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# **Pykickstart Documentation**

*Release 3.5*

**Anaconda Team**

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## Chapter 1. Introduction

### What are Kickstart Installations?

Many system administrators would prefer to use an automated installation method to install Fedora or Red Hat Enterprise Linux on their machines. To answer this need, Red Hat created the kickstart installation method. 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.

Kickstart files can be kept on a server system and read by individual computers during the installation. This installation method can support the use of a single kickstart file to install Fedora or Red Hat Enterprise Linux on multiple machines, making it ideal for network and system administrators.

The Fedora installation guide at <http://docs.fedoraproject.org/en-US/index.html> has a detailed section on kickstart.

## How Do You Perform a Kickstart Installation?

Kickstart installations can be performed using a local CD-ROM, a local hard drive, or via NFS, FTP, or HTTP.

To use kickstart, you must:

1. Create a kickstart file.
2. Create a boot diskette with the kickstart file or make the kickstart file available on the network.
3. Make the installation tree available.
4. Start the kickstart installation.

This chapter explains these steps in detail.

## Creating the Kickstart File

The kickstart file is a simple text file, containing a list of items, each identified by a keyword. You can create it by using the Kickstart Configurator application or by writing it from scratch. The Fedora or Red Hat Enterprise Linux installation program also creates a sample kickstart file based on the options that you selected during installation. It is written to the file `/root/anaconda-ks.cfg`. You should be able to edit it with any text editor or word processor that can save files as ASCII text.

First, be aware of the following issues when you are creating your kickstart file:

- While not strictly required, there is a natural order for sections that should be followed. Items within the sections do not have to be in a specific order unless otherwise noted. The section order is:
  1. Command section – Refer to Chapter 2 for a list of kickstart options. You must include the required options.
  2. The `%packages` section – Refer to Chapter 3 for details.
  3. The `%pre`, `%pre-install`, `%post`, `%onerror`, and `%traceback` sections – These sections can be in any order and are not required. Refer to Chapter 4, Chapter 5, and Chapter 6 for details.
- The `%packages`, `%pre`, `%pre-install`, `%post`, `%onerror`, and `%traceback` sections are all required to be closed with `%end`
- Items that are not required can be omitted.
- Omitting any required item will result in the installation program prompting the user for an answer to the related item, just as the user would be prompted during a typical installation. Once the answer is given, the installation will continue unattended unless it finds another missing item.
- Lines starting with a pound sign (`#`) are treated as comments and are ignored.
- If deprecated commands, options, or syntax are used during a kickstart installation, a warning message will be logged to the `anaconda.log`. Since deprecated items are usually removed within a release or two, it makes sense to check the installation log to make sure you haven't used any of them. When using `ksvalidator`, deprecated items will cause an error.

## Special Notes for Referring to Disks

Traditionally, disks have been referred to throughout Kickstart by a device node name (such as `sda`). The Linux kernel has moved to a more dynamic method where device names are not guaranteed to be consistent across reboots, so this can complicate usage in Kickstart scripts. To accommodate stable device naming, you can use any item from `/dev/disk` in place of a device node name. For example, instead of:

```
part / --fstype=ext4 --onpart=sda1
```

You could use an entry similar to one of the following:

```
part / --fstype=ext4 --onpart=/dev/disk/by-path/pci-0000:00:05.0-scsi-0:0:0:0-part1
part / --fstype=ext4 --onpart=/dev/disk/by-id/ata-ST3160815AS_6RA0C882-part1
```

This provides a consistent way to refer to disks that is more meaningful than just `sda`. This is especially useful in large storage environments.

You can also use shell-like entries to refer to disks. This is primarily intended to make it easier to use the `clearpart` and `ignoredisk` commands in large storage environments. For example, instead of:

```
ignoredisk --drives=sdaa, sdab, sdac
```

You could use an entry similar to the following:

```
ignoredisk --drives=/dev/disk/by-path/pci-0000:00:05.0-scsi-*
```

Finally, anywhere you want to refer to an existing partition or filesystem (say, in the `part --ondisk=`) option, you may also refer to the device by its filesystem label or UUID. This is done as follows:

```
part /data --ondisk=LABEL=data
part /misc --ondisk=UUID=819ff6de-0bd6-4bf4-8b72-dbe41033a85b
```

## Chapter 2. Kickstart Commands in Fedora

The following commands can be placed in a kickstart file. If you prefer to use a graphical interface for creating your kickstart file, you can use the Kickstart Configurator application.

Most commands take arguments. If an argument is followed equals mark (=), a value must be specified after it.

In the example commands, options in “[square brackets]” are optional arguments for the command.

pykickstart processes arguments to commands just like the shell does:

```
If a list of arguments can be passed in, the arguments must be separated by
commas and not include any extra spaces. If extra spaces are required in the
list of arguments, the entire argument must be surrounded by double quotes.
If quotes, spaces, or other special characters need to be added to the
arguments list, they must be escaped.
```

### auth or authconfig

```
auth|authconfig [options]
```

New in version Fedora3.

This required command sets up the authentication options for the system. This is just a wrapper around the `authconfig` program, so all options recognized by that program are valid for this command. See the manual page for `authconfig` for a complete list.

By default, passwords are normally encrypted and are not shadowed.

positional arguments:

```
[options]
```

See `man authconfig`.

New in version Fedora3.

## autopart

```
autopart [--encrypted] [--passphrase PASSPHRASE] [--escrowcert <url>]
  [--backuppassphrase] [--nolvm] [--type TYPE] [--cipher CIPHER]
  [--fstype FSTYPE] [--nohome] [--noboost] [--noswap]
```

New in version Fedora3.

Automatically create partitions – a root (/) partition, a swap partition, and an appropriate boot partition for the architecture. On large enough drives, this will also create a /home partition.

The `autopart` command can't be used with the `logvol`, `part/partition`, `raid`, `reqpart`, or `volgroup` in the same kickstart file.

optional arguments:

`--encrypted`

Should all devices with support be encrypted by default? This is equivalent to checking the “Encrypt” checkbox on the initial partitioning screen.

New in version Fedora9.

`--passphrase PASSPHRASE`

Only relevant if `--encrypted` is specified. Provide a default system-wide passphrase for all encrypted devices.

New in version Fedora9.

`--escrowcert <url>`

Only relevant if `--encrypted` is specified. Load an X.509 certificate from `<url>`. Store the data encryption keys of all encrypted volumes created during installation, encrypted using the certificate, as files in `/root`.

New in version Fedora12.

`--backuppassphrase`

Only relevant if `--escrowcert` is specified. In addition to storing the data encryption keys, generate a random passphrase and add it to all encrypted volumes created during installation. Then store the passphrase, encrypted using the certificate specified by `--escrowcert`, as files in `/root` (one file for each encrypted volume).

New in version Fedora12.

`--nolvm`

Don't use LVM when partitioning.

New in version Fedora16.

Changed in version Fedora17.

The same as `--type=plain`

`--type TYPE`

Select automatic partitioning scheme. Must be one of the following: [`'lvm'`, `'btrfs'`, `'partition'`, `'thinp'`, `'plain'`]. Plain means regular partitions with no `btrfs` or `lvm`.

New in version Fedora17.

Changed in version Fedora20.

Partitioning scheme ‘thinp’ was added.

`--cipher CIPHER`

Only relevant if `--encrypted` is specified. Specifies which encryption algorithm should be used to encrypt the filesystem.

New in version Fedora18.

`--fstype FSTYPE`

Use the specified filesystem type on the partitions. Note that it cannot be used with `--type=btrfs` since `btrfs` is both a partition scheme and a filesystem. eg. `--fstype=ext4`.

New in version Fedora21.

`--nohome`

Do not create a `/home` partition.

New in version Fedora26.

`--noboot`

Do not create a `/boot` partition.

New in version Fedora26.

`--noswap`

Do not create a swap partition.

New in version Fedora26.

## autostep

```
autostep [--autoscreenshot]
```

New in version Fedora3.

Kickstart normally skip unnecessary screens. This makes the installer step through every screen, displaying each briefly.

This is mostly used for debugging.

optional arguments:

`--autoscreenshot`

Take a screenshot at every step during installation and copy the images over to `/root/anaconda-screenshots` after installation is complete. This is most useful for documentation.

New in version Fedora3.

## bootloader

```
bootloader [--append APPENDLINE] [--location {mbr,partition,none,boot}]
  [--password PASSWORD] [--upgrade] [--driveorder DRIVEORDER]
  [--timeout TIMEOUT] [--default DEFAULT] [--iscrypted]
  [--md5pass _MD5PASS] [--boot-drive BOOTDRIVE] [--leavebootorder]
  [--extlinux] [--disabled] [--nombr]
```

New in version Fedora3.

This required command specifies how the boot loader should be installed.

There must be a biosboot partition for the bootloader to be installed successfully onto a disk that contains a GPT/GUID partition table, which includes disks initialized by anaconda. This partition may be created with the kickstart command `part biosboot --fstype=biosboot --size=1`. However, in the case that a disk has an existing biosboot partition, adding a `part biosboot` option is unnecessary.

optional arguments:

`--append APPENDLINE`

Specifies kernel parameters. The default set of bootloader arguments is “`rhgb quiet`”. You will get this set of arguments regardless of what parameters you pass to `-append`, or if you leave out `-append` entirely. For example:

```
``bootloader --location=mbr --append="hdd=ide-scsi ide=nodma"``
```

New in version Fedora3.

`--linear`

New in version Fedora3.

Removed in version Fedora4.

`--nonlinear`

New in version Fedora3.

Removed in version Fedora4.

`--location {mbr,partition,none,boot}`

Specifies where the boot record is written. Valid values are the following: `mbr` (the default), `partition` (installs the boot loader on the first sector of the partition containing the kernel), or `none` (do not install the boot loader).

New in version Fedora3.

`--password PASSWORD`

If using GRUB, sets the GRUB boot loader password. This should be used to restrict access to the GRUB shell, where arbitrary kernel options can be passed.

New in version Fedora3.

`--upgrade`

New in version Fedora3.

`--useLilo`

New in version Fedora3.

Removed in version Fedora4.

`--driveorder DRIVEORDER`

New in version Fedora3.

`--timeout TIMEOUT`

Specify the number of seconds before the bootloader times out and boots the default option.

New in version Fedora8.

`--default DEFAULT`

Sets the default boot image in the bootloader configuration.

New in version Fedora8.

`--lba32`

New in version Fedora3.

Deprecated since version Fedora12.

Removed in version Fedora14.

`--iscrypted`

If given, the password specified by `--password=` is already encrypted and should be passed to the bootloader configuration without additional modification.

New in version Fedora15.

`--md5pass _MD5PASS`

If using GRUB, similar to `--password=` except the password should already be encrypted.

New in version Fedora3.

Changed in version Fedora15.

If using GRUB, similar to `--password=` except the password should already be encrypted.

`--boot-drive BOOTDRIVE`

Specifies which drive the bootloader should be written to and thus, which drive the computer will boot from.

New in version Fedora17.

`--leavebootorder`

On EFI or ISeries/PSeries machines, this option prevents the installer from making changes to the existing list of bootable images.

New in version Fedora18.

