

Lab 00 – Binary Conversion

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Generate and select a random IP address from <https://www.ipvoid.com/random-ip/>.

1. What addresses were generated?

Random IP Generator

Use this online random IP generator to generate a list of random IP addresses in the format 123.123.123.123 (IPv4 addresses). By default 10 random IP addresses are generated, you can change this number below.

How many IP addresses to generate?

10

Generate Random IP's

38.40.255.20
130.148.174.28
160.33.223.75
222.36.105.135
204.209.137.245
251.120.135.81
221.83.175.54
197.149.185.213
143.115.110.127
0.50.150.221

38.40.255.20
130.148.174.28
160.33.223.75
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221.83.175.54
197.149.185.213
143.115.110.127
0.50.150.221

2. Select one of these by bolding it in the list above.

130.148.174.28

3. Now, convert each of the four octets from decimal to binary using the method above. Show your work.

130	148	174	28
130 / 2 = 65 R 0	148 / 2 = 74 R 0	174 / 2 = 87 R 0	28 / 2 = 14 R 0
65 / 2 = 32 R 1	74 / 2 = 37 R 0	87 / 2 = 43 R 1	14 / 2 = 7 R 0
32 / 2 = 16 R 0	37 / 2 = 18 R 1	43 / 2 = 21 R 1	7 / 2 = 3 R 1
16 / 2 = 8 R 0	18 / 2 = 9 R 0	21 / 2 = 10 R 1	3 / 2 = 1 R 1
8 / 2 = 4 R 0	9 / 2 = 4 R 1	10 / 2 = 5 R 0	1 / 2 = 0 R 1
4 / 2 = 2 R 0	4 / 2 = 2 R 0	5 / 2 = 2 R 1	
2 / 2 = 1 R 0	2 / 2 = 1 R 0	2 / 2 = 1 R 0	
1 / 2 = 0 R 1	1 / 2 = 0 R 1	1 / 2 = 0 R 1	
10000010	10010100	10101110	00011100

10000010.10010100.10101110.00011100

4. Then, convert each of the decimal values back to binary. Show your work.

10000010	$(1 * 128) + (0 * 64) + (0 * 32) + (0 * 16) + (0 * 8) + (0 * 4) + (1 * 2) + (0 * 1)$ $128 + 2 = \mathbf{130}$
10010100	$(1 * 128) + (0 * 64) + (0 * 32) + (1 * 16) + (0 * 8) + (1 * 4) + (0 * 2) + (0 * 1)$ $128 + 16 + 4 = \mathbf{148}$
10101110	$(1 * 128) + (0 * 64) + (1 * 32) + (0 * 16) + (1 * 8) + (1 * 4) + (1 * 2) + (0 * 1)$ $128 + 32 + 8 + 4 + 2 = \mathbf{174}$
00011100	$(0 * 128) + (0 * 64) + (0 * 32) + (1 * 16) + (1 * 8) + (1 * 4) + (0 * 2) + (0 * 1)$ $16 + 8 + 4 = \mathbf{28}$

130.148.174.28