Bridging NetWare to Novell® Open Enterprise Server for Linux

Global Training Services

www.novell.com

EXERCISE MANUAL | March 2006

Novell®

Module 1 - Introduction to Linux

Exercise Manual

Complete the following exercises as directed by your instructor.

Exercise 1: Describe Linux and Open Source

Exercise 2: Define the Business Reasons for Linux

Feedback

E-mail ***training@novell.com*** with the following:

Subject: *Bridging NetWare to Linux Module 1*

Exercise 1 Describe Linux and Open Source

Complete the following:

1. Read the article Linux: The “Other” Operating System.

   http://support.novell.com/techcenter/articles/ana20030701.html

2. Answer the question: What is Linux?

3. Answer the question: What is Open Source?

4. Go to http://www.opensource.org and review the definition for open source software.

5. What is Novell's main product for workgroup computing?

(End of Exercise)

Exercise 2 Define the Business Reasons for Linux

Many network administrators are asked to justify their decisions for recommending a particular software product over others.

The purpose of this exercise is to broaden your knowledge around the business reasons for selecting Linux.

Complete the following:

1. Read the 10 reasons to choose Novell for Linux.

   http://www.novell.com/linux/whynovell/index.html

2. Review the article on how Novell is jump starting Linux in the small and medium business world.

   http://www.novell.com/linux/pdf/ideasiams051305.pdf

3. Review the Linux truth web site.

   http://www.novell.com/linux/truth/

4. Review the Novell Open Enterprise Server total cost of ownership paper.

   http://www.novell.com/products/openenterpriseserver/docs/oes_tco_whitepaper.pdf

5. Review the Novell Open Enterprise Server product brochure.

   http://www.novell.com/products/openenterpriseserver/oes_brochure.pdf

6. Review the latest news and reviews on OES.

   http://www.novell.com/products/openenterpriseserver/oes_news.html

(End of Exercise)

Module 2- Linux Fundamentals

Exercise Manual

Complete the following exercises.

Exercise 1: Login, Use Linux, and Logout

Exercise 2: Locate and Use Help Resources

Exercise 3: Use the Linux Shell and Command Line

Exercise 4: Describe and Use Common Linux Commands

Exercise 5: Understand and View Processes

Exercise 6: Manage Runlevels

Exercise 7: Shut Down and Restart the Server

Feedback

E-mail ***training@novell.com*** with the following:

Subject: *Bridging NetWare to Linux Module 2*

Exercise 1 Login, Use Linux, and Logout

Prerequisites

- You will need an OES Linux server to perform these exercises.

  If you do not meet this requirement, you may want to come back and perform this exercise after installing OES Linux in Module 4.

  A VMware 5 virtual machine for Open Enterprise Server SP1 for Linux from the course web page.

- If using VMware, configure the hotkey to use **Ctrl-Alt-Shift** instead of Ctrl-Alt.

  Ctrl-Alt is used by Linux to access the virtual consoles.

Complete the following:

Login to Linux

1. Boot the OES Linux server.
2. Login to the OES Linux server:

   Username: **admin**

   Password: **novell**

Access the Virtual Consoles

1. Switch to the first virtual terminal by pressing **Ctrl+Alt+F1**.
2. Login as **admin** with a password of **novell**.
3. Switch to the second virtual terminal by pressing **Ctrl+Alt+F2**.

   Notice that you are not logged in as admin.
4. Press **Ctrl+Alt+F1** to switch back to the first terminal.

   Notice you are still logged in as admin.

Logout of Linux

1. From the first virtual terminal, logout by entering: **exit**
2. Switch back to the graphical user interface by pressing **Ctrl+Alt+F7**.
3. Logout of the graphical console.
   a. Click on the KDE Menu (Green sphere with red N).
   b. Select **Logout**.

Use the Linux Desktop (KDE)

1. Login as admin with a password of novell.
2. Click on the KDE Menu (Green sphere with red N).
3. Select Internet.
4. Select Web Browser.
5. Select Mozilla.
6. Enter: localhost

   You should now see the OES welcome page.
7. Close the browser.
8. Select the KDE Menu (Green sphere with red N).
9. Select System.
10. Select YaST.
11. Enter the root password: novell

    You should now see YaST.
12. Close YaST, select Close.
13. Start the file manager Konqueror by selecting the blue house icon on the Kicker.

14. View the navigation area by selecting the red folder icon on the left side of the Konqueror window.

(End of Exercise)

Exercise 2 Locate and Use Help Resources

Use man pages

1. Launch a terminal (monitor icon with shell)
2. Find the man pages for the command info by entering: **whatis info**
3. Read the first section (executable programs and shell commands) of the man pages of the command info by entering: **man 1 info**
4. Scroll through the text with the up arrow key and down arrow key.
5. When you are finished reviewing the information, press **q** to quit.

Use info

1. Access the info page for the ls command, enter: **info ls**
2. Move the cursor to Note Common options, press **Tab**.
3. Go to the note by pressing **Enter**.
4. Return to the previous reference by pressing **l** (lowercase L).

5. Exit the info by pressing **q**.

Use the SUSE HelpCenter

1. Launch the GUI based help, select the ***lifesaver*** icon on the kicker.
2. Create a search index by selecting the Search tab.
3. Start the creation by selecting **Yes**.
4. Confirm the creation by selecting **OK**.
5. After the creation process finishes, press **Close**.
6. Get help about the Apache web server, enter apache in the text field above the Search tab and select **Search**.
7. Select the link for *Chapter 22. The Apache Web Server*.
8. After reviewing the information, close the SUSE HelpCenter window.

(End of Exercise)

Exercise 3 Use the Linux Shell and Command Line

Use the command history

1. Open a terminal.
2. View the history cache by entering **history**.
3. Press the up arrow key until you see a command that you would like to execute, then press Enter.
4. Type h and press Page Up once.

   You should see *history* displayed on the command line.

Use the command line tab completion

1. From a terminal, change the current directory to: **/etc**
2. Use tab completion to display the contents of the novell-release file, enter the following:
   a. **cat /no**
   b. Press **Tab**, the remainder of the filename should display.
   c. Press **Enter**.

You should see the contents of the file novell-release displayed.

(End of Exercise)

Exercise 4 Describe and Use Common Linux Commands

Complete the following from a terminal:

1. Display your userid, enter:

   whoami

2. Display the current directory, enter:

   pwd

3. Change the current directory to /etc, enter: **cd /etc**

4. List the files in the directory, enter:

   ls

You can also use the **dir** command.

5. List the contents of the hosts file, enter:

   cat hosts

6. Clear the screen, enter:

   clear

This is equivalent to the NetWare clear screen (**cls**). You can also use Ctrl-l (lowercase L) in Linux to clear the terminal screen.

7. List the last 10 lines of the hosts file, enter:

   tail hosts

8. List all configuration files under /etc, enter:

   ll *.conf

ll is an alias for ls -l.

9. Change back to your home directory, enter:

   cd ~

You can also enter just **cd** without the tilde.

Display operating system information

1. Display the man page for uname, enter:

   man uname

2. Look for the options to display the following:
   - Kernel name
   - Kernel release number

- Kernel version number
- Machine hardware name

3. Close the man page, enter **q** (for quit).

You can also use **uname --help**.

4. Display the above information using uname.

Create a directory and copy the hosts files from /etc

1. From your home directory, create a directory called backup, enter: **mkdir backup**

The command **md** also works.

2. Change to the backup directory, enter: **cd backup**
3. Copy the files, enter **cp /etc/hosts* .**

Using the dot for the current directory is equivalent to using: **cp /etc/hosts* /home/admin/backup**

4. Verify the copy, enter: **ll**
5. Now, copy the /var/log/ directories and all subdirectories to /home/admin/backup, enter:

cp -r /var/log/ .

