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DEC 27 1996

Federal Communications Commission
Office of Secretary

December 27, 1996

Mr. William F. Caton
Acting Secretary
Federal Communications Commission
Washington, DC 20554

Re: *Ex Parte* - Tariff Streamlining (CC Docket No. 96-187)

Dear Mr. Caton:

This is to advise that Pat Day of BellSouth, Dave Powell and I from GTE met with Judy Nitsche of the Competitive Pricing Division of the Common Carrier Bureau today to provide a status report of electronic filing capabilities of GTE and several of the Regional Bell Operating Companies. The attached proposal formed the basis of the discussion.

Also attached are several documents which describe the capabilities of Lotus Domino, Lotus Notes and Adobe Acrobat.

Two copies of this notice are filed in accordance with Section 1.1206(a)(1) of the Commission's Rules.

Sincerely,

F. G. Maxson
Director - Regulatory Affairs

C: Judy Nitsche

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**F.C.C.
ELECTRONIC TARIFF FILING
PROPOSAL**

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DEC 27 1996

Federal Communications Commission
Office of Secretary

INTRODUCTION

On September 6, 1996, the Federal Communications Commission (FCC) released a Notice of Proposed Rulemaking (NPRM), CC Docket No. 96-187, seeking comment regarding the electronic filing of tariffs, oppositions and replies electronically. In addition, the NPRM seeks comment on whether the Commission or the providing carrier has the responsibility of posting, managing and maintaining the electronic filings. Including the Regional Bell Operating Companies (RBOCs) and GTE, twenty-seven companies filed responses to the NPRM, with the majority supporting electronic filings.

This proposal is being submitted to facilitate an order by the Commission which meets the needs of the Commission and the Local Exchange Carriers. Without coordination, an electronic filing system might be mandated without consideration of technical and financial feasibility.

PURPOSE

The objective of this proposal is to recommend the method by which companies will file documentation electronically, in lieu of paper, including tariff filings with support material, opposition, replies and applications for special permission.

This proposal will also suggest methods for providing electronic access to a company's effective tariffs by the general public. This proposal must allow for

the greatest flexibility among filing companies while keeping the Commission's responsibility to a minimum.

ELECTRONIC FILING

Companies will submit their FCC filing documentation, e.g., tariff transmittals, support and replies to oppositions, etc., via Internet electronic mail (SMTP). The individual filing components will be converted to Adobe® Portable Document Format (PDF) by the filing company and attached to the e-mail message. We would propose the use of mail server type products, such as Lotus® Notes and Domino for e-mail processing, storage and Internet presentation. These, in conjunction with Adobe® PDF should allow filing companies to do electronic filings with little or no change to their existing tariff production systems. This capability must be assured so that the filing companies may continue to process their existing filing packages using the computer systems, (e.g., Macintosh, DOS, Windows 95, etc. and application software programs, such as Word Perfect®, Microsoft® Word, Lotus® and Adobe®, etc.) that they either use today or might use in the future.

Filings which require additional components such as spread sheet files in their native format may also be attached to the filing e-mail message. These files will be downloaded, in the existing allowable format, by those individuals requiring the information. A copy will be within the filing document that would be placed on the Commission's Web Site.

Filings sent to the Commission's system would automatically receive notification of delivery. Companies that submit supporting data under confidential cover will identify those components which will be placed in databases only accessible by Commission personnel.

Oppositions and replies to oppositions may be electronically filed with the Commission and interested parties in the same manner as used for tariff filings.

EFFECTIVE TARIFFS

Currently, GTE and some of the RBOCs provide limited access to their tariffs electronically within their own companies. With minimal changes, these companies can allow the general public access to these tariffs by moving or allowing access to a Web server on the Internet. This arrangement would keep the responsibility of maintaining these tariffs on the respective company. In addition, the Commission's Internet Web server would not be required to store the effective tariff data but will contain links to the filing companies' effective tariff information. Companies which do not have the capability or do not wish to maintain an Internet Web server, may arrange for their effective tariffs to be placed on the Commission's Web Site.

When tariff pages become effective, the filing company will replace their existing effective tariff page(s) at their Web Site by the next business day.

CONCLUSION

This proposal provides an efficient, low cost method for handling both the electronic filing process and the electronic access to the filing company's effective tariffs. Because the companies will be filing Adobe® Portable Document Format files into Lotus® Notes and Domino programs on the Commission's Internet Web server, they will not be required to convert their existing mechanized filing process into a set standard. In addition, this arrangement will allow the public to receive the information without the requirement of having the same software packages as the software from which the information was first created.

Electronic access to the filing company's effective tariff keeps the responsibility of maintaining the information on the filing company, without involving the Commission's Webmaster. Companies which do not have the capability or do not wish to maintain an Internet Web server, may arrange for their effective tariffs to be placed on the Commission's Web Site for electronic access availability.

INFO WORLD

The Voice of Client/Server in the Enterprise

SCO ties NCs to Unix

■ Tarantella serves apps to thin clients

By Judy DeMocker

THE SANTA CRUZ OPERATION will enter the systems management field this week when it announces technology for Unix servers that will distribute applications to network computers (NCs).

Company officials said the technology, code-named Tarantella, will

allow network administrators to distribute Windows, X-Windows, and character-based applications across multiple Unix servers, which can then be accessed by any Java-enabled Web browser.

