Assignment 3

Router Commands & Access Control Lists

→ **Problem Statement :**

Using a Network Simulator, Configure a router using router commands & access control lists. (standard & extended)

→ **Theory :**

ACLs are basically a set of commands, grouped together by a number or a name that is used to filter traffic entering or leaving an interface.

When activating an ACL on an interface, you must specify in which direction the traffic should be filtered.

- Inbound ACLs
- Outboud . ACLs

Inbound ACLs. :

Incoming packets are ~~filtered~~ processed before, they are routed to an outbound interface. An inbound ACL is efficient because it saves the overhead of routing lookups if the

packet will be discarded after it is denied by the filtering tests.

Outbound ACLs

Incoming packets are routed to the outbound interface & then processed through the outbound ACL.

Universal Facts about Access Control Lists: ●

- ACLs come in 2 varieties: numbered & named
- Each of these references to ACLs, support 2 types of filtering: standard & extended
- Standard IP ACLs can filter only on the source IP Address inside a packet.
- Whereas an extended ACLs can filter on the source as well as the destination IP addresses in the packet.
- Only 2 actions possible: permit or deny ●
- Statements are processed top-down.

No matter what type of ACL you use, you can have only one ACL per protocol, per interface, per direction.

Type	Range
IP Standard	1-99
IP Extended	100 - 199
IP Extended Standard Range	1300 - 1999
IP Extended Extended Range	2000 - 2699

Standard ACLs

A standard ACL is simple, it filters based on source address only. You can filter a source network or a source host, but you cannot filter based on destination of a packet. You can permit or deny only source traffic.

Extended ACLs :

An extended ACL gives you much power than just a standard ACL. Extended IP ACLs check both the source & destination packet addresses. They can also check for specific protocols, port numbers and other parameters, which allows administrators more flexibility & control

Named ACLs

One of the main disadvantage of using IP standard & IP extended ACLs is that you have to refer them by numbers. With a named ACL, for example Deny Mike is lot more meaningful.
Named ACLs also allow you to remove individual lines out of an ACL.

Concept of Wildcard mask :

- It is not a subnet mask.
- Like an IP address or a subnet mask a wildcard mask consists of 32 bits, when doing conversion - subtract each byte in subnet by 255
- 0.0.0.0 wildcard mask is called a host mask.
- 255.255.255.255 will cover the address & mask to the keyword any.

→ <u>Conclusion</u> :

1. Study of Router Commands & ACLs
2. Configuration of Routers
3. Use of ACLs.