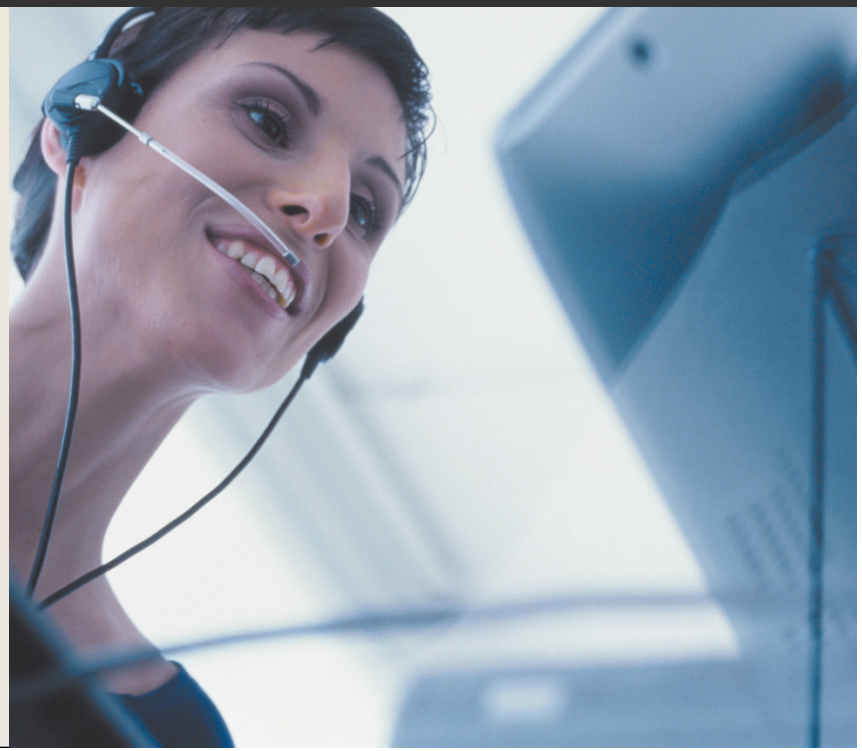
Chapter Fourteen

Enterprise Computing

Discovering Computers 2012

Your Interactive Guide to the Digital World



Objectives Overview

- Discuss the special information requirements of an enterprise-sized corporation
- Identify information systems and software used in the functional units of an enterprise
- Describe and list general purpose and integrated information systems used throughout an enterprise
- Describe and list types of technologies used throughout an enterprise
- Describe virtualization, cloud computing, and grid computing

See Page 719
for Detailed Objectives

Objectives Overview

- Discuss the computer hardware needs and solutions for an enterprise
- Discuss high availability, scalability, and interoperability
- Determine why computer backup is important and how it is accomplished
- Discuss the steps in a disaster recovery plan

See Page 719
for Detailed Objectives

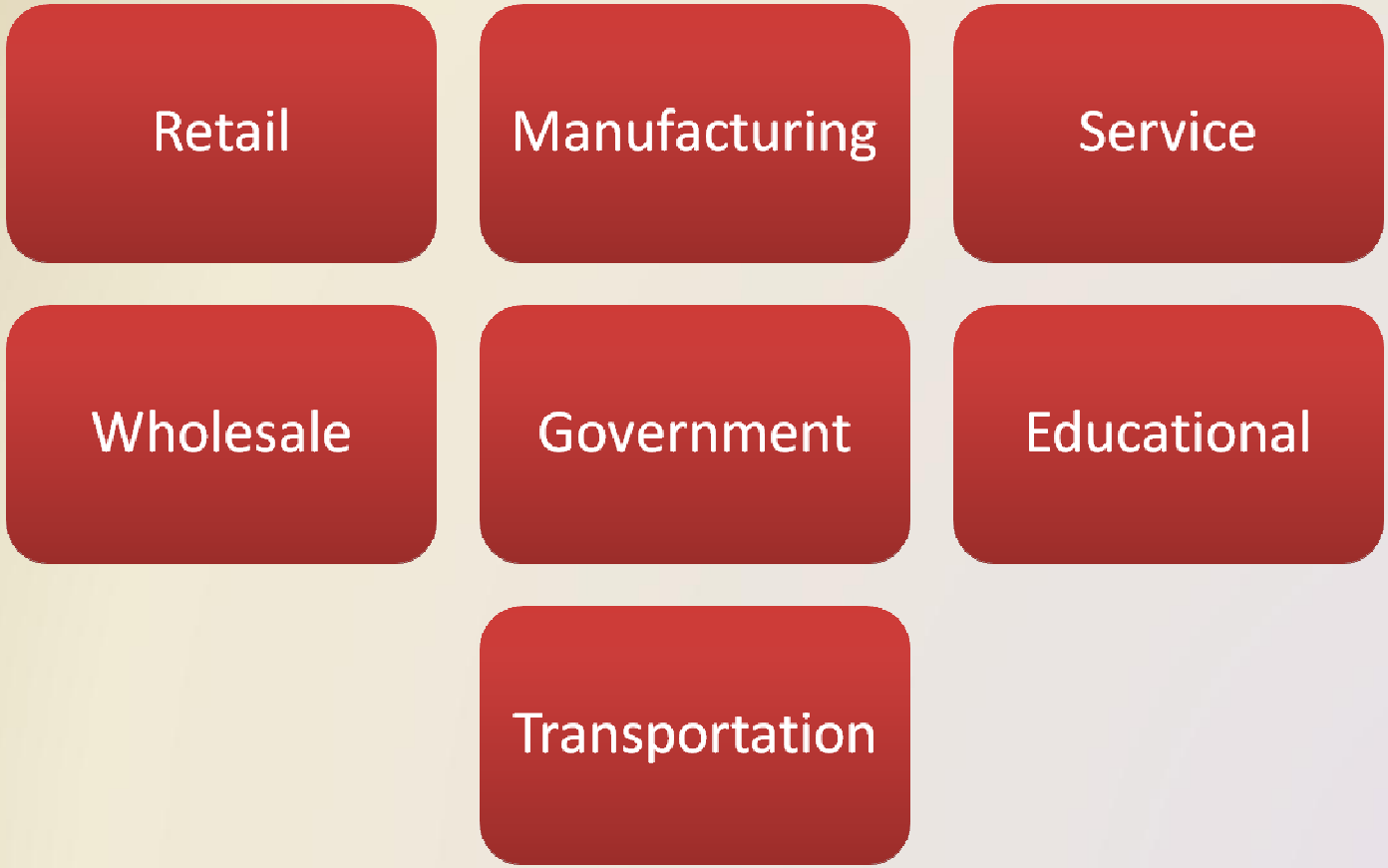
What Is Enterprise Computing?

- **Enterprise computing** involves the use of computers in networks, such as LANs and WANs, or a series of interconnected networks that encompass a variety of different operating systems, protocols, and network architectures

Pages 720 – 721
Figure 14-1

What Is Enterprise Computing?

- Types of enterprises include:



What Is Enterprise Computing?

- Most traditional enterprises are organized in a hierarchical manner

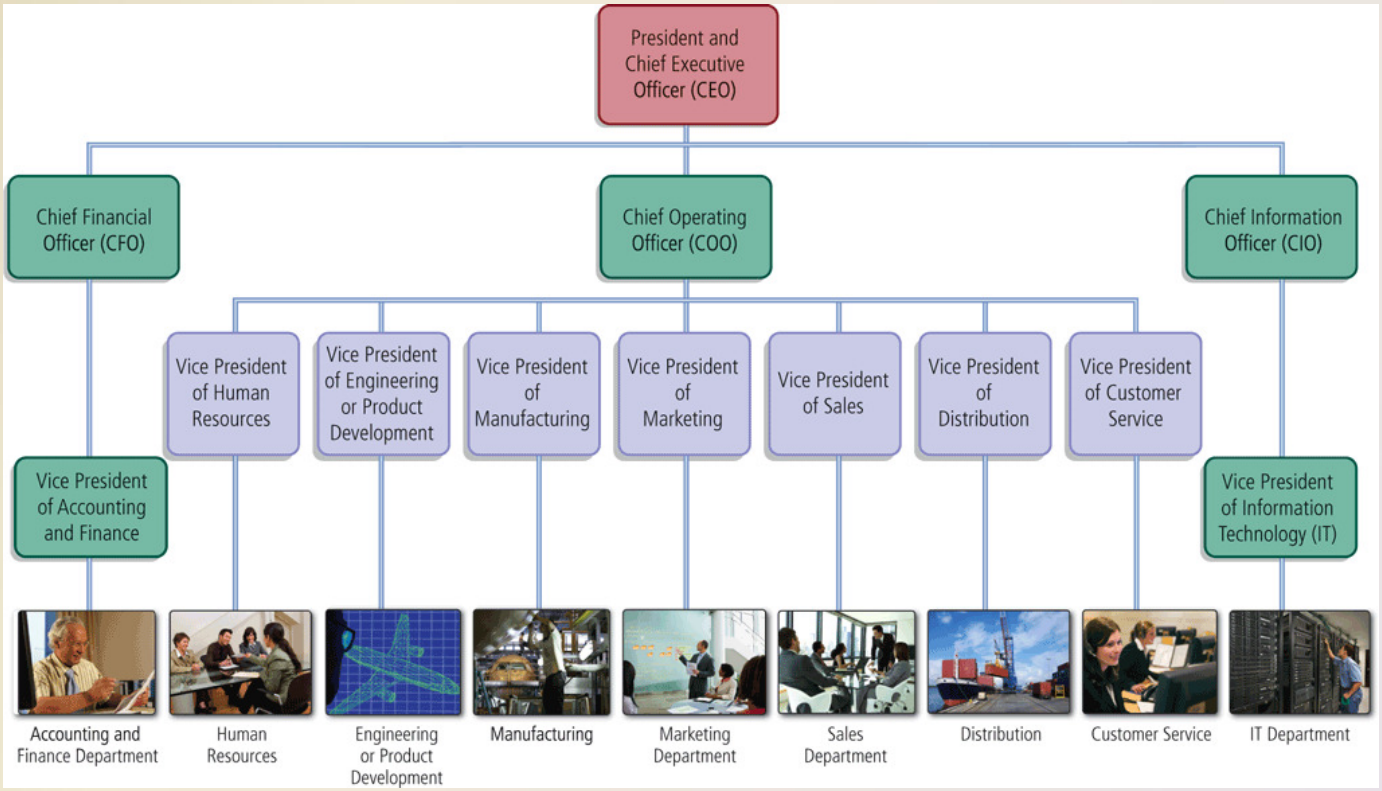


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Figure 14-2

What Is Enterprise Computing?

