Router Configuration

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Cisco Modes Devices

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Setup mode

- **Permit the administrator to install a minimal configuration for a router (appeared if no saved configuration , Ctrl-C to skip)**

```
--- System Configuration Dialog ---

Would you like to enter the initial configuration dialog? [yes/no]:
y

At any point you may enter a question mark '?' for help.
Use ctrl-c to abort configuration dialog at any prompt.
Default settings are in square brackets '[]'.

Basic management setup configures only enough connectivity
for management of the system, extended setup will ask you
to configure each interface on the system
Would you like to enter basic management setup? [yes/no]: no
First, would you like to see the current interface summary? [yes]:
no
Configuring global parameters:
..
..text omitted ..
..
[0] Go to the IOS command prompt without saving this config.
[1] Return back to the setup without saving this config.
[2] Save this configuration to nvram and exit.

Enter your selection [2]:
Building configuration...
[OK]
Use the enabled mode 'configure' command to modify this
configuration.
```

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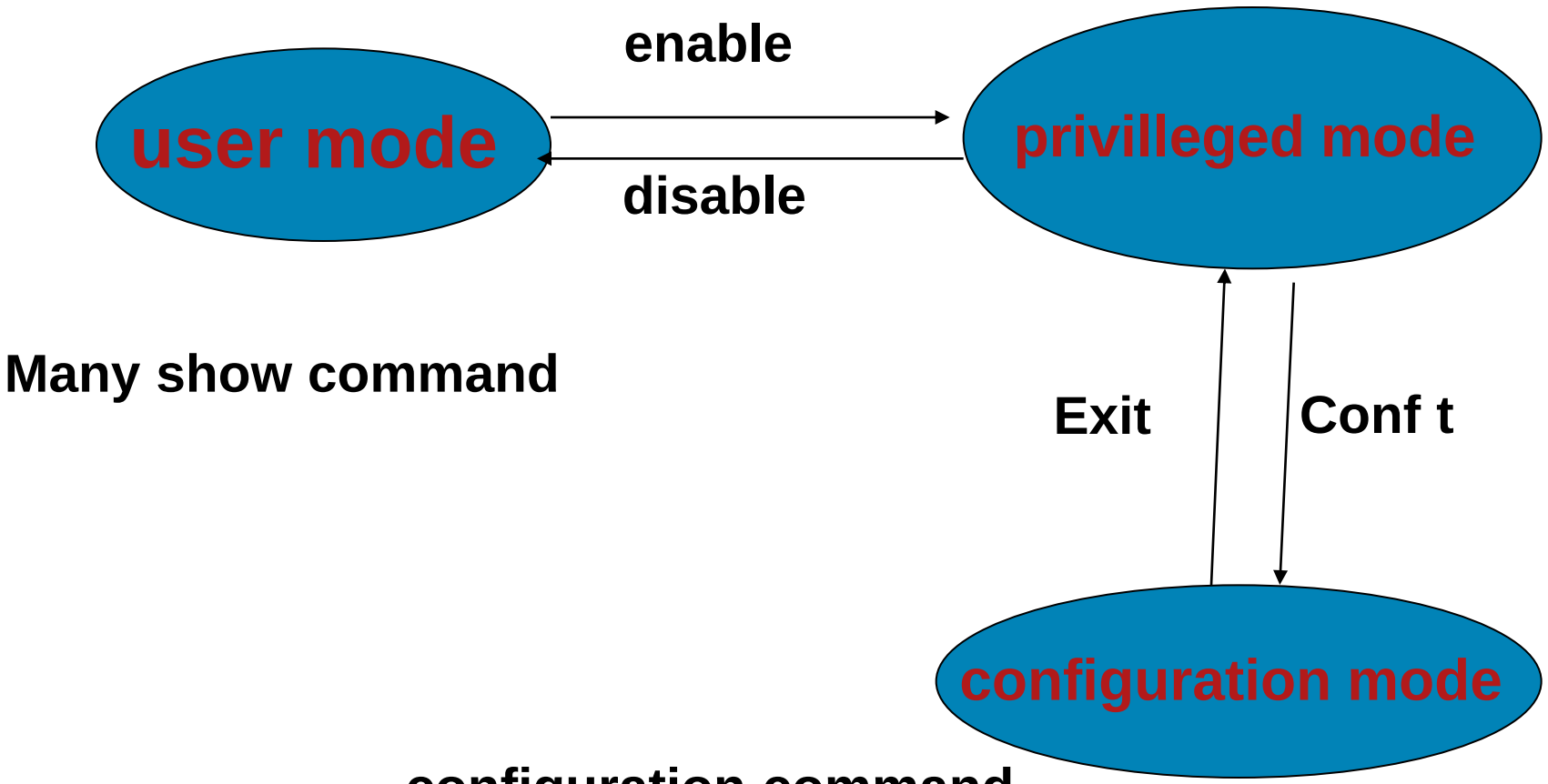
Setup Mode

- The router will enter setup mode when:
  - The contents of NVRAM have been erased with the "erase start" command
  - When the router is "out of the box" and has not been initially configured
  - After deleting the backup configuration and reloading the router
- You can make the router enter setup mode by entering:

  Router# setup

Cisco IOS Software

Show- Copy-erase-debug

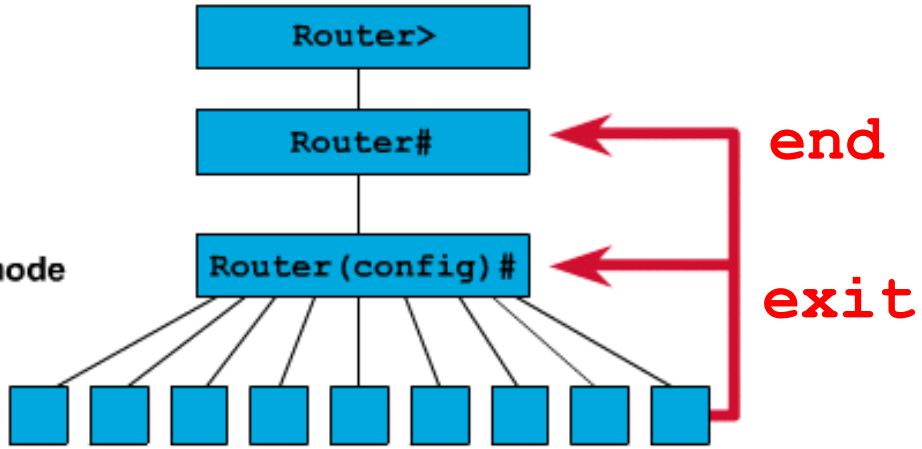


ROUTER Modes

- User Exec mode
- Privileged Exec mode
- Global configuration mode

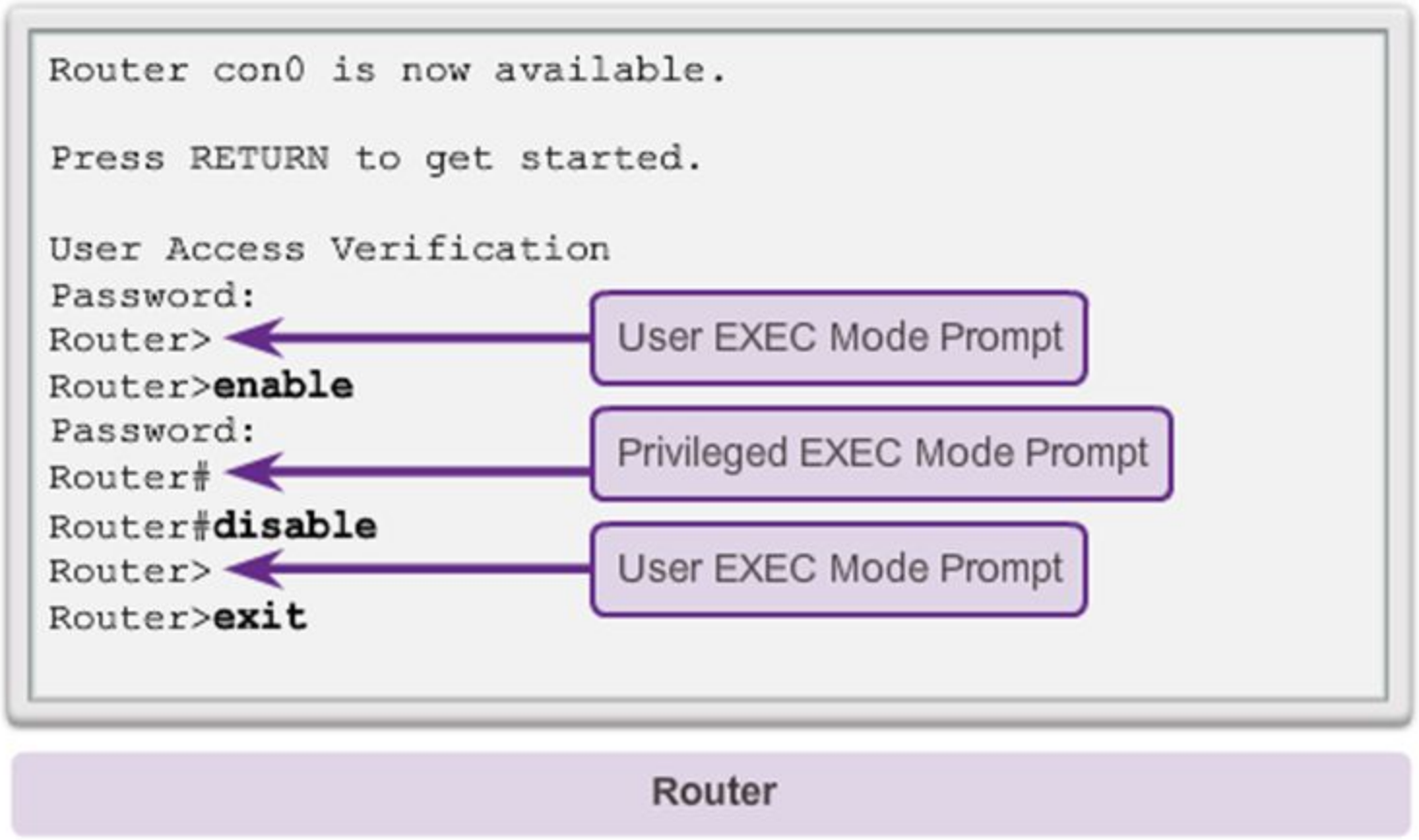
Sub-Configuration Mode

- Specific Configuration modes



Configuration Mode	Prompt
Interface	`Router(config-if)#`
Subinterface	`Router(config-subif)#`
Controller	`Router(config-controller)#`
Map-list	`Router(config-map-list)#`
Map-class	`Router(config-map-class)#`
Line	`Router(config-line)#`
Router	`Router(config-router)#`
IPX-router	`Router(config-ipx-router)#`
Route-map	`Router(config-route-map)#`

Navigating Between IOS Modes



User EXEC Commands – Router >

ping
show (limited)
enable
etc...

Privileged EXEC Commands – Router #

all User EXEC commands
debug commands
reload
configure
etc...

Global Configuration Commands – Router (config)#

hostname
enable secret
ip route

interface
- ethernet
- serial
- bri
- etc...

Interface Commands – Router (config-if)#

ip address
ipx address
encapsulation
shutdown / no shutdown
etc...

router
- rip
- ospf
- igrp
- etc...

Routing Engine Commands – Router (config-router)#

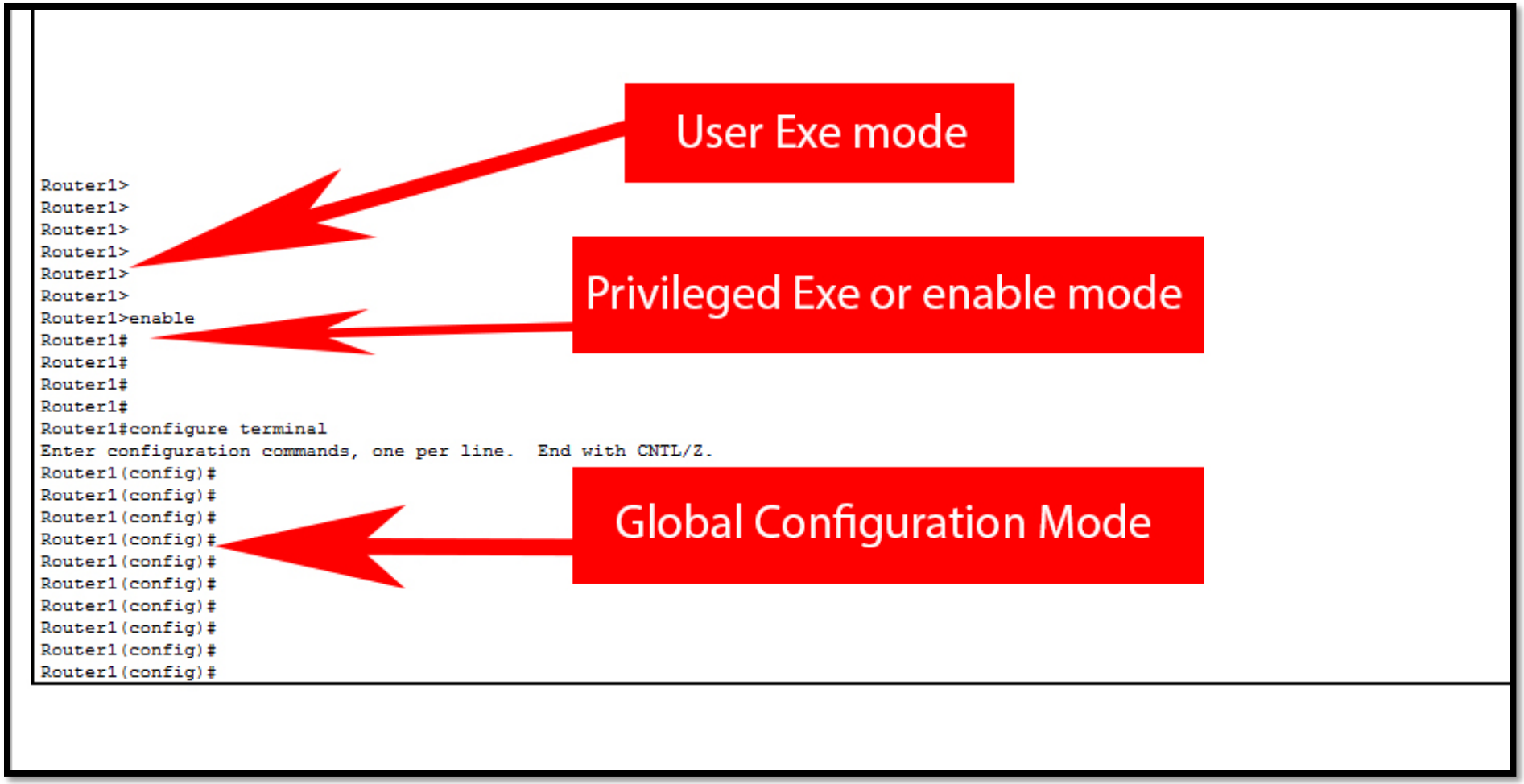
network
version
auto-summary
etc.

