Installing Red Hat Linux

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- Red Hat Linux provides many ways to perform the installation such as
  - booting from CD-ROM,
  - booting from local disk,
  - FTP, HTTP and NFS

Hardware Issues

Hardware Issues, which need to be addressed before you can install Red Hat

- Architectures
- Device drivers
- CPU
- Memory

Architectures

Linux can run on a variety of hardware platforms for example x86, Itanium and Compaq Alpha.

This course will concentrate on the x86 platform

Device drivers

The Red Hat hardware compatibility list can be found at ***http://hardware.redhat.com/hcl***

CPUs

The installation program automatically probes for the number of CPUs.

A maximum of sixteen CPUs are supported by the kernel.

Two kernels installed

- grub.conf entries are *Red Hat Linux (kernel version)* and *Red Hat Linux (kernel version-smp)*
- lilo.conf entries are linux and linux-up

Memory

Red Hat 9 on 32-bit x86 can autodetect up to a gigabyte of memory.

Disk Structure & Partitioning

Basic Disk Structure:

- Master Boot Record (MBR).
- A number of partitions

Master Boot Record:

- Partition table stores info on how the partitons are laid out.
- Boot loader stores info on where to boot from.

Partitions

-Primary Partitions

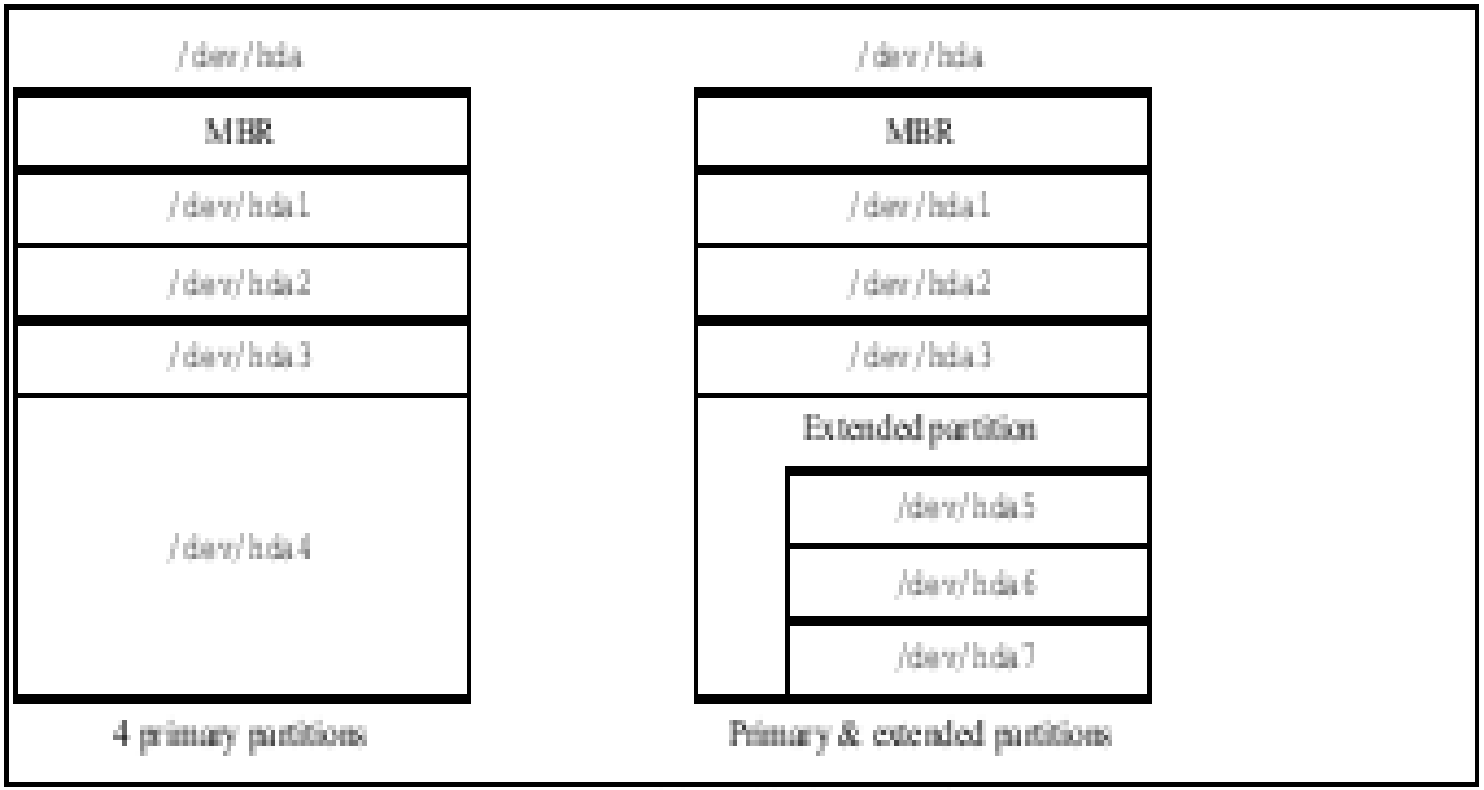
-Extended Partitions

Primary Partitions:

- Up to 4 primary partitions.
- Can convert a primary partition into an extended partition.

Extended Partitions

- Extended partitions are containers for logical partitions.
- Up to 12 logical partitions can exist within an extended partition



Slide 10: Disk partitioning examples

Partitioning Tool:

- Disk Druid (only available from within the installation program).

Disk Druid:

- Easy to use for standard partitioning schemes.
- Makes intelligent assumptions about the use of extended and logical partitions.
- You can assign mount points to partitions.

Disk Druid impose restrictions.

- you can’t edit the existing partition set up.
- it decides where partitions go on the disk and what device names are allocated.

Disk Druid uses the following rules when assigning partitions to device names:

The 4 primary partitions are assigned unique device names of ***/dev/hda1, /dev/hda2, /dev/hda3*** and ***/dev/hda4*** respectively

If one of the primary partitions is used for an extended partition then the logical partitions within this extended partition are assigned device names sequentially upwards from /dev/hda5.

For example the first logical partition will always be assigned /dev/hda5, the second /dev/hda6 and so on

Device names are allocated to each partition.

- Primary partition are assigned ***/dev/xxy[1-4].***
- Logical partitions are assigned sequentially upwards from ***/dev/xxy5.***

/dev/xxy[1-4]

xx: Indicates what type of device, hd (IDE), sd (SCSI)

y: Indicates which disk, a (the first disk), b (the second disk)

Ex

/dev/hda5

- the 1st logical partition on the 1st IDE drive.

/dev/sdb7

- the 3rd logical partition on the 2nd SCSI drive.

Unix file system:

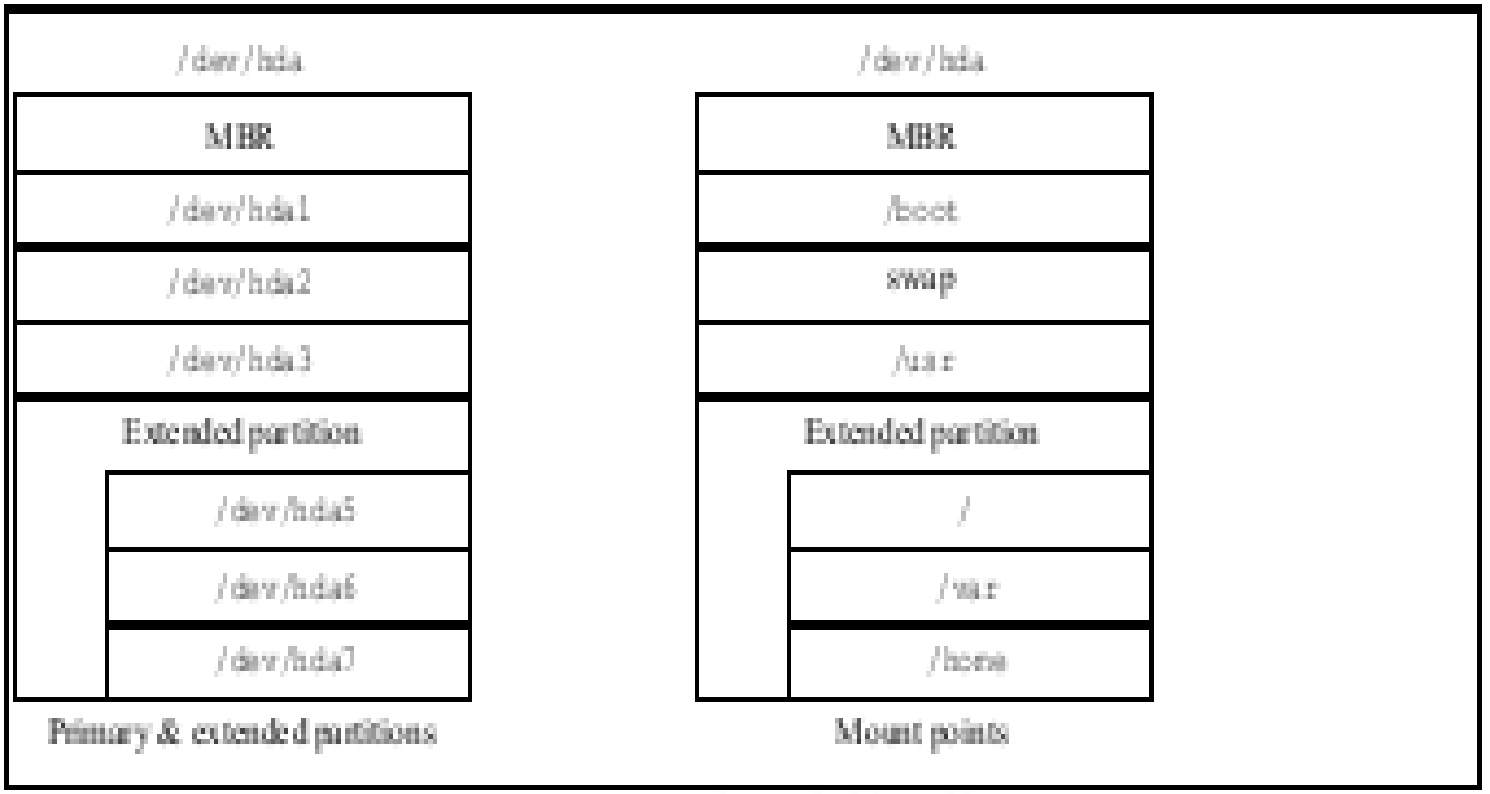
- built up in an inverted tree structure.
- the top of the tree is called root or /.

Mounting:

- it maps partitions onto reference points in the filesystems.

e.g. mount /dev/hda8 /usr/local

- the filesystem on /dev/hda8 can now be accessed through the /usr/local mount point.



Slide 14: Mount Points and Disk Partitions

Mount points are assigned to partitions during the installation.

This tells the installation where to put things

Mount points can be assigned to partitions during the installation by using ***Disk Druid*** or after the installation by adding entries to the ***/etc/fstab*** file.

The ***/etc/fstab*** file is a lookup table that is read during the system start up.

It simply maps mount points to device names

A simple partitioning scheme

You need at least 2 partitions for the installation:

- A root partition or (/).
- Swap (There is a maximum of 8 swap partitions).

partitioning scheme..

