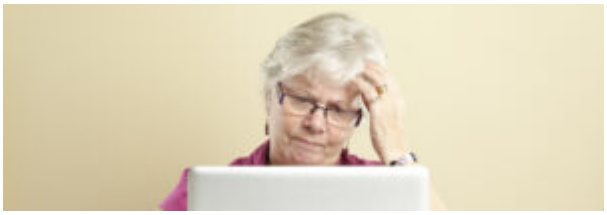
Connectivity definitions

Description

Connectivity Definitions

Want to know your bandwidth from your broadband? Here's a glossary of useful definitions of terms used when talking about connectivity.

Resources from nbn, Telstra, BIRRR and NFF have been used to collate these definitions.



A-C

Australian Communications and Media Authority (ACMA)

The Australian government agency responsible for the regulation of broadcasting, radio communications, telecommunications and online content.

Access plan

An (internet) access plan is an agreement between a customer and a retail (RSP) or internet service provider (ISP) for access to the internet. It typically involves a customer purchasing an allowance of data which allows them to access the internet, with the data allowance to be consumed within or over a period of time.

The allowance will usually specify a timeframe over which it can be used (ie per month) and, once used, may result in the user being 'shaped' or having no access at all.

An access plan is usually sold in terms of gigabytes which can be downloaded; in some instances, users can purchase unlimited data allowances. Plans often have a choice of speed tiers, where a consumer can pay more for a higher speed plan.

Access point

An access point (or Wi-Fi Access Point (WAP)) is a networking hardware device that allows other Wi-Fi devices to connect to a wired network.

AgTech

AgTech is any innovation used across the value chain to improve efficiency, productivity, profitability and/or sustainability. It includes hardware and software, business models, new technologies and new applications.

The new frontiers of AgTech are in the digital space, using data, tools and decision-support to assist agribusinesses to meet emerging consumer demands or enter new markets.

Asymmetric Digital Subscriber Line (ADSL)
ADSL is a type of DSL broadband communications technology used for connecting to the Internet. ADSL allows more data to be sent over existing copper telephone lines (POTS), when compared to traditional modem lines.

Backhaul

Backhaul refers to the side of the network that communicates with the global internet, and generally references which type of network or technology (mobile, fixed line, satellite etc) is being used to underpin individual internet access.

In an agricultural setting, backhaul may refer to the type of on-farm connectivity network deployed to support devices operating on-farm.

Bandwidth

Bandwidth refers to the throughput (uploads and downloads from a device) of the internet service. Speed of the connection. The number of users on the same connection, location and the type of devices are factors in relation to bandwidth.
Bandwidth is usually measured in kilobits, megabits or gigabits per second.

Base station

A base station is a wireless communications station installed at a fixed location and used to communicate as part of a telecommunication provider’s network. In an agricultural setting, a base station can also refer to a stationary
GPS/GNSS receiver for precision agricultural practices.

Bit

An abbreviated term for binary digit, the smallest unit of computer data. A bit is a basic unit of information in computing, essentially a ‘1’ or ‘0’. Bits per second (bps) Bits per second (bps) is a common measure for data transmission speed.
The speed in bps is equal to the number of bits transmitted or received each second.

Broadband

Broadband is a term used to refer to ‘always on’ high speed Internet.

business nbn® Satellite Service (BSS)
business nbn Satellite Service (often referred to as BSS) is an enterprise grade wholesale broadband satellite service provided by nbn. With business nbn Satellite Service connections an end user can choose the type of speed tier that suits their need through their RSP.

Byte (B)

A unit of storage measurement – a byte is made up of 8 bits. All information is stored or transmitted as bits and bytes, which determine the size of the document, picture, video clip etc that you may wish to download or send via email.

Cat M1 Category M1 (Cat M1)

A low-power wide area (LPWAN) cellular technology that is built specifically for IoT projects. Like most LPWAN networks, Cat M1 functions at its best when transferring low to medium amounts of data at a long range. It transmits small
packages of data from the field sensor noted to the server and requires a small amount of power which can be supplied by battery or solar.

Cel-Fi

A Cel-Fi device repeats an available mobile signal over a larger area. These devices are regulated by the Australian Media and Communications Authority (ACMA).

Citizens Band (CB) Radio

Citizens Band Radio (CB Radio) is a radio communications protocol using frequencies around 27MHz to enable one to many communications.

Cloud

Cloud refers to remotely-hosted managed services (of which storage may be one of these

services) that are accessed over the Internet. The cloud enables users to access the same files and applications from almost any device, because the computing and storage takes place on servers in a data centre, instead of locally on the user device.

