Abthorpe Broadband Association Ltd.

Bringing Broadband to the community since 2003.

Wi-Fi Home Network issues

Introduction

Tove Valley Broadband provide your property with a single wired network connection to superfast broadband. Any additional network points or Wi-Fi provision is your responsibility. However, we are a community project and like to ensure that we support our members to as great an extent as possible.

We get asked lots of questions about home Wi-Fi networking. Very often people don't get satisfactory coverage all over the house. This document sets out some things to consider if you are suffering with any problems.

Before you start

If you have any concerns about the performance of your broadband you should first measure your speed and latency at the point that the service enters your property. The process for doing this is laid out in our library document – "How fast is my broadband?"

This will give a very good starting point for evaluating what problems, if any, you have with your home network.

Use wired connections if possible

A wired network connection will always be better than Wi-Fi. If at all possible you should consider wiring network ports for critical points in your home to service static devices (eg office PC, TV, Games consoles and repeater Wi-Fi access points). The speed and latency at a wired port should be pretty much the same as at the entry point into your home.

Move the router

Particularly if you suffer from occasional Wi-Fi problems (either poor performance or the router just locking up and needing to be restarted) then the most likely cause is radio interference.

Most Wi-Fi routers use the 2.4GHz radio band. This band is also used by a lot of other devices that you can find around the home and that can cause radio interference. Examples are DECT (cordless) phones, baby monitors, wireless shower controls, microwaves and weather stations to name just a few. Any of these can cause problems to your Wi-Fi. So the first thing to do is to check carefully where your router is located relative to any other wireless devices. For example, if you have your router on the window cill right next to your cordless phone – one of them needs to be moved. Ensure that the router is as far away as possible from any other wireless devices.

Bizarrely, we have had several instances of Wi-Fi networks becoming unstable due to interference from flashing Christmas lights. Something worth checking, particularly if your Wi-Fi Access Point is near to your Christmas tree.

Change your router channel

Secondly, your neighbour's router could be interfering with yours. All routers have 11 channels that can be used. Unfortunately, only 3 of the 11 channels can run simultaneously without overlapping or interfering with each other: channels 1, 6, and 11. Consequently, interference from other routers in the vicinity is a common source of connectivity problems. It is quite common to have two or three other routers' signals present in your house.

To see if other wireless routers might be interfering, take a look at the list of nearby wireless networks. If you're using Windows, click the network icon in the lower right corner. For mobile devices just go to the wireless setup area. If you see other network names, especially those with more than one bar of signal, they could be interfering with your signal.

You can try to dodge interference by changing your router to another channel. You can blindly choose a channel (going with 1 or 11 is probably your best bet) or you can make a better-educated selection by checking to see which channels nearby networks are using so you can use a different channel. You can walk around the house with a free program like Wifi Analyzer on an Android device or InSSIDer on Android or Windows devices to scan for Wi-Fi networks which will give you an idea of the strength of signal and channel numbers in use.

Once you've decided on a channel to switch to, you'll need to log in to your router's control panel and change the channel. To access the router's Web-based control panel, open a new window in your browser while you're connected to your router's wireless network and then type in its IP address (most commonly 192.168.1.1 or 192.168.0.1).

> *If you don't know your router's IP address, refer to the wireless connection details: In the lower-right corner of your Windows desktop, right-click the network icon and open the Network and Sharing Center. Select the wireless network that you wish to view, and click the Details button. You should now see the router's IP address listed as the Default Gateway. Or open a DOS window (Start>Run>cmd) and enter ipconfig.*

Next, log in to your router control panel with the appropriate username and password. If you don't know the password, you may never have changed it--so try the default password, which you can look up on **RouterPasswords.com**.

After logging in to the router, find the wireless settings and change the channel. Many routers have an automatic channel selection feature; if yours does, you can disable it and manually choose a channel. Again, for maximum performance, try to stick with channel 1 or 11. Once you've saved and applied the settings, your router may reboot; if so, reconnect and then check to see whether your connectivity problem persists. If so, you may need to try another channel.

Use 5Ghz Wi-Fi

Many mobile devices now also work with the 5Ghz Wi-Fi band. This results in much less interference, although transmission distance is not necessarily improved. If your router

supports 5Ghz as well as 2.4Ghz it is worth doing some experiments to see if using that band for some of your devices makes a difference.

