Item 1 of 22 (Lab_Q1)

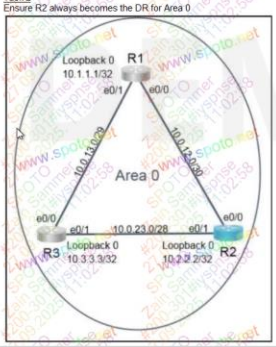
Hide Answer

Guidelines
Please use the "Tasks" and "Topology" tabs to complete this lablet.

Tasks
Refer to the topology. All physical cabling is in place. Routers 1and 3 are inaccessible. Configure OSPF routing for the network and ensure R2 has joined Area 0 and participates in the DR/BDR process.

Task 1
Configure OSPF on R2 and ensure R1 and R3 become neighbors and do not use interface commands.
1. use process ID 30
2. use 10.22.22.22 as the router ID
3. advertise connected networks using an inverted subnet mask to match the exact prefixes used

Task 2
Ensure R2 always becomes the DR for Area 0



A. R2:

```
R2>en
R2#config t
R2(config)#int range e0/0-1
R2(config-if-range)#ip ospf priority 255
R2(config-if-range)#exit
R2(config)#router ospf 30
R2(config-router)#router-id 10.22.22.22
R2(config-router)#network 10.0.12.0 0.0.0.3 area 0
R2(config-router)#network 10.0.23.0 0.0.0.15 area 0
R2(config-router)#end
R2#wr
```

Answer: A

Item 2 of 22 (Lab_Q2)

Hide Answer

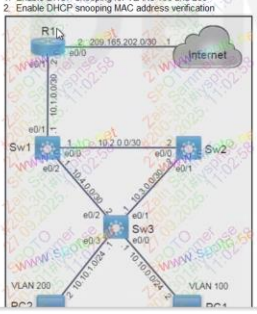
Guidelines
Please use the "Tasks" and "Topology" tabs to complete this lablet.

Tasks
Refer to the topology. All physical cabling is in place, and a routing protocol is preconfigured on all network devices.

Task 1:
Using the minimum number of ACEs, configure an extended named ACL and place it within the topology to conserve as many resources as possible. ACL requirements are:
1. ACL name = TELNET_ACL
2. Allow HTTP traffic only from VLAN 200
3. Block telnet only for PC1
4. Allow all other traffic

Task 2:
Configure a local account on Sw2 with telnet access only on virtual ports 0-4. Use the following information:
1. Username: WebTech
2. Password: G0id3n
3. Algorithm type: Scrypt
4. Privilege level: Exec mode

Task 3:
Configure Sw3:
1. Enable DHCP snooping for VLANs 100 and 200
2. Enable DHCP snooping MAC address verification



A. Sw3:

```
Sw3>en
Sw3#config t
Sw3(config)#ip dhcp snooping vlan 100,200
Sw3(config)#ip dhcp snooping verify mac-address
Sw3(config)#ip access-list extended TELNET_ACL
Sw3(config-ext-nacl)#permit tcp 10.10.1.0 0.0.0.255 any eq 80
Sw3(config-ext-nacl)#deny tcp any any eq 80
Sw3(config-ext-nacl)#deny tcp host 10.10.0.2 any eq telnet
Sw3(config-ext-nacl)#permit ip any any
Sw3(config-ext-nacl)#exit
Sw3(config)#int range e0/0,e0/3
Sw3(config-if-range)#ip access-group TELNET_ACL in
Sw3(config-if-range)#end
Sw3#wr

Sw2:

Sw2>en
Sw2#config t
Sw2(config)#username WebTech privilege 15 algorithm-type scrypt secret G0id3n
Sw2(config)#line vty 0 4
Sw2(config-line)#login local
Sw2(config-line)#transport input telnet
Sw2(config-line)#end
Sw2#wr
```

Answer: A

Item 3 of 22 (Lab, Q3)

Hide Answer

Guidelines
Please use the "Tasks" and "Topology" tabs to complete this lablet.

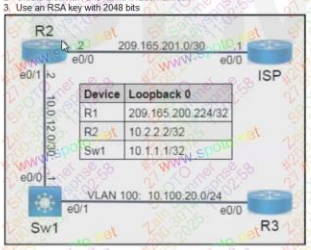
Tasks
Connectivity between the devices has been established. IP services must be configured to complete the implementation. Router R2 has partial configurations for NAT and DHCP.

Task 1
Router R2 is partially configured for Port Address Translation (PAT) for IP 10.0.12.1.
1. Configure PAT so that 10.0.12.1 uses the IP address of Ethernet0/0 as the Public routable IP.
2. A ping from Sw1 to 209.165.200.224 should be used to verify the translation is successful on R2.

Task 2
Configure an NTP client on Sw1 using the NTP Server on R2.
1. The commands ntp broadcast client or ntp broadcast must not be used.

Task 3
Configure a DHCP Relay Agent on Sw1.

Task 4
1. Configure R2 with SSH version 2 and allow only SSH on all VTY lines.
2. Create a domain and name it r2domain.com
3. Use an RSA key with 2048 bits



A. R2:

```
R2>en
R2#config t
R2(config)#ip nat inside source list 11 interface e0/0 overload
R2(config)#ip domain-name r2domain.com
R2(config)#crypto key generate rsa modulus 2048
R2(config)#line vty 0 4
R2(config-line)#login local
R2(config-line)#transport input ssh
R2(config-line)#end
R2#wr
```

Sw1:

```
Sw1>en
Sw1#config t
Sw1(config)#ntp server 10.2.2.2
Sw1(config)#int vlan 100
Sw1(config-if)#ip helper-address 10.0.12.2
Sw1(config-if)#end
Sw1#wr
```

Answer: A

Item 4 of 22 (Lab, Q4)

Hide Answer

Guidelines
Please use the "Tasks" and "Topology" tabs to complete this lablet.

Tasks
Connectivity between the devices has been established. IP services must be configured to complete the implementation. Router R2 has partial configurations for NAT and DHCP.

Task 1
Router R2 is partially configured to allow for Port Address Translation (PAT) for IP 10.0.112.1.
1. Configure PAT so that 10.0.112.1 uses the IP address of Ethernet0/0 as the Public routable IP.
2. A ping from Sw1 to 209.165.200.224 should be used to verify the translation is successful on R2.

Task 2
Set the Sw1 switch to use NTP as a client using the NTP server on R2.
1. Do not use ntp broadcast client or ntp broadcast commands.

