

## Tutor me! (Instructor Version)

**Instructor Note:** Red font color or Gray highlights indicate text that appears in the instructor copy only.

### Objectives

**Configure initial settings on a network device using the Cisco IOS software.**

- Students will use and reinforce their knowledge of Cisco IOS CLI by explaining it to other students. They will look for different ways to explain the meaning of individual commands. Students will find the optimal grouping of commands to be used when configuring a device in order to minimize the necessary count of mode changes when configuring.

### Background / Scenario

**(Students will work in pairs. Packet Tracer is required to be used with this activity.)**

Assume that a new colleague has asked you for an orientation to the Cisco IOS CLI. This colleague has never worked with Cisco devices before.

You explain the basic CLI commands and structure, because you want your colleague to understand that the CLI is a simple, yet powerful, command language that can be easily understood and navigated.

Use Packet Tracer and one of the activities available in this chapter as a simple network model (for example, Lab Activity 2.3.3.5 LAB – Configuring a Switch Management Address). Focus on these areas:

- While the commands are technical, do they resemble any statements from plain English?
- How is the set of commands organized into subgroups or modes? How does an administrator know which mode he or she is currently using?
- What are the individual commands to configure the basic settings of a Cisco device? How would you explain this command in laymen's terms? Use parallels to real life whenever appropriate.

Suggest how to group different commands together according to their modes so that a minimum number of moves between modes will be needed.

**Instructor notes:** This Modeling Activity may be used as a graded assignment. However, its purpose is to help students reflect on the knowledge acquired from Chapter 2, focusing on how the Cisco IOS is used directly to configure intermediary devices. Instructor facilitation of the discussion should encourage student-to-student discussions of each other's work.

### Required Resources

- Packet Tracer
- Any simple network model activity available from Chapter 2

### Reflection

- After completing Chapter 2, do you feel as though you have a concrete understanding of what the Cisco IOS does and how it operates? What were some of the difficulties you encountered when explaining the basic CLI commands and structure to your colleague? If you were the "new colleague," what would be some of the difficulties that you would have learning the basic CLI commands and structure?

---

---

---

- Answer the following questions, and discuss your answers with the entire class:

- a) While the commands are technical, do they resemble any statements from plain English?
- b) How is the set of commands organized into subgroups or modes? How does an administrator know which mode he or she is currently using?
- c) What are the individual commands to configure the basic settings of a Cisco device? How would you explain this command in laymen's terms? Use parallels to real life whenever appropriate.
- d) With the help of your colleague, try to suggest how to group different commands together according to their modes so that a minimum number of moves between modes will be needed.

**(Answers will vary (represented below are Chapter 2 content-based variations):**

- a) While the commands are technical, do they resemble any statements from plain English?  
Absolutely. Keywords like enable, password, banner, address, shutdown are ordinary words whose meaning in CLI is appropriately adapted but still carrying a strong relevancy to their common usage.
- b) How is the set of commands organized into subgroups, or modes? How does an administrator know which mode is he/she using currently?  
First, the level of access to CLI can either be a user (user EXEC) level, or an administrator level (privileged EXEC). From the administrator level, the configuration mode can be accessed that is internally divided into global configuration mode, line configuration mode, interface configuration mode and other modes as necessary. The administrator is informed about the current mode in the prompt where the > symbol represents user access level, # represents administrator access level, and optional keywords in parentheses designate the configuration mode and possible submodes.
- c) What are the individual commands to access and configure the basic settings of a Cisco device? How would you explain these commands in layman terms? Use parallels to real life whenever appropriate.  
**enable** – become empowered to complete control over a device  
**configure terminal** – Start the configuration editor, accepting changes from the terminal  
**hostname** – Assign a name to a device  
**service password-encryption** – Causes the device to obscure all entered passwords in the configuration so that they cannot be eavesdropped  
**line con 0** – Enter the configuration of the line, or the “socket”, labeled with CONSOLE 0 on the device and used to manage the device  
**line vty 0 4** – Enter the configuration of 5 virtual “sockets” that allow managing the device remotely, through the network  
**password** – Set up a password to be used when accessing the device  
**login** – Protect the access using a login procedure requiring a password defined used the password command  
**exit** – Leave the current mode and exit to the higher placed mode.  
**enable secret** – The secret phrase which protects the usage of the enable command  
**banner** – The message displayed to a user that tries to access the device  
**interface Vlan 1** – enter the configuration mode of the interface called Vlan1  
**description** – Assign a textual comment to an interface to help the administrator know what is the purpose and location of the interface  
**ip address** – Assign a numerical IP address to an interface  
**no shutdown** – Removes the shutdown command and thereby making an interface active  
**end** – Exit the configuration editor

Moving through the configuration and making changes to the device settings is like navigating in a maze. Each configuration mode is like a chamber in a maze. Even if you know the map of the maze, you may still move through the maze in a disorganized way, possibly never finding a way out. Similarly, even if you know the meaning of individual commands and the modes in which they are located, the way you move through these modes when configuring a device depends mostly on you.

- d) With the help of your colleague, try to suggest how to group different commands together according to their modes so that a minimum number of moves between modes is needed.

One of possible effective command sequences for configuring a device is:

```
enable
configure terminal
hostname AtlantaSw
service password-encryption
banner login ^
```

```
Access to this device permitted only to authorized personnel!
```

```
^
enable secret V3ry5ecr3tP4ssw0rd
line con 0
  password 5ecr3tP4ssw0rd
  login
  exit
line vty 0 4
  password 5ecr3tP4ssw0rd
  login
  exit
interface Vlan 1
  ip address 192.0.2.11 255.255.255.0
  no shutdown
end
```

An ineffective way of configuring would be, for example:

```
enable
configure terminal
line con 0
  password 5ecr3tP4ssw0rd
  exit
hostname AtlantaSw
```

```
service password-encryption
line vty 0 4
  password 5ecr3tP4ssw0rd
  exit
banner login ^
```

```
Access to this device permitted only to authorized personnel!
```

```
^
line con 0
  login
  exit
interface Vlan 1
  ip address 192.0.2.11 255.255.255.0
  exit
line vty 0 4
  login
  exit
enable secret V3ry5ecr3tP4ssw0rd
interface Vlan 1
  no shutdown
end
```

(Note that while both configurations lead to the same resulting set of settings, the second configuration is slightly larger (because of repetitive entering individual modes again and again) and is very difficult to follow because the flow of commands is practically random and does not follow their logical sequence and modal commonality Instructor)

### Identify elements of the model that map to IT content:

- Commands
- Modes
- Efficient orientation in configuration mode
- Real-world customer relations skills