

Name \_\_\_\_\_ Date \_\_\_\_\_

## **Module 4 - ACL Concepts**

### **Enterprise Networking, Security, and Automation– Semester 3**

### **Student Version**

#### **Module 4 Sections:**

- 4.0 Introduction
- 4.1 Purpose of ACLs
- 4.2 Wildcard Masks in ACLs
- 4.3 Guidelines for ACL Creation
- 4.4 Types of IPv4 ACLs
- 4.5 Module Practice and Quiz

#### **Required Materials:**

Reading Organizer

Packet Tracer Activities:      None

Labs:   None

Module's 3 – 5 Exam

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Name \_\_\_\_\_ Date \_\_\_\_\_

## Module 4 - ACL Concepts

### Reading Organizer

#### Student Version

**Note:** The Reading Organizer has weighted scoring. Any question with the word **explain, define, or describe** in it is expected to have a longer answer and is worth two points each.

**After completion of this module, you should be able to:**

- Explain how ACLs filter traffic.
- Explain how ACLs use wildcard masks.
- Explain how to create ACLs.
- Compare standard and extended IPv4 ACLs

#### 4.1 Purpose of ACLs

1. Explain what an ACL does.
2. An ACL uses a sequential list of permit or deny statements. What are these statements called?
3. List the tasks performed by routers that require the use of ACLs to identify traffic.
  - a.
  - b.
  - c.
  - d.
  - e.
  - f.

4. At what OSI model layers does packet filtering occur?

5. Cisco routers support two types of ACLs. List and describe both.

a. \_\_\_\_\_ -

b. \_\_\_\_\_ -

6. ACLs can be configured to apply to \_\_\_\_\_ traffic and \_\_\_\_\_ traffic.

7. ACLs \_\_\_\_\_ act on packets that originate from the router itself.

8. Why are inbound ACL's considered more efficient?

9. Explain when is it best to use an outbound ACL?

10. Describe the operational steps used when traffic has entered a router interface with an inbound standard IPv4 ACL configured.

1.

2.

3.

4.

11. What is the last implicit ACE statement of every ACL?

12. Explain why an ACL must have at least one permit statement.

## 4.2 Wildcard Masks in ACLs

14. Describe the two rules wildcard masks use to match binary 1s and 0s.

a. Wildcard mask bit 0 –

b. Wildcard mask bit 1 –

15. List the three ways wildcard masks can be used to filter traffic.

a.

b.

c.

16. One shortcut method to calculate a wildcard mask is to subtract the subnet mask from 255.255.255.255. Using this shortcut determine the wildcard mask for the following subnet masks.

$$\begin{array}{r} \text{a. } 255.255.255.255 \\ - 255.255.255. \quad 0 \\ \hline 0. \quad 0. \quad 0.255 \end{array}$$

$$\begin{array}{r} \text{b. } 255.255.255.255 \\ - 255.255.240. \quad 0 \\ \hline 0. \quad 0. \quad 15.255 \end{array}$$

$$\begin{array}{r} \text{c. } 255.255.255.255 \\ - 255.192. \quad 0. \quad 0 \\ \hline 0. \quad 63.255.255 \end{array}$$

$$\begin{array}{r} \text{d. } 255.255.255.255 \\ - 255.255. \quad 0. \quad 0 \\ \hline \end{array}$$

$$\begin{array}{r} \text{e. } 255.255.255.255 \\ - 255.255. \quad 0. \quad 192 \\ \hline \end{array}$$

$$\begin{array}{r} \text{f. } 255.255.255.255 \\ - 255.224. \quad 0. \quad 0 \\ \hline \end{array}$$

$$\begin{array}{r} \text{g. } 255.255.255.255 \\ - 255.255.128. \quad 0 \\ \hline \end{array}$$

$$\begin{array}{r} \text{h. } 255.255.255.255 \\ - 255.255.255.252 \\ \hline \end{array}$$

$$\begin{array}{r} \text{i. } 255.255.255.255 \\ - 255.255.255. \quad 64 \\ \hline \end{array}$$

17. The Cisco IOS provides two keywords to identify the most common uses of wildcard masking. List and describe both.

a. \_\_\_\_\_-

b. \_\_\_\_\_-

### 4.3 Guidelines for ACL Creation

18. There is a limit on the number of ACLs that can be applied on a router interface. List what a router interface can have.

a.

b.

c.

d.

19. ACLs \_\_\_\_\_ have to be configured in both directions.

20. Basic planning is required before configuring an ACL. List the guidelines that form the basis of an ACL best practices.

a.

b.

c.

d.

e.

#### 4.4 Types of IPv4 ACLs OSPF Features and Characteristics

21. List and describe the two types of IPv4 ACLs.

a. \_\_\_\_\_ -

b. \_\_\_\_\_ -

22. What are the numbers available for use on standard ACLs?

23. What are the numbers available for use on extended ACLs?

24. List the rules to follow for named ACLs.

a.

b.

c.

d.

e.

