

IBM China Development Lab

WebSphere Application Server Overview

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Mar 2011 IBM China Development Lab WebSphere Foundation Level2 Support

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3. OpenMic Session Introduction / Survey

- 1. WebSphere Application Server Overview
 - 1.1 Concepts

What is WebSphere Appliation Server ?

WebSphere Application Server is IBM runtime environment for Java Enterprise Edition/J2EE applications.

Enterprise Applications Web Module Applications EJB JMS Web Services



- 1. WebSphere Application Server Overview
 - 1.1 Concepts

WebSphere Applicatoin Server Product Family (Packaging)

- Application Server Hypervisor Edition
- Application Server Express
- Application Server Community Edition
- Application Server Network Deployment
- Application Server for Developers
- Application Server for z/OS



http://www-01.ibm.com/software/webservers/appserv/wasproductline/compare.html



- 1. WebSphere Application Server Overview
 - 1.1 Concepts

WAS Installation = Core product files + User files (Profiles)



Core product files

- Application binaries for WAS

User files (Profiles)

- Customizations, including configuration files, installed applications, resource adapters, properties, log files



1. WebSphere Application Server Overview

1.1 Concepts

Profiles

A basic building block of WAS WAS runtime environments are built by profiles Each profile is a WAS configuration

Profile types in WAS ND 7.0

Cell (Management + Application Server)

Application Server

Management

Custom

Secure Proxy (Configuration-only)





1. WebSphere Application Server Overview

1.1 Concepts

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- 1. WebSphere Application Server Overview
 - 1.1 Concepts

Application Servers

• An application server runs one or more applications and provides the services required to run those applications.

Deployment Manager

• The central administration point of a cell that consists of multiple nodes and node groups in a distributed server configuration



1. WebSphere Application Server Overview

1.1 Concepts

Nodes

• An administrative grouping of application servers for configuration and operational management within one operating system instance

Node agents

• In distributed server configurations, each node has a node agent that works with the deployment manager to manage administration processes

Cells

• A grouping of nodes into a single administrative domain

Clusters

• A collection of servers managed together

		_	and the second second
_	_	_	
_	_	_	

- 1. WebSphere Application Server Overview
 - **1.2 Functional Components**

What can WAS do for us ?

- Web Container / EJB Container / JMS
- Session Management
- Class Loader
- Data Replication Service (DRS) / Dynamic Cache
- Database / JMS / MQ / J2C Connectivity
- Security

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- 1. WebSphere Application Server Overview
 - 1.3 System Administration
 - System Administration Facilities
 - Administrative Console Scripting Client (wsadmin)

Administrative roles

Monitor Configurator Operator Administrator Iscadmins Deployer Admin Security Manager Auditor

For complete administrative role description, please refer to http://publib.boulder.ibm.com/infocenter/wasinfo/v7r0/index.jsp? topic=/com.ibm.websphere.nd.doc/info/ae/ae/rsec_adminroles.html



- 1. WebSphere Application Server Overview
 - 1.4 New Features in WAS ND 7.0

Flexible management topology



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Task 1) Core product installation

Task 2) Creating a Deployment Manager profile

Task 3) Federating a node with a Deployment Manager

Task 4) Creating a cluster

Task 5) Installing / running an application

Task 6) Enabling diagnostic trace

Task 1) Core production installation



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Task 1) Core production installation

🕑 IBM WebSphere Applie	cation Server 7.0	
	System Prerequisites Check	
WebSphere, software	Passed: Your operating system completed the prerequisites check successfully.	
	Your operating system meets or exceeds the requirements for this product. See the <u>WebSphere Application Server detailed system requirements</u> Web pages for more information about supported operating systems. Go to the <u>product support</u> Web pages to obtain the latest maintenance packages to apply after installation.	Ш
	The installation wizard also checks for existing installations of WebSphere Application Server. To have more than one installation of WebSphere Application Server running on the same machine, unique port values must be assigned to each installation. Otherwise, only one installation of WebSphere Application Server can run.	
	 Installations of WebSphere Application Server prior to Version 6.1 may not be found reliably. 	~
InstallShield		
	< Back Next > Cance	

WebSphere Application Server detailed system requirements http://www-01.ibm.com/support/docview.wss?rs=180&uid=swg27006921



Task 1) Core production installation





Task 1) Core production installation

🕑 IBM WebSphere Appli	cation Server 7.0	×
WebSphere, software	Installation Directory IBM WebSphere Application Server Network Deployment, Version 7.0 will be installed to the specified directory. Specify a different directory or click Browse to select a different install location. Product installation location:	
	C:\IBM\WebSphere\AppServer7 Browse	
InstallShield	< Back Next > Cancel	