- In an enterprise, users typically fall into one of four categories:

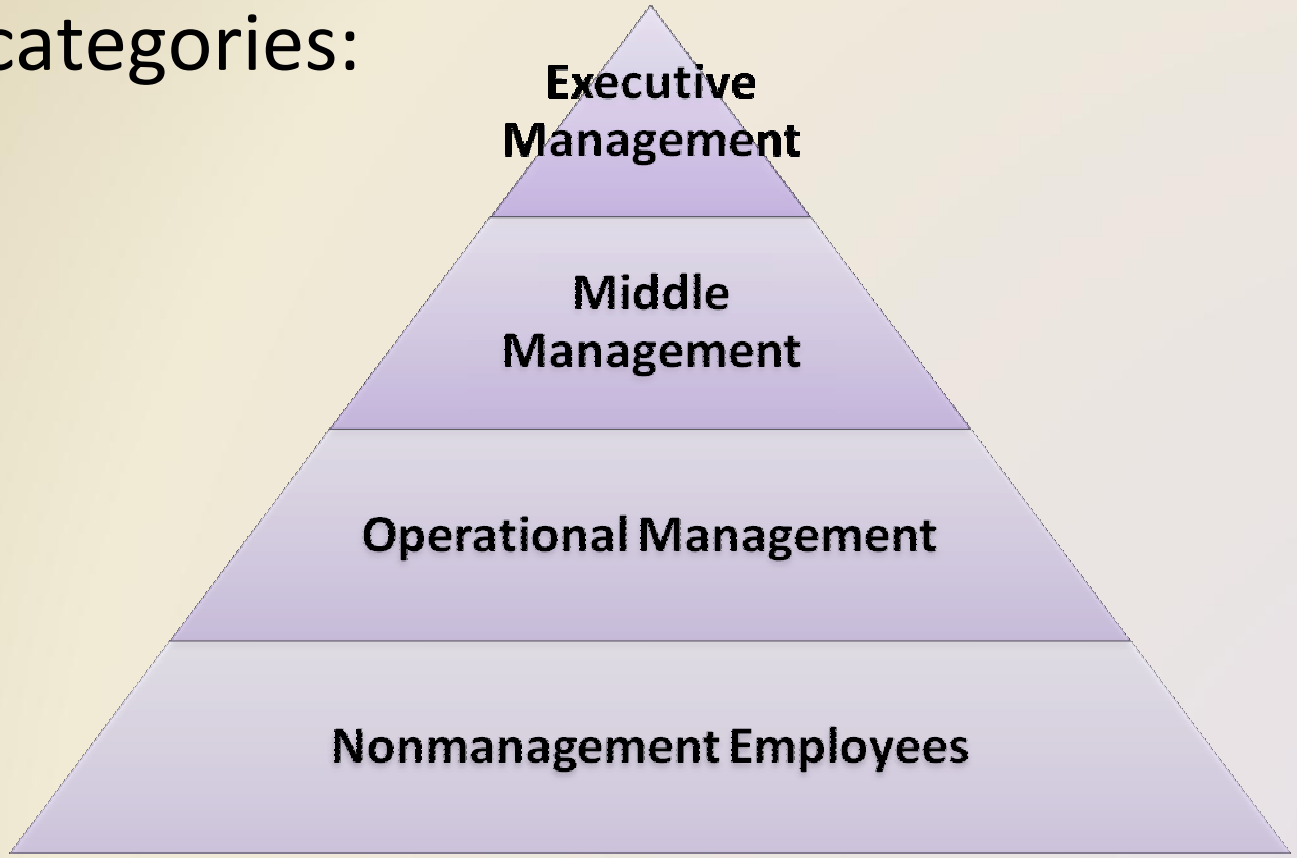

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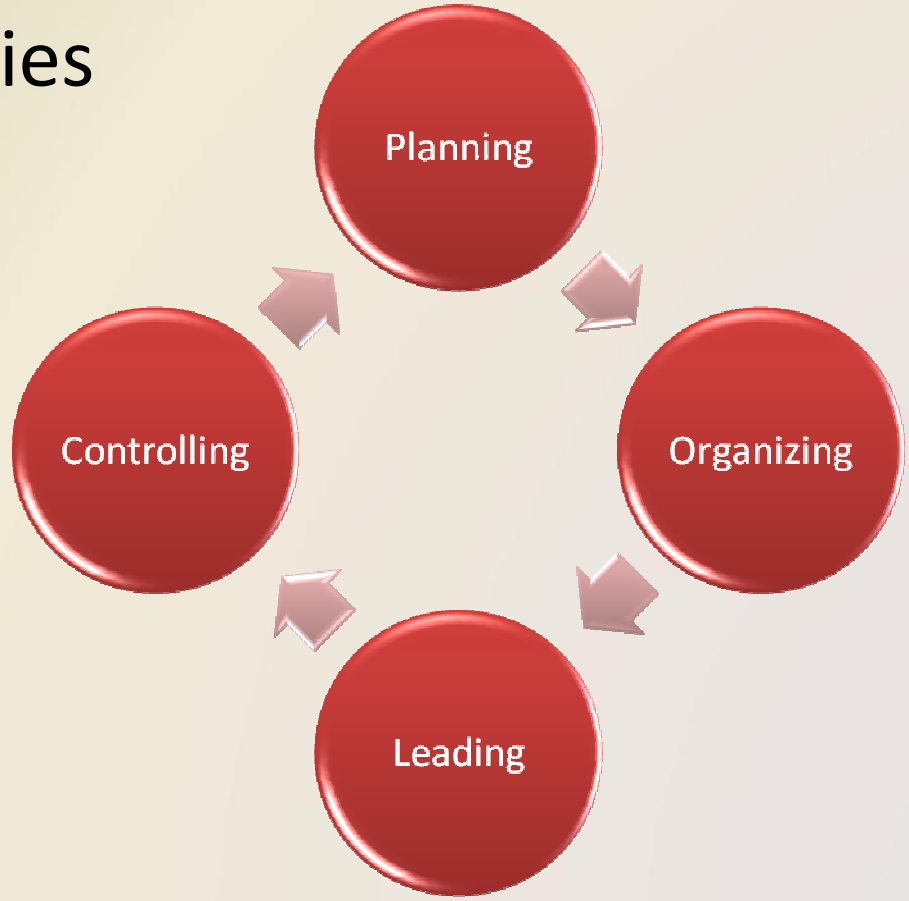
Figure 14-3

What Is Enterprise Computing?

- **Enterprise information** is the information gathered in the ongoing operations of an enterprise-sized organization
  - Business intelligence
  - Business process management
  - Business process automation

What Is Enterprise Computing?

- **Managers** coordinate resources by performing four activities



Information Systems in the Enterprise

- An **information system** is a set of hardware, software, data, people, and procedures that work together to produce information

