

Chapter 4: Using Common Mass Storage Peripherals

Besides the main components which make up the modern PC, there are many optional peripherals which can be attached to it and when these are properly utilised they can contribute to make the computing environment and experience more convenient, productive and pleasant. The more common peripherals include:

- printer
- scanner
- mass storage devices

In this chapter we shall be looking at how to access and use the common peripheral mass storage devices,

- floppy disk drive
- CD-ROM drive
- USB mass storage device
- CD-RW drive

Setting up and using a printer and scanner will be covered in the next chapter.

Note:

The method for accessing the mass storage peripherals described below are based on GNOME version 2.4. A new version of GNOME, version 2.6, came out while this guide is being written. In GNOME 2.6 the right-clicking on the Desktop and selecting Disks method has been deprecated. The new method is to use the Computer icon located on the Desktop. Double-click on the Computer icon, and it will display all the system devices as well as the filesystem.

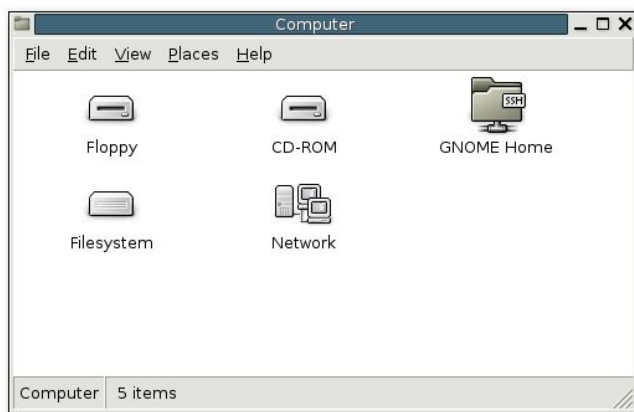


Fig. Accessing System Devices and Filesystem in GNOME 2.6

THE FLOPPY DISK DRIVE

While most of the work is done using the hard disk or drive and system and user data are stored on the hard drive, sometimes you may want to transfer or copy files to another PC. One convenient way to perform this provided that the file sizes are not too large is to use a floppy disk or diskette. Diskettes are very useful as a portable storage medium for small files.

Mounting and Using the Diskette

Before a diskette can be used, you have to perform an operation called "mounting" the diskette. This is to let the system know that you are going to use and access the diskette in the floppy drive.

To mount a diskette, move the mouse to an empty area on the Desktop and right-click it. From the pop-up menu select,

Disks --> Floppy

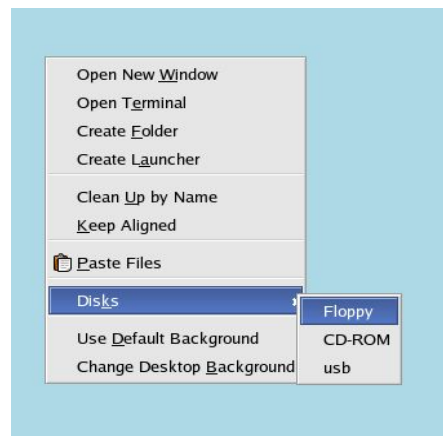


Fig. Mounting a Floppy

(Under the new version of GNOME, disk access is done by right-clicking on the Computer icon on the desktop and selecting Floppy. See the Note at the top of this chapter.)

This will mount the floppy and add a floppy icon on the desktop. Double-clicking on this will list out the files and folders in the floppy under the File Manager.

Once you have successfully mounted the diskette and listed out its directory contents under the File Manager, you can treat it like another folder to read and write files and folders. However, you have to bear in mind some differences between the floppy diskette folder and the normal folder you have been working with.

The diskette has a very low storage capacity compared with the hard disk; a floppy diskette typically will have about 1.44 MB of storage capacity only. In contrast a hard disk will have at least a few hundred MB of storage capacity at the minimum!

If the write-protect tab on the diskette is enabled, then the diskette can be used for reading only, i.e. you can read the contents of the files on it only. You cannot write to the files, and so you cannot modify and/or create new files or folders.

After using the diskette, you will need to unmount it before you take off the diskette from the floppy drive. To unmount the diskette, right-click on the floppy icon on the desktop and select "Eject". This will unmount the diskette and the floppy icon will disappear from the Desktop. Once this has happened, you can safely remove the diskette from the floppy drive.

Note:

It is important that you unmount the diskette before removing it from the floppy drive, especially if it has been mounted for writing. Failure to do so may result in incomplete data being written to the diskette and corruption of the file system on the diskette.

