Lab. 3: Packet Tracer - Navigating the IOS

Topology

Objectives

Part 1: Basic Connections, Accessing the CLI and Exploring Help

Part 2: Exploring EXEC Modes

Part 3: Setting the Clock

Background

Home routers are actually four devices in one:

- Router - Forwards data packets to and receives data packets from the Internet.
- Switch - Connects end devices using network cables.
- Wireless access point - Consists of a radio transmitter capable of connecting end devices wirelessly.
- Firewall appliance - Secures outgoing traffic and restricts incoming traffic.

The operating system on a network device is known as a network operating system. The Cisco Internetwork Operating System (IOS) is a generic term for the collection of network operating systems used on Cisco networking devices.

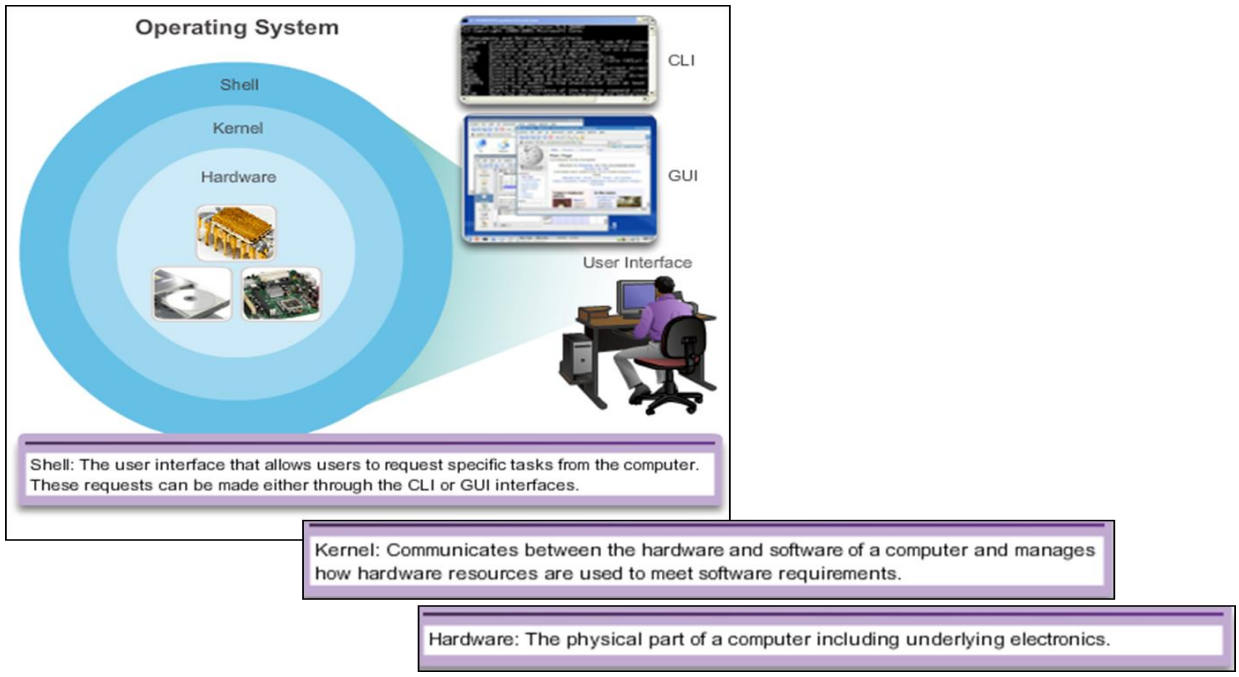
PC operating systems (Windows 8 and OS X) perform technical functions that enable:

- Use of a mouse
- View output
- Enter text

Switch or router IOS provides options to:

- Configure interfaces
- Enable routing and switching functions

All networking devices come with a default IOS.



Cisco IOS Modes of Operation

IOS Mode Hierarchical Structure

User EXEC Command-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 secrect
ip route

interface ethernet
serial
dsl
etc.

Interface Commands-Router(config-if)#
ip address
ipv6 address
encapsulation
shutdown/no shutdown
etc.

router rip
ospf
eigrp
etc.

