Staying Superfast

3. Wireless networks

Wireless networks are great for flexibility but these can often introduce bottlenecks for superfast broadband, even with the very latest equipment. If you are looking to make the most of very high speeds (e.g. 80+Mbps) you should consider the benefits of a wired Ethernet network.

Tip One

If you are using a wireless network, find out if this is slowing down your connection. You could do this by running speed tests whilst plugged directly into the router, and comparing them with speed tests run over the wireless network.

Tip Two

It is often sensible to split the wireless router from the main router / firewall, so that it can be located in the optimum place. The main router can then be more easily changed for another one if troubleshooting.

Tip Three

Some wireless devices, such as tablets or smart phones, can only operate at limited speeds sufficient for the applications they can run – bear this in mind if using them to test the speed of your wireless network.

Tip Four

Your wireless network should use an up to date WiFi 'protocol' - currently '802.11n' is the most widely available and fastest choice, although an even faster '802.11ac' is now becoming available. Older routers which use protocols like '802.11a-g' are likely to run slower. Remember that you need this on both ends of the wireless for the link to run as fast as possible.

Tip Five

It is very rare to see the full headline speed of the wireless equipment (such as 54Mbps for 802.11g) in a wireless network. As you get further away from your wireless router, or as walls get in the way (especially if they have modern foil-backed insulation), the signal will weaken and speeds will drop. To overcome this, you may need to extend your wireless network. This can be done in a number of ways, such as using wireless repeaters or wiring additional wireless access points back to your hub or switch – both over a dedicated Ethernet cable or using the power cables.

Tip Six

Wireless networks will run on certain 'channels' within the band of frequencies available. There are a limited number of channels, and any congestion from neighbours or multiple wireless hubs could cause further interference and slowing down. Most WiFi networks run at 2.4GHz but the popularity of wireless can make for congestion, so some equipment now operates at 5GHz which is a more expensive option. Dual band wireless routers using both 2.4GHz and 5GHz will offer the greatest flexibility.

Tip Seven

It can be beneficial for you to occasionally reset (or even factory) reset your router. It helps to clear any possible data issues in the router and clears previously stored connections, as these can be limited on some hubs.

Tip Eight

If you are running dual band routers, these can be activated simultaneously to support multiple devices in a small area.
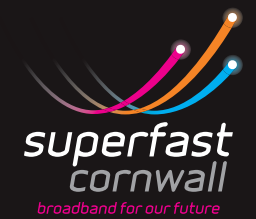
Further help and support

Superfast Business Cornwall is a fully funded service to support eligible businesses to understand, adopt and exploit digital technologies.

The service offers all businesses in Cornwall access to guides, top tips, case studies, videos and more in its Technology Knowledge Bank at www.sfbcornwall.co.uk/knowledge-bank

Getting the most out of your superfast connection

Now that you have a superfast business, you will want to make sure you are getting the most out of your faster connection. Your superfast connection will be either:

• FTTC (Fibre to the Cabinet) which uses your phone line to deliver the last step of the superfast broadband, or

• FTTP (Fibre to the Premises) which brings the fibre-optic connection all the way to your business

Your installation engineer should have left you with a good working connection. For an FTTC connection this will be connected to the primary telephone socket, and will be subject to a 10 day 'stabilisation period'.

There are a few things you may need to check to make sure there are no avoidable 'bottlenecks' in the connection. These steps will help ensure that you see superfast speeds all the way through your business.

1. Check your speed

Step one

For FTTC connections your connection speed can fluctuate dramatically during the first 10 days or so, as the equipment at either end 'tunes' itself to deliver the best sustainable speed. Please be patient during this stabilisation period.

Step two

If you are using a speed tester to see what speed you are getting, remember that results can vary between different testers. With some service providers, speed can be partly reduced at busy times of day – many service providers guarantee a speed of at least 16Mbps for at least 90% of the busiest time of day (4-7pm), provided that your connection can support a speed at least this level.

Step three

Most Internet Service Providers (ISPs) focus on download speeds, but upload speeds can be just as important. Businesses using virtual private networks (VPNs), video-conferencing or sending large files should choose a superfast product with good upload as well as download speeds.

Step four

If you think your internet has slowed down, you should use a speed tester with a computer plugged directly into the router (to eliminate any bottlenecks caused by the internal wireless or wired network). This should show a speed similar to the prediction you were given when you ordered.

Step five

For many service providers, **speedtest.btwholesale.com** is a good way to test the internet speed for your connection all the way to the service provider itself and will help identify where in the network any problems may reside. If this speed test does not work then refer to your service provider for guidance (often found on their website).

Step six

Always follow the guidance when performing speed tests, such as making sure no other network traffic is sharing the connection and taking average readings at various times of day.

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Superfast Cornwall is a programme part-funded by the EU, together with Cornwall Council, Broadband Delivery UK (BDUK) part of the UK Governement and BT. It is managed by Cornwall Development Company, a local authority company controlled by Cornwall Council.

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European Union
European Regional Development Fund

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2. Tips for getting superfast speeds around your business

Tip one

Your internet connection will only go as fast as the slowest link in the chain, so anything that stands between you and the internet could be slowing you down. This could be an old PC, a slow WiFi network, a router that's not up to the job or a problem in the broadband connection. Trouble-shooting often involves working along the chain to find the slowest link.

