

Microsoft® Internet Explorer 4.0 and Netscape Communicator 4.0

Comparison Guide

“The Web the Way You Want It”

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Microsoft Internet Explorer 4.0 vs. Netscape Communicator Comparison Guide

This document provides a framework for organizations and individuals to compare Microsoft® Internet Explorer 4.0 and Netscape Communicator for the Windows® 95 and Windows NT® 4.0 operating systems. This document should be read in conjunction with the Microsoft Internet Explorer 4.0 for Windows 95 and Windows NT 4.0 white paper.

Executive Summary

Both Microsoft Corp. and Netscape Inc. are delivering their next-generation Internet client products to customers over the next few months. Netscape has released the first part of Communicator and plans to release the rest (Netcaster) at an unannounced future date, while Microsoft is about to release its Microsoft Internet Explorer 4.0 Platform Preview 2. Although both products promise to offer users advances in technology and enhanced features, the two product strategies differ in vision and scope. Netscape describes Communicator as a suite of clients for doing e-mail, groupware and browsing on the Web. Microsoft has a much broader vision for Microsoft Internet Explorer 4.0. In addition to providing superior browsing, e-mail and collaboration, Microsoft is building-in managed “webcasting” of information and true Web-to-operating-system integration.

Netscape is marketing Communicator primarily to the corporate market as a set of groupware applications. In fact, for most small business and home users, Communicator basically offers an enhanced browser, which borrows from Microsoft Internet Explorer 3.0, plus an improved HTML e-mail package. For corporations, Communicator also offers rudimentary collaboration features via group scheduling and threaded discussions. The Netcaster application did not ship with Communicator and only promises the most basic Web page “pulling” features already offered today by most offline readers. And, in an effort to differentiate and charge for value, Netscape includes a fair share of proprietary standards and technologies for HTML (e.g., Layer), newsgroups (e.g., Collabra), scheduling (e.g., vCalendar) and “push” (e.g., Marimba and JavaScript 1.2 extensions) to name a few. Netscape’s strategy is to not componentize the various applications and to strongly encourage use of the monolithic Communicator suite as a layer on top of the operating system.

Microsoft Internet Explorer 4.0 goes beyond Communicator’s basic browser and e-mail improvements by offering significant end-user usability improvements via Security Zones, smarter Searching and History, as well as deep implementations of emerging Internet standards such as true Dynamic HTML, XML and Java. For users who just want better e-mail and browsing, Microsoft Internet Explorer 4.0 is the superior offering. In addition, Microsoft Internet Explorer 4.0 offers state-of-the-art webcasting of information that provides everything from basic smart pulling of Web sites to “true” push via multicast. Most significantly, Microsoft Internet Explorer 4.0’s component architecture allows it to integrate seamlessly with the PC operating system to provide users with the easiest and best-performing way to view information on their computer. Finally, Microsoft Internet Explorer 4.0 allows users complete choice to mix and match best-of-breed communication and collaboration tools for everything from basic conferencing to industrial-strength workgroup computing. Thus, Microsoft Internet Explorer 4.0 appeals to IT managers, end users and developers alike.

To help with your evaluation, Microsoft offers the following four areas of technology that customers have mentioned as most pertinent in choosing an Internet client:

- **The best browser** for end users and organizations to find and view relevant information, as well as a next-generation development platform for content developers.
- **Complete communication and collaboration**, providing HTML-rich, Internet standards-based applications that deliver audio-, video- and dataconferencing, messaging, authoring, Web broadcasting and discussion groups.
- **Webcasting of sites and channels**, providing a rich and open authoring and publishing capability for sending and receiving information through either Web sites, channels, e-mail messages or software components.
- **True Web integration**, which makes Internet access a seamless part of the operating system.
- **Complete administrative features** for businesses, so corporations have the best client for improved corporate communication, easy deployment and administration, and reduced total cost of ownership.

The following table provides a high-level comparative overview of Microsoft Internet Explorer 4.0 and Netscape Communicator and Netcaster in each of these areas.

	Microsoft Internet Explorer 4.0	Netscape Communicator and Netcaster
Browser and Web technology	Microsoft Internet Explorer <ul style="list-style-type: none"> • Significant step beyond Microsoft Internet Explorer 3.0 • Ease-of-use and personalization enhancements • Comprehensive integration • Integrated offline browsing • True Dynamic HTML — Cascading Style Sheets (CSS), Document Object Model (DOM), data binding • Full support for DOM • Full support for ActiveX™ technologies • Java™ enhancements, fastest JIT compiler • Performance improvements (HTTP 1.1) • Security zones, Authenticode™ technology version 2, certificate management 	Navigator <ul style="list-style-type: none"> • UI catch-up to Microsoft Internet Explorer 3.0 • Limited usability enhancements • Limited suite integration • Limited offline capabilities • Supports only CSS; no support for DOM or data binding • Uses proprietary Layer tag • Limited support for ActiveX Documents only • Uses Symantec JIT • Does not support HTTP 1.1 • Finally supports code signing
Communication and collaboration <ul style="list-style-type: none"> • Mail • News and discussion groups • Real-time conferencing • Web Broadcast • Authoring • Publishing • Calendar/PIM 	Mail and News (Outlook™ Express, Outlook) <ul style="list-style-type: none"> • Scalable from Outlook Express to the Outlook desktop information manager (corporate-strength) • Standards-based (SMTP/POP3, NNTP, IMAP4, LDAP, MIME, S/MIME, MHTML) • User can choose any mail and news client • Mail and news completely integrated • Multiple mail and news accounts Conferencing (NetMeeting™) <ul style="list-style-type: none"> • Audio, video and data standards (T.120, H.323, etc.) • Videoconferencing • True application sharing • Multipoint communications • LDAP integration Web Broadcast (NetShow™) <ul style="list-style-type: none"> • Streaming audio and video • Unicast of Active Streaming Format • IP multicast support for ASF and files • Standards-based • Stream URL flips, script events • Scheduling capabilities Authoring (FrontPage Express) <ul style="list-style-type: none"> • WYSIWYG editing • Wizards and templates Publishing (Personal Web Server for Windows 95) <ul style="list-style-type: none"> • Web Publishing Wizard Calendar/PIM (Outlook, not part of core Internet Explorer 4.0) <ul style="list-style-type: none"> • Corporate-level groupware functions with Outlook upgrade • Internet standard upgrade in development 	Mail and News (Messenger and Collabra) <ul style="list-style-type: none"> • One-size-fits-all solution for business and home • Targeted at corporations, yet missing key corporate-user features • Proprietary extensions to NNTP • User forced to install Netscape mail and news client, even if not used • Mail and news not integrated; single mail account Conferencing (Conference) <ul style="list-style-type: none"> • Supports only H.323 audio standard • No videoconferencing support • No application sharing (joint browsing only) • Point-to-point communications • Answering machine functions Web Broadcast (Live Media Player) <ul style="list-style-type: none"> • Streaming audio only • Audio multicast only • Proprietary transport protocols and compression • No scheduling support Authoring (Composer) <ul style="list-style-type: none"> • WYSIWYG editing • Wizards and templates Publishing and Web server not offered Calendar/PIM (Calendar) <ul style="list-style-type: none"> • Rudimentary calendar/PIM • Uses nonstandard vCalendar protocol • Not sufficient for corporate environment