6. Verify that all the subdirectories below /var/log were also copied.
7. Rename the hosts file to hosts.backup, enter:

   cd ~/backup (make sure you are in the backup directory under your home directory)

   mv hosts hosts.backup

Create and Execute a Shell Script

1. From the desktop, press **Alt-F2**.
2. Enter: **kate**
3. Enter the following to create a shell script that will clear the display, display the current user, and the date:

```
#!/bin/sh
# Script to clear the display, show the name of
current user logged in.
# Display today's date
clear
echo "The Current User is:  $USER"
echo "Today is:  ";date
```

4. Save the file as **myscript.sh**.

5. Change the permissions to executable, enter: **chmod +x myscript.sh**
6. Execute the script, enter: **./myscript.sh**

You should see the terminal display clear and the current user and date displayed.

(End of Exercise)

Exercise 5 Understand and View Processes

Complete the following:

1. Open a terminal.
2. View all process with information on who owns the process, enter: **ps aux**
3. View processes in real-time, enter: **top**
4. Press **q** to exit top.
5. View process graphically, enter: **ksysguard**
6. Select the **Process Table** tab.
7. Select the checkbox next to Tree to view the process trees.
8. From the pull-down menu, select **User Processes**.
9. Close ksysguard.
10. Start the program xeyes by entering: **xeyes**
11. Stop the process by pressing: **Ctrl-Z**
12. Move the xeyes process into the background by entering: **bg**
13. Now, view the xeyes process information, enter: **ps aux | grep xeyes**

ps aux displays all processes and then | (pipes) that command to grep which searches the input from ps aux for the string “xeyes” and returns just those processes with that string.

14. Now end the process, enter: **killall xeyes**

killall can be used when you know the process name. Otherwise, you can use **kill** with the process ID.

15. Now view all processes, enter: **ps aux | less**
16. Scroll through the output by pressing the **Down Arrow** and **Up Arrow** keys.
17. Return to the command line by typing: **q**
18. Close the terminal by entering: **exit**

(End of Exercise)

Exercise 6 Manage Runlevels

Complete the following:

1. From the KDE desktop, open a terminal window; then su to root (**su -**) with a password of novell.
2. Check the previous and current runlevels by entering: **runlevel**

   List the runlevels:

   Notice that the previous runlevel is listed as N, which means that there was no previous runlevel set.
3. Change to runlevel 3 by entering: **telinit 3**

   The KDE desktop (X windows) is terminated and you are left at a terminal login prompt.
4. Log in as **root** with a password of **novell**.
5. Check the previous and current runlevel by entering **runlevel**.

   List the runlevels:

6. Switch to runlevel 5 by entering **init 5**.

   The GUI login screen appears.

7. Log in as **admin** with a password of **novell**.

(End of Exercise)

Exercise 7 Shut Down and Restart the Server

Logout of the graphical desktop

1. From the N (KDE Menu), select **Logout**.

   The xdm (graphical login) appears.

2. Select **Menu** (Alt-M).

3. Select **Shutdown** (Alt-S).

4. (Optional) Try additional methods of shutting down the server, such as the following:

   - shutdown -h now
   - halt
   - init 0
   - Ctrl-Alt-Del

5. (Optional) Try additional methods of restarting the server, such as the following:

   - shutdown -r now
   - reboot
   - init 6
   - Ctrl-Alt-Del

(End of Exercise)

Module 3 - Novell Open Enterprise Server for Linux Features and Services

Exercise Manual

Complete the following exercises.

Exercise 1: OES Features and Services

Feedback

E-mail ***training@novell.com*** with the following:

Subject: *Bridging NetWare to Linux Module 3*

Exercise 1 OES Features and Services

Complete the following:

1. What versions of NetWare and Linux are included with Open Enterprise Server Support Pack 1?

   Why is this important to your deployment?

2. What OES services are not installed by default?

3. Determine the SUSE Linux release versions for OES Linux. From a Terminal, enter:

   cat /etc/SUSE-release

4. OES Linux is the upgrade path for Nterprise Linux Services 1.0 which includes: eDirectory, iFolder, iPrint, eGuide, iManager, Virtual Office, etc. Why is this important for OES Linux?

5. List some of the services that were ported from Linux to NetWare, so that administration on both platforms can use similar tools.

   - ❑
   - ❑
   - ❑
   - ❑
   - ❑
   - ❑

(End of Exercise)

Answers to Exercise 1

1. The following versions are included:
   - NetWare 6.5 Support Pack 4
   - SUSE LINUX Enterprise Server 9 Service Pack 2

   It is important to your deployment because you are getting products that have already been deployed in production environments for an extended period of time and have been updated to resolve common issues. This means that OES is not a 1.0 product that you have to wait to deploy.
2. OES Services not installed by default:
   - Novell iFolder 2.x
   - Novell NSS
   - Novell Cluster Services
   - Novell IP Managment (Framework only)
   - Novell iFolder 3.x Web Access
   - Novell iFolder 3.x

   You can find this information by launching Yast. Select Software.

   Select Install and remove software.

Change the filter to Selections.

Scroll down in the left window pane.

3. The SUSE-release version is:
   - SUSE LINUX Enterprise Server 9 (i586)
   - VERSION = 9
   - PATCHLEVEL = 2
4. It is important for OES Linux because it means that these products have already been ported to Linux and are not dot zero releases.
5. The newest product not in NNLS is NSS and with Support Pack 1, the performance equals that of NSS on NetWare.
6. Some services that were ported from Linux:
   - bash
   - vim
   - rcd
   - rpm
   - ssh
   - syslog

(End of Exercise)

Module 4 - Install Novell Open Enterprise Server for Linux

Exercise Manual

Complete the following exercises.

Exercise 1: Install OES Linux from CD

Optional exercises:

Exercise 2: Configure an NFS Network Installation Server

Exercise 3: Install OES Linux from a Network Installation Server Remotely via VNC

Feedback

E-mail ***training@novell.com*** with the following:

Subject: *Bridging NetWare to Linux Module 4*

Exercise 1 Install OES Linux from CD

In this exercise, you will install Open Enterprise Server on Linux from CD.

Setup Hardware

Complete the following:

1. Prepare the server that you are going to use to install OES Linux.
2. Verify that the equipment you are using does not contain any valuable data, as the hard drives will be partitioned and formatted. This exercise should only be performed on lab equipment and not on a production server.
3. Verify the hardware meets the hardware requirements for OES Linux.
4. The server that you install should be on an isolated network. You will be using a 10.0.0.0 address. You can however choose any address that works for your environment and then use that address in the exercises instead of the one listed.

Download OES Linux ISOs and Prepare CDs

If you do not have the OES Linux CDs available, use the following instructions to create CDs.

1. Browse to:

   http://download.novell.com/

2. Select the Product pull-down menu and choose **Novell Open Enterprise Server**.

3. Select **Search**.

4. Select the link for **Novell Open Enterprise Server SP1 EVAL**.

5. Scroll down and read the information on this page, as it will explain what each ISO files purpose and how to label the CDs.

6. Under the evaluating OES with Support Pack 1 heading, select the link for **Product Registration and Access**.

7. Record the **Novell Open Enterprise Server for SUSE LINUX Enterprise Server 9 Evaluation Activation Code**.

   _____

8. Select Proceed to Download.

9. (Conditional) If you don't have a username and password for novell.com, select the link **create new account**.
10. Login to your Novell Account by entering your username and password.
11. Select Login.
12. Download the following files:
    - oes-sp1-linux-1.iso
    - oes-sp1-linux-2.iso
    - oes-sp1-linux-3.iso
    - oes-sp1-linux-5-sles9-2.iso
    - oes-sp1-linux-6-sles9-3.iso
    - oes-sp1-linux-7-sles9-4.iso

Optional ISO Images (containing source code): oes-sp1-linux-4.iso, oes-sp1-linux-8-sles9-5.iso, oes-sp1-linux-9-sles9-6.iso

13. Review the Install Instructions, select **view**.
14. Verify the integrity of the downloaded ISOs. You can check each file's MD5 values by doing one of the following:

    From a Linux Desktop:

a. Open a shell prompt, enter the following command:

md5sum filename

where filename is the name of the file you are verifying.

b. Compare the results with the MD5 Verification Numbers posted on the download page.

