

Cluster Server Agent for WebSphere Application Server Installation and Configuration Guide

Windows

6.1

Cluster Server Agent for WebSphere Application Server Installation and Configuration Guide

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Introducing the agent for WebSphere Application Server

This chapter includes the following topics:

- [About the Cluster Server agent for WebSphere Application Server](#)
- [Supported software](#)
- [Agent functions](#)

About the Cluster Server agent for WebSphere Application Server

Cluster Server agents monitor specific resources within an enterprise application, determine the status of these resources, and start or stop them according to external events.

The Cluster Server agent for WebSphere Application Server monitors specific resources within an enterprise application, determines the status of these resources, and starts or stops them according to external events. The agent for WebSphere Application Server provides high availability for WebSphere Application Server in a cluster environment.

High availability is supported for following types of WebSphere Application Server components:

- WAS Application Server - An application server, which can either be a stand-alone server or a server deployed within a Cell.

- WAS Deployment Manager
- WAS Node Agent

Supported software

For information on the software versions that the Cluster Server agent for WebSphere Application Server supports, see the Symantec Operations Readiness Tools (SORT) site: <https://sort.symantec.com/agents>.

Agent functions

Online

The online function performs the following tasks:

The online function is responsible for starting a WebSphere Application Server.

The online function performs the following tasks:

- Verifies that the WebSphere Application Server instance is not already online.
- Starts the WebSphere Application Server instance by executing the appropriate start script, which is supplied by the WebSphere installation program. The script executed depends upon the type of server being started.

| Server Type | Start Command |
|--------------------|--|
| Deployment Manager | Deployment Manager WAS_HOME\profile\ServerProfile\binDir\startManager.bat |
| Node Agent | WAS_HOME\profile\ServerProfile\binDir\startNode.bat |
| Application Server | WAS_HOME\profile\ServerProfile\binDir\startServer.bat |

Offline

The offline function performs the following tasks:

The offline function is responsible for stopping a WebSphere Application Server instance. The offline function performs the following tasks:

- Verifies that the WebSphere Application Server instance is not already offline.
- Stops the WebSphere Application Server instance by executing the appropriate stop script, which is supplied by the WebSphere installation program. The script executed depends upon the type of server being stopped.

| Server Type | Stop Command |
|--------------------|--|
| Deployment Manager | <code>WAS_HOME\profile\ServerProfile\binDir\stopManager.bat</code> |
| Node Agent | <code>WAS_HOME\profile\ServerProfile\binDir\stopNode.bat</code> |
| Application Server | <code>WAS_HOME\profile\ServerProfile\binDir\stopServer.bat</code> |

Monitor

The monitor function is responsible for monitoring the state of WebSphere Application Servers on all nodes in the cluster.

The monitor function performs the following tasks:

- PidFile based monitoring checks for the for the existence of process running with Pid equal to Pid present in PidFile.
 - If the agent finds such process running then it further searches the command line for that process. The search string includes the values specified in resource attributes ServerName, WAS_NODE, WAS_CELL, ServerProfile, and WAS_HOME. If the search is successful, agent proceeds to SecondLevel monitoring if enabled.
 - If the PidFile is not present or if the agent does not finds a process running with Pid specified in PidFile, agent proceeds to process based monitoring. Location of the PidFile is determined using resource attributes as follows:
`WAS_HOME\profile\ServerProfile\log\ServerName\ServerName.pid`
- Process based monitoring quickly checks for the existence of the system process (the Java Virtual Machine) that represents the WebSphere Application Server instance. It determines the process existence by scanning the system process table and searching for strings in the process command line that uniquely identify the JVM process associated with the WebSphere Application Server instance. These search strings include the values specified in resource attributes WAS_HOME, WAS_CELL, WAS_NODE, and ServerName.
- If second-level monitoring is enabled (if SecondLevelMonitor > 0), the monitor agent function performs a deeper, more thorough state check of the WebSphere Application Server. Second-level monitoring uses the IBM-supplied utility program serverStatus.bat. The output from this program is parsed to confirm the server is running.

When enabled, the integer value specified in attribute SecondLevelMonitor determines how frequently the program is executed. For example, if SecondLevelMonitor is set to 1, the monitor agent function executes serverStatus.bat during each monitor interval. If SecondLevelMonitor is set to 3, the monitor agent function executes serverStatus.bat every third monitor

interval. This mechanism lets you control the system load generated by monitoring.

The `serverStatus.bat` script spawns a Java program that establishes a connection to the WebSphere Application Server. Spawning a JVM every monitor interval places additional load on the system. If performance is more important than a second-level state check, then consider disabling second-level monitoring and only performing the first-level process check.

- The monitor agent function executes a custom monitor program specified in the `MonitorProgram` attribute. This program does not execute if either the first or second-level monitor reports that the resource is offline. You can omit second-level monitoring, and attempt running a custom monitor check immediately after first-level monitoring.

This feature allows VCS administrators to define custom programs that determine the state of the WebSphere Application Server. For example, the administrator may want to test the status of a J2EE component running inside the server and ensure that the underlying application is functioning properly.

See [“WebSphere Application Server agent attributes”](#) on page 15.

Clean

The clean function removes any WebSphere Application Server instance processes remaining after a fault event or after an unsuccessful attempt to online or offline the resource.

The clean function performs the following tasks:

- Kills the process that starts the WebSphere Application Server instance. It is unlikely that this process exists, but it needs to be removed if for some reason it still exists during clean.
- Kills the process that stops the WebSphere Application Server instance. It is unlikely this process exists, but it needs to be removed if for some reason it still exists during clean.
- Kills the JVM process for the WebSphere Application Server instance. This process is identified by searching the system process table using the values specified in attributes `WAS_HOME`, `WAS_CELL`, `WAS_NODE`, and `ServerName`.

Installing, upgrading, and removing the agent for WebSphere Application Server

This chapter includes the following topics:

- [Before you install the agent for WebSphere Application Server](#)
- [Installing the agent for WebSphere Application Server](#)
- [Removing the agent for WebSphere Application Server](#)

Before you install the agent for WebSphere Application Server

Before you install the Cluster Server agent for WebSphere Application Server, ensure that you install and configure the VCS on all nodes in the cluster.

Installing the agent for WebSphere Application Server

Use the Product Installer to install the agent for WebSphere Application Server.

Note: Ensure that you have uninstalled the previous version of this agent, if installed.

