jlye, Fotolia

Building a custom live CD with Fedora's livecd-creator

ORIGINAL SPIN

Fedora 7 comes with new tools for creating custom live CDs and custom .iso files. We'll show you how to get started with Fedora's new command-line tool, livecd-creator.

BY COLIN MCGREGOR

The traditional technique for building a Live CD is to enter a series of commands that create directories to represent the file systems on the finished CD. Then you can manually install the files you need in the appropriate directories, manipulate them as necessary, and assemble the directories into an *.iso* file, and the *.iso* is burned onto a CD or DVD.

This procedure is often error prone, and if you find you need to make some minor revisions three months down the road, you must repeat the process.

One solution to the repetition is to write scripts that assemble the files and build the CD. Homegrown scripts, however, add additional complications. Fedora's new command-line tool, livecd-creator, offers an alternative approach. Live-cd-creator lets you assemble a Live CD using a few simple commands, and you can even use a kickstart *.ks* configuration file to specifies the contents of the finished CD. Fedora 7 also comes with a GUI-based tool, Revisor (Figure 1), for creating custom *.isos* and Live CDs, and other similar utilities – such as openSUSE's Kiwi – are available. This article focuses on how to build a custom Live CD with livecd-creator.

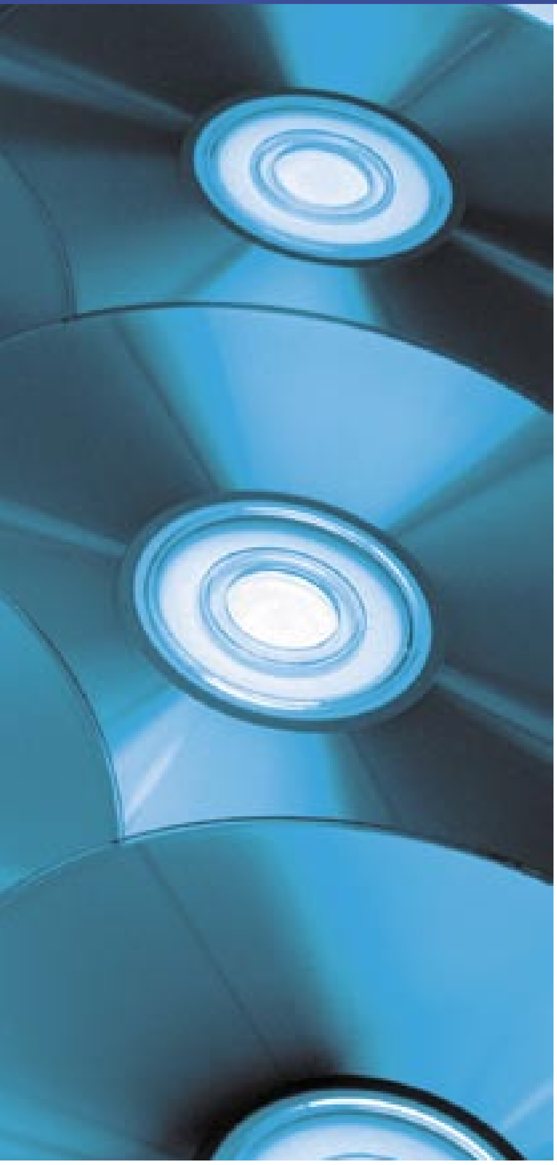
Getting Ready

Livecd-creator is not cross platform, so the computer you are using needs to be running Fedora or a close Fedora relative. Some of the steps in the process are memory intensive, so throw as much RAM as you can at the computer running livecd-creator. If you don't have enough RAM, your machine will use the hard drive for extra memory, which slows down the process.

By default, livecd-creator puts a large number of temporary files in */var/tmp*, which, depending on the size of your */var* partition, could be a problem. My solution was to create an extra directory in */home*, where I had a lot of free space. I started up a terminal session and entered the following:

```
su
<<root password>>
cd /var
rm -rf tmp
mkdir /home/tmp
ln -s /home/tmp tmp
exit
```

A small bug that can cause considerable grief with livecd-creator has shown up in



the yum package-manager program.

