Superfast Business Wales

Business Guide

Data Storage and Backup

The availability of Superfast Broadband enables you to take advantage of a range of cloud-based storage and backup solutions capable of handling vast volumes of digital data.

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Data Storage and Backup

As the reliance of all organisations on IT grows, so does the quantity and importance of the digital data we generate – and how to store that data efficiently and securely becomes a major question in itself. The availability of Superfast Broadband enables you to take advantage of a range of cloud-based storage and backup solutions capable of handling vast volumes of digital data.

Data is stored in different ways for different purposes. There's what we might call everyday storage, comprising not only the many thousands of files that make up operating systems and applications, but also the files that users create and edit. There's archival storage, for data that isn't needed often, but needs to be kept in case it is required someday–old accounting records, for example.

And then there is backup: copies of data files made in case they are lost or damaged by hardware or software failure, disaster, human error, or sabotage. Backup has been compared to an insurance policy. It carries a cost–in money and effort–that brings no immediate benefit, but if it's needed and you don't have it, the consequences could be disastrous.

Technically, backup is just another form of storage. But in this guide, when we simply say 'storage' we mean the everyday storage that your users access on their PCs or servers, to distinguish it from backup.

Understand

What Does The Technology Do?

Storage solutions

Data storage comes in a variety of types, from the hard disks in our PCs to tapes kept in a remote, secure location. It can be seen as a hierarchy starting with local storage (the hard disk), to network storage (the server), to offline storage (disks or tapes that need to be retrieved and connected to the network before they can be used), to off -site storage.

The technologies used to record data vary, too, including magnetic disks, optical disks, and tape. In larger IT environments, storage and backups can be 'virtualised', meaning that multiple physical units are seen by the system as a single disk, making it easier to manage.

The role of networked servers

While all these serve different useful functions, networked servers are perhaps the most important for both storage and backups in small to medium-sized businesses (although the cloud–more of which below–is likely to usurp some of their role).

Indeed, there are good reasons to set policies and practices that encourage your users to save their data on the network, rather than on their own hard disks. These include easier maintenance, upgrading and management; better performance; more robust security; and simpler connection for mobile workers needing to access data remotely.

Backing-up in the cloud

Backups can, in theory, also be made on any of the devices mentioned above. For the smaller enterprise, however, it is most likely that the backup will be stored on the network–just like the day-to-day working files. Often this is, in effect, a dedicated backup server on the premises, although an increasingly popular option is to use cloud computing backup.

Accessed over the internet, a cloud solution provides unlimited backup capacity, maintained and managed by a third party, on a pay-as-you-go basis – although it is still your responsibility to ensure that the backups are made. The cloud can also be used for normal day-to-day data storage as well as for backup. (See our guide to Cloud Computing for more on this approach to providing IT resources.)

Even the smallest organisation should invest in backup software to automate the process; manual backups are mostly famous for not getting done. Ordinary storage requirements, likewise, can benefit from the use of storage resource management (SRM) tools.

Your business needs for backup, which we discuss in the following sections, will help to determine exactly which technical approach you ought to take. Options include full backups (which make a complete copy of everything on server or PC hard disks); differential and incremental backups, two techniques which reduce capacity requirements and time by periodically copying only the data which has changed since the last full backup; and continuous data protection, or CDP, which is constantly backing up your files in real time.

In practice, a common approach is occasional full backups (once a week, say) with more regular differential or incremental backups (these might be daily or hourly; depending on how severely the loss of data would affect you).

Adopt

What Business Benefits Can I Expect?

The business case for storage in general is clear: you simply cannot use other IT investments such as PCs and software effectively or efficiently without ample storage capacity.

The case for backup is rather different. Backup will not improve the way you normally do business, but it will help you avoid catastrophe. So its benefits should be seen in terms of the disadvantages of not having it. Without backup technology and policies in place, the loss of data could lead to:

- **Impaired productivity**–employees can't work efficiently without the information they need, and may have to spend time gathering data again and re-entering it
- **Recovery costs**–sometimes data can be recovered from a damaged system, but it's an expensive (and uncertain) process
- **Loss of business currently underway**–customers may go to a competitor if your data problems leave you temporarily unable to service their needs
- **Collapse of long-term customer confidence** – especially if these issues recur, you could become known as shaky and unreliable

- **Liability**–you could lose data that you're legally required to keep

However, cloud-based solutions do offer considerable benefits in terms of scalability, cost and resilience. Nevertheless, it should be remembered that even cloud-stored data may need to be backed up to cloud-based back-up systems.

