

Application Note: Deployment and Administration of Veritas Storage Plug-in for OEM

AIX, Linux, Solaris

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Overview of the Veritas Storage plug-in for Oracle Enterprise Manager

This chapter includes the following topics:

- [About Veritas Storage plug-in for Oracle Enterprise Manager](#)

About Veritas Storage plug-in for Oracle Enterprise Manager

Veritas Storage plug-in provides a graphical interface to efficiently manage and view your InfoScale storage and InfoScale cluster objects through Oracle Enterprise Manager (OEM) 12c and 13c.

The Veritas Storage plug-in was designed to monitor and manage the spectrum of various database objects. The plug-in provides ease-of-navigation by letting you toggle between objects and InfoScale solutions.

The Veritas Storage plug-in functionality is broadly categorized into the following tabs:

- The **SmartIO** tab provides a gateway to manage the objects that use the SmartIO feature, which is an advanced caching solution.
- You can use the **Snapshot** tab to apply the point-in-time copy technologies of SFDB to the selected database objects, such as datafiles and tablespaces.
- The **Cluster** tab extracts various configuration-specific information from the Cluster Server component and displays them in a tabular format.

See [“Getting started with the Veritas Storage plug-in ”](#) on page 11.

Deploying the Veritas Storage plug-in with OEM

This chapter includes the following topics:

- [Requirements for Veritas Storage plug-in](#)
- [Deploying the Veritas Storage plug-in](#)
- [Undeploying the Veritas Storage plug-in](#)

Requirements for Veritas Storage plug-in

Veritas Storage plug-in operates with the Veritas InfoScale 7.x product suites.

InfoScale 7.x product requirements are included in:

- *Veritas Infoscale Availability Release Notes*
- *Veritas Infoscale Enterprise Release Notes*

Hardware requirements

There are no specific hardware requirements or limitations for the Veritas Storage plug-in.

Consult the installation requirements in the documentation for your SF and SFHA product.

Software requirements

There are no specific software requirements or limitations for the Veritas Storage plug-in.

For information on the supported database versions, refer to the Software Compatibility List (SCL) for your InfoScale product version. To locate the latest SCLs, visit:

https://www.veritas.com/content/support/en_US/DocumentLanding.html

For information on certified Oracle database versions, see the following technical note:

https://www.veritas.com/content/support/en_US/doc/112632971-112632974-1

Note: It is possible that an Oracle version listed in the SCL is not present in the support matrix. This is because the support matrix is updated for Oracle versions only after completion of the required Oracle certifications. The certification process usually take a few months to complete after the product release.

Prerequisites

Before deploying the Veritas Storage plug-in, make sure that the following prerequisites are met:

- Oracle Enterprise Manager 12c Cloud Control Release 4 or higher is deployed.
- The host has at least one Oracle database up and running, and the operating system user who started the OEM agent process on the host is able to connect to the Oracle database on the system.
- The SFAE daemon is enabled and running.
- To perform SmartIO-specific operations, make sure that the SmartIO cache is created and available on the plug-in host.

For more information on the SmartIO feature, see the *Veritas InfoScale Solutions SmartIO for Solid State Drives Solutions Guide*.

Deploying the Veritas Storage plug-in

You can use the graphical or script-based installer to deploy Veritas Storage plug-in.

For instructions on deploying the graphical installer, refer to the Oracle Enterprise Manager documentation.

To deploy the Veritas Storage plug-in using the CLI

- 1 Make sure the Enterprise Manager Command Line Interface (EMCLI) is installed on the driver node.

For more information on installing emcli, see the Oracle EMCLI documentation.

- 2 Download the Veritas Storage plug-in.

3 Copy the plug-in archive to temp location.

For example:

```
# scp /tmp/12.1.0.1.0_veritas.storage.xsfh_2000_0.opar\  
oracle@testbox:/tmp
```

4 Import the plug-in locally to the Oracle Management Server (OMS) host. You can import from any host that has an emcli client installed.

