

IPv4 Address Classes

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IPv4 is currently the main addressing method on the Internet. (IPv6 is coming.) Students who plan to use networking skills in their future careers should have some technical skill with IPv4 addressing.

This tutorial teaches you to identify the class of an IP address.

Dotted Quad

IPv4 addresses are typically written as four numbers separated by dots. Each number is between 0 and 255, and represents eight bits (in binary), for a total of 32 bits in an address. Here is a sample IPv4 address in dotted quad notation.

10.78.82.7

Here is the same address in binary.

0000 1010 0100 1110 0101 0010 0000 0111

IPv4 addresses are written in dotted quad format because they are shorter and easier to work with by humans, but the computer uses them in their binary form.

Class A, B, C, D, and E

The first few bits of the address tells the computer whether the whole address is part of Class A, B, C, D, or E. The binary rules are very simple, and the dotted-quad rules use strange numbers. However, most people seem to find the dotted-quad rules more convenient.

Class	first bits	first quad
A	0...	0 to 127
B	10..	128 to 191
C	110.	192 to 223
D	1110	224 to 239
E	1111	240 to 255

If the first number is between 0 and 127, we have a Class A address. If the first number is between 128 and 191, we have a Class B address. If the first

number is between 192 and 223, we have a Class C address. Classes A, B, and C are used for normal communications on the Internet. If the first number is between 224 and 239, we have a Class D address. Class D is used for multicast. If the first number is between 240 and 255, we have a Class E address. Class E addresses are reserved for experimental use by authorized researchers (not you or me).

Quiz

For each host address, tell what network class it is: A, B, C, D, E, or Invalid. Cover the answers. Then test yourself.

IP Address	Network Class
120.31.122.199	..... A
142.194.186.156	..... B
194.244.156.25	..... C
242.196.87.268	..... I
31.79.247.47	..... A
252.46.250.117	..... E
142.129.175.144	..... B
142.60.85.152	..... B
160.42.96.234	..... B
245.5.18.234	..... E
216.175.165.24	..... C
173.29.20.245	..... B
234.145.185.194	..... D
208.125.150.66	..... C
156.249.222.160	..... B
196.28.70.15	..... C
212.84.131.166	..... C
247.79.34.231	..... E
79.236.233.208	..... A
117.47.77.132	..... A
254.255.227.111	..... E
17.263.155.243	..... I
168.37.68.146	..... B
209.76.107.194	..... C