



This presentation will give an overview of WebSphere Extended Deployment version 6.1.

This module references

WebSphere Extended Deployment Operations Optimization, which is now called WebSphere Virtual Enterprise and

WebSphere Extended Deployment Data Grid, which is now called WebSphere eXtreme Scale.

Though the module uses the previous names, the technical material covered is still accurate.

Agenda

- Introduction to WebSphere Extended Deployment
- Operations optimization
- Data grid
- Compute grid



This presentation will introduce WebSphere Extended Deployment and how it is packaged in version 6.1, then it will introduce the major features of WebSphere Extended Deployment.

Section

Introduction



This section will introduce the WebSphere Extended Deployment product.

Overview

- A set of extensions for your existing middleware systems focused around quality of service, performance, resiliency, and manageability
- Works with a variety of middleware systems
 - ▶ WebSphere and non-WebSphere
- Three main focus areas
 - ▶ Operations optimization with support for application virtualization
 - ▶ Data grid for high performance transaction processing
 - ▶ Compute grid for batch and compute intensive workloads



WebSphere Extended Deployment, also called WebSphere XD, is an add-on product for WebSphere Application Server that provides advanced features for your environment. WebSphere Extended Deployment adds features in the following areas:

Dynamic operations features enable a virtualized, dynamic environment for goal-oriented workload management, to take better advantage of hardware resources in a distributed environment. It provides several advanced features for enhanced administration, including the ability to manage and seamlessly roll out multiple editions of an application. Operations visualization tools help you better understand what is happening in your environment, health monitoring agents can automatically take action when certain software conditions are detected, and more.

The partitioning facility is a programming framework and runtime environment for implementing high-volume transactional applications that scale linearly with additional hardware. This is done by dividing a large environment into smaller, uniquely addressable 'partitions' to increase efficiency and reduce contention. ObjectGrid is a new high-performance, transactional, and customizable cache framework for Java™ objects.

Lastly, compute grid functionality enables you to run and manage long-running and compute-intensive J2EE applications in a WebSphere Extended Deployment environment designed for those types of work.

Each of these topics will be discussed briefly in this presentation, and covered in more detail in other presentations.

Three separate installation packages

- Operations optimization (CD, install)
 - ▶ Intelligent workload routing
 - ▶ Server virtualization
 - ▶ Advanced administration
 - ▶ Extended manageability
 - ▶ Other middleware server support
- Data grid (CD, install)
 - ▶ Partitioning facility
 - ▶ ObjectGrid
- Compute grid (CD, install)
 - ▶ Batch workload services
 - ▶ Compute-intensive workload services
 - ▶ Long-running workload scheduler
- Each package's CD works for all supported distributed platforms.



WebSphere Extended Deployment Version 6.1 is composed of three separate packages:

Operations optimization contains many performance, scalability, and administrative enhancements, and extends the WebSphere administrative domain to include support for middleware servers on nodes not running WebSphere Extended Deployment.

Data grid enables high-volume data-intensive applications.

Compute grid extends WebSphere application servers to allow long running work to run within the WebSphere J2EE environment.

Each of these packages is provided on a separate CD and must be installed separately.

Two ways to install

- As an 'add-on' product for WebSphere Application Server Network Deployment
 - ▶ Requires WebSphere Application Server V6.1
 - ▶ Fundamentally alters WebSphere Network Deployment operations
- WebSphere Extended Deployment middleware agent
 - ▶ Used to manage servers that are not running WebSphere Extended Deployment.
 - ▶ Does not require WebSphere Application Server



The WebSphere Extended Deployment installer allows you to choose one of two installation types.

To install as an extension to WebSphere Application Server Network Deployment node, you must first install WebSphere Application Server Network Deployment version 6.1 and any required fixpacks and interim fixes. This option enables you to create WebSphere Extended Deployment resources like nodes, application servers, and dynamic clusters.

The second installation option installs a Java™-based agent to a system that does not have WebSphere Network Deployment previously installed. You can install the middleware agent on a node that is running other middleware servers that were created outside of WebSphere Extended Deployment.

Section

Operations optimization



This section will introduce WebSphere Extended Deployment Operations Optimization.

Operations optimization: Dynamic operations

- Dynamic workload management
 - ▶ Virtualized
 - ▶ Goal-oriented
 - ▶ Policy-based
- More consistent quality of service for critical applications
- More efficient utilization of hardware resources
- On-demand router
- Dynamic application placement



WebSphere Extended Deployment provides a virtualized environment that allows hardware resources to be shared and allocated dynamically based on performance goals that you have defined for your WebSphere applications. This capability can help you provide a more consistent quality of service for your critical applications in times of excessive load, and more efficiently utilize the hardware resources that you already have.

Advanced administration features

- Advanced administration features ease management of large environments
- Visualization tools
- Edition control center
- Health monitoring tools
- Extended repository service
- High availability deployment manager
- Centralized installation manager



WebSphere Extended Deployment includes many features that make life easier for the administrator of a WebSphere environment. The visualization components enhance the administrative console to provide live data on the performance and health characteristics of the entire cell. The administrative console also features the edition control center, which enables management of multiple versions of an application, including interruption-free rollout. WebSphere Extended Deployment also has health monitoring capability, and can take remediation steps when software health problems are detected. The extended repository service provides the ability to create checkpoints of your WebSphere cell configuration, providing you with administrative “undo” capability. High availability deployment manager environment eliminates the single point of failure for administrative functions, and the centralized installation manager allows you to install components and updates from a central location.

