
How to Remaster Fedora Core

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Agenda

- ➔ Linux History
- ➔ Linux Distributions
- ➔ How to Remaster Fedora Core?
- ➔ Conclusion
- ➔ References



Linux History



GNU History

- ⇒ In 1983
- ⇒ Richard Stallman
- ⇒ It is free
 - free means freedom
- ⇒ GNU's Not Unix



Linux History

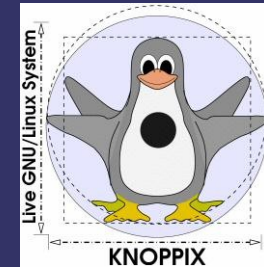
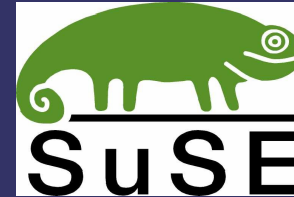
- ⇒ In 1991
- ⇒ Linus Torvalds
- ⇒ Based on Minix
- ⇒ GNU/Linux



Linux Distributions



Linux Distributions



Linux Distributions Ranking

- ➔ Ubuntu
- ➔ SuSE
- ➔ Mandriva
- ➔ Fedora Core
- ➔ MEPIS
- ➔ Damn Small
- ➔ Debian



Ubuntu

- ➔ Ubuntu Linux is a complete desktop Linux operating system.
- ➔ Freely available with both community and professional support.
- ➔ The "Ubuntu" is an ancient African word, meaning "humanity to others".



SuSE

- ➔ SUSE LINUX is the international technology leader and solutions provider in Open Source operating system software.
- ➔ SUSE LINUX was acquired by Novell, Inc in November 2003.



Mandriva

- ➔ Mandriva Linux was created in 1998.
- ➔ The goal of making Linux easier to use for everyone.



Fedora Core

- ➔ The Fedora Project is an openly-developed project designed by Red Hat.
- ➔ The goal of The Fedora Project is to work with the Linux community to build a complete, general purpose operating system exclusively from open source software.



MEPIS

- ➔ MEPIS Linux is a desktop Linux system that is also easy to configure as a dedicated server.
- ➔ It includes cutting-edge features such as a live/installation/recovery CD and



Damn Small

- ➔ Damn Small Linux is a business card size (50MB) Live CD Linux distribution.
- ➔ Despite its minuscule size it strives to have a functional and easy to use desktop.



Debian

- ➔ The Debian Project is an association of individuals who have made common cause to create a free operating system.
- ➔ Debian comes with over 8000 packages - all of it free.



What Makes Distros Different?

- ⇒ System Installer
 - Anaconda (Red Hat, Fedora and ...)
 - Yast (SuSE)
- ⇒ Package Management
 - RPM (Red Hat, Fedora, SuSE and ...)
 - DEB (Debian based distros)
 - TGZ (Slackware based distros)
- ⇒ Configuration System
 - Yast (SuSE)
 - system-config-* (Fedora)
- ⇒ Packages



How to Remaster Fedora Core



How to

- ➔ Step 1
 - Create a minimum system.
 - Rebuild the Anaconda.

- ➔ Step 2
 - Install Required packages.
 - Configure the system.

- ➔ Step 3
 - Create the iso file.



Step 1



Step 1

- ➔ Selecting the basic packages.
- ➔ Changing the comps.xml file.
- ➔ Changing the Anaconda logos.
- ➔ Rebuild the Anaconda.