Note: Please avoid blank be included in installation directory e.g in Windows, C:\Program Files\IBM\WebSphere\AppServer\



Task 1) Core production installation

BM WebSphere Application Server 7.0		
WebSphere. software	WebSphere Application Server Environments Select the type of WebSphere Application Server environment to create during installation. Although only one environment type can be chosen, additional profiles can be created after installation using the Profile Management Tool. Environments	
	Cell (deployment manager and a managed node) Management Application server Custom Secure proxy (configuration-only)	
	None Description WebSphere Application Server version 7.0 requires at least one profile to be functional. Only select this option if one or more profiles will be created after installation completes successfully.	
InstallShield	< Back Next > Cancel	



- Profile Management Tool
 <WAS_ROOT>\bin\ProfileManagement\pmt.bat (sh)
- Command line <WAS_ROOT>\bin\manageprofiles.bat(sh) -help

🕐 Profile Ma	nagement Tool 7.0		_ 🗆 🗙
File Window	Help		
🔛 🔞 Profile	Management Tool 🕕 Welcome		
Profiles			
Profile name	Environment	Profile path	Create
AppSrv03	Application server	C:\IBM\WebSphere\AppServer\profiles\App	
AppSrv04	Cell application server	C:\IBM\WebSphere\AppServer\profiles\App	Augment
AppSrv05	Application server	C:\IBM\WebSphere\AppServer\profiles\App	
AppSrv06	Application server	C:\IBM\WebSphere\AppServer\profiles\App	
Dmgr01	Cell deployment manager	C:\IBM\WebSphere\AppServer\profiles\Dmg	

Profile Management Tool 7.0	
Environment Selection	
Select a specific type of environment to create. Environments:	
WebSphere Application Server Cell (deployment manager and a federated application server) Management Custom profile Custom profile Secure proxy (configuration-only)	
Description A management profile provides the server and services for managing multiple application server environments. The administrative agent manages applica servers on the same machine. The Network Deployment edition also includes a deployment manager for tightly coupled management and a job manager fic coupled management of topologies distributed over multiple machines.	tion or loosely
< Back Next > Finish	Cancel

IBM

2. Start working with WAS

🚯 Profile Management Tool 7.0	_ 🗆 🗙
Server Type Selection	i a
Select the type of server to be created within this management profile	
O Administrative agent	
An administrative agent provides management capability for multiple stand-alone application servers. An administrative agent can manage only the application servers that exist within the same installation on one machine.	≣
 Deployment manager 	
A deployment manager provides management capability for multiple federated nodes. A deployment manager can manage nodes that span multiple s and platforms. The nodes that are managed by a deployment manager can only be managed by a single deployment manager and must be federated cell of that deployment manager.	systems d to the
◯ Job manager	
A job manager provides management capability for multiple stand-alone application servers, administrative agents, and deployment managers. The ju manager can manage nodes that span multiple systems and platforms. The nodes that are managed by one job manager also can be managed by ot managers.	ob her job
< Back Next > Finish	Cancel

IBM

2. Start working with WAS

Profile Management Tool 7.0	
Optional Application Deployment	la g
Select the applications to deploy to the WebSphere Application Server environment being created.	
Deploy the administrative console (recommended).	
Install a Web-based administrative console that manages the application server. Deploying the administrative console is recommended, but if you deselve option, the information center contains detailed steps for deploying it after the profile exists.	ct this
< Back Next > Finish	Cancel

Profile Management Tool 7.0		×
Profile Name and Location	i a	
Specify a profile name and directory path to contain the files for the run-time environment, such as commands, configuration files, and log files. Click Brow select a different directory. Profile name:	se to	^
Dmgr02		≣
Profile directory:		
C:\IBM\WebSphere\AppServer\profiles\Dmgr02		
Make this profile the default. Each installation of WebSphere Application Server always has one default profile. Commands that run without referring to a specific profile use the default profile.	Browse	
profile. Select this option to make this profile the new default		•
< Back Next > Finish	Cancel	

Profile Management Tool 7.0	
Node, Host, and Cell Names	i a
Specify a node name, a host name, and a cell name for this profile.	^
Node name:	
CellManager02	
Host name:	
Zi-Rui-Wei	
Cell name:	
çello2	
 Node name: A node name is for administration by the deployment manager. The name must be unique within the cell. Host name: A host name is the domain name system (DNS) name (short or long) or the IP address of this computer. Cell name: A cell name is a logical name for the group of nodes administered by this deployment manager. The following naming rules must be used: Names must start and end with alphabetic characters (A-Z, a-z), numbers (0-9), and underscores () only. Names may contain alphabetic characters (A-Z, a-z), numbers (0-9), periods (.), dashes (-) and underscores () only. Names must not contain spaces or these characters: /*, :; = +? <> % '* [] # \$ ^ {} () See the information center for profile naming and migration considerations. View the online information center 	
<pre>Sack Next > Finish</pre>	Cancel



