

Cluster Server Agent for SAP Sybase Replication Server Installation and Configuration Guide

Linux

7.0

VERITAS™

Veritas InfoScale™ Availability Agents

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https://sort.veritas.com/data/support/SORT_Data_Sheet.pdf

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Introducing the agent for SAP Sybase Replication Server

This chapter includes the following topics:

- [About the Cluster Server agent for SAP Sybase Replication Server](#)
- [Supported software](#)
- [How the SybaseRS and SybaseRMA agents make SAP Sybase Replication Server and SAP Sybase RMA highly available](#)
- [How the agents support intelligent resource monitoring](#)
- [Typical SAP Sybase Replication Server configuration in a VCS cluster](#)
- [Agent functions](#)

About the Cluster Server agent for SAP Sybase Replication Server

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

The Cluster Server agent for SAP Sybase Replication Server contains two agents in its RPM package (VRTSsybrep):

- The VCS agent for SAP Sybase Replication Server — SybaseRS. The SybaseRS agent monitors the configured SAP Sybase Replication Server.

SAP Sybase Replication Server is a database replication software that moves and synchronizes data across the enterprise to meet a host of competing needs, including guaranteed data delivery, real-time business intelligence, and zero operational downtime.

The VCS SybaseRS agent provides high availability for SAP Sybase Replication Server in a clustered environment. The SybaseRS agent brings the configured SAP Sybase Replication Server online, monitors the server, and takes it offline. The agent includes a resource type declaration and agent executable represented by the SybaseRS resource type.

- The VCS agent for SAP Sybase Replication Management Agent — SybaseRMA. The SybaseRMA agent monitors the configured SAP Sybase Replication Management Agent

SAP Sybase Replication Management Agent supports automated setup and configuration, monitoring, and administration for an SAP Business Suite for Adaptive Server disaster recovery solution. SAP Sybase Replication Management Agent is a Sybase Control Center (SCC) plug-in that runs inside the SCC server framework.

The VCS SybaseRMA agent provides high availability for SAP Sybase Replication Management Agent in a clustered environment. The SybaseRMA agent brings the configured SAP Sybase Replication Management Agent online, monitors the agent, and takes it offline. The agent includes a resource type declaration and agent executable represented by the SybaseRMA resource type.

Refer to the SAP Sybase product documentation for more details about SAP Sybase Replication Server and SAP Sybase Replication Management Agent.

Supported software

For information on the software versions that the Cluster Server agent for SAP Sybase Replication Server supports, see the Veritas Services and Operations Readiness Tools (SORT) site: <https://sort.veritas.com/agents>.

How the SybaseRS and SybaseRMA agents make SAP Sybase Replication Server and SAP Sybase RMA highly available

The VCS SybaseRS agent and SybaseRMA agent continuously monitor the SAP Sybase Replication Server and SAP Sybase Replication Management Agent processes to verify that they function properly.

The SybaseRS and SybaseRMA agents can perform the following levels of monitoring:

- **Primary or Basic monitoring**
In the Primary or Basic monitoring mode, the agents detect an application failure if a configured SAP Sybase Replication Server process or SAP Sybase Replication Management Agent process is not running.
- **Secondary or Detail monitoring**
In this mode, the agents run an isql utility to verify the status of the configured SAP Sybase Replication Server process or SAP Sybase Replication Management Agent process. The agents detect application failure if they cannot detect healthy status of the application. When this application failure occurs, the SAP Sybase Replication Server service group fails over to another node in the cluster.
- **Intelligent monitoring framework (IMF)**
The agents support IMF in the process check mode of basic monitoring. The agents are IMF-aware and use asynchronous monitoring framework (AMF) kernel driver for resource state change notifications. Note that the agents support intelligent resource monitoring for online resources only.

When the agents detect that the configured SAP Sybase Replication Server or SAP Sybase Replication Management Agent is not running on a system, the Sybase service group is failed over to the next available system in the service group's SystemList. The configured SAP Sybase Replication Server or SAP Sybase Replication Management Agent is started on the new system. In this manner, the Cluster Server agents provide high availability for the SAP Sybase Replication Server, and SAP Sybase Replication Management Agent, and the data.

How the agents support intelligent resource monitoring

With intelligent monitoring framework (IMF), VCS supports intelligent resource monitoring in addition to the poll-based monitoring. Poll-based monitoring polls the resources periodically whereas intelligent monitoring performs asynchronous monitoring.

When an IMF-enabled agent starts up, the agent initializes the asynchronous monitoring framework (AMF) kernel driver. After the resource is in a steady state, the agent registers with the AMF kernel driver, the details of the resource that are required to monitor the resource. For example, the agent for SAP Sybase Replication Server registers the PIDs of the SAP Sybase Replication Server processes with the AMF kernel driver. The agent's `imf_getnotification` function waits for any resource state changes. When the AMF kernel driver module notifies the `imf_getnotification`

function about a resource state change, the agent framework runs the monitor agent function to ascertain the state of that resource. The agent notifies the state change to VCS, which then takes appropriate action.

You can enable or disable the intelligent resource monitoring functionality of the VCS agent manually. See [“Enabling and disabling intelligent resource monitoring manually”](#) on page 30.

