

## Our FREE Guide to the NBN™

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## Introduction

The NBN (National Broadband Network) is Australia's new broadband network and it is currently being built by NBN Co (NBN™). NBN™ is a government owned organisation with a goal of completing construction of the new national broadband network by 2020. At the time of writing the Abbot government is committed to providing a minimum of 25Mbit/s download speeds to every property in Australia. This is significantly lower than the original plan to provide up to 1 Gbit/s speeds to much of the country.

NBN™ themselves do not actually sell broadband services to end users. NBN™ is a wholesale provider of services to retail service providers (RSPs). Retail service providers like Tangerine contract with NBN™ to access the NBN and sell internet access to end users.

A number of different technologies are used to deliver the NBN broadband services to homes and businesses across Australia. NBN™ make the decision on how NBN will be delivered to a property and often it will be based on the location and density of the properties in an area.

## NBN™ Delivery Methods

There are a number of different NBN™ delivery methods and these are outlined below.

### Fibre to the Premises (FTTP)

FTTP connections involve fibre optics cabling being installed right into the end users property. This is certainly the most future proof method of NBN delivery as it provides the ability to offer extremely fast internet services with up to 1Gbit/s speeds. Installation is time consuming and expensive and does require access to the end users property.

### Fibre to the Node/Basement (FTTN/B)

FTTN connections involve both fibre optic cables and the existing copper telephone network that is already in place across most of the country. Fibre optic cables are installed in an area and terminate in a node that is positioned around a suburb. The node is a large green box that is positioned on the street. At the node, the fibre optic cables are connected to the existing copper telephone network that runs into the homes and business in the area.

Using the existing old copper cable does bring with it some limitations. The internet speed that can be transmitted along the copper cable can be limited. Both by the quality of the copper and the length of copper from the node. This means that the higher speeds available on FTTP are not possible with fibre to node technology. Installations can be done at a faster pace and are less expensive than FTTP. They also on most occasions do not require access to the end users property.

Fibre to the Basement refers to NBN™ connections in building with multi tenants. For example a block of apartments. Fibre optics are delivered to the basement of the apartment block. In the basement the fibre optics are then connected to copper cables that runs to the individual apartments.

### Fixed Wireless

Fixed Wireless NBN involves sending the internet via a wireless signal to a property. A receiver will be installed on the end users property and this will pick up the NBN™ signal from a large transmitter located in the area. This is proving very popular in less populated areas and small towns. Improvements to the speeds available on Fixed Wireless are continually being developed and released to end users.

### Hybrid Fibre Coaxial (HFC)

HFC connections make use of existing cable TV and internet cable networks that are already present in some urban areas. Previously these cables will have to distributed cable TV and internet services to homes and businesses.

## Fibre to the Curb (FTTC)

FTTC NBN™ connections are the newest addition to the range of delivery methods used to distribute high-speed internet across Australia on the NBN™. In a FTTC area NBN™ will run fibre optic cables along every street. At the distribution point outside every home or business the fibre will be connected to the existing copper cable that runs into the property. This could be in an existing telecommunications pit outside the home or on the nearest telegraph pole. By utilising the shortest amount of copper cable far greater speeds are possible compared to FTTN connections.

## Satellite NBN

In extremely remote areas and areas not serviced by one of the other NBN delivery methods end users will access NBN™ using a satellite dish. The dish will be installed by a qualified NBN™ technician. Speeds and data inclusions are not the same as those available on other NBN™ delivery methods. Satellite NBN is the only delivery method that Tangerine is unable to provide.

## NBN™ Speeds

NBN™ offer a range of speed tiers on the NBN network that an end user can choose from. The common speed tiers are nbn12, nbn25, nbn50 and nbn100. The speeds refer to the maximum download and upload speeds available on the internet connection ordered by the end user. Each speed tier attracts a different cost from the NBN™ and price to the end user.

It is important to remember that these speed tiers are the theoretical maximum speed that is possible on the ordered NBN™ service. It is unlikely that an end user would ever actually achieve these speeds, especially during peak times of internet usage. Peak times are often experienced between 6pm and 10pm when more users in an area are using the internet.

In addition, depending on the delivery method of the NBN™ other factors may influence the achieved speed. This is particularly important to note on FTTN/B connections. If a property has old or poor quality copper running to it – the achieved internet speed will be negatively affected. If the property has a long length of cable from the node to the property this will also negatively influence the maximum speeds available.

