

Dr.Umayal Ramanathan College for Women
Accredited with B+ Grade by NAAC
Affiliated to Alagappa University
(Run by Dr.Alagappa Educational Trust)
Karaikudi – 630 003

Study Material
Academic Year 2020-21

Name of the Faculty: V.Seethalakshmi

Department: COMMERCE WITH COMPUTER APPLICATION

**II YEAR – IV SEMESTER
COURSE CODE: 7BCC4C1**

CORE COURSE - IX – E-COMMERCE AND INTERNET

Unit - I

Introduction to E-Commerce – Application of E-Commerce – E-Commerce and Media convergence – Market forces influencing I-way – components of I-way – network Access Equipment – Global Information Distribution Networks.

Unit – II

Architectural Framework of Electronic Commerce – World Wide Web (WWW) as the Architecture – Web Background – Hypertext Publishing – Technology behind the Web – security and the web type of Electronic payment system (EPS) – Digital token Based EPS – Smart cards and EPS credit card Based EPS – Risk and EPS – Designing EPS.

Unit – III

Electronic data interchange – EDI applications in Business – EDI legal, security and privacy issues – EDI and E-commerce– Internal Information systems – macro – forces and Internal commerce – supply chain Management (SCM) – Dimension of internal electronic commerce systems – making a business case for a document Library – Types of Digital documents – corporate data warehouses.

Unit – IV

Introduction to Internet – History and resources of Internet – Hardware and software requirement of Internet –Internet Architecture – Internet working Protocol - Internet service providers (ISP)– Connecting to Internet - Internet connection Dial-up access, leased line, ISDN, DSL, cable modem – Internet Addressing.

Unit – V

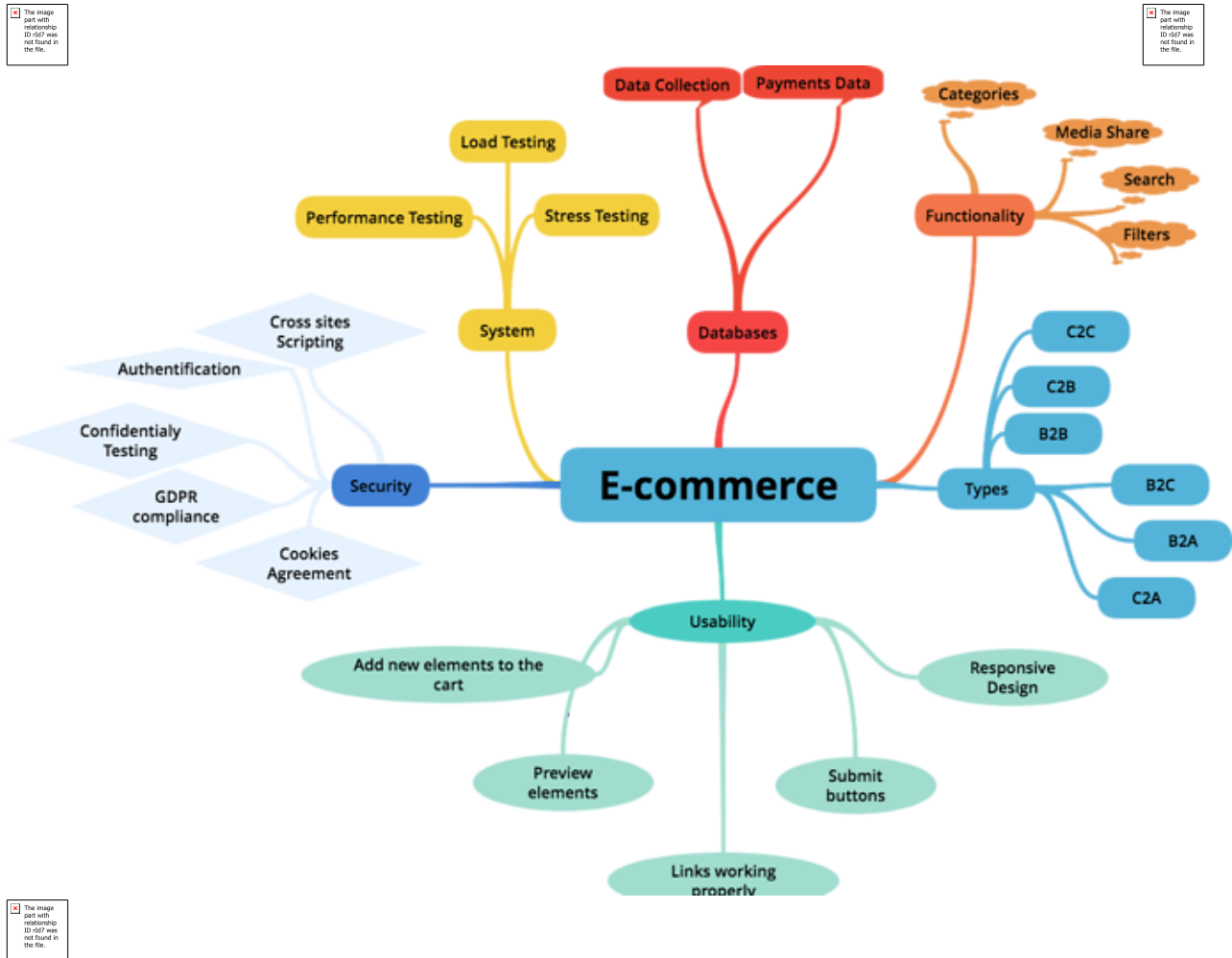
Internet Services : E-Mail – WWW – FTP – Telnet – News – Internet Relay Chat -Introduction to web – URLs schemes, host names and port numbers – Web browser – Search Engines - Web pages protocol – Adding website to favorites – Customizing options.

Learning Outcome:

- E-Commerce is new way of conducting, managing and executing business transactions using computer and telecommunications networks.
- As awareness of the 24 IT in Action Internet throughout the commercial world and general public increases, more and more business activities using internet based technology.
- The real key to making electronic commerce over the Internet a normal, every day business activity is the convergence of the telecommunications, content/media and software industries.
- E-commerce is expected to improve the productivity and competitiveness of participating businesses by unprecedented access to an online global market place with million of customers and thousands of products and services.
- Analyze how Internet technology has changed value propositions and business models.
- electronic commerce and describe how it has changed consumer retailing and business-to-business transactions.
- Compare the principal payment systems for electronic commerce.
- Assess the challenges posed by electronic business and electronic commerce and management solutions.

UNIT-I

Mind Map



UNIT-I

Introduction:

Electronic Commerce:

- Electronic commerce, commonly known as E-commerce is trading in products or services using computer networks, such as the Internet.
- Electronic commerce draws on technologies such as mobile commerce, electronic funds transfer, supply chain management, Internet marketing, online transaction processing, electronic data interchange (EDI), inventory management systems, and automated data collection systems.
- Modern electronic commerce typically uses the World Wide Web for at least one part of the transaction's life cycle, although it may also use other technologies such as e-mail.

Definition of E-commerce:

Sharing business information, maintaining business relationships and conducting business transactions using computers connected to telecommunication network is called E-Commerce.

E-Commerce Categories:

1. Electronic Markets

Present a range of offerings available in a market segment so that the purchaser can compare the prices of the offerings and make a purchase decision.

Example: Airline Booking System

2. Electronic Data Interchange (EDI)

- It provides a standardized system
- Coding trade transactions
- Communicated from one computer to another without the need for printed orders and invoices & delays & errors in paper handling
- It is used by organizations that make a large no. of regular transactions

Example: EDI is used in the large market chains for transactions with their suppliers

3. Internet Commerce

- It is used to advertise & make sales of wide range of goods & services.
- This application is for both business to business & business to consumer transactions.

Example: The purchase of goods that are then delivered by post or the booking of tickets that can be picked up by the clients when they arrive at the event.

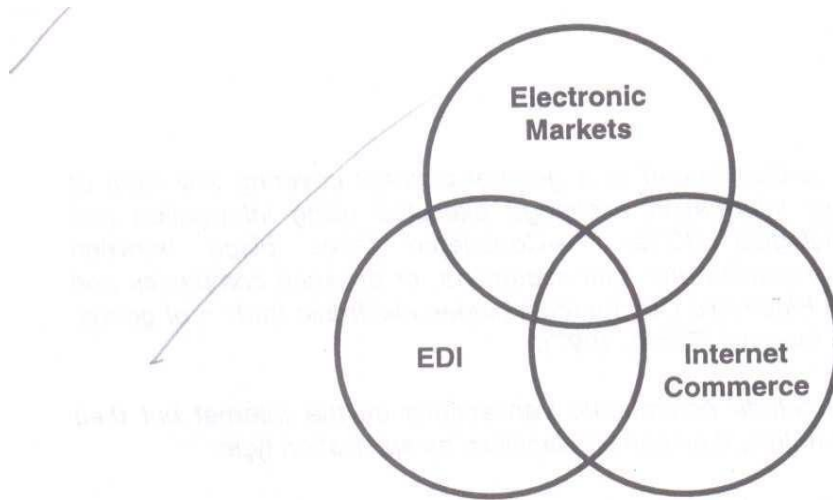


Fig. 1.1 The three categories of e-Commerce.

Advantages Of E-commerce:

- Buying/selling a variety of goods and services from one's home or business
- Anywhere, anytime transaction
- Can look for lowest cost for specific goods or service
- Businesses can reach out to worldwide clients - can establish business partnerships
- Order processing cost reduced
- Electronic funds transfer faster
- Supply chain management is simpler, faster, and cheaper using ecommerce
 - Can order from several vendors and monitor supplies.
 - Production schedule and inventory of an organization can be inspected by cooperating supplier who can in-turn schedule their work

Disadvantages Of E-commerce:

- Electronic data interchange using EDI is expensive for small businesses
- Security of internet is not very good - viruses, hacker attacks can paralyse e-commerce
- Privacy of e-transactions is not guaranteed
- E-commerce d-personalizes shopping

Threats of E-commerce:

- Hackers attempting to steal customer information or disrupt the site
- A server containing customer information is stolen.
- Importers can mirror your e commerce site to steal customer money
- Authorized administrators/users of an e commerce website downloading hidden active content that attacks the e commerce system.
- A disaffected employee disrupting the e commerce system.
- It is also worth considering where potential threats to your e commerce site might come from, as identifying potential threats will help you to protect your site. Consider:
- Who may want to access your e commerce site to cause disruption or steal data; for example competitors, ex-employees, etc.
- What level of expertise a potential hacker may possess; if you are a small company that would not be likely to be considered a target for hackers then expensive, complex security may not be needed.

Features of E-Commerce:

➤ **Ubiquity**

Internet/Web technology is The marketplace is extended beyond traditional available everywhere: at work, at home, and boundaries and is removed from a temporal and elsewhere via mobile devices, anytime. geographic location. -Marketplace is created; shopping can take place anywhere. Customer convenience is enhanced, and shopping costs are reduced.

➤ **Global reach**

The technology reaches Commerce is enabled across cultural and across national boundaries, around the earth. national boundaries seamlessly and without modification.

-Marketplace includes potentially billions of consumers and millions of businesses worldwide.

➤ **Universal standards**

There is one set of technical media standards technology standards, namely Internet across the globe.

➤ **Richness**

Video, audio, and text messages Video, audio, and text marketing messages are are possible. integrated into a single marketing message and consuming experience.

➤ **Interactivity**

The technology works Consumers are engaged in a dialog that through interaction with the user. dynamically adjusts the experience to the individual, and makes the consumer a co- participant in the process of delivering goods to the market.

➤ **Information density**

The technology Information processing, storage, and reduces information costs and raises quality. communication costs drop dramatically, while currency, accuracy, and timeliness improve greatly. Information becomes plentiful, cheap, and accurate.

➤ **Personalization/Customization**

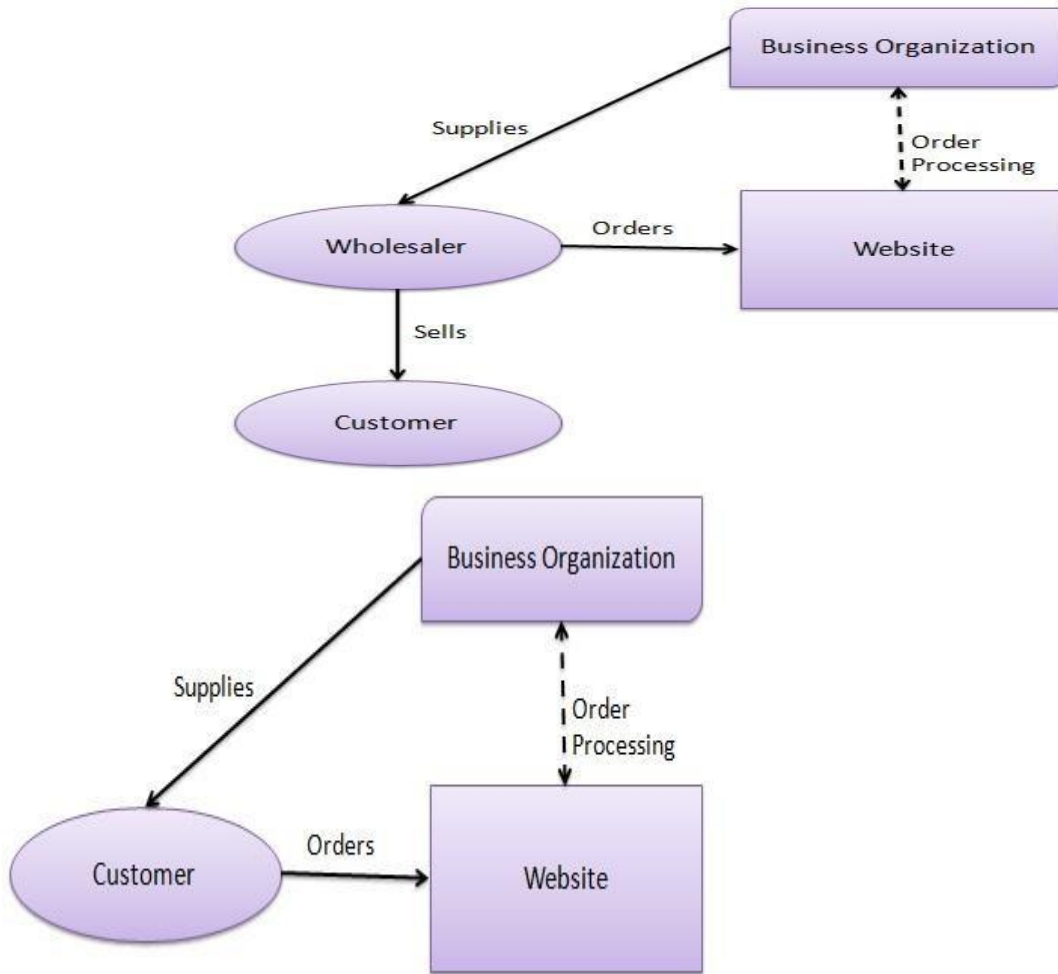
The Personalization of marketing messages and technology allows personalized messages to customization of products and services are be delivered to individuals as well as groups. based on individual characteristics.

Business models of e-commerce:

There are mainly 4 types of business models based on transaction party.

Business-to-Consumer (B2C)

In a Business-to-Consumer E-commerce environment, companies sell their online goods to consumers who are the end users of their products or services. Usually, B2C E-commerce web shops have an open access for any visitor, meaning that there is no need for a person to login in order to make any product related inquiry.