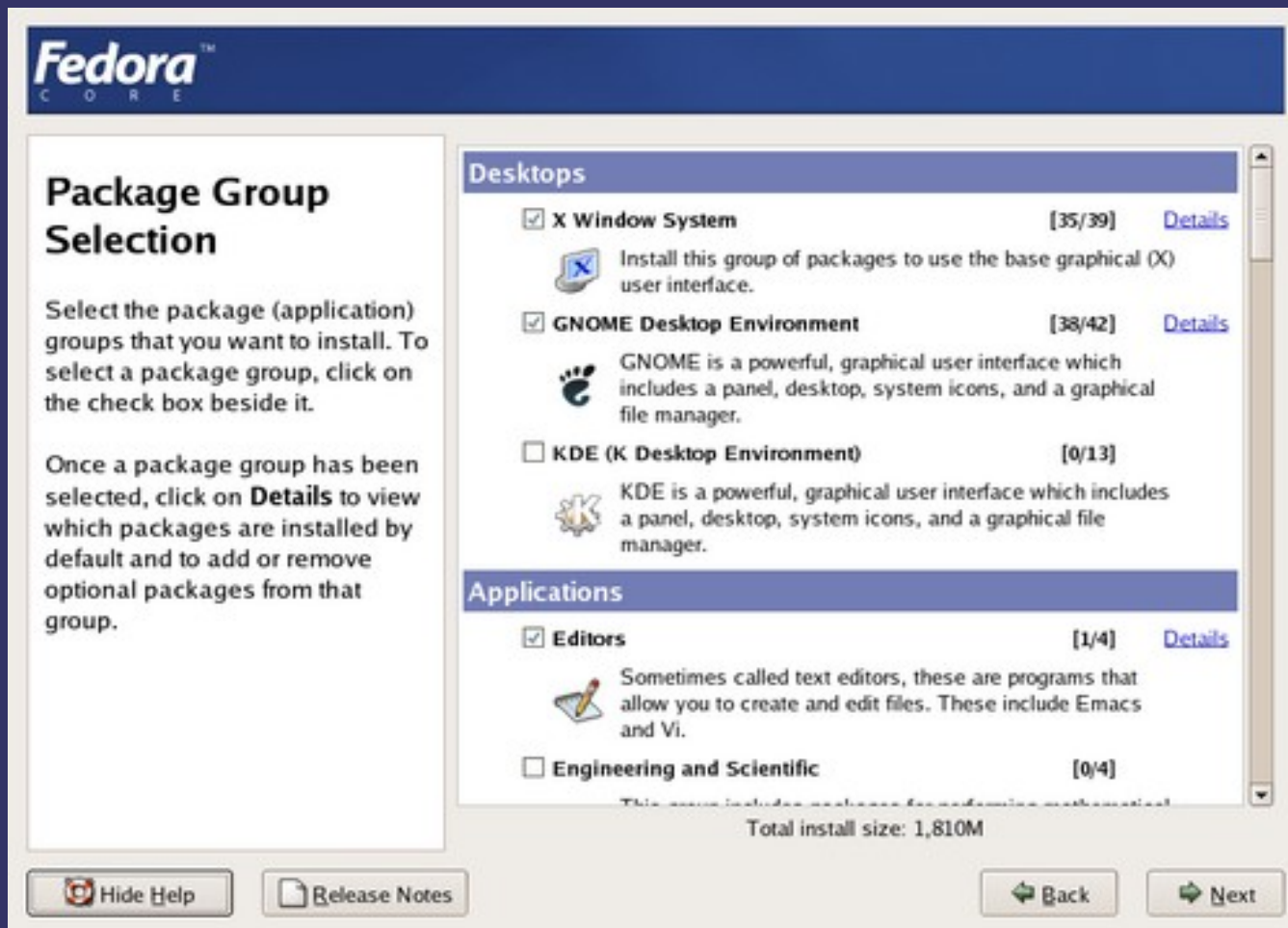


comps.xml

- ➔ The comps file defines how the packages are bundled during the installation.
- ➔ It is then broken into different sections
 - The first is the group lists
 - which describe the different groups available for selection during a Red Hat Linux installation.
 - The second section is a group hierarchy.
 - This defines an ordering of the groups by breaking them down into categories.
 - Finally, there is a section with the list of packages included and their resolved dependencies.



