Lab 2 Basic switch setup

Introduction

A new switch just purchased from Cisco contains no default configuration in it. You need to configure the switch with setup mode using the setup mode or from scratch using the command line interface (CLI) before connecting it in your network environment. As a Cisco certified technician, it is very important to know the basic Cisco switch configuration commands to improve the performances and the security of your internetwork.

Basic Switch Configuration Command (CLI-Command Line Interface)

In this section, we will learn about Cisco Internetwork Operation System (IOS) command line interface (CLI) for 2000 series switch.

User vs. Privileged Mode

User mode is indicated with ">" next to the switch name. So, you can look at settings but cannot make any change from this user mode. In Privilege mode, indicated by #, in this mode you can do anything. To get into Privilege mode type "enable"

Help

To view all commands available from this mode type: **?** This will give you the list of all available commands for the switch in your current mode. You can also use the question mark after you have started typing a command. For example if you want to use a show command but you do not remember which one it is, use the? as this will output all commands that you can use with the show command.

Configuration Mode

From privilege mode you can enter configuration mode by typing **config term** command you can exit configuration mode type type end or **<CTL>+z**

Configuration of Cisco 2960 Switch

To practically implement these command either create a simple topology on packet tracer or download this topology.

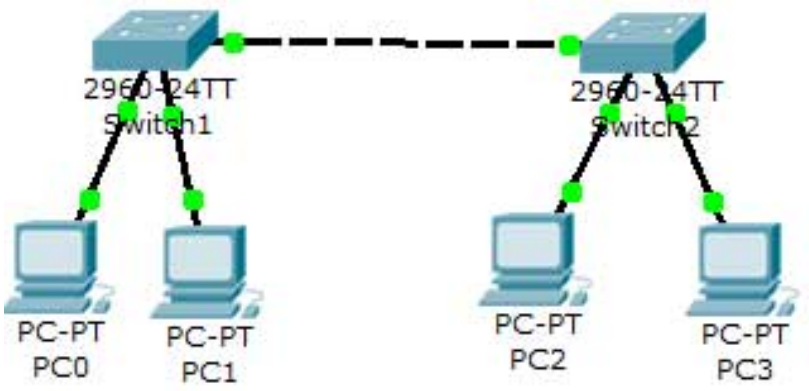


Figure 1 Basic Switch Configuration

1. Use Packet Trace to configure the above (Figure 1 Basic Switch Configuration) network topology
2. Click on any switch and configure it as giving below (To know all available command on user exec mode type ? and enter.

```
Switch>?
Exec commands:
  <1-99>          Session number to resume
  connect         Open a terminal connection
  disable         Turn off privileged commands
  disconnect      Disconnect an existing network connection
  enable          Turn on privileged commands
  exit            Exit from the EXEC
  logout          Exit from the EXEC
  ping            Send echo messages
  resume          Resume an active network connection
  show            Show running system information
  telnet          Open a telnet connection
  terminal        Set terminal line parameters
  traceroute      Trace route to destination
```

3. 3 Command line that you may try to logout form terminal connection

```
Switch>enable
Switch#disable
Switch>exit

Switch con0 is now available
Press RETURN to get started.
```

4. Show Version of the switch

```
Switch>enable
Switch#show version
Cisco IOS Software, C2960 Software (C2960-LANBASE-M), Version 12.2(25)FX, RELEASE SOFTWARE (fc1)
Copyright (c) 1986-2005 by Cisco Systems, Inc.
Compiled Wed 12-Oct-05 22:05 by pt_team

ROM: C2960 Boot Loader (C2960-HBOOT-M) Version 12.2(25r)FX, RELEASE SOFTWARE (fc4)

System returned to ROM by power-on

Cisco WS-C2960-24TT (RC32300) processor (revision C0) with 21039K bytes of memory.

24 FastEthernet/IEEE 802.3 interface(s)
2 Gigabit Ethernet/IEEE 802.3 interface(s)
63488K bytes of flash-simulated non-volatile configuration memory.
Base ethernet MAC Address      : 0090.2B16.756A
Motherboard assembly number    : 73-9832-06
Power supply part number       : 341-0097-02
Motherboard serial number      : FOC103248MJ
Power supply serial number     : DCA102133JA
Model revision number          : B0
Motherboard revision number    : C0
Model number                   : WS-C2960-24TT
System serial number           : FOC1033Z1EY
Top Assembly Part Number       : 800-26671-02
Top Assembly Revision Number   : B0
Version ID                     : V02
CLEI Code Number               : COM3K00BRA
Hardware Board Revision Number : 0x01


Switch   Ports  Model          SW Version          SW Image
------   -----  -----          ----------          ----------
*   1   26    WS-C2960-24TT     12.2                C2960-LANBASE-M

Configuration register is 0xF
```