In addition to NCs, these servers can support Windows PCs and

► SCO page 24

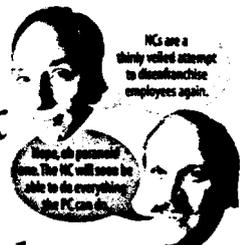
DIGITAL

Digital aims for leadership
 Digital's current strategy is meant to focus the company toward leadership in high-growth core competencies, as opposed to being a broad player in all areas. Targeted market segments.

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NC showdown: Lewis and Petreley square off in the great Network Computer debate. 76 & 118



Custom apps, more or less



Tailor made: Why C-Cube chose a custom client/server fit instead of buying its apps off the rack. 80

Hand-held OS reaches out

■ Microsoft expands Windows CE's connectivity, platforms

By Ephraim Schwartz and Andy Santoni

ALTHOUGH THE DUST is still settling on the Windows CE hand-held platform, Microsoft is already working on a more robust version of the OS, as well as upgrades to Pocket Internet Explorer, its browser for mobile devices that comes with Windows CE.

Version 2 of the Pocket Internet

Explorer will include support for ActiveX as well as Java applets, according to Keith Amodt, OEM product manager in Microsoft's consumer appliance group. Version 2 will also support Microsoft's Java Virtual Machine implementation and include the Java class libraries, he said.

"We have them running in the lab [on the existing Windows CE], but

not with Pocket Internet Explorer," Amodt said.

The Java class libraries take 1MB, Amodt explained, so the lab has been unable to get them to run with Microsoft's Pocket Explorer browser yet.

Other enhancements are expected as well.

"If you look at what's on [Explorer] ► WINDOWS CE page 24

Internet World

Vendors close gap between ActiveX, Java

By Ted Smalley Bowen and Lynda Radosevich

HOPING TO GIVE customers the tools needed to bridge rival Web architectures from Sun Microsystems and Microsoft, tool vendors this week at Internet World in New York will unveil myriad products that span the tangle of languages, component models, and platforms that now confronts developers.

Microsoft and Sun are pursuing rival component strategies, which means developers are looking for tools that will allow them to generate both ActiveX and Java code.

"Developers can't commit up front entirely to being in one environment or another," said Stan Dolberg, an analyst with Forrester Research, a market research company in Cambridge, Mass. "When you create applications that use either or both, you need mechanisms in the development environment to provide at least some baseline interoperability between the two."

To help developers survive in a ► TOOLS page 24

PRODUCT COMPARISON

As vendors vie for the workgroup grail, will the users' price be improved productivity?

CO-OPERATION

Intranets meet groupware

E

PRODUCT COMPARISON

Intraware solutions

Notes wins the first bout

It's a new battle to help workgroups work better. Notes and Exchange have long been wrestling over the groupware market. But now, with the Internet, people work differently and SuiteSpot has changed the war.

COMPARED

Lotus Notes,
Release 4.1
Lotus Development Corp.

Microsoft
Exchange Server
4.0
Microsoft Corp.

SuiteSpot
Netscape
Communications Corp.

UPCOMING

Intraware solutions:

Part Two

Will these vendors keep their promises for the next generation of solutions? We'll find out when we test Intraware, Part Two, in an upcoming issue.

Intraware: \in-trä-wer\ *noun* 1 a: A solution that combines the World Wide Web's ease with groupware's power to enable communication, collaboration, and cohesion among workers b: intranet plus groupware 2: The merging of demand for intranets with a 7-year-old market for groupware.

Face it: You're not asking for much. Your business users need to talk to one another and know what each is doing while doing it — without having to jump through hoops. They want Microsoft Word, for instance, to tell them when another team member is already composing a recap of Thursday's sales meeting. They want to revise the document so everybody knows about everyone else's changes before implementing their own. And they want to discuss those revisions online and access data on the Web to support their positions — maybe even embed a link to a URL.

But that's not all. They want all this information-sharing to happen automatically. They don't want to have to load a separate communications application — they want it integrated, built into the tools they already use. It's the software's job — not theirs — to track who has which file version when. But watch it: As much as they want the software to coordinate, users won't be enslaved to some rigid workflow paradigm that leaves them feeling as if they work for the application instead of the other way around. They just want an easy way, as a team, to get work done. Is this too much to ask?

INTRANETS VS. GROUPWARE. That's what we ventured to find out. You can't go anywhere without hearing about how intranets — Web sites set up behind a firewall and accessible only to those inside a company — are boosting productivity and enhancing communication. How do intranets compare with groupware, a category defined and developed by Lotus when Notes claimed the same benefits in 1989? Does a browser interface on the client lead to easier collaboration and more productivity than a proprietary interface? And what's guarding the data on the back end?

We compared the top contenders in this "intraware" market. The groupware granddaddy — Lotus Notes, Release 4.1 — includes the InterNotes Web Publisher for the server, the Web Navigator browser, the Outside/In viewer, and the Notes mail client. Microsoft Exchange Server 4.0 comes with the Exchange Client (which works with browsers but doesn't include one) and Microsoft Schedule+. The newest adversary is Netscape's SuiteSpot family of servers: Enterprise Server 2.0 with Administration Server; Mail Server 2.0; News Server 2.0; LiveWire Pro 1.0, which includes the Informix relational database; and the Navigator Gold 2.02 client.

