



Lecture 8- Router Types, Ports & Cables



1. Types of Routers Provided by Cisco

Cisco provides **two main types of routers** ✅ :

◆ **Unmanaged Routers**

- No configuration changes allowed ❌
- Mostly used in **homes**
- Plug and play devices



Daily Life Example:

- Like a basic TV remote with fixed buttons
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◆ **Managed Routers**

- Used in **companies & enterprises**
- Fully configurable
- High security & control

Managed routers are of **two types** 👇



2. Mountable vs Non-Mountable Routers

◆ **Mountable Routers**

- Ports/modules can be **added or removed**
- Supports **1, 2, 4 or more extra ports**
- Router must be **powered OFF** before adding interfaces
- Includes **Console & AUX ports**

 Example:

- Like upgrading RAM in a laptop 
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◆ Non-Mountable Routers

- Fixed hardware
- Usually **4 LAN ports only**
- Ports **cannot be changed**

 Example:

- Like a sealed smartphone 
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3. Important Router Ports

Console Port

- Used to **configure router physically**
- Connects router to **laptop/PC** using console cable
- Requires **PuTTY application**

 Purpose:

- Initial configuration
- Password recovery

 Example:

- Like using USB cable to configure a new phone 
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AUX Port

- Used in **older Cisco routers**
- Allowed remote access using modem 

- Rarely used in modern routers
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🌐 Telnet & SSH

Used for **remote router access** 🛡️

Protocol Security

Telnet ✗ Not secure

SSH ✓ Secure (Encrypted)

🔌 USB Port

- Used when router OS is corrupted ⚠️
- Cisco IOS can be **reinstalled using USB**

🧠 Example:

- Like reinstalling Windows using a pen drive 🖮
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⚡ 4. LAN Port Types & Speeds

LAN ports connect **PCs, switches, routers** 🔗

Port Type	Speed	Usage
Ethernet (Eth)	10 Mbps	Very old networks
Fast Ethernet (Fa)	100 Mbps	Old networks
Gigabit Ethernet (Gig)	1 Gbps	Modern networks
10 Gig Ethernet	10 Gbps	Data centers
25G / 40G / 100G	Ultra Fast	ISPs & Cloud

💡 5. RJ45 Ethernet Cable Basics

RJ45 cable has **4 twisted pairs (8 wires)** 📡

◆ Straight-Through Cable

Used to connect **different devices** ✎

📌 Example:

- PC ↔ Switch
- Router ↔ Switch

◆ Wire Order (Both Ends Same – T568B)

1. White-Green
2. Green
3. White-Orange
4. Blue
5. White-Blue
6. Orange
7. White-Brown
8. Brown



◆ Crossover Cable

Used to connect **same devices** ✎

📌 Example:

- PC ↔ PC
- Switch ↔ Switch

◆ **Wire Order**

Side A (T568B):

1. White-Green
2. Green
3. White-Orange
4. Blue
5. White-Blue
6. Orange
7. White-Brown
8. Brown

Side B (T568A):

1. White-Orange
2. Orange
3. White-Green
4. Blue
5. White-Blue
6. Green
7. White-Brown
8. Brown





6. How to Download PuTTY

- 1 Open web browser 
 - 2 Search **PuTTY download**
 - 3 Open official website
 - 4 Select Windows version (32-bit or 64-bit)
 - 5 Download .exe file
 - 6 Install and open PuTTY
 - 7 Select **Serial / COM port** for console access
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7. Checking IP Details Using CMD

Command:

ipconfig

Shows:

- Private IP Address
- Subnet Mask
- Default Gateway



8. Cisco Packet Tracer Software

Used for **network simulation & practice** 

◆ Why Packet Tracer?

- Practice CCNA labs
 - Design networks virtually
 - No physical devices needed
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How to Download Cisco Packet Tracer

- 1** Open browser 
 - 2** Search **Cisco Packet Tracer download**
 - 3** Login using Cisco NetAcad account
 - 4** Choose correct OS (Windows/Linux)
 - 5** Download installer
 - 6** Install and launch Packet Tracer
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Key Takeaways

- Cisco routers can be managed or unmanaged
 - Console port is used for initial setup
 - SSH is more secure than Telnet
 - Cable type depends on device connection
 - Packet Tracer is essential for CCNA practice 
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◆ 1 Chapter Summary

This chapter focuses on **routers, their types, ports, cables, and practical tools** used in real networking environments.

