



IBM Workplace Client Technology — delivering the rich client experience.

Gain flexibility and choice with new model for managed clients.



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Needed: next step in the evolution of network computing

Companies have aggressively embraced the network-centric computing model over the last several years to break away from the growing costs of managing and integrating the silos of traditional client/server applications. Yet, as companies have adopted browser-based application models, freeing themselves from the costs and complexities of proprietary, segregated architectures, they are now seeing the need to supply many of their users with a richer user experience than browsers can provide.

Certainly, the ubiquitous browser serves as an ideal interface for many applications, but browsers fall short for certain classes of applications for a host of reasons, ranging from usability, to support for disconnected use, to security and more. So, the challenge before companies is to evolve their network-centric infrastructures to support a more secure, richer end-user experience while retaining the advantages of cost of ownership, integration, and the simplified development and deployment of browser applications.

Challenges of traditional client/server applications

The primary challenges associated with traditional client/server applications are in the difficulty and costs of management in a distributed environment. Dependent on many disparate applications to run their businesses, with fat clients sitting on end-users' machines and the code residing locally, IT administrators have been forced to manage seas of PC servers, as well as the client desktop environments. The term *rollout* has been associated with the significant manual effort required to maintain large numbers of PCs and mobile computers, where every new application, upgrade or patch requires administrators to address each desktop individually, radically slowing the speed of deployment.

Moreover, the many disparate applications, often relying on proprietary systems, may perform well initially, but they can be difficult to connect, integrate and extend. The result is often a “lobster-trap” effect (you can walk in, but you can't walk out) – proprietary technology, representing major investment, that must be maintained despite its inability to adapt as new needs surface and technology advances. All this can drive up the total cost of ownership (TCO) while stifling business innovation and agility.

Web computing has arisen as an attempt to achieve the functionality of distributed, client/server computing without the management overhead and other negatives.

While users appreciate the functionality inherent in traditional fat-client computing, their organizations face significant problems with document management and security. Typically users have thousands of word processing files, presentations, spreadsheets, e-mails and other documents stored and isolated on their hard drives. Managing these documents, if they are managed at all, takes considerable time and effort on the part of users, affecting individual productivity. In addition, locally stored documents are unavailable for sharing and collaboration, which can leave valuable knowledge assets isolated and ineffective. They can also be vulnerable to increasingly sophisticated security threats, because desktop-installed software can be particularly susceptible to viruses.

Laying the burden of document management and security on individual users can create a situation with technology overload that distracts from business-critical duties, while also creating a situation where a company's intellectual property may be at risk. What's needed are more efficient and secure ways to facilitate and control information management, collaboration, backup and security than are typical of client/server environments.

Though addressing some client/server deficiencies, Web computing leaves many gaps.

Web computing offers some answers but not all

Responding to some of these challenges, Web computing has arisen as an attempt to achieve the functionality of distributed, client/server computing without the management overhead and other negatives. Web computing reintroduced the concept of centralized, server-based applications. With *zero footprint* on the client, this model can lead to more efficient IT administration and management, easier deployment and lower TCO. Users can benefit from ubiquitous access from any Web-connected computer through a browser-based, standard HTML and JavaScript interface. And little training is typically required beyond the browser itself.

Though addressing some client/server deficiencies, Web computing leaves many gaps. Browser-based applications lack the rich functionality, flexibility, performance and ease of use of traditional client software. The user interface is more limited, interactivity and visualization are not as rich as needed in some cases, and performance suffers due to the need for multiple round trips to the server to execute simple tasks. This can slow down productivity as users wait for each command to be executed. Further, by definition a network-connected model, Web computing lacks offline use, restricting user access to only those times when a secure network connection can be made to the hosting server resources.

