



IBM Software Group

IBM® WebSphere® Extended Deployment V6.1

WebSphere Virtual Enterprise

Formerly Operations Optimization

Runtime operations



@business on demand.

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This presentation will cover the runtime operations enhancements added to the administrative console in WebSphere Extended Deployment version 6.1.

This module was originally recorded for WebSphere Extended Deployment Operations Optimization, which is now called WebSphere Virtual Enterprise. Though the module uses the previous names, the technical material covered is still accurate.

Agenda

- Runtime operations overview
- System status summary views
 - ▶ Cell-level
 - ▶ Cluster
 - ▶ Server
 - ▶ Application
- Visualization data service
- Summary



This presentation begins with an overview of runtime operations, followed by a description of the system summary and status views, and concludes with an explanation of the visualization data service.

Runtime operations

- **Status summary views**
 - ▶ Allow operators to monitor system
 - ▶ Provide visual alerts when component stability becomes questionable or unstable
- **Core runtime components can be tracked (location and stability)**
 - ▶ State and stability of on demand routers
 - ▶ Core group stability
 - ▶ Node state and stability
- **Visualization data service**
 - ▶ Captures valuable system usage data for monitoring and budgeting



WebSphere Extended Deployment V6.1 introduces a set of system status and summary views on the administrative console. These runtime operations views provide the status of your Extended Deployment dynamic goals directed environment. These views are designed to provide administrators with health information for on-demand routers, nodes, core groups, and core components in your environment. The visualization data service can also be used to monitor system usage to better plan, control and budget for IT resources.

Cell level runtime operations

- Operational alerts (takes time – be patient)
- **Dashboard**
 - ▶ Applications
 - ▶ **Deployment Targets**
 - ▶ **Service Policies**
- Extended deployment
 - ▶ On demand routers
 - ▶ Core groups
 - ▶ Core components
 - ▶ Nodes



New in
V6.1.0.1



The WebSphere Extended Deployment V6.1 administrative console provides several panels which display the status of key Extended Deployment components. Version 6.1.0.1 adds several new panels which display high level status of key health and performance related metrics for your application. To access cell-level runtime operations data, navigate to the “Runtime Operations” menu in the left panel of the administrative console.

Because the system must poll all the nodes in the cell to collect system summary information, it could take up to several minutes for the full page display to complete in version 6.1. Version 6.1.0.1 includes performance enhancements that reduce the time for these screens to display.

Operational alerts

Operation Alerts

Core components **OpsManTestCell**: WebSphere Extended Deployment core runtime component, WsmmControllers, is reporting a stability of unstable level. Please see the Extended Deployment summary operations view, core component sub-tab, for additional information.

Node **xdblade02b14_1** The agent process for node xdblade02b14_1 in cell OpsManTestCell is not running and the node is not in maintenance mode. Please start the agent or place the node into maintenance mode.

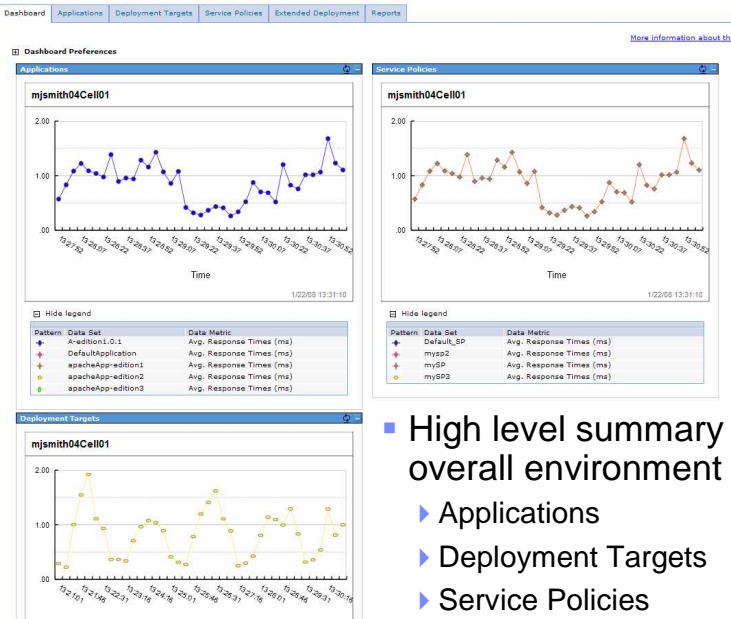
Application **StockTrade** the application has breached its service policy goal. The goal is 200 ms and the application is currently responding with an average response time of 250 ms.

