



CISCO™

CCNA 200-301

Lesson 6

- Cisco Catalyst Switches
- Switch CLI
- Switch Storage
- Switch functions

Cisco Catalyst Switches

Cisco Catalyst switcher are also called enterprise switches, network switches, Layer 2 switches.

This switches are running Cisco IOS (Interconnect Operating System)

There are three popular methods to access to switch's IOS:

- ❖ Console cable,
- ❖ Telnet protocol,
- ❖ SSH protocol.

Using these three methods we get access to Cisco CLI. CLI is text-based interface where network engineers type commands and press enter. According to the result of command CLI gives us the result.



Accessing CLI with Console cable

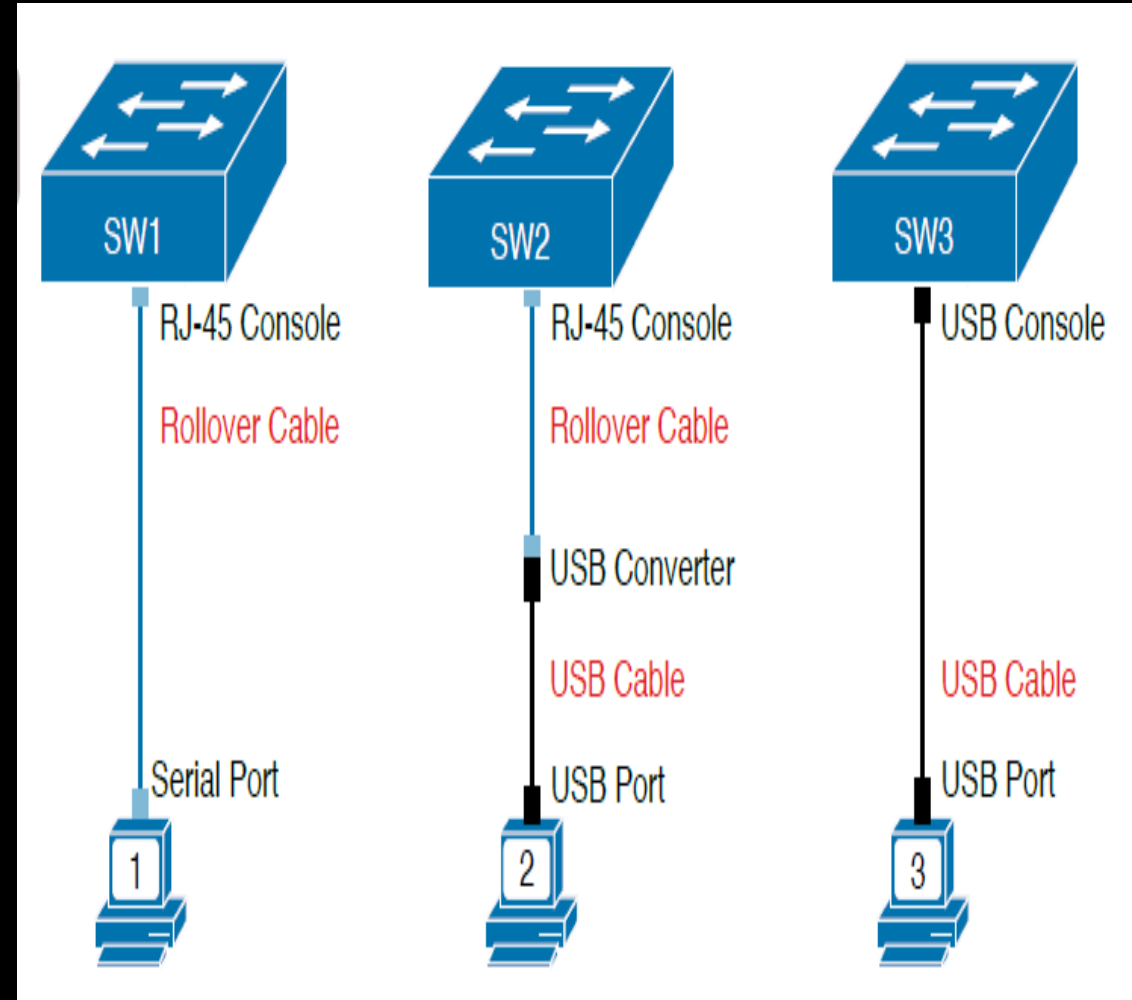
Switch's console port is used.