Lotus Notes was the old general, and experience breeds success in this round of the war. Notes offers a robust back-end database with a flexible client, an improved interface, and excellent security. SuiteSpot's strengths are its open architecture for developing applications



and its Web-centric approach to collaboration, but its chink is weak messaging. And although Exchange is great for Windows NT shops, it lacks strong groupware tools and Web capabilities, making this version the least intrawarelike solution so far.

As we found flaws with these solutions, the vendors were introducing fixes in beta products that were unavailable for testing. For example, we wanted to include Domino 4.5 Server Powered by Notes, but it isn't scheduled to ship until mid-December. And Novell's GroupWise 5.0 shipped in October, after our testing was complete. For previews of both products, see page 93. Microsoft's Exchange Server 4.5 promises application development tools and Internet compatibility, but it won't ship until the first quarter of 1997. Microsoft Outlook is the new client for Exchange Server, coming with Office 97 in mid-January; it integrates the mail client, Schedule+, and its own scripting language. And although Netscape has filled some gaps with its just-released Proxy, Catalog, and Directory Servers, SuiteSpot 3.0 is coming in January. (See page 93.) We'll also send dispatches from the front as the battles heat up in the months ahead.

WHO'S THE GROUP? For our testing, we focused on the concerns of IS managers administering the solutions as well as the users demanding new tools every day — because if you can't please both, your workgroup won't work.

We started with configuration, because IS managers need to consider the company's current investments in its environment. Is there a contingent of Unix users to support? Is there internal warfare over which browsers to implement?

And if the idea is for users to share information, then IS' headache is how to secure confidential data to protect it from intruders inside and outside the company. We tested administration tasks such as replication, the process of creating new users and servers, troubleshooting tools, and maintenance.

Intraware's advantage is document storage, which allows you to centralize information that doesn't change, such as human resources policies. But who controls the content of a stored document? How much maintenance is needed to keep the employee database up to date, and is that done by the HR executive or the IS programmer? Exchange lets you drag folders to add them to a public folder.

For messaging, we tested how e-mail and databases let users discuss issues, maintain threads, and track revisions. We also considered whether the interface was a place where we could work for several hours. Can users create forms when they need to, or do they need to rely on a programmer in a separate department to make their jobs easier? Notes lets you see forms as you build them; to add more than rudimentary capabilities to forms in Exchange, you need to know Visual Basic.

IS managers have to constantly ask: "What do we have, and where are we going?" For interoperability, we considered what standards were supported as well as the resources needed. Most IS managers have to consider current e-mail as well as access to databases and the Internet — so we did, too.

People come and go; workgroups change all the time — and so will a good solution that supports them. We used the application development tools to see how flexible the solutions were. Is it customizable enough to create and maintain applications as they are needed? SuiteSpot's LiveWire Pro lets you use C++ and Java. Notes uses LotusScript but lets you see what you're building. Exchange traps you into a user interface that only a Visual Basic programmer could love.

Finally, this is one of our first comparisons to evaluate cost of ownership rather than price, taking into consideration the expense of installing, training, deploying, and maintaining these solutions.

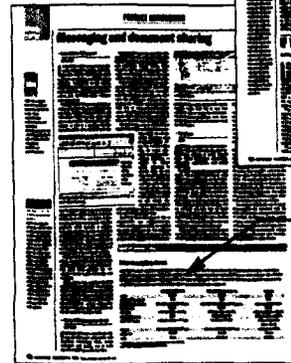
READY, AIM, COLLABORATE. The benefits of intraware are difficult to test in the confines of a lab, no matter how realistic our tests are. So we took two of these solutions on the road to let users evaluate products that the vendors created based on our specifications. Read about the results on page 94.

Overall, these products have taken a big step forward to enable collaboration and information sharing, and we have the Internet to thank for that. In the rush to capture the Web's appeal, vendors have delivered messaging, document sharing, and groupware tools that go farther than pure groupware solutions before.

But stayed tuned. This is the first shot fired in what looks to be an interesting war for mind share and user loyalty. All the companies will be watching one another closely to borrow strategies and match competition. But no matter how battle-weary the vendors end up, the result will likely be better solutions for users who need to collaborate.

A guide to this comparison

094 If you build it, they will test: Readers got to try out the help desk applications that Lotus and Netscape designed for our road testing.



098 Money, money, money: We scored the costs of the solutions balanced with the costs for the training and maintenance involved.



Contents

- 92 Report Card
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- 93 New recruits
- 94 Document storage
- 94 Road testing solutions
- 98 Messaging and document sharing
- 98 Cost of ownership

Electric extras

See these articles online at <http://www.infoworld.com/cgi-bin/displayTC.pl?/pcsb120996.htm>.

- How we tested
- Setup
- Administration
- Interoperability
- Application development

RELATED ARTICLES

Exchange gains clients, Internet Oct. 27, page 91

The beta version of Microsoft's Exchange Server, Version 4.5, improves support for Web browsers and mail, but Outlook doesn't solve all of its application development problems.

Outlook presents a great picture Aug. 26, page 91 Microsoft's beta version of its desktop information manager is Messaging API-compliant and manages e-mail, journals, and calendars.

Results at a glance

➤ Continued from page 1
masters all three — but Notes is the closest so far. SuiteSpot is a close second and only needs more robust messaging, and Exchange Server needs improved groupware and intranet tools.

If the vendors live up to their plans for their next releases, we'll have an evenly matched battle raging soon.

