

Installing Red Hat Linux

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Mangaluru-1

- 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 partitions are laid out.
- Boot loader stores info on where to boot from.

Partitions

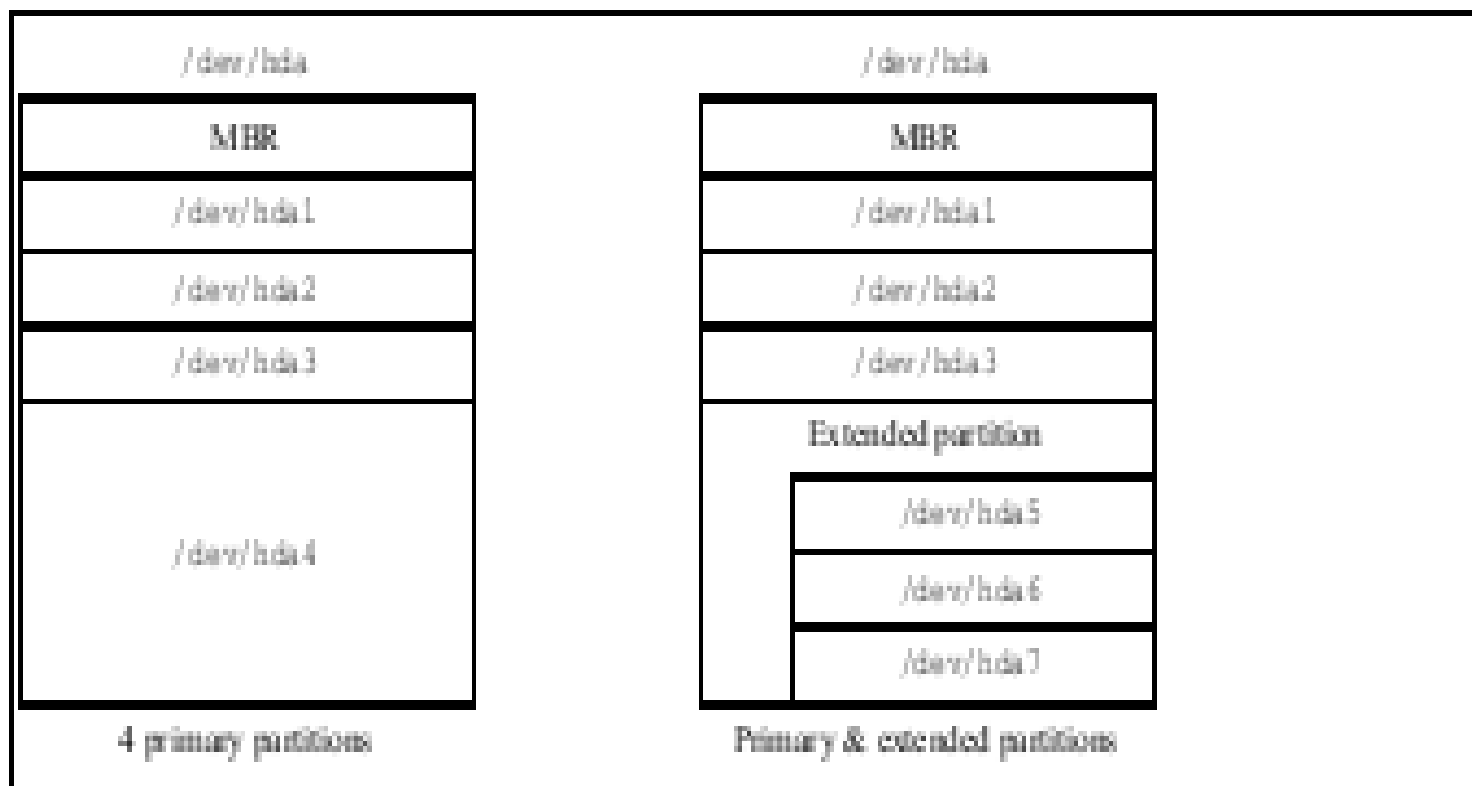
- Primary Partitions
- Extended Partitions

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/xy[1-4]***.
- Logical partitions are assigned sequentially upwards from ***/dev/xy5***.

/dev/xy[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:

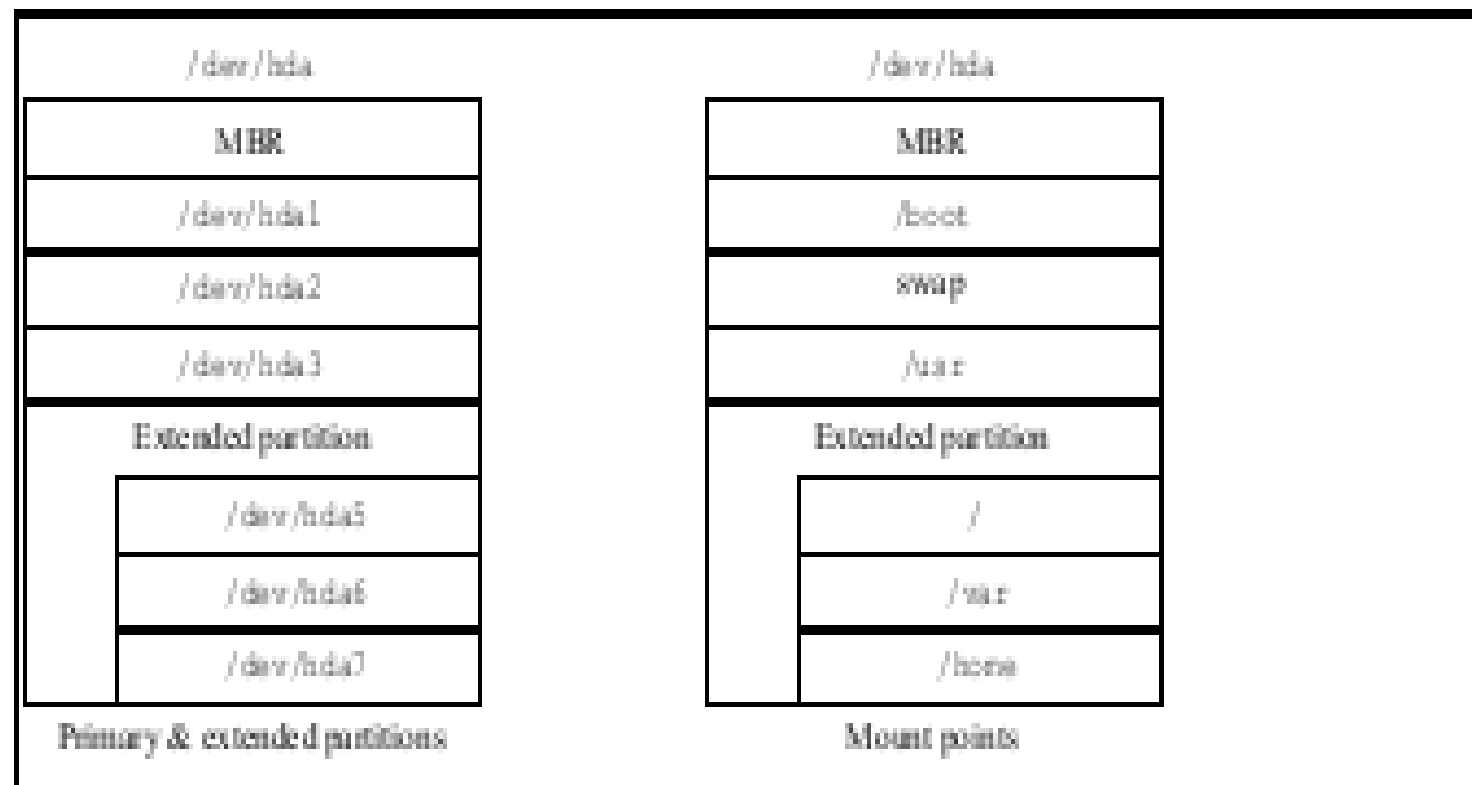
- built up in an inverted tree structure.
- the top of the tree is called root or /.