To install the VCS agent for WebSphere Application Server

- 1 Log on to any node in the cluster.
Ensure that the logged on user has the domain administrative privileges.
- 2 Download the Agent Pack from the Symantec Operations Readiness Tools (SORT) site: <https://sort.symantec.com/agents>.
You can download the complete Agent Pack tar file or the individual agent tar file.
- 3 Uncompress the file to a temporary location.
- 4 If you downloaded the complete Agent Pack tar file, navigate to the directory containing the package for the platform running in your environment.

```
Windows 2003      cd1\windows\w2k3\application\websphere_agent\  
                  vcs_version\version_agent\  
                  websphere agt.5.1.0.0-GA w2k3
```

Windows 2008 (x64) For VCS 5.1:

```
cd1\windows\w2k8x64\vcs\application\websphere_agent\
5.1\version_agent\websphere_agt.version
-GA w2k8X64\Pkgs
```

For VCS 6.0 and later:

```
cd1\windows\w2k8x64\vcs\application\websphere_agent\  
vcs version\version agent\Pkgs
```

```
Windows 2012    cd1\windows\w2k12x64\wcs\application\websphere_agent\  
(x64)           6.1\version agent\Pkgs
```

- 5 Double-click **vrtsvcswebsphere.msi**.
Follow the instructions that the install program provides, to complete the installation of the Cluster Server agent for WebSphere.

Removing the agent for WebSphere Application Server

Perform the following procedure to uninstall the agent for WebSphere Application Server from a cluster. Perform these steps while the cluster is active.

To uninstall the VCS agent for WebSphere Application Server

- 1** Ensure that all clustered VCS resources are offline.
- 2** From the cluster, remove all the resources that use the agent for WebSphere Application Server.
- 3** Perform the following steps on each node from which you want to uninstall the agent. Ensure that you have a user with administrative privileges.
 - Click **Start > Settings > Control Panel**.
 - On Windows 2008: Navigate to **Programs and Features**
 - On Windows 2008R2/2012: Navigate to **Programs>Programs and Features**
 - From the list of programs, select **vrtsvcswspsphere.msi**.
- 4** Click **Change/Remove**.
- 5** Follow the instructions that the uninstall program provides, to complete the uninstallation of the agents for WebSphere Application Server.

Configuring the agent for WebSphere Application Server

This chapter includes the following topics:

- [About configuring the agent for WebSphere Application Server](#)
- [WebSphere Application Server agent attributes](#)
- [Uniquely identifying WebSphere Application Server instances](#)
- [Executing a custom monitor program](#)
- [Service group configuration options](#)
- [Important considerations while configuring the agent](#)

About configuring the agent for WebSphere Application Server

After installing the agent for WebSphere Application Server, you can create and configure a WebSphere Application Server resource. Before you configure a resource, review the attributes table that describes the WebSphere Application Server resource type and its attributes.

WebSphere Application Server agent attributes

[Table 3-1](#) shows the required attributes for the agent for WebSphere Application Server.

Table 3-1 Required attributes

| Required attribute | Description |
|--------------------|--|
| ResLogLevel | <p>The logging detail performed by the agent for the resource. Valid values are:</p> <p>ERROR: Only logs error messages.</p> <p>WARN: Logs above plus warning messages.</p> <p>INFO: Logs above plus informational messages.</p> <p>TRACE: Logs above plus trace messages. TRACE is very verbose and should only be used during initial configuration or for troubleshooting and diagnostic functions.</p> <p>Type and dimension: string-scalar</p> <p>Default: INFO</p> <p>Example: TRACE</p> |
| SecondLevelMonitor | <p>Specifies if second-level monitor is enabled and how frequently it is performed. Second-level monitor is a deeper, more thorough state check of the WebSphere resource, performed by executing the IBM-supplied utility program serverStatus.bat. The output from this program is parsed to confirm the server status is running. The integer value specified by this attribute determines how frequently the second-level monitor program is executed. For example, if SecondLevelMonitor is set to 1, the monitor function will execute serverStatus.bat during each monitor interval. A value of 3 executes the program every third monitor interval. If SecondLevelMonitor is set to 0, the monitor function will never perform the second-level monitor.</p> <p>Type and dimension: integer-scalar</p> <p>Default: 0</p> <p>Example: 1</p> |
| ServerName | <p>Contains the server name assigned to the WebSphere Server during its installation. In Network Deployment configurations, the default ServerName for Deployment Managers is dmgr and the default ServerName for the Node Agents is nodeagent, but these names are not mandatory.</p> <p>See “Uniquely identifying WebSphere Application Server instances” on page 20.</p> <p>Type and dimension: string-scalar</p> <p>Default: ""</p> <p>Example: server1</p> |

Table 3-1 Required attributes (*continued*)

| Required attribute | Description |
|--------------------|--|
| ServerProfile | <p>Contains the server profile name of the WebSphere Server instance or complete path to the WebSphere Application Server profile. If Profile is installed at the non-default location, provide the complete path to the WebSphere Application Server Profile. In case if profile is installed at the default location, profile name is sufficient.</p> <p>This attribute is applicable to the WebSphere version 6.0 and later, and it must be null if the WebSphere major version number is 5. You must specify this attribute if the resource manages a WebSphere Application Server version 6.0 and later.</p> <p>Type and dimension: string-scalar</p> <p>Default: ""</p> <p>Example 1: Dmgr01</p> <p>Example 2: C:\Users\administrator\Downloads\AppSrv04_Custom_Location</p> |
| ServerType | <p>Type of WebSphere Application Server that the cluster will manage. Valid names are as follows:</p> <ul style="list-style-type: none"> ■ DeploymentManager: Resource is a Deployment Manager. ■ NodeAgent: Resource is a Node Agent. ■ ApplicationServer: Resource is an Application Server, which may be a standalone server or may be part of a Network Deployment and is a member of a WebSphere Cell. <p>The agent uses this value to determine how to manage the WebSphere Application Server within a cluster. Refer to the WebSphere documentation for a full explanation of the purposes and use of each WebSphere Application Server type.</p> <p>Type and dimension: string-scalar</p> <p>Default: ""</p> <p>Example: DeploymentManager</p> |
| User | <p>The Windows user name used to run the programs that start, stop, and monitor the WebSphere resource, which include the program specified in the MonitorProgram attribute. IBM recommends using the Administrator account, but you may use any account. If User is not set to Administrator, the user name must be synchronized across the systems within the cluster.</p> <p>Type and dimension: string-scalar</p> <p>Default: ""</p> <p>Example: Administrator</p> |