line
- vty
- console
- etc...

Line Commands – Router (config-line)#

password
login
modem commands
etc...

Cisco Router Modes



User Mode

- The user mode allows only a limited number of basic monitoring commands.
- This is often referred to as a view only mode.
- The user mode level does not allow any commands that might change the configuration of the router.
- The user mode can be identified by the > prompt.

Privileged Mode

- The privileged EXEC mode provides access to all router commands.
- This mode can be configured to require a password.
- Configuration and management commands require that the network administrator be at the privileged EXEC level.
- Global configuration mode and all other more specific configuration modes can only be reached from the privileged EXEC mode.
- The privileged EXEC mode can be identified by the # prompt.

Using CLI help

- Identify the types of help and feedback available while using IOS and use these features to get help, take

Context Sensitive Help

Example of a sequence of commands using the CLI context sensitive help

```
Cisco#cl?
clear  clock
Cisco#clock ?
  set  Set the time and date
Cisco#clock set
% Incomplete command.
Cisco#clock set ?
  hh:mm:ss  Current Time
Cisco#clock set 19:50:00
% Incomplete command.
```

```
Cisco#clock set 19:50:00 ?
  <1-31>  Day of the month
  MONTH   Month of the year
Cisco#clock set 19:50:00 25 6
                            ^
Invalid input detected at '^' marker.
Cisco#clock set 19:50:00 25 June
% Incomplete command.
Cisco#clock set 19:50:00 25 June ?
  <1993-2035>  Year
Cisco#clock set 19:50:00 25 June 2007
Cisco#
```

Command explanations
Incomplete Command messages
Invalid input messages
Variable formats

Abbreviated commands (Router and Switch)

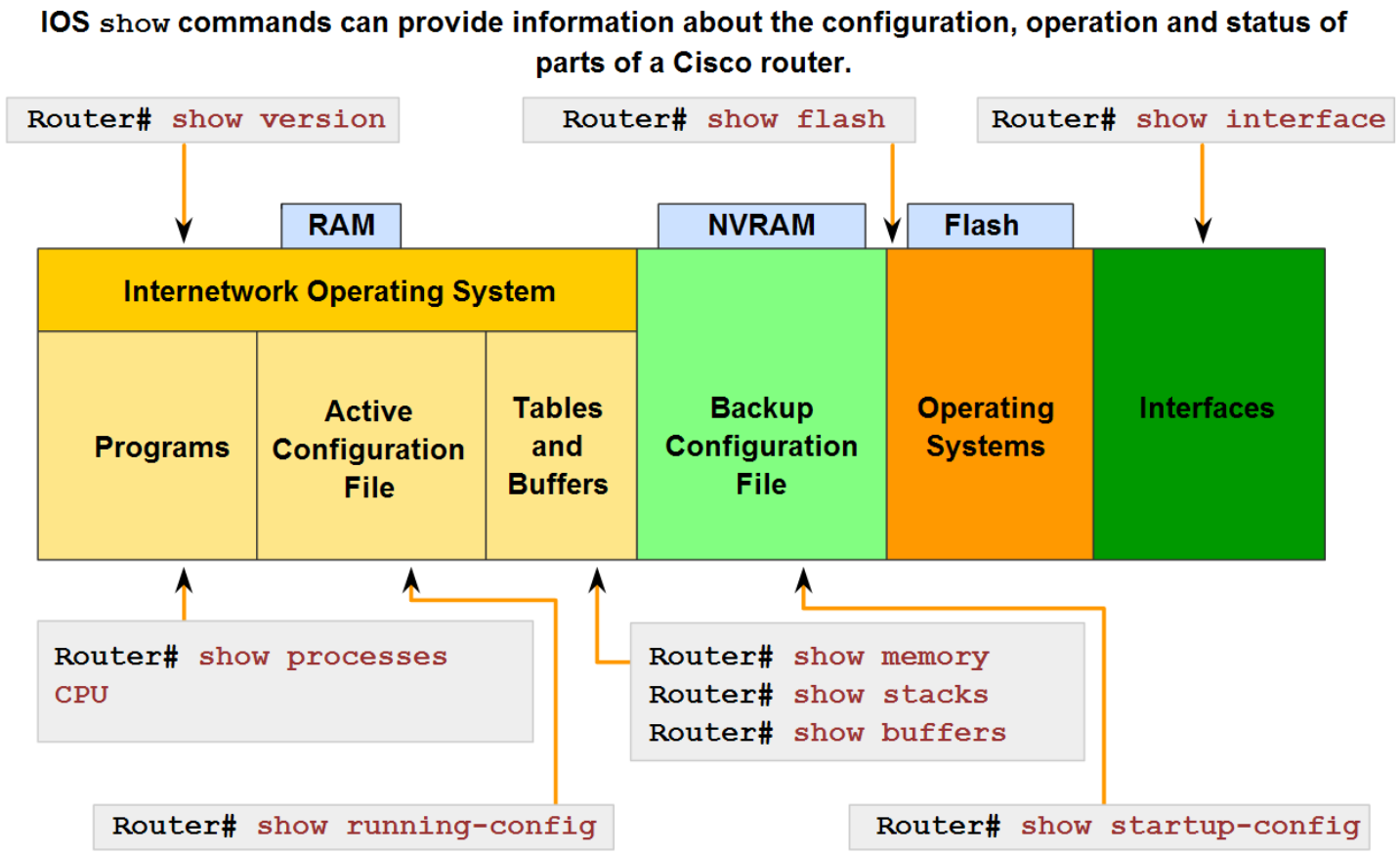
```
Router# sh inter
```

Same as

```
Router# show interfaces
```

IOS "examination" commands

- Identify the purpose of the show command and several of its variations



Configuring Interfaces

- Identify the role of a router in a network.