🚯 Profile Management Tool 7.0	_ 0 🛛]
Administrative Security	la l	
Choose whether to enable administrative security. To enable security, supply a user name and password for logging into administrative tools. This administration is created in a repository within the application server. After profile creation finishes, you can add more users, groups, or external repositories.	tive user 🛕]
✓ Enable administrative security		
User name:		ľ
wasadmin		ľ
Password:	≡	
•••••		
Con <u>fi</u> rm password:		
•••••		
See the information center for more information about administrative security. View the online information center		
< Back Next > Finish	Cancel	

BM

2. Start working with WAS

Task 3) Federating a node with a Deployment Manager

1) Check Dmgr SOAP_CONNECTOR_ADDRESS Port	Port Name
	CELL_DISCOVERY_A
On Admin console or	BOOTSTRAP_ADDRE
<pre>Char ROOT>\properties\portdef properties</pre>	SOAP_CONNECTOR
	ORB_LISTENER_ADD
2) Enderste node with Dmar	SAS_SSL_SERVERAU
2) Federale hode with Drigi	CSIV2_SSL_MUTUAL
Make sure Dmgr is running	CSIV2_SSL_SERVER

<Profile_HOME>\bin\addNode localhost 8879 ADMU0003I: Node Node06 has been successfully federated.

Ports

Port Name	Port	Details
CELL_DISCOVERY_ADDRESS	7280	
BOOTSTRAP_ADDRESS	9809	
SOAP_CONNECTOR_ADDRESS	8879	
ORB_LISTENER_ADDRESS	9104	
SAS_SSL_SERVERAUTH_LISTENER_ADDRESS	9414	
CSIV2_SSL_MUTUALAUTH_LISTENER_ADDRESS	9415	
CSIV2_SSL_SERVERAUTH_LISTENER_ADDRESS	9413	
WC_adminhost	9064	
DCS_UNICAST_ADDRESS	9352	
WC_adminhost_secure	9047	
IPC_CONNECTOR_ADDRESS	9632	
DataPowerMgr_inbound_secure	5555	

Task 4) Creating a cluster

Integrated Solutions Console Welcome admin	Help Logout	
View: All tasks	Cell=Zi-Rui-WeiCell01, Profile=Dmgr01 Create a new cluster Create a new cluster	-
 New server Server Types Clusters WebSphere application server clusters Proxy server clusters Generic server clusters Cluster topology DataPower Core Groups 	 → Step 1: Enter basic cluster information Step 2: Create first cluster member Step 3: Create additional cluster members Step 4: Summary 	
Applications Services Resources Security Environment System administration	Next Cancel	

Monitoring and Tuning

Troubleshooting
 ■

Service integration

Task 4) Creating a cluster

Create a new cluster	2 -
Create a new cluster	
Step 1: Enter basic	Create first cluster member
→ Step 2: Create first cluster member	The first cluster member determines the server settings for the cluster members. A server configuration template is created from the first member and stored as part of the cluster data. Additional cluster members are copied from this template.
Step 3: Create additional cluster members	* Member name member1
Step 4: Summary	Select node AppSrv03-Node01(ND 7.0.0.13)
	* Weight 2 (020)
	☑ Generate unique HTTP ports
	Select basis for first cluster member:
	 Create the member using an application server template. default
	Create the member using an existing application server as a template. Zi-Rui-WeiCell01/AppSrv03-Node01(ND 7.0.0.13)/memberA 💽
	Create the member by converting an existing application server.
	Zi-Rui-WeiCell01/AppSrv03-Node01(ND 7.0.0.13)/server1
	None. Create an empty cluster.
Previous Next Cano	

