The nbn LTSS and you.

Current indications are that the rollout of the nbn LTSS satellite will commence in mid 2016 and be completed by mid 2017. The rollout will be divided into geographic areas with multiple teams performing the installations.

In most cases, the changeover from your existing Sat to the nbn Sat will simply involve unplugging the computer cable from your existing satellite modem and plugging it into the new nbn one.

Before we get going, here is a Techspeak translator.

Tech Speak to Home Tutor Translation

Things	Computers, printers, external hard drives, IPads, Routers, Switches.
Network	A collection of things that have been connected together.
Local Network	The one at your place
Ethernet	A data transmission method using cables to connect things together
Ethernet 1000/100/10	The speed in Megabits of your Ethernet computer network. The faster the better.
Ethernet External Hard drive	A hard drive which plugs into the Ethernet network, this allows all users to share the same hard drive.
Network Switches	A thing that takes a single Ethernet connection and converts it to many (4&8 is typical) but without Wi-Fi and firewall capabilities.
ISP	Internet Service Provider e.g. BigPond.
Modem	A box that sucks a signal in and puts Internet data out.
Multiple ISP Access	nbn modems have the ability to connect to a number of ISPs. This means you could have a company internet account, a domestic internet account, and an education internet account. The usage on each account is measured and billed separately.
PowerLine Extender	This is a thing that allows data to be transmitted over the wires used for your power. First choice would always be to use a Ethernet cable as it is likely faster and more reliable but cable is not always practical.
Routers	A thing that takes a single Ethernet output from the modem and converts into multiple connections using Ethernet and Wi-Fi so that you can connect multiple things to the internet and to each other. It also acts as a firewall
Firewall	Stops nasty people breaking into your computer. It is NOT virus Protection. If a computer does not have a firewall, it is estimated it will take about 10 minutes for hackers to gain access and create havoc.
Virus Protection	Minimises the risk of getting a very sick computer from nasty software bugs.
Wi-Fi	A data transmission method that uses radio to connect things together.
Single Band Wi-Fi	A Wi-Fi Radio that only works on 2.4Ghz.
Dual Band Wi-Fi	A Wi-Fi radio that works in the 2.4Ghz and 5Ghz bands. Because you can split things to different transmitters, things work faster.
Wi-Fi Access Point	This is a thing that will convert a Ethernet wired data signal to a Wi-Fi radio data signal
Wi-Fi Extenders	This is a thing which picks up a Wi-Fi signal and boosts it. Your school room may get a weak Wi-Fi signal and not work reliably, this thing may be able to get enough signal into the school room. It is also good for that dead spot in the lounge.

The nbn modem has the facility to have multiple independent ISP accesses.

An enhancement with the nbn modem over your existing modem is that it is capable of local networking at a maximum speed of 1000 Mbps, where your existing modem would likely have a maximum speed of 100 Mbps. The nbn modems local network speed will be determined by the speed capability of the equipment connected to it so if necessary it can reduce its speed to 100Mbps to maintain compatibility.

NOTE :- 1000Mbps Ethernet uses all 8 wires in the cable. The use of Ethernet cable Splitter units that allow 2 computers to use the same cable will restrict the speed to 100Mbps.

The higher speed should be taken into account If new equipment is being purchased, also the latest Wi-Fi routers have the capability of a much higher Wi-Fi speed than earlier ones. An Ethernet external hard drive becomes almost as fast as an internal hard drive when a local network is running at 1000Mbps

Home school room

If you have a home school room, things may get a bit more complex.

Currently there is a proposal to provide a dedicated access for Students (Primary/High School & Tertiary etc). their usage will not count against the household account. Should this proposal proceed, it will be necessary to split your home network into a domestic / business section that is independent from the education section.

How to connect the Internet modem Education Port to the school room.

One of the following is likely your choice:-

1. An Ethernet cable direct to computer or to a Router / Ethernet Switch.
2. Wi-Fi from a Wireless Access Point at the internet modem
3. An Ethernet Powerline Extender to the computer or to a Router / Ethernet Switch

The solution for a particular school room will depend on the location of the Internet modem and the school room plus the number of students to be accommodated so it will vary from place to place.

Single student / single computer

Where there is only one school room computer that is cabled from your existing router, it may be as simple as unplugging from your existing router and plugging into education port on the nbn modem.