According to Forrester Research, “With the increasing demands to support local device processing, push mode events from servers, transactions, [and] richer control of state and context sharing, choosing a browser-based client creates an instant legacy application. Moreover, the browser has, for all practical purposes, stopped evolving, which is causing problems when enterprises are forced to support new requirements such as disconnected (mobile) work modes”¹ and non-PC devices.

Compromises and trade-offs inherent in Web computing go beyond the applications. Data and systems are usually no more secure than the browser itself. Additionally, because browser-based applications do not integrate well with desktop productivity applications, users still find themselves mired in the challenges of proprietary systems – such as being forced to switch among isolated applications to perform simple, everyday tasks. The Web-centric approach also results for some users in floods of unmanaged information and undesirable communications in the form of spam.

Application requirements for the on demand enterprise

What then do CIOs and IT executives require of an application environment for today’s on demand enterprise? The potential list is long.

- Rich user experiences with all the functionality of the native desktop client, coupled with improved manageability and easier deployment
- Fast user response for time-sensitive and complex processes with real-time data validation and manipulation
- A strong security model with a local, encrypted data store that synchronizes to a secure server environment – providing a *walled garden* to protect against viruses and other security risks
- Flexible integration with desktop productivity applications
- Support for a variety of operating systems and client devices, ranging from traditional PCs, to thinner devices like kiosks and tablets, down to mobile devices like personal digital assistants (PDAs) and smartphones
- Reusable and consistent user-interface design, where both application content and transactions can be mixed seamlessly
- Single-client architecture to execute in both online as well as offline modes (support for disconnected and connected operations)
- Web-services enablement, and better interaction between Web services-based applications and the users of these applications

At the same time that the outer limits of browser-based computing are being reached and challenged, the industry has been building foundations for the evolution of a more sophisticated computing model.

Seeds of evolution

At the same time that the outer limits of browser-based computing are being reached and challenged, the industry has been building foundations for the evolution of a more sophisticated network computing model which in the future will help address the needs described above. The first step in this evolution has been a dramatic increase in the possibilities for integration and interoperability unleashed by the progressive accretion of standards.

With the Web, for example, has come such standards as Web services, which can significantly improve application integration. Now programs written in different languages on different platforms can communicate openly, helping to minimize point-to-point integration challenges. The Web Services for Remote Portlets (WSRP) standard allows the integration of existing portlet-based parts with an otherwise Java[®] technology-based user interface experience. XML, with its standard formats for structured documents and data, and organizations like OASIS (www.oasis-open.org) – with its push to address e-business standards – also contribute to a synergy and flexibility made possible by common standards.

Standards are not the only impetus for this evolution in the network computing model. The open-source phenomenon opens up alternatives to proprietary software. Linux – first as a server and now as a client – is the primary example, but also important in this area are extensible frameworks like the standards-based Eclipse application development environment (www.eclipse.org). Eclipse.org is an open-source community that created a platform for building operating system-independent, integrated development environments based on the Java run time. According to RedMonk, “Eclipse provides interoperability across a range of enterprise tool functions, from application development to business modeling to operational management, [and] is well on its way to becoming a corporate standard in many Enterprises.”²²

What is needed is a technology that can provide both rich user interactions and the low cost of ownership associated with standards-based computing.

The blend of standards and open-source development is the primary enabler for a new network computing model. Last, but not least, is the rise of componentized software development processes. Increasingly, the software industry is creating components that can be reused in many applications and products, sometimes sharing them in open-source communities. Componentized architectures can enable one-time development of applications that can then be made available through multiple-access channels; componentized client environments allow reuse of components and help promote easier maintenance of applications.

Meanwhile, corporations and independent software vendors (ISVs) have started to augment Web run-time environments with client-side add-ins and software, such as Macromedia Flash plug-ins for rich media, plug-ins for displaying Adobe Acrobat documents, and electronic data capture forms and capabilities. This movement to enhance Web-based computing has further advanced to incorporate more robust, client-side components for a richer end-user experience, while still leveraging methods for automatic download and delivery of updates. More and more, instead of building monolithic software products, the industry is generating Web-based computing models in which the end user is pointed to a destination (Web address or URL) where a Web application or portal server constructs documents, data and applications that are brought down to the client environment and assembled on the fly.

