



NOIE

The National Office for the
INFORMATION ECONOMY

broadband for small business
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what is broadband ?



About

This brochure has been developed by The National Office for the Information Economy (NOIE) in cooperation with SPAN Broadband Xchange to provide useful information to small businesses getting started on broadband.

What is broadband?

Broadband is the term used for any kind of fast Internet access. Broadband is designed to give a business or residential user instant Internet access 24 hours a day.

It's **fast** – generally 10-20 times faster than your existing dial-up modem. A typical dial-up modem operates in the range of 30 kbit/s to 50 kbit/s. A broadband connection operates at between 256 kbit/s and 10 Mbit/s, depending on the service you have selected. To give you an idea of the difference that this speed can make, a 150 Kbyte Word document takes more than 20 seconds to download using a 56 kbit/s dial-up modem, but less than 1 second on a 1.5 Mbit/s broadband link. Similarly, an 8 Mbyte PowerPoint presentation takes more than 19 minutes to download using a 56 kbit/s dial-up modem but only about 43 seconds on a 1.5 Mbit/s broadband link.

What are the benefits of broadband?

- Broadband's high speed gives you access to applications that are either not feasible at the speed of a dial-up connection or just annoyingly slow. For example, broadband can
 - allow you to transfer large files of text or graphics at high speeds,
 - give you instant access to web pages, even those with large amounts of graphics that are typically very slow to download on a dial-up connection,
 - allow employees to telecommute, operating from their home or elsewhere with the same response speeds and level of security as if they were in their office,
 - link several computers to the Internet through the same connection,
 - make videoconferencing faster, smoother and more practical,
 - save money by allowing a business to rationalise and centralise its servers.

- It's always on. As long as your computer is switched on you can be connected to the Internet. This means that you do not waste time dialing up and waiting for your modem to connect you to the Internet every time you go online. You will not be subject to annoying busy signals and less likely to experience drop outs.
- Your phone line is not tied up while using the Internet. Therefore there is no need to pay for a second phone line.
- There are no additional dial-up charges to connect each time you use the service.

NOIE case studies of small businesses using broadband

NOIE has developed a series of broadband for small business case studies. Visit www.noie.gov.au/advancingwiththebusiness to learn more about the business case for broadband.

What types of broadband service are currently available and how do I know which one is best for me?

DSL

DSL stands for Digital Subscriber Line. The term DSL refers to a group of technologies, the most common being ADSL or Asymmetric Digital Subscriber Line. DSL uses your existing telephone lines to deliver high-speed Internet access. It allows voice communication and high-speed data transmission on the same line at the same time, by transmitting the two on different frequencies.

Advantages of ADSL

- There is no need for extra access infrastructure – ADSL uses the existing phone line.
- ADSL does not tie up your phone line while you are on the Internet.
- There is no need to dial-up the Internet.

Disadvantages of ADSL

- ADSL is not available everywhere – your local telephone exchange must be ADSL enabled. (Visit www.broadbandxchange.org/sas/adsl.asp to find out if your local exchange is ADSL enabled.)

case study



Entech ElectroGraphics

Adelaide business Entech ElectroGraphics demonstrates the benefits of eBusiness using broadband.

Part of the Entech Group of Companies (www.entechgroup.net), the company specialises in the design and manufacture of membrane switches and screen printed products for the electronics and manufacturing industries. The business employs 35 full-time staff.

Entech benefits from the efficiencies of running fully integrated Enterprise Resource Planning (ERP) software, online ordering and tracking, online banking, payroll and payment of vendor invoices, and a Virtual Private Network (VPN) link to their office in Shekou, China. Design and manufacturing data are promptly and reliably transmitted within the group as well as to customers via ADSL broadband internet access and by use of dedicated broad spectrum radio links.

Over ninety per cent of Entech's customers prefer to make electronic payments. Entech's eBusiness enabled streamlined production process and shortened product to market time resulted in additional revenues of \$240,000 and cost savings of \$64,000 in 2001.

The full Entech case study is available at www.noie.gov.au/advancingwiththebusiness

- If you live more than 3.5km away from your exchange, ADSL may not be available.

Cable

Cable Internet uses the pay TV cable network to bring you broadband Internet access.

Advantages of Cable

- Cable does not tie up your phone line while you are on the Internet.
- There is no need to dial-up the Internet.
- Once connected to cable you have access to other facilities, such as pay TV, if you want it.
- Cable connections can be cheaper than other technologies.

Disadvantages of Cable

- Cable is not available everywhere – the physical cable must run past your business for you to be able to use this service.

Satellite

Satellite broadband uses a satellite dish to connect to the Internet. Satellite connections come in two forms – one-way and two-way satellite. One-way satellite, as the name implies, only communicates with the Internet in one direction i.e. you can download information from the Internet at high speed via satellite, but you do not send it via the satellite. The return channel for uploading data to the Internet in a one-way satellite broadband installation is often by ISDN line or dial-up modem. Two-way satellite broadband uses a satellite dish to both send and receive data. Two way satellite involves higher equipment and installation costs.

