LITTLE BOOK OF
TECHIE TRENDS



FIBRESPEED
CONNECTING DIGITAL WALES

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THE CLOUD **EXPLAINED**

The Cloud is a subject that continues to promote excitement right across every sector. Within all the buzz and hype, it's clear that even the subject experts can't seem to agree upon a clear definition.

DEFINING THE CLOUD

The cloud, despite its name, isn't a physical entity that can be seen or touched. It is, in fact, more of an idea.

To put it simply, "the cloud" is a way of representing the ability of any computer, Smartphone, tablet or Wi-Fi enabled device to connect to another similarly enabled device or application anywhere in the world using the internet as the means to establish that link. In the simplest terms, the cloud provides a different way of managing your IT.

The cloud has only been made possible by the rise of the internet and the availability of fast, reliable connectivity from anywhere. Regardless of whether you're in an office, on the move, at home or abroad, the cloud is about being able to connect from anywhere using any internet capable device.

With the ability to connect from anywhere, the internet can be used as an extension of your office network. Servers and applications no longer have to be located in-house, but can be situated anywhere and still accessed as though they were in your office. It's this that has fuelled the growth of cloud services. From basic hosting through to full virtualisation, either your entire business or just one small part of it can be operated in the cloud.

As the adoption of cloud services accelerates, the choices are growing, presenting new opportunities and ways of doing business. For small- and medium-sized businesses, cloud services can provide massive benefit, reducing both the expense and hassle of IT whilst simultaneously introducing previously unachievable levels of sophistication without the complexity.

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BENEFITS

Capex: By adopting cloud based applications or processes, you lessen the need for in-house computing power and storage. This means a reduction in or even an elimination of servers from the business which will allow you to scale down your capital expenditure.

Flexibility: It's a simple matter to scale up or down services when necessary. Businesses can quickly adapt to changing conditions without worrying about an IT infrastructure that's either too big or too small for current demand and the cost if you need to upgrade.

Reliability: An IT infrastructure is there to support the business, but for cloud services providers it is the business. That means that reliability is even more important to them than it is to you. Because service integrity is paramount to cloud vendors, they generally deploy very high spec systems to ensure that, no matter what, service availability is maintained.

Capability: Large corporates generally have the capabilities to employ large teams of IT professionals that have the capacity and knowledge to plan and implement an extensive IT. For the majority of SMEs, the reality is somewhat different as it is a struggle to offer the 24/7/365 support needed. With cloud services, even if problems do occur, you're not going to notice as they will be dealt with promptly and efficiently by a team of experts.

Maintenance: There is no need to plan, procure and manage hardware and software upgrades. A key feature of most cloud services is that you've always got the latest version of software or hardware available all within your monthly fee.

Level Playing Field: Large corporates generally have the ability to adopt cutting edge technology, but that isn't the case for the vast majority of SMEs which face capability, budget and risk related compromises. Cloud services give SMEs access to access to systems, support, protection and redundancy that, until now, has been the exclusive preserve of corporates.

Disaster Recovery: Unthinkable, but disasters do happen. How would you cope if you suddenly lost your office? Inability to access systems and data can very rapidly put you out of business. But if your systems and data are in the cloud, you simply log in from somewhere else, anywhere else, and carry on.

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SIMPLY ANOTHER **ASININE SOUND BITE?**

The technology industry is full of acronyms. SaaS, or Software as a Service, is a generic term for software applications hosted in the cloud and accessed via the Internet. It's also a major growth area. Why? Simply compare the traditional approach for deploying software versus the new cloud-based alternative.

SCENARIO A: THE "IN-HOUSE" APPROACH

An average office IT set-up often comprises of one or more servers providing centralised access to applications, file storage, printer management and so on. For any application, licensing has to be tracked and kept up to date, patches have to be installed, back-ups need to be performed, and user administration has to be managed on top of the never-ending assistance needed for users. Periodically, hardware needs to be upgraded or replaced and it seems that as soon as you've carried out a major software update, the vendor announces the next version is about to be released.

In the middle of all this is the IT department. Frequently subject to the knowledge and availability of a very small resource pool or, in many cases, the office manager pressed into service to take the lead on all things IT. It's no wonder many companies struggle with the set-up and ongoing management of software applications. It's a lot of work, frequently a lot of hassle and often places quite a strain on personnel time.

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SCENARIO B: THE SAAS APPROACH

SaaS is simple. You pay a monthly subscription for access to a software application that's located externally or in the cloud. Just pay for what is needed; if you need more, increase your subscription, if you need less, reduce it. The operational benefits are huge - no hardware worries, no IT genius needed for set up or support. As the data is cloud based, it can be accessed anytime from anywhere.