From a Windows desktop:

a. Obtain a Windows-compatible MD5-based checksum utility from the Web and follow the usage instructions for the utility.

b. Compare the results with the MD5 Verification Numbers posted on the download page.

15. Create the CDs:

a. Insert a blank, writable CD into your CD burner.

b. Select the option to create a CD from an image file.

c. Select ISO as the file type.

d. Select the first image file from the location you downloaded it to.

e. Complete the CD creation process.

f. Label the CD according to the Install Instructions that you viewed earlier in this lab.

g. Repeat this process for each of the ISO image files.

Install OES Linux from CD

Hardware Requirements

- In addition to the standard hardware requirements, you will need 2 hard drives in the server. The first will be used for the OES Linux system and the second will be used for NSS.

  If you do not have at least a 4 GB second drive, refer to the OES documentation on how to setup EVMS so that you can put both the Linux system and NSS on the same physical hard drive.

Do the following:

1. Power on the computer that you are using to install OES Linux.
2. Boot the server from the ***Open Enterprise Server SP 1 CD 1***.

3. When the GRUB installation screen appears, highlight the **Installation** option and do NOT press Enter.

   You have 20 seconds to highlight the option before GRUB boots from the hard drive.

4. Set the display resolution by pressing F2; then select a display resolution of at least 1024x768.

If a resolution of 1024x768 is not available, select the highest resolution available (such as 640x480).

5. Verify the installation type next to F3 is set to **CD-ROM**.

6. Verify that **Installation** is highlighted and press **Enter**.

   The Linux kernel begins loading.

   A Novell Software License Agreement dialog appears.

7. Accept the license agreement by selecting **I Agree**.

   A YaST Welcome screen appears. YaST is the installation and system administration program provided by SUSE LINUX.

8. Select ***English***; then select **Accept**.

Or select the language of your choice.

9. (Conditional) If prompted to confirm driver activation, select **OK**.
10. (Conditional) If a dialog appears with installation options, continue by selecting **New installation**; then select **OK**.

    An Installation Settings screen appears with several headings such as System, Mode, Keyboard Layout, and Mouse.

    Because this installation screen is designed in a hub-and-spoke configuration, each heading (headline) provides a link to a configuration screen you can use to reconfigure the default installation settings.

    Make sure the System, Mode, Keyboard Layout, and Mouse settings are correct (the defaults are normally correct).

    (Conditional) If a setting is not correct, select the heading and make the necessary changes.
11. From the Installation Settings, scroll down and select **Time zone**.
12. Select ***your time zone*** and then select **Accept**.

13. Select **Software**.
14. Select **Detailed Selection**.
15. Select the following:
    - **Novell NSS**

To utilize NSS on Linux, the server should have a second hard drive with unpartitioned space.

Optional components that require additional configuration that not covered in this training.

- DHCP and DNS Server
- Novell iFolder 2.x
- Novell Cluster Services
- Novell iFolder 3.x Web Access
- Novell iFolder 3.x

16. Select **Accept**.
17. From the Automatic changes screen, select **Continue**.
18. (Conditional) If a setting is not correct, select the heading and make the necessary changes.
19. When you are satisfied with the installation settings, select **Accept**.

20. Start the installation by selecting **Yes, install**.

    Wait for the files to be copied.

21. Insert the appropriate CDs when prompted.

    After the last CD, the system to reboot.

22. Enter a root password of **novell** twice.

23. Accept the warnings about the password being too simple. In a production environment, you would want to choose a complex password.

24. Select **Next**.

25. From the Network Configuration screen, select **Change**.

You may need to select **Configure** if the network card is not listed in the bottom panel.

26. A list of one or more configured cards appears, select **Edit**.

27. Select Static address setup and enter the following settings:

    - IP Address: **10.0.1.1**
    - Subnet mask: **255.0.0.0**

28. Select Host name and name server and enter the following:

- Host name: **oeslinux**
- Domain name: **digitalairlines.com**
- Name Server 1: **10.0.1.1**
- Domain search 1: **digitalairlines.com**

29. When you finish, select **OK**.
30. Return to the Network cards configuration overview by selecting **Next**.
31. Select **Finish**.
32. Select **Next**.
33. From the Test Internet Connection dialog, since you are using an isolated network, select **No, Skip This Test**; then select **Next**.
34. From the Service Configuration dialog, select **Next**.
35. A Open Enterprise Server Configuration – Now or Later dialog appears, select **Next**.
36. The eDirectory Configuration - New or existing tree dialog appears. Leave New Tree selected and enter the tree name: **DA-TREE**
37. Select **Next**.

38. An eDirectory Configuration - Admin User and Password dialog appears. Enter the following information:
    - FDN admin name: **cn=admin.o=da**
    - Admin Password: **novell** (twice)
39. Select **Next**.
40. An eDirectory Configuration - Ports dialog appears. Accept the default values, select **Next**.

    An eDirectory Configuration - NTP & SLP dialog appears.
41. For the Network Time Protocol (NTP) Server & SLP, accept the default for NTP as **Local Clock** and since this is a small lab environment change SLP to **Use multicast to access SLP**; then select **Next**.
42. From the warning about SLP, select **Yes**.
43. Select **Next**.
44. Select **Next**.
45. Select **Next**.
46. ***Wait*** while services are configured.
47. Review the release notes; then continue by selecting **Next**.

A Hardware Configuration screen appears.

48. Check the Graphics Cards information.

    You should have a minimum resolution and color setting of 1024x768@16bit to run the GUI interface for OES.

    You can change the resolution and color setting by doing the following:

    a. Select **Graphics Cards**.

       If your monitor is not detected, a warning dialog appears.

    b. Configure your monitor by selecting **Yes**, selecting **Properties**, and selecting the monitor model or entering the correct properties; then continue by selecting **Finish**.

    c. On the left expand **Desktop**; then select **Color and Resolution**.

    d. At the bottom of the screen select **Change Configuration**.

    e. Make sure your desktop is selected; then select **Properties**.

       A dialog appears with tabs for Colors, Resolution, and Expert.

    f. Select **Colors**; then make sure **65536 (16 bit)** is selected from the drop-down list.

g. Select **Resolution (s)**; then select **1024x768**.

h. When you finish, select **Ok**; then select **Finish**.

i. Continue by selecting **Finalize >>**.

j. Test the new configuration by selecting **Test**.

A test screen appears.

k. (Conditional) If the display is corrupted or does not display at all, press **Ctrl+Alt+Backspace** and try adjusting the colors and resolution again.

l. Make any position or size adjustments; then select **Save**.

A message indicates that the settings have been saved and will be displayed the next time you restart the graphics system.

m. Select **Ok**.

49. Continue by selecting **Next**.

50. Continue by selecting **Finish**.

51. Log in as **admin** with a password of **novell**.

52. (Conditional) If you receive a warning message about the monitor not reporting its X-size and Y-size, continue by selecting No.

53. Test the installation by launching one of the following from the web browser:

- Welcome Page:
  http://10.0.1.1/
- iManager 2.5:
  https://10.0.1.1/nps/iManager

The iManager URL is case sensitive.

- Novell Remote Manager:
  http://10.0.1.1:8008

(End of Exercise)

Exercise 2 Configure an NFS Network Installation Server

In this lab, you will configure the server installed in Exercise 1 as a network installation server. Using that server, you can install other servers from the network without shuffling CDs.