5. Show mac address – This command will show all detected mac addresses

```
Switch#show mac-address-table
        Mac Address Table
-------------------------------------------

Vlan    Mac Address       Type        Ports
----    -----------       --------    -----

  1    0003.e4e1.8e01    DYNAMIC     Fa0/1
```

6. Show all run time configuration in RAM “show running-config”

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

Current configuration : 1037 bytes
!
version 12.2
no service timestamps log datetime msec
no service timestamps debug datetime msec
no service password-encryption
!
hostname Switch
!
!
!
!
spanning-tree mode pvst
!
interface FastEthernet0/1
!
interface FastEthernet0/2
!
interface FastEthernet0/3
```

7. To view startup configuration in NVRAM use " show startup-config"

```
Switch#show
startup-config Current configuration : 925 bytes
version 12.2 no service password-encryption
!
hostname Switch
[Output is omitted]
```

8. To get information about VLAN configuration use ***show vlan*** command

```
Switch#show vlan

VLAN Name                             Status    Ports
---- -------------------------------- --------- -------------------------------
1    default                          active    Fa0/1, Fa0/2, Fa0/3, Fa0/4
                                                Fa0/5, Fa0/6, Fa0/7, Fa0/8
                                                Fa0/9, Fa0/10, Fa0/11, Fa0/12
                                                Fa0/13, Fa0/14, Fa0/15, Fa0/16
                                                Fa0/17, Fa0/18, Fa0/19, Fa0/20
                                                Fa0/21, Fa0/22, Fa0/23, Fa0/24
                                                Gig1/1, Gig1/2
1002 fddi-default                     act/unsup
1003 token-ring-default               act/unsup
1004 fddinet-default                  act/unsup
1005 trnet-default                    act/unsup

VLAN Type  SAID       MTU   Parent RingNo BridgeNo Stp  BrdgMode Trans1 Trans2
---- ----- ---------- ----- ------ ------ -------- ---- -------- ------ ------
1    enet  100001     1500  -      -      -        -    -        0      0
1002 fddi  101002     1500  -      -      -        -    -        0      0
1003 tr    101003     1500  -      -      -        -    -        0      0
1004 fdnet 101004     1500  -      -      -        ieee -        0      0
1005 trnet 101005     1500  -      -      -        ibm  -        0      0

Remote SPAN VLANs
------------------------------------------------------------------------------
```

9. show interface command will show all detected interface with their hardware description and configuration

```
Switch#show interface
FastEthernet0/1 is up, line protocol is up (connected)
  Hardware is Lance, address is 0060.5cc3.8501 (bia 0060.5cc3.8501)
 BW 100000 Kbit, DLY 1000 usec,
    reliability 255/255, txload 1/255, rxload 1/255
  Encapsulation ARPA, loopback not set
  Keepalive set (10 sec)
  Full-duplex, 100Mb/s
  input flow-control is off, output flow-control is off
  ARP type: ARPA, ARP Timeout 04:00:00
  Last input 00:00:08, output 00:00:05, output hang never
  Last clearing of "show interface" counters never
  Input queue: 0/75/0/0 (size/max/drops/flushes); Total output drops: 0
  Queueing strategy: fifo
  Output queue :0/40 (size/max)
  5 minute input rate 0 bits/sec, 0 packets/sec
  5 minute output rate 0 bits/sec, 0 packets/sec
    956 packets input, 193351 bytes, 0 no buffer
    Received 956 broadcasts, 0 runts, 0 giants, 0 throttles
    0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort
    0 watchdog, 0 multicast, 0 pause input
    0 input packets with dribble condition detected
    2357 packets output, 263570 bytes, 0 underruns
```

10. interface vlan 1 is used to assign ip address and default gateway to switch. ***Show interface vlan 1*** will give a over view of vlan1.

```
witch#show interface vlan1
Vlan1 is administratively down, line protocol is down   Hardware is CPU
Interface, address is 0060.5c23.82ae
(bia 0060.5c23.82ae)
MTU 1500 bytes, BW 100000 Kbit, DLY 1000000 usec,     reliability 255/255,
txload 1/255, rxload 1/255   Encapsulation ARPA, loopback not set   ARP type:
ARPA, ARP Timeout 04:00:00
[Output is omitted]
```

11. ***delete*** command is used to delete all vlan configuration from switch Don't add space between flash and vlan.dat Run this exactly shown here adding a space could erase flash entirely leaving switch blank

```
Switch#delete flash:vlan.dat
Delete filename [vlan.dat]?
Delete flash:/vlan.dat? [confirm]
%deleting flash:/vlan.dat
```

12. Earse command can remove all startup configuration (Use this command if you want to reset device)

```
Switch#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
```

Basic switch configuration step by step

1. Use "enable" and "configure terminal" or "config t" to get into configuration mode

```
Switch>enable
Switch#config t
Enter configuration commands, one per line.  End with CNTL/Z.
Switch(config)#
```

2. Now change switch name to Lab02
3. Set enable password to "computer" and secret to "network"

```
Switch(config)#hostname lab02
lab02(config)#enable password computer
lab02(config)#enable secret network
lab02(config)#
```

4. Set console password to "computer" and enable to by *login command.* Order of command is very important. Set password before you enable it.