SaaS solutions are generally more secure and show greater immunity to failures, outages and performance issues than the average in-house system. As with cloud services, SaaS providers host these applications in purpose-built, highly secure, 24 hour data centres. These state of the art facilities are equipped with everything needed to ensure an organisation's data is protected and secure, from back-up power supply arrangements to various resilience and redundancy features for the equipment and where it is accommodated. Hardware, software, resilience, upgrades, patching, licensing, support and administration are all carried out by the service provider. Everything will always be fully up to date, protected, backed-up, secure.

With SaaS, there is the flexibility that allows the applications to fit to the business and its requirements instead of the other way round. If your organisation has a mobile workforce, SaaS will benefit them with the ability to access and modify data, provide updates and create reports whenever and from anywhere. The immediacy of up to date information means that the whole business is fully in touch with what's going on and can make informed strategic decisions.

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VOIP (VOICE OVER IP) **– RIGHT FOR YOU?**

There are many stories in the market about VoIP. Calls for free, all you need is an Internet connection. It's really simple to set up. It's only for big companies. Quality is bad. It's not secure. It's not reliable. With all the hype and often conflicting information, how do you know if VoIP is the right move for you?

WHAT IS VOIP?

VoIP allows you to make telephone calls over the Internet. A simple concept and whilst there's a whole host of reasons for switching to VoIP, there are a number of issues to consider for an organisation looking to use this service.

Over the course of the last decade, VoIP has emerged as a business tool that can provide real advantage to business. VoIP is all about flexibility and presence. The most outstanding characteristic of VoIP is simply that you're not tied to a specific geographic location. This means that you don't have to be in the office to be "in the office". Provided you can hook up to the Internet, you'll be able to make and take calls on your normal number regardless of where you are. Your customers, suppliers, partners and colleagues will be able to reach you, wherever and whenever the need to. In today's quick fire business environment, simply being contactable and responsive gives you an edge over your competition.

But this goes far beyond merely the ability to easily contact you and your staff. If there was a reason that you could not use the main business office, VoIP allows you to easily set up shop elsewhere. As long as there is an Internet connection, office staff can be set up and running again in no time which is ideal for a disaster recovery strategy.

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THE VOIP REQUIREMENTS

In order to implement VoIP there are key things that you need to address:

An organisations internal network and firewall need to be set up to prioritise voice traffic. The vast majority of VoIP problems are directly attributable to poor bandwidth management on the LAN and poor control of the firewall. The simple introduction of prioritisation and Quality of Service measures will ensure that you avoid the typical start-up problems that many companies have faced – and which have been responsible for much of the bad press VoIP has (unfairly) received.

There must be sufficient bandwidth to cover your requirements. A basic broadband connection is not the right vehicle for your combined voice and data traffic. Make sure that you have the quality of service and the service level guarantees that provide you with a connection that works, stays working and which is quickly fixed should the unexpected happen.

Another consideration is diversity in connectivity requirements. Being wholly dependent upon a single connection into business exposes you to a deterioration or failure of that connection. Business grade services, especially those delivered via fibre, generally have service levels attached to them which ensure any problems are dealt with rapidly. Even so, it may be wise to invest in a fall-back connection. As a fail-safe mechanism, this may not need to replicate the capacity or service levels of your primary connection.

Not only can a high quality Ethernet service can be used for VoIP call, it is capable of so much more. As well as providing your Internet access, the same connection can be used as a means to introduce and support a vast array of applications and services specifically designed to improve business performance, efficiency and response. As the world gears up for and migrates towards cloud services, that Ethernet link represents a highway into and out of your business. The bigger it is, the more you can do with it. If this service is going to be implemented for your organisation, consider about how else you might use it to advance your business.

VoIP is on the rise. Old style telephony systems will be around for some time to come, but their days are numbered and sooner or later, VoIP will be the right thing for your company to embrace. It's not as complicated as you may have been led to believe and when you consider that most companies are now looking to invest in high quality Internet connectivity to enable other data and/or cloud services, VoIP gives an added reason to justify that investment.

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VPNS (VIRTUAL PRIVATE NETWORKS) AND MPLS **– WHAT'S WORTH KNOWING**

The terms VPN and MPLS frequently crop up in discussions about business communications and whilst most people are familiar with the terms, many are not entirely sure what they mean or what advantage they offer. With the ability to share information and systems across the wider business, irrespective of the number of offices or mobile staff or even their relative locations, it is an essential part of maintaining a competitive edge in an increasingly connected world.