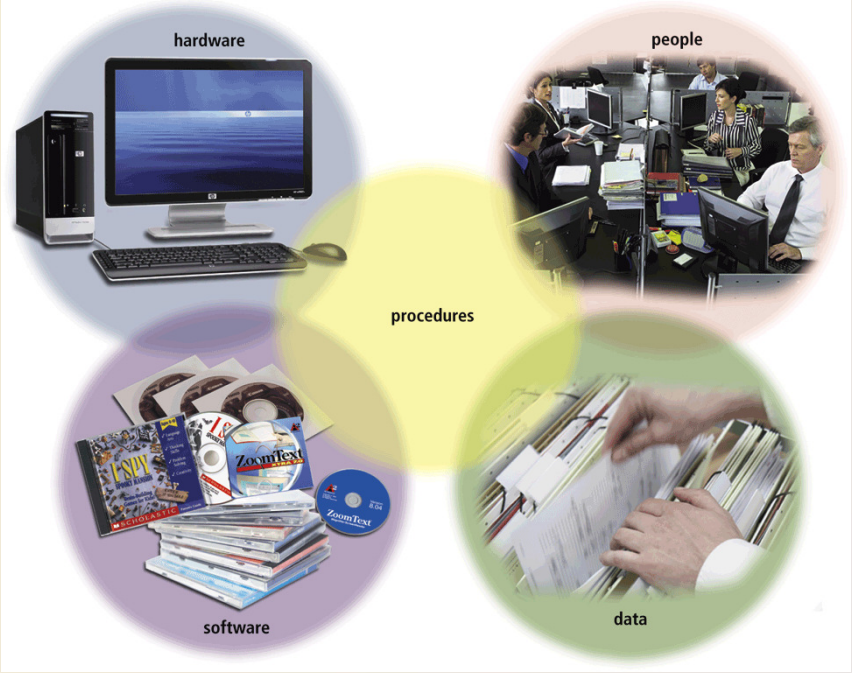


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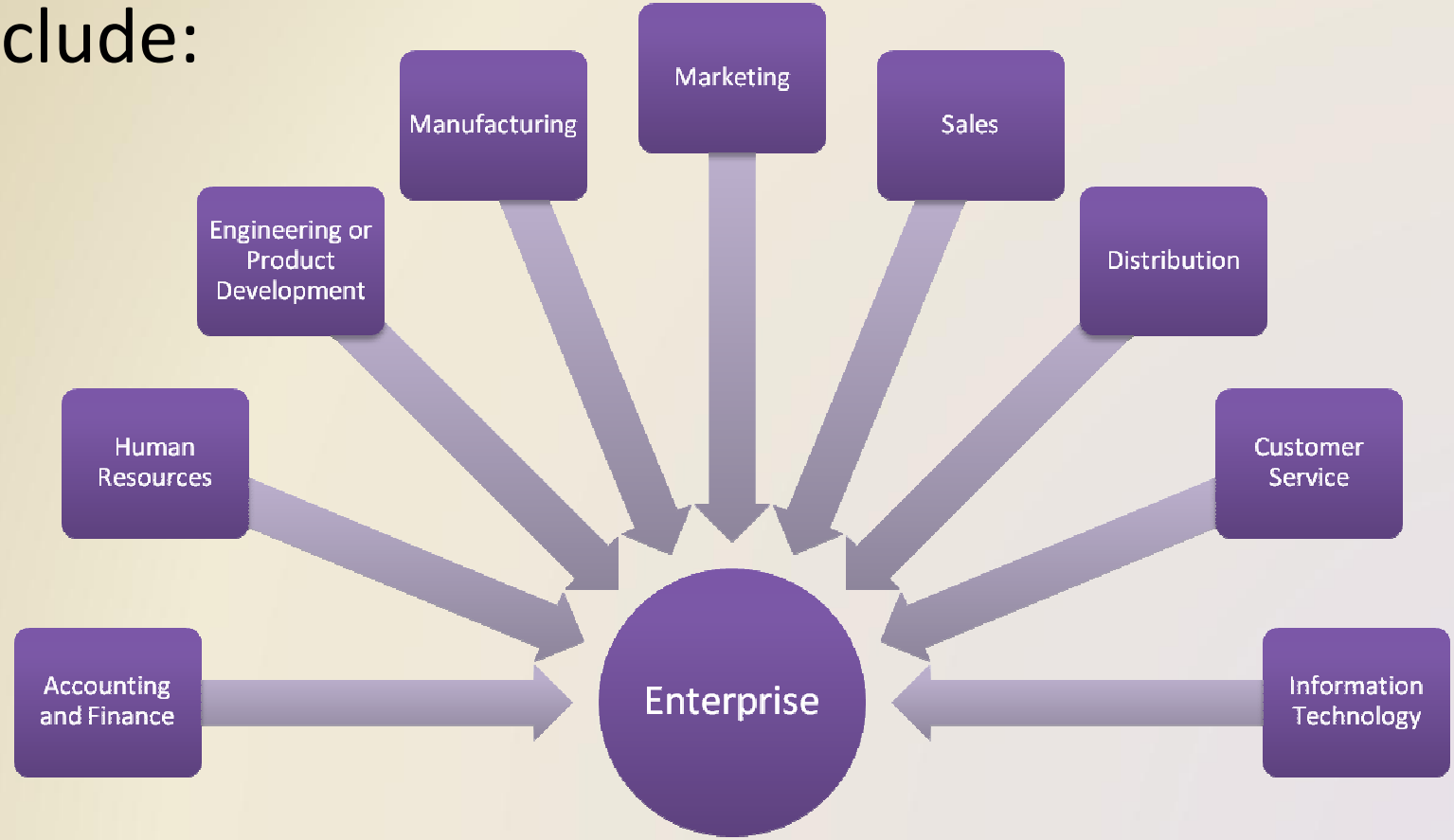
Figure 14-5

Information Systems in the Enterprise

- Functional units within an enterprise might include:



Information Systems in the Enterprise

- Accounting software manages everyday transactions
- Billing software helps the company reconcile purchases with customer payments
- Financial software helps managers budget, forecast, and analyze

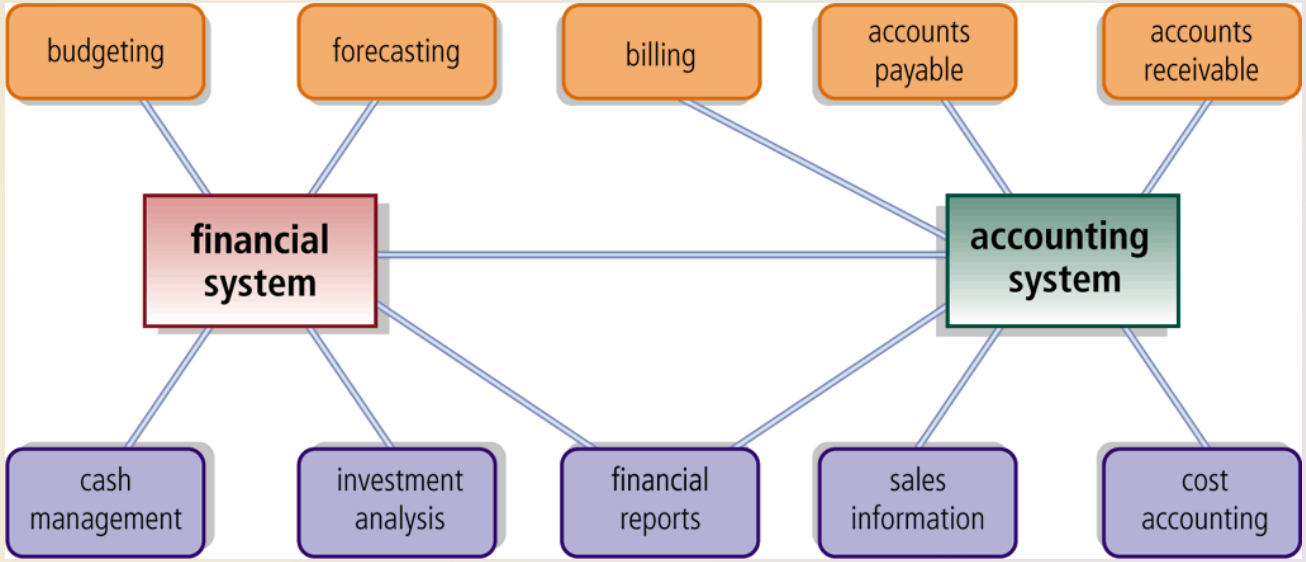


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Figure 14-7

Information Systems in the Enterprise

- A **human resources information system** (**HRIS**) manages one or more human resources functions
- Employee relationship management systems manage communication between employees and the business

Information Systems in the Enterprise

- **Computer-aided design** (**CAD**) uses a computer and special software to aid in engineering, drafting, and design
- **Computer-aided engineering** (**CAE**) uses computers to test product designs

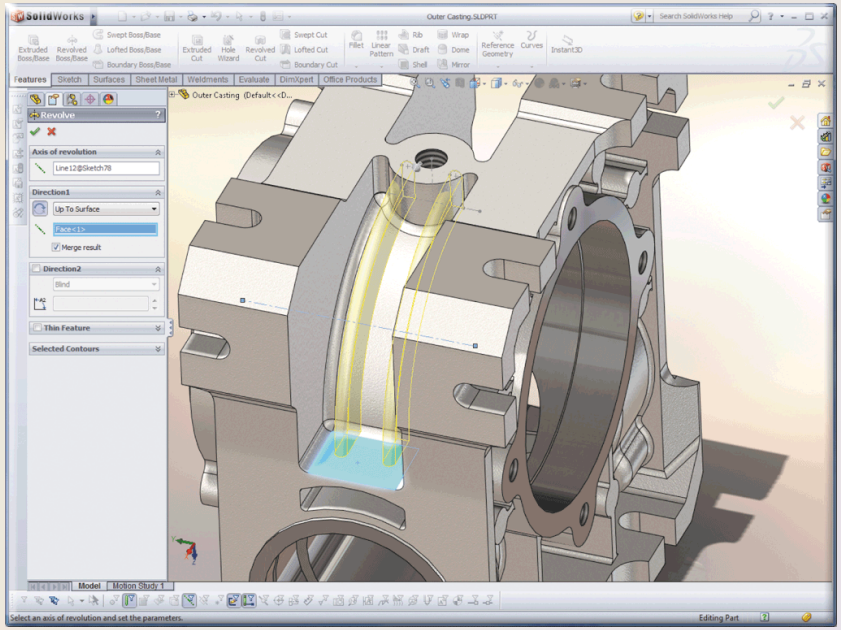

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Figure 14-9

Information Systems in the Enterprise

- **Computer-aided manufacturing** (**CAM**) is the use of computers to control production equipment
- **Computer-integrated manufacturing** (**CIM**) uses computers to integrate the many different operations of the manufacturing process

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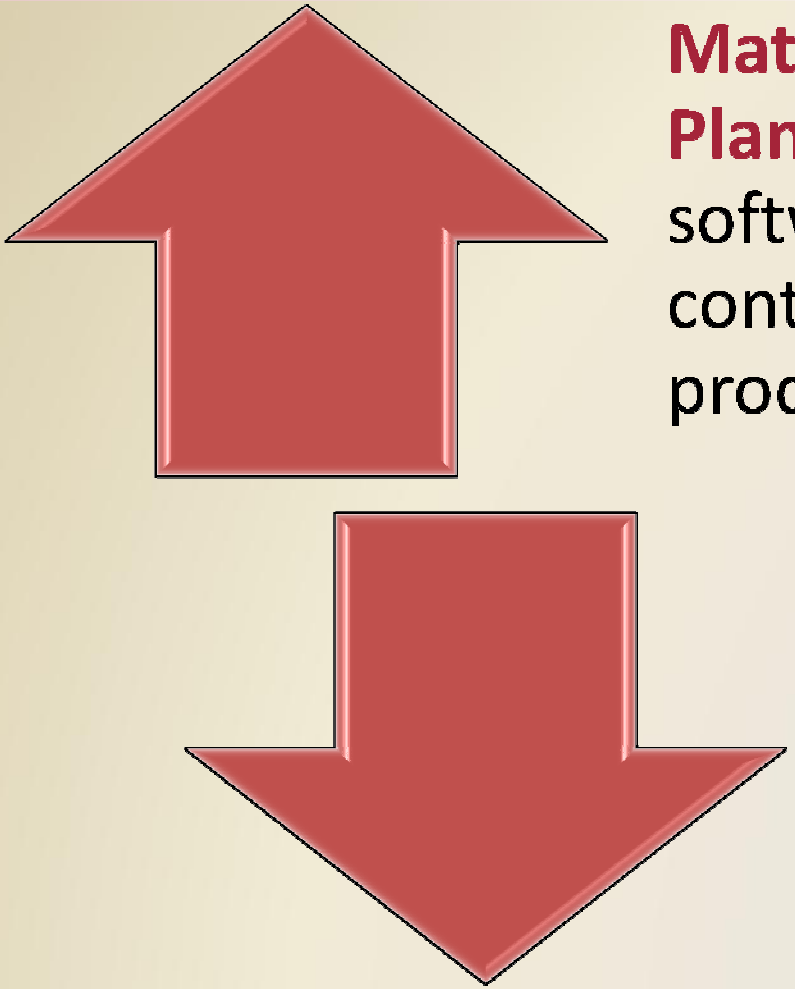
Figure 14-10

Information Systems in the Enterprise



Material Requirements Planning (MRP) uses software to help monitor and control processes related to production

Manufacturing Resource Planning II (MRP II) is an extension of MRP and also includes software that helps in scheduling

Information Systems in the Enterprise

A quality control system helps an organization maintain or improve the quality of its products or services

A marketing information system serves as a central repository for the tasks of a marketing department

Information Systems in the Enterprise

- **Sales force automation** (**SFA**) software equips traveling salespeople with the electronic tools they need to be more productive

