

Linux Installation Guide

Novell® Open Enterprise Server

2 SP1

December 2008

www.novell.com



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About This Guide

This guide describes how to install, upgrade, and update Novell® Open Enterprise Server (OES) 2 SP1 Linux. Except where specifically stated, the content of this guide applies to installing OES Linux on a computer's physical hardware rather than on a Xen* virtual machine host server.

- ♦ “What's New” on page 11
- ♦ “Preparing to Install OES 2 SP1 Linux” on page 13
- ♦ “Installing Open Enterprise Server 2 SP1 Linux” on page 29
- ♦ “Installing or Configuring OES 2 Services on an Existing OES 2 SP1 Linux or SLES 10 SP2 Server” on page 89
- ♦ “Upgrading to OES 2 SP1 Linux” on page 93
- ♦ “Completing Installation or Upgrade Tasks on OES 2 SP1 Linux” on page 123
- ♦ “Updating an OES 2 SP1 Linux Server” on page 127
- ♦ “Using AutoYaST to Install and Configure Multiple OES 2 SP1 Linux Servers” on page 147
- ♦ “Installing, Upgrading, or Updating OES 2 SP1 Linux on a Xen-based Virtual Machine” on page 157
- ♦ “Disabling OES 2 SP1 Linux Services” on page 165
- ♦ “Security Considerations” on page 167
- ♦ “Installing Linux with EVMS as the Volume Manager of the System Device” on page 169
- ♦ “OES 2 SP1 Linux File and Data Locations” on page 189
- ♦ “Setting Up an Installation Source on NetWare” on page 191

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 SP1: Linux Installation Guide* is available at the [Open Enterprise Server 2 documentation Web site \(http://www.novell.com/documentation/oes2/inst_oes_lx/data/front.html\)](http://www.novell.com/documentation/oes2/inst_oes_lx/data/front.html).

Additional Documentation

Table 1 *Additional Documentation References*

For more information about	See
Planning and implementing OES 2 SP1 for Linux	<i>OES 2 SP1: Planning and Implementation Guide</i>
Migration from and coexistence with other products	"Different Migration Tools" in the <i>OES 2 SP1: Migration Tool Administration Guide</i>
Installing OES 2 SP1 Linux on a Xen Virtual Host Server	Chapter 10, "Installing, Upgrading, or Updating OES 2 SP1 Linux on a Xen-based Virtual Machine," on page 157
SLES 10 Installation and Administration details	<i>SUSE® LINUX Enterprise Server 10 Installation and Administration Guide</i> (http://www.novell.com/documentation/sles10/sles_admin/data/sles_admin.html)

Documentation Conventions

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

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

What's New

1

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 in OES 2 SP1,” on page 11](#)
- ♦ [Section 1.2, “What’s New \(OES 2 Initial Release\),” on page 11](#)

1.1 What’s New in OES 2 SP1

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

Table 1-1 OES 2 SP1 Release

Functionality	For More Information About
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 37 . Installing OES 2 services on a server that is already running SLES 10 SP1: See “Installing or Configuring OES 2 Services on an Existing OES 2 SP1 Linux or SLES 10 SP2 Server” on page 89 .

1.2 What’s New (OES 2 Initial Release)

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

Table 1-2 OES 2 Initial Release

Functionality	For More Information About
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 37 . Installing OES 2 services on a server that is already running SLES 10 SP1: See “Installing or Configuring OES 2 Services on an Existing OES 2 SP1 Linux or SLES 10 SP2 Server” on page 89 .
DVD media is now also available to perform the installation.	See “Preparing Physical Media for a New Server Installation or Upgrade” on page 32 .
OES 2 Linux can be installed on x86-64 bit hardware.	See Table 2-1 on page 14 .

Functionality	For More Information About
Configuring OES services is easier to find and perform on multiple services.	See “Configuring Novell Open Enterprise Server Services” on page 59 and “Installing or Configuring OES 2 Services on an Existing OES 2 SP1 Linux or SLES 10 SP2 Server” on page 89 .
A specific tool for extending the schema is available in YaST.	See “Extending the Schema” on page 16 .
You can install OES 2 Linux on a Xen-based virtual machine host server.	See “Chapter 10, “Installing, Upgrading, or Updating OES 2 SP1 Linux on a Xen-based Virtual Machine,” on page 157.”
You can install OES 2 Linux as a Xen-based virtual machine host server.	See “Chapter 9, “Installing OES 2 SP1 Linux as a Xen VM Host Server,” on page 155.”
The method for updating OES matches the method for updating SLES 10 SP1.	“Updating an OES 2 SP1 Linux Server” on page 127 .

Preparing to Install OES 2 SP1 Linux

2

Before you install Novell® Open Enterprise Server (OES) 2 SP1 Linux, you should review the information in the following sections:

- ❑ “Planning Your OES 2 Implementation” in the *OES 2 SP1: Planning and Implementation Guide*
- ❑ “Installing OES 2 SP1” and “Installation/Upgrade Issues” in the *OES2 SP1: Readme*

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

- ♦ Section 2.1, “Don’t Mix 32-Bit and 64-Bit Options,” on page 13
- ♦ Section 2.2, “Meeting All Server Software and Hardware Requirements,” on page 13
- ♦ Section 2.3, “Preparing eDirectory for OES 2 SP1,” on page 15
- ♦ Section 2.4, “eDirectory Rights Required to Install OES Linux,” on page 18
- ♦ Section 2.5, “Deciding What Patterns to Install,” on page 20
- ♦ Section 2.6, “Install Only One Server at a Time,” on page 27
- ♦ Section 2.7, “What’s Next,” on page 28

2.1 Don’t Mix 32-Bit and 64-Bit Options

OES 2 and SLES 10 both have 32-bit (i386) and 64-bit (x86_64) architectural versions. These versions cannot be mixed. In other words, you cannot install 32-bit OES with 64-bit SLES and the reverse is also true.

If you have a 64-bit server, you can install either the 32-bit or 64-bit versions of the software, but if your server is 32-bit, you can install only the 32-bit version of the software.

2.2 Meeting All Server Software and Hardware Requirements

Before installing OES 2 SP1 Linux, ensure that your system meets the following requirements.

- ♦ Section 2.2.1, “Server Software,” on page 13
- ♦ Section 2.2.2, “Server Hardware,” on page 14

2.2.1 Server Software

As part of the OES 2 SP1 Linux installation, you install SUSE® Linux Enterprise Server 10 SP2.

IMPORTANT: OES 2 SP1 services were developed and tested on a default SLES 10 server base.

As you install OES 2 SP1, 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 SP1 services not working properly.

If you are installing on an existing SLES 10 SP2 server, be sure to verify that all of the default SLES 10 SP2 components are installed before attempting to install OES 2 SP1 services.

2.2.2 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	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. NOTE: Some OES services run in 32-bit mode only.
Memory	512 MB of RAM	1 GB of RAM
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 <p>If you install Novell iFolder[®], you need an additional IP address. iFolder requires a separate IP address on Linux.</p> <ul style="list-style-type: none"> ♦ 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.	

System Component	Minimum Requirements	Recommended Requirements
Video Card and Monitor	1024 X 768 resolution or higher	NOTE: Although it is technically possible to run the ncurses installation at a lower resolution, some informational messages, etc. 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 Linux service components you install might require additional RAM and disk space.

Be sure to complete the planning instructions found in the *OES 2 SP1: Planning and Implementation Guide* for each component you install. During that planning process, you are instructed to record and track the additional RAM and disk space you need on a worksheet.

2.3 Preparing eDirectory for OES 2 SP1

- ♦ Section 2.3.1, “If Your Directory Tree Is Earlier than eDirectory 8.6,” on page 15
- ♦ Section 2.3.2, “If Your LDAP Server Is Running NetWare 6.5 SP2 or earlier,” on page 16
- ♦ Section 2.3.3, “If Your Tree Has Ever Had an OES 1 Linux Server with LUM Installed,” on page 16
- ♦ Section 2.3.4, “Extending the Schema,” on page 16

2.3.1 If Your Directory Tree Is Earlier than eDirectory 8.6

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

- 1 Extend the schema using Deployment Manager. See “**Schema Update**” in the *OES 2 SP1: NetWare Installation Guide*.
- 2 Ensure that the schema is synchronized throughout the tree from [ROOT] by doing the following:
 - 2a Verify that schema is synchronizing out from [ROOT] by entering 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

2.3.2 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, upgrade the LDAP server that the OES Linux installation will communicate with to the NetWare 6.5 SP3 or later software. A server running NetWare 6.5 SP2 or earlier will probably abend.

2.3.3 If Your Tree Has Ever Had an OES 1 Linux Server with LUM Installed

<You need to fix the IDs for a couple of system users.>

2.3.4 Extending the Schema

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

- ♦ [“Who Can Extend the Schema?” on page 16](#)
- ♦ [“Which OES 2 SP1 Services Require a Schema Extension?” on page 16](#)
- ♦ [“Extending the Schema While Installing OES 2” on page 17](#)
- ♦ [“Using the YaST Plugin to Extend the Schema” on page 17](#)
- ♦ [“Extending the Schema for Novell Cluster Services \(NCS\)” on page 18](#)

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 SP1 Services Require a Schema Extension?

The following service schema extensions are included with OES 2 SP1.

A single asterisk (*) indicates a service that is either required for OES 2 Linux servers or for the default services that are installed on every OES 2 server. They are implemented when the first OES 2 SP1 Linux 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 plugin (see [“Using the YaST Plugin to Extend the Schema” on page 17](#)).

- ♦ CIFS
- ♦ Directory Services*
- ♦ iFolder

- ♦ iPrint
- ♦ DHCP
- ♦ DNS
- ♦ Domain Services for Windows
- ♦ Linux User Management*
- ♦ NCP
- ♦ NCS**

Novell Cluster Services requires extending the schema manually. Follow the instructions in “[Extending the eDirectory Schema to Add Cluster Objects](#)” in the *OES 2 SP1: Novell Cluster Services 1.8.5 for Linux Administration Guide*.

- ♦ 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 Linux servers is to have a tree admin install the first OES 2 Linux 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 [Section 2.4.3, “eDirectory Rights Required for Subcontainer Administrators,” on page 19](#).

Using the YaST Plugin to Extend the Schema

If you want a subcontainer admin to install the first OES 2 Linux 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, you can extend the schema using YaST from either

- ♦ An OES 2 SP1 server running in another tree
 - ♦ An OES 2 SP1 server that was installed without any OES 2 services added (the YaST plugin is a default OES 2 component)
- or
- ♦ A SLES 10 SP2 server with the `yast2-novell-schematool.rpm` installed. The RPM is available on the OES 2 SP1 installation media and can be launched at a terminal prompt following installation by entering `yast2 novell-schematool`.

To run the Novell Schema Tool, do the following:

- 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, enter the information for an eDirectory server with a Read/Write replica of the Root partition.

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

- 5 If you are preparing the tree so that a subcontainer admin can install the first OES 2 SP1 Linux server, select the services marked with an asterisk (*) in [“Which OES 2 SP1 Services Require a Schema Extension?” on page 16](#).

Although this step is not required if the tree already has an OES 2 SP1 Linux 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 Linux servers in the tree.
- 7 Click *Next*.

The schema is extended.

Extending the Schema for Novell Cluster Services (NCS)

If you want a subcontainer administrator to install the first instance of NCS 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 SP1: Novell Cluster Services 1.8.5 for Linux Administration Guide*.

2.4 eDirectory Rights Required to Install OES Linux

The following eDirectory rights are discussed in this section:

- [Section 2.4.1, “eDirectory Rights Required to Install the First Three OES Linux Servers in an eDirectory Tree,” on page 18](#)
- [Section 2.4.2, “eDirectory Rights Required to Run Deployment Manager,” on page 19](#)
- [Section 2.4.3, “eDirectory Rights Required for Subcontainer Administrators,” on page 19](#)

2.4.1 eDirectory Rights Required to Install the First Three OES Linux Servers in an eDirectory Tree

If you are installing the server into a new tree, the Admin user that is created during the OES Linux 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 Linux as necessary. To install the first OES Linux server in an eDirectory tree, you must have the Supervisor right at the [Root] of the eDirectory tree.

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 to the container in which the server holding the partition resides.

Before letting a subcontainer administrator install subsequent OES Linux servers in a tree, a user with the Supervisor rights to the root of the tree must extend the schema in 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 eDirectory tree install the first OES Linux server into the tree. For more information, see [Section 2.3.4, “Extending the Schema,” on page 16](#).

2.4.2 eDirectory Rights Required to Run Deployment Manager

If you are installing the first OES Linux server into an existing eDirectory tree, you can run Deployment Manager first to prepare the tree so it is compatible with the new version of eDirectory that comes with OES 2 SP1. This requires access to a server with a Read/Write replica of the Root partition.

2.4.3 eDirectory 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 Linux servers, without granting them full rights to the entire tree. A subcontainer administrator needs the following rights to install an OES Linux server into the tree:

- ♦ Supervisor right to the container where the server will be installed
- ♦ Read right to the Security container object for the eDirectory tree
- ♦ Read right to the NDSPKI:Private Key attribute on the Organizational CA object (located in the Security container)
- ♦ Supervisor right to the W0 object located inside the KAP object in the Security container
- ♦ Supervisor right to the Security container when installing the NMAST™ login methods
- ♦ Create right to the container where the UNIX Config object is located.
- ♦ Modify right to the UNIX Config object.

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.

When installing DNS/DHCP into an existing tree with DNS/DHCP, you need to give the sub-container administrator the following rights:

Table 2-2 *Rights Needed for Subcontainer Admin for Installing DNS/DHCP*

DNS/DHCP Objects	Object Rights	All Property Rights
Locator	Browse	Supervisor
Group	Browse	Supervisor
Existing	Supervisor	Supervisor

For more information on rights needed for managing DNS/DHCP on OES Linux, see “**eDirectory Permissions**” in the *OES 2 SP1: Novell DNS/DHCP Administration Guide for Linux*.

2.5 Deciding What Patterns to Install

A default SLES 10 SP2 installation has the following base technology, Graphical Environment, and Primary Function patterns selected for installation by default. 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 SP2 Installation Patterns*

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>This pattern is selected for installation by default.</p> <p>IMPORTANT: You must either install this pattern or the Server Base System pattern.</p>
Server Base System	<p>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.</p> <p>IMPORTANT: You must either install this pattern or the Common Code Base 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>
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>

Pattern	Description
Print Server	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 may 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.
	This pattern is selected for installation by default.

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

Table 2-4 OES Services Pattern Descriptions

Pattern	Description
Novell AFP	Novell AFP server allows Mac clients to access data stored on NSS volumes in the same way they access data on a Mac OSX server. This service selects and installs these services: <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	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. This service selects and installs these 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)
Novell Backup/Storage Management Services (SMS)	The Novell backup infrastructure (called Storage Management Services™ or SMS) provides backup applications with the framework to develop a complete backup and restore solution. 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. This service selects and installs these services: <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 Linux server. CIFS allows read and write access from multiple client systems simultaneously.</p> <p>This service 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)
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 or OES NetWare 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 service 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)
Novell DHCP	<p>Novell DHCP (Dynamic Host Configuration Protocol) uses eDirectory to provide configuration parameters to client computers and integrate them into a network.</p> <p>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>This service 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 DNS	<p>Novell DNS uses Novell eDirectory to deliver information associated with domain names, in particular the IP address.</p> <p>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>This service 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 Domain Services for Windows	<p>Novell Domain Services for Windows provides seamless cross-authentication capabilities between Windows/Active Directory and Novell OES 2 Linux 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 service 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
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 service 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)

Pattern	Description
Novell FTP	<p>Novell FTP (File Transfer Protocol) is integrated with Novell eDirectory so that users can securely transfer files to and from OES Linux or OES NetWare volumes.</p> <p>This service 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 iFolder	<p>Novell iFolder 3.7 is a simple and secure storage solution that can increase user productivity by enabling users to back up, access, and manage their personal files from anywhere, at any time.</p> <p>This service 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 iManager	<p>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>iManager provides the following benefits:</p> <ul 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>This service 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)
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 service selects and installs these services:</p> <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)

Pattern	Description
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 Linux servers.</p> <p>This service 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 Linux 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 Linux.</p> <p>NCP Server includes Novell Dynamic Storage Technology, which allows rarely accessed files on NCP 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 service 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 NetStorage	<p>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>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>This service selects and installs these services:</p> <ul style="list-style-type: none"> ♦ Novell Backup/Storage Management Services (SMS) ♦ Novell iManager ♦ Novell Linux User Management (LUM) ♦ Novell Remote Manager (NRM)

Pattern	Description
Novell Pre-Migration Server	<p>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>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 SP1: Migration Tool Administration Guide.</p> <p>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>This service selects and installs these services:</p> <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	<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 service 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)
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 service selects and installs these services:</p> <ul style="list-style-type: none"> ♦ Novell Backup/Storage Management Services (SMS) ♦ Novell Linux User Management (LUM)

Pattern	Description
Novell Samba	<p>Novell Samba provides Windows (CIFS and HTTP-WebDAV) access to files stored on an OES Linux server's file system using an eDirectory username and password.</p> <p>This service 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)
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> <hr/> <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 Linux with EVMS as the Volume Manager of the System Device," on page 169.</p> <hr/> <p>This service 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)

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 39](#) and ["Installing or Configuring OES 2 Services on an Existing OES 2 SP1 Linux or SLES 10 SP2 Server" on page 89](#).

2.6 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.

2.7 What's Next

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

- ♦ [“Installing Open Enterprise Server 2 SP1 Linux” on page 29](#)
- ♦ [“Upgrading to OES 2 SP1 Linux” on page 93](#)
- ♦ [“Updating an OES 2 SP1 Linux Server” on page 127](#)
- ♦ [“Using AutoYaST to Install and Configure Multiple OES 2 SP1 Linux Servers” on page 147](#)
- ♦ [“Installing, Upgrading, or Updating OES 2 SP1 Linux on a Xen-based Virtual Machine” on page 157](#)
- ♦ [“Installing Linux with EVMS as the Volume Manager of the System Device” on page 169](#)

Installing Open Enterprise Server 2 SP1 Linux

3

Novell® Open Enterprise Server (OES) 2 SP1 Linux is an add-on product to SUSE® Linux Enterprise Server (SLES) 10 SP2. When you install and configure OES Linux, you can also install and configure SLES 10 SP2. Therefore, it is helpful to understand how to perform a SLES 10 SP2 installation.

For detailed information on performing a SLES installation, see the *SLES 10 SP2 Installation and Administration Guide*.

Before installing OES 2 SP1 Linux, we recommend that you read the following documents and information:

- ❑ *OES 2 SP1: Planning and Implementation Guide*
- ❑ *OES2 SP1: Readme*
- ❑ “Preparing to Install OES 2 SP1 Linux” on page 13

This section includes brief steps for performing a full installation of OES Linux and provides information on the following topics:

- ♦ “Obtaining OES 2 Linux Software” on page 29
- ♦ “Setting Up an Installation Source” on page 29
- ♦ “Installing OES 2 SP1 Linux As a New Installation” on page 33

3.1 Obtaining OES 2 Linux Software

For information on obtaining OES Linux software, see “Getting and Preparing OES 2 Software” in the *OES 2 SP1: Planning and Implementation Guide*.

3.2 Setting Up an Installation Source

This section covers how to get the media you need for an installation and how to set up installation sources for installing OES Linux:

- ♦ Section 3.2.1, “Preparing a Network Installation Source,” on page 29
- ♦ Section 3.2.2, “Preparing Physical Media for a New Server Installation or Upgrade,” on page 32

3.2.1 Preparing a Network Installation Source

This section contains the following information:

- ♦ “Requirements” on page 30
- ♦ “Procedure” on page 30

Requirements

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

- ❑ A server to act as the YaST Network Installation server:

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

- ❑ A computer to become the new OES Linux server

Both servers need to be connected to the network and able to communicate with each other.

If you have DHCP on your network, using DHCP works well to begin the initial network installation. During the installation, you are prompted to configure your OES Linux server with a static IP address. The static IP address is required for the configuring OES network services on your server.

If you don't have DHCP on your network, you need to do a manual installation and configure your OES Linux server with a static IP address, subnet mask, a default gateway, and a name server. You do not need to redo this network configuration later in the installation because it is already set up. The instructions for this come later in the installation procedure. (See [“Installing OES 2 SP1 Linux As a New Installation” on page 33.](#))

Procedure

To prepare a network installation source on a NetWare server, see [Appendix C, “Setting Up an Installation Source on NetWare,” on page 191.](#)

To prepare a network installation source on a Linux or Window server, see [“Setting Up the Server Holding the Installation Sources”](#) in the *SLES 10 SP2 Installation and Administration Guide* and the following instructions.

- 1 Download or copy the ISO image files to a directory of your choice.

For a list of images, see [Table 3-1, “OES Linux ISO Images and Labels for i386,” on page 32](#) or [Table 3-2, “OES Linux ISO Images and Labels for x86_64,” on page 33.](#)

- 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 31](#)
- ♦ [“FTP Protocol Configuration” on page 31](#)
- ♦ [“HTTP Protocol Configuration” on page 31](#)

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 SP1 CD 1* and label it with that name.

For information on creating this CD, see [“Preparing Physical Media for a New Server Installation or Upgrade” on page 32.](#)

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 [“Installing OES 2 SP1 Linux As a New Installation” on page 33](#) or [“Upgrading to OES 2 SP1 Linux” on page 93](#).

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 installed using 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.

3.2.2 Preparing Physical Media for a New Server Installation or Upgrade

To prepare physical media for an installation or upgrade, you must first download then burn a CD or DVD for each ISO image file that you need.

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

When creating the installation source, you need the media listed in the following tables. The tables show the ISO image filename and how each CD or DVD should be labelled. For the SLES media, you can use the ISO files for CDs or the DVD ISO.

For information on downloading these image files, see the [Novell Open Enterprise Server 2 Download Instructions \(http://www.novell.com/documentation/oes2/esd/di_oes2.html\)](http://www.novell.com/documentation/oes2/esd/di_oes2.html).

Table 3-1 OES Linux ISO Images and Labels for i386

ISO Image File	CD or DVD Label
oes2-sp1-i386-CD1.iso	<i>Novell Open Enterprise Server 2 SP1 CD 1</i>
SLES-10-SP2-CD-i386-CD1.iso	<i>SUSE Linux Enterprise Server 10 SP2 CD 1</i>
SLES-10-SP2-CD-i386-CD2.iso	<i>SUSE Linux Enterprise Server 10 SP2 CD 2</i>
SLES-10-SP2-CD-i386-CD3.iso	<i>SUSE Linux Enterprise Server 10 SP2 CD 3</i>
SLES-10-SP2-CD-i386-CD4.iso	<i>SUSE Linux Enterprise Server 10 SP2 CD 4</i>
SLES-10-SP2-DVD-i386-DVD1.iso	<i>SUSE Linux Enterprise Server 10 SP2 DVD 1</i>

Table 3-2 OES Linux ISO Images and Labels for x86_64

ISO Image File	CD or DVD Label
OES2-sp2-x86_64-CD1.iso	<i>Novell Open Enterprise Server 2 SP1 CD 1</i>
SLES-10-SP2-CD-x86_64-CD1.iso	<i>SUSE Linux Enterprise Server 10 SP2 CD 1</i>
SLES-10-SP2-CD-x86_64-CD2.iso	<i>SUSE Linux Enterprise Server 10 SP2 CD 2</i>
SLES-10-SP2-CD-x86_64-CD3.iso	<i>SUSE Linux Enterprise Server 10 SP2 CD 3</i>
SLES-10-SP2-CD-x86_64-CD4.iso	<i>SUSE Linux Enterprise Server 10 SP2 CD 4</i>
SLES-10-SP2-DVD-x86_64-DVD1.iso	<i>SUSE Linux Enterprise Server 10 SP2 DVD 1</i>

3.3 Installing OES 2 SP1 Linux As a New Installation

This section does not provide step-by-step instructions on how to do the installation, but it provides the following important information specific to OES 2 SP1 Linux as you progress through the installation.

- ♦ [Section 3.3.1, “Starting the OES 2 SP1 Linux Installation,” on page 33](#)
- ♦ [Section 3.3.2, “Specifying the Installation Mode,” on page 36](#)
- ♦ [Section 3.3.3, “Specifying the Add-On Product Installation Information,” on page 37](#)
- ♦ [Section 3.3.4, “Setting Up the Clock and Time Zone,” on page 38](#)
- ♦ [Section 3.3.5, “Specifying the Installation Settings for the SLES Base and OES Linux Installation,” on page 38](#)
- ♦ [Section 3.3.6, “Specifying Configuration Information,” on page 42](#)

3.3.1 Starting the OES 2 SP1 Linux Installation

Insert *SUSE Linux Enterprise Server 10 SP2 CD 1* into the CD-ROM drive of the computer that you want to be your OES Linux server, then boot the machine. Then continue with one of the following procedures:

- ♦ [“Installation Using a Network Installation Source with DHCP” on page 33](#)
- ♦ [“Installation Using a Network Installation Source without DHCP” on page 34](#)
- ♦ [“New Server Installation Using Physical Media or ISO” on page 36](#)

Installation Using a Network Installation 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, 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 (Conditional) You can specify boot option parameters to specify all the parameters that the manual installation steps will step you through or you can continue with [Step 3](#).
If you do specify boot options parameters, press Enter then continue with [Step 6 on page 34](#).
For more information on specifying boot option parameters, see “[Using Custom Boot Options](#)” in the *SLES 10 SP2 Installation and Administration Guide*.
 - 3 Press F4, and then select the network installation type (CD or DVD, SLP, FTP, HTTP, NFS, SMB/CIFS) that you set up on your network installation server.
See [Step 2 on page 30](#) of the [Preparing a Network Installation Source](#) procedure.
 - 4 Specify the required information (server name and installation path), then select *OK*.
 - 5 Press Enter to begin the installation.
 - 6 Follow the screen prompts, using the information contained in the following sections:
 - 6a “[Specifying the Installation Mode](#)” on page 36.
 - 6b “[Specifying the Add-On Product Installation Information](#)” on page 37.
 - 6c “[Setting Up the Clock and Time Zone](#)” on page 38.
 - 6d “[Specifying the Installation Settings for the SLES Base and OES Linux Installation](#)” on page 38.
 - 6e “[Specifying Configuration Information](#)” on page 42.
 - 6f “[Finishing the Installation](#)” on page 60.
 - 7 Complete the server setup by following the procedures in “[Completing Installation or Upgrade Tasks on OES 2 SP1 Linux](#)” on page 123.

Installation Using a Network Installation Source without DHCP

- 1 From the CD boot menu, select one of the following Installation options that matches your environment, then press Enter.
 - ♦ **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 (Conditional) You can specify boot option parameters to specify all the parameters that the manual installation steps will step you through or you can continue with [Step 3](#).

If you do specify boot options parameters, press Enter then continue with [Step 19 on page 35](#).

For more information on specifying boot option parameters, see “[Using Custom Boot Options](#)” in the *SLES 10 SP2 Installation and Administration Guide*.

- 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, 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 36.
 - 19b “[Specifying the Add-On Product Installation Information](#)” on page 37.
 - 19c “[Setting Up the Clock and Time Zone](#)” on page 38.
 - 19d “[Specifying the Installation Settings for the SLES Base and OES Linux Installation](#)” on page 38.

- 19e** “Specifying Configuration Information” on page 42.
- 19f** “Finishing the Installation” on page 60.
- 20** Complete the server setup by following the procedures in “Completing Installation or Upgrade Tasks on OES 2 SP1 Linux” on page 123.

New Server Installation Using Physical Media or ISO

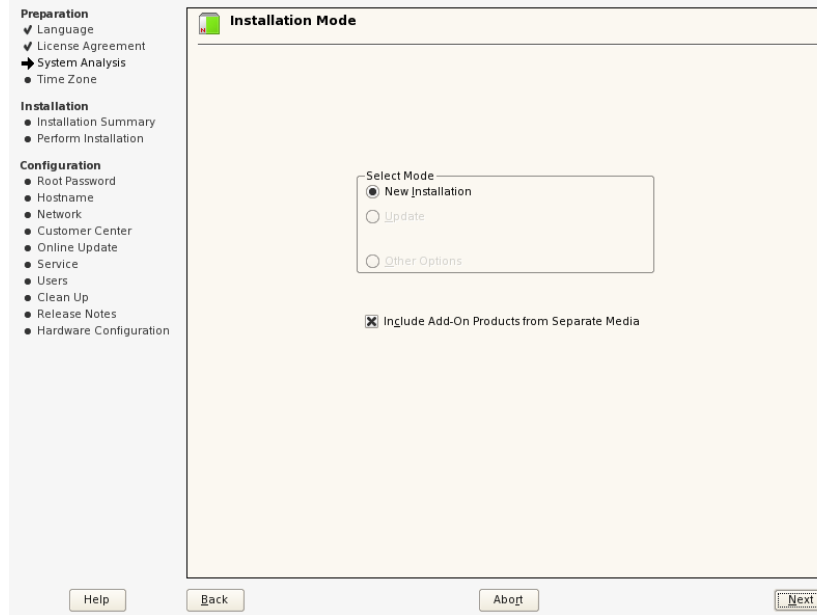
- 1** From the CD boot menu, select the second option (*Installation*), then press Enter.
- 2** Select the language that you want to use, then click *Next*.
- 3** Read and accept the license agreement, then click *Next*.
- 4** (Conditional) If you haven’t already verified that the media you burned is valid, you can check it using the Media Check; 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 36.
 - 5b** “Specifying the Add-On Product Installation Information” on page 37.
 - 5c** “Setting Up the Clock and Time Zone” on page 38.
 - 5d** “Specifying the Installation Settings for the SLES Base and OES Linux Installation” on page 38.
 - 5e** “Specifying Configuration Information” on page 42.
 - 5f** “Finishing the Installation” on page 60.
- 6** Complete the server setup by following the procedures in “Completing Installation or Upgrade Tasks on OES 2 SP1 Linux” on page 123.

3.3.2 Specifying the Installation Mode

When selecting the type of installation, select *New Installation*.

- 1** When the *Installation Mode* screen displays, select the following menu options, then click *Next*:
 1. *New Installation*
 2. *Include Add-On Products from Separate Media*



- 2 Continue with [Section 3.3.3, “Specifying the Add-On Product Installation Information,”](#) on [page 37](#).

3.3.3 Specifying the Add-On Product Installation Information

When the *Add-On Product Installation* page displays:

- 1 Click *Add*.
- 2 In the Add-On Product Media dialog, click *CD*, then click *Next*.
If you are using an alternate installation source, click the appropriate option that matches your installation source selection.
- 3 In the Insert the Add-On Product CD dialog, select the appropriate drive where you want to insert the CD labeled *Open Enterprise Server 2 SP1 CD 1*.
- 4 Click *Eject*.
- 5 Insert the CD labeled *Open Enterprise Server 2 SP1 CD 1*, then click *Continue*.
- 6 Read and accept the Novell Open Enterprise Server 2 license agreement, then click *Next*.
- 7 Confirm that the Add-On Product Installation page shows the correct path to the OES media, then click *Next*.
- 8 Continue with [Section 3.3.4, “Setting Up the Clock and Time Zone,”](#) on [page 38](#).

3.3.4 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 3.3.5, “Specifying the Installation Settings for the SLES Base and OES Linux Installation,”](#) on page 38.

3.3.5 Specifying the Installation Settings for the SLES Base and OES Linux Installation

The instructions in this section assume you are using the graphical YaST interface for installation. If you are installing from a shell prompt or the text-based YaST interface, you need to apply these installation instructions concepts to the interface you are using.

This section does not provide step-by-step instructions on how to do the installation, but it provides important information specific to OES Linux as you progress through the installation and determine the Installation Settings.

For step-by-step information on performing a SLES installation, see “[Deployment](#)” in the *SLES 10 SP2 Installation and Administration Guide*. However, the *SUSE Linux Enterprise 10 Installation and Administration Guide* does not contain instructions for OES-specific components.

You are presented with the Installation Settings proposal. You can accept the default settings or customize each setting to fit the needs of your organization. At this stage of the installation, you can change settings for the System, Keyboard Layout, Partitioning, Add-On Products (conditional), Software, Booting, Time Zone, Language, and Default Runlevel.

This section gives recommendations or procedures for the following tasks:

- ♦ “[Setting Up Disk Partitions](#)” on page 38
- ♦ “[Customizing the Software Selections](#)” on page 39
- ♦ “[Accepting the Installation Settings](#)” on page 41

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.

For OES Linux, Novell Storage Services™ (NSS) volumes can be used only as data volumes, not as system volumes. They cannot be created as part of the install process. You must also consider whether you will be creating NSS volumes in the future on the devices where you are installing Linux. 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; NSS requires EVMS (Enterprise Volume Management System) management of its devices.

IMPORTANT: If you have only a single 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 as data volumes after the install, make sure to follow the partition configuration instructions in “[Installing Linux with EVMS](#)”

as the **Volume Manager of the System Device**” on page 169. You can also follow this alternate setup if you have multiple devices and want to be able to create NSS volumes in the future on the same device that contains the system partitions.

Table 3-3 presents guidelines for setting up disk partitions on your OES Linux server. For more information, see “**Installation Summary**” in the *SLES 10 SP2 Installation and Administration Guide*.

