

LESSON E35_EN. VET & EVET PRODUCTS / INTERNET SERVICE PROVIDER. HOW TO ACHIEVE STEP BY STEP ONE LAN CONNECTED AT INTERNET. - Installing Fedora Core 4 Server.

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Consultations: Every working day between 8.30 a.m. and 11.00 a.m..

After the learning this lesson you will be more reach with the following knowledge:

- ☐ What is necessary for installing a Fedora Core 4 Server
- ☐ How to begin installation of Fedora Core 4 server
- ☐ Select the necessary package for installation the server

CONTENT OF THE LESSON

Installing Fedora Core 4 Server

1. Getting started
2. Installing Fedora Core 4

LEARNING OBJECTIVES:

After learning this lesson you will accomplish the ability to:

- ☐ Hardware requirements for installing Fedora Core 4
- ☐ Finding the installation software for Fedora Core 4
- ☐ Set-up the network interfaces in Fedora System for ISP services (connecting to the Internet, Ethernet and wireless connection)
- ☐ IP forwarding between External Internet connection and your clients
- ☐ Set-up Squid proxy server

Installing Fedora Core 4 Server

Becoming an ISP in our time is very easy because we have a lot of instruments around us.

Regarding the software which make your hardware work like a server for distribution of Internet to the potential clients we present bellow the *Fedora Core 4*. [2.10]

Fedora Core 4 is a complete operating system produced by the Fedora Project sponsored by Red Hat, Inc. [2.11]

Fedora is based on the Linux kernel and is an open source project developed by a worldwide community of software developers.

Linux, the kernel of a free operating system, is developed by Linus Benedict Torvalds and released to the world in 1991. [2.1] Torvalds decide to distribute Linux under a free software license named the GNU General Public License (GPL). [2.12]

We choose to propose to you using of open source operating systems from the following main reasons:

- ☐ in the last 10 years this operating system grow continuously until overpass 50% from the Internet Servers
- ☐ offer to you an excellent opportunity regarding starting investment in a business, because is free for very low cost
- ☐ you can install on how many computers do you want, but in the term of GNU licenses
- ☐ in the last 3-4 years the graphical interface was very strong developed and become a special friendly to use by a larger variety of users
- ☐ by installing Fedora Core 4 you have also a lot of software for writing, office possibilities, multimedia, graphical application and also good and powerfully instruments for programming
- ☐ you have possibilities to use Fedora Core 4 as Server platform for your Internet business or as Desktop version for your personal computer
- ☐ Linux is stable, scalable, fast and secure
- ☐ can use very old computer like Intel-based 486 with even 8Mb of RAM (see bellow our recommendations)

Also, exists many other Open Source [2.13] operating systems which you can use for your Internet server, like Mandrake, FreeBSD, Slackware, Debian and other.

1.1. Getting started

Hardware Requirements

For install Fedora Core 4 we recommend to use the hardware configuration described on Part 1, on the present lesson. Also, the Fedora Core 4 could be install on older computer with minimum 200MHz Pentium CPUs, 750MB hard drive space and 64MB RAM for using Fedora without a graphical interface. [2.1]

Before installation is good to have a list with your minimum configuration, so make a list like bellow:

Hardware configuration	Description (your server or computer)
Amount of memory (RAM)	128 MB (i.e.)
Size of hard drive	10 GB (i.e.)
Type of mouse	USB (i.e.)
Type of video card	ATI Rage 9200 128MB RAM (i.e.)
Display monitor (maximum resolution)	1024 x 800 (i.e.)
Installed network interface (Type)	RTL 8139 (i.e.)

Note: If you have a particular (brand or special) PC model or laptop is better to check if support Linux.
If you research is not concluded, read the Linux Hardware HOWTO on:
<http://www.tldp.org/HOWTO/Hardware-HOWTO/>

Fedora Core 4 installation software CD's

You can download the CD's for free from:

<http://download.fedora.redhat.com/pub/fedora/linux/core/4/i386/iso/>

On that link you will find four files, which are ISO images of four CD's :

- FC4-i386-disc1.iso
- FC4-i386-disc2.iso
- FC4-i386-disc3.iso
- FC4-i386-disc4.iso

Note: Above downloaded Fedora software is compatible with Intel-based PCs. If you have other kind of computer is better to consult the RedHat documentation to see if you can download the specific software.

After burning all of them on CD put a label on each and you can install the Fedora Core 4.

If you don't have a large band of Internet to download the 4th CDs you can ask for help from Internet Café places.

A third solution is to obtain the software from specialized software newspaper or pc's magazine.

Other solution is to buy the Fedora Core 4 directly from RedHat (<http://www.redhat.com/fedora/>).

Hard drive preparation

The installation permit to have more that one operating system on your hard drive. Anyway we recommend to install only the Fedora Core 4 on your server because, the server will run 24 hours per day, delivering Internet to your clients and is not necessary to have other operating systems on it.

If you plan to install the Fedora Core 4 also on your personal computer or maybe on your laptop may be consider to have more operating systems on the same hard drive.

For both options you have to partition the hard drive. This operation could be done before or during installation.

Linux use for hard drive the device name:

- /dev/hda for recognize the first (master) IDE hard drive on channel 0,
- /dev/hdb for the second (slave) IDE hard drive on channel 0,
- /dev/hdc for the third (master) IDE hard drive on channel 1,
- /dev/hdd for the forth (second) IDE hard drive on channel 1.

2. Installing Fedora Core 4

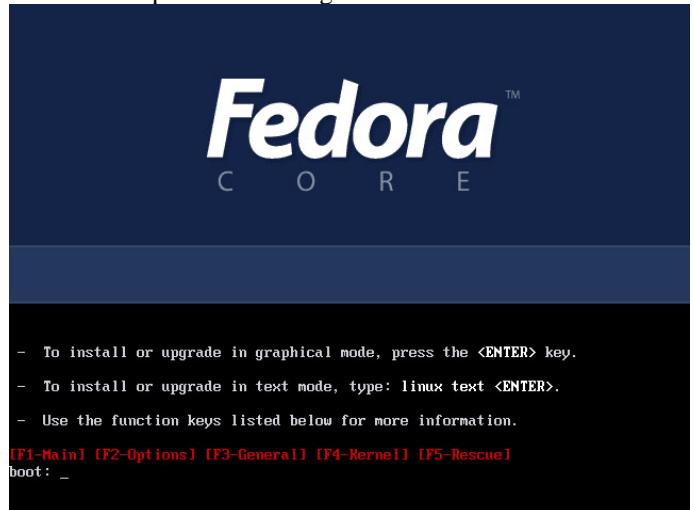
We choose to install Fedora from CD-ROM. There are other way to install, but not necessary for your starting business: DOS; Network file systems (NFS); File Transfer Protocol (FTP); Hypertext Transport Protocol (HTTP); Directly from the Internet; From a hard drive partition; or from preinstalled media (by transfer the image from a hard to another).

IMPORTANT: For install Fedora form the CD-ROM, firstly set-up from BIOS to boot computer from CD drive.

Starting installation: Insert the first CD into CD-ROM and restart the computer for booting from CD.

After booting you should have on your screen the next image:

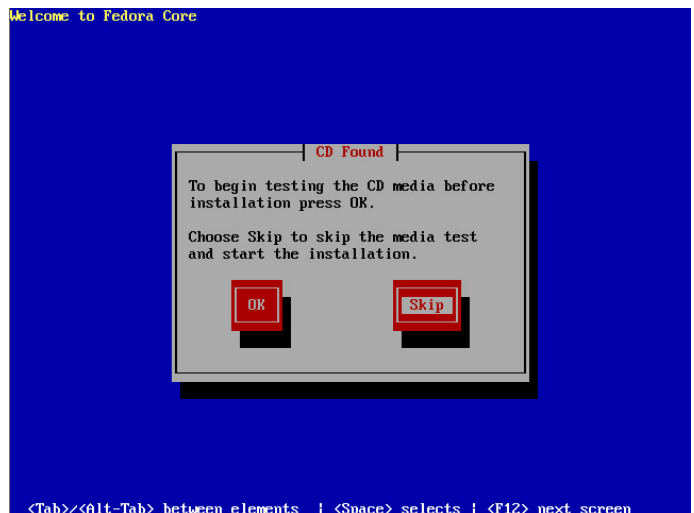
Strike the Enter key to run installation.



Next image is for testing your installation CDs. It's more an assurance to don't start the installation and form different reasons one of the 4th CDs is not working.

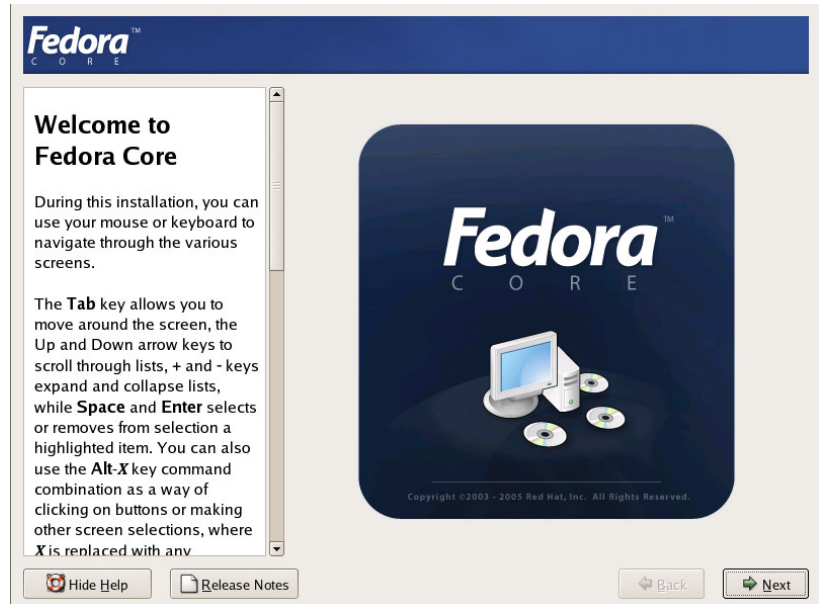
If you are not sure of quality of your recorded CDs maybe it's better to do the test and for that you choose <OK>.

