installation Mode page displays, select the following menu options:
 1. *Update*
 2. *Include Add-On Products from Separate Media*

IMPORTANT: To upgrade previously installed OES services and install any additional OES services, you must select the *Include Add-On Products from Separate Media* option. If you don't, only SLES is updated (if necessary). None of the OES services are upgraded.



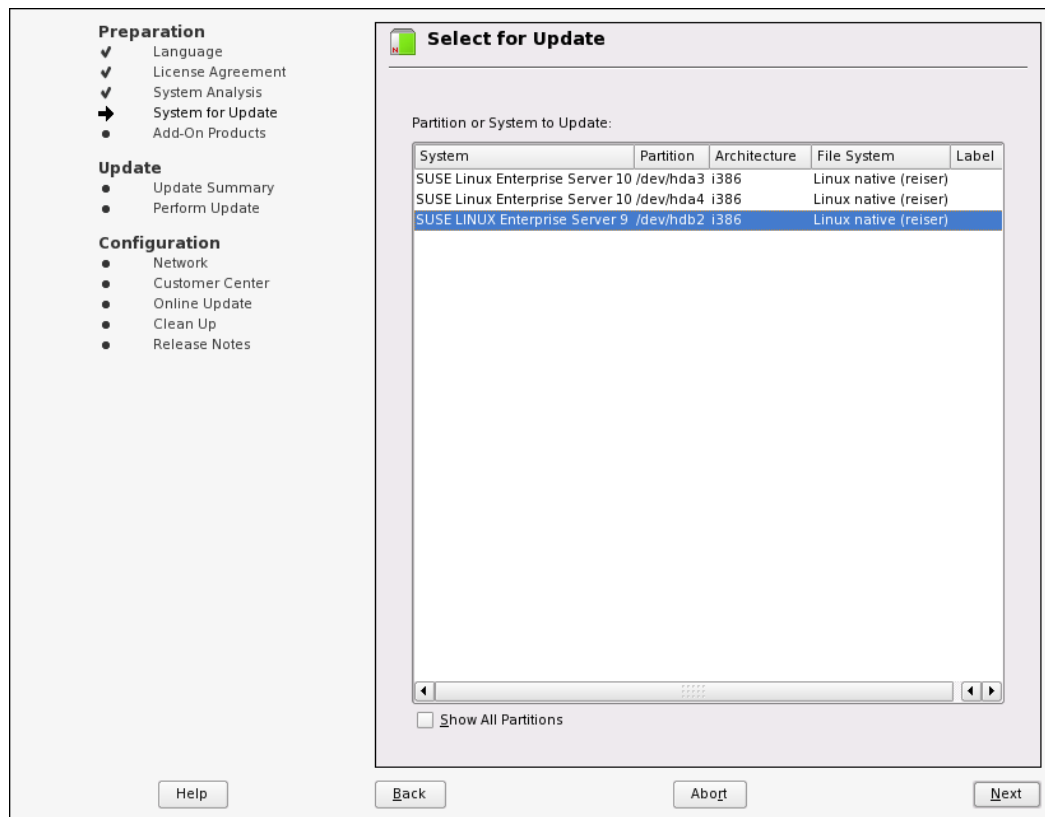
- 2 Click *Next*.
- 3 Continue with [“Specifying the Partition to Update” on page 130](#) or [“Specifying the Add-On Product Installation Information” on page 133](#), depending on which matches your installation.

5.4.7 Specifying the Partition to Update

YaST tries to determine the correct root (/) partition. If there are several possibilities, or if YaST can't definitely determine the correct root partition, the Select for Update page displays.

IMPORTANT: If no partitions are listed, you are attempting to upgrade an i386 installation using x86_64 media. Mixing architectures in an upgrade is not permitted. See [Section 5.1, “Supported Upgrade Paths,” on page 117](#). You must start the upgrade again, using i386 installation media.

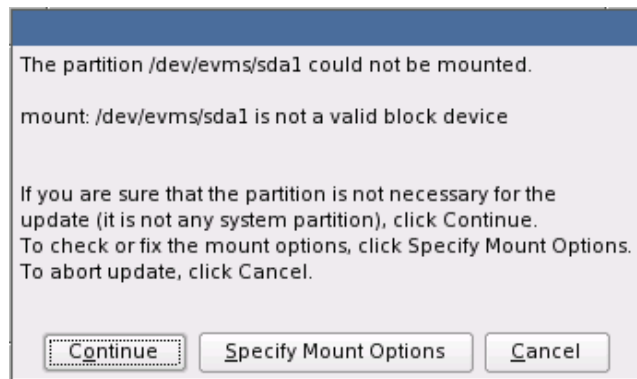
- 1 If there is only one partition listed, click *Next*.
- 2 If there are several partitions, select the partition with /evms in the path.
For example, make sure you select the /dev/evms/lvm/... partition rather than the /dev/lvm/... partition.
- 3 Click *Next*.
YaST reads the old fstab on this partition to analyze and mount the file systems listed there.



Next, YaST tries to mount the boot (/boot) partition.

- 4 If no error displays, skip to [“Specifying the Add-On Product Installation Information” on page 133.](#)

If you have EVMS on your system disk, you might get an error stating that the partition could not be mounted:



- 5 If this error displays, click *Specify Mount Options*.

The Mount Options dialog box appears.

The image shows a 'Mount Options' dialog box. It has a title bar with the text 'Mount Options'. Below the title bar, there are three input fields. The first is labeled 'Mount Point' and contains the text '/boot'. The second is labeled 'Device' and contains the text '/dev/evms/sda1'. The third is labeled 'File System (empty for autodetection)' and is currently empty. At the bottom of the dialog box, there are two buttons: 'OK' and 'Cancel'.

- 6 Remove `/evms` from the *Device* path.

The image shows a 'Mount Options' dialog box, similar to the one above. The title bar says 'Mount Options'. The 'Mount Point' field contains '/boot'. The 'Device' field now contains '/dev/sda1', with the 'evms' part removed. The 'File System' field is empty. The 'OK' and 'Cancel' buttons are at the bottom.

- 7 Click *OK*.

TIP: In rare cases, the same disks are reported as hard disk devices (`hda`, etc.) on SLES 9 and SCSI disk devices (`sda`, etc.) on SLES 10.

If you remove `/evms` from the device path, and you still see the error in [Step 5](#), try changing the path to use `sda` instead of `hda`.

- 8 Continue with [“Specifying the Add-On Product Installation Information”](#) on page 133.

5.4.8 Specifying the Add-On Product Installation Information

- 1 When the Add-On Product Installation page displays, click *Add*.
- 2 In the Add-On Product Media page, if you are installing from physical media, click *CD > Next*. Otherwise, skip to [Step 3](#).
 - 2a In the Insert the Add-On Product CD dialog box, select the drive where you want to insert the CD labeled *Novell Open Enterprise Server 2 SP3 CD 1* if there is more than one drive.
 - 2b Click *Eject*.
 - 2c Insert the CD labeled *Novell Open Enterprise Server 2 SP3 CD 1*, click *Continue*, then skip to [Step 4](#).
- 3 If you are using an alternate installation source, such as a network location, click the appropriate option, such as the network protocol that matches your installation source, then click *Next* and specify the information for the source you have specified.
- 4 Read and accept the Novell Open Enterprise Server 2 license agreement, then click *Next*.
- 5 Confirm that the Add-On Product Installation page shows the correct path to the OES media, then click *Next*.
- 6 If you are upgrading from OES 1 SP2, continue with [“Reviewing the Delete Unmaintained Packages Notification” on page 133](#). Otherwise, skip to [“Verifying and Customizing the Update Options in Installation Settings” on page 134](#).

5.4.9 Reviewing the Delete Unmaintained Packages Notification

After the OES 2 SP3 installation source has been added, if you are upgrading from OES 1 SP2, the following notification is displayed:

Important: The Delete Unmaintained Packages option is selected.

If your server includes packages (RPMs) for any of the following, they are about to be deleted:

- OES 1 services not included in OES 2, such as iFolder 2, eGuide, and Virtual Office.
- Other Novell products, such as GroupWise, ZenWorks, and Identity Manager.
- SLES 9 services not included in SLES 10.
- Third-party products.

Take one of the following actions:

- Delete these packages by clicking Accept on the Installation Summary screen.
- Keep specific packages by clicking the Packages link on the Installation Settings screen, then changing each specific package's status to Keep.
- Keep all packages by clicking the Update Options link on the Installation Settings screen, then deselecting the Delete Unmaintained Packages option.

Keeping any packages that are targeted for deletion requires you to resolve package conflicts.

For more information and detailed instructions, see the upgrade sections in the OES 2 Linux Installation Guide.



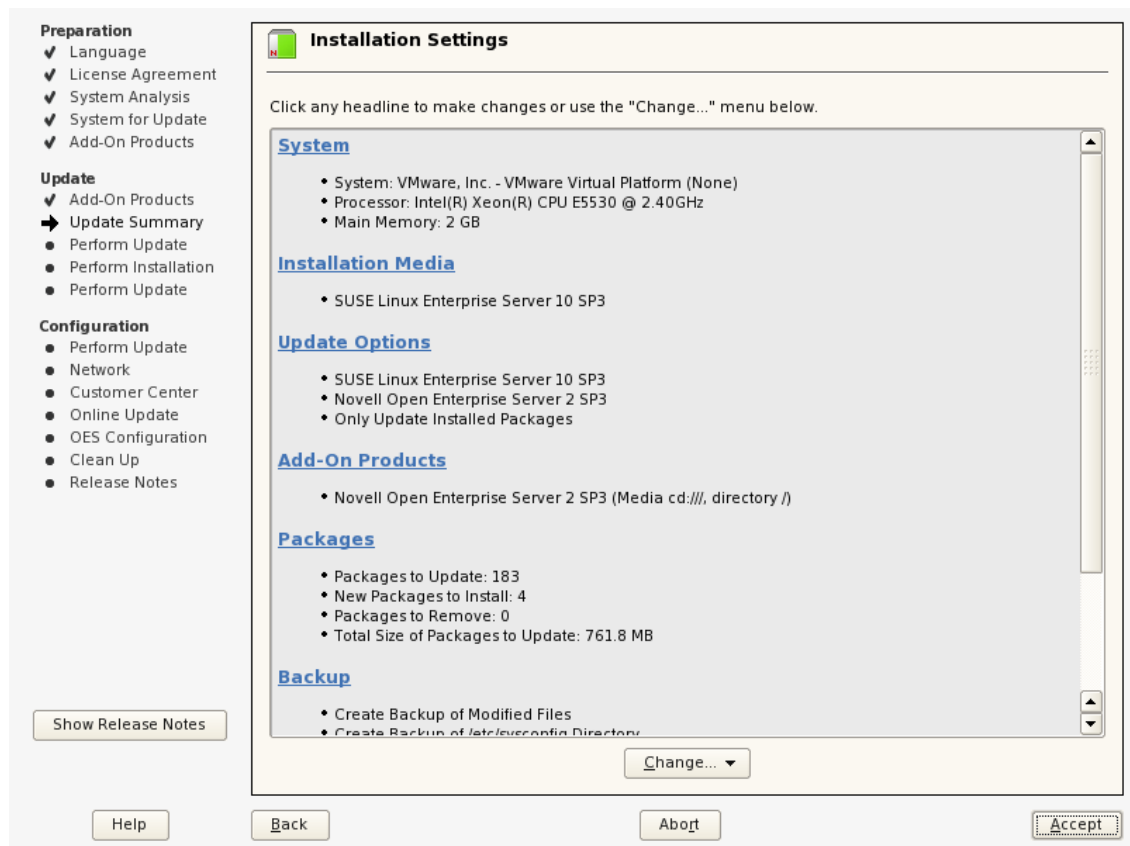
- 1 Carefully read the notification.
- 2 Decide how you want to proceed. For more information, see [“OES 1 Server Upgrades: Non-OES 2 Packages Are Deleted by Default”](#) on page 118.
- 3 Click *OK*, then continue with [Verifying and Customizing the Update Options in Installation Settings](#).

5.4.10 Verifying and Customizing the Update Options in Installation Settings

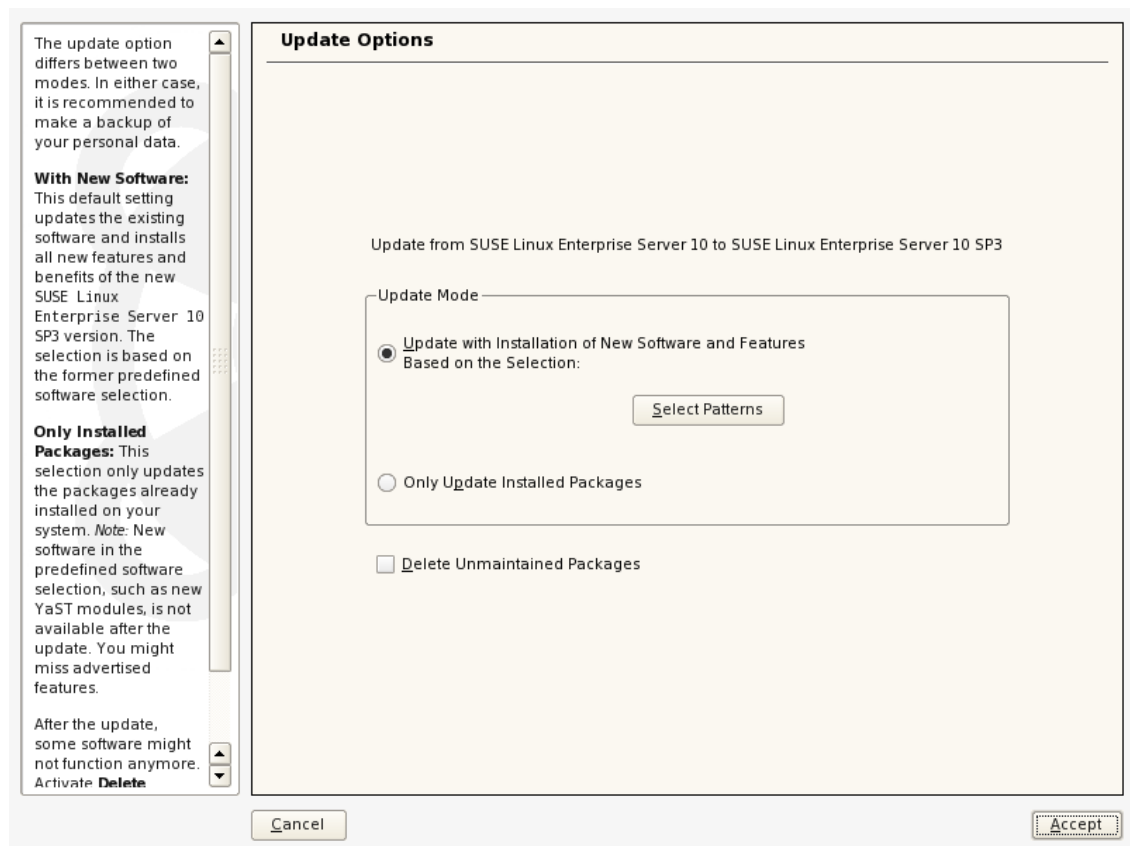
IMPORTANT: To verify that previously installed services are selected for installation and to install any additional OES services during the upgrade, you must customize the Update Options on the Installation Settings page.

To verify or customize the software packages that are installed on the server:

- 1 On the Installation Settings page, make sure Novell Open Enterprise Server 2 SP3 is listed under the *Add-On Products* link. If it is, proceed with [Step 3](#).



- 2 If Novell Open Enterprise Server is not listed, click the *Add-On Products* link and follow the steps in [“Specifying the Add-On Product Installation Information”](#) on page 133. When the Installation Settings page shows Novell Open Enterprise Server 2 SP3 as an installation setting, proceed with [Step 3](#).
- 3 If you see package conflict errors (red text under the *Packages* link), refer to the [OES 2 SP3 Readme](#) for resolution instructions.
- 4 On the Installation Settings page, click *Update Options*.
- 5 In the Update Options page, click *Update with Installation of New Software and Features Based on the Selection > Select Patterns*.



- 6 All of the OES Services patterns that were previously installed are selected by default.

Ensure that the patterns for the services you are upgrading are selected, and select the patterns for any new OES Services patterns that you might want to also install.

A description displays to the right of a pattern when the pattern is selected. For a description of OES Services patterns and the components selected with each pattern, see [Table 2-4 on page 31](#).

Some OES services, such as Novell CIFS and Novell Samba, are not supported together on the same server. For more information, see “[Unsupported Service Combinations](#)” in the *OES 2 SP3: Planning and Implementation Guide*.

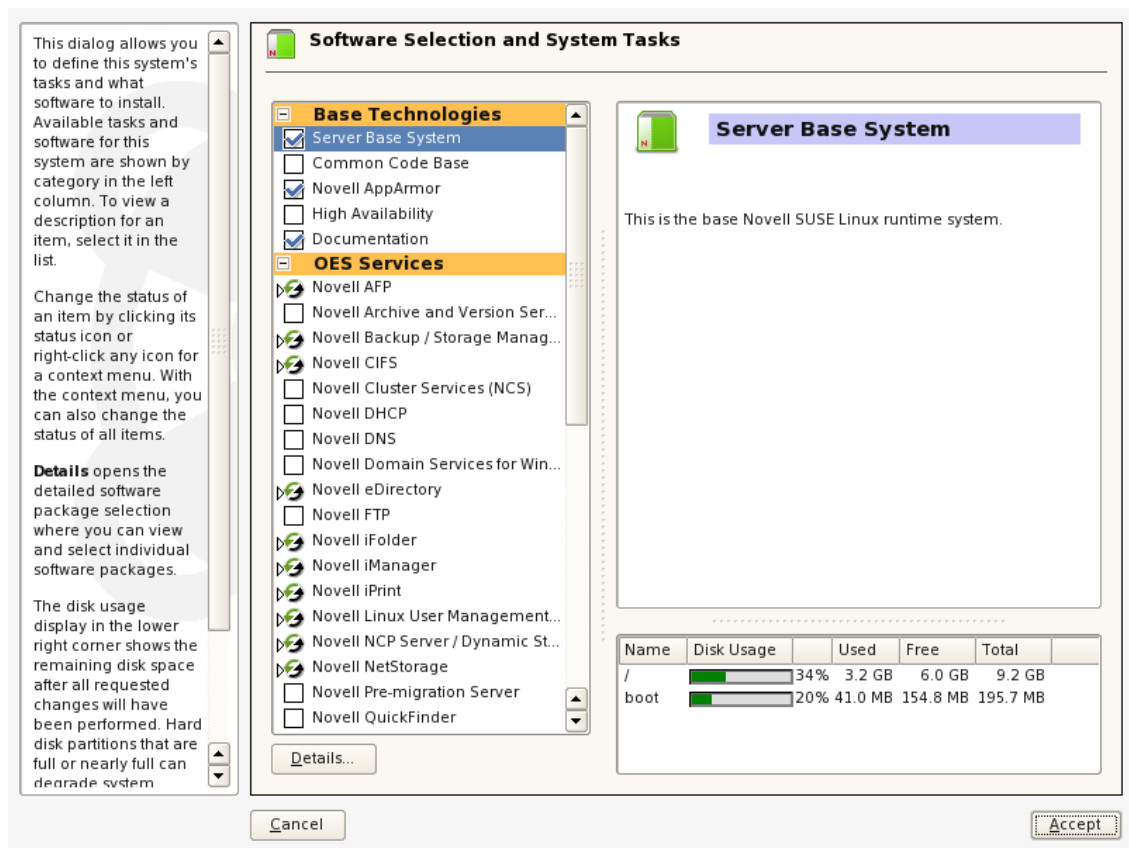
IMPORTANT: If you deselect a pattern after selecting it, you are instructing the installation program to not install that pattern and all of its dependent patterns. Rather than deselecting a pattern, click *Cancel* to cancel your software selections, then click the *Select Patterns* heading again to choose your selections again.

Selecting only the patterns that you want to install ensures that the patterns and their dependent patterns and packages are installed.

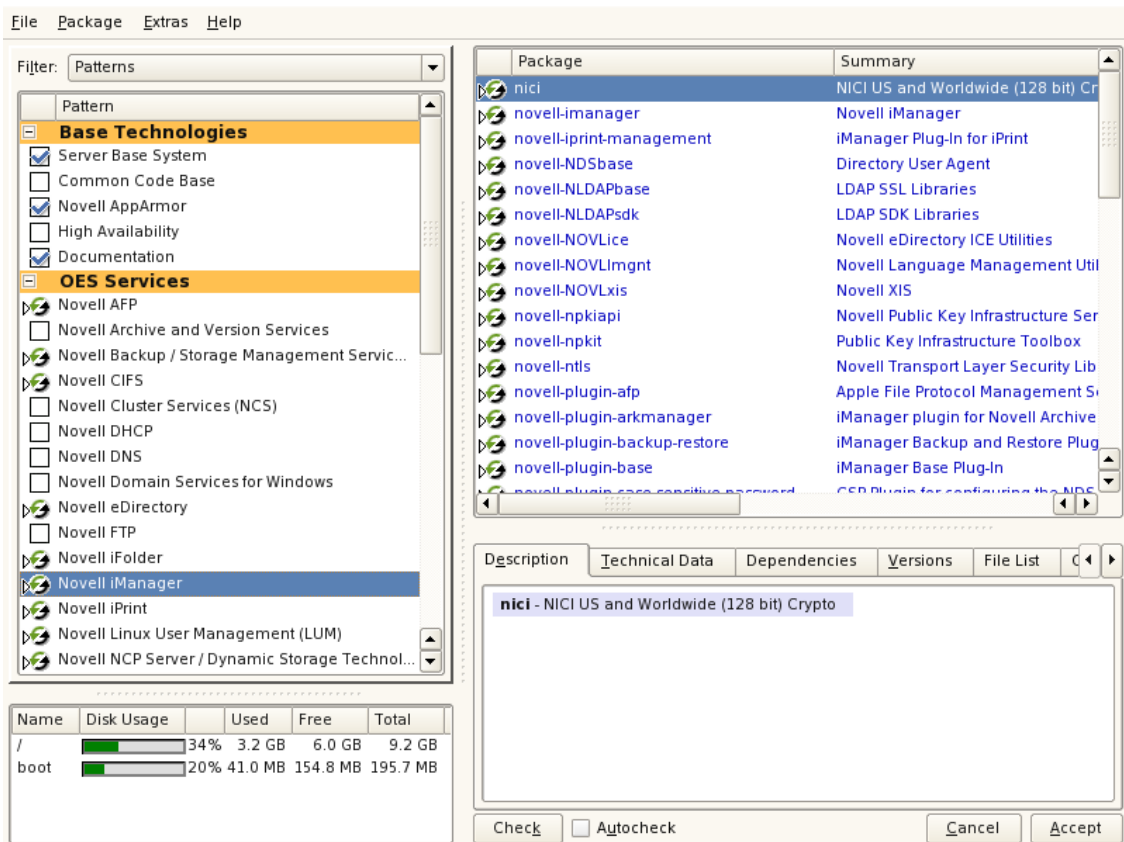
If you click *Accept*, then return to software pattern selection page, the selections that you made become your base selections and must be deselected if you want to remove them from the installation proposal.

Attempting to uninstall a service by deselecting its pattern is not recommended. For more information, see [Chapter 13, “Disabling OES 2 Services,” on page 221](#).

Selecting a pattern automatically selects the other patterns that it depends on to complete the installation.



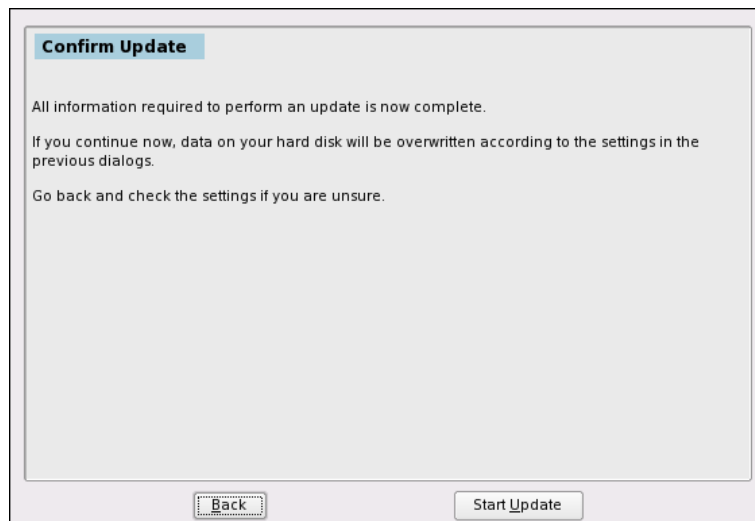
7 If you want to see the details of your selections, click *Details*.



- 8 When you have the software components selected that you want to install, click *Accept*.
- 9 When the notification about deleting unmaintained packages appears, click *OK*.
- 10 (Conditional) If the prompt for the AGFA Fonts license displays, read the agreement, then click *Accept*.
- 11 (Conditional) If the prompt for *Automatic Changes* displays, click *Continue*.
- 12 (Conditional) If you are prompted, resolve any dependency conflicts.
- 13 If the Update Options page displays again, click *Accept*.
- 14 Continue with [“Accepting the Installation Settings”](#) on page 138.

5.4.11 Accepting the Installation Settings

- 1 Review the final Installation Settings page to ensure that you have all the Installation settings you desire. Make sure that the page shows all the OES Services that you want to update and install.
- 2 After you have changed all the installation settings as desired, click *Accept*.
- 3 In the Confirm Update dialog box, click *Start Update*.



The base installation settings are applied and the packages are installed.

- 4 While the server is updating the files, do one of the following:
 - ♦ For installations using a network installation source, remove the boot CD (*SUSE Linux Enterprise Server 10 SP4 CD 1*) from the CD drive.
 - ♦ For installations using a CD or DVD installation source, leave the CD or DVD in the CD-ROM or DVD drive. When the installation process prompts you for each CD at the appropriate time, insert the CD. The progress status at the bottom of the screen indicates which CD will be prompted for next.
- 5 After the server reboots, continue with [“Specifying Configuration Information” on page 59](#).

TIP: If you have the disk driver situation mentioned in [Step 8 on page 132](#), your server boots to a prompt for the root password. Specify the password, and then use an editor such as VI to modify the `/etc/fstab` file so that the path to the boot partition uses `sda` instead of `hda`. Then reboot the server. The upgrade should continue normally.

5.4.12 Specifying Configuration Information

When the server reboots, you are required to complete the following configuration information:

- ♦ [“Testing the Connection to the Internet” on page 139](#)
- ♦ [“Specifying Novell Customer Center Configuration Settings” on page 140](#)
- ♦ [“Updating the Server Software During the Upgrade” on page 142](#)
- ♦ [“Upgrading eDirectory” on page 146](#)
- ♦ [“Specifying LDAP Configuration Settings” on page 146](#)
- ♦ [“Configuring Novell Open Enterprise Server Services” on page 147](#)

Testing the Connection to the Internet

On the Test Internet Connection page:

- 1 Select *Yes, Test Connection to the Internet*, click *Next*.
- 2 Obtaining the latest SUSE release notes might fail at this point. If it does, view the log to verify that the network configuration is correct, then click *Next*.

- 3 If the network configuration is not correct, click *Back > Back* and fix your network configuration. See [“Network Interface” on page 60](#). The most common problem is that an invalid DNS server is specified.

or

Skip this test by clicking *No, Skip This Test*, then continue with [Step 4](#).

IMPORTANT: Most OES services configurations require a connection to the Internet.

Skipping this test also skips downloading release notes, configuring the Novell Customer Center, and updating online.

- 4 If you skipped the customer center test, continue with [“Upgrading eDirectory” on page 146](#). Otherwise, continue with [“Specifying Novell Customer Center Configuration Settings” on page 140](#).

Specifying Novell Customer Center Configuration Settings

To receive support and updates for your OES 2 SP3 server, you need to register it in the Novell Customer Center. When the Novell Customer Center Configuration page is displayed, you have three options:

- ♦ [“Updating a Registered Server \(Recommended\)” on page 140](#)
- ♦ [“Registering the Server Later / Skipping a Registered Server Update” on page 140](#)
- ♦ [“Registering the Server During the Upgrade” on page 140](#)

Updating a Registered Server (Recommended)

- 1 If you have already registered your OES 2 server and you want to download the available patches, leave *Configure Now* selected and click *Next*.
YaST contacts the server (which might take a few minutes) and then downloads the available patches.
- 2 Go to [Step 8 on page 142](#).

Registering the Server Later / Skipping a Registered Server Update

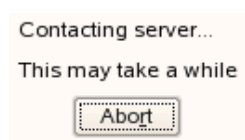
- 1 Click *Configure Later*.
- 2 Continue with [“Upgrading eDirectory” on page 146](#).
- 3 Register the server after the installation is complete by using the procedures in [Section 7.3, “Registering the Server in the Novell Customer Center,” on page 159](#).

Registering the Server During the Upgrade

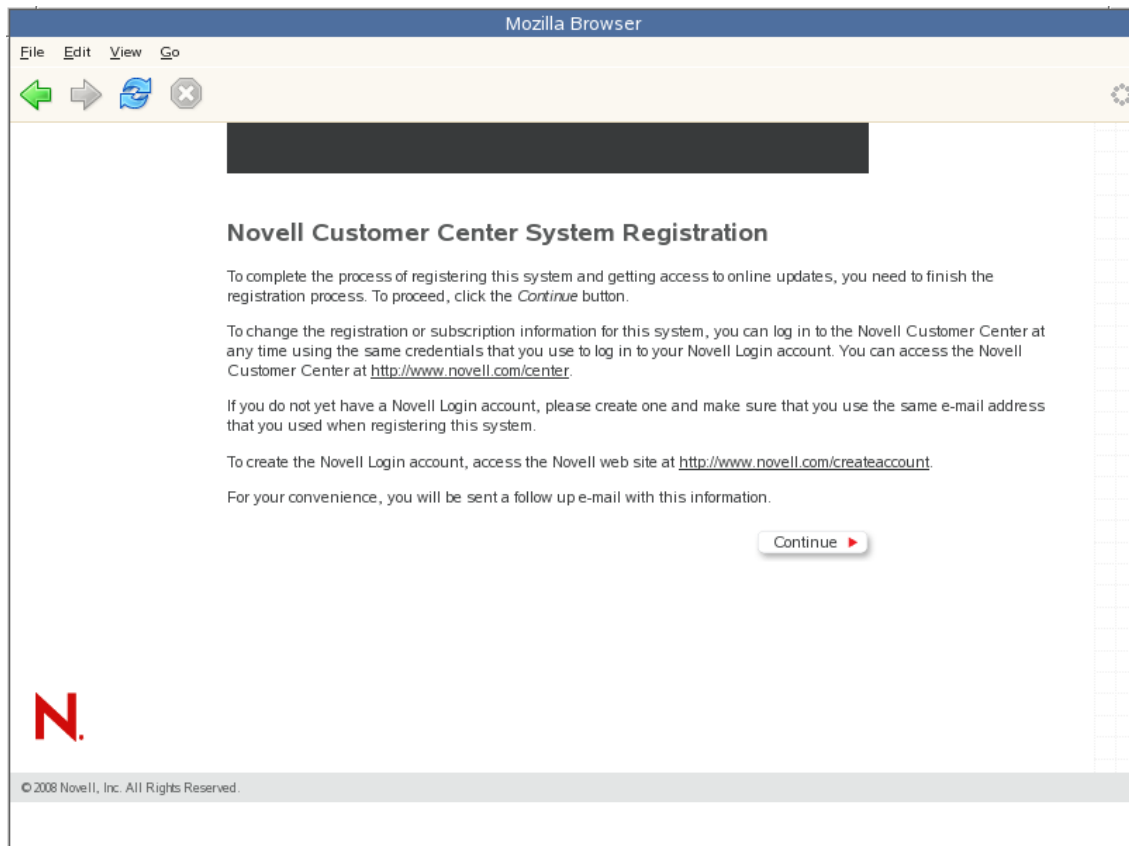
- 1 On the Novell Customer Center Configuration configuration page, select all of the following options, then click *Next*.

Option	What it Does
<i>Configure Now</i>	Proceeds with registering this server and the SLES 10 SP4 and OES product in the Novell Customer Center.
<i>Hardware Profile</i>	Sends information to the Novell Customer Center about the hardware that you are installing SLES 10 SP4 and OES 2 on.
<i>Optional Information</i>	Sends optional information to the Novell Customer Center for your registration. For this release, this option doesn't send any additional information.
<i>Registration Code</i>	Makes the registration with activation codes mandatory.
<i>Regularly Synchronize with the Customer Center</i>	Keeps the installation sources for this server valid. It does not remove any installation sources that were manually added.

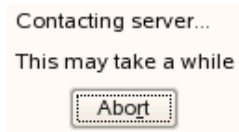
- 2 After you click *Next*, the following message is displayed. Wait until this message disappears and the Manual Interaction Required page displays.



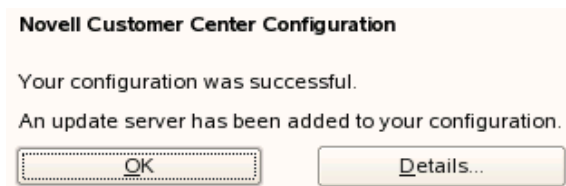
- 3 On the Manual Interaction Required page, note the information that you will be required to specify, then click *Continue*.
- 4 On the Novell Customer Center Registration page, specify the required information in the following fields:
 - ◆ **Email Address:** The e-mail address for your Novell Login account.
 - ◆ **Confirm Email Address:** The same e-mail address for your Novell Login account
 - ◆ **Activation Code for SLES Components (optional):** Specify your purchased or 60-day evaluation registration code for the SLES 10 product.
If you don't specify a code, the server cannot receive any updates or patches.
 - ◆ **Activation Code for OES Components (optional):** Specify your purchased or 60-day evaluation registration code for the OES 2 product.
If you don't specify a code, the server cannot receive any updates or patches.
 - ◆ **System Name or Description (optional):** The hostname for the system is specified by default.
If you want to change this to a description, for the Novell Customer Center, specify a description to identify this server.
- 5 Click *Submit*.
- 6 When the message to complete the registration displays, click *Continue*.



- 7 After you click *Continue*, the following message is displayed with the Manual Interaction Required page. Wait until this message disappears and Novell Customer Center Configuration page displays with the message that Your configuration was successful.



- 8 When you see the message Your configuration was successful on the Novell Customer Center Configuration, click *OK*.



- 9 Continue with “[Updating the Server Software](#)” on page 65.

