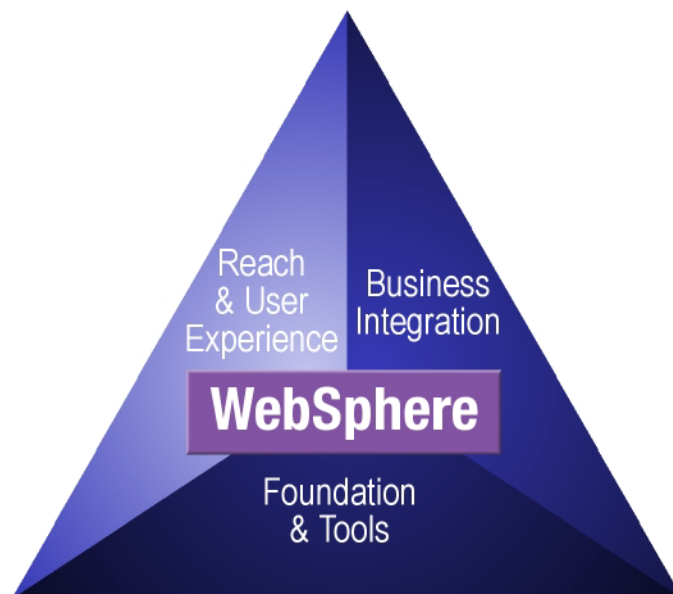




World Class Infrastructure for On Demand Business

WebSphere Application Server, Version 5



Intelligent End-to-End Application Optimization

In today's ever-changing business environment, the ability to optimize your network for enhanced performance, scalability and availability on an ongoing basis has a direct impact on the top and bottom lines of a business. High-volume, dynamic Web sites place significant demands on e-business infrastructure. Attracting and keeping customers who have the choice to go elsewhere requires reliable and secure access to business-critical applications. And, refreshing frequently-requested data must happen dynamically and transparently so the Web sites are available without interruption. All these functions must happen while continuing to drive efficient operations and keep costs down.

WebSphere® Application Server, V5 leverages the proven experience of IBM to deliver the most scalable, available and secure e-business platform. Through added performance and availability features together with edge-of-network technology and advanced security capabilities, *WebSphere Application Server, Version 5* can dynamically and securely react to network pressures. WebSphere provides an intelligent, optimized application platform that benefits business today and lays the foundation for e-business grid services capabilities.

For the highest qualities of service, *WebSphere Application Server, V5* includes capabilities to exploit the powerful z/OS™ operating system platform. *WebSphere® Application Server, V5* is the only application server software natively exploiting key facilities like Workload Manager (WLM), Parallel Sysplex and Intelligent Resource Director for true optimizations in that environment.

Always On, Always Available

To improve network performance and system availability and to reduce unplanned outages, *WebSphere® Application Server, V5* provides an improved and more advanced implementation of workload management, offering more intelligent application-level load balancing across WebSphere clusters.

The new load-balancing component in *WebSphere® Application Server, V5* provides a scalable solution for distributing and routing HTTP, servlet, and Enterprise JavaBean™ (EJB) requests. As the load on one server or a cluster of servers with similar content increases, the load balancer can redirect this incoming traffic to underused servers to help maintain optimal response times for each site visitor. Incoming user requests are routed to back-end servers depending on their availability, performance and on the relevance of the application or components they host.

Additionally, custom advisors can be used to load-balance requests based on unique application and platform criteria. To ensure ever-changing, accurate traffic allocation to back-end servers, an advisor can be deployed to be as high level as periodically determining the overall status of the servers, or as granular as checking specific application response times on the servers. Once the server health is determined, the advisor informs the load balancer "manager" function, which then sets weights for the servers to determine which server should receive new session or application requests. Through advisor code, traffic is appropriately routed to the optimal back-end server.

To extend the load balancing capabilities beyond purely a WebSphere Application Server environment, consultant code can be used to optimize server performance within a Cisco or Nortel infrastructure. Consultants generate server weighting metrics and distributes them to Cisco CSS 11000 switches or Nortel Alteon 180 series of switches for optimal server selection, load balancing and fault tolerance.