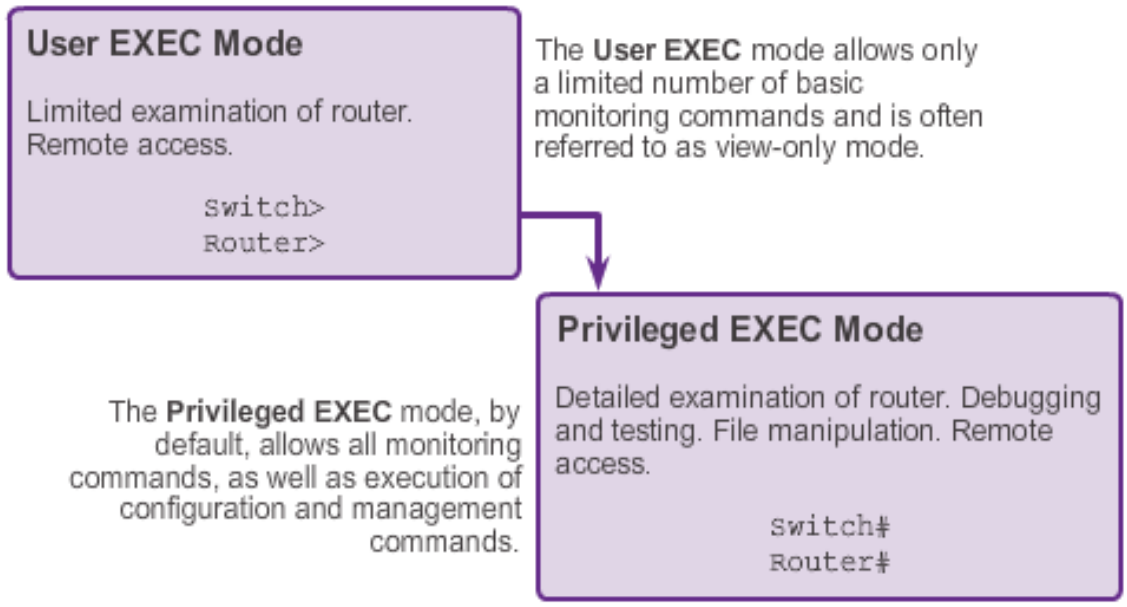
Routing Engine Commands-Router(config-router)#
network
version
auto summary
etc.

line vty
console
etc.

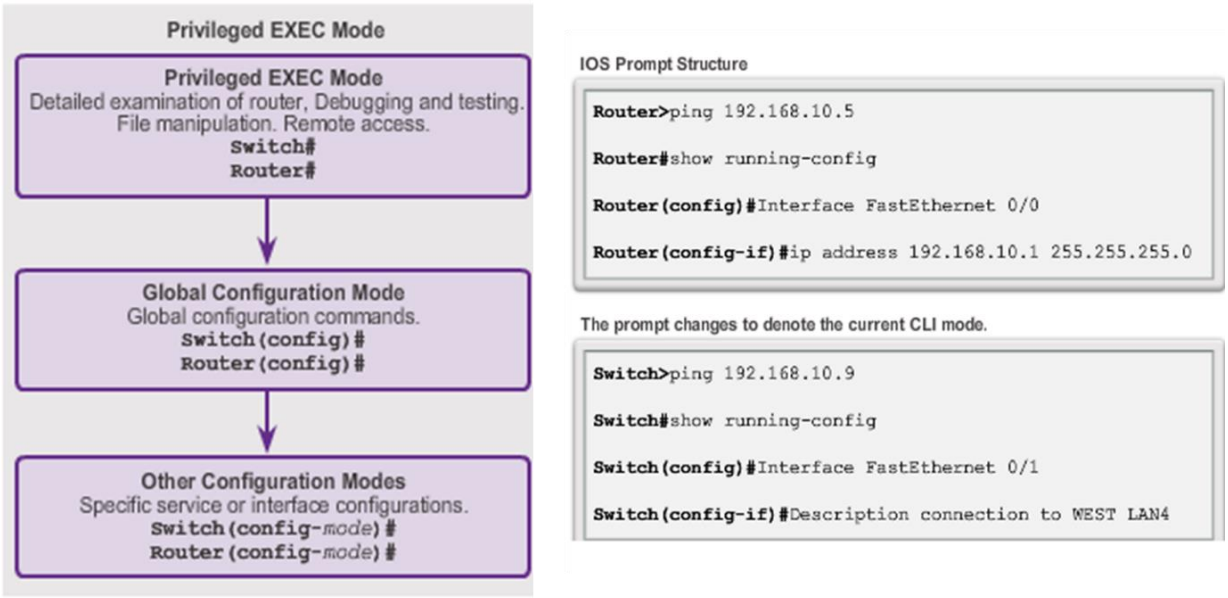
Line Commands-Router(config-line)#
password
login
modem commands
etc.

