

GUI in Linux –KDE & GNOME

Session Objectives

- **The X Window system**
- **The K Desktop Environment**
- **The GNOME Environment**

The X Window System

A windowing system is a set of software libraries that is used to manage the graphical capabilities of a system.

Linux uses the X Window system as the default windowing system. X is a portable system, which means that it is not tied to any operating system or specific hardware. X follows the client-server architecture. The X server is a software program that serves client requests for displaying graphics. X uses a client-server protocol called the X protocol.

The power of the X window System may not be felt if both the client and server are in the same machine. Its main potential is utilized when it is used across the network on multiple machines.

The advantages of using the X interface are:

- The client and server software can be installed on different machines
- X client applications can be ported to other systems
- There can be multiple X servers running on more than one machine at a time.

The X desktop environment

The desktop environment is a user interface that runs on the window manager. A window manager is used by a windowing system to keep track of the location of each window on the desktop. The desktop environment provides a collection of graphical utilities called X utilities or X clients.

Although the window manager may manage the location and look of the windows, it does not provide utilities for X. This is where the desktop environment comes into the picture. A window manager customizes the desktop according to the user's needs. Various desktop environments have been developed for X. Some of them are

- GNOME
- K Desktop Environment (KDE)
- Common Desktop Environment (CDE)

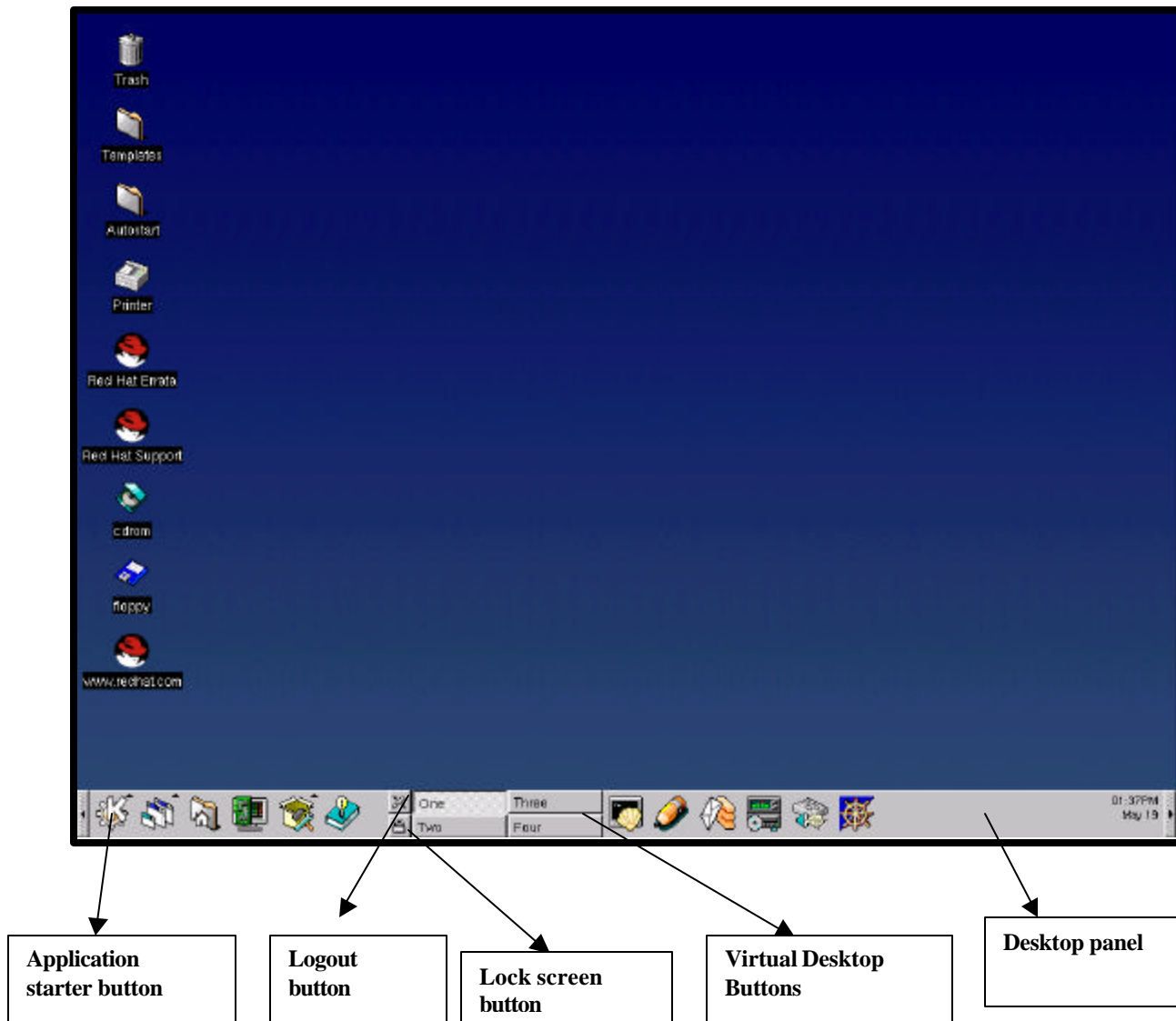
The K Desktop environment

The K Desktop environment is a powerful graphical desktop environment for Linux. KDE provides a complete desktop environment including a window manager and lots of X utilities. KDE uses the K Windows Manager as the default window manager.