Configuring Router Interfaces

All interfaces are accessed by issuing the `interface` command at the global configuration prompt.

In the following commands, the *`type`* argument includes serial, ethernet, fastethernet, and others:

```
Router(config)#interface type port
Router(config)#interface type slot/port
Router(config)#interface type slot/subslot/port
```

The following command is used to administratively turn off the interface:

```
Router(config-if)#shutdown
```

The following command is used to turn on an interface that has been shutdown:

```
Router(config-if)#no shutdown
```

The following command is used to quit the current interface configuration mode:

```
Router(config-if)#exit
```

When the configuration is complete, the interface is enabled and interface configuration mode is exited.

Viewing, Saving and Erasing the Configurations

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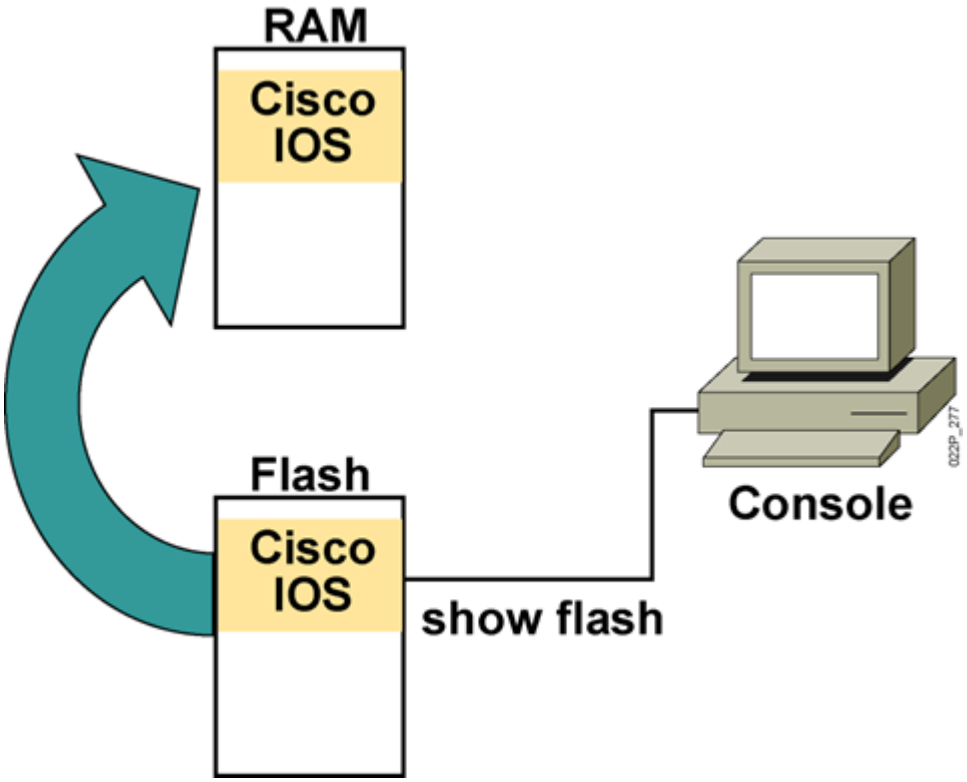
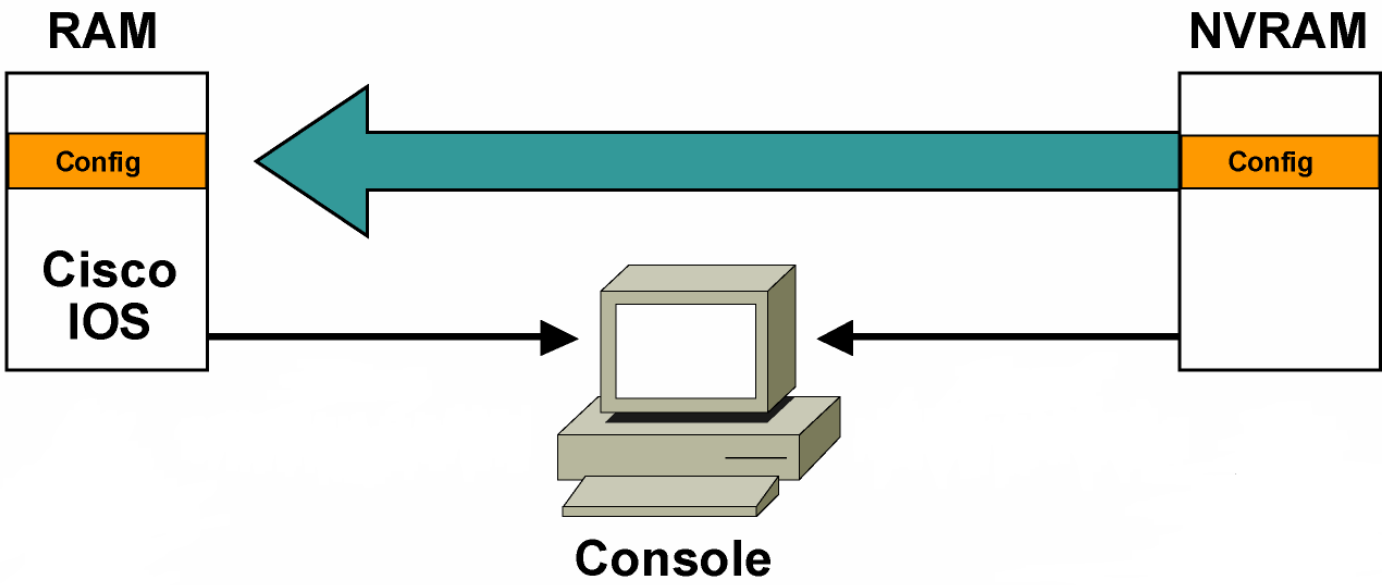
Loading the Cisco IOS Image from Flash Memory



- **The flash memory file is decompressed into RAM.**

Loading the Configuration



- **Load and execute the configuration from NVRAM.**

Router#show running-config

```
Current configuration : 542 bytes
!
version 12.2
!
interface FastEthernet0/0
 no ip address
 shutdown
 duplex auto
 speed auto
!
interface Serial0/0
 no ip address
 shutdown
!
line con 0
line aux 0
line vty 0 4
!
end
Router#
```

running-config

- The running-config file is the configuration in RAM memory.
- All changes are made to the running-config file.
- This is the configuration that the router is currently using.
- The running-config is lost when the router loses power or reloads.
- Privilege mode command.

```
Router# show startup-config

startup-config is not present
Router#
```

startup-config

- The startup-config file is the saved configuration in NVRAM.
- If there is a startup-config file in NVRAM when the router boots up, this file will be copied into running-config.
- The running-config is what the router will use.
- Privilege mode command.

