Basic Configuration of Switch

Overview: Switch is a device who works with the device's mac address. It works with only specified devices. It does not allow to exchange data outside it's own network. Switch has three mode to configure

1. **Normal User Mode :** Here user only can log in. Normal user mode looks like

```
Switch>
```

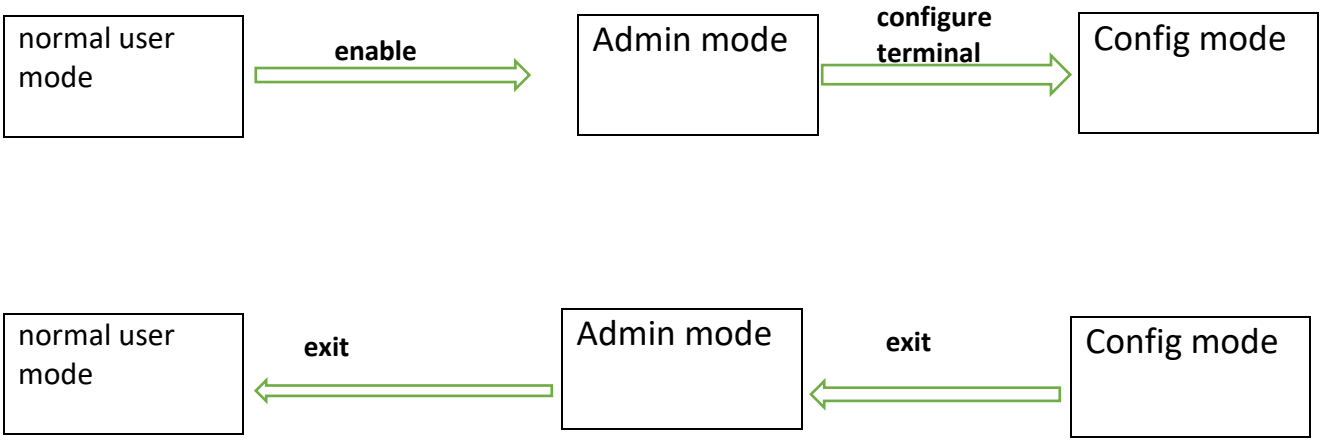
2. **Privilized Mode:** The other name of this mode is administrative mode. A user can show different types of configure such as configuration of ram,nvram,hostname,password,secrete-password and others in this mode. A user can save the configuration on nvram in administrative mode. Privilized mode looks like ->

```
Switch#
```

3. **Configuration Mode:** In this stage user configure the switch by using different types of commands. User can set hostname,password,secrete-password,port-configure,interface-configure and so on.
Configuration mode looks like:

```
Switch(config)#
```

How to change mode :



Tips: If we forget the spelling of commands,we can click on **tab** button of our keyboard. Tab button will complete your rest of latters of your command on your command line.

Set Hostname & password&secrete:

1. Set username for swith login

```
Switch(config)#hos
Switch(config)#hostname SW_01
```

2. set password for user

```
SW_01(config)#ena
SW_01(config)#enable pass
SW 01(config)#enable password jahid123
```

3.enable secret

```
SW_01(config)# enable ?
  password  Assign the privileged level password
  secret    Assign the privileged level secret
SW_01(config)# enable sec
SW 01(config)# enable secret jahid321
```

See changes on RAM & NVRAM: To see the changes of configuration we use these commands on command line interface(CLI).

RAM-> <show running-config>

NVRAM-> <Show startup-config>

RAM:

```
SW_01#
SW_01#show running-config
Building configuration...

Current configuration : 1153 bytes
!
version 15.0
no service timestamps log datetime msec
no service timestamps debug datetime msec
no service password-encryption
!
hostname SW_01
!
enable secret 5 $1$mERr$11d15cp6pdhG3Qiqm//37.
enable password jahid123
!
!
!
!
!
!
spanning-tree mode pvst
spanning-tree extend system-id
!
interface FastEthernet0/1
!
interface FastEthernet0/2
!
interface FastEthernet0/3
!
interface FastEthernet0/4
!
interface FastEthernet0/5
!
interface FastEthernet0/6
!
interface FastEthernet0/7
!
interface FastEthernet0/8
!
interface FastEthernet0/9
!
interface FastEthernet0/10
!
interface FastEthernet0/11
!
interface FastEthernet0/12
```

NVRAM: We are not save any configuration, that's why there is no configuration save.

```
SW_01#    show startup-config
startup-config is not present
```

What is NVRAM?

= Full forms of NVRAM-> Non-volatile random access memory.
NVRAM acts as a storage in the switch, where every changes locates even though your device is starting on after shutdown.