If the school room computer currently uses Wi-Fi from what will become the domestic wireless router, it will be necessary to establish a second Wi-Fi system to feed the home school room under the proposed dedicated education port. If the school room is close enough run a computer cable or if suitable a powerline network extender to school room. See the Appendix "Hardware lists" for comments on different technology types.

Use USB ports to connect the Printer & External hard drive to the computer or you could use a Wi-Fi router, Wi-Fi Access Point or network switch to connect the computer, printer and external data hard drive back to the education port as required.

Tablets could make use of the Wi-Fi from the school room router or Wi-Fi Access Point.

Multiple students / multiple computers

Where there are multiple devices in the school room, it would be worth looking at locating the Wi-Fi router in the classroom and connecting the computers, printers and external hard drive directly by cable. This has the potential to create a Gigabit (1000Mbps) network in the school room.

 Tablets could make use of the fast Wi-Fi from the school room router.

Security

While it is likely that it has been unnecessary to have security on your Homestead Wi-Fi network due to your isolation, I would recommend Security be set up on both the domestic and the new educational Wi-Fi routers / Wireless Access Points. This will prevent any educational devices straying onto the domestic network. Any educational usage on your domestic network would count as normal usage on that account. Securing the educational network prevents non educational devices straying on to it and will prevent any issues this could cause.

The nbn LTSS and you. Appendix

Hardware list.

Here is a list of hardware which is provided to give you a general idea of what to look / ask for.

There are many suppliers who provide similar products. You should discuss what is suitable for you with your IT supplier.

I have found Jaycar have a good range of products, it would be worth investing in one of their catalogues. It will give you a good starting point into what is available.

How do I buy my "things".

First, check around before you go to your Computer Shop / IT supplier so you have an idea of costs. I have seen the same item in a shop that is dearer than the same shop on line. If so, ask for the on line price.

I would always try my local Computer Shop / IT Supplier first, then I try Jaycar, Office Works, Netcomm Wireless, Harvey Norman etc in no particular order.

Be careful of any real cheapie items as they may not have the performance and reliability of similar items.

A typical shopping list is at the end of this document.

Ethernet Cables

A good quality Cat 5E cable can support 1000Mbps link to about 100 Metres, if a longer length than that is required, an Ethernet extender is required. An Ethernet Gigabit switch can be used as an extender. It should be used in the midpoint of the cable run, it will not work if used at the ends.

Off the shelf cables come in various lengths up to 30 Metres, any cable longer than this will likely have to be made for you. Your IT supplier may the right gear to do this as it is a simple task.

Ethernet Cable Joiners

Jaycar YT-6081 RJ45 Inline Joiner for Ethernet cables.

Jaycar PS4064 Waterproof RJ45 Cable Connector Housing

It always best to use a cable with no joiners, this is not always possible.

Joiners will allow 30 Metre Ethernet cables which is commonly the longest available off the shelf length to be extended. The joiners MUST be kept clean and dry or problems will develop over time.

Ethernet Power Line Extenders

Netcomm Wireless NP511   500Mbps powerline kit with AC pass through

Netcomm Wireless NP508 500Mbps powerline kit with Dual Band Wi-Fi (I am using this unit to get Wi-Fi Internet into my Wife's sewing shed.)

TP-Link AC500 Powerline Ethernet Adaptor (I have used this one)

Are just a few of those available.

NOTE:- I have found powerline extenders to be a good tool but they have a number of limitations.

Powerline extenders are good for about 100 metres. This is measured from the power point they are plugged into, back to the power box, allowing for the wiring in the walls. Ideally, they should be on the same power phase. A cable should always be the first choice. A cable may take a bit longer to install but it should then be trouble free. But powerline extenders are handy in a difficult situation.

Having 2 different Powerline Ethernet extenders trying to work in the same house will be unlikely work as they may interfere with each other. If you want multiple locations, you can get 2 sets that are the same and combine them into the one network. I know you can do this with the Netcomm ones, so check before you buy.

Wi-Fi Giga Net Routers

D-Link DWR-116 Wireless Multi-WAN Router (Single Band) (good value for a small site)

Netcomm Wireless N600 Dual band Wi-Fi Gigabit Modem/Router (this includes a ADSL Modem which would not be used)

Telstra Gateway Max Dual Band Wi-Fi Gigabit Modem/Router (this includes a ADSL Modem which would not be used.)

These are a couple of the units available. If Wi-Fi is not required, a Gigabit Ethernet switch could be used in its place.

Ethernet Switches

TP-Link TL-SG1008D 8 port Gigabit Switch.

