



Sun Cluster Data Service for WebSphere MQ Integrator Guide for Solaris OS

SPARC Platform Edition

Sun Microsystems, Inc.
4150 Network Circle
Santa Clara, CA 95054
U.S.A.650-960-1300

Part No: 817-4580-10
April 2004, Revision A

Copyright 2003 Sun Microsystems, Inc. 4150 Network Circle, Santa Clara, CA 95054 U.S.A. All rights reserved.

This product or document is distributed under licenses restricting its use, copying, distribution, and decompilation. No part of this product or document may be reproduced in any form by any means without prior written authorization of Sun and its licensors, if any. Third-party software, including font technology, is copyrighted and licensed from Sun suppliers.

Parts of the product may be derived from Berkeley BSD systems, licensed from the University of California. UNIX is a registered trademark in the U.S. and other countries, exclusively licensed through X/Open Company, Ltd.

Sun, Sun Microsystems, the Sun logo, Solstice DiskSuite, iPlanet, and Solaris are trademarks, registered trademarks, or service marks of Sun Microsystems, Inc. in the U.S. and other countries. All SPARC trademarks are used under license and are trademarks or registered trademarks of SPARC International, Inc. in the U.S. and other countries. Products bearing SPARC trademarks are based upon an architecture developed by Sun Microsystems, Inc.

The OPEN LOOK and Sun™ Graphical User Interface was developed by Sun Microsystems, Inc. for its users and licensees. Sun acknowledges the pioneering efforts of Xerox in researching and developing the concept of visual or graphical user interfaces for the computer industry. Sun holds a non-exclusive license from Xerox to the Xerox Graphical User Interface, which license also covers Sun's licensees who implement OPEN LOOK GUIs and otherwise comply with Sun's written license agreements.

Federal Acquisitions: Commercial Software—Government Users Subject to Standard License Terms and Conditions.

DOCUMENTATION IS PROVIDED "AS IS" AND ALL EXPRESS OR IMPLIED CONDITIONS, REPRESENTATIONS AND WARRANTIES, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR NON-INFRINGEMENT, ARE DISCLAIMED, EXCEPT TO THE EXTENT THAT SUCH DISCLAIMERS ARE HELD TO BE LEGALLY INVALID.

Copyright 2001 Sun Microsystems, Inc., 901 San Antonio Road, Palo Alto, CA 94303-4900 Etats-Unis. Tous droits réservés.

Ce produit ou document est distribué avec des licences qui en restreignent l'utilisation, la copie, la distribution, et la décompilation. Aucune partie de ce produit ou document ne peut être reproduite sous aucune forme, par quelque moyen que ce soit, sans l'autorisation préalable et écrite de Sun et de ses bailleurs de licence, s'il y en a. Le logiciel détenu par des tiers, et qui comprend la technologie relative aux polices de caractères, est protégé par un copyright et licencié par des fournisseurs de Sun.

Des parties de ce produit pourront être dérivées des systèmes Berkeley BSD licenciés par l'Université de Californie. UNIX est une marque déposée aux Etats-Unis et dans d'autres pays et licenciée exclusivement par X/Open Company, Ltd.

Sun, Sun Microsystems, le logo Sun, Solstice DiskSuite, iPlanet, et Solaris sont des marques de fabrique ou des marques déposées, ou marques de service, de Sun Microsystems, Inc. aux Etats-Unis et dans d'autres pays. Toutes les marques SPARC sont utilisées sous licence et sont des marques de fabrique ou des marques déposées de SPARC International, Inc. aux Etats-Unis et dans d'autres pays. Les produits portant les marques SPARC sont basés sur une architecture développée par Sun Microsystems, Inc.

L'interface d'utilisation graphique OPEN LOOK et Sun™ a été développée par Sun Microsystems, Inc. pour ses utilisateurs et licenciés. Sun reconnaît les efforts de pionniers de Xerox pour la recherche et le développement du concept des interfaces d'utilisation visuelle ou graphique pour l'industrie de l'informatique. Sun détient une licence non exclusive de Xerox sur l'interface d'utilisation graphique Xerox, cette licence couvrant également les licenciés de Sun qui mettent en place l'interface d'utilisation graphique OPEN LOOK et qui en outre se conforment aux licences écrites de Sun.

LA DOCUMENTATION EST FOURNIE "EN L'ETAT" ET TOUTES AUTRES CONDITIONS, DECLARATIONS ET GARANTIES EXPRESSES OU TACITES SONT FORMELLEMENT EXCLUES, DANS LA MESURE AUTORISEE PAR LA LOI APPLICABLE, Y COMPRIS NOTAMMENT TOUTE GARANTIE IMPLICITE RELATIVE A LA QUALITE MARCHANDE, A L'APTITUDE A UNE UTILISATION PARTICULIERE OU A L'ABSENCE DE CONTREFAÇON.