Anaconda – Group List



The screenshot shows the 'Package Group Selection' window in the Fedora Core Anaconda installer. The window has a blue header with the 'Fedora CORE' logo. On the left, a sidebar titled 'Package Group Selection' provides instructions: 'Select the package (application) groups that you want to install. To select a package group, click on the check box beside it.' and 'Once a package group has been selected, click on **Details** to view which packages are installed by default and to add or remove optional packages from that group.' Below the sidebar are buttons for 'Hide Help' and 'Release Notes'. The main area is divided into two sections: 'Desktops' and 'Applications'. The 'Desktops' section lists three groups: 'X Window System' (checked, [35/39]), 'GNOME Desktop Environment' (checked, [38/42]), and 'KDE (K Desktop Environment)' (unchecked, [0/13]). The 'Applications' section lists two groups: 'Editors' (checked, [1/4]) and 'Engineering and Scientific' (unchecked, [0/4]). At the bottom, there are 'Back' and 'Next' navigation buttons and a 'Total install size: 1,810M' indicator.


Fedora™
C O R E

Package Group Selection


Select the package (application) groups that you want to install. To select a package group, click on the check box beside it.

Once a package group has been selected, click on **Details** to view which packages are installed by default and to add or remove optional packages from that group.

Desktops

- X Window System** [35/39] [Details](#)
 Install this group of packages to use the base graphical (X) user interface.
- GNOME Desktop Environment** [38/42] [Details](#)
 GNOME is a powerful, graphical user interface which includes a panel, desktop, system icons, and a graphical file manager.
- KDE (K Desktop Environment)** [0/13]
 KDE is a powerful, graphical user interface which includes a panel, desktop, system icons, and a graphical file manager.

Applications

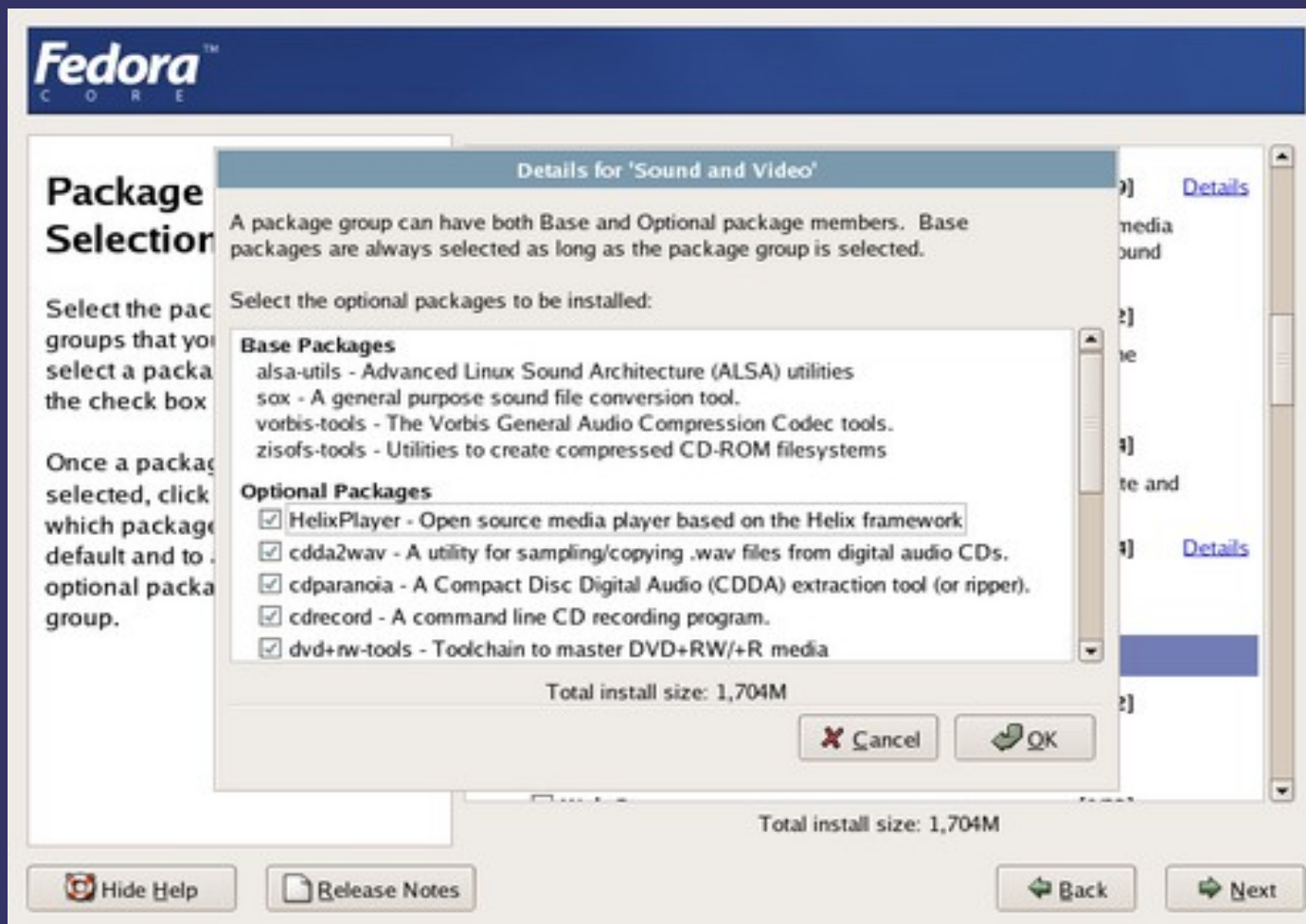
- Editors** [1/4] [Details](#)
 Sometimes called text editors, these are programs that allow you to create and edit files. These include Emacs and Vi.
- Engineering and Scientific** [0/4]
This group includes packages for performing mathematical