KDE is free software and has the following features:

- A collection of over 150 utilities (X clients)
- Available free of charge since it is open source software
- Multiple desktop support
- A trashcan to help recover from accidental deletion of files
- Graphical tools to configure the hardware and other features of the system
- Drag-and-drop feature to facilitate easy copy, link, move and deletion of various files and devices
- Inbuilt web browser (KFM). KFM is the file manager in KDE.

The KDE Desktop



The KDesktop consists of three main parts:

- The **desktop**, on which frequently used files and folders may be placed.
- A **panel** (now called the kicker) across the bottom of the screen which is used to start applications and switch between desktops.
- A **taskbar** which is now incorporated into the kicker to switch between currently running applications.

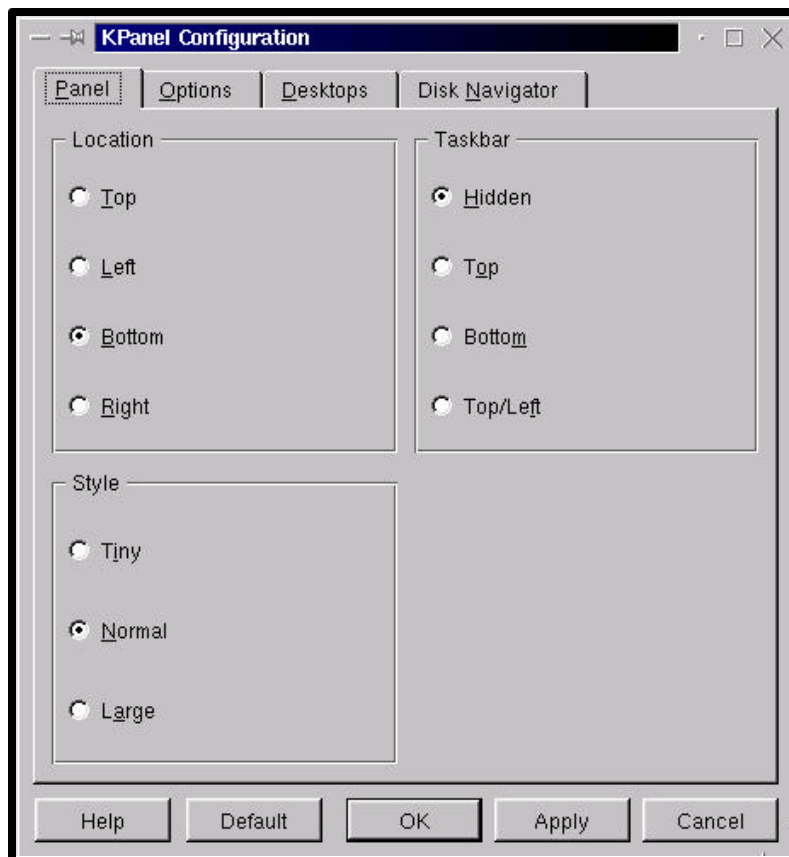
The KDesktop Panel

The following items can be seen on the K desktop panel:

- The K icon which is used to launch all applications in KDE. The K icon displays the start menu of KDE. It is called the **Application Starter** button.
- Icons for virtual desktop
- Buttons to launch frequently used applications. The following are the default buttons present on the KDesktop panel
 - Window list button: This displays a menu showing a list of currently open applications, organized desktop-wise.
 - Home directory: This button displays the HOME directory of the user in the KFM
 - KDE Control Center :This starts the K Control Center window
 - Find files utility : This displays the Find dialog box
 - KDE Help : This provides access to online help
 - Navigate the filesystem: This provides quick access to all the files and folders on the system
 - Terminal Emulation program: This provides access to the terminal prompt. It starts the K Virtual Terminal (kvt) program
- The Time applet displays the system date and time.