VPNS

Virtual Private Network, or VPN, enables geographically remote office networks to be connected together so that the entire business, regardless of the number of sites or their relative locations, can work together as if they were all operating from a single location. As a technology, VPNs have gained popularity largely due to the widespread availability of cost-effective Ethernet and broadband Internet services. Although VPNs utilise public networks, they are inherently secure with information transfers generally being encrypted and requiring user authentication before any access is granted. VPNs can also be extended to non-office based or mobile staff, giving them direct access to systems and data and allowing them to work just as effectively as your office staff.

MPLS

MPLS, or Multi Protocol Label Switching, is another technology used to interconnect geographically remote offices. Just like VPNs, MPLS networks are inherently secure and enable information and application sharing across the business. Similarly, they can also be used to connect up remote and non-office based users. The difference is the introduction of Quality of Service (QoS). Unified communications is where voice calls, video information and data are all being carried over the same network. However, in this situation not all network traffic is equal. To ensure trouble free delivery of services, voice and live

video really needs to be prioritised above streamed data, e-mail and file transfers in order to prevent voice calls or wobbly video conferences. QoS is the prioritisation of information flows to ensure that time sensitive traffic receives preferential treatment as it crosses the network thereby ensuring that the user experience is a good one.

When they first appeared, MPLS networks were the only means of guaranteeing QoS. However, advances in networking hardware now means that QoS guarantees can be built into normal VPN circuits. Already vendors are promoting MPLS VPN replacements which are essentially VPNs using modern routers with built-in QoS.

LITTLE BOOK OF **TECHIE TRENDS**



WHAT IS **IP CCTV?**

IP based cameras are the future. They work by turning images and audio into data then transmitting this data over a network or Internet connection. The ultimate benefit of this over analogue CCTV systems is greater flexibility, better performance and easier installation. Whilst IP CCTV has been available for around 10 years, it is only in the last few years that the technology has matured, leading to the developments in Megapixel IP.

HOW DO IP CAMERAS WORK?

The camera turns video and audio into data, which then connects to your network or directly to your router and transmits this data onto the network. The data can then be viewed as high quality images and audio on any authorised computer or mobile phone, on the local network, or over the internet.

BENEFITS

GREATER FLEXIBILITY

IP CCTV systems do not require local recording, they can transmit their images across Local Networks, the Internet and Wide Area Networks to a central location, where they can be recorded, viewed and managed. An analogue CCTV system is designed to record security cameras locally only. This means that if you have two or more premises, then each will require a Recording Device which makes managing larger systems harder and less cost effective.

BETTER CAMREA PERFORMANCE

IP CCTV systems convert all images to data and have no theoretical limit to resolution, providing the relevant bandwidth to transmit the images exists. IP cameras offer especially high detail precision with Megapixel resolution, at least 3x better quality than standard analogue cameras. These are very affordable, with pricing equivalent to analogue CCTV systems. Analogue CCTV systems are limited in the amount of evidential quality images a single analogue camera can supply, or simply the size of area it can watch. Resulting in an increase in the number of cameras required to watch an area, which in turn means more cost.

LITTLE BOOK OF **TECHIE TRENDS**

EASIER SYSTEM INSTALLATION

IP CCTV systems run over existing IP networks, wired or wireless. This makes wiring IP CCTV systems simple, causing less disruption, reducing the time required to install them and minimizing unsightly cables. A simple, single camera system will only require an IP Camera that is connected to a network/internet connection; footage can then be viewed by a PC using Internet Explorer. If Power over Ethernet (POE) IP cameras and networks are used, then the IP CCTV cameras do not even need separate power as they can be powered via the network cable. Analogue CCTV systems have their own proprietary cabling which can make new installations and additions to existing installations both expensive and slow to implement.

BETTER SYSTEM INTEGRATION

Because IP CCTV systems communicate using IP, it allows them to integrate and co-exist on the same network/cabling as other IP based systems, such as Access Control and IP Phone Systems. Integrating these mean that the different systems can work together, such as an IP camera that is picking up movement will be able to transmit images to an IP Video Phone automatically. IP systems also allow the direct use of IP-based services as standard such as e-mail or image sending via FTP. Analogue CCTV systems are designed to be closed circuit systems, this means that they do not integrate easily with Access Control, Intruder Alarm or other systems or devices that are found in buildings.

LITTLE BOOK OF **TECHIE TRENDS**



WHAT IS VIDEOCONFERENCING?

Videoconferencing, or videoteleconferencing (VTC) and visual collaboration are becoming an increasingly popular tool in corporate office environments. People can connect up remotely to a videoconference without having to leave their location.