Copy running-config to startup-config

```
Router# copy running-config startup-config
Destination filename [startup- config]?  <Press Enter>
Building configuration...
[OK]
Router#show startup- config
Current configuration : 542 bytes
!
version 12.2
!
interface FastEthernet0/0
<text omitted>
```

Erase startup-config

```
Router#erase startup-config

Erasing the nvram filesystem will remove all files!
  Continue? [confirm]  <Press Enter>

[OK]

Erase of nvram: complete

Router#
```

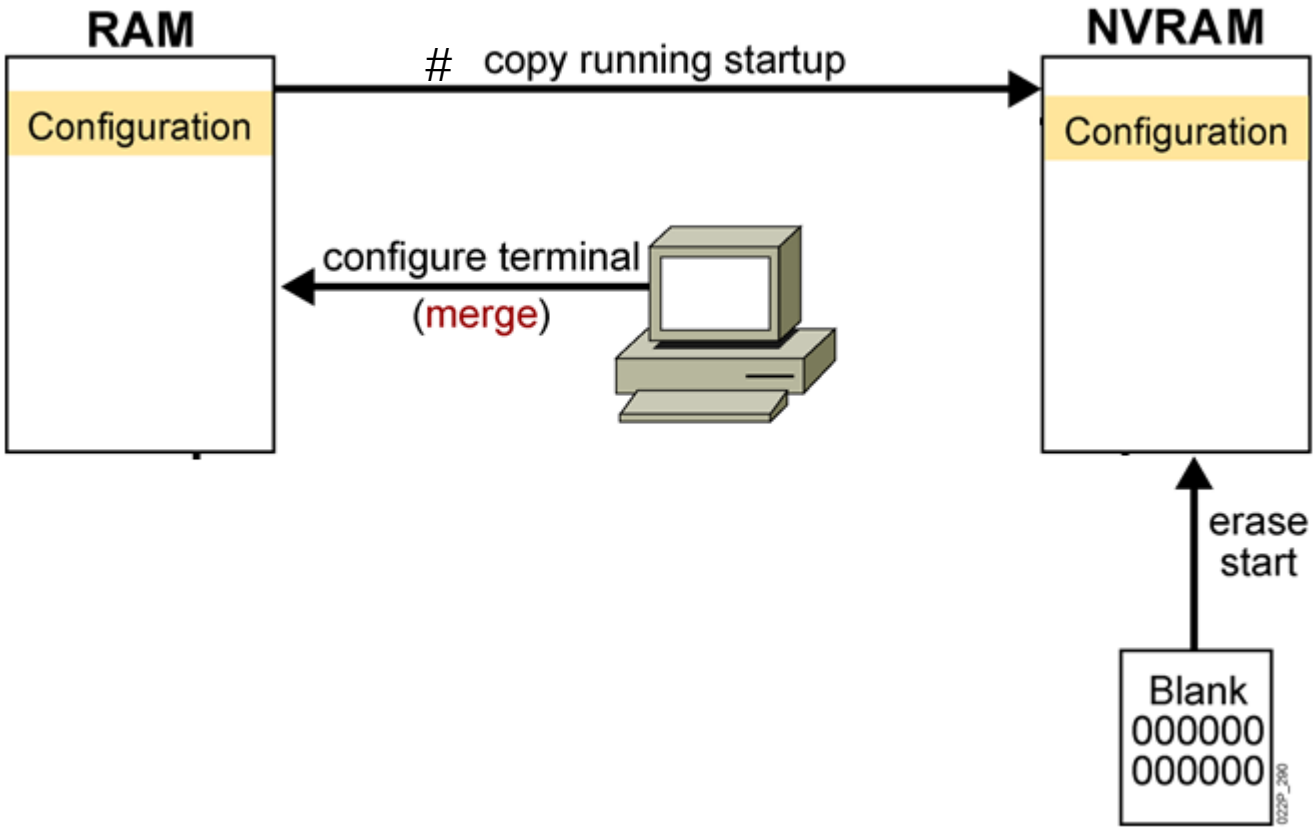
- When you are done with the routers in the lab, please be sure to erase the startup-config.
- If you are starting a lab, and you do not get the message:

```
Would you like to enter the initial configuration dialog? [yes/no]:
```

- You will need to erase the startup-config and reboot.
- Privilege mode command.

Cisco IOS copy Command

To save configuration file



Return the Device to Its Original Configuration

- Router# reload
- System configuration has been modified. Save? [yes/no]: n
- Proceed with reload? [confirm]
- To erase the startup configuration file use erase NVRAM:startup-config or erase startup-config at the privileged EXEC mode prompt:
- Router# erase startup-config

Interpreting the Interface Status

```
Router#show interfaces serial 0/1
Serial0/1 is up, line protocol is up
```

Interface is working properly

Layer 1 status

Layer 2 status

Other interface status :

- Serial0/1 is administratively down , line protocol is down

  interface is shut down

- Serial0/1 is down , line protocol is down

  interface or cable H/W failure (no keep-alives)

