

Seeking cost effective connectivity?

With more options available than ever before, it's difficult to know what solution to select for your current and future business connectivity and telecommunication needs.

In this edition, we get behind the hype to introduce the options available and discover their strengths and weaknesses.

For further assistance in selecting the best connectivity solution for your business, contact us.

Yours in good business!
The Active Cost Management Team

Helpful definitions

Backhaul - is the service that allows telecommunication carriers and ISPs (Internet Service Providers) to collect and aggregate data such as internet and voice to a central location.

Last mile - providing services to the end point subscriber/ the final leg of delivering connectivity from a communications provider to a customer.

Mesh networking - a way to route data, voice and instructions between nodes (computer terminals). It allows reliable networking with continuous connections and reconfiguration around broken or blocked paths by 'hopping' from node to node until the destination is reached.

VoIP (Voice over Internet Protocol) - routing of voice conversations over the internet or through any other IP-based network.

Quality of Service (QoS) - resource reservation control mechanisms manage QoS and provide different priority to different users or data flows, or guarantee a certain level of performance to a data flow in accordance with requests from the application program or the ISP policy.

Telecommunications - What are the choices for voice and data?

Most of us will be using the existing PSTN (Public Switched Telephone Network) for voice and Frame Relay services for data. But are we on the best plan and are we receiving the 'Quality of Service' we pay for?

Today we have a plethora of technologies capable of delivering all our voice and data requirements. But what is best for your business?

Is it Voice over IP (VoIP)?

VoIP - allows a broadband internet connection to be used to make and receive phone calls. Because the calls travel over the internet infrastructure rather than the telephone network infrastructure of the major phone companies, VoIP service providers can offer rates way below those of many carriers. In some cases calls can even be free. The best way to check could be to opt for a pay-as-you-go service

Strengths	Weaknesses
Voice over IP (VoIP)	
<ul style="list-style-type: none"> • cost savings in phone service costs from traditional providers • significant savings in international call costs, subject to plan selection and usage level • uses digital rather than analogue technology • provides extensive feature sets • can be integrated with video conferencing 	<ul style="list-style-type: none"> • access to a good internet connection required • calls compete with other internet traffic • data delays due to heavy internet traffic affect voice quality • power blackout may mean loss of service • VoIP calls treated like any other broadband usage - 10 mins. talk equates to approx 1 MB of download quota • larger internet caps may be required, hence higher internet cost

Is it Wireless?

All wireless transmissions require a licence, which are regulated by the Australian Communications and Media Authority. Some are free (class licences) all others require a payment.

Examples of a class licence include:

- **Wi-Fi wireless networking (2.4ghz band)** - this technology brand is in common use and is aiming to improve the interoperability of wireless local area network products. Wi-Fi is commonly used for internet and VoIP phone access, gaming, and connectivity for devices such as televisions, DVD players and digital cameras. The popularity and proliferation of Wi-Fi hotspots, access points in homes and businesses have somewhat polluted this spectrum, and added interference from devices such as cordless phones, garage door openers, microwave ovens etc., has reduced the Quality of Service this technology can deliver.
- **WiMAX (Worldwide Interoperability for Microwave Access) wireless networks** - this technology provides wireless data over long distances (up to many kilometres). This has been selected for use in the Australian Government's National Broadband Strategy. It will use the 5 GHz class licensed band to deliver broadband services in remote areas.

Examples of paid licences include:

- **3G Wireless broadband/networks** - most Australian telecommunication providers have introduced these services. They use a technology known as WCDMA on 850 MHz and/ or 2100 MHz licensed bands. To improve data/broadband performance this service has been augmented by HSPDA (High Speed Packet Download Access) providing speeds up to 10mb/s. Overseas roaming capability is being expanded as other networks are built.
- In October 2007 the ITU Radiocommunications Assembly, the standards body in Geneva, approved the use of **WiMAX-derived technology** for delivering fixed and mobile 3G services. Most Australian telecommunication providers are currently examining the capabilities of this technology. If the technology is taken up by providers, voice, mail and full multimedia services will be available wirelessly to laptops and cellular mobiles within the service area.