Save configuration: If we save anything on switch, that save will store on the NVRAM. For saving anything, we use

- ➔ write
  or
- ➔ copy

write command will write the changes on NVRAM.

Copy command will copy the changes on RAM TO NVRAM.

```
SW_01#write
Building configuration...
[OK]
```

Set Consol port's Password: When we try to set password on consol port, we must need to go to the console port. To go to the console port we use

<line console 0 > command.

For setting password we use password <“password that you want to make”>

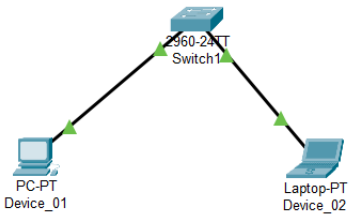
Then we use <login local> command.

```
SW_01(config)#line console 0
SW_01(config-line)#pass
SW_01(config-line)#password jahid1234
SW_01(config-line)#login local
```

Delete all save-work from NVRAM: To delete all changes from the NVRAM we use <erase startup-config> command.After run this command all data that are stored on nvram, will be delete.

```
SW_01#era
SW_01#erase start
SW_01#erase startup-config
Erasing the nvram filesystem will remove all configuration files! Continue? [confirm]
[OK]
Erase of nvram: complete
%SYS-7-NV BLOCK INIT: Initialized the geometry of nvram
```

Show Current Interface Status: On interface we can see which device connected through which port . We can check connected device able or disable status. We use <show interfaces status> on admin mode.




```
Switch#sho
Switch#show int
Switch#show interfaces stat
Switch#show interfaces status
Port      Name               Status       Vlan       Duplex  Speed Type
Fa0/1                        connected    1          auto    auto  10/100BaseTX
Fa0/2                        connected    1          auto    auto  10/100BaseTX
Fa0/3                        notconnect   1          auto    auto  10/100BaseTX
Fa0/4                        notconnect   1          auto    auto  10/100BaseTX
Fa0/5                        notconnect   1          auto    auto  10/100BaseTX
Fa0/6                        notconnect   1          auto    auto  10/100BaseTX
Fa0/7                        notconnect   1          auto    auto  10/100BaseTX
Fa0/8                        notconnect   1          auto    auto  10/100BaseTX
Fa0/9                        notconnect   1          auto    auto  10/100BaseTX
Fa0/10                       notconnect   1          auto    auto  10/100BaseTX
Fa0/11                       notconnect   1          auto    auto  10/100BaseTX
Fa0/12                       notconnect   1          auto    auto  10/100BaseTX
Fa0/13                       notconnect   1          auto    auto  10/100BaseTX
Fa0/14                       notconnect   1          auto    auto  10/100BaseTX
Fa0/15                       notconnect   1          auto    auto  10/100BaseTX
Fa0/16                       notconnect   1          auto    auto  10/100BaseTX
Fa0/17                       notconnect   1          auto    auto  10/100BaseTX
Fa0/18                       notconnect   1          auto    auto  10/100BaseTX
Fa0/19                       notconnect   1          auto    auto  10/100BaseTX
Fa0/20                       notconnect   1          auto    auto  10/100BaseTX
Fa0/21                       notconnect   1          auto    auto  10/100BaseTX
Fa0/22                       notconnect   1          auto    auto  10/100BaseTX
Fa0/23                       notconnect   1          auto    auto  10/100BaseTX
Fa0/24                       notconnect   1          auto    auto  10/100BaseTX
Gig0/1                       notconnect   1          auto    auto  10/100BaseTX
Gig0/2                       notconnect   1          auto    auto  10/100BaseTX
```

Disconnect device from switch: To disconnect any device that you want from the switch, run this command <interface fastEthernet <port no.>> after that run <shutdown> command . you must run these command on configure mode.

```
Switch(config)#interface fast
Switch(config)#interface fastEthernet 0/1
Switch(config-if)#sh
Switch(config-if)#shutdown

Switch(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/1, changed state to administratively down

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to down
```

