

Basic Device Configuration

Switch Boot Sequence

1 Loads a **POST** (power-on self-test) program stored in ROM. Checks CPU, DRAM, flash

2 Loads the **boot loader** software (stored in ROM)

3 Boot loader performs **low-level CPU initialization** (CPU registers)

4 Boot loader **initializes the flash file system**

5 Boot loader locates and **loads a default IOS**

- 🤔 BOOT variable set in `startup-config` ➡ `flash:/config.text`

- Loads that IOS. To set an IOS:

```
S1(config)# boot system flash:/folder/iosfile.bin
```

- 🤔 BOOT variable not set ➡ Attempts to load the 1st executable file it can find

Switch LED Indicators

- ⚠ The **MODE** button is used to move between the different modes – STAT, DUPLX, SPEED, and PoE
- **SYST** (System): ● Power and functioning properly.
- **RPS** (Redundant Power Supply):
 - ●: No RPS
 - ●: RPS ready
 - ● ●: RPS up but not available
 - ●: RPS Standby or fault
 - ● ●: Internal PS fault. RPS providing power



Switch LED Indicators

- **STAT (Port Status):** ● Selected mode
 - ●: No link or shutdown
 - ●: Link Up
 - ● ●: Activity
 - ● / ● ● ●: Port blocked preventing loop
 - ● ● ●: Link fault

Port status can then be understood by the light associated with each port.



Switch LED Indicators

- **DUPLX** (Port Duplex): ● Selected mode
 - ●: Half-duplex
 - ●: Full-duplex
- **SPEED** (Port Speed): ● Selected mode
 - ●: 10 Mbps
 - ●: 100 Mbps
 - ● ●: 1000 Mbps (1 Gbps)

Port duplex and speed can then be understood by the light associated with each port.



Switch LED Indicators

- PoE (Power over Ethernet LED):
 - ●: PoE off
 - ●: PoE on
 - ●: PoE disabled
 - ● ●: PoE off due to fault
 - ● ● ●: PoE denied (over budget)



Recovery from a System Crash

- 1** Connect a PC by console cable to the switch console port using PuTTY.
- 2** Unplug the switch power cord.
- 3** Reconnect the power cord to the switch and, within 15 seconds, press and hold down the Mode button while the System LED is still flashing green (● ● ●).
- 4** Continue pressing the Mode button until the System LED turns briefly amber (●) and then solid green (●); then release the Mode button.
- 5** The boot loader `switch:` prompt appears in PuTTY on the PC.

Boot loader command line supports commands to format the flash file system, reinstall the operating system software, and recover a lost or forgotten password.

Switch Management Access

1 Configure the Management Interface

- VLAN 1 or VLAN 99 for security purposes

2 Configure the Default Gateway

3 Verify Configuration

```
S1# configure terminal
S1(config)# interface vlan 99
S1(config-if)# ip address 172.17.99.11 255.255.255.0
S1(config-if)# ipv6 address 2001:db8:acad:99::1/64
S1(config-if)# no shutdown
S1(config-if)# exit
S1(config)# ip default-gateway 172.17.99.1
S1(config)# exit
S1# show ip interface brief
S1# show ipv6 interface brief
```


Duplex Communication

```
S1# configure terminal
S1(config)# interface f0/1
S1(config-if)# duplex full
S1(config-if)# speed 100
```

Auto-MDIX

Automatic Medium-Dependent Interface Crossover. Enabled by default Cisco 2960+

```
S1# configure terminal
S1(config)# interface f0/1
S1(config-if)# duplex auto
S1(config-if)# speed auto
S1(config-if)# mdix auto
```

Switch Verification Commands

```
S1# show interfaces [interface-id]
S1# show startup-config
S1# show running-config
S1# show flash
S1# show version
S1# show history
S1# show ip interface [interface-id]
S1# show ipv6 interface [interface-id]
S1# show mac-address-table
S1# show mac address-table
```

Troubleshooting Network Access Layer Issues



Configure SSH Remote Access

```
S1# show ip ssh
S1# configure terminal
S1(config)# ip ssh version 2
S1(config)# ip domain-name cisco.com
S1(config)# crypto key generate rsa general-keys modulus 1024
S1(config)# username admin secret ccna
S1(config)# line vty 0 4
S1(config-line)# transport input ssh
S1(config-line)# login local
```