Primary Modes

The two primary modes of operation are user EXEC mode and privileged EXEC mode. Tthe privileged EXEC mode has a higher level of authority in what it allows the user to do with the device.



Global Configuration Mode and Submodes



In this activity, you will practice skills necessary for navigating the Cisco IOS, including different user access modes, various configuration modes, and common commands you use on a regular basis. You also practice accessing the context-sensitive Help by configuring the **clock** command.

Part 1: Basic Connections, Accessing the CLI and Exploring Help

In Part 1 of this activity, you connect a PC to a switch using a console connection and explore various command modes and Help features.

Step 1: Connect PC1 to S1 using a console cable.

a. Click the **Connections** icon (the one that looks like a lightning bolt) in the lower left corner of the Packet Tracer window.

b. Select the light blue Console cable by clicking it. The mouse pointer will change to what appears to be a connector with a cable dangling off of it.

c. Click **PC1**; a window displays an option for an RS-232 connection.

d. Drag the other end of the console connection to the S1 switch and click the switch to bring up the connection list.

e. Select the Console port to complete the connection.

Step 2: Establish a terminal session with S1.

a. Click **PC1** and then select the **Desktop** tab.

b. Click the **Terminal** application icon; verify that the Port Configuration default settings are correct.

What is the setting for bits per second? 9600 bits per second

c. Click **OK**.

d. The screen that appears may have several messages displayed. Somewhere on the display there should be a `Press RETURN to get started!` message. Press **ENTER**.

What is the prompt displayed on the screen? Switch>

دخلنا إلى ال mode الاول (User EXEC mode) والدليل علامة الاكبر من

Step 3: Explore the IOS Help.

a. The IOS can provide help for commands depending on the level being accessed. The prompt currently being displayed is called **User EXEC** and the device is waiting for a command. The most basic form of help is to type a question mark (?) at the prompt to display a list of commands.

`S1> ?`

علامة الاستفهام تساعدنا في معرفة ماهي الاوامر التي يمكن استخدامها في هذا ال mode ووظيفة كل منها

Which command begins with the letter 'C'? connect

b. At the prompt, type **t**, followed by a question mark (**?**).

`S1> t?`

Which commands are displayed? telnet terminal traceroute

c. At the prompt, type **te**, followed by a question mark (**?**).

`S1> te?`

Which commands are displayed? telnet terminal

This type of help is known as **context-sensitive** Help, providing more information as the commands are expanded.

```
Switch>?
Exec commands:
  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
Switch>
Switch>t?
telnet  terminal  traceroute
Switch>te?
telnet  terminal
```

Part 2: Exploring EXEC Modes

In Part 2 of this activity, you switch to privileged EXEC mode and issue additional commands.

```
Switch>en
Switch>enable
Switch#?
Exec commands:
  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
```

Step 1: Enter privileged EXEC mode.

a. At the prompt, type the question mark (**?**).

```
S1> ?
```

What information is displayed that describes the **enable** command?

Switch# والدليل علامة الهاشتاق (privileged EXEC mode) دخلنا إلى ال mode الثاني

b. Type **en** and press the **Tab** key.

```
S1> en<Tab>
```

What displays after pressing the **Tab** key? Switch>enable

enable سيتم اكمال الامر

This is called command completion or tab completion. When part of a command is typed, the **Tab** key can be used to complete the partial command. If the characters typed are enough to make the command unique, as in the case with the **enable** command, the remaining portion is displayed.

What would happen if you were to type **te<Tab>** at the prompt?

Switch>te

أي أنه لن يتغير اي شيء او يكملها لانها لا تتعبر فريده ومميزه فيوجد أكثر من أمر يبدأ ب te

such as telnet and terminal

c. Enter the **enable** command and press **ENTER**. How does the prompt change?

Switch# والدليل علامة الهاشتاق (privileged EXEC mode) دخلنا إلى ال mode الثاني

d. When prompted, type the question mark (**?**).

```
S1# ?
```

Previously there was one command that started with the letter 'C' in user EXEC mode. How many commands are displayed now that privileged EXEC mode is active? (**Hint**: you could type c? to list just the commands beginning with 'C'.)

clear , clock , configure , connect , copy

Step 2: Enter Global Configuration mode.

a. One of the commands starting with the letter 'C' is **configure** when in Privileged EXEC mode. Type either the full command or enough of the command to make it unique along with the <**Tab**> key to issue the command and press **<ENTER>**.

```
S1# configure
```

What is the message that is displayed?