Table 3-1 Required attributes (*continued*)

| Required attribute | Description |
|--------------------|---|
| WAS_HOME | <p>The absolute path to the WebSphere Application Server or WebSphere Application Server Network Deployment root installation directory. This attribute is used to locate programs executed by the agent. The <i>binDir\setupCmdLine.bat</i> file also resides at this location. The value is also used to uniquely identify the ServerType processes. Using WAS_HOME to uniquely identify an Application Server's process IDs requires that WAS_HOME be unique compared to WAS_HOME for all other WAS instances in the cluster.</p> <p>See "Uniquely identifying WebSphere Application Server instances" on page 20.</p> <p>Note: Both WAS_HOME and WAS_ND_HOME are defined as WAS_HOME in the standard environment file <i>setupCmdLine.bat</i>, which is supplied with WebSphere.</p> <p>Type and dimension: string-scalar</p> <p>Default: ""</p> <p>Example: C:\Program Files\IBM\WebSphereNET\AppServer</p> |
| WAS_NODE | <p>The WebSphere Node Name to which the server instance belongs. The Node Name is an administrative identifier that is internal to the WebSphere environment and is assigned when the node is installed. WebSphere requires that a Node Name must be unique within a WebSphere cell.</p> <p>See "Uniquely identifying WebSphere Application Server instances" on page 20.</p> <p>Type and dimension: string-scalar</p> <p>Default: ""</p> <p>Example: was51c1n2</p> |
| Domain | <p>Specifies the Windows domain name to which the specified user belongs. If the attribute value for User does not belong to a Windows domain, use VCS localization settings to specify the local computer name for each system.</p> <p>Type and dimension: string-scalar</p> <p>Default: No default value</p> <p>Example: USER-DOMAIN</p> |
| Password | <p>Password for the user. Use the <i>vcscrypt -agent</i> command to encrypt the password. If you are using the VCS GUI, the GUI automatically encrypts the password. Refer to the VCS documentation for more information about VCSEncrypt.</p> <p>Type and dimension: string-scalar</p> <p>Default: No default value</p> |

Table 3-1 Required attributes (*continued*)

| Required attribute | Description |
|--------------------|---|
| WAS_CELL | <p>WebSphere Cell Name of the WebSphere Server instance. This is the network name assigned to the WebSphere Cell. A Cell is a logical group of WebSphere Nodes belonging to the same administrative domain. In a single administrative domain every server has the same CELL name. If there are more than one administrative domains or installations of WebSphere on the system, then the CELL name for these domains is different. All WebSphere Servers, regardless of ServerType, are assigned a Cell name.</p> <p>Type and dimension: string-scalar</p> <p>Default: "" Example: HOST01CELL01</p> |

[Table 3-2](#) lists the optional attributes for the agent for WebSphere Application Server.

Table 3-2 Optional attributes

| Optional Attribute | Definition |
|--------------------|---|
| MonitorProgram | <p>The full pathname and command-line arguments for an externally provided monitor program. See “Executing a custom monitor program” on page 20.</p> <p>Type and dimension: string-scalar</p> <p>Default: ""</p> <p>Example: C:\server1\bin\mymonitor.bat</p> |
| StartOptions | <p>The command-line options that are passed to the WebSphere start script when it is executed within the online function. Multiple options should be separated by a space. Refer to the WebSphere product documentation for a list and description of supported start options.</p> <p>Type and dimension: string-scalar</p> <p>Default: ""</p> <p>Example: "-replacelog -trace"</p> |
| StopOptions | <p>The command-line options that are passed to the WebSphere stop script when it is executed within the offline function. Multiple options should be separated by a space. Refer to the WebSphere product documentation for a list and description of supported stop options.</p> <p>Type and dimension: string-scalar</p> <p>Default: ""</p> <p>Example: "-replacelog -trace"</p> |

Uniquely identifying WebSphere Application Server instances

You can virtualize a WebSphere Application Server instance using a cluster. Using shared disk and virtual IP addresses, you can manage a large set of WebSphere Application Server instances in a single cluster.

Set the WAS_HOME, WAS_CELL, WAS_NODE, and ServerName attributes such that the combined values are unique for each WebSphere Application Server instance.

WebSphere Application Servers can run on separate cluster nodes or can run concurrently on a single node. If WebSphere Application Servers run concurrently on a single node, you must ensure that the agent can uniquely identify each WebSphere Application Server on a host system that is running more than one WebSphere Application Server.

For unique identification, the agent's monitor and clean functions use the values specified by attributes WAS_HOME, WAS_CELL, WAS_NODE, and ServerName to uniquely identify each running WebSphere Server JVM process.

Differentiating WebSphere Application Server instances is especially important when the agent must kill the processes of a non-responsive or failed instance. Failure to define unique names for each WebSphere Application Server could result in a clean operation that kills processes for more than one WebSphere Application Server instance.

Executing a custom monitor program

The monitor function executes a custom monitor program to perform a user-defined WebSphere Application Server state check.

The monitor function executes the MonitorProgram if the following conditions are true:

- The specified utility is a valid executable file.
- The first level process check indicates that the WebSphere Application Server is online.
- The SecondLevelMonitor attribute is either set to 0 or 1, and the second level check indicates that the WebSphere Application Server is online.
- The SecondLevelMonitor attribute is set to greater than 1, but the second level check is deferred for this monitoring cycle.

The monitor operation interprets the program exit code as follows:

| | |
|-----------------|---|
| 110 or 0 | WebSphere Application Server is ONLINE |
| 100 or 1 | WebSphere Application Server is OFFLINE |
| 99 | WebSphere Application Server is UNKNOWN |
| Any other value | WebSphere Application Server is UNKNOWN |

To ensure that the custom monitor program is always available to the agent application, Symantec recommends storing the file in a shared directory that is available on an online node.

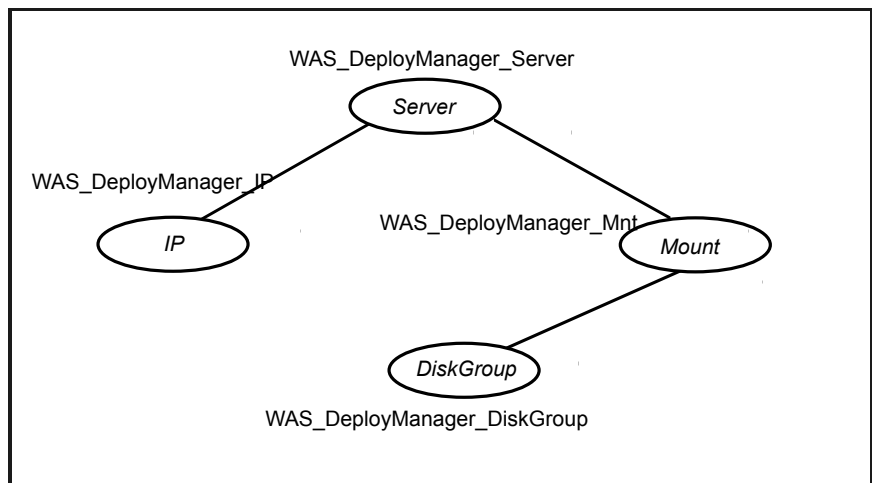
Service group configuration options

The WebSphere deployment type and strategy determines the number of service groups in a cluster required and the number of WebSphere Application Servers managed within each service group. Although not comprehensive, the following examples depict common scenarios to consider.