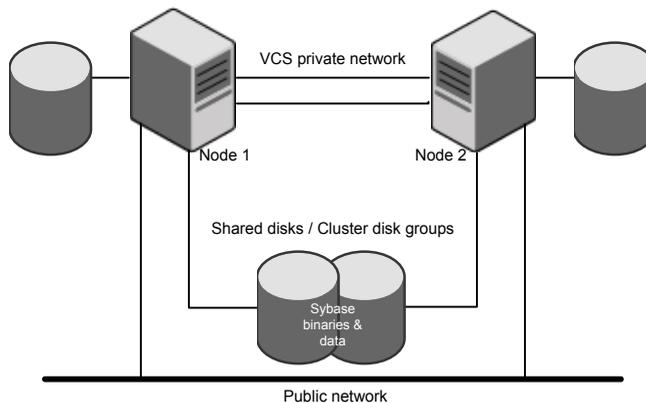
See the *Cluster Server Administrator’s Guide* for more information.

Typical SAP Sybase Replication Server configuration in a VCS cluster

In a typical configuration, VCS is configured in a two node cluster. The SAP Sybase Replication Server data is installed on shared disks. The SAP Sybase Replication Server binaries can be installed locally on both nodes or on shared disks. The VCS agent for SAP Sybase Replication Server and SAP Sybase Replication Management Agent are installed on both the nodes. The shared disks can be managed using Veritas Volume Manager (VxVM).

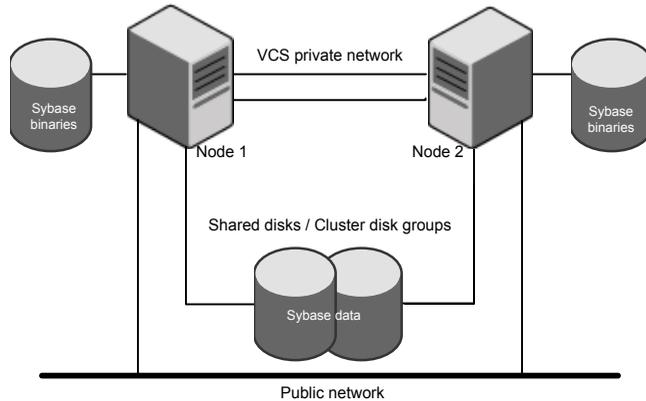
[Figure 1-1](#) illustrates a sample configuration in which the SAP Sybase Replication Servers, including binaries and data are installed completely on shared disks or shared cluster disk groups managed using VxVM.

Figure 1-1 SAP Sybase Replication Server binaries and data on shared disks



[Figure 1-2](#) illustrates a sample configuration in which the SAP Sybase Replication Server binaries are installed locally on each node in the cluster and the SAP Sybase Replication Server data is in shared disks or shared cluster disk groups managed using VxVM.

Figure 1-2 Binaries on local disk and SAP Sybase Replication Server data on shared disks



Agent functions

This section describes the functions of the agent for SAP Sybase Replication Server (SybaseRS) and the agent for SAP Sybase Replication Management Agent (SybaseRMA).

SAP Sybase Replication Server (SybaseRS) agent functions

The operations or functions that the Cluster Server agent for SAP Sybase Replication Server can perform are:

Online

The online function performs the following tasks:

- Verifies that the SAP Sybase Replication Server is not already online. If the SAP Sybase Replication Server process is online, the online function does not take any action.
- If the SAP Sybase Replication Server process (repserver) is not running but if the dbsrv12 process for this instance is found running, the agent cleans up this process.
- Starts the SAP Sybase Replication Server by using the following steps:
 - Sources the SYBASE.sh or SYBASE.csh environment file.
 - Executes the file that is specified in the RunServerFile attribute.

For example:

```
/sybase/C01_REP/REP-15_5/samp_repserver/RUN_SAMPLE_RS
```

Note: You must specify the location of the start script file for SAP Sybase Replication Server in the `RunServerFile` attribute.

- Uses an `isql` connection to ensure that the Replication Server is fully up and running.

Offline

The offline operation performs the following tasks:

- Verifies that the SAP Sybase Replication Server instance is not already offline.
- If the SAP Sybase Replication Server process (`repserver`) is not running but if the `dbsrv12` process for this instance is found running, the agent cleans up this process.
- Stops the SAP Sybase Replication Server by using the `isql` command in the following manner:
If the location of the interfaces file is specified using the `InterfacesFile` attribute, the agent uses the specified file while connecting to the `isql` session.
- The agent first executes the `shutdown` command.
- If the SAP Sybase Replication Server process does not respond to the `shutdown` command, the agent uses the `SIGTERM` signal to kill the SAP Sybase Replication Server process and the `dbsrvr12` process corresponding to this server instance.
- When the `DelayAfterOffline` attribute is set, the monitor function is invoked after completion of the offline function and after the number of seconds specified in the `DelayAfterOffline` attribute have elapsed.

Monitor

In the basic monitoring mode, the SAP Sybase Replication Server agent scans the process table for the Replication Server process.

In the detail monitoring mode, the agent checks the server status by using the `admin health` command through an `isql` connection.

The detail monitoring check is performed at the frequency specified in the `LevelTwoMonitorFreq` attribute.

imf_init

Initializes the agent to interface with the AMF kernel driver, which is the IMF notification module for SAP Sybase Replication Server agent. This function runs when the agent starts up.

imf_register

Registers or unregisters resource entities with the AMF kernel module. This function runs for each resource after the resource goes into a steady online state.