Configuring the KDesktop panel

The panel settings can be changed by clicking on **Application Starter button->Panel->configure**.



From the configure dialog box, we can change the settings of the panel and the taskbar, such as location, style, ToolTips, number of desktops displayed and autohide.

The KDE taskbar

The taskbar appears at the top of the KDesktop. If the KDesktop panel is hidden, the K start button appears on top of the desktop.

The KDE desktop

The desktop contains icons for frequently used applications/folders. The default icons that are present on the desktop are:

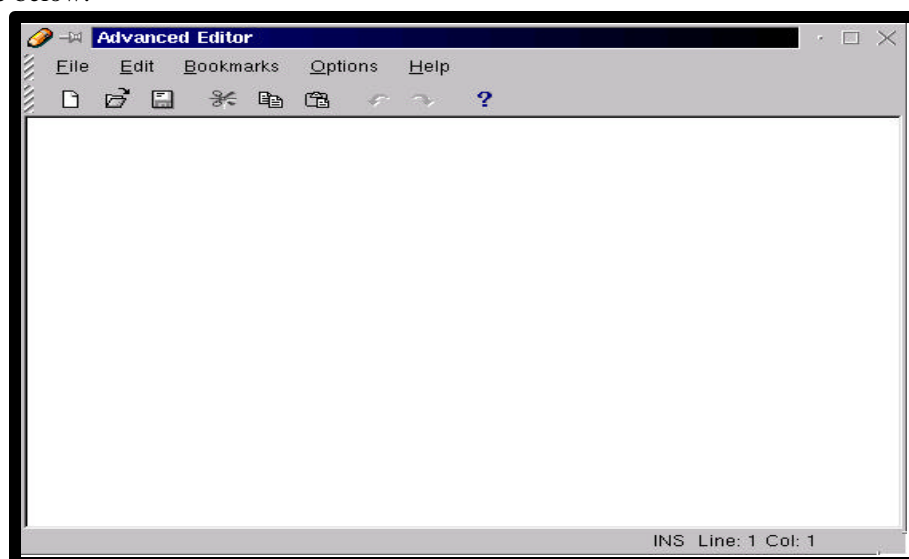
- The AutoStart folder icon, which contains the applications that should be started when logging into KDE.
- The Printer icon, which prompts the user to choose a printer and displays the print queue for the printer selected.
- The Templates folder icon contains program shortcuts that can be created with the help of the **New** option of the shortcut menu that is displayed when we right click on the desktop.
- The Trashcan folder icon stores the files that are deleted. The files that have been deleted accidentally can be recovered by accessing this folder.
- The **CD-ROM** icon is a link to the CD-ROM disk
- The **Floppy** icon is a link to the floppy disk.

The KDE Application Starter Menu

On clicking the K button on the KDE panel, the KDE starter menu appears. The various menus present are described below:

The Applications menu

The Applications menu has utilities like the Advanced Editor (KWrite), the Organizer(KOrganizer) and the Text Editor (KEdit). KWrite and KEdit are word processors. The KOrganizer utility displays a calendar that can also be used as a organizer to maintain schedule. The advanced editor is shown in the figure below:



The Games Menu

The Games Menu displays a list of games supplied with Linux.

The Graphics Menu

The Graphics menu displays a list of utilities like the Fax Viewer, the Icon Editor and different Image Viewers, to paint and grab screen shots.

The Internet Menu

The Internet menu provides utilities such as chat programs, Mail programs and News viewers.

The Multimedia Menu

The Multimedia menu displays a list of utilities used to play audio and video files on the Linux system and to control the audio effect.

The Settings Menu

The Settings menu contains sub-menus that lists the utilities to configure the environment such as Desktops, Input devices, network, Information, Sound, Applications, Keys and Windows.

The System Menu

The System menu displays the utilities used to maintain the Linux system.

The Utilities Menu

The Utilities menu lists some useful KDE utilities.