For example:

```
# emcli import_update -file=/tmp/ \  
12.1.0.1.0_veritas.storage.xsfh_2000_0.opar -omslocal
```

5 Deploy the plug-in on OMS using the following command:

```
# emcli deploy_plugin_on_server -plugin=veritas.storage.xsfh:\ \  
12.1.0.1.0 -sys_password=systemPassword
```

For example:

```
# emcli deploy_plugin_on_server -plugin=veritas.storage.xsfh:\ \  
12.1.0.1.0 -sys_password=oracle12c
```

6 Deploy the plug-in on the OEM agent using the following command:

```
# emcli deploy_plugin_on_agent -plugin=veritas.storage.xsfh:\ \  
12.1.0.1.0 -agent_names=systemRunningOEMAgent:agentPort
```

7 Add a new target using the following command:

```
# emcli add_target -name=targetName -type=veritas_storage \  
-host=systemRunningOEMAgent
```

For example:

```
# emcli add_target -name=VrtsStorage -type=veritas_storage \  
-host=dblxx64-3-vip2.samgpub.veritas.com
```

Your target gets listed in the OEM graphical interface.

8 Set the **Preferred Credentials** for the Oracle user in OEM.

Undeploying the Veritas Storage plug-in

You can undeploy or uninstall the Veritas Storage plug-in using the script-based installer.

To undeploy the Veritas Storage plug-in

- 1 Delete the target and undeploy the plug-in from Management Agent using the following command:

```
# emcli undeploy_plugin_from_agent -plugin=veritas.storage.xsfh:\
12.1.0.1.0 -agent_names=agentName1:agentPort1;agentName2:agentPort2\
-delete_targets
```

- 2 Undeploy the plug-in from Management Server using the following command:

```
# emcli undeploy_plugin_from_server -plugin=veritas.storage.xsfh \
-sys_password=systemPassword
```

Administering the Veritas Storage plug-in for OEM

This chapter includes the following topics:

- [Accessing the Veritas Storage plug-in](#)
- [Getting started with the Veritas Storage plug-in](#)
- [Adding or removing databases](#)
- [Working with the SmartIO tab](#)
- [Working with the Snapshot tab](#)
- [Working with the Cluster tab](#)
- [Limitations of the Veritas Storage plug-in](#)

Accessing the Veritas Storage plug-in

You can access the Veritas Storage plug-in through the Oracle Enterprise Manager.

To access the Veritas Storage plug-in

- 1 Log in to Oracle Enterprise Manager.
- 2 Select **Targets > All Targets**.
- 3 Select the target with type as **Veritas Storage**.

The Veritas Storage plug-in home page opens.

Getting started with the Veritas Storage plug-in

You can launch the Veritas Storage plug-in from the Oracle Enterprise Manager window. The Veritas Storage plug-in home page has three tabs that enable you to perform operations related to SmartIO feature, SFDB tools, and Cluster Server (VCS). Each tab opens a feature-specific view with associated sub-tabs and the drop-down list that lets you perform operations on the selected data objects.

