
Fedora 18

Burning ISO images to disc

How to download ISO images and create CD and DVD media



Fedora Documentation Project

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Abstract

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1. Introduction

The Fedora Project distributes Fedora in the form of *ISO image files* that you can download from the Internet. You can transfer, or *burn*, these ISO image files to a blank CD or DVD and then use this disc to install Fedora on a computer.

This document shows you how to download these image files and burn them to a disc using a few common tools. This document assumes that you have no experience with Linux.



Third-party software

The Fedora Project only supports software that is part of the Fedora distribution

Other software mentioned in this article is intended to guide you in the right direction. The Fedora Project is not responsible for nor endorses those software packages, and their use is described here merely for your convenience. This is not intended to be a comprehensive guide to burning ISOs under every operating system.

2. Downloading

Several download options for Fedora ISOs are available from <http://fedoraproject.org/get-fedora>, including "spins" (special versions targeted at specific audiences) and versions for different processor types. Multiple download methods are available, including direct download from an official Fedora mirror, and torrents. Torrents download data from multiple peers, but require special software (for example *transmission* or *Ktorrent*).

The ISO files are large, so it might take a long time to download them, especially using a dial-up modem. If you have a slow connection to the Internet, consider using a download manager. Download managers typically enable you to pause and recommence the download at convenient times and to resume a download that was interrupted.

2.1. Choosing CD or DVD

Fedora is distributed on multiple CD-sized ISO image files, or a single DVD-sized ISO image file. You can use the single DVD ISO file if your computer meets the following requirements:

- It has a DVD-writable or DVD-rewritable drive.
- It has sufficient storage space available to hold the image file (approximately 3.5 GB).

- It uses a *file system* that can store files larger than 2 GB.

To write the DVD ISO file to a disc, your computer needs to have a drive that can write to DVD media. If your computer has a drive that only writes CD media and not DVD media, download the CD-sized files instead.

A *file system* is a method that your computer uses to organize the files and data on its storage devices. Some file systems cannot store files larger than 2 GB, which would prevent them from storing the Fedora DVD image, which is approximately 3.5 GB. *FAT32* is a file system that is still in common use on older computers and which is limited in this way. *FAT32* was the default file system for computers that used the Windows 98 and Windows Me operating systems, and was also used on many computers with the Windows 2000 and Windows XP operating systems, although it was not the default choice.

If your computer uses Windows 98 or Windows Me, do not download the DVD image file; download the CD image files instead. If your computer uses Windows 2000 or Windows XP, you can check the format of a drive such as **C:**. Click the **Start** button and double-click **My Computer**. Right-click the drive you want to check, and choose **Properties**. The resulting dialog displays the format for that file system. Most drives on computers that use Windows 2000 or Windows XP are formatted as *NTFS*, a file system that can handle large files like DVD images.

Create a new directory where you can download the files that you need. You need approximately 700 MB of free space available for each CD-sized ISO file, or approximately 3.5 GB for the DVD-sized ISO file.

2.2. Choosing the ISO Files

The exact files you need from the download server depend upon your system and the version of Fedora you are downloading. The files you need are named in the form of **Fedora-<version>-<arch>-disc<count>.iso**, where "*<version>*" is the version of Fedora you wish to download, "*<arch>*" is your computer's processor architecture, and "*<count>*" is the disc number for each of the installation CDs. In the case of an installation DVD, **DVD** is used in the filename.

The computer processor architecture is usually *i386* for 32-bit PCs, including the Pentium and Athlon processor families. The architecture is usually *x86_64* for 64-bit PCs, including the Athlon 64 processor family. The architecture is usually *ppc* for PowerPC computers, including most of Apple's Macintosh offerings before they began using Intel chips in the MacBook. If in doubt, your system probably requires the *i386* versions.

For example, if downloading Fedora 18 for a Pentium 4 computer, the correct file is **Fedora-18-i386-DVD.iso**. You may also need the **CHECKSUM** file to verify that the files you have downloaded are complete and correct.

Note that a Fedora Live CD is also available. This disc does not contain all the software packages available on the DVD or set of CDs, but does allow you to try Fedora before you install it to your computer. Refer to the article *Fedora Live Images* available from <http://docs.fedoraproject.org> to learn more.

