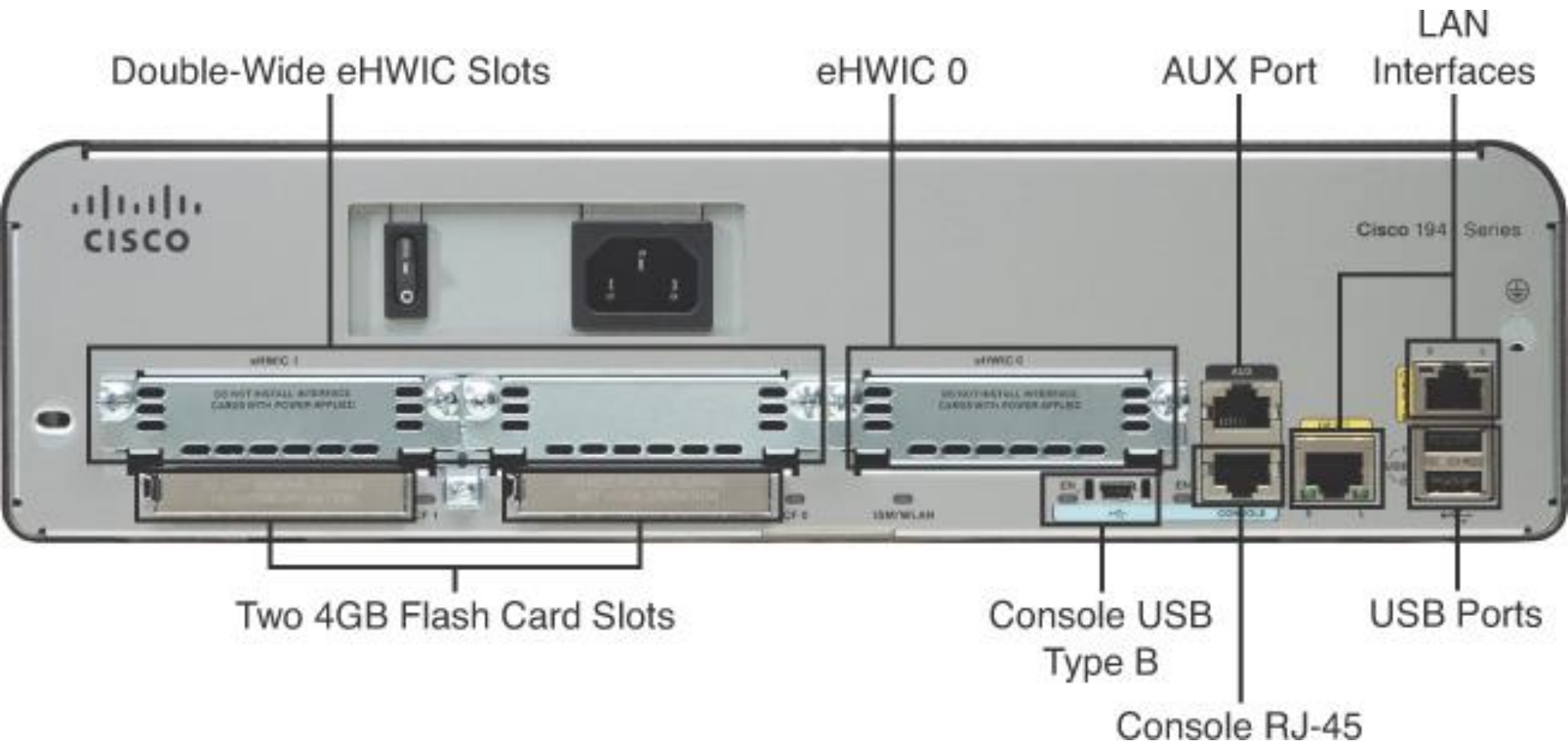
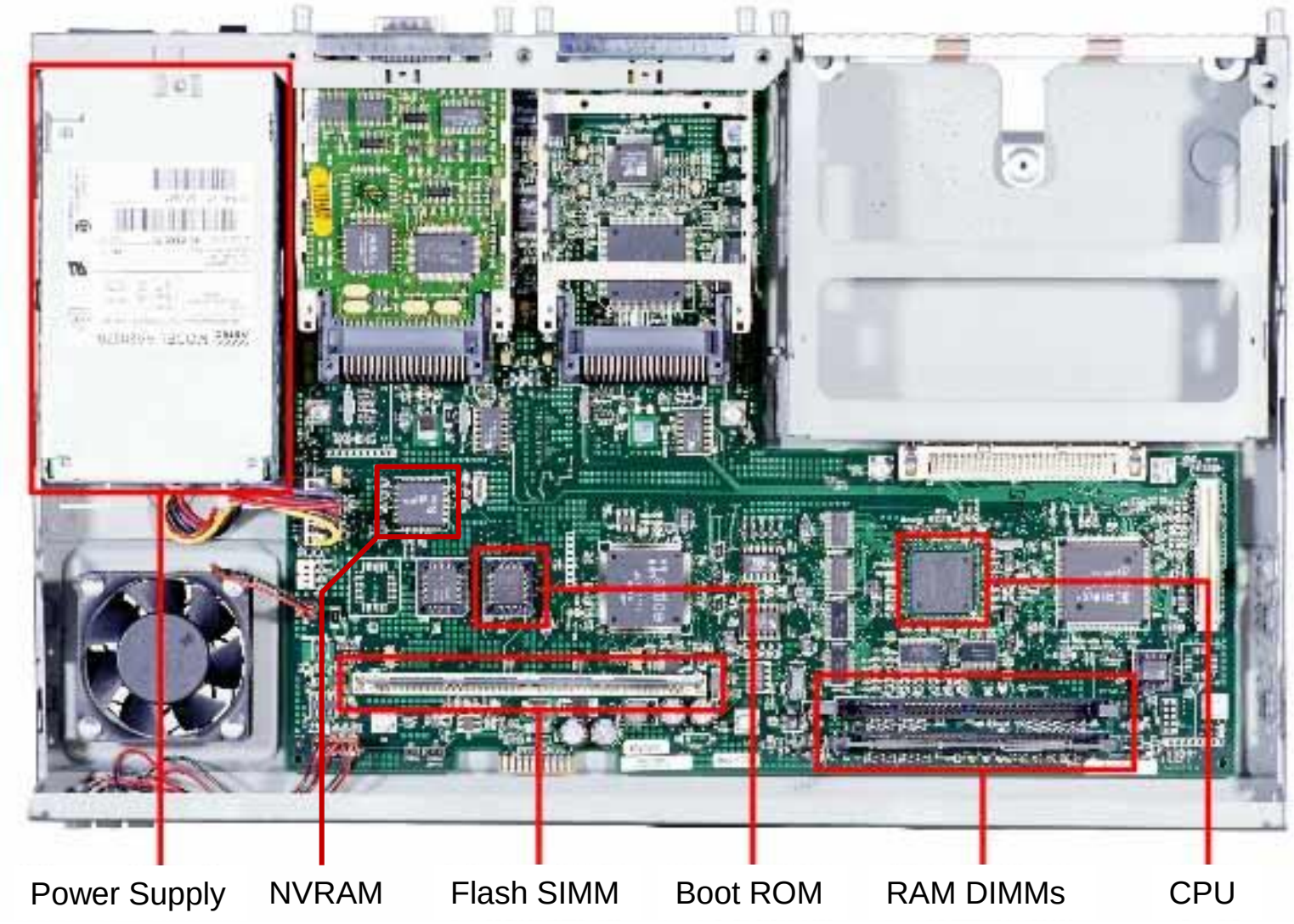
Basic config Router

Router Example

Router Example (cont.)

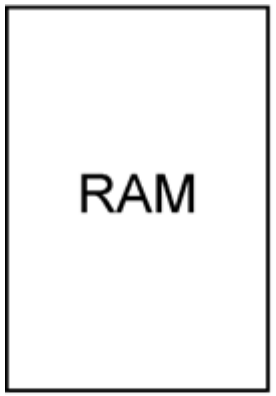


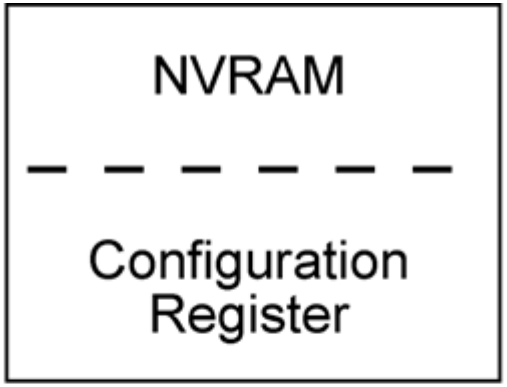
Router Internal Components



Router Internal Components (cont.)