Cloud computing

Provision of services, software, storage and security over the internet. In simple terms, it allows access to information/programs etc. on multiple devices in multiple locations. By using cloud computing, users and companies don't have to manage physical servers themselves or run software applications on their own machines.

Connectivity Literacy
Connectivity Literacy refers to the knowledge a consumer needs to access and maintain suitable, affordable, and reliable voice and broadband services. It encompasses understanding how to choose appropriate technologies, providers, and service plans, as well as how to select and upgrade equipment and troubleshoot connectivity issues.

Cyber safety

The safe use of information and telecommunications technology (including mobile phones) and the internet.

D-F

Data

In computing, data is described as information that has been translated into a form that is efficient for movement or processing by electronic means.

Data interoperability

Interoperability is a characteristic of a product or system to work with other products or systems and share data without interference or confusion.

Data plan

See 'Access Plan'.

Device

A gadget that collects and transmits data e.g., soil moisture probes, water level sensors, electric fence sensor, weather stations. Each device will have a technology embedded, such as a

microchip and radio transmitter, allowing it to sense and communicate data via a network to a central server.

Digital inclusion

Ensuring everyone has the access, confidence and skills – regardless of age, income, ability or location – to enjoy the benefits of modern communications technology.

Digital Literacy

Digital literacy is all of the skills and knowledge needed by a consumer to use technology, navigate various digital platforms, understand and communicate through them.

Download
A download is any activity that transfers data to your computer from another one. Viewing a web page is downloading, because all the words, pictures and links on that page have to be transferred to your computer and contributes to any download limits placed on your account by your Internet service provider. Other activities like retrieving emails, listening to music, watching a video or chatting online are also downloads.

eHealth

eHealth is the sharing of health resources and provision of healthcare by electronic means. It encompasses three main areas:

- The delivery of health information, for health professionals and health consumers, through the internet and telecommunications
- The use of information technology and e-commerce to improve public health services (for example, the delivery of training services for health workers)
- The use of e-commerce and e-business practices in health systems management.

Exchange

An aggregation point for wired telecommunications services. Exchanges are also utilised for providing backhaul transport for mobile and fixed communications.

Frequency

These are the radio bands over which wireless signals broadcast.

G-I

Gateways

Access points, which can include antennas, that send and receive signal between devices and networks. Gateways usually connect two networks together, enabling one to connect to the internet. One gateway can connect many networks to a single connection to the internet, such as a LPWAN to a higher bandwidth broadband network. In a mesh network, a gateway often refers to the main/central point of connection to the modem.

Geostationary (GEO) satellite
Geostationary (GEO) satellites are located more than 35,000km from earth and enable communication between a fixed range of latitude and the satellite. One consequence of GEO satellites is the higher latency experienced, given their distance from the earth.

Gigabyte (GB)

One billion bytes, or 1,024MB. It is usually used to refer to data volume.

Gigabit(s) per second (Gbps)

Gigabit(s) per second, or Gbps, is one billion bits per second. It is usually used to refer to data speed.

Internet of Things (IoT)

The Internet of Things, or IoT, refers to the billions of physical devices around the world that are now connected to the internet, all collecting and sharing data. In agriculture the term is often used to describe sensors/stations in the
field or in machines. Devices can be remotely monitored and controlled (including some in real time), and can include anything from pumps, sheds and tractors to weather stations and computers.

IoT communications network

A network designed specifically to connect IoT-capable devices and sensors to a backhaul communications network.

IoT device

A device, such as a soil moisture probe, often with minimal power requirements, capable of recording, collecting and sending data via wired or wireless communication.

Internet Service Provider (ISP)
An organisation that offers access to the Internet to its customers. See also: Retail Service

Provider (RSP).

J-L

Kilobit(s) per second (Kbps)

Kilobit(s) per second, or Kbps, is one thousand bits per second. It is usually used to refer to data speed.

Kilobyte (KB)

One thousand bytes, or 1,024B. It is usually used to refer to data volume.

Land connected

A landline telephone connected via wires to an exchange which can be used to make voice calls.

Latency

Latency is the term used to indicate any kind of delay that happens in data communication over a network. Latency is often more noticeable with satellite connections and is attributable to the time it takes data to travel from earth to a satellite and
back to the network's base (receiving) station.

Local Area Network (LAN)

A network of devices connected together in a single location.

