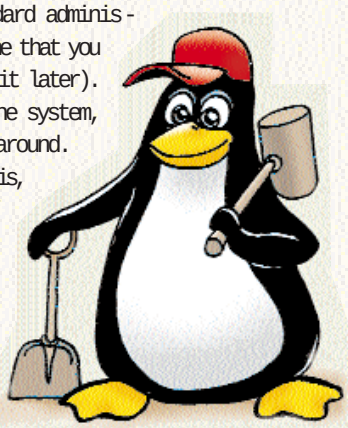
Tips on Linux

It s cool and it s hot! Here s how you can teach a new penguin old tricks

Contents

Tips&Tricks

Linux is a multi-user operating system and the standard administrator account is called root . The password is the one that you had selected during installation (unless you changed it later). However, this account places you in complete control of the system, which can be dangerous when you are still feeling your way around.

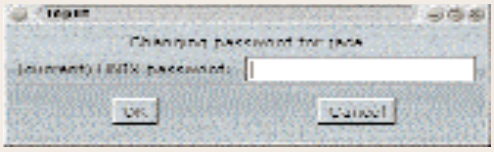


Creating a new non-privileged account is safer. To do this, open a terminal window (look under the Utilities section of the main menu) and type useradd <login>, where login is your preferred choice of login id. This can be your first name, nickname, initials or anything else you fancy.

We recommend that you use the same id as in your e-mail address. If, for example, your e-mail address is pengs@hotmail.com, your choice of login id could be pengs . The usage for the useradd command would then be useradd pengs. This command creates a disabled account by default that can only be used after you choose a password. To do this, type passwd <login>. You could choose to have a blank password. Type exit to close the terminal window, or to logout if you are at the console.

Changing passwords

To change the password for the current login id, type passwd in a terminal window. This command prompts you for your current password, then your new password and a confirmation. For security reasons, nothing is displayed on your screen as you type your password. The passwd command also insists that you choose a difficult password, something that is not based on your login id or on a dictionary word. If you are not really paranoid about security, you can switch to the root account and type passwd <login>. This will still issue the warnings, but won t stop you from proceeding.



Change passwords easily with GNOME

Morphing logins

To quickly switch between user accounts, type su <login>. Just enter the password for the particular account, and you re in. To get back to your account, type exit. Because the su command is most frequently used to access the root account, typing su without any parameters will switch you to the root.

Help yourself

Do you need documentation on any command? Type man <command> at the terminal to access the manual pages. These pages usually contain references to other manual pages, typically followed by a number in brackets, like this: ls(1). The number identifies a section and can be ignored most of the time since most pages are only one section long. Some, like the crontab pages, are spread across multiple sections. In this case, type man 1 crontab to see the first section, and man 5 crontab to see the fifth section.

The man system, which has been around for a long time, now has a successor in the Texinfo pages (Tex is a text formatting language). These pages are capable of hypertext, unlike the flat layout of man, and can be accessed using the info <command> syntax. The idea of having two help systems is that the man pages provide basic usage information, while info pages go into greater detail. Gnome comes with a graphical help browser for both man and info pages. Select Help System from the main menu to access this.

There exists another source for documentation in the HOWTO pages. These pages deal with accomplishing tasks rather than understanding the use of a command. They are maintained by the Linux Documentation Project (LDP) and, being plain ASCII files, do not need a special viewer. If installed on your machine, these pages are located in the /usr/doc/HOWTO directory. The Publisher s Edition of Red Hat 6.0 (distributed with the August CHIP CD) did not carry the HOWTO pages. However, an RPM installable version was carried in the Linux section in the September issue CD.