040210@7940



Contents

Installing and Configuring Sun Cluster HA for WebSphere MQ Integrator	5
Installing and Configuring Sun Cluster HA for WebSphere MQ Integrator	5
Sun Cluster HA for WebSphere MQ Integrator Overview	6
Planning the Sun Cluster HA for WebSphere MQ Integrator Installation and Configuration	6
Configuration Restrictions	7
Configuration Requirements	8
Installing and Configuring WebSphere MQ Integrator	12
▼ How to Install and Configure WebSphere MQ Integrator	12
Verifying the Installation and Configuration of WebSphere MQ Integrator	13
▼ How to Verify the Installation and Configuration of WebSphere MQ Integrator	13
Installing the Sun Cluster HA for WebSphere MQ Integrator Packages	15
▼ How to Install the Sun Cluster HA for WebSphere MQ Integrator Packages Using the Web Start Program	15
▼ How to Install the Sun Cluster HA for WebSphere MQ Integrator Packages by Using the <code>scinstall</code> Utility	16
Registering and Configuring Sun Cluster HA for WebSphere MQ Integrator	17
▼ How to Register and Configure Sun Cluster HA for WebSphere MQ Integrator	17
Verifying the Sun Cluster HA for WebSphere MQ Integrator Installation and Configuration	20
▼ How to Verify the Sun Cluster HA for WebSphere MQ Integrator Installation and Configuration	20
Understanding Sun Cluster HA for WebSphere MQ Integrator Fault Monitor	20
Resource Properties	21
Probing Algorithm and Functionality	21
Debug Sun Cluster HA for WebSphere MQ Integrator	21

▼ How to turn on debug for Sun Cluster HA for WebSphere MQ Integrator 22

Index 25

Installing and Configuring Sun Cluster HA for WebSphere MQ Integrator

Installing and Configuring Sun Cluster HA for WebSphere MQ Integrator

Table 1-1 lists the tasks for installing and configuring Sun Cluster HA for WebSphere MQ Integrator. Perform these tasks in the order that they are listed.

TABLE 1-1 Task Map: Installing and Configuring Sun Cluster HA for WebSphere MQ Integrator

Task	For Instructions, Go To
Plan the installation	“Sun Cluster HA for WebSphere MQ Integrator Overview” on page 6 “Planning the Sun Cluster HA for WebSphere MQ Integrator Installation and Configuration” on page 6
Install and configure WebSphere MQ Integrator	“How to Install and Configure WebSphere MQ Integrator” on page 12
Verify installation and configuration	“How to Verify the Installation and Configuration of WebSphere MQ Integrator” on page 13
Install Sun Cluster HA for WebSphere MQ Integrator Packages	“How to Install the Sun Cluster HA for WebSphere MQ Integrator Packages by Using the <code>scinstall</code> Utility” on page 16
Register and Configure Sun Cluster HA for WebSphere MQ Integrator	“How to Register and Configure Sun Cluster HA for WebSphere MQ Integrator” on page 17
Verify Sun Cluster HA for WebSphere MQ Integrator Installation and Configuration	“How to Verify the Sun Cluster HA for WebSphere MQ Integrator Installation and Configuration” on page 20

TABLE 1-1 Task Map: Installing and Configuring Sun Cluster HA for WebSphere MQ Integrator (Continued)

Task	For Instructions, Go To
Understand Sun Cluster HA for WebSphere MQ Integrator fault monitor	“Understanding Sun Cluster HA for WebSphere MQ Integrator Fault Monitor” on page 20
Debug Sun Cluster HA for WebSphere MQ Integrator	“Debug Sun Cluster HA for WebSphere MQ Integrator” on page 21

Sun Cluster HA for WebSphere MQ Integrator Overview

WebSphere MQ Integrator works with WebSphere MQ messaging, extending its basic connectivity and transport capabilities to provide a powerful message broker solution. Messages are formed, routed, and transformed according to the rules defined by an easy-to-use graphical user interface (GUI).

The Sun Cluster HA for WebSphere MQ Integrator data service provides a mechanism for orderly startup and shutdown, fault monitoring and automatic failover for the WebSphere MQ Integrator service. The WebSphere MQ Integrator components are protected by the Sun Cluster HA for WebSphere MQ Integrator data service.

TABLE 1-2 Protection of Components

Component	Protected by
Broker	Sun Cluster HA for WebSphere MQ Integrator
User Name Server	Sun Cluster HA for WebSphere MQ Integrator

Planning the Sun Cluster HA for WebSphere MQ Integrator Installation and Configuration

This section contains the information you need to plan your Sun Cluster HA for WebSphere MQ Integrator installation and configuration.

Configuration Restrictions

This section provides a list of software and hardware configuration restrictions that apply to Sun Cluster HA for WebSphere MQ Integrator only.



Caution – Your data service configuration might not be supported if you do not observe these restrictions.

For restrictions that apply to all data services, see the *Sun Cluster Release Notes*.