	Microsoft Internet Explorer 4.0	Netscape Communicator and Netcaster
Webcasting of sites and channels <ul style="list-style-type: none"> • Channels • Subscriptions 	<ul style="list-style-type: none"> • Three-tier webcasting model • Basic sitecrawling (in browser and channels) • Optimized and managed push with proposed CDF standard • True push with multicast protocol support • Integrates channels and subscriptions with existing operating system and browser • Easy channel UI builds on familiar Microsoft Internet Explorer interface • Open delivery architecture: acts as client to any back-end channel service • Premium channels • Existing Web sites can be channels with CDF • Displays all standards-based Web content 	Netcaster <ul style="list-style-type: none"> • Offers basic sitecrawling in Netcaster only • No native support for CDF • • No multicast support • • Not integrated with Navigator, additional layer on top of Communicator for channels • Completely new interface • • Delivery protocol restrictions (Marimba) • Fewer user options and control • • Includes premium content • Requires changes to content to be a channel • • Netscape still pushing proprietary Layer tag
Web integration <ul style="list-style-type: none"> • Single explorer • Start menu and taskbar • Active Desktop 	<ul style="list-style-type: none"> • Familiar UI for users of Windows 95 and Windows NT operating systems • Seamless — one UI for navigating the PC and Web • Native management and HTML file system viewing • Web tasks and components in the native operating system taskbars and desktop 	<ul style="list-style-type: none"> • Web integration features removed from Communicator/Netcaster • No file management features • • Allows docking only a single, specific Web page as Webtop; no personalization features
Centralized administration	Microsoft Internet Explorer Administration Kit <ul style="list-style-type: none"> • Easy set-up and central administration • Ability to create custom Web-based user environments and centrally manage them • Roaming users and multiple-user support on clients running Windows 95 or Windows NT Workstation with Windows NT Server-based networks • Auto-migration of existing desktop configurations 	Mission Control and AutoAdmin <ul style="list-style-type: none"> • Ability to create custom Web-based user environments (Webtop) and centrally manage • Improved UI — catch up with Microsoft Internet Explorer Administration Kit • • Removed roaming user support, still not enough focus on management tools • • No easy migration of existing configurations • Costs \$2,000

Communication and Collaboration Comparison

Microsoft sees two distinct market segments in terms of collaboration: basic collaboration and full collaboration. Netscape leaves out the home- and small-business market, while only partially solving the needs of business users. For basic collaboration — such as e-mail, application sharing and chatting — Microsoft Internet Explorer 4.0 offers the, best-of-breed clients. The other portion of the market, which needs high-end collaboration solutions, should compare Communicator's offerings with the more complete solutions found in Microsoft Exchange Server and the Outlook desktop information manager, or in IBM's Lotus Notes. Microsoft's solution is designed to offer a scalable set of communication and collaboration clients that allow users to select which is most appropriate for them. For the user who needs basic collaboration, Microsoft believes that Microsoft Internet Explorer 4.0 offers a much better solution than Communicator, while also providing the opportunity to scale up to a more powerful solution when required.

Additionally, Netscape has chosen to provide a one-size-fits-all set of communication clients. For example, if you have already standardized on an e-mail system and you install Communicator, you will then have two e-mail clients installed on every system. In addition, your production e-mail client will not integrate into Communicator. Microsoft understands that the investments organizations and users have made in e-mail clients cannot be taken lightly, and therefore designed Microsoft Internet Explorer 4.0 to be open and to interoperate fully with any e-mail client.

True Web Integration Comparison

Judging by Communicator, Netscape considers integration to mean adding a large, monolithic program on top of the native operating system. Although Netscape had originally planned to place an operating shell on top of the underlying operating system with Constellation, it has removed that functionality from Netcaster. This is a wise move, considering that a new “shell” — or layer — on top of the existing operating system would have required substantial investments in user training and support. Microsoft understands that organizations and users have already made investments in training, and want to take advantage of that investment. Instead of adding another layer on top of the operating system, Microsoft Internet Explorer 4.0 extends Windows 95 and Windows NT 4.0 to naturally take advantage of Web tasks.

Administrative Comparison

Netscape removed its originally planned roaming-user support from Netcaster. Microsoft believes that the more important near-term issue is to provide powerful and easy-to-use central administration capabilities for corporate MIS, so administrators can effectively control costs while improving overall productivity. And of course, Microsoft Internet Explorer 4.0 takes advantage of the capabilities that already exist in the Windows 95 and Windows NT operating systems, running on Windows NT Server-based networks to enable roaming-user and multiple-user support.

Finally, Microsoft Internet Explorer 4.0 enables a business model that allows content developers and corporations to develop effective, powerful implementations of channels and Web sites.

The Best Browser

The most important aspect of having a great Web experience comes from the strength of the browser. Web users care about the following key browser areas:

- **Ease of use, personalization and offline capabilities** to improve their productivity
- **Security and privacy protection** so they can navigate the Web and make secure transactions without worry
- **Performance** so they can get the information they want more rapidly
- **The ability to view the widest type of content** (through best support of Internet standards and leading technologies)

Microsoft Internet Explorer 4.0 provides the easiest, fastest and most useful way to browse the Web. It does so through performance and usability improvements such as innovative Search and History bars, automatic completion of Web addresses, Dynamic HTML, support for the improved download performance of HTTP 1.1, and integrated offline capabilities, to name just a few. Making browsing more useful also involves continuing to lead the way in supporting Internet protocols and standards that result in more exciting and rewarding content for end users to access. Thus, Microsoft Internet Explorer 4.0 supports the widest range of Internet standards available today including Cascading Style Sheets, Dynamic HTML, the proposed CDF, Java, ActiveX Controls, and both ECMAScript and the Visual Basic® programming system, Scripting Edition.

Ease of Use, Personalization and Offline Enhancements

To make accessing pertinent information even easier, users want to be able to personalize their Internet experience, whether through personalizing the look of the browser or using appropriate international versions. Microsoft Internet Explorer 4.0 can be personalized more than Navigator. User interface features such as ease of use and personalization should be judged by how easy it is for users to discover and effectively use them, and by how well the UI enables the user to accomplish tasks.

With the expense of connection time and the hassles of waiting for Web pages to download, many users have a great need for offline Web support. By downloading important Web information at night or when they are not doing other tasks, users can use their online connect time more effectively.

