

# Migrating from UNIX/LINUX to SLES9

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## Where to start

Start your migration to Linux in areas that have been successful for others



Edge-of-the-network servers: DNS/DHCP



Web-serving functions: Web servers and firewalls



General services: file, print, and e-mail servers



Application servers



Database servers

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## Why move?

### Compelling cost advantages



Lower-cost hardware replacements for proprietary server systems



Lower-cost peripheral hardware: SCSIs, modems, and CD-ROM



Lower support and licensing costs

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## When to move

### Typical triggers



Expiring hardware or software support and licensing contracts



Hardware or software refresh cycles



Adding additional server capacity

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## Before you start hardware considerations

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Device incompatibilities - SCSIs, graphics, sound, and network cards

Computer model differences - Same make and model shipped with slightly different driver configurations

Device recognition - Multiple SCSI adapters that need the same Linux driver; machine recognizes only one device when it boots

*In short, check with the hardware vendor  
—before you purchase a machine.*

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## Before you start application considerations

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- ✓ Understand which applications are supported on Linux.
- ✓ Find alternatives for applications that aren't.
- ✓ Make sure you have the proper installation and configuration tools; some packages require an RPM installation; others use the `make` command.
- ✓ Lab test applications before rolling them to production.

*More and more application vendors are supporting Linux; the list grows daily.*

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## Before you start environment considerations

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Make a backup—disasters happen.



Gather the documentation  
(if all else fails...read it).

Note: The *SUSE LINUX Enterprise Server 9 Installation and Administration* manual can be downloaded from

<http://www.novell.com/documentation/sles 9 /index.html>



Check port availability.

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## Install SUSE® LINUX Enterprise Server 9

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The installation process is simple and GUI-driven—**Next, Next, Finish.**

Basic installation steps are similar to those for UNIX.

Hardware is usually auto-detected and drivers loaded.

Boot loader installation is prompted for.

All steps are clearly documented in the left pane.

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## Check the system

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Verify network connectivity



Create a system snapshot



Create boot and rescue diskettes



Make sure applications run as expected



Create a non-root account

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## Migration overview

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Determine which services to migrate.

Identify source and destination directories.

Transfer files using SCP or FTP.

Move all HTML files from `/etc/var/docs` on UNIX to `/srv/www/htdocs` on SLES9.

Manually verify that all necessary files have been copied.

Test the Web site using “spiders.”

See <http://www.download.com> or <http://www.tucows.com/>

Test the migrated services for a day or two in a test lab.

Remove the UNIX box from service.

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## Migrating user accounts

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### User accounts

`/etc/password` on UNIX

`/etc/passwd` on SLES9

### Passwords

`/etc/shadow` on both systems  
(but encrypted differently so not convertible)

### Conversion Script

Convert user accounts to LDIF format

See <http://www.padl.com/OSS/MigrationTools.html>

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## Migrating DNS

Migrating DNS and other networking (edge) services is straightforward since the two systems are similar.

Note the UNIX file structure so you can either replicate it or change it to better meet your needs.

### Typical UNIX file structure

```
/var/named/named.ca  
/var/named/hosts  
/var/named/hosts.rev  
/var/named/named.local  
/etc/resolv.conf  
/etc/dhcp/inittab
```

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## DNS installation with BIND

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BIND (Berkeley Internet Name Domain) is included with SLES9 and is already configured; it can be started immediately after installation.

- BIND settings are stored in `/etc/named.conf`.
- BIND runs as a pure caching-only name server until you configure zones.
- Zone data (host names and IP addresses) is stored in separate files in `/var/lib/named`.
- To configure DNS, use YaST.
- To start the name server, enter `rcnamed start` (you must be logged in as root).
- If the name server does not start or behaves in an unexpected way, look for the cause in `/var/log/messages`.
- Use `rcnamed status` to see whether the server is running.

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## DNS migration from UNIX DNS to Linux BIND

### Scenario one—Create a secondary DNS

- 1 Use the information in the secondary zone file on UNIX to create the primary zone on SLES9.
- 2 Complete a zone transfer by running the `rndc` command.
- 3 Use the secondary zone file on UNIX to create the primary zone file for SLES9.

Change from the secondary to the primary using BIND config or change this in the `named.conf` file.

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## DNS migration from UNIX DNS to Linux BIND

### Scenario two—Replace the DNS server

- 1 Create slave entries on the Linux server for each zone in the UNIX `named.conf` file.
- 2 Change the domain name, file path, and master DNS server IP address to those for the Linux system.  

This causes `named` to do a zone transfer of each domain into its respective file.
- 3 Change `slave` to `master` in `named.conf`.
- 4 Edit each domain configuration file, changing the NS and SOA records to match the new nameserver.

`ndc reload` and `named` will now act as the primary DNS server for these zones.

# N DHCP migration

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The DHCP daemon leases addresses according to the settings defined in `/etc/dhcpd.conf`.

