

# INTERNET ADDRESSING

**ICANN** International Corporation of Assigned Names and Numbers. A private, nongovernment organization that ensures each user has a unique IP address.

## Four Dotted Quad Fields

**Binary:** 32-bit (IPv4) 128-bit (IPv6) addresses. Each field = 1 byte. 8 bits = 1 byte

**Decimal:** Each quad with a value between 0 (binary 0~field off) and 255 (binary 1~field on)

<b>INTERNET ADDRESS CLASSES</b>			
Class	1 <sup>st</sup> byte	1 <sup>st</sup> bit(s)	Network/Host Portions
<b>A</b>	<b>1-126</b>	<b>0</b>	8 bits/1 byte 126 networks
0.0.0.0 to 127.255.255.255			24 bits/3 bytes 16,777,214 hosts
0.0.0.0			Used when computer initializes and requests an IP address. Source address is initially 0.0.0.0 until it is assigned an IP address
10.0.0.0 to 10.255.255.255			Reserved IP addressing for private internets
<b>127 loopback:</b> Cannot be used as internet address. Allows client/server on same host to communicate. Ideal for testing/troubleshooting (127.0.0.1 localhost)			
<b>B</b>	<b>128-191</b>	<b>10</b>	16 bits/2 bytes 16,384 networks
128.0.0.0 to 191.255.255.255			16 bits/2 bytes 65,534 hosts
172.16.0.0 to 172.31.255.255			Reserved IP addressing for private internets
<b>C</b>	<b>192-223</b>	<b>110</b>	24 bits/3 bytes 2,097,152 networks
192.0.0.0 to 223.255.255.255			8 bits/1 byte 254 hosts
192.168.0.0 to 192.168.255.255			Reserved IP addressing for private internets
<b>D</b>	<b>224-239</b>	<b>1110</b>	<b>MULTICASTING:</b> Not routable. Datagram targeted to a group that is identified by network address only. (no host portion)
224.0.0.0 to 239.255.255.255			
<b>E</b>	<b>240-247</b>	<b>11110</b>	<b>EXPERIMENTAL:</b> Reserved for future use.
240.0.0.0 to 247.255.255.255			
<b>BROADCAST ADDRESSES (255) (Network and host portions cannot be 255)</b>			
Send messages to all network hosts and are used only as destination addresses.			
<b>Limited Broadcast</b> 255.255.255.255			Used for configuring hosts when they boot up. (Not valid for sending and receiving) Can broadcast to obtain an IP address from DHCP or BOOTP servers.
Net-directed Broadcast			Used to broadcast to all hosts in a network. Assigned network quad(s) host quad(s) is/are 255
Subnet-directed Broadcast			Broadcast can be sent to all hosts within a subnet.
All-subnets-directed Broadcast			Has become obsolete ~ multicasting is preferred. Broadcast can be sent to all hosts within all network subnets.