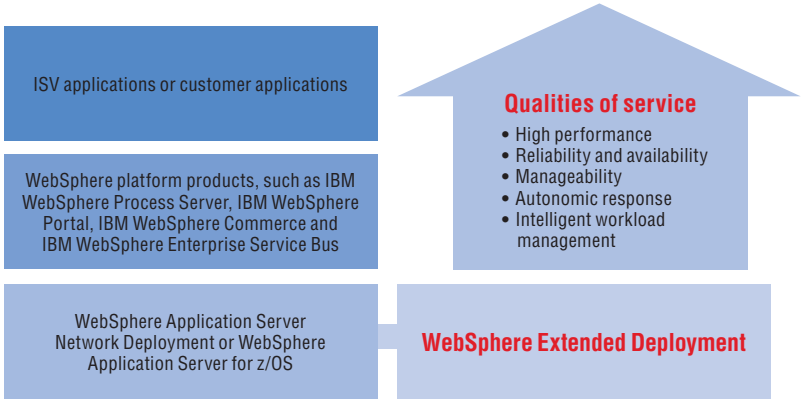
WebSphere® software

IBM WebSphere Extended Deployment, Version 6.1 and IBM WebSphere Extended Deployment for z/OS, Version 6.1

Highlights

- ***Provides virtualization capabilities that can dynamically match available resources to changing workload demands***
- ***Features virtualization, and workload and health management for PHP, BEA WebLogic, JBoss, Apache Tomcat and WebSphere Application Server Community Edition application environments***
- ***Offers enhanced capabilities in job scheduling, monitoring and management for batch-type workloads***
- ***Delivers customizable health policies and actions to help enhance manageability***
- ***Supports innovative and highly scalable data fabrics to accelerate data-intensive application performance***
- ***Provides flexible purchase options to give you choices in satisfying your business requirements***



WebSphere Extended Deployment can help you achieve your business goals.

Your business can only be as flexible as the IT systems that support it. To thrive in an environment of market volatility and competition, your IT infrastructure must be able to adapt as your business needs fluctuate—with a minimum of human intervention. Building robust function into your IT infrastructure can help reduce IT-management complexities, enabling you to better use your existing assets. You can also improve your organization's ability to respond quickly to changing customer and trading-partner demands—and be better prepared for future growth.

Flexibility in business has become equal in importance with operational efficiency. While the drivers of change manifest themselves differently in each industry, a common theme is emerging across all industries: those that adjust to change more quickly gain a competitive advantage. A service oriented architecture (SOA) can be your key to making the IT department a catalyst for growth and innovation.

Extend the capabilities of your IT infrastructure

IBM WebSphere® Extended Deployment, Version 6.1 delivers exciting new virtualization services at the application layer, to help you match available resources to workload demands. The ability to dynamically manage workload and resources gives you the IT flexibility necessary, in fast-changing environments, to deliver resources where they are most needed, providing your clients with the best service possible.

Today, many existing IT infrastructures face common challenges of:

- *Scaling IT resources so that they can adjust dynamically to business needs.*
- *Helping to ensure high availability and reliability during peaks in transaction volume.*
- *Helping to reduce the effort and cost of monitoring and managing a complex IT environment.*
- *Providing consistent and predictable performance for critical applications.*
- *Handling unrelenting data volumes that can have dramatic effects on application performance and business competitiveness.*
- *Building on current investments in software, skills and servers.*

WebSphere Extended Deployment can help you address these challenges through a dynamic, goal-directed, high-performance environment for running transactional, batch, data-intensive and compute-intensive workloads simultaneously while delivering a resilient operational-computing environment that is dynamic, manageable, high-performing and flexible.

Dynamic

With WebSphere Extended Deployment, your application environment can scale as work demands dictate, through the virtualization of WebSphere software resources, according to service policies based on your business goals. This capability can help you increase the speed at which your company can adapt to business change.

Manageable

WebSphere Extended Deployment can help improve the management of complex system operations with meaningful, real-time, advanced visualization tools and gradual, controlled implementation of autonomic capabilities and health policies, helping you reduce the cost of managing IT resources.