- **The Sun Cluster HA for WebSphere MQ Integrator data service can be configured only as a failover service** – WebSphere MQ Integrator cannot operate as a scalable service and therefore, the Sun Cluster HA for WebSphere MQ Integrator data service can be configured only to run as a failover service.
- **Installing WebSphere MQ Integrator onto Cluster File Systems** – Initially, you install the WebSphere MQ Integrator product into `/opt/mqs` and `/var/mqsi`. You must mount `/var/mqsi` as a Global File System with a symbolic link for `/var/mqsi/locks` to a Local File System. It is recommended that `/opt/mqsi` be on a local disk. For a discussion of the advantages and disadvantages of installing the software on local versus cluster file system, see “Determining the Location of the Application Binaries” on page 3 of the *Sun Cluster Data Services Installation and Configuration Guide*
- **Mount `/var/mqsi` as a Global File System** – WebSphere MQ Integrator uses several directories within `/var/mqsi`, which needs to be available on all nodes within Sun Cluster as a Global File System. Generated locks must be located within a Local File System. Because of this, you must setup `/var/mqsi/locks` as a symbolic link to a Local File System.

Note – It is best practice to mount Global File Systems with the `/global` prefix and to mount Failover File Systems with the `/local` prefix.

Example 1-1 shows WebSphere MQ Integrator with `/var/mqsi` mounted as a Global File System through a symbolic link to `/global/mqsi`, with `/var/mqsi/locks` setup as a symbolic link to `/var/mqsi_locks` on the root file system, that is, local disk.

EXAMPLE 1-1 WebSphere MQ Integrator with `/var/mqsi/locks` symbolically linked to a local file system

```
# ls -l /var/mqsi
lrwxrwxrwx  1 root      other          12 Sep  5 15:32 /var/mqsi ->
/global/mqsi
#
# ls -l /global/mqsi/locks
```

EXAMPLE 1-1 WebSphere MQ Integrator with /var/mqsi/locks symbolically linked to a local file system (Continued)

```
lrwxrwxrwx  1 root    other          15 Sep 18 15:37 /global/mqsi/locks ->
/var/mqsi_locks
#
# df -k /global/mqsi/locks
Filesystem      kbytes    used    avail capacity  Mounted on
/dev/dsk/c0t0d0s0 12731708 5792269 6812122    46%      /
#
# more /etc/vfstab (Subset of the output)
/dev/md/dg_d6/dsk/d60 /dev/md/dg_d6/rdisk/d60 /global/mqsi
                        ufs      4          yes    logging,global
```

- **The Sun Cluster HA for WebSphere MQ Integrator RDBMS** – The Sun Cluster HA for WebSphere MQ Integrator data service can operate only with a local RDBMS, i.e. not a remote RDBMS and more specifically, only with DB2 and Oracle. This restriction is because the Sun Cluster HA for WebSphere MQ Integrator data service needs to manage the restart scenarios for WebSphere MQ Integrator, whenever the RDBMS restarts.

Configuration Requirements

Use the requirements in this section to apply to Sun Cluster HA for WebSphere MQ Integrator only. You must meet these requirements before you proceed with your Sun Cluster HA for WebSphere MQ Integrator installation and configuration.



Caution – Your data service configuration might not be supported if you do not adhere to these requirements.

- **WebSphere MQ Integrator components and their dependencies** – You can configure the Sun Cluster HA for WebSphere MQ Integrator data service to protect a WebSphere MQ Integrator Broker and UserNameServer. These components and their dependencies are described in Table 1-3.

TABLE 1-3 WebSphere MQ Integrator components and their dependencies (via → symbol)

Component	Description
Broker (Mandatory)	<p>→ <i>SUNW.HAStoragePlus</i> resource</p> <p>→ <i>WebSphere MQ Queue Manager</i> and <i>Listener</i> resources</p> <p>→ <i>RDBMS</i> resource</p> <p>The <i>SUNW.HAStoragePlus</i> resource manages the WebSphere MQ Integrator File System Mount point, i.e. <code>/global/mqsi</code>.</p> <p>Dependency on the <i>WebSphere MQ Queue Manager</i> resource ensures that the WebSphere MQ Queue Manager is available.</p> <p>Dependency on the <i>WebSphere MQ Listener</i> resource is required only if <code>runmqldr</code> is used instead of <code>inetd</code>.</p> <p>Dependency on the <i>RDBMS</i> resource ensures that the <i>RDBMS</i> is available.</p> <p>All these dependencies ensure that WebSphere MQ Integrator is not started until these services are available.</p>
UserNameServer (Optional)	<p>→ <i>SUNW.HAStoragePlus</i> resource</p> <p>→ <i>WebSphere MQ Queue Manager</i> and <i>Listener</i> resources</p> <p>The <i>SUNW.HAStoragePlus</i> resource manages the WebSphere MQ Integrator File System Mount point, i.e. <code>/global/mqsi</code>.</p> <p>Dependency on the <i>WebSphere MQ Queue Manager</i> resource ensures that the WebSphere MQ Queue Manager is available.</p> <p>Dependency on the <i>WebSphere MQ Listener</i> resource is required only if <code>runmqldr</code> is used instead of <code>inetd</code>.</p>

The WebSphere MQ Integrator Broker component and its dependencies must all reside within the same Resource Group. Likewise the WebSphere MQ Integrator UserNameServer and its dependencies must also all reside with the same Resource Group.

