

**Hardware Networking**

**Installation and Maintenance of**

**Hardware and Its components**

**SUBMITTED TO**

**KAMLESH SHUKLA SIR**

**SUBMITTED BY**

**MANAV BANDHANIA**

**1. Function of the ACL Analysis Tool**

The **ACL Analysis (ACL Trace) tool** in APIC-EM helps network engineers check how **Access Control Lists (ACLs)** affect network traffic.

* **Correct Answer:** D. Analysis of the impact of ACLs on the packets that would flow from Host A to B
* **Explanation:**
* ACLs are rules that allow or block specific network traffic.
* The ACL Analysis tool **checks if any ACL blocks or allows** packets between Host A and Host B.
* It does **not** analyze Layer 2 or Layer 3 forwarding, only **ACL impact**.

**2. IPv6 Equivalent of IPv4 Loopback Address**

The **IPv4 loopback address** (127.0.0.1) is used for testing network communication on the **same device**.

* **Correct Answer:** A ::1
* **Explanation:**

| **IPv4 Address** | **Equivalent IPv6 Address** | **Purpose** |
| --- | --- | --- |
| 127.0.0.1 | ::1 | Loopback (used for testing within the same device) |

* The ::1 in IPv6 serves the same purpose as 127.0.0.1 in IPv4.
* Any packet sent to ::1 **stays inside the same device**.

**3. Command to Apply ACL to an Interface**

To apply an **Access Control List (ACL)** to a router **interface**, use the ip access-group command.

* **Correct Answer:** **B. ip access-group**
* **Explanation:**

| **Command** | **Purpose** |
| --- | --- |
| ip access-group | Attaches an ACL to a router interface to filter traffic |
| access-group | Invalid, incomplete command |
| ip access-list | Used to **create** an ACL, not apply it |
| ip access-class | Used for **VTY (remote access)**, not interfaces |
| access-class | Similar to ip access-class, used for controlling remote access |
| access-list | Used to **define** an ACL, not apply it |

**Example Usage:**

Router(config)# interface GigabitEthernet0/1

Router(config-if)# ip access-group 100 in

This applies **ACL 100** to the **GigabitEthernet0/1** interface for incoming traffic.

**4. Command to Configure Hostname**

To set the router's hostname, use hostname R1 in **global configuration mode**.

* **Correct Answer:** **C. Router(config)#hostname R1**
* **Explanation:**

| **Command** | **Correct/Incorrect** | **Reason** |
| --- | --- | --- |
| Router(config)#hostname R1 | Correct | This is the **proper command** to set the hostname |
| Router# hostname R1 | Incorrect | Must be in **global config mode**, not exec mode |
| Router(config)#name R1 | Incorrect | Wrong syntax (hostname should be used, not name) |
| Router#name R1 | Incorrect | Wrong mode and wrong syntax |
| Router>hostname R1 | Incorrect | Not in the correct configuration mode |
| Router>name R1 | Incorrect | Incorrect command |

**Example Usage:**

Router# configure terminal

Router(config)# hostname R1

R1(config)#

**5. Reserved IPv4 Address with All Host Bits as 0s**

In an IPv4 address, the **host portion** is the part that identifies individual devices. If all **host bits** are set to **0**, it represents the **network address**.

* **Correct Answer:** **D. Network address**
* **Explanation:**

| **Address Type** | **Description** |
| --- | --- |
| **Local broadcast address** | All host bits are 1 (e.g., 192.168.1.255) |
| **Loopback address** | Used for testing inside the same device (127.0.0.1) |
| **Directed broadcast address** | Sends traffic to all hosts in a network (192.168.1.255) |
| **Network address** | Identifies the network itself, **all host bits = 0** (192.168.1.0) |
| **All zeros address** | 0.0.0.0 (used for default routes) |

**Example:**

For the network **192.168.1.0/24**:

| **IP Type** | **Address** |
| --- | --- |
| **Network Address** | 192.168.1.0 |
| **First Usable Host** | 192.168.1.1 |
| **Last Usable Host** | 192.168.1.254 |
| **Broadcast Address** | 192.168.1.255 |