Red Hat also recommends a partition ***/boot.***

It contains the kernel and a small number of files used during the bootstrapping process.

partitioning scheme..

It is best to spilt certain mount points onto separate partitions.

This provides some extra flexibility and resilience.

- Could split /usr, /home, /data, /var.
- Don’t separate /etc, /lib, /sbin, /dev.

The ***/boot*** partition contains all the files which are needed to bootstrap the system. The idea is to keep this partition located near the front of the disk

Boootloader

To allow the system to be booted without a floppy you are going to need a boot loader

Boootloader

GRUB (GRand Unified Boootloader) and

LILO (The Linux Loader) are used to boot the system

The default Boootloader is GRUB.

By default it get installed in the MBR.

You can change where GRUB is installed during the installation

- in the Master Boot Record (can boot both Linux and Win 95/98/2K/XP).

- or in the first sector of your root partition (this doesn’t overwrite the current system loader)

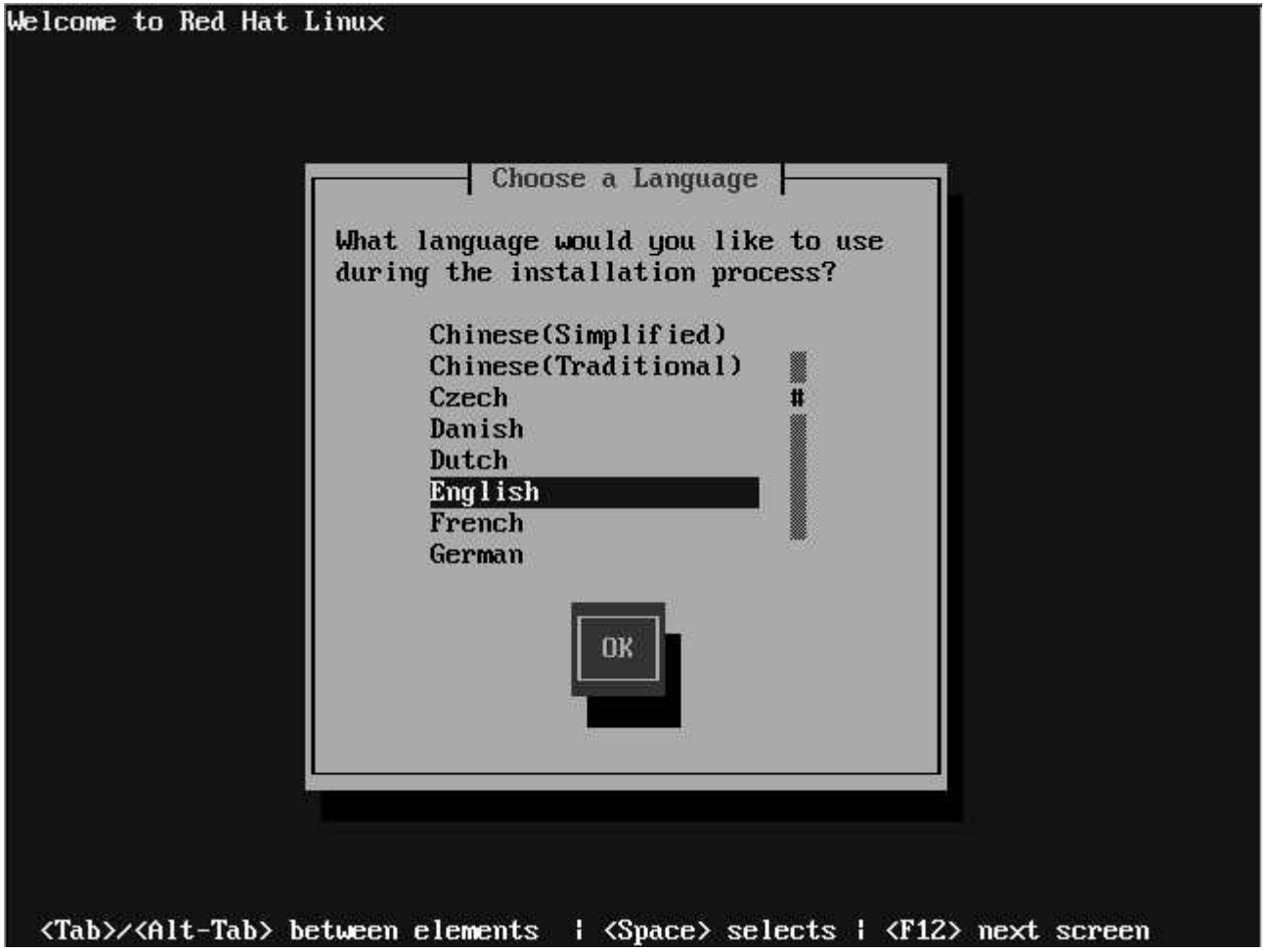
GRUB is quite friendly and will allow you to boot either operating system.

An installation walk through

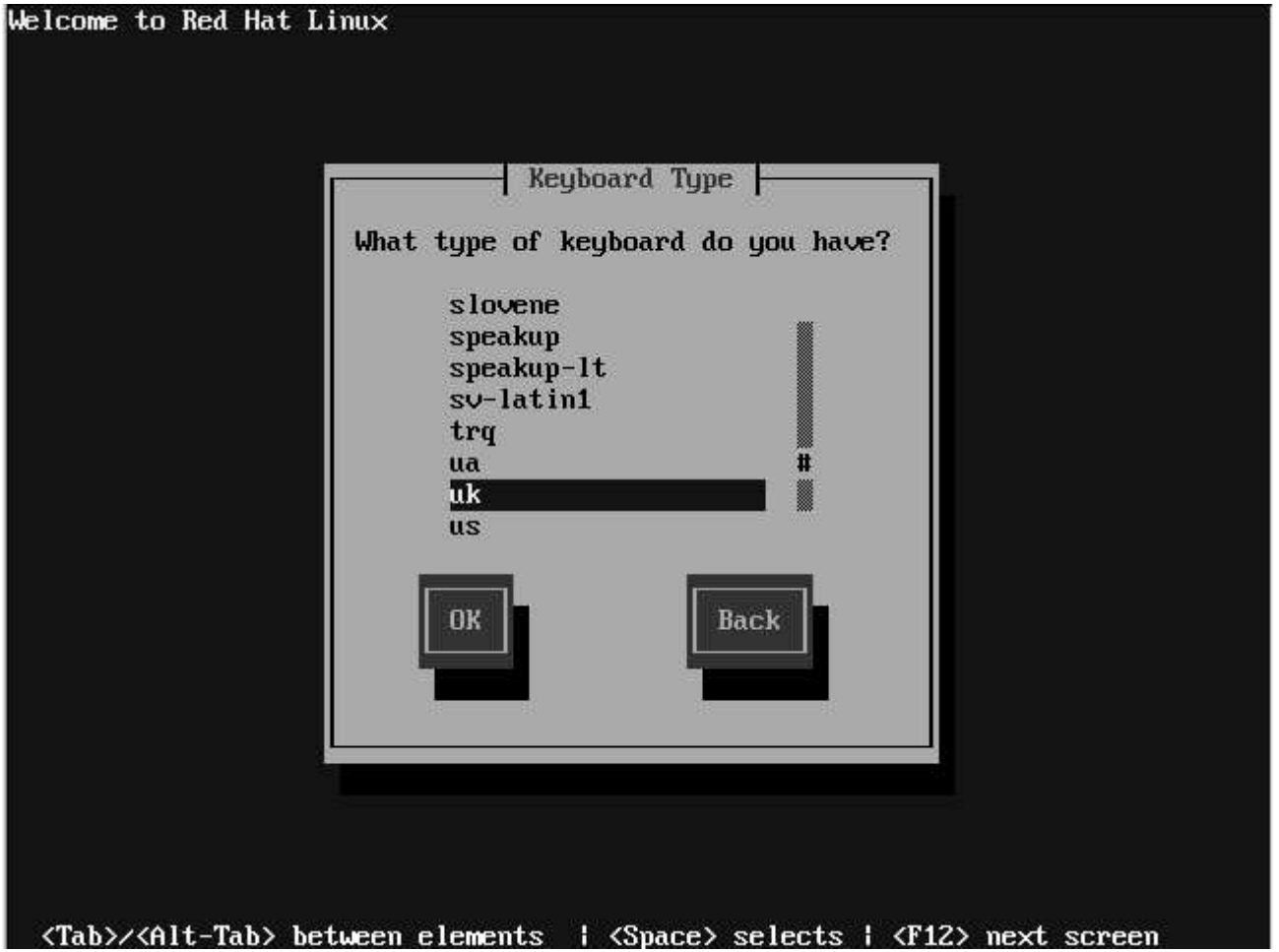
- Typical dialogue that occurs when installing Red Hat Linux