However, these solutions already have good foundations to help teams work better.

Lotus Notes, Release 4.1, bases everything on a file structure that integrates all the security, administration, and replication. With an improved interface and templates, users can easily set up workflow tasks and databases. There are agents to organize your mail, many options for viewing and customizing documents, and formatting features to make composing documents as easy as using a word processor. And users don't have to leave the Notes environment to access the World Wide Web; they can use the Web Navigator client with the InterNotes Web Publisher server.

What's missing, however, are file-locking features to protect a document, so if two or more users try to save changes to the same file at the same time, they will get replication conflicts. Also, although you can add the Organizer module, we look forward to the time when calendaring and group scheduling tasks are integrated into Notes.

SuiteSpot's collaboration is terrific because you can get access to it from any browser on any desktop. Plus, people already know the interface, so they don't

The Score

7.9

Lotus Notes, Release 4.1

7.8

SuiteSpot

6.4

Microsoft Exchange Server 4.0

have to learn a new one. The Navigator Gold Editor has a WYSIWYG editor for saving files as HTML, so the editor looks like you're editing in a word processor, but you're actually generating HTML code. You can easily design Web pages to share documents and collaborate on Web pages. Revision controls are reliable, and Enterprise Server has file-locking to protect changes from being overwritten. There is also a trail to track the journey of a document among editors.

You can simply post a discussion to newsgroups and you can follow threaded conversations reading the newsgroup on the News Server. You can even post your HTML file for people's comments. You can replicate one News Server to another News Server and set up which newsgroups replicate on which servers. (SuiteSpot replicates the changed documents in a newsgroup, but we preferred Notes' field-level replication, which replicates only the changes.)

SuiteSpot fell short on revision controls for other documents types; currently, you can read a spreadsheet, but you can't edit it very easily. Also, the

e-mail could be simpler to use. Currently, the mail client is simple POP3, so the server keeps all the mail until the client asks for it. Then the server dumps the mail on the client and deletes the mail in the server. The IMAP-4 protocol keeps mail on the server, so it doesn't clog the client. SuiteSpot supports IMAP-4 on the server, but not the client, so the capabilities aren't yet realized. Stay tuned for the next release, though.

(Notes and Exchange store messages on the server and share the same concept as IMAP-4.)

Microsoft Exchange Server 4.0 does not make too many tasks easier for workgroups. For one thing, it's slow, making it tedious to use. Workgroups won't use something that results in more work than productivity. It's also difficult to set up workflow tasks (compared with the simplicity of Notes' templates), and you have to develop tasks from the ground up. Exchange is based on a back-end messaging foundation — the server software is pretty robust, but the client isn't. Microsoft may have left developing a good client to third parties, but clearly the other solutions have better interfaces.

Exchange also lets you filter messages and handle them the way you want on the client in the same way that Notes does. Schedule+ is bundled for group scheduling, but when you use it, you access two programs to do the job of one — this will be fixed in Outlook, coming in the next version. But by then, we hope things move faster so people can work faster, too.

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WHAT IS DOMINO?

HOW DOES DOMINO WORK?

DOWNLOAD DOMINO

DOMINO HOMEPAGE

It's a Web server. It lets anyone with a Web browser have access to the information contained on Notes. Domino combines the power and security of Notes with the reach and flexibility of the Internet. The Web is all about e-mail and groupware and Lotus invented the category.

Why should I use the Internet for business?

Millions of potential customers and suppliers have cheap and easy access to the Web via a local phone call from anywhere in the world.

What are the key features of Domino?

- Domino is a database that lets you manage the pages and content on your site, not just store them.
- Domino is a directory that helps you keep track of who is who. Particularly useful when assigning tasks based on input or mere browsing.
- Domino is a security system. You control who sees which pages and what they can do with them.
- Domino is an e-mail system. Particularly handy because a lot of what happens on the Web needs to be sent to the right people at the right time. For instance, when an urgent client inquiry needs to be answered by an account rep instead of the Webmaster.
- Domino is a workflow system that helps you keep an eye on what's going on. Like when the same customer has called eight times in three days.
- Domino is an efficient Web-authoring tool. Content authors can use any browser to create, edit and maintain their own Web pages -- ensuring your Web site has the most up-to-date information.
- Domino is standards-based. You can use any content, application development or e-mail tool.

What will Domino allow my staff to do?

Domino enables every worker in your company, whether mobile or on-site, to reach your Notes server by using an ordinary Web browser via a local phone call.

Your IS manager can use the Web to build an open, modular company communications system (or Intranet) and build it on a proven system that operates across all major computing platforms.

With Domino, your staff can act on information, not just read it. Its graphical interface reduces tedious links so sites are easier to navigate. It automates work flow processes like scheduling, lead generation, resume tracking and customer service.

What else can my staff do?

- Set up discussion groups around the world
- Send and receive messages
- Talk to suppliers
- Access inventory data in real-time
- Track orders
- Read the latest message from the president
- Scrutinize the annual report
- Review an ad campaign
- Create, edit and delete documents
- Search a database and look at its contents
- Manage entire projects
- Create interactive publishing
- Automatically maintain a user/resource directory

Do I have to hire someone to get Domino up and running?

No. Anyone in your company who can do word processing can author the site. With Domino, you can create a Web site or intranet application that would once take weeks or months of programming in as little as a day. It's an easy point-and-click approach to establishing and managing your Web site.