Updating the Server Software During the Upgrade

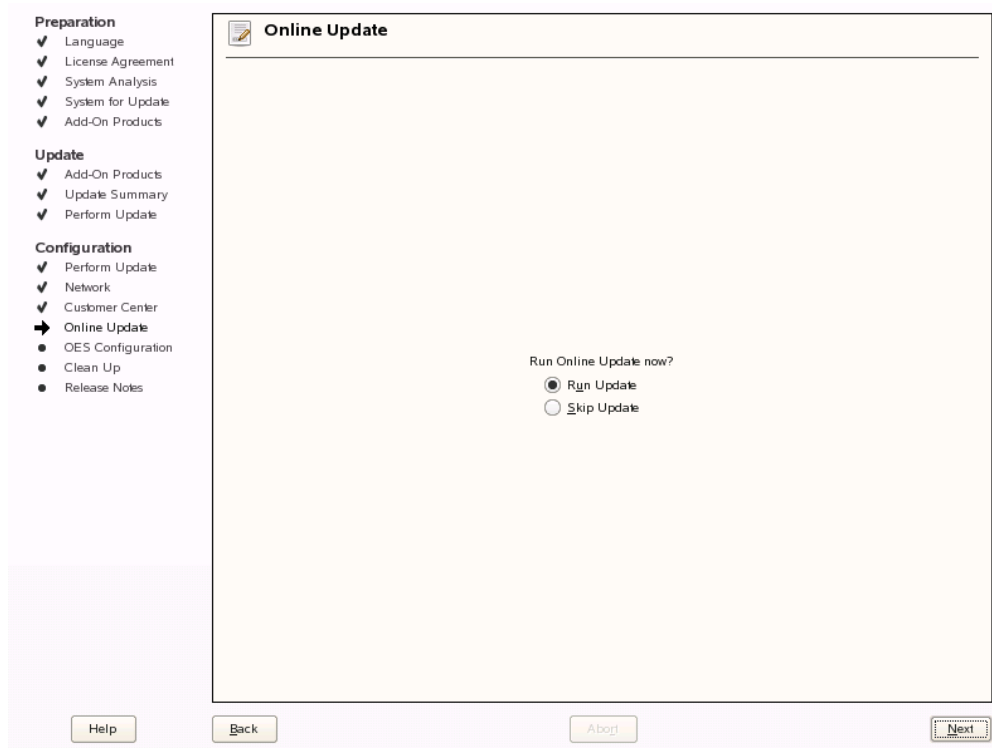
If you have a successful connection to the Internet and have registered the server in the Novell Customer Center, the server displays the Online Update page. You can run the online update now or skip it and get updates later.

To skip getting updates during the upgrade:

- 1 On the Online Update page, click *Skip Update*.
- 2 Continue with [“Upgrading eDirectory” on page 146](#).

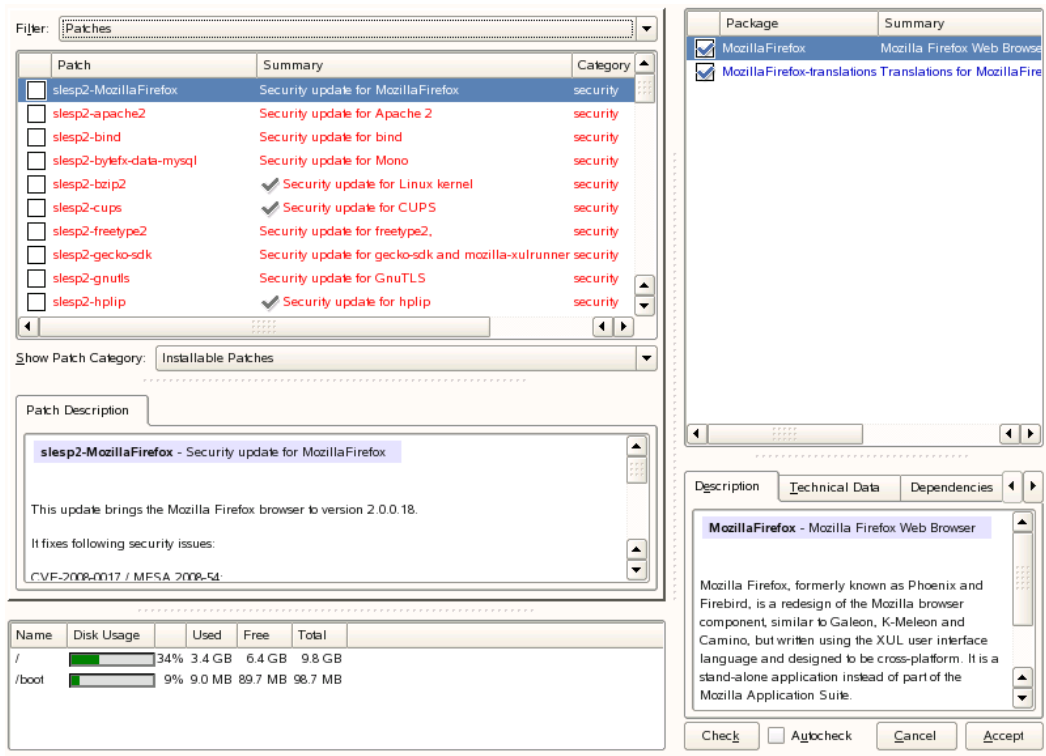
To get updates during the upgrade:

- 1 On the Online Update page, click *Run Update*.

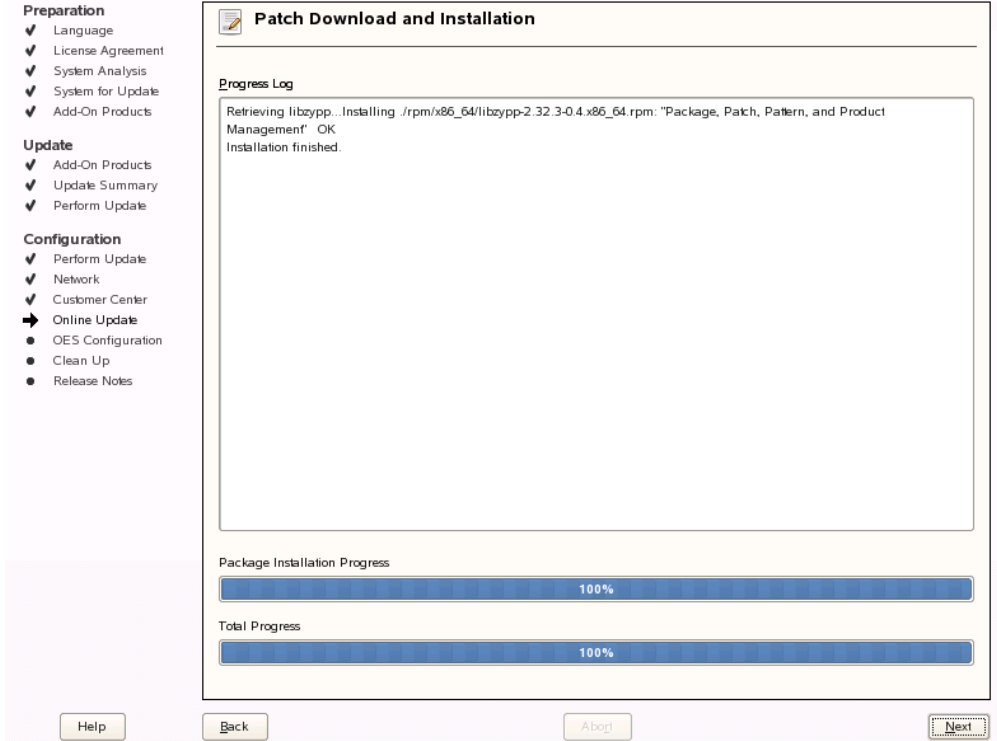


- 2 On the page that shows that updates are available, select the updates that you want to install, then click *Accept*.

The check marks that are shown in the summary column of the patches list are the patches that have already been installed on your system.



3 When you see the message, Installation finished on the Patch Download and Installation page, click *Next*.



4 If the update makes changes to YaST, the following message displays. If so, click *OK* to restart YaST.

Packages for package management were updated.
Finishing and restarting now.

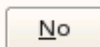


- 5 If the installation was interrupted, the following message might display. If so, click *Yes* to continue with the installation, and enter the root password.

Starting Installation...

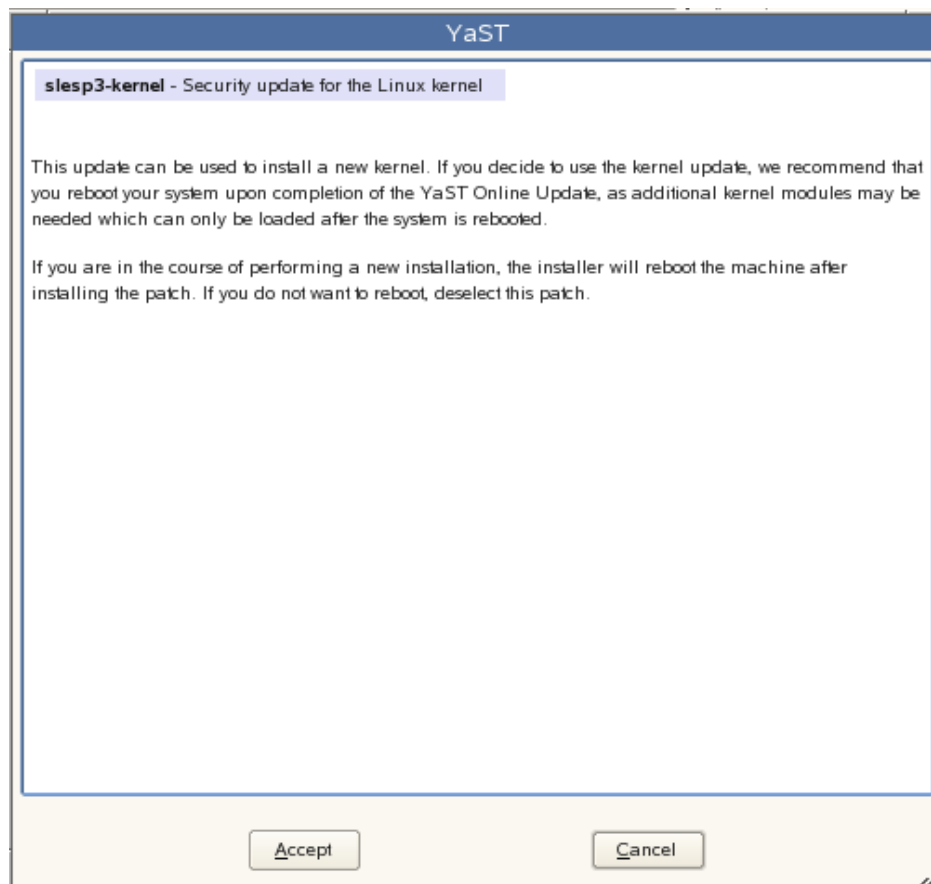
The previous installation has failed.
Would you like it to continue?

Note: You may have to enter some information again.



The online update displays again with additional updates. If a patch has changes to the kernel, you might want to deselect it and install it later after the installation is complete. For procedures, see [“Updating \(Patching\) an OES 2 SP3 Server” on page 157](#).

- 6 If you do install patches that have changes to the kernel, click *OK* when you see the following message.

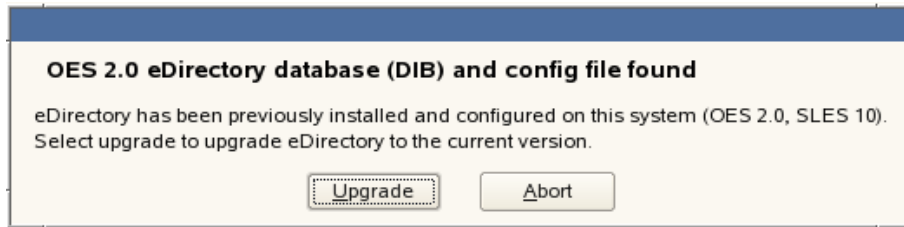


- 7 After all the patches are installed, continue with [“Upgrading eDirectory” on page 146](#).

Upgrading eDirectory

OES 2 SP3 includes eDirectory 8.8.6.

- 1 When the following dialog box appears, click *Upgrade*.



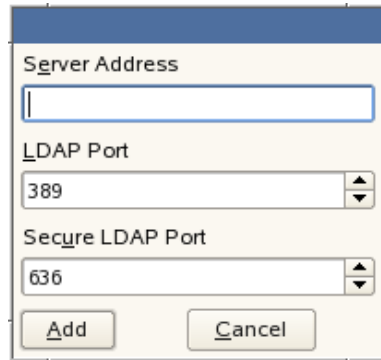
- 2 On the eDirectory Upgrade - Existing Server Information page, type the Admin password.
- 3 (Conditional) If you are upgrading from OES 1 SP2 and you have installed a third-party CA certificate on the server, consider deselecting the Use eDirectory Certificates for HTTPS services. Otherwise, your HTTPS services will be configured to use the eDirectory certificate.
For more information, see "[Certificate Management](#)" in the *OES 2 SP3: Planning and Implementation Guide*.
- 4 Click *Next*.
- 5 On the Novell Modular Authentication Service page, click *Next*.
- 6 Continue with with "[Specifying LDAP Configuration Settings](#)" on page 146.

Specifying LDAP Configuration Settings

Many of the OES services require eDirectory. If eDirectory was not selected as a product to upgrade or install but other OES services that do require LDAP services were installed, the LDAP Configuration service displays so that you can complete the required information.

- 1 In the *eDirectory Tree Name* field, specify the name for the existing eDirectory tree that you are installing this server into.
- 2 In the *Admin Name and Context* field, specify the name and context for user Admin on the existing tree.
- 3 In the *Admin Password Name* field, specify a password for user for user Admin on the existing tree.
- 4 Add the LDAP servers that you want the services on this server to use. The servers that you add should hold the master or a read/write replica of eDirectory. Do the following for each server you want to add.
 - 4a Click *Add*.
 - 4b In the next dialog box, specify the following information for the server to add, then click *Add*.
 - ♦ Server IP Address
 - ♦ LDAP port

- ◆ Secure LDAP port



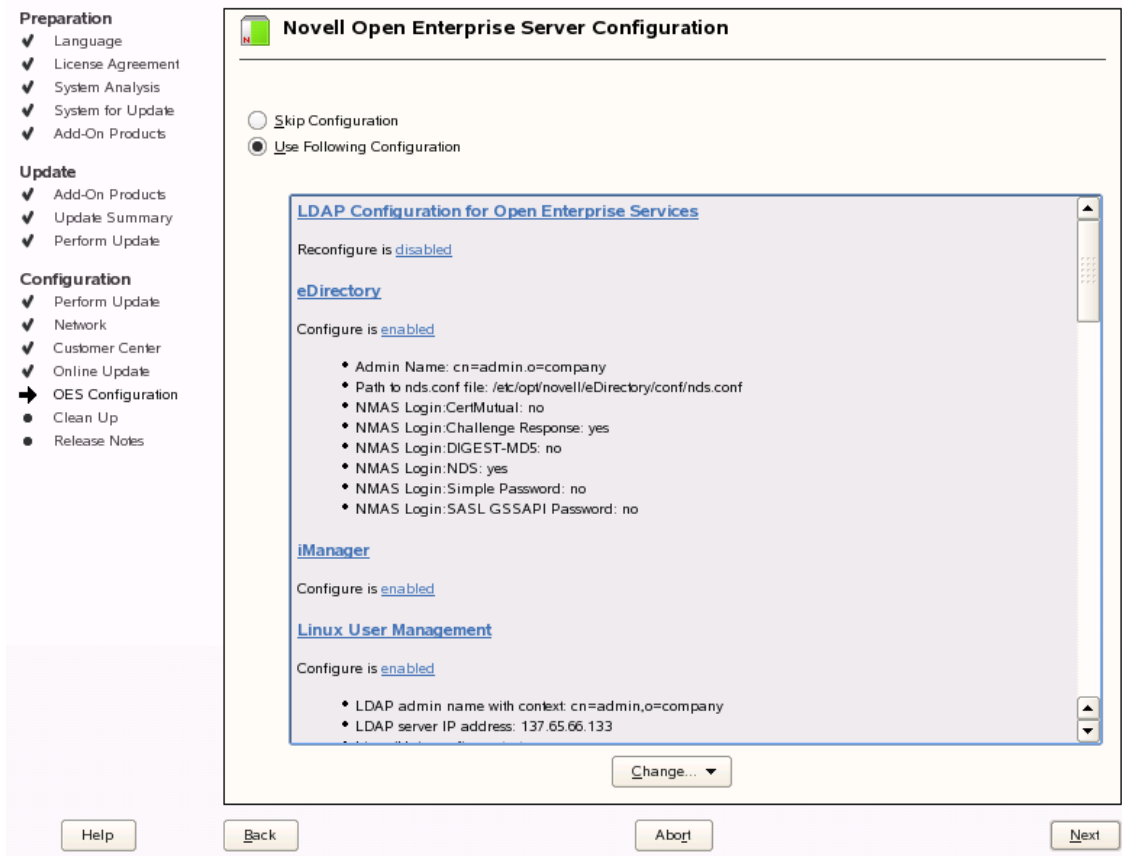
The screenshot shows a dialog box titled "Server Address" with a blue header. It contains three input fields: "Server Address" (a text box), "LDAP Port" (a spinner box with "389" selected), and "Secure LDAP Port" (a spinner box with "636" selected). At the bottom are "Add" and "Cancel" buttons.

- 4c** Click *Add*.
- 4d** (Optional) Repeat [Step 4a](#) through [Step 4c](#) to add additional servers.
- 5** When all the LDAP servers that you want to specify are listed, click *Next*.
- 6** Continue with [“Configuring Novell Open Enterprise Server Services”](#) on page 147.

Configuring Novell Open Enterprise Server Services

After you complete the LDAP configuration or eDirectory configuration, the *Novell Open Enterprise Server Configuration* summary page is displayed, showing all the OES components you updated and installed and their configuration settings.

- 1** Review the setting for each component and click the component heading to change any settings.



When you specify the configuration information for OES services, see the information in [“Configuration Guidelines for OES Services” on page 79](#); or, if you are reading online, click a link below:

- ◆ [AFP](#)
- ◆ [Archive and Version Services](#)
- ◆ [Backup/Storage Management Services \(SMS\)](#)
- ◆ [CIFS](#)
- ◆ [Clustering \(NCS\)](#)
- ◆ [DHCP](#)
- ◆ [DNS](#)
- ◆ [Domain Services for Windows \(DSfW\)](#)
- ◆ [eDirectory](#)
- ◆ [FTP](#)
- ◆ [iFolder](#)
- ◆ [iManager](#)
- ◆ [iPrint](#)
- ◆ [Linux User Management \(LUM\)](#)
- ◆ [NCP Server/Dynamic Storage Technology](#)
- ◆ [NetStorage](#)
- ◆ [Pre-Migration Server](#)

- ◆ [QuickFinder](#)
 - ◆ [Novell Remote Manger \(NRM\)](#)
 - ◆ [Novell Samba](#)
 - ◆ [Novell Storage Services](#)
- 2 When you are satisfied with the settings for each component, click *Next*.
 - 3 When you confirm the OES component configurations, you might receive the following error:

The proposal contains an error that must be resolved before continuing.

If this error is displayed, check the summary list of configured products for any messages immediately below each product heading. These messages indicate products or services that need to be configured. If you are running the YaST graphical interface, the messages are red text. If you are using the YaST text-based interface, they are not red.

For example, if you selected Linux User Management in connection with other OES products or services, you might see a message similar to the following:

Linux User Management needs to be configured before you can continue or disable the configuration.

If you see a message like this, do the following:

 - 3a On the summary page, click the heading for the component.
 - 3b Supply the missing information in each configuration page.

When you specify the configuration information for OES services during the upgrade, see the information in [“Configuration Guidelines for OES Services” on page 79](#).

When you have finished the configuration of that component, you are returned to the Novell Open Enterprise Server Configuration summary page.
 - 3c If you want to skip the configuration of a specific component and configure it later, click *Enabled* in the *Configuration is enabled* status to change the status to *Configuration is disabled*.

If you change the status to *Configuration is disabled*, you must configure the OES components after the installation is complete. See [“Installing or Configuring OES 2 SP3 on an Existing Server” on page 111](#).
 - 4 After resolving all product configuration problems, click *Next* to proceed with the configuration of all services and installation of iManager plug-ins.
 - 5 When the Readme page displays, click *Next* and continue with [Section 5.5, “Finishing the Upgrade,” on page 149](#).

5.5 Finishing the Upgrade

After a successful configuration, YaST shows the Installation Completed page.

- 1 Deselect *Clone This System for AutoYaST*. Cloning is selected by default.

This increases the speed of finishing the installation update.

AutoYaST is a system for automatically installing one or more SUSE Linux Enterprise systems without user intervention. Although you can create a profile from a system that has been upgraded, it does not work to upgrade a similar system.
- 2 Finish the upgrade by clicking *Finish* on the Installation Completed page.

- 3 If you have upgraded a server that has NSS pools and volumes on the system device (the device that contains the root (/), /boot, and swap partitions), you must do the following:
 - 3a Verify that the `/etc/fstab` file is correct. For example, make sure that the path to `/boot` is complete; that is `/dev/evms/sda1` (or `hda1`) and not just `/dev/evms`. If the path to the `/boot` partition is incomplete or doesn't contain `/evms`, change it and save the `fstab` file.
 - 3b Open a terminal and run the following command to ensure that the `initrd` file is correctly created:

```
mkinitrd -f evms
```
 - 3c Reboot the server before continuing with [“Verifying That the Upgrade Was Successful” on page 150](#).

A script runs automatically during the OES 2 SP3 upgrade to install and enable `boot.evms`. These changes are applied when you reboot your system after the upgrade is completed. Make sure that you reboot after the upgrade and before you do anything that would alter the changes made in this step.
- 4 After the server completes the upgrade, continue with [“Verifying That the Upgrade Was Successful” on page 150](#).

5.6 Post-Migration iManager Configuration

If Role-Based Services are configured in iManager, the *Driver* tab in iManager is missing after upgrading iPrint to OES 2 SP3. This is because support was added for Windows 7. To display the new *Driver* tab, see the instructions in [TID 7004921 \(http://www.novell.com/support/php/search.do?cmd=displayKC&docType=kc&externalId=7004921&sliceId=2&docTypeID=DT_TID_1_1&dialogID=66652408&stateId=1%20%2066654011\)](http://www.novell.com/support/php/search.do?cmd=displayKC&docType=kc&externalId=7004921&sliceId=2&docTypeID=DT_TID_1_1&dialogID=66652408&stateId=1%20%2066654011).

5.7 Verifying That the Upgrade Was Successful

One way to verify that your OES server upgrade was successful and that the components are loading properly is to watch as the server boots. As each component is loaded, the boot logger provides a status next to it indicating if the component is loading properly.

You can also quickly verify a successful installation by accessing the server from your Web browser.


- 1 In the Address field of your Web browser, enter the following URLs:

`http://IP_or_DNS`

Replace `IP_or_DNS` with the IP address or DNS name of your OES server.

You should see a Web page similar to the following:


Home Management Services Client Software Help Current Server: 10.1.1.1



Customers Agree!

Novell Open Enterprise Server delivers the best networking, file and print services in the market.


[View Demo](#)



Linux Does More

Take advantage of the choices you get from the world's best Linux. SUSE Linux Enterprise Server is certified for 5,000+ applications and hardware. Isn't that the kind of flexibility you need?


[Read More](#)



Let Us Help You

Check out the many resources we've provided to help you upgrade your services from NetWare to Open Enterprise Server on Linux.

[Get Resources](#)



Get Training

Using Open Enterprise Server on Linux is easy with all the familiar management tools. However, you can dive deeper into new features and capabilities with On-demand training.

[Sign Up](#)

- 2 If you want to look at the eDirectory tree and begin to see how iManager works, click the Management Services home page, click *Management Tools > iManager*, and then log in as user Admin (the user you created during product installation).

You can also access iManager by typing the following URL in a browser window and logging in as user Admin:

`http://IP_or_DNS_name/nps/iManager.html`

- 3 Continue with ["What's Next" on page 151](#).

5.8 What's Next

After you complete the upgrade and verify that it was successful, see ["Completing OES Installation or Upgrade Tasks" on page 153](#) and ["Updating \(Patching\) an OES 2 SP3 Server" on page 157](#).

6 Completing OES Installation or Upgrade Tasks

This section provides information for completing the following tasks:

- [Section 6.1, “Determining Which Services Need Additional Configuration,”](#) on page 153
- [Section 6.2, “Rebooting the Server after Installing NSS,”](#) on page 155
- [Section 6.3, “Restarting Tomcat,”](#) on page 155
- [Section 6.4, “Launching and Configuring Firefox for Linux,”](#) on page 155

6.1 Determining Which Services Need Additional Configuration

NOTE: For information on configuring OES services as a different administrator than the one who originally installed the OES server, see [Section 2.5.3, “Adding/Configuring OES Services as a Different Administrator,”](#) on page 23.

Depending on the products you have installed, there might be some tasks that you must complete before you can use individual service components.

For more information, see [“Caveats for Implementing OES 2 Services”](#) in the *OES 2 SP3: Planning and Implementation Guide*.

If a component requires additional configuration that is not part of the Novell Open Enterprise Server (OES) 2 Linux installation, see the component's administration guide for more information. The following table include links to the installation and configuration information for most OES 2 SP3 services.

Table 6-1 OES 2 SP3 Services Additional Installation and Configuration Instructions

OES 2 SP3 Service	For Additional Installation and Configuration Information
Domain Services for Windows	See “Installing Domain Services for Windows” in the <i>OES 2 SP3: Domain Services for Windows Administration Guide</i> .
Novell AFP	See “Installing and Setting Up AFP” in the <i>OES 2 SP3: Novell AFP For Linux Administration Guide</i> .
Novell Archive and Version Services	See “Setting Up Archive and Version Services ” in the <i>OES 2 SP3: Novell Archive and Version Services 2.1 Administration Guide for Linux</i> .
Novell Backup/Storage Management Services (SMS)	See “Installing and Configuring SMS” in the <i>OES 2 SP3: Storage Management Services Administration Guide for Linux</i> .
Novell CIFS	See “Installing and Setting Up AFPInstalling Upgrading and Setting Up CIFS” in the <i>OES 2 SP3: Novell CIFS for Linux Administration Guide</i> .

OES 2 SP3 Service	For Additional Installation and Configuration Information
Novell Cluster Services	See “ Installing and Configuring Novell Cluster Services on OES 2 Linux ” in the <i>OES 2 SP3: Novell Cluster Services 1.8.8 Administration Guide for Linux</i> .
Novell DHCP	See “ Installing and Configuring DHCP ” in the <i>OES 2 SP3: Novell DNS/DHCP Administration Guide</i> .
Novell DNS	See “ Installing and Configuring DNS ” in the <i>OES 2 SP3: Novell DNS/DHCP Administration Guide</i> .
Novell eDirectory 8.8	See “ Installing or Upgrading Novell eDirectory on Linux ” in the <i>Novell eDirectory 8.8 Installation Guide</i> .
Novell iFolder 3.8	<p>When you configure iFolder as part of the OES install and configuration, you can specify only an EXT3 or ReiserFS volume location for the System Store Path, which is where you are storing iFolder data for all your users. You cannot create NSS volumes during the system install.</p> <p>If you want to use an NSS volume to store iFolder data, you must reconfigure iFolder after the initial OES installation. To reconfigure, use Novell iManager to create an NSS volume, then go to <i>YaST > Open Enterprise Server > Install and Configure Open Enterprise Services</i> and select iFolder 3.8 to enter new information. All previous configuration information is removed and replaced.</p> <p>See “Installing and Configuring iFolder Services” in the <i>Novell iFolder 3.8.4 Administration Guide</i> (http://www.novell.com/documentation/ifolder3/).</p>
Novell iManager 2.7.3	See “ Installing iManager ” in the <i>Novell iManager 2.7.4 Installation Guide</i> (https://www.netiq.com/documentation/imanager27/)
Novell iPrint	See “ Installing and Setting Up iPrint on Your Server ” in the <i>OES 2 SP3: iPrint for Linux Administration Guide</i> .
Novell Linux User Management	See “ Setting Up Linux User Management ” in the <i>OES 2 SP3: Novell Linux User Management Administration Guide</i> .
Novell NCP Server	See “ Installing and Configuring NCP Server for Linux ” in the <i>OES 2 SP3: NCP Server for Linux Administration Guide</i> .
Novell NetStorage	See “ Installing NetStorage ” in the <i>OES 2 SP3: NetStorage Administration Guide</i> .
Novell QuickFinder	See “ Installing QuickFinder Server ” in the <i>OES 2 SP3: Novell QuickFinder Server 5.0 Administration Guide</i> .
Novell Remote Manager	See “ Changing the Configuration ” in the <i>OES 2 SP3: Novell Remote Manager for Linux Administration Guide</i> .
Novell Samba	See “ Installing the Novell Samba Components ” in the <i>OES2 SP3: Samba Administration Guide</i> .
Novell Storage Services	See “ Installing and Configuring Novell Storage Services ” in the <i>OES 2 SP3: NSS File System Administration Guide for Linux</i> .
Pre-Migration Server	See “ Preparing for Transfer ID ” in the <i>OES 2 SP3: Migration Tool Administration Guide</i> .

6.2 Rebooting the Server after Installing NSS

If you install Novell Storage Services (NSS) on an existing OES server, enter `rcnovell-smrd restart` at the command prompt or reboot the server before performing any backups, restores, or server consolidations on the NSS file system.

6.3 Restarting Tomcat

If you install iManager after the server has been installed, Tomcat is not running and you must restart it to run iManager.

To restart Tomcat, enter the following command at a command line prompt.

```
/etc/init.d/tomcat5 restart
```

6.4 Launching and Configuring Firefox for Linux

After upgrading from OES 2 to OES 2 SP3, you need to launch and configure Mozilla Firefox before accessing other applications via a URL.

For example, you cannot configure the Novell Customer Center from the YaST until Firefox is configured.

To configure Firefox:

- 1 On the GNOME desktop, click *Computer > Firefox*.
or
On the KDE desktop, click the *Main Menu* icon > *Browse > Web Browser > Firefox*.
- 2 When Firefox opens, configure the browser by supplying all of the information that it requests. After Firefox is ready to browse the Internet, it is also ready to be used with OES.

7 Updating (Patching) an OES 2 SP3 Server

Updating a Novell Open Enterprise Server (OES) 2 SP3 Linux server is essentially the same as updating a SUSE Linux Enterprise Server (SLES) 10 SP4 server except that you apply patches for both SLES 10 SP4 and OES 2 SP3.

To update your server with the patches released from Novell requires you to perform the following tasks during the installation or upgrade or after the installation or upgrade is complete. The instructions in this section are for patching the server after the installation or upgrade is complete.

- ♦ [Section 7.1, “Overview of Updating \(Patching\),” on page 157](#)
- ♦ [Section 7.2, “Preparing the Server for Updating,” on page 158](#)
- ♦ [Section 7.3, “Registering the Server in the Novell Customer Center,” on page 159](#)
- ♦ [Section 7.4, “Updating the Server,” on page 162](#)
- ♦ [Section 7.5, “Verifying That Your Channel Subscriptions Are Up-to-Date,” on page 172](#)
- ♦ [Section 7.6, “Frequently Asked Questions about Updating,” on page 172](#)
- ♦ [Section 7.7, “Patching From Behind a Proxy Server,” on page 173](#)
- ♦ [Section 7.8, “Quick Path Updating,” on page 173](#)

7.1 Overview of Updating (Patching)

- ♦ [Section 7.1.1, “The Patch Process Briefly Explained,” on page 157](#)
- ♦ [Section 7.1.2, “Update Options,” on page 158](#)

7.1.1 The Patch Process Briefly Explained

The OES 2 patch process consists of the following processes:

1. The patch tool (rug, Software Updater, or YaST Online Update [YOU]) checks for available patches on its configured patch channels and displays them for selection.
2. The patch administrator selects which patches to apply.
3. The patch tool checks cross-dependencies and displays any messages regarding situations or conflicts that require administrator input.
4. The patches are downloaded.

If any downloaded patches contain information or instructions, these are displayed for administrator acknowledgement. For example, administrators might be instructed to restart a service or run a configuration script file to complete the process after the patch process completes.

5. After all of the messages have been acknowledged, the downloaded patches are installed.
6. If the kernel was updated, the administrator is prompted to restart the server.

7.1.2 Update Options

OES 2 administrators have three options for updating servers with patches from Novell.

- ♦ **ZENworks Linux Management:** An enterprise-level product that requires a separate license. It provides updates for SUSE Linux Enterprise, OES, and Red Hat Enterprise Linux (RHEL) products. In addition to hosting updates for download, ZENworks Linux Management is also capable of pushing the updates to targeted devices through a single Web interface. For more information about ZENworks Linux Management, see its [product page on Novell.com \(http://www.novell.com/products/zenworks/linuxmanagement/\)](http://www.novell.com/products/zenworks/linuxmanagement/).
- ♦ **Subscription Management Tool (SMT) for SUSE Linux Enterprise:** This product doesn't require a separate license. It lets you host patches from the Novell online update channel on an internal server, which provides more security and greatly reduces Web traffic related to server updates. SMT is available for download on the [Novell Download Site \(http://download.novell.com/Download?buildid=5YxjWD8_ZZk-\)](http://download.novell.com/Download?buildid=5YxjWD8_ZZk-).
- ♦ **Novell Online Update Servers:** For those who don't require an internal update source, OES 2 servers can be easily configured to directly access the online patch channel. Instructions for doing this are included in the sections that follow.

7.2 Preparing the Server for Updating

- 1 Make sure you have installed all the services that you need on the server.
- 2 Before starting your update, make note of the root partition and available space.

If you suspect you are running short of disk space, secure your data before updating and repartition your system. There is no general rule regarding how much space each partition should have. Space requirements depend on your particular partitioning profile and the software selected.

The `df -h` command lists the device name of the root partition. In the following example, the root partition to write down is `/dev/hdb2` (mounted as `/`).

Example: List with `df -h`.

```
ti:~ # df -h
Filesystem      Size  Used Avail Use% Mounted on
/dev/hdb2       186G  2.9G  183G   2% /
udev            506M  204K  506M   1% /dev
ti:~ # █
```

In particular, ensure that you have enough space where the update process downloads all the updates to in `/var/cache/zmd/`.

Depending on the number of patches that you are going to apply, you might need about 3 GB for OES 2 SP3.

- 3 Before updating the server, secure the current data on the server.

Copy all configuration files to a separate medium, such as a streamer, removable hard disk, USB stick, or ZIP drive. This primarily applies to files stored in `/etc` as well as some of the directories and files in `/var` and `/opt`. You might also want to write the user data in `/home` (the HOME directories) to a backup medium. Back up this data as `root`. Only `root` has read permission for all local files.

7.3 Registering the Server in the Novell Customer Center

Before you can patch an OES 2 SP3 server with updates from Novell, you must register the server either during installation or later by using the instructions in this section.

If you register through evaluation codes, your server can receive patches for only 60 days, at which time the codes expire.

You need to register each server with the Novell Customer Center only once. After you have registered the server, you can update the server at any time. This includes replacing evaluation codes with purchased codes. You can use the desktop interface (GUI) or the command line to accomplish this task.