`--extlinux`

Use the extlinux bootloader instead of GRUB. This option only works on machines that are supported by extlinux.

New in version Fedora19.

`--disabled`

Do not install the boot loader.

New in version Fedora21.

`--nombr`

New in version Fedora21.

## btrfs

```
btrfs [--noformat] [--useexisting] [--label LABEL] [--data DATALEVEL]
      [--metadata METADATALEVEL] [--subvol] [--parent PARENT] [--name NAME]
      [--mkfsoptions MKFSOPTS]
```

New in version Fedora17.

Defines a BTRFS volume or subvolume. This command is of the form:

```
btrfs <mntpoint> --data=<level> --metadata=<level> --label=<label>  
<partitions*>
```

for volumes and of the form:

```
btrfs <mntpoint> --subvol --name=<path> <parent>
```

for subvolumes.

The <partitions\*> (which denotes that multiple partitions can be listed) lists the BTRFS identifiers to add to the BTRFS volume. For subvolumes, should be the identifier of the subvolume's parent volume.

<mntpoint>

Location where the file system is mounted.

optional arguments:

--noformat

Use an existing BTRFS volume (or subvolume) and do not reformat the filesystem.

New in version Fedora17.

--useexisting

Same as --noformat.

New in version Fedora17.

--label LABEL

Specify the label to give to the filesystem to be made. If the given label is already in use by another filesystem, a new label will be created. This option has no meaning for subvolumes.

New in version Fedora17.

--data DATALEVEL

RAID level to use (0, 1, 10) for filesystem data. Optional. This option has no meaning for subvolumes.

New in version Fedora17.

--metadata METADATALEVEL

RAID level to use (0, 1, 10) for filesystem/volume metadata. Optional. This option has no meaning for subvolumes.

New in version Fedora17.

--subvol

Create BTRFS subvolume.

New in version Fedora17.

--parent PARENT

New in version Fedora17.

--name NAME

Subvolume name.

New in version Fedora17.

```
--mkfsoptions MKFSOPTS
```

Specifies additional parameters to be passed to the program that makes a filesystem on this partition. No processing is done on the list of arguments, so they must be supplied in a format that can be passed directly to the mkfs program. This means multiple options should be comma-separated or surrounded by double quotes, depending on the filesystem.

New in version Fedora23.

The following example shows how to create a BTRFS volume from member partitions on three disks with subvolumes for root and home. The main volume is not mounted or used directly in this example – only the root and home subvolumes:

```
part btrfs.01 --size=6000 --ondisk=sda
part btrfs.02 --size=6000 --ondisk=sdb
part btrfs.03 --size=6000 --ondisk=sd

btrfs none --data=0 --metadata=1 --label=f17 btrfs.01 btrfs.02 btrfs.03
btrfs / --subvol --name=root LABEL=f17
btrfs /home --subvol --name=home f17
```

## cdrom

```
cdrom
```

New in version Fedora3.

Install from the first CD-ROM/DVD drive on the system.

## clearpart

```
clearpart [--all] [--drives DRIVES] [--initlabel] [--linux] [--none]
          [--list DEVICES] [--disklabel DISKLABEL]
```

New in version Fedora3.

Removes partitions from the system, prior to creation of new partitions. By default, no partitions are removed.

If the clearpart command is used, then the `--onpart` command cannot be used on a logical partition.

optional arguments:

```
--all
```

Erases all partitions from the system.

New in version Fedora3.

```
--drives DRIVES
```

Specifies which drives to clear partitions from. For example, the following clears the partitions on the first two drives on the primary IDE controller:

```
``clearpart --all --drives=sda,sdb``
```

New in version Fedora3.

```
--initlabel
```

Initializes the disk label to the default for your architecture (for example msdos for x86 and gpt for Itanium). This is only meaningful in combination with the ‘-all’ option.

New in version Fedora3.

`--linux`

Erases all Linux partitions.

New in version Fedora3.

`--none`

Do not remove any partitions. This is the default

New in version Fedora3.

`--list DEVICES`

Specifies which partitions to clear. If given, this supersedes any of the `--all` and `--linux` options. This can be across different drives:

```
``clearpart --list=sda2,sda3,sdb1``
```

New in version Fedora17.

`--disklabel DISKLABEL`

Set the default disklabel to use. Only disklabels supported for the platform will be accepted. eg. msdos and gpt for x86\_64 but not dasd.

New in version Fedora21.

## graphical or text or cmdline

```
graphical|text|cmdline [--non-interactive]
```

New in version Fedora3.

Controls which display mode will be used during installation. If `cmdline` is chosen all required installation options must be configured via kickstart otherwise the installation will fail.

optional arguments:

`--non-interactive`

Perform the installation in a completely non-interactive mode. This mode will kill the installation when user interaction will be required. Can't be used with `cmdline` mode. This option is especially useful for automated testing purpose.

New in version Fedora26.

## device

```
device [--opts MODULEOPTS]
```

New in version Fedora3.

On most PCI systems, the installation program will autoprobe for Ethernet and SCSI cards properly. On older systems and some PCI systems, however, kickstart needs a hint to find the proper devices. The `device` command, which tells the installation program to install extra modules, is in this format:

```
device <moduleName> --opts=<options>
<moduleName>
```

Replace with the name of the kernel module which should be installed.

Deprecated since version Fedora24.

optional arguments:

```
--opts MODULEOPTS
```

Options to pass to the kernel module. For example:

```
--opts="aic152x=0x340 io=11"
```

New in version Fedora3.

## deviceprobe

```
deviceprobe
```

New in version Fedora3.

## dmraid

```
dmraid --name NAME --dev DEVICES
```

New in version Fedora6.

Deprecated since version Fedora24.

optional arguments:

```
--name NAME
```

New in version Fedora6.

```
--dev DEVICES
```

New in version Fedora6.

## driverdisk

```
driverdisk [--source SOURCE] [--biospart BIOSPART] [partition [partition ...]]
```

New in version Fedora3.

Driver diskettes can be used during kickstart installations. You need to copy the driver disk's contents to the root directory of a partition on the system's hard drive. Then you need to use the driverdisk command to tell the installation program where to look for the driver disk.

positional arguments:

```
partition
```

Partition containing the driver disk.

New in version Fedora3.

optional arguments:

`--source SOURCE`

Specify a URL for the driver disk. NFS locations can be given with `nfs:host:/path/to/img`.

New in version Fedora3.

`--biospart BIOSPART`

BIOS partition containing the driver disk (such as 82p2).

New in version Fedora4.

`--type TYPE`

New in version Fedora3.

Deprecated since version Fedora12.

Removed in version Fedora14.

## eula

```
eula [--agreed]
```

New in version Fedora20.

Automatically accept Red Hat's EULA

optional arguments:

`--agreed`, `--agree`, `--accepted`, `--accept`

Accept the EULA. This is mandatory option!

New in version Fedora20.

## fcoe

```
fcoe --nic NIC [--dcb]
```

New in version Fedora12.

optional arguments:

`--nic NIC`

New in version Fedora12.

`--dcb`

New in version Fedora13.

## firewall

```
firewall [--disable] [--enable] [--port PORTS] [--trust TRUSTS]
  [--service SERVICES] [--ftp] [--http] [--smtp] [--ssh]
  [--remove-service REMOVE_SERVICES]
```

New in version Fedora3.

This option corresponds to the Firewall Configuration screen in the installation program

optional arguments:

`--disable, --disabled`

Do not configure any iptables rules.

New in version Fedora3.

`--enable, --enabled`

Reject incoming connections that are not in response to outbound requests, such as DNS replies or DHCP requests. If access to services running on this machine is needed, you can choose to allow specific services through the firewall.

New in version Fedora3.

`--high HIGH`

New in version Fedora3.

Deprecated since version Fedora3.

Removed in version Fedora9.

`--medium MEDIUM`

New in version Fedora3.

Deprecated since version Fedora3.

Removed in version Fedora9.

`--port PORTS`

You can specify that ports be allowed through the firewall using the port:protocol format. You can also specify ports numerically. Multiple ports can be combined into one option as long as they are separated by commas. For example:

```
``firewall --port=imap:tcp,1234:ucp,47``
```

New in version Fedora3.

`--trust TRUSTS`

Listing a device here, such as eth0, allows all traffic coming from that device to go through the firewall. To list more than one device, use `-trust eth0 -trust eth1`. Do NOT use a comma-separated format such as `-trust eth0, eth1`.

New in version Fedora3.

`--service SERVICES`

This option provides a higher-level way to allow services through the firewall. Some services (like cups, avahi, etc.) require multiple ports to be open or other special configuration in order for the service to work. You could specify each individual service with the `--port` option, or specify `--service=` and open them all at once.

Valid options are anything recognized by the `firewall-cmd` program in the `firewalld` package. If `firewalld` is running:

```
``firewall-cmd --get-services``
```

will provide a list of known service names.

New in version Fedora10.

`--ftp`

New in version Fedora3.

Changed in version Fedora10.

`--http`

New in version Fedora3.

Changed in version Fedora10.

`--smtp`

New in version Fedora3.

Changed in version Fedora10.

`--ssh`

New in version Fedora3.

Changed in version Fedora10.

`--telnet TELNET`

New in version Fedora3.

Deprecated since version Fedora10.

Removed in version Fedora14.

`--remove-service REMOVE_SERVICES`

New in version Fedora20.

## firstboot

```
firstboot [--disable] [--enable] [--reconfig]
```

New in version Fedora3.

Determine whether the Setup Agent starts the first time the system is booted. If enabled, the `initial-setup` package must be installed. If not specified, the setup agent (`initial-setup`) is disabled by default.

optional arguments:

`--disable, --disabled`

The Setup Agent is not started the first time the system boots.

New in version Fedora3.

`--enable, --enabled`

The Setup Agent is started the first time the system boots.

New in version Fedora3.

`--reconfig`

Enable the Setup Agent to start at boot time in reconfiguration mode. This mode enables the language, mouse, keyboard, root password, security level, time zone, and networking configuration options in addition to the default ones.

New in version Fedora3.

## group

```
group --name NAME [--gid GID]
```

New in version Fedora12.

Creates a new user group on the system. If a group with the given name or GID already exists, this command will fail. In addition, the `user` command can be used to create a new group for the newly created user.

optional arguments:

`--name NAME`

Provides the name of the new group.

New in version Fedora12.

`--gid GID`

The group's GID. If not provided, this defaults to the next available non-system GID.

New in version Fedora12.

## reboot or poweroff or shutdown or halt

```
reboot|poweroff|shutdown|halt [--eject] [--kexec]
```

New in version Fedora3.

`reboot`

Reboot after the installation is complete. Normally, kickstart displays a message and waits for the user to press a key before rebooting.

`poweroff`

Turn off the machine after the installation is complete. Normally, kickstart displays a message and waits for the user to press a key before rebooting.

`shutdown`

At the end of installation, shut down the machine. This is the same as the `poweroff` command. Normally, kickstart displays a message and waits for the user to press a key before rebooting.

`halt`

At the end of installation, display a message and wait for the user to press a key before rebooting. This is the default action.

Changed in version Fedora18.

