New York Sales Department

- The next largest subnet is New York Sales which requires 14 hosts.

- Pause the video here and calculate the optimal subnet mask.

- Also determine the network and broadcast addresses that we will allocate, and the range of host addresses.

New York Sales Department

- We've been allocated 200.15.10.0/24

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	1	0	0	0	0	0	0	0	1	1	1	1	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0

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	0	0	0	0	0	0	0	0

- /28 (or 255.255.255.240) supports 14 hosts
- 200.15.10.0 to 200.15.10.63 are already in use by the Engineering departments, so this network address will start at 200.15.10.64
- The network address goes up in values of 16, so the next one is 200.15.10.80
- Our broadcast address is 200.15.10.79
- Valid host addresses are 200.15.10.65 to 200.15.10.78

Boston Sales Department

- The next largest subnet is Boston Sales which requires 7 hosts.

- Pause the video here and calculate the optimal subnet mask.

- Also determine the network and broadcast addresses that we will allocate, and the range of host addresses.

Boston Sales Department

- We've been allocated 200.15.10.0/24

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	1	0	0	0	0	0	0	0	1	1	1	1	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0

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	0	0	0	0	0	0	0	0

- /28 (or 255.255.255.240) supports 14 hosts
- /29 does not support 8 hosts! Remember to subtract 2 for the network and broadcast address
- 200.15.10.0 to 200.15.10.79 are already in use, so this network address will start at 200.15.10.80
- The network address goes up in values of 16, so the next one is 200.15.10.96
- Our broadcast address is 200.15.10.95
- Valid host addresses are 200.15.10.81 to 200.15.10.94

Subnetting

- We're done, right?

- Not so fast, don't forget the links between routers

- You also need to allocate address space for your router loopback interfaces, we'll talk about those later. (Not required in our example.)

New York to Boston Link

- The last subnet is the link between the New York and Boston routers.

- Pause the video here and calculate the optimal subnet mask.

- Also determine the network and broadcast addresses that we will allocate, and the range of host addresses.

New York to Boston Link

- We've been allocated 200.15.10.0/24

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	1	0	0	0	0	0	0	0	1	1	1	1	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0

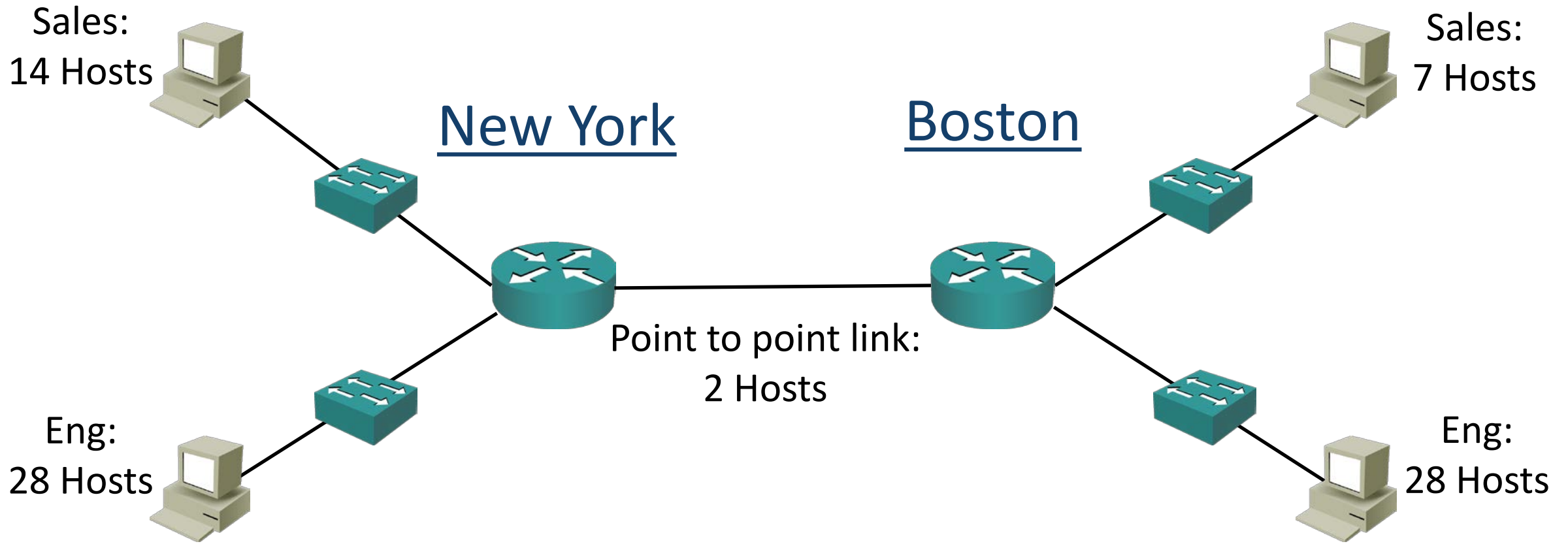| 128	64	32	16	8	4	2	1	128	64	32	16	8	4	2	1	128	64	32	16	8	4	2	1	128	64	32	16	8	4	2	1
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0

- /30 (or 255.255.255.252) supports 2 hosts

- 200.15.10.0 to 200.15.10.95 are already in use, so our network address will be 200.15.10.96

- The network address goes up in values of 4, so the next one is 200.15.10.100

- Our broadcast address is 200.15.10.99

- Valid host addresses are 200.15.10.97 to 200.15.10.98

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Network Topology Diagram

- Revisit the network topology diagram again on the next slide

- Update the diagram with the IP addressing information for each subnet

- Also enter the IP addresses on the router

- The default gateway address should be the first available address in each subnet

Network Topology Diagram

New York

Boston

Sales:
200.15.10.64/28

Sales:
200.15.10.80 /28

.65

200.15.10.96/30

.81

.97

.98

.1

.33

Eng:
200.15.10.0/27

Eng:
200.15.10.32/27