- Displayed at top of every summary and operations detail tab
- Alert operator to potential problem
- Dynamic
 - ▶ Removed when not applicable



Operational alerts appear at the top of every summary and operations detail tab, visually alerting the operator to problems in the cell. In many cases the messages will provide direct links to the operations detail view for the resource for quick navigation to the problem spot. Alerts are dynamic in nature and are removed from the view when the issues are resolved. Runtime alerts can take a few minutes to display, especially for the core group because the console must poll every component. Version 6.1.0.1 caches the alerts, reducing the time required for these screens to display.

Runtime operations - Dashboard



New in V6.1.0.1

- High level summary of your overall environment
 - Applications
 - Deployment Targets
 - Service Policies

Runtime operations © 2008 IBM Corporation 6

The runtime operations **Dashboard** view displays a high level summary of your overall environment. By default, the dashboard will display summary charts for applications, deployment targets, and service policies, but you can also create and configure other charts to display on this screen. Each of the default charts also has its own details tab that includes status, stability, and performance information.

Runtime operations - Applications

New in V6.1.0.1

Dashboard Applications Deployment Targets Service Policies Extended Deployment Reports

Applications

hostACell01

Hide legend

Pattern	Data Set	Data Metric
XDStock		Avg. Response Times (ms)

Preferences

Name	Edition	Type	Status	Stability	Active Service Policy Associations
XDStock	Base edition	Java 2 Platform, Enterprise Edition	🟢	🟡	Platinum_SP, Silver_SP, Bronze_SP, Gold_SP
Total 1					

- Operational summary of all applications
 - Performance chart
 - Status
 - Stability
 - Active service policy associations

The **Applications** summary tab displays an operational summary of all the applications in your environment, including status, stability, and active service policy associations.

The chart shows the relative utilization of all applications that are running.

The application summary table displays information about each of the applications in your environment. For each application, this table includes a status which indicates whether the application is started, stopped, or unavailable. The table also provides a high level indicator of the operational stability of the application.

A “stable” application is operational, without issues.

“Questionable” stability indicates the application has some problems, but is still operational.

And “Unstable” means the application has severe issues.

Similar indicator symbols are used on the panels for each component’s operations view.

The Active Service Policy Associations portion of the table specifies all of the service policies that have been associated with the application over the life of the on-demand routers.

Runtime operations - Deployment targets



The **Deployment Targets** summary tab displays an operational summary of all the deployment targets in your environment. Deployment targets include application servers, middleware servers, clusters, and dynamic clusters. This page allows you to view the runtime capacity that the deployment targets are consuming in relationship to each other, the operational status of the deployment targets, the service policies to which the deployment targets are classified, and the applications that are most active on the deployment targets.

The chart shows the relative utilization of the deployment targets that are running.

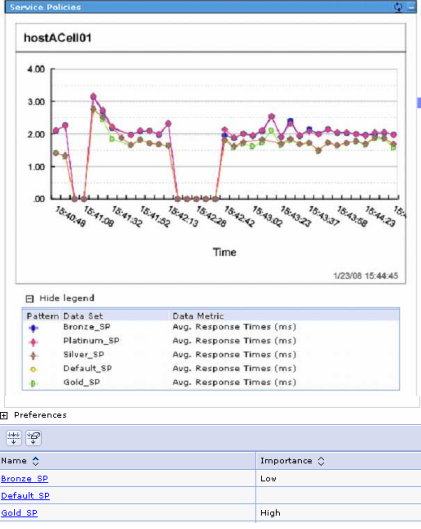
The deployment target summary table displays information about each of the deployment targets in your environment. For each deployment target, this table includes a status which indicates whether the component is started, stopped, or unavailable. The table also provides a high level indicator of the deployment target's operational stability, similar to that for applications.