25. Explain where and why extended ACLs should be located on the network?

26. Explain where and why standard ACLs should be located on the network?

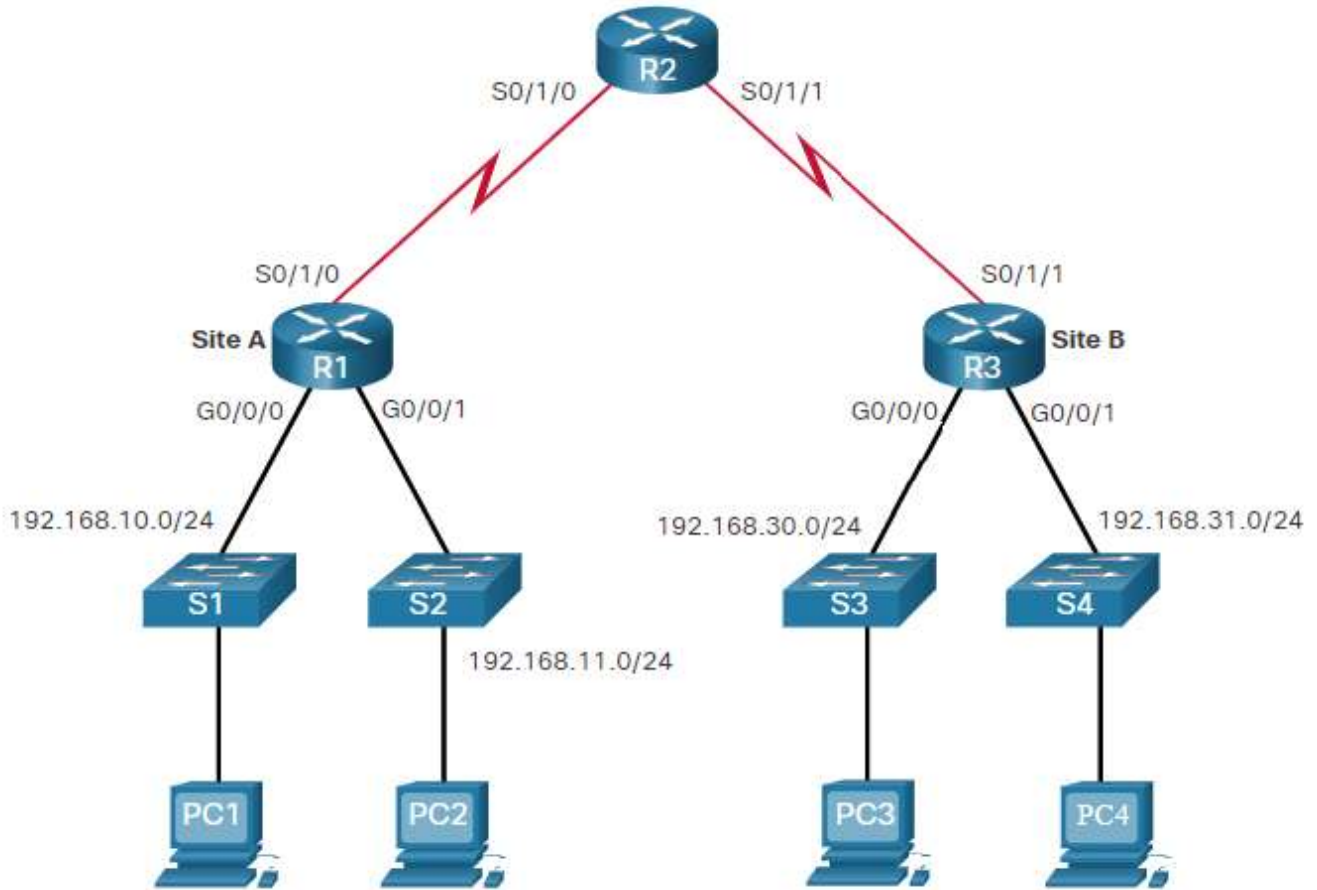
27. List the factors influencing ACL Placement.

a.

b.

c.

28. Answer the following questions based on the graphic below.



a. Which router and interface is the best location to place a standard ACL to block PC1 from reaching PC4?

Router \_\_\_\_\_ Interface \_\_\_\_\_

b. Which router and interface is the best location to place a extended ACL to block PC1 from reaching PC4?

Router \_\_\_\_\_ Interface \_\_\_\_\_

c. Which router and interface is the best location to place a standard ACL to block the 192.168.31.0 network from reaching 192.168.11.0 network?

Router \_\_\_\_\_ Interface \_\_\_\_\_

d. Which router and interface is the best location to place a extended ACL to block the 192.168.31.0 network from reaching 192.168.11.0 network?

Router \_\_\_\_\_ Interface \_\_\_\_\_