

Updated 19/06/2018 by EM

Choosing the right Wi-Fi router for your home.

Introduction

One of the most common communications we receive relates to broadband speed. We can check the link to your house, but cannot see how well the equipment inside your house is performing. The problem is usually related to the Wi-Fi and often a new Wi-Fi router is needed; this note explains how to choose one.

Tove Valley Broadband does not recommend any particular router – we suggest models which conform to a specification. It is up to the member to research the market and make their own choice from those available.

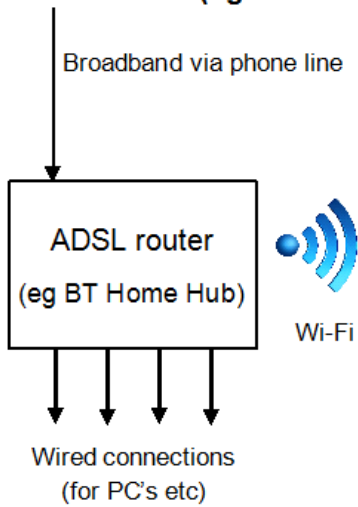
Please note that we do not support, and will not get involved with, the re-use of ADSL routers (such as BT Home Hubs). These devices, although it may be possible to get them to work, do not conform to the type of broadband service we offer.

This is a complex subject, so if you don't want all the technical details, you will find suggestions in the table at the end of this document.

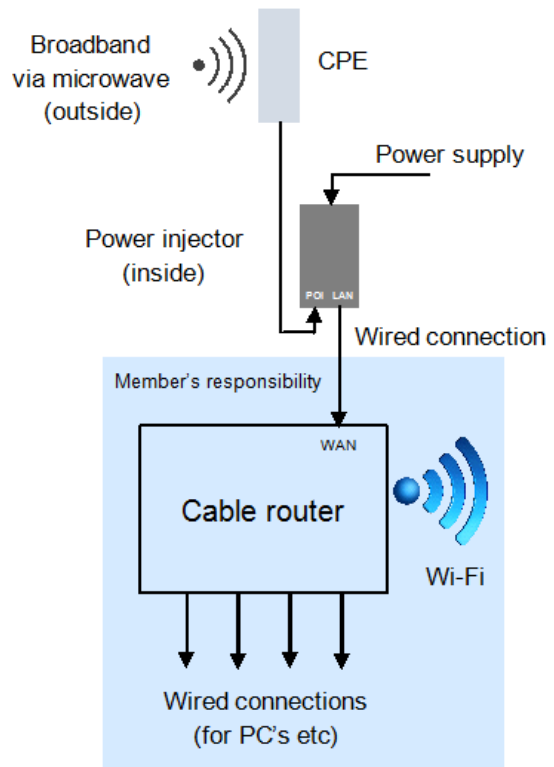
How does TVB differ from conventional broadband services?

This drawing shows the differences between how conventional (ADSL) broadband and Tove Valley Broadband broadband is supplied

ADSL broadband (eg BT or Sky)



Tove Valley Broadband



Our domestic broadband needs generally are for a wired supply (to plug into a PC for example) and Wi-Fi (for your phones and tablets). It is desirable also to separate this local network from the wider world.

The TVB supply is via the Customer Premises Equipment (CPE) on the outside of your house and terminates in a single wired connection at the power injector inside your house. This is where the TVB responsibility ends. Most users now require Wi-Fi and therefore members need to provide an access point for this purpose.

What type of Wi-Fi router do I need?

Actually you do not need a router as the CPE on the outside of your property acts as a router already, and separates your in-house network from the wider TVB network.

However, it is rare to find a Wi-Fi access point without a router function until you get into the higher-cost office grade units such as Ubiquity Unify.

Many routers in the shops and on the internet are ADSL (or DSL) routers (they have a telephone socket on the back). **These are not suitable for TVB.**

You will need a Wi-Fi router with a WAN ethernet port for connection to TVB and other ethernet ports for your local connections.

Sometimes these are called **Cable Routers**, but definitely NOT ADSL or DSL or modem routers. This picture shows the rear of a Cable Router – most have a similar layout.



The LAN socket on your power injector should be connected to the WAN socket (sometimes labelled “Internet” and usually coloured differently from the other sockets).

Connecting the router to your incoming TVB service in this way will work “straight out of the box”. There are no configuration or authorisation settings required. The necessary settings to authorise your connection are set by TVB in the CPE.

Which one should I choose?