Note: The SybaseRS agent supports intelligent resource monitoring for online resources only. Hence, the Mode key of the IMF type-level attribute must be set to either 2 or 0. See [“About the keys of the IMF attribute”](#) on page 29.

imf_getnotification

Gets notification about resource state changes. This function runs after the agent initializes with the AMF kernel module. This function continuously waits for notification and takes action on the resource upon notification.

Clean

Forcefully stops the SAP Sybase Replication Server by using the `isql` command in the following manner.

The agent first executes the `shutdown` command.

If the process does not respond to the `shutdown` command, the agent uses the SIGTERM signal to kill the SAP Sybase Replication Server process and the `dbssvr12` process corresponding to this server instance.

If the processes still do not stop, the agent kills these processes using the SIGKILL signal.

SAP Sybase Replication Management Agent (SybaseRMA) agent functions

The operations or functions that the Cluster Server agent for SAP Sybase Replication Management Agent can perform are:

Online

The online function performs the following tasks:

- Verifies that the SAP Sybase Replication Management Agent is not already online. If the SAP Sybase Replication Management Agent process is online, the online function does not take any action.
- Starts the SAP Sybase Replication Management Agent by using the following steps:
 - Sources the SYBASE.sh or SYBASE.csh environment file.
 - Executes the file that is specified in the RunServerFile attribute.
An example of the value of the RunServer file for SybaseRMA resource:
`/sybase/C01_REP/SCC-3_2/bin/scc.sh`

Note: You must specify the location of the start script file for SAP Sybase Replication Management Agent in the RunServerFile attribute.

- Uses an isql connection to ensure that the SAP Sybase Replication Management Agent is fully up and running.

Offline

The offline operation performs the following tasks:

- Verifies that the SAP Sybase Replication Management Agent instance is not already offline.
- Stops SAP Sybase Replication Management Agent by using the `isql` command in the following manner.
If the location of the interfaces file is specified in the InterfacesFile attribute, the agent uses the specified file while connecting to the isql session.
- The agent first executes the `shutdown` command.
- If the SAP Sybase Replication Management Agent process does not respond to the `shutdown` command, the agent uses the SIGTERM signal to kill the process.
- When the DelayAfterOffline attribute is set, the monitor function is invoked after completion of the offline function and after the number of seconds specified in DelayAfterOffline attribute have elapsed.

Monitor

In the basic monitoring mode, the agent for SAP Sybase Replication Management Agent scans the process table for the Replication Management Agent process.

In the detail monitoring mode, the agent checks the server status by using the `sap_status` command through an isql connection.

The detail monitoring check is performed at the frequency that is specified in the `LevelTwoMonitorFreq` attribute.

imf_init

Initializes the agent to interface with the AMF kernel driver, which is the IMF notification module for the agent for SAP Sybase Replication Management Agent. This function runs when the agent starts up.

imf_register

Registers or unregisters resource entities with the AMF kernel module. This function runs for each resource after the resource goes into a steady online state.

Note: The SybaseRMA agent supports intelligent resource monitoring for online resources only. Hence, the `Mode` key of the IMF type-level attribute must be set to either 2 or 0. See [“About the keys of the IMF attribute”](#) on page 29.

imf_getnotification

Gets notification about resource state changes. This function runs after the agent initializes with the AMF kernel module. This function continuously waits for notification and takes action on the resource upon notification.

Clean

Forcefully stops SAP Sybase Replication Management Agent by using the `isql` command in the following manner.

The agent first executes the `shutdown` command.

If the process does not respond to the `shutdown` command, the agent uses the SIGTERM signal to kill the SAP Sybase Management Agent process.

If the process still does not stop, the agent kills these process using the SIGKILL signal.

VCS requirements for installing Sybase Replication Server and Sybase Replication Management Agent

This chapter includes the following topics:

- [Prerequisites for installing SAP Sybase Replication Server and SAP Sybase Replication Management Agent in a VCS environment](#)
- [SAP Sybase Replication Server installation directory](#)
- [System group and user creation](#)
- [Transparent virtual IP failover](#)

Prerequisites for installing SAP Sybase Replication Server and SAP Sybase Replication Management Agent in a VCS environment

Before you install SAP Sybase Replication Server or SAP Sybase Replication Management Agent, make sure that the systems in the cluster have adequate resources to run these applications and VCS.

Install SAP Sybase Replication Server and SAP Sybase Replication Management Agent according to the instructions provided in the SAP Sybase product documentation.

Note: SAP Sybase Replication Server and SAP Sybase Replication Management Agent may be installed on the same node or on different nodes.

SAP Sybase Replication Server installation directory

The SAP Sybase Replication Server installation directory can be located on a local disk or a shared storage.

Review the following prerequisites:

- If the SAP Sybase Replication Server binaries are installed on a local disk, verify that the installation path is the same on all the nodes in the cluster. Make sure that the Sybase configuration files are identical on all the nodes in the cluster.
- If the SAP Sybase Replication Server binaries are installed on shared disks, make sure that the mount points for the shared disks are the same on all the nodes.
The Sybase installation directory is specified by the environment variable \$SYBASE. Create the same \$SYBASE mount points on each system.

System group and user creation

Make sure you have a system group and user, with the same name and ID, on all cluster nodes.