Boot Options

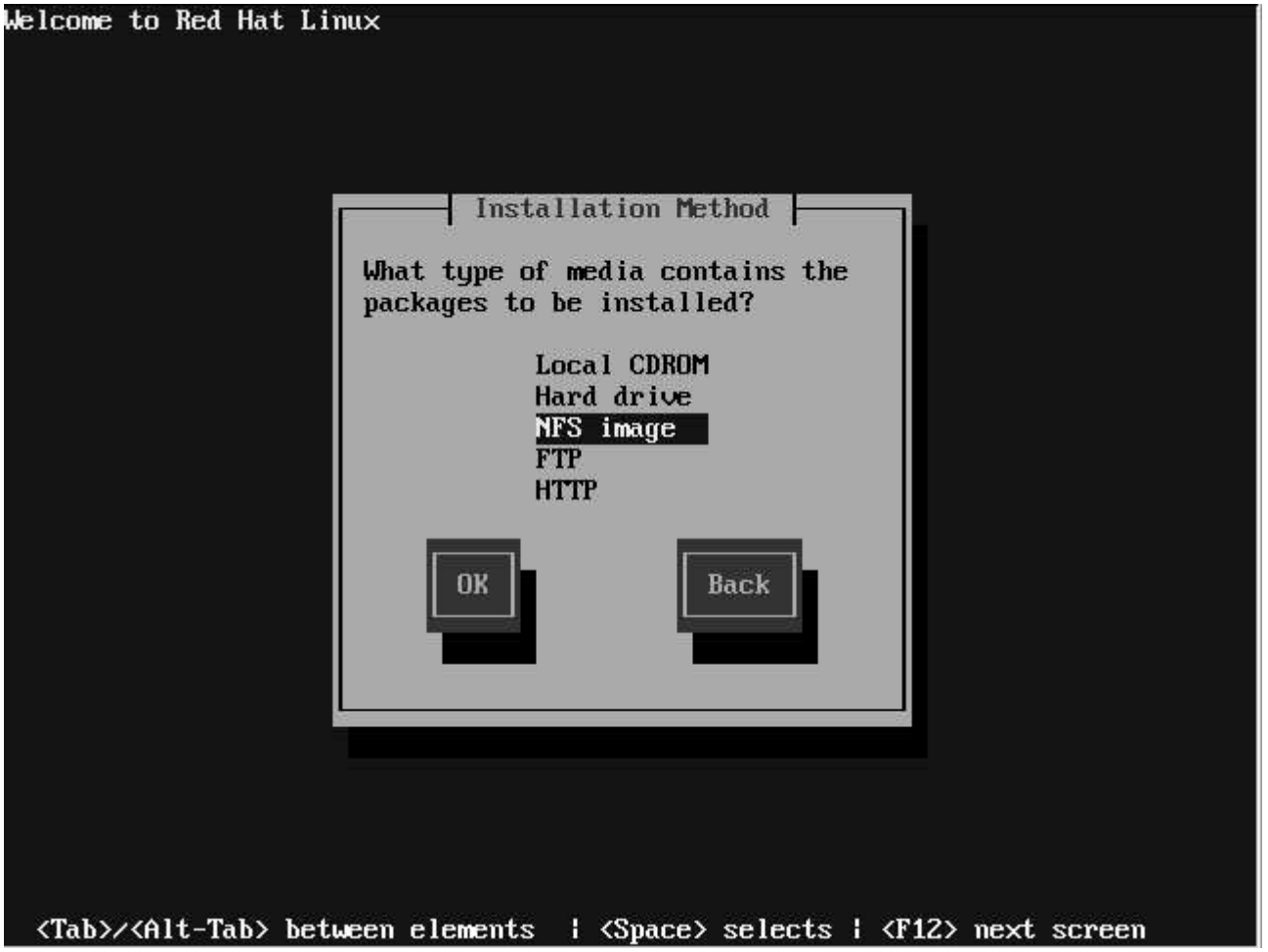
Choosing a language



Selecting the Keyboard



Selecting an Installation Method



GUI installation program

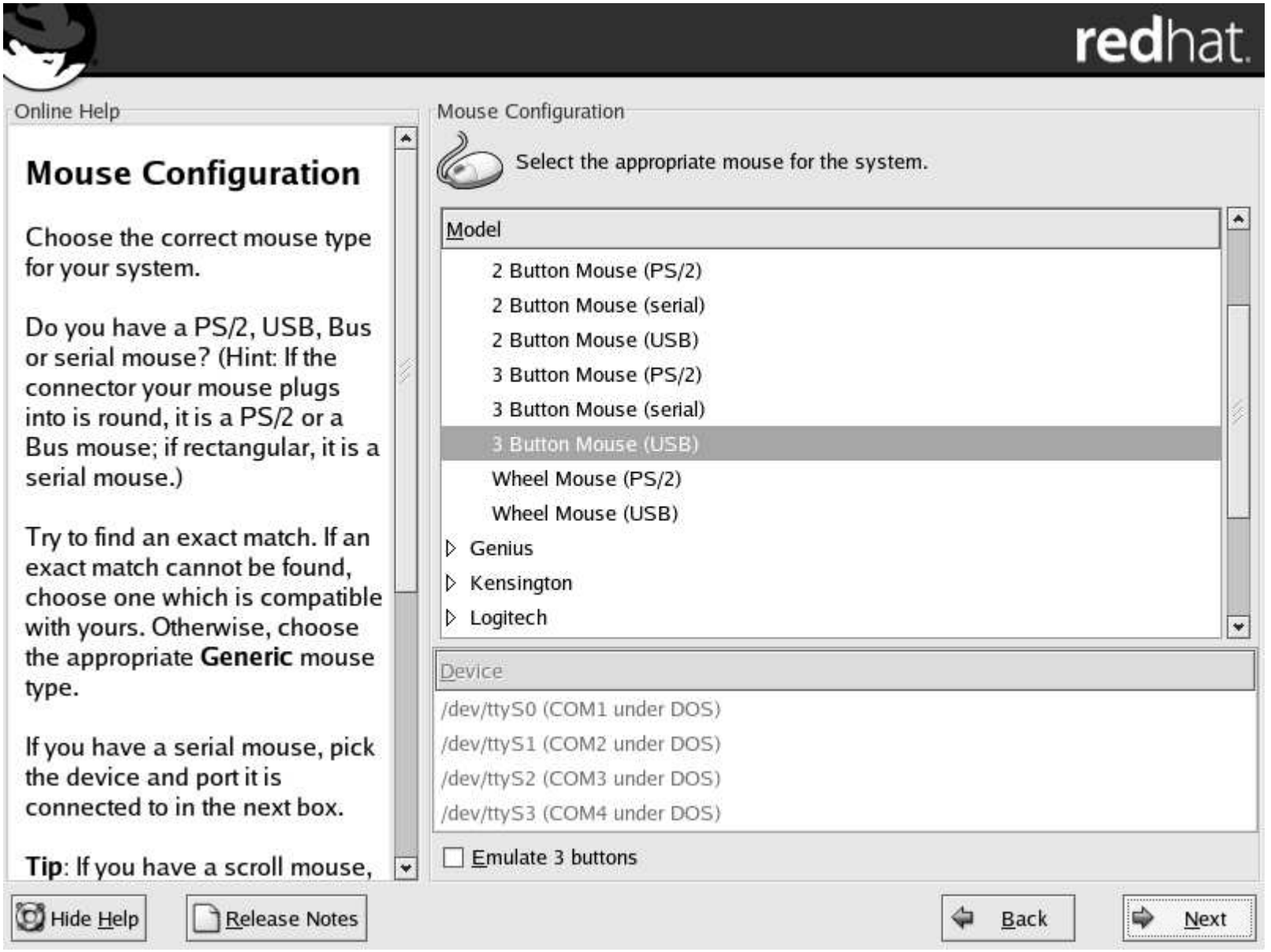
GUI installation program

NOTE

Only use a single mouse click to select the Next button on the GUI.

Double clicking the mouse button will result in the installation program skipping a screen

What mouse?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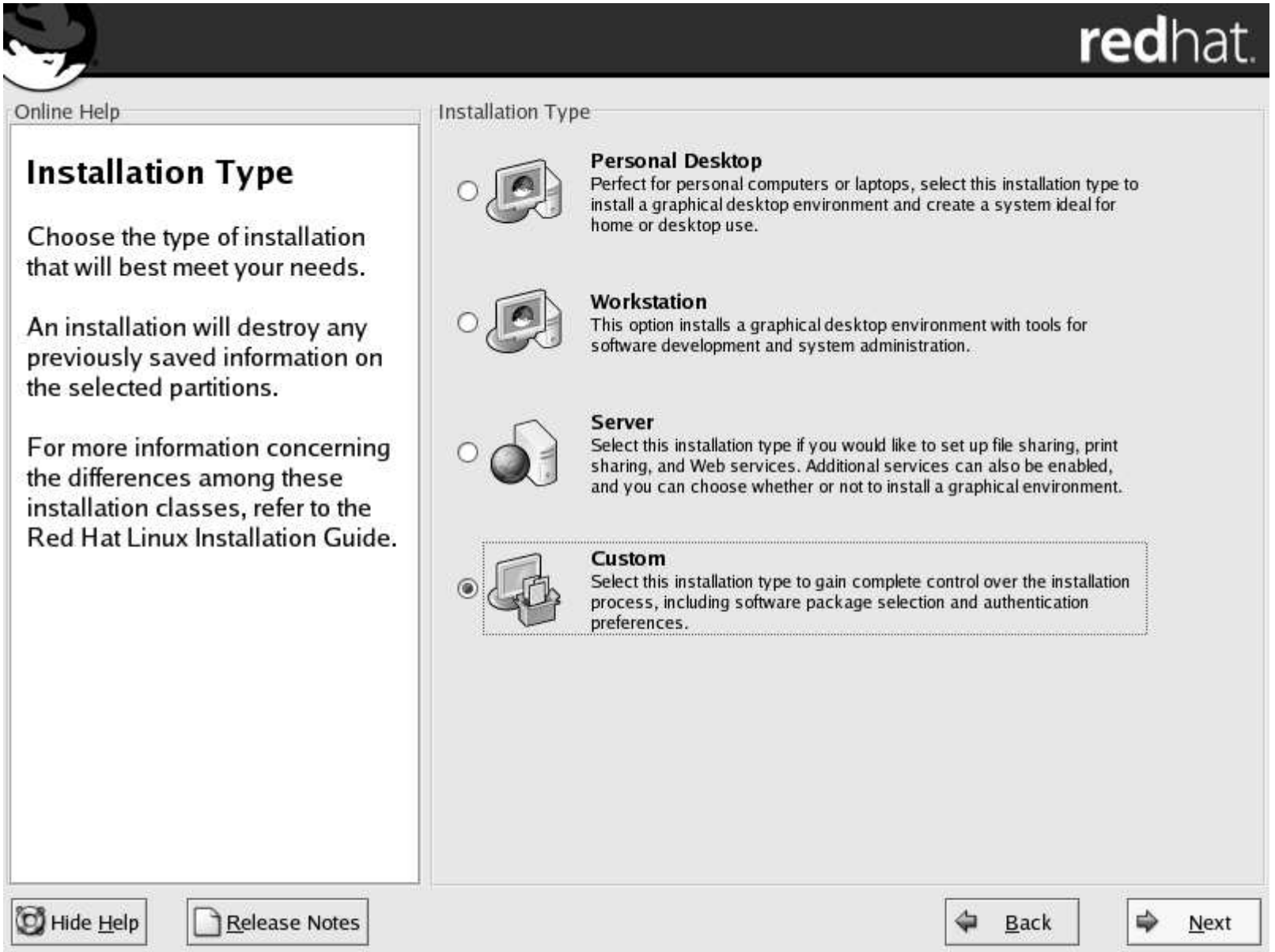
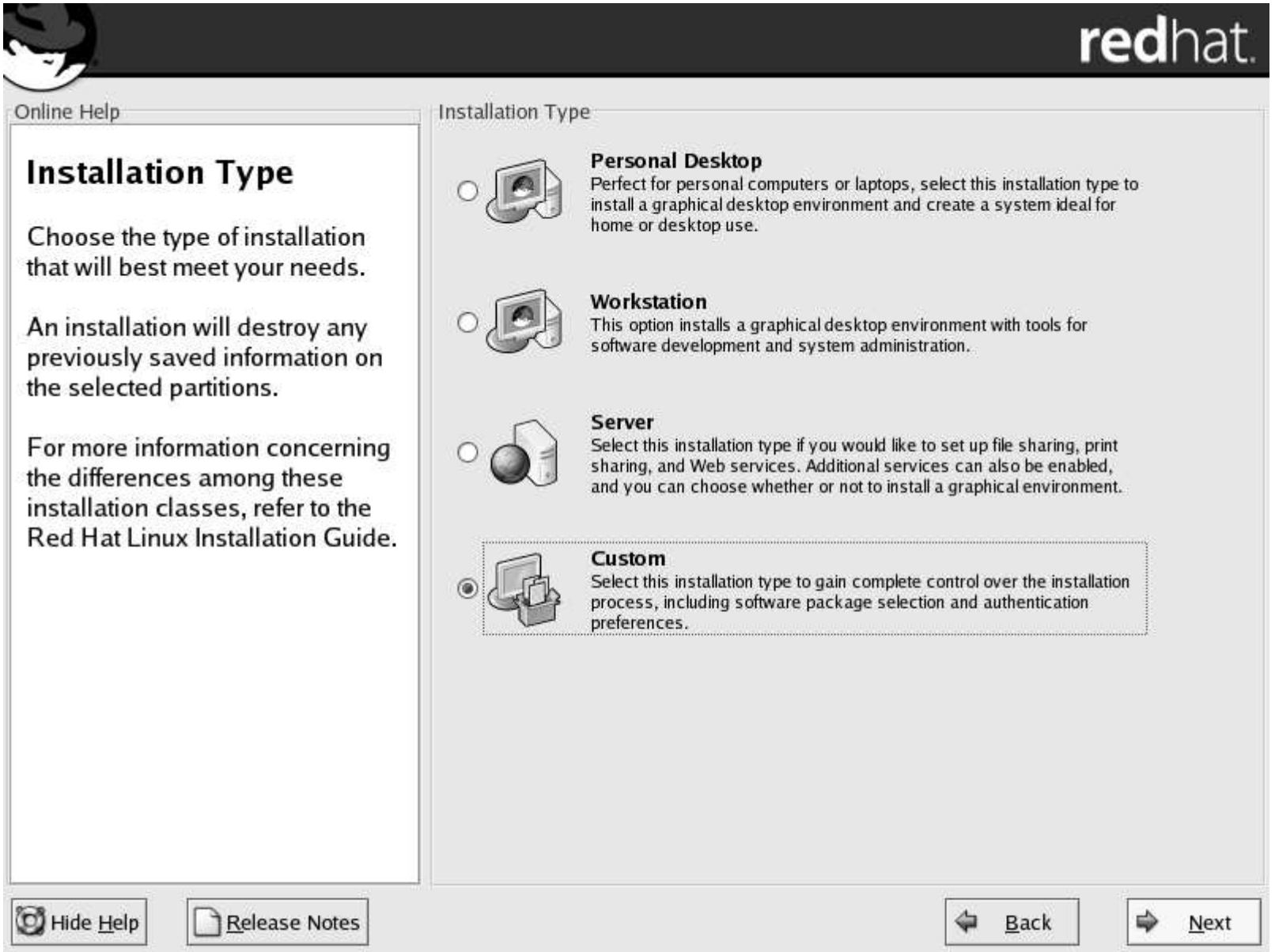
Online Help
Mouse Configuration
Select the appropriate mouse for the system.
Model
2 Button Mouse (PS/2)
2 Button Mouse (serial)
2 Button Mouse (USB)
3 Button Mouse (PS/2)
3 Button Mouse (serial)
3 Button Mouse (USB)
Wheel Mouse (PS/2)
Wheel Mouse (USB)
Genius
Kensington
Logitech
Device
/dev/ttyS0 (COM1 under DOS)
/dev/ttyS1 (COM2 under DOS)
/dev/ttyS2 (COM3 under DOS)
/dev/ttyS3 (COM4 under DOS)
Emulate 3 buttons
Mouse Configuration
Choose the correct mouse type for your system.
Do you have a PS/2, USB, Bus or serial mouse? (Hint: If the connector your mouse plugs into is round, it is a PS/2 or a Bus mouse; if rectangular, it is a serial mouse.)
Try to find an exact match. If an exact match cannot be found, choose one which is compatible with yours. Otherwise, choose the appropriate Generic mouse type.
If you have a serial mouse, pick the device and port it is connected to in the next box.
Tip: If you have a scroll mouse,
Hide Help
Release Notes
Back
Next