However, the WebSphere MQ Integrator Broker and UserNameServer do not have to reside within the same Resource Group, they can reside in separate Resource Groups. Likewise, multiple instances of the WebSphere MQ Integrator Broker can reside in separate Resource Groups. However, only one instance of the WebSphere MQ Integrator UserNameServer is allowed.

Example 1-2 shows two WebSphere MQ Integrator Brokers (XXX and YYY) and a WebSphere MQ Integrator UserNameServer within different Resource Groups and shows that all WebSphere MQ Integrator components (Broker and UserNameServer) use the same Global File System `/global/mqsi`.

EXAMPLE 1-2 Multiple WebSphere MQ Integrator Brokers and UserNameServer .

■ **Resource Group 1** with the following *resources*

```
SUNW.HAStoragePlus resource with
-x FilesystemMountPoints=/local/db2,/global/mqm,/global/mqsi,
  /local/mqm/qmgrs/qmgr1,/local/mqm/log/qmgr1
RDBMS resource for DB2
WebSphere MQ resource for Queue Manager qmgr1
WebSphere MQ Integrator resource for Broker XXX
```

■ **Resource Group 2** with the following *resources*

```
SUNW.HAStoragePlus resource with
-x FilesystemMountPoints=/global/mqm,/global/mqsi
-x AffinityOn=FALSE
SUNW.HAStoragePlus resource with
-x FilesystemMountPoints=/local/oracle,
  /local/mqm/qmgrs/qmgr2,/local/mqm/log/qmgr2
RDBMS resource for Oracle
RDBMS resource for Oracle Listener
WebSphere MQ resource for Queue Manager qmgr2
WebSphere MQ Integrator resource for Broker YYY
```

■ **Resource Group 3** with the following *resources*

```
SUNW.HAStoragePlus resource with
-x FilesystemMountPoints=/global/mqm,/global/mqsi
-x AffinityOn=FALSE
SUNW.HAStoragePlus resource with
-x FilesystemMountPoints=/local/mqm/qmgrs/qmgr3,/local/mqm/log/qmgr3
WebSphere MQ resource for Queue Manager qmgr3
WebSphere MQ Integrator resource for UserNameServer
```

Note – For detailed information about these WebSphere MQ Integrator components, refer to *IBM's WebSphere MQ Integrator Introduction and Planning manual*.

Each WebSphere MQ Integrator component has a configuration and registration file in `/opt/SUNWscmqi/xxx/util`, where `xxx` is a three-character abbreviation for the WebSphere MQ Integrator component. These files allow you to register the WebSphere MQ Integrator components with Sun Cluster.

Within these files, the appropriate dependencies have been applied.

EXAMPLE 1-3 WebSphere MQ Integrator configuration and registration file for Sun Cluster

```
# cd /opt/SUNWscmqi
#
# ls -l sib/util
total 6
```

EXAMPLE 1-3 WebSphere MQ Integrator configuration and registration file for Sun Cluster *(Continued)*

```
-rwxr-xr-x  1 root    sys      1032 Dec 20 14:44 sib_config
-rwxr-xr-x  1 root    sys      720 Dec 20 14:44 sib_register
#
# ls -l siu/util
-rwxr-xr-x  1 root    sys      733 Dec 20 14:44 siu_config
-rwxr-xr-x  1 root    sys      554 Dec 20 14:44 siu_register
#
# more sib/util/*
:::::::::::::
sib/util/sib_config
:::::::::::::
#
# Copyright 2003 Sun Microsystems, Inc. All rights reserved.
# Use is subject to license terms.
#
# This file will be sourced in by sib_register and the parameters
# listed below will be used.
#
# These parameters can be customized in (key=value) form
#
#     RS - name of the resource for the application
#     RG - name of the resource group containing RS
#     QMGR - name of the Queue Manager
#     PORT - name of the Queue Manager port number
#     LH - name of the LogicalHostname SC resource
#     HAS_RS - name of the Queue Manager HAStoragePlus SC resource
#     SC3_IN - name of the Test Message Flow (Inbound)
#     SC3_OUT - name of the Test Message Flow (Outbound)
#     MQSI_ID - name of the WebSphere MQI userid
#     BROKER - name of the WebSphere MQI Broker
#     RDBMS_ID - name of the WebSphere MQI RDBMS userid
#     QMGR_RS - name of the Queue Manager SC resource
#     RDBMS_RS - name of the RDBMS SC resource and listener (if Oracle)
#               e.g. RDBMS_RS=<ora-rs>,<lsr-rs>
#
RS=
RG=
QMGR=
PORT=
LH=
HAS_RS=
SC3_IN=
SC3_OUT=
MQSI_ID=
BROKER=
RDBMS_ID=
QMGR_RS=
RDBMS_RS=
:::::::::::::
sib/util/sib_register
:::::::::::::
```