This section contains the following information:

- ♦ [Section 7.3.1, “Prerequisites,” on page 159](#)
- ♦ [Section 7.3.2, “Registering the Server in the Novell Customer Center \(Command Line\),” on page 159](#)
- ♦ [Section 7.3.3, “Registering the Server in the Novell Customer Center \(GUI\),” on page 160](#)

7.3.1 Prerequisites

To complete these procedures, you must have the following:

- ♦ A Novell Customer Center account or access to an account.

For more information about creating a Novell Customer Center account, see [“Creating an Account” in the Novell Customer Center User Guide \(http://www.novell.com/documentation/ncc/ncc/data/b5exp8k.html#b5exj2f\)](#). (This is the same account that you use for Bugzilla.)

- ♦ The activation codes for SLES and OES 2 SP3 that you received when you purchased your product.
- ♦ An established connection to the Internet.

7.3.2 Registering the Server in the Novell Customer Center (Command Line)

To register a new server or to replace evaluation activation codes with standard codes.

- 1 Log in to the server as root or su to root
- 2 At the command line, enter

```
suse_register -a email=email_address -a regcode-sles=SLES_registration_code -a  
regcode-oes=oes2_registration_code
```

For example:

```
suse_register -a email=joe@example.com -a regcode-sles=4adab769abc68 -a  
regcode-oes=30a74ebb94fa
```

IMPORTANT: If you are replacing evaluation codes with purchased codes, simply enter the codes. No further action is required.

- 3 Verify that the server is registered by checking whether you have the service types and catalogs needed for updates:

- 3a To verify the service type, enter

```
rug sl
```

The results should be similar to the following:

```
wgp-dt209:~ # rug sl
# | Status | Type | Name | URI
-----+-----+-----+-----+-----
1 | Active | ZYPP | SUSE Linux Enterprise Server 10 SP3 | http://192.65.48.6...
2 | Active | ZYPP | Novell Open Enterprise Server 2 SP3 | http://192.65.48.6...
3 | Active | NU | https://nu.novell.com | https://nu.novell.com
wgp-dt209:~ # █
```

The URIs you see for the ZYPP type differ based on your installation source.

3b To verify the catalogs, enter

```
rug ca
```

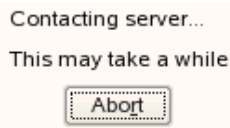
The results should be similar to the following:

```
wgp-dt209:~ # rug ca
Sub'd? | Name | Service
-----+-----+-----
Yes | SUSE Linux Enterprise Server 10 SP3 | SUSE Linux Enterprise Server 10 SP3
Yes | Novell Open Enterprise Server 2 SP3 | Novell Open Enterprise Server 2 SP3
Yes | SLES10-SP3-Updates | https://nu.novell.com
Yes | SLES10-SP3-Pool | https://nu.novell.com
| SLES10-SP3-Online | https://nu.novell.com
| SLE10-SP3-Debuginfo-Updates | https://nu.novell.com
| SLE10-SP3-Debuginfo-Pool | https://nu.novell.com
| SLE10-SP3-Debuginfo-Online | https://nu.novell.com
| SLES10-GPLv3-Extras | https://nu.novell.com
Yes | OES2-SP3-Updates | https://nu.novell.com
Yes | OES2-SP3-Pool | https://nu.novell.com
wgp-dt209:~ # █
```

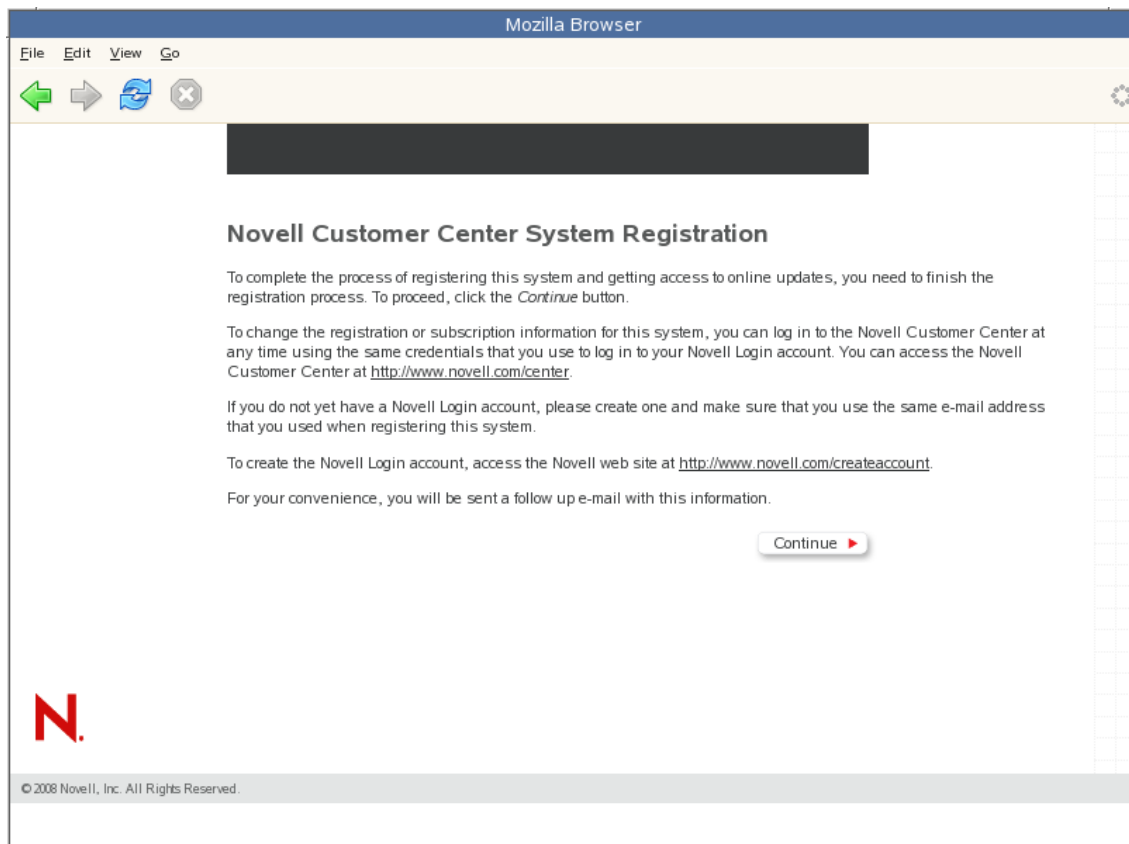
7.3.3 Registering the Server in the Novell Customer Center (GUI)

- 1 In the *YaST Control Center*, click *Software > Novell Customer Center Configuration*.
- 2 On the Novell Customer Center Configuration configuration page, select all of the following options, then click *Next*.
 - ♦ **Configure Now:** Proceeds with registering this server and the OES product with the Novell Customer Center.
 - ♦ **Hardware Profile:** Sends information to the Novell Customer Center about the hardware that you are installing SLES 10 SP4 and OES 2 on.
 - ♦ **Optional Information:** Sends optional information to the Novell Customer Center for your registration. For this release, this option doesn't send any additional information.
 - ♦ **Registration Code** Makes the registration with activation codes mandatory.
 - ♦ **Regularly Synchronize with the Customer Center:** Keeps the installation sources for this server valid. It does not remove any installation sources that were manually added.

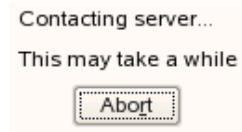
After you click *Next*, the following message is displayed. Wait until this message disappears and the Manual Interaction Required page displays.



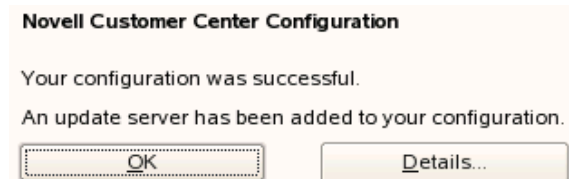
- 3 On the Manual Interaction Required page, note the information that you will be required to specify, then click *Continue*.
- 4 On the Novell Customer Center Registration page, specify the required information in the following fields:
 - ♦ **Email Address:** The e-mail address for your Novell Login account.
 - ♦ **Confirm Email Address:** The same e-mail address for your Novell Login account
 - ♦ **Activation Code for SLES Components (optional):** Specify your purchased or 60-day evaluation registration code for the SLES SP4 product.
If you don't specify a code, the server cannot receive any updates or patches.
 - ♦ **Activation Code for OES Components (optional):** Specify your purchased or 60-day evaluation registration code for the OES product.
If you don't specify a code, the server cannot receive any updates or patches.
 - ♦ **System Name or Description (optional):** The hostname for the system is specified by default. If you want to change this to a description for the Novell Customer Center, specify a description to identify this server.
- 5 Click *Submit*.
- 6 When the message to complete the registration displays, click *Continue*.



After you click *Continue*, the following message is displayed with the Manual Interaction Required page. Wait until this message disappears and the Novell Customer Center Configuration Was Successful page displays.



- 7 When you see the message that the Novell Customer Center was successful, click *OK*.



When the registration is successful, the server is registered in the Novell Customer Center and the installation sources for patches are configured on the server.

7.4 Updating the Server

After the server has been registered in the Novell Customer Center, you can apply updates via packages and patches. The default GNOME desktop indicates when there are updates available to the server. You can update the server from any of the following interfaces.

- ♦ [Section 7.4.1, "Updating the Server Base from SLES 10SP3 to SLES10 SP4," on page 162](#)
- ♦ [Section 7.4.2, "Updating the Server by Using the Command Line," on page 163](#)
- ♦ [Section 7.4.3, "Updating the Server from the GNOME or KDE Desktop," on page 170](#)

7.4.1 Updating the Server Base from SLES 10SP3 to SLES10 SP4

Prerequisites

- ♦ Ensure you have enough disk space in `/var/cache/zmd` where the update process downloads all the updates to.
 - ♦ Register the SLES 10 SP 3 server in the Novell Customer Center.
- 1 Ensure that the server meets the upgrade requirements. See ["Meeting the Upgrade Requirements" on page 120](#).
 - 2 Install the `move-to-sles10-sp4` patch on the server. This is an optional patch and will never be installed automatically.
 - ♦ If you are using `rug`, enter the following command at a terminal prompt:

```
rug in -t patch move-to-sles10-sp4 && rug ping -a
```
 - ♦ If you are using the GUI Software Updater, click *Software Updater*, then select the `move-to-sles10-sp4` patch, and click *Update*.
 - 3 Answer all of the prompts in the affirmative until the `move-to-sles10-sp4` patch is installed.

- 4 Verify that the SUSE-Linux-Enterprise-Server-SP4-migration, OPEN_ENTERPRISE_SERVER_SP3 and SUSE_SLES_SP3 products are installed along with their associated channels by entering the following command at a terminal prompt:

```
rug pd -i
```
- 5 Install the recommended patches that are in the channels using `rug up -t patch -g recommended && rug ping -a`
- 6 Repeat [Step 5](#), answering all of the prompts in the affirmative until you are prompted to reboot server.
- 7 (Optional) Create an answer file. See [“Creating a Password Answer File” on page 128](#).
- 8 Reboot the server.
- 9 If you did not provide a password answer file ([“Creating a Password Answer File” on page 128](#)), you must enter the passwords for the LDAP (eDirectory) Admin user and (if applicable) the DSfW Domain Administrator to start the configuration process.
If you provided an answer file, the service configuration process continues automatically.

IMPORTANT: If an error occurs, for example if the wrong password is entered, you can rerun the configuration phase again by either

- ♦ Rebooting the server
or
- ♦ Entering the following command at a terminal prompt:

```
sudo yast2 channel-upgrade-oes
```

-
- 10 Various messages indicate the services being configured. When the Login prompt appears, verify that the upgrade was successful. See the procedures in [“Verifying That the Installation Was Successful” on page 108](#).
 - 11 Verify that the base has changed to SLES 10 SP4 by using the `SPident --vv` command. Ensure that the output does not throw up any conflicts.

NOTE: If the message NOT upto date is displayed when you run the SPident (Service Pack Identification) tool, then install the latest rpms of fuse, libfuse2, and ruby using the following commands:

1. `rug in fuse`
2. `rug in libfuse2`
3. `rug in ruby`

-
- 12 Complete the server setup by following the procedures in [“Completing OES Installation or Upgrade Tasks” on page 153](#).

7.4.2 Updating the Server by Using the Command Line

After you have registered the server in the Novell Customer Center, you can update the server by using commands at the command line. The following procedure specifies steps for updating the server with all available patches for SLES 10 SP4 and OES 2 SP3.

- 1 Log in to the server as root or `su to root`.
- 2 At the command line, enter the following commands. The screen shots show example output.

2a Refresh all services:

```
rug ref
```

```
wgp-dt209:~ # rug ref
Refreshing Services...
100%
Successfully refreshed.
```

2b See whether updates are available for SLES 10 SP4 and OES 2 SP3:

```
rug lu catalog1 catalog2
```

For example:

```
rug lu SLES10-SP4-Updates OES2-SP3-Updates
```

- ◆ No updates available:

```
wgp-dt209:~ # rug lu SLES10-SP4-Updates OES2-SP3-Updates
No updates are available in the specified catalogs.
wgp-dt209:~ # █
```

- ◆ Updates available:

S	Catalog	Bundle	Name	Version	Arch
v	SLES10-SP4-Updates		aaa_base	10-12.64.1	x86_64
v	SLES10-SP4-Updates		apache2	2.2.3-16.36.1	x86_64
v	SLES10-SP4-Updates		apache2-worker	2.2.3-16.36.1	x86_64
v	SLES10-SP4-Updates		apparmor-profiles	2.0.1-20.26.1	noarch
v	SLES10-SP4-Updates		at	3.1.8-921.29.1	x86_64
v	SLES10-SP4-Updates		audiofile	0.2.6-17.10.14	x86_64
v	SLES10-SP4-Updates		audiofile-32bit	0.2.6-17.10.14	x86_64
v	SLES10-SP4-Updates		bash	3.1-24.28.8	x86_64
v	SLES10-SP4-Updates		bind-libs	9.6ESVR4P3-0.7.1	x86_64
v	SLES10-SP4-Updates		bind-libs-32bit	9.6ESVR4P3-0.7.1	x86_64
v	SLES10-SP4-Updates		bind-utils	9.6ESVR4P3-0.7.1	x86_64
v	SLES10-SP4-Updates		cifs-mount	3.0.36-0.13.16.5	x86_64
v	SLES10-SP4-Updates		coreutils	5.93-22.27.1	x86_64
v	SLES10-SP4-Updates		cpio	2.6-19.30.1	x86_64
v	SLES10-SP4-Updates		cron	4.1-45.36.1	x86_64
v	SLES10-SP4-Updates		glibc	2.4-31.93.1	x86_64
v	SLES10-SP4-Updates		glibc-32bit	2.4-31.93.1	x86_64
v	SLES10-SP4-Updates		glibc-i18ndata	2.4-31.93.1	x86_64
v	SLES10-SP4-Updates		glibc-locale	2.4-31.93.1	x86_64
v	SLES10-SP4-Updates		glibc-locale-32bit	2.4-31.93.1	x86_64
v	SLES10-SP4-Updates		hal	0.5.6-33.49.1	x86_64
v	SLES10-SP4-Updates		hal-32bit	0.5.6-33.49.1	x86_64
v	SLES10-SP4-Updates		hal-gnome	0.5.6-33.49.1	x86_64
v	SLES10-SP4-Updates		iputils	ss021109-167.20.1	x86_64
v	SLES10-SP4-Updates		kernel-default	2.6.16.60-0.89.1	x86_64
v	SLES10-SP4-Updates		ksh	93u-0.9.1	x86_64
v	SLES10-SP4-Updates		libsmbclient	3.0.36-0.13.16.5	x86_64
v	SLES10-SP4-Updates		libsmbclient-32bit	3.0.36-0.13.16.5	x86_64
v	SLES10-SP4-Updates		logrotate	3.7.3-13.15.1	x86_64
v	SLES10-SP4-Updates		mkinitrd	1.2-106.102.1	x86_64
v	SLES10-SP4-Updates		mono-core	1.2.2-12.30.16	x86_64
v	SLES10-SP4-Updates		mono-core-32bit	1.2.2-12.30.16	x86_64
v	SLES10-SP4-Updates		mono-data	1.2.2-12.30.16	x86_64
v	SLES10-SP4-Updates		mono-web	1.2.2-12.30.16	x86_64

2c Update the server with all available SLES10 SP4 and OES 2 SP3 patches:

```
rug up -t patch SLES10-SP4-Updates OES2-SP3-Updates
```



```
wgp-dt209:~ # rug lu SLES10-SP4-Updates OES2-SP3-Updates
No updates are available in the specified catalogs.
wgp-dt209:~ # █
```

- ◆ Updates available in the specified catalogs:

S	Catalog	Bundle	Name	Version	Arch
v	SLES10-SP4-Updates		aaa_base	10-12.64.1	x86_64
v	SLES10-SP4-Updates		apache2	2.2.3-16.36.1	x86_64
v	SLES10-SP4-Updates		apache2-worker	2.2.3-16.36.1	x86_64
v	SLES10-SP4-Updates		apparmor-profiles	2.0.1-20.26.1	noarch
v	SLES10-SP4-Updates		at	3.1.8-921.29.1	x86_64
v	SLES10-SP4-Updates		audiofile	0.2.6-17.10.14	x86_64
v	SLES10-SP4-Updates		audiofile-32bit	0.2.6-17.10.14	x86_64
v	SLES10-SP4-Updates		bash	3.1-24.28.8	x86_64
v	SLES10-SP4-Updates		bind-libs	9.6ESVR4P3-0.7.1	x86_64
v	SLES10-SP4-Updates		bind-libs-32bit	9.6ESVR4P3-0.7.1	x86_64
v	SLES10-SP4-Updates		bind-utils	9.6ESVR4P3-0.7.1	x86_64
v	SLES10-SP4-Updates		cifs-mount	3.0.36-0.13.16.5	x86_64
v	SLES10-SP4-Updates		coreutils	5.93-22.27.1	x86_64
v	SLES10-SP4-Updates		cpio	2.6-19.30.1	x86_64
v	SLES10-SP4-Updates		cron	4.1-45.36.1	x86_64
v	SLES10-SP4-Updates		glibc	2.4-31.93.1	x86_64
v	SLES10-SP4-Updates		glibc-32bit	2.4-31.93.1	x86_64
v	SLES10-SP4-Updates		glibc-i18ndata	2.4-31.93.1	x86_64
v	SLES10-SP4-Updates		glibc-locale	2.4-31.93.1	x86_64
v	SLES10-SP4-Updates		glibc-locale-32bit	2.4-31.93.1	x86_64
v	SLES10-SP4-Updates		hal	0.5.6-33.49.1	x86_64
v	SLES10-SP4-Updates		hal-32bit	0.5.6-33.49.1	x86_64
v	SLES10-SP4-Updates		hal-gnome	0.5.6-33.49.1	x86_64
v	SLES10-SP4-Updates		iputils	ss021109-167.20.1	x86_64
v	SLES10-SP4-Updates		kernel-default	2.6.16.60-0.89.1	x86_64
v	SLES10-SP4-Updates		ksh	93u-0.9.1	x86_64
v	SLES10-SP4-Updates		libsmbclient	3.0.36-0.13.16.5	x86_64
v	SLES10-SP4-Updates		libsmbclient-32bit	3.0.36-0.13.16.5	x86_64
v	SLES10-SP4-Updates		logrotate	3.7.3-13.15.1	x86_64
v	SLES10-SP4-Updates		mkinitrd	1.2-106.102.1	x86_64
v	SLES10-SP4-Updates		mono-core	1.2.2-12.30.16	x86_64
v	SLES10-SP4-Updates		mono-core-32bit	1.2.2-12.30.16	x86_64
v	SLES10-SP4-Updates		mono-data	1.2.2-12.30.16	x86_64
v	SLES10-SP4-Updates		mono-web	1.2.2-12.30.16	x86_64

- ◆ See a list of patches from all catalogs and their status:

```
rug pch
```

Catalog	Name	Version	Category	Status
SLE10-SP4-Debuginfo-Updates	dbgpp4-apache2	7722-0	security	Not Applicable
SLE10-SP4-Debuginfo-Updates	dbgpp4-apache2-mod_php5	7553-0	security	Not Applicable
SLE10-SP4-Debuginfo-Updates	dbgpp4-apache2-mod_php5	7393-0	security	Not Applicable
SLE10-SP4-Debuginfo-Updates	dbgpp4-autofs5	7598-0	recommended	Not Applicable
SLE10-SP4-Debuginfo-Updates	dbgpp4-base_timezone	7681-0	recommended	Not Applicable
SLE10-SP4-Debuginfo-Updates	dbgpp4-bind	7551-0	security	Not Applicable
SLE10-SP4-Debuginfo-Updates	dbgpp4-bind	7614-0	security	Not Applicable
SLE10-SP4-Debuginfo-Updates	dbgpp4-cpio	7631-0	recommended	Not Applicable
SLE10-SP4-Debuginfo-Updates	dbgpp4-cron	7687-0	recommended	Not Applicable
SLE10-SP4-Debuginfo-Updates	dbgpp4-cyrus-imapd	7583-0	security	Not Applicable
SLE10-SP4-Debuginfo-Updates	dbgpp4-cyrus-imapd	7727-0	security	Not Applicable
SLE10-SP4-Debuginfo-Updates	dbgpp4-dapl	7582-0	recommended	Not Applicable
SLE10-SP4-Debuginfo-Updates	dbgpp4-dapl2	7585-0	recommended	Not Applicable
SLE10-SP4-Debuginfo-Updates	dbgpp4-dbus-1	7482-0	security	Not Applicable
SLE10-SP4-Debuginfo-Updates	dbgpp4-dbus-1	7592-0	security	Not Applicable
SLE10-SP4-Debuginfo-Updates	dbgpp4-dhcp	7716-0	security	Not Applicable
SLE10-SP4-Debuginfo-Updates	dbgpp4-dhcp	7430-0	security	Not Applicable
SLE10-SP4-Debuginfo-Updates	dbgpp4-dhcp	7451-0	security	Not Applicable
SLE10-SP4-Debuginfo-Updates	dbgpp4-dhcp6	7465-0	security	Not Applicable
SLE10-SP4-Debuginfo-Updates	dbgpp4-firefox3-pango	7459-0	security	Not Applicable
SLE10-SP4-Debuginfo-Updates	dbgpp4-glibc	7574-0	security	Not Applicable
SLE10-SP4-Debuginfo-Updates	dbgpp4-glibc	7663-0	security	Not Applicable
SLE10-SP4-Debuginfo-Updates	dbgpp4-hal	7714-0	recommended	Not Applicable
SLE10-SP4-Debuginfo-Updates	dbgpp4-kernel	7665-0	security	Not Applicable
SLE10-SP4-Debuginfo-Updates	dbgpp4-kernel	7515-0	security	Not Applicable
SLE10-SP4-Debuginfo-Updates	dbgpp4-ksh	7750-0	recommended	Not Applicable

- ◆ See a list of all installed patches:

```
rug pch -i
```

- ◆ Before patches are installed:

```
wgp-dt209:~ # pch -i
No patches found.
wgp-dt209:~ # █
```

- ◆ After two patches are installed:

```
wgp-dt209:~ # rug pch -i
```

Catalog	Name	Version	Category	Status
System	oes2sp3-April-2011-Scheduled-Maintenance	7468-0	recommended	Applied
System	oes2sp3-August-2011-Scheduled-Maintenance	7607-0	recommended	Applied

```
wgp-dt209:~ # █
```

- ◆ After all patches have been installed:

```
wgp-dt209:~ # rug pch -i
```

Catalog	Name	Version	Category	Status
System	move-to-sles10-sp4	0-31	optional	Applied
System	oes2sp3-April-2011-Scheduled-Maintenance	7468-0	recommended	Applied
System	oes2sp3-August-2011-Scheduled-Maintenance	7607-0	recommended	Applied
System	oes2sp3-eDirectory-886-patch2	7461-0	recommended	Applied
System	oes2sp3-edirectory-886-patch2	7296-0	security	Applied
System	oes2sp3-edirectory-886-patch3	7609-0	recommended	Applied
System	oes2sp3-May-2011-Scheduled-Maintenance	7485-0	recommended	Applied
System	product-sles10-sp4	0-30	recommended	Applied
System	slesp3-aaa_base	7084-0	recommended	Applied
System	slesp3-apache2	7721-0	security	Applied
System	slesp3-apparmor-parser	7123-0	recommended	Applied
System	slesp3-apparmor-profiles	7520-0	recommended	Applied
System	slesp3-audiofile	7315-0	security	Applied
System	slesp3-beagle	7277-0	recommended	Applied
System	slesp3-bytelfx-data-mysql	7445-0	security	Applied
System	slesp3-bzip2	7169-0	security	Applied
System	slesp3-cifs-mount	7656-0	security	Applied
System	slesp3-compatible-openssl097g	7644-0	security	Applied
System	slesp3-coreutils	7655-0	security	Applied
System	slesp3-cpio	7630-0	recommended	Applied
System	slesp3-cron	6865-0	security	Applied
System	slesp3-cups	7244-0	security	Applied
System	slesp3-dbus-1	7593-0	security	Applied
System	slesp4-xorg-x11	7416-0	security	Applied
System	slesp4-yast2-storage	7675-0	recommended	Applied

```
wgp-dt209:~ # █
```

- ◆ See a list of all installed patches:

```
rug pch -i
```

- ◆ Before patches are installed:

```
wgp-dt209:~ # pch -i
No patches found.
wgp-dt209:~ # █
```

- ◆ After two patches are installed:

```
wgp-dt209:~ # rug pch -i
```

Catalog	Name	Version	Category	Status
System	oes2sp3-April-2011-Scheduled-Maintenance	7468-0	recommended	Applied
System	oes2sp3-August-2011-Scheduled-Maintenance	7607-0	recommended	Applied

```
wgp-dt209:~ # █
```

- ◆ After all patches have been installed:

```
wgp-dt209:~ # rug pch -i
```

Catalog	Name	Version	Category	Status
System	move-to-sles10-sp4	0-31	optional	Applied
System	oes2sp3-April-2011-Scheduled-Maintenance	7468-0	recommended	Applied
System	oes2sp3-August-2011-Scheduled-Maintenance	7607-0	recommended	Applied
System	oes2sp3-eDirectory-886-patch2	7461-0	recommended	Applied
System	oes2sp3-edirectory-886-patch2	7296-0	security	Applied
System	oes2sp3-edirectory-886-patch3	7609-0	recommended	Applied
System	oes2sp3-May-2011-Scheduled-Maintenance	7485-0	recommended	Applied
System	product-sles10-sp4	0-30	recommended	Applied
System	slesp3-aaa_base	7084-0	recommended	Applied
System	slesp3-apache2	7721-0	security	Applied
System	slesp3-apparmor-parser	7123-0	recommended	Applied
System	slesp3-apparmor-profiles	7520-0	recommended	Applied
System	slesp3-audiofile	7315-0	security	Applied
System	slesp3-beagle	7277-0	recommended	Applied
System	slesp3-bytelfx-data-mysql	7445-0	security	Applied
System	slesp3-bzip2	7169-0	security	Applied
System	slesp3-cifs-mount	7656-0	security	Applied
System	slesp3-compat-openssl1097g	7644-0	security	Applied
System	slesp3-coreutils	7655-0	security	Applied
System	slesp3-cpio	7630-0	recommended	Applied
System	slesp3-cron	6865-0	security	Applied
System	slesp3-cups	7244-0	security	Applied
System	slesp3-dbus-1	7593-0	security	Applied
System	slesp4-xorg-x11	7416-0	security	Applied
System	slesp4-yast2-storage	7675-0	recommended	Applied

```
wgp-dt209:~ # █
```

- ◆ See information for a specific patch:

```
rug patch-info patch_name
```

For example:

```
rug patch-info oes2-oes-SPident
```

```
linux:~ # rug patch-info oes2-oes-SPident
Name: oes2-oes-SPident
Version: 3628-0
Arch: noarch
Status: Satisfied
Category: recommended
Created On: 06/08/2007 11:30:26
Reboot Required: No
Restart Required: No
Interactive: No
Summary: Recommended update for oes-SPident for Beta3.27
Description: OES2 Update for oes-SPident for Beta3.27
Provides:
patch: oes2-oes-SPident = 3628-0

Requires:
atom: oes-SPident = 1.0.1-4

linux:~ # █
```



```
rug in -t patch oes2-oes-SPident*
```

```
linux:~ # rug in -t patch oes2-oes-SPident*
Resolving Dependencies...

The following packages will be installed:
oes2-oes-SPident 4230-0 (OES2-Updates)
oes-SPident 1.0.1-16 (OES2-Updates)
oes-SPident-1.0.1-16.noarch[OES2-Updates] needed by atom:oes-SPident-1.0.1-16.noarch[OES2-Updates]

Proceed with transaction? (y/N) y
Downloading Packages...
Transaction...
Transaction Finished
linux:~ #
```

5 To finish the update, reboot the server.




Rebooting the server activates the new kernel if it has been updated and ensures that OES services that need restarting after patching are restarted.

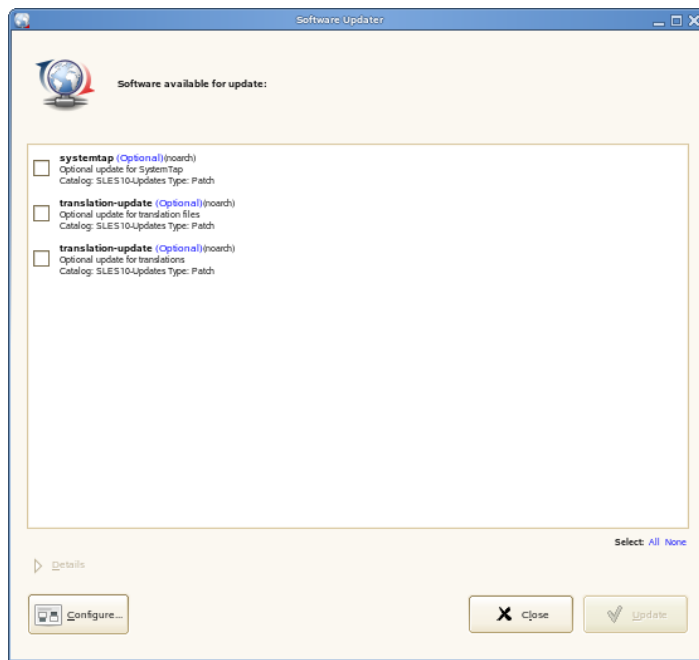
The following table shows some additional commands you might want to use:

Table 7-1 Additional Rug Commands

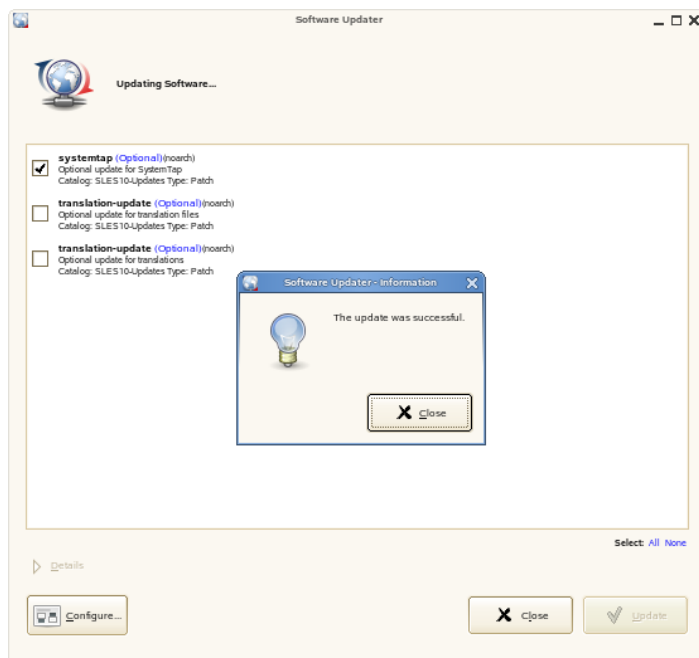
Task	Command
Halts the ZLM daemon. Accepts the following option flags: <ul style="list-style-type: none">♦ -f, --force: Force the shutdown.♦ -n, --no-wait: Don't wait for confirmation that the daemon was shut down.	<code>rug shutdown [options]</code>
Restarts the ZLM daemon. Accepts the following option flags: <ul style="list-style-type: none">♦ -f, --force: Forc♦ -n, --no-wait: Does not wait for confirmation that the daemon has restarted.♦ --clean: Cleans up at restart	<code>rug restart [options]</code>
Access help for all the rug commands	<code>rug</code>
Access the rug man page	<code>man rug</code>

7.4.3 Updating the Server from the GNOME or KDE Desktop

- 1 Log into the server as root or su to root.
- 2 Click the *Novell Updater* icon , which indicates that updates are available
On the GNOME Desktop, the icon is on the taskbar.
On the KDE Desktop, click *G > System > Novell Updater* icon 
If no updates are available, the Novell Updater icon changes appearance to a globe. 
- 3 On the Software Available for Updates page, select the updates that you want to install, then click *Update*.
Updates that have a Security or Recommended status are usually preselected.



- 4 When the Software Updater Information status indicates that the update was successful, click *Close*.



- 5 If necessary, rerun the updater until all the desired patches have been installed.
- 6 To finish the update, reboot the server.

Rebooting the server activates the new kernel if it has been updated and ensures that OES services that need restarting after patching are restarted.

7.5 Verifying That Your Channel Subscriptions Are Up-to-Date

When an OES 2 server is updated properly, the update channel list is refreshed to include Updates entries for your OES 2 and SLES 10 versions.

To verify that you have updates from both update channels:

- 1 At a terminal prompt on the server you have updated, enter the following command:

```
rug ca
```

The list of channels should include Updates channels for your OES 2 and SLES 10 versions. For example, after updating an OES 2 SP3 server, the channel listing should include both `SLES10-SP4-Updates` and `OES2-SP3-Updates` as subscribed channels.

- 2 If the channel listing on your server doesn't include the updates channels for your OES 2 and SLES 10 versions, follow the instructions in [TID 3150078](http://www.novell.com/support/php/search.do?cmd=displayKC&docType=kc&externalId=3150078&sliceId=2&docTypeID=DT_TID_1_1&dialogID=76715112&stateId=0%200%2076711680) (http://www.novell.com/support/php/search.do?cmd=displayKC&docType=kc&externalId=3150078&sliceId=2&docTypeID=DT_TID_1_1&dialogID=76715112&stateId=0%200%2076711680) to resolve the issues.
- 3 After the channel list contains the correct entries, update your server by repeating the pertinent instructions in [Section 7.4, "Updating the Server,"](#) on page 162.

7.6 Frequently Asked Questions about Updating

This section contains the following information:

- [Section 7.6.1, "Do I apply all the patches in the catalogs? How do I know which patches to apply?,"](#) on page 172
- [Section 7.6.2, "How do I re-add the catalogs for OES 2 in my ZENworks Management Daemon configuration after removing one or more of them?,"](#) on page 173
- [Section 7.6.3, "What about YaST Online Update?,"](#) on page 173

7.6.1 Do I apply all the patches in the catalogs? How do I know which patches to apply?

In OES 1, we recommended that all the patches in the channel be applied. However, in OES 2 the dependency checking has been improved to help you understand more about each patch listed in the catalogs.

