

E-Business Technologies

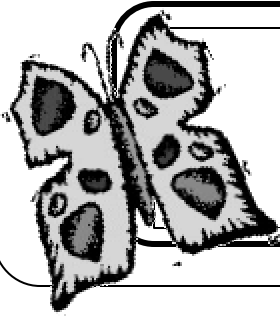
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Client/Server Technologies for E-Business

Chapter 7

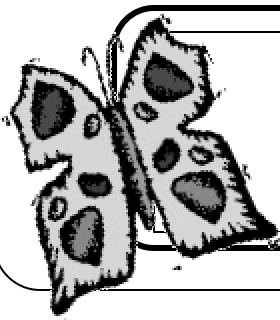


Key Ideas

- E-commerce applications require a variety of servers to perform a variety of functions.
- The client/server environment is divided into tiers to provide independence among presentation, application logic, and data management.
- Separating the database from a web server provides additional security.



Server Technologies



Types of Servers

- **File/application**
 - “An extended hard drive” for users
- **Print server**
 - Places files in print queue for printing
- **Web server**
 - Manages web traffic
- **Database server**
 - Holds database(s) for the organization



More Server Types

- **Communication server**
 - Handles remote access, communication protocols, gateway and network services
- **Groupware server**
 - Facilitates communication among group members
- **Multimedia server**
 - Run specialized files and programs for music, film, graphics
- **Proxy server**
 - Requests Internet services and forwards contents, may serve as cache for frequently used documents



Server and Network Operating Systems

- Network operating systems (NOS) are complex programs for managing internal and local area network resources
- May manage servers, printers, stations, remote users, security, applications, client/server functions.



Operating Systems for Web Servers

- Windows 2000/ME/XP
- UNIX
- Linux
 - Open source
 - Not a web server, just an operating system
 - Runs with Apache Web server frequently
- OS/2 (IBM)
- Netware (Novell)
- Solaris and iPlanet (Sun)



Server and Network Operating Systems

- **Many selection criteria**

- (Cost, range of hardware and applications supported, performance, stability)
- Many other operating systems exist (IBM's OS/390)
- Many applications can run on various platforms



Server Hardware

- **Three typical processors**

- Intel Pentium
- Alpha based
- Sun Microsystems

- **Typical computer classifications**

- Microcomputer, minicomputer, mainframe, supercomputer

- **Server can be on any of these, but operating systems may not run on all machines**



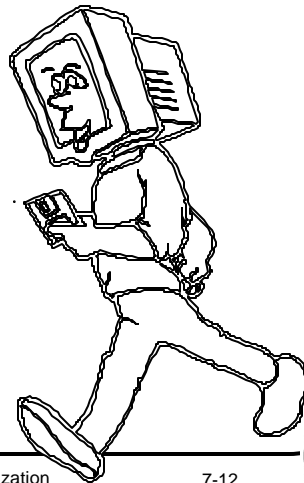
Server Considerations

- Dual processor servers
 - Multiple processors can improve speed, but also have coordination and communication overhead
 - (2 processors not twice as fast as 1)
- Random access memory (RAM)
- Server auxiliary storage
- RAID (Redundant arrays of independent disks)
 - Important for continuous processing and security



Other Server Peripherals

- Monitor
- Network Equipment
 - Hubs
 - Ethernet and token ring
- Backup Systems
 - Data compression
 - Zip disks and CD-ROMs
 - Optical disks and CD burners
 - Cartridge and magnetic tape backup
 - USB ports



Server Configurations

- Thin server
 - Designed for one function
- Server farms and server collections
 - Allows clustering
 - Fault-tolerant systems
 - Middleware, operating system clustering software, and custom applications for seamless clustering
 - Load balancing
 - Server failover
 - Data mirroring

