



# Association For Cyber Security

## Introduction To Routers

Routers are like traffic directors for the internet. They help send information from one place to another. They do this by connecting to different types of internet cables, like the ones in your house or at a big company.

Routers use smart rules to decide which way to send each piece of information. Before, we talked about how to connect to these cables in your house or office. Now, we're going to talk about how to set up routers in a big company and how to connect a small office or home to the internet through a fast connection.

Enterprise Router A typical big company's network has a few main locations and many smaller remote places. To make sure all the devices at each *location (like computers, phones, and printers)* can communicate, they use something called a LAN switch at each place.

Each location also has a router that connects to the LAN switch and to a special internet link called a WAN link. This WAN link connects the remote places back to the main location and also to other remote places through the main location.

There are two types of diagrams that we assume, we can use to draw this network.

One type, is good for talking about the technical details of how the network works. It shortly shows things like IP addresses and doesn't focus too much on the physical stuff. For example, it represents Ethernet LANs with simple lines and doesn't show all the LAN switches. It also shows Ethernet WANs as straight lines with cloud shapes, and the router labels like "*G0/1/0*" and "*G0/0/0*" stand for different parts of the router.

The other type, gives more details about the physical stuff in the network and less about the technical details. In this type of diagram, we can see the LAN switches and how they connect outside the main diagram.



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The router's Ethernet ports are shown as RJ-45 connectors, and you just connect a cable between the router and the nearby LAN switch.



When it comes to the special internet links (serial WANs), we need to consider where the special hardware called CSU/DSU is. In real networks, these links end at a CSU/DSU. Sometimes, the CSU/DSU is a separate device outside the router, like on the left side of router R1

Other times, it's integrated into the router's serial interface hardware, like on the right side of router R2 in the same diagram. For the cables, the service provider (the company that gives the internet connection) will bring the cable into the company's wiring closet and put a special connector called RJ-48 on the end.

This cable should connect to the CSU/DSU. If there's an *internal CSU/DSU (like with router R2)*, the router's serial port has an RJ-48 port where you connect the cable. If there's an external CSU/DSU, you need to connect it to the router's serial card using a short serial cable. Cisco Integrated Services Routers (ISRs) are a family of routers developed by Cisco Systems, a leading networking and telecommunications company.

These routers are designed to provide a comprehensive set of networking services and features in a single, integrated platform. They play a critical role in connecting and managing networks, facilitating communication between devices, and enabling various applications and services

Association for Cyber Security looks forward towards your success!

Contact us: +91 7938001181 | Email: [info@acs.albussec.com](mailto:info@acs.albussec.com)

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