Table 3-3 Partition Guidelines

Partition to Create	Other Considerations
/boot	<p>Depending on the hardware, it might be useful to create a boot partition (/boot) 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 /boot 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/xen_admin/data/sec_xen_filesystem.html)” in the <i>Virtualization with Xen (http://www.novell.com/documentation/sles10/xen_admin/data/bookinfo.html)</i> guide.</p>
swap	<p>This should normally be twice the size of the RAM installed on your server, up to 1 GB. If you create a /boot partition, create the swap partition second. Otherwise, create the swap partition first.</p>
/	<p>Define this partition as 3 GB or more. In all cases, create this partition after you create the swap partition.</p>
/var	<p>Define this partition as 4 GB or more.</p>
/opt	<p>Some (mostly commercial) programs install their data in /opt.</p> <p>Define this partition as 4 GB or more.</p>
/usr	<p>Define this partition as 4 GB or more.</p>
/home	<p>You can allocate the rest of the disk space to this partition.</p>

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 Services on an Existing OES 2 SP1 Linux or SLES 10 SP2 Server**” on page 89.

To customize which software packages are installed on the server:

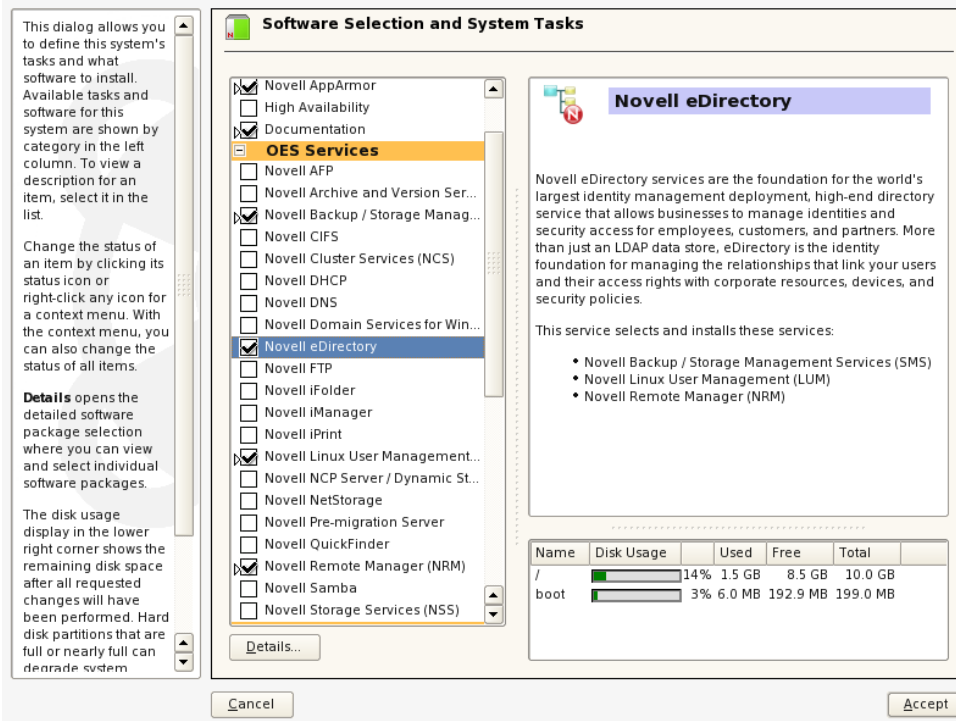
- 1 On the Installation Settings page, click *Software*.

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 any of number of the OES Services patterns.



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 21](#).

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.

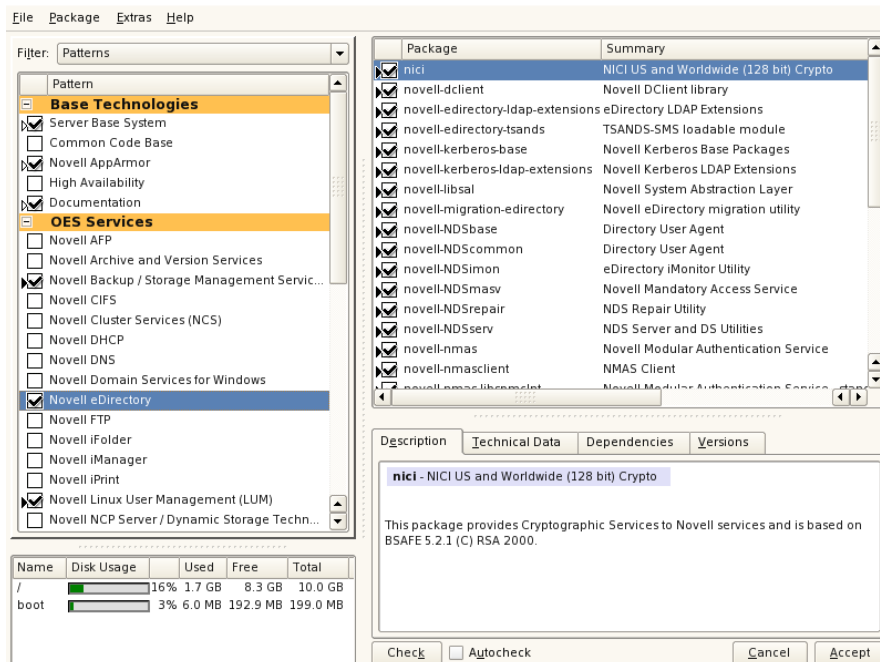
Selecting only the patterns that you want to install ensures that the patterns and their dependent patterns and packages are installed.

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.

- ♦ You can view the details of your selection and add or remove specific packages for the installation by clicking *Details*.



- 3 When you have the software components selected that you want to install, click *Accept*.
- 4 If 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.

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 SP2 CD 1*) from the CD drive.
- 5 For installations using a CD or DVD installation source, leave the CD or DVD in the CD-ROM or DVD drive.
- 6 After the server reboot, proceed with **“Specifying Configuration Information”** on page 42.

3.3.6 Specifying Configuration Information

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

1. “Specifying the Password for the System Administrator “root”” on page 42
2. “Specifying Network Configuration Settings” on page 42
3. “Testing the Connection to the Internet” on page 45
4. “Specifying Novell Customer Center Configuration Settings” on page 45
5. “Updating the Server Software During the Installation” on page 47
6. “Specifying Service Configuration Settings” on page 51
7. “Specifying LDAP Configuration Settings” on page 52
8. “Specifying eDirectory Configuration Settings” on page 54
9. “Configuring Novell Open Enterprise Server Services” on page 59

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 between five and eight characters long and should contain a mixture of both uppercase and lowercase letters and numbers. The maximum length for passwords is 72 characters, and passwords are case sensitive. If you have a password longer than eight characters, click *Expert Options > Blowfish > OK*.
- 2 Confirm the password.
- 3 Click *Next*.

Specifying Network Configuration Settings

On the Network Configuration page, you can change the configuration for the components listed below. In this section, we only give details for the Network Interfaces and Firewall settings.

Configuration success is directly tied to specific networking configuration requirements. Make sure that the following settings are configured exactly as specified for the Network Interfaces dialogs.

1. Network Mode
2. Firewall
3. IPV6
4. Network Interfaces
5. DSL Connections
6. ISDN Adapters
7. Modems
8. VNC Remote Administration
9. Proxy

Network Interface

Specify the setting for each network board on the server:

- 1** On the *Network Configuration* page, click *Network Interfaces*.
- 2** In the *Network Card Configuration Overview* dialog, 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.
By default, the OES Linux installation requires you to configure the network card to use 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 Linux server.
 - 5b** Click *OK* to return to the *Detailed Settings* list.
- 6** Click *Next* to return to the *Network Card Configuration Overview* dialog.
- 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.

To adapt the automatic settings to your own preferences, click *Change > Firewall*. In the dialog that opens, determine whether the firewall should be started. If you do not want the firewall to be started, select the appropriate option and exit the dialog.

To start and configure the firewall, click *Next* for a series of dialogs similar to those described in [Section 44.4.1, “Configuring the Firewall with YaST” in the *SUSE Linux Enterprise Server Installation and Administration Guide* \(\[http://www.novell.com/documentation/sles10/sles_admin/data/sec_fire_suse.html\]\(http://www.novell.com/documentation/sles10/sles_admin/data/sec_fire_suse.html\)\).](#)

Many of the OES services require an open port in the firewall. These ports are automatically opened when the service is configured.

Table 3-4 Open Enterprise Server Services and Ports

Service	Default Ports
Domain Services for Windows	♦ 1636

Service	Default Ports
eDirectory™	<ul style="list-style-type: none"> ♦ 389 (ldap) ♦ 636 (secure ldap) ♦ 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	♦ 548
Novell Archive and Version Services	♦ 26029
Novell CIFS	♦ 636 (secure ldap)
Novell DHCP	♦ 67
Novell DNS	<ul style="list-style-type: none"> ♦ 53 http ♦ 953 secure http
Novell FTP	♦ 21
Novell Information Portal	<ul style="list-style-type: none"> ♦ 80 http ♦ 443 secure http
Novell NetWare Core Protocol (NCP™)	♦ 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
Secure Shell	♦ 22
Storage Management Services (Backup)	♦ 40193 smdr daemon
UDP	♦ 524

To disable the firewall:

- 1 On the *Network Configuration* page, under the *Firewall* heading, click *enabled* on the *Firewall is enabled* status line.

When the firewall is disabled, the status for Firewall should read *Firewall is disabled*.

- 2 When all settings in the Network Configuration page are set as desired, click *Next* to save the configuration, then continue with **“Testing the Connection to the Internet” on page 45**.

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 43**.

- 2 Or, you can skip this test by clicking *No, Skip This Test*; however, 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.

- 3 Continue with **“Specifying Novell Customer Center Configuration Settings” on page 45**. If you skip this test, continue with **“Specifying Service Configuration Settings” on page 51**.

Specifying Novell Customer Center Configuration Settings

To receive support and updates for your OES 2 SP1 server, you need to register it in the Novell Customer Center (NCC). When the Novell Customer Center Configuration page is displayed, you have two options. You can choose to register the server during the installation or register it later.

To register the server and get online update after the installation is complete:

- 1 Click *Configure Later*.
- 2 Continue with **“Specifying Service Configuration Settings” on page 51**.
- 3 Register the server after the installation is complete by using the procedures in **Section 7.2, “Registering the Server in the Novell Customer Center,” on page 128**.

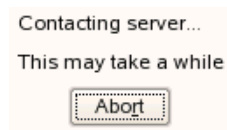
To register the server during the installation:

- 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 SP2 and OES 2 SP1 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 SP2 and OES 2 SP1 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.

Option	What it Does
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.

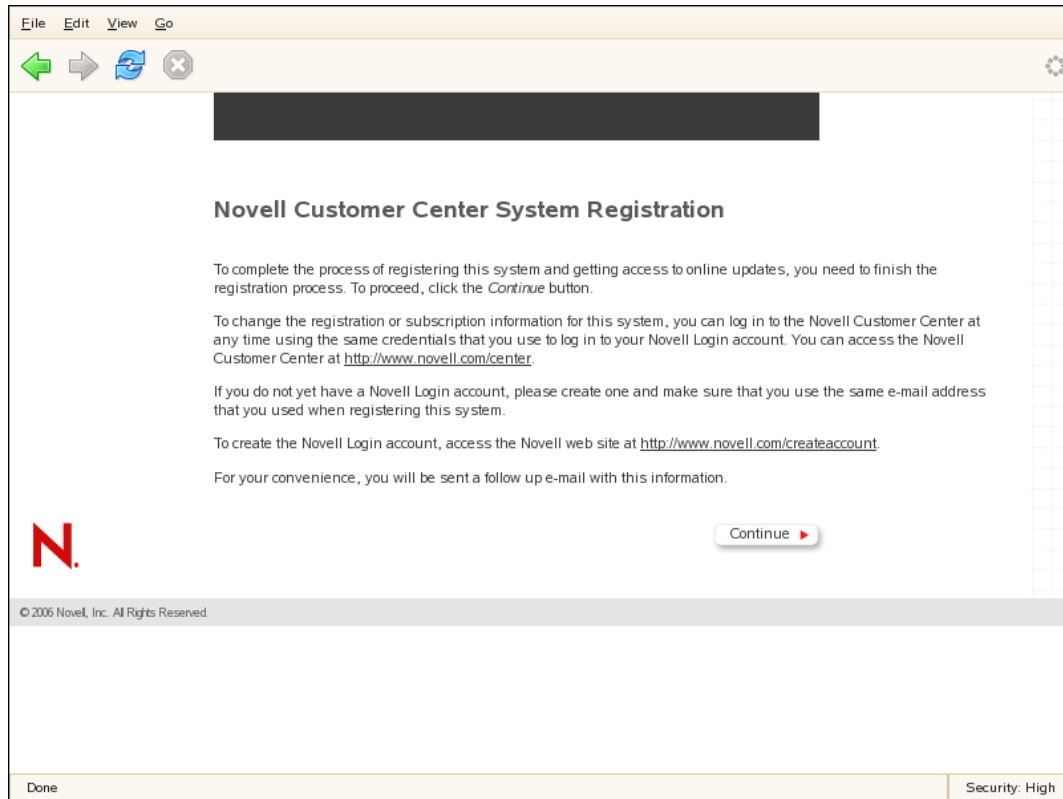
- After you click *Next*, the following message is displayed. Wait until this message disappears and the Manual Interaction Required page displays.



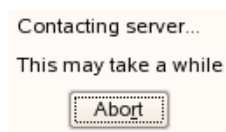
- On the Manual Interaction Required page, note the information that you will be required to specify, then click *Continue*.
- On the Novell Customer Center Registration page, specify the required information in the following fields, then click *Submit*:

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 permanent registration code for the SLES SP1 product. If you don't enter the permanent registration code now, a temporary code and organization are made for this server and the SLES SP1 product. This lets you have updates for 15 days, until you register this system in the NCC with the permanent activation code.
Activation Code for OES Components (optional):	Specify your permanent registration code for the OES product. If you don't enter the permanent registration code now, a temporary code and organization are made for this server and the OES 2 SP1 product. This lets you have updates for 15 days, until you register this system with the permanent activation code.
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.

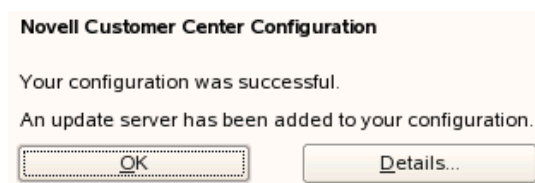
- When the message to complete the registration displays, click *Continue*.



- 6 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 with the message that Your configuration was successful.



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



- 8 Continue with “Updating the Server Software During the Installation” on page 47.

Updating the Server Software During the Installation

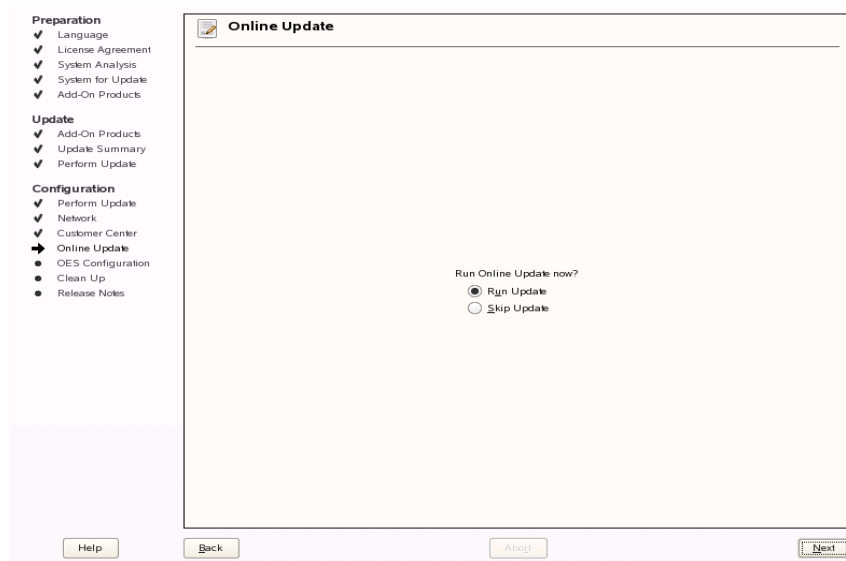
If you have a successful connection to the Internet and have registered the server in the Novell Customer Center, the server displays the Online Update dialog. You can run the online update now or skip it and get updates later.

To skip getting updates during the installation:

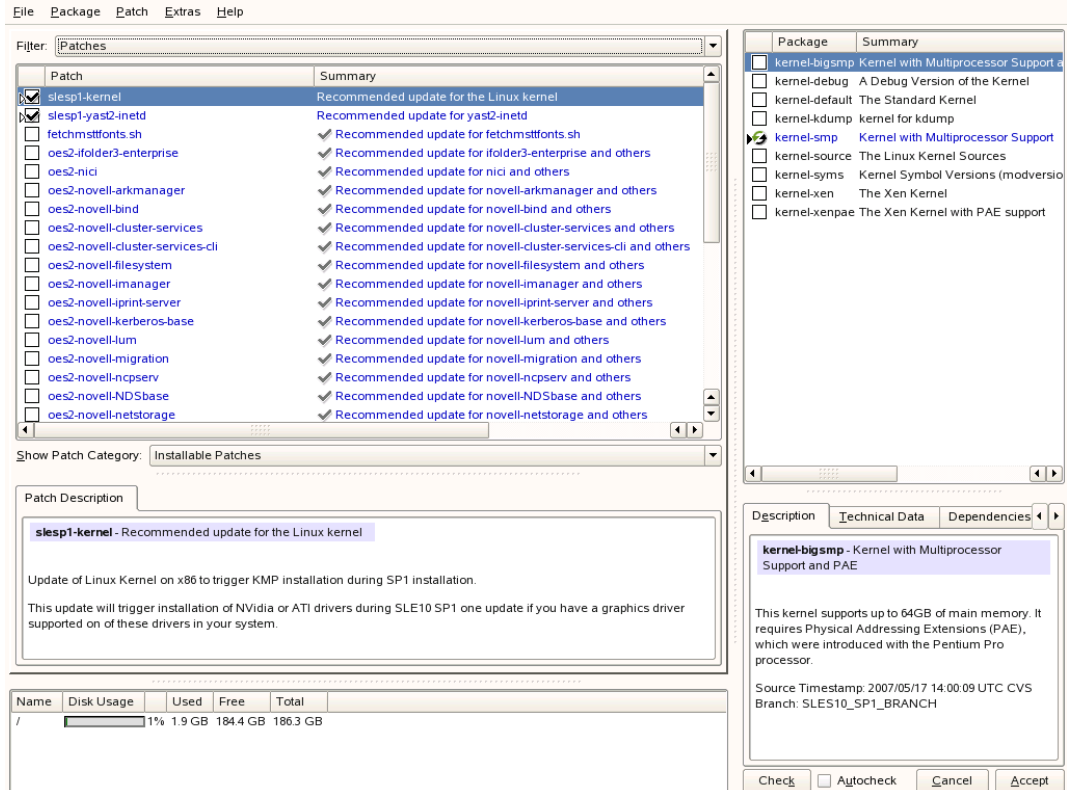
- 1 On the Online Update page, click *Skip Update*.
- 2 Continue with “Specifying Service Configuration Settings” on page 51.

To get updates during the installation:

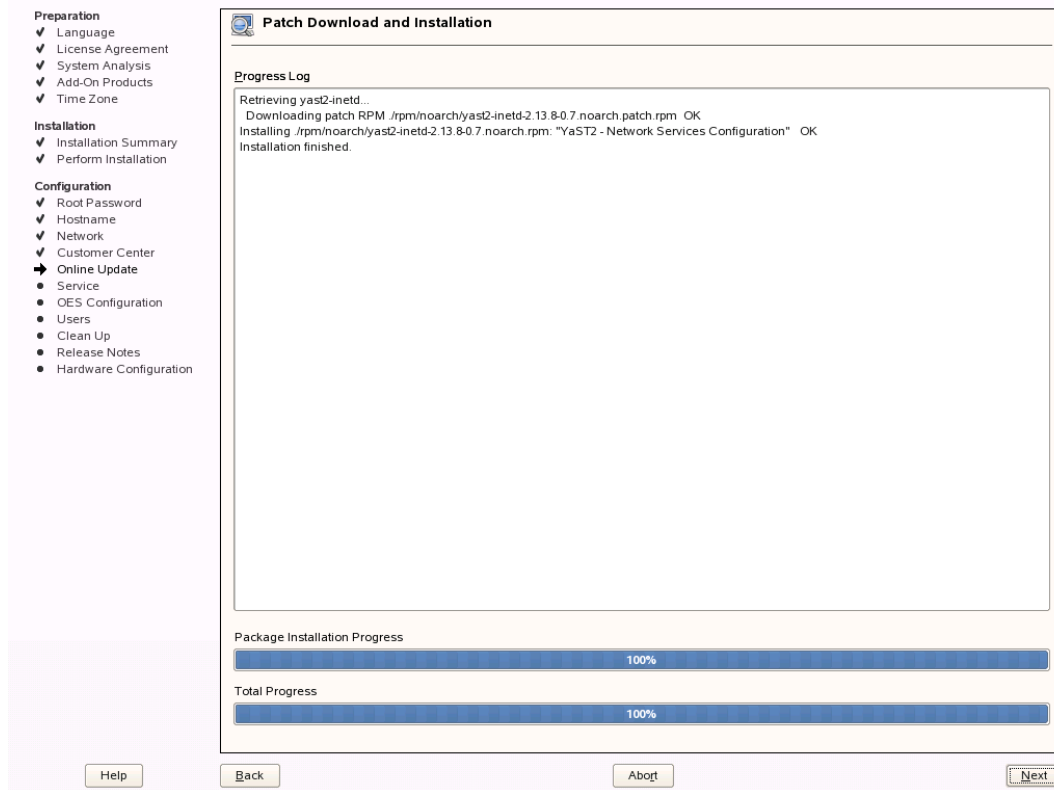
- 1 In the Online Updates dialog, click *Run Update*.



- 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 on the summary portion of the page are patches that have already been installed on your system.



- 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. Click *OK* to restart YaST.



- 5 Because the installation was interrupted, the following message displays. Click *Yes* to continue with the installation.

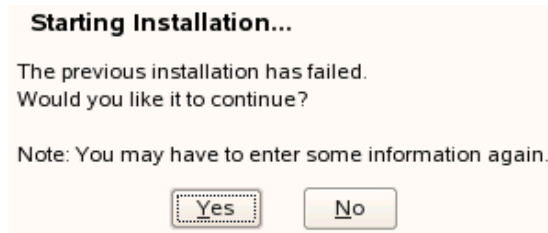


- 6 The online update displays again with additional updates. If a patch has changes to the kernel, you might want to deselect it and install it later after the installation is complete. For procedures, see [“Updating an OES 2 SP1 Linux Server” on page 127](#).

If you do install patches that have changes to the kernel, click *OK* when you see the following message.



- 7 Because the installation was interrupted again, the following message displays. Click *Yes* to continue with the installation.



- 8 After all the patches are installed, continue with “[Specifying Service Configuration Settings](#)” on page 51.

Specifying Service Configuration Settings

- 1 In the *Installation Settings* page, select or deselect the following options:

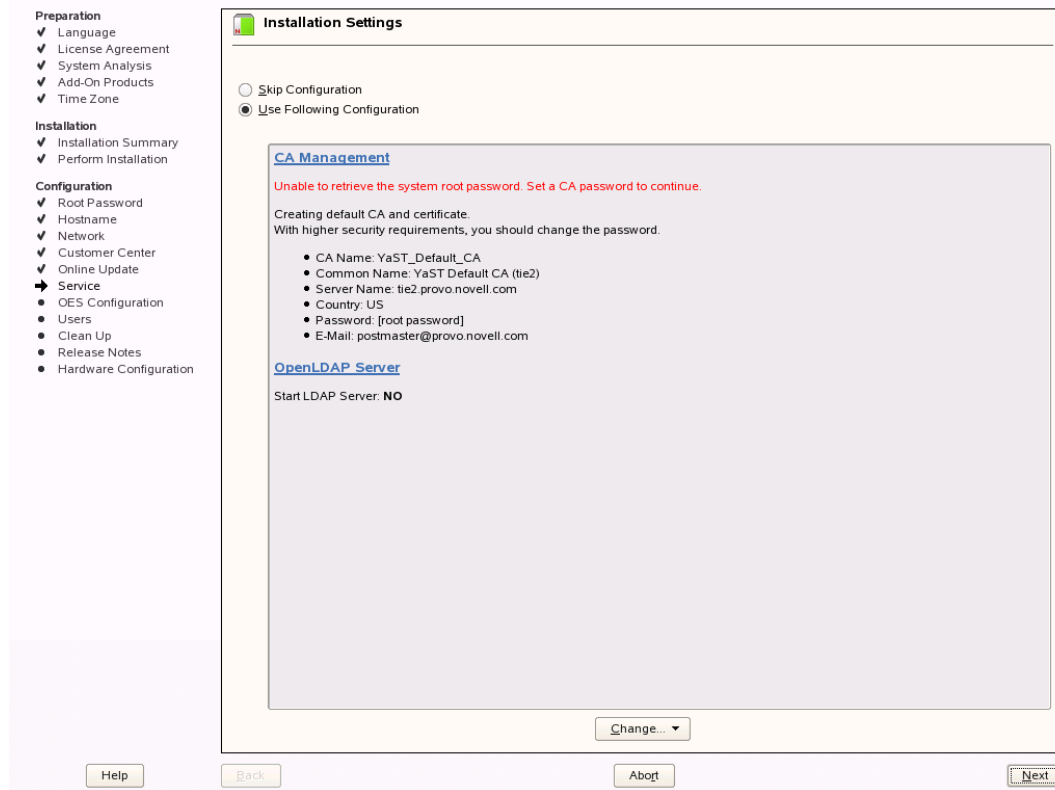
CA Management: You can accept the default settings or change the settings for a greater security level.

The certificate that is created is used by the Apache Web server. If you disable this configuration, each service that uses Apache will not work. The option to run the CA Management configuration is selected by default.

For more information about Certificate Authority Management, see in the “[Managing X.509 Certification](#)” in the *SUSE LINUX Enterprise Server 10 Installation and Administration Guide* (http://www.novell.com/documentation/sles10/sles_admin/data/cha_yast_ca.html).

Do Not Enable OpenLDAP Server: Because the Novell eDirectory LDAP server replaces the SLES 10 OpenLDAP server, you must not enable this option. It is disabled by default.

- 2 If you updated the server during the installation, the default settings for CA management loses the root password. You need to reset the password for `root` in this dialog’s settings.



- 2a** On the Installation Settings page, click the *CA Management* link.
- 2b** On the Managing CA and Certificates page, click *Edit Default Settings*.
- 2c** On the Edit Default Settings page, enter the password for `root` in the Password and Confirm Password fields, then click *Next*.
- 3** When the setting are as desired, click *Next* and continue with one of the applicable procedures as follows:
 - ♦ “Specifying LDAP Configuration Settings” on page 52.
 - ♦ “Specifying eDirectory Configuration Settings” on page 54.

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 expecting you to in 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 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 dialog, specify the following information for the server to add, then click *Add*.

- ♦ IP Address
- ♦ LDAP port and secure LDAP port

LDAP Server Configuration
Use this dialog to specify eDirectory LDAP server information for the OES services you install on this server.

eDirectory Tree Name
Specify the eDirectory tree that you are installing this server into.

Admin Name and Context
Specify the fully distinguished, typeful name of a user with administrative rights in the tree. Use LDAP format. For example, cn=admin,o=organization.

Admin Password
Specify the password for the eDirectory Admin user.

Configured LDAP Servers
The eDirectory LDAP servers listed in this table are 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.

If you are creating a new tree, the server you are installing has the master replica.

If you are installing into an existing tree, this server might not have a replica copied to it, depending on the tree configuration. For details, see the eDirectory 8.8 documentation. <http://www.novell.com/doc>

Add
Click this option to add an eDirectory LDAP server to the Configured LDAP Servers table. This opens an additional dialog

Configured LDAP Servers

eDirectory Tree Name
9-tree

Admin name and context
cn=admin.o=novell

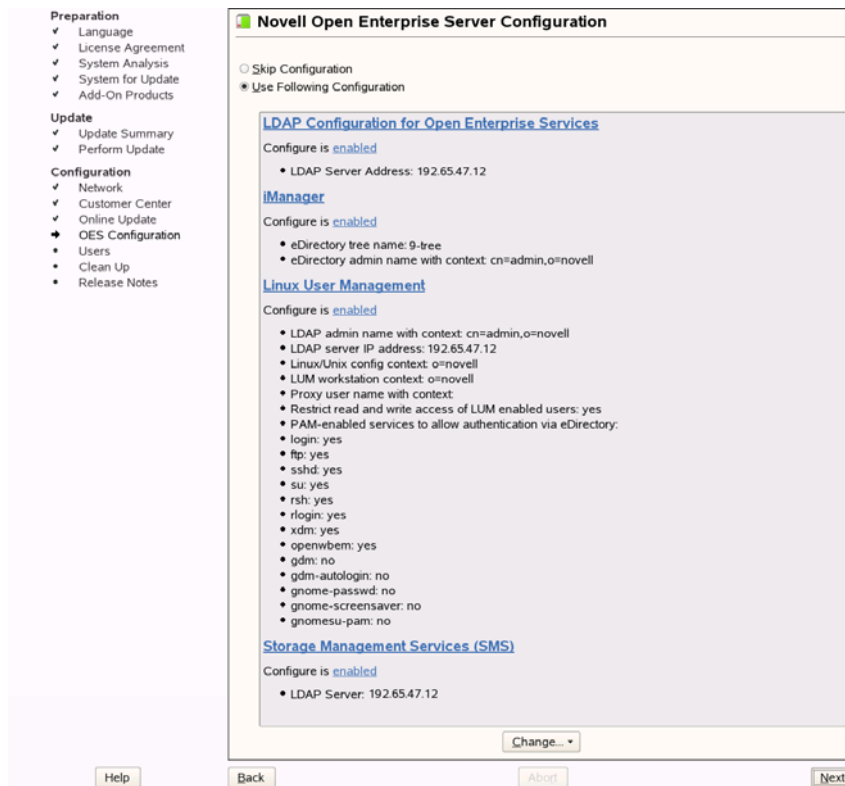
Admin password

IP Address	LDAP Port	Secure LDAP Port	Server
192.65.47.12	389	636	remote

Add Delete

Back Abort Next

- 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 Novell Open Enterprise Server Services” on page 59.

Specifying eDirectory Configuration Settings

When specifying 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 54
- ♦ “Installing the Server into an Existing eDirectory Tree” on page 55

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.
- 3 Select the Use eDirectory Certificates for HTTPS Services check box to replace the existing YaST server certificate and key files with eDirectory server certificate and key files (default).

On an existing SLES 10 server that already has certificates installed and configured, leave this option deselected to preserve the existing certificate configuration.

IMPORTANT: Selecting the Use eDirectory Certificates for HTTPS Services check box overwrites existing certificate configuration files.

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.

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).

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 SPI: Planning and Implementation Guide*.

- 4 Click *Next*.
- 5 In the New Tree Information page, specify the following information:
 - ♦ The fully distinguished, typeful name for the user Admin.
 - ♦ A password for the user Admin.
- 6 Click *Next*.
- 7 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 the number of objects in your tree to be large and 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.
 - ♦ The ports to use for providing access to the iMonitor application.

The default ports are 8028 non-secure and 8030 secure.
- 8 Click *Next*, then continue with “**Specifying Synchronizing Server Time Options**” on page 56.

Installing the Server into an Existing eDirectory Tree

- 1 In the eDirectory Configuration - New or Existing Tree screen, select *Existing Tree*.
- 2 In the *eDirectory Tree Name* field, specify a name for the eDirectory tree you want to join.
- 3 Select the Use eDirectory Certificates for HTTPS Services check box to replace the existing YaST server certificate and key files with eDirectory server certificate and key files (default).

On an existing SLES 10 server that already has certificates installed and configured, leave this option deselected to preserve the existing certificate configuration.

IMPORTANT: Selecting the Use eDirectory Certificates for HTTPS Services check box overwrites existing certificate configuration files.

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.

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).

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 SP1: Planning and Implementation Guide*.

- 4 In the following fields on the eDirectory Configuration - Existing Tree Information dialog, 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.
- 5 Click *Next*.
- 6 In the eDirectory Configuration - Local Server Configuration dialog, 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 the number of objects in your tree to be large and 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.
 - ♦ The ports to use for providing access to the iMonitor application.

The default ports are 8028 non-secure and 8030 secure.
- 7 Click *Next* and continue with “**Specifying Synchronizing Server Time Options**” on page 56.

Specifying Synchronizing Server Time Options

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

- 1 In the eDirectory Configuration - NTP & SLP page, use the Network Time Protocol (NTP) Server field to specify the time source that you want all the servers in the tree to use.

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 installing multiple servers in to the same eDirectory tree, make sure that all servers point to the same time source and not to server holding the master replica. For example, time.novell.com or some other 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.

- 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. 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.

- 3 Continue with **“Specifying SLP Configuration Options” on page 57.**

For information on this important topic, see **Implementing Time Synchronization** in the *OES 2 SP1: 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 it 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 selecting this option, you configure the servers to use by adding or removing them from the SLP Directory Agent list.

- ♦ **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 a SLP Directory Agent is running.
- 2 Click *Next*, 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 supports the traditional NDS password when the NMAS client is in use and is installed by default. 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 Administration Guide*.

- 2 Click *Next*, then continue with “[Configuring Novell Open Enterprise Server Services](#)” on page 59.

Configuring Novell Open Enterprise Server Services

- 1 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. Review the setting for each component and click the component heading to change any settings.

When specifying the configuration information for OES services, see the information in “[Guidelines for Configuring OES 2 SP1 Linux Components](#)” on page 61.

- 2 When you are satisfied with the settings for each component, click *Next*.
- 3 When confirming 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 a message immediately below each product heading that indicates the product or service needs to be configured. If you are running the YaST graphical interface, the text appears red. If you are installing using the YaST text-base interface, it is not red.

