WORDS: NIGEL WHITFIELD

Take control of your inbox

Setting up an email server is easier than you think. In the first of a two-part feature, our step-by-step guide will help you configure and build a system

Viruses and spam are the scourge of the Internet, making up a huge proportion of the emails received every day. There are, of course, tools that can deal with them when you collect your email from the server, but in many situations it's best if you can reject them before they even reach you. There are commercial companies, such as Messagelabs, that will do the job for you, as well as many server-based spam and virus solutions.

All too often, however, you'll have to pay subscriptions to keep up to date and as you add more users, that can quickly start to become expensive.

With a little effort you can, however, combine open source tools to set up a mail server that doesn't need costly subscriptions, can be set up in a few hours and filters out both junk mail and viruses before they reach anyone's inbox.

Whether you want to provide a mail gateway for a small office or a central mail server to put on the end of an ADSL connection for a home network, it's a lot simpler – and cheaper – than you might think. You can put together a powerful mail scanning system for around £500; in fact, our tests suggest there'll still be plenty of horsepower left over if you want to use the same system for other tasks too.

Over the next few pages, we'll show you how to configure and build a server based on the OpenBSD operating system and next month we'll explain how to configure the email scanning and filtering.

What you'll need

Spam used to be the main problem affecting Internet mail servers. But over the past couple of years, viruses have become a great threat too, thanks to some that have been particularly fast and prolific in their spread, making it near-essential for any mail system to check for them, along with rejecting junk.

There are many ways that you can check for spam; one of the best-known open-source tools is called Spamassassin; it's powerful and can be configured to apply its own rules, to check messages against a Bayes database to determine the likelihood of them being spam and to check other online resources, for example email from known spam hosts, or message 'fingerprints' to see if other people have reported spam.

A couple of years ago, finding a free anti-virus system wasn't easy. But now there's a tool called ClamAV (**www.clamav.net**), which is open source and has regular updates to its virus database; it's even caught some viruses before commercial alternatives and can intercept phishing attacks too.

So, there are tools available, but what's the best way to implement them? In this project, we're creating a mail server that's capable of hosting several domains, with messages delivered both to mailboxes on the server, and to other machines, when spam and virus checks have been carried out. We'd naturally like it to be as secure as possible.

For some, Linux is the obvious choice for this type of project. Here, though, we've opted for OpenBSD 3.6 (**www.openbsd.org**), a Unix-like operating system that is secure by default; when you install it, you won't find things like mail, web and FTP servers running automatically. Instead, those things will only be running – and potentially vulnerable – if you explicitly enable

Top: The Mini-ITX store might have what you are looking for

Bottom: OpenBSD 3.6 has a great security record

'With little effort, you can combine open-source tools to set up a mail server in just a few hours'

them. It has a very good track record in security and there's a wide range of precompiled packages available, making it easy to get up and running.

Besides the operating system, we need to decide on an email system; and in this we were guided by experience and two excellent pieces of documentation from Scott Vintinner and Kris Nosack; without their How-to documents (**www.flakshack.com/anti-spam/wiki**), this project would have been much harder. The email system they used is Postfix and that's what we're going to use too. It's much easier to configure than Sendmail and can be set up in a fairly secure way – more of which next month.

Another key choice is the hardware to use; if you've decided on an operating system, that will to a large extent determine what you can buy, since you need to be sure the drivers are available; the hardware section of the OpenBSD web site at **www.openbsd.org/i386.html** is invaluable here, for checking that things such as Ethernet cards and disk controllers will work.

We wanted a compact system, to fit in a rackmounting case, and that led us to the Mini-ITX store (**www.mini-itx.com**), where we opted for a Via Epia PD6000E motherboard. At only 600MHz, that might not sound like much power, but in fact it's plenty for this type of mail server – with around 1,500 messages a day going through it, our server spends most of its time with only a few per cent of the CPU being used, ramping up to around 70 per cent if several large messages arrive simultaneously.

