Veritas™ High Availability Agent for WebSphere MQ Installation and Configuration Guide

Windows

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Symantec™

Veritas High Availability Agent for WebSphere MQ Installation and Configuration Guide

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Contents

Chapter 1

Introducing the Veritas High Availability Agent for WebSphere MQ

This chapter includes the following topics:

About the High Availability agent for WebSphere MQ

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

The Veritas agent for WebSphere MQ manages the WebSphere MQ Queue Managers in a clustered environment. The agent can bring a specific WebSphere MQ Queue Manager online and monitor the state of the Queue Manager. The agent can also detect failures and can shut down the Queue Manager in case of a failure.

What's new in this release

The enhancements in this release of the agent for WebSphere MQ are as follows:

- You can configure WebSphere MQ for high availability in a virtual environment, by using the Symantec High Availability Configuration wizard.

The agent supports the Symantec High Availability Configuration wizard on VCS 6.0.1 or later.

Note: In this release, the wizard does not configure the storage resources for the MQ installation path. If the MQ installation path is on shared storage, then each Queue Manager for that installation path cannot failover independently. In such a case, a storage resource for the MQ installation path must be configured manually, if required.

- The agent type has changed from WebSphereMQ6 to WebSphereMQ.

Supported software

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

Agent functions

Online

The online function performs the following tasks:

- Verifies that the WebSphere MQ Queue Manager is not already online.
- Uses an IBM provided start command to start the WebSphereMQ using the name of the Queue Manager.
- Ensures that the WebSphere MQ Queue Manager is up and running successfully. The function uses the wait period that the OnlineTimeout attribute specifies to enable the Queue Manager to initialize fully before allowing the monitor function to probe the resource.

Offline

The offline function performs the following tasks:

- Verifies that the WebSphereMQ Queue Manager is not already offline.
- Uses an IBM provided stop command to stop the WebSphere MQ Queue Manager using the name of the Queue Manager.

- Ensures that the WebSphereMQ Queue Manager is given enough time to go offline successfully. The function uses a wait period that the OfflineTimeout attribute specifies, to allow the WebSphereMQ Queue Manager to complete the offline sequence before allowing further probing of the resource.

Monitor

The monitor function monitors the states of the WebSphere MQ Queue Managers running on all nodes within the cluster. The monitor function can monitor the following WebSphere MQ Queue Manager components:

- Queue Manager
- Channel Initiator
- Command Server (If the CommandServer attribute is set to 1)

The monitor function performs the following tasks:

- The first level check searches for all system processes that must be running for a WebSphereMQ Queue Manager. If the first level check does not find these processes running on the node, the check exits immediately, and reports the Queue Manager as OFFLINE.
- If the SecondLevelMonitor attribute is set to greater than 0, the monitor function performs a second level check to determine the status of the WebSphereMQ Queue Manager.
  The second level check executes the runmqsc command and pings the Queue Manager to see if the manager is up and running. This check ensures that the processes are truly available for MQ Queue processing.
- Depending upon the MonitorProgram attribute, the monitor function can perform a customized check using a user-supplied monitoring utility. For details about executing a custom monitor program:
  See "Executing a custom monitor program" on page 29.

Clean

In case of a failure or after an unsuccessful attempt to online or offline WebSphereMQ Queue Manager, the clean function removes any Queue Manager processes remaining in the system. The clean function performs the following tasks:

- Attempts to gracefully shut down the WebSphereMQ Queue Manager.
- If a graceful shutdown fails, the clean function looks for all the processes running for the WebSphereMQ Queue Manager, and cleans the processes.

- If the CommandServer attribute is set to 1 for WebSphere version 6.0, the clean function kills the Command Server processes associated with the WebSphere MQ Queue Manager.

Online

The online function performs the following tasks:

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Chapter 2

Installing, upgrading, and removing the agent for WebSphere MQ

This chapter includes the following topics:

Before you install the agent for WebSphere MQ

Ensure that you meet the following prerequisites before installing the agent for WebSphere MQ:

- Install and configure Veritas Cluster Server.
- Remove any previous version of this agent.
  See "Removing the VCS agent for WebSphere MQ" on page 23.

Installing the VCS agent for WebSphere MQ

Use the Product Installer to install the agent for WebSphere MQ.

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

To install the VCS agent for WebSphere MQ

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\webspheremq_agent\`
	`vcs_version\version_agent\`
	`webspheremq_agt.5.0-GA_w2k3`

Windows 2003 (IA64)	`cd1\windows\w2k3IA64\vcs\application\webspheremq_agent\`
	`vcs_version\version_agent\`
	`webspheremq_agt.version-GA_w2k3IA64\Pkgs`

Windows 2003 (x64)	`cd1\windows\w2k3x64\vcs\application\webspheremq_agent\`
	`vcs_version\version`
	`_agent\webspheremq_agt.version-GA_w2k3x64\Pkgs`

Windows 2008 (x64)	For VCS 5.1:
	`cd1\windows\w2k8x64\vcs\application\webspheremq_agent\`
	`5.1\version_agent\webspheremq_agt.version`
	`-GA_w2k8X64\Pkgs`
	For VCS 6.0:
	`cd1\windows\w2k8x64\vcs\application\webspheremq_agent\`
	`vcs_version\version_agent\Pkgs`

5. Double-click **vrtsvcswebspheremq.msi**.

   Follow the instructions that the install program provides, to complete the installation of Veritas agent for WebSphere MQ.

Removing the VCS agent for WebSphere MQ

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

To uninstall the VCS agent for WebSphere MQ

1. Ensure that all clustered VCS resources are offline.
2. From the cluster, remove all the resources that use the agent for WebSphere MQ.
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 2003: Navigate to **Add/Remove Programs**
     - On Windows 2008 : Navigate to **Programs and Features**
     - On Windows 2008R2 : Navigate to **Programs**>**Programs and Features**
   - From the list of programs, select **vrtsvcswebspheremq.msi**.
4. Click **Change/Remove**.
5. Follow the instructions that the uninstall program provides, to complete the uninstallation of the agents for WebSphere MQ.

Upgrading the agent for WebSphere MQ

Perform the following steps to upgrade the agent with minimal disruption, in a VCS environment.

To upgrade the agent in a VCS environment

1. Login as domain administrator.
2. Verify that your path is *drive*:\Program Files\Veritas\Cluster Server\bin
3. Persistently freeze all the service groups that host the application.

   C:\> hagrp –freeze *GroupName* -persistent
4. Stop the cluster services forcibly.

   C:\> hastop -all –force
5. Ensure that the agent operations are stopped on all the nodes.

6 Take a back up of the main.cf and types.cf

```
C:\> copy drive:\> Program Files\Veritas\Cluster
Server\conf\config\main.cf drive:\>backup\main.cf
```

```
C:\> copy drive:\> Program Files\Veritas\Cluster
Server\conf\config\types.cf drive:\>backup\types.cf
```

7 Uninstall the agent package from all the nodes.

See "Removing the VCS agent for WebSphere MQ" on page 23.