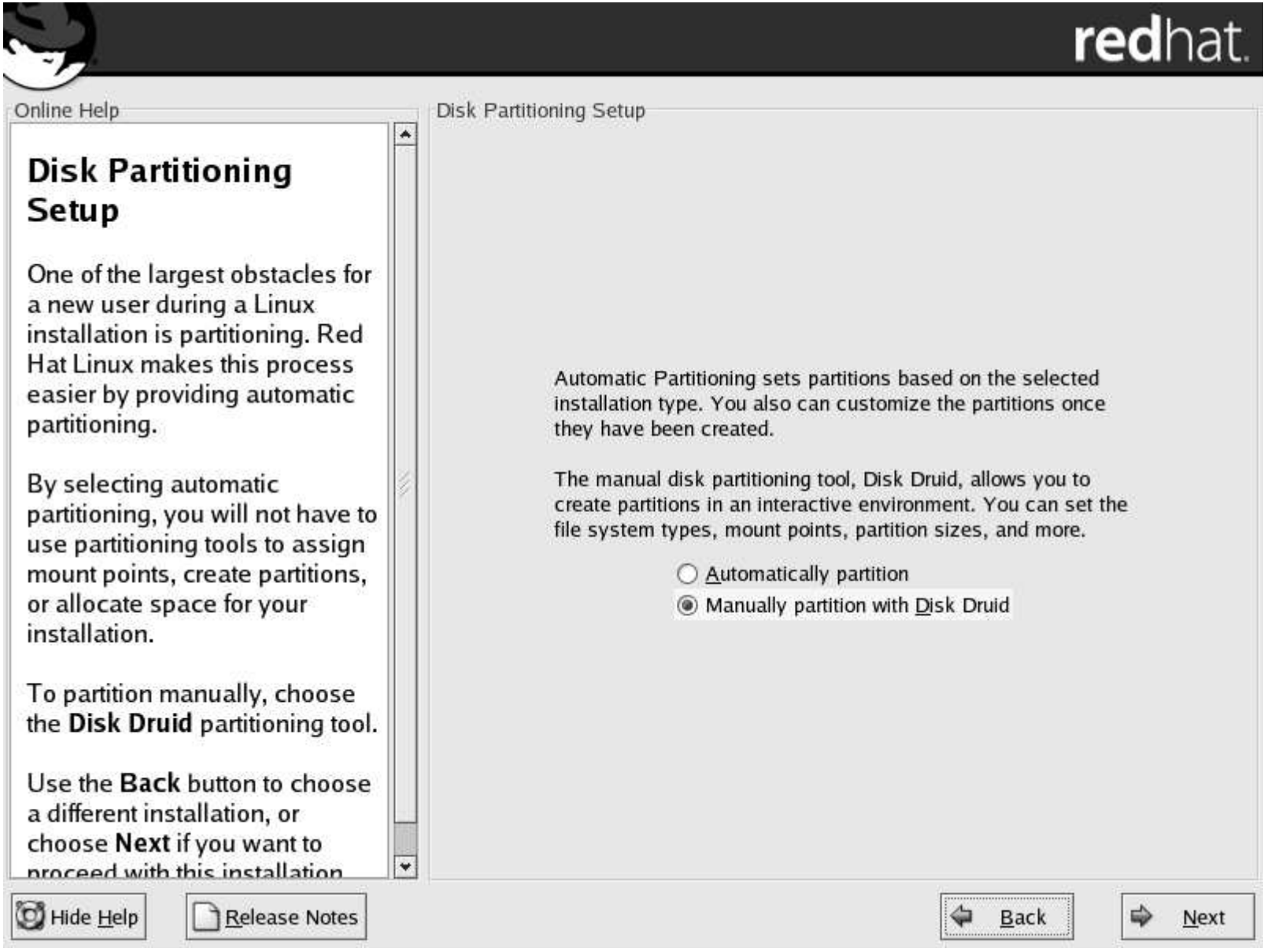
Installing Type



Installing Type

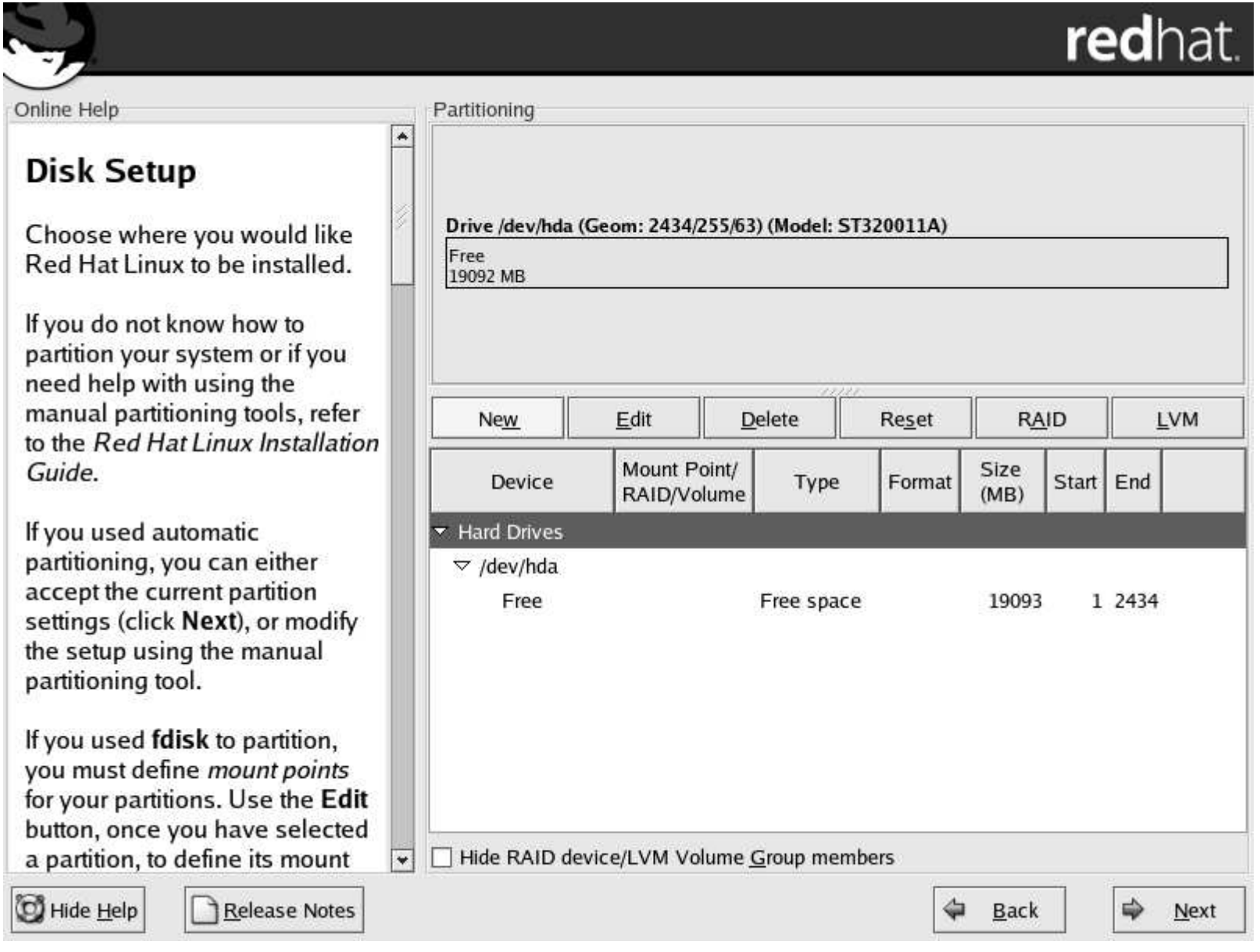


Disk Partitioning



Select the Manually Partition with Disk Druid option

Partitioning in Disk Druid



You can control Disk Druid by clicking on the appropriate buttons

Controlling Options

New: Used to add a new partition.

Edit: Used to edit mount points and partition sizes.

Delete: Used to delete the partition which is highlighted

Reset: This will reset the partition table to its original state

RAID: Used to provide redundancy to any or all disk partitions.

LVM: Allows you to create an LVM logical volume.