Total install size: 1,810M

[Hide Help](#) [Release Notes](#) [Back](#) [Next](#)



Anaconda – Detailed Group List



The screenshot shows the Fedora Core Package Selection dialog box. The main window has a blue header with the Fedora logo and the text "Fedora CORE". The title bar of the dialog box reads "Details for 'Sound and Video'".

Package Selection

Select the package groups that you want to install. To select a package group, click the check box next to the package group name.

Once a package group is selected, click the "Next" button to view the details for that package group. To return to the previous screen, click the "Back" button.

A package group can have both Base and Optional package members. Base packages are always selected as long as the package group is selected.

Select the optional packages to be installed:

Base Packages

- alsa-utils - Advanced Linux Sound Architecture (ALSA) utilities
- sox - A general purpose sound file conversion tool.
- vorbis-tools - The Vorbis General Audio Compression Codec tools.
- zisofs-tools - Utilities to create compressed CD-ROM filesystems

Optional Packages

- HelixPlayer - Open source media player based on the Helix framework.
- cdda2wav - A utility for sampling/copying .wav files from digital audio CDs.
- cdparanoia - A Compact Disc Digital Audio (CDDA) extraction tool (or ripper).
- cdrecord - A command line CD recording program.
- dvd+rw-tools - Toolchain to master DVD+RW/+R media

Total install size: 1,704M

Buttons: Cancel, OK

Buttons: Hide Help, Release Notes, Back, Next



comps.xml – Group list

```
<group>
  <id>somegroup</id>
  <name>Sample Group</name>
  <default>>true</default>
  <uservisible>>false</uservisible>
  <description>This is a silly sample group</description>
  <packagelist>
    <packagereq type="mandatory">bash</packagereq>
    <packagereq type="default">cpio</packagereq>
  </packagelist>
</group>
```



comps.xml – Group Hierarchy

```
<grouphierarchy>  
  <category>  
    <name>Random Groups</name>  
    <subcategories>  
      <subcategory>somegroup</subcategory>  
    </subcategories>  
  </category>  
</grouphierarchy>
```



