NAME: BAMIDELE .S OJO

MODULE: TWO
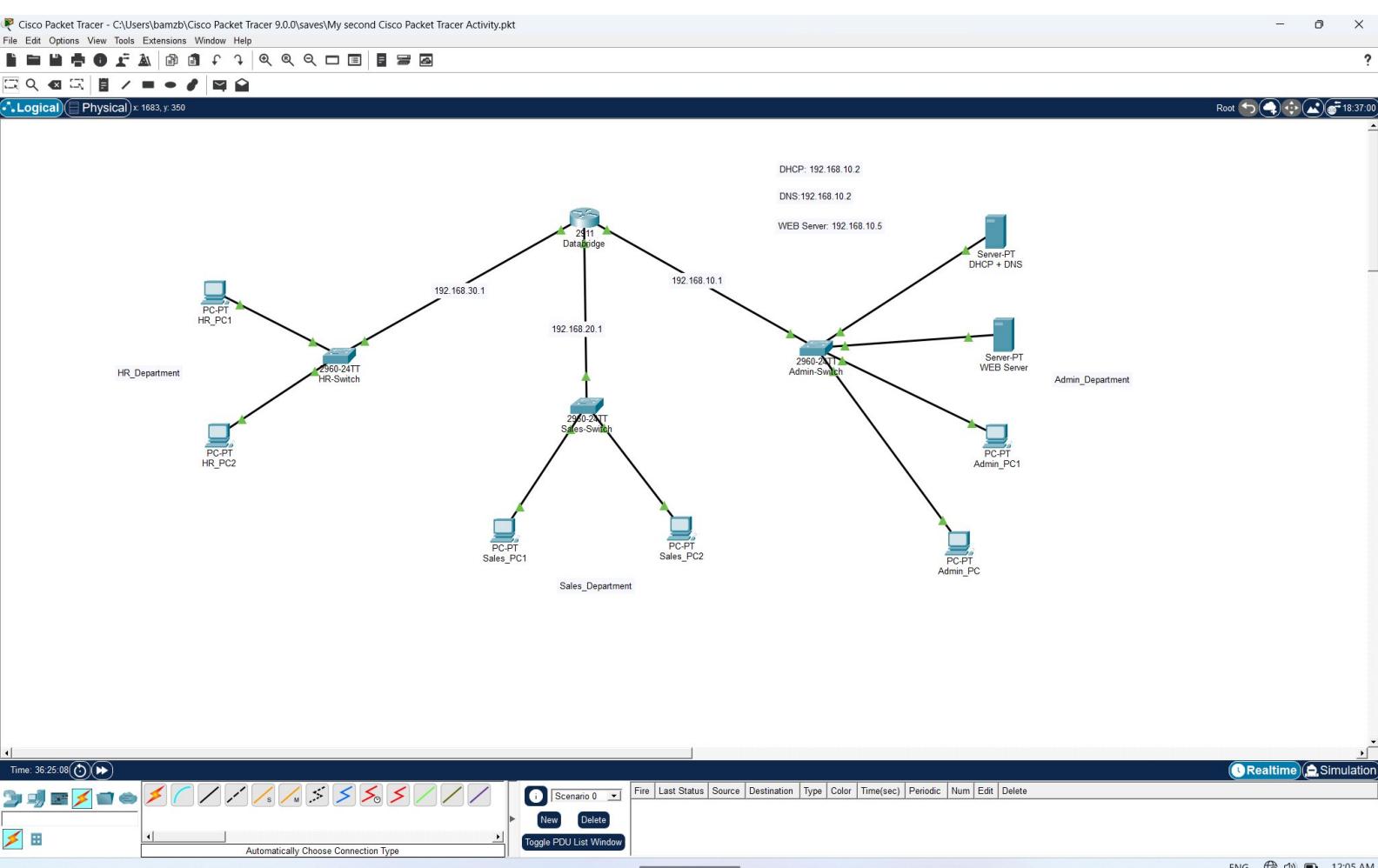
ASSIGNMENT TITLE: NETWORKING PROJECT

DATE SUBMITTED: OCT 29, 2025.