The Active Service Policy Associations portion of the table specifies all of the service policies that have been associated with the deployment target by the active on-demand routers. The top Applications column lists the top five applications that are consuming the most power on the deployment target.

Runtime operations - Service policies

Dashboard Applications Deployment Targets Service Policies Extended Deployment Reports

New in V6.1.0.1



- Operational summary of all service policies
 - Performance chart
 - Importance
 - Stability
 - Goal type

Name	Importance	Goal	Stability
Bronze_SP	Low	Average Response Time	⊗
Default_SP		Discretionary	⊗
Gold_SP	High	Average Response Time	⊗

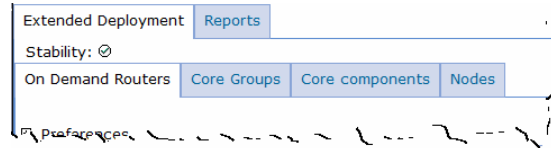
Runtime operations © 2008 IBM Corporation 9

The **Service Policies** summary tab displays an operational summary of all the service policies in your environment. You can use this page to view the relative performance of all service policies to their defined service policy goals.

The Service policy summary chart shows the relative performance of the service policies to their goal values.

The Service policy table displays summary information for the service policies that are shown in the chart. Each service policy includes a relative importance, from Lowest to Highest, and a goal type. OLTP goal types include “Average response time”, “Percentile response time”, and “Discretionary”. Long Running goal types include “Discretionary” and “Completion time”

Runtime operations - Extended Deployment



- Overall Extended Deployment health is determined by:
 - ▶ Are all the on demand routers running?
 - ▶ Are all the core groups well formed?
 - ▶ Are all the autonomic managers running?
 - ▶ Are all the nodes not in maintenance mode running and not being overloaded?



The runtime operations **Extended Deployment** view provides a summary of the health of the dynamic environment and is important in troubleshooting problems with Extended Deployment operations. The stability indicator is determined by verifying if all the on-demand routers are running, all the core groups are well formed, all the autonomic managers are running, and all the nodes are running and not overloaded.

On-demand routers

- Single view of all on-demand routers
- Simple performance indicator
- Stability indicator

Extended Deployment Reports

Stability:

On Demand Routers Core Groups Core components Nodes [More information about this page](#)

Preferences

Name	Node	Type	Stability	Avg. Throughput
odr	hostANode01	On demand router		133.8
Total 1				

The “on-demand routers” tab of the Extended Deployment page provides a single view of all on-demand routers and a summary of the stability and average throughput of each on-demand router. This can be especially helpful in observing anomalies in on-demand router operations and in planning your on-demand router strategy.

Core groups

Extended Deployment Reports

Stability:

On Demand Routers Core Groups Core components Nodes

[More information about this page](#)

Preferences

Maximum rows

Retain filter criteria.

Apply Reset

Name	Stability
DefaultCoreGroup	
Total 1	

- Single view of all core groups
- Stability indicator
- Link to core group details showing all members



The “Core Groups” tab of the Extended Deployment provides a single view of all core groups in your environment. Well-formed core groups are crucial for proper operation of your cell, and when you are routing requests between different cells. Selecting a core group name will display the members of the core group and provide a stability indicator for each member.

Core components

- Autonomic controllers and managers
 - Scope
 - Stability

Extended Deployment **Reports**

Stability: ⓘ

On Demand Routers Core Groups **Core components** Nodes [More information about this page](#)


Preferences

Name	Scope	Stability	Current location
ARFMController	hostACell01	☑	hostACell01/hostANode01/odr
Application Placement Controller	hostACell01	☑	hostACell01/hostANode01/nodeagent
Async PMI Bridge	hostACell01	☑	hostACell01/hostBNode01/nodeagent
DWLM Controller	StockTrade_DC (hostACell01)	☑	hostACell01/hostBNode01/nodeagent
DWLM Controller	AccountManagement_DC (hostACell01)	☑	hostACell01/hostBNode01/nodeagent
DWLM Controller	FinancialAdvice_DC (hostACell01)	☑	hostACell01/hostBNode01/nodeagent
Health Controller	hostACell01	☑	hostACell01/hostANode01/nodeagent
Node Detect Bridge	hostACell01	☑	hostACell01/hostBNode01/nodeagent
Work Profiler Controller	hostACell01	☑	hostACell01/hostBNode01/nodeagent
Total 9			

The “Core components” tab provides a single view of the core Extended Deployment components and a quick way to verify the stability of the components, including the dynamic workload manager for dynamic clusters and autonomic controllers. This view is also useful for identifying where autonomic managers, such as the health controller, are located.