Configure NFS Server

1. From the OES Linux server desktop, launch **YaST**.
2. Select **Network Services**.
3. Select **NFS Server**.
4. From the Configuration of the NFS Server screen, select **Start NFS server**.
5. Select **Next**.
6. Select **Finish**.

Configure the Installation Server

1. Open a Terminal.

2. Enter: **su**
3. Authenticate with root's password that you set during the installation of the server in Exercise 1.
4. Enter: **cd /**
5. Enter: **md /install/oessp1**
6. Launch YaST.
7. Select **Misc**.
8. Select **Installation Server**.
9. Select Configure as **NFS Source**
10. For the Directory, enter **/install/oessp1**
11. Select **Next**.
12. From the Installation Server -- NFS screen, select **Next**.
13. Select **Finish**.

Extract the OES Linux ISOs

Do the following:

1. Download **netInstall.sh** from

   http://support.novell.com/cgi-bin/search/searchtid.cgi?/2972902.htm

and save to the **/install** directory.

2. Copy the ISO files you downloaded to create CDs in Exercise 1 to **/install** or burn them to a DVD. You will need the following:

   - oes-sp1-linux-1.iso
   - oes-sp1-linux-2.iso
   - oes-sp1-linux-3.iso
   - oes-sp1-linux-5-sles9-2.iso
   - oes-sp1-linux-6-sles9-3.iso
   - oes-sp1-linux-7-sles9-4.iso

   From a Linux Desktop:

   a. Open a terminal.

   b. Change to the directory where the ISO files were downloaded.

   c. Enter the following command to copy the files to the server:

      scp * root@10.0.1.1:/install

      This will copy everything in the directory (ISOs and netInstall.sh) to the /install directory on the server.

   From a windows workstation:

   a. (Conditional) Download a secure copy utility, such as PSCP.EXE (PuTTy).

   b. Open a command prompt.

c. Change to the directory where the ISO files were downloaded.

d. Enter the following command to copy the files to the server:

pscp * root@10.0.1.1:/install

Enter root's password when prompted.

This will copy everything in the directory (ISOs and netInstall.sh) to the /install directory on the server.

3. Change the netInstall.sh script to executable if it is not already, using **chmod +x netInstall.sh**.

4. Run the network install script to extract the ISOs to the NFS installation source.

./netInstall.sh

5. Enter the full path to the install source directory:

/install/oessp1

6. Enter the full path to directory containing ISO files:

/install

or if you burned the ISOs to a DVD:

/media/dvd (or the path to your DVD drive)

(End of Exercise)

Exercise 3 Install OES Linux from a Network Installation Server Remotely via VNC

In this exercise, you will install Open Enterprise Server on Linux from an OES Linux installation server.

In most cases you would use a SUSE Linux Enterprise Server 9 installation server instead of OES Linux, but for ease of use with this training, the OES Linux server is being used.

The purpose of this lab is to simulate a system administrator installing OES Linux on a server in their data center.

Once the server is booted with the first OES CD and the installation is started, the administrator can go to their office and complete the installation remotely.

Install OES Linux from a Network Installation Source

Hardware Requirements

- In addition to the standard hardware requirements, you will need 2 hard drives in the server. The first will be used for the OES Linux system and the second will be used for NSS.

  If you do not have at least a 4 GB second drive, refer to the OES documentation on how to setup EVMS so that you can put both the Linux system and NSS on the same physical hard drive.

Do the following:

1. Power on the Install Server and wait for it to start.
2. Power on the server that is going to be installed.
3. Insert the ***Open Enterprise Server Linux Installation CD 1.***
4. (Conditional) If necessary, select the option to boot from CD.
5. When the GRUB installation screen appears, highlight the **Installation** option and do NOT press Enter.

   You have 20 seconds to highlight the option before GRUB boots from the hard drive.

6. Set the display resolution by pressing **F2**; then select a display resolution of at least 1024x768.

If a resolution of 1024x768 is not available, select the highest resolution available (such as 640x480).

7. Set the installation type by pressing **F3**; then select **NFS**.
8. From the HTTP Installation dialog, enter the following:
   - Server: **10.0.1.1**
   - Directory: **/install/oessp1**
9. In the Boot Options, enter:

   vnc=1 vncpassword=novell hostip=10.0.1.2 netmask=255.0.0.0
10. Verify that **Installation** is highlighted and press **Enter**.

    The Linux kernel begins loading.

    Wait until you see the message that the VNC server is started.
11. Launch the VNC viewer from a Novell Linux Desktop (workstation) by selecting **Application > System > Remote Access > Krdc** or launch VNC from a Windows workstation.

For the Windows VNC client to connect, select Options > Misc > Protocol 3.3.

12. Enter **10.0.1.2:1** and select **Connect**.
13. Enter the password: **novell**

    A Novell Software License Agreement dialog appears.
14. Accept the license agreement by selecting **I Agree**.

    A YaST Welcome screen appears. YaST is the installation and system administration program provided by SUSE LINUX.
15. Select ***English***; then select **Accept**.

Or select the language of your choice.

16. (Conditional) If prompted to confirm driver activation, select **OK**.
17. (Conditional) If a dialog appears with installation options, continue by selecting **New installation**; then select **OK**.

An Installation Settings screen appears with several headings such as System, Mode, Keyboard Layout, and Mouse.

Because this installation screen is designed in a hub-and-spoke configuration, each heading (headline) provides a link to a configuration screen you can use to reconfigure the default installation settings.

Make sure the System, Mode, Keyboard Layout, and Mouse settings are correct (the defaults are normally correct).

18. (Conditional) If a setting is not correct, select the heading and make the necessary changes.
19. From the Installation Settings, scroll down and select **Time zone**.
20. Select ***your time zone*** and then select **Accept**.
21. Select **Software**.
22. Select **Detailed Selection**.
23. Select the following:
    - **Novell NSS**
    - **Novell iFolder 2.x**
24. Select **Accept**.

25. From the Automatic changes screen, select **Continue**.
26. (Conditional) If a setting is not correct, select the heading and make the necessary changes.
27. When you are satisfied with the installation settings, select **Accept**.
28. Start the installation by selecting **Yes, install**.

    Wait for the files to be copied and the system to reboot.
29. Enter a root password of **novell** twice.
30. Select **Next**.
31. From the Network Configuration screen, select **Change**.

You may need to select **Configure** if the network card is not listed in the bottom panel.

32. A list of one or more configured cards appears, select **Edit**.
33. Select Static address setup and enter the following settings:
    - IP Address: **10.0.1.2**
    - Subnet mask: **255.0.0.0**

34. Select Host name and name server and enter the following:
    - Host name: **oeslinux2**
    - Domain name: **digitalairlines.com**
    - Name Server 1: **10.0.1.1**
    - Domain search 1: **digitalairlines.com**
35. When you finish, select **OK**.
36. Select **Advanced > Virtual Aliases**.
37. Select **Add**.
38. Create an Alias for iFolder, enter the following:
    - Alias Name: **iFolder**
    - IP Address: **10.0.1.3**
    - Netmask: **255.0.0.0**
39. Select **OK**.
40. Return to the Network cards configuration overview by selecting **Next**.
41. Select **Finish**.
42. Select **Next**.
43. From the Test Internet Connection dialog, select **No, Skip This Test**; then select **Next**.

44. From the Service Configuration dialog, select **Next**.
45. A Open Enterprise Server Configuration – Now or Later dialog appears, select **Next**.
46. The eDirectory Configuration - New or existing tree dialog appears. Leave New Tree selected and enter the tree name: **DA-TREE**
47. Select **Next**.
48. An eDirectory Configuration - Admin User and Password dialog appears. Enter the following information:
    - FDN admin name: **cn=admin.o=da**
    - Admin Password: **novell** (twice)
49. Select **Next**.
50. An eDirectory Configuration - Ports dialog appears. Accept the default values, select **Next**.

