Veritas™ High Availability Agent for SAP MaxDB Installation and Configuration Guide

AIX, HP-UX, Linux, Solaris

5.0

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Veritas High Availability Agent for SAP MaxDB Installation and Configuration Guide

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Introducing the Veritas High Availability Agent for SAP MaxDB

This chapter includes the following topics:

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About the Veritas agent for SAP MaxDB

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

The Veritas agent for SAP Max DB provides high availability for SAP Max DB Servers in a cluster.

MaxDB is a relational database system that was developed for Online Transaction Processing (OLTP).

It is the first agent to support SAP MaxDB Server with ACC Library.

See the following Technical Support TechNote for the latest updates or software issues for this agent:

http://seer.entsupport.symantec.com/docs/282004.htm

What's new in this agent

The enhancements in this release of SAP MaxDB agent are as follows:

- Added support for HP-UX 11iv3

- Added support for RHEL 5.0 and SuSE 10.0

- Added support for Solaris 10 x64

Supported software

The Veritas agent for SAP MaxDB supports the following software versions:

Veritas Cluster Server	VCS 4.0, 4.1, 5.0
ACC Library	5.1 and later
Operating Systems	■ AIX 5.2 and 5.3 on pSeries ■ HP-UX 11i v2, 11iv3 ■ Red Hat Enterprise Linux 4.0, 5.0 ■ SUSE Linux 9.0, 10.0 ■ Solaris 8, 9 and 10 SPARC ■ Solaris 10 x64
SAP MaxDB	7.5, 7.6, 7.7

About SAP MaxDB server

SAP MaxDB is a relational database system that was developed for Online Transaction Processing (OLTP). The OLTP database instance type has been optimized for the rapid processing of individual transactions with a large number of users and large databases.

SAP MaxDB is a relational database system with which you can create, use and manage MaxDB database instances. You can use a MaxDB database as the database for an SAP system, among other uses. Prior to version 7.5, MaxDB was delivered under the name SAP DB.

SAP DB and MaxDB

In May 2003, SAP concluded a cooperation agreement with MySQL AB. The contract stipulates that, as of database version 7.5, the SAP DB database shall be delivered under the name MaxDB. MaxDB 7.5 is the result of the continuing development of the SAP DB source code. The MaxDB software 7.5 can be used as a direct upgrade for previous SAP DB versions as of 7.2.04. As per the releases for SAP applications, this also applies to SAP DB databases in SAP installations. For SAP customers, nothing changes as a result of this contract.

Overview of the Database System

SAP MaxDB is SAP's own relational database system. You can use it in SAP solutions as a less expensive alternative to databases from other vendors.

A database instance comprises a database and the additional information required for the operation of the database. A database is a set of data with a regular structure. The data in a database is comprised of the application data (data records) and the database catalog (metadata). Every database instance has a unique name. A database instance can be in different operational states, for example ONLINE, ADMIN, OFFLINE. In the ONLINE operational state, users can work with the data in the database instance, while the ADMIN operational state allows database administrators to execute administration tasks.

As a user, to query or change data in a database, you use the Structured Query Language (SQL). Using SQL, you can display, change and delete the logical units (database objects) of the database instance, such as tables. You can use schemas to group database objects logically. The database system executes SQL statements within transactions. In physical terms, a database instance comprises the data and log volumes (permanent storage), multiple caches, the files in the run directory and a collection of metadata (including configuration files, database parameters, paths of the volumes, etc.). The database system uses page chains and B* trees as logical access structures.

Accessing a MaxDB Database Instance From Remote Computers

Several different database tools help to work with database instances. To use a database instance in a database application, integrate the database instance in the database application via an interface. Database application, database tools, interfaces and database instance can be located on different computers in a network. To access a database instance located on a remote computer, the database tools and interfaces require the MaxDB XServer (communication server).

XServer

The Max DB XServer is the communication server for the database system. The XServer listens out for connection requests from clients such as database applications and database tools. The XServer is necessary if a client is establishing a connection to a database instance located on a remote computer. The JDBC interface also requires the XServer for local communication. Communication between clients and XServer can be encrypted with SSL/TLS in SAP systems. The XServer can be used on all operating systems supported by the database system. The XServer is part of the MaxDB software package.

XUSER

The MaxDB XUSER database tool enables user log-in data to be stored and provides simplified log-on to database instances. You can use XUSER to store log-in data for database system administrators (SYSDBA users), database manager operators (DBM operators) and database users. XUSER is a command line tool and can be used on all operating systems supported by the database system. XUSER can be used in SAP systems. XUSER is part of the MaxDB software package.

Log-on data for logging on to database instances is defined as XUSER entry data and stored under a user key. When logging on to a database instance, you specify the user key only. XUSER entries are stored separately for each operating system user. XUSER entries are stored in the file system in UNIX/Linux. Operating system users can define up to 32 user keys for themselves. If several users are working with the same computer but log on under different user names using one database instance, individual user data can be managed separately in such cases.

Figure 1-1 illustrates how you can access a MaxDB database from remote computers.