8 Install the new agent on all the nodes.

9 Navigate to *drive*:\> Program Files\Veritas\Cluster Server\conf\config\types.cf file and verify if any duplicate type definitions exists for Weblogic on all the nodes.

If duplicate type definitions exist, remove old type definition from types.cf file and save the file.

Note: To identify the old type definition, compare the new type definition file with the old (backed up) types.cf file.

---

10 Check for the changes in the resource values required, if any, due to the new agent types definition.

Note: To note the list of changed attributes, compare the new type definition file with the old type definition file.

---

11 Start VCS on all nodes in the cluster.

```
C:\> hastart
```

12 Start the agent on all nodes, if not started.

```
C:\> haagent -start WebSphereMQ -sys SystemName
```

13 Unfreeze the service groups once all the resources come to an online steady state.

```
C:\> hagrp -unfreeze GroupName -persistent
```

Chapter 3

Configuring the agent for WebSphere MQ

This chapter includes the following topics:

About configuring the agent for WebSphere MQ

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

Agent attributes for WebSphere MQ

Table 3-1 shows the required attributes for configuring a WebSphere MQ Queue Manager.

Table 3-1 Required attributes

Required attributes	Description
Home	The absolute path to the WebSphereMQ installation directory. This attribute is used to locate programs executed by the agent, such as strmqm.exe. Type and dimension: string-scalar Default: No default value Example: c:\Program Files\IBM\WebSphere MQ
Domain	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. Type and dimension: string-scalar Default: No default value Example: ISV-DOMAIN
Password	Password for the user. Use the vcsencrypt -agent 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. Type and dimension: string-scalar Default: No default value
CommandServer	Decides whether the monitor operation must monitor the command server process or not. This attribute is applicable for WebSphere version 6.0 only. If you set this attribute to 1, the agent for WebSphere MQ monitors the command server process, amqpcsea. If this process faults, the agent for WebSphere MQ restarts the process. If you set this attribute to 0, the agent for WebSphere MQ does not monitor the amqpcsea process. Type and dimension: string-scalar Default: 0 Example: 1

Table 3-1 Required attributes *(continued)*

Required attributes	Description
User	Windows user name of the owner of the WebSphere MQ directories and executables. The agent operations use this name to execute all WebSphere MQ commands. This user name does not have to be unique within a cluster. Do not include the domain name when specifying this attribute; use the Domain attribute to specify domain requirements. Type and dimension: string-scalar Default: mqm Example: mqusr1
MQVer	Version of the WebSphere MQ Queue Manager. Supported version is 6.0. Type and dimension: string-scalar Default: 6.0
QueueManager	Name of the WebSphere MQ Queue Manager that the cluster server manages. You must uniquely define this attribute for each Queue Manager within the cluster. This attribute also uniquely identifies the processes running for a specific WebSphere MQ Queue Manager. Type and dimension: string-scalar Default: No default value Example: venus.queue.manager

Table 3-1 Required attributes *(continued)*

Required attributes	Description
ResLogLevel	Specifies the logging detail performed by the agent for the resource. Valid values are: ■ INFO: Logs error messages. ■ TRACE: Logs error and trace messages. TRACE is very verbose and should only be used during initial configuration or for troubleshooting and diagnostic operations. To see trace messages while agent entry point is executing, add value DBG_21 to LogDbg attribute of WebSphereMQ resource type and set ResLogLevel attribute value to TRACE. Type and dimension: string-scalar Default: INFO Example: TRACE

Table 3-2 shows the optional attributes for configuring a WebSphere MQ Queue Manager.

Table 3-2

Optional attributes	Description
MonitorProgram	Absolute path name of an external, user-supplied monitor executable. For information about setting this attribute: See "Executing a custom monitor program" on page 29. Type and dimension: string-scalar Default: No default value
SecondLevelMonitor	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 configured WebSphere MQ resource, performed by executing the runmqsc.exe utility. Type and dimension: integer-scalar Default: 0 Example: 1

Executing a custom monitor program

The monitor function executes a custom monitor program to perform a user-defined WebSphere MQ Queue Manager 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 MQ Queue Manager is online.
- The SecondLevelMonitor attribute is either set to 0 or 1, and the second level check indicates that the WebSphere MQ Queue Manager 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 MQ Queue Manager is ONLINE
100 or 1	WebSphere MQ Queue Manager is OFFLINE
99	WebSphere MQ Queue Manager is UNKNOWN
Any other value	WebSphere MQ Queue Manager 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.

Chapter 4

Configuring the service group for WebSphere MQ using the Symantec High Availability Configuration wizard

This chapter includes the following topics:

Typical VCS cluster configuration in a virtual environment

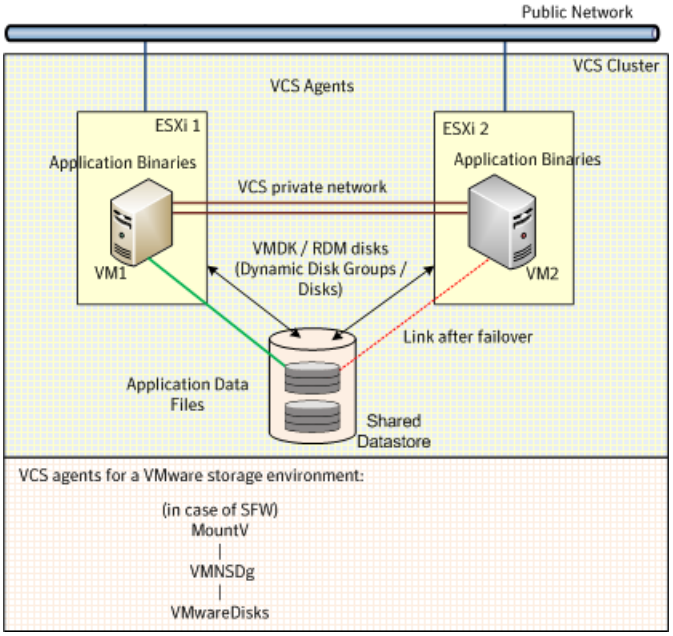
A typical VCS cluster configuration for WebSphere MQ Queue Manager, in a VMware virtual environment involves two or more virtual machines. The virtual machine on which the application is active, accesses a non-shared VMware VMDK or RDM disk that resides on a VMware datastore.

The virtual machines involved in the VCS cluster configuration may belong to a single ESX host or could reside on separate ESX hosts. If the virtual machines reside on separate ESX hosts, the datastore on which the VMware VMDK or RDM disks (on which the application data is stored) reside must be accessible to each of these ESX hosts.

The application binaries are installed on the virtual machines and the data files are installed on the VMware disk drive. The VCS agents monitor the application components and services, and the storage and network components that the application uses.