According to switch model, type of console port may be different.

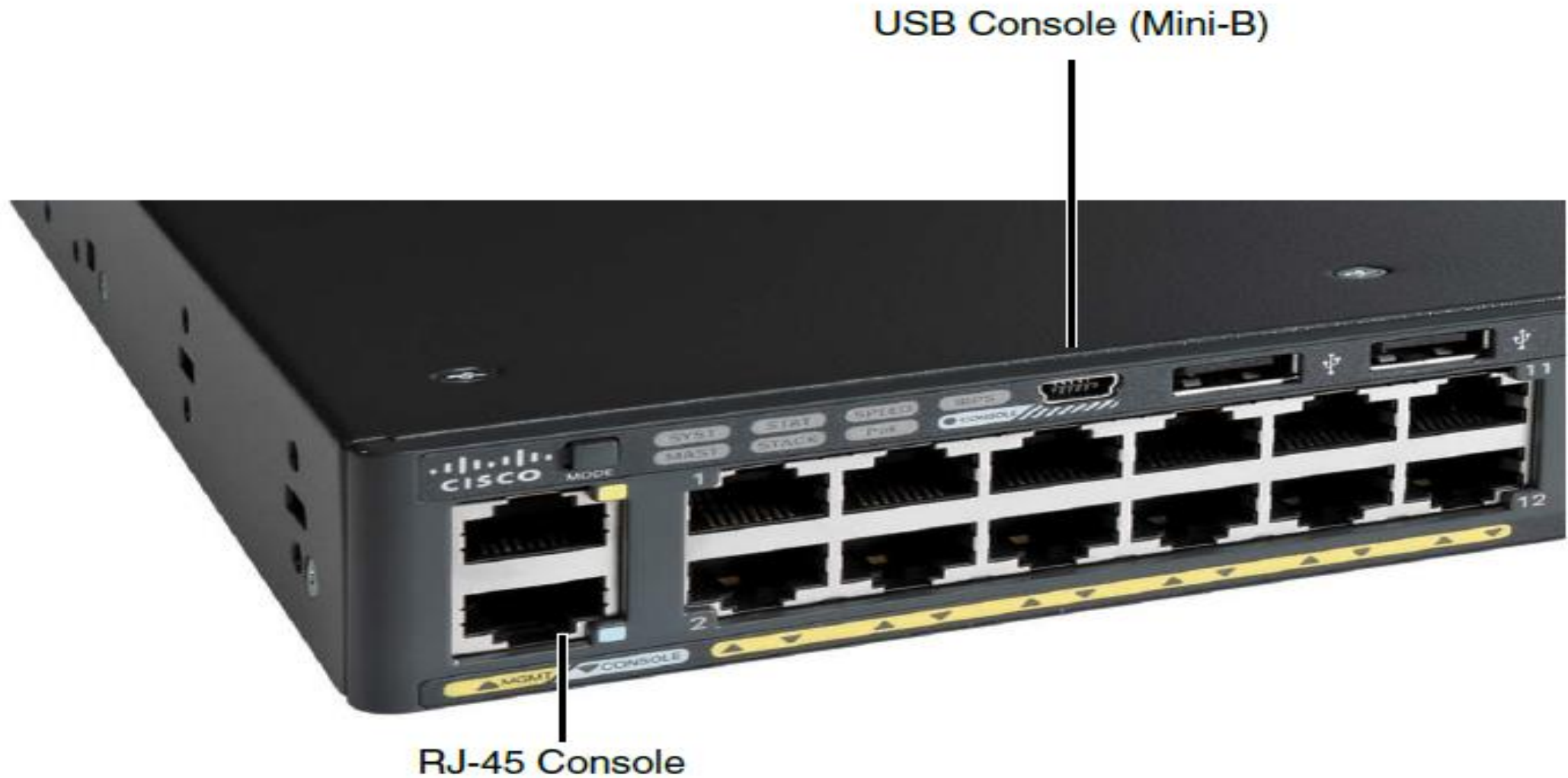
Sw1's console port RJ-45 Console,
Rollover cable is used.

