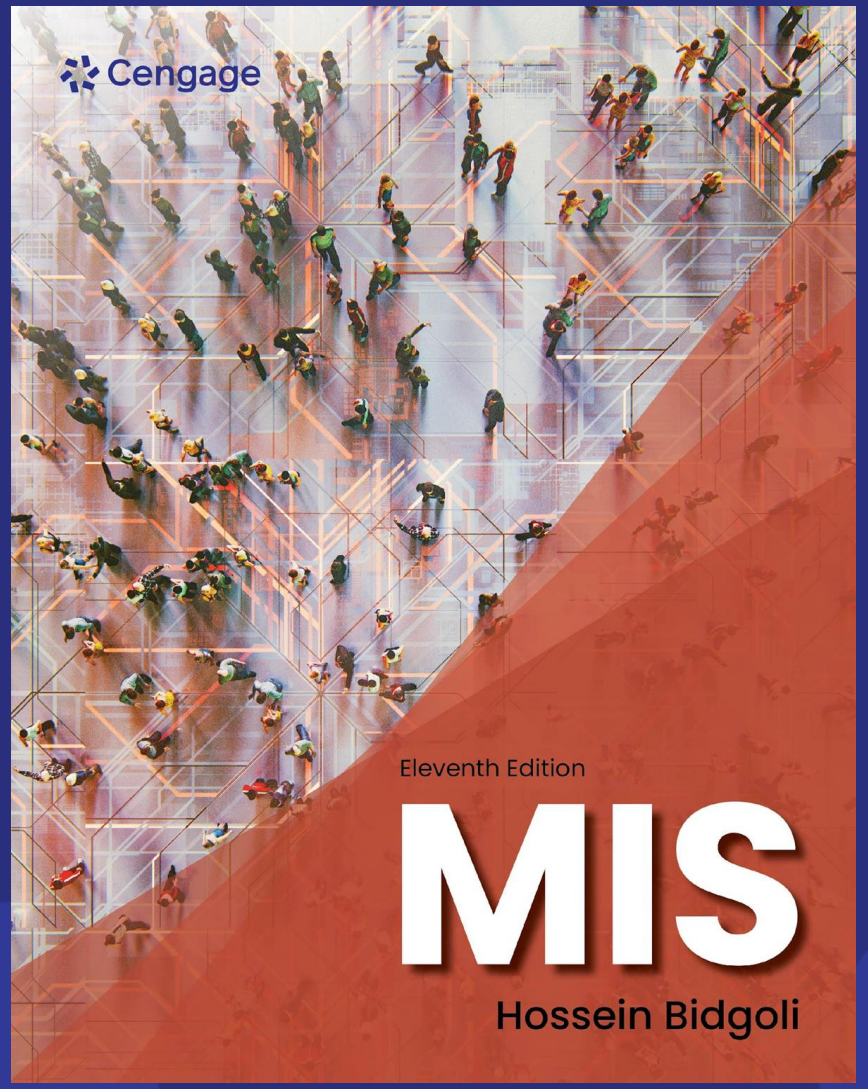


MIS, 11e

Module 7: The Internet, Intranets, and Extranets

Module Objectives

By the end of this module, you should be able to:

- 7.1 Describe the makeup of the Internet and the Web
- 7.2 Discuss navigational tools, search engines, and directories
- 7.3 Describe four common Internet services and how they are used in a business environment
- 7.4 Explain business applications of the Internet
- 7.5 Describe the role of intranets in various business functions
- 7.6 Describe the role of extranets in various business functions
- 7.7 Analyze Web trends and their impact on business
- 7.8 Analyze the Internet of Everything and its business application

Module Objectives (cont)

- 7.6 Describe the role of extranets in various business functions
- 7.7 Analyze Web trends and their impact on business
- 7.8 Analyze the Internet of Everything and its business application

The Internet

- The **Internet** is a worldwide collection of billions of computers and networks of all sizes
- No one runs or owns the Internet
- Started in 1969 as ARPANET
- ARPANET evolved into the NSFNET in 1987
- Originally only permitted for research and educational institutions due to limited bandwidth
- **Internet backbone** is a foundation network linked with fiber-optic cables that support high bandwidth.
- Additional internet backbones were allowed to connect to NSFNET to support commercial use

- Watch: https://www.youtube.com/watch?v=AEaKrq3SpW8

The Web

- Introduced a graphical user interface (GUI)
- Changed how users were able to interact with the Internet
- Proposed by Tim Berners-Lee at the CERN
- Organizes information by using hypermedia
- **Hypermedia** is documents that include embedded references
- **Hypertext** is the embedded references in the hypermedia
- A web server is used to store the hypermedia documents and make them available to other computers (clients)

- Watch: https://www.youtube.com/watch?v=guvsH5OFizE

Domain Name System

- Domain names are unique identifiers of network addresses on the Internet
- Internet Protocol (IP) address are assigned to each network by ICANN
- **Domain Name System (DNS)** protocol translates language based names to IP addresses
- DNS Servers maintain lists of computer and website addresses and translates names to IP addresses
- Language based domain names are used in uniform resources locators
- **Uniform Resource Locators (URL)** are used to identify web page
- Every URL has a top-level domain (TLD) suffix (i.e. .edu, .com., .org)

- Watch: https://www.youtube.com/watch?v=mpQZVYPuDGU
- Watch: https://www.youtube.com/watch?v=5Jr-_Za5yQM

Internet Connections

DSL methods for connecting to a network like the Internet

- Symmetric DSL
- Asymmetric DSL
- Very High-Speed DSL

Symmetric DSL (SDSL)

- Has the same data transmission rate for the upstream and downstream
- Rate up to 1.5 Mbps in both directions

Asymmetric DSL (ADSL)

- Lower transmission rate upstream than downstream
- Rate upstream is 3.5 Mbps
- Rate downstream is 24 Mbps

Very High-Speed DSL (VDSL)

- Rate downstream and upstream up to 100 Mbps over short distances

Watch (DSL): https://www.youtube.com/watch?v=RLooclrz7wA

Navigational Tools, Search Engines, and Directories

- Three tools to navigate across the Internet
  - Navigational tools
  - Search engines
  - Directories

Navigational Tools

- Variety of graphical Web browsers available (i.e. Microsoft Edge, Google Chrome, etc.)
- Provide menu options that users are familiar with
- Include options to view history, bookmark pages, navigation buttons, and more.

Search Engines and Directories

Search Engines

- Search engines are information systems that allow users to retrieve data from the Web based on search terms
- Examples include Google, Bing, DuckDuckGo, etc.
- All search engine have a three step process:
  - Crawl the web using spiders
  - Index data provided by the spiders
  - Use the index it created to provide results based on the search term(s) a user entered

Search Engines and Directories

Search Engines

- Additional searches from Facebook and Google are gaining popularity
  - Graph Search (Facebook)
  - Knowledge Graph (Google)
  - Voice Search (Google)

  Watch: https://www.youtube.com/watch?v=LVV_93mBfSU

Directories

- Organize information into categories
- Two kinds of directories
  - Automated (crawler-based)
  - Human-powered directory (not as relevant as they used to be)

Internet Services

- Many services are made possible by TCP protocol in the Transport Layer of the OSI
- Popular services include email, newsgroups and discussion groups, instant message, and Internet telephony

E-Mail

- One of the most widely used services on the Internet
- Two main types of email
  - Web-based email
  - Client-based email

Internet Services (cont)

Newsgroups and Discussion Groups

- Provide a way for people with similar interest to connect
- **Discussion groups** provide a way to exchange opinions and ideas on a specific topic
- **Newsgroups** are more general and can cover any topic
- Discussion threads provide a chain of written ideas or opinions exchanged by participants online

Instant Messaging

- **Instant Messaging (IM)** is a service for communicating with others in a private “chat room” on the Internet

Internet Services (cont)

Internet Telephony

- Uses the Internet (not the telephone network) to have spoken conversations
- Uses **Voice over Internet Protocol (VoIP)** which is a protocol that requires a high-speed Internet connection

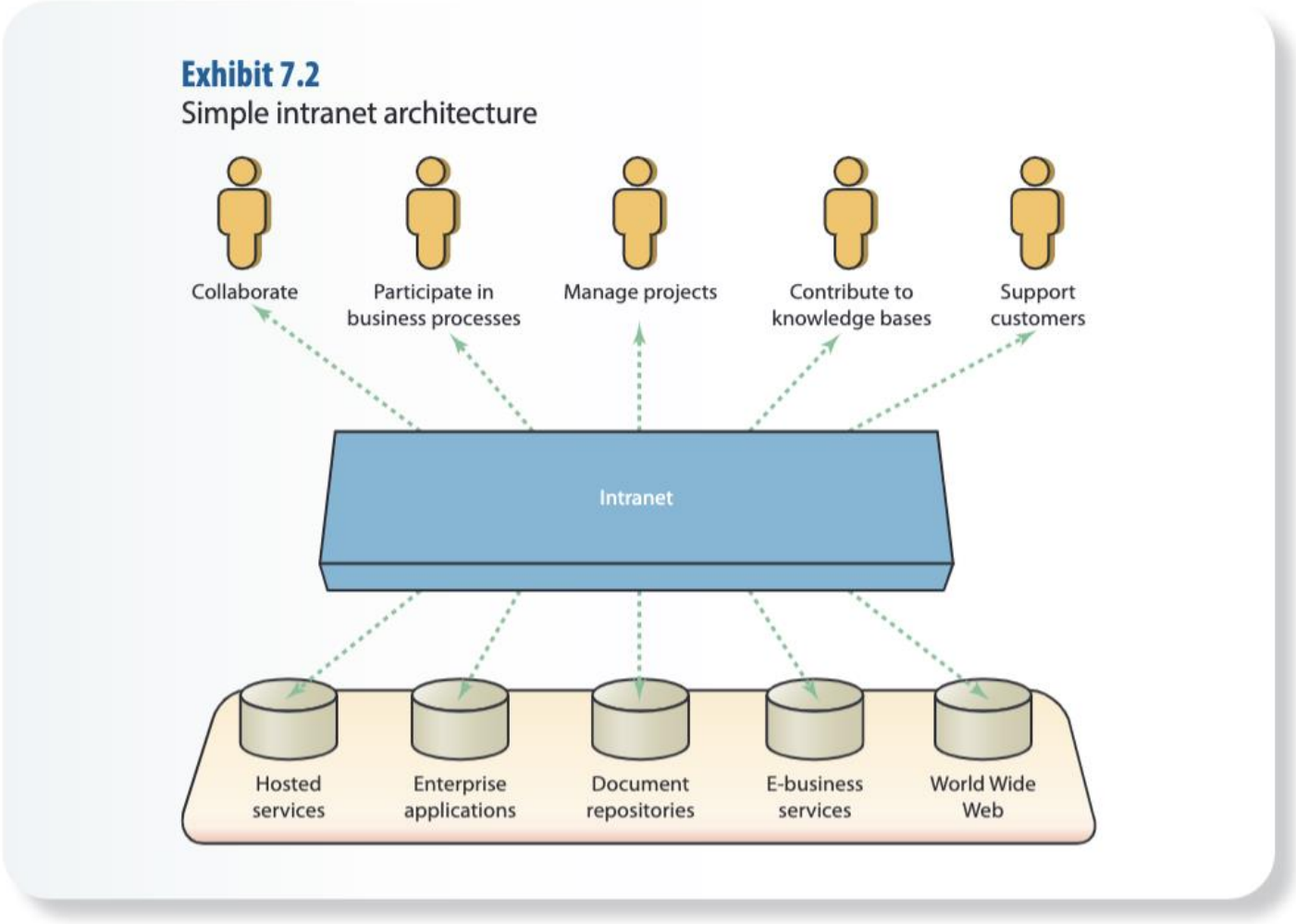
Web Applications

- Web applications have minimal costs and helps organizations reduce expenses
- Industries that have benefited from web applications include
  - Tourism and travel
  - Publishing
  - Higher education
  - Real estate
  - Employment
  - Financial institutions
  - Software distributions
  - Healthcare
  - Politics

Intranet

- An **intranet** is a network within an organization that uses Internet protocols and technologies
- Used for collecting, storing, and disseminating information for business activities
- For internal organization use or authorized external users
- Intranets can be used to improve efficiency within an organization
- Examples of intranet uses include
  - Human resource management
  - Sales and marketing
  - Production and operations
  - Accounting and finance

Simple Intranet Architecture



Internet vs Intranet

Internet

- Public network
- Anyone can access
- Uses TCP/IP protocol
- Uses browsers to access information
- No control on what browser is used

Intranet

- Private network
- Limited access to approved users
- Uses TCP/IP protocol
- Uses browsers to access information
- Organization can control what browser is used

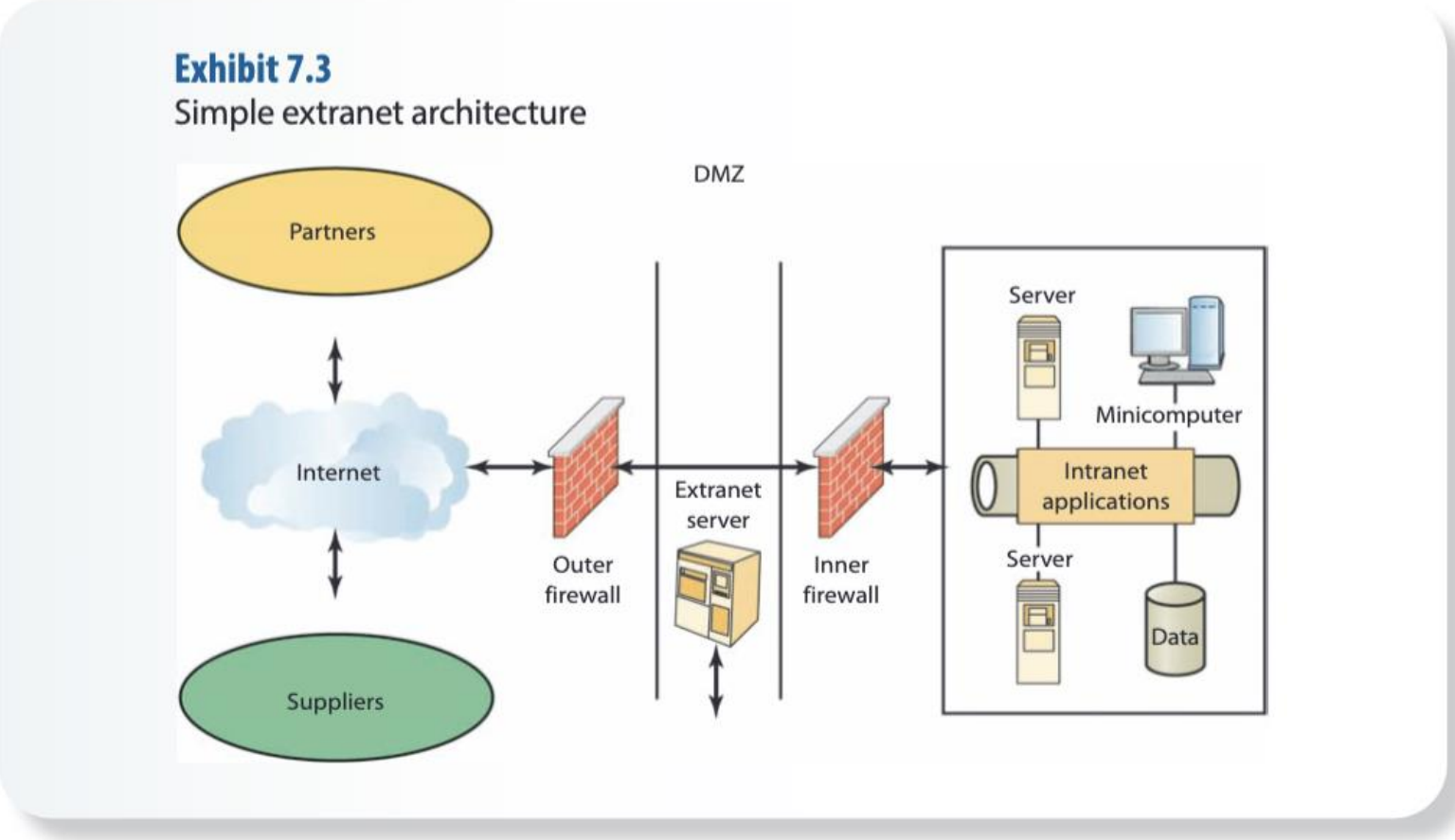
Table 7.2 The Internet versus Intranets

Key Feature	Internet	Intranet
User	Anybody	Approved users only
Geographical scope	Unlimited	Limited or unlimited
Speed	Slower than an intranet	Faster than the Internet
Security	Less than an intranet's	More than the Internet's; user access more restricted

Extranets

- An **extranet** uses the Internet and Web technologies to connect intranets of business partners and enable communication between organizations and consumers
- Provides same benefits of intranets with additional advantages that include
  - Coordination
  - Feedback
  - Customer satisfaction
  - Cost reduction
  - Expedited communication

Simple Extranet Architecture



Internet, Intranets, and Extranets

Table 7.3 Comparison of the Internet, Intranets, and Extranets

	Internet	Intranet	Extranet
Access	Public	Private	Private
Information	General	Typically confidential	Typically confidential
Users	Everybody	Members of an organization	Groups of closely related companies, users, or organizations

Web Trends

- Three generations of Web applications
  - Web 1.0 (static content)
  - Web 2.0 (dynamic content)
  - Web 3.0 (Semantic Web)

Web 3.0

Watch: https://www.youtube.com/watch?v=OEJGQD1OuKA

Web 2.0 vs Web 3.0

Table 7.4 Web 2.0 versus Web 3.0

Feature	Web 2.0	Web 3.0
Interaction with the user	Mostly read–write	Portable and personal
Focus	Community	Individual
Sharing information	Blogs and wikis	Livestreams
Content	Sharing	Consolidating
Applications	Web applications	Smart applications
Information transfer	Tagging	User behavior
Advertising method	Cost per click	User engagement
Advertising mode	Interactive	Behavioral
Content editing	Wikipedia	The Semantic Web
Data representation and programming language	XML/RSS	RDF*/OWL**

Web Trends

Blog

- Journal or newsletter intended for general public

Wikis

- Type of website that allows users to add, delete, and modify content

Social Networking Sites

- **Social networking** consists of a broad class of Web sites and services that allows users to connect with others

Business Application of Social Networks

- Social networks provides small businesses equal footing with large organizations

Web Trends

RSS Feeds

- **Really Simple Syndication (RSS) feeds** are a fast, easy way to distribute Web content in XML format

Podcasting

- A **podcast** is an electronic audio file that is posted on the Web for users to download or listen over the Web
- Has a specific URL

Internet of Things (IoT)

- **Internet of Things (IoT)** refers to physical objects that are connected to the Internet and to other physical objects
- **Industrial IoT (IIoT)** is used to enhance manufacturing and industrial processes

Knowledge Check Activity 1-1

An organization needs to configure a network that will be limited to within the organization and not accessible by external parties. What type of network will they need?

a. Intranet

b. Internet

c. Subnet

d. Extranet

Knowledge Check Activity 1-1: Answer

An organization needs to configure a network that will be limited to within the organization and not accessible by external parties. What type of network will they need?

Answer: Intranet

The Intranet is a network that uses Internet protocols and technologies to collect, store, and disseminated information for business activities. It is not available to the public and is only intended for internal business operations.

Discussion Activity 1-1

An organization sells products to retailers. It needs to provide a secure way to allow retailers to place orders without needing to call a sales representative. This organization does not sell to the public. What type of network should this organization have to provide access to outside retailers?

Discuss possible correct answers with your classmates.

Discussion Activity 1-1: Answer

An organization sells products to retailers. It needs to provide a secure way to allow retailers to place orders without needing to call a sales representative. This organization does not sell to the public. What type of network should this organization have to provide access to outside retailers?

Answer: An extranet

Explanation: An extranet will provide a secure network to connect between the organization and the retailers.

Summary

Now that the lesson has ended, you should be able to:

- Describe the makeup of the Internet and the Web.
- Discuss navigational tools, search engines, and directories.
- Describe four common Internet services and how they are used in a business environment.
- Explain business applications of the Internet.
- Describe the role of intranets in various business functions.
- Describe the role of extranets in various business functions
- Analyze Web trends and their impact on business.
- Analyze the Internet of Everything and its business applications.