SECTION 2 – Briefly describe what the assignment aims to achieve

Haven set up the organization's network configuration and everything now working smoothly, I've been asked to add an additional server to the Admin department to set up the organization's web server and enable the HTTP service to be up and running. I've also been asked to update the ACL rules so that only the Admin and Sales department can access the HTTP Server, and the HR department is denied absolute access to the Server, and every other department in the organization.

This task aims to show the importance of the principle of Least Privilege in cybersecurity, through the implementation of Access Control List (ACL), ensuring that only the person or department who are authorized and approved can access the Organization's resources. The ACL rule is essential in access management and instrumental in upholding the CIA triad.

SECTION 3 – Explain the Network setup briefly

This network is comprised of three departments (Admin, Sales and HR). Each department has their own switches and independent default network interface, also all the endpoint devices on this network have been assigned their own individual ipv4 addresses. All the switches are connected to one router. The network has two different servers located at the admin department, the first server hosts both the DHCP and DNS network, while the second server hosts the HTTP services of the Organization. All the endpoint devices, switches, servers and router on this network have been configured to communicate effectively. However, ACL rules has been applied to the network configuration as follows: the Admin department and all endpoint devices on it has been allowed access to the server (HTTP), and also to the Sales and HR department, the Sales department is granted access to the Admin department and the Server (HTTP) service, while the HR department has been denied absolute access to the Admin and Sales department and the Server (HTTP), but can communicate with outside network.

```
databridge(config-if)#no shutdown

databridge(config-if)#
%LINK-5-CHANGED: Interface GigabitEthernet0/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0, changed state to up

databridge(config-if)#interface Gig0/1
databridge(config-if)#ip address 192.168.20.1 255.255.255.0
databridge(config-if)#no shutdown

databridge(config-if)#
%LINK-5-CHANGED: Interface GigabitEthernet0/1, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/1, changed state to up

databridge(config-if)#interface Gig0/2
databridge(config-if)#ip address 192.168.30.1 255.255.255.0
databridge(config-if)#no shutdown

databridge(config-if)#
%LINK-5-CHANGED: Interface GigabitEthernet0/2, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/2, changed state to up

databridge(config-if)#
databridge(config-if)#exit
databridge(config)#exit
databridge#
%SYS-5-CONFIG_I: Configured from console by console

databridge#show ip interface brief
Interface              IP-Address      OK? Method Status                Protocol
GigabitEthernet0/0     192.168.10.1    YES manual up                    up
GigabitEthernet0/1     192.168.20.1    YES manual up                    up
GigabitEthernet0/2     192.168.30.1    YES manual up                    up
Vlan1                  unassigned      YES unset  administratively down down
databridge#
databridge#
databridge#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
databridge(config)#interface GigabitEthernet0/0
databridge(config-if)#
databridge(config-if)#exit
databridge(config)#interface GigabitEthernet0/1
databridge(config-if)#
databridge(config-if)#exit
databridge(config)#interface GigabitEthernet0/2
databridge(config-if)#
databridge(config-if)#exit
databridge(config)#interface GigabitEthernet0/1
databridge(config-if)#exit
databridge(config)#exit
databridge#
%SYS-5-CONFIG_I: Configured from console by console

databridge#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
databridge(config)#interface Gig0/1
databridge(config-if)#ip helper-address 192.168.10.2
databridge(config-if)#exit
databridge(config)#interface Gig0/2
databridge(config-if)#ip helper-address 192.168.10.2
databridge(config-if)#exit
databridge(config)#exit
databridge#
%SYS-5-CONFIG_I: Configured from console by console

databridge#
```

Copy   Paste

☐ Top

ENG   1:00 PM

Physical   Config   Services   Desktop   Programming   Attributes

SERVICES

HTTP	
DHCP	
DHCPv6	
TFTP	
DNS	
SYSLOG	
AAA	
NTP	
EMAIL	
FTP	
IoT	
VM Management	
Radius EAP	
PRP	

DHCP

Interface	FastEthernet0	Service ⦿ On	◯ Off
Pool Name		serverPool	
Default Gateway		192.168.10.1	
DNS Server		192.168.10.2	