Domino provides everything you need to build a Web site including a page management database, a full-text search engine with automatic indexing, a threaded discussion template, rapid application development forms, a registration template and directory service for secure Web client access.

What about security?

Domino lets you use Notes to easily build, maintain and create a Web site with different layers of access. Example: a senior manager can review the entire salary structure of his group, while his group only has access to the company's benefits package.

Once created, Domino automatically maintains an access control list. Web users are assigned a role. When they go to open a database they'll need a

password. Domino is designed with multiple security layers to separate what people can see from what people can do. You control who has access privileges without ever compromising the security of the server.

What about my current investment in technology?

Domino transforms Lotus Notes into a Web server. No need to buy additional hardware or invest time and energy rewriting programs and applications. Domino converts any document you've created in Notes to a Web-ready HTML document on the fly. For example, your marketing director in North America can edit an existing advertising strategy and post it on the Web, so all the marketing directors in Europe will have access to it.

What about my bottom line?

Doing business on the Web reduces all sorts of overhead costs. Suppliers, vendors, buyers, can interact more quickly and efficiently with your people. The security features of Domino lets you keep the bad guys out and the good guys in.

When, where, how much?

Domino 1.0 is shipping today. All customers and prospects worldwide may download the shipping version or current Beta versions of Domino through this Web site. Click on Download Domino on this screen or go back to the Home Page.

Domino is included in the price of the Notes 4.5 server.

▶ **HOW DOES DOMINO WORK?**

▶ **DOWNLOAD DOMINO**

▶ **DOMINO HOMEPAGE**

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▶ HOW DOES DOMINO WORK ?

WHAT IS DOMINO?

DOMINO HOMEPAGE

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It's a Web server that converts a Notes database into an open system that can be used and accessed from any Internet browser. Domino leverages the power and security of Notes with the reach and flexibility of the Web.

What kinds of Internet/Intranet applications can I build with Domino?

Domino leverages Lotus Notes, transforming it into an interactive Web application server. Domino provides businesses and organizations the ability to rapidly develop a broad range of business applications for the Internet and intranets. Some examples of applications are customer service sales automation with lead generation and tracking; HR benefits program information and sign-up; threaded discussions for internal teams or for communities of customers.

Which Internet standards, protocols and functions does Domino support?

Domino leverages the following Internet standards to support interaction between a Notes server and Web client:

HTTP: Includes a full implementation of the HTTP protocol to serve Notes as well as HTML documents in the files system to Web clients.

HTML: Supports version HTML 3.2. Renders each object stored in a Notes database into HTML at the time that object is requested by a Web client.

URL: Supports a URL syntax for direct addressing of objects stored in a Notes database, in addition to file system based URLs.

CGI: Contains full support for CGI. Existing Web site applications can continue to be served by Domino.

MIME: Supports the configurations of MIME-type mapping of data and file objects stored on the server.

“Domino provides such thorough access to Notes functions from a web browser that it earned Notes a higher Suitability to Task rating for Internet INTEGRATION than Netscape's SuiteSpot.”

- PC MAGAZINE 10/96

Can I use Java with Domino?

Yes. You may plug in different technologies for creating dynamic pages. For example, Javascript is treated by Domino just as HTML is and served directly to the Web client.

Java apps can be referenced from any page in the Web site from either the file system or the Notes object store. As a result, any Java development environment can be used in conjunction with Domino. Domino can also be used in conjunction with streaming audio and video servers. Future support includes CGI replacement technologies and server APIs (fast CGI, ISAPI, NSAPI).

What about security?

Domino extends Notes Access Control to Web users. Web users may be listed in the Notes Name and Address book. In each database, Web users may be added to the access control list and assigned a role. When Web users go to open the database they will be asked for a password.

The Web user's access to functionality and information, down to the field level, is then governed by predefined roles set in the Notes Access Control List (ACL). Domino also supports SSL for server authentication and for the encryption of data transmitted in a secure session.

By combining Basic Web Authentications, SSL, and Notes access control, Domino provides the best of Web security available through Web clients today.

Along with several other applications shipping with Domino, a registration application will automate the request and addition of new users to the Name and Address book and access control lists for particular databases.

Can I use my existing Web server with Domino?

Yes, on two separate machines. For instance, use your existing Web server to serve out static pages (with Notes and InterNotes Web Publisher managing the content) and Domino to serve customized, interactive applications. (Domino may serve both Notes data and HTML documents from the file system.) You can also create links to your Domino applications to pages on any Web server.

What is the relation between Domino and the InterNotes Web Publisher?

Domino is the next generation technology designed to extend the powerful application development facilities of Notes to natively support the open networking environment of Internet standards and protocols. Domino is a Web server that's integrated into the Notes server.

Domino and InterNotes Web Publisher are designed

with the same goal in mind: to provide Web client access to Notes data and applications. However, they accomplish this goal via different architectural models and therefore different feature sets.

Which operating systems will run Domino?

NT, Solaris, AIX, HP/UX.

What are the software/hardware requirements of Domino?

Domino requires a Notes Release 4 Server and IP connection. Domino has the same hardware and OS requirements as the Notes server. For example, on NT, Domino requires NT Server 3.51, 48 MB RAM, 500 MB hard disk.

When, where, how much?

Domino Beta is available today. All customers and prospects worldwide may download Domino Beta through this Web site. Click on Download Domino on this screen or go back to the Home Page.

