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CIS 420
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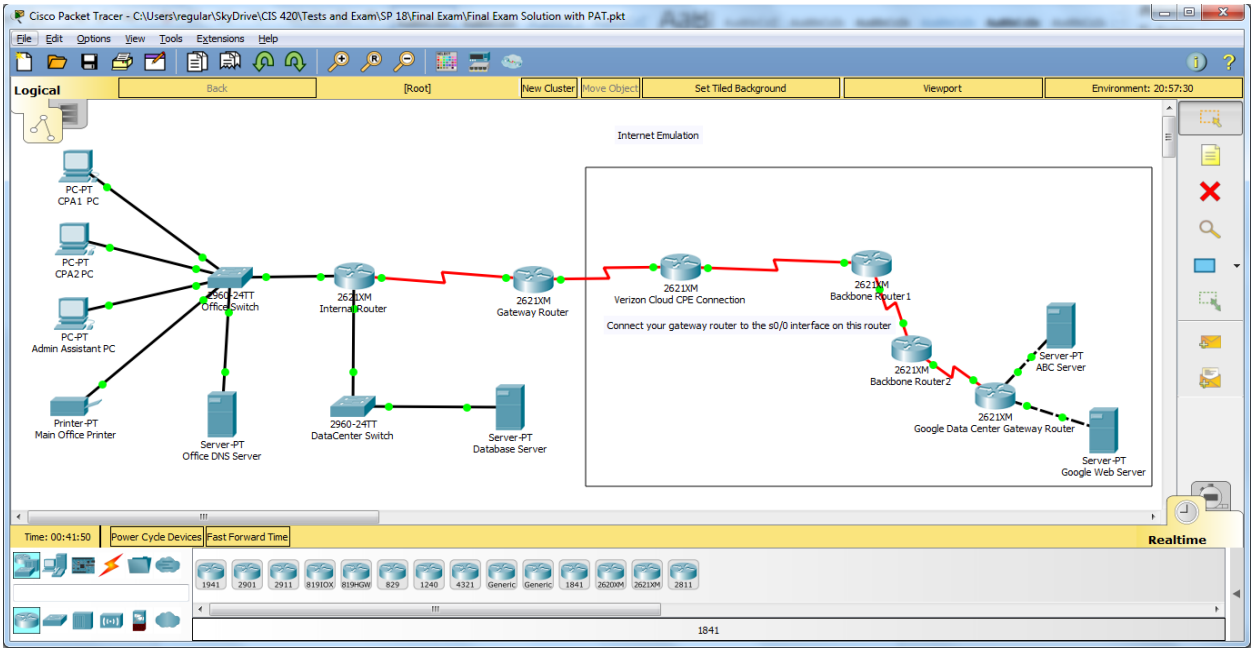


Self Notes:

PC1(f0/0)---Office Switch (fa0/1)—192.168.0.10 (255.255.255.128)—192.168.0.1 (gateway)
PC2(f0/0)---Office Switch (fa0/2)— 192.168.0.11 (255.255.255.128)—192.168.0.1
Admin PC(f0/0)---Office Switch (fa0/3)--- 192.168.0.12 (255.255.255.128)— 192.168.0.1
Printer(f0/0)---Office Switch (fa0/4)-- 192.168.0.13 (255.255.255.128)— 192.168.0.1
Office DNS Server(f0/0)---Office Switch (fa0/5)--- 192.168.0.14 (255.255.255.128)— 192.168.0.1

Office Switch (fa0/6)—internal router(fa0/0)
Internal router (s0/2)---gateway(s0/2)
Gateway router(s0/0)---Verizon CPE(s0/0)

Internal router(fa0/1)---Datacenter Switch(f0/2)
Data center switch (fa0/1) ---Database Server(f0/0) (192.168.0.130 (255.255.255.128)—192.168.0.129)

CLI notes

Internal router config

#Basic configuration

Router>enable

Router#configure terminal

Enter configuration commands, one per line. End with CNTL/Z.

Router(config)#hostname internal

#FastEthernet 0/0 interface config

internal(config)#interface f0/0

internal(config-if)#no shutdown

internal(config-if)#

%LINK-5-CHANGED: Interface FastEthernet0/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up

internal(config-if)#ip address 192.168.0.1 255.255.255.128

internal(config-if)#exit

#FastEthernet 0/1 interface config

internal(config)#interface f0/1

internal(config-if)#no shutdown

internal(config-if)#

%LINK-5-CHANGED: Interface FastEthernet0/1, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to up

internal(config-if)#ip address 192.168.0.129 255.255.255.240

internal(config-if)#exit

internal(config)#

#serial 0/0 interface config

internal(config)#interface s0/2

internal(config-if)#no shutdown

%LINK-5-CHANGED: Interface Serial0/2, changed state to down

internal(config-if)#ip address 192.168.0.253 255.255.255.252

internal(config-if)#exit

#OSPF config

internal(config)#router ospf 2

internal(config-router)#network 192.168.0.0 0.0.0.127 area 1

internal(config-router)#network 192.168.0.252 0.0.0.3 area 1

internal(config-router)#network 192.168.0.128 0.0.0.15 area 1

internal(config-router)#exit

 # Two (2) Access lists for the Database Subnet Interface

internal(config)#ip access-list extended inbound

internal(config-ext-nacl)#permit ip host 192.168.0.130 192.168.0.0 0.0.0.127

internal(config-ext-nacl)#exit

internal(config)#ip access-list extended outbound

internal(config-ext-nacl)#permit ip 192.168.0.0 0.0.0.127 host 192.168.0.130

internal(config-ext-nacl)#exit

internal(config)#interface f0/1

internal(config-if)#ip access-group inbound in

internal(config-if)#ip access-group outbound out

internal(config-if)#exit

internal(config)#exit

#Save running config to startup config

internal#copy running-config startup-config

Destination filename [startup-config]?