The 'halt' command was added!

optional arguments:

`--eject`

Attempt to eject CD or DVD media before rebooting.

New in version Fedora6.

`--kexec`

Use kexec to reboot into the new system, bypassing BIOS/Firmware and bootloader.

New in version Fedora23.

## harddrive

```
harddrive [--biospart BIOSPART] [--partition PARTITION] --dir DIR
```

New in version Fedora3.

Install from a directory of ISO images on a local drive, which must be either vfat or ext2. In addition to this directory, you must also provide the `install.img` in some way. You can either do this by booting off the `boot.iso` or by creating an `images/` directory in the same directory as the ISO images and placing `install.img` in there.

optional arguments:

`--biospart BIOSPART`

BIOS partition to install from (such as `82p2`).

New in version Fedora3.

`--partition PARTITION`

Partition to install from (such as, `sdb2`).

New in version Fedora3.

`--dir DIR`

Directory containing both the ISO images and the `images/install.img`. For example:

```
``harddrive --partition=hdb2 --dir=/tmp/install-tree``
```

New in version Fedora3.

## ignoredisk

```
ignoredisk [--drives IGNOREDISK] [--only-use ONLYUSE] [--interactive]
```

New in version Fedora3.

Controls anaconda's access to disks attached to the system. By default, all disks will be available for partitioning. Only one of the following three options may be used.

optional arguments:

`--drives IGNOREDISK`

Specifies those disks that anaconda should not touch when partitioning, formatting, and clearing.

New in version Fedora3.

Changed in version Fedora8.

This argument is no longer required!

`--only-use ONLYUSE`

Specifies the opposite - only disks listed here will be used during installation.

New in version Fedora8.

`--interactive`

Allow the user manually navigate the advanced storage screen.

New in version RedHatEnterpriseLinux6.

## install

```
install [--root-device ROOT_DEVICE]
```

Install a fresh system. You must specify the type of installation from one of `cdrom`, `harddrive`, `nfs`, or `url` (for `ftp` or `http` installations). The `install` command and the installation method command must be on separate lines.

Important: before Fedora 20 this command was known as `install` or `upgrade` but the `upgrade` part was deprecated!

optional arguments:

`--root-device ROOT_DEVICE`

On a system with multiple installs, this option specifies which filesystem holds the installation to be upgraded. This can be specified by device name, `UUID=`, or `LABEL=` just like the `harddrive` command may be.

New in version Fedora11.

## interactive

```
interactive
```

New in version Fedora3.

Use interactive kickstart installation method.

Deprecated since version Fedora14.

## iscsi

```
iscsi [--target TARGET] --ipaddr IPADDR [--port PORT] [--user USER]
      [--password PASSWORD] [--reverse-user USER_IN]
      [--reverse-password PASSWORD_IN] [--iface IFACE]
```

New in version Fedora6.

Specifies additional iSCSI storage to be attached during installation. If you use the `iscsi` parameter, you must also assign a name to the iSCSI node, using the `iscsiname` parameter. The `iscsiname` parameter must appear before the `iscsi` parameter in the kickstart file.

We recommend that wherever possible you configure iSCSI storage in the system BIOS or firmware (iBFT for Intel systems) rather than use the `iscsi` parameter. Anaconda automatically detects and uses disks configured in BIOS or firmware and no special configuration is necessary in the kickstart file.

If you must use the `iscsi` parameter, ensure that networking is activated at the beginning of the installation, and that the `iscsi` parameter appears in the kickstart file before you refer to iSCSI disks with parameters such as `clearpart` or `ignoredisk`.

optional arguments:

`--target TARGET`

The target iqn.

New in version Fedora6.

`--ipaddr IPADDR`

The IP address of the target to connect to.

New in version Fedora6.

`--port PORT`

The port number to connect to (default, `--port=3260`).

New in version Fedora6.

`--user USER`

The username required to authenticate with the target.

New in version Fedora6.

`--password PASSWORD`

The password that corresponds with the username specified for the target.

New in version Fedora6.

`--reverse-user USER_IN`

The username required to authenticate with the initiator from a target that uses reverse CHAP authentication.

New in version Fedora10.

`--reverse-password PASSWORD_IN`

The password that corresponds with the username specified for the initiator.

New in version Fedora10.

`--iface IFACE`

Bind connection to specific network interface instead of using the default one determined by network layer. Once used, it must be specified for all `iscsi` commands.

New in version Fedora17.

## iscsiname

```
iscsiname <iqn>
```

New in version Fedora6.

Assigns an initiator name to the computer. If you use the `iscsi` parameter in your kickstart file, this parameter is mandatory, and you must specify `iscsiname` in the kickstart file before you specify `iscsi`.

positional arguments:

<iqn>

IQN name

New in version Fedora6.

## keyboard

```
keyboard [--vckeymap VC_KEYMAP] [--xlayouts X_LAYOUTS]
        [--switch SWITCH_OPTIONS]
        [kbd [kbd ...]]
```

New in version Fedora3.

This required command sets system keyboard type.

Changed in version Fedora18.

See the documentation of `--vckeymap` option and the tip at the end of this section for a guide how to get values accepted by this command.

Either `--vckeymap` or `--xlayouts` must be used.

Alternatively, use the older format, `arg`, which is still supported. `arg` can be an X layout or VConsole keymap name.

Missing values will be automatically converted from the given one(s).

positional arguments:

kbd

Keyboard type

New in version Fedora3.

optional arguments:

`--vckeymap VC_KEYMAP`

Specify VConsole keymap that should be used. is a keymap name which is the same as the filename under `/usr/lib/kbd/keymaps/` without the `.map.gz` extension.

New in version Fedora18.

`--xlayouts X_LAYOUTS`

Specify a list of X layouts that should be used (comma-separated list without spaces). Accepts the same values as `setxkbmap(1)`, but uses either the layout format (such as `cz`) or the 'layout (variant)' format (such as `'cz (qwerty)'`). For example:

```
``keyboard --xlayouts=cz,'cz (qwerty)''
```

New in version Fedora18.

`--switch SWITCH_OPTIONS`

Specify a list of layout switching options that should be used (comma-separated list without spaces). Accepts the same values as `setxkbmap(1)` for layout switching. For example:

```
``keyboard --xlayouts=cz,'cz (qwerty)' --switch=grp:alt_shift_toggle``
```

New in version Fedora18.

*If you know only the description of the layout (e.g. Czech (qwerty)), you can use [http://vpodzime.fedorapeople.org/layouts\\_list.py](http://vpodzime.fedorapeople.org/layouts_list.py) to list all available layouts and find the one you want to use. The string in square brackets is the valid layout specification as Anaconda accepts it. The same goes for switching options and [http://vpodzime.fedorapeople.org/switching\\_list.py](http://vpodzime.fedorapeople.org/switching_list.py)*

## lang

```
lang [--addsupport LOCALE] <lang>
```

New in version Fedora3.

This required command sets the language to use during installation and the default language to use on the installed system to `<id>`. This can be the same as any recognized setting for the `$LANG` environment variable, though not all languages are supported during installation.

Certain languages (mainly Chinese, Japanese, Korean, and Indic languages) are not supported during text mode installation. If one of these languages is specified using the `lang` command, installation will continue in English though the running system will have the specified language by default.

The file `/usr/share/system-config-language/locale-list` provides a list the valid language codes in the first column of each line and is part of the `system-config-languages` package.

positional arguments:

`<lang>`

Language ID.

New in version Fedora3.

optional arguments:

`--addsupport LOCALE`

Install the support packages for the given locales, specified as a comma-separated list. Each locale may be specified in the same ways as the primary language may be, as described above.

New in version Fedora19.

## langsupport

```
langsupport [--default DEFLANG]
```

New in version Fedora3.

Install the support packages for the given locales.

Deprecated since version Fedora5.

optional arguments:

`--default DEFLANG`

Default locale

New in version Fedora3.

## lilo

```
lilo [--append APPENDLINE] [--linear] [--nolinear]
    [--location {mbr,partition,none,boot}] [--lba32] [--password PASSWORD]
    [--md5pass MD5PASS] [--upgrade] [--useLilo] [--driveorder DRIVEORDER]
```

New in version Fedora3.

This required command specifies how the boot loader should be installed.

There must be a biosboot partition for the bootloader to be installed successfully onto a disk that contains a GPT/GUID partition table, which includes disks initialized by anaconda. This partition may be created with the kickstart command `part biosboot --fstype=biosboot --size=1`. However, in the case that a disk has an existing biosboot partition, adding a `part biosboot` option is unnecessary.

optional arguments:

`--append APPENDLINE`

Specifies kernel parameters. The default set of bootloader arguments is “rhgb quiet”. You will get this set of arguments regardless of what parameters you pass to `--append`, or if you leave out `--append` entirely. For example:

```
``bootloader --location=mbr --append="hdd=ide-scsi ide=nodma"``
```

New in version Fedora3.

`--linear`

New in version Fedora3.

`--nolinear`

New in version Fedora3.

`--location {mbr,partition,none,boot}`

Specifies where the boot record is written. Valid values are the following: `mbr` (the default), `partition` (installs the boot loader on the first sector of the partition containing the kernel), or `none` (do not install the boot loader).

New in version Fedora3.

`--lba32`

New in version Fedora3.

`--password PASSWORD`

If using GRUB, sets the GRUB boot loader password. This should be used to restrict access to the GRUB shell, where arbitrary kernel options can be passed.

New in version Fedora3.

`--md5pass MD5PASS`

If using GRUB, similar to `--password=` except the password should already be encrypted.

New in version Fedora3.

`--upgrade`

New in version Fedora3.

`--useLilo`

New in version Fedora3.

`--driveorder DRIVEORDER`

New in version Fedora3.

## lilocheck

```
lilocheck
```

New in version Fedora3.

## liveimg

```
liveimg --url <url> [--proxy <proxyurl>] [--noverifyssl] [--checksum <sha256>]
```

New in version Fedora19.

Install a disk image instead of packages. The image can be the squashfs.img from a Live iso, or any filesystem mountable by the install media (eg. ext4). Anaconda expects the image to contain utilities it needs to complete the system install so the best way to create one is to use livemedia-creator to make the disk image. If the image contains /LiveOS/\*.img (this is how squashfs.img is structured) the first \*.img file inside LiveOS will be mounted and used to install the target system. The URL may also point to a tarfile of the root filesystem. The file must end in .tar, .tbz, .tgz, .txz, .tar.bz2, tar.gz, tar.xz

optional arguments:

`--url <url>`

The URL to install from. http, https, ftp and file are supported.

New in version Fedora19.

`--proxy <proxyurl>`

Specify an HTTP/HTTPS/FTP proxy to use while performing the install. The various parts of the argument act like you would expect. Syntax is:

```
``--proxy=[protocol://][username[:password]@]host[:port]``
```

New in version Fedora19.

`--noverifyssl`

For a tree on a HTTPS server do not check the server's certificate with what well-known CA validate and do not check the server's hostname matches the certificate's domain name.

New in version Fedora19.

`--checksum <sha256>`

Optional sha256 checksum of the image file

New in version Fedora19.

## logging

```
logging [--host HOST] [--port PORT]
        [--level {debug,info,warning,error,critical}]
```

New in version Fedora6.