Formatting the Diskette

Before a diskette can be used it has to be "formatted" first. This will create the directory structures and other information needed for the system to keep track of where the data is stored on the diskette. You need to format a diskette once only. You can subsequently format it again after using it for some time but re-formatting will result in the loss of the original contents of the diskette.

To format a diskette, you can use the floppy formatter selection from the Main Menu.

Main Menu --> System Tools --> Floppy Formatter

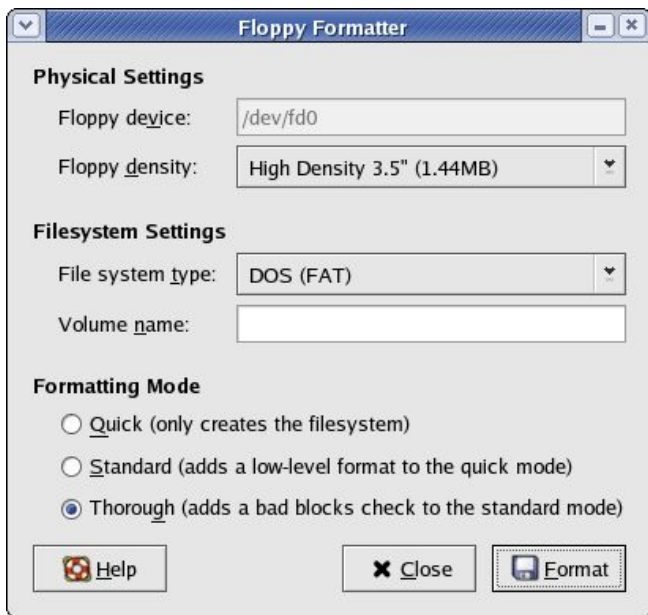


Fig. Floppy Formatter Dialog

Choose the default floppy density of 1.44 MB and the DOS (FAT) file system type. This will enable the diskette to be read on almost all commonly used operating systems including Microsoft Windows.

EXERCISES

1. Format a floppy diskette, mount it for read-write and copy the following files/folders found in the /etc directory to it: hosts, termcap, motd and rc.d.
2. Unmount the diskette, mount it again and copy its entire contents to the folder tmp in your home directory (create this folder if it is not there). Unmount the diskette after the copying.

THE CD-ROM DRIVE

Nowadays the CD-ROM is widely used as a means to store and distribute data and information. A typical 5.25" CD-ROM can store up to 700 MB of data. It is thus ideal as a medium for distributing large files, multimedia games and software packages.

By default when a CD-ROM is placed in the drive it is automatically mounted and the File Manager will open it to display its directory contents. If it is not automounted, then it can be mounted by moving the mouse to an empty area on the Desktop and right-click it. From the pop-up menu select,

Disks --> CD-ROM

(Under the new version of GNOME, disk access is done by right-clicking on the Computer icon on the desktop and selecting CD-ROM. See the Note at the top of this chapter.)

This will mount the CD and add a CD icon on the desktop. Double-clicking on this will list out the files and folders in the CD-ROM under the File Manager. The File Manager can then be used to access the files and folders on the CD. Since the CD-ROM is a read-only medium, you can only read the contents of the CD and not write to it.

After using the CD, you will need to unmount it before you take it off the CD-ROM drive. To unmount the CD, right-click on the CD icon on the desktop and select "Eject". This will unmount the CD and the CD icon will disappear from the desktop.

THE USB MASS STORAGE DEVICE

Another popular portable storage medium is the USB mass storage device (sometimes also known as a thumb drive). Like the floppy diskette you can read and write to a thumb drive but it has the advantage of storing much more data than a diskette. Thumb drive devices of capacities 32 MB, 64, 128 MB etc. are common.

To access the thumb drive, place it in the USB slot (port) provided and move the mouse to an empty area on the desktop and right-click it. From the pop-up menu select,

Disks --> usb

Note:

This assumes that the system you are using has been set up with the name of "usb" for the thumb drive; it can be another name (customisable).

Under GNOME 2.6 (see the Note at the beginning of this chapter) the thumb drive is accessed by double-clicking on the Computer icon on the Desktop, and is referred to by the name "Flash",

Computer --> Flash

This will mount the USB thumb drive and add a thumb drive icon on the desktop. Double-clicking on this will list out the files and folders in the thumb drive under the File Manager. You can then treat it like another folder to read and write files and folders.

After finishing with the thumb drive, you will need to unmount it by right-clicking on the thumb drive icon on the desktop and selecting "Unmount Volume", before removing it from the USB port.