In our installation we choose <Skip>, considering that the CDs are OK.



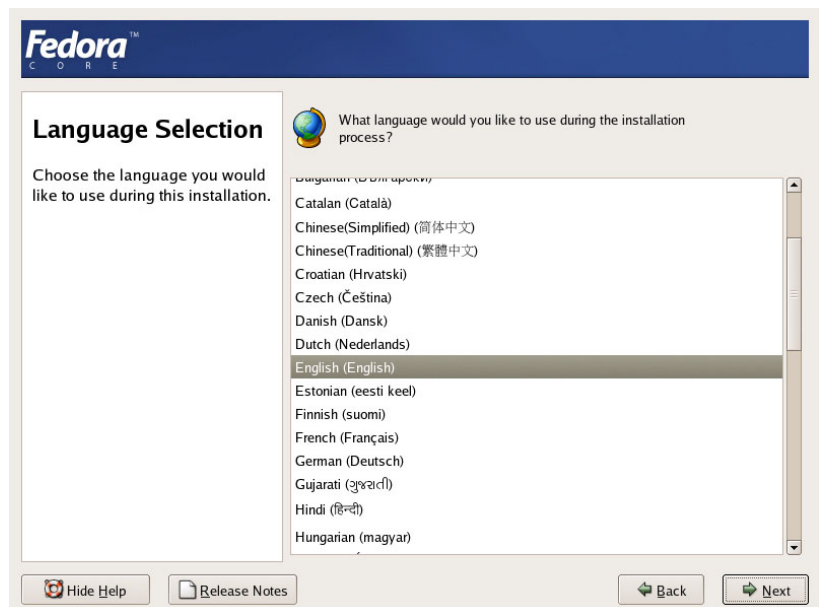
Next image is a “welcome” one.

Just go to the next with the <Next> button in the right-down corner.



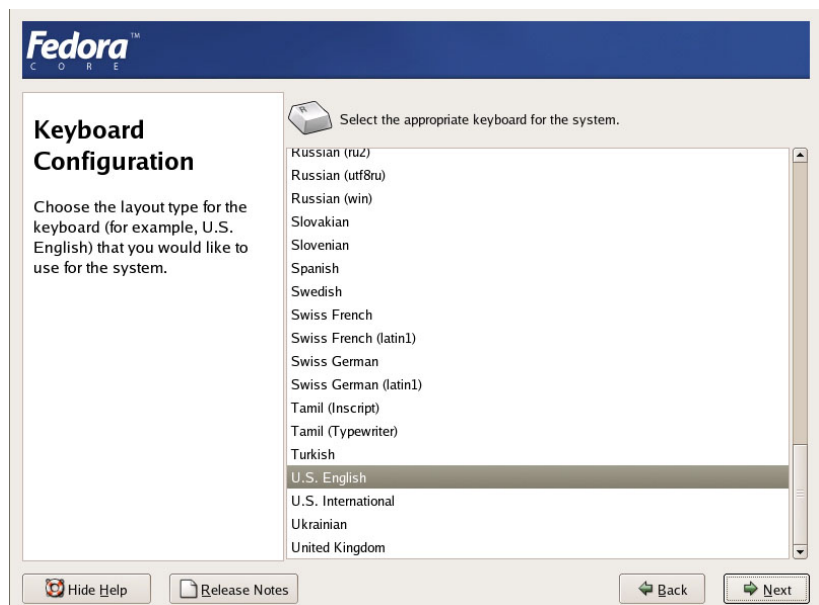
Now, you have to make a language selection.

Our recommendation is to choose English (English) even if you are not a native English language. The reason is simple: the Internet is almost entirely a English language land and it's better to become familiar with that language.



For “*Keyboard Configuration*” we also use <U.S. English> , but that's depend of your specific keyboard connected to your computer.

So, pick-up one from the list and click on <Next> button.



From this point is actually start the installation.

Because our interest is to become an Internet Service Provider we install the <Server> type.

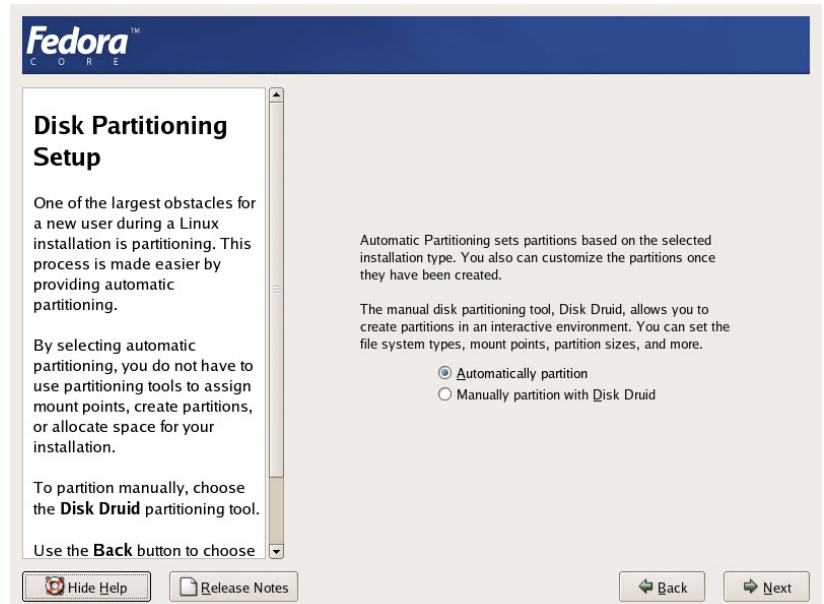
Then click on <Next> button.



The partition strategy of your hard drive is “an art” for an experienced Linux administrator. From this point of view, from now on you’ll heard a lot of versions from different people.

Considering our intention, is not necessary to have much trouble. So, simply we recommend to make <Automatically partition> then <Next> button.

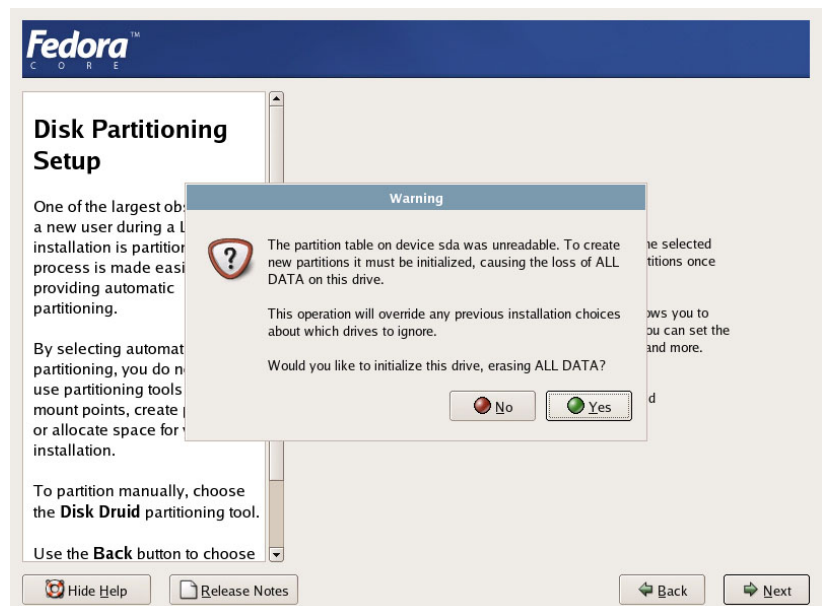
In the future keep in mind to make separate partition for user data, because those could be more important than the system itself. (the system could be repaired or reinstalled, but the data are lost forever).



An warning window will be displayed for losing all data on your hard drive.

If your hard drive is new and empty or you know that are not important data on it, proceed with <Yes> button.

In other case choose <No> and the installation will stop.



Like in the preview window, you are informed and also asked to make a choice.

Into the spirit on our recommendation to install only Fedora Core 4 on your server system, click on <Remove all partitions on this system> option and then <Next> button.

In other case is better to make the right choice for not losing data.

Warning: maybe your image from your display is a little different about the “Device name”, depend on your hardware configuration. Specially regarding size of your hard drive. In our example we have a 4GB size hard drive.

IMPORTANT: We are not responsible for data lost if you are not use an empty or a new hard drive.