Start IP Address :	192	168	10	10
Subnet Mask:	255	255	255	0

Maximum Number of Users :	50
TFTP Server:	0.0.0.0
WLC Address:	0.0.0.0

Add	Save	Remove

Pool Name	Default Gateway	DNS Server	Start IP Address	Subnet Mask	Max User	TFTP Server	WLC Address
HR_Deprt	192.168.30.1	192.168.10.2	192.168.30.10	255.255.255.0	50	0.0.0.0	0.0.0.0
Sales_Deprt	192.168.20.1	192.168.10.2	192.168.20.10	255.255.255.0	50	0.0.0.0	0.0.0.0
serverPool	192.168.10.1	192.168.10.2	192.168.10.10	255.255.255.0	50	0.0.0.0	0.0.0.0

☐ Top

ENG   9:43 AM

Physical   Config   Services   Desktop   Programming   Attributes

GLOBAL
Settings
Algorithm Settings
INTERFACE
FastEthernet0

Global Settings

Display Name DHCP + DNS

Gateway/DNS IPv4
- ○ DHCP
- ● Static

Default Gateway 192.168.10.1

DNS Server 192.168.10.2

Gateway/DNS IPv6
- ○ Automatic
- ● Static

Default Gateway

DNS Server

Device Clock: 04:34:21 Tue Oct 28 2025 UTC

PTP

Profile   Power

- ○ Enable   ● Disable

☐ Top

ENG   9:44 AM

WEB Server

Physical   Config   **Services**   Desktop   Programming   Attributes

SERVICES

HTTP	
DHCP	
DHCPv6	
TFTP	
DNS	
SYSLOG	
AAA	
NTP	
EMAIL	
FTP	
IoT	
VM Management	
Radius EAP	
PRP	

HTTP

HTTP
⦿ On   ◯ Off

HTTPS
⦿ On   ◯ Off

File Manager

	File Name	Edit	Delete
1	Databridge.html	(edit)	(delete)
2	copyrights.html	(edit)	(delete)
3	cscoptlogo177x111.jpg		(delete)
4	helloworld.html	(edit)	(delete)
5	image.html	(edit)	(delete)
6	index.html	(edit)	(delete)

New File   Import

File Name: Databridge.html

```
<html>
<center><font size='+2' color='blue'>DATABRIDGE</font></center>
<hr>Welcome to Databridge. How can we help you today?. Mind Wide Open.
<p>Quick Links:
<br><a href='helloworld.html'>A small page</a>
<br><a href='copyrights.html'>Copyrights</a>
<br><a href='image.html'>Image page</a>
<br><a href='cscoptlogo177x111.jpg'>Image</a>
</html>
```

File Manager   Save

☐ Top

ENG   9:56 AM

WEB Server

IP Configuration   X

IP Configuration

○ DHCP   ● Static

IPv4 Address	192.168.10.5
Subnet Mask	255.255.255.0
Default Gateway	192.168.10.1
DNS Server	0.0.0.0

IPv6 Configuration

○ Automatic   ● Static

IPv6 Address		/
Link Local Address	FE80::2E0:A3FF:FE91:90B3
Default Gateway	
DNS Server	

802.1X

☐ Use 802.1X Security

Authentication	MD5
Username	
Password	

☐ Top

ENG   9:56 AM

Physical   Config   Desktop   Programming   Attributes

Web Browser   X

< | > | URL | http://databridge.com | Go | Stop

DATABRIDGE

Welcome to Databridge. How can we help you today?. Mind Wide Open.

Quick Links:
A small page
Copyrights
Image page
Image

Top

HP Product Status

Physical   Config   Desktop   Programming   Attributes

Web Browser   X

< | > | URL | http://databridge.com | Go | Stop

DATABRIDGE

Welcome to Databridge. How can we help you today?. Mind Wide Open.