Tip two

Most ADSL routers will be unsuitable for a superfast architecture, so if your ISP has not provided you with an upgrade you will need to upgrade your router. It will need to be properly configured for superfast broadband. Make sure you do not leave old routers plugged into the network as they can cause problems with conflicting information.

Tip three

Router settings can sometimes be set to a maximum speed threshold, so you may need to look at your router settings and reconfigure these too.

Tip four

In some cases you may need to look at the overall architecture of the building's wiring to get the most out of superfast speeds. Many businesses now 'flood wire' their offices with structured computer cabling – a future-proof way of distributing broadband (and telephony) around your premises.

Tip five

Consider upgrading all network components to Gigabit speeds to really make sure that end users and devices are seeing the maximum speed possible. Older network components in particular are more likely to be incompatible with superfast speeds.

Tip six

The greater the amount of additional hardware, such as switches, that you have in the network between your router and computer, the greater the likelihood of additional bottlenecks. Minimise the number of devices that your data has to go through, avoid 'daisy chaining' switches together, and avoid multiple connections between switches.

Tip seven

For organisations using multiple switches, you should definitely consult your IT supplier as there are a number of traps you could fall into!

Tip eight

Some standalone hardware firewalls could be slowing things down, so do comparative speed tests with and without your firewall to see if this is the case (remember to put it back straight away!)

Tip nine

Another source of issues can be the DNS (Domain Name System) configuration. If you have changed ISP to get superfast broadband, check that the correct DNS servers are specified on the router, and if you have a server make sure its 'forwarders' are set up correctly.

Tip ten

With an FTTP (Fibre to the Premises) connection, you may have selected an ultrafast broadband product with speeds in excess of 80Mbps. In this case, it is more likely that a bottleneck of the type described above will be limiting the speeds you receive. Equipment such as your router, firewall, switches and even wiring will all have a physical maximum speed which could be limiting your throughput, so you may need to consider upgrading these to Gigabit speeds.
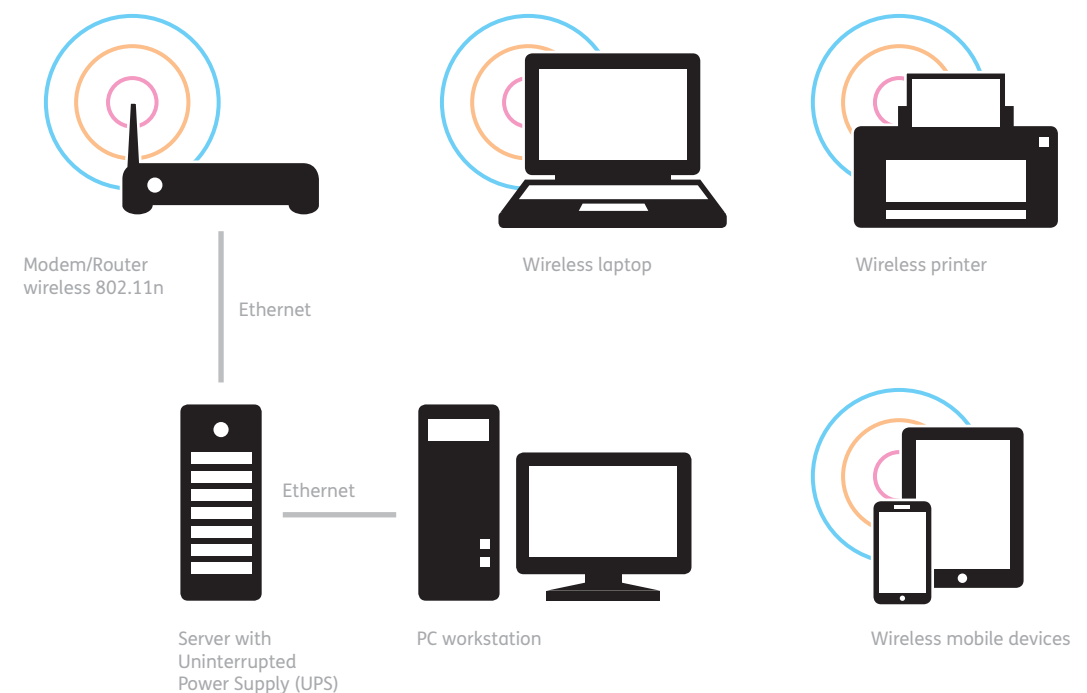
What does speed mean?

Your broadband speed is measured in megabits per second (Mbps), and one megabit is a million bits. A 'bit' (b) is a single piece of binary digital information and a 'byte' (B) is made up of 8 bits, so an 8Mbps link will download a 1MB file in 1 second.

What might slow your broadband down

Your speed could be getting restricted at any point in the chain, and it is unlikely that any device will perform at its maximum specified throughput.

A simplified example of a small office network

Modem/Router wireless 802.11n

Ethernet

Wireless laptop

Wireless printer

Server with Uninterrupted Power Supply (UPS)

Ethernet

PC workstation

Wireless mobile devices

Sounds confusing? You don't have to do it yourself. Many IT companies will look at your network for you and develop a strategy for the best way to adopt wired and wireless networking to get the most from superfast broadband, both now and in the future.

Note: Please do not undertake any actual changes to your office set up unless you are totally confident in your own abilities! You should always consult with your IT supplier, and get the experts to address any issues discussed here, such as configuring/replacing routers, firewalls and wireless networks.

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