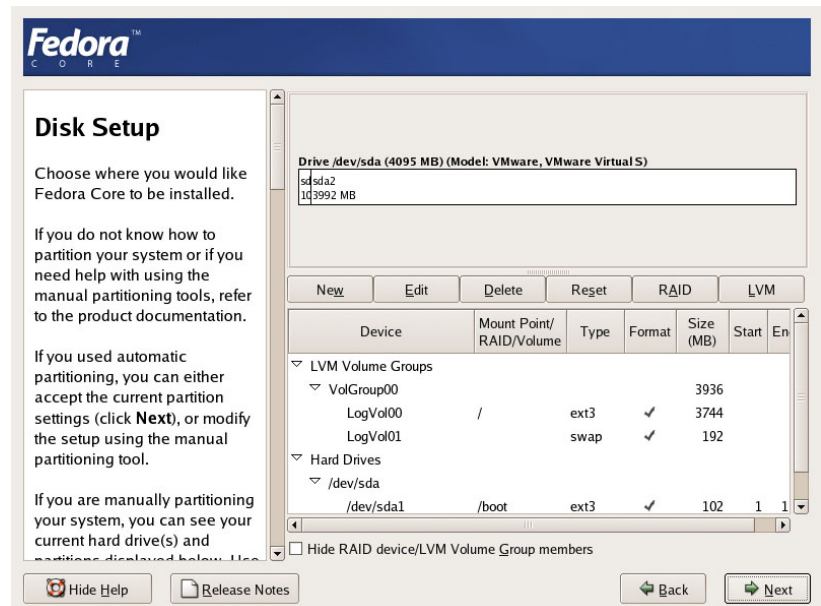
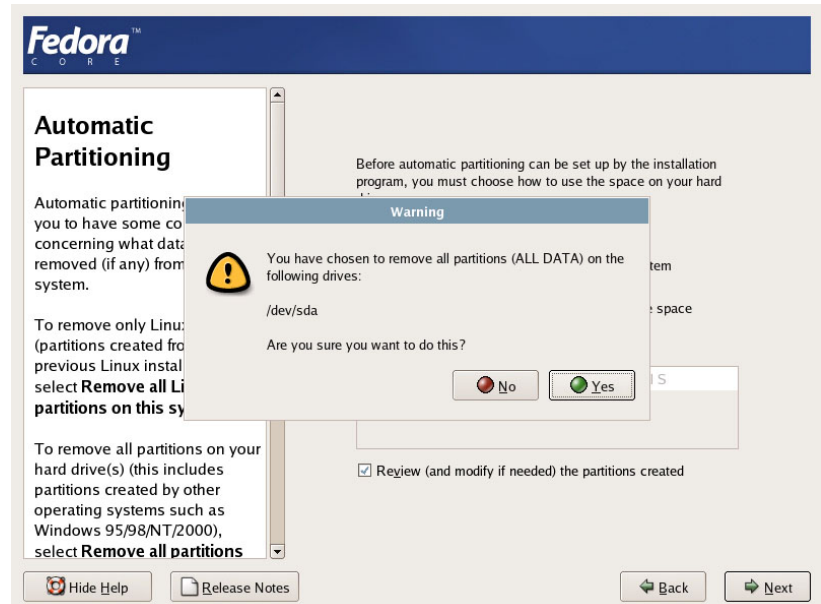
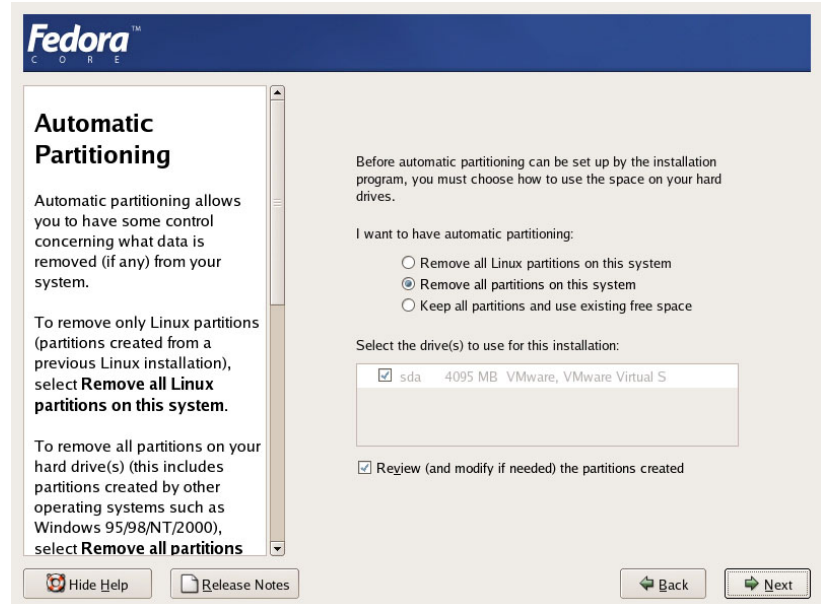
Is very dangerous to work on the drive with already stored data on it. Even an experienced person could make terrible mistake. If you still want to work on the hard drive with data on it, at least, firstly, make a safe copy on other media storage (hard drive, CD, DVD, tape, a.o.).

Another warning message and the <Yes> button choice.

An information window showing results of your previous choice.

Click <Next> button.

Warning: maybe your image from your display is a little different about the “Device name”, depend on your hardware configuration.



Again click <Next> button.

Warning: maybe your image from your display is a little different about the “Device name”, depend on your hardware configuration.

Fedora
C O R E

Boot Loader Configuration

By default, the GRUB boot loader is installed on the system. If you do not want to install GRUB as your boot loader, select **Change boot loader**.

You can also choose which OS (if you have more than one) should boot by default. Select **Default** beside the preferred boot partition to choose your default bootable OS. You cannot move forward in the installation unless you choose a default boot image.

You may add, edit, and delete

The GRUB boot loader will be installed on /dev/sda. [Change boot loader](#)

You can configure the boot loader to boot other operating systems. It will allow you to select an operating system to boot from the list. To add additional operating systems, which are not automatically detected, click 'Add.' To change the operating system booted by default, select 'Default' by the desired operating system.

Default	Label	Device
<input checked="" type="checkbox"/>	Fedora Core	/dev/VolGroup00/LogVol00

[Add](#)
[Edit](#)
[Delete](#)

A boot loader password prevents users from changing options passed to the kernel. For greater system security, it is recommended that you set a password.

☐ Use a boot loader password [Change password](#)

☐ Configure advanced boot loader options

[Back](#) [Next](#)

Installation program find one network interface on computer. For configuring manually this interface click on <Edit> button. Otherwise the Fedora will be installed with DHCP and automatically allocate the IP.

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Network Configuration

Any network devices you have on the system are 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

Network Devices

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

[Edit](#)

Hostname

Set the hostname:

☒ automatically via DHCP

☐ manually (ex. "host.domain.com")

Miscellaneous Settings

Gateway:

Primary DNS:

Secondary DNS:

Tertiary DNS:

[Back](#) [Next](#)

In the by-screen you unchecked the check box <configure using DHCP> and complete the <IP Address> with: 192.168.0.1.

Also the <Netmask>: 255.255.255.0 like in the presented example.

If the Fedora finds more than one network adapter is possible to be asked to configure the second device. In that case, the device name eth0 will be first adapter activated when Fedora starts.

After installation we can reconfigure the network device with a graphical tool: system-config-network

Fedora
C O R E

Network Configuration

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If you do not have DHCP client

Network Devices

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

[Edit](#)

Edit Interface eth0

Configure eth0

☐ Configure using DHCP

☒ Activate on boot

Hardware address: 00:0C:29:43:9C:D4

IP Address: 192 168 0 1

Netmask: 255 255 255 0

[Cancel](#) [OK](#)

[Back](#) [Next](#)

You can configure the hostname entering a name like our example: ldv.ueb.ro but not identical.

The IP necessary for Gateway and Primary and eventual Secondary DNS is given to you to your external Internet company from where you have the connection.

We configure the <Gateway>: 141.85.128.6 and the <Primary DNS> with 141.85.128.1 (please complete with your own data).

Fedora
C O R E

Network Configuration

Any network devices you have on the system are 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

Active on Boot	Device	IP/Netmask	Edit
<input checked="" type="checkbox"/>	eth0	192.168.0.1/255.255.255.0	

Hostname

Set the hostname:

☐ automatically via DHCP

☒ manually (ex. "host.domain.com")

Miscellaneous Settings

Gateway:

Primary DNS:

Secondary DNS:

Tertiary DNS:

Because we want to install a server configuration we check all the check box from the screen <Firewall Configuration> and <Enable firewall>.

It is true that for becoming Internet Service Provider you don't need <Web Server> or <Mail Server>, but will help you to understand more futures of the Fedora Core 4. If you don't have much Internet clients maybe, in the future you want to host some small web pages on the same server. (is not recommended to have the web server on the same server, but for a started and small company with few clients it's helpful from expenses point of view).

Fedora
C O R E

Firewall Configuration

A firewall can help prevent unauthorized access to your computer from the outside world. Would you like to enable a firewall?

☐ No firewall

☒ Enable firewall

You can use a firewall to allow access to specific services on your computer from other computers. Which services, if any, do you wish to allow access to?

☒ Remote Login (SSH)

☒ Web Server (HTTP, HTTPS)

☒ File Transfer (FTP)

☒ Mail Server (SMTP)

Choose the appropriate security level for your system.

No Firewall — No firewall provides complete access to your system and does no security checking. Security checking is the disabling of access to certain services. This

Security Enhanced Linux (SELinux) provides finer-grained security controls than those available in a traditional Linux system. It can be set up in a disabled state, a state which only warns about things which would be denied, or a fully active state.

Enable SELinux?:

When you will have sufficient financial stability, dedicated servers are much important. (web server, mail server, gateway). Anyway the Linux it is recognized like a stable server and from our previous experience up to 10 small and medium web pages could be hosted and also use the same computer like gateway.

On the <Time Zone Selection> screen you have to select your <Location>.

We select <Europe/Bucharest>, but you can select anything you want according to your country.