Domino is included in the price of the Notes 4.5 server.

- ▶ **WHAT IS DOMINO?**
- ▶ **DOWNLOAD DOMINO**
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- ▼ [Introduction](#)
- ▼ [The External Window Handler Plug-in](#)
- ▼ [Page-at-a-Time Downloading](#)
- ▼ [Integration Considerations](#)

Adobe(R) Acrobat(R) 3.0 Technology A Mini-White Paper for Developers

Introduction

The Acrobat 3.0 Reader provides an Interapplication Communication (IAC) interface designed for integrating the Acrobat Viewer into environments where existing applications, such as World Wide Web browsers, permit viewing PDF files in-line. The IAC interface provides two main capabilities:

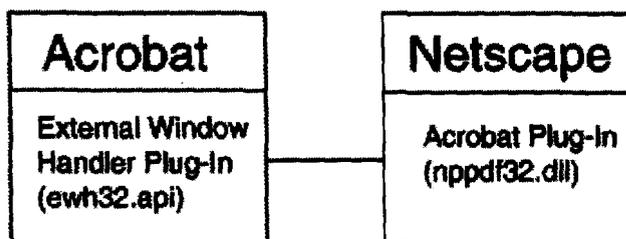
- It allows the Acrobat Viewer to render and manage a live PDF document in the window of another application (such as a Web browser). All of the normal Acrobat Viewer capabilities such as document scrolling, hypertext links, annotations, and an optional Acrobat toolbar are available in the calling application's window.
- It allows the calling application to supply the Acrobat Viewer with an interface for reading PDF files from arbitrary data sources such as Web servers.

In a typical scenario, a Web browser sends an IAC message to the Acrobat Viewer. The message specifies a handle to the window in which the document will be displayed and a handle to a stream from which the Acrobat Viewer can read the PDF file's data. The Acrobat Viewer then sends an IAC message back to the Web browser to request to read bytes from the stream. The Web browser sends the requested bytes to the Acrobat Viewer, which then displays the document in the application's window.

The IAC mechanism is platform-dependent. It uses shared memory on the Macintosh(R) and Windows(R) platforms. Event handling is also platform-dependent; the Acrobat Viewer can get events directly from the window handle on the Windows platform, while events must be explicitly passed to the Acrobat Viewer through the IAC interface on the Macintosh platform.

The External Window Handler Plug-in

The Acrobat 3.0 Reader includes a new Acrobat Viewer plug-in called the External Window Handler plug-in, which implements the Acrobat Viewer's IAC interface. It is not compatible with previous versions of the Acrobat Viewer (versions 2.1 and earlier). The External Window Handler supports simultaneous rendering in multiple windows from one or more calling applications.



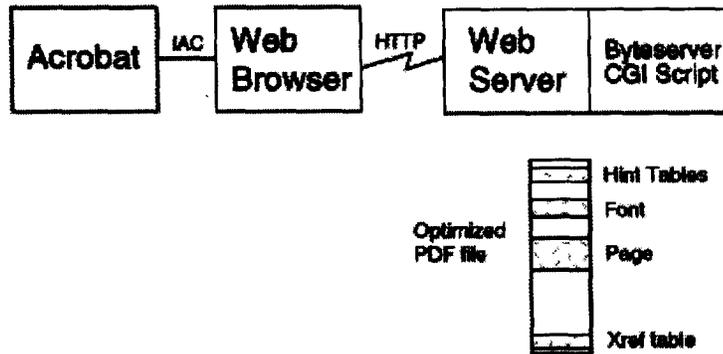
In the case of the Acrobat integration with Netscape(TM) Navigator(TM) 2.0 browser, the browser communicates with the Acrobat External Window Handler plug-in (called ewh32.api in Windows 95) through a Netscape plug-in (called nppdf32.dll in Windows 95).

Page-at-a-Time Downloading

The Adobe Portable Document Format (PDF) used by the Acrobat products is capable of representing rich electronic documents that include formatted text, line art and scanned images. PDF documents can be thousands of pages long and have built-in navigation aids such as document-specific bookmarks and page thumbnails. PDF files can include embedded fonts to allow the look of an electronic document to be precisely replicated on different computer systems. Objects such as fonts can be shared across multiple pages in a PDF document. The Acrobat Viewer needs to be able to randomly access the PDF file to read the resources that are required to render a given page. To support this, PDF files have an internal cross-reference table that specifies the locations of every object in the PDF file.

To provide good performance on the Web, the Viewer must download and view one page of a PDF file at a time, rather than requiring the entire file (including fonts and images) to be downloaded before any of it can be viewed. This is addressed by the Acrobat 3.0 Viewer in conjunction with an appropriate Web browser and Web server. The Web browser must support a proposed HTTP extension for specifying byte ranges of a file to be downloaded, and the Web server must support byte range downloading using a CGI script or other mechanism. Ari Luotonen from Netscape and John Franks from Northwestern University have proposed an extension to HTTP in an IETF Internet-Draft: Byte Ranges With HTTP URLs. This extension allows a Web

browser to request portions of a file specified by byte ranges.