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

Booootloader

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

Booootloader

GRUB (GRand Unified Booootloader) and
LILO (The Linux Loader) are used to boot the
system

The default Bootloader 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.

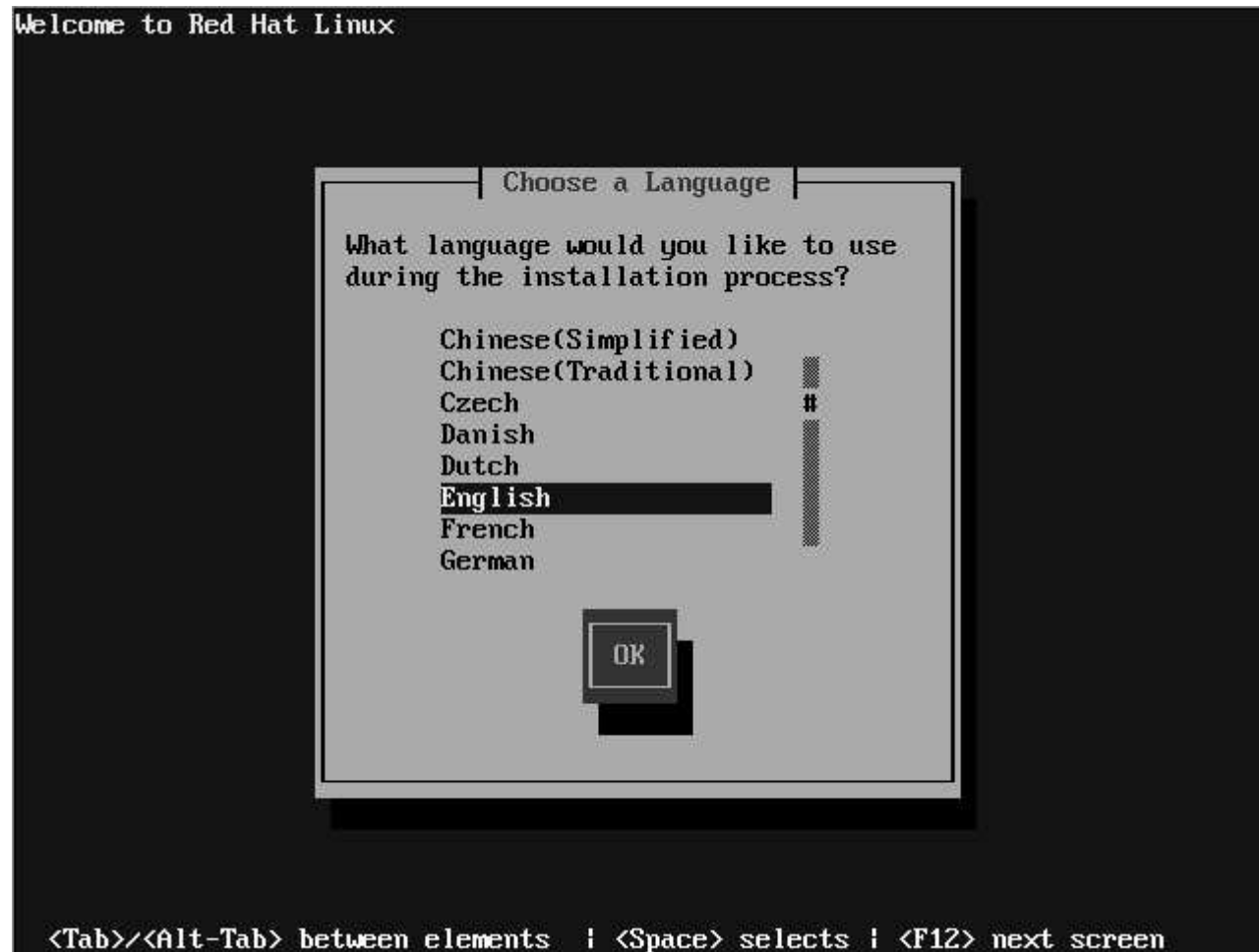
An installation walk through

Typical dialogue that occurs when installing Red Hat Linux

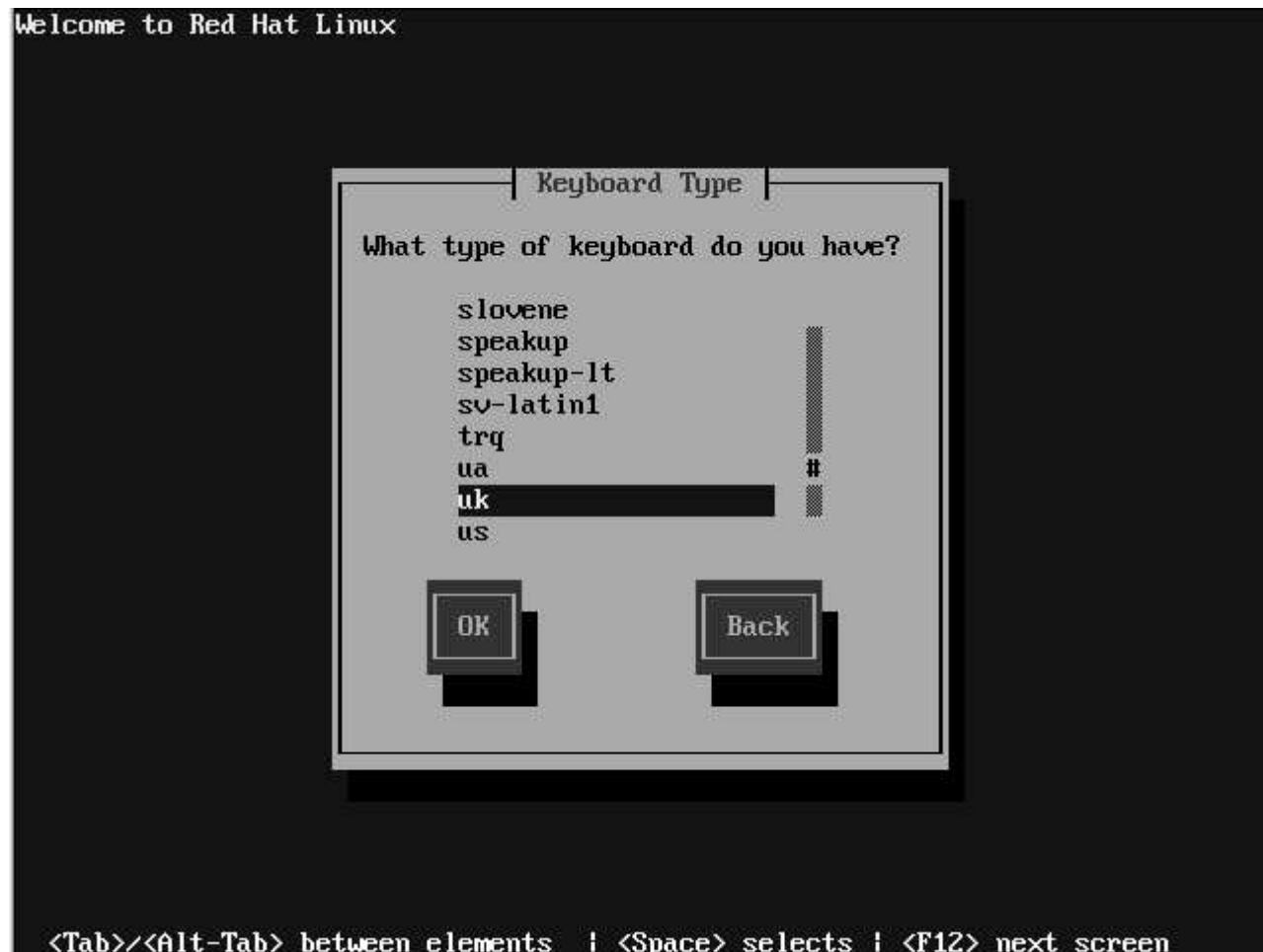
Boot Options



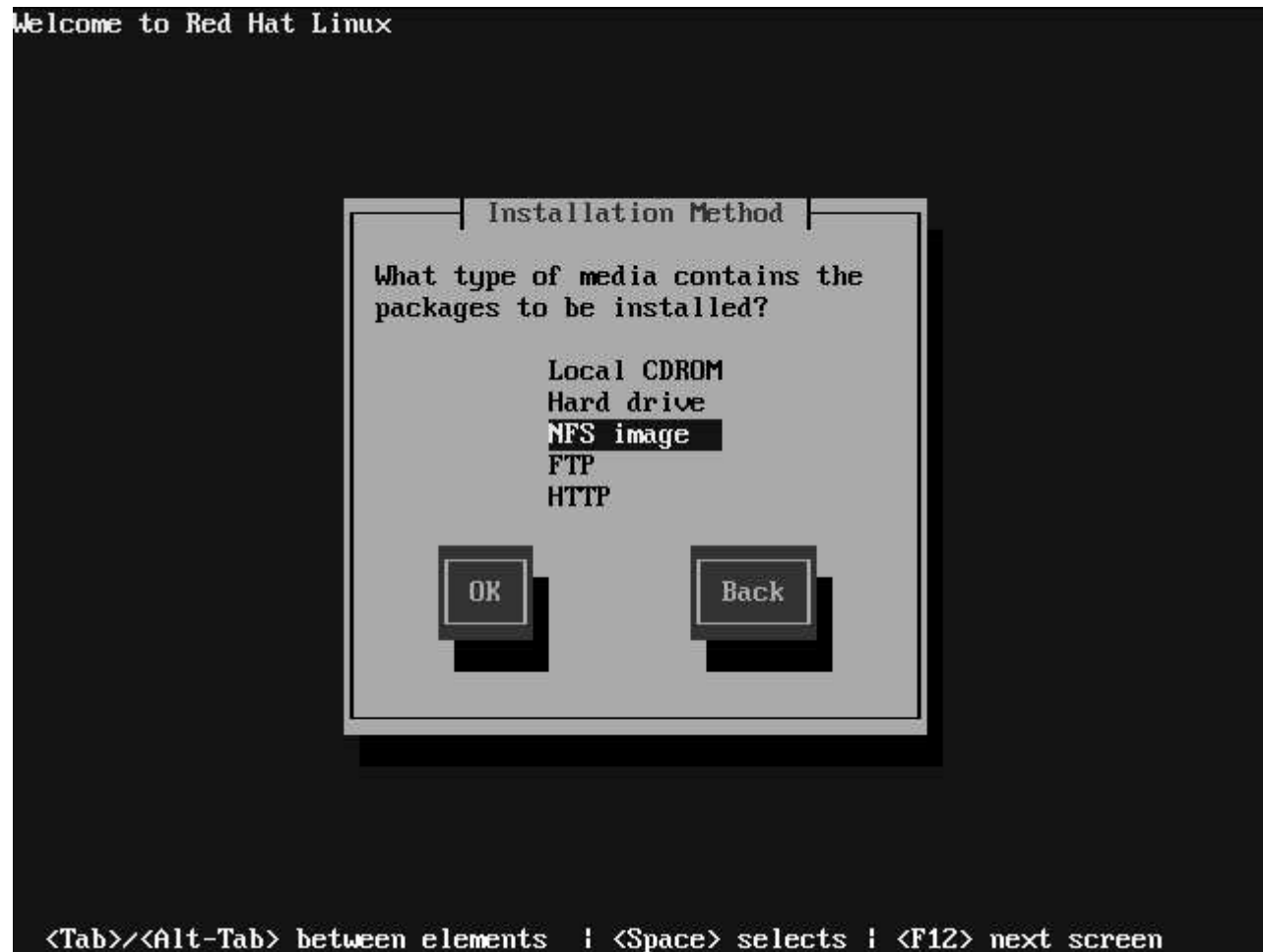
Choosing a language



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?



