

Network servers



Most businesses will benefit from having a computer network (see *Networking your business*).

This briefing covers:

- What a server is used for.
- How to choose a server.
- How to keep your server secure.

1 Using a server

If you only have two or three computers you may not need a server.

You can connect your computers together and give them Internet access through a router (see *Networking your business*). But many businesses will find a server the more viable and useful option.

1.1 Use a **network server** to:

- Store and share your files on the server's hard disk.
- Share a single Internet connection between all your computers.
- Manage incoming and outgoing email. You can store the contents of everyone's email boxes on the server, so they can access them wherever they are.
- Allow staff to access their files when out and about through a virtual private network (VPN).
See **Remote working**.
- Centralise printing so that the server manages print jobs and lets you share printers.
- Run networked applications. For example, you can run your customer

database from the server.

- Host an intranet, a kind of private website holding important information about your business.
See **Intranets**.

Businesses with a large number of computers may need to use several servers in order to spread the load.

1.2 Some applications may dramatically **slow your network** if you run them on your server.

They may require a separate server, used just for them. Such applications can include:

- Large shared databases.
- Complex internal mail systems.

Directors' Briefing

a book in four pages

More than 160 briefings are now available.

If you need further information or help, ask the distributor of this briefing about the services available to you.

2 Types of server

The vast majority of network servers are high-performance PCs, designed and built specifically to be used as servers.

Some businesses use Apple servers. These companies usually use Apples heavily in their work. Other types of highly-specialist servers are available, though you are unlikely to use them.

2.1 There are clear reasons **PC servers** dominate the market.

- Hardware is standard, so you can purchase your servers, components and add-ons from many different suppliers.
- These servers can run the most popular

network software (see 4).

- PC-based servers work well with most business software, which is written for the PC.

2.2 If your business only uses Apples, it may be simpler to use a **Macintosh network server**.

- Although much easier these days, it may still be more difficult to connect PCs and other compatible devices.

2.3 'Thin client' systems are becoming more common.

- With a thin client system, the PCs in your business are replaced by cut down terminals connected to the server.
- All data processing is done on the server, and all data is stored centrally.
- Thin clients are very secure, because data cannot be copied to individual terminals.
- However, in order to use a thin client system you must replace existing PCs with new terminals.

The cost and loss of flexibility means most businesses are better off with a traditional PCs and server set-up.

2.4 There are some **general rules** to consider when purchasing a new server:

- Your server will be the most important piece of hardware in your business, so do not cut corners.
Pick the best server you can afford
- Always look at the complete package, including warranties, support and expandability.
- Remember to budget for extras.
For example, you will almost certainly want uninterruptible power (see 3.4) and a backup facility (see 5).
- Setting up a server is a complex task.
If you do not have the expertise in your business, get help.

“If you already have a server but reliability is an issue and you don't want the headache, or don't have the IT skills to manage it yourself, don't panic. Many companies offer small businesses an entirely IT managed service for a flat, monthly fee. They can deploy or re-deploy your network adding any extra elements required to make it more fit for purpose, including fault tolerance so a failure would not drastically impact the business.”

**James
Passingham,
Foehn**

Alternatives to a server

If you are not ready to invest in a server, you can get some of the benefits in other ways.

A Use **hosted applications**.

- A hosted application is a program run on a server owned by another company.
- Hosted applications are generally offered by web-hosting firms.
- You can run your email, intranet, customer database and more as hosted applications.
- Hosted applications are accessed across the Internet.
- The hosting company takes care of all the administration and technical support.
- You pay a monthly fee to use the service.

B Share files, printers and the Internet through a **router**.

- You can share the Internet between several computers by connecting them to an Internet router.
- This small, cheap piece of hardware manages network traffic and acts as a gateway to the Internet.
You can also connect network attached storage drives and certain types of printers directly to your router.
- A network attached storage (NAS) drive is basically a hard disk designed to connect directly to a network.
- NAS allows all users to share the stored files.
- If you want to share a printer in this way, make sure it has a network connection built in.

3 Server hardware

You will be using your network server all day, every day. This means the hardware needs to be very robust.

The key components are the processor, RAM and hard disk.

3.1 Choose a network server with a **powerful processor**.

- Most servers will come with dual or quad core processors.
These are effectively two or four processors in one, so a quad core processor running at 2GHz is more powerful than a dual core processor running at 2.5GHz.
- The processor is not the only thing that determines server performance.
The other hardware elements are crucial too.
- Look for at least a dual core 3GHz processor.
If you have lots of users (up to 30) or run demanding applications, you can opt for one or more quad core processors.

3.2 Ensure that you have **enough RAM** (random access memory) available.

You will be able to access files faster with more RAM.

- Do not buy a server with less than 2GB of RAM.
4GB or more may be advisable, depending on your operating system.
- You will need more RAM if you run a database or any applications on your network server.

3.3 The **hard disk** is the part of your server that is most likely to fail.

You should minimise the risk of this happening.