However, the augmented browser model still remains limited in what it can provide to the end-user experience. For example, it doesn't offer convenient multitasking, or drag-and-drop support, or rich document editing capabilities, or the ability to plug in application run-time models. What is needed is a technology that can provide both rich user interactions and the low cost of ownership associated with standards-based distributed computing. Thus, the advent of rich client technology.

... organizations that embrace IBM Workplace Client Technology and the applications built on it will have the flexibility of client-side applications with the server-side control and cost-saving traditionally associated with Web-based computing. Effectively, they'll have the best of both worlds.

IBM Workplace Client Technology

IBM, a major contributor to open standards advancements, has also taken a leadership role in an important open-source initiative for a rich client framework. Building on the Eclipse open-standards development environment for aggregating multiple development tools into a consistent programming experience, IBM has now created a client-side framework, based on Eclipse, for the deployment and management of business applications. This framework, IBM Workplace Client Technology, previewed in January 2004, will help drive the next evolution in network-centric computing.

IBM Workplace Client Technology addresses the growing demand for dynamic, powerful applications (the rich client experience) that can be deployed and managed affordably. Because of the way Workplace Client Technology shares code and processing work among clients and middleware servers, organizations that embrace this technology and the applications built on it will have the flexibility of client-side applications combined with the server-side control and cost-saving traditionally associated with Web-based computing. Effectively, they'll have the best of both worlds.

This rich computing environment has the reach and TCO benefits of the Web-based computing model, because the cost-effective distribution and management of rich clients is now truly feasible. Not only will this be a boon to IT administrators, but the end user will be able to enjoy the richness of a traditional client with security, fast response time, user interface (UI) consistency, offline support and tighter integration with desktop productivity applications. Now, the potential exists for users to access necessary data and applications anytime, anywhere and from any device – with the full functionality of traditional client software. IBM Workplace Client Technology will also provide ISVs with an extensible run-time environment, opening up major new possibilities for application delivery.

Finally, standards-based computing made available through IBM Workplace Client Technology will mean that companies need not be caught in the lobster trap – hemmed in by prior investments they have made on the desktop.

Inspired by flexibility and choice, and embracing open standards, IBM Workplace Client Technology provides flexible access for a complete range of user experiences — on both desktop and mobile devices — via a dynamically downloaded client platform.

Not a product—an enabling technology

Key to the IBM on demand operating environment is providing flexibility and choice. A major theme is to help organizations acquire and pay for only the capabilities they need, and at a reasonable price, as opposed to the one-size-fits-all approach. Workplace Client Technology is extending IBM's ability to deliver on that promise.

Inspired by flexibility and choice, and embracing open standards, IBM Workplace Client Technology offers a new model for server-managed clients. It provides flexible access for a complete range of user experiences — on both desktop and mobile devices — via a dynamically downloaded client platform. (See Figure 1.)

Just as open-source software is being written in componentized fashion, IBM is building its Workplace Client Technology with heavy reuse of standards-based components from across IBM Software Group. For example, in addition to the Eclipse framework, IBM is reusing the IBM Cloudscape™ data store (acquired when IBM acquired Informix®), and an application run-time environment from the IBM WebSphere® team called IBM Extension Services for WebSphere Everyplace®. Synchronization capabilities are delivered through support of the SyncML standard that IBM is continuing to drive. Consistent alignment with the open-standards approach facilitates bringing together diverse elements, whether protocols, or business applications, or Web services — helping to expedite the proliferation of new robust solutions.

IBM Workplace Client Technology extends the security, manageability and component-based assembly of a server-based platform to the enterprise desktop and pervasive devices. This gives IBM, customers and business partners an innovative model for building rich, reusable client applications. It will be the foundation for the next-generation, rich end-user experience for both enterprises and small to midsize businesses.

