Subnetting Practice Question

- What are the network address, broadcast address, and valid host addresses for the IP address 198.22.45.173/26?

- What is the subnet mask in dotted decimal notation?

- Pause the video here and answer the questions.

Practice Question Answer

- Let's figure out the subnet mask in dotted decimal notation first because that's easy…

- /26 borrows the first 2 bits in the last octet

128	64	32	16	8	4	2	1	128	64	32	16	8	4	2	1	128	64	32	16	8	4	2	1	128	64	32	16	8	4	2	1
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0

- 128 + 64 = 192

- So the subnet mask is 255.255.255.192

Practice Question Answer

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- Next let's calculate the address range for this subnet
- Write out 198.22.45.173/26

128	64	32	16	8	4	2	1	128	64	32	16	8	4	2	1	128	64	32	16	8	4	2	1	128	64	32	16	8	4	2	1
1	1	0	0	0	1	1	0	0	0	0	1	0	1	1	0	0	0	1	0	1	1	0	1	1	0	1	0	1	1	0	1

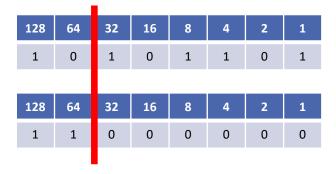| 128	64	32	16	8	4	2	1	128	64	32	16	8	4	2	1	128	64	32	16	8	4	2	1	128	64	32	16	8	4	2	1
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0

- The network portion of the address is the first 26 bits
- 198.22.45.128 is the network address
- The line is after 64, so add 64 to get the network address of the next subnet
- The next subnet begins at 198.22.45.192
- So the broadcast address is 198.22.45.191
- And the valid host addresses are 198.22.45.129 to 198.22.45.190

- 198.22.45.173/26

128	64	32	16	8	4	2	1
1	0	1	0	1	1	0	1

128	64	32	16	8	4	2	1
1	1	0	0	0	0	0	0

- Note that when we subnet a Class C address the magic is all going to happen in the last subnet
- So we didn't really need to write out the 198.22.45 part