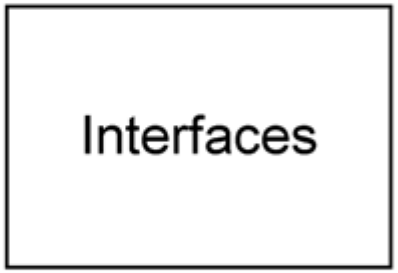
(**R**andom **A**ccess **M**emory)
Stores routing table & running configuration
RAM contents lost when power is off





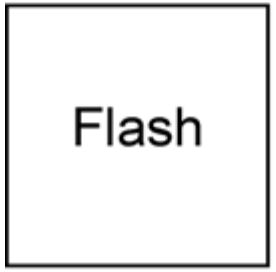
(**N**on-**v**olatile **RAM**)
Stores startup configuration
The NVRAM is not erased when the router is reloaded or even switched off

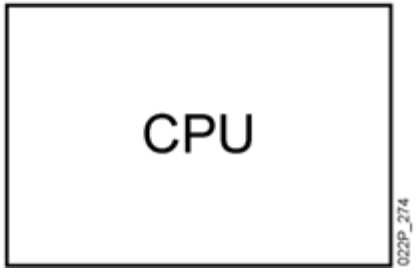
(**R**ead **O**nly **M**emory)
Holds diagnostic software used when router is power up & stores the bootstrap program



Physical Interfaces that are used to connect network

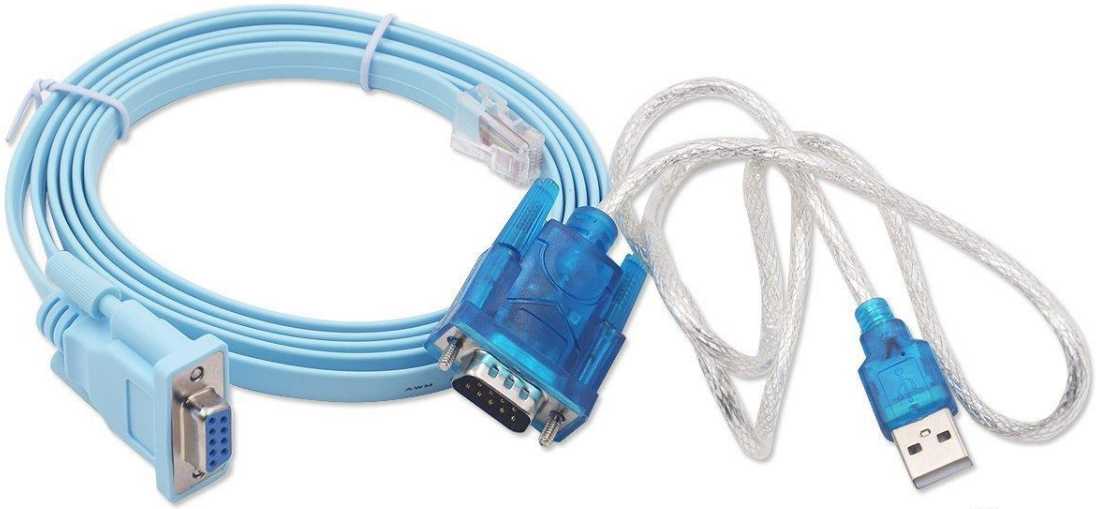
Contains the operating system (Cisco IOS)

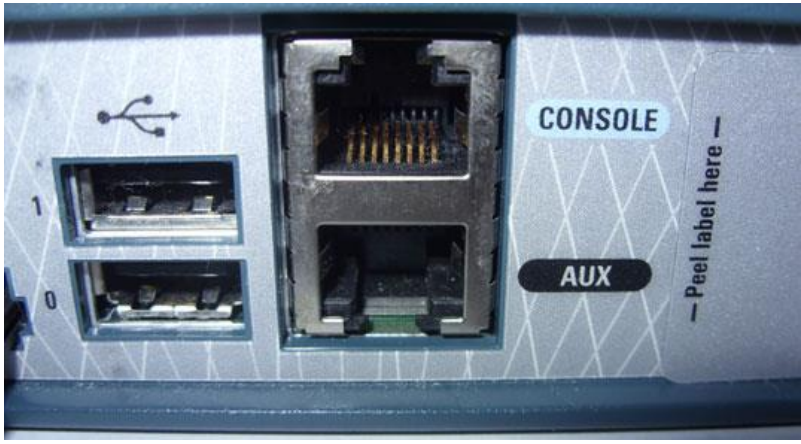




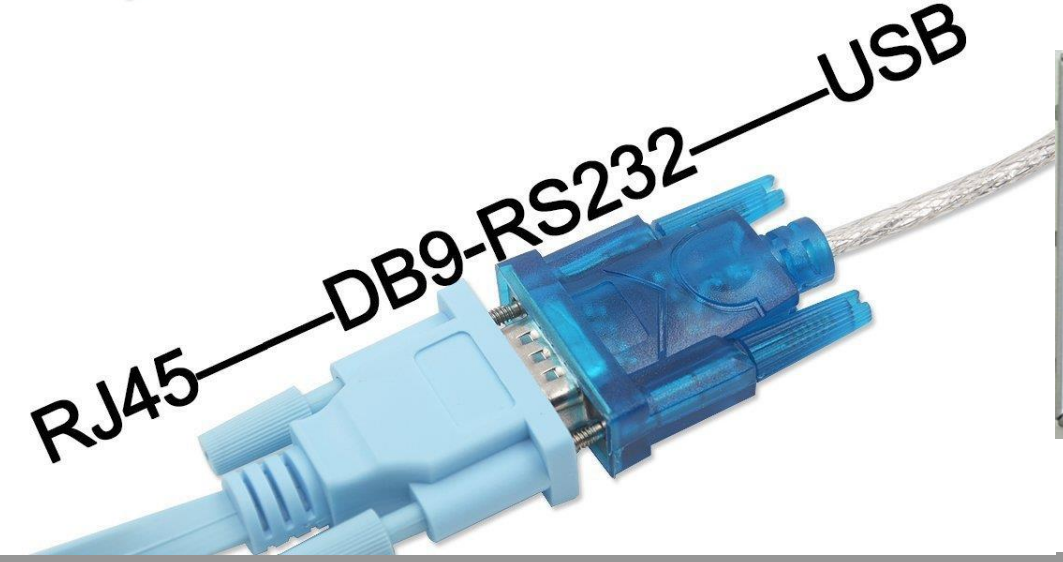
Executes operating system instructions

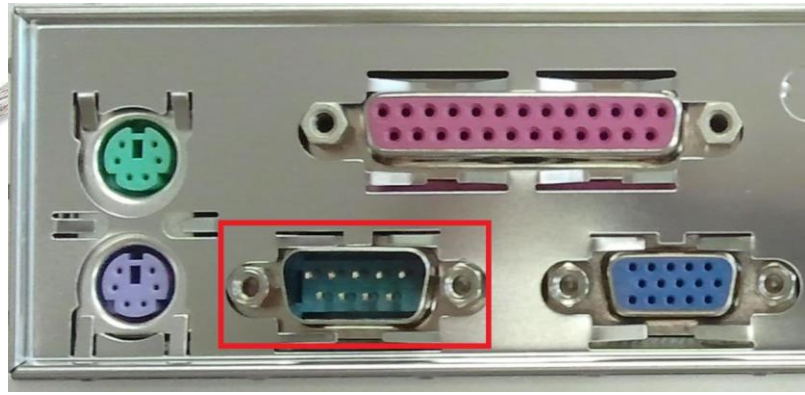
Connect Console Cable





Router

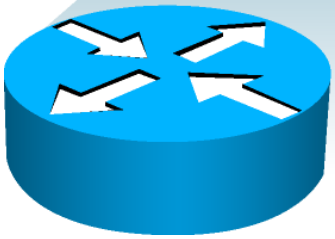




PC

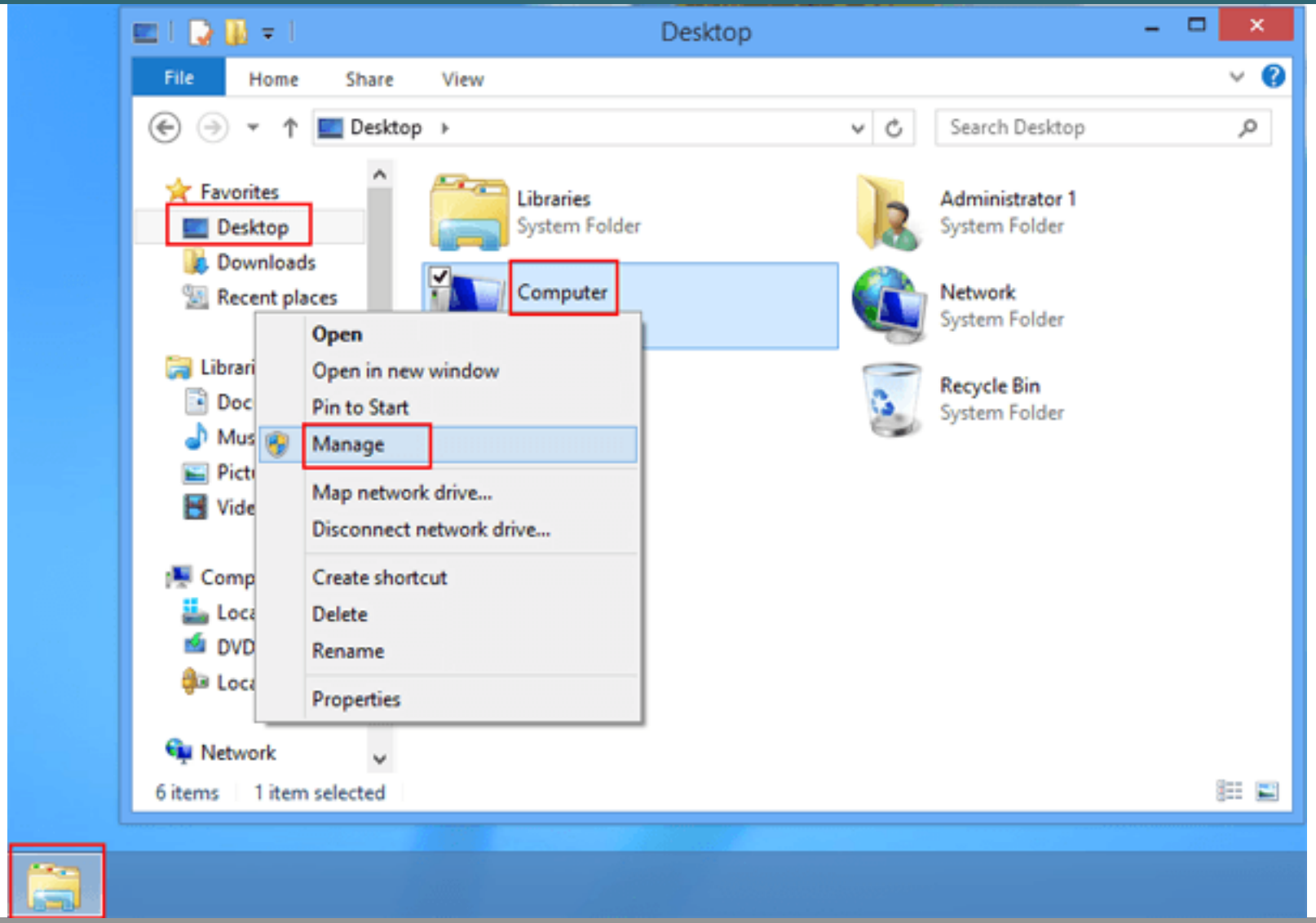
Initial Startup of the Cisco Router

- System startup routines initiate router software
- Router falls back to startup alternatives if needed

