

# COMPONENTS OF A WIRELESS LAN

Typically there are a couple of components essential for a wireless LAN:

## **Access Points**

An access point acts as the main radio transmitter for your wireless LAN. Access points translate network traffic into radio signals and transmit that signal to wireless enabled computers. An access point can also be connected to an existing wired network via a cable in order to allow wireless enabled computers access to a wired network. You can have more than one access point on a particular network.

Each access point has a limited range within which it can maintain a wireless connection with wireless enabled computers on a network. This range depends on the environment but is typically up to around 90 metres indoors. The range will be shorter if the building structure interferes with radio transmissions (e.g. presence of metal framing, large masonry structures, multiple floors and walls etc.).

Performance generally suffers as distance increases beyond the limits of a range of 50-90 metres.

Outdoors, ranges can extend to as much as 250-500 metres, but again this depends upon the environment. The basic range of an access point can be extended using

signal boosters which amplify the radio signal. Specially designed antenna can also expand the range of a wireless LAN.

Where multiple access points are used, each access point's wireless area should overlap with that of its neighbouring access point. This results in a seamless area in which mobile computer users can move around without losing their connection to the network.

Technically most access points can support up to 255 computers. However in practice, most access points struggle with more than 10. More expensive *hardware* can usually support more computers.

### **Wireless Network Interface Cards (NIC)**

These are special network cards installed within wireless enabled computers. The cards pick up signals from the base station and convert them to signals the computer can understand. The cards can be removable *USB* or *PCMCIA* cards, or permanently installed inside a computer.

Wireless NICs can also enable computers in which they are installed to communicate with each other directly on a peer-to-peer (or Ad Hoc) basis. Files and printers can be shared this way without the need for an access point. If wireless computers are also part of a wired network via an access point they may not be able to access resources on the wired part of the network. This problem can be

overcome by installing special *software* on one of the wireless computers so it can act as a bridge to the wired network. A wireless LAN could also include some of these components:

### **Extension Points**

Extension points, or wireless relays are similar to the access point. They extend the range of the wireless network by relaying signals from wireless enabled computers to the access point.

### **Directional antennae**

The antennae built into most access points are not particularly well designed. The addition of a better antenna can improve the range of a wireless LAN. There are several different designs of antenna, each of which is suited to different purposes. Some antenna produce a very focussed directional signal. Two of these pointed at each other, each connected to an access point, can be used to connect two different locations - this is called a "line of site" connection. These can bridge quite large (but unblocked) distances.

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