Figure 1-1   Accessing a MaxDB database instance from remote computers
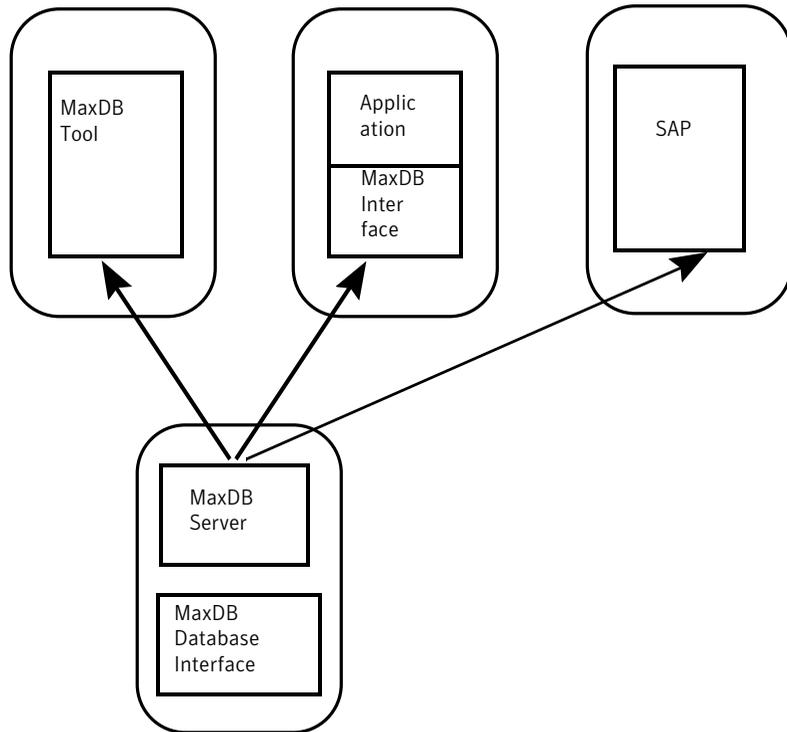
Integrating MaxDB Instances into SAP Systems

You can use MaxDB database instances in SAP systems. MaxDB can be integrated into the following SAP systems:

SAP NetWeaver AS	MaxDB SQLDBC
SAP NetWeaver BI	MaxDB SQL DBC
SAP NetWeaver EP	MaxDB JDBC
SAP NetWeaver MI (Clients)	MaxDB JDBC
SAP NetWeaver MDM	MaxDB JDBC
SAP NetWeaver XI	MaxDB JDBC

Integration of MaxDB into SAP NetWeaver AS

MaxDB is integrated into SAP NetWeaver AS using MaxDB SQLDBC.

Figure 1-2 shows the integration of MaxDB with SAP NetWeaver AS

Figure 1-2 Integration of MaxDB with SAP NetWeaver AS
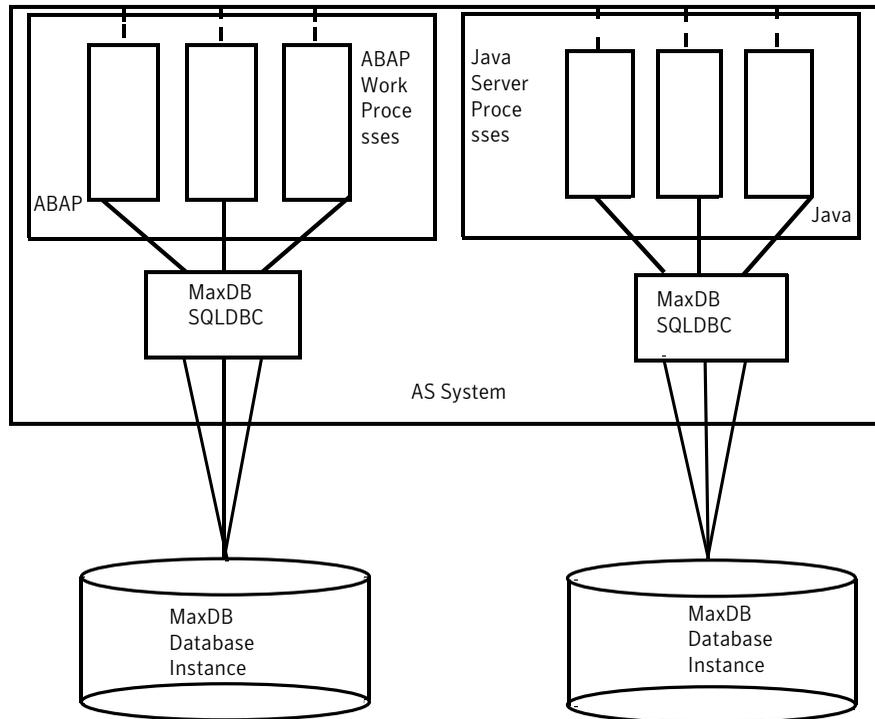
Communication with MaxDB Server

To establish a connection to a database on a remote computer, database applications and database tools use the MaxDB X Server running on the remote computer. The X Server is concurrently available to all database instances even if several database instances are installed on one computer, only one X Server ever runs. To secure the connection between the client and the X Server, SAP customers can use SSL/TLS. Connections to database instances on the local computer use shared memory. If you want to force the database to establish the connection via the X Server nonetheless, specify localhost as the database computer when you log on to the database instance.

Example: Communication between Clients and Database Instance

Consider the following two database instances HOTELDB and SHOPDB that are installed on computer ROME:

■ A user on computer PARMA uses the Database Manager GUI (DBMGUI) to access the database instance HOTELDB via the X Server on computer ROME.

■ A second user, on computer GENUA, uses the SQL Studio to access the database instance SHOPDB via the same X Server on computer ROME.