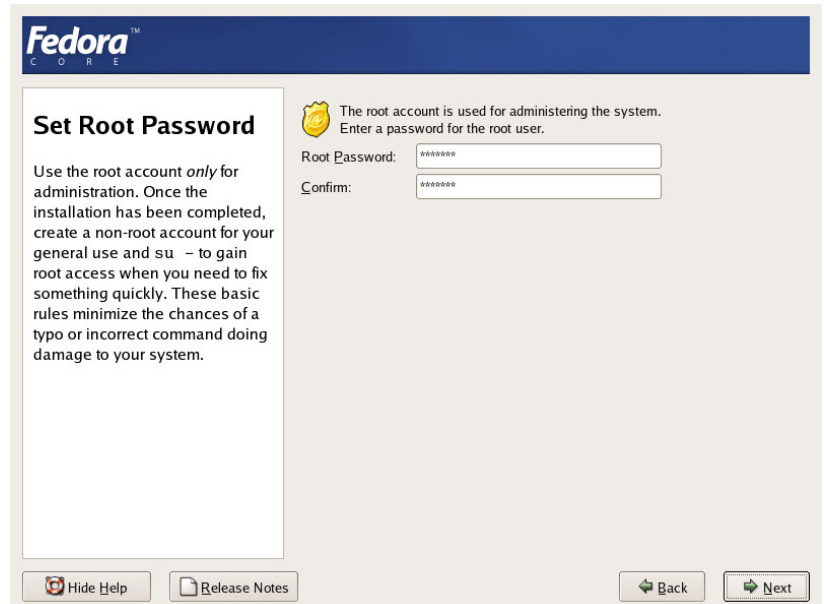
Setting the root password is important for the security of your system.

The “root” is the administrator for the entire server and have access to all resources.

So, the password for root is highly desired by any possible intruders. The root password:

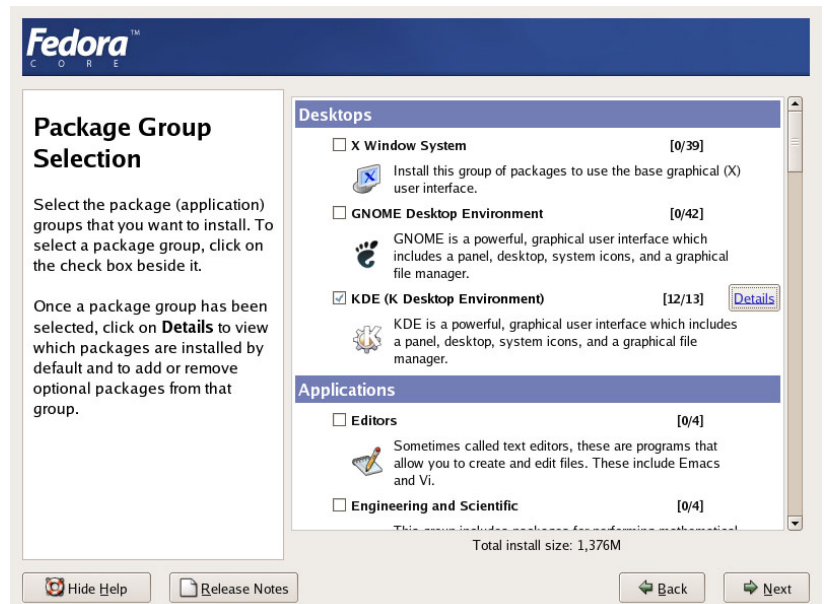
- ☐ must be as much as long, that you can remember it,
- ☐ with different characters,
- ☐ even different sentence,
- ☐ alternate letters with numbers,
- ☐ not containing your name or initial.

Example: dh64rEv08nseR



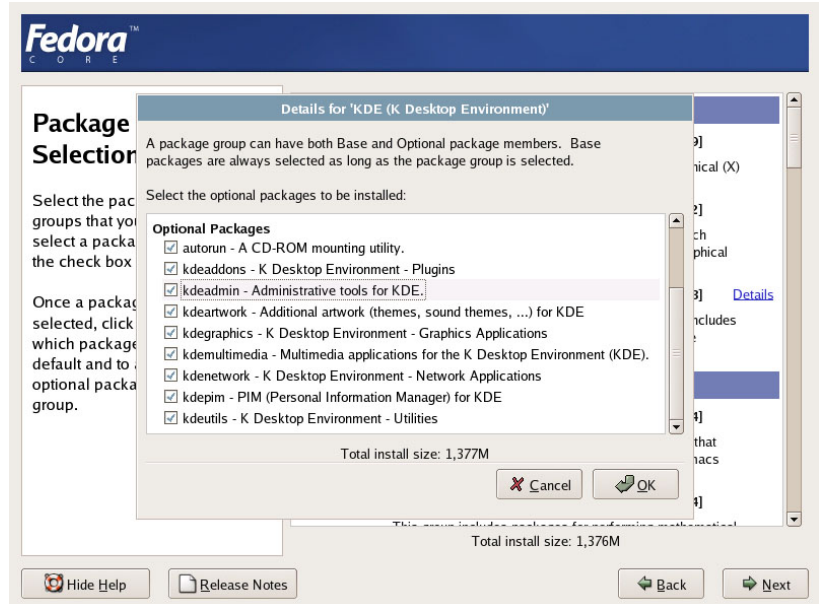
From now on we start to select the necessary package for the Fedora Core 4.

Firstly we select the check box <KDE (K Desktop Environment)>, then click on <Details> button.

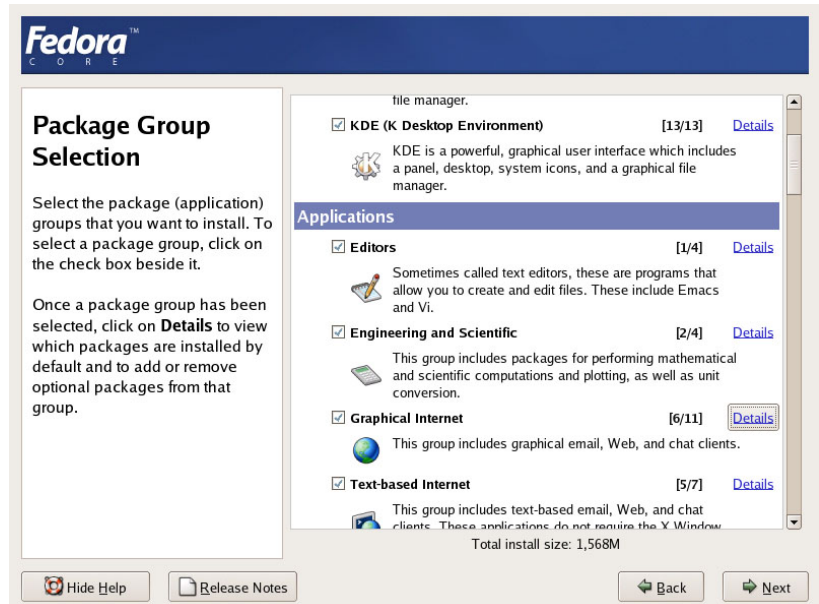


From administrative point of view select third item <kdeadmin-Administrative tools for KDE>.

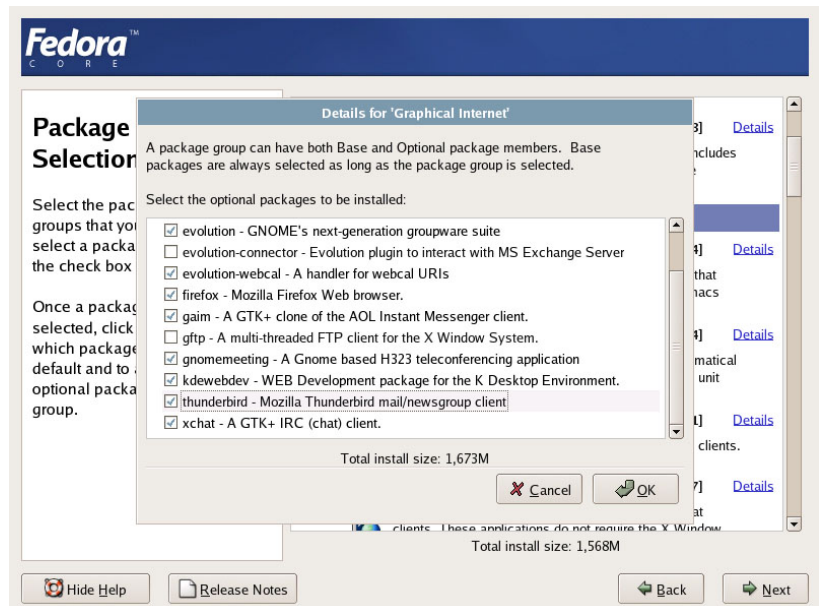
Then click on <OK> button.



Scroll down the screen and select:
<Editors> ,
<Engineering and Scientific> ,
<Graphical Internet> ,
<Text-based Internet> and click on
<Details> button from <Graphical Internet>.

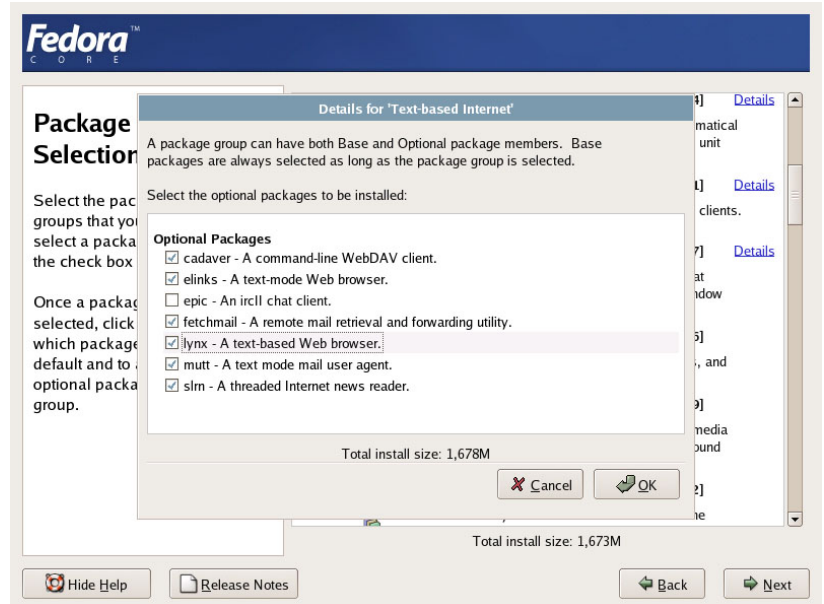


On “Graphical Internet” screen select:
<kdewebdev – WEB Development package for the K Desktop Environment> and
<thunderbird – Mozilla Thunderbird mail/newsgroup client>, then click on <OK> button.

