CSE421: Computer Networking

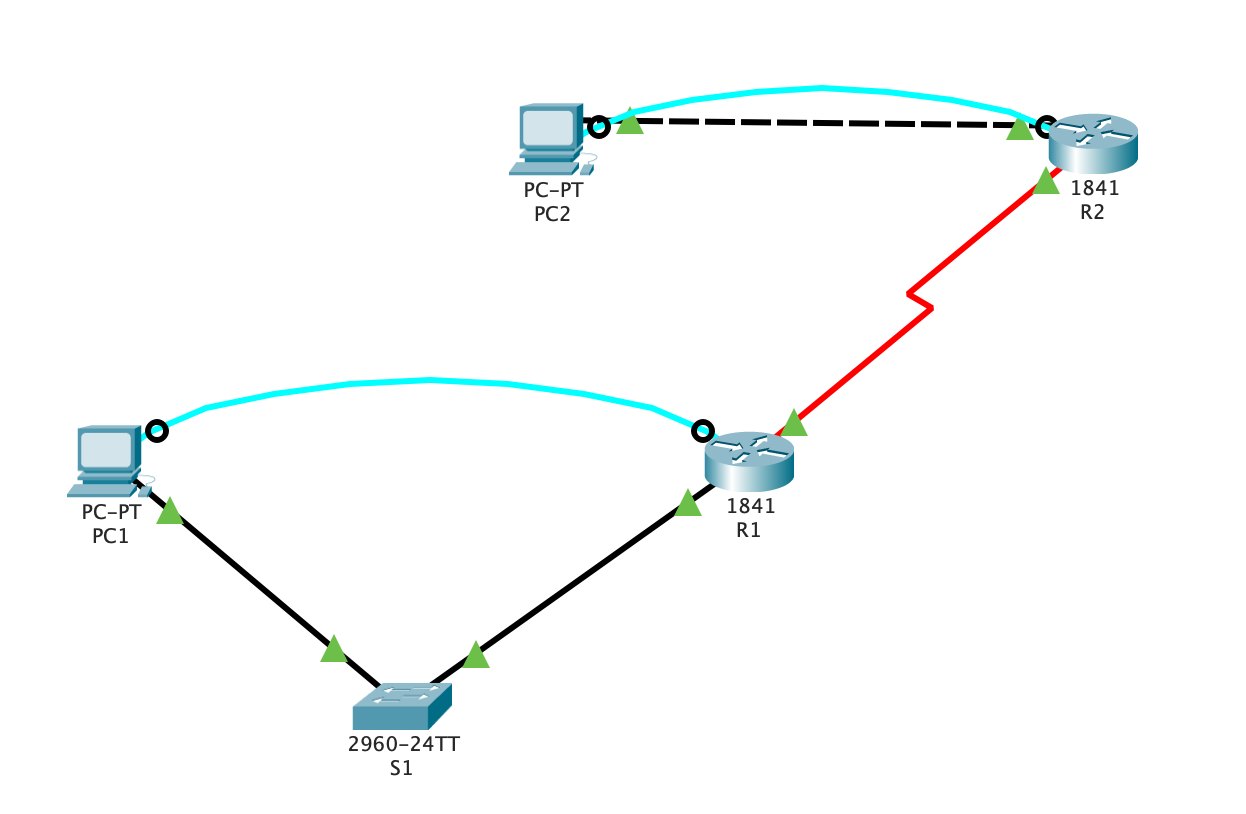
Lab Assignment 1

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ID: 20101381

Task 1: Cable the Network.

Connect the network devices using the appropriate cable types. Be sure to connect the serial DCE cable to router R1 and the serial DTE cable to router R2.



Task 2: Erase and Reload the Routers.

Step 1 - Establish a terminal session to router R1.

Step 2 - Enter privileged EXEC mode.

Router> enable

Router#

Step 3 – Clear the configuration.

Router# erase startup-config

Erasing the nvram filesystem will remove all configuration files! Continue? [confirm] [OK]

Erase of nvram: complete

%SYS-7-NV\_BLOCK\_INIT: Initialized the geometry of nvram

Router#

Step 4 – Reload configuration.

Router#reload

Proceed with reload? [confirm]ySystem Bootstrap, Version 12.3(8r)T8, RELEASE SOFTWARE (fc1)

Initializing memory for ECC

..

C1841 processor with 524288 Kbytes of main memory

Main memory is configured to 64 bit mode with ECC enabled

Readonly ROMMON initialized

Self decompressing the image : ########################################################################## [OK]

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Image text-base: 0x6007D180, data-base: 0x61400000

Port Statistics for unclassified packets is not turned on.