■ A third, local, user uses the Database Manager GUI to access the database instance HOTELDB without using the X Server.

Figure 1-3 shows the communication between a client and database instance

Figure 1-3 Communication between client and database Instance
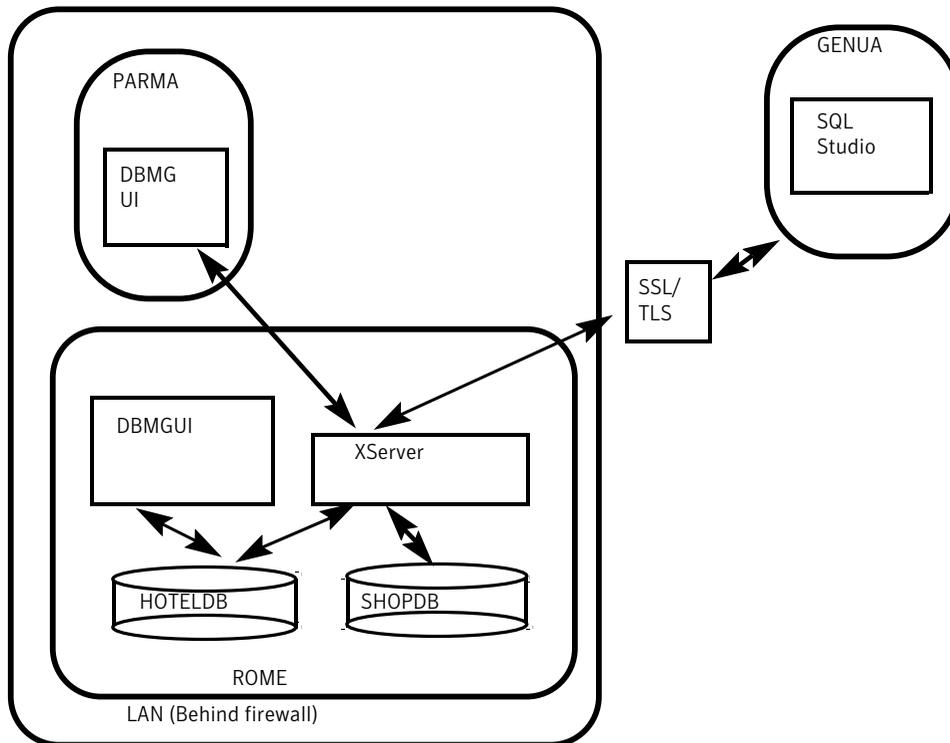
SAP MaxDB Interface

Database applications, such as SAP systems, access MaxDB database instances via interfaces. If the database application (and thus the MaxDB interface) is on a different computer than the database instance, the database system also needs

the MaxDB XServer (communication server) for communication. The JDBC interface needs the MaxDB XServer even for local communication.

Figure 1-4 shows how database applications access a MaxDB Database instance via MaxDB interfaces.

Figure 1-4   Database applications accessing a MaxDB Database instance via MaxDB interfaces
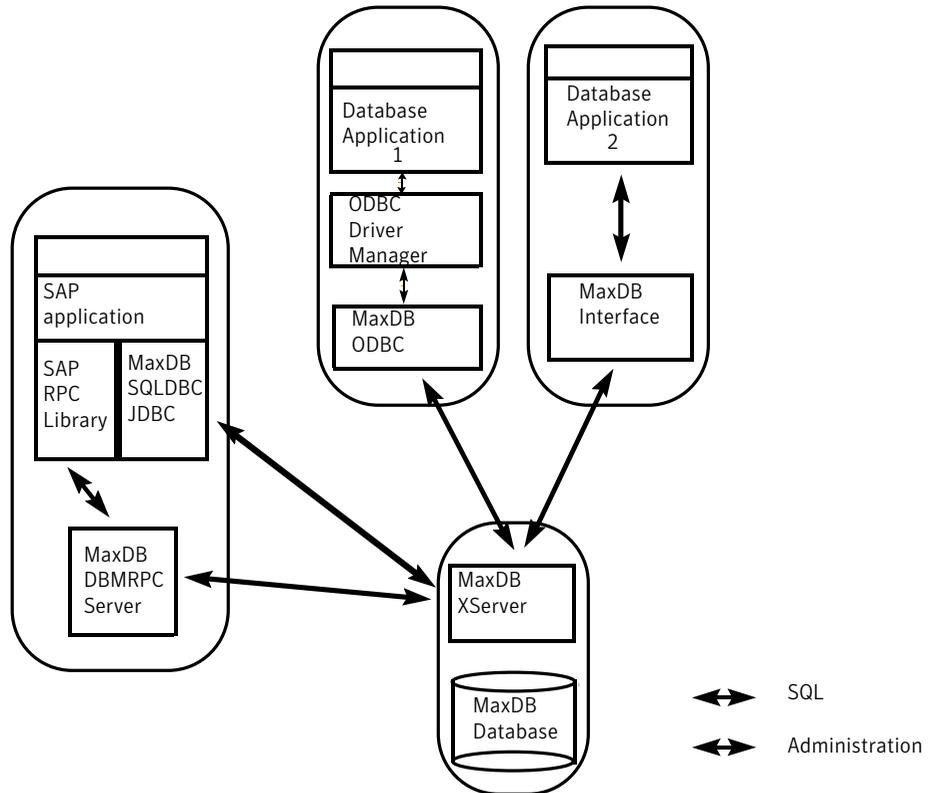
High Availability for SAP MaxDB Database

A database instance can fail due to hardware or logical errors. To restore the database instance, you have to import data and log backups. If you have a lot of data to import, restoring the database instance can take a long time. The database instance is not available for use during this time.

