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Chapter X

Client-Server Computing: Lessons Learned and an Application in the Healthcare Industry

Mahesh S. Raisinghani
University of Dallas, USA

Ann Shou-an Char
Parkland (TX) Health & Hospital System, USA

INTRODUCTION

Client-server architecture is a local area network (LAN) based computing environment in which a central database sever or engine performs all database commands sent to it from client workstations, and application programs on each client concentrate on user interface functions. Client-server computing is a phrase used to describe a model for computer networking. In this shared processing model, a server has an intelligent database engine functioning as a service on the network. This model offers an efficient way to provide data/ information and services to many users as needed. A network connection is only made when a user needs to access the information or obtain the needed service. This lack of a continuous network connection provides network efficiency. Any change made in the server is transparent to clients.

A client is a requester for networked data/information and service. A client is usually a personal computer (PC) or a workstation that can query a database and/or other information from a server. Typical client functions are to display the user interface, perform basic input editing, format queries to be

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forwarded to the server processor, communicate with the server, and format server responses for presentation.

A server is a computer that stores information for manipulation by networked clients. Examples of servers are a mainframe, a high powered workstation/PC, or a minicomputer. A server is passive and it does not initiate conversations with clients although it can act as a client of other servers. A server waits for and accepts clients, presents a defined abstract interface to clients, and maintains the location independence and transparency of client interface.

A client/ server system allows one or more clients to request data from one or more servers and put the data to a convenient place for clients. An underlying operating system and inter-process communication system are required to form a composite system for distributing computation, analysis, and presentation.

CHARACTERISTICS OF CLIENT-SERVER COMPUTING

The major characteristics of a client-server include the logical separation of the client processes from the server processes, as well as the ability to change a client without affecting the server or other clients. Client-server computing is distinct from ordinary distributed processing. There is a heavy reliance on bringing user-friendly applications to the user's front-end system. The client-based station generally represents the type of graphical interface that is most comfortable to users. This gives the user a great deal of control over the timing and computer uses and gives department-level managers the ability to be responsive to their local needs.

When the applications are dispersed, there is an emphasis on centralizing corporate databases and many network management and utility functions. This enables management to maintain overall control of the total capital investment in computing and information systems and enables management to provide interoperability so that systems are tied together. At the same time, it relieves individual departments and divisions of much of the overhead of maintaining sophisticated computer-based facilities, but it enables them to choose just about any type of machine and interface they need to access data and information. There is a commitment, both by user organizations and vendors, to open and modular systems, which means that the user has greater choice