Quick Links:
A small page
Copyrights
Image page
Image

Top

HP Product Status

HR_PC1

Physical | Config | Desktop | Programming | Attributes

Web Browser   X

< | > | URL | http://databridge.com | | Go | Stop

Host Name Unresolved

☐ Top

HP **HP Product Status**

ENG   5:43 PM

Physical | Config | Desktop | Programming | Attributes
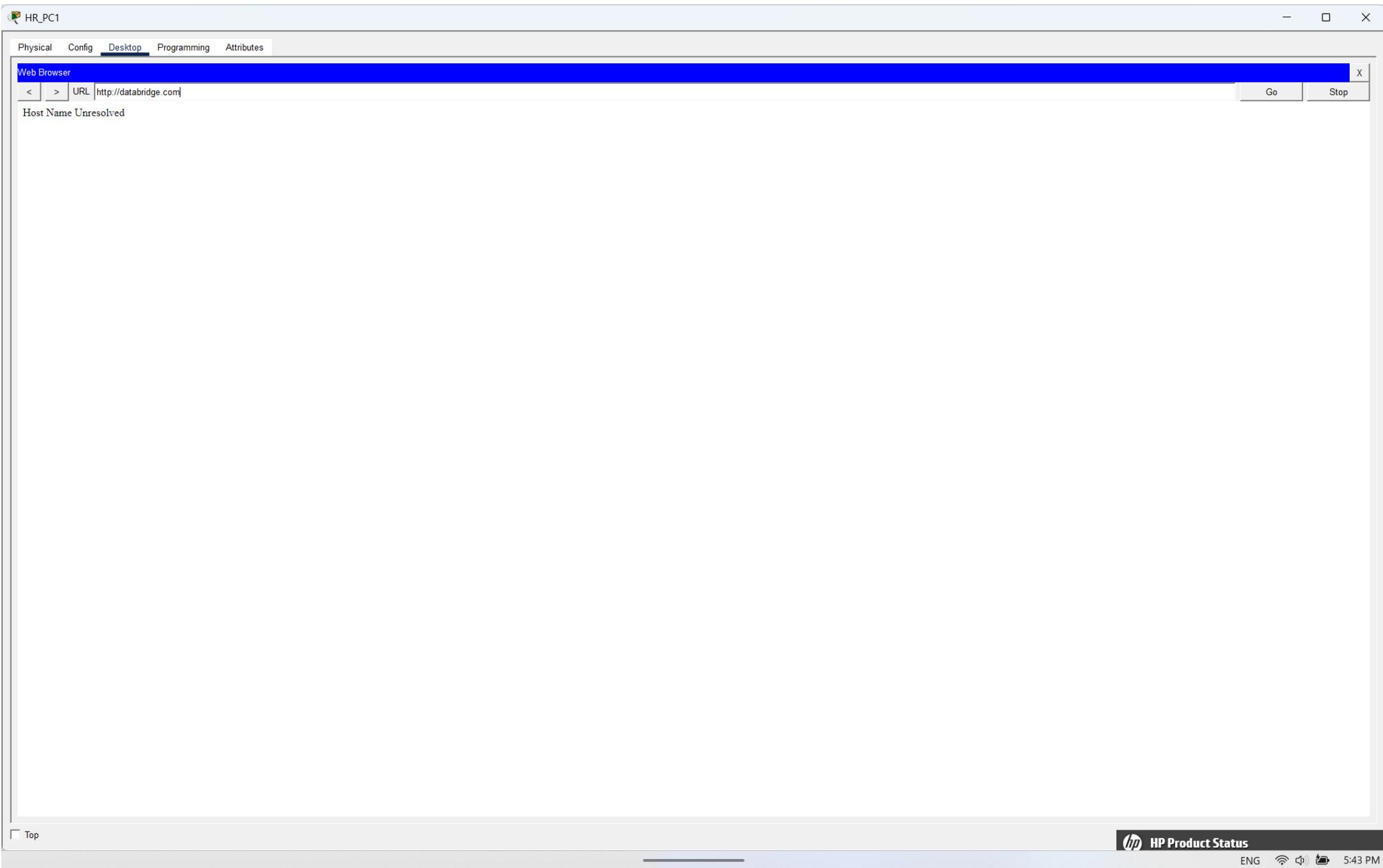
Command Prompt

```
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 6ms, Average = 2ms

C:\>ping 192.168.20.11

Pinging 192.168.20.11 with 32 bytes of data:

Request timed out.
Reply from 192.168.20.11: bytes=32 time<1ms TTL=127
Reply from 192.168.20.11: bytes=32 time<1ms TTL=127
Reply from 192.168.20.11: bytes=32 time<1ms TTL=127

Ping statistics for 192.168.20.11:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>ping 192.168.30.11

Pinging 192.168.30.11 with 32 bytes of data:

Request timed out.
Reply from 192.168.30.11: bytes=32 time=1ms TTL=127
Reply from 192.168.30.11: bytes=32 time<1ms TTL=127
Reply from 192.168.30.11: bytes=32 time=1ms TTL=127

Ping statistics for 192.168.30.11:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 1ms, Average = 0ms

C:\>ping 192.168.20.11

Pinging 192.168.20.11 with 32 bytes of data:

Reply from 192.168.20.11: bytes=32 time<1ms TTL=127
Reply from 192.168.20.11: bytes=32 time<1ms TTL=127
Reply from 192.168.20.11: bytes=32 time<1ms TTL=127
Reply from 192.168.20.11: bytes=32 time=1ms TTL=127

Ping statistics for 192.168.20.11:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 1ms, Average = 0ms

C:\>ping 192.168.30.11

Pinging 192.168.30.11 with 32 bytes of data:

Request timed out.
Request timed out.
Request timed out.
Request timed out.

Ping statistics for 192.168.30.11:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

C:\>ping 192.168.10.11

Pinging 192.168.10.11 with 32 bytes of data:

Reply from 192.168.10.11: bytes=32 time=7ms TTL=128
Reply from 192.168.10.11: bytes=32 time=5ms TTL=128
Reply from 192.168.10.11: bytes=32 time=5ms TTL=128
Reply from 192.168.10.11: bytes=32 time=3ms TTL=128

Ping statistics for 192.168.10.11:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 3ms, Maximum = 7ms, Average = 5ms

C:\>
```

