Quiz, Solution 1

You have been given the 172.30.0.0/16 network. Your company requires 100 subnets with at least 500 hosts per subnet. What prefix length should you use?

Borrowed bits:	1	2	3	4	5	6	7
Num. of subnets:	2	4	8	16	32	64	128

Quiz, Solution 1

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1 0 1 0 1 1 0 0 . 0 0 0 1 1 1 1 0 . 0 0 0 0 0 0 0 0 . 0 0 0 0 0 0 0 0

172 . 30 . 0 . 0

9 host bits = 2^9 - 2 = 510 usable addresses

Subnet mask:

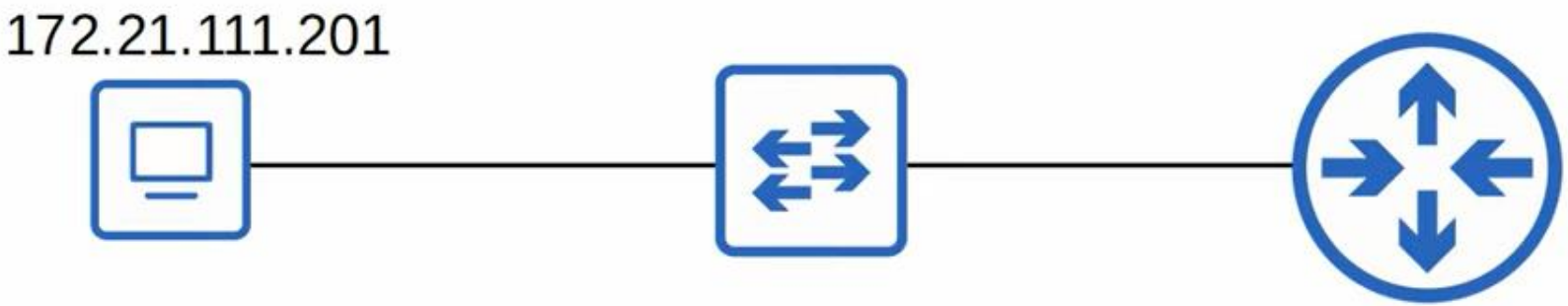
1 1 1 1 1 1 1 1 . 1 1 1 1 1 1 1 1 . 1 1 1 1 1 1 1 0 . 0 0 0 0 0 0 0 0

255 . 255 . 254 . 0

Quiz, Question 2

What subnet does host **`172.21.111.201/20`** belong to?

Subnet ID: _____/20



Quiz, Solution 2

/20

1 0 1 0 1 1 0 0 . 0 0 0 1 0 1 0 1 . 0 1 1 0 1 1 1 1 . 1 1 0 0 1 0 0 1

172 . 21 . 111 . 201

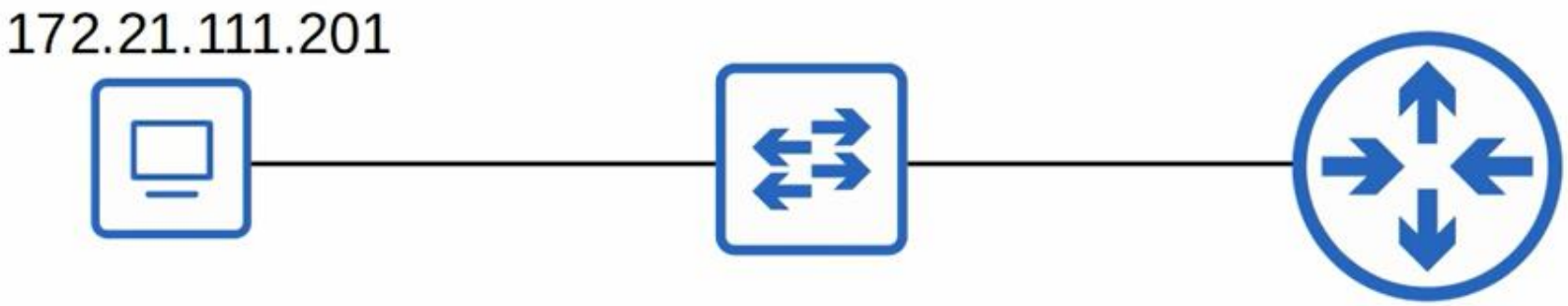
1 0 1 0 1 1 0 0 . 0 0 0 1 0 1 0 1 . 0 1 1 0 0 0 0 0 . 0 0 0 0 0 0 0 0

172 . 21 . 96 . 0

Quiz, Solution 2

What subnet does host **172.21.111.201/20** belong to?