Configuring from terminal, memory, or network [terminal]?

Enter configuration commands, one per line. End with CNTL/Z.12:43 PM

b. Press the **<ENTER>** key to accept the default parameter enclosed in brackets **[terminal]**.

How does the prompt change?

Switch(config)# والدليل كلمة كونفيق قبل علامة الهاشتاق (global configuration mode.) دخلنا إلى ال mode الثالث والاخير

c. This is called **global configuration mode**. This mode will be explored further in upcoming activities and labs. For now exit back to Privileged EXEC mode by typing **end**, **exit** or **Ctrl-Z**.

```
S1(config)# exit
S1#
```

Part 3: Setting the Clock

Step 1: Use the clock command.

a. Use the **clock** command to further explore Help and command syntax. Type **show clock** at the privileged EXEC prompt.

```
S1# show clock
```

What information is displayed? What is the year that is displayed?

0:28:52.374 UTC Mon Mar 1 1993 سيظهر اعدادات الساعة الوقت والسنة واليوم ..الخ
years 1993

b. Use the context-sensitive Help and the **clock** command to set the time on the switch to the current time. Enter the command **clock** and press **ENTER**.

```
S1# clock<ENTER>
```

What information is displayed?

%Incomplete command امر غير مكتمل او ناقص مما يدل على انه يحتاج الى مزيد من المعلومات لتنفيذ الامر

c. The `% Incomplete command` message is returned by the IOS indicating that the **clock** command needs further parameters. Any time more information is needed help can be provided by typing a space after the command and the question mark (?).

```
S1# clock ?
```

What information is displayed?

set set the time and date سيعطينا المعلومات التي يمكن ان تكتب بعد الامر clock

d. Set the clock using the **clock set** command. Continue proceeding through the command one step at a time.

```
S1# clock set ?
```

What information is being requested?

hh : mm : ss current time الساعه والدقائق والثواني في الوقت الحالي

What would have been displayed if only the **clock set** command had been entered and no request for help was made by using the question mark?

%Incomplete command امر غير مكتمل او ناقص مما يدل على انه يحتاج الى مزيد من المعلومات لتنفيذ الامر

e. Based on the information requested by issuing the **clock set ?** command, enter a time of 3:00 p.m. by using the 24-hour format of 15:00:00. Check to see if further parameters are needed.

```
S1# clock set 15:00:00 ?
```

The output returns the request for more information:

```
<1-31>  Day of the month
MONTH   Month of the year
```

f. Attempt to set the date to 01/31/2035 using the format requested. It may be necessary to request additional help using the context-sensitive Help to complete the process. When finished, issue the **show clock** command to display the clock setting. The resulting command output should display as:

```
S1# show clock
*15:0:4.869 UTC Tue Jan 31 2035
```

g. If you were not successful, try the following command to obtain the output above:

```
S1# clock set 15:00:00 31 Jan 2035
```

Step 2: Explore additional command messages.

a. The IOS provides various outputs for incorrect or incomplete commands as experienced in earlier sections. Continue to use the **clock** command to explore additional messages that may be encountered as you learn to use the IOS.

b. Issue the following command and record the messages:

```
S1# cl
```

What information was returned? %Ambiguous command: "cl"

وهذا يعني أن الامر غير واضح

```
S1# clock
```

What information was returned? %Incomplete command

وهذا يعني أن الامر غير مكتمل

```
S1# clock set 25:00:00
```

What information was returned?

%Invalid input detected at '^' marker.

وهذا يعني أنه يوجد خطأ في الادخال فلا يوجد ساعه اسمها 25 فعدد الساعات هو 24 ساعه

```
S1# clock set 15:00:00 32
```

What information was returned?

%Invalid input detected at '^' marker.

وهذا يعني انه يوجد خطأ في الادخال فلا يوجد تاريخ 32 فاقصى تاريخ يوجد في الشهر هو 30

```
Switch>
Switch>enable
Switch#cl
% Ambiguous command: "cl"
Switch#clock
% Incomplete command.
Switch#clock set 25:00:00
                 ^
% Invalid input detected at '^' marker.

Switch#clock set 15:00:00 32
                          ^
% Invalid input detected at '^' marker.
```

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