Each patch has a category and a status associated with it. The categories state whether the patch is a security patch, a recommended patch, or an optional patch. The `rug pch` command shows whether the patch is needed or not needed and whether it has been applied. When you are using the Novell Updater, only the patches that are needed and have not been applied display in the list of patches.

Therefore, you can just apply all the security patches and wait to apply other patches that might change how a feature or product works.

7.6.2 How do I re-add the catalogs for OES 2 in my ZENworks Management Daemon configuration after removing one or more of them?

To re-add the catalogs and services needed for updating your version of OES 2 to the ZENworks Management Daemon configuration:

- 1 Delete the `/var/cache/SuseRegister/lastzmdconfig.cache` file.:

```
rm /var/cache/SuseRegister/lastzmdconfig.cache
```

- 2 At the command line, enter

```
suse_register -a email=email_address -a regcode-sles=SLES_registration_code -a  
regcode-oes=oes2_registration_code
```

For example,

```
suse_register -a email=joe@example.com -a regcode-sles=4adab769abc68 -a  
regcode-oes=30a74ebb94fa
```

Performing this procedure removes the complete ZENworks Management Daemon configuration, then registers the server in the Novell Customer Center again. When you register the server in the Novell Customer Center again, it adds all the catalogs and services that are need for updating your version of OES 2.

7.6.3 What about YaST Online Update?

Novell supports two mechanisms for updating an OES 2 server:

- ♦ The `rug` utility from a terminal prompt.
- ♦ The Novell Updater from a GUI desktop.

However, some OES administrators prefer to use YaST Online Update (YOU) for updating OES 2 servers. Although YOU is not tested by OES 2 product testers, the only customer problems reported to Novell occur when someone tries to use both the `rug`-based methods and the YOU method in combination on the same server.

IMPORTANT: Whichever method (YOU or `rug`-based) you choose for a given OES 2 SP3 server, that method must be used exclusively for the life of the server.

For more information about using YOU to update your servers, see “YaST Online Update” (http://www.suse.com/documentation/sles10/book_sle_reference/?page=/documentation/sles10/book_sle_reference/data/sec_yast2_sw.html) in the *SLES 10 Administration Guide*.

7.7 Patching From Behind a Proxy Server

See [TID 3132246](http://www.novell.com/support/viewContent.do?externalId=3132246&sliceId=2) (<http://www.novell.com/support/viewContent.do?externalId=3132246&sliceId=2>).

7.8 Quick Path Updating

This section contains the following Quick Path steps for patching an OES 2 server:

- ♦ [Section 7.8.1, “Do Not Use `rug` up without the `-t` Option,” on page 174](#)
- ♦ [Section 7.8.2, “Command Line Quick Path for Updating OES 2,” on page 174](#)
- ♦ [Section 7.8.3, “GUI Quick Path for Updating OES 2 SP3,” on page 176](#)

7.8.1 Do Not Use `rug up` without the `-t` Option

Do not use the `rug up` command by itself to update an OES server. Always use the `-t patch` option as described in [Section 7.8.2, “Command Line Quick Path for Updating OES 2,”](#) on page 174.

If the `-t patch` option is omitted, `rug` includes SLES packages in the download that can cripple or completely break OES services.

The `-t patch` option also ensures that patch metadata (including script files, etc.) is downloaded so that SLES can correctly update the system.

7.8.2 Command Line Quick Path for Updating OES 2

1 Make sure you have the following:

- ◆ A Novell Customer Center account
If you don't have one, create it at <http://www.novell.com/register>. This is the same account that you use for Bugzilla.
- ◆ Activation Codes for both SLES 10 and OES 2
- ◆ A valid installation source
- ◆ An established connection to the Internet
- ◆ All of the services installed that you need on the server.
- ◆ Enough disk space in `/var/cache/zmd/` where the update process downloads all the updates to.
Depending on the number of patches that you are going to apply, you might need about 3 GB.
- ◆ A backup of the current data on the server.

2 Register the server in the Novell Customer Center (one time only).

2a Log in to the server as `root` or `su` to `root`.

2b At the command line, enter

```
suse_register -a email=email_address -a regcode-sles=SLES_registration_code  
-a regcode-oes=oes2_registration_code
```

For example,

```
suse_register -a email=joe@example.com -a regcode-sles=4adab769abc68 -a  
regcode-oes=30a74ebb94fa
```

2c Verify that the server is registered by checking to see whether you have the service types and catalogs needed for updates.

To verify the service types, enter:

```
rug sl
```

To verify that you have the catalogs you need, enter:

```
rug ca
```

3 Update the server with all available updates:

3a Refresh all services by entering:

```
rug ref
```

3b See whether updates are available by entering:

```
rug lu SLES10-SP4-Updates OES2-SP3-Updates
```

- 3c** Update the server with all available SLES 10 SP4 and OES 2 SP3 patches by entering:

```
rug up -t patch SLES10-SP4-Updates OES2-SP3-Updates
```
- 3d** Repeat [Step 3b](#) and [Step 3c](#) until there are no more SLES 10 SP4 or OES 2 SP3 patches. When there are no more patches, continue with [Step 3e](#).
- 3e** Reboot the server to finish the update.
 Rebooting the server activates the new kernel and ensures that OES services that need restarting after patching are restarted.

You can also update your server with specific maintenance patches.

- 1** Log in to the server as root or su to root.
- 2** At the command line, enter the following commands:
 - 2a** To refresh all services, enter:

```
rug ref
```
 - 2b** To check for available updates, enter:

```
rug lu SLES10-SP4-Updates OES2-SP3-Updates
```
 - 2c** To list the patches and their status, enter:

```
rug pch SLES10-SP4-Updates OES2-SP3-Updates
```
 - 2d** To view specific patch information, enter:

```
rug patch-info patch_name
```

For example:

```
rug patch-info slespl-xpdf
```

- 2e** To list all installed patches, enter:

```
rug pch -i
```

- 2f** To update the server with specific patches, choose from the following:

- ♦ To install all patches from one or more catalogs of a particular category:

```
rug up -t patch catalog1 catalog2 -g category_name
```

Replace *category_name* with security, recommended, or optional.

For example:

```
rug up -t patch SLES10-SP4-Updates OES2-SP3-Updates -g security
```

- ♦ To install one version of a patch without confirmation, enter:

```
rug in -t patch -y patch_name-version
```

For example:

```
rug in -t patch -y oes2-CASA-3904-0
```

- ♦ To install all versions of a patch, enter:

```
rug in -t patch patch_name*
```

For example:

```
rug in -t patch oes2-oes-SPident*
```

- 2g** Reboot the server to ensure that any changes to the kernel are activated, and applicable OES 2 services are restarted.

The following table shows some additional commands you might want to use:

Table 7-2 Additional Rug Commands

Task	Command
Halts the ZLM daemon. Accepts the following option flags: <ul style="list-style-type: none">◆ -f, --force: Force the shutdown.◆ -n, --no-wait: Don't wait for confirmation that the daemon was shut down.	<code>rug shutdown [options]</code>
Restarts the ZLM daemon. Accepts the following option flags: <ul style="list-style-type: none">◆ -f, --force: Forces the shutdown.◆ -n, --no-wait: Does not wait for confirmation that the daemon has restarted.◆ --clean: Cleans up at restart	<code>rug restart [options]</code>
Access help for all the rug commands	<code>rug</code>
Access the rug man page	<code>man rug</code>

7.8.3 GUI Quick Path for Updating OES 2 SP3

To update your server with the patches released from Novell after the server has been installed and configured:

1 Make sure you have the following:

- ◆ A Novell Customer Center account (If you don't have one, create it at <http://www.novell.com/register>. This is the same account that you use for Bugzilla.)
- ◆ Activation Code for SLES 10 and OES 2 SP3
- ◆ A valid installation source
- ◆ An established connection to the Internet
- ◆ Make sure you have installed all the services that you need on the server.
- ◆ Before starting your update, make note of the root partition and space available.

In particular, ensure you have enough space where the update process downloads all the updates to in `/var/cache/zmd/`. Depending on the amount of patches that you are going to upgrade, you might need about 3 GB.

- ◆ Before updating the server, secure the current data on the server.

2 Register the server in the Novell Customer Center.



If the server is already registered in the Novell Customer Center, skip to [Step 3](#).

2a In the *YaST Control Center*, click *Software > Novell Customer Center Configuration*.

2b On the Novell Customer Center Configuration configuration page, select all of the following options, then click *Next*.

- ◆ Configure Now
- ◆ Hardware Profile
- ◆ Optional Information
- ◆ Registration Code
- ◆ Regularly Synchronize with the Customer Center

After you click *Next*, a Contacting Server message is displayed. Wait until this message disappears and the Manual Interaction Required page displays.

- 2c** On the Manual Interaction Required page, note the information that you will be required to specify, then click *Continue*.
 - 2d** On the Novell Customer Center Registration page, specify the required information in each field, then click *Submit*.
 - 2e** When the message to complete the registration displays, click *Continue*. After you click *Continue*, the Contacting Server message is displayed with the Manual Interaction Required message. Wait until this message disappears and Novell Customer Center Configuration Was Successful page displays.
 - 2f** When you see the message that the Novell Customer Center was successful, click *OK*.
 - 2g** Confirm that you get the registration e-mails from the Novell Customer Center. You can perform [Step 3](#) before you receive these e-mails.
- 3** Update the server from GNOME Desktop or KDE desktop:
- 3a** Log into the server as `root`.
 - 3b** Click the Novell Updater icon  that indicates that updates are available. If no updates are available, the Novell Updater icon changes appearances to a globe. 
 - 3c** In the Software Available for Updates list of patches, select the updates that you want to install, then click *Update*.
 - 3d** When the Software Updater Information status indicates that the update was successful, click *Close*.
 - 3e** Repeat [Step 3c](#) and [Step 3d](#) until all available patches are applied.
 - 3f** Reboot the server to finish the update.
Rebooting the server activates the new kernel and ensures that OES services that need restarting after patching are restarted.

8 Using AutoYaST to Install and Configure Multiple OES Servers

If you need to install OES to multiple systems that perform similar tasks and that share the same environment and similar but not necessarily identical hardware, you might want to use AutoYaST to perform the installation.

To use AutoYaST, first you use the Configuration Management tool (*YaST > Miscellaneous > Autoinstallation*) to generate an XML profile file (referred to as a control file) and use it to perform OES installations to multiple servers that share the same hardware and environments. You can also tailor this control file for any specific environment. You then provide this control file to the YaST2 installation program.

This section does not provide complete AutoYaST instructions. It provides only the additional information you need when setting up AutoYaST to install multiple OES 2 SP3 servers.

For complete instructions on using AutoYaST2, see *Automatic Linux Installation and Configuration with Yast2* (http://www.suse.de/~ug/autoyast_doc/index.html). You can also access the documentation locally on an OES server in `/usr/share/doc/packages/autoyast2/html/index.html` or `autoyast.pdf`.

This section contains the following information:

- ◆ [Section 8.1, “Security Considerations,” on page 179](#)
- ◆ [Section 8.2, “Prerequisites,” on page 179](#)
- ◆ [Section 8.3, “Setting Up a Control File with OES Components,” on page 180](#)
- ◆ [Section 8.4, “Setting Up an Installation Source,” on page 186](#)

8.1 Security Considerations

See [“Password for User Admin Written in Clear Text in control.xml” on page 231](#).

8.2 Prerequisites

You need at least the following components to install an OES 2 SP3 server by using AutoYaST:

- A server with OES 2 SP3 already installed.
- One or more target computers to install the server software to and the following information about each:
 - ◆ Number of hard disks
 - ◆ MAC address
 - ◆ Monitor types and graphics hardware

- ❑ A control file.
For information on setting up a control file with OES components, see [“Setting Up a Control File with OES Components” on page 180](#).
- ❑ A boot scenario set up.
You can boot from media or from an installation source. For more information, see [“Setting Up an Installation Source” on page 186](#).
- ❑ A source or server that contains the AutoYaST profile (control file).
For more information, see [“Setting Up an Installation Source” on page 186](#).

8.3 Setting Up a Control File with OES Components

The control file is an XML file that contains an installation profile for the target computer. This installation profile contains all the information to complete software installation and configuration on the target computer.

To create a control file:

- ◆ You can create the control file manually in a text editor (not recommended).
- ◆ When you complete an installation, you can click *Clone for AutoYaST*. If you use this option, the resulting file is `/root/autoinst.xml`. This file must be edited manually before using it. See [Section 8.3.1, “Fixing an Automatically Created Control File,” on page 180](#).
- ◆ You can create or modify a control file by using the AutoInstallation module in YaST. For procedures, see [Section 8.3.2, “Using the AutoInstallation Module to Create the Control File,” on page 181](#).

This system depends on existing modules that are usually used to configure a computer after OES 2 SP3 is installed on a server.

8.3.1 Fixing an Automatically Created Control File

Review the following issues and solutions to fix the automatically created control file.

- ◆ **Issue 1:** If you install all OES Services through AutoYaST, Apache does not run.

Solution: Reboot the server when the installation is complete; or, when you create the profile or control file, deselect the Print Server pattern in the Primary Functions category. If you have already created the control file, remove the following section:

```
- <printer>
  <cups_installation config:type="symbol">server< cups_installation>
  <default />
  <printcap config:type="list" />
  <server_hostname />
  <spooler>cups</spooler>
</printer>
```

- ◆ **Issue 2:** The Certificate Authorities section of the control file is not created.

Solution: You must insert the CA section manually.

To add this information to the control file:

1. Open YaST as root.
2. Click *Miscellaneous > Autoinstallation*.
3. Select *Security and Users > CA Management*, then click *Configure*.

4. In the *Common Name File* field, specify a name for the certificate. For example `YaST_Default_CA(hostname)`.
5. Specify an e-mail name in the *Email* field.
6. Specify a password in the *Password* field.
7. Click *File > Save* to save the file. Ignore any error messages that you receive.
8. Click *View Source* to ensure that the CA entry was entered.

It should look similar to the following:

```
<ca_mgm>
  <CAName>YaST_Default_CA</CAName>
  <ca_commonName>YaST_Default_CA(hostname)</ca_commonName>
  <country>US</country>
  <importCertificate config:type="boolean">>false</importCertificate>
  <locality></locality>
  <organization></organization>
  <organizationUnit></organizationUnit>
  <password>actual_password</password>
  <server_email>name@example.com</server_email>
  <state></state>
  <takeLocalServerName config:type="boolean">>true</takeLocalServerName>
</ca_mgm>
```

- ♦ **Issue 3:** If you install Novell Cluster Services, one package does not install correctly.

Solution: Comment out the following line in the control file.

```
<package>novell-cluster-services-kmp-smp</package>
```

For example:

```
<!--<package>novell-cluster-services-kmp-smp</package>-->
```

- ♦ **Issue 4:** If you did not patch the server during the installation, the OES product is not identified correctly in the control file.

Solution: When creating the profile or control file, change the product line from:

```
<product>Novell Open Enterprise Server 2</product>
```

to

```
<product>OPEN_ENTERPRISE_SERVER</product>
```

8.3.2 Using the AutoInstallation Module to Create the Control File

The following procedure contains a quick list of steps to create the control file by using the AutoInstallation module in YaST on a server running OES 2.

- 1 On a server that has OES 2 installed, Click *Computer > YaST Administrator Settings*.
- 2 Click *Miscellaneous > Autoinstallation*.
The AutoYaST Configuration Management System application window opens, referred to hereafter as the *main window*.
- 3 Click *Tools > Create Reference Profile*.
- 4 In the Create a Reference Control File dialog box under *Select Additional Resources*, select the *Network card* check box, then click *Create*.

AutoYaST probes the server it is running on for software, partitioning, boot loader, network card information, language settings, mouse, and other system settings. After the information has been collected, the status messages cease and only the main window is displayed.

- 5 Verify the package selections:
 - 5a In the left frame of the main window, click *Software*, then under *Available Modules*, click *Package Selection*.
 - 5b On the Package Selection page, make sure the items are the same as you previously installed on the server. For more information on the add-ons (software selections) that are selected in the base selections or patterns, see [“Deciding What Patterns to Install” on page 29](#). If the configuration contains the packages and selections you need, skip to [Step 7](#). If not, continue with [Step 6](#).
- 6 If necessary, change the package selections for the target servers:
 - 6a In the Package Selection dialog box, click *Configure*.
 - 6b On the Software Selection page, click *Patterns* in the *Filter* field.
 - 6c Select the specific software items that you want to be added, then click *Accept*.
 - 6d If you are prompted to accept the AGFA Monotype Corporation End User License Agreement, click *Accept*.
 - 6e Accept the automatic changes by clicking *Continue* in the Changed Packages dialog box.
- 7 Specify the Partitioning parameters for the target server:
 - 7a In the left frame of the main window, click *Hardware*, under *Available Modules*, click *Partitioning*, then click the *Configure* button.
 - 7b Set up partitioning on the first drive as desired, then click *Finish*.
See the online help for details about limitations.
For more information on partitioning options, see [“Partitioning” in Automatic Linux Installation and Configuration with Yast2](#) (http://www.suse.de/~ug/autoyast_doc/index.html).
- 8 Specify the settings for the graphics card and monitor:
 - 8a In the left frame of the main window, click *Hardware*, under *Available Modules*, click *Graphics Card and Monitor*, then click the *Configure* button.
 - 8b In the *General Options* field of the X11 Configuration page, specify the settings that you want.
 - 8c In the *Desktop* field of the X11 Configuration page, select the settings that you want for the Display Manager and Window Manager, then click *Next*.
 - 8d On the Configure Monitor page, select the applicable monitor vendor and model, then click *Next*.
 - 8e Verify the X11 settings. If they are not correct, repeat [Step 8a](#) and [Step 8d](#).
If you skip this step, the server keyboard mappings might be German.
- 9 (Optional) Insert a script to perform a task that you want, such as a script for removing partitions:

For more information on custom user scripts, see [“Custom User Scripts”](#) (http://www.suse.de/~ug/autoyast_doc/createprofile.scripts.html) in *Automatic Linux Installation and Configuration with Yast2*.

 - 9a In the main window, click *Miscellaneous* > *Custom Scripts* > *Configure*.
 - 9b On the User Script Management page, click *New*.
 - 9c In the *File Name* field, specify a descriptive name for the script, such as `hello_world_script`.
 - 9d In the *Script Source* field, specify commands such as the following example script:


```
#!/bin/sh
`echo "hello world" > /tmp/post-script-output`
```

- 9e** Click the *Type* drop-down box, then select *Post*.
This script runs after the installation is complete. For additional options, see the online help for this dialog box.
- 9f** Click *Save*.
- 9g** Make sure your script appears in the *Available Scripts* section of the User Script Management page, then click *Finish*.
- 9h** Make sure your script appears in the *Post Scripts* section of the Custom Scripts page.
- 10** Set the password for the *root* user:
- 10a** From the main window, click *Security and Users > User Management > Configure*.
- 10b** Click *Set Filter*, then select *Select System Users* from the drop-down menu.
- 10c** Select user *root*, then click *Edit*.
- 10d** Type a password for the *root* user in the *Password and Verify Password* fields, click *Accept*, then click *Finish*.
- 10e** Verify that the *root* user appears in the *Users* section of the *User Management* dialog box.
- 11** Set a password for Certificate Authority management:
- 11a** From the main window, click *Security and Users > CA Management > Configure*.
- 11b** Type a password for the certificate in the *Password and Confirm Password* fields, then click *Finish*.
- 11c** Verify that the Password status appears as *Set* on the *CA Management* page.
- 12** Configure OES Services:
- 12a** From the main window, click *Open Enterprise Server > module_name > Configure*.

All OES services are in the Open Enterprise Server category.

We recommend configuring eDirectory first. Although there are dependencies for some of the components, in this release AutoYaST does not verify whether one module is configured or not.

See the following table for category names and dependencies. You should configure all the modules that were selected for the software selections in [Step 5 on page 182](#). For more information about which modules are in each pattern, see [“Deciding What Patterns to Install” on page 29](#).

Pattern	Other Module Dependencies
Novell AFP	<ul style="list-style-type: none"> ◆ Novell Backup / Storage Management Services (SMS) ◆ Novell eDirectory ◆ Novell Storage Services (NSS) ◆ Novell Linux User Management (LUM) ◆ Novell Remote Manager (NRM)
Novell Archive and Version Services	<ul style="list-style-type: none"> ◆ Novell Backup/Storage Management Services (SMS) ◆ Novell eDirectory ◆ Novell Linux User Management (LUM) ◆ Novell Remote Manager (NRM) ◆ Novell Storage Services (NSS)

Pattern	Other Module Dependencies
Novell Backup/Storage Management Services (SMS)	<ul style="list-style-type: none"> ◆ Novell Linux User Management (LUM) ◆ Novell Remote Manager (NRM)
Novell CIFS	<ul style="list-style-type: none"> ◆ Novell Backup / Storage Management Services (SMS) ◆ Novell eDirectory ◆ Novell Storage Services (NSS) ◆ Novell Linux User Management (LUM) ◆ Novell Remote Manager (NRM)
Novell Cluster Services (NCS)	<ul style="list-style-type: none"> ◆ Novell Backup/Storage Management Services (SMS) ◆ Novell Linux User Management (LUM) ◆ Novell Remote Manager (NRM)
Novell DHCP	<ul style="list-style-type: none"> ◆ Novell Backup/Storage Management Services (SMS) ◆ Novell eDirectory ◆ Novell Linux User Management (LUM) ◆ Novell Remote Manager (NRM)
Novell DNS	<ul style="list-style-type: none"> ◆ Novell Backup/Storage Management Services (SMS) ◆ Novell eDirectory ◆ Novell Linux User Management (LUM) ◆ Novell Remote Manager (NRM)
Novell Domain Services for Windows	<ul style="list-style-type: none"> ◆ Novell Backup / Storage Management Services (SMS) ◆ Novell eDirectory ◆ Novell DNS ◆ Novell iManager ◆ Novell iPrint ◆ Novell Linux User Management (LUM) ◆ Novell Remote Manager (NRM) ◆ Novell Storage Services (NSS) ◆ Novell NCP Server
Novell eDirectory	<ul style="list-style-type: none"> ◆ Novell Backup/Storage Management Services (SMS) ◆ Novell Linux User Management (LUM) ◆ Novell Remote Manager (NRM)
Novell FTP	<ul style="list-style-type: none"> ◆ Novell Backup/Storage Management Services (SMS) ◆ Novell eDirectory ◆ Novell Linux User Management (LUM) ◆ Novell Remote Manager (NRM)

Pattern	Other Module Dependencies
Novell iFolder	<ul style="list-style-type: none"> ◆ Novell Backup/Storage Management Services (SMS) ◆ Novell eDirectory ◆ Novell Linux User Management (LUM) ◆ Novell Remote Manager (NRM)
Novell iManager	<ul style="list-style-type: none"> ◆ Novell Backup/Storage Management Services (SMS) ◆ Novell Linux User Management (LUM) ◆ Novell Remote Manager (NRM)
Novell iPrint	<ul style="list-style-type: none"> ◆ Novell Backup/Storage Management Services (SMS) ◆ Novell eDirectory ◆ Novell iManager ◆ Novell Linux User Management (LUM) ◆ Novell Remote Manager (NRM)
Novell Linux User Management (LUM)	<ul style="list-style-type: none"> ◆ Novell Backup/Storage Management Services (SMS) ◆ Novell Remote Manager (NRM)
Novell NCP Server / Dynamic Storage Technology	<ul style="list-style-type: none"> ◆ Novell Backup/Storage Management Services (SMS) ◆ Novell eDirectory ◆ Novell Linux User Management (LUM) ◆ Novell Remote Manager (NRM)
Novell NetStorage	<ul style="list-style-type: none"> ◆ Novell Backup/Storage Management Services (SMS) ◆ Novell iManager ◆ Novell Linux User Management (LUM) ◆ Novell Remote Manager (NRM)
Novell Pre-Migration Server	<ul style="list-style-type: none"> ◆ Novell Backup / Storage Management Services (SMS) ◆ Novell eDirectory (without a replica) ◆ Novell Linux User Management (LUM) ◆ Novell Remote Manager (NRM)
Novell QuickFinder	<ul style="list-style-type: none"> ◆ Novell Backup/Storage Management Services (SMS) ◆ Novell Linux User Management (LUM) ◆ Novell Remote Manager (NRM)
Novell Remote Manager (NRM)	<ul style="list-style-type: none"> ◆ Novell Backup/Storage Management Services (SMS) ◆ Novell Linux User Management (LUM)
Novell Samba	<ul style="list-style-type: none"> ◆ Novell Backup/Storage Management Services (SMS) ◆ Novell Linux User Management (LUM) ◆ Novell Remote Manager (NRM)

Pattern	Other Module Dependencies
Novell Storage Services (NSS)	<ul style="list-style-type: none"> ◆ Novell Backup/Storage Management Services (SMS) ◆ Novell eDirectory ◆ Novell NCP Server ◆ Novell Linux User Management (LUM) ◆ Novell Remote Manager (NRM)

- 12b** Type or select the information for each field requested on each page, then click *Next* until a summary of settings is displayed for that service.
- 12c** Verify that the settings for each module are what you want.
If not, click *Reset Configuration* and provide the corrected settings.
- 12d** Repeat [Step 12a](#) through [Step 12c](#) until all the required modules have been configured, then continue with [Step 13](#).
- 13** Save the file.:
- 13a** Click *File > Save*.
- 13b** Browse to a location that you want to save the file to.
- 13c** Type *filename.xml*, then click *Save*.
Replace *filename* with an appropriate name to identify the control file for the installation you are performing.
By default, the file is saved in the `/var/lib/autoinstall/repository/` directory.
For additional filename requirements and recommendations, see ["The Auto-Installation Process" in Automatic Linux Installation and Configuration with Yast2](http://www.suse.de/~ug/autoyast_doc/Invoking.html) (http://www.suse.de/~ug/autoyast_doc/Invoking.html).
- 14** Exit the configuration management tool by clicking *File > Exit*.
- 15** Proceed with ["Setting Up an Installation Source" on page 186](#).

8.4 Setting Up an Installation Source

For OES 2, you must set up a separate directory for the SLES 10 software and the OES 2 software.

AutoYaST requires an installation source. You have several options. For an explanation of each, see ["Network Based Installation"](http://www.suse.de/~ug/autoyast_doc/Bootmanagement.html) (http://www.suse.de/~ug/autoyast_doc/Bootmanagement.html) and ["The Auto-Installation Process" in Automatic Linux Installation and Configuration with Yast2](http://www.suse.de/~ug/autoyast_doc/Invoking.html) (http://www.suse.de/~ug/autoyast_doc/Invoking.html).

You can also set up an installation source on a NetWare server. See [Section 2.10.2, "NetWare as a Network Installation Source Server," on page 43](#).

9 Installing OES as a Xen VM Host Server

You can install Novell Open Enterprise Server (OES) 2 SP3 as a Xen VM host server.

To understand why you might want your VM host server to have OES 2 SP3 installed, see “[Why Install OES Services on Your VM Host?](#)” in the *OES 2 SP3: Planning and Implementation Guide*.

To install OES 2 SP3 on your VM host server, add the following steps to the basic installation instructions found in “[Setting Up a Virtual Machine Host](#)” (http://www.novell.com/documentation/sles10/book_virtualization_xen/data/cha_xen_virtualization_vhost_setup.html) in the *Virtualization with Xen* (http://www.novell.com/documentation/sles10/book_virtualization_xen/data/book_virtualization_xen.html) guide.

- 1 When you reach the Installation Mode page, select the *Include Add-On Products from Separate Media* option and complete the instructions in [Section 3.3, “Specifying the Add-On Product Installation Information,”](#) on page 51.
- 2 When you reach the Installation Settings page, click the *Software* heading.
- 3 Of the services listed in the *OES Services* category, only the following are supported on a Xen VM host server:
 - ◆ Novell Linux User Management (LUM)
 - ◆ Novell Storage Management Services (SMS)
 - ◆ Novell Cluster Services (NCS)

You can select any of these services that you want to be available on the host server, or you can leave all of the services deselected. In either case, the server will be configured as an OES server.

- 4 If you selected any of the supported OES services, Novell Remote Manager (NRM) is also selected. Click the green check mark by NRM to change it to a red symbol and prevent NRM from being installed. NRM is not a supported OES service on a Xen VM host server.
- 5 In the *Primary Functions* category, select *Xen Virtual Machine Host Server*.

Because you want the host server optimized to manage your virtual machines, do not choose any additional primary functions. Other services should be installed on an OES or SUSE Linux Enterprise Server (SLES) 10 VM guest server or physical server.

- 6 On the Configured LDAP Servers page, specify the tree name, admin name, and password for the eDirectory tree into which you are installing the host server.

IMPORTANT: If you didn't select any OES services, the Novell Open Enterprise Server Configuration page appears instead. In that case, the Configured LDAP Servers page is accessible via the *LDAP Configuration for Open Enterprise Services* link.

- 7 Click *Add* and specify the IP address of a server in the tree that has eDirectory installed on it, then click *Next*.
- 8 On the Novell Open Enterprise Server Configuration page, click *Next*.
- 9 When you reach the User Authentication Method page, do not change the Authentication Method.
- 10 On the New Local User page, do not create a local user.

- 11** After the server boots, make sure the GRUB boot loader is set to run the Xen kernel:
 - 11a** On the desktop, click *Computer > YaST*.
 - 11b** In YaST, click *System > Boot Loader*.
 - 11c** Make sure there is a check mark by the *XEN* label. If a different option is marked, select *XEN* and click the *Set as Default* button.
 - 11d** Click *Finish*.
 - 11e** Close YaST and restart the server.

The server is now prepared to function as a Xen VM host server.

10 Installing, Upgrading, or Updating OES on a Xen-based VM

In Novell Open Enterprise Server (OES) 2 SP3, you can install OES 2 SP3 as a guest operating system on the following servers:

- ♦ A SUSE Linux Enterprise Server (SLES) 10 Linux server

See “Setting Up a Virtual Machine Host” (http://www.novell.com/documentation/sles10/book_virtualization_xen/data/cha_xen_virtualization_vhost_setup.html) in the *Virtualization with Xen* (http://www.novell.com/documentation/sles10/book_virtualization_xen/data/book_virtualization_xen.html) guide.

- ♦ An OES 2 SP3 server that has been set up as a Xen-based host server
See Chapter 9, “Installing OES as a Xen VM Host Server,” on page 187.

For general information on the Xen virtualization technology in SLES 10 SP4, see the *Virtualization with Xen* guide (http://www.novell.com/documentation/sles10/book_virtualization_xen/data/book_virtualization_xen.html).

This section documents the system requirements, installation instructions, upgrade and migration instructions, and issues associated with setting up OES 2 on a Xen-based virtual machine.

- ♦ Section 10.1, “System Requirements,” on page 189
- ♦ Section 10.2, “Prerequisites,” on page 191
- ♦ Section 10.3, “Preparing the Installation Software,” on page 191
- ♦ Section 10.4, “Installing an OES 2 SP3 VM Guest,” on page 192
- ♦ Section 10.5, “Upgrading an OES 2 VM Guest to OES 2 SP3,” on page 196
- ♦ Section 10.6, “Updating an OES 2 SP3 VM Guest,” on page 201
- ♦ Section 10.7, “Managing a Virtual Machine Running OES 2 SP3,” on page 201
- ♦ Section 10.8, “Setting Up an OES 2 SP3 VM Guest to Use Novell Storage Services (NSS),” on page 201

10.1 System Requirements

To create an OES 2 SP3 VM guest, you need a SLES 10 SP4 or OES 2 SP3 server that is set up as a Xen VM host server.

- ♦ Section 10.1.1, “OES 2 SP3 VM Host Considerations,” on page 190
- ♦ Section 10.1.2, “Novell Storage Services Considerations,” on page 190
- ♦ Section 10.1.3, “Setup Instructions,” on page 190

10.1.1 OES 2 SP3 VM Host Considerations

When you set up a virtual machine host for OES 2 SP3 VM guests, ensure that the host server has the following:

- ♦ **Time synchronization:** Set the server's time configuration to the same reliable, external time source as the eDirectory tree that the virtual machines on that host will be joining.
To set the time source, use *Yast > Network Services > NTP Time Configuration*.
The time source can be running NTP or Timesync with the NTP option selected.
- ♦ **RAM:** Enough memory to support each virtual machine that you want to run concurrently on the host server.
For example, if you are installing one OES 2 SP3 virtual machine, you need a minimum of 1 GB of memory (512 MB for the host plus 512 MB for the OES 2 Linux VM).
If you are installing two virtual machines, and the first VM guest's services need 1 GB and the second guest's need 1.5 GB, you need 2.5 GB for the VM guests and 512 MB for the host—a total of 3 GB.
- ♦ **Disk Space:** Enough disk space on the host for creating and running your VM guests.
The default disk space required for an OES 2 SP3 VM guest is 4 GB and the default allocation for each VM guest in Xen is 10 GB, leaving approximately 6 GB for data files, etc. The space you need is dependent on what you plan to use the virtual server for and what other virtual storage devices, such as NSS volumes, that you plan to attach to it.

10.1.2 Novell Storage Services Considerations

If you want to set up Novell Storage Services (NSS) on the virtual machine, note the following:

- ♦ NSS can recognize physical, logical, or virtual devices up to 2 TB in size (where 1 TB = 2⁴⁰ bytes = 1,099,511,627,776 bytes).
- ♦ In a virtual environment, the devices that you want to use for the NSS file system on the guest operating system cannot exceed the 2 TB limit, even if the host operating system and guest operating system can handle larger devices.
For information, see “[Device Size Limit](#)” in the *OES 2 SP3: NSS File System Administration Guide for Linux*.

10.1.3 Setup Instructions

As mentioned in [Section 10.1, “System Requirements,”](#) on page 189, you can use either a SLES 10 SP4 server or an OES 2 SP3 server as your VM host server.

For setup procedures, see the following information:

- ♦ **SLES 10 SP4:** “[Setting Up a Virtual Machine Host](http://www.novell.com/documentation/sles10/book_virtualization_xen/data/cha_xen_virtualization_vhost_setup.html)” (http://www.novell.com/documentation/sles10/book_virtualization_xen/data/cha_xen_virtualization_vhost_setup.html) in the *Virtualization with Xen* (http://www.novell.com/documentation/sles10/book_virtualization_xen/data/book_virtualization_xen.html) guide.
- ♦ **OES 2 SP3:** “[Chapter 9, “Installing OES as a Xen VM Host Server,”](#) on page 187.”

10.2 Prerequisites

Before creating an OES 2 SP3 virtual machine, you need the following:

- ♦ If you want to use AutoYaST to specify the Installation settings, create an AutoYaST profile (control) file and download it to a directory on the host machine server or make it available on the network. For more information, see [Chapter 8, “Using AutoYaST to Install and Configure Multiple OES Servers,”](#) on page 179.
- ♦ A static IP address for each virtual server that you want to create.

