

ROUTER/FIREWALL

Smoothwall

GPL router and firewall for the small office environment

Pros Uses old hardware in place of expensive proprietary boxes

Cons Only analogue connections supported so far

Price Free download



While any Linux box is quite capable of acting as a router for other machines in a small network, there are plenty of arguments for using dedicated hardware for the task.

A separate router means that only the essential functions of packet forwarding, IP masquerading and firewalling need to run on it, making security more straightforward. It also means that should the main Linux box have to be taken out of service for any reason, the other machines in the network can still have internet access.

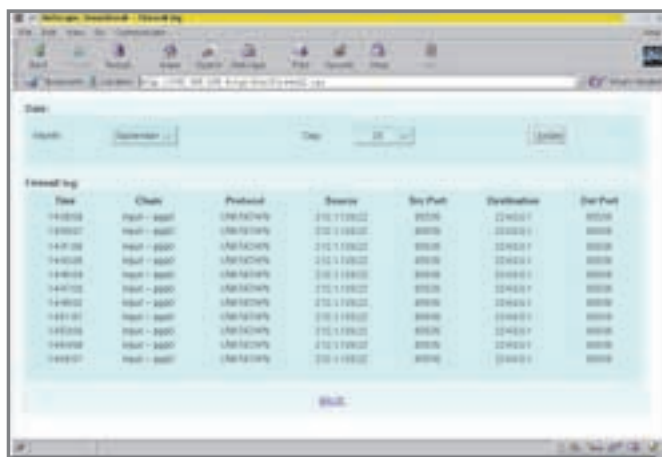
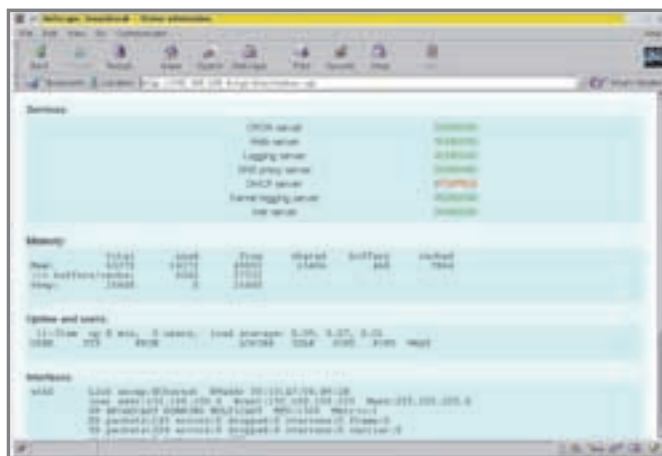
Dedicated routers and firewall boxes are available as proprietary hardware, but the SmoothWall development team, based in Winchester and headed by Lawrence Manning and Richard Morrell, has designed its GPL project around typical obsolete PC hardware. Minimum requirements are a late 486 or early Pentium system with 16Mb RAM and 100Mb hard disk.

The pre-ATAPI proprietary interface CD-ROM drives that are usually tedious to configure under Linux are supported during installation and, if you have an old BIOS that cannot boot from a CD, there's a floppy disk boot option. Using the second floppy image on the CD, a network install is possible, allowing you to leave the CD-ROM drive out of the SmoothWall box if you prefer.

The only part required that's not likely to be found in the average junk room is a decent speed NIC but, with these starting at around £15 for a generic RTL8139 chipset 10/100 card, this router and firewall is hardly likely to break the bank. If you want to use an old ISA NIC, many of these are supported too, and detection and configuration is automatic.

The aim of the SmoothWall team is to make the distribution so easy to install that users of any system, not just Linux, can implement it.

The installation takes over the



address of the SmoothWall box in a browser allows you to do the rest of the configuration from your usual workstation, setting up PPP and optional features.

The version tested, 0.94, only supports analogue modem connections, but the team has been testing ISDN and broadband options for an upcoming release.

The other machines on the network need to have their gateway address set to the IP of the SmoothWall box, and that's all that's required to begin using it. SmoothWall is also capable of running as a DHCP server if necessary.