Nodes

Extended Deployment Reports

Stability: 

On Demand Routers Core Groups Core components Nodes [More information about this page](#)

Preferences

Name	Agent	Version	CPU Utilization	Stability	Maintenance Mode
hostACellManager01	dmgr	XD 6.1.0.0 WXDOP 6.1.0.0 WXDCG 6.1.0.0 WXDDG 6.1.0.0 ND 6.1.0.7	0.0		
hostANode01	nodeagent	XD 6.1.0.0 WXDOP 6.1.0.0 WXDCG 6.1.0.0 WXDDG 6.1.0.0 ND 6.1.0.7	42.0		
hostBNode01	nodeagent	XD 6.1.0.0 WXDOP 6.1.0.0 WXDCG 6.1.0.0 WXDDG 6.1.0.0 ND 6.1.0.7	62.0		
hostCNode01	nodeagent	XD 6.1.0.0 WXDOP 6.1.0.0 WXDCG 6.1.0.0 WXDDG 6.1.0.0 ND 6.1.0.7	93.0		
wsbeta176	middlevareagent	XD 6.1.0.0 WXDOP 6.1.0.0 XDA 6.1.0.0	57.0		
wsbeta177	middlevareagent	XD 6.1.0.0 WXDOP 6.1.0.0 XDA 6.1.0.0	0.0		

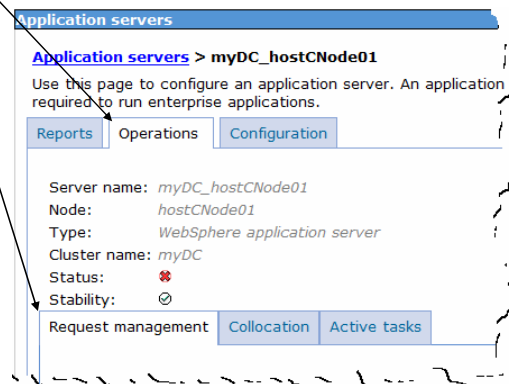
- Single view of all nodes
 - ▶ Stability
 - ▶ Summary performance indicator



The “Nodes” tab contains a single view of all nodes in the cell and provides insight into the stability and processor usage of each node. When troubleshooting your environment this is a good place to start to get an inventory of the environment and assess overall health of all the nodes.

Operations detail views

- System status views
- Available from
 - ▶ Cluster
 - ▶ Server
 - ▶ Application



In addition to the “Extended Deployment” status views, the administrative console includes “Operations” tabs off the cluster, server, and application panels.

Request management

- Information about how requests are being routed
- Simple performance indicator
- Cluster and dynamic cluster
- Server
- Application

The screenshot displays four panels from the Request Management Operations panel:

- Applications:** Applications associated with this resource. XDStock (hostACell01) 12772 request(s) in last 4 minute(s)
- Service policies:** Service policies associated with this resource.
 - Platinum_SP (hostACell01) 6377 request(s) in last 4 minute(s)
 - Silver_SP (hostACell01) 6270 request(s) in last 4 minute(s)
 - Bronze_SP (hostACell01) 6380 request(s) in last 4 minute(s)
 - Gold_SP (h...
- On demand routers:** On demand routers associated with this resource. odr (hostACell01, hostANode01) 25502 request(s) in last 4 minute(s)
- Deployment targets:** Deployment targets associated with this resource.
 - AccountManagement_DC_hostCNode01 (hostACell01, hostCNode01) 3138 request(s) in last 2 minute(s)
 - AccountManagement_DC_hostBNode01 (hostACell01, hostBNode01) 3246 request(s) in last 3 minute(s)
 - StockTrade_DC_hostCNode01 (hostACell01, hostCNode01) 6314 request(s) in last 2 minute(s)
 - StockTrade_DC_hostBNode01 (hostACell01, hostBNode01) 6329 request(s) in last 3 minute(s)



The “Request management” Operations panel for a cluster or dynamic cluster displays the type of servers contained in the cluster, the stability of the cluster, a list of the on-demand routers that are actively communicating with the cluster, a list of active applications running within the cluster, usage information about those applications, and a list of the active service policies that are associated with the cluster.