The Find files Utility

The Find Files utility is used to locate a file on the file system.

The Home Directory

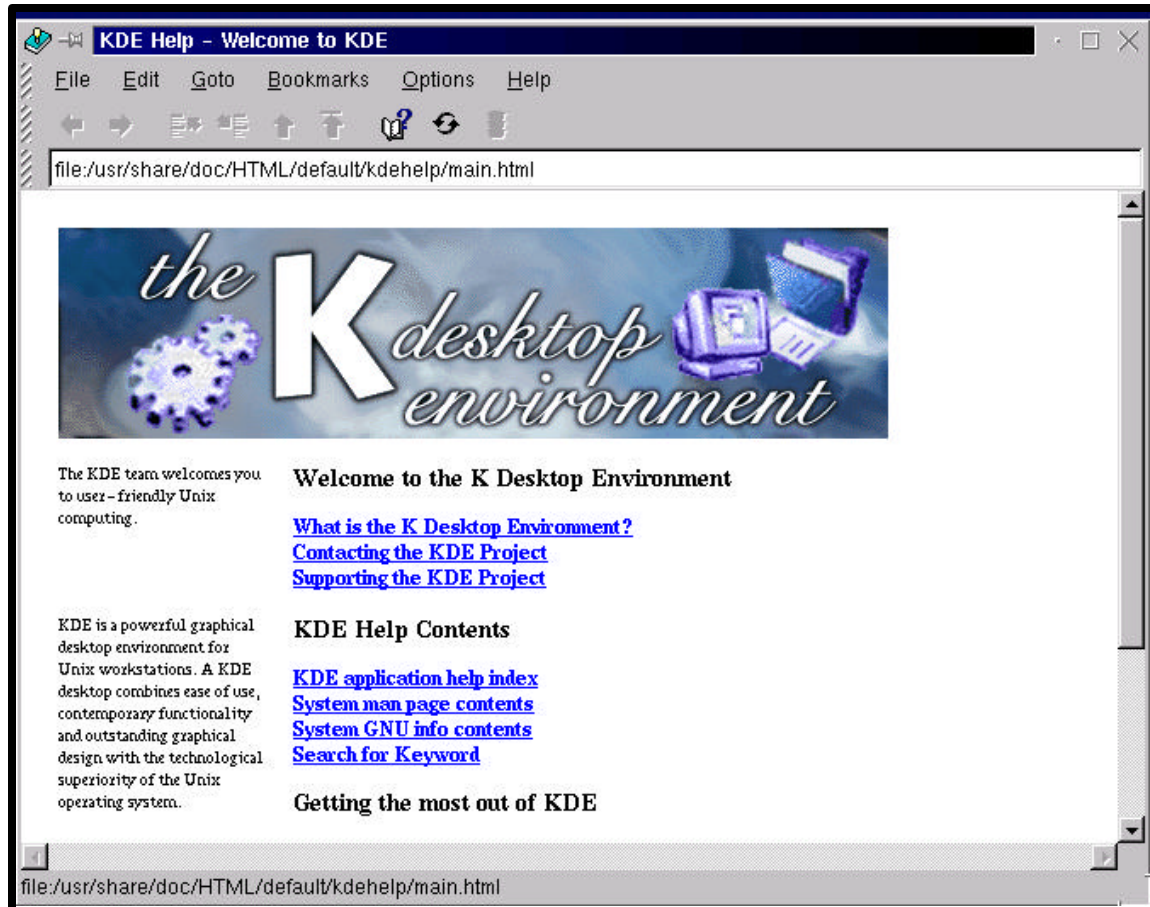
This option launches the K File manager and displays the contents of our HOME directory

K Control Center

This option launches the K Control Center that helps us to configure our system.

KDE Help

This option launches the KDE HELP in the KDE Help browser. All the topics have hyperlinks, which help, in quick browsing through the help pages.



Refresh Desktop

This option helps us to rescan the files in the /Desktop directory

Trashcan

This option launches a window that displays all deleted files. We can either recover the file or delete the file permanently, after which it cannot be recovered.

The Disk Navigator Menu

The Disk Navigator menu helps us to quickly navigate the filesystem. It also displays a list of recently accessed utilities and files.