Task 3
1. Complete the DHCP configuration.
2. Configure Sw1 to forward DHCP requests from clients in VLAN 212 to the DHCP server on R2.
3. Configure the LAN interface on router R3 as a DHCP client.
4. Ensure the R3 router receives an IP address from the DHCP server using the show ip dhcp binding command.

Task 4
1. Configure R2 as an SSH server.
2. Use a 2048 bit RSA key.
3. Configure ssh session authentication timeout value to 90 seconds.

A. R2:

```
R2>en
R2#config t
R2(config)#ip nat inside source list 12 interface e0/0 overload
R2(config)#crypto key generate rsa modulus 2048
R2(config)#line vty 0 4
R2(config-line)#exec-timeout 0 90
R2(config-line)#end
R2#wr
```

Sw1:

```
Sw1>en
Sw1#config t
Sw1(config)#ntp server 10.212.12.2
Sw1(config)#int vlan 212
Sw1(config-if)#ip helper-address 10.0.112.2
Sw1(config-if)#end
Sw1#wr
```

R3:

```
R3>en
R3#config t
R3(config)#int e0/0
R3(config-if)#ip address dhcp
R3(config-if)#end
R3#wr
```

Answer: A

Item 5 of 22 (Exam C, Q5)

Hide Answer

Guidelines

This is a lab item in which tasks will be performed on virtual devices.

1. Refer to the Tasks tab to view the tasks for this lab item.
2. Refer to the Topology tab to access the device console(s) and perform the tasks.
3. Console access is available for all required devices by clicking the device icon or using the tab(s) above the console window.
4. All necessary preconfigurations have been applied.
5. Do not change the enable password or hostname for any device.
6. **Save your configurations** to NVRAM before moving to the next item.
7. Click **Next** at the bottom of the screen to submit this lab and move to the next question.
8. When **Next** is clicked, the lab closes and cannot be reopened.

Tasks

Connectivity between the devices has been established. IP services must be configured to complete the implementation. Router R2 has partial configurations for NAT and DHCP.

Task 1

Router R2 is partially configured to allow for Port Address Translation (PAT) for IP 10.0.122.1.

1. Configure PAT so that 10.0.122.1 uses the IP address of Ethernet0/0 as the Public routable IP.
2. A ping from Sw1 to 209.165.200.224 should be used to verify the translation is successful on R2.

Task 2

Set router R3 to use NTP as a client using the NTP server on R2.

1. Do not use ntp broadcast client or ntp broadcast commands.

Task 3

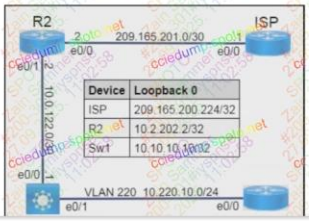
Complete the DHCP configuration.

1. Configure Sw1 to forward DHCP requests from clients in VLAN 220 to the DHCP server on R2.
2. Configure the LAN interface on router R3 as a DHCP client.
3. Ensure the R3 router receives an IP address from the DHCP server.

Task 4

Remove SSH configuration parameters from R2.

1. Remove SSH Version 2.
2. Remove SSH access for remote connections.



Device	Loopback 0
ISP	209.165.200.224/32
R2	10.2.202.2/32
Sw1	10.10.10.10/32

A.

R2:

```
R2>en
R2#config t
R2(config)#no ip ssh version 2
R2(config)#line vty 0 4
R2(config-line)#no transport input
R2(config-line)#exit
R2(config)#ip nat inside source list 20 interface e0/0 overload
R2(config)#int e0/1
R2(config-if)#no ip nat outside
R2(config-if)#ip nat inside
R2(config-if)#int e0/0
R2(config-if)#no ip nat inside
R2(config-if)#ip nat outside
R2(config-if)#end
R2#wr
```

R3:

```
R3>en
R3#config t
R3(config)#ntp server 10.2.202.2
R3(config)#int e0/0
R3(config-if)#ip address dhcp
R3(config-if)#end
R3#wr
```

Sw1:

```
Sw1>en
Sw1#config t
Sw1(config-if)#int e0/1
Sw1(config-if)#switchport mode access
Sw1(config-if)#int vlan 220
Sw1(config-if)#ip helper-address 10.0.122.2
Sw1(config-if)#end
Sw1#wr
```

Answer: A

Item 6 of 22 (Lab, Q6)

Hide Answer

Guidelines

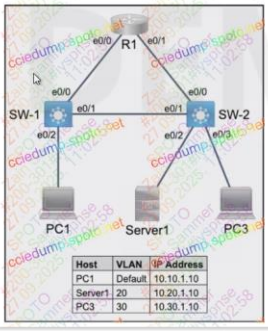
This is a lab item in which tasks will be performed on virtual devices.

1. Refer to the Tasks tab to view the tasks for this lab item.
2. Refer to the Topology tab to access the device console(s) and perform the tasks.
3. Console access is available for all required devices by clicking the device icon or using the tab(s) above the console window.
4. All necessary preconfigurations have been applied.
5. Do not change the enable password or hostname for any device.
6. **Save your configurations** to NVRAM before moving to the next item.
7. Click **Next** at the bottom of the screen to submit this lab and move to the next question.
8. When **Next** is clicked, the lab closes and cannot be reopened.

Tasks

R1 has been pre-configured with all the necessary commands. All physical cabling is in place and verified. Connectivity from PC1, PC3, and the Server must be established to the switches, and each port must only allow one VLAN.

1. Configure the VLAN connecting to the switch port for PC3 with the name "SALES"
2. Configure the switch port connecting to Server1.
3. Configure the switch port connecting to PC3.
4. Ensure R1 discovers SW-1 via the Cisco proprietary neighbor discovery protocol and all other devices on the network are unable to discover SW-1



Host	VLAN	IP Address
PC1	Default	10.10.1.10
Server1	20	10.20.1.10
PC3	30	10.30.1.10

A. SW-1:

```
SW-1>en
SW-1#config t
SW-1(config)#cdp run
SW-1(config)#int range e0/1-2
SW-1(config-if-range)#no cdp enable
SW-1(config-if-range)#end
SW-1#wr


SW-2:

SW-2>en
SW-2#config t
SW-2(config)#vlan 20
SW-2(config-vlan)#vlan 30
SW-2(config-vlan)#name SALES
SW-2(config-vlan)#exit
SW-2(config)#int e0/2
SW-2(config-if)#switchport mode access
SW-2(config-if)#switchport access vlan 20
SW-2(config-if)#int e0/3
SW-2(config-if)#switchport mode access
SW-2(config-if)#switchport access vlan 30
SW-2(config-if)#end
SW-2#wr
```

Answer: A

Item 7 of 22 (Lab, Q7) Hide Answer

Guidelines
Please use the "Tasks" and "Topology" tabs to complete this tablet.

