Case Study

CST8270 – Basic Network Routing

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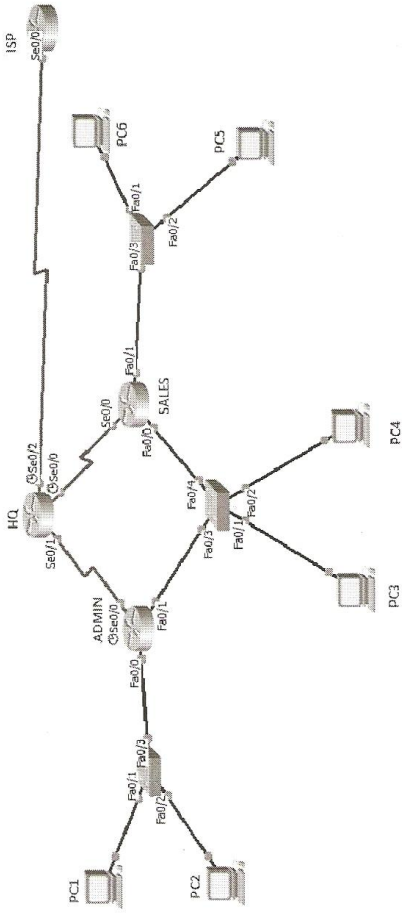

Title:

IP addresses:

Title

Device	Interface/NIC	IP Address	Mask
Admin	Fa0/0	172.32.96.1	255.255.254.0
Admin	Fa0/1	172.32.99.1	255.255.255.128
Admin	S0/0	192.168.4.146	255.255.255.252
HQ	S0/1	192.168.42.145	255.255.255.252
HQ	S0/0	192.168.42.149	255.255.255.252
HQ	S0/2	10.10.10.69	255.255.255.252
Sales	Fa0/0	172.32.99.2	255.255.255.128
Sales	Fa0/1	172.32.98.1	255.255.255.0
Sales	S0/0	192.168.4.150	255.255.255.252
ISP	S0/0	10.10.10.70	255.255.255.252
HQ	Lo0	102.42.42.1	255.255.255.0
HQ	Lo1	102.52.88.1	255.255.255.0
HQ	Lo2	102.62.73.1	255.255.255.0
ISP	Lo0	200.20.20.21	255.255.255.0
Device	**IP Address**	**Mask**	**Default Gateway**
WS1	172.32.97.254	255.255.254.0	172.32.96.1
WS2	172.32.97.253	255.255.254.0	172.32.96.1
WS3	172.32.99.126	255.255.255.128	172.32.99.2
WS4	172.32.99.125	255.255.255.128	172.32.99.2
WS5	172.32.98.254	255.255.255.0	172.32.98.1
WS6	172.32.98.253	255.255.255.0	172.32.98.1

Subnetting errors.

```
RouterHQ#sho start
Using 1263 bytes
!
version 12.2
no service timestamps log datetime msec
no service timestamps debug datetime msec
no service password-encryption
!
hostname RouterHQ
!
!
!
enable secret 5 $1$mERr$hx5rVt7rPNoS4wqbXKX7m0
!
!
!
!
!
!
!
!
!
!
no ip domain-lookup
!
!
!
!
!
!
interface Loopback0
 ip address 102.42.42.1 255.255.255.0
!
interface Loopback1
 ip address 102.52.88.1 255.255.255.0
!
interface Loopback2
 ip address 102.62.73.1 255.255.255.0
!
interface FastEthernet0/0
 no ip address
 duplex auto
 speed auto
 shutdown
!
interface FastEthernet0/1
```

```
 no ip address
 duplex auto
 speed auto
 shutdown
!
interface Serial0/0
 description This is s0/0
 ip address 192.168.42.149 255.255.255.252
 clock rate 64000
!
interface Serial0/1
 description This is s0/1
 ip address 192.168.42.145 255.255.255.252
!
interface Serial0/2
 description This is s0/2
 ip address 10.10.10.69 255.255.255.252
!
interface Serial0/3
 no ip address
 shutdown
!
router eigrp 1
 network 192.168.42.144 0.0.0.3
 network 10.10.10.68 0.0.0.3
 network 192.168.42.148 0.0.0.3
 network 102.0.0.0
 no auto-summary
!
ip classless
!
!
!
banner motd ^C
This is case study router HQ
^C
!
!
line con 0
 exec-timeout 12 0
 password class
 logging synchronous
 login
line vty 0 4
 password class
 login
!
!
```

wildcard

missing - bandwidth
- manual summary
- default route
- redistribute static.

```
!
End
   102.0.0.0/24 is subnetted, 3 subnets
C      102.42.42.0 is directly connected, Loopback0
C      102.52.88.0 is directly connected, Loopback1
C      102.62.73.0 is directly connected, Loopback2
   172.32.0.0/16 is variably subnetted, 3 subnets, 3 masks
D      172.32.96.0/23 [90/2172416] via 192.168.42.146, 00:15:25, Serial0/1
D      172.32.98.0/24 [90/2172416] via 192.168.42.150, 00:15:23, Serial0/0
D      172.32.99.0/25 [90/2172416] via 192.168.42.146, 00:15:25, Serial0/1
                      [90/2172416] via 192.168.42.150, 00:15:23, Serial0/0
   192.168.42.0/30 is subnetted, 2 subnets
C      192.168.42.144 is directly connected, Serial0/1
C      192.168.42.148 is directly connected, Serial0/0

P 102.42.42.0/24, 1 successors, FD is 128256
      via Connected, Loopback0
P 102.52.88.0/24, 1 successors, FD is 128256
      via Connected, Loopback1
P 102.62.73.0/24, 1 successors, FD is 128256
      via Connected, Loopback2
P 192.168.42.148/30, 1 successors, FD is 2169856
      via Connected, Serial0/0
P 192.168.42.144/30, 1 successors, FD is 2169856
      via Connected, Serial0/1
P 172.32.99.0/25, 2 successors, FD is 2172416
      via 192.168.42.146 (2172416/28160), Serial0/1
      via 192.168.42.150 (2172416/28160), Serial0/0
P 172.32.96.0/23, 1 successors, FD is 2172416
      via 192.168.42.146 (2172416/28160), Serial0/1
      via 192.168.42.150 (2174976/30720), Serial0/0
P 172.32.98.0/24, 1 successors, FD is 2172416
      via 192.168.42.150 (2172416/28160), Serial0/0
      via 192.168.42.146 (2174976/30720), Serial0/1
```

```
Using 940 bytes
!
version 12.2
no service timestamps log datetime msec
no service timestamps debug datetime msec
no service password-encryption
!
hostname RouterAdmin
!
!
!
enable secret 5 $1$mERr$hx5rVt7rPNoS4wqbXKX7m0
!
!
!
!
!
!
!
!
!
!
!
no ip domain-lookup
!
!
!
!
!
!
interface FastEthernet0/0
 description This is Router ADMIN
 ip address 172.32.96.1 255.255.254.0
 duplex auto
 speed auto
!
interface FastEthernet0/1
 description This is fa 0/1
 ip address 172.32.99.1 255.255.255.128
 duplex auto
 speed auto
!
interface Serial0/0
 description This is s0/0
 ip address 192.168.42.146 255.255.255.252
 clock rate 64000
!
```

BW

```
interface Serial0/1
 no ip address
 shutdown
!
router eigrp 1
 network 192.168.42.144 0.0.0.3
 network 172.32.0.0
 no auto-summary
!
ip classless
!
!
!
banner motd ^C
This is Case study router Admin
^C
!
!
!
!
line con 0
 exec-timeout 12 0
 password class
 logging synchronous
 login
line vty 0 4
 password class
 login
!
!
!
End
```

wildcard -

```
    102.0.0.0/24 is subnetted, 3 subnets
D      102.42.42.0 [90/2297856] via 192.168.42.145, 00:22:32, Serial0/0
D      102.52.88.0 [90/2297856] via 192.168.42.145, 00:22:32, Serial0/0
D      102.62.73.0 [90/2297856] via 192.168.42.145, 00:22:32, Serial0/0
    172.32.0.0/16 is variably subnetted, 3 subnets, 3 masks
C      172.32.96.0/23 is directly connected, FastEthernet0/0
D      172.32.98.0/24 [90/30720] via 172.32.99.2, 00:22:05, FastEthernet0/1
C      172.32.99.0/25 is directly connected, FastEthernet0/1
    192.168.42.0/30 is subnetted, 2 subnets
C      192.168.42.144 is directly connected, Serial0/0
D      192.168.42.148 [90/2172416] via 172.32.99.2, 00:22:05, FastEthernet0/1
```