LoRaWAN®

The LoRaWAN® specification (Long Range Wireless Access Network) is a LPWAN protocol designed to wirelessly connect battery operated 'things' to the internet in regional, national or global networks, and targets key Internet of Things (IoT) requirements such as bi-directional communication, end-to-end security, mobility and location services. It uses lower radio frequencies with longer range between gateway and devices to cover large areas. LoRaWAN® frequencies are determined by national / regional regulators – in Australia, the allocated frequency is 915-928MHz. Care should be taken
to ensure that any imported devices can operate within this frequency. Other common spectrum frequencies used by LoRaWAN® around the world include:

- US 902-928 MHz
- EU 863-870 MHz
- China 470-510 MHz and 779-787 MHz

Low Earth Orbit (LEO) satellite

Low Earth Orbit (LEO) satellites, or constellation satellites, are an interconnected network of satellites operating between 250km and 2,000km above the earth. LEO satellites used for communications purposes typically have lower latency than geostationary (GEO) satellites, however because of the speed that a LEO satellite orbits the earth, many satellites are required in order to supply a constant connection.

Low Power Wide Area Network (LPWAN)

Low Power Wide Area Network (LPWAN) describes a variety of low power, low cost and long-range technologies used to connect IoT devices to a network. LPWAN encompasses a range of approaches including LoRaWAN, Sigfox, Cat M1, NB-IoT and others.

Long Term Evolution (LTE)

Long Term Evolution (LTE) is the name given to 4G networks used in mobile telephony.

M-O

Machine to Machine (M2M)

Machine to Machine (M2M), refers to objects that can communicate to each other, for example two or more autonomous tractors may communicate their location to each other.

Megabit(s) per second (Mbps)

Megabit(s) per second, or Mbps, is one million bits per second. It is usually used to refer to data speed.

Megabyte (MB)

One million bytes, or 1,024KB. It is usually used to refer to data volume.

Mesh

A mesh network (or mesh Wi-Fi) is a network system that transmits (or repeats) Wi-Fi evenly over an area through a network of remotely located devices. Instead of functioning like a Wi-Fi

repeater, mesh Wi-Fi spreads Wi-Fi signals out evenly. In most systems, a central wireless router connects to multiple nodes or gateways that take the connection signal and repeat it. Mesh networks operate well in large homes, or in homes with thick walls, where signal repeaters can provide a consistent signal strength throughout the building. In an agricultural setting, a mesh network might be used in a
large shed or structure to spread coverage evenly. Most mesh networks will require a power source to operate each repeater node.

Metered data/content

Metered data or content refers to the way data transmitted by browsing the internet is counted. An access plan may specify the maximum amount of data which can be consumed by an individual customer over a specified period. Once the data limit is reached, the customer may be ‘shaped’.

Microwave

A transmission type that transfers information by electromagnetic waves across both short and long distances. Microwave signals are normally limited to the line of sight; longer distance transmission may require a signal repeater.

Mobile

A network with a series of mobile base stations that relay a wireless signal, that allows devices to connect and transmit and receive data e.g., mobile phone networks. See also Long Term Evolution (LTE).

Mobile broadband

Mobile, or wireless, broadband refers to internet access supplied via the LTE or mobile phone backhaul network.
While the specific technology used to provide mobile broadband services varies, each service provider uses radio frequencies to transmit and receive data between their customers and a local transmission point. Normally, this requires a number of base stations, similar to mobile phone towers, which transmit to customers who have a small transmitter/receiver located at the premise requiring connection.

Modem

A device which connects a home network to the internet. In some situations, the network termination device is also the modem. See also: Router, nbn Connection Box, Network Termination Device (NTD).

Managed Service Provider (MSP)
A managed service provider is a provider that services and maintains the operation and delivery of

devices, internal network and connectivity past the point of the network termination device.

Multi Dwelling Unit (MDU)

Typically refers to blocks of flats, apartments etc.

Narrowband

Refers to an ‘always on’ network used to connect IoT devices.

Narrowband IoT (NBIoT)

Narrowband IoT (NB-IoT) is a Low Power Wide Area Network (LPWAN) radio technology standard to enable a wide range of cellular devices and services.