EXAMPLE 1-3 WebSphere MQ Integrator configuration and registration file for Sun Cluster (Continued)

```
#
# Copyright 2003 Sun Microsystems, Inc. All rights reserved.
# Use is subject to license terms.
#

. `dirname $0`/sib_config

scrgadm -a -j $RS -g $RG -t SUNW.gds \
-x Start_command="/opt/SUNWscmqi/sib/bin/start-broker \
-R $RS -G $RG -Q $QMGR -I $SC3_IN -O $SC3_OUT \
-U $MQSI_ID -B $BROKER -D $RDBMS_ID " \
-x Stop_command="/opt/SUNWscmqi/sib/bin/stop-broker \
-R $RS -G $RG -Q $QMGR -I $SC3_IN -O $SC3_OUT \
-U $MQSI_ID -B $BROKER -D $RDBMS_ID " \
-x Probe_command="/opt/SUNWscmqi/sib/bin/test-broker \
-R $RS -G $RG -Q $QMGR -I $SC3_IN -O $SC3_OUT \
-U $MQSI_ID -B $BROKER -D $RDBMS_ID " \
-y Port_list=$PORT/tcp -y Network_resources_used=$LH \
-x Stop_signal=9 \
-y Resource_dependencies=$HAS_RS,$QMGR_RS,$RDBMS_RS
```

Installing and Configuring WebSphere MQ Integrator

▼ How to Install and Configure WebSphere MQ Integrator

Use this procedure to install and configure WebSphere MQ Integrator.

Note – For this section, follow *IBM's WebSphere MQ Integrator for Sun Solaris — Installation Guide* to install and create a Broker and UserNameServer.

1. Mount the WebSphere MQ Integrator Cluster File Systems.

Before installing WebSphere MQ Integrator within Sun Cluster, ensure that the Cluster File System `/var/mqsi`, or `/global/mqsi` if you have setup a symbolic link, is mounted as a Global File System.

2. Install WebSphere MQ Integrator onto all nodes within Sun Cluster.

It is recommended that you install WebSphere MQ Integrator binaries onto local disks on `/opt/mqsi`. For a discussion of the advantages and disadvantages of installing the software on local versus cluster file system, see “Determining the Location of the Application Binaries” on page 3 of the *Sun Cluster Data Services Installation and Configuration Guide*.

3. Create your WebSphere MQ Integrator Broker.

After you have installed WebSphere MQ Integrator onto all nodes within Sun Cluster that will run WebSphere MQ Integrator, create your WebSphere MQ Integrator Broker.

Verifying the Installation and Configuration of WebSphere MQ Integrator

This section contains the procedure you need to verify the installation and configuration.

Note – Refer to *IBM’s WebSphere MQ Intercommunication* and *IBM’s WebSphere MQ Command Reference* manuals to create queues and channels for communication between the Broker(s) and UserNameServer within Sun Cluster and the Configuration Manager on Windows NT.

▼ How to Verify the Installation and Configuration of WebSphere MQ Integrator

Use this procedure to verify the installation and configuration. This procedure does not verify that your application is highly available because you have not installed your data service yet.

Note – The Sun Cluster HA for WebSphere MQ Integrator data service requires that a message flow has been setup within the Broker.

This section requires that the WebSphere MQ queue manager Logical Hostname IP address be available. This should have been setup if you have completed the Sun Cluster HA for IBM WebSphere MQ data service installation. Ensure that you have completed the installation of the Sun Cluster HA for IBM WebSphere MQ data service before you continue with the next steps.

1. Create the communication links between the Broker queue manager and Configuration Manager queue manager.

Set up queues and channels between the Broker queue manager(s) and the Configuration Manager queue manager, so that the message flows and rules setup on the Configuration Manager can be deployed from the Configuration Manager to the Broker queue manager(s) within Sun Cluster.

See *Chapter 4 in IBM's WebSphere MQ Integrator for Sun Solaris — Installation Guide*. Refer to the section *Starting your broker domain*.

2. Create the communication links between the Broker queue manager and UserNameServer (UNS) queue manager.

If you are using a UNS, then you need to setup queues and channels between the Broker queue manager(s) and the UserNameServer.

3. Test the communication links between the queue managers.

After you setup all queues and channels between the Broker, UserNameServer and Configuration Manager, test that all the queue managers can communicate with each other.

4. Create and deploy a message flow on the Configuration Manager.

After you setup and test all queues between the Broker, UserNameServer and Configuration Manager, create a message flow and deploy it to the Broker queue manager. You will need a separate message flow for each Broker queue manager.

a. Create a message flow.

Create a simple message flow, that uses two queues, to receive a message from an input queue and put it to an output queue. Within the Control Center on Windows NT, you can use the IBMPrimitives MQInput and MQOutput to achieve this message flow.