Memory is important, so we opted for 512MB, though again the system isn't using it all, leaving plenty of headroom for adding other services. A hard disk with 40GB of space is sufficient, though if you anticipate users having large mailboxes on the server, you might want more.

We partitioned our disk with around 20GB for user files (/home), and 10GB for spool files in /var, which includes mailboxes. The root partition (/) will fit in 1GB, and 5GB for /usr leaves plenty of space for applications and source code. We have a temporary (/tmp) partition of 1GB, enough to hold a full CD image for burning.

The motherboard incorporates two Ethernet ports, along with graphics, USB and PCI expansion. You may need to check manufacturers' data sheets for your motherboard choice, to find out the chipsets used, then check those against the compatibility list.

Two items pushed up the cost – the rackmounting case, at around £149 ex VAT – and a slimline combo drive. The rack case needs a slimline laptop-style drive, and we opted to spend £69 ex VAT on a Panasonic slot-loading combo drive, so we can read DVDs and write to CD-R or CD-RW, enabling us to back up configuration files easily. These drives also need an IDE adapter at £9.50 ex VAT. Even so, including VAT and delivery, the system cost just £522.29.

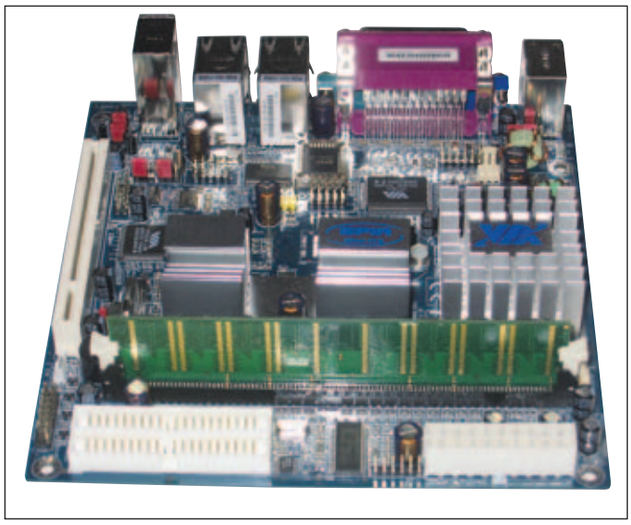
If you have the DVD edition of *PCW*, you'll find two ISO disk images, which can be burnt to CDs. The first, cd36.iso, is a bootable installer for OpenBSD 3.6, while the second, PCWOpenBSD3.6.iso, contains the files needed by the installer.

They were too big for the CD, so if you have that edition, you can download the cd36.iso image from the OpenBSD site (**www.openbsd.org/36.html**) and install over the Internet, or support OpenBSD by buying a full set of official CDs.

When you've got your installation media ready, it's time to put your server together – see the workshops overleaf.

Step 1

This is the inside of our 1U Travla C146 rackmount case, with the drive mounting bays removed, along with the optical bay, which is beneath the left-hand drive mount. We've fitted the backplate with the cutouts for the motherboard ports and the PCI riser; there's space in this case for two PCI cards, but if you don't anticipate expansion, you can leave it out. Low-profile cases like this tend to have quite small power supplies – in this case 180w – so don't go overboard with your graphics controllers. There are cooling fans in the box at the right of the case, which blow over the motherboard. You'll also need the power extension cable, to reach from the PSU on the left to the motherboard on the right.