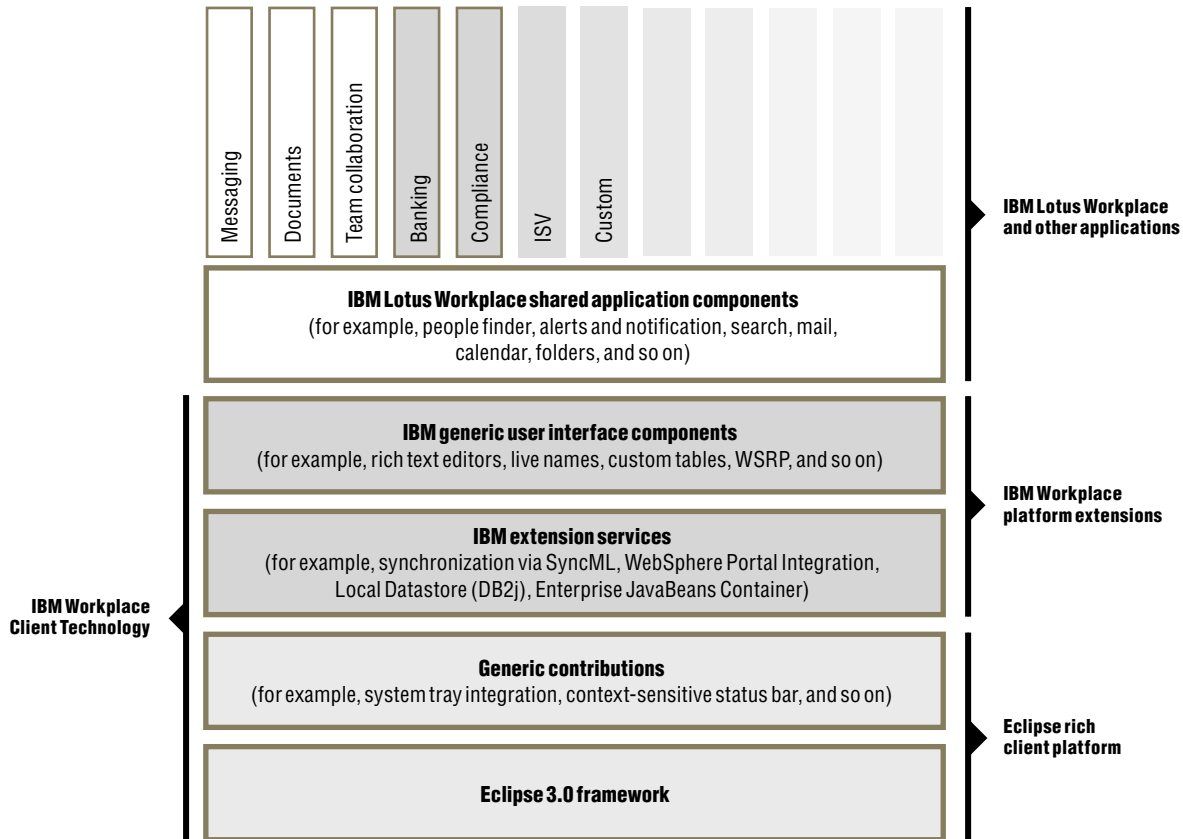


Figure 1. IBM Workplace Client Technology conceptual stack

The core platform is based on Eclipse technology, which provides the Java run-time environment for general desktop applications, an application user interface, and a flexible architecture that is easily extended and supports multiple operating systems.

Add-on generic contributions are being developed through cooperative effort between IBM and Eclipse.

IBM extension services consists of value-added capabilities that Lotus holds for its own applications, such as synchronization via SyncML, credential store for security, single-sign-on for user convenience and simplified access management, and more. WebSphere Portal software is used as the aggregation framework.