Task 4) Creating a cluster

Create a new cluster

	Step 1: Enter basic	Create a	dditional cluster men	ibers				
_	Step 2: Create first cluster member	Enter in cluster first me copied f	formation about this n member to the membe mber, and stored as p from this template.	ew cluster member, and clicl r list. A server configuration art of the cluster data. Addit	k Add Member to a template is created ional cluster memb	dd this I from the ers are		
	additional cluster members	* Memb	er name er2					
	Step 4: Summary	Select AppS	node rv03-Node01(ND 7.0.0.1)	3) 💌				
		* Weig 2	ht	(020)				
		🗹 G	enerate unique HTTP p	orts				
		Add Member						
		Use the this list allowed	Edit function to edit th Use the Delete function to edit or remove the	he properties of a cluster me on to remove a cluster memb first cluster member or an a	mber that is alread per from this list. Yo lready existing clus	ly included in ou are not ter member.		
		Edit	Delete					
		D	6					
		Select	Member name	Nodes	Version	Weight		
		member1 AppSrv03-Node01 ND 7.0.0.13 2						
			member2	AppSrv03-Node01	ND 7.0.0.13	2		
		Total	2					
	Previous Next Cance	el						

Task 4) Creating a cluster

Step 1: Enter basic	Summary				
Ctop 2: Crosto first	Summary of actions:				
cluster member	Options	Values			
Step 3: Create	Cluster Name	TestClusterA			
additional cluster	Core Group	DefaultCoreGroup			
	Node group	DefaultNodeGroup			
→ Step 4: Summary	Prefer local	true			
	Configure HTTP session memory- to-memory replication	true			
	Server name	member1			
	Node	AppSrv03-Node01(ND 7.0.0.13)			
	Weight	2			
	Clone Template	default			
	Clone Basis	Create the member using an application server template.			
	Generate unique HTTP ports	true			
	Server name	member2			
	Node	AppSrv03-Node01(ND 7.0.0.13)			
	Weight	2			
	Clone Template	Version 7 member template			
	Generate unique HTTP ports	true			
Previous Finish Ca	ancel				

Task 4) Creating a cluster

E Messages

Cluster repDomainCluster and all of its cluster members were deleted successfully.

⚠ Changes have been made to your local configuration. You can:

- <u>Save</u> directly to the master configuration.
- <u>Review</u> changes before saving or discarding.

An option to synchronize the configuration across multiple nodes after saving can be enabled in <u>Preferences.</u>

⚠ The server may need to be restarted for these changes to take effect.

WebSphere application server clusters

Use this page to change the configuration settings for a cluster. A server cluster consists of a group of application servers. If one of the member servers fails, requests will be routed to other members of the cluster. Learn more about this task in a <u>guided activity</u>. A guided activity provides a list of task steps and more general information about the topic.

Preferences



Task 4) Creating a cluster

eplication domains	- 1 -
Replication domains	
Use this page to create a list of replication domains that the sessio and the stateful session bean failover components. All components replication domain.	n manager uses for replication of the dynamic cache service, that need to share information must be in the same
Preferences	
New Delete	
Select Name 🗢	Type 🗘
You can administer the following resources:	
TestClusterA	Data replication domain
Total 1	

Task 5) Installing an application

Integrated Solutions Console Welcome admin	
View: All tasks Velcome	Enterprise Applications Preparing for the application installation
 Guided Activities Servers New server Server Types WebSphere application servers WebSphere proxy servers Generic servers Version 5 JMS servers WebSphere MQ servers WebSphere MQ servers Web servers Clusters 	Specify the EAR, WAR, JAR, or SAR module to upload and install. Path to the new application Local file system Full path Browse_ Remote file system Full path Browse_ Browse
DataPower Core Groups Applications New Application Application Types WebSphere enterprise applications Business-level applications Assets	Next Cancel

Some sample and utility installable applications are available at </br><WAS_ROOT>\installableApps\

Install New Application	2	
Charify antiona for installi		
specify options for install	ng encerprise applications and modules.	
→ Step 1: Select	Select installation options	
Stee 2 Map	Specify the various options that are available to prepare and install your application.	
modules to servers	Precompile JavaServer Pages files	
Step 3 Provide JSP	Directory to install application	
reloading options for Web modules		
Step 4 Map shared	✓ Distribute application	
libraries	Use Binary Configuration	
<u>Step 5</u> Map shared	Deploy enterprise beans	
library relationships	Application name Dynamic Cache Monitor	
<u>Step 6</u> Map virtual hosts for Web		
modules		
Step 7 Map context	Override class reloading settings for Web and EJB modules	
roots for Web modules	Reload interval in seconds	
Step 8 Map security		
roles to users or	Validate Input off/warp/fail	
	warn 💌	
<u>Step 9</u> Summary	Process embedded configuration	
	· · · · · · · · · · · · · · · · · · ·	