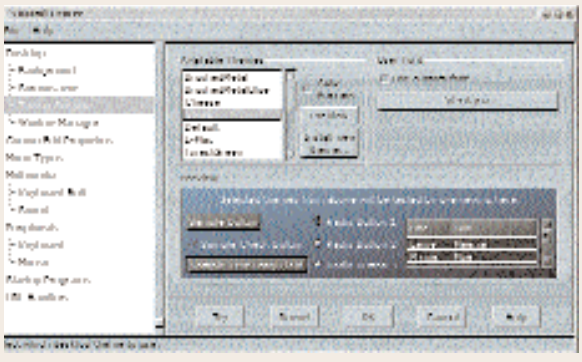
The GNOME Help browser provides a unified front-end to the man and info pages

Quickie help

For a one-line description of any command, type whatis <command>. For example, typing whatis ls will display the description list directory contents. Reverse lookup is also possible using the apropos command. Typing apropos directory will display a list of all the commands that have the word directory in the description, including ls. Both whatis and apropos use the less command to display text. Use the arrows keys or Page Up and Page Down to scroll. Press q to exit.

Make your desktop pretty

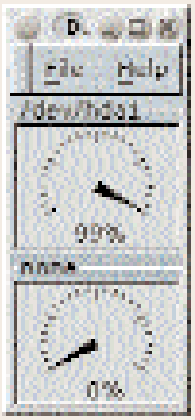
Gnome can be made to look like practically any other desktop environment (Windows, Mac, BeOS) using themes. Changing themes involves two phases: changing the window manager s theme (window manager is Enlightenment by default), and changing the Gtk+ theme. Middle-click (or press both mouse buttons together) on an unused area of the desktop to bring



The theme selector lets you preview a theme before applying it

up the Enlightenment menu, then select a theme from the Themes sub-menu. The BrushedMetal-Tigert theme would be a good choice.

Next, open the main menu and navigate to Settings > Desktop > Theme Selector. Choose either BrushedMetal or BrushedMetalBlue here to match the Enlightenment theme. If you have trouble accessing the Enlightenment menu, open the Window Manager section of the Control Panel and click on the configuration button. Move to the Themes section and make your choice. Additional themes can be downloaded from http://e.themes.org (for Enlightenment) and http://gtk.themes.org



The Disk Free monitor sits unobtrusively in a corner of your desktop

(for Gtk+). Both sites contain instructions on installing themes.

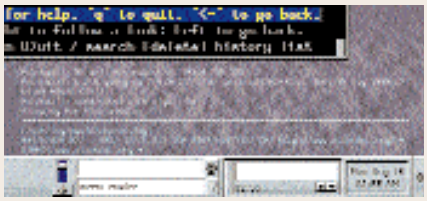
Free space

Type df to check the amount of free disk space on your hard disk. To check the amount of disk space taken by a particular directory, type du /directory. Using du without any parameters will check the current directory. To check a file instead of a directory, use the -s parameter, like this: ls -s filename.

Monitor logs

FIND IT ON THE CHIP CD

Most Linux background applications come without front-ends for status information. While applications that can monitor multiple services are available, they are usually cumbersome to install. A simpler way is to look at the log files that are usually located somewhere



Root-tail monitors logs from a corner of

in the /var/log directory. Log files can get huge and unreadable, but there are utilities to display the first or the last few lines of the file, named head and tail respectively. Consult the man pages for information if you want to see something other than the default ten lines. Tail is the more useful of the two, since all additions to the log are at the end of the file. This utility also comes with an interesting parameter

```
C:\>checked for
viruses?_
```

called --follow (or f for short) which continuously polls the file for any changes, and displays them on screen as they occur. An example would be for monitoring usage of the Squid proxy server: tail -f /var/log/squid/access.log. Tail can monitor multiple files; all you have to do is simply specify them on the command line.

A graphical version of the tail utility blends the output with the desktop wallpaper. Called root-tail and named after the root window (the correct term for the Linux desktop background), this utility is the graphical equivalent of tail -f. Being graphical in nature, root-tail can use a customised font and colour-coding when working with multiple files. A complex example for monitoring two log files is given below:

rt -g 80x10+650+700 -fork -font fixed /var/log/squid/access.log,cyan /var/log/fetchmail,grey

This displays the output at the bottom right corner of the screen. A resolution of 1152x864 is assumed here. Consult man rt for creating a customised version, and insert it under the Startup Programs section of the control panel. Instructions for installation are included in the archive section of this month s CHIP CD.