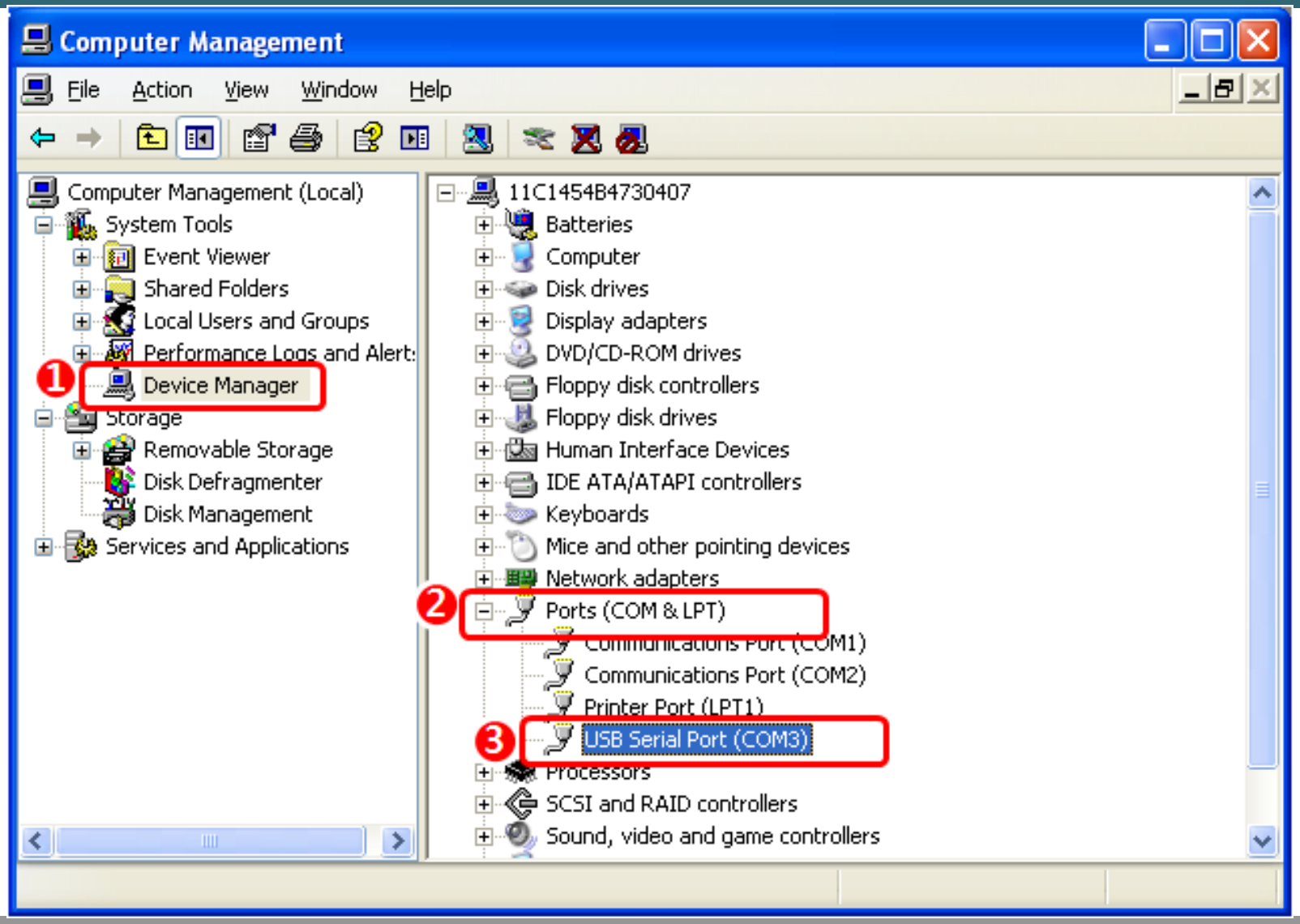


1. Before you start the router, verify the power, cabling, and console connection.
2. Push the power switch to “on.”
3. Observe the boot sequence:
   - Cisco IOS Software output text appears on the console.