Changing the Anaconda Logos

- ➔ fedora-logo-<ver>.rpm
- ➔ Download fedora-logo-<ver>.src.rpm
- ➔ Extract it.
- ➔ Replacing the logos.
- ➔ Rebuild the fedora-logo rpm file:
 - /usr/src/redhat/{BUILD,RPMS,SOURCES,SPECS,SRPMS}
 - rpmbuild -bb /usr/src/redhat/SPECS/fedora-logo.spec



Rebuild the Anaconda

- 1) Preparation
- 2) Updating
- 3) Cleanup
- 4) Build
- 5) Splitting the installation tree



Preparation

- ⇒ Installing necessary tools
 - anaconda
 - anaconda–help
 - anaconda–runtime
 - busybox–anaconda
- ⇒ Set the environment variable
 - export PYTHONPATH=/usr/lib/anaconda
 - export
PATH="\$PATH:/usr/lib/anaconda–runtime"
- ⇒ Copy the entire Fedora CD



Updating

- ➔ It consists of replacing the RPMs and src RPMs with updated versions.



Cleanup

➔ Removing extra files

- `find $FCBASE/fc3 -name TRANS.TBL -exec rm -f {} \;`
- `find $FCBASE/fc3 -name boot.cat -exec rm -f {} \;`



Build

➔ Update the hdlist file

```
genhdlist --productpath=DISTRO \  
$MYPATH/mydistro-cd
```

➔ Create the package order file

```
pkgorder $MYPATH/mydistro-cd i386 DISTRO \  
> $MYPATH/pkgfile
```

➔ Update the installation files

```
buildinstall --pkgorder $MYPATH/mydistro-cd \  
--version 1 --product "My Distro" \  
--release "My Distro" \  
--prodpath DISTRO \  
$MYPATH/mydistro-cd
```



Splitting The Installation Tree

- ➔ Split the distribution tree

```
splittree.py --arch=i386 \  
--total-discs=8 --bin-discs=4 \  
--src-discs=4 \  
--release-string="Fedora Core 3" \  
--pkgorderfile=$FCBASE/fc3/pkgfile \  
--distdir=$FCBASE/fc3/i386 \  
--srcdir=$FCBASE/fc3/i386/SRPMS \  
--productpath=Fedora
```

- ➔ Rebuild the hdlst

```
genhdlst --productpath=Fedora \  
--withnumbers \  
--fileorder $MYPATH/pkgfile \  
$MYPATH/mydistro-cd
```

