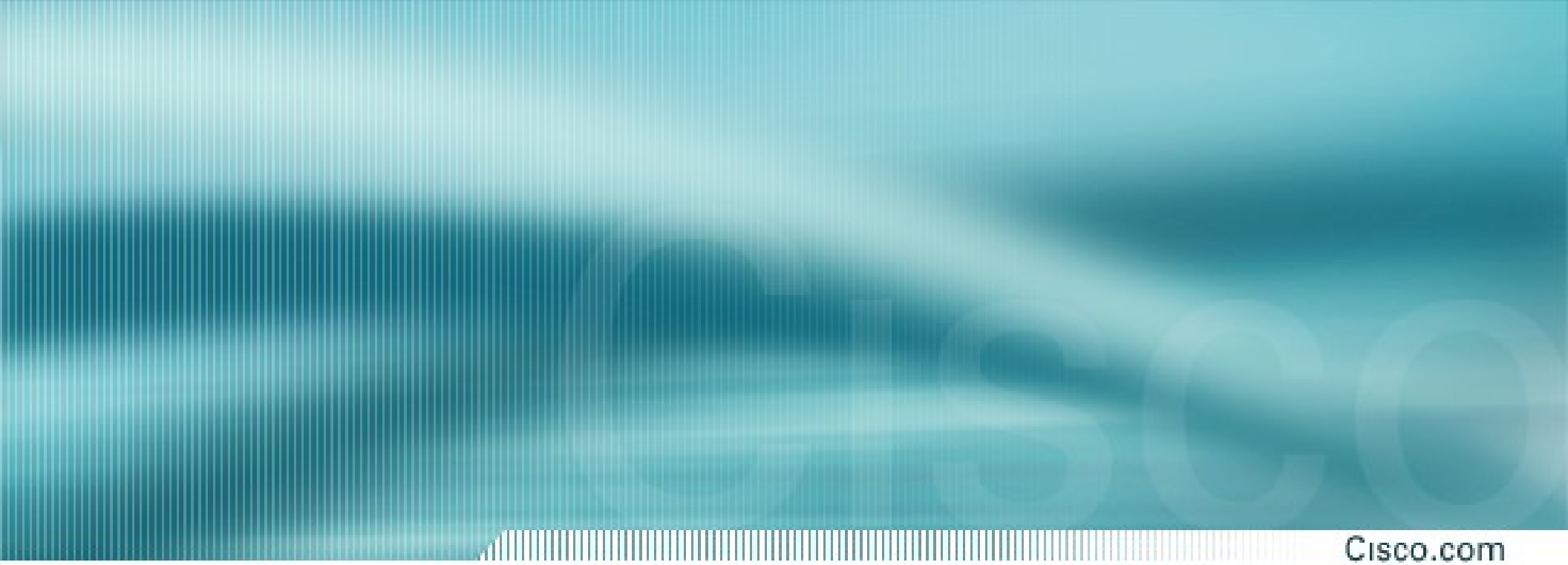


Switch Configuration

Slide Set 6

Switch

- **Switches are dedicated, specialized computers**
  - **Central processing unit (CPU)**
  - **Random access memory (RAM)**
  - **Operating system**
- **Switch ports for**
  - **Connecting hosts (for inter-host communication)**
  - **Management (console port for configuration)**

Switch LED Indicators

- If Mode is STAT (default mode)