## To move from DHCP on UNIX:

- 1 Use the DHCP module in YaST to set up the DHCP server included in SLES9. DHCP configurations can be stored locally or on an LDAP server.
- 2 Manually transfer the zones.
- 3 Shut down DHCP on Solaris.
- 4 Activate DHCP on SLES9 using `rcdhcpd start`.

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## DHCP migration

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By default, the DHCP daemon is started in a **chroot** environment.

- ✔ Use **rcdhcpd start** to copy the configuration files to **chroot** so the daemon can find them.
- ✔ Check configuration file syntax using **rcdhcpd check-syntax**.
- ✔ Make sure the **/etc/dhcpd.conf** is located in **/var/lib/dhcp/etc/** so dhcpd can:
  - Run with the permissions assigned to **nobody**
  - Run in a chroot environment (**/var/lib/dhcp/**)

The corresponding init script copies the file to this directory.

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## Moving Apache to Linux

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Use either FTP or SCP to move from Apache on UNIX to Apache on SLES9.

### Using SCP

- 1 Log in as root and stop Apache on UNIX (`apachectl stop`).
- 2 At the SLES machine, copy documents to a destination directory.
  - `cd /srv/www/`
  - `scp -rvp * www@Solaris.IP:/var/www/`
- 3 Check and edit the permissions to replicate the UNIX configuration.
- 4 Test Apache syntax by entering `apachectl configtest`.
- 5 Start Apache on SLES9 (`/etc/init.d/apache start`).
- 6 Tail the `/var/log/httpd/error_log` to check the configuration.
- 7 Test with a compliant browser.

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## Moving e-mail systems

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**To replicate e-mail services** - port UNIX Sendmail to Linux Sendmail.

**To create a collaboration environment** (e-mail, calendaring, and scheduling) - consider Evolution, Open Exchange, or Novell GroupWise® 6.5 for Linux.

### Porting Sendmail

- 1 Install Sendmail. With SLES9, the YaST mail server module is installed by default.
- 2 Configure Sendmail via the Sendmail configuration file, `sendmail.cf`.

Numerous example configuration files are distributed with the Sendmail source; tweaking any one of them will work for most purposes.

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## Moving e-mail systems

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Using m4, a macro preprocessor shipped with Sendmail, create a master configuration file (.mc).

- Use the master file with m4 to generate a sendmail.cf.
- Use one of the sample m4 master configuration files to tweak features appropriate for your system.

4

Install the new Sendmail.cf on SLES9 by copying the new version into place and restarting the Sendmail daemon.

5

Use FTP or SCP to copy users' e-mails from `/var/mail` on UNIX to `/var/spool/mail` on the SLES9 mail server.

Both e-mail servers use text-based messaging; you won't need to convert documents.

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## Moving file systems

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Transfer files from UNIX to SLES9 using:

- FTP or SCP
- NFS
- File copies through an intermediate device

### With FTP

Two FTP clients (ncftp and wget) are included with SLES9.

- 1 Position the two servers sharing the transfer close together (on the same subnet and on the same physical network switch).
- 2 Make sure the UNIX server holding the data has a configured FTP server.

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## Moving file systems

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- 3 Make sure file and directory permissions for incoming data have been determined on SLES9.
- 4 Start FTP on the UNIX server. The FTP service can be configured to run from the super daemon inetd or xinetd.
- 5 Log in to the UNIX server using the FTP client on SLES9.
- 6 Navigate to the data to be transferred.
- 7 Make sure the FTP client is prepared to place the incoming data in the correct directory (at the command line, use `lcd`; with the GUI, navigate graphically to the correct location).
- 8 Begin the transfer.

For large amounts of data, the transfer may take a while.

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## Linux printing

### Printing options

**CUPS** - adequate for small to medium printing environments

**iPrint** - best choice for enterprise printing environments

### Differences between CUPS and iPrint printing

#### iPrint

The client does the print filtering (converting data to printer format).

The server handles only spooling; thus a single server can accommodate more printers.

#### CUPS (default scenario)

The server handles both data filtering and spooling.

A client isn't required.

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## Setting up CUPS printing

### Install CUPS

- 1 Connect the printer to the network and install the printer software.
- 2 Select the Default or Full installation options during SLES9 installation to install CUPS.

Most CUPS print options are activated by default.