Remote starting and stopping of the PPP connection is available through the web interface, with password protection to prevent unauthorised users running up big phone bills. Time spent online, logs and connection statistics, including records of attempted port scans, are all visible from your browser.

One drawback in this version is that only one PPP account is supported, and in real life a back-up ISP account is often necessary, perhaps dialling in on another number.

Apart from a simple logfile, the web interface does not offer features for debugging troublesome connections such as a terminal window, but normal root access is still possible on the machine itself.

Some ISPs will not accept connections from Linux boxes without the use of 'stupid mode' in the wvdial utility, which unfortunately doesn't seem to be part of SmoothWall. Having said that, a test connection to a friendly ISP such as UK Linux Net

(www.uklinux.net) worked first time, and the project is developing rapidly, so new features may well have been added by the time you read this.

Anyone using PPP to connect a small network to the Internet should give SmoothWall a go and, judging by early download figures, this UK-based project should be a global success.

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machine completely, dedicating it to its new task and wiping any data present, so it's not a distribution that can be tried out casually on a computer that's in use. The cost in time of installation and configuration is minimal, since the stripped-down VA/Red Hat distribution forming the core of SmoothWall only requires you to set IP address details and passwords to get going.

There's no room for the X Window System on such a lean machine but, thanks to Apache, opening the IP

Relax with a Linux smoothie. You won't be getting too hot under the collar as you set up a stern fire-walling policy

BACKUP SOFTWARE

BRU Backup for Linux

A simple backup utility for the single-user workstation

- Pros** Easy to use, fast, reliable
- Cons** Installation leaves something to be desired
- Price** £65 non-commercial, £195 commercial (£76, £229 inc VAT)



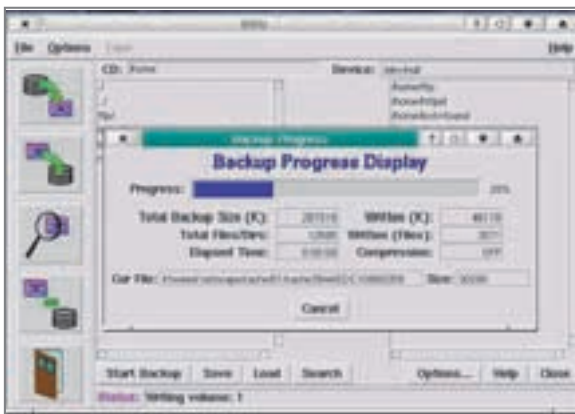
BRU is one of the best-known backup products across the more established Unix platforms, and now it's available for Linux. BRU's main selling point is that it is 'Reliable, Easy, Flexible and Fast'. Obviously this is quite a claim, especially in the face of several other long-running backup suites.

For this review, the current version of BRU was tested on a bog-standard Athlon 650/14GB IDE system running Mandrake 7.1, with an HP SureStore tape drive connected to an Adaptec U/W SCSI controller. After a pleasingly short download of the package, installation appeared at first glance to be simple. However, as with several other recent Linux package launches, this is sadly not the case. The installation un-tars to three separate directories, and there is nothing to indicate which of the three directories you need to be in to start the installer. Additionally, there are no clues as to what you need to run to install the package. A simple README file would have been welcome at this point.

After the install, the package runs in both text-only mode and in X11 GUI mode. Both modes come with comprehensive documentation and even the text-mode man pages contain more than enough information to hand-hold the novice user through setting up his tape drive and performing simple full or incremental backups.

The X11 interface is simplicity itself, living up to the product's claim. Again, the online documentation is good and well written for the non-guru user. We set our system to perform a simple full backup (around 2Gb) to tape using compression and this was achieved at a consistent 15Mb/sec. During the backup process itself, the interface provides useful feedback information on progress, along with more in-depth logging facilities if needed. Restoring tapes is again just a simple matter of point-and-click, with the default options selected by the program more than appropriate for most people's needs.

The addition of a backup schedule facility is very user-friendly, and seems to work reliably which is important as



▲ A pleasant interface to ease those backup chores or simply leave BRU in the background on a tight backup schedule

unattended backups are the most used feature of any backup product.

