Cisco Router IOS

The Cisco IOS is a proprietary kernel that provides routing, switching, internetworking, and telecommunications features. It is responsible for some important things like:
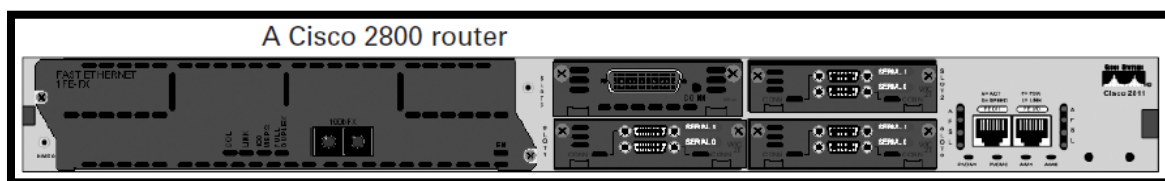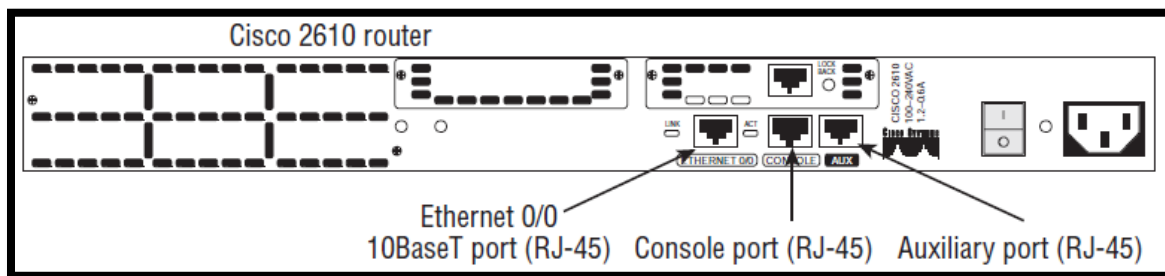
- Carrying network protocols and functions
- Connecting high-speed traffic between devices
- Adding security to control access and stop unauthorized network use
- Providing scalability for ease of network growth and redundancy
- Supplying network reliability for connecting to network resources

You can access the Cisco IOS through the console port of a router, from a modem into the auxiliary (or Aux) port, or even through Telnet. Access to the IOS command line is called an EXEC session.
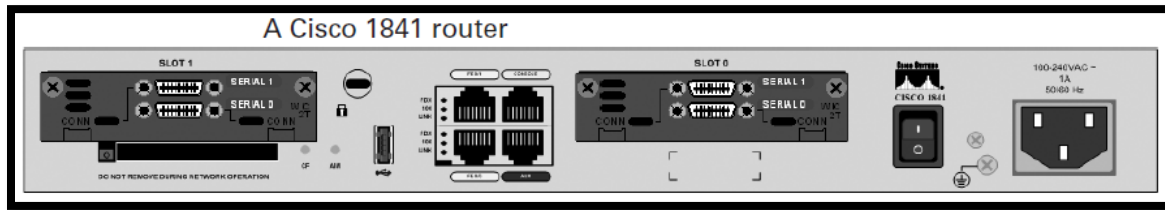
Connecting to a Cisco Router

You can connect to a Cisco router to configure it, verify its configuration, and check statistics.

There are different ways to do this, but most often, the first place you would connect to is the console port. The console port is usually an RJ-45 (8-pin modular) connection located at the back of the router.

Cisco 2610 router

Ethernet 0/0
10BaseT port (RJ-45)   Console port (RJ-45)   Auxiliary port (RJ-45)

A Cisco 2800 router

A Cisco 1841 router

Bringing Up a Router

When you first bring up a Cisco router, it will run a power-on self-test (POST). If it passes, it will load the bootstrap program from ROM to RAM. The main task of the bootstrap program is to locate the Cisco IOS and load it from flash memory into RAM. After that, the IOS loads and looks for a valid configuration file — known as startup-config— that is stored in nonvolatile RAM (NVRAM), when the file is copied into RAM as the running configuration file, running-config. Once the IOS begins to load, you may see a string of pounds signs (#) while the image decompresses:

Self decompressing the image :
[OK]

After it is decompressed into RAM, the IOS is loaded and starts running the router.