Sw2's console port RJ-45 Console,
Rollover and USB cable is used.

Sw3's console port USB Console,
USB cable is used.



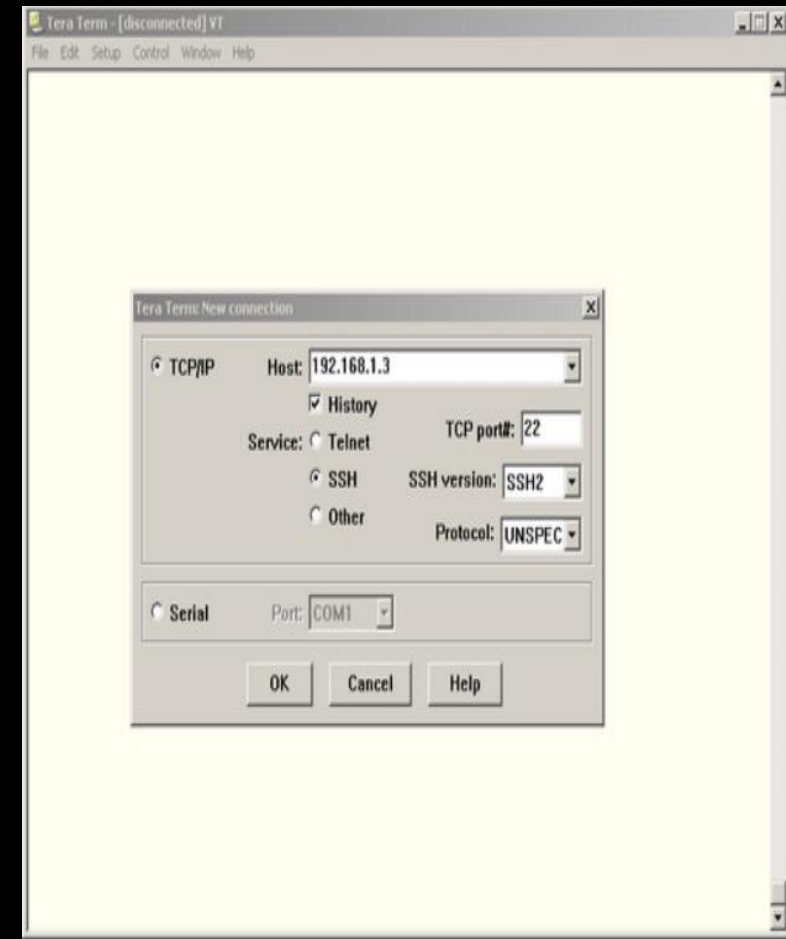
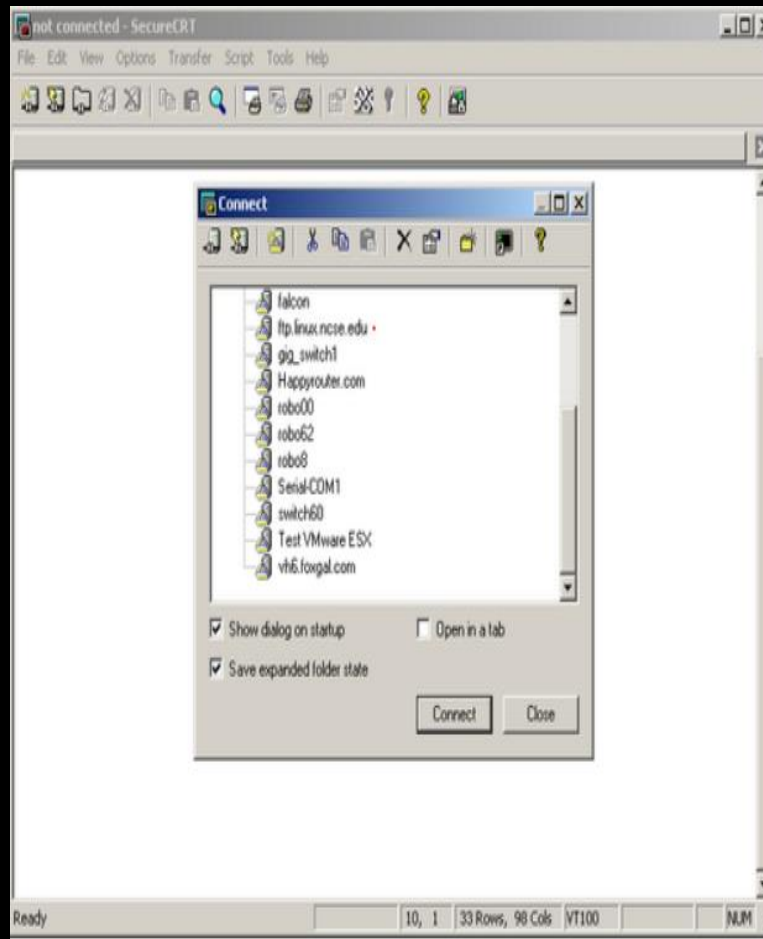
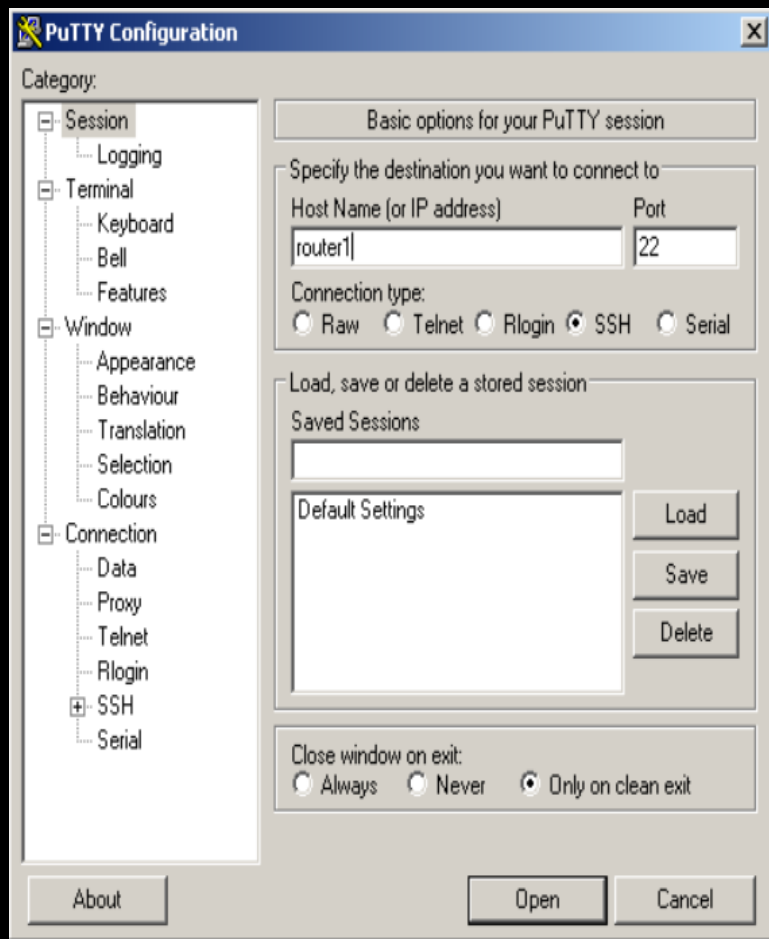
Console Port types