The Panel Menu

The Panel menu has utilities to configure the K Panel. We can add or remove applications from the K Panel

Lock screen

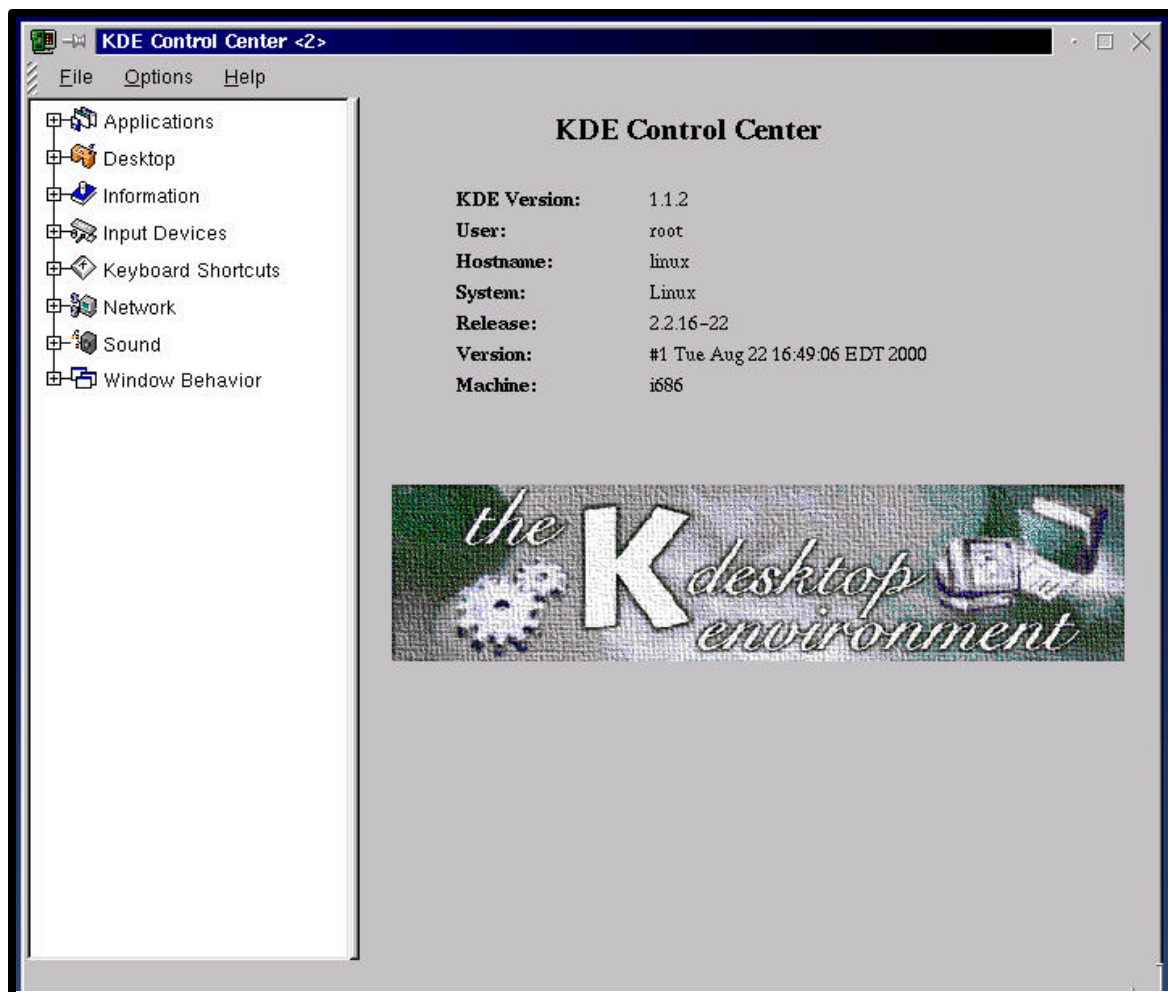
The Lock Screen option starts the screensaver and locks the desktop.

Logout

The Logout option displays the names of applications that are running. It asks the user for confirmation before logging him out. The Logout option ends the current KDE session and takes the user to the opening login screen.

Using the KDE Control Center

Launch the Control Center from the Application Starter. A window with two panes appears, displaying a list of modules in the left pane. Open a module by clicking the "plus" sign next to the module or by double-clicking the module name. Then, click one of the module category names to edit its configuration in the right pane.