See *Chapter 5 — Verifying your installation* within *IBM's WebSphere MQ Integrator for Sun Solaris — Installation Guide*. In particular, refer to the section *Building and using a message flow*.

b. Deploy the message flow to the broker.

Note – The message flow and message flow queues that you create will be used by the Sun Cluster HA for WebSphere MQ Integrator data service to probe WebSphere MQ Integrator Broker.

Installing the Sun Cluster HA for WebSphere MQ Integrator Packages

If you did not install the Sun Cluster HA for WebSphere MQ Integrator packages during your Sun Cluster installation, perform this procedure to install the packages. Perform this procedure on each cluster node where you are installing the Sun Cluster HA for WebSphere MQ Integrator packages. To complete this procedure, you need the Sun Java Enterprise System Accessory CD Volume 3.

If you are installing more than one data service simultaneously, perform the procedure in “Installing the Software” in *Sun Cluster 3.1 10/03 Software Installation Guide*.

Install the Sun Cluster HA for WebSphere MQ Integrator packages using one of the following installation tools:

- The Web Start program
- The `scinstall` utility

Note – The Web Start program is *not* available in releases earlier than Sun Cluster 3.1 Data Services 10/03.

▼ How to Install the Sun Cluster HA for WebSphere MQ Integrator Packages Using the Web Start Program

You can run the Web Start program with a command-line interface (CLI) or with a graphical user interface (GUI). The content and sequence of instructions in the CLI and the GUI are similar. For more information about the Web Start program, see the `installer(1M)` man page.

1. **Become superuser on the cluster node where you are installing the Sun Cluster HA for WebSphere MQ Integrator packages.**
2. **(Optional) If you intend to run the Web Start program with a GUI, ensure that your `DISPLAY` environment variable is set.**
3. **Load the Sun Java Enterprise System Accessory CD Volume 3 into the CD-ROM drive.**

If the Volume Management daemon `vold(1M)` is running and configured to manage CD-ROM devices, it automatically mounts the CD-ROM on the `/cdrom/cdrom0` directory.

4. Change to the Sun Cluster HA for WebSphere MQ Integrator component directory of the CD-ROM.

The Web Start program for the Sun Cluster HA for WebSphere MQ Integrator data service resides in this directory.

```
# cd /cdrom/cdrom0/components/SunCluster_HA_MQI_3.1
```

5. Start the Web Start program.

```
# ./installer
```

6. When you are prompted, select the type of installation.

- To install only the C locale, select Typical.
- To install other locales, select Custom.

7. Follow instructions on the screen to install the Sun Cluster HA for WebSphere MQ Integrator packages on the node.

After the installation is finished, the Web Start program provides an installation summary. This summary lets you view logs that the Web Start program created during the installation. These logs are located in the `/var/sadm/install/logs` directory.

8. Exit the Web Start program.

9. Unload the Sun Java Enterprise System Accessory CD Volume 3 from the CD-ROM drive.

- a. To ensure that the CD-ROM is not being used, change to a directory that does *not* reside on the CD-ROM.
- b. Eject the CD-ROM.

```
# eject cdrom
```

▼ How to Install the Sun Cluster HA for WebSphere MQ Integrator Packages by Using the `scinstall` Utility

You need the Sun Java Enterprise System Accessory CD Volume 3 to perform this procedure. This procedure assumes that you did not install the data service packages during your initial Sun Cluster installation.

If you installed the Sun Cluster HA for WebSphere MQ Integrator packages as part of your initial Sun Cluster installation, proceed to “Registering and Configuring Sun Cluster HA for WebSphere MQ Integrator” on page 17.

Perform this procedure on all nodes that can run Sun Cluster HA for WebSphere MQ Integrator data service.

1. **Load the Sun Java Enterprise System Accessory CD Volume 3 into the CD-ROM drive.**
2. **Run the `scinstall` utility with no options.**
This step starts the `scinstall` utility in interactive mode.
3. **Choose the menu option, Add Support for New Data Service to This Cluster Node.**
The `scinstall` utility prompts you for additional information.
4. **Provide the path to the Sun Java Enterprise System Accessory CD Volume 3.**
The utility refers to the CD as the “data services cd.”
5. **Specify the data service to install.**
The `scinstall` utility lists the data service that you selected and asks you to confirm your choice.
6. **Exit the `scinstall` utility.**
7. **Unload the CD from the drive.**

Registering and Configuring Sun Cluster HA for WebSphere MQ Integrator

This section contains the procedures you need to configure Sun Cluster HA for WebSphere MQ Integrator.

▼ How to Register and Configure Sun Cluster HA for WebSphere MQ Integrator

This procedure assumes that you installed the data service packages during your initial Sun Cluster installation.

If you did not install the Sun Cluster HA for WebSphere MQ Integrator packages as part of your initial Sun Cluster installation, go to “How to Install the Sun Cluster HA for WebSphere MQ Integrator Packages by Using the `scinstall` Utility” on page 16.