The IBM user interface layer provides reusable components — such as rich text editor, live names and custom tables — that tie into extension services and can be used in applications built either by IBM or other providers.

IBM Lotus Workplace shared application components comprise the Lotus Workplace collaboration platform and can be assembled to create Lotus products such as IBM Lotus Mail and IBM Lotus Workplace Documents, and other applications that third parties can build.

... a no-touch deployment model coupled with policy-based management to help reduce the cost of managing the end-user's desktop environment.

Defining features of IBM Workplace Client Technology

IBM Workplace Client Technology provides a no-touch deployment model coupled with policy-based management to help reduce the cost of managing the end-user's desktop environment. As an enterprise solution, IBM Workplace Client Technology provides built-in security features, such as a local, encrypted data store that synchronizes with the server environment (to support both connected and disconnected operations), and the ability to help ensure that all applications running are provisioned and digitally signed by a trusted source.

IBM Workplace Client Technology provides fundamental document-management and editing capabilities, giving enterprises a further level of control over the intellectual property that is created, edited and stored on desktops and mobile devices. It includes editors for word-processing, spreadsheets and presentation files, as well as plug-in support for other leading editors.

To help maintain customer flexibility, IBM Workplace Client Technology will support a variety of client operating systems, including Linux distributions, Microsoft® Windows® on the desktop, (and currently planned, Macintosh OS) as well as a range of mobile devices.

Setting the path for IBM and the industry

Workplace Client Technology will be IBM's foundation for building rich desktop environments for IBM standards-based servers, including Lotus Workplace products and select products from across the IBM Software Group portfolio. Current plans include leveraging Workplace Client Technology in future releases of IBM Lotus Notes® (targeting release 8) so that Lotus Notes customers can enjoy the benefits of Lotus Workplace and the client technology without having to rip and replace their current applications. The technology will also be made available in future releases to solution providers and ISVs that can leverage its open standards and second-generation componentization (with objects coming from both Lotus and other IBM brands) to help weave together robust valuable solutions.

Benefits

Customers that leverage products and solutions built with IBM Workplace Client Technology can enjoy the following advantages.

No-touch desktop provisioning. Server-managed delivery of rich clients to end-user communities, based on roles, with centralized setup, administration, client updates and policy-based distribution of capabilities on demand. Administrators will be able to push down incremental updates to components – not only to applications, but also to the base framework.

Role-based application access and data aggregation. Centrally managed, portal-based personalization and aggregation of end-user data and application access will help support increased user productivity.

Faster application deployment. With the dynamic provisioning capabilities, users can be kept up to date easily on latest versions of their software, and companies can be more nimble in deploying applications needed to support critical business processes, speeding time to value.

Enforcement of business policies. Central management of desktops will allow companies to define and implement policies supportive of operational goals. Policies on issues such as document retention, data access, which content editors to use, security, movement from proprietary to open document formats, or virus protection can be enforceable through automated, nonintrusive means.

Rich user experience. Support for mobile users through disconnected use with synchronization, plus the power and usability of client software, such as drag-and-drop, user interface control, improved integration with PC-based applications and embedded document management. These are capabilities that users have come to expect and that are needed by certain classes of applications, but which browsers are unable to deliver. Users will have a much better experience because of the integrated environment that provides them with everything they need, richer, more supportive capabilities, and faster response time – all of which contribute to enhanced productivity.

Built-in document management and content editors. Personal-to-enterprise document management support with included editors that help streamline access to documents and support popular file formats. IBM Workplace Client Technology will also provide plug-in support for many document-editing and application run-time environments, such as Microsoft Office, Lotus Notes or specialized applications.

Secure document and data management. A local, encrypted, server-managed and synchronized data store, with robust policy-managed access and control. With security features, the encrypted data store can manage documents and relational data on the local device, as well as help protect against viruses and other security violations.

