

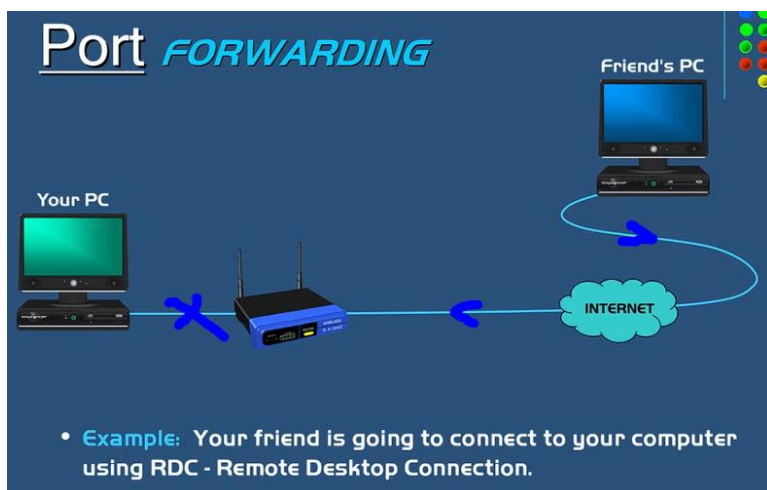
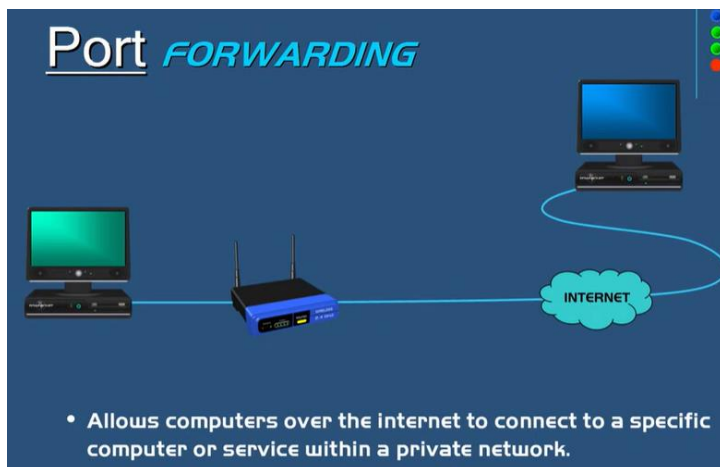
What is Port Forwarding?

- Port forwarding lets computers **on the internet** connect to a **specific computer or service** inside a **private (home) network**.
- It's like opening a small door in your router to let certain traffic go to the right computer.

Example: Remote Desktop Connection

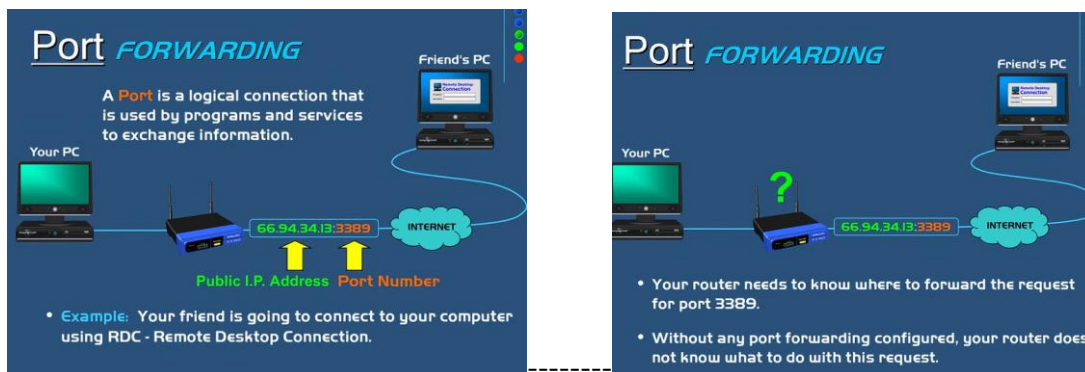
- Suppose your friend wants to **control your PC remotely** using **Remote Desktop (RDP)**.
- Remote Desktop uses **port 3389** to communicate.
- Your friend sends a request to your **public IP address** with **port 3389**.
- When the request reaches your **router**, it needs to know **which computer** inside your home to send it to.

Without port forwarding, your router won't know where to send this request — so the connection fails.



How to Set Up Port Forwarding

1. **Find your router's IP address:**
 - Open **Command Prompt** → type `ipconfig` → look for **Default Gateway** (this is your router's internal IP).
2. **Find your computer's IP address** (also shown in `ipconfig`).
3. **Login to your router:**
 - Open a web browser → enter router's IP (e.g., 192.168.1.1).
4. **Go to the Port Forwarding section.**
5. **Add a new rule:**
 - **Name:** Remote Desktop
 - **Port number:** 3389
 - **IP Address:** Your computer's IP (e.g., 192.168.1.2)
6. **Save settings.**
7. Now, when your friend connects using port 3389, the router forwards the connection to your computer.



Analogy: Phone System

- Think of a company phone system:
 - The **phone number** reaches the company.
 - The **extension number** directs the call to the right department.
- In networking:
 - The **IP address** is like the phone number.
 - The **port number** is like the extension.
 - The **router** acts like the phone operator.
 - The **computers inside** are like the different departments.
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Ports in Networking

- A **port** is a **logical connection** (not physical).
- Each port is linked to a **specific service or application**.
- **Ports identify what kind of traffic** is coming in (web, email, file transfer, etc.).

Common Port	Use
20, 21	FTP (File Transfer Protocol)
80	Web pages (HTTP)
443	Secure web pages (HTTPS)
3389	Remote Desktop (RDP)

- Port numbers range from **0 to 65,535**.
- **Well-known ports:** 0–1023 (used by standard services like web, email, etc.).

Summary

- **Port forwarding** = router instruction that says:
“When data comes in on this port, send it to this computer.”
- It helps outside computers access specific services in a private network.
- It’s useful for gaming servers, remote desktop, web servers, etc