Exploit

How Can I Use Storage and Backup Effectively?

Understanding your requirements

Whatever technology solution you are adopting for storage and backup, it is important to assess your needs both now and in the future. Most organisations' requirements for storage and backup capacity are growing rapidly for several reasons, ranging from the digitisation of business processes that were previously conducted on paper, to the huge data files involved in multimedia content and 'big data'.

As a rule of thumb, you should allow for 20-30% excess capacity – in other words, estimate how much capacity is needed this year and over the next few years, then plan to invest in that extra capacity just in case.

Benefits of the cloud approach

Using cloud storage and backup eases the planning issues to a large extent, because it is straight-forward to buy more capacity if your requirements prove to be greater than expected. But it is still useful for budgeting purposes to have a forecast.

Putting policies in place

You'll also need to decide what is to be backed up, and how often. It may be tempting to say 'everything, all the time' but in reality few organisations need that level of backup. For example, if a strict policy is adhered to of keeping all important data on servers rather than individual users' local hard disks, the loss of trivial data (to-do lists, personal correspondence and the like) on those hard disks may be an acceptable price to pay for reducing the complexity of backups. In that case, you could concentrate only on the servers.

At a more technical level, you may have to decide how granular your backups should be. For example, if one file in a folder changes, do you backup just that file, or the whole folder? Do you backup one email, or a whole mailbox? Smaller organisations will likely not have to worry about such choices and can often rely on default settings in their backup products, but the bigger the enterprise, the greater the effect of these factors on performance, storage requirements, and investment.

Timing considerations

Timing of backups is also important in order to minimise their impact on systems performance. If it is not critical that they are absolutely up-to-date, they can be done overnight or during other periods when usage of your network and servers is low, so their activity doesn't slow everything down. However, this is not always possible in a world where data is often needed 24/7.

Storage, Backup and Business Continuity

The best way to guarantee that your backup practices are appropriate to your needs is to see backup as part of an overall business continuity approach. For instance, asking how much data you can afford to lose will tell you how often backups need to be done, while identifying the ways in which data could be at risk will help you to decide whether backups ought to be kept off-site.

You should also develop a plan of action for the day those backups are required. Merely having copies of your data does not get your users up and running again. How will the backups be brought into use as part of a live working system? How long will it take? How can the business carry on in the meantime?

Once you've installed any kind of storage or backup system, you should test its reliability through dry runs before trusting it with your data – and continue to monitor its performance throughout its life. The risk of failure can never be totally mitigated, but knowing when storage is likely to cause problems can help you avoid them, while carefully managed backup practices can save the day if the worst happens.

Top Tips

Assess the potential benefits of cloud-based solutions

Storage and backup in the cloud answers many scalability and reliability challenges.

Focus on avoiding data loss

Capacity and performance are important purchasing considerations for storage and backup–but avoiding data loss is the most important of all.

Ensure and regularly test that data can be restored from backups

A backup strategy is only as good as the plan for restoring data from the backup.

Plan for the future

Use standard, open formats for long-term storage and backup of data, so you can be sure it will be accessible by future software.

Consider the implications of personal devices like mobile phones and tablets

You probably can't back them up, so should you restrict their use for business? This question has a security dimension too.

Scalability works both ways

You need storage and backup systems that can grow with your requirements, but if they're designed for far bigger organisations, they may be overkill.

Recognise that 100% reliability is costly and difficult to achieve

99% reliability in storage technology is usually easily achievable. Getting the last one percent is tougher and more expensive.

NEXT STEPS

1. **Register to attend a fully-funded Business Development Workshop.**
   www.business.wales.gov.uk/superfastbusinesswales/events

2. **Make an appointment to see a Business Advisor who will help you create a personal action plan to grow your business.**
   www.business.wales.gov.uk/contact-us

For further information on Data Storage to take a look at:

See how other businesses in Wales have exploited Superfast Broadband
www.business.wales.gov.uk/superfastbusinesswales/superfast-success-stories

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Find out how much your business could save with our
www.business.wales.gov.uk/superfastbusinesswales/savings-calculator

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