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Preface

This document provides instructions on how to install and configure the VERITAS Cluster Server Agent for Netbackup. For information about VCS, refer to the VERITAS Cluster Server User’s Guide.

Technical Support

For assistance with this VERITAS product, or for information regarding VERITAS service packages, contact Technical Support at 800.342.0652 (U.S. and Canada). You may also contact Technical Support via email at support@veritas.com.

For Customers Outside U.S. and Canada

From Europe, the Middle East, or Asia, visit the Technical Support website at http://support.veritas.com for a list of each country’s contact information.
## Conventions

<table>
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<th>Typeface</th>
<th>Usage</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>courier</strong></td>
<td>Computer output, files, attribute names, device names, and directories</td>
</tr>
<tr>
<td><strong>courier</strong> (bold)</td>
<td>User input and commands, keywords in grammar syntax</td>
</tr>
<tr>
<td><em>italic</em></td>
<td>New terms, titles, emphasis</td>
</tr>
<tr>
<td><em>italic</em></td>
<td>Variables</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Usage</th>
</tr>
</thead>
<tbody>
<tr>
<td>%</td>
<td>C shell prompt</td>
</tr>
<tr>
<td>$</td>
<td>Bourne/Korn shell prompt</td>
</tr>
<tr>
<td>#</td>
<td>Superuser prompt (for all shells)</td>
</tr>
</tbody>
</table>
Installing and Configuring the Agent

Welcome to the VERITAS Cluster Server (VCS) Enterprise Agent, version 1.3.1 for NetBackup. This guide describes the agent for NetBackup, its modes of operation, and its attributes. It describes how to install and configure the agent.

Version Numbers and Operating Systems

The VCS enterprise agent, version 1.3.1, for NetBackup monitors the NetBackup server and Media Manager 3.1, 3.1.1 and 3.2, and 3.4 running on HP-UX 11.0.

About the Agent

The following information summarizes the VCS agent processes for NetBackup:

<table>
<thead>
<tr>
<th>Description</th>
<th>Brings the NetBackup server online and monitors the status of the server processes.</th>
</tr>
</thead>
</table>
| Operations  | ❉ Online—Executes the commands ltid and initbprd on the NetBackup server. Moves SERVER = NBU Master_hostname to the first line in /user/openv/netbackup/bp.conf.  
              ❉ Offline—Executes the commands bprdreq -terminate, bpdbm -terminate stopltid, vmctrldbm -t, and t1?cd -t on each system.  
              ❉ Monitor—Scans the process table for ltid, vmd, avrd, bprd, and bpdbm. The specific processes to be monitored can be configured by the ServerType attribute (see "NetBackup Resource Type" on page 6). Note that bpdbm runs only on the NetBackup Master server.  
              ❉ Clean—Stops all NetBackup or Media Manager daemons after detecting an unexpected offline, or an ineffective online timeout. |
| Detecting Application Failure | By default, the system goes offline if the monitor cannot locate ltid, vmd, avrd, bprd, or bpdbm in the process table. |
Prerequisites

- ✔ Install and configure VCS. If necessary, review the VERITAS Cluster Server Installation Guide.
- ✔ Install and configure NetBackup and the Media Manager software according to the additional requirements listed in the following section. If necessary, review the NetBackup documentation and release notes.

Additional Requirements

Shared Tape Drives

If the tape drive is accessed through a shared bus (dual-hosted SCSI or fibre-attached), the drive entries in `/dev/rmt/` must match on both systems. For a SCSI configuration, ongoing backup jobs on the Master server may be disrupted if the standby system is booted. This disruption is caused by a bus reset signal. We recommend you use multiplexer or fibre switches for shared tape drives. If you use a multibackup server setup (one master fails over to a slave), you must separate the Media Manager configuration from the NetBackup setup. For more information, contact VERITAS Consulting Services.

Mount Point `/usr/openv` on Shared Disks

For the NetBackup server, all NetBackup and Media Manager executables, configurations, and database files must reside on a shared disk. Because the path is hardcoded into the application, the shared disk mount point is `/usr/openv`. Alternatively, you can create a symbolic link from `/usr/openv/netbackup` and `/usr/openv/volmgr` to NetBackup on the mounted shared disk file system.