For example, if you have 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 specifying the configuration information for OES services, see the information in “[Guidelines for Configuring OES 2 SP1 Linux Components](#)” on page 61.

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 will configure the OES components after the installation is complete. See “[Installing or Configuring OES 2 Services on an Existing OES 2 SP1 Linux or SLES 10 SP2 Server](#)” on page 89.

- 4 After resolving all product configuration problems, click *Next* to proceed with the configuration of all components.
- 5 When the configuration has completed, continue with [Section 3.4, “Finishing the Installation,”](#) on page 60.

3.4 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. In this dialog, do the following:

- 1 Optionally, 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 2 SP1 Linux Servers,”](#) on page 147.

IMPORTANT: If you select this option and haven’t updated the server during installation, see [“Password for User Admin Written in Clear Text in y2log”](#) on page 167

- 2 Finish the installation by clicking *Finish* in the Installation Completed dialog.
- 3 After the server reboots, continue with [Section 3.5, “Verifying That the Installation Was Successful,”](#) on page 60.

3.5 Verifying That the Installation Was Successful

One way to verify that your OES Linux 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 URLs:
`http://IP_or_DNS`
where *IP_or_DNS* is the IP address or DNS name of your OES Linux server.
You should see a Web page displayed similar to the following:

Novell Open Enterprise Server 2 Support Pack 1

[Home](#)
[Management Services](#)
[Client Software](#)
[Novell Customer Center](#)
[Documentation](#)
[Services & Support](#)
[Partners & Communities](#)

Novell Open Enterprise Server provides secure, reliable and highly available workgroup services in an open environment that's easy to deploy and manage. It meets the needs of workgroups large and small by delivering proven networking, communication and collaboration capabilities. Unlike other server platforms that force vendor lock-in or can't meet enterprise needs, Novell Open Enterprise Server delivers advanced workgroup services in an open, flexible environment. Novell Open Enterprise Server combines services from Novell, the trusted leader for secure networking services, with SUSE Linux Enterprise Server, the leading open platform for supporting solutions for your mission-critical needs. ☺



What's new in Novell
Open Enterprise
Server 2 Support
Pack 1

Do you know about
the Novell Open
Workgroup Suite?

Virtualize NetWare

Consolidate your
NetWare by running it
virtualized

Virtualize NetWare:
Getting Started +

More about Xen
virtualization +

Migrate to Linux

Migrate your NetWare
services to Linux

Migrate to Linux: Getting
Started +

+ Get Trained

Need to update your
skills? Let Novell help
you stay ahead.

Want to transition your
NetWare skills to Linux?
Start here +

Find Linux counterparts
for your favorite NetWare
commands +

- 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 87.

3.6 Guidelines for Configuring OES 2 SP1 Linux Components

Keep the following in mind as you configure the OES 2 SP1 Linux components:

Table 3-5 Guidelines for Configuring OES Components

Issue	Guideline
Software Selections When Using Text-Based YaST	<p>Some older machines, such as Dell* 1300, use the text mode install by default when the video card does not meet SLES 10 specifications. When you go into 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 Typeful Admin Names	<p>When installing 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>
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> <hr/> <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 cn=juan\garcia.ou=users.o=novell. The period (.) inside a name component must be escaped.</p> <p>When using NDAP format (dot), you must escape all embedded dots. For example: cn=admin.o=novell\.provo</p> <p>When using LDAP format (commas), you must escape all embedded commas. For example: cn=admin,o=novell\,provo</p> <hr/> <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 cn contains a period (.), you must remove the backslash (\) from the unique_id field of the User object container.</p> <p>For example, cn=juan.garcia has a unique_id attribute = juan\garcia. Before such a user can be LUM-enabled, the backslash (\) must be removed from the unique_id attribute.</p>

Each OES component and the configurable fields associated with it are listed in the following sections. These components also include the default or previously entered values, where applicable. Some components might require some additional configuration as part of the OES installation; this information is also included in the tables.

The following sections list the specific configuration information required for each component:

- ♦ [Section 3.6.1, “LDAP Configuration for Open Enterprise Services,” on page 63](#)
- ♦ [Section 3.6.2, “Novell AFP for Linux,” on page 64](#)
- ♦ [Section 3.6.3, “Novell Archive and Version Services,” on page 65](#)
- ♦ [Section 3.6.4, “Novell Backup/Storage Management Services \(SMS\),” on page 66](#)
- ♦ [Section 3.6.5, “Novell CIFS for Linux,” on page 66](#)
- ♦ [Section 3.6.6, “Novell Cluster Services,” on page 67](#)
- ♦ [Section 3.6.7, “Novell DHCP Services,” on page 69](#)
- ♦ [Section 3.6.8, “Novell DNS Services,” on page 71](#)
- ♦ [Section 3.6.9, “Novell Domain Services for Windows,” on page 72](#)
- ♦ [Section 3.6.10, “Novell eDirectory Services,” on page 72](#)
- ♦ [Section 3.6.11, “Novell FTP Services,” on page 77](#)
- ♦ [Section 3.6.12, “Novell iFolder,” on page 77](#)
- ♦ [Section 3.6.13, “Novell iManager,” on page 81](#)
- ♦ [Section 3.6.14, “Novell iPrint,” on page 81](#)
- ♦ [Section 3.6.15, “Novell Linux User Management,” on page 82](#)
- ♦ [Section 3.6.16, “Novell NCP Server / Dynamic Storage Technology,” on page 84](#)
- ♦ [Section 3.6.17, “Novell NetStorage,” on page 84](#)
- ♦ [Section 3.6.18, “Novell Pre-Migration Server,” on page 85](#)
- ♦ [Section 3.6.19, “Novell QuickFinder,” on page 85](#)
- ♦ [Section 3.6.20, “Novell Remote Manager,” on page 85](#)
- ♦ [Section 3.6.21, “Novell Samba,” on page 86](#)
- ♦ [Section 3.6.22, “Novell Storage Services \(NSS\),” on page 86](#)

3.6.1 LDAP Configuration for Open Enterprise Services

Table 3-6 *LDAP Configuration for Open Enterprise Services Values*

Parameter	Default or Previously Entered Values
eDirectory Tree Name	The new eDirectory tree name (default) or name of eDirectory tree you are installing the server into.

Parameter	Default or Previously Entered Values
Admin Name and Context	cn=admin,o=novell
Specify the fully distinguished, typeful name of a user with administrative rights in the tree. Use LDAP format.	
Admin Password	
Specify a password for the eDirectory Admin user.	
Configured LDAP Servers	LDAP port: 389
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 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.	Secure LDAP port: 636
	Server Type: local
For each server you must specify an IP Address, LDAP Port, Secure LDAP Port, and Server Type	

3.6.2 Novell AFP for Linux

Table 3-7 *Novell Apple Filing Protocol Parameters and Values*

Parameter	Default or Previously Entered Values
AFP Proxy User	Create a new AFP Proxy User
Select <i>Use existing user as AFP Proxy User</i> to allow the user to use an existing proxy user to configure the AFP service.	
Select <i>Create a new AFP Proxy User</i> to allow the user to create a new proxy user to configure the AFP service.	
AFP Proxy User Name	
Specify the FQDN (fully qualified distinguished name) of the AFP proxy user.	
For example: cn=user, o=novell	
NOTE: This user is granted rights to read the passwords of any users, including non-AFP users, that are governed by any of the password policies you select in the Novell AFP Service Configuration page.	
AFP Proxy User Password	
Specify the password to authenticate to the AFP server.	

Parameter	Default or Previously Entered Values
eDirectory Context	
Specify the context for the AFP server.	
The context defines the position of an object within the directory tree structure. It is a list of container objects leading from the object to the root of the tree.	
Specifying the context preempts the need to specify the FQDN (fully qualified distinguished name) of the user.	
Credential Storage Location	CASA
Specify where the user credentials of the AFP proxy server are to be stored.	
For security reasons, the default and recommended method of credential storage is CASA.	
For additional configuration instructions, see “ Installing and Setting Up AFP ” in the <i>OES 2 SP1: Novell AFP For Linux Administration Guide</i>	

3.6.3 Novell Archive and Version Services

Table 3-8 *Novell Archive and Version Services Parameters and Values*

Parameter	Default or Previously Entered Values
Database Port Number	5432
Specify a port number to use for the archive database communications.	
Database Username	arkuser
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.	
Database Password	The default is the password for the eDirectory Admin user.
Specify a password for the database user.	

For additional configuration instructions, see “[Setting Up Archive and Version Services](#)” in the *OES 2 SP1: Novell Archive and Version Services 2.1 for Linux Administration Guide*.

3.6.4 Novell Backup/Storage Management Services (SMS)

Table 3-9 *Novell Backup / Storage Management Services Parameters and Values*

Parameter	Default or Previously Entered Values
Directory Server Address	The default is the first server selected in the <i>LDAP Configuration</i> list of servers.
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.	

For additional configuration instructions, see “**Installing and Configuring SMS**” in the *Installing and Configuring SMS*.

3.6.5 Novell CIFS for Linux

Table 3-10 *Novell CIFS Parameters and Values*

Parameter	Default or Previously Entered Values
eDirectory server address or host name	
This is the default eDirectory server IP address. Select from the drop-down list to change to a different server.	
Use secure channel for configuration	Selected
By default, this option is selected. This is preferred.	
LDAP port for CIFS Server	636
The default is 636. This is preferred. Do not change the default port value during a fresh installation of the tree.	
NOTE: If the OES 2 Linux server is attached to an existing tree, the administrator can change this to another LDAP port.	
Local NCP Server context	Displays the NCP™ Server context.
CIFS Proxy User Name	
Create a new proxy user. Use the format <code>cn=proxyusername,o=company</code> .	
CIFS Proxy User Password	
The password specified here is set in the CIFS configuration file. It cannot be changed. The maximum length is 256 characters.	

Parameter	Default or Previously Entered Values
eDirectory Contexts	The default is displayed.
Select or add a new context, indicating where the user resides. Use the <i>Add</i> and <i>Delete</i> buttons to add and delete contexts.	
Credential Storage Location	CASA
By default, the credential is stored in CASA. It is possible to store the credentials by using the Local File option. The password file is encrypted and encoded in the credential storage location.	
For additional configuration instructions, see “ Installing a CIFS Server on OES 2 SP1 Linux ” in the <i>OES 2 SP1: Novell CIFS for Linux Administration Guide</i> <i>OES 2 SP1: Novell AFP For Linux Administration Guide</i>	

3.6.6 Novell Cluster Services

Table 3-11 *Novell Cluster Services Parameters and Values*

Parameter	Default or Previously Entered Values
New or Existing Cluster	New Cluster
Cluster FDN	
Specify 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 you will give 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.	
Directory Server Address	The default is the first server selected in the <i>LDAP Configuration</i> list of servers.
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.	

Parameter	Default or Previously Entered Values
<p>Cluster IP Address</p> <p>If you are creating a new cluster, specify a unique IP address for the cluster.</p> <p>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.</p>	
<p>Storage Device With Shared Media</p> <p>If you are creating a new cluster, select the device where the Split Brain Detector (SBD) partition will be created.</p> <p>If you have a shared disk system attached to your cluster servers, Novell Cluster Services will create 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.</p> <p>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.</p> <p>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.</p>	none
<p>Optional Device for Mirrored Partitions</p> <p>If you want to mirror the SBD partition for greater fault tolerance, select the device where you want to mirror to.</p> <p>You can also mirror SBD partitions after installing Novell Cluster Services.</p>	
<p>IP Address of this Node</p> <p>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.</p>	
<p>Start Cluster Services Now</p> <p>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.</p> <p>This option applies only to installing Novell Cluster Services after the OES installation because it starts automatically when the server initializes during the installation.</p> <p>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.</p> <p>You can manually start Novell Cluster Services by going to the <code>/etc/init.d</code> directory and entering <code>./novell-ncs start</code> at the server console of the cluster server.</p>	Later

For additional instructions, see the *OES 2 SP1: Novell Cluster Services 1.8.5 for Linux Administration Guide*.

3.6.7 Novell DHCP Services

Table 3-12 *Novell DHCP Services Parameters and Values*

Parameter	Default or Previously Entered Values
DHCP Server Context	o=example
Specify a context for the DHCP Server object.	
DHCP Server Object Name	DHCP_example_server
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.	
DHCP Locator Object	o=example
Specify the context for the DHCP Locator object.	
The DHCP Locator object has references to dhcpServer and dhcpService objects.	
Group Context	o=example
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.	
Log File Location	It is usually in the /var/log/ directory.
Specify the path and filename for the DHCP Services log file. You can type the path manually or click <i>Browse</i> to locate the log.	
LDAP Method	Static
Select <i>Static</i> if you do not want the DHCP server to query the LDAP server for host details.	
Select <i>Dynamic</i> if you want the DHCP server to query for host details from the LDAP server for every request.	
Selecting the dynamic LDAP method ensures that the responses you receive to queries are accurate, but the server takes a longer time to respond.	
Referrals	
Select <i>Chase Referral</i> if you want the DHCP server to follow referrals. Otherwise, select the <i>Do Not Chase Referral</i> option.	
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.	

Parameter	Default or Previously Entered Values
<p>eDirectory Server Address or Host Name</p> <p>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.</p> <p>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.</p>	<p>The default is the first server selected in the <i>LDAP Configuration</i> list of servers.</p>
<p>Use Secure Channel for Configuration</p> <p>This option is selected by default. When you are configuring DHCP services, it ensures that all configuration is transferred over a secure channel.</p> <p>Deselecting this option lets a user with fewer privileges configure LDAP services.</p>	<p>Selected</p>
<p>LDAP User Name with Context</p> <p>Specify a typeful, distinguished name and context for an LDAP user.</p> <p>This user should be an eDirectory user that can access the DHCP server.</p>	<p>cn=joe,o=example</p>
<p>LDAP User Password</p> <p>Type a password for the LDAP user.</p>	
<p>LDAP Port for DHCP Server</p> <p>Select a port for the LDAP operations to use.</p>	<p>636</p>
<p>Use Secure LDAP Channel</p> <p>This option is selected by default to ensure 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.</p>	<p>Selected</p>
<p>Request Certificate</p> <p>Specifies what checks to perform on server certificate in a SSL/TLS session. Select one of the following options:</p> <ul style="list-style-type: none"> ♦ <i>Never</i>: The server does not ask the client for a certificate. ♦ <i>Allow</i>: The server requests a client certificate, but if a certificate is not provided or a wrong certificate is provided, the session still proceeds normally. ♦ <i>Try</i>: 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 ♦ <i>Hard</i>: The server requests a certificate. A valid certificate must be provided, or the session is immediately terminated. 	<p>Never</p>

Parameter	Default or Previously Entered Values
<p>Paths to Certificate Files</p> <p>Specify or browse the path for the certificate files.</p> <p>The LDAP CA file contains CA Certificates</p> <p>The LDAP client certificate contains the client certificate.</p> <p>The LDAP client key file contains the key file for the client certificate.</p>	<p>The default location for these files is <code>/etc/opt/novell/certs</code>.</p>
<p>Network Boards for the Novell DHCP Server</p> <p>From the available interfaces, select the network interfaces that the Novell DHCP server should listen to.</p>	

For additional configuration instructions, see “[Installing and Configuring DHCP](#)” in the *OES 2 SP1: Novell DNS/DHCP Administration Guide for Linux*.

3.6.8 Novell DNS Services

Table 3-13 *Novell DNS Services Parameters and Values*

Parameter	Default or Previously Entered Values
<p>Directory server address</p> <p>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.</p> <p>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.</p>	<p>The default is the first server selected in the <i>LDAP Configuration</i> list of servers.</p>
<p>Novell DNS Services Locator Object Context</p> <p>Specify the context for the DNS Locator object.</p> <p>The Locator object contains global defaults, DHCP options, and a list of all DNS and DHCP servers, subnets, and zones in the tree.</p>	<p>o=example</p>
<p>Novell DNS Services Root Server Info Context</p> <p>Specify the context for the DNS Services root server.</p> <p>The RootSrvrInfo Zone is an eDirectory container object that contains resource records for the DNS root servers.</p>	<p>o=example</p>
<p>Novell DNS Services Group Object Context</p> <p>Specify the context for the DNS Group object.</p> <p>This object is used to grant DNS servers the necessary rights to other data within the eDirectory tree.</p>	<p>o=example</p>

Parameter	Default or Previously Entered Values
Local NCP Server Context	o=example
Specify a context for the local NCP Server object.	
Use Secure LDAP Port	Selected
This option is selected by default to ensure that the data transferred by this service is secure and private. If you deselect this option, the transferred data is in clear text format.	
eDirectory Username with Context for DNS	cn=jsmith,ou=users,o=example
Specify the fully distinguished, typeful name of an existing eDirectory user.	
This user is used to authenticate to eDirectory to access information for DNS during runtime. The user must have eDirectory read, write, and browse rights under the specified context.	
Specify Password for eDirectory User	
Type the password for the eDirectory user that you specified for accessing DNS.	

For additional configuration instructions, see “[Installing and Configuring DNS](#)” in the *OES 2 SP1: Novell DNS/DHCP Administration Guide for Linux*.

3.6.9 Novell Domain Services for Windows

There are multiple configuration scenarios, depending on your deployment. For information, see “[Installing and Configuring Domain Services for Windows](#)” in the *OES 2 SP1: Domain Services for Windows Administration Guide*.

3.6.10 Novell eDirectory Services

Table 3-14 *Novell eDirectory Parameters and Values*

Parameter	Default or Previously Entered Values
New Tree	Selected
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 ” in the <i>Novell eDirectory 8.8 Administration Guide</i> .	

Parameter	Default or Previously Entered Values
Tree Name	
Specify the name of the eDirectory tree you want to create or the name of the tree you want to install this server into. If you are creating a new tree, specify a unique tree name.	
Use eDirectory Certificates for HTTPS Services	Selected on new installs.
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.	Deleted on add-on or upgrades to existing servers.
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).	
For new server installations, this option is enabled by default and is recommended for the increased security it provides.	
For add-on installations and upgrades to existing servers, this option is not selected by default. This prevents any certificates that you might have installed from a third-party CA from being accidentally backed up and overwritten. However, if you have not installed third-party certificates and your services are using the YaST-generated certificates, we recommend that you select this option for increased security.	
For more information on certificate management and this option, see "Security" in the <i>OES 2 SP1: Planning and Implementation Guide</i> .	
FDN Admin Name with Context	cn=admin,o=example
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.	
When specifying a context, you can use LDAP (comma-delimited) or NDAP (dot delimited) format.	
Admin Password	
Specify the eDirectory administrator's password. This is the password of the user specified in the prior field.	
Verify Admin Password	
Retype the password to verify it.	
Enter Server Context	
Specify the location of the new server object in the eDirectory tree.	
When specifying a context, you can use LDAP (comma delimited) or NDAP (dot-delimited) format.	

Parameter	Default or Previously Entered Values
<p>Enter Directory Information Base (DIB) Location</p> <p>Specify a location for the eDirectory database. The default path is <code>/var/opt/novell/eDirectory/data/dib</code>, 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.</p>	<p><code>/var/opt/novell/eDirectory/data/dib</code></p>
<p>Enter LDAP Port</p> <p>Specify the LDAP port number this server will use to service LDAP requests.</p>	<p>389</p>
<p>Enter Secure LDAP Port</p> <p>Specify secure LDAP port number this server will use to service LDAP requests.</p>	<p>636</p>
<p>Enter iMonitor Port</p> <p>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.</p>	<p>8028</p>
<p>Enter Secure iMonitor Port</p> <p>Specify the secure port this server will use to provide access to the iMonitor application.</p>	<p>8030</p>
<p>Network Time Protocol (NTP) Server</p> <p>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, or you can select <i>Local Clock</i> to use the server hardware clock.</p> <p>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.</p> <p>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 Synchronization” in the <i>OES 2 SP1: Planning and Implementation Guide</i>.</p>	
<p>Do Not Configure SLP</p> <p>Do not configure the Service Location Protocol. SLP enables client applications to dynamically discover services in TCP/IP networks.</p> <p>IMPORTANT: If the tree where you are installing this server has or will have more than three servers, you must configure SLP.</p>	

Parameter	Default or Previously Entered Values
<hr/> Use Multicast to Access SLP	
<p>Sends SLP requests to multiple servers that are using the Service Location General Multicast Address (224.0.1.22). All Service Agents holding service information that satisfies the request unicast the reply directly to the requesting User Agent. Use this option if no Directory Agents are available.</p>	
<hr/> <p>IMPORTANT: If you select this option, you must disable the firewall.</p> <hr/>	
Configure SLP to Use an Existing Directory Agent	
<p>Configures SLP to use an existing Directory Agent in your network. A Directory Agent stores and disseminates service information for the network.</p>	
Service Location Protocol Scopes	Default
<p>Specify the scopes a user agent (UA) or service agent (SA) is allowed when making requests or when registering services, or specify the scopes a directory agent (DA) must support. The default value is DEFAULT.</p> <p>Use commas with no space to separate each scope. For example, net.slp.useScopes = myScope1,myScope2,myScope3</p>	<p>This information is required when selecting the <i>Use Multicast to Access SLP</i> or <i>Configure SLP to Use an Existing Directory Agent</i> option is selected.</p>
Configured SLP Directory Agent	Enabled only when configuring SLP to use an existing Directory Agent.
<p>Specify the hostname or IP address of one or more external servers on which a SLP Directory Agent is running. Do not specify the local host.</p> <p>To add an agent, click <i>Add</i>. In the <i>SLP DA Server</i> field, specify a server's DNS name or IP address, then click <i>Add</i>.</p> <p>To remove an agent, select one or more agents to remove, then click <i>Delete</i>.</p> <hr/>	

Parameter	Default or Previously Entered Values
<p>Novell Modular Authentication Services</p> <p>Choose the login methods that you want to install into eDirectory by selecting the appropriate check boxes.</p> <p>If you want to install all of the login methods into eDirectory, click <i>Select All</i>. If you want to clear all selections, click <i>Deselect All</i>.</p> <hr/> <p>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.</p> <hr/> <ul style="list-style-type: none"> ♦ 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. <p>For more information on these login methods, see “Managing Login and Post-Login Methods and Sequences” in the <i>Novell Modular Authentication Services 3.3 Administration Guide</i>.</p>	<p>Challenge Response and NDS selected</p>

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

3.6.11 Novell FTP Services

No additional configuration is required.

3.6.12 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 are storing 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 3.6* to enter new information. All previous configuration information is removed and replaced.

Table 3-15 *Novell iFolder 3.6 Parameters and Values*

Parameter	Default or Previously Entered Values
iFolder Component to Be Configured	All three options are selected
iFolder Server: This option lets you configure the settings for the iFolder server. It is the central repository for storing user iFolders and synchronizing files for enterprise users.	
iFolder Web Admin: This option 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: This option 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.	
Name Used to Identify the iFolder System to Users	iFolder
Specify a unique name to identify your iFolder Enterprise Server.	
System Description (optional)	iFolder Enterprise System
Specify a descriptive label for your iFolder Enterprise Server to identify it to the users.	

Parameter	Default or Previously Entered Values
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.	<code>/var/simias/data/</code>
IMPORTANT: This location cannot be modified after install.	
Path to the Default Configuration Files Specify the case-sensitive address of the location where the iFolder Enterprise Server stores iFolder configuration files.	<code>/var/simias/conf</code>
IMPORTANT: This location cannot be modified after install, and it can be the same location as that of the server data files.	
Path to the Recovery Agent Certificates (optional) Specify the path to the recovery agent certificates that are used for recovering the encryption key.	
Name of iFolder Server Specify a unique name to identify your iFolder Enterprise Server. For example: Host1.	<code>server_name</code>
iFolder Public URL Specify the public URL for users to reach the iFolder Enterprise Server.	<code>local ip address</code>
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.	<code>local ip address</code>
iFolder Port to Listen On Specify the port for the iFolder to listen on.	80
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.	not selected
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.	

Parameter	Default or Previously Entered Values
<p>Directory server address</p> <p>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.</p> <p>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.</p>	<p>The default is the first server selected in the <i>LDAP Configuration</i> list of servers.</p>
<p>The iFolder Default Administrator</p> <p>Specify the username for the default iFolder administrative user. Use the full distinguished name of the iFolder administrative user.</p>	<p>cn=admin,o=example</p>
<p>iFolder Admin Password</p> <p>Specify a password for the iFolder administrative user.</p>	
<p>Verify iFolder Admin Password</p> <p>Type the password for the iFolder administrative user again.</p>	
<p>LDAP Proxy User</p> <p>Specify the full distinguished name of the LDAP Proxy user.</p> <p>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.</p>	<p>cn=user,o=example</p>
<p>LDAP Proxy User Password</p> <p>Specify a password for the LDAP Proxy user.</p>	
<p>Verify LDAP Proxy User Password</p> <p>Type the password for the LDAP Proxy user again.</p>	
<p>LDAP Search Context</p> <p>Click <i>Add</i>, 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</p> <p>If no context is specified, only the iFolder administrative user is provisioned for services during the install.</p>	<p>o=example</p>

Parameter	Default or Previously Entered Values
<p>LDAP Naming Attribute</p> <p>Select which LDAP attribute of the User account to apply when authenticating users. This setting cannot be changed after the install.</p> <p>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.</p> <p>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.</p>	Common Name (CN)
<p>Require a Secure Connection Between the LDAP server and the iFolder Server.</p> <p>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.</p>	Selected
<p>iFolder Web Access Configuration</p> <p>Apache Alias</p> <p>Specify the Apache alias to point to the iFolder Web Access Application. This is a user-friendly pointer for the Apache service.</p>	/ifolder
<p>Host or IP Address of the iFolder Server</p> <p>Specify the host or IP address of the iFolder Enterprise Server to 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.</p>	local server
<p>Require a Secure Connection Options</p> <p>These options are selected by default to establish a secure connection between the iFolder server and the iFolder Web Access application or the Web browser and the iFolder Web Access application. This enables a secure SSL channel between the two.</p>	Selected
<p>Web Admin Configuration</p> <p>Apache Alias</p> <p>Specify an Apache alias to point to the iFolder Web Admin application. This is an admin-friendly pointer for the Apache service.</p>	/admin
<p>Host or IP Address of the iFolder Server</p> <p>Specify the hostname or IP address of the iFolder Enterprise Server to be managed by the iFolder Web Admin application. The iFolder Web admin application manages this host.</p>	local server

Parameter	Default or Previously Entered Values
Secure Connection Options	Selected
<p>These options are selected by default to establish a secure connection between the iFolder Enterprise Server and the iFolder Web Admin application or the Web browser and the iFolder Web Admin application. This enables a secure SSL channel between the two.</p>	

For additional configuration instructions, see “[Installing and Configuring iFolder Services](#)” in the *OES 2 SP1: Novell iFolder 3.7 Administration Guide*.

3.6.13 Novell iManager

Table 3-16 *Novell iManager Parameters and Values*

Parameter	Default or Previously Entered Values
eDirectory Tree Name	exampletree
<p>Shows the name of a valid eDirectory tree that you specified when configuring eDirectory. To change this configuration, you must change the eDirectory configuration.</p>	
eDirectory Admin with Context	cn=admin,o=example
<p>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.</p>	

For additional configuration instructions, see “[Installing iManager](#)” in the *Novell iManager 2.7 Installation Guide*.

3.6.14 Novell iPrint

Table 3-17 *Novell iPrint Parameters and Values*

Parameter	Default or Previously Entered Values
Directory server address	The default is the first server selected in the <i>LDAP Configuration</i> list of servers.
<p>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.</p> <p>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.</p>	

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

3.6.15 Novell Linux User Management

Table 3-18 *Novell Linux User Management Parameters and Values*

Parameter	Default or Previously Entered Values
<p>Directory server address</p> <p>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.</p> <p>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.</p>	<p>The default is the first server selected in the <i>LDAP Configuration</i> list of servers.</p>
<p>Unix Config Context</p> <p>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.</p> <p>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.</p> <p>If the Unix Config Object is placed below the location of the User objects, the <code>/etc/nam.conf</code> file on the target computer must include the <code>support-outside-base-context=yes</code> parameter.</p> <p>Geographically dispersed networks might require multiple Unix Config objects in a single tree, but most networks need only one Unix Config object in eDirectory.</p>	<p>o=example</p>
<p>Unix Workstation Context</p> <p>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.</p> <p>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.</p>	<p>o=example</p>
<p>Proxy User Name with Context (Optional)</p> <p>Specify a user (existing or created here) with rights to search the LDAP tree for LUM objects.</p>	<p>cn=proxy,o=novell</p>

Parameter	Default or Previously Entered Values
Proxy User Password	
Specify a password (existing or created here) for the Proxy user.	
Restrict Access to the Home Directories of Other Users	Selected
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 <code>/etc/login.defs</code> from 022 to 077.	
Services to LUM-enable for authentication via eDirectory:	IMPORTANT: Before you change the PAM-enabled service settings, be sure you understand the security implications explained in “ User Restrictions—Some OES 2 Linux Limitations ” in the OES 2 SP1: Planning and Implementation Guide .
<code>login:</code> no	
<code>ftp:</code> no	
<code>sshd:</code> no	
<code>su:</code> no	
<code>rsh:</code> no	
<code>rlogin:</code> no	
<code>xdm:</code> no	
<code>openwbem:</code> yes	
<code>gdm:</code> no	
<code>gdm-autologin:</code> no	
<code>gnome-passwd:</code> no	
<code>gnome-screensaver:</code> no	
<code>gnomesu-pam:</code> no	
Select the services to LUM-enable on this server. The services will be available to authenticated LUM users.	
<i>OpenWBEM</i> 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 get access to iManager, you must enable OpenWBEM.	
<i>SSHD</i> and <i>NetStorage</i> : If you want to use the SSH protocol to define a NetStorage storage location object so your users can use SSH to have access to local files or files on another server in the same eDirectory tree, you must select SSHD as a LUM-enabled service.	
If do not select <i>SSHD</i> , users cannot to log in to NetStorage through SSH to access their files.	
For additional configuration instructions, see “ Setting Up Linux User Management ” in the OES 2 SP1: Novell Linux User Management Technology Guide .	

3.6.16 Novell NCP Server / Dynamic Storage Technology

Table 3-19 *Novell NCP Server Parameters and Values*

Parameter	Default or Previously Entered Values
Admin Name with Context	cn=admin,o=example
This value is a default value that is specified in the eDirectory configuration.	

For additional configuration instructions, see “[Installing and Configuring NCP Server for Linux](#)” in the *OES 2 SP1: NCP Server for Linux Administration Guide*.

3.6.17 Novell NetStorage

Table 3-20 *Novell NetStorage Parameters and Values*

Parameter	Default or Previously Entered Values
Authentication Domain Host	The default is the first server selected in the <i>LDAP Configuration</i> list of servers.
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.	
Proxy User Name with Context	cn=admin,o=example
Enter the Proxy User Name including the context, or accept the default. This is required so that NetStorage has sufficient rights to get and save users iFolder passphrases the first time they access iFolder. This means that users do not need to enter a passphrase when accessing files and directories on an iFolder server. The default is the Admin user that is created during the eDirectory installation.	
User Context	o=example
Enter the Users 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.	

For additional configuration instructions, see “[Installing NetStorage](#)” in the *OES 2 SP1: NetStorage for Linux Administration Guide*.

3.6.18 Novell Pre-Migration Server

No additional configuration is required. For information, see “[Preparing the Source Server for Migration](#)” the *OES 2 SP1: Migration Tool Administration Guide*.

3.6.19 Novell QuickFinder

Table 3-21 *Novell QuickFinder Parameters and Values*

Parameter	Default or Previously Entered Values
Novell QuickFinder Admin User Type	Local
Make the QuickFinder administrator a LUM-enabled eDirectory user or a local Linux user.	
<i>Local:</i> Select this option to give QuickFinder Server administration rights to a local Linux user (the default is the <code>root</code> user if no other local users exist).	
<i>Directory LUM Enabled:</i> Gives QuickFinder Server administration rights to an eDirectory user.	
eDirectory Admin Name	cn=admin.o=example
Enter the QuickFinder administrator name. If you selected <i>Directory LUM enabled</i> as the user type, include the full context (such as <code>cn=admin,o=novell</code>). If you selected <i>Local</i> as the user type, enter only the admin name (such as <code>root</code>). If the user does not already exist, it will be created.	
Add novlwww User to the Shadow Group	Selected
QuickFinder uses the 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 (<code>wwwrun</code>).	
For QuickFinder to verify user credentials for local users (including <code>root</code>), the <code>wwwrun</code> user must be added to the local shadow group. If only LUM-enabled eDirectory users will use QuickFinder, this option does not need to be set.	

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

3.6.20 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 SP1: Novell Remote Manager for Linux Administration Guide*.

3.6.21 Novell Samba

Table 3-22 *Novell Samba Parameters and Values*

Field or Selection	Default or Previously Entered Values and Comments
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. 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 Linux server.	The default is the first server selected in the <i>LDAP Configuration</i> list of servers.
Base Context for Samba Users The eDirectory context (existing or created here) where the default Samba group is created. By default, this is the same context as the LUM Workstation object. Do not change the default unless you are altering the standard Samba configuration.	o=example
Proxy User Name with Context A user on the LDAP server specified that has rights to search the LDAP tree for Samba users. The name and context must be specified using typeful syntax. (cn=name,ou=organizational_unit,o=organization)	cn=admin.o=example
Proxy User Password The password of the Proxy User specified above.	

For additional configuration instructions, see “[Installing the Novell Samba Components](#)” in the *OES2 SP1: Samba Administration Guide*.

3.6.22 Novell Storage Services (NSS)

Table 3-23 *Novell Storage Services Parameters and Values*

Parameter	Default or Previously Entered Values
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.	The default is the first server selected in the <i>LDAP Configuration</i> list of servers.