Accessing CLI with Console cable

After the PC is physically connected to the console port, a terminal emulator software package must be installed and configured on the PC.

Terminal Emulator Software: Putty, SecureCRT, TeraTerm, Windows telnet etc ...



Telnet and SSH

Telnet and SSH protocols give us a comfort with access to network devices remotely like from home, offices.

SSH is recommended protocol because it has security feature. Telnet send our command in plain text format but SSH protect out commands with encryption.

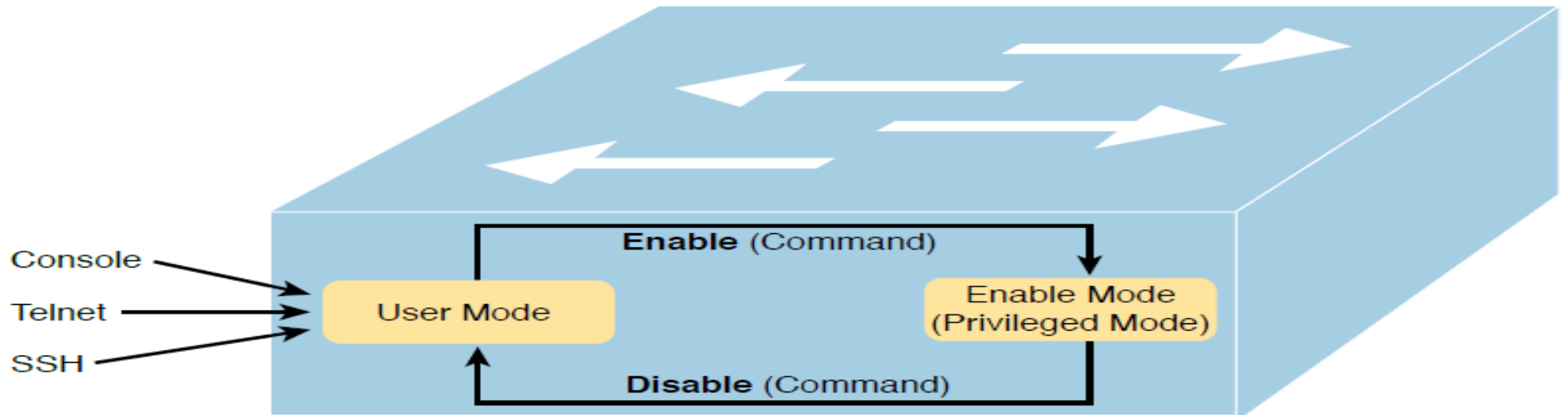
Telnet uses the concept of a Telnet client (the terminal application) and a Telnet server (the switch in this case). A *Telnet client*, the device that sits in front of the user, accepts keyboard input and sends those commands to the *Telnet server*. The Telnet server accepts the text, interprets the text as a command, and replies back.

Cisco Catalyst switches enable a Telnet server by default.

CLI modes

After joining to switch one of the three methods, cisco IOS prompts us to USER MODE (also called USER EXEC MODE). In this mode we look around and do not break anything.

After **enable** command we get access PRIVILEGED MODE (also called USER PRIVILEGED MODE).



CLI Help feature

? (question mark) is used.

What You Enter	What Help You Get
<code>?</code>	Provides help for all commands available in this mode.
<code>command ?</code>	With a space between the command and the ?, the switch lists text to describe all the first parameter options for the command.
<code>com?</code>	Lists commands that start with com.
<code>command parm?</code>	Lists all parameters beginning with the parameter typed so far. (Notice that there is no space between <i>parm</i> and the ?.)
<code>command parm<Tab></code>	Pressing the Tab key causes IOS to spell out the rest of the word, assuming that you have typed enough of the word so there is only one option that begins with that string of characters.
<code>command parm1 ?</code>	If a space is inserted before the question mark, the CLI lists all the next parameters and gives a brief explanation of each.

Packet Tracer practice

Keyboard help

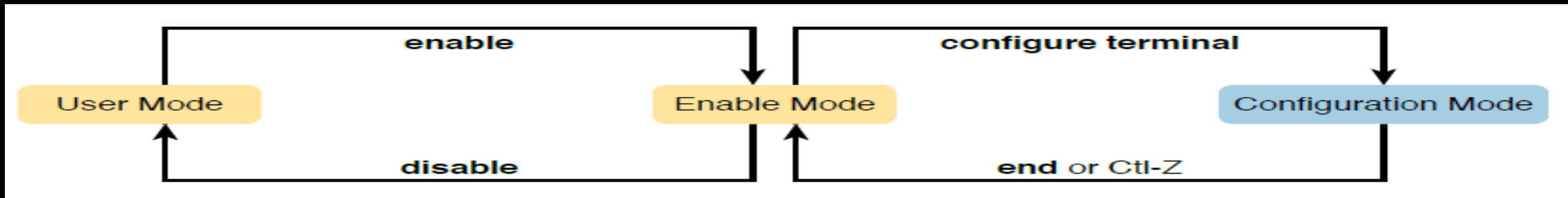
Keyboard Command	What Happens
Up arrow or Ctrl+P	This displays the most recently used command. If you press it again, the next most recent command appears, until the history buffer is exhausted. (The <i>P</i> stands for previous.)
Down arrow or Ctrl+N	If you have gone too far back into the history buffer, these keys take you forward to the more recently entered commands. (The <i>N</i> stands for next.)
Left arrow or Ctrl+B	This moves the cursor backward in the currently displayed command without deleting characters. (The <i>B</i> stands for back.)
Right arrow or Ctrl+F	This moves the cursor forward in the currently displayed command without deleting characters. (The <i>F</i> stands for forward.)
Backspace	This moves the cursor backward in the currently displayed command, deleting characters.