Microsoft Internet Explorer 4.0 and Netscape Navigator 4.0 both offer the following:

- **Component integration**
- **Automatic completion of URL addresses**
- **Enhanced Favorites (bookmarks) filing**
- **Navigation history on Back and Forward buttons**
- **Customizable toolbars**
- **Localization in a limited number of languages**
- **Ability to specify parameters** such as maximum cache size and number of pages to download

Microsoft Internet Explorer 4.0 goes further by providing the following key features for making browsing easier and more personalized:

- **Search Bar.** Keeps a list of search results in view while the user explores the sites listed.
- **History Bar.** Provides a list of previously visited sites, organized by date.
- **Channel Bar.** Gives users access to their channels from within the browser.
- **Greater toolbar customization.** Microsoft Internet Explorer toolbars can be combined in any manner.
- **Full-screen viewing**
- **Monitor subscribed sites.** Users can find out automatically when their favorite subscribed sites were last updated, and when they last visited.
- **Subscribe to any Web site for offline download.**
- **Complete offline/online integration with Microsoft Internet Explorer.** Users simply select Work Offline from the File menu, and browse their subscribed sites the same way they do when connected.
- **Schedule offline downloads** at any time, such as off-peak hours, with any frequency.
- **Auto-detect of offline/online mode.** Microsoft Internet Explorer 4.0 can detect when the user is online or offline and switch into the appropriate mode.
- **Site password support.** Unattended offline download of sites that require a password to access.
- **More localized versions** (25 to 30 languages planned in all).

Private Transactions and Security Protection on the Internet

The Internet provides users with a convenient and effective way to communicate and share information worldwide. However, many users increasingly rely on the Web to use applications such as online banking and shopping. Along with this increased reliance comes a greater need for security and privacy of transactions on the Internet. It is important to judge the security measures in the new generation of integrated Internet products by their comprehensive use of security standards throughout the product, along with broad support for multiple security formats.

With its innovative use of security zones and strong support of standard Internet security protocols, Microsoft Internet Explorer 4.0 lets users communicate privately, verify their identity and sites' identities, shield themselves and others from inappropriate content, prevent others from tracking their activities without their consent, and gain greater control over what software is downloaded to their computer. And with support for the emerging W3C P3 privacy standards, Microsoft Internet Explorer 4.0 users can receive tailored content that matches their interests, while protecting their privacy through complete control of what information they share.

Microsoft Internet Explorer 4.0 and Netscape Communicator both support the following:

- **Server and client authentication.** Uses digital identification or a digital certificate to identify the user to Web servers and uses server authentication with server certificates to verify a valid Web site.
- **Secure sockets layer (SSL) 2.0/3.0.** This basic protocol provides secure communications over a TCP/IP connection.
- **Java capabilities-based security model.** This includes code signing and access out of the "sandbox."

Beyond these features, Microsoft Internet Explorer 4.0 supports the following:

Security Features

- **Security zones.** Users can divide the Web into sites that they do and don't trust, deciding in advance what level of security to assign to each zone. IS managers have complete control over security settings in each zone.
- **Certificate management.** Network administrators can control which Java™ applets, ActiveX controls, and other software can be run on their intranets, based on who published the software.
- **Authenticode technology.** Ensures accountability and integrity for Web executables, including Java Applets, Navigator plug-ins and ActiveX Controls.

Private Transaction Features

- **Microsoft Wallet.** Internet Explorer 4.0 includes an electronic wallet where you can securely store and access private information such as credit card numbers, digital certificates and digital keys for easy & private online transactions.
- **Platform for Internet Content Selection (PICS).** Ratings services protect family members or employees from viewing inappropriate content.
- **Profiling Assistant.** Internet Explorer 4.0 provides the first implementation of the emerging W3C P3C privacy standards which puts control over the disclosure of any and all information into users hands.
- **CryptoAPI.** The Microsoft CryptoAPI provides an extensible architecture for developers to build exportable applications that take advantage of a full range of cryptographic services.
- **Transport layer security (TLS).** Once the draft specification is approved by the Internet Engineering Task Force (IETF), Microsoft will add support for TLS secure-channel protocols to complement existing security protocols.
- **Microsoft Protected Store.** An operating system service that allows multiple applications to store sensitive information for the user in one central secure location.
- **Personal Information Exchange (PFX).** Allows users to transport personal private data between machines and across platforms, and which builds upon existing security standards.
- **Smart card authentication.** Enabled for smart card authentication (using SSL or PCT) through CryptoAPI.

Performance

The No. 1 complaint about the Web from home users is that it is too slow. The browser can't improve the connection bandwidth, Web traffic or computer processor speed. But there are several factors that can greatly improve the user's perception of speed beyond simple page rendering of the browser. Other performance factors beyond speed are important to consider. Effective use of computer memory is important. If the browser eats up too much memory, the swapping time

between applications can be long. Also important is the robustness of the browser. One crash can wipe out any minor page-rendering gains.

Microsoft Internet Explorer leads performance with its superior component-based architecture. This is a strength of Internet Explorer 4.0 that Netscape has yet to implement. And rather than simply port one code base from operating system to operating system, Microsoft Internet Explorer is developed specifically for each operating system, optimizing it for that platform. In fact, Communicator is a large, monolithic application that requires all core modules to be run in the same memory address space, whether they are used or not, resulting in more memory use than required, and the potential of crashing all core Communicator clients when only one has a problem.

Both Microsoft Internet Explorer 4.0 and Netscape Communicator provide the following performance enhancements:

- **Fast virtual machine/Java Just-In-Time compiler.** Microsoft's product includes a new, open, backward-compatible compression technology so that classes download to the computer faster.
- **Direct CD-ROM support.** This will give content providers the ability to author content that directly accesses the CD-ROM.

Microsoft Internet Explorer 4.0 also includes these performance enhancements not matched by Communicator:

- **True Web integration.** By integrating the browser with the operating system, the browser is always loaded and available.
- **True Dynamic HTML.** Dynamic HTML lets Web site authors create richer, interactive pages while reducing bandwidth requirements. Pages can be modified on the client, reducing the time to download a new page.
- **HTTP 1.1.** Support for this update to the basic Web transport protocol greatly improves page download speed.
- **Partial Download Support.** Resume both FTP and HTTP downloading of files, ActiveX controls, Java applets, images, and web pages from where you last left off.
- **Hybrid Cache.** Hybrid Cache (think of fast cache) lets ISVs and Internet content providers (ICPs) extend and reserve the Microsoft Internet Explorer 4.0 memory cache to create a customized cache that can reside on the local file system.

View the Widest Content

Users want to be able to see the widest type of content, regardless of the browser they choose. Therefore, Internet clients should be judged on how well they implement existing and emerging standards. They should also be judged on how innovative they are and how successful the company is at working with standards bodies.

Microsoft Internet Explorer 4.0 continues to give the user the platform to view the widest range of Internet content, including the ability to see the latest Dynamic HTML content, view and listen to real-time Web broadcasts, watch videos, and run ActiveX Controls and Java Applets. Microsoft Internet Explorer 4.0 makes this possible because of its extensive support for Internet standards and because it includes innovative underlying technologies, such as Dynamic HTML, ActiveX and Java. Using this set of technologies, it's possible to produce more enticing content and develop consumer and business applications that deliver more value — creating a unique, fun and more rewarding experience for end users.