Command-Line Interface (CLI)

The Cisco IOS command-line interface (CLI) is the primary user interface used for **configuring**, **monitoring**, and **maintaining** Cisco devices. This user interface allows you to directly and simply execute Cisco IOS commands, whether using a router console or terminal, or using remote access methods. Consider the below figure to know how to start using CLI
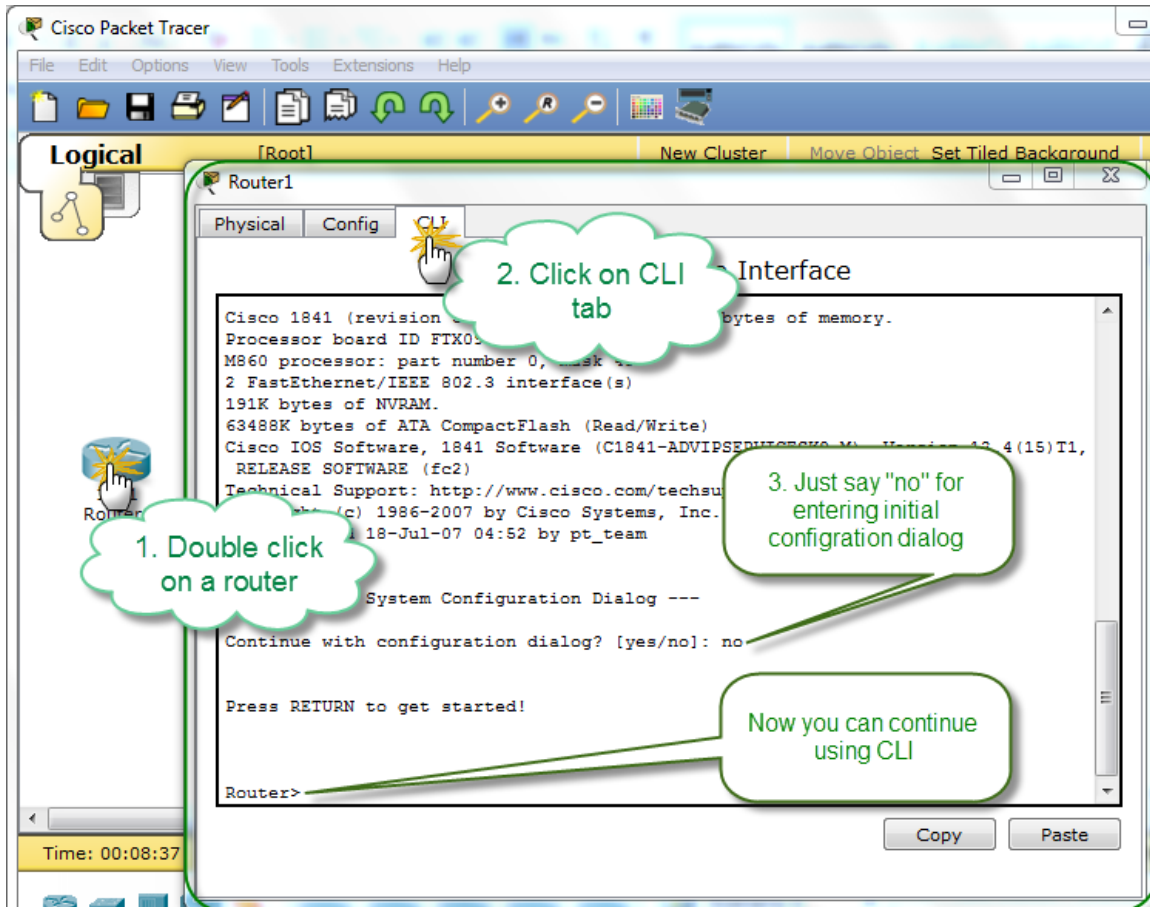
After the interface status messages appear and you press *Enter*, the Router> prompt will appear. This is called user exec mode (user mode), and it's mostly used to view statistics, but it's also a stepping stone to logging in to privileged mode.

