Installation of the CMS distribution disk

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1 Contents of the hard disk

The 30GB hard disk is formatted into 6 partitions.

`/dev/hda1(23MB)`	→	`/boot`
`/dev/hda2(4GB)`	→	`/`
`/dev/hda5(0.5GB)`	→	`swap`
`/dev/hda6(2GB)`	→	`/home`
`/dev/hda7(8GB)`	→	`/cms`
`/dev/hda8(15GB)`	→	`/data`

CMS related software is installed under `/cms`. Sample data are stored in `/data`. The OS is Fermi version of Redhat Linux. Boot loader is `lilo` and the information is written in the MBR.

There are three predefined accounts, `root`, `cmsadmin` and `cmsuser`. `Cmsadmin` is the owner of CMS related files. `Cmsuser` is a sample user account having no privileges to the system.

2 Before starting the installation

- Hardware requirements: i586 compatible CPU, AT compatible motherboard, a CD-ROM drive, a floppy disk drive and an Ethernet NIC.
- Check the machine's host name, and IP booting scheme (DHCP or static.).
- Check the gateway, name server and DHCP server's IP address if necessary.
- Think three passwords for `root`, `cmsadmin` and `cmsuser`. You need to change these passwords immediately after the installation of the disk.
- Decide where on the IDE bus you install the disk. The harddisk is configured to be used as Primary-Master disk. It is still possible to use it at other position on the IDE bus.
- If you use X window system, check out the model and/or manufacturer of the video card. It is not mandatery, but it may help you in some cases.

- The machine would better having bootable CD-ROM drive for the case you have troubles.

3 Installation as the Primary-Master disk

1. The disk comes to you in removable IDE bay+tray kit. Open the disk tray and take out a small booklet, a bootable CD-ROM and screws.
2. Install the harddisk in a PC. It should be on the primary IDE bus. If there is no other disk on the bus (not in the machine), take out the jumper. ('Single' use) If another disk is connected as a slave disk, set the jumper to master (MA).
3. Switch on the power
4. If necessary, go into BIOS setup menu and put drive C: (or, primary master drive) in the list of bootable devices. Sometimes, you may need to exclude other disks than primary master from the list of IDE disks to let BIOS find the correct boot sector.
5. In middle of the booing process, Linux will run 'Kudzu' to probe hardware configuration. Let it try detecting the hardware and changing configuration files. In other words, keep hitting 'Enter' key.
6. When Linux boot up and shows login prompt, login as 'root' The initial password is '`pt_cruiser`'.

```
Fermi Linux Release ...(...)
Kernel 2. ... on ...

foobar login: root
Password: _
```

7. If Kudzu couldn't detect the network card correctly, change the network card configuration. Edit `/etc/conf.modules` and delete comment mark (#) only for the appropriate line.

```
# vi /etc/conf.modules
alias eth0 eepro100
#alias eth0 3c59x
#alias eth0 tulip
```

   If you are using Intel's EtherExpress 100 Pro or other i82557/8/9 cards, the module is eepro100. The module 3c59x works with most of recent 3Com cards and tulip for DEC21*4* based cards.

8. Configure X window system. To do that, just run Xconfigurator from the console.

   ```
   # Xconfigurator
   ```

   Currently, VGA16, SVGA, Mach64 and 3DLabs drivers are installed. If Xconfigurator failed to choose a driver correctly, select appropriate driver by hand. In case you have no idea on which should be selected and you had several trials failed, just select VGA. It works most of the case, but with poor resolution. As a monitor, 'Generic Multisysc' works fine.

9. Configure network environment. You need to modify following files.

   ```
   /etc/resolv.conf
   /etc/hosts
   /etc/hosts.allow
   /etc/sysconfig/network
   /etc/sysconfig/network-scripts/ifcfg-eth0
   ```

   You may need to modify a few other files (for sendmail, NTP, NFS, NIS, AFS and so on). Ask network administrator at your site for details.