    An eDirectory Configuration - NTP & SLP dialog appears.
51. For the Network Time Protocol (NTP) Server & SLP, accept the default for NTP as **Local Clock** and change SLP to **Use multicast to access SLP**; then select **Next**.
52. From the warning about SLP, select **Yes**.

53. From the Installation Setting dialog, scroll down and select **iFolder 2.x**.
54. Select **Next**.
55. Enter the following information:
    - iFolder 2.x server IP address: **10.0.1.3**
    - iFolder 2.x server netmask: **255.0.0.0**
    - iFolder 2.x server DNS hostname: **ifolder.digitalairlines.com**
    - iFolder user data path: **/var/ifolder2/data**
56. Select **Next**.
57. Select **Next**.
58. Select **Next**.
59. ***Wait*** while services are configured.
60. Review the release notes; then continue by selecting **Next**.

    A Hardware Configuration screen appears.
61. Check the Graphics Cards information.

    You should have a minimum resolution and color setting of 1024x768@16bit to run the GUI interface for OES.

    You can change the resolution and color setting by doing the following:

a. Select **Graphics Cards**.

   If your monitor is not detected, a warning dialog appears.

b. Configure your monitor by selecting **Yes**, selecting **Properties**, and selecting the monitor model or entering the correct properties; then continue by selecting **Finish**.

c. On the left expand **Desktop**; then select **Color and Resolution**.

d. At the bottom of the screen select **Change Configuration**.

e. Make sure your desktop is selected; then select **Properties**.

   A dialog appears with tabs for Colors, Resolution, and Expert.

f. Select **Colors**; then make sure **65536 (16 bit)** is selected from the drop-down list.

g. Select **Resolution (s)**; then select **1024x768**.

h. When you finish, select **Ok**; then select **Finish**.

i. Continue by selecting **Finalize >>**.

j. Test the new configuration by selecting **Test**.

   A test screen appears.

k. (Conditional) If the display is corrupted or does not display at all, press **Ctrl+Alt+Backspace** and try adjusting the colors and resolution again.

l. Make any position or size adjustments; then select **Save**.

A message indicates that the settings have been saved and will be displayed the next time you restart the graphics system.

m. Select **Ok**.

62. Continue by selecting **Next**.

63. Continue by selecting **Finish**.

64. Log in as **admin** with a password of **novell**.

65. (Conditional) If you receive a warning message about the monitor not reporting its X-size and Y-size, continue by selecting **No**.

66. Test the installation by launching one of the following from the web browser:

- Welcome Page:

  http://10.0.1.2/

- iManager 2.5:

  https://10.0.1.2/nps/iManager

The iManager URL is case sensitive.

- Novell Remote Manager:
  http://10.0.1.2:8008

(End of Exercise)

Module 5 - Open Enterprise Server Administration

Exercise Manual

Complete the following exercises.

Exercise 1: OES Administration

Feedback

E-mail ***training@novell.com*** with the following:

Subject: *Bridging NetWare to Linux Module 5*

Exercise 1 OES Administration

Complete the following:

1. How do the administrator accounts differ on NetWare and Linux?

2. From a terminal, determine the runlevel, enter: **runlevel**

3. How are services started on stopped on OES Linux?

4. What is the Resource Control to restart Novell Remote Manager for Linux?

5. How do you provide updates to an OES Linux server?

6. How do you apply a support pack to an OES Linux server?

7. How do I check the status of eDirectory on Linux?
   a. From a Terminal, enter: **ndsstat**
   b. Check the status with the resource control for ndsd. First you need to switch user to root, enter: **su -**

Because the resource control can change the state of a process, you have to switch user to root to perform the task.

   c. Launch the ndsd resource control, enter: **rcndsd status**
   d. Restart eDirectory on Linux, enter:

rcndsd restart

Wait until you see eDirectory stop and start again.

(End of Exercise)

Answers to Exercise 1

1. The root account on Linux is local, while the admin account on NetWare is in eDirectory.

   You can login to the OES Linux server as admin, however it is just a regular user. The root account is the all power account. The user root has a User ID (UID) of 0 (zero).

2. You should be in runlevel 5 for these exercises.

3. /etc/init.d/servicename start | status | restart | etc...

4. rcnovell-httpstkd restart

5. You can update an OES Linux server using the rug command line client.

   You will need an activation code discussed in the Exercises of Module 4.

   Novell's update server is:

   https://update.novell.com/data

Check the OES Linux Installation Guide on www.novell.com/documentation for details. The section titled, *Patching a Server using the ZLM Channel from the Command Line (rug)*.

6. To apply a support pack, check the OES Linux Installation Guide on www.novell.com/documentation for details. The section titled, *Patching an OES Linux Server*, provides a variety of methods.

   For example, this course uses a non-routable private address and so using the method of patching the server using a patch CD would work.

7. n/a

8. n/a

(End of Exercise)

Module 6 - Manage the Network

Exercise Manual

Complete the following exercises.

Exercise 1: Configure Network Boards

Exercise 2: Manage Network Boards

Exercise 3: Determine Network Connectivity

Feedback

E-mail ***training@novell.com*** with the following:

Subject: *Bridging NetWare to Linux Module 6*

Exercise 1 Configure Network Boards

Depending on the utility, you will see a Network Board referred to by various terms:

network board = network interface card (NIC) = network card = network board = ethernet device = net interface

Complete the following:

1. Open a Terminal.
2. Switch user to root, enter: **su -**
3. Enter root's password.
4. Display the IP Address, enter: **ip address show**
5. Now display the network interface configuration, enter: **ifconfig**
6. You can also view and configure network boards using a GUI. From the OES Linux Desktop, select the **YaST** icon.

You can also launch YaST from the N (KDE Menu) > System > YaST.

TIP: From the desktop, if the mouse pointer changes from an arrow to a pointing hand, only a single click is required to launch the icon. YaST also utilizes single clicks, however does not change the mouse pointer.

7. Enter root's password.
8. Single click **Network Devices**.
9. Single click **Network Card**.

   The Network card configuration window appears.

   There are two sections.

   - The top section displays network cards that are not configured.
   - The bottom section displays network cards that are already configured.

TIP: In the top section, you need to highlight the unconfigured device and then choose Configure. In the bottom section, you cannot highlight the device, but just select Change and then you will be taken to a list of devices that you can change.

10. Select **Change**.
11. Highlight the top interface card and select **Edit**.

12. Familiarize yourself with how to configure IP Address and Subnet Mask.

TIP: With OES Linux, if you change the IP Address, you will need to change the IP Address in the services configuration files that refer to it. The presentation portion of this course contains the TID number for the document that provides details on how to do this.

13. Select Host name and name server.

    The Host name and name server configuration appear.

14. The Host Name field contains the name of the server. The default value is linux. The name server fields also contain the IP Address and Domain for the DNS servers. Select **OK**.
15. Select **Routing**.
16. Review the options and select **OK**.
17. To add a Secondary IP Address, select **Advanced**.
18. Select **Virtual Aliases**.
19. Select **Add**.
20. For the Alias Name, enter: **www**
21. For the IP Address, enter: **10.0.1.10**

22. For the Netmask, enter: **255.0.0.0**
23. Select **OK**.
24. Select **OK**.
25. Select **Next**.
26. Select **Finish**.

(End of Exercise)

Exercise 2 Manage Network Boards

Complete the following:

1. YaST stores the configuration information in /etc/sysconfig/network. Change to this directory, enter: **cd /etc/sysconfig/network**
2. List the directory, enter: **ll**
3. Display the adapter you just configured. The file will begin with ifcfg-eth-id-<MAC address>. Enter: **cat ifcfg-eth-id**

   Now press **Tab** to complete the rest of the filename, which is the MAC address of your network board.

   Press **Enter**.
4. Review the output for the Secondary IP Address that you just added.
5. If you have the need to restart all network boards on the server, there is no need to reboot the server like some operating system, you can enter the following: **rcnetwork restart**

You will find that as you build your skill set on Linux that the tendency to reboot to fix a problem will go away. Restarting a reconfigured or failed service usually resolves the issue on Linux.