[Figure 3-1](#) depicts a service group that manages a Deployment Manager Server.

Other service groups manage WebSphere Servers of the type Node agent and Application Server.

Figure 3-1 Service group that manages a Deployment Manager Server



[Figure 3-2](#) depicts a service group that manages a Node Agent Server.

In this configuration, the cluster does not control the Application Servers managed by this Node Agent instance. Thus, the Node Agent Server may fully manage and monitor its managed Application Servers without conflict with the cluster.

Figure 3-2 WebSphere Application Server NodeAgent on all systems

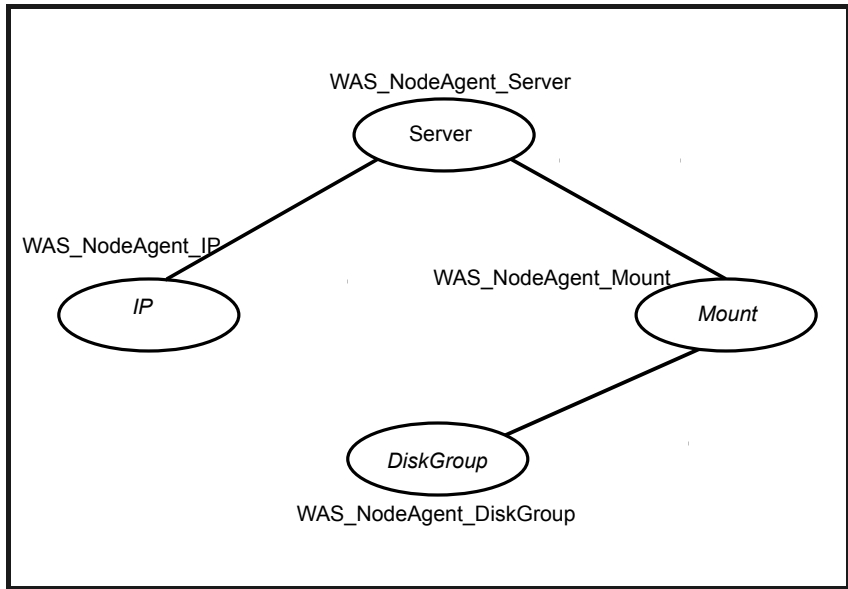
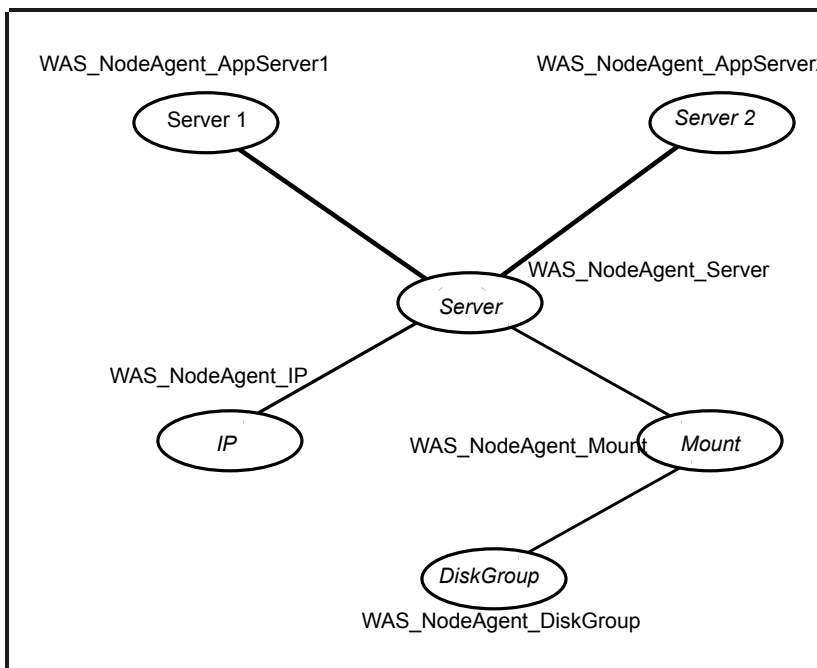


Figure 3-3 depicts a service group that controls a Node Agent Server and its two managed Application Servers.

In this configuration, the cluster controls the Application Servers that are managed by this Node Agent instance. Thus, the Node Agent Server should be configured to not monitor and restart its failed Application Servers, as this would conflict with cluster actions in response to the failure.

Figure 3-3 Service group that controls a Node Agent Server and its two managed Application Servers



Important considerations while configuring the agent

While configuring the agent, make the following settings:

- The time required to fully start a WebSphere instance depends on the number, size, and complexity of Java applications started within the server. Be sure to compare the value of the `OnlineTimeout` attribute with the actual time required to fully initialize the WebSphere Application Server. Large WebSphere Application Server deployments may require a larger `OnlineTimeout`. Properly tuning this attribute ensures that the cluster does not time out the online entry point while a WebSphere Application Server is initializing.
- Allow sufficient time for the WebSphere Application Server to shut down completely before probing the resource to determine if the request to stop was successful. Depending upon the environment, you may need to adjust the `OfflineTimeout` attribute for this resource to allow the instance ample time to shut down. Properly tuning this attribute ensures that the cluster does not time

out the offline entry point while a WebSphere Application Server is completing a graceful shut down.

After a WebSphere Application Server is placed under cluster control, do not attempt to start or stop the instance without using a cluster interface. Only use the Web Console, Java Console, or command-line interface, to start or stop a managed WebSphere instance.

Configuring the service groups for WebSphere Application Server

This chapter includes the following topics:

- [Configuring service groups for WebSphere Application Server](#)

Configuring service groups for WebSphere Application Server

While various methods and procedures can be used to install and cluster a WebSphere Application Server, Symantec recommends the following general process:

Allocating shared disk resource for the WebSphere node

A WebSphere node is a logical group of WebSphere Application Servers that are located on the same physical machine. This machine is also called a host. Multiple WebSphere nodes can exist on a single node.