```
lab02(config)#line console 0
lab02(config-line)#password computer
lab02(config-line)#login
lab02(config-line)#exit
```

5. Enable telnet section login [vty0-vty4] for the switch (router) and set password to "computer"

```
lab02(config)#line vty 0 4
lab02(config-line)#password computer
lab02(config-line)#login
lab02(config-line)#exit
```

6. Now set switch ip address to 192.168.0.10 255.255.255.0 and default gateway to 192.168.0.5

```
Lab02(config)#interface vlan1
Lab02(config-if)#ip address 192.168.0.10 255.255.255.0
Lab02(config-if)#exit
Lab02(config)#ip default-gateway 192.168.0.5
```

7. Set a description finance VLAN to interface fast Ethernet 1

```
Lab02 (config)#interface fastEthernet 0/1
Lab02 (config-if)#description finance VLAN
```

8. By default switch automatically negotiate speed and duplex but you can adjust it manually

```
Lab02(config-if)#duplex full
%LINK-5-CHANGED: Interface FastEthernet0/1, changed state to down
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1,
 changed state to down
Lab02(config-if)#duplex auto
%LINK-5-CHANGED: Interface FastEthernet0/1, changed state to up
Lab02(config-if)#duplex half
%LINK-5-CHANGED: Interface FastEthernet0/1, changed state to down
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1,
changed state to down
%LINK-5-CHANGED: Interface FastEthernet0/1, changed state to up
Lab02(config-if)#duplex auto
Lab02(config-if)#speed 10
Lab02(config-if)#speed 100
Lab02(config-if)#speed auto
Lab02(config-if)#exit
Lab02(config)#exit
```

9. To restart switch use reload command [running configuration will be erased so copy it first to startup configuration]