Figure 3-1 Veritas Storage plug-in home page

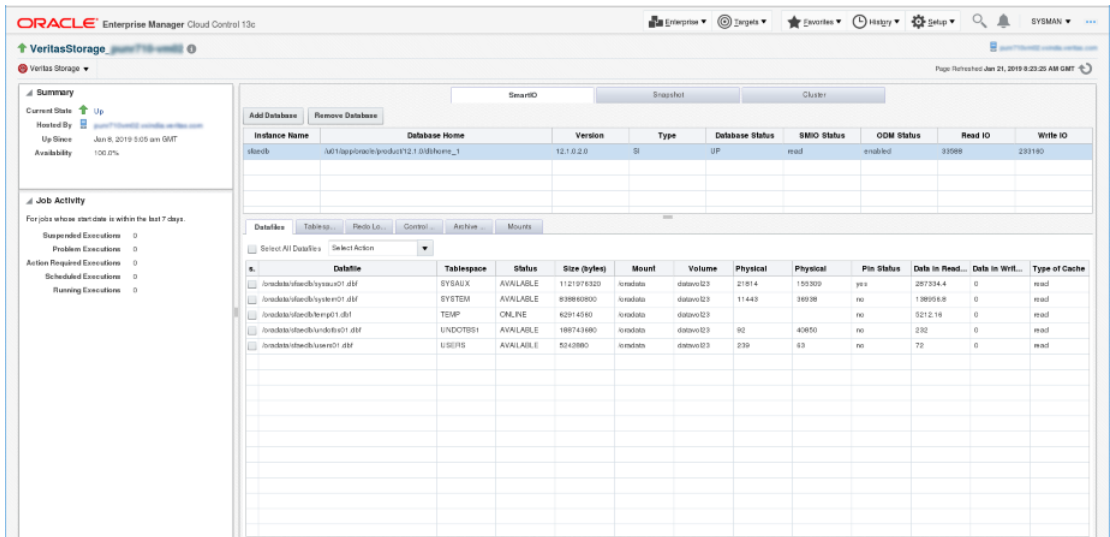


Table 3-1 Elements of the Veritas Storage plug-in home page

Label	Element	Description
1	Summary and Job Activity pane	Provides the summary details of the Veritas Storage plug-in, and the operations performed by the plug-in.
2	SmartIO, Snapshot, Cluster tabs	Opens a view containing the associated data objects, operation menu, and the corresponding details.
3	Database pane	Lets you add or remove a database managed by the Veritas Storage plug-in. The database table shows the registered database details.

Table 3-1 Elements of the Veritas Storage plug-in home page (*continued*)

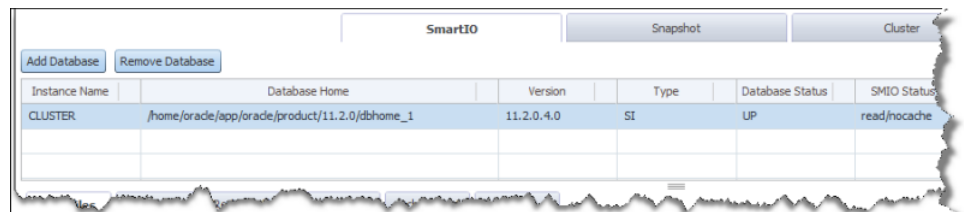
Label	Element	Description
4	Details pane	Lists the corresponding data objects and actions pertinent to the selected tab.

Adding or removing databases

For Veritas Storage plug-in to manage a database, you must register the database with the plug-in. If required, you can also unregister the database from the plug-in.

You can register or unregister a database from the **SmartIO**, **Snapshot**, and **Cluster** tab.

Figure 3-2 shows the **Add Database** and **Remove Database** button along with the database table.

Figure 3-2 Add and remove database


To register a database

- 1 On the Veritas Storage plug-in page, click **Add Database**.
- 2 In the **Add New Database** window, specify a value in the **Instance Name** field.
- 3 Specify a value in the **Database Home** field.
- 4 Click **Next**.
- 5 Click **Finish**.

To remove a database

- 1 On the Veritas Storage plug-in page, select the database from the table.
- 2 Click **Remove Database**.

Working with the SmartIO tab

Veritas Storage plug-in is integrated with OEM to provide an optimized mechanism that enables the host running Veritas Storage Foundation or Veritas InfoScale to use the SmartIO feature.

Figure 3-3 shows the tabs available under the **SmartIO** tab.