The server’s request management panel displays the node to which the server belongs, the server type, the cluster that contains the server, the stability of the server, a list of the on-demand routers that are actively communicating with the server, a list of the applications that are actively running on the server, usage information about those applications, and a list of the active service policies that are associated with the applications on this server.

The application’s request management panel displays the application type, the stability of the application, a list of the on-demand routers that are actively routing work to servers with this application installed on them, a list of the active service policies that are associated with this application, usage data for those service policies, and a list of active deployment targets associated with this resource.

Each list provides high level performance indicators for the component shown.

Cluster: Server placement

Configuration Reports Operations

Cluster name: AccountManagement_DC
 Type: WebSphere application server
 Status: 
 Stability: 



Request management Server placement Active tasks [More information about this page](#)

Preferences

Maximum rows
20

Retain filter criteria.

Apply Reset

Select	Application Server	Node	Stability	Weight	Active Service Policy Associations	Top Application
<input type="checkbox"/>	AccountManagement_DC_hostCNode01	hostCNode01		1	Silver_SP	XDStock
<input type="checkbox"/>	AccountManagement_DC_hostBNode01	hostBNode01		1	Silver_SP	XDStock
Total 2						

- Where servers are placed
 - ▶ dWLM weight
 - ▶ Stability



The “Server placement” Operations panel for a cluster or dynamic cluster lists all servers within the cluster and what node they belong to. It also displays the dWLM weight for the server process and a stability indicator for the individual servers.



Application: Application placement

- Where application is deployed
 - ▶ dWLM weight
 - ▶ Cluster membership
 - ▶ Node
 - ▶ Stability

[All Applications](#) > XDStock

Use this page to configure an enterprise application. Click the links to access pages for further configuring of the application or its modules.







Reports | Operations | Configuration | Service Policies | Routing Policies

Application name: XDStock
 Type: Java 2 Platform, Enterprise Edition
 Status: 
 Stability: 

Request management | Application placement | Active tasks

[More information about this page](#)

Preferences

Select	Application Server	Node	Cluster	Stability	Weight	Active Edition	Active Application Modules
<input type="checkbox"/>	AccountManagement_DC_hostBNode01	hostBNode01	AccountManagement_DC		20		AccountManagement.war
<input type="checkbox"/>	AccountManagement_DC_hostCNode01	hostCNode01	AccountManagement_DC		0		AccountManagement.war
<input type="checkbox"/>	FinancialAdvice_DC_hostBNode01	hostBNode01	FinancialAdvice_DC		20		FinancialAdvice.war
<input type="checkbox"/>	FinancialAdvice_DC_hostCNode01	hostCNode01	FinancialAdvice_DC		0		FinancialAdvice.war
<input type="checkbox"/>	StockTrade_DC_hostBNode01	hostBNode01	StockTrade_DC		0		StockTrade.war, StockQuery.war
<input type="checkbox"/>	StockTrade_DC_hostCNode01	hostCNode01	StockTrade_DC		20		StockTrade.war, StockQuery.war
Total 6							

The “Application placement” Operations panel for an application lists all servers where this application is deployed. If the server is a member of a cluster or dynamic cluster, the cluster name is displayed. It also displays the dWLM weight for the server process and lists application modules deployed to the server.

Server: Collocation

- List other servers on same node
- Performance indicators
- Stability
- dWLM weight

Request management Collocation Active tasks [More information about this page](#)

Preferences

Select	Application Server	Cluster	Stability	Weight	CPU Utilization
<input type="checkbox"/>	nodeagent		☑	1	0.52%
<input type="checkbox"/>	StockTrade_DC_hostBNode01	StockTrade_DC	⚠	19	37.08%
<input type="checkbox"/>	FinancialAdvice_DC_hostBNode01	FinancialAdvice_DC	☑	19	20.62%
<input type="checkbox"/>	AccountManagement_DC_hostBNode01	AccountManagement_DC	☑	20	22.08%
<input type="checkbox"/>	hostB_tomcat	Tomcat_DC	☑	0	0%
Total 5					



A server's operations collocation tab lists all server and agent processes co-located on the same node with the server along with the percentage of the available processing power each is actively using. It also displays the dWLM weight for the server process.