Tangerine offers the end user the ability to change speed at any time. This is a quick and easy process and happens remotely with no need for a technician visit. Speed changes can usually be processed on the same day as the request is made.

## Ordering NBN™

To be connected to the NBN™ an end user will need to place an order with an authorised retail service provider of the NBN™. There are a large number of these and Tangerine is one of them. Timeframes for connection can vary based on the delivery method of NBN™ to a property. An NBN™ Service Class is associated to every property in Australia. The Service Class identifies the properties NBN™ readiness and is useful to know when ordering an NBN service.

## NBN™ Service Classes

NBN™ Service Classes are used to identify a properties NBN™ readiness. A property will likely change Service Class as the NBN™ rollout progresses in the area. The Service Class gives a clear indication of the properties NBN™ readiness. It will highlight whether or not a property has an active NBN service, is ready to order a service, or is yet to have NBN™ complete the construction works in the area. It will also give confirmation on the delivery method used to provide NBN™ to the property.

To find out your Service Class you will need to speak to your service provider. Alternatively, there are some online tools that provide relatively accurate Service Class information. See [www.myngbn.info](http://www.myngbn.info). Please note that data on this website is not linked live with the NBN database and may be out of date. To get an accurate Service Class classification it is important to check with your RSP.

Below gives the list of current Service Classes as outlined by NBN™.

<b>Service Class</b>	<b>Service Class Definition</b>
Service Class 0	The site is planned to be serviced by fibre
Service Class 1	The site is serviceable by fibre, with no PCD or NTD in place
Service Class 2	The site is serviceable by fibre, PCD is installed, no NTD in place
Service Class 3	The site is serviceable by fibre, PCD and NTD are installed
Service Class 4	The site is planned to be serviceable by fixed wireless NBN
Service Class 5	The site is serviceable by fixed wireless NBN, no antenna or NTD in place
Service Class 6	The site is serviceable by fixed wireless NBN, antenna and NTD are installed
Service Class 7	The site is planned to be serviceable by satellite
Service Class 8	The site is serviced by satellite (dish/NTD not installed)
Service Class 9	The site is serviced by satellite (dish/NTD already installed)
Service Class 10	Site is planned to be serviceable by copper (FTTN or FTTB)
Service Class 11	Site is serviceable by copper, copper lead-in required
Service Class 12	Site is serviceable by copper, jumpering is required
Service Class 13	Site is serviceable by copper, all infrastructure is in place.
Service Class 20	Site is serviceable by cable (HFC).
Service Class 21	The property is within the HFC footprint, no drop, wall plate or NTD
Service Class 22	The property is within the HFC footprint, drop in place, no wall plate or NTD
Service Class 23	The property is within the HFC footprint, drop and wall plate in place, no NTD
Service Class 24	The property is within the HFC footprint, drop, wall plate and NTD in place.
Service Class 30	The property will be serviced by FTTC in the future.
Service Class 31	The property is within the FTTC footprint, copper lead in is required.
Service Class 32	The property is within FTTC footprint, appointment required.
Service Class 33	The property is within the FTTC footprint, NCD to be sent by carrier.
Service Class 34	The property is connected to FTTC – no additional appointment required.

For reference the PCD is the Premises Connection Device. This is a box that is installed on the outside of a property.

The NTD is the Network Termination Device and this is installed inside a property.

The NCD is the Network Connection device and is required in FTTC connections.

## Activation Timeframes

The table below give indicative timeframes for NBN™ activation. These are based on standard installations and assume that no complications are encountered during the activation.

NBN™ Delivery Method	Service Class	General Activation Timeframes
0	FTTP	Unknown
1	FTTP	1 – 3 weeks
2	FTTP	1 – 3 weeks
3	FTTP	24 – 48 hours
4	Fixed Wireless	1 – 3 weeks
5	Fixed Wireless	1 – 3 weeks
6	Fixed Wireless	24 – 48 hours
7	Satellite	Unknown (not available with Tangerine)
8	Satellite	Unknown (not available with Tangerine)
9	Satellite	24 – 48 hours (not available with Tangerine)
10	FTTN/B	Unknown
11	FTTN/B	1 – 3 weeks
12	FTTN/B	1 – 3 weeks
13	FTTN/B	24 – 48 hours
20	HFC	Unknown
21	HFC	1 – 3 weeks
22	HFC	1 – 3 weeks
23	HFC	1 – 3 weeks
24	HFC	24 – 48 hours
30	FTTC	Unknown
31	FTTC	1 – 3 weeks
32	FTTC	1 – 3 weeks
33	FTTC	1 – 2 weeks
34	FTTC	24 – 48 hours

## What information is needed when ordering NBN™

When placing an order for NBN™ you will need your full property address as known in the NBN™ system. All orders are confirmed by service address. If a property is a new build it may not be listed on the NBN™ database. In which case it needs to be registered with the NBN™.

