ALBUS SECURITY

Assignment Submission

Heading: Challenge 01

Approach: First, I looked at the status of the interface devices. I got the IP of the server i.e. 10.0.0.1, I tried connecting it but failed.
Solution: I went to the switch this time directly, went to the Config tab and tried seeing the config of fastEthernet 0/1, this gave me access to the CLI and I ran the following commands:
(config)#exit
#copy running-config startup-config

These commands helped me recover the running config which is in the primary memory of the switch making it volatile, further when exporting these files I got a file stating all the commands used for setting up the network. One command in particular caught my attention:
username net privilege 1 password 0 game
This gave me the username ‘net’ and the password ‘game'

```
<>Hi! Welcome to Albus Security</>

User Access Verification

Username: net
Password:

Switch>en
```

Heading: Challenge 02

Approach: To make changes in the switches and see how the MAC addresses is stored.

Solution:

Observed how the changes in MAC addresses take place, And also saw the packet forwarding logic.

Heading: Challenge 03

Approach: We check the status of the VLAN. Try to find the issues and do the needful to set the VLAN properly.
Solution: While checking the communication of packets, we see bob and vicer are configured to 2 different VLANs, hence hindering in their communication. To make them work, we switch the VLAN of fastEthernet 0/3 of admin switch to 1 instead of 2 to make it work. I did it with the following step:

```
Switch(config)#interface FastEthernet0/3
Switch(config-if)#switchport mode access
Switch(config-if)#switchport access vlan 1
Switch(config-if)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan2, changed state to
down

Switch(config-if)#exit
```

Heading: Challenge 04

Approach: Understand the problem of configuring the hostname on a switch. Researched methods for Cisco switches running IOS. Analyse with available commands.

Solution:

Utilized the following command for Cisco switches running IOS:

Switch# configure terminal

Switch(config)# hostname R1

Heading: Challenge 05
Approach: Understand the problem between lines and solve them.
Solution:
line status of fastEthernet 0/3 of the Junior switch was down, brought that up by using the following commands:

```
Switch#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
Switch(config)#interface fastEthernet 0/3
Switch(config-if)#no shutdown

Switch(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/3, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/3, changed
state to up

Switch(config-if)#exit
```

Heading: Challenge 06

Approach: Troubleshoot for the error in the network and fix it with the pre-requisite knowledge.

Solution:

Configure the switches first-

Admin:

```
Switch(config)#interface gig0/1
Switch(config-if)#switchport mode trunk
Switch(config)#interface fa0/3
Switch(config-if)#switchport mode access
Switch(config-if)#switchport access vlan 2
Switch(config-if)#exit
Switch(config)#interface fa0/2
Switch(config-if)#switchport mode access
Switch(config-if)#switchport access vlan 1
Switch(config-if)#exit
Switch(config)#interface fa0/1
Switch(config-if)#switchport mode access
Switch(config-if)#switchport access vlan 3
Switch(config-if)#exit
Switch(config)#end
Switch#write memory
```

Senior:

```
Switch(config)#interface gig0/1
```

```
Switch(config-if)#switchport mode trunk
Switch(config)#interface fa0/1
Switch(config-if)#switchport mode access
Switch(config-if)#switchport access vlan 2
Switch(config-if)#exit
Switch(config)#interface fa0/2
Switch(config-if)#switchport mode access
Switch(config-if)#switchport access vlan 3
Switch(config-if)#exit
Switch(config)#interface fa0/3
Switch(config-if)#switchport access vlan 1
Switch(config-if)#switchport mode access
Switch(config-if)#switchport access vlan 1
Switch(config-if)#exit
Switch(config)#end
Switch#write memory
```

Now I changed the following IPs:
VLAN1 On Senior: 10.0.0.2
VLAN2 on Senior: 30.0.0.2
VLAN3 on Senior: 40.0.0.2
Bob's IP: 192.168.2.1
Hope's IP: 192.168.1.1
Vicer's IP: 192.168.3.1
Carlos's IP: 192.168.2.2
Jack's IP: 192.168.3.2

Harry's IP: 192.168.1.2
All of this made the network work again.

Heading: Challenge 7
Approach: I took the following actions to resolve a layer 1 problem on functional interfaces, specifically duplex mismatches shown by late collisions.
Solution:
Fixed duplex mismatch in one of the switches named Senior using the following commands:

```
Switch>en
Switch#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
Switch(config)#interface fa0/2
Switch(config-if)#duplex ?
  auto  Enable AUTO duplex configuration
  full  Force full duplex operation
  half  Force half-duplex operation
Switch(config-if)#duplex auto
Switch(config-if)#end
Switch#
%SYS-5-CONFIG_I: Configured from console by console

Switch#write memory
Building configuration...
[OK]
Switch#
```

Heading: Challenge 08

Approach: Read the running-configs. See the configuration of SSH in the switches and configure them accordingly.

Solution:

The Admin Switch had SSH setup improperly. I set it up properly using the following commands:

```
Switch>en
Switch#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
Switch(config)#hostname s1
s1(config)#ip domain-name test
s1(config)#username albus password game
s1(config)#crypto key gen rsa
The name for the keys will be: s1.test
Choose the size of the key modulus in the range of 360 to 4096 for your
  General Purpose Keys. Choosing a key modulus greater than 512 may take
  a few minutes.

How many bits in the modulus [512]: 1024
% Generating 1024 bit RSA keys, keys will be non-exportable...[OK]

s1(config)#ip ssh version 2
*Mar 1 0:4:28.186: %SSH-5-ENABLED: SSH 1.99 has been enabled
s1(config)#line con 0
s1(config-line)#line vty 0 4
s1(config-line)#transport input ssh
s1(config-line)#login local
s1(config-line)#line vty 5 15
s1(config-line)#transport input ssh
s1(config-line)#login local
s1(config-line)#end
s1#
%SYS-5-CONFIG_I: Configured from console by console

s1#write memory
Building configuration...
[OK]
s1#
```

Heading: Challenge 09
Approach: Learn about SSH timeouts
Solution:
Disable SSH timeout:
Switch(config)#line vty 0 15
Switch(config-line)#exec-timeout 0 0

Disable console timeout:
Switch(config)# line console 0
Switch(config-line)# exec-timeout 0 0

Don’t forget to save the settings using : write memory

Heading: Challenge 10

Approach: Recognised trunking and VLAN problems in the lab.
based on research, selected a methodical troubleshooting technique.
Solution:
To fix the VLAN, we perform the following operations in the switches:
Switch Admin:

```
Switch(config)#interface vlan 1
Switch(config-if)#ip address 10.0.0.3 255.255.255.0
Switch(config-if)#no shutdown
Switch(config)#interface fa0/1-2
Switch(config-if)#switchport mode trunk
Switch(config-if)#interface fa0/3
Switch(config-if)#switchport mode access
Switch(config-if)#switchport access vlan 1
```

Switch Junior:

```
Switch(config)#interface vlan 1
Switch(config-if)#ip address 10.0.0.1 255.255.255.0
Switch(config-if)#no shutdown
Switch(config)#interface fa0/1-2
Switch(config-if)#switchport mode trunk
Switch(config-if)#interface fa0/3
Switch(config-if)#switchport mode access
```

Switch(config-if)#switchport access vlan 1

Switch Senior:
Switch(config)#interface fa0/1
Switch(config-if)#no shutdown
Switch(config)#interface fa0/1-2
Switch(config-if)#switchport mode trunk