To provide optimal page-at-a-time viewing, PDF files must be optimized by Acrobat Exchange(R). Optimization adds hint tables to the PDF file and restructures it for maximum compression. The Acrobat 3.0 Viewer uses these hint tables to make smart requests of the Web browser, requesting only the bytes required to view the next page. The Acrobat Viewer can specify the complete list of byteranges required for a given page in a single call to the Web browser. This allows the Web browser to retrieve the bytes for an entire page in a single HTTP connection with the Web server. As each byterange is returned in a multipart MIME, those bytes should be pushed at Acrobat so it can begin incrementally drawing the page as more bytes are arriving.

In addition, the optimized PDF file is structured so that the first page can begin displaying immediately as a result of the initial read. Because of this, the initial byterange request that the Acrobat Viewer makes of the Web browser is for the entire file. As the user is viewing page one of the file, the rest of the document is being downloaded and the Acrobat Viewer is caching the bytes being passed to the Acrobat Viewer so that it can begin. When the user requests a different page of the document, the first connection is broken through a call to the Web browser and a new read is issued for the byteranges necessary to view the next page of the document (unless those bytes were already cached because of the read-ahead).

Because the intelligence for what bytes to download for each page is encapsulated in the PDF hint tables and the Acrobat 3.0 Viewer, the Byteserver CGI script is very simple (less than 100 lines of PERL). Its only responsibilities are to parse the HTTP request, extract the bytes from the file, and return a properly formed HTTP response. Adobe intends to freely distribute an implementation of the Byteserver CGI script. Netscape and some other server vendors have announced that they are planning to build Byteserving support directly into their Web servers. If PDF files are not optimized

and there is no Byteserver present, the PDF files will be downloaded entirely before any pages are viewed in the calling application's window. If the PDF files are not optimized but a Byteserver is present on the Web server, the Acrobat 3.0 Viewer will attempt to approximate page-at-a-time downloading, but without optimal efficiency.

Integration Considerations

A goal of Acrobat 3.0 Viewer's integration capabilities is to make PDF files first-class citizens in the Web browsing experience. To assist this, a browser should integrate PDF files into the goback stack, so that viewing a PDF file has the same goback semantics as viewing an HTML file. Installation is another integration consideration. Ideally, the Acrobat 3.0 Reader will be bundled with the Web browser when it is distributed on disk, or at least the user will be prompted to download and install Acrobat when the first PDF file is encountered on the Web.

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▶ **Acrobat Access:**

Making Information Accessible in PDF to the Visually Disabled

▶ **Acrobat 3.0 Technology**

A Mini-White Paper for Developers

▶ **Scanner Support Information**

▼ **Key Features**

▼ **System Requirements**



▶ **Acrobat 3.0 for Macintosh(R) and Windows(R) Brochure**
(803 KB / 3 pages)



▶ **Acrobat 3.0 Fact Sheet**
(237 KB / 4 pages)



▶ **Acrobat 3.0 for UNIX(R) Brochure**
(324 KB / 2 pages)



▶ **Acrobat Extended Print Services**
(14 KB / 2 pages)



▶ **PDF for Production Printing**
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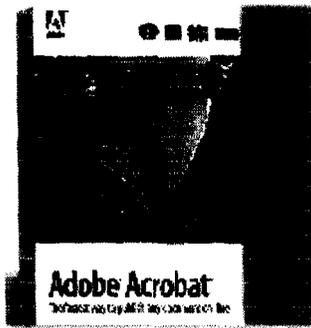
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(1,512 KB / 394 pages)

▶ **Press Releases**

▶ **Customer Spotlights**

Key Features

Everything You Need in One Box



Adobe Acrobat software offers you all the features you need to convert documents into PDF and publish them on-line including the tools formerly available in Acrobat Exchange(R) 2.1, Acrobat Pro 2.1, and Acrobat Search for CD-ROMs 2.1: Acrobat PDFWriter, Acrobat Distiller(R), Acrobat Catalog, and Acrobat Search. It also gives you brand-new tools, such as the Acrobat Capture(R) Plug-in.

Adobe Acrobat 3.0 Product Family

	Reader	Exchange	PDF Writer	Distiller	Catalog	Scan	Capture plug-in	Import	Touch-up
Macintosh	■	■	■	■	■				■
Power Macintosh(R)	■	■	■	■	■	•	•	•	■
Windows 3.1	■	■	■	■	■	■	■	■	■
Windows 95	■	■	■	■	■	■	■	■	■
Windows NT(R) 3.5.1	■	■	■	■	■	■	■	■	■
Windows NT 4.0	■	■	•	■	■	■	•	■	■
OS/2(R)	■								
SunOS(TM)	■	■		■					
Sun(TM) Solaris(R)	■	■		■					
HP-UX	■	■		■					
AIX(R)	■	■		■					
SGI(R) IRIX(TM)	■								
LINUX	■								
Components currently available						• Scheduled for future release. Registered Acrobat 3.0 users will receive a free upgrade.			

Creating PDF Files



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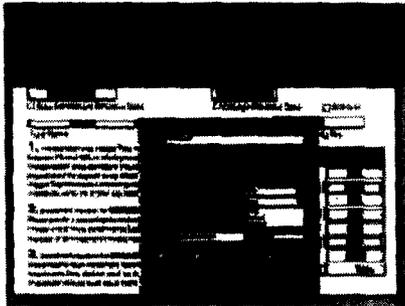
- Microsoft(R) Word and Excel Macros for Windows 95**
 New macros for Word and Excel add a "Create Adobe PDF" option to the File menus of both applications. Choosing the Create Adobe PDF option automatically switches to the PDFWriter driver, creates the PDF file, and then switches back to the previously selected printer driver.
- Acrobat Distiller**
 The Distiller lets you convert visually rich Adobe PostScript(R) language files created in image editing, illustration, and page layout applications to PDF.



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- Converting Paper Documents to PDF**
 With **Acrobat 3.0**, scanning and OCR, complete with page recognition, is fast and easy. Users can import all the leading image formats, or scan and convert almost any printed business document into PDF. Letters, memos, and faxes lying dormant in file cabinets come back to life electronically. PDF files are fully searchable and retain all their original layout, including fonts, images, tables, and even multicolumn text. And for batch-converting entire volumes or archives of paper documents to PDF for posting on-line, use Acrobat Capture software.
- PDFWriter**
 Use the PDFWriter to easily "print" everyday business documents from any application to PDF.

Enhancing PDF Files



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□ **Interactive Forms**

Companies can use Acrobat to create visually rich, interactive forms that include features such as pop-up lists and radio buttons. For the first time, your Web forms can preserve your corporate identity.

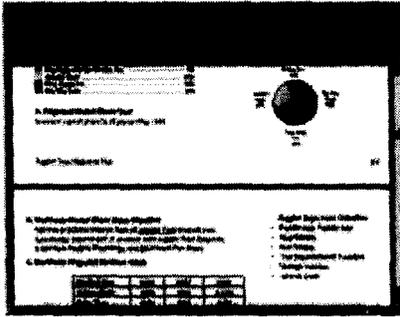
□ **Embedded PDF Files**

PDF files may be embedded directly in an HTML page using the HTML `<EMBED>` tag. Using the WIDTH and HEIGHT options, HTML authors can scale the PDF file. If the PDF file has multiple pages, only the first page is downloaded. When an embedded PDF file is viewed within Netscape(TM) Navigator(TM), an HTML option allows users to click on the embedded PDF file to open the entire document.

□ **Dynamic Controls**

Acrobat makes it easy to add dynamic controls (interactive buttons) that trigger sound and QuickTime(R) or AVI movies in any PDF file. Users can publish PDF files from their desktop using any media that suits their needs including CD-ROM or to an e-mail attachment, as well as through the intranet or external Web sites.

Integrated Viewing



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- **Integrated Viewing**
Acrobat 3.0 offers integrated viewing of PDF files directly within the leading Web browsers, including Netscape Navigator 3.0 and Microsoft Internet Explorer 3.0.

- **Page-on-Demand Access**
Page-at-a-time downloading of PDF files across the Internet ensures fast display of PDF documents.
- **Progressive Rendering**
Progressive rendering of PDF pages means that text is rendered first (using a substitute font if necessary), followed by hypertext links and images. Then any embedded fonts are drawn on-screen last, ensuring quick viewing of the information.

Optimization for the Internet

- **Save As**
The "Save As" option of Acrobat 3.0 now includes a checkbox for optimizing PDF files for on-line delivery. This means that duplicate background objects (text, line art, and images) are combined, significantly reducing file sizes. Objects in a PDF file are reordered for page-on-demand access over the Internet.
- **Batch Optimization**
You can easily optimize an entire folder - and optionally, all included subfolders - of PDF files on a hard disk, Web server, or a CD-ROM staging area.
- **Cross-Document Links and the Internet**
PDF files with relative cross-document links now work unchanged. This means that you can create a single collection of hypertext-linked PDF files and publish them on local drives, network drives, CD-ROM, or a Web server - and the links automatically work in all locations.

System Requirements

Adobe Acrobat for Windows

Minimum

- i386(TM), i486(TM), Pentium(R), or Pentium Pro processor-based personal computer
- Microsoft Windows 3.1, Windows 95, or Windows NT(R) 3.51 or later
- 8 MB of RAM (16 MB for Windows NT) for Acrobat Reader, Acrobat Exchange, or Acrobat Catalog
- 16 MB of RAM (24 MB for Windows NT) for Distiller or Acrobat Capture Plug-in
- CD-ROM drive (1.44 MB floppy disks available on request)

Recommended

- Pentium processor-based personal computer
- Windows 95 or Windows NT
- 16 MB of RAM (24 for Windows NT)
- CD-ROM drive
- 40 MB of available hard-disk space

Adobe Acrobat for Macintosh and Power Macintosh

Minimum

- Macintosh with a 68020 or greater processor, or Power Macintosh
- 3.5 MB of RAM (5 MB for Power Macintosh) available to Acrobat Reader
- 4 MB of RAM (6 MB for Power Macintosh) available to Acrobat Exchange
- 6 MB of RAM (8 MB for Power Macintosh) available to Distiller
- 16 MB of RAM available to Acrobat Capture Plug-in* (Acrobat Capture Plug-in available only for Power Macintosh)
- Apple(R) System Software version 7.1 or later
- CD-ROM drive (1.44 MB floppy disks available on request)

Recommended

- Power Macintosh (required for Acrobat Capture Plug-in*)
- 16 MB of available RAM
- Apple System Software version 7.1.2 or later
- CD-ROM drive
- 40 MB of available hard-disk space

* Acrobat Capture Plug-in for Macintosh is not included with Acrobat 3.0. Registered users will receive a free upgrade to a future release that includes this feature.

Adobe Acrobat for UNIX