Not only can it save organisations money by eliminating expensive travel costs, it is a reliable, quick and easy way to communicate with just one person or multiple people at the same time.

VIDEOCONFERENCING EXPLAINED

Videoconferencing involves the use of a collection of interactive telecommunications technologies which allows people in two or more locations to interact real time via two way audio and video transmissions. Videoconferencing is a similar technology to the standard office conference call, except with a videoconference you can actually see the person you are talking to.

Within a business environment a videoconference could be used to set up a meeting between two business people or multiple boardrooms full of many people. Aside from audio and visual data, videoconferences can be employed to share computer files or papers across multiple participants.

ADVANCEMENTS IN VIDEOTELECONFERENCING TECHNOLOGY

Videoconferencing has only recently become a viable option because in the last couple of years as the cost of VTC technology has begun to decrease dramatically. Previously, due to its high cost of hardware, set up and operation, videoconferencing was reserved for very particular applications such as NASA and not for a typical small or medium business. Cheap videoconferencing set ups in the 1970s transmitted such a poor, grainy image due to inefficient video compression and the limited bandwidth available at the time, that it made VTC very cost ineffective.

LITTLE BOOK OF **TECHIE TRENDS**

Only with the advent of ISDN in the 1980s, which allowed videos to be compressed more effectively did we see the first signs of videoconferencing becoming a more viable option for the public at large. During the 1990s videoconference software and hardware changed from a technology reserved only for scientific institutes to a system priced much more reasonably, and open for purchase to the public. The possibility for videoconferencing using an Internet Protocol and the development of efficient video compression software – plus the free software that incorporated this technology is what has made videoconferencing over the Internet a popular option for today's business people.

The fundamental technology at the heart of videoconferencing is real time digital audio and video compression which is then transported over a network. The data transfer will transmit the data captured from the video and audio inputs. This data can be transmitted via either an Internet connection or a Local Area Network connection.

Dedicated videoconferencing equipment can also be purchased from manufacturers which will provide much higher quality images and audio during the videoconferencing session. For example, HD signals are now becoming the standard for videoconferencing set ups, which allows for extremely high quality images.

However, videoconferencing can now be conducted using common computer components such as webcam and computer monitors, thus greatly reducing the potential start-up costs. There is also now a large amount of software available for free that can help coordinate each videoconference component to work as required. This means that the costs of implementing videoconferencing are much lower than they used to be.

LITTLE BOOK OF **TECHIE TRENDS**



WHAT IS A DATA CENTRE?

A data centre is a dedicated space where companies can keep and operate most of the ICT infrastructure that supports their business. Data centres are the digital highways moving and storing these vast quantities of data. They are the lifeblood of the IT and telecommunications industry and are the servers and storage equipment that run application software and process and store data and content. For some companies this might be a simple cage or rack of equipment, for others it could be a room housing a few or many cabinets, depending on the scale of their operation.

The space will typically have a raised floor with cabling ducts running underneath to feed power to the cabinets and carry the cables that connect the cabinets together. The environment is controlled in terms of areas such as temperature & humidity, both to ensure the performance and the operational integrity of the systems within. Facilities will generally include power supplies, backup power, chillers, cabling, fire and water detection systems and security controls.

WHAT ARE THE ADVANTAGES OF USING A DATA CENTRE?

Data centres are the epicenter for organisations and their data. Not only are all mission critical, business activities supported by connectivity to, and applications within a data centre, they are central to business continuity and disaster recovery strategies to ensure the organisation can always run efficiently.

Some companies locate their data centres in-house, where others use an external facility belonging to a third party. As many companies want flexible and scalable ways to manage their ICT infrastructure, using an external data centre can help a company stay in control, reduce costs, improve application performance, manage risk and regulation, enhance security and continuity, and focus on their core business.

LITTLE BOOK OF **TECHIE TRENDS**

A carrier-neutral data centre gives independent access to the widest choice of connectivity via fixed and mobile carriers, content distribution networks, internet service provider and internet exchanges. As in other industries, data centres compete within their area of expertise to deliver the best performance, service and price.

By working with a third party and outsourcing your data centre requirements, an organisation can see a number of benefits including:

- Saving time, money and energy in the set-up, maintenance and running costs of a server room.
- It is easy to add new services or upgrade to the latest technology.
- It provides a secure home for your data, software applications, VOIP system and networks.
- Server space is scalable to meet your changing needs.
- It offers guaranteed service levels, the latest technology, full technical support, and fast, reliable connectivity.
- You can access your data and applications – and your customers can access your websites or other online services – 24/7.

LITTLE BOOK OF
TECHIE TRENDS



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