Address registration is easy to do and the team at Tangerine help a lot of end users with this request. It generally takes 5 – 10 business days for an address registration to be completed. Providing proof of address will speed up this process up and NBN™ often request official documentation to assist with this. A letter from the council or utility bill will often suffice.

If an end user is ordering a FTTN/B service then details of the copper cable that is being activated for NBN™ will be required. This is often referred to by the service providers as the FNN (Full National Number). If an active telephone line is at the property the FNN will simply be this active telephone number. If the end user has a naked DSL service the ULL reference number will be required. ULL stands for Unconditional Local Loop. The ULL reference is an identifying number that the service providers use for the naked DSL line. It is a 10 digit number starting with the numbers 161. It must be obtained from the naked DSL provider.

## NBN™ New Development Charge

In April 2015 the Minister for Communications announced that NBN Co would begin charging a New Development Charge for certain new development properties. This charge is charged where these new development properties want to connect to the NBN network.

Part of charge is described as an End User Contribution charge which came into affect in April 2016 and has a cost of \$300 inc GST. If your property is deemed a new development by NBN then this charge will apply when ordering and connecting to the NBN with Tangerine. Our team can confirm for you if this charge is applicable, in the vast majority of cases it is not applicable and only relates to newly developed properties.

## What happens at the activation appointment?

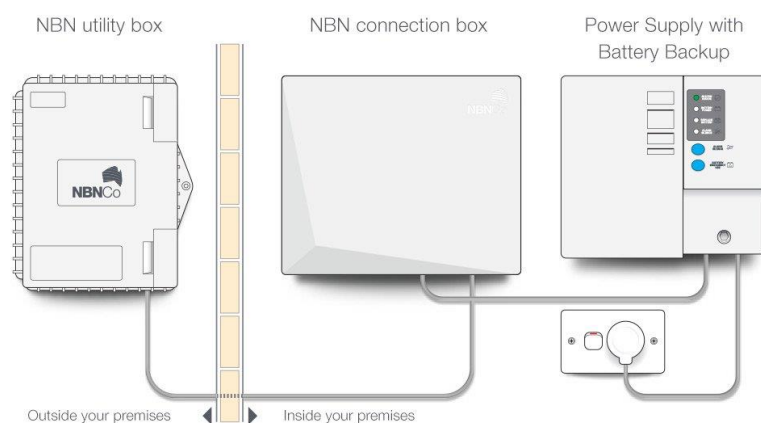
Due to the range of different delivery methods for NBN™ there is a range of activities that take place during an NBN™ activation. It also depends on whether NBN™ has been connected previously at a property or if an end user is transferring between retail service providers (RSP). We will break these down by the delivery method used for NBN™ and explain below.

### FTTP Activations

FTTP activations involve a fibre optic cable being installed right into the property. For new FTTP activations an NBN™ technician will require access to the property to complete the activation. They will install a Premises Connection Device (PCD) on the outside of the property (this is also known as an NBN Utility Box). They will then install a Network Termination Device (NTD) on the inside of the property. Mains power will be required to power the NTD inside the property.

The end user will then plug in an NBN™ compatible router to the NTD. This router will allow connection to the internet and provide Wifi services for the property.

It is important that the property owner or someone over the age of 18 is present during the FTTP activation. Decisions need to be made on where the equipment will be installed. Once the equipment has been installed it is very difficult to get it moved. The end user will also plug any fixed telephone services into the NTD or router. As such special attention should be given to the positioning of the equipment.



If NBN FTTP equipment has already been installed at a property a site visit by an NBN™ technician will not be required. Activation can take place remotely and the end user can simply plug their router into the relevant Uni-D port on the NBN™ connection box.