Cisco 1841 (revision 5.0) with 114688K/16384K bytes of memory.

Processor board ID FTX0947Z18E

M860 processor: part number 0, mask 49

2 FastEthernet/IEEE 802.3 interface(s)

2 Low-speed serial(sync/async) network interface(s)

191K bytes of NVRAM.

32768K bytes of ATA CompactFlash (Read/Write)

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--- System Configuration Dialog ---

Would you like to enter the initial configuration dialog? [yes/no]: no

Press RETURN to get started!

Step 5 – Repeat steps 1 to 4 for R2

Step 1 for R2

Establish a terminal session to router R2. Step 2 for R2

Router>enable Router#

Step 3 for R2

Router#erase startup-config

Erasing the nvram filesystem will remove all configuration files! Continue? [confirm] [OK]

Erase of nvram: complete

%SYS-7-NV\_BLOCK\_INIT: Initialized the geometry of nvram

Router#

Step 4 for R2

Router#reload

Proceed with reload? [confirm]

System Bootstrap, Version 12.3(8r)T8, RELEASE SOFTWARE (fc1) Initializing memory for ECC

..

C1841 processor with 524288 Kbytes of main memory

Main memory is configured to 64 bit mode with ECC enabled

Readonly ROMMON initialized

Self decompressing the image : ########################################################################## [OK]

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--- System Configuration Dialog ---

Would you like to enter the initial configuration dialog? [yes/no]: no

Press RETURN to get started!

Task 3: Basic Configuration of Router R1.

Step 1 - Establish a HyperTerminal session to router R1.

Step 2 - Enter privileged EXEC mode.

Router>enable

Router#

Step 3 - Enter global configuration mode.

Router# configure terminal

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

Router(config)#

Step 4 - Configure the router name as R1.

Router(config)#hostname R1

R1(config)#

Step 5 - Disable DNS lookup.

R1(config)# no ip domain-lookup

R1(config)#

Step 6 - Configure the EXEC mode password.

R1(config)# enable secret class

R1(config)#

Step 7 - Configure a message-of-the-day banner.

R1(config)# banner motd &

Enter TEXT message. End with the character '&'.

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&

R1(config)#

Step 8 - Configure the console password on the router.

R1(config)# line console 0

R1(config-line)# password cisco

R1(config-line)# login

R1(config-line)# exit

R1(config)#

Step 9 - Configure the password for the virtual terminal lines.

R1(config)# line vty 0 4

R1(config-line)# password cisco

R1(config-line)# login

R1(config-line)# exit

R1(config)#

Step 10 - Configure the FastEthernet0/0 interface.

R1(config)# interface fastethernet 0/0

R1(config-if)# ip address 192.168.1.1 255.255.255.0

R1(config-if)# no shutdown

R1(config-if)#

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

Step 11 - Configure the Serial0/0/0 interface.

R1(config-if)# interface serial 0/0/0

R1(config-if)# ip address 192.168.2.1 255.255.255.0

R1(config-if)# clock rate 64000

R1(config-if)# no shutdown

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

R1(config-if)#

Step 12 - Return to privileged EXEC mode.

R1 (config-if)# end

R1#

Step 13 - Save the R1 configuration.

R1#copy run start

Destination filename [startup-config]?

Building configuration...

[OK]

R1#

Task 4: Basic Configuration of Router R2.

Step 1 – Establish a HyperTerminal session to router R2.

Step 2 - Enter privileged EXEC mode.

Router> enable

Router#

Step 3 - Enter global configuration mode.

Router# configure terminal

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

Router(config)#

Step 4 - Configure the router name as R2.

Router(config)#hostname R2

R2(config)#

Step 5 - Disable DNS lookup.

R2(config)# no ip domain-lookup

R2(config)#

Step 6 - Configure the EXEC mode password.

R2(config)# enable secret class

R2(config)#

Step 7 - Configure a message-of-the-day banner.

R2(config)# banner motd &

Enter TEXT message. End with the character '&'.

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&

R2(config)#

Step 8 - Configure the console password on the router.

R2(config)# line console 0

R2(config-line)# password cisco

R2(config-line)# login

R2(config-line)# exit

R2(config)#

Step 9 - Configure the password for the virtual terminal lines.

R2(config)# line vty 0 4

R2(config-line)# password cisco

R2(config-line)# login

R2(config-line)# exit

R2(config)#

Step 10 - Configure the Serial 0/0/0 interface.