The WebSphere MQ Integrator Broker component is dependent on WebSphere MQ and an RDBMS. All resources for the WebSphere MQ Integrator Broker component, WebSphere MQ components, and the RDBMS must reside within the same Resource Group. For example, refer to Example 1–2.

The WebSphere MQ Integrator UserNameServer component is dependent only on WebSphere MQ. All resources for the WebSphere MQ Integrator UserNameServer component, WebSphere MQ components and the RDBMS must reside within the same Resource Group. For example, refer to Example 1-2

Currently only local RDBMS support for DB2 or Oracle is supported. Refer to "Configuration Restrictions" on page 7, in particular to *Sun Cluster HA for WebSphere MQ Integrator RDBMS* for a description of this restriction.

1. Become superuser on one of the nodes in the cluster that will host WebSphere MQ Integrator.

2. Register the SUNW.gds resource type.

```
# scrgadm -a -t SUNW.gds
```

3. Register the SUNW.HAStoragePlus resource type.

```
# scrgadm -a -t SUNW.HAStoragePlus
```

4. Create a failover resource group.

```
# scrgadm -a -g WebSphere MQ-failover-resource-group
```

5. Create a resource for the WebSphere MQ Integrator Disk Storage.

```
# scrgadm -a -j WebSphere MQ Integrator-has-resource \  
-g WebSphere MQ-failover-resource-group \  
-t SUNW.HAStoragePlus \  
-x FilesystemMountPoints=WebSphere MQ Integrator- instance-mount-points
```

6. Enable the failover resource group that now includes the WebSphere MQ Integrator Disk Storage resource.

```
# scswitch -z -g WebSphere MQ-failover-resource-group
```

7. Create and register each required WebSphere MQ Integrator component.

Note – This section requires that you have installed the Sun Cluster HA for WebSphere MQ and RDBMS data services and that their resources are online within Sun Cluster. Ensure that you have done this before you continue with this step.

Perform this step for the Broker component (*sib*), then repeat for the optional UserNameServer component, replacing *sib* with:

```
siu - UserNameServer
```

```
# cd /opt/SUNWscmqi/sib/util
```

Edit the *sib_config* file and follow the comments within that file. For example:

```

# These parameters can be customized in (key=value) form
#
#       RS - name of the resource for the application
#       RG - name of the resource group containing RS
#       QMGR - name of the Queue Manager
#       PORT - name of the Queue Manager port number
#       LH - name of the LogicalHostname SC resource
#       HAS_RS - name of the Queue Manager HAStoragePlus SC resource
#       SC3_IN - name of the Test Message Flow (Inbound)
#       SC3_OUT - name of the Test Message Flow (Outbound)
#       MQSI_ID - name of the WebSphere MQI userid
#       BROKER - name of the WebSphere MQI Broker
#       RDBMS_ID - name of the WebSphere MQI RDBMS userid
#       QMGR_RS - name of the Queue Manager SC resource
#       RDBMS_RS - name of the RDBMS SC resource and listener (if Oracle)
#               e.g. RDBMS_RS=<ora-rs>,<lsr-rs>
#

```

The following is an example for WebSphere MQ Integrator Broker XXX, with WebSphere Integrator MQ Manager qmgr1.

```

RS=wmq-broker-res
RG=wmq-rg
QMGR=qmgr1
PORT=1414
LH=wmq-lh-res
HAS_RS=wmqi-has-res
SC3_IN=SC3_IN
SC3_OUT=SC3_OUT
MQSI_ID=mqsi1
BROKER=XXX
RDBMS_ID=db2
QMGR_RS=wmq-qmgr-res
RDBMS_RS=wmq-rdbms-res

```

After editing `sib_config`, you must register the resource.

```
# ./sib_register
```

8. Enable each WebSphere MQ Integrator resource.

Repeat this step for each WebSphere MQ Integrator component.

```

# scstat

# scswitch -e -j WebSphere MQ Integrator-resource

```

Verifying the Sun Cluster HA for WebSphere MQ Integrator Installation and Configuration

This section contains the procedure you need to verify that you installed and configured your data service correctly.

▼ How to Verify the Sun Cluster HA for WebSphere MQ Integrator Installation and Configuration

1. Become superuser on one of the nodes in the cluster that will host WebSphere MQ Integrator.

2. Ensure all the WebSphere MQ Integrator resources are online with `scstat`.

```
# scstat
```

For each WebSphere MQ Integrator resource that is not online, use the `scswitch` command as follows.

```
# scswitch -e -j WebSphere MQ Integrator- resource
```

3. Run the `scswitch` command to switch the WebSphere MQ Integrator resource group to another cluster node, such as `node2`.

```
# scswitch -z -g WebSphere MQ Integrator-failover-resource-group -h node2
```

Understanding Sun Cluster HA for WebSphere MQ Integrator Fault Monitor

This section describes the Sun Cluster HA for WebSphere MQ Integrator fault monitor's probing algorithm or functionality, states the conditions, messages, and recovery actions associated with unsuccessful probing.