During a failover, the VCS storage agents (MountV-VMNSDg-VMwareDisks in case of SFW storage, Mount-NativeDisks-VMwareDisks in case of LDM strorage) move the VMware disks to the new system. The VCS network agents bring the network components online, and the application-specific agents then start the application services on the new system.

Figure 4-1 Typical WebSphere MQ Queue Manager cluster configuration in a VMware virtual environment



About configuring application monitoring using the Symantec High Availability solution for VMware

Consider the following before you proceed:

- You can configure monitoring for WebSphere MQ on a virtual machine using the Symantec High Availability Configuration wizard for VMware.
  The wizard is launched when you click **Configure application for high availability** on the Symantec High Availability tab in VMware vSphere Client.
- Apart from the Symantec High Availability Configuration wizard, you can also configure application monitoring using the Veritas Cluster Server (VCS) commands. For more information, refer to the *Veritas Cluster Server Administrator's Guide*.
- Symantec recommends that you first configure application monitoring using the wizard before using VCS commands to add additional components or modify the existing configuration.
  Apart from configuring application availability, the wizard also sets up the other components required for successful application monitoring.

- You must not suspend a system if an application is currently online on that machine. If you suspend a system, VCS moves the disks along with the application to another system. Later, when you try to restore the suspended system, VMware does not allow the operation because the disks that were attached before the system was suspended are no longer with the system. To suspend a virtual machine, ensure that the application being monitored is not online on that system.

Note: For details about deploying, configuring, and administering the Symantec High Availability solution, refer to the *Symantec High Availability Solutions Guide for VMware*.

Getting ready to configure VCS service groups using the wizard

Ensure that you complete the following tasks before configuring application monitoring on a virtual machine:

- Install the VMware vSphere Client.
- Install and enable VMware Tools on the virtual machine, where you want to monitor applications with VCS. Install a version that is compatible with the VMware ESX server.
- Install Symantec High Availability console on a Windows system in your data center and register the Symantec High Availability plug-in with the vCenter server.
- Assign Configure Application Monitoring (Admin) privileges to the logged-on user on the virtual machine where you want to configure application monitoring.
- Install Veritas Cluster Server.
- Install the application and the associated components that you want to monitor on the virtual machine.
- If you have configured a firewall, ensure that your firewall settings allow access to ports used by the Symantec High Availability installer, wizards, and services. Refer to the *Symantec High Availability Solutions Guide for VMware* for a list of ports and services used.

Before configuring application monitoring

Note the following prerequisites before configuring application monitoring on a virtual machine:

- The Symantec High Availability Configuration wizard discovers the disks that are attached and the storage that is currently mounted. Ensure that the shared storage used by the application is mounted before you launch the wizard.
- For all the WebSphere MQ Queue Managers that you want to configure, the DataPath, LogPath, and InstallationPath directories must be accessible from the node from where you invoke the Symantec High Availability Configuration wizard.
- You must not restore a snapshot on a virtual machine where an application is currently online, if the snapshot was taken when the application was offline on that virtual machine. Doing this may cause an unwanted failover. This also applies in the reverse scenario; you should not restore a snapshot where the application was online on a virtual machine, where the application is currently offline. This may lead to a misconfiguration where the application is online on multiple systems simultaneously.
- While creating a VCS cluster in a virtual environment, you must configure the cluster communication link over a public network in addition to private adapters. The link using the public adapter should be assigned as a low-priority link. This helps in case the private network adapters fail, leading to a condition where the systems are unable to connect to each other, consider that the other system has faulted, and then try to gain access to the disks, thereby leading to an application fault.
- You must not select teamed network adapters for cluster communication. If your configuration contains teamed network adapters, the wizard groups them as "NIC Group #N" where "N" is a number assigned to the teamed network adapters. A teamed network adapter is a logical NIC, formed by grouping several physical NICs together. All NICs in a team have an identical MAC address, due to which you may experience the following issues:
  - SSO configuration failure.
  - The wizard may fail to discover the specified network adapters.
  - The wizard may fail to discover/validate the specified system name.
- Verify that the boot sequence of the virtual machine is such that the boot disk (OS hard disk) is placed before the removable disks. If the sequence places the removable disks before the boot disk, the virtual machine may not reboot after an application failover. The reboot may halt with an "OS not found" error. This issue occurs because during the application failover the removable disks are

detached from the current virtual machine and are attached on the failover target system.

- Verify that the disks used by the application that you want to monitor are attached to non-shared controllers so that they can be deported from the system and imported to another system.
- If multiple types of SCSI controllers are attached to the virtual machines, then storage dependencies of the application cannot be determined and configured.
- The term 'shared storage' refers to the removable disks attached to the virtual machine. It does not refer to disks attached to the shared controllers of the virtual machine.
- If you want to configure the storage dependencies of the application through the wizard, the VxVM volumes used by the application should not be mounted on more than one mount point path.

Launching the Symantec High Availability Configuration wizard

You can launch the Symantec High Availability Configuration wizard from:

- VMware vSphere Client: See To launch the wizard from the VMware vSphere Client.
- A browser window: See To launch the wizard from a browser window.

You must launch the Symantec High Availability Configuration wizard from the system where the disk residing on the shared datastore is attached.

To launch the wizard from the VMware vSphere Client

1. Launch the VMware vSphere Client and connect to the VMware vCenter Server that hosts the virtual machine.
2. From the vSphere Client's Inventory view in the left pane, select the virtual machine where you want to configure application monitoring.

3 Skip this step if you have already configured single sign-on during guest installation.

Select the Symantec High Availability tab and in the Symantec High Availability View page, specify the credentials of a user account that has administrative privileges on the virtual machine and click **Configure**.

The Symantec High Availability console sets up a permanent authentication for the user account on that virtual machine.

4 Depending on your setup, use one of the following options to launch the wizard:

- If you have not configured a cluster, click the **Configure application for high availability** link.
- If you have already configured a cluster, click **Actions > Configure application for high availability** or the **Configure application for high availability** link.
- If you have already configured a cluster and configured an application for monitoring, click **Actions > Configure application for high availability**.

To launch the wizard from a browser window

1 Open a browser window and enter the following URL:

`https://<VMNameorIP>:5634/vcs/admin/application_health.html`

<VMNameorIP> is the virtual machine name or IP address of the system on which you want to configure application monitoring.

2 In the Authentication dialog box, enter the username and password of the user who has administrative privileges.

3 Depending on your setup, use one of the following options to launch the wizard:

- If you have not configured a cluster, click the **Configure application for high availability** link.
- If you have already configured a cluster, click **Actions > Configure application for high availability** or the **Configure application for high availability** link.
- If you have already configured a cluster and configured an application for monitoring, click **Actions > Configure application for high availability**.

Configuring the WebSphere MQ queue manager for high availability

Perform the following steps to configure the WebSphere MQ queue manager for high availability on a virtual machine.

To configure the WebSphere MQ queue manager for high availability

1. Launch the Symantec High Availability Configuration wizard. See "Launching the Symantec High Availability Configuration wizard" on page 36.
2. Review the information on the Welcome panel and click **Next**.
3. On the Application Selection panel, select **WebSphere MQ** from the Supported Applications list and click **Next**.