Parameter	Default or Previously Entered Values
FD NSS Admin Name with Context	cn=servernameadmin.o=example
Enter the NSS Admin name and context. 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. The default NSS Admin Name is the server host name concatenated with the LDAP Admin Name you entered for this server. For example: cn=HOSTNAMEadmin,o=acme	

For additional configuration instructions, see “[Installing and Configuring Novell Storage Services](#)” in the *OES 2 SP1: NSS File System Administration Guide*.

3.7 What's Next

After you've completed the initial installation, complete any additional tasks you might need to perform. See “[Completing Installation or Upgrade Tasks on OES 2 SP1 Linux](#)” on page 123 and “[Updating an OES 2 SP1 Linux Server](#)” on page 127.

Installing or Configuring OES 2 Services on an Existing OES 2 SP1 Linux or SLES 10 SP2 Server

After installing or upgrading to Novell® Open Enterprise Server (OES 2 SP1) Linux, 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 SP2, you can also add OES 2 SP1 services to the server.

- ♦ [Section 4.1, “Installing or Configuring OES Services on an Existing Server,” on page 89](#)
- ♦ [Section 4.2, “What's Next,” on page 92](#)

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 Installing or Configuring OES Services on an Existing Server

IMPORTANT: If you are adding supported OES2 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 SP1 components.

1. In YaST, select System > Boot Loader > SuSE Linux Enterprise Server 10 SP2 > Set As Default > Finish.
2. Reboot the server.

After adding the supported OES2 components, reset the boot loader option to XEN.

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

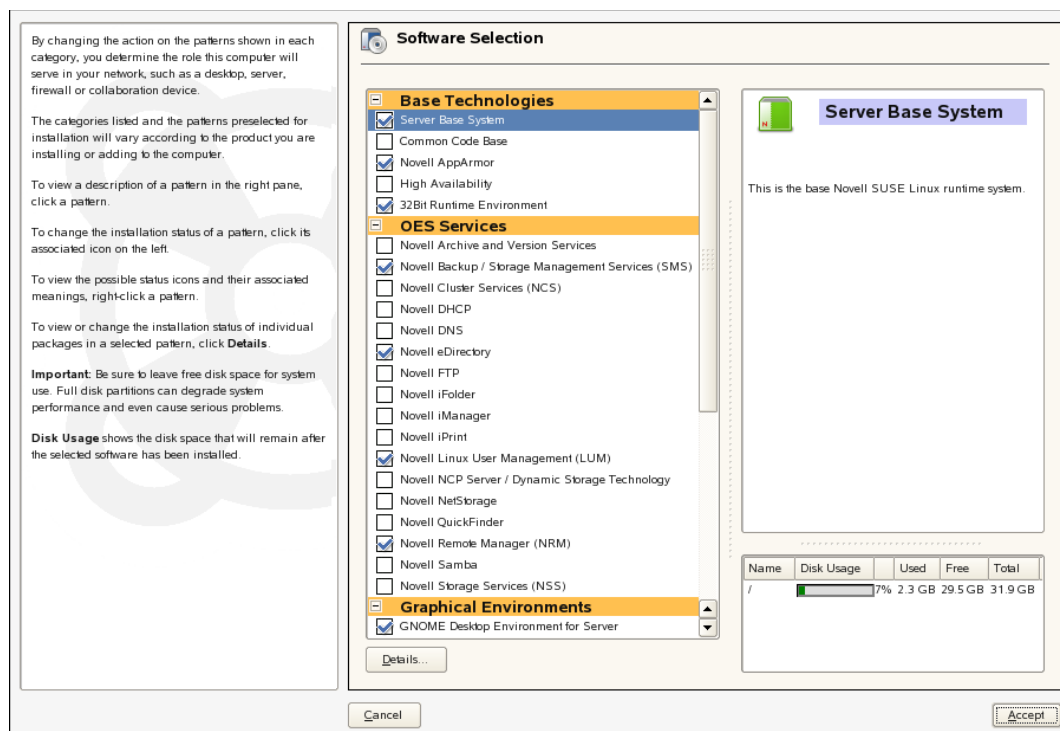
Be sure to add only those OES 2 SP1 components that are supported on a VM host server. For more information, see [“Step 3 on page 155.”](#)

To install or configure OES 2 SP1 services on an existing OES 2 SP1 Linux server or SLES 10 SP2 server:

- 1** Open YaST.
- 2** If an OES 2 SP1 installation source has not been added to the server:
 - 2a** Click *Software > Add-on Product*.
 - 2b** Click *Add*.
 - 2c** In the Add-On Product Media dialog, 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, select the appropriate drive where you want to insert the CD labeled *Open Enterprise Server 2 CD 1*.
 - 2e Click *Eject*.
 - 2f Insert the CD labeled *Open Enterprise Server 2 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 Continue with **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.
 5 If you are only configuring or reconfiguring services that are already installed, click *Accept*, then skip to **Step 7**.



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 want the OES components to use a local eDirectory database, we recommend that you install eDirectory before installing any other OES component.

If you need to reconfigure eDirectory, we recommend that you use tools provided by eDirectory such as iMonitor or iManager to change the configuration rather than YaST. The configuration provided in YaST is for the initial eDirectory installation and configuration only.

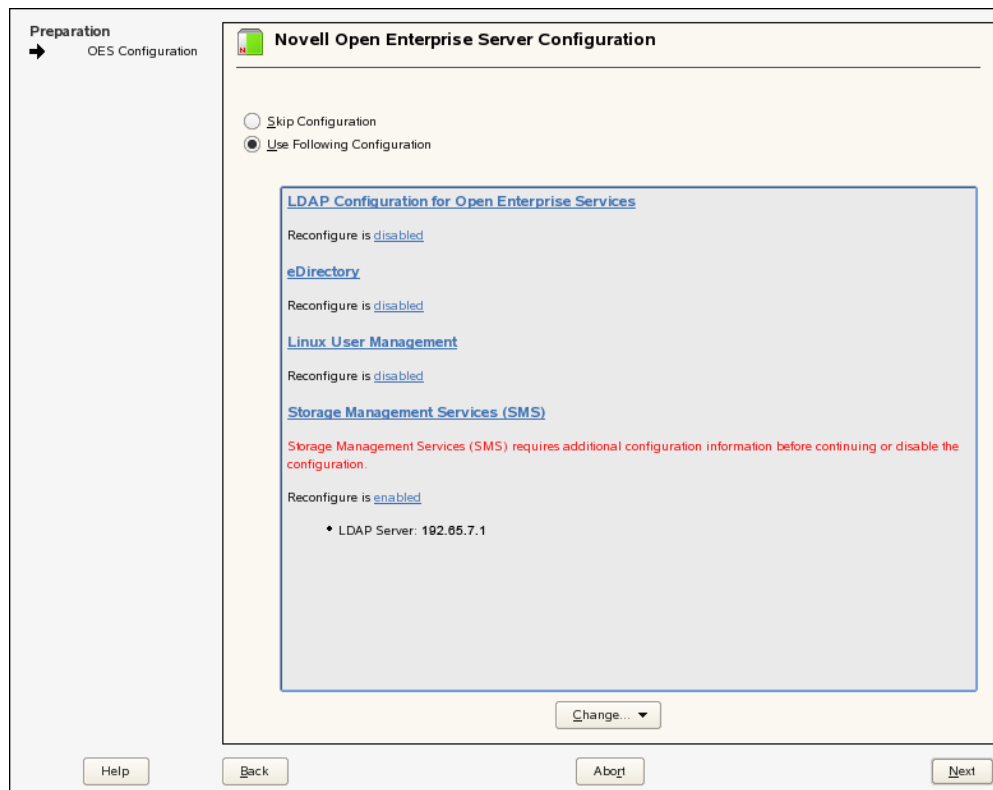
The following services have eDirectory dependencies:

- ♦ Novell Cluster Services™
- ♦ Novell DHCP
- ♦ Novell DNS
- ♦ Novell FTP
- ♦ Novell iFolder®
- ♦ Novell iPrint
- ♦ Novell NCP™ Server
- ♦ Novell NetStorage
- ♦ Novell NSS
- ♦ Novell iManager (eDirectory must be somewhere in the network)

6 After selecting the services to install, click *Accept*.

7 Change the default configuration information as required.

Figure 4-1 Example of the OES Configuration Dialog with Configuration and Re-Configuration Statuses



In most cases, the default configuration is acceptable. You need to change the configuration at the following times:

- ♦ When the installation indicates that more information is required by displaying the following message:

```
service_name service requires additional configuration
information before continuing or disable the configuration.
```
- ♦ You want to change the default configuration settings, such as enabling services for LUM.
- ♦ You want to reconfigure a service that has already been configured.

7a 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 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*.

7b To enable the configuration status of any disabled service configuration, click the *Disabled* link to change the status to *Enabled*.

7c To delay the configuration of newly installed services to a later time, click the *Enabled* link to change the status to *Configure is disabled*.

8 When all the services have complete configuration information and the configuration or reconfiguration status is set to enable for the services that you want to configure, click *Next* to continue with the configuration process.

4.2 What's Next

After you've completed the configuration process, complete any additional tasks you might need to perform. See [“Completing Installation or Upgrade Tasks on OES 2 SP1 Linux” on page 123](#) and [“Updating an OES 2 SP1 Linux Server” on page 127](#).

Upgrading to OES 2 SP1 Linux

5

Novell® Open Enterprise Server 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.

- ♦ [Section 5.1, “About Upgrading,” on page 93](#)
- ♦ [Section 5.2, “Planning for the Upgrade to OES 2 SP1,” on page 94](#)
- ♦ [Section 5.3, “Meeting the Upgrade Requirements,” on page 96](#)
- ♦ [Section 5.4, “Upgrading the Server,” on page 98](#)
- ♦ [Section 5.5, “Finishing the Upgrade,” on page 119](#)
- ♦ [Section 5.6, “Verifying That the Upgrade Was Successful,” on page 120](#)
- ♦ [Section 5.7, “What's Next,” on page 121](#)

5.1 About Upgrading

- ♦ [Section 5.1.1, “Down-Server Upgrading Is Required,” on page 93](#)
- ♦ [Section 5.1.2, “Supported Upgrade Paths,” on page 93](#)

5.1.1 Down-Server Upgrading Is Required

SLES 10 supports an upgrade method referred to in the SLES documentation as an “online migration.” Basically, you can upgrade a SLES 10 server to a newer support pack through the patch channel.

Unlike the services on SLES 10, OES 2 services are tightly integrated with eDirectory. The online migration mechanisms in SLES 10 do not support the eDirectory configuration changes that must happen when an OES server is upgraded.

Therefore, upgrading an OES 2 server through the patch channel is not supported.

5.1.2 Supported Upgrade Paths

Table 5-1 outlines the supported paths for upgrading to OES 2 SP1.

Table 5-1 *Supported OES 2 SP1 Upgrade Paths*

Source	Destination
OES 1 SP2 (32-bit)	OES 2 SP1 (32-bit)
OES 2 (32-bit)	OES 2 SP1 (32-bit)
OES 2 (64-bit)	OES 2 SP1 (64-bit)

IMPORTANT: Source servers must have all patches applied from the appropriate SLES and OES patch channels prior to an upgrade.

5.2 Planning for the Upgrade to OES 2 SP1

- ♦ [Section 5.2.1, “Be Sure to Check the Readme:,” on page 94](#)
- ♦ [Section 5.2.2, “Always Upgrade SLES and OES at the same time:,” on page 94](#)
- ♦ [Section 5.2.3, “Understanding the Implications for Other Products Currently Installed on the Server,” on page 94](#)

5.2.1 Be Sure to Check the Readme:

The “[Installation/Upgrade 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 SUSE® Linux Enterprise Server (SLES) 10 and OES 2 Linux at the same time.

5.2.3 Understanding the Implications for Other Products Currently Installed on the Server

- ♦ [“OES 1: Non-OES 2 Packages Are Deleted by Default:” on page 94](#)
- ♦ [“OES 2: Non-OES 2 Packages Are Retained but Might Not Work After Upgrading:” on page 95](#)

OES 1: Non-OES 2 Packages Are Deleted by Default:

During the upgrade process from OES 1 to OES 2 SP1, 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:** Such as iFolder 2, eGuide, and Virtual Office. For more information, see “[eGuide, iFolder 2, and Virtual Office Are Still Available on Netware](#)” in the *OES 2 SP1: Planning and Implementation Guide*.
- ♦ **Other Novell products:** Such as GroupWise®, ZENworks®, and Identity Manager.

For Information About This Novell Product	See This Documentation
GroupWise	GroupWise 7 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
All other	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 it is supported on SLES 10 and follow the upgrade instructions that should be included with it.

To manually retain packages, you must follow the steps outlined in [Section 5.4.6, “Reviewing the Delete Unmaintained Packages Notification,” on page 106.](#)

IMPORTANT: 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: Non-OES 2 Packages Are Retained but Might Not Work After Upgrading:

During the upgrade process from OES 2 to OES 2 SP1, packages that are not part of the SLES 10 SP2 and OES 2 SP1 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 7 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)
All other	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 SP2 and follow the upgrade instructions that should be included with it.

5.3 Meeting the Upgrade Requirements

Meet the following OES Linux requirements before you upgrade and install any OES Linux components:

- ♦ [Section 5.3.1, “Secure the Current Data,” on page 96](#)
- ♦ [Section 5.3.2, “Storage Space on the Root Partition,” on page 96](#)
- ♦ [Section 5.3.3, “SLES 10 SP2,” on page 97](#)
- ♦ [Section 5.3.4, “OES 1 SP2,” on page 97](#)
- ♦ [Section 5.3.5, “OES 2,” on page 97](#)
- ♦ [Section 5.3.6, “IP Address,” on page 97](#)
- ♦ [Section 5.3.7, “DNS,” on page 97](#)
- ♦ [Section 5.3.8, “Common Server Certificate,” on page 98](#)
- ♦ [Section 5.3.9, “Installation Source,” on page 98](#)

5.3.1 Secure the 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 from a backup copy if needed.

Save your configuration files. Copy all configuration files to a separate medium, such as a streamer, removable hard disk, USB stick, or ZIP drive, 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 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 of thumb 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/hda3` (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:~ # █
```


File System	Size	Used	Avail	Use%	Mounted on
/dev/hda3	74G	22 G	53 G	29%	
/tmpfs	506M	0	506M	0%	/dev/shm
/dev/hda5	116G	5.8G	111G	5%	/home
/dev/hda1	39G	1.6G	37G	4%	/window/C
/dev/hda2	4.6G	2.6G	2.1G		/window/D

5.3.3 SLES 10 SP2

- ❑ Ensure that the products and services you have running on the server can run on the new SLES 10 SP2 kernel.
- ❑ Make sure the server meets the hardware requirements for SLES 10 SP2. See “[System Requirements for Operating Linux](http://www.novell.com/documentation/sles10/sles_x86/data/cha_sysreqs.html)” in the *Architecture-Specific Information Guide* (http://www.novell.com/documentation/sles10/sles_x86/data/cha_sysreqs.html).

Itanium is not a supported platform for OES 2 SP1 Linux.

5.3.4 OES 1 SP2

Patch the OES 1 server to the latest patch level and ensure that the server and services are still running as desired. For procedures, see “[Patching an OES Linux Server](http://www.novell.com/documentation/oes/install_linux/data/bxlu3xc.html#bxlu3xc)” in the *OES 1 Linux Installation Guide*. (http://www.novell.com/documentation/oes/install_linux/data/bxlu3xc.html#bxlu3xc)

To determine the OES 1 server version:

- 1 At the terminal console command prompt, enter

```
cat /etc/novell-release
```

5.3.5 OES 2

Run *YaST* > *Software* > *Online Update* to patch the OES 2 server to the latest patch level. Then ensure that the server and services are still running as desired.

5.3.6 IP Address

Make sure the server has a static IP address.

5.3.7 DNS

Make sure DNS returns the server's DNS name when presented with the server's IP address. You can use the host to validate this item.

5.3.8 Common Server Certificate

Make sure the server has a server certificate that has been generated and exported as a Common Server certificate.

To check for or add a certificate, do the following:

- 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*.

5.3.9 Installation Source

Review and complete the instructions for “[Setting Up an Installation Source](#)” on page 29. We recommend using the network installation option, especially if you are upgrading multiple servers.

5.4 Upgrading the Server

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 98](#)
- ♦ [Section 5.4.2, “Starting the Upgrade,” on page 99](#)
- ♦ [Section 5.4.3, “Selecting the Installation Mode Options,” on page 102](#)
- ♦ [Section 5.4.4, “Specifying the Partition to Update,” on page 103](#)
- ♦ [Section 5.4.5, “Specifying the Add-On Product Installation Information,” on page 105](#)
- ♦ [Section 5.4.6, “Reviewing the Delete Unmaintained Packages Notification,” on page 106](#)
- ♦ [Section 5.4.7, “Verifying and Customizing the Update Options in Installation Settings,” on page 106](#)
- ♦ [Section 5.4.8, “Accepting the Installation Settings,” on page 110](#)
- ♦ [Section 5.4.9, “Specifying Configuration Information,” on page 110](#)

5.4.1 For Servers with EVMS and NSS on the System Device

If your server has EVMS and NSS on the system device (the device that contains the root, boot, and swap), you must prepare the server prior to upgrading or the upgrade will fail. Because completing the instructions in the following sections hides the server’s NSS partition, you should do so just prior to upgrading the server.

Preparing an OES 1 SP2 Server

If you are upgrading a server that has EVMS as the volume manager for the system device (the device that contains the `/boot`, `swap`, and `/` (root) partitions), and might also have Novell Storage Services™ (NSS) pools and volumes on the system device, you need to enable `boot.lvm` and `boot.md`.

Do the following just before you begin the upgrade:

- 1 In YaST, click *System > Runlevel Editor > Expert Mode*.
- 2 Select `boot.lvm`.
- 3 Click *Set/Reset > Enable the Service*.
- 4 Select `boot.md`.
- 5 Click *Set/Reset > Enable the Service*.
- 6 Click *Finish*, then click *Yes*.

Preparing All OES Servers

Prior to starting the upgrade, be sure to complete the instructions in “[EVMS-Managed System Devices Require Special Handling or the Upgrade Will Fail](#)” in the *OES2 SP1: Readme*.

5.4.2 Starting the Upgrade

- ♦ “[Upgrade Using a Network Installation Source with DHCP](#)” on page 99
- ♦ “[Upgrade Using a Network Installation Source without DHCP](#)” on page 100
- ♦ “[Upgrade Using Physical Media or ISO](#)” on page 102

Upgrade Using a Network Installation Source with DHCP

- 1 Ensure that the server meets the upgrade requirements. See “[Meeting the Upgrade Requirements](#)” on page 96.
- 2 Insert *SUSE Linux Enterprise Server 10 SP2 CD 1* into the CD-ROM drive of the server you want to upgrade to OES 2 SP1 Linux, then reboot the server.
- 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, 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.

- 4 (Conditional) You can specify boot option parameters to specify all the parameters that the manual installation steps will step you through or you can continue with **Step 5**.
If you do specify boot options parameters, press Enter then continue with **Step 10**.
For more information on specifying boot option parameters, see “Using Custom Boot Options” in the *SUSE Linux Enterprise Server Installation and Administration Guide* (http://www.novell.com/documentation/sles10/sles_admin/data/sec_deployment_remoteinst_bootinst.html#sec_deployment_remoteinst_bootinst_custom).
- 5 Press F3, and then select the network installation type (NFS, FTP, HTTP) that you set up on your network installation server.
See **Step 2 on page 30** of the **Preparing a Network Installation Source** procedure.
- 6 Specify the required information (server name and installation path), then select *OK*.
- 7 Press Enter to begin the upgrade.
- 8 Select a language, then click *Accept*.
- 9 On the License Agreement page, click *Yes, I Agree to the License Agreement > Next*.
- 10 Follow the prompts, using the information contained in the following sections:
 - 10a “Selecting the Installation Mode Options” on page 102.
 - 10b “Specifying the Partition to Update” on page 103.
 - 10c “Specifying the Add-On Product Installation Information” on page 105.
 - 10d “Verifying and Customizing the Update Options in Installation Settings” on page 106.
 - 10e “Accepting the Installation Settings” on page 110.
 - 10f “Specifying Configuration Information” on page 110.
 - 10g “Finishing the Upgrade” on page 119.
- 11 Verify that the upgrade was successful. See the procedures in “Verifying That the Installation Was Successful” on page 60.
- 12 Complete the server setup by following the procedures in “Completing Installation or Upgrade Tasks on OES 2 SP1 Linux” on page 123.

Upgrade Using a Network Installation Source without DHCP

- 1 Ensure that the server meets the upgrade requirements. See “Meeting the Upgrade Requirements” on page 96.
- 2 Insert *SUSE Linux Enterprise Server 10 SP2 CD 1* into the CD-ROM drive of the server you want to upgrade to OES 2 SP1 Linux, then reboot the machine.
- 3 From the CD boot menu, select one of the following Installation options that matches your environment, then press Enter.
 - ♦ **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.

You can specify boot option parameters to specify all the parameters that the manual installation steps will step you through or you can continue with **Step 4**.

If you do specify boot options parameters, press Enter then continue with **Step 21 on page 101**.

For more information on specifying boot option parameters, see “Using Custom Boot Options” in the *SUSE Linux Enterprise Server Installation and Administration Guide* (http://www.novell.com/documentation/sles10/sles_admin/data/sec_deployment_remoteinst_bootinst.html#sec_deployment_remoteinst_bootinst_custom).

- 4 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.
```
- 5 Select the language, then select *OK* and press Enter.
- 6 Select a keyboard map, then select *OK* and press Enter.
- 7 Select *Start Installation or System*, then select *OK* and press Enter.
- 8 Select *Start Installation or Update*, then select *OK* and press Enter.
- 9 Select *Network*, press Enter, then select *OK* and press Enter.
- 10 Select the network protocol that matches the configured protocol on your network installation server, then press Enter.
- 11 (Conditional) If you have more than one network interface card, select one of the cards, then press Enter.
We recommend eth0.
- 12 When prompted whether you want to use DHCP, select *No*, then press Enter.
- 13 Specify the IP address, then press Enter.
- 14 Specify the subnet mask, then press Enter.
- 15 Specify the gateway, then press Enter.
- 16 Specify the IP address of a name server, then press Enter.
- 17 Specify the IP address of the network installation server, then press Enter.
- 18 (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 19**.
- 19 Specify the path to your installation source on the network installation server, then press Enter.
- 20 On the License Agreement page, click *Yes, I Agree to the License Agreement > Next*.
- 21 Follow the prompts, using the information contained in the following sections:
 - 21a “Selecting the Installation Mode Options” on page 102.
 - 21b “Specifying the Partition to Update” on page 103.
 - 21c “Specifying the Add-On Product Installation Information” on page 105.
 - 21d “Verifying and Customizing the Update Options in Installation Settings” on page 106.
 - 21e “Accepting the Installation Settings” on page 110.

- 21f “Specifying Configuration Information” on page 110.
- 21g “Finishing the Upgrade” on page 119.
- 22 Verify that the upgrade was successful. See the procedures in “Verifying That the Installation Was Successful” on page 60.
- 23 Complete the server setup by following the procedures in “Completing Installation or Upgrade Tasks on OES 2 SP1 Linux” on page 123.

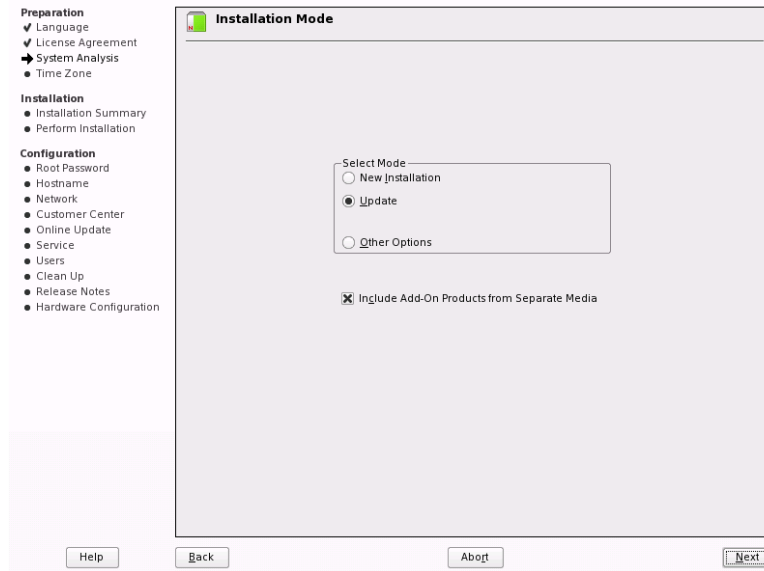
Upgrade Using Physical Media or ISO

- 1 Ensure that the server meets the upgrade requirements. See “Meeting the Upgrade Requirements” on page 96.
- 2 Insert the *SUSE Linux Enterprise Server 10 SP2 CD 1* or *SUSE Linux Enterprise Server 10 SP2 DVD 1* into the CD-ROM or DVD drive of the server you want to upgrade to OES 2 SP1 Linux, 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 102.
 - 6b “Specifying the Partition to Update” on page 103.
 - 6c “Specifying the Add-On Product Installation Information” on page 105.
 - 6d “Verifying and Customizing the Update Options in Installation Settings” on page 106.
 - 6e “Accepting the Installation Settings” on page 110.
 - 6f “Specifying Configuration Information” on page 110.
 - 6g “Finishing the Upgrade” on page 119.
- 7 Verify that the upgrade was successful. See the procedures in “Verifying That the Installation Was Successful” on page 60.
- 8 Complete the server setup by following the procedures in “Completing Installation or Upgrade Tasks on OES 2 SP1 Linux” on page 123.

5.4.3 Selecting the Installation Mode Options

- 1 When the *Installation Mode* screen 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, the server is only updated from SLES 9 to SLES 10 and none of the OES services are upgraded.



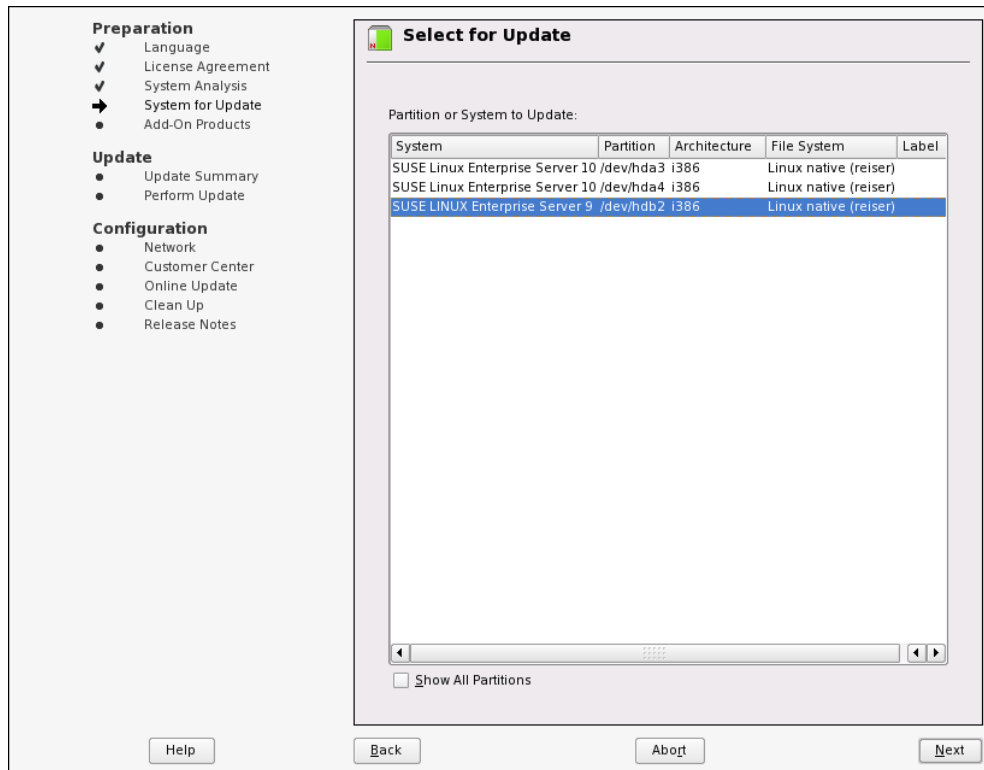
- 2 Click *Next*.
- 3 Continue with [“Specifying the Partition to Update” on page 103](#) or [“Specifying the Add-On Product Installation Information” on page 105](#), depending on which matches your installation.

5.4.4 Specifying the Partition to Update

YaST tries to determine which is 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.

NOTE: 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 5.1.2, “Supported Upgrade Paths,” on page 93](#).

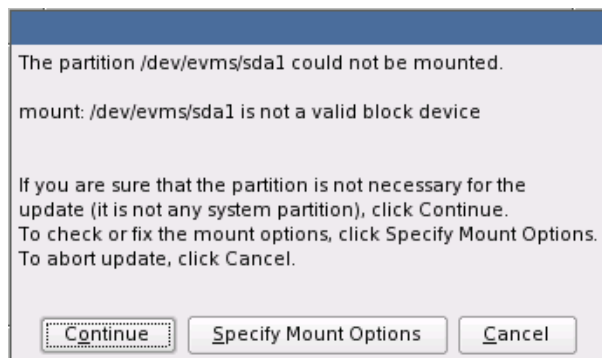
- 1 If there is only one partition listed, click *Next*.
- 2 If there are several partitions, select the partition with `/evms` in the path.
 For example, make sure you select the `/dev/evms/1vm/...` partition rather than the `/dev/1vm/...` partition.
 then click *Next*. YaST reads the old `fstab` on this partition to analyze and mount the file systems listed there.



3 Next, YaST tries to mount the boot (`/boot`) partition.

If no error displays, skip to [“Specifying the Add-On Product Installation Information” on page 105](#).

4 If you have EVMS on your system disk, you might get an error stating that the partition could not be mounted:



If this error displays, click *Specify Mount Options*.

The Mount Options dialog appears.

Mount Options

Mount Point
/boot

Device
/dev/evms/sda1

File System
(empty for autodetection)

OK Cancel

- 5 Remove /evms from the *Device* path.

Mount Options

Mount Point
/boot

Device
/dev/sda1

File System
(empty for autodetection)

OK Cancel

- 6 Click *OK*.
- 7 Continue with “Specifying the Add-On Product Installation Information” on page 105.

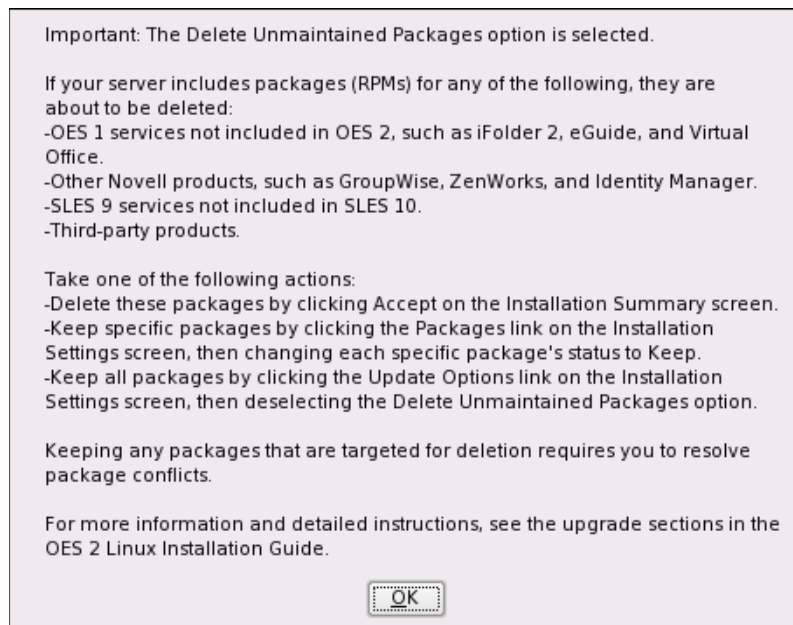
5.4.5 Specifying the Add-On Product Installation Information

- 1 When the *Add-On Product Installation* page displays, click *Add*.
- 2 In the Add-On Product Media dialog, if you are installing from physical media, click *CD > Next*.
 - 2a In the Insert the Add-On Product CD dialog, select the appropriate drive where you want to insert the CD labeled *Open Enterprise Server 2 SP1 CD 1* if there is more than one drive, then click *Eject*.
 - 2b Insert the CD labeled *Open Enterprise Server 2 SP1 CD 1*, then click *Continue*.
- 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 Continue with “[Verifying and Customizing the Update Options in Installation Settings](#)” on [page 106](#).