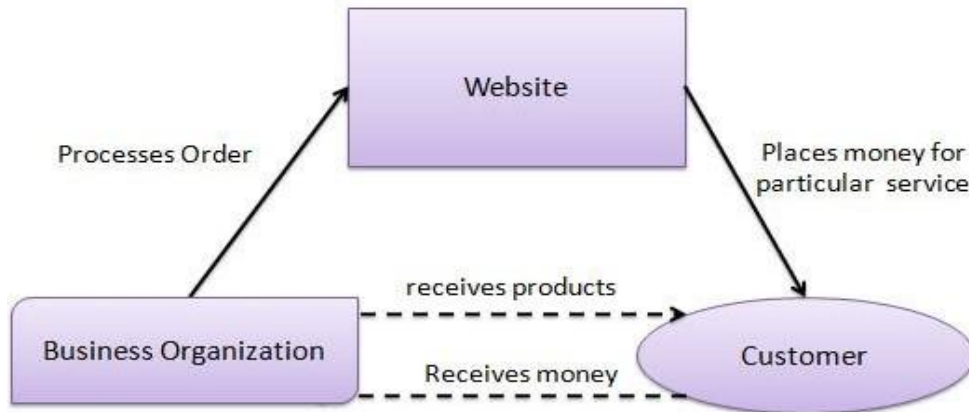


Business-to-Business (B2B)

In a Business-to-Business E-commerce environment, companies sell their online goods to other companies without being engaged in sales to consumers. In most B2B E-commerce environments entering the web shop will require a log in. B2B web shop usually contains customer-specific pricing, customer-specific assortments and customer-specific discounts.

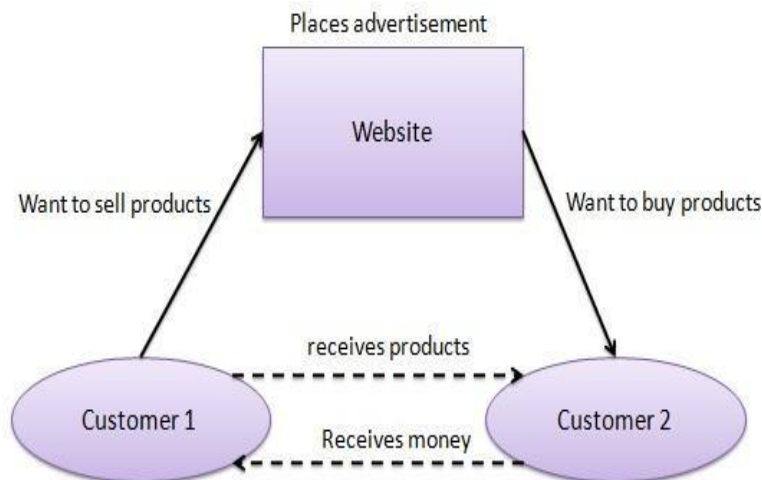
Consumer-to-Business (C2B)

In a Consumer-to-Business E-commerce environment, consumers usually post their products or services online on which companies can post their bids. A consumer reviews the bids and selects the company that meets his price expectations.



Consumer-to-Consumer (C2C)

In a Consumer-to-Consumer E-commerce environment consumers sell their online goods to other consumers. A well-known example is eBay.



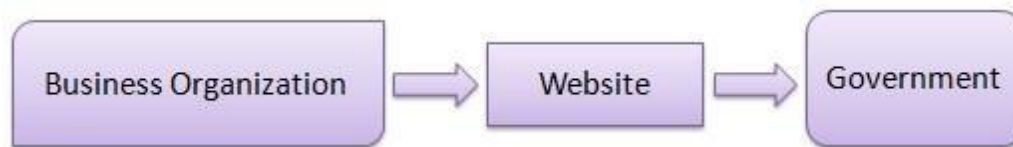
1.2 E-Governance:

E-governance is the application of information and communication technology (ICT) for delivering government services, exchange of information communication transactions, integration of various stand-alone systems and services between government-to-customer (G2C), government-to-business (G2B), government-to-government (G2G) as well as back office processes and interactions within the entire government framework.

Through e-governance, government services will be made available to citizens in a convenient, efficient and transparent manner. The three main target groups that can be distinguished in governance concepts are government, citizens and businesses/interest groups. In e-governance there are no distinct boundaries.

Business - to - Government (B2G)

B2G model is a variant of B2B model. Such websites are used by government to trade and exchange information with various business organizations. Such websites are accredited by the government and provide a medium to businesses to submit application forms to the government.



Government - to - Business (G2B)

Government uses B2G model website to approach business organizations. Such websites support auctions, tenders and application submission functionalities.



Government - to - Citizen (G2C)

Government uses G2C model website to approach citizen in general. Such websites support auctions of vehicles, machinery or any other material. Such website also provides services like registration for birth, marriage or death certificates. Main objectives of G2C website are to reduce average time for fulfilling people requests for various government services.

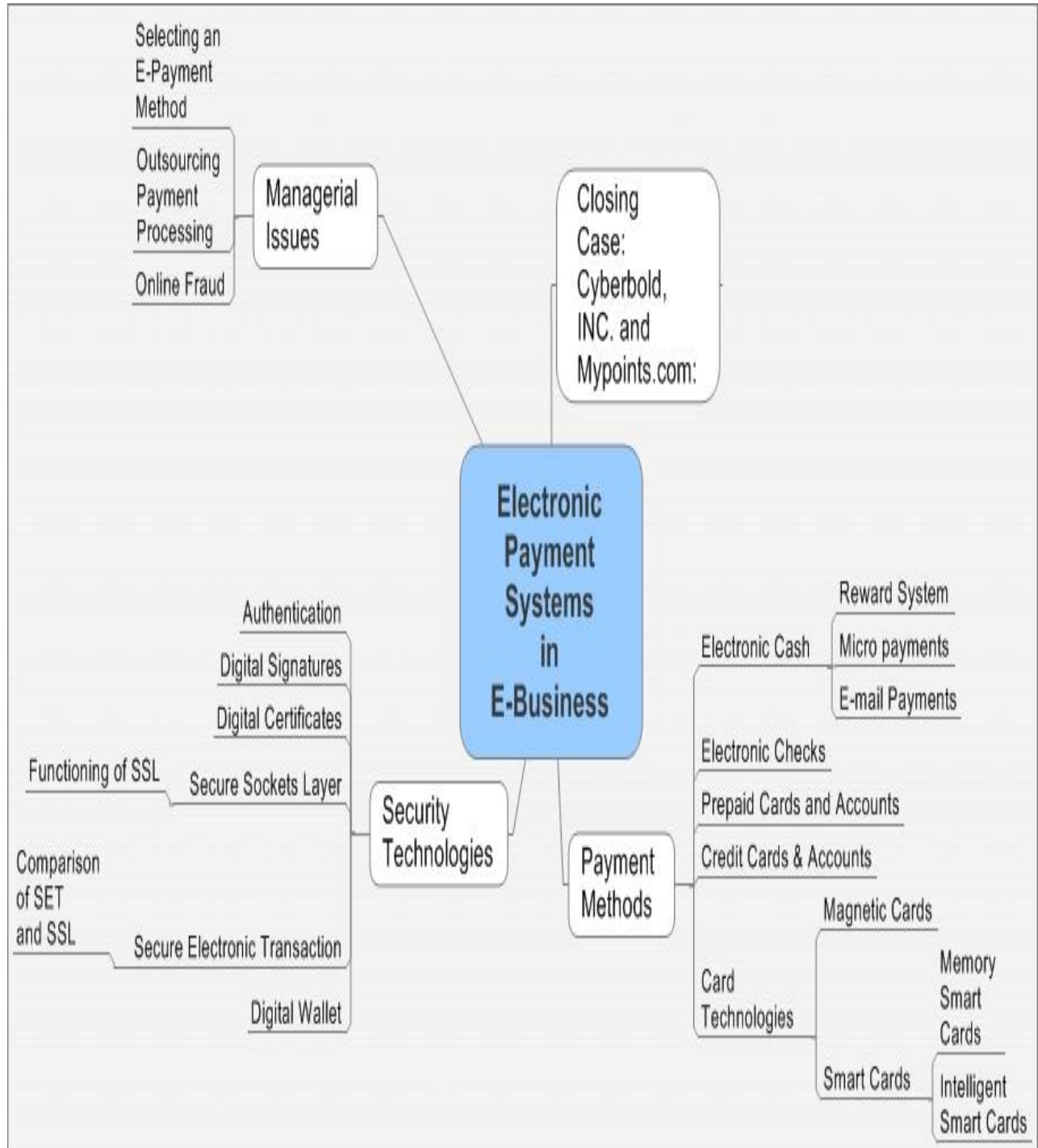


Questions for your self-study:

1. What are the key technologies for B2B E-commerce? Explain architectural models of B2B E-commerce.
2. What are the various components of electronic commerce applications?
3. Discuss the E-commerce Architecture and its components in detail with the help of a diagram.
4. What are the four types of consumer oriented applications of E-commerce? Discuss them briefly.
5. List the advantages and disadvantages of EC.

UNIT-II

Mind Map



UNIT-II

Electronic Payment System:

Electronic payment systems are central to on-line business process as companies look for ways to serve customers faster and at lower cost. Emerging innovations in the payment for goods and services in electronic commerce promise to offer a wide range of new business opportunities.

Electronic payment systems and e-commerce are highly linked given that on-line consumers must pay for products and services. Clearly, payment is an integral part of the mercantile process and prompt payment is crucial. If the claims and debits of the various participants (consumers, companies and banks) are not balanced because of payment delay, then the entire business chain is disrupted. Hence an important aspect of e-commerce is prompt and secure payment, clearing, and settlement of credit or debit claims.

Electronic payment systems are becoming central to on-line business transactions nowadays as companies look for various methods to serve customers faster and more cost effectively. Electronic commerce brings a wide range of new worldwide business opportunities. There is no doubt that electronic payment systems are becoming more and more common and will play an important role in the business world. Electronic payment always involves a payer and a payee who exchange money for goods or services. At least one financial institution like a bank will act as the issuer (used by the payer) and the acquirer (used by the payee).

Types of Electronic Payment Systems:

Electronic payment systems are proliferating in banking, retail, health care, on-line markets, and even government—in fact, anywhere money needs to change hands.

- Organizations are motivated by the need to deliver products and services more cost effectively and to provide a higher quality of service to customers.
- The emerging electronic payment technology labeled electronic funds transfer (EFT).
- EFT is defined as -any transfer of funds initiated through an electronic terminal telephonic instrument, or computer or magnetic tape so as to order, instruct, or authorize a financial institution.

EFT can be segmented into three broad categories:

- **Banking and financial payments**
 - Large-scale or wholesale payments (e.g., bank-to-bank transfer)
 - Small-scale or retail payments (e.g., automated teller machines)
 - Home banking (e.g., bill payment)
- **Retailing payments**
 - Credit Cards (e.g., VISA or MasterCard)
 - Private label credit/debit cards (e.g., J.C. Penney Card)
 - Charge Cards (e.g., American Express)
- **On-line electronic commerce payments**
 - ❖ **Token-based payment systems**
 - Electronic cash (e.g., DigiCash)
 - Electronic checks (e.g., NetCheque)
 - Smart cards or debit cards (e.g., Mondex Electronic Currency Card)
 - ❖ **Credit card-based payments systems**
 - Encrypted Credit Cards (e.g., World Wide Web form-based encryption)
 - Third-party authorization numbers (e.g., First Virtual)

E-Cash:

- There are many ways that exist for implementing an e-cash system, all must incorporate a few common features.
- Electronic Cash is based on cryptographic systems called -digital signatures!
- This method involves a pair of numeric keys: one for locking (encoding) and the other for unlocking (decoding).

E-cash must have the following four properties.

- Monetary value
 - Interoperability
 - Retrievability
 - Security
- Electronic cash is a general term that describes the attempts of several companies to create value storage and exchange system that operates online in much the same way that government-issued currency operates in the physical world.

- Concerns about electronic payment methods include:

- Privacy
- Security
- Independence
- Portability

Electronic Cash Storage:

- Two methods

- **On-line**

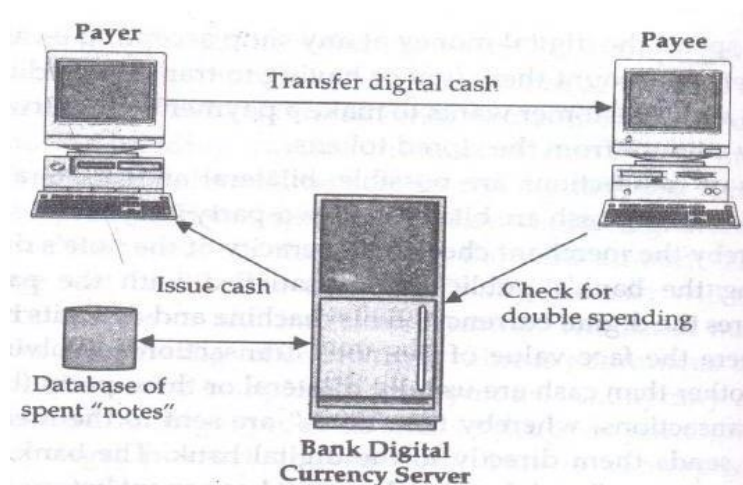
- Individual does not have possession personally of electronic cash
- Trusted third party, e.g. e-banking, bank holds customers' cash accounts

- **Off-line**

- Customer holds cash on smart card or electronic wallet
- Fraud and double spending require tamper-proof encryption

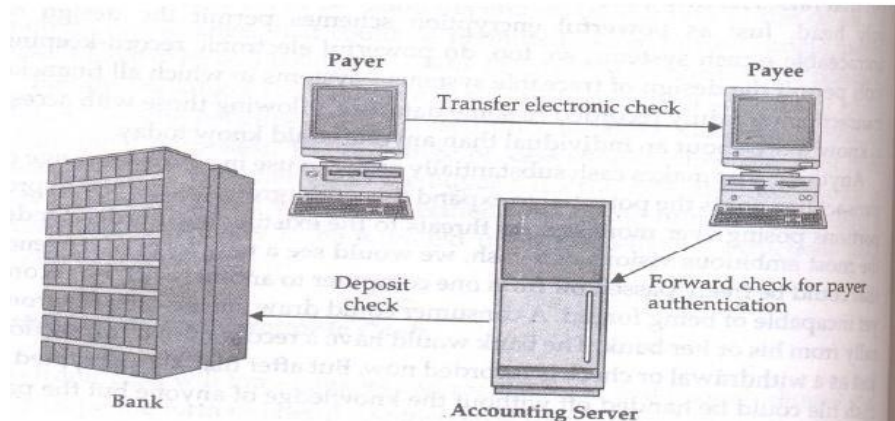
The purchase of e-cash from an on-line currency server (or bank) involves two steps:

- Establishment of an account
- Maintaining enough money in the account to bank the purchase.
- Once the tokens are purchased, the e-cash software on the customer's PC stores digital money undersigned by a bank.
- The users can spend the digital money at any shop accepting e-cash, without having to open an account there or having to transmit credit card numbers.
- As soon as the customer wants to make a payment, the software collects the necessary amount from the stored tokens Convenience



Electronic Checks:

- It is another form of electronic tokens.
- Buyers must register with third-party account server before they are able to write electronic checks.
- The account server acts as a billing service.



Advantages of Electronic Checks:

1. They work in the same way as traditional checks.
2. These are suited for clearing micropayments.
3. They create float & availability of float is an important for commerce.
4. Financial risk is assumed by the accounting server & may result in easier acceptance.