Flexibility and choice. Multiplatform support for Linux and Windows (and currently planned for the Macintosh OS) provides end-user client alternatives and options for integrating and extending existing applications. Support for evolving standards will help ensure that applications are built using an open, flexible architecture so that as new standards-based applications evolve, organizations can take advantage of them. Because IBM Workplace Client Technology provides support for both Web-based and Eclipse technology-based applications, customers can have the flexibility to build and deploy applications in a way that helps optimize their on demand infrastructures.

Extensible client platform. The open, flexible IBM Workplace Client Technology will enable end-user, enterprise and third-party customizations of the environment and applications, while retaining enterprise policy control. With the ability to plug in existing supported applications and content so they can be used within this framework, companies can continue to integrate new capabilities over time as they are needed and become available.

Low cost of ownership. No-touch client management, updates and deployments, superior security features and scalability, open standards and cross-platform flexibility, and provisioning of capabilities on demand can all help to reduce TCO.

Workplace Client Technology applications

Solutions built on IBM Workplace Client Technology will fit into a user's environment as a centrally managed desktop application experience, serving as a powerful alternative to browser access to Lotus Workplace, to WebSphere Portal, and eventually to third-party applications. IBM currently plans to release two such solutions powered by Workplace Client Technology in 2004: IBM Lotus Workplace Messaging and IBM Lotus Workplace Documents.

IBM Lotus Workplace Messaging

This application provides users with an integrated experience for accessing mail, calendaring, instant messaging and more. Its primary design goal is to allow users to focus on the task at hand instead of the tools they use. It follows the componentization model, with components such as mail, calendar, awareness and chat available for use throughout the Lotus Workplace collaborative application portfolio. It can be reused by external developers as they create new applications for both the browser and desktop environments.

In addition to the base mail and calendaring capabilities offered in the browser version of Lotus Workplace Messaging, the rich client edition will provide new capabilities, such as integrated instant messaging, ability to chat with others from various views, support for offline mail and calendar, spell check, printing, local full-text search, people finder, basic mail threads, simplified briefing views, attention indicators and much more. The rich client experience will also enjoy the benefits of dynamic client provisioning, configuration and upgrades.

The planned release for this product is second quarter 2004.

IBM Lotus Workplace Documents

The Lotus Workplace Documents application will provide document creation and editing, rendering and life-cycle management functions, combined with the use of an enterprise document library. With Lotus Workplace Documents, documents created locally are synchronized back to the enterprise store on the server, facilitating better management and control of the critical business information that resides in documents.

Lotus Workplace Messaging and Lotus Workplace Documents will be just the first in a series of rich client applications powered by IBM Workplace Client Technology.

Accessed via the rich client, Lotus Workplace Documents provides a local, encrypted content repository, enabling more secure storage of content on end-users' machines and the ability to work with documents offline. Additionally, the rich client allows users to drag-and-drop files from the local hard drive into the local client repository for synchronization back to the enterprise document library, encouraging the secure storage and sharing of content. The rich client will also include document editors (word processing, spreadsheets, presentations), the ability to integrate with other productivity applications such as Microsoft Office (when deployed on a desktop that has Microsoft Office), and integrated instant messaging and chat so a user can instantly collaborate with a document's author. All the benefits of a managed client (dynamic client provisioning, configuration and upgrades) are also available.

The planned release for this product is second quarter 2004.

Next steps

Lotus Workplace Messaging and Lotus Workplace Documents will be just the first in a series of rich client applications powered by IBM Workplace Client Technology. Subsequent releases of the Lotus Workplace products will deliver the rich client experience across the whole Lotus software portfolio, including applications for team collaboration and collaborative learning. IBM also plans to leverage this technology with WebSphere Portal software to enhance functionality, including support for offline portal applications. Additionally, Lotus has already demonstrated technology previews of planned future releases of Lotus Notes that will leverage IBM Workplace Client Technology so that Notes® customers can benefit from the advantages of the client technology without having to rip and replace their existing Notes applications.

