

# “What is Networking?”

A network is simply a set of machines that can all talk to each other. For example, networked machines can share files, print to printers attached to other machines on the network, etc.

There are two basic categories of network, a **Local Area Network (LAN)**, and a **Wide Area Network (WAN)**. Although with modern technology the boundaries between these network types are vague, a LAN is generally regarded as a network that is self contained - most likely all the machines are in one building. A WAN is an open network - there are no geographical boundaries. The Internet is an example of a WAN (it is the widest network of them all).

## “What is Internet Connection Sharing?”

**Internet Connection Sharing (ICS)** means what it says. The idea is that several machines connected to a network (a LAN), can all share a single Internet connection.

For example, lets say you have a single machine attached to your **ADSL (Asymmetric Digital Subscriber Line)**/Cable modem. At the moment everything is fine, you can surf the Internet from your machine. However, what if you bring your laptop home from work, or perhaps you buy a second PC and you want to access the Internet from it? ICS is simply a mechanism where any of your machines can share the single Internet connection.

## “What is Wireless Networking?”

On a "normal" network, computers are connected by cables. These cables are referred to as **CAT-5 (category 5)** cables. The cables plug into a **network interface card (called an Ethernet card)** on each computer.

While this has been the de-facto standard way to connect machines for some time, a new standard (wireless networking) is emerging. Instead of using CAT-5 cables and Ethernet cards, a wireless network card is installed into each computer. There are no cables - the computers communicate by radio.

Wireless networking has a wide range - ~60 metres, and is suitable for home users and small to medium sized businesses who don't want unsightly cabling between computers.



# “What are the Essential Components of a Network with Internet Connection Sharing?”

**Internet Connection** - this is your broadband DSL/Cable modem.

**Router/Gateway** - this directly connects to the modem, and allows other computers on the internal network to attach to it. It is possible to use an existing computer as a "router" (using Internet Connection Sharing software), or alternatively you can use a dedicated hardware router - which is generally the preferred option.

**Network Interface Card** - each computer needs at least one card. If one of the computers is being used as a router then that machine will need 2 cards (one to connect to the broadband modem, and the other to connect to the internal network).

**Hub** - a hub allows multiple machines to connect to the network. Basically all the machines "plug-in" to the hub and they can all talk to each other. A hub is used when there are many (2 or more) computers on the local network.

**Firewall** - a firewall prevents unauthorised users connecting to your network from the Internet, and also can prevent unauthorised access to the Internet (or to certain sites on the Internet) from a machine on your network. If you have a broadband Internet connection, Arnclan strongly advises that you consider installing a Firewall. Without one, your entire network is potentially open to malicious attack.

**Switch** - a switch is a variation on a hub that allows for more efficient data transfer. For this reason, switches are generally more expensive than hubs. A switch is not normally required on small networks, but may be where there are large volumes of data passing between machines, or where there are many machines on the LAN.

A lot of **modern machines come with Ethernet capability**. However, at the present time it is rare to find a machine that comes with a "wireless capable" card built in.

While it is possible to use the **USB (Universal Serial Bus)** to network machines together and even (in some cases) to connect to the broadband modem, **Arnclan do not generally recommend this approach**.

Note that most hardware routers have an in-built hub - so a dedicated hub need not always form part of a network.



# “Firewalls”

A firewall works by closing ports that are not being used on your network. For home users, this is normally every port. For business users, some ports may need to be open (for web servers etc.). Most firewalls stop all inbound traffic unless you explicitly "open" ports. This provides an extremely secure way of safeguarding your network from attack.

While there is firewall software available, in almost every case **Arnclan recommend that you use a dedicated hardware firewall**. This ensures that your computer is running at maximum capacity rather than being tied up blocking unauthorised network traffic, and isolates you (to a degree) from bugs in the firewall software itself.

Note that most of the routers that we recommend to our customers have inbuilt firewall software. Therefore there is often no need to purchase an extra firewall.

## “How should I set up my LAN for Internet Connection Sharing?”

There are several different approaches you can use when you want to set up a LAN with a shared Internet connection. The choice depends broadly on the following factors:

How many computers do you intend to share the connection?

How far apart are they?

Do you mind having cables running between the computers, or would you prefer no cabling?

How much load will the Internet connection be under?

How much load will the Internet connection be under? For example, will every machine be streaming huge video files from the connection (e.g. watching "Big Brother" on-line), or are you just browsing a few web sites now and again?

How important is future proofing to you? (that is, how concerned are you about making sure that your LAN will accommodate new machines as and when you buy them?).

How much money do you want to spend?