stall New Application				
Specify options for installing	enterprise a	pplicatio	ns and modules.	
<u>Step 1</u> Select	Map modu	les to	servers	
 Step 2: Map modules to servers <u>Step 3</u> Provide JSP reloading options for Web modules 	Specify targets such as application servers or clusters of application servers where you want to install the modules that are contained in your application. Modules can be installed on the same application server or dispersed among several application servers. Also, specify the Web servers as targets that serve as routers for requests to this application. The plug-in configuration file (plugin- cfg.xml) for each Web server is generated, based on the applications that are routed through.			
<u>Step 4</u> Map shared libraries	Display cl All securit	usters a ty domai	nd servers in the following	security domain:
<u>Step 5</u> Map shared library relationships <u>Step 6</u> Map virtual hosts for Web modules	Clusters and servers: WebSphere:cell=Zi-Rui-WeiCell01,cluster=TestClusterA WebSphere:cell=Zi-Rui-WeiCell01,cluster=singleServerCluster WebSphere:cell=Zi-Rui-WeiCell01,node=AppSrv03-Node01,server=server1 WebSphere:cell=Zi-Rui-WeiCell01,node=Node06,server=server1 WebSphere:cell=Zi-Rui-WeiCell01,node=Zi-Rui-WeiNode02,server=server1 Apply			
<u>Step 7</u> Map context roots for Web modules				
Step 8 Map security	Select Mo	odule	URI	Server
roles to users or groups	Dy Ca Mo	namic ache onitor	CacheMonitor.war,WEB- INF/web.xml	WebSphere:cell=Zi- Rui-WeiCell01,cluster=TestClusterA
Step 9 Summary				
Previous Next C	ancel			



tall New Application			
pecify options for installing	enterprise applications	and modules.	
<u>Step 1</u> Select	Map context roots	for Web modules	
installation options	Context root defined	in the deployment descriptor	can be edited.
<u>Step 2</u> Map modules to servers	Web module	URI	Context Root
<u>Step 3</u> Provide JSP reloading options for	Dynamic Cache Monitor	CacheMonitor.war,WEB- INF/web.xml	/cachemonitor
<u>Step 4</u> Map shared libraries			
<u>Step 5</u> Map shared library relationships			
<u>Step 6</u> Map virtual hosts for Web modules			
Step 7: Map context roots for Web modules			
<u>Step 8</u> Map security roles to users or groups			
Step 9 Summary			
Previous Next (Cancel		

<u>Step 1</u> Select	Summary				
installation options	Summary of installation ontions				
<u>Step 2</u> Map modules to servers	Ontions	Values			
	Precompile JavaServer Pages files	No			
reloading options for	Directory to install application				
Web modules	Distribute application	Yes			
Step 4 Map shared	Use Binary Configuration	No			
libraries	Deploy enterprise beans	No			
Step 5 Map shared	Application name	Dynamic Cache Monitor			
indrary relationships	Create MBeans for resources	Yes			
<u>Step 6</u> Map virtual hosts for Web modules	Override class reloading settings for Web and EJB modules	No			
Stop 7 Map contaxt	Reload interval in seconds				
roots for Web	Deploy Web services	No			
modules	Validate Input off/warn/fail	warn			
Step 8 Map security	Process embedded configuration	No			
roles to users or groups	File Permission	.*\.dll=755#.*\.so=755#.* \.a=755#.*\.sl=755			
Step 9: Summary	Application Build ID	WAS70.SERV1 [cf131038.08]			
	Allow dispatching includes to remote resources	No			
	Allow servicing includes from remote resources	No			
	Business level application name				
	Asynchronous Request Dispatch Type	Disabled			
	Allow EJB reference targets to resolve automatically	No			
	Cell/Node/Server	Click here			

Task 6) Enabling diagnostic trace

ns	Logging and Tracing ?
	Logging and Tracing > dmgr > Diagnostic trace service > Change log detail levels
	Use log levels to control which events are processed by Java logging. Click Components to specify a log detail level for
	individual components, or click Groups to specify a log detail level for a predefined group of components. Click a component or group name to select a log detail level, log detail levels are cumulative; a level near the top of the list includes all the
	subsequent levels.
	Configuration Runtime
anges to master repository tent manager ents oups ed Installation Manager Preferences Identity Groups	Change Log Detail Levels Components Groups *=info
uning Monitoring Infrastructure (PMI) ics iewer	
ng	
5	

For specific component trace string, please refer http://www-01.ibm.com/support/docview.wss?rs=180&uid=swg21145599



3. OpenMic session introduction / Survey

Frequency: Bi-Monthly

Products: WebSphere Application Server WebSphere MQ WebSphere Message Broker

Candidate topics survey for year 2011

WAS

Advanced security configuration Session management Data source and connection pooling MQ

MQ Introduction MQ 7 New Feature: Topic publication & subscription MQ clusters Deploying & running MQ clients on WAS