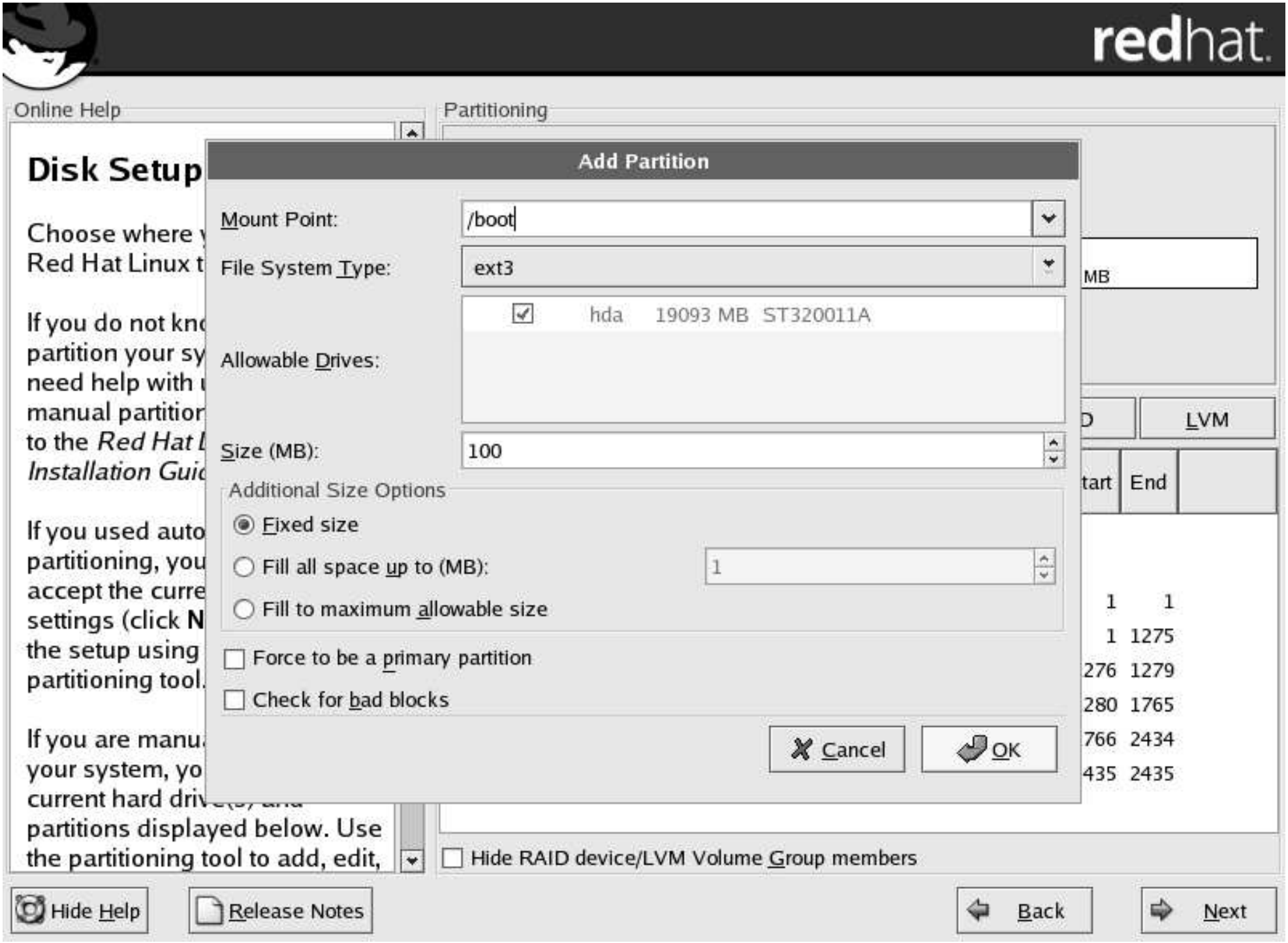
To add 100M partition called **/boot**

First click on the New button in the main Disk Druid window.

Then enter the appropriate details into the pop up window

For this example enter /boot in the Mount Point field and 100 into the Size (Megs) field

Then you click on the Ok button.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Online Help
Partitioning
Disk Setup
Choose where y
Red Hat Linux t
If you do not kn
partition your sy
need help with u
manual partitior
to the Red Hat L
Installation Guic
If you used auto
partitioning, you
accept the curre
settings (click N
the setup using
partitioning tool.
If you are manu
your system, yo
current hard driv
partitions displayed below. Use
the partitioning tool to add, edit,
Add Partition
Mount Point:
/boot
File System Type:
ext3
Allowable Drives:
hda 19093 MB ST320011A
Size (MB):
100
Additional Size Options
Fixed size
Fill all space up to (MB):
1
Fill to maximum allowable size
Force to be a primary partition
Check for bad blocks
Cancel
OK
MB
LVM
tart
End
1 1
1 1275
276 1279
280 1765
766 2434
435 2435
Hide RAID device/LVM Volume Group members
Hide Help
Release Notes
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DD Options

You can choose whether to keep a partition a fixed size or to allow it to ”grow” (fill up the rest of the disk) or to allow the partition to grow to a certain point.

DD Options

If you select the Fill to maximum allowable size button on more than one partition then any additional free space will be shared out between the partitions

create the following partition layout:

100 MB /boot

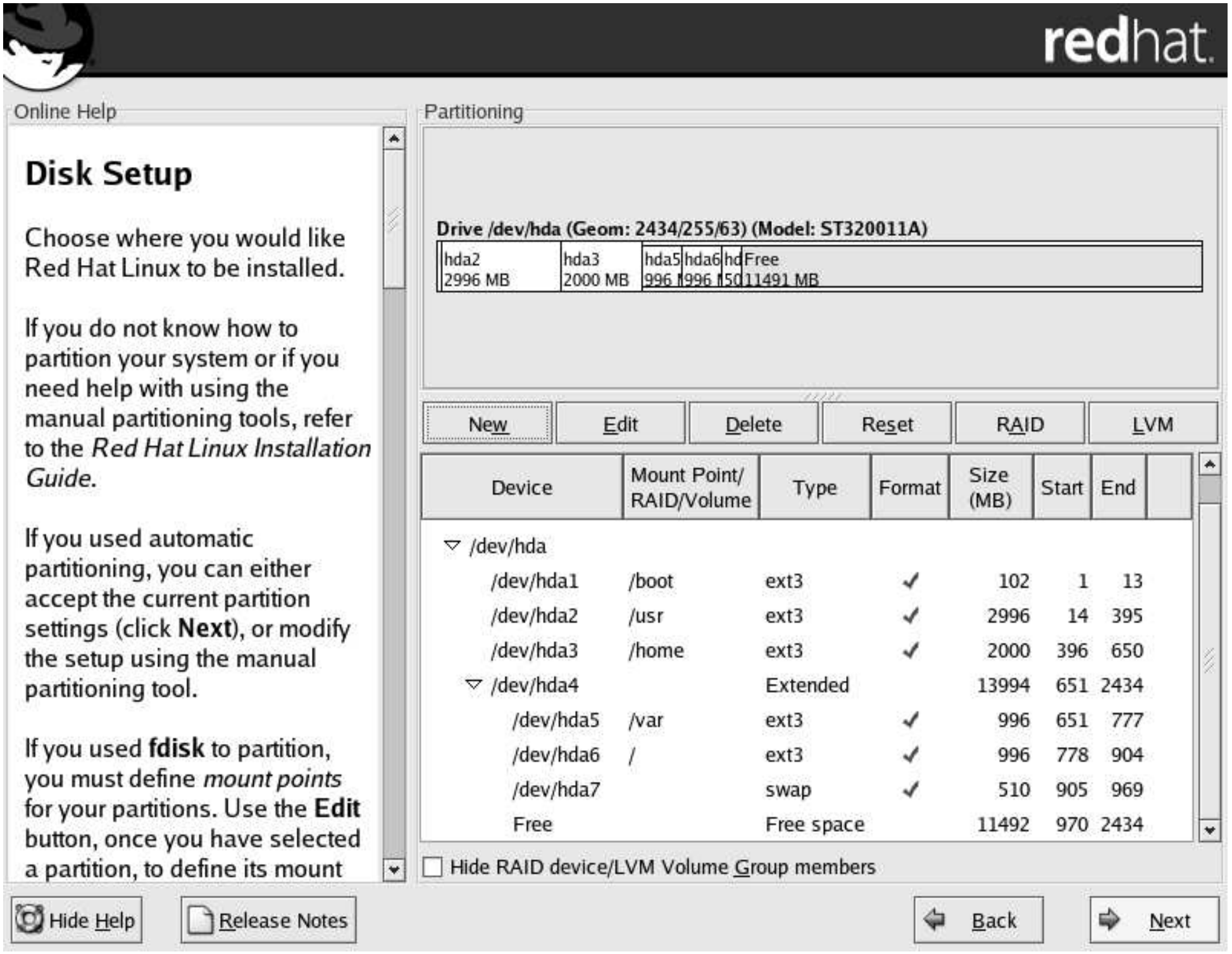
512 MB swap

1000 MB /

4000 MB /usr

1000 MB /var

2000 MB /home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Online Help
Disk Setup
Choose where you would like Red Hat Linux to be installed.
If you do not know how to partition your system or if you need help with using the manual partitioning tools, refer to the *Red Hat Linux Installation Guide*.
If you used automatic partitioning, you can either accept the current partition settings (click **Next**), or modify the setup using the manual partitioning tool.
If you used **fdisk** to partition, you must define *mount points* for your partitions. Use the **Edit** button, once you have selected a partition, to define its mount
Partitioning
Drive /dev/hda (Geom: 2434/255/63) (Model: ST320011A)
hda2 2996 MB
hda3 2000 MB
hda5 996 M
hda6 996 M
hd 150
Free 11491 MB
New
Edit
Delete
Reset
RAID
LVM
Device
Mount Point/ RAID/Volume
Type
Format
Size (MB)
Start
End
/dev/hda
/dev/hda1 /boot ext3 102 1 13
/dev/hda2 /usr ext3 2996 14 395
/dev/hda3 /home ext3 2000 396 650
/dev/hda4 Extended 13994 651 2434
/dev/hda5 /var ext3 996 651 777
/dev/hda6 / ext3 996 778 904
/dev/hda7 swap 510 905 969
Free Free space 11492 970 2434
Hide RAID device/LVM Volume Group members
Hide Help
Release Notes
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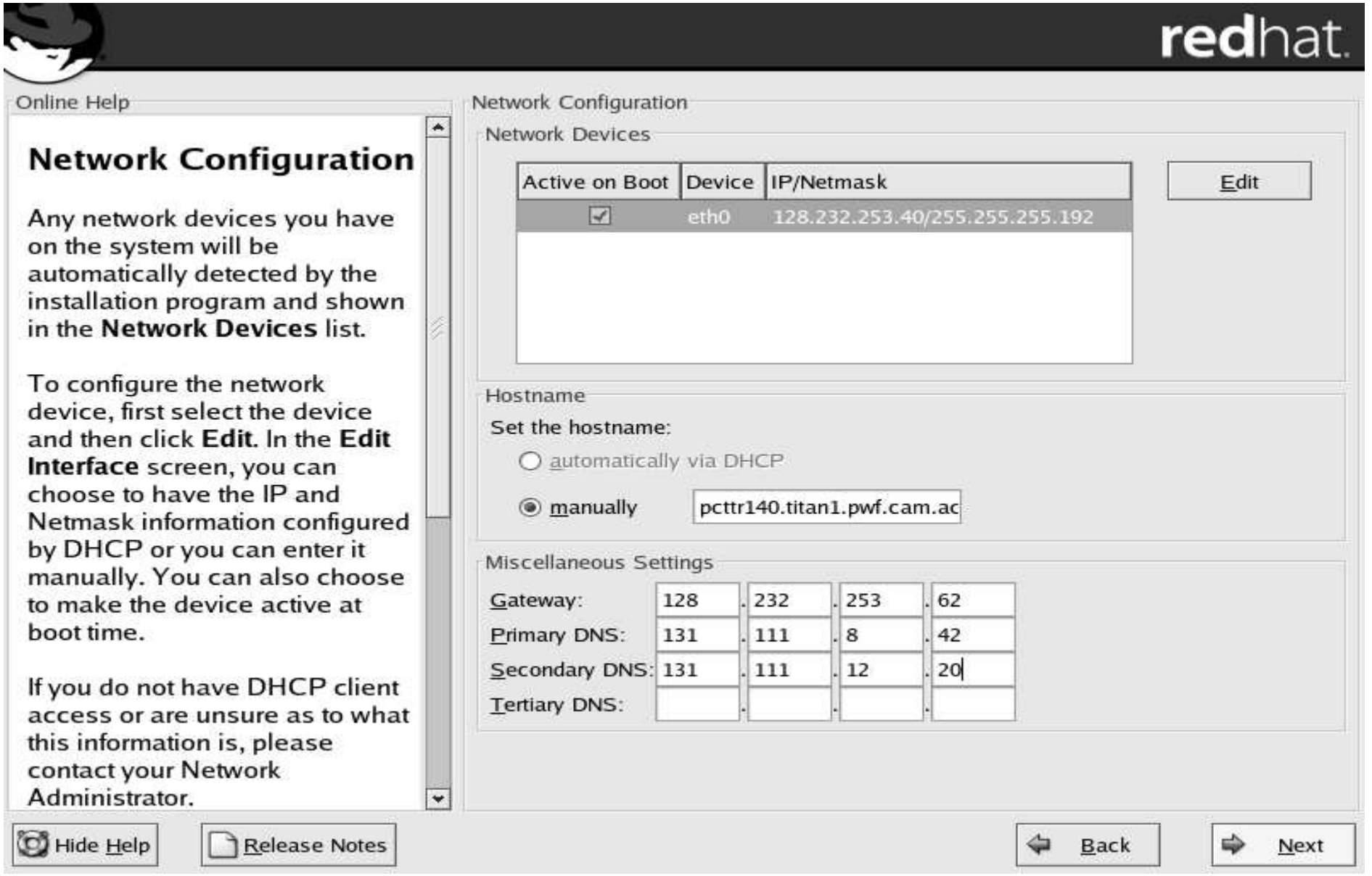
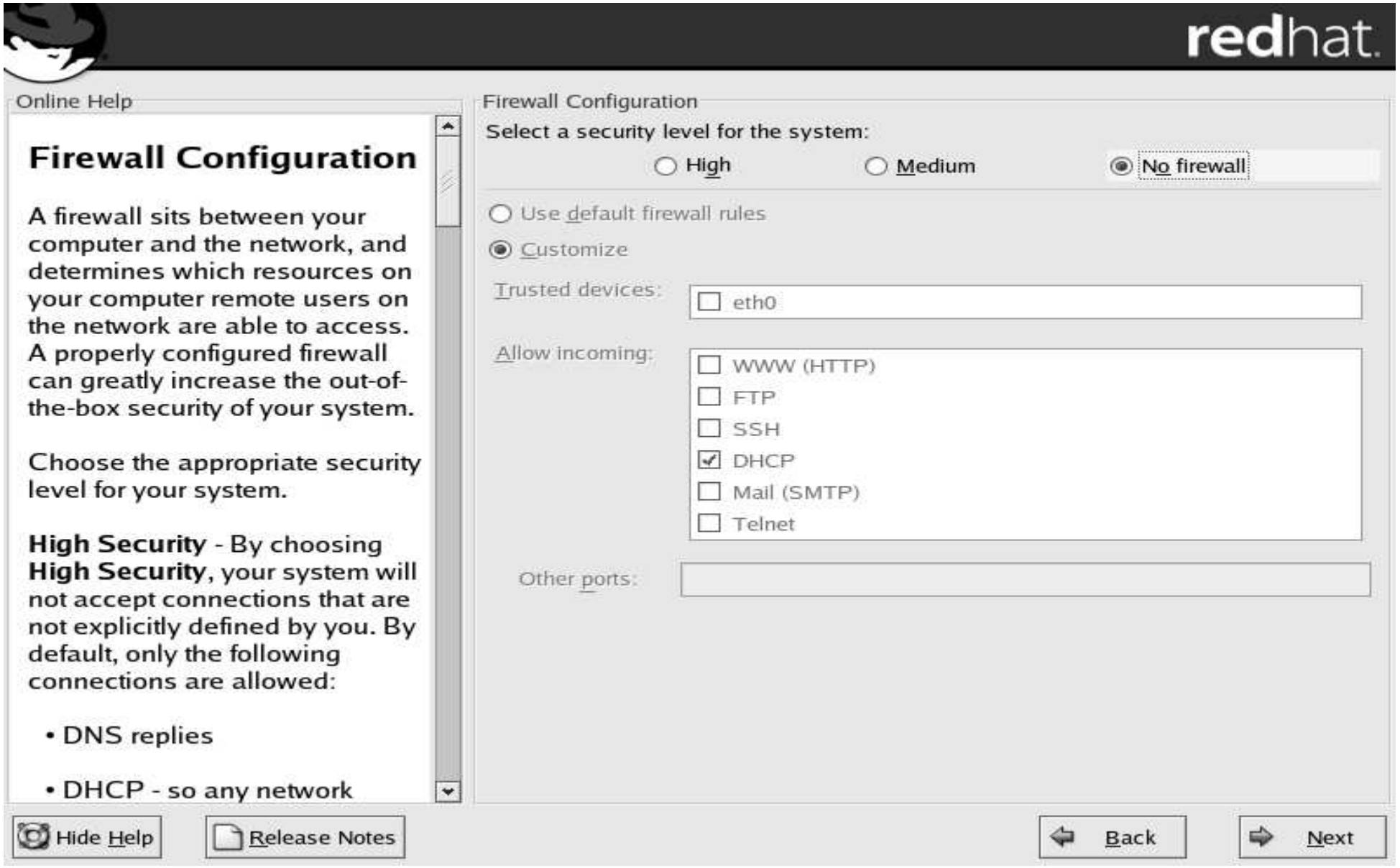
Make sure that none of the partitions has the Fill to maximum allowable size button selected