6. To deactivate a single network board, such as eth0, you can enter: **ifdown eth0**
7. To activate eth0, enter: **ifup eth0**

(End of Exercise)

Exercise 3 Determine Network Connectivity

Complete the following:

1. Open a Terminal.
2. Enter: **ping -c3 10.0.1.10**

You can also configure the newly added secondary IP Address with a DNS entry and ping it by name, but that is beyond the scope of this course.

3. Now enter: **ping 10.0.1.10**
4. You will notice that the default behavior is to continue to ping the device. This is helpful when you want to troubleshoot a device that is not responding and view the ping results to see if the problem has been resolved. To stop the command, enter: **Ctrl-C**
5. Now let's look at listening network connections and statistics, enter: **netstat**
6. You may have noticed a lot of information scrolled by, therefore it is helpful to pipe the output of netstat to the less command. Enter: **netstat | less**
7. Scroll through the output with *arrow* and *page* keys. To quit, press **Q**.

8. To display network routes, enter: **netstat -r**
9. Now switch user to root, enter: **su -**
10. Enter root's password.
11. You can check connectivity across multiple routers with the traceroute command.

    However, if you isolated your server on a private network as specified in this training, you can just try the command: **traceroute 10.0.1.1** to some how the output is formatted.

    You will want to try this command on a your network to see more meaningful information.
12. Lookup the man pages for the following commands and test them out on a network that has DNS setup:
    - arp
    - dig

(End of Exercise)

Module 7 - Server Management Tools

Exercise Manual

Complete the following exercises.

Exercise 1: Use Novell Remote Manager for Linux

Exercise 2: Configure iManager 2.5 on Linux

Exercise 3: Use iManager 2.5 on Linux

Exercise 4: Access the OES Linux Server via SSH

Feedback

E-mail ***training@novell.com*** with the following:

Subject: *Bridging NetWare to Linux Module 7*

Exercise 1 Use Novell Remote Manager for Linux

Typically the tools discussed in this section are access from a workstation. If you do not have a workstation attached to the same network as the OES Linux server, you can launch the Mozilla browser from the server.

Complete the following:

1. Open a browser from a workstation or from the server, select N (KDE Menu) > Internet > Web Browser > Mozilla.

If you do not have the server patched with Support Pack 1, you will need to update Mozilla to version 1.7 or install Firefox.

2. Launch Novell Remote Manager, enter the following URL:

   http://10.0.1.1:8008

   or

   https://10.0.1.1:8009

3. (Conditional) Accept the certificate permanently if prompted.

4. (Conditional) If prompted with a DNS security error, since we are not running a DNS server for this course, select **OK**.
5. (Conditional) Select the option you want and OK to any other encryption alerts that may appear.
6. Login as **admin** with a password of **novell**.
7. (Conditional) If prompted to remember the password, it is up to you what option to choose. Obviously, you would never remember passwords for a production server because of the security risk.
8. From the main screen, familiarize yourself with the File System Mounts.
9. Expand **Diagnose** by select the plus icon to the left.

The collapsible menu items are a new feature in OES SP1.

10. Select **Health Monitor**.
11. Review the health items listed.
12. Expand **View File System** from the left menu.
13. Select **View File System Listing**.

You will notice that the root file system is displayed on the right.

14. Select **etc**.
15. Scroll down and observe the icons on the left of the file listing. Directories are designated with a yellow folder and document icon. Files are designated with just a document icon.

    You may notice that both icons also have a magnifying glass as part of the icon, indicating that if you select the icon, you can see more information about that file.
16. Choose any file in the list and click on the icon.
17. Scroll down and review the information.

    Notice that you can set Linux file permissions, edit, delete, and rename the file.

    You can also create hard and symbolic links (the discussion of what these links are is outside the scope of this course).
18. Now, expand **Manage Hardware** and familiarize yourself with the information that you can select.
19. The **Use Group Operations** allows you to setup a visual map of your server and monitor their health.

20. The **Manage NCP Services** section allows you to manage NCP volumes.

Module 8 will discuss NCP server.

21. Now, familiarize yourself with the icons at the top of the page.
22. When you are done, select the **exit** icon.

(End of Exercise)

Exercise 2 Configure iManager 2.5 on Linux

Do the following:

1. Open a web browser and enter the following:

   https://10.0.1.1/nps/iManager

2. Authenticate as **admin** with a password of **novell** in the **DA-TREE**.

If you get a -634 error, just enter the IP Address of the server instead of the treename.

3. Notice the following information on the main screen:
   - **admin.da has unrestricted access**
   - **Some of the roles and tasks are not available**
4. Select **View Details**.
5. View the tasks that are not available, then select **Close**.
6. Select the **Configure** icon.
7. Expand **Role Based Services**.
8. Select **RBS Configuration**.
9. Select **Configure iManager**.

10. Set the Container field to **da**.
11. Select **Next**.
12. Verify that all modules are selected and then browse and set the scope to **.DA-TREE.**
13. Leave the **Assign Rights** and **Inheritable** boxes checked.
14. Select **Start**.
15. When the modules are updated, select **Close**.

    Now that RBS is configured, admin.da will have Collection Owner Access and the informational message about the tasks not being available will have been resolved.

(End of Exercise)

Exercise 3 Use iManager 2.5 on Linux

Do the following:

Modify the Helpdesk Role

Do the following:

1. Launch iManager by entering the following in a web browser:

   https://10.0.1.1/nps/iManager

2. Authenticate as **admin**.
3. Scroll down and expand the **Users** role.
4. Select Create User.
5. Enter the following:
   - Username = **geeko**
   - Lastname = **novell**
   - Context = **da**
   - Password = **novell**
   - Retype password = **novell**
6. Select **OK** > **OK**.
7. Select the **Configure** icon at the top.
8. Expand **Role Based Services**.

9. Select **RBS Configuration**.
10. Select **Role Base Services 2.da**.
11. Select **Help Desk**.
12. Select **Add** in the title bar at the top of the list.
13. From All Tasks, select **ModifyGroup**.
14. Select the right arrow to move the task to Assigned Tasks.
15. Select **OK > OK**.
16. Select **Close**.
17. Select the checkbox next to **Help Desk**.
18. Select **Actions > Member Associations**.
19. For the Name field, select the Object Selector icon; then browse to and select **geeko.da**.
20. Select **OK**.
21. For the scope field, select the Object Selector icon; then browse to and select **da**.
22. Select **OK**.
23. Select **Add**.
24. Select **OK > OK**.
25. At the top of the screen, select the **Exit** icon.

26. Log in as **geeko** with a password of **novell**.

    Notice that only the Helpdesk role is available to EKing.

27. Select the **Exit** icon.

Create iManager Favorites

Add 4 tasks that you perform on a regular basis to the Favorites:

1. Log in as **admin** with a **novell** password.
2. At the top of the screen, select the **Favorites** icon.

   No favorites should be listed.

3. Select the **Preferences** icon.
4. Under General, select **Manage Favorites**.
5. Add the following tasks to the Favorites list (use the left arrow):
   - **Create User**
   - **Modify User**
   - **Set Password**
   - **Volumes**
6. Select **OK > OK**.

7. Select the **Favorites** icon.

   The 4 tasks you selected should now be listed under Favorites.

8. (Optional) Change the Language to one you are familiar with, view the changes, and then set back to English.

Search for eDirectory Objects Using iManager 2.5

Do the following:

1. Select the **View Objects** icon.
2. Select the **Search** tab.
3. In the name field, enter **SSL*** and select **Search**.

   You should see SSL certificate objects for both oeslinux and oesnw.

4. Start a new search, in the Name field, enter **k*** and select **Search**.
5. In the Type field, select **User**.

   All users with a user id that begins with K are displayed.

