

ITS 323 –SUMMARY FOR IP ADDRESSES

1 Dotted Decimal Notation

An IP address is 32 bits in binary. The dotted decimal notation is a convenient way to write a 32 IP address.

1.1 Convert from 32 bit binary to Dotted Decimal Notation

32 bit binary	01101000110100010011110110101001
Split into four 8-bit parts	01101000 11010001 00111101 10101001
Convert each part into decimal	104 209 61 169
Join, separated by dots	104.209.61.169

1.2 Convert from Dotted Decimal Notation to 32 bit binary

Dotted decimal notation	104.209.61.169
Convert each part to binary	01101000.11010001.00111101.10101001
Remove dots and join	01101000110100010011110110101001

2 Special Addresses

A 32 bit IP address is split into a Network portion and a Host portion. The Network portion identifies a network on the Internet, and the Host portion identifies a host on that network.

There are special cases for the Host portion which cannot be used to identify a computer. There are also special cases for the Network portion, which cannot be used to identify a network or computer. These special cases apply in both Classful and Classless addressing.

2.1 Network Address

The address of a network for a computer is determined by taking the Network portion of the computers IP address, and setting the Host portion to all 0's.

IP address	01101000110100010011110110101001
Network portion	01101000
Host portion	110100010011110110101001
Network address	01101000000000000000000000000000 104.0.0.0

2.2 Broadcast Address

The address used in order to send an IP datagram to all hosts on a particular network. Determined by taking the Network portion of the computers IP address, and setting the Host portion to all 1's.

IP address	01101000110100010011110110101001
Network portion	01101000
Host portion	110100010011110110101001
Broadcast address	01101000111111111111111111111111 104.255.255.255