You can only view and change the configuration of a Cisco router in privileged exec mode (privileged mode), which you can enter with the enable command. Here's how:

Router>enable (or: en)
Router#

You now end up with a Router# prompt, which indicates that you're in privileged mode, where you can both **view** and **change** the router's configuration. You can go back from privileged mode into user mode by using the disable command, as seen here:

Router#disable

3

Router Modes

- ❖ User EXEC mode: Limited to basic monitoring commands
  - o Used mostly to view statistics
  - o Prompt: Router>
- ❖ Privileged EXEC mode: Provides access to all other router commands
  - o Used to view & change router configuration
  - o Type: Router>enable to enter privileged mode
  - o Prompt: Router#
- ❖ Global configuration mode: Commands that affect the entire system
  - o Type: Router#configure terminal or Router#conf t to enter this mode
  - o Prompt: Router(config)#
- ❖ Specific configuration modes: Commands that affect interfaces/processes only
  - o Example: Router(config-if)# to configure an interface

Router and Switch Administrative Configurations

The administrative functions that you can configure on a router and switch are as follows:

- Hostnames
- Banners
- Passwords
- Interface descriptions
- Saving changes on a router

Hostnames

You can set the identity of the router with the hostname command.
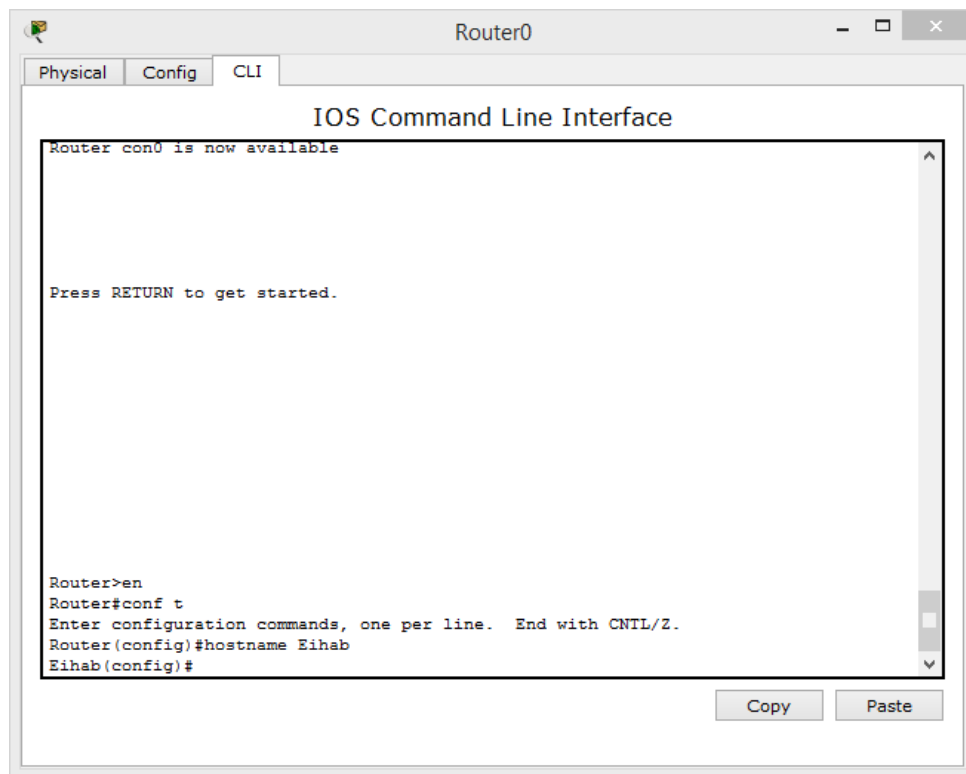- Remember to enter Global Configuration before trying to use hostname command.