Top

ENG   3:05 PM

Physical   Config   Desktop   Programming   Attributes

Command Prompt   X

```
Ping statistics for 192.168.20.10:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>ping 192.168.30.10

Pinging 192.168.30.10 with 32 bytes of data:

Request timed out.
Reply from 192.168.30.10: bytes=32 time<1ms TTL=127
Reply from 192.168.30.10: bytes=32 time<1ms TTL=127
Reply from 192.168.30.10: bytes=32 time=2ms TTL=127

Ping statistics for 192.168.30.10:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 2ms, Average = 0ms

C:\>ping 192.168.10.11

Pinging 192.168.10.11 with 32 bytes of data:

Reply from 192.168.10.11: bytes=32 time<1ms TTL=127
Reply from 192.168.10.11: bytes=32 time<1ms TTL=127
Reply from 192.168.10.11: bytes=32 time<1ms TTL=127
Reply from 192.168.10.11: bytes=32 time=1ms TTL=127

Ping statistics for 192.168.10.11:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 1ms, Average = 0ms

C:\>ping 192.168.20.10

Pinging 192.168.20.10 with 32 bytes of data:

Reply from 192.168.20.10: bytes=32 time<1ms TTL=128
Reply from 192.168.20.10: bytes=32 time<1ms TTL=128
Reply from 192.168.20.10: bytes=32 time<1ms TTL=128
Reply from 192.168.20.10: bytes=32 time<1ms TTL=128

Ping statistics for 192.168.20.10:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>ping 192.168.30.10

Pinging 192.168.30.10 with 32 bytes of data:

Reply from 192.168.20.1: Destination host unreachable.
Reply from 192.168.20.1: Destination host unreachable.
Reply from 192.168.20.1: Destination host unreachable.
Reply from 192.168.20.1: Destination host unreachable.

Ping statistics for 192.168.30.10:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

C:\>ping 192.168.30.11

Pinging 192.168.30.11 with 32 bytes of data:

Reply from 192.168.20.1: Destination host unreachable.
Reply from 192.168.20.1: Destination host unreachable.
Reply from 192.168.20.1: Destination host unreachable.
Reply from 192.168.20.1: Destination host unreachable.

Ping statistics for 192.168.30.11:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

C:\>
```

☐ Top

ENG   3:08 PM

Physical   Config   Desktop   Programming   Attributes

Command Prompt   X

Reply from 192.168.30.11: bytes=32 time<1ms TTL=128

Ping statistics for 192.168.30.11:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>ping 192.168.50.11

Pinging 192.168.50.11 with 32 bytes of data:

Reply from 192.168.30.1: Destination host unreachable.
Reply from 192.168.30.1: Destination host unreachable.
Reply from 192.168.30.1: Destination host unreachable.
Request timed out.