Of course, no system is 100% free from failure risk. If a failure does happen, WebSphere helps capture the root cause of the failure and quickly diagnose the necessary corrections. If remote support is

needed to fix a problem, then everything the remote support team needs for diagnosis is automatically captured for further investigation.

Enhanced User Experience

For improved system response times and enhanced user experiences, WebSphere's caching technology can be deployed to reduce network congestion by storing frequently accessed content so information is retrieved only once. Information can be cached depending on when it will expire, how large the cache should be, and when the information should be updated. Faster download times for cache hits mean better quality of service for customers and reduced load on back-end servers.

The new edge-of-network caching capability in *WebSphere Application Server, Version 5*, improves response time by offloading back-end servers and peering links. And, in contrast to other caching proxies that can cache *static* content, the edge proxy server can also cache - and invalidate - *dynamically-generated* content from the WebSphere Application Server, such as JSP and servlet results to create a virtual extension of the application server cache into network-based caches - or to caches in the Akamai network through the implementation of Edge Side Includes (ESI) technology.

Edge Side Includes (ESI) is a simple mark-up language and proposed standard for the dynamic assembly of Web page fragments, such as stock quotes and individual catalog prices. By leveraging ESI technology, dynamic content caching is extended by moving fragments from the Application Server to a proxy server that resides in the network - such as Akamai's. This enables caching to occur at a more granular level, as well as allowing companies to position page composition at the most optimal location, closer to the end user. As a result, companies can improve user experiences through expedited, personalized page composition, and reduce workload on the network servers due to fragment offload to the edge. In addition, *WebSphere Application Server, Version 5*, maintains control over the externally cached fragments through the ESI Invalidation Gateway.

To further enhance network performance, WebSphere exposes performance monitoring interfaces to allow Tivoli and third-party performance monitors to better integrate with WebSphere and provide services to help you fine-tune your WebSphere systems for the best possible overall performance regardless of the typical peaks and valleys of transactional application needs.

Instill Confidence with Security

WebSphere Application Server, Version 5, offers the best security in the industry through its sophisticated security infrastructure, single sign-on capabilities and through its extensive support of open, standards-based java specifications. WebSphere Application Server's secure infrastructure prevents unauthorized access to the J2EE and Web resources it protects, through strong WAS authentication capabilities that consist of basic (UserID/Password), forms-based, and certificate options to validate that a user is who the user says he/she is, and roles-based authorization to allow the user to only access those resource(s) that he/she has been given the rights to access through the designation of the administrator.

From a single sign-on (SSO) perspective, WebSphere Application Server includes SSO capability across Domino, WebSphere and Tivoli resources to allow web users to move between different applications, located on the same or different physical machines, without being prompted for a username and password (or certificate) every time.

Additionally, *WebSphere Application Server, V5*, will support Java Authentication and Authorization Services (JAAS) for authenticating new principals and managing privilege information for a principal, Java 2 Standard Edition (J2SE) for securing system resources, Java Secure Socket Extension (JSSE) for securing communication channels based on transport level security (TLS/SSL), Java Cryptographic Extension (JCE) and Java Cryptographic Architecture (JCA) for java cryptographic extensibility such as for PKI integration, and Common Secure Interoperability V2 (CSIv2) for secure interoperability between application servers. Together, these implementations enable customers and partners to implement standards-based security capabilities within their enterprise applications.

Sophisticated enterprise topologies and infrastructure can also be implemented by leveraging WebSphere's pluggable security architecture. This includes pluggable user registries to enable customers to exploit LDAP or custom registries, web single sign-on exclusively provided by WebSphere or through integration with front-end authentication end-points through Trust Association Interceptor (TAI) technology.

And, if you require a centralized approach to security, tighter integration has been developed between the *WebSphere Application Server, Version 5* and the Tivoli Access Manager. This will enable you to build centralized identity management solutions with global sign-on capabilities and enforceable policies to secure cached and non-cached J2EE, Portal, Web and legacy resources. In addition, companies who implement this integrated solution will benefit from the ease of working with a single object namespace, representing the full set of security policies for the resources you want to protect. When T. Rowe Price needed to create secure Web-based access with single sign-on across 120 applications for over 1 million users, they chose an integrated WebSphere Application Server and Tivoli Access Manager solution. The result was a secure enterprise environment that greatly simplified administration and enhanced user experiences.