Symantec recommends installing each WebSphere node to be clustered on a separate, dedicated shared disk resource (for example, LUN). Work with the appropriate administrative group in your organization to obtain a shared disk resource for the WebSphere node.

Creating a Veritas disk group, volume, and file system

Create a Veritas disk group, volume, and file system on the shared disk resource allocated for the WebSphere node.

Although not recommended, WebSphere Application Servers can be clustered without using Veritas Volume Manager or Veritas File System. But the tight integration between the cluster, Volume Manager, and File System ensures a more comprehensive and resilient high availability solution for your WebSphere Application Server.

Obtaining dedicated virtual IP addresses and host names

Obtain dedicated virtual IP addresses and host names required to support the WebSphere node IP network configuration.

Several configurations are possible. For example, a Node agent, which is an administrative process that manages all servers running on a WebSphere node, can share one IP address and host name with all of its managed servers. Alternatively, the Node agent and each of its managed servers could be assigned its own IP address and host name.

No matter which configuration you deploy, these network addresses and host names are used exclusively by this WebSphere node, regardless of which system in the cluster is running it.

Obtaining a dedicated user account if needed

If the WebSphere Application Server does not run using the root account, obtain a dedicated Windows account for the WebSphere Application Server. Refer to the description of User attribute for important instructions and requirements to create the account.

Creating service group and supporting resources

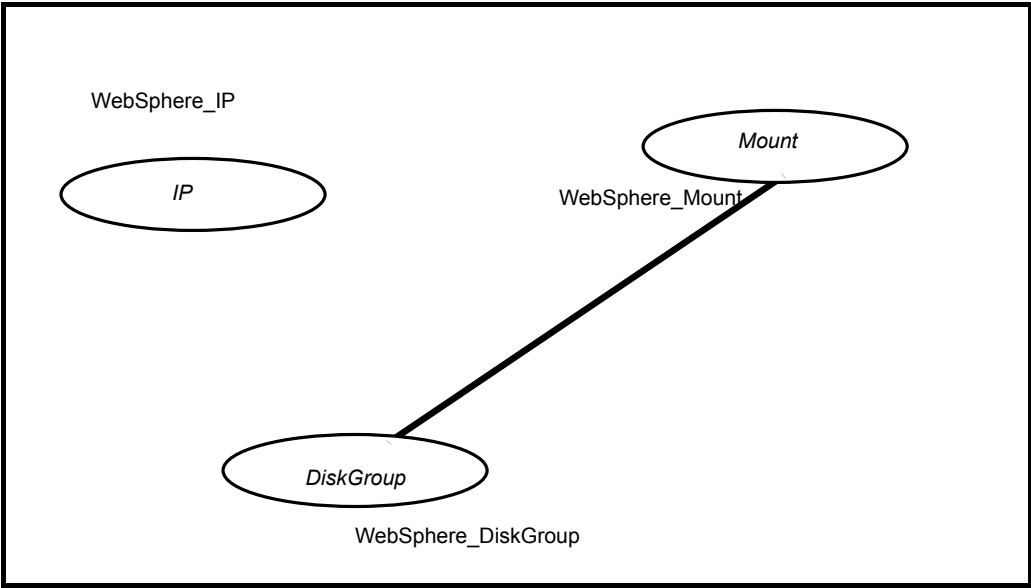
First create a service group on a cluster to contain the resources supporting the WebSphere node.

Then create the appropriate cluster resources and links to place the previously created shared disk and networking objects under cluster control.

Test the service group configuration by placing it online. Your service group should appear similar to the following figure.

[Figure 4-1](#) shows a typical service group.

Figure 4-1 Typical service group



Installing the WebSphere software

With the disk and network resources now available and online in the cluster, you are ready to install the WebSphere software.

Follow the instructions in the WebSphere product documentation and install the WebSphere Application Server software. Be sure to instruct the installation program to install the software on the shared disk file system previously established for this WebSphere node.

A well-designed directory structure for your WebSphere Application Server instances will simplify the cluster configuration and create a storage environment that is more intuitive and easier to manage. Assuming that all WebSphere Application Server instances will be clustered and installed on shared disk, Symantec recommends a directory structure similar to the following:

| Directory | Purpose |
|--------------------------------------|---|
| C:\Program Files\IBM\WebSphere | Top level directory under which all WebSphere nodes are installed. |
| C:\Program Files\IBM\WebSphere\cell1 | Subdirectory under which all WebSphere nodes assigned to cell1 are installed. |

| | |
|---|---|
| C:\Program Files\IBM\WebSphere\cell1\depmgr | Subdirectory is the mount point for the shared disk resource dedicated to the Deployment Manager instance supporting cell1. |
| C:\Program Files\IBM\WebSphere\cell1\node1 | Subdirectory is the mount point for the shared disk resource dedicated to the WebSphere node named <i>node1</i> , which belongs to cell1. The WebSphere software supporting this node agent and its managed Application Servers is installed in this directory. |
| C:\Program Files\IBM\WebSphere\cell1\node2 | Subdirectory is the mount point for the shared disk resource dedicated to the WebSphere node named <i>node2</i> , which belongs to cell1. The WebSphere software supporting this node agent and its managed Application Servers is installed in this directory. |
| C:\Program Files\IBM\WebSphere\cell1\node3 | Subdirectory is the mount point for the shared disk resource dedicated to the WebSphere node named <i>node3</i> , which belongs to cell1. The WebSphere software supporting this node agent and its managed Application Servers is installed in this directory. |

Continue with the same naming pattern for all remaining cells and WebSphere Application Servers.

During the installation, be sure to set the node's Host Name to the dedicated virtual IP host name previously allocated to this node.

Finally, be sure to configure the server's port numbers to avoid conflicts with the port numbers of other WebSphere Application Servers that may be running simultaneously on the same system. Configuring the port numbers is especially important in a cluster environment where WebSphere nodes can be easily moved around the systems in the cluster in almost any combination.