Subnet ID: 172.21.96.0 /20

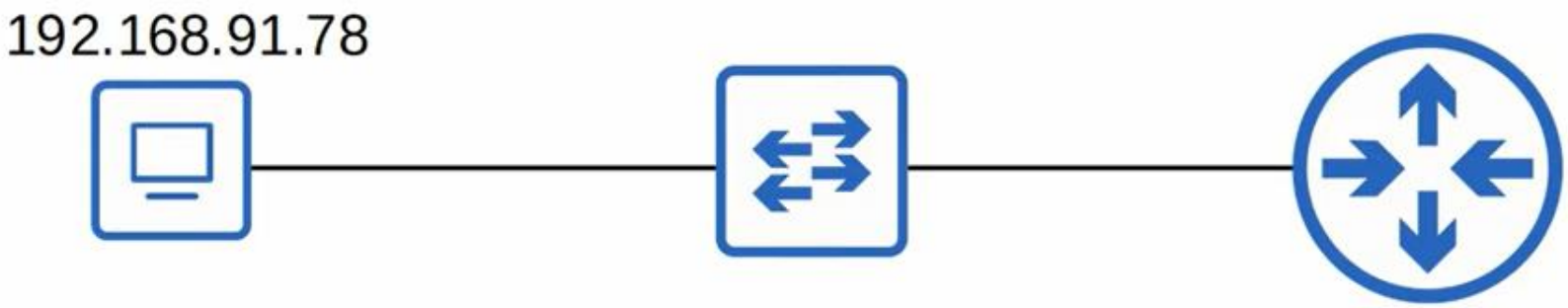


Quiz, Question 3

What is the **broadcast address** of the network

192.168.91.78/26 belongs to?

Broadcast address: _____/26



Quiz, Solution 3

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1 1 0 0 0 0 0 0 . 1 0 1 0 1 0 0 0 . 0 1 0 1 1 0 1 1 . 0 1 0 0 1 1 1 0

192 . 168 . 91 . 78

1 1 0 0 0 0 0 0 . 1 0 1 0 1 0 0 0 . 0 1 0 1 1 0 1 1 . 0 1 1 1 1 1 1 1

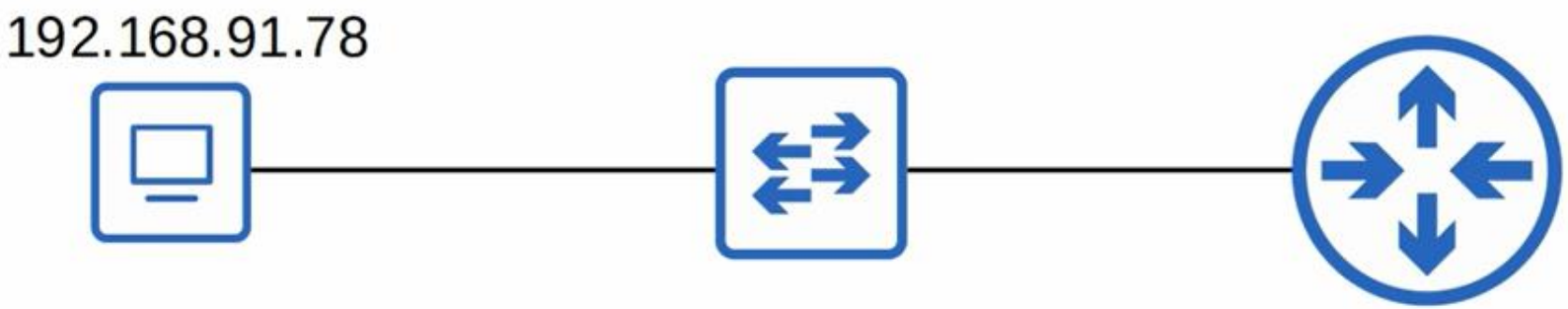
192 . 168 . 91 . 127

Quiz, Solution 3

What is the **broadcast address** of the network

192.168.91.78/26 belongs to?

Broadcast address: 192.168.91.127 /26



Quiz, Question 4

You divide the 172.16.0.0/16 network into 4 subnets of equal size. Identify the **network** and **broadcast** addresses of the second subnet.

Quiz, Solution 4

You divide the 172.16.0.0/16 network into 4 subnets of equal size.
Identify the **network** and **broadcast** addresses of the second subnet.

Borrow 2 bits = 2^2 = 4 subnets

Quiz, Solution 4

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1 0 1 0 1 1 0 0 . 0 0 0 1 0 0 0 0 . 0 0 0 0 0 0 0 0 . 0 0 0 0 0 0 0 0

172 . 16 . 0 . 0

1 0 1 0 1 1 0 0 . 0 0 0 1 0 0 0 0 . 0 1 0 0 0 0 0 0 . 0 0 0 0 0 0 0 0

172 . 16 . 64 . 0

= Network address of the second subnet.

Quiz, Solution 4

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1 0 1 0 1 1 0 0 . 0 0 0 1 0 0 0 0 . 0 1 0 0 0 0 0 0 . 0 0 0 0 0 0 0 0

172 . 16 . 64 . 0

1 0 1 0 1 1 0 0 . 0 0 0 1 0 0 0 0 . 0 1 1 1 1 1 1 1 . 1 1 1 1 1 1 1 1

172 . 16 . 127 . 255

= Broadcast address of the second subnet.

Quiz, Question 5

You divide the 172.30.0.0/16 network into subnets of 1000 hosts each. How many subnets are you able to make?

Quiz, Solution 5

You divide the 172.30.0.0/16 network into subnets of 1000 hosts each. How many subnets are you able to make?

10 host bits = 2^{10}- 2 = 1022 hosts

Quiz, Solution 5

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1 0 1 0 1 1 0 0 . 0 0 0 1 1 1 1 0 . 0 0 0 0 0 0 0 0 . 0 0 0 0 0 0 0 0

172 . 30 . 64 . 0

6 borrowed bits = 2^6 = 64 subnets