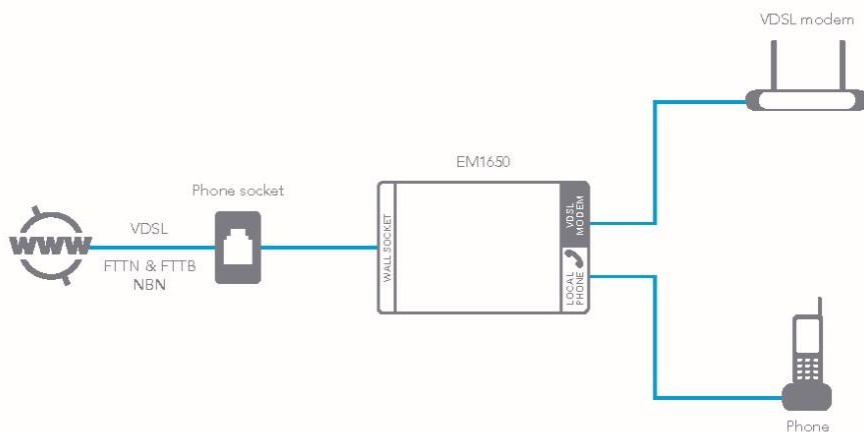
Up to 4 different NBN™ services can be active to the NBN™ connection box at any one time. It's important to ensure that the router is connected to the correct Uni-D port as advised by the retail service provider.

## FTTN/B Activations

FTTN and FTTB activations utilise the existing copper cabling that runs into a property. If existing copper cabling has not been previously connected NBN™ will install new copper. In some cases access to the property by NBN™ will not be required. On other occasions it will be. This should be highlighted after your order has been submitted and an appointment date has been scheduled for your activation. Tangerine advise the end user of this via email at the same time as advising the appointment date.

After the appointment has been completed, the end user will need to plug in their NBN™ compatible modem to the telephone wall socket that has been activated for NBN™. The modem must be VDSL compatible (please note that this is different technology to ADSL).

The end user should if required be able to continue to use their existing telephone service while NBN™ is running. For this to take place a filter splitter is required and it can be plugged in as shown in the diagram below. Most ADSL filters will work for this, however a VDSL filter is recommended.

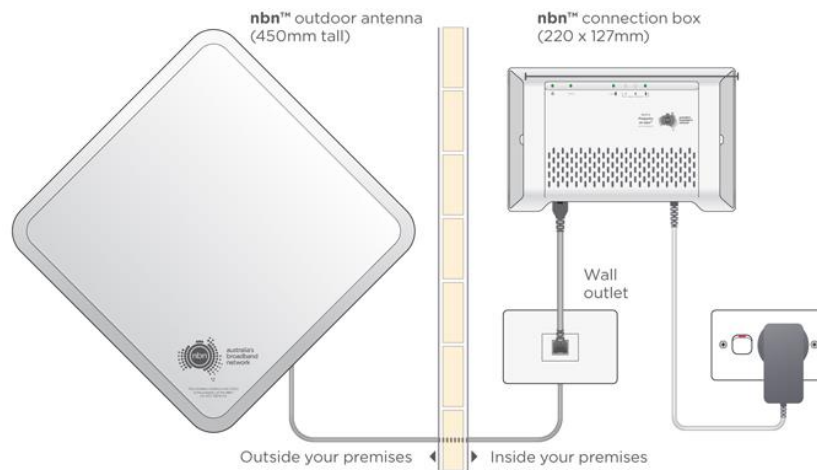


If a property has previously had a FTTN/B service activated then a site appointment by an NBN™ technician will likely not be required. This is also the case when transferring between different retail service providers.

## Fixed Wireless Activations

For new Fixed Wireless activations, a site visit by an NBN™ technician is required to complete the activation. The technician will need to install an NBN™ Fixed Wireless receiver on the side or roof of the property. There must be line of sight and the property must be within range of the nearest NBN™ transmitter tower.

The technician will also install NBN™ equipment inside the property. Mains power will be needed to power this equipment. The end user will then plug their NBN™ compatible router into this equipment. The router will provide access to the internet and Wifi services for the property. The diagram below shows how the equipment will connect together.