High-performing

WebSphere Extended Deployment can enhance the quality of service of your critical applications to support high-end transaction processing, helping you to improve customer-service levels while also taking advantage of existing Java™ programming skills and resources. It also enables applications to deal with the daunting challenges of growing data volumes in a scalable and resilient manner. And you can extend these robust performance capabilities to existing and competitive application-server environments.

Flexible

Organizations can run both Online Transaction Processing (OLTP) and batch-type workloads within the same application server and have WebSphere Extended Deployment intelligently manage and prioritize the work. Enhanced service policy and workload management for batch jobs gives you the flexibility to support mixed application types and patterns.

Dynamic-operations capabilities that can help increase business responsiveness

Through its dynamic-operations capabilities, WebSphere Extended Deployment can automatically adjust how it manages the incoming work requests, based on the business goals and available resources, to achieve agreed-to service levels. The key elements of dynamic operations are a service-policy model, workload-management capabilities and dynamic server pools.

Service-policy model

The service-policy model provides the ability to differentiate application work requests according to their importance. This feature enables you to define how the work should be managed based on business goals and objectives. Work can be assigned to different transaction and service classes as a way to define relative importance and average response times desired.

Workload-management capabilities

The workload-management capabilities help ensure that work requests are classified, prioritized, queued and routed to servers based on the service policies set by the user. WebSphere Extended Deployment places work requests on the server best able to handle them, and then monitors these requests to help ensure that they are meeting the service policies. As the volume of incoming requests increases, WebSphere Extended Deployment, using virtualization technology, can dynamically increase the number of application instances available to process the work.

Dynamic server pools

Server resources are pooled in shared, dynamic clusters so that WebSphere Extended Deployment can dynamically assign work requests across the shared pool. The size of the dynamic clusters is increased or decreased dynamically as work demands require, enabling WebSphere Extended Deployment to more fully use the server resources available.

When deployed on the IBM z/OS® operating system, the service policy-driven workload-management capabilities of WebSphere Extended Deployment provide complementary functionality to IBM z/OS Workload Manager, which also supports policy-driven workloads. And in environments where z/OS is the centralized platform, with management required across multiple distributed platforms including Linux® on IBM System z™, the dynamic-operations capabilities of WebSphere Extended Deployment can manage workloads that run on both z/OS and distributed platforms.

When WebSphere Extended Deployment determines more server resources are required to meet service-level goals, it can work with IBM Tivoli® Intelligent Orchestrator*, if present (available separately), to have more server resources allocated and then added to the shared pool. If other resources aren't available, WebSphere Extended Deployment can work within the business goals you've provided to meet the service levels of priority applications until the requirements on the system decrease. The ability to allocate resources in response to actual resource demand can potentially enable you to run more applications on the machines you already have in place.

Other dynamic-operations enhancements include:

New and expanded support for non-WebSphere application servers

WebSphere Extended Deployment, Version 6.1 significantly expands dynamic-operations support to a broad range of application-infrastructure resources, such as Post Hypertext Preprocessor (PHP) servers, BEA WebLogic, JBoss, Apache Tomcat and WebSphere Application Server Community Edition, among others. This capability enables a unified workload-management approach for mixed-server environments.

Network protocols supported
WebSphere Extended Deployment traffic shaping helps ensure that user requests are classified, prioritized, queued and routed to servers based on application-service policies that are tied to business goals. HTTP work requests receive full traffic-shaping support. Support for Java Message Service (JMS) work requests provides classification and flow control for JMS workloads. You can classify JMS messages based on the JMS destination name, enabling WebSphere Extended Deployment to differentiate and prioritize JMS messages.