BRU does not appear to support network backups, but this product isn't aimed at high-end backup systems and is more suitable for the single-user workstation backup. To this end, it succeeds admirably.

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UK Reseller LinuxIT, www.linuxit.com

NETWORK CAMERA

Axis 2100 Network Camera

Very versatile Linux-based alternative to the bulky dedicated PC and webcam

- Pros** Easy to set up and administer, produces quality images
- Cons** Documentation Windows-centric.
- Price** £318 (£373 inc VAT)



Why dedicate a whole machine to running a webcam for the LAN, WAN or internet when a palm-sized dedicated box can do the job just as well, if not better? The Axis 2100 network camera certainly fits the bill in terms of stability and features, running embedded Linux and even packing in a web server. It's very versatile, with good functionality built in: 10/100 Mbit Ethernet, serial modem connection and an I/O port at the back which can be triggered to send images.

The network camera can be set up to serve live video images to any web browser across a local network, via FTP to another server or using SMTP to email images on demand. The webcam can even be dialled into directly from a remote location.

Setting up via a network connection is probably the quickest and easiest route. The first step is to give the little box an IP address so that you can then access it with a browser from another machine. This is as simple as one command under Unix or DOS. A few seconds later you've got live video on the remote browser and a range of password protected configuration and application options. These are simply but efficiently presented and cover everything from modem and ISP options, to re-designing the web page which the image sits on. With the aid of well-written documentation included, it's pretty easy to configure the camera for most situations.

Obviously, there is a choice of image size and degree of JPEG compression. The camera offers compression speeds of up to 10 frames/second and a peak resolution of 640x480. Across the board the quality is better than most standard webcams, and having a standard c-mount lens which can easily be changed is another great bonus.

We did have problems, however, with re-setting the camera to factory defaults and with direct dialling into the camera, but this was because of older firmware running on the review box. These bugs have since been totally fixed on more recent releases. The advantages over the traditional PC plus webcam are many and it's clear that the Axis Network Camera is maturing into a very useful product – passing on all the benefits of embedded Linux.

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▲ Browse your fishtank, or keep a remote eye on your stock, shop or office with this compact and versatile network camera

SERVER AND GATEWAY SOFTWARE

e-smith server and gateway

Simple Linux-based solution for all manner of gateway and file serving applications

- Pros** Very quick and easy to set up a useful array of services
- Cons** Possible security issues, lack of support for older Ethernet cards
- Price** US\$595 annual subscription with upgrades and unlimited technical support, free download

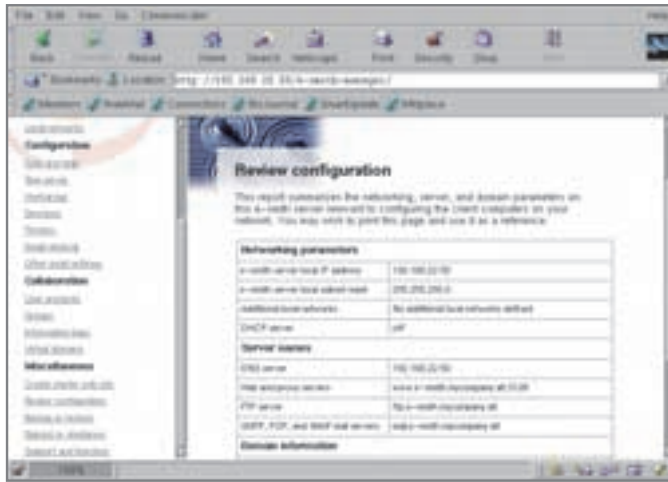


e-smith provides a neat solution to setting up a secure internet gateway for the office LAN and a cross-platform file-server and web server. It's pretty much a Red Hat install automated via the Kickstart utility, which makes for a very fast text-based install of around 160 Mb with a recent kernel 2.2.16. Of course, these details don't matter to the user and no knowledge of Linux is needed during set-up or the configuration which takes place after reboot.

Again, it's a simple text-based configuration which asks questions covering Ethernet drivers, network configuration, the use of the server and gateway, and DHCP. In order to keep things small, the number of supported devices, particularly on the Ethernet front, is quite reduced.