3. Validating the Files

Errors can occur during the download, even if your download manager reports none. Therefore it is **very important** to check that the files have not been corrupted in any way. This is the purpose of the **CHECKSUM** file. It contains one line for each of the available ISO files with a content verification code called a *hash* computed from the original ISO files.

BitTorrent Automatic Error Checking

BitTorrent automatically performs this error checking during downloads. If your **BitTorrent** application reports all files have been successfully downloaded, you can safely skip this step.

Third-party software

The Fedora Project and Red Hat, Inc. have no control over external sites such as the ones listed in the sections below, or the programs they provide.

3.1. Getting the CHECKSUM Files

Before getting started, it's a good time to download the checksums from <http://fedoraproject.org/verify>. Click on the link that matches the ISO you have downloaded and keep it handy for the next steps.

3.2. Validating in the Windows Graphical Environment

There are a number of no-cost products available for file validation and hashing that have point and click interfaces. Here are links to a few of them:

- HashTab: <http://implbits.com/HashTab/HashTabWindows.aspx>
- DivHasher: <http://soft.mydiv.net/DivHasher.html>
- MD5 GUI: <http://www.toast442.org/md5/>

Follow the instructions provided to install the program. When you run the program, use the file selection tools provided to select your downloaded ISO image files. Then select the SHA256 algorithm for calculation, and run the tool. The program takes some time to complete, since it must read the entire ISO file.

If you are using HashTab, you will need to enable the SHA256 checksum option. In order to do this you will need to open the File Properties window (right click --> File Hashes tab --> Settings), then select the SHA256 option. It is advisable to uncheck any preselected hash options as they will only slow down the hash calculations.

Open the file **CHECKSUM** with a text editor, such as **Notepad**, to display its contents. Make sure the hash displayed by the hash tool for **each** of the downloaded ISO files **exactly** matches the corresponding hash in the **CHECKSUM** file.

If all of the hashes match, you can burn the ISO file to disc. If a file does not match, download it again.

3.3. Validating at the Windows Command Prompt

To check the files using the command prompt, download the program **sha256sum.exe** available from <http://www.labtestproject.com/files/win/sha256sum/sha256sum.exe>. If you have any problems accessing sha256sum.exe, you can try to grab **md5sum.exe** from <http://etree.org/software.html>. If you have downloaded **md5sum.exe** be sure to substitute for the correct tool below.

The **sha256sum.exe** program computes and displays hashes. To use it, save **sha256sum.exe** to the same directory as the ISO files. Select **Run...** from the Start menu and then enter **cmd** for the name of the program to start a **Command Prompt** window. Then change into the download directory. Run **sha256sum** with each ISO file like this:

```
cd "C:\Documents and Settings\Owner\My Documents\My Downloads\Fedora"
sha256sum.exe Fedora-18-i386-DVD.iso
```

The program takes some time to complete, since it must read the entire ISO file.

Open the file **CHECKSUM** with a text editor, such as **Notepad**, to display its contents. Make sure the hash displayed by **sha256sum.exe** for **each** of the downloaded ISO files **exactly** matches the corresponding hash in the **CHECKSUM** file.

If all of the hashes match, you can burn the ISO file to disc. If a file does not match, download it again.

3.4. Validating in Mac OS X

To check the files, download the program **HashTab** available from <http://beeblebrox.org/>.

Drag each Fedora image file that you want to validate, and drop it to **HashTab**. Take note of the SHA256 value that **HashTab** displays.

Open the file **CHECKSUM** with a text editor, such as **TextEdit**, to display its contents. Make sure the hash displayed by **HashTab** for **each** of the downloaded ISO files **exactly** matches the corresponding hash in the **CHECKSUM** file.

To validate the files from the command line, use the **shasum** command. In order to correctly validate the files, the 256-bit algorithm must be specified. Change into the directory that holds the ISO image files, then run **shasum**. For example:

```
cd Desktop
shasum -a 256 Fedora-18-i386-DVD.iso
```

If all of the hashes match, you can burn the ISO file to disc. If a file does not match, download it again.

3.5. Validating in Linux

Open a *terminal emulator*:

- on the GNOME desktop, click **Applications** **System Tools** **Terminal** to open **GNOME Terminal**
- on the KDE desktop, click **Kickoff Application Launcher** **Applications** **System** **Terminal** to open **Konsole**

Change into the directory that holds the ISO image files, then run **sha256sum**, for example:

```
$ cd Downloads
$ sha256sum Fedora-18-i386-DVD.iso
```

Open the file **CHECKSUM** with a text editor, such as **gedit** or **kwrite**, to display its contents. Make sure the hash displayed by **sha256sum** for **each** of the downloaded ISO files **exactly** matches the corresponding hash in the **CHECKSUM** file.

