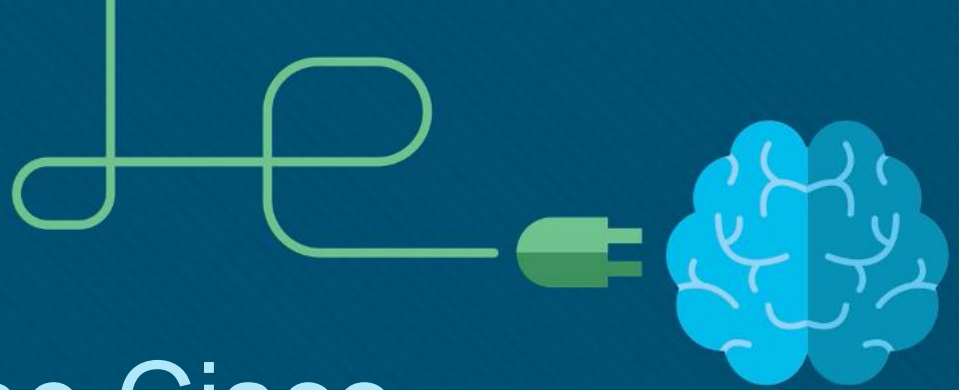




Module 18: The Cisco IOS Command Line

Networking Essentials (NETESS)



Module Objectives

Module Title: The Cisco IOS Command Line

Module Objective: Explain how to use the Cisco IOS.

Topic Title	Topic Objective
IOS Navigation	Explain how to navigate the Cisco IOS modes.
The Command Structure	Explain how to navigate the Cisco IOS to configure network devices.
View Device Information	Use show commands to monitor device operations.

18.1 Navigate the IOS

The Cisco IOS Command Line Interface

- The Cisco IOS command line interface (CLI) is a text-based program that enables entering and executing Cisco IOS commands to configure, monitor, and maintain Cisco devices.
- The Cisco CLI can be used with either in-band or out-of-band management tasks.
- CLI commands are used to alter the configuration of the device and to display the current status of processes on the router.
- The CLI can be used to enter Cisco IOS commands.

```
Router con0 is now available

Press RETURN to get started!

Router> enable
Router# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)# hostname R1
R1(config)# interface gigabitethernet 0/0/0
R1(config-if)#
```

Primary Command Modes

The Cisco IOS software separates management access into the following two command modes

- **User EXEC Mode** – Has limited capabilities for basic operations. Allows basic monitoring commands but not the execution of any commands that change device configuration.
- **Privileged EXEC Mode** – Used to execute configuration commands. Higher configuration modes, like global configuration mode, can only be reached from privileged EXEC mode.

Command Mode	Description	Default Device Prompt
User Exec Mode	<ul style="list-style-type: none">• Mode allows access to only a limited number of basic monitoring commands.• It is often referred to as “view-only” mode.	Switch> Router>
Privileged EXEC Mode	<ul style="list-style-type: none">• Mode allows access to all commands and features.• The user can use any monitoring commands and execute configuration and management commands.	Switch# Router#

Video - IOS CLI Primary Command Modes

Video – IOS CLI Primary Command Modes

This video will cover the following:

- User EXEC mode
- Privileged EXEC mode
- Global config mode

0:01

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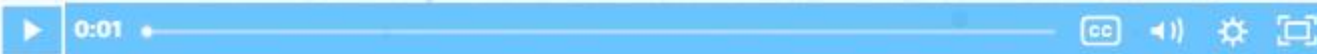
The image shows a video player interface. At the top, there is a green header with the title "Video – IOS CLI Primary Command Modes". Below the header, the main content area has a light gray background with a network diagram pattern of nodes and lines. The text "This video will cover the following:" is followed by a bulleted list of three items: "User EXEC mode", "Privileged EXEC mode", and "Global config mode". At the bottom of the video player, there is a blue progress bar showing "0:01" and several control icons: a play button, a closed captioning icon (CC), a volume icon, a settings gear, and a full screen icon.

Video - Navigate Between IOS Modes

Video – Navigate between IOS Modes

This video will cover the following:

- enable
- disable
- configure terminal
- exit
- end
- Control + Z on keyboard
- Other commands to enter sub configuration modes



A Note About Syntax Checker Activities

Syntax checker is a simulation tool used to help build configuration and troubleshooting skills.

Each Syntax Checker activity includes a set of instructions to enter a specific set of commands.

- You cannot progress in Syntax Checker unless the exact and full command is entered as specified.
- More advanced simulation tools, such as Packet Tracer, let you enter abbreviated commands, much as you would do on real equipment.