Check whether the port I want to disconnect is really connected or disabled?

```
Switch(config-if)#do sh int stat
Port      Name               Status       Vlan       Duplex  Speed Type
Fa0/1                        disabled 1         auto    auto  10/100BaseTX
Fa0/2                        connected    1          auto    auto  10/100BaseTX
Fa0/3                        notconnect   1          auto    auto  10/100BaseTX
Fa0/4                        notconnect   1          auto    auto  10/100BaseTX
Fa0/5                        notconnect   1          auto    auto  10/100BaseTX
Fa0/6                        notconnect   1          auto    auto  10/100BaseTX
Fa0/7                        notconnect   1          auto    auto  10/100BaseTX
Fa0/8                        notconnect   1          auto    auto  10/100BaseTX
Fa0/9                        notconnect   1          auto    auto  10/100BaseTX
Fa0/10                       notconnect   1          auto    auto  10/100BaseTX
Fa0/11                       notconnect   1          auto    auto  10/100BaseTX
Fa0/12                       notconnect   1          auto    auto  10/100BaseTX
Fa0/13                       notconnect   1          auto    auto  10/100BaseTX
Fa0/14                       notconnect   1          auto    auto  10/100BaseTX
Fa0/15                       notconnect   1          auto    auto  10/100BaseTX
Fa0/16                       notconnect   1          auto    auto  10/100BaseTX
Fa0/17                       notconnect   1          auto    auto  10/100BaseTX
Fa0/18                       notconnect   1          auto    auto  10/100BaseTX
Fa0/19                       notconnect   1          auto    auto  10/100BaseTX
Fa0/20                       notconnect   1          auto    auto  10/100BaseTX
Fa0/21                       notconnect   1          auto    auto  10/100BaseTX
Fa0/22                       notconnect   1          auto    auto  10/100BaseTX
Fa0/23                       notconnect   1          auto    auto  10/100BaseTX
Fa0/24                       notconnect   1          auto    auto  10/100BaseTX
Gig0/1                       notconnect   1          auto    auto  10/100BaseTX
Gig0/2                       notconnect   1          auto    auto  10/100BaseTX
```

why I use do command?

= In this case, I don’t want to logout from the configure mode. If you want to see any interface status from the config mode, you must use “do”.

Connect the disconnected device:

If you accidently disable any device, don't worry you can again connec this device by running <no sh > command on interface.

```
Switch(config-if)#no sh

Switch(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/1, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to up

Switch(config-if)#do sh int stat
Port      Name               Status       Vlan       Duplex  Speed Type
Fa0/1                        connected    1          auto    auto  10/100BaseTX
Fa0/2                        connected    1          auto    auto  10/100BaseTX
Fa0/3                        notconnect   1          auto    auto  10/100BaseTX
Fa0/4                        notconnect   1          auto    auto  10/100BaseTX
Fa0/5                        notconnect   1          auto    auto  10/100BaseTX
Fa0/6                        notconnect   1          auto    auto  10/100BaseTX
Fa0/7                        notconnect   1          auto    auto  10/100BaseTX
Fa0/8                        notconnect   1          auto    auto  10/100BaseTX
Fa0/9                        notconnect   1          auto    auto  10/100BaseTX
Fa0/10                       notconnect   1          auto    auto  10/100BaseTX
Fa0/11                       notconnect   1          auto    auto  10/100BaseTX
Fa0/12                       notconnect   1          auto    auto  10/100BaseTX
Fa0/13                       notconnect   1          auto    auto  10/100BaseTX
Fa0/14                       notconnect   1          auto    auto  10/100BaseTX
Fa0/15                       notconnect   1          auto    auto  10/100BaseTX
Fa0/16                       notconnect   1          auto    auto  10/100BaseTX
Fa0/17                       notconnect   1          auto    auto  10/100BaseTX
Fa0/18                       notconnect   1          auto    auto  10/100BaseTX
Fa0/19                       notconnect   1          auto    auto  10/100BaseTX
Fa0/20                       notconnect   1          auto    auto  10/100BaseTX
Fa0/21                       notconnect   1          auto    auto  10/100BaseTX
Fa0/22                       notconnect   1          auto    auto  10/100BaseTX
Fa0/23                       notconnect   1          auto    auto  10/100BaseTX
Fa0/24                       notconnect   1          auto    auto  10/100BaseTX
Gig0/1                       notconnect   1          auto    auto  10/100BaseTX
Gig0/2                       notconnect   1          auto    auto  10/100BaseTX
```

Make Duplex Mode:

A duplex mode is a mode where a sender and receiver can send and receive packet conditionally. There are 2 types of duplex mode. one is Full-duplex and half-duplex is another one.Though nowadays maximum switch use auto mode. For making duplex mode, we use <duplex full >/ <duplex half> command on the interface.

```
Switch(config-if)#duplex full
Switch(config-if)#
%LINK-3-UPDOWN: Interface FastEthernet0/1, changed state to down

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to down

Switch(config-if)#do sh int stat
Port      Name               Status       Vlan       Duplex  Speed Type
Fa0/1                        notconnect   1          a-full  auto  10/100BaseTX
Fa0/2                        connected    1          auto    auto  10/100BaseTX
Fa0/3                        notconnect   1          auto    auto  10/100BaseTX
Fa0/4                        notconnect   1          auto    auto  10/100BaseTX
Fa0/5                        notconnect   1          auto    auto  10/100BaseTX
Fa0/6                        notconnect   1          auto    auto  10/100BaseTX
Fa0/7                        notconnect   1          auto    auto  10/100BaseTX
Fa0/8                        notconnect   1          auto    auto  10/100BaseTX
Fa0/9                        notconnect   1          auto    auto  10/100BaseTX
Fa0/10                       notconnect   1          auto    auto  10/100BaseTX
Fa0/11                       notconnect   1          auto    auto  10/100BaseTX
Fa0/12                       notconnect   1          auto    auto  10/100BaseTX
Fa0/13                       notconnect   1          auto    auto  10/100BaseTX
Fa0/14                       notconnect   1          auto    auto  10/100BaseTX
Fa0/15                       notconnect   1          auto    auto  10/100BaseTX
Fa0/16                       notconnect   1          auto    auto  10/100BaseTX
Fa0/17                       notconnect   1          auto    auto  10/100BaseTX
Fa0/18                       notconnect   1          auto    auto  10/100BaseTX
Fa0/19                       notconnect   1          auto    auto  10/100BaseTX
Fa0/20                       notconnect   1          auto    auto  10/100BaseTX
Fa0/21                       notconnect   1          auto    auto  10/100BaseTX
Fa0/22                       notconnect   1          auto    auto  10/100BaseTX
Fa0/23                       notconnect   1          auto    auto  10/100BaseTX
Fa0/24                       notconnect   1          auto    auto  10/100BaseTX
Gig0/1                       notconnect   1          auto    auto  10/100BaseTX
Gig0/2                       notconnect   1          auto    auto  10/100BaseTX
```

Speed Declaretion:

You can set how much speed a device can get. If you want decrease or increase any device's speed, you need to run command on the interface.

We see three types of port for network cable on switch.

1. Ethernet cable : which is > 10 mbps
2. Fast-Ethernet cable: which is >100mbps
3. Giga-Ethernet cable: which is > 1gbps

```
Switch(config-if)#speed 100
Switch(config-if)#do sh int stat
Port      Name               Status       Vlan       Duplex  Speed Type
Fa0/1                        notconnect   1          a-full  a-100 10/100BaseTX
Fa0/2                        connected    1          auto    auto  10/100BaseTX
Fa0/3                        notconnect   1          auto    auto  10/100BaseTX
Fa0/4                        notconnect   1          auto    auto  10/100BaseTX
Fa0/5                        notconnect   1          auto    auto  10/100BaseTX
Fa0/6                        notconnect   1          auto    auto  10/100BaseTX
Fa0/7                        notconnect   1          auto    auto  10/100BaseTX
Fa0/8                        notconnect   1          auto    auto  10/100BaseTX
Fa0/9                        notconnect   1          auto    auto  10/100BaseTX
Fa0/10                       notconnect   1          auto    auto  10/100BaseTX
Fa0/11                       notconnect   1          auto    auto  10/100BaseTX
Fa0/12                       notconnect   1          auto    auto  10/100BaseTX
Fa0/13                       notconnect   1          auto    auto  10/100BaseTX
Fa0/14                       notconnect   1          auto    auto  10/100BaseTX
Fa0/15                       notconnect   1          auto    auto  10/100BaseTX
Fa0/16                       notconnect   1          auto    auto  10/100BaseTX
Fa0/17                       notconnect   1          auto    auto  10/100BaseTX
Fa0/18                       notconnect   1          auto    auto  10/100BaseTX
Fa0/19                       notconnect   1          auto    auto  10/100BaseTX
Fa0/20                       notconnect   1          auto    auto  10/100BaseTX
Fa0/21                       notconnect   1          auto    auto  10/100BaseTX
Fa0/22                       notconnect   1          auto    auto  10/100BaseTX
Fa0/23                       notconnect   1          auto    auto  10/100BaseTX
Fa0/24                       notconnect   1          auto    auto  10/100BaseTX
Gig0/1                       notconnect   1          auto    auto  10/100BaseTX
Gig0/2                       notconnect   1          auto    auto  10/100BaseTX
```

Description:

You can initialize anything that you want for devices from the switch. By writing any description you need run <description “write description”> command on interface.

```
Switch(config-if)#do sh int stat
Port      Name               Status       Vlan       Duplex  Speed Type
Fa0/1     jahid's_pc         notconnect   1          a-full  a-100 10/100BaseTX
Fa0/2                        connected    1          auto    auto  10/100BaseTX
Fa0/3                        notconnect   1          auto    auto  10/100BaseTX
Fa0/4                        notconnect   1          auto    auto  10/100BaseTX
Fa0/5                        notconnect   1          auto    auto  10/100BaseTX
Fa0/6                        notconnect   1          auto    auto  10/100BaseTX
Fa0/7                        notconnect   1          auto    auto  10/100BaseTX
Fa0/8                        notconnect   1          auto    auto  10/100BaseTX
Fa0/9                        notconnect   1          auto    auto  10/100BaseTX
Fa0/10                       notconnect   1          auto    auto  10/100BaseTX
Fa0/11                       notconnect   1          auto    auto  10/100BaseTX
Fa0/12                       notconnect   1          auto    auto  10/100BaseTX
Fa0/13                       notconnect   1          auto    auto  10/100BaseTX
Fa0/14                       notconnect   1          auto    auto  10/100BaseTX
Fa0/15                       notconnect   1          auto    auto  10/100BaseTX
Fa0/16                       notconnect   1          auto    auto  10/100BaseTX
Fa0/17                       notconnect   1          auto    auto  10/100BaseTX
Fa0/18                       notconnect   1          auto    auto  10/100BaseTX
Fa0/19                       notconnect   1          auto    auto  10/100BaseTX
Fa0/20                       notconnect   1          auto    auto  10/100BaseTX
Fa0/21                       notconnect   1          auto    auto  10/100BaseTX
Fa0/22                       notconnect   1          auto    auto  10/100BaseTX
Fa0/23                       notconnect   1          auto    auto  10/100BaseTX
Fa0/24                       notconnect   1          auto    auto  10/100BaseTX
Gig0/1                       notconnect   1          auto    auto  10/100BaseTX
Gig0/2                       notconnect   1          auto    auto  10/100BaseTX
```

Set ip VLan on switch : VLan means virtual lan. Using vlan you can access switch remotely.

why we use ip in switch?

= We use ip vlan for showing the Mac Address Table through ARP. ARP means Address resulation protocol.

For setting ip we need some basic ideas of ip address, it's class& it's subnet mask.

```
Switch>en
Switch>enable
Switch#conf
Switch#configure ter
Switch#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Switch(config)#
Switch(config)#inter
Switch(config)#interface vl
Switch(config)#interface vlan 1
Switch(config-if)#ip
Switch(config-if)#i
Switch(config-if)#ip add
Switch(config-if)#ip address 192.168.3.1 255.255.255.0
Switch(config-if)#no sh

Switch(config-if)#
%LINK-5-CHANGED: Interface Vlan1, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan1, changed state to up
```

Output from command prompt:

```
Pinging 192.168.3.1 with 32 bytes of data:

Request timed out.
Reply from 192.168.3.1: bytes=32 time=1ms TTL=255
Reply from 192.168.3.1: bytes=32 time<1ms TTL=255
Reply from 192.168.3.1: bytes=32 time<1ms TTL=255
Reply from 192.168.3.1: bytes=32 time<1ms TTL=255
Reply from 192.168.3.1: bytes=32 time<1ms TTL=255
Reply from 192.168.3.1: bytes=32 time<1ms TTL=255
Reply from 192.168.3.1: bytes=32 time=1ms TTL=255
Reply from 192.168.3.1: bytes=32 time=1ms TTL=255
Reply from 192.168.3.1: bytes=32 time<1ms TTL=255
```

Telnet work:

Telnet indicates how much devices access the switch remotely. Maximum 16 user can access switch remotely.

```
Switch(config-if)#exit
Switch(config)#li
Switch(config)#line vt
Switch(config)#line vty 0 4
Switch(config-line)#pass
Switch(config-line)#password jahid123
Switch(config-line)#login
Switch(config-line)#
```

```
Trying 192.168.3.1 ...Open


User Access Verification

Password:
SW_01>
```

Password Encryption:

We want our password encrypt as like as secrete. For this we just run command <service password-encryption> on configure mode.

```
SW_01(config)#service password-encryption
SW_01(config)#sho
SW_01(config)#show
SW_01(config)#do sh run
Building configuration...

Current configuration : 1209 bytes
!
version 15.0
no service timestamps log datetime msec
no service timestamps debug datetime msec
service password-encryption
!
hostname SW_01
!
enable password 7 082B4D46001D5445415F
!
!
!
!
!
!
spanning-tree mode pvst
spanning-tree extend system-id
!
interface FastEthernet0/1
 description jahid's_pc
 duplex full
 speed 100
```

Thank You

Md. Jahidul Islam
Mail: jahidislam1204.bd@gmail.com
Linkedin: linkedin_profile