All the routers we suggest, and in fact the greater majority of routers, come with 4 LAN (Local Area Network) ports to which you can connect computers, TVs, TV service boxes, VOIP units and game controllers. You can run up to 100m of Ethernet cable through your house to, say, another Wi-Fi router or access point which might then give coverage in a different part of your home.

At the same time, a Wi-Fi router will provide connection for mobile, tablets and other devices which require a Wi-Fi signal.

Wi-Fi capability

Previously Wi-Fi devices worked on just one frequency band (2.4Ghz). Many devices now (phone and tablets etc.) will work on the 5Ghz band as well. The advantage of 5Ghz is that it is less prone to interference (from microwaves, doorbells, wireless telephones, etc.) and

provides a faster speed than 2.4Ghz. However the disadvantage is that it is less capable of penetrating walls and other obstacles.

For these reasons we only suggest routers with dual-band capability. The notation 802.11ac or just AC identifies a dual band capability.

There are a considerable number of routers available so how best can you be more precise in your choice?

You need to consider these factors:

- a) How far do you want your signal to reach (within reason) and are there restrictions to your positioning of a WiFi router?
- b) How many devices might be connected to it at the same time?
- c) What level or quantity of usage of the internet do you need?

a) How far do you want your signal to reach?

By far the highest incidents of reported broadband problems are due to the difficulty of Wi-Fi to penetrate walls, floors, etc. However up-to-date premium units have better electronics and clever (multiple) aerials that can increase the range and penetration of signals significantly.

How far you can reach with a Wi-Fi signal is governed by the age and quality of the unit and very much by the environment. Stone walls and modern foil-backed plasterboard and insulation boards are not good for Wi-Fi.

A word of warning - there are several ways in which you can extend the Wi-Fi coverage by installing more Wi-Fi devices. Among these are powerline adapters (where your network uses the mains wiring as a cable) and Wi-Fi Extenders. We **do not recommend** using Wi-Fi Extenders unless you really understand how they work. Some brief notes follow the tables.

b) How many devices might be connected to it at the same time?

The capability of your router to handle many connections at once is important if you have mobile phones, tablets, lap-tops and desk computers all connected and all being used at the same time. We highlight those routers that are particularly good at this.

c) What level or quantity of usage of the internet do you need?

If you have many devices connected and/or you regularly stream music, video or TV then you need to consider the throughput of the unit (ie the amount of data that it can handle). Units do vary in this respect and it's worth paying a bit more if necessary for a more satisfactory service.

Explanation of the column headings







Speed – manufacturer's speed of data throughput. Can be a measure of how good the router can handle multiple connections.

Antennae – generally the more the antennae the greater the range.

Beam-forming – a capability of strengthening the connection to static devices such as TVs and computers.

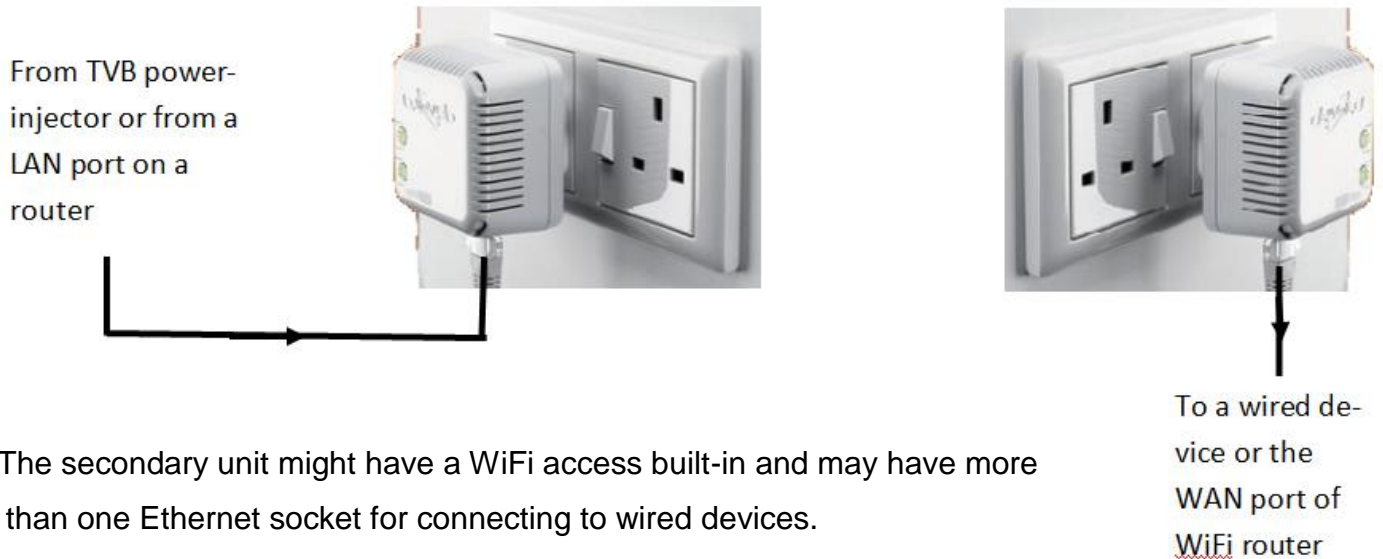
USB ports – if you want to share a printer or NAS drive (common storage of files) across your network you should investigate using any USB connections to those – for example, a shared printer performs better when hard-wired than connected by WiFi.