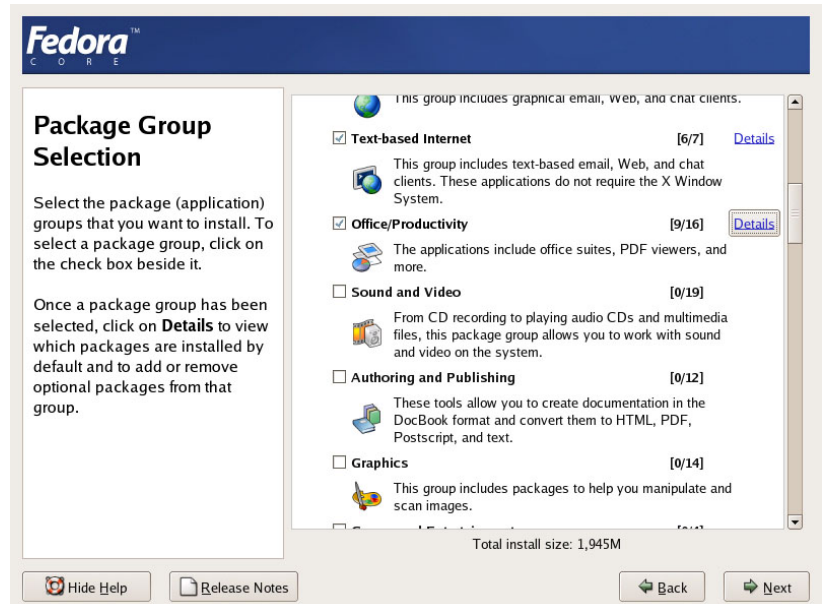


Returned on <Package Group Selection> screen click on <Details> from <Text-based Internet>.

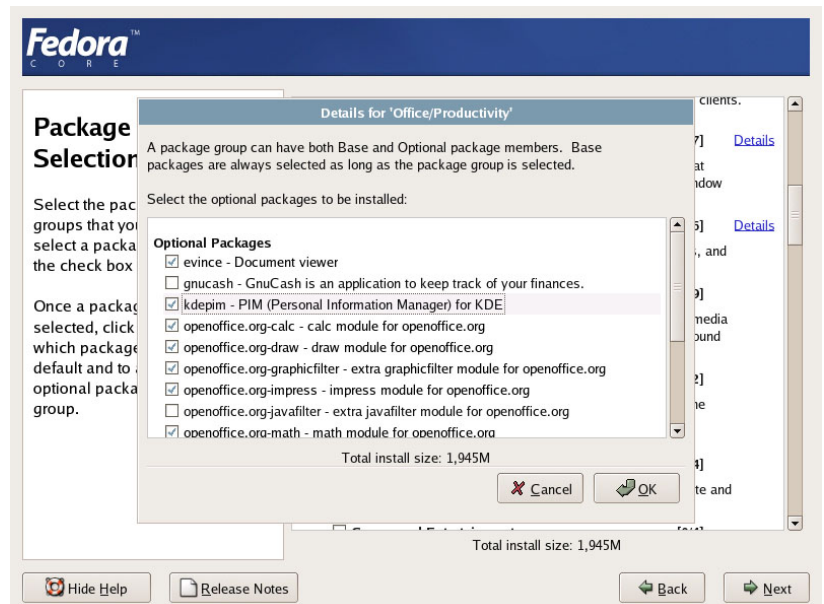
On <Text-based Internet> details screen select <lynx – A text-based Web browser>, then <OK>.



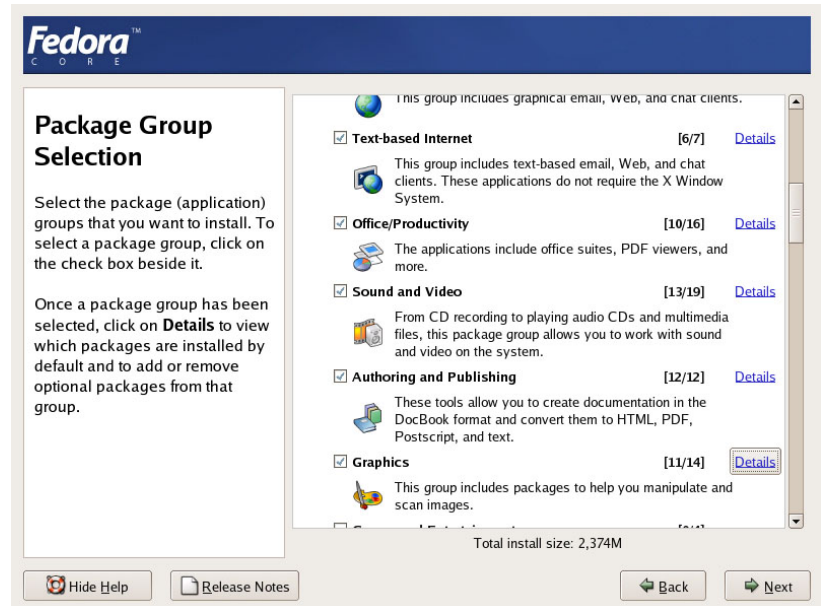
Scroll down and select <Office/Productivity> item, then <Details>.



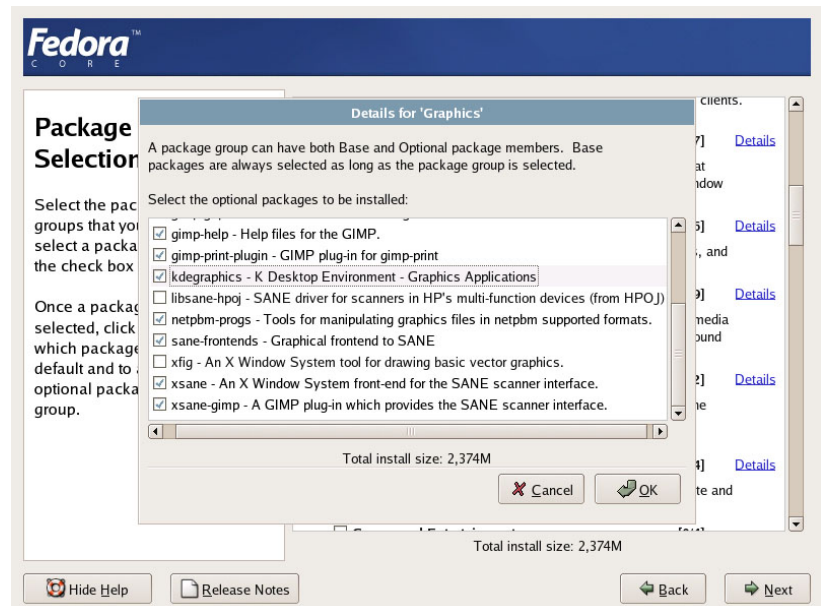
Now, select <kdepim – PIM (Personal Information Manager) for KDE> item, then <OK>.



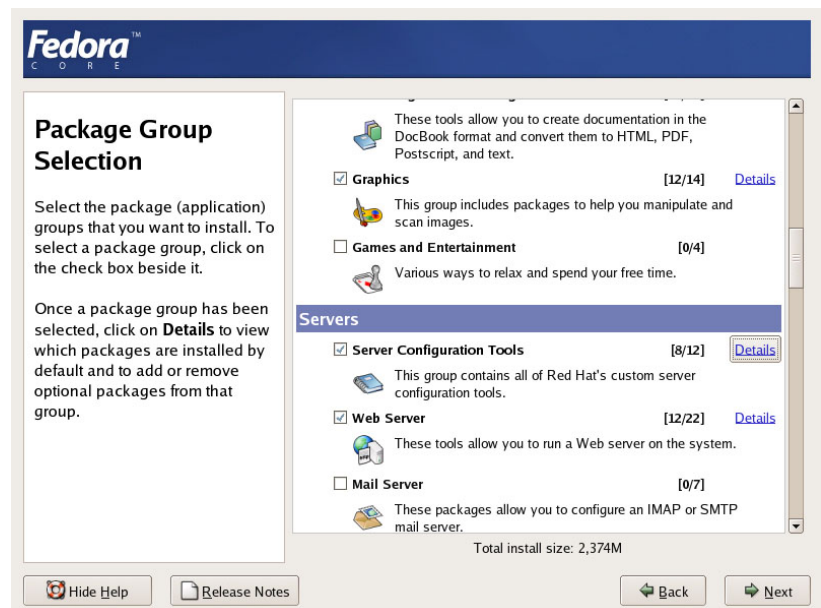
Select :
 <Sound and Video> ,
 <Authoring and Publishing> ,
 <Graphics> and <Details> from
 <Graphics>.