Tasks
Refer to the topology. All physical cabling is in place. Router R4 and PC1 are fully configured and inaccessible. Configurations should ensure that connectivity is established end-to-end.

Task 1
Configure static routing to ensure R1 prefers the path through R2 to reach R4's LAN.

Task 2
Configure static routing that ensures traffic sourced from R1 will take an alternate path through R3 to R4's LAN in case of an outage along the primary path.

Task 3
Configure default routes on R1 and R3 to the Internet using the least number of hops.

Device	Interface	IP Address
R3	e0/2	209.165.201.3
ISP	e0/0	209.165.201.1
PC1	e0/0	10.0.44.10

A. R1:

```
R1>en
R1#config t
R1(config)#ip route 10.0.44.0 255.255.255.0 10.0.22.2
R1(config)#ip route 10.0.40.0 255.255.255.0 10.0.23.2
R1(config)#ip route 0.0.0.0 0.0.0.0 10.0.23.3
R1(config)#end
R1#wr


R3:

R3>en
R3#config t
R3(config)#ip route 0.0.0.0 0.0.0.0 209.165.201.1
R3(config)#end
R3#wr
```

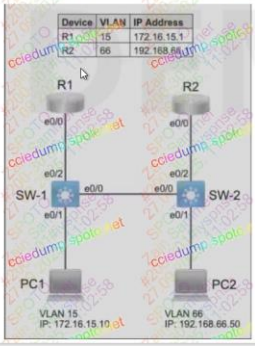
Answer: A

Item 8 of 22 (Lab, Q8) Hide Answer

Guidelines
This is a lab item in which tasks will be performed on virtual devices.
1. Refer to the Tasks tab to view the tasks for this lab item.
2. Refer to the Topology tab to access the device console(s) and perform the tasks.
3. Console access is available for all required devices by clicking the device icon or using the tab(s) above the console window.
4. All necessary preconfigurations have been applied.
5. Do not change the enable password or hostname for any device.
6. **Save your configurations** to NVRAM before moving to the next item.
7. Click **Next** at the bottom of the screen to submit this lab and move to the next question.
8. When **Next** is clicked, the lab closes and cannot be reopened.

Tasks
R1 and R2 are pre-configured with all the necessary commands. All physical cabling is in place and verified. Connectivity for PC1 and PC2 must be established to the switches; each port must only allow one VLAN and be operational.
1. Configure SW-1 with VLAN 15 and label it exactly as OPS
2. Configure SW-2 with VLAN 66 and label it exactly as ENGINEERING
3. Configure the switch port connecting to PC1.
4. Configure the switch port connecting to PC2.
5. Configure the E0/2 connections on SW-1 and SW-2 for neighbor discovery using the vendor-neutral standard protocol and ensure that e0/0 on both switches uses the Cisco proprietary protocol

Device	VLAN	IP Address
R1	15	172.16.15.1
R2	66	192.168.66.1



A. SW-1:

```
SW-1>en
SW-1#config t
SW-1(config)#lldp run
SW-1(config)#vlan 15
SW-1(config-vlan)#name OPS
SW-1(config-vlan)#int e0/1
SW-1(config-if)#switchport mode access
SW-1(config-if)#switchport access vlan 15
SW-1(config)#int e0/2
SW-1(config-if)#no cdp enable
SW-1(config-if)#lldp transmit
SW-1(config-if)#lldp receive
SW-1(config-if)#int e0/0
SW-1(config-if)#switchport trunk encapsulation isl
SW-1(config-if)#switchport mode trunk
SW-1(config-if)#end
SW-1#wr
```

```
SW-2:
SW-2(config)#lldp run
SW-2(config)#vlan 66
SW-2(config-vlan)#name ENGINEERING
SW-2(config-vlan)#int e0/1
SW-2(config-if)#switchport mode access
SW-2(config-if)#switchport access vlan 66
SW-2(config)#int e0/2
SW-2(config-if)#no cdp enable
SW-2(config-if)#lldp transmit
SW-2(config-if)#lldp receive
SW-2(config-if)#int e0/0
SW-2(config-if)#switchport trunk encapsulation isl
SW-2(config-if)#switchport mode trunk
SW-2(config-if)#end
SW-2#wr
```

Answer: A

Item 9 of 22 (Lab, Q9) Hide Answer

Guidelines
Please use the "Tasks" and "Topology" tabs to complete this tablet.

Task 1
Refer to the exhibit. Configure OSPF area 0 with process ID 101 on R1, R2, R3 and SW101. Use a single command under the OSPF process to achieve this.

Task 2
Configure SW101 to be always the topology's designated router (DR) for VLAN101 network. There should be no BDR.
1. Do not use the neighbor command under the OSPF process to achieve this.
2. You are not permitted to make any configuration changes on SW101 for this task.

Device	Interface	IP Address
R1	Loopback 0	10.10.10.10/32
R2	Loopback 0	10.20.20.20/32
R3	Loopback 0	10.30.30.30/32
Sw101	Loopback 0	10.101.1.1/32
Sw101	VLAN 101	10.101.101.101/24

A. R1:

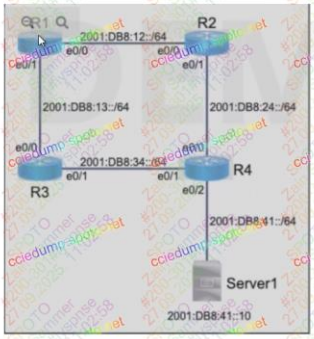
```
R1>en
R1#config t
R1(config)#int range e0/0-2
R1(config-if-range)#ip ospf priority 0
R1(config-if-range)#exit
R1(config)#router ospf 101
R1(config-router)#network 0.0.0.0 255.255.255.255 area 0
R1(config-router)#end
R1#wr

R2:

R2>en
R2#config t
R2(config)#int range e0/0-1
R2(config-if-range)#ip ospf priority 0
R2(config-if-range)#exit
R2(config)#router ospf 101
R2(config-router)#network 0.0.0.0 255.255.255.255 area 0
R2(config-router)#end
R2#wr

R3:

R3>en
R3#config t
R3(config)#int range e0/0-1
R3(config-if-range)#ip ospf priority 0
R3(config-if-range)#exit
R3(config)#router ospf 101
R3(config-router)#network 0.0.0.0 255.255.255.255 area 0
R3(config-router)#end
R3#wr

Sw1:

Sw1>en
Sw1#config t
SW1(config)#router ospf 101
SW1(config-router)#network 0.0.0.0 255.255.255.255 area 0
SW1(config-router)#end
Sw1#wr
```

Answer: A

Item 10 of 22 (Lab, Q10) Hide Answer

Guidelines
This is a lab item in which tasks will be performed on virtual devices.
1. Refer to the Tasks tab to view the tasks for this lab item.
2. Refer to the Topology tab to access the device console(s) and perform the tasks.
3. Console access is available for all required devices by clicking the device icon or using the tab(s) above the console window.
4. All necessary preconfigurations have been applied.
5. Do not change the enable password or hostname for any device.
6. **Save your configurations** to NVRAM before moving to the next item.
7. Click **Next** at the bottom of the screen to submit this lab and move to the next question.
8. When **Next** is clicked, the lab closes and cannot be reopened.

