SEMINAR
ON
"LINUX ADMINISTRATION AND SERVER CONFIGURATION"

Topics to be covered:-

- *Introduction*
- *Utilities*
- *Configuration Files*
- *Telnet Server Configuration*
- *FTP (File Transfer Protocol) Server Configuration*
- *Links and FAQs*

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.

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.

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.
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.

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 **In**ternet **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
```

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**	*init* is the parent of all processes. This file contains information on how init 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 init.
e) **/etc/lilo.conf** or **/boot/grub/grub.conf**	Boot loader files

4) Telnet Server Configuration:

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

Port: 23
Files: /etc/xinet.d/telnet
Services: xinetd

Server Side	Client Side
1) Install Package for Telnet Server.	1) **`telnet 192.168.0.1`**
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

5) Ftp (File Transfer Protocol) Server Configuration:

It 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 with4 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 *vsftpd* service.	3) Use ftp commands like *get* and *put* 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:

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/

http://www.linuxjournal.com/

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