This bug is found in some updates to Fedora 7 and some of the pre-release versions of Fedora 8. The solution is to perform a regular software update or grab an updated version of yum from *http://koji.fedoraproject.org/koji/*

.ks File

The Live CD definition will appear in a kickstart-style *.ks* file. Kickstart files are normally used to allow people to automate Fedora installation. See */usr/share/livecd-tools/ for* some example livecd-creator-oriented kickstart files.

Depending on what you're doing, the files in */usr/share/livecd-tools/* may be all you need. Search online for more sample *.ks* files.

I created a directory called *livecd* in my home directory for *.ks* files. Any line that starts with a hash *#* in the files will be ignored. It is a good idea to make liberal use of *#* marks (rather than deleting unused lines) to simplify any changes you make later.

See */usr/share/livecd-tools/* for some ready-made *.ks* configuration files.

The Fedora project provides two Live CD configuration files:

- *livecd-fedora-minimal.ks* – the base Live CD system
- *livecd-fedora-desktop.ks* – complete desktop with applications and input/output support for supported locales.

The easiest approach to creating a custom CD is to start with one of these template files and then add your own customizations.

Simply copy the file to your *livecd* directory, and edit the file as necessary. Consult the Fedora documentation for a full description of the kickstart file format.

An example of a setting you may wish to change is the time zone:

```
timezone US/Central
```

See */usr/share/zoneinfo* for a full list of valid time zones.

For nations like the United States and Canada, which are stretched across a number of time zones, there is a directory with the country name and a collection of definition files, one for each time zone.

Also, you must tell the software where to get the packages and files used to create the Live CD, so make sure you have a line like the following in your *.ks* file:

```
repo -name=development ➥
--mirrorlist=http://mirrors.➥
fedoraproject.org/mirrorlist?➥
repo=rawhide&arch=$basearch
```

Rather than directly editing the template *.ks* file, you may want to add your customizations through an include file:

```
%include ➥
included-livecd-setup.ks
```

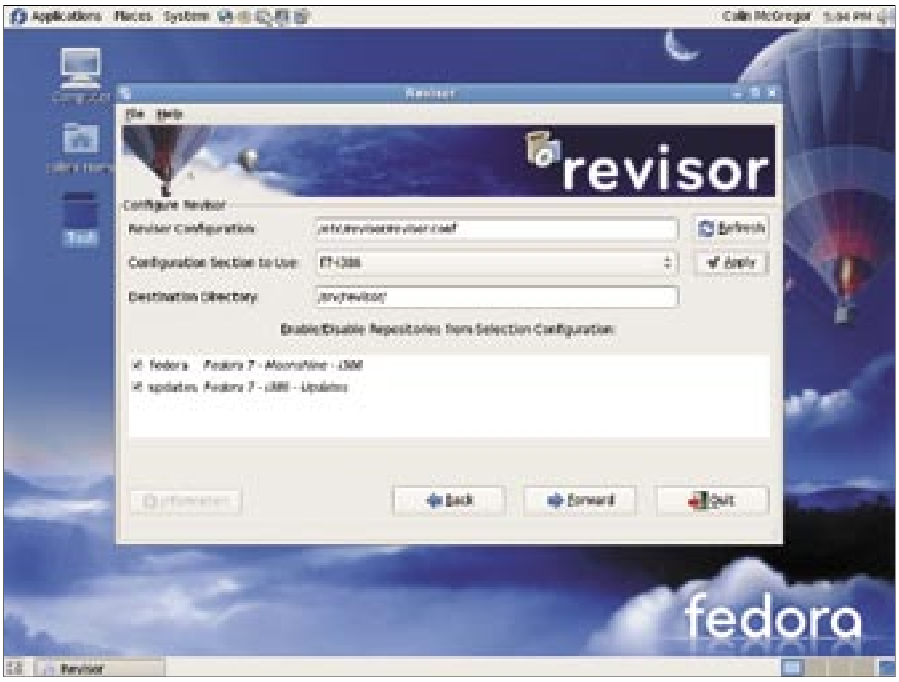
This command will let you apply the changes on top of the basic configuration file.

