

# Day 4: Introduction to the CLI

## CCNA 200-301 Study Guide: Device Management & CLI Fundamentals

Mastering initial device access and Command-Line Interface (CLI) navigation is the foundation for all network configuration, troubleshooting, and security hardening. These skills are central to Domain 1.0 (Network Fundamentals) and Domain 5.0 (Security Fundamentals).

### 1.0 Establishing the Initial Console Connection

Before network-based protocols (SSH/Telnet) can be used, you must establish "out-of-band" access. This is the only reliable method for managing unconfigured devices.

#### 1.1 Physical Hardware and Cabling

- Console Port: A dedicated management port (RJ-45 or USB mini-B).
- Rollover Cable: A specialized cable with reversed pinouts designed for serial communication.
- USB-to-Serial Adapter: Required for modern PCs lacking native DB9 serial ports.

**Critical Note:** A rollover cable is electrically incompatible with standard Ethernet signaling. Using a standard Ethernet cable in a console port will not work and may cause hardware damage.

# 1.2 Terminal Emulator Configuration

Use an application like PuTTY or Tera Term with the following precise serial settings:

Setting	Value
Baud Rate (Speed)	9600 bps
Data Bits	8
Parity	None
Stop Bits	1
Flow Control	None

# 2.0 Mastering the Cisco IOS CLI

The Cisco Internetwork Operating System (IOS) uses a hierarchical mode structure to prevent accidental configuration errors by restricting sensitive commands to specific modes.

## 2.1 The Hierarchy of CLI Modes

Mode Name	Prompt	Access Method	Core Function
User EXEC	Router>	Default on login.	Basic monitoring/connectivity tests.
Privileged EXEC	Router#	enable	Full "show" commands, file mgmt, reloads.
Global Config	Router(config)#	configure terminal	Commands affecting the entire device.
Interface Config	Router(config-if)#	interface [type/id]	Specific interface settings (IP, Speed).

## 2.2 Navigation & Productivity Shortcuts

Command/Shortcut	Purpose and Operational Impact
exit	Moves back one level in the hierarchy.
end or Ctrl+Z	Immediately returns to Privileged EXEC mode.

?	Context-sensitive help; lists available commands/options.
Tab	Command completion; also verifies correct syntax.
do	Executes a Privileged EXEC command from configuration modes.

## 3.0 Core Device Configuration and Security

### 3.1 Establishing Identity and Access

- Hostname: Use hostname [Name] in Global Config to identify the device.
- Securing Privileged Access:
  - enable password: Insecure. Stores password in plain text. Do not use.
  - enable secret: Best Practice. Stores password as a strong cryptographic hash.

Precedence Rule: If both are configured, the device always enforces the enable secret and ignores the plain-text password.

### 3.2 Password Obfuscation & Reversal

- service password-encryption: Applies weak, reversible encryption to plain-text passwords to prevent "shoulder surfing."
- The no Command: Prefix any command with no to remove or reverse it (e.g., no hostname).

## 4.0 Managing and Saving Configuration Files

It is vital to distinguish between active (volatile) memory and permanent storage.

### 4.1 The Two Key Configuration Files

File Type	Storage Location	Persistence	View Command
Running Configuration	RAM	Volatile: Lost on power loss.	show running-config
Startup Configuration	NVRAM	Non-Volatile: Persists on reboot.	show startup-config

## 4.2 Persisting Changes

To save active changes, you must copy the running configuration to the startup configuration:

```
copy running-config startup-config
```

# 5.0 Study Summary: Critical Recall

- Console Settings: 9600, 8, N, 1 (8-N-1).
- Access Escalation: User EXEC  $\rightarrow$  enable  $\rightarrow$  Privileged EXEC  $\rightarrow$  conf t  $\rightarrow$  Global Config.
- Encryption Best Practice: Always use enable secret over enable password.
- Final Step: Always perform a copy run start before exiting your session to ensure changes survive a reboot.

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