- Ensure the hard disk is large enough for your needs.
This figure is largely determined by the kind of files you use and what applications you run on the server. Consider 250GB an absolute minimum.
- SCSI hard disks are more expensive but faster and more robust than standard IDE disk drives.
The faster the drive, the less time it takes for a user to access a file.
- Consider having several hard disk drives if you need extra-large capacity.
You will probably want to invest in a RAID system, which is designed to tolerate a drive failure and keep on working (see 5.3).

3.4 You will need to check for or choose some **additional components**.

- You need a network interface card (NIC) to connect to your business network.
A 1GB card should be included as standard.
- You may be able to add additional cards if you transfer large amounts of data.
- Ensure the server has some spare expansion slots.

You can use these for upgrades.

- An uninterruptible power supply (UPS) will supply power to your server in the event of a power cut (see 5.1).
- A hardware firewall can protect your server from Internet hackers.

3.5 The **cost** of your server will vary considerably depending on the speculation.

- An entry-level server will cost at least £300.
More powerful servers can cost thousands.

4 Server software

A typical network server may have several different kinds of software installed.

4.1 The two main **network operating systems** are Microsoft's Windows Server and Linux.

There are many types of Linux; the most common include Ubuntu, Red Hat and Debian. Some businesses may want to use Unix. This is similar to Linux.

- Both Windows Server and Linux supply the features required on a general-purpose server.
- The systems work with each other, so you can connect Windows PCs to a Linux server.
- You can use both systems with a wide range of processors and hardware.

4.2 You may need additional **network management software** to monitor and control everything attached to your network.

- Managing the network becomes more difficult as your network grows.
- Make sure any hardware you buy can communicate with the network management software you use.

4.3 **Network versions** of desktop software make it easier to manage the software.

- You install a single copy of the software on your server, which then installs it on each user's desktop computer.
This makes it easier to be sure everyone is using the latest version of the software.
- Buying multiple-user licences is often cheaper than buying individual copies.

4.4 Large databases and groupware products are often supplied as **client-server applications**.

- This reduces network traffic.

The desktop computer (the client) sends a request to the server. The request is then processed by the server and the client is sent an answer.

- This kind of software consumes a lot of computer time and often needs to be run on a dedicated server (see **1.2**).

4.5 You may need **additional software**.

For instance:

- Intranet software enables you to host your intranet on the server.
See **Intranets**.
- Mail server software lets your server take care of all incoming and outgoing email.
- A collaboration package will let you create shared workspaces on the server.
- Security software is key.
See **5.4**.

5 Security

Your server may fail at some point. This could be due to a hardware or software problem, or because of malicious activity, like hacking or a virus.

There are many actions you can take to minimise the risk of failure or disaster, and to help you restore your system after any incidents.

5.1 Fit your network server with an **uninterruptible power supply** (UPS).

This is basically a large battery which powers the server during power cuts and eliminates power surges.

- The UPS should be compatible with your network operating system and management software.
This is so the UPS can shut down the network properly.

5.2 **Back up** your data.

- Choose a convenient, high-speed back-up device, such as a tape drive or DVDs.
You can also use an online backup service to save your data remotely.
- Ensure you can automatically back up at least one day's worth of new data.
- Use backup software to automate the procedure.
This allows you to do backups at times when the system is not being heavily used.
- Use a cycle of backup tapes to record new data every day and a full copy of the entire hard disk every week.
- Store a full copy of the system off site and

test restoring from your backup at least every three months.

5.3 You can protect against **hard disk failure**.

- Use a RAID or mirroring system.
- With mirroring, the system software keeps two copies of everything and will automatically use the mirrored copy if the first copy fails.
- RAID uses several hard drives to protect your data, but is not a substitute for regular backups too.

5.4 Use **security software** to protect your server.

- A security package should include virus, Trojan and spyware protection, plus a software firewall.
- Use a hardware firewall to provide an additional layer of protection.
- See **IT security**.

5.5 Make sure your server is **physically secure**.

- Keep your server in a locked room with access restricted to essential personnel only.
- Consider keeping it off the ground floor to protect against flood damage

6 Upgrading

Servers are expected to see several years' service and are designed to be upgraded.

6.1 You may need to upgrade your **hardware**.

- Adding more RAM will improve the speed at which your network server responds (see **2.2**).
- You can add additional hard drives when you need more storage.
- Adding processors will improve the performance of some applications.

6.2 You may need to upgrade your **software**.

Upgrading or changing network software may involve reconfiguring all the computers connected to the server.

- You may occasionally need to update your network operating system.

Upgrade your network server at a time when nobody else needs to access the data on it. Make sure you have a complete backup before making changes, in case you need to start again.

Expert contributors

Thanks to **James Passingham** (Foehn, 0208 940 7919).

Further help

There are other Directors' Briefing titles that can help you. These briefings are referred to in the text by name, such as **Intranets**.

© BHP Information Solutions Ltd 2009. ISSN 1369-1996. All rights reserved. No part of this publication may be reproduced or transmitted without the written permission of the publisher. This publication is for general guidance only. The publisher, expert contributors and distributor disclaim all liability for any errors or omissions. Consult your local business support organisation or your professional adviser for help and advice.