In addition, to ensure that the system user has ownership of the Sybase home directory on the shared disk, run the following commands:

- `# groupadd -g group_id group_name`
- `# useradd -u user_id -g group_name user_name`
- `# chown -R user_name:group_name $SYBASE`

Transparent virtual IP failover

For SAP Sybase Replication Server failover to be transparent to Sybase clients, create an IP address as part of the Sybase service group. This IP address must match the server entries in the interfaces file located in the Sybase home directory.

For information on the format for adding entries to the interfaces file, refer to the SAP Sybase product documentation.

Installing and uninstalling the SybaseRS and SybaseRMA agents

This chapter includes the following topics:

- [Installing the SybaseRS and SybaseRMA agents](#)
- [Uninstalling the agents](#)

Installing the SybaseRS and SybaseRMA agents

You must install the SybaseRS and SybaseRMA agents on all the systems that will host SAP Sybase Replication Server service groups.

Before you install the agents, ensure that you install and configure Cluster Server as per the instructions in the Cluster Server installation guide.

Note: The agent package VRTSsybrep includes the agents for SAP Sybase Replication Server (SybaseRS) and SAP Sybase Replication Management Agent (SybaseRMA). The following procedure installs both these agents.

To install the agents

- 1 Download the Cluster Server agent for SAP Sybase Replication Server from the Veritas Services and Operations Readiness Tools (SORT) site:
<https://sort.veritas.com/agents>.

You can download either the complete Agent Pack tar file or an individual agent tar file.

- 2 Uncompress the file to a temporary location, say /tmp.
- 3 Navigate to the rpms directory.

If you downloaded the complete Agent Pack tar file, navigate to the rpms directory located at:

```
cd1/linux/generic/vcs/application/sybasers_agent/  
vcs_version/version_agent/rpms
```

- 4 Log in as superuser.
- 5 Install the package.

```
# rpm -ihv VRTSsybrep-AgentVersion\  
-GA_GENERIC.noarch.rpm
```

For example:

```
# rpm -ihv VRTSsybrep-6.0.0.0-GA_GENERIC.noarch.rpm
```

- 6 Copy the agent type configuration file. See “[Importing the agent types files in a VCS environment](#)” on page 21.

Uninstalling the agents

To uninstall the agents when VCS is running

- 1 Log in as a superuser.
- 2 Set the cluster configuration mode to read/write by typing the following command from any node in the cluster:

```
# haconf -makerw
```

- 3 Remove all SAP Sybase Replication Server and SAP Sybase Replication Management Agent resources from the cluster. Use the following command to verify that all resources have been removed:

For SAP Sybase Replication Server

```
# hares -list Type=SybaseRS
```

For SAP Sybase Replication Management Agent

```
# hares -list Type=SybaseRMA
```

- 4 Remove the agent type from the cluster configuration by typing the following command from any node in the cluster:

For SAP Sybase Replication Server

```
# hatype -delete SybaseRS
```

For SAP Sybase Replication Management Agent

```
# hatype -delete SybaseRMA
```

Removing the agent's type file from the cluster removes the include statement for the agent from the main.cf file, but the agent's type file is not removed from the cluster configuration directory. You can remove the agent's type file later from the cluster configuration directory.

- 5 Save these changes. Then set the cluster configuration mode to read-only by typing the following command from any node in the cluster:

```
# haconf -dump -makero
```

- 6 Use the platform's native software management program to remove the agent for SAP Sybase Replication Server from each node in the cluster.

Execute the following command to uninstall the agent:

```
# rpm -e VRTSsybrep
```

To uninstall the agents when VCS is not running

- 1 On any node in the cluster, manually edit the main.cf file to remove the following:
 - All resources of type SybaseRS and SybaseRMA.
 - The resource dependencies for the SybaseRS and SybaseRMA resources.
 - The lines: include "SybaseRMATypes.cf" include "SybaseRSTypes.cf"
- 2 Ensure that when VCS is started next, it is started from the node used in step 1, that is, the node on which the main.cf file was manually edited.

Configuring the SybaseRS and SybaseRMA agents

This chapter includes the following topics:

- [About configuring the SybaseRS and SybaseRMA agents](#)
- [Importing the agent types files in a VCS environment](#)
- [Agent attributes](#)
- [Enabling and disabling intelligent resource monitoring manually](#)

About configuring the SybaseRS and SybaseRMA agents

After installing the SybaseRS and SybaseRMA agents, you must import the respective agent type configuration file. After importing this file, review the attributes table that describes the resource type and its attributes, and then create and configure resources. See [“Agent attributes”](#) on page 23.

Importing the agent types files in a VCS environment

To use the SybaseRS and SybaseRMA agents, you must import the agent types files into the VCS cluster.

You can import the agent types files using the Cluster Manager (Java Console) or via the command line interface.

To import the agent types files using the Cluster Manager (Java Console)

- 1 Start the Cluster Manager (Java Console) and connect to the cluster on which the agent is installed.
- 2 Click **File > Import Types**.
- 3 In the Import Types dialog box, select the following file:

For SybaseRS:

```
/etc/VRTSagents/ha/conf/SybaseRS/SybaseRSTypes.cf
```

For SybaseRMA

```
/etc/VRTSagents/ha/conf/SybaseRMA/SybaseRMATypes.cf
```

- 4 Click **Import**.
- 5 Save the VCS configuration.

