



Broadband internet connectivity for general practice

Recommended minimum requirements

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Contents

Introduction	1
<i>What is broadband?</i>	1
<i>Independent professional advice</i>	1
Determining your broadband requirements	2
<i>Technical requirements</i>	4
Operational and technical support	5
<i>Adherence to best practice in computer security</i>	8
Links.....	8
Checklist for choosing a broadband plan	9

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Introduction

The purchase and implementation of a suitable broadband internet service for general practice requires careful consideration, planning and management.

Over the three financial years 2004/05 – 2006/07 the Australian Government directly supported, in the form of a financial incentive, the take-up of broadband services in general practices through the *Broadband for Health* program. The program enabled general practices to select qualified broadband internet services which met stipulated minimum technical and operational requirements from different Internet Service Providers (ISP). The Australian Government's *Broadband for Health* program, including the availability of the financial incentive, expired on 31 December 2007.

This resource has been developed by the National eHealth Support Officers Network in consultation with the Division of General Practice Network to assist general practitioners and practice managers choose a suitable broadband internet service for their practice. In considering the contents of the information provided, it should be remembered that what is being recommended are minimum requirements and **not** a comprehensive guide to selecting a broadband internet service.



What is broadband?

Broadband comes from the word 'broad bandwidth' and is a general term used to describe fast 'always-on' internet access. There are many different types of broadband technology used to deliver broadband. Different options are available depending on the location of your practice. Some of the most common include ADSL (Asymmetric Digital Subscriber Line), ADSL2+, cable, wireless and satellite.

A rich source of information about the state of broadband in Australia, including information on the different type of technology used to deliver broadband can be found at www.whirlpool.net.au, which is a fully independent, non-commercial, community website.

Business grade broadband

There is no standard definition of business grade broadband. It means different things to different ISPs. Your practice should ensure that a 'business grade plan' meets the recommended minimum requirements.

Broadband and general practice

Broadband enables access to the internet and a growing range of online medical and business applications. Broadband can be used to deliver remote consultations, assist with diagnosis and patient monitoring as well as for Medicare claiming. It can also be used for online access to test results, patient records, electronic prescriptions and remote education.



Independent professional advice

This resource should not be seen as a replacement for independent professional information technology and/or business advice. It is recommended that your practice access some form of expertise (preferably a professional IT consultant or company) to assist you with your decision.

Determining your broadband requirements

A. Count the number of computers in your practice that will be connecting to the internet

Record the number here:

B. Estimate your expected level of internet use

Estimating your level of Internet use

The internet is a repository of information stored on linked computers around the world. In order for you to access that information, like the text and images on a web page, your computer has to transfer it from some other computer to your own. This is known as *downloading* data.

When you want to send information to someone else (e.g. an email) the information is transferred from your computer to the computer with the address you specified. This is *uploading* data.

Your usage level is determined by the amount of data you upload and download – the more you transfer, the heavier your use is.

Light	Occasional web browsing/emailing
Medium	Above, plus regular web browsing/emailing, web research, downloading pathology and radiology reports, online shopping/supply ordering, online Medicare processing
Heavy	Above, plus frequent web browsing/emailing, downloading radiology images, video conferencing, Voice over Internet Protocol (VoIP), frequent download of large files.

Tick the usage level most applicable to your practice:

☐ **Light**

☐ **Medium**

☐ **Heavy**

*Step 1:
Assess
your
internet
usage*

Using your answers to Steps 1A and 1B identify the **Level** that is commensurate with your usage level from the grid below:

Number of computers using the internet	Estimated level of use		
	Light	Medium	Heavy
< 5	Level 1	Level 2	Level 3
5-10	Level 2	Level 3	Level 4
10+	Level 4	Level 5	Level 5

Step 2:
Calculate
your level
of usage

Using the **Level** number determined from Step 2, identify from the table of Plan Features below the configuration of a plan suitable for your practice. Tips for selecting a new plan are in the “**Checklist for choosing a broadband plan**” section on page 10.

You will find a definition of each feature following the table below.