10.3 Preparing the Installation Software

- ♦ [Section 10.3.1, “Downloading the Installation Software,”](#) on page 191
- ♦ [Section 10.3.2, “Preparing the Installation Source Files,”](#) on page 191

10.3.1 Downloading the Installation Software

For information on downloading the following ISO image files, see the [Novell Open Enterprise Server 2 Download Instructions](#) (http://www.novell.com/documentation/oes2/esd/di_oes2_sp3.html).

Table 10-1 OES ISO Images and CD Labels for i386 (32-Bit Installations)

ISO Image File	CD Label
OES2-SP3-i386-CD1.iso	Novell Open Enterprise Server 2 SP3 CD 1
SLES-10-SP4-DVD-i386-GM-DVD1.iso	SUSE Linux Enterprise Server 10 SP4 DVD

Table 10-2 OES ISO Images and CD Labels for x86_64 (64-Bit Installations)

ISO Image File	CD Label
OES2-SP3-x86_64-CD1.iso	Novell Open Enterprise Server 2 SP3 CD 1
SLES-10-SP4-DVD-x86_64-GM-DVD1.iso	SUSE Linux Enterprise Server 10 SP4 DVD

10.3.2 Preparing the Installation Source Files

To create an OES 2 SP3 VM guest, you must make the installation software available in one of the following locations:

- ♦ **A Local Installation Source:** The 32-bit ([Table 10-1](#)) or 64-bit ([Table 10-2](#)) ISO files copied to the host server’s local drives.
- ♦ **A Network Installation Source:** The 32-bit ([Table 10-1](#)) or 64-bit ([Table 10-2](#)) ISO files used to create a network installation source. For instructions, see [“Setting Up the Server Holding the Installation Sources”](#) in the *SUSE Linux Enterprise Server 10 Installation and Administration Guide* (http://www.novell.com/documentation/sles10/book_sle_reference/data/sec_deployment_remoteinst_instserver.html).

10.4 Installing an OES 2 SP3 VM Guest

Creating an OES 2 SP3 virtual machine requires you to complete the following major tasks.

- ♦ [Section 10.4.1, “Specifying Options for Creating an OES 2 SP3 VM Guest,” on page 192](#)
- ♦ [Section 10.4.2, “Specifying the Installation Mode,” on page 194](#)
- ♦ [Section 10.4.3, “Specifying the Add-On Product Installation Information,” on page 195](#)
- ♦ [Section 10.4.4, “Completing the OES 2 SP3 VM Guest Installation,” on page 196](#)

10.4.1 Specifying Options for Creating an OES 2 SP3 VM Guest

The Create Virtual Machine Wizard helps you through the steps required to create a VM guest and install the desired operating system.

- 1 Launch the Create Virtual Machine Wizard by using one of the following methods:
 - ♦ From the virtualization host server desktop, click *YaST > Virtualization > Create Virtual Machines*
 - ♦ From within Virtual Machine Manager, click *New*.
 - ♦ At the command line, enter `vm-install`.

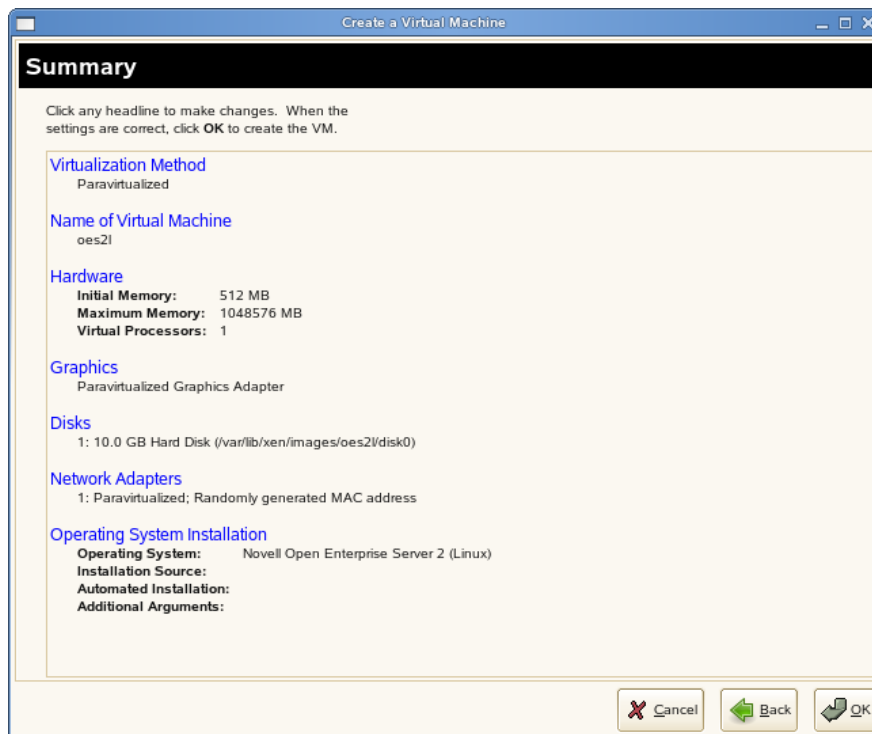
If the wizard does not appear or the `vm-install` command does not work, review the process of installing and starting the virtualization host server. The virtualization software might not be installed properly.

- 2 After specifying that you want to create a virtual machine, click *Forward*.
- 3 Click *Forward*.

The option to set up a virtual machine based on an existing disk or disk image is supported only if the existing disk or disk image was originally set up through the Create Virtual Machine Wizard.

- 4 On the Type of Operating System page, select *Novell Open Enterprise Server 2 (Linux)*, then click *Forward*.

The Summary page appears.



NOTE: Detailed explanations of the Summary page settings are available in “[Virtualization: Configuration Options and Settings \(http://www.novell.com/documentation/sles10/book_virtualization_xen/data/cha_xen_config_options.html\)](http://www.novell.com/documentation/sles10/book_virtualization_xen/data/cha_xen_config_options.html)” in the *Virtualization with Xen guide (http://www.novell.com/documentation/sles10/book_virtualization_xen/data/book_virtualization_xen.html)*.

- 5 Click *Name of Virtual Machine*.
- 6 Specify a name for the virtual machine in the *Name* field, then click *Apply*.
For example, you might specify *hostname_vm*, where *hostname* is the DNS name of the server you are installing in the VM.
- 7 Click *Hardware*.
 - 7a Specify the amount of initial and maximum memory for the virtual machine to consume from the available memory. The initial memory should not be less than 1024 MB.
 - 7b Specify the number of processors that you want the virtual machine to use.
 - 7c Click *Apply*.
- 8 If you want to change the graphics adapter settings, click *Graphics* and select the type of graphic support desired, then click *Apply*.
- 9 Click *Disks*.
The Virtual Disk page lets you create the virtual disks that the OES 2 SP3 VM guest will have access to. This includes the installation media if you are installing from downloaded SLES and OES ISO image files.
Initially, a 10 GB file is specified for the partitions/volumes on the virtual server. The default location of the file is `/var/lib/xen/images`.
By default, this is a sparse file, meaning that although 10 GB is allocated, the size of the file on the disk is only as large as the actual data it contains. Sparse files conserve disk space, but they have a negative impact on performance.

The OES 2 SP3 installation guidelines recommend 10 GB for a server installation. Keep in mind, however, that you are defining the total local disk size for the server. You should allocate as much local space as you anticipate the server needing for data and other files after it is hosting user services.

9a Specify the hard disk space you want to be available to the virtual machine.

9b Click *Apply*.

- 10** If you are installing SLES 10 SP4 from a downloaded ISO image file, click *CD-ROM*, browse to the SLES 10 SP4 image file, then click *Open > OK > Apply*.
- 11** If you are installing OES 2 SP3 from a downloaded ISO image file, click *CD-ROM*, browse to the OES 2 SP3 image file, then click *Open > OK > Apply*.
- 12** If you want to change the network adapter settings, click *Network Adapters*, view the default setting, then edit the default settings.

or

Click *New* and specify the setting for another network board of your choice, then click *Apply*.

- 13** Click *Operating System*:

13a If you are installing from a downloaded ISO image, make sure that the SLES 10 SP4 image is specified as the *Virtual Disk* installation source.

13b If you are installing from a network installation source, specify the URL for the SLES 10 SP4 network installation source.

You specify a network installation source for OES 2 SP3 during the install.

13c If you are using an AutoYaST control file to specify the settings for a virtual machine operating system, specify the path to the file in the *AutoYaST File* field or click the *Find* button to the right of the field to locate the file on the local host server.

13d If necessary, use the *Additional Arguments* field to specify additional install or boot parameters to assist the installation.

For example, if you wanted to specify the parameters for an IP address of 192.35.1.10, a netmask of 255.255.255.0, a gateway of 192.35.1.254 for the virtual server, and use ssh to access the installation from another workstation, you could enter the following parameters in the *Additional Argument* field:

```
hostip=192.35.1.10 netmask=255.255.255.0 gateway=192.35.1.254 usesh=1  
sshpassword=password
```

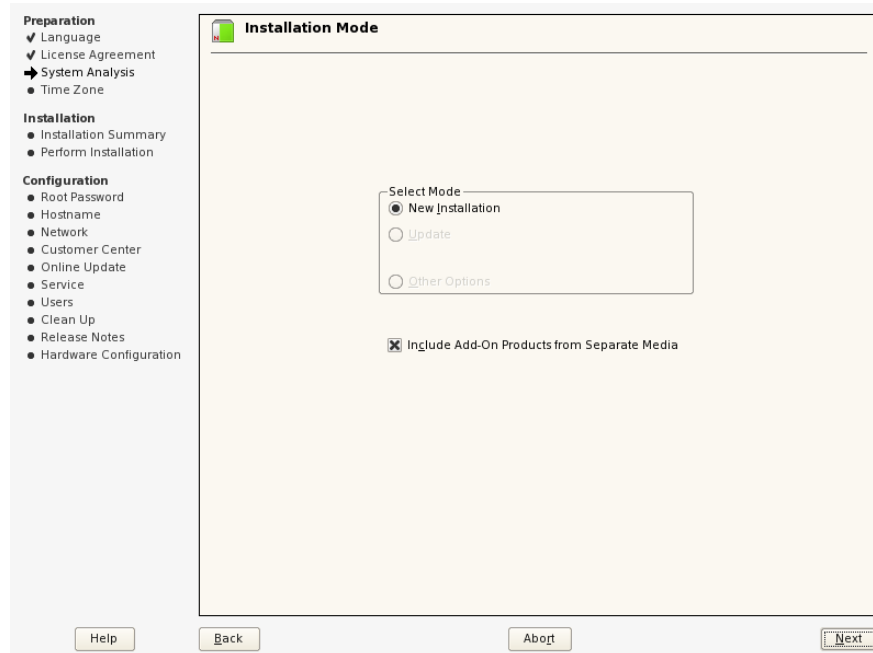
13e Click *Apply*.

- 14** Click *OK* to start the virtual machine and launch the operating system installation program.
- 15** Continue with [Section 10.4.2, "Specifying the Installation Mode,"](#) on page 194.

10.4.2 Specifying the Installation Mode

- 1** When the *Installation Mode* screen displays, select the following menu options:
 - ◆ *New Installation*

- ◆ *Include Add-On Products from Separate Media*



- 2 Click *Next*.
- 3 Continue with [Section 10.4.3, “Specifying the Add-On Product Installation Information,”](#) on page 195.

10.4.3 Specifying the Add-On Product Installation Information

When the Add-On Product Installation page displays:

- 1 Click *Add*.
- 2 If you are installing OES 2 from an ISO image file:
 - 2a On the Add-On Product Media page, click *Specify URL*, then click *Next*.
 - 2b In the URL field, type
`hd:///?device=/dev/xvdc/`
 - 2c Click *OK*.
 - 2d Skip to [Step 4](#).
- 3 If you are installing from a network installation source, click the appropriate protocol for your situation, then click *Next* and supply the required information.
- 4 Read and accept the Novell Open Enterprise Server 2 license agreement, then click *Next*.
- 5 Confirm that the Add-On Product Installation page shows the correct path to the OES media, then click *Next*.
- 6 Continue with [“Completing the OES 2 SP3 VM Guest Installation.”](#)

10.4.4 Completing the OES 2 SP3 VM Guest Installation

- 1 Follow the on-screen prompts, using the information contained in the following sections:
 - 1a [Section 3.4, “Setting Up the Clock and Time Zone,” on page 52.](#)
 - 1b [Section 3.5, “Specifying the Installation Settings for the SLES Base and OES Installation,” on page 52.](#)
 - 1c [Section 3.6, “Specifying Configuration Information,” on page 59.](#)

During the configuration portion of the installation, you might see additional prompts concerning hardware detection of the network cards, DSL, PPPoE DSL, ISDN cards, and modems.

When you specify the time source during the eDirectory configuration, use the same time source as the eDirectory tree you are installing the server into.

After the installation, enable the virtual machine’s Independent Wall Clock setting and reboot the virtual machine so it can synchronize its time correctly. For more information on this configuration issue, [“Virtual Machine Clock Settings \(http://www.novell.com/documentation/sles10/book_virtualization_xen/data/sec_guest_suse.html#sec_xen_time\)”](http://www.novell.com/documentation/sles10/book_virtualization_xen/data/sec_guest_suse.html#sec_xen_time) in the *Virtualization with Xen guide (http://www.novell.com/documentation/sles10/book_virtualization_xen/data/book_virtualization_xen.html)*.
 - 1d [Section 3.7, “Finishing the Installation,” on page 107.](#)

During the hardware configuration, graphics and sound cards are not recognized when installing OES 2 SP3 as a VM guest.
- 2 Complete the server setup by following the procedures in [“Chapter 6, “Completing OES Installation or Upgrade Tasks,” on page 153.”](#)

10.5 Upgrading an OES 2 VM Guest to OES 2 SP3

- ♦ [Section 10.5.1, “Upgrading an OES 2 VM Guest by Using the Update Channel,” on page 196](#)
- ♦ [Section 10.5.2, “Performing an Offline Upgrade,” on page 196](#)

10.5.1 Upgrading an OES 2 VM Guest by Using the Update Channel

Patching or updating an OES 2 SP3 VM guest is essentially the same as updating an OES 2 SP3 physical server. For instructions on updating a physical OES 2 SP3 server, see [Section 5.4.5, “Using the Patch Channel to Upgrade \(Online\),” on page 127.](#)

10.5.2 Performing an Offline Upgrade

You can perform an offline upgrade using either an ISO file or files on the network. Physical media upgrades are not supported for VM guests.

NOTE: The offline upgrade process is quite lengthy. If your guest VMs have access to a patch channel, we recommend that you upgrade by using the patch channel. See [Section 5.4.5, “Using the Patch Channel to Upgrade \(Online\),” on page 127.](#)

Performing a down-server upgrade on an OES 2 VM guest is similar in many ways to upgrading a physical machine, but there are important differences as outlined in the following sections:

- ◆ [“Before You Start the Upgrade Process” on page 197](#)
- ◆ [“A Brief Overview of the Upgrade Process” on page 197](#)
- ◆ [“Creating a Temporary Upgrade Directory on the VM Host” on page 198](#)
- ◆ [“Creating a Directory and Copying the ISO Files to the VM Host” on page 198](#)
- ◆ [“Checking the Kernel Type” on page 198](#)
- ◆ [“\(Conditional\) Obtaining the xenpae Kernel” on page 198](#)
- ◆ [“Shutting Down and Preparing the VM Guest” on page 199](#)
- ◆ [“Copying the Boot Files and Preparing the VM Guest Configuration Files” on page 199](#)
- ◆ [“Starting the Upgrade” on page 200](#)
- ◆ [“Resuming and Completing the Upgrade” on page 201](#)

Before You Start the Upgrade Process

- 1 Make sure you follow all of the applicable instructions and guidelines in [Section 5.2, “Planning for the Upgrade to OES 2 SP3,” on page 118](#) and [Section 5.3, “Meeting the Upgrade Requirements,” on page 120](#).

A Brief Overview of the Upgrade Process

When you perform a down-server upgrade on a physical server to OES 2 SP3, you must first shut down the server and then reboot it, using the installation kernel and initial RAM disk (initrd) files on the SLES 10 SP4 installation media. This is accomplished by booting the server through a SLES CD or DVD, an ISO image file, or by accessing a SLES installation image on the network through a PXE or other remote connection.

Upgrading a VM guest also requires that you shut down the guest. However, when a Xen VM guest reboots, it doesn't scan the local storage devices or attempt a network PXE connection. Rather, it uses its configuration information to locate the kernel and other needed files on the host's file system. The only way to affect the boot process of a VM guest is to modify its configuration.

Therefore, to upgrade a Xen VM guest, you must do the following high-level tasks as detailed in the sections that follow.

1. Copy the installation/upgrade kernel and initial RAM disk (initrd) files to the VM host's file system.
2. Create two copies of the VM guest configuration:
 - ◆ **A Modified Version:** You use this to start the upgrade process and run the first portion of the process.
 - ◆ **An Unmodified Version:** You use this to restore the guest's operating environment for the second portion of the upgrade process.
3. Remove the VM guest's configuration information from the Xen database so that it can boot using configuration files you create above.

Creating a Temporary Upgrade Directory on the VM Host

As explained in “[A Brief Overview of the Upgrade Process](#)” on page 197, the kernel and other files needed to run the upgrade must be accessible on the VM host’s file system.

- 1 Create a directory on the VM host server for the following:
 - ♦ The installation kernel
 - ♦ The initial RAM disk (initrd) file
 - ♦ The configuration files that you need during the upgrade process.

The instructions that follow assume the directory is `/tmp/upgrade`, but you can use a different directory if you prefer.

Creating a Directory and Copying the ISO Files to the VM Host

NOTE: This is not required for an installation over the network.

If you plan to install from ISO image files on the VM host:

- 1 Create a directory for the files on your VM host server.

Because the images need to be available for future maintenance operations, they should be kept in a permanent location so that YaST knows where to find them.
- 2 Copy the ISO image files for your platform architectural type (32-bit or 64-bit).

Refer to the information on obtaining OES software in “[Getting and Preparing OES 2 Software](#)” in the *OES 2 SP3: Planning and Implementation Guide*.

Checking the Kernel Type

If you are upgrading a 32-bit VM guest, and you don’t know whether it uses the non-PAE or PAE kernel:

- 1 Open a terminal on the VM guest.
- 2 Enter the following command:

```
uname -r
```
- 3 Note whether the kernel name ends in
 - ♦ **xen:** Indicates the non-PAE kernel.
 - or
 - ♦ **xenpae:** Indicates the PAE kernel.

This determines which version of the kernel you must copy to the temporary upgrade directory.

(Conditional) Obtaining the xenpae Kernel

The xenpae kernel was inadvertently left off the SLES 10 SP4 media. If your guest requires the xenpae kernel, refer to [TID 7005079](http://www.novell.com/support/search.do?cmd=displayKC&docType=kc&externalId=7005079&sliceId=1&docTypeID=DT_TID_1_1&dialogID=189462491&stateId=0%20%20189464454) (http://www.novell.com/support/search.do?cmd=displayKC&docType=kc&externalId=7005079&sliceId=1&docTypeID=DT_TID_1_1&dialogID=189462491&stateId=0%20%20189464454) for instructions on overcoming this limitation. If necessary, click the Login link to see the TID information.

Shutting Down and Preparing the VM Guest

- 1 On the VM host server, open Virtual Machine Manager, right-click the OES 2 guest server you are upgrading, and select *Shutdown*.
- 2 If you are upgrading using ISO image files, in Virtual Machine Manager click *View > Details > Hardware > Add > Storage Device*, then browse to and select the SLES 10 SP4 ISO file.
- 3 Browse to and select the OES 2 SP3 ISO file.

Copying the Boot Files and Preparing the VM Guest Configuration Files

- 1 Copy the installation kernel and initrd files from your SLES 10 SP4 installation source > the `/boot/i386` or `/boot/x86_64` directory (depending on which architectural version you are upgrading) to the temporary directory you created in [Step 1 on page 198](#).

If you are upgrading a 64-bit VM guest installation, the files are named `vmlinuz-xen` and `initrd-xen`.

If you are upgrading a 32-bit VM guest installation, choose the files that are appropriate for your hypervisor as determined in [“Checking the Kernel Type” on page 198](#):

- ♦ `vmlinuz-xen` and `initrd-xen`
or
- ♦ `vmlinuz-xenpae` and `initrd-xenpae`

- 2 Capture the VM guest’s configuration in a file that you can modify to start the upgrade process.

At a terminal prompt, enter the following command:

```
xm list -l vm_name > /path/to/modify_config_file.sxp
```

Replace `vm_name` with the name of the VM guest that you are upgrading as listed in the Virtual Machine Manager, and the path with your temporary directory created in [Step 1 on page 198](#) and specifies a filename that indicates it is modified for starting the upgrade process.

For example:

```
xm list -l myserver_vm > /tmp/upgrade/modify_myserver_vm.sxp
```

- 3 Before modifying the configuration file you just created, change to the directory containing the file and use the following commands to make a copy of it to preserve the unmodified configuration:

```
cd /path/to/upgrade_directory
```

```
cp modify_config_file.sxp unmodified_config_file.sxp
```

Replace `modify_config_file.sxp` with the name the configuration file you specified in [Step 2](#) and replace `unmodified_config_file.sxp` with the name of the new file you will use to restore the VM guest’s original configuration for the second phase of the upgrade process.

For example:

```
cd /tmp/upgrade
```

```
cp modify_myserver_vm.sxp unmodified_myserver_vm.sxp
```

- 4 Verify that both of the configuration files are in your upgrade directory, then remove the VM guest’s configuration from the Xen VM database by using the following command:

```
xm delete vm_name
```

Replace `vm_name` with the name of the VM guest that you are upgrading.

For example:

```
xm delete myserver_vm
```

The VM guest no longer appears in Virtual Machine Manager.

- 5** Using a text editor, open the configuration file that you created in [Step 2](#) and change it as follows:

5a Remove the line that begins with `(bootloader_args ...`

5b Change the line that reads

```
(on_reboot restart)
```

to

```
(on_reboot destroy)
```

5c Remove the line that contains

```
(bootloader /usr/lib/xen/boot/domUloader.py).
```

5d Find the following indented lines:

```
(image
  (linux
    (kernel ...)
```

5e In the kernel line, before the closing parenthesis “)”, modify the listed path (or insert a path if none is present) to point to the `vmlinuz-xen` or `vmlinuz-xenpae` file copied in [Step 1](#).

For example, modify the kernel line so that it reads:

```
(kernel /tmp/upgrade/vmlinuz-xen)
```

or

```
(kernel /tmp/upgrade/vmlinuz-xenpae)
```

5f Insert a ramdisk line below the kernel line (or if a ramdisk line already exists, modify it) to point to the `initrd` file you copied in [Step 1](#).

For example, insert or modify the line so that it reads:

```
(ramdisk /tmp/upgrade/initrd-xen)
```

or

```
(ramdisk /tmp/upgrade/initrd-xenpae)
```

5g In the args line, between the single quotes, insert the path to your SLES 10 SP4 installation source.

For example, if you are upgrading a 64-bit installation from the network, you might modify the args line so that it reads:

```
(args 'install=http://myserver.mycompany.com/sles10-SP4/x86_64')
```

Or, if you are upgrading a 64-bit installation from ISO files, you might modify the args line so that it reads:

```
(args 'install=hd:///?device=/dev/xvdx')
```

Replace *x* with the letter assigned to the SLES 10 SP4 ISO image file, for example `.../xvdc`.

5h Save the upgrade configuration file, then continue with [Starting the Upgrade](#).

Starting the Upgrade

- 1** On the VM host server at a terminal prompt, enter the following command:

```
xm create -F /path/to/modify_config_file.sxp
```

For example:


```
xm create -F /tmp/upgrade/modify_myserver_vm.sxp
```

The VM guest appears again in Virtual Machine Manager.

- 2 Open the VM guest, then select the language and accept the SLES 10 SP4 license agreement.
- 3 Complete the first phase of the upgrade process by following the standard upgrade instructions, starting with [Section 5.4.6, “Selecting the Installation Mode Options,”](#) on page 130.

IMPORTANT: Remember that you must specify the location URL for the OES 2 SP3 installation files, either by using a network protocol such as HTTP:// or by using the device path assigned to the OES ISO, such as `hd:///device=/dev/xvdd`.

Resuming and Completing the Upgrade

After you complete the instructions in [Section 5.4.11, “Accepting the Installation Settings,”](#) on page 138, the server doesn’t reboot automatically and the VM guest disappears from Virtual Machine Manager.

You must re-create the VM guest to continue the upgrade process and complete the second phase.

- 1 Enter the following command at the terminal prompt:

```
xm new -F /path/to/unmodified_config_file.sxp
```

For example:

```
xm new -F /tmp/upgrade/unmodified_myserver_vm.sxp
```

- 2 Open the VM guest and follow the standard upgrade instructions to completion, starting with [Section 5.4.12, “Specifying Configuration Information,”](#) on page 139.

When the upgrade process is complete, you can remove the upgrade directory that you created in [Step 1 on page 198](#).

10.6 Updating an OES 2 SP3 VM Guest

Patching or updating an OES 2 SP3 VM guest is essentially the same as updating an OES 2 SP3 physical server. For instructions on updating a physical OES 2 SP3 server, see [Chapter 7, “Updating \(Patching\) an OES 2 SP3 Server,”](#) on page 157.

10.7 Managing a Virtual Machine Running OES 2 SP3

Managing a virtual machine running OES 2 SP3 is the same as managing virtual machines running other operating systems. For procedures, see [“Managing a Virtualization Environment \(http://www.novell.com/documentation/sles10/book_virtualization_xen/data/cha_xen_virtualization_manage.html\)”](http://www.novell.com/documentation/sles10/book_virtualization_xen/data/cha_xen_virtualization_manage.html) in the *Virtualization with Xen guide* (http://www.novell.com/documentation/sles10/book_virtualization_xen/data/book_virtualization_xen.html).

10.8 Setting Up an OES 2 SP3 VM Guest to Use Novell Storage Services (NSS)

When you install OES 2 SP3 on a virtual machine, we recommend that you configure a virtual machine with multiple devices. Use the primary virtual disk as the system device with LVM2 (the YaST install default) as the volume manager. After the install, you can assign additional storage

resources from the host server to the virtual machine. In the guest server environment, the additional disks can use LVM2 or EVMS as needed. In this scenario, NSS volumes are created only on additional virtual disks, not on the primary virtual disk that you are using for the guest server's system device.

IMPORTANT: When you create the virtual machine, make sure to configure the size of the primary virtual disk according to the amount of space you need for the /boot, swap, and root (/) volumes.

If you decide to use EVMS for the system device on the virtual machine, follow the install instructions in [“Section A.2, “Configuring the System Device to Use EVMS,” on page 234,”](#) just as you would for a physical machine.

After the virtual machine is set up, you need to perform additional tasks to set up additional Novell Storage Service (NSS) devices. See [“Using NSS in a Virtualization Environment”](#) in the *OES 2 SP3: NSS File System Administration Guide for Linux*.

11 Installing and Managing NetWare on a Xen-based VM

IMPORTANT: NetWare 6.5 SP8 has been modified to run in paravirtual mode on a Xen virtual machine. Running NetWare in fully virtualized mode on a Xen host server is not supported.

You can install NetWare as a virtual machine guest (VM guest) operating system on the following servers:

- ♦ A SUSE Linux Enterprise Server (SLES) 10 Linux server

See “Setting Up a Virtual Machine Host” (http://www.novell.com/documentation/sles10/book_virtualization_xen/data/cha_xen_virtualization_vhost_setup.html) in the *Virtualization with Xen* guide (http://www.novell.com/documentation/sles10/book_virtualization_xen/data/book_virtualization_xen.html).

- ♦ An OES 2 SP3 server that has been set up as a Xen-based host server

See “Chapter 9, “Installing OES as a Xen VM Host Server,” on page 187” in the .

For general information on the Xen virtualization technology in SLES 10 SP4, see the *Virtualization with Xen* guide (http://www.novell.com/documentation/sles10/book_virtualization_xen/data/book_virtualization_xen.html).

This section documents the system requirements, installation instructions, upgrade and migration instructions, and issues associated with setting up NetWare on a Xen-based virtual machine.

- ♦ [Section 11.1, “Introduction,” on page 203](#)
- ♦ [Section 11.2, “Support Information,” on page 204](#)
- ♦ [Section 11.3, “Preparing to Install a NetWare VM Guest Server,” on page 205](#)
- ♦ [Section 11.4, “Installing Virtualized NetWare,” on page 208](#)
- ♦ [Section 11.5, “Managing NetWare on a Virtual Machine,” on page 215](#)
- ♦ [Section 11.6, “If VM Manager Doesn’t Launch on a Xen VM Host Server,” on page 217](#)

11.1 Introduction

There are many reasons to install NetWare 6.5 SP8 on virtual machines, such as:

- ♦ Incorporating a NetWare server into a production environment without committing additional hardware resources.
- ♦ Isolating Novell iFolder, iPrint, GroupWise, or other applications to a single virtual server without committing additional hardware resources.
- ♦ Extending the useful life of NetWare services by running them on a Linux host server, thereby taking advantage of the widespread industry support for Linux hardware drivers.

To simplify the process of installing virtualization software, the SLES 10 SP4 software includes *Xen Virtual Machine Host Server* as a primary server function that you can select when installing SLES 10 SP4 as a virtualization host server.

Selecting this pattern installs the Xen host server software, which enables the server to boot the Xen version of the SLES 10 SP4 operating system kernel. It also installs utilities for preparing and creating virtual machines.

After the host server is up and running, you can then create a virtual machine and install NetWare 6.5 SP8 as a guest operating system.

11.2 Support Information

- ◆ [Section 11.2.1, “OES 2 Registration Is Required for Support,” on page 204](#)
- ◆ [Section 11.2.2, “Supported Configurations and Features,” on page 204](#)
- ◆ [Section 11.2.3, “Unsupported Configurations and Features,” on page 204](#)

11.2.1 OES 2 Registration Is Required for Support

Although OES 2 NetWare and NetWare 6.5 share the same code base and are the same in every way, virtualized NetWare in Xen is an OES 2 product feature. Support for NetWare on a Xen virtual machine is available only to OES 2 registered customers.

11.2.2 Supported Configurations and Features

The following configurations and features are supported for NetWare VM guest servers.

- ◆ OES 2 NetWare or later running in paravirtual mode.
- ◆ The graphical paravirtualized frame buffer and the text-based console interface.
- ◆ Running on 32-bit, 32-bit PAE, and 64-bit hypervisors.
- ◆ Running in 32-bit PAE compatibility mode on 64-bit platforms.
- ◆ Up to 16 block devices.
- ◆ Up to 32 virtual CPUs.
- ◆ The pause and resume functionality.
- ◆ The `xm shutdown` command.
- ◆ The `shutdown` command in Virtual Machine Manager.
- ◆ Allocated memory from 1 GB to 8 GB.
- ◆ VCPU cover commitment, pinning, and capping.
- ◆ Installations through a NetWare response file.

11.2.3 Unsupported Configurations and Features

The following configurations and features are not supported for NetWare VM guest servers.

- ◆ NetWare in full virtualization mode.
- ◆ NetWare 6.5 SP6 and earlier running on a virtual machine.
- ◆ VCPU hotplug.

- ◆ Network or block device hotplug.
- ◆ Virtual memory resizing.
- ◆ Direct access to physical devices.
- ◆ The save, restore, and migrate commands.
- ◆ Some Novell Remote Manager debugging features.

11.3 Preparing to Install a NetWare VM Guest Server

- ◆ [Section 11.3.1, “Planning for VM Host Servers,” on page 205](#)
- ◆ [Section 11.3.2, “Planning for NetWare VM Guest Servers,” on page 206](#)
- ◆ [Section 11.3.3, “You Must Use Timesync for Time Synchronization,” on page 207](#)
- ◆ [Section 11.3.4, “Disabling the Alt+Esc Shortcut on the Host,” on page 207](#)

11.3.1 Planning for VM Host Servers

- ◆ [“Meeting Server Hardware and Software Requirements” on page 205](#)
- ◆ [“Deciding Whether to Run OES Services on VM Host Servers” on page 206](#)

Meeting Server Hardware and Software Requirements

To accommodate NetWare VM guest servers, your VM host servers must:

- Meet the criteria specified in [“Setting Up a Virtual Machine Host”](http://www.novell.com/documentation/sles10/book_virtualization_xen/data/cha_xen_virtualization_vhost_setup.html) (http://www.novell.com/documentation/sles10/book_virtualization_xen/data/cha_xen_virtualization_vhost_setup.html) in the *Virtualization with Xen* guide (http://www.novell.com/documentation/sles10/book_virtualization_xen/data/book_virtualization_xen.html).
- Have enough memory (RAM) on the physical machine for:
 - ◆ The SLES 10 operating system (512 MB)
 - ◆ Any of the supported OES services that you install on the VM host (512 MB)
 - ◆ Each NetWare virtual machine that you plan to run concurrently (1 GB to 8 GB)

For example, if you are installing one NetWare VM guest server on a SLES 10 VM host server, you need a minimum of 1.5 GB of memory: 512 MB for the VM host server and 1 GB for the NetWare VM guest server. For optimal performance, you should allocate as much memory as possible for each NetWare VM guest, up to 8 GB each.

- Have enough disk space on the host server for creating and running the VM guest servers.

The default disk space for a NetWare VM guest server is 10 GB. You might need more or less space, depending on what you will use the guest server for and what its storage configuration will be. You might want to locate your virtual machines on a separate partition or even on a separate storage device. For example, you might create a /vm partition on a separate drive installed in the server. For additional information, see [“Storage Planning” on page 206](#).

Deciding Whether to Run OES Services on VM Host Servers

You should also decide whether to install OES 2 SP3 and one or more of its supported services on your VM host servers.

To ensure that optimal resources are available to the virtual machines, each VM host server should be dedicated to running the Xen virtualization software as much as possible. However, there are several good reasons why you might want to choose to install one or more of the supported OES services on the host server itself. For more information, see [“Why Install OES Services on Your VM Host?”](#) in the *OES 2 SP3: Planning and Implementation Guide*.

11.3.2 Planning for NetWare VM Guest Servers

Before creating NetWare virtual machines, you need to plan for the following:

- ♦ [“RAM Planning”](#) on page 206
- ♦ [“Storage Planning”](#) on page 206
- ♦ [“Network Planning”](#) on page 206
- ♦ [“eDirectory Planning”](#) on page 207

RAM Planning

To ensure the best performance by your NetWare VM guests, you should plan for the optimal RAM configuration of each NetWare VM guest server. As a general rule, the more RAM you assign to a NetWare guest server (up to 8 GB), the better the server performance is. For specific planning information, see [“Optimizing Server Memory”](#) in the *NW 6.5 SP8: Server Memory Administration Guide*.