National Broadband Network (NBN)

A high speed broadband network that is planned to reach Australian households with a combination of different technologies.

nbn Connection Box

Also known as an NTD or Network Termination Device. This is the box that is installed in your home where you connect a router to enable access to the internet. See also: Network Termination Device.

nbn® Fibre to the Node (FTTN)

An nbn Fibre to the node (FTTN) connection is utilised in circumstances where the existing copper network will be used to make the final part of the nbn network connection, from a nearby FTTN cabinet or micro-node to your premises. The fibre node usually takes the form of a street cabinet. Each street cabinet will allow the nbn network signal to travel over optic fibre from the exchange to the cabinet and connect with the existing copper network to reach the premises.

nbn® Fibre to the Premise (FTTP)
An nbn Fibre to the Premises connection (FTTP) is used in circumstances where an optic fibre line will be run from the nearest available fibre node, to your premises. FTTP also requires an nbn network device to be installed inside the connected premise. This device requires power to operate.

nbn® fixed line

nbn fixed line refers to a residential- or enterprise-grade wholesale broadband service operating to a premise and supplied by a copper wire, coaxial or fibre optic cable. Fixed line connections are

usually found in built-up areas of Australia; as
of November 2022, 79% of regional Australians connected to the internet with the nbn network are connected via nbn fixed line technology. These are often referred to as FTTP (Fibre to the Premises), FTTC (Fibre to the Curb), FTTB (Fibre to the Building), FTTN (Fibre to the Node) or HFC (Hybrid Fibre Co-Axial).

nbn® Fixed Wireless

nbn Fixed Wireless is a residential-grade wholesale broadband service operating predominantly in semi-rural, regional and remote Australia. Fixed Wireless connections are supplied from 2,200 base stations which transmit a signal over a distance (presently up to 14km, increasing to up to 29km by 2025) and are received by an antenna connected to the property.

nbn® Sky Muster®

nbn Sky Muster® is a residential-grade wholesale broadband satellite service provided by nbn and available in places where fixed line or nbn Fixed Wireless services are not available. nbn Sky Muster plans are data-capped and operate with speed limitations.

nbn® Sky Muster® Plus
nbn Sky Muster Plus is a residential-grade wholesale broadband satellite service provided by nbn and available in places where fixed line or nbn Fixed Wireless services are not available. Since 1 July 2022, the only internet activity that counts towards the monthly data allowance on nbn Sky Muster Plus plans is video streaming services and VPN use between 4:00pm to 12am midnight daily. All other internet activity continues not to count towards the monthly data allowance for the remaining 16 hours of the day (12am midnight – 4pm). nbn Sky Muster Plus plans have the ability to burst above speeds of 25/5Mbps where network conditions allow.

Network

The infrastructure that enables two or more physically or wireless connected components to exchange data.

Network Service Provider

A provider who specialises in supplying and managing networking services on a commercial basis.

Network Termination Device (NTD)
The point of interconnection in a premise where a modem is connected to the backhaul provider’s network. See also nbn Connection Box.

Node

A network communicating device that connects several devices or sensors to a gateway.

Open source

Open Source refers to the full programming code which has been made freely available for modification, editing, and transfer for community benefit.

P-R

Platform

A platform refers to the means by which information collected by a device and shared across the network is presented to the user in a meaningful format. This includes visualising sensor data via a dashboard interface. A platform is often connected to the internet via an interface (where cloud storage may be used), or may be proprietary (requiring connection to the data source). Some common types of platforms include Facebook, Twitter, YouTube and Spotify.

Point to Point (P2P)

Point-to-Point (P2P) wireless connections are used to connect two locations together using directional antennas with line of sight. They use a combination of small, powerful, highly-directional aerials, routers, and cables to set up the connection.
The connection can be used to receive and rebroadcast any computer network from one location to another – including an internet connection – for up to 50km from the original point. The connection can also be called a Wi-Fi bridge, or wireless bridge.

Point to Multi Point (P2MP)
Point to Multi Point (P2MP) wireless connections are used to connect two or more locations together from a central point which has line of sight.

Protocols

A communications or network protocol is the specification of a set of rules for a particular type of communication. Protocols are standards that dictate how electronic systems “talk” to each other. Wireless communications have their own protocols, all starting with the numbers “802”.

Range

The distance that a signal can travel to connect to and service an end device.

Repeaters

A device that receives a signal and amplifies or re-transmits it. It is used to extend the range of base station signals and to expand coverage and will sometimes require power to operate.

Retail Service Provider (RSP)

A retail service provider (RSP) is the interface between the wholesale service provider and the customer/end user.
A customer will purchase access to the internet from an RSP through an access plan which specifies the terms and conditions of access.

Router

A router receives your internet connection, distributes it to your computers and devices and is capable of distributing it to multiple devices simultaneous. A router's internal computer can manage the connection in a variety of ways and allows computers and devices to communicate with each other. The connection can be routed via cables or wirelessly (Wi-Fi).