   You can use the Search box to search for the WebSphere MQ application.
4. On the Application Inputs panel, from the Queue Manager list, select the WebSphere MQ queue manager instances that you want to monitor.

   Note: The wizard does not display Queue Manager instances that are already configured.
5. Specify the domain name, user name and password of the user for the queue manager.
6. Skip this step if you do not want to monitor the related queue manager listener.

   If you want to monitor the related queue manager listener, check the **Monitor Queue Manager Listener** check box and enter the listener port number in the **ListenerPort** field.A separate resource for the listener is created using the generic Application agent.

   Note: The Symantec High Availability Configuration wizard supports only one listener associated with each queue manager.

   Click **Next**.
7. Skip this step if you do not want to monitor mount points for the selected queue managers.

   If you want to monitor mount points, select the mount points that are associated with each queue manager and click **Next**.

8 On the Configuration Inputs panel, use the Edit icon to specify the details of the systems for the VCS cluster operations and then move the required systems to the **Application failover targets** list. Use the up and down arrow keys to define the priority order of the failover systems.

After you specify the cluster systems and the failover targets, you must specify the domain user account details in the respective fields under Domain user details. The VCS agent uses this account to perform domain operations such as Active Directory updates.

The Cluster systems lists the systems included in the cluster configuration. **Application failover targets** lists the systems to which the application can fail over. The local system is selected by default for both, the cluster operations and as a failover target.

9 Skip this step if you do not want to add more systems to your cluster.

To add more systems, click **Add System** and then in the Add System dialogue box, specify the following details of the system that you want to add to the VCS cluster and click **OK**.

System Name or IP address	Specify the name or IP address of the system that you want to add to the VCS cluster.
User name	Specify the user account for the system. The user name must be in the format `domain.com\username`. **Note:** The specified user must be a domain user with administrative privileges on all the selected system.
Password	Specify the password for the user account mentioned.
Use the specified user account on all systems	Select to use the specified user account on all the cluster systems that have the same user name and password. This is selected by default.

The wizard validates the system details and then adds the system to the VCS cluster system list.

10 Skip this step if you do not want to modify the default security settings for your cluster.

To modify the security settings for the cluster, click **Advanced Settings**. In the Advanced settings dialog box, specify the following details and click **OK**.

Use Single Sign-on	Select to configure single sign-on using VCS Authentication Service for cluster communication. This option is enabled by default.
Use VCS user privileges	Select to configure a user with administrative privileges to the cluster. Specify the username and password and click **OK**.

Note: The **Advanced Settings** link is not visible if the cluster is already created.

11 On the Network Details panel, select the type of network protocol to configure the VCS cluster network links and then specify the adapters for network communication. By default, the links are configured over Ethernet.

Note: Symantec recommends that one of the network adapters must be a public adapter. You may assign low priority to the VCS cluster communication link that uses the public adapter.

Depending on the network over which you want to configure the links, select one of the following:

- **Use MAC address for cluster communication (LLT over Ethernet)**: Select the adapter for each network communication link. You must select a different network adapter for each communication link. This communication type configures the links over the non-routed network. Choose this mode only if the failover target systems reside in the same subnet.
- **Use IP address for cluster communication (LLT over UDP)**: Select the type of IP protocol and then specify the required details for each communication link. This communication type configures the links over the routed network. Choose this mode if the failover target systems reside in same or different subnets. You can select only the adapters that have an IP address. Symantec recommends that the IP address assigned to these adapters should be in different subnets.
  Select the IP protocol (IPv4 or IPv6) and then specify the following:

Network Adapter	Select a network adapter for the communication links. You must select a different network adapter for each communication link.
IP Address	Specify the IP address for cluster communication over the specified UDP port.
Port	Specify a unique port number for each link. You can use ports in the port range 49152 to 65535. A specified port for a link is used for all the cluster systems on that link.
Subnet mask (IPv4)	Displays the subnet mask details.
Prefix (IPv6)	Displays the prefix details.

By default, one of the links is configured as a low-priority link on a public network interface. The second link is configured as a high-priority link. To change a high-priority link to a low-priority link, click **Modify**. In the Modify low-priority link dialog box, select the link and click **OK**.

12 On the Virtual Network Details panel, select the IP network (IPV4 or IPv6).

Select the Queue Manager instance for which you want to specify a virtual IP address, and depending on the IP protocol, specify the following:

Virtual IP address	Specify a unique virtual IP address.
Subnet Mask (IPv4)	Specify the subnet mask details.
Prefix (IPv6)	Select the prefix from the drop-down list.
Network Adapter	Select the network adapter that will host the virtual IP.

If you want to add another virtual IP address, click **Add virtual IP address**.

13 Click **Next**.

14 Skip this step if you did not select mount points.

On the Target ESX Details panel, specify all the ESX hosts to which the virtual machines can fail over. Each ESX host must be able to access the required shared datastores that contain visible disks. Enter the administrative user account details for each ESX host and click **Next**.

To specify the ESX hosts, click **Add ESX Host** and in the Add ESX Host dialog box, specify the following details:

ESX hostname or IP address	Specify the target ESX hostname or IP address. The virtual machines can fail over on this ESX host during vMotion. All the additional ESX hosts should have access to the datastore on which the disks used by the application reside.
User name	Specify a user account for the ESX host. The user account must have administrator privileges on the specified ESX host.
Password	Specify the password for the user account provided in the User name text box.

The wizard validates the user account and the storage details on the specified ESX hosts.

15 On the Summary panel, review the VCS cluster configuration summary and then click **Next** to proceed with the configuration.

If the network contains multiple clusters, the wizard verifies the cluster ID with the IDs assigned to all the accessible clusters in the network. The wizard does not validate the assigned ID with the clusters that are not accessible during the validation. Symantec recommends you to validate the uniqueness of the assigned ID in the existing network. If the assigned ID is not unique or if you want to modify the cluster name or cluster ID, click **Edit**. In the Edit Cluster Details dialog box, modify the details as necessary and click **OK**.

16 On the Implementation panel, the wizard creates the VCS cluster, configures the application for monitoring, and creates cluster communication links.

The wizard displays the status of each task. After all the tasks are complete, click **Next**.

If the configuration task fails, click **View Logs** to check the details of the failure. Rectify the cause of the failure and run the wizard again to configure application monitoring.

17 On the Finish panel, click **Finish** to complete the wizard workflow.

This completes the application monitoring configuration.

If the application status shows as not running, click **Start** to start the configured components on the system.

Understanding service group configurations

One or more WebSphere MQ Queue Manager instances can be discovered on a virtual machine. These WebSphere MQ Queue Manager instances may or may not share the same mount points, disks, disk groups, volume, or virtual IP address. The WebSphere MQ Queue Manager listeners that do not share any of these forms a separate service group.