Netgear GS105 5 Port Gigabit Ethernet Switch (1 in / 4 out)

Wi-Fi Extenders

Netgear WN3000RP Universal Wi-Fi Range Extender (I have used this one successfully)

Netcomm Wireless NP127 AC750 Dual Band Wi-Fi Extender.

This unit has the capability of becoming a Wireless Access Point when it is connected back to the Router via an Ethernet cable, making it perfect for a Wi-Fi only classroom

There are a number of Wi-Fi extenders available, most receive the signal from the Wi-Fi router and then rebroadcast it on the same channel. This does push signal into dead spots but can reduce the effective speed of the link. They can be a necessary evil.

Jaycar YN8330 High Power Wireless Outdoor Router/Range Extender 802.11n

I have used this unit, it connects back to the router via an Ethernet cable and then transmits a standalone Wi-Fi signal. It is very handy for bridging the gap between buildings where cable is not practical. One DE family is using one to bridge the 300 metres to the school room.

Wi-Fi to Ethernet Converters

If you are currently operating from a Mobile Phone Wi-Fi Data device to connect the home school room to the internet it is possible to convert a Wi-Fi data signal to Ethernet data source. This is handy if you want to connect non Wi-Fi devices.

NETGEAR Universal N300 Wi-Fi to Ethernet Adapter (WNCE2001) (Single Port)

Jaycar YN8361 Wi-Fi Bridge (100Mbps- 4 ports) (I am using this unit to connect my TV, Blu-ray Player and a PC in my entertainment system to my local network via Wi-Fi)

They are often sold to connect smart TV's and the like to Wi-Fi internet. They come in single Ethernet outputs or those which include an Ethernet Switch giving 4 outlets.

Ethernet connected Hard Drives

There are a number of Ethernet external hard drives available, this is just a few.

Western Digital My Cloud 2TB 3.5 inch NAS Hard Drive USB 3.0 Gigabit Ethernet (External)

I am currently using a Western Digital 4Tera Bit (4000 Gigs) MyCloud unit.

I store photos, movies plus I backup my computers to it as well.

Currently I have 6 computers & tablets sharing the one drive and of course, my smart TV for the movies and music.

Uninterruptable Power Supplies

Your satellite modems, routers, switches, computer, printers and external hard drives will benefit from stable power. There are 2 basic types of UPS units.

1. Change Over – the power goes bad and the power switch to a battery powered inverter.
2. Regulating – the UPS tries to smooth the power by keeping the output voltage the same over a wide range of input variations. If it gets too bad, it will switch to a battery powered inverter. (I have a couple of these, on my computer gear, on my entertainment gear, plus importantly on my wife's electronic sewing machine. We have never lost anything to power line related problems. We get a lot of lightning around here!)

I have purchased my UPS units from Jaycar but there are many suppliers. Always buy a bigger unit than necessary as that will give you some reserve capacity plus a longer battery life if the power goes off. I always use a Regulating UPS, I am using the 1500VA unit listed below.

Jaycar Line Interactive UPS 650VA   MP-5206

Jaycar Line Interactive UPS 1500VA   MP-5207

Sample Shopping Lists.

1. Ethernet cable from the school room directly to Internet modem. We are assuming it is a distance of 60 metres and a single computer.
   a. 2 – 30 metre Cat5E Ethernet (Blue) cables
   b. 1 – RJ45 inline joiner.
   c. 1 – Waterproof RJ45 cable connector housing (if required)

2. Wi-Fi Access Point located at the Internet Modem (this would replace the Wi-Fi connection from the existing Router)
   a. 1 to 2 metre Cat5E Ethernet cable
   b. 1 – Wireless Access Point

3. Wi-Fi Access located in or close to the school room (this would replace the Wi-Fi connection from the existing router which gave poor signal strength in the school room) We are assuming 30 metres to the school room.
   a. 1 – 30 metre Cat5E Ethernet (blue) cable
   b. 1 – Wireless Access point.

4. Multiple Students with 2 computers. Wi-Fi is required.
   a. Ethernet cable from internet modem to school room
   b. Ethernet Router with Wi-Fi
   c. Ethernet cables from Router to Computers, Printers
   d. Ethernet External Hard Drive.