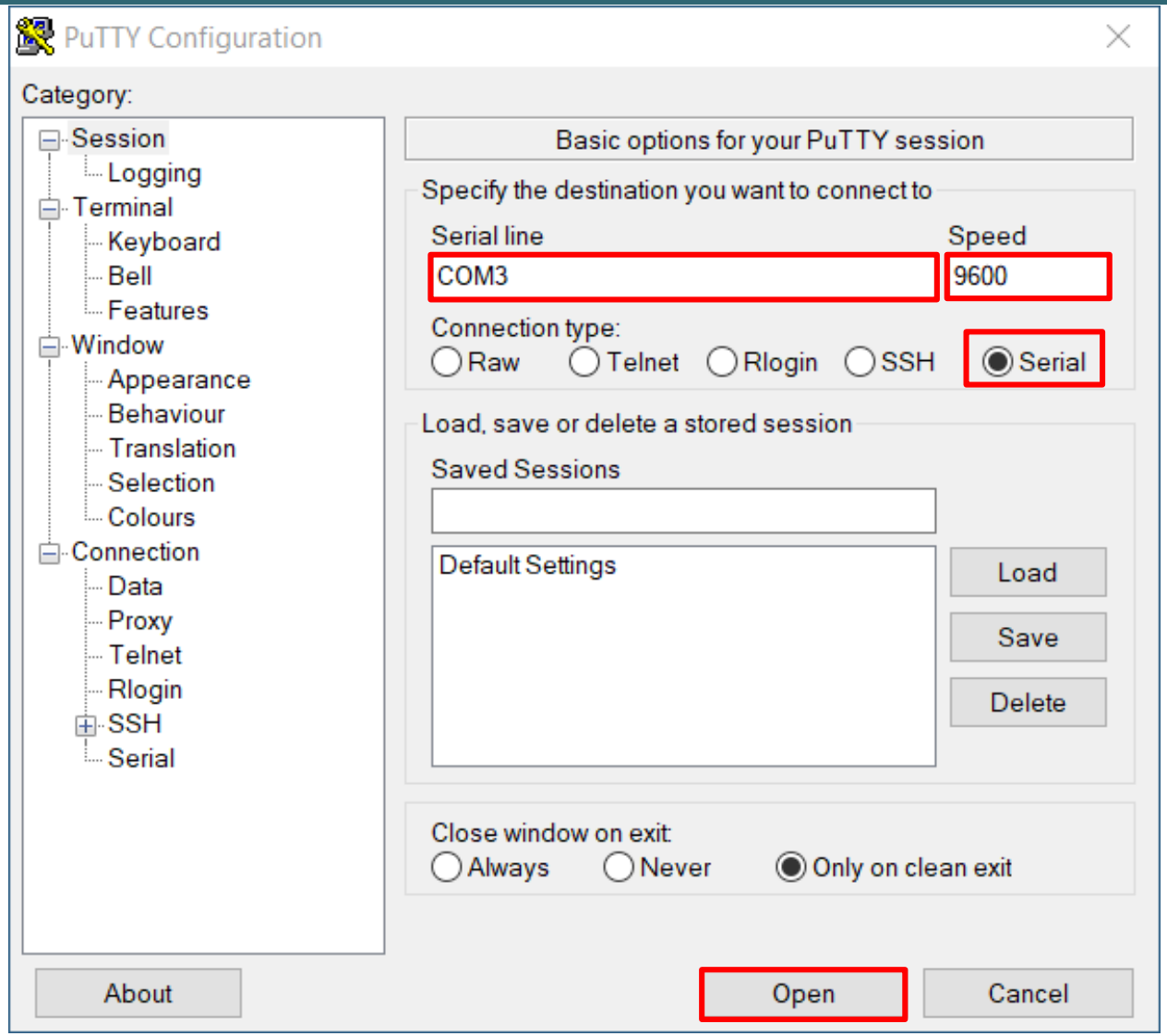
Verify COM port



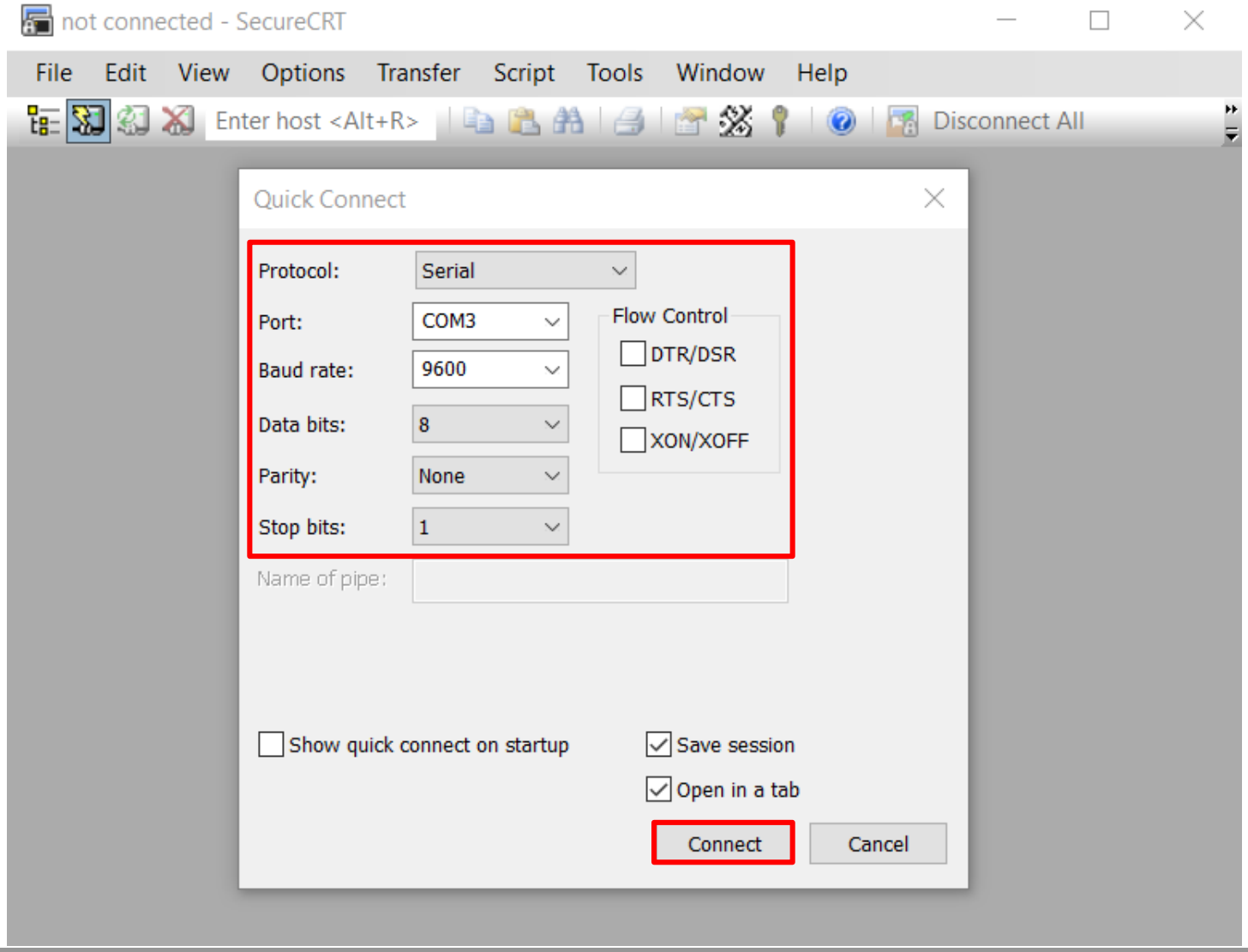
Verify COM port (cont.)



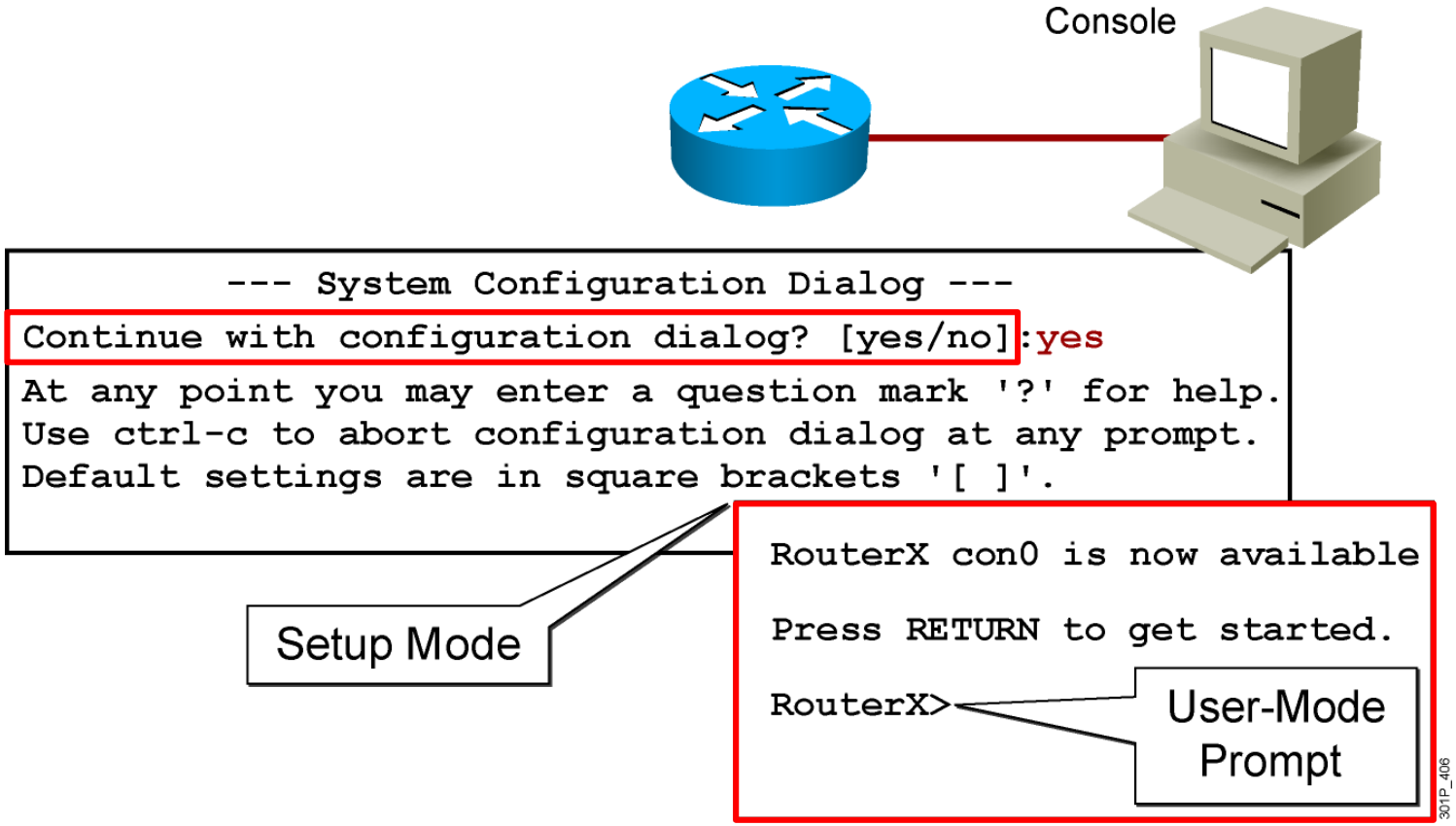
PuTTY Example



SecureCRT Example



Bootup Output from the Router



Unconfigured vs. Configured Router

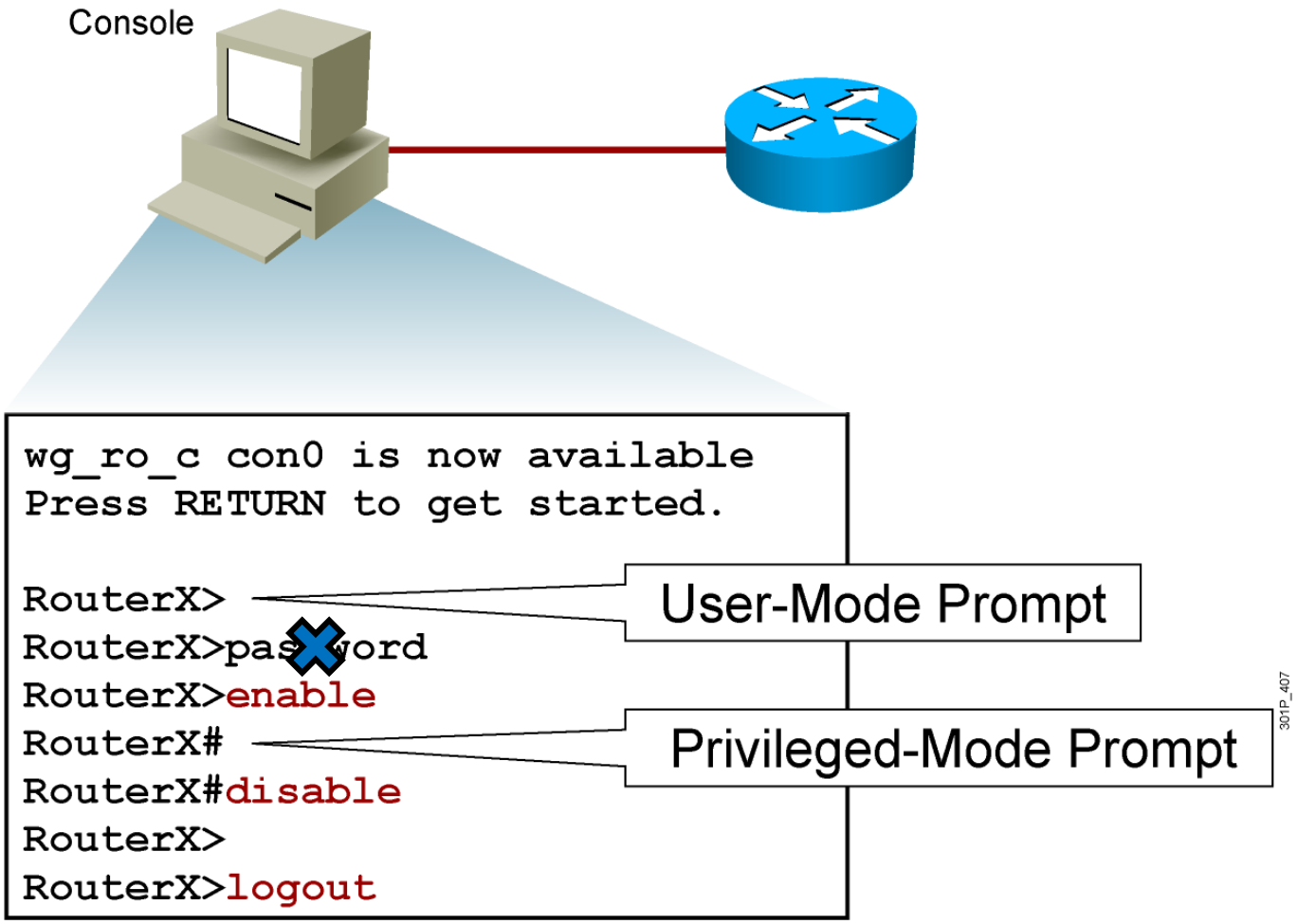
Setup Mode

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

Continue with configuration dialog? [yes/no]:

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]: yes
Configuring global parameters:

  Enter host name [Router]: Router_A

  The enable secret is a password used to protect access to
  privileged EXEC and configuration modes. This password, after
  entered, becomes encrypted in the configuration.
  Enter enable secret: cisco
```

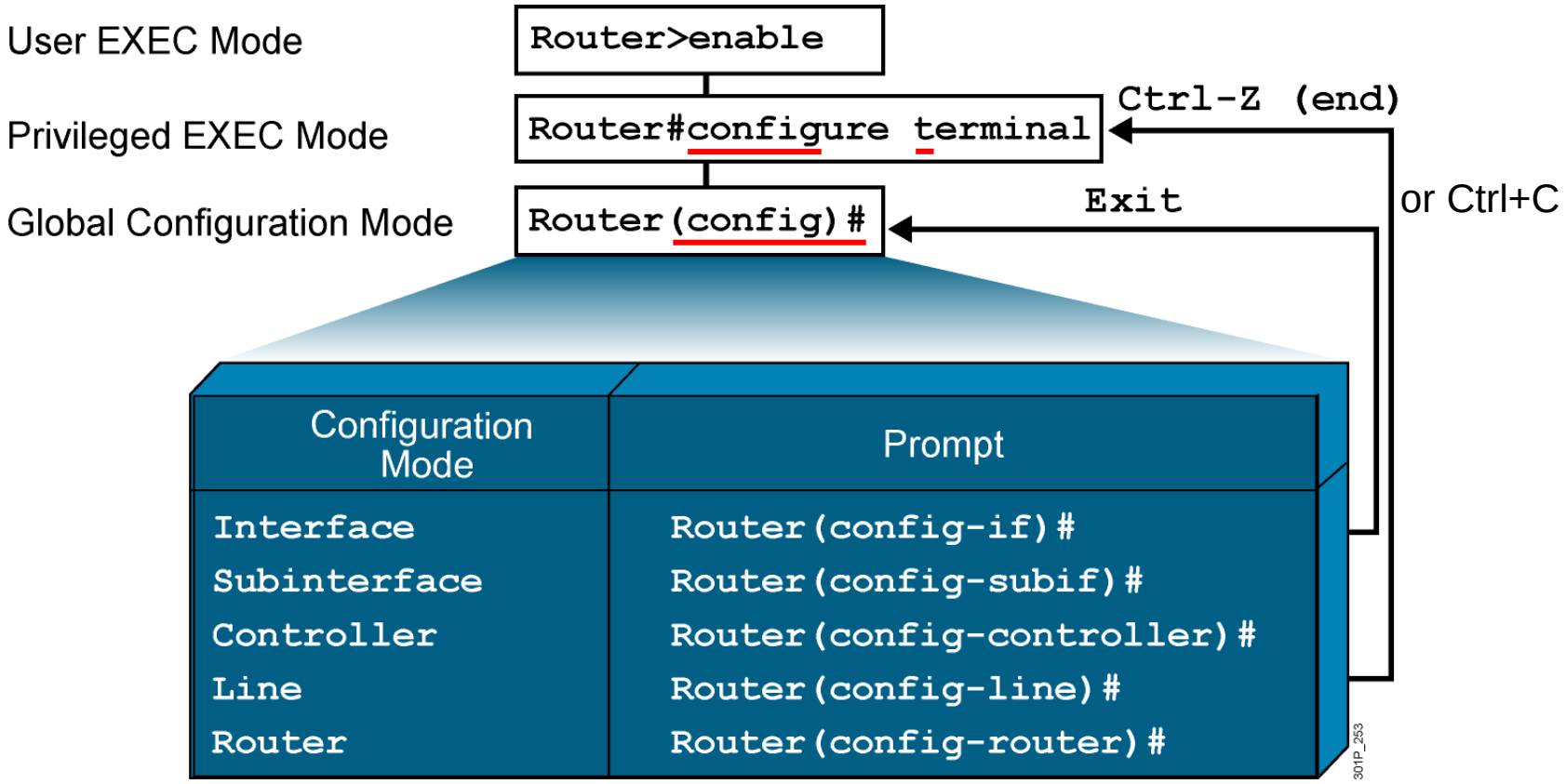
no → **CLI** (Command-Line Interface)

We changed hostname to "Router_A"

Logging in to the Cisco Router



Overview of Router Modes



Router User-Mode Command List

```
RouterX>?
Exec commands:
  access-enable     Create a temporary Access-List entry
  access-profile    Apply user-profile to interface
  clear             Reset functions
  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
  help              Description of the interactive help system
  lat               Open a lat connection
  lock              Lock the terminal
  login             Log in as a particular user
  logout            Exit from the EXEC
-- More --
```

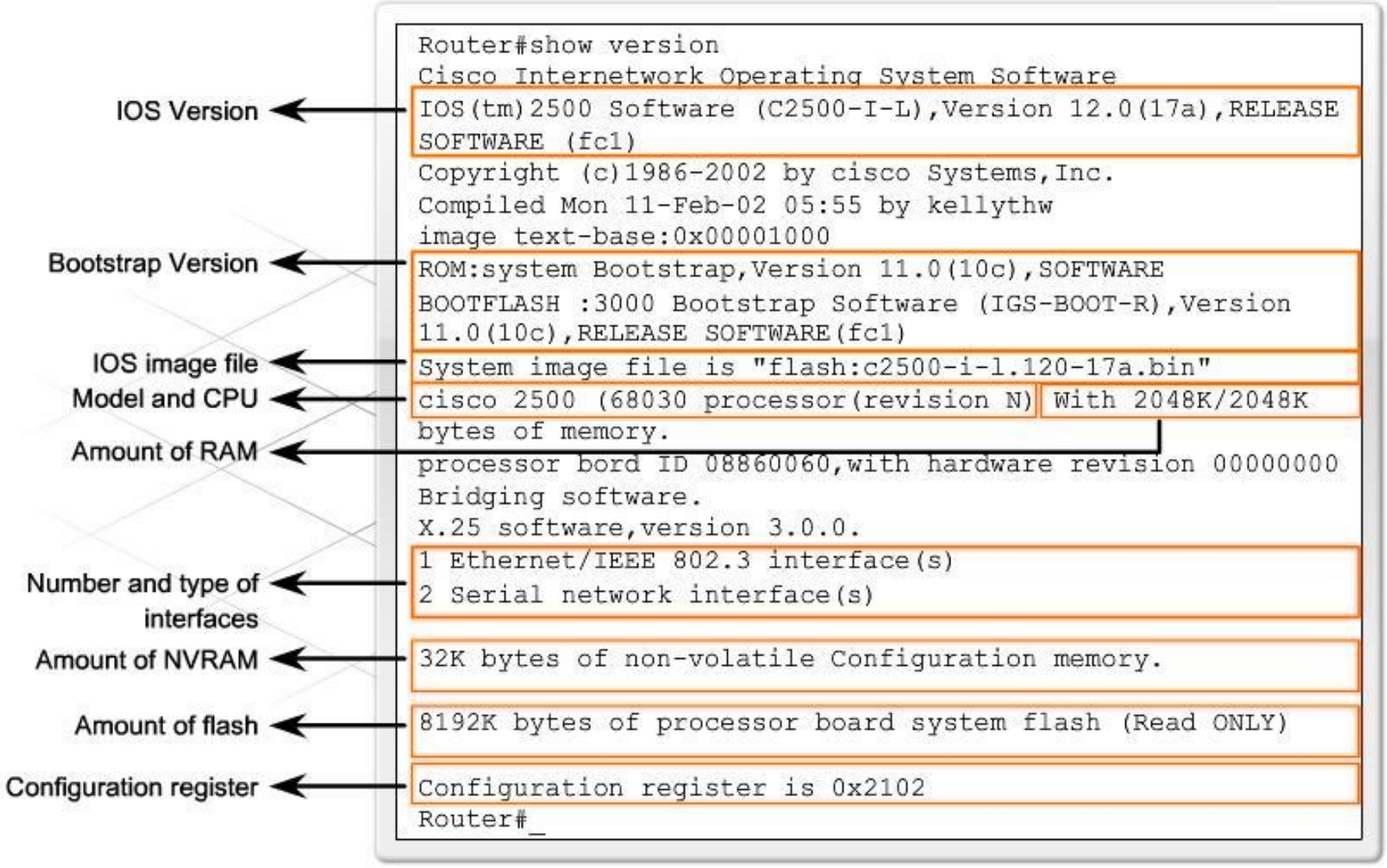
You can abbreviate a command to the fewest characters that make a unique character string.

Router Privileged-Mode Command List