Tasks
All physical cabling is in place. Configurations should ensure that connectivity is established end-to-end.
1. Configure a route on R1 to ensure that R1 prefers R2 to reach the 2001:db8:41::/64 network.
2. Configure a floating route on R1, and ensure that R1 uses R3 to reach the 2001:db8:41::/64 network if the connection between R1 and R2 is down.
3. Ping and traceroute should be working.



A. R1

```
R1>en
R1#config t
R1(config)#ipv6 route 2001:db8:41::/64 2001:db8:12::2
R1(config)#ipv6 route 2001:db8:41::/64 2001:db8:13::3:2
R1(config)#end
R1#wr
```

R2:

```
R2>en
R2#config t
R2(config)#ipv6 route 2001:db8:41::/64 2001:db8:24::4
R2(config)#end
R2#wr
```

R3:

```
R3>en
R3#config t
R3(config)#ipv6 route 2001:db8:41::/64 2001:db8:34::4
R3(config)#end
R3#wr
```

R4:

```
R4>en
R4#config t
R4(config)#ipv6 route 2001:db8:12::/64 2001:db8:24::2
R4(config)#ipv6 route 2001:db8:13::/64 2001:db8:23::3
R4(config)#end
R4#wr
```

Answer: A

Item 11 of 22 (Lab: Q11)

Hide Answer

Guidelines

This is a lab item in which tasks will be performed on virtual devices.

1. Refer to the Tasks tab to view the tasks for this lab item.
2. Refer to the Topology tab to access the device console(s) and perform the tasks.
3. Console access is available for all required devices by clicking the device icon or using the tab(s) above the console window.
4. All necessary preconfigurations have been applied.
5. Do not change the enable password or hostname for any device.
6. **Save your configurations** to NVRAM before moving to the next item.
7. Click **Next** at the bottom of the screen to submit this lab and move to the next question.
8. When **Next** is clicked, the lab closes and cannot be reopened.

Tasks

Refer to the topology. All physical cabling is in place. Configure a local user account, a Named ACL (NACL), and security.

Task 1

Configure a local account on Sw101 with telnet access only on virtual ports 0-4. Use the following information:

1. Username: support
2. Password: max2learn
3. Privilege level: Exec mode

Task 2

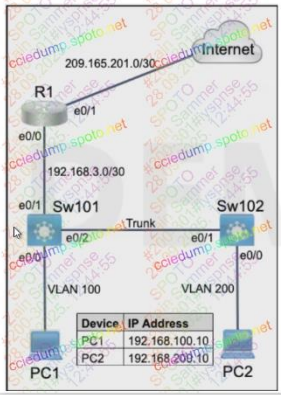
Configure and apply a single NACL on Sw101 using the following:

1. Name: ENT_ACL
2. Restrict only PC2 on VLAN 200 from pinging PC1
3. Allow only PC2 on VLAN 200 to telnet to Sw101
4. Prevent all other devices from telnetting from VLAN 200
5. Allow all other network traffic from VLAN 200

Task3

Configure security on interface Ethernet 0/0 of Sw102:

1. Set the maximum number of secure MAC addresses to four.
2. Drop packets with unknown source addresses until the number of secure MAC addresses drops below the configured maximum value. No notification action is required.
3. Allow secure MAC addresses to be learned dynamically.



A. Sw101:

```
Sw101>en
Sw101#config t
Sw101(config)#username support privilege 15 password max2learn
Sw101(config)#line vty 0 4
Sw101(config-line)#login local
Sw101(config-line)#transport input telnet
Sw101(config-line)#exit
Sw101(config)#ip access-list extended ENT_ACL
Sw101(config-ext-nacl)#deny icmp host 192.168.200.10 host 192.168.100.10
Sw101(config-ext-nacl)#permit tcp host 192.168.200.10 host 192.168.200.1 eq telnet
Sw101(config-ext-nacl)#deny tcp 192.168.200.0 0.0.0.255 any eq telnet
Sw101(config-ext-nacl)#permit ip any any
Sw101(config-ext-nacl)#exit
Sw101(config)#int vlan 200
Sw101(config-if)#ip access-group ENT_ACL in
Sw101(config-if)#end
Sw101#wr
```

Sw102:

```
Sw102>en
Sw102#config t
Sw102(config)#int e0/0
Sw102(config-if)#switchport port-security
Sw102(config-if)#switchport port-security maximum 4
Sw102(config-if)#switchport port-security violation protect
Sw102(config-if)#switchport port-security mac-address sticky
Sw102(config-if)#end
Sw102#wr
```

Answer: A

Item 12 of 22 (Lab, Q12)

Hide Answer

Guidelines

This is a lab item in which tasks will be performed on virtual devices.

1. Refer to the Tasks tab to view the tasks for this lab item.
2. Refer to the Topology tab to access the device console(s) and perform the tasks.
3. Console access is available for all required devices by clicking the device icon or using the tab(s) above the console window.
4. All necessary preconfigurations have been applied.
5. Do not change the enable password or hostname for any device.
6. **Save your configurations** to NVRAM before moving to the next item.
7. Click **Next** at the bottom of the screen to submit this lab and move to the next question.
8. When **Next** is clicked, the lab closes and cannot be reopened.

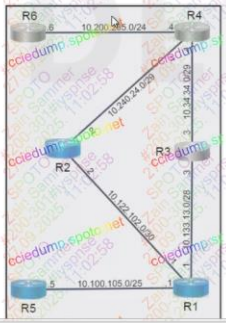
Tasks

Task 1

1. Configure a host route on R5 for the destination of 10.200.205.6.
2. Configure a static default route on R1 preferring the path through R3 towards R6.
3. From R5, use traceroute and ping to verify the path towards and reachability of R6.