Moving ahead

What does this evolution in network computing mean for those concerned with the strategic direction of corporate IT infrastructures? IBM Workplace Client Technology will be a journey and can evolve with your infrastructure. Within six months of the first two product releases currently planned for second quarter 2004 (Lotus Workplace Messaging and Lotus Workplace Documents), it is anticipated that more IBM products will follow and the enabling technology will be made available to the ISV development community. Moving forward, the intent is that IBM Workplace Client Technology will become the foundation for rich client user experiences across the Lotus Workplace portfolio and for WebSphere Portal, and that the tool set for the ISV and solution developer community will continue to grow.

Interested parties can begin learning more about the technology through postings on the IBM Web site and other communication vehicles. You will want to begin thinking about how this technology maps to your current needs and the role it will have in your future.

Early adoption

IBM Workplace Client Technology and its first related products will be attractive in the near term (as well as the long term) to organizations that match any of the following descriptions:

- Are concerned about the manageability, security and cost of ownership of desktop solutions.
- Are looking at portal technologies.
- Have a need to support a distributed or mobile workforce.
- Are interested in finding new methods for enhancing Web applications to provide rich capabilities traditionally found only in fat-client software.
- Have applications that lend themselves to branch topologies or require support for disconnected use.
- Have users with messaging, calendaring and scheduling needs that would benefit from the deployment and access features of Workplace Client Technology, such as support for disconnected use, central provisioning of new capabilities, and integration with desktop and other business and collaborative applications.
- Have a need for applications that support collaboration.
- Have a need for the document services that the technology will provide to address concerns about compliance, and security of data and intellectual property created by users.
- Are taking advantage of the Eclipse programming model and have applications in development.
- Are interested in extending their development environments to encompass open standards.
- Are interested in deploying Linux client environments or taking advantage of standards-based client software components.
- Use Java and Java 2 Platform, Enterprise Edition (J2EE) programming models.

Getting ready

There are several ways that organizations can begin now to prepare for the adoption of IBM Client Workplace Technology.

Get familiar with Eclipse. Organizations that will want to develop their own applications or customize existing ones in the future using this technology should begin acquainting themselves with the Eclipse development framework. This is true both for organizations that live in the open-source world, and for those that reside in the portal world, using the STRUTS framework, but will want to use IBM Client Technology farther down the road.

Evaluate WebSphere Portal. IBM Workplace Client Technology uses WebSphere Portal as the aggregation framework. Companies evaluating portal technologies should consider the market-leading WebSphere Portal, knowing that rich client technology will help them extend their portal investment and provide a rich user experience.

Assess needs of user population segments. CIOs and IT managers can begin to look at their existing IT infrastructures to evaluate the current costs of serving their full complement of users – including the costs of upgrading technology at the desktop, of maintaining the IT management infrastructure required to support and operate the environment, and of providing many tools in excess of need for many users because of licensing agreements that necessitate one-size-fits-all provisioning. Clearly, a one-size-fits-all approach to desktop applications can be cumbersome and costly. Begin assessing your user populations and inventorying the real needs each segment has. The cross-platform support, componentized architecture, and open framework of IBM Workplace Client Technology can help you serve various user populations consistently with the capabilities they need, while minimizing extra overhead or costs.

Plan ahead. Piloting of IBM Workplace Client Technology is planned to start in May 2004, with the first production deployments anticipated for early 2005. Organizations that recognize the importance of this technology in their futures should begin looking at it and bringing it in house to pilot through 2004, and preparing to consider early implementations in late 2004 or early 2005.



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¹ "How to Decide Between a Browser-Based or Rich Client," by Uttam Narsu with John Meyer, Forrester Research, Inc., February 2003.

² "Eclipse Joins LAMP: Mainstream Tools and Rich Clients," by James Governor, RedMonk Report, March 19, 2004.