The building blocks of e-Commerce are the technologies of the Worldwide Web—protocols, standards, browsers, and servers. Applications like communication network and wireless networks are made possible by the tying Internet infrastructure servers, software, and storage that enable work on the Internet: balancing, firewall security, backup, and distribution and management.

Satellite companies offer broadband networks to reach people where telephone service is not available. Cable television providers have prepared their network two-way Internet traffic via boxes that act as converters for inbound and outbound traffic, for data other than video or voice. Telecommunications companies provide new technologies for higher-bandwidth communication across existing network. Wireless networks are being convened for Internet use and mobile-commerce providers for each technological area play a major role in the expansion of Internet. As figure 5.1 shows, they form the overall building blocks of electronic commerce.

The Internet is a network of networks. A network is any-to-any communication. This communication is made possible by assigning a unique address to each station (called a node) on the network. This technical architecture like the telephone network connecting your phone to any other phone. All you need is the other party's phone number. Intermediary nodes (normally-special computers) forward traffic between network segments. These nodes include routers and switches, linking the nodes together within a network and among networks is called data communications.

This chapter is about the technologies of the Internet. Technologies are specified by protocols, meaning rules that govern the way a network operates, how applications access the network, how data travel in packets, and how electrical signals represent data on a network cable. In Internet terminology, any computer of any site attached to the Internet is a host—servers as well as home PCs. Each host has an assigned number to identity it to other hosts, much like a phone number. This is called an IP address. Throughout the chapter, we use the host when we explain the various aspects of the technology and how it works.
To understand how the Internet works for e-Commerce, you need to know the mechanics of networking. The chapter begins by reviewing some core networking concepts: how data are sent from one place to another, and the standards used when you dial into the Internet from home, from the office, or on the road. We will also look at the TCP/IP-OSI standards architecture that governs the Internet worldwide.

As an information technology (IT) student or a student of business, you will not need to learn how to program switches or routers, but you will need to understand how they work and the functions they perform in an e-Commerce environment. This background will help you work with planners and network designers to know what you're getting in return for financial investment in the infrastructure.

**What is a Network?**

Before we get into the technical aspects of the Internet and how computers communicate on the Internet, it is important to have a clear idea of the concept of a network. Put simply, a network is a connection between at least two computers for the purpose of sharing resources. All networks are based on the concept of sharing.

**Types of Network**

There are two types of networks: peer-to-peer or Client server networks. The latter type is what you expect to find in every e-Commerce's technology infrastructure. Peer-to-peer is a simplified version of a small business for in-house purposes. Computers in peer-to-peer networks are together as equals, with no centralized server or control.

Any computer gets its resources with any other computer on the same network in any land whenever it chooses to do so. Users are network administrators in charge of control access to the resources that reside on their own computer. The flexibility of this arrangement peer-to-peer networks can result security can be a problem (see figure 2.1).
As a rule, a peer-to-peer setup connects fewer than 10 computers. It is apt late for a dental clinic or a travel agency, for example. As the number of Increases, the peer-to-peer environment becomes impractical. The more that try to access resources on any particular computer. The worse the finance of the user’s machine being accessed across the network. For file, if a user's printer is network accessible, it slows down every lime Buffer user in the network sends a job to that printer.

Another drawback is the status of information. With each machinelike a server, it is difficult for users to know what information on computer Backing up files is also difficult. Each network computer has up its own data, which makes the whole process inefficient and unwieldy.

Client/Server Networks. A server is simply a special-per computer or specialized hardware and software designed for one function address a client’s requests. A client is any computer or workstation conned to the server within a network. One of the main advantages of client/server networks is centrized control over network resources.

All programs or applications reside on the server. Tor example, a client might send a request to die server lo use Microsoft Word. The server all the client to download the executable portion of
Word. When the work finished, the program is uploaded onto the server for storage and future use. Client-server system is a multi-user environment. More than one other user can access any programme or application that resides on the server (Figure 2.2).

![Client Server Network](image)

Figure-2.2 Client/Server Network

**Key Benefits**

- Pros and Cons of Peer-to-Peer Networks
- Users can control their own shared resources
- Easy to install.
- Easy to configure the system
- Inexpensive to purchase and operate
- No dependence on a dedicated server
- Ideal for small businesses of 10 users or fewer.
- All you need to set up this network is an operating system and a few cables
- No need for a full-time network administrator.

**Key Drawbacks**

- Network security is applied to one computer at a time.
- Every time a computer in the network is accessed, performance suffers.
- Backup is performed on each machine separately to protect shared resources.
- Users have to use a separate password on each computer in the network.
- No centralized setup to locate, manage, or control access to data.
Servers are usually fast computers with physical and logical security lie of controlling who accesses what resource. They provide centralized nation of user passwords and current accounts. To access an application server, a user must provide a name and password to the server’s domain pillar. The whole setup is monitored network administrator, who is the only person authorized to make changes words or to issue passwords 1 he pros and cons of client server design. Compared to peer-to-peer designs, a client/server network costs more, enquires more knowledgeable stall to manage it and causes problems. A client 'server design is appropriate when more than Id users must share network resources, when centralized security and when users require access to specialized servers on a regular basis.

In the United States, transmission lines and routers arc owned by commercial organizations. To use the Internet, your computer must be connected to an organization called an Internet Service Provider (ISP). When you send information from another host computer, you dial into a HP whose router connects you lo the router of the other host computer this involve intermediary routers that bounce your message across routers eventual destination

![Figure 2.3 Mail server and ISP Network](image)

They are called an Internet protocol suite, or Transmission Control Protocol, or TCP/IP. This is the most widely used protocol suite on the Internet. Packet switching is a basic Internet communication term. It relates in the way data are exchanged between two communicating computers. The technology divides data into packets (datagrams), which also contain control information like Internet addresses of the source and destination computers, once loaded, they are sent independently through the network and reassembled
at the destination computer into the original message. Bandwidth is the medium that makes packet transmission possible.

Packet switching makes it possible to enable multiple communicating computers to share the network efficiently, quickly, and accurately. The main problem with such a setup is possible loss of packed during network congestion. Congestion causes delay (latency) and compounded loss of packets during the process. This is why it is quite a feat to implement Internet telephony (telephone calls over the Interact), considering the likely distortions it causes.

Internet is not a single large network, but a series of interconnected networks (hence its name), using specialized devices called routers that pass packets from one network to another.

**Other Networks**

TCP-IP protocols are not restricted to the Internet. Companies have found them useful in creating intranets, or internal company networks using TCP/IP to share information within an organization. Companies wishing to connect with vendors and suppliers establish shared databases and use TCP/IP to form connections among the Internet, an intranet, and an extranet.