Figure 3-3 SmartIO tab

Tablename	Status	Size	Mount	Volume	Physical	Physical	Pin	Data in read cache	Data in write cache	Cache type
/data/sfaedb/sysaux	SYSAUX	189792256	/data	datavol	4506	106891	no	304	0	read
/data/sfaedb/system	SYSTEM	796917760	/data	datavol	2236	2983	no	6307.84	0	read
/data/sfaedb/temp0	TEMP	112197632	/data	datavol			no	496	0	read
/data/sfaedb/undott	UNDOTBS1	471859200	/data	datavol	48	18877	no	8	0	read
/data/sfaedb/undotbs02.dbf	UNDOTBS2	121503744	/data	datavol	19	18	no	8	0	read
/data/sfaedb/users01.dbf	USERS	5242880	/data	datavol	19	18	no	8	0	read

To use the SmartIO feature from the plug-in, you need to configure the database objects from the **SmartIO** tab.

Table 3-2 describes the tabs in the **SmartIO** tab.

Table 3-2 SmartIO-specific tabs

Tab	Description
Datafile	Displays the datafile information such as datafile name, tablespace, status, mount, volume, physical, pin status, data in read cache, data in write cache, and cache type.
Tablespaces	Displays the individual tablespace information such as tablespace name, mount, volume, number of physical reads, number of physical writes, pin status, data in read cache, data in write cache, and cache type.
Redo Log Files	Displays the redo log details such as redo log file name, status, size, mount, volume, pin status, data in read cache, data in write cache, and cache type.
Control Files	Displays the control file details such as name, status, size, mount, volume, and disk group.

Table 3-2 SmartIO-specific tabs (*continued*)

Tab	Description
Archive Dest	Displays the archive destination details such as archive log destination path, status, mount, mount options, volume, and disk group.
Mount	Displays the mounts used by the database such as type, volume layout, volume, file system, usage, LUN/disk, disk group, cache type, cache size, and FSS disk group.

For the tablespaces and datafiles, select the object from the table, and select the appropriate operation.

[Table 3-3](#) describes the operations that can be performed on the tablespace and datafile

Table 3-3 SmartIO-specific operations

Operation	Description
Pin to Cache	Pins the selected database objects to the SmartIO cache area.
Unpin from Cache	Unpins the selected database objects from the SmartIO cache area.
Enable Read Cache	Enables the database objects to participate in the read cache area.
Enable Writeback Cache	Enables the database objects to participate write-back cache area.
Disable Cache	Disables the database objects from participating in the cache area.

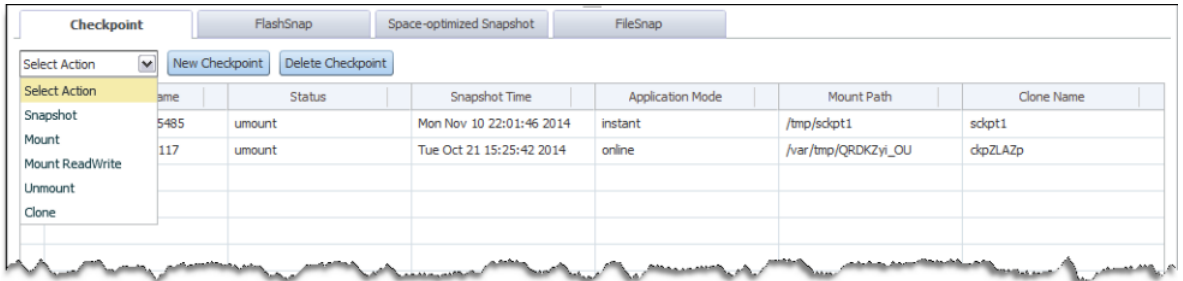
For more information on the SmartIO feature, see the *Veritas InfoScale Solutions SmartIO for Solid State Drives Solutions Guide*.

Working with the Snapshot tab

The Veritas Storage plug-in assists you in using the SFDB feature that is to create point-in-time copies (Storage Checkpoint, Database FlashSnap, Space-optimized Snapshot, and FileSnap) of an Oracle database. In addition, you can perform mount, clone, unmount, and other operations for the database.

