

Intranet, Extranet and Internet



- Individual Computer networks such LANS and PANs can be interconnected to form extended networks.

QN: What is the difference between Intranet, Extranet and Internet?

- Intranet is used within an organization;
- Extranet is an extension of an intranet - used even out side the organization.
- Internet is global.

Intranet



- Intranet refers to a connection of private computer networks within an organization.
- An intranet has tools to facilitate communication between organization's employees or workgroups to improve the knowledge and data sharing capability.
- Many schools and non-profit groups have deployed intranets
- A simple intranet consists of an internal email system.
- More complicated intranets include Web sites and databases containing company news, forms, and personnel information.
- An example of an intranet is a school network.

EXTRANET



- **An extranet is a computer network that allows controlled access from the outside for specific business or educational purposes.**
- **Extranets are extensions to, or segments of, private intranet networks that have been built in many corporations for information sharing.**
- **Most extranets use the internet as the entry point for outsiders, a firewall configuration to limit access and a secure protocol for authenticating users**

Advantages of extranet



- Exchange large volumes of data using Electronic Data Interchange (EDI)
- Share product catalogs exclusively with trade partners
- Collaborate with other companies on joint development efforts
- Jointly develop and use training programs with other companies
- Provide or access services provided by one company to a group of other companies, such as an online banking application managed by one company on behalf of affiliated banks.
- Share news of common interest exclusively

Disadvantages of extranet



- **Extranets can be expensive to implement and maintain within an organization (e.g., hardware, software, employee training costs)**
- **Security of extranets can be a concern when hosting valuable or proprietary information.**

INTERNET



- Internet is an International/global interconnection of computer networks.
- It is described as a network of networks; it is a global network where all LANs (both big and small) worldwide are connected together in many different ways to form the Internet.
- The **Internet** has its root in a **networking** project called the ARPANET started by the Pentagon's **Advanced Research Projects Agency (ARPA)**.

History of internet



- The **ARPANET** became functional in September 1969, linking scientific and academic researchers in the United States.
- In 1986, the **National Science Foundation (NSF)** connected its huge network of five **supercomputer** centers, called **NSFnet** to the **ARPANET**, and this configuration of complex networks and hosts became known as the **Internet**.

Characteristics of the Internet



- It is made up of numerous networks worldwide.
- There is No organization that has a direct control over the Internet.
- It is dynamic; ever changing.
- It offers very many services
- The Internet size and technology grow at a very fast rate.
- It is not owned by any single organization (has no central control).

Requirements/infrastructure for Internet connection



- **Host computer**
- **Communication hardware such as Modem and router.**
- **Communication Software such as a Web browser and internet protocols**
- **Communication media such as VSAT, wireless antenna or telephone line.**
- **Internet Service provider (ISP)**

The Internet Service providers (ISP)



- ISP is a company which provides services for accessing and using the Internet at a fee.

Qn. Give some examples of ISPs in Uganda.

- There are many ISPs on the market in Uganda to choose from such as AFSAT, UTL, MTN

Which services ISPs offer?



The services offered by the ISP

- Offer connection to the Internet
- They do system analysis and consultancy
- Network servicing and maintenance
- Provide network security
- Domain name registration
- Website hosting
- Hiring storage space to small organizations
- Electronic mail services

The Factors to consider when choosing an ISP



- Setup costs
- Experience for both ISP and client.
- Auxiliary/additional services offered by the ISP e.g. E-Mail/ telephone SMS facility.
- Availability of online help.
- Compatibility of ISP software with yours e.g. windows Vs Linux Vs Wang.

The Factors to consider when choosing an ISP



- **Efficiency/Effectiveness of ISP devices e.g. speeds of ISP modem, Bandwidth etc. cabling**
- **architecture, Bit–Bus architecture for devices etc.**
- **Available technology. For example, In case you intend to hire a dial-up service, you need to**
- **consider the availability of a local phone number or toll-free number for access, This would help to reduce cost of acquiring totally new technology or equipment.**

The Factors to consider when choosing an ISP



- the Technology offered by the ISP. Some technologies are older and less efficient than others. The ISP should be able to offer the latest and most efficient technology.
- Technical support. What kinds of support services can the ISP provide?
- Are there any additional charges for support?
- The terms of service. Whether they meet your expectations or not

The Factors to consider when choosing an ISP



- Other services offered by the ISP that you can have on top of internet connection. E.g. web hosting and domain services.
- The fee charged for the services.
- The size of the ISP's Client base. ISP capacity is usually limited, the bigger the client base the
- less reliable is the ISP.
- Coverage. Does the ISP coverage reach your location or not?

Internet connection technologies



Dial-up (DUN)

- This is a connection method where the client must request for a connection to the ISP server each time he wishes to access the Internet.
- This method requires the use of a MODEM and a telephone line and the fee depends on the amount of time spend on-line.

Leased line

- This is where there is a permanent connection between the user and the ISP at a fixed fee.

Internet connection technologies



BANDWIDTH

- Bandwidth is the amount of Data (bits) that can be transmitted along a communication channel in a given time (per second) which is measured in bits per second or bps e.g. 32 bps. The larger the range of frequencies the greater the amount of data that can be transmitted.

BIT RATE

- Bit rate is the speed at which a particular transmission is taking place. It is measured in bits per
- second (bit/s or bps) and represents the actual speed of transfer of data.

Determinants of internet access speed



- The amount of bandwidth allocated by ones ISP.
- Connection technology used ; telephone lines are much slower than newer technology such as ISDN and ADSL.
- The volume of traffic. the more the number of people logged on the internet the slower the internet speed.
- Adapter or modem speed used.
- The processing speed and amount of RAM of the host computer
- Type of data/files being downloaded or uploaded.

Internet services



- 1. E-commerce**
- 2. Provision of information. e.g, on weather, and finance.**
- 3. E-banking**
- 4. Research**
- 5. On-line training**
- 6. Downloading and uploading files**
- 7. Sending or receiving messages.**
- 8. Real-time communication e.g. video conferencing and chat.**
- 9. On-line news**
- 10. On-line booking/reservation**
- 11. Virtual classes**
- 12. Entertainment services such as online games.**

Factors to consider when choosing ISPs



1. Availability

- You should check the services of your ISP because not all services are available on all locations especially the Wireless access services (*WiFi*). Cables are also limited specially in rural places.

2. Speed/Performance

- Exactly how important speed is depends on the type and amount of content you need to download plus the number of computers sharing the Internet connection within your organization. 512Kbps is adequate for 90% of Internet tasks

Factors to consider when choosing ISPs



3. Security Levels

- **The ISP should have security systems set up to ensure that your connectivity is safe enough, to eliminate fears of hackers from the neighborhood accessing your connection. Select a service that will not compromise the privacy of your information**

4. Price

- **Cheap Packages for home/personal use and Expensive ones for fast and huge downloads for business use are all available.**
- **Choose an ISP with affordable rates after agreeing with the terms and conditions. Some ISPs charge in terms of kilo bits transferred and others in terms of time duration**

Factors to consider when choosing ISPs



5. Support Services / Customer care –

- One of the top priorities when choosing an Internet Service Provider is their ability to offer the best customer service and technical support.
- Clarify how support is offered – 24 hours a day? 7 days a week? Is this done through a premium rate phone number?

6. Restrictions of use –

- Check whether there are restrictions on use. Some ISPs stipulate for only personal Use and hinder Business Use and others limit the amount of information you can download in a given time period .

Factors to consider when choosing ISPs



- 7. Length of contract – Many ISPs ask you to sign up for a specific time – usually a year or eighteen months**
- 8. Compatibility – That the speed of their modems and their software matches the speed of yours ()**
- 9. Reliability – How long the service provider has been in business and how dependable your ISP is**
- 10. Email addresses – Check whether the ISP has email and WWW services. Most ISPs will set up an email address when you activate your account. This would appear something like name@isp.co.ug.**

Uses & Advantages of getting connected to the internet



- Access a wealth of information, such as news, weather reports, and airline schedules.
- Shop for goods and services through E – commerce
- Use online banking services and manage investments.
- Do research and take online training courses.
- To Download files, software etc.
- For Advertisement. People use internet to publish information about them selves or their work

Uses & Advantages of getting connected to the internet



- **Make cheap internet calls**
- **Send and receive e-mail to and from other connected users.**
- **Communicate with others around the world through chat rooms, videoconferencing e.t.c**
- **Access sources of entertainment and leisure, such as online games, magazines, and vacation planning guides, listen to music, and watch movies..**

Uses & Advantages of getting connected to the internet



- Has storage where you can store information safely and can access it anywhere.
- It is accessible 24/7 (always on)
- Search Engines like Yahoo, Google can help you get what you want – compared to looking for a information in a Library.

Disadvantages of internet



- **Computer viruses** these can be downloaded and spread across machines and have destructive effects.
- **Internet provides unsuitable material** such as Pornography, the biggest threat related to healthy mental life.
- **Theft of Personal information**
If you use the Internet, you may be facing grave danger as your personal information such as name, address, credit card number etc. can be accessed by hackers or thieves.
- **Spamming:** Spamming refers to sending unwanted e-mails in bulk, which provide no purpose and needlessly obstruct the entire system.

Disadvantages of internet



- Some people are getting addicted to the internet and thus causing problems with their interactions of friends and loved ones.
- Some of the sites on the internet require passwords to have access to information that you want.
- The initial cost of connecting to the internet is high. e.g. buying computers.
- Many people are computer illiterate and so can not use internet.
- There is a lot of wrong information on the internet. Anyone can post anything, and much of it is deceit/garbage

Review Questions



- 1. How can the Internet be useful in the area of education?**
- 2. List at least possible advantages and disadvantages connected with a school being online.**
- 3. State the similarity and difference between internet and intranet.**
- 4. List and explain some of the services offered by the internet.**
- 5. What is an information network? Give examples of computer networks.**

Types of internet connection

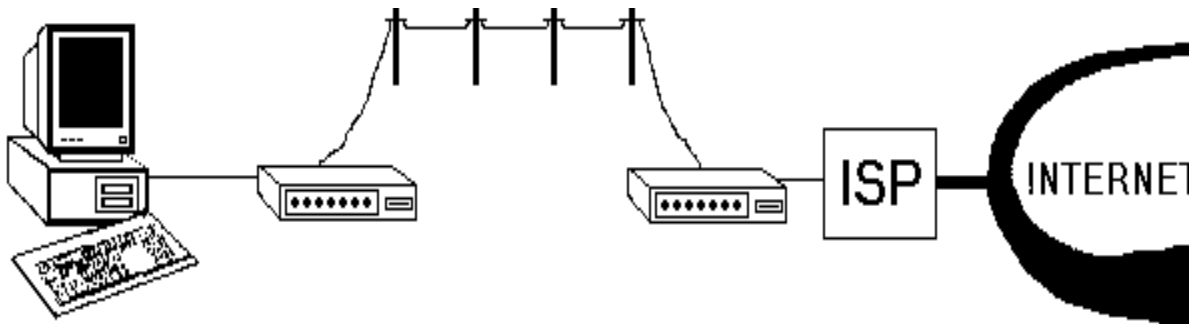


- The more technology grows, the bigger, better and faster Internet connections come up.
- The Methods of connecting to internet are Only two: The Dial Up/ Analog access which uses normal telephone lines and the wireless connectivity which requires no telephone lines
- The common Example of the wireless type is Broadband, a high speed Internet connection.
- Others examples include ISDN, DSL, Cable, 3G phones and satellite.

How to connect to internet



- We are going to describe a way of connecting to internet using the Analog/Dial Up access.
- The basic requirements for this type of connectivity are a computer, a modem, a phone line, vital software and a contract with an (ISP).



- Below are the specifications required:

Computer –



- Choose a computer that will be able to support the software that you would like to install.
- This computer should also be fast enough in handling different tasks.
- This computer should also support the relevant hardware parts needed in networking e.g. NIC, Modem etc
- The hardware should be easy to upgrade in case of any change in technology.

Modem –



- This converts your digital computer information into analogue telephone signals and vice-versa. Choose the fastest modem that your ISP can handle.
- Ensure that anything you get will be upgradeable, to ensure it can keep pace with increasing system speeds.
- Some people like an external modem where they can watch it blinking as it transfers data to and from the Internet.
- Many manufactures now build them into the computer. It is better to buy a computer with an in-built modem to avoid compatibility problems

Phone Line –



- This may be your biggest expense after purchasing the equipment.
- The cable companies often give special deals to connect you with any ISP who uses their phones.
- Examples of ISPs in Uganda include Uganda Telecom and MTN, Africa Online, Infocom etc.

Required Software –



- The computer can not communicate with the modem without installation of software
- **Browser software is also required to be installed for the computer to view web pages.**
- The most commonly used browser software include: Microsoft internet Explorer, Netscape Navigator, Mozilla firefox, e.t.c.
- **The version of your software should be up-to-date for your computer to view all websites**

Internet Service Provider (ISP) -



- **An Internet Service Provider is the company that takes care of the technical aspects of connecting your computer(s) to the internet.**
- **The lights on your modem display when they communicate to the modem of your ISP during the transfer of information in both directions.**
- **Always check and understand the terms and conditions of your ISP before making a contract!**
- **Some ISPs are very expensive but you can buy a few hours per month at a cheaper cost.**

Factors to consider when choosing ISPs



- The choice of an ISP depends mainly on the kind of work you are going to do with the internet.
- The key deciding factor should be service quality and the ability to alter the package at a later date, to meet your developing needs.
- Here some factors to consider to help you choose the right service for you.

FACTORS AFFECTING INTERNET CONNECTION SPEED



1. Computer Processor speed

- A computer with high processor speed has a high internet connection than that with a low processor speed.

2. Traffic on the network

- The greater the number of computers on the network, the more the internet speed reduces.

3. Distance the data travels



- Actual Internet speeds will vary, depending on the distance the data **travels** coupled with how many servers it has to go through and the different speeds of each server.
- Additionally, the shorter the cables or the closer the computers are to the routers, the faster the connection speed.



4. Malware, Spyware and Viruses

- Viruses hinder the operation of programs on the computer, regardless of its processor strength; this in turn slows down the speed of connectivity.
- **Quality or type** of internet connection, that may be specific to a particular case.

5. Modem speed



- If the modem is substandard with a low rating, or not compatible with your ISP's modem then this will slow down the speed at which data is transmitted.

6. Natural Conditions

- Instability in connection speed is also commonly caused by natural conditions such as stormy weather and thunder, which interfere with the transmission of signals.

7. Modems + Routers Positioning



- **Modems and Routers should be strategically positioned.**
- **The routers should not be put below or under tables but should be raised well to be able to send the signals directly to the receiving computers/ laptops**

8. Hardware problems.



- A poor network card, video card or signal receiver can seriously reduce the speed of the data being processed by your system, slowing down the speed at which your computer can take the information coming in.
- If your Internet service comes over the phone line and you have a faulty filter attached, the speed will be compromised

9. Software problems



- You need good updated web browser software to display the web pages efficiently.
- Currently Internet explorer version 6 is unable to display some WebPages with advanced features.
- It is also good to have updated software and device drivers to newer versions for optimum performance.

10. Memory available



- With each program you open on your computer, you are using up more RAM memory.
- Your computer has to write this data to the disk, and the more memory you are using up on open programs, the less memory there is available to receive the data.
- Data will slow down if your computer cannot receive it fast enough, making the Internet speed seem slow.

11. Computer internet settings



- **Improper computer settings can also affect the speed of your internet connection. Setting your firewall, safe search and other options properly will improve the speed as well.**

12. Technological Circumstances



- **Slow speed of an internet connection can be due to technical causes such as loose connections of cables or maintenance works being done by an your ISP.**

13. Cookies



- When surfing, the browser collects information, such as passwords and stores it on your local hard drive in a file known as a **cookie**.
- Over time, these cookies can compromise the speed of your Internet connection, particularly if you visit many websites during a browsing session.

Internet services



After connecting to the internet, the following are the services that we can utilize online.

- 1. Telnet – One of the amazing features of the Internet that lets you use the resources of another computer in another part of the world. This is done by remotely logging to the distant computer which is called the host.**
- 2. Email – It allows the transfer of messages, documents, and pictures among others, across the Internet.**
- 3. Mailing list – This is based on the email protocol. As an electronic mailing list it is very convenient when somebody wants to send a message or newsletter, for example, to many people in one go.**

Internet services (cont)



4. **Internet Relay Chat (IRC)** –Allows people to converse in real time by typing questions and responses. Chats are usually organized in what we call chat rooms.
5. **File Transfer Protocol** – The standard method for transferring files, whether downloading or uploading, to and from your computer with another computer on the Internet.
6. **Newsgroups** – This is an Internet equivalent of a discussion group or an electronic bulletin board. There are newsgroups for every conceivable topic and more, e.g. educational technology.
7. **World Wide Web** – This refers to the global collection of electronic documents called WebPages stored on computers all over the world.
 - As it is the most exciting feature that has revolutionized the Internet, people use this service to surf or browse for information.

EXAM QUESTIONS



1. Discuss the view that 'internet is a necessary evil' (20 mks) .
2. a) Explain four factors that affect the speed of an internet connection. (8 mks)
b) What should be considered when choosing an ISP? (12 mks)
3. a) State the difference that distinguishes the dial up from the wireless internet connectivity. (4mks)
b) Explain the requirements of getting connected to internet using the Analog access. (16mks)
4. a) Explain any six services of the Internet that you know. (12 mks)
b) The difference and similarity between internet, intranet and extranet (8 mks)
5. a) Write the following in full:
i) ISDN, ii) DSL, iii) ISPs, iv) NIC, v) Kbps, vi) EDI, vii) IRC. (7mks)
b) Give the meaning of the following words as used in computer studies i) Compatibility ii) Upgrade iii) Downloading iv) Uploading (8mks)
c) What is browsing? Give three examples of browser software (5mrks)

E-mail Communications



Definition:

- **Email (Electronic Mail) Communications refers to the transmission of messages via a computer network such as; a local area network or internet.**
- **The email can be simple text, or include an attachment such as a word processing document, a graphic, an audio clip or video clip.**

Advantages of using email as a means of communication



- **Easy to use.** Emails applications have user friendly tools that help during composing messages.
- **Email supports sending of attachments like documents, zipped files, e.t.c**
- **It is very fast in terms of speed:** The e-mail is delivered instantly, anywhere across the globe.
- **Easy to prioritize:** Since the mails have subject lines, it is easy to prioritize them and ignore unwanted mails.
- **Email messages can be sent to many recipients at the same time**

Advantages of using email as a means of communication



- Emails can also carry hyperlinks that lead to other webpages with just a click
- One can subscribe to news and other online services through email
- Email software have management features that help users to organize their messages in folders like inbox, sent, draft, etc.
- Easier for reference: When one needs to reply to a mail, there is a provision in the mailing system to attach the previous mails as references. This refreshes the recipient's knowledge, on what he is reading.

Advantages of using email as a means of communication



- **Environment friendly:** Postal mails use paper as a medium to send letters. Electronic mail thus, saves a lot of trees from being axed. It also saves fuel needed in transportation.
- **Email software have address book features** that may be sorted in alphabetical order.
- **Email software has a good degree of security features** such as username and password before sign in
- **Email applications have inbuilt English dictionary** which safeguards the sender from incorrect spelling and grammar.
- **Email is a relatively cheap means of communication** since there are no printing or postage expenses involved.

Advantages of using email as a means of communication



- There is flexibility in time of opening the e-mail for any time access. At any time of the day or night, one can communicate with friends, relatives, professors and business associates.
- Messages remain permanent for future and frequent accessing from anywhere.
- Use of graphics such as colorful greeting cards and interesting pictures can be sent through e-mails.
- Advertising tool: many individuals and companies are using e-mails to advertise their products, services, etc.

Limitations of using Email as means of communication.



- **Emails can carry Viruses:** The recipient needs to scan the mails, as viruses are transmitted through them and have the potential to harm computer systems.
- **Spam and Junk:** E-mails when used to send unsolicited messages and unwanted advertisements create nuisance called Spam. Checking and deleting these unwanted mails can unnecessarily consume a lot of time, and it has become necessary to block or filter the unwanted e-mails by means of spam filters.
- **E-mail spoofing is another common practice.** Spoofing involves deceiving the recipient by altering the e-mail headers or the addresses from which the mail is sent.

Limitations of using Email as means of communication. (cont)



- **Hacking and email interception:** The act of unauthorized attempts to bypass the security mechanisms of an information system or network is termed as hacking. After the e-mail is sent and before it is received by the desired recipient, it "bounces" between servers located in different parts of the world. Hence, the e-mail can be intercepted by a professional hacker.
- **Misinterpretation:** One has to be careful while posting any kind of content through an e-mail. If typed in a hurry, the matter could be misinterpreted.

Limitations of using Email as means of communication. (cont)



- The content posted via e-mails is considered informal. Therefore, there is a chance of business documents going unnoticed. Thus, urgent transactions and especially those requiring signatures are not managed through e-mails.
- Crowded inbox: Over a period of time, the e-mail inbox may get crowded with mails. It becomes difficult for the user to manage such a huge chunk of mails.
- Need to check the inbox regularly: In order to be updated, one has to check his e-mail account regularly, which may be expensive in the long run.

Limitations of using Email as means of communication. (cont.)



- Email cannot be used without computers especially in remote areas without electricity
- In case one forgets his/her password, signing in is not possible and this can lead to loss of information.
- Email may violate privacy in case someone else gets to know your user password since the other may check your mails.

Components of an e-mail message



- **Headers**
- **The message headers contain information concerning the sender and recipients. The exact content of mail headers can vary depending on the email system that generated the message.**
- **Subject. The theme of the email message**
- **Sender (From). This is the senders Internet email address.**
- **Date and time received (On). The time the message was received.**

Components of an e-mail message (cont)



- **Recipient (To :).** First/last name of email recipient, as configured by the sender.
- **CC: “Carbon copy”** enables copies of the email message to be sent to third party while acknowledging other recipients
- **Bcc:** Enables copies of the mail message to be sent to the third party without acknowledging any other recipients.
- **Reply-to.** This is the Internet email address that will become the recipient of your reply if you click the Reply button.

Components of an e-mail message (cont)



- **Body**
- The body of a message contains text that is the actual content.
- The message body also may include signatures or automatically generated text that is inserted by the sender's email system.
- **Attachments:** Attachments are optional and include any separate files that may be part of the message.
- **Signature:** Personalized information about sender.

EMAIL SOFTWARE



- This refers to the programs that are used to manage email account messages.
- They are in two categories:
Application packages locally installed on the computer (email clients), and
Online email programs hosted by a website on the www (webmail).
- Examples of email clients include:
 - Microsoft Outlook, Thunderbird
 - The most popular webmail software:
 - Yahoo
 - Hotmail
 - Gmail
 - Excite
 - Mail.com
 - Netscape web mail
 - AOL
 - Eudora mail