S-U

Satellite

A communications vehicle orbiting the Earth. Satellites typically provide a variety of information from weather data to
television programming. Satellites send time-stamped signals to GPS receivers to determine the position on the Earth.
See also: Geostationary satellite, Low Earth Orbit (LEO) satellite, nbn® Sky Muster®, nbn® Sky Muster® Plus.

Secured

Has security measures in place, such as a password, to protect the device from a malicious attack.

Shaped data

Shaped data, or shaping, refers to the experience of a customer who has used all the data allocated in their access plan, and usually results in the connection speed experienced by the customer slowing down. Shaping will usually end once the next period (as specified by the access plan) begins.

SigFox

An inexpensive, reliable LPWAN solution used to connect sensors and devices. See also: Low

Power Wide Area Network (LPWAN).

SIM

A subscriber identity module, or SIM, card is used in devices connected to an LTE network and provides the device with a unique international identification feature enabling two-way communication.

Spectrum

The radio frequency bandwidth on which a gateway and device communicate. Mobile networks use radio transmission to carry signals through the air just like radio and television. The spectrum we use is defined by where on the dial we sit (the
frequency) and how much of the dial we take up (the spectrum bandwidth). The more spectrum bandwidth we have access to, the greater the amount of information we can carry and the more users we can support on our network.

Terabyte (TB)

One trillion bytes, or 1,024Gb. It is usually used to refer to data volume.

Terabit(s) per second (Tbps)

Terabit(s) per second, or Tbps, is one trillion bits per second. It is usually used to refer to data speed.

Ultra-High Frequency (UHF)

Ultra-High Frequency (UHF) is a radio communications protocol using frequencies between 300MHz and 1GHz to enable communication.

Ultra-High Frequency Citizens Band (UHF CB)

Ultra-High Frequency Citizens' Band (UHF-CB) is a licensed spectrum allowing two-way communication between licenced parties on the 477MHz band.

Unmetered/uncapped data

Unmetered/uncapped data refers to data transmitted over the internet that does not count towards the data allowance purchased in your access plan.

Unsecured

Has no security measures to protect devices from a malicious attack.

Uninterrupted power supply (UPS)

A battery system which ensures continuity of power supply in the event of a power outage. A UPS may be necessary to ensure continuity of connectivity where powered repeater systems are installed. Solar panels connected to a battery system are an example of a UPS.

V-Z

Very High Frequency (VHF)

Very High Frequency (VHF) is a radio communications protocol using frequencies between 30MHz and 300MHz to enable communication.

Virtual Private Network (VPN)

A Virtual Private Network (VPN) sets up a secure “encrypted” connection for an entire internet connection. Regardless of what you’re connecting to, people can’t see (and therefore steal) your data.

Voice

Voice is often referred to a type of telecommunication technology. See also: Voice over IP (VoIP), Land Connected and Mobile.

Voice over IP (VOIP)

Voice over IP (VoIP) is a service that uses the internet to make voice calls to any other phone number in the world, rather than using a traditional LTE connection. Data used in VOIP calls may be metered and count towards data allocations specified in your access plan. See also: Wi-Fi calling.

Wholesale service provider

A wholesale service provider is typically a backhaul network provider responsible for delivering a telecommunications network, or public utilities. nbn is an example of a wholesale service provider.

Wide Area Network (WAN)

A network that allows computers and devices to communicate with each other across large geographic areas.

Wi-Fi

A facility allowing wireless network enabled technology to connect and communicate with an attached network, such as local, business or internet networks.

Wi-Fi calling

Wi-Fi calling uses your compatible mobile telephone to make calls and send and receive SMS and MMS using the internet rather than your mobile service. See also: Voice over IP (VOIP).

Wireless

A system using radio signals rather than wires to connect computers, sensors, mobile phones, etc. to each other.
See also: Wi-Fi.

Wireless broadband

See mobile broadband or nbn® Fixed Wireless.

Wireless access point

See Gateway or Access Point.

WISP

Wireless Internet Service Provider. In Australia, a range of private businesses offer non-nbn fixed wireless connections. Typically, these businesses are referred to as ‘WISPs’ (Wireless Internet Service Providers).

Yagi

A type of directional antenna comprised of 2 or more parallel antenna elements, commonly used to connect legal mobile-repeaters or cellular-based modems. Yagi antennas typically have medium to high gain, which makes them suitable for increasing signal type in rural and remote areas.

Still having issues? Give us a call.

Chat to us on our hotline with one of our team members and let’s get the conversation started. If we don’t answer, we’ll get back to you in no time at all.

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