Storage Planning

The disk space that you allocate while creating the Xen virtual machines is used by the NetWare VM guest for the `sys:` volume.

For best performance in a Xen virtual environment, NSS pools and volumes on NetWare should be created on virtual devices that are SCSI devices, Fibre Channel devices, or iSCSI devices on the host server, or on partitions that are on those types of devices.

SATA or IDE disks have slower performance because special handling is required when working through the Xen driver to ensure that data writes are committed to the disk in the order intended before the driver reports back.

For more information on NSS disk storage, see [“Using NSS in a Virtualization Environment”](#) in the *OES 2 SP3: NSS File System Administration Guide for Linux*.

Network Planning

Each Xen guest VM is assigned one virtualized network card by default. You can create additional cards if desired.

You must obtain one static IP address for each virtualized network card you plan to create on your NetWare VM guest servers. OES 2 SP3 does not support dynamically assigned (DHCP) IP addresses.

eDirectory Planning

You can place a NetWare virtual machine in an existing tree or as the first server in a new tree. However, the performance of virtualized NetWare doesn't match a physical NetWare installation. In most cases, it is probably preferable to add your NetWare virtual machine to an existing tree located on a physical NetWare server, particularly if the tree is large.

Also, because virtualized servers might be started and stopped more often than they would normally be on physical servers, we recommend that the master replica (usually the first server in a tree) be placed on a system that is running at all times. For more information about master replicas, see ["Managing Partitions and Replicas"](#) in the *Novell eDirectory 8.8 Administration Guide*.

11.3.3 You Must Use Timesync for Time Synchronization

Because of known issues with Xen and the NTP NLM, you must use Timesync as the time synchronization method for NetWare VM guests running on Xen VM hosts. Otherwise, time drift causes problems for your NetWare VM guests.

Keeping accurate time is a critical function for servers in an eDirectory tree. The reported time must be synchronized across the network to provide the expiration dates and time stamps necessary for ordering eDirectory events.

NetWare VM guest servers synchronize time in the same ways that NetWare physical servers do. In other words, the clock on the VM host server has no influence on the NetWare VM guest server's time.

IMPORTANT: To ensure that your NetWare VM guest is configured correctly, be sure to follow the instructions in ["Configuring Time Synchronization"](#) (specifically Step 4) in the *NW65 SP8: Installation Guide*, and configure the NetWare VM guest to get time from the same time source as the eDirectory tree it is joining. If the time source specified is an NTP server, be sure to select the NTP option next to the source's DNS name or IP address. This enables Timesync to communicate with the NTP time source.

11.3.4 Disabling the Alt+Esc Shortcut on the Host

Alt+Esc is used on a NetWare server to switch between console screens, but on SLES 10 it moves between open windows. To provide the expected behavior for the virtualized NetWare server, you must disable the shortcut for SLES 10.

- 1 On the host server as the `root` user, click *Computer > Control Center*.
- 2 Click *Personal > Shortcuts*.
- 3 Under the *Window Management* category, click *Move between windows immediately*, then press the Backspace key to disable the shortcut.
- 4 Click *Close*.
- 5 Close the Control Center.

11.4 Installing Virtualized NetWare

This section provides the instructions for installing NetWare 6.5 SP8 as a guest OS.

- ♦ [Section 11.4.1, “Preparing the Installation Media,” on page 208](#)
- ♦ [Section 11.4.2, “Creating a Response File for an Unattended NetWare Installation,” on page 208](#)
- ♦ [Section 11.4.3, “Creating a Xen Virtual Machine and Installing a NetWare VM Guest Server,” on page 210](#)

11.4.1 Preparing the Installation Media

You must use the DVD installation files to install a NetWare VM guest on a Xen VM host server. (Xen on SLES 10 doesn't support CD swapping.)

The installation media must appear as a local disk to the virtual machine, but it can be physically located in either of the following locations:

- ♦ On a DVD in the host's physical DVD reader.
- ♦ As the DVD ISO image file copied to the Xen VM host server desktop.

The following steps are for downloading to the VM host server's desktop and can be adapted as necessary for the other locations listed above.

- 1 Use the Firefox browser on the VM host server to access the [Novell Open Enterprise Server 2 Download and Instructions page \(http://www.novell.com/documentation/oes2/esd/di_oes2_sp1.html\)](http://www.novell.com/documentation/oes2/esd/di_oes2_sp1.html) and download the `NW65SP8_OVL_DVD.iso` file to the server's desktop (or another location of your choosing).
- 2 After the file downloads, if you are installing on an OES 2 SP3 VM host server by using a response file, continue with [Step 3](#). Otherwise, skip to [Section 11.4.3, “Creating a Xen Virtual Machine and Installing a NetWare VM Guest Server,” on page 210](#).
- 3 Click *Open* in the Firefox download dialog box.
- 4 Sort the list of files by *Location* by clicking the column heading, then scroll to `/LICENSE`.
- 5 Select the `.NFK` and `.NLF` files, right-click them, and select *Extract*.
- 6 In the Extract dialog box, click *Extract*, then close the ISO file and the browser.
- 7 Double-click the `LICENSE` folder on the desktop or other location that you chose in [Step 1](#), select the two files you extracted and drag them to the desktop, then delete the `LICENSE` folder by dragging it to the Trash.
- 8 Continue with [Creating a Response File for an Unattended NetWare Installation](#).

11.4.2 Creating a Response File for an Unattended NetWare Installation

OES 2 SP3 includes a YaST-based NetWare Response File utility that asks you for information about the NetWare server you want to install. Basically, you answer the same questions as you would during a physical NetWare installation. When the time comes to run the NetWare Install program, the installation reads your responses from the file and proceeds without requiring further intervention.

- 1 Open YaST and click *Open Enterprise Server > NetWare Response File Utility*.
- 2 On the Select Install Type page, make sure the *Hardware Type* is set for *Virtual*. Do not change any other options. Click *Next*.

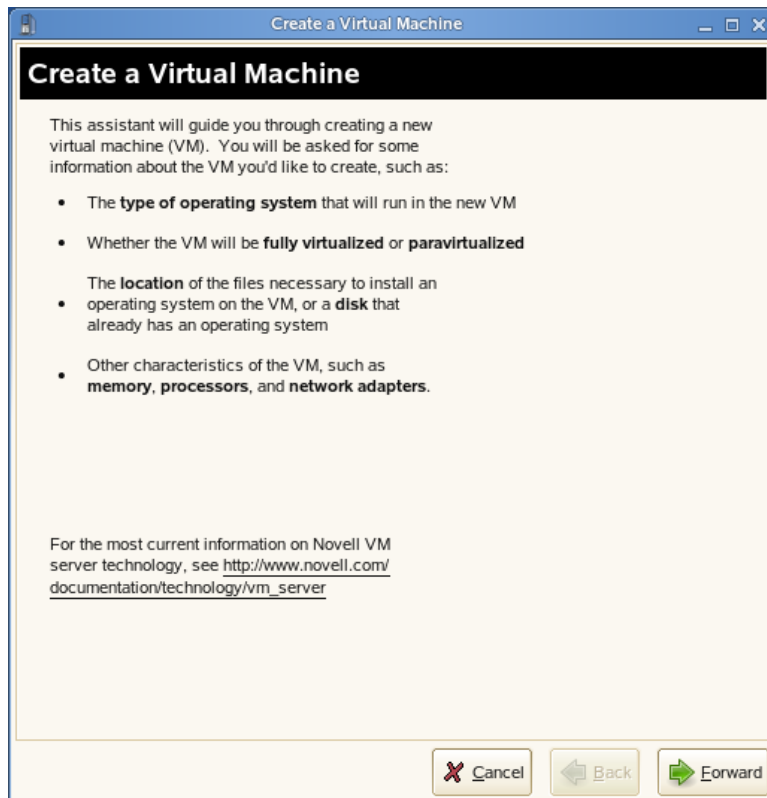
- 3 Click *Destination Address*, specify a valid NetWare server name for the virtualized NetWare server, and specify the IP address you want the virtualized server to use.
The IP address must be unique on the subnet just as it would be for a physical NetWare installation.
 - 4 Click *Next*.
 - 5 Click *Destination eDirectory*.
 - 6 Specify the name of the eDirectory tree and a context for this server object.
 - 7 In the *Replica Server IP Address* field, specify the IP address of the eDirectory server.
 - 8 In the *User Information* section, specify the admin information for the tree, then click *Next*.
 - 9 Click *License*, specify the eDirectory container where you want the NetWare license files stored (usually the Organization object), then click *Next*.
 - 10 Click *Protocols*.
 - 11 Specify the *Subnet Mask* and *Gateway* information for the subnet and click *Next*.
 - 12 Click *Language*, change the language settings if needed, then click *Next*.
 - 13 Click *SLP Configuration*.
 - 14 If your tree has more than three servers, you must specify valid SLP information before continuing. Otherwise, you can leave the page at the default settings.
After you are finished with the page, click *Next*.
 - 15 Click *DNS Configuration*, specify the DNS information, then click *Next*.
 - 16 Click *Time Zone Configuration*, select your time zone options, then click *Next*.
 - 17 Click *Time Sync Configuration*.
 - 18 Leave the protocol set to TimeSync (do not select NTPv3), select *Use TIMESYNC Configured Sources*, specify the same time synchronization source as your eDirectory server uses, select *NTP* if applicable, then click *Next*.
 - 19 Click *Install Settings*, change the default settings if needed, add any needed SET parameters by clicking *Edit*, then click *Next*.
 - 20 Click *Storage Configuration*, adjust the default sizes if desired, then click *Next*.
 - 21 Click *Pattern Selection*, select the preconfigured server pattern you want installed, then click *Next*.
 - 22 If you selected *Customized NetWare Server* in [Step 21](#), click *Product Selection*, select the services you want installed, then click *Next*.
 - 23 Click *NMAS Configuration > Next > Next*.
 - 24 (Conditional) Depending on what products you selected for the server, click the headings and enter the required information until all the configuration options have been completed for the response file.
 - 25 On the Save Response File page, specify a response filename, then browse to the directory where you stored your NetWare license files. (If you completed all of the instructions in [Section 11.4.1, "Preparing the Installation Media,"](#) on page 208, the field should show a path that ends with a forward slash (/).
 - 26 If you want the VM Manager to launch automatically after you exit the Response File Generator, select *Launch VM Manager*.
-
- IMPORTANT:** If the option is not selectable, the server isn't running the Xen kernel. See [Section 11.6, "If VM Manager Doesn't Launch on a Xen VM Host Server,"](#) on page 217.
-
- 27 Specify the location of the Installation Source by browsing to the DVD .iso file that you copied to the local server, then click *Finish*.

28 Click *Next*.

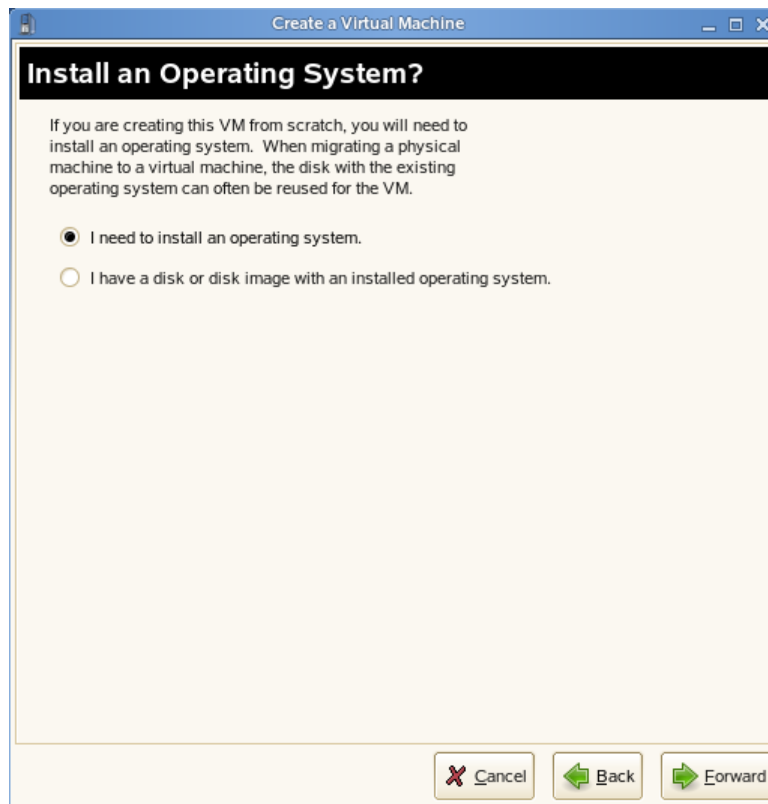
29 If you chose to automatically launch VM Manager in [Step 26](#) above, click *Forward* and skip to [Step 5 on page 213](#). Otherwise, continue with [Section 11.4.3, “Creating a Xen Virtual Machine and Installing a NetWare VM Guest Server,”](#) on page 210.

11.4.3 Creating a Xen Virtual Machine and Installing a NetWare VM Guest Server

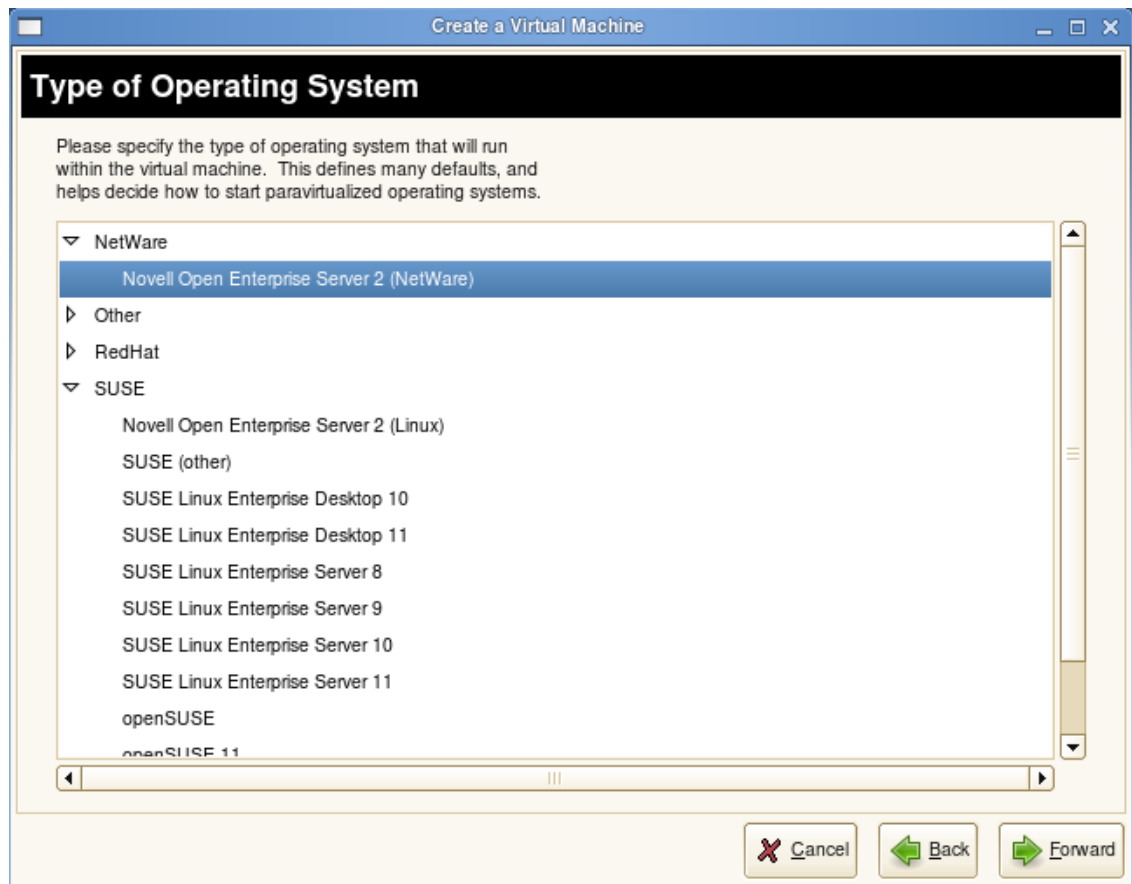
1 Open YaST, then click *Virtualization > Create Virtual Machines*.



2 Read the Create a Virtual Machine welcome page, then click *Forward*.

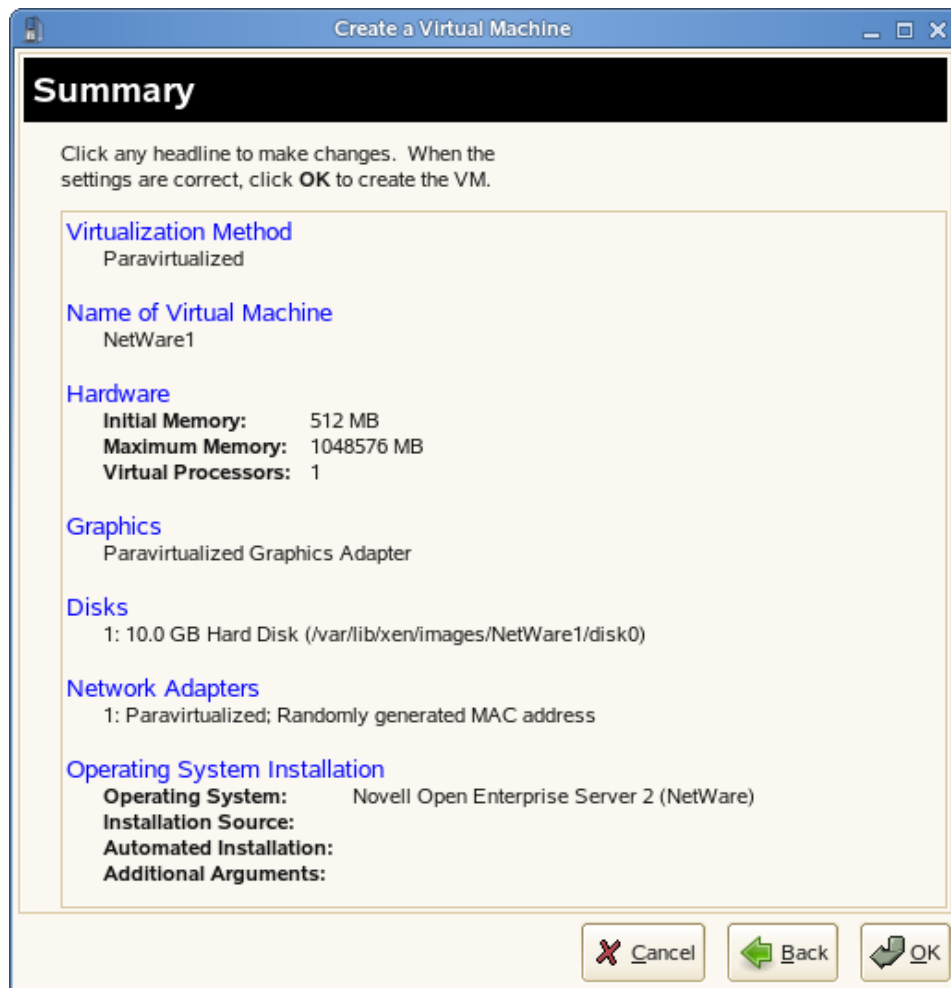


- 3 Select *I need to install an operating system*, then click *Forward*.



- 4 Click the triangle next to *NetWare*, select *Novell Open Enterprise Server 2 (NetWare)*, then click *Forward*.

The Summary page appears, showing the settings to be used for the virtual machine.



5 Click *Name of Virtual Machine*.

Specify the name that you want displayed for this virtual machine in the Virtual Machine Manager.

For example, you might specify *hostname_vm*, where *hostname* is the host name of the server you are installing.

6 Click *Hardware*.

Change the initial memory setting to at least 1024 MB and the maximum setting to as much as 8 GB, depending on the RAM available on your host server.

Add additional virtual processors if desired.

7 Click *Disks*.

The Virtual Disks dialog box lets you create the virtual disks that the NetWare VM guest has access to. This includes the installation media if you are installing from a DVD on the host server or from an ISO image file copied to the host server's storage devices.

Initially, a 10 GB file is specified for the partitions/volumes on the virtual server. The default location of the file is `/var/lib/xen/images`.

By default, this is a sparse file, meaning that although 10 GB is allocated, the size of the file on the disk is only as large as the actual data it contains. Sparse files conserve disk space, but they have a negative impact on performance.

The NetWare install allocates 500 MB for a DOS partition and 4 GB for the `sys:` volume. The default disk size of 10 GB leaves about 5.5 GB for other partitions.

- 8** If you want to change the location of the NetWare VM's first virtual hard drive, select the default *Hard Disk* and click *Edit*. Then modify the path in the *Server* field to where you want the virtual disk located.

Make sure that you specify enough physical disk space on the host server's hard drive and partition to accommodate the maximum size of the virtual disk.

- 9** If you want optimal performance, deselect the sparse file option. This creates a blank file of the selected size when you start the virtual machine installation.
- 10** Click *OK*.
- 11** If you are installing from a mounted DVD, click *CD-ROM*, browse to `/dev/cdrom` or `/dev/dvd`, then click *Open > OK > Apply*.

or

If you are installing from a downloaded ISO image file, browse to the image file, then click *Open > OK > Apply*.

- 12** If you want multiple virtual network adapters, click *Network Adapters*.

Create virtual network adapters for the server.

The default setting is a single paravirtualized network adapter.

- 13** If you are installing on an OES 2 SP3 VM host and you created a response file that you want to use for the NetWare installation, click *Operating System Installation* and complete the following tasks:

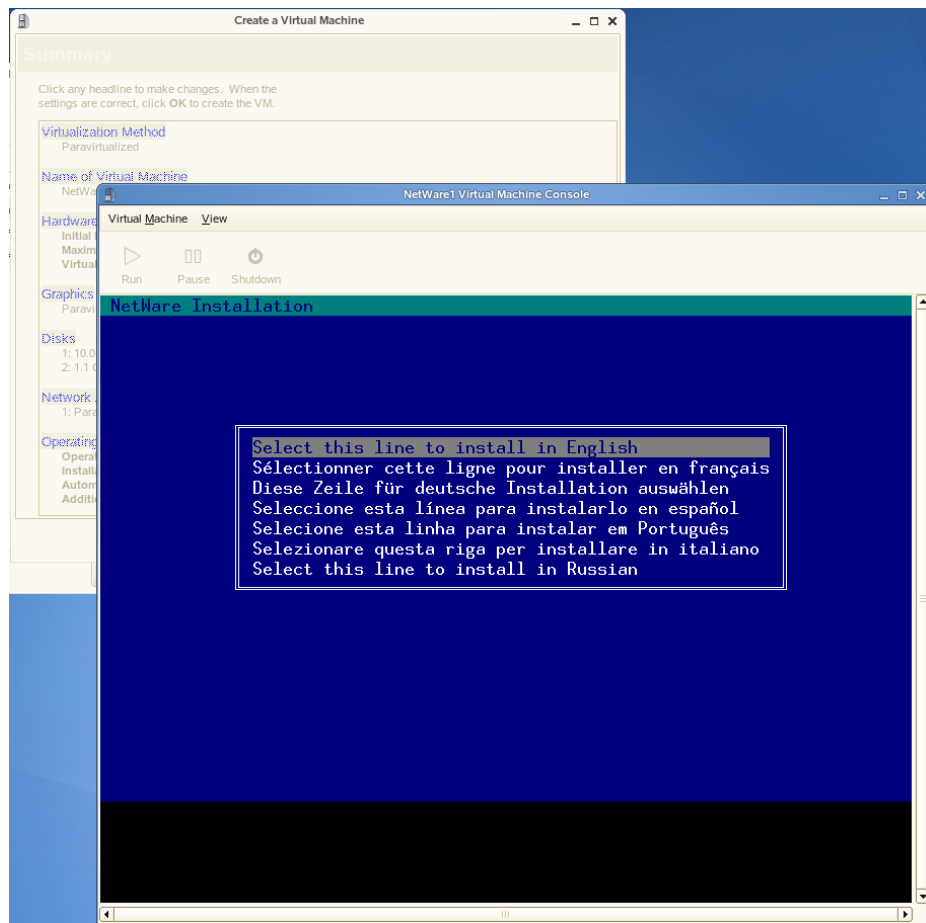
- 13a** Click *Find*, then browse to and select the file you created in [Section 11.4.2, "Creating a Response File for an Unattended NetWare Installation,"](#) on page 208.

- 13b** Click *Open > Apply*.

The response file's path and filename should be displayed in the Automated Installation field on the Summary page.

- 14** When you have the virtual machine settings the way you want them, click *OK* to proceed with the creation of the virtual machine and the installation of the virtual NetWare server.

A VNC viewer window appears, displaying the progress of the NetWare install program.



If you specified a response file, the installation uses the information you recorded in the response file. If a required parameter is missing in the response file, you are prompted to enter the desired values during the installation.

15 If you did not specify a response file, you must do the following:

15a Click inside the installation window to set the mouse pointer.

The mouse is not used on the first few screens, but you must set it now. Otherwise, the mouse and the keyboard might not work as expected when the GUI pages appear.

15b Enter all of the installation information as you would for a physical NetWare installation.

IMPORTANT: Do not close the VNC viewer window while the NetWare install program is running. Doing so prevents the installation from finishing properly.

11.5 Managing NetWare on a Virtual Machine

Virtualized NetWare is managed in the same way as if it were running on a physical machine. For information about managing your NetWare server, see the [NW 6.5 SP8: Server Operating System Administration Guide](#). For additional information about managing NetWare servers in a virtualized environment, see “[Running NetWare in a Virtualized Environment](#)” in the same guide.

- ◆ [Section 11.5.1, “Using the Virtual Machine Manager,”](#) on page 216
- ◆ [Section 11.5.2, “Using the Command Line,”](#) on page 216

11.5.1 Using the Virtual Machine Manager

Managing a NetWare virtual machine is simplified by using the Virtual Machine Manager utility, which is installed by default when you install the Xen virtualization software.

To start the Virtual Machine Manager, open a terminal prompt and enter `virt-manager`.

For more information, see “*Managing a Virtualization Environment* (http://www.novell.com/documentation/sles10/book_virtualization_xen/data/cha_xen_virtualization_manage.html)” in the *Virtualization with Xen* guide (http://www.novell.com/documentation/sles10/book_virtualization_xen/data/book_virtualization_xen.html).

11.5.2 Using the Command Line

Many NetWare administrators prefer to manage the server through the command line. If you want to use the command line, you should be aware of the following issues:

- ♦ “Terminal Size” on page 216
- ♦ “NetWare Debugger” on page 216
- ♦ “VNC Viewer” on page 216
- ♦ “The `xm` Commands” on page 216

Terminal Size

The terminal window might display only 80x24 characters. If you don’t want to scroll to the command line, you need to resize the terminal.

NetWare Debugger

If pressing `Alt+Shift+Shift+Esc` doesn’t launch the debugger, you can enter `386debug` at the command line.

VNC Viewer

In the VNC Viewer, pressing `F8` displays a pop-up utility menu. Press `F8` twice to pass single `F8` to the remote side.

The `xm` Commands

- ♦ You can also manage the NetWare virtual machine, and all other virtual machines, by using the `xm` command line tools. For more information, see “The `xm` Command (http://www.novell.com/documentation/sles10/book_virtualization_xen/data/sec_xen_virtualization_xm.html)” in the *Virtualization with Xen* guide (http://www.novell.com/documentation/sles10/book_virtualization_xen/data/book_virtualization_xen.html).
- ♦ To make a break in NetWare from a terminal, enter `xm sysrq x c`, where `x` is the domain ID and `c` is any keyboard character.

11.6 If VM Manager Doesn't Launch on a Xen VM Host Server

If the option to launch the VM Manager for installing a NetWare guest is not available, the most likely cause is that the Xen kernel is not running on the Xen VM host server. See *The Boot Loader Program* (http://www.novell.com/documentation/sles10/book_virtualization_xen/data/sec_xen_config_bootloader.html) in the *Virtualization with Xen* guide (http://www.novell.com/documentation/sles10/book_virtualization_xen/data/book_virtualization_xen.html).

12 Upgrading NetWare on a Xen-based VM

- ♦ [Section 12.1, “Upgrading the VM Host Server,” on page 219](#)
- ♦ [Section 12.2, “Upgrading the NetWare VM Guest Server,” on page 219](#)

12.1 Upgrading the VM Host Server

Before you upgrade the NetWare VM guest servers on any Xen-based VM host servers, be sure to upgrade the host server to either SUSE Linux Enterprise Server (SLES) 10 SP4 or Open Enterprise Server (OES) 2 SP3, as applicable.

For SLES 10 SP4 upgrade instructions, see the *SLES 10 SP4 Installation and Administration Guide* (http://www.novell.com/documentation/sles10/book_sle_reference/data/book_sle_reference.html).

For OES 2 SP3 upgrade instructions, see [Chapter 5, “Upgrading to OES 2 SP3,” on page 117](#).

12.2 Upgrading the NetWare VM Guest Server

After you have upgraded the Xen VM host server, upgrading a NetWare 6.5 guest on the host server is the same as upgrading a physical installation. You accomplish this by installing the Support Pack 8 (SP8), which is the same thing as NetWare 6.5 SP8, on the server.

The only difference with upgrading a NetWare VM guest is the process of providing access to the SP8 media.

If the support pack is unzipped to a location on the guest, such as the `sys :` volume, the process of installing the support pack is exactly the same as on a physical server.

If the support pack is unzipped on a DVD or to a location on the host server, you must add the DVD or location to the VM guest. Keep in mind that you can only specify a block device, such as a mounted DVD or the root of a separately defined partition on the VM host server. You cannot specify a directory where you unzipped the support pack files as a block device for the VM guest to access.

- ♦ [Section 12.2.1, “Downloading the NetWare SP8 Zip File,” on page 219](#)
- ♦ [Section 12.2.2, “Providing Access to a Mounted DVD,” on page 220](#)

12.2.1 Downloading the NetWare SP8 Zip File

- 1 Log into your Novell account and access the [NetWare 6.5 SP8 e-Media Kit](http://download.novell.com/Download?buildid=dpIR3H1ymhk~) (<http://download.novell.com/Download?buildid=dpIR3H1ymhk~>).
- 2 Download the `NW65SP8.zip` file.
- 3 Extract the support pack files contained in the zip file you downloaded.

- 4 Complete the step that applies to your situation:
 - ♦ If you extracted the file to a root-level directory on the VM guest, continue with the instructions in “Starting an Upgrade” in the *NW65 SP8: Installation Guide*.
 - ♦ If you extracted the file to a partition on the VM host, see the *Virtualization with Xen* guide (http://www.novell.com/documentation/sles10/book_virtualization_xen/data/book_virtualization_xen.html) for information on making a block device available to a VM guest.

IMPORTANT: After adding the block device, you will probably need to reboot the NetWare VM guest before the guest will recognize the device.

- ♦ If you extracted the file to a DVD, continue with [Providing Access to a Mounted DVD](#).

12.2.2 Providing Access to a Mounted DVD

After downloading the `NW65SP8.zip` file and extracting it to a DVD:

- 1 Insert the DVD in the VM host server.
- 2 On the desktop, click *Computer > Virtual Machine Manager*.
- 3 Select the NetWare VM guest you are upgrading, then click the *Details* button.
- 4 Click the *Hardware* tab.
- 5 Click the *Add* button.
- 6 In the *Hardware Type* drop-down list, select *Storage Device*, then click *Forward*.
- 7 Under *Target* in the *Device Type* drop-down list, select *Virtual Disk (read only)*.
- 8 With the *Normal Disk Partition* option selected, click *Browse*.
- 9 In the *Places* column, double-click *File System*, then double-click the `dev` folder.
- 10 Click the `dvd` device file, then click *Open*.
- 11 Click *Forward > Finish*.

You should see a new disk in the *Hardware* list.

- 12 In the NetWare VM guest's machine console, open the file browser.
- 13 If the DVD is listed, write down the volume name, then go to “Installing the Support Pack” [Step 2](#) in the *NW65 SP8: Installation Guide* and complete the instructions there.
If the DVD is not listed, continue with [Step 14](#).
- 14 Shut down and restart the NetWare VM.
- 15 After the VM restarts, confirm that the DVD is listed, write down the volume name listed, then go to “Installing the Support Pack” [Step 2](#) in the *NW65 SP8: Installation Guide*.

13 Disabling OES 2 Services

Although you can uninstall Novell Open Enterprise Server 2 (OES) Linux service RPMs through YaST, we do not recommend it because so many modules have interdependencies. Uninstalling services can leave the server in an undesirable state. Instead, we recommend disabling the service.

- 1 Log in as `root` and start YaST.
- 2 Click *System > System Services (Runlevel)*.
- 3 Select *Expert Mode*.
- 4 Select the *applicable_service_name*, then click *Set/Reset > Disable the service*.
- 5 Repeat [Step 4](#) for each service you want to disable.
- 6 Click *Finish* to exit the YaST Runlevel tool.

NOTE: YaST does not support removing products that create objects or attributes in eDirectory. You need to use iManager to remove these objects and attributes. For procedures, see “Deleting an Object” in the [Novell iManager 2.7.4 Administration Guide \(https://www.netiq.com/documentation/imanager27/\)](https://www.netiq.com/documentation/imanager27/).

14 Reconfiguring eDirectory and OES Services

If the eDirectory database becomes corrupt, you need to reconfigure eDirectory and the OES services. This section outlines the steps to be performed, depending on the role of the server with regard to your eDirectory tree.

If a backup of the eDirectory database is not available, you can contact Novell Support or perform the following procedures:

- ◆ [Section 14.1, “Cleaning Up the eDirectory Server,” on page 223](#)
- ◆ [Section 14.2, “Reconfiguring the eDirectory Server through YaST,” on page 225](#)
- ◆ [Section 14.3, “Reconfiguring OES Services,” on page 225](#)

NOTE: Removing an OES server from an existing tree, renaming it and trying to attach it to the same tree or some other tree is an unsupported eDirectory scenario. Doing so will destabilize the OES server and make it unusable.

14.1 Cleaning Up the eDirectory Server

Novell does not recommend performing the operations in this section unless you have problems with eDirectory that aren't resolved by performing regular eDirectory maintenance tasks, or unless Novell Support recommends that you do them.