Smart Cards & Electronic Payment Systems:

- Smart cards have been in existence since the early 1980s and hold promise for secure transactions using existing infrastructure.
- Smart cards are credit and debit cards and other card products enhanced with microprocessors capable of holding more information than the traditional magnetic stripe.
- The smart card technology is widely used in countries such as France, Germany, Japan, and Singapore to pay for public phone calls, transportation, and shopper loyalty programs.

Types of Smart Cards:

- Relationship-Based Smart Credit Cards
- Electronic Purses also known as debit cards
- **Relationship-Based Smart Credit Cards:**
 - It is an enhancement of existing cards services &/ or the addition of new services that a financial institution delivers to its customers via a chip-based card or other device.
 - These services include access to multiple financial accounts, value-added marketing programs, or other information card holders may want to store on their card.
 - It includes access to multiple accounts, such as debit, credit, cash access, bill payment & multiple access options at multiple locations.

□ **Electronic Purses:**

To replace cash and place a financial instrument are racing to introduce electronic purses, wallet-sized smart cards embedded with programmable microchips that store sums of money for people to use instead of cash for everything.

The electronic purse works in the following manner:

- After purse is loaded with money at an ATM, it can be used to pay for candy in a vending machine with a card reader.
- It verifies card is authentic & it has enough money, the value is deducted from balance on the card & added to an e-cash & remaining balance is displayed by the vending machine.

Credit Card-Based Electronic Payment Systems:

Payment cards are all types of plastic cards that consumers use to make purchases:

– Credit cards

- Such as a Visa or a MasterCard, has a preset spending limit based on the user's credit limit.

– Debit cards

- Removes the amount of the charge from the cardholder's account and transfers it to the seller's bank.

– Charge cards

- Such as one from American Express, carries no preset spending limit.

Advantages:

- Payment cards provide fraud protection.
- They have worldwide acceptance.
- They are good for online transactions.

Disadvantages:

Payment card service companies charge merchants per-transaction fees and monthly processing fees.

Risks in Electronic Payment systems:

- Customer's risks
 - Stolen credentials or password
 - Dishonest merchant
 - Disputes over transaction
 - Inappropriate use of transaction details
- Merchant's risk
 - Forged or copied instruments
 - Disputed charges
 - Insufficient funds in customer's account
 - Unauthorized redistribution of purchased items

Electronic payments Issues:

- Secure transfer across internet
- High reliability: no single failure point
- Atomic transactions
- Anonymity of buyer
- Economic and computational efficiency: allow micropayments
- Flexibility: across different methods
- Scalability in number of servers and users

Security Requirements In Electronic Payment Systems:**□ Integrity and authorization**

A payment system with integrity allows no money to be taken from a user without explicit authorization by that user. It may also disallow the receipt of payment without explicit consent, to prevent occurrences of things like unsolicited bribery. Authorization constitutes the most important relationship in a payment system. Payment can be

authorized in three ways: via out-band authorization, passwords, and signature.

□ **Out-band authorization**

In this approach, the verifying party (typically a bank) notifies the authorizing party (the payer) of a transaction. The authorizing party is required to approve or deny the payment using a secure, out-band channel (such as via surface mail or the phone). This is the current approach for credit cards involving mail orders and telephone orders: Anyone who knows a user's credit card data can initiate transactions, and the legitimate user must check the statement and actively complain about unauthorized transactions. If the user does not complain within a certain time (usually 90 days), the transaction is considered -approved by default.

□ **Password authorization**

A transaction protected by a password requires that every message from the authorizing party include a cryptographic check value. The check value is computed using a secret known only to the authorizing and verifying parties. This secret can be a personal identification number, a password, or any form of shared secret. In addition, shared secrets that are short - like a six-digit PIN - are inherently susceptible to various kinds of attacks. They cannot by themselves provide a high degree of security. They should only be used to control access to a physical token like a smart card (or a wallet) that performs the actual authorization using secure cryptographic mechanisms, such as digital signatures.

□ **Signature authorization**

In this type of transaction, the verifying party requires a digital signature of the authorizing party. Digital signatures provide non repudiation of origin.

□ **Confidentiality**

Some parties involved may wish confidentiality of transactions. Confidentiality in this context means the restriction of the knowledge about various pieces of information related to a transaction: the identity of payer/payee, purchase content, amount, and so on. Typically, the confidentiality requirement dictates that this information be restricted only to the participants involved. Where anonymity or un-traceability are desired, the requirement may be to limit this knowledge to certain subsets of the participants only, as described later.

□

□ **Availability and reliability:**

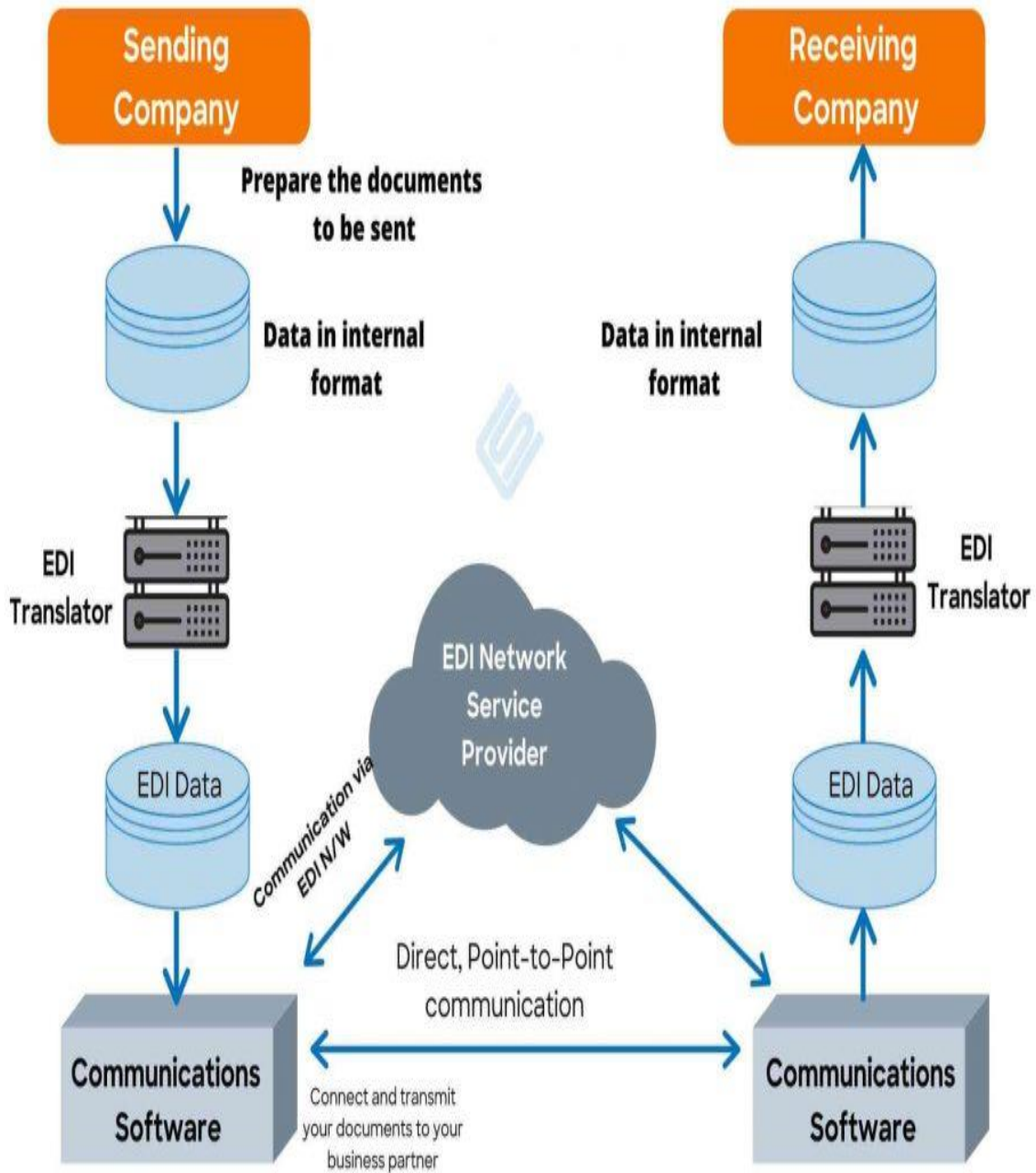
All parties require the ability to make or receive payments whenever necessary. Payment transactions must be atomic: They occur entirely or not at all, but they never hang in an unknown or inconsistent state. No payer would accept a loss of money (not a significant amount, in any case) due to a network or system crash. Availability and reliability presume that the underlying networking services and all software and hardware components are sufficiently dependable. Recovery from crash failures requires some sort of stable storage at all parties and specific resynchronization protocols. These fault tolerance issues are not discussed here, because most payment systems do not address them explicitly.

Questions for your self-study:

1. What is e-payment? Why is orientation and standardization required for epayment businesses?
2. What do you understand by Electronic Funds Transfer?
3. What are the risks involved in Electronic Payment Systems?
4. What are the advantages and disadvantages of a Smart Card?
5. Write in short about a) Smart cards b) Digital or Electronic cash c) Features of an e-payment system d) SSL

UNIT-III

Mind Map



UNIT-III

Supply Chain Management:

It is the process of planning, implementing, and controlling the operations of the supply chain with the purpose to satisfy customer requirements as efficiently as possible. Supply chain management spans all movement and storage of raw materials, work-in-process inventory, and finished goods from point-of-origin to point-of-consumption.

Supply chain management must address the following problems:

- **Distribution Network Configuration:** Number and location of suppliers, production facilities, distribution centers, warehouses and customers.
- **Distribution Strategy:** Centralized versus decentralized, direct shipment, cross docking, pull or push strategies, third party logistics.
- **Information:** Integrate systems and processes through the supply chain to share valuable information, including demand signals, forecasts, inventory and transportation.
- **Inventory Management:** Quantity and location of inventory including raw materials, work- in-process and finished goods.

Features Of Supply Chain Management:

In electronic commerce, supply chain management has the following features.

- An ability to source raw material or finished goods from anywhere in the world
- A centralized, global business and management strategy with flawless local execution
- On-line, real-time distributed information processing to the desktop, providing total supply chain information visibility
- The ability to manage information not only within a company but across industries and enterprises

- The seamless integration of all supply chain processes and measurements, including third- party suppliers, information systems, cost accounting standards, and measurement systems
- The development and implementation of accounting models such as activity based costing that link cost to performance are used as tools for cost reduction
- A reconfiguration of the supply chain organization into high-performance teams going from the shop floor to senior management.

Components Of Supply Chain Management:

The following are five basic components of SCM.

➤ **Plan:**

This is the strategic portion of SCM. You need a strategy for managing all the resources that go toward meeting customer demand for your product or service. A big piece of planning is developing a set of metrics to monitor the supply chain so that it is efficient, costs less and delivers high quality and value to customers.

➤ **Source:**

Choose the suppliers that will deliver the goods and services you need to create your product. Develop a set of pricing, delivery and payment processes with suppliers and create metrics for monitoring and improving the relationships. And put together processes for managing the inventory of goods and services you receive from suppliers, including receiving shipments, verifying them, transferring them to your manufacturing facilities and authorizing supplier payments.

➤ **Make:**

This is the manufacturing step. Schedule the activities necessary for production, testing, packaging and preparation for delivery. As the most metric-intensive portion of the supply chain, measure quality levels, production output and worker productivity.

➤ **Deliver:**

This is the part that many insiders refer to as logistics. Coordinate the receipt of orders from customers, develop a network of warehouses, pick carriers to get products to customers and set up an invoicing system to receive payments.

Return:

The problem part of the supply chain. Create a network for receiving defective and excess products back from customers and supporting customers who have problems with delivered products.

Measuring A Supply Chain's Performance:

The performance of a supply chain is evaluated by how it reduces cost or increases value. SCM performance monitoring is important; in many industries, the supply chain represents roughly 75 percent of the operating budget expense. Three common measures of performance are used when evaluating SCM performance:

- Efficiency focuses on minimizing cost by decreasing the inventory investment or value relative to the cost of goods sold. An efficient firm is therefore one with a higher inventory turnover or fewer weeks' worth of inventory on hand.
- Responsiveness focuses on reduction in both inventory costs and missed sales that comes with a faster, more flexible supply chain. A responsive firm is proficient in an uncertain market environment, because it can quickly adjust production to meet demand.
- Effectiveness of the supply chain relates to the degree to which the supply chain creates value for the customer. Effectiveness-focused supply chains are called -value chains because they focus more on creating customer value than reducing costs and improving productivity.

To examine the effect of the Internet and electronic commerce on the supply chain is to examine the impact the Internet has on the efficiency, responsiveness, effectiveness, and overall performance of the supply chain.

Advantages of Internet/E-Commerce Integrated Supply Chain:

The primary advantages of Internet utilization in supply chain management are speed, decreased cost, flexibility, and the potential to shorten the supply chain.

□ **Speed:**

A competitive advantage accrues to those firms that can quickly respond to changing market conditions. Because the Internet allows near instantaneous transfer of information between various links in the supply chain, it is ideally suited to help firms keep pace with their environments. Many businesses have placed a priority upon real-time information regarding the status of orders and production from other members of the supply chain.

□ **Cost decrease:**

Internet-based electronic procurement helps reduce costs by decreasing the use of paper and labor, reducing errors, providing better tracking of purchase orders and goods delivery, streamlining ordering processes, and cutting acquisition cycle times.

□ **Flexibility:**

The Internet allows for custom interfaces between a company and its different clients, helping to cost-effectively establish mass customization. A manufacturer can easily create a custom template or Web site for a fellow supply chain member with pre-negotiated prices for various products listed on the site, making re-ordering only a mouse click away. The information regarding this transaction can be sent via the Internet to the selling firm's production floor and the purchasing firm's purchasing and accounting departments. The accuracy and reliability of the information is greater than the traditional paper and pencil transaction, personnel time and expense is reduced, and the real-time dissemination of the relevant information to interested parties improves responsiveness. These advantages can benefit both firms involved in the transaction.

□ **Shortening the supply chain:**

Dell computers has become a classic example of the power the Internet can have on a supply chain. Dell helped create one of the first fully Internet-enabled supply chains and revolutionized the personal-computer industry by selling directly to businesses and consumers, rather than through retailers and middlemen. In mid-1996, Dell began allowing consumers to configure and order computers online. By 1998, the company recorded roughly \$1 billion in -purel Internet orders. By reducing sales costs and attracting customers who spend more per transaction, Dell estimates that it yields 30 percent greater profit margins on Internet sales compared to telephone sales.

Disadvantages of Internet/E-Commerce Integrated Supply Chain:

➤ **Increased interdependence:**

Increased commoditization, increased competition, and shrinking profit margins are forcing companies to increase outsourcing and subcontracting to minimize cost. By focusing on its core competencies, a firm should be able to maximize its economies of scale and its competitiveness. However, such a strategy requires increased reliance and information sharing between members of the supply chain. Increased dependency on various members of the supply chain can have disastrous consequences if these supply chain members are unable to handle the functions assigned to them.

➤ **The costs of implementation:**

Implementation of a fully-integrated Internet-based supply chain is expensive. This expense includes hardware cost, software cost, reorganization cost, and training costs. While the Internet promises many advantages once it is fully integrated into a supply chain, a significant up front investment is needed for full deployment.

➤ **Keeping up with the change in expectations:**

Expectations have increased as Internet use has become part of daily life. When customers send orders electronically, they expect to get a quick confirmation and delivery or denial if the order can not be met. Increasingly, in this and other ways, customers are dictating terms and conditions to suppliers. The introduction of Internet-based supply chains make possible the change to a -pull manufacturing strategy replacing the traditional -push strategy that has been the standard in most industries.

