VERITAS

InfoScale Availability Technology Track Test Cases Guide for Replication Agents

Veritas™ Technology Partner Program (VTPP)

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Table of Contents

About VTPP-enabled agents

The Veritas Technology Partner Program (VTPP) allows technology partners to create custom agents for InfoScale Availability, formerly known as Cluster Server (VCS). The acronym VCS is still used for familiarity. Veritas assists partners to develop custom agents using SDKs provided by the InfoScale Availability Technology Track. These custom agents are tested, validated, certified, and integrated with the InfoScale Availability agents on the Veritas Services and Operations Readiness Tools (SORT) site.

For more information about VTPP, refer to the *InfoScale Availability Technology Track Welcome Kit*.

For more information about developing the agents, refer to the *Cluster Server Agent Developer's Guide*.

Note: After you run the test cases, use the SORT Data Collector to gather the logs that you can then share with Veritas. For more information, refer to the following article:
https://www.veritas.com/support/en_US/article.000081310

About Veritas test cases for VTPP-enabled agents

Partners develop custom InfoScale Availability agents, and Veritas provides generic test cases to test those VTPP-enabled agents. Partners test the agents using self-test tools and Veritas-provided generic test cases. Veritas validates the test results and certifies the custom agent. The test cases contain a set of test inputs, execution conditions, and expected results that aid in verifying the compliance of the agent with Veritas standards. The test cases describe all the conditions that partners must implement to verify that the agents meet the requirements of a High Availability (HA) validation solution.

For more information about testing an agent, refer to the *Cluster Server Agent Developer's Guide*.

Agent installation and configuration test case

This test case is used to verify that the agent binaries are correctly installed and configured and that the resource type is correctly imported.

Note: Before testing an agent, ensure that you have built, installed, and configured the agent.

Table 1: Agent installation and configuration test case

Test case description	Precondition	Action	Expected result

Verification of agent installation and configuration	The agent is built, installed, and configured on the system.	1. Verify that the type definition file is present.
		`#ls -l <path to type definition file>`
		2. Verify that the type definition file is included in the main.cf file.
		`# grep include /etc/VRTSvcs/conf/config/main.cf`
		3. Verify that the agent type is imported on the system.
		`#hatype -display <agentname>`
		4. Verify that all files of the agent are present on the system and are assigned the required permissions.
		`# ls -lR <path to agent directory>`
		5. Verify that the agent is running.
		`#haagent -display <agentname>`
			▪ The type definition file must be present.
			▪ The `hatype -display` command should display the agent attributes.
			▪ All files of the agent present on the system should have the read and execute permissions for the root user.
			▪ The `haagent -display` command should display the status of the agent that is running.

Entry point test cases

The entry point test cases assume that the following items are installed and configured on the target cluster node:

- InfoScale Availability (formerly VCS) or InfoScale Enterprise (formerly SFHA or SFW HA)
- The InfoScale Availability agent package for the application

Ensure that replication is configured between the cluster nodes at the primary and secondary sites.

Online entry point test cases

Table 2: Online entry point test cases

Test case description	Precondition	Action	Expected result
Online operation on a properly configured resource at Primary site.	▪ Each resource attribute is set to a proper value. ▪ The replication is configured and it is in healthy state. ▪ The devices under replication are write-enabled and the state of the resource is offline.	1. Bring the resource online using VCS. 2. Verify that the replication is fully functional.	▪ The VCS resource should come online. ▪ The VCS logs should not display any error or any warning messages. ▪ The agent should log a message that devices under replication are write-enabled. ▪ The replication status command, if any, outside the VCS should report the replication is running.

Table 2: Online entry point test cases

Test case description	Precondition	Action	Expected result
Online operation on a properly configured resource at Secondary site and Primary site is available.	▪ Each resource attribute is set to a proper value. ▪ The replication is configured and it is in healthy state. ▪ The devices under replication are read only and the state of the resource is offline.	1. Bring the resource online using VCS. 2. Verify that the replication is fully functional.	▪ The VCS resource should come online. ▪ The VCS logs should not display any error or any warning messages. ▪ The replication direction is reversed. Secondary becomes Primary. ▪ The replication status command, if any, outside the VCS should report the replication is running and replication direction is reversed and devices are write-enabled.

