**Liberty University**

**CSIS 331**

**Lab 14 Answer Sheet**

**Numbered IPv4 ACLs**

Ping Table 1

|  |  |  |  |
| --- | --- | --- | --- |
| **Ping From Device** | **Ping to Device IP** | **Possible Y/N** | **If no, Why Not?** |
| PC1 | PC2 | Y |  |
| PC1 | Webserver | Y |  |
| PC2 | Webserver | Y |  |
| PC1 | PC3 | Y |  |
| PC2 | PC3 | Y |  |
| PC3 | Webserver | Y |  |

Show Run Output:

R2#show run

R2#show running-config

Building configuration...

Current configuration : 1005 bytes

!

version 15.1

no service timestamps log datetime msec

no service timestamps debug datetime msec

no service password-encryption

!

hostname R2

!

!

!

!

!

!

!

!

ip cef

no ipv6 cef

!

!

!

!

license udi pid CISCO1941/K9 sn FTX1524UE18

!

!

!

!

!

!

!

!

!

!

!

spanning-tree mode pvst

!

!

!

!

!

!

interface GigabitEthernet0/0

ip address 192.168.20.1 255.255.255.0

ip access-group 1 out

duplex auto

speed auto

!

interface GigabitEthernet0/1

no ip address

duplex auto

speed auto

shutdown

!

interface Serial0/0/0

description Link to R1

ip address 10.1.1.2 255.255.255.252

!

interface Serial0/0/1

description Link to R3

ip address 10.2.2.1 255.255.255.252

clock rate 4000000

!

interface Vlan1

no ip address

shutdown

!

router eigrp 100

passive-interface GigabitEthernet0/0

network 192.168.20.0

network 10.0.0.0

!

ip classless

!

ip flow-export version 9

!

!

access-list 1 deny 192.168.11.0 0.0.0.255

access-list 1 permit any

!

!

!

!

!

!

line con 0

login

!

line aux 0

!

line vty 0 4

login

!

!

!

End

**R3**

R3#show run

Building configuration...

Current configuration : 974 bytes

!

version 15.1

no service timestamps log datetime msec

no service timestamps debug datetime msec

no service password-encryption

!

hostname R3

!

!

!

!

!

!

!

!

ip cef

no ipv6 cef

!

!

!

!

license udi pid CISCO1941/K9 sn FTX1524PEUL

!

!

!

!

!

!

!

!

!

!

!

spanning-tree mode pvst

!

!

!

!

!

!

interface GigabitEthernet0/0

description R3 LAN

ip address 192.168.30.1 255.255.255.0

ip access-group 1 out

duplex auto

speed auto

!

interface GigabitEthernet0/1

no ip address

duplex auto

speed auto

shutdown

!

interface Serial0/0/0

ip address 10.3.3.2 255.255.255.252

!

interface Serial0/0/1

description Link to R2

ip address 10.2.2.2 255.255.255.252

!

interface Vlan1

no ip address

shutdown

!

router eigrp 100

passive-interface GigabitEthernet0/0

network 192.168.30.0

network 10.0.0.0

!

ip classless

!

ip flow-export version 9

!

!

access-list 1 deny 192.168.10.0 0.0.0.255

access-list 1 permit any

!

!

!

!

!

!

line con 0

!

line aux 0

!

line vty 0 4

login

!

!

!

end

Ping Table 2

|  |  |  |  |
| --- | --- | --- | --- |
| **Ping From Device** | **Ping to Device IP** | **Possible Y/N** | **If no, Why Not?** |
| PC1 | PC2 | Y |  |
| PC1 | Webserver | Y |  |
| PC2 | Webserver | N |  |
| PC1 | PC3 | N |  |
| PC2 | PC3 | Y |  |
| PC3 | Webserver | Y |  |

**Named IPv4 ACLs**

|  |  |  |  |
| --- | --- | --- | --- |
| **Ping From Device** | **Ping to Device IP** | **Possible Y/N** | **If no, Why Not?** |
| PC-0 | Web Server | Y |  |
| PC-0 | File Server | Y |  |
| PC-1 | Web Server | Y |  |
| PC-1 | File Server | Y |  |
| PC-2 | Web Server | Y |  |
| PC-2 | File Server | Y |  |

Show Run Output:

R1#show running-config

Building configuration...

Current configuration : 890 bytes

!

version 12.3

no service timestamps log datetime msec

no service timestamps debug datetime msec

no service password-encryption

!

hostname R1

!

!

!

!

!

!

!