Support for non-WebSphere environments

- Support for other runtimes
 - ▶ BEA, Tomcat, JBoss, WebSphere Community Edition, .NET
- Complete Extended Deployment dynamic operations capabilities
 - ▶ Health management and monitoring
 - ▶ Application placement for resource control



WebSphere Extended Deployment Operations Optimization version 6.1 extends dynamic operations capabilities beyond the traditional WebSphere administrative domain, allowing other middleware server types to be integrated into a WebSphere Extended Deployment environment. The on-demand router can route traffic to any HTTP endpoint. This means that you can use it as a front end to applications running on other vendor's servers, including Tomcat, .NET, or other versions of WebSphere such as WebSphere Application Server Community Edition. This provides you with all of the benefits of the on-demand router's request prioritization and flow control features. WebSphere Extended Deployment Version 6.1 additionally provides full dynamic operations support for these other middleware servers, including dynamic application placement, through the middleware agent for operations optimization.

Section

Data grid



This section will introduce WebSphere Extended Deployment Data Grid.

Data grid

- Partitioning facility allows you to 'partitioned' an application across multiple servers.
 - ▶ A partition is a unique endpoint within a cluster
 - ▶ Requests for certain data or certain enterprise java beans (EJBs) are always routed to the same partition
- ObjectGrid
 - ▶ A high performance highly scalable cache framework for storing Java objects



Data Grid is composed of two primary components. The partitioning facility is an extension to WebSphere that provides a programming framework and runtime environment that makes it possible for high transaction-volume applications to scale linearly by adding hardware capacity. To accomplish this, an application is partitioned across multiple servers in a cluster. Each partition is a uniquely addressable endpoint within the cluster, to which requests for certain EJBs or certain data are always routed. Partitioning solves some of the traditional challenges of very large clustering, because it can reduce data contention and reduce the overhead of replicating shared data, like caches or state information.

ObjectGrid provides a high-performance, transactional cache framework for storing Java objects. An ObjectGrid can be used as a generic object cache, and optionally persisted to a hardened store. In the same fashion, it can also be used as a local cache for objects stored in a database. ObjectGrid is a highly customizable feature, with interfaces provided for custom data loaders, invalidation and size management schemes, and more. ObjectGrid can be used independently of the rest of WebSphere Extended Deployment.

Section

Compute grid



This section will introduce WebSphere Extended Deployment Compute Grid.

Compute grid

- Compute-intensive applications focus on large amounts of processor-bound work
- Batch applications focus on doing large amounts of work based on a specific task, for example record processing
- Non-WebSphere applications



Long-running work can generally be divided into two types, both of which are supported by WebSphere Extended Deployment.

Compute-intensive applications are long-running tasks that focus on performing a large amount of work that tends to be processor-bound, such as large-scale simulation work. In this case, WebSphere Extended Deployment provides a runtime environment and a thread of execution, and all other logic is implemented by the application.

A batch application is designed to repeatedly perform some specific unit of work, such as processing a database record, over a large set of data. If an application provides the logic for performing the work, WebSphere Extended Deployment can manage the transaction support and life cycle aspects, such as restarting the work at the point it was stopped in the case of an interruption.

Summary

- WebSphere Extended Deployment is an 'add-on' product for WebSphere Application Server that provides many advanced features
- Dynamic operations features create a virtualized, goal-based environment for workload management
- Advanced administrative capabilities
 - ▶ Administrative visualization provides new ways to look at performance data about your environment
 - ▶ Application edition management features enable seamless rollout of multiple editions of an application
 - ▶ Health monitoring can trigger alerts and take action when software health problems are detected



In summary, WebSphere Extended Deployment is an add-on product that provides several advanced features for WebSphere Application Server. The dynamic operations features enable a virtualized, dynamic environment for better utilizing shareable hardware resources based on user-defined performance goals. The advanced administration features provided by WebSphere Extended Deployment include advanced visualization tools for monitoring the performance of your environment, the Edition Control Center for the management and seamless deployment of multiple editions of an application, and health monitoring features that can detect software health problems and take actions on your behalf, and much more.

Summary

- Data grid
 - ▶ The partitioning facility provides a means to create a highly scalable environment for high-volume transaction processing
 - ▶ ObjectGrid is a high-performance, transactional, and extensible cache framework
- Compute grid
 - ▶ An environment for running and managing compute-intensive and batch style J2EE applications



The Data Grid package contains the partitioning facility, which provides a programming model and runtime environment for implementing highly scalable solutions for transaction processing. It also provides ObjectGrid which is a high-performance, transactional, and extensible object cache for Java applications.

Lastly, Compute Grid provides an environment for running and managing compute intensive and batch style J2EE applications within a WebSphere Extended Deployment cell.

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