Introduction To Cisco Switch

To create an Ethernet LAN, network engineers start by planning. They consider the requirements, create a design, buy the switches, contract to install cables, and configure the switches to use the right features.

The first skill you need to learn before doing all the configuration and verification tasks is to learn how to access and use the user interface of the switch, called the command-line interface (CLI). Cisco uses the concept of a command-line interface (CLI) with its router products and most of its Catalyst LAN switch products.

The CLI is a text-based interface in which the user, typically a network engineer, enters a text command and presses Enter.

Pressing Enter sends the command to the switch, which tells the device to do something. The switch does what the command says, and in some cases, the switch replies with some messages stating the results of the command.

Cisco Catalyst switches also support other methods to both monitor and configure a switch. For example, a switch can provide a web interface so that an engineer can open a web browser to connect to a web server running in the switch. Switches also can be controlled and operated using network management software

Cisco Catalyst Switches

Within the Cisco Catalyst brand of LAN switches, Cisco produces a wide variety of switch series or families. Each switch series includes several specific models of switches that have similar features, similar price-versus-performance trade-offs, and similar internal components. In simple terms, Cisco uses the terms **"interfaces" or "ports"** to refer to the physical connectors on a switch. Each interface has a specific type and number assigned to it. The interface type can be Ethernet, Fast Ethernet, Gigabit Ethernet, or higher for faster speeds.

For Ethernet interfaces that support multiple speeds, the permanent name of the interface is based on the fastest supported speed. For example, a 10/100/1000 interface would be referred to as Gigabit Ethernet, regardless of the currently used speed.

To uniquely identify each interface, some Cisco Catalyst switches use a two-digit interface number (x/y), while others use a three-digit number (x/y/z). For example, on older switches, two 10/100/1000 ports might be labeled as Gigabit Ethernet 0/0 and Gigabit Ethernet 0/1.

On newer switches like the 2960-XR series, two interfaces would be labeled as Gigabit Ethernet 1/0/1 and Gigabit Ethernet 1/0/2. Essentially, the naming conventions help identify and distinguish different interfaces on the switch based on their type, speed, and numbering scheme.

How To Access Switch?

Like any other piece of computer hardware, Cisco switches need some kind of operating system software. Cisco calls this OS the **Internetwork Operating System (IOS).** Cisco IOS Software for Catalyst switches implements and controls logic and functions performed by a Cisco switch. Besides controlling the switch's performance and behavior, Cisco IOS also defines an interface for humans called the CLI.

The Cisco IOS CLI allows the user to use a terminal emulation program. The switch CLI can be accessed through three popular methods—*the console, Telnet, and Secure Shell (SSH).* Two of these methods *(Telnet and SSH)* use the IP network in which the switch resides to reach the switch. The console is a physical port built specifically to allow access to the CLI.

Cisco Catalyst Switch 2960-XR User Mode

All three CLI access methods covered so far (console, Telnet, and SSH) place the user in an area of the CLI called user EXEC mode. User EXEC mode, sometimes also called user mode, allows the user to look around but not break anything.
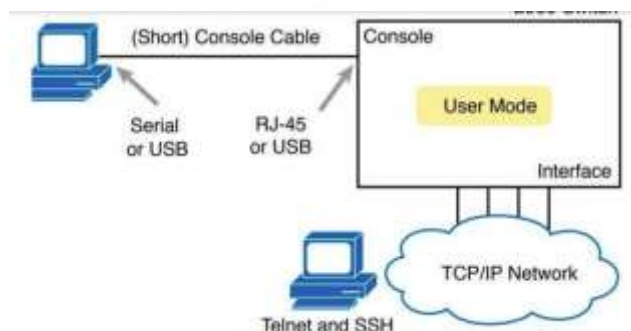
User Mode:

User Mode is the basic mode when you first access a device, such as a network switch or router. In this mode, you have limited privileges and can only view basic information, such as device status and statistics. You can't make any configuration changes or perform advanced operations in User Mode.
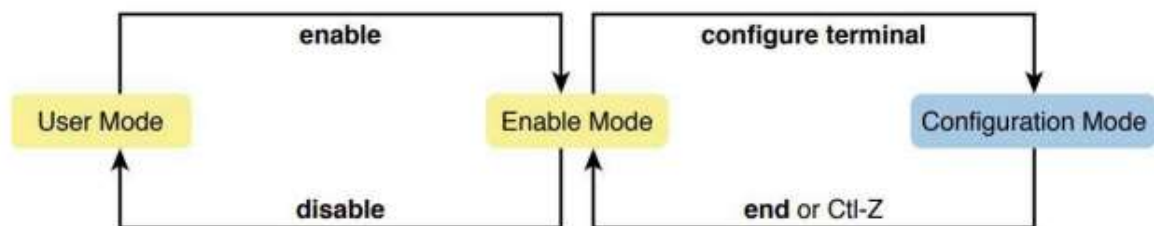
Enable Mode:

Enable Mode, also known as Privileged Mode or Administrator Mode, grants you elevated privileges on the device. Once you enter the correct password, you can access Enable Mode from User Mode. In Enable Mode, you have more control and can execute powerful commands, configure settings, and perform administrative tasks on the device.

Configuration Mode

Configuration Mode is a subset of Enable Mode that allows you to make changes to the device's configuration. Once you are in Enable Mode, you can enter Configuration Mode to modify settings, add or remove interfaces, create network policies, and configure various features. Configuration Mode gives you the ability to customize the device according to your network requirements. Configuration mode itself encompasses a wide array of commands.

To enhance the organization of configurations, IOS groups specific types of configuration commands together. This is achieved by transitioning from the initial mode, known as global configuration mode, to subcommand modes while in configuration mode. **Context-setting commands** facilitate this transition, moving you from one configuration subcommand mode or context to another. These context-setting commands inform the switch about the subject you intend to address with the upcoming configuration commands.

Moreover, the context conveys the current topic of importance to the switch. As a result, when you employ the **"?"** command to seek assistance, the switch provides help exclusively related to that topic using straightforward language.

NOTE- You can also move directly from one configuration sub-mode to another, without first using the exit command to move back to global configuration mode. Just use the commands listed in bold in the center of the figure.

Storing Switch Configuration Files

The following list provides an overview of the primary types of memory found in Cisco switches, along with their common uses:

- **RAM (Dynamic Random-Access Memory):** Also known as DRAM, RAM serves as working storage for the switch, like any other computer. It holds the active configuration file while the switch is operational.

- **Flash memory:** This memory can be either a built-in chip or a removable memory card. Flash memory is where fully functional Cisco IOS images are stored, and it serves as the default location from which the switch retrieves its Cisco IOS during startup. Additionally, it can be used for storing various files, such as backup copies of configuration files.

- **ROM (Read-Only Memory):** ROM contains a bootstrap or boot helper program that loads when the switch is powered on. This program locates the complete Cisco IOS image and manages the process of loading Cisco IOS into RAM. Once the Cisco IOS takes control, the switch starts functioning.

- **NVRAM (Non-volatile RAM):** NVRAM stores the initial or startup configuration file, which is utilized when the switch is first powered on or reloaded. It retains the configuration even in the absence of power.