Local paths

If you ever get down to compiling any software under Linux, it will install to a directory named /usr/local/bin, indicating a directory meant for executable files created locally. This directory is not in the path by default, so you ll have to add it yourself. To do this, first switch to the root account, then edit the /etc/profile file. At the very bottom, add this line, exactly as printed:

export PATH=$PATH:/usr/local/bin

Next, you need to include the local shared libraries directory in the library search path. Edit the file /etc/ld.so.conf and add /usr/local/lib to the bottom. Exit the editor and type /sbin/ldconfig to rescan the library directories. Finally, log out and re-login to make the change to the path effective.

Links to files

Though Gnome currently does not have any mechanism for creating links on the desktop, you can still do this using the terminal. First, type cd ~/.gnome-desktop to enter the desktop directory. Next, create the link by typing ln -s /path/to/file shortcut-name. Remember that if you use spaces in the shortcut name, you must enclose the entire name in double-quotes, like this . You can use links for a variety of purposes, like for instance when you install a large package in a directory of its own. Rather than put that directory in the path, you can make a link to the main executable from some directory that is already in the path.

Coloured directories

Does the output from the ls command look drab? Add some colour; use the --color parameter. You can also use the -F parameter to add a file type identification symbol to the end of every filename displayed.

Rather than append these two options every time you use ls, you can set up an alias that does this automatically. Type alias ls= ls --color -F (note the single quotes) and ls will now always display in colour. The single-quotes are used because there are spaces in the alias definition. Either single or double quotes can be used. To delete this definition, type unalias ls.

Finally, since this definition lasts only until you log out, you can make it permanent or at least make it seem so by entering it in the startup script /etc/profile (the Linux equivalent of autoexec.bat). Simply add the above alias command to the end of this file.

Familiar faces

Here are some common configuration files that you will encounter when using Linux:

/etc/fstab contains a list of disk drives and partitions to be mounted at startup. This file takes care of mapping your CD-ROM driver name to the easy-to-remember /mnt/cdrom directory.

/etc/hosts has a listing of IP addresses against host names used on networks with static IP addresses.

/etc/issue hosts the message displayed at the console just before you log in. Modifying this file is of no use because it is recreated every time the machine is rebooted.

/etc/profile is the equivalent of the autoexec.bat file in DOS and Windows 95.

/etc/rc.d/rc.local is a rough equivalent to the config.sys file. This file is executed only during system startup, but is a normal script file and can be edited as one. Among other things, this script is responsible for creating the /etc/issue file.

/etc/ld.so.conf lists directories that contain shared libraries.

/etc/lilo.conf contains the configuration for the LILO boot manager. Type man lilo.conf for information on what this file can do.

/etc/passwd lists all user accounts on the system. In spite of the name, this file no longer contains any passwords. They will have been moved to another file for security reasons.

/etc/shadow contains encrypted passwords for all user accounts. Unlike /etc/passwd, this file cannot be read by anyone except the administrator.

/etc/smb.conf Has the configuration for the Samba file server. This file defines shared directories and their properties.

What installed this?

Did you accidentally modify a system file, and have no backup to restore from? Type rpm -qf <filename> to find out what package installed that particular file. Then install the package again by typing rpm -ivh --force <rpm-file.rpm>. If you are unsure about where you installed this file from, it was most probably from the CD that came with the August 1999 issue of CHIP. Mount it and enter the /mnt/cdrom/RedHat/RPMS directory, then look for the file in the directory.

Find files

Linux maintains a database of all the files on your system that can be quickly searched using the locate command, like this: locate tes. This will find all files with the letters tes in the name, including the files tes, test or latest (if they exist). This database is updated every night, so if you don t leave your machine running while you sleep, issue the updatedb command once every few days or so. You can also use the find utility to locate files under a particular directory.

Lost the keys?