This command controls the error logging of anaconda during installation. It has no effect on the installed system.

optional arguments:

--host HOST

Send logging information to the given remote host, which must be running a syslogd process configured to accept remote logging.

New in version Fedora6.

--port PORT

If the remote syslogd process uses a port other than the default, it may be specified with this option.

New in version Fedora6.

--level {debug,info,warning,error,critical}

Specify the minimum level of messages that appear on tty3. All messages will still be sent to the log file regardless of this level, however.

New in version Fedora6.

## logvol

```
logvol [--fstype FSTYPE] [--grow] [--maxsize MAXSIZE] --name NAME
        [--noformat] [--percent PERCENT] [--recommended] [--size SIZE]
        [--useexisting] --vgname VGNAME [--fsoptions FSOPTS]
        [--fsprofile FSPROFILE] [--encrypted] [--passphrase PASSPHRASE]
        [--escrowcert <url>] [--backuppssphrase] [--label LABEL] [--resize]
        [--hibernation] [--cipher CIPHER] [--thinpool] [--thin]
        [--poolname POOL_NAME] [--chunksize CHUNK_SIZE]
        [--metadatasize METADATA_SIZE] [--profile PROFILE]
        [--cachesize CACHE_SIZE] [--cachemode CACHE_MODE]
        [--cachepvs CACHE_PVS] [--mkfsoptions MKFSOPTS]
        <mntpoint>
```

New in version Fedora3.

Create a logical volume for Logical Volume Management (LVM).

positional arguments:

<mntpoint>

Mountpoint for this logical volume or 'none'.

New in version Fedora3.

optional arguments:

--fstype FSTYPE

Sets the file system type for the logical volume. Valid values include `ext4`, `ext3`, `ext2`, `btrfs`, `swap`, and `vfat`. Other filesystems may be valid depending on command line arguments passed to Anaconda to enable other filesystems.

New in version Fedora3.

`--grow`

Tells the logical volume to grow to fill available space (if any), or up to the maximum size setting. Note that `--grow` is not supported for logical volumes containing a RAID volume on top of them.

New in version Fedora3.

`--maxsize MAXSIZEMB`

The maximum size in MiB the logical volume may grow to. Specify an integer value here, and do not append any units. This option is only relevant if `--grow` is specified as well.

New in version Fedora3.

`--name NAME`

The name of this logical volume.

New in version Fedora3.

`--noformat`

Use an existing logical volume and do not format it.

New in version Fedora3.

`--percent PERCENT`

Specify the size of the logical volume as a percentage of available space in the volume group. Without the above `--grow` option, this may not work.

New in version Fedora3.

`--recommended`

Determine the size of the logical volume automatically.

New in version Fedora3.

`--size SIZE`

Size of this logical volume.

New in version Fedora3.

`--useexisting`

Use an existing logical volume and reformat it.

New in version Fedora3.

`--vgname VGNAME`

Name of the Volume Group this logical volume belongs to.

New in version Fedora3.

`--fsoptions FSOPTS`

Specifies a free form string of options to be used when mounting the filesystem. This string will be copied into the `/etc/fstab` file of the installed system and should be enclosed in quotes.

New in version Fedora4.

`--bytes-per-inode BYTES_PER_INODE`

Specify the bytes/inode ratio.

New in version Fedora4.

Deprecated since version Fedora9.

Removed in version Fedora14.

`--fsprofile FSPROFILE`

Specifies a usage type to be passed to the program that makes a filesystem on this partition. A usage type defines a variety of tuning parameters to be used when making a filesystem. For this option to work, the filesystem must support the concept of usage types and there must be a configuration file that lists valid types. For ext2/3/4, this configuration file is `/etc/mke2fs.conf`.

New in version Fedora9.

`--encrypted`

Specify that this logical volume should be encrypted.

New in version Fedora9.

`--passphrase PASSPHRASE`

Specify the passphrase to use when encrypting this logical volume. Without the above `--encrypted` option, this option does nothing. If no passphrase is specified, the default system-wide one is used, or the installer will stop and prompt if there is no default.

New in version Fedora9.

`--escrowcert <url>`

Load an X.509 certificate from `<url>`. Store the data encryption key of this logical volume, encrypted using the certificate, as a file in `/root`. Only relevant if `--encrypted` is specified as well.

New in version Fedora12.

`--backuppassphrase`

Only relevant if `--escrowcert` is specified as well. In addition to storing the data encryption key, generate a random passphrase and add it to this logical volume. Then store the passphrase, encrypted using the certificate specified by `--escrowcert`, as a file in `/root`. If more than one LUKS volume uses `--backuppassphrase`, the same passphrase will be used for all such volumes.

New in version Fedora12.

`--label LABEL`

Specify the label to give to the filesystem to be made. If the given label is already in use by another filesystem, a new label will be created.

New in version Fedora15.

`--resize`

Attempt to resize this logical volume to the size given by `--size=`. This option must be used with `--useexisting --size=`, or an error will be raised.

New in version Fedora17.

`--hibernation`

This option can be used to automatically determine the size of the swap partition big enough for hibernation.

New in version Fedora18.

`--cipher CIPHER`

Only relevant if `--encrypted` is specified. Specifies which encryption algorithm should be used to encrypt the filesystem.

New in version Fedora18.

`--thinpool`

Create a thin pool logical volume. Use a mountpoint of 'none'.

New in version Fedora20.

`--thin`

Create a thin logical volume. Requires `--poolname`.

New in version Fedora20.

`--poolname POOL_NAME`

Specify the name of the thin pool in which to create a thin logical volume. Requires `--thin`.

New in version Fedora20.

`--chunksize CHUNK_SIZE`

Specify the chunk size (in KiB) for a new thin pool device.

New in version Fedora20.

`--metadatasize METADATA_SIZE`

Specify the metadata area size (in MiB) for a new thin pool device.

New in version Fedora20.

`--profile PROFILE`

Specify an LVM profile for the thin pool (see `lvm(8)`, standard profiles are `default` and `thin-performance` defined in the `/etc/lvm/profile/` directory).

New in version Fedora21.

`--cachesize CACHE_SIZE`

Requested size (in MiB) of cache attached to the logical volume. Requires `--cachepvs`.

New in version Fedora23.

`--cachemode CACHE_MODE`

Mode that should be used for the cache. Either `writeback` or `writethrough`.

New in version Fedora23.

`--cachepvs CACHE_PVS`

Comma-separated list of (fast) physical volumes that should be used for the cache.

New in version Fedora23.

`--mkfsoptions MKFSOPTS`

Specifies additional parameters to be passed to the program that makes a filesystem on this partition. No processing is done on the list of arguments, so they must be supplied in a format that can be passed directly to the mkfs program. This means multiple options should be comma-separated or surrounded by double quotes, depending on the filesystem.

New in version Fedora23.

Create the partition first, create the logical volume group, and then create the logical volume. For example:

```
part pv.01 --size 3000
volgroup myvg pv.01
logvol / --vgname=myvg --size=2000 --name=rootvol
```

## mediacheck

```
mediacheck
```

New in version Fedora4.

If given, this will force anaconda to run mediacheck on the installation media. This command requires that installs be attended, so it is disabled by default.

## method

```
method
```

New in version Fedora3.

## monitor

```
monitor [--hsync HSYNC] [--monitor MONITOR] [--vsync VSYNC] [--noprobe]
```

New in version Fedora3.

If the monitor command is not given, anaconda will use X to automatically detect your monitor settings. Please try this before manually configuring your monitor.

Deprecated since version Fedora10.

optional arguments:

`--hsync HSYNC`

Specifies the horizontal sync frequency of the monitor.

New in version Fedora3.

`--monitor MONITOR`

Use specified monitor; monitor name should be from the list of monitors in `/usr/share/hwdata/MonitorsDB` from the hwdata package. The list of monitors can also be found on the X Configuration screen of the Kickstart Configurator. This is ignored if `--hsync` or `--vsync` is provided. If no monitor information is provided, the installation program tries to probe for it automatically.

New in version Fedora3.

`--vsync VSYNC`

Specifies the vertical sync frequency of the monitor.

New in version Fedora3.

`--noprobe`

Do not probe the monitor.

New in version Fedora6.

## mouse

```
mouse [--device DEVICE] [--emulthree]
```

New in version RedHatEnterpriseLinux3.

Configure the system mouse

optional arguments:

`--device DEVICE`

Which device node to use for mouse

New in version RedHatEnterpriseLinux3.

`--emulthree`

If set emulate 3 mouse buttons

New in version RedHatEnterpriseLinux3.

## multipath

```
multipath --name NAME --device DEVICE --rule RULE
```

New in version Fedora6.

Deprecated since version Fedora24.

optional arguments:

`--name NAME`

New in version Fedora6.

`--device DEVICE`

New in version Fedora6.

`--rule RULE`

New in version Fedora6.

## network

```
network [--bootproto {dhcp,bootp,static,query,ibft}] [--dhcpclass DHCPCLASS]
  [--device DEVICE] [--essid ESSID] [--ethtool ETHTOOL]
  [--gateway GATEWAY] [--hostname HOSTNAME] [--ip IP] [--mtu MTU]
  [--nameserver NAMESERVER] [--netmask NETMASK] [--nodns]
  [--onboot ONBOOT] [--wepkey WEPKEY] [--notksdevice] [--noipv4]
```

```
[--noipv6] [--ipv6 IPV6] [--activate] [--nodefroute] [--wpakey WPAKEY]
[--bondslaves BONDSLAVES] [--bondopts BONDOPTS] [--vlanid VLANID]
[--ipv6gateway IPV6GATEWAY] [--teamslaves TEAMSLAVES]
[--teamconfig TEAMCONFIG] [--interfacename INTERFACENAME]
[--bridgeslaves BRIDGESLAVES] [--bridgeopts BRIDGEOPTS]
[--no-activate]
```

New in version Fedora3.

Configures network information for target system and activates network devices in installer environment. The device specified in the first network command is activated automatically. Activation of the device can be also explicitly required by `--activate` option

optional arguments:

`--bootproto {dhcp,bootp,static,query,ibft}`

The method of IPv4 configuration. For IPv6 configuration use `--ipv6` option.

The default setting is `dhcp`. To turn IPv4 configuration off use `--noipv4` option.

- The `dhcp` method uses a DHCP server system to obtain its networking configuration.

- The `static` method requires that you specify at least IP address and netmask with `--ip` and `--netmask` options. For example:

```
``network --device=link --bootproto=static --ip=10.0.2.15 --netmask=255.255.
↪255.0 --gateway=10.0.2.254 --nameserver=10.0.2.1``
```

- `ibft` setting is for reading the configuration from iBFT table.

New in version Fedora3.

Changed in version Fedora9.

The ‘`query`’ value was added.

Changed in version Fedora16.

The ‘`ibft`’ value was added.

`--dhcpclass DHCPCLASS`

Specifies the DHCP vendor class identifier. The `dhcpd` service will see this value as vendor-class-identifier.

New in version Fedora3.

`--device DEVICE`

Specifies the device to be configured (and eventually activated in Anaconda) with the `network` command.