5.4.6 Reviewing the Delete Unmaintained Packages Notification

After the OES 2 SP1 installation source has been added, if you are upgrading from OES 1 SP2, the following notification is displayed:



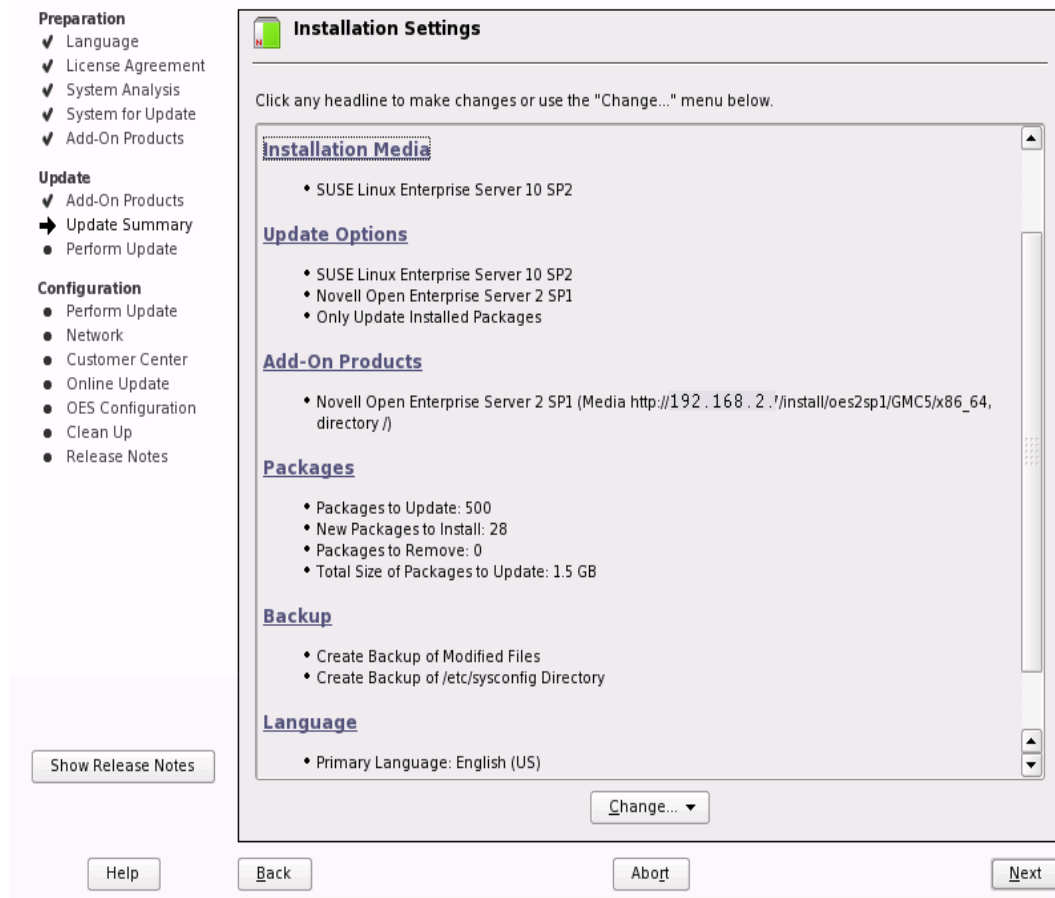
- 1 Carefully read the notification.
- 2 Decide how you want to proceed. For more information, see [Section , “OES 1: Non-OES 2 Packages Are Deleted by Default;,” on page 94](#).
- 3 Click *OK*, then continue with [Verifying and Customizing the Update Options in Installation Settings](#).

5.4.7 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 dialog.

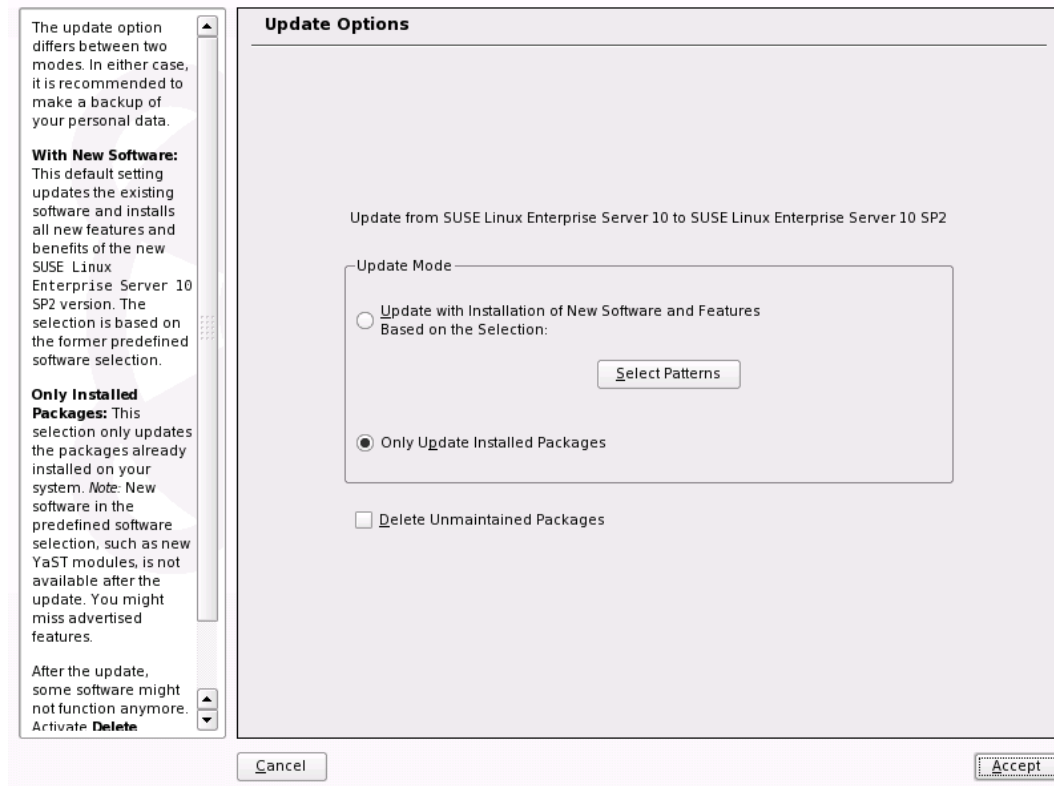
To verify or customize the software packages that are installed on the server:

- 1 On the Installation Settings dialog, make sure Novell Open Enterprise Server 2 is listed under the *Add-On Products* link. If it is, proceed with [Step 2](#).



If it is not, click the *Add-On Products* link and follow the steps in “**Specifying the Add-On Product Installation Information**” on page 105. When the Installation Setting dialog shows Novell Open Enterprise Server 2 as an installation setting, proceed with **Step 2**.

- 2** If you see package conflict errors (red text under the *Packages* link), refer to the *OES2 SP1: Readme* for resolution instructions.
- 3** On the Installation Settings dialog, click *Update Options*.
- 4** In the Update Options dialog, click *Select Patterns*.



5 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, such as Novell AFP or Novell CIFS.

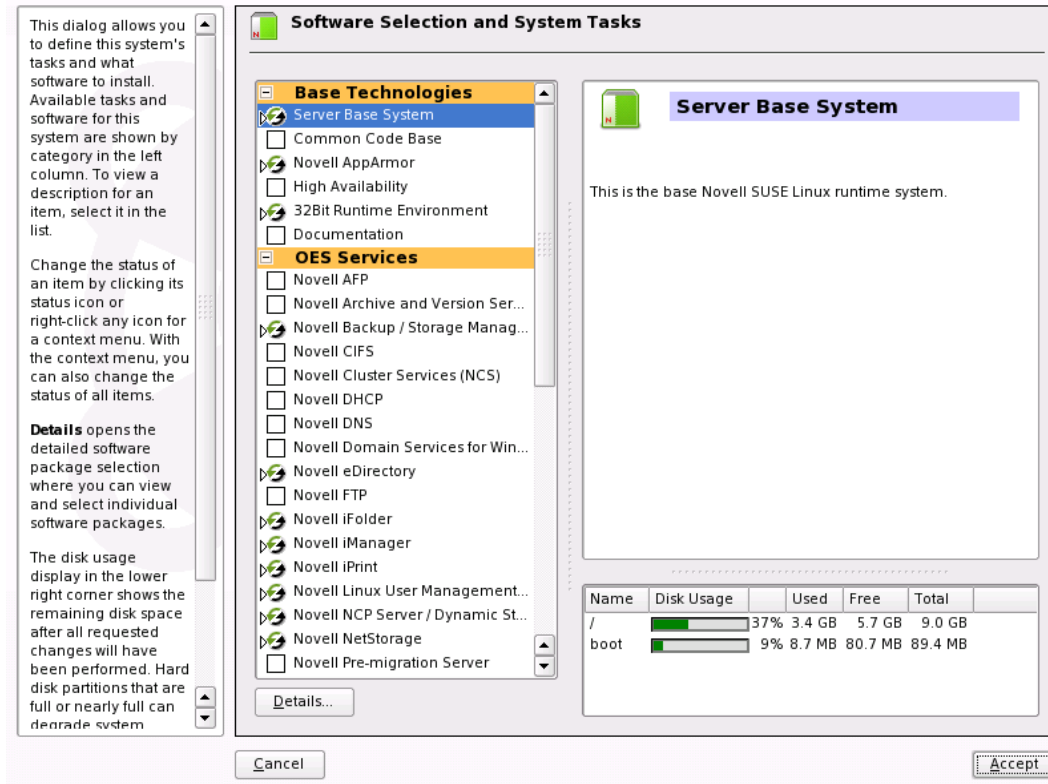
A description of each pattern displays to the left of the pattern when it is selected. For a description of OES Services patterns and the components selected with each pattern, see [Table 2-4 on page 21](#).

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.

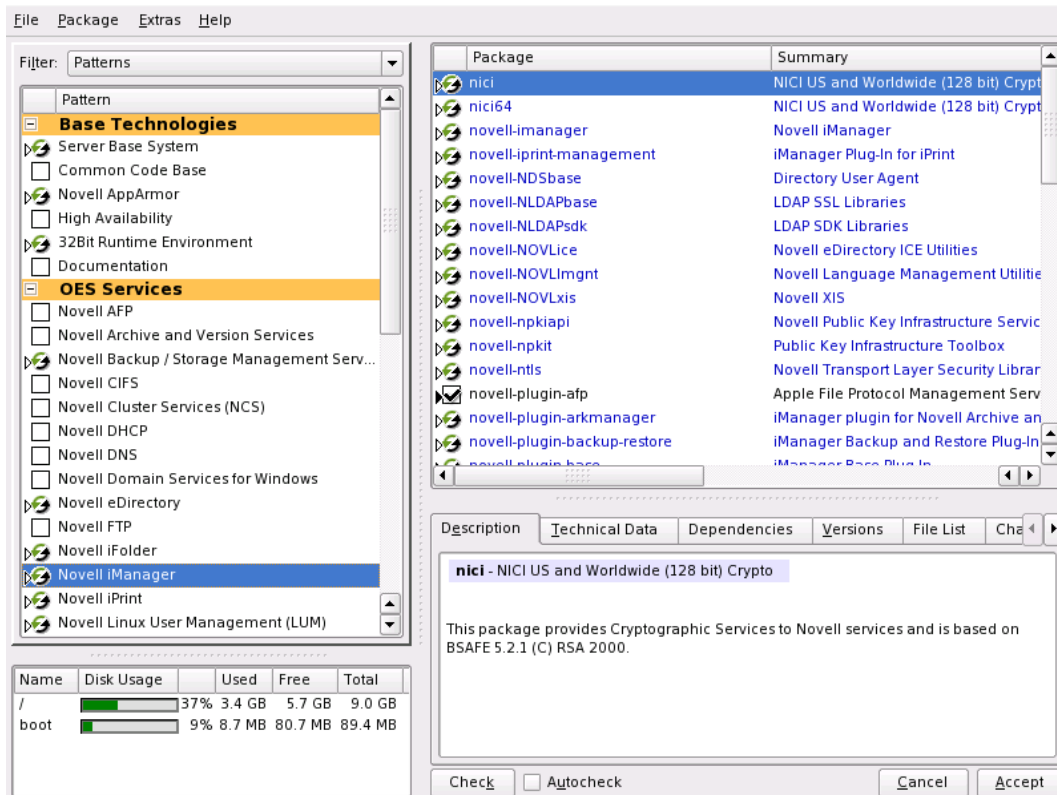
Selecting only the patterns that you want to install ensures that the patterns and their dependent patterns and packages are installed.

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.

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



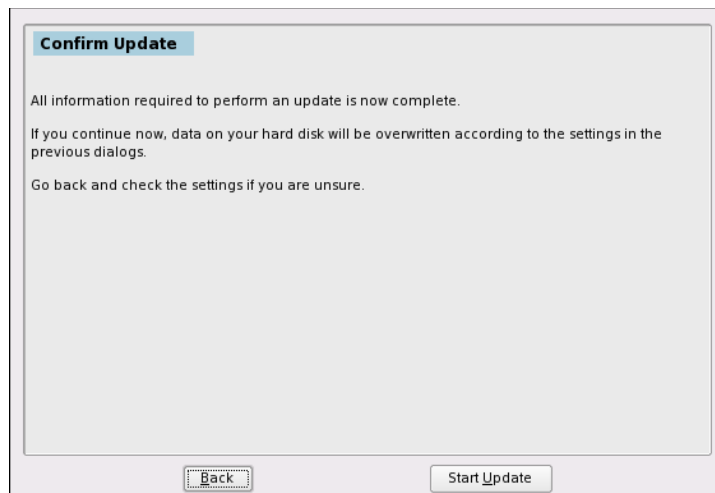
6 If you want to see the details of your selections, click *Details*.



- 7 When you have the software components selected that you want to install, click *Accept*.
- 8 (Conditional) If the prompt for the AGFA Fonts license displays, read the agreement, then click *Accept*.
- 9 (Conditional) If the prompt for *Automatic Changes* displays, click *Continue*.
- 10 (Conditional) If prompted, resolve any dependency conflicts.
- 11 If the Update Options dialog displays again, click *Accept*.
- 12 Continue with [“Accepting the Installation Settings” on page 110](#).

5.4.8 Accepting the Installation Settings

- 1 Review the final Installation Summary page to ensure that you have all the Installation settings you desire. Make sure that it 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, 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 SP2 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 42](#).

5.4.9 Specifying Configuration Information

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

- ♦ [“Testing the Connection to the Internet” on page 111](#)
- ♦ [“Specifying Novell Customer Center Configuration Settings” on page 111](#)

- ♦ “Updating the Server Software During the Upgrade” on page 114
- ♦ “Upgrading eDirectory” on page 116
- ♦ “Specifying LDAP Configuration Settings” on page 117
- ♦ “Configuring Novell Open Enterprise Server Services” on page 118

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 43.
- 2 Or, you can skip this test by clicking *No, Skip This Test*; however, most OES services configuration require a connection to the Internet.
Skipping this test also skips downloading release notes, configuring the Novell Customer Center, and updating online.
- 3 Continue with “[Specifying Novell Customer Center Configuration Settings](#)” on page 111. If you skip this test, continue with “[Upgrading eDirectory](#)” on page 116.

Specifying Novell Customer Center Configuration Settings

To receive support and updates for your OES 2 SP1 server, you need to register it in the Novell Customer Center (NCC). When the Novell Customer Center Configuration page is displayed, you have three options:

- ♦ “[Updating a Registered Server](#)” on page 111
- ♦ “[Registering the Server Later / Skipping a Registered Server Update](#)” on page 111
- ♦ “[Registering the Server During the Upgrade](#)” on page 112

Updating a Registered Server

- 1 If you have already registered your OES 2 server and you want to download the available patches, which is recommended, 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 7](#) on page 113.

Registering the Server Later / Skipping a Registered Server Update

To register the server later or to skip the update process for a registered server:

- 1 Click *Configure Later*.
- 2 Continue with “[Upgrading eDirectory](#)” on page 116.
- 3 Register the server after the installation is complete by using the procedures in [Section 7.2](#), “[Registering the Server in the Novell Customer Center](#),” on page 128.

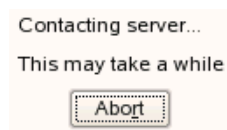
Registering the Server During the Upgrade

To register 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
Configure Now	Proceeds with registering this server and the SLES 10 SP2 and OES 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 SP1 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.

- 2 After you click *Next*, the following message is displayed. Wait until this message disappears and the Manual Interaction Required page displays.

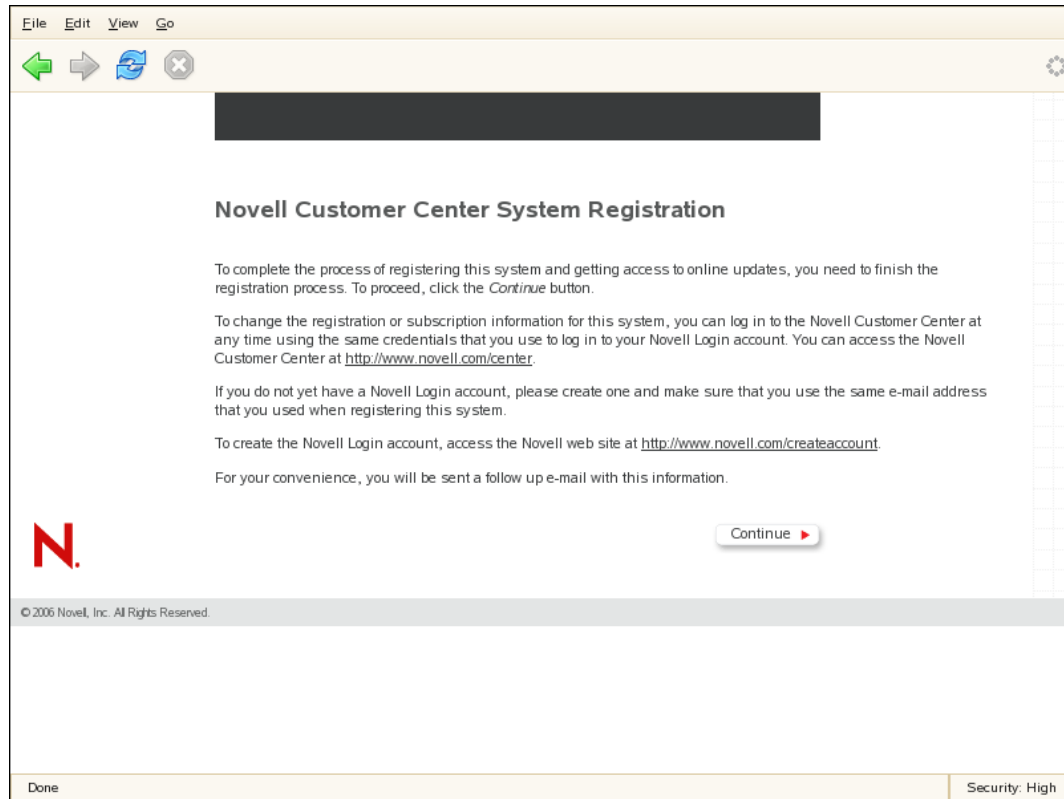


- 3 On the Manual Interaction Required page, note the information that you will be required to specify, then click *Continue*.
- 4 On the Novell Customer Center Registration page, specify the required information in the following fields, then click *Submit*:

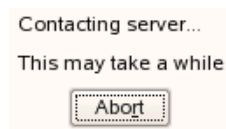
Field	Information to Specify
Email Address	The e-mail address for your Novell Login account.
Confirm Email Address	The same e-mail address for your Novell Login account
Activation Code for SLES Components (optional):	Specify your permanent registration code for the SLES SP1 product. If you don't enter the permanent registration code now, a temporary code and organization are made for this server and the SLES SP1 product. This let you have updates for 15 days, until you register this system in the NCC with the permanent activation code.
Activation Code for OES Components (optional):	Specify your permanent registration code for the OES product. If you don't enter the permanent registration code now, a temporary code and organization are made for this server and the OES 2 SP1 product. This lets you have updates for 15 days, until you register this system with the permanent activation code.

Field	Information to Specify
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.

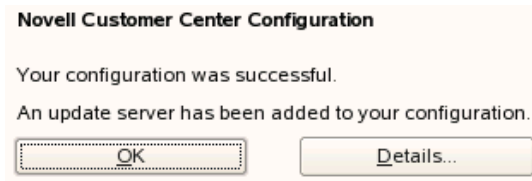
- 5 When the message to complete the registration displays, click *Continue*.



- 6 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 with the message that Your configuration was successful.



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



- 8 Continue with **“Updating the Server Software During the Installation”** on page 47.

Updating the Server Software During the Upgrade

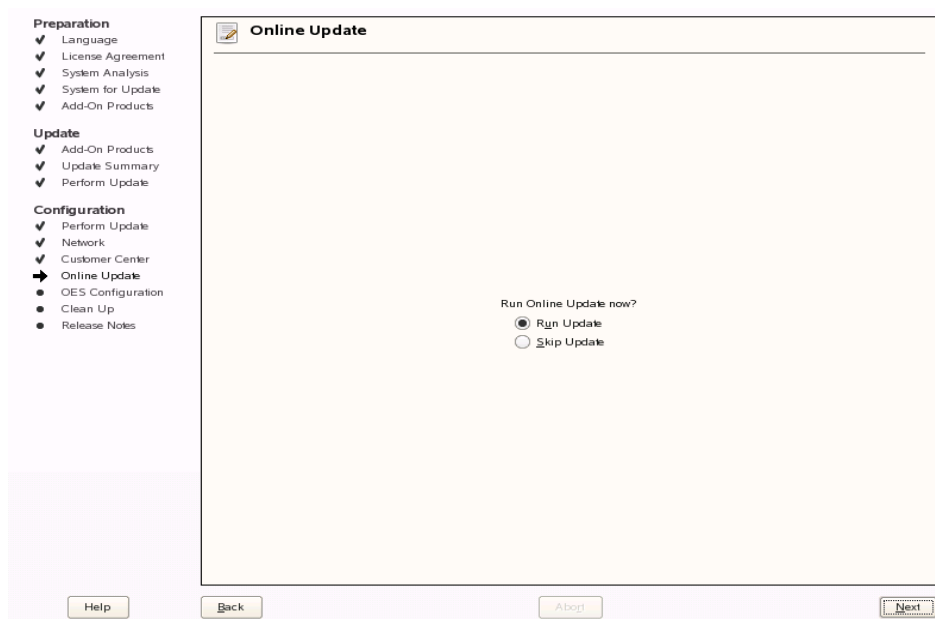
If you have a successful connection to the Internet and have registered the server in the Novell Customer Center, the server displays the Online Update dialog. You can run the online update now or skip it and get updates later.

To skip getting updates during the upgrade

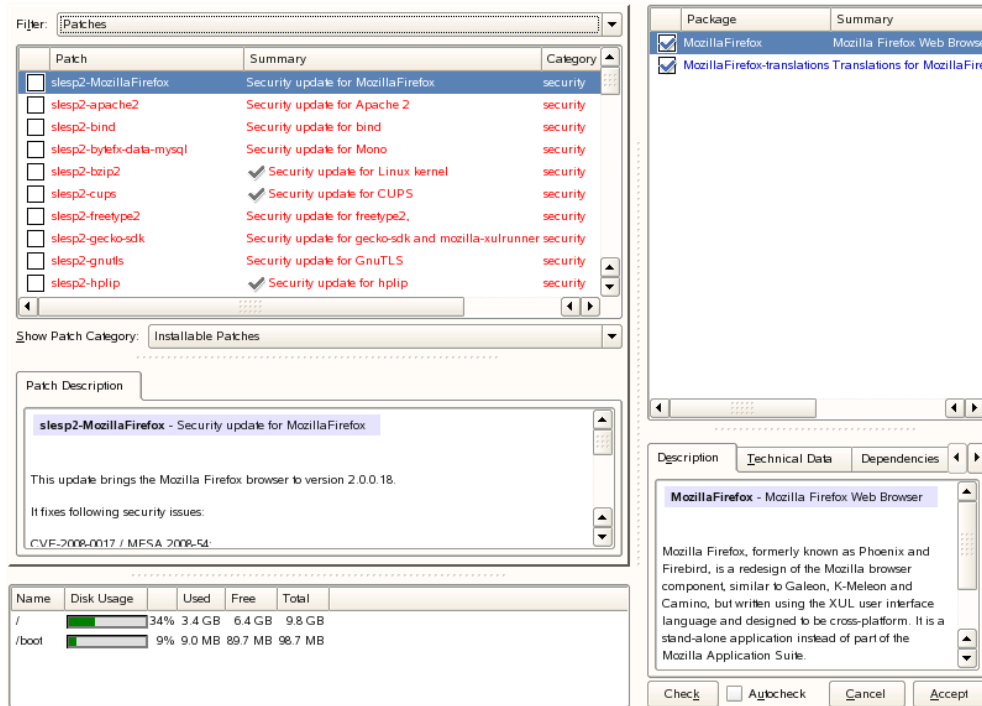
- 1 On the Online Update page, click *Skip Update*.
- 2 Continue with **“Upgrading eDirectory”** on page 116.

To get updates during the upgrade:

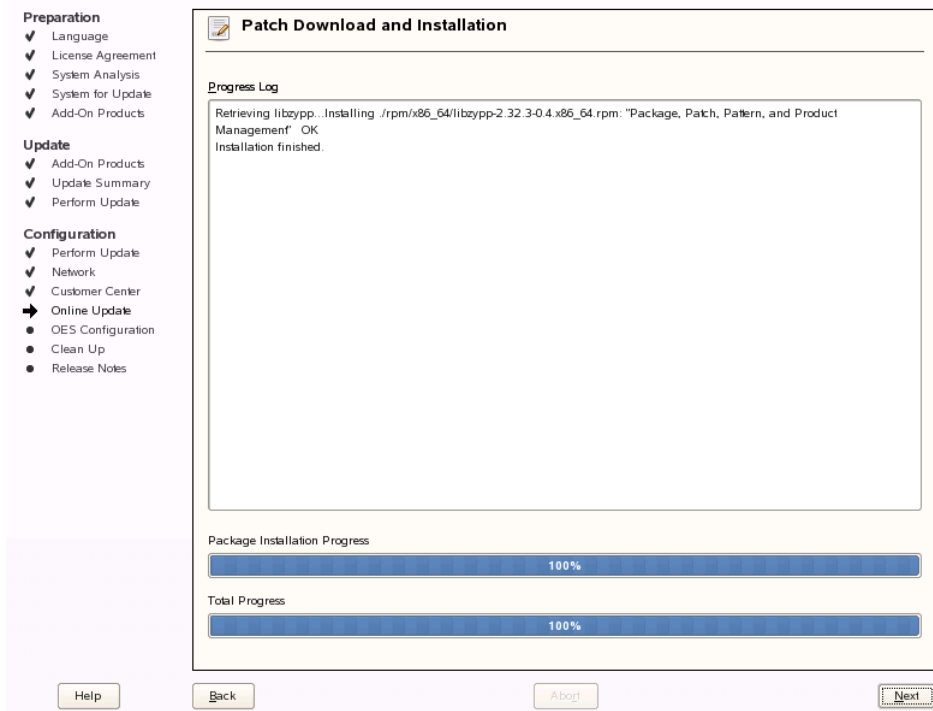
- 1 On the Online Updates page, click *Run Update*.



- 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 on the summary portion of the page are patches that have already been installed on your system.



- When you see the message, Installation finished on the Patch Download and Installation page, click *Next*.



- If the update makes changes to YaST, the following message displays. Click *OK* to restart YaST.

Packages for package management were updated.
Finishing and restarting now.



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.



- 5 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 an OES 2 SP1 Linux Server” on page 127](#).

If you do install patches that have changes to the kernel, click *OK* when you see the following message.

The kernel has been updated. The system will
reboot now then continue the installation.



- 6 After all the patches are installed, continue with [“Upgrading eDirectory” on page 116](#).

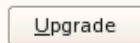
Upgrading eDirectory

OES 2 SP1 includes eDirectory 8.8.4.

- 1 When the following dialog appears, click *Upgrade*.

OES 1.0 eDirectory database (DIB) and config file found

eDirectory has been previously installed and configured on this system (OES 1.0, SLES 9).
Select upgrade to upgrade eDirectory to the current version.



- 2 On the eDirectory Upgrade - Existing Server Information page, type the Admin password and click *Next*.
- 3 On the Novell Modular Authentication Service page, click *Next*.
- 4 Continue with [“Specifying LDAP Configuration Settings” on page 117](#).

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 expecting you to in 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 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 On the next dialog, specify the following information for the server to add, then click *Add*.
 - ♦ IP Address
 - ♦ LDAP port and secure LDAP port

LDAP Server Configuration
Use this dialog to specify eDirectory LDAP server information for the OES services you install on this server.

eDirectory Tree Name
Specify the eDirectory tree that you are installing this server into.

Admin Name and Context
Specify the fully distinguished, typelful name of a user with administrative rights in the tree. Use LDAP format. For example, cn=admin,o=organization.

Admin Password
Specify the password for the eDirectory Admin user.

Configured LDAP Servers
The eDirectory LDAP servers listed in this table are 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.

If you are creating a new tree, the server you are installing has the master replica.

If you are installing into an existing tree, this server might not have a replica copied to it, depending on the tree configuration. For details, see the eDirectory 8.8 documentation. <http://www.novell.com/doc>

Add
Click this option to add an eDirectory LDAP server to the Configured LDAP Servers table. This opens an additional dialog

Configured LDAP Servers

eDirectory Tree Name: 9-tree

Admin name and context: cn=admin.o=novell

Admin password: *****

IP Address	LDAP Port	Secure LDAP Port	Server
192.65.47.12	389	636	remote

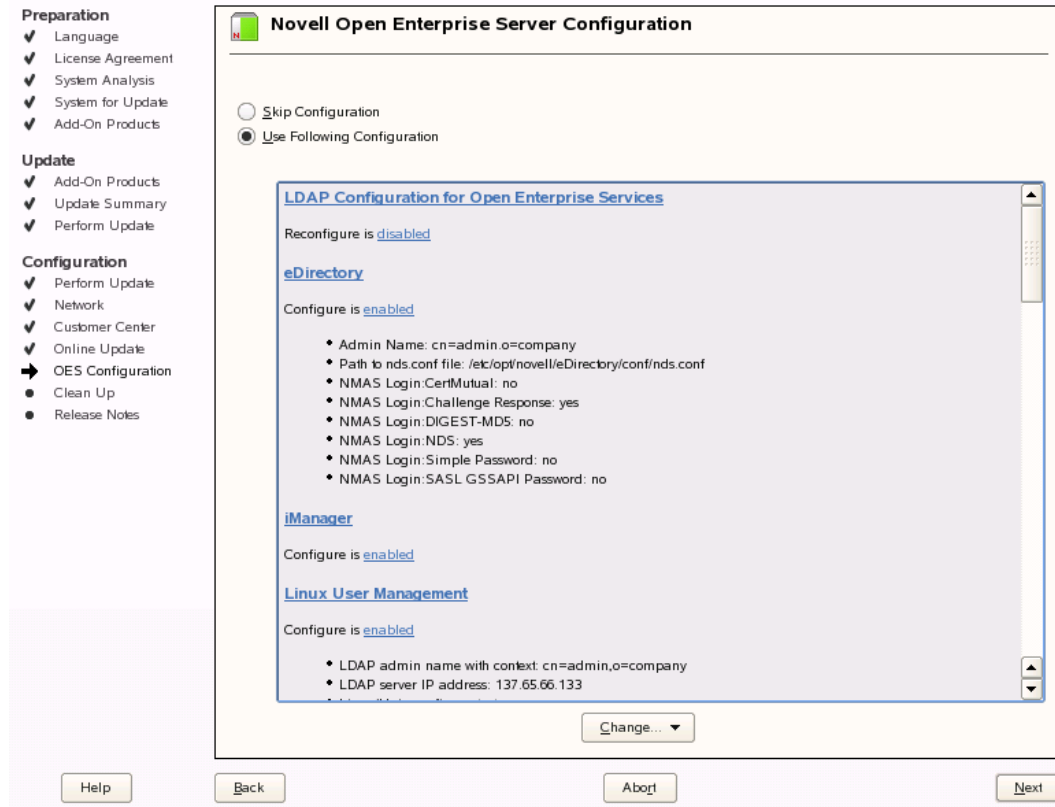
Add Delete

Back Abort Next

- 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 118.

Configuring Novell Open Enterprise Server Services

- 1 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. Review the setting for each component and click the component heading to change any settings.



When specifying the configuration information for OES services, see the information in “[Guidelines for Configuring OES 2 SP1 Linux Components](#)” on page 61.

- 2 When you are satisfied with the settings for each component, click *Next*.
- 3 When confirming 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 a message immediately below each product heading that indicates the product or service needs to be configured. If you are running the YaST graphical interface, the text appears red. If you are installing using the YaST text-base interface, it is not red.

For example, if you have 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 specifying the configuration information for OES services during the upgrade, see the information in [“Guidelines for Configuring OES 2 SP1 Linux Components” on page 61](#).

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 Services on an Existing OES 2 SP1 Linux or SLES 10 SP2 Server” on page 89](#).
- 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 119](#).

5.5 Finishing the Upgrade

After a successful configuration, YaST shows the Installation Completed dialog. In this dialog, do the following:

- 1** Deselect *Clone This System for AutoYaST*. Cloning is selected by default.

This will increase 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 will not work to upgrade a similar system.

IMPORTANT: If you did not deselect this option and haven’t updated the server during the upgrade, see [“Password for User Admin Written in Clear Text in y2log” on page 167](#).

- 2** Finish the upgrade by clicking *Finish* in the Installation Completed dialog.
- 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), 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—`/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** Return to “[EVMS-Managed System Devices Require Special Handling or the Upgrade Will Fail](#)” in the *OES2 SP1: Readme* and follow the instructions there to unhide your NSS partitions.
- 3d** Reboot the server before continuing with “[Verifying That the Upgrade Was Successful](#)” on [page 120](#).

A script runs automatically during the OES 2 SP1 Linux 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 120](#).

5.6 Verifying That the Upgrade Was Successful

One way to verify that your OES Linux server upgrade was successful and that the components are loading properly is to watch 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`
where *IP_or_DNS* is the IP address or DNS name of your OES Linux server.
You should see a Web page displayed similar to the following:

Novell Open Enterprise Server 2 Support Pack 1

Home

Management Services

Client Software

Novell Customer Center

Documentation

Services & Support

Partners & Communities

Novell Open Enterprise Server provides secure, reliable and highly available workgroup services in an open environment that's easy to deploy and manage. It meets the needs of workgroups large and small by delivering proven networking, communication and collaboration capabilities. Unlike other server platforms that force vendor lock-in or can't meet enterprise needs, Novell Open Enterprise Server delivers advanced workgroup services in an open, flexible environment. Novell Open Enterprise Server combines services from Novell, the trusted leader for secure networking services, with SUSE Linux Enterprise Server, the leading open platform for supporting solutions for your mission-critical needs. ☺



What's new in Novell Open Enterprise Server 2 Support Pack 1

Do you know about the Novell Open Workgroup Suite?