Dynamic HTML and HTML Compatibility

Dynamic HTML

Unlike other browsers, Microsoft Internet Explorer 4.0 allows changes to styles, positioning and content at any time — not only when the page is loaded — through Dynamic HTML, which is being jointly developed by Microsoft and the World Wide Web Consortium (W3C). Dynamic HTML gives users unprecedented speed and interactivity with Web pages and provides Web site developers enhanced creative control over the appearance and behavior of Web pages. Netscape Communicator allows styles to be updated via JavaScript-Accessible Style Sheets (JASS), but only at load-time, not dynamically. Netscape's JASS proposal, still under consideration at the W3C, does not allow authors to update page content or styles after the page has loaded, unlike true Dynamic HTML. Netscape's technology lacks the core features of

Dynamic HTML, including dynamic styles, dynamic content and dynamic positioning, because it does not support the Document Object Model. In addition, Netscape does not support data binding and awareness. Netscape is also still evangelizing its proprietary, anti-standard Layer tag, even though it was rejected by the W3C.

Microsoft Internet Explorer 4.0 and Netscape Communicator both support:

- **CSS Recommendation.** Specific style (e.g., font, color, spacing) in HTML documents through Cascading Style Sheets.
- **CSS Positioning Working Draft.** Position elements anywhere in the page using x, y coordinates and z layer.

Microsoft's full implementation of Dynamic HTML features includes the following:

- **Document Object Model.** Dynamically update a page without a server round-trip at any time — even after download. Netscape does not support the Document Object Model, as specified by the W3C Preliminary Requirements for the Document Object Model.
- **Data binding and awareness.** Integrate data with native HTML elements and automatically generate and expand tables and databound form fields; dynamically sort tabular data; query local tables.
- **Script-driven and extensible.** Supports ECMAScript and Visual Basic, Scripting Edition (VBScript), and can be extended with Java Applets and ActiveX Controls.
- **Multimedia and animation.** Create dynamic visual effects such as filters, animation and transitions, on page elements, entire pages, or between pages without scripting or downloading huge files or pages.

HTML Compatibility

Microsoft Internet Explorer 4.0 continues to lead Netscape Navigator with the broadest HTML 3.2 and HTML 4.0 Working Draft support. Even with Communicator, Netscape still lags behind Microsoft Internet Explorer 3.0 in advanced HTML 3.2 support. Netscape has developed its own proprietary extensions for layering, JavaScript-Accessible Style Sheets and tables – in essence, increasing switching costs for customers by developing these proprietary solutions.

The W3C is leading the way with innovative HTML enhancements. HTML 4.0 provides greater flexibility and power to content providers. It also ensures better accessibility to international and visually impaired web users. Consistent with our HTML pledge, Microsoft fully supports the HTML 4.0 Working Draft in MS IE4 and is an active member in the W3C standards process.

Support for the following HTML features are built into both Microsoft Internet Explorer 4.0 and Netscape Communicator:

- **HTML 2.0. and core HTML 3.2**
- **Cascading Style Sheets, level 1 (CSS1).** Style sheets bring desktop publishing capabilities to the Web.
- **Standard tables.** Give great control over the display of text, graphics and background colors, making Web content more readable and visually interesting.
- **Standard and borderless frames.** Make it possible to seamlessly open several panes within the browser window, or embed a single frame along any edge of the page.
- **Limited HTML 4.0 Working Draft support.** Both Netscape and Microsoft support the <OBJECT> tag, RFC 1867 file upload, hypertext links in HTML, HTML and style sheets, client-side scripting and HTML.

Microsoft Internet Explorer 4.0 goes further by supporting:

- **Advanced HTML 3.2 features.**

- **CSS layout.** Specification for handling frames, floating frames, multicolumn layout, 2-D direct placement of elements, ordering and overlapping of elements, all in a rich and well-architected HTML syntax.
- **Dynamic fonts.** Internet Explorer 4.0 supports the upcoming W3C Draft Recommendation for font-embedding technology, whereas Netscape uses the proprietary TrueDoc technology and proprietary HTML extensions.
- **Advanced HTML 4.0 features** such as form and frame enhancements, and international character support. Provides greater flexibility and power to content providers. It also ensures better accessibility to international and visually impaired web users. Microsoft fully supports the HTML 4.0 Working Draft.
 - **Enhanced frames.** Includes frames within frames, floating frames (a frame can be inserted anywhere that a graphic might be) and nonscrolling frames.
 - **Enhanced tables.** Beyond simply supporting background colors, Microsoft Internet Explorer 4.0 also supports background images, wrapped text and cell groupings within tables.

Beyond HTML: Powerful Application Support on the Web

While Dynamic HTML greatly improves the Web's ability to offer fast interactivity on the Web using HTML, it provides only some of the Web's potential for Internet interactivity. More powerful Web content demands applications such as ActiveX Controls, Java Applets or Netscape plug-ins to extend beyond HTML. Scripting these software applets together provides for interactivity and a dynamic Internet experience.

While both Microsoft Internet Explorer 4.0 and Navigator 4.0 support Java Applets, JavaScript (Microsoft supports the standard ECMAScript, which Netscape does not support yet) and plug-ins, customers have requested a browser that supports cutting-edge Web technology and also existing information and code. Microsoft Internet Explorer 4.0 satisfies these demands using ActiveX, which Netscape has promised to support, but has not done yet. ActiveX allows developers to use their existing investment in language and application skills (such as VBScript and COM) to create content for the Web.

ActiveX

ActiveX support in Microsoft Internet Explorer 4.0 allows ActiveX Controls to be faster, smaller and more fun than ever before. As before, ActiveX support allows users to view and edit OLE-compliant files (ActiveX Documents), such as Microsoft Word or Microsoft Excel, in place within the browser window. Netscape Communicator now provides limited support for ActiveX Documents.

ActiveX Controls now have full access to Microsoft Internet Explorer 4.0's object model, which lets developers manipulate pages dynamically. To make it even easier for developers to work with ActiveX scripting, Microsoft has developed the ActiveX debugger. With this tool, which can be downloaded for free from the Microsoft Web site (connect-time charges may apply), developers can easily view and edit their ActiveX scripts. And Microsoft Internet Explorer 4.0 comes installed with a set of new ActiveX multimedia controls that make it easy for developers to deliver dazzling yet low-bandwidth effects on Web pages. In addition, Microsoft Internet Explorer 4.0's ActiveX Control Viewer makes it easy for administrators and users to manage their controls.

Java

Java is another way to bring dynamic, interactive content and applications to the Web. The three important measures to compare are speed, stability and functionality. Microsoft is committed to providing the best way to develop and run Java applications in a fast, robust and fully compatible way.

