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# Connectivity Infrastructure Overview

The design of a communications network for any organization requires the following:

- a physical link such as a fiber optic or coaxial cable, a phone line, or radio link connecting the premises to the Service Provider
- a secure Internet connection from the Internet Service Provider (ISP) using the physical link
- a router for high-speed Internet connection of the internal network to the Internet
- firewall capabilities to ensure security of the internal network
- one or more data switches that link computers to one another inside the premises
- management and security software for all components of the network and IT infrastructure
- wireless (WIFI) access points and WIFI controllers that deliver wireless network access to the premises and immediate surrounds
- devices used by people for various library functions such as telephones, computers, tablets, scanners, printers, security cameras

The conceptual flow is that the ISP sends information to the modem, which connects to the router, which then connects the servers, desktops, printers, laptops and tablets , either wired or wirelessly.

A typical network infrastructure includes:

- External Network Services:
  - High Speed Internet link
  - Fibre Internet Link
  - Coaxial Cable
  - Line of Sight Radio Link (microwave)
  - Digital Subscriber Link (DSL)
  - Satellite
- Networking Hardware:
  - firewall
  - routers
  - switches
  - Wireless routers and Access Points (WAP)
  - cabling
  - electrical power
- Networking Software:
  - Domain Name Service
  - Network Address Translation (NAT)
  - Network Segmentation (VLAN)
  - Network security applications - Intrusion Detection, threat prevention, Cybersecurity solutions
  - Network operations and management

The aim of this guide is hopefully to deepen your understanding of connectivity and assist you in procurements and planning without overwhelming you with acronyms.

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