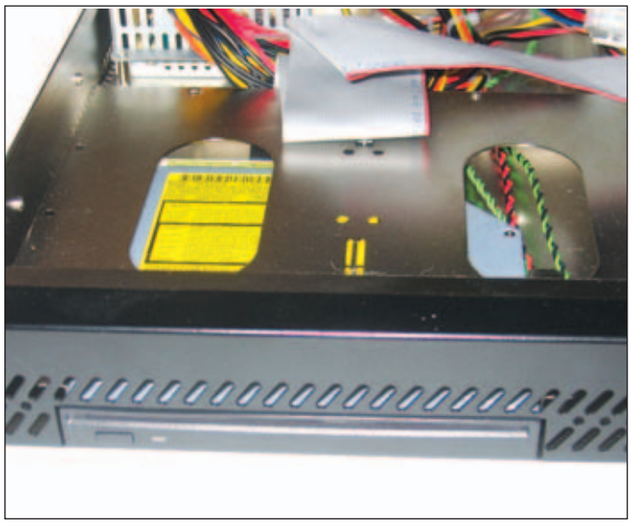


Step 2

Now, make sure you're grounded and remove the motherboard from its protective packaging. There's only one memory slot on the board, so it's best to go for a decent size to start with – we've installed a 512MB PC2100 module; if you're using a low-profile case like this, make sure the memory will fit. You can see the two IDE connectors at the bottom left of the motherboard, with the single PCI slot on the side. This board also includes graphics, sound, two Ethernet ports, four USB and a serial port on the rear panel, with headers for two more USB and three more serial connections. Line the board up on the mounting posts built into the case and fix it with one of the mounting screws at each corner.

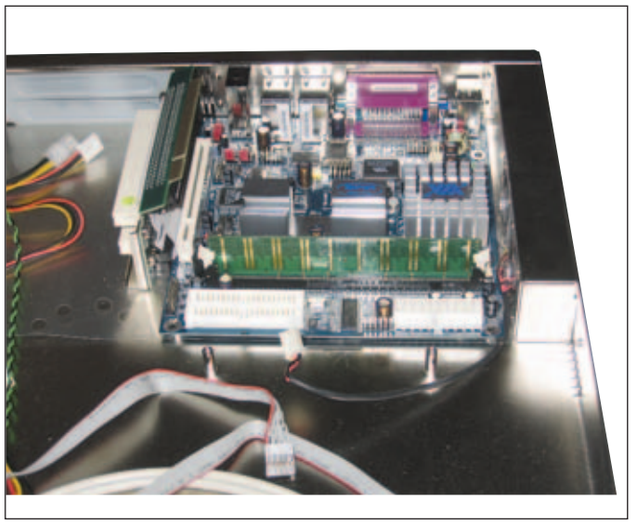
Step 5

Now, take the optical drive and mount it in its carrier. It's held in place by three small screws, two on one side and one on another. For a slimline drive such as this, you'll also need an adapter to connect it to the standard cabling inside the case. You must screw the adapter onto the back of the drive, otherwise it's liable to work loose. Connect one of the small floppy-disk-style power connectors from the PSU to the back of the adapter and then connect one end of a second IDE cable. It's a bit of a tight squeeze on the adapter, but don't worry – you're unlikely to break anything.



Step 6

Once you've mounted the optical drive in its carrier, screw the carrier back onto the base of the case and then replace the left-hand drive mounting bracket above it. You should end up with something that looks like the photo above. We've folded the IDE cable onto the top of the mounting platform, so we can route it neatly; it's worth considering the type of drive you use here; we could have saved some money by opting for a tray-loading design, but this slot-loader doesn't have anything that can stick out and get damaged. As you can see here, the red and green power and LED cables from the front panel pass under the drive platform, before going round to the side of the motherboard.



