

HRG Insight Thin Clients Are Here to Stay

Today there is much market activity regarding so-called "thin" clients, i.e., desktop or portable computers that obtain much or all of their software, data, and/or computing power from networked servers. Products such as IBM's Network Station computer and Citrix's WinFrame software are variations on this idea. Regardless of the technical differences in individual products, Harvard Research Group (HRG) believes that the thin client approach is a sound response to technical and economic fundamentals, and that thin clients can be expected to account for a substantial portion of user interfaces for the foreseeable future.

Actually, the thin client has been around for a while, being called the dumb terminal. The factors leading to its resurgence can best be understood from a historical perspective.

Once upon a time the corporate computer was time-shared. Dumb terminals connected users to the computer center, where the Information Systems (IS) department cared for the main frame behind glass walls. Requests for new applications were queued at the centrally budgeted IS resource, and it was not uncommon for an operating department to wait years for needed functionality.

Then the affordable minicomputer enabled operating departments to acquire their own computing resources and reduce their dependence on the mainframes and the IS department. The staff at IS became concerned that users was defecting, but still had plenty of backlog to keep them busy.

Later the commodity-priced desktop computer enabled individuals to find their own ways of being more productive, and the local area network (LAN) enabled them to share files and printers on the departmental minicomputer. The IS staff began to taste panic. They were at risk of becoming irrelevant. Worse, their budget might actually shrink.

But IS still had one unassailable asset: the corporate databases. Departments needed access to this information. Policy as well as sense dictated that the corporate data be updated from departmental information. With survival at stake, the IS staff found a way to cooperate with and even support the move to departmental computing: they advocated the client-server model. Recognizing that departmental and desktop computers were a permanent part of the landscape, IS offered to connect them to the corporate mainframes, for access to applications and databases. Those previously autonomous computers became clients of the central servers, and a whole sub-industry developed to support client-server application development and system management. Thus launched, the client-server paradigm expanded during the early 90's.

Today however, desktop and departmental computers have become complex beyond what merely intelligent users can manage while getting their jobs done. Upgrades to client-server applications often require new software on the clients. The job of installing upgrades to specialized and commodity software is made more difficult by additional programs and customizations installed by users, and by periodic hardware improvements needed for resource-guzzling software. The management of the vast numbers of client computers has become an administrative nightmare and a recognized high cost. IS has

plenty of work to do now, but has to spin a good tale to management to justify costs that were once hidden in departmental budgets.

In the face of this challenge it is tempting to think about a design known in the 80's as the "diskless workstation." What if all the software for a client were stored on a server, to be downloaded as needed? Then upgrades could be done centrally at greatly reduced support costs, and users would not be able to foul up system management with their own customizations. Of course the client computer today would not really be diskless. Windows requires a large disk file for memory swapping. To keep network traffic reasonable you'd want to keep Windows itself on the local disk. Upgrades to Windows would require a visit to the client computer, but that's better than upgrading all applications. Nevertheless one has to consider that 90's applications tend to be large, especially with help files and graphics. It's not obvious that the necessary megabytes can be moved over the network fast enough to give the users acceptable performance. In HRG's opinion the "diskless" client computer is not a clear win.

To minimize network traffic, it would make sense for processing to occur at the server – where the files are. What if the client computer had just enough power to run a display, mouse, and keyboard? What if all the other memory, processing, and storage were at a server, where they could be consolidated, shared, and centrally managed? Instead of a diskless computer we would have a "brainless" computer. Network traffic would be reduced to keystrokes, cursor positions, mouse clicks, and display updates. The client computer would now be a dumb terminal like those of old, albeit with a better display and a little more elaborate protocol to support modern user interfaces.

These nouveau dumb terminals are here today, more respectfully called thin clients. Physically, a thin client can range from a hand-held display linked to a network by radio, to a desktop computer with just enough resources to run a display and connect to a network. HRG considers Citrix Corp. to be a leader in software for this type of thin-client technology. Microsoft has recently agreed to support Citrix protocols.

A typical thin-client installation consists of a few servers providing resources to dozens of thin clients on a time-shared basis. In addition to ease of system management, reduced network loading, and reduced costs of the clients themselves, the clients are truly interchangeable. Since there are no user- or application-specific resources on the clients, a user can move from one to the other freely, even in the middle of a session. Just like in the good old days of time-sharing on dumb terminals!

HRG views the IS challenge now to be that of managing the department in a way that avoids the isolation so commonly experienced by users in the good old days. Hopefully everyone has learned how to do their jobs better by now.

Will the client-server model pass into the history books as just a stage in the evolution of computing? Harvard Research Group believes that for routine office applications this will indeed be so. However, Microsoft and others are hard at work on a new type of client called the NetPC. It will be a full computer, but with no floppies, no CD-ROM drives, and no expansion slots. It is designed to be connected to a network and managed centrally. Perhaps smart clients will be with us after all, as long as they think only the thoughts of the central management.

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