   How to do it.

   e. Run a cable from the Internet modem to the school room.
   f. Connect the cable to a Router (4 output ports) with Wi-Fi
   g. Connect 2 - Computers to Router by Cable
   h. Connect Ethernet hard drive by cable to Router
   i. Connect Printer by cable to Router
   j. Connect any tablets or other devices to the Wi-Fi

Note:- If Wi-Fi is not required an Ethernet Switch can be used in place of the Router.

5. More than 2 computers in the school room. Wi-Fi is required.
   a. Ethernet cable from internet modem to school room
   b. Ethernet Router with Wi-Fi.
   c. Ethernet Switch
   d. Ethernet External Hard Drive
   e. Ethernet Cables from Router to Computers and Printer

   How to do it.

   f. Run a cable from the Internet modem to the school room.
   g. Connect the cable to a Router (4 output ports) with Wi-Fi
   h. Connect an Ethernet Switch by cable to a port on the Router,
   i. Connect Ethernet hard driver by cable to Router
   j. Connect to printer by cable to an output on the Switch.
   k. Connect by cable the most used computers to the router with the balance on the switch

Note:- If Wi-Fi is not required an Ethernet Switch can be used in place of the Router.

NOTE:- If it is not possible to run a cable to the school room, the use of an Ethernet Power Line could be considered. See Hardware list for limitations.
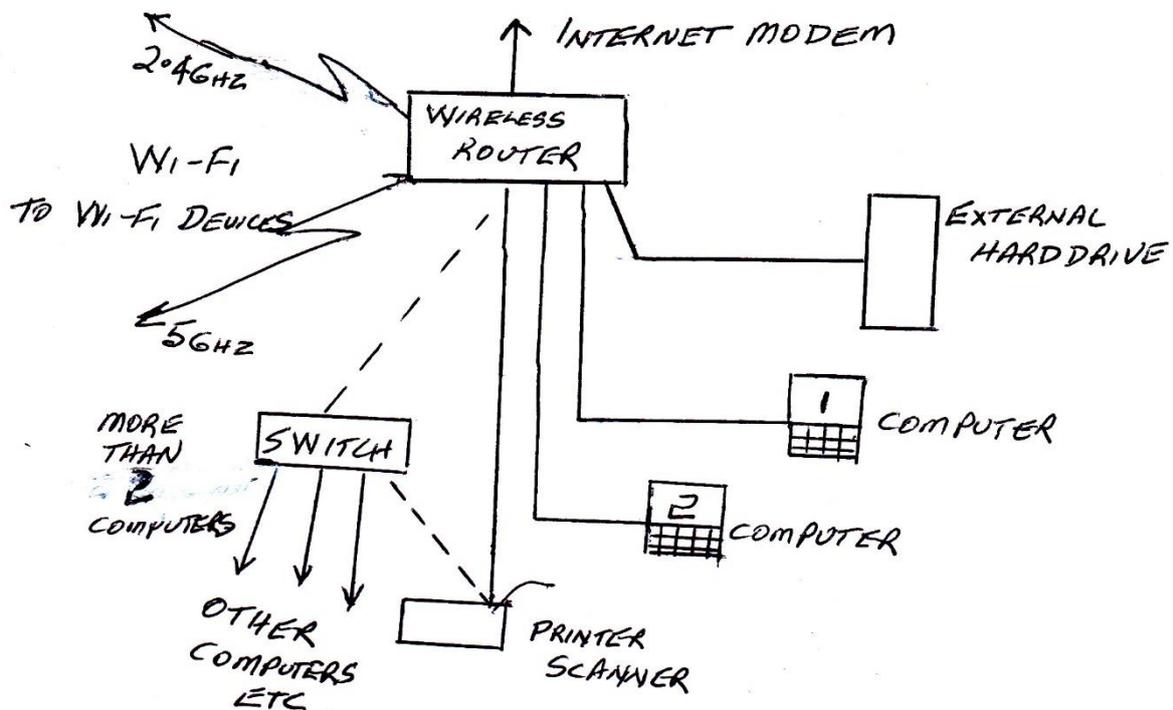
School Room Network

6. Wi-Fi in a location where an Ethernet Powerline Extender is used.
   a. 1 set Powerline extenders with Wi-Fi
   b. Ethernet cables to connect unit to internet modem

   How to do it.

   c. Connect Main Powerline extender to internet modem by Ethernet cable.
      Plug unit into a power point.
   d. Plug the Remote Powerline extender into a power point.
   e. Link Devices by Wi-Fi to extender.
   f. Some of the remote units have an Ethernet outlet, this can be used for the printer or external hard drive.

See Hardware list for limitations.