Online Help

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,

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

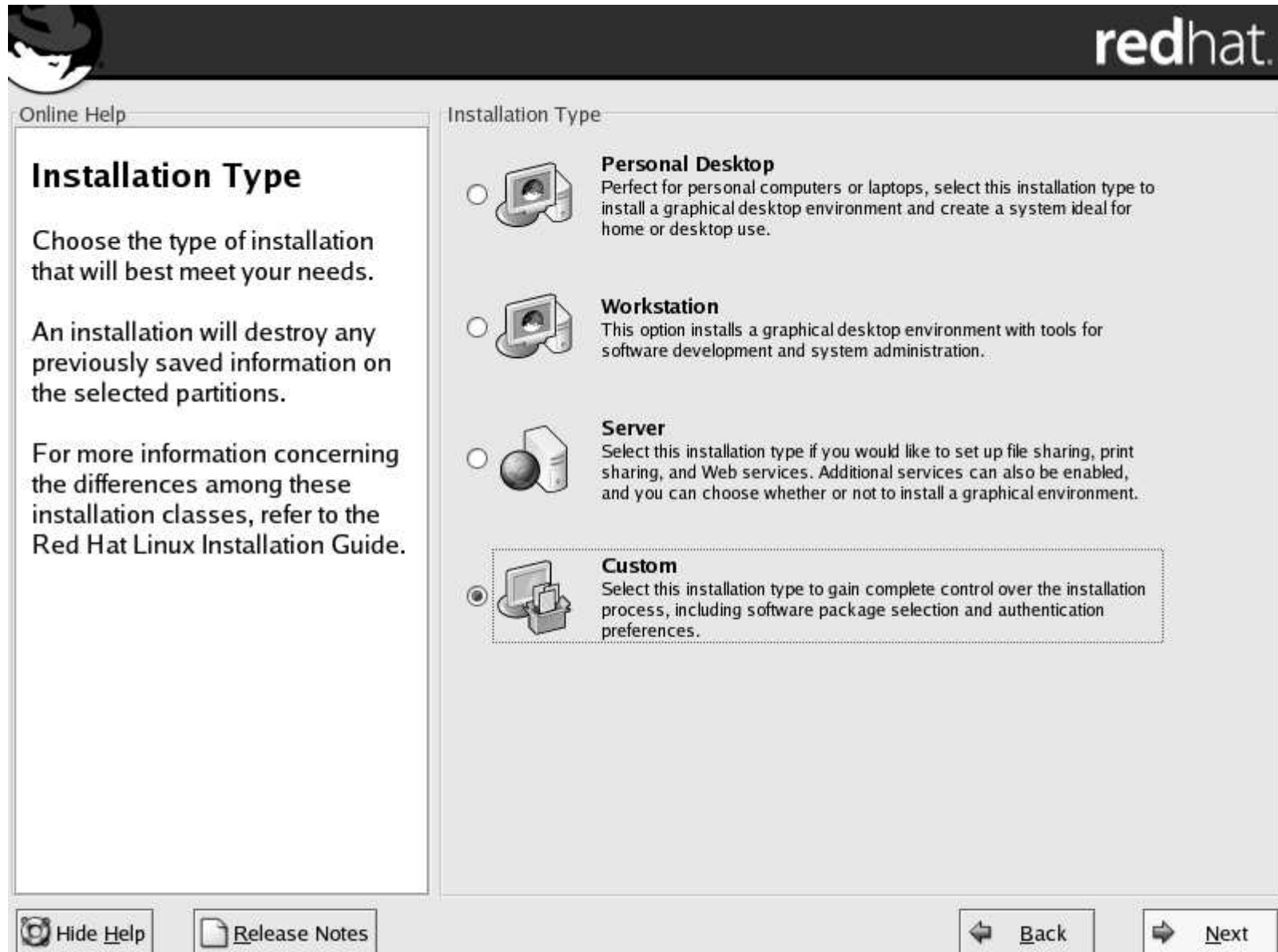
 Hide Help

 Release Notes

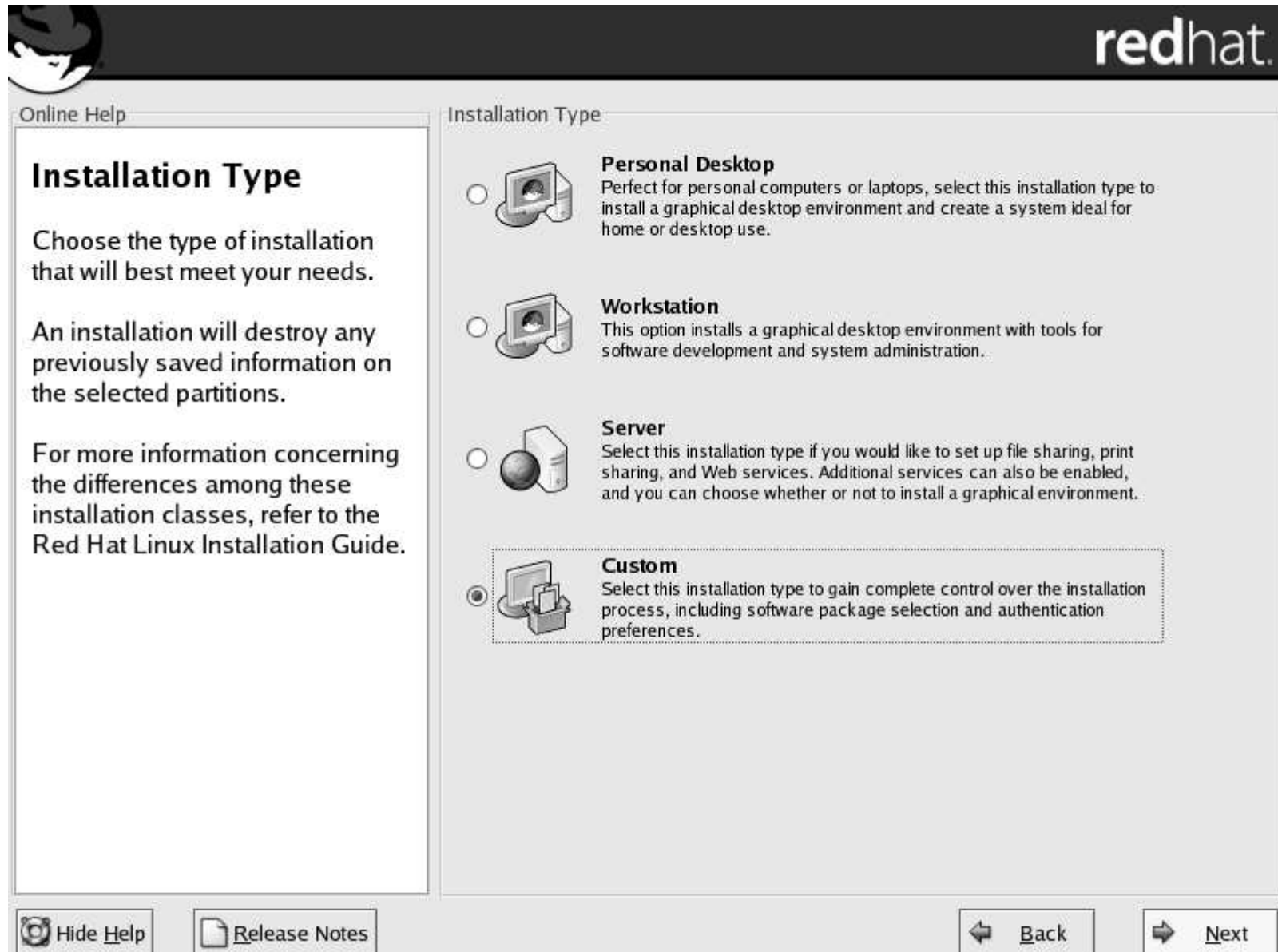
 Back

 Next

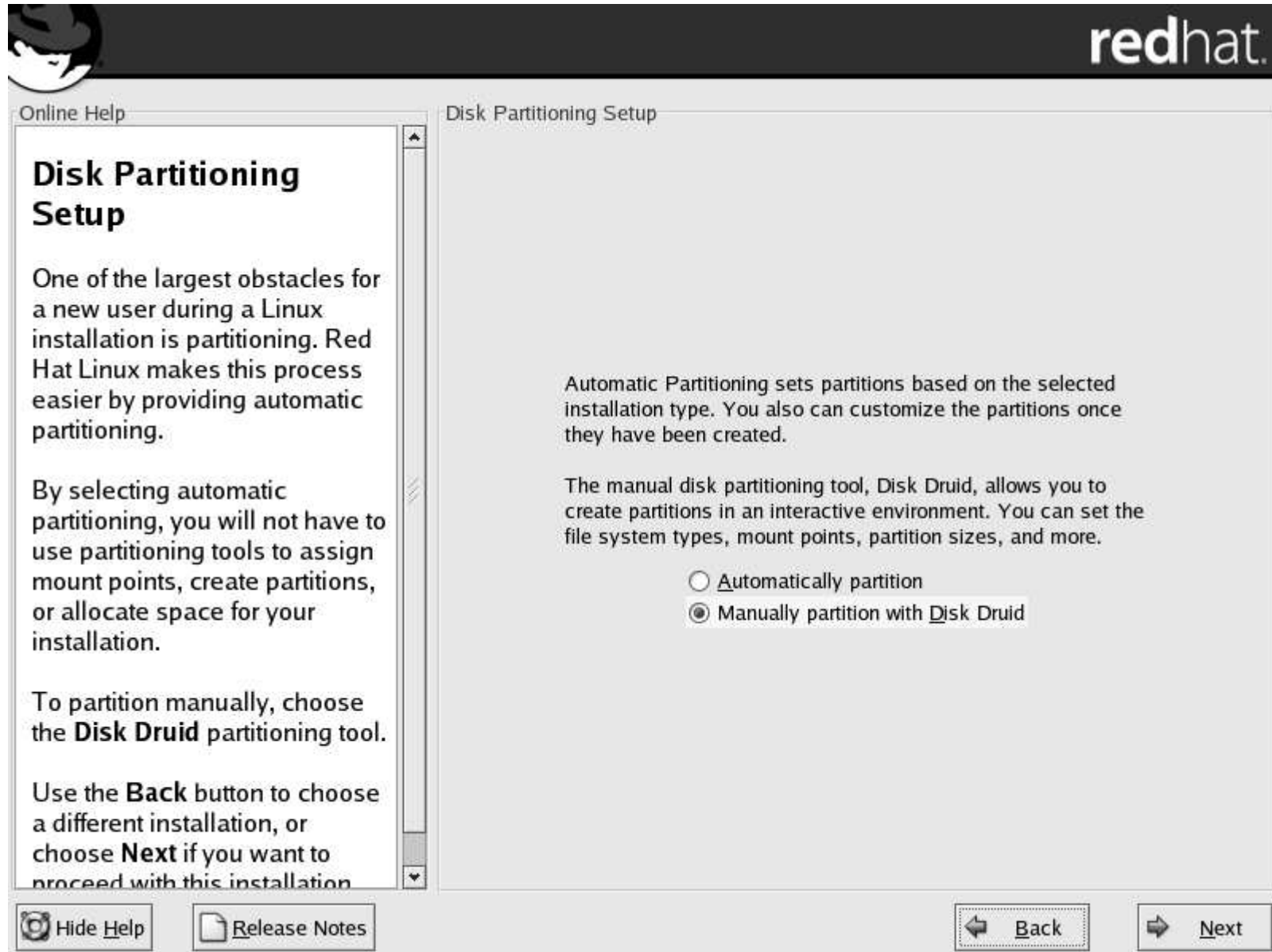
Installing Type



Installing Type



Disk Partitioning



Select the Manually Partition with Disk Druid
option

Partitioning in Disk Druid

The screenshot shows the Red Hat Disk Druid partitioning utility. The interface is divided into a left sidebar with instructions and a main right pane for disk configuration.

Left Sidebar: 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

Right Pane: Partitioning

Drive `/dev/hda` (Geom: 2434/255/63) (Model: ST320011A)

Free
19092 MB

Buttons: **New**, **Edit**, **Delete**, **Reset**, **RAID**, **LVM**

Device	Mount Point/ RAID/Volume	Type	Format	Size (MB)	Start	End	
▼ Hard Drives							
▼ /dev/hda							
Free		Free space		19093	1	2434	

☐ Hide RAID device/LVM Volume Group members

Bottom Buttons: **Hide Help**, **Release Notes**, **Back**, **Next**

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.