Figure 3-4 shows the tabs that are available in the **Snapshot** tab.

Figure 3-4 Snapshot tab



For more details on the SFDB features, see *Veritas InfoScale Storage and Availability Management for Oracle Databases*.

Before proceeding with the operations, ensure that you select the **Checkpoint**, **Flashsnap**, **Space-optimized Snapshot**, or **Filesnap** tab and the relevant configuration.

Note: Use the New button, to create a fresh configuration. To delete an existing configuration, use the Delete button from the solution tab. For example, to create new filesnap, click **New Filesnap**.

Table 3-4 describes the operations that can be performed based on the selected solutions.

Table 3-4 Snapshot operations and solutions

Operation	Description	Solutions
Mount	Mounts the component on the file system.	<ul style="list-style-type: none"> ■ Checkpoint ■ FlashSnap ■ Space-optimized Snapshot
Mount ReadWrite	Mounts the component in the read-write mode.	Checkpoint
Unmount	Unmounts the component from the file system	<ul style="list-style-type: none"> ■ Checkpoint ■ FlashSnap ■ Space-optimized Snapshot

Table 3-4 Snapshot operations and solutions (*continued*)

Operation	Description	Solutions
Clone	Clones the component.	<ul style="list-style-type: none"> ■ Checkpoint ■ FlashSnap ■ Space-optimized Snapshot, FileSnap
Validate	Validates the component to ensure that the solution is applied.	<ul style="list-style-type: none"> ■ FlashSnap ■ Space-optimized Snapshot
Snapshot	Takes a snapshot of the component.	<ul style="list-style-type: none"> ■ FlashSnap ■ Space-optimized Snapshot
Resync	Resynchronize the component to implement the solutions.	FlashSnap

For more information on creating point-in-time copies of an Oracle database, see the *Veritas InfoScale Storage and Availability Management for Oracle Databases*.

Configuration parameters

[Table 3-5](#) lists the Snapshot configuration parameters that can be provided using the Veritas Storage plug-in.

Table 3-5 Configuration parameters

Parameter	Description
Application Mode	The mode of the application when the snapshot operation is being performed.
Clone name	The name of the application instance that is created during the clone operation.
Clone path	The path to which the clone files are mounted.
PFILE_MOD Filename	The location of the file in the Oracle pfile format that is used to modify initialization parameters for the clone instance.
Snapshot Removable	A parameter to specify whether a removable or a non-removable storage checkpoint is being created.

Table 3-5 Configuration parameters (*continued*)

Parameter	Description
Snapshot Archive Log	If this parameter is set, the snapshot operation is also performed on the archive log volumes
Archivelog destination	The full path of the archive logs. There are several archive log destinations that can be used for database recovery if you are multiplexing the archive logs. You must specify which archive log destination to use.
Secondary Host	The host on which the snapshot can be mounted and the application can be cloned.
Snapshot Plex Tag	The value of the putil2 attribute tag for the plexes that must be a part of the snapshot.
Snapshot Volume Prefix	Specifies the snapshot volume prefix. Use this variable to specify a prefix for the snapshot volumes split from the primary disk group. A volume name cannot be more than 32 characters. You should consider the length of the volume name when assigning the prefix.
Snapshot Diskgroup Prefix	The name of the prefix attached to the disk group name. A snapshot disk group's name is a concatenation of SNAPSHOT_DG_PREFIX and the corresponding primary dg name. Its default value will be "SNAP_". The snapshot volumes will be put into this disk group on the primary host and deported. The secondary host will import this disk group to start a clone database.
Number of Snapshot Mirrors	The number of mirrors that need to be broken off to form the snapshot volumes.
Mapped Mounts	The paths where the snapshot volumes should be mounted. Format: <dg-name>:<volume-name>=<full-path>

Table 3-5 Configuration parameters (*continued*)

Parameter	Description
Extra Objects	The list of additional objects that must be included in the snapshot disk groups. Examples of additional objects: volumes, volume sets. Format should be like: <dg-name>:<extra-object-name>
Cache Objects	The name of the cache object, which is used to create Space Optimized Snapshots.
Source Snapshot	The name of the FlashSnap configuration that must be used as a golden image for space-optimized snapshots.