You can now create SAP Sybase Replication Server resources.

To import the agent types file using the command line interface (CLI):

- 1 Log in to a cluster system as superuser.
- 2 Make the cluster configuration as read-only. This action ensures that all changes to the existing configuration have been saved and further changes are prevented while you modify main.cf:

```
# haconf -dump -makero
```

- 3 To ensure that VCS is not running while you edit main.cf, issue the following command to stop the VCS engine on all systems. Leave the resources that are available online.

```
# hastop -all -force
```

- 4 Make a backup copy of the main.cf file.

```
# cd /etc/VRTSvcs/conf/config
```

```
# cp main.cf main.cf.orig
```

- 5 Copy the agent type configuration file:

For SybaseRS, copy `SybaseRSTypes.cf` from the `/etc/VRTSagents/ha/conf/SybaseRS/` directory to the `/etc/VRTSvcs/conf/config` directory.

For SybaseRMA, copy `SybaseRMATypes.cf` from the `/etc/VRTSagents/ha/conf/SybaseRMA/` directory to the `/etc/VRTSvcs/conf/config` directory.

- 6 Edit the main.cf file to include the SybaseRSTypes.cf and SybaseRMATypes.cf files.

```
include "SybaseRMATypes.cf"
```

```
include "SybaseRSTypes.cf"
```

- 7 Start HAD on all the nodes.

Agent attributes

This section describes the attributes of the the agent for SAP Sybase Replication Server (SybaseRS) and the agent for SAP Sybase Replication Management Agent (SybaseRMA).

Attributes of the VC agent for SAP Sybase Replication Server (SybaseRS)

[Table 4-1](#) lists the required attributes of the agent for SAP Sybase Replication Server.

Table 4-1 Required attributes

Attribute	Description
Server	<p>The name of the SAP Sybase Replication Server.</p> <p>The VCS SybaseRS agent uses the value specified in this attribute to establish an isql connection. Ensure that the Server name you specify is unique in the cluster.</p> <p>Note: The value specified in the Server attribute must be the same as the value specified in the interfaces file.</p> <p>Type and dimension: string-scalar</p> <p>Example: SAMPLE_RS</p> <p>Default: No default value</p>
Owner	<p>The operating system user that is the defined owner of SAP Sybase Replication Server executables and files in any of the sources (like NIS+, /etc/passwd, ldap, and so on) that are specified in the /etc/nsswitch.conf file for password entry.</p> <p>Type and dimension: string-scalar</p> <p>Example: sybase</p> <p>Default: No default value</p>

Table 4-1 Required attributes (*continued*)

Attribute	Description
Home	The path to SAP Sybase Replication Server binaries and configuration files. Type and dimension: string-scalar Example: /sybase/C01_REP Default: No default value
Version	The version of SAP Sybase Replication Server. Type and dimension: string-scalar Default: 15
RSAdmin	The SAP Sybase Replication Server administrator. The VCS SybaseRS agent uses the value specified in this attribute to connect to SAP Sybase Replication Server through isql. Type and dimension: string-scalar Default: No default value
RSAdminPassword	The password for the SAP Sybase Replication Server administrator. Use <code>vcscrypt -agent</code> to encrypt the password. Type and dimension: string-scalar Default: No default value
RunServerFile	The location of the start script file for SAP Sybase Replication Server. Type and dimension: string-scalar Example: /sybase/C01_REP/REP-15_5/samp_repserver/RUN_SAMPLE_RS Default: No default value

[Table 4-2](#) lists the optional attributes of the agent for SAP Sybase Replication Server.

Table 4-2 Optional attributes

Attribute	Description
InterfacesFile	<p>The location of the interfaces file for the Sybase instance.</p> <p>If you configure this attribute, the VCS SybaseRS agent uses the <code>-I interfaces_file</code> option when connecting to an isql session.</p> <p>Type and dimension: string-scalar</p> <p>Default: No default value</p>
ShutdownWaitLimit	<p>The maximum number of seconds for which the VCS SybaseRS agent waits for the SAP Sybase Replication Server instance to stop after issuing shutdown, and before attempting a forceful shutdown, if required.</p> <p>Type and dimension: integer-scalar</p> <p>Default: 60</p>
DelayAfterOnline	<p>The number of seconds after the online function is run, and before the next monitor cycle starts.</p> <p>Type and dimension: integer-scalar</p> <p>Default: 10</p>
DelayAfterOffline	<p>The number of seconds after the offline function is run, and before the next monitor cycle starts.</p> <p>Type and dimension: integer-scalar</p> <p>Default: 2</p>
LevelTwoMonitorFreq	<p>This is a type-level attribute that specifies the frequency at which the agent for this resource type must perform second-level or detailed monitoring. You can also override the value of this attribute at the resource level. The value indicates the number of monitor cycles after which the agent will monitor the configured processes in detail.</p> <p>For example, the value 5 indicates that the agent will monitor the configured processes in detail after every five online monitor intervals.</p> <p>Default: 0</p>

Table 4-2 Optional attributes (*continued*)

Attribute	Description
IMF	<p>This type-level attribute determines if the agent must perform intelligent resource monitoring. You can also override the value of this attribute at the resource level. See “About the keys of the IMF attribute” on page 29.</p> <p>Note: Intelligent monitoring of online resources is enabled by default.</p>
IMFRegList	<p>An ordered list of attributes whose values are registered with the IMF notification module. The attribute values can be overridden at the resource level.</p> <p>Default: { Server, Owner, Home, Version }</p>

Attributes of the VCS agent for SAP Sybase Replication Management Agent (SybaseRMA)

[Table 4-3](#) lists the required attributes of the agent for SAP Sybase Replication Management Agent.