Step 3:
Identify
your plan
features

Plan Features

Level	Transfer speed* (download/upload)	Download Allowance	Quality of Service (QoS)	Contention Ratio
1	Slower / Slower	Small	Not Applicable	Not Applicable
2	Medium / Slower	Small / Medium	Not Applicable	Not Applicable
3	Medium / Medium	Large	Desirable	Not Applicable
4	Fast / Slower	Large	Recommended	Low
5	Fast / Slower	Large	Strongly Recommended	Low

- Transfer speed is relative to currently available technology

Transfer speed

The range of transfer speeds possible at any point in time increase as technology develops. For this reason, the transfer speeds are given broad descriptive terms: *slower, medium, fast*.

The speed rates of transfer for an internet connection are divided into download and upload (the speed at which data is downloaded from and uploaded to the internet). The download rate is usually faster than the upload rate. Standard practice when ISPs advertise their plans is to state the download speed and then the upload speed, separated by a slash. For example:

1500k/256k

k = kilobit per second

Connections are available which are symmetrical (512k/512k). These are recommended for VOIP, video conferencing and remote access. The type of connection (e.g. ADSL, wireless, cable, satellite) available in your region may affect the possible level of service.

Allowance

The configuration of plans offered by ISPs includes the amount of data that you are allowed to transfer. The plans usually only consider the download amount, but some also restrict the upload amount.

Quality of Service (QoS)

Quality of Service prioritises internet data flow depending on its type of content, in a similar way that a traffic control centre changes the patterns of traffic lights to keep major roads flowing smoothly.

QoS ensures that important applications receive priority over other types of data use. For example, people use a technology called Voice-over-IP (VoIP) to make phone calls over the internet and these VoIP calls should receive higher priority than typical data transfers so callers don't notice a time lag in the phone conversation.

QoS requires specialised equipment, and the service must be supported by the internet service provider, and configured correctly by a professional.

Contention Ratio

A contention ratio of 50:1 means that at any one time you could be sharing your connection with a maximum of 49 other people. The higher the number of people you're sharing with, the slower your download speed will be.

Most information sources that enable you to choose a plan will not detail what the contention ratio is. To find out the contention ratio for a particular plan you will most likely have to contact the ISP directly.

A contention ratio of 20:1 or lower is considered suitable for general practice with a high bandwidth use.

Add to the Plan Features determined in Step 3 the following recommended minimum core technical requirements, and consider the operational and technical support options:

Recommended core broadband service requirements



Technical requirements

Carrier based spam filtering and anti-virus checking

Unrestricted access (no port blocking)

DSL Transfer (ADSL plans only)

Operational and Technical Support



Technical requirements

Carrier based spam filtering and anti-virus checking

Most ISPs offer services that filter incoming emails for spam and scan all emails for viruses that may incur additional costs. The emails are filtered and scanned when they arrive at the ISP's server and **before** they are downloaded to your desktop.

Step 4:
Add
recommended
core broadband
service
requirements

While carrier based spam filtering and anti-virus checking is an essential and helpful service, it is strongly recommended that practices implement additional strategies to protect themselves from spam and email viruses.

These strategies are articulated in the General Practice Computing Group (GPCG) Computer Self-Assessment Guidelines (www.gpcg.org.au).

Port blocking

Port blocking by the ISP can result in some services, such as QoS or VPN not being available. In some instances this is a commercial decision by the provider to encourage you to subscribe to their value added services. This should not be confused with firewall port blocking, where the intention is to raise the level of security for your system.

It is recommended that the broadband internet service you purchase does not block ports which may affect the functionality of services which your practice may wish to implement via broadband (e.g. VoIP, VPN, etc).

DSL account Transfer (ADSL plans only)

DSL Transfer, also called DSL churn, is the term used to describe the rapid switching of an ADSL service from one ISP to another (generally no more than a day or two), where both providers participate in a Telstra-provided changeover (or 'CHURN') process. The process is designed to ensure minimal interruption when changing ISP. ISPs that have signed up to the transfer process can be found at

www.telstrawholesale.com/products/docs/access_broadband_dsltransfer.xls?from=web.

Switching between ISPs will result in downtime. To minimize disruption obtain professional IT advice

Operational and technical support

The level and type of support provided by an ISP with any given broadband internet service should be considered carefully before deciding on the suitability of that service for your practice. The level of support you will require from an ISP will depend on the operational requirements of your business.

At a minimum an ISP should provide the following support as part of any broadband internet service:

- 24/7 telephone and web based technical and fault management support with options for onsite support
- service monitoring and reporting of availability, quality and performance.

