UNIT 13 INTRANET, EXTRANET AND INTERNET

Structure

13.0 OBJECTIVES

After studying the unit, you will be able to:

- understand differences among Internet, Intranet and Extranet;

- develop an effective communication system within an organisation using provisions of Intranet; and

- know the advantages of setting up Extranets in business organisations and libraries.

13.1 INTRODUCTION

The Internet can be defined as a Network of computers using standard protocols for sharing of data. It binds computers running on different platforms into a Web so as to access information by using a Standard Client Programme, such as Web Browsers like Internet Explorer and Netscape. The use of accessing information through Web Browsers has become so popular over the last few years that an increasing number of Web-Based software programmes are being developed throughout the world. Almost all the software producers such as Microsoft, SUN etc. are now designing their Services, which could be easily accessed through Web Browsers. The popularity of Web Browsers has also given birth to the development of Intranets and Extranets. The Intranets and Extranets use Internet protocols and technology for sharing the data from one computer to another. The users also need not understand different commands for accessing different databases as almost all of them could be accessed through a Web Browser or other Client Software Programmes.

13.2   INTRANET

An "intranet" can be defined as an "internal internet"— a network of an office, company, university or college or even a large library that runs on IP protocols An intranet is a private network that is contained within an enterprise. It may consist of many interlinked Local Area Networks and also use leased lines in the Wide Area Network. Typically, an intranet includes connections through one or more gateway computers to the outside Internet. The main purpose of an intranet is to share information within the organization and computing resources among employees. An intranet can also be used to facilitate working in groups and for teleconferences.

The *Intranet* is a Web-based architecture used for managing internal information. Another definition can be given as: Intranet is an organisation's internal information system that uses Internet tools, protocols, and technology. An Intranet could be something as simple as a single HTML document made accessible on a Local Area Network with no access to the Internet at large; or it could be as complex as one or more dedicated Web servers with thousands of HTML documents linking together a worldwide network of corporate offices; or it could be anything in between.

An intranet differs from a conventional LAN in two ways: it links more than one kind of networking technology using the Internet protocols, TCP/IP; and it uses a firewall to keep the larger Internet out of your internal information resources. This means Intranets take the same features that make a World Wide Web useful - minus geographic and time barriers, integrating multiple information services into a single interface, interactive multimedia application, etc. - and bring them into the office.

Typically, larger organisations allow users within their intranet to access the public Internet through firewall servers that have the ability to screen messages in both directions so that company security is maintained. When part of an intranet is made accessible to its staff (working in branch offices), customers, partners, suppliers, or others outside the organisation, that part becomes part of an extranet. A firewall is a computer or several computers that sit between your network and the greater Internet. Using filtering and specialized routing, as well as rules you decide upon, firewalls keep out people who don't have permission to access your resources internally. You, on the other hand, can access all the resources of the general Internet.

As intranet uses TCP/IP, HTTP, and other Internet protocols, it looks like a private version of the Internet. With tunneling, companies can send private messages through the public network, using the public network with special encryption/decryption and other security safeguards to connect one part of their intranet to another. In some ways, the word "intranet" is a portmanteau word, which logically combines the concepts in "internal internet between business sites." Going deeper, we see that an intranet uses not only the protocols for transport but the tools for collaboration, information dissemination, and resource sharing that the Internet offers. Internal Web servers, FTP archives, newsgroups, and other resources become the way your employees get their work done.

13.2.1 Advantages of Intranet

An increasing number of organisations throughout the world are now using almost all the facilities/ provisions of Internet technology for internal communication. Access to internal document collections, document management system, chat, file transferring, e-messaging and video-conferencing are the popular usage of Intranet. Almost all

the internal information of an organisation such as newsletters, telephone directories, calendars, policy manuals, current personnel lists, etc. are being made available through Intranets. The Interanets are becoming quite popular due to the following reasons:

i)   The interface is easy to use; it also encompasses access to multimedia formats such as text, video, sound and graphical images.

ii) A single interface to all formats of information using the Internet open standard removes the requirement for an organisation's network to provide several dedicated interfaces traditionally needed to interrogate proprietary systems such as databanks, bibliographic information retrieval systems and management information systems. Also, the user only needs to be familiar with one interface.

iii) Compared to the cost of employing proprietary information systems, or group ware, intranets are very inexpensive to set up. In addition, proprietary packages also use in-house protocols, which often result in a dependency on the software distributor, and update and utilities may only be acquired from the original vendor.

iv) They provide improved access in a number of respects:

    a)   documents may be shared across all major networking platforms.

    b)   information is accessible regardless of the user's location

    c)   a workstation configured for use on an intranet is also ready for Internet use if the necessary gateways are incorporated into the network.

    d)   access and use of groups using the intranet may be monitored, making it possible to assess the value of services and resources offered on the intranet

    e)   user authentication systems can be incorporated into browsers, so that access to information can be controlled.

v)   They allow for maintenance of current documents, by offering access to electronic documents that will always be the latest version. The eliminates significant reprography, and time spent trying to locate lost paper-based documents.

13.2.2 Library Applications of Intranet

As Intranets become ubiquitous in the corporate world, there is no reason that these same concepts can't be applied to libraries' internal information system. Nonprofit library systems that are "single" library systems or multiple library systems confined to relatively small geographic areas a city, country, or college campus - may not realize the same benefits that national and international corporations realize, but there are still benefits to be gained.

Intranet in libraries can be used to link staff to copies of departmental handbooks, personnel manuals, copies of the library's mission statement, goals and objectives, annual reports, staff white pages, etc. The Intranet also can serve as a bulletin board where the library staff posts interesting news stories, job announcements, monthly reports, and training schedules. With applications like RealAudio, messages can be heard, not just read.

Libraries can also use the facility of Intranet for informing its readers within a parent organisation about the new arrival of publications and its CAS and SDI services can

be rendered through it. The users can also access information about the availability of any publication in the library and its status (whether issued or not, if issued then to whom) through Intranet. A copy each of the reference queries earlier met by the library staff can also be kept on the Intranet servers so as to be accessed by the library users. An Academic Library can keep various forms such as, membership form, reservation request form, etc. on the Intranet so as to provide improved services to its users.

Almost all the Standard Libraries software programmes are now providing Web based access to its users. These include access to library catalogues, list of additions, Circulation Information, status of issues of Periodicals, Documentation List, etc.

13.3 EXTRANET

An Extranet, or extended Intranet, can be defined as a private network of linking branch offices or several cooperating organizations located outside the walls of any organisation. An Extranet service uses existing Intranet interactive infrastructure, including standard servers, e-mail clients and Web browsers. This makes Extranet far more economical than the creation and maintenance of a proprietary network. It enables trading partners, suppliers and customers with common interests to form a tight business relationship and a strong communication bond.

The Extranet can be defined as "a network that links business partners to one another over the Internet by tying together their corporate intranets". Extranets may be used to allow inventory database searches, for example, or to transmit information on the status of an order. They are being used by businesses of all types such as banks, airlines, railways, large corporate offices having several branches etc.

An Extranet is a private network that uses the Internet protocol and the public telecommunication system to securely share part of an organisation's information or operations with its branches (located within the same city or outside), partners, users, customers, suppliers or contacts. An extranet can be viewed as part of an organisation's intranet that is extended to users outside the organisation.

An extranet requires security and privacy. These require firewall server management, the issuance and use of digital certificates or similar means of user authentication, encryption of messages, and the use of virtual private networks (VPN) that tunnel through the public network.

Let us take an example from the business sector. A new attitude within businesses about how to communicate - within the business, among employees and managers, as well as between the business and its external constituents: partners, customers, and vendors. There's almost a rush toward this now. It seems to me that companies are becoming extremely aware of how important this type of communication is, both in growing the top line of the business by increasing revenue and sales, and in improving the bottom line by reducing costs, either within the business or between the business and its partners or distributors. As businesses continue to use open Internet technologies to improve communication with customers and partners, they can gain many competitive advantages along the way - in product development, cost savings, marketing, distribution, and leveraging their partnerships. And, perhaps, most important of all, they can strengthen their business relationships.

Netscape, Oracle, and Sun Microsystems have announced an alliance to ensure that their extranet products can work together by standardizing on JavaScript and the Common Object Request Broker Architecture (CORBA). Microsoft supports the Point-to-Point Tunneling Protocol (PPTP) and is working with American Express and other companies on an Open Buying on the Internet (OBI) standard. The Lotus Corporation is promoting its groupware product, Notes, as well suited for extranet use.

13.3.1 Advantages of Extranet

An organization can use provisions of the Intranet to create systems with an idea to build them for improving employee productivity, sharing data, or updating human resources information, for example. Then they would build other applications for use outside the organization - either products for their customers or products to let the company communicate better with their vendors. So in addition to internal company networks, or intranets, that are behind the firewall, companies are building external networks called "extranets" that reach out to people who may physically work outside the firewall but who are an important part of the business strategy, product-delivery system, or customer-support apparatus. The organisations can use an extranet to:

- Exchange large volumes of multimedia data using Electronic Data Interchange (EDI)

- Share office information, library, circulars, etc., at all the locations. Collaborate with other organisations on joint development efforts

- Jointly develop and use training programmes with other organisations

- Provide or access services provided by one organisation to a group of other organisations.

- Share news of common interest exclusively with partner organisations.

An extranet is not the only method of connecting an organization to distant locations of the same organization but also to similar organisations, their employees, researchers, etc. to other businesses.

Ubiquity of Access. Suppose an organization has to rely on contractors and subcontractors to supply you with widget parts. One advantage of the Internet is that it is becoming increasingly acceptable to any existing contractor or subcontractor. You don't need to make sure your operating system is the same, or that you're using the same type of database. You don't even need to be using the same Web browser. "An extranet is an effective way for organizations to communicate without having to agree to buy all similar systems so the cost of enabling goes way down".

Open Standards. Another advantage of an extranet is the Internet's open standards. Regardless of what equipment different companies own, it's unlikely they buy their equipment from the same vendor. The extranet eliminates many compatibility problems.

Less Time and Money. Lastly, and most importantly, an extranet can save a corporation money and time. Extranet is certainly not a miracle situation to handle complex problems of remote office. The Intranet and Extranets are being popularly used for communication application like Audio and Video Conferencing, netmeetings, netshows, collaborative Multimedia computing, etc the details of which have been discussed in an earlier chapter. There are, however, a few issue needs to be overcome.

System Vulnerability. Its biggest drawback, at least for now, concerns security, a major issue for the Internet and intranets, as well. A system that runs over the Internet is more vulnerable than a proprietary one, and no one has yet come up with a foolproof, end-to-end security plan. Also, the type of information transmitted over extranets-financial data, specs for new products—makes the network an appealing target for hackers.

Insufficient Support. Another concern with extranets, which also holds true for intranets, is that of quality of service. "Right now, it's not sufficient to support mission-critical applications," "That needs to be improved, although some applications such as E-mail." are working satisfactorily.

Technical and cost advantages are, of course, very important. But the real significance of Extranet is that it is the first non-proprietary technical tool that can support rapid evolution of electronic commerce. On a perhaps more fundamental level, the Extranet is also likely to redefine the business evolution of a conventional corporation into "the knowledge factory". It will radically change the way private and public sector organizations would conduct their business in the new Internet-driven global economy.

13.3.2 Library Applications of Extranet

Extranets can help libraries to improve their customer relations, user services, and save time and resources. Let us consider a University Library having its campuses at different locations or in another city or various colleges of the university located in different cities. In order to provide library services to its faculty, students and researchers at all the distant locations the library can develop extranets. This will help the users of the Library to access speedy information at much less cost. This will also improve services being given to the readers located at distant locations. A well-developed Extranet can give them a feeling of being part of the main campus even though they are sitting miles away from the main campus. In relation to its content and marketing potential, the term "third wave" also refers to the maturity process in the development of Web technology. Extranet is conceptualized as the key technology enabler for the development of the third wave large-scale electronic commerce sites. Moreover, this new concept is also at the heart of the re-engineering effort required to advance a traditional corporation into the state of the "knowledge factory". Its usage in the field of library and information services is likely to grow tremendously over the next 3-5 years.

13.4   THE INTERNET, INTRANET AND EXTRANET

Internet refers to outward-facing systems, with little or no connection to any other internal systems. Internet sites have rapidly evolved from inter-organisation e-commerce systems to become a general-purpose broadcast medium for sharing data, e-commerce, corporate marketing material, etc. This refers to the global system involving organisations of all categories, types, and size.

Intranet refers to inward-facing or staff-facing systems. Intranets have some similarities to Internet-based Web sites, starting out as departmental or corporate e-mail systems and evolving into a broadcast medium for managing internal information, including Web-based documents as well as access to existing systems and data repositories. An intranet has two fundamental functions: provide secure, customized access to relevant, up-to-date information found in transaction systems; and let users act on

that information by managing how it flows through process systems. These applications are used within and across workgroups to manage product development, human resources, sales force automation and other internal business processes.
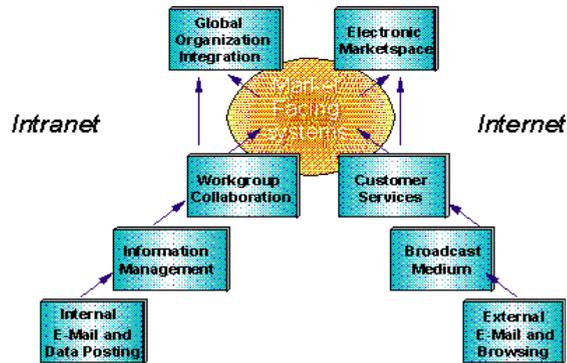
Extranet, then, refers to the marriage of these two otherwise separate systems into a single, seamless system - a market-facing system. For example, in an extranet, a customer service system faces both inward towards the customer service personnel and management as well as outward towards the customers themselves, who enjoy a similar level of interactivity and security as an internal participant. As the extranet itself evolves, it extends not only data but actual transactions to the Internet to conduct electronic commerce. Similarly, it lends itself to internal global organizational integration by sharing internal and external data with processes that span all existing systems.

As depicted above, the evolution of the Internet and intranet systems leads to a natural integration point, the extranet, the new nexus of the relationship between a company and its customers and partners. The difference among the three can be summarised as below:

	Internet	**Interanet**	**Extranet**
Access	public	private	semi-private
		members of a	group of closely related
Users	everyone	specific firm	firms
			shared in closely trusted
Information	fragmented	proprietary	held circles

Self Check Exercise

1) What are the primary uses of Internet?

2) Distinguish between Intranets and Extranets.

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13.5   SUMMARY

The Internet is a vast network of computers spanning the entire world. Thousands and thousands of computer networks are linked together through the Internet. Presently millions of computers are connected to the Internet and this number is growing at a mind boggling pace. On the other hand, Intranet is like an "internal internet"— a private network contained within an enterprise. It may consist of many interlinked LANs and may also use leased lines in WAN. An Intranet may be connected to the Internet through one or more gateways. Extranet, basically, can be termed as an extended Intranet. It can link business partners over a wide area, using the Internet by tying together their corporate Intranets. The evolution of the Internet and Intranet has led to their integration, resulting in Extranet.

13.6   ANSWERS TO SELF CHECK EXERCISES

1)   Internet the so-called information highway, is highly used for e-mail, news groups, web browsing, sharing information and transferring files. Rising at a rapid rate is the use of electronic commerce on the Internet.

2)   Intranets are basically "baby" Internets. They use the same network facilities that the Internet does, but access is restricted to a limited sphere. An extranet is a network that connects a number of intranets into a truly mini-Internet. Access is extended to all the intranets connected through the extranet, but again, not to the Internet. Extranets require a constant Internet connection and a hypertext transfer protocol (http) server.

13.7   KEYWORDS

Decryption	:	A process of decoding data that has been encrypted into a secret format. Decryption requires a secret key or pass word.
Encryption	:	The translation of data into a secret code. It is the most effective way to achieve data security.
News Group	:	An on-line discussion group on the Internet
Web Browser	:	A software application used to locate and display web pages.

13.8   REFERENCES AND FURTHER READING

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