In the Web Services Security space, *WebSphere Application Server, Version 5*, will provide support for the WS-Security specification, that was jointly developed by IBM, Microsoft and Verisign and recently submitted to the OASIS standards body. The WS-Security specification defines the propagation of security credentials, including identity assertions, digital signature support and XML-based encryption.

Harness the Power of z/OS

WebSphere® Application Server for z/OS allows you to deploy your J2EE applications and Web Services to the platform that was specifically designed to respond to the demanding Quality of Service requirements for large-scale enterprise e-business: zSeries™ servers running the z/OS operating system. *WebSphere Application Server for z/OS* utilizes zSeries™ and z/OS unique features that translate into real, tangible business benefits in a variety of key areas, including:

Availability: the z(ero downtime)/OS brand promise. z/OS is capable of consistently delivering expected service regardless of capacity-constrained environments, unanticipated workload spikes, or failures in applications, system software or hardware. *WebSphere Application Server for z/OS* is designed for availability through its focus on workload isolation; exploitation of z/OS Parallel Sysplex clustering; integration with z/OS Automatic Restart Management (ARM); and utilization of the self-managing behavior of the z/OS Workload Manager (WLM).

Selectivity: managing resources towards achievement of business goals. z/OS enables the ability to guarantee service levels (response time, throughput, etc) for specific types of customers and high priority workloads as defined by business needs. *WebSphere Application Server for z/OS* is designed to rely on the z/OS WLM to provide goal-oriented workload balancing, management and reporting both within a system and across a Parallel Sysplex cluster.

Integration: enabling reuse of existing assets. Composition and integration with multiple z/OS resource managers is a key requirement for any application that needs to reuse existing assets. *WebSphere Application Server for z/OS* is designed to provide optimized, heterogeneous two-phase commit concurrency control with IMS, CICS and DB2. Using *WebSphere Application Server for z/OS* as your integration engine will provide optimal performance (through closer data proximity and a reduced duration of held locks), better availability (through reduced points of failure), and faster recovery in rollback situations.

Efficiency: maximizing people and system resources. z/OS was designed for efficiency, and can provide a lower total cost of ownership through reduction in trained system programmers to configure, monitor, and adjust multiple systems, and fuller utilization of existing capacity. z/OS is able to automatically handle unpredictable spikes in mission critical workload without wasting spare cycles during periods of low and average utilization. As a well-behaved z/OS subsystem, *WebSphere Application Server for z/OS* easily fits into the heterogeneous nature of z/OS workloads running simultaneously in either a single z/OS image or across multiple images configured in a Parallel Sysplex cluster.

Security: providing a trusted environment. z/OS is a proven security leader, maintaining the integrity and availability of systems, applications and data in the face of threats. *WebSphere Application Server for z/OS* was designed to fully integrate with the IBM SecureWay Security Server for z/OS or equivalent z/OS security products.

WebSphere Application Server for z/OS is the only application server that has been designed with the special optimizations and fine-tuning required to fully exploit and leverage the exceptional scalability capabilities of the z/OS operating system environment.

For the existing z/OS customer, *WebSphere Application Server for z/OS* lets you fully leverage your existing investment in zSeries in unparalleled ways. The skills and the procedures already in place for use in your data center can be utilized with *WebSphere Application Server for z/OS* in taking these battle tested, proven assets to the web environment.

WebSphere Application Server for z/OS provides the best of both worlds for your environment - the deep exploitation of the zSeries hardware and z/OS software, with the application portability of the J2EE standards. As business needs demand, a J2EE application or Web Service deployed to any other platform can be re-deployed without code changes to z/OS. With *WebSphere Application Server for z/OS*, you can leverage your existing assets and investments without new skills or hardware purchases, and well-established operational procedures for the zSeries can be re-used for your Web environment.



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