Building configuration...

[OK]

Gateway router:

#Basic Configuration

Router>enable

Router#configure terminal

Enter configuration commands, one per line. End with CNTL/Z.

Router(config)#hostname Gateway

#Configuration of the serial 0/2 interface

Gateway(config)#interface s0/2

Gateway(config-if)#ip address 192.168.0.254 255.255.255.252

Gateway(config-if)#no shutdown

Gateway(config-if)#exit

#Configuration of the serial 0/0 interface

Gateway(config)#interface s0/0

Gateway(config-if)#ip address 177.100.100.2 255.255.255.252

Gateway(config-if)#no shutdown

%LINK-5-CHANGED: Interface Serial0/0, changed state to up

#Default Route using the serial 0/0 interface

Gateway(config)#ip route 0.0.0.0 0.0.0.0 s0/0

#OSPF config

Gateway(config)#router ospf 2

Gateway(config-router)#

Gateway(config-router)#network 192.168.0.252 0.0.0.3 area 1

Gateway(config-router)#default-information originate

#NAT configuration

#NAT

Gateway(config)#access-list 1 permit 192.168.0.0 0.0.0.255

Gateway(config)#ip nat inside source list 1 interface s0/0 overload

Gateway(config)#interface s0/0

Gateway(config-if)#ip nat outside

Gateway(config-if)#exit

Gateway(config)#interface s0/2

Gateway(config-if)#ip nat inside

Gateway(config-if)#exit

#Access-list on outbound interface of Gateway Router

Gateway(config)#ip access-list extended internet

Gateway(config-ext-nacl)#deny icmp any any

Gateway(config-ext-nacl)#permit tcp any host 177.100.100.2 established

Gateway(config-ext-nacl)#exit

Gateway(config)#interface s0/0

Gateway(config-if)#ip access-group internet in

Gateway(config-if)#exit

Gateway#copy running-config startup-config

Destination filename [startup-config]?

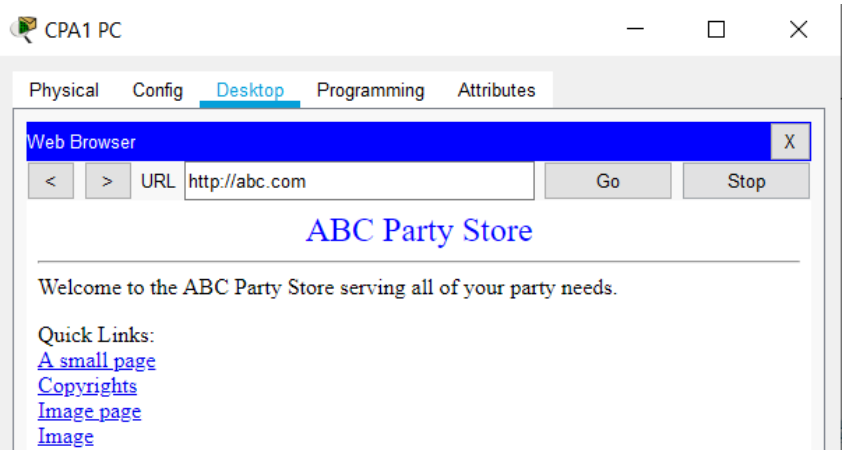
Building configuration...

[OK]

Testing:

#Testing Internal and External network connectivity

1- Web access from CPA1 PC to external web server abc.com



2- Drop ping packets (due to the Access-list configuration over the outbound interface of the Gateway Router) from CPA1-PC to abc.com

```
C:\>ping abc.com

Pinging 100.100.100.2 with 32 bytes of data:

Request timed out.
Request timed out.
```

3- Successful ping connectivity from CPA1 PC to the internal database Server

```
C:\>ping 192.168.0.130

Pinging 192.168.0.130 with 32 bytes of data:

Reply from 192.168.0.130: bytes=32 time=1ms TTL=127
Reply from 192.168.0.130: bytes=32 time=11ms TTL=127
Reply from 192.168.0.130: bytes=32 time=2ms TTL=127
Reply from 192.168.0.130: bytes=32 time<1ms TTL=127
```

4- Successful connectivity to other devices on the internal network

```
C:\>ping 192.168.0.12

Pinging 192.168.0.12 with 32 bytes of data:

Reply from 192.168.0.12: bytes=32 time=1ms TTL=128
Reply from 192.168.0.12: bytes=32 time<1ms TTL=128

Ping statistics for 192.168.0.12:
    Packets: Sent = 2, Received = 2, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 1ms, Average = 0ms
```

```
C:\>ping 192.168.0.13

Pinging 192.168.0.13 with 32 bytes of data:

Reply from 192.168.0.13: bytes=32 time=1ms TTL=128
Reply from 192.168.0.13: bytes=32 time<1ms TTL=128

Ping statistics for 192.168.0.13:
    Packets: Sent = 2, Received = 2, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 1ms, Average = 0ms
```

```
C:\>ping 192.168.0.14

Pinging 192.168.0.14 with 32 bytes of data:

Reply from 192.168.0.14: bytes=32 time=1ms TTL=128
Reply from 192.168.0.14: bytes=32 time=1ms TTL=128

Ping statistics for 192.168.0.14:
    Packets: Sent = 2, Received = 2, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 1ms, Maximum = 1ms, Average = 1ms
```