Ping statistics for 192.168.50.11:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

C:\>ping 192.168.30.11

Pinging 192.168.30.11 with 32 bytes of data:

Reply from 192.168.30.11: bytes=32 time<1ms TTL=128
Reply from 192.168.30.11: bytes=32 time<1ms TTL=128
Reply from 192.168.30.11: bytes=32 time<1ms TTL=128
Reply from 192.168.30.11: bytes=32 time<1ms TTL=128

Ping statistics for 192.168.30.11:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>ping 192.168.30.11

Pinging 192.168.30.11 with 32 bytes of data:

Reply from 192.168.30.11: bytes=32 time=11ms TTL=128
Reply from 192.168.30.11: bytes=32 time<1ms TTL=128
Reply from 192.168.30.11: bytes=32 time<1ms TTL=128
Reply from 192.168.30.11: bytes=32 time<1ms TTL=128

Ping statistics for 192.168.30.11:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 11ms, Average = 2ms

C:\>ping 192.168.20.11

Pinging 192.168.20.11 with 32 bytes of data:

Reply from 192.168.30.1: Destination host unreachable.
Reply from 192.168.30.1: Destination host unreachable.
Reply from 192.168.30.1: Destination host unreachable.
Reply from 192.168.30.1: Destination host unreachable.

Ping statistics for 192.168.20.11:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

C:\>ping 192.168.10.11

Pinging 192.168.10.11 with 32 bytes of data:

Reply from 192.168.30.1: Destination host unreachable.
Reply from 192.168.30.1: Destination host unreachable.
Reply from 192.168.30.1: Destination host unreachable.
Reply from 192.168.30.1: Destination host unreachable.

Ping statistics for 192.168.10.11:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

C:\>

Top

ENG   3:10 PM

```
databridge(config)#ip access-list extended SALES-ACL
databridge(config-ext-nacl)#permit ip 192.168.20.0




databridge con0 is now available




Press RETURN to get started.








databridge>enable
databridge#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
databridge(config)#ip access-list extended SALES-ACL
databridge(config-ext-nacl)#permit ip 192.168.20.0 0.0.0.255 192.168.10.0 0.0.0.255
databridge(config-ext-nacl)#deny ip 192.168.20.0 0.0.0.255 192.168.30.0 0.0.0.255
databridge(config-ext-nacl)#permit ip any any
databridge(config-ext-nacl)#exit
databridge(config)#interface GigabitEthernet0/1
databridge(config-if)#ip access-group SALES-ACL in
databridge(config-if)#exit
databridge(config)#exit
databridge#
%SYS-5-CONFIG_I: Configured from console by console

databridge#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
databridge(config)#ip access-list extended HR-ACL
databridge(config-ext-nacl)#deny ip 192.168.30.0 0.0.0.255 192.168.0.0 0.0.255.255
databridge(config-ext-nacl)#permit ip any any
databridge(config-ext-nacl)#exit
databridge(config)#interface GigabitEthernet0/2
databridge(config-if)#ip access-group HR-ACL in
databridge(config-if)#exit
databridge(config)#exit
databridge#
%SYS-5-CONFIG_I: Configured from console by console

databridge#show access-list
Extended IP access list SALES-ACL
    10 permit ip 192.168.20.0 0.0.0.255 192.168.10.0 0.0.0.255
    20 deny ip 192.168.20.0 0.0.0.255 192.168.30.0 0.0.0.255
    30 permit ip any any
Extended IP access list HR-ACL
    10 deny ip 192.168.30.0 0.0.0.255 192.168.0.0 0.0.255.255
    20 permit ip any any

databridge#
```

Copy   Paste

☐ Top

ENG   3:03 PM

SECTION 6 – Explanation

The ACL configuration in the network restricted access to the Admin Server, by filtering traffic based on IP and protocol. This ensures that only the Admin and sales department can access the Admin server, and the HR department is denied such access. This shows how effective ACL is in enforcing access control at the router and firewall level.

SECTION 7 – Conclusion – Summary

The ACL rules help in securing and Organization's network by making sure only those who are authorized to access the Organization's resources can do so. It also implements the principle of Least Privilege, ensuring the Confidentiality and Integrity of data. Including ACL rules in a network configuration ensures that security mindset is implemented in the development process of a network. Lastly it helps ensure that the data and resources of the Organization is more secured. The ACL rule is essential and instrumental in upholding the CIA triad.