P 172.32.99.0/25, 1 successors, FD is 28160
    via Connected, FastEthernet0/1
P 172.32.96.0/23, 1 successors, FD is 28160
    via Connected, FastEthernet0/0
P 192.168.42.144/30, 1 successors, FD is 2169856
    via Connected, Serial0/0
P 102.42.42.0/24, 1 successors, FD is 2297856
    via 192.168.42.145 (2297856/128256), Serial0/0
P 102.52.88.0/24, 1 successors, FD is 2297856
    via 192.168.42.145 (2297856/128256), Serial0/0
P 102.62.73.0/24, 1 successors, FD is 2297856
    via 192.168.42.145 (2297856/128256), Serial0/0
P 192.168.42.148/30, 1 successors, FD is 2172416
    via 172.32.99.2 (2172416/2169856), FastEthernet0/1
    via 192.168.42.145 (2681856/2169856), Serial0/0
P 172.32.98.0/24, 1 successors, FD is 30720
    via 172.32.99.2 (30720/28160), FastEthernet0/1

```
Using 1026 bytes
!
version 12.2
no service timestamps log datetime msec
no service timestamps debug datetime msec
no service password-encryption
!
hostname RouterSales
!
!
!
enable secret 5 $1$mERr$hx5rVt7rPNoS4wqbXKX7m0
!
!
!
!
!
!
!
!
!
!
no ip domain-lookup
!
!
!
!
!
!
interface FastEthernet0/0
 description This is fa 0/0
 ip address 172.32.99.2 255.255.255.128
 duplex auto
 speed auto
!
interface FastEthernet0/1
 description This is fa 0/1
 ip address 172.32.98.1 255.255.255.0
 duplex auto
 speed auto
!
interface Serial0/0
 description This is s0/0
 ip address 192.168.42.150 255.255.255.252
!
interface Serial0/1
```

```
 no ip address
 shutdown
!
router eigrp 1
 network 192.168.42.148 0.0.0.3
 network 172.32.0.0
 no auto-summary
!
ip classless
ip route 192.168.42.148 255.255.255.252 172.32.99.1
ip route 192.168.42.144 255.255.255.252 FastEthernet0/0
!
!
!
banner motd ^C
This is case study router Sales
^C
!
!
!
!
line con 0
 exec-timeout 12 0
 password class
 logging synchronous
 login
line vty 0 4
 password class
 login
!
!
!
End
```

```
    102.0.0.0/24 is subnetted, 3 subnets
D      102.42.42.0 [90/2297856] via 192.168.42.149, 00:25:04, Serial0/0
D      102.52.88.0 [90/2297856] via 192.168.42.149, 00:25:04, Serial0/0
D      102.62.73.0 [90/2297856] via 192.168.42.149, 00:25:04, Serial0/0
    172.32.0.0/16 is variably subnetted, 3 subnets, 3 masks
D      172.32.96.0/23 [90/30720] via 172.32.99.1, 00:24:39, FastEthernet0/0
C      172.32.98.0/24 is directly connected, FastEthernet0/1
C      172.32.99.0/25 is directly connected, FastEthernet0/0
    192.168.42.0/30 is subnetted, 2 subnets
S      192.168.42.144 is directly connected, FastEthernet0/0
C      192.168.42.148 is directly connected, Serial0/0
```