Task 2

1. Configure a floating static default route on R1, preferring the path through R2 towards R6 if the link to R3 should fail.
2. Configure the administrative distance for 205.
3. Configure a static route on R2 to forward the return traffic towards 10.100.105.0/25.
4. After shutting interface e0/1 on R1, use traceroute and ping from R5 to verify path towards and reachability of R6.



A. R5:

```
R5>en
R5#config t
R5(config)#ip route 10.200.205.6 255.255.255.255 10.100.105.1
R5(config)#end
R5#wr
```

R1:

```
R1>en
R1#config t
R1(config)#ip route 10.200.205.6 255.255.255.255 10.133.13.3
R1(config)#ip route 10.200.205.6 255.255.255.255 10.122.102.2 205
R1(config)#end
R1#wr
```

R2:

```
R2>en
R2#config t
R2(config)#ip route 10.100.105.0 255.255.255.128 10.122.102.1
R2(config)#end
R2#wr
```

Answer: A

Item 13 of 22 (Lab, Q13)

Hide Answer

Guidelines

This is a lab item in which tasks will be performed on virtual devices.

1. Refer to the Tasks tab to view the tasks for this lab item.
2. Refer to the Topology tab to access the device console(s) and perform the tasks.
3. Console access is available for all required devices by clicking the device icon or using the tab(s) above the console window.
4. All necessary preconfigurations have been applied.
5. Do not change the enable password or hostname for any device.
6. **Save your configurations** to NVRAM before moving to the next item.
7. Click **Next** at the bottom of the screen to submit this lab and move to the next question.
8. When **Next** is clicked, the lab closes and cannot be reopened.

Tasks

Refer to the topology. All physical cabling is in place. Configure local users accounts, modify the Named ACL (NACL), and configure DHCP Snooping. The current contents of the NACL must remain intact.

- Configure a local account on Sw103 with telnet access only on virtual ports 0-4. Use the following information:

1. Username: devnet
2. Password: access8cli
3. Algorithm type: SHA256
4. Privilege level: Exec mode

- Using the minimum number of ACEs, modify the existing NACL "INTERNET_ACL" to control network traffic destined for the Internet, and apply the ACL on R1:

1. Allow HTTPS from 172.16.0.0/16
2. Allow Telnet only for VLAN 101
3. Restrict all other traffic and log the ingress interface, source MAC address, the packet's source and destination IP addresses, and ports

- Configure Sw101:

1. Enable DHCP Snooping for VLAN 101
2. Disable DHCP Option-82 data insertion
3. Enable DHCP Snooping MAC address verification

A. Sw103:

```
Sw103>en
Sw103#config t
Sw103(config)#username devnet privilege 15 algorithm-type sha256 secret access8cli
Sw103(config)#line vty 0 4
Sw103(config-line)#login local
Sw103(config-line)#transport input telnet
Sw103(config-line)#end
Sw103#wr
```

R1:

```
R1>en
R1#config t
R1(config)#ip access-list extended INTERNET_ACL
R1(config-ext-nacl)#permit tcp 172.16.0.0 0.0.255.255 any eq 443
R1(config-ext-nacl)#permit tcp 172.16.101.0 0.0.255.255 any eq telnet
R1(config-ext-nacl)#deny ip any any log
R1(config-ext-nacl)#end
R1#wr
```

Sw101:

```
Sw101>en
Sw101#config t
Sw101(config)#ip dhcp snooping vlan 101
Sw101(config)#no ip dhcp snooping information option
Sw101(config)#ip dhcp snooping verify mac-address
Sw101(config)#end
Sw101#wr
```

Answer: A

Item 14 of 22 (Lab, Q14) Hide Answer

Guidelines

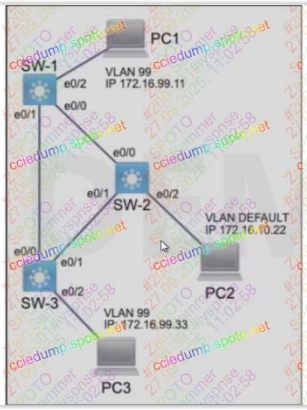
This is a lab item in which tasks will be performed on virtual devices.

1. Refer to the Tasks tab to view the tasks for this lab item.
2. Refer to the Topology tab to access the device console(s) and perform the tasks.
3. Console access is available for all required devices by clicking the device icon or using the tab(s) above the console window.
4. All necessary preconfigurations have been applied.
5. Do not change the enable password or hostname for any device.
6. **Save your configurations** to NVRAM before moving to the next item.
7. Click **Next** at the bottom of the screen to submit this lab and move to the next question.
8. When **Next** is clicked, the lab closes and cannot be reopened.

Tasks

All physical cabling is in place and verified. Connectivity for PC1, PC2 and PC3 must be established to the switches. Each port connecting to the PCs must be configured as an end-user port and only allow the designated VLAN.

1. Configure VLAN 99 on all three switches and label it exactly as FINANCIAL.
2. Configure the switch ports connecting to PC1, PC2 and PC3.
3. Cisco's neighbor discovery protocol has been disabled on SW-1 and must be re-enabled.
4. PC1 must not be able to discover SW-1 via the Cisco neighbor discovery protocol.



A. SW-1:

```
SW-1>en
SW-1#config t
SW-1(config)#cdp run
SW-1(config)#vlan 99
SW-1(config-vlan)#name FINANCIAL
SW-1(config-vlan)#exit
SW-1(config-if)#int range e0/0-1
SW-1(config-if-range)#switchport trunk encapsulation dot1q
SW-1(config-if-range)#switchport mode trunk
SW-1(config-if-range)#no shutdown
SW-1(config-if-range)#int e0/2
SW-1(config-if)#switchport mode access
SW-1(config-if)#switchport access vlan 99
SW-1(config-if)#no cdp enable
SW-1(config-if)#no shutdown
SW-1(config-if)#end
SW-1#wr
```

SW-2:

```
SW-2>en
SW-2#config t
SW-2(config)#vlan 99
SW-2(config-vlan)#name FINANCIAL
SW-2(config-vlan)#exit
SW-2(config-if)#int range e0/0-1
SW-2(config-if-range)#switchport trunk encapsulation dot1q
SW-2(config-if-range)#switchport mode trunk
SW-2(config-if-range)#no shutdown
SW-2(config-if-range)#int e0/2
SW-2(config-if)#switchport mode access
SW-2(config-if)#no shutdown
SW-2(config-if)#end
SW-2#wr
```

