GLS UNIVERSITY

Faculty of Computer Applications & Information Technology

The Internet, World Wide Web and E - Commerce

UNIT 4

Integrated Msc(IT)

The Internet – An Introduction

- The Internet as we know it today started around 1980
- 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.
- The Internet is a global system of interconnected computer networks that use the standard Internet protocol suite (TCP/IP) to link several billion devices worldwide.
- It is a network of networks that consists of millions of private, public, academic, business, and government

The Internet – History

- The Internet has its root in the ARPANET system of the Advanced Research Project Agency of the U.S Department of Defence.

- The primary objective of the ARPANET project was to create a nationwide computer network to share and exchange information between the connected computers.

- The internet evolved from the concepts of ARPANET.

- No one actually owns the Internet, and no single person or organization controls the Internet in its entirety.

- The Internet is more of a concept than an actual

The Internet Protocols

- Internet Protocol (IT) – The protocol that the Internet uses for addressing computing devices.

- Transmission Control Protocol – The protocol that is uses for transmission of data.

- The two protocols IP (Internet Protocol) and TCP (Transmission Control Protocol) are collectively called as TCP over Ip or TCP/IP protocol.

The Internet – Services of the Internet

- Services provided by the internet include:
  - Electronic Mail (E-Mail)
  - World Wide Web(WWW)
  - File Transfer Protocol (FTP)
  - Telnet
  - Chat Rooms
  - Mailing list
  - Instant Messaging
  - Usenet newsgroup
  - Wikis
  - Videoconferencing
  - Internet Relay Chat (IRC)

Services of the Internet – Communication Services

Electronic Mail
Used to send electronic message over the internet.

Telnet
Used to log on to a remote computer that is attached to internet.

Newsgroup
Offers a forum for people to discuss topics of common interests.

Internet Relay Chat (IRC)
Allows the people from all over the world to communicate in real time.

Mailing Lists
Used to organize group of internet users to share common information through e-mail.

Internet Telephony (VoIP)
Allows the internet users to talk across internet to any PC equipped to receive the call.

Instant Messaging
Offers real time chat between individuals and group of people. Eg. Yahoo messenger, MSN messenger.

Services of the Internet – Information Retreival Services

File Transfer Protocol (FTP)

Enable the users to transfer files.

Archie

It's updated database of public FTP sites and their content. It helps to search a file by its name.

Gopher

Used to search, retrieve, and display documents on remote sites.

Very Easy Rodent Oriented Netwide Index to Computer Achieved (VERONICA)

VERONICA is gopher based resource. It allows access to the information resource stored on gopher's servers.

Electronic Mail (E-Mail)

- It permits users to send and receive messages and files to one another via modems almost instantly.

- The term, 'e-mail' applies both to the Internet e-mail system based on Simple Mail Transfer Protocol (SMTP) and to the Intranet systems allowing users within one organization to e-mail each other.

- SMTP is a simple, text-based protocol, where one or more recipients of a message are specified and then the -message text is transferred.

- The messages in an e-mail service can contain not only text documents but also images, audio and video data.

- The audio and video data is converted into the format that a computer accepts—such as GIF and JPEG file format—before it is attached to the e-mail message.

Electronic Mail (E-Mail)

- The advantages of e-mail are as follows:
  - E-mail is faster than ordinary mail.
  - An e-mail is sent through the Internet, and thus it transcends the geographical boundaries.
  - It can be sent to distant places instantly at a very low cost.
  - E-mail documents can be stored in a computer and easily edited.

World Wide Web

- WWW or W3 is a collection of on-line documents stored on the servers around the world that, are connected to the Internet.

- On-line documents are written in 'HTML language, which provides links to the other documents stored on a Web server.

- These hypertext on-line documents on the Internet are known as Web pages.

- WWW uses an Internet Protocol (TP) called HTTP for interaction between the computers on the Internet.

- Any computer on the Internet, which uses the HTTP protocol, is called a Web server, and any computer, which can access that server, is called a Web client.

- In a client-server model, a link can be shown on the screen in multiple ways, such as highlighted text or different colored text.

- A link is a special type of item in a hypertext document, which connect the document to another document that provides
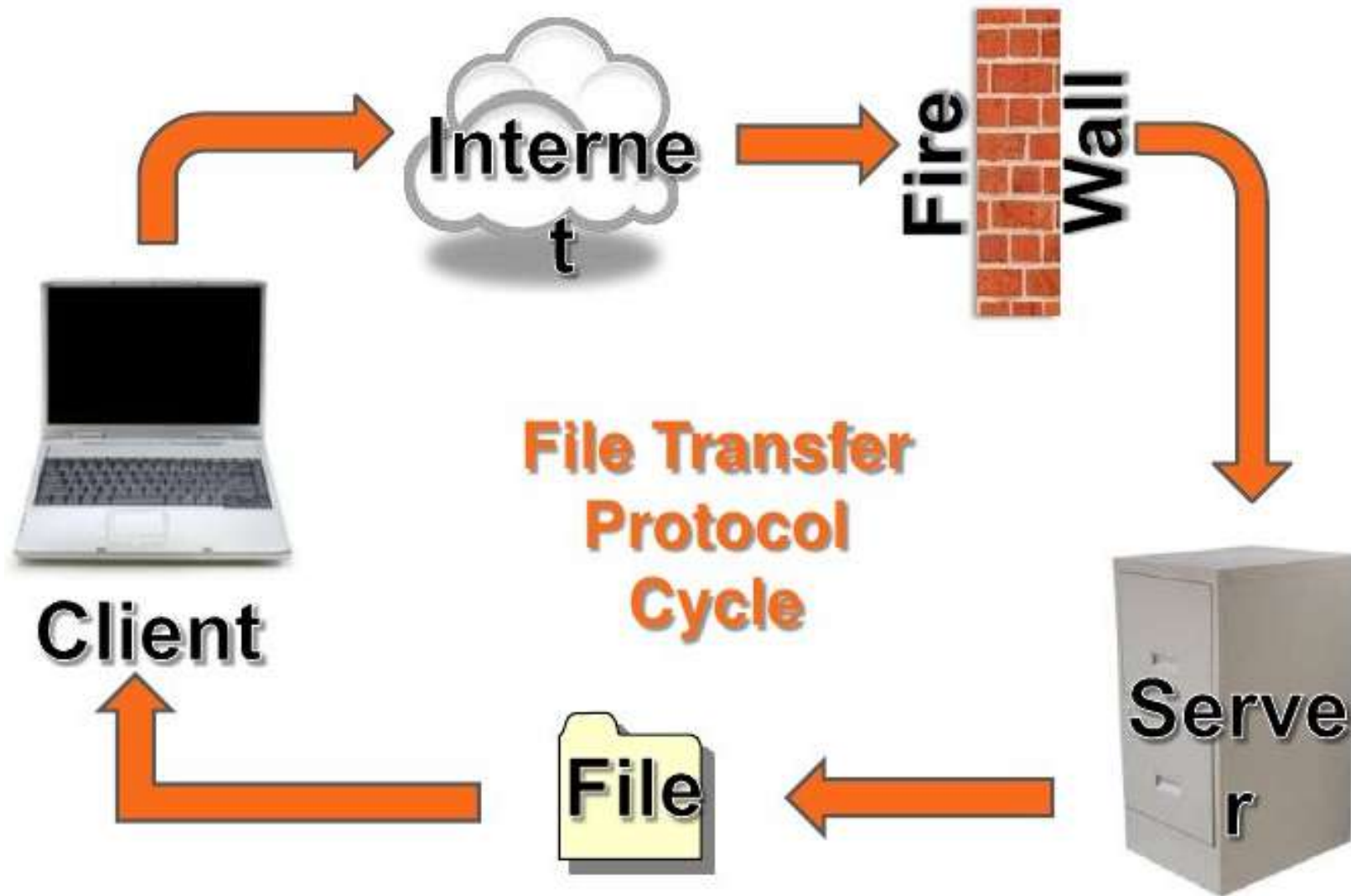
File Transfer Protocol

- FTP is an application protocol for exchanging files between computers over the Internet.

- It is the simplest and the most commonly used method to download or upload a file from / to a server—for example, to download a document or an article from a Website.

- Like other technologies, FTP also uses the Internet's TCP/IP to enable data transfer.

- Allows user to move a file from one computer to another on the Internet

- Moving a file from a remote computer to ones own computer is known as downloading.

- Moving a file from ones own computer to a remote computer is known as uploading.

- FTP works on client-server architecture:

- An FTP user (client) has to first authenticated itself to an FTP server (the remote computer) using a valid username and password for
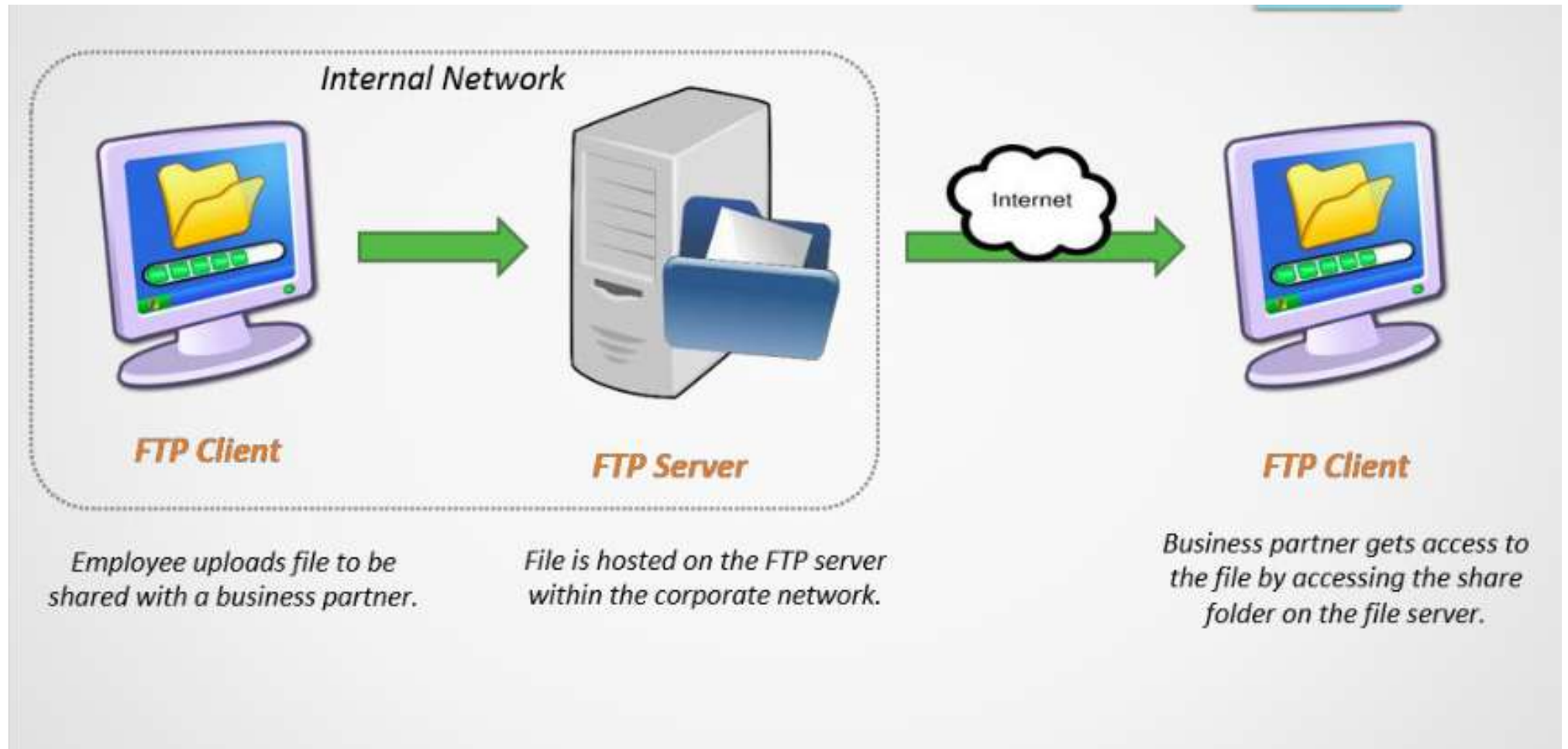
File Transfer Protocol

- Anonymous ftp site is a computer allowing a user to log in with a username of anonymous and password that is user's e-mail address.

- Anonymous ftp sites are called publicly accessible sites because they can be accessed by any user on the Internet.

- FTP can be command line or graphic based.

File Transfer Protocol

File Transfer Protocol

Internal Network

FTP Client

FTP Server

FTP Client

Employee uploads file to be shared with a business partner.

File is hosted on the FTP server within the corporate network.

Business partner gets access to the file by accessing the share folder on the file server.

Telnet

- Telnet or remote computing is telecommunication utility software, which uses available telecommunication facility and allows you become a user on a remote computer.

- Once you gain access to remote computer, you can use it for the intended purpose.

- The TELNET works in a very step by step procedure.

- The commands typed on the client computer are sent to the local Internet Service Provider (ISP), and then from the ISP to the remote computer that you have gained access.

- Most of the ISP provides facility to TELENET into your own account from another city and check your e-mail while you are traveling or away on business.

Telnet

- With Telnet, you log on as a regular user with whatever privileges you may have been granted to the specific application and data on that computer.

- For example, a user who is travelling may like to access information stored on his/her home/office computer from the laptop that he/she is carrying.

- For example, a user may like to use a remote computer from his/her own computer either for using the data/software on the remote computer.

- Some common uses of telnet service are:

  - Using the computing power of the remote computer

  - Using a software on the remote computer

  - Accessing remote computer's database or archive

Usenet Newsgroup

- Usenet service enables Internet users to generate, store, retrieve and share news articles among a set of widely distributed Internet users.

- It enables a group of Internet users having common interest to form a virtual group.

- Allows group of users to exchange their views/ ideas/ information.

- Several Usenet news groups exist on the Internet and are called newsgroups.

- A member creates a specially formatted news articles and submits it to the Usenet software running on his computer. This is called posting of an article.

Usenet Newsgroup

- Each news server talks to other news servers (its newsfeeds) and exchanges such posted articles with each other.

- Usenet also provides bulletin board symantics (BBS) to the end users.

- This means, a virtual notice board is accessible to all members belonging to the same group.

- In a moderated newsgroup only selected members have the right to directly post (write) a message to the virtual notice board.

- Other members can only read the posted messages.

- In a non-moderated newsgroup any member can directly post a message to the virtual notice board.

- Netiquette (network etiquette) deals with rules of framing

Usenet Newsgroup

WWW

- 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.

Videoconferencing

- A videoconferencing system allows a group of Internet users located at different locations to conduct meetings, as if they were sitting and discussing in a meeting room.

- The system allows the participants to send and receive audio, video and image data simultaneously over the Internet in real-time.

- This saves the time, effort and cost involved in travel of participants to assemble at one place for conducting messages.

Internet Relay Chat (IRC)

- The IRC system enables an Internet user to send messages to another Internet user in real-time.

- That is, sender's message appears on receiver's screen as soon as he types it.

- The receiver can immediately reply to the sender.

- In this manner, the sender and receiver can chat for any amount of time.

Internet Telephony

- Internet telephony means using the Internet for voice communication.

- Internet telephony software enables either computer-to-computer communications, or computer-to-telephone communication, or both.

- Several such software are available including Net2phone, PhoneFree, Skype, Dialpad.

- With the help of Internet telephony software, users having internet connectivity can use their computers/ or telephones for making long distance calls via the Internet.

Web Page

- Hypertext documents on the Internet are known as web pages.

- Web pages are created by using a special language called HyperText Markup Language (HTML)

- In addition to the content of a web page, HTML enables web page designers to specify the visual representation of a web page.

- The contents of the web page is tagged using HTML elements like <title>, <img>, <font>, etc.

- These elements are building blocks of a web page.

- HTML also allows embedding of scripts written in JavaScript in web page contents to create interactive

Web Page

- A web page or webpage is a document, commonly written in HTML, that is viewed in an Internet browser.

- It can be accessed by entering a URL address into a browser's address bar.

- It may contain text, graphics, and hyperlinks to other web pages and files.

- It is often used to provide information to viewers, including pictures or videos to help illustrate important topics.

- It may also be used as a method to sell products or services to viewers.

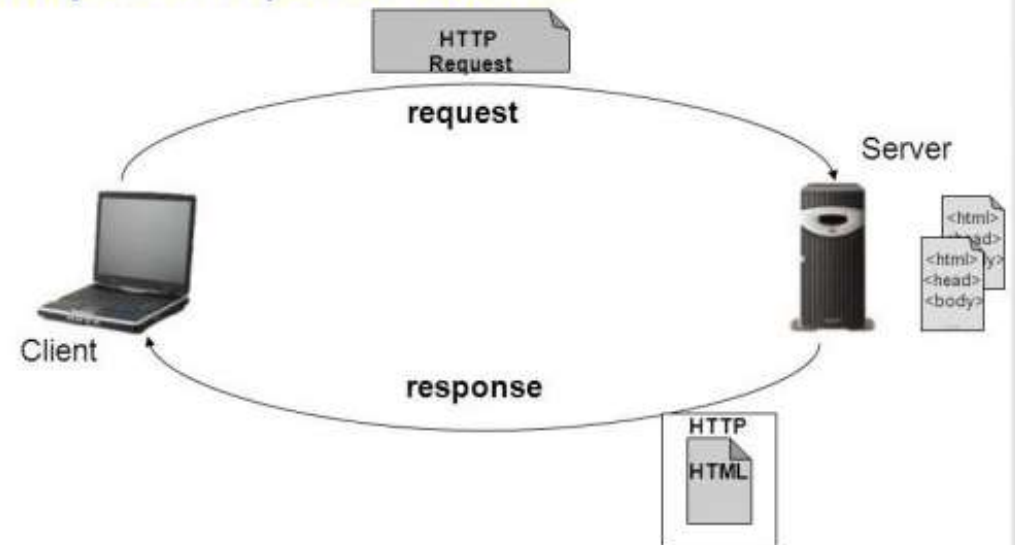- Multiple web pages make up a website.

Web Clients and Servers

- The web uses the client-server architecture.

- Any computer on the Internet that host web resources such as web pages or performs some functions that can be used by other users is called web server.

- Any computer that accesses a web server for making use of its resources or functions is called a web client.

- To enable different types of computers on the Internet to interact with each other seamlessly.

- WWW uses the client-server model and an Internet

Web Clients and Servers

the browser send a Url

the server send a html page
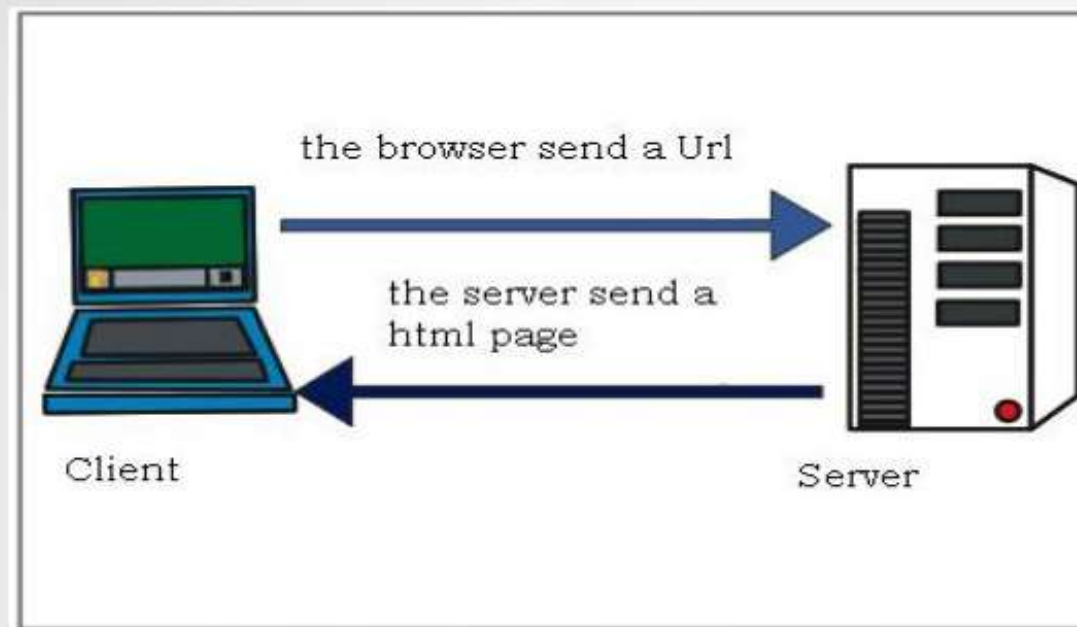
Client   Server

- **Request-response model.**

HTTP Request

request

Server

Client

response

HTTP HTML

HTTP

- HTTP is the foundation of data communication for the web.

- In addition to containing the web resources that a web server offers to web clients, it also contains a HTTP program that is designed to wait for HTTP requests from web clients and handle them when they arrive.

- When requested, with HTTP the requested file/information is transmitted without any encryption.

- For better security of sensitive information, another Internet Protocol called HTTPS (HTTP Secure) is

Web Browser

- Web browser is a software application used by web clients for retrieving, rendering, displaying and traversing web resources on the WWW.

- To use a computer as a web client, a user needs to load a browser.

- HTTP resources on the web are identified and located by Uniform Resource locator (URL).

http://www.computerhope.com/jargon/u/url.htm

| Protocol | Subdomain | Domain and domain suffix | Directories | Web page |

Web Browser

- Commonly used features in their user interface:

  - Address bar

  - Search bar

  - Status bar

  - Forward and back buttons

  - Stop button

  - Home button

  - Open multiple windows

Web Browser

- The process of navigating the web to search for useful information is called web surfing.

- A plug-in is a downloadable software that is designed to provide additional functionality to a browser.

- Most browsers enable a user to create,add, delete and update a personal hotlist of favourite URLs called favourites or bookmarks.

- Browsers maintain a 'history' feature that maintains a history of URLs accessed by a user.

- Browsers also support download facility.

Web Browser

- Browsers also include 'pop-up blockers' to prevent unwanted windows from popping up on user's screen.

- The list of browsers are Internet Explorer, Google Chrome, Mozilla Firefox, Apple Safari, Netscape Navigator, etc.

- Browsers designed for use on mobile hand-held devices are known as microbrowsers.

- Some popular microbrowsers are Opera Mini and IE.

Web Search Engines

- Used to search data.

- A web search engine is a software system that is designed to search for information on the World Wide Web.

- The search results are generally presented in a line of results often referred to as search engine results pages (SERPs).

- It maintains a database of websites indexed on keywords, titles,contents etc.

- To create this database, it has a web crawler (web spider) that periodically crawls on the Internet and stores newly encountered links of information about each new website, webpage, or web function it comes across along with their associated keywords and titles.

Web Search Engines

- During this navigation, it also updates the existing database.

- It also uses the concept of boolean operators (AND, OR and NOT) to enable users to refine and extend the terms of the search by combining multiple keywords.

- When a user gives a query request to the web search engine by specifying the keywords, the search engine extracts the matching websites from its database and ranks them in an order that it believes is most relevant to the search query.

- For this, it calculates a relevance score for each matching website.

- The relevance score calculation algorithm varies widely from one search engine to another, but it is often based on the number of times a keyword appears in a web page.

Web Search Engines

- Three main components of any web search engine::

  - User interface for formulating and specifying search request

  - Mechanism to discover information from website

  - Mechanism to rank and display the matched websites in response to a search request.

- List of search engines:

- Baidu (Chinese search engine)

- Bing (Multilingual)

- Duck Duck go (Multilingual)

Web 1.0

- It is the "readable" phrase of the World Wide Web with flat data.

- In Web 1.0, there is only limited interaction between sites and web users.

- Web 1.0 is simply an information portal where users passively receive information without being given opportunity to post reviews, comments, and feedback.

- The user can search for information and read/download it.

- It had basic shopping cart applications that deal with online promotion, sale and purchase of products on the Internet.

Web 2.0

- It is the **"writable"** phrase of the World Wide Web with interactive data.

- Unlike Web 1.0, Web 2.0 facilitates interaction between web users and sites, so it allows users to interact more freely with each other.

- Web 2.0 encourages participation, collaboration, and information sharing. Examples of Web 2.0 applications are Youtube, Wiki, Flickr, Facebook, and so on.

- One of the most significant differences between Wen 2.0 and Web 1.0 is that Web 2.0 enables greater collaboration among Internet user, content providers, and enterprises.
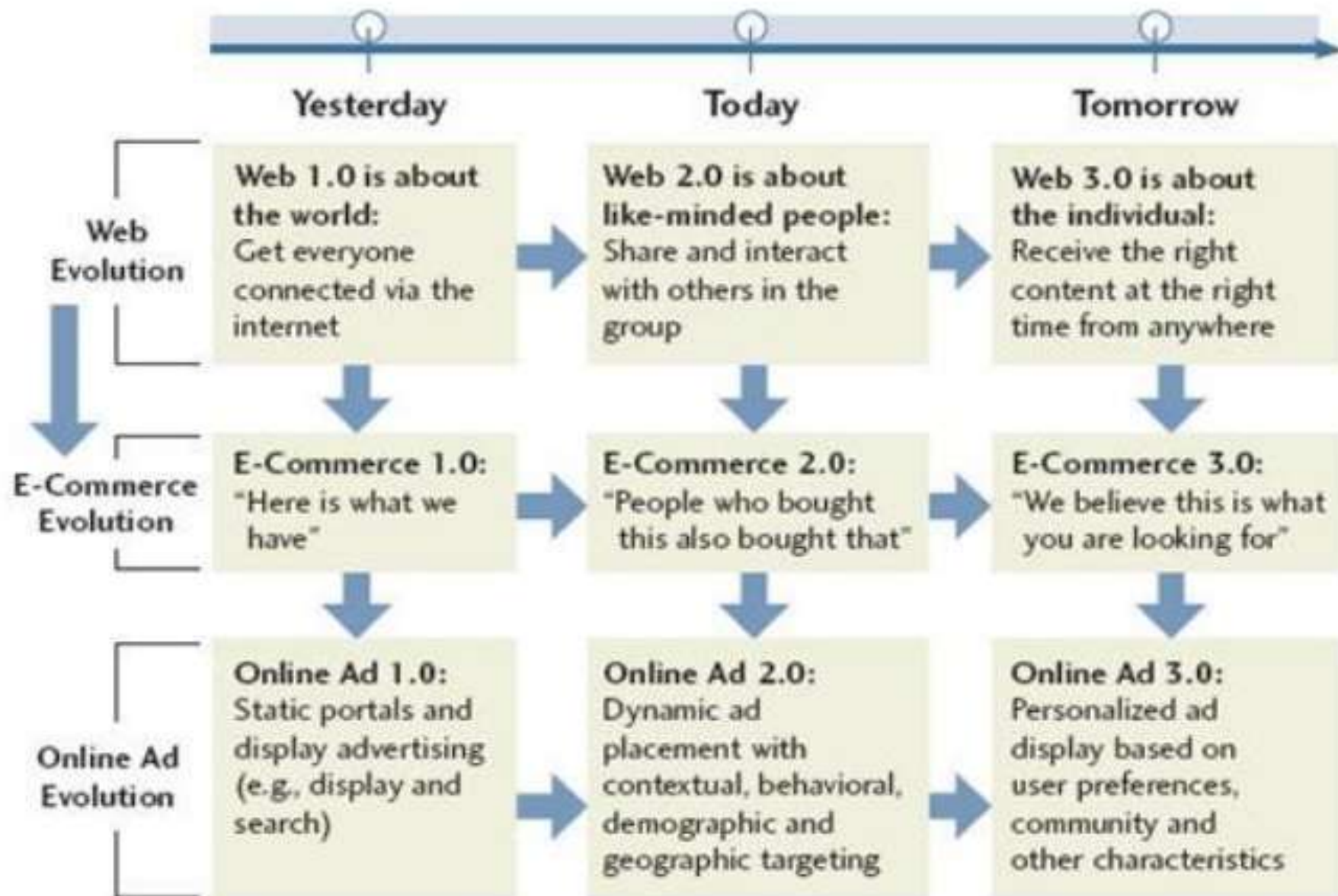
Web 3.0

- Web 3.0 is the "read, write, execute Web."

- It's a semantic web, where the web technology evolves into a tool that lets users create, share, and connect content via search and analysis. It is based on comprehension of words instead of numbers and keywords.

- It incorporates Artificial Intelligence and Machine Learning. If these concepts are combined with Natural Language Processing (NLP), the result is a computer that uses Web 3.0 to become smarter and more responsive to user needs.

- It offers users the freedom to interact publicly or privately without having an intermediary expose them to

Web Evolution and Its Impact on E-Commerce and Online Advertising
*Source: Yankee Group, 2008*

	Yesterday	Today	Tomorrow
Web Evolution	Web 1.0 is about the world: Get everyone connected via the internet	Web 2.0 is about like-minded people: Share and interact with others in the group	Web 3.0 is about the individual: Receive the right content at the right time from anywhere
E-Commerce Evolution	E-Commerce 1.0: "Here is what we have"	E-Commerce 2.0: "People who bought this also bought that"	E-Commerce 3.0: "We believe this is what you are looking for"
Online Ad Evolution	Online Ad 1.0: Static portals and display advertising (e.g., display and search)	Online Ad 2.0: Dynamic ad placement with contextual, behavioral, demographic and geographic targeting	Online Ad 3.0: Personalized ad display based on user preferences, community and other characteristics

Intranet

- An intranet is a private network of an organization whose resources are accessible only to the employees of the organization.

- Uses similar communication protocols, software tools, and applications as that of the Internet.

- It uses TCP/IP protocols, web browser software, and various types of client and server software applications used on the Internet.

- The main purpose of setting up of an intranet to enable sharing of the organization's information and computing resources among the employees of the organization in a secured manner.

Intranet
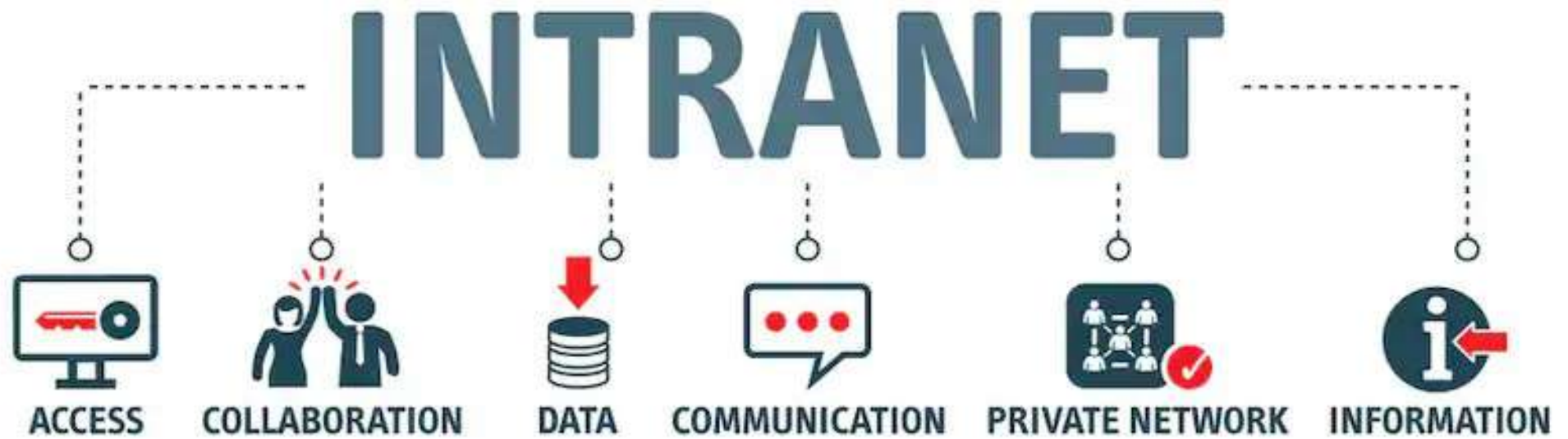
Intranet

- Benefits:

- Enables to communicate effectively and quickly using communication tools.

- Can share data easily

- Enables employees having common interest to form newsgroup

- Enables employees located in geographically remote offices to conduct meetings

- Enables publishing of information on intranet

- Enables employees to carry out collaborative work

- Enables the organization to maintain single copy version of documents

Extranet

- An extranet is an intranet whose resources are partially accessible to authorized users outside the organization to which the intranet belongs.

- To create an extranet, two or more organizations who are business partners, often link their intranets by using similar communication protocols, communication tools and software tools.

- We can also create extranet by providing access privileges to those users outside the organization.

- Organization uses firewall with suitable access control mechanisms to grant access to only a limited set of resources to an outsides user.

Extranet

- **Benefits of Extranet:**

- Enables to communicate effectively and quickly using communication tools. (vendors, suppliers, customers)

- Can share data easily with partners

- Enables employees having common interest to form newsgroup

- Enables employees located in geographically remote offices to conduct meetings

- Enables employees to carry out collaborative work

- Enables the organization to maintain single copy version of documents
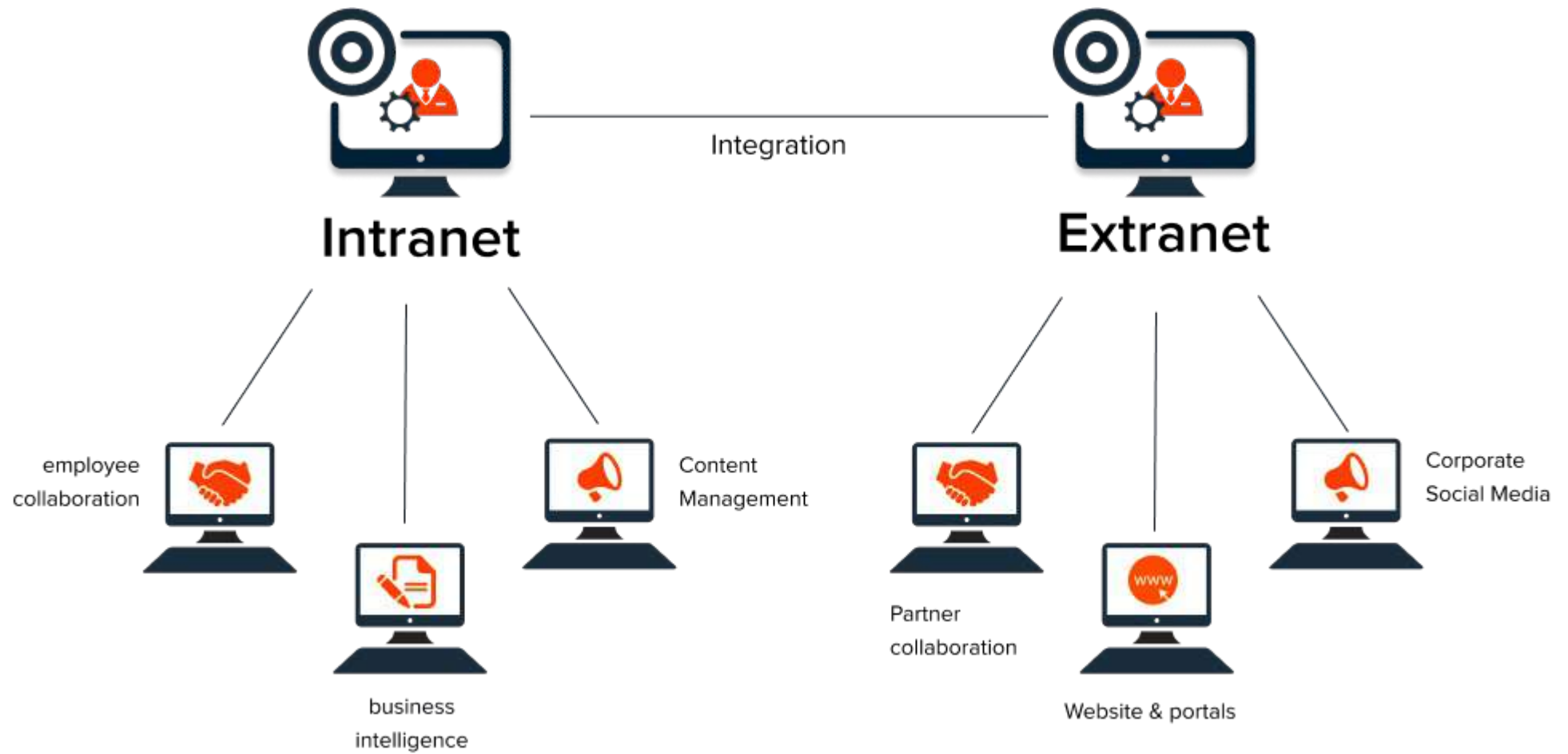
Extranet

Enterprise Network

- Is an organization's network infrastructure for data, voice and video communications to conduct business.

- Includes the organization's intranet, its connectivity to partners' networks (extranet) and the Internet.

- Enterprise network brings all the benefits of the Internet to the employees of the organization.

Enterprise Network
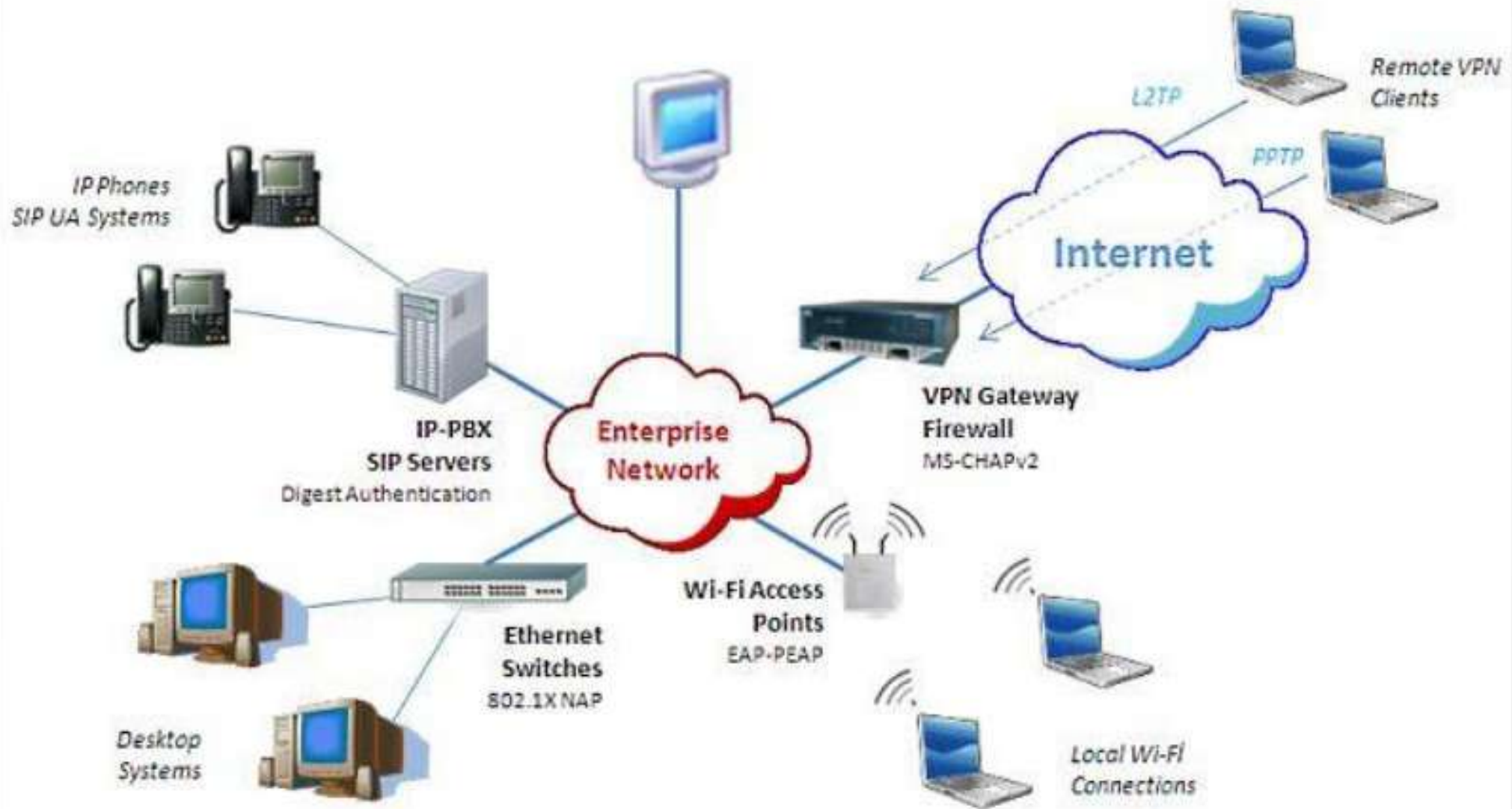
Intranet, Extranet and Enterprise Network

- Intranet: serves communication needs within organization

- Extranet: serves communication needs with partners

- Internet: serves communication needs with outside world

What is E-Commerce?

- E-commerce (electronic commerce) is the buying and selling of goods and services, or the transmitting of funds or data, over an electronic network, primarily the internet.

- The terms e-commerce and e-business are often used interchangeably.

- The term e-tail is also sometimes used in reference to the transactional processes for online shopping.
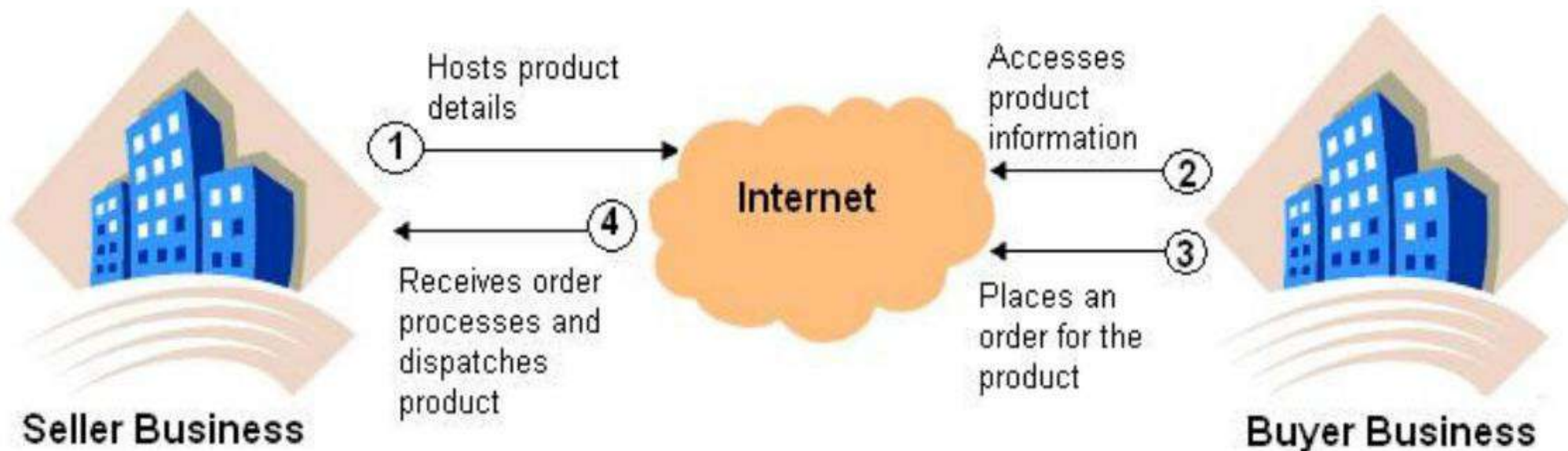
Types of E-Commerce
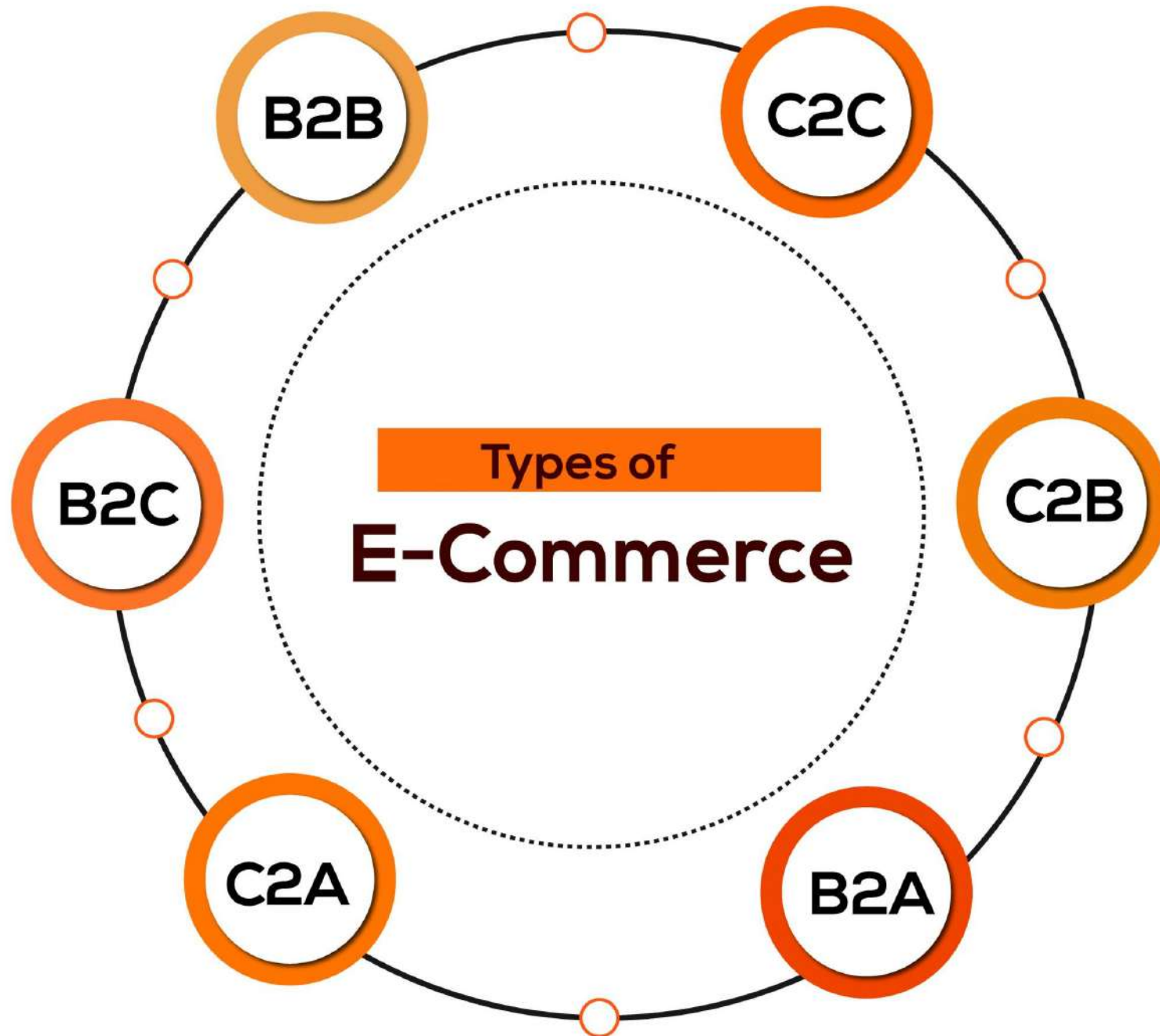
Business-to-Business (B2B)
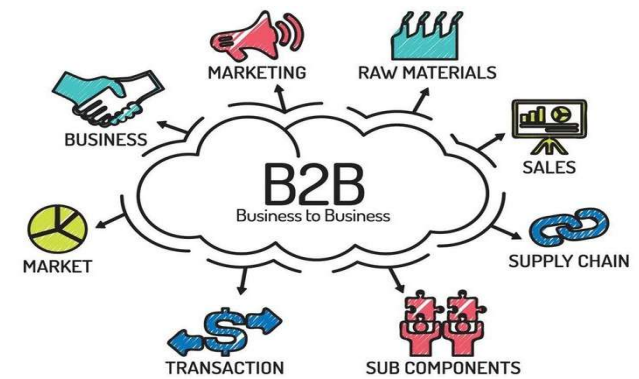
- Business-to-Business (B2B) e-commerce encompasses all electronic transactions of goods or services conducted between companies.

- Producers and traditional commerce wholesalers typically operate with this type of electronic commerce.
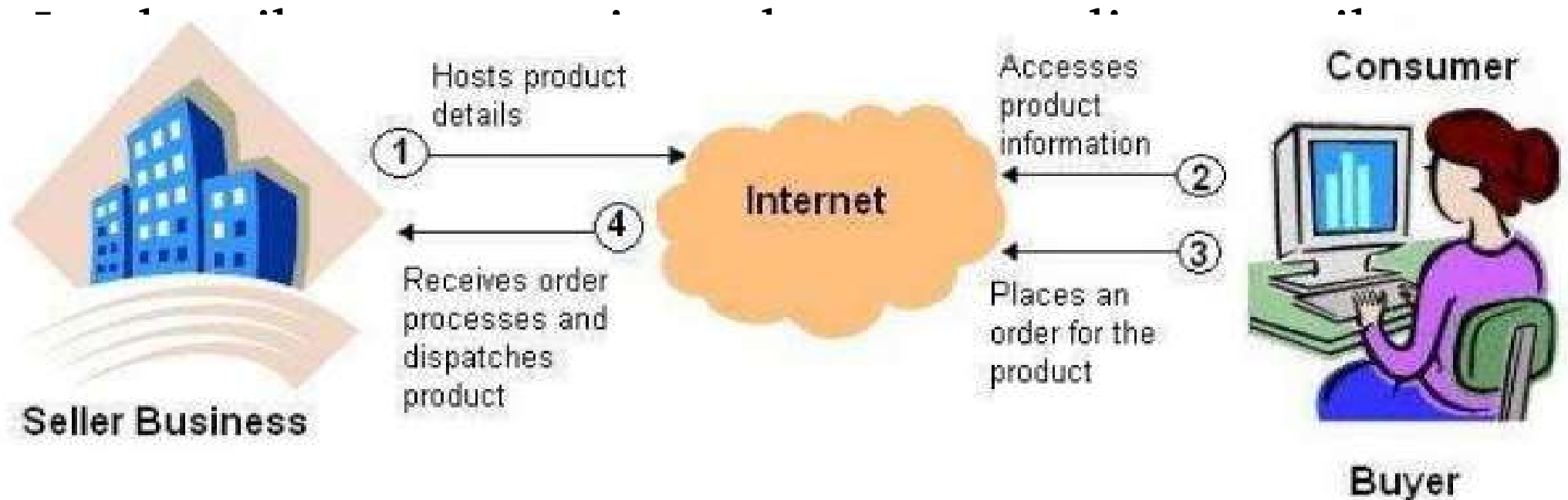
Business-to-Business (B2B)

Business-to-Consumer (B2C)

- B2C (Business-to-Customer) ecommerce is the exchange of goods or services over the internet between online stores and individual customers.

- B2C, or business-to-consumer, is used to describe a commerce transaction between a business and an end consumer.

Hosts product details
1

Internet

Accesses product information
2

Receives order processes and dispatches product
4

Places an order for the product
3

Seller Business

Consumer

Buyer

Business-to-Consumer (B2C)

6. DELIVERY

1. CUSTOMER

5. EXPEDITION

Online Store
(e-commerce B2C)

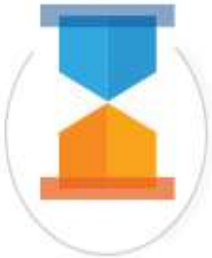2. ONLINE STORE

4. PAYMENT

3. PRODUCTS
& OFFERS

B2B
Business-to-business promotion

Logic-driven

Focuses on time, money & resources saved

Favors in-depth promotion

B2C
Business-to-consumer promotion

Favor simple, easy messaging

Appeals to emotion

Focuses on benefits and solving problems

Consumer-to-Consumer (C2C)

- C2C or Consumer-to-consumer eCommerce is one consumer selling goods or services to another consumer online

- Consumer-to-Consumer (C2C) type e-commerce encompasses all electronic transactions of goods or services conducted between consumers.

- Generally, these transactions are conducted through a third party, which provides the online platform where the transactions are actually carried out.
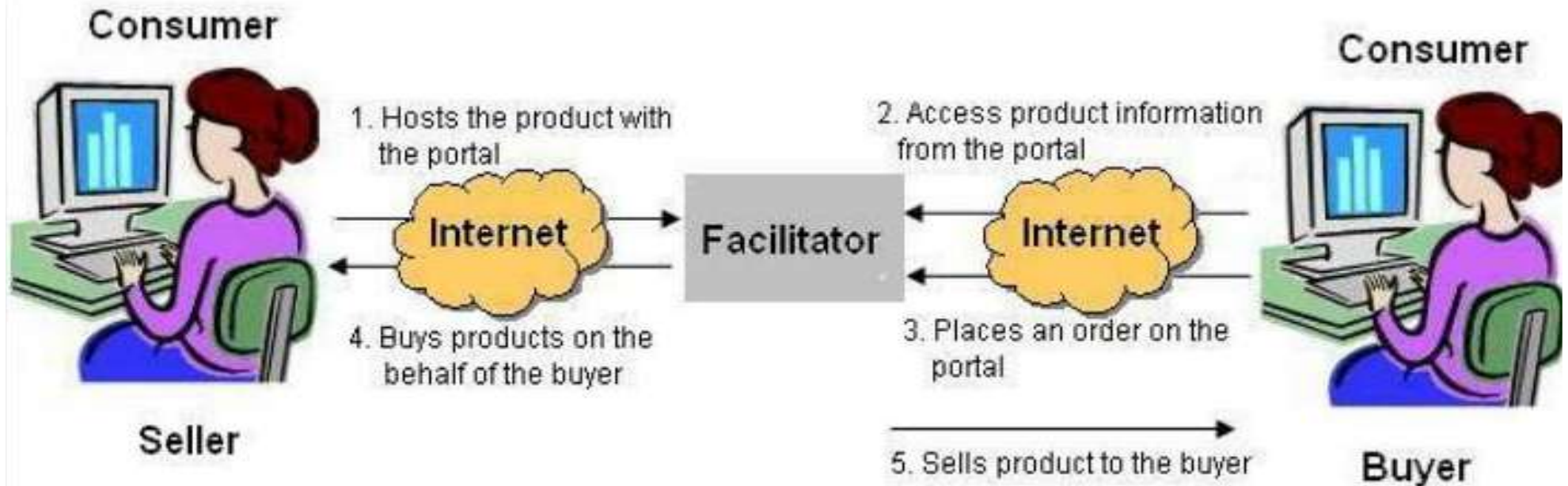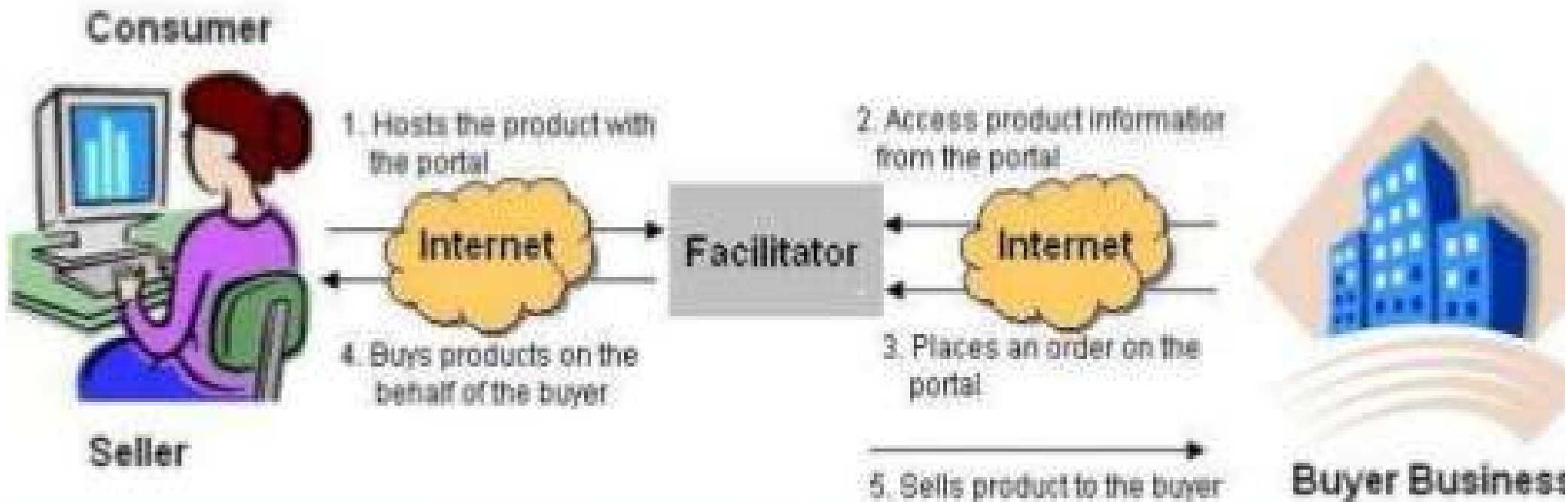
Consumer-to-Consumer (C2C)

Consumer-to-Business (C2B)

- Consumer-to-business (C2B) is a business model where an end user or consumer makes a product or service that an organization uses to complete a business process or gain competitive advantage.

- The C2B methodology completely transposes the traditional business-to-consumer (B2C) model, where a business produces services and products for consumer consumption.

Consumer-to-Business (C2B)

Business-to-Administration (B2A)

- B2A E-Commerce model is meant for electronic transactions between businesses and public administration.

- The business provides services, software and their maintenance to the administrative department.

- Businesses can also provide raw material and human resources for construction.

- It helps the government maintain records of citizens including their identity, credibility, health records, legal documents, and everything else.

Business-to-Administration (B2A)
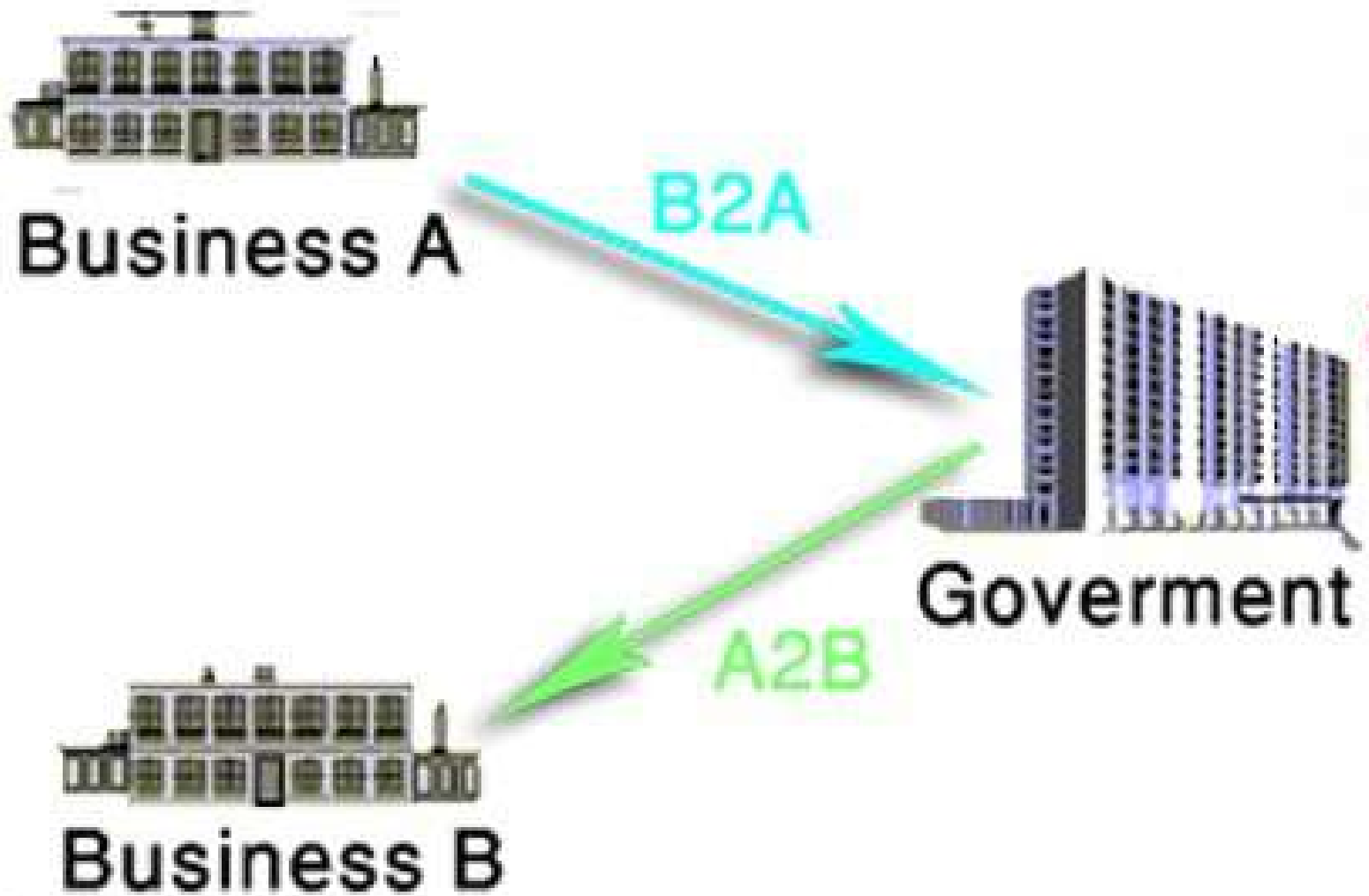
Consumer-to-Administration (C2A)

- The Consumer-to-Administration model encompasses all electronic transactions conducted between individuals and public administration.

- **Examples of applications include:**

- **Education –** disseminating information, distance learning, etc.

- **Social Security** – through the distribution of information, making payments, etc.

- **Taxes –** filing tax returns, payments, etc.

- **Health –** appointments, information about illnesses, payment of health services, etc.

E-Commerce: Advantages

Simple and easy usage

Low and affordable prices

Products that cannot be find in physical store

Quick shopping

Products that cannot be find in Croatian stores

Time saving

High offer of different products and services at one place

Safety

Buying from home

Delivery door to door

Do not need to talk to salesperson

Availability 24/7

E-Commerce: Disadvantages

- Unreliable
- Unsecure payment methods
- Longer delivery time
- Impossibility of trying clothes or shoes on
- Possibility of paying and do not receiving ordered products or services
- Limited offer
- Risk of getting products or services different from orders
- Impossibility of return ordered products
- No delivery in Croatia
- Bad and unfriendly web page design
- Description and photos of products which do not match the real product
- High delivery costs