For conceptual information on fault monitors, see the *Sun Cluster Concepts Guide*.

Resource Properties

Sun Cluster HA for WebSphere MQ Integrator fault monitor uses the same resource properties as resource type `SUNW.gds`. Refer to the `SUNW.gds(5)` man page for a complete list of resource properties used.

Probing Algorithm and Functionality

- **WebSphere MQ Integrator Broker**
 - Sleeps for `Thorough_probe_interval`.
 - Test the RDBMS or Queue Manager has been restarted. If the RDBMS has been restarted, then the whole Resource Group will be restarted. If the Queue Manager has been restarted, then the Broker is stopped and waits until the Queue Manager is restarted, after which the Broker is restarted.
 - If the RDBMS and Queue Manager have not been restarted, then a check against `bipservice` is made. If `bipservice` is lost, then the probe will restart the Broker.
 - If `bipservice` is available, then the probe checks that the queue names for `SC3_IN` and `SC3_OUT` are valid and empty, puts a test message to `SC3_IN`, and checks that the message flows to `SC3_OUT` by checking that the `CURDEPTH` for `SC3_OUT` is equal to 1. If this test fails, then the probe will restart the Broker.
 - If the Broker is repeatedly restarted and subsequently exhausts the `Retry_count` within the `Retry_interval`, then a failover is initiated for the Resource Group onto another node.
- **WebSphere MQ Integrator UserNameServer**
 - Sleeps for `Thorough_probe_interval`
 - If `bipservice` for the `UserNameServer` is lost, then the probe will restart the `UserNameServer`.
 - If the `UserNameServer` is repeatedly restarted and subsequently exhausts the `Retry_count` within the `Retry_interval` then a failover is initiated for the Resource Group onto another node.

Debug Sun Cluster HA for WebSphere MQ Integrator

Sun Cluster HA for WebSphere MQ Integrator can be used by multiple WebSphere MQ Integrator instances. However, it is possible to turn on debug for all WebSphere MQ Integrator instances or for a particular WebSphere MQ Integrator instance.

Each WebSphere MQ Integrator component has a DEBUG file under `/opt/SUNWscmqi/xxx/etc`, where `xxx` is a three-character abbreviation for the respective WebSphere MQ Integrator component.

These files allow you to turn on debug for all WebSphere MQ Integrator instances or for a specific WebSphere MQ Integrator instance on a particular node with Sun Cluster. If you require debug to be turned on for Sun Cluster HA for WebSphere MQ Integrator across the whole Sun Cluster, you will need to repeat these steps on all nodes within Sun Cluster.

▼ How to turn on debug for Sun Cluster HA for WebSphere MQ Integrator

1. Edit `/etc/syslog.conf` and change `daemon.notice` to `daemon.debug`

```
# grep daemon /etc/syslog.conf
*.err;kern.debug;daemon.notice;mail.crit      /var/adm/messages
*.alert;kern.err;daemon.err                  operator
#
```

Change the `daemon.notice` to `daemon.debug` and restart `syslogd`. The output below, from the command `grep daemon /etc/syslog.conf`, shows that `daemon.debug` has been set.

```
# grep daemon /etc/syslog.conf
*.err;kern.debug;daemon.debug;mail.crit      /var/adm/messages
*.alert;kern.err;daemon.err                  operator
#
# pkill -1 syslogd
#
```

2. Edit `/opt/SUNWscmqi/sib/etc/config`

Perform this step for the Broker component (`sib`), then repeat for the optional UserNameServer (`siu`) that requires debug output, on each node of Sun Cluster.

Edit `/opt/SUNWscmqi/sib/etc/config` and change `DEBUG=` to `DEBUG=ALL` or `DEBUG=resource`

```
# cat /opt/SUNWscmqi/sib/etc/config
#
# Copyright 2003 Sun Microsystems, Inc. All rights reserved.
# Use is subject to license terms.
#
# Usage:
#     DEBUG=<RESOURCE_NAME> or ALL
#
DEBUG=ALL
#
```

Note – To turn off debug, reverse the steps above.

Index

C

C locale, 16
commands
 scinstall, 17
 scrgadm, 18
 scstat, 19, 20
 scswitch, 18, 20
configuration
 requirements, 8
 restrictions, 7

D

debug, 23

F

fault monitor, 21
files, installation logs, 16

I

installing
 Sun Cluster HA for WebSphere MQ
 Integrator
 by using Web Start program, 15
 log files created, 16
 WebSphere MQ Integrator, 12

L

locales, 16
log files, installation, 16

R

registering, Sun Cluster HA for WebSphere MQ
 Integrator, 18

V

/var/sadm/install/logs directory, 16
verifying
 Sun Cluster HA for WebSphere MQ
 Integrator, 20
 WebSphere MQ Integrator, 13

W

Web Start program, 15
WebSphere MQ Integrator, 6