Active tasks

Request management		Server placement		Active tasks	
<div style="text-align: right;">More information about this page</div>					
<div> <input type="checkbox"/> Preferences <input type="button" value="Submit"/> </div>					
<div> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> </div>					
Select	Action	Task ID	State	Severity	Originated Time
<input type="checkbox"/>	Accept	1888912769 A memory leak is suspected by policy Default_Memory_Leak for server StockTrade_DC_hostBNode01 on nod ...	New	Minor	9/13/07 04:26:44
<input type="checkbox"/>	Accept	3548331751 A storm drain condition is suspected by policy Default_Storm_Drain for server StockTrade_DC_hostCNod ...	New	Minor	9/10/07 14:46:31
Total 2					

- Runtime tasks
 - ▶ Placement and health controller tasks
 - Supervised mode tasks
 - ▶ Like task management
 - Filtered for component



The active tasks panel for a cluster or dynamic cluster displays tasks related to the cluster. These tasks are typically generated by the placement controller. For a server or application, this panel will display tasks related to the specific server or application; typically tasks created due to monitored health conditions or service policy breaches.

Tasks from dynamic clusters running in automatic mode and health conditions with a reaction mode of automatic will appear while the task is being executed. When the task is complete is it removed from the list. Tasks for dynamic clusters running in supervised mode or health conditions with a reaction mode of supervised will remain in the list until they expire or until an operator submits an action.

Runtime operations

- Cluster or dynamic cluster
 - ▶ Request management
 - ▶ Server placement
 - ▶ Active tasks
- Server
 - ▶ Request management
 - ▶ Collocation
 - ▶ Active tasks
- Application
 - ▶ Request management
 - ▶ Application placement
 - ▶ Active tasks



This slide lists the runtime operations views that are available on the Operations tab for clusters, dynamic clusters, servers, and applications.

Section

Visualization data service



The runtime operations feature set also includes the visualization data service.

Visualization engine

- Runs inside the deployment manager
- Gathers data from cell members
- Drives all runtime operations views in the administrative console



All of the visualization capabilities in WebSphere Extended Deployment are driven by the visualization engine. The visualization engine runs inside the deployment manager process, gathering information from other nodes and making the data available for display in the administrative console.

Visualization data logging

- Extended Deployment provides the ability to capture historical performance metrics to the file system
- User can control frequency and amount of data captured
- Designed to be used in production
- Simple CSV text file format
- Can be imported into Excel®, data warehouse or reporting tool
- Can be used for:
 - ▶ Capacity planning
 - ▶ To compute charge-back for system usage
- Log properties can be changed under *System Administration* → *Visualization Data Service*



WebSphere Extended Deployment can write this performance data to a log file for historical purposes or for importing into another application. You can specify the location of the visualization logs, maximum file size, and other parameters that affect the way the logs are recorded. The default log location is in the deployment manager's "logs" directory. The format for the time stamp included with each record is specified by a timestamp pattern as defined in the SimpleDateFormat Java class. By default, logging is not enabled.

The performance logs are written as comma-separated-variable text files, which can be easily imported into a spreadsheet or other reporting programs such as IBM Tivoli Usage and Accounting Manager. The data from the logs can then be interpreted by the application to evaluate and determine usage of shared IT resources by application. Multi-variate and multi-dimensional analysis can be performed on the historical data to mine other usage patterns and request trends.

Summary

- The runtime operations visualization features of WebSphere Extended Deployment make it easier to manage a large environment
 - ▶ Very flexible views of system and component health at many different levels



In summary, the runtime operations views display what is running in your environment, where it is running and basic health information about your systems. The visualization features of WebSphere Extended Deployment give you tools to more effectively manage a large, dynamic environment.

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