After reboot, a large number of pretty useful services such as LDAP, HTTPD, Squid, Appletalk and SMB start up before the simple text control console opens. We can test and reconfigure from here, but it's at this point when we know things are working properly that the server should be thrown in a cupboard and left to get on with its job. Now we can get down to configuring the e-smith manager via a web browser, sorting out the details of our web-server, mail, Windows workgroups, virtual domains and i-bays for sharing corporate data across groups of users.

e-smith makes set-up and configuration of a range of useful services a lot easier. Given its features, it's pretty impressive but security worries are always at the forefront when inner workings are hidden from the user. By default, telnet access is denied from outside the local network, but within the LAN root telnet access is allowed which does beg a few questions. e-smith is rapidly developing, with planned added functionality including SSL and support for VPN, and of course security can always be improved. If you need some advanced file serving and sharing



functionality and you need it right now with minimum bother, e-smith comes highly recommended.

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▲ Sit back and set up a completely integrated and versatile file serving or gateway solution with a few mouse clicks

NETWORK TOOLS

Ethereal

A powerful, fully-featured network analyser, snoop and sniffer

- Pros** Clear and easy to use with powerful features found only on expensive software
- Cons** Some bugs, like any security tool open to possible abuse
- Price** Free download, open source



Ethereal is a very approachable, fully featured network protocol analyser. In English that means it snoops on all network traffic it can see and decodes packets in real time, making them available for display or logging. Although a little dubious in some circumstances from a privacy point of view, low-level monitoring of what happens on any network is absolutely vital to security.

An example of one application for this tool would be to spot an attacker guessing passwords on a server. Set up a filter using an easy-to-understand syntax to monitor port 23 (telnet) on that box's IP address. Make sure it logs all traffic on that port. Quickly you have reduced a massive amount of traffic, only a tiny percentage of which is relevant, to a

▼ Ethereal provides you with a window on the previously unseen. Find out what's really going down on your network

few entries that can easily be sorted into genuine and suspicious groups.

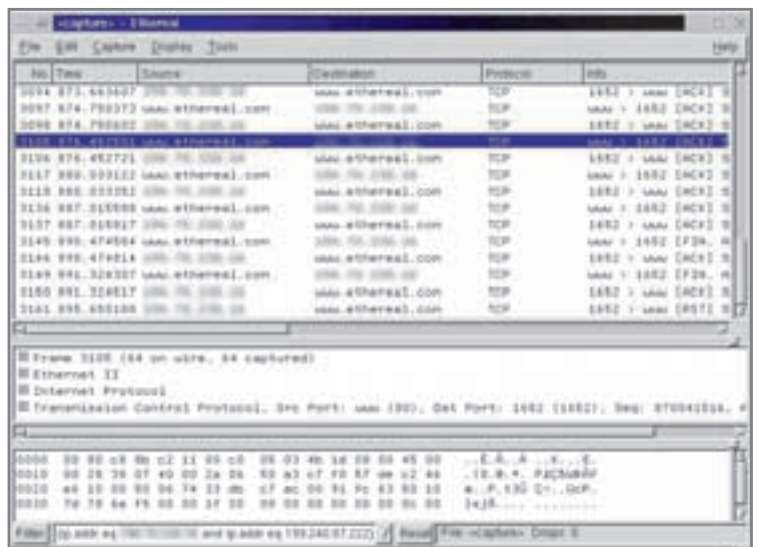
The analyser supports decoding of a vast array of protocols, and with each release more appear to be added; 145 at last count, some of which I have never heard of. It is comforting to know, however, that nearly everything that is likely to pop up on your network will be distinguishable and readable. It even supports decoding of *Quake* packets, for spotting who is using your office bandwidth for entertainment purposes!

Although stable most of the time, the program tended to produce segmentation faults occasionally for no apparent reason, such as when selecting protocols to be decoded or when resetting the filter and this has the potential to become annoying when tracing security breaches. Another minor criticism is that there is no 'select all' or 'deselect all' button for choosing protocols to be decoded.

