



# Understanding Cisco IOS Software Basics

This section describes what you need to know about the Cisco IOS software before you configure the router using the CLI. Understanding these concepts will save time as you begin to use the commands. If you have never used Cisco IOS software or need a refresher, take a few minutes to read this chapter before you proceed to the next chapter.

If you are already familiar with Cisco IOS software, proceed to the *Configuring Host Name and Password* section in this guide.

- [Basics Before Using Commands, on page 1](#)
- [Command Modes, on page 2](#)
- [Undoing a Command or Feature, on page 3](#)
- [Saving Configuration Changes, on page 3](#)
- [Upgrading to a New Cisco IOS Release, on page 3](#)
- [Where to Go Next, on page 4](#)

## Basics Before Using Commands

The following table specifies some basic rules and notes to configure the device by using the command line interface. Use the question mark (?) and arrow keys to help you enter commands:

Rule	Example
For a list of available commands, enter a question mark.	Router> ?
To complete a command, enter a few known characters followed by a question mark (with no space).	Router> s?
For a list of command variables, enter the command followed by a space and a question mark.	Router> show ?
To redisplay a command you previously entered, press the Up Arrow key. You can continue to press the Up Arrow key for more commands.	

# Command Modes

The Cisco IOS user interface is divided into different modes. Each command mode permits you to configure different components on your router. The commands available at any given time depend on which mode you are currently in.

Entering a question mark (?) at the prompt displays a list of commands available for each command mode. The following table lists the most common command modes:

**Table 1: Common Command Modes**

Command Mode	Access Method	Router Prompt Displayed	Exit Method
User EXEC	Log in	Router>	Use the <b>logout</b> command.
Privileged EXEC	From user EXEC mode, enter the <b>enable</b> command.	Router#	To exit to user EXEC mode, use the <b>disable</b> , <b>exit</b> , or <b>logout</b> command.
Global configuration	From the privileged EXEC mode, enter the <b>configure terminal</b> command.	Router (config)#	To exit to privileged EXEC mode, use the <b>exit</b> or <b>end</b> command, or press <b>Ctrl-Z</b> .
Interface configuration	From the global configuration mode, enter the GigabitEthernet interface command such as, <b>gigabitEthernet0/0</b> .	Router (config-if)#	To exit to global configuration mode, use the <b>exit</b> command. To exit directly to privileged EXEC mode, press <b>Ctrl-Z</b> .



### Timesaver

Each command mode restricts you to a subset of commands. If you are having trouble entering a command, check the prompt, and enter the question mark (?) for a list of available commands. You might be in the wrong command mode or be using the wrong syntax.

In the following example, notice how the prompt changes after each command, to indicate a new command mode for the voice gateway:

```
Router> enable
Password: <enable password>
Router# configure terminal
Router (config)# interface gigabitEthernet 0/0/0
Router#
%SYS-5-CONFIG_I: Configured from console by console
```

The last message is normal and does not indicate an error. Press **Return** to get the Router# prompt.



### Note

Press **Ctrl-Z** in any mode to immediately return to enable mode (Router#) instead of entering **exit**, which returns you to the previous mode.

## Undoing a Command or Feature

If you want to undo a command you entered or disable a feature, enter the keyword **no** before most commands.

For example, **no ip routing**.

## Saving Configuration Changes

To prevent the loss of your device configuration, save the configuration changes to NVRAM.

---

**Step 1** Router> enable

**Example:**

```
Password: password
```

**Example:**

```
Router#
```

Enables the privileged EXEC mode. Enter your password, if prompted.

**Step 2** Router# copy running-config startup-config

Saves the configuration changes to NVRAM so that the changes are not lost during resets, power cycles, or power outages.

**Step 3** Router(config-if)# Ctrl-z

**Example:**

```
Router#
```

**Example:**

```
%SYS-5-CONFIG_I: Configured from console by console
```

Returns to the user EXEC mode.

---

## Upgrading to a New Cisco IOS Release

To install or upgrade to a new Cisco IOS release, see [How to Update or Upgrade Cisco IOS Software](#).



---

**Note** For Cisco VG410 Voice Gateway, the DSP container will be automatically upgraded when you upgrade the Cisco IOS-XE image.

---

## Where to Go Next

Now that you have learned some Cisco IOS software basics, you can begin to configure the router using the CLI. However, before you begin, here are a few useful tips.

- Use the question mark (?) and arrow keys to help you enter commands.
- Each command mode restricts you to a set of commands. If you have difficulty entering a command, check the prompt and then enter the question mark (?) for a list of available commands. You might be in the wrong command mode or you might be using the wrong syntax.
- To disable a feature, enter the keyword **no** before the command. For example, **no ip routing**.
- Save your configuration changes to NVRAM so that the changes are not lost if there is a system reload or power outage.

To begin the configuration of the router, proceed to the *Configuring the Host Name and Password* section in this guide.