Adding and Removing Packages

Once you have tinkered with the basic settings, you'll need to decide which packages to include on the Live CD. The *.ks* file format provides a means for adding and removing packages from the Live CD configuration. Add the core Fedora packages as follows:

```
%packages
@base
@core
@hardware-support
@admin-tools
@base-x
```

The *%packages* line tells the system to treat the subsequent lines as software to be added or removed.



Revisor Configuration: /etc/revisor/revisor.conf

Configuration Section to Use: f7-i386

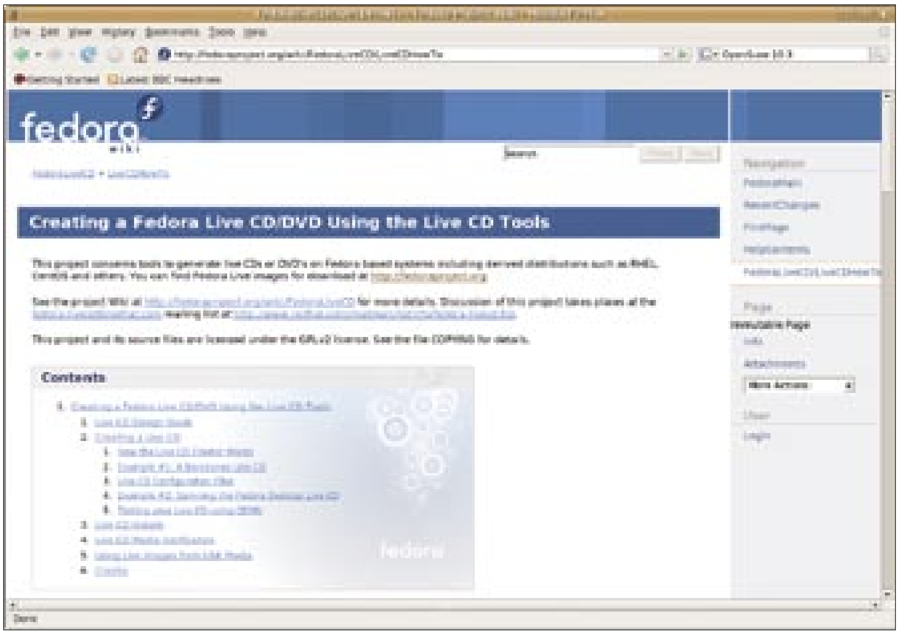
Destination Directory: /srv/revisor/

Enable/Disable Repositories from Selection Configuration:

☑ fedora Fedora 7 - Moonshine - i386

☑ updates Fedora 7 - i386 - Updates

Figure 1: Revisor is a GUI-based tool built on livecd-creator.



Creating a Fedora Live CD/DVD Using the Live CD Tools

This project concerns tools to generate live CDs or DVD's on Fedora based systems including derived distributions such as RHEL, CentOS and others. You can find Fedora Live images for download at http://fedoraproject.org

This project and its source files are licensed under the GPLv2 license. See the file COPYING for details.

Contents

Figure 2: See the Fedora wiki for additional information on working with livecd-creator.

Adding and Removing Programs

The next step is to add and/or remove programs from the core configuration to customize your CD. Add or remove individual programs with commands like:

```
anaconda
anaconda-runtime
-samba-client
```

Any program that starts with a minus sign (-) will be removed; any program without a minus sign will be added. The preceding code adds two anaconda programs and removes *samba-client*.

If you want to switch from installing or removing software to manipulating files that have been installed, use the *%post* command. Unless you specify otherwise, commands that run after the *%post* command are done in a *chroot* command jail. In the *chroot* jail, the commands are only run against the new file system created for the Live CD.

If you want to tie each CD to a staff member, you can easily add a login to the Live CD with:

```
# Add our user and apply a ⮐
password
useradd -c "Hari Seldon" hseldon
echo "newpass" | passwd --stdin ⮐
hseldon > /dev/null
```

The preceding code will place the plaintext password in the configuration file, but the password will not be written to the CD. Also, you may want to add additional security measures, such as virtual private network services.