Online Help

Partitioning

Disk Setup

Choose where you want to install Red Hat Linux.

If you do not know how to partition your system, you need help with manual partitioning. See the *Red Hat Linux Installation Guide*.

If you used automatic partitioning, you can accept the current settings (click **N**) or the setup using manual partitioning tool.

If you are manually partitioning your system, you can view the current hard drive(s) and the partitions displayed below. Use the partitioning tool to add, edit,

Add Partition

Mount Point:

File System Type:

Allowable Drives:

<input checked="" type="checkbox"/>	hda	19093 MB	ST320011A
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Size (MB):

Additional Size Options

☒ Fixed size

☐ Fill all space up to (MB):

☐ Fill to maximum allowable size

☐ Force to be a primary partition

☐ Check for bad blocks

MB

D LVM

start	End
1	1
1	1275
276	1279
280	1765
766	2434
435	2435

☐ Hide RAID device/LVM Volume Group members

Hide Help

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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



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	hda3	hda5	hda6	hda7	Free
2996 MB	2000 MB	996 MB	996 MB	510 MB	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

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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

redhat.

Online Help

Network Configuration

Any network devices you have on the system will be automatically detected by the installation program and shown in the **Network Devices** list.

To configure the network device, first select the device and then click **Edit**. In the **Edit Interface** screen, you can choose to have the IP and Netmask information configured by DHCP or you can enter it manually. You can also choose to make the device active at boot time.

If you do not have DHCP client access or are unsure as to what this information is, please contact your Network Administrator.

Network Configuration

Network Devices

Active on Boot	Device	IP/Netmask
<input checked="" type="checkbox"/>	eth0	128.232.253.40/255.255.255.192

Edit

Hostname


Set the hostname:


☐ automatically via DHCP


☒ manually


Miscellaneous Settings

Gateway:	<input type="text" value="128"/>	<input type="text" value="232"/>	<input type="text" value="253"/>	<input type="text" value="62"/>
Primary DNS:	<input type="text" value="131"/>	<input type="text" value="111"/>	<input type="text" value="8"/>	<input type="text" value="42"/>
Secondary DNS:	<input type="text" value="131"/>	<input type="text" value="111"/>	<input type="text" value="12"/>	<input type="text" value="20"/>
Tertiary DNS:	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>


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Firewall configuration



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Online Help

Firewall Configuration

A firewall sits between your computer and the network, and determines which resources on your computer remote users on the network are able to access. A properly configured firewall can greatly increase the out-of-the-box security of your system.

Choose the appropriate security level for your system.

High Security - By choosing **High Security**, your system will not accept connections that are not explicitly defined by you. By default, only the following connections are allowed:

- DNS replies
- DHCP - so any network

Firewall Configuration

Select a security level for the system:

☐ High ☐ Medium ☒ No firewall





☐ Use default firewall rules
☒ Customize

Trusted devices: ☐ eth0

Allow incoming:

- ☐ WWW (HTTP)
- ☐ FTP
- ☐ SSH
- ☒ DHCP
- ☐ Mail (SMTP)
- ☐ Telnet


Other ports:

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Firewall configuration

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

Language support selection



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Online Help

Additional Language Support

Select a language to use as the default language. The default language will be the language used on the system once installation is complete. If you choose to install other languages, it is possible to change the default language after the installation.

Red Hat Linux can alternately install and support several languages. To use more than one language on your system, choose specific languages to be installed, or select all languages to have all available languages installed on the system.

Use the **Reset** button to cancel

Additional Language Support

Select the default language for the system: English (USA) ▼

Select additional languages to install on the system:

- ☐ English (Denmark)
- ☐ English (Great Britain)
- ☐ English (Hong Kong)
- ☐ English (India)
- ☐ English (Ireland)
- ☐ English (New Zealand)
- ☐ English (Philippines)
- ☐ English (Singapore)
- ☐ English (South Africa)
- ☒ English (USA)
- ☐ English (Zimbabwe)
- ☐ Estonian
- ☐ Faroese (Faroe Islands)
- ☐ Finnish
- ☐ French (Belgium)
- ☐ French (Canada)
- ☐ French (France)
- ☐ French (Luxemburg)
- ☐ French (Switzerland)

Select All

Select Default only

Reset


Hide Help

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Time zone configuration

**redhat.**

Online Help

Time Zone Selection


You can set your time zone either by selecting your computer's physical location, or by your time zone's offset from Universal Time, Coordinated. (also known as UTC).

Notice the two tabs at the top of the screen. The first tab offers you the ability to configure by location. With this option, you can choose your view. In choosing **View**, your options are: World, North America, South America, Pacific Rim, Europe, Africa, and Asia.

From the interactive map, you can click on a specific city, as indicated by the yellow dots, and a red X will appear at your selection.

Time Zone Selection


Location UTC Offset





Antarctica/Davis - Davis Station, Vestfold Hills


Location	Description
Europe/Lisbon	mainland
Europe/Ljubljana	
Europe/London	Great Britain
Europe/Luxembourg	
Europe/Madrid	mainland

☐ System clock uses UTC


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Root password


redhat.

Online Help

Set Root Password

Use the root account *only* for administration. Once the installation has been completed, create a non-root account for your general use and `su -` to gain root access when you need to fix something quickly. These basic rules will minimize the chances of a typo or incorrect command doing damage to your system.


Set Root Password


 Enter the root (administrator) password for the system.


Root Password:


Confirm:

Root password accepted.


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Package group selection

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Online Help

Package Group Selection


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


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


To select individual packages, check the **Select Individual Packages** box at the bottom of the screen.

Package Group Selection


Desktops


☒ **X Window System** [31/33] [Details](#)
 Install this group of packages to use the base graphical (X) user interface.

☒ **GNOME Desktop Environment** [35/35] [Details](#)
 GNOME is a powerful, graphical user interface which includes a panel, desktop, system icons, and a graphical file manager.





☐ **KDE Desktop Environment** [0/16]
 KDE is a powerful, graphical user interface which includes a panel, desktop, system icons, and a graphical file manager.