- ◆ [Section 14.1.1, “Before You Clean Up,” on page 223](#)
- ◆ [Section 14.1.2, “Reconfiguring the Replica Server,” on page 224](#)
- ◆ [Section 14.1.3, “Reconfiguring the CA Server,” on page 224](#)
- ◆ [Section 14.1.4, “Cleaning Up eDirectory,” on page 224](#)

14.1.1 Before You Clean Up

- ◆ Before the cleanup, make a note of the following eDirectory configuration parameters:
 - ◆ eDirectory tree name
 - ◆ Replica server IP
 - ◆ eDirectory admin context
 - ◆ eDirectory server context
 - ◆ IP address of servers running NTP and SLP services

- ♦ If you are cleaning the master replica server, ensure that you make a read-write replica as a master. For more information, see [Section 14.1.2, “Reconfiguring the Replica Server,” on page 224.](#)
- ♦ If the reconfiguration is performed on a CA server, transfer the role of CA server to another server or create a new CA server. If you don’t do this, the CA does not work. For more information, see [Section 14.1.3, “Reconfiguring the CA Server,” on page 224.](#)

14.1.2 Reconfiguring the Replica Server

- 1 If the corrupted server is a master replica, make any other replica into the master replica.
For more information, refer to [Managing Partitions and Replicas \(http://www.novell.com/documentation/edir88/edir88/?page=/documentation/edir88/edir88/data/a2iik.html\)](http://www.novell.com/documentation/edir88/edir88/?page=/documentation/edir88/edir88/data/a2iik.html) in the *Novell eDirectory 8.8 Administration Guide*.
- 2 Clean up the replica server.
For more information, see [Section 14.1.4, “Cleaning Up eDirectory,” on page 224.](#)
- 3 Reconfigure the replica server.
For more information, see [Section 14.2, “Reconfiguring the eDirectory Server through YaST,” on page 225.](#)
- 4 On successful reconfiguration of the replica server, continue with [Section 14.3, “Reconfiguring OES Services,” on page 225.](#)

14.1.3 Reconfiguring the CA Server

- 1 If the corrupted server is a CA server, transfer the CA server role to another server or create a new CA server.
For more information, refer to [Moving the Organizational CA to a Different Server \(http://www.novell.com/documentation/crt33/crtadmin/data/a2ebop8.html#acea8nu\)](http://www.novell.com/documentation/crt33/crtadmin/data/a2ebop8.html#acea8nu) and [Creating a Server Certificate Object \(http://www.novell.com/documentation/crt33/crtadmin/data/fbgcdhec.html\)](http://www.novell.com/documentation/crt33/crtadmin/data/fbgcdhec.html) in the *Novell Certificate Server 3.3.2 Administration Guide*.
- 2 Clean up the server.
For more information, see [Section 14.1.4, “Cleaning Up eDirectory,” on page 224.](#)
- 3 Reconfigure the server.
For more information, see [Section 14.2, “Reconfiguring the eDirectory Server through YaST,” on page 225.](#)
- 4 After successfully reconfiguring the server, continue with [Section 14.3, “Reconfiguring OES Services,” on page 225.](#)

14.1.4 Cleaning Up eDirectory

- 1 Stop the ndsd daemon:


```
rcnsd stop
```
- 2 Delete the eDirectory configuration file and eDirectory instance file.:


```
rm -f /etc/opt/novell/eDirectory/conf/nds.conf
rm -f /etc/opt/novell/eDirectory/conf/instances.0
```
- 3 Delete the eDirectory database:


```
rm -rf /var/opt/novell/eDirectory/data/dib
```


- 4 Use iManager to delete the NCP server object, HTTP server object, SNMP group object, LDAP server object, and LDAP group object from the eDirectory tree.
- 5 Remove the server from the replica ring.

For more information, see [Section 17.7.1, Cleaning Up the Replica Ring \(http://www.novell.com/documentation/edir88/edir88/?page=/documentation//edir88/edir88/data/agm7hq7.html\)](http://www.novell.com/documentation/edir88/edir88/?page=/documentation//edir88/edir88/data/agm7hq7.html) in the *Novell eDirectory 8.8 Administration Guide*.

14.2 Reconfiguring the eDirectory Server through YaST

The eDirectory reconfiguration can be done on the Root partition Master replica server, a Read-Write replica server, a server without a replica, or the CA server.

- 1 Open YaST.
- 2 Click *Open Enterprise Server > OES Install and Configuration*.
- 3 On the Software Selection Page, click *Accept*.
The status of eDirectory service is displayed as *Reconfigure is disabled*.
- 4 To reconfigure, click *disabled* to change the status to *enabled*.
- 5 Click *eDirectory* to access the configuration dialog box.
- 6 Provide all the eDirectory configuration information that was noted in [Section 14.1.1, “Before You Clean Up,” on page 223](#):
 - 6a Verify the eDirectory tree name and click *Next*.
 - 6b Specify the admin password and click *Next*.
 - 6c Specify the server context and click *Next*.
 - 6d Specify the IP address of the Network Time Protocol Server.
 - 6e (Conditional) If SLP was configured earlier, select *Configure SLP to use an existing Directory Agent*, then click *Add*.
 - 6f Specify the SLP DA server IP address and click *Add*.
 - 6g Click *Next*.
- 7 In the Novell Modular Authentication Service (NMAS) window, click *Next*.
- 8 Verify the listed configuration information and click *Next*.
eDirectory is configured and installation is successfully completed.
- 9 Click *Finish*.

14.3 Reconfiguring OES Services

After you have successfully configured eDirectory, some of the OES services are started by default, some services require a manual start, some services require the eDirectory objects to be re-created, and some services must be reconfigured.

Table 14-1 Services

Starts by Default	Start Manually	Re-create Objects	Reconfigure
SMS	Novell AFP	NSS	Novell DNS
LUM	NCS	NCP	Novell CIFS
NRM	Archive and Version Services		SLP
Novell FTP	Novell DHCP		NMAS
Novell iFolder	iPrint		
Groupwise	Novell Samba		
DST	NetStorage		
DFS	iManager		
WBFM	NTP		
Welcome Page			
CASA	QuickFinder		
VLOG Utility			

- ◆ Section 14.3.1, “Re-creating eDirectory Objects,” on page 226
- ◆ Section 14.3.2, “Services Requiring Reconfiguration,” on page 227
- ◆ Section 14.3.3, “Manually Starting Services,” on page 228

14.3.1 Re-creating eDirectory Objects

- ◆ “Novell Storage Service” on page 226
- ◆ “NCP Server” on page 227

Novell Storage Service

Use the NSS Management utility to re-create the eDirectory objects for NSS pools and volumes. For additional information, see [NSS Management Utility Quick Reference \(http://www.novell.com/documentation/oes2/stor_nss_lx/data/boswz11.html\)](http://www.novell.com/documentation/oes2/stor_nss_lx/data/boswz11.html) in the *NSS Administration Guide*.

- 1 Re-create the eDirectory object for each NSS pool:
 - 1a Start NSSMU by entering the following command at the command prompt:

```
nssmu
```
 - 1b Select *Pools* and press Enter to list all the NSS pools.
 - 1c Select a pool that needs to be re-created and press F4.
 - 1d Select *Yes* when you are prompted to delete and re-create an NDS pool object.
The selected NDS pool object is re-created.
 - 1e Repeat from [Step 1c](#) for each NDS pool object that needs to be re-created.

- 2 Re-create the eDirectory object for each NSS volume:
 - 2a In NSSMU, select *Volumes* and press Enter to list all the NSS volumes.
 - 2b Select a volume and press F4.
 - 2c Select *Yes* when you are prompted to delete and re-create the NDS volume object.
The selected volume object is re-created.
 - 2d Repeat from [Step 2b](#) for each NDS volume object that needs to be re-created.
- 3 (Conditional) If the eDirectory object for `_ADMIN` volume exists, execute the following command:

```
rcadminfs restart
```

NCP Server

Use the NCP server console (NCPCON) utility to delete and re-create the eDirectory objects for the NCP volumes. For more information on the NCPCON utility, see [NCP Server Console Utility \(http://www.novell.com/documentation/oes2/file_ncp_lx/?page=/documentation/oes2/file_ncp_lx/data/ba456t4.html#ba440lz\)](http://www.novell.com/documentation/oes2/file_ncp_lx/?page=/documentation/oes2/file_ncp_lx/data/ba456t4.html#ba440lz) in the *NCP Server for Linux Administration Guide*.

IMPORTANT: If restoration of the eDirectory database is not possible, simply delete the NCP server object.

- 1 Delete the eDirectory object of the NCP volume by entering the following command:

```
ncpcon remove volume SYS
```
- 2 Re-create the eDirectory object of the NCP volume by entering the following command:

```
ncpcon create volume SYS /usr/novell/sys
```

14.3.2 Services Requiring Reconfiguration

- ♦ [“Novell DNS” on page 227](#)
- ♦ [“Novell CIFS” on page 228](#)
- ♦ [“Novell SLP” on page 228](#)
- ♦ [“NMA5” on page 228](#)

Novell DNS

- 1 Open YaST.
- 2 Click *Open Enterprise Server > OES Install and Configuration*.
- 3 On the Software selection page, click *Accept*.
The status of the Novell DNS service is displayed as *Reconfigure is Disabled*.
- 4 To reconfigure the DNS service, click *disabled* to change the status to *enabled*.
- 5 Click the *DNS Services* heading link and enter the admin password to access the configuration dialog box.
- 6 Validate the displayed information and click *Next*.
- 7 Ensure that the *Create DNS Server Object* check box is not selected, then click *Next*.
- 8 Verify the configuration information and click *Next*.
- 9 Click *Finish* to complete the Novell DNS reconfiguration.

Novell CIFS

- 1 Open YaST.
- 2 Click *Open Enterprise Server > OES Install and Configuration*.
- 3 Click *Accept* to skip the Software Selection page.
The status of Novell CIFS service is displayed as *Reconfigure is Disabled*.
- 4 To reconfigure CIFS, click the *Disabled* link to change the status to *Enabled*.
- 5 Click the *Novell CIFS services* heading link and enter admin password to access the configuration dialog box.
- 6 Validate the displayed information and click *Next*.
- 7 Provide the user context and select the password policy of the previous CIFS configuration, then click *Next*.
- 8 Verify the configuration information and click *Next*.
- 9 Click *Finish* to complete the CIFS reconfiguration.

Novell SLP

The SLP DA IP address is added during eDirectory reconfiguration. See [Step 6e on page 225](#) for more information.

NMAS

The NMAS login method is selected during eDirectory reconfiguration. See [Step 7 on page 225](#) for more information.

14.3.3 Manually Starting Services

Re-create the eDirectory objects of NCP and NSS volumes as directed in the [Section 14.3.1, “Re-creating eDirectory Objects,” on page 226](#), before starting the following services manually:

Table 14-2 *Manually Restarting Services*

Service Name	Starting the Service
Novell AFP	<code>rcnovell -afptcpd start</code>
Novell Cluster Service (NCS)	<code>rcnovell -ncs start</code>
Archive and Version Service	<code>rcnovell -ark start</code> <code>rcadminfs start</code>
NetStorage	<code>rcnovell -xregd start</code> <code>rcnovell -xsrvd start</code>
QuickFinder	Generate the index again from QuickFinder Administration.
Samba	Start the Samba service through iManager
Novell DHCP	<code>rcnovell -dhcpd start</code>

Service Name	Starting the Service
iPrint	rcnovell -ipsmd start rcnovell -idsd start
iManager	/etc/init.d/tomcat5 start rcapache2 restart
NTP	rcntpd restart

15 Security Considerations

This section includes issues that you should consider when installing and configuring a Novell Open Enterprise Server 2 (OES) Linux server.

- ♦ [Section 15.1, “Password for User Admin Written in Clear Text in control.xml,” on page 231](#)
- ♦ [Section 15.2, “Access to the Server During an Installation or Upgrade,” on page 231](#)
- ♦ [Section 15.3, “Remote Installations Through VNC,” on page 231](#)
- ♦ [Section 15.4, “Improperly Configured LDAP Servers,” on page 231](#)

15.1 Password for User Admin Written in Clear Text in control.xml

When you create a `control.xml` file by using AutoYast, the eDirectory password for user Admin is written in clear text. This password can be read by anyone who has access to the file. Linux passwords are stored in the file in a hashed form.

We recommend controlling access to this file.

15.2 Access to the Server During an Installation or Upgrade

Because eDirectory passwords are not obfuscated in system memory during the installation or upgrade, we recommend not leaving a server unattended during installation, upgrade, or configuration.

You can use SSH (secure shell) to access the system to perform an installation. However, only authorized users can access the installation.

15.3 Remote Installations Through VNC

When you install the server, we recommend that you do not use Virtual Network Computing (VNC) for remote installation in an untrusted environment. Consider using one of the more secure options (such as SSH) as outlined in [“Installation Scenarios for Remote Installation” in the SLES 10 Installation and Administration Guide](http://www.novell.com/documentation/sles10/book_sle_reference/data/sec_deployment_remoteinst_scenario.html) (http://www.novell.com/documentation/sles10/book_sle_reference/data/sec_deployment_remoteinst_scenario.html).

15.4 Improperly Configured LDAP Servers

Issue 1: Improperly configured LDAP servers allow any user to connect to the server and query for information.

An eDirectory LDAP server enables NULL BIND by default, but allows it to be disabled on the server. To enhance the security of the OES server, disable the NULL BIND on LDAP server port 389. See [“Configuring LDAP Services for Novell eDirectory”](#) in the *Novell eDirectory 8.8 Administration Guide*.

Issue 2: Improperly configured LDAP servers allow the directory BASE to be set to NULL. This allows information to be culled without any prior knowledge of the directory structure. Coupled with a NULL BIND, an anonymous user can query your LDAP server through a tool such as LdapMiner.

An eDirectory LDAP server allows the directory BASE to be set to NULL, and there is no way to disable it. However, with the NULL BIND disabled, as previously mentioned, the security threat posed by this feature is minimized.

A Installing with EVMS as the Volume Manager of the System Device

This section describes how to modify the default partitioning scheme for the system device during installation of Novell Open Enterprise Server 2 (OES) and Novell Storage Services (NSS) so that the system device is managed by the Enterprise Volume Management System (EVMS) instead of the Linux Volume Manager 2 (LVM2).

IMPORTANT: For the purpose of this documentation, a system device is any device that contains the Linux `/boot`, `swap`, or `root (/)` partitions for your OES 2 server.

- ♦ [Section A.1, “Using EVMS to Manage the System Device,” on page 233](#)
- ♦ [Section A.2, “Configuring the System Device to Use EVMS,” on page 234](#)
- ♦ [Section A.3, “Installing SLES 10 SP4 and Post-Installing OES 2 SP3,” on page 239](#)
- ♦ [Section A.4, “Using EVMS to Manage Devices,” on page 240](#)

A.1 Using EVMS to Manage the System Device

The Novell Storage Services file system requires that the Enterprise Volume Management System (EVMS) be used as the volume manager of devices that contain (or will contain) NSS pools and volumes. NSS management tools cannot see devices managed by non-EVMS volume managers, so those devices and the space on them are unavailable for creating NSS pools and volumes. EVMS also makes it possible to use the full range of services that NSS offers. NSS is not supported or tested for non-EVMS volume managers.

IMPORTANT: NSS management tools require that the devices you use for NSS pools and volumes be managed by EVMS.

For a list of the NSS capabilities that are not available when using a non-EVMS volume manager, see [“NSS Limitations for Non-EVMS Volume Managers”](#) in the *OES 2 SP3: NSS File System Administration Guide for Linux*.

SUSE Linux Enterprise Server 10 supports LVM2 and EVMS as volume managers; however, a given device can be managed by only one volume manager at a time. LVM2 is the default volume manager for SUSE Linux. During the install, the YaST *Installation Settings* page automatically recommends a partitioning scheme that uses LVM2 as the volume manager of the primary device and that allocates the entire disk for the Linux system partitions and POSIX file systems.

This default partitioning scheme creates two problems for administrators who want to use NSS pools and volumes on the same device as the system partitions:

- ◆ NSS management tools cannot see devices that are managed by LVM2. Therefore, any unpartitioned free space on the system device is not available to be used for NSS pools and volumes.
- ◆ The default LVM partitioning scheme allocates the entire device for Linux POSIX file systems, so there is no free space available to be used later.

Possible workarounds for these problems are:

- ◆ **(Recommended) Use Additional Disks for NSS Pools and Volumes:** Use multiple devices on the server, and reserve the system device for system partitions and Linux POSIX file systems. Create NSS pools and volumes on the non-system disks only.

This solution does not require that the system device be managed by EVMS. During the install, use LVM2 as the volume manager for the system device. Do not partition or configure the non-system devices during the install. Otherwise, follow the install procedures described in [Section A.2, “Configuring the System Device to Use EVMS,” on page 234](#). Any free space on the LVM2-managed system device is not seen by NSS management tools and is not available for creating NSS pools.

After the install, you can create NSS pools or Linux POSIX file systems on other EVMS-managed devices.

- ◆ **(Supported) Modify the Partitioning Scheme During Install:** At install time, modify the partitioning scheme for the system device to use EVMS and to leave unpartitioned free space available on the device that can be used later for NSS pools.

NOTE: This option applies to physical machines. With virtual machines, you can easily add a second virtual disk to use for NSS pools and volumes.

Beginning in OES 2 SP3, the Partitioner in the YaST Install offers the *Create EVMS Based Proposal* option. Follow the procedure in [Section A.2, “Configuring the System Device to Use EVMS,” on page 234](#).

After the install, you can create NSS pools or Linux POSIX file systems on the system device and on any additional disks. For information about creating NSS and Linux POSIX file systems on EVMS-managed devices, see [Section A.4, “Using EVMS to Manage Devices,” on page 240](#).

A.2 Configuring the System Device to Use EVMS

Beginning in OES 2 SP3, the Partitioner in the YaST install offers the *Create EVMS Based Proposal* option. For unpartitioned devices over 20 GB in size, this option creates a boot partition and a system partition for the container that holds the swap and / (root) volumes.

- ◆ [Section A.2.1, “Understanding the EVMS–Based Partitioning Scheme,” on page 235](#)
- ◆ [Section A.2.2, “Prerequisites,” on page 235](#)
- ◆ [Section A.2.3, “Modifying the Installation Settings,” on page 235](#)

A.2.1 Understanding the EVMS–Based Partitioning Scheme

Using EVMS to manage the system device allows you to later add NSS pools and volumes on any unpartitioned free space on it. You must modify the partitioning scheme to use EVMS during the install. It is not possible to change the volume manager for the system device after the install.

Beginning in OES 2 SP3, the Partitioner in the YaST Install offers the *Create EVMS Based Proposal* option to automatically create an EVMS solution for the system device. For unpartitioned devices over 20 GB in size, this option creates a boot partition and a container for the swap and / (root) volumes in up to the first 20 GB, and leaves the remainder of the space on the device as unpartitioned free space.

[Table A-1](#) shows the default proposed setup for a machine with 768 MB RAM. The default swap size is 1 GB or larger, depending on the size of the RAM on your machine. The remainder of the device is left as unpartitioned free space.

Table A-1 Default EVMS Proposal for Devices over 20 GB in Size

Device	Size	Type	Mount Point
/dev/sda1	70.5 MB	Ext2	/boot
/dev/sda2	14.9 GB	Linux LVM	
/dev/evms/lvm2/system	14.9 GB	EVMS lvm2/system	
/dev/evms/lvm2/system/root	10.0 GB	EVMS	/
/dev/evms/lvm2/system/swap	1.1 GB	EVMS	swap

A.2.2 Prerequisites

This setup assumes that you have a single device in your physical server and you want to add NSS pools and volumes on the device after the install.

- ♦ The device must be unpartitioned.

If the device has existing partitions, you can remove them all or specify which ones to keep during the install as described in [Step 3 on page 236](#).

- ♦ The device must be over 20 GB in size.

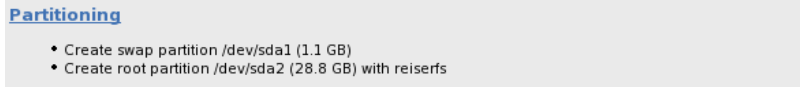
A.2.3 Modifying the Installation Settings

The procedure in this section describes how to use the *Create EVMS Based Proposal* option in the YaST Partitioner to modify the partitioning settings during the install of OES 2 SP3 or later.

IMPORTANT: The procedure assumes SCSI devices and refers to device node names with the *sdn* notation. Other device drivers use different notation for device node names. For example, IDE drives use the *hdn* notation.

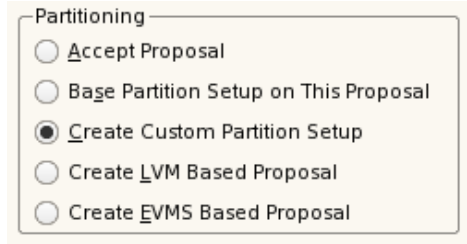
- 1 Begin the SLES 10 SP4 install for OES 2 SP3.
For information, see [“Installing OES 2 SP3 as a New Installation” on page 47](#).
- 2 When the installation reaches the Installations Settings page, select *Partitioning* to open the Partitioner and modify the default device setup.

For example, a default device setup might look like the one below:



3 If the device is already partitioned, you must remove some or all of the partitions before you use the EVMS-based partitioning proposal. If the device is unpartitioned, skip to [Step 4](#).

3a On the Suggested Partitioning page under *Partitioning*, select *Create Custom Partition Setup*.



3b On the Preparing Hard Disk: Step 1 page, select the disk, then click *Next*.



3c On the Preparing Hard Disk: Step 2 page under *Disk Areas to Use*, do one of the following to specify which partitions can be deleted:

WARNING: The data on the deleted partitions will no longer be available.

- ♦ **Keep One or More Partitions:** Select only those partitions that can be deleted; deselect (clear the check box) the partitions that you want to keep.

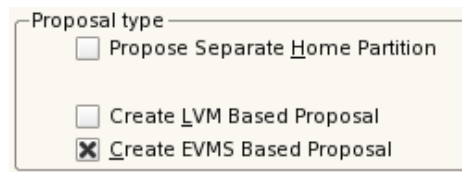


This allows you to keep partitions if they have data on them that you don't want to be deleted. This is very important if the disk was used previously, and has an NSS partition with pools that you want to keep.

- ♦ **Remove All Partitions:** Click *Use Entire Hard Disk*. All of the partitions on the disk are selected for deletion.

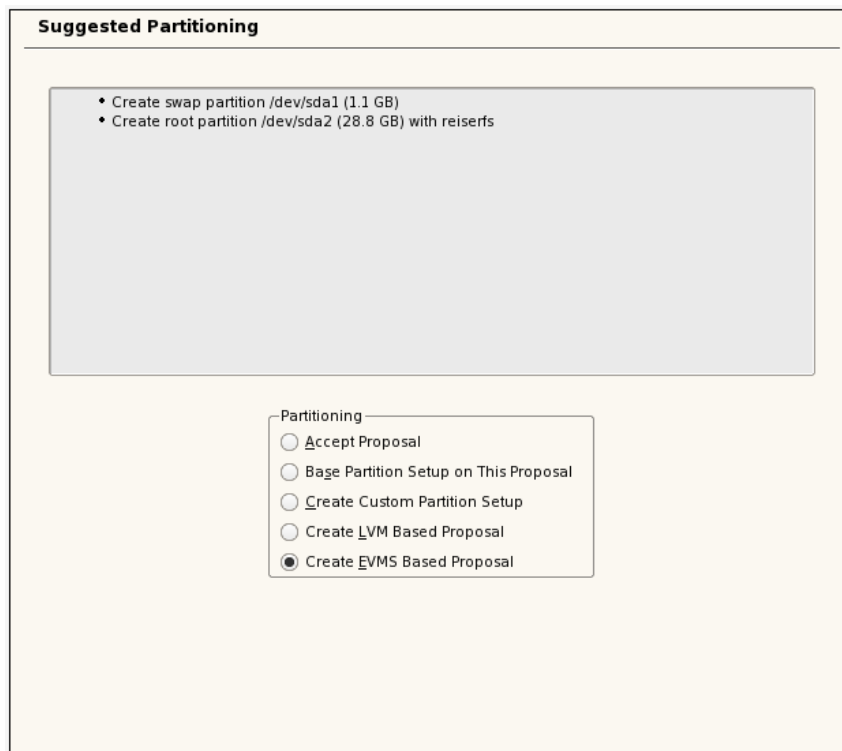


- 3d** On the Preparing Hard Disk: Step 2 page under *Proposal type*, select *Create an EVMS Based Proposal*.



- 3e** Skip to [Step 5](#).

- 4** If the device is unpartitioned, on the *Suggested Partitioning* page under *Partitioning*, select *Create EVMS Based Proposal*.



- 5** Click *Next* to create the default EVMS-based partitioning scheme.

This deletes the LVM2 proposed partitions and the related partition table on the disk and replaces them with the EVMS proposed partitions and setup described in [Section A.2.1, “Understanding the EVMS–Based Partitioning Scheme,”](#) on page 235.

On the Installation Settings page, the new EVMS partitioning scheme is displayed.

```

Partitioning
• Create boot partition /dev/sda1 (70.5 MB) with ext2
• Create partition /dev/sda2 (14.9 GB) with id=8E
• Create container lvm2/system from /dev/sda2
• Create EVMS volume /dev/evms/lvm2/system/root (10.0 GB) for / with reiserfs
• Create swap EVMS volume /dev/evms/lvm2/system/swap (1.1 GB)

```

6 Modify the software settings to install NSS.:

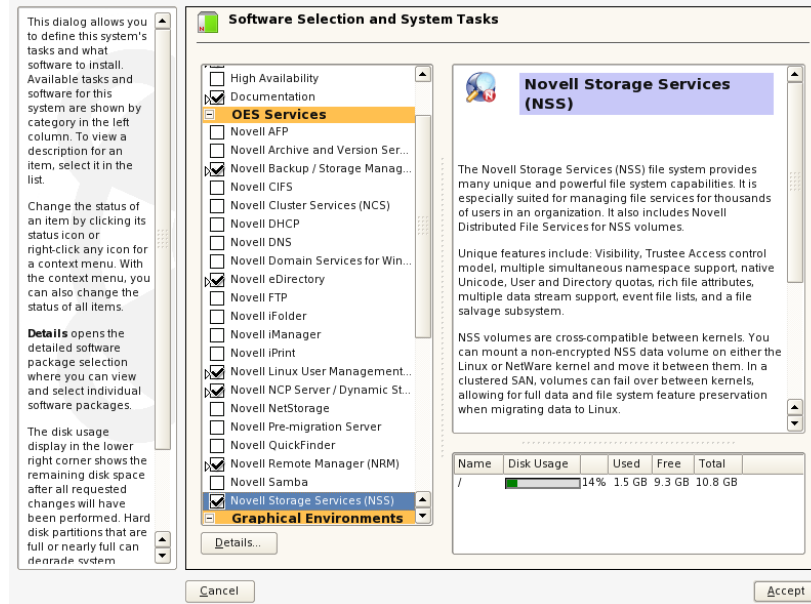
IMPORTANT: This step describes essential services for NSS. You can optionally install other OES 2 services on the same server. For information, see [Section 2.7, “Deciding What Patterns to Install,”](#) on page 29.

6a On the Installations Settings page, click *Software* to go to the Software Selections and System Tasks page.

6b Select *Novell Storage Services* from the available *OES Services* options.

Novell Distributed File Services is part of NSS, so it is automatically installed whenever you install NSS. When you select *Novell Storage Services*, the following additional OES services are automatically selected:

- ◆ Novell Backup / Storage Management Services
- ◆ Novell eDirectory
- ◆ Novell Linux User Management
- ◆ Novell NCP Server / Dynamic Storage Technology

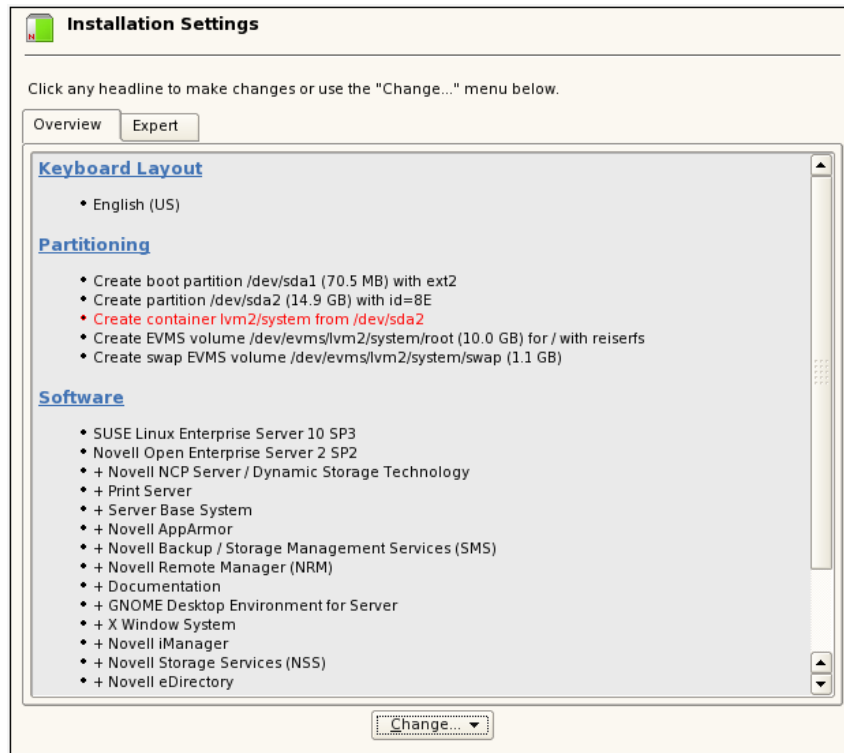


6c (Optional) Select *Novell iManager* to be installed on the server.

You must install iManager somewhere in the same tree as the server. If you install iManager and NSS on the same server, the storage-related plug-ins are automatically installed.

If you install iManager on a different server, make sure you install the storage-related plug-ins that you need to manage NSS file system and services. For information about installing storage-related plug-ins on an existing server, see “[Novell iManager and Storage-Related Plug-Ins](#)” in the *OES 2 SP3: NSS File System Administration Guide for Linux*.

6d Click *Accept* to return to the Installation Settings page.



7 If you are prompted to accept proprietary modules being installed, accept them.

8 Continue with the OES 2 installation.

Refer to the product documentation for information about configuring OES Services that are being installed. For general information about the install, see “[Installing OES 2 SP3 as a New Installation](#)” on page 47.

A.3 Installing SLES 10 SP4 and Post-Installing OES 2 SP3

It is also possible to install SLES 10 SP4 with EVMS as the system device, and then post-install OES 2 SP3 with NSS and other components.

1 Install SLES 10 SP4 and use EVMS as the system device.

For information, see “[Configuring the System Device at Install to Use EVMS](http://www.novell.com/documentation/sles10/stor_admin/data/configsysdevatinstall.html)” (http://www.novell.com/documentation/sles10/stor_admin/data/configsysdevatinstall.html) in the *SLES 10 SP4: Storage Administration Guide* (http://www.novell.com/documentation/sles10/stor_admin/data/bookinfo.html).

2 Use the Create EVMS Proposal option to partition the device with EVMS as the volume manager.

For instructions, see [Step 2](#) through [Step 5](#) in [Section A.2](#), “[Configuring the System Device to Use EVMS](#),” on page 234.

- 3 After the install and before you reboot the server, make sure to following the setup instructions in “After the Install” (http://www.novell.com/documentation/sles10/stor_admin/data/configsysdevatinstall.html#b1xfw90) in the *SLES 10 SP4: Storage Administration Guide* (http://www.novell.com/documentation/sles10/stor_admin/data/bookinfo.html).
- 4 In YaST, use the OES 2 SP3 Add-on disk to post-install NSS and other OES 2 components.
For information about selecting patterns, see [Step 6 in Section A.2, “Configuring the System Device to Use EVMS,” on page 234](#).
For information about post-installing, see [Chapter 4, “Installing or Configuring OES 2 SP3 on an Existing Server,” on page 111](#).
- 5 If the NSS services do not start automatically after you install NSS and reboot the server, use one of the following methods to start NSS. Thereafter, NSS should start automatically on reboot.

32-bit: At a terminal console prompt, enter the following commands:

```
cd /lib/modules/`uname -r`/updates
depmod -a
rcnovell-nss start
```

64-bit: At a terminal console prompt, enter

```
rcnovell-nss start
```

A.4 Using EVMS to Manage Devices

You can use the free space on the system device for NSS or Linux POSIX file systems. Consider the guidelines below when working with EVMS-managed devices.

- ♦ [Section A.4.1, “NSS File Systems on EVMS-Managed Devices,” on page 240](#)
- ♦ [Section A.4.2, “Linux POSIX File Systems on EVMS-Managed Devices,” on page 240](#)

A.4.1 NSS File Systems on EVMS-Managed Devices

Use only an NSS tool (such as NSSMU or the Storage plug-in to iManager) to create a pool on a new EVMS-managed device. The tool automatically carves out a partition with the DOS Segment Manager so that the device can be used later for either NSS or Linux POSIX file systems. Then the tool adds the NetWare Segment Manager and creates the NSS partition and pool.

For the best performance, if you plan to use a non-system device for both NSS and Linux POSIX file systems, create the NSS file systems on the device first. NSS partitions the device in a manner that ensures the best performance for the NSS file systems, and does not adversely affect performance for Linux POSIX file systems.

For instructions for creating pools and volumes, see the “[Managing NSS Pools](#)” and “[Managing NSS Volumes](#)” in the *OES 2 SP3: NSS File System Administration Guide for Linux*.

A.4.2 Linux POSIX File Systems on EVMS-Managed Devices

Use the Linux EVMSGUI tool (evmsgui) to create Linux POSIX file systems on the EVMS-managed device. For EVMS-managed devices, Linux POSIX file systems require that the Linux partitions be managed by the DOS Segment Manager (DOSSegMgr). This is laid down automatically if you first create an NSS file system on the device.

WARNING: EVMS administration utilities (evms, evmsgui, and evmsn) should not be running when they are not being used. EVMS utilities lock the EVMS engine, which prevents other EVMS-related actions from being performed. This affects both NSS and Linux POSIX volume actions.

NSS and Linux POSIX volume cluster resources should not be migrated while any of the EVMS administration utilities are running.

Failure to observe this warning could cause a system hang and lead to data corruption.

Consider the following guidelines when working with EVMSGUI to create a Linux POSIX partition:

Scenario	To create the Linux partition in evmsgui:
Free space is controlled by the DOS Segment Manager.	Create the Linux partition as usual.
Disk is not initialized.	<ol style="list-style-type: none">1. Select <i>No</i> at the prompt to initialize. On a pure SLES system (no NSS), ignore this step.2. Delete the disk object from the <i>Volumes</i> tab.3. Add the DOS Segment Manager to the device.4. Create the Linux partition as usual.
Free space is controlled by the NetWare Segment Manager.	<p>Do one of the following:</p> <ul style="list-style-type: none">◆ If no partitions are on the device, remove the NetWare Segment Manager from the device, add the DOS Segment Manager, then create the partition as usual. <p>WARNING: Changing the segment manager initializes the disk again (destroys existing data), so you should do this only with a disk that has no partitions on it, or if you do not want any of the partitions that are currently on the disk.</p> <ul style="list-style-type: none">◆ If partitions exist, reboot the server to automatically give control of the device back to the DOS Segment Manager, then create the partition as usual.

If no partitions are on the device, use the following procedure to add a DOS Segment Manager to a non-clustered device:

- 1 Log in as the root user, open a terminal console, then enter

```
evmsgui
```
 - 2 If necessary, remove the NetWare Segment Manager:
 - 2a Click the *Disks* tab, then locate and select the device, such as device *sdb*.
 - 2b Right-click the device, then select *Remove segment manager from Object*.
This option appears only if there is an existing segment manager for the selected disk.
 - 2c Select the listed segment manager, click *Remove*, then click *OK*.
-

WARNING: All data on the selected disk space is destroyed.

