



# INTERNET CONNECTIONS EXPLAINED

We spend quite a bit of time with our clients explaining the different types of internet that are available at their site and going through the pros and cons of each available data connection.

We spend quite a bit of time with our clients explaining the different types of internet that are available at their site and going through the pros and cons of each available data connection. Why is one service better or more cost effective than the other? Why is one NBN cheaper than the other, with what looks to be the same specifications? Why is one 100Mb fibre service different to the other? Why don't we get full speed on NBN? Why does our service speed vary so much?

Business nowadays depends on good quality and reliable Internet. Business will grind to a halt if their Internet stops working. Staff scream, productivity stops, costs go up, time is wasted looking for interim measures, deadline's get missed and customers get angry. Given that their data connection is mission critical, we are often surprised by some business customers approach to their data connection. In some cases they budget less on their data connection than they do on coffee for the office. And then when the \$80 a month residential grade Internet connection stops working or slows down, the stress levels go through the roof, business doesn't get done and cash flows out the door in lost productivity. Bewildering really...

This article explains in layman's terms, the Pros and Cons of each Internet service type.

---

↓ MAXIMUM AVAILABLE DOWNLOAD SPEED

↑ MAXIMUM UPLOAD SPEED

✓ TYPICAL REAL LIFE SPEEDS

---

## ADSL BROADBAND

↓ 20mbPS    ↑ 1mbPS    ✓ 25-70% OF MAXIMUMS

ADSL broadband is on the way out so we won't spend too much time on it here. Costing between \$60 and \$150 a month, ADSL is really the last resort internet connection for business.

In short ADSL Internet is delivered over a single copper wire from the Exchange to you. While there are many factors that influence end user speeds, the further you are from the exchange the slower the speed you will get. This is called transmission loss. Also, the older the copper line you are using, the slower the speed and the greater the risk of dropouts and faults. Deleted increases

There is also another factor that affects your speed called contention ratio. This is basically how many users your carrier shares the connection over. The more users you share with the less speed you will get. It's also how budget carriers can offer unlimited data while providers like Telaar, charge more. Their services are not shared over as many users, so in general you will get a better and more reliable result.

ADSL is basically the Internet connection of last resort for business.

A good analogy for most data types is that a data connection is a bit like a water pipe running down your street. You get a certain amount of water pressure but when more taps that are turned on, the water pressure gets shared across all the users. This results in lower water pressure if everyone's using the service. It's the same for data. There is a set bandwidth allocated and the more users online will mean that the internet slows down.

So the message is if you want a quality connection with stable speed, you probably want to avoid ADSL & budget carriers and get a dedicated business grade connection.

## NBN

📶 100mbPS 📶 40mbPS ✅ 30-90% OF SPEED ORDERED

NBN comes in many flavours. Fibre to the Premises, Fibre to the Node, HFC, and Fibre to the Distribution Point and Fibre to the basement as well as Satellite and Wireless. We will only discuss the NBN Internet services that run through the ground in this article. Costing between \$80 and \$150 a month, NBN offers a significant improvement over ADSL but it is not a Business Grade Service.

Most people think that the NBN is an entire network carrying your services out into the Internet. It is not. The NBN carries the Internet service from your premises, back via a Node or Exchange to one of 121 Points of Interconnect or POIs. The NBN costs and the capacity from your premises to the POI are equal for all providers. However, from the POIs, the providers supply their own back haul out into the general Internet and this has a tremendous effect on the capacity of your Internet connection and its cost. The backhaul component of NBN services would typically be 20-40% of the NBN provider charges.

It is therefore important to understand that not all NBN service providers are equal. Budget carriers put far more connections over their back haul links than quality providers do. This is how you have Budget provider A, offering unlimited Internet for \$80, and quality Provider B, only offering 100Gb for the same amount at the same NBN speed. It's economics and physics. You can't put more users on the same amount of bandwidth and expect to get the same result. This is the NBN version of contention ratio that was discussed under ADSL. So as a general rule, more users over the same capacity, equals lower end user cost and lower end user speeds.

NBN services delivered over a fibre service, like FTTP and HFC, will not be drastically affected by your distance from the exchange. The biggest effect on those services will be the provider's backhaul capacity. So like many other things in life, with NBN you get what you pay for.

## NBN offers a significant improvement over ADSL but it is not a Business Grade Service.

Fibre to the Node is a different story altogether. Fibre to the Node (FTTN) means the Internet service is on Fibre from the POI to the Node in the street. From the Node to the Premises, the service is delivered over a single copper wire, so all of the issues that affect ADSL come into play. If you are more than 500m from the Node your service speed can be impacted dramatically. On FTTN you are subject to all the weather, poor quality copper and transmission loss issues that can affect ADSL.

All NBN Internet services are residential grade services. Yes you can get a Static IP, but there are no repair SLAs on down time and no bandwidth guarantees.

## SHDSL OVER COPPER - MBE - EFM - BDSL

📶 60mbPS 📶 60mbPS ✅ 80-90+% OF SPEED ORDERED

Copper based Ethernet SHDSL services are very popular. To deliver an Ethernet over copper service, multiple copper phone lines are bonded together to deliver a more robust and higher capacity Internet service.

These SHDSL services are bonded to a Network termination Unit at your site. These services are also commonly known as SHDSL (Symmetrical High Speed Subscriber Data Link). SHDSL offers symmetrical upload and down load speeds up to a theoretical maximum of around 80/80mbps. The most popular and common services are 10/10mbps or 20/20mbps. Costing between \$249 and \$799 a month, SHDSL Ethernet services over copper offer a business grade service with synchronous upload speeds on a lower budget than Fibre.

There are 3 SHDSL services on offer, BDSL from Telstra (more expensive than Fibre, not as fast as fibre and because of this therefore not covered here) EFM and MBE. All Ethernet over Copper services run over the same technology but with some differences in how they are delivered.

EFM is delivered over 4, 6 or 8 Wires. Speeds are up to 20/20mbps. You nominate the number of wires you want to be installed based on your budget and the estimated speed for that service at your site. The big difference here is that regardless of the number of wire services you order, what you get is what you get. For example, if you order 4 wires and the estimated speed is 7mbps, but only 4mbps can be delivered, then there is no recourse with EFM. You have a 4 wire service delivering 4mb and that's it.

Of course you can always submit a speed inquiry and if there is anything that can be done to bring the speed up, it will be done but there is no guarantee on this service type.

MBE is slightly different in that if you order a 10/10mb or 20/Mbps MBE service, the carrier will continue to put copper lines in (up to a maximum of 8 lines or 16 wires) to get the full 10mb speeds. The full ordered speed should be delivered at handover. The installation process for MBE and EFM are explained in detail in our MBE and EFM installation process notes. Ask your Telaarustralia contact for the install notes if you are considering these products.

## Ethernet over Copper services deliver a business grade internet service on lower budget than fibre.

It is important to remember that the speed on an SHDSL service is measured at the Network Termination Unit (NTU) so the actual useable speed will be less. The router settings will drag down the speed and if you have a Firewall in place, which will also reduce the speed. It's not uncommon for a 10mb service at the NTU to drop to 8 or 9mb at the router/firewall. If you really crank up the Firewall it can drop the speed dramatically.

Over time copper can degrade, so no carriers will guarantee bandwidths at the full speed over a copper based service. EFM has no Guarantee and MBE has an 80% bandwidth warranty. One downside with these services is that there is no rebate for outages. Because the most common cause of any issue is the underlying copper, and the services are carried over Telstra copper, there is no rebate in the event of an outage.

What does SHDSL over Copper cost? A non guaranteed EFM 4 Wire is \$249 a month and a 8 Wire service \$349 a month. A guaranteed 10/10mb MBE is \$419 a month and 20/20mb is \$479 a month. This means a quality 10/10mb MBE service would cost under \$2 per person per business day for a 10 person office.