Customize iManager Look and Feel

Do the following:

1. Select the **Configure** icon.
2. Expand **iManager Server**.
3. Select **Configure iManager**.
4. Select the **Look and feel** tab.
5. Change the Title Bar Name to *your company's name*.
6. Change the Header Color to **#6484A4**.
7. Change the Background Color to **#B6C9CF**.
8. Select **Save**.
9. Select **Roles and Tasks** to view the new look and feel.

   If the Title has not changed, try reloading the web page.

(End of Exercise)

Exercise 4 Access the OES Linux Server via SSH

This exercise works best from a Linux or Windows workstation.

If you use a Windows workstation, you will need to download an SSH client, such as PuTTy and adapt the exercise appropriately to the client you are using.

If a workstation is not available, you can still perform the exercise on the server to simulate access from a workstation.

Complete the following:

1. Open a Terminal.
2. Enter: **ssh root@10.0.1.1**
3. (Conditional) If prompted to add the local IP Address to the list of known hosts, enter: **yes**
4. Enter the password: **novell**

   You are now connected to the server as if you were sitting at the server console.

   Notice the prompt in the terminal changes to indicate the name of the server.

5. To end the ssh session, enter: **exit**
6. Close the terminal, enter: **exit**

(End of Exercise)

Module 8 - Manage the File System

Exercise Manual

Complete the following exercises.

Exercise 1: Use the Linux File System

Exercise 2: Understand Disk Partitions

Exercise 3: Use NSS on Linux

Exercise 4: Use NCP Server and File Access

Exercise 5: Use Samba for Native Windows Access to OES Linux

Feedback

E-mail ***training@novell.com*** with the following:

Subject: *Bridging NetWare to Linux Module 8*

Exercise 1 Use the Linux File System

Complete the following:

1. Open a Terminal.
2. Create a file, enter: **touch myfile.txt**
3. List the files in the directory that begin with m, enter: **ll m***

   Notice that a file called myfile.txt was created.
4. Update the timestamp on the file, enter:

   touch myfile.txt
5. List the files in the directory that begin with m, enter: **ll m***

   Compare the information listed.
6. Switch user to root, enter: **su -**
7. Enter root's password: **novell**
8. Change back to admin's home directory, enter:

   cd /home/admin
9. Now change the ownership of the file, enter: **chown root myfile.txt**
10. List the files in the directory that begin with m, enter: **ll m***

Notice the change of ownership.

11. Rename the file to first.sh, enter:

    mv myfile.txt first.sh

12. List the files in the directory that begin with f, enter: **ll f***

    Notice the file name has changed.

13. Now change the file to be executable, enter:

    chmod +x first.sh

14. List the files in the directory that begin with f, enter: **ll f***

    Notice the execute permission has been added.

(End of Exercise)

Exercise 2 Understand Disk Partitions

Complete the following:

1. View the partitions and mountpoints that are automatically mounted at boot time, enter:

   cat /etc/fstab

2. View mounted file systems, enter:

   mount

3. A helpful command to determine how much disk space is free, is the df command. Enter:

   df -h

The -h displays the information in human readable, such as KB, MB, or GB.

4. Determine disk usage with the du command. Enter: du -sh

The -s is used to provide only summary information. The -h displays in human readable format.

(End of Exercise)

Exercise 3 Use NSS on Linux

Requirements

This lab requires two hard drives on the server or virtual machine you are using to perform the exercises.

Complete the following:

1. Open a Terminal on the OES Linux server.
2. Switch user to root, enter: **su -**
3. Enter root's password: **novell**
4. Launch the NSS Management Utility, enter:

   nssmu

   The NSS Management Utility main menu appears. You will notice that this is identical to nssmu on NetWare.
5. Select **Devices**.
6. Write down the device name for the second hard drive you have installed in the server.

7. Press **Esc**.
8. Select **Pools**.
9. Press **Insert** and create a pool named **linuxpool**.
10. With the ***device name*** that contains free space highlighted, press **Enter**.
11. Enter a partition size in MB of **1000**, press **Enter**.
12. Press **Esc**.
13. Select **Volumes**.
14. Press **Ins** and create a volume named **linuxvol**, press **Enter**.
15. From the pool list, select **linuxpool**.
16. Press **Esc** (twice) to exit nssmu.
17. From the Terminal, enter: **nsscon**
18. The NSS console will appear, enter: **nss space**
19. To close the console, enter: **exit**

You can create another NSS volume in iManager by following the same steps you use to create an NSS volume on NetWare.

(End of Exercise)

Exercise 4 Use NCP Server and File Access

Requirements

This exercise requires Windows workstation running the Novell Client for Windows.

Complete the following:

1. Open a Terminal.
2. Switch user to root, enter: **su -**
3. Enter root's password: **novell**
4. Change to the / (root) directory, enter: **cd /**
5. Create a directory named mail, enter: **mkdir data**
6. Create an NCP volume using ncpcon, enter: **ncpcon**
7. Enter: **volumes**
8. Enter the following command:

   create volume data /data
9. From a Windows workstation, right-click the red **N** in the system tray, then select **NetWare Login**.

   The Novell Client for Windows dialog appears.

10. Select **Advanced**.
11. Make sure the following is entered in the displayed fields:
    - Tree: **DA-TREE**
    - Context: **da**
    - Server: **oeslinux** or **10.0.1.1**
12. Log in as **admin** with a **novell** password.
13. From the desktop, open **My Network Places** and select **Novell connections**.
14. Locate the oeslinux server and confirm that it has the volumes **SYS** and **DATA** mounted.
15. Open **DATA** and create a folder called **project** and a folder called **reports**.
16. Grant the user geeko.da, the RWCEMF rights by doing the following:
    a. Right-click the **project** folder.
    b. Select **Trustee Rights**.
    c. Browse to and select **geeko.da**.
    d. Select **Add**.
    e. In the Trustee list at the top, select the **W**, **E**, **C**, and **M** boxes.
    f. Select **OK**.

g. Close all windows.

17. Right-click on the red **N** in the system tray and login as **.geeko.da** with a **novell** password.

    A Confirm dialog appears.

18. Select **Yes**.

19. From the desktop, open **My Network Places** and select **Novell connections**.

20. Locate the OESLINUX server and confirm that it has the volumes **SYS** and **DATA** mounted.

21. Open the **DATA** volume and confirm that you can see only the **project** folder.

22. Close all open windows on both computers.

(End of Exercise)

Exercise 5 Use Samba for Native Windows Access to OES Linux

Create a public access SMB share on your OES Linux server and access it from a Windows workstation without using the Novell Client for Windows. You can also setup controlled access shares.

Using iManager you can also enable eDirectory users to access Samba on OES Linux.

Complete the following:

1. From a Windows workstation initial login prompt, make sure **Workstation only** is selected if the workstation has the Novell Client for Windows installed; then log locally to Windows.
2. From the OESLINUX server desktop, open a terminal window.
3. Switch to root by entering **su -** and a password of **novell**.
4. Create a new directory to function as the share by entering **mkdir /sambademo**.
5. Make this share available to all users by entering **chmod 777 /sambademo**.

6. From the desktop, press **Alt+F2**; then enter **kdesu kate**; then select **Run**.
7. Enter a password of **novell** and select **OK**.
8. Select **File > Open**; then browse to and open the **/etc/samba/smb.conf** file.

You can increase the size of the text in the file by selecting the plus magnifying glass icon on the toolbar.

Note the name of the Samba server in the file. The netbios name should be %h-W. The %h variable expands to the oeslinux hostname, so the Samba server name is oeslinux-W.

9. Add the following lines to the end of the file:

   [sambademo]

   comment = OES Samba Public Share

   path = /sambademo

   read only = no

   public = yes

10. Save the file by selecting **File > Save**.

    Keep the smb.conf file opened, as you will edit it later.