Both Microsoft Internet Explorer 4.0 and Netscape Communicator support the following:

- **Java Applets**, software components created using the Java language
- **Just-In-Time Java Compiler** for greater performance
- **Basic JDK 1.1 support**
- **Capabilities-based security model**, which gives Java Applets access to the operating system out of the sandbox

Microsoft Internet Explorer 4.0 goes further than Netscape Communicator by providing the following capabilities:

- **Fastest Java implementation**
- **Application Foundation Classes (AFC)** provide the easiest way for Java developers to build rich, commercial-quality applications quickly.
- **Greatly improved Abstract Windowing Toolkit (AWT)**
- **Stronger JDK 1.1 cross-platform support**, including the event model, which is crucial for JavaBeans, and all cross-platform features
- **Advanced class libraries.** Microsoft supports Application Foundation Classes (AFC), while Netscape supports Internet Foundation Classes (IFC). Netscape has announced that it will not update or support IFC in the future.
- **J/Direct**, which gives developers the ability to call any Win32[®] API from Java
- **JavaBeans support**, automatic and bidirectional integration of ActiveX components and JavaBeans
- **Exposing the Dynamic HTML object model to Java** allows Web pages to be modified dynamically by Java.
- **Multimedia class libraries with DirectX™ API support** gives Java applications terrific multimedia capabilities.
- **Advanced security zones support**, enhancing the basic Java security model by allowing discrete trust-based control over Java security in different zones
- **Better capabilities-based Java security**, through use of existing APIs and capabilities determined and granted at download time (static model) instead of run time

Scripting

Rather than supporting only ECMAScript/JavaScript and LiveConnect and relying upon existing technologies being re-created in these languages, Microsoft Internet Explorer 4.0 supports the widest number of programming and scripting languages so users can evolve their technologies to the Internet. Only Microsoft Internet Explorer 4.0 provides fast, comprehensive, language-independent script handling capability with its support for ActiveX scripting.

Both Microsoft and Netscape support the following:

- **Java Applet** scripting

Microsoft Internet Explorer 4.0's additional scripting support includes the following:

- **ECMAScript** -compatible scripting
- **Visual Basic, Scripting Edition**
- **Microsoft Internet Explorer 4.0 object model is exposed to ActiveX and Java**, letting developers manipulate pages dynamically as they add more interactivity.
- **Integration of objects and scripts**
- **All HTML tags accessible with scripting**
- **Full event model for all tags**

Netscape provides additional scripting capability beyond Microsoft Internet Explorer 4.0 with plug-in scripting, through LiveConnect. Netscape also offers script signing, which Microsoft Internet Explorer does not yet offer.

Multimedia

The Web gets more exciting every day as Web pages come alive with new multimedia capabilities such as movies, sounds, animations and 3-D worlds. Microsoft Internet Explorer 4.0 supports all the latest multimedia standards — including the virtual reality modeling language (VRML) 2.0 — and makes viewing multimedia over the Internet faster and more fun.

Microsoft and Netscape have set different goals for providing multimedia on the Internet. While Microsoft has worked with Internet standards organizations and independent software developers to support a wide variety of standards, Netscape has focused on a more limited multimedia offering. With Microsoft Internet Explorer 4.0, Web developers will find it easier than ever to use multimedia effects to create compelling, interactive Web pages. Microsoft Internet Explorer 4.0's new Dynamic HTML technology enables them to add filters and transitions to their pages, create effects that work on a timer, and alter the surface of a bitmap.

Microsoft Internet Explorer 4.0 and Netscape Navigator 4.0 both support the following:

- **AIFF, AU, MIDI and WAV** audio formats
- **AVI** video format
- **In-line (streamed) sound** support
- **QuickTime** video playback (Navigator needs the Apple QuickTime plug-in)
- **VRML and 3-D** animation

Microsoft Internet Explorer 4.0 goes beyond Communicator with support for the following:

- Additional multimedia formats, such as MPEG audio and video
- **DirectX support and MMX-enabled.** Take advantage of the latest multimedia performance enhancements.
- **New multimedia controls.** Exciting, low-bandwidth multimedia effects.
- **Microsoft Interactive Music control (add-on).** A new control that can create music on the fly.
- **NetShow.** Live or stored streaming of Active Streaming Format (ASF) content over the Internet or a corporate intranet. ASF content can be audio, illustrated audio (audio synchronized with images), video and even streaming applications.
- **ActiveMovie™ API.** Cross-platform video and audio technology, including support for MPEG, AU, AIFF, MID, Wav + AVI, MOV and QuickTime formats and others.

Summary

Microsoft Internet Explorer 4.0 delivers the best browsing experience across today's wide range of Internet standards and technologies — including Microsoft's innovative new Dynamic HTML — allowing authors to create and users to experience a new generation of exciting and useful content on the Web. Through performance improvements, easy navigation of URLs and enhanced searching, Microsoft Internet Explorer 4.0 provides an easy, fast and fun way to use the Web.

Complete Communication and Collaboration

The Web provides the opportunity for unparalleled communication and collaboration. Users have a wide variety of needs for Web communications: mail, news and discussion groups, real-time audio, video- and dataconferencing, chat, application sharing and Web page publishing. The key metrics to compare in this area are implementation of standards, integration and interoperability with other applications, and rich functionality.

The communication clients in Microsoft Internet Explorer 4.0 and Netscape Communicator include the following:

- **Messaging and discussions.** Microsoft Outlook Express is an easy-to-use, full-featured e-mail and news client that supports all of the latest Internet protocols such as SMTP, POP3, MIME, NNTP, IMAP, LDAP, MHTML and S/MIME. Communicator has two separate clients, Messenger for mail and Collabra for news.
- **Conferencing.** Microsoft NetMeeting offers unmatched dataconferencing (multipoint true application sharing, chat, whiteboard and file transfer), audioconferencing/Internet telephony and videoconferencing. Communicator's Conference offers limited audio- and dataconferencing.
- **Web Broadcasting.** Microsoft NetShow offers live or stored unicast or multicast streaming of audio, illustrated audio (audio synchronized with images) and video over networks that range in bandwidth from 14.4 Kbps dial-up connections to local area networks. Netscape's Live Media Player supports only audio capabilities.
- **Web page authoring.** Microsoft FrontPage Express is an easy-to-use Web page and general HTML authoring tool. Netscape Composer is a similar client for Communicator.
- **Web publishing.** Microsoft's Personal Web Server and Web Publishing Wizard let users publish Web pages as easily as sharing a folder on a PC. Netscape offers no equivalent products in Communicator.

Messaging and Discussions

The most important factor users care about with e-mail is its interoperability with other e-mail clients. And because they spend so much of their time using e-mail, users want it to be easy. Finally, because there is such a wide range of users, from home to small business to large corporation, a range of rich functionality is needed. Because of these user needs, the key areas to compare e-mail (and news and discussion clients) are in their standards support, usability and personalization, features and scalability. Outlook Express, which ships with Microsoft Internet Explorer 4.0, surpasses Netscape Messenger.

Microsoft scalable and flexible messaging clients offer better solutions to a wider array of users than Netscape's one-size-fits-all solution. Besides offering Outlook Express as part of Microsoft Internet Explorer 4.0, Microsoft also offers Outlook, a powerful messaging and collaboration client for the enterprise. For customers with existing mail and news clients, Microsoft Internet Explorer 4.0 offers built-in extensibility, so it is easy to integrate third party-clients into the Microsoft Internet Explorer environment. Netscape's product does not come with modular messaging components. It's not possible to plug in another enterprise mail system to Netscape Communicator – you have to install Netscape's, regardless of how much you may have invested in an existing system.

