Microsoft Active Platform:
A Development Platform for Internet-Based Distributed Computing

Backgrounder

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Intent on increasing online efficiency while reducing development and training costs, businesses are demanding a single solution for storing, publishing and retrieving information, as well as for running line-of-business applications on internal networks and the Internet. The Microsoft® Active Platform meets this demand by providing a foundation for distributed computing. An integrated, comprehensive set of client and server development technologies, the Active Platform makes it easy for developers to integrate the connectivity of the Internet with the power of the personal computer.

The Active Platform is based on the leading standards-based implementation of HTML from Microsoft, open scripting and component architecture. It allows developers to use the same tools and components they know and use today to build powerful applications easily for the Internet and intranets. This comprehensive set of tools and technologies provides a new application development approach across clients and servers using a single component model. By making optimal use of today's tools and tomorrow's Internet technologies, the Active Platform enables developers to make the transition into the new paradigm for desktop computing and capitalize on the new opportunities it presents.

The Active Platform offers users and administrators a graphically rich, intuitive, easy-to-manage and consistent experience across platforms. Developers benefit from rich services built into the system and a uniform programming model across the client and the server that can be accessed from a consistent, integrated set of tools.

Figure1. The Microsoft Active Platform brings information to the desktop from the Internet and intranets under the comprehensive interface of the Active Desktop.

A Platform for Developing Leading-Edge Internet Applications

The Internet has created a single paradigm for accessing information: a browser that interprets a standard language (HTML) and understands standard protocols. The Active Desktop, the client side of the Microsoft Active Platform for distributed computing, embraces and extends this universal client with scripting and components to support active content, and combines it with the Windows® user interface through Microsoft Internet Explorer 4.0. Although the native implementation of the Active Desktop is for the Windows 95 and Windows NT® operating systems, Active Desktop is specifically designed to support the development of client software that can run on other operating systems, such as Macintosh and UNIX. The Active Server is the server side of the Active Platform and the cornerstone of the infrastructure required to store, process, manage and deliver information to the Active Desktop. It is an easy-to-use framework that attracts developers to write server applications for the Internet and intranets. The Active Server insulates the developer from the complexity of server programming and integrates components with system services.

Active Platform Technologies

The Active Platform includes client technologies that run in an Active Client browser, server technologies that run on the Windows NT Server network operating system and Microsoft Internet Information Server, and ActiveX™ technologies that tie client and server components together across the network and enable component-based applications to work seamlessly together.

The core elements of the Active Platform are discussed below.

ActiveX Technologies

ActiveX technologies provide cross-platform component interoperability across networks, including the Internet. ActiveX

technologies include the component object model (COM) for enabling communication between client components and distributed COM (DCOM) for integrating components across the network. Because ActiveX technologies are open, developers can use them to integrate their products with the Active Platform in their browsers, applications or operating systems.

The Active Client

The Active Client is the set of Active Platform technologies that enables developers to deliver "least common denominator" components or applications that run on multiple operating systems and multiple browsers, including Microsoft Internet Explorer. The Active Client allows developers to reach all users with a single application or component and gives users a faster, more responsive and interactive Web experience. Microsoft is scheduled to deliver the Active Client technology for all major commercial desktop operating systems, including Windows, Macintosh and key UNIX implementations. Content that specifically targets the Active Client will run on any operating system that hosts the Active Client. The Active Client includes the following features:

Integrated, cross-platform delivery of HTML, scripting, components and network services
Dynamic HTML technology based on the World Wide Web Consortium's latest HTML standard
High-performance, language-independent scripting, supporting a syntax that is compatible with both the Visual Basic® programming system and JavaScript
Support for ActiveX Controls
Support for Java™ Applets through the Microsoft Java Virtual Machine

The Active Server

The Active Server is the set of technologies that enables developers to easily build and deploy component-based server applications without the complexities generally associated with network programming. The Active Server takes full advantage of Windows NT Server and Microsoft Internet Information Server 3.0 to create high-performance, reliable and scalable Web applications.