R2(config)# interface serial 0/0/0

R2(config-if)# ip address 192.168.2.2 255.255.255.0

R2(config-if)# no shutdown

R2(config-if)#

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

R2(config-if)#

%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0, changed state to up

Step 11 - Configure the FastEthernet0/0 interface.

R2(config-if)#i nterface fastethernet 0/0

R2(config-if)# ip address 192.168.3.1 255.255.255.0

R2(config-if)# no shutdown

R2(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

R2(config-if)#

Step 12 - Return to privileged EXEC mode.

R2(config-if)# end

R2#

Step 13 - Save the R2 configuration.

R2# copy run start

Destination filename [startup-config]?

Building configuration...

[OK]

R2#

Task 5: Configure IP Addressing on the Host PCs.

Step 1 - Configure the host PC1.

Done

Step 2 - Configure the host PC2.

Done

Task 6: Verify and Test the Configurations.

Step 1 - Verify routing tables have the following routes using the show ip route command.

R1# show ip route

Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area

N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2

E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP

i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area

\* - candidate default, U - per-user static route, o - ODR

P - periodic downloaded static route

Gateway of last resort is not set

C 192.168.1.0/24 is directly connected, FastEthernet0/0

C 192.168.2.0/24 is directly connected, Serial0/0/0

R2# show ip route

Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area

N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2 E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP

i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area

\* - candidate default, U - per-user static route, o - ODR

P - periodic downloaded static route

Gateway of last resort is not set

C 192.168.2.0/24 is directly connected, Serial0/0/0

C 192.168.3.0/24 is directly connected, FastEthernet0/0

Step 2 - Verify the configuration.

R1# show ip interface brief

Interface IP-Address OK? Method Status Protocol

FastEthernet0/0 192.168.1.1 YES manual up up

FastEthernet0/1 unassigned YES NVRAM administratively down down

Serial0/0/0 192.168.2.1 YES manual up up

Serial0/0/1 unassigned YES NVRAM administratively down down

Vlan1 unassigned YES NVRAM administratively down down

R2# show ip interface brief

Interface IP-Address OK? Method Status Protocol

FastEthernet0/0 192.168.3.1 YES manual up up

FastEthernet0/1 unassigned YES NVRAM administratively down down

Serial0/0/0 192.168.2.2 YES manual up up

Serial0/0/1 unassigned YES NVRAM administratively down down

Vlan1 unassigned YES NVRAM administratively down down

Step 3 - Test connectivity by pinging from each host to the default gateway that has been configured for that host.

Go to:

PC1 -> Desktop -> Command Prompt

Then,

Packet Tracer PC Command Line 1.0

C:\>ping 192.168.1.1

Pinging 192.168.1.1 with 32 bytes of data:

Reply from 192.168.1.1: bytes=32 time=1ms TTL=255

Reply from 192.168.1.1: bytes=32 time=1ms TTL=255

Reply from 192.168.1.1: bytes=32 time<1ms TTL=255

Reply from 192.168.1.1: bytes=32 time=1ms TTL=255

Ping statistics for 192.168.1.1:

Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),

Approximate round trip times in milli-seconds:

Minimum = 0ms, Maximum = 1ms, Average = 0ms

C:\>

Go to:

PC2 -> Desktop -> Command Prompt

Packet Tracer PC Command Line 1.0

C:\>ping 192.168.3.1

Pinging 192.168.3.1 with 32 bytes of data:

Reply from 192.168.3.1: bytes=32 time=2ms TTL=255

Reply from 192.168.3.1: bytes=32 time<1ms TTL=255

Reply from 192.168.3.1: bytes=32 time<1ms TTL=255

Reply from 192.168.3.1: bytes=32 time<1ms TTL=255

Ping statistics for 192.168.3.1:

Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),

Approximate round trip times in milli-seconds:

Minimum = 0ms, Maximum = 2ms, Average = 0ms

C:\>

Step 4 - Test connectivity between router R1 and R2.

Go to,

R1 -> CLI

Then,

Press RETURN to get started!

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User Access Verification

Password: cisco

R1>enable

Password: class

R1#ping 192.168.2.2

Type escape sequence to abort.

Sending 5, 100-byte ICMP Echos to 192.168.2.2, timeout is 2 seconds:

!!!!!

Success rate is 100 percent (5/5), round-trip min/avg/max = 7/15/29 ms

R1#

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Go to,

R2 -> CLI

Then,

Press RETURN to get started.