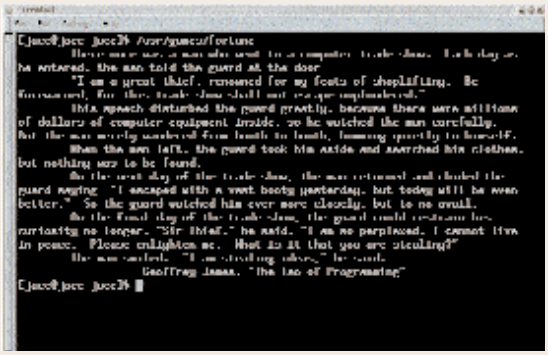
If you ve lost your root password, there is a way to recover control over your machine. When the LILO boot prompt appears at startup, type linux single instead of just linux. This will start Linux in single user mode, without a login or password. You can now change the password using the passwd command. Type init 5 to continue booting up normally (or init 3 if your X-Window isn t working).

Find disk errors

The Linux version of Windows ScanDisk utility is called fsck. It stands for FileSystem Check, and is used like this: /sbin/fsck /dev/hda1. In spite of lacking a graphical interface, this utility serves its purpose fairly well. Lost clusters are stored in the /lost+found directory.

Your luck today

The fortune command may not win you the lottery, but it could brighten up your day with an interesting message. This command is located in the /usr/games directory which is not



Fortune can really brighten up your day!

in the path by default, so you'll have to either add it to the path, or type out /usr/games/fortune. Linking to it from your startup script is recommended. When logged in from your normal account, edit ~/.bash_profile (notice the period in the filename), and at the bottom, add a line reading exec /usr/games/fortune.

Hotline between programs

Most Linux commands are designed to be used in conjunction with each other. The output from one program can be redirected as input to another program, making for rather interesting results. This is known as a pipe, indicating the connection for data transfer between two programs.

The less program, for instance, is a file viewer that takes a filename as a command-line argument, while the ps program displays a list of currently executing processes.

Depending on the configuration switches used with ps, the displayed output could exceed a screenful. In this case the ps and less commands can be chained together using a syntax like ps aux | less. The aux switches for ps display all processes with detailed information for all users, something that can easily require the screen to scroll.

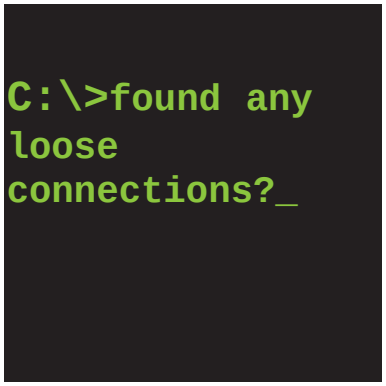
This usage can be extended further: ps aux | tee somefile | less. This command displays a scrollable output like the previous one, and also saves a copy into a file named somefile. Like the shape of the letter T, the tee command sends its input in two directions: as standard output, and into a file. The | character indicates that the output from the command at the left must be piped into the command at right.

Peek into files

Need to find some text within a file? Linux programmers use a tool that you too may find useful. It's called grep and, like most other commands, works with both files and piped input. The command is used more often with the latter, since finding text in the output of a program is harder than looking within a file.

An example of the use of grep would be to check if a particular program is running. Typing ps ax will display a list of all programs running, including the one you are looking for, but the output can be lengthy. The grep command can be used here like this: ps ax | grep some-program. If the program is running, its name will be displayed in the one or two lines of text that will now appear.

Note that grep will find itself as well, because the ps command displays command line arguments along with program names, and grep is simply looking for any mention of the searched text. To eliminate this, use ps ax | grep some-program | grep -v grep. The new pipe at the end includes a parameter that tells grep to display all lines except those that contain the word grep.



To use grep for looking into files, type grep text filename. Multiple file names can be used too: grep text file1 file2...

Note that because only the first word is considered as the search text, using spaces becomes a problem. In such cases, enclose the entire string in double quotes, like this: grep "search text with spaces" file1 file2 file3... You can do a lot more with grep. Consult the manual pages at man grep.