Applications

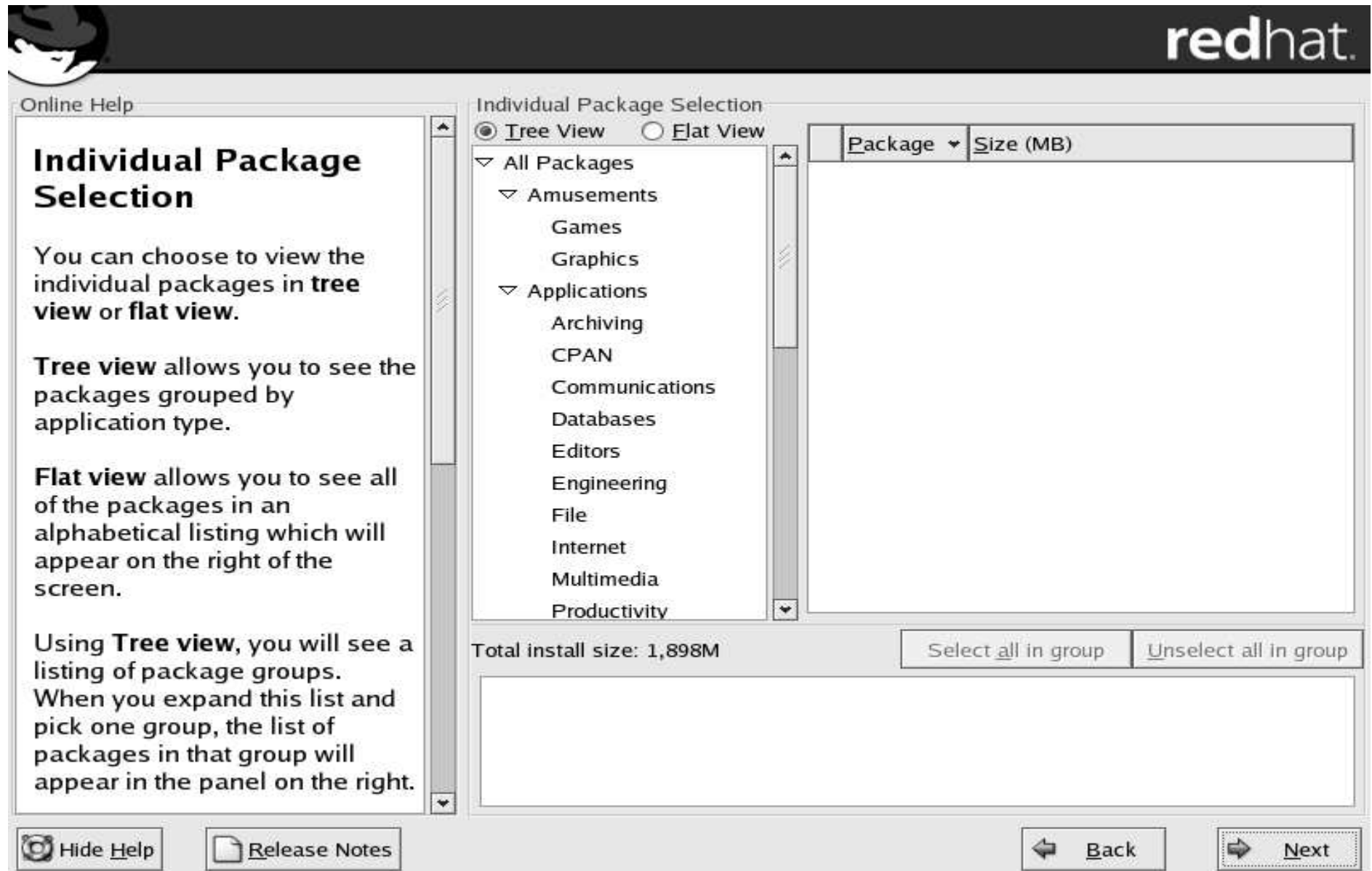
☒ **Editors** [2/4] [Details](#)
 Sometimes called text editors, these are programs that allow you to create and edit files. These include Emacs and Vi.

☐ **Engineering and Scientific** [0/7]
 This group includes packages for performing mathematical and scientific computations and plotting, as well as unit conversion.



☒ **Select individual packages** Total install size: 1,898M

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Selecting individual packages



Unresolved Dependencies



Online Help

Unresolved Dependencies

Many software packages depend on other packages or libraries in order to work correctly. To make sure your system has all the packages it needs in order to work, the installation program checks these package *dependencies* each time you install or remove a package. If one package requires another package that has not been installed, unresolved dependencies exist.



One or more packages you have selected have unresolved dependencies. You can resolve this by selecting **Install Packages to Satisfy Dependencies**. You can also choose not to install any



Unresolved Dependencies

Package	Requirement
tk	tcl
anaconda	bogl

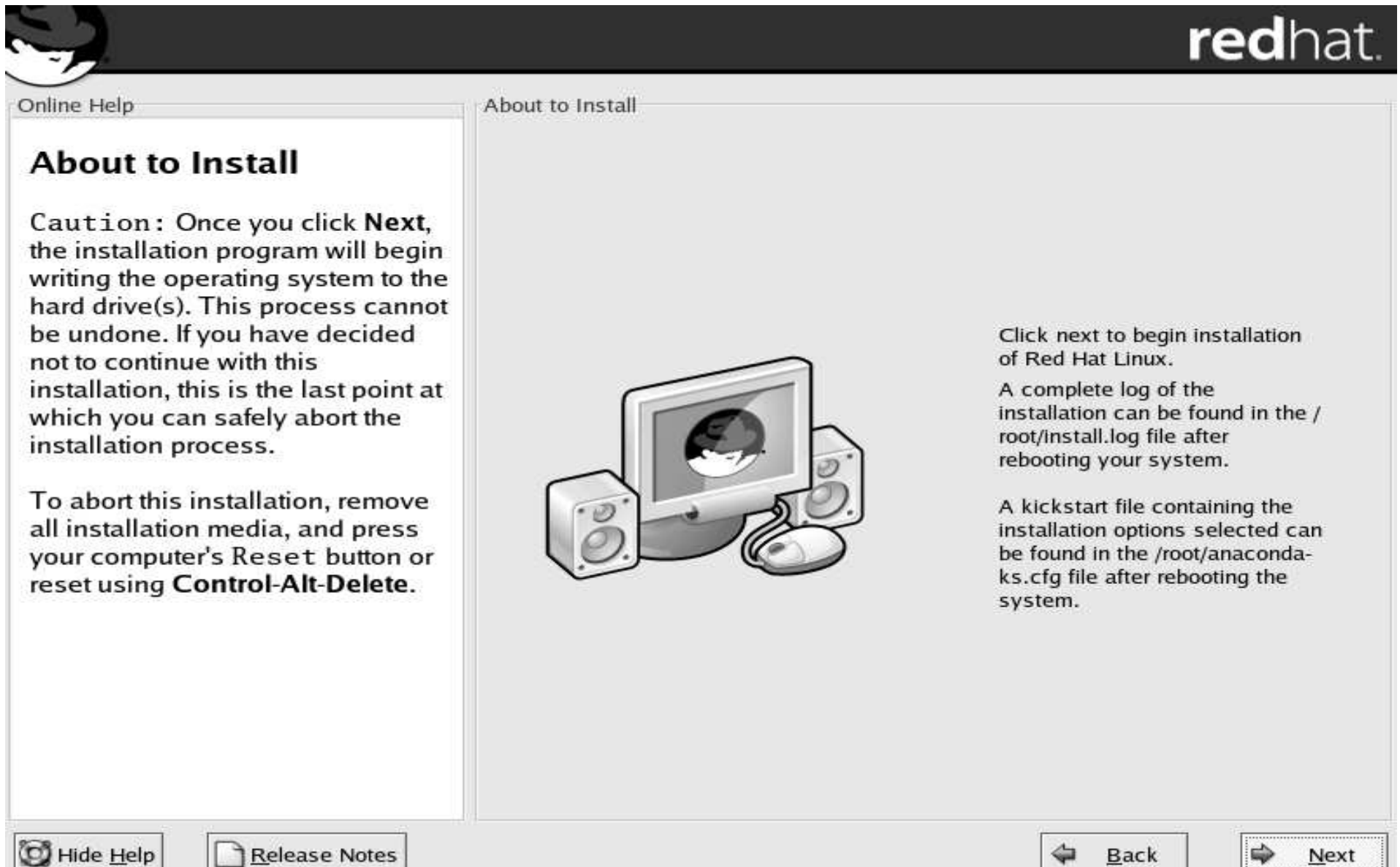
☒ Install packages to satisfy dependencies
☐ Do not install packages that have dependencies
☐ Ignore package dependencies