Microsoft Active Server technologies include Active Server Pages, Microsoft Transaction Server and message queues. Active Server technologies make the development of Internet and intranet component software faster and easier by offering a unique language-independent approach that separates business logic from display generation.

To enable developers to take advantage of the Active Server technologies as soon as possible, Microsoft is shipping each technology as it becomes available. DCOM shipped in Windows NT Server 4.0 in summer of 1996. Active Server Pages and Microsoft Transaction Server are also available. Message queue technology is scheduled to be delivered in mid-1997. All these technologies are expected to be integrated and delivered in Windows NT Server 5.0.

Because the Active Server uses the same component-based development model as the Active Desktop, developers can create components and applications that integrate seamlessly with other components and applications on servers or clients across the network.

Using Operating System-Specific Features With the Active Platform

The Active Platform is the only development platform that lets developers choose to target either cross-platform or platform-specific functionality. Developers who want to move beyond "lowest common denominator" functionality can take advantage of the strengths of a specific operating system. The Active Platform gives developers the option to use platform-specific components and services such as the DirectX™ set of APIs on Windows or QuickTime on the Macintosh. In addition, developers can take advantage of the large library of platform-specific ActiveX-based components available for Windows.

On the server, Active Platform enables developers to build scalable solutions easily from ActiveX-based components without having to program low-level application infrastructure. This capability reduces the cost and complexity of deploying solutions on the Internet. These server applications can be projected to any client operating system via HTML and DCOM and can tie together existing applications on UNIX and mainframe systems using open transactional and message queuing protocols.

Microsoft Is Committed to Helping Developers

For more than 15 years, Microsoft has been dedicated to providing the most innovative, comprehensive and easy-to-use development platform for the personal computer. Today, more than 4 million professional developers use Microsoft or third-party tools to develop for the Windows 95 or Windows NT operating systems, and nearly 500,000 developers are registered members of the Microsoft Site Builder Network. Microsoft offers a wealth of training, support and marketing programs for its developers and is committed to helping them take full advantage of their knowledge and expertise in new, innovative technology markets. The Active Platform enables developers to easily create applications that take advantage of the connectivity of the Internet and the power of the personal computer.

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Why Choose the Active Platform?

Business Advantages of the Active Platform

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The Internet offers today's developers a whole new set of business opportunities and also poses many challenges, including managing change in a quickly changing environment and integrating existing applications and investments into a new paradigm. Internet and corporate intranet developers must decide which development technologies will help them successfully meet these challenges and deliver the best results for their business. This means choosing technologies that allow them to easily and cost-effectively deliver the best applications, Web sites, and corporate solutions to a large base of customers while maintaining their investments in existing tools and applications.

The Microsoft® Active Platform is an integrated, comprehensive, and easy-to-use set of client- and server-side technologies that developers can use today to achieve these goals.

An Integrated Development Platform

Powerful, interactive Web sites and applications. The Active Platform enables developers to integrate scripting, components, and transactions to build powerful applications that run on the desktop or on the server. Support for ActiveX™ technologies allows Active Platform developers to bring the rich interactivity and multimedia elements of today's low-cost PCs to their Web sites. This means they can offer their customers Internet experiences that include features such as audio, surround video and high-performance graphics.

Integration with today's desktop applications. Web applications written with Active Platform technologies can be fully integrated with a user's desktop operating system and applications, giving the user a seamless way to move among the Internet, the local network, and their desktop.

Integration with Internet standards. The Active Platform provides first-class implementations of key Internet standards, including World Wide Web Consortium-standard HTML; the Visual Basic® programming system, Scripting Edition; Java™; SHTTP; HTTP; JavaScript-compatible scripting, and more. This enables developers to deliver their products to the broadest audience and to take advantage of the most innovative Internet technologies.

Integration with today's server applications. Active Platform helps make it easy for users to integrate and extend their existing systems to the Internet and intranets, taking full advantage of investments in systems, applications and training. The Active Platfom includes support for existing transaction processing standards -- including XA and SNA LU 6.2 sync level 2 -- enabling component-based applications running on the Windows NT® Server network operating system to interoperate at a transactional level with existing production systems running on UNIX databases and mainframes.