Changing the configuration is fairly straightforward. A help button is available on each configuration panel to explain settings that are not obvious. Each panel has buttons labeled *Ok*, *Apply*, and *Cancel*, which work as follows:

- **Ok** applies configuration changes and closes the configuration panel.
- **Apply** applies configuration changes and leaves the current panel open so you can make other changes.
- **Cancel** closes the current panel without applying changes.

Note: If you make changes on one configuration panel and move to a different module without clicking *Ok* or *Apply* first, your changes will be lost.

Configuration Modules

Here is a brief overview of the configuration modules:

- **Applications** - contains settings for the Desktop Manager and the Panel (which includes virtual desktop configuration).
- **Desktop** - contains settings related to the appearance of the desktop, such as background color/image, window colors, screen saver, fonts, and language.
- **Information** - displays information about memory usage and the system CPU.
- **Input Devices** - contains settings for the keyboard and mouse.
- **Network** - contains network-related settings.
- **Sound** - contains system sound settings.
- **Windows** - contains settings governing window appearance and behavior, such as the focus policy, titlebar buttons, and window animation.

The GNOME Desktop Environment

GNOME is a user-friendly desktop environment that can be run on multiple operating systems. It is the default desktop environment for Red Hat Linux 6.0. GNOME stands for GNU Network Object Model Environment.

The features provided by GNOME are:

- GNOME is open source software. It is available completely free.
- GNOME uses the CORBA standards of development. This allows the applications running on GNOME to inter-operate seamlessly regardless of the machine being used.
- GNOME applications are made session-aware with the help of the GNOME Session Manager. GNOME can be configured in such a way that it remembers the open windows and their positions at the end of a session. The next time the user logs into GNOME the user will get the same applications, open at their respective positions.
- GNOME supports 3D programming through Mesa which is the open source implementation of OpenGL. OpenGL is the industry standard for developing portable and interactive 2D and 3D graphics.
- GNOME has a graphical toolkit known as GTK (GNOME ToolKit) which is used for all the numerous graphical applications.
- GNOME supports the drag-and-drop feature for maximum interoperability with applications that are not GNOME-compliant.

- GNOME supports many national languages. So, any new language can be added without changing the software.
- GNOME supports virtual consoles and multiple desktops.

The GNOME Desktop

The GNOME interface consists of the GNOME panel and the desktop area which has icons. The panel consists of the main menu button (the GNOME symbol button), the help button, the GNOME configuration tool, the Netscape Communicator, the Terminal Emulation program button, the GNOME pager and an applet denoting the current system date and time.

Frequently used programs and data-items can be placed on the desktop. On double-clicking the icon, the particular item is invoked. If the item is an application, it will be executed. If it is a data item, it is opened in the file manager. The file manager is a utility to view the hierarchy of directories on the computer and the files and directories in each selected directory.

The default icons that are displayed on the desktop are described below:

Home Directory : Displays the HOME directory of the user who has logged in

www.redhat.com : Displays the <http://www.redhat.com> web page in the default browser.

Red Hat Support : Displays the <http://www.redhat.com> web page to display the support service on Red Hat.

Red Hat Errata : Displays the <http://www.redhat.com/errata> web page. The Red Hat Errata Web page contains information about the important updates, fixes and corrections for Red Hat Linux and other related products from Red Hat.