Classification and flow-control support is also provided for Internet Inter-Orb Protocol (IIOP) workloads, specifically for the Enterprise JavaBeans (EJB) requests that use that protocol. You can classify workloads based on:

- *Application name (the name that the enterprise archive [EAR] is deployed under)*
- *EJB method name*
- *EJB module name (the name of the EJB Java archive [JAR] file)*
- *EJB name*
- *Source and destination of the Internet Protocol (IP) and ports*

WebSphere platform product support
WebSphere Extended Deployment supports the following WebSphere platform products:

- *IBM WebSphere Process Server*
- *IBM WebSphere Commerce*
- *IBM WebSphere Portal*
- *IBM WebSphere Enterprise Service Bus (WebSphere ESB)*

WebSphere Extended Deployment can optimize application performance by using service policies that let you state which applications are important to you, enabling those applications to get the highest-priority access to your WebSphere resources at the right time. This capability can help ensure, for example, that your best customers get the best quality of service when they interact with you.

WebSphere Extended Deployment also supports the ability to classify WebSphere Portal requests based on the virtual portal address. You can classify requests according to JMS destination name for WebSphere Process Server. For WebSphere Commerce applications, using HTTP header content to classify requests provides the ability to prioritize buy requests from browse requests or to identify a preferred customer from a first-time shopper, thereby giving better service to the request likely to be more important. WebSphere ESB supports intelligent routing of requests using HTTP, JMS and IIOP.

Support for balancing workloads across geographically dispersed regions
WebSphere Extended Deployment provides the ability to route requests for a particular application to geographically dispersed application-server clusters. This feature provides multicluster failover and load balancing if your organization operates across multiple physical locations. For example, if application A is deployed to two geographically dispersed cells, a New York cell and a Tokyo cell, the on demand router component in New York can be configured to send requests for application A to the Tokyo cell for:

- Geographic failover. *If no servers in New York are currently running application A, then requests for application A that are sent to New York can automatically be routed to Tokyo.*

- Geographic load balancing. *If sending the request to Tokyo is predicted to provide a better response time, typically due to server overutilization in New York, then requests can be load-balanced between New York and Tokyo.*

Extended manageability can help simplify IT management while maintaining administrator control

It can be difficult to visualize and manage complex, distributed IT environments where multiple applications are deployed on tens or even hundreds of application servers. Although the WebSphere Application Server administrative console provides excellent built-in capabilities, the special needs of very complex deployments require an aggregated, more-meaningful view of the application runtime environment.

WebSphere Extended Deployment expands the capabilities of the existing WebSphere Application Server administrative console to allow you to see, at a glance, what is happening in your infrastructure and assess the relative health of your application resources. It can also enhance the existing WebSphere administrative console by charting application performance against business goals so that you can easily determine success.

WebSphere Extended Deployment uses alerts to notify you when intervention is required to meet your business goals, which helps decrease personnel-intensive monitoring and management. For example, if a critical application is in danger of not meeting its defined business goal, a WebSphere Extended Deployment view might suggest that you allocate more servers to the application. Over time, you can automate these decisions and corresponding actions.

WebSphere Extended Deployment includes a number of existing and new operations features designed to maximize the management capabilities of the product.

Operations features

Operations features delivered by WebSphere Extended Deployment include:

- *An aggregated view, called a* tree map, *of the application runtime environment to help operators more quickly see areas that need their attention. The WebSphere Extended Deployment tree map provides a summary view of the configuration and performance of your entire environment. This starting point can be used to drill down to more-specialized views.*
- *Runtime topology views to show what applications are running where (important in a virtualized, dynamic environment) and application relationships to other WebSphere artifacts.*
- *Operations views to offer customizable charting to provide a graphical representation of application performance compared to performance goals.*
- *Events to alert operations of areas that are in the process of change or that require action, with direct links to chart views and other, more-detailed views.*
- *Autonomic computing options with three modes of operation—manual, supervised and on demand mode—enabling you to choose the level of control that you have over your environment. The supervised mode provides a first step toward autonomic operation, while letting you maintain control, and offers a way to incrementally adopt autonomic-computing capabilities. WebSphere Extended Deployment enables granular control of operating modes, so new applications can be treated with less trust than reliable, proven applications.*

Also in WebSphere Extended Deployment, Version 6.1 is the application edition manager feature, which provides virtually interruption-free application updates. This feature supports the deployment of multiple application versions without interrupting service, while providing a highly available application infrastructure with built-in failover support.

