Chapter 3

CD-ROM, Floptical, and Floppy Disk Drives

This chapter discusses the software that is used to access and use CD-ROM, floptical, and floppy disk drives. It contains the following sections:

- "Floppy Disk and CD-ROM Filesystems"
- "Configuring Floppy Disk Drive Device Files"
- "Using Floppy Disk Drives"

Floppy Disk and CD-ROM Filesystems

IRIX allows you to mount and use filesystems on floppy disks, floptical disks, and CD-ROMs. You can use these filesystems on your own system, or you can export them via NFS for use on other systems (if you have NFS® installed). See the *ONC3/NFS Administration Guide* for more information on exporting filesystems.

The operating instructions for these kinds of filesystems are similar and are covered in detail in the mediad(1M) reference page.

Note: Only one instance of *mediad* is allowed per system. That is, two invocations of *mediad* for the same device generate an error.

IRIX supports the following CD-ROM, floptical disk, and floppy disk filesystem formats:

- FAT (MS-DOS®)
- HFS (Macintosh)
- EFS and XFS (IRIX filesystem)
- ISO 9660
- Photo CD
- High Sierra
- Music CD format

CD-ROM Filesystems

mediad monitors CD-ROM drives, waiting for a CD-ROM to be inserted. When a CD-ROM is inserted, the filesystem it contains is mounted if the filesystem is in EFS, HFS, ISO 9660, or High Sierra format. If your system is running the objectserver, CD-ROM drives are monitored automatically. When a CD-ROM containing a valid filesystem is inserted, it is automatically mounted on */CDROM* (for the first CD-ROM drive), and */CDROM2*, */CDROM3*, and so on for additional drives.

If you are not running the objectserver when you invoke *mediad*, you must give instructions for the SCSI device to be monitored and a location to mount the CD-ROM filesystem. You must also have created the mount point and ensured that the directory permissions are set appropriately (755 is usually adequate for read-only filesystems). For example, if you are not running the objectserver and you wish to start *mediad* for a CD-ROM drive with SCSI identifier 4 and the mount point */CDROM* with the mount option **ro** (for read-only), issue this command:

```
mediad -o ro -ip /dev/scsi/sc0d410 /CDROM
```

Note that CD-ROM filesystems are always read-only. When you are finished using the filesystem, issue the *eject* command, and *mediad* will attempt to unmount the filesystem. If the unmount is successful, it ejects the CD-ROM. When *mediad* is running, however, any user can unmount and eject a CD-ROM with the *eject* command.

Floppy Disk Filesystems

Note: In this chapter, the term floppy disk drive also applies to a floptical drive since both are configured and used in the same manner.

Filesystems on floppy disk drives are controlled by the *mediad* daemon. *mediad* monitors a given floppy disk drive, waiting for a disk to be inserted. If your system is running the objectserver, floppy disk drives are mounted on */floppy* if the disk is in FAT (MS-DOS) or HFS (Macintosh) format. If you have more than one floppy disk drive, floppy disks in additional drives are automatically mounted on */floppy2*, */floppy3*, and so on. If your system is not running objectserver, you must provide a location for the mount point. See the mediad(1M) reference page for complete information. When you are through using the floppy disk, issue the *eject* command, and *mediad* attempts to unmount the filesystem. If the unmount is successful, it ejects the floppy disk immediately.

If you are not running the objectserver and you wish to start *mediad* for a high-density floppy disk drive with SCSI identifier 7 and the mount point */floppy*, use this command:

```
mediad -ip /dev/rdsk/fds0d7.3.5hi /floppy
```

This command gives instructions for the floppy disk drive to be monitored and provides a location to mount its filesystem. You must also have created the mount point and ensured that the directory permissions are set appropriately (777 is usually required for read-write filesystems).

Configuring Floppy Disk Drive Device Files

There are a number of SCSI floppy disk drives available for use with your system. To install a floppy disk drive on an IRIX system, follow the hardware documentation that is furnished with your drive to connect it to the computer.

If you are adding a floppy disk drive to a system that does not have one, the software configuration is taken care of automatically when the system boots. When the system boots, if *hinv* indicates that a floppy disk drive is installed, but there is no link to it through the */dev* special device files, the *MAKEDEV* program is automatically invoked to add the proper device files. For more information on the *MAKEDEV* program, refer to IRIX Admin: Disks and Filesystems.

If you are installing a floppy disk drive after your initial system installation, perform the following steps:

1. Install the hardware.
2. Log in as root (the superuser) and enter these commands:

   ```
   cd /dev
   ./MAKEDEV floppy
   ```

   The *MAKEDEV* program creates the appropriate device nodes.