P 172.32.98.0/24, 1 successors, FD is 28160
    via Connected, FastEthernet0/1
P 172.32.99.0/25, 1 successors, FD is 28160
    via Connected, FastEthernet0/0
P 192.168.42.148/30, 1 successors, FD is 2169856
    via Connected, Serial0/0
P 102.42.42.0/24, 1 successors, FD is 2297856
    via 192.168.42.149 (2297856/128256), Serial0/0
P 102.52.88.0/24, 1 successors, FD is 2297856
    via 192.168.42.149 (2297856/128256), Serial0/0
P 102.62.73.0/24, 1 successors, FD is 2297856
    via 192.168.42.149 (2297856/128256), Serial0/0
P 192.168.42.144/30, 1 successors, FD is 2172416
    via 172.32.99.1 (2172416/2169856), FastEthernet0/0
    via 192.168.42.149 (2681856/2169856), Serial0/0
P 172.32.96.0/23, 1 successors, FD is 30720
    via 172.32.99.1 (30720/28160), FastEthernet0/0

Summary

We had many problems while trying to complete the case study. At first we were unable to make anything from sales go through Admin, then eventually we just add a static route to do this. We were also unable to do everything on the ISP router, not sure why, we never solved that problem.

ISP config?

Students: Ian & Stephane

Case Study Marking Sheet F10

Category	4 points	3 points	2 points	1 point	0 point	Score
Submission	All documents included	Missing 1 document	Missing 2 documents	Missing 3 documents	Missing more than 4 documents	3
Topology	• All devices • Interfaces indicated • DCE marked. • IP addresses and subnet masks. • Names	Missing 1 of the requirement	Missing 2 of the requirements	Missing 3 of the requirements	Missing more than 3 of the requirements	3
Addressing	• **all** devices and loopback interfaces • IP address and subnet mask • errors	Missing 1 of the requirement	Missing 2 of the requirements	Missing 3 of the requirements	Missing more than 3 of the requirements	3
Packet Tracer If not submitted then the rest of the Case Study cannot be marked.	Submitted ✓	n/a late	n/a -2	n/a	Not submitted	2
Router Configuration	Checked router: HQ • hostname • IP addresses • Descriptions • Disable DNS lookup. • EXEC mode password. • **login** banner. • Logging synch • EXEC timeout of 12 minutes • password for console connections. • password for VTY connections.	Missing 1 configuration task	Missing 2 configuration tasks	Missing 3 configuration tasks	Missing more than 3 of the configuration tasks	3
Summary	n/a	n/a	Completed ✓	n/a	Not completed	2
Professionalism	Very professional – well organized, polished	Somewhat professional – organized	Lacking in professionalism - unorganized ✓	Poorly put together		2

(15)

Routing	10 points	8 points	6 points	4 points	2 points	Score
EIGRP	Routing Configurations: ☐ EIGRP on all routers except ISP ☐ Wildcard masks ☐ Bandwidths adjusted ☐ Summary static routes on ISP ☐ Default route between HQ and the ISP ☐ Propagating default route. ☐ Manual summarization to route for the loopback interfaces on the HQ router. ☐ Disable automatic summarization	Missing 2 configuration task	Missing 3 configuration tasks	Missing 4 configuration tasks	Missing more than 4 of the configuration tasks	2.
Testing	The following pings should be successful: ☐ PC1 to 172.32.102.126 (PC3) ☐ PC1 to 172.32.101.254 (PC5) ☐ PC1 to 102.42.42.1 (loopback interface on HQ) ☐ PC3 to 102.52.88.1 (loopback interface on HQ) ☐ PC5 to 102.62.73.1 (loopback interface on HQ) The following trace routes should be successful. ☐ From PC1 to 200.20.20.20/24 ☐ From PC3 to 200.20.20.20/24 (has to go through the ADMIN router) ☐ From PC5 to 200.20.20.20/24 (has to go through the ADMIN router ☐ **From ISP to Lo0 on HQ** ☐ From PC5 to 2.2.2.2 (shouldn't end up in a routing loop.) ☐ **Traffic between SALES and HQ has to go through ADMIN to be efficient.**	2 unsuccessful pings/ trace routes	3 unsuccessful pings/ trace routes	4 unsuccessful pings/ trace routes	5 or more unsuccessful pings/ trace routes	2

⇒ missing routes for 172, 102, 192 networks

Waiting on Packet tracer file

Justification (10 marks) Good start but more planning & troubleshooting is needed. 6/10

Total Score 28 /56