

## A quick guide to Wi-Fi

What, why, who, how explained

by Rob Kerr published on 13 January 2009

What is it?

Standing for, well, nothing really. In the past, people have wrongly associated Wi-Fi with Wireless Fidelity. When in actual fact it's just a trade mark associated with its governing body over standards. The Wireless Ethernet Compatibility Alliance (WECA) more commonly known as the Wi-Fi alliance provides certification of those standards and equipment being used.

It's probably best to think of Wi-Fi as Wireless LAN or WLAN instead. As that is more of an accurate definition of the technology. This really should have been the more popular phrase everyone uses, instead of Wi-Fi as it's less confusing and spot on.

Wireless LANs are a way for computers or similar devices to access data over the airwaves. It's as simple as that.

What are the variations of the technology?

Wi-Fi can also be thought of by the various standards and variants that use the airwaves for data access. These are listed in what's known as the IEEE 802.11x protocol, with x being a, b, g or what's becoming more common place today, n.

All these, in their purest essence, just boil down to how strong the signal is and how far it can reach. The most commonplace of these used and seen around today are: 802.11b and 802.11g, with 802.11n being only recently more widely adopted, with the latter replacing the 802.11g standard, just as it did before with the "b".

All of these are backward compatible with each other, meaning there's no need to throw the baby out with bath water - so to speak.

802.11n works off the 5Ghz and 2.4Ghz frequency, with a possible maximum indoor range



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of 70 metres taking into account walls and floors. It's also possible to reach 600Mbit/s, meaning it's capable of receiving 75 Megabytes a second.

802.11g runs from the 2.4Ghz spectrum and has been around for over 5 years. It's more common to see this technology than not these days. Its maximum rate is around 54Mbps with an indoor range of around 38 metres. Some providers of this technology equipment cheat, by bundling multiple "g" channels together on one device. This in turn increases the possible data travelling across them, also boosting the range in some cases.

802.11b also works from the 2.4Ghz range and has been around for nearly a decade, with only an 11Mbit/s rate and a 38 metre range. This isn't really seen around anymore, only in legacy or older equipment.

Why should I care?

More and more devices seen around these days have a Wi-Fi/WLAN technology built in; to be honest it's unusual not to see it featured. Laptops to computers, mobile phones and even with some extra additions, gaming consoles too. The first grumble anyone has when a new mobile phone comes out is if it lacks Wi-Fi, an indication of how we're so used to seeing it around.

What's a good example in practice?

A great deal of ADSL and cable internet access providers offer a gratis Wi-Fi router, where multiple computers can all access the Internet at once. This is the alternative to having a computer based right next to where the phone line or cable box comes in, where there's no room for portability or convenient internet access around the home.

What's needed to be taken into consideration is the connection speed offered by the ISP. It's not worth having a 802.11b wireless router if you have a 22 Mbps internet connection, as there will be a bottle neck and you wouldn't benefit from the

download speeds.

With the latest and greatest from Virgin Media, even the 802.11g would creak under the 50Mbps possible speed. This is why they'll be bundling in the latest and greatest 802.11n wireless routers around.

Is there a competing technology that I should be aware of?

There really is only one alternative to Wi-Fi around the home, that's from technology known as HomePlug. This essentially is a way of getting data to a computer, over the mains power circuit in a house or home.

These range in their possible speeds of transmitting and receiving data from 14Mbps, to 85Mbps up to 200Mbps currently. This is all from equipment that looks rather like an extension plug for the mains socket, where a normal Ethernet cable runs from a HomePlug product into an ADSL router, with another one to be plugged into the wall near a computer with an Ethernet cable running to the PC, enabling internet access over the mains power.

In some instances, these could actually benefit Wi-Fi as there are products that fall under the HomePlug category of devices that plug into the mains, take the main signal from the Wi-Fi router and then extends its range. It more or less acts like another wireless router around the home, all without the configuration needing to happen or connection to a phone line.

What is in store for the future?

802.11n isn't actually fully ready yet, although devices have been around for some years. In saying that, the current range of either wireless routers or Wi-Fi products will be fine for the when the final standard becomes released. With just a minor software update of sorts needed to make the current technology fully ratified.

Just as 802.11g got around increasing its data limitation by "bonding" multiple "g" channels together, we suspect "n" could possibly go down

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this route too.