Resource dependency

Following are the resource dependencies:

- When the listeners are monitored using the Independent of Queue Manager option, the listener resources associated with a WebSphere MQ Queue Manager instance depends on the WebSphere MQ resource.
- Listener resources also depend on the configured IP resources.
- The WebSphere MQ resource depends on mount point resources which are discovered for that particular WebSphere MQ instance. The wizard checks if the DataPath and LogPath for the Queue Manager are on the shared storage.
- Mount point resources depend on VxVM volume. VxVM volume depends on DiskGroup resources.
- DiskGroup resources depend on the shared disks which are configured as VMware Disks resources.

Service group dependency

The Symantec High Availability Configuration wizard does not create service group dependency for WebSphere MQ.

Infrastructure service groups

As part of configuring the application, the Symantec High Availability Configuration wizard:

- Configures application specific service groups and resources.
- Configures the VCS infrastructure service group (VCSInfraSG).

VCSInfraSG includes a resource called VCSNotifySinkRes. The type of this resource is Process. VCSNotifySinkRes configures and administers the notify_sink process on the guest. The notify_sink process sends the details about service groups and its attributes to the Symantec High Availability Console. This information is used for reporting purpose and is displayed on the Dashboard.

Note: VCSInfraSG is an internal service group. You must not add or delete resources from this service group.

The following are the VCSInfraSG notes:

- Before you configure the application for monitoring, ensure that SSO is configured between the Symantec High Availability Console and the guest. If SSO is not configured, VCSInfraSG fails to come online.
- If VCSInfraSG or VCSNotifySinkRes faults, ensure that SSO is configured between the Symantec High Availability Console and the guest. Clear the faults and bring the resource online again.
- VCSInfraSG or VCSNotifySinkRes must not be taken offline because it affects the information displayed on the Dashboard.

Understanding configuration scenarios

You can configure WebSphere MQ Queue Manager instances in different ways using the Symantec High Availability Configuration wizard.

- Configuring a single instance/multiple instances in VCS
- Configuring multiple WebSphere MQ Queue Manager instances in VCS using multiple runs of the wizard
- Configuring multiple applications

Configuring a single instance/multiple instances in VCS

Use the Symantec High Availability Configuration wizard to configure one or more WebSphere MQ Queue Manager instances in a single run. In the Application Inputs panel, select the WebSphere MQ Queue Manager instances from the Queue Manager list. For each instance, you must specify the following mandatory parameters:

- Domain
- User
- Password
- Listener related to the specific Queue Manager

Configuring multiple WebSphere MQ Queue Manager instances in VCS using multiple runs of the wizard

If you are configuring the first WebSphere MQ Queue Manager instance on a machine where more than one Queue Manager instance is present, configure it by following the steps in the Configuring a single instance/multiple instances in VCS section.

The Symantec High Availability Configuration wizard will not allow you to configure the next WebSphere MQ Queue Manager instance if any of the mandatory dependent resources such as mount point, disk group, and disk are already configured in VCS.

- If existing resources are part of the WebSphere MQ service group, unconfigure the existing service group and then reconfigure the new instance along with the old instances/listeners which were part of the pre-existing service group.

  Note: All the queue managers that share the mount point for the Queue Manager DataPath or LogPath must be configured in a single run of the wizard.

- If existing resources are part of an application service group other than WebSphere MQ, the wizard does not support configuring multiple applications. You can configure these applications through CLI or Veritas Operations Manager.

Configuring multiple applications

If you run the Symantec High Availability Configuration wizard multiple times, you can configure multiple applications of different types.

If you are configuring the first application on a machine where more than one application is running, you can configure it by following the steps in the Configuring a single instance/multiple instances in VCS section.

The Symantec High Availability Configuration wizard will not allow you to configure the next application if any of the mandatory dependent resources such as mount point, disk group, and disk are already configured in VCS.

Symantec High Availability Configuration wizard limitations

Following are the Symantec High Availability Configuration wizard limitations:

- The wizard supports WebSphere MQ 7.0 or later.
- The wizard does not monitor the Command Server Process for WebSphere MQ queue manager. To manually configure the Command Server Process for monitoring, use the command line interface.
- The wizard supports discovery of only VxVM type of storage.
- The wizard does not discover the disks used by the application if the controllers attached to the virtual machine are of different type. To correctly discover and identify the association of mount points to the virtual disks, all the controllers attached to the virtual machine must be of same type.
- The wizard does not discover disks that are attached to the virtual machine in shared mode.

Troubleshooting

This section lists common troubleshooting scenarios that you may encounter while or after configuring application monitoring.

Symantec High Availability Configuration wizard displays blank panels

The Symantec High Availability Configuration wizard may fail to display the wizard panels. The window may appear blank.

Workaround: Verify that the Symantec ApplicationHA Service is running on the Symantec High Availability Console host and then launch the wizard again.

The Symantec High Availability Configuration wizard displays the "hadiscover is not recognized as an internal or external command" error

While configuring application monitoring the Symantec High Availability Configuration wizard may display the following error after you click **Next** on the Application Selection panel:

```
hadiscover is not recognized as an internal or external command
```

This issue occurs if you launch the wizard from a system where you have reinstalled the Symantec High Availability guest components.

Workaround: Close the wizard, restart the Veritas Storage Foundation Messaging Service, and then re-run the wizard.

Running the `hastop -all` command detaches virtual disks

The `hastop -all` command takes offline all the components and component groups of a configured application, and then stops the VCS cluster. In the process, the command detaches the virtual disks from the VCS cluster nodes.

Workaround: If you want to stop the VCS cluster (and not the applications running on cluster nodes), instead of the `hastop -all` command, use the `hastop -all -force` command. This command stops the cluster without affecting the virtual disks attached to the VCS cluster nodes.

Log files

The log files are stored in the virtual machine on which you configured application monitoring.

The healthview_A.log file contains the steps performed by the back-end to configure the application. To check the file, you must access: `/var/VRTSvcs/log/healthview_A.log`

The WebSphereMQ_A.log file contains the actions performed by the agent. To check the file, you must access: `/var/VRTSvcs/log/WebSphereMQ_A.log`

The engine_A.log file contains the actions performed by the VCS cluster. To check the file, you must access: `/var/VRTSvcs/log/engine_A.log`