You can specify a device to be activated in any of the following ways: - the device name of the interface, for example, `em1` - the MAC address of the interface, for example, `01:23:45:67:89:ab` - the keyword `link`, which specifies the first interface with its link in the up state - the keyword `bootif`, which uses the MAC address that `pxelinux` set in the `BOOTIF` variable. Set `IPAPPEND 2` in your `pxelinux.cfg` file to have `pxelinux` set the `BOOTIF` variable.

For example:

```
``network --bootproto=dhcp --device=ens3``
```

If the `--device=` option is missing on the first use of the `network` command, the value of the `ksdevice=Anaconda` boot option is used, if available. If `ksdevice=` is not set, `link` value is used. Note that this is considered deprecated behavior; in most cases, you should always specify a `--device=` for every `network` command. The behavior of any subsequent `network` command in the same Kickstart file is unspecified if its `--device=` option is missing. Make sure you specify this option for any `network` command beyond the first.

New in version Fedora3.

`--essid` ESSID

The network ID for wireless networks.

New in version Fedora3.

`--ethtool` ETHTOOL

Specifies additional low-level settings for the network device which will be passed to the `ethtool` program.

New in version Fedora3.

`--gateway` GATEWAY

Default gateway, as a single IPv4 address.

New in version Fedora3.

`--hostname` HOSTNAME

The host name for the installed system.

The host name can either be a fully-qualified domain name (FQDN) in the format `hostname.domainname`, or a short host name with no domain. Many networks have a DHCP service which automatically supplies connected systems with a domain name; to allow DHCP to assign the domain name, only specify a short host name.

New in version Fedora3.

`--ip` IP

IPv4 address for the interface.

New in version Fedora3.

`--mtu` MTU

The MTU of the device.

New in version Fedora3.

`--nameserver` NAMESERVER

Primary nameserver, as an IP address. Multiple nameservers must be comma separated.

New in version Fedora3.

`--netmask` NETMASK

IPv4 network mask of the device.

New in version Fedora3.

`--nodns`

Do not configure any DNS server.

New in version Fedora3.

`--onboot ONBOOT`

Whether or not to enable the device a boot time.

New in version Fedora3.

`--wepkey WEPKEY`

The WEP encryption key for wireless networks.

New in version Fedora3.

`--notksdevice`

This network device is not used for kickstart.

New in version Fedora4.

`--noipv4`

Disable IPv4 configuration of this device.

New in version Fedora6.

`--noipv6`

Disable IPv6 configuration of this device.

New in version Fedora6.

`--ipv6 IPV6`

IPv6 address for the interface. This can be: - the static address in form `<IPv6 address>[/<prefix length>]`, e.g. `3ffe:ffff:0:1::1/128` (if prefix is omitted 64 is assumed), - `auto` for stateless automatic address autoconfiguration, or - `dhcp` for DHCPv6-only configuration (no router advertisements).

New in version Fedora8.

`--activate`

As noted above, using this option ensures any matching devices beyond the first will also be activated.

New in version Fedora16.

`--nodefroute`

Prevents grabbing of the default route by the device. It can be useful when activating additional devices in installer using `--activate` option.

New in version Fedora16.

`--wpakey WPAKEY`

The WPA encryption key for wireless networks.

New in version Fedora16.

`--bondslaves BONDSLAVES`

Bonded device with name specified by `--device` option will be created using slaves specified in this option. Example:

```
``network --device bond0 --bootproto static --ip=10.34.102.222 --netmask=255.
↪255.255.0 --gateway=10.34.102.254 --nameserver=10.34.39.2 --
↪bondslaves=ens7,ens8 --bondopts=mode=active-backup,primary=ens7 --
↪activate``
```

New in version Fedora19.

`--bondopts BONDOPTS`

A comma-separated list of optional parameters for bonded interface specified by `--bondslaves` and `--device` options. Example:

```
``--bondopts=mode=active-backup,primary=eth1``
```

If an option itself contains comma as separator use semicolon to separate the options. Example:

```
``--bondopts=mode=active-backup,balance-rr;primary=eth1``
```

New in version Fedora19.

`--vlanid VLANID`

Id (802.1q tag) of vlan device to be created using parent device specified by `--device` option. For example:

```
``network --device=eth0 --vlanid=171``
```

will create vlan device `eth0.171`.

New in version Fedora19.

`--ipv6gateway IPV6GATEWAY`

Default gateway, as a single IPv6 address.

New in version Fedora19.

`--teamslaves TEAMSLAVES`

Team device with name specified by `--device` option will be created using slaves specified in this option. Slaves are separated by comma. A slave can be followed by its configuration which is a single-quoted json format string with double quotes escaped by `'` character. Example:

```
``--teamslaves="p3p1'{"prio": -10, "sticky": true}',p3p2'{"prio": 100}'"``.
```

See also `--teamconfig` option.

New in version Fedora20.

`--teamconfig TEAMCONFIG`

Double-quoted team device configuration which is a json format string with double quotes escaped with `'` character. The device name is specified by `--device` option and its slaves and their configuration by `--teamslaves` option. Example:

```
``network --device team0 --activate --bootproto static --ip=10.34.102.222 --  
↪netmask=255.255.255.0 --gateway=10.34.102.254 --nameserver=10.34.39.2 --  
↪teamslaves="p3p1'{"prio": -10, "sticky": true}',p3p2'{"prio": 100}'" --  
↪teamconfig="{\"runner\": {\"name\": \"activebackup\"}}"``
```

New in version Fedora20.

`--interfacename INTERFACENAME`

Specify a custom interface name for a virtual LAN device. This option should be used when the default name generated by the `--vlanid=` option is not desirable. This option must be used along with `--vlanid=`. For example:

```
``network --device=em1 --vlanid=171 --interfacename=vlan171``
```

The above command creates a virtual LAN interface named `vlan171` on the `em1` device with an ID of 171. The interface name can be arbitrary (for example, `my-vlan`), but in specific cases, the following conventions must be followed:

If the name contains a dot (`.`), it must take the form of `NAME.ID`. The `NAME` is arbitrary, but the `ID` must be the VLAN ID. For example: `em1.171` or `my-vlan.171`. Names starting with `vlan` must take the form of `vlanID` - for example: `vlan171`.

New in version Fedora21.

`--bridgeslaves BRIDGESLAVES`

When this option is used, the network bridge with device name specified using the `--device=` option will be created and devices defined in the `--bridgeslaves=` option will be added to the bridge. For example:

```
``network --device=bridge0 --bridgeslaves=em1``
```

New in version Fedora22.

`--bridgeopts BRIDGEOPTS`

An optional comma-separated list of parameters for the bridged interface. Available values are `stp`, `priority`, `forward-delay`, `hello-time`, `max-age`, and `ageing-time`. For information about these parameters, see the bridge setting table in the `nm-settings(5)` man page or at <https://developer.gnome.org/NetworkManager/0.9/ref-settings.html>.

New in version Fedora22.

`--no-activate`

Use this option with first network command to prevent activation of the device in installer environment

New in version Fedora25.

## nfs

```
nfs --server <hostname> --dir <directory> [--opts <options>]
```

New in version Fedora3.

Install from the NFS server specified. This can either be an exploded installation tree or a directory of ISO images. In the latter case, the `install.img` must also be provided subject to the same rules as with the `harddrive` installation method described above.

optional arguments:

`--server <hostname>`

Server from which to install (hostname or IP).

New in version Fedora3.

`--dir <directory>`

Directory containing the `Packages/` directory of the installation tree. If doing an ISO install, this directory must also contain `images/install.img`.

New in version Fedora3.

`--opts <options>`

Mount options to use for mounting the NFS export. Any options that can be specified in `/etc/fstab` for an NFS mount are allowed. The options are listed in the `nfs(5)` man page. Multiple options are separated with a comma.

New in version Fedora6.

## ostreesetup

```
ostreesetup --osname OSNAME [--remote REMOTE] --url URL --ref REF [--nogpg]
```

New in version Fedora21.

Used for OSTree installations. See <https://wiki.gnome.org/action/show/Projects/OSTree> for more information about OSTree.

optional arguments:

`--osname OSNAME`

Management root for OS installation.

New in version Fedora21.

`--remote REMOTE`

Management root for OS installation.

New in version Fedora21.

`--url URL`

Repository URL.

New in version Fedora21.

`--ref REF`

Name of branch inside the repository.

New in version Fedora21.

`--nogpg`

Disable GPG key verification.

New in version Fedora21.

## part or partition

```
part|partition [--active] [--asprimary] [--fstype FSTYPE] [--grow]
    [--maxsize MAXSIZE] [--noformat] [--onbiosdisk ONBIOSDISK]
    [--ondisk DISK] [--onpart ONPART] [--recommended] [--size SIZE]
    [--fsoptions FSOPTS] [--label LABEL] [--fsprofile FSPROFILE]
    [--encrypted] [--passphrase PASSPHRASE] [--escrowcert <url>]
    [--backupperphrase] [--resize] [--hibernation]
    [--cipher CIPHER] [--mkfsoptions MKFSOPTS]
    <mntpoint>
```

New in version Fedora3.

Creates a partition on the system. This command is required. All partitions created will be formatted as part of the installation process unless `--noformat` and `--onpart` are used.

positional arguments:

`<mntpoint>`

The `<mntpoint>` is where the partition will be mounted and must be of one of the following forms:

`/<path>`

For example, `/`, `/usr`, `/home`

`swap`

The partition will be used as swap space.

`raid.<id>`

The partition will be used for software RAID. Refer to the `raid` command.

`pv.<id>`

The partition will be used for LVM. Refer to the `logvol` command.

`btrfs.<id>`

The partition will be used for BTRFS volume. Rerefer to the `btrfs` command.

`biosboot`

The partition will be used for a BIOS Boot Partition. As of Fedora 16 there must be a biosboot partition for the bootloader to be successfully installed onto a disk that contains a GPT/GUID partition table. Rerefer to the `bootloader` command.

New in version Fedora3.

optional arguments:

`--active`

New in version Fedora3.

`--asprimary`

Forces automatic allocation of the partition as a primary partition or the partitioning will fail.

**TIP:** The `--asprimary` option only makes sense with the MBR partitioning scheme and is ignored when the GPT partitioning scheme is used.

New in version Fedora3.

`--fstype FSTYPE, --type FSTYPE`

Sets the file system type for the partition. Valid values include `ext4`, `ext3`, `ext2`, `xf`s, `btrfs`, `swap`, and `vf`at. Other filesystems may be valid depending on command line arguments passed to `anaconda` to enable other filesystems.

New in version Fedora3.

`--grow`

Tells the partition to grow to fill available space (if any), or up to the maximum size setting. Note that `--grow` is not supported for partitions containing a RAID volume on top of them.

New in version Fedora3.

`--maxsize MAXSIZEMB`

The maximum size in MiB the partition may grow to. Specify an integer value here, and do not append any units. This option is only relevant if `--grow` is specified as well.

New in version Fedora3.

`--noformat`

Tells the installation program not to format the partition, for use with the `--onpart` command.

New in version Fedora3.

`--onbiosdisk ONBIOSDISK`

Forces the partition to be created on a particular disk as discovered by the BIOS.

New in version Fedora3.