Transparent IP Address Failover

- Include an IP resource for continuous access to the NetBackup server after the service group is switched. Include the first hostname (or multiple lines with aliases and DNS variations) of this IP address in `/usr/openv/netbackup/bp.conf` as the line `SERVER = NBUMaster_hostname` on each server and client. NetBackup uses a hostname lookup for server authentication to establish and maintain client/server communication.
- To avoid authentication failures, create `SERVER` entries in `bp.conf` for each local (private) VCS cluster hostname member defined in the Netbackup service group’s `SystemList` attribute.
- Include all hostnames in `bp.conf` if using multiple IP addresses on the NetBackup server under VCS control.
Server-Independent Restores

- If the tape drive is accessed through a shared bus (dual-hosted SCSI or fibre-attached), the file /usr/openv/netbackup/bp.conf must contain the line
  FAILOVER_RESTORE_MEDIA_SERVERS = sysa, sysb. Otherwise, you must modify the NetBackup Media database when the service group is switched. (See the NetBackup documentation.) This feature is available for NetBackup 3.1 and later.

- The storage unit definition inside NetBackup uses the VCS-controlled IP resource as NetBackup Host.

Shared Robotic Control

- For VCS setups in which robotic control is switched with shared disks as part of server failover, the robotic control host must contain the NetBackup service group’s hostname of the IP resource. The name of the robotic control host is automatically chosen by the NetBackup vmconf/tpconfig installation utility. It is the system name of the host on which the installation takes place.

  To check the current definition of the robotic host definition, type:

  ```
  # strings /usr/openv/volmgr/database/robotic_def
  ```

  If the definition contains the local hostname of one VCS cluster member, save the file by renaming it, then switch the hostname to the NetBackup IP resource (uname -S vcs_host) and restart vmconf. After reinitializing, revert to the original hostname of the server.

- Verify that the NetBackup generic SCSI drivers in /dev/sg are installed on all hosts accessing the shared tape library. If necessary, use /usr/openv/volmgr/bin/install/sg.install to initialize the sg devices on each system in the NetBackup service group. To verify that the device names are the same on all systems, type:

  ```
  # /usr/openv/volmgr/bin/sgscan
  ```

- Contact VERITAS Technical Support for assistance with StorageTek tape libraries using Automated Cartridge System Library Software (ACSLs).
Installing the Agent Software

1. Log in as root.

2. Insert the CD into a drive connected to your system. You must mount the CD manually. For example:

   ```bash
   # mount -F cdfs -o ro /dev/dsk/c0t6d0 /cdrom
   ``

   Where, in this example, `/dev/dsk/c0t6d0` is the device file for the CD drive, and `/cdrom` is the mount point; create the mount point if it does not exist.

3. Type the following command to install the agent:

   ```bash
   # swinstall -s /cdrom VRTSvcsnb
   ``

4. Repeat steps 1-3 on each system that will become part of the NetBackup service group.

A Sample NetBackup Configuration

In the following example, VCS is configured on a two-system cluster (sysa and sysb), and NetBackup is installed on shared disks.

Sample Configuration on a Two-System Cluster
Configuring the Agent

You can configure the NetBackup agent using two methods:

- By using VCS Cluster Manager (the VCS graphical user interface) to edit a resource group template for the NetBackup agent. See “Configuring the NetBackup Agent with Cluster Manager” on page 8), or,

- By using the types configuration file and directly editing the main.cf file based on the sample main.cf supplied with the NetBackup agent (see “Configuring the NetBackup Agent by Editing Configuration Files” on page 10). This method requires that VCS be stopped and restarted before the configuration takes effect.