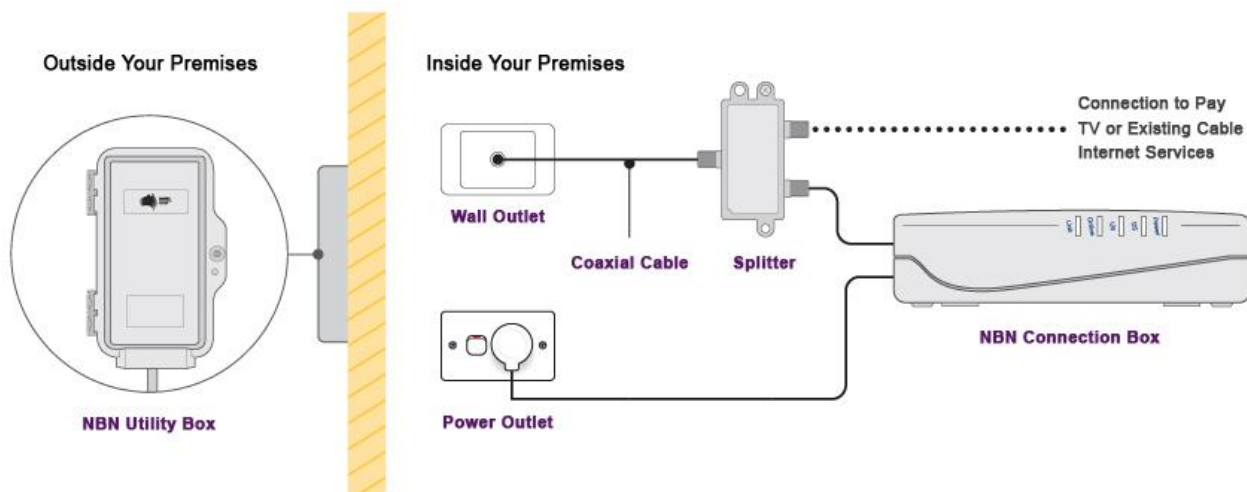


If NBN Fixed Wireless equipment has already been installed at a property a site visit by an NBN™ technician will not be required. Activation can take place remotely and the end user can simply plug their router into the relevant Uni-D port on the NBN™ connection box.

Up to 4 different NBN™ services can be active to the NBN™ connection box at any one time. It's important to ensure that the router is connected to the correct Uni-D port as advised by the retail service provider.

## HFC Activations

HFC activations make use of cable TV networks that are in most cases already in place in some urban areas. Some properties will already have the HFC socket installed in their property. In these cases the activation is quite straight forward and an NBN™ technician will come and plug in the NBN Connection Box as shown in the diagram below.



For properties that do not already have an HFC socket installed in their property further work will be required. This is the case for service class 21 and 22 activations. An NBN™ technician will need to complete installation work outside the property to connect the property to the existing HFC cables that is running in the area. This can often add lengthy delays to an activation.

Once any necessary work is complete the NBN™ technician will install the NBN Connection Box. The end user will then connect an NBN™ compatible router to this. The router will provide access to the internet and Wifi services for the property.

