Nowadays, most people use devices such as flash drives or hard disks as a replacement for optical disks. When we write a bootable ISO to a flash drive, it will no longer be bootable unless we use a special hybrid ISO image designed specifically for the purpose.

This recipe will give you an insight on ISO images and manipulations.

Getting ready

As we described many times in this book, Unix handles everything as files. Every device is a file. Hence, what if we want to copy an exact image of a device? We need to read all data from it and write to another file, right?

As we know, the `cat` command can be used to read any data and redirection can be used to write to a file.

How to do it...

In order to create an ISO image from `/dev/cdrom`, use the following command:

```
# cat /dev/cdrom > image.iso
```

Though this will work, the preferred way to create an ISO image is to use `dd`:

```
# dd if=/dev/cdrom of=image.iso
```

`mkisofs` is a command used to create an ISO system. The output file of `mkisofs` can be written to CD-ROM or DVD-ROM using utilities such as `cdrecord`. We can use `mkisofs` to create an ISO file using a directory containing all the required files that should appear as contents of an ISO file as follows:

```
$ mkisofs -V "Label" -o image.iso source_dir/
```

The `-o` option in the `mkisofs` command specifies the ISO file path. The `source_dir` command is the path of the directory that should be used as source content for the ISO and the `-V` option specifies the label that should be used for the ISO file.

There's more...

Let's learn more commands and techniques related to ISO files.

Hybrid ISO that boots off a flash drive or hard disk

Usually, bootable ISO files cannot be transferred or written to a USB storage device and booted the OS from the USB key. But, special type of ISO files called hybrid ISOs can be flashed and they are capable of booting from such devices.

We can convert standard ISO files into hybrid ISOs with the `isohybrid` command. The `isohybrid` command is a new utility and most Linux distros don't include this by default. If this is a case for your distro, you can download the syslinux package from `http://www.syslinux.org`.

Have a look at the following command:

```
# isohybrid image.iso
```

Using this command, we will have a hybrid ISO with the filename `image.iso` and it can be written to USB storage devices.

To write the ISO to a USB storage device, use the following command:

```
# dd if=image.iso of=/dev/sdb1
```

Use the appropriate device instead of `/dev/sdb1`, or, you can use `cat` as follows:

```
# cat image.iso >> /dev/sdb1
```

Burning an ISO from the command line

The `cdrecord` command is used to burn an ISO file into a CD-ROM or DVD-ROM. It can be used to burn the image to the CD-ROM as follows:

```
# cdrecord -v dev=/dev/cdrom image.iso
```

Some extra options are as follows:

► We can specify the burning speed with the `-speed` option as follows:

```
-speed SPEED
```

For example:

```
# cdrecord -v dev=/dev/cdrom image.iso -speed 8
```

Here, `8` is the speed specified as 8x.

► A CD-ROM can be burned in multisessions such that we can burn data multiple times on a disk. Multisession burning can be performed using the `-multi` option as follows:

```
# cdrecord -v dev=/dev/cdrom image.iso -multi
```

Playing with the CD-ROM tray

If you are on a desktop computer, try the following commands and have fun:

```
$ eject
```