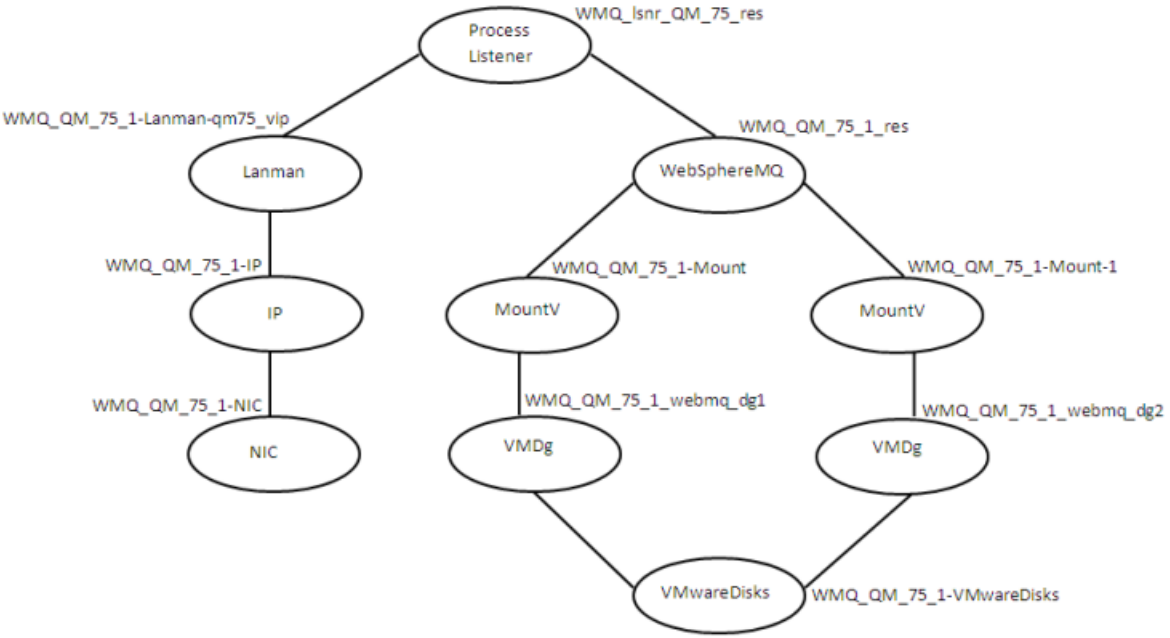
Sample configurations

The sample configurations includes description for typical service groups that are configured using the Symantec High Availability Configuration wizard.

Sample VCS configuration file for single WebSphere MQ Queue Manager instance (VxVM)

Figure 4-2 shows a typical service group configured to monitor the state of a WebSphere MQ Queue Manager instance. In this example, the WebSphere MQ Queue Manager instance uses VxVM volume as storage.

Figure 4-2 Dependency graph for single WebSphere MQ Queue Manager instance (VxVM)



Review the sample configuration with a resource of type WebSphere MQ Queue Manager that is configured as follows in main.cf file.

```
include "types.cf"

cluster clus_vm4_vm5 (
 SecureClus = 1
 )

system PUNB200M2VM4 (
 )

system PUNB200M2VM5 (
```

```
 )

group VCSInfraSG (
 SystemList = { PUNB200M2VM4 = 0, PUNB200M2VM5 = 1 }
 UserAssoc = { Type = "vcs internal",
   Name = "VCS Infrastructure service group" }
 Parallel = 1
 AutoStartList = { PUNB200M2VM4, PUNB200M2VM5 }
 OnlineRetryLimit = 5
 )

 Process VCSNotifySinkRes (
  StartProgram = "C:\\Program Files\\Veritas\\Cluster Server\\bin\\
  notify_sink.exe"
  StartupDirectory = "C:\\Program Files\\Veritas\\Cluster Server\\bin"
  )



 // resource dependency tree
 //
 // group VCSInfraSG
 // {
 // Process VCSNotifySinkRes
 // }


group WMQ_QM_75_1 (
 SystemList = { PUNB200M2VM4 = 0 }
 UserAssoc = { Type = WebSphereMQ, Name = WMQ_QM_75_1 }
 AutoStartList = { PUNB200M2VM4 }
 )

 IP WMQ_QM_75_1-IP (
  Address = "10.20.50.6"
  SubNetMask = "255.255.252.0"
  MACAddress @PUNB200M2VM4 = "00:50:56:8A:5D:CD"
  )

 Lanman WMQ_QM_75_1-Lanman-qm75_vip (
  VirtualName = qm75_vip
  IPResName = WMQ_QM_75_1-IP
  )
```

```
MountV WMQ_QM_75_1-Mount (
 MountPath = "w:"
 VolumeName = webmq_vol1
 VMDGResName = WMQ_QM_75_1_webmq_dg1_VMNSDg
 )

MountV WMQ_QM_75_1-Mount-1 (
 MountPath = "x:"
 VolumeName = webmq_vol2
 VMDGResName = WMQ_QM_75_1_webmq_dg2_VMNSDg
 )

NIC WMQ_QM_75_1-NIC (
 MACAddress @PUNB200M2VM4 = "00:50:56:8A:5D:CD"
 )

Process WMQ_lsnr_QM_75_res (
 StartProgram = "C:\\Program Files (x86)\\WebMQ_7.5\\
 WebSphere MQ_3\\bin\\runmqlsr.exe
 -r -m QM_75 -t TCP -p 5555 -i 10.20.50.6"
 StopProgram = "C:\\Program Files (x86)\\WebMQ_7.5\\
 WebSphere MQ_3\\bin\\endmqlsr.exe
 -m QM_75"
 UserName = webmqadm
 )

VMNSDg WMQ_QM_75_1_webmq_dg1_VMNSDg (
 DiskGroupName = webmq_dg1
 DGGuid = 0cb34d1c-89e4-40a5-9450-93fe65c7c714
 )

VMNSDg WMQ_QM_75_1_webmq_dg2_VMNSDg (
 DiskGroupName = webmq_dg2
 DGGuid = e36f74e4-028f-4f84-a60c-3b85b672c8fd
 )

VMwareDisks WMQ_QM_75_1-VMwareDisks (
 ESXDetails = { "10.209.64.79" = "root=aocMpmPoeGbgCgd" }
 DiskPaths = {
   "6000C293-3fc9-68ac-691e-3f5129477bb9:[WebSphereMQ_LUN1]
    PUNB200M2LABS14vm4/
    PUNB200M2LABS14vm4_1.vmdk" = "0:1",
```

```
   "6000C299-104d-b606-0047-20975a11990b:[WebSphereMQ_LUN2]
    PUNB200M2LABS14vm4/
    PUNB200M2LABS14vm4_2.vmdk" = "0:2",
   "6000C29a-4674-fd09-c9cf-403dfb4b690e:[ds001] PUNB200M2LABS14vm4/
    PUNB200M2LABS14vm4_3.vmdk" = "0:3" }
 IsVMHAEnabled = 0
 )

WebSphereMQ WMQ_QM_75_1_res (
 QueueManager = QM_75
 Domain = isv-domain
 User = webmqadm
 Password = aogMdoDiaGbgCgd
 MQVer = "7.5"
 Home = "C:\\Program Files (x86)\\WebMQ_7.5\\WebSphere MQ_3"
 )

WMQ_QM_75_1_res requires WMQ_QM_75_1-Mount
WMQ_QM_75_1_res requires WMQ_QM_75_1-Mount-1
WMQ_lsnr_QM_75_res requires WMQ_QM_75_1_res
WMQ_lsnr_QM_75_res requires WMQ_QM_75_1-Lanman-qm75_vip
WMQ_QM_75_1-IP requires WMQ_QM_75_1-NIC
WMQ_QM_75_1-Lanman-qm75_vip requires WMQ_QM_75_1-IP
WMQ_QM_75_1-Mount requires WMQ_QM_75_1_webmq_dg1_VMNSDg
WMQ_QM_75_1-Mount-1 requires WMQ_QM_75_1_webmq_dg2_VMNSDg
WMQ_QM_75_1_webmq_dg1_VMNSDg requires WMQ_QM_75_1-VMwareDisks
WMQ_QM_75_1_webmq_dg2_VMNSDg requires WMQ_QM_75_1-VMwareDisks


// resource dependency tree
//
// group WMQ_QM_75_1
// {
// Process WMQ_lsnr_QM_75_res
//     {
//     WebSphereMQ WMQ_QM_75_1_res
//         {
//         MountV WMQ_QM_75_1-Mount
//             {
//             VMNSDg WMQ_QM_75_1_webmq_dg1_VMNSDg
//                 {
//                 VMwareDisks WMQ_QM_75_1-VMwareDisks
//                 }
```

```
//              }
//          MountV WMQ_QM_75_1-Mount-1
//              {
//              VMNSDg WMQ_QM_75_1_webmq_dg2_VMNSDg
//                  {
//                  VMwareDisks WMQ_QM_75_1-VMwareDisks
//                  }
//              }
//          }
//      Lanman WMQ_QM_75_1-Lanman-qm75_vip
//          {
//          IP WMQ_QM_75_1-IP
//              {
//              NIC WMQ_QM_75_1-NIC
//              }
//          }
//      }
// }
```