```
RouterX#?
Exec commands:
  access-enable    Create a temporary Access-List entry
  access-profile   Apply user-profile to interface
  access-template  Create a temporary Access-List entry
  bfe              For manual emergency modes setting
  cd               Change current directory
  clear            Reset functions
  clock            Manage the system clock
  configure        Enter configuration mode
  connect          Open a terminal connection
  copy             Copy from one file to another
  debug            Debugging functions (see also 'undebug')
  delete           Delete a file
  dir              List files on a filesystem
  disable          Turn off privileged commands
  disconnect       Disconnect an existing network connection
  enable           Turn on privileged commands
  erase            Erase a filesystem
  exit             Exit from the EXEC
  help             Description of the interactive help system
-- More --
```

You can complete a command string by entering the unique character string, then pressing the Tab key.

show version **Command**



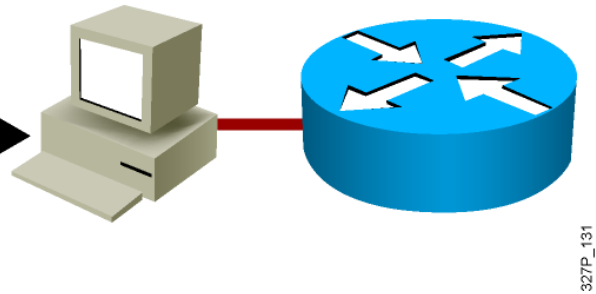
Configuring Router Identification

Router Name

```
Router(config)#hostname RouterX
RouterX(config)#
```

Message-of-the-Day Banner

```
RouterX(config)#banner motd  #
      Enter TEXT message. End with
      the character #. You have
      entered a secured system.
      Authorized access only! #
```



result

```
Press RETURN to get started.


You have entered a secured system.
Authorized access only!
RouterX#
```

Console-Line Commands

minutes *seconds* *(Default: 10 mins)*

```
RouterX(config)#line console 0
RouterX(config-line)#exec-timeout 20 30
```

- Modifies console session timeout

```
RouterX(config)#line console 0
RouterX(config-line)#logging synchronous
```

- Redisplays interrupted console input

(Before)

```
RouterX#
*Mar  1 00:39:18.911: %SYS-5-CONFIG_I: Configured from console by consoleABC
RouterX#ABC  <-- Tab
```

(After)

```
RouterX#
*Mar  1 00:40:16.271: %SYS-5-CONFIG_I: Configured from console by console
RouterX#
```

Useful Command

```
RouterX(config)# no ip domain-lookup
```

- Disable DNS lookup function (enabled by default)

(Before)

```
RouterX#abc
Translating "abc"...domain server (255.255.255.255)
 (255.255.255.255)
Translating "abc"...domain server (255.255.255.255)
% Unknown command or computer name, or unable to find computer address
RouterX#
```

(After)

```
RouterX#abc
Translating "abc"

Translating "abc"
% Unknown command or computer name, or unable to find computer address
RouterX#
```

Configuring an Interface

```
RouterX(config)#interface type number
RouterX(config-if)#
```

- type includes serial, ethernet, token ring, fddi, hssi, loopback, dialer, null, async, atm, bri, tunnel, and so on
- number is used to identify individual interfaces

```
RouterX(config)#interface type slot/port
RouterX(config-if)#
```

- For modular routers, selects an interface

FastEthernet 0/0
or
Fa0/0

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

- Quits from current interface configuration mode

Configuring an Interface Description

```
RouterX(config-if)# description string
```

- *string is a c*omment or a description to help you remember what is attached to this interface.
- The maximum number of characters for the *string* argument is 238.

```
RouterX#show interfaces description
Interface                      Status         Protocol Description
Fa0/0                          up             up       LAN
Se0/0                          admin down     down
Fa0/1                          up             up       WAN
```

Disabling or Enabling an Interface

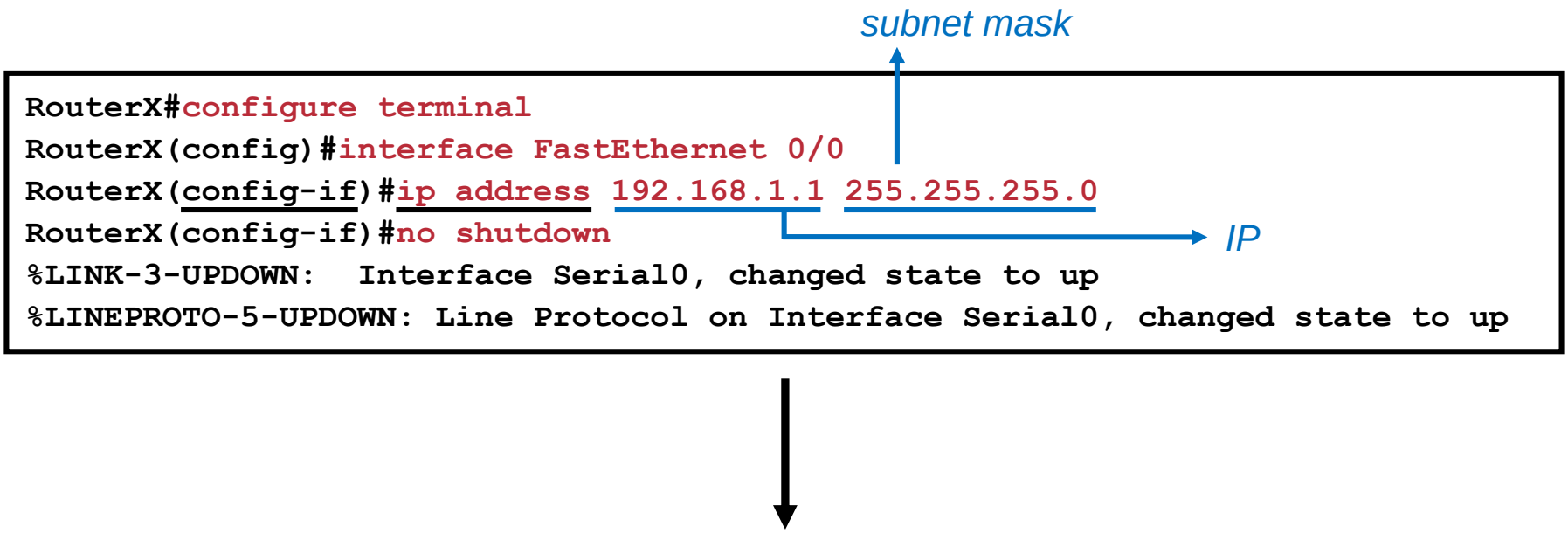
```
RouterX#configure terminal
RouterX(config)#interface serial 0
RouterX(config-if)#shutdown
%LINK-5-CHANGED: Interface Serial0, changed state to administratively down
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0, changed state to down
```

- Administratively turns off an interface

```
RouterX#configure terminal
RouterX(config)#interface serial 0
RouterX(config-if)#no shutdown
%LINK-3-UPDOWN:  Interface Serial0, changed state to up
%LINEPROTO-5-UPDOWN: Line Protocol on Interface Serial0, changed state to up
```

- Enables an interface that is administratively shut down

Configuring IP Addresses

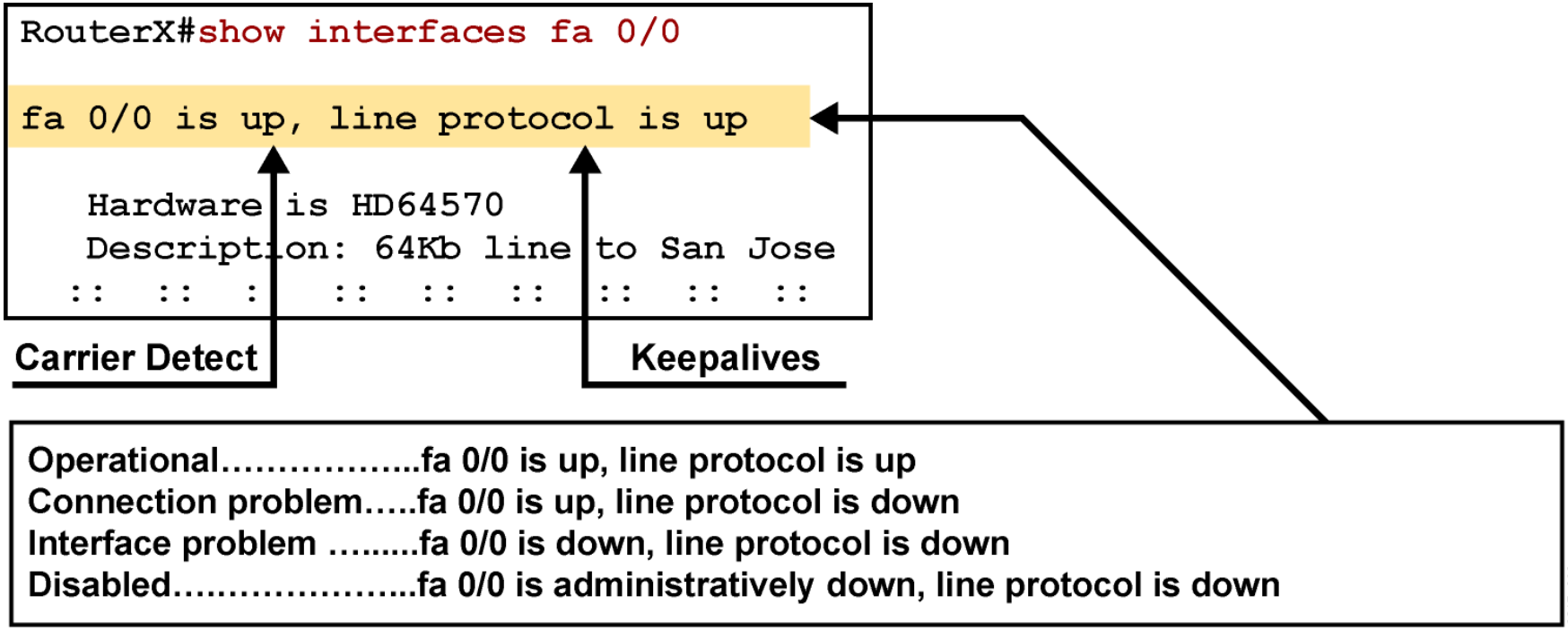



