

WIRELESS LAN STANDARDS

There are a number of competing standards for wireless LAN technology. The main technologies relevant for office wireless networks include:

- Various parts of the IEEE 802.11 standard;
- Bluetooth

These are considered in more detail below. Other standards (not covered here) exist including HomeRF (designed more for the home network) and Ultra Wide Bandwidth (an emerging technology).

IEEE 802.11 standards

The IEEE (Institute of Electrical and Electronic Engineers) is an organisation that is involved in setting up computing and communications standards. There are several IEEE 802.11 standards:

802.11b

This open standard, developed by the Wireless Local Area Networks Standards Working Group, was until recently the most widely used wireless LAN standard. 802.11b uses the same frequency (2.4 GHz) as appliances such as cordless phones and microwaves and so is susceptible to interference. Speeds of up to 11Mbps can

be reached (although 4-6Mbps is more usual). 802.11b is a mature technology suitable for most home and office environments and there are many products available.

802.11a

Products using this standard first started to appear during 2002. High speeds of up to 54 *Mbps* can be reached (again, less in practice). This standard uses the less congested 5GHz frequency, reducing the potential for interference. Because of the high speed, this standard is more suitable in offices where there are a large number of users and where the wireless LAN is likely to be very busy. Although higher speeds can be reached, more access points are likely to be needed as range is limited to around 50 feet (shorter than 802.11b). The technology is also presently relatively expensive compared to 802.11b. Products using the 802.11a standard are not compatible with products using the 802.11b standard.

802.11g

This standard offers maximum speeds of 54 Mbps. It uses the same 2.4GHz frequency as 802.11b, and can support 802.11b equipment at the slower speed. It also suffers from the same interference issues. 802.11g is currently the most common *protocol*, with the most equipment available.

802.11n

802.11n is currently under development. The standard offers minimum speeds of 100 Mbps with maximum speeds up to four times that of 802.11g (i.e. up to 216 Mbps). The standard is due to be ratified by IEEE by the end of 2006/early 2007. Manufacturers are already shipping "Pre-n" equipment based on the proposed standard. However as there may be future compatibility problems, it is probably best to wait until the standard has been finalised before buying 802.11n equipment.

Bluetooth

Bluetooth is a relatively inexpensive, very low-powered and short-range radio frequency system designed for small, mobile devices. Bluetooth can be used to link devices such as pagers, PDAs (Personal Digital Assistants - Handheld computers), mobile phones, and laptops. Since Bluetooth also uses the 2.4GHz radio frequency, it is susceptible to interference from microwaves etc. Range is short at up to only 10 -12 metres. This distance constraint makes Bluetooth generally unsuitable for serious LAN implementation, and so not many Bluetooth LAN systems have been developed.

Source: <http://www.ictknowledgebase.org.uk/wirelessnetworks>