To make the database instance available for use more quickly (high availability), you can cluster the SAP MaxDB using VCS. VCS uses two systems for clustering SAP MaxDB. Only one system will be active for MaxDB at any point of time. When

a failure occurs on the first system the file system and IP will be brought online on the second system and then MaxDB will be brought online.

Figure 1-5 shows how high availability can be achieved for SAP MaxDB database using VCS.

Figure 1-5   High availability for SAP MaxDB database
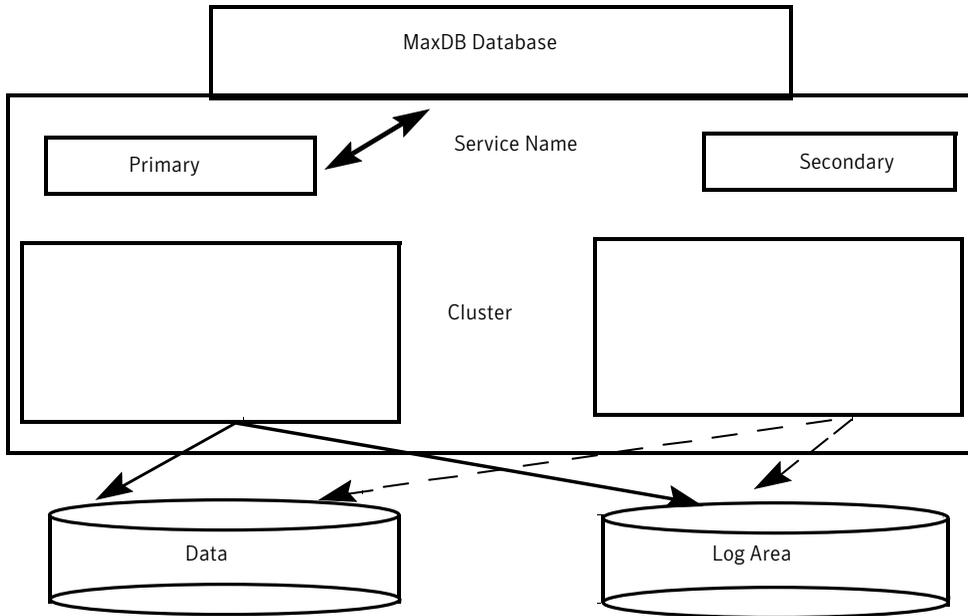
SAP MaxDB agent operations

The agent consists of resource type declarations and agent executables. The agent executables are organized into online, offline, monitor, and clean functions.

Online

The online function performs the following tasks:

- Verifies that the required attributes are set correctly. If the attribute values are invalid the agent responds with appropriate error message.

- Verifies whether the SAP MaxDB Server instance is not already online. If the instance is online, the online function exits immediately.

- If any SAP MaxDB Server processes remain online, the function kills these processes using the user name associated with the specific pattern kernel <DBName>.

- Removes all the IPC resource IDs from <independentdatapath>/ipc directory if it exists.

- Starts the SAP MaxDB server with SAP supplied utility "dbmcli".

- Confirms that the SAP MaxDB processes starts up.

- Returns the status of SAP MaxDB agent to VCS.

Offline

The offline function performs the following tasks:

- Verifies that the required attributes are set correctly. If the attribute values are invalid the agent responds with appropriate error message.

- Verifies that the SAP MaxDB Server instance is not offline. If the instance is offline, the offline function exits immediately.

- Stops the SAP MaxDB server with SAP supplied 'dbmcli' utility.

- Checks if any processes exist for the MaxDB Instance. If any processes exist kills them.

- Cleans up all the IPC resources for the SAP MaxDB Instance.

- Returns the exit status of SAP MaxDB agent to VCS.

Monitor

The monitor function monitors the states of the SAP MaxDB server on all nodes within the cluster. The function performs the following tasks:

- Verifies that the required attributes are set correctly. If the attribute values are invalid the agent responds with appropriate error message

- Confirms that the SAP MaxDB processes exists.

- Runs the second level monitor attribute checks.

- Runs the DBM command dbmcli to get the state of the MaxDB Instance if SLM is enabled.

- Validates the MonitorProgram attributes and aborts if the values are not valid.

- Runs the monitor program.

- Returns the exit status of the monitor program to VCS HAD.

Clean

In case of a failure or after an unsuccessful attempt to online or offline a MaxDB server instance, the clean function performs the following tasks:

■ Attempts to gracefully shut down the MaxDB server instance.

■ If the instance does not shut down normally, the clean function kills the remaining MaxDB processes.

■ Removes any existing IPC resources of the MaxDB instance.

■ Runs the dbmcli command to clear the runtime environment for MaxDB Instance.

■ Returns the exit status to VCS.

Installing, upgrading, and removing the agent for SAP MaxDB

This chapter includes the following topics:

- Before you install the Veritas agent for SAP MaxDB
- Installing the ACC library
- Installing the agent in a VCS environment
- Removing the agent in a VCS environment
- Removing the ACC library
- Upgrading the agent in a VCS environment

Before you install the Veritas agent for SAP MaxDB

You must install the Veritas agent for SAP MaxDB on all the systems that will host a SAP MaxDB service group.