Table 2: Online entry point test cases

Test case description	Precondition	Action	Expected result
Online operation on a properly configured resource at Secondary site and Primary site is down.	▪ Each resource attribute is set to a proper value. ▪ The replication is configured and is in healthy state and the state of the resource is offline.	1. Bring the resource online using VCS. 2. Verify that the replication is fully functional.	▪ The VCS resource should come online. ▪ The VCS logs should not display any error or any warning messages. ▪ The replication is broken and Secondary becomes Primary. ▪ The replication status command, if any, outside the VCS should report the replication is broken.
Online operation on a resource with an invalid agent attribute value.	▪ One of the resource attributes is set to an invalid value. ▪ The replication is properly configured, and the state of the resource is offline.	1. Bring the resource online using VCS. 2. Repeat the test case with other attributes of the resource. 3. Repeat the test case on remote replication site.	▪ The VCS resource should move to the UNKNOWN state. ▪ The VCS logs should display appropriate error or warning messages.
Online operation on a resource when the required agent attributes for online are missing.	▪ One of the required resource attributes is not set to any value. ▪ The replication is properly configured, and the state of the resource is offline.	1. Bring the resource online using VCS. 2. Repeat the test case with other attributes of the resource. 3. Repeat the test case on remote replication site.	▪ The VCS resource should move to the UNKNOWN state. ▪ The VCS logs should display appropriate error or warning messages.

Table 2: Online entry point test cases

Test case description	Precondition	Action	Expected result
Online operation on a resource using all supported shells.	▪ Each resource attribute is set to a proper value. ▪ The replication is properly configured, and the state of the resource is offline.	1. Set the default shell to one of the supported shells. 2. Bring the resource online using VCS. 3. Verify that the replication is fully functional. 4. Repeat the test case with other supported shells. 5. Repeat the test case on remote replication site.	▪ The VCS resource should come online. ▪ The VCS logs should not display any error or any warning messages.
Online operation on a resource where replication is not in healthy state.	Each resource attribute is set to a proper value.	1. Verify that the replication is not in healthy state. 2. Bring the resource online using VCS. 3. Verify that the replication resource comes online.	▪ On Primary the agent should log error message, bring the resource ONLINE, and ensure theat devices are write-enabled. ▪ On Secondary the agent should log messages that the replication is in error state and the resource is declared as FAULTED.

Offline entry point test cases

Table 3: Offline entry point test cases

Test case description	Precondition	Action	Expected result
Offline operation on a fully configured resource.	Each resource attribute is set to a proper value.	1. Bring the resource online. 2. Once VCS detects the resource as online, take the resource offline using VCS. 3. Verify that the resource state is offline. 4. Bring the resource online using VCS and verify whether the replication is functioning properly.	▪ The VCS resource should report offline. ▪ The VCS logs should not display any error or any warning messages. ▪ Once the resource is brought online, the replication should be fully functional.
Offline operation on a resource using all supported shells.	▪ Each resource attribute is set to a proper value. ▪ Replication resource state is offline.	1. Set the default shell to one of the supported shells. 2. Bring the resource online using VCS. 3. Verify that the replication is fully functional. 4. Repeat the test with other supported shells. 5. Repeat the test case on remote replication site.	▪ The VCS resource should report offline. ▪ The VCS logs should not display any error or any warning messages.

Monitor entry point test cases

Table 4: Monitor entry point test cases

Test case description	Precondition	Action	Expected result
Monitor operation on an online resource.	Each resource attribute is set to a proper value.	1. Bring the resource online using VCS. 2. Probe the resource and verify that the resource state is reported online. 3. Verify that the replication is fully functional.	▪ The VCS resource should report online. ▪ The VCS logs should not display any error or any warning messages.
Monitor operation on a manually started replication.	Each resource attribute is set to a proper value.	1. Start the replication manually. 2. Probe the resource and verify that the resource state is reported online. 3. Verify that the replication is fully functional and devices are write-enabled.	▪ The VCS resource should report online. ▪ The VCS logs should not display any error or any warning messages.

Table 4: Monitor entry point test cases

Test case description	Precondition	Action	Expected result
Monitor operation on an offline resource.	Each resource attribute is set to a proper value.	1. Bring the resource online using VCS. 2. Verify that the resource state is reported online. 3. Take the resource offline using VCS. 4. Verify that the replication is stopped completely and no traces are left behind. 5. Probe the resource and verify that the resource state is reported offline.	▪ On the Primary site, devices are write-enabled and replication is fully functional. The Monitor should report resource as online. ▪ The VCS logs should not display any error or any warning messages.
Monitor operation for an online VCS resource and the state of replication devices is changed to read-only outside the VCS control.	Each resource attribute is set to a proper value.	1. Bring the resource online using VCS. 2. Verify that the resource state is reported online. 3. Change the state of replication devices to read-only outside the VCS control. 4. Verify that the monitor program detects the replication status and resource faults. 5. Repeat the test with all possible ways of failure injection to the replication.	▪ The resource should move to the FAULTED state. ▪ The agent should log the unexpected replication failure messages in the VCS logs. ▪ If the Critical attribute is set to 1 for the replication resource, the resource should come online on the remote cluster.

Table 4: Monitor entry point test cases

Test case description	Precondition	Action	Expected result
Monitor operation on a resource with an invalid agent attribute value.	▪ The replication is cleanly stopped, no traces are left behind, and the state of the resource is offline. ▪ One of the resource attributes is set to an invalid value.	1. Probe the resource. 2. Repeat the test case with other attributes of the resource.	▪ The resource should report STATE UNKNOWN for mandatory attribute and OFFLINE for optional attribute. ▪ The agent should log the error or warning messages in the VCS logs.
Monitor operation on a resource when the required agent attributes are missing for an online resource.	▪ The replication is fully functional and the state of the resource is online. ▪ One of the resource attribute values is missing.	1. Probe the resource. 2. Repeat the test case with other attributes of the resource.	▪ The resource should report STATE UNKNOWN. ▪ The agent should log the error messages in the VCS logs.

Table 4: Monitor entry point test cases

Test case description	Precondition	Action	Expected result
Monitor operation on a resource using all supported shells.	▪ Each resource attribute is set to a proper value. ▪ The replication is cleanly stopped, no traces are left behind, and the state of the resource is offline.	1. Set the default shell to one of the supported shells. 2. Bring the resource online using VCS. 3. Verify that the replication is fully functional and VCS detects the state as online. 4. Take the resource offline using VCS. 5. Probe the resource and verify that VCS detects the state as offline. 6. Repeat the test with other supported shells.	▪ The resource should report as offline. ▪ The VCS logs should not display any error or any warning messages.

Clean entry point test cases

Table 5: Clean entry point test cases

Test case description	Precondition	Action	Expected result
Clean operation on a resource when the replication has error.	Each resource attribute is set to a proper value.	1. Bring the resource online using VCS. 2. Verify that the resource state is reported online. 3. Bring replication in error state by injecting failure manually. 4. Repeat the test with all possible ways of failure injection to replication.	The monitor program detects the replication status, clean program succeeds, and the resource faults.
Clean operation for all possible causes such as online ineffective, offline ineffective, and monitor timeout.	Each resource attribute is set to a proper value.	Simulate the online ineffective, offline ineffective, and monitor timeout use cases.	The clean program succeeds.

Switchover and failover test cases

Table 6: Switchover and failover test cases

Test case description	Precondition	Action	Expected result
Manual switchover of a service group.	Each resource attribute is set to a proper value.	1. Bring the service group online on one node. 2. Perform switch operation of service group to another node using the `hagrp -switch` command.	▪ The service group should come online on the other node in the cluster. ▪ The VCS logs should not display any error or any warning messages. ▪ If service group comes online on the Secondary site, the agent should reverse the replication direction.
Failover of a service group.	▪ Each resource attribute is set to a proper value. ▪ Ensure that the Critical attribute of the resource is set to 1.	1. Bring the service group online on Primary site. 2. Inject fault on the replication and verify that the service group fails over to Secondary site.	The service group should come online on node in the Secondary site.

About Veritas Technologies LLC

Veritas Technologies LLC enables organizations to harness the power of their information, with solutions designed to serve the world's largest and most complex heterogeneous environments. Veritas works with 86 percent of Fortune 500 companies today, improving data availability and revealing insights to drive competitive advantage.

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