The news component of Outlook Express is more than just a newsgroup reader. It allows users to set up personal and group-shared discussion groups, using NNTP standards. By comparison, Netscape has incorporated nonstandard extensions to NNTP to add extra functionality to Collabra. The vast majority of end users will not be well-served by the midrange functionality of Netscape Collabra, which offers unneeded features for casual end users (for a high price), and not enough features for users who need true collaborative software. Customers who require true collaboration will want Microsoft Outlook.

Microsoft Outlook Express and Netscape's Messenger and Collabra share the following features:

- **Internet standard support.** SMTP/POP3, NNTP, IMAP4, LDAP, MIME, S/MIME, MHTML
- **Integration with rest of Internet client components**
- **View and author full-fidelity HTML messages** (in both mail and news). Brings graphics, text, interactive forms, hyperlinks, animation, multimedia files and even video to messages. And MHTML support allows users to view Web pages sent to them offline.
- **Server-based mail and news with IMAP4.** Reach your mail remotely from any IMAP4-compliant e-mail client.
- **Offline mail and news support with POP3.** Netscape offers offline synchronization with IMAP4 mail servers, which Outlook Express does not currently provide.
- **Internet white pages e-mail name lookup with LDAP**

- **Send and receive encrypted and/or signed e-mail with S/MIME**
- **Secure news/discussions with SSL 3.0**
- **Multiple news server support**
- **Mail filters.** Allow user to prespecify folders in which to place mail or actions to take.
- **Stationery templates.** Personalize HTML mail with colorful and distinctive templates.

Microsoft Outlook Express goes significantly beyond Netscape's solutions to offer the following capabilities:

- **Have any Web site sent to your mailbox.** Unlike Netscape's Inbox Direct, Microsoft Internet Explorer 4.0 allows users to subscribe to any Web site and have the full Web content sent to their mail.
- **Complete mail and news integration with three-pane view.** Users can view all mail and discussion messages in one place, using the exact same interface.
- **Customizable toolbar.** Users can personalize their work environment for maximum productivity.
- **Multiple POP3/IMAP4 mail server support.** An essential feature for the large number of Internet users who receive mail from multiple sources.
- **Automatic name resolution/auto-lookup from personal address book and LDAP servers.** Incomplete e-mail names are resolved in both local and remote address books.

Conferencing

One of the most exciting features of the Internet is that it allows live communication, such as Internet telephony, data- and videoconferencing, chat, and true application sharing. Many types of users — those at home, students, employees of small businesses or large organizations — want to take full advantage of the global reach of the Internet or corporate intranet for richer and more effective real-time communications. The most important metric for comparing conferencing applications is how well they support existing communication standards so that users can communicate with users of other conferencing products, and can take advantage of conferencing services that support these standards.

With NetMeeting 2.0 conferencing software, Microsoft continues to set the standard for real-time Internet communication and collaboration. NetMeeting 2.0 delivers a complete Internet conferencing solution consisting of a real-time communications client, and an open, extensible platform supporting standards-based audio-, data- and videoconferencing functionality.

Netscape has been slow to adopt open communication and collaboration standards on the Internet. Although Netscape Conference now includes support for H.323, it still lacks videoconferencing and vital support for T.120, so other applications cannot interoperate with Conference — thus making it inappropriate for corporate use. In addition, Conference is still only point-to-point, making it unusable for workgroup conferencing and collaboration.

Both Microsoft NetMeeting and Netscape Conference offer the following:

- **Standards-based audio conferencing (H.323)**
- **Collaborative browsing**
- **Point-to-point audioconferencing**
- **Point-to-point collaborative whiteboard, file transfer and chat**

NetMeeting goes beyond Conference in support of the following:

- **Videoconferencing (H.323).** Users can videoconference with colleagues or family around the world.
- **T.120 standard support for multipoint dataconferencing and file transfer**
- **Multipoint and open standard support** for video, audio, data, whiteboard, file and chat. NetMeeting users can conference with multiple parties, and connect with other programs that use these standards.
- **True application sharing.** Unlike Netscape's simple URL passing scheme for joint browsing, NetMeeting users can jointly use any application, even if it is only on one user's machine.

Web Broadcasting

Internet Web broadcast client users need products that can deliver rich multimedia content to the desktop, are open to as many formats as possible, offer both direct and multicast capabilities, support a large number of video feeds, and provide an open framework for adding formats and standards as they evolve. Microsoft NetShow 2.0 networked multimedia software, built into Internet Explorer 4.0, meets these needs by making the Web come alive with interactive streaming multimedia content, including live and on-demand audio and video and illustrated audio (images and sound). NetShow works over networks that range from low bandwidth dial-up Internet connections to high bandwidth switched local area networks. From simple audio to sophisticated interactive Web-based applications, companies use NetShow to offer new streaming content for applications such as training, corporate communications, entertainment, and advertising to users all over the world.

Even though Netscape's stated focus is the enterprise customer, its Live Media server and player do not offer much more than simple audio streaming support. They are not providing the vast number of home users with a high-quality Web broadcast media viewer. Microsoft is committed to making NetShow the best scalable solution, so that it works well not only for home users with limited bandwidth Internet connections, but also for delivering high-quality streaming video over high-bandwidth corporate networks.

Both Microsoft NetShow and Netscape's Live Media Player provide the following:

- **Streaming audio playback**
- **Live audio IP multicast**

Only NetShow delivers the following:

- **Live and on-demand streaming audio/video and illustrated audio (images synchronized with audio tracks)**
- **Live and on-demand streaming PowerPoint presentations**
- **Live or on-demand VB Script or Java Script events, and URL flips**
- **Standards-based support for Active Streaming Format (ASF) files**
- **IP unicast and multicast of audio/video and files**
- **High-quality, standards-based audio and video codecs from Microsoft and third party sources**
- **Rich scheduling capabilities**

Authoring and Publishing

While HTML has made it easier for many people to become instant publishers, it still is not intuitive enough for everyone. The key to offering a good basic authoring and publishing capability is to provide the set of functions that most casual users would need — without overloading the product with complicated features that only more advanced users would want — and then make it easy for users to upgrade to a higher-level product when they need to.

To make it easy for anyone to author Web pages and general HTML documents, Microsoft Internet Explorer 4.0 includes FrontPage Express – a WYSIWYG HTML editor based on the full-featured FrontPage™ 97 Web authoring and management tool. FrontPage Express takes users step-by-step through the process of creating Web pages, and is a great tool for editing existing HTML documents. It offers more functionality than Netscape’s Composer and shares a user interface with Microsoft Office, ensuring that users who are already familiar with Office’s toolbars can create effective documents in no time. And FrontPage Express can be easily upgraded to FrontPage for creating more complex Web pages and sites.

The Microsoft Personal Web Server (PWS) offers an easy way for users and corporations to publish Web pages on their own server, while the Web Publishing Wizard offer the opportunity to publish Web pages on their own or a third-party server. Their simplicity makes them perfectly designed for home users, schools and corporate workgroups – anyone who wants to share information on the Internet. Netscape does not offer products comparable to the Personal Web Server and Web Publishing Wizard.