SW-3:

```
SW-3>en
SW-3#config t
SW-3(config)#vlan 99
SW-3(config-vlan)#name FINANCIAL
SW-3(config-vlan)#exit
SW-3(config-if)#int range e0/0-1
SW-3(config-if-range)#switchport trunk encapsulation dot1q
SW-3(config-if-range)#switchport mode trunk
SW-3(config-if-range)#no shutdown
SW-3(config-if-range)#int e0/2
SW-3(config-if)#switchport mode access
SW-3(config-if)#switchport access vlan 99
SW-3(config-if)#no shutdown
SW-3(config-if)#end
SW-3#wr
```

Answer: A

Item 15 of 22(Exam C, Q15)

Hide Answer

Guidelines
This is a lab item in which tasks will be performed on virtual devices.
1. Refer to the Tasks tab to view the tasks for this lab item.
2. Refer to the Topology tab to access the device console(s) and perform the tasks.
3. Console access is available for all required devices by clicking the device icon or using the tab(s) above the console window.
4. All necessary preconfigurations have been applied.
5. Do not change the enable password or hostname for any device.
6. **Save your configurations** to NVRAM before moving to the next item.
7. Click **Next** at the bottom of the screen to submit this lab and move to the next question.
8. When **Next** is clicked, the lab closes and cannot be reopened

Tasks
All physical cabling is in place. Router R4 and PC1 are fully configured and inaccessible. R4's WAN interfaces use .4 in the last octet for each subnet. Configurations should ensure that connectivity is established end-to-end.
1. Configure static routing to ensure R1 prefers the path through R2 to reach only PC1 on R4's LAN
2. Configure static routing that ensures traffic sourced from R1 will take an alternate path through R3 to PC1 in the event of an outage along the primary path
3. Configure default routes on R1 and R3 to the Internet using the least number of hops

A. R1:

```
R1>en
R1#config t
R1(config)#ip route 10.0.41.10 255.255.255.255 10.0.12.2
R1(config)#ip route 10.0.41.10 255.255.255.255 10.0.13.3 2
R1(config)#ip route 0.0.0.0 0.0.0.0 10.0.13.3
R1(config)#end
R1#wr
```

R3:

```
R3>en
R3#config t
R3(config)#ip route 0.0.0.0 0.0.0.0 209.165.201.1
R3(config)#end
R3#wr
```

Answer: A

Item 16 of 22 (Lab, Q16)

Hide Answer

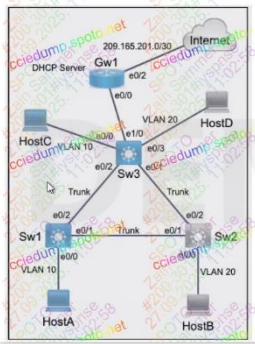
Guidelines
This is a lab item in which tasks will be performed on virtual devices.
1. Refer to the Tasks tab to view the tasks for this lab item.
2. Refer to the Topology tab to access the device console(s) and perform the tasks.
3. Console access is available for all required devices by clicking the device icon or using the tab(s) above the console window.
4. All necessary preconfigurations have been applied.
5. Do not change the enable password or hostname for any device.
6. **Save your configurations** to NVRAM before moving to the next item.
7. Click **Next** at the bottom of the screen to submit this lab and move to the next question.
8. When **Next** is clicked, the lab closes and cannot be reopened

Tasks
Refer to the topology. All physical cabling is in place. Configure local users accounts, modify the Named ACL (NACL), and configure DHCP Snooping. The current contents of the NACL must remain intact.

Task 1
Configure a local account on Gw1 with telnet access only on virtual ports 0-4. Use the following information:
1. Username: wheel
2. Password: lock3path
3. Algorithm type: Scrypt
4. Privilege level: Exec mode

Task 2
Configure and apply a NACL on Gw1 to control network traffic from VLAN 10.
1. Name: CORP_ACL
2. Allow BOOTP and HTTPS
3. Restrict all other traffic and log the ingress interface, source MAC address, the packet's source and destination IP addresses, and ports.

Task 3
Configure Sw1
1. Enable DHCP Snooping for VLAN 10
2. Disable DHCP Option-82 data insertion
3. Enable DHCP Snooping MAC address verification
4. Enable trusted interfaces.



A. Gw1

```
Gw1>en
Gw1#config t
Gw1(config)#username wheel privilege 15 algorithm-type scrypt secret lock3path
Gw1(config)#line vty 0 4
Gw1(config-line)#login local
Gw1(config-line)#transport input telnet
Gw1(config-line)#exit
Gw1(config)#ip access-list extended CORP_ACL
Gw1(config-ext-nacl)#permit udp 10.10.0.0 0.0.0.255 eq bootpc any eq bootps
Gw1(config-ext-nacl)#permit tcp 10.10.0.0 0.0.0.255 any eq 443
Gw1(config-ext-nacl)#deny ip any any log
Gw1(config-ext-nacl)#int e0/0
Gw1(config-if)#ip access-group CORP_ACL in
Gw1(config-line)#end
Gw1#wr
```

Sw1

```
Sw1>en
Sw1#config t
Sw1(config)#ip dhcp snooping
Sw1(config)#ip dhcp snooping vlan 10
Sw1(config)#no ip dhcp snooping information option
Sw1(config)#ip dhcp snooping verify mac-address
Sw1(config-if)#int range e0/1-2
Sw1(config-if-range)#ip dhcp snooping trust
Sw1(config-if-range)#end
Sw1#wr
```

Answer: A

Item 17 of 22 (Lab, Q17) Hide Answer

Guidelines
Please use the "Tasks" and "Topology" tabs to complete this lablet.

Tasks
Refer to the topology. All physical cabling is in place, and a routing protocol is preconfigured on all network devices.

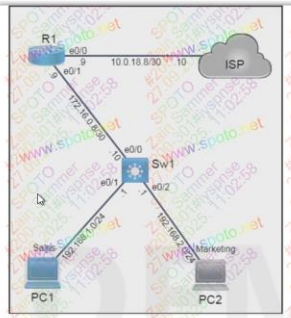
Task 1
Complete the configuration of NAT/PAT on the R1 router using the predefined configuration.

R1 Predefined Configuration
interface Ethernet0/0
ip nat outside
interfaceEthernet0/1
ip nat inside
access-list 192 permit ip 192.168.0.0 0.0.3.255 any

Task 2
Configure NTP on R1 and Sw1 using the following information:
1. NTP server = R1
2. Source = Loopback 0
3. Client = Sw1

Task 3
R1 is preconfigured with a DHCP pool and associated information. PC1 is configured to obtain an IP address automatically.
1. Configure a relay agent on Sw1.