11. From the terminal window, restart the Samba server by entering:

    rcsmb restart

You can also enter: **/etc/init.d/smb restart**

12. On your Windows XP workstation, select **Start > Run**.
13. Enter the path:

    \\oeslinux-W

14. Select **OK**.
15. Verify that you can see the sambademo share.
16. Create a new file in the share.
17. From the terminal window on the OESLINUX server enter:

    cd /sambademo ; ls -l

    Notice that the file you created is owned by the user **nobody**.

    This is the Linux user that public samba access maps to.

(End of Exercise)

Module 9 - Monitor the Operating System

Exercise Manual

Complete the following exercises.

Exercise 1: Monitor Processes on Linux

Exercise 2: Monitor Connections

Exercise 3: Monitor Server Health

Exercise 4: Monitor the Server

Exercise 5: Access Error Logs

Feedback

E-mail ***training@novell.com*** with the following:

Subject: *Bridging NetWare to Linux Module 9*

Exercise 1 Monitor Processes on Linux

Complete the following:

1. Open a Terminal.
2. List the processes that are running on the OES Linux server, enter: **ps aux**
3. Now look for process information for ndsd, enter:

   ps aux | grep ndsd
4. To view real-time process information, enter: **top**
5. Review the process information and when done, close top, enter: **q**
6. You can view a process and it's associated process, enter: **pstree**
7. Using the ps aux command, find the process id (PID) and then display the process tree. For example: pstree 7034
8. To view process information in a graphical utility, launch: **ksysguard**

9. Familiarize yourself with the available options for processes, select the **Process Table** tab.

(End of Exercise)

Exercise 2 Monitor Connections

Complete the following:

1. Open a Terminal.
2. Create a file, enter: **touch testfile**
3. Edit the file, enter: **kate testfile**
4. Enter some text into the file.
5. Now check to see what processes are using that file, enter: **fuser -v /home/admin**
6. Now check for open files, enter:

   lsof | less
7. When done viewing the list, enter: **q**
8. Now check to see who has testfile open, enter:

   lsof | grep testfile
9. Save the file testfile and exit kate.
10. Monitor the connections, enter:

w

11. Also try the command who, enter: **who**
12. Now create another connection to the server, enter:

    ssh root@localhost
13. Authenticate using root's password.
14. Now, display connection information again, enter: **w**
15. Close all terminals.

(End of Exercise)

Exercise 3 Monitor Server Health

Complete the following:

1. Open a web browser and enter the following:

   https://10.0.1.1/nps/iManager

2. Log in as **admin** with a **novell** password.
3. From the left pane, expand **Servers**.
4. Select **Monitor Servers**.
5. Browse to and select **da** as the container; then select **OK**.
6. Select **Add**.
   - Server Name: **oeslinux**
   - IP Address/DNS Name: **10.0.1.1**
   - Description: **OES Linux**
7. Leave the default Monitoring Type set to:
   - Robust Health (OpenWBEM required)
8. Select **OK**.
9. Select the link for **oeslinux** and view the server health information.
10. Select **Servers** (from the main frame).

11. Select the description **OES Linux** and view the Quick Status.
12. Select **Action > Manage Groups**.
13. Select **Add**.
14. For the Group Name, enter **Linux Servers**; then select **OK**.
15. Select the **Linux Servers** group link.
16. Select **Add**.
17. In the Server Name field, enter:

    oeslinux
18. In the IP Address/DNS Name field enter: **10.0.1.1**
19. Select **OK**.
20. Select **Groups**.

    Notice that you now have 2 groups available—Linux Servers and My Servers. The Linux Servers group only includes Linux servers, while the My Servers group can include other servers.
21. From the Groups screen, select **MyServers**.

22. (Conditional) If you have workstation or any device with an IP address, find the IP address of that device.

    For example, if you have an Novell Linux Desktop workstation:

    a. Open a terminal.

    b. Enter: **su**

    c. Enter: *root's password*

    d. Enter: **ifconfig**

    e. Write down the IP address of eth0:

    _____

23. Select **Add**.

    - Server Name: **NLD**
    - IP Address/DNS Name: ***enter IP address from the step above***
    - Description: **Workstation**

24. Change the Monitoring Type to:

    - Simple Server Status (up/down status only)

25. Select **OK**.

26. Select the **Show Status Icon Legend** icon (located in the upper right corner of the screen) and review the legend.

27. Take some time to review other Health Monitor options.

(End of Exercise)

Exercise 4 Monitor the Server

Complete the following:

1. Open a Terminal.
2. View memory usage, enter: **free**
3. Determine how long the server has been up, enter: **update**
4. Display CPU information, enter:

   cat /proc/cpuinfo
5. Display system information, enter:

   procinfo

(End of Exercise)

Exercise 5 Access Error Logs

Complete the following:

1. Open a Terminal.
2. View the system error logs, enter:

   cat /var/log/messages
3. Look for a specific string, enter:

   cat /var/log/messages | grep *string*
4. View kernel message, press:

   Ctrl-Alt-F10
5. Press **Enter** a few times to create some space on the screen.
6. Toggle back to the GUI, enter: **Ctrl-Alt-F7**
7. From a terminal, generate an error message, enter: **ssh root@10.0.1.1**
8. For the password, enter: **wrong**
9. View kernel message, press:

   Ctrl-Alt-F10

   Notice the error message generated.

10. Now view the system log in YaST, select the **YaST** icon from the desktop or from the N (KDE Menu).
11. Authenticate with *root's password*.
12. Select **Misc**.
13. Select **View system Log**.
14. From the pull-down menu, select some of the other logs.
15. When done viewing the log, select **OK**.
16. Select **Close**.

(End of Exercise)

Module 10 - Linux Training Plan

Exercise Manual

Complete the following exercise.

Exercise 1: Create a Linux Training Plan

Feedback

E-mail ***training@novell.com*** with the following:

Subject: *Bridging NetWare to Linux Module 10*

Exercise 1 Create a Linux Training Plan

Complete the following:

1. Complete this course, *Bridging NetWare Skills to Novell Open Enterprise Server for Linux*.
2. Pass the course assessment.
3. Find a mentor that is a Linux veteran that is willing to patiently give you guidance when you need it.
4. Read, *How To Ask Questions The Smart Way*

http://www.catb.org/~esr/faqs/smart-questions.html

5. Based on any unanswered questions that you have from this training, do all you can to find the answers to a questions before asking someone.

   This is a great way to discover and learn.

   If you have searched and cannot find an answer, go to your mentor before you get frustrated.
6. Complete the Novell Linux Desktop (NLD) Training, then install and use NLD. Free through March 2006.

http://www.novell.com/training/train_product/lcm/lcm.html

7. Install SUSE Linux 9.3/10, or Open SUSE Linux.
8. Use both KDE and gnome interfaces and applications.
9. Try some of the lab projects for OES Linux.

http://www.novell.com/products/openenterpriseserver/docs/oes_migration.pdf

10. Visit the websites listed in the course.
11. Review some of the books listed on the Novell Press website and talk to your mentor for advice on other books and resources they found helpful.
12. Determine your learning style.
13. Based on your learning style, there are additional training resources available for instructor-led training, self-paced, etc., determine the level of certification that you need.
14. Review the Certified Linux Professional (CLP) information.

http://www.novell.com/training/certinfo/clp/

15. Review the Certified Linux Engineer 9 (CLE9) information.

http://www.novell.com/training/certinfo/cle9/

16. Determine if you need additional training on Open Enterprise Server, such as course 3059.

http://www.novell.com/training/train_product/oes.html

17. Determine if you need additional training on eDirectory on Linux, such as course 3017.

http://www.novell.com/training/train_product/nds_edirectory.html

If you need additional assistance with your training plan or want custom/onsite training, please contact Novell Training Services.
http://www.novell.com/training/pep/custom_training.html

(End of Exercise)