- Serial0/1 is up , line protocol is down

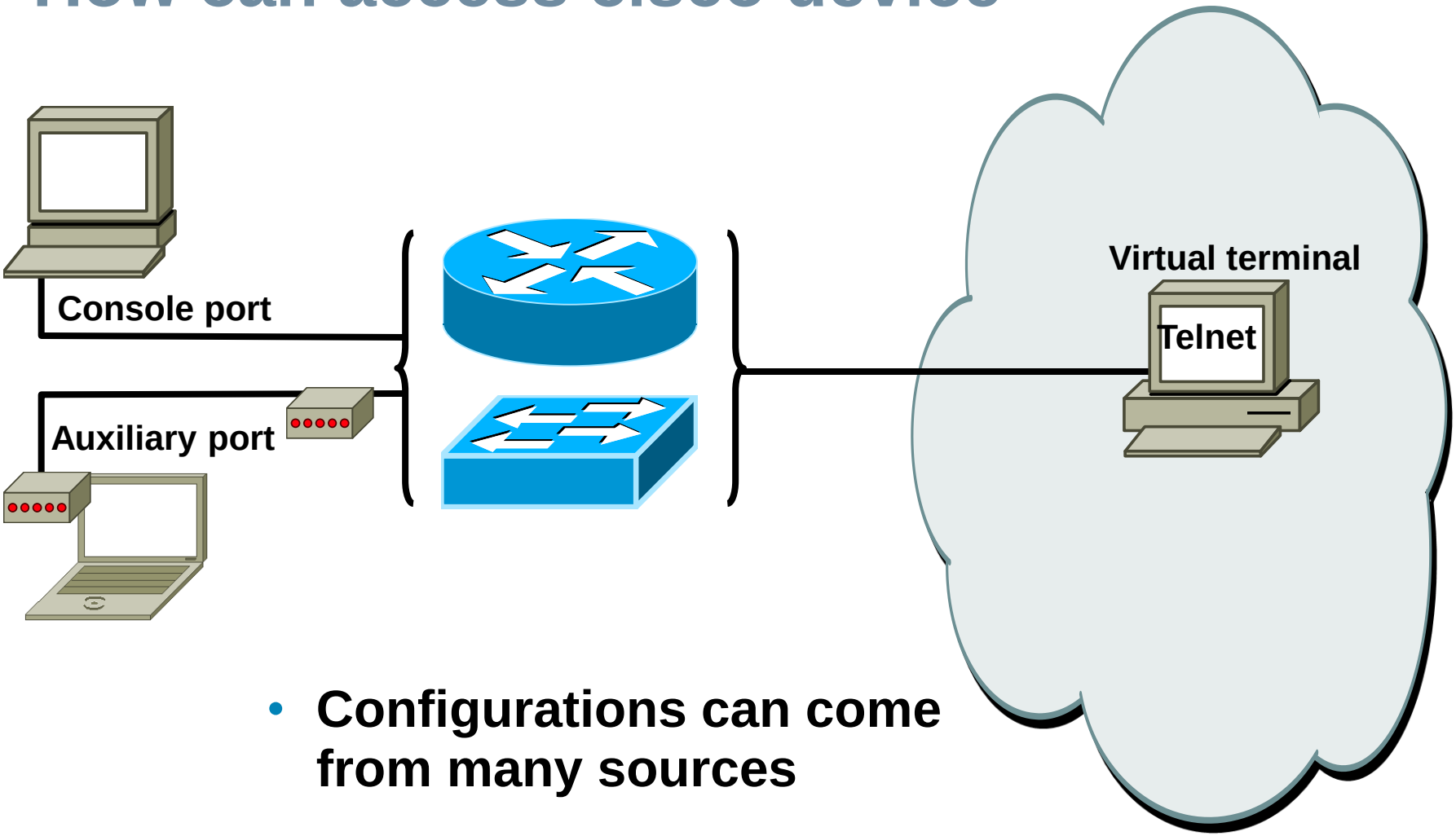
  different encapsulation type (PPP , HDLC , FR) or no clock rate on the DCE device.

show ip interface brief

- To display the usability status of interfaces configured for various IP addresses, use the show ip interface brief command in privileged mode.
- Router # show ip interface brief

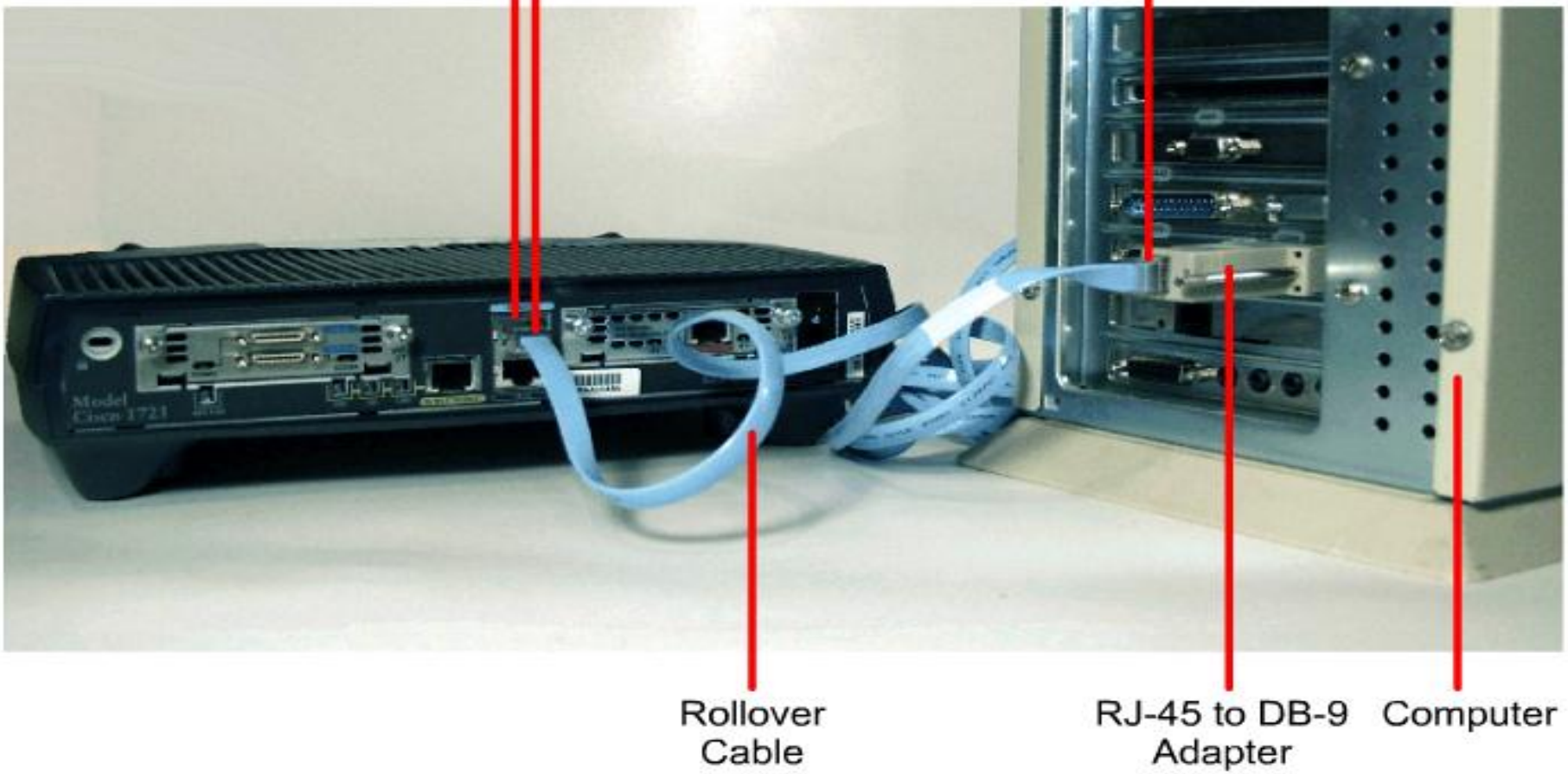
Interface	Status (Layer 1)	Protocol (Layer 2)
FastEthernet0	administratively down	down
Serial 0	down	down
Serial 1	up	down
Serial 2	up	up