True to type

The Garamond TrueType font under Linux

You can use your Windows TrueType fonts under Red Hat Linux 6.0 using a utility called ttmkfdir. You can find it on this month's CHIP CD. Install this utility, then switch to the /usr/X11R6/lib/X11/fonts directory. Make a directory here called ttfonts. Place all your TTF fonts, then enter the directory and type ttmkfdir > fonts.scale. Next, type mkfontdir.

You should now ideally have two non-blank files named fonts.scale and fonts.dir in this directory. Now move to the /usr/X11R6/lib/X11/fs directory and edit the file named config. To the list of font directories in this file, add the directory /usr/X11R6/lib/X11/fonts/ttfonts. Back at the prompt, restart the font server with /etc/rc.d/init.d/xfs restart. Start the Font Selector utility from the Utilities menu and check if your TrueType fonts are available.

If you dual-boot Windows and Linux and would rather use your TrueType fonts directly from where they are (in your Windows partition), you can do that too. Create fonts.dir and fonts.scale files in your Windows > Fonts directory, and add that to the font directory list. From now on, when you add or delete a font, you'll need to recreate the fonts.dir and fonts.scale files and restart the font server.

Sharing files

ICEBERGS

Linux users, log on to your community centres! You will find plenty of Linux Web sites, but here are a few that stand out:
Official Linux sites
www.linux.org and
www.kernel.org
Discuss current news
www.slashdot.org
Updates and software
www.freshmeat.net
Pure Linux news
www.linuxtoday.com
www.32bitsonline.com
Help for Linux newcomers
www.linux.com
Software for newcomers
www.linuxapps.com
www.linuxberg.com
Finally, KDE (www.kde.org) and Gnome (www.gnome.org) both have their own sites, where new

The Samba file server that comes with Linux is configured by default for user-level file sharing. This means that it will ask users for a password before allowing them to access shared resources over the network. If you wish to password-protect only specific resources, as is the default with Windows, you can switch from user-level to resource-level sharing via the configuration file. Edit /etc/smb.conf and search for the security setting. Change the default value from user to share, like this: security = share.

What's this?

If someone gave you a file and it doesn't seem to be of the type that the extension says, you can ask Linux to analyse the file for you. Type file filename.ext. The file command will tell you what kind of file it is.

Aliases with a twist

The ls command comes with a couple of aliases named dir and vdir. The first is designed to make life easier for users migrating from DOS. The second presents an even more DOS-like vertical file display, equivalent to typing ls -l.

Switching resolutions

If you have enabled support for multiple resolutions, you can quickly switch between them by pressing Ctrl+Alt <+> and Ctrl+Alt < > (on the numeric keypad). If nothing happens when you press the keys, you can enable multiple resolution support by running Xconfigurator and choosing to customise the default resolution during the last step. Enable all the resolutions that you want to be able to use (you can use only one colour depth, though).

Text mode fonts

You can change the console mode resolution if you have installed the SVGATextMode package. Just use the stm command and pass a mode

title as parameter. Try stm 80x30x9 as an example. Use the setfont utility to load fonts from the standard set installed in the /usr/lib/kbd/consolefonts directory.

Multiple desktops

You can switch between two or more completely different desktops on one machine. When one is already running, switch to the console, login as any user, and type startx -- /usr/X11R6/bin/X :1 (note the two dashes with spaces around them). Now press Ctrl+Alt+F7 and Ctrl+Alt+F8 to switch between them. To start a third desktop, replace the 1 with 2, and access it using Ctrl+Alt+F9.

Spreading a desktop across multiple monitors is not currently supported, but it soon will be, in the forthcoming version of the XFree86 server project.

Keyboard shortcuts

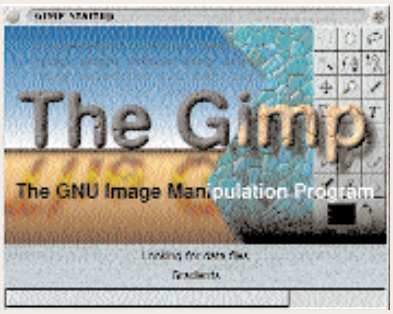
Typing long commands can be troublesome, but the terminal provides many keyboard shortcuts. When you begin typing a command, press the Tab key and the rest of the command gets completed automatically. For example, type fet and press Tab to expand it to fetchmail. You should hear a beep after this, indicating that there are multiple commands starting with the letters fetchmail.