Virtualize NetWare

Consolidate your NetWare by running it virtualized

Virtualize NetWare: Getting Started +

More about Xen virtualization +

Migrate to Linux

Migrate your NetWare services to Linux

Migrate to Linux: Getting Started +

+ Get Trained

Need to update your skills? Let Novell help you stay ahead.

Want to transition your NetWare skills to Linux? Start here +

Find Linux counterparts for your favorite NetWare commands +

- 2 (Optionally) If you want to look at the eDirectory tree and begin to see how iManager works, go to on 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 121.

5.7 What's Next

After you've completed the upgrade and verified that it was successful, see “[Completing Installation or Upgrade Tasks on OES 2 SP1 Linux](#)” on page 123 and “[Updating an OES 2 SP1 Linux Server](#)” on page 127.

Completing Installation or Upgrade Tasks on OES 2 SP1 Linux

This section provides information for completing the following tasks:

- [Section 6.1, “Determining Which Services Need Additional Configuration,” on page 123](#)
- [Section 6.2, “Completing Additional Tasks for Networks or Servers Running NSS on OES Linux Servers,” on page 125](#)
- [Section 6.3, “Resolving the Certificate Store Error,” on page 125](#)
- [Section 6.4, “Restarting Tomcat,” on page 126](#)
- [Section 6.5, “Launching and Configuring Firefox,” on page 126](#)

6.1 Determining Which Services Need Additional Configuration

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 SP1: 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 SP1 services.

Table 6-1 OES 2 SP1 Services Additional Installation and Configuration Instructions

OES 2 SP1 Service	For Additional Installation and Configuration Information
Domain Services for Windows	See “ Installing and Configuring Domain Services for Windows ” in the <i>OES 2 SP1: Domain Services for Windows Administration Guide</i> or “ Installing and Setting Up AFP ” in the <i>OES 2 SP1: Novell AFP For Linux Administration Guide</i> .
Novell AFP	See “ Installing and Setting Up AFP ” in the <i>OES 2 SP1: Novell AFP For Linux Administration Guide</i> .
Novell Archive and Version Services	See “ Setting Up Archive and Version Services ” in the <i>OES 2 SP1: Novell Archive and Version Services 2.1 for Linux Administration Guide</i> .
Novell Backup/Storage Management Services (SMS)	See “ Installing and Configuring SMS ” in the <i>Installing and Configuring SMS</i> .

OES 2 SP1 Service	For Additional Installation and Configuration Information
Novell CIFS	See “Installing and Setting Up AFP/Installing a CIFS Server on OES 2 SP1 Linux” in the <i>OES 2 SP1: Novell CIFS for Linux Administration Guide</i> .
Novell Cluster Services™	See “Installing Novell Cluster Services on OES 2 Linux” in the <i>OES 2 SP1: Novell Cluster Services 1.8.5 for Linux Administration Guide</i> .
Novell DHCP	See “Installing and Configuring DHCP ” in the <i>OES 2 SP1: Novell DNS/DHCP Administration Guide for Linux</i> .
Novell DNS	See “Installing and Configuring DNS ” in the <i>OES 2 SP1: Novell DNS/DHCP Administration Guide for Linux</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® 3.7	<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 3.6 to enter new information. All previous configuration information is removed and replaced.</p> <p>See “Installing and Configuring iFolder Services” in the <i>OES 2 SP1: Novell iFolder 3.7 Administration Guide</i>.</p>
Novell iManager 2.7.2	See “Installing iManager” in the <i>Novell iManager 2.7 Installation Guide</i> .
Novell iPrint	See “Installing and Setting Up iPrint on Your Server” in the <i>OES 2: iPrint for Linux Administration Guide</i> .
Novell Linux User Management	See “Setting Up Linux User Management” in the <i>OES 2 SP1: Novell Linux User Management Technology Guide</i> .
Novell NCP™ Server	See “Installing and Configuring NCP Server for Linux” in the <i>OES 2 SP1: NCP Server for Linux Administration Guide</i> .
Novell NetStorage	See “Installing NetStorage” in the <i>OES 2 SP1: NetStorage for Linux Administration Guide</i> .

OES 2 SP1 Service	For Additional Installation and Configuration Information
Novell QuickFinder™	See “ Installing QuickFinder Server ” in the <i>OES 2: Novell QuickFinder Server 5.0 Administration Guide</i> .
Novell Remote Manager	See “ Changing the Configuration ” in the <i>OES 2 SP1: Novell Remote Manager for Linux Administration Guide</i> .
Novell Samba	See “ Installing the Novell Samba Components ” in the <i>OES2 SP1: Samba Administration Guide</i> .
Novell Storage Services™	See “ Installing and Configuring Novell Storage Services ” in the <i>OES 2 SP1: NSS File System Administration Guide</i> .
Pre-Migration Server	See “ Preparing for Transfer ID ” in the <i>OES 2 SP1: Migration Tool Administration Guide</i> .

6.2 Completing Additional Tasks for Networks or Servers Running NSS on OES Linux Servers

If you use Novell Storage Services™ (NSS) on Open Enterprise Server servers in your network or have just installed it on a server, complete the following procedures as applicable.

- ♦ [Section 6.2.1, “Checking for an nssid.sh File,”](#) on page 125
- ♦ [Section 6.2.2, “Rebooting Server after Installing NSS,”](#) on page 125

6.2.1 Checking for an nssid.sh File

If you use Novell Storage Services (NSS) on OES Linux, after installing the first OES Linux server in a tree, you should check every subsequent server to see whether the `/opt/novell/oes_install/nssid.sh` file exists.

If this script file exists, you must run it on the server to synchronize the file ownership information for specific system users. For more information, see “[Always Check for an nssid.sh File](#)” in the *OES 2 SP1: Planning and Implementation Guide*.

6.2.2 Rebooting Server after Installing NSS

If you install NSS on an existing OES Linux server, enter `rcnovell-smdrd restart` at the command prompt or reboot the server before performing any backups, restores, or server consolidations on the NSS file system.

6.3 Resolving the Certificate Store Error

After installing OES, you might receive the following error:

Warning - Unable to change the group owner of the certificate store to www

To resolve this error, run the `chgrp` command on the `/opt/novell/lib/java2/jre/lib/security/cacerts` certificate file using the following command in a command shell:

```
chgrp www /opt/novell/lib/java2/jre/lib/security/cacerts
```

6.4 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 commandline prompt.

```
./etc/init.d/tomcat5 restart
```

6.5 Launching and Configuring Firefox

After upgrading from OES 2 to OES 2 SP1, 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 Configure the browser.

Updating an OES 2 SP1 Linux Server

7

Updating an Novell® Open Enterprise Server (OES) 2 Linux server is essentially the same as updating a SUSE® Linux Enterprise Server (SLES) 10 SP2 server except that you apply patches for both SLES 10 and OES 2 SP1 Linux.

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, “Preparing the Server for Updating,” on page 127](#)
- ♦ [Section 7.2, “Registering the Server in the Novell Customer Center,” on page 128](#)
- ♦ [Section 7.3, “Updating the Server,” on page 132](#)

The following sections contain more information about patching:

- ♦ [Section 7.1, “Preparing the Server for Updating,” on page 127](#)
- ♦ [Section 7.2, “Registering the Server in the Novell Customer Center,” on page 128](#)
- ♦ [Section 7.3, “Updating the Server,” on page 132](#)
- ♦ [Section 7.4, “Frequently Asked Questions about Updating,” on page 139](#)
- ♦ [Section 7.5, “For More Information About Updating,” on page 140](#)
- ♦ [Section 7.6, “Updating the Server Quick Path,” on page 141](#)

7.1 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 of thumb 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/hda2` (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 SP1.

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, 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.

7.2 Registering the Server in the Novell Customer Center

Before you can patch an OES 2 SP1 Linux server with updates from Novell, you need to register the server if you didn't do so during the installation. You need to register each server with the Novell Customer Center only once. After you have registered the server, you can update the server any time it is needed. You can use the desktop interface (GUI) or command line commands to accomplish this task.

This section contains the following information:

- ♦ [Section 7.2.1, “Prerequisites,” on page 128](#)
- ♦ [Section 7.2.2, “Registering the Server in the Novell Customer Center \(Command Line\),” on page 129](#)
- ♦ [Section 7.2.3, “Registering the Server in the Novell Customer Center \(GUI\),” on page 129](#)

7.2.1 Prerequisites

To complete these procedures, you must have the following:

- ♦ A Novell Customer Center (NCC) account or access to an account.

For more information about creating a Novell Customer Center account, see “[Creating an Account](http://www.novell.com/documentation/ncc/ncc/data/b5exp8k.html#b5exj2f)” 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 SP1 that you received when you purchased your product.
- ♦ An installation source that contains the update patches.

An installation source is automatically added to the server when you register with the Novell Customer Center or you can add a different source manually.

- ♦ An established connection to the Internet.

If the server doesn't have a connection to the Internet, you can update the server by using support pack media (if available), or you can create a local server as your installation source. See “[Deploying and Mirroring SUSE Linux Enterprise 10 Updates](http://www.novell.com/linux/technical_library/deploying_mirroring.pdf)” (http://www.novell.com/linux/technical_library/deploying_mirroring.pdf)

7.2.2 Registering the Server in the Novell Customer Center (Command Line)

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
```

3 Verify that the server is registered by seeing 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:

```
linux:~ # rug sl  


| # | Status | Type | Name                                | URI                   |
|---|--------|------|-------------------------------------|-----------------------|
| 1 | Active | ZYPP | SUSE Linux Enterprise Server 10 SP1 | http://192.65.48.6... |
| 2 | Active | ZYPP | Novell Open Enterprise Server 2     | ftp://192.65.44.13... |
| 3 | Active | NU   | https://nu.novell.com               | https://nu.novell.com |

  
linux:~ # █
```

The URIs you see for the ZYPP type will differ based on your installation source.

3b To verify the catalogs, enter

```
rug ca
```

The results should be similar to the following:

```
Sub'd? | Name | Service  
-----|-----|-----  
Yes | SUSE Linux Enterprise Server 10 SP1 | SUSE Linux Enterprise Server 10 SP1  
Yes | Novell Open Enterprise Server 2 | Novell Open Enterprise Server 2  
Yes | SLES10-SP1-Updates | https://nu.novell.com  
Yes | SLE10-SP1-Debuginfo-Updates | https://nu.novell.com  
Yes | OES2-Updates | https://nu.novell.com
```

7.2.3 Registering the Server in the Novell Customer Center (GUI)

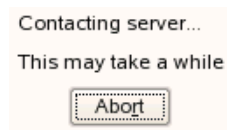
If the server is already registered in the Novell Customer Center, continue with [“Updating the Server” on page 132](#).

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*.

Option	What it Does
Configure Now	Proceeds with registering this server and the OES product with the Novell Customer Center.
Hardware Profile	Sends the information to the Novell Customer Center about the hardware that you are installing SLES 10 SP1 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.

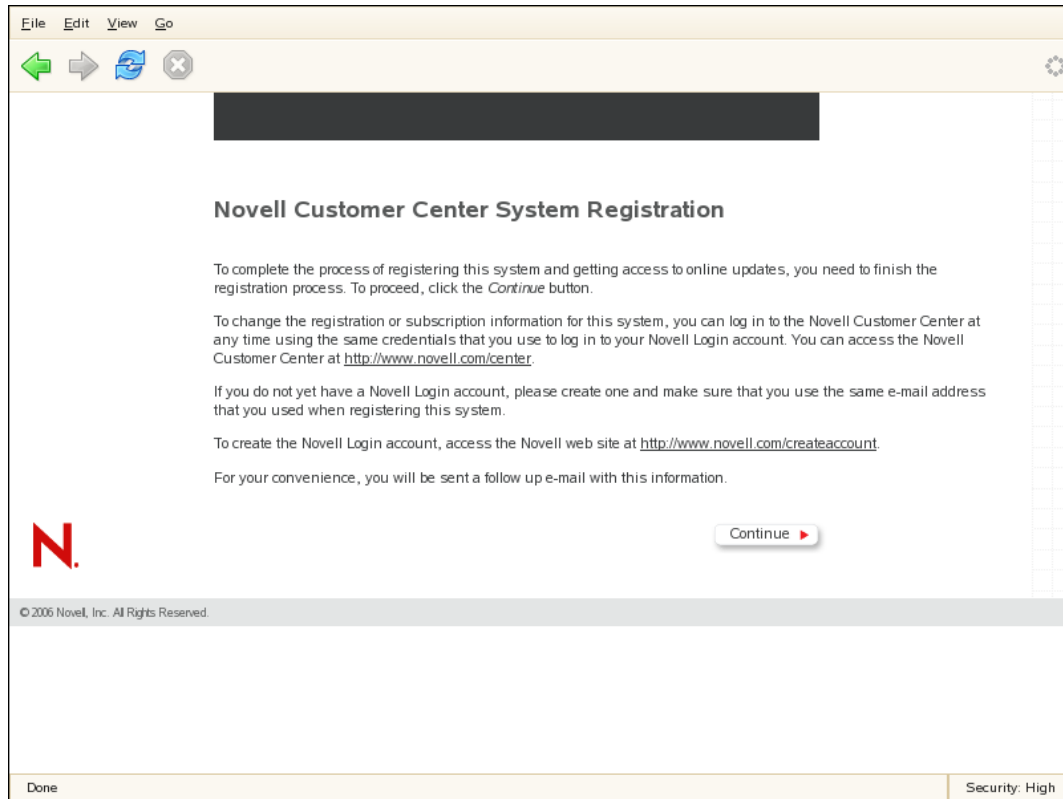
After you click *Next*, the following message is displayed. Wait until this message disappears and the Manual Interaction Required page displays.



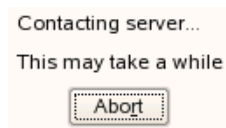
- 3 On the Manual Interaction Required page, note the information that you will be required to specify, then click *Continue*.
- 4 On the Novell Customer Center Registration page, specify the required information in the following fields, then click *Submit*:

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 permanent registration code for the SLES SP1 product. If you don't enter the permanent registration code now, a temporary code and organization are made for this server and the SLES SP1 product. This lets you have updates for 15 days, until you register this system in the NCC with the permanent activation code.
Activation Code for OES Components (optional)	Specify your permanent registration code for the OES product. If you don't enter the permanent registration code now, a temporary code and organization are made for this server and the OES 2 SP1 product. This lets you have updates for 15 days, until you register this system with the permanent activation code.
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.

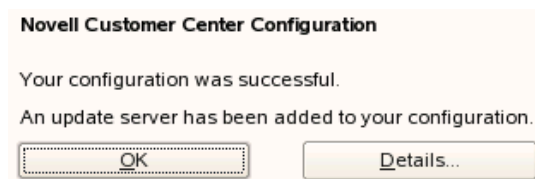
- 5 When the message to complete the registration displays, click *Continue*.



After you click *Continue*, the following message is displayed with the Manual Interaction Required page. Wait until this message disappears and Novell Customer Center Configuration Was Successful page displays.



- 6 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.

7.3 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.

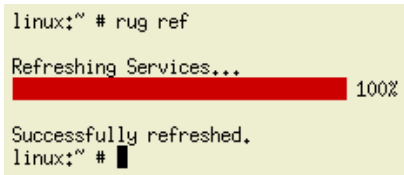
- [Section 7.3.1, “Updating the Server by Using the Command Line,” on page 132](#)
- [Section 7.3.2, “Updating the Server from the GNOME or KDE Desktop,” on page 138](#)

7.3.1 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 SP2 and OES 2 SP1.

- 1 Log in to the server as `root` or `su` to `root`.
- 2 At the command line, enter the following commands:

2a Refresh all services:

Command	Example Results
<code>rug ref</code>	

- 2b** See whether updates are available for SLES 10 SP2 and OES 2 SP1:

Command

Example Results

rug lu catalog1
catalog2

For example,

rug lu SLES10-
SP2-Updates
OES2-Updates

No updates are available:

```
linux:~ # rug lu SLES10-SP1-Updates OES2-Updates  
No updates are available in the specified catalogs.  
linux:~ # █
```

Updates available:

S	Catalog	Bundle	Name	Version	Arch
v	SLES10-SP1-Updates		aaa_base	1.0-12.31	i586
v	OES2-Updates		adminfs	1.0.73-3	i586
v	SLES10-SP1-Updates		bind	9.3.4-1.16	i586
v	SLES10-SP1-Updates		bind-libs	9.3.4-1.16	i586
v	SLES10-SP1-Updates		bind-utils	9.3.4-1.16	i586
v	OES2-Updates		CASA	1.7.1408-4	i586
v	SLES10-SP1-Updates		cifs-mount	3.0.24-2.28	i586
v	SLES10-SP1-Updates		cpio	2.6-19.17	i586
v	SLES10-SP1-Updates		cron	4.1-45.18	i586
v	SLES10-SP1-Updates		cups	1.1.23-40.24	i586
v	SLES10-SP1-Updates		cups-client	1.1.23-40.24	i586
v	SLES10-SP1-Updates		cups-libs	1.1.23-40.24	i586
v	SLES10-SP1-Updates		dhcp-server	3.0.3-23.38	i586
v	SLES10-SP1-Updates		e2fsprogs	1.38-25.24	i586
v	SLES10-SP1-Updates		evms	2.5.5-24.49	i586
v	SLES10-SP1-Updates		evms-gui	2.5.5-24.49	i586
v	SLES10-SP1-Updates		evolution-data-server	1.6.0-43.58	i586
v	OES2-Updates		yast2-novell-ncpserver	2.13.3-35	noarch
v	OES2-Updates		yast2-novell-ncs	2.13.1-41	noarch
v	OES2-Updates		yast2-novell-netstorage	2.13.4-32	noarch
v	OES2-Updates		yast2-novell-nss	2.13.7-43	noarch
v	OES2-Updates		yast2-novell-quickfinder	2.13.3-34	noarch
v	OES2-Updates		yast2-novell-responsefile	2.13.1-25	noarch
v	OES2-Updates		yast2-novell-samba	2.13.3-36	noarch
v	OES2-Updates		yast2-novell-schematool	2.13.1-32	noarch
v	OES2-Updates		yast2-novell-sms	2.13.2-29	noarch
v	OES2-Updates		yast2-oes-ldap	2.13.4-29	noarch
v	SLES10-SP1-Updates		yast2-online-update	2.13.61-0.2	noarch

```
linux:~ # █
```

2c Update the server with all available SLES10 SP2 and OES 2 SP1 patches:

Command	Results
<pre>rug up -t patch SLES10-SP2- Updates OES2 Updates</pre>	<pre>linux:~ # rug up -t patch SLES10-SP1-Updates OES2-Updates Resolving Dependencies... The following packages will be installed: adminfs 1.0.73-3 (OES2-Updates) adminfs=1.0.73-3,i586[OES2-Updates] needed by atom;adminfs=1.0.73-3,i586[OES2-Updates] CASA 1.7.1408-4 (OES2-Updates) CASA=1.7.1408-4,i586[OES2-Updates] needed by atom;CASA=1.7.1408-4,i586[OES2-Updates] CASA-cl1 1.7.1408-4 (OES2-Updates) CASA-cl1=1.7.1408-4,i586[OES2-Updates] needed by novell-oes-dhcp-conf-1.0.0-39,i586[OES2-Updates] google-perftools 0.8-8 (OES2-Updates) google-perftools=0.8-8,i586[OES2-Updates] needed by atom;google-perftools=0.8-8,i586[OES2-Updates] yast2-oes-trans-zh_CN 2.13.0-11 (OES2-Updates) yast2-oes-trans-zh_CN=2.13.0-11,noarch[OES2-Updates] needed by atom;yast2-oes-trans-zh_CN=2.13.0-11,noarch[OES2-Updates] yast2-oes-trans-zh_TW 2.13.0-11 (OES2-Updates) yast2-oes-trans-zh_TW=2.13.0-11,noarch[OES2-Updates] needed by atom;yast2-oes-trans-zh_TW=2.13.0-11,noarch[OES2-Updates] yast2-online-update 2.13.61-0.2 (SLES10-SP1-Updates) yast2-online-update=2.13.61-0.2,noarch[SLES10-SP1-Updates] needed by atom;yast2-online-update=2.13.61-0.2,noarch[SLES10-SP1-Updates] Proceed with transaction? (y/N) y Downloading Packages... Transaction... Transaction Finished linux:~ # █</pre>

2d Repeat **Step 2b** and **Step 2c** until no more updates are available.

Command	Example Results
<code>rug lu SLES10-SP2-Updates OES-Updates</code>	<p>No updates are available in the specified catalogs:</p> <pre>linux:~ # rug lu SLES10-SP1-Updates OES2-Updates No updates are available in the specified catalogs. linux:~ #</pre>

2e 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.

You can also update your server with specific maintenance patches by using commands at the command line:

- 1** Log into the server as `root` or `su` to `root`.
- 2** At the command line, enter the following commands:
 - 2a** Refresh all services

Command	Example Results
<code>rug ref</code>	<pre>linux:~ # rug ref Refreshing Services... Successfully refreshed. linux:~ #</pre>

2b See whether updates are available, see a list of patches and their status, or see information for a specific patch:

Command	Results
See whether patches are available:	No updates are available in the specified catalogs.
<pre>rug lu catalog1 catalog2</pre>	<pre>linux:~ # rug lu SLES10-SP1-Updates OES2-Updates No updates are available in the specified catalogs. linux:~ # █</pre>

Updates available:

S	Catalog	Bundle Name	Version	Arch
v	SLES10-SP1-Updates	aaa-base	1.10-12.31	i586
v	OES2-Updates	adinfns	1.0.73-3	i586
v	SLES10-SP1-Updates	bind	9.3.4-1.16	i586
v	SLES10-SP1-Updates	bind-libs	9.3.4-1.16	i586
v	SLES10-SP1-Updates	bind-utils	9.3.4-1.16	i586
v	OES2-Updates	CRSA	1.7.1400-4	i586
v	SLES10-SP1-Updates	cifs-mount	3.0.24-2.20	i586
v	SLES10-SP1-Updates	cpio	2.6-13.17	i586
v	SLES10-SP1-Updates	cron	4.1-45.18	i586
v	SLES10-SP1-Updates	cups	1.1.23-40.24	i586
v	SLES10-SP1-Updates	cups-client	1.1.23-40.24	i586
v	SLES10-SP1-Updates	cups-libs	1.1.23-40.24	i586
v	SLES10-SP1-Updates	dhcp-server	3.0.3-23.38	i586
v	SLES10-SP1-Updates	ed2kprogs	1.39-25.24	i586
v	SLES10-SP1-Updates	ews	2.5.5-24.49	i586
v	SLES10-SP1-Updates	ews-gui	2.5.5-24.49	i586
v	SLES10-SP1-Updates	evolution-data-server	1.6.0-43.50	i586
v	OES2-Updates	fast2-novell-novserver	2.13.5-35	noarch
v	OES2-Updates	fast2-novell-ncs	2.13.1-41	noarch
v	OES2-Updates	fast2-novell-netstorage	2.13.4-32	noarch
v	OES2-Updates	fast2-novell-rms	2.13.7-43	noarch
v	OES2-Updates	fast2-novell-quickfinder	2.13.8-34	noarch
v	OES2-Updates	fast2-novell-responsefile	2.13.1-25	noarch
v	OES2-Updates	fast2-novell-rsmba	2.13.5-36	noarch
v	OES2-Updates	fast2-novell-schematool	2.13.1-32	noarch
v	OES2-Updates	fast2-novell-rss	2.13.2-29	noarch
v	OES2-Updates	fast2-ovs-ldap	2.13.4-29	noarch
v	SLES10-SP1-Updates	fast2-online-update	2.13.61-0.2	noarch
linux:~	# █			


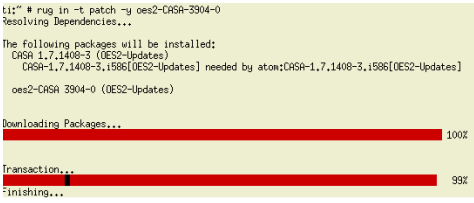

See a list of patches from all catalogs and their status:

```
rug pch
```

Catalog	Name	Version	Category	Status
SLES10-SP1-Debuginfo-Updates	dbgp1-glibc-debuginfo	3400-0	optional	Needed
SLES10-SP1-Debuginfo-Updates	dbgp1-kernel	3535-0	recommended	Not Applicab
SLES10-SP1-Debuginfo-Updates	dbgp1-kernel	3543-0	recommended	Not Applicab
SLES10-SP1-Debuginfo-Updates	dbgp1-kernel-bjgpm-debuginfo	3486-0	optional	Needed
SLES10-SP1-Debuginfo-Updates	dbgp1-kernel-debug-debuginfo	3486-0	optional	Needed
SLES10-SP1-Debuginfo-Updates	dbgp1-kernel-default-debuginfo	3489-0	optional	Needed
SLES10-SP1-Debuginfo-Updates	dbgp1-kernel-rpm-debuginfo	3486-0	optional	Needed
SLES10-SP1-Debuginfo-Updates	dbgp1-kernel-source-debuginfo	3488-0	optional	Needed
SLES10-SP1-Debuginfo-Updates	dbgp1-kernel-un-debuginfo	3501-0	optional	Needed
SLES10-SP1-Debuginfo-Updates	dbgp1-kernel-xenpa-debuginfo	3502-0	optional	Needed
SLES10-SP1-Debuginfo-Updates	dbgp1-kernel-xenpa-debuginfo	3504-0	optional	Needed
OES2-Updates	oes2-CRSA	3762-0	recommended	Not needed
OES2-Updates	oes2-CRSA	3251-0	recommended	Not needed
OES2-Updates	oes2-CRSA	3709-0	recommended	Not needed
OES2-Updates	oes2-CRSA	3791-0	recommended	Not needed
OES2-Updates	oes2-CRSA	3576-0	recommended	Not needed
OES2-Updates	oes2-CRSA	3304-0	recommended	Not needed
OES2-Updates	oes2-CRSA	3413-0	recommended	Not needed
OES2-Updates	oes2-CRSA	3355-0	recommended	Not needed
OES2-Updates	oes2-CRSA	3017-0	recommended	Not needed
OES2-Updates	oes2-CRSA	3601-0	recommended	Not needed
OES2-Updates	oes2-CRSA	3232-0	recommended	Not needed

Command	Results																																																																																																																																																																
See a list of all installed patches:	Before patches are installed:																																																																																																																																																																
<pre>rug pch -i</pre>	<pre>linux:~ # rug pch -i No patches found. linux:~ # █</pre>																																																																																																																																																																
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System	oes2-novell-netstorage	4215-0	recommended	Applied																																																																																																																																																													
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<pre>rug patch-info patch_name</pre>																																																																																																																																																																	
For example:																																																																																																																																																																	
<pre>rug patch-info oes2-oes-SPident</pre>	<pre>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:~ # █</pre>																																																																																																																																																																

2c Update the server with specific patches:

Command	Results
<p>Install all patches from the one or more catalogs of a particular category.</p> <pre>rug up -t patch catalog1 catalog2 -g category_name</pre> <ul style="list-style-type: none"> ♦ security ♦ recommended ♦ optional <p>For example:</p> <pre>rug up -t patch SLES10-SP2-Updates OES2-Updates -g security</pre>	
<p>Install one version of a patch without confirmation:</p> <pre>rug in -t patch -y patchname-version</pre> <p>For example:</p> <pre>rug in -t patch -y oes2-CASA-3904-0</pre>	
<p>Install all versions of a patch with confirmation:</p> <pre>rug in -t patch patch_name*</pre> <p>For example:</p> <pre>rug in -t patch oes2-oes-SPident*</pre>	

3 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:

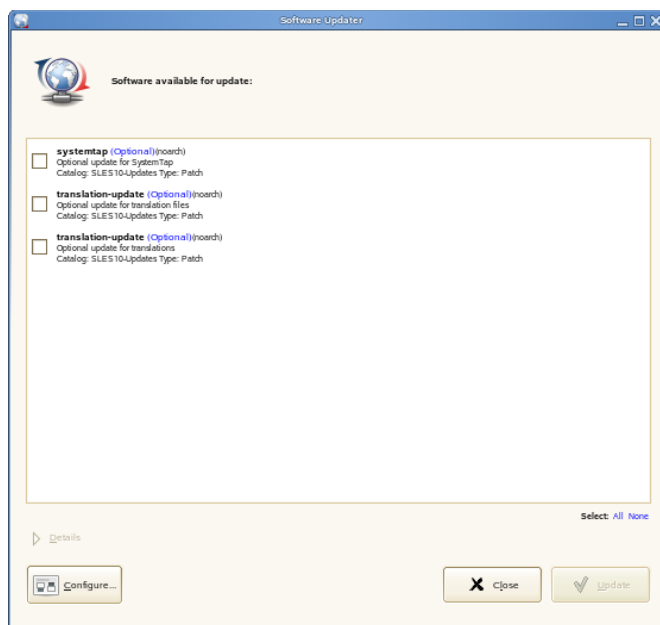
Table 7-1 Additional Rug Commands

Task	Command
<p>Halts the ZLM daemon. Accepts the following option flags:</p> <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>
<p>Restarts the ZLM daemon. Accepts the following option flags:</p> <ul style="list-style-type: none"> ♦ -f, --force: Force ♦ -n, --no-wait: Does not wait for confirmation that the daemon has restarted. ♦ --clean: Cleans up at restart 	<code>rug restart [options]</code>

Task	Command
Access help for all the rug commands	<code>rug</code>
Access the rug man page	<code>man rug</code>

7.3.2 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  that 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.

7.4 Frequently Asked Questions about Updating

This section contains the following information:

- ♦ [Section 7.4.1, “Do I apply all the patches in the catalogs or how do I know which patches to apply?,” on page 139](#)
- ♦ [Section 7.4.2, “Can I Set Up a Local Server to Get Patches From?,” on page 140](#)
- ♦ [Section 7.4.3, “How do I re-add the catalogs for OES 2 SP1 in my ZENworks Management Daemon \(ZMD\) configuration after removing one or more of them?,” on page 140](#)

7.4.1 Do I apply all the patches in the catalogs or 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 SP1 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.

7.4.2 Can I Set Up a Local Server to Get Patches From?

Yes. You can set up a server using the technology available from your SLES 10 base server, or you can set up a patching server by using ZENworks 7.2.

For specific procedures, see [Table 7-2](#).

Table 7-2 *More Information About Updating*

Task	For More Information, See
Update from a local update mirror server at my site	"Deploying and Mirroring SUSE Linux Enterprise 10 Updates" (http://www.novell.com/linux/technical_library/deploying_mirroring.pdf)
Update the server using ZENworks Linux Management 7.2	AppNote: "Advanced Patching of SUSE Linux Enterprise Server 10 with ZENworks Linux Management 7.2" (http://www.novell.com/coolsolutions/appnote/19124.html)

7.4.3 How do I re-add the catalogs for OES 2 SP1 in my ZENworks Management Daemon (ZMD) configuration after removing one or more of them?

To re-add the catalogs and services need for updating OES 2 SP1 to the ZMD 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 ZMD 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 OES 2 SP1.

7.5 For More Information About Updating

Additional information about updating a server via patching is available in these document sources:

Table 7-3 *More Information About Updating*

Task	For More Information, See
Update software using the Novell ZENworks® Linux Management that is integrated in SLES 10.	“Managing Software with ZENworks” in the SUSE Linux Enterprise Server 10 Installation and Administration Guide (http://www.novell.com/documentation/sles10/sles_admin/data/cha_zmd.html)
Update from a local update mirror server at my site	“Deploying and Mirroring SUSE Linux Enterprise 10 Updates” (http://www.novell.com/linux/technical_library/deploying_mirroring.pdf)
Update the server using ZENworks Linux Management 7.2	AppNote: “Advanced Patching of SUSE Linux Enterprise Server 10 with ZENworks Linux Management 7.2” (http://www.novell.com/coolsolutions/appnote/19124.html)
Update the server from behind a proxy server	TID 3132246: “Getting the SLES 10 / SLED 10 Software Updater to work if you use a Proxy Server.” (https://secure-support.novell.com/KanisaPlatform/Publishing/289/3132246_f.SAL_Public.html)

7.6 Updating the Server Quick Path

This section contains the following Quick Path steps for patching an OES 2 SP1 Linux server:

- ♦ “Command Line Quick Path for Updating OES 2 SP1 Linux” on page 141
- ♦ “GUI Quick Path for Updating OES 2 SP1 Linux” on page 144

7.6.1 Command Line Quick Path for Updating OES 2 SP1 Linux

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 and OES 2 SP1
- ♦ 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 available space.

In particular, ensure 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.

- ♦ Before updating the server, secure 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 seeing 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-SP2-Updates OES2-Updates
```

- 3c** Update the server with all available SLES10-SP2 and OES 2 SP1 patches by entering:

```
rug up -t patch SLES10-SP2-Updates OES2-Updates
```

- 3d** Repeat **Step 3b** and **Step 3c** until there are no more SLES10-SP2 or OES 2 SP1 patches.

When there are no more SLES10-SP2 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 into the server as `root` or `su` to `root`.

- 2** At the command line, enter the following commands:

- 2a** Refresh all services by entering:

```
rug ref
```

- 2b** See whether updates are available by entering:

```
rug lu SLES10-SP2-Updates OES2-Updates
```

- 2c** See a list of patches and their status by entering:

```
rug pch SLES10-SP2-Updates OES2-Updates
```

- 2d** See information about a specific patch by entering:

```
rug patch-info patch_name
```

For example:

```
rug patch-info slespl-xpdf
```

- 2e** See a list of all installed patches:

```
rug pch -i
```

2f Update the server with specific patches:

- ♦ 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-SP2-Updates OES2-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 7-4 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>

7.6.2 GUI Quick Path for Updating OES 2 SP1 Linux

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 and OES 2 SP1
- ♦ 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 clicking *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** On the Software Available for Updates 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.