How can access cisco device



- **Configurations can come from many sources**

Management port – Console Port connection



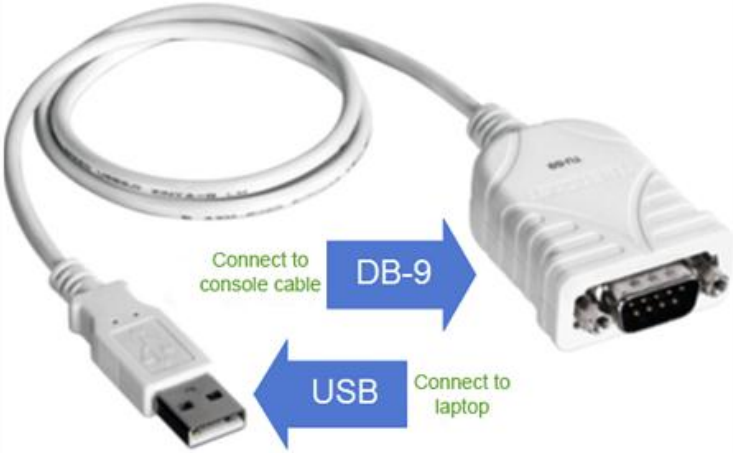
Connect Laptop to Router Console Port

Console Cables

You must have one or a combination of these cables to complete this task:

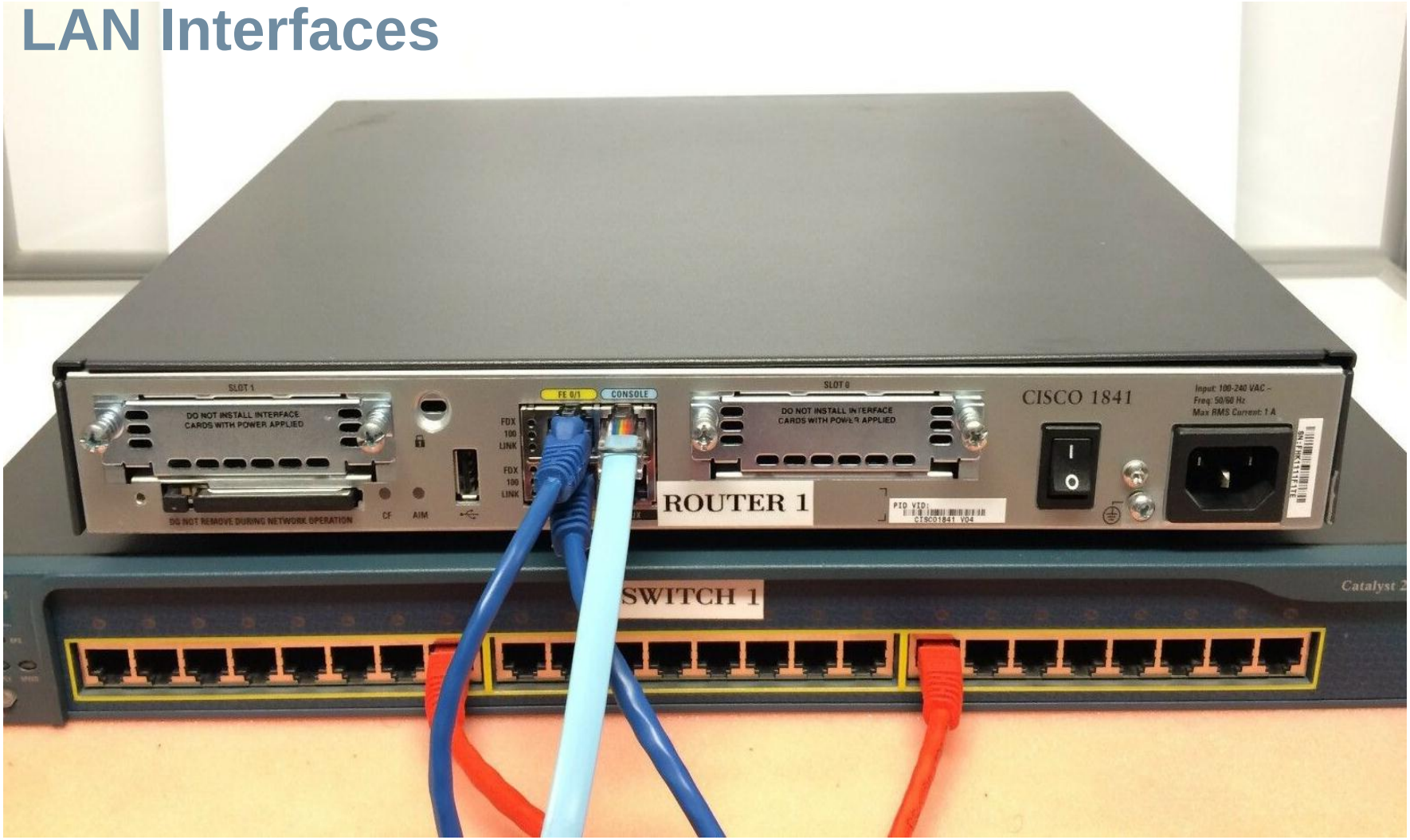
- Serial DB-9/Ethernet RJ-45 console cable