Integration of common component model. Active Platform lets developers build components or applications once and run them where it makes the most sense to optimize performance -- on either client or server.

Comprehensive Capabilities

Complete solution. Microsoft provides the most comprehensive platform: client, server, and tools that make it easier to build applications. The Active Platform gives developers the technologies they need, from client to server, to develop Web applications easily. Moreover, these technologies are provided using a consistent, component-based approach. Broad support from tools vendors also gives Active Platform developers access to the largest choice of tools.

Access to components. With more than 2,500 ActiveX components, Active Platform developers have access to a wide range of resources for building powerful Web sites and corporate applications. Instead of having to start from scratch, developers can acquire these pre-existing components, saving development time and cost.

Combination of cross-platform and platform-specific functionality. The Active Platform allows developers to choose between cross-platform applications and applications that take advantage of platform-specific features. Developers can easily deliver "least common denominator" functionality applications by targeting the cross-platform Active Client technologies, which include HTML, scripting, the Microsoft Java Virtual Machine and network components. Or they can choose to incorporate platform-specific components and features into their applications to make optimal use of the resources and functionality of a specific platform, such as the Windows® operating system or Macintosh. Active Platform supports both options, allowing developers to target the most appropriate solution for each project.

Support for innovative technologies. Support for the latest technologies -- such as Microsoft's new cross-platform Dynamic HTML and the high-performance DirectX™ application programming interfaces for multimedia -- helps ensure that Active Platform developers can deliver cutting-edge features, such as information on demand and highly personalized Web experiences, to their customers.

Broadest market. Active Platform client-side applications will run on popular operating systems and in most popular browsers, and Active Server applications will run on the Windows NT Server, currently the fastest-growing Internet platform. This gives developers access to a broad market for their applications.

Easy to Use

Using familiar tools. Unlike other development models that require developers to use only Java, or JavaScript (formerly known as LiveScript), the Active Platform allows developers to use any tool or language they choose, including Visual Basic, C++, Borland Delphi, Powerbuilder, MicroFocus COBOL, Java, and JavaScript. This breadth of options means developers do not have to learn how to use new tools and can instead take advantage of their existing tools knowledge to create cutting-edge Internet and intranet applications. Using what is already known cuts down on training time and saves time and money.

Consistent, component-based model throughout. The Active Platform provides the same high-productivity, component-based approach to development, whether developers are scripting objects in an HTML page, performing database queries on a Web site, or coordinating a distributed transaction among multiple machines. This consistent approach reduces training and maintenance costs substantially. Currently, no other development platform provides this scalable, extensible programming model.

Improved ease of use for tools and utilities. In the past year, Microsoft has delivered tools and utilities that make it easier for even nontechnical Web site builders to create interactive sites and applications. Some of these technologies include Visual Basic 5.0, which enables developers to create their own ActiveX Controls easily, and ActiveX Layout Control and ActiveX Control Pad, which allow site builders to integrate controls easily into their Web pages. In 1997, Microsoft will expand its options for developing interactive Web sites with a new version of Microsoft Internet Information Server, enhanced to take advantage of ActiveX and provide the same component-based development approach used by other elements of the Active Platform. This built-in extensibility helps make it easier for Web developers to build more interactive and compelling sites. Microsoft will also deliver Internet Studio, a new tool for server-side development.

Server applications made easy. With the increasing popularity of the Web, the demand for server applications has never been greater. Active Server helps make it easier to build server applications by taking advantage of the same component-based development model used throughout the Active Platform. Active Server includes "application infrastructure," which manages the attributes required for a scalable, reliable business server, including support for transactions and low-level server "plumbing." This frees up developers to focus on delivering solutions, not programming infrastructure.

Cost-effective. Active Platform technologies are the most cost-effective choice for both client- and server-side development. Client-side Active Platform technologies, such as ActiveX, are open and available royalty-free to developers who want to use them to build applications or to ISVs that want to redistribute them with their products. Active Server lowers the cost of delivering server applications while enabling businesses to use their investments in existing production systems.