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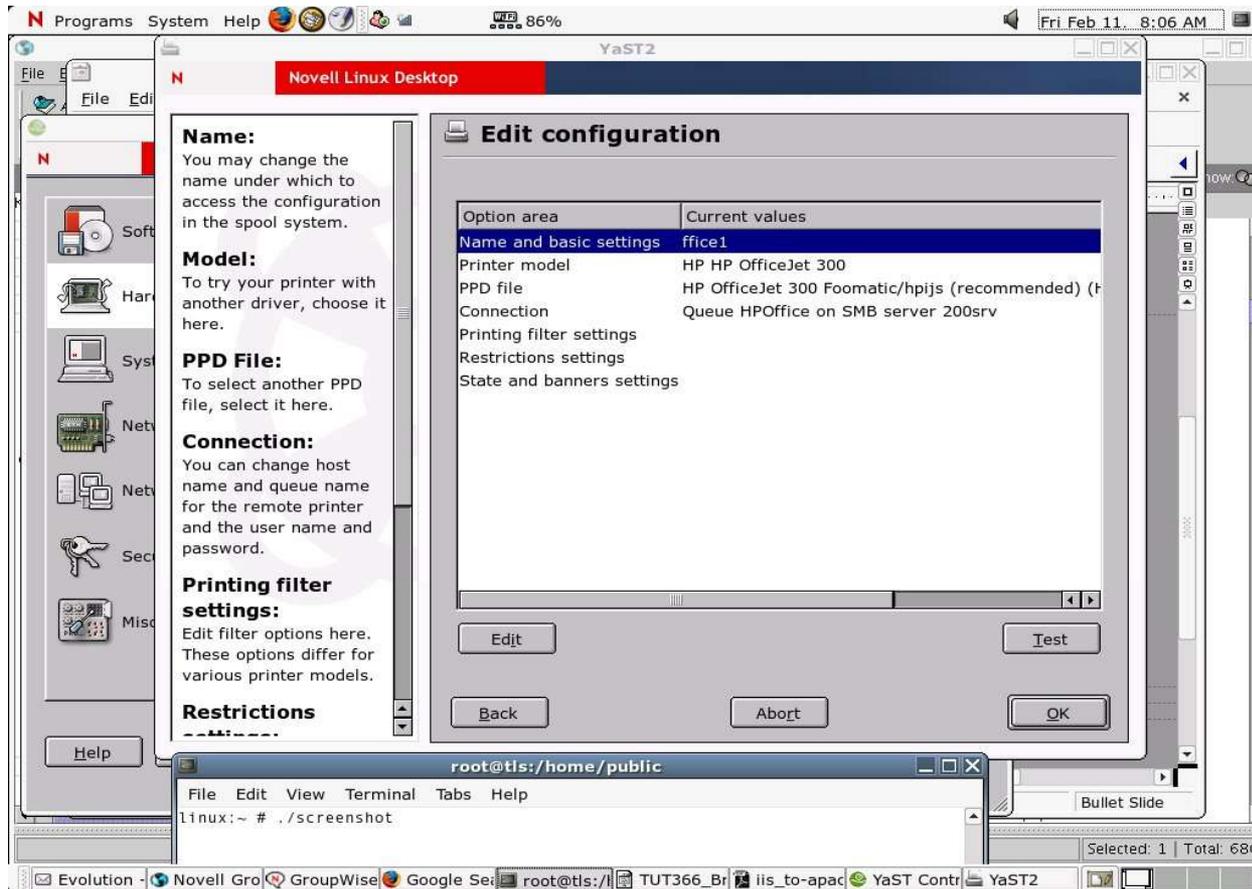
## Configuring CUPS

### Configure CUPS using YaST

- 1 Identify the printer's TCP/IP address and queue name, make and model.
- 2 Make sure necessary PostScript Printer Description (PPD) files are located in `/usr/share/cups/mode`.
- 3 Log in as root.
- 4 Select `Start Applications > System > YaST > Hardware > Printer`.
- 5 Create or modify the printer configuration by following the on-screen prompts.

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## CUPS configuration screen



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## Migrating database services

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**Proprietary databases.** Consider Oracle, DB2, Sybase, and Informix. (Most vendors that support UNIX database servers also support Linux.)

**Open source databases.** Consider MySQL, PostgreSQL, Ingress r3.

**Tools.** Most vendors supply tools for migrating between platforms.

**Consolidation.** Consider:

- Upgrading to the next version of the database
- Consolidating on a single database vendor environment
- Implementing advanced redundancy features

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## Migrating databases

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- 1 Assess migration scope by accounting for current database instances, platforms and versions, size, connectivity and peak workload.
- 2 Inventory servers to identify opportunities to reduce the number of database instances and decommission end-of-life equipment.

An excellent source for real-life scenarios representing all major databases is <http://www.dbforums.com/>.

See also

<http://www5.experts-exchange.com/Databases/>

<http://shearer.org/en/writing/replacemicrosoft/replace-windows2000-howto.html>



# Need training?

## Novell Training Services

### Linux certification

LPI level 1 or LPI level 2

### SUSE LINUX training and certification

#### Novell Certified Linux Professional (Novell CLP)

Course 3036: Linux Fundamentals

Course 3037: Linux Administration

Course 3038: Advanced Linux Administration

Course 301: Migrating to SUSE LINUX (for experienced Linux administrators)

Novell Practicum

#### Novell Certified Linux Engineer (Novell CLE)

Course 3017: Fundamentals of Novell eDirectory

Course 3015: Novell Nterprise Linux Services

Novell Practicum

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## Need help with your move?

### Novell Professional Services

- **Strategy and Discovery** - Define both current and future Linux strategies
- **Requirements Assessment** - Discover your readiness (or not) for moving to Linux
- **Planning and Design** - Define in detail how to orchestrate your migration
- **Migration** - Implement your migration plans in pilot, test, and production environments

See <http://www.novell.com/linux/migrate> for details.

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