– General Linux 2 –

Booting the System

(Linux Professional Institute Certification)

$Id: gl2.106.1.slides.tex,v 1.1 2003/07/26 03:13:31 geoffr Exp $

Boot the system

Objective

Candidates should be able to guide the system through the booting process. This includes giving commands to the boot loader and giving options to the kernel at boot time, and checking the events in the log files.

Boot the system

Key files, terms, and utilities

dmesg

/var/log/messages

/etc/conf.modules or /etc/modules.conf

LILO

GRUB

Booting

- Machine powers up, BIOS POST, spin up SCSI drives, etc
- BIOS boots boot loader
- *(Boot loader may load its "second stage" from somewhere else)*
- Boot loader loads Linux kernel
- Linux kernel starts up, detects hardware, etc
- Linux kernel mounts /
- Linux kernel starts `init`(8)
- `init`(8) starts up rest of system

Finding the boot loader

(i386-specific)

BIOS boots Master Boot Record (MBR), located at the beginning of the disk.

Usual DOS MBR looks for “active” partition and loads the boot loader found in that partition.

You can either install your boot loader

- in the MBR, replacing the DOS boot loader, or
- use a DOS-compatible boot loader and install your boot loader in the active partition.

Boot Loaders

LILO

“Usual” i386 boot loader.

`lilo`(8) install command generates suitable assembly code and installs it into either the MBR or a partition. Configured through `/etc/lilo.conf`

Remembers actual disk blocks of kernel and uses that to access the file directly (using BIOS disk routines).

Because the calculations are done at install time, LILO can get confused by changes in disk configuration.

Boot Loaders

GRUB

The GNU HURD boot loader.

Unlike LILO, GRUB understands some partition formats and reads files through “normal” means.

Snarfing kernel output

`dmesg`(8) gives you the last 16k of kernel messages.

`syslog` usually logs this to `/var/log/messages` and `/var/log/kern.log` for posterity.

/etc/modules.conf

Configuration for `modprobe`(8)

(AKA `/etc/conf.modules`)

Gives kernel module options, module aliases and a few more exotic options (like module pre/post load commands).