Working with the Cluster tab

The **Cluster** tab provides a tabular view manifesting cluster-specific information. The tab contains individual tables representing cluster, node, listener, privnic, and Oracle database instance information.

Figure 3-5 shows the tables in the **Cluster** tab.

Figure 3-5 Cluster tab

The screenshot displays the 'Cluster tab' interface with the following sections:

- Cluster Details:**
 - Cluster Name: hjgr
 - Fencing Mode: SCSI3
- HA Configuration:**

Resource	Service Group	Host	SID	Home	Detail Monitor	Resource State
ora_res	ora_grp	racqa04-1	newdb4	/u02/dbbase/dbhome	NOVAL	ONLINE
ora_res	ora_grp	racqa02-1	newdb2	/u02/dbbase/dbhome	NOVAL	ONLINE
ora_res	ora_grp	racqa01-1	newdb1	/u02/dbbase/dbhome	NOVAL	ONLINE
ora_res	ora_grp	racqa03-1	newdb3	/u02/dbbase/dbhome	NOVAL	ONLINE
- Node Configuration:**

Node	Node ID	State
racqa04-1	3	RUNNING
racqa02-1	1	RUNNING
racqa01-1	0	RUNNING
racqa03-1	2	RUNNING
- Listener Configuration:**

Listener	Node	Virtual IP
LISTENER2	racqa01-1	NOVAL
LISTENER2	racqa04-1	NOVAL
LISTENER2	racqa03-1	NOVAL
LISTENER2	racqa02-1	NOVAL
- Privnic Configuration:**

Node	Private IP	Device
racqa02-1	192.168.12.2	en1
racqa01-1	192.168.12.1	en1
racqa03-1	192.168.12.3	en2
racqa01-1	192.168.12.1	en2

**If you do not see any data on this page, please make sure that you have a VCS user session running. Please refer to plug-in documentation for more information.

Table 3-6 Tables and description

Table	Description
Cluster	Displays the cluster name and I/O Fencing state.
Node	Displays the node name, node ID, and node state.
Listener	Displays the listener resource name, nodes on which the resource exists, and VIP used for the listener.
Privnic	Displays the ID of the device on which the privnic is configured, devices on which the privnic is configured, the nodes on which the privnic resource exists, and the private IP used.
Oracle DB instance	Displays the Oracle resource name, service group name, the nodes on which the resource exists, the SID for the DB on the node, the Oracle Home for the database on the node, usage status of the DetailMonitoring, and the state of the resource on every node.

Veritas Storage plug-in uses the Cluster Server (VCS) commands to extract information on the target server. Thus, to use the VCS commands, the Oracle user on the target server should be authorized to run the VCS commands.

To authorize the Oracle user

- 1 If a VCS user does not exist, create a VCS user.
 - On the target server, log in as a superuser, and create a VCS user with guest privileges.

```
# hauser -add username
```

- 2 Create an active VCS session.

- On the target server, log in as an Oracle user, and authorize the Oracle user to use the VCS commands.

```
$ halogin username
```

Limitations of the Veritas Storage plug-in

Veritas Storage plug-in has the following limitations:

- The VxVM SmartIO feature is not supported.
- Writeback cache for RAC environment is not supported.
- Operations on a cloned FileSnap are not supported from the graphical interface of the plug-in. To perform these operations use the CLI (vxsfadm).
- If a cache area is not created then the **Pin status** and **Type of cache** displays the value as non-vxfs even for VxFS file systems.
- Information for a database on the standby site is not displayed when the **standby_archive_dest** and **log_archive_dest_n** parameters are specified, and the values are same.
- In a dataguard setup, on the primary site, an extra row is displayed for the **Mount** tab, and the arch dest tab which is non-vxfs. You can ignore this extra row.
- The **DetailMonitoring** column in the **Cluster** tab displays incorrect information when the **LevelTwoMonitoringFrequency** attribute is set only at type level and not at resource level.
- While performing SmartIO operations on multiple database objects you may observe an error message similar to:

```
RemoteOperationException: ERROR: input param is too long for CORE stdin
```

To avoid this issue, retry the operation after selecting less number of database objects.