Electronic Data Interchange(EDI):

- Electronic Data Interchange (EDI) - interposes communication of business information in standardized electronic form.
- Prior to EDI, business depended on postal and phone systems that restricted communication to those few hours of the workday that overlap between time zones.

Why EDI?

- Reduction in transaction costs
- Foster closer relationships between trading partners

EDI & Electronic Commerce

- Electronic commerce includes EDI & much more

- EDI forges boundary less relationships by improving interchange of information between trading partners, suppliers, & customers.

EDI layered architecture:

- Semantic (or application) layer
- Standards translation layer
- Packing (or transport) layer
- Physical network infrastructure layer

EDI semantic layer	Application level services	
EDI standard layer	EDIFACT business form standards	
	ANSI X12 business form standards	
EDI transport layer	Electronic mail	X.435, MIME
	Point to point	FTP, TELNET
	World Wide Web	HTTP
Physical layer	Dial-up lines, Internet, I-way	

EDI semantic layer:

- Describes the business application
 - Procurement example
- Requests for quotes
- Price quotes
- Purchase orders
- Acknowledgments
- Invoices
- Specific to company & software used

Standards translation:

- Specifies business form structure so that information can be exchanged
- Two competing standards
 - American National Standards Institute(ANSI)X12
 - EDIFACT developed by UN/ECE, Working Party for the Facilitation of International Trade Procedures

EDI transport layer

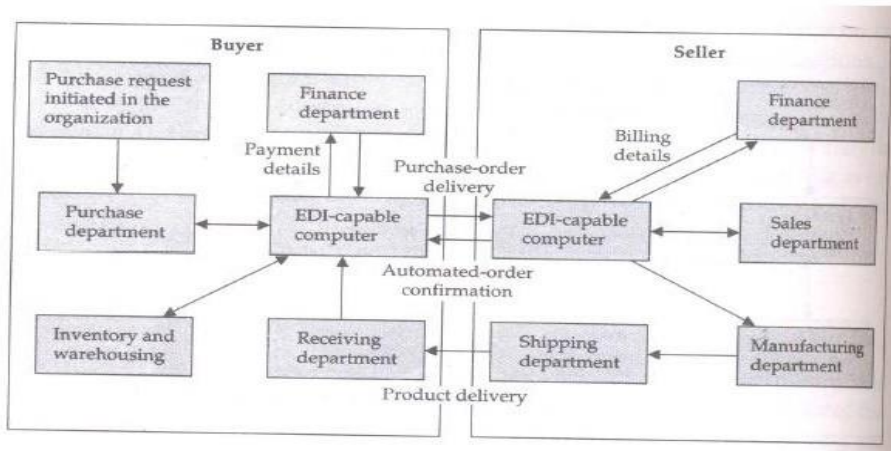
- How the business form is sent, e.g. post, UPS, fax
- Increasingly, e-mail is the carrier
- Differentiating EDI from e-mail
 - Emphasis on automation

– EDI has certain legal status

Physical network infrastructure layer

- Dial-up lines, Internet, value-added network, etc.

Information flow with EDI:



1. Buyer sends purchase order to seller computer
2. Seller sends purchase order confirmation to buyer
3. Seller sends booking request to transport company
4. Transport company sends booking confirmation to seller
5. Seller sends advance ship notice to buyer
6. Transport company sends status to seller
7. Buyer sends Receipt advice to seller
8. Seller sends invoice to buyer
9. Buyer sends payment to seller

Applications of EDI:

1. Role of EDI in international trade:

- Reduced transaction expenditures

Quicker movement of imported & exported goods

- Improved customer service through -track & trace| programs
- Faster customs clearance & reduced opportunities for corruption, a huge problem in trade

2. Interbank Electronic Funds Transfer (EFT)

- EFTS is credit transfers between banks where funds flow directly from the payer's bank to the payee's bank.
- The two biggest funds transfer services in the United States are the Federal Reserve's system, Fed wire, & the Clearing House Interbank Payments System (CHIPS) of the New York clearing house

3. Health care EDI for insurance EDI

- Providing good & affordable health care is a universal problem
- EDI is becoming a permanent fixture in both insurance & health care industries as medical provider, patients, & payers
- Electronic claim processing is quick & reduces the administrative costs of health care.
- Using EDI software, service providers prepare the forms & submit claims via communication lines to the value-added network service provider
- The company then edits sorts & distributes forms to the payer. If necessary, the insurance company can electronically route transactions to a third-party for price evaluation
- Claims submission also receives reports regarding claim status & request for additional information

4. Manufacturing & retail procurement using EDI

- These are heavy users of EDI
- In manufacturing, EDI is used to support just-in-time.
- In retailing, EDI is used to support quick response

EDI Protocols:

- ANSI X12
- EDIFACT

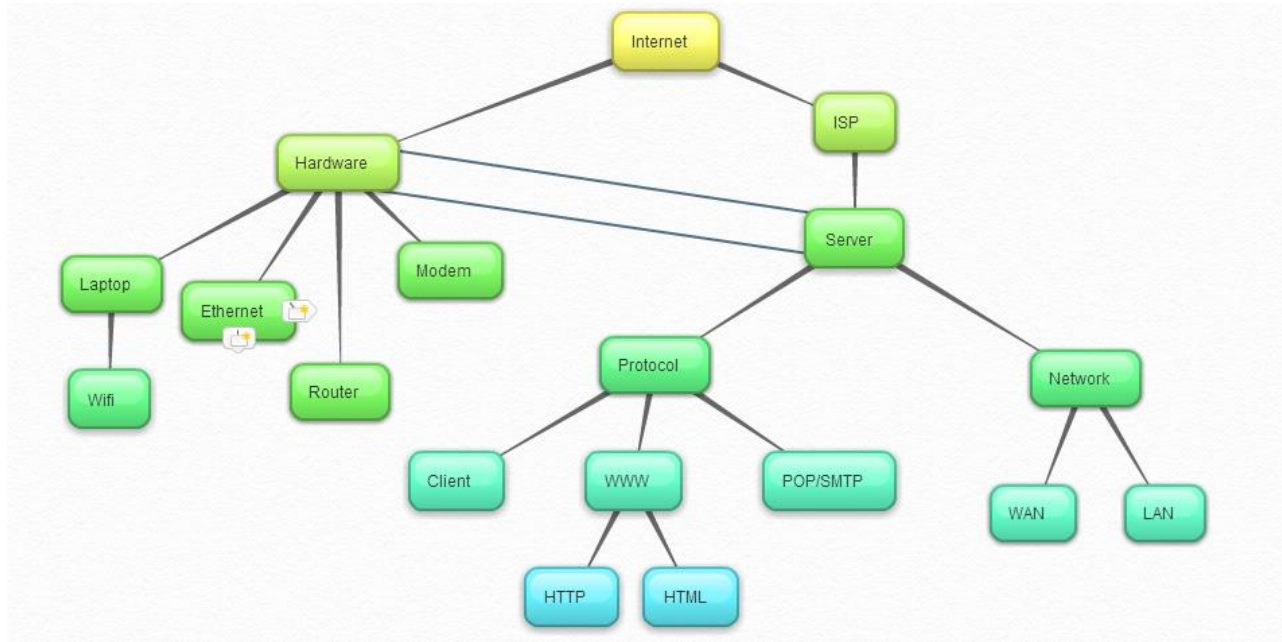
Questions for your self-study:

1. What is an EDI? List its benefits and limitations.
2. Explain the role of EC in i) supply chain management ii) Retailing
3. What is supply chain management? Discuss how it is advantageous to EC
4. a) Explain how SCM can be used to renovate the businesses using ECommerce. b)

Discuss about the push based supply chain and pull based supply chain

UNIT-IV

Mind Map



UNIT-IV

Introduction to Internet and different Types of Networking For E-Commerce:

Internet:

The Internet is a global network of computers that allows people to send email, view web sites, download files such as mp3 and images, chat, post messages on newsgroups and forums and much more.

The Internet was created by the Advanced Research Projects Agency (ARPA) of the U.S. government in 1960's and was first known as the ARPANet. At this stage the Internet's first computers were at academic and government institutions and were mainly used for accessing files and to send emails. From 1983 onwards the Internet as we know it today started to form with the introduction of the communication protocol TCP/IP to ARPANet. Since 1983 the Internet has accommodated a lot of changes and continues to keep developing.

The last two decades has seen the Internet accommodate such things as network LANs and ATM and frame switched services. The Internet continues to evolve with it becoming available on mobile phones and pagers and possibly on televisions in the future.

Advantages of internet:

There many advantages to using the internet such as:

E-mail

Email is now an essential communication tool in business. It is also excellent for keeping in touch with family and friends. The advantage to email is that it is free (no charge per use) when compared to telephone, fax and postal services.

Information

There is a huge amount of information available on the internet for just about every subject known to man, ranging from government law and services, trade fairs and conferences, market information, new ideas and technical support.

Services

Many services are now provided on the internet such as online banking, job seeking and applications, and hotel reservations. Often these services are not available off-line or cost more. Buy or sell products.

The internet is a very effective way to buy and sell products all over the world.

Communities

communities of all types have sprung up on the internet. Its a great way to meet up with people of similar interest and discuss common issues.

A Leading-Edge Image

Presenting your company or organization as leading-edge shows your customers and prospective customers that you are financially strong, technologically savvy, and ready for the 21st century. And that you care enough about your customers to take advantage of new technologies for their benefit. And finally that you have the resources to support your clients in the most beneficial manner possible.

More and more advertisers on television, radio, magazines, and newspapers are including a Web address. Now is the time to avoid playing catch-up later.

Improved Customer Service

The companies are available to their customers 24 hours a day, 7 days a week. The Internet never sleeps. Whenever customer needs information about any company, products or services, they can access the company's Web Page.

Market Expansion

The Internet is a global system. Latest estimates are that there are about 40 million people with access to the Internet, and this number is growing every day. By simply posting a Web Page you are also addressing International markets.

Low Cost Marketing

Imagine developing a full color brochure without having to incur the costs of proofs, printers, wasted paper, long lead times between revisions, and more. Then imagine a full color product or services brochure that is interactive and which incorporates text, graphics, audio, and/or video. One that can be immediately updated without incurring the usual costs of product material updates.

Low Cost Selling

Without the cost of direct selling potential customers can get detailed information about your products or services at any time. And they can easily order your products over the Internet, or request additional information be sent to them via a request form on your Web page.

Lower Communication Costs

Your time, and your employees time, is valuable. Most businesses and organizations spend time answering the same questions over and over again. With a Web page you can make the answers available to everyone immediately. You can also update your Web page with new information quickly and easily.

Intranet:

- An intranet is a computer network that uses Internet Protocol technology to share information, operational systems, or computing services within an organization. This term is used in contrast to extranet, a network between organizations, and instead refers to a network within an organization.
- The objective is to organize each individual's desktop with minimal cost, time and effort to be more productive, cost efficient, timely, and competitive.
- An intranet may host multiple private websites and constitute an important component and focal point of internal communication and collaboration.
- Any of the well known Internet protocols may be found in an intranet, such as HTTP (web services), SMTP (e-mail), and FTP (file transfer protocol). Internet technologies are often deployed to provide modern interfaces to legacy information systems hosting corporate data.

Uses of Intranet:

- Increasingly, intranets are being used to deliver tools, e.g. collaboration (to facilitate working in groups and teleconferencing) or sophisticated corporate directories, sales and customer relationship management tools, project management etc., to advance productivity.
- Intranets are also being used as corporate culture-change platforms. For example, large numbers of employees discussing key issues in an intranet forum application could lead to new ideas in management, productivity, quality, and other corporate issues.

- In large intranets, website traffic is often similar to public website traffic and can be better understood by using web metrics software to track overall activity. User surveys also improve intranet website effectiveness. Larger businesses allow users within their intranet to access public internet through firewall servers. They have the ability to screen messages coming and going keeping security intact.
- When part of an intranet is made accessible to customers and others outside the business, that part becomes part of an extranet. Businesses can send private messages through the public network, using special encryption/decryption and other security safeguards to connect one part of their intranet to another.
- Intranet user-experience, editorial, and technology teams work together to produce in-house sites. Most commonly, intranets are managed by the communications, HR or CIO departments of large organizations, or some combination of these.
- Because of the scope and variety of content and the number of system interfaces, intranets of many organizations are much more complex than their respective public websites. Intranets and their use are growing rapidly.

Advantages:

- **Workforce productivity:** Intranets can help users to locate and view information faster and use applications relevant to their roles and responsibilities. With the help of a web browser interface, users can access data held in any database the organization wants to make available, anytime and — subject to security provisions — from anywhere within the company workstations, increasing employees' ability to perform their jobs faster, more accurately, and with confidence that they have the right information.
- **Time:** Intranets allow organizations to distribute information to employees on an *as-needed* basis; Employees may link to relevant information at their convenience, rather than being distracted indiscriminately by email.
- **Communication:** Intranets can serve as powerful tools for communication within an organization, vertically strategic initiatives that have a global reach throughout the organization. By providing this information on the intranet, staff have the opportunity to keep up-to-date with the strategic focus of the organization. Some examples of communication would be chat, email, and/or blogs. A great real world example of where

an intranet helped a company communicate is when Nestle had a number of food processing plants in Scandinavia. Their central support system had to deal with a number of queries every day.

- **Web publishing:** allows cumbersome corporate knowledge to be maintained and easily accessed throughout the company using hypermedia and Web technologies. Examples include: employee manuals, benefits documents, company policies, business standards, news feeds, and even training, can be accessed using common Internet standards (Acrobat files, Flash files, CGI applications). Because each business unit can update the online copy of a document, the most recent version is usually available to employees using the intranet.
- **Business operations and management:** Intranets are also being used as a platform for developing and deploying applications to support business operations and decisions across the internetworked enterprise.
- **Cost-effective:** Users can view information and data via web-browser rather than maintaining physical documents such as procedure manuals, internal phone list and requisition forms. This can potentially save the business money on printing, duplicating documents, and the environment as well as document maintenance overhead.
- **Enhance collaboration:** Information is easily accessible by all authorised users, which enables teamwork.
- **Cross-platform capability:** Standards-compliant web browsers are available for Windows, Mac, and UNIX.
- **Built for one audience:** Many companies dictate computer specifications which, in turn, may allow Intranet developers to write applications that only have to work on one browser (no cross-browser compatibility issues).
- **Promote common corporate culture:** Every user has the ability to view the same information within the Intranet.
- **Immediate updates:** When dealing with the public in any capacity, laws, specifications, and parameters can change. Intranets make it possible to provide your audience with "live" changes so they are kept up-to-date, which can limit a company's liability.

- **Supports a distributed computing architecture:** The intranet can also be linked to a company's management information system, for example a time keeping system.

Wireless Application Protocol:

- WAP is a technical standard for accessing information over a mobile wireless network.
- A WAP browser is a web browser for mobile devices such as mobile phones that uses the protocol.
- WAP is a specification for a set of communication protocols to standardize the way that wireless devices, such as cellular telephones and radio transceivers, can be used for Internet access, including e-mail, the World Wide Web, newsgroups, and instant messaging.

The WAP layers are:

- Wireless Application Environment (WAE)
- Wireless Session Layer (WSL)
- Wireless Transport Layer Security (WTLS)
- Wireless Transport Layer (WTP)

Web security:

- It is a branch of Information Security that deals specifically with security of websites, web applications and web services.
- At a high level, Web application security draws on the principles of application security but applies them specifically to Internet and Web systems. Typically web applications are developed using programming languages such as PHP, Java EE, Java, Python, Ruby, ASP.NET, C#, VB.NET or Classic ASP.

