



## TECHNOLOGY STRATEGIES

### Another look at Exchange vs. Notes and Domino

By [Ron Herardian](#)

Lotus and Microsoft provide a variety of communication and collaboration tools that provide some overlapping functionality. However, these tools are very different in terms of integration at the desktop, at the server, and in terms of application development. The two vendors have different strategies for client, server, and development technology integration. While it is obvious that two different sets of products and development tools are made available by these two vendors, it may not be as apparent that these products and development tools represent totally different paradigms of client/server computing and of software development for collaborative computing.

The two sets of solutions offered by Lotus and Microsoft offer a different mixture of features and technologies and each one takes different approaches to technology integration. This article offers a broad comparison of applications and technologies and reaches the conclusion that Lotus Notes and Domino provide a more coherent and flexible solution than comparable Microsoft products within a groupware-oriented development environment. Lotus' better-integrated solution offers real-world advantages over Microsoft's product and development tool lineup in the collaboration and communication area.

### Client-side integration

On the surface, the best client-side integration story seems to be that of Microsoft. After all, they control the Windows OS, the dominant Microsoft Office suite of business applications, MAPI (the Windows standard for email integration). Plus, they provide a free Web browser and email client.

Partly due to the bundling of Outlook with Microsoft Office, many IT managers have assumed that Microsoft would automatically become the leader in communication and collaboration applications. A flood of free applications from Microsoft has reinforced that impression. However, a more careful analysis shows that Microsoft lacks a fully complete integration strategy for messaging, collaboration, intranet (Web) applications, security, and directory services; all of which are key components within an integrated messaging and groupware infrastructure.

One observation is that Microsoft provides a veritable flood of communication and collaboration tools either bundled with the Windows OS or as free add-ons. With Windows 98 and available for download, Microsoft gives away free the following items, and more:

- Microsoft Outlook email and calendaring client;
- the Internet Explorer browser with Outlook Express for Internet mail and news;
- Microsoft Chat, a text chat client;
- NetMeeting for IP-based text chat, voice, and video conferencing;
- a Personal Web Server and FrontPage Express which together enable users to make information on their workstations available on the Web;
- Dial-up networking client and server software providing remote access to computer networks.

At another level, there are also Microsoft technologies, such as Active X, that claim leadership in the standards area and that could indirectly shape the future of Web-based collaboration and e-commerce. It may seem surprising that any company or product line can compete with Microsoft's avalanche of free Internet-oriented communication and collaboration applications and technologies. This becomes even more seemingly apparent when considering the vast distribution channel that derives from piggybacking on top of Windows and linking

every user of Windows on the Internet to Microsoft's Web site. Nonetheless, Microsoft has yet to match the collaborative computing functionality offered by Lotus.

In my opinion, the reason why Microsoft has been unable to catch up with Lotus in the marketplace is that Microsoft's free client applications, while well-suited for ad-hoc departmental or small office information sharing, do not comprise a sweeping strategy for enterprise communication and collaboration. Many of the Microsoft tools are well-suited for personal computer users whose only network connection is the Internet. In my opinion, Microsoft's grab bag of Internet-oriented communication and collaboration tools do not qualify as groupware because they lack deep integration both at the desktop and at the server.

Microsoft's plan seems to be to provide seemingly countless applications with no consistent integration strategy outside of a common underlying OS. Lotus' client integration strategy appears to be the precise inverse. Rather than attempting to deliver every possible application and protocol, Lotus provides generic thin and thick client interfaces that work with many different server-based applications. The difference--and the power--of Domino is that all applications except the Notes client or browser reside on the server.

Lotus client strategy is much better for larger organizations because it gives customers the ability to build and deploy virtually unlimited applications throughout the Domino infrastructure worrying about what specific software is installed on the PC desktop. While the Notes client itself may have a substantial footprint at the workstation, it is ultimately economical because the bulk of applications and data normally remain at the server. At the same time, applications developed within the Notes and Domino framework can be tightly integrated with each other and multiple applications can seamlessly access data within the Domino server. The power of Notes and Domino stems from the client/server model of multiple server-based applications with one client, rather than the typical Microsoft model of multiple locally installed client applications (and multiple servers).

### **Server-side integration**

To approach Microsoft's communication and collaboration solution for the corporate enterprise, as differentiated from home and academic users, it is necessary to strip away the countless client-side bells and whistles and to examine Microsoft's Back Office server products. These include Windows NT Server, Microsoft Exchange Server, Internet Information Server (IIS), and Microsoft Certificate Server. Microsoft Exchange Server is of course the bulwark of Microsoft's competitive messaging and groupware strategy.

The features and administration capabilities of Microsoft Exchange are well integrated within the product and the Exchange Server itself is tightly integrated with Windows NT Server and with the NT directory and NT domain structure. The Microsoft Exchange Server provides email, news (discussions), calendaring, Web access to email, and other information sharing tools such as public folders that can be replicated across servers. Like Domino, Exchange 5.5 offers a full suite of Internet protocols to support access from any standards-based client application. The access protocols include HTTP, SMTP, POP3, IMAP4, and LDAP access to directory information.

Exchange Server implements secret key encryption by default and, historically, has not been well integrated with public key security technology which has become the standard of choice. Prior to version 5.5 SP1, Exchange offered only a crude interface with the Microsoft Key Management Server. Current versions of Exchange interface with the Microsoft Certificate Server but this integration is not comparable to the tight integration of digital certificates (Notes IDs) and directory services (the Name and Address Book) in Domino--where a single administrative interface manages both digital certificates and directory information. Similarly, Microsoft requires multiple servers to provide this functionality while Domino is a complete solution in itself.

Exchange, of course, supports only Windows NT, which sharply limits its power and scalability as compared with Lotus' cross-platform server strategy. In theory, this goes a long way to explain why Microsoft has been unable to gain leadership in the groupware market despite their strong client application lineup. Outlook Express does not use the MAPI interface and is thus not extensible within Microsoft's own development framework.

Microsoft has linked the success of Exchange to that of Windows NT Server and this somewhat constrains the applicability of Exchange as a solution to very large companies because it drives up the overall cost. Domino, on the other hand, runs on all the major implementations of UNIX and thus has access to cost-effective high-performance hardware platforms, such as Sun and HP servers, which far outperform the fastest Intel-based servers.

## Development environment

The relatively weak integration of Exchange Server with Certificate Server and again of Exchange Server with Web applications generally makes developing groupware applications in the Back Office environment somewhat more complex than developing Notes applications. At the same time, while Microsoft offers a wide range of industrial-strength development tools, Exchange Server does not represent a development environment comparable to Lotus Notes and Domino. In many cases, programming applications that integrate with Exchange require more general programming knowledge and familiarity with Microsoft's general-purpose development tools. This is partly because the Microsoft programming paradigm for Exchange is to employ existing general purpose programming tools to reach into Exchange through a set of APIs. The Notes and Domino programming paradigm is exactly the inverse.

The Notes programming environment provides a rich set of programming functionality inside Notes and Domino while extending this groupware-oriented programming facility outward to external, general-purpose programming tools and a variety of APIs.

At the time that Iris Associates developed Notes, Lotus and other companies faced the growing challenge of Microsoft's secret monopoly: software development tools. Lotus' strategy was to make Notes a development platform so that cross-platform applications could be developed to run within the Notes client and server--rather than directly on top of the workstation or server OS.

Essentially, this allowed one programming environment to be used for all client platforms while at the same time taking application development entirely away from the OS vendor. Interestingly, Lotus cross-platform application development technology--achieved through server-based applications interacting with a thick client--can be seen as an early precursor of Java, which some claim to be perhaps the single greatest threat to Microsoft's OS monopoly. The Domino programming paradigm moves both applications and development into an increasingly open and extensible client/server computing environment.

Although Exchange is marketed as a groupware development platform, it offers few built-in capabilities to work with documents. Microsoft's Routing Objects technology was implemented only recently while Lotus Notes and Domino represent five or more years of document-savvy technology evolution. The lack of a document-centric development paradigm in Exchange underscores the lack of maturity of this platform in the groupware area.

## Conclusions

Lotus' client integration strategy leverages the strength of the Domino server and development environment as well as the Web. In practical terms this could mean that there are fewer visits to the desktop to deploy applications, that applications can be managed from the server, and that an overall a conservation of workstation resources may be achieved as compared with an environment where there are multiple client-side applications.

Lotus' server-side approach to integration strategy provides server-side applications and unifies security, directory services, and intranet application technologies. Broadly speaking, Exchange is a less mature, messaging-centric solution with limited Web functionality while Domino is a mature, collaboration-centric solution with extensive Web capabilities. At the same time, Domino provides a single, consistent administration framework. While Microsoft Exchange Server is a strong product for messaging and simple collaboration, Exchange does not provide the degree of technological or administrative integration that Lotus Notes and Domino deliver.

While Microsoft offers a broad range of development tools and a plethora of APIs, Microsoft does not offer a single groupware-oriented development environment for both Exchange Server and Web or Intranet applications. While Microsoft bends its general-purpose development tools towards Exchange and the Web, Lotus offers a specialized but rich and extensible groupware and Web application programming environment directly within Notes and Domino.

Overall, the integration of client, server, and development technologies in Lotus Notes and Domino is markedly more advanced than the comparative jumble of tools and technologies which Microsoft positions in the groupware marketplace. Despite a strong year for Exchange in 1998, Lotus remains far ahead of Microsoft when it comes integrated communication and collaboration technologies.

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### **Product availability and resources**

Microsoft's central Exchange resource pages are at <http://www.microsoft.com/exchange/>.

Of course, Lotus Notes and Domino information is just a click away at <http://www.lotus.com>.

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