off No link

Solid green Link operational

Flashing green Port sending/ receiving

Green/Amber Fault on link

Solid Amber Port disabled or Port blocked by STP

- If mode is UTL

Off Reduction by half total b/w

Green All Green – using50% bandwidth

- If mode is FDUP

Off Half-duplex mode

Green Full-duplex mode

- If mode is 100

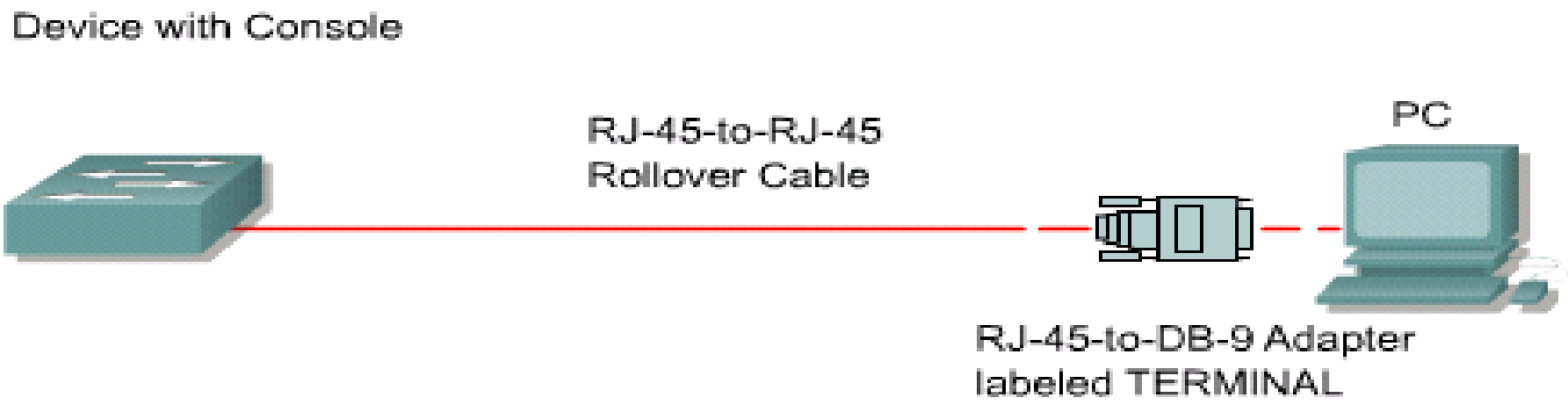
Off Operating at 10Mbps

Green Operating at 100Mps

Verifying Switch LEDs

- **POST**
  - **runs automatically**
  - **verify that the switch functions correctly**
- **The System LED indicates success/failure of POST**
  - **System LED off and switch is plugged in, POST running**
  - **System LED green, POST was successful**
  - **System LED amber, POST failed (fatal error)**
- **The Port Status LEDs changes during switch POST**
  - **Port Status LEDs amber (30 secs) switch discovers network topology and searches for loops**
  - **Port Status LEDs green, Link established between port and PC**
  - **Port Status LEDs off, nothing is plugged into the port**

To Configure a Switch



Set hyperterminal link with Com port Settings

- 9600bps
- 8 data bits
- No parity
- 1 stop bit
- Hardware flow control

Switch can be configured

- Manually or
- System Configuration Dialog

To Configure a Switch

- **By default**
  - **Data is in running configuration file**
  - **Hostname is** Switch
  - **No passwords set on the console or vty lines**
  - **Switch ports or interfaces are set to auto mode**
  - **No IP Address**
    - **Switch may be given an IP address for management purposes**
    - **This is configured on the virtual interface, VLAN 1**
  - **All switch ports are in VLAN 1**
    - **default management VLAN**
    - **No VLAN database or configuration file**
  - **IOS image is in flash directory by default**
  - **One broadcast domain**
  - **Spanning-Tree Protocol is enabled and allows the bridge to construct a loop-free topology across an extended LAN**

Obtaining help

- **Command Syntax help**

  ? List all possible commands

  Command ? List of sub commands for command

Switch Command Modes

- **User Executive Mode**
  - Default mode
  - Prompt >
  - Commands at this level
    - change terminal settings
    - perform basic tests
    - display system information
    - Show commands
  - >enable change into Privileged Exec Mode

- **Privileged Exec Mode**
  - Should be password protected
    - Case sensitive
    - Does not appear on screen
  - Prompt #
  - commands
    - All allowed in user exec mode
    - configure command to access other modes

Switch Configuration

- **Switch>enable**
- **Switch#delete flash:vlan.dat** *deletes vlan information*
- **Switch#erase startup-config** *erase configuration files*
- **Switch#reload** *reload switch*
- **Switch#config terminal** *enter configuration mode*
- **Switch(config)#hostname newName** *configure hostname*

Switch Configuration

- To configure a console password

  Switch(config)#line con 0

  Switch(config-line)#password <password>

  Switch(config-line)#login

- To configure a telnet password

  Switch(config)#line vty 0 4

  Switch(config-line)#password<password>

  Switch(config-line)#login

Switch Configuration

- To make switch accessible by Telnet and other TCP/IP applications set

  IP addresses and a default gateway

- By default, VLAN 1 is management VLAN
- Configuration needed

  To access, configure, and manage all internetworking devices

  Switch(config)#interface VLAN1

  Switch(config-if)#ip address <add> <sub-mask>

  Switch(config-if)#exit

  Switch(config)#ip default-gateway <next hop>

Switch Configuration

- Once a switch is configured with an IP address and gateway, it can be accessed through the web browser
- This allows you to verify configuration settings
- To do this HTTP service must be turned on

  Switch(config)#ip http server

  Enables a http server

  Switch(config)#ip http port 80

  Port 80 is the default port for http

Managing the MAC Address Table

- **MAC Address**
  - Dynamically learned
  - Held in CAM – MAC address table
  - Switches examines the source address
    - Record or tag mac address
  - MAC Address discarded after 300 seconds of no taging
- **To see the MAC Address table**
  - show mac-address–table
- **To remove all entries from MAC Address table**
  - Clear mac-address-table

Configuring Static MAC Address

- **Why assign a static mac address**
  - **MAC address will not be aged out automatically by the switch**
  - **A specific server or user workstation must be attached to the port and the MAC address is known**
  - **Security is enhanced**
- **Configuration**
  - **Switch(config)#mac-address-table static <mac>**
- **To remove a static mac address**
  - **Switch(config)#no mac-address-table static <mac>**

Configuring Port Security

- Access layer switch ports are a potential entry point to the network by unauthorized users.
- Port security limits the number of addresses that can be learned on an interface
- Set port security on a switch interface

  Can be limited to 1

  Switch(config)#interface fa0/2

  Switch(config-if)#port security max-mac-count <number>
- switch#show port security

What to Configure when Adding a New Switch

- Switch name
- IP Address form management purposes
- Default gateway
- Passwords for console, aux, vty
- Security
- Access switch ports

Moving a MAC Address

- Add the address to a new port
- Configure port security on new switch
- Remove old port configurations

- Administrator should

  document and maintain the operational configuration files for networking devices (back up on a server or disk)

  Backup IOS to a local server

Password Recovery

- **Enter the setup program**
  - **Deleting the switch configuration file**
  - **Rebooting the switch**