New operations features

New operations features in this release of WebSphere Extended Deployment include:

- *Three options added for controlling application assignment to dynamic clusters—isolation, strict isolation and isolation by group. This feature is particularly useful in environments, such as multitenant hosting, that require the isolation of server resources to particular applications.*
- *A new server state called* server maintenance mode *to facilitate the process of debugging or tuning a server in its runtime environment.*
- *Enhanced data logging and metrics for resource usage and workload implementation that help streamline charge-back accounting by easily facilitating integration with other billing products such as IBM Tivoli Usage and Accounting Manager.*

In addition, WebSphere Extended Deployment provides health policies for monitoring common application-health problems such as excessive memory, memory leaks and excessive requests. When a violation is detected, it takes several actions automatically, including notifying administrators, capturing diagnostics and restarting the server. This feature helps provide a first line of defense against poor application health. WebSphere Extended Deployment integrates with other products, such as IBM Tivoli Composite Application Manager for deep-dive application problem-determination capabilities.

New in WebSphere Extended Deployment, Version 6.1 is the ability to create customized health policies and actions tailored to your environment. You can monitor conditions of your choice and base the policy metrics on thresholds, trends or error-response codes. Administrators have the flexibility to specify which actions are to take place when a health condition is triggered. This broad support enables you to take a more-consistent approach to achieving health policies and actions across a heterogeneous set of application servers.

Extreme scalability for high-volume transactions and data fabrics

To reliably support high-end transaction-processing requirements within a unified WebSphere environment, WebSphere Extended Deployment provides an optimized transactional environment by helping to reduce unnecessary traffic to the data stores, which helps eliminate the most likely cause of bottlenecks. WebSphere Extended Deployment can enable you to achieve near-linear scalability as the transaction load increases, and a very fast recovery time in the event that a server fails.

High-performance computing features in WebSphere Extended Deployment include the partitioning facility and ObjectGrid features supported by high-availability services.

Partitioning facility

This feature lets you partition applications and data through a partitioning model that uses asymmetric clustering, an approach that enables intelligent request routing based on defined application partitions. This approach can result in dramatically improved caching rates and workload management, providing improved performance, higher throughput and near-linear scalability.

ObjectGrid feature

In WebSphere Extended Deployment, Version 6.1, the ObjectGrid feature has been enhanced to provide performance improvements across a wide range of application scenarios. The number of Java Virtual Machines (JVMs) and size of data sets supported have been significantly increased, query capabilities have been added allowing for parallel operations across the ObjectGrid configurations, and applications using different schemas for the underlying ObjectGrid information can run concurrently, helping to improve application availability.

The ObjectGrid feature facilitates the creation of innovative types of applications by extending the data-caching concept with advanced features to help you develop new classes of high-performance applications. You can use the ObjectGrid component to make these applications a reality in the following ways:

- *Simple data and database. An application might simply want to access its data structures to improve data performance and throughput using an ObjectGrid configuration as a cache.*
- *Peer-to-peer and shared. You can wire together a set of peer JVMs with an ESB to publish events across the set of virtual machines.*
- *Client/server. A JVM can have a local ObjectGrid that sits in front of a remote ObjectGrid and caches a subset of the data. This capability enables a client to use a very large remote cache to offload back-end processing or to speed access to cached results.*
- *Real-time data and event mining. A partitioned ObjectGrid configuration can subscribe to events, apply them to partitioned data and run continuous queries on each partition to produce aggregate data in real time, thereby supporting linear scalability for these application types.*
- *Ultra-scale data grid. ObjectGrid clients can invoke agents that run against data in parallel on all machines in an ObjectGrid. Clients can then further aggregate the data stored in the ObjectGrid in parallel.*

With WebSphere Extended Deployment, Version 6.1, the ObjectGrid feature offers significant enhancements to support application innovation, extreme scalability and increased levels of operational flexibility.

WebSphere Extended Deployment for z/OS, Version 6.1 supports the client environment, enabling z/OS applications to either accelerate performance of individual applications using caching or connect with distributed ObjectGrid configurations to enable high-performance, scale-out applications.