Chapter 5

Configuring the service groups for WebSphere MQ Queue Manager using the CLI

This chapter includes the following topics:

About configuring a service group for the agent for WebSphere MQ

To provide high availability for WebSphere MQ components, you must configure WebSphere MQ in a clustered environment and use the Veritas agent for WebSphere MQ to manage the Queue Manager components.

Configuring a WebSphere MQ resource

In a clustered environment, you can configure a WebSphere MQ resource using two methods:

The Active-Passive configuration is an easier method of configuration. This method limits the configuration to one service group running a WebSphere MQ Queue Manager on a particular node at one time.

Active-Active configuration

The Active-Active configuration allows multiple service groups running WebSphere MQ Queue Managers on a particular node simultaneously. This configuration incurs additional complexity in configuration and maintenance.

Active-Passive configuration

In an active-passive configuration, all WebSphere MQ Queue Managers running on a single node are configured under a single service group. In case of a failure of any queue manager component, the whole service group fails over to the other node in a cluster.

Perform the following steps on the node that hosts the service group:

To configure a WebSphere MQ Queue Manager using active-passive configuration

1. Ensure that a file system is located on a shared disk.

   This file system must be in the same service group in which the WebSphere MQ Queue Manager is to be created.

   Mount location should be same on all clustered nodes.

2. Use the WebSphere MQ tools to create the WebSphere MQ Queue Manager.

   Refer to the WebSphere MQ documentation for details.

3. Define this WebSphere MQ Queue Manager as a resource in the service group.

   See "Sample configuration for WebSphere MQ" on page 64.

You can now create additional Queue Managers on the same node on which the service group is currently online.

Ensure that you always define the additional Queue Manager as a cluster server resource in the same service group where other Queue Managers are defined.

Active-Active configuration

In an active-active configuration, you can configure each WebSphere MQ Queue Manager in a separate service group, and each Queue Manager can fail over independent of each other. This configuration is complex to implement and maintain. However, this configuration provides the flexibility that some applications may require. This method also supports many-to-one and many-to-many cluster configurations.

Perform the following steps on the node that hosts the service group to which the WebSphere MQ Queue Manager belongs.

To configure a WebSphere MQ Queue Manager using active-active configuration

1. Use the WebSphere MQ tools to create the WebSphere MQ Queue Managers that you require. Refer to the WebSphere MQ documentation for details.
2. Create a file system for each WebSphere MQ Queue Manager on the shared disk. Add each file system to a separate service group.

   See "Sample configuration for WebSphere MQ" on page 64.
3. Move the log directory (for example, C:\Program Files\IBM\WebSphere MQ\log*QueueManagerName*) to a directory on each file system on the shared disk. Ensure that you copy the sub-directories also.
   - Take a backup of the contents of the log directory for the queue manager at some other location.
   - Make sure that the log directory is empty.
   - Create mount points for shared storage.
   - Restore the content of the log directory from the backup location, on to a directory on shared storage.
4. Move the qmgr directory (for example, C:\Program Files\IBM\WebSphere MQ\Qmgrs*QueueManagerName*) to a directory on each file system on the shared disk. Ensure that you copy the sub-directories also.
   - Take a backup of the contents of the qmgr directory for the Queue Manager at some other location.
   - Make sure that the qmgr directory is empty.
   - Create mount points for shared storage.
   - Restore the content of the qmgr directory from the backup location, on to a directory on shared storage.
5. Define the Queue Managers as resources in separate service groups.

   See "Sample configuration for WebSphere MQ" on page 64.

Note: WebSphere MQ can run on many nodes in the cluster. These nodes are defined in the SystemList attribute. Replicate the registry information for newly created queue manager from the node in which the queue manager is created to all other clustered nodes. The replicated registry key is: HKLM\Software\IBM\MQseries\CurrentVersion\Configuration\QueueManager*QueueManager NAME*\

Configuring a WebSphere MQ Listener

A WebSphere MQ Queue Manager uses a Listener to listen for requests on a specific IP address. Symantec recommends that you configure a Listener resource in the cluster using a bundled process agent. A example listener resource configuration is shown as follows.

You can replace these values with the virtual IP address and Queue Manager name defined within the cluster.

```
Process mq_listener (
Critical = 1
StartProgram = "\"C:\\Program Files\\IBM\\WebSphere
MQ\\bin\\runmqlsr.exe\" -r -m QM_75 -t TCP"
StopProgram = "\"C:\\Program Files\\IBM\\WebSphere
MQ\\bin\\endmqlsr.exe\" -m QM_75"
UserName = administrator
Password = FTLrITi
Domain = isv-domain
)
```

For details about the WebSphere MQ listener, refer to the IBM WebSphere MQ documentation.

Chapter 6

Troubleshooting the agent for WebSphere MQ

This chapter includes the following topics:

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:

Meeting prerequisites

Before installing the Veritas agent for WebSphere MQ, double check that you meet the prerequisite requirements. For a list of prerequisites:

See "Before you install the agent for WebSphere MQ" on page 21.

Configuring WebSphere MQ Queue Manager resources

Before using an WebSphere MQ Queue Manager resource, ensure that you configure the agent attributes correctly. For more information,

See "Agent attributes for WebSphere MQ" on page 25.