Advantages of Satellite

- Satellite is available everywhere, and so is useful where other technologies, such as DSL and cable, are not available.
- A single satellite service can support a large number of users within the satellite “footprint” and is therefore attractive for businesses that wish to provide access to many dispersed offices or branch locations.

wireless

Disadvantages of Satellite

Because one way satellite solutions operate in only one direction (i.e. the satellite dish can receive data but not send it), you still need to maintain your dial-up modem to be able to request information from the Internet. This means that, if you have only one phone line, your phone-line is tied up while you are accessing the Internet. Furthermore, you still need to pay for a separate dial-up account with your Internet service provider.

- For a single user, satellite is more expensive than other technologies – for infrastructure, installation and use. Two-way satellite transceivers are more expensive again than one-way satellite receivers.
- A satellite connection can be affected by exceptionally heavy rainfall.

Wireless

Wireless broadband can deliver fast access by using radio waves instead of cables or wires to carry signals and data.

WiFi/802.11

WiFi (or Wireless Fidelity) is designed for localised medium range (eg within a building) communication between devices (up to about 90m). WiFi can be used to set up private wireless LANs (local area networks), connecting devices such as computers, printers and scanners. WiFi is also being used to provide public high speed Internet access in locations such as cafes, hotels and airport lounges, providing Internet and corporate access to users who are away from their normal place of work.

WiFi is implemented using a credit-card sized wireless PC card, which plugs into your computer and communicates over the airwaves with a local access point. From there information is transmitted via a cable or ADSL link to your Internet service provider.

Wide Area Wireless

A wide area wireless system uses a network of fixed antennas to transmit radio waves that carry data. This network of antennas offers coverage over a much wider area than can be achieved by WiFi.

At least two wide area wireless systems are currently being trialed in Sydney. One of these offers mobile computing capability.

Traditional wireless systems broadcast their signal in all directions because the location of a subscriber device is not known. This not only wastes capacity and signal quality, it also generates interference with unintended receivers. A new type of wireless technology currently under development uses smart antennas to direct a signal to its intended receiver. This will improve the capacity, coverage and quality of transmission.

Advantages of Wireless

- Some wireless technology allows users the flexibility to physically move while using a device such as a computer.
- New nodes can be added to a wireless network.
- Wireless can be used in places where it is not possible to run cables or drill holes, such as within historic buildings.
- Wireless technology can give users broadband access even when they are away from their office.

Disadvantages of Wireless

- Wireless has a relatively high initial outlay, compared to ADSL or cable.
- Some wireless technology may require line-of-sight between the transmitting and receiving points. This can be a problem in some areas.
- Wireless suffers from potential security risks. As radio waves travel in all directions, *anyone* within range can access or intercept an unsecured wireless network, be they in the next office, the next building or even out in the street. The wireless market is still at an early stage of development and security measures for wireless networks are being continually updated.
- Bandwidth can be limited in a congested network. WiFi shares the airwaves with devices such as microwaves and cordless phones, which can use up valuable bandwidth, or cause interference on occasions.

what should I expect?



ISDN

ISDN sends data via a digital phone line to national and international destinations. Its speed and clarity mean you can use it to send and receive text, voice, video and images. Speeds can range from 64kbit/s for fast Internet access using the basic service, up to 2Mbit/s using multiple channels.

Advantages of ISDN

- ISDN is a well established, reliable, technology widely used by business.
- It provides two voice or data lines.
- It is often available in areas where ADSL and cable are not.
- If you are involved in uploading large amounts of data ISDN can offer superior speeds for uploading data than ADSL.

Disadvantages of ISDN

- A basic ISDN service provides a lower download speed than other broadband technologies.
- ISDN can be relatively expensive compared to other broadband technologies, depending on usage.

Optical Fibre

Traditionally fibre optic cable has only been used as the backbone of large networks or for connecting into large corporate offices. However, in today's world, where applications such as video-conferencing and multimedia are demanding ever-increasing speed and bandwidth, some businesses are beginning to turn to optical fibre as the solution for local area networks (LANs), running the fibre directly to the desktop. Fibre to the desk makes even the most advanced software applications available to everyone on a LAN. For example, a main office could have a full video-conference link with its satellites or staff could be provided with real-time video instructions or product demonstrations over the network.

Advantages of Fibre

- Optical fibre cables have a much higher bandwidth (i.e. they can carry more data) and can transmit data over longer distances than other types of cable.