Practices should be aware that there will be times when their broadband internet service may not be available. Where a practice requires uninterrupted connectivity consideration should be given to redundancy options such as having an alternative internet service as backup.

In addition to the recommended minimum core technical and non-technical requirements stipulated above consideration should be given to including the following additional features to your broadband internet service.

Recommended optional service features



Static IP

Shaping your download allowance

Domain names

Static IP

Once your computer is connected to the internet it needs an address so that other computers know where you are (just like a street address). Your internet address is called an IP (Internet Protocol) address.

There are 2 different types of IP addresses: Dynamic or Static. Dynamic addresses are temporarily assigned to a user and therefore change over time. A Static IP address is permanent.

A static address is only required when the organisation has reasons to allow external users to connect to their network over the internet. This is the case of organizations hosting web servers, email servers or willing to provide Remote/VPN access to their employees.

If you want to access your practice's computer from outside the practice (remote access) you will need a permanent static IP.

Shaping your download allowance

Shaping means that if you download more than your data allowance for a specified billing period (usually a month) your download speed will be slowed considerably until the next billing period begins. The speed is usually slowed to the agreed shaping speed e.g. 64k, 128k, 256k, etc but you won't be charged an extra fee for your excess download. It should be noted that shaping applies to many plans advertised as 'unlimited'

If you run business critical services, such as VoIP or VPN, you should determine your average monthly download and consider a non shaped plan. This means that you may be charged an extra fee for your excess download, but you won't incur the risk of your system failing due to reduced bandwidth.

Plans that do not offer shaping or flat fees are not recommended because even a small overrun of your data allowance could mean a large increase in your monthly cost.

Domain names

Internet Domain Names can be thought of as a cross between a street address and a business name. A Domain Name allows you to have an internet address based on your business name.

Most ISPs include an email account with their plans. The email address is usually something like: admin@myserviceprovider.com.au. However with a domain

Step 5: Consider optional additional service features

name a practice can switch their service provider and still retain the same email address. For example, a practice called "Healthy Lives Clinic" could arrange to have the Domain Name of "healthylivesclinic.com.au". This would allow the practice to set up a number of email addresses such as:

doctor@healthylivesclinic.com.au | manager@healthylivesclinic.com.au
nurse@healthylivesclinic.com.au | admin@healthylivesclinic.com.au

You will need to register a domain name in order to use this service. Your ISP can help you register a Domain Name. For more information on registering a domain name visit www.auda.org.au.

The benefit of having your own domain name is that you can switch ISPs easily without changing email addresses.

Any use of the internet poses certain security and privacy risks for your computer files. With broadband you are always connected to the internet and exposed to these risks as long as your computer or any computer on your local network is turned on. In addition to the recommended minimum requirements stipulated above and any additional service features that you may wish to add it is strongly recommended that all practices install a hardware firewall with Stateful Packet Inspection (see below) and adhere to best practice when it comes to computer security:

■ Hardware firewall with Stateful Packet Inspection (SPI)

A firewall is a hardware or software based device that filters all incoming and outgoing traffic from a private network to a public one such as the internet.

Many ISPs provide customers with very basic connectivity equipment. Some of these devices have basic firewall capabilities, which by themselves may not offer adequate protection. It would be good practice to ask your ISP or your local IT professional if the supplied device has SPI and if it is certified. You can install an extra certified hardware firewall with SPI which works together with your ISP provided device.

A firewall should provide the following features:

Network / Port Address Translation (NAT - PAT) | Stateful packet inspection (SPI) | Intrusion Detection System (IDS) | Packet Filtering.

The more advanced firewalls also provide content filtering and VPN support. Standalone computers connected to the internet can use one of the many software based personal firewall solutions available but a dedicated hardware solution is strongly recommended, particularly for business information systems. It should be installed and maintained by a qualified technician. Sole reliance on personal desktop firewalls is not recommended.

Due to the confidential nature of the information which medical practices deal with, it is strongly recommended that practices only consider installing certified hardware firewalls with stateful packet inspection capability.

When selecting a firewall it is strongly recommended that general practices only consider certified devices. Organisations such as ICSA Labs offer certification programs (<https://newlabs.icsalabs.com/icsa/topic.php?tid=fdghgf54645-ojojoj567>) to verify that the selected product does what is intended to do and is compliant with a set of international criteria.