Using AutoYaST to Install and Configure Multiple OES 2 SP1 Linux Servers

8

If you need to install OES Linux 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.

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 Linux 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 SP1 Linux servers.

For complete instructions on using AutoYaST2, see [Automatic Linux Installation and Configuration with Yast2](http://forgeftp.novell.com/yast/doc/SLES10/autoinstall/index.html) (<http://forgeftp.novell.com/yast/doc/SLES10/autoinstall/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 147](#)
- ♦ [Section 8.2, “Prerequisites,” on page 147](#)
- ♦ [Section 8.3, “Setting Up a Control File with OES Components,” on page 148](#)
- ♦ [Section 8.4, “Setting Up an Installation Source,” on page 153](#)

8.1 Security Considerations

The following issues exist when using or creating control files for use with AutoYaST.

- ♦ [Password for User Admin Written in Clear Text in y2log \(page 167\)](#)
- ♦ [Password for User Admin Written in Clear Text in control.xml \(page 167\)](#)

8.2 Prerequisites

You need at least the following components to install an OES 2 SP1 Linux server using AutoYaST:

- ☐ A server with OES 2 SP1 Linux 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 148](#).

- ❑ 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 153](#).

- ❑ A source or server that contains the AutoYaST profile (control file)

For more information, see [“Setting Up an Installation Source” on page 153](#).

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 completing 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 148](#).
- ♦ 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 149](#).

This system depends on existing modules that are usually used to configure a computer after OES 2 SP1 Linux 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 using AutoYaST, Apache does not run.

Solution: Reboot the server when the installation is complete; or when creating 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, do the following:

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.

See the following syntax:

```
<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 using the AutoInstallation module in YaST on a server running OES 2.

- 1 On a server that has OES 2 installed, open the YaST2 Control Center.

- 2** Click *Miscellaneous > Autoinstallation*.
- 3** Click *Tools > Create Reference Control File*.
- 4** In the Create a Reference Control File dialog box, select the *Network card* check box in the *Select Additional Resources* field, then click *Create*.
AutoYaST probes the system for software, partitioning, boot loader, network card information, language settings, mouse, and other system settings.
- 5** Verify the package selections.
 - 5a** Click *Software > Package Selection*.
 - 5b** On the Package Selection page, make sure the items are the same as you previously selected. 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 20. If the configuration contains the packages and selections you need, skip to **Step 7**. If not, continue with **Step 6**.
- 6** If you need to change the package selections for the target servers, do the following:
 - 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** From the Main YaST AutoInstallation menu, click *Hardware > Partitioning > Configure*.
 - 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://forgeftp.novell.com/yast/doc/SLES10/autoinstall/CreateProfile.Partitioning.html>).
- 8** Specify the settings for the graphics card and monitor:
 - 8a** From the Main YaST AutoInstallation menu, click *Hardware > Graphics Card and Monitor > Configure*.
 - 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 might want, such as a script for removing partitions:

For more information on custom user scripts, see “Custom User Scripts” (<http://forgeftp.novell.com/yast/doc/SLES10/autoinstall/createprofile.scripts.html>) in *Automatic Linux Installation and Configuration with Yast2*.

9a From the Main YaST AutoInstallation menu, 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 YaST AutoInstallation menu, click *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 YaST AutoInstallation* menu, 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 YaST AutoInstallation menu, 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 150](#). For more information about which modules are in each pattern, see [“Deciding What Patterns to Install” on page 20](#).

Module Name	Other Module Dependencies
Novell Archive and Version Services	Novell Backup/Storage Management Services (SMS), Novell eDirectory, Novell Linux User Management, Novell Remote Manager, and Novell Storage Services
Novell Backup/Storage Management Services (SMS)	Novell Linux User Management and Novell Remote Manager
Novell Cluster Services™ (NCS)	Novell Backup/Storage Management Services (SMS), Novell Linux User Management, and Novell Remote Manager
Novell DHCP	Novell Backup/Storage Management Services (SMS), Novell eDirectory, Novell Linux User Management, and Novell Remote Manager
Novell DNS	Novell Backup/Storage Management Services (SMS), Novell eDirectory, Novell Linux User Management, and Novell Remote Manager
Novell eDirectory™	Novell Backup/Storage Management Services (SMS), Novell Linux User Management, and Novell Remote Manager
Novell FTP	Novell Backup/Storage Management Services (SMS), Novell eDirectory, Novell Linux User Management, and Novell Remote Manager
iFolder 3.6	Novell Backup/Storage Management Services (SMS), Novell eDirectory, Novell Linux User Management, and Novell Remote Manager
iManager	Requires eDirectory in the network and Novell Backup/Storage Management Services (SMS), Novell Linux User Management, and Novell Remote Manager
Novell iPrint	Novell Backup/Storage Management Services (SMS), Novell eDirectory, Novell Linux User Management, and Novell Remote Manager
Novell Linux User Management (LUM)	Novell Backup/Storage Management Services (SMS) and Novell Remote Manager
Novell NCP™ Server/Dynamic Storage Technology	Novell Backup/Storage Management Services (SMS), Novell eDirectory, Novell Linux User Management, and Novell Remote Manager
Novell NetStorage	Novell Backup/Storage Management Services (SMS), Novell iManager, Novell Linux User Management, and Novell Remote Manager
Novell QuickFinder	Novell Backup/Storage Management Services (SMS), Novell Linux User Management, and Novell Remote Manager
Novell Remote Manager	Novell Backup/Storage Management Services (SMS) and Novell Linux User Management

Module Name	Other Module Dependencies
Novell Samba	Novell Backup/Storage Management Services (SMS), Novell Linux User Management, and Novell Remote Manager
Novell Storage Services™	Novell Backup/Storage Management Services (SMS), Novell eDirectory, Novell Linux User Management, and Novell Remote Manager

12b Type or select the information for each field requested on each page, then click *Next* until a summary of setting 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](http://forgeftp.novell.com/yast/doc/SLES10/autoinstall/Invoking.html)” in *Automatic Linux Installation and Configuration with Yast2* (<http://forgeftp.novell.com/yast/doc/SLES10/autoinstall/Invoking.html>).

14 Exit the configuration management tool by clicking *File > Exit*.

15 Proceed with “[Setting Up an Installation Source](#)” on page 153.

8.4 Setting Up an Installation Source

AutoYaST requires an installation source. You have several options. For an explanation of each, see “[Network Based Installation](http://forgeftp.novell.com/yast/doc/SLES10/autoinstall/Invoking.html)” (<http://forgeftp.novell.com/yast/doc/SLES10/autoinstall/Invoking.html>) and “[The Auto-Installation Process](http://forgeftp.novell.com/yast/doc/SLES10/autoinstall/Bootmanagement.html)” in *Automatic Linux Installation and Configuration with Yast2* (<http://forgeftp.novell.com/yast/doc/SLES10/autoinstall/Bootmanagement.html>).

You can also set up an installation source on a NetWare server. See [Appendix C, “Setting Up an Installation Source on NetWare,”](#) on page 191.

For OES 2 SP1, you must set up a separate directory for the SLES 10 software and the OES Linux software.

Installing OES 2 SP1 Linux as a Xen VM Host Server

9

You can install Novell® Open Enterprise Server (OES) 2 SP1 Linux as a Xen VM host server.

To understand why you might want your VM host server to have OES 2 SP1 installed, see “[Why Install OES Services on Your VM Host?](#)” in the *OES 2 SP1: Planning and Implementation Guide*.

To install OES 2 SP1 on your VM host server, add the following steps to the basic installation instructions found in “[Setting Up a Virtual Machine Host \(http://www.novell.com/documentation/sles10/xen_admin/data/cha_xen_virtualization_vhost_setup.html\)](http://www.novell.com/documentation/sles10/xen_admin/data/cha_xen_virtualization_vhost_setup.html)” in the *Virtualization with Xen (http://www.novell.com/documentation/sles10/xen_admin/data/bookinfo.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 3.3.3, “Specifying the Add-On Product Installation Information,” on page 37](#).
- 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 Linux server.

- 4 If you selected any of the supported OES services, you will notice that Novell Remote Manager (NRM) is also selected. Click the green checkmark by NRM to change it to a red taboo 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 Linux or SLES 10 VM guest server or physical server.
- 6 In the *Primary Functions* category, deselect *Print Server* by clicking the option twice.
- 7 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.

- 8 Click *Add* and specify the IP address of a server in the tree that has eDirectory installed on it, then click *Next*.
- 9 On the Novell Open Enterprise Server Configuration page, click *Next*.

- 10** When you reach the User Authentication Method page, do not change the Authentication Method.
- 11** On the New Local User page, do not create a local user.
- 12** After the server boots, make sure the GRUB boot loader is set to run the Xen kernel by doing the following:
 - 12a** On the desktop, click *Computer > YaST*.
 - 12b** In YaST click *System > Boot Loader*.
 - 12c** Make sure there is a check mark by the *XEN* label. If a different option is checked, select *XEN* and click the *Set as Default* button.
 - 12d** Click *Finish*.
 - 12e** Close YaST and restart the server.

The server is now prepared to function as a Xen VM host server.

Installing, Upgrading, or Updating OES 2 SP1 Linux on a Xen-based Virtual Machine

10

In Novell® Open Enterprise Server (OES) 2 SP1 Linux, you can install OES 2 SP1 Linux as a guest operating system on a

- ♦ SUSE® Linux Enterprise Server (SLES) 10 Linux server

See “Setting Up a Virtual Machine Host (http://www.novell.com/documentation/sles10/xen_admin/data/cha_xen_virtualization_vhost_setup.html)” in the *Virtualization with Xen* (http://www.novell.com/documentation/sles10/xen_admin/data/bookinfo.html) guide.

or

- ♦ OES 2 SP1 Linux server that has been set up as a Xen-based host server

See [Chapter 9, “Installing OES 2 SP1 Linux as a Xen VM Host Server,” on page 155.](#)

For general information on the Xen virtualization technology in SLES 10 SP2, see the *Virtualization with Xen* (http://www.novell.com/documentation/sles10/xen_admin/data/bookinfo.html) guide.

This section documents the system requirements, installation instructions, upgrade and migration instructions, and issues associated with setting up OES 2 Linux on a Xen-based virtual machine.

- ♦ [Section 10.1, “System Requirements,” on page 157](#)
- ♦ [Section 10.2, “Prerequisites,” on page 159](#)
- ♦ [Section 10.3, “Preparing the Installation Software,” on page 159](#)
- ♦ [Section 10.4, “Installing an OES 2 SP1 Linux VM Guest,” on page 160](#)
- ♦ [Section 10.5, “Upgrading a Linux VM Guest to OES 2 SP1 Linux,” on page 163](#)
- ♦ [Section 10.6, “Updating an OES 2 SP1 Linux VM Guest,” on page 163](#)
- ♦ [Section 10.7, “Managing a Virtual Machine Running OES 2 SP1 Linux,” on page 163](#)
- ♦ [Section 10.8, “Advanced Configuration Options,” on page 163](#)

10.1 System Requirements

To create an OES 2 SP1 Linux VM guest, you need a SLES 10 SP2 or OES 2 SP1 Linux server that is set up as a Xen VM host server.

- ♦ [Section 10.1.1, “OES 2 SP1 VM Guest Considerations,” on page 158](#)
- ♦ [Section 10.1.2, “NSS Considerations,” on page 158](#)
- ♦ [Section 10.1.3, “Setup Instructions,” on page 158](#)

10.1.1 OES 2 SP1 VM Guest Considerations

When setting up a virtual machine host for OES 2 SP1 Linux 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.
- ♦ **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 SP1 Linux 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 while 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 SP1 Linux 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 NSS 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 = 2E40 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 SP1: NSS File System Administration Guide*.

10.1.3 Setup Instructions

For setup procedures, see

- ♦ **SLES 10 SP2:** “Setting Up a Virtual Machine Host (http://www.novell.com/documentation/sles10/xen_admin/data/cha_xen_virtualization_vhost_setup.html)” in the *Virtualization with Xen* (http://www.novell.com/documentation/sles10/xen_admin/data/bookinfo.html) guide.

or

- ♦ **OES 2 SP1:** “**Chapter 9, “Installing OES 2 SP1 Linux as a Xen VM Host Server,” on page 155.**”

10.2 Prerequisites

Before creating an OES 2 SP1 Linux 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.
- ♦ 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 159](#)
- ♦ [Section 10.3.2, “Preparing the Installation Source Files,” on page 159](#)

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.html) (http://www.novell.com/documentation/oes2/esd/di_oes2.html).

Table 10-1 OES Linux ISO Images and CD Labels for i386

ISO Image File	CD Label
OES2-SP1-i386-CD1.iso	Novell Open Enterprise Server 2 SP1 CD 1
SLES-10-SP2-DVD-i386-GM-DVD1.iso	SUSE Linux Enterprise Server 10 SP2 DVD

Table 10-2 OES Linux ISO Images and CD Labels for 64

ISO Image File	CD Label
OES2-SP1-x86_64-CD1.iso	Novell Open Enterprise Server 2 SP1 CD 1
SLES-10-SP2-DVD-x86_64-GM-DVD1.iso	SUSE Linux Enterprise Server 10 SP2 DVD

10.3.2 Preparing the Installation Source Files

To create an OES 2 SP1 Linux 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.
- or
- ♦ **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/sles_admin/data/sec_deployment_remoteinst_instserver.html#sec_deployment_remoteinst_instserver)

10.4 Installing an OES 2 SP1 Linux VM Guest

Creating an OES 2 SP1 Linux virtual machine requires you to complete the following major tasks.

- ♦ [Section 10.4.1, “Specifying Options for Creating an OES 2 SP1 Linux VM Guest,” on page 160](#)
- ♦ [Section 10.4.2, “Completing the OES 2 SP1 Linux VM Guest Installation,” on page 162](#)

10.4.1 Specifying Options for Creating an OES 2 SP1 Linux 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`.

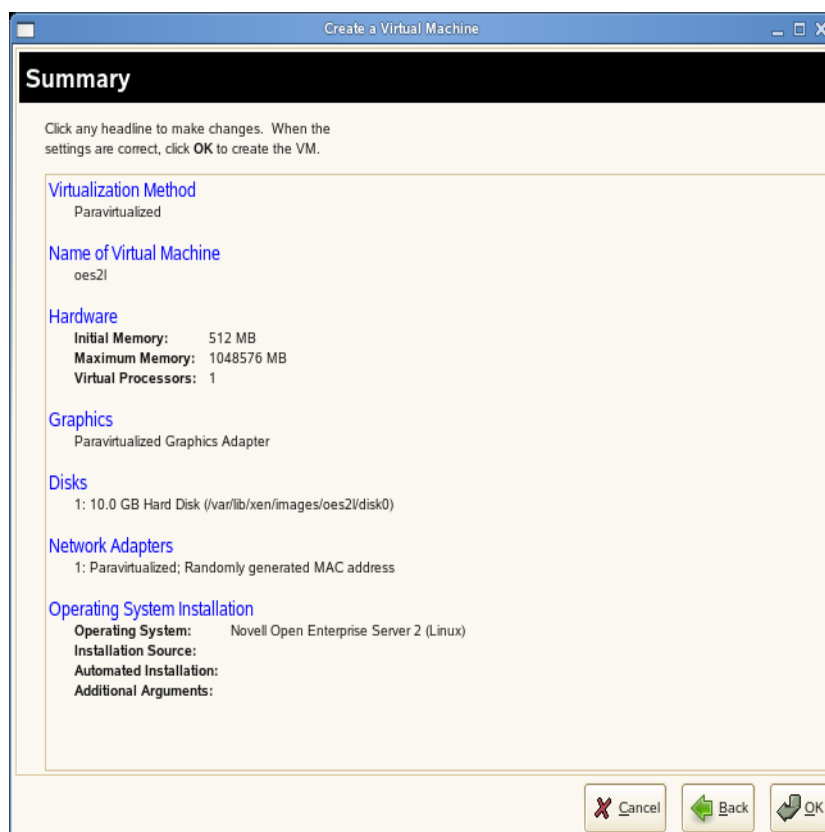
If the wizard does not appear or the `vm-install` command does not work, review the process of installing and starting the virtualization host server. The virtualization software might not be installed properly.

- 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 only supported 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 \(http://www.novell.com/documentation/sles10/xen_admin/data/cha_xen_config_options.html\)](http://www.novell.com/documentation/sles10/xen_admin/data/cha_xen_config_options.html)” in the *Virtualization with Xen* (http://www.novell.com/documentation/sles10/xen_admin/data/bookinfo.html) guide.

5 Change the Summary page settings to meet your configuration requirements.

The following recommendations help you quickly set up a virtual machine running OES 2 SP1 Linux:

- 5a** On the Name Of Virtual Machine page, 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.
- 5b** On the Hardware page:
 - 5b1** 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.
 - 5b2** Specify the number of processors that you want the virtual machine to use.
 - 5b3** Click *Apply*.
- 5c** On the Graphics page, select the type of graphic support desired, then click *Apply*.
- 5d** On the Disk page, specify the block device that you want to create the virtual device on.
- 5e** then click *Apply*. Some options include a partition, a volume, or whether it is file backed.

- 6 On the Network Adapters page, view the default setting, edit the default settings, or click *New* and specify the setting for another network board of your choice, then click *Apply*.
- 7 On the Operating System Installation page:
 - 7a Specify the URL for the network installation source.
 - 7b If you are using an AutoYaST control file to specify the settings for 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.
 - 7c If needed, 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 installation, 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 usessh=1 sshpassword=password
```
 - 7d Click *Apply*.
- 8 Click *OK* to start the virtual machine and launch the operating system installation program.
- 9 Continue with [Section 10.4.2, “Completing the OES 2 SP1 Linux VM Guest Installation,”](#) on page 162.

10.4.2 Completing the OES 2 SP1 Linux VM Guest Installation

- 1 Follow the on-screen prompts, using the information contained in the following sections:
 - 1a [Section 3.3.2, “Specifying the Installation Mode,”](#) on page 36.
 - 1b [Section 3.3.3, “Specifying the Add-On Product Installation Information,”](#) on page 37.
 - 1c [Section 3.3.4, “Setting Up the Clock and Time Zone,”](#) on page 38.
 - 1d [Section 3.3.5, “Specifying the Installation Settings for the SLES Base and OES Linux Installation,”](#) on page 38.
 - 1e [Section 3.3.6, “Specifying Configuration Information,”](#) on page 42.

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 specifying 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 machines Independent Wall Clock setting and reboot the virtual machine so the virtual machine will synchronize its time correctly. For more information on this configuration issue, “[Virtual Machine Clock Settings \(http://www.novell.com/documentation/sles10/xen_admin/data/sec_guest_suse.html#sec_xen_time\)](http://www.novell.com/documentation/sles10/xen_admin/data/sec_guest_suse.html#sec_xen_time)” in the *Virtualization with Xen (http://www.novell.com/documentation/sles10/xen_admin/data/bookinfo.html)* guide.
- 1f [Section 3.4, “Finishing the Installation,”](#) on page 60.

During the hardware configuration, graphics and sound cards are not recognized when installing OES 2 SP1 Linux as a VM guest.

- 2 Complete the server setup by following the procedures in “[Chapter 6, “Completing Installation or Upgrade Tasks on OES 2 SP1 Linux,” on page 123.](#)”

10.5 Upgrading a Linux VM Guest to OES 2 SP1 Linux



Novell plans to deliver detailed instructions about this process as it pertains to OES 2 SP1. Meanwhile, please refer to the [Virtualization with Xen guide \(http://www.novell.com/documentation/sles10/xen_admin/data/sec_guest_suse.html\)](http://www.novell.com/documentation/sles10/xen_admin/data/sec_guest_suse.html) for general instructions.

10.6 Updating an OES 2 SP1 Linux VM Guest

Patching or updating an OES 2 SP1 Linux VM guest is essentially the same as updating an OES 2 SP1 Linux physical server. For instructions on updating a physical OES 2 SP1 Linux server, see “[Updating an OES 2 SP1 Linux Server](#)” in the *OES2 SP1: Linux Installation Guide*.

10.7 Managing a Virtual Machine Running OES 2 SP1 Linux

Managing a virtual machine running OES 2 SP1 Linux is the same as managing virtual machines running other operating systems. For procedures, see “[Managing a Virtualization Environment \(http://www.novell.com/documentation/sles10/xen_admin/data/cha_xen_virtualization_manage.html\)](http://www.novell.com/documentation/sles10/xen_admin/data/cha_xen_virtualization_manage.html)” in the *Virtualization with Xen (http://www.novell.com/documentation/sles10/xen_admin/data/bookinfo.html)* guide.

10.8 Advanced Configuration Options

This section includes advanced configuration options that you need to set up these services on an OES 2 SP1 Linux VM guest.

- ♦ [Section 10.8.1, “Setting Up an OES 2 SP1 Linux VM Guest to Use Novell Storage Services \(NSS\),” on page 163](#)

10.8.1 Setting Up an OES 2 SP1 Linux VM Guest to Use Novell Storage Services (NSS)

When you install OES 2 SP1 Linux 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 “[Configuring the System Device to Use EVMS](#)” in the *OES2 SP1: Linux Installation Guide*, 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 SP1: NSS File System Administration Guide*.

Disabling OES 2 SP1 Linux Services

11

Although you can uninstall Novell™ Open Enterprise Server 2 (OES) Linux service RPMs using 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 2.7.2 Administration Guide*.

This section includes issues that you should consider when installing and configuring an Novell® Open Enterprise Server 2 (OES) Linux server.

- ♦ [Section 12.1, “Password for User Admin Written in Clear Text in y2log,” on page 167](#)
- ♦ [Section 12.2, “Password for User Admin Written in Clear Text in control.xml,” on page 167](#)
- ♦ [Section 12.3, “Access to the Server During an Installation or Upgrade,” on page 167](#)
- ♦ [Section 12.4, “Remote Installations Using VNC,” on page 168](#)
- ♦ [Section 12.5, “Improperly Configured LDAP Servers,” on page 168](#)

12.1 Password for User Admin Written in Clear Text in y2log

During the installation of OES 2 SP1 Linux or an upgrade to OES 2 SP1 Linux, the eDirectory™ password for user Admin is written in clear text to the `/var/log/YaST2/y2log` file when you select the option to *Clone the System for AutoYaST* option at the end of the installation.

To prevent writing this user’s password to this file, update the server with the SLES10-SP2 yast2-core-2.13.40 package during the installation or upgrade.

If you have already installed the server, you can update the server with this package and delete the password in all the `y2log` files.

If you need to send the `y2log` file to someone else for troubleshooting purposes, make sure you delete the password before sending the file.

For information on updating the server during the installation or upgrade, see [“Updating the Server Software During the Installation” on page 47](#) and [“Updating the Server Software During the Upgrade” on page 114](#).

12.2 Password for User Admin Written in Clear Text in control.xml

When you create a `control.xml` file 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.

12.3 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 the 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. YaST installation is always a down server installation, so unauthorized users cannot connect to the computer from other computers on the network during an installation or upgrade.

12.4 Remote Installations Using VNC

While installing the server, we recommend that you do not use Virtual Network Computing (VNC) for remote installation in an untrusted environment.

12.5 Improperly Configured LDAP Servers

Issue 1: Improperly configured LDAP servers will allow any user to connect to the server and query for information

eDirectory LDAP server enabled 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 the 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 will 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 using 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.

Installing Linux with EVMS as the Volume Manager of the System Device

A

This section describes how to modify the default partitioning scheme for the system device during the install of Novell® Open Enterprise Server 2 (OES) Linux server and Novell Storage Services™ (NSS) so that its 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 SP1 Linux server.

- ♦ [Section A.1, “Using EVMS to Manage the System Device,” on page 169](#)
- ♦ [Section A.2, “Understanding the EVMS Partitioning Scheme for the System Device,” on page 170](#)
- ♦ [Section A.3, “Configuring the System Device to Use EVMS,” on page 171](#)
- ♦ [Section A.4, “Using EVMS to Manage Devices,” on page 186](#)
- ♦ [Section A.5, “Upgrading a Server with EVMS and NSS on the System Device,” on page 188](#)

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. 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 SP1: NSS File System Administration Guide*.

IMPORTANT: NSS management tools require that the devices you use for NSS pools and volumes be managed by EVMS.

SUSE® Linux Enterprise Server 10 supports LVM2 and EVMS as volume managers, but 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. First, NSS management tools cannot see devices that are managed by LVM2 so any unpartitioned free space on the system device is not available to be used for NSS pools and volumes. Second, the default 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 Volumes:** Use multiple devices on the server, and reserve the system device for system partitions and Linux POSIX file systems.

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 elsewhere in this guide. Any free space on the LVM2-managed system device is not seen by NSS management tools, so any free space on the device is not available for creating NSS pools.

After the install, you can create NSS pools or Linux POSIX file systems on the other devices. For information, see [Section A.4, “Using EVMS to Manage Devices,” on page 186](#).

- ♦ **(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 that can be used later for NSS pools.

During the YaST install, you can use the Partitioner to create an EVMS partitioning scheme for the system device. For information, see [Section A.2, “Understanding the EVMS Partitioning Scheme for the System Device,” on page 170](#).

To modify the partitioning scheme during the install, follow the procedure in [Section A.3, “Configuring the System Device to Use EVMS,” on page 171](#).

After the install, you can create NSS pools or Linux POSIX file systems on the device. For instructions for creating pools and volumes, see the “[Managing NSS Pools](#)” and “[Managing NSS Volumes](#)” in the *OES 2 SP1: NSS File System Administration Guide*.

NOTE: These options apply to physical machines and virtual machines.

A.2 Understanding the EVMS Partitioning Scheme for the System Device

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.

IMPORTANT: Make sure to follow the detailed instructions in [Section A.3, “Configuring the System Device to Use EVMS,” on page 171](#).

We recommend that you choose a size for the system device that is based on to your current and future needs. Resizing of the root and swap partitions is not supported. If you need more space for paths like `/home`, you can map it in with new partitions as needed.

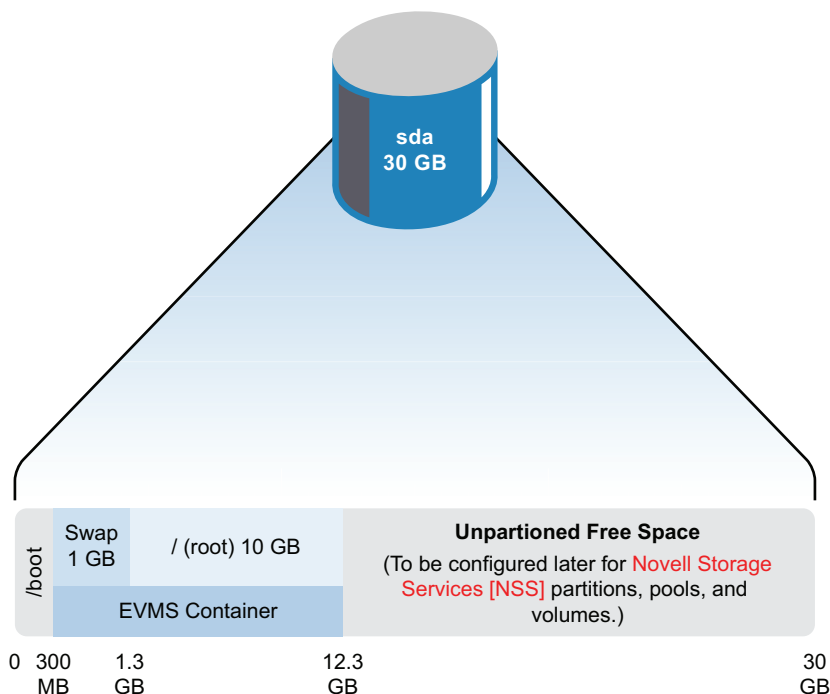
Consider the following to determine what data should be stored within the system device structure and what data you want to store on additional NSS volumes and Linux POSIX volumes that are mapped to a location on the system device:

- ♦ Linux operating system requirements
- ♦ [Table 3-3, “Partition Guidelines,” on page 39](#)
- ♦ OES 2 SP1 services that you plan to install
- ♦ Novell applications that you plan to install

- ♦ Third-party applications that you plan to install
- ♦ Home directories
- ♦ Non-system data, including databases

For example, [Figure A-1](#) illustrates how a 30-GB device can be partitioned during the install to enable EVMS to be used as the volume manager. After deleting the default partitioning scheme, you can specify a new partitioning scheme based on EVMS. Create a `/boot` volume of 300 MB at the beginning of the device. Next, create an EVMS container of type Linux LVM2 with only the amount of space needed to hold both the `swap` and `/` (root) volumes. In this example, the EVMS container is 11 GB because we plan to use 1 GB for the `swap` and 10 GB for the `/`. Next, create the `swap` volume (1 GB) and the `/` (root) volume (10 GB) in the EVMS container. Do not partition the remaining space (17.7 GB) on the system device. This free space is where you can create NSS pools and partitions by using NSS management tools after the install.

Figure A-1 Using EVMS for the System Device



IMPORTANT: As illustrated, only the `/boot` partition, the EVMS container, and `swap` and `/` volumes inside of the EVMS container are configured at install-time. The remainder of the device remains as unpartitioned free space where you can create NSS pools and volumes after the install.

A.3 Configuring the System Device to Use EVMS

This section describes how to configure the system device during the Linux install to use EVMS as the volume manager instead of the current default of LVM2.

- ♦ [Section A.3.1, “Prerequisites and Guidelines,” on page 172](#)
- ♦ [Section A.3.2, “Modifying the Installation Settings for EVMS and NSS,” on page 173](#)
- ♦ [Section A.3.3, “After the Linux Install,” on page 182](#)

A.3.1 Prerequisites and Guidelines

This section discusses the following:

- ♦ “System Device” on page 172
- ♦ “Device Size Limits” on page 172
- ♦ “Storage Deployment Considerations for Data Devices” on page 172
- ♦ “Data Loss Considerations for the System Device” on page 173

System Device

For the purpose of this documentation, a system device is any device that contains the Linux / boot, swap, or root (/) partitions for your Linux computer.

The instructions assume the following:

- ♦ All three system partitions are on the same physical disk.

If you use different disks for any of the system partitions, make sure to modify the install instructions for your deployment scenario so that all of the system partitions are managed by EVMS.
- ♦ You must configure the boot partition within the BIOS-addressable space (such as 2 GB for x86 or 8 GB for x86-64) of the first disk recognized by the system.

If this restriction is not required for your hardware, you can modify the location of the /boot partition as desired.
- ♦ Your system uses the Grub or LILO boot loaders.

If you have an IA64 system, you must modify these install instructions to use the ELILO boot loader (/boot/efi/elilo.conf) instead.

WARNING: Whenever you manually alter the kernel or `initrd` on your system, make sure to run `/sbin/elilo` before shutting down the computer. If you leave out this step, your system might not be bootable.

Device Size Limits

NSS recognizes devices only up to 2 TB in size. If you plan to use a device for NSS data volumes, the device must be 2 TB or smaller.

IMPORTANT: If necessary, use a third-party disk partitioner to carve the device into logical devices less than 2 TB in size.

Storage Deployment Considerations for Data Devices

During the install, if you set up Linux POSIX file systems on data devices where you later need to have EVMS support:

- ♦ Configure the devices to use EVMS as the volume manager.
- ♦ Leave unallocated free space on the device that can be used later for NSS pools and volumes.

Data Loss Considerations for the System Device

When you modify the partitioning scheme, you delete the suggested partitioning settings, and create new partitions to use EVMS instead. This destroys all data on the disk.

WARNING: To avoid data loss, it is best to use the EVMS install option only on a new device.

If you are upgrading, take one or more of the following precautionary measures before you install or upgrade:

- ♦ Move the data volumes from the system device to another device, and save your configuration files.
- ♦ If you cannot move the volumes, make a backup copy of the data, so you can restore the data volumes later from a backup copy.

A.3.2 Modifying the Installation Settings for EVMS and NSS

The procedure in this section describes how to modify the partitioning settings to install Linux with EVMS as the volume manager for your boot and system partitions, and how to modify the software settings to install NSS and other OES 2 SP1 services that NSS uses to provide storage services on an OES 2 SP1 Linux server.

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.

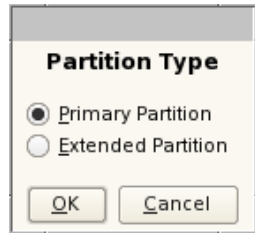
WARNING: The following procedure destroys all data on the system device.

- 1** Begin the SLES 10 install for OES 2 SP1 Linux.
For information, see [“Installing Open Enterprise Server 2 SP1 Linux” on page 29](#).
- 2** When the installation reaches the *Installations Settings* page, you must first delete the proposed LVM2-based partitioning solution so that the device can be configured to use EVMS as the volume manager instead of LVM2.
 - 2a** In the list of *Installation Settings*, select *Partitioning*.
 - 2b** On the *Suggested Partitioning* page under *Partitioning*, select *Create Custom Partition Setup*, then click *Next*.
 - 2c** On the *Preparing Hard Disk: Step 1* page under *Hard Disk*, select *Custom Partition (for experts)*, then click *Next* to open the *Expert Partitioner* page.
 - 2d** At the bottom of the *Expert Partitioner* page, click *Expert*, select *Delete Partition Table and Disk Label* from the pop-up menu, then click *Yes* to continue through the *Caution* advisory.
This deletes the default proposed partitions and the partition table on the system disk.
- 3** Create a primary partition on the system disk to use as the `/boot` partition:
 - 3a** At the bottom of the *Expert Partitioner* page, click *Create*.
If there are multiple devices connected to the server, a *Device* dialog box opens where you can specify which device to use. If only a single device is available, the *Partition Type* dialog box opens.

