SWITCH CLI

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To configure a switch, cisco provides us with an option to the switch's comm
and debug the configurations.

Cisco calls the operating system of the switch as **Internetwork Operating**

You can access the CLI in three different ways:

1) **Console Port:** You can connect the serial port on the PC to a console p
   you would typically use a UTP cable with RJ-45 connector on one end
   end which plugs into the PC. This is a older generation connection betw
   would then have to open a terminal on the PC to perform necessary con
   a. **USB to Console:** Modern day PC's might not or do not have a ser
      connector) to connect the console port to the PC and hence cisco h
      USB port on the PC to console port on the switch using a USB con
      cable with an RJ-45 connector which connects to the USB connec
      between the connector and the PC to make a connection.
   b. **USB to USB:** Modern day Cisco switches have a mini USB-B typ
      USB-B cable and connect the PC to the switch.
   c. **NOTE:** The UTP Cable which is used to connect the switch and t
      of the standard ethernet pinout. In the rollover pinout, cables "1,8"
2) **Telnet:** You can also configure Telnet Server on the switch and then u
   connect to the switch, get the CLI access to perform necessary configu
   secure since it sends the data to the switch in clear-text which can lead
   anybody can use a sniffer and see the commands being sent out to the s
   TCP/IP.
3) **SSH:** This is a more secure version of remote access. It encrypts the co
   the pc. SSH uses TCP/IP for communication.

mand line interface to perform, verify

System (IOS).

port on the switch. To connect them,
and D-shell connector on the other
ween the switch and the PC. You
nfigurations.
ial port (D -Shell connector or DB-9
has provided an option to connect the
nnector. You typically have a UTP
tor and then you connect a USB cable

e port. You can get a USB-A to mini

he PC uses a "rollover pinout" instead
", "2,7" and so on are connected.
se your PC as a telnet client to
rations. However, telnet is not as
to a major security issue since
switch. Telnet communicates using

ommunication between the switch and

When you use any command on the switch, the "terminal emulator (CLI)" t
to the switch and the switch then accepts it as if it was a command, executes
output on the terminal emulator

Modes of access in a switch:

There are three modes of access in a switch:

USER EXEC / USER MODE: This is the mode you enter into when you f
defines that you can execute commands on this mode but you cannot config
switch. You can basically run commands that can help you see current state
made on the switch. Hostname ">" indicates that you are in user mode

PRIVILEGED EXEC / PRIVILEGED: This is a mode which is powerful
all the configuration, state of the switch in this mode. Although you cannot
still view all of them. You can do stuff like restart the switch etc. You can e
command. Hostname "#" indicates that you are in privileged mode

Configuration mode: This is the most powerful access one can have. You
the switch. Create/change passwords and configure the switch to perform ar

Every Cisco switch has four components - RAM, Flash Memory, ROM and

RAM provides the same functionality as it does in a normal PC. When conf
switch temporarily stores the configuration file in the RAM.

When the switch is first powered on, the "boothelper/bootstrapper" program
The boot helper program then pulls the "cisco ios" image from flash memor
Cisco IOS then handles the rest of the configuration.

Flash Memory stores the images and backup files of the configuration.
Non-Volatile Ram stores the initial configuration file that is used when the
helper takes care of everything else.

reats it as a text. It then sends the text
s the command and displays the

irst access the switch. The EXEC
gure anything or make changes to the
of the switch and configurations

l than the user mode. You can view
modify the configurations, you can
nter this mode by using "enable"

can make/break the configurations on
nything you want it to.

l NVRAM

figuration happens in the CLI, the

n which is stored in ROM is loaded.
y and loads it into the RAM. The

switch is first powered on. The boot

The switches store data in two configuration files:

One file is stored in NVRAM - This stores the initial configuration used any
Second file is stored in RAM which is for active and running configurations

Basically, when you are in the global configuration mode, you are editing th
saved in the startup config so that you see the changes when you reboot the

You will have to run "*copy running-config startup-config"* command to cop
overwrite the startup config with the newly made configurations.

ytime the switch reloads Cisco IOS
s.

he running config and it needs to be
switch next time.

by the current running config and