CISCO IOS NAVIGATION

Primary Command Modes

➔ Cisco IOS software separates management access using two command modes;

1. User EXEC Mode: Limited capabilities but useful for basic operations.Allows basic monitoring commands but does not allow the execution of any commands that might change the configuration of the device. The User EXEC mode is identified by the CLI prompt that ends with **> ie switch>**
2. Privileged EXEC Mode: To be able to execute configuration commands, one must be in the privilege EXEC mode. Higher configuration modes must be reached through this mode, ie global configuration mode. The privilege mode is defined by **# ie router#.**

NOTE: Privilege mode is sometimes known as enable mode.

Subconfiguration Modes

➔ To configure a device, one must be in the global configuration mode defined by **(config)#.**

➔ From this mode, the user can enter different subconfiguration modes.The two main subconfiguration modes include;

1. Line Configuration Mode: Used to configure console, SSH, Telnet, or AUX access.Line config prompt is **switch / router (config-line)#**
2. Interface Configuration Mode: Used to configure a switch port or router network interface.The interface default prompt is **switch/router (config-if) #.**

Navigation Between IOS Modes

- To navigate from user EXEC to privilege EXEC, the enable command is used.
- To move in and out of global config mode, use the configure terminal privilege EXEC mode command.

- *For line subconfiguration, the line command is used, followed by the management line type and number you wish to access,* ***i.e., line console 0.***
- *One can also move from one subconfiguration mode to another.*

Password Configurations.

- *To configure the user EXEC mode, one has to be in line console 0 since securing is done in the console. The 0 is used to represent the first and, in most cases, the only console interface.*
- *When in the console interface, specify the user exec mode password using the password command.*
- *Finally enable the user EXEC using the login command.*

```
Switch>enable
Switch#
Switch#config t
Enter configuration commands, one per line.  End with CNTL/Z.
Switch(config)#line console 0
Switch(config-line)#
Switch(config-line)#
Switch(config-line)#password Cisco
Switch(config-line)#login
Switch(config-line)#end
Switch#
%SYS-5-CONFIG_I: Configured from console by console

Switch#exit
```

- *How it will look after the password is implemented.*

```
User Access Verification

Password:

Switch>enable
Switch#
```

- *To have all access to the iOS commands, including configuring a device, one must gain privileged EXEC mode access. This mode provides complete access to the device.*
- *To secure the privileged EXEC access, we use the enable secret password global config command.*

```
Switch>enable
Switch#
Switch#config t
Enter configuration commands, one per line.  End with CNTL/Z.
Switch(config)#
Switch(config)#enable secret class
Switch(config)#exit
Switch#
%SYS-5-CONFIG_I: Configured from console by console
```

- *Virtual Terminal (VTY) lines enable remote access using SSH or Telnet to the device, supporting up to **16 VTY** lines numbered **0–15**.*
- *To secure the lines, we have to be in the VTY mode through the **line vty 0 15 global config command**.*
- *Proceed to specify the VTY password using the **password password command**.*
- *Lastly, enable VTY access using the login command.*

```
Switch(config)#
Switch(config)#line vty 0 15
Switch(config-line)#password cisco
Switch(config-line)#login
Switch(config-line)#end
Switch#
%SYS-5-CONFIG_I: Configured from console by console
```

Password Encryption

- *The startup-config and running-config display most passwords in plain text. This is a security threat because anyone can discover the passwords if they have access to the files.*
- *To encrypt all plaintext passwords, we use the **service password-encryption** global config command.*

Configuration Files

- *There are two system files that store the device configuration:*
    1. ***Startup-config**: Configurations are saved in the **NVRAM**. Upon powering the device off, the configurations remain.*
    2. ***Running-config**: Configurations are stored in the **RAM**, reflecting the current configurations. Since RAM is volatile, all content stored is lost upon device power-off or restart.*