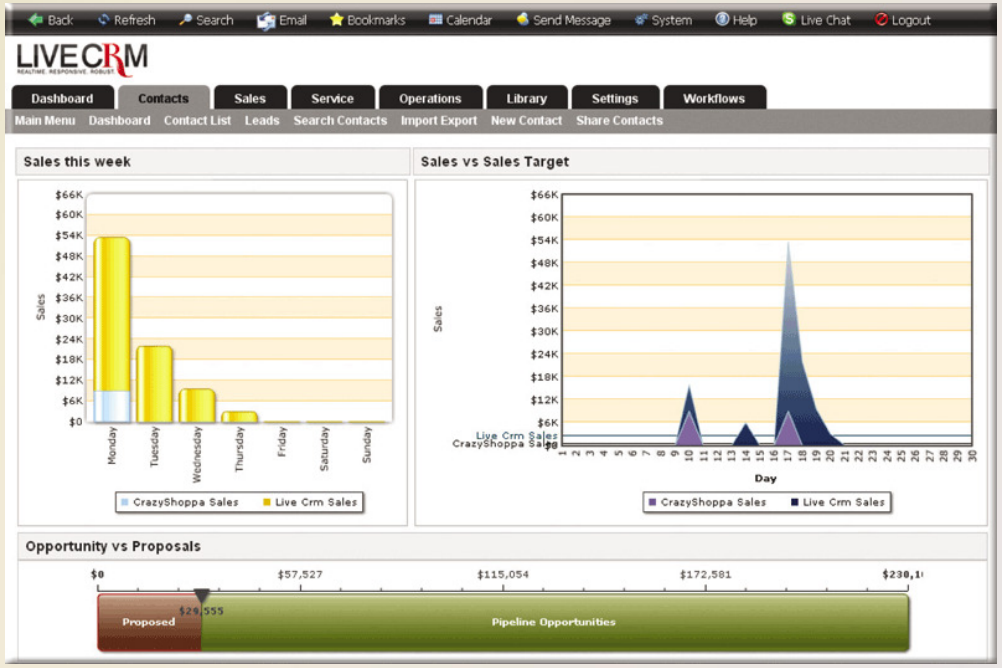


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Figure 14-12

Information Systems in the Enterprise

- Distribution systems perform the following functions:

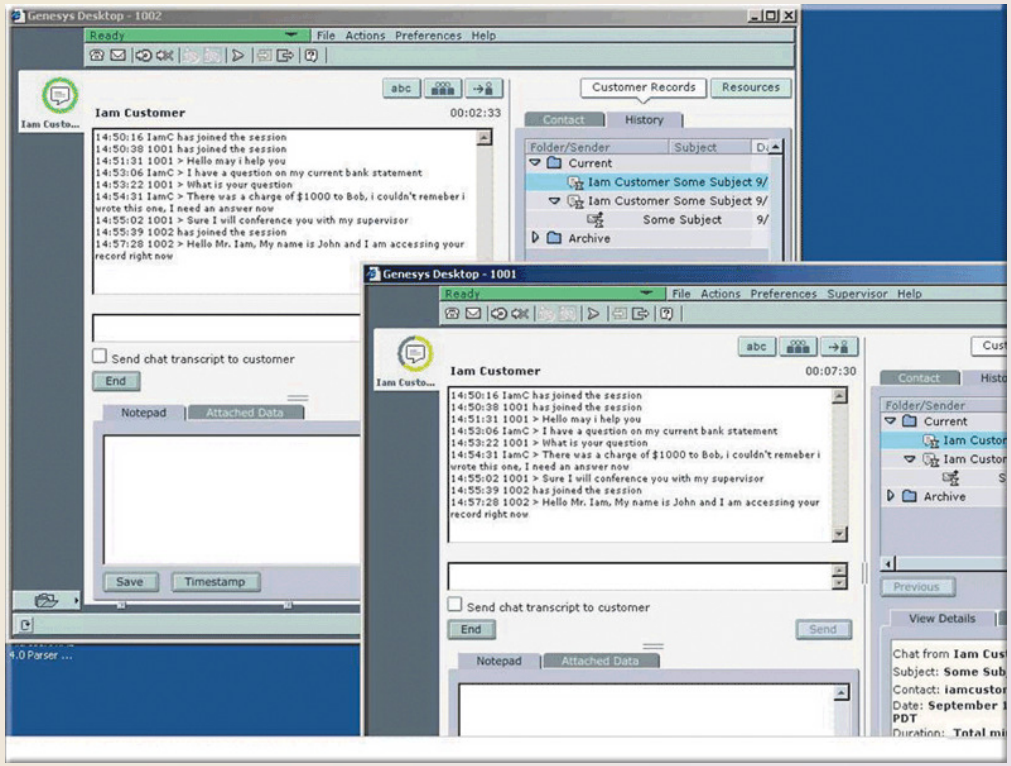
Provide forecasting for inventory control

Manage and track shipping of products

Provide information and analysis on inventory in a warehouse

Information Systems in the Enterprise

- **Customer interaction management** (**CIM**) software manages the day-to-day interactions with customers

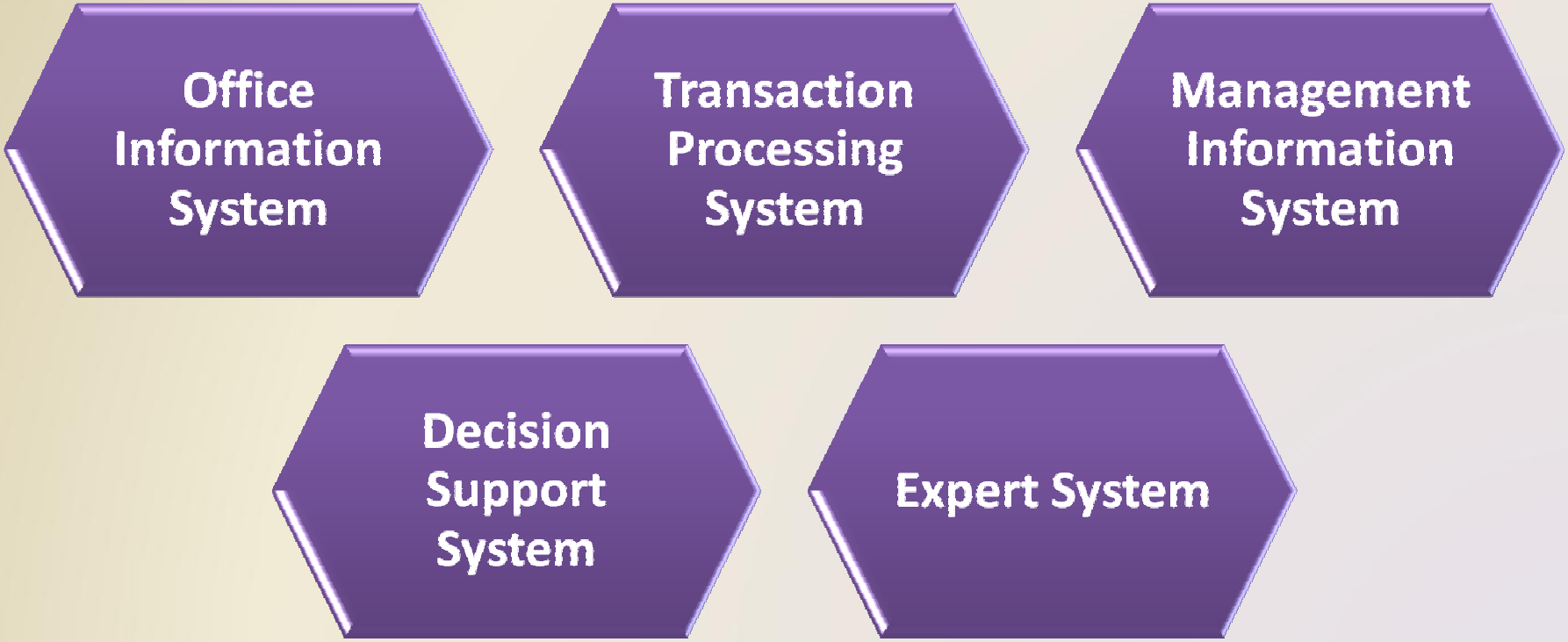


Information Systems in the Enterprise

- The information technology (IT) department makes technology decisions for the enterprise
  - Whether to build or buy new information systems
  - When a computer or information system has outlived its useful life
- Web site management programs collect data designed to help organizations make informed decisions regarding their Web presence

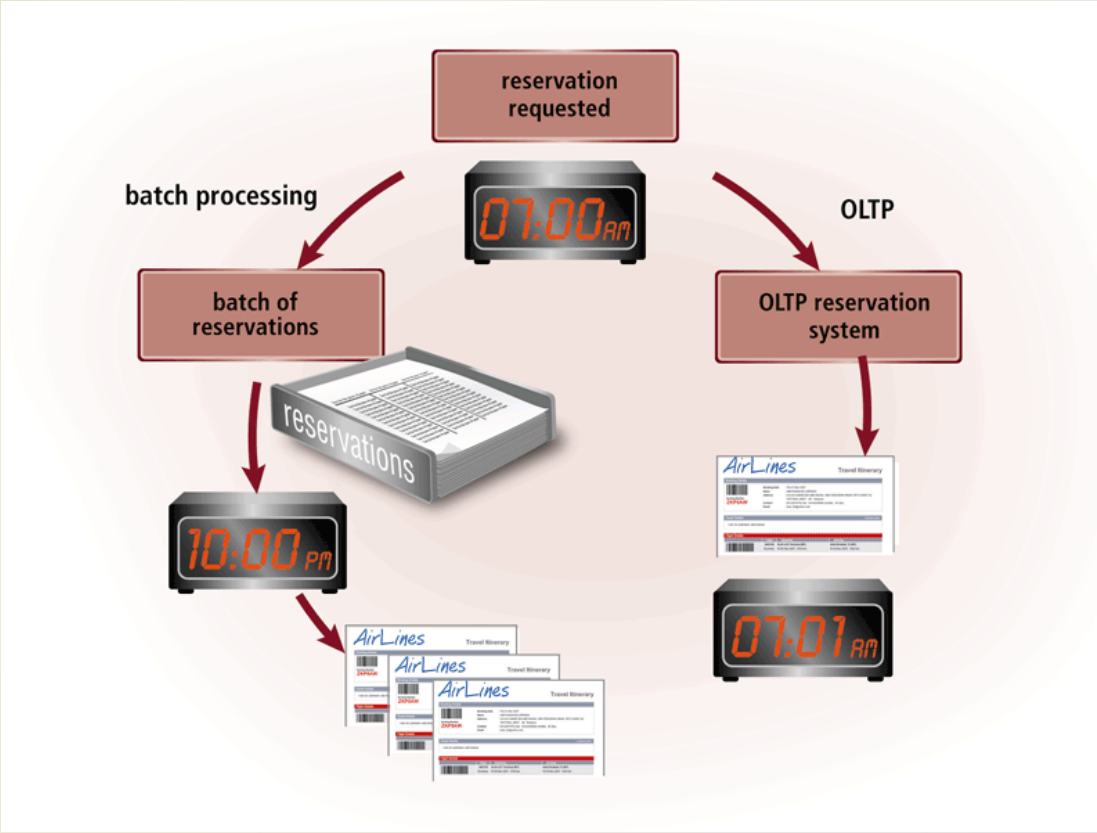
Information Systems in the Enterprise

- General purpose information systems generally fall into one of five categories



Information Systems in the Enterprise

- Batch processing vs. online transaction processing



Information Systems in the Enterprise

Management Information System

Figure 14-15a (detailed report)