- Optical fibre can be easier to install than other cable because it is smaller and more flexible.
- Optical fibre cables are not affected by noise (electromagnetic interference) and so provide a higher quality of transmission. This also means they can be run along the same routes as electric cables.
- Data transmitted over optical fibre cable is very secure. It is not possible to tap the signal being transmitted through a fibre because the fibre does not radiate a magnetic field.

Disadvantages of Fibre

- Converting existing hardware and software to use fibre optics can be expensive and time-consuming.
- Although fibre optic cable itself is cheaper than coaxial cable, the additional components required for a fibre optic network e.g. transmitters, receivers and connectors, can make it a more expensive option

What should you expect?

Your choice of technology will depend largely on which technologies are available to you as not all technologies are available in all areas. However, wherever your business is located you will be able to get high speed access to the Internet. Under the Digital Data Service Obligation (DDSO) the Federal Government requires Telstra to make a 64 kbit/s ISDN service available to most customers on request. Those who do not have access to an ISDN service, primarily those customers living more than four kilometres from a metropolitan exchange or six kilometres from a country exchange, are covered by the Special DDSO. The Special DDSO provides for the supply on demand of a satellite downlink service comparable to a 64 kbit/s service and broadly equivalent to an ISDN service. Currently, Telstra and Hotkey Internet Services Pty Ltd are carriers declared as Special Digital Data Service Providers. Eligible customers may be able to access rebates for installation of the required equipment.

The best person to give you advice on which technology is the most suitable for you is your Internet Service Provider. However, not all service providers offer all technologies, so you may need to talk to more than one Internet service provider to gather the information you require.

where is it available?



Connecting to Broadband

Who offers broadband services?

Broadband services are offered by Internet Service Providers or ISPs. Your ISP is your gateway to the Internet and provides the following services:

- An ISP provides a local computer (or server) to which you connect using a modem. From there you can access the rest of the world wide web.
- An ISP translates addresses that you type on your computer into physical locations and delivers your messages and information requests to the correct location, anywhere in the world.
- An ISP sends and collects your email messages for you.
- An ISP can host your web site – i.e. they will store your website on their computer so that it is always accessible to other people browsing the Internet, even when your computer is switched off.
- Most ISPs offer a proxy server – a computer which stores a copy of the most frequently downloaded web sites. This gives you faster access to these pages as your web browser need only access the proxy server, instead of a computer that is possibly on the other side of the world.

For further information on ISPs currently providing broadband services in Australia visit

www.broadbandxchange.org/sas/c02p021.htm

Is broadband available everywhere?

To have access to ADSL technology your local telephone exchange must be ADSL enabled, you must live within approximately 3.5 km of the telephone exchange and your telephone line must be ADSL compatible. To find out if ADSL is available to you now visit

www.broadbandxchange.org/sas/adsl.asp

Cable Internet services are now available to approximately 2.7 million Australian homes in Sydney, Melbourne, Canberra, Brisbane, Adelaide, Perth and some regional centres. If cable pay TV is available in your area then there is a high probability that a cable broadband Internet connection will also be available to your business.

Satellite technology provides an alternative access mode where other technologies are not available.

What do I need to know about broadband before I talk to an Internet Service Provider?

Broadband Speeds

The speed at which information travels between your computer and the Internet is measured in either kbit/s (kilobits per second) or Mbit/s (megabits per second). One kilobit is one thousand bits and one megabit is 1,000 kilobits, where a bit is simply an electronic unit of information.

Broadband connections are generally *asymmetric*. This means that the speed at which you download information from the Internet (i.e. receive information such as email or web pages) is different from the speed at which you upload (i.e. send information to the Internet such as email, requests for web pages). Typically upload speeds are slower than download speeds, but as you will often download much more information than you upload, a fast download speed is more critical.

Broadband speeds will typically be advertised in the format *download speed/upload speed*. For example, the advertised speed 512/128 means the service will let you download information at a maximum speed of 512 kbit/s and upload at a maximum of 128 kbit/s.

Symmetric connections, where the upload and download speeds are the same, are available but are usually more expensive than asymmetric connections.

Upload and Download Limits

Most ISPs set a limit on the amount of data you can upload or download for your monthly access fee over a given period of time, usually one month. This limit can range from 250 Mbytes to several Gbytes, depending on the plan you choose. Some service providers include upload traffic in their limits, others do not count upload traffic at all. (A byte is a measure of data, one byte equates to one character.)

how do I find out more ?



What information will a service provider need from me?

Once you decide to apply for a broadband connection, the Internet Service Provider you have chosen will expect you to provide the following information:

- your phone number for installation and other contact information,
- the current configuration of your network or setup,
- whether you intend to supply and install your own modem or whether you require the ISP to provide it,
- the speed of access you require,
- the number of distributed sites you may have,
- what applications are to be supported,
- the download allowance you require (taking into account your current usage and any new applications you would like to use once you have broadband).

