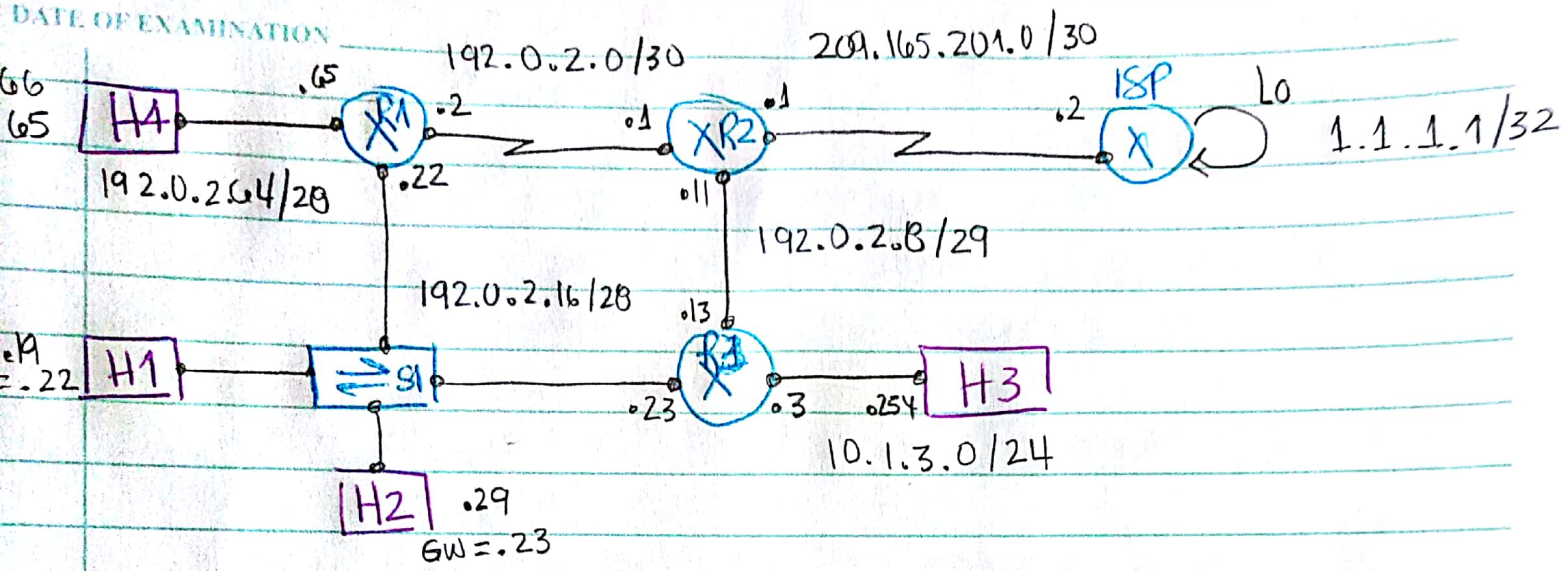
ADDITIONAL ANSWER BOOK

NAME Carolina Ayala STUDENT NO.

SUBJECT NET 3008 - Q1

DATE OF EXAMINATION



Q1. What can H2 ping?

(1) H2 should be able to ping all devices within its network:

→ .19 (H1)
→ .23 (R3-fa0/1)
→ .22 (R1-fa0/1)

Important:
Notice that H2 is in a /28 network.
Jump # = 16
Network goes from
192.0.2.16
↕
.31 (broadcast)

(2) H2 should be able to ping all interfaces within the router that is acting as it's default GW (R3)

→ 10.1.3.3
→ 192.0.2.13
→ 192.0.2.23

Notice:
R3 has 3 directly connected networks
{ 192.0.2.8/29
{ 192.0.2.16/28
{ 10.1.3.0/24
meaning it can reach those networks

(3) Should H2 be able to ping H3?