Router>en

Router#conf t

Router(config)#hostname Eihab
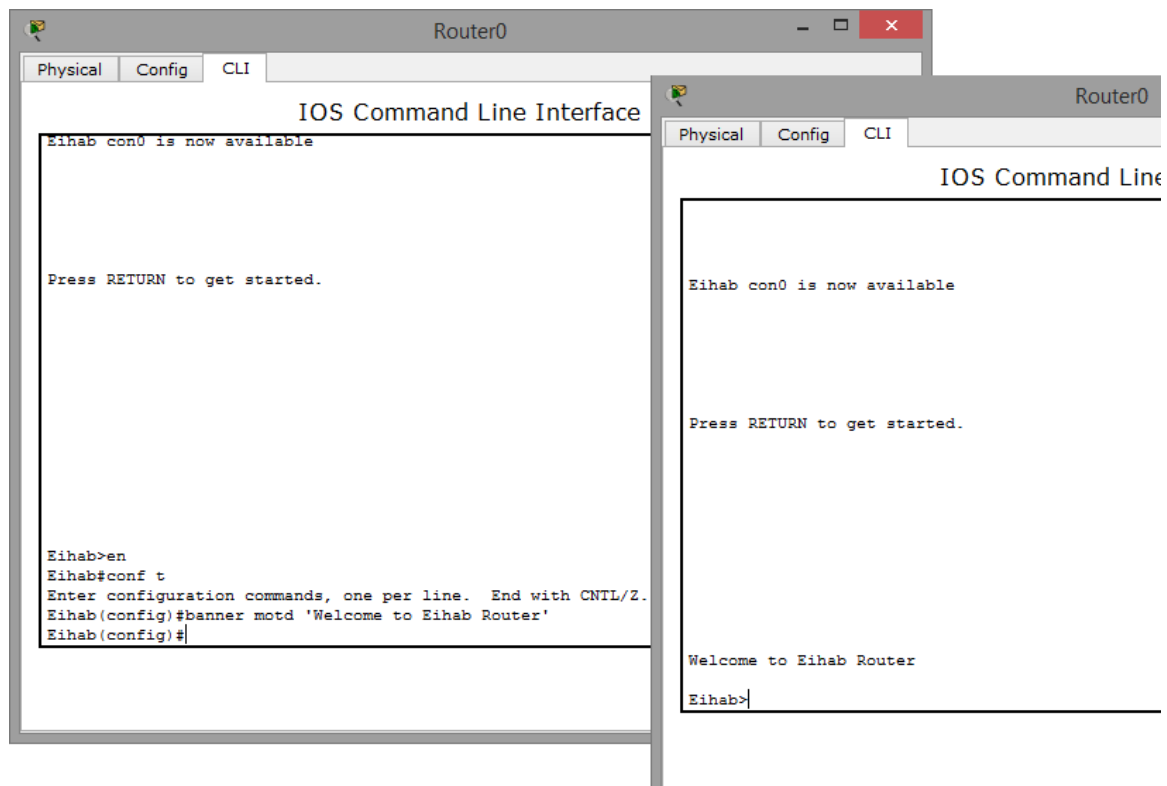
Eihab(config)#

5

Banners

One very good *reason* for having a banner *is* to give any and all who dare attempt to telnet or dial into your internetwork a little security notice. Moreover, you can create a banner to give anyone who shows up on the router exactly the information you want him or her to have.

Eihab>en

Eihab#conf t

Eihab(config)#banner motd 'Welcome to Eihab Router!'

Eihab(config)#

Setting Passwords
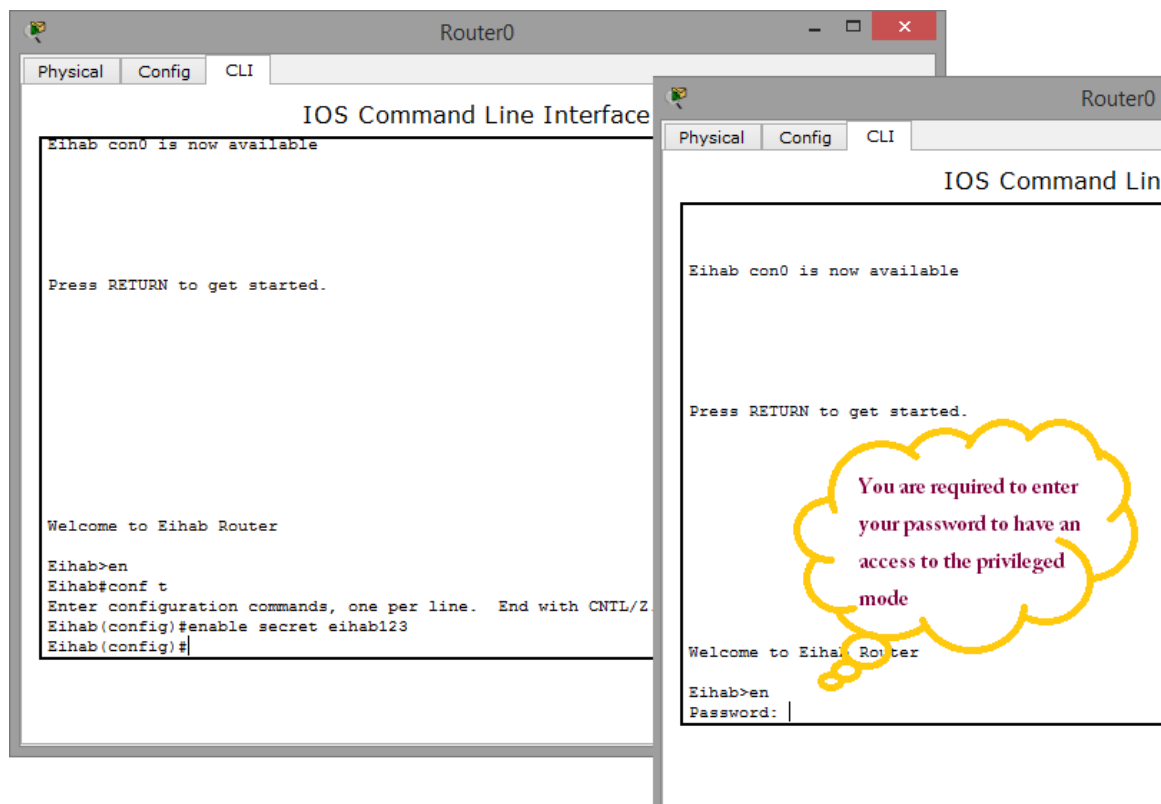
You set the enable passwords from global configuration mode to protect privileged mode, like this:

Eihab >en

Eihab #conf t

Eihab (config)#enable secret eihab123

Eihab(config)#

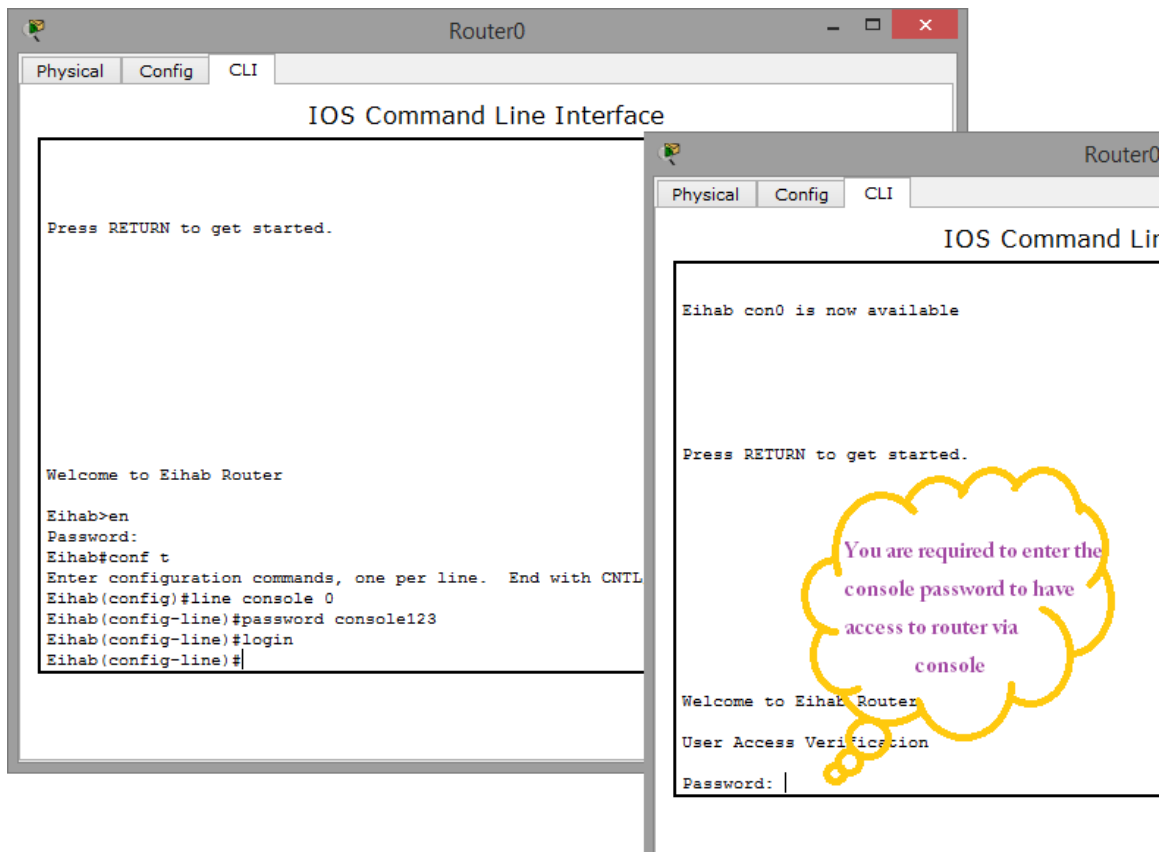In addition, you can set a password for console like this:

Eihab >en

Eihab #conf t

Eihab (config)#line console 0

Eihab (config)#password console123

Eihab (config)#login

Eihab (config)#

7

Saving changes

You can manually save the file from DRAM to NVRAM by using the copy runningconfig startup-config command (Shortcut: copy run start)

- ✓ Remember to use this command in privileged mode not global configuration mode

Eihab# copy running-config startup-config

Or

Eihab#copy run start

Or

Eihab# Write
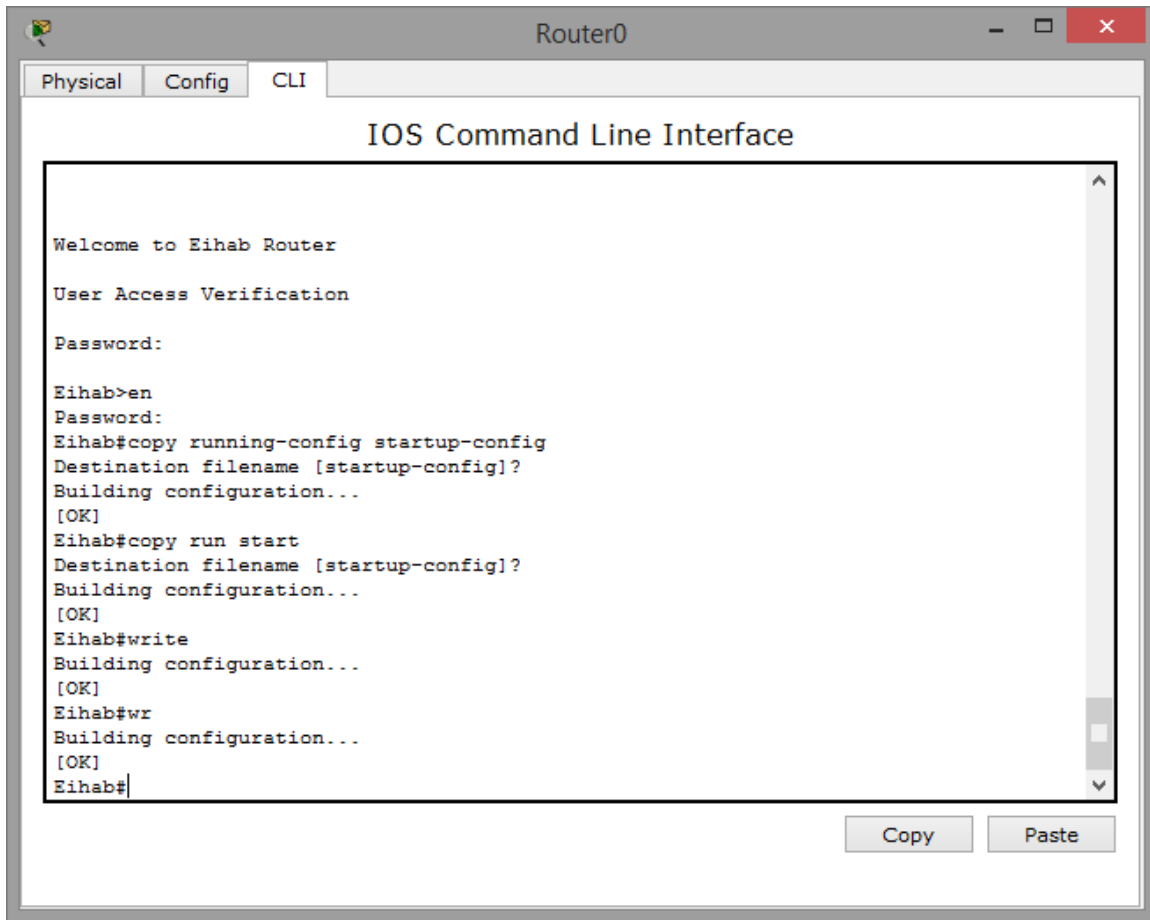
Or

Eihab# wr

8

Note: to remove the password you entered you use the no password command

---

☺ *Quiz Next Lab* ☺