- 3b** If the *Device* dialog box opens, select the device you want to use for the `/boot` partition from the list of devices, such as `/dev/sda`, then click *OK*.

If there is only a single device available, the partitioner automatically selects it, and you are not prompted to specify which device to use.

- 3c** In the *Partition Type* dialog box, select *Primary Partition*, then click *OK*.



The *Create a Primary Partition on /dev/sda* dialog box opens, where `/dev/sda` is the device node name of the specified device.

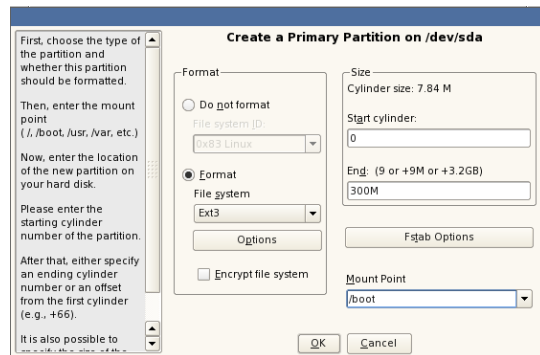
- 3d** In the *Create a Primary Partition on /dev/sda* dialog box, specify the following values:
- ♦ **Format:** Select *Format*, then select the Linux file system you want to use from the *File System* drop-down menu, such as *Ext3*.

IMPORTANT: In a Xen paravirtualized environment, use *Ext2* as the file system for the boot device. For a technical explanation of why this is necessary, see “[Paravirtual Mode and Journaling File Systems](http://www.novell.com/documentation/sles10/xen_admin/data/sec_xen_filesystem.html) (http://www.novell.com/documentation/sles10/xen_admin/data/sec_xen_filesystem.html)” in the *Virtualization with Xen* (http://www.novell.com/documentation/sles10/xen_admin/data/bookinfo.html) guide.

- ♦ **Size:** Do not modify the *Start Cylinder* value (0). Type an *End* value of 200 MB or larger to be the size of the `/boot` partition.

For example, to set the size at 300 MB, type 300M.

- ♦ **Mount Point:** Select `/boot` from the *Mount Point* drop-down menu.



- 3e** Click *OK* to create the `/boot` partition.

On the *Expert Partitioner* page, the partition appears as a logical device in the devices list, such as `/dev/sda1`.

Expert Partitioner									
Device	Size	F	Type	Mount	Mount By	Start	End	Used By	Label
/dev/sda	20.0 GB		VMware,-VMware Virtual S			0	2609		
/dev/sda1	305.9 MB	F	Linux native (Ext3)	/boot	K	0	38		

- 4** Create a second primary partition on the system disk to use for both the `swap` and system volumes:

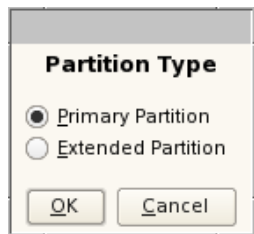
- 4a** At the bottom of the *Expert Partitioner* page, click *Create*.

If there are multiple devices connected to the server, a *Device* dialog box opens where you can specify which device to use. If only a single device is available, the *Partition Type* dialog box opens.

- 4b** If the *Device* dialog box opens, select the device you want to use for the second primary partition from the list of devices, such as `/dev/sda`, then click *OK*.

If there is only a single device available, the partitioner automatically selects it, and you are not prompted to specify which device to use.

- 4c** In the *Partition Type* dialog box, select *Primary Partition*, then click *OK*.



The *Create a Primary Partition on /dev/sda* dialog box opens, where `/dev/sda` is the device node name of the specified device.

- 4d** In the *Create a Primary Partition on /dev/sda* dialog box, specify the following values:
- ♦ **Format:** Select *Do Not Format*, then select *0x8E Linux LVM* from the *File System ID* drop-down list.
 - ♦ **Size:** Do not modify the *Start Cylinder* value. Type an *End* value of 5 GB or larger, depending on the combined partition size you need to contain your system and swap volumes.

For example, to create a system partition of 11 GB in size that allows 1 GB for a `swap` and 10 GB for the root (`/`) volume, type `11G`.

If you intend to create additional NSS volumes on the same physical disk, you must leave unpartitioned space available.

IMPORTANT: Do not make the system partition larger than necessary. The remaining unpartitioned free space on the system disk is used later to create the NSS pools and volumes. It can also be used to create Linux POSIX file systems.

To determine how much space to use, consider the following recommendations:

- ♦ The total size you specify for the system partition should be the size you need for your system volume plus the size you need for your swap volume.

- ♦ For your system volume, allow 2 GB (minimum) to 10 GB (recommended), depending on the OES services that you intend to install.
- ♦ Set aside 128 MB or larger for the swap volume.

Swap management is different for Linux kernel 2.4.10 and later. How much swap to add depends on the RAM size, the tasks that are planned for the system, and whether you want to make more virtual memory available than the RAM provides.

Some swap space (at least 128 MB) is good, to minimize the risk of losing data when active processes run out of RAM space. Swap is not required for systems with more than 1 GB of RAM. You must have at least 1 GB of virtual memory (RAM plus swap) during the install, but if the swap is more than 2 GB, you might not be able to install on some machines.

For example, suppose you have a 20 GB hard drive and 2 GB of RAM. If you plan to install all of the OES services on the system volume, your system partition should be about 11 GB (10 GB for the system volume and 1 GB for the swap). The remaining 9 GB should remain as free unpartitioned space where you can later create NSS pools and volumes or other Linux partitions.

- 4e** Click *OK* to create a second primary partition.

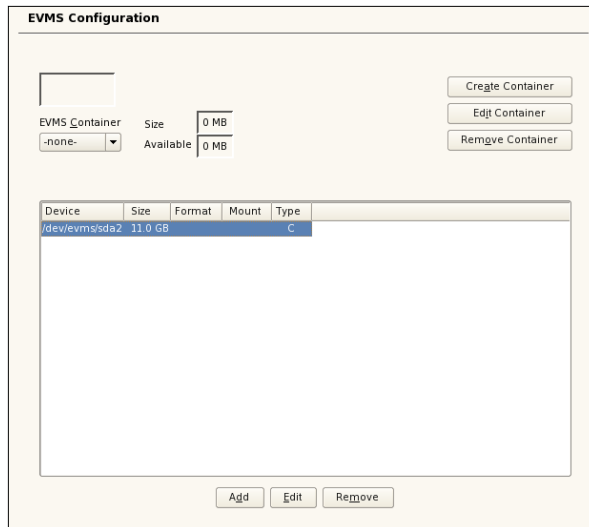
On the *Expert Partitioner* page, the system partition appears as a logical device in the devices list, such as `/dev/sda2`.

Expert Partitioner									
Device	Size	F	Type	Mount	Mount By	Start	End	Used By	Label
/dev/sda	20.0 GB		VMware-Virtual S			0	2609		
/dev/sda1	305.9 MB	F	Linux native (Ext3)	/boot	K	0	38		
/dev/sda2	11.0 GB		Linux LVM			39	1474		

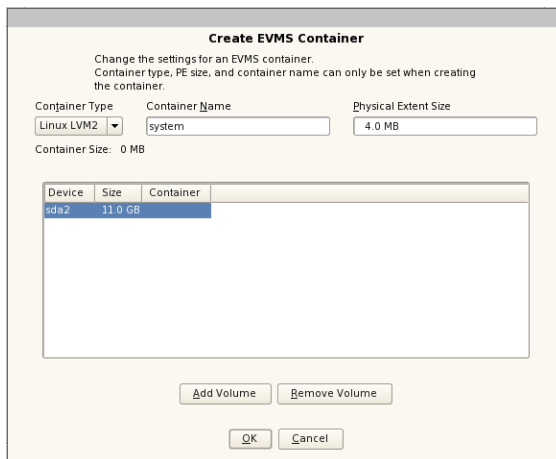
- 5** Create an EVMS container for the system partition that you created in **Step 4**:

- 5a** At the bottom of the *Expert Partitioner* page, click *EVMS* to open the *EVMS Configuration* page.

Available partitions for EVMS now appear as devices under `/dev/evms`. For example, the system partition `/dev/sda2` is listed as `/dev/evms/sda2`.



- 5b** On the *EVMS Configuration* page, select the system partition created in **Step 4** (such as `/dev/evms/sda2`), then click *Create Container* to open the *Create EVMS Container* dialog box.



- 5c** In the *Create EVMS Container* dialog box, select the partition, specify the following parameters, then click *OK*:
- ♦ **Container Type:** Select *Linux LVM2* from the drop-down menu.
 - ♦ **Container Name:** Specify the container name, such as *system*.
 - ♦ **Physical Extent Size:** Specify the physical extent size for regions in the container, such as 4 MB.

The physical extent (PE) size is the granularity with which regions can be created. The default PE size for LVM2 is 32 MB. Unlike LVM1, there is no limitation to the number of extents that can be allocated to an LVM2 region.

- 5d** Click *Add Volume* to create the `lvm2/system` container, where *system* is the container name.

The `lvm2/system` container name is displayed in the *Container* column, and the *Container Size* is shown beneath the *Container Type*.

5e Click *OK* to create the container.

On the *EVMS Configuration* page, the container you just created should automatically be selected, and its information displayed in the upper left of the page. If it is not, you can select it from the *EVMS Container* drop-down menu.

6 Create the swap volume in the `lvm2/system` container that you created in [Step 5](#):

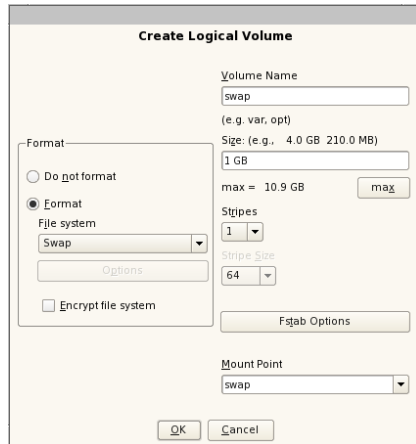
6a On the *EVMS Configuration* page, select the `lvm2/system` container from the *EVMS Container* drop-down menu, then click *Add*.

6b In the *Create Logical Volume* dialog box, specify the following parameters:

- ♦ **Format:** Select *Format*, then select *Swap* from the *File System* drop-down menu.
- ♦ **Volume Name:** Specify `swap` as the volume name.
- ♦ **Size:** Specify the size to use for the swap volume.

The swap size should be 128 MB or larger, with a recommended size of 1 GB. Specify the value you planned based on your calculations and recommendations in [Step 4d](#).

- ♦ **Mount Point:** Select *swap* from the *Mount Point* drop-down menu.



Create Logical Volume

Volume Name:
 (e.g. var, opt)

Size: (e.g., 4.0 GB 210.0 MB)

 max = 10.9 GB

Format:
☐ Do not format
☒ Format

File system:

☐ Encrypt file system

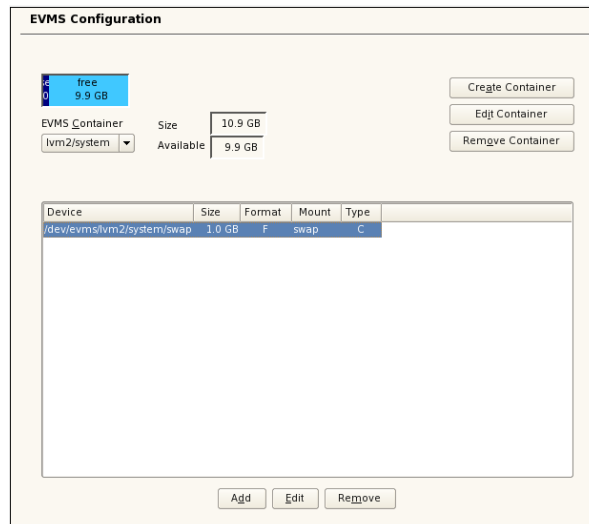
Stripes:

 Stripe Size:

Mount Point:

6c Click *OK* to create the swap volume.

On the *EVMS Configuration* page, the swap volume is listed as a device in the container, and its pathname is `/dev/evms/lvm2/system/swap`, where *system* is the name of the system partition and *swap* is the name of the swap volume.



EVMS Configuration

free: 9.9 GB

EVMS Container: Size:
 Available:

Device	Size	Format	Mount	Type
/dev/evms/lvm2/system/swap	1.0 GB	F	swap	C

7 Create the system volume in the `lvm2/system` container that you created in **Step 5**:

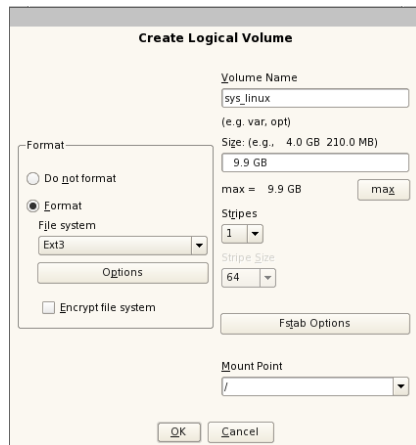
7a On the *EVMS Configuration* page, select the `lvm2/system` container from the *EVMS Container* drop-down menu, then click *Add*.

7b In the *Create Logical Volume* dialog box, specify the following parameters:

- ♦ **Format:** Select *Format*, then select the file system to use from the *File System* drop-down menu, such as *Reiser* or *Ext3*.
- ♦ **Volume Name:** Specify a volume name. For example, name it `sys_linux`.

You can use any volume name that you know to be unique on the system. When you install OES 2 SP1 services, a `sys` volume that parallels the one on NetWare® is automatically created, so make sure not to use `sys` as the volume name.

- ◆ **Size:** Click *Max* to set the size of the system volume as the remaining space available in the *lvm2/system* partition.
- ◆ **Mount Point:** Select */* (root) from the *Mount Point* drop-down menu.



Create Logical Volume

Volume Name:

(e.g. var, opt)

Size: (e.g., 4.0 GB 210.0 MB) max = 9.9 GB

Stripes: Stripe Size:

Format:

☐ Do not format

☒ Format

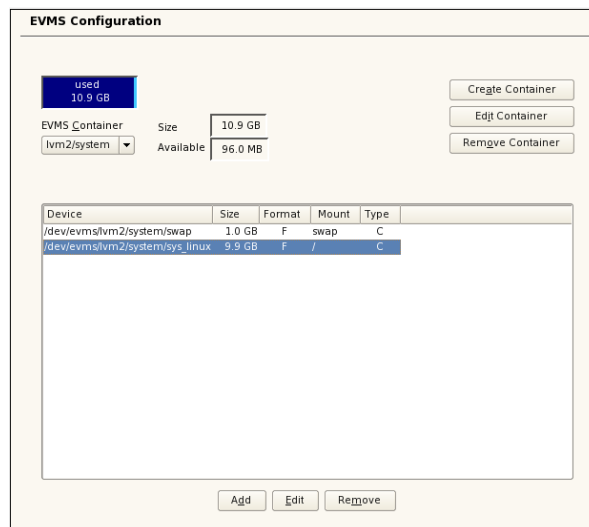
File system:

☐ Encrypt file system

Mount Point:

7c Click *OK* to create the system volume.

On the *EVMS Configuration* page, the system volume is listed as a device in the container and its pathname is */dev/evms/lvm2/system/sys_linux*, where *system* is the name of the system partition and *sys_linux* is the name of the system volume.



EVMS Configuration

used: 10.9 GB

EVMS Container: Size: Available: 96.0 MB

Device	Size	Format	Mount	Type
/dev/evms/lvm2/system/swap	1.0 GB	F	swap	C
/dev/evms/lvm2/system/sys_linux	9.9 GB	F	/	C

8 On the *EVMS Configuration* page, click *Next* to return to the list of devices on the *Expert Partitioner* page.

Your complete EVMS solution for the system devices is displayed on the *Expert Partitioner* page. Your setup depends on the number and type of devices connected to the server and the sizes you specified for the system partitions.

Expert Partitioner						
Device	Size	F	Type	Mount	Mount By	Start End
/dev/sda	20.0 GB		VMware,VMware Virtual S			0 26
/dev/sda1	305.9 MB	F	Linux native (Ext3)	/boot	K	0 0
/dev/sda2	11.0 GB		Linux LVM			39 14
/dev/evms/lvm2/system	10.9 GB		EVMS lvm2/system			
/dev/evms/lvm2/system/swap	1.0 GB	F	EVMS	swap	K	- -
/dev/evms/lvm2/system/sys_linux	9.9 GB	F	EVMS	/	K	- -

9 Click *Finish* to return to the *Installation Settings* page.

If you get a warning that you should not mix EVMS and non-EVMS partitions on the same device, you can safely dismiss it.

10 Modify the software settings to install NSS.

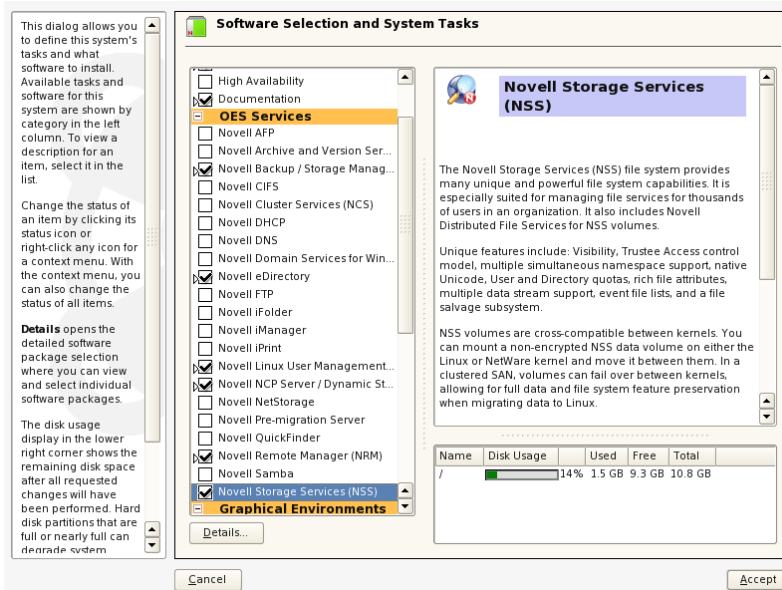
IMPORTANT: This step describes essential services for NSS. You can optionally install other OES 2 SP1 services on the same server.

10a On the *Installations Settings* page, click *Software* to go to the *Software Selections and System Tasks* page.

10b 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



10c Optionally 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 SP1: NSS File System Administration Guide*.

10d Click *Accept* to return to the *Installation Settings* page.

Licensing dialog boxes might open where you are prompted to accept proprietary modules being installed.

11 Continue with the OES 2 SP1 Linux installation.

Refer to the product documentation for information about configuring OES Services that are being installed. For general information about the install, see “[Installing Open Enterprise Server 2 SP1 Linux](#)” on page 29.

12 Some additional steps are required after the install to make sure that your system is bootable by EVMS.

WARNING: Do not reboot automatically or perform other configurations until the post-install steps outlined in [Section A.3.3, “After the Linux Install,”](#) on page 182 are completed. Otherwise, your system might not be bootable by EVMS.

After the install is complete, do one of the following:

- ♦ If this is a new install, you can reboot your system now to automatically run a script that performs the post-install steps outlined in [Section A.3.3, “After the Linux Install,”](#) on page 182.
- ♦ If this is a new install and you prefer to manually perform the EVMS setup tasks, go to [Section A.3.3, “After the Linux Install,”](#) on page 182 and complete the tasks. You reboot the system after these tasks are done.
- ♦ If you are post-installing OES 2 SP1 services and NSS, do not reboot now. You must perform the tasks manually. The special script does not run on a post-install. Go to [Section A.3.3, “After the Linux Install,”](#) on page 182 and complete the tasks.

A.3.3 After the Linux Install

The tasks in this section must be done to ensure that the system device functions properly under EVMS and that your system is bootable under EVMS. After the OES installation is complete, do not attempt to reboot the server until these tasks are complete, unless this is a new install.

In a new install of OES 2 SP1 with NSS, a script runs automatically to complete these tasks if you reboot after the install. You can also perform these tasks manually before rebooting. In a post-install of OES 2 SP1 services and NSS, the script does not run, so the tasks must be performed manually.

WARNING: Without the setup modifications described in this section, your system is not bootable on EVMS.

Perform the following post-install tasks in the order indicated:

- ♦ “[Disable the boot.lvm and boot.md Services](#)” on page 183
- ♦ “[Enable the boot.evms Service](#)” on page 183
- ♦ “[Verify the Device Name for the /boot Partition in /etc/fstab](#)” on page 183
- ♦ “[Reboot the Server](#)” on page 184

- ♦ “Verify the System Services” on page 184
- ♦ “Enable Write-Through Cache Management for SCSI Devices and RAID Controllers” on page 185

Disable the `boot.lvm` and `boot.md` Services

You can optionally disable the `boot.lvm` and `boot.md` services so they do not run at boot time (runlevel B) when they are not needed. EVMS now handles the boot.

IMPORTANT: Whenever you upgrade the server, the `boot.lvm` service must be enabled in order for the YaST install to boot.

- 1 In YaST, click *System > System Services (Runlevel) > Expert Mode*.
- 2 Select *boot.lvm*.
- 3 Click *Set/Reset > Disable the Service*.
- 4 Select *boot.md*.
- 5 Click *Set/Reset > Disable the Service*.
- 6 Click *Finish*, then click *Yes*.
The changes do not take effect until the server is restarted.
- 7 Continue with “Enable the `boot.evms` Service” on page 183.

Enable the `boot.evms` Service

The `boot.evms` service should be enabled automatically after the install, but you must verify that it is enabled. Otherwise, your server cannot boot.

- 1 In YaST, click *System > System Services (Runlevel) > Expert Mode*.
- 2 Select *boot.evms*.
- 3 Click *Set/Reset > Enable the Service*.
The *B runlevel* option is automatically selected.
- 4 Click *Finish*, then click *Yes*.
The changes do not take effect until the server is restarted.

NOTE: Effective in SUSE Linux Enterprise 10, the `/dev` directory is on `tmpfs`, and the device nodes are automatically re-created on boot. It is no longer necessary to modify the `/etc/init.d/boot.evms` script to delete the device nodes on system restart, as was required for previous versions of SUSE Linux.

- 5 Continue with “Verify the Device Name for the `/boot` Partition in `/etc/fstab`” on page 183.

Verify the Device Name for the `/boot` Partition in `/etc/fstab`

When you boot the system, the kernel reads the `/etc/fstab` file to identify which file systems should be mounted and then mounts them. This file contains a table of file system information about the root (`/`), `/boot`, and swap partitions plus other partitions and file systems you want to mount.

The `/boot` partition is discovered by EVMS at startup, and requires that the device it uses be listed under `/dev/evms` in the `fstab` file so it can be found when booting with `boot.evms`. For example:

```
/dev/evms/sda1 /boot reiser defaults 1 1
```

During the OES 2 SP1 install, the `/etc/fstab` file was modified to make sure that the `/boot` partition entry is properly formatted in this manner to be detected by EVMS. A script runs automatically to perform the following tasks:

- ♦ Modifies the device node pathname of the `/boot` partition in the `/etc/fstab` file so that the node is located under `/dev/evms` instead of `/dev`. For example, if the device is `sda1`, the script changes the `/boot` partition entry from `/dev/sda1` to `/dev/evms/sda1`.
- ♦ Runs `mkinitrd` to create a new `initrd` file that incorporates the change made in the `/etc/fstab` file.

These changes are applied when you reboot your system after the install is completed. Make sure that you reboot after the install and before you do anything that would alter these settings.

IMPORTANT: For a SUSE Linux Enterprise Server 10 server install without the OES 2 SP1 Add-On CD, these tasks must be performed manually after the install and before you reboot. For information about a single-disk install with EVMS on a pure SLES 10 server install, see “[After the Install \(http://www.novell.com/documentation/sles10/stor_evms/data/configsysdevatinstall.html#b1xfw90\)](http://www.novell.com/documentation/sles10/stor_evms/data/configsysdevatinstall.html#b1xfw90)” in the *SUSE Linux Enterprise Server 10 Storage Administration Guide* (http://www.novell.com/documentation/sles10/stor_evms/data/bookinfo.html).

Avoid other methods of formatting the path for the `/boot` partition, such as by its device node name (such as `/dev/sda1`) or by the UUID pathname (such as `/dev/disk/by-id/scsi-SServerA_Drive_1_600BC00000-part1`). The name for the boot device must be in the form that includes `evms` in the path, such as `/dev/evms/sda1`.

Continue with “[Reboot the Server](#)” on page 184.

Reboot the Server

- 1 After the install is complete, and the `boot.evms` service has been enabled, reboot the server.
- 2 On restart, if the system device does not appear, it might be because EVMS has not been activated. At the prompt, enter

```
evms_activate
```

Verify the System Services

After the post-install configuration is complete and you have rebooted the server, make sure the server is operating as expected. For example:

- ♦ Check the server health. For information, see “[Monitoring Server Health](#)” in the *OES 2 SP1: Novell Remote Manager for Linux Administration Guide*.

- ♦ Make sure the free space on the system device is available to you in iManager. For information about how to view devices in iManager, see “[Viewing Devices on a Server](#)” in the *OES 2 SP1: NSS File System Administration Guide*.
- ♦ Make sure that NSS modules are running. In YaST, click *System > System Services (Runlevel) > Expert Mode*. The NSS module should be enabled. Any changes you make do not take effect until you reboot the server.

Enable Write-Through Cache Management for SCSI Devices and RAID Controllers

Any journal based file system (including NSS) requires that when writes occur, they must be committed to disk in order to prevent corruption in event of a power failure.

Using write-back cache management can improve performance by allowing data to be held in cache rather than being written to disk. However, write-back cache management introduces the risk of losing data if the power fails. Many array controllers have an on-board battery backup, which can reduce the risk of data loss when using write-back, but it might not eliminate the risk. It is up to you to determine if the power backup is sufficient for power loss scenarios in your production environment.

If your storage system does not have sufficient power loss protection, we require using write-through cache management for SCSI devices to minimize the risk of losing data in the event of power failure. Write-Through cache management assures the file system that writes are being committed to disk as required.

If the server uses a RAID controller, enable Write-Through (disable Write-Back) cache management when configuring the RAID device by using the controller’s BIOS setup routine or configuration utility.

- ♦ “[SCSI Devices in a Hardware RAID](#)” on page 185
- ♦ “[Local SCSI Devices](#)” on page 185

SCSI Devices in a Hardware RAID

If you have not already done so, use the RAID controller’s BIOS setup routine or configuration utility to enable Write-Through cache management for the controller and the RAID’s SCSI devices.

Local SCSI Devices

To enable Write-Through cache management for local SCSI devices:

- 1 Log in to the server as `root`.
- 2 If the `scsi-config` utility is not already installed, install it by using the `xscsi` RPM.
The `xscsi` RPM, which contains the `scsi-config` command, is not installed by default.
 - 2a In YaST, open the Software Management section, then search for `xscsi`.
 - 2b Install the `xscsi` RPM package, then close YaST.
The `xscsi` package installs the `scsi-config` utility in `/user/bin/scsi-config`.
- 3 Enable Write-Through (disable Write-Back) cache management for each SCSI device by performing the following for each device where you plan to use NSS volumes.
 - 3a In a terminal console, enter

```
scsi-config
```

- 3b** In the window that opens, browse to select drive you want to manage, then click *Continue*.
- 3c** Click *Cache Control Page*.
- 3d** Enable Write-Through cache management mode by deselecting the *Write cache enabled* check box.
- 3e** Click *Quit > Save Changes*.
- 3f** When prompted to confirm the change, click *Go Ahead and Save > Quit*.
- 3g** To verify the setting, enter the following at a terminal console prompt:

```
scsiinfo -c /dev/sdx
```

Replace `/dev/sdx` with the device you are checking.

A value of 0 for *Write Cache* means that the drive is in Write-Through cache management mode.

A.4 Using EVMS to Manage Devices

You can use the free space on devices for NSS or Linux POSIX file systems by using EVMS to manage devices. Consider the guidelines below when working with EVMS-managed devices.

When you use NSS tools to create a pool on a new EVMS-managed device, the tools automatically carve 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 NetWare Segment Manager creates the NSS partition and pool.

IMPORTANT: Always use NSS tools (NSSMU and the Storage plug-in to iManager) to create NSS pools.

For EVMS-managed data devices, Linux POSIX file systems require that the Linux partitions be managed by the DOS Segment Manager (DOSSegMgr). Consider the following guidelines when working with `evmsgui` to create a Linux partition:

Scenario	To create the Linux partition in <code>evmsgui</code> :
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 DOS Segment Manager.	Create the Linux partition as usual.

Scenario	To create the Linux partition in evmsgui:
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. <hr/> <p>WARNING: Changing the segment manager initializes the disk again (destroys existing data), so you only want to do this with disks that have no partitions on it, or if you do not want any of the partitions that are currently on the disk.</p> <hr/> <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, do the following 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
```

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.

- 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, 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, choose *DOS Segment Manager*, then click *Next*.

- 3c On the Select Plugin Acceptable Objects page, choose 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, choose 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 Disks](#)” in the *OES 2 SP1: Novell Cluster Services 1.8.5 for Linux Administration Guide*.

A.5 Upgrading a Server with EVMS and NSS on the System Device

Because the YaST installer is designed to use LVM by default, it looks for the LVM partitions in the `/dev/` device nodes path during an upgrade. When EVMS is the volume manager of the system devices, the Linux path for the `/boot`, `swap`, and `/` (root) partitions are under `/dev/evms/`, so the YaST installer will not find the system devices. The YaST installer looks for this information in the `/etc/fstab` file.

The YaST installer uses the `boot.lvm` boot loader when it attempts to boot the device for the upgrade. The `boot.lvm` and `boot.md` boot loaders were disabled in [Section A.3.3, “After the Linux Install,” on page 182](#), because the `boot.evms` is used by EVMS to boot the system under normal conditions. If you enabled the boot loaders using the instructions in [Section , “Preparing an OES 1 SP2 Server,” on page 99](#) and you want to disable the loaders again, repeat the instructions in “[Disable the boot.lvm and boot.md Services](#)” on page 183.

OES 2 SP1 Linux File and Data Locations

B

This section contains information about the general rules and conventions 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 OES 2 SP1 Linux components follow Linux Standard Base (LSB) requirements regarding file location. Efforts to do this are detailed here.

- ♦ [Section B.1, “General Rules,” on page 189](#)
- ♦ [Section B.2, “Exceptions,” on page 190](#)

B.1 General Rules

Where possible, product design has followed these rules:

- ♦ **/opt/novell:** Contains all static data in the following standard subdirectories.

<code>/opt/novell/bin</code>	Executable files that are used by multiple products or are intended to be executed by an end user.
<code>/opt/novell/product/bin</code>	Executable files that are used only by a product and are not executed by an end user.
<code>/opt/novell/lib</code>	Shared libraries that are used by multiple products and shared or static libraries that are part of an SDK.
<code>/opt/novell/include</code>	Header files for SDKs, typically in a product subdirectory.
<code>/opt/novell/oes_install</code>	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.
- ♦ **/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 (for example in the case of PAM modules, which use suffixes instead of prefixes), the standard conventions are followed.

Setting Up an Installation Source on NetWare

C

Complete the instructions that follow to set up an Novell® Open Enterprise Server (OES) 2 Linux installation source on an existing OES NetWare® server.

- ♦ [Section C.1, “Prerequisites,” on page 191](#)
- ♦ [Section C.2, “Copy the Files and Mount Them as NSS Volumes,” on page 191](#)
- ♦ [Section C.3, “Create the Boot CDs,” on page 193](#)

C.1 Prerequisites

You need the following:

- ❑ A NetWare 6.5 server accessible on the network where you plan to install the OES 2 SP1 Linux 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-SP2-i386-CD1.iso	Boot CD for i386 (32-bit) SLES 10 SP2 installations
SLES-10-SP2-x86_64.iso	Boot CD for x86_64 (64-bit) SLES 10 SP2 installations
SLES-10-SP2-i386-DVD1.iso	Install source for i386 (32-bit) SLES 10 SP2
SLES-10-SP2-x86_64-DVD1.iso	Install source for x86_64 (64-bit) SLES 10 SP2
oes2-i386-CD1.iso	Install source for i386 (32-bit) OES 2 SP1 Linux services
oes2-x86_64-CD1.iso	Install source for x86_64 (64-bit) OES 2 SP1 Linux services

For information on downloading these image files, see the [Novell Open Enterprise Server 2 Download Instructions \(http://www.novell.com/documentation/oes2/esd/di_oes2.html\)](http://www.novell.com/documentation/oes2/esd/di_oes2.html).

C.2 Copy the Files and Mount Them as NSS Volumes

The following instructions create unrestricted access to OES 2 SP1 installation files on a NetWare server on your network. Restricting access to the installation files requires additional configuration through Apache Manager or 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 SP1 image files, do the following:

- 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 no longer available.
- 3** Copy the DVD image files listed in “Prerequisites” on page 191 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
```

where *volume* is the NSS volume name, *directory* is the directory you created in **Step 1**, and *filename* is the name of the ISO file.
Continuing the example, you might enter the following:

```
nss /MountImageVolume=TOOLS:OES2_INSTALL/SLES-10-SP2-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 SP1 image files. The first file mounted is the actual OES 2 SP1 volume name, but the second image is assigned a `CD_`xxx 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, then 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.

C.3 Create the Boot CDs

See [Section 3.2.2, “Preparing Physical Media for a New Server Installation or Upgrade,” on page 32](#).