If all of the hashes match the hashes found at <http://fedoraproject.org/verify>, you can burn the ISO file to disc. If a file does not match, download it again.

4. Burning

The process of burning ISO images to disc varies according to your operating system and the software that you have available. This section provides a guide to some popular disc burning tools.

If you are burning a set of Fedora CDs, you can test that you are burning the discs correctly and that your computer can boot from these discs as soon as you have burnt the first disc in the set. Refer to [Section 5, “Next steps”](#) to learn how to start your computer from a Fedora disc. If you press **Enter** on the Fedora boot screen, the Fedora installer will offer you a chance to test the disc. If you discover a problem with the first disc before you burn an entire set, you could save time and discs. Note that the disc test option is available when you boot from a Fedora DVD, or CDR0M#1 from a Fedora CD set, but *not* when you boot from a Fedora Live CD.

If you are burning CDs, the steps below will need to be repeated for each CD in the set. It may be helpful to label the CDs with the number after each one completes.

4.1. Burning discs under Windows operating systems

4.1.1. Burning discs with Windows 7

1. Insert a blank, writable disc.
2. Right-click the ISO image file and select **Burn disc image**.
3. In the **Windows Disc Image Burner** window, check that the correct drive is identified in the **Disc burner** drop-down menu, then click **Burn**.

4.1.2. Burning discs with older Windows operating systems

The CD burning feature built into Windows XP and Windows Vista cannot burn CDs from images and Windows operating systems before Windows XP did not have any built-in CD burning capability at all. Therefore, to turn an ISO image files into a CD or DVD on Windows operating systems prior to Windows 7, you need separate disc burning software that can handle ISO image files. Although this is true of most disc burning software, exceptions exist.

Examples of popular CD burning software for Windows that you might already have on your computer include **InfraRecorder**, **Nero Burning ROM**, and **Roxio Creator**. If you use a Windows operating system on your computer and do not have disc burning software installed (or you are not sure that the software can burn discs from image files) **InfraRecorder** is a suitable solution available from <http://www.infrecorder.org/>, and is free and open-source.

The steps required to burn ISO images to disks with several popular CD burning applications are listed below.

4.1.2.1. Using InfraRecorder

Obtain and install InfraRecorder from the <http://infrecorder.org> web site.

1. Start **InfraRecorder**.
2. Select **Actions**.
3. Select **Burn Image**.
4. Choose the Fedora ISO file and select **open**.

5. Select 4X as the write speed.
6. Select **OK**.

4.1.2.2. Using The ISO Recorder V2 Power Toy

Obtain and install the ISO Recorder power toy from the <http://isorecorder.alexfeinman.com/isorecorder.htm> web site.

1. In the file manager **Explorer**, right click on the first Fedora ISO file.
2. In the context menu, select **Copy image to CD**.
3. Follow the steps given by the **CD Recording Wizard** pop-up.
4. Repeat for the remaining ISO files.

4.1.2.3. Using Roxio Easy Media Creator 7

1. Start **Creator Classic**.
2. Select **Other Tasks**.
3. Select **Burn from Disc Image File**.
4. Choose the Fedora ISO file and burn it.

4.1.2.4. Using Nero Burning ROM 5

1. Start the program.
2. Open the **File** menu.
3. Select **Burn Image**.
4. Choose the Fedora ISO file and burn it.
5. Repeat the above steps for each of the other ISO files.

4.1.2.5. Using Nero Express 6

1. Start the program.
2. Select **Disc Image or Saved Project**.
3. An **Open** dialog appears. Select the first Fedora ISO file. Click **Open**.
4. Set the writing speed for your disc recorder. The optimal setting depends on your specific hardware.
5. Click Next to burn.
6. Repeat the steps above for the other ISO files.

4.2. Burning discs under Mac OS X

1. Right or Control-click on the ISO file. A contextual menu appears.

2. Click **Open With** **Disk Utility**.
3. In the **Disk Utility** window, click the ISO file, then click the **Burn** icon in the toolbar. A **Burn Disc In** sheet slides down from the toolbar.
4. Insert a blank, writable disc.
5. Click **Burn**. When burning is complete, your computer ejects the now ready-to-use disc.

