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## Web-Based Systems

The concept of client/server architecture has dominated IT architecture for several decades. But the specially structured client/server applications that were considered revolutionary in the mid-1990s may soon become obsolete due to the rapid development of Web-based systems, as well as the introduction of new concepts such as utility computing and software services. Although all of these new technologies are based on the client/server concept, their implementation is considerably less expensive than that of many specially structured client/server systems. Furthermore, the conversion of existing systems to Web-based ones can be easy and fast, and the functionalities of the Web-based can be larger than those available in non-Web-based client/server systems. Therefore, the Internet, intranets, and sometimes extranets are becoming an indispensable part of most IT architectures. New Web-based architectures may replace old architectures, or may integrate legacy systems into their structure.

Technically, the term **Web-based systems** refers to those applications or services that are resident on a server that is accessible using a Web browser and is therefore accessible from anywhere in the world via the Web. The only client side software needed to access and execute Web-based applications is a Web browser environment, and of course the applications must conform to the Internet protocols. An example of such an application would be an online store. Additionally, two other very important features of Web-based functionalities are:

1. The generated content/data are updated in real time, and
2. Web based systems are universally accessible via the Web to users (dependent on defined user-access rights).

The major communication networks of the Web environments are the Internet, intranets, and extranets.

## The Internet

Sometimes called simply "the Net," The Internet, as no other communication medium, has given an International or, if you prefer, a "Globalized" dimension to the world. Internet has become the Universal source of information for millions of people, at home, at school, and at work. Internet is actually the most democratic of all the mass media. With a very low investment, anyone can have a web page in Internet. This way, almost any business can reach a very large market, directly, fast and economically, no matter the size or location of the business. With a very low investment, almost anybody that can read and write can have access to the World Wide Web.

Physically, the Internet uses a portion of the total resources of the currently existing public telecommunication networks. Technically, what distinguishes the Internet is its use of a set of protocols called TCP/IP (for Transmission Control Protocol/Internet Protocol). Two adaptations of Internet technology, intranets and extranets, also make use of the TCP/IP protocol.

Today the Internet continues to grow day by day. The following table shows the incredibly fast evolution of the Internet from 1995 till the present time.

**Table (7) Evolution of the Internet from 1995 till the present time**

<b>Date</b>	<b>Number of Users</b>	<b>% World Population</b>
December, 1995	16 millions	0.4 %
December, 1996	36 millions	0.9 %
December, 1997	70 millions	1.7 %
December, 1998	147 millions	3.6 %
December, 1999	248 millions	4.1 %
December, 2000	361 millions	5.8 %
August, 2001	513 millions	8.6 %
September, 2002	587 millions	9.4 %
December, 2003	719 millions	11.1 %
December, 2004	817 millions	12.7 %
December, 2005	1,018 millions	15.7 %
December , 2006	1,093 millions	16.7 %
December , 2007	1,319 millions	20.0 %
December , 2008	1,574 millions	23.5 %
March, 2009	1,596 millions	23.8 %
June, 2009	1,669 millions	24.7 %
September, 2009	1,734 millions	25.6 %
December , 2009	1,802 millions	26.6 %
June, 2010	1,966 millions	28.7 %
September, 2010	1,971 millions	28.8 %

## **Intranets**

The concept of an intranet is a natural progression in the marriage of the enterprise and the Internet. An intranet is the use of Web technologies to create a private network, usually within one enterprise. Although an intranet may be a single local area network (LAN) segment that uses the

TCP/IP protocol, it is typically a complete LAN, or several interconnected LANs. A security gateway such as a firewall is used to segregate the intranet from the Internet and to selectively allow access from outside the intranet. Intranets have a variety of uses, they allow for the secure online distribution of many forms of internal company information. Intranets are used for workgroup activities and the distributed sharing of projects within the enterprise. Other uses include controlled access to company financial documents, use of knowledge management, research materials, online training, and other information that requires distribution within the enterprise. Intranets are usually combined with and accessed via a corporate portal.

### **Extranets**

Extranets connect several intranets via the Internet, by adding to the Internet a security mechanism and possibly some functionality. They form a larger virtual network that allows remote users (such as mobile employees) to securely connect over the Internet to the enterprise's main intranet. Typically, remote access software is used to authenticate and encrypt the data that pass between the remote user and the intranet. Extranets allow two or more enterprises to share information in a controlled fashion, and therefore they play a major role in the development of business-to-business electronic commerce (this subject will be covered in the next lectures).

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## Enterprise Web

The **Enterprise Web** is an open environment for managing and delivering Web applications. The Enterprise Web combines services from different vendors in a technology layer that spans rival platforms and business systems, creating a foundation for building applications at lower cost. This foundation consists of the services most commonly used by Web applications, including business integration, collaboration, content management, identity management, and search, which work together via integrating technologies such as middleware, component-based development.

The result is an environment that spans the entire enterprise, is open to all platforms for which adapters are available (or completely open with Web services), and is available to all audiences. Providing a common foundation for Web applications built on any platform lowers infrastructure and development costs; integrating resources from different systems into Web applications increases the return on those systems; and creating a common user experience for audiences across the enterprise to work together drives enterprise productivity and increases profits. Enterprise Web environments are available from all major software vendors (e.g., Microsoft, IBM, SAP, Oracle, BEA, PeopleSoft, and more).