Microsoft FrontPage Express and Netscape Composer both offer the following authoring capabilities:

- **WYSIWYG editing.** Users see exactly what they are creating, without having to know arcane commands.
- **Web page templates and wizards** allow users to walk step-by-step through the process of creating a variety of standard Web pages, such as personal home pages.
- **Table creation and editing,** including column editing
- **Java Applet, ECMAScript/JavaScript, plug-in support.** FrontPage Express supports top Internet technologies from throughout the software industry.

Only Microsoft Internet Explorer 4.0’s FrontPage Express and Personal Web Server offer these additional capabilities:

- **ActiveX and VBScript support.** FrontPage Express supports the widest type of Internet content.
- **Forms** that can be added to Web pages for people to fill out and return
- **Personal Web Server.** The PWS turns any Windows 95-based computer into a Web server, enabling easy publication of personal Web pages. Easy to install and administer, PWS simplifies sharing information on corporate intranets or the Internet. It is designed for small-scale peer-to-peer or small Web server usage.
- **Web Publishing Wizard.** This wizard makes it easy for users to post a Web site to their own computer or a standalone server. The wizard automates the process of copying files to the Web server.

Summary

Microsoft Internet Explorer 4.0 gives users a complete solution for communication and collaboration with others over the Internet and corporate intranets. From great e-mail and Web authoring to video conferencing, Web broadcasting, and application sharing, Microsoft Internet Explorer 4.0 provides a complete set of clients to allow users to engage in highly effective communications. And while Microsoft Internet Explorer 4.0 provides top-of-the-line tools in each category of communication, it also remains open so users can plug in other tools — their current e-mail client, for instance — if they feel more comfortable using them.

Webcasting of Sites and Channels

Users care about several important factors when selecting an information delivery or webcasting client: personalization capabilities, integration with other Internet applications and the underlying operating system, standards support and “push” optimization, an open architecture for different transport protocols and agents, access to premium content providers, and ease of use. Microsoft Internet Explorer 4.0 takes the lead in this area through webcasting of sites and channels. Netscape’s competitive offering for push is Netcaster, which is still in beta testing..

Microsoft Internet Explorer 4.0's webcasting solution is superior to Netcaster because it offers three tiers of webcasting, compared to just one tier for Netcaster. While both Microsoft Internet Explorer 4.0 and Netcaster offer basic Web site crawling, Microsoft Internet Explorer goes beyond that to offer optimized and managed push, as well as an open architecture and multicasting. Microsoft Internet Explorer 4.0 will implement the industry's first channel definition format, optimizing the delivery of push content to the millions of Microsoft Internet Explorer users. CDF is an open and easily authored format for publishing Web-standard channels that will allow Web publishers to optimize the broadcast of their content to millions of Internet users. CDF already has strong support, and is going through the W3C standards process.

Microsoft Internet Explorer 4.0 and Netscape Netcaster offer the following content push features:

- **Tier 1: Basic Web site crawling**, including scheduling of content download, full-screen viewing and a channel guide/finder.
- **Premium channels**, offering exclusive content from content providers.
- **Offline viewing**, the ability to download any channel and view it offline.
- **Support for auto download and maintenance of Java Applets.** Microsoft Internet Explorer can also automatically download ActiveX Controls.

Microsoft Internet Explorer 4.0's solution to pushing content goes beyond Netcaster's in several key areas:

- **Tier 2: Managed and optimized content push.** The proposed CDF standard provides a description of what's on a site, as well as mechanisms for grouping information logically, scheduling how often the content updates, and determining how best to deliver content to the user. Netscape does not currently support CDF.
- **Tier 3: Open architecture support and multicasting.** The webcasting architecture enables any back-end push technology vendor, such as BackWeb Technologies, Marimba Inc. or PointCast Inc., to deliver its push content into Microsoft Internet Explorer 4.0 using standard protocols or even new "true push" protocols such as those provided by AirMedia Inc. Netscape's solution does not scale up to use true multicast push.
- **Optimized Webcasting of any Web site.** Any existing Web content or site can be broadcast to Microsoft Internet Explorer 4.0 users without any major modification to the Web site or content, just by adding a CDF file to the site.
- **Requires no new software.** Microsoft Internet Explorer 4.0 does not require new server or proxy software. The Netscape solution requires the purchase of the Netcaster client as well as proprietary server and proxy software by Marimba in order to go beyond Netcaster's basic site crawl limitations.
- **Standards-based approach.** CDF has been proposed to the W3C and has broad industry support.
- **Multiple delivery options.** In addition to targeting delivery to the desktop and channels, users can choose to view subscribed Web content in their screen saver, a desktop ticker or their mail, or while browsing offline.

True Web Integration

The Internet has clearly become a necessary component of modern life. However, with current technology there is a distinct schism between two very different worlds: one containing local and network information, the other containing intranet and Internet data. When evaluating this next generation of Internet clients, it is important to judge how well they meet users' concerns about bridging the gap between the local PC user interface and the Web user interface. At the same time, it is imperative that the solution builds upon users' existing training and knowledge, so that they are not forced to relearn an entirely new interface.

Through rich integration with a proven user interface in the operating system, Microsoft Internet Explorer 4.0 delivers true Web integration with the integrated shell. Microsoft Internet Explorer 4.0 goes well beyond Netscape Communicator with a complete set of tightly integrated client components that meld the Internet into every aspect of the PC — including the

desktop, file folders, the network, even the Start menu – to tightly integrate Web browsing, collaboration, and the integrated shell into one environment.

Microsoft Internet Explorer 4.0's integrated shell becomes the user's home base for launching and switching between the Web browser and other applications, including office productivity software. Microsoft Internet Explorer 4.0's Active Desktop and desktop channels integrate content, applications and documents into a single, customizable workspace on the desktop, including tickers and a screensaver for real-time or cached updates. Every aspect is built around open, published standards, making it easy for ISVs, corporations, OEMs and others to customize or extend this space.

The core components of Microsoft Internet Explorer 4.0's true Web integration include a Single Explorer, Web-savvy Start Menu and Taskbar and the Active Desktop.

Single Explorer

Microsoft Internet Explorer's Single Explorer is the one-window browser users get with the integrated shell. It provides a single user interface for accessing all data throughout the system for rich information publishing. True Web integration turns Internet access into a seamless part of the operating system and PC. Now the Internet is instantly accessible from anywhere in the system, including the PC's desktop.

Although Netscape originally promised that Constellation would offer an integrated operating system shell and Web environment, it removed this functionality in the renamed Netcaster component of Communicator. As a result, it offers no features comparable to Microsoft Internet Explorer's Single Explorer.

Key features of Microsoft Internet Explorer 4.0's Single Explorer, not offered by Netscape Communicator, include these:

- **Integrated native file management and Web browsing.** Browsing your hard disk and the LAN in the same window you use to browse the Web, using the same navigation tools.
- **Single-click navigation** and application/file launching, back/forward buttons everywhere, combined Web and local Favorites, etc.
- **Web View.** Richer, easier-to-use, customizable HTML views on commonly used or chosen folders. Create rich HTML views for file shares on any type of server. Use the Customize this Folder Wizard to easily create your own Web Views. Corporations can remotely administrate Web Views of folders.
- **Full-screen browser/file navigation with auto-hide toolbars**
- **New HTML-based help files**

Web-Savvy Start Menu and Taskbar

In developing the Windows 95 user interface, Microsoft learned from customers that a single, always-visible "anchor" for the environment makes the system easier to learn and easier to use. The Start menu and Taskbar together provide that anchor in Windows 95, giving users one center of gravity for task-centric launching and switching.