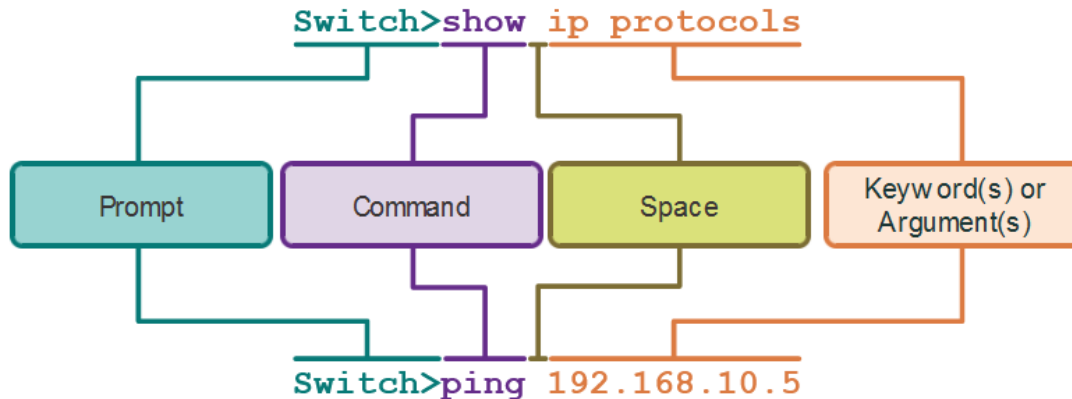
18.2 The Command Structure

Basic IOS Command Structure

Each IOS command has a specific syntax and can only be executed in the appropriate mode.

The general syntax for a command is the command followed by appropriate keywords and arguments.

- **Keyword** – A specific parameter defined in the operating system (in the figure, **ip protocols**).
- **Argument** – A value or variable defined by the user (in the figure, **192.168.10.5**).



IOS Command Syntax

A command might require one or more arguments.

To determine the keywords and arguments required for a command, refer to the command syntax.

The syntax provides the pattern, or format, that must be used when entering a command.

Convention	Description
boldface	Boldface text indicates commands and keywords that you enter literally as shown.
<i>italics</i>	Italic text indicates arguments for which you supply values.
[x]	Square brackets indicate an optional element (keyword or argument).
{x}	Braces indicate a required element (keyword or argument).
[x { y z }]	Braces and vertical lines within square brackets indicate a required choice within an optional element. Spaces are used to clearly delineate parts of the command.

IOS Command Syntax (Cont.)

The following examples demonstrate conventions used to document and use IOS commands:

- **ping** *ip-address* - The command is **ping** and the user-defined argument of *ip-address* is the IP address of the destination device. For example, **ping 10.10.10.5**.
- **traceroute** *ip-address* - The command is **traceroute** and the user-defined argument of *ip-address* is the IP address of the destination device. For example, **traceroute 192.168.254.254**.

Some commands are is complex with multiple arguments

```
Switch(config-if)# switchport port-security aging { static | time time | type {absolute | inactivity}}
```

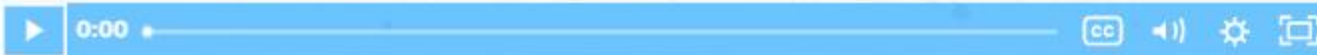
The Cisco IOS Command Reference is the ultimate source of information for a particular IOS command.

Video - Context Sensitive Help and Command Syntax Check

Video - Context-Sensitive Help and Command Syntax Check

This video covers the following:

- Use the help command in user EXEC, privileged EXEC, and global config modes
- Finish commands and arguments with the help command
- Use the command syntax checker to fix syntax errors and incomplete commands