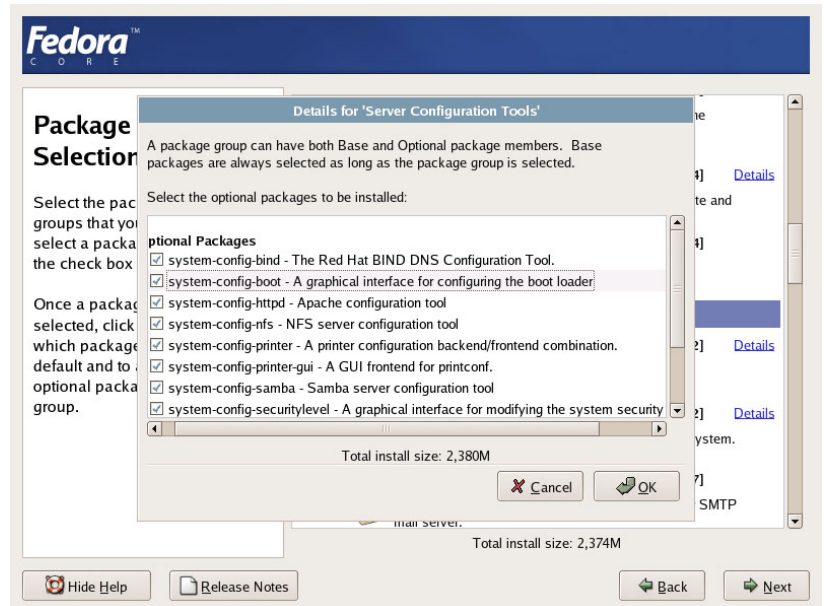
On “Details for Graphics” screen select <kdegraphics – K Desktop Environment – Graphics Applications> item, then <OK>.



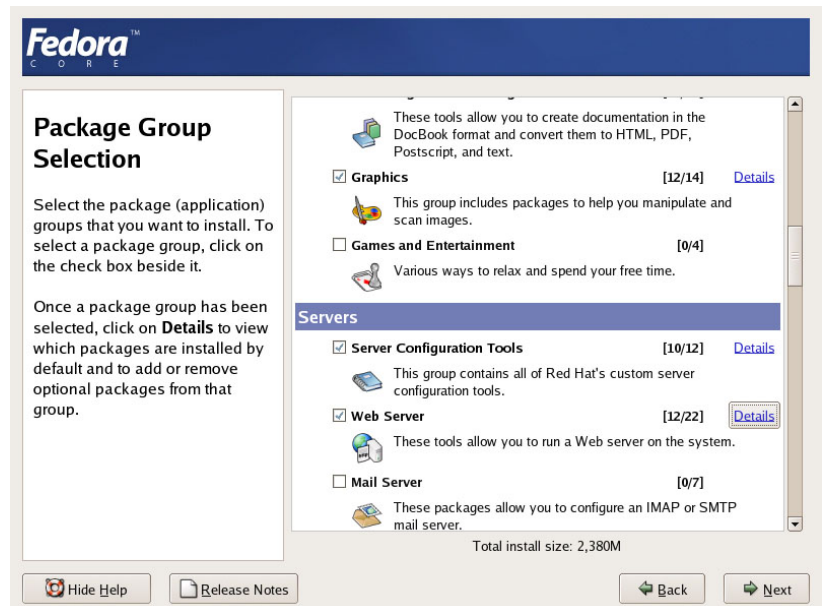
A little bit lower select <Server Configuration Tools>, then <Details>.



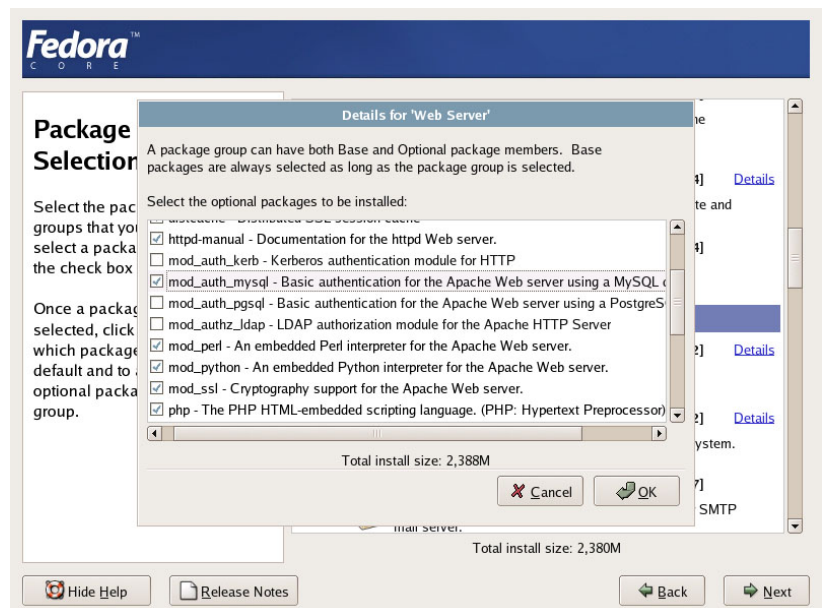
Select first two items: <system-config-bind> and <system-config-boot>, then <OK>.



Select <Web Server> item, then <Details>.



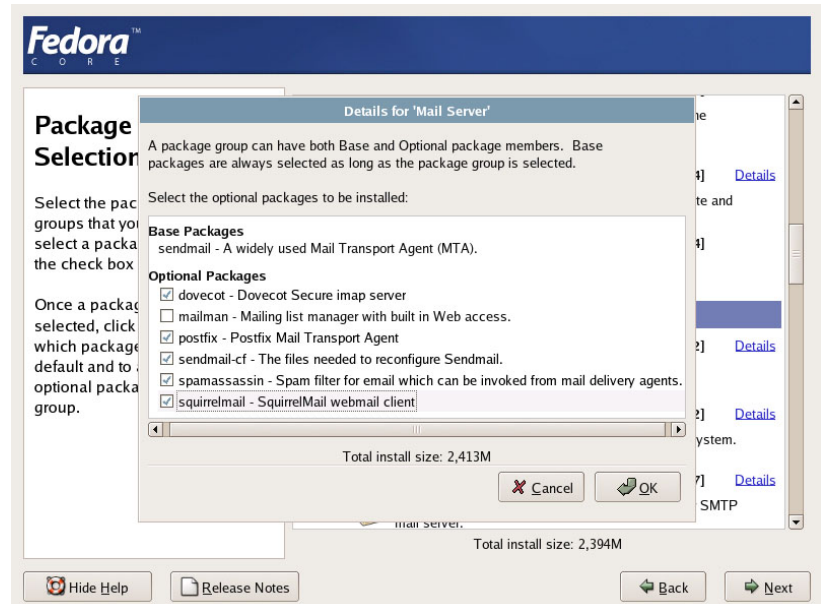
On "Web Server" screen select: <mod_auth_mysql>, scroll down. <php-mysql> and <php-odbc>, then <OK>.



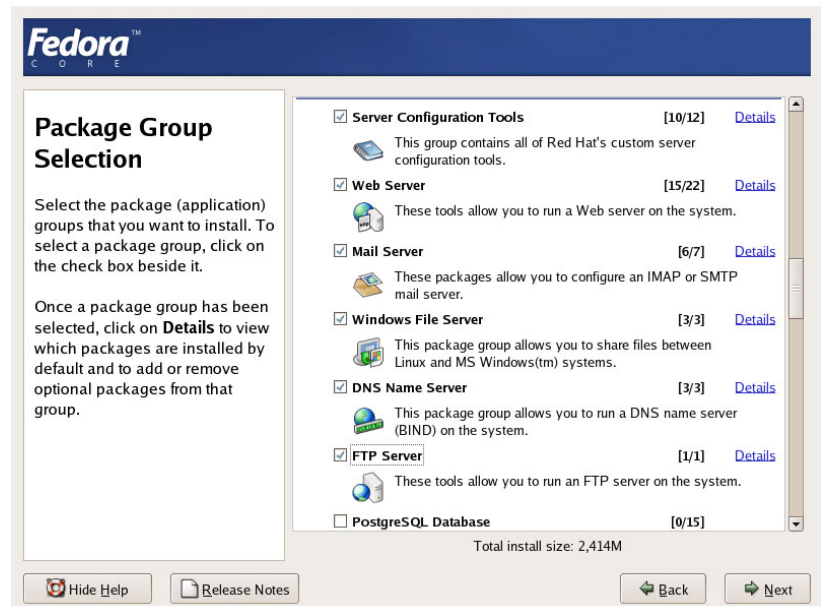
Select <Mail Server>, then <Details>.



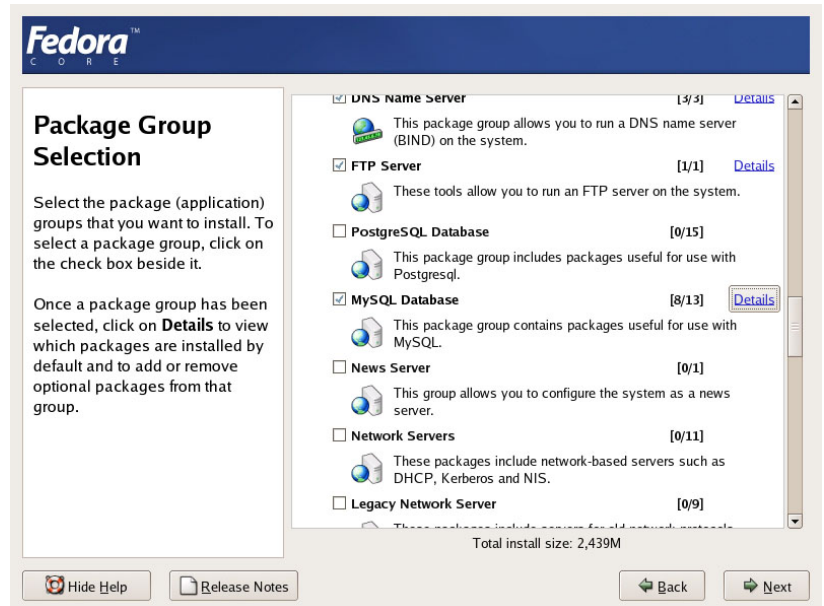
Select <postfix> and <squirrelmail>, then <OK>.