Table 4-3 Attributes of the SybaseRMA agent

Attribute	Description
Server	<p>The name of the SAP Sybase Replication Management Agent server.</p> <p>The VCS SybaseRMA agent uses the value specified in this attribute to establish an isql connection. Ensure that the Server name you specify is unique in the cluster.</p> <p>Note: The value specified in the Server attribute must be the same as the value specified in the interfaces file.</p> <p>Type and dimension: string-scalar</p> <p>Example: C01_REP_DR</p>
Owner	<p>The operating system user that is the defined owner of SAP Sybase Replication Management Agent executables and files in any of the sources (NIS+, /etc/passwd, ldap, and so on) that are specified in the <code>/etc/nsswitch.conf</code> file for password entry.</p> <p>Example: sybase</p> <p>Type and dimension: string-scalar</p>

Table 4-3 Attributes of the SybaseRMA agent (*continued*)

Attribute	Description
Home	The path to the Sybase Replication home directory. Type and dimension: string-scalar Example: /sybase/C01_REP Default value: No default value
Version	The version of SAP Sybase Replication Management Agent. Type and dimension: string-scalar Default: 15
RMAAdmin	The SAP Sybase Replication Management Agent administrator. The VCS SybaseRMA agent uses the value specified in this attribute to connect to SAP Sybase Replication Management Agent through isql. Type and dimension: string-scalar Default value: No default value
RMAAdminPassword	The password for the SAP Sybase Replication Management Agent administrator. Use <code>vcscrypt -agent</code> to encrypt the password. Type and dimension: string-scalar Default value: No default value
RunServerFile	The location of the start script file for SAP Sybase Replication Management Agent. Type and dimension: string-scalar Example: /sybase/C01_REP/SCC-3_2/bin/scc.sh Default: No default value

[Table 4-4](#) lists the optional attributes of the agent for SAP Sybase Replication Management Agent.

Table 4-4 Optional attributes

Attribute	Description
InterfacesFile	<p>The location of the interfaces file for the Sybase instance.</p> <p>If you configure this attribute, the VCS SybaseRMA agent uses the <code>-I interfaces_file</code> option when connecting to an isql session.</p> <p>Type and dimension: string-scalar</p> <p>Default: No default value</p>
ShutdownWaitLimit	<p>The maximum number of seconds for which the VCS SybaseRMA agent waits for the SAP Sybase Replication Management Agent instance to stop after issuing shutdown, and before attempting a forceful shutdown, if required.</p> <p>Type and dimension: integer-scalar</p> <p>Default: 60</p>
DelayAfterOnline	<p>The number of seconds after the online function is run, and before the next monitor cycle starts.</p> <p>Type and dimension: integer-scalar</p> <p>Default: 10</p>
DelayAfterOffline	<p>The number of seconds after the offline function is run, and before the next monitor cycle starts.</p> <p>Type and dimension: integer-scalar</p> <p>Default: 2</p>
LevelTwoMonitorFreq	<p>This is a type-level attribute that specifies the frequency at which the agent for this resource type must perform second-level or detailed monitoring. You can also override the value of this attribute at the resource level. The value indicates the number of monitor cycles after which the agent will monitor the configured processes in detail.</p> <p>For example, the value 5 indicates that the agent will monitor the configured processes in detail after every five online monitor intervals.</p> <p>Default: 0</p>

Table 4-4 Optional attributes (*continued*)

Attribute	Description
IMF	<p>This type-level attribute determines if the agent must perform intelligent resource monitoring. You can also override the value of this attribute at the resource level. See “About the keys of the IMF attribute” on page 29.</p> <p>Note: Intelligent monitoring of online resources is enabled by default.</p>
IMFRegList	<p>An ordered list of attributes whose values are registered with the IMF notification module. The attribute values can be overridden at the resource level.</p> <p>Default: { Server, Owner, Home, Version }</p>

About the keys of the IMF attribute

The IMF type-level attribute uses the following keys:

Table 4-5 IMF attribute keys

Key	Description
Mode	<p>Define this attribute to enable or disable intelligent resource monitoring. Valid values are as follows:</p> <ul style="list-style-type: none"> ■ 0—Does not perform intelligent resource monitoring ■ 1—Performs intelligent resource monitoring for offline resources and performs poll-based monitoring for online resources ■ 2—Performs intelligent resource monitoring for online resources and performs poll-based monitoring for offline resources ■ 3—Performs intelligent resource monitoring for both online and for offline resources. <p>Note: The agent for SAP Sybase Replication Server supports intelligent resource monitoring for online resources only. Hence, Mode should be set to either 0 or 2.</p> <p>Default: 2</p>

Table 4-5 IMF attribute keys (*continued*)

