

IBM Raises the Application Platform Bar with WebSphere Extended Deployment

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WebSphere Extended Deployment (XD) “extends” the WebSphere Application server with enhanced capabilities in several areas. XD focuses on scaling on-demand (by dynamically allocating server hardware resources¹ to applications), simplifying operation management, and improving the quality of service for high-transactional applications. XD extends the J2EE environment with some mainframe-class application platform capabilities building on what IBM has learned in high-transactional custom development on J2EE. While WebSphere for z/OS stands alone among application server offerings in providing a mainframe-class application platform, with XD, IBM brings some of this capability to other platforms including Linux/Intel, AIX, Solaris, and Windows. While competitor offerings can provide scalability for high-end transactional environments, none offer virtualization and partitioning flexibility, which increases hardware utilization efficiency. Manageability enhancements in XD also offer significant differentiation from competing offerings. For users, XD together with WebSphere Application Server Network Deployment (ND) delivers a high-performance, manageable, and dynamically scalable application platform for WebSphere applications deployed on Windows, Linux, Solaris, and AIX that leverages the principles and concepts of proven IBM systems, such as WebSphere Application Server for z/OS.

Before WebSphere XD, IT either had to deploy WebSphere Application Server for z/OS or perform a significant amount of custom development and configuration to achieve higher quality of service levels on Linux/Intel, AIX, Solaris, and Windows. With XD, these distributed platforms can achieve higher quality of service levels for WebSphere applications, however these levels do not quite match those of WebSphere for z/OS. The new manageability features of XD reduce the labor to manage complex WebSphere environments that are typical where such high levels of transactional capability and quality of service are deployed.

The value proposition presented by WebSphere XD will extend to other WebSphere offerings that are built on WebSphere Application Server ND such as Business Integration, Portal, and Commerce. Further, ISVs and custom IT application developers can also leverage these benefits, which reduces the need for custom infrastructure development. This allows IT and ISVs to focus on business logic and business process improvements and differentiation instead of application development.

WebSphere XD enables scalability through the dynamic allocation of resources with a virtualized WebSphere environment. It creates pools of resources that can be shared among applications. This breaks the relationship between application clusters and machines, which can now be shared amongst applications, optimizing resource utilization and simplifying overall deployment. Further, WebSphere XD dynamically adjusts application resources according to demand. Finally, it can scale beyond the defined application server pool with Tivoli Intelligent Orchestrator (TIO – which is optional). TIO dynamically expands and

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contracts resources by adding and removing machines into and out of resource pools when monitoring logic deems it necessary. For users, this means a greater utilization of existing hardware resources. Further, this dynamic allocation capability reduces the pressure to configure to the highest potential scenario for each application in isolation, a practice that leaves a great deal of unused capacity on the IT shop floor.

New in WebSphere XD is the ability to deliver application availability and performance using policies based on defined business goals. This enables a “goals-directed infrastructure” that better aligns IT with business goals by directing the IT infrastructure to work on the most critical workloads with the highest priority to ensure greater customer and stakeholder satisfaction. WebSphere XD enables IT to define application service levels that are consistent with business goals. IT can optimize application performance according to operational policies that reflect application service level goals and the application’s relative importance to the organization. Another feature delivered in XD is enhanced quality of service for business critical applications. User requests are classified, prioritized, queued, and routed to servers based on application operational policies (which are tied to business goals). Finally, the “goals-directed infrastructure” created by XD balances workload based on each server’s performance. Server weights (and associated workload routing) adjust dynamically according to actual server performance, which results in improved application throughput and response time. While this feature adds value and helps achieve greater quality of service levels, it injects complexity into the WebSphere environment, which requires administrators to learn new skills. Nevertheless, D.H. Brown Associates, Inc. (DHBA) believes that administrators of large-scale deployments will welcome this capability.

XD further differentiates with visualized and simplified management of IT application platform operations. Administrative tools provide an aggregate view of the application runtime environment, which offers real-time insight into resource utilization and performance to facilitate application infrastructure management. Monitoring of application server runtime behavior and performance is provided by an aggregated view of the application runtime environment. A visual operational console provides charting of application performance against business goals. WebSphere XD reduces human-intensive monitoring and management by providing alerts when intervention is required to deliver on business goals. Finally, these new administration capabilities introduce autonomies in a controlled, gradual way. Multiple operations modes – manual, supervised, and autonomic – provide options where the software can suggest actions that are implemented if IT staff agrees. Eventually, IT may allow the software to implement the action automatically. DHBA believes that administrators will want to retain control until they become more comfortable with XD. Even then, autonomies will take some time to penetrate the mainstream.

WebSphere XD adds a level of high-performance computing for high-demand transactional applications, which will enable near-linear scalability for high write rate, On-Line Transaction Processing (OLTP) applications. Applications may be designed to divide logic and data into sections (e.g., by ranges of customer numbers) that can be mapped to

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partitions in servers and in databases. Because reliability is critical to high-end OLTP, WebSphere XD includes high availability services that provide Class 5 (99.999%) availability for partitioned applications and fast application recovery time (seconds versus minutes). The high-performance computing focus of XD enables J2EE development that leverages existing Java skills to build high-end OLTP applications.

For end users, XD means that enhanced quality of service for the J2EE platform is available for Windows, UNIX, and Linux application deployments. Further, the virtualization features of the application platform allow IT to better utilize the hardware it already has and reduce the requirement to deploy hardware for peak workload for each application in isolation. The manageability and autonomic features will enable IT administrators to view their complex environments as a total unit and improve their productivity. XD offers advanced features for complex environments. For these to penetrate the user base and become relevant, IBM must ensure their ease of use and deployment.

While other vendors' J2EE or .NET application platforms can scale to support large applications, none bring the mainframe-like capability that XD does to WebSphere Application Server. Some of these other vendors offer strong ease-of-use and developer productivity as value propositions; hence, have good penetration into single-application-per-server deployments. However, IBM WebSphere XD is optimized to enable high qualities of service with multiple applications deployed per server and to utilize the hardware across an IT installation more efficiently. Other vendors will be pressured to improve their high-end capabilities to be competitive with IBM in these environments.

¹ XD does not directly allocate hardware resources; rather it allocates servers from a pool that have already been provisioned with an OS and WebSphere Application Server.

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