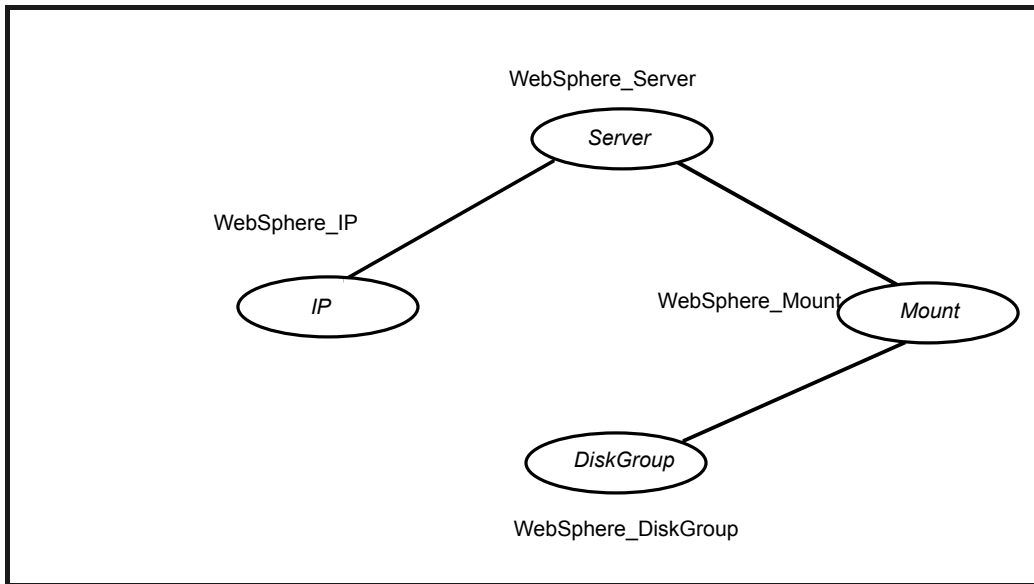
Placing the WebSphere Application Server under cluster control

After the WebSphere Application Server installation is complete, create a cluster resource using the agent for WebSphere to place the server under cluster control.

Your service group should now appear similar to the following figure.

Figure 4-2 shows a typical service group.

Figure 4-2 Typical service group



Warning: After a WebSphere Application Server is placed under cluster control, do not attempt to start or stop the instance without using a cluster interface. Only use the Web Console, Java Console, or command-line interface to start or stop a managed WebSphere instance.

Troubleshooting the agent for WebSphere Application Server

This chapter includes the following topics:

- [Using correct software and operating system versions](#)
- [Starting the WebSphere Application Server outside a cluster](#)
- [Reviewing error log files](#)

Using correct software and operating system versions

Ensure that no issues arise due to incorrect software and operating system versions. For the correct versions of operating system and software to be installed on the resource systems, refer to SORT site: <https://sort.symantec.com/agents>

Starting the WebSphere Application Server outside a cluster

If you face problems while working with a resource, you must disable the resource within the cluster framework. A disabled resource is not under the control of the cluster framework, and so you can test the WebSphere Application Server independent of the cluster framework. Refer to the cluster documentation for information about disabling a resource. You can then restart the WebSphere Application Server outside the cluster framework.

Note: Use the same parameters that the resource attributes define within the cluster framework while restarting the resource outside the framework.

A sample procedure to start a WebSphere Application Server outside the cluster framework, is illustrated as follows:

To start a WebSphere Deployment Manager outside the cluster framework

- 1** Using the user name specified in the User attribute, log into the host on which the WebSphere Deployment Manager application is to run.
- 2** Use the values specified in the agent attributes to start the WebSphere Deployment Manager.

For example, assume that the WebSphere Deployment Manager environment is set as follows:

| Attribute | Value |
|---------------|---|
| ServerType | DeploymentManager |
| ServerName | dmgr |
| WAS_CELL | Host04Cell01 |
| WAS_NODE | was60c1dmsol |
| WAS_HOME | C:\Program Files\IBM\WebSphere\v60\cell1\depmgr |
| ServerProfile | Dmgr01 |

- 3** Go to directory C:\Program Files\IBM\WebSphere\v60\cell1\depmgr\profiles\Dmgr01\bin.
- 4** Using the startManager.bat script, start the Deployment Manager.
C:\Program Files\IBM\WebSphere\v60\cell1\depmgr\profiles\Dmgr01\bin\startManager.bat
- 5** Ensure that the Deployment Manager Server starts successfully.

If the Deployment Manager works properly outside the cluster framework, you can attempt to implement the server within the framework.

To start a WebSphere node agent outside the cluster framework

- 1 Using the user name specified in the User attribute, log into the host on which the WebSphere Node agent application is to run.
- 2 Use the values specified in the agent attributes to start the WebSphere Node agent.

For example, assume that the WebSphere Node agent environment is set as follows:

| Attribute | Value |
|---------------|---|
| ServerType | NodeAgent |
| ServerName | nodeagent |
| WAS_CELL | Host04Cell01 |
| WAS_HOME | C:\Program Files\IBM\WebSphere\v60\cell1\node\node1 |
| ServerProfile | Default |

- 3 Go to specified directory C:\Program Files\IBM\WebSphere\v60\cell1\node1\profiles\AppSrv\bin.
 - 4 Using the startNode.bat script, start the Node Agent:
 C:\Program Files\IBM\WebSphere\v60\cell1\node1\profiles\AppSrv\bin\startNode.bat
 - 5 Ensure that the Node Agent starts successfully.
- If the Node Agent works properly outside the cluster framework, you can attempt to implement the server within the framework.

Reviewing error log files

If you face problems while using the WebSphere Application Server or the agent for WebSphere Application Server, use the error log files described in this section to investigate the problems. Contact Symantec support for more information.

Reviewing VCS log files

In case of problems while using the agent for WebSphere Application Server, you can also access the VCS engine log file for more information about a particular resource.

The VCS engine log file is located at c:\program files\veritas\cluster server\log\engine_A.txt.

Reviewing agent log files

In case of problems while using the agent for WebSphere Application Server , you can access the agent log files for WebSphere Application Server for more information. The agent saves the output of all the agent operation processes in the c:\program files\veritas\cluster server\log folder. The format of the log file is WebSphere_X.log.

Using trace level logging

The ResLogLevel attribute controls the level of logging that is written in a cluster log file for each WebSphere Application Server resource. You can set this attribute to TRACE, which enables very detailed and verbose logging. If you set ResLogLevel to TRACE, a very high volume of messages is produced. Symantec recommends that you must localize the ResLogLevel attribute for particular resource.

To localize ResLogLevel attribute for a resource

- 1 Identify the resource for which you want to enable detailed logging.
- 2 Localize the ResLogLevel attribute for the identified resource:

```
# hares -local Resource_Name ResLogLevel
```

- 3 Set the ResLogLevel attribute to TRACE for the identified resource:

```
# hares -modify Resource_Name ResLogLevel TRACE -sys SysA
```

- 4 Note the time before you begin to operate the identified resource.
- 5 Test the identified resource. The function reproduces the problem that you are attempting to diagnose.
- 6 Note the time when the problem is reproduced.
- 7 Set the ResLogLevel attribute back to INFO for the identified resource:

```
# hares -modify Resource_Name ResLogLevel INFO -sys SysA
```

- 8 Review the contents of the VCS engine output log file. Use the time noted in Step 4 and Step 6 to diagnose the problem.