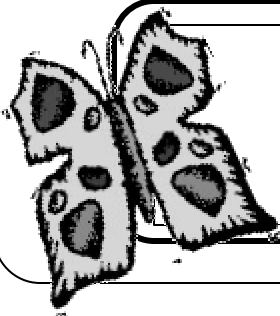


Sizing a Web Server

- User demand or volume
 - Hits per second/ average versus peak
 - Other functions: authentication, transfer protocol information, managing connections (sockets)
- Type of content
 - Text takes less space than images (and less time to transfer)
 - Script requests
- Network Bandwidth



Client Technologies



Workstations

- Generally desktop client devices
- Cost
- Performance
 - Memory is key – processing stored data much faster than getting data from peripheral devices
- Features offered
- Compatibility with existing equipment
- Reputation of vendor

Network Computer

- Lacks attached secondary storage capacity
- Reliant on network to supply OS and applications
- Updates can be facilitated for all users at once
- Security advantages – can't copy data to diskettes
- Portable workstations
- Workstation peripherals



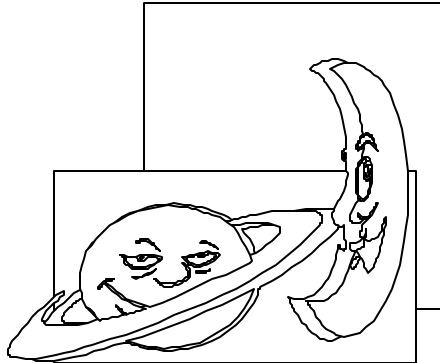
Transaction Terminals

- ATMs
- POS (point of sale) systems
 - Builds computer technology into the old "cash register"
- Kiosks
- Television set-top boxes



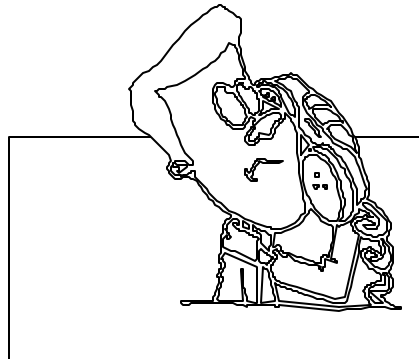
Client Configurations

- How much application logic by the client?
 - Thin client, server handles most logic
 - Pros: security, easier maintenance
 - Cons: less control for users, higher cost for larger servers, diminishes sharing load between clients and servers
 - Fat client, most logic handled by client
 - Inverse pros and cons with thin client.



Mobile Client Technologies

- Digital phones
- PDAs
- Smart Phones
 - WAP
 - WTLS
 - Data integrity
 - Privacy
 - Authentication
 - Denial-of-service
- AvantGo.com
- SportsFeed.com

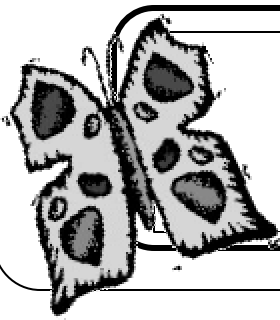


Your Turn

- Consider the ideas of thin clients, fat clients, and thin servers.
 - Who benefits the most from each approach?
 - (Note some stakeholders may both benefit and be constrained by some approaches)
 - What should be the key considerations in making these choices?



Managerial Issues



Hosting or Being Hosted?

- Advantages for being hosted (disadvantages for hosting)
 - 24/7 support
 - High speed data lines
 - Skilled staff
 - Relatively low costs (especially upfront)
- Disadvantages for being hosted (advantages for hosting)
 - No control over server environment
 - May have size limits
 - Risk of security breach if database stored outside
 - Lack of bandwidth controls



Summary

- There are many types of servers with a wide variety of functions. Selecting the right ones can be critical for e-business success.
- Further there are many types of clients and choices for managers in this domain.
- Coordinating servers and clients can be challenging especially for small businesses.



Expanding the Domain

- For examples of client/server technologies for e-business see:
 - AvantGo
 - <http://www.AvantGo.com>
 - Skiviez
 - <http://www.skiviez.com>
 - Apache project
 - <http://www.apache.org>



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