
A Seminar Report On
Linux Administration and Server
Configuration

**Birla Institute of Technology
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CERTIFICATE

This is to certify that the following student of BIT, Mesra (Ranchi), Extension Centre, Jaipur of M.C.A. Vth Semester have given seminar

on

LINUX ADMINISTRATION AND SERVER CONFIGURATION

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1) Introduction:

Linus Torvalds, a Finnish college student created Linux Kernel in 1991.

How to Pronounce Linux?

Pronouncing the word Linux is one of the great controversies of the Linux world. Americans pronounce the proper name Linus with a long 'i' sound, as in style. However, because Linux was originally based on a small, PC-based implementation of UNIX called Minix (pronounced with a short i), the actual pronunciation of Linux preserves this characteristic: It's officially pronounced "LIH nucks."

Linux Vs UNIX

Linux is not UNIX, as UNIX is a copyrighted piece of software that demands license fees when any part of its source code is used. Linux was written from scratch to avoid license fees entirely, although the operation of the Linux operating system is based entirely on UNIX. It shares UNIX's command set and look-and-feel, so if you know either UNIX or Linux, you know the other, too.

Distributions of Linux:

- *The Fedora Project*: RedHat-sponsored community effort OS.
- *Mandrake*
- *Debian*
- *TurboLinux*
- *Slackware*
- *SuSE*
- *Knoppix*: distribution that runs from a CD, you don't need to install anything for this one.

Hardware Requirements for Linux Installation:

Linux, a clone of the UNIX operating system that runs on machines with an Intel 80386 processor or better, as well as Intel-compatible CPUs, such as AMD and Cyrix.

Linux is a free, UNIX work-alike designed for Intel processors on PC architecture machines.

- 1) The hardware requirements for Linux include at least an 80386 processor, a minimum of 100MB of disk space, 4MB of RAM and a 3.5-inch floppy drive.
- 2) The swap space on Linux is an area on the disk used by Linux as a scratch area when working with lots of processes.
- 3) You will need 8MB of RAM to get X Window to run with an acceptable degree of performance.

Current application of Linux systems:

Today Linux has joined the desktop market. On the server side, Linux is well-known as a stable and reliable platform, providing database and trading services for companies like *Amazon*, the well-known online bookshop, *US Post Office*, the *German army* and such. Especially Internet providers and Internet service providers have grown fond of Linux as firewall, proxy- and web server. Clusters of Linux machines are used in the creation of movies such as "*Titanic*", "*Shrek*" and others.

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It is also worth to note that modern Linux not only runs on workstations, mid- and high-end servers, but also on "gadgets" like *PDA's*, mobiles, a shipload of *embedded applications* and even on experimental *wristwatches*. This makes Linux the only operating system in the world covering such a wide range of hardware.

Quickstart Commands

Command	Meaning
ls	Displays a list of files in the current working directory, like the <code>dir</code> command in DOS
cd directory	change directories
Passwd	change the password for the current user
file filename	display file type of file with name <code>filename</code>
cat textfile	throws content of <code>textfile</code> on the screen
Pwd	display present working directory
exit or logout	leave this session
man command	read man pages on command
info command	read Info pages on command
apropos string	search the <i>whatis</i> database for strings

Overview of DOS/Linux commands

As an extra means of orientation for new users with a Windows background, the table below lists MS-DOS commands with their Linux counterparts. Keep in mind that Linux commands usually have a number of options. Read the Info or man pages on the command to find out more.

DOS commands	Linux command
<code><command> /?</code>	<code>man <command></code>
cd	cd
chdir	pwd
cls	clear
copy	cp
date	date
del	rm
dir	ls
echo	echo
Edit	vim (or other editor)
Exit	exit
fc	diff
Find	grep
format	mke2fs or mformat
mem	free
mkdir	mkdir
more	more or even less

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DOS commands	Linux command
move	mv
Ren	mv
time	date

RPM packages

RPM, the RedHat Package Manager, is a powerful package manager that you can use to install, update and remove packages. It allows you to search for packages and keeps track of the files that come with each package. A system is built-in so that you can verify the authenticity of packages downloaded from the Internet. Advanced users can build their own packages with RPM.

An RPM package consists of an archive of files and meta-data used to install and erase the archive files. The meta-data includes helper scripts, file attributes, and descriptive information about the package. Packages come in two varieties: binary packages, used to encapsulate software to be installed, and source packages, containing the source code and recipe necessary to produce binary packages.

Many other distributions support RPM packages, among the popular ones Mandrake and SuSE Linux. Apart from the advice for your distribution, you will want to read **man rpm**.

Most packages are simply installed with the upgrade option, `-U`, whether the package is already installed or not. The RPM package contains a complete version of the program, which overwrites existing versions or installs as a new package. The typical usage is as follows:

```
rpm -qa | grep vim (queries to check vim is installed or not)
rpm -Uvh totem-0.99.5-1.fr.i386.rpm (updates totem package)
rpm -ivh xmms.i386.rpm (installs xmms packages)
```

Backup commands

Command	Meaning
bzip2	A block-sorting file compressor.
cdrecord	Record audio or data Compact Disks from a master.
dd	Convert and copy a file
fdformat	Low-level formats a floppy disk.
gzip	Compress or expand files.
mcopy	Copy MSDOS files to/from UNIX.
mdir	Display an MSDOS directory.
mformat	Add an MSDOS file system to a low-level formatted floppy disk.
mkbootdisk	Creates a stand-alone boot floppy for the running system.
mount	Mount a file system (integrate it with the current file system by connecting it to a mount point).
tar	Tape archiving utility, also used for making archives on disk instead of on tape.