Ensure that you meet the following prerequisites to install the agent for SAP MaxDB.

For VCS, do the following:

- Install and configure Veritas Cluster Server.
  For more information on installing and configuring Veritas Cluster Server refer to, `Veritas Cluster Server Installation Guide`
- Remove any previous version of this agent.

To remove the agent,
See "Removing the agent in a VCS environment" on page 24.

■ Install the latest version of ACC Library.
To install or update the ACC Library package, locate the library and related documentation on the agentpack disc.
See "Installing the ACC library" on page 22.

About ACC Library

The operations for the Veritas agent for SAP MaxDB depend on a set of Perl modules known as the ACC library. The library must be installed on each system in the cluster that will run the agent for SAP MaxDB. The ACC library contains common, reusable functions that perform tasks, such as process identification, logging, and system calls.

Installing the ACC library

Install the ACC library on each system in the cluster that runs an agent that depends on the ACC library.

To install the ACC library

1   Log in as superuser.

2   Navigate to the pkgs directory (the pkgs directory on the CD).

AIX	*cd_mount*/aix/application/acc_library/vcs/*version*_library/pkgs
HP-UX	*cd_mount*/hpux/generic/application/acc_library/vcs/*version*_library/pkgs
Linux	*cd_mount*/linux/generic/application/acc_library/vcs/*version*_library/rpms
Solaris	*cd_mount*/solaris/*dist_arch*/application/acc_library/vcs/*version*_library/pkgs
	where *dist_arch* is sparc or sol_x64.

3   Install the package. Enter **Yes** if asked to confirm overwriting of files in the existing package.

AIX   `# installp -ac -d VRTSacclib.rte.bff VRTSacclib.rte`

HP-UX   `# swinstall -s 'pwd' VRTSacclib`

Linux   `# rpm -i \`
             `VRTSacclib-`*VersionNumber*`-GA_GENERIC.noarch.rpm`

Solaris   `# pkgadd -d . VRTSacclib`

4   For HP-UX, install the HP-UX patch PHCO_29042 if it is not already installed.

Installing the agent in a VCS environment

Install the agent for SAP MaxDB on each node in the cluster.

To install the agent

1 Log in as superuser.

2 Navigate to the directory containing the package for the platform running in your environment.

AIX   *cd_mount*/aix/database/sapmaxdb_agent/

            vcs_*version*/*version*_agent/pkgs

HP-UX   *cd_mount*/hpux/generic/database/sapmaxdb_agent/

            vcs_*version*/*version*_agent/pkgs

Linux   *cd_mount*/linux/generic/
            database/sapmaxdb_agent/vcs_*version*/
            *version*_agent/rpms

Solaris   *cd_mount*/solaris/*dist_arch*/database/
            sapmaxdb_agent/vcs_*version*/*version*_agent/pkgs

            Where *dist* is the Solaris distribution and *arch* is the Solaris processor architecture.

3 Install the package.

AIX   # installp -ac -d VRTSsapdb.rte.bff VRTSsapdb.rte

HP-UX   # swinstall -s `pwd` VRTSsapdb

Linux   # rpm -ihv \
         VRTSsapdb-*AgentVersion*-GA_GENERIC.noarch.rpm

Solaris # pkgadd -d . VRTSsapdb

Removing the agent in a VCS environment

You must uninstall the agent for SAP MaxDB from a cluster while the cluster is active.

To uninstall the agent in a VCS environment

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 MaxDB resources from the cluster. Use the following command to verify that all resources have been removed:

```
# hares -list Type=SAPMaxDB
```

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

```
# hatype -delete SAPMaxDB
```

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 MaxDB from each node in the cluster.

Execute the following command to uninstall the agent:

AIX	`# installp -u VRTSsapdb.rte`
HP-UX	`# swremove VRTSsapdb`
Linux	`# rpm -e VRTSsapdb`
Solaris	`# pkgrm VRTSsapdb`

Removing the ACC library

Perform the following steps to remove the ACC library.

To remove the ACC library

1   Ensure that all agents that use ACC library are removed.

2   Run the following command to remove the ACC library package.

AIX   # installp -u VRTSacclib.rte

HP-UX   # swremove VRTSacclib

Linux   # rpm -e VRTSacclib

Solaris   # pkgrm VRTSacclib

Upgrading the agent in a VCS environment

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

1   Persistently freeze the service groups that host the application.

    # hagrp -freeze *group* -persistent

2   Stop the cluster services forcibly.

    # hastop -all -force

3   Ensure that the agent operations are stopped on all the nodes.

    # ps -ef |grep SAPMaxDB

4   Uninstall the agent package from all the nodes.

    See "Removing the agent in a VCS environment" on page 24.

5   Install the new agent on all the nodes.

    See "Installing the agent in a VCS environment" on page 23.

6   Copy the new SAPMaxDBTypes.cf file from the agent's sample conf directory,

    VCS 4.x   /etc/VRTSagents/ha/bin/SAPMaxDB

    VCS 5.0   /etc/VRTSvcs/conf/sample_SAPMaxDB

    to the VCS conf directory /etc/VRTSvcs/conf/config.