- 2d Click *Save*, then click *Save* again to save your changes.

3 Add the DOS Segment Manager:

- 3a** From the EVMSGUI menu, click *Actions > Add > Segment Manager to Storage Object*.
- 3b** On the Add Segment Manager to Storage Object page, select *DOS Segment Manager*, then click *Next*.
- 3c** On the Select Plugin Acceptable Objects page, select the device where you want to add the segment manager, then click *Next*.
- 3d** On the Configurable Options page, select the disk type (Linux is the default), click *Add*, then click *OK*.
- 3e** Click *Save*, then click *Save* again to save your changes.

4 Create a segment for the DOS Segment Manager.

The DOS Segment Manager requires you to create a segment before creating an EVMS volume. Without a segment, the additional segment manager does not appear when you attempt to create an EVMS volume.

- 4a** From the evmsgui menu, click *Actions > Create > Segment*.
- 4b** On the Create Disk Segment page, select *DOS Segment Manager*, then click *Next*.
- 4c** On the Select Plugin Acceptable Objects page, select the device where you want to add the segment, then click *Next*.
- 4d** Specify the size of the segment, the partition type (such as Linux LVM), click *Create*, then click *OK*.
- 4e** Click *Save*, then click *Save* again to save your changes.

For information about adding or changing segment managers when you are clustering a shared device with Novell Cluster Services, see "[Creating Linux POSIX Volumes on Shared Devices](#)" in the *OES 2 SP3: Novell Cluster Services 1.8.8 Administration Guide for Linux*.

B OES 2 SP3 File and Data Locations

This section contains information about the general rules and conventions that Novell follows when determining where various data types and program components are stored on the Linux file system.

Where possible, we have tried to ensure that Open Enterprise Server (OES) 2 SP3 components follow Linux Standard Base (LSB) requirements regarding file location. Efforts to do this are detailed here.

- ♦ [Section B.1, “General Rules,” on page 243](#)
- ♦ [Section B.2, “Exceptions,” on page 244](#)

B.1 General Rules

Where possible, product design has followed these rules:

- ♦ **/opt/novell:** Contains all static data in the following standard subdirectories.

/opt/novell/bin	Executable files that are used by multiple products or are intended to be executed by an end user.
/opt/novell/ <i>product</i> /sbin	Executable files that are used only by a product and are not executed by an end user.
/opt/novell/lib	Shared libraries that are used by multiple products and shared or static libraries that are part of an SDK.
/opt/novell/include	Header files for SDKs, typically in a product subdirectory.
/opt/novell/oes_install	The OES installation and uninstallation code.

- ♦ **/etc/opt/novell:** Generally contains host-specific configuration data.
If a product has a single configuration file, it is named *product* or *service.conf*.
If a product uses multiple configuration files, they are placed in a subdirectory named for the product or service.
- ♦ **/etc/opt/novell/*service_name*:** Contains various OES service configuration files.
- ♦ **/var/opt/novell:** Contains all variable data.
Variable data (data that changes during normal run time operations) is stored in a product or service subdirectory.
- ♦ **/var/opt/novell/log:** Generally contains log files.
If a product or service has a single log file, it is stored in a file with the product or service name.
If a product or service has multiple log files, they are stored in a subdirectory named for the product or service.
- ♦ All files and directories that could not follow the above rules have the prefix *novell-* where possible.

B.2 Exceptions

Some files must reside in nonstandard locations for their products to function correctly. Two examples are init scripts, which must be in `/etc/init.d`, and cron scripts, which must be in `/etc/cron.d`. When possible, these files have a `novell-` prefix.

When standard conventions preclude the use of prefixes (such as PAM modules, which use suffixes instead of prefixes), the standard conventions are followed.

C Upgrading to OES 2 SP3 Through a ZENworks Linux Management Server

Use the information in the sections that follow to upgrade an OES 2 SP2 server to OES 2 SP3 through a ZENworks Linux Management (ZLM) server and either the SP3 patch channel or a downloaded OES 2 SP3 ISO image file.

- ♦ [Section C.1, “Using a ZLM Server and the Patch Channel to Upgrade,” on page 245](#)
- ♦ [Section C.2, “Using a ZLM Server and an ISO Image File to Upgrade,” on page 252](#)
- ♦ [Section C.3, “Known Issues,” on page 258](#)

C.1 Using a ZLM Server and the Patch Channel to Upgrade

NOTE: All of the examples in this section reflect the x86_64 (64-bit) platform.

The information and instructions in the following sections help you perform an unattended, online upgrade from Open Enterprise Server (OES) 2 SP2 to OES 2 SP3 by using ZENworks Linux Management (ZLM) and the OES 2 SP3 patch channel.

After completing the instructions in the following sections, OES 2 SP2 servers are upgraded according to the schedule you set.

- ♦ [Section C.1.1, “Preparing the Environment,” on page 245](#)
- ♦ [Section C.1.2, “Mirroring the Channels to Your ZENworks Linux Management Server,” on page 246](#)
- ♦ [Section C.1.3, “Creating OES 2 SP3 Bundles,” on page 247](#)
- ♦ [Section C.1.4, “Assigning the Bundles and Scheduling Upgrades,” on page 249](#)
- ♦ [Section C.1.5, “Creating the answer and prereboot.sh Files,” on page 249](#)
- ♦ [Section C.1.6, “Post-Installation Script File,” on page 250](#)
- ♦ [Section C.1.7, “Sample XML file for Mirroring,” on page 251](#)

C.1.1 Preparing the Environment

Before you can use ZENworks Linux Management to upgrade OES 2 SP2 servers to OES 2 SP3, you must have the following:

- ♦ The ZENworks Linux Management 7.3 IR3 server installed and running on your network.
- ♦ The ZENworks Linux Management 7.3 IR3 Agent installed on each OES 2 SP2 server that you plan to upgrade.

IMPORTANT: The agent included with OES provides package-management capabilities through the ZENworks Management Daemon. Unless the full agent is installed, updates cannot be scheduled from the ZENworks Linux Management server.

- ◆ Each OES 2 SP2 server registered with the ZENworks Linux Management server.
- ◆ Each OES 2 SP2 server updated with the latest OES 2 SP2 and SUSE Linux Enterprise Server (SLES) 10 SP3 patches.

C.1.2 Mirroring the Channels to Your ZENworks Linux Management Server

Use the instructions in this section to create a mirror of the following OES 2 SP3 patch channels on your ZENworks Linux Management server.

- ◆ OES2-SP3-Online
 - ◆ OES2-SP3-Pool
- 1 Save the `zlm-mirror-conf.xml` file to a working area on your workstation or server. For a sample file, see [Section C.1.7, “Sample XML file for Mirroring,”](#) on page 251.
 - 2 Open `zlm-mirror-conf.xml` in a UNIX text editor and customize it as shown in the following table:

Replace/Remove	With
USERID	<p>The DeviceID of your ZENworks Linux Management server, which is used to authenticate to the <code>nu.novell.com</code> server.</p> <ol style="list-style-type: none">1. To find the DeviceID, log in as <code>root</code> and enter the following command at a terminal prompt: <pre>cat /etc/zmd/deviceid</pre>The DeviceID is prepended to the terminal prompt. For example, if <code>123abc:myserver/</code> is displayed, the DeviceID is <code>123abc</code>.
PASSWORD	<p>The Secret of your ZENworks Linux Management server.</p> <ol style="list-style-type: none">1. To find the Secret, log in as <code>root</code> and enter the following command at a terminal prompt: <pre>cat /etc/zmd/secret</pre>The Secret is prepended to the terminal prompt. For example, if <code>456def:myserver/</code> is displayed, the Secret is <code>456def</code>.
ZLM-ADMINID	<p>The account name that the mirror operation uses to attach to the local ZENworks Linux Management server.</p> <p>Replace this only if you are using a different server administrative account to mirror the channels.</p>
ZLM-ADMINPASSWORD	<p>The password for the administrative account (the default is <code>administrator</code>) that the mirror operation uses to attach to the local server.</p>
<Target> </Target>	<p>The two <code><Target> . . . </Target></code> entries in each section indicate that both the <code>i586</code> (32-bit) and <code>x86_64</code> (64-bit) patches are needed. If you have only one architecture type deployed, you can remove the entry for the architecture you don't use.</p>

IMPORTANT: These customizations are required for the mirror operation to succeed. Experienced administrators might want to make further modifications to the `zlm-mirror-conf.xml` file, but such modifications should be confined to those fields that have no values specified. For information on customizing the file, see the information in [Mirroring Software \(http://www.novell.com/documentation/zlm73/lm7admin/?page=/documentation/zlm73/lm7admin/data/bvel3dn.html#bvel3dn\)](http://www.novell.com/documentation/zlm73/lm7admin/?page=/documentation/zlm73/lm7admin/data/bvel3dn.html#bvel3dn) and `zlmirror(1)` (<http://www.novell.com/documentation/zlm73/lm7admin/?page=/documentation/zlm73/lm7admin/data/b74o97x.html#b74o97x>) in the *Novell ZENworks 7.3 Linux Management Administration Guide* (<http://www.novell.com/documentation/zlm73/lm7admin/?page=/documentation/zlm73/lm7admin/data/front.html>).

- 3 If the `zlm-mirror-conf.xml` file is on your workstation, copy it to a directory of your choosing on the ZENworks Linux Management server, for example `/root/zlm_conf_files`.
- 4 As the `root` user at a terminal prompt, change to the directory containing the `zlm-mirror-conf.xml` file and enter the following command:

```
zlmirror m -c zlm-mirror-conf.xml -v --force-nevra
```

The files start downloading to the server. Depending on your download speed, the mirror operation could take a few hours to complete.

C.1.3 Creating OES 2 SP3 Bundles

For the upgrade process, you need to create the following bundles on the ZLM server:

- ♦ “OES2-SP3-file-bundle” on page 247
- ♦ “OES2-SP3-firstboot-bundle” on page 248

OES2-SP3-file-bundle

You must create the [answer file](#) and the [prereboot.sh](#) file before executing the following steps.

- 1 Log in to ZENworks Control Center.
- 2 Click *Bundles*.
- 3 In the *Bundles* panel, click *New > Bundle*.
- 4 Select *File Bundle*, then click *Next*.
- 5 In the *Name* field, type `OES2-SP3-file-bundle`.
- 6 Click *Next*.

The file bundle is ready to have files added to it.

- 7 Add the [prereboot.sh](#) file to `OES2-SP3-file-bundle`:

7a In the *Files* panel, click *Add > Upload*.

7b In the *Destination* field, type `/tmp`.

7c In the *Target Platforms* list, select `sles-10-x86_64`.

7d Click *Add File*, browse to and select the `prereboot.sh` script file on your workstation or server, then click *OK*.

The `prereboot.sh` file is set to be uploaded to the `/tmp` directory on each server being upgraded.

- 8 Add the [answer file](#) to OES2-SP3-file-bundle:
 - 8a In the *Files* panel, click *Add > Upload*.
 - 8b In the *Destination* field, type `/opt/novell/oes-install`.
 - 8c In the *Target Platforms* list, select `sles-10-x86_64`.
 - 8d Click *Add File*, browse to and select the answer file on your workstation or server, then click *OK*.

The `prereboot.sh` and answer files are listed.

- 9 Below the *Files* panel, click *Next*.
An empty *Scriptable Actions* list is displayed.
- 10 Click *New*.
- 11 In the *Scriptable Action* drop-down list, select *Post-Installation*.
- 12 In the *Script to run* drop-down list, select *Define your own script*.
- 13 Copy and paste the following contents to the *Script Content* box:

```
#!/bin/sh
/etc/init.d/atd start
at now + 2 minutes -f /tmp/prereboot.sh
```

- 14 Click *OK > Next*.
- 15 Click *Finish > OK*.

The file bundle is created.

OES2-SP3-firstboot-bundle

- 1 Log in to ZENworks Control Center.
- 2 Click *Bundles*.
- 3 In the *Bundles* panel, click *New > Bundle*.
- 4 Select *RPM Package Bundle*, then click *Next*.
- 5 In the *Name* field, type `OES2-SP3-firstboot-bundle`.
- 6 Click *Next*.
The file bundle is ready to have files added to it.
- 7 In the *Packages* panel, click *Add > Import From Repository*.
- 8 In the *Search* panel > *Name* field, type `yast2-firstboot` and click *Search*.
- 9 Select *rpm*, then click *OK*.
The `yast2-firstboot` RPM is available as part of the SLES 10 SP4 bundle on the ZENworks Linux Management server.
- 10 In the *Packages* panel, click *Add > Import From Repository*.
- 11 In the *Search* panel > *Name* field, type `evms` and click *Search*.
- 12 Select the rpm `evms2.5.5-24.73.17`, then click *OK*.
- 13 In the *Packages* panel, click *Add > Import From Repository*.
- 14 In the *Search* panel > *Name* field, type `ruby`, then click *Search*.
- 15 Select the `ruby-1.8.6.p369-0.5` and `ruby-devel-1.8.6.p369-0.5` RPMs, then click *OK*.
- 16 Click *Next*.
- 17 Under *Scriptable Actions*, click *New*.

- 18 In the *Scriptable Action* drop-down list, select *Post-Installation*.
- 19 In the *Script to Run* drop-down list, select *Define your own script*.
- 20 Copy and paste the contents from [Section C.2.6, “Post-Installation Script File,”](#) on page 257 to the *Script Content* box.
- 21 Click *OK > Next*.
- 22 Click *Finish > OK*.
The post-installation script is added to the Scriptable Actions panel.
- 23 After creating the `OES2-SP3-firstboot-bundle`, click the bundle and go to the *Details* tab. For the `yast2-firstboot` RPM, ensure that the state of `freshen` is set to `false`.

C.1.4 Assigning the Bundles and Scheduling Upgrades

Assign the bundles to the OES 2 SP2 servers, then schedule the bundles to install appropriately:

- 1 In the ZENworks Control Center, click *Bundles*.
- 2 In the left column, select `oes2-sp3-pool-catalog`.
- 3 Click *Action > Assign Catalog*.
- 4 Click *Add*, click the down-arrow by *Servers*, then select the servers that you want to assign the bundles to.
- 5 Click *OK > Next*.
- 6 Schedule the catalog to install according to your organization’s policy.
- 7 In the left column, select `OES2-SP3-Online-bundle`, `OES2-SP3-file-bundle`, and `OES2-SP3-firstboot-bundle`.
- 8 Click *Action > Assign Bundle*.
- 9 Click *Add*, click the down-arrow by *Servers*, then select the servers you want to upgrade.
- 10 Click *OK > Next*.
- 11 Schedule the bundles to install according to your organization’s policy.
- 12 Click *Next > Finish > OK*.

IMPORTANT: The servers you selected in the preceding steps are now ready to be upgraded to OES 2 SP3. The actual upgrade operations occur automatically as scheduled.

C.1.5 Creating the answer and prereboot.sh Files

- ♦ [“answer file”](#) on page 249
- ♦ [“prereboot.sh file”](#) on page 250

answer file

For the upgrade process to run without user intervention, each SP3 server must have an eDirectory password answer file for the YaST install.

- 1 As `root`, open a terminal prompt.
- 2 At the prompt, enter the following command:

```
sudo yast2 create-answer-file ldap_password optional_domain_admin_password
```

Replace *ldap_password* with the LDAP (eDirectory) Admin password and *optional_domain_admin_password* with the Domain Services for Windows (DSfW) Domain Administrator password, if it is needed for any of the servers being upgraded. (The existence of a second password in the answer file does not affect the upgrade process on servers that don't have DSfW installed.)

IMPORTANT: Because passwords on the command line might include special characters, it is a good idea to surround the password with single quotes. For example, if the password is pa\$\$word, enter it as 'pa\$\$word'.

All the uses of an exclamation mark (!) require that you escape the character by using a backslash (\). For example, the password novell! must be specified as novell\! or preferably 'novell/!'.

A dash (-) used at the beginning of a password also requires escaping. For example, -novell- must be specified as \-novell- or preferably '\-novell-'.

- 3 Press *Enter* to close the confirmation message.
- 4 From your working directory, copy the resulting answer file to the workstation or server that you will use to create the bundles.

prereboot.sh file

The `prereboot.sh` script checks whether the bundles are installed. On successful installation of all bundles, it triggers a reboot.

- 1 Open any text editor.
- 2 Copy and paste the following text into the text editor, then save it as `prereboot.sh`. Copy the `prereboot.sh` file to the workstation or server that you will use to create the bundles.

```
#!/bin/bash

status="j"
while [ $status != "ii" ] ; do
sleep 10
status=i`rug bl |grep OES2-SP3-Online-bundle |cut -f1 -d '|'`
done
status="j"
while [ $status != "ii" ] ; do
sleep 10
status=i`rug bl |grep OES2-SP3-firstboot-bundle |cut -f1 -d '|'`
done

sleep 60
/sbin/reboot
```

IMPORTANT: In the above script, the bundle names are OES2-SP3-Online-bundle and OES2-SP3-firstboot-bundle. If your bundle name is different, change the script accordingly. If the bundle names are inaccurate, the reboot is not triggered after installation of the bundles.

C.1.6 Post-Installation Script File

The following post-installation script is added to the OES2-SP3-firstboot-bundle. See [Step 20 on page 249](#).

```

#!/bin/sh

touch /etc/reconfig_system
chkconfig firstboot on

cat > /etc/YaST2/firstboot.xml << EndOfText
<?xml version="1.0"?>
<!DOCTYPE productDefines SYSTEM "/usr/share/YaST2/control/control.dtd">
<productDefines xmlns="http://www.suse.com/1.0/yast2ns"
  xmlns:config="http://www.suse.com/1.0/configns">

  <!--
  : firstboot.xml 35106 2007-01-05 13:42:15Z jsrain $
  Work around for the text domain
  textdomain="firstboot"
  -->

  <textdomain>firstboot</textdomain>
  <workflows config:type="list">
    <workflow>
      <defaults>
        <enable_back>yes</enable_back>
        <enable_next>yes</enable_next>
        <archs>all</archs>
      </defaults>
      <stage>firstboot</stage>
      <label>Channel Upgrade</label>
      <mode>installation</mode>
      <modules config:type="list">
        <module>
          <label>upgrade</label>
          <enabled config:type="boolean">true</enabled>
          <name>channel-upgrade-oes</name>
        </module>
      </modules>
    </workflow>
  </workflows>
</productDefines>
EndOfText

```

C.1.7 Sample XML file for Mirroring

```

<ZLMMirrorConf>
  <Session>
    <RemoteServer>
      <Base>https://nu.novell.com/repo</Base>
      <Proxy></Proxy>
      <Type>nu</Type>
      <SystemID></SystemID>
      <User>USERID</User>
      <Password>PASSWORD</Password>
    </RemoteServer>
    <LocalServer>
      <Base></Base>
      <Type>zlm</Type>
      <User>ZLM-ADMINID</User>
      <Password>ZLM-ADMINPASSWORD</Password>
    </LocalServer>
    <Catalog>
      <Name>OES2-SP3-Pool</Name>
      <LocalName>oes2-sp3-pool-catalog</LocalName>
      <Folder>OES2-SP3</Folder>
      <Target>sles-10-x86_64</Target>
      <ExcludeTarget></ExcludeTarget>
      <Bundle></Bundle>
      <ExcludeBundle></ExcludeBundle>
      <Package></Package>
      <ExcludePackage></ExcludePackage>
    </Catalog>
  </Session>
</ZLMMirrorConf>

```

```

</Catalog>
<Catalog>
  <Name>OES2-SP3-Online</Name>
  <LocalName>oes2-sp3-online-catalog</LocalName>
  <Folder>OES2-SP3</Folder>
  <Target>sles-10-x86_64</Target>
  <ExcludeTarget></ExcludeTarget>
  <Bundle></Bundle>
  <ExcludeBundle></ExcludeBundle>
  <Package></Package>
  <ExcludePackage></ExcludePackage>
</Catalog>
</Session>
</ZLMMirrorConf>

```

C.2 Using a ZLM Server and an ISO Image File to Upgrade

NOTE: All of the examples in this section reflect the x86_64 (64-bit) platform.

The information and instructions in the following sections help you perform an unattended, online upgrade from Open Enterprise Server (OES) 2 SP2 to OES 2 SP3 by using ZENworks Linux Management (ZLM) and an OES 2 SP3 ISO image file.

After completing the instructions in the following sections, OES 2 SP2 servers are upgraded according to the schedule you set.

- ◆ [Section C.2.1, “Preparing the Environment,” on page 252](#)
- ◆ [Section C.2.2, “Creating OES 2 SP3 Bundles,” on page 253](#)
- ◆ [Section C.2.3, “Assigning the Bundles and Scheduling Upgrades,” on page 255](#)
- ◆ [Section C.2.4, “Creating the answer and prereboot.sh Files,” on page 255](#)
- ◆ [Section C.2.5, “Creating the pkgadd.sh file,” on page 256](#)
- ◆ [Section C.2.6, “Post-Installation Script File,” on page 257](#)

C.2.1 Preparing the Environment

Before you can use ZENworks Linux Management to upgrade OES 2 SP2 servers to OES 2 SP3, you must have the following:

- ◆ The ZENworks Linux Management 7.3 IR3 server installed and running on your network.
- ◆ The ZENworks Linux Management 7.3 IR3 Agent installed on each OES 2 SP2 server that you plan to upgrade.

IMPORTANT: The agent included with OES provides package-management capabilities through the ZENworks Management Daemon. Unless the full agent is installed, updates cannot be scheduled from the ZENworks Linux Management server.

- ◆ Each OES 2 SP2 server registered with the ZENworks Linux Management server.

C.2.2 Creating OES 2 SP3 Bundles

For the upgrade process, you need to create the following bundles on the ZLM server:

- ♦ “OES2SP3-bundle” on page 253
- ♦ “OES2SP3-file-bundle” on page 253
- ♦ “OES2SP3-firstboot-bundle” on page 254

OES2SP3-bundle

When you create this bundle, all of the OES 2 SP3 RPMs are added to it.

- 1 Download the OES 2 SP3 ISO image for the x86_64 (64-bit) platform.
- 2 Create a `pkgadd.sh` file and copy it to the ZLM server. For more information on the `pkgadd.sh` file, refer to the “[Creating the pkgadd.sh file](#)” on page 256.
- 3 Add the execute permission to the `pkgadd.sh` file:

```
chmod +x pkgadd.sh
```

- 4 On the ZLM server, mount the OES 2 SP3 ISO image under the directory where you copied `pkgadd.sh`.

For example, if the `pkgadd.sh` file is copied to the `/home/user1/` directory, mount the OES 2 SP3 ISO image on `/home/user1/oes2sp3/`.

- 5 Execute the following command:

```
./pkgadd.sh OES2SP3-bundle sles-10-x86_64
```

This creates the OES2SP3-bundle for the x86_64 platform with OES 2 SP3 RPMs.

OES2SP3-file-bundle

You must create the [answer file](#) and the [prereboot.sh file](#) before executing the following steps.

- 1 Log in to ZENworks Control Center.
- 2 Click *Bundles*.
- 3 In the *Bundles* panel, click *New > Bundle*.
- 4 Select *File Bundle*, then click *Next*.
- 5 In the *Name* field, type `OES2SP3-file-bundle`.
- 6 Click *Next*.

The file bundle is ready to have files added to it.

- 7 Add the [prereboot.sh file](#) to `OES2SP3-file-bundle`:

7a In the *Files* panel, click *Add > Upload*.

7b In the *Destination* field, type `/tmp`.

7c In the *Target Platforms* list, select `sles-10-x86_64`.

7d Click *Add File*, browse to and select the `prereboot.sh` script file on your workstation or server, then click *OK*.

The `prereboot.sh` file is set to be uploaded to the `/tmp` directory on each server being upgraded.

- 8 Add the [answer file](#) to OES2SP3-file-bundle:
 - 8a In the *Files* panel, click *Add > Upload*.
 - 8b In the *Destination* field, type `/opt/novell/oes-install`.
 - 8c In the *Target Platforms* list, select `sles-10-x86_64`.
 - 8d Click *Add File*, browse to and select the answer file on your workstation or server, then click *OK*.

The `prereboot.sh` and answer files are listed.

- 9 Below the *Files* panel, click *Next*.
An empty *Scriptable Actions* list is displayed.
- 10 Click *New*.
- 11 In the *Scriptable Action* drop-down list, select *Post-Installation*.
- 12 In the *Script to run* drop-down list, select *Define your own script*.
- 13 Copy and paste the following contents to the *Script Content* box:

```
#!/bin/sh
/etc/init.d/atd start
at now + 2 minutes -f /tmp/prereboot.sh
```

- 14 Click *OK > Next*.
- 15 Click *Finish > OK*.

The file bundle is created.

OES2SP3-firstboot-bundle

- 1 Log in to ZENworks Control Center.
- 2 Click *Bundles*.
- 3 In the *Bundles* panel, click *New > Bundle*.
- 4 Select *RPM Package Bundle*, then click *Next*.
- 5 In the *Name* field, type `OES2SP3-firstboot-bundle`.
- 6 Click *Next*.
- 7 In the *Packages* panel, click *Import From Repository*
- 8 In the *Search* panel *> Name* field, type `yast2-firstboot` and click *Search*.
- 9 Select *RPM*, then click *OK*.

The `yast2-firstboot rpm` is available as part of the SLES10 SP4 bundle on the ZENworks Linux Management (ZLM) server. If the SLES 10 SP4 bundle is not available on the ZLM server, then copy `yast2-firstboot.rpm` from the SLES 10 SP4 ISO image and upload the RPM to this bundle.

- 10 Click *Next*.
- 11 Under *Scriptable Actions*, click *New*.
- 12 In the *Scriptable Action* drop-down list, select *Post-Installation*.
- 13 In the *Script to Run* drop-down list, select *Define your own script*.
- 14 Copy and paste the contents from [Section C.2.6, "Post-Installation Script File,"](#) on page 257 to the *Script Content* box.
- 15 Click *OK > Next*.

- 16 Click *Finish* > *OK*.

The post-installation script is added to the Scriptable Actions panel.

C.2.3 Assigning the Bundles and Scheduling Upgrades

Assign the bundles to the OES 2 SP2 servers, then schedule them to install appropriately.

- 1 In the ZENworks Control Center, click *Bundles*.
- 2 In the left column, select *OES2SP3-bundle*, *OES2SP3-file-bundle*, and *OES2SP3-firstboot-bundle*.
- 3 Click *Action* > *Assign Bundle*.
- 4 Click *Add*, click the down-arrow by *Servers*, then select the servers you want to upgrade.
- 5 Click *OK* > *Next*.
- 6 Schedule the bundles to install according to your organization's policy.
- 7 Click *Next* > *Finish* > *OK*.

IMPORTANT: The servers you have selected in the preceding steps are now ready to be upgraded to OES 2 SP3. The actual upgrade operations occur automatically as scheduled.

C.2.4 Creating the answer and prereboot.sh Files

- ♦ [“answer file” on page 255](#)
- ♦ [“prereboot.sh file” on page 256](#)

answer file

For the upgrade process to run without user intervention, each SP3 server must have an eDirectory password answer file for the YaST install.

- 1 As *root*, open a terminal prompt.
- 2 At the prompt, enter the following command:

```
sudo yast2 create-answer-file ldap_password optional_domain_admin_password
```

Replace *ldap_password* with the LDAP (eDirectory) Admin password and *optional_domain_admin_password* with the Domain Services for Windows (DSfW) Domain Administrator password, if it is needed for any of the servers being upgraded. (The existence of a second password in the answer file does not affect the upgrade process on servers that don't have DSfW installed.)

IMPORTANT: All the uses of an exclamation mark (!) require that you escape the character by using a backslash (\). For example, the password *novell!* must be specified as *novell\!*.

A dash (-) used at the beginning of a password also requires escaping. For example, *-novell-* must be specified as *\-novell-*.

- 3 Press *Enter* to close the confirmation message.
- 4 From your working directory, copy the resulting *answer* file to the workstation or server that you will use to create the bundles.

prereboot.sh file

The `prereboot.sh` script checks whether the bundles are installed. On successful installation of all bundles, it triggers a reboot.

- 1 Open any text editor.
- 2 Copy and paste the following text into a text editor, then save it as `prereboot.sh`

```
#!/bin/bash

status="j"
while [ $status != "ii" ] ; do
sleep 10
status=i`rug bl |grep OES2SP3-bundle |cut -f1 -d '|'`
done
status="j"
while [ $status != "ii" ] ; do
sleep 10
status=i`rug bl |grep OES2SP3-firstboot-bundle |cut -f1 -d '|'`
done

sleep 60
/sbin/reboot
```

IMPORTANT: In the above script, the bundle names are `OES2SP3-bundle` and `OES2SP3-firstboot-bundle`. If your bundle name is different, change the script accordingly. If the bundle names are inaccurate, the reboot is not triggered after installation of the bundles.

C.2.5 Creating the `pkgadd.sh` file

This script is used to create a bundle from an ISO image.

Usage: `pkgadd.sh <bundle_name> <arch/target>`

To create the `pkgadd.sh` file:

- 1 Open any text editor.
- 2 Copy and paste the following text into the text editor, then save it as `pkgadd.sh`.

```
#!/bin/bash
#
# Run this program from a directory filled with RPMS to load them into a bundle
in ZLM.
#
# All rpms, except src and nosrc rpms, in the directory and all of its
subdirectories will be loaded into the bundle and architecture indicated below.
#
# Don't forget to enter your admin password below and update the bundle name
and architecture below.
#
if [ $# -lt 2 ]

then

    echo "Usage :: pkgadd.sh <bundle_name> <arch> "
    echo "Example :: pkgadd.sh SLES-9-Distro sles-9-i586 "

exit

fi

# Create the bundle to load into
```



```

zlman -V -U administrator -P novell bc $1

# loop through these directories and load all of the rpms
STARTDIR=`pwd`

for dir in `find . |grep .rpm |grep -v src.rpm|grep -v nosrc.rpm|awk -F / '{NF-
-; OFS="/"; print $0}'| sort | uniq`; do

    cd $STARTDIR

    cd $dir

    echo "Loading RPM's from `pwd`"

    zlman -V -U administrator -P novell bap $1 $2 *.rpm --force-nevra --freshen;

done

```

C.2.6 Post-Installation Script File

The following post-installation script is added to the OES 2 SP3-firstboot-bundle. See [Step 14 on page 254](#).

```

#!/bin/sh

touch /etc/reconfig_system
chkconfig firstboot on

cat > /etc/YaST2/firstboot.xml << EndOfText
<?xml version="1.0"?>
<!DOCTYPE productDefines SYSTEM "/usr/share/YaST2/control/control.dtd">
<productDefines xmlns="http://www.suse.com/1.0/yast2ns"
    xmlns:config="http://www.suse.com/1.0/configns">

    <!--
    : firstboot.xml 35106 2007-01-05 13:42:15Z jsrain $
    Work around for the text domain
    textdomain="firstboot"
    -->

    <textdomain>firstboot</textdomain>
    <workflows config:type="list">
        <workflow>
            <defaults>
                <enable_back>yes</enable_back>
                <enable_next>yes</enable_next>
                <archs>all</archs>
            </defaults>
            <stage>firstboot</stage>
            <label>Channel Upgrade</label>
            <mode>installation</mode>
            <modules config:type="list">
                <module>
                    <label>upgrade</label>
                    <enabled config:type="boolean">true</enabled>
                    <name>channel-upgrade-oes</name>
                </module>
            </modules>
        </workflow>
    </workflows>
</productDefines>
EndOfText

```

C.3 Known Issues

- ♦ [Section C.3.1, “oes-SPident Command Does Not Display the OES 2 SP3 Version,” on page 258](#)
- ♦ [Section C.3.2, “After Installing Bundles, the Status of ZLM Bundle Does Not Change to Install,” on page 258](#)

C.3.1 oes-SPident Command Does Not Display the OES 2 SP3 Version

This issue occurs because of duplicate files. When you upgrade the servers to OES 2 SP3, the system contains both the old and new versions of the `novell-ifolder-mono` RPM.

To resolve this issue, delete the older version of the `novell-ifolder-mono-2.4-0.13` RPM.

C.3.2 After Installing Bundles, the Status of ZLM Bundle Does Not Change to Install

If the iFolder service is running on the OES 2 SP2 server, the status of the bundles does not change to Installed.

To resolve this issue, execute the following command:

```
rug ref
```

The bundle status changes to Installed and a reboot is triggered.

D Documentation Updates

To help you keep current on updates to the documentation, this section contains information on content changes that have been made in this guide since publication for the FCS release.

This document is provided on the Web in HTML and PDF, and is kept up to date with the documentation changes listed in this section. If you need to know whether a copy of the PDF documentation you are using is the most recent, check its publication date on the title page.

September, 2011

Section	Change
All	Updated SLES 10 SP3 references to SLES 10 SP4.

February 8, 2011

Section	Change
"OES2-SP3-firstboot-bundle" on page 248	Corrected reference to second ruby package.

February 3, 2011

Section	Change
Section 1.4, "What's New in the OES 2 SP3 Install," on page 13	Mentioned common proxy support as a new feature, previously overlooked.

January 26, 2011

Section	Change
All	Made editorial changes for SP3.

January 19, 2011

Section	Change
Section 3.6.10, "Configuring OES Services," on page 78 and Section 5.4.12, "Specifying Configuration Information," on page 139	Improved visibility and access to the OES service configuration guidelines.

December 2010

Section	Change
Section C.2, "Using a ZLM Server and an ISO Image File to Upgrade," on page 252	New section added.
All sections	Updated for the SP3 release.

October 7, 2010

Section	Change
Chapter 14, "Reconfiguring eDirectory and OES Services," on page 223	New section added.

February 24, 2010

Section	Change
Section C.2.3, "Assigning the Bundles and Scheduling Upgrades," on page 255	Minor clarifications made.

February 18, 2010

Section	Change
Appendix C, "Upgrading to OES 2 SP3 Through a ZENworks Linux Management Server," on page 245	New section added.

February 2, 2010

Section	Change
Various	Editing changes for style and uniformity throughout.

January 13, 2010

Section	Change
Various	Corrected references to SLES 10 SP2 that should refer to SLES 10 SP3.

December 17, 2009

Section	Change
Section 2.9, "Preparing Physical Media for a New Server Installation or an Upgrade," on page 39	Updated download links.

November 2009

Section	Change
Section 2.4, "eDirectory Rights Needed for Installing OES," on page 20	Reworked and updated information.
Section 2.5, "Installing and Configuring OES as a Subcontainer Administrator," on page 20	Reworked and updated information.
Section 5.4.5, "Using the Patch Channel to Upgrade (Online)," on page 127	New section.
Chapter 12, "Upgrading NetWare on a Xen-based VM," on page 219	New section moved from the NetWare Installation Guide.
Appendix A, "Installing with EVMS as the Volume Manager of the System Device," on page 233	Removed manual EVMS instructions.
