

# Network Terminology

## About This Document

This document provides a brief explanation of some of the networking terms you are likely to come across while setting up Netiom. Most of the descriptions are simplifications and in this form apply to a typical small network connected to the Internet via an ADSL or similar router.

It is beyond the scope of this document to go into great detail about networking in general.

## Networks – General

Networks can be divided into 2 main types, local area networks (LANs) and wide area networks (WANs). Home and office networks will normally be described as a LAN. While the Internet would be described as a WAN. A local area network may be connected to a wide area network via a gateway.

## IP Address

Each device on a network must have a unique address. The IP address is this address. It consists of 4 bytes and for convenience each of the 4 bytes are separated by a dot. Hence a typical IP Address would look like:

192.168.0.6

Each of the 4 numbers represents a byte and can therefore not exceed 255. For example the IP Address:

123.456.78.90

would be illegal because 456 exceeds 255.

LANs have their own set of IP Addresses and devices on different networks can have the same address because they are not directly connected to each other. Thus the address 192.168.0.1 will be used by many thousands of devices on many thousands of networks.

A series of addresses are allocated for local networks:

10.0.0.0 to 10.255.255.255  
172.16.0.0 to 172.31.255.255  
192.168.0.0 to 192.168.255.255

## Gateways

A gateway is an interface between two networks, normally a local area network and a wide area network. A gateway will have two IP addresses, one for the local network and one for the wide area.

## Gateway Address

The gateway address is the local area network address of the gateway. Devices need to know the gateway address so that they know where to direct their requests for connections to the wide area network.

## **Submask**

The Submask is used to tell a device what range of devices it is directly connected to and is used in conjunction with its own IP Address.

## **Port**

This is simply a two byte number embedded in the TCP data packet used to communicate over the network. Servers are said to listen on certain ports. That is they will discard all data that does not have that specific port number embedded in the data packet. Different services have different default ports. For example HTTP uses port 80 as default.

Specific services do not have to use the default port so long as both sides of the transaction (Client and server) know which port to use.

## **MAC Address**

This is a unique 6 byte number which is hard coded into all network devices. It is not normally possible to change this address.

## **DHCP**

Dynamic Host Configuration Protocol. This is a method by which a device on a network can get an IP address. For this to work there must be a DHCP server on the network. This will keep a record of all the devices on the network and assign a free address when a new device makes a request.

As the name implies address which are assigned will be dynamic, that is they may change over a period of time.

## **Servers and Clients**

Generally a server will have a fixed IP address. Clients can have either a fixed or dynamic address.

Clients will initiate a connection to a server. A server will not initiate a connection to a server. Once a connection is established data can flow in either direction.

## **HTTP**

Hypertext Transfer Protocol. This is a method of communication between web servers and their browser clients. Clients use this protocol to access web pages and their associated components.

HTTP should not be confused with HTML (Hypertext Markup Language) which is used to construct web pages. HTTP is used for file transfer and while these files may contain HTML pages they are not restricted to HTML. For example jpegs gifs etc are transferred using HTTP.

## **Ping**

A ping is simply a command sent to a network device which requires it to reply back. It is useful in diagnosing network problems.

## **Dynamic and Static IP Addresses**

A dynamic IP Address is one that may change with time. IP Addresses which are obtained using DHCP will be dynamic. Some ISPs will only provide dynamic IP Addresses.

The advantage of a dynamic IP address allocation is that the network can be configured automatically without the need to manually configure the address each time a new device is attached.

A static IP address is one which is permanently assigned to a device. The advantage of this is that you always know the device's address (important if it is a server).

**Phaedrus Limited  
Unit 1  
Darwen Enterprise Centre  
Railway Road  
Darwen  
BB3 3EH  
U.K.**

**Tel / Fax +44 (0)1254 772622  
e-mail [tech@phaedrusltd.com](mailto:tech@phaedrusltd.com)**

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