To choose your download allowance it is best to evaluate the type of data you will be accessing. If, for example you will be downloading a significant number of large documents, such as graphic files, software or online catalogues, then a plan with a high download allowance would be advisable. If the connection will be used mainly for regular email and Internet browsing then a lower download plan would be sufficient.

What questions should I ask a potential Internet Service Provider?

The services offered by ISPs vary from a simple Internet connection to a comprehensive service including customer support, email, web-hosting and so on.

Depending on the level of service you require and the amount you are willing to pay, questions that will help you determine which Internet Service Providers can best meet your needs include:

- Which broadband technologies does the ISP offer?
- What fees and charges apply– installation and monthly access?
- Is there a download limit and if so how is it calculated and applied?
- What is the maximum speed of the connection (upload and download speed)?
- Is the new system scalable if my business grows?
- Is there a service level agreement guaranteeing a minimum level of performance for speed and reliability?
- What are the terms and conditions of the contract and acceptable use policy?

A comprehensive list of questions you should ask a potential ISP is available at

www.broadbandxchange.org/abb/c01p054.htm

You should also know about your ISP's acceptable use policy. An acceptable use policy is a written agreement with your Internet service provider that you will use their system in a responsible manner -

see www.broadbandxchange.org/abb/c01p052.htm

for further information.

More information

NOIE (www.noie.gov.au) and SPAN Broadband Xchange (www.broadbandxchange.org) have produced this brochure. Visit www.noie.gov.au/advancingwiththebusiness to learn how eBusiness is being applied by small business. Visit www.broadbandxchange.org/abb/c01p060.htm for further explanation of terms used. The Broadband Xchange website is provided by SPAN (Service Providers Industry Association Inc ABN 83 588 663 448 www.span.net.au). The principal sponsors of Broadband Xchange are Alcatel, Microsoft, Southern Cross Cable Network and Telstra.

How much will it cost to connect to broadband?

The cost of your broadband connection will depend on the Internet Service Provider you choose and which plan you select with that ISP. The costs that you may incur are:

- a one-off connection fee,
- the cost of any **hardware or software** you need to purchase,
- an installation charge (this may be included in the connection fee),
- a monthly access fee,
- a fee for downloading data,
- a cancellation fee should you choose to terminate your contract prematurely,
- domain name registration,
- web hosting,
- email services.

The monthly access fee could take one of the following forms:

- A base fee giving you untimed access and a download allowance, plus a charge per megabyte to download additional data over that limit. Sometimes the download limit will be broken down into the maximum amount of data that can be downloaded at peak and non-peak times.
- A base fee with unlimited downloads, but a charge for every megabyte of data downloaded.

Typically the higher the download allowance and the higher the speed of the connection, the higher the monthly access fee. Internet service providers will usually offer several different plans at different prices and with varying download limits and speeds.

There is a wide range in the prices charged by ISPs.

Visit www.broadbandxchange.org/abb/c01p055.htm for an indication of what you might expect to pay for various types of plans, based on offers currently being made by ISPs. Be aware, though, that ISPs offer special deals from time to time, so this information should be used as a guide only.

eSecurity and the Internet

NOIE has developed a guide to eSecurity for small businesses entitled *Trusting the Internet*. Talk to your broadband provider about e-security. For more information visit

www.noie.gov.au/trustingtheinternet

www.broadbandxchange.org/abb/c01p057.htm



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National Office for the Information Economy (NOIE)

The National Office for the Information Economy (NOIE) is the Federal Government's lead agency for information economy issues.

NOIE provides strategic advice to Government on the key factors driving the information economy, and in this context coordinates the Government's *Strategic Framework for the Information Economy*.

The Office promotes the benefits of the information economy, acting as a catalyst for change in the wider community and focusing debate on the use of new information tools in the Australian economy.

NOIE also coordinates the application of new technologies to government administration, information and service provision.

The Agency is helping Australians create a world-class online economy and society through its work coordinating Commonwealth Government responses to the information revolution.

NOIE's key priorities in 2003 include:

- encourage economic transformation through better information and communications technology (ICT) use across the Australian economy;
- transform Australian government information, services and administration through application of ICT;
- accelerate the uptake of e-business and e-procurement by small to medium business enterprises (SMEs); and
- promote e-security, facilitating implementation of a coordinated national e-security agenda.

Disclaimer

Although the information contained in this brochure is provided in good faith, neither SPAN nor the Commonwealth of Australia can warrant the accuracy or completeness of the information. You should undertake your own analysis of the information and obtain appropriate advice about your own circumstances. In particular, information about specific broadband services (including the nature and availability of services, price etc) should be confirmed with the service provider concerned.

To the maximum extent permissible by law, both SPAN and the Commonwealth of Australia expressly disclaim any liability to any person arising out of anything done or omitted to be done by any person in reliance, whether wholly or in part, upon the whole or any part of the information in this brochure.

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