In addition, the ObjectGrid feature can run in a stand-alone fashion within any Java 2 Platform, Enterprise Edition (J2EE) or Java 2 Standard Edition (J2SE) JVM. Non-WebSphere servers can use the ObjectGrid feature to provide a common object-caching approach across heterogeneous deployments. The stand-alone ObjectGrid feature can be used for advanced object caching and to support HTTP session failover for Web applications. Sessions can be persisted within the ObjectGrid, enabling simple HTTP clustering.

Business flexibility to support mixed application types

Traditionally, systems are configured to optimize for OLTP applications while batch-type jobs are provisioned for separately, or run in a specific time period, such as off-peak hours. This practice can result in costly duplication of effort with no ability to share resources across the two environments. The virtualized, goals-directed, workload-management capabilities in WebSphere Extended Deployment are designed to help control the simultaneous implementation of these mixed application types in what's referred to as a business grid. The business-grid capability of WebSphere Extended Deployment can support this diverse mix of application types while helping to ensure service levels are met for priority requests.

Along with OLTP applications, WebSphere Extended Deployment supports several batch-type workloads, including Java transactional-batch, compute-intensive and, recently introduced with Version 6.1, a new type called *native execution*. This type of workload enables non-Java workloads to run on distributed end points. All these application types run in a business grid, a single application infrastructure that provides new opportunities for infrastructure optimization.

In addition, Version 6.1 includes a number of features designed to enhance the operation of batch-type workloads:

- *A job-management console to control the submission, setup, monitoring and termination of jobs*
- *A simplified, non-EJB programming model for transactional-batch jobs*
- *Improvements to job management, including integration with popular workload-scheduling systems such as IBM Tivoli Workload Scheduler*

WebSphere Extended Deployment for z/OS, Version 6.1 introduces dynamic servants to batch job-processing environments. Dynamic servants use z/OS Workload Manager capabilities to automatically start new servants to run batch workloads as business needs dictate. With this capability, the z/OS Workload Manager can dynamically add application servers in response to an influx of batch work requests.

Multimedia and presence-aware applications are also increasing in popularity as businesses seek new opportunities to bring new products to market. These applications often require unique qualities of service and support for new protocols. To help you keep pace, WebSphere Extended Deployment, Version 6.1 delivers support for these innovative applications by supporting the Session Initiation Protocol (SIP), which is an important protocol to facilitate the integration of voice and video in business applications.

The ability to manage mixed application types in a single application infrastructure is a real strength of WebSphere Extended Deployment. You can better optimize service levels when a common set of service policies drive allocation of resources across workloads.

You can also take full advantage of server resources when you use a common pool of virtualized resources for multiple application types. And WebSphere Extended Deployment enables you to handle development, administration and management centrally, helping to decrease costs and increase operational stability.

Flexible purchase options

For added flexibility, you now have more choices to address your business needs. You can purchase WebSphere Extended Deployment as a complete solution or purchase the individual component that satisfies a specific requirement. See the at-a-glance chart for more details.

A robust resource-management solution

WebSphere Extended Deployment can help enable you to:

- *Extend the existing qualities delivered by the WebSphere platform and apply this extended value throughout the application stack, helping to make your environment more reliable, better performing and more flexible.*
- *Scale as business needs dictate to almost seamlessly accommodate fluctuations in business demands with the virtualization of WebSphere application resources.*
- *Build massively scalable data fabrics with integrated availability and redundancy.*
- *Deliver application availability and performance using policies based on defined business goals.*
- *Confidently and efficiently manage your application infrastructure with a real-time, aggregated view of application resource usage and performance.*
- *Introduce autonomic-computing capabilities in a controlled, gradual way with manual, supervised and on demand modes of operation.*
- *Develop highly scalable, high-performance Java applications by using the partitioning facility and ObjectGrid distributed caching.*
- *Reliably support ultra-high-end transaction-processing requirements within a unified, distributed WebSphere software environment.*
- *Integrate your heterogeneous application-server infrastructure by effectively managing non-WebSphere resources.*
- *Support computational and transactional workloads with a common set of resources and scheduling, while helping to drive down costs and increase your business effectiveness.*