HISTORY OF THE INTERNET

What is the “internet”? □

The Internet is a global information network that connects millions of computers It is growing exponentially and provides a unique information resource that is global, diverse and current.

What do we use the internet for? □

Browsing information □ Social media and creating awareness □ For entertainment (music, videos, movies) □ Communicating with people all over the world. □ Sharing information □ E-commerce and banking Internet in the 1950's □ The Internet has no single “inventor.” Instead, it has evolved over time. □ The Internet got its start in the United States more than 50 years ago as a government weapon in the Cold War.

Scientists and researchers used it to communicate and share data with one another through what was known as DARPA (Defense's Advanced Research Projects Agency Network). □ This was in response to the Soviet Union bombings and a need to create a communication network which was free from interference and disruption.

Internet in the 1960's:

□ In 1962, a scientist from M.I.T. and DARPA named J.C.R. Licklider proposed : a “galactic network” of computers that could talk to one another. Such a network would enable government leaders to communicate even if the Soviets destroyed the telephone system. □

In 1965, another M.I.T. scientist developed a way of sending information from one computer to another that he called “packet switching.” Packet switching breaks data down into blocks, or packets, before sending it to its destination.

□ Without packet switching, the government's computer network—now known as the ARPANET—would have been just as vulnerable to enemy attacks as the phone system. □ In 1969, ARPANET delivered its first message: a “node-to-node” communication from one computer to another but it crashed the full network.

Internet in the 1970's :

□ By the end of 1969, just four computers were connected to the ARPANET, but the network grew steadily during the 1970s. □ As packet-switched computer networks multiplied, however, it became more difficult for them to integrate into a single worldwide “Internet.”

By the end of the 1970s, a computer scientist named Vinton Cerf had begun to solve this problem by developing a way for all of the computers on all of the world's mini-networks to

communicate with one another. □ He called his invention “Transmission Control Protocol,” or TCP. (Later, he added an additional protocol, known as “Internet Protocol.” The acronym we use to refer to these today is TCP/IP.) TCP/IP was described to be the “handshake” between computers all over the world. It enabled each computer to have its own identity

Internet in the 1980’s □ Cerf’s protocol transformed the Internet into a worldwide network. Throughout the 1980s, researchers and scientists used it to send files and data from one computer to another. □

Internet in the 1990’s □ However, in 1991 the Internet changed again. □ Tim Berners-Lee introduced the World Wide Web: an Internet that was not simply a way to send files from one place to another but was itself a “web” of information that anyone on the Internet could retrieve. □ Berners-Lee created the first browser and the Internet that we know today. searchers from different universities and labs.

In 1992, a group of students and researchers at the University of Illinois developed a sophisticated browser that they called Mosaic. (It later became Netscape.) □ Mosaic offered a user-friendly way to search the Web: It allowed users to see words and pictures on the same page for the first time and to navigate using scrollbars and clickable links.

That same year, Congress decided that the Web could be used for commercial purposes. As a result, companies of all kinds hurried to set up websites of their own, and e-commerce entrepreneurs began to use the Internet to sell goods directly to customers. □ More recently, social networking sites like Facebook have become a popular way for people of all ages to stay connected.

Types of Internet service:

The type of Internet service you choose will largely depend on which Internet service providers (ISPs) serve your area, along with the types of service they offer. Here are some common types of Internet service.

Dial-up: This is generally the slowest type of Internet connection, and you should probably avoid it unless it is the only service available in your area. Dial-up Internet uses your phone line,

so unless you have multiple phone lines you will not be able to use your landline and the Internet at the same time.

DSL: DSL service uses a broadband connection, which makes it much faster than dial-up. DSL connects to the Internet via a phone line but does not require you to have a landline at home. And unlike dial-up, you'll be able to use the Internet and your phone line at the same time.

Cable: Cable service connects to the Internet via cable TV, although you do not necessarily need to have cable TV in order to get it. It uses a broadband connection and can be faster than both dial-up and DSL service; however, it is only available where cable TV is available.

Satellite: A satellite connection uses broadband but does not require cable or phone lines; it connects to the Internet through satellites orbiting the Earth. As a result, it can be used almost anywhere in the world, but the connection may be affected by weather patterns. Satellite connections are also usually slower than DSL or cable.

3G and 4G: 3G and 4G service is most commonly used with mobile phones, and it connects wirelessly through your ISP's network. However, these types of connections aren't always as fast as DSL or cable. They will also limit the amount of data you can use each month, which isn't the case with most broadband plans.

Choosing an Internet service provider:

Now that you know about the different types of Internet service, you can do some research to find out what ISPs are available in your area. If you're having trouble getting started, we recommend talking to friends, family members, and neighbors about the ISPs they use. This will usually give you a good idea of the types of Internet service available in your area.

Most ISPs offer several tiers of service with different Internet speeds, usually measured in Mbps (short for megabits per second). If you mainly want to use the Internet for email and social networking, a slower connection (around 2 to 5 Mbps) might be all you need. However, if you want to download music or stream videos, you'll want a faster connection (at least 5 Mbps or higher).

You'll also want to consider the cost of the service, including installation charges and monthly fees. Generally speaking, the faster the connection, the more expensive it will be per month.

Although dial-up has traditionally been the least expensive option, many ISPs have raised dial-up prices to be the same as broadband. This is intended to encourage people to switch to broadband. We do not recommend dial-up Internet unless it's your only option.

Hardware needed:

Modem:

Once you have your computer, you really don't need much additional hardware to connect to the Internet. The primary piece of hardware you need is a modem.

The type of Internet access you choose will determine the type of modem you need. Dial-up access uses a telephone modem, DSL service uses a DSL modem, cable access uses a cable modem, and satellite service uses a satellite adapter. Your ISP may give you a modem—often for a fee—when you sign a contract, which helps ensure that you have the right type of modem. However, if you would prefer to shop for a better or less expensive modem, you can choose to buy one separately.

Router:

A router is a hardware device that allows you to connect several computers and other devices to a single Internet connection, which is known as a home network. Many routers are wireless, which allows you to create a home wireless network, commonly known as a Wi-Fi network.

You don't necessarily need to buy a router to connect to the Internet. It's possible to connect your computer directly to your modem using an Ethernet cable. Also, many modems include a built-in router, so you have the option of creating a Wi-Fi network without buying extra hardware.

Setting up your Internet connection:

Once you've chosen an ISP, most providers will send a technician to your house to turn on the connection. If not, you should be able to use the instructions provided by your ISP—or included with the modem—to set up your Internet connection.

After you have everything set up, you can open your web browser and begin using the Internet. If you have any problems with your Internet connection, you can call your ISP's technical support number.

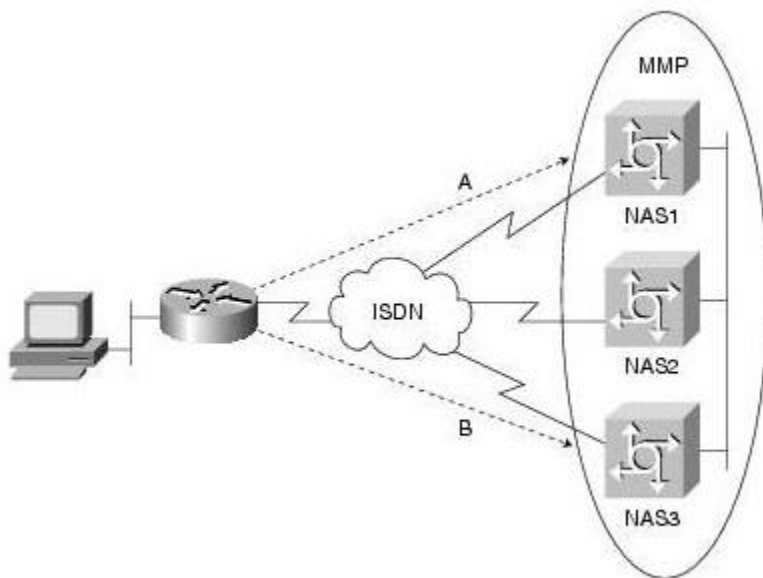
Home networking:

If you have multiple computers at home and want to use all of them to access the Internet, you may want to create a home network, also known as a Wi-Fi network. In a home network, all of your devices connect to your router, which is connected to the modem. This means everyone in your family can use the Internet at the same time.

If you want to connect a computer that does not have built-in Wi-Fi connectivity, you can purchase a Wi-Fi adapter that plugs into your computer's USB port.

Integrated Services Digital Network (ISDN) Service

Integrated Services Digital Network (ISDN) is a digital service that simultaneously transmits voice & data, and controls signals over a single telephone line. ISDN service operates on a standard telephone line, but requires a special modem and phone service, which adds to the cost. An ISDN data connection can transfer data up to 128,000 bits per second (128 Kbps). It helps to connect a PC, telephone and fax to a single ISDN line and use them simultaneously.



Digital Subscriber Line (DSL)

Digital Subscriber Line is similar to that of ISDN in using telephone network, but it uses more advanced digital signal processing and algorithms to squeeze maximum number of signals

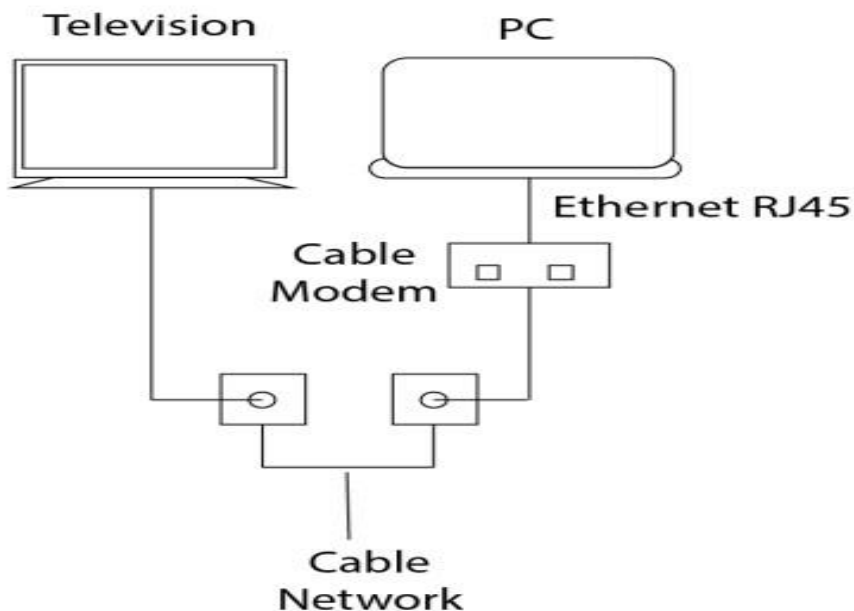
through telephone lines. DSL also requires changes in components of telephone network before it can be offered in any area. Like ISDN, DSL provides simultaneous data, voice and fax transmission on the same line. Several versions of DSL services are available for home and business use; each version provides 24/7 full-time connection at different levels of service, speed, bandwidth and distance.



DSL Type	Maximum Sending speed	Maximum Receiving speed	Maximum Distance	Lines Required	Phone Support
ADSL	800 Kbps	8 Mbps	5,500 m	1	Yes
HDSL	1.54 Kbps	1.54 Mbps	3,650 m	2	No
IDSL	144 Kbps	144 Mbps	10,700 m	1	No
MSDSL	2 Mbps	2 Mbps	8,800 m	1	No
RADSL	1 Mbps	7 Mbps	5,500 m	1	Yes
SDSL	2.3 Mbps	2.3 Mbps	6,700 m	1	No
VDSL	16 Mbps	52 Mbps	1,200 m	1	Yes

Cable Modem Service

Now-a-days many cable television companies use some percentage of their network's bandwidth to provide internet access through prevailing cable television connections. Since this connection uses a special cable modem, it is called "Cable Modem Service". Cable television systems transmit data via coaxial cable, which can transmit data as much as 100 times faster than common telephone lines. Coaxial cable allows transmission via several channels simultaneously, i.e., the internet data can be transmitted on one channel, while audio, video and control signals are transmitted separately. The user can access internet and watch television concurrently, with two non-interfering data streams.



Wireless LAN (WLAN) Connections

Wireless LAN connections are very common these days, which are based on the technology that is often cited as Wi-Fi (Wireless Fidelity). The distance covered by WLAN is usually measured in meters rather than miles. Therefore, this is not a technology that connects directly to an ISP but can be used to connect to another LAN or device through which internet access is achieved.



Process

To connect to internet, the wireless access point is connected to a wired LAN like any other devices, and then computers with wireless NICs can access the wired LAN.

"Wireless access point" is a device that acts as a hub or switch.

"NIC" refers to a Network Interface Card which helps to identify a computer on a network.

Wireless WAN (WWAN) Connections

A WWAN is a digital network that spans over a large geographical area. A WWAN accepts and transmits data using radio signals via cellular sites and satellites. At the switching center, the WWAN divides off into segments and then connects to either isolated or public network through telephone or other high speed communication links. The data is then linked to an organization's existing LAN/WAN infrastructure. The coverage area for WWAN is normally measured in miles (kilometers) with a data transmission rate of 100 Mbps.



Satellite Services

Satellite services provide a mutual (two-way) communication between user and the internet. This provides a full-time connection which is used in armed forces, business, etc. It includes two parts

Transceiver – A satellite dish that is placed outdoors in direct line of sight to one of the several satellites in geostationary orbit.

Modem-like device – It is connected to a dish, placed indoors and connected to a LAN or computer.

Internet is a global communication system that links together thousands of individual networks. It allows exchange of information between two or more computers on a network. Thus internet helps in transfer of messages through mail, chat, video & audio conference, etc. It has become mandatory for day-to-day activities: bills payment, online shopping and surfing, tutoring, working, communicating with peers, etc.

In this topic, we are going to discuss in detail about concepts like basics of computer networks, Local Area Network (LAN), Wide Area Network (WAN), concept of internet, basics of internet architecture, services on internet, World Wide Web and websites, communication on internet, internet services, preparing computer for internet access, ISPs and examples (Broadband/Dialup/Wi-Fi), internet access techniques, web browsing software, popular web browsing software, configuring web browser, search engines, popular search engines/search for content, accessing web browser, using favorites folder, downloading web pages and printing web pages.