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

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

---

8 Start the cluster services.

```
# hastart
```

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

```
# haagent -start SAPMaxDB -sys System
```

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

```
# hagrp -unfreeze group -persistent
```

Preparing to configure the agent for SAP MaxDB

This chapter includes the following topics:

About configuring the Veritas agent for SAP MaxDB

After installing the Veritas agent for SAP MaxDB, you must import the agent type configuration file. After importing this file, you can create and configure a SAP MaxDB resource. Before you configure a resource, review the attributes table that describes the resource type and its attributes.

Importing the agent types files in a VCS environment

To use the agent for SAP MaxDB, you must import the agent types file into the cluster.

To import the agent types file using the Veritas Cluster Server graphical user interface

1   Start the Veritas Cluster Manager 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:

VCS 4.x   /etc/VRTSvcs/conf/sample_SAPMaxDB/SAPMaxDBTypes.cf

VCS 5.0   /etc/VRTSagents/ha/conf/SAPMaxDB/SAPMaxDBTypes.cf

4 Click **Import**.

5 Save the VCS configuration.

The SAP MaxDB agent type is now imported to the VCS engine.

You can now create SAP MaxDB resources. For additional information about using the VCS GUI, refer to the *Veritas Cluster Server User's Guide.*

SAP MaxDB agent attributes

SAP MaxDB service is managed within a Veritas Cluster Server (VCS) environment. VCS uses software agents to control software services within a VCS cluster. To allow VCS to monitor and control the MaxDB service effectively, the service is managed with the agent for SAP MaxDB server.

VCS deploys agents to manage all components or resources of the same type. For example, a single Mount agent will be responsible for managing all mounted file systems that are under VCS control.

The agent attributes define the specific details that will be passed from the VCS engine to the agent to uniquely identify the specific resource component that is to be managed.

Table 3-1 lists the attributes are that are passed to the SAPMaxDB agent.

| Table 3-1 | Required Attributes |

Attribute Type and Dimension	Definition
ResLogLevel	String used to set the ResLogLevel of each instance of a resource. This attribute should not be confused with the VCS generic LogLevel type-attribute, which controls the VCS engine log level on a per agent-type basis. The ResLogLevel attribute controls the amount of ACCLib VCS agent framework based logging that is written to the VCS log file on a per resource instance basis. Valid values are: ■ ERROR : Only Error level messages are logged. ■ WARN : Above plus warning level messages are logged. ■ INFO: Above plus informational level messages are logged. This is the default log level. ■ TRACE: Above plus trace level messages are logged. This is very verbose and should only be used during diagnostic operations. Type and dimension: string-scalar Example: "TRACE" Default: "INFO"
EnvFile	Environments file for DBUser to be sourced before starting/stopping the MaxDB database server. Symantec recommends to keep the environments file on shared disk for easy maintenance. Type and dimension: string-scalar Default: " " Example: /home/sqderp/erpdbenv.csh
DBHome	Directory where the MaxDB database software is installed. This directory is needed to find the dbmcli and XServer executables. Type and dimension: string-scalar Default: " " Example: "/sapdb/programs/bin"
DBUser	Operating system user for MaxDB server. This user is responsible for starting and stopping the MaxDB database server. It must always be set to a value. In general this user takes the form sqd<DBName> or <DBName>adm. Type and dimension: string-scalar Default: " " Example: sqderp

Table 3-1	Required Attributes *(continued)*
Attribute Type and Dimension	**Definition**
DBName	Name of the MaxDB instance which contains a maximum of eight alphanumeric characters. Also called MaxDB SID. Only upper case letters are allowed and the first letter must be a character. This attribute is needed to uniquely identify the processes of the MaxDB database. When you use MaxDB with SAP systems the length of the DBName is three alphanumeric characters.
	Type and dimension: string-scalar
	Default: " "
	Example: ERP
DBHost	Description: Virtual hostname of the MaxDB database server.
	Type and dimension: string-scalar
	Default: " "
	Example: saperpdb
DBMUserId String-Scalar	Description: The Database Manager UserId used in the "dbmcli" to connect to the MaxDB database server.
	Type and dimension: string-scalar
	Example: control.
	Default: "control "
DBMPassword	Description: Password for the user <DBMUserId>.
	-store encrypted
	- agent to do decryption appropriately
	Use `vcsencrypt -agent` option to encrypt the password. If you are using VCS GUI to enter password no need to encrypt the password. VCS GUI will automatically encrypt password for you.
	Type and dimension: string-scalar
	Default: " "
	Example: jxpVmxMpkPlpMpnPo