Detailed Flight Report for March 30, 2011

Flight #	Origin/ Destination	Class – Number of Passengers	Premier Club Members
1048	ORD – RSW	A – 5 B – 14 C – 89	A – 1 B – 12 C – 20
543	ORD – BMI	A – 2 B – 7 C – 15	A – 2 B – 5 C – 5
715	ORD – LAX	A – 12 B – 25 C – 123	A – 8 B – 15 C – 39
701	ORD – JFK	A – 9 B – 10 C – 7	A – 7 B – 0 C – 3

Figure 14-15b (summary report)

Summary Flight Report for March 30, 2011

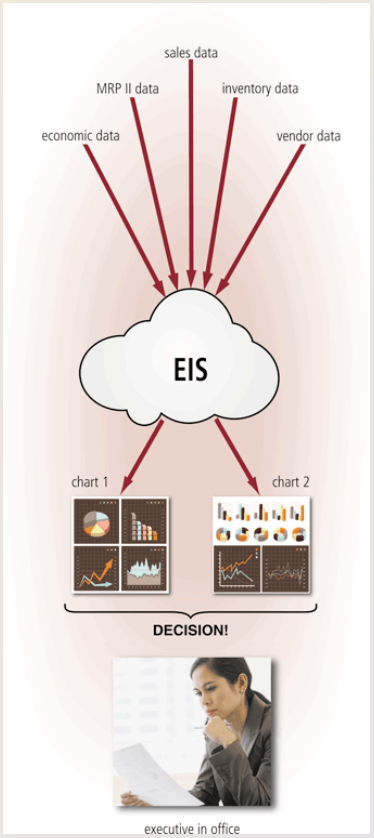
Flight #	Origin/ Destination	Passengers	Premier Club Members
1048	ORD – RSW	108	33
543	ORD – BMI	24	12
715	ORD – LAX	160	62
701	ORD – JFK	26	10

Figure 14-15c (exception report)

Exception Flight Report for March 30, 2011

Flight #	Class	Origin/ Destination	Premier Club Members	Premier Club Member Goal
1048	A	ORD – RSW	1	4
701	C	ORD – JFK	3	5

Decision Support System



executive in office

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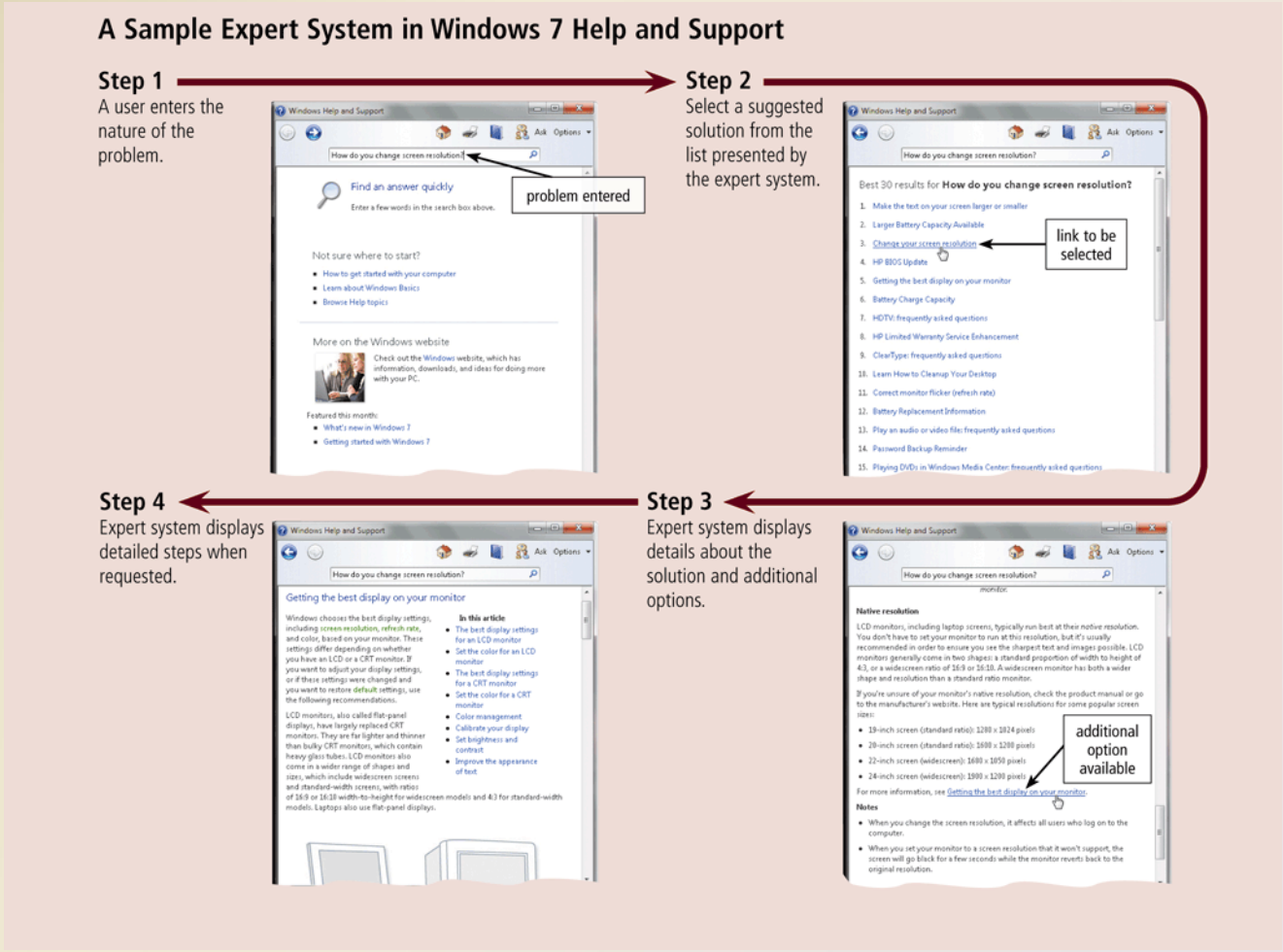
Figures 14-15 – 14-16

Information Systems in the Enterprise



Information Systems in the Enterprise

Integrated Information Systems

Customer relationship management manages information about customers, interactions with customers, past purchases, and interests	**Enterprise resource planning** provides centralized, integrated software to help manage and coordinate ongoing activities	**Content management systems** are information systems that combine databases, software, and procedures

Information Systems in the Enterprise

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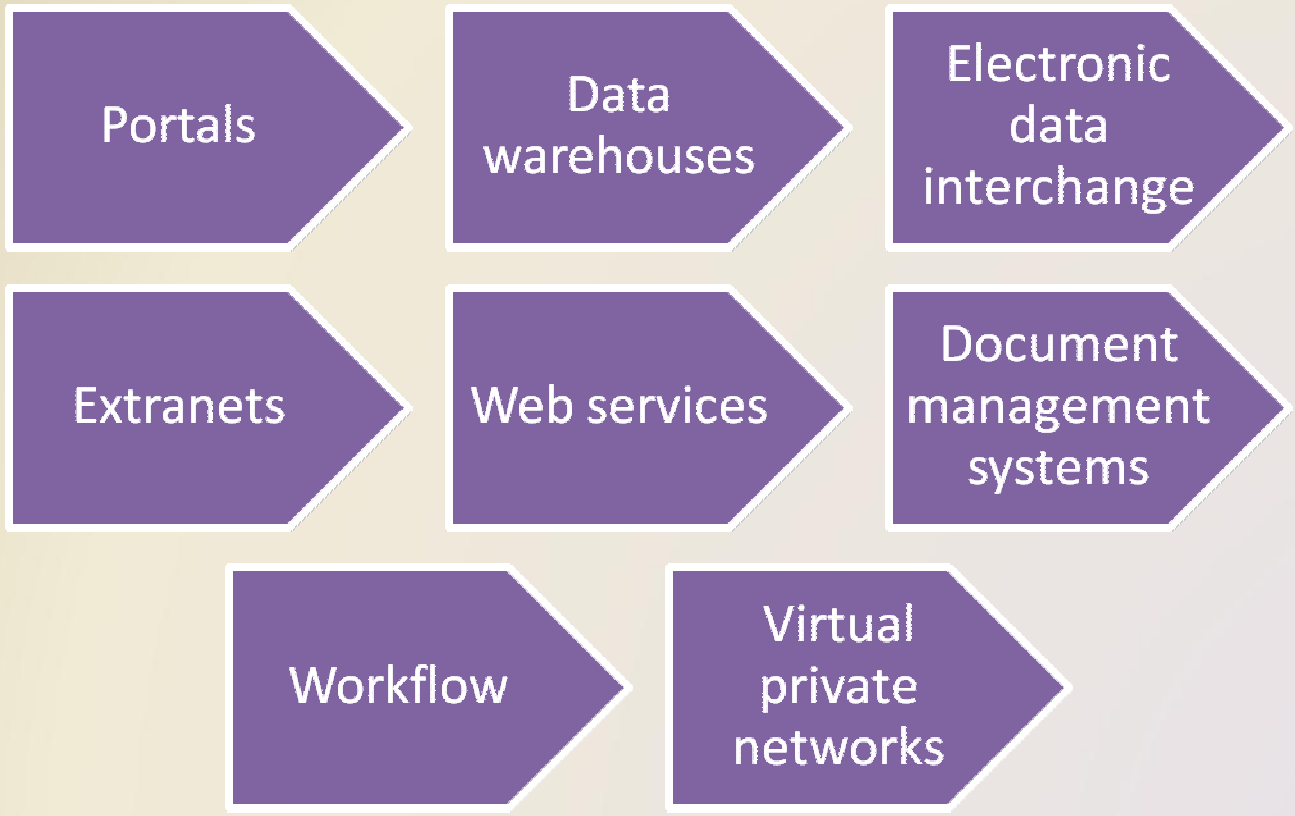
Figure 14-18