```
RouterX#show ip interface brief
Interface                  IP-Address      OK? Method Status                Protocol
FastEthernet0/0            192.168.1.1     YES manual up                    up
Serial0/0                  unassigned      YES unset  administratively down down
FastEthernet0/1            unassigned      YES unset  up                    up
Serial0/1                  unassigned      YES unset  administratively down down
FastEthernet1/0            unassigned      YES unset  administratively down down
FastEthernet2/0            unassigned      YES unset  administratively down down
```

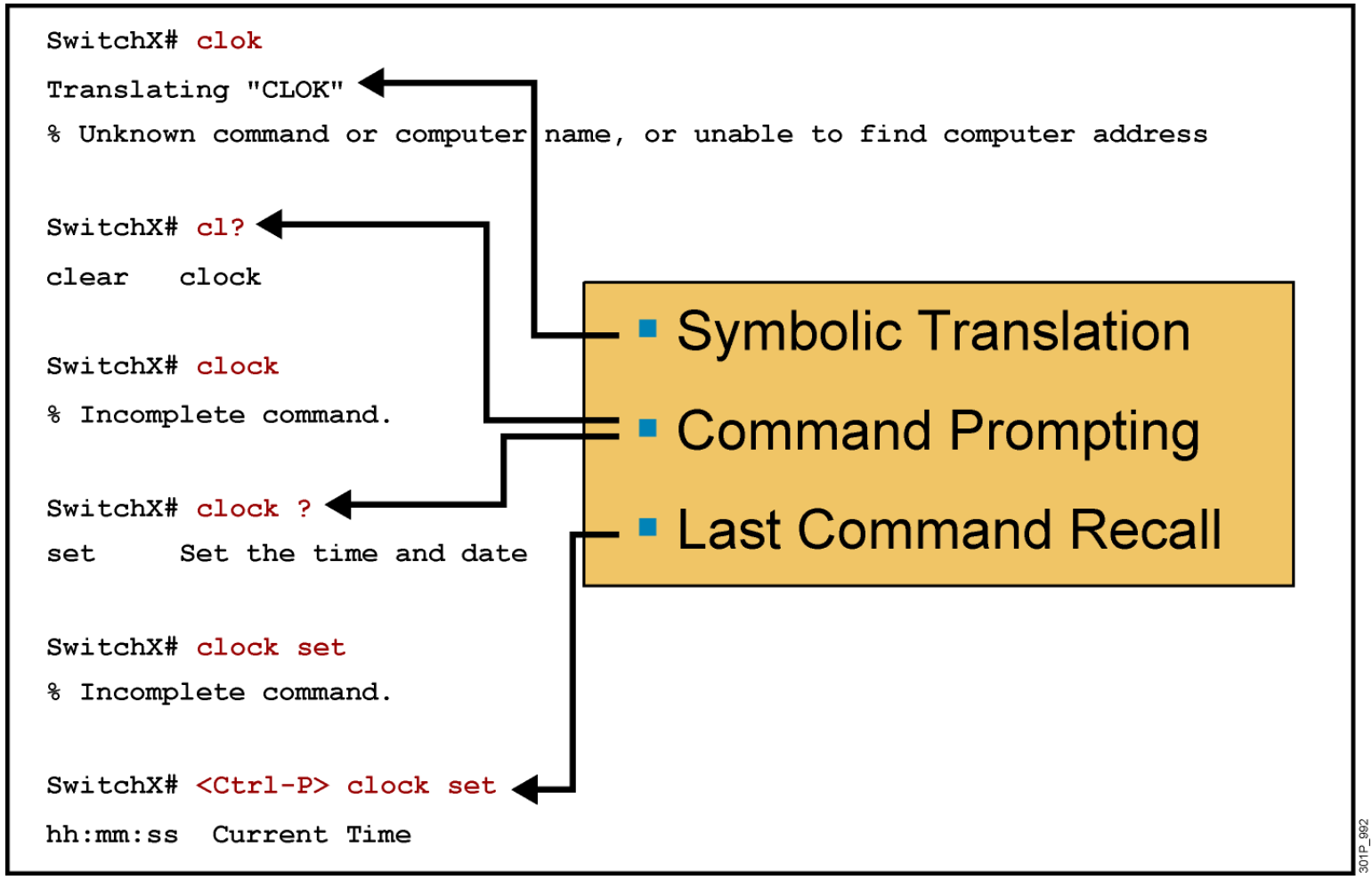
Router show interfaces **Command**

```
RouterX#show interfaces
Ethernet0 is up, line protocol is up
  Hardware is Lance, address is 00e0.1e5d.ae2f (bia 00e0.1e5d.ae2f)
  Internet address is 10.1.1.11/24
  MTU 1500 bytes, BW 10000 Kbit, DLY 1000 usec, rely 255/255, load 1/255
  Encapsulation ARPA, loopback not set, keepalive set (10 sec)
  ARP type: ARPA, ARP Timeout 04:00:00
  Last input 00:00:07, output 00:00:08, output hang never
  Last clearing of "show interface" counters never
  Queueing strategy: fifo
  Output queue 0/40, 0 drops; input queue 0/75, 0 drops
  5 minute input rate 0 bits/sec, 0 packets/sec
  5 minute output rate 0 bits/sec, 0 packets/sec
     81833 packets input, 27556491 bytes, 0 no buffer
     Received 42308 broadcasts, 0 runts, 0 giants, 0 throttles
     1 input errors, 0 CRC, 0 frame, 0 overrun, 1 ignored, 0 abort
     0 input packets with dribble condition detected
     55794 packets output, 3929696 bytes, 0 underruns
     0 output errors, 0 collisions, 1 interface resets
     0 babbles, 0 late collision, 4 deferred
     0 lost carrier, 0 no carrier
     0 output buffer failures, 0 output buffers swapped out
```

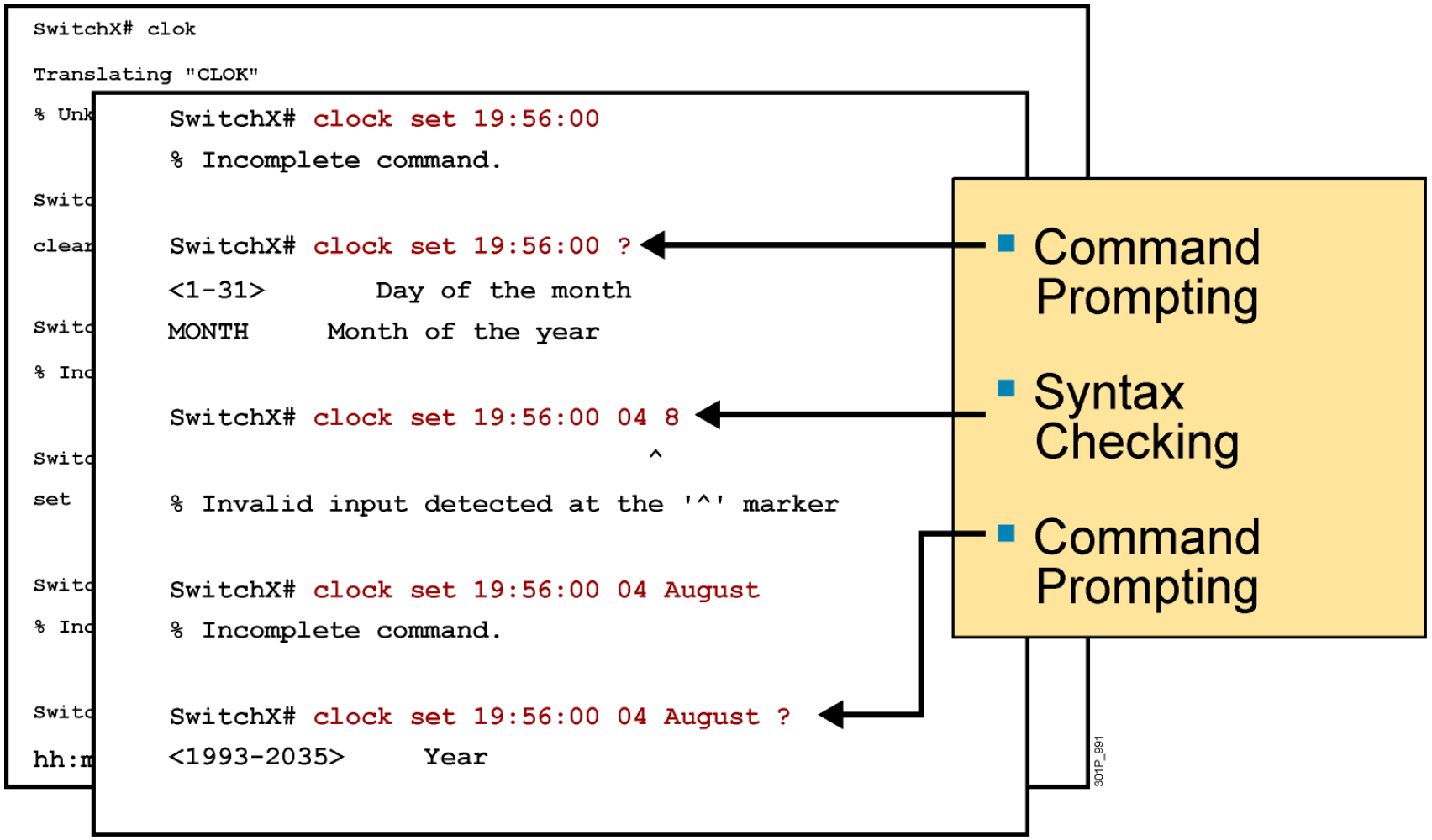
Interpreting the Interface Status



Context-Sensitive Help



Context-Sensitive Help (Cont.)



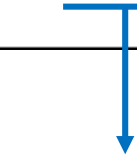
Enhanced Editing Commands (Cont.)