Parental controls – the ability to prevent access to and to filter out certain web content.

Date last updated: 12/02/2017	Speed (2.4Ghz/5Ghz)	Antennae	Beam forming	USB ports	Parental controls	Cost approx	colour	Additional comments	Picture
Netgear R6120	250/300Mbps	2 external	no	1	yes + Guest	£41	black		
TP-Link Archer C60 AC1350	450/867Mbps	5 external	no	none	yes + Guest	£50	white		
ASUS RT-AC1200G	600Mbps	4 external	yes	1		£75	black	Longer range	
TP-Link Archer C7 AC1750	450/1300Mbps	six (3 ext, 3 intern)	no	two	yes + Guest	£75	black	The C7 is black. The C9 is white. If you can stand a white box, go for the C9.	
TP-Link Archer C9 AC1900	600/1300Mbps	3 external	yes	two	yes + Guest	£106	white	The C8 is £10 cheaper but the extra speed is very well worth going for the C9	
Ubiquiti Unify UAP-AC-LR	1300Mbps	3 x 3		n/a		£118	white	Great coverage vertically when mounted on ceiling or in loft.	
Ubiquiti Unify UAP-AC-PRO	1750Mbps	3 x 3		n/a		£147	white	This and the LR Unify units are powered over one ethernet cable to aid positioning in the right place.	

About power-line (Homeplug) devices

Power-line devices allow you to take an Ethernet connection and pass it into your electricity power cables at a mains socket, then in another place in your house take the signal out in the form of an ethernet wired or WiFi connection.



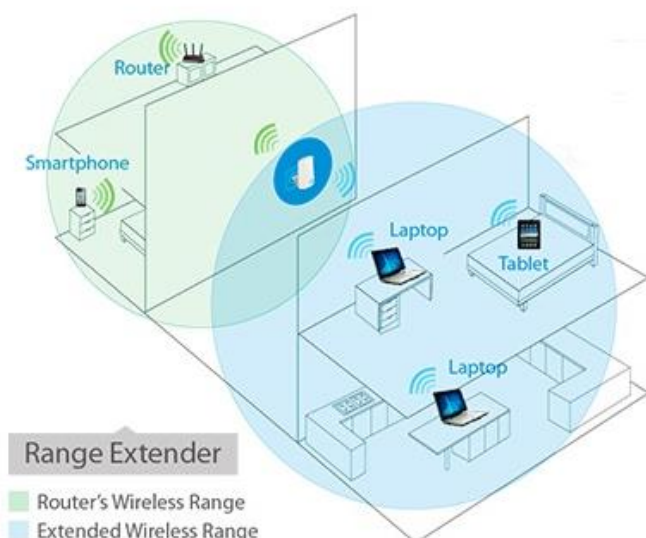
The secondary unit might have a WiFi access built-in and may have more than one Ethernet socket for connecting to wired devices.

The things to watch are that powerline plugs *must not* be used in suppressed sockets and that the two points must be on the same phase *and desirably* on the same distribution board (fuse box).

You should avoid using these devices with old wiring due to the inherent interference present.

About Range Extenders / WiFi boosters / WiFi repeaters

Range extenders (all of the above mean the same thing) connect to your WiFi router and re-transmit the signal. It is important to position the extender in a suitable place so that it can *both* connect easily to your main WiFi router *and* provide WiFi into an area where your main router cannot adequately reach.



Of all of the WiFi devices we know of, these are the most miss-understood. Please be aware of their limitations but especially how to deploy them **before** you buy any.