!

ip cef

no ipv6 cef

!

!

!

!

!

!

!

!

!

!

!

!

spanning-tree mode pvst

!

!

!

!

!

!

interface FastEthernet0/0

ip address 192.168.100.1 255.255.255.0

duplex auto

speed auto

!

interface FastEthernet0/1

ip address 192.168.200.1 255.255.255.0

ip access-group File\_Server\_Restrictions out

duplex auto

speed auto

!

interface Ethernet0/0/0

ip address 192.168.10.1 255.255.255.0

duplex auto

speed auto

!

interface Ethernet0/1/0

ip address 192.168.20.1 255.255.255.0

duplex auto

speed auto

!

interface Vlan1

no ip address

shutdown

!

ip classless

!

ip flow-export version 9

!

!

ip access-list standard File\_Server\_Restrictions

permit host 192.168.20.4

deny any

!

!

!

!

!

!

line con 0

!

line aux 0

!

line vty 0 4

login

!

!

!

end

|  |  |  |  |
| --- | --- | --- | --- |
| **Ping From Device** | **Ping to Device IP** | **Possible Y/N** | **If no, Why Not?** |
| PC-0 | Web Server | Y |  |
| PC-0 | File Server | N |  |
| PC-1 | Web Server | Y |  |
| PC-1 | File Server | Y |  |
| PC-2 | Web Server | N |  |
| PC-2 | File Server | N |  |

Reflection Question 1. Typically, more typing is required when using a named ACL as opposed to a numbered ACL.

Why would you choose named ACLs over numbered?

**You can add, delete, and modify entries in a named ACL**

**Configuring Dynamic and Static NAT**

1. What is the translation of the Inside local host address?

192.168.1.20 = 209.165.200.225

2. The Inside global address is assigned by?

The router(isp) from the NAT pool

3. The Inside local address is assigned by?

administrator

4. What port number was used in this ICMP exchange?

1025

5. What was the protocol used in this translation?

tcp

6. What are the port numbers used?

Inside global / local: 1025

Outside global / local: 23

7. What is the translation of the Inside local host address for PC-B?

192.168.1.21= 209.165.200.225

8. What port number was used in this ICMP exchange?

1025

9. What protocol was used in this translation?

tcp

10. What port numbers were used?

Inside: 1052

Outside:80

11. What well-known port number and service was used?

http 80

Reflection Questions:

1.Why would NAT be used in a network?

**Network** Address Translation (**NAT**) **is** designed for IP address conservation. It enables private IP networks that **use** unregistered IP addresses to connect to the Internet.

2.What are the limitations of NAT?

Address **Limitations**: The lack of access to IP addresses with **NAT** means that specific functions may fail to work properly which would require applications to be rewritten. IPv6 provides a bigger address space which eliminates the time investment which is necessary when trying to make applications work with **NAT**.

R2 Show Run Output:

Gateway#show running-config

Building configuration...

Current configuration : 1269 bytes

!

version 15.1

no service timestamps log datetime msec

no service timestamps debug datetime msec

service password-encryption

!

hostname Gateway

!

!

!

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

!

!

!

!

!

!

no ip cef

no ipv6 cef

!

!

!

!

license udi pid CISCO1941/K9 sn FTX15242VH7-

!

!

!

!

!

!

!

!

!

no ip domain-lookup

!

!

spanning-tree mode pvst

!

!

!

!

!

!

interface GigabitEthernet0/0

no ip address

duplex auto

speed auto

shutdown

!

interface GigabitEthernet0/1

ip address 192.168.1.1 255.255.255.0

ip nat inside

duplex auto

speed auto

!

interface Serial0/0/0

no ip address

clock rate 2000000

shutdown

!

interface Serial0/0/1

ip address 209.165.201.18 255.255.255.252

ip nat outside

!

interface Vlan1

no ip address

shutdown

!

ip nat pool public\_access 209.165.200.242 209.165.200.254 netmask 255.255.255.224

ip nat inside source list 1 pool public\_access

ip nat inside source static 192.168.1.20 209.165.200.225

ip classless

ip route 0.0.0.0 0.0.0.0 209.165.201.17

!

ip flow-export version 9

!

!

access-list 1 permit 192.168.1.0 0.0.0.255

!

banner motd ^C

Unauthorized access is strictly prohibited. ^C

!

!

!

!

!

line con 0

password 7 0822455D0A16

logging synchronous

login

!

line aux 0

!

line vty 0 4

password 7 0822455D0A16

login

!

!

!

end