Key	Description
MonitorFreq	<p>This key value specifies the frequency at which the agent invokes the monitor agent function. The value of this key is an integer.</p> <p>You can set this key to a non-zero value for cases where the agent requires to perform both poll-based and intelligent resource monitoring.</p> <p>If the value is 0, the agent does not perform poll-based process check monitoring.</p> <p>After the resource registers with the AMF kernel driver, the agent calls the monitor agent function as follows:</p> <ul style="list-style-type: none"> ■ After every (MonitorFreq x MonitorInterval) number of seconds for online resources ■ After every (MonitorFreq x OfflineMonitorInterval) number of seconds for offline resources <p>Default: 5</p>
RegisterRetryLimit	<p>If you enable intelligent resource monitoring, the agent invokes the imf_register agent function to register the resource with the AMF kernel driver.</p> <p>The value of the RegisterRetryLimit key determines the number of times the agent must retry registration for a resource. If the agent cannot register the resource within the limit that is specified, then intelligent monitoring is disabled until the resource state changes or the value of the Mode key changes.</p> <p>Default: 3</p>

Enabling and disabling intelligent resource monitoring manually

The intelligent resource monitoring feature is enabled by default. Review the following procedures to enable or disable intelligent resource monitoring manually.

The IMF resource type attribute determines whether an IMF-aware agent must perform intelligent resource monitoring.

To enable intelligent resource monitoring manually

- 1** Make the VCS configuration writable.

```
# haconf -makerw
```
- 2** Run the following command to enable intelligent resource monitoring of online resources:

```
# hatype -modify SybaseRS IMF -update Mode 2
# hatype -modify SybaseRMA IMF -update Mode 2
```
- 3** If required, change the values of the MonitorFreq key and the RegisterRetryLimit key of the IMF attribute.
- 4** Save the VCS configuration.

```
# haconf -dump -makero
```
- 5** Restart the agent. Run the following commands on each node.

```
# haagent -stop agent_name -force -sys sys_name
# haagent -start agent_name -sys sys_name
```

To disable intelligent resource monitoring manually

- 1** Make the VCS configuration writable.

```
# haconf -makerw
```
- 2** To disable intelligent resource monitoring for all the resources of a certain type, run the following command:

```
# hatype -modify SybaseRS IMF -update Mode 0
# hatype -modify SybaseRMA IMF -update Mode 0
```
- 3** To disable intelligent resource monitoring for a specific resource, run the following command:

```
# hares -override resource_name IMF
# hares -modify resource_name IMF -update Mode 0
```
- 4** Save the VCS configuration.

```
# haconf -dump -makero
```

Troubleshooting the agent

This chapter includes the following topics:

- [Preliminary troubleshooting checks](#)
- [Starting the SAP Sybase Replication Server outside a cluster](#)
- [Reviewing log files](#)
- [Using debug logs](#)

Preliminary troubleshooting checks

If you face problems with the VCS SybaseRS and SybaseRMA, perform the following checks before further investigation:

- Use the correct software and operating system versions.
Ensure that no issues arise due to incorrect software and operating system versions. For information on the software versions that the VCS SybaseRS and SybaseRMA agents, see the Veritas Services and Operations Readiness Tools (SORT) site: <https://sort.veritas.com/agents>.
- Configure SAP Sybase Replication Server resources and SAP Sybase Replication Management Agent correctly.
Before using SAP Sybase Replication Server and SAP Sybase Replication Management Agent resources, ensure that you configure the resources properly. For a list of attributes used to configure all SAP Sybase Replication Server and SAP Sybase Replication Management Agent resources, refer to the agent attributes. See "[Agent attributes](#)" on page 23.

Starting the SAP Sybase Replication Server outside a cluster

If you face problems while working with a resource, you must disable the resource within the cluster framework. A disabled resource is not under the control of the cluster framework, and so you can test the SAP Sybase Replication Server instance independent of the cluster framework. Refer to the cluster documentation for information about disabling a resource.

You can then restart the SAP Sybase Replication Server instance outside the cluster framework.

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

Source the SYBASE.sh or SYBASE.csh environment file based on the user shell.

Execute the file that is specified in the RunServerFile attribute. For example:

```
/sybase/C01_REP/REP-15_5/samp_repserver/RUN_SAMPLE_RS
```

Reviewing log files

If you face problems while using SybaseRS or SybaseRMA agents, use the log files described in this section to investigate the problems.

The engine log file is located at `/var/VRTSvcs/log/engine_A.log`.

The SybasRS agent log file is located at `var/VRTSvcs/log/SybaseRS_A.log`.

The SybasRMA agent log file is located at `var/VRTSvcs/log/SybaseRMA_A.log`.

Using debug logs

Run following command to enable debug log level for the SybaseRS agent:

```
# hatype -modify SybaseRS LogDbg DBG_1 DBG_2  
DBG_3 DBG_4 DBG_5 DBG_6
```

Run following command to enable debug log level for the SybaseRMA agent:

```
# hatype -modify SybaseRMA LogDbg DBG_1 DBG_2  
DBG_3 DBG_4 DBG_5 DBG_6
```

Sample configurations

This appendix includes the following topics:

- [About sample configurations](#)
- [Sample agent type definition files](#)
- [Sample configuration \(main.cf\)](#)

About sample configurations

The sample configuration graphically depicts the resource types, resources, and resource dependencies within the service group. Review these dependencies carefully before configuring the VCS SybaseRS and SybaseRMA agents. For more information about these resource types, see the *Cluster Server Bundled Agents Reference Guide*.