Task 4
Sw1 is preconfigured with a local user account and a dori name. Complete the SSH configuration on Sw1.
1. RSA Key = 2048 bits
2. SSH Version = 2



A. R1

```
R1>en
R1#config t
R1(config)#ip nat inside source list 192 interface e0/0 overload
R1(config)#ntp master 1
R1(config)#ntp source loopback0
R1(config)#end
R1#wr
```

Sw1

```
Sw1>en
Sw1#config t
Sw1(config)#ntp server 209.165.202.134
Sw1(config)#ip ssh version 2
Sw1(config)#crypto key generate rsa modulus 2048
Sw1(config)#int e0/1
Sw1(config-if)#ip helper-address 172.16.0.9
Sw1(config-if)#end
Sw1#wr
```

Answer: A

Item 18 of 22 (Lab, Q18)

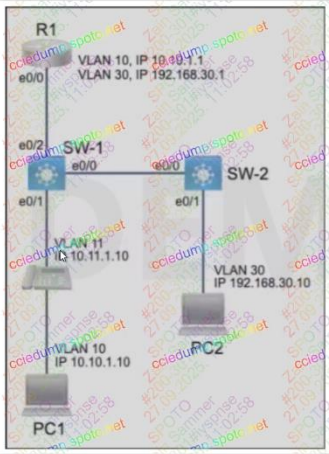
Hide Answer

Guidelines

This is a lab item in which tasks will be performed on virtual devices.
1. Refer to the Tasks tab to view the tasks for this lab item.
2. Refer to the Topology tab to access the device console(s) and perform the tasks.
3. Console access is available for all required devices by clicking the device icon or using the tab(s) above the console window.
4. All necessary preconfigurations have been applied.
5. Do not change the enable password or hostname for any device.
6. **Save your configurations** to NVRAM before moving to the next item.
7. Click **Next** at the bottom of the screen to submit this lab and move to the next question.
8. When **Next** is clicked, the lab closes and cannot be reopened

Tasks

R1 has been pre-configured with all the necessary commands. All physical cabling is in place and verified. Connectivity to the end devices must be configured.
1. Configure SW-1 switch port E0/1 to carry traffic for the Cisco IP phone and PC2.
2. Configure SW-2 E0/1 to carry traffic for PC2.
3. Configure VLAN 10 with the name "Engineering" on SW-1.
4. Configure the link between SW-1 and SW-2 to use the vendor neutral neighbor discovery protocol
5. Configure the link on SW-1 to R1 so that it does not allow the Cisco neighbor discovery protocol to pass



A. SW-1:

```
SW-1>en
SW-1#config t
SW-1(config)#vlan 10
SW-1(config-vlan)#name Engineering
SW-1(config-vlan)#int e0/0
SW-1(config-if)#lldp transmit
SW-1(config-if)#lldp receive
SW-1(config-if)#int e0/1
SW-1(config-if)#switchport mode access
SW-1(config-if)#switchport access vlan 10
SW-1(config-if)#switchport voice vlan 11
SW-1(config-if)#int e0/2
SW-1(config-if)#no cdp enable
SW-1(config-if)#end
SW-1#wr

SW-2:

SW-2>en
SW-2#config t
SW-2(config)#int e0/0
SW-2(config-if)#lldp transmit
SW-2(config-if)#lldp receive
SW-2(config-if)#int e0/1
SW-2(config-if)#switchport mode access
SW-2(config-if)#switchport access vlan 30
SW-2(config-if)#end
SW-2#wr
```

Answer: A

Item 19 of 22 (Lab, Q19)

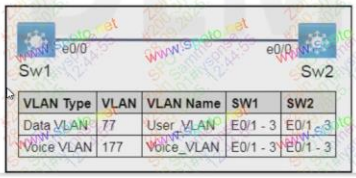
Hide Answer

Guidelines

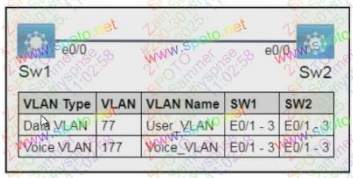
This is a lab item in which tasks will be performed on virtual devices.
1. Refer to the Tasks tab to view the tasks for this lab item.
2. Refer to the Topology tab to access the device console(s) and perform the tasks.
3. Console access is available for all required devices by clicking the device icon or using the tab(s) above the console window.
4. All necessary preconfigurations have been applied.
5. Do not change the enable password or hostname for any device.
6. **Save your configurations** to NVRAM before moving to the next item.
7. Click **Next** at the bottom of the screen to submit this lab and move to the next question.
8. When **Next** is clicked, the lab closes and cannot be reopened

Tasks

All physical cabling is in place and verified. Connectivity for the Switches on ports E0/1, E0/2, and E0/3 must be configured and available for voice and data capabilities.
1. Configure Sw1 and Sw2 with both VLANS, naming them according to the topology.
2. Configure the E0/1, E0/2, and E0/3 ports on both switches for both VLANS and ensure that Cisco IP phones and PCs will pass traffic.
3. Configure Sw1 and Sw2 to allow neighbor discovery via the vendor-neutral protocol and deny the Cisco proprietary neighbor discovery protocol on e0/0.



VLAN Type	VLAN	VLAN Name	SW1	SW2
Data VLAN	77	User_VLAN	E0/1 - 3	E0/1 - 3
Voice VLAN	177	Voice_VLAN	E0/1 - 3	E0/1 - 3



VLAN Type	VLAN	VLAN Name	SW1	SW2
Data VLAN	77	User_VLAN	E0/1 - 3	E0/1 - 3
Voice VLAN	177	Voice_VLAN	E0/1 - 3	E0/1 - 3

A. Sw1/Sw2

```
Switch>en
Switch#config t
Switch(config)#vlan 77
Switch(config-vlan)#name User_VLAN
Switch(config-vlan)#vlan 177
Switch(config-vlan)#name Voice_LAN
Switch(config-vlan)#exit
Switch(config)#int range e0/1-3
Switch(config-if-range)#switchport mode access
Switch(config-if-range)#switchport access vlan 77
Switch(config-if-range)#switchport voice vlan 177
Switch(config-if-range)#lldp transmit
Switch(config-if-range)#lldp receive
Switch(config-if-range)#no shutdown
Switch(config-if-range)#int e0/0
Switch(config-if)#switchport trunk encapsulation dot1q
Switch(config-if)#switchport mode trunk
Switch(config-if)#no cdp enable
Switch(config-if)#no shutdown
Switch(config-if)#end
Switch#wr
```

Answer: A

Item 20 of 22 (Lab, Q20)

Hide Answer

Guidelines

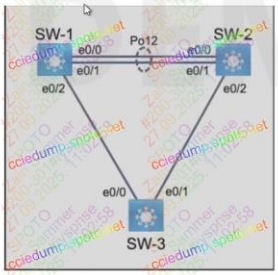
This is a lab item in which tasks will be performed on virtual devices.