Before you configure the agent, review the following tables that describe the NetBackup resource types and their attributes. The resource type definition files and the sample main.cf configurations are also shown for reference.
NetBackup Resource Type

<table>
<thead>
<tr>
<th>Attributes</th>
<th>Type and Dimension</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>ServerType</td>
<td>string-scalar</td>
<td>The agent will monitor processes as specified by the value of ServerType. The values for ServerType and the processes monitored for each are:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>♦ NBUSlave: vmd, ltid, avrd</td>
</tr>
<tr>
<td></td>
<td></td>
<td>♦ NBUMaster: bprd, bpdbm, vmd, ltid, avrd</td>
</tr>
<tr>
<td></td>
<td></td>
<td>♦ NBUMasterwoMM: bprd, bpdbm (this is the equivalent of NBUMaster without Media Manager)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>The value for ServerType may be a list of process names enclosed by quotes, the names separated by white space. For example:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>&quot;bprd avrd ltid&quot;</td>
</tr>
<tr>
<td>RobotDaemon</td>
<td>string-scalar</td>
<td>Executable file name of the robotic device control daemon as defined in:</td>
</tr>
<tr>
<td>(optional)</td>
<td></td>
<td>/usr/openv/volmgr/bin.</td>
</tr>
<tr>
<td>MonScript</td>
<td>string-scalar</td>
<td>Pathname of secondary monitor script. (See page 12 for details on secondary monitoring.)</td>
</tr>
<tr>
<td>(optional)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

By default, the RestartLimit is set to 2. This default setting activates two restart attempts if the resource offlines unexpectedly. The OnLineRetryLimit and OnLineWaitLimit are set to 1. If an online is ineffective (for example, if a daemon does not completely start), this default setting activates a clean action.

Type Definition

```c
type NetBackup {
    str ServerType
    str RobotDaemon
    str MonScript
    static int OnLineRetryLimit = 1
    static int OnLineWaitLimit = 1
    static int RestartLimit = 2
    NameRule = group.Name + "_" + resource.ServerType
    static str ArgList[] = { ServerType, RobotDaemon, MonScript }
}
```
Sample Configuration

```
NetBackup nbgrp_NBUMaster {
    ServerType = NBUMaster
    RobotDaemon = ts8d
    MonScript = ""
}
```

The figure below illustrates the configuration’s dependency graph.

![Dependency Graph](image)

Dependency Graph

This configuration has one disk group on which a single volume is created. The mount point `/opt/nbu` requires the LVMLogicalVolume and LVMVolumeGroup resources. The service group IP address of the Master server is configured using the IP and NIC resource types. The Master server can be started after each of these resources is brought online.

**Note** In this example, the shared disks are not mounted at `/usr/openv/`. Use the command `ln -s /opt/nbu /usr/openv` to create symbolic links on each cluster system.
Configuring the NetBackup Agent with Cluster Manager

A template for the NetBackup resource groups was automatically installed when you installed the NetBackup enterprise agent. Using the VCS GUI, you can view the template, which displays the NetBackup service group, its resources and their attributes. You can dynamically modify the attributes’ values as necessary for your configuration.

Importing the NetBackupTypes.cf File

To use the NetBackup Group template, import the NetBackupTypes.cf file to the VCS engine by using Cluster Manager:

1. Start Cluster Manager.
2. Click on the File menu and select Import Types.
3. In the Import Types dialog box, select the file:
   
   /etc/VRTSvcs/conf/sample_nbu/NetBackupTypes.cf

4. Import the types file for NetBackup.
5. Save the configuration.

At this point, the NetBackup types have been imported to the VCS engine. The NetBackup agent can be configured without interrupting or stopping VCS.

For detailed information about using the VCS Cluster Manager, refer to the chapter “About the VCS GUI” in the VERITAS Cluster Server User’s Guide.
Adding the NetBackup Group Using the Wizard

If you have imported the NetBackupTypes.cf file, you can download the NetBackup Group template by starting the Service Group Configuration Wizard in Cluster Manager.

1. In Cluster Manager, click the service group configuration wizard icon on the toolbar.

2. Click Next on the wizard Welcome window.
   a. Enter the service group name. In this instance, enter NetBackup.
   b. Select the systems on which the service group will run.

3. Confirm that you are basing the service group on a predefined template: click Next.

4. Select the NetBackup template (NetBackupGroup) from the list of templates; click Next.

5. The wizard prompts you with alternate names in case the names in the template clash with existing names; make corrections as necessary and click Next.

6. When the wizard indicates that it is ready to create the service group, click Next; the service group is dynamically created based on the NetBackup template.

7. Review the service group’s resource attributes, and modify the default values, if necessary, in accord with your specific configuration.
Configuring the NetBackup Agent by Editing Configuration Files

Follow the instructions below to configure the agent according to the sample configuration of the Master server:

1. Log in to sysa as root.
   
   If VCS is configured and running on your machine, use the following command to stop it:
   
   ```bash
   # hastop -all -force
   ```

2. Copy the NetBackupTypes configuration file:
   
   ```bash
   # cp /etc/VRTSvcs/conf/sample_nbu/NetBackupTypes.cf
   /etc/VRTSvcs/conf/config/NetBackupTypes.cf
   ```

3. If you want to add a NetBackup resource to an existing VCS configuration, go to step 4. If you have a new VCS configuration, perform the following steps:

   a. Copy the sample NetBackup configuration file:
      
      ```bash
      # cp /etc/VRTSvcs/conf/sample_nbu/main.cf
      /etc/VRTSvcs/conf/config/main.cf
      ```

   b. Edit the default attributes in the file /etc/VRTSvcs/conf/config/main.cf to match the parameters in your configuration.

4. If you have created a resource tree with your own configuration and want to configure the NetBackup resource only, edit the main.cf file to contain the line:
   
   ```bash
   include "NetBackupTypes.cf"
   ```

   a. Create the NetBackup resource in the main.cf file, using the sample configuration on page 7. The resource block must be after the group definition, and requires one Mount and one IP resource.

   b. Assign dependencies to the newly created resource.
5. Verify the syntax of the file `/etc/VRTSvcs/conf/config/main.cf`:
   ```
   # hacf -verify config
   ```

6. Start the VCS engine:
   ```
   # hastart
   ```

7. Verify that all NetBackup service group resources are brought online:
   ```
   # hagrp -state service_group -sys sysa
   ```

8. Take the service group offline and verify that all resources are stopped:
   ```
   # hagrp -offline service_group -sys sysa
   # hagrp -state service_group -sys sysa
   ```

9. Bring the service group online again and verify that all resources are available:
   ```
   # hagrp -online service_group -sys sysa
   # hagrp -state service_group -sys sysa
   ```

10. Start the VCS engine on sysb:
    ```
        # hastart
        # hagrp -state service_group -sys sysb
    ```

11. Switch the NetBackup service group to sysb:
    ```
        # hagrp -switch service_group -sys sysb
    ```

12. Verify that all NetBackup service group resources are brought online on sysb:
    ```
        # hagrp -state service_group -sys sysb
        # hagrp -state service_group -sys sysa
    ```
Modifying the Agent Configuration

Dynamic Configuration

To dynamically configure the VCS enterprise agent for NetBackup, see the chapter on reconfiguring VCS from the command line in the VERITAS Cluster Server User’s Guide.

Additional Monitoring

The VCS enterprise agent for NetBackup provides two levels of application monitoring: primary and secondary. The primary level monitors the NetBackup daemon processes to verify that they are continuously active.

The secondary level runs a script for further testing. The pathname to the script, with execute permissions for root, is defined by the MonScript attribute of the NetBackup agent. A return value of 100 indicates that the test failed and that the resource is offline. A return value of 101–110 indicates that the test was successful and that the resource is online. Other values of the resource state are undefined. (For more information, see the chapter on implementing entry points using scripts in the VERITAS Cluster Server Agent Developer’s Guide.)
Disabling the Agent

To disable the agent on a system, you must first switch the NetBackup service group to an OFFLINE state. You can stop the application completely, or switch the agent to another system.

1. You can determine if the service group is online by entering:

   ```
   # hagrp -state service_group -sys system_name
   ```

2. If the service group is online, take it offline by entering:

   ```
   # hagrp -switch service_group -to system_name
   ```
   or:

   ```
   # hagrp -offline service_group -sys system_name
   ```

3. Stop the NetBackup agent on the system:

   ```
   # haagent -stop agent
   ```

   When you get the message “Please look for messages in the log file,” check the file /varVRTSvcs/log/engine_A.log for a message confirming the agent has stopped.

   You can also use the `ps` command to confirm the agent is stopped.

   You can now remove the system, service group, or resource type from the VCS configuration. See the chapter on reconfiguring VCS from the command line in the VERITAS Cluster Server User’s Guide.

Removing the Agent

Type the following command on each system to remove the agent. Answer prompts accordingly:

```
# swremove VRTSvcsnb
```