Ping request:
- H3 is in a different network, the ping (request) will be sent to R3
- R3 knows about the network that H3 belongs to (10.1.3.0/24)
- R3 can deliver the ping (request) to H3.

Ping Reply
- H3 replies to H2 (in a different network)
- The reply is sent to R3
- R3 knows about the network that H2 is in
- R3 sends the echo reply out its Fa0/1 interface
- H2 receives the echo reply.

Remember for a ping to be successful it is required to have communication both ways (Request / Reply)

(4) H2 is able to ping H3 (a device connected at the other end of the router acting as its default GW)

(4) Is H2 able to ping R1 (fa0/0) - 192.0.2.11 ?

- The echo request is delivered to R3
- R3 knows about 192.0.2.8/29 (link connecting to R1)
- R3 delivers the echo request to R1
- R1 needs to echo reply to H2 (192.0.2.16/28 network)
- R1 does not know about 192.0.2.16/28
- R1 can't answer back to H2

Notice:
R1 has 3 directly connected networks
192.0.2.0/30 (s0/0/1)
192.0.2.8/29 (fa0/0)
209.165.201.0/3 (s0/0/0)

H2 will receive the ICMP message

Important!

Request time out

Which means, the ICMP packet reach its destination but the reply could not reach the requesting host

H2 will not be able to ping R1 (fa0/0)

(5) What about R1 (s0/0/1) and R1 (s0/0/0)?

Notice that these interfaces are different than R1 (fa0/0)!

- H2 pings 192.0.2.1, R1 (s0/0/1)
- The ICMP echo request goes to R3 (fa0/1), Default GW for H2)
- R3 does not have 192.0.2.0/30 in its routing table

H2 will receive an ICMP message

Important!

Reply from 192.0.2.23: Destination host unreachable

Which means 192.0.2.23 (R3) that there is not a valid route to the requested host

- Same answer for all the other addreses!
- Network unknow to R3!

Q2. What if H2's default GW is reconfigured 192.0.2.22?

(1) H2 should ping all devices with in its network
→ .19
→ .22
→ .23

*R2 has 3 directly connected networks
192.0.2.16/28 – fa0/1
192.0.2.64/28 – fa0/0
192.0.2.0/30 – s0/0/0

(2) H2 should be able to ping all interfaces in R2

→ .22 (fa0/1 – as in (1))
→ .2 (s0/0/0)
→ .65 (fa0/0)

(3) H2 should be able to ping H4 192.0.2.66
Same explanation as in Q1(3).

(4) While H2 can ping 192.0.2.2 – R2(s0/0/0)
it can not ping 192.0.2.1 – R1(s0/0/1)
Remember: R1 does not know about 192.0.2.64/28
check ↙ page #2

the ICMP message is "Request time out"

(5) R2 will not know about any other networks*, the ICMP message sent back to H2 will be

Reply from 192.0.2.22: Destination host unreachable.

Q3. Explain. Why the ping will not succeed:

R2# ping 192.0.2.1 source fa0/0

- Check back again R2 and R1 route table.
- 192.0.2.0/30 is directly connected to R2 and R1
- R2# ping 192.0.2.1 should be succesful
- R2# ping 192.0.2.1 source fa0/0 is not

Explanation

- By default ping uses as source IP address the interface closes to the destination address' network, In this case, the source will be 192.0.2.1 - R2 (s0/0/0).
- Since R1 knows about the network, it will be able to reply
- In the Q., the ping is being source by fa0/0 192.0.2.65
- R1 will receive the request, but 192.0.2.64/28 is not in it's routing table, thus it will be unable to send the request

Important

- Which ICMP message will R2 receive?

Q4. Give a command to configure a single static route so the ping in Q3 could work. Include IOS prompt.

- Static routes are configured in global configuration
- R1 needs to know about the 192.0.2.64/28

network — net mask (/28)

R1(config)# ip route 192.0.2.64 255.255.255.240 192.0.2.2

next hop IP