Delete RSA key pairs:

```
S1(config)# crypto key zeroize rsa
```

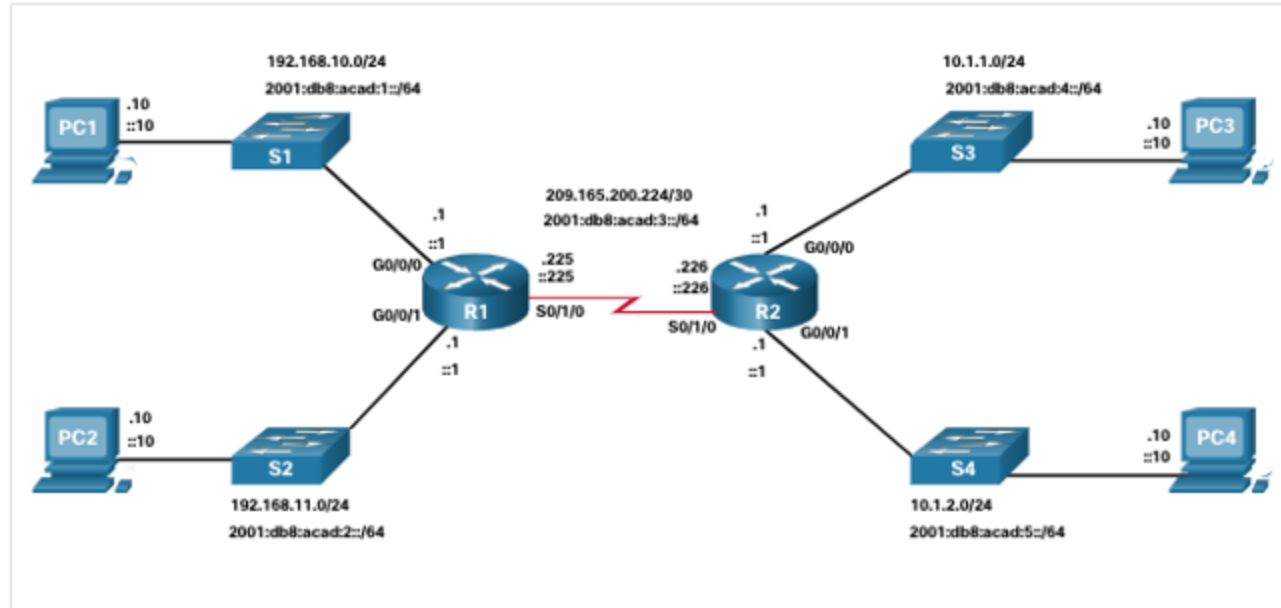
SSH Linux connection:

```
ssh -oKexAlgorithms=+diffie-hellman-group1-sha1 -oHostKeyAlgorithms=+ssh-rsa -c aes128-cbc -l admin 192.168.99.2
```

Configure Basic Router Settings

```
Router# configure terminal
Router(config)# hostname R1
R1(config)# enable secret class
R1(config)# line console 0
R1(config-line)# password cisco
R1(config-line)# login
R1(config-line)# line vty 0 4
R1(config-line)# password cisco
R1(config-line)# login
R1(config-line)# exit
R1(config)# service password-encryption
R1(config)# banner motd $Authorized Access Only!$
R1(config)# do wr
```

Dual Stack Topology - Configure Router Interfaces



```
R1(config)# interface g0/0/0
R1(config-if)# description Link to LAN 1
R1(config-if)# ip address 192.168.10.1 255.255.255.0
R1(config-if)# ipv6 address 2001:db8:acad:1::1/64
R1(config-if)# no shutdown
```

Router Verification Commands

```
R1# show ip interface brief
R1# show ipv6 interface brief
R1# show running-config interface interface-id
R1# show interfaces
R1# show ip interface
R1# show ipv6 interface
R1# show ip route
R1# show ipv6 route
R1# show history
```