Sr.No.	Internet, WWW, Web Browsers Concepts & Description
1	Basics of Computer Networks Computer network is an interconnection between two or more hosts/computers. Different types of networks include LAN, WAN, MAN, etc.
2	Internet Architecture Internet is called the network of networks. It is a global communication system that links together thousands of individual networks. Internet architecture is a meta-network, which refers to a congregation of thousands of distinct networks interacting with a common protocol
3	Services on Internet Internet acts as a carrier for numerous diverse services, each with its own

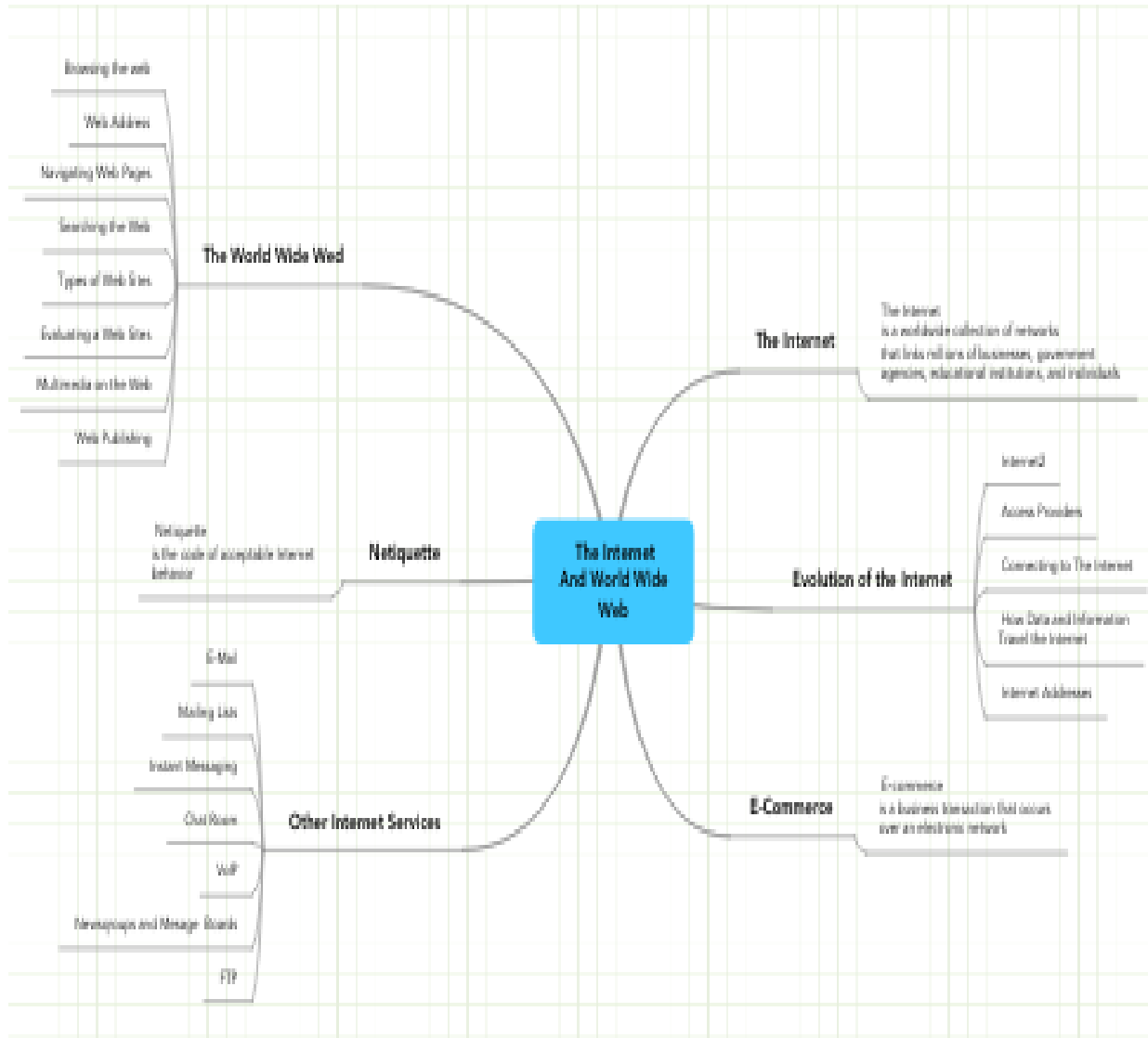
	distinctive features and purposes.
4	<p>Communication on Internet</p> <p>communication can happens through the the Internet by using Email, Internet Relay Chat, Video Conference etc.</p>
5	<p>Preparing Computer for Internet Access</p> <p>We shall learn how to use functions and charts in Microsoft Excel Using Formulas like Addition, Subtraction, Multiplication, Division</p>
6	<p>Internet Access Techniques</p> <p>A chart is a graphical representation of worksheet data. Charts can make data interesting, attractive and easy to read and evaluate. They can also help you to analyze and compare data.</p>
7	<p>Web Browsing Software</p> <p>"World Wide Web" or simple "Web" is the name given to all the resources of internet. The special software or application program with which you can access web is called "Web Browser".</p>
8	<p>Configuring Web Browser</p> <p>Search Engine is an application that allows you to search for content on the web. It displays multiple web pages based on the content or a word you have typed.</p>
9	<p>Search Engines</p> <p>Search Engine is an application that allows you to search for content on the web. It displays multiple web pages based on the content or a word you have typed.</p>
10	<p>Search for the content</p> <p>Search Engine helps to search for content on web using the different stages</p>
11	<p>Accessing Web Browser</p> <p>There are several ways to access a web page like using URLs, hyperlinks, using navigating tools, search engine, etc.</p>

Questions for self-study:

1. What do you understand by WWW? What is the use of hypertext links in Internet access
2. What is the difference between intranet and extranet?
3. What is intranet?
4. a) Write about the internet technologies essential and relevant to ECommerce. b) What is a web server? What is the data held in web server in the context of EC?
5. Discuss different web technologies used for EC.
6. Discuss about Internet applications for E-Commerce

UNIT-V

Mind Map



UNIT-V

Internet Services:

Email

Email is a service which allows us to send the message in electronic mode over the internet. It offers an efficient, inexpensive and real time mean of distributing information among people.

E-Mail Address

Each user of email is assigned a unique name for his email account. This name is known as E-mail address. Different users can send and receive messages according to the e-mail address.

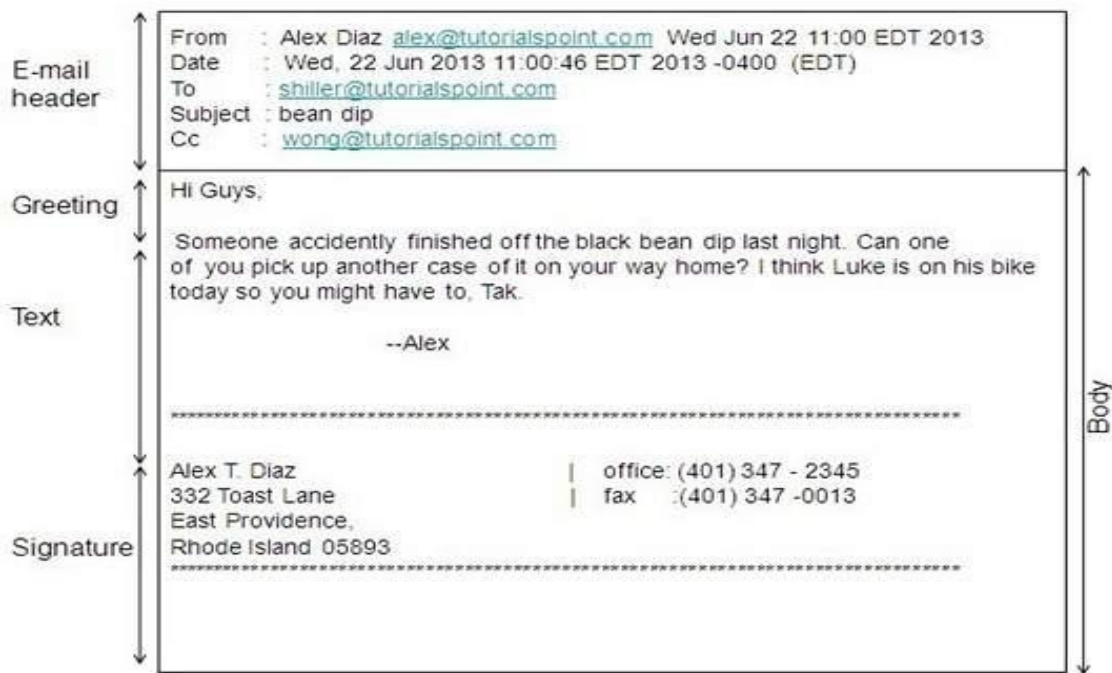
E-mail is generally of the form username@domainname. For example, webmaster@gmail.com is an e-mail address where webmaster is username and gmail.com is domain name.

- The username and the domain name are separated by @ (**at**) symbol.
- E-mail addresses are not case sensitive.
- Spaces are not allowed in e-mail address.

E-mail Message Components

E-mail message comprises of different components: E-mail Header, Greeting, Text, and Signature.

These components are described in the following diagram:



E-mail Header

The first five lines of an E-mail message is called E-mail header. The header part comprises of following fields:

From-The From field indicates the sender's address i.e. who sent the e-mail.

Date-The Date field indicates the date when the e-mail was sent.

To-The To field indicates the recipient's address i.e. to whom the e-mail is sent.

Subject-The Subject field indicates the purpose of e-mail. It should be precise and to the point.

CC-CC stands for Carbon copy. It includes those recipient addresses whom we want to keep informed but not exactly the intended recipient.

BCC-BCC stands for Black Carbon Copy. It is used when we do not want one or more of the recipients to know that someone else was copied on the message.

Greeting-Greeting is the opening of the actual message. Eg. Hi Sir or Hi Guys etc.

Text-It represents the actual content of the message.

Signature-This is the final part of an e-mail message. It includes Name of Sender, Address, and Contact Number.

Advantages

E-mail has proved to be powerful and reliable medium of communication. Here are the benefits of **E-mail**:

1. Reliable
2. Convenience
3. Speed
4. Inexpensive
5. Printable
6. Global
7. Generality

Reliable-Many of the mail systems notify the sender if e-mail message was undeliverable.

Convenience-There is no requirement of stationary and stamps. One does not have to go to post office. But all these things are not required for sending or receiving an mail.

Speed-E-mail is very fast. However, the speed also depends upon the underlying network.

Inexpensive-The cost of sending e-mail is very low.

Printable-It is easy to obtain a hardcopy of an e-mail. Also an electronic copy of an e-mail can also be saved for records.

Global-E-mail can be sent and received by a person sitting across the globe.

Generality-It is also possible to send graphics, programs and sounds with an e-mail.

Disadvantages

Apart from several benefits of E-mail, there also exists some disadvantages as discussed below:

1. Forgery
2. Overload
3. Misdirection
4. Junk
5. No response

Forgery-E-mail doesn't prevent from forgery, that is, someone impersonating the sender, since sender is usually not authenticated in any way.

Overload-Convenience of E-mail may result in a flood of mail.

Misdirection-It is possible that you may send e-mail to an unintended recipient.

Junk-Junk emails are undesirable and inappropriate emails. Junk emails are sometimes referred to as spam.

No Response-It may be frustrating when the recipient does not read the e-mail and respond on a regular basis.

PROTOCOLS:

E-mail Protocols are set of rules that help the client to properly transmit the information to or from the mail server. Here in this tutorial, we will discuss various protocols such as **SMTP**, **POP**, and **IMAP**.

SMTP

SMTP stands for **Simple Mail Transfer Protocol**. It was first proposed in 1982. It is a standard protocol used for sending e-mail efficiently and reliably over the internet.

Key Points:

- 1.SMTP is application level protocol.
- 2.SMTP is connection oriented protocol.
- 3.SMTP is text based protocol.
- 4.It handles exchange of messages between e-mail servers over TCP/IP network.
- 5.Apart from transferring e-mail, SMPT also provides notification regarding incoming mail.
- 6.When you send e-mail, your e-mail client sends it to your e-mail server which further contacts the recipient mail server using SMTP client.
- 7.These SMTP commands specify the sender's and receiver's e-mail address, along with the message to be send.

8.The exchange of commands between servers is carried out without intervention of any user.

9.In case, message cannot be delivered, an error report is sent to the sender which makes SMTP a reliable protocol.

SMTP Commands

The following table describes some of the SMTP commands:

S.N.	Command Description
1	HELLO This command initiates the SMTP conversation.
2	EHELLO This is an alternative command to initiate the conversation. ESMTP indicates that the sender server wants to use extended SMTP protocol.
3	MAIL FROM This indicates the sender's address.
4	RCPT TO It identifies the recipient of the mail. In order to deliver similar message to multiple users this command can be repeated multiple times.
5	SIZE This command let the server know the size of attached message in bytes.
6	DATA The DATA command signifies that a stream of data will follow. Here stream of data refers to the body of the message.
7	QUIT This commands is used to terminate the SMTP connection.
8	VERFY This command is used by the receiving server in order to verify whether the given username is valid or not.

9	<p>EXPN It is same as VRFY, except it will list all the users name when it used with a distribution list.</p>
---	--

IMAP

IMAP stands for **Internet Message Access Protocol**. It was first proposed in 1986. There exist five versions of IMAP as follows:

- 1.Original IMAP
- 2.IMAP2
- 3.IMAP3
- 4.IMAP2bis
- 5.IMAP4

Key Points:

- 1.IMAP allows the client program to manipulate the e-mail message on the server without downloading them on the local computer.
- 2.The e-mail is hold and maintained by the remote server.
- 3.It enables us to take any action such as downloading, delete the mail without reading the mail.It enables us to create, manipulate and delete remote message folders called mail boxes.
- 4.IMAP enables the users to search the e-mails.
- 5.It allows concurrent access to multiple mailboxes on multiple mail servers.

IMAP Commands

The following table describes some of the IMAP commands:

S.N.	Command Description
1	<p>IMAP_LOGIN This command opens the connection.</p>

2	CAPABILITY This command requests for listing the capabilities that the server supports.
3	NOOP This command is used as a periodic poll for new messages or message status updates during a period of inactivity.
4	SELECT This command helps to select a mailbox to access the messages.
5	EXAMINE It is same as SELECT command except no change to the mailbox is permitted.
6	CREATE It is used to create mailbox with a specified name.
7	DELETE It is used to permanently delete a mailbox with a given name.
8	RENAME It is used to change the name of a mailbox.
9	LOGOUT This command informs the server that client is done with the session. The server must send BYE untagged response before the OK response and then close the network connection.

POP

POP stands for Post Office Protocol. It is generally used to support a single client. There are several versions of POP but the POP 3 is the current standard.

Key Points

1. POP is an application layer internet standard protocol.
2. Since POP supports offline access to the messages, thus requires less internet usage time.
3. POP does not allow search facility.
4. In order to access the messages, it is necessary to download them.
5. It allows only one mailbox to be created on server.

6.It is not suitable for accessing non mail data.

7.POP commands are generally abbreviated into codes of three or four letters. Eg. STAT.

POP Commands

The following table describes some of the POP commands:

S.N.	Command Description
1	LOGIN This command opens the connection.
2	STAT It is used to display number of messages currently in the mailbox.
3	LIST It is used to get the summary of messages where each message summary is shown.
4	RETR This command helps to select a mailbox to access the messages.
5	DELE It is used to delete a message.
6	RSET It is used to reset the session to its initial state.
7	QUIT It is used to log off the session.

Comparison between POP and IMAP

S.N.	POP	IMAP
1	Generally used to support single client.	Designed to handle multiple clients.
2	Messages are accessed offline.	Messages are accessed online although it also supports offline mode.
3	POP does not allow search facility.	It offers ability to search emails.
4	All the messages have to be downloaded.	It allows selective transfer of messages to the client.
5	Only one mailbox can be created on the server.	Multiple mailboxes can be created on the server.
6	Not suitable for accessing non-mail data.	Suitable for accessing non-mail data i.e. attachment.
7	POP commands are generally abbreviated into codes of three or four letters. Eg. STAT.	IMAP commands are not abbreviated, they are full. Eg. STATUS.
8	It requires minimum use of server resources.	Clients are totally dependent on server.
9	Mails once downloaded cannot be accessed from some other location.	Allows mails to be accessed from multiple locations.
10	The e-mails are not downloaded automatically.	Users can view the headings and sender of e-mails and then decide to download.
10	POP requires less internet usage time.	IMAP requires more internet usage time.

E-MAIL WORKING

E-mail System

E-mail system comprises of the following three components:

1. Mailer
2. Mail Server
3. Mailbox

Mailer

It is also called **mail program, mail application** or **mail client**. It allows us to manage, read and compose e-mail.

Mail Server

The function of mail server is to receive, store and deliver the email. It is must for mail servers to be Running all the time because if it crashes or is down, email can be lost.

Mailboxes

Mailbox is generally a folder that contains emails and information about them.