Step 3

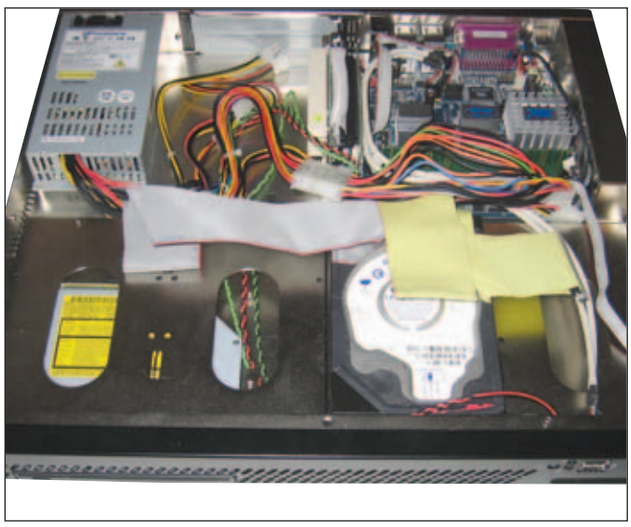
Here you can see the motherboard mounted in the case, with the PCI riser ready to be plugged in; it's a bit fiddly, but it will go in eventually. The black cable on the right is for the case fans. Make sure it isn't snagged as you slot the motherboard into the case and then connect it to the appropriate header on the motherboard. You should also make sure that when you route other cables, you don't obstruct those fans, especially with a fanless motherboard such as ours. There are three two-wire cables from the front of the case, for the power switch, hard drive LED and power LED. They're fairly flexible, so connect them now. On each one, the black cable connects to the appropriate HDD connector. We'll leave most of the other connectors until later.

Step 4

Now you need to set the jumpers on your hard drive as Master and mount it on one of the drive platforms. The case is supplied with a range of screws for mounting the drive; make sure you pick the right ones, as there are some that look very similar, but with a different thread pitch. We've mounted ours immediately in front of the motherboard, but bear in mind that in this position, it can be quite fiddly to get at the connectors without first unscrewing the drive platform again. Connect one end of the IDE cable to the drive, and then set it aside.

Step 7

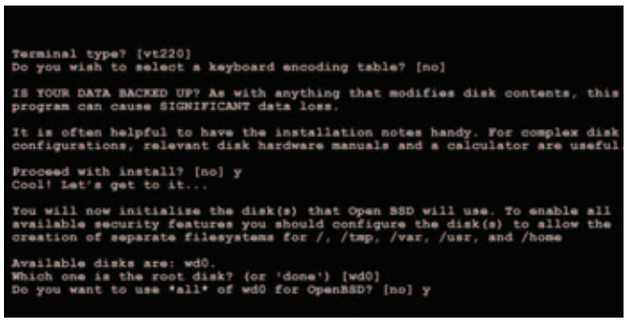
Next, replace the right-hand drive platform, with the hard drive already installed on it. Plug the IDE cable from the hard drive into the IDE1 socket, furthest from the edge of the main board, and connect a power cable from the PSU. Then plug the IDE cable from the optical drive into the IDE2 socket and indulge in some origami to tidy up the cables. You'll also need to route the cable for the two front-panel USB sockets and the front-panel serial port to the appropriate headers on the motherboard. The gap below the USB ports on the front panel is for an optional Compact Flash reader. When you've routed all the other cables tidily, plug the power connector into the motherboard; this is the bulkiest cable, so you'll have to squeeze it in around everything else.



Step 8

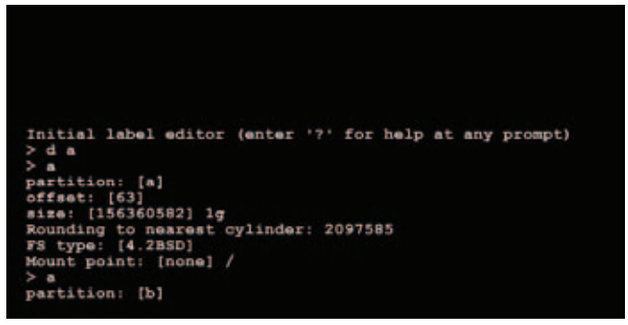
This is the finished result; we're almost ready to get started. First, though, connect a monitor and a keyboard with a PS/2 connector to the back panel sockets. Power up the system and go into the Bios by pressing Del. Check that both drives are detected, though with a new drive you won't be able to boot yet. Now make a few changes to the settings. First, in the standard Cmos features section, set the Halt option to All except keyboard, so the system will boot keyboardless. In Advanced Bios settings, set the boot order to CD first, then hard drive. Under Integrated Peripherals, turn on USB keyboard support, so you can plug a keyboard into the front panel, and finally under ACPI set the Power button so that it has to be held down before switching the system off, preventing accidental shutdowns.

