City College of Calamba
Dalubhasan ng Lungsod ng Calamba

Department of Computing and Informatics (DCI)

NET301 – Computer Networking 4

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SUBJ. CODE-SECTION:	**Net 301 3IT-2**	**PROFESSOR:**	**Prof. John Ceazar Bello**

Packet Tracer - Skills Integration Challenge

Addressing Table

Device	Interface	IP Address	Subnet Mask	Default Gateway
		IPv6 Address / Prefix		
HQ	G0/0	172.16.127.254	255.255.192.0	N/A
	G0/1	172.16.63.254	255.255.192.0	N/A
	S0/0/0	192.168.0.1	255.255.255.252	N/A
	S0/0/1	64.104.34.2	255.255.255.252	64.104.34.1
Branch	G0/0	172.16.159.254	255.255.240.0	N/A
		2001:DB8:ACAD:B1::1/64		
	G0/1	172.16.143.254	255.255.240.0	N/A
		2001:DB8:ACAD:B2::1/64		
	S0/0/0	192.168.0.2	255.255.255.252	N/A
HQ1	NIC	172.16.64.1	255.255.192.0	172.16.127.254
HQ2	NIC	172.16.0.2	255.255.192.0	172.16.63.254
HQServer.pka	NIC	172.16.0.1	255.255.192.0	172.16.63.254
B1	NIC	172.16.144.1	255.255.240.0	172.16.159.254
		2001:DB8:ACAD:B1::2/64		2001:DB8:ACAD:B1::1
B2	NIC	172.16.128.2	255.255.240.0	172.16.143.254
		2001:DB8:ACAD:B2::2/64		2001:DB8:ACAD:B2::1
BranchServer.pka	NIC	172.16.128.1	255.255.240.0	172.16.143.254
		2001:DB8:ACAD:B2::3/64		2001:DB8:ACAD:B2::1

Scenario

In this challenge activity, you will finish the addressing scheme, configure routing, and implement named access control lists.

Requirements

a. Divide 172.16.128.0/19 into two equal subnets for use on **Branch**.

1) Assign the last usable IPv4 address of the second subnet to the Gigabit Ethernet 0/0 interface.

2) Assign the last usable IPv4 address of the first subnet to the Gigabit Ethernet 0/1 interface.

3) Document the IPv4 addressing in the Addressing Table.

4) Configure **Branch** with appropriate IPv4 addressing.

```
Branch#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
Branch(config)#int gi
Branch(config)#int gigabitEthernet 0/0
Branch(config-if)#ip ad
Branch(config-if)#ip address 172.16.159.254?
A.B.C.D
Branch(config-if)#ip address 172.16.159.254 255.255.254.0
Branch(config-if)#no shut
Branch(config-if)#
```

```
Branch(config)#int gi
Branch(config)#int gigabitEthernet 0/1
Branch(config-if)#ip ad
Branch(config-if)#ip address 172.16.143.254 255.255.240.0
Branch(config-if)#
```

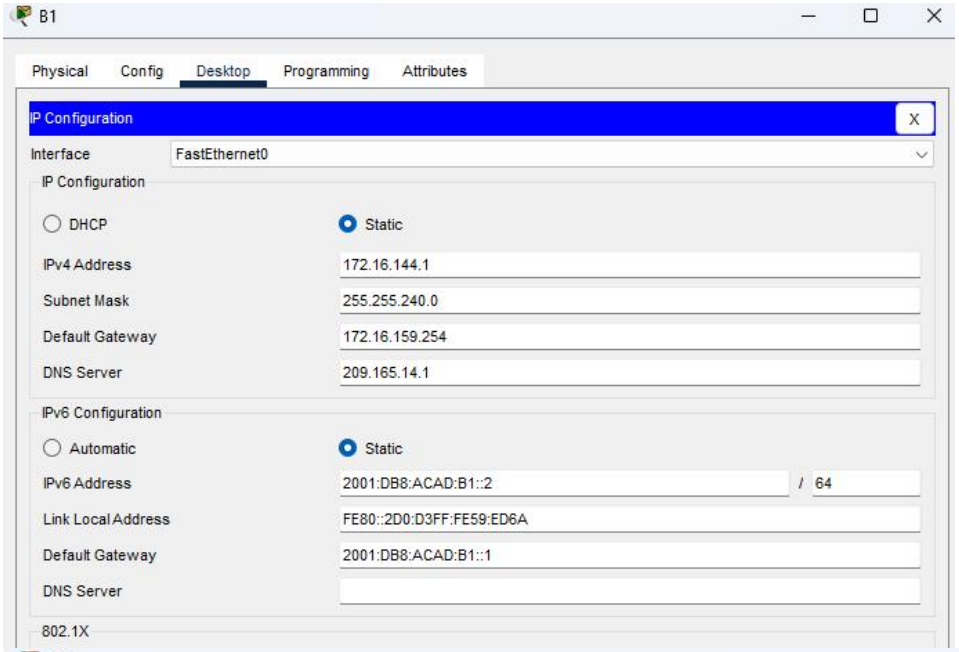
b. Configure **B1** with appropriate IPv4 address using the first available address of the network to which it is attached.

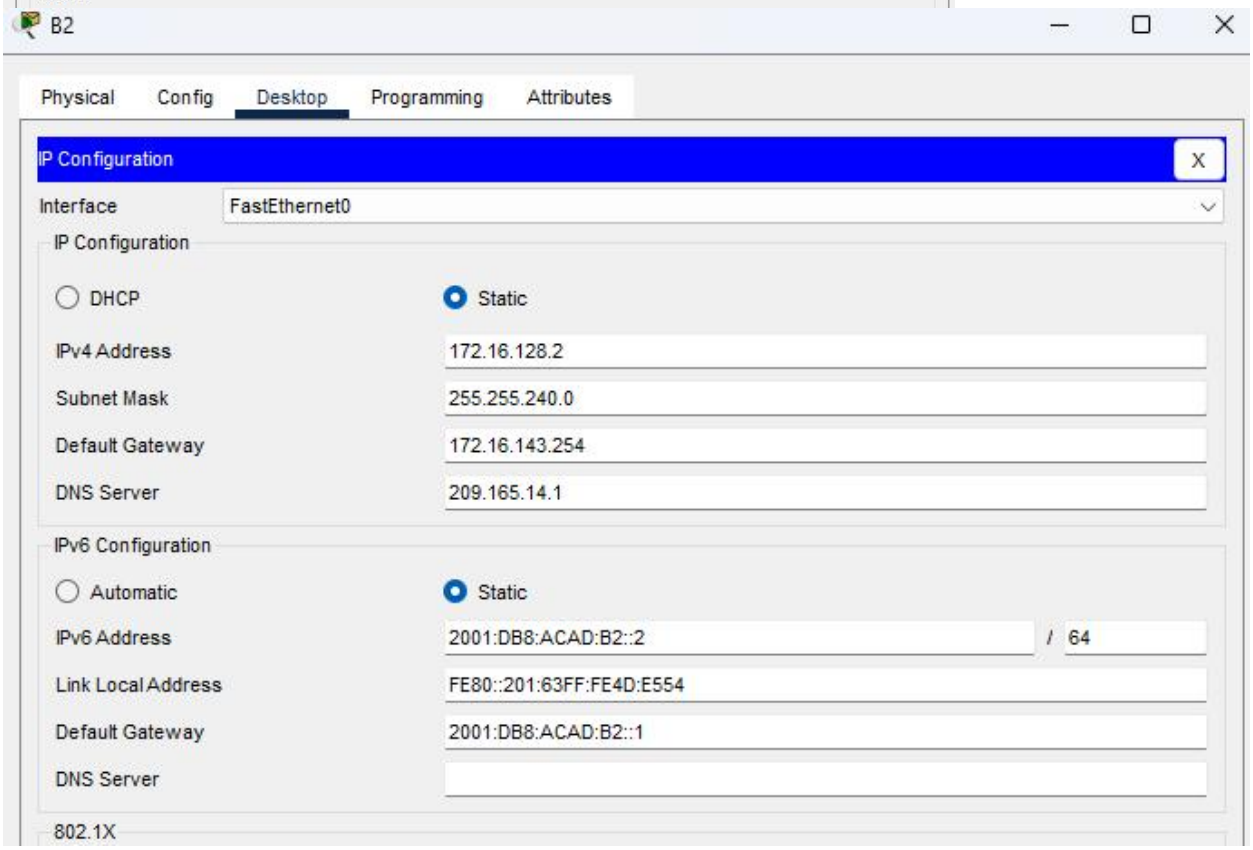
1) Assign 2001:DB8:ACAD:B1::1/64 and 2001:DB8:ACAD:B2::1/64 to **Branch's** Gigabit Ethernet 0/0 and Gigabit Ethernet 0/1, respectively.

c. Configure **Branch** with appropriate IPv6 addressing.

```
Branch#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
Branch(config)#int
Branch(config)#interface gi
Branch(config)#interface gigabitEthernet 0/0
Branch(config-if)#ipv6 ad
Branch(config-if)#ipv6 address 2001:DB8:ACAD:B1::1/64
Branch(config-if)#no shut
Branch(config-if)#no shutdown
Branch(config-if)#
Branch(config-if)#exit
Branch(config)#int gi
Branch(config)#int gigabitEthernet 0/1
Branch(config-if)#ipv6 ad
Branch(config-if)#ipv6 address  2001:DB8:ACAD:B2::1/64
Branch(config-if)#no shut
Branch(config-if)#no shutdown
Branch(config-if)#
```

d. Configure **B1** and **B2** with appropriate IPv6 addresses using the first available address of the network to which it is attached.





e. Document the addressing in the Addressing Table.

f. Configure **HQ** and **Branch** with OSPFv2 routing for IPv4 according to the following criteria:

- Assign the process ID 1.
- Advertise all attached IPv4 networks. Do not advertise the link to the Internet.
- Configure appropriate interfaces as passive.

```
Branch>en
Branch#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
Branch(config)#router os
Branch(config)#router ospf ?
  <1-65535>  Process ID
Branch(config)#router ospf 1
Branch(config-router)#net
Branch(config-router)#network 172.16.128.0?
A.B.C.D
Branch(config-router)#network 172.16.128.0 0.0.15.255?
A.B.C.D
Branch(config-router)#network 172.16.128.0 0.0.15.255 area 0
Branch(config-router)#network 172.16.144.0 0.0.15.255 area 0
Branch(config-router)#network 192.168.0.0 0.0.0.3 area 0
Branch(config-router)#pass
Branch(config-router)#passive-interface gi
Branch(config-router)#passive-interface gigabitEthernet 0/0
Branch(config-router)#pass
Branch(config-router)#passive-interface gi
Branch(config-router)#passive-interface gigabitEthernet 0/1
Branch(config-router)#
```

```
HQ>en
HQ>enable
HQ#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
HQ(config)#rout
HQ(config)#router os
HQ(config)#router ospf 1
HQ(config-router)#net
HQ(config-router)#network 172.16.64.0 0.0.63.255 area 0
HQ(config-router)#network 172.16.0.0 0.0.63.255 area 0
HQ(config-router)#net
HQ(config-router)#network 192.168.0.0 0.0.0.3 ar
HQ(config-router)#network 192.168.0.0 0.0.0.3 area 0
HQ(config-router)#
HQ(config-router)#
01:13:36: %OSPF-5-ADJCHG: Process 1, Nbr 192.168.0.2 on Serial0/0/0
from LOADING to FULL, Loading Done

HQ(config-router)#pass
HQ(config-router)#passive-interface gi
HQ(config-router)#passive-interface gigabitEthernet 0/0
HQ(config-router)#pass
HQ(config-router)#passive-interface gi
HQ(config-router)#passive-interface gigabitEthernet 0/1
HQ(config-router)#
```

g. Set a IPv4 default route on **HQ** which directs traffic to S0/0/1 interface. Redistribute the route to **Branch**.

```
HQ(config)#ip route
HQ(config)#ip route 0.0.0.0 0.0.0.0 ser
HQ(config)#ip route 0.0.0.0 0.0.0.0 serial 0/0/1
%Default route without gateway, if not a point-to-point interface,
may impact performance
HQ(config)#
```

h. Design an IPv4 named access list **HQServer** to prevent any computers attached to the Gigabit Ethernet 0/0 interface of the **Branch** router from accessing **HQServer.pka**. All other traffic is permitted. Configure the access list on the appropriate router, apply it to the appropriate interface and in the appropriate direction.

```
Branch>en
Branch>enable
Branch#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
Branch(config)#ip ac
Branch(config)#ip access-list ?
  extended  Extended Access List
  standard  Standard Access List
Branch(config)#ip access-list extended ?
  <100-199>  Extended IP access-list number
  WORD        name
Branch(config)#ip access-list extended HQServer
Branch(config-ext-nacl)#deny ip an
Branch(config-ext-nacl)#deny ip any host 172.16.0.1
Branch(config-ext-nacl)#per
Branch(config-ext-nacl)#permit any any
                        ^
% Invalid input detected at '^' marker.

Branch(config-ext-nacl)#permit ip any any
Branch(config-ext-nacl)#exit
Branch(config)#int gi
Branch(config)#int gigabitEthernet 0/0
Branch(config-if)#ip ac
Branch(config-if)#ip access-group ?
  <1-199>  IP access list (standard or extended)
  WORD     Access-list name
Branch(config-if)#ip access-group HQServer in
Branch(config-if)#
```

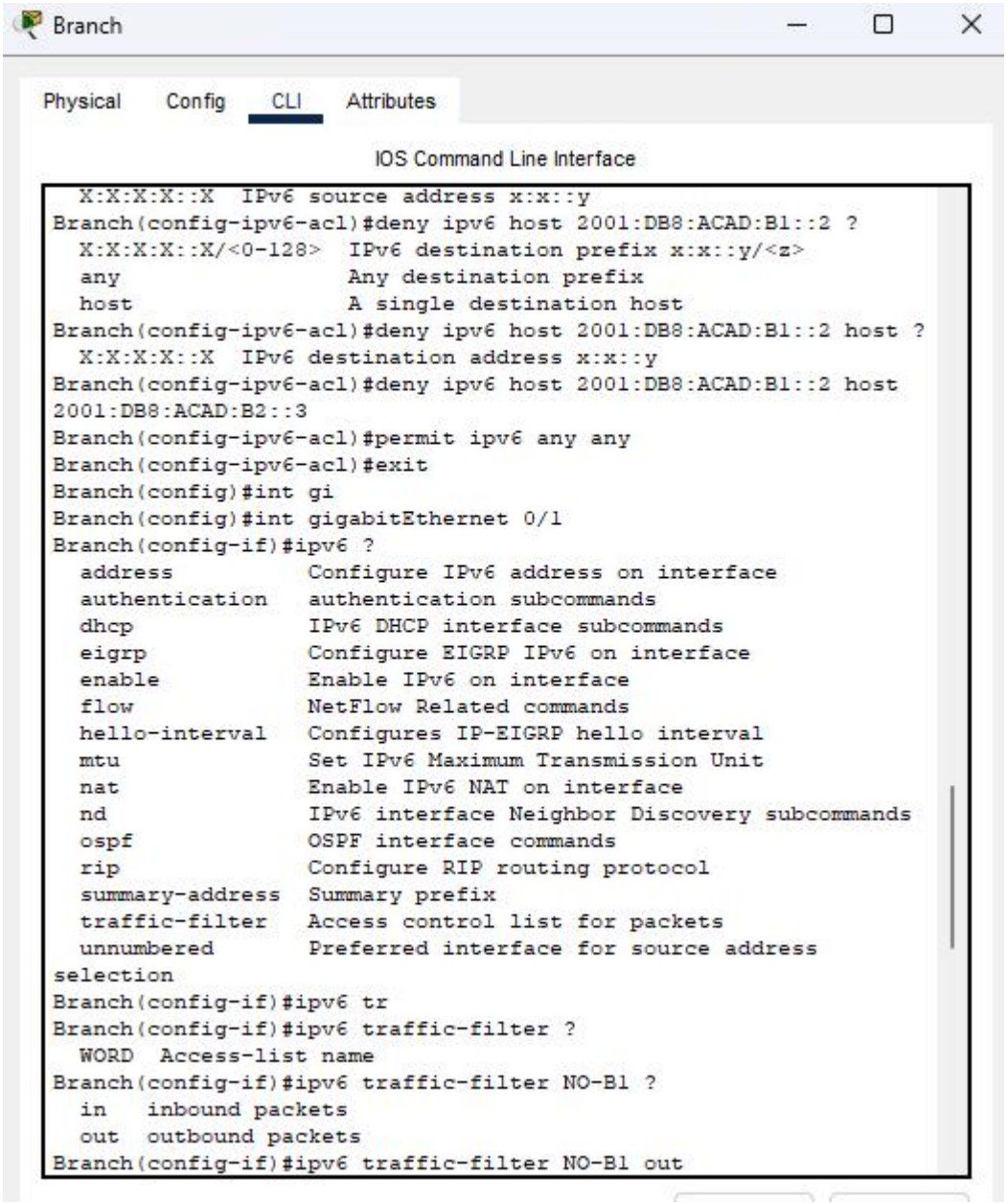
i. Design an IPv4 named access list **BranchServer** to prevent any computers attached to the Gigabit Ethernet 0/0 interface of the **HQ** router from accessing the HTTP and HTTPS service of the **Branch** server. All other traffic is permitted. Configure the access list on the appropriate

router, apply it to the appropriate interface and in the appropriate direction.

```
HQ>en
HQ>enable
HQ#conf t
Enter configuration commands, one per line.  End with CNTL/
Z.
HQ(config)#ip ac
HQ(config)#ip access-list ex
HQ(config)#ip access-list extended ?
  <100-199>  Extended IP access-list number
  WORD        name
HQ(config)#ip access-list extended BranchServer
HQ(config-ext-nacl)#deny tcp any ho
HQ(config-ext-nacl)#deny tcp any host 172.16.128.1 eq ?
  <0-65535>  Port number
  domain     Domain Name Service (DNS, 53)
  ftp        File Transfer Protocol (21)
  pop3       Post Office Protocol v3 (110)
  smtp       Simple Mail Transport Protocol (25)
  telnet     Telnet (23)
  www        World Wide Web (HTTP, 80)
HQ(config-ext-nacl)#deny tcp any host 172.16.128.1 eq www
HQ(config-ext-nacl)#deny tcp any host 172.16.128.1 eq 443
HQ(config-ext-nacl)#per
HQ(config-ext-nacl)#permit ip ?
  A.B.C.D  Source address
  any      Any source host
  host     A single source host
HQ(config-ext-nacl)#permit ip any any
HQ(config-ext-nacl)#exit
HQ(config)#
HQ(config)#int gi
HQ(config)#int gigabitEthernet 0/0
HQ(config-if)#ip ac
HQ(config-if)#ip access-group BranchServer in
HQ(config-if)#
```

Copy Paste

j. Design an IPv6 access-list named **NO-B1** to prevent any IPv6 traffic originating on **B1** to reach the **BranchServer.pka**. No traffic should be permitted from **B1** to **BranchServer.pka**. Apply the IPv6 access to the most appropriated location (interface and direction).


Branch
Physical
Config
CLI
Attributes
IOS Command Line Interface
X:X:X:X::X IPv6 source address x:x::y
Branch(config-ipv6-acl)#deny ipv6 host 2001:DB8:ACAD:B1::2 ?
X:X:X:X::X/<0-128> IPv6 destination prefix x:x::y/<z>
any Any destination prefix
host A single destination host
Branch(config-ipv6-acl)#deny ipv6 host 2001:DB8:ACAD:B1::2 host ?
X:X:X:X::X IPv6 destination address x:x::y
Branch(config-ipv6-acl)#deny ipv6 host 2001:DB8:ACAD:B1::2 host
2001:DB8:ACAD:B2::3
Branch(config-ipv6-acl)#permit ipv6 any any
Branch(config-ipv6-acl)#exit
Branch(config)#int gi
Branch(config)#int gigabitEthernet 0/1
Branch(config-if)#ipv6 ?
address Configure IPv6 address on interface
authentication authentication subcommands
dhcp IPv6 DHCP interface subcommands
eigrp Configure EIGRP IPv6 on interface
enable Enable IPv6 on interface
flow NetFlow Related commands
hello-interval Configures IP-EIGRP hello interval
mtu Set IPv6 Maximum Transmission Unit
nat Enable IPv6 NAT on interface
nd IPv6 interface Neighbor Discovery subcommands
ospf OSPF interface commands
rip Configure RIP routing protocol
summary-address Summary prefix
traffic-filter Access control list for packets
unnumbered Preferred interface for source address
selection
Branch(config-if)#ipv6 tr
Branch(config-if)#ipv6 traffic-filter ?
WORD Access-list name
Branch(config-if)#ipv6 traffic-filter NO-B1 ?
in inbound packets
out outbound packets
Branch(config-if)#ipv6 traffic-filter NO-B1 out

PT Activity: 02:13:07

Packet Tracer - Skills Integration Challenge

Addressing Table

Device	Interface	IP Address	Subnet Mask	Default Gateway
		IPv6 Address / Prefix		
HQ	G0/0	172.16.127.254	255.255.192.0	N/A
	G0/1	172.16.63.254	255.255.192.0	N/A
	S0/0/0	192.168.0.1	255.255.255.252	N/A
	S0/0/1	64.104.34.2	255.255.255.252	64.104.34.1
Branch	G0/0			N/A
	G0/1			N/A
	S0/0/0	192.168.0.2	255.255.255.252	N/A
HQ1	NIC	172.16.64.1	255.255.192.0	172.16.127.254
HQ2	NIC	172.16.0.2	255.255.192.0	172.16.63.254
HQServer.pka	NIC	172.16.0.1	255.255.192.0	172.16.63.254
B1	NIC			
B2	NIC	172.16.128.2	255.255.240.0	172.16.143.254
BranchServer.pka	NIC	172.16.128.1	255.255.240.0	172.16.143.254
		2001:DB8:ACAD:B2::3/64		2001:DB8:ACAD:B2::1

Scenario

In this challenge activity, you will finish the addressing scheme, configure routing, and implement named access control lists.

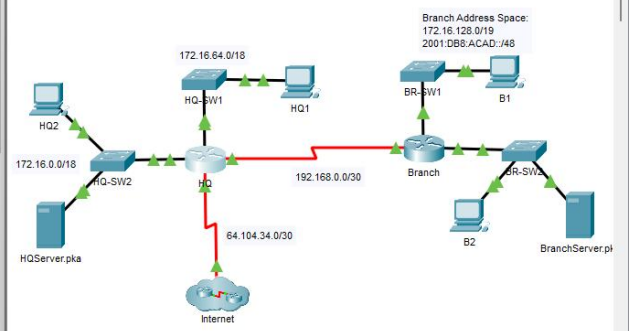
Time Elapsed: 02:13:07 Completion: 100/100

Top Dock Check Results Back 1/1 Next

Cisco Packet Tracer - C:/Users/rudy mar/Downloads/NET301-CHAPTER6PKTINTEGRATIONACTI...

File Edit Options View Tools Extensions Window Help

Logical Physical x: 343, y: 395 Root 13:53:00



Time: 02:07:17 Realtime Simulation

4331 4321 1941 2901 2911 819IOX 819HGW 829 1240 PT-Router PT-Empty 1841

2901

Cisco Packet Tracer - C:/Users/rudy mar/Downloads/NET301-CHAPTER6PKTINTEGRATIONACTIVITY.pka - Rudy Mar Hanggas - 2024-11-02 06:57:23

File Edit Options View Tools Extensions Window Help

Activity Results Time Elapsed: 02:13:25

Congratulations Rudy Mar Hanggas! You completed the activity.

Overall Feedback | Assessment Items | Connectivity Tests

Congratulations! You successfully completed the **Packet Tracer - Skills Integration Challenge** activity.

Cisco Packet Tracer - C:/Users/rudy mar/Downloads/NET301-CHAPTER6PKTINTEGRATIONACTIVITY.pka - Rudy Mar Hanggas - 2024-11-02 06:57:23

File Edit Options View Tools Extensions Window Help

Activity Results Time Elapsed: 02:13:38

Congratulations Rudy Mar Hanggas! You completed the activity.

Overall Feedback | Assessment Items | Connectivity Tests

Expand/Collapse All | Show Incorrect Items

Assessment Items	Status	Points	Component(s)	Feedback
Network				
B1				
Default Gateway	Correct	3	Default Gateway...	
Ports				
FastEthernet0				
IP Address	Correct	3	IPv4 Host Addre...	
Subnet Mask	Correct	3	IPv4 Subnet Mas...	
Branch				
ACL		0	ACL	
HQServer	Correct	15	IPv4 Extended A...	
ACLV6		0	ACL	
NO-B1	Correct	15	ACL	
OSPF				
Process ID 1				
Networks				
(deprecated) Route0	Correct	2	OSPFv2 Routing ...	
(deprecated) Route1	Correct	2	OSPFv2 Routing ...	
(deprecated) Route2	Correct	2	OSPFv2 Routing ...	
Passive Interface				
GigabitEthernet0/0	Correct	1	OSPFv2 Routing ...	
GigabitEthernet0/1	Correct	1	OSPFv2 Routing ...	
Ports				
GigabitEthernet0/0				
Access-group In	Correct	5	IPv4 Extended A...	
IP Address	Correct	2	IPv4 Address Cal...	
IPv6 Traffic Filter In	Correct	5	ACL	
Subnet Mask	Correct	2	IPv4 Subnet Mas...	
GigabitEthernet0/1				
IP Address	Correct	2	IPv4 Address Cal...	
Subnet Mask	Correct	2	IPv4 Subnet Mas...	

Score : 100/100
Item Count : 25/25

Component	Items/Total	Score
ACL	2/2	20/20
Default Gateway Configuration	1/1	3/3
Default Route Redistribution	1/1	4/4
IPv4 Address Calculation	2/2	4/4
IPv4 Default Route Configuration	1/1	3/3
IPv4 Extended ACL Implementation	4/4	40/40
IPv4 Host Address Calculation	1/1	3/3
IPv4 Subnet Mask Calculation	3/3	7/7
OSPFv2 Routing Configuration	10/10	16/16

Close

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