Information Systems in the Enterprise

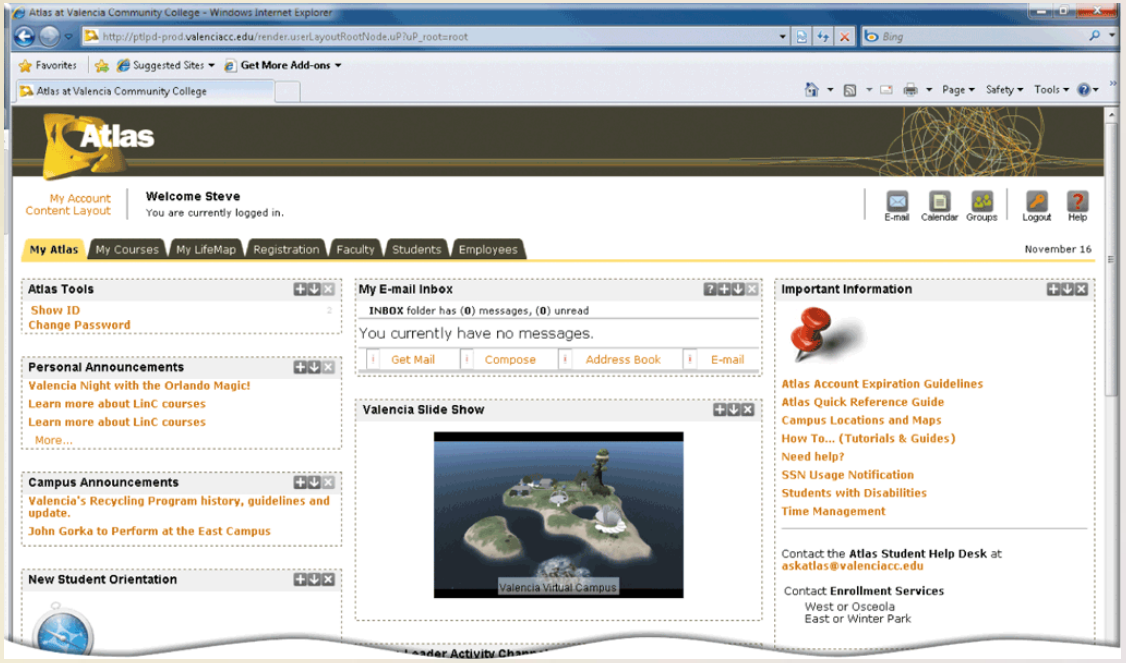
Enterprise-Wide Technologies and Methodologies

- Some technologies used in enterprises include:



Enterprise-Wide Technologies and Methodologies

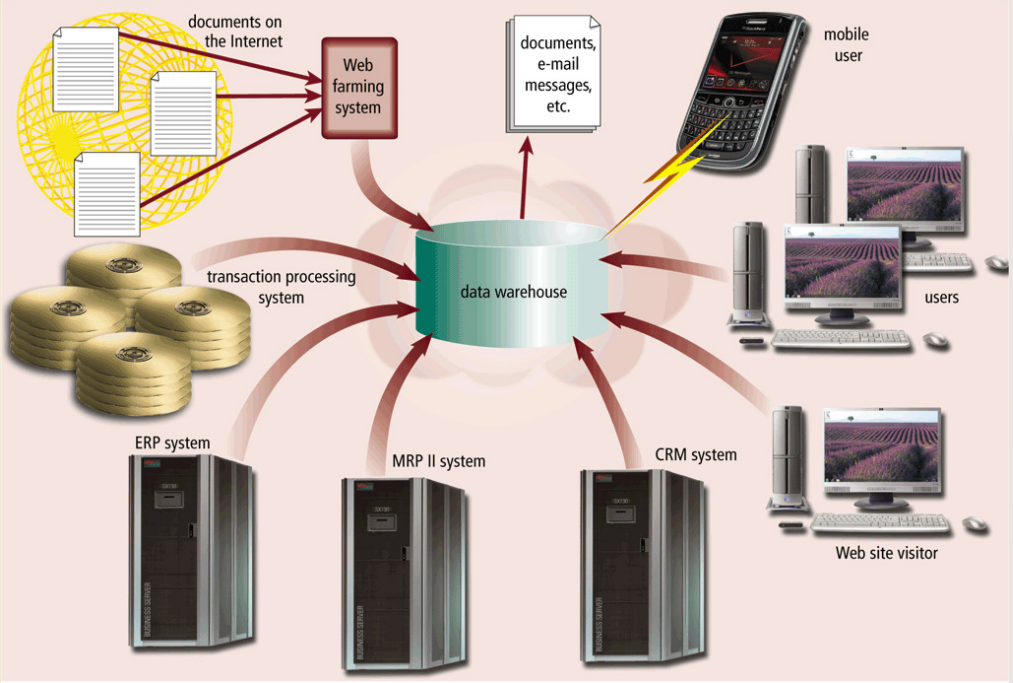
- A **portal** is a collection of links, content, and services presented on a Web page that are interesting for a particular job function



Pages 740 – 741
Figure 14-20

Enterprise-Wide Technologies and Methodologies

- A **data warehouse** is a huge database that stores and manages the data required to analyze historical and current transactions



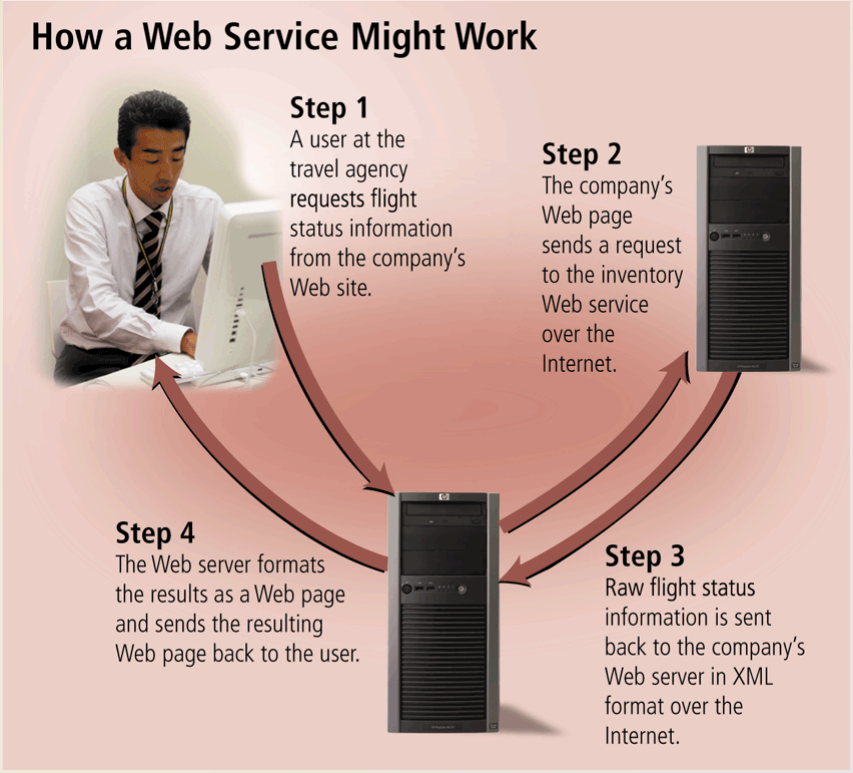
Enterprise-Wide Technologies and Methodologies

EDI is a set of standards that controls the transfer of business data and information among computers both within and among enterprises

An **extranet** is the portion of a company's network that allows customers or suppliers of a company to access parts of an enterprise's intranet

Enterprise-Wide Technologies and Methodologies

- **Web services** allow businesses to create products and B2B interactions over the Internet



Pages 742 – 743
Figure 14-22

Enterprise-Wide Technologies and Methodologies

- In a service-oriented architecture, information systems provide services to other information systems in a well-defined manner over a network
- A **document management system** (**DMS**) allows for storage and management of a company's documents
  - Stored in a repository

Enterprise-Wide Technologies and Methodologies

- A **workflow** is a defined process that identifies the specific set of steps involved in completing a particular project or business process
  - **Workflow application**

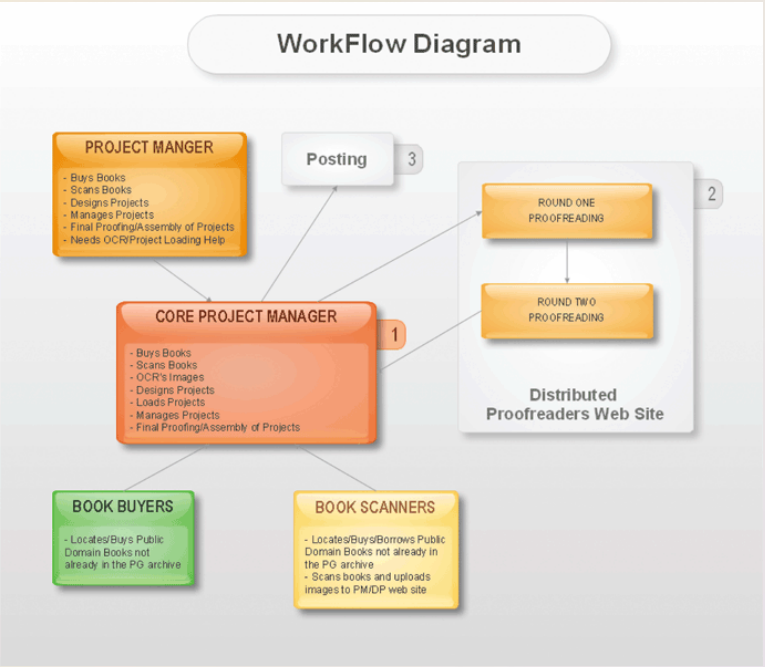


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Figure 14-23

Enterprise-Wide Technologies and Methodologies

- A **virtual private network** (**VPN**) provides mobile users, vendors, and customers with a secure connection to the company network server