- USB to serial DB-9 adapter only if your laptop does not have a serial port



- RJ-45 console cable to USB if your laptop does not have a serial port

LAN Interfaces

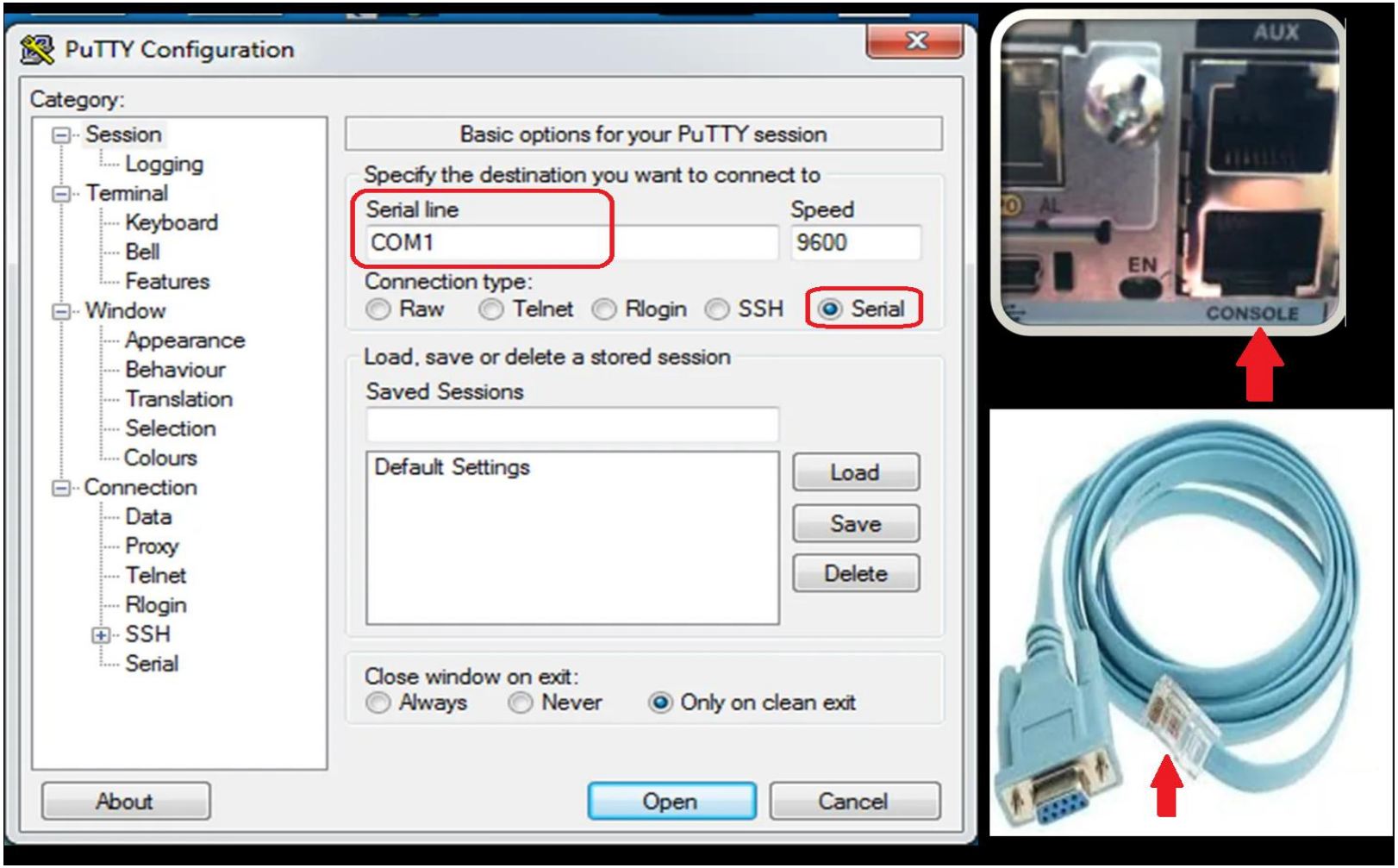


- **Ethernet and Fast Ethernet interfaces.**
- **Typically an RJ-45 jack (UTP).**

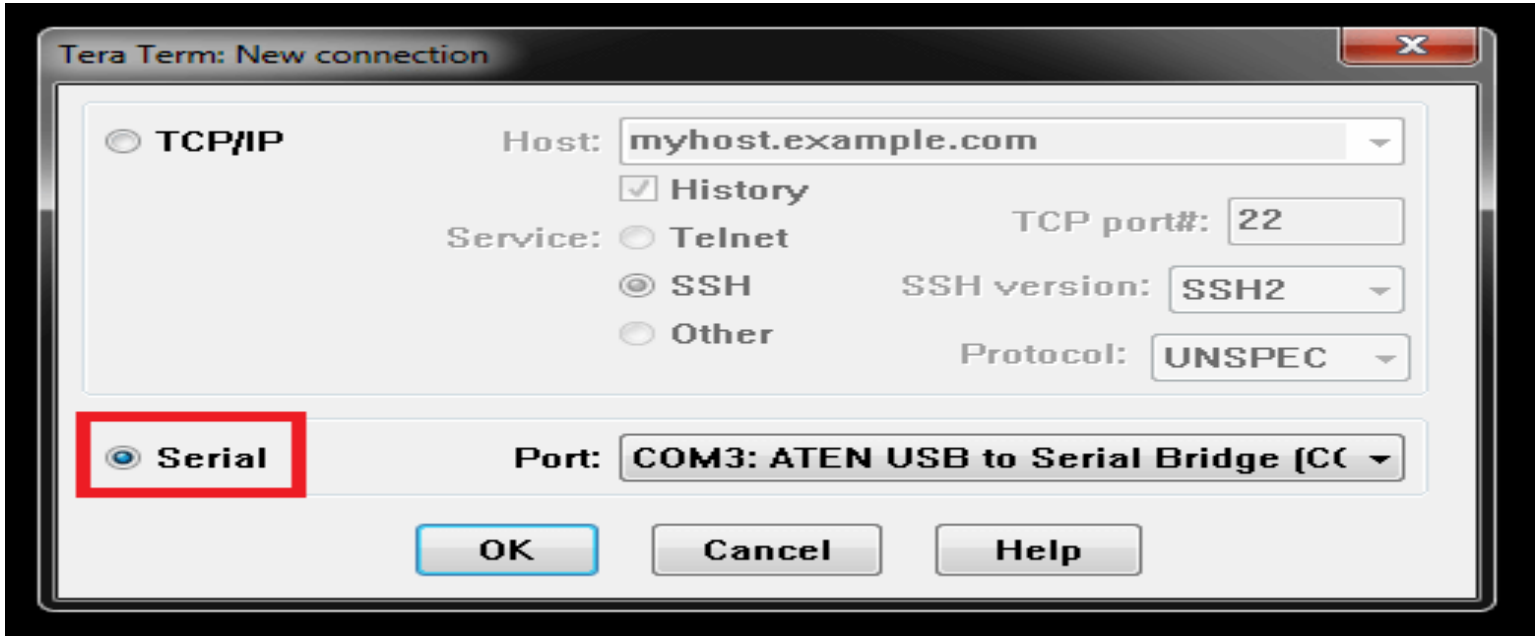
  Router to switch: straight-through cable.

  Router to router via Ethernet interfaces, or PC's NIC to router's Ethernet interface: crossover cable.

Putty



Tera Term



- The terminal software is also required for accessing the router and switches. The Tera Term , Putty, and Hyper Terminal are usually used to access the router and switches on a console port. Most of the Peoples use Putty software for console access. The figure below shows the terminal window of putty.