```
Lab02#reload
Proceed with reload? [confirm]
Switch con0 is now available
Press RETURN to get started.
```

Lab instructions

This lab will test your ability to configure basic settings on a cisco switch.

1. Use the local laptop connects to the switch console.

2. Configure Switch hostname as LOCAL-SWITCH

3. Configure the message of the day as "Unauthorized access is forbidden"

4. Configure the password for privileged mode access as "cisco". The password must be md5 encrypted

5. Configure password encryption on the switch using the global configuration command

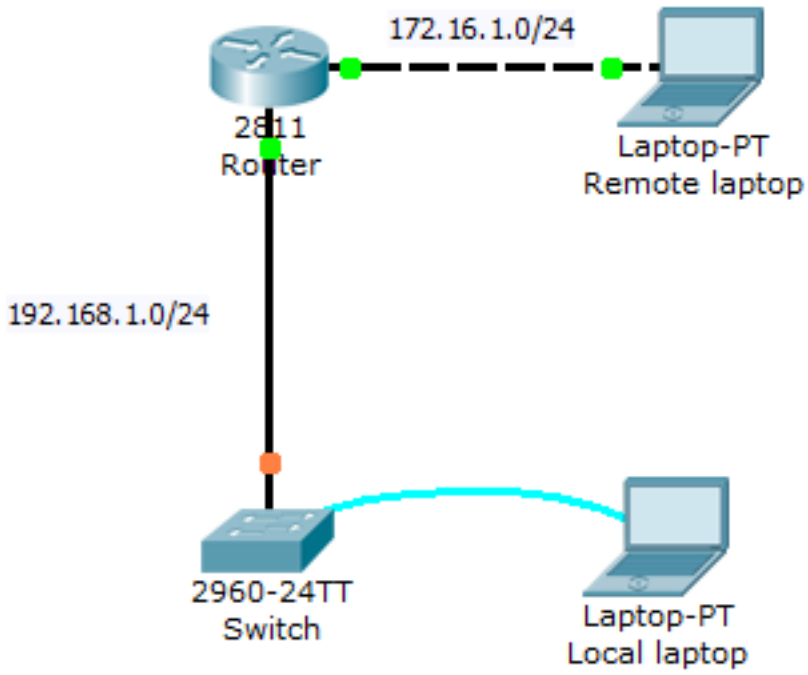
6. Configure CONSOLE access with the following settings:
- Login enabled
- Password : ciscoconsole
- History size : 15 commands
- Timeout : 6'45''
- Synchronous logging

6. Configure TELNET access with the following settings :
- Login enabled
- Password : ciscotelnet
- History size : 15 commands
- Timeout : 8'20''
- Synchronous logging

7. Configure the IP address of the switch as 192.168.1.2/24 and it's default gateway IP (192.168.1.1).

8. Test telnet connectivity from the Remote Laptop using the telnet client.

Network diagram



Solution

Configure Switch hostname as LOCAL-SWITCH
hostname LOCAL-SWITCH

Configure the message of the day as "Unauthorized access is forbidden"
banner motd #
Unauthorized access is forbidden#

Configure the password for privileged mode access as "cisco". The password must be md5 encrypted
enable secret cisco

Configure password encryption on the switch using the global configuration command
service password-encryption

Configure CONSOLE access [...]
line con 0
password ciscoconsole
logging synchronous
login
history size 15
exec-timeout 6 45

Configure TELNET access [...]
line vty 0 15
exec-timeout 8 20
password ciscotelnet
logging synchronous
login
history size 15

Configure the IP address of the switch as 192.168.1.2/24 and it's default gateway IP (192.168.1.1).
interface Vlan1
ip address 192.168.1.2 255.255.255.0
ip default-gateway 192.168.1.1

CCNA basic switch configuration commands sheet

Command	descriptions
switch>?	The ? works here the same as in a router Used to get the list of all available commands
switch>enable	User mode, same as a router
switch#	Privileged mode
switch#disable	Leaves privileged mode
switch>exit	Leaves user mode
switch#show version	Displays information about software and hardware.
switch#show flash:	Displays information about flash memory (will work only for the 2900/2950 series).
switch#show mac-address-table	Displays the current MAC address forwarding table
switch#show running-config	Displays the current configuration in DRAM.
switch#show startup-config	Displays the current configuration in NVRAM.
switch#show vlan	Displays the current VLAN configuration.
switch#show interfaces	Displays the interface configuration and status of line: up/up, up/down, admin down.
switch#show interface vlan1	Displays setting of virtual interface VLAN 1, the default VLAN on the switch.
To Reset Switch Configuration	
Switch#delete flash:vlan.dat	Removes the VLAN database from flash memory.
Delete filename [vlan.dat]?	Press Enter
Delete flash:vlan.dat? [confirm]	Press Enter
Switch#erase startup-config	Erases the file from NVRAM.
Switch#reload	Restarts the switch.

To Set Host Names	
Switch#configure terminal	Moves to global configuration mode
Switch(config)#hostname Switch1	Creates a locally significant host name of the switch. This is the same command as the router.
Switch1(config)#	
To Set Passwords	
Switch(config)#enable password vinita	Sets the enable password to vinita
Switch(config)#enable secret nikki	Sets the encrypted secret password to nikki
Switch(config)#line console 0	Enters line console mode
Switch(config-line)#login	Enables password checking
Switch(config-line)#password vinita	Sets the password to vinita
Switch(config-line)#exit	Exits line console mode
Switch(config-line)#line vty 0 4	Enters line vty mode for all five virtual ports
Switch(config-line)#login	Enables password checking
Switch(config-line)#password vinita	Sets the password to vinita
Switch(config-line)#exit	Exits line vty mode
Switch(config)#	
To Set IP Addresses and Default Gateways	
Switch(config)#interface vlan1	Enters the virtual interface for VLAN 1, the default VLAN on the switch
Switch(config-if)#ip address 192.168.0.10 255.255.255.0	Sets the IP address and netmask to allow for remote access to the switch
Switch(config-if)#exit	
Switch(config)#ip default-gateway 192.168.0.5	Allows IP information an exit past the local network
To Set Interface Descriptions	
Switch(config)#interface fastethernet 0/1	Enters interface configuration mode

Switch(config-if)#description Finance VLAN	Adds a description of the interface
To Set Duplex Operation	
Switch(config)#interface fastethernet 0/1	Moves to interface configuration mode
Switch(config-if)#duplex full	Forces full-duplex operation
Switch(config-if)#duplex auto	Enables auto-duplex config
Switch(config-if)#duplex half	Forces half-duplex operation
To Set Operation Speed	
Switch(config)#interface fastethernet 0/1	
Switch(config-if)#speed 10	Forces 10-Mbps operation
Switch(config-if)#speed 100	Forces 100-Mbps operation
Switch(config-if)#speed auto	Enables autospeed configuration
MAC Address Table	
switch#show mac address-table	Displays current MAC address forwarding table
switch#clear mac address-table	Deletes all entries from current MAC address forwarding table
switch#clear mac address-table dynamic	Deletes only dynamic entries from table