- **Point to Point WiMax** - already a number of ISPs use WiMax in licensed spectrum to deliver Broadband services.
- **Other wireless mobile/broadband** - the 'i-Burst' network by Personal Broadband Australia uses a proprietary wireless technology to offer a truly mobile service that maintains connection during the handover from one cell site to the next. It makes use of the 1.9 GHz licensed spectrum and currently operates in the metropolitan areas of Sydney, Melbourne, Brisbane, Canberra, Perth, Adelaide and the Gold Coast. In the future, other telecommunication companies may move into this attractive market.

Where to with our 'legacy' copper wire based network infrastructure?

Those within a short distance from an upgraded telephone exchange have access to high speed data services using ADSL2+ technology. Speed delivered is distance based and at best, approximately 24mb/s. In the pipeline is VDSL2, which will provide an even faster data speed over the existing copper network, but will we be able to afford it? To replace all the existing copper wire infrastructure with fibre will be a very expensive process.

Optic fibre technology has been used in private networks for many years. Most major telecommunications backbone circuits use this technology. Already areas of some Australian cities and towns enjoy Fibre-To-The-Premises (FTTP) or variants thereof.

Optic fibre is the most secure and fastest environment in which to deliver voice, data, fax, multimedia, high definition streaming video and digital television. When compared to current ADSL technologies, FTTP's speed does not degrade with distance. Looking to the future, upgrades in speed will also be possible with FTTP without having to lay new cable.

Strengths	Weaknesses
WiMAX Broadband	
<ul style="list-style-type: none"> • suited to neighbourhood fixed and mobile services • good for 'last mile' services • good access point footprint • supports VoIP • may be used in hotspots and cellular network backhaul • good security 	<ul style="list-style-type: none"> • subscribers connected to an access point are required to share fixed pool of bandwidth • used in both licensed and class licensed spectrum • potential interference with close by Wi-Fi systems • current internet plans are expensive • download speed currently limited • some operational frequencies subject to rain fade • requires Wi-Fi for indoor extension unless home/business is hard cabled • weak signals may necessitate external antenna installation
3G WCDMA Networks	
<ul style="list-style-type: none"> • especially suited for ad-hoc connections - fixed and mobile • increased security over GSM networks • may be used for fixed residential • portable wireless modem, USB connected for home computer connection 	<ul style="list-style-type: none"> • subscribers connected to an access point are required to share fixed pool of bandwidth • number of subscribers connected per access point limited • expensive internet plans • does not support VoiP
Wi-Fi Networks	
<ul style="list-style-type: none"> • licence free and capable of good security • most suited to local networks and hotspots • used widely for community WANs with internet access • supports mesh networking 	<ul style="list-style-type: none"> • subject to interference from other services • use abused by many users • limited broadband users per access point • coverage approx 100m • does not meet good 'Quality of Service' guidelines
iBurst (proprietary technology)	
<ul style="list-style-type: none"> • highly regarded by mobile users • good security • active antenna system • good range 	<ul style="list-style-type: none"> • currently provider only owns spectrum in capital cities • implementation subject to an ISP owning licensed local spectrum • not designed for fixed residential
Fibre-To-The-Premises (FTTP)	
<ul style="list-style-type: none"> • technically superior and most secure • provides highest internet access speed • suits high definition digital video streaming and supports VoIP • other providers draw on optic fibre backbone for source data • allows interference-free use of Wi-Fi for home extension • re-cabling not required for performance upgrade • supplemented with cellular mobile, provides the full spectrum of services 	<ul style="list-style-type: none"> • initial costs high • internet plans medium to expensive

Cut your costs without sacrificing service - or staff!

Contact us to find out how Active Cost Management's advisors and practitioners can help you reach your cost management goals in:

telecoms and data, freight and couriers, office supplies, printing, catering, advertising, packaging, cleaning, waste management, document storage and more.

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