Pressing Tab again will produce a beep, but press once more, and the list of programs is displayed on screen: fetchmail and fetchmailconf. This means that you can now press Enter to start the fetchmail program, or press c followed by Tab again to expand to fetchmailconf (you could also type conf yourself). After the command name, you can still use the Tab key to enter filenames for parameters.

Here are some more shortcuts:
Recall previous commands:
Up and Down arrow keys
Search for previous commands: Ctrl+R
Move to the beginning or end of the current line: Ctrl+A and Ctrl+E
Delete the last word typed: Alt+BkSp

What's the Gimp?

The GNU Image Manipulation Program (or Gimp, for short), is the pro-



The GIMP splash screen

Find out more about GIMP here

gram that started it all. Originally created as a high-school project, Gimp was one of the first high-quality applications written for Linux (there is also a Windows version now), and was a forerunner of a large number of present-day applications.

In fact, it even competes with high-end image-editing tools such as Photoshop. The Gimp Toolkit (Gtk+), the user-interface toolkit that was created specially for Gimp, is now the backbone for the Gnome project. Gtk+ accounts for a major part of Gnome.

The program is easy to use and can be extended using either plug-ins or scripts (written in a language called script-fu). Best of all, it's free. Extra plug-ins, patterns, gradients and brushes are available from the official Web site www.gimp.org, or the guide site for artists, www.TheGimp.com.

The only limitation is the lack of support for the CMYK colour format, making Gimp suitable only for Web graphics.

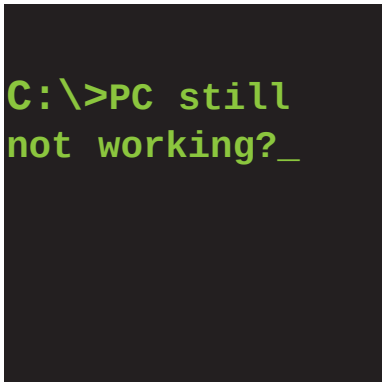
Meet your old Windows files

You can access DOS/Windows partitions from within Linux. The operating system supports a variety of file system types including Windows VFAT and FAT32 formats. However, rather than assign drive letters to each partition, Linux requires you to mount them on top of a directory. The /mnt directory is normally used for such mounted partitions.

As root, edit the file /etc/fstab and add a new entry with these values for each column: /dev/hda1 (or whichever your DOS partition is), /mnt/dosc, vfat, default, 0 0. Then do mkdir /mnt/dosc followed by mount /mnt/dosc. Your partition is now accessible as /mnt/dosc. Use the same procedure to add new partitions just change the device partition number and the directory (such as /mnt/dosd, /mnt/dose and so on).

Remote possibilities

Linux is a true network-enabled operating system. You can connect



to your Linux machine over a LAN or even the Internet, and use it just as if you were sitting in front of your terminal, using the telnet program that is available under both Linux and Windows.

This can be extended to support the graphical interface too. If you are running Linux on the machine that you are connecting from, enter the graphical X interface, open a terminal window and telnet from there. If you are using Windows, download an X server and keep it running before you telnet (none of the good ones are free, though). Once logged in, type export DISPLAY=xxx.xxx.xx.xx:0.0 (replace the xx with the IP address of the local machine). Now, type the name of any

The GNOME panel is amazingly

GUI application (for example, Netscape) to see its output on the local screen.

This demonstrates what used to be known as a dumb terminal and what is now known as a thin client. Run the application on the remote side, and see only the display on the local side.

Be like BeOS

The Gnome panel is flexible enough to create a BeOS-style taskbar. Right-click on an unused area of the taskbar and choose to create a new corner panel from the menu. Align this panel vertically at the top right corner of your screen, by clicking your middle-mouse button (or press the left and right buttons together). Edit the panel's Properties if you have trouble dragging it into position.