THE CD-RW DRIVE

While the CD-ROM drive is very useful as a portable storage medium due to its high capacity and low cost, it suffers from the disadvantage that it is a read-only medium.

To overcome this, many PCs are sold nowadays with drives which enable you to record data onto CD-R (CD recordable) and CD-RW (CD rewritable) disks. The former refers to a CD medium which allows you to record to it only once, while with a CD-RW disk it is possible to rewrite data to it multiple times.

Note:

While a CD-RW drive supports both CR-R and CD-RW functionalities, the CD medium that you utilise determines whether you can write data to it only once (CR-R) or multiple times (CD-RW). So it is important that you buy the correct medium type for the function that you want.

CD-CREATOR

The File Manager has a facility which enables a user to copy files and folders very easily to a CD-RW drive. To use this feature, start the File Manager and from the menu bar at the top select,

Go --> CD Creator

and the CD Creator window will be displayed. The files and folders which are to be copied (burned) onto the CD-R(W) disk are to be placed here in this window. To do this, open up another window on the File Manager,

File --> Open New Window

In the new File Manager window, select the files and folders you want and drag and drop them into the CD Creator window. After you have finished selecting and dropping all the files and folders you want, go to the Cd Creator window and click on the "Write to CD" button at the top. A dialog box will open up and from here you can choose the writing

speed, the CD name and other options. The default settings may be used if you do not know what to fill in here.

To start the burning, click on the "Write files to CD" button in the dialog box. A status window showing the status of the CD burning will be displayed.

GNOME TOASTER

While the CD Creator application described above is very convenient and easy to use, its functionality is mainly limited to the copying of files/folders to a CD-R(W). A more versatile CD burning application is GnomeToaster. To start it select,

Main Menu --> System Tools --> More System Tools
--> CD Writer

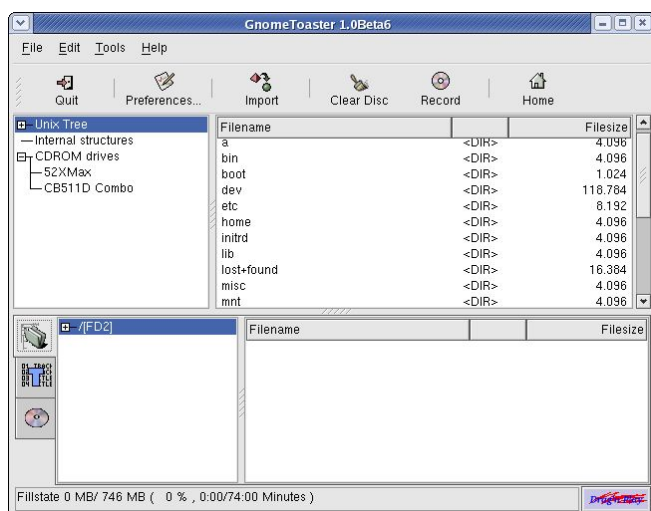


Fig GnomeToaster

Top Window - Data Sources

The GnomeToaster window has 2 main window sections. The top window shows a list of data sources - Unix Tree, Internal Structure and CDROM drives. The data sources are the sources for the data to be copied and burned into the CD-R(W).

The Unix Tree represents the file system on the computer. Clicking on the + icon of the tree will expand it to display the file system, i.e. the hierarchical tree structure comprising files and directories (folders). Clicking on a directory will cause the files in the directory to be displayed on the right panel of the top window.

Clicking on CDROM drives will expand into a listing of the CD-ROM drives present in the system and clicking on one of the drives will display the tracks in it on the right panel.

Note:

*If you have a CD-ROM drive and it is not displayed on the GnomeToaster CDROM drives listing, you may have to physically enter your CD-ROM drive device information into the GnomeToaster configuration setup so that the application can recognise it. To perform this, click on the Preferences button at the top and select "CDROM and Recorder Setup". Click on the Add button at the bottom to display the setup window. Enter the CD-ROM drive data for your system. For the model and manufacturer, you can enter the information marked on your CD-ROM drive or if you do not know what they are, you can just enter any meaningful text description. The Device File entry will probably be "/dev/cdrom" while the Mountpoint entry is usually "/mnt/cdrom". For the Scsi ID use the default value of "0,0". Ensure that the boxes entitled "This Drive is a CD writer" and "Use SCSI Interface for DAE" are **not** marked. Click on OK to apply the settings and click on OK again to exit the "CDROM and Recorder Setup" window.*