`--ondisk DISK, --ondrive DISK`

Forces the partition to be created on a particular disk.

New in version Fedora3.

`--onpart ONPART, --usepart ONPART`

Put the partition on an already existing device. Use `--onpart=LABEL=name` or `--onpart=UUID=name` to specify a partition by label or uuid respectively.

Anaconda may create partitions in any particular order, so it is safer to use labels than absolute partition names.

New in version Fedora3.

`--recommended`

Determine the size of the partition automatically.

New in version Fedora3.

`--size SIZE`

The minimum partition size in MiB. Specify an integer value here and do not append any units.

New in version Fedora3.

`--fsoptions FSOPTS`

Specifies a free form string of options to be used when mounting the filesystem. This string will be copied into the `/etc/fstab` file of the installed system and should be enclosed in quotes.

New in version Fedora4.

`--label LABEL`

Specify the label to give to the filesystem to be made on the partition. If the given label is already in use by another filesystem, a new label will be created for this partition.

New in version Fedora4.

`--bytes-per-inode BYTES_PER_INODE`

Specify the bytes/inode ratio.

New in version Fedora4.

Deprecated since version Fedora9.

Removed in version Fedora14.

`--fsprofile FSPROFILE`

Specifies a usage type to be passed to the program that makes a filesystem on this partition. A usage type defines a variety of tuning parameters to be used when making a filesystem. For this option to work, the filesystem must support the concept of usage types and there must be a configuration file that lists valid types. For ext2/3/4, this configuration file is `/etc/mke2fs.conf`.

New in version Fedora9.

`--encrypted`

Specify that this partition should be encrypted.

New in version Fedora9.

`--passphrase PASSPHRASE`

Specify the passphrase to use when encrypting this partition. Without the above `--encrypted` option, this option does nothing. If no passphrase is specified, the default system-wide one is used, or the installer will stop and prompt if there is no default.

New in version Fedora9.

`--start START`

New in version Fedora3.

Deprecated since version Fedora11.

Removed in version Fedora14.

`--end END`

New in version Fedora3.

Deprecated since version Fedora11.

Removed in version Fedora14.

`--escrowcert <url>`

Load an X.509 certificate from `<url>`. Store the data encryption key of this partition, encrypted using the certificate, as a file in `/root`. Only relevant if `--encrypted` is specified as well.

New in version Fedora12.

`--backuppssphrase`

Only relevant if `--escrowcert` is specified as well. In addition to storing the data encryption key, generate a random passphrase and add it to this partition. Then store the passphrase, encrypted using the certificate specified by `--escrowcert`, as a file in `/root`. If more than one LUKS volume uses `--backuppssphrase`, the same passphrase will be used for all such volumes.

New in version Fedora12.

`--resize`

Attempt to resize this partition to the size given by `--size=`. This option must be used with `--onpart` `--size=`, or an error will be raised.

New in version Fedora17.

`--hibernation`

This option can be used to automatically determine the size of the swap partition big enough for hibernation.

New in version Fedora18.

`--cipher CIPHER`

Only relevant if `--encrypted` is specified. Specifies which encryption algorithm should be used to encrypt the filesystem.

New in version Fedora18.

`--mkfsoptions MKFSOPTS`

Specifies additional parameters to be passed to the program that makes a filesystem on this partition. This is similar to `--fsprofile` but works for all filesystems, not just the ones that support the profile concept. No processing is done on the list of arguments, so they must be supplied in a format that can be passed directly to the mkfs program. This means multiple options should be comma-separated or surrounded by double quotes, depending on the filesystem.

New in version Fedora23.

If partitioning fails for any reason, diagnostic messages will appear on virtual console 3.

## raid

```
raid --device DEVICE [--fstype FSTYPE] [--level LEVEL] [--noformat]
  [--spares SPARES] [--useexisting] [--fsoptions FSOPTS]
  [--fsprofile FSPROFILE] [--encrypted] [--passphrase PASSPHRASE]
  [--escrowcert <url>] [--backupp passphrase] [--label LABEL]
  [--cipher CIPHER] [--mkfsoptions MKFSOPTS] [--chunksize CHUNK_SIZE]
  <mntpoint> [<partitions*> [<partitions*> ...]]
```

New in version Fedora3.

Assembles a software RAID device.

positional arguments:

`<mntpoint>`

Location where the RAID file system is mounted. If it is `/`, the RAID level must be 1 unless a boot partition (`/boot`) is present. If a boot partition is present, the `/boot` partition must be level 1 and the root (`/`) partition can be any of the available types.

New in version Fedora3.

`<partitions*>`

The software raid partitions lists the RAID identifiers to add to the RAID array.

New in version Fedora3.

optional arguments:

`--device DEVICE`

Name of the RAID device to use (such as `'fedora-root'` or `'home'`). As of Fedora 19, RAID devices are no longer referred to by names like `'md0'`. If you have an old (v0.90 metadata) array that you cannot assign a name to, you can specify the array by a filesystem label or UUID (eg: `--device=LABEL=fedora-root`).

New in version Fedora3.

`--fstype FSTYPE`

Sets the file system type for the RAID array. Valid values include `ext4`, `ext3`, `ext2`, `btrfs`, `swap`, and `vfat`. Other filesystems may be valid depending on command line arguments passed to `anaconda` to enable other filesystems.

New in version Fedora3.

`--level LEVEL`

RAID level to use set(['RAID10', 'RAID5', 'RAID4', 'RAID6', 'RAID1', 'RAID0']).

New in version Fedora3.

Changed in version Fedora7.

The “RAID10” level was added.

Changed in version Fedora13.

The “RAID4” level was added.

`--noformat`

Use an existing RAID device and do not format the RAID array.

New in version Fedora3.

`--spares SPARES`

Specifies the number of spare drives allocated for the RAID array. Spare drives are used to rebuild the array in case of drive failure.

New in version Fedora3.

`--useexisting`

Use an existing RAID device and reformat it.

New in version Fedora3.

`--fsoptions FSOPTS`

Specifies a free form string of options to be used when mounting the filesystem. This string will be copied into the `/etc/fstab` file of the installed system and should be enclosed in quotes.

New in version Fedora4.

`--bytes-per-inode BYTES_PER_INODE`

Specify the bytes/inode ratio.

New in version Fedora5.

Deprecated since version Fedora9.

Removed in version Fedora14.

`--fsprofile FSPROFILE`

Specifies a usage type to be passed to the program that makes a filesystem on this partition. A usage type defines a variety of tuning parameters to be used when making a filesystem. For this option to work, the filesystem must support the concept of usage types and there must be a configuration file that lists valid types. For ext2/3/4, this configuration file is `/etc/mke2fs.conf`.

New in version Fedora9.

`--encrypted`

Specify that this RAID device should be encrypted.

New in version Fedora9.

`--passphrase PASSPHRASE`

Specify the passphrase to use when encrypting this RAID device. Without the above `--encrypted` option, this option does nothing. If no passphrase is specified, the default system-wide one is used, or the installer will stop and prompt if there is no default.

New in version Fedora9.

`--escrowcert <url>`

Load an X.509 certificate from `<url>`. Store the data encryption key of this partition, encrypted using the certificate, as a file in `/root`. Only relevant if `--encrypted` is specified as well.

New in version Fedora12.

`--backupperphrase`

Only relevant if `--escrowcert` is specified as well. In addition to storing the data encryption key, generate a random passphrase and add it to this partition. Then store the passphrase, encrypted using the certificate specified by `--escrowcert`, as a file in `/root`. If more than one LUKS volume uses `--backupperphrase`, the same passphrase will be used for all such volumes.

New in version Fedora12.

`--label LABEL`

Specify the label to give to the filesystem to be made. If the given label is already in use by another filesystem, a new label will be created.

New in version Fedora15.

`--cipher CIPHER`

Only relevant if `--encrypted` is specified. Specifies which encryption algorithm should be used to encrypt the filesystem.

New in version Fedora18.

`--mkfsoptions MKFSOPTS`

Specifies additional parameters to be passed to the program that makes a filesystem on this partition. No processing is done on the list of arguments, so they must be supplied in a format that can be passed directly to the mkfs program. This means multiple options should be comma-separated or surrounded by double quotes, depending on the filesystem.

New in version Fedora23.

`--chunksize CHUNK_SIZE`

Specify the chunk size (in KiB) for this RAID array.

New in version Fedora25.

The following example shows how to create a RAID level 1 partition for `/`, and a RAID level 5 for `/usr`, assuming there are three disks on the system. It also creates three swap partitions, one on each drive:

```
part raid.01 --size=6000 --ondisk=sda
part raid.02 --size=6000 --ondisk=sdb
part raid.03 --size=6000 --ondisk=sdc

part swap1 --size=512 --ondisk=sda
part swap2 --size=512 --ondisk=sdb
part swap3 --size=512 --ondisk=sdc

part raid.11 --size=6000 --ondisk=sda
part raid.12 --size=6000 --ondisk=sdb
part raid.13 --size=6000 --ondisk=sdc
```

```
raid / --level=1 --device=md0 raid.01 raid.02 raid.03
raid /usr --level=5 --device=md1 raid.11 raid.12 raid.13
```

## realm

```
realm
```

New in version Fedora19.

## repo

```
repo --name NAME [--baseurl BASEURL] [--mirrorlist MIRRORLIST] [--cost COST]
      [--excludepkgs EXCLUDEPKGS] [--includepkgs INCLUDEPKGS]
      [--ignoregroups IGNOREGROUPS] [--proxy PROXY] [--noverifyssl] [--install]
```

New in version Fedora6.

Configures additional yum repositories that may be used as sources for package installation. Multiple repo lines may be specified. By default, anaconda has a configured set of repos taken from `/etc/anaconda.repos.d` plus a special Installation Repo in the case of a media install. The exact set of repos in this directory changes from release to release and cannot be listed here. There will likely always be a repo named “updates”.

Note: If you want to enable one of the repos in `/etc/anaconda.repos.d` that is disabled by default (like “updates”), you should use `--name=` but none of the other options. anaconda will look for a repo by this name automatically. Providing a baseurl or mirrorlist URL will result in anaconda attempting to add another repo by the same name, which will cause a conflicting repo error.

optional arguments:

`--name NAME`

The repo id. This option is required. If a repo has a name that conflicts with a previously added one, the new repo will be ignored. Because anaconda has a populated list of repos when it starts, this means that users cannot create new repos that override these names. Please check `/etc/anaconda.repos.d` from the operating system you wish to install to see what names are not available.

New in version Fedora6.

`--baseurl BASEURL`

The URL for the repository. The variables that may be used in yum repo config files are not supported here. You may use one of either this option or `--mirrorlist`, not both. If an NFS repository is specified, it should be of the form `nfs://host:/path/to/repo`. Note that there is a colon after the host. Anaconda passes everything after “`nfs://`” directly to the mount command instead of parsing URLs according to RFC 2224. Variable substitution is done for `$releasever` and `$basearch` in the url.

New in version Fedora6.

Changed in version Fedora15.

`--mirrorlist` and `--baseurl` are not required anymore!