Contact Symantec support for more help.

Sample Configurations

This appendix includes the following topics:

- [About the sample configuration for the agent for WebSphere Application Server](#)
- [Sample WebSphere Application Server agent type definition](#)
- [Sample configuration](#)
- [Sample service group configuration for the agent for WebSphere Application Server](#)

About the sample configuration for the agent for WebSphere Application Server

The sample configuration depicts the resource types, resources, and resource dependencies within the service group. Review these dependencies carefully before configuring the agent for WebSphere Application Server. For more information about these resource types, refer to the *Cluster Server Bundled Agents Reference Guide*.

Sample WebSphere Application Server agent type definition

A sample agent type definition is shown as follows:

```
type WebSphere (  
    static il8nstr ArgList[] = { ResLogLevel, State, IState,  
                                ServerName, User, Domain, Password,  
                                WAS_NODE, WAS_HOME, WAS_CELL,  
                                ServerProfile, ServerType, StartOptions,
```

```
StopOptions, MonitorProgram,  
SecondLevelMonitor }  
  
str ResName  
str ResLogLevel = INFO  
str ServerName  
str User  
str Domain  
str Password  
str WAS_NODE  
str WAS_HOME  
str WAS_CELL  
str ServerProfile  
str ServerType  
str StartOptions  
str StopOptions  
str MonitorProgram  
int SecondLevelMonitor  
)
```

Sample configuration

A sample main.cf file is shown as follows:

```
include "types.cf"  
include "WASTypes.cf"  
include "WebSphereTypes.cf"  
  
cluster accwin5 (  
  UserNames = { admin = bQRjQLqNRmRRpZRlQO }  
  Administrators = { admin }  
)  
  
system sys_A (  
)  
  
system sys_B (  
)  
  
group Grp_WebSphere (  
  SystemList = { sys_A = 0 , sys_B = 1 }  
)  
  
IP Res_IP (  

```

```
Critical = 0
Device = hme0
Address = "10.136.228.11"
NetMask = "255.255.248.0"
)

MountV Res_mount (
    Critical = 0
    MountPath = "C:\\Program Files\\IBM\\WebSphereNET\\AppServer"
    VolumeName = was_log_vol
    VMDGResName = Res_DiskGroup
    ForceUnmount = ALL
)

VMDg Res_DiskGroup (
    Enabled = 0
    DiskGroupName = Res_DiskGroup
    DGGuid = c844de2f-efbc-431f-b6dd-9a5abc6ece55
)

WebSphere Res_NodeAgent (
    Critical = 0
    ServerName = nodeagent
    User = administrator
    Domain = ISV-DOMAIN
    Password = ftlRitI
    WAS_NODE = Host04node03
    WAS_HOME = "C:\\Program Files\\IBM\\WebSphereNET\\AppServer"
    WAS_CELL = Host04Cell01
    ServerProfile = AppSrv01
    ServerType = NodeAgent
    StartOptions = "-replacelog -trace"
)

WebSphere res_DeploymentManager (
    Critical = 0
    ResLogLevel = TRACE
    ServerName = dmgr
    User = Administrator
    Domain = ISV-DOMAIN
    Password = ftlRitI
    WAS_NODE = accnet04CellManager01
    WAS_HOME = "C:\\Program Files\\IBM\\WebSphereNET\\AppServer"
```

```
WAS_CELL = Host04Cell01
ServerProfile = Dmgr01
ServerType = DeploymentManager
StartOptions = "-trace -replacelog"
)

WebSphere Res_ApplicationServer1 (
    Critical = 0
    ServerName = server1
    User = administrator
    Domain = ISV-DOMAIN
    Password = ftlRitI
    WAS_NODE = Host04node03
    WAS_HOME = "C:\\Program Files\\IBM\\WebSphereNET\\AppServer"
    WAS_CELL = Host04Cell01
    ServerProfile = AppSrv01
    ServerType = ApplicationServer
    StartOptions = "-replacelog -trace"
)

WebSphere Res_ApplicationServer2 (
    Critical = 0
    ServerName = server2
    User = administrator
    Domain = ISV-DOMAIN
    Password = ftlRitI
    WAS_NODE = Host04node03
    WAS_HOME = "C:\\Program Files\\IBM\\WebSphereNET\\AppServer"
    WAS_CELL = Host04Cell01
    ServerProfile = AppSrv01
    ServerType = ApplicationServer
    StartOptions = "-trace -replacelog"
    MonitorProgram = "C:\\monitor.bat"
    SecondLevelMonitor = 3
)

Res_NodeAgent requires res_DeploymentManager
res_DeploymentManager requires Res_IP
res_DeploymentManager requires Res_mount
Res_ApplicationServer1 requires Res_NodeAgent
Res_ApplicationServer2 requires Res_NodeAgent
Res_mount requires Res_DiskGroup
```

```
// resource dependency tree
//
// group Grp_WebSphere
// {
//   WebSphere Res_ApplicationServer1
//   {
//     WebSphere Res_NodeAgent
//     {
//       WebSphere res_DeploymentManager
//       {
//         IP Res_IP
//         MountV Res_mount
//         {
//           VMDg Res_DiskGroup
//         }
//       }
//     }
//   }
//   WebSphere Res_ApplicationServer2
//   {
//     WebSphere Res_NodeAgent
//     {
//       WebSphere res_DeploymentManager
//       {
//         IP Res_IP
//         MountV Res_mount
//         {
//           VMDg Res_DiskGroup
//         }
//       }
//     }
//   }
// }
```

The following is an excerpt from a VCS configuration file (main.cf) that defines a Network Deployment of WebSphere Application Servers and two independent Application Servers (Application Servers that are not part of a Network Deployment).

This configuration demonstrates that you can combine Network Deployment WebSphere Cells with independent WebSphere Application Servers. In the example, there is one WebSphere Cell consisting of one Deployment Manager named `dmgr`. The WebSphere Cell contains two Node Managers, both named `nodeagent`.

Review the information to configure a service group that manages one independent, stand-alone Application Server.