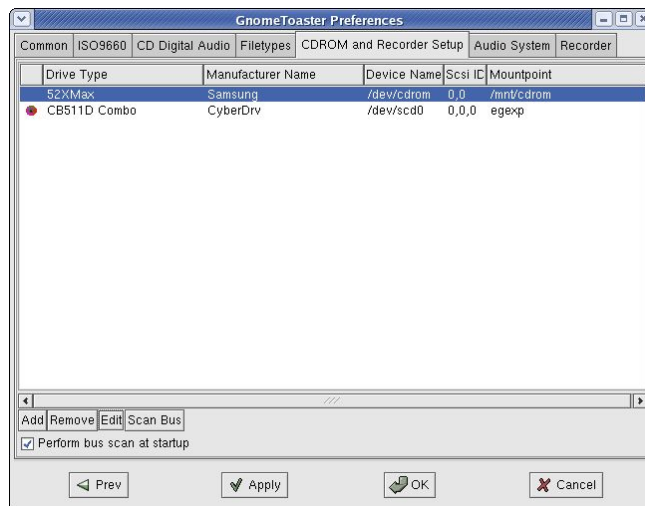


Fig GnomeToaster CDROM and Recorder Setup

The CD-ROM drive should now be visible in the CDROM drives tree listing panel. You can now use it as a source of data for burning.

Clicking on Internal Structures will display the "GnomeToaster-Filesystem" on the right panel.

Bottom Window

Writing data to the CD-R(W) involves selecting the data from the data sources window described above and dragging and dropping them into the bottom window panel. The bottom window has three possible selections - the virtual filesystem, the track editor and the recorder settings. Each of these can be selected by clicking on the icons in the left panel of the bottom window.

The virtual filesystem represents a view of the filesystem setup in a track of the CD-R(W) to be written to later. Note that this is not part of the actual filesystem on your computer and so manipulating the files here will not affect the ones in the computer filesystem. The virtual filesystem can be managed and edited by right-clicking the mouse.

The track editor shows you the tracks that you have selected to be burned to the CD-R(W). You can edit them using the track editor by right-clicking the mouse before committing them to be burned.

The recorder settings view enables you to change from the default, the various parameters for recording, e.g. recording speed etc.

FillstateStatus

At the bottom of the GnomeToaster window is the Fillstate status panel. This shows you the current space that will be taken up by the selected tracks as a percentage of the space available on the CD-R(W). This space utilisation is also displayed in megabyte (MB) units as well as the audio playing time.

Duplicating CDs

It is easy to make a duplicate of a CD using GnomeToaster. The source CD should be placed into the CD drive and the drive selected in the data source top window. The tracks in the source CD will be displayed in the right window panel. Select the tracks you want (or all of it if you are duplicating the CD) and drag them into the tracklist panel in the bottom window. The tracklist panel is displayed in the bottom window right panel when the trackeditor is selected for the bottom window.

After you have selected all the tracks you want, you should select the recorder settings parameters. This is done by clicking on the recorder settings button in the bottom window left panel. Usually you need to change only the recording speed to one which can be adequately supported

by your drive. The Multisession box should usually be off while the Fixate box turned on.

To start the actual recording (burning) of the CD click on the Record button at the top of the GnomeToaster window.

Creating a Data CD

This section will discuss how you can copy files and folders from the mounted filesystem and record them into a CD-R (W). Select the files and folders you want to copy from the Unix Tree in the Data Source window at the top and drag them into the virtual filesystem right panel in the bottom window (the virtual filesystem will have to be selected first in the bottom window). The files and folders in the virtual filesystem can be edited by right-clicking on the mouse. You can create, delete and rename files and directories (folders). You can also provide your own volume name to the data track's volume id (default name is CDROM) by selecting the root entry in the filesystem 's editor left panel and right-clicking it. Select the "Rename VOLUME/Directory" option and choose a new name for the volume.

After you have selected all the files you want, you should select the recorder settings parameters as above and then start the recording.

Writing ISO Images

It is possible to copy and store all of the data on a CD in the form of what is known as an ISO image file format. If this ISO image file is then written to a CD, the new CD will be a duplicate of the original one from which the ISO image was created. This provides a convenient way of duplicating a data CD if you can copy or download the ISO image file from another source to the filesystem on your computer.

To write ISO images to a CD-R(W), select the ISO image file from the Unix Tree filesystem data source window and drag it into the tracklist panel window in the bottom window. After that ensure that the recording settings are correct and click on the record button at the top to start the burning.

Help

There are many more options and features which GnomeToaster have, e.g. multisession burning, mixing audio and digital data, working with CD-RW media etc. The GnomeToaster documentation should be consulted for these more advanced features. The GnomeToaster User's Guide may be obtained from:

<http://gnometoaster.rulez.org>