

Cisco IOS Command Hierarchy

Cisco IOS (Internetwork Operating System) uses a hierarchical command-line interface (CLI) structure that organizes commands into different modes. Each mode provides access to specific sets of commands, ensuring proper configuration control and security. Understanding this hierarchy is essential for effective network device management.

User EXEC Mode

Prompt: Router>

This is the initial mode when logging into a Cisco device. It provides limited, read-only access for basic monitoring commands such as *show*, *ping*, and *traceroute*. Users cannot view or modify configuration settings from this mode.

Privileged EXEC Mode

Prompt: Router#

Access: Type *enable* from User EXEC mode

Also known as Enable mode, this level provides full access to all *show* and *debug* commands. Users can view complete configuration files, test connectivity, and access all monitoring tools. This mode is password-protected to prevent unauthorized access.

Global Configuration Mode

Prompt: Router(config)#

Access: Type *configure terminal* from Privileged EXEC mode

This mode allows configuration changes that affect the entire device, including hostname, DNS settings, routing protocols, access control lists, and other system-wide parameters. Changes made here apply globally unless overridden by more specific configurations.

Specific Configuration Modes

Access: Accessed from Global Configuration mode via specific commands

From Global Configuration mode, administrators can enter specialized sub-modes to configure specific components:

- **Interface Configuration Mode** (Router(config-if)#): Configure individual network interfaces including IP addresses, descriptions, and interface-specific settings
- **Line Configuration Mode** (Router(config-line)#): Configure console, auxiliary, and virtual terminal (VTY) lines for device access
- **Router Configuration Mode** (Router(config-router)#): Configure routing protocols such as OSPF, EIGRP, or BGP
- **VLAN Configuration Mode** (Switch(config-vlan)#): Configure VLANs on Layer 2 switches

Navigation Commands

Key commands for moving through the hierarchy:

Command	Function
<i>enable</i>	Enter Privileged EXEC mode
<i>disable</i>	Return to User EXEC mode
<i>configure terminal</i>	Enter Global Configuration mode
<i>exit</i>	Move back one level in hierarchy
<i>end</i>	Return to Privileged EXEC mode from any config mode

Mastering the Cisco IOS command hierarchy enables efficient device management and reduces configuration errors. Always verify mode transitions using the prompt indicator and use ? for context-sensitive help at any level.