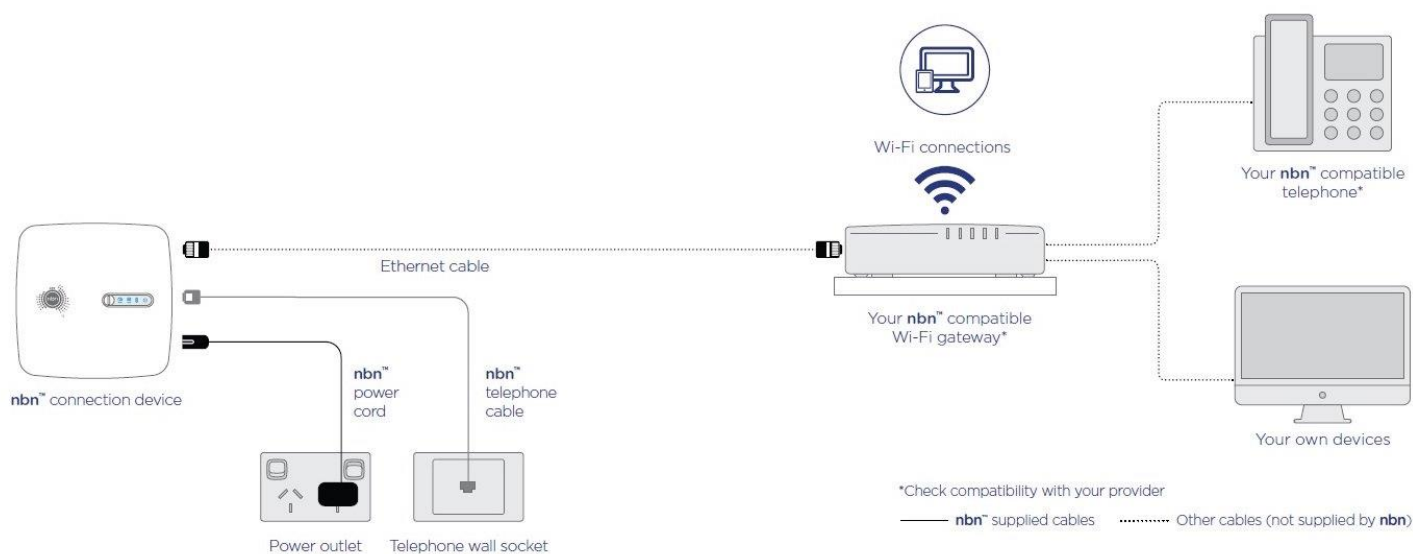


## FTTC Activations

With fibre to the curb technology there are a number of different scenarios that can play out during activation. It will depend on the buildings readiness for NBN, and the properties service class (SC) specifies this. We will describe the different scenarios and when ordering FTTC with Tangerine your service class will be confirmed.

For SC31 and SC32 connections and NBN technician will be required to attend the property. Here they will connect an existing copper line that runs into the property to a DTU (network terminating unit). This DTU will be positioned out the property in the street or underground in the pit. They will also deliver the NCD (network connection device). For SC33 connections, the NBN network carrier will despatch the NCD to the site address.

After the appointment is complete or after the NCD has been received the end user will be responsible for connecting the equipment. The NCD will connect to the existing telephone wall socket. And the NBN modem will connect to the NCD. The below diagram shows how the setup should take place.



There is often an 'activation time'. This is the time it takes for the NBN service to activate after the NCD and modem are plugged in. This can be anywhere up to 24 hours, but should be no more than 1 hour. It is important to wait until the date of any voice service transfer to ensure that internet and phones continue to work. Detailed information if emailed to users who have ordered FTTC services from Tangerine.

## Compatible End User Equipment

The end user of an NBN™ service will require compatible equipment to connect to the internet. The equipment needed will vary based on how NBN™ is delivered to a property.

For FTTP, Fixed Wireless and HFC connections, a WAN capable router will be required. There are a large number of these available on the market and most modem/router manufacturers have a range of WAN capable routers.

For FTTN and FTTB connections, a VDSL compatible modem is required. This connects in the same way as an ADSL modem but uses VDSL technology. Note that not all ADSL modems will support VDSL and it is important to check before assuming that an ADSL modem will work for NBN™.

It is recommended that the End User Equipment have Wifi capabilities as the NBN™ installed equipment does not provide Wifi services.

Some NBN™ retail service providers have other requirements to use a device on their network. It is important to check these prior to purchasing a device.

## NBN™ Voice Services

When NBN™ becomes available in an area some changes are needed if an end user wants to continue to use a fixed line telephone service. The biggest change is that an active NBN™ connection is required to continue to use a telephone service.

With NBN™ telephone calls are made and received over the internet in the form of VOIP (Voice of Internet Protocol).

In the case of FTTP NBN™ connections there are 2 Uni-V ports on the NBN™ equipment that can be used to plug a compatible analogue telephone into. For FTTN/B, Fixed Wireless and HFC connections a voice compatible modem/router must be used and a VOIP service provided from the retail service provider. This does often mean that existing telephone cabling in a property will no longer work.

Tangerine supplies VOIP compatible modem/routers and an analogue telephone can be plugged into the back of the modem/router.

### Phone Number Transfers (Porting)

Most NBN™ retail services providers can provide voice services and most support number porting. This is when an existing telephone number is transferred from the old Telstra copper network to the new provider of NBN™ voice services using VOIP technology.

The number porting process can take 1 – 2 weeks and involves the different carriers planning the transfer. Minimal downtime should be experienced during the porting but it is important to understand how your RSP will provide your VOIP service.

### Copper Disconnection

Copper disconnection is the term used to describe the final part of the migration of an area to the NBN™ network. Copper Disconnection is when traditional telephone services are disconnected in an area. End Users in an area will have 18 months from the time NBN™ becomes available to migrate existing telephone and internet services to the NBN™ network.

Failure to migrate services before the Copper Disconnection date is enforced will result in disconnection of old traditional services. This can lead end users to lose telephone numbers and not have access to landline or internet services.

For this reason it is important to make the decision on an NBN™ provider and get a service ordered ahead of the Copper Disconnection date.

## More Information and Questions

If you have more questions or require further information on the NBN™ feel free to give the team at Tangerine a call. The team can be contacted by dialling 1800 211 112 or by email: [hello@tangerinetelecom.info](mailto:hello@tangerinetelecom.info).

Full details on the Tangerine NBN™ plans can be found at our website: [www.tangerinetelecom.com.au](http://www.tangerinetelecom.com.au)