10. Set correct time zone. There are time zone files under `/usr/share/zoneinfo/`. Choose correct file and copy it as `/etc/localtime`.

    ```
    # cp -p /usr/share/zoneinfo/Asia/Tokyo /etc/localtime
    ```

11. Finally, don't forget to change passwords for the three predefined accounts, `root`, `cmsadmin` and `cmsuser`.

4 Installation as the Primary-Slave disk

A bootable Linux system, either from a hard disk or CD-ROM, is necessary to configure the disk bootable from other than the primary-master. For this purpose, the kit contains a bootable CD-ROM, which is Linuxcare's one.

In the following procedure, you create a boot floppy disk to use the CMS software. There are, however, many other ways to make a system bootable from the CMS disk. Please choose the most suitable one for you depending on the OS at the master disk, loader or your preference. Some documents are found in `http://www.linuxdoc.org/`.

1. Step 1. of the previous section.

2. Install the disk on the primary IDE bus. The jumper is in the position of slave (SL).

3. Setup the BIOS for new configuration. After turning on the machine, go to BIOS setup menu. How to do it depends on the BIOS. Check out two things, the primary-slave harddisk is recognized and the CD-ROM drive is in the list of bootable devices. If not, set them accordingly.

4. Boot up the system from the CD-ROM. When you exit the BIOS setup menu, the machine starts boot sequence again. Put the Linux CD-ROM in the drive so that the system is booted up.

5. Log on as `root`.

6. Mount the system partitions on `/mnt/1`.

```
# umount /dev/hdb1 /dev/hdb2
# mount /dev/hdb2 /mnt/1
# mount /dev/hdb1 /mnt/1/boot
```

7. Go to `/mnt/1` and change it to `/`.

```
# cd /mnt/1
# chroot .
```

8. Edit `fstab`. Change all `hda` occurences to `hdb`.

```
# vi /etc/fstab
# cat /etc/fstab
/dev/hdb2       /               ext2    defaults          1 1
/dev/hdb1       /boot           ext2    defaults          1 2
/dev/hdb7       /cms            ext2    defaults          1 2
/dev/hdb8       /data           ext2    defaults          1 2
/dev/hdb6       /home           ext2    defaults          1 2
/dev/hdb5       swap            swap    defaults          0 0
/dev/cdrom      /mnt/cdrom      iso9660 noauto,owner,ro   0 0
/dev/fd0        /mnt/floppy     ext2    noauto,owner      0 0
none            /proc           proc    defaults          0 0
none            /dev/pts        devpts  gid=5,mode=620    0 0
```

9. Create `lilo.conf` for floppy boot.

```
# cd /etc
# cp lilo.conf lilo.conf.fd0
# vi lilo.conf.fd0
# cat lilo.conf.fd0
boot=/dev/fd0
map=/mnt/floppy/map
install=/boot/boot.b
prompt
timeout=50
default=linux

image=/boot/vmlinuz-2.2.16-3
    label=linux
    initrd=/boot/initrd-2.2.16-3.img
    read-only
    root=/dev/hdb2
```

10. Create a boot floppy for the system. Put a blank floppy in the drive.

```
# fdformat /dev/fd0H1440
# mkfs /dev/fd0
# mount /dev/fd0 /mnt/floppy
# cp -p /boot/boot.b /boot/chain.b /mnt/floppy
# lilo -C /etc/lilo.conf.fd0
# umount /mnt/floppy
```

11. Exit from the chroot'd shell.

```
# exit
```

12. Unmount the CMS partitions and reboot the machine. While booting, keep the floppy disk in the drive.

```
# umount /mnt/boot
# umount /mnt
# reboot
```

13. Continue with steps 5 and later in the previous section.

5 Trouble shooting

Please write your questions to the package manager, Shuichi Kunori, via E-Mail (`kuroni@fnal.gov`). For purely technical questions, Ichiro Suzuki (`ichiro@fnal.gov`) is also available.