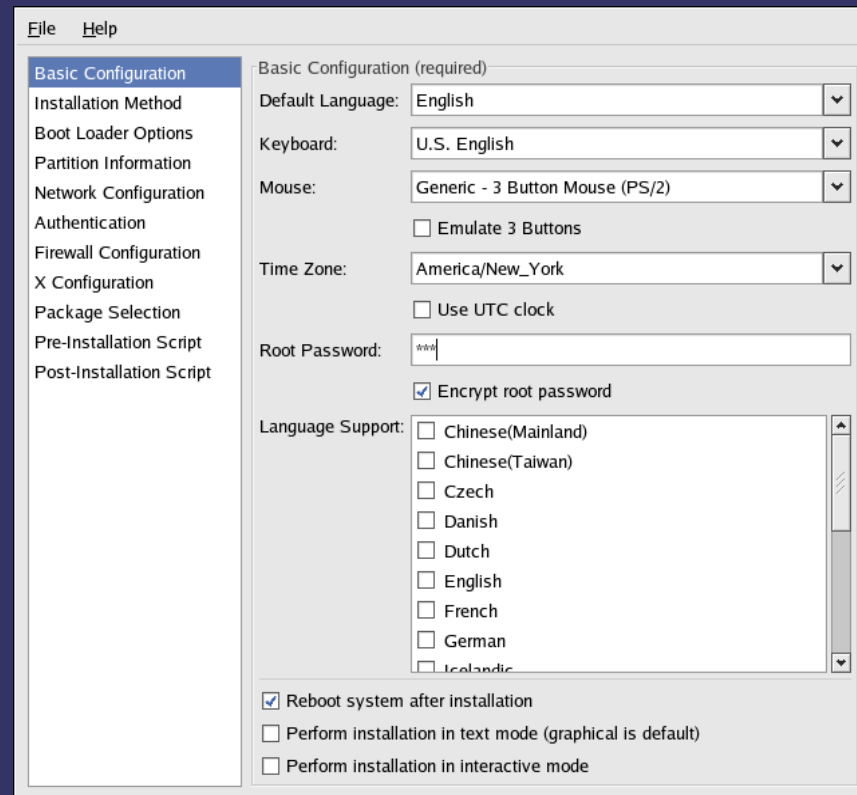


Step 2



Kickstart

- ➔ Using kickstart, a system administrator can create a single file containing the answers to all the questions that would normally be asked during a typical installation.



The screenshot shows a window titled "Basic Configuration (required)" with a menu on the left and configuration options on the right. The menu items are: Basic Configuration, Installation Method, Boot Loader Options, Partition Information, Network Configuration, Authentication, Firewall Configuration, X Configuration, Package Selection, Pre-Installation Script, and Post-Installation Script. The "Basic Configuration" section is active and contains the following options:

- Default Language: English
- Keyboard: U.S. English
- Mouse: Generic - 3 Button Mouse (PS/2)
 - Emulate 3 Buttons
- Time Zone: America/New_York
 - Use UTC clock
- Root Password: [masked]
 - Encrypt root password
- Language Support:
 - Chinese(Mainland)
 - Chinese(Taiwan)
 - Czech
 - Danish
 - Dutch
 - English
 - French
 - German
 - Icelandic
- Reboot system after installation
- Perform installation in text mode (graphical is default)
- Perform installation in interactive mode



Kickstart File

- ➔ Command section
- ➔ The %packages section
- ➔ The %pre and %post sections



Starting a Kickstart Installation

- ➔ To begin a kickstart installation, you must boot the system from boot media you have made.

```
linux ks=cdrom:/ks.cfg
```



My Distro Kickstart Config

- ➔ Creating CD device in /dev
- ➔ Finding the correct CD drive
- ➔ Doing required configuration for my distro



Creating CD Device

```
cd_list=`cat /proc/sys/dev/cdrom/info | head -n  
3 | tail -n 1 | cut -d ":" -f2`
```

```
for dev in $cd_list  
do
```

```
    major=`cat /sys/block/$dev/dev | cut -d: -f1`
```

```
    minor=`cat /sys/block/$dev/dev | cut -d: -f2`
```

```
    mknod /dev/$dev b $major $minor
```

```
done
```



Finding the Correct CD Drive

```
mkdir -p /mnt/cdrom
for dev in $cd_list
do
    mount /dev/$dev /mnt/cdrom
    if [ -d /mnt/cdrom/DISTRO ]; then
        magfa_cd=$dev
    fi
    sleep 1
    umount /mnt/cdrom
    sleep 1
done
```



Step 3



Creating The ISO File

➔ The bootable CD

```
mkisofs -R -J -T -v \  
-no-emul-boot -boot-load-size 4 \  
-boot-info-table \  
-V "My Distro" \  
-b isolinux/isolinux.bin -c isolinux/boot.cat \  
-x "lost+found" \  
-o mydistor.iso \  
$MYPATH/mydistro-cd
```