Step 6: Protect your computer files

Adherence to best practice in computer security

It is strongly recommended that general practices implement policies and procedures to secure your computer systems and insure that your business is using the internet safely. A useful resource includes the GPCG Computer Self-Assessment Guidelines (www.gpcg.org.au/index.php?option=com_content&task=view&id=128&Itemid=38).

A computer networks exposure and vulnerability can be assessed using the ShieldsUP! program offered freely by the Gibson Research Corporation (www.grc.com). The simplest and most meaningful assessment is the one testing 'common ports'. Should this test fail, print out the report and contact your IT consultant for advice.

Free online resources and tools can be accessed to assist general practices to identify, develop and maintain good internet security practices as well as test network exposure and vulnerability.

Links

Broadband Plan Selection

Broadband Guide www.broadbandguide.com.au

Whirlpool www.whirlpool.net.au

Internet Security

DCITA: Internet Security Essentials for Small Business (direct) www.dcita.gov.au <http://tinyurl.com/2s75ob>

General Practice Computing Group Security Guidelines (direct) <http://www.gpcg.org.au/> <http://tinyurl.com/2478g7>

Stay Smart Online <http://www.staysmartonline.gov.au/>

Australian General Practice Network

Alliance of NSW Divisions www.answd.com.au

Australian Capital Territory Division of General Practice www.actdgp.asn.au

General Practice and Primary Health Care Northern Territory www.gpphcnt.org.au

General Practice Queensland www.gpqld.com.au

General Practice Tasmania www.gptasmania.com.au

General Practice Victoria www.gpv.org.au

South Australian Divisions of General Practice www.sadi.org.au

Western Australian General Practice Network www.wagpnetwork.com.au

To contact your local Division see the Divisions Directory www.agpn.com.au/divdirectory

Checklist for choosing a broadband plan

The following checklist has been developed to assist you to assess an ISP broadband internet service plan against the recommended minimum requirements. Prior to contacting an ISP you may wish to visit the Broadband Guide website (www.broadbandguide.com.au) or do the Broadband Plan Search at www.whirlpool.net.au to search and compare information on ISP's and their broadband plans.

Transfer speed <i>e.g. Fast/Slower</i>	Allowance <i>e.g. Large</i>	QoS <i>e.g. Desirable</i>	Contention Ratio <i>e.g. Not applicable</i>

ISP Name	ISP Phone Number

Plan	Minimum required			
Name of plan	Transfer speed	Allowance	QoS	Blocked ports

Standards recommend the following:

Carrier based spam filtering	Tick if present
Carrier based anti-virus checking	
DSL transfer (churn)	
24/7 telephone and web-based support	
Service monitoring and reporting	

Optional

Static IP (Y/N)	Shaped (Y/N)	Domain Name (Y//N)	Domain Name Cost

Total setup cost	Monthly charge	Total cost

Plan	Minimum required			
Name of plan	Transfer speed	Allowance	QoS	Blocked ports

Standards recommend the following:

Carrier based spam filtering	Tick if present
Carrier based anti-virus checking	
DSL transfer (churn)	
24/7 telephone and web-based support	
Service monitoring and reporting	

Optional

Static IP (Y/N)	Shaped (Y/N)	Domain Name (Y//N)	Domain Name Cost

Total setup cost	Monthly charge	Total cost

Second ISP provider

Plan		Minimum required		
Name of plan	Transfer speed	Allowance	QoS	Blocked ports
	/			
Standards recommend the following:				
				Tick if present
Carrier based spam filtering				
Carrier based anti-virus checking				
DSL transfer (churn)				
24/7 telephone and web-based support				
Service monitoring and reporting				
Optional				
Static IP (Y/N)	Shaped (Y/N)	Domain Name (Y//N)	Domain Name Cost	
			\$	
Total setup cost	Monthly charge	Total cost		
\$	\$	\$		



Plan		Minimum required		
Name of plan	Transfer speed	Allowance	QoS	Blocked ports
	/			
Standards recommend the following:				
				Tick if present
Carrier based spam filtering				
Carrier based anti-virus checking				
DSL transfer (churn)				
24/7 telephone and web-based support				
Service monitoring and reporting				
Optional				
Static IP (Y/N)	Shaped (Y/N)	Domain Name (Y//N)	Domain Name Cost	
			\$	
Total setup cost	Monthly charge	Total cost		
\$	\$	\$		