Next, right-click on the panel and add a new Gnome-pager applet from the Utility section of the Applets menu. Edit the applet properties to disable the pager and also the Show Task List item in the next tab. Set the value for maximum width of the vertical task list to, say, 120. You can change this value to suit your preferences. Apply these modifications and watch as the taskbar suddenly starts to resemble the one in BeOS.

What about the task list already in

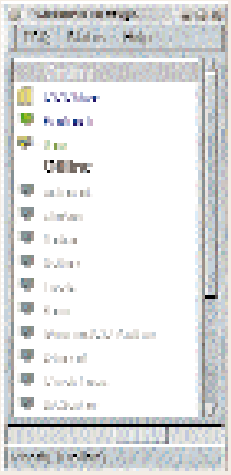
Choose Configuration from the menu

Edit your shortcuts with the E configuration program

the bottom panel? You can either remove it or convert it into a simple pager. For the latter, edit its properties and uncheck Show Task List from the second tab.

The key to your shortcuts

You can use the Windows key as a shortcut in combination with other keys. To do this, you will first need to enable support for the extra keys on your keyboard. Switch to root and edit the file /etc/X11/XF86Config, then locate the Keyboard section towards the end of the file. One of the configuration settings in this section should define XkbModel as



GnomeICU is still under development, but it can do just about all that you will need with ICQ

pc101 . Change this to pc104 . Exit, log out and re-login. Henceforth, the two Windows keys will be known as Meta_L and Meta_R, while the mouse key is Menu. Another identifier called mod4 links to both left and right Windows keys (this is configurable using the xmodmap command).

To define a shortcut using the mod4 key, middle-click on the desktop (or press left and right mouse buttons together) and select Enlightenment Configuration from the menu. Go to the Shortcuts section and click on New to create a new shortcut. You can now select MOD4 from the Modifier pull-down menu, and define your shortcut. For example, you can specify that you want MOD4+M (Win+M) to maximise a window.

Meet your pals

You can use ICQ from within Linux.

Although Mirabilis/AOL does not have an official version beyond JavaICQ, a number of free clones do exist. One of the most advanced of these clones is GnomeICU, an ICQ client based on the Gnome panel. Find this on the September CHIP CD under the Linux section.

Rebuild your source

RPM files are undoubtedly the easiest way to manage your installed programs. However, there are times when you might find it better to recompile an application so that it can take advantage of your existing hardware and software configuration.

To rebuild from a source RPM (SRPM, .src.rpm file), switch to root and type rpm --rebuild file.src.rpmm. Rebuilding can take time and plenty of CPU resources but you can continue using your system when the rebuild process runs in the background.

When done, you ll find a fresh RPM file sitting in the /usr/src/redhat/RPMS/i386 directory. It will have the same name as the SRPM file, but will have an extension of .i386.rpm. To install this, type rpm --ivh file.i386.rpmm . If an older version is installed, you will need to upgrade using rpm -Uvh instead. Finally, if you want to replace the same version, you may need to force the installation, like this: rpm -ivh --force file.i386.rpmm .

Files may also come in the .tar.gz (tarball) format. This is actually a combination of two formats. The first part (.tar) indicates that the files have been archived using the tar (tape archive) program. This program does not do any compression, it only archives. The second part (.gz) indicates the gzip compression program. Gzip does not have any archiving facilities and can therefore compress only one file at a time. Developers sometimes include a .spec file in the .tar.gz file that can be used to build an RPM file. To do this, type rpm -ta file.tar.gz . The RPM and SRPM files are then built and placed in the /usr/src/redhat/ RPMS/i386 and the /usr/src/redhat/ SRPMS directories respectively.

You could run into trouble with this procedure at times, though. The rpm program requires that the spec file be owned by the root user, but many developers fail to set the file permissions before making the tarball.

Or the spec file may be obsolete and belong to an older version of the program being compiled. In this case, you will need to extract the spec file from the tarball (uncompress normally and make a copy of the file), chown root.root on it (to change the file s owner and group), copy the tarball to /usr/src/redhat/SOURCES, and type rpm -ba file.spec .

The RPM and SRPM files are