## OPTICAL FIBRE INTERNET

📶 1gbPS 📶 1gbPS ✅ 80-90+% OF SPEED ORDERED

Optical Fibre Internet services are becoming the standard service type for businesses looking for service quality, fast fault resolution, SLAs and consistent synchronous bandwidths. At around \$1200 a month for a quality 100/100mbps connection, many businesses are starting to see the value that an Optical Fibre Internet connection offers to their business.

### Aside from cost and contract length, there isn't any negatives for a Fibre Connection.

Fibre services are delivered over glass fibre from the exchange directly to the customer's premises. Because the signal is carried by light rather than by electrical signal, fibre services can be easily upgraded without requiring a substantial increase in infrastructure. Fibre services start at around \$500 per month and range up to \$5000 plus a month for premium Gigabit services.

Fibre services are delivered to existing Pre Fibred buildings (Pre lit) or with a network build. The greater the network build required to deliver the service, the greater potential for increased costs. Some of the carriers like TPG and Vocus only offer their high speed 400 & 500mb service into buildings they have already lit, with the prospect of providing their service to 20 or more tenants. You can't order these 400/500mb services at a stand alone site. This way the cost to build and deliver the Fibre is amortised over many customers, and build costs are kept low, by only offering these services in area with many High Density or CBD buildings.

Because Fibre is technically complex product, it is not just handed over to an NTU plugged into the wall or sitting in a rack. A Fibre service will have its own cabinet and power supply and requires very specific delivery requirements, which are explained in our Fibre Installation notes. Delivery of Fibre can involve costs over and above the carrier charges for commercial works, lead in upgrades, internal cabling and additional power supply. Ask your Telaarustralia contact for the install notes if you are considering this product.

The great advantage of quality fibre, is that it is not affected by transmission loss like copper, it is not affected by water like copper and unlike copper services, it is easily upgradeable. With Fibre, the main issue effecting the quality and speed of the service will be the carriers backhaul network and the quality measures the carrier puts on the service. Again, with Fibre you get what you pay for. Most carriers run Fibre at 1:1 Contention back to the exchange but not all carriers have a 1:1 Contention though their network, and that is where there can be a substantial pricing difference.

For an office of 20 staff, a high quality 100/100mb fibre costs around \$2.85 per person per business day.

Typically, Fibre will have a bandwidth guarantee of around 90+% of the deliverable bandwidth and uptime availability guarantees of 99.9% plus.

The uptime levels of Fibre Internet are chalk and cheese when compared to Copper based services. If you have a mission critical need, for a very low rate you can also increase the service SLA on your Fibre connection to as little as a 2hr response time 24/7.

Aside from cost, the only real down side for a Fibre connection, is that because there is quite a carrier investment into building a fibre network, Fibre is usually only available on a minimum 36 month contract.

What about the cost? A 10mb quality fibre service starts at around \$600 per month, 20mb at \$700, 50mb at around \$1000 a month and 100mb \$1200 per month inc gst. For an office of around 20 staff, a 100mb fibre costs around \$2.85 per person per business day. That's less than a cup of coffee. If you have 10 staff it works out at \$5.70 per person per day. You probably pay more per person in rent, training, software and transport than you do for your Internet connection. If your data connection is mission critical, it's hard to understand why Fibre Internet would not be the data connection of choice.

## Telaarustralia's Business Connectivity Assessment can help businesses save up to 50% of their telecommunications & data costs.

**Our experience is that many SMEs are often struggling with how to navigate and make sense of what are now highly complex and fragmented, Telco, IT and Cloud markets.**

We see that SMEs are looking for a trusted advisor who can help translate the complex range of products and services available in today's market, into simple and effective solutions, that deliver what your business needs.

Telaarustralia looks at your current and future needs, audits your IT & Telco spends, and then creates you a road map to an optimal solution for your business.

Your assessment includes vendor neutral advice and solutions. Telaarustralia are carrier agnostic so our solutions are not tied to any one carrier.

**Contact Telaarustralia to find out more about Business Internet Connections and our Business Connectivity assessment and how we can help your business.**

📞 **1300 783 528**

✉️ **INFO@TELAUSTRALIA.COM.AU**

**TELAUSTRALIA.COM.AU**