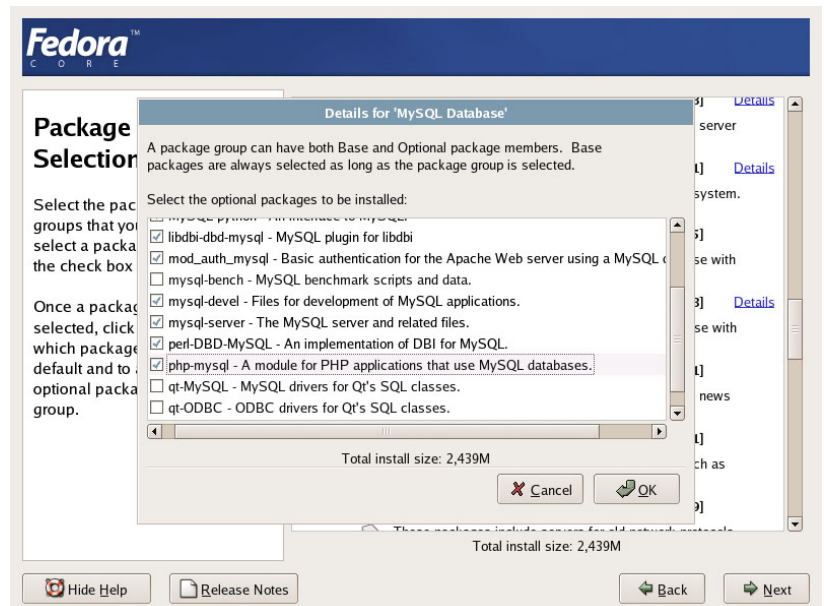
Select items:
<Windows File Server> ,
<DNS Name Server> ,
<FTP server>



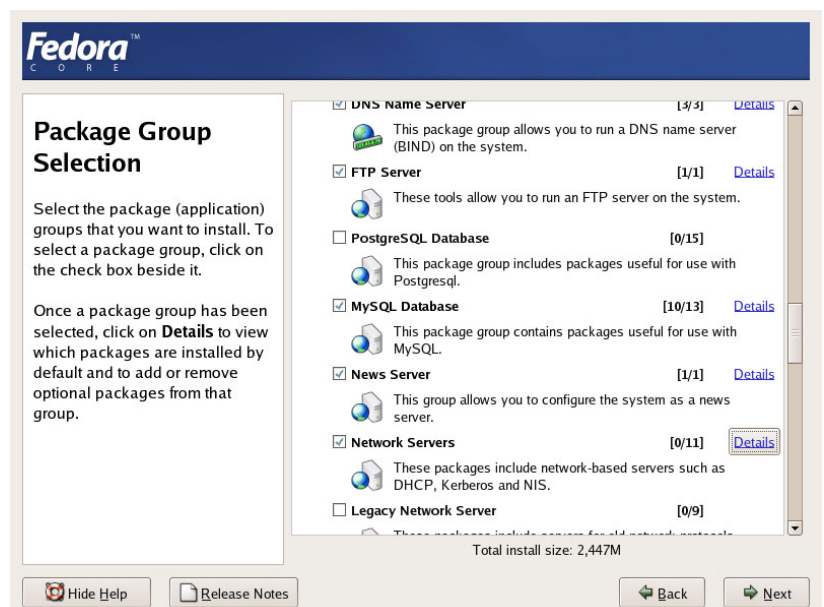
Scroll down and select <MySQL Database> , then <Details>.



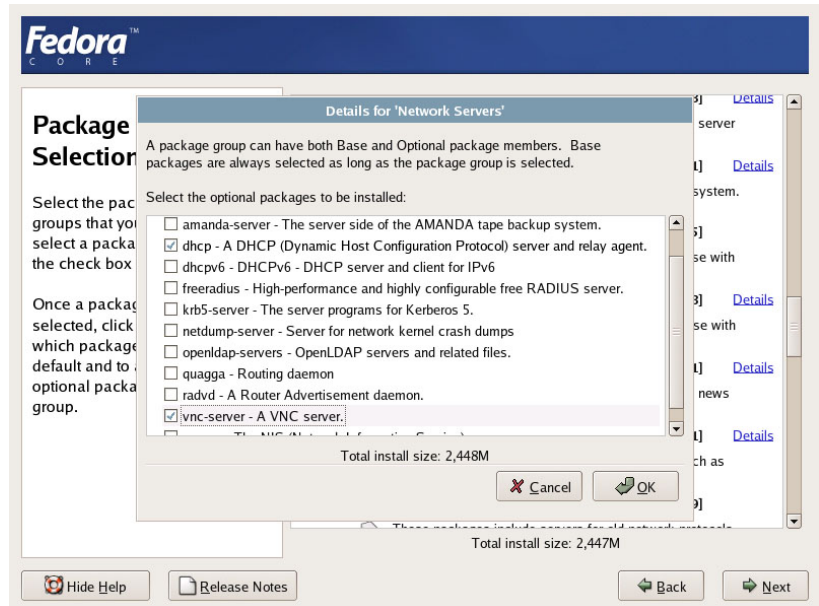
Select:
<mod_auth_mysql> and
<php-mysql> items, then <OK>.



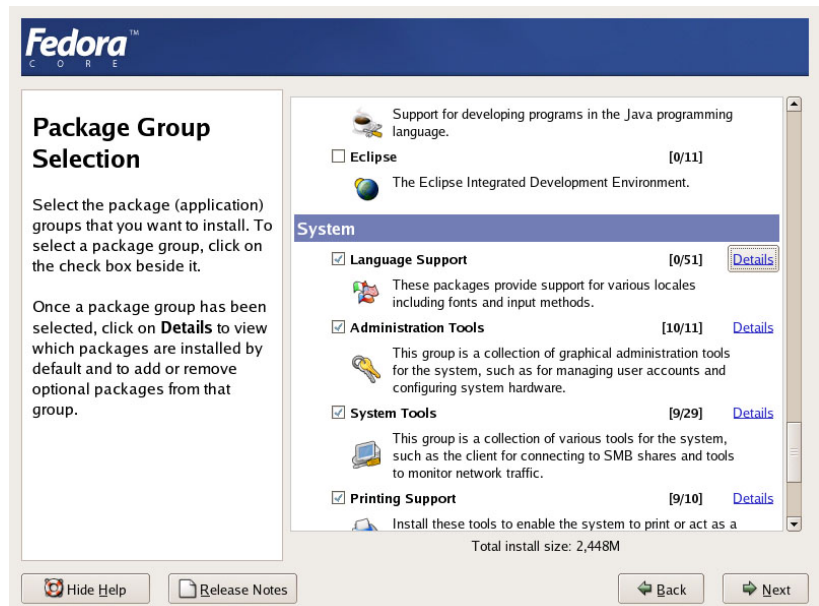
Select <News Server> and
<Network Servers> , then
<Details>.



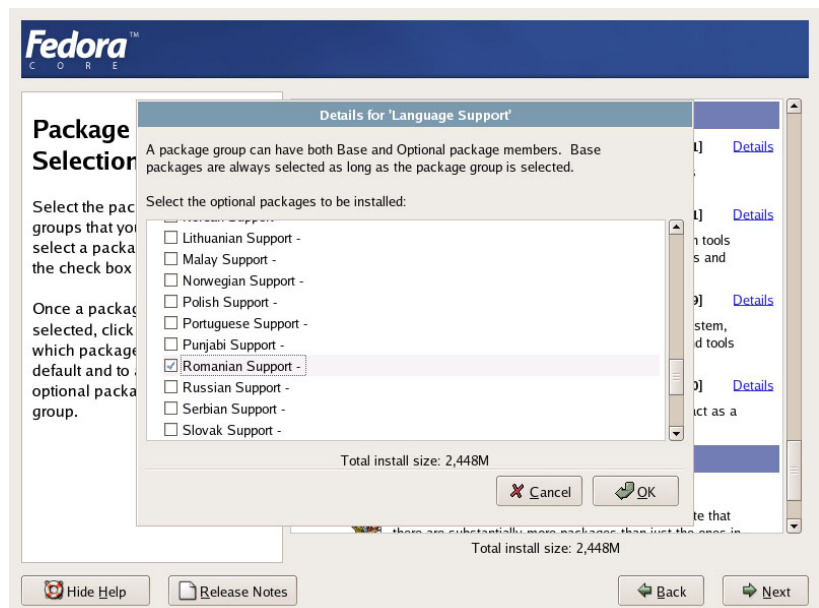
Select <dhcp> and <vnc-server>, then <OK>.



If you want, select a different <Language Support>, then <Details>. Selecting a language support doesn't mean that you renounce to English, but you'll have possibility to have other Language.