CLI Configuration Mode

Configuration mode is another mode for the Cisco CLI, similar to user mode and privileged mode. This mode accepts configuration commands and tell Cisco IOS to do special tasks. To gain access to configuration mode the following command is used in enable (privileged) mode.

- Switch>enable
- Switch#configure terminal
- Switch(conf)#



In configuration mode we can configure switches with more commands: For example

Switch(conf)#interface G0/0/0 – interface configuration

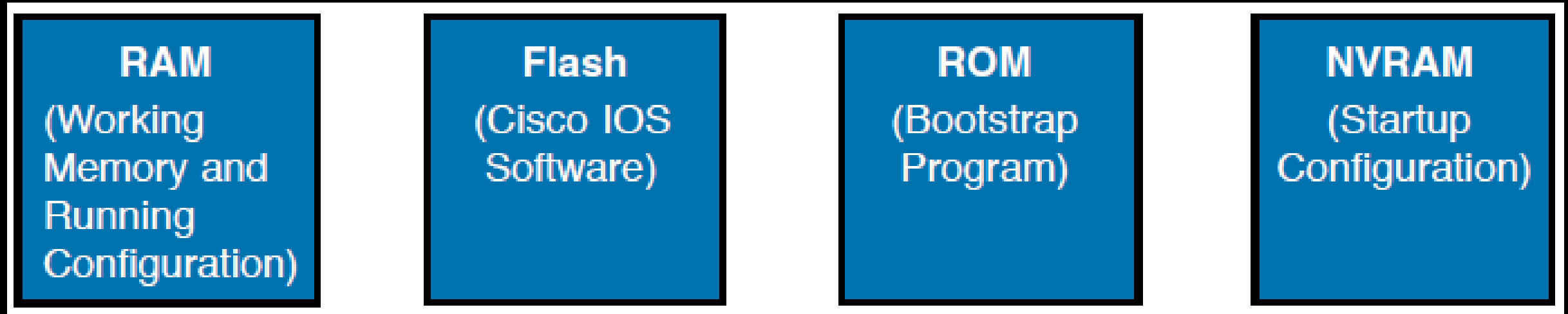
Switch(conf)#hostname cisco – hostname configuration

Switch(conf)#VLAN 10 – VLAN configuration

Switch(conf)#line console 0 – Console access configuration

Switch Storage

- ❖ RAM (Read Access Memory) – the running configuration is stored in RAM.
- ❖ ROM (Read Only Memory) – bootstrap or boothelper program that is loaded when switches first power on is stored in ROM.
- ❖ Flash Memory – where the switches get their IOS from.
- ❖ NVRAM (Non-Volatile RAM) - stores the initial or startup configuration.



Cleaning switch configuration

Next commands are used in enable mode

- ❖ write erase
- ❖ erase startup-config
- ❖ erase nvram:

After these commands we need to reload our switch with the **reload** command at enable mode.

```
Switch#reload
```

VLAN configuration is stored in **vlan.dat** database and is needed to clean separately with the **delete vlan.dat** command at enable mode.

```
Switch#delete vlan.dat
```

Switch functions

The core side of switch function is to forward data-link frames based on source and destination mac-addresses.

The switches has mac-address table that stores all mac-addresses that has been learnt. The default time for mac-address that is kept in mac-address table is 300 seconds. If the switch does not get frame during this period it cleans mac-address from table.

We can see mac-address table using the following command.

```
Switch#show mac-address-table | dynamic
```

A switch's MAC address table is also called the switching table, or bridging table, or even the Content-Addressable Memory (CAM) table

Packet tracer practice...

That is all for Lesson 6



The key is :



Learn



Repeat



Practice



You will be able to reach your goals.



GOOD LUCK !!!!!...