Working of E-mail

Email working follows the client server approach. In this client is the mailer i.e. the mail application or mail program and server is a device that manages emails.

Following example will take you through the basic steps involved in sending and receiving emails and will give you a better understanding of working of email system:

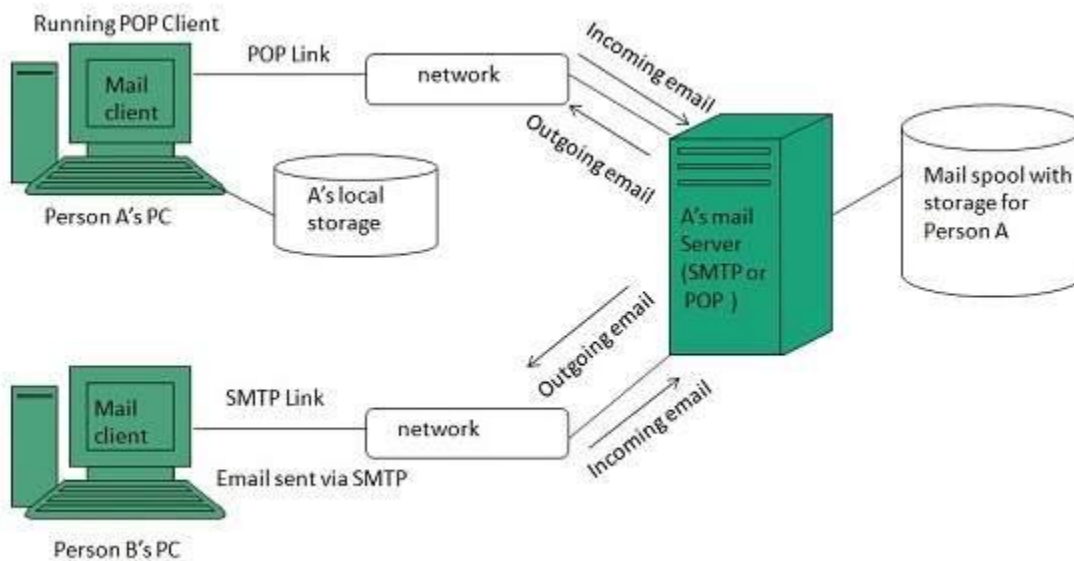
- Suppose person A wants to send an email message to person B.
- Person A composes the messages using a mailer program i.e. mail client and then select Send option.

- The message is routed to **Simple Mail Transfer Protocol** to person B's mail server.
- The mail server stores the email message on disk in an area designated for person B.

The disk space area on mail server is called mail spool.

- Now, suppose person B is running a POP client and knows how to communicate with B's mail server.
- It will periodically poll the POP server to check if any new email has arrived for B. As in this case, person B has sent an email for person B, so email is forwarded over the network to B's PC. This message is now stored on person B's PC.

The following diagram gives pictorial representation of the steps discussed above:



E-MAIL OPERATIONS

Creating Email Account

There are various email service provider available such as **Gmail, hotmail, ymail, rediff mail** etc. Here we will learn how to create an account using Gmail.

Open gmail.com and click **create an account**.

Now a form will appear. Fill your details here and click **Next Step**.

This step allows you to add your picture. If you don't want to upload now, you can do it later. Click **Next Step**.

Now a welcome window appears. Click **Continue to Gmail**.

Now you will see your Gmail account as shown in the following image:

Key Points:

Gmail manages the mail into three categories namely **Primary, Social** and **Promotions**.

Compose option is given at the right to compose an email message.

Inbox, Starred, Sent mail, Drafts options are available on the left pane which allows you to keep track of your emails.

Composing and Sending Email

Before sending an email, we need to compose a message. When we are composing an email message, we specify the following things:

Sender's address in To field

Cc (if required)

Bcc (if required)

Subject of email message

Text

Signature

You should specify the correct email address; otherwise it will send an error

back to the sender.

Once you have specified all the above parameters, It's time to send the email. The mailer program provides a Send button to send email, when you click Send, it is sent to the mail server and a message **mail sent successfully** is shown at the above.

Reading Email

Every email program offers you an interface to access email messages. Like in Gmail, emails are stored under different tabs such as primary, social, and promotion. When you click one of tab, it displays a list of emails under that tab.

In order to read an email, you just have to click on that email. Once you click a particular email, it gets opened.

The opened email may have some file attached with it. The attachments are shown at the bottom of the opened email with an option called **download attachment**.

Replying Email

After reading an email, you may have to reply that email. To reply an email, click **Reply** option shown at the bottom of the opened email.

Once you click on Reply, it will automatically copy the sender's address in to the To field. Below the To field, there is a text box where you can type the message.

Once you are done with entering message, click Send button. It's that easy. Your email is sent.

Forwarding Email

It is also possible to send a copy of the message that you have received along with your own comments if you want. This can be done using **forward** button available in mail client software.

The difference between replying and forwarding an email is that when you reply a message to a person who has send the mail but while forwarding you can send it to anyone.

When you receive a forwarded message, the message is marked with a > character in front of each line and **Subject:** field is prefixed with **Fw**.

Deleting Email

If you don't want to keep email into your inbox, you can delete it by simply selecting the message from the message list and clicking **delete** or pressing the appropriate command.

Some mail clients offers the deleted mails to be stored in a folder called deleted items or trash from where you can recover a deleted email.

E-MAIL FEATURES

Attachment

Ability to attach file(s) along with the message is one of the most useful features of email. The attachment may be a **word document, PowerPoint presentation, audio/video files, or images.**

In order to attach file(s) to an email, click the attach button. As a result, a dialog box appears asking for specifying the name and location of the file you want to attach.

Once you have selected the appropriate file, it is attached to the mail.

Usually a paper clip icon appears in the email which indicates that it has an attachment.

When adding an attachment it is better to compress the attached files so as to reduce the file size and save transmission time as sending and downloading large files consumes a lot of space and time.

Address Book

Address book feature of a mail program allows the users to store information about the people whom they communicate regularly by sending emails. Here are some of the key features of an Address book:

Address book includes the nick names, email addresses, phone number etc. of the people.

Using address book allows us not to memorize email of address of a person, you just have to select recipient name from the list.

When you select a particular name from the list, the corresponding email address link automatically get inserted in to the **To:** field.

Address book also allows creating a group so that you can send a email to very member of the group at once instead of giving each person email address one by one.

MIME Types

MIME is acronym of **Multipurpose Internet Mail Extensions**. MIME compliant mailer allows us to send files other than simple text i.e. It allows us to send audio, video, images, document, and pdf files as an attachment to an email.

Suppose if you want to send a word processor document that has a group of tabular columns with complex formatting. If we transfer the file as text, all the formatting may be lost. MIME compliant mailer takes care of messy details and the message arrives as desired.

The following table describes commonly used MIME Types:

1.	Type	Subtype	Description	File extension(s)
2.	Application	postscript tex troff	Printable postscript document TEX document Printable troff document	.eps, .ps .tex .t, .tr, .roff
3.	Audio	aiff au midi real audio	Apple sound Sun Microsystems sound Musical Instrument Digital Interface Progressive Network sound	.aif, .aiff, .aifc .au, .snd .midi, .mid .ra, .ram
4.	image	gif jpeg png triff	Graphics Interchange Format Joint Photographic Experts Group Portable Network Graphics Tagged Image Modeling Language	.gif .jpeg, .jpg, .jpe .png .tiff, .tif
5.	Model	vrml	Virual reality Modelling Language	.wrl
6.	Text plain sgml	html	Hyper Text Markup Language Unformatted text Standard Generalized Markup language	.html, .htm .txt .sgml
7.	Video	avi mpeg quicktime sgi-movie	Microsoft Audio Video Interleaved Moving Pictures Expert Group Apple QuickTime movie silicon graphic movie	.avi .mpeg, .mpg .qt, .mov .movie

E-MAIL SECURITY

E-mail Hacking

Email hacking can be done in any of the following ways:

- 1.Spam
- 2.Virus
- 3.Phishing

Spam

E-mail spamming is an act of sending **Unsolicited Bulk E-mails (UBI)** which one has not asked for. Email spams are the junk mails sent by commercial companies as an advertisement of their products and services.

Virus

Some emails may incorporate with files containing malicious script which when run on your computer may lead to destroy your important data.

Phishing

Email phishing is an activity of sending emails to a user claiming to be a legitimate enterprise. Its main purpose is to steal sensitive information such as usernames, passwords, and credit card details.

Such emails contains link to websites that are infected with malware and direct the user to enter details at a fake website whose look and feels are same to legitimate one.

E-mail Spamming and Junk Mails

Email spamming is an act of sending Unsolicited Bulk E-mails (UBI) which one has not asked for. Email spams are the junk mails sent by commercial companies as an advertisement of their products and services.

Spams may cause the following problems:

- A.It floods your e-mail account with unwanted e-mails, which may result in loss of important e-mails if inbox is full.
- B.Time and energy is wasted in reviewing and deleting junk emails or spams.
- C.It consumes the bandwidth that slows the speed with which mails are delivered.
- D.Some unsolicited email may contain virus that can cause harm to your computer.

Blocking Spams

Following ways will help you to reduce spams:

While posting letters to newsgroups or mailing list, use a separate e-mail address than the one you used for your personal e-mails.

Don't give your email address on the websites as it can easily be spammed.

Avoid replying to emails which you have received from unknown persons.

Never buy anything in response to a spam that advertises a product.

E-mail Cleanup and Archiving

In order to have light weighted Inbox, it's good to archive your inbox from time to time. Here I will discuss the steps to clean up and archive your Outlook inbox.

Select **File** tab on the mail pane.

Select **Cleanup Tools** button on account information screen.

Select **Archive** from cleanup tools drop down menu.

Select **Archive this folder and all subfolders** option and then click on the folder that you want to archive. Select the date from the **Archive items older than:** list. Click **Browse** to create new **.pst** file name and location. Click **OK**.

E-MAIL PROVIDERS

There are several email service providers available in the market with their enabled features such as sending, receiving, drafting, storing an email and much more.

The following table shows the popular email service providers:

S.N.	Service and Description
1.	Gmail Gmail is an email service that allows users to collect all the messages. It also offers approx 7 GB of free storage.
2.	Hotmail Hotmail offers free email and practically unlimited storage accessible on web.
3.	Yahoo Mail Yahoo Mail offers unlimited storage, SMS texting, social networking and instant messaging to boot.
4.	iCloud Mail iCloud Mail offers ample storage, IMAP access, and an elegantly functional web application.
5.	ATM Mail ATM Mail is a free email service with good spam protection.
6.	Mail.com and GMX Mail Mail.com and GMX Mail offers reliable mail service with unlimited online storage.
7.	Shortmail Shortmail offers easy and fast email service but with limited 500 characters per message.

8.	Inbox.com Inbox.com offers 5 GB of free online storage. IMAP is not supported by Inbox.com
9.	Facebook Messages Facebook Messages includes the message conversation.
10.	My Way Mail My Way Mail offers clean and fast free email service but lacks in secure messaging.

WWW:

World Wide Web (WWW), byname the Web, the leading information retrieval service of the Internet (the worldwide computer network). The Web gives users access to a vast array of documents that are connected to each other by means of hypertext or hypermedia links—i.e., hyperlinks, electronic connections that link related pieces of information in order to allow a user easy access to them.

Hypertext allows the user to select a word or phrase from text and thereby access other documents that contain additional information pertaining to that word or phrase. Hypermedia documents feature links to images, sounds, animations, and movies.

The Web operates within the Internet’s basic client-server format; servers are computer programs that store and transmit documents to other computers on the network when asked to, while clients are programs that request documents from a server as the user asks for them. Browser software allows users to view the retrieved documents.

A hypertext document with its corresponding text and hyperlinks is written in HyperText Markup Language (HTML) and is assigned an online address called a Uniform Resource Locator (URL).

The development of the World Wide Web was begun in 1989 by Tim Berners-Lee and his colleagues at CERN, an international scientific organization based in Geneva, Switzerland. They

created a protocol, HyperText Transfer Protocol (HTTP), which standardized communication between servers and clients. Their text-based Web browser was made available for general release in January 1992.

What is WORLD-WIDE WEB?

World-Wide Web (also called WWW or W3) is a hypertext-based information system. Any word in a hypertext document can be specified as a pointer to a different hypertext document where more information pertaining to that word can be found. The reader can open the second document by selecting the word (using different methods depending on the interface; in a mouse based system, a user would probably place the mouse over the word and click the mouse button); only the part of the linked document which contains relevant information will be displayed.

The second document may itself contain links to further documents. The reader need not know where the referenced documents are, because they will be obtained and presented as they are needed.

World-Wide Web uses hypertext over the Internet: the linked documents may be located at different Internet sites. WWW can handle different text formats and different methods of organizing information.

The World-Wide Web also provides access to many of the other tools described in this guide, and is becoming widely used as the major means of access to Internet resources.

Special index documents have been created in the WWW information space and these can be searched for given keyword(s). The result is a new document which contains links to documents selected from the index.

If you were reading this document on a hypertext system, instead of this all too short explanation about hypertext, you would have a selectable pointer to a complete hypertext information web with examples and more pointers to other definitions. For instance, in the first document you might read:

Who can use WORLD-WIDE WEB?

You must be on the international TCP/IP network (the Internet) in order to use a client on your computer to access WWW. If you are on the Internet, but don't have a WWW client on your computer, you can still enter the World-Wide Web because several sites offer public interactive access to WWW clients (see the Remote clients section under How to get to World-Wide Web below).

If you have e-mail access only, or if you are not on the Internet, then you can not fully exploit the vast potential of WWW. However, a mail-robot is available at the address: listserv@info.cern.ch which gives e-mail access to WWW-accessible files. (see E-mail access section under How to get to World-Wide Web below).

How to get to WORLD-WIDE WEB

Users access the World-Wide Web facilities via a client called a browser, which provides transparent access to the WWW servers. If a local WWW client is not available on your computer, you may use a client at a remote site: this can be an easy way to start using WWW.

Local clients

Use of a local client is encouraged since it will provide better performance and better response time than a remote client.

Public domain clients for accessing WWW servers are available for: Macintosh, MS-DOS, VMS, VM/CMS, MVS, NeXT, Unix, X-Windows. All these platforms support a simple line mode browser. In addition, graphical clients are available for: Macintosh, Windows, X-Windows, NeXT and Unix. See the list of freely available client software in Appendix A.

Remote clients

To access a remote WWW client, telnet to the client site. If you are new to WWW, you should telnet to info.cern.ch. No login is needed for this, and you will immediately enter the WWW line mode browser.

Some publicly accessible clients have been locally developed. Most remote clients are at sites with WWW servers holding information on specific areas. Telnet to the client site, and at the login: prompt enter www; no password is needed. The following remote client sites are available:

What is World Wide Web?

World Wide Web, which is also known as a Web, is a collection of websites or web pages stored in web servers and connected to local computers through the internet. These websites contain text pages, digital images, audios, videos, etc. Users can access the content of these sites from any part of the world over the internet using their devices such as computers, laptops, cell phones, etc. The WWW, along with internet, enables the retrieval and display of text and media to your device.



The building blocks of the Web are web pages which are formatted in HTML and connected by links called "hypertext" or hyperlinks and accessed by HTTP. These links are electronic connections that link related pieces of information so that users can access the desired information quickly. Hypertext offers the advantage to select a word or phrase from text and thus to access other pages that provide additional information related to that word or phrase.