Check your Wi-Fi security key

You should always set a security key on your wireless router so that only authorized people can use your Wi-Fi. This is done by using the configuration pages on the router. There are several options for the key and using some (particularly WEP) will limit the throughput of the Wi-Fi. We recommend that you use a WPA key.

Wireless coverage

If the connection difficulty seems to arise only when you're rather far away from your wireless router, the problem could be that you're on the fringe of the router's coverage zone. First, make sure that your router's antennas are securely attached and are positioned upright. Next, confirm that the router isn't buried or blocked behind large objects that might cause the signal to degrade faster than it normally would. For best results, place your router out in the open so the signal can travel freely.

All wireless routers have limited coverage. If your router is located in an office in one corner of the house downstairs, it is not likely to have good coverage upstairs at the other end of the house. Remember that you may be able to connect to your Wi-Fi in the bedroom, but if it's just one bar it may not be satisfactory. Low signal strength can result in the connection dropping out and/or poor bandwidth (speed).

Carefully consider your Wi-Fi requirements throughout your house. Could you move the router altogether to a more central position which provides satisfactory coverage everywhere it's needed. To do this you may have to provide a wired connection (see below)

If this is not possible, then there are some other options.

Wire Additional Wireless Access Points

The most reliable—but usually the most difficult—way to extend your Wi-Fi coverage is to wire in an additional wireless access point (AP). This method offers the best connection speeds and performance. However, it requires running an Ethernet cable from the router to the additional AP.

Range Extenders / Wi-Fi boosters / Wi-Fi repeaters

Range extenders (all of the above mean the same thing) connect to your Wi-Fi 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 Wi-Fi router **and at the same time** provide Wi-Fi into an area where your main router cannot adequately reach.
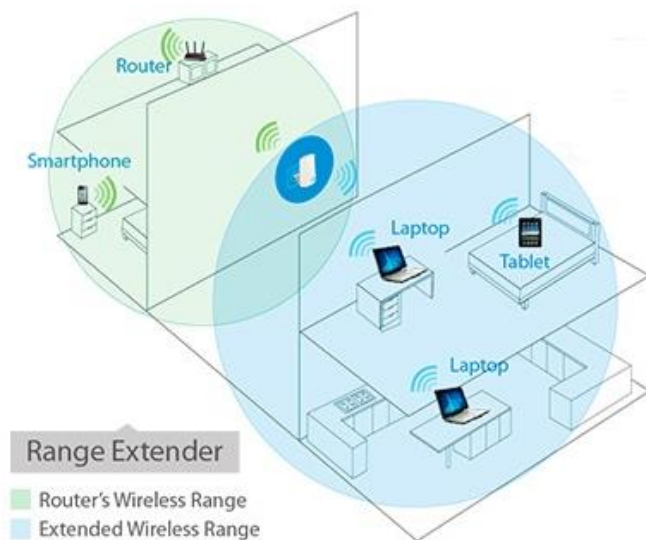
Of all of the Wi-Fi devices we know, these are the most misunderstood. Please be aware of their limitations, but especially how to deploy them, **before** you buy any.

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 Wi-Fi connection.

From TVB power-injector or from a LAN port on a router

To a wired device or the WAN port of WiFi router

The secondary unit might have a Wi-Fi point 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).

When choosing Powerline devices, it is important to select good quality ones from a recognised manufacturer such as Solwise, D-Link, Netgear, TP-Link, Cisco, Devolo or ZyXEL. Devices do vary and you should look for the highest specification.

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

Special considerations for Games consoles

Using games consoles online requires a very good Internet connection in terms of speed and particularly latency. A medium to poor Wi-Fi connection is often not good enough. If you want to connect with other gamers on the Internet you should consider using a direct wired connection or a connection via Powerline devices.

Your equipment

If you are using router, access point or Powerline devices that are more than a couple of years old, then you could almost certainly improve the performance of your network by obtaining new equipment. Hardware has come a long way in the last few years and we have seen Wi-Fi speed, for example, double by installing new devices.

There is lots of helpful information regarding routers in our library document - "Choosing the right Wi-Fi router for your home".

Conclusion

These notes should help you to diagnose for yourself any problems with your Wi-Fi. Please try to run through these steps before contacting TVB support.

Please remember that TVB support is provided by unpaid volunteers and that whilst wishing to help our members enjoy their superfast broadband experience as much as possible, general home networking is not strictly within our area of responsibility.