	Table 3-1	Required Attributes *(continued)*

Attribute Type and Dimension	Definition
SecondLevelMonitor	Used to enable second-level monitoring and specify how often it is run. Second-level monitoring is a deeper, more thorough state check of the configured SAP MaxDB instance. The numeric value specifies how often that the second-level monitoring routines are run. Zero (0) means never run the second-level monitoring routines. One (1) would mean to run it every monitor interval. Two (2) means to run the second-level monitoring routines every second monitor interval, and so on.
	Care should be taken when setting this attribute to large numbers. For example, if the MonitorInterval is set to 60 seconds, and the SecondLevelMonitor is set to 100, then the 'dbmcli' command for this attribute would only get executed every 100 minutes, which may not be as often as intended. In order to provide maximum flexibility, the value set is not checked for an upper limit. Thus, you could cause the SecondlevelMonitor command to run once a month, if that is what is desired.
	Type and dimension: integer-scalar
	Default: 0
	Example: 1
MonitorProgram	Description: Full path and file name of an external, user-supplied monitor program. If specified, the monitor entry point will execute this file to perform an additional server state check. There are no restrictions for what actions the external monitor program performs to determine the state of a SAP MaxDB database. The only constraint is that the external monitor program must return one of the following integer values:
	■ 0 (server is online) ■ 110 (server is online) ■ 100 (server is offline) ■ 1 (server is offline) ■ 99 or any thing other than{0,1,110,100}(server state is unknown) ■ Symantec recommends storing the external monitor program on the shared disk directory to ensure the file is always available on the online system. Arguments are supported.
	Type and dimension: string-scalar
	Default: No default value
	Example1:
	/sapdb/data/db/wrk/ERP/mymonitor.sh
	Example2:
	/sapdb/data/db/wrk/ERP/mymonitor.sh arg1 arg2

When you create a database instance, you define the name of the database instance (database name).

The following restrictions apply:

- The maximum length of a database name is 8 characters.

- The database name may only contain characters from the 7-Bit ASCII character set.

- The database name must not begin with an underscore or a period.

- When you create a database instance, the database system automatically changes all lowercase letters in the database name into uppercase letters.

Executing a customized monitoring program

The monitor function can execute a customized monitoring utility to perform an additional SAP MaxDB server state check.

The monitor function executes the utility specified in the MonitorProgram attribute if the following conditions are satisfied:

- The specified utility is a valid executable file.

- The first level process check indicates that the SAP MaxDB instance is online.

- The SecondLevelMonitor attribute is either set to 0 or 1, and the second level check indicates that the SAP MaxDB instance is online.

110 or 0	SAP MaxDB server instance is online
100 or 1	SAP MaxDB server instance is offline
99	SAP MaxDB server instance is unknown
Any other value	SAP MaxDB server instance is unknown

Configuring the service groups for SAP MaxDB

This chapter includes the following topics:

- Configuring service groups for SAP MaxDB Server
- Installing the MaxDB server on first node
- Installing the MaxDB software on second node
- Creating SAP MaxDB resource

Configuring service groups for SAP MaxDB Server

Configuring the service groups for SAP MaxDB server involves the following steps:

- Installing the MaxDB server on first node
- Installing the MaxDB software on second node
- Creating SAP MaxDB resource

Note: For more information on clustering, follow the instructions in SAP note 803452.

Installing the MaxDB server on first node

Install the MaxDB server using SAP provided installation tool SAPInst for the required SAP application.

Complete the following steps:

To install the MaxDB server on first node

1   Start the Database Instance installation for the SAP application using
    SAPINST_USE_HOSTNAME=<Virtual Host Name>.

    Use the following command for starting the installation:

    ```
    sapinst SAPINST_USE_HOSTNAME=<Virtual Host Name>
    ```

    And proceed as per the instructions on the SAP installation GUI for installing
    Database Instance.

2   If you are installing MaxDB database for Standalone use (not with SAP
    applications) install the MaxDB server using SDBINST tool provided with
    SAP MaxDB software.

    For Standalone use install the MaxDB server with SDBINST.

    ```
    SDBINST
    ```

3   Perform all the post-installation steps described in the SAP MaxDB installation
    guide.

Installing the MaxDB software on second node

Install the MaxDB software on the second node with the same MaxDB name used
in installing on the first node.

Complete the following steps:

To install the MaxDB server on second node

1   Create SAP MaxDB database software owner "sdb" user on the system with
    logon permission disabled with same UID as of first node.

2   Create SAP MaxDB database administration group "sdba" on the system with
    same GID as of first node.

3   Create SAP MaxDB user "<DBUser>" with same permissions as on first node
    and with same UID as of first node.

4   Start the MaxDB software installation from the MaxDB media with SDBINST.

5   Setup the X server logon credentials for all SAP users: <DBUser>, control,
    superdba as described in SAP note 39439.

6   Mount the data and log volumes on first node on to second node.

7   Start the MaxDB server.

Creating SAP MaxDB resource

Create SAP MaxDB resource using VCS GUI.

Figure 4-1 shows a sample configuration of VCS resource for the SAP MaxDB
Server.

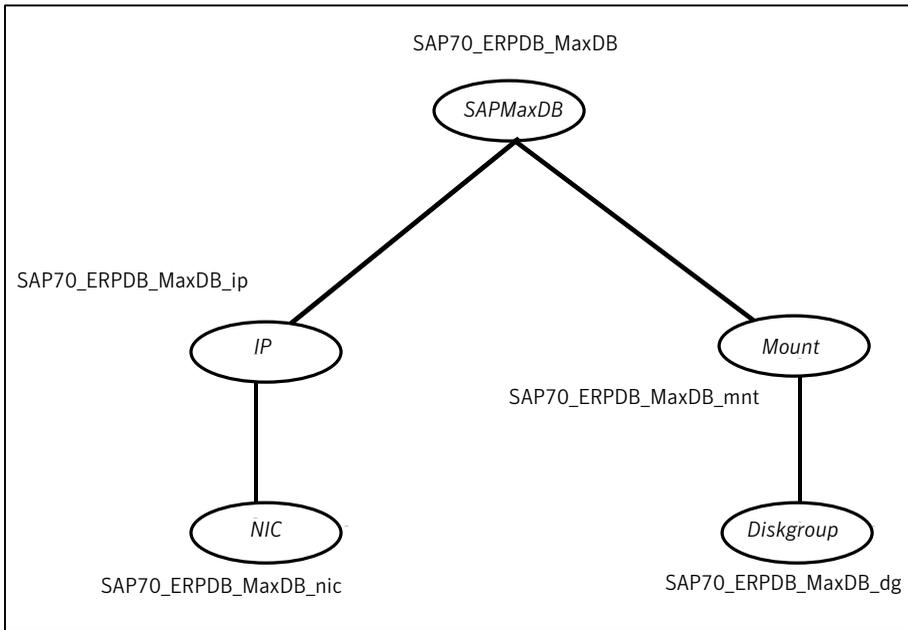**Figure 4-1**   SAP MaxDB service group configuration