See [“Service group configuration options”](#) on page 21.

```
group WASCell1DM (
    SystemList = { sysa = 0, sysb = 1, sysc = 2 }
)
DiskGroup WASCell1DM_dg (
    DiskGroup = was51cldm
)

IP WASCell1DM_ip (
    Device = hme0
    Address = "10.136.228.11"
    NetMask = "255.255.248.0"
)

Mount WASCell1DM_mnt (
    Critical = 0
    MountPath = "C:\\Program Files\\IBM\\
                WebSphereNET\\APPServer"
    VolumeName = was_log_vol
    VMDGResName = WASCell1DM_dg
    ForceUnmount = ALL
)

WebSphere Res_ApplicationServer1 (
    Critical = 0
    ServerName = server1
    User = administrator
    Domain = ISV-DOMAIN
    Password = ftlRitI
    WAS_NODE = Host04node03
    WAS_HOME = "C:\\Program Files\\IBM\\
                WebSphereNET\\APPServer"
    WAS_CELL = Host04Cell101
    ServerProfile = AppSrv01
    ServerType = ApplicationServer
    StartOptions = "-replacelog -trace"
)

Res_ApplicationServer1 requires WASCell1DM_ip
```

```
Res_ApplicationServer1 requires WASCell1DM_mnt
WASCell1DM_mnt requires WASCell1DM_dg
```

```
group WASCell1Node1 (
    SystemList = { sysb = 0, sysa = 1, sysc = 2 }
)
DiskGroup WAS51Cell1Node1_dg (
    DiskGroup = was51cln1
)

IP WAS51Cell1Node1_ip (
    Device = hme0
    Address = "10.136.228.18"
    NetMask = "255.255.248.0"
)

Mount WAS51Cell1Node1_mnt (
    Critical = 0
    MountPath = "C:\\Program Files\\IBM\\
                WebSphereNET\\APPServer"
    VolumeName = was_log_vol
    VMDGResName = Res_DiskGroup
    ForceUnmount = ALL
)

WebSphere Res_NodeAgent (
    Critical = 0
    ServerName = nodeagent
    User = administrator
    Domain = ISV-DOMAIN
    Password = ftlRitI
    WAS_NODE = Host04node03
    WAS_HOME = "C:\\Program Files\\IBM\\
                WebSphereNET\\APPServer"
    WAS_CELL = Host04Cell01
    ServerProfile = AppSrv01
    ServerType = NodeAgent
    StartOptions = "-replacelog -trace"
)

WebSphere Res_ApplicationServer1 (
    Critical = 0
```

```

    ServerName = server1
    User = administrator
    Domain = ISV-DOMAIN
    Password = ftlRitI
    WAS_NODE = Host04node03
    WAS_HOME = "C:\\Program Files\\IBM\\
                WebSphereNET\\APPServer"
    WAS_CELL = Host04Cell01
    ServerProfile = AppSrv01
    ServerType = ApplicationServer
    StartOptions = "-replacelog -trace"
)

WebSphere Res_ApplicationServer2 (
    Critical = 0
    ServerName = server2
    User = administrator
    Domain = ISV-DOMAIN
    Password = ftlRitI
    WAS_NODE = Host04node03
    WAS_HOME = "C:\\Program Files\\IBM\\
                WebSphereNET\\APPServer"
    WAS_CELL = Host04Cell01
    ServerProfile = AppSrv01
    ServerType = ApplicationServer
    StartOptions = "-trace -replacelog"
    MonitorProgram = "C:\\monitor.bat"
    SecondLevelMonitor = 3
)

Res_ApplicationServer2 requires Res_NodeAgent
WASCell1Node1_mnt requires WASCell1Node1_dg
Res_NodeAgent requires WASCell1Node1_ip
Res_NodeAgent_was requires WASCell1Node1_mnt
Res_ApplicationServer1 requires Res_NodeAgent
)

group WASAppSrvr1 (
    SystemList = { sysa = 0, sysb = 1, sysc = 2 }
)

DiskGroup WASAppSrvr1_dg (
    DiskGroup = was51c1n1
)
```

```

    )

Mount WASAppSrvr1_mnt (
    Critical = 0
    MountPath = "C:\\Program Files\\IBM\\
                WebSphereNET\\APPServer"
    VolumeName = was_log_vol
    VMDGResName = Res_DiskGroup
    ForceUnmount = ALL
)

WebSphere Res_ApplicationServer1 (
    Critical = 0
    ServerName = server1
    User = administrator
    Domain = ISV-DOMAIN
    Password = ftlRitI
    WAS_NODE = Host04node03
    WAS_HOME = "C:\\Program Files\\IBM\\
                WebSphereNET\\APPServer"
    WAS_CELL = Host04Cell01
    ServerProfile = AppSrv01
    ServerType = ApplicationServer
    StartOptions = "-replacelog -trace"
)

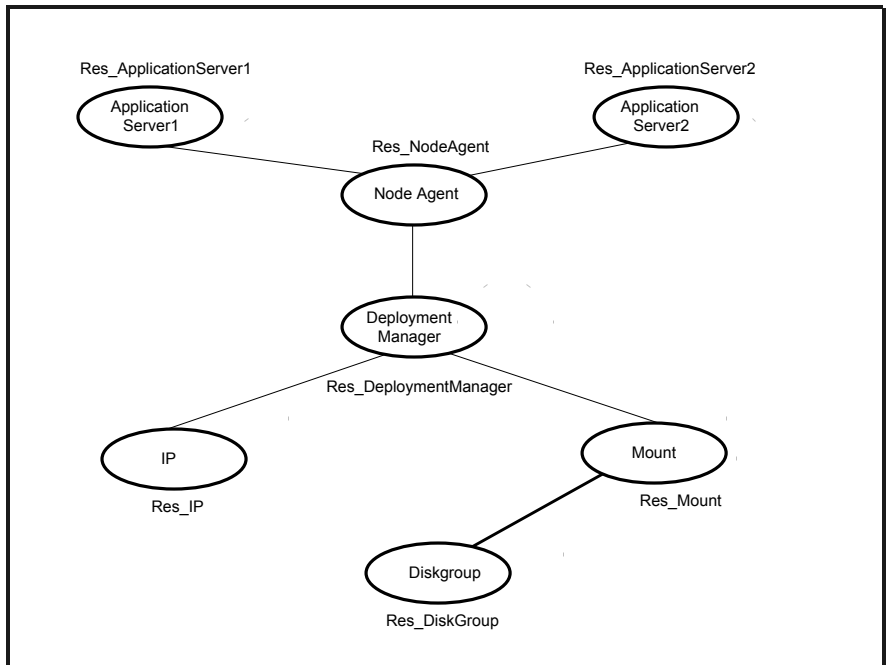
WASAppSrvr1_mnt requires WASAppSrvr1_dg
Res_ApplicationServer1 requires WAS51AppSrvr1_ip
Res_ApplicationServer1 requires WAS51AppSrvr1_mnt
)

```

Sample service group configuration for the agent for WebSphere Application Server

Figure A-1 depicts a typical service group configuration.

Figure A-1 Service group configuration



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