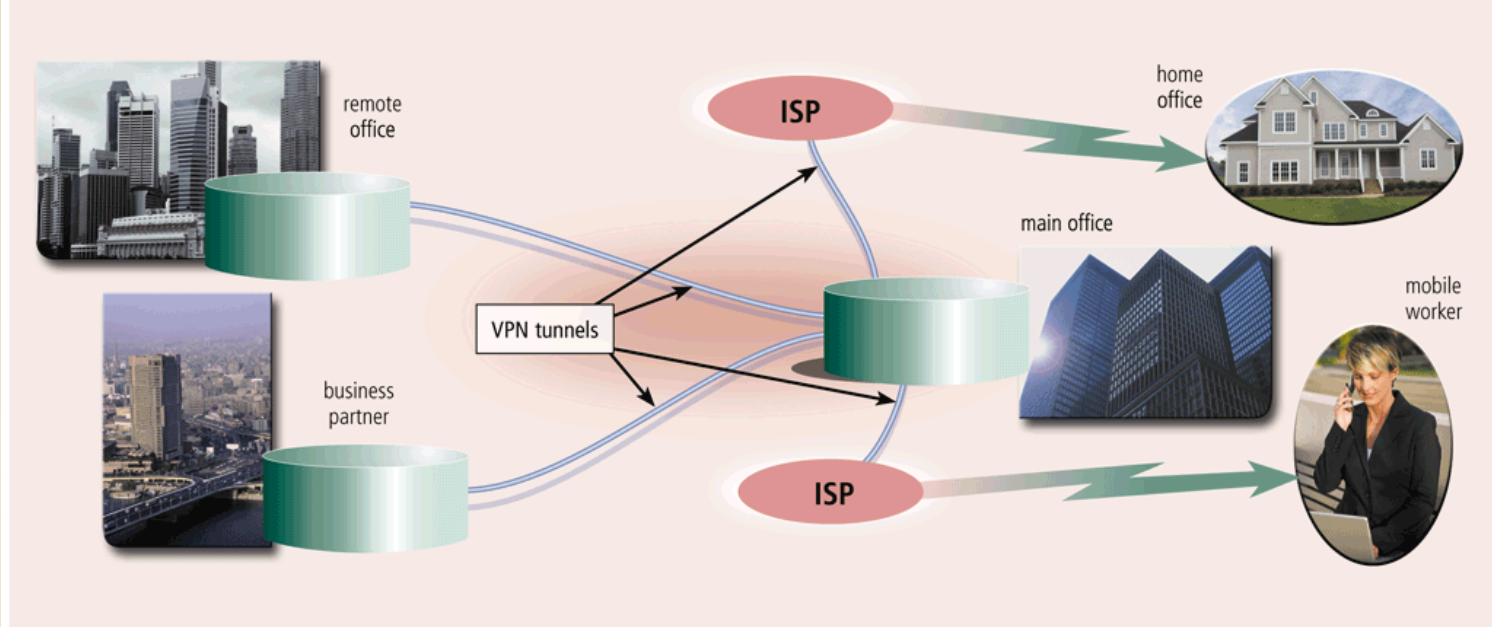

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Figure 14-24

Virtualization and Cloud Computing

- Virtualization is the practice of sharing or pooling computing resources

Server virtualization

- Provides the capability to divide a physical server logically into many virtual servers

Storage virtualization

- Provides the capability to create a single logical storage device from many physical storage devices

Virtualization and Cloud Computing

Cloud computing is an Internet service that provides computing needs to computer users

Grid computing combines many servers and/or personal computers on a network to act as one large computer

E-Commerce

Examples of E-Commerce

Type	Purpose	Example Web Sites
E-Retail	**E-retail**, also called *e-tail*, occurs when retailers use the Web to sell their products and services.	amazon.com shopping.yahoo.com shopzilla.com
Finance	**Online banking** allows users to pay bills from their computer or mobile device, that is, transfer money electronically from their account to a payee's account such as the electric company or telephone company. With **online trading**, users invest in stocks, options, bonds, treasuries, certificates of deposit, money markets, annuities, mutual funds, and so on — without using a broker.	vanguard.com fidelity.com e-trade.com
Travel	The Web provides many travel-related services. If you need directions, you simply enter a starting point and destination, and many Web sites provide detailed directions along with a map. Users can make airline reservations and reserve a hotel or car.	orbitz.com priceline.com kayak.com
Entertainment and Media	Music, videos, news, sporting events, and 3-D multiplayer games are a growing part of the Web's future. Newsprint on the Web is not replacing the newspaper, but enhancing it and reaching different populations.	itunes.com youtube.com nytimes.com
Health	Many Web sites provide up-to-date medical, fitness, nutrition, or exercise information. Some Web sites offer the capability to listen in on health-related seminars and discussion.	webmd.com health.gov familydoctor.com drugstore.com

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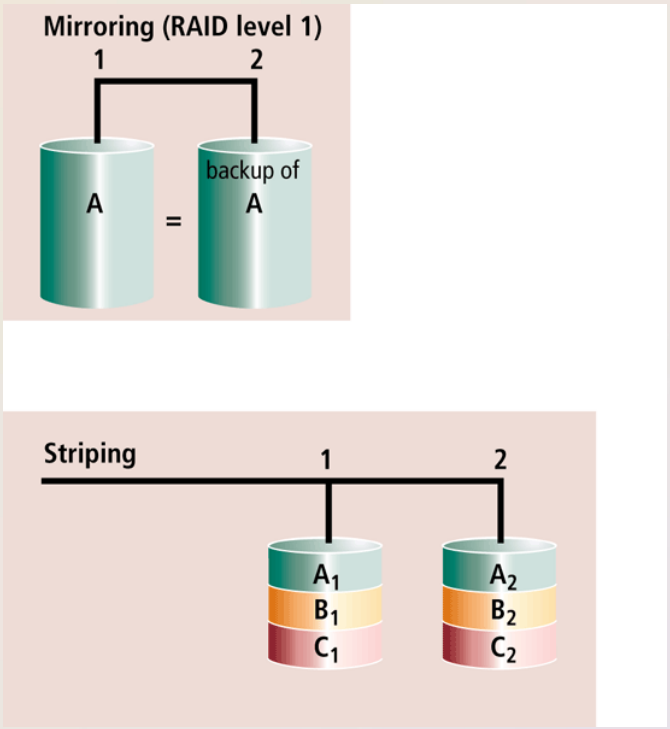
Figure 14-25

Enterprise Hardware

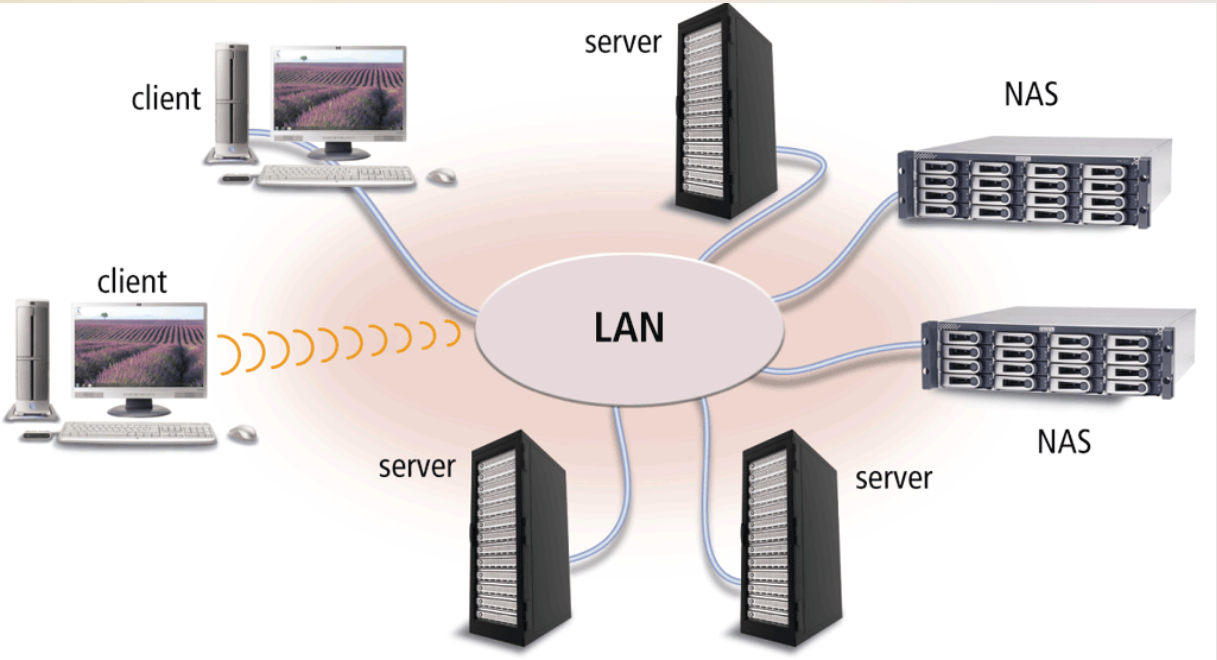
- **Enterprise hardware** allows large organizations to manage and store information and data using devices geared for:
  - Heavy use
  - Maximum availability
  - Maximum efficiency
- **RAID** duplicates data and implements duplication in different ways