`--mirrorlist MIRRORLIST`

The URL pointing at a list of mirrors for the repository. The variables that may be used in yum repo config files are not supported here. You may use one of either this option or `--baseurl`, not both. Variable substitution is done for `$releasever` and `$basearch` in the url.

New in version Fedora6.

Changed in version Fedora15.

`--mirrorlist` and `--baseurl` are not required anymore!

`--cost COST`

An integer value to assign a cost to this repository. If multiple repositories provide the same packages, this number will be used to prioritize which repository will be used before another. Repositories with a lower cost take priority over repositories with higher cost.

New in version Fedora8.

`--excludepkgs EXCLUDEPKGS`

A comma-separated list of package names and globs that must not be pulled from this repository. This is useful if multiple repositories provide the same package and you want to make sure it comes from a particular repository.

New in version Fedora8.

`--includepkgs INCLUDEPKGS`

A comma-separated list of package names and globs that must be pulled from this repository. This is useful if multiple repositories provide the same package and you want to make sure it comes from this repository.

New in version Fedora8.

`--ignoregroups IGNOREGROUPS`

This option is used when composing installation trees and has no effect on the installation process itself. It tells the compose tools to not look at the package group information when mirroring trees so as to avoid mirroring large amounts of unnecessary data.

New in version Fedora11.

`--proxy PROXY`

Specify an HTTP/HTTPS/FTP proxy to use just for this repository. This setting does not affect any other repositories, nor how the `install.img` is fetched on HTTP installs. The various parts of the argument act like you would expect. The syntax is:

```
``--proxy=[protocol://] [username[:password]@]host[:port]``
```

New in version Fedora13.

`--noverifyssl`

For a `https` repo do not check the server's certificate with what well-known CA validate and do not check the server's hostname matches the certificate's domain name.

New in version Fedora14.

`--install`

Install this repository to the target system so that it can be used after reboot.

New in version Fedora21.

## reqpart

```
reqpart [--add-boot]
```

New in version Fedora23.

Automatically create partitions required by your hardware platform. These include a `/boot/efi` for x86\_64 and Aarch64 systems with UEFI firmware, `biosboot` for x86\_64 systems with BIOS firmware and GPT, and `PrePBoot` for IBM Power Systems.

**Note:** This command can not be used together with `autopart`, because `autopart` does the same and creates other partitions or logical volumes such as `/` and `swap` on top. In contrast with `autopart`, this command only creates platform-specific partitions and leaves the rest of the drive empty, allowing you to create a custom layout.

optional arguments:

`--add-boot`

Create a separate `/boot` partition in addition to the platform-specific partition created by the base command.

New in version Fedora23.

## rescue

```
rescue [--nomount] [--romount]
```

New in version Fedora10.

Automatically enter the installer's rescue mode. This gives you a chance to repair the system should something catastrophic happen.

optional arguments:

`--nomount`

Don't mount the installed system.

New in version Fedora10.

`--romount`

Mount the installed system in read-only mode.

New in version Fedora10.

By default, the installer will find your system and mount it in read-write mode, telling you where it has performed this mount. You may optionally choose to not mount anything or mount in read-only mode. Only one of these two options may be given at any one time.

## rootpw

```
rootpw [--iscrypted] [--lock] [--plaintext] [<password>]
```

New in version Fedora3.

This required command sets the system's root password.

positional arguments:

`<password>`

The desired root password.

New in version Fedora3.

optional arguments:

`--iscrypted`

If this is present, the password argument is assumed to already be encrypted. To create an encrypted password you can use python:

```
``python -c 'import crypt; print(crypt.crypt("My Password", "$6$My Salt"))'``
```

This will generate sha512 crypt of your password using your provided salt.

New in version Fedora3.

`--lock`

If this is present, the root account is locked by default. That is, the root user will not be able to login from the console. When this option is present the <password> argument is not required.

New in version Fedora8.

`--plaintext`

The password argument is assumed to not be encrypted. This is the default!

New in version Fedora8.

## selinux

```
selinux [--disabled] [--enforcing] [--permissive]
```

New in version Fedora3.

Sets the state of SELinux on the installed system. SELinux defaults to enforcing in anaconda.

optional arguments:

`--disabled`

If this is present, SELinux is disabled.

New in version Fedora3.

`--enforcing`

If this is present, SELinux is set to enforcing mode.

New in version Fedora3.

`--permissive`

If this is present, SELinux is enabled, but only logs things that would be denied in enforcing mode.

New in version Fedora3.

Only one of `--disabled`, `--enabled` or `--permissive` must be specified!

## services

```
services [--disabled <list>] [--enabled <list>]
```

New in version Fedora6.

Modifies the default set of services that will run under the default runlevel. The services listed in the disabled list will be disabled before the services listed in the enabled list are enabled.

optional arguments:

`--disabled <list>`

Disable the services given in the comma separated list.

New in version Fedora6.

`--enabled <list>`

Enable the services given in the comma separated list.

New in version Fedora6.

One of `--disabled` or `--enabled` must be provided.

## skipx

```
skipx
```

New in version Fedora3.

If present, X is not configured on the installed system.

## snapshot

### %include

Use the `%include /path/to/file` or `%include <url>` command to include the contents of another file in the kickstart file as though the contents were at the location of the `%include` command in the kickstart file.

Note the semantics of most kickstart commands default to “last keyword wins”, which means that for example if you have a `services --enable=foo,bar` in one file, and `%include` that file and use `services --enable=baz`, only the `baz` service will be enabled.

The Kickstart documentation usually notes which commands support multiple instances - this is mostly multi-line commands such as `%packages` and `%post`. Other exceptions include the `user` and `group` commands. Consult individual command documentation for semantics.

### %ksappend

The `%ksappend url` directive is very similar to `%include` in that it is used to include the contents of additional files as though they were at the location of the `%ksappend` directive. The difference is in when the two directives are processed. `%ksappend` is processed in an initial pass, before any other part of the kickstart file. Then, this expanded kickstart file is passed to the rest of anaconda where all `%pre` scripts are handled, and then finally the rest of the kickstart file is processed in order, which includes `%include` directives.

Thus, `%ksappend` provides a way to include a file containing `%pre` scripts, while `%include` does not.

## Chapter 3. Kickstart Commands in Red Hat Enterprise Linux

The following commands can be placed in a kickstart file. If you prefer to use a graphical interface for creating your kickstart file, you can use the Kickstart Configurator application.

Most commands take arguments. If an argument is followed equals mark (=), a value must be specified after it.

In the example commands, options in “[square brackets]” are optional arguments for the command.

pykickstart processes arguments to commands just like the shell does:

If a `list` of arguments can be passed `in`, the arguments must be separated by commas **and not** include `any` extra spaces. If extra spaces are required `in` the `list` of arguments, the entire argument must be surrounded by double quotes. If quotes, spaces, **or** other special characters need to be added to the arguments `list`, they must be escaped.

### %include

Use the `%include /path/to/file` or `%include <url>` command to include the contents of another file in the kickstart file as though the contents were at the location of the `%include` command in the kickstart file.

### %ksappend

The `%ksappend url` directive is very similar to `%include` in that it is used to include the contents of additional files as though they were at the location of the `%ksappend` directive. The difference is in when the two directives are processed. `%ksappend` is processed in an initial pass, before any other part of the kickstart file. Then, this expanded kickstart file is passed to the rest of anaconda where all `%pre` scripts are handled, and then finally the rest of the kickstart file is processed in order, which includes `%include` directives.

Thus, `%ksappend` provides a way to include a file containing `%pre` scripts, while `%include` does not.

## Chapter 10. Making the Kickstart File Available

A kickstart file must be placed in one of the following locations:

- On a boot diskette
- On a boot CD-ROM
- On a network

Normally a kickstart file is copied to the boot diskette, or made available on the network. The network-based approach is most commonly used, as most kickstart installations tend to be performed on networked computers.

Let us take a more in-depth look at where the kickstart file may be placed.

### Creating a Kickstart Boot Diskette

To perform a diskette-based kickstart installation, the kickstart file must be named `ks.cfg` and must be located in the boot diskette’s top-level directory. Refer to the section Making an Installation Boot Diskette in the Red Hat Enterprise Linux Installation Guide for instruction on creating a boot diskette. Because the boot diskettes are in MS-DOS format, it is easy to copy the kickstart file under Linux using the `mcopy` command:

```
mcopy ks.cfg a:
```

Alternatively, you can use Windows to copy the file. You can also mount the MS-DOS boot diskette in Linux with the file system type vfat and use the cp command to copy the file on the diskette.

## Creating a Kickstart Boot CD-ROM

To perform a CD-ROM-based kickstart installation, the kickstart file must be named ks.cfg and must be located in the boot CD-ROM's top-level directory. Since a CD-ROM is read-only, the file must be added to the directory used to create the image that is written to the CD-ROM. Refer to the Making an Installation Boot CD-ROM section in the Red Hat Enterprise Linux Installation Guide for instruction on creating a boot CD-ROM; however, before making the file.iso image file, copy the ks.cfg kickstart file to the isolinux/ directory.

## Making the Kickstart File Available on the Network

Network installations using kickstart are quite common, because system administrators can easily automate the installation on many networked computers quickly and painlessly. In general, the approach most commonly used is for the administrator to have both a BOOTP/DHCP server and an NFS server on the local network. The BOOTP/DHCP server is used to give the client system its networking information, while the actual files used during the installation are served by the NFS server. Often, these two servers run on the same physical machine, but they are not required to.

To perform a network-based kickstart installation, you must have a BOOTP/DHCP server on your network, and it must include configuration information for the machine on which you are attempting to install Fedora or Red Hat Enterprise Linux. The BOOTP/DHCP server will provide the client with its networking information as well as the location of the kickstart file.

If a kickstart file is specified by the BOOTP/DHCP server, the client system will attempt an NFS mount of the file's path, and will copy the specified file to the client, using it as the kickstart file. The exact settings required vary depending on the BOOTP/DHCP server you use.

Here is an example of a line from the dhcpd.conf file for the DHCP server:

```
filename "/usr/new-machine/kickstart/";  
server-name "blarg.redhat.com";
```

Note that you should replace the value after filename with the name of the kickstart file (or the directory in which the kickstart file resides) and the value after server-name with the NFS server name.

If the filename returned by the BOOTP/DHCP server ends with a slash ("/"), then it is interpreted as a path only. In this case, the client system mounts that path using NFS, and searches for a particular file. The filename the client searches for is:

```
:: <ip-addr>-kickstart
```

The section of the filename should be replaced with the client's IP address in dotted decimal notation. For example, the filename for a computer with an IP address of 10.10.0.1 would be 10.10.0.1-kickstart.

Note that if you do not specify a server name, then the client system will attempt to use the server that answered the BOOTP/DHCP request as its NFS server. If you do not specify a path or filename, the client system will try to mount /kickstart from the BOOTP/DHCP server and will try to find the kickstart file using the same -kickstart filename as described above.

## HTTP Headers

When Anaconda requests the kickstart over the network it includes several custom HTTP headers:

X-Anaconda-Architecture: `x86_64` indicates the architecture of the system being installed to.

X-Anaconda-System-Release: `Fedora` indicates the product name being installed.

