INTERNET

Intranet & Networking

Basics of networking

To fully understand and appreciate how the Internet works and why it works the way it does, it would be better for you to have some basic understanding of what networking is all about and how it works in general.

The previous part had highlighted some basic concept of what a network is. To recap, a network occurs when more than one computer in linked with another. This linking can take place within a premise or department and is often called local area networking or LAN (usually within a kilometer radius). Today, many companies are using wireless LAN.

A link that occurs from one area to another far away (a few to thousands of kilometers away) is known as wide area networking or WAN and is generally linked via cables and satellite.

Introduction to Intranet

Most of us would have heard of the Internet. What then is the Intranet? An Intranet is a private network within an organization incorporating the standard protocols commonly found on the World Wide Web ("WWW").

As the use of the Internet grew, more people accepted its technologies and what it could offer. This led to computer network administrators to apply the same technologies to information and computer systems within their companies.

An intranet in other words is a local private network within an organization that also has access to the Internet. It shares many characteristics of the Internet but fundamentally different.

One could also look at an Intranet as a mini version of the Internet confined within an organization only.

Difference between an Intranet and the Internet

An Intranet is different from the Internet based on the following ways:

- The Internet is global and spans all countries. The Intranet is confined to an organization only and is within a building or sometimes within the reach of wide area networking.

- The Internet has more than a million hosts connected to it while the largest Intranets would contain anything in the region of 100,000 hosts.

- The Internet is available to be accessed by all and the contents within it are generally made public. Thus, little security is required. An Intranet is private and as such, security is high.

- Any user attempting to access an Intranet would be expected to provide a user (login) name and password which is verified by the system before allowing the user to access it. In contrast, anyone can access the Internet especially via the many cyber cafes around us.

- No one owns the Internet and the rules and standards of operations are established by consensus. An Intranet is completely controlled by the organization that owns it.

Factors contributing to the growth of Intranet

Why should one use an Intranet? What benefits are gained in doing so? Below are some of the reasons that have led to the popularity of the Intranet.

- The growth of the Internet has prompted many to use the same technologies in creating an Intranet. With the technological advancement of the Internet, the same technologies could be applied to the Intranet too, allowing the transfer of skills and software developed to the Internet to be used within an Intranet.

- For the end users who are already familiar with the Internet, the learning curve to use the tools and software used on the Intranet is short due to the similar familiarity.

- In developing an Intranet, the cost and complexity involved is usually less than that required to build other types of network applications. This is the effect of the widely available tools available and also the speed and simplicity of developing HTML applications.

- Many of the applications developed for use on the Intranet can be expanded for use on the Internet too. For example, some of the information available to employees may be extended to the customers via the Internet on the company's corporate website.

- Intranets can reduce the amount of paper usage required in business procedures. It also allows organizations to exploit any information and knowledge available such as documents and personal data.

More on Intranet

The growth of the Intranet has also a lot to do with the corporations relying on proprietary hardware and software systems to network its computers, which is very costly and time consuming. This is made worse if the same set of hardware and software is used in offices around the world with little technical support available. Sharing information became difficult due to different file formats used in different systems.

Thus, by using an "off the shelf" Internet technology, Intranets managed to fill the gap and made internal communications with offices around the world simpler.

The Intranets use HTML (hyper text markup language) to create documents and the transmission protocol TCP/IP to transmit information across the network. Data and information is stored in one (or more) of the company's servers and can be accessed using a web browser such as Internet Explorer or Netscape Navigator (two of the more popular web browsers). However, access to the Intranet is limited to employees only and sometimes extended to vendors or contractors.

As organizations thrive on information, access to it was never easy. Employees needed to get approvals from their superiors to certain reports and these were never on time.

Now with the Intranet, employees can get access to annual reports, handbooks, schedule a meeting, liaise with counterparts within the same organizations in different parts of the world, review company's employment policies, to name a few. This can be done 24 hours a day for anyone who has access to the Intranet. Some of the more sophisticated Intranets allow employees to access it via the Internet from the comfort of home or where ever they are globally.

Examples on the usage of Intranet

An example on the use of the Intranet is the sharing of printed documents such as newsletters and general reports. Imagine how much it will cost to print these reports on a regular basis! This is without considering the environment impact the paper has!

Yet another advantage that the Intranet can offer is the easy updating of corporate information. For example, when the corporate directory of names, telephone and fax numbers, e-mail addresses needs to be updates, it can be done with a few keystrokes and updated instantly.

Recently, video conferencing has made an impact for employees around the world to get together at the same time and communicate with one another. Virtual one-to-one meetings are also made possible with the more sophisticated Intranets. Costs can be saved in terms of traveling and accommodation.

As more companies use high speed LAN, files such as video clips, animation and audio can remain on an Intranet and delivered to employees' desktop. For example, a speech by the Group Chief Executive Officer can be stored and retrieved for a later viewing by employees in different parts of the world in different time zones.

Despite all of the above, employees should realize that an organization can only derive the full benefit from an Intranet if employees are willing to share information (non-confidential) with others i.e. an information sharing culture should be emphasized within that organization.

One way of achieving an information sharing culture is to have a change in attitude. Just as how many people forward e-mail messages to others, the same culture should be encouraged within the organization. Of course, this does not mean that one should resort to spamming! Messages such as annual parties or a new company policy should be disseminated to all employees who have access to the Intranet.

Introduction to Extranet

Now that you know what the Internet and Intranet are, the next step is to know briefly what an Extranet is. An Extranet is a collaborative network which uses Internet technology to link its businesses with the organization's customers, suppliers, vendors or others that share the same common business goals. An Extranet may have a private connection between two or more Intranets. The information available on the Extranet usually has various levels of accessibility to outsiders such as who gets access to privileged financial information, research and development stages on new prototypes, etc.

Examples on the usage of Extranet

An example on the application of Extranet is the JIT ("just-in-time") system pioneered by Toyota Motors, Japan. The JIT system is a highly sophisticated system where to keep inventories low, Toyota had allowed their vendors and suppliers of components to access its system which will trigger and inform the vendors/suppliers that a certain component is running low (or hits the re-order level). In this sense, Toyota does not require to have a huge warehouse to stock parts for its vehicles. The JIT system allows for the delivery of parts just before it is to be used.

Another example is the use of paperless transaction between customers and their suppliers or vendors. Initially at an earlier stage, this was made available via the Electronic Data Interchange ("EDI"). However, as the cost of implementing this was high, it was beyond the reach of most companies.

Many companies conduct training programs via their Extranet network. Training or educational materials can be shared across many others who have access to this network. Similarly, product catalogs can be shared among wholesalers, retailers and even some end-users.

The joint development of new project has been made easier by collaborating via the Extranet. Project managers find it a lot easier to gather information and have control over what is available to them with respective to the individual projects.

Security and privacy issues

While the Extranet can prove to be very valuable, it is also prove to unwanted attacks from employees within the organization and others outside it. To cater for this, some of the security and privacy issues that need to be addressed are as follows:

- Companies are encouraged to use leased lines for transmission or privately owned lines.
- Create a Virtual Private Network ("VPN") for transmitting data and information.
- Use digital signatures and certificates whenever possible.
- Use the Internet with encryption whenever possible
- Implement firewalls for blocking or allowing specific addresses to be displayed only.

Importance of networking

Why has networking been given such high priority in the global world? For one, it is today the new way of working not just with your immediate peers but also to the world of people around us electronically. In terms of networking, many people still relied on the informal method of networking i.e. "who do you know". With the Internet and Intranet, there is an enterprise wide repository where information can be accessed 24 hours a day throughout the year.

This can be achieved "wirelessly" today especially with a mobile phone, PDA ("portable digital assistant") or a notebook (assuming you have the 802.11b wireless network access built-in to your device).

Resource sharing has been expanded to many non-employees of the company too. Teams of people working on a group project can do so without incurring traveling expenses or accommodation.

Amongst the other reasons networking is importance is for the successful transfer of information and communication especially for the corporate user. Many managers today are able to use the newest application on the network but many departments still do not communicate for the proper decision making due to much needed information being unavailable. In view of this, the computer networks can play a role by converging the tools required for storage of information and retrieving them at a later stage or time.

Computer networks can manage to reduce the barriers between information held on several computer systems. It allows users to access remote programs and databases within the same company or public sources.

Due to the optimal information and communication possibilities, computer networks may increase organizational learning and the value of a person in the long term.

Some of the other long term benefits of a computer network are as follows:

- Cost reduction in terms of sharing hardware and software resources.
- High reliability by having multiple sources of supply.
- The usage of PC based network is a cost saving factor as compared to using mainframes.
- Computer networks allows for greater flexibility due to the possibility of connecting devices from various vendors.