🚀 LECTURE 8 – Cisco Packet Tracer: Basic Router Configuration

In this lecture, we learn how to configure a simple network on Cisco Packet Tracer using:

- 1 Router

- 1 Switch

- 2 PCs

- Cables

- Basic router setup (IP, speed, enabling interface)

- PC IP configuration

- Passwords: enable password, enable secret

- Console password

- Telnet password

- SSH setup (most important part)

🟦 1. Creating a Basic Network in Packet Tracer

Devices Needed

✔ One Router
✔ One Switch
✔ Two PCs
✔ Appropriate cables (straight-through cable for PC–Switch, and Switch–Router)

Steps

1. Open Packet Tracer

2. Go to **Network Devices → Routers → Select CISCO 2911** (or any router)

3. Add a Switch (ex: 2960)

4. Add 2 PCs

5. Connect:
   - PC1 → Switch
   - PC2 → Switch
   - Switch → Router (GigabitEthernet port)

🟦 2. Showing Interface Speeds & Ports

If port numbers are not visible:

Steps:

1. Go to **Options**
2. Select **Preferences**
3. Tick the option:
   ✔ "Always Show Port Labels in Logical Workspace"

Now all port numbers will be visible.

🟦 3. Router Configuration (Step-by-Step)

Click the Router → CLI →

It asks:
"Would you like to enter the initial configuration dialog?"
Select: **NO**

Press ENTER twice → You reach:

Router>

✔ Enter Privileged EXEC mode

enable

✔ Enter Global Configuration mode

configure terminal

or

conf t

🟦 4. Assign IP Address to Router Interface

Go to interface:

interface g0/0

or

int g0/0

Assign IP:

ip address 10.0.0.1 255.0.0.0

Enable the interface (VERY IMPORTANT – by default interfaces are shutdown):

no shutdown

⭐ Why?

All router interfaces are OFF by default for safety.
no shutdown turns it on.

⭐ Daily Life Example:

When a new ISP router arrives, the technician enables its WAN/LAN ports before connecting to the internet.

🟦 5. PC IP Configuration

Click PC → Desktop → IP Configuration

Enter:

IP Address: (example) 10.0.0.10
Subnet Mask: Automatically fills (255.0.0.0)
Default Gateway: 10.0.0.1 → **router's IP**

⭐ Why default gateway is needed?

To send traffic outside your own network.

Daily Example:

Your PC uses 192.168.1.1 as default gateway to access Google.

🟦 6. Speed Settings on Router Interface

To check speed options:

int g0/0

speed ?

Possible values:

- 100

- 1000

- auto

To set speed:

speed 100

or

speed 1000

To verify interface status:

show int g0/0

🟦 7. Checking IP & Interface Status

✔ To check ALL interfaces:

show ip interface brief

Shows:

- Each interface

- IP address

- Status (up/down)

✔ To check a specific interface:

show int g0/0

🟦 8. Description for Interfaces

To add description (useful in companies):

int g0/0

description Connected to PC

⭐ Why important?

Helps engineers understand what each interface connects to.

Example:

In real companies:

- Gi0/0 → Connected to Firewall
- Gi0/1 → Connected to Switch
- Gi0/2 → Internet Link

🟦 9. Show Commands in Global Mode

You **cannot** run show commands directly in Global Configuration mode.

You must type:

do show ip int brief

Why?
"do" executes a privileged command from configuration mode.

🟦 10. Router Password Protection

Routers use different types of passwords:

1. Enable Password

2. Enable Secret

3. Console Password

4. Telnet Password

5. SSH Password

🟧 A) Enable Password & Enable Secret

Enable Password

enable password 1234

- Uses **MD7 encryption**

- Weak

- Can be cracked easily

- Not recommended in real companies

- Shown as plain-text unless encryption is enabled

Enable Secret (MOST SECURE)

enable secret mysecret123

- Uses **MD5 hashing**

- Strong

- Cannot be reversed easily

- Industry standard

- ALWAYS preferred over enable password

✔ View Password in Running Config

show running-config

Enable password = weak
Enable secret = encrypted

✔ Remove password:

no enable secret

🟧 B) Setting the Router Hostname

hostname BranchRouter

Why?

- Helps identify routers in large networks

- Used in SSH authentication (required)

🟧 C) Setting Console Password

Console = local access to router.

Commands:

line console 0

password 123

login

⭐ Why set console password?

To prevent unauthorized people from configuring the router locally.

🟧 D) Telnet Password (Remote Access)

Telnet is an **insecure** remote login method.

Commands:

line vty 0 15

password telnet12345

login

Meaning:

- VTY 0–15 → allows 16 simultaneous Telnet users

- Everyone must enter this password

🔴 **Why Telnet is NOT recommended?**

Because Telnet sends:

- username

- password

- commands

in **plain text**.

Anyone can sniff it.

🟧 **E) SSH Configuration (Most Secure) — VERY IMPORTANT**

SSH uses encryption and is the preferred remote access method.

Step 1: Set hostname

hostname Router1

Step 2: Set domain name

ip domain-name codingseekho.in

Step 3: Generate RSA key

crypto key generate rsa

It will ask:

How many bits in the modulus?

You can give:

- 1024

- 2048 (recommended)

More bits = more secure.

Step 4: Create a user account

username admin privilege 15 secret adminpass123

privilege 15 = full admin access

Step 5: Enable SSH-only access on VTY

line vty 0 4

transport input ssh

password 12345

login

Now only SSH is allowed.

⭐ **Daily Life Example of SSH:**

When engineers manage routers in:

- Banks

- Data centers

- Cloud networks

- IT companies

They ALWAYS use SSH (port 22).

Telnet is banned.

✔ **Saving everything**

do write

or

do wr

🟩 **FINAL SUMMARY (Perfect for Revision)**

✔ **Build network using router + switch + 2 PCs**

✔ **Assign IP to router interfaces**

✔ **Enable interfaces using no shutdown**

✔ **Configure PC IP + subnet mask + gateway**

✔ **Set interface speed**

✔ **Check connectivity using show ip int brief**

✔ **Add interface descriptions**

✔ **Enable passwords:**

- enable password (weak)

- enable secret (strong)

✔ **Console password**

✔ **Telnet password**

✔ **SSH configuration (recommended)**