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User Access Verification

Password: cisco

R2>enable

Password: class

R2#ping 192.168.2.1

Type escape sequence to abort.

Sending 5, 100-byte ICMP Echos to 192.168.2.1, timeout is 2 seconds:

!!!!!

Success rate is 100 percent (5/5), round-trip min/avg/max = 1/4/8 ms

R2#

Task 7: Reflection

Step 1: Attempt to ping from the host connected to R1 to the host connected to R2 (PC1 to PC2)

This is unsuccessful

C:\>ping 192.168.3.10

Pinging 192.168.3.10 with 32 bytes of data:

Reply from 192.168.1.1: Destination host unreachable.

Reply from 192.168.1.1: Destination host unreachable.

Reply from 192.168.1.1: Destination host unreachable.

Request timed out.

Ping statistics for 192.168.3.10:

Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

C:\>

Step 2: Attempt to ping from the host connected to R1 to router R2. (PC1 to R2)

This is unsuccessful

C:\>ping 192.168.3.1

Pinging 192.168.3.1 with 32 bytes of data:

Reply from 192.168.1.1: Destination host unreachable.

Reply from 192.168.1.1: Destination host unreachable.

Reply from 192.168.1.1: Destination host unreachable.

Reply from 192.168.1.1: Destination host unreachable.

Ping statistics for 192.168.3.1:

Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

C:\>

Step 3: Attempt to ping from the host connected to R2 to router R1 (PC2 to R1).

This is unsuccessful

C:\>ping 192.168.1.1

Pinging 192.168.1.1 with 32 bytes of data:

Reply from 192.168.3.1: Destination host unreachable.

Reply from 192.168.3.1: Destination host unreachable.

Reply from 192.168.3.1: Destination host unreachable.

Reply from 192.168.3.1: Destination host unreachable.

Ping statistics for 192.168.1.1:

Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

C:\>

Task 8: Documentation

For R1:

* show running-config

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User Access Verification

Password: cisco

R1>enable

Password: class

R1#show running-config

Building configuration...

Current configuration : 938 bytes

!

version 12.3

no service timestamps log datetime msec

no service timestamps debug datetime msec

no service password-encryption

!

hostname R1

!

!

!

enable secret 5 $1$mERr$9cTjUIEqNGurQiFU.ZeCi1

!

!

!

!

!

!

no ip cef

no ipv6 cef

--More—

Show ip route

R1# show ip route

Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP

D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area

N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2

E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP

i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area

\* - candidate default, U - per-user static route, o - ODR

P - periodic downloaded static route

Gateway of last resort is not set

C 192.168.1.0/24 is directly connected, FastEthernet0/0

C 192.168.2.0/24 is directly connected, Serial0/0/0

R1#

show ip interface brief

R1# show ip interface brief

Interface IP-Address OK? Method Status Protocol

FastEthernet0/0 192.168.1.1 YES manual up up

FastEthernet0/1 unassigned YES NVRAM administratively down down

Serial0/0/0 192.168.2.1 YES manual up up

Serial0/0/1 unassigned YES NVRAM administratively down down

Vlan1 unassigned YES NVRAM administratively down down

R1#

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For R2:

show running-config

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!!!AUTHORIZED ACCESS ONLY!!!

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User Access Verification

Password: cisco

R2> enable

Password: class

R2# show ip config

^

% Invalid input detected at '^' marker.

R2#show running-config

Building configuration...

Current configuration : 919 bytes

!

version 12.3

no service timestamps log datetime msec

no service timestamps debug datetime msec

no service password-encryption

!

hostname R2

!

!

!

enable secret 5 $1$mERr$9cTjUIEqNGurQiFU.ZeCi1

!

!

!

!

!

!

no ip cef

no ipv6 cef

--More—

show ip route

R2#show ip route

Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP

D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area

N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2

E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP

i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area

\* - candidate default, U - per-user static route, o - ODR

P - periodic downloaded static route

Gateway of last resort is not set

C 192.168.2.0/24 is directly connected, Serial0/0/0

C 192.168.3.0/24 is directly connected, FastEthernet0/0

R2#

show ip interface brief

R2# show ip interface brief

Interface IP-Address OK? Method Status Protocol

FastEthernet0/0 192.168.3.1 YES manual up up

FastEthernet0/1 unassigned YES NVRAM administratively down down

Serial0/0/0 192.168.2.2 YES manual up up

Serial0/0/1 unassigned YES NVRAM administratively down down

Vlan1 unassigned YES NVRAM administratively down down

R2#

Task 9: Clean Up

Clean up will remove all the configuration and set up finally.