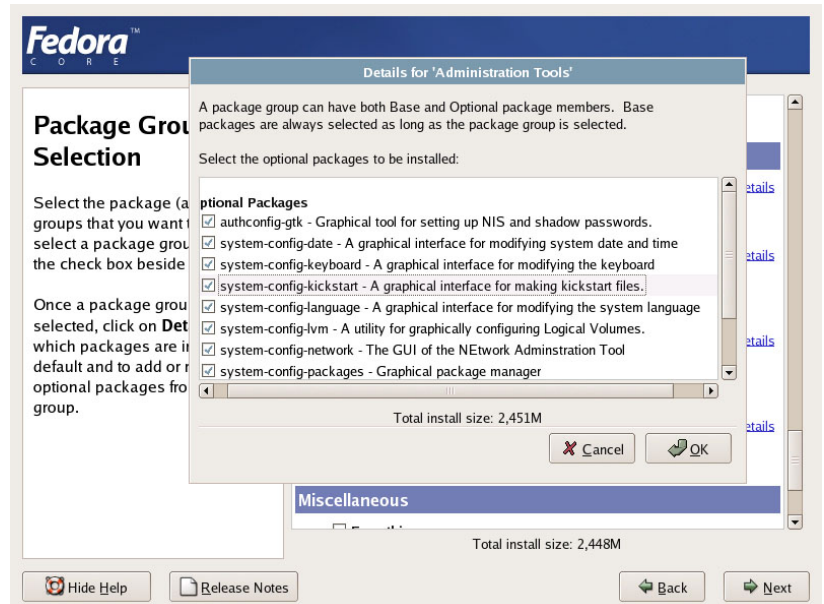
In our example we select <Romanian Support>, but you select anything you want according, maybe, with your natal language.



Select <Administrative Tools>, then <Details>.



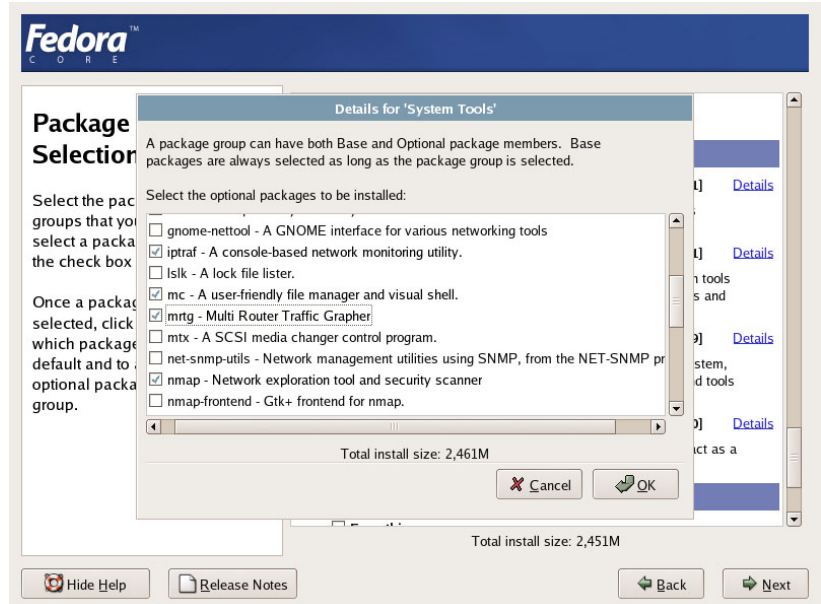
Select <system-config-kickstart>, then <OK>.



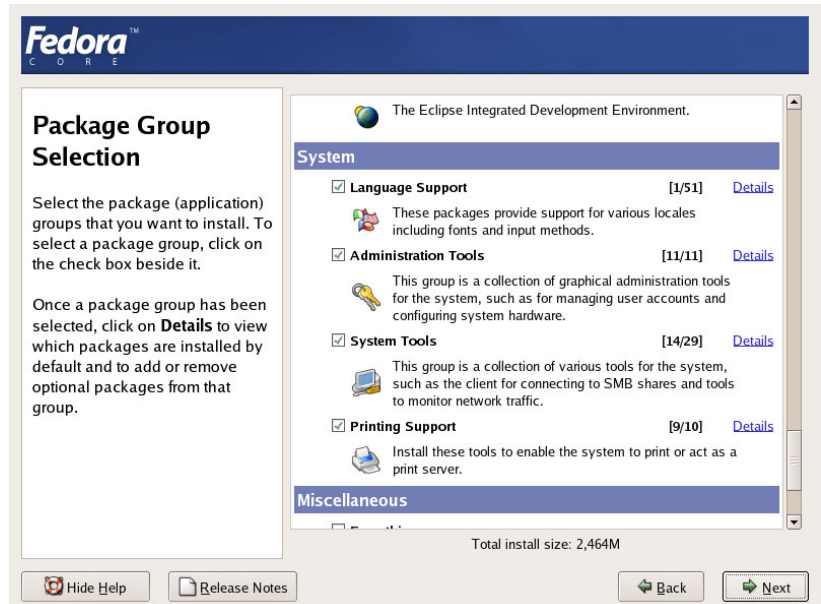
Select <System Tools>, then <Details>.



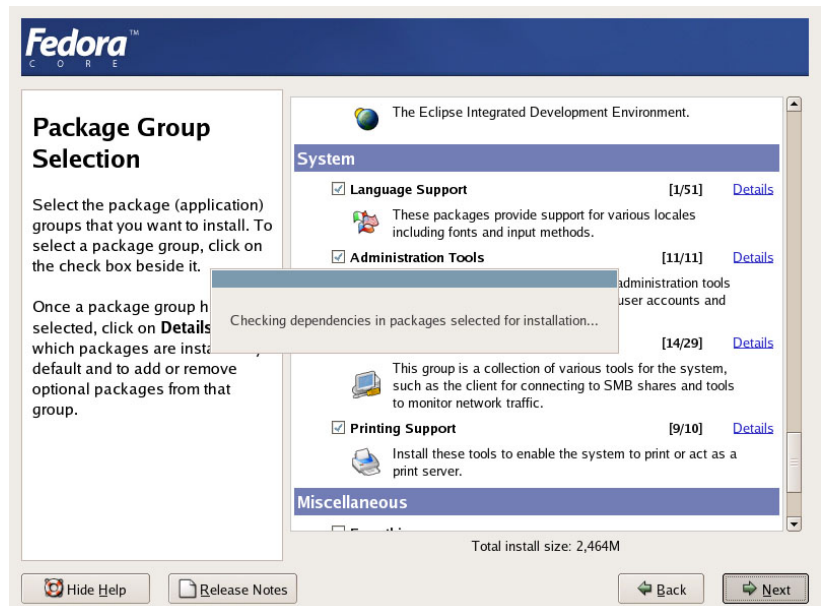
On “System Tools” screen select:
 - <iptraf> , <mc> and <mrtg> items,
 then scroll down, and select also:
 <uucp> and <vnc>, then <OK>.



Now, your Packages selection is ready, then click <Next>.



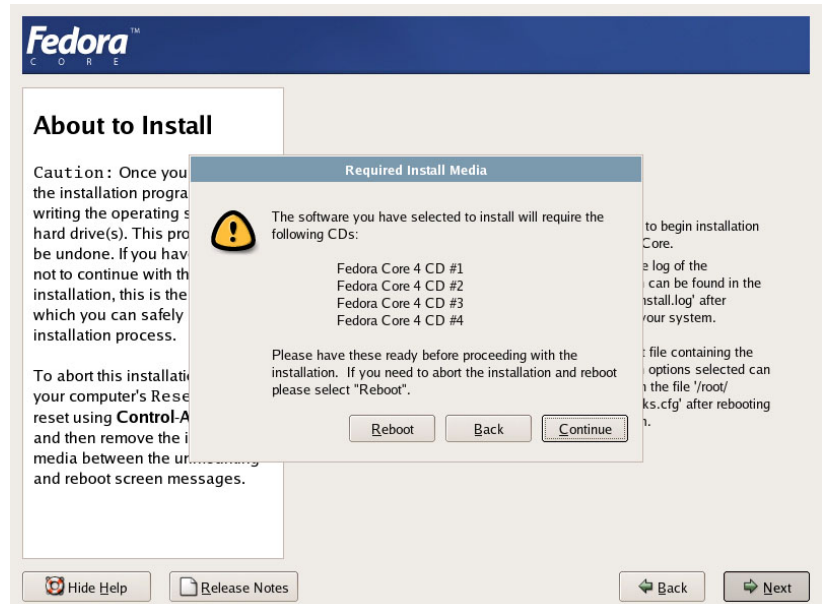
The installation software will verify what is necessary for installing Fedora Core 4 conform your selected packages.



This is an information screen so, click <Next>.



Again, an information screen, where it is written that are necessary all 4 CDs for installing the system and the packages selected. If you have all four CDs ready click on <Continue> button, otherwise click <Reboot>.



After all these operations, the Fedora Core 4 starts installation and you have to wait between 30 to 90 minutes to perform all jobs (depending on your hardware performance).

During the installation other information will be displayed and everything must go on smoothly. If something is wrong try to see what is the error message and fix the problem. Maybe you must restart from beginning the all installation, but not before check the hardware compatibility describe in the beginning of the lesson-part 1.

When the installation will end you'll be asked to restart computer and after restarting are running post-installation operation. All processes will end with login screen presented below.

Tips:

- change the root password monthly;
- don't write the password on computer, on keyboard or something like that (we see that often at the beginners).

Key Point Summary Conclusions and Recommendations

You can also install the Fedora Core 5 which is the latest release.

Study Guide

ESSENTIAL QUESTIONS TO EVALUATE THE ACQUIRED KNOWLEDGE

1. What are the names of device for the hard drive?

2. How many CDs are necessary to install Fedora Core 4?
3. Which is the IP from the first network interface, for the internal network, which goes to your clients?

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SUPPLEMENTARY INDICATIONS ABOUT THE CONTENT OF THE LESSON

ANSWERS TO THE QUESTIONS

1. The device name of the hard drive are: hda, hdb, hdc, hdd.
2. There are 4 CDs for installing Fedora Core 4 and for our example are all necessary.
3. The IP for the eth0 is: 192 . 168 . 0 . 1.

WORDS TO THE LEARNER: *Install and discover!*