You can also write configuration files to the Live CD for changing default webbrowser bookmarks and other settings. The following lines create the file that tells the CD the default desktop is KDE.

```
cat > ⮐
/etc/sysconfig/desktop <<EOF
DESKTOP="KDE"
DISPLAYMANAGER="KDE"
EOF
```

Once you have defined a *.ks* file, or a collection of connected *.ks* files, it is time to create the *.iso* file that you will burn onto a CD or DVD:

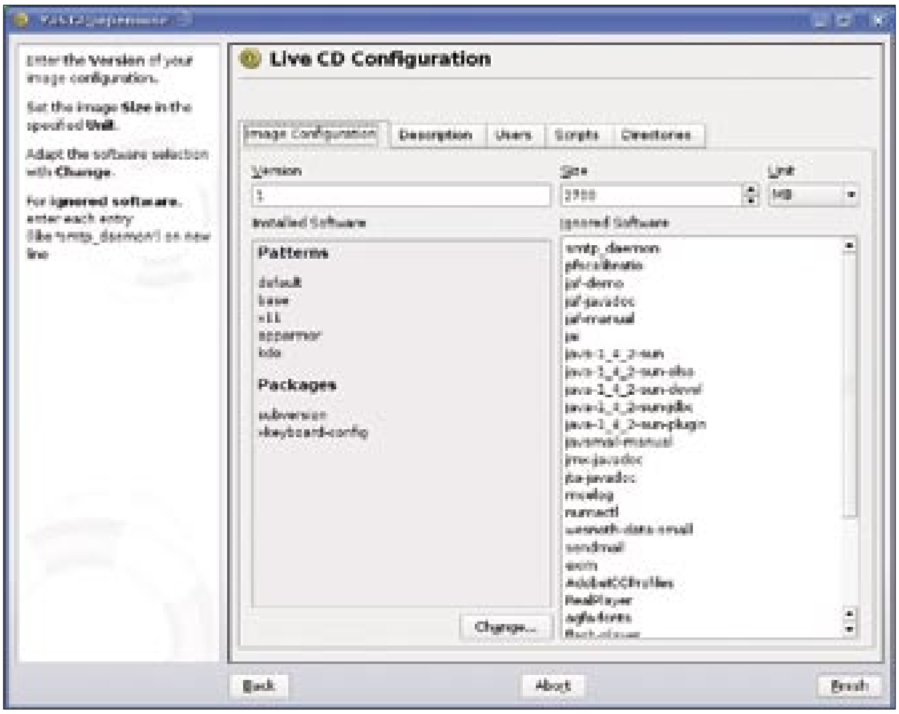
```
livecd-creator -config=my-⮐
config-file.ks -fslabel=⮐
mylive-fedora
```

Final Thoughts

The time necessary for creating the Live CD *.iso* varies depending on factors such as computer speed, packages, available RAM, and package sources. For example, when creating a basic KDE-based Fedora Live CD on a Sempron 2400 + PC with 768MB RAM and downloading files with a high-speed cable modem, the command takes a bit more than an hour. In the end, you'll have an *.iso* file you can burn to CD or DVD.

Creating a Live CD using livecd-creator presents some challenges, but far fewer than when creating a Live CD without such a tool.

Livecd-creator lets you skip much of the grunt work associated with creating a Live CD, and it turns the process into something reliable that's also easy to repeat and document. ■



Live CD Configuration

Enter the **Version** of your image configuration.

Set the image **Size** in the specified **Unit**.

Adapt the software selection with **Change**.

For **ignored software**, enter each entry (like 'smtp_daemon') on new line.

Version: 1

Size: 2700

Unit: MB

Installed Software

Patterns

default
base
x11
apparmor
kde

Packages

subversion
xkeyboard-config

Ignored Software

smtp_daemon
jaf-demo
jaf-javadoc
jaf-manual
java-1_4_2-sun
java-1_4_2-sun-alsa
java-1_4_2-sun-devel
java-1_4_2-sun-jdbc
java-1_4_2-sun-plugin
javamail-manual
jms-javadoc
jta-javadoc
numactl
sendmail
exim
AdobeICCProfiles
RealPlayer
agfa-fonts

Figure 3: The Kiwi image creator, which is now integrated into YaST, is SUSE's answer to Revisor and livecd-creator.