Pages 748 – 749
Figure 14-27

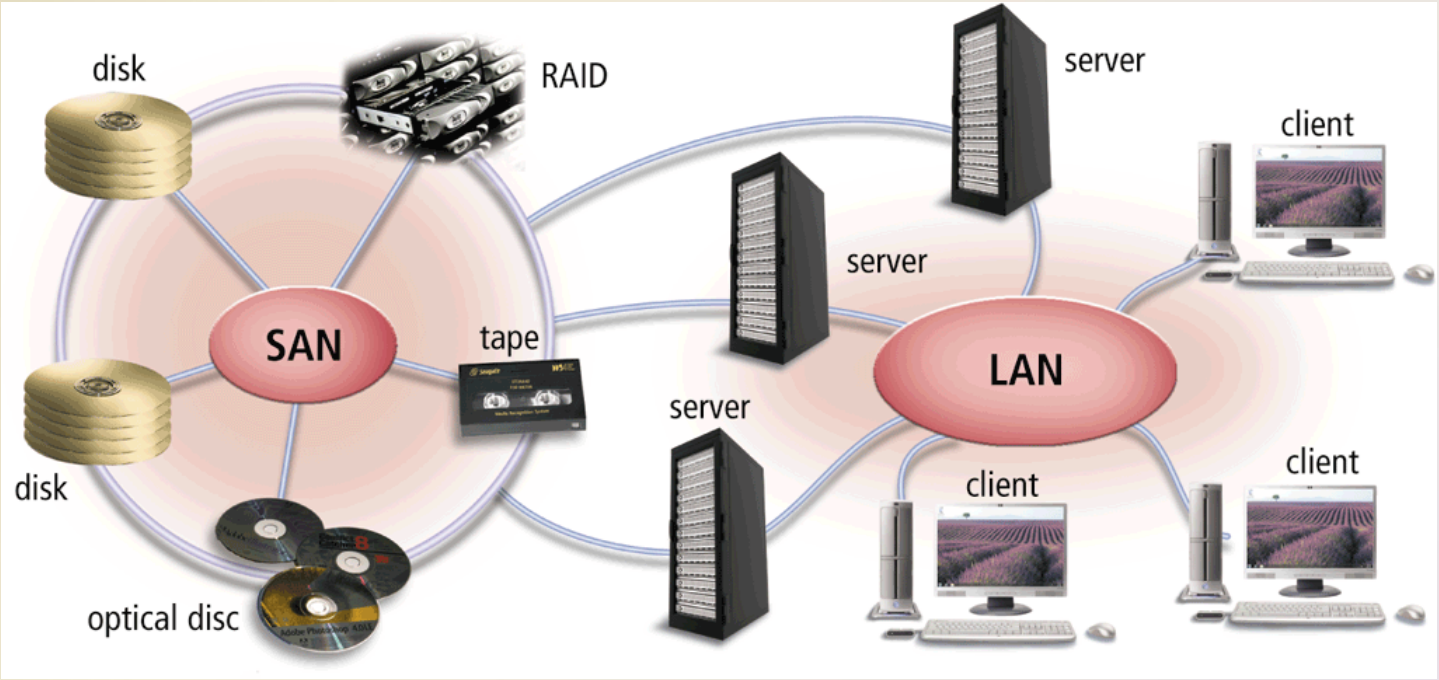
Enterprise Hardware

- **Network attached storage** (**NAS**) is a server that provides storage to users and information systems attached to the network



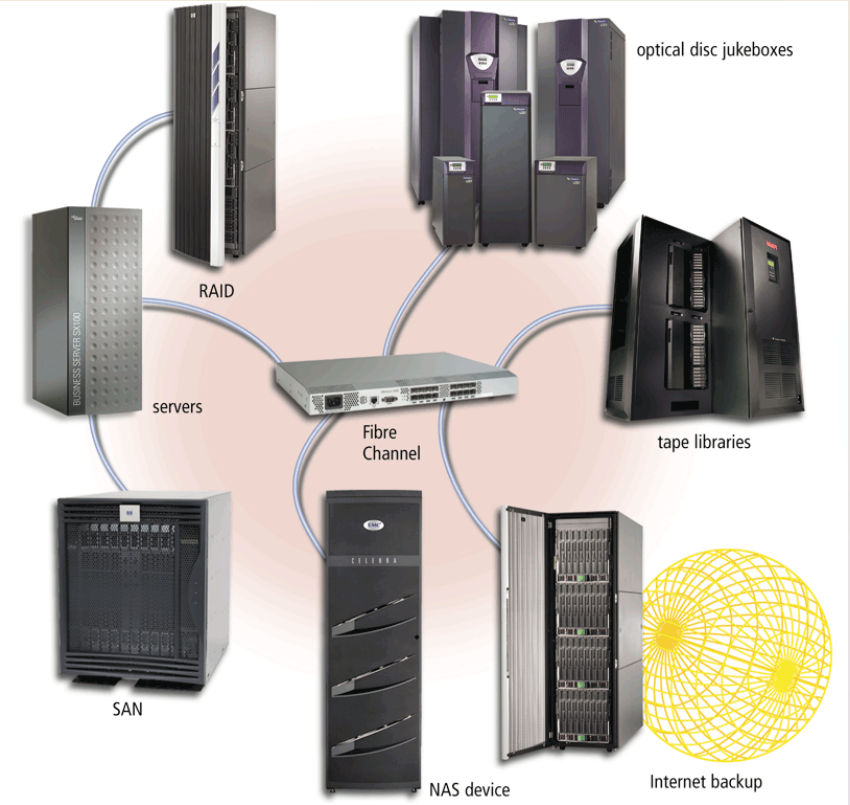
Enterprise Hardware

- A **storage area network** (**SAN**) is a high-speed network that provides storage to other servers to which it is attached



Enterprise Hardware

- An **enterprise storage system** is a strategy that focuses on the availability, protection, organization, and backup of storage in a company
- Goal is to consolidate storage



Enterprise Hardware

- A **blade server** packs a complete computer server on a single card (called a blade) rather than a system unit
- The individual blades insert in a blade server chassis

Page 751
Figure 14-30

Enterprise Hardware

- A **thin client** is a small terminal-like computer that mostly relies on a server for data storage and processing
- The processing for a thin client usually is done on a server

Page 752
Figure 14-31

High Availability, Scalability, and Interoperability

- A **high-availability system** continues running and performing tasks for at least 99 percent of the time
  - May include hot-swapping and **redundant components**
    - When a component fails, another component takes over and the system continues to function

Pages 752 – 753
Figure 14-32

High Availability, Scalability, and Interoperability

- **Scalability** is a measure of how well computer hardware, software, or an information system can grow to meet increasing performance demands
- **Interoperability** is the ability for an information system to share information with other information systems within an enterprise

Backup Procedures

Various Backup Methods

Type of Backup	Advantages	Disadvantages
Full	Fastest recovery method. All files are saved.	Longest backup time.
Differential	Fast backup method. Requires minimal storage space to back up.	Recovery is time-consuming because the last full backup plus the differential backup are needed.
Incremental	Fastest backup method. Requires minimal storage space to back up. Only most recent changes saved.	Recovery is most time-consuming because the last full backup and all incremental backups since the last full backup are needed.
Selective	Fast backup method. Provides great flexibility.	Difficult to manage individual file backups. Least manageable of all the backup methods.
Continuous	The only real-time backup. Very fast recovery of data.	Very expensive and requires a great amount of storage.

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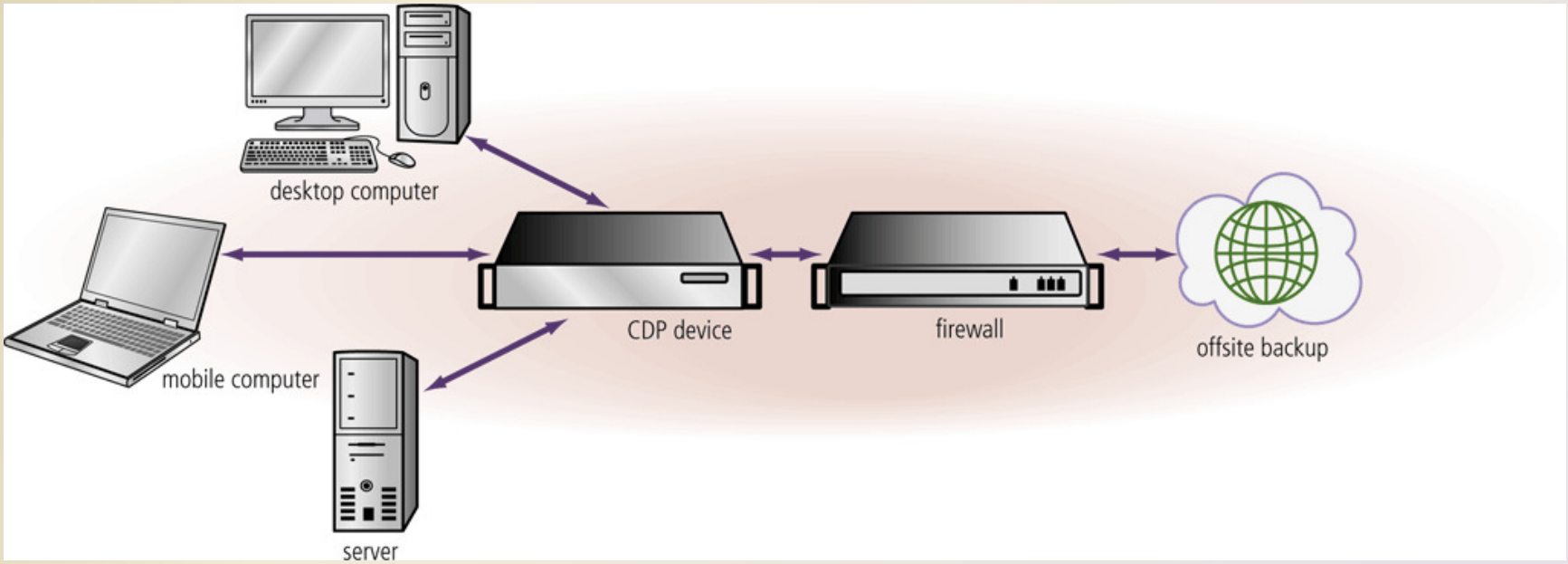
Figure 14-33

Backup Procedures

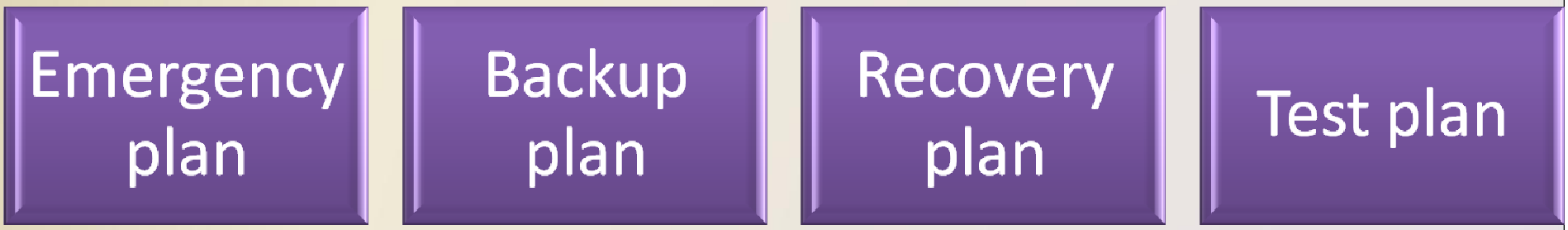
- Continuous data protection provides automatic data backup whenever data is changed in an enterprise



Pages 754 – 755
Figure 14-34

Backup Procedures

- A **disaster recovery plan** is a written plan describing the steps a company would take to restore computer operations in the event of a disaster
- Contains four major components



Summary

- Special computing requirements present in an enterprise-sized organization
- Various types of users within an organization
- Large information systems
- Benefits of virtualization and cloud computing
- Requirements for enterprise hardware
- Backup procedures present in a large organization

Chapter Fourteen

Enterprise Computing

Discovering Computers 2012

Your Interactive Guide to the Digital World

Chapter 14 Complete