Sample agent type definition files

This section provides examples of the agent type definition files for the SybaseRS and SybaseRMA agents.

Sample agent type definition for the SybaseRS agent

```
type SybaseRS (
    static int IMF{} = { Mode=2, MonitorFreq=5, RegisterRetryLimit=3 }
    static str IMFRegList[] = { Server, Owner, Home, Version }
    static str AgentFile = "/opt/VRTSvcs/bin/Script51Agent"
    static str AgentDirectory = "/opt/VRTSagents/ha/bin/SybaseRS"
    static str ArgList[] = { Server, Owner, Home, Version, RSAdmin,
        RSAdminPassword, RunServerFile, InterfacesFile, ShutdownWaitLimit,
        DelayAfterOnline, DelayAfterOffline }
```

```
static boolean AEPTimeout = 1
str Server
str Owner
str Home
str Version = "15"
str RSAdmin
str RSAdminPassword
str RunServerFile
str InterfacesFile
int ShutdownWaitLimit = 60
int DelayAfterOnline = 10
int DelayAfterOffline = 2
)
```

Sample agent type definition for the SybaseRMA agent

```
type SybaseRMA (
  static int IMF{} = { Mode=2, MonitorFreq=5, RegisterRetryLimit=3 }
  static str IMFRegList[] = { Server, Owner, Home, Version }
  static str AgentFile = "/opt/VRTSvcs/bin/Script51Agent"
  static str AgentDirectory = "/opt/VRTSagents/ha/bin/SybaseRMA"
  static str ArgList[] = { Server, Owner, Home, Version, RMAAdmin,
    RMAAdminPassword, RunServerFile, State, InterfacesFile,
    ShutdownWaitLimit, DelayAfterOnline, DelayAfterOffline }
  static boolean AEPTimeout = 1
  str Server
  str Owner
  str Home
  str Version = "15"
  str RMAAdmin
  str RMAAdminPassword
  str RunServerFile
  str InterfacesFile
  int ShutdownWaitLimit = 60
  int DelayAfterOnline = 10
  int DelayAfterOffline = 2
)
```

Sample configuration (main.cf)

```
include "OracleASMTypes.cf"
include "types.cf"
include "Db2udbTypes.cf"
include "OracleTypes.cf"
include "SybaseTypes.cf"
include "SybaseRMATypes.cf"
include "SybaseRSTypes.cf"

cluster SAP_Rep_Cluster01 (
)

system SYSA (
)

system SYSB (
)

group SYBASE_SG (
  SystemList = { SYSA = 0, SYSB = 1 }
)

IP SYBASE_SG_IP (
  Device = eth2
  Address = "10.xxx.xxx.xx"
  NetMask = "255.255.255.0"
)

NIC SYBASE_SG_NIC (
  Device = eth2
)

Sybase SYBASE_SG_DB (
  Server = D01_CS
  Owner = sybase
  Home = "/sybase/D01"
  Version = "15.0.1"
  SA = sa
  SApswd = aabbccdd
)

SybaseBk SYBASE_SG_BKDB (
```

```
Backupserver = D01_CS_BS
Owner = sybase
Home = "/sybase/D01"
Version = "15.0.1"
Server = D01_CS
SA = sa
SApswd = aabbccdd
)

SYBASE_SG_BKDB requires SYBASE_SG_DB
SYBASE_SG_DB requires SYBASE_SG_IP
SYBASE_SG_IP requires SYBASE_SG_NIC

// resource dependency tree
//
// group SYBASE_SG
// {
//   SybaseBk SYBASE_SG_BKDB
//   {
//     Sybase SYBASE_SG_DB
//     {
//       IP SYBASE_SG_IP
//       {
//         NIC SYBASE_SG_NIC
//       }
//     }
//   }
// }

group SybaseRS_C01_SG (
  SystemList = { SYSA = 0, SYSB = 1 }
)

IP SYBASERS_C01_IP (
  Device = eth2
  Address = "10.xxx.xxx.xx"
  NetMask = "255.255.255.0"
)

NIC SYBASERS_C01_NIC (
  Device = eth2
```

```
)

SybaseRMA SYBASERMA_C01 (
  Server = C01_REP_DR
  Owner = sybase
  Home = "/sybase/C01_REP"
  Version = "15.7"
  RMAAdmin = DR_admin
  RMAAdminPassword = aabbccdd
  RunServerFile = "/sybase/C01_REP/SCC-3_2/bin/scc.sh"
)

SybaseRS SYBASERS_C01 (
  Server = SAMPLE_RS
  Owner = sybase
  Home = "/sybase/C01_REP"
  Version = "15.7"
  RSAdmin = sa
  RSAdminPassword = aabbccdd
  RunServerFile = "/sybase/C01_REP/REP-15_5/samp_repserver/
  RUN_SAMPLE_RS"
)

SYBASERMA_C01 requires SYBASERS_C01
SYBASERS_C01 requires SYBASERS_C01_IP
SYBASERS_C01_IP requires SYBASERS_C01_NIC

// resource dependency tree
//
// group SybaseRS_C01_SG
// {
//   SybaseRMA SYBASERMA_C01
//     {
//       SybaseRS SYBASERS_C01
//         {
//           IP SYBASERS_C01_IP
//             {
//               NIC SYBASERS_C01_NIC
//             }
//         }
//     }
// }
// }
```