You learned:

- Types of Cisco routers (Managed vs Unmanaged)
- Difference between **Mountable & Non-Mountable routers**
- Important router ports (Console, AUX, USB, LAN)
- Difference between **Telnet and SSH**
- LAN port speeds (Ethernet → 100G)
- Ethernet cable types (**Straight-through & Crossover**)
- RJ45 wiring standards (T568A & T568B)
- Use of **PuTTY** for router configuration
- Checking IP details using **CMD**
- Importance of **Cisco Packet Tracer** for CCNA practice

👉 This chapter builds **hands-on networking foundation** 🧠💻

◆ 2 Chapter Conclusion 🎯

Routers are the **backbone of any network** 🌐.

Understanding router types, ports, and cables is **mandatory** for:

- Network Engineers 💻
- CCNA / CCNP aspirants 💡
- Data center & enterprise networking 🏢

Key takeaway:

- **Managed routers** = control + security 🔒
- **Console port** = first step of router life 🚨
- **SSH > Telnet** always ✅

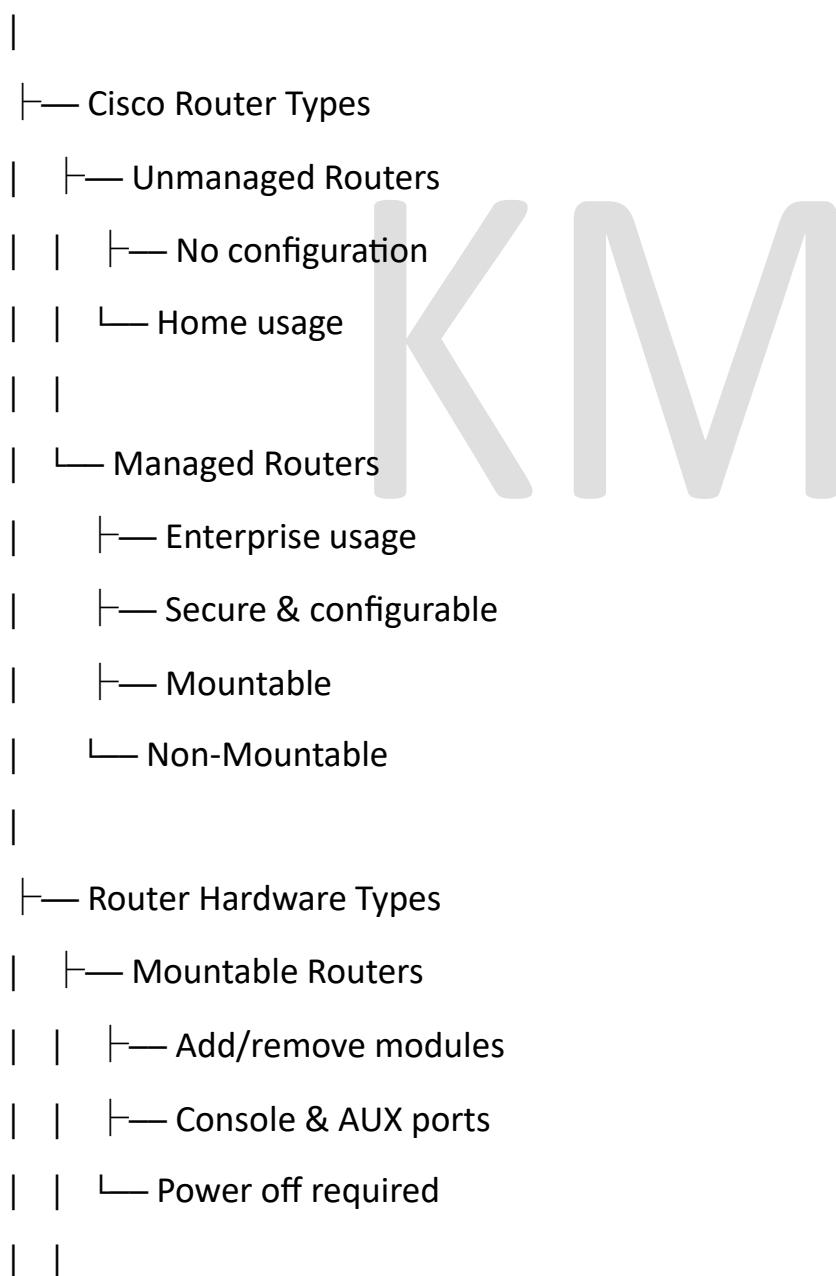
- **Correct cable selection** avoids network failure ✘
- **Packet Tracer** helps you practice without hardware 💡

💡 Interviewer mindset:

“If he knows ports + cables clearly, he can work on real devices.” 🔥

◆ 3 Detailed Mind Map

Lecture 8: Router Types, Ports & Cables



- | └ Non-Mountable Routers
 - | └ Fixed ports
 - | └ Limited expansion
 - |
 - | └ Router Ports
 - | └ Console Port
 - | └ AUX Port
 - | └ USB Port
 - | └ LAN Ports
 - |
 - | └ Remote Access
 - | └ Telnet (Not secure)
 - | └ SSH (Encrypted)
 - |
 - | └ LAN Port Speeds
 - | └ Ethernet (10 Mbps)
 - | └ Fast Ethernet (100 Mbps)
 - | └ Gigabit (1 Gbps)
 - | └ 10G Ethernet
 - | └ 25G / 40G / 100G
 - |
 - | └ Ethernet Cables
 - | └ Straight-Through
 - | | └ Different devices
 - | |
 - | └ Crossover

- | └ Same devices
- |
- | └ RJ45 Standards
- | | └ T568A
- | | └ T568B
- |
- | └ Tools
- | | └ PuTTY
- | | └ Cisco Packet Tracer
- |
- └ Commands
 - └ ipconfig



◆ Q & A

❓ Q1. What are the types of Cisco routers?

Answer:

Cisco provides **two types of routers**:

- **Unmanaged routers** (no configuration, home use  - **Managed routers** (enterprise use, fully configurable 
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❓ Q2. What is an unmanaged router?

Answer:

An unmanaged router is a **plug-and-play device** where configuration changes are **not allowed**.

Used mostly in **home networks**.

❓ Q3. Why are managed routers used in companies?

Answer:

Because managed routers provide:

- Security 
 - Traffic control 
 - Custom configuration
 - Better monitoring
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❓ Q4. What is a mountable router?

Answer:

A mountable router allows **hardware modules or ports to be added or removed**.

Router must be **powered OFF** before adding interfaces .

❓ Q5. Difference between mountable and non-mountable routers?

Answer:

Feature	Mountable	Non-Mountable
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Ports	Changeable	Fixed
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Flexibility	High	Low
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Usage	Enterprise	Small networks
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❓ Q6. What is a console port?

Answer:

A console port is used for **initial router configuration** by physically connecting a PC using a **console cable**.

❓ Q7. When is console port used?

Answer:

- First-time router setup
 - Password recovery
 - When network access is not available
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❓ Q8. What software is used with console port?

Answer:

PuTTY is used to access router CLI via console port .

❓ Q9. What is an AUX port?

Answer:

AUX port allows **remote access using modem**.

It is mostly **obsolete** now .

? Q10. Difference between Telnet and SSH?

Answer:

Protocol Security

Telnet  Plain text

SSH  Encrypted

 SSH is always preferred .

? Q11. What is the use of USB port in a router?

Answer:

USB port is used to **reinstall Cisco IOS** when the router OS is corrupted .

? Q12. What are LAN ports used for?

Answer:

LAN ports connect:

- PCs 
 - Switches 
 - Routers 
-

? Q13. Explain LAN port speeds.

Answer:

- Ethernet → 10 Mbps
 - Fast Ethernet → 100 Mbps
 - Gigabit → 1 Gbps
 - 10G / 25G / 40G / 100G → Data centers & ISPs 
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❓ Q14. What is an RJ45 cable?

Answer:

RJ45 is an **8-wire twisted-pair Ethernet cable** used for LAN communication .

❓ Q15. What is a straight-through cable?

Answer:

Used to connect **different devices** like:

- PC ↔ Switch
- Router ↔ Switch

Both ends use **same wiring standard (T568B)**.

❓ Q16. What is a crossover cable?

Answer:

Used to connect **same devices** like:

- PC ↔ PC
- Switch ↔ Switch

Uses **T568A on one end and T568B on the other**.

❓ Q17. What is T568A and T568B?

Answer:

They are **RJ45 wiring standards** that define the color order of Ethernet wires



❓ Q18. Which cable is mostly used today?

Answer:

Straight-through cable, because modern devices support **auto MDI-X** .

❓ Q19. What command is used to check IP details?

Answer:

ipconfig

It shows IP address, subnet mask, and gateway .

❓ Q20. What is Cisco Packet Tracer?

Answer:

Cisco Packet Tracer is a **network simulation tool** used to practice CCNA labs **without real hardware** .

❓ Q21. Why is Packet Tracer important for students?

Answer:

Because it allows:

- Virtual network design
 - Command practice
 - Real-world scenarios
 - Zero hardware cost 
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❓ Q22. Real-life example of router?

Answer:

A router works like a **traffic police**  , deciding which data goes where.