Starting the WebSphere MQ Queue Manager 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 MQ Queue Manager independent of the cluster framework. Refer to the cluster documentation for information about disabling a resource. You can then restart the WebSphere MQ Queue Manager 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 MQ Queue Manager outside the cluster framework, is illustrated as follows:

To restart the WebSphere MQ Queue Manager outside the framework

1. Log in as an MQUser.
2. Start the WebSphere MQ Queue Manager.

   ```
   strmqm Queue Manager Name
   ```

   If the WebSphere MQ Queue Manager works properly outside the cluster framework, you can then attempt to implement the Queue Manager within the cluster framework.

Monitoring WebSphere MQ Queue Manager processes

The agent for WebSphere MQ monitors the following processes:

- amqzxma0.exe
- amqzmuc0.exe
- amqzmur0.exe
- amqrrmfa.exe

- amqzdmaa.exe
- runmqchi.exe
- amqpcsea.exe

Reviewing error log files

If you face problems while using the WebSphere MQ Queue Manager or the agent for WebSphere MQ, use the error log files described in this section to investigate the problems. Contact Symantec help for more information.

Reviewing VCS log files

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

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

Using WebSphere MQ log files

If the WebSphere MQ Queue Manager has problems, you can access the server log files to further diagnose the problem. The WebSphere MQ Queue Manager log files are located in the Queue Manager Home\qmgrs*Queue Manager Name*\errors directory.

Using trace level logging

The ResLogLevel attribute controls the level of logging that is written in a cluster log file for each WebSphere MQ Queue Manager 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.

Reviewing VCS log files

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

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

Using WebSphere MQ log files

If the WebSphere MQ Queue Manager has problems, you can access the server log files to further diagnose the problem. The WebSphere MQ Queue Manager log files are located in the Queue Manager Home\qmgrs*Queue Manager Name*\errors directory.

Using trace level logging

The ResLogLevel attribute controls the level of logging that is written in a cluster log file for each WebSphere MQ Queue Manager 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.

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1 Identify the resource for which you want to enable detailed logging.

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```
# 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.

```
 str Password
 str MQVer = "6.0"
 str Home
 int SecondLevelMonitor
 str MonitorProgram
)
```

Sample configuration for WebSphere MQ

A sample main.cf file is shown as follows:

```
include "types.cf"
include "WebSphereMQTypes.cf"
cluster SFWHA50 (
UserNames = { admin = gpqIpkPmqLqqOyqKpn, a = jQQk }
Administrators = { admin, a }
)
system systemA (
)
system systemB (
)
group mqgrp (
SystemList = { systemA = 0, systemB = 1 }
)
MountV mq_qmgr_mnt (
MountPath = "C:\\Program Files\\IBM\\WebSphere
MQ\\Qmgrs\\QM_57"
VolumeName = mq_qmgr_vol
VMDGResName = mq_qmgr_dg
ForceUnmount = ALL
)
MountV mq_log_mnt (
MountPath = "C:\\Program Files\\IBM\\WebSphere
MQ\\log\\QM_57"
VolumeName = mq_log_vol
VMDGResName = mq_log_dg
ForceUnmount = ALL
)
Process mq_listener (
StartProgram = "\"C:\\Program Files\\IBM\\WebSphere
MQ\\bin\\runmqlsr.exe\" -r -m QM_57 -t TCP"
StopProgram = "\"C:\\Program Files\\IBM\\WebSphere
MQ\\bin\\endmqlsr.exe\" -m QM_57"
```

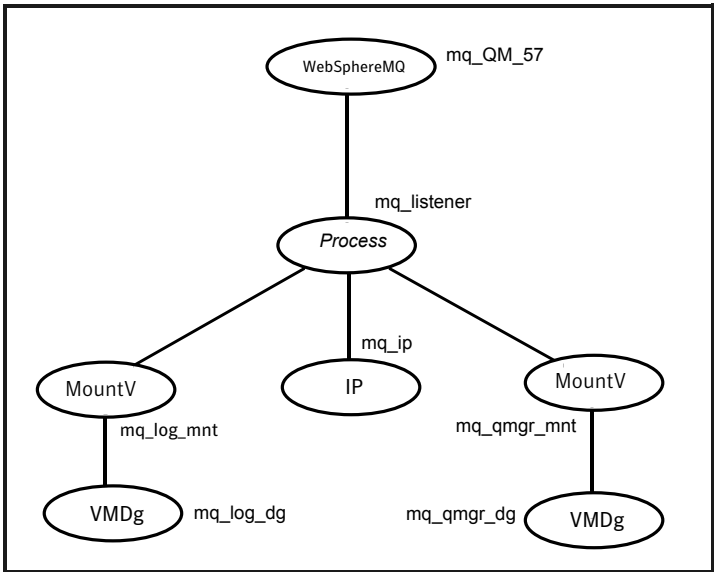
```
UserName = administrator
Password = FTLrITi
Domain = isv-domain
)
VMDg mq_qmgr_dg (
DiskGroupName = mq_qmgr_dg
DGGuid = c844de2f-efbc-431f-b6dd-9a5abc6ece55
)
VMDg mq_log_dg (
DiskGroupName = mq_log_dg
DGGuid = "0dd2cb27-b7e3-4f72-a6a5-2b0e80b90b31"
)
WebSphereMQ mq_queuemgr_QM_57 (
QueueManager = QM_57
CommandServer = 1
Domain = isv-domain
User = administrator
Password = HVNtKVk
Home = "C:\\Program Files\\IBM\\WebSphere MQ"
SecondLevelMonitor = 1
)
mq_qmgr_mnt requires mq_qmgr_dg
mq_log_mnt requires mq_log_dg
mq_queuemgr_QM_57 requires mq_listener
mq_listener requires mq_qmgr_mnt
mq_listener requires mq_log_mnt
// resource dependency tree
//
// group mqgrp
// {
//  WebSphereMQ mq_queuemgr_QM_57
//  {
//   Process mq_listener
//   {
//    MountV mq_qmgr_mnt
//    {
//     VMDg mq_qmgr_dg
//    }
//    MountV mq_log_mnt
//    {
//     VMDg mq_log_dg
//    }
//   }
```

```
//    }
//  }
```

Sample service group configuration for WebSphere MQ

Figure A-1 depicts a typical service group configuration for WebSphere MQ Queue Manager.

Figure A-1 Service group configuration



Appendix B

Changes introduced in Past releases

This appendix includes the following topics:

Changes introduced in the past releases

The changes introduced in the past releases of the agent for WebSphere MQ are as follows:

- The installer for the WebSphere MQ agent is modified to correctly install the agent in a custom location, even when VCS is installed in a non-default location, such as in the D:\ drive.
  This enhancement is applicable to the Windows 2008 operating system.
- Added support for WebSphere MQ Queue Manager version 7.0.*.
- Removed the use of Windows Management Instrumentation (WMI) to determine which processes are running, thus speeding up execution.
- Added support for custom WebSphereMQ authorization module.
- Added support for VCS 5.1 on Microsoft Windows Server 2008 (x64).

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