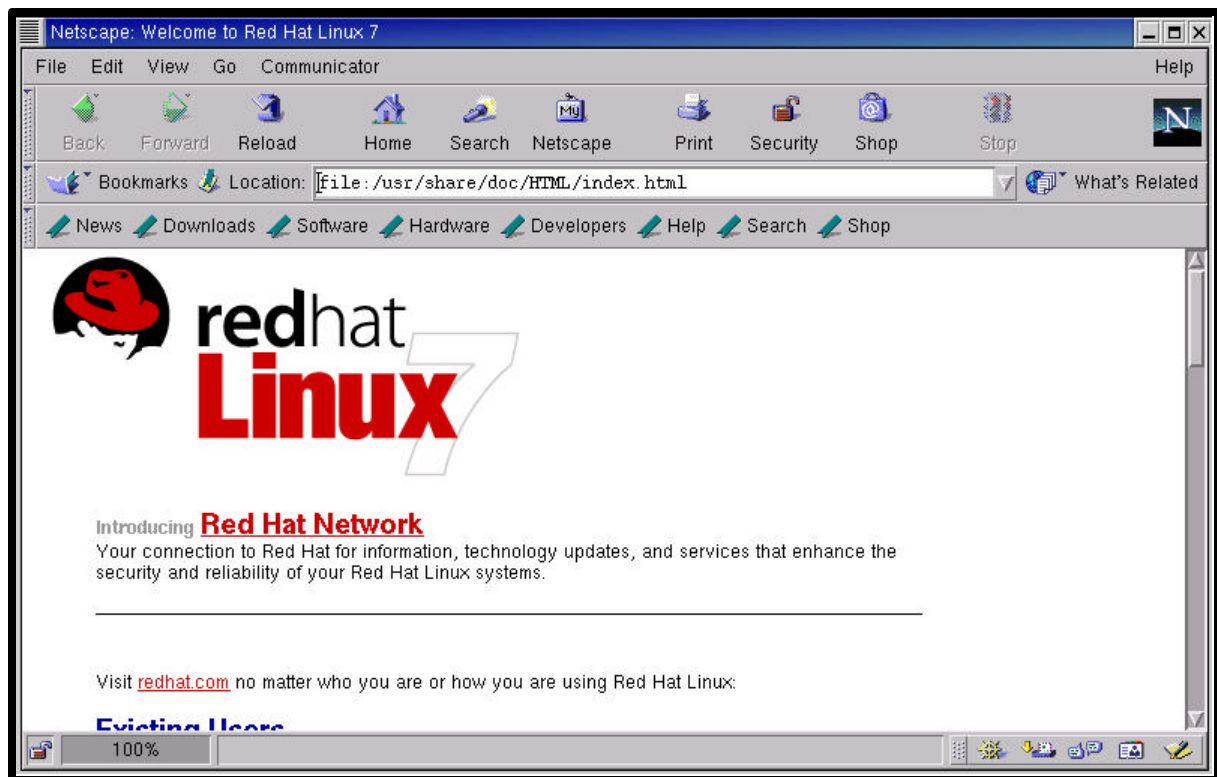
LDP –Linux Documents : Displays the <http://www.redhat.com/mirrors/LDP> Web page. This page displays the Linux Documentation Project (LDP) pages.

GNOME Web Site : Displays the <http://www.gnome.org> web page.

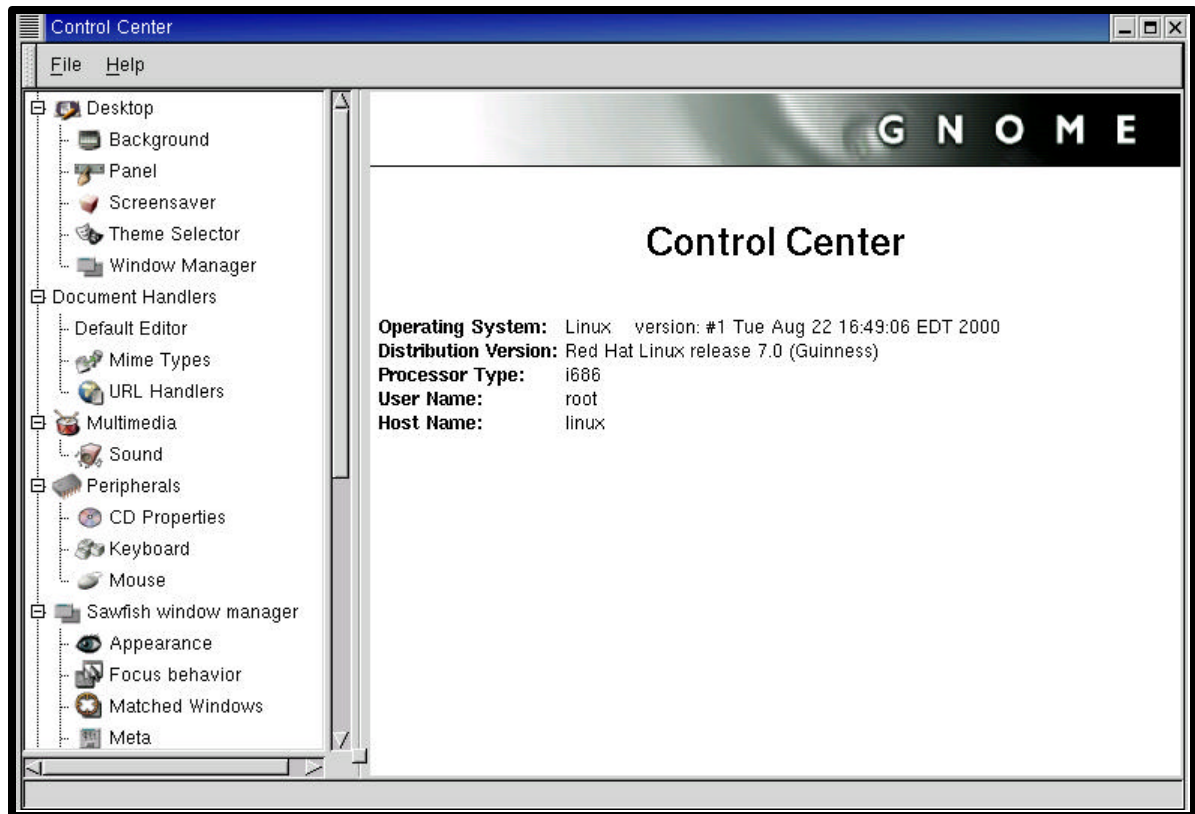
The default buttons that appear in the GNOME panel are described below:

Terminal Emulation Program : This button starts a window that displays the Linux shell terminal.

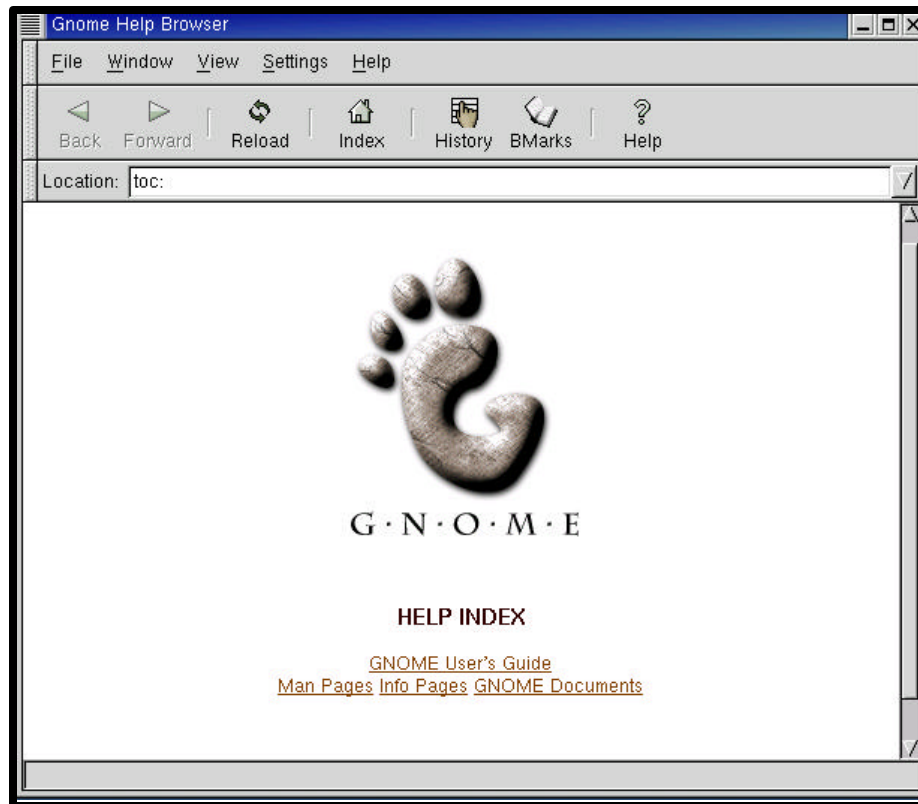
Netscape Communicator: This button invokes Netscape Communicator browser. This is the default browser that comes with Red Hat 6.0



GNOME Configurator Tool: This button invokes the GNOME Configurator Tool (This is also called the Control Center) which can be used to configure the various components of the system.



GNOME Help Browser : This button invokes the GNOME Help Browser. This utility provides online help. All the keywords are in the form of hyperlinks. Clicking on a link takes the user to the appropriate help page. It can also search for a particular keyword that the user types and displays help on that topic.



REVIEW QUESTIONS

1. Linux uses the _____ system as the default windowing system.
2. The _____ is a user interface that runs on the window manager.
3. The K icon that displays the start menu of KDE is called the _____ button.
4. The Internet menu provides utilities such as chat programs, Mail programs and News viewers.
5. GNOME stands for _____.