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Client/Server Computing

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Chapter

3

Overview of Client/Server Applications

A client/server application has three components: a client, a server, and a network. Each of these components has a hardware and a software component. Their interaction is illustrated in Figure 3.1.

3.1 Components of Client/Server Applications

Client/server computing uses a divide-and-conquer approach, as shown in Figure 3.2. Servers perform the routine, behind-the-scenes tasks. Clients, the front-ends, get the glory. To many users, the client is “the system.”

For most applications, this division of labor is straightforward. The data management software on the server is responsible for keeping the data “safe and sound.” The application itself deals with the customized procedural logic and the interaction with the user. The server doesn’t care what interface the client application uses. The server views clients in terms of connections, sessions, and requests.

Connections are established according to a communications protocol. But there is no single communications protocol. Communications channels can be synchronous or asynchronous, dictating whether a client can make more than one request at a time. The client/server model assumes a many-to-one relationship (many clients to one server). However, some organizations have applications where clients need to maintain concurrent connections with more than one server, which is a many-to-many relationship.

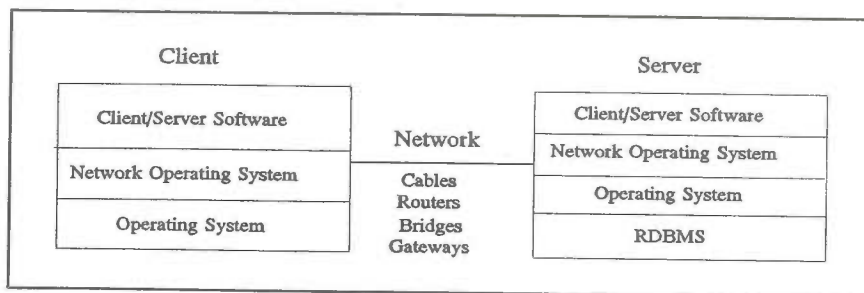


Figure 3.1 Components of client/server computing

3.1.1 The Client

The client hardware is the desktop machine that runs client software. It could be a micro or a workstation. The client hardware has to be robust enough to support the presentation requirements and the client-based processing of the application.

The client software formulates data requests and passes the requests to the network software. This software sends the requests to the server, accepts the results from the server and passes the results back to the client software. The client software may perform some application logic on the results of the request before passing it on to the presentation component of the software.

The presentation component produces the interface that the user views and interacts with. It is often, but not always, a graphical user interface. GUIs provide a graphic-oriented presentation front-end to applications and provide (or simulate) multitasking processing (the ability to run two or more applications at the same time). The major windowing environments are Windows from Microsoft, Presentation

Client Functions	Server Services
GUI	File, print, database server
Distributed application processing	Distributed application processing
Local application	E-mail
E-mail	Communications
Terminal emulation	Network management
	Resource management
	Configuration management

Figure 3.2 Client/server division of duties

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