This deliberately leaves some space spare

Network Configuration



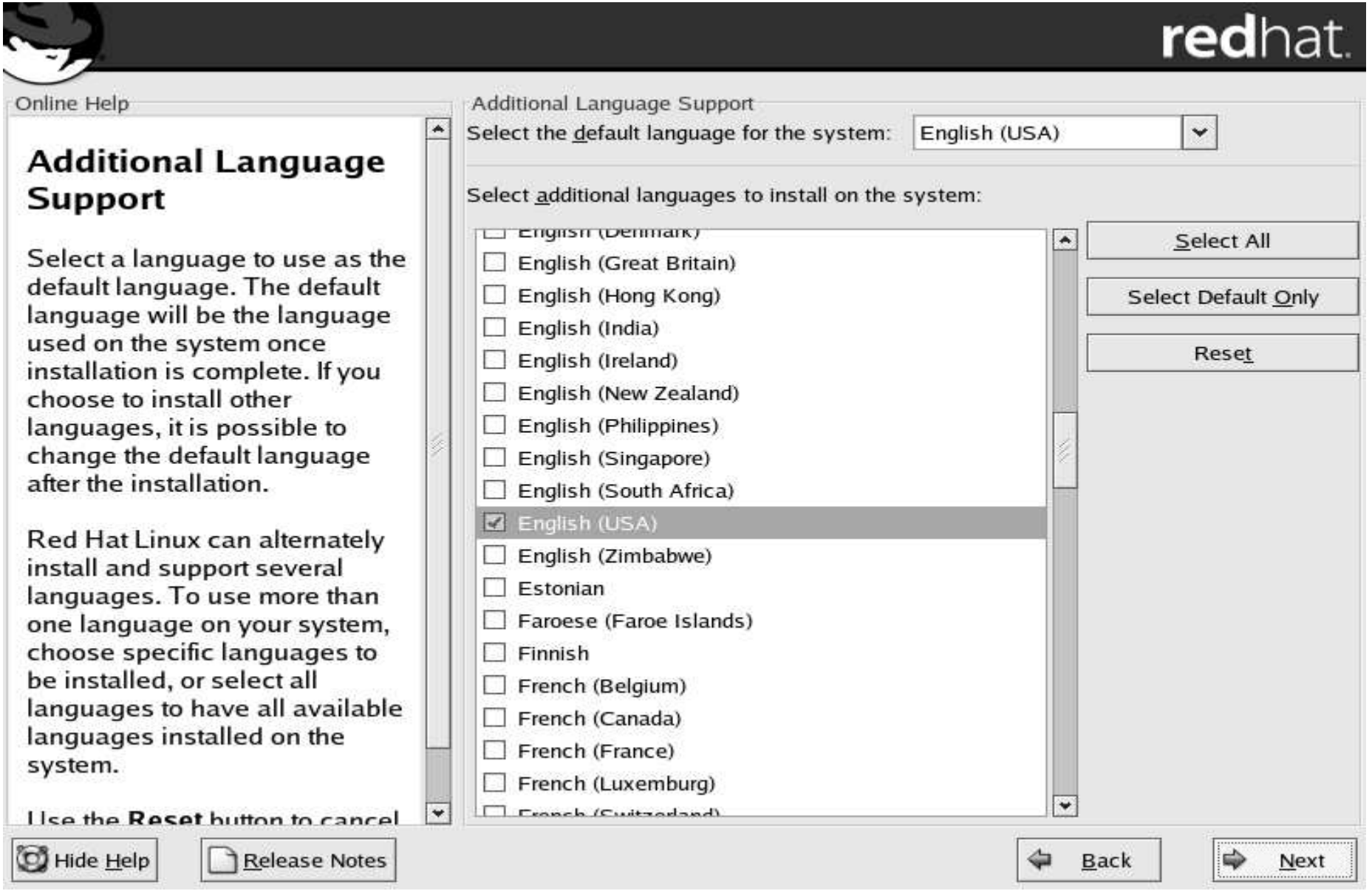
Firewall configuration



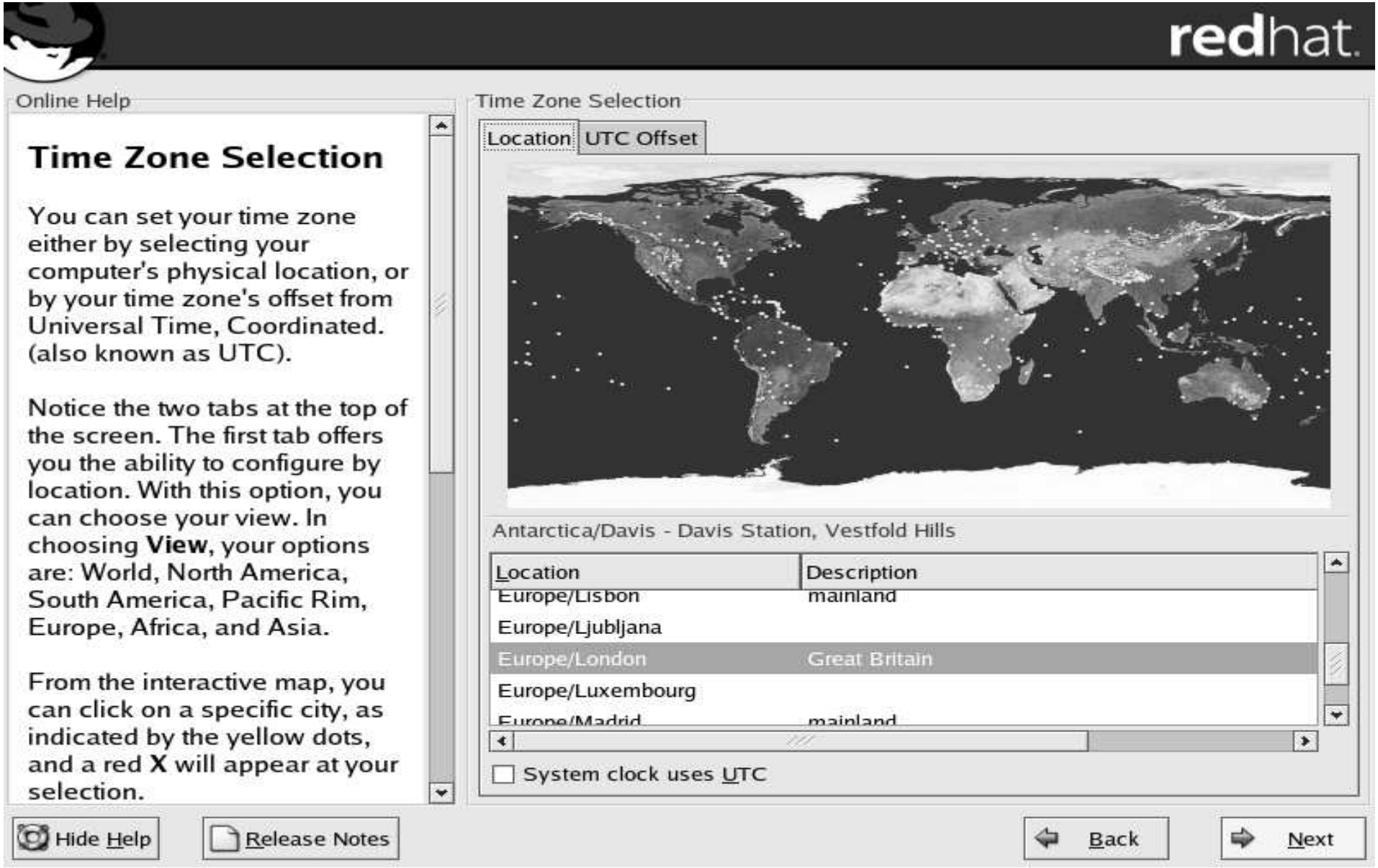
Firewall configuration

we have the option of setting up a firewall to stop selected network services from being accessed