- The storage plug-in generates debug logs in the `/var/vx/vxdba/logs` directory even when the vxsfadm operations are not performed using the plug-in. To recover from this issue, remove the debug log files manually or use cron job.

Troubleshooting issues with the Veritas Storage plug-in for OEM

This chapter includes the following topics:

- [The Veritas Storage plug-in reports an error due to the missing preferred credentials](#)
- [The plug-in fails to perform SmartIO-specific operations](#)
- [The enable write-back cache operation fails with an error message](#)
- [Execution status of Snapshot operations](#)
- [Metric collection](#)
- [About the vxdbd daemon](#)

The Veritas Storage plug-in reports an error due to the missing preferred credentials

The plug-in reports the following error message when the preferred credentials are not set:

```
Error attempting to locate default host credentials for target  
No Preferred credentials set
```

To set the preferred credentials

- 1 On the **Veritas Storage plug-in** page, click **Setup > Security > Preferred Credentials**.
- 2 Click **Manage Preferred Credentials** and set the appropriate credentials.
For more information about setting credentials, see the Oracle documentation.

The plug-in fails to perform SmartIO-specific operations

You may observe this issue when a cache area is unavailable on the plug-in host.

To resolve the issue

- 1 Log in as a root user on the plug-in host.
- 2 Validate if the specified cache is available in the cache area using the following command:

```
# sfcache list
```

- 3 If the cache is not listed, then create a new cache using the following command:

```
# sfcache create dg/vol
```

For more information on the SmartIO feature, see the *Veritas InfoScale Solutions SmartIO for Solid State Drives Solutions Guide*.

The enable write-back cache operation fails with an error message

The plug-in reports an error resembling to the following message:

```
Failed to set caching mode to filename:Operation not supported
```

Make sure that the file system is mounted with the SmartIO write-back mount option.

To remount the file system

- 1 Log in as root.
- 2 Run the following command:

```
# mount -t vxfs -o smartiomode=writeback,remount mount point
```

Execution status of Snapshot operations

From the Veritas Storage plug-in's graphical interface, you can check the execution status of the snapshot operations.

To view the execution status

Use one the following procedures

- 1 On the **Veritas Storage pug-in** page, in the **Job Activity** page, click the **Problem Executions** value.
- 2 On the **Veritas Storage pug-in** page, click **Enterprise > Job > Activity**.

Metric collection

In the plug-in interface, if the tables are empty, confirm that the metric values are extracted for the plug-in.

The plug-in has a set of pre-defined metrics.

To view the configuration details

- 1 On the **Veritas Storage pug-in** page > **Veritas Storage > Monitoring > All Metrics**.
- 2 On the **All Metrics** page, click the appropriate metric configuration.

About the vxdbd daemon

The SFDB commands are run as the DBA user. DBA users need to perform several operations, such as creating snapshots and mounting file systems, as the root user. The vxdbd daemon is used by the SFDB commands to run privileged commands, or when communicating with the SFDB repository on a different host.

The Veritas Storage plug-in requires the daemon to be up and running.

To view the vxdbd status

- 1 Log in as root.
- 2 Run the command:

```
# /opt/VRTS/bin/sfae_config status
```

- 3 If the vxdbd daemon is not running, start it using the following command:

```
# /opt/VRTS/bin/sfae_config enable
```

For more information about the vxdbd daemon, see the *Veritas InfoScale Storage and Availability Management for Oracle Databases*.