# TUESDAY MORNING REVIEW

- Why is a switch better than a hub?
- Which layer of the OSI references MAC addresses?
- What information is returned by ARP?
- What is a PDU?
- Which cable connects two switches to each other (straight-through or crossover)?

Feel free to type your answers into Notepad (or better yet, Notepad++) so that you can copy and paste them into the chat window as we get to each question - it's faster than typing your answers directly into the chat window. Or you can just talk. ☺

# TUESDAY MORNING REVIEW ANSWERS

- Why is a switch better than a hub? Switches learn destination MAC address, hubs send traffic out all ports except the one from which it came in
- Which layer of the OSI references MAC addresses? Layer 2, the Data Link layer
- What information is returned by ARP? The MAC address associated with a particular IP address
- What is a PDU? Protocol Data Unit (Bits, Frames, Packets, Segments) – a more specific name for ‘data’
- Which cable connects two switches to each other? Crossover

# WEDNESDAY MORNING REVIEW

What network device moves traffic between networks?

What is TTL?

Given the network 193.128.2.0 /24:
Subnet this network so that there are at least 10 subnets.
Determine the increment value of the resulting subnets.

- List the first four newly created subnets
- The valid IP host address ranges,
- The directed broadcast addresses for each subnet.

Be as efficient as possible… (Realizing that there is more than one answer that will accomplish the objective, but only one BEST answer.)

We will review this together shortly…

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# WEDNESDAY MORNING REVIEW ANSWERS

What network device moves traffic between networks?

A router (or a Layer 3 switch)

What is TTL? The letters stand for Time To Live, it is really a hop count. As a router moves a packet, it decrements the value by 1. If the value gets to 0, the packet is dropped.

Original subnet mask:
11111111.11111111.11111111.00000000
To get 10 subnets requires 4 folds or borrowing 4 bits, so the new mask looks like this:
11111111.11111111.11111111.11110000
At four positions over on the chart, the subnet mask value is 240, the interesting octet is the fourth one, and the increment is 16.

Listing the first four:

| Subnet IDs | IP Address range | | | Directed broadcast address |
|---|---|---|---|---|
| 193.128.2.0 | 193.128.2.1 | - | 193.128.2.14 | 193.128.2.15 |
| 193.128.2.16 | 193.128.2.17 | - | 193.128.2.30 | 193.128.2.31 |
| 193.128.2.32 | 193.128.2.33 | - | 193.128.2.46 | 193.128.2.47 |
| 193.128.2.48 | 193.128.2.49 | - | 193.128.2.62 | 193.128.2.63 |

# THURSDAY MORNING REVIEW

What is an FQDN?

Port numbers? FTP TFTP HTTP SMTP NTP

Break 192.168.1.0 /24 into subnets of at least 20 hosts per subnet.

Given the host IP address of 192.168.1.195 and subnet mask of 255.255.255.248, determine the directed broadcast address for this host.

We will review them together shortly

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# THURSDAY MORNING REVIEW ANSWERS

FQDN: Fully Qualified Domain Name includes hostname, parent domain and top level domain ***thiscomputer . interfacett . com.***

Port numbers: FTP 21 (& 20) TFTP 69 HTTP 80 SMTP 25 NTP 123

Break 192.168.1.0 /24 into subnets of at least 20 hosts per subnet.

How many host bits (zeroes) are required to have 20 or more hosts?

$2^h - 2 \geq 20$ (Or fold until the result exceeds 20). This would be

2, 4, 8 ,16, 32

1 2 3 4 5 folds, or reserve 5 zeroes. Here are the 5 zeroes in green font:

11111111.11111111.11111111.11100000

This makes the mask 224 and the increment 32 (from the chart). This first two subnets looks like this:

| IDs | < - - - - Valid IP range - - - - > | Broadcast addresses |
|---|---|---|
| 192.168.1.0 | 192.168.1.1 - 192.168.1.30 | 192.168.1.31 |
| 192.168.1.32 | 192.168.1.33-192.168.1.62 | 192.168.1.63 |

Given the host IP address of 192.168.1.195 and subnet mask of 255.255.255.248, determine the directed broadcast address for this host.

A 248 mask has an increment of 8. The biggest multiple of 8 that is less than (or equal to) the host address of 195 is 192. So the subnet ID for the host information given is 192.168.1.192. The next subnet ID with an increment of 8 after 192 is 192.168.1.200. The highest number less than 200 is 199, so the answer, the broadcast address in question is: 192.168.1.199

# FRIDAY MORNING REVIEW

CIA Triad.  For what do the letters C I & A stand?

What is MitM?

What is an ACL?

**Subnetting question:**  Of what valid host range is the IP address 172.30.228.10/23 a part?  How would it change your answer if the above IP address was 172.30.229.10/23?

We will review them together shortly

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# FRIDAY MORNING REVIEW ANSWERS Part 1

CIA Triad. For what do the letters C I & A stand?
Confidentiality, Integrity, and Availability

What is MitM? Man in the Middle attack (such as ARP poisoning)

What is an ACL? Access Control List, a list of permit and deny statements to control or modify network traffic.

# FRIDAY MORNING REVIEW ANSWERS Part 2

Of what valid host range is the IP address 172.30.228.10/23 a part?

/23 IN BINARY LOOKS LIKE THIS
11111111.11111111.1111111**0**.00000000
This makes the subnet mask
255.255.254.0
The interesting octet is the third one, and the increment is 2.
So the third octet is changing by twos (even numbers), and the current value of the third octet is an even number, so the subnet ID is: 172.30.228.0
The next subnet ID would be: 172.30.230.0
The valid range of IP addresses: 172.30.228.1 – 172.30.229.254
The directed broadcast address: 172.30.229.255

Writing it horizontally:

| Subnet ID | [ Range of IP addresses ] | Directed Broadcast Address |
|---|---|---|
| 172.30.228.0 | 172.30.228.1 - 172.30.229.254 | 172.30.229.255 |

*How would it change your answer if the above IP address was 172.30.229.10/23?*
Since the third octet is incrementing by 2, if the given third octet was an odd number (like 229), you would just go back to the highest even number that is less than 229, which is 228. In that case, the subnet determined above would not change - the answer would still be 172.30.228.0/23. Another way to determine the subnet ID is to Boolean AND the IP address and the mask. Let's see that in the 'interesting octet':

229: 11100101
254: 11111110
'AND' Result: 11100100 <- which is 228, which validates our above answer.