INSTALLING OPEN BSD



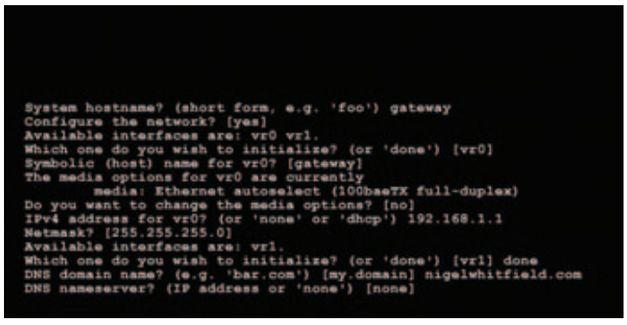
Step 1

Boot the server from the cd36.iso CD. You should see the OpenBSD/i386 boot prompt; if the system doesn't continue after a few seconds, press Enter. You'll see a list of hardware detected scroll past, then at the next prompt, press I followed by Enter. Press Enter to accept default terminal and keyboard types, confirm you really want to install and use the whole disk for OpenBSD.



Step 2

When the Disk label editor starts, type d a then Enter to delete the initial whole disk partition. Press a and create a new partition for the root filesystem – 1GB is fine. Add partition b, of type swap (1GB) then repeat to add d (mount point /usr), e (/tmp), f (/home) and g (/var); there's no partition 'c'. We allocated 1GB to / and /tmp, 5GB to /usr, 20GB to /home and the remainder to /var. Press q to save the new disk label, confirm with y and type done at the next prompt.



Step 3

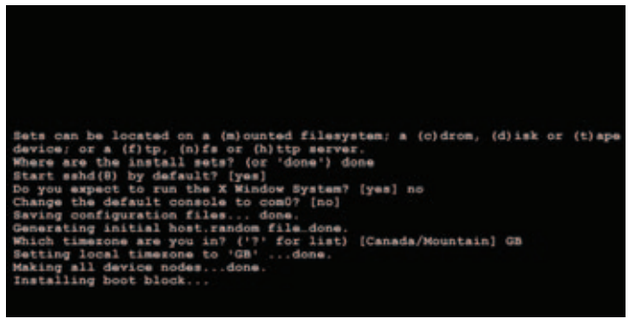
When you've confirmed the previous stage, the disk will be formatted, then you'll see these prompts, where you set the host name, domain and network details. If you're going to install over the network via FTP or HTTP, you need to choose yes when you're asked if you want to use DNS now. Note that since this will be a mail server, you should give it a fixed IP address, rather than using DHCP.

Step 4

Now enter a password for the root user twice and pick the location for the install – it's quickest from a CD, so eject the boot CD and insert the next one. The suggested path is for the official OpenBSD discs. If you're using the PCW OpenBSD disc, type x86install and press Enter.

Step 5

You'll see a list of install sets, like this. The default should be fine – we're not going to add X-Windows, since it's not really necessary on a mail server and consumes more CPU. Type done when you're sure the selection is OK and the files will be installed on the hard disk; it's very quick.



Step 6

When you're asked for the location of install sets again, type done, and then choose to have sshd started by default; this allows you to make a secure connection to the server for admin. Answer no to questions about X-Windows and console, then enter your time zone. Shortly afterwards you'll see a congratulation message. Type halt, wait for the system to say it's shutdown, remove the CD and reboot – you're ready to configure your mail system; details next month.