If you have removed a floppy disk drive and are installing one of a different type, follow these steps:

1. Install the hardware.
2. Log in as the superuser and enter these commands:

   ```
   cd /dev/rdsk
   rm fds*
   ./MAKEDEV floppy
   ```

   The *MAKEDEV* program creates the appropriate device nodes according the SCSI controller, and floppy disk drive number, and type of floppy disk drive. For example, a 3.5-inch floppy disk drive configured as drive 2 on SCSI controller 0 has the device node:

   ```
   /dev/rdsk/fds0d2.3.5
   ```

   There are various options for the different kinds of floppy disk drives that are supported. For example, your device node could use any of the following options, depending on which option suits the hardware you are installing:

3.5	(720Kb 3.5" floppy)
3.5hi	(1.44Mb 3.5" floppy)
3.5.20m	(20.1Mb floptical)
48	(360Kb 5.25" floppy)
96	(720Kb 5.25" floppy)
96hi	(1.2Mb 5.25" floppy)

3. Use the following command to link your floppy disk drive device node with a convenient filename for access, typically */dev/floppy*. Substitute the device node information for your type of floppy disk drive for the node name used here:

   ```
   ln -s /dev/rdsk/fds0d2.3.5 /dev/floppy
   ```

Using Floppy Disk Drives

This section describes how to copy files to and retrieve files from floppy and floptical disks, regardless of whether the disk is in Macintosh, DOS, or IRIX filesystem format.

Note: The term floppy disk is used interchangeably with floptical disk in this section.

Using DOS and Macintosh Floppy Disks

The *mediad* daemon automatically determines the format of a floppy disk inserted in your drive and, if it is a DOS or Macintosh floppy disk, automatically mounts the filesystem on your default mount directory. Once the filesystem is mounted, you can use typical IRIX commands such as *cd*, *ls*, and *pwd* with it. See the mediad(1M) reference page for complete information.

Using a Floppy Disk Drive for IRIX File Transfer

You can use a floppy disk drive like a tape drive for IRIX file transfer. You can use the standard tape archive commands to write files to the floppy disk drive if it is in DOS format. Use the *mkfp* command to create the DOS filesystem on the floppy disk. See the mkfp(1M) reference page for complete information. You can also use the command version of fx(1M) to format your floppy disk for file transfer.

When you place files on a floppy disk, it is a good idea to make a note on the disk label of the format or the exact command used to place the files on the floppy disk. This makes it much easier for you (and others) to retrieve the files from the floppy disk. Also, whenever possible, change directories to the directory that contains the file and place the file on the floppy disk using a relative pathname, rather than specifying the absolute pathname.

Also, be aware that using a floppy disk to transfer files to systems made by other manufacturers may mean that the same tools are not available on the receiving system. The *tar*, *cpio*, and *dd* tools are usually available on all UNIX systems.

In the following examples, the floppy disk drive device name is given as */dev/rdsk/fds0d3.3.5*. Your actual device name may be different.

Floppy Disk File Transfer With tar

To place a copy of the file *transfer.file* on a floppy disk with the *tar* command, use the syntax:

```
tar cvf /dev/rdsk/fds0d3.3.5 transfer.file
```

To retrieve the file, use the command:

```
tar xvf /dev/rdsk/fds0d3.3.5 transfer.file
```

To retrieve all files from a *tar* floppy disk, use the command:

```
tar xvf /dev/rdsk/fds0d3.3.5
```

or for high-density floppy disks:

```
tar xvf /dev/rdsk/fds0d3.3.5hi
```

For complete information on *tar* and its options, see the tar(1) reference page.

Floppy Disk File Transfer With cpio

To copy files to floppy disk with *cpio*, use the command:

```
ls transfer.file | cpio -oc > /dev/rdsk/fds0d3.3.5
```

To retrieve the file again, use the command:

```
cat /dev/rdsk/fds0d3.3.5 | cpio -i
```

For complete information on *cpio* and its options, see the cpio(1) reference page.

Floppy Disk File Transfer With dd

This *dd* command copies a file to the floppy disk:

```
dd if=transfer.file of=/dev/rdsk/fds0d3.3.5 conv=sync
```

The following command extracts the same file:

```
dd if=/dev/rdsk/fds0d3.3.5 of=transfer.file conv=sync
```

Note: *dd* works only with single files. You can use *tar* or *cpio* to create an archive file, though, and then use *dd* to transfer that archive. If you attempt to extract the file on another brand of workstation and you experience an error, try adding the *conv=swab* statement to your extraction command line. For complete information on *dd*, see the dd(1) reference page.