Language support selection

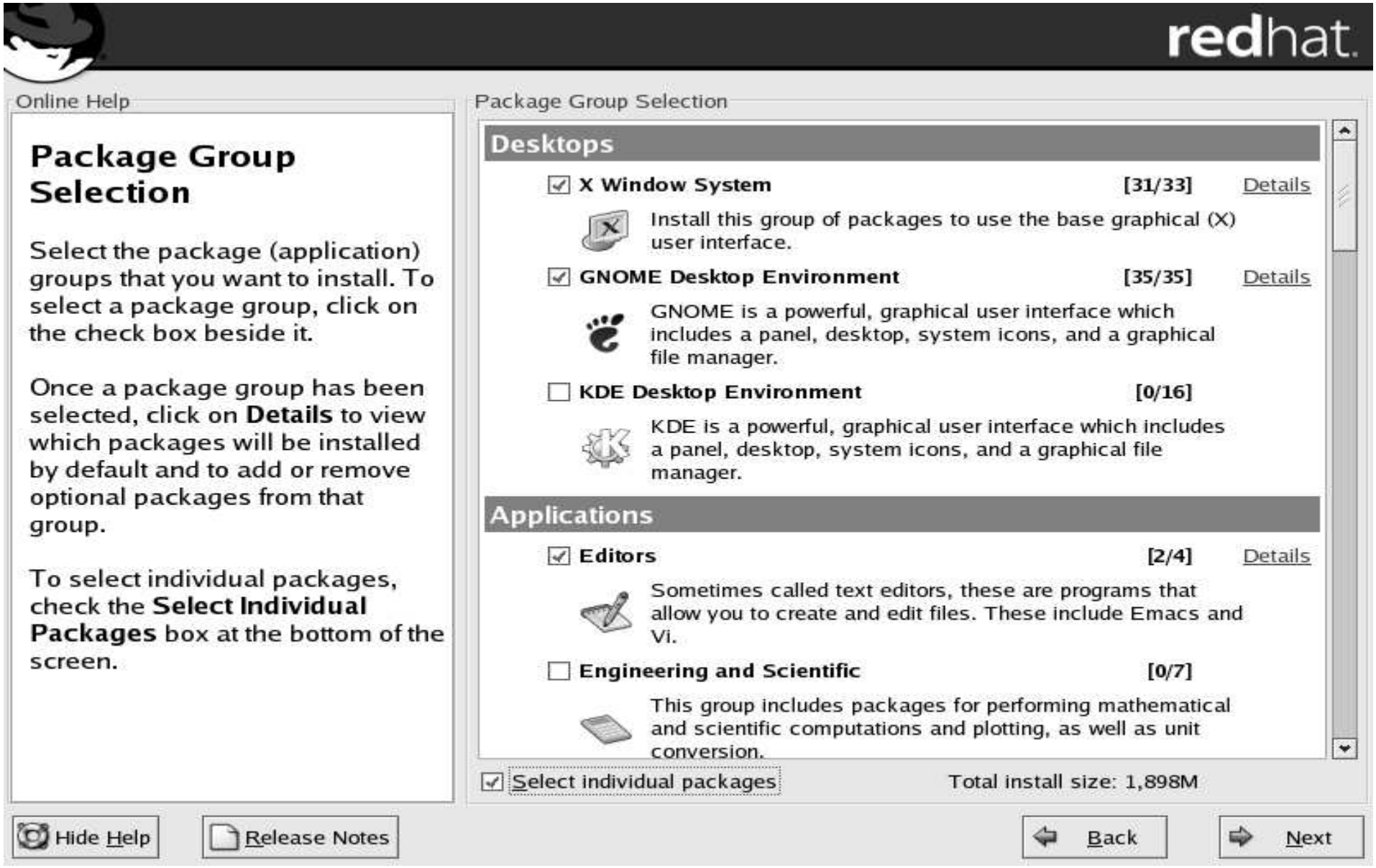


Time zone configuration

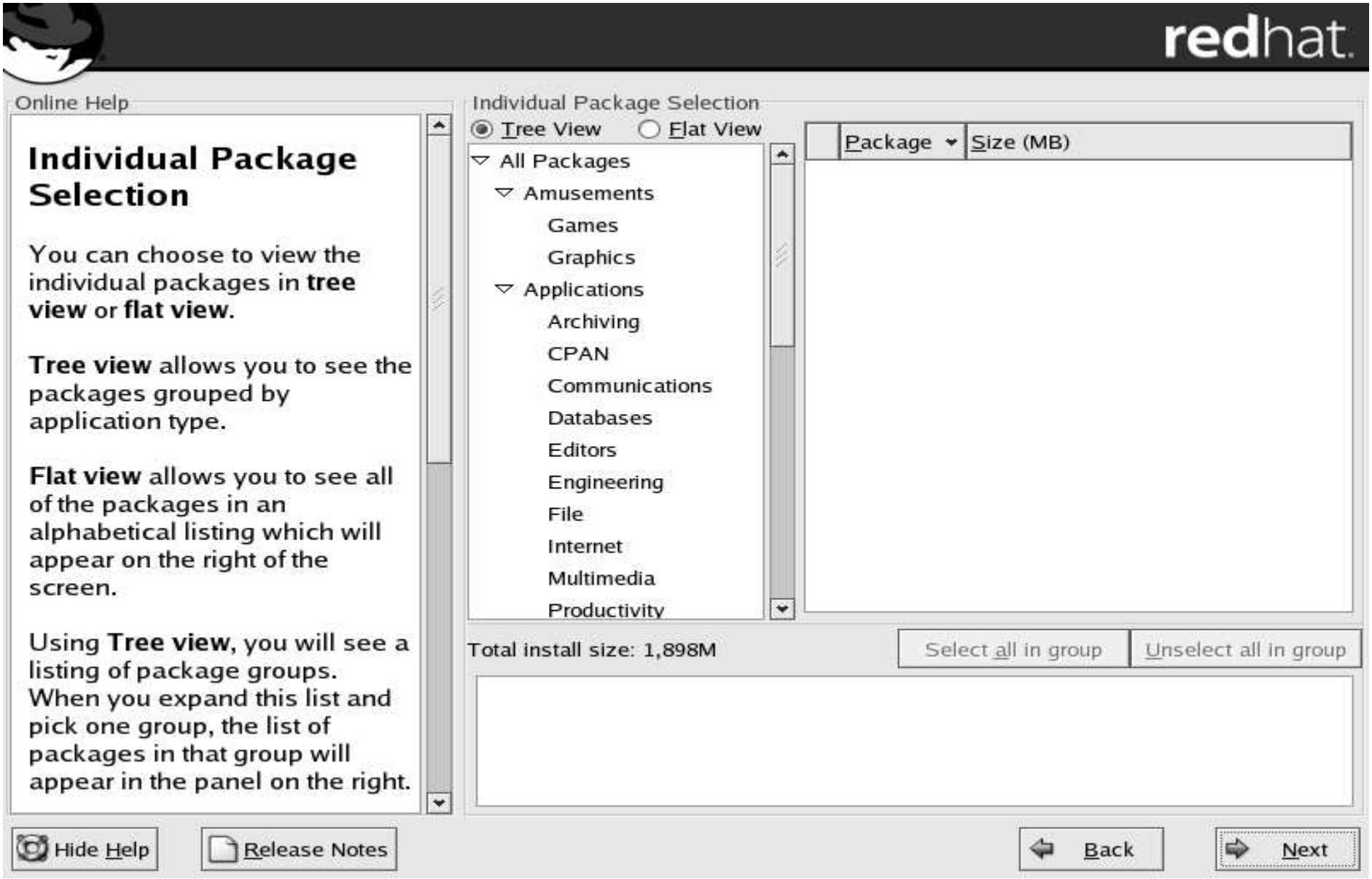


Root password

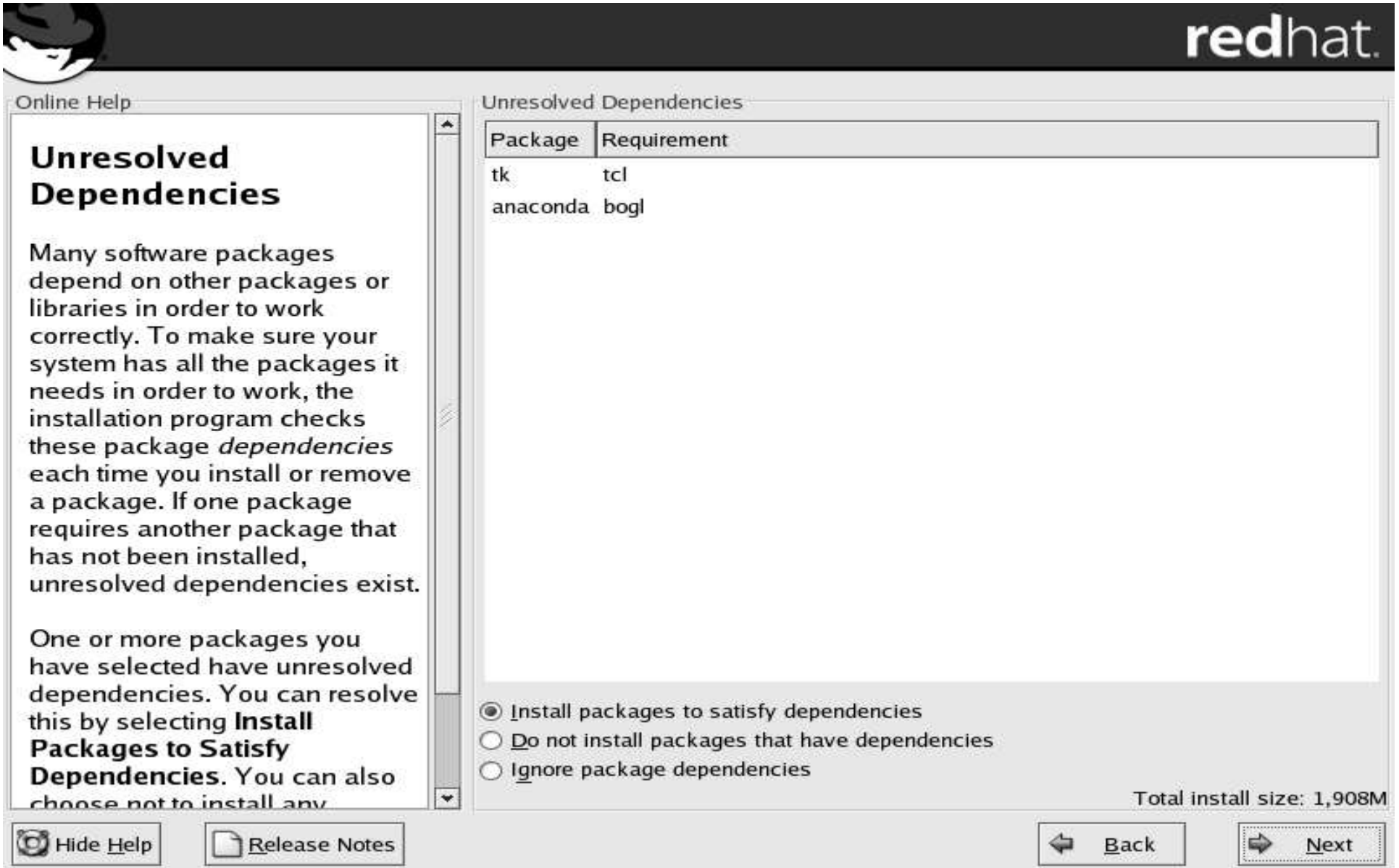
Package group selection



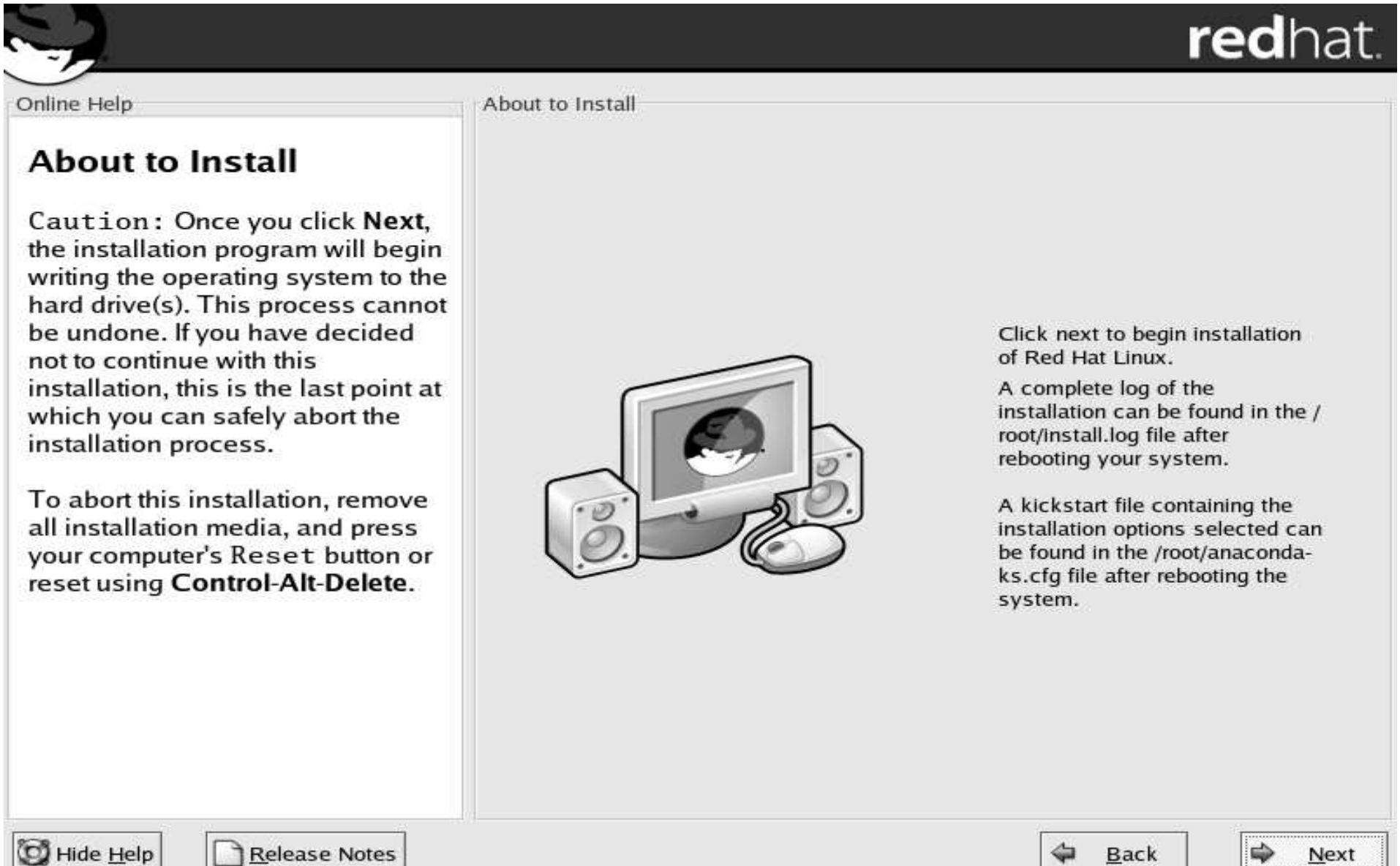
Selecting individual packages



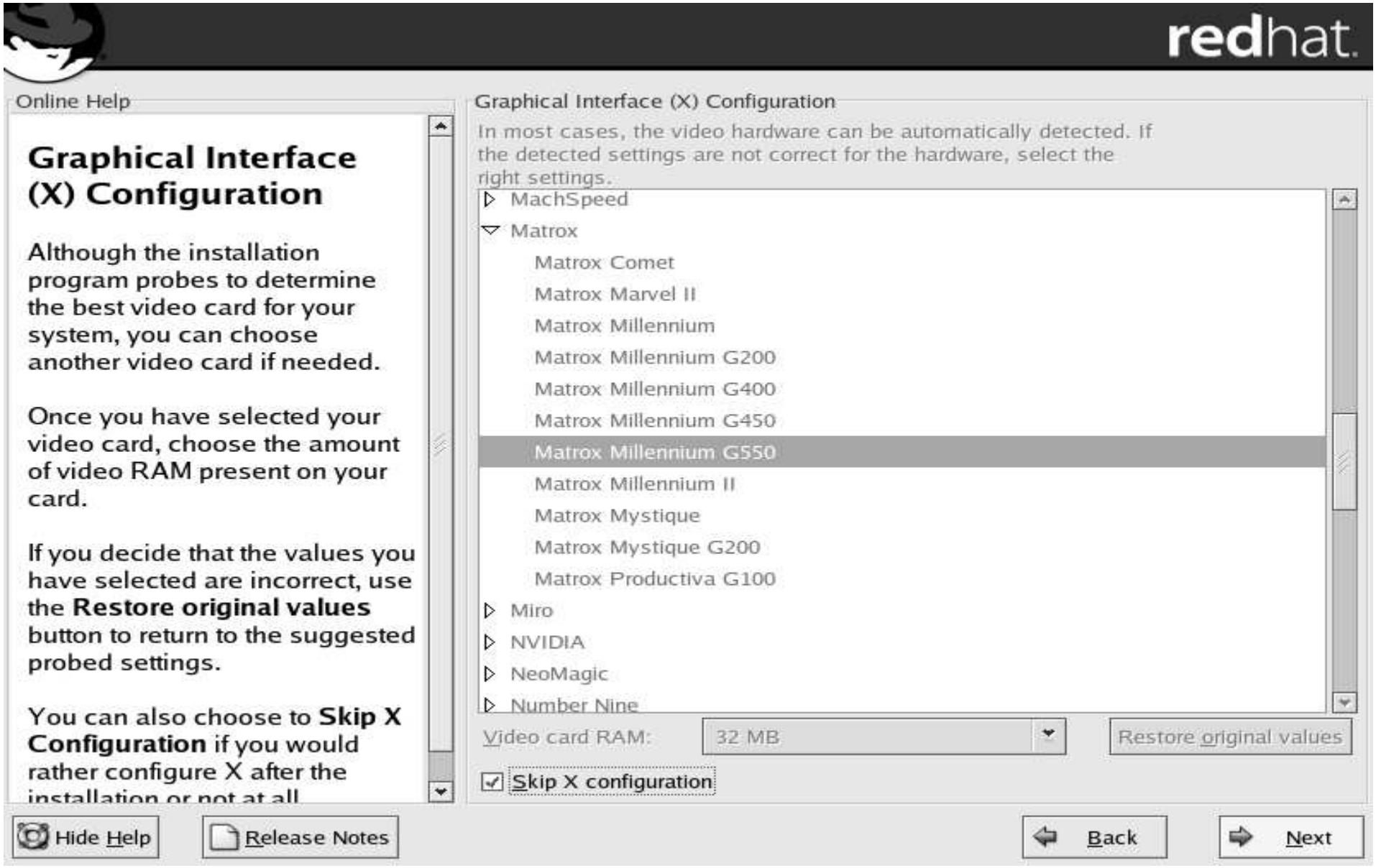
Unresolved Dependencies



Are you ready to install?



Installing X



Congratulations