There are also 2 optional headers, controlled by the kernel command line options `inst.ks.sendmac` and `inst.ks.sendsn`

Prior to Fedora 17 and Red Hat Enterprise Linux 7, these options were named `kssendmac` and `kssendsn`.

## Chapter 11. Making the Installation Tree Available

The kickstart installation needs to access an installation tree. An installation tree is a copy of the binary Fedora or Red Hat Enterprise Linux CD-ROMs with the same directory structure.

If you are performing a CD-based installation, insert the Fedora or Red Hat Enterprise Linux CD-ROM #1 into the computer before starting the kickstart installation.

If you are performing a hard-drive installation, make sure the ISO images of the binary Fedora or Red Hat Enterprise Linux CD-ROMs are on a hard drive in the computer.

If you are performing a network-based (NFS, FTP, or HTTP) installation, you must make the installation tree available over the network. Refer to the Preparing for a Network Installation section of the Red Hat Enterprise Linux Installation Guide for details.

## Chapter 12. Starting a Kickstart Installation

To begin a kickstart installation, you must boot the system from a Fedora or Red Hat Enterprise Linux boot diskette, Fedora or Red Hat Enterprise Linux boot CD-ROM, or the Fedora or Red Hat Enterprise Linux CD-ROM #1 and enter a special boot command at the boot prompt. In order to get to the boot prompt you must hit escape at the CD or DVD boot menu. In case you don't know what I'm talking about I took a screenshot. The installation program looks for a kickstart file if the `ks` command line argument is passed to the kernel.

[https://fedoraproject.org/wiki/File:Fedora\\_boot\\_screen.png](https://fedoraproject.org/wiki/File:Fedora_boot_screen.png)

Prior to Fedora 17 and Red Hat Enterprise Linux 7, all the various forms of the `inst.ks=` parameter were simply named `ks=`.

### Boot Diskette

If the kickstart file is located on a boot diskette as described in the Section called Creating a Kickstart Boot Diskette in Chapter 6, boot the system with the diskette in the drive, and enter the following command at the boot: prompt:

```
linux inst.ks=floppy
```

### CD-ROM #1 and Diskette

The `linux inst.ks=floppy` command also works if the `ks.cfg` file is located on a `vfat` or `ext2` file system on a diskette and you boot from the Fedora or Red Hat Enterprise Linux CD-ROM #1.

An alternate boot command is to boot off the Fedora or Red Hat Enterprise Linux CD-ROM #1 and have the kickstart file on a `vfat` or `ext2` file system on a diskette. To do so, enter the following command at the boot: prompt:

```
linux inst.ks=hd:fd0:/ks.cfg
```

## With Driver Disk

If you need to use a driver disk with kickstart, specify the `dd` option as well. For example, to boot off a boot diskette and use a driver disk, enter the following command at the boot: prompt:

```
linux inst.ks=floppy dd
```

## Boot CD-ROM

If the kickstart file is on a boot CD-ROM as described in the Section called Creating a Kickstart Boot CD-ROM in Chapter 6, insert the CD-ROM into the system, boot the system, and enter the following command at the boot: prompt (where `ks.cfg` is the name of the kickstart file):

```
linux inst.ks=cdrom:<device>:/ks.cfg
```

## Other kickstart options

```
inst.ks=nfs:<server>:/<path>
```

The installation program will look for the kickstart file on the NFS server , as file . The installation program will use DHCP to configure the Ethernet card. For example, if your NFS server is `server.example.com` and the kickstart file is in the NFS share `/mydir/ks.cfg`, the correct boot command would be `inst.ks=nfs:server.example.com:/mydir/ks.cfg`.

```
inst.ks=http://<server>/<path>
```

The installation program will look for the kickstart file on the HTTP server , as file . The installation program will use DHCP to configure the Ethernet card. For example, if your HTTP server is `server.example.com` and the kickstart file is in the HTTP directory `/mydir/ks.cfg`, the correct boot command would be `inst.ks=http://server.example.com/mydir/ks.cfg`.

```
inst.ks=floppy
```

The installation program looks for the file `ks.cfg` on a `vfat` or `ext2` file system on the diskette in `/dev/fd0`.

```
inst.ks=floppy:/<path>
```

The installation program will look for the kickstart file on the diskette in `/dev/fd0`, as file .

```
inst.ks=hd:<device>:/<file>
```

The installation program will mount the file system on (which must be `vfat` or `ext2`), and look for the kickstart configuration file as in that file system (for example, `inst.ks=hd:sda3:/mydir/ks.cfg`).

```
inst.ks=bd:<biosdev>:/<path>
```

The installation program will mount the file system on the specified partition on the specified BIOS device (for example, `inst.ks=bd:80p3:/mydir/ks.cfg`). Note this does not work for BIOS RAID sets.

```
inst.ks=file:/<file>
```

The installation program will try to read the file from the file system; no mounts will be done. This is normally used if the kickstart file is already on the `initrd` image.

```
inst.ks=cdrom:/<path> or in newer versions inst.ks=cdrom:<cdrom device>:/<path>
```

The installation program will look for the kickstart file on CD-ROM, as file .

```
inst.ks
```

If `ks` is used alone, the installation program will configure the Ethernet card to use DHCP. The kickstart file is read from the “bootServer” from the DHCP response as if it is an NFS server sharing the kickstart file. By default, the bootServer is the same as the DHCP server. The name of the kickstart file is one of the following:

- If DHCP is specified and the bootfile begins with a `/`, the bootfile provided by DHCP is looked for on the NFS server.
- If DHCP is specified and the bootfile begins with something other than a `/`, the bootfile provided by DHCP is looked for in the `/kickstart` directory on the NFS server.
- If DHCP did not specify a bootfile, then the installation program tries to read the file `/kickstart/1.2.3.4-kickstart`, where 1.2.3.4 is the numeric IP address of the machine being installed.

```
inst.ks.device=<device>
```

The installation program will use this network device to connect to the network. For example, to start a kickstart installation with the kickstart file on an NFS server that is connected to the system through the `eth1` device, use the command `inst.ks=nfs:<server>:/<path> ksdevice=eth1` at the boot prompt. For more information, see [anaconda boot options](#).

Prior to Fedora 17 and Red Hat Enterprise Linux 7, this option was named `ksdevice=`.

## Example Kickstart Script

Since I got tons of errors I thought I would share an example of a kickstart script that works. This also has an example of an lvm setup. I couldn't find a good example of an lvm anywhere else. I also added comments where I thought would help. Please modify if you think you have some other good examples.

```
# Kickstart file automatically generated by anaconda.

#version=DEVEL
#url --url http://mirrors.kernel.org/fedora/releases/7/Fedora/i386/os
#inst.ks=http://127.0.0.1/ks.cfg
#inst.ks=http://localhost/ks.cfg
url --url http://ftp.usf.edu/pub/fedora/linux/releases/14/Fedora/i386/os
install
cdrom
lang en_US.UTF-8
keyboard us
network --onboot yes --device eth0 --bootproto dhcp --noipv6
timezone --utc America/New_York
rootpw --iscrypted $6$s9ilbQbmW4oSWMJc$0oHfSz0b/
↪d90EvHx7cy70RJGIHrPlawzAgL9A3x2tbkyh72P3kN4lvssaI3/SJf4Y4qSo6zxc2gZ3srzc4ACX1
selinux --permissive
authconfig --enableshadow --passalgo=sha512 --enablefingerprint
firewall --service=ssh
# The following is the partition information you requested
# Note that any partitions you deleted are not expressed
# here so unless you clear all partitions first, this is
# not guaranteed to work

#I am deleting the old partitions with this
clearpart --all --drives=sda

#I am creating partitions here
#I will create the lvm stuff farther down
part /boot --fstype=ext4 --size=500 --ondisk=sda --asprimary
part pv.5xwrsR-ldgG-FEMM-2Zu5-Jn30-sx9T-unQUOe --grow --size=500 --ondisk=sda --
↪asprimary
```

```
#Very important to have the two part lines before the lvm stuff
volgroup VG --pesize=32768 pv.5xwrsR-ldgG-FEmM-2Zu5-Jn30-sx9T-unQUOe
logvol / --fstype=ext4 --name=lv_root --vgname=VG --size=40960
logvol /home --fstype=ext4 --name=lv_home --vgname=VG --size=25600
logvol swap --fstype swap --name=lv_swap --vgname=VG --size=4096

bootloader --location=mbr --driveorder=sda --append="rhgb quiet"

%packages
@admin-tools
#@editors
#@fonts
@gnome-desktop
#@games
#@graphical-internet
#@graphics
@hardware-support
@input-methods
#@java
#@office
#@online-docs
@printing
@sound-and-video
@text-internet
@base-x
xfsprogs
mtools
#gggme
#openoffice.org-opensymbol-fonts
#gvfs-obexftp
hdparm
#gok
#iok
#vorbis-tools
jack-audio-connection-kit
#ncftp
gdm
%end

# Reboot after installation
reboot
```

## More Kickstart usage examples

Various Kickstart usage examples based on real use cases:

[Reinstalling Fedora with Kickstart on BTRFS](#)

[Kickstarting a Fedora Live installation](#)



---

### Testing pykickstart

---

Pykickstart's test suite requires the nosetests Python package. To execute it from inside the source directory run the command:

```
make test
```

It is also possible to generate test coverage reports using the Python coverage tool. To do that execute:

```
make coverage
```

To execute the Pylint code analysis tool run:

```
make check
```

Running Pylint requires Python3 due to usage of pocket-lint.

## Test Suite Architecture

Pykickstart's test suite relies on several base classes listed below. All test cases inherit from them.

- `unittest.TestCase` - the standard unit test class in Python. Used only for base classes described below;
- `CommandTest` - intended as a base class for tests related to pykickstart commands. The important functions are:
  - `self.assert_parse` - KickstartParseError is not raised. If a matching value is supplied make sure the resulting string matches it;
  - `self.assert_parse_error` - assert that parsing the supplied string raises the specified exception (KickstartParseError by default);
  - `self.assert_deprecated` - ensure that the provided option is listed as deprecated;
  - `self.assert_removed` - ensure that the provided option is not present in `option_list`;
  - `self.assert_required` - ensure that the provided option is labelled as required in `option_list`;

- *self.assert\_type* - ensure that the provided option is of the requested type;
- `ParserTest` - base class for tests related to parsing functionality. Always uses the DEVEL version of pykickstart. Important functions are:
  - *self.assert\_parse* - parsing of this string is expected to finish without raising an exception; if it raises an exception, the test failed;
  - *self.assert\_parse\_error* - parsing of this command sequence is expected to raise an exception (`Kickstart-ParserError` by default). Matching regular expression can also be provided.
- `CommandSequenceTest` - inherits from `ParserTest`, enables testing kickstart independent command sequences and checking if their parsing raises or doesn't raise a parsing exception.

In addition any other assert methods from `unittest.TestCase` can be used as well to provide better test coverage.

Test scenarios are defined inside the *runTest* method of each test class using multiple assert statements.

In order to get a high level view of how test classes inherit from each other you can generate an inheritance diagram:

```
PYTHONPATH=. python3-pyreverse -p "Pykickstart_Tests" -o svg -SkAmy tests/
```

## CHAPTER 3

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### Indices and tables

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