Total install size: 1,908M

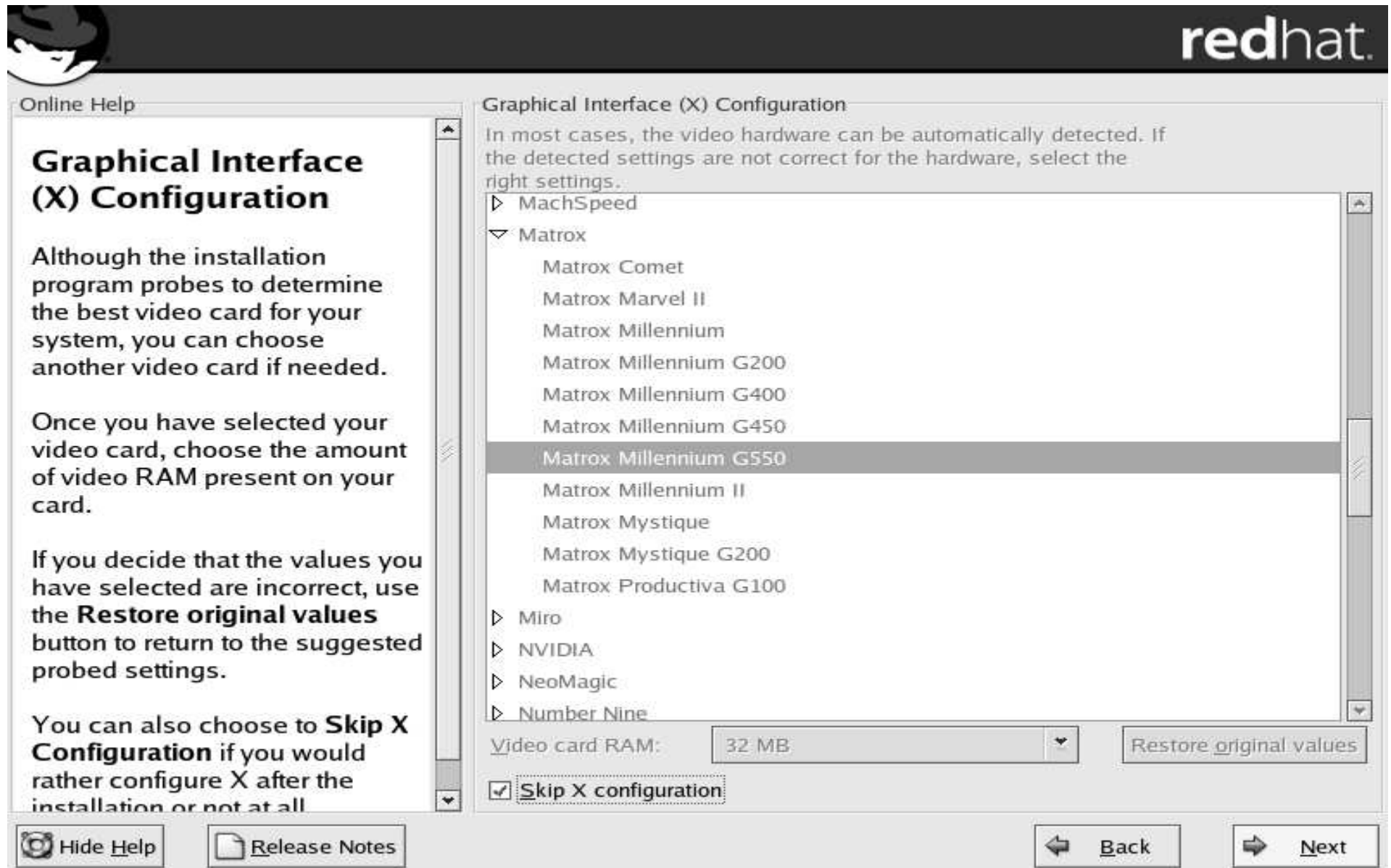
 Hide Help  Release Notes

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Are you ready to install?



Installing X



Congratulations



redhat.

Congratulations



Congratulations, the installation is complete.

Remove any installation media (diskettes or CD-ROMs) used during the installation.

If you created a boot diskette during this installation as your primary means of booting Red Hat Linux, insert it before rebooting your newly installed system.

For information on Errata (updates and bug fixes), visit:
<http://www.redhat.com/errata/>

For information on automatic updates through Red Hat Network, visit:
<http://rhn.redhat.com/>

For information on using and configuring the system, visit:
<http://www.redhat.com/docs/>
<http://www.redhat.com/apps/support/>

To register the product for support, visit:
<http://www.redhat.com/apps/activate/>

Click 'Exit' to reboot the system.

