Guide from

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Network servers

A network server is a powerful computer used to store files and run programs centrally. A server can improve file management and security and make it easier for employees to collaborate.

Choosing the right server for your needs is essential. You will need expert help to set up the server and make sure it is secure.

1. Using a server

A server is used to store files and run centralised applications, such as your customer database.

In the past, you really needed a server in order to make best use of your computer network. However, businesses now typically rely on cloud computing services instead.

A network server can have many roles

Use a network server to:

- store and share your files;
- share a single internet connection between all your devices;
- manage incoming and outgoing email;
- allow staff to access files when out and about through a virtual private network (VPN);
- centralise printing, so the server manages print jobs and lets you share printers;
- run networked applications, such as your customer database;
- host an intranet (a kind of private website holding important information about your business).

Businesses with many computers may need to spread the load across several servers

- Virtualisation can help you do more with a single server (see 'Types of system').

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;
- in-house software development environments;
- complex internal email systems.

Using the cloud instead

You can use cloud computing services (sometimes called hosted applications or Software as a Service (SaaS)) to do many jobs that have traditionally required a server.

Cloud computing services are well suited to small or new companies with little IT expertise in-house. Some businesses use a mix of server and cloud-based services to accomplish their goals.

With cloud computing, your data is held on a server located outside your business

- To access files and services, you log in usually via a web browser.
- Individual cloud computing services can help you with specific tasks, like backups or accounting.
- You can also purchase 'cloud servers' that perform all the functions of an in-house network server.

Cloud computing offers a number of advantages over buying a server

- You pay monthly, allowing you to spread the cost (although the cloud may not work out much cheaper overall).
- Your cloud provider usually takes care of all the administration, backups and technical support.
- It is very flexible. You can add or remove users instantly, and you aren't usually tied in to a long contract.
- Updates can take place silently and without disrupting internal operations.
- It makes remote working easy, because cloud services can be accessed from anywhere and on virtually any device.

Consider carefully before signing up to cloud services

- Make sure your cloud supplier is trustworthy, as you'll be relying on them to take good care of your data.
- You need an internet connection to use cloud services, so make sure yours is fast and reliable.
- Check what level of support you get. Are you confident your cloud provider will be there to help?

2. Types of system

The vast majority of network servers are high-performance PCs

- They are specially designed to be used as servers.
- Hardware is standard, so you can purchase servers, components and add-ons from different suppliers.
- These servers can run the most popular server software.
- Windows servers remain among the most popular in business, but Apple's macOS operating system has networking capabilities built-in for businesses that run fleets of Apple Macs.
- You can run a mix of Windows and macOS devices on a Windows network.

'Thin client' systems

- With a thin client system, your company PCs 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.

Server virtualisation can let you do more things with a single server

- Virtualisation uses special software to split a single physical server into several 'virtual servers'.
- Each virtual server functions as a completely separate server.
- Virtualisation lets you run several complex applications at once, without them interfering with each other.
- Modern servers can be very powerful, so virtualisation lets you use them to their full potential.

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

- Your server will be a key piece of hardware in your business, so pick the best you can afford.
- Always look at the complete package, including warranties, support and expandability.
- Budget for extras. For example, you may want uninterruptible power and a backup facility.
- Setting up a server is complicated. Seek help from an expert or a reliable IT supplier.

3. Server hardware

Your server will be on all day, every day. This means the hardware needs to be very reliable. The key components are the processor, RAM (random access memory), power supply and hard disk. Servers are available in both freestanding and rackmount forms.

Choose a network server with a powerful processor

- 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.
- The processor is not the only thing that determines server performance. The other hardware elements are crucial too.

Ensure you have enough RAM available

- You will be able to access files faster with more RAM.
- Do not buy a server with less than 8GB of RAM. 16GB or more is advisable.
- You will need more RAM if you run a database or any applications on your network server.

Minimise the risk of hard disk failure

- The hard disk is the part of your server that is most likely to fail.
- 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. As a minimum, get 1TB.
- Consider having several hard disk drives if you need extra capacity. You will probably want to invest in a RAID system, which is designed to tolerate a drive failure and keep on working (see 'Security').

You may need some additional components

- A 1GB network interface card should be included.
- Ensure the server has space to add memory and hard disk drives. This makes it easier to upgrade in future.
- An uninterruptible power supply (UPS) will supply power to your server in the event of a power cut.
- A hardware firewall can protect your server from hackers and security threats.

The cost of your server will vary considerably depending on the specification

- An entry-level server will cost at least £500. More powerful servers can cost thousands.

4. Server software

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

The two main network operating systems are Microsoft's Windows Server and 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.
- Apple's macOS operating system has networking features built in, enabling you to effectively turn any Apple Mac computer into a server.

You may need additional software to monitor and control your network

- Managing the network becomes more involved as your network grows.
- Make sure any hardware you buy can communicate with the network management software you use.
- Investing in device management software is advisable in order to gain full control over the varying devices that are likely to connect to your network.

You can use the server to install and manage software centrally

- Once the software is on your server, you can roll it out to individual devices in your company.
- This makes it easier to keep all the software in your business up to date.
- Buying software designed for network installation can be cheaper than buying individual copies.

Some software is supplied as client-server applications

- For example, your customer relationship management (CRM) software may run centrally on the server.
- When someone in your business wants to use it, their device (the client) sends a request to the server. The request is processed by the server and the client is sent an answer.
- This kind of software can use a lot of server resources. It may need to be run on its own server.

You may need additional software

For instance:

- virtualisation software makes it easier to use your server for several different things;
- intranet software enables you to host your intranet on the server;
- 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.

5. Security

Servers usually hold a large amount of important company data, so can be a target for hackers or online criminals. Like any computer, servers can also suffer software crashes or hardware problems.

There are many things you can do to minimise the risk of failure or disaster, and to make it easy to get back up and running after any incidents.

Fit your server with an uninterruptible power supply (UPS)

- Essentially, this is a battery that can keep the server running during a power cut.
- The UPS should be compatible with your network operating system and management software. This is so the UPS can shut down the network properly.

Back up your data

- Choose a convenient, fast backup device. You might use an online service, mirroring system (to copy information onto a second hard disk) or combination of the two (advisable).
- Use backup software to automate the backup procedure. This allows you to run backups when the system is not being heavily used. Online backup services will do this automatically for you.
- Backup new data every day and take a full copy of the entire hard disk every week.
- Store a full copy of the system off site and test restoring from your backups at least every three months.

You can protect against hard disk failure

- Use a RAID (redundant array of independent disks) system.
- RAID spreads your data across several hard drives so it can be reconstructed even if one of the drives fails.
- RAID should be used alongside a separate backup system.

Use security software to protect your server

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

Keep all server software up to date

- This helps protect your server from hackers targeting vulnerabilities in the software.

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

A server should last for at least four or five years. Most are designed to be easily upgraded.

You may need to upgrade your hardware

- Adding more RAM will improve the speed at which your network server responds.
- You can add additional hard drives when you need more storage.

You may need to upgrade your software

- Upgrading or changing network software may involve reconfiguring all 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 it

- Make sure you have a complete backup before making changes, in case you need to start again.

Signpost

- Find guidance on cyber security from Get Safe Online.

Expert quote

"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

May 2018