Of course, abuse of this program represents a huge security risk in itself as clear text passwords are commonly used in FTP, telnet and POP3 as well as other protocols. Therefore access to the machine that runs this utility should be kept tight. Someone able to record passwords would not only gain access to your network, but quite possibly to other networks (especially POP3 boxes).

This all adds up to a pretty powerful utility, which ought to be run on any office firewall or, if a spare box is available, on a hub between your switches and router. It has the features of some amazingly expensive network analysers, and is at the same time very easy to use.

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MOTHERBOARD

ABIT KT7-RAID

Fast, low-cost hardware RAID motherboard supported by its own distribution

Pros The easiest RAID set up yet, and it's as cheap per megabyte as backup gets

Cons Only RAID 0 or 1 supported, and you still need to archive data

Price £115 (£135 inc VAT)



With hard disk size spiralling ever upwards, mirroring data to a second hard disk seems like the only low-cost option for fast backups. Ready-made RAID systems have not been available in the sub-£1,000 PC market, but this board may change all that.

It's a Socket A board, designed for an AMD Athlon Thunderbird or Duron processor, with a built-in High Point HPT370 controller. This chipset supports four IDE ATA-100 drives in addition to the usual four IDE Ultra DMA 66 drives, which means that in theory you can have up to eight fast hard drives, providing you have room in the case and enough power.

The HPT370 controller supports RAID 0 striping for speed, RAID 1 mirroring for data security, or both in combination. It recognises drives up to 128Gb, and has its own RAID BIOS for setup purposes, which is very straightforward.

The motherboard has hardware monitoring features, and supports tweaking with extensive configuration possibilities. It has all the features you might expect in a contemporary ATX board, such as infra-red support and USB, and can



▼ The very neat Abit Control Center displays vital hardware monitoring information, including CPU temperature and load, and fan speed, to help you keep everything running smooth and cool.

handle up to 1.5Gb of RAM.

This interesting hardware would be of little relevance to the Linux user without the necessary support in the distribution of choice, and unfortunately the likes of Red Hat have been slow in providing full support for the fast IDE controllers. If you've got a lot of systems to build, you don't want to have to use bodes like installing on a relatively slow legacy IDE controller, and then swapping cables over and hacking configuration files. Out-of-the-box support for the HPT370 RAID controller sadly doesn't seem that common in Linux distributions either.

Fortunately, ABIT has addressed these problems by creating its own distribution with full support for the hardware it produces. Based on Red Hat, Gentus Linux originally faced criticism over licensing, due to a hardware monitoring utility that was not GPL'd but included on a GPL CD anyway. ABIT has created a new utility to replace it, and it's to be hoped that this integration initiative will now be accepted for the promising development that it is.

The latest release of Gentus Linux – version 3.0a – should come bundled with the motherboard from any clued-up supplier, but as it's a GPL distribution you can also download it, or purchase it at modest cost from a GPL CD supplier such as the Linux Emporium.

Installation is almost identical to Red Hat 6.2, except with motherboard autodetection. The installer shows you a picture of the detected motherboard as if to prove it, and runs through the history of the Abit firm while you wait. The full installation of a KDE workstation takes only five minutes once the usual questions have been answered.

The only part of the installation

process which might confuse the user is the option to set up software RAID during partitioning, since this is not distinguished from hardware RAID and is not likely to be necessary.

In use, the hardware RAID is so transparent that it's hard to know whether it's actually working. The kernel reports two root filesystems mounted at boot time and, without going to drastic lengths such as disconnecting the master drive, that's all the user has to rely on to know that the setup is running as it should.

Of course, even with one of the new journaling file systems installed (none of which are yet supported during the installation of Gentus Linux), you still need to archive data to protect against accidental deletion or hardware theft.

But the Abit KT-7 RAID motherboard combined with Gentus Linux provides protection against hard disk failure for an extra fifteen quid over the cost of an equivalent non-RAID board plus the cost of a second hard disk, making it very competitive compared to other disk-based backup systems.

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▼ Take a look under the bonnet at the business end of an ATA-100 RAID-enabled Linux supported motherboard