Table 4-1 depicts a typical resource configuration for SAPMaxDB.

Table 4-1   SAPMaxDB resource configuration

Attribute	Value
ResLogLevel	INFO
EnvFile	/home/sqderp/saperpdb.csh
DBHome	/sapdb/programs/bin
DBUser	sqderp
DBName	ERP
DBHost	saperpdb

Table 4-1   SAPMaxDB resource configuration *(continued)*

Attribute	Value
DBMUserId	control
DBMPassword	iwoUlwLojOkoLomOn
SecondLevelMonitor	0
MonitorProgram	

Troubleshooting the agent for SAP MaxDB

This chapter includes the following topics:

- Meeting prerequisites
- Starting the SAP MaxDB instance outside a cluster

Meeting prerequisites

Before installing the agent for SAP MaxDB, double check that you meet the prerequisites.

For example, you must install the ACC library on VCS before installing the agent for SAP MaxDB.

See "Before you install the Veritas agent for SAP MaxDB" on page 21.

Starting the SAP MaxDB instance 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 MaxDB instance independent of the cluster framework. Refer to the cluster documentation for information about disabling a resource.

You can then restart the SAP MaxDB 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.

A sample procedure to start a SAP MaxDB instance outside the cluster framework, is illustrated as follows.

To restart the SAP instance outside the cluster framework

1   Log in as superuser.

2   Use the DBUser atribute to log in to the SAP server.

```
# su DBUser
$ USER=DBUser; LOGNAME=DBUser; HOME=/home/DBUser
$ export USER LOGNAME HOME
$ . EnvFile
```

For certain shell versions on AIX, LOGNAME is read-only.

3   Start the SAPMaxDB server instance, using the following command:

```
$ DBHome/dbmcli -d DBName -n DBHost -u DBMUserId,DBMPassword db_online
```

4   Ensure that the SAPMaxDB instance is running successfully by running the grep command for DBName.

For example, for SAPMaxDB server instance ERP run the following command:

```
$ ps -ef | grep ERP
```

The kernel processes run on the system for MaxDB server.

If the SAP MaxDB server instance is running outside the cluster framework, you can attempt to restart the SAP MaxDB server within the cluster framework by enabling the MaxDB cluster resource.

Sample Configurations

This appendix includes the following topics:

- About sample configurations for the agent for SAP MaxDB

- Sample agent type definition For MaxDB

- Sample SAP MaxDB resource configuration for VCS

About sample configurations for the agent for SAP MaxDB

The sample configuration graphically depicts the resource types, resources, and resource dependencies within the service group. Review these dependencies carefully before configuring the agent for SAP MaxDB. For more information about these resource types, see the *Veritas Cluster Server Bundled Agents Reference Guide.*

Sample agent type definition For MaxDB

For VCS 4.1

```
type SAPMaxDB (
    static str ArgList[] = { ResLogLevel, State, IState, EnvFile,
    DBHome, DBUser,     DBName, DBHost, DBMUserId, DBMPassword,
    SecondLevelMonitor,            MonitorProgram }
    str ResLogLevel = "INFO"
    str EnvFile
    str DBHome
    str DBUser
    str DBName
    str DBHost
```

```
    str DBMUserId = "control"
    str DBMPassword
    int SecondLevelMonitor
    str MonitorProgram)
```

For VCS 5.0

```
type SAPMaxDB (
    static str AgentDirectory =   "/opt/VRTSagents/ha/bin/SAPMaxDB"
    static str AgentFile = "/opt/VRTSvcs/bin/Script50Agent"

    static str ArgList[] = { ResLogLevel, State, IState,
    EnvFile, DBHome, DBUser, DBName, DBHost, DBMUserId,
    DBMPassword, SecondLevelMonitor, MonitorProgram }
    str ResLogLevel = "INFO"
    str EnvFile
    str DBHome
    str DBUser
    str DBName
    str DBHost
    str DBMUserId = "control"
    str DBMPassword
    int SecondLevelMonitor
    str MonitorProgram
    )
```

Sample SAP MaxDB resource configuration for VCS

A sample resource configuration for SAP MaxDB is as follows:

```
SAPMaxDB Resource_MaxDB (
    ResLogLevel     = INFO
    EnvFile      = /home/sqderp/erpdbenv.csh
    DBHome     = /sapdb/programs/bin
    DBUser      = sqderp
    DBName     = ERP
    DBHost      = saperpdb
    DBMUserId     = control
    DBMPassword     = xdfaasaskfaasei
    SecondLevelMonitor   = 0
    MonitorProgram    = /sapdb/data/wrk/ERP/mymonitor.sh
    )
```

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