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Command	Meaning
umount	Unmount file systems.

2) Utilities:

a) **netconfig**

netconfig is used to set IP address to a computer.

Example: *netconfig*
service network restart

b) **ifconfig**

ifconfig is used to configure and set IP addresses on network.

Example: *ifconfig*

c) **ping**

The *ping* (**P**acket **I**nternet **G**roper) program is used to query another system and ensure a connection is active.

Examples: *ping 192.168.0.1*

d) **chkconfig**

chkconfig is used to set the services at boot time and makes them persist across boots by changing the definition of the run levels.

Examples: *chkconfig --list*
chkconfig kudzu --list
chkconfig kudzu off

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3) Configuration Files:

Files	Details
a) /etc/hosts	It is a simple list of IP addresses and the hostnames to which they correspond. 127.0.0.1 localhost.localdomain localhost 192.168.0.1 server1.example.com server1
b) /etc/networks	It lists names and IP address of your own network and other networks you connect to frequently. This file is used by the route command.
c) /etc/inittab	<i>init</i> is the parent of all processes. This file contains information on how <i>init</i> should set up the system in every run level, as well as the run level to use as default.
d) /var/log/dmesg	It contains a snapshot of the kernel messages taken just after control is passed to <i>init</i> .
e) /etc/lilo.conf or /boot/grub/grub.conf	Boot loader files

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4) Telnet Server Configuration:

Telnet is used to connect to remote computer using its IP address or name.

Port: 23

Files: /etc/xinetd.d/telnet

Services: xinetd

Server Side	Client Side
1) Install Package for Telnet Server.	1) <code>telnet 192.168.0.1</code>
2) Open file /etc/xinetd.d/telnet and make appropriate changes.	2) Login Name: tut2 Password:
3) Restart the xinetd service.	

Miscellaneous Parameters to restrict and allow certain computers:

host_allow = IP address or hostname

no_access = IP address or hostname

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5) Ftp (File Transfer Protocol) Server Configuration:

FTP is used to upload and download files from remote computer depending upon the access rights set in the configuration files.

Port: 21/tcp (ftp), 20/tcp (ftp-data)

Packages: vsftpd, anonftp (where *vs* stands for 'very secure')

Files: /etc/vsftpd/vsftpd.conf, /etc/vsftpd.user_list, /etc/vsftpd.ftpusers

Services: vsftpd

We have two levels user access:

- a) **Anonymous access:** Users can log in as user ftp or as user anonymous to get access to an anonymous ftp site. By default gets logged into /var/ftp directory.
- b) **User access:** Users with 4 accounts on the target system can connect via ftp and log in using their username and password. By default they get logged into their home directory in /home.

Server Side	Client Side	
1) Install Package for Ftp Server.	1) ftp 192.168.0.1	
2) Open file /etc/vsftpd/vsftpd.conf and make appropriate changes.	2a) Anonymous Login	Login Name: anonymous Password:
3) Create required directory in /var/ftp with appropriate permission.	2b) User Login	Login Name: tut2 Password:
4) Restart the <i>vsftpd</i> service.	3) Use ftp commands like <i>get</i> and <i>put</i> to download and upload files.	

6) Links and FAQs:

1) How to restore original DOS MBR?

If you want to restore the MBR to the original DOS MBR, you can use the following procedure:

Step 1: Boot from a DOS floppy.

Step 2: Run fdisk /MBR from the DOS prompt. (You can also use the command SYS C:.)

Step 3: Reboot.

2) Help! I lost my MBR?

Boot using your Linux CD#1, type 'linux rescue' at the boot-prompt and press Enter. After a few simple questions, the Linux kernel will mount an image of your filesystem at /mnt/sysimage. This following sequence of commands will then return you to glory:

```
chroot /mnt/sysimage
```

```
lilo
```

```
exit
```

If you use GRUB, use 'grub-install /dev/hda' instead of the 'lilo' command.

3) How to avoid Repartitioning?

If it is not possible to repartition the hard-disk and if the last partition in the disk (Whether primary or logical) is FAT 16/32 with plenty of free space, a simple solution as outlined underneath is available:

Let's presume that the last partition's number is N. After you have determined the value of N, boot with Linux CD#1 and enter 'linux rescue' at the boot-prompt. When setup drops you into a shell:

```
parted /dev/hda # at the parted prompt
```

```
print
```

Let's say parted reports the starting and ending values for the last partition as nStart and nEnd respectively (Both in MB) to Free 2000MB:

```
resize <N> <nStart> <nEnd - 2000> # at the parted prompt
```

```
quit # at the parted prompt
```

```
exit
```

(If the last partition is logical, you will have to issue the 'resize' command twice: once for the logical partition and once for the extended partition)

4) Sources for References, tutorials, help, HOWTO Documents

Books:

Red-Hat Linux Unleashed

UNIX: Concepts and Applications by Sumitabha Das.

The UNIX Programming Environment by Brian Kernighan & Rob Pike.

Websites:

<http://www.linuxquestions.org/>

<http://www.linuxjournal.com/topics.php/>

<http://www.rhce2b.com/>

<http://www.redhat.com/>

FTP Site:

<ftp://sunsite.unc.edu/pub/linux/>

Linux Journal:

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The Linux Journal is a commercial publication dedicated to Linux. It covers the entire gamut of Linux topics, ranging from material suitable for newcomers to the operating system to very complex programming. The Linux Journal has a home page, accessible through:
<http://www.ssc.com/> (Specialized System Consultants Inc.)
<http://www.linuxjournal.com/>

Thank You

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