```
SwitchX>$ value for customers, employees, and partners.
```

	(Automatic scrolling of long lines)
Ctrl-A	Move to the beginning of the command line.
Ctrl-E	Move to the end of the command line.
Esc-B	Move back one word.
Esc-F	Move forward one word.
Ctrl-B	Move back one character.
Ctrl-F	Move forward one character.
Ctrl-D	Delete a single character.

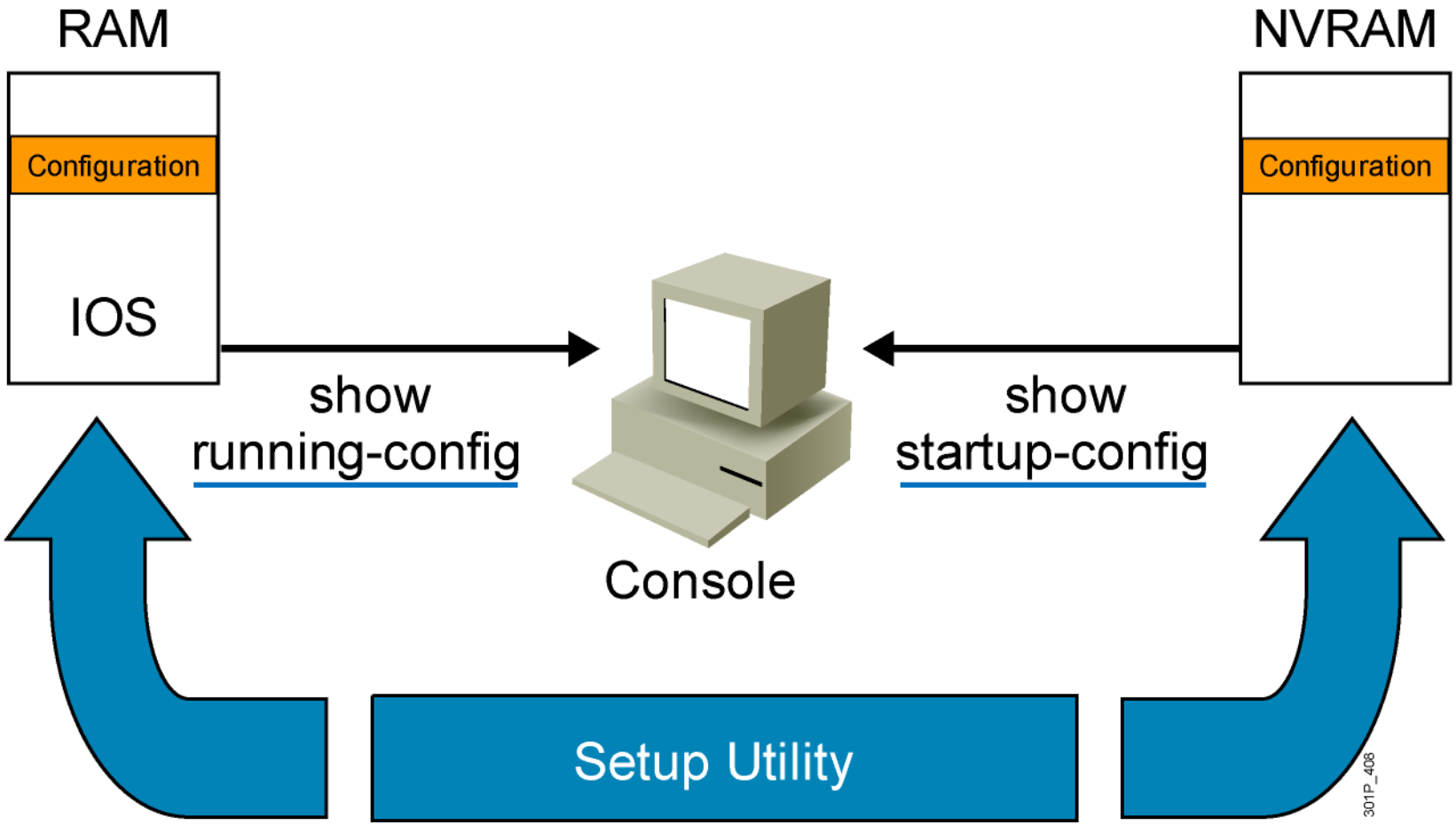
Router Command History

	Ctrl-P or Up Arrow	Recalls last (previous) commands.
	Ctrl-N or Down Arrow	Recalls more recent commands.
#	`show history`	Shows command buffer contents.
#	`terminal history size lines`	Sets session command buffer size.



0 - 256
(Default: 10)

Viewing the Configuration



Saving Configurations

```
RouterX#
RouterX#copy running-config startup-config
Destination filename [startup-config]?
Building configuration…

RourterX#
```

Copies the current configuration to NVRAM

~ write memory
~ wr

show running-config and show startup-config Commands

In RAM

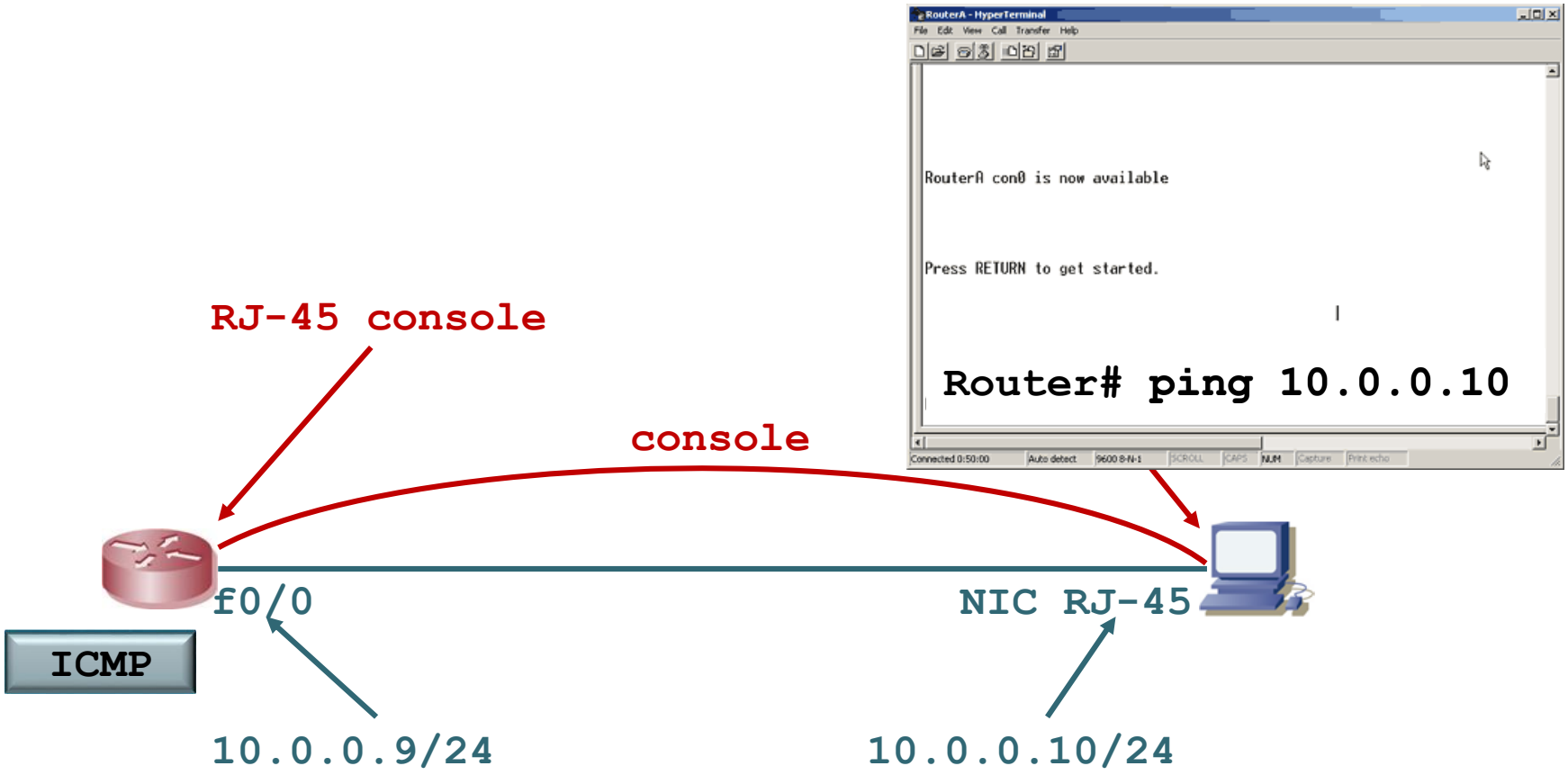
```
SwitchX#show running-config
Building configuration...??
Current configuration:?
!?
version 12.0
!
 -- More --
```

In NVRAM

```
SwitchX#show startup-config
Using 1359 out of 32762 bytes
!
version 12.0
!
 -- More --
```


Displays the current and saved configuration

Note



C:\> ping 10.0.0.9


CISCO