Creating The ISO File

➔ Other CDs

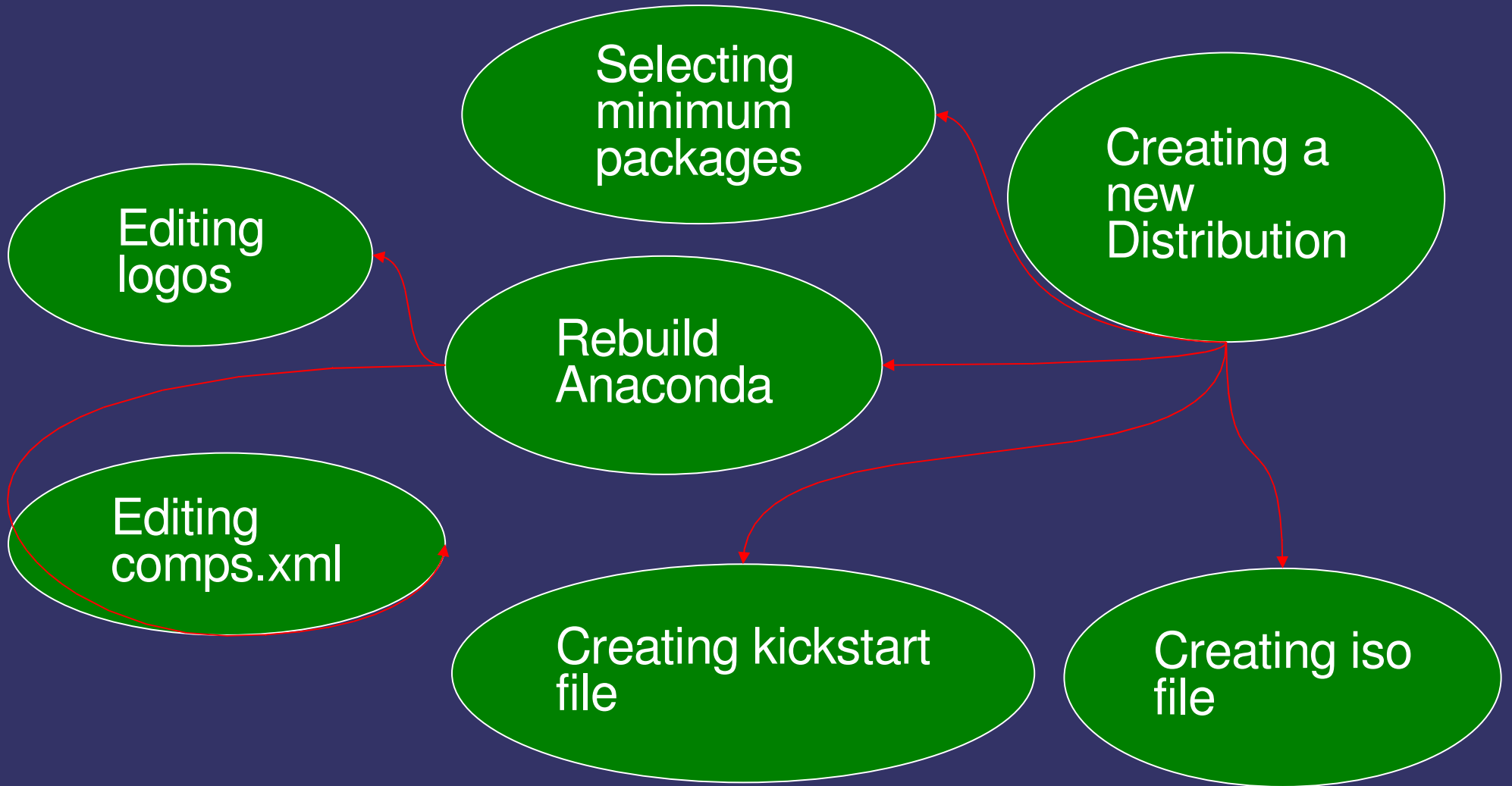
```
mkisofs -R -J -T -v \  
-V "My Distro" \  
-x "lost+found" \  
-o cd2.iso \  
i386-disc2
```



Conclusion



Conclusion



References



Refernces

- ➔ <http://www.redhat.com>
- ➔ <http://fedoraproject.org/wiki/Anaconda>
- ➔ <http://vn-x.com>
- ➔ <http://blagblagblag.com>
- ➔ <http://rhlinux.redhat.com/anaconda>



Questions



Comments

