# Veritas NetBackup™ Appliance High Availability Reference Guide

Release 4.0

VERITAS™

# Veritas NetBackup™ Appliance High Availability Reference Guide

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

# Contents

Chapter 1

# Overview of NetBackup Appliance high availability

This chapter includes the following topics:



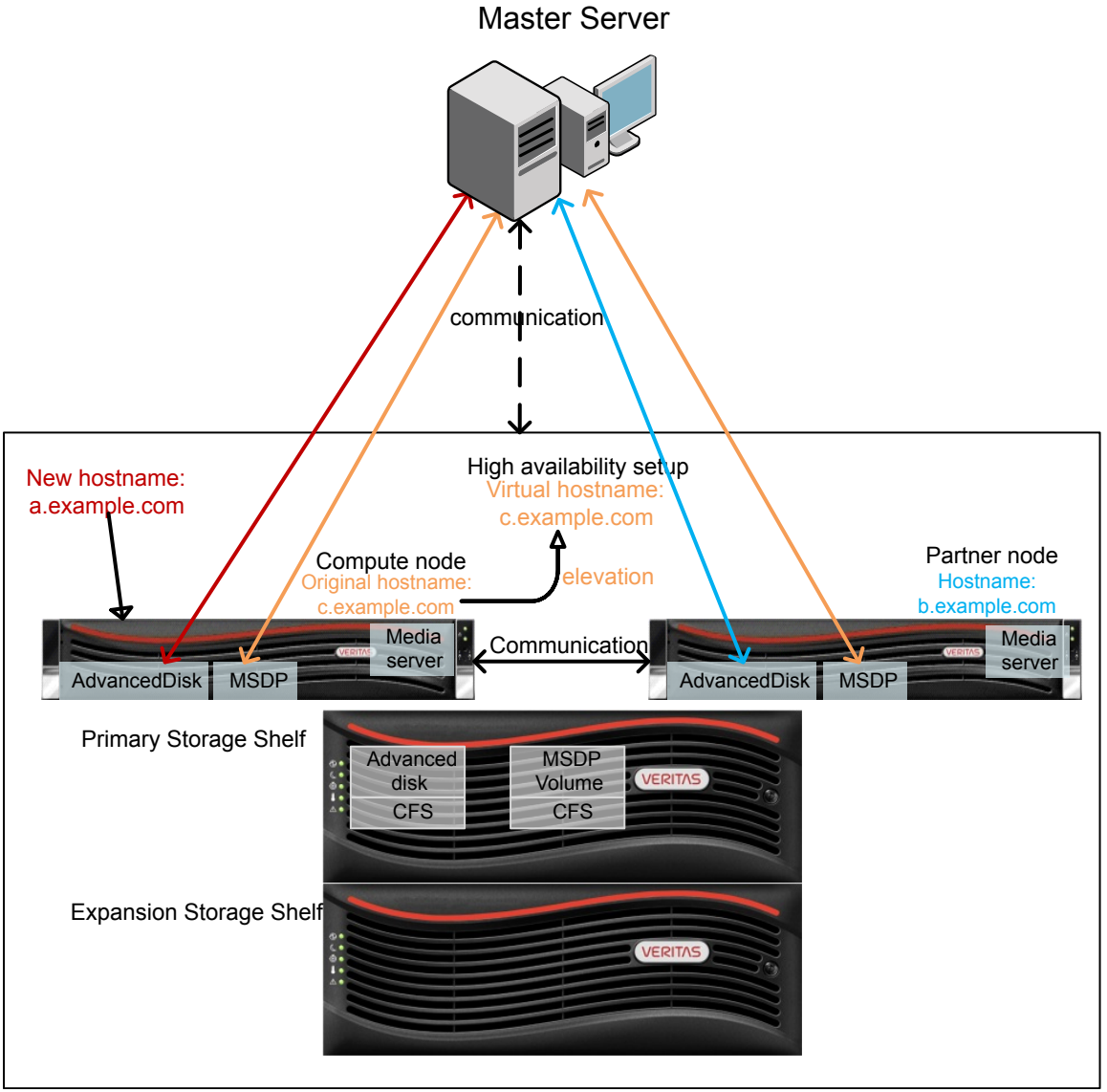
## Introduction to NetBackup 53xx high availability solution

Starting with NetBackup Appliance release 3.1, Veritas offers a high availability (HA) solution for 53xx appliances. The HA solution helps to ensure system throughput and operational availability for data protection operations.

The 53xx high availability solution is a dual-node solution that provides the following benefits:

- Two 53xx compute nodes (a node and a partner node) that operate in an active/active mode through an HA configuration.
- The two nodes efficiently share the storage workload.
- All stored data is available and accessible through either node.
- All system jobs can be run on one node while its partner node is serviced or upgraded.
- Automatic failover and job retry for a single-node failure.
- Existing systems can be converted for an HA solution.

The following diagram illustrates the internal communications in the a 53xx HA solution:



| Color legend | Explanation |
|---|---|
| Red line | Transactions through the physical host name or IP address of the compute node |
| Blue line | Transactions through the physical host name or IP address of the partner node |
| Orange line | Transactions through virtual host name of the HA configuration |
| Black line with two arrows | HA communication between the two nodes |
| Black line with one arrow | Network assignment |
| Black dashes | Communication between the master server and the HA configuration |

# Introduction to a NetBackup 53xx high availability configuration

This topic describes the hardware requirements and the configuration requirements to deploy a complete 53xx high availability (HA) solution.

## HA hardware requirements

- Master server
  A NetBackup 52xx appliance requires appliance software version 3.1 or later.
  A traditional (non-appliance) