

CHAPTER 4

Electronic Commerce Software



Learning Objectives

In this chapter, you will learn:

- How to find and evaluate Web-hosting services
- What functions are performed by electronic commerce software
- How electronic commerce software works with database and ERP software
- What enterprise application integration and Web services are and how they can be used with electronic commerce software

Learning Objectives (cont'd.)

- Which types of electronic commerce software are used by small, medium, and large businesses
- How electronic commerce software works with customer relationships management, knowledge management, and supply chain management software

Introduction

- Case study: Harry Barker
 - Sells pet products online
 - Prepared in advance for an expected increase in online orders from a *Good Morning America* segment
 - Added an additional Web server
 - Hired additional temporary staff
 - Created a customer Web page
 - Company followed up to measure how well it met new customer expectations

Web Hosting Alternatives

- Self-hosting is running servers in-house
 - Most often used by large companies
- Third-party Web-hosting service providers offer Web services, electronic commerce functions
 - Often used by midsize, smaller companies
- Commerce service providers (CSPs) provide Internet access and Web-hosting services
 - Offer Web server management and rent application software
 - Also called Managed service providers (MSPs) or Application service providers (ASPs)

Web Hosting Alternatives (cont'd.)

- Web-hosting service options
 - Shared hosting means client's Web site on a server hosting other Web sites simultaneously
 - Dedicated hosting means the client Web server not shared with other clients
 - Service provider owns and maintains server hardware, leases it to client, and provides Internet
- With co-location (collocation or colocation) service the provider rents physical space to client with a reliable power supply, Internet connection
 - Clients install/maintain server hardware and software

Web Hosting Alternatives (cont'd.)

- Web server-hosting decisions
 - Hardware platform and software combination
 - Should be upgradable when site's Web traffic increases
 - Scalable hardware and software combinations
 - Adaptable to meet changing requirements

Basic Functions of Electronic Commerce Software

- All electronic commerce solutions must provide
 - Catalog display, shopping cart capabilities and transaction processing
- Larger complex sites may include software with added features and capabilities

Catalog Display Software

- Catalog organizes goods and services being sold
 - May organize by logical departments
 - Web store advantage is a single product may appear in multiple categories
- Catalog is a listing of goods and services
 - Static catalog is a simple list written in HTML
 - Must edit HTML to add or delete items
 - Dynamic catalog stores information in a database with photos, detailed descriptions and a search tool for locating item and determining availability
 - Both located in third tier of Web site architecture

Shopping Cart Software

- Early electronic commerce used forms-based shopping
 - Shoppers selected items by filling out online forms which was awkward if ordering more than one or two items and error prone
- Electronic shopping carts are now standard
 - Keep track of items customer selected and allows them to view cart contents, add and remove items
 - Ordering requires a simple click which executes the purchase transaction
 - Screen asks for billing and shipping information

Shopping Cart Software (cont'd.)

- Web is a stateless system that does not retain information from one transmission to another
 - Shopping cart software must store information
 - Cookies allows information to be stored and retrieved
 - If browser does not allow cookie storage software automatically assigns temporary number
- Dynamic pricing management software adjusts prices in real time based on variables seller chooses
- Promotion management software allows sellers to create special offers on specific products

Shopping Cart Software (cont'd.)

- Fulfillment integration software connects seller's shopping cart to fulfillment provider's computer
 - Shipping automatically triggered at completed sale
- Product review management software allows customers to post reviews of products
- Product recommendation triggers are tools that respond to customer's product selection
 - Provides suggestions for related products, refills
- Abandoned cart management software enables shopping cart to be retained for later when customer session is terminated

Gary's Tool Shed

[Home](#)
[Specials](#)
[Product Type](#)
[Our Company](#)
[View Cart](#)

Tools By Type

- > [Drills](#)
- > [Hand Tools](#)
- > [Sanders](#)
- > [Saws](#)

| Quantity | Item Name | Number/SKU | Each | Total |
|--------------------------------|--|------------|----------|----------|
| <input type="text" value="1"/> | 9.6V 3/8" Cordless Driver/Drill with case & flashlight | FDS10DVAK | \$89.00 | \$89.00 |
| <input type="text" value="1"/> | 18V Hammer, Drill, Saw Combo Pack | DW4PAK-2 | \$499.00 | \$499.00 |

Product Total

\$588.00

Discount

-\$29.40

Subtotal

\$558.60

Total

\$558.60

continue shopping

checkout ▶

FIGURE 9-1 Typical shopping cart page

Transaction Processing

- Occurs when shopper proceeds to virtual checkout counter by clicking the checkout button
 - Electronic commerce software performs calculations
- Web browser software and seller's Web server software switch into secure communication state
 - Electronic commerce software communicates with accounting software sales and inventory modules
 - FedEx and UPS shipping rate software integrates with electronic commerce software
- Other calculations include coupons, promotions, time-sensitive offers

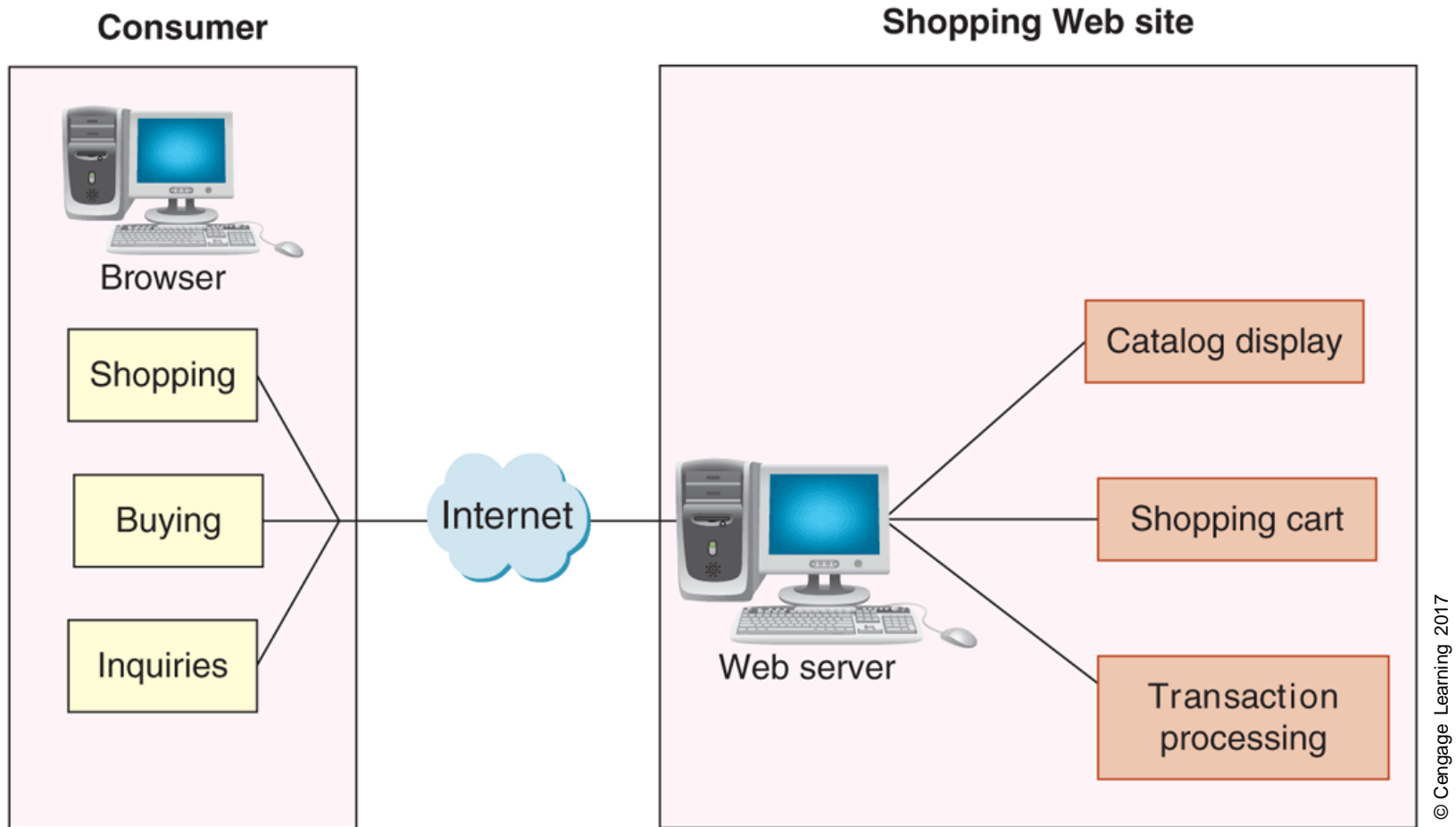


FIGURE 9-2 Basic electronic commerce site architecture

How Electronic Commerce Software Works with Other Software

- Most large companies with electronic commerce operations also have substantial business activity unrelated to electronic commerce
 - Important to integrate electronic commerce activities into the company's other operations
- Basic information system element is a collection of databases

Databases

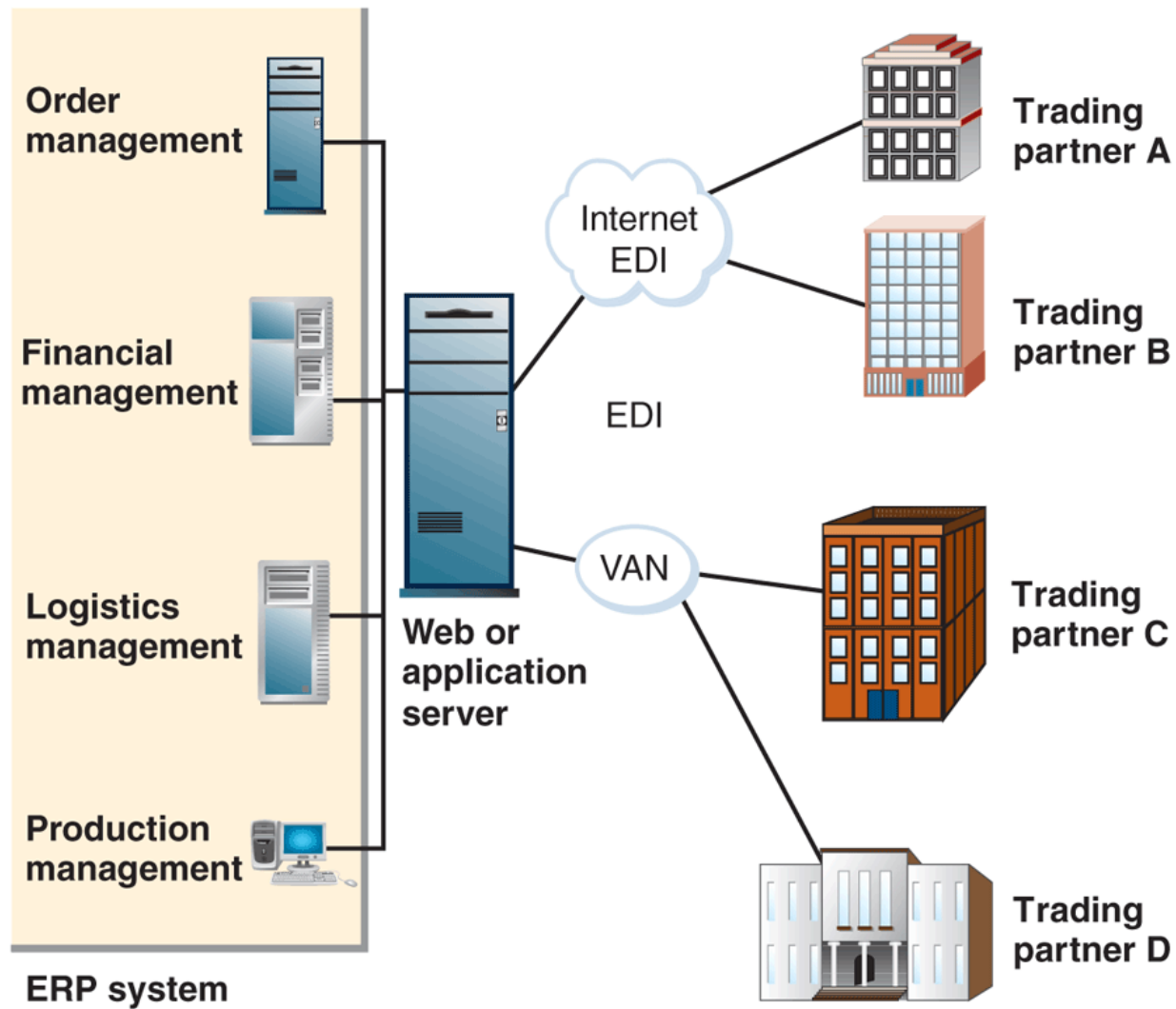
- Highly structured information stored on a computer
- Business rules are how the company does business
- Database management software allows users to enter, edit, update, retrieve database information
- Distributed information systems are large systems storing data in many different physical locations
 - Distributed database systems are databases within distributed information systems
- MySQL database is open-source software owned by Oracle and maintained by group of programmers

Middleware

- Middleware takes sales and inventory shipments information from electronic commerce software
 - Transmits to accounting and inventory management software
 - Companies can write their own or purchase customized middleware
- Interoperability is making information systems work together
- Middleware cost range is \$30,000 to several millions
 - Depending on complexity and existing systems

Integration with ERP Systems

- Enterprise resource planning (ERP) software are business systems integrating all facets of a business
 - Accounting, logistics, manufacturing, marketing, planning, project management, and treasury functions
- Two major ERP vendors: Oracle and SAP
 - ERP software installation costs between \$1 million and \$10 million for a midsize company
- Smaller online businesses can purchase products like NetSuite that offer ERP system subscriptions
 - Called software as a service (SaaS)



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FIGURE 9-3 ERP system integration with EDI

Web Services

- Software systems supporting interoperable machine-to-machine interaction over a network
 - Set of software and technologies allowing computers to use the Web to interact with each other directly
 - Does not require human operators directing the specific interactions
- Application program interface (API) is a general name for the ways programs interconnect with each other
 - Web APIs: interaction over the Web

Electronic Commerce for Small and Midsize Businesses: Basic CSPs

- Use of service provider's shared or dedicated hosting services
 - Shifts staffing burden from company to Web host
 - Spread costs over all hosted businesses
 - Host provider keeps server working through storms and power outages
- CSPs offer free or low-cost e-commerce software
 - Less than \$20 per month with software built into site
- CSP examples
 - Gate.com, ProHosting.com, 1&1 Internet, Yahoo!

Mall-Style CSPs

- Provide small businesses with basic Web site, online store design tools, templates and easy-to-use interfaces
 - Low monthly fee, one-time setup fees and percentage (or fixed) amount for each transaction
 - Shopping cart software and payment processing
- Two-main mall-style CSPs are Amazon services for business and eBay stores for businesses
 - No long term commitment and few up-front costs

Estimating Operating Expenses for a Small Web Business

- Cost to become operational between \$400 and \$8200
 - Assumes less than 100 items for sale and business already has computer and Internet access
 - Figure 9-4 shows the range of estimates for first-year expenses for a small business owners
- Self-hosting include one time basic server and router costs of \$2000 to \$10,000 plus annual costs
 - Basic Internet connection: \$480 to \$1,800
 - Secure server room: \$5000
 - Required technicians: \$50,000 to \$100,000
 - Annual total costs: \$60,000 to \$100,000

| Operating Costs | Cost Estimates | |
|---|----------------|--------|
| | Low | High |
| Initial site setup fee | \$ 0 | \$ 200 |
| Annual CSP maintenance fee (12 x \$20 to \$300) | 240 | 3600 |
| Domain name registrations | 0 | 300 |
| Scanner for photo conversion or digital camera | 60 | 2000 |
| Photo editing software | 0 | 800 |
| Occasional HTML and site design help | 100 | 1100 |
| Merchant credit card setup fees | 0 | 200 |
| Total first-year costs | \$400 | \$8200 |

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FIGURE 9-4 Approximate costs to put a small store online

Electronic Commerce Software for Midsize Businesses: Web Site Development Tools

- Possible to use Web page creation and site management tools.
- After Web site creation add purchased software elements and create the middleware

Midrange Electronic Commerce Software

- Costs \$5000 to \$200,000
- Operating costs range \$1000 to \$30,000 annually
- Offers connectivity to database or ERP systems that store inventory information
- Intershop offers midrange packages
 - Include search and catalog capabilities, electronic shopping carts, credit card processing and connection to back-end businesses and databases
 - Setup wizards, catalog tools, data management functions and built-in templates are included
 - Manage storefronts with Web browser interface

Midrange Electronic Commerce Software (cont'd.)

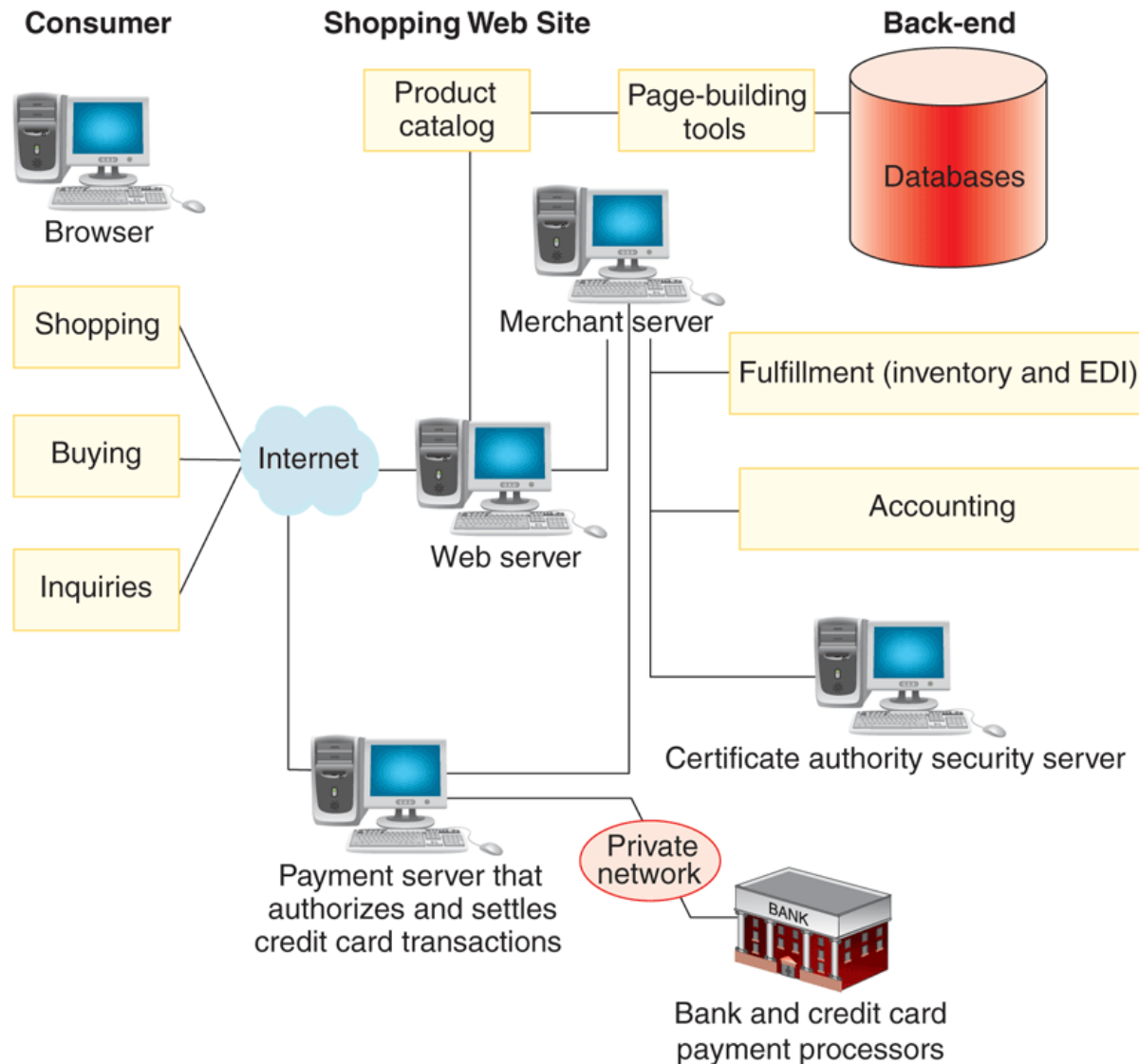
- IBM WebSphere Commerce Professional is a family of software components
 - Includes catalog templates, setup wizards, advanced catalog tools
 - Provides link with existing corporate systems
 - Inventory databases, procurement systems
 - Customization requires programmers with JavaScript, Java or C++ expertise
 - Costs between \$50,000 and \$300,000 depending on number of servers and options

Electronic Commerce Software for Large Businesses

- Larger business requirement many of the same advanced capabilities as midsize firms
 - Need ability to handle higher transaction loads and dedicated software applications to handle specific online business elements
- Enterprise-class commerce software is used in large online business operations
 - Encompasses all areas of the business or enterprise
 - Provides tools for B2B and B2C commerce
 - Interacts with wide variety of existing systems
 - Costs: \$200,000 to \$10 million

Enterprise-Class Electronic Commerce Software

- Requires several dedicated computers, Web server system, firewalls
 - IBM WebSphere Commerce Enterprise, Oracle E-Business Suite and Broadvision
- Provides tools for linking to and supporting supply and purchasing activities
 - Secure transaction processing and fulfillment
 - Interaction with firm's inventory system to issue purchase orders
 - Generate accounting entries
 - Download electronic goods directly from site



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FIGURE 9-5 Typical enterprise-class electronic commerce architecture

Content Management Software

- Helps control large amounts of text, graphics, media files that have become crucial to doing business
 - Increased use of social media and networking as part of online business operations
- Software should be tested before commitment
 - Straightforward procedures for regular maintenance
 - Facilitates typical content creation tasks
- Leading providers include IBM and Oracle
 - Costs between \$50,000 and \$500,000
 - Can cost 3 to 4 times that amount to customize, configure and implement

Knowledge Management Software

- Systems that manage knowledge itself rather than the documentary representations of that knowledge
 - Collect, organize and share knowledge
 - Enhance collaboration and preserve knowledge gained through information use to benefit future users
- Tools to read documents and conduct searches
 - Use proprietary semantic, statistical algorithms
- Collects knowledge elements by extracting them from normal interactions users have with information
- Implementation costs \$10,000 to \$1 million or more

Supply Chain Management Software

- Helps coordinate planning and operations with supply chain partners
 - SCM planning software develops coordinated demand forecasts
 - SCM execution software helps with warehouse and transportation management
- SCM software components manage demand and supply planning and demand fulfillment
- Cost of SCM software implementations varies tremendously based on number of locations
 - Range from under \$300,000 to \$5 million

Customer Relationship Management Software

- Goal is to understand customer's specific needs and customize product or service to meet those needs
 - Idea is if customer needs are met exactly they will pay more for goods or services
- Software must obtain data from operations software and gather data about customer activities
 - Use data to conduct analytical activities
- Basic form of CRM uses customer information to sell more goods or services
- Advanced form of CRM delivers attractive, positive customer experiences

Customer Relationship Management Software (cont'd.)

- Important in maintaining customer loyalty when purchase process is long and complex
- From 1996 to 2000 companies spent millions to buy systems and restructure customer strategies
 - Bad experiences led to a change in thinking
- Now used to solve smaller, more specific problems
 - Popular target is call center operations
- Some companies create their own but most buy a software package
 - Prices start around \$2000 and large implementations can cost millions

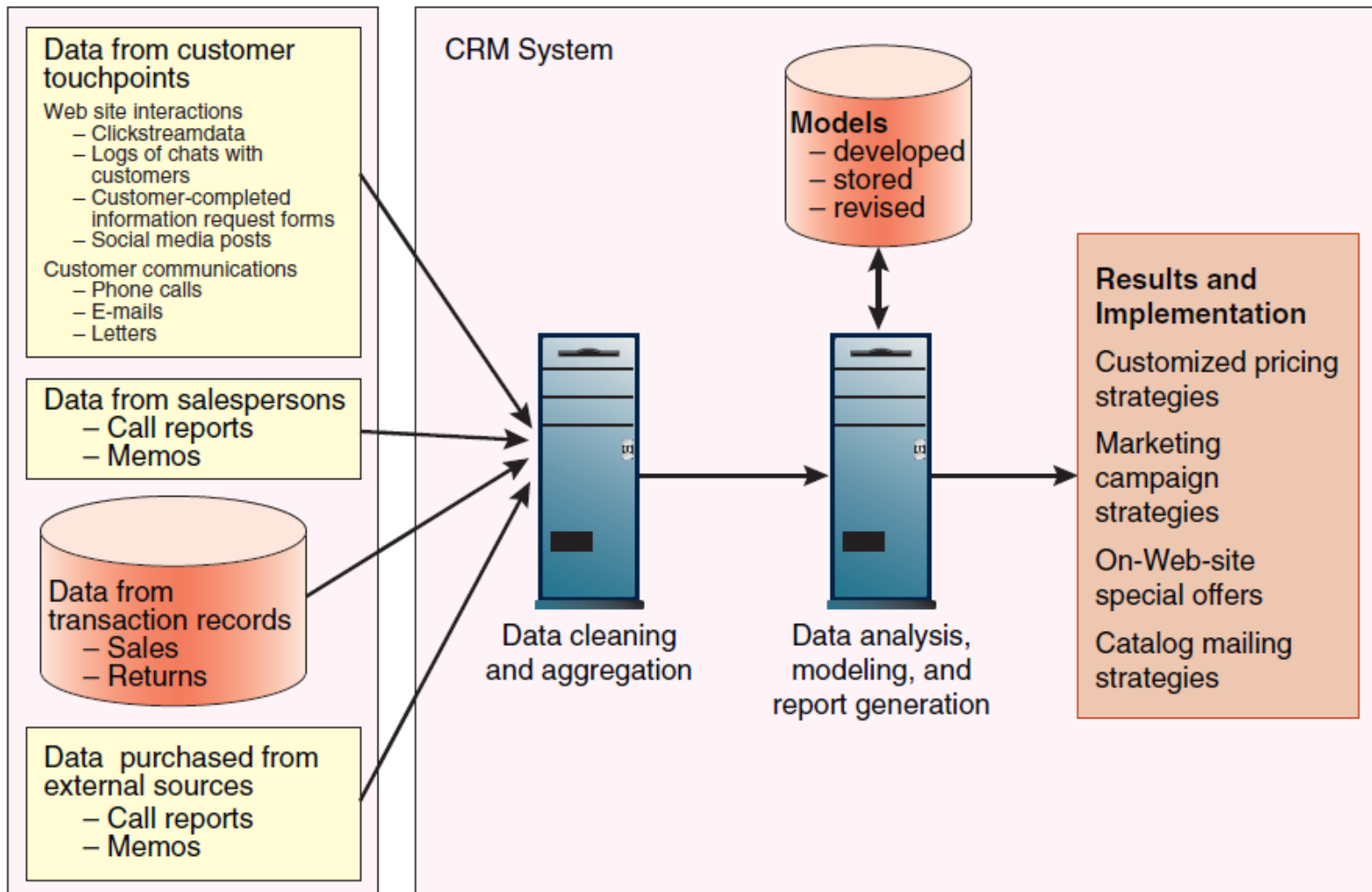


FIGURE 9-6 Elements of a CRM system