4.3. Burning discs under Linux

4.3.1. Burning discs on the GNOME desktop

CD/DVD Creator is disc burning software integrated with the GNOME desktop.

1. Right-click on the ISO image file that you downloaded and select **Write to disk**. The **Write to Disc** dialog box appears.
2. Click the **Write** button. **CD/DVD Creator** prompts you to insert a disc, then burns the image file to the disc.

4.3.2. Burning discs with K3b

K3b is the default disc burning software for the KDE desktop.

1. Click **Kickoff Application Launcher** **Applications** **Multimedia** **CD & DVD Burning** to launch **K3b**.
2. Click **Tools** **Burn CD Image** to burn a CD, or **Tools** **Burn DVD ISO Image** to burn a DVD. The **Burn CD Image** or **Burn Iso1660 Image to DVD** dialog box appears.
3. Use the button beside the **Image to burn** box to browse to the ISO image file.
4. Insert a blank disc, then click the **Start** button. **K3b** burns the image file to the disc.

4.3.3. Burning discs with Brasero

Brasero is disc burning software included with many Linux distributions, on a variety of desktops.

1. Launch **Brasero**.
2. Click **Burn image**.
3. Click **Click here to select a disc image** and browse to the ISO image file you downloaded.
4. Insert a blank disc, then click the **Burn** button. **Brasero** burns the image file to the disc.

4.3.4. Burning discs with wodim from the command line

wodim is a command line tool that makes burning iso files to disc easy. These instructions will help you to burn a disc when a Graphical User Interface is not available.

1. Install **wodim** with the command `su -c 'yum install wodim'`
2. Locate your cdrom drives location with `wodim --devices`. This should give something like the following:


```
[zoglesby@zlaptop ~]$ wodim --devices
wodim: Overview of accessible drives (1 found) :
-----
0  dev='/dev/scd0' rwrw-- : 'TSSTcorp' 'DVD+-RW TS-T633C'
-----
```

- Using the output from above identify your drive location. In this example it would be `/dev/scd0`, and issue the following command to burn the cd.

wodim -v dev=/dev/xxx speed=4 -eject /path/to/Fedora.iso.

Replace values

Be sure to replace the `dev=/dev/xxx` with your drive path, and `/path/to/Fedora.iso` to the actual path and name of the ISO file

5. Next steps

To boot your computer from the DVD or CDs that you have just produced:

- Insert the DVD or CDROM#1, then turn off your computer with the disc still in the drive.
- Restart your computer. As the computer starts, watch for a message that tells you to press a certain key to choose a boot device. The key varies from computer to computer but, on many systems, the required key will be **F12**, **F2**, **F1**, **Esc**, or **Delete**. Press the required key and select the CD or DVD drive that contains your disc.

If your computer does not offer you a boot menu, and a Fedora boot screen does not appear shortly after the computer starts, you might need to change the computer's boot sequence in its BIOS. Refer to the documentation that came with your computer for instructions. The details of this procedure vary widely from computer to computer.

- When the Fedora boot screen appears, you can proceed to install Fedora. Refer to the *Fedora 18 Installation Quick Start Guide* for basic instructions for most desktop and laptop computers, or the *Fedora 18 Installation Guide* for a full set of installation instructions. Both documents are available from <http://docs.fedoraproject.org>.

6. We Need Feedback!

If you find a typographical error in this manual, or if you have thought of a way to make this manual better, we would love to hear from you! Please submit a report in Bugzilla: <http://bugzilla.redhat.com/bugzilla/> against the product **Fedora Documentation**.

When submitting a bug report, be sure to mention the manual's identifier: *readme-burning-isos*

If you have a suggestion for improving the documentation, try to be as specific as possible when describing it. If you have found an error, please include the section number and some of the surrounding text so we can find it easily.

A. Revision History

Revision 18 **Mon Dec 24 2012**

Update for Fedora 18
Added content to clarify instructions.

Ben Cotton bcotton@fedoraproject.org

Revision 17 **Mon May 28 2012**

Update for Fedora 17
Added OS X CLI instructions
Corrected mis-formatted filenames

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14.0.1

Update for Fedora 14
Added text for InfraRecorder. (BZ 527854)

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13.1.0

Update for Fedora 13
Include instructions for Windows 7

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