The Command Structure

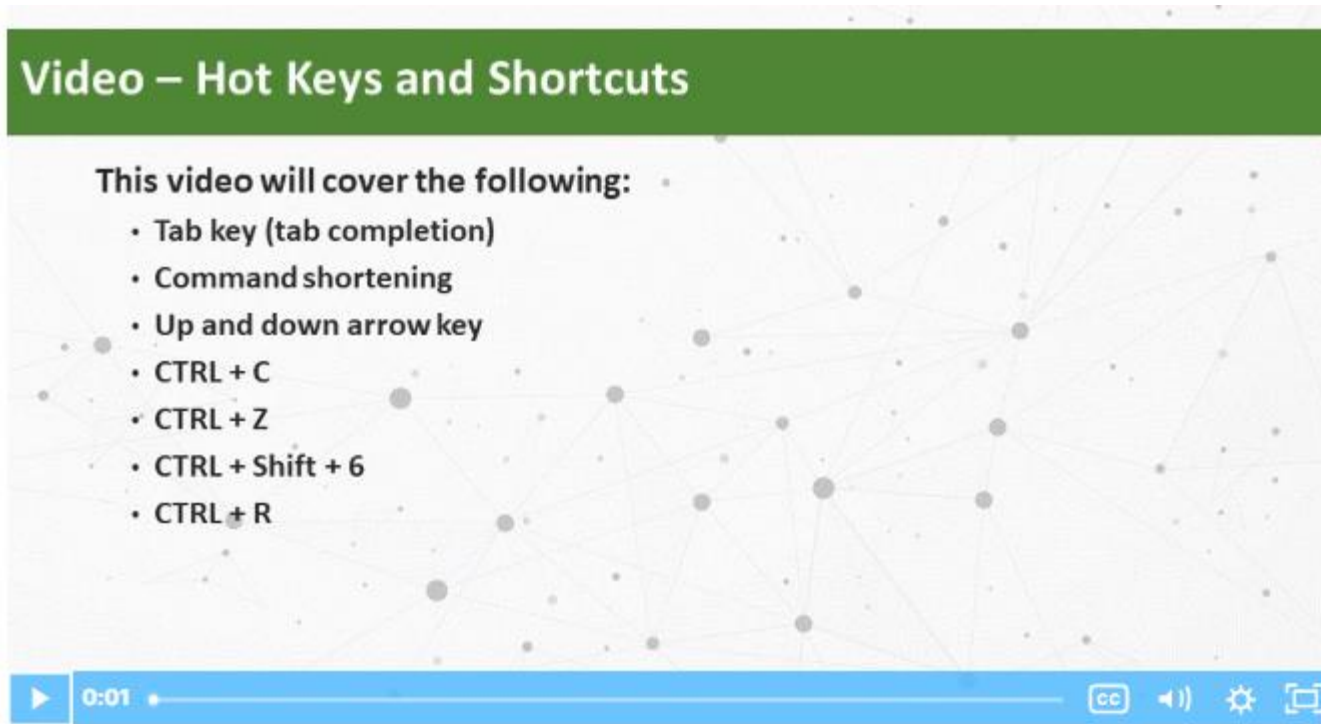
Hotkeys and Shortcuts

Key Stroke	Description
Ctrl+E	Moves the cursor to the end of command line.
Up Arrow or Ctrl+P	Recalls the previous command in the history buffer, beginning with the most recent command.
Down Arrow or Ctrl+N	Goes to the next line in the history buffer.
Ctrl+R or Ctrl+I or Ctrl+L	Redisplays the system prompt and command line after a console message is received.
Enter	Displays the next line.
Space	Displays the next screen.
Any other key*	Ends the display string, returning to previous prompt. *Except "y", which answers "yes" to the --More-- prompt, and acts like the Space .
Ctrl-C	When in any configuration mode, ends the configuration mode and returns to privileged EXEC mode. When in setup mode, aborts back to the command prompt.
Ctrl-Z	When in any configuration mode, ends the configuration mode and returns to privileged EXEC mode.
Ctrl-Shift-6	All-purpose break sequence used to abort DNS lookups, traceroutes, pings, and to interrupt an IOS process.

Hotkeys and Shortcuts (Cont.)

Key Stroke	Description
Tab	Completes a partial command name entry.
Backspace	Erases the character to the left of the cursor.
Ctrl+D	Erases the character at the cursor.
Ctrl+K	Erases all characters from the cursor to the end of the command line.
Esc D	Erases all characters from the cursor to the end of the word.
Ctrl+U or Ctrl+X	Erases all characters from the cursor back to the beginning of the command line.
Ctrl+W	Erases the word to the left of the cursor.
Ctrl+A	Moves the cursor to the beginning of the line.
Left Arrow or Ctrl+B	Moves the cursor one character to the left.
Esc B	Moves the cursor back one word to the left.
Esc F	Moves the cursor forward one word to the right.
Right Arrow or Ctrl+F	Moves the cursor one character to the right.

Video - Hot Keys and Shortcuts



Video – Hot Keys and Shortcuts

This video will cover the following:

- Tab key (tab completion)
- Command shortening
- Up and down arrow key
- CTRL + C
- CTRL + Z
- CTRL + Shift + 6
- CTRL + R

0:01

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Packet Tracer – Navigate the IOS

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

18.3 View Device Information

View Device Information

Video - Cisco IOS Show Commands



View Device Information

Show Commands

Command	Used to
show running-config	Verify the current configuration and settings.
show interfaces	Verify the interface status and see if there are any error messages.
show ip interface	Verify the Layer 3 information of an interface.
show arp	Verify the list of known hosts on the local Ethernet LANs.
show ip route	Verify the Layer 3 routing information.
show protocols	Verify which protocols are operational.
show version	Verify the memory, interfaces, and licenses of the device.

Packet Tracer – Use Cisco IOS Show Commands

In this activity, you explore some Cisco IOS show commands.

18.4 The Cisco IOS Command Line Summary

What Did I Learn in this Module?

- The Cisco IOS command line interface (CLI) is a text-based program that enables entering and executing Cisco IOS commands to configure, monitor, and maintain Cisco devices.
- The Cisco CLI can be used with either in-band or out-of-band management tasks.
- The Cisco IOS software separates management access into the following two command modes
 - User EXEC Mode – with limited capabilities for basic operations.
 - Privileged EXEC Mode – Used to execute configuration commands.
- Syntax checker is a simulation tool used to help build configuration and troubleshooting skills.
- Each IOS command has a specific syntax and can only be executed in the appropriate mode.
- The general syntax for a command is the command followed by appropriate keywords and arguments.
- A keyword is specific parameter defined in the operating system.
- An argument is a value or variable defined by the user.

Module 18 – New Terms and Commands

- user EXEC mode
- privilege EXEC mode
- Syntax Checker
- keyword
- argument
- Ctrl-C
- Ctrl-Z
- Ctrl-Shift-6
- **show running-config**
- **show interface**
- **show ip interface**
- **show arp**
- **show ip route**
- **show protocols**
- **show version**