A web page is given an online address called a Uniform Resource Locator (URL). A particular collection of web pages that belong to a specific URL is called a website,

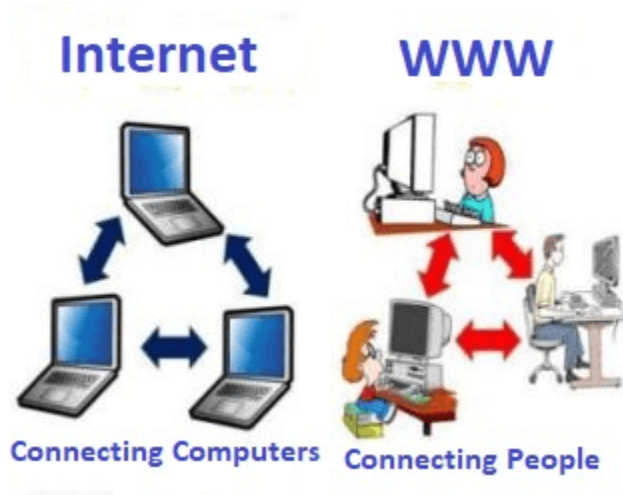
e.g., www.facebook.com, www.google.com, etc. So, the World Wide Web is like a huge electronic book whose pages are stored on multiple servers across the world.

Small websites store all of their WebPages on a single server, but big websites or organizations place their WebPages on different servers in different countries so that when users of a country search their site they could get the information quickly from the nearest server.

So, the web provides a communication platform for users to retrieve and exchange information over the internet. Unlike a book, where we move from one page to another in a sequence, on World Wide Web we follow a web of hypertext links to visit a web page and from that web page to move to other web pages. You need a browser, which is installed on your computer, to access the Web.

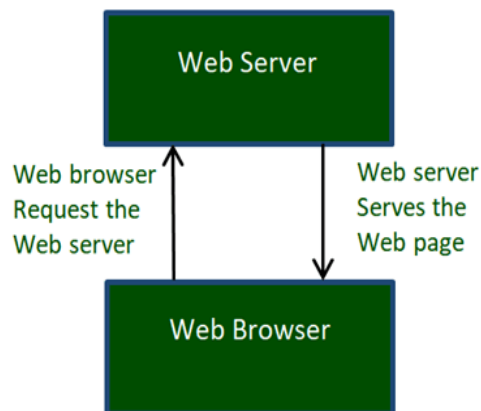
Difference between World Wide Web and Internet:

Some people use the terms 'internet' and 'World Wide Web' interchangeably. They think they are the same thing, but it is not so. Internet is entirely different from WWW. It is a worldwide network of devices like computers, laptops, tablets, etc. It enables users to send emails to other users and chat with them online. For example, when you send an email or chatting with someone online, you are using the internet.

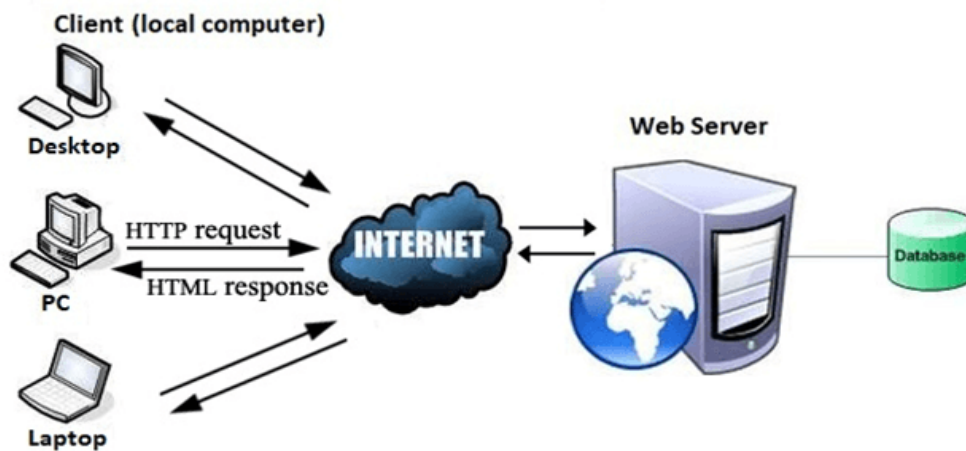


How the World Wide Web Works?

Now, we have understood that WWW is a collection of websites connected to the internet so that people can search and share information. Now, let us understand how it works!



The Web works as per the internet's basic client-server format as shown in the following image. The servers store and transfer web pages or information to user's computers on the network when requested by the users. A web server is a software program which serves the web pages requested by web users using a browser. The computer of a user who requests documents from a server is known as a client. Browser, which is installed on the user' computer, allows users to view the retrieved documents.



All the websites are stored in web servers. Just as someone lives on rent in a house, a website occupies a space in a server and remains stored in it. The server hosts the website whenever a user requests its WebPages, and the website owner has to pay the hosting price for the same.

The moment you open the browser and type a URL in the address bar or search something on Google, the WWW starts working. There are three main technologies involved in transferring information (web pages) from servers to clients (computers of users). These technologies include Hypertext Markup Language (HTML), Hypertext Transfer Protocol (HTTP) and Web browsers.

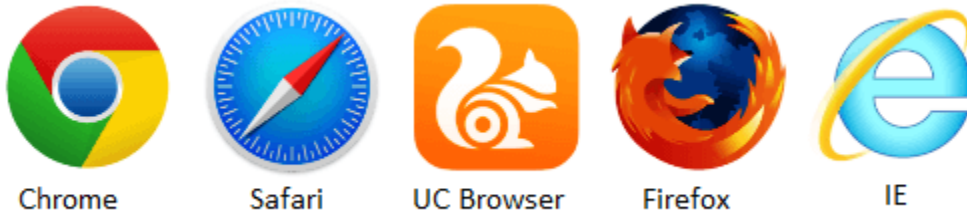
Hypertext Markup Language (HTML):



HTML is a standard markup language which is used for creating web pages. It describes the structure of web pages through HTML elements or tags. These tags are used to organize the pieces of content such as 'heading,' 'paragraph,' 'table,' 'Image,' and more. You don't see HTML

tags when you open a webpage as browsers don't display the tags and use them only to render the content of a web page. In simple words, HTML is used to display text, images, and other resources through a Web browser.

Web Browser:

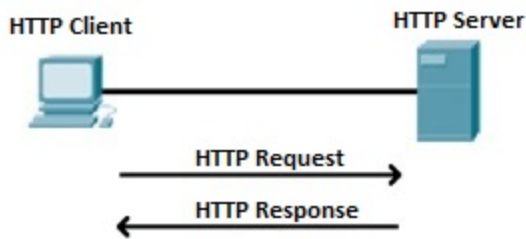


A web browser, which is commonly known as a browser, is a program that displays text, data, pictures, videos, animation, and more. It provides a software interface that allows you to click hyperlinked resources on the World Wide Web. When you double click the Browser icon installed on your computer to launch it, you get connected to the World Wide Web and can search Google or type a URL into the address bar.

In the beginning, browsers were used only for browsing due to their limited potential. Today, they are more advanced; along with browsing you can use them for e-mailing, transferring multimedia files, using social media sites, and participating in online discussion groups and more. Some of the commonly used browsers include Google Chrome, Mozilla Firefox, Internet Explorer, Safari, and more.

Hypertext Transfer Protocol (HTTP):

Hyper Text Transfer Protocol (HTTP) is an application layer protocol which enables WWW to work smoothly and effectively. It is based on a client-server model. The client is a web browser which communicates with the web server which hosts the website. This protocol defines how messages are formatted and transmitted and what actions the Web Server and browser should take in response to different commands. When you enter a URL in the browser, an HTTP command is sent to the Web server, and it transmits the requested Web Page.



When we open a website using a browser, a connection to the web server is opened, and the browser communicates with the server through HTTP and sends a request. HTTP is carried over TCP/IP to communicate with the server. The server processes the browser's request and sends a response, and then the connection is closed. Thus, the browser retrieves content from the server for the user.

URL (Uniform Resource Locator):

URL stands for Uniform Resource Locator, which is simply an address of a document on the web, more accurately, on the internet. Although a URL can look complex and long, it's made up of four basic parts – protocols, host names, folder names and file name – each of which has a specific function. Depending on the application, a URL can include additional information, to specify user names or input to a server-side script, but fundamentally these four parts cover the basics.

What is a URL?

A URL (Uniform Resource Locator) is a unique identifier used to locate a resource on the Internet. It is also referred to as a web address. URLs consist of multiple parts -- including a protocol and domain name -- that tell a web browser how and where to retrieve a resource.

End users use URLs by typing them directly into the address bar of a browser or by clicking a hyperlink found on a webpage, bookmark list, in an email or from another application.

How is a URL structured?

The URL contains the name of the protocol needed to access a resource, as well as a resource name. The first part of a URL identifies what protocol to use as the primary access medium. The second part identifies the IP address or domain name -- and possibly subdomain -- where the resource is located.

URL protocols include HTTP (Hypertext Transfer Protocol) and HTTPS (HTTP Secure) for web resources, mail to for email addresses, FTP for files on a File Transfer Protocol (FTP) server, and telnet for a session to access remote computers. Most URL protocols are followed by a colon and two forward slashes; "mail to" is followed only by a colon.

Optionally, after the domain, a URL can also specify:

a path to a specific page or file within a domain;

a network port to use to make the connection;

a specific reference point within a file, such as a named anchor in an HTML file; and

a query or search parameters used -- commonly found in URLs for search results.

Importance of a URL design

URLs can only be sent over the Internet using the ASCII character-set. Because URLs often contain non-ASCII characters, the URL must be converted into a valid ASCII format. URL encoding replaces unsafe ASCII characters with a "%" followed by two hexadecimal digits. URLs cannot contain spaces.

URL examples

When designing URLs, there are different theories about how to make the syntax most usable for readers and archivists. For example, in the URL's path, dates, authors, and topics can be included in a section referred to as the "slug." Consider, for example, the URL for this definition:

<https://searchnetworking.techtarget.com/definition/URL>

Look past the protocol (identified as HTTPS) and the permalink (searchNetworking.com) and we see the path includes the path (definition) and the title of the definition (URL).

Additionally, some URL designers choose to put the date of the post, typically, as (YYYY/MM/DD).

Parts of a URL

Using the URL <https://whatis.techtarget.com/search/query?q=URL> as an example, components of a URL can include:

The protocol or scheme. Used to access a resource on the internet. Protocols include http, https, ftps, mailto and file. The resource is reached through the domain name system (DNS) name. In this example, the protocol is https.

Host name or domain name. The unique reference the represents a webpage. For this example, whatis.techtarget.com.

Port name. Usually not visible in URLs, but necessary. Always following a colon, port 80 is the default port for web servers, but there are other options. For example, :port80.

Path. A path refers to a file or location on the web server. For this example, [search/query](https://whatis.techtarget.com/search/query).

Query. Found in the URL of dynamic pages. The query consists of a question mark, followed by parameters. For this example, ?.

Parameters. Pieces of information in a query string of a URL. Multiple parameters can be separated by ampersands (&). For this example, [q=URL](https://whatis.techtarget.com/search/query?q=URL).

Fragment. This is an internal page reference, which refers to a section within the webpage. It appears at the end of a URL and begins with a hashtag (#). Although not in the example above, an example could be #history in the URL <https://en.wikipedia.org/wiki/Internet#History>.



Other examples of parts of a URL can include:

The URL `mailto:president@whitehouse.gov` initiates a new email addressed to the mailbox president in the domain whitehouse.gov.

The URL `ftp://www.companyname.com/whitepapers/widgets.ps` specifies the use of the FTP protocol to download a file.

HTTP vs. HTTPS

Both HTTP and HTTPS are used to retrieve data from a web server to view content in a browser. The difference between them is that HTTPS uses a Secure Sockets Layer (SSL) certificate to encrypt the connection between the end user and the server.

HTTPS is vital to protecting sensitive information, such as passwords, credit card numbers and identity data, from unauthorized access.

HTTPS uses TCP/IP port number 443 by default, whereas HTTP uses port 80.

URL vs. URI

A URL is the most common type of Uniform Resource Identifier (URI). URIs are strings of characters used to identify a resource over a network. URLs are essential to navigating the internet.

URL shorteners

URL shortening is a technique in which an URL may be made substantially shorter in length and still direct to the required page. A shortener achieves this using a redirect on a domain name that is short. There are many URL shortener services available. While many are free, those that offer capabilities such as Web analytics, charge a fee. Companies that offer URL shorteners include Rebrandly, Bitly, Ow.ly, clicky.me, Budurl.com.

Some Web site hosts, such as GoDaddy.com, offer URL shorteners. Other service providers, including search engines, have begun turning away from URL shorteners because they are often subject to abuse by spammers, who hide malware inside shortened URLs.

Types of URL:

URLs vary depending on the location of the document to which user will link. Basically, URLs fall into two categories; Absolute and relative URL. They are described below.

(i) Absolute URL:



An absolute URL contains all the information necessary to find the files on the internet. It contains the protocol indicator, hostname, folder name and file name. Absolute URL are similar to address used by the U.S. Postal Service, which include a name, street address, apartment number, city, state and zip code. If some of the information is missing — say, the street number or house number — the carrier can't deliver the mail to the right person.

Similarly, if the protocol indicator or hostname is missing from a URL, browsers can not link to a specific file because they won't know where and how to look for the file. Likewise, if the folder or file name is missing, browsers won't know which piece of information to pull of the server.

The given is an example of absolute URLs

(ii) Relative URLs :

A relative URL usually contains only the folder name and file name or even just the file name. We can use these partial URLs when we are pointing to a file that's located within the same folder or on the same server as the originating file. In these cases, a browser doesn't need the server name or the protocol indicator because it assumes the files are located in a folder or on a server that's relative to the originating document.

User can use relative URLs to refer to documents in relation to the originating documents, which is called Document-Relative URLs or to the server on which the originating document resides, which is called Server-Related URLs.

Questions for your self-study:

1. Explain in brief different types of internet connection.
2. What are the various services of internet?
3. What is internet? What are its advantages and disadvantages?
4. Discuss the E-mail in detail.
5. Write a short note on FTP and VoIP.
6. Discuss the advantages and disadvantages of E-mail.
7. Discuss the steps required in TELNET session.
8. List the various advantages and disadvantages of TELNET.

Learning Outcome:

- E-Commerce is new way of conducting, managing and executing business transactions using computer and telecommunications networks.
- As awareness of the 24 IT in Action Internet throughout the commercial world and general public increases, more and more business activities using internet based technology.

- The real key to making electronic commerce over the Internet a normal, every day business activity is the convergence of the telecommunications, content/media and software industries.
- E-commerce is expected to improve the productivity and competitiveness of participating businesses by unprecedented access to an online global market place with million of customers and thousands of products and services.
- Analyze how Internet technology has changed value propositions and business models.
- Electronic commerce and describe how it has changed consumer retailing and business-to-business transactions.
- Compare the principal payment systems for electronic commerce.
- Assess the challenges posed by electronic business and electronic commerce and management solutions.

Reference Books:

1. E-Commerce fundamentals and applications Hendry Chan, Raymond Lee, Tharam Dillon, Elizabeth Chang, John Wiley.
2. Brown , jeff ”, E-commerce strategies and practices ”Editor jill mckenna. Ciwf (2001)
- 3 .E Commerce – Cutting Edge of Business, Kamlesh K Bajaj, Debjani Nag, Tata McGraw Hill, 1/e, 2003.
3. E-Commerce and its Applications,U.S.Pandey, Rahul Srinivastava, SaurabhShukla,S.Chand& Company Ltd
4. E-commerce, C.S.V. Murthy, Himalaya Publishing House
5. E-commerce, David Whiteley, McGraw Hill
6. Information Technology in business, J.A. Senn, Prentice Hall