As part of the new integrated shell in Microsoft Internet Explorer 4.0, the Start menu and Taskbar have been enhanced to extend local functionality to incorporate Web functionality. Netscape Communicator offers none of these features.

Microsoft Internet Explorer 4.0 offers these new features on the Start menu and Taskbar:

- **New toolbars.** Application quick launch, Favorites and the URL address bars make it easy to launch the applications or sites used most frequently, whether they're stored locally or on an intranet or the Internet.
- **Display HTML content.** Toolbars can display Web content of any kind.
- **Drag-and-drop toolbar customization.** Drag content to your toolbars, or move, resize, dock and merge your toolbars anywhere on your desktop.

Active Desktop

With the importance of information on the Internet and intranets growing every day, it is clear that users need fast, simple ways to access data. Before Microsoft Internet Explorer 4.0 was available, users were forced to launch a separate application to interact with Web content, and all Web content was displayed in a different, highly constrained application window. But now Microsoft Internet Explorer 4.0 extends the local desktop metaphor to include Web-based information. The Active Desktop is the HTML-based desktop that comes with the integrated shell.

Microsoft Internet Explorer 4.0's Active Desktop provides a highly customizable workspace, bringing together local and Web-based information. You can now embed pieces (desktop channels) of your favorite Web sites (both from a corporate intranet or the Web) directly into your workspace. Some examples of desktop channels are headline news, stock quotes, traffic maps, project status and telephone directories.

Both Microsoft Internet Explorer 4.0 and Netscape Netcaster offer these features:

- **Locked-down Web interface.** Netscape's Webtop feature allows users or administrators to subscribe to a Web channel and make that the default desktop. Microsoft Internet Explorer 4.0 offers this as a subset of the Active Desktop, but does not require it to be a channel. Administrators can use this feature to create centrally controlled desktop environments for every user.
- **Updates and caching.** Customizable content updating and offline caching capabilities.

Microsoft Internet Explorer's Active Desktop goes far beyond Netcaster to offer the following:

- **Desktop channels.** Users can easily embed Web channels into their native desktop. These can be any Web content, including full or mini Web pages, images, applets, controls, etc.
- **Screen saver.** Microsoft Internet Explorer 4.0 includes a screen saver, which can cycle through channels and favorite sites, displaying live or cached information.
- **Customization.** Unlike Netcaster's limited Webtop mode, the Active Desktop can be tailored easily by end users merely by adding desktop channels. And they can easily move and resize them on the Active Desktop.
- **Displays pre-existing content.** Unlike Netcaster's Webtop mode, the Active Desktop retains all of the existing icons on the user's native operating system desktop.

Complete Administrative Features

Technology purchase decisions are increasingly driven by considerations of total cost of ownership (TCO). System administrators want to provide productive technology solutions at the lowest total cost. Other key system manager concerns include common computer user interfaces, centralized MIS administration, rich customization capabilities and integration with existing systems.

Microsoft Internet Explorer 4.0 has been designed to offer superior integration with Windows NT Server and is an integral component of Microsoft's Zero Administration initiative for Windows.¹ Microsoft Internet Explorer 4.0 will reduce all the ownership costs involved in managing a corporate Intranet. In addition to being free, Microsoft Internet Explorer 4.0 is easy to deploy, easy to upgrade and easy to administer. But just as important is the extra benefit Microsoft Internet Explorer 4.0 brings to organizations in terms of improved communications and improved work processes. After deploying Microsoft Internet Explorer 4.0, employees and customers can browse company files the same way they find information on the Internet.

Microsoft Internet Explorer 4.0 and Microsoft servers (e.g., Internet Information Server, Microsoft Commercial Internet System) offer a complete solution: a rock-solid platform that delivers valuable new authoring opportunities and

¹ See <http://www.microsoft.com/windows/zerowp.htm> for more detailed information on Microsoft's strategy for reducing the cost of owning PCs.

administration features, and the integration of the industry's best-of-breed browser with the Windows operating system to provide a new level of value for organizations and customers. On top of that is a large, committed force of Microsoft field representatives and Solution Providers, ready to help.

Microsoft Internet Explorer 4.0's complete set of administration tools includes these:

- **Active Setup.** Allows administrators to easily install and assist in the management of software once it is installed on their users' computers.
- **Microsoft Internet Explorer Administration Kit.** Makes it easy to deploy Microsoft Internet Explorer 4.0 across many different machines and platforms in a corporation. The Microsoft Internet Explorer Administration Kit lets administrators redistribute the browser royalty-free and also customize and revise it to best suit their organization or customers' needs and personality.
- **ActiveX Control Viewer.** Enables administrators to see all of the controls installed and clean them up when necessary.
- **Automatic Proxy Configuration.** Allows administrators to automatically configure proxy settings such as server addresses and bypass lists.

Netscape's administration solution requires two components, Mission Control, which costs \$1,995, and AutoAdmin, which comes with each copy of Communicator Pro version at \$79. The Microsoft Internet Explorer Administration Kit is free (requires shipping and handling charges for mail delivery).

Both Microsoft and Netscape offer the following administrative features:

- **Central configuration management of clients**
- **Client customization**
- **Automatic download, install, and upgrade of clients**
- **Restrictions on client downloading capabilities**
- **Automatic Proxy Configuration**

Microsoft's complete administrative features go beyond these to include the following:

- **Active Setup.** Hands-free setup, auto migration of existing configurations, multiple download site switching.
- **Browser customization.** Administrators can create custom, branded versions of Microsoft Internet Explorer 4.0, with a custom logo, title bar, preloaded channels and Favorites, and Start and Search pages.
- **Security zone management.** Set up and remotely maintain trusted and untrusted zones.
- **Certificate management.** Control which ActiveX Controls and other signed code can be installed on users' machines by managing the allowed certificates.
- **Netscape client migration.** The Microsoft Internet Explorer Administration Kit will migrate existing Netscape settings on a machine that is already configured to work with the Netscape browser.
- **Roaming-user support.** Microsoft Internet Explorer Administration Kit provides support for roaming users using Win32 API-based clients on Windows NT-based servers.
- **Delete controls.** Until now, there was no easy way to find all of the installed ActiveX Controls, much less delete them. The ActiveX Control Viewer makes it easy.
- **Auto Proxy.** Automatically control proxy settings for each Internet protocol. Microsoft Internet Explorer can automatically cycle through the different proxy servers to avoid overloading any particular server.

Conclusion

Microsoft Internet Explorer 4.0 is the first product to completely integrate the Internet with the PC, making it a more compelling, productive and exciting solution. It beats Netscape Communicator in the five key areas of consideration: browser, communication and collaboration, webcasting, true Web integration, and administration. Microsoft Internet Explorer 4.0 is a new step in the process of making computing better for everyone.

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