For more information

To learn more about IBM WebSphere Extended Deployment, Version 6.1, contact your IBM representative or IBM Business Partner, or visit:

ibm.com/software/webservers/appserv/extend

To join the IBM WebSphere Global Community, visit:

www.websphere.org

IBM WebSphere Extended Deployment, Version 6.1 at a glance

Product components and their functions

Product component	Function
WebSphere Extended Deployment Operation Optimization	• Virtualization • Workload routing (HTTP, SOAP, JMS) • Workload traffic shaping and flow control • Policy-based workload management • Dynamic application placement • Health management • Operational management • Visualization • Application-edition management
WebSphere Extended Deployment Compute Grid	• Transactional batch-workload services • Compute-intensive workload services • Job scheduling and management services
WebSphere Extended Deployment Data Grid	• ObjectGrid • Partitioning facility

Product features

	WebSphere Extended Deployment, Version 6.1	WebSphere Extended Deployment for z/OS, Version 6.1
Dynamic operations		
Virtualization	X	X
Dynamic cluster, shared server pools	X	X
Workload routing (HTTP, SOAP, JMS)	X	X
Workload traffic shaping and flow control	X	X
Service policy-based workload management	X	X
Dynamic application placement	X	X
Server-isolation policies	X	X
Health-policy-based management	X	X
Support for non-WebSphere application servers	X	
Operational management (in manual, supervised and on demand modes)	X	X
Visualization	X	X
Application-edition management	X	X
Central install manager	X	
Enhanced resource-usage reporting	X	X

IBM WebSphere Extended Deployment, Version 6.1 at a glance (continued)

Product features (continued)

	WebSphere Extended Deployment, Version 6.1	WebSphere Extended Deployment for z/OS, Version 6.1
Mixed application types		
Transactional batch	X	X
Compute-intensive	X	X
Native execution	X	
Job scheduling and management services	X	X
Dynamic servants		X
Service-policy coordination		X
Interface to scheduling systems from other vendors	X	X
SIP support	X	
High-performance features		
Synchronous and asynchronous replication	X	
Automatic data rebalancing	X	
Programming model support	X	X
Geographic zone balancing	X	
Replica restart from last checkpoint	X	

Hardware requirements

- For WebSphere Extended Deployment, Version 6.1: WebSphere Application Server Network Deployment, Version 6.1 with support for the same hardware platforms
- For WebSphere Extended Deployment for z/OS, Version 6.1: WebSphere Application Server for z/OS, Version 6.1 with support for the same hardware platforms

Platform support

- IBM AIX®
- HP-UX
- Linux on Intel®
- Linux on IBM POWER® processors
- Sun Solaris Operating Environment
- Microsoft® Windows®
- z/OS

IBM WebSphere Extended Deployment, Version 6.1 at a glance (continued)

Software requirements

One of the following applications

- WebSphere Application Server Network Deployment, Version 6.1
- WebSphere Application Server for z/OS, Version 6.1
- IBM WebSphere Process Server
- IBM WebSphere Portal
- IBM WebSphere Commerce
- IBM WebSphere Enterprise Service Bus

Operating systems

- AIX
- HP-UX
- Linux for x86
- Linux for AMD and Intel
- Linux for System z
- Linux on POWER
- Sun Solaris Operating Environment
- Windows
- z/OS
- IBM z/OS.e

For a complete listing of the hardware and software requirements for IBM WebSphere Extended Deployment, Version 6.1 and IBM WebSphere Extended Deployment for z/OS, Version 6.1, visit **ibm.com**/software/webservers/appserv/extend/requirements.

IBM Corporation
Software Group
Route 100
Somers, NY 10589
U.S.A.

Produced in the United States of America
04-07

Any performance data contained herein was determined in a controlled environment. Therefore, the results obtained in other operating environments may vary significantly. Actual results may vary. Users of this document should verify the applicable data for their specific environment.

* IBM Tivoli Intelligent Orchestrator does not support a z/OS installation of WebSphere Extended Deployment at this time and may not in the future.

WSD11323-USEN-00