1. Refer to the Tasks tab to view the tasks for this lab item.
2. Refer to the Topology tab to access the device console(s) and perform the tasks.
3. Console access is available for all required devices by clicking the device icon or using the tab(s) above the console window.
4. All necessary preconfigurations have been applied.
5. Do not change the enable password or hostname for any device.
6. **Save your configurations** to NVRAM before moving to the next item.
7. Click **Next** at the bottom of the screen to submit this lab and move to the next question.
8. When **Next** is clicked, the lab closes and cannot be reopened

Tasks

VLANS 35 and 45 have been configured in all three switches. All physical connectivity has been installed and verified. All inter-switch links must be operational.

1. Configure SW-1 and SW-2 switch ports e0/0 and e0/1 for 802.1q trunking allowing all VLANS.
2. Configure the inter-switch links on SW-1 e0/2, SW-2 e0/2, and SW-3 e0/0 and e0/1 to use native VLAN 35.
3. Configure SW-1 and SW-2 switch ports e0/0 and e0/1 for link aggregation. SW-1 should immediately negotiate LACP and SW-2 must only respond to LACP requests.



A. SW1:

```
SW1>en
SW1#config t
SW1(config)#int range e0/0-2
SW1(config-if-range)#switchport trunk encapsulation dot1q
SW1(config-if-range)#switchport mode trunk
SW1(config-if-range)#int range e0/0-1
SW1(config-if-range)#channel-group 12 mode active
SW1(config-if-range)#int e0/2
SW1(config-if)#switchport trunk native vlan 35
SW1(config-if)#end
SW1wr
```

SW2:

```
SW2>en
SW2#config t
SW2(config)#int range e0/0-2
SW2(config-if-range)#switchport trunk encapsulation dot1q
SW2(config-if-range)#switchport mode trunk
SW2(config-if-range)#int range e0/0-1
SW2(config-if-range)#channel-group 12 mode passive
SW2(config-if-range)#int e0/2
SW2(config-if)#switchport trunk native vlan 35
SW2(config-if)#end
SW2wr
```

SW3:

```
SW3>en
SW3#config t
SW3(config)#int range e0/0-1
SW3(config-if-range)#switchport trunk encapsulation dot1q
SW3(config-if-range)#switchport mode trunk
SW3(config-if)#switchport trunk native vlan 35
SW3(config-if-range)#end
SW3#wr
```

Answer: A

Select the best choice

Item 21 of 22 (Lab, Q21)

Hide Answer

Guidelines

This is a lab item in which tasks will be performed on virtual devices.

1. Refer to the Tasks tab to view the tasks for this lab item.
2. Refer to the Topology tab to access the device console(s) and perform the tasks.
3. Console access is available for all required devices by clicking the device icon or using the tab(s) above the console window.
4. All necessary preconfigurations have been applied.
5. Do not change the enable password or hostname for any device.
6. **Save your configurations** to NVRAM before moving to the next item.
7. Click **Next** at the bottom of the screen to submit this lab and move to the next question.
8. When **Next** is clicked, the lab closes and cannot be reopened.

Tasks

Task 1

Configure the trunks between Sw1 and Sw2 on ports E0/0 and E0/1 using the IEEE standard frame tagging method.

1. Only the VLANs for the PCs should be permitted across the trunks.
2. Routers are simulated as PCs and are preconfigured with IP Addresses.
3. PC configurations must remain unchanged.

Task 2

On Sw1 and Sw2, use IEEE 802.3ad link aggregation.

1. Assign number 10 to the link.
2. Combine E0/0 and E0/1 into a single logical link.
3. Both links must negotiate aggregation.

Name	IP Address	VLAN
PC1	10.2.2.10	10
PC2	10.2.2.20	10
PC3	10.3.3.10	30
PC4	10.3.3.20	30

A. Sw1/Sw2

```
Switch>en
Swtich#config t
Switch(config)#int range e0/0-1
Switch(config-if-range)#switchport trunk encapsulation dot1q
Switch(config-if-range)#switchport mode trunk
Switch(config-if-range)#switchport trunk allowed vlan 10,30
Switch(config-if-range)#channel-group 10 mode active
Switch(config-if-range)#end
Switch#wr
```

Answer: A

Item 22 of 22 (Lab, Q22)

Hide Answer

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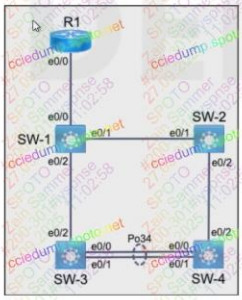
Tasks

All physical cabling is in place and verified. Router R1 is configured and passing traffic for VLANs 5 and 6. All relevant ports are pre-configured as 802.1q trunks.

1. Configure SW-1 port E0/0 to permit only VLANs 5 and 6
2. Configure both SW-1 and SW-2's E0/1 ports to send and receive untagged traffic over VLAN 77
3. Configure SW-2 E0/2 port to permit only VLAN 6
4. Configure both SW-3 and SW-4 ports e0/0 and e0/1 for link aggregation using the industry standard protocol with the following requirements:
   - SW-3 ports must immediately negotiate the aggregation protocol
   - SW-4 ports must not initiate the negotiation for the aggregation protocol
   - Use the designated number assignment



A. SW-1:

```
SW-1>en
SW-1#config t
SW-1(config)#int e0/0
SW-1(config-if)#switchport trunk allowed vlan 5,6
SW-1(config-if)#int e0/1
SW-1(config-if)#switchport trunk native vlan 77
SW-1(config-if)#end
SW-1#wr
```

SW-2:

```
SW-2>en
SW-2#config t
SW-2(config)#int e0/1
SW-2(config-if)#switchport trunk native vlan 77
SW-2(config-if)#int e0/2
SW-2(config-if)#switchport trunk allowed vlan 6
SW-2(config-if)#end
SW-2#wr
```

SW-3:

```
SW-3>en
SW-3#config t
SW-3(config)#int range e0/0-1
SW-3(config-if-range)#channel-group 34 mode active
SW-3(config-if-range)#end
SW-3#wr
```

SW-4:

```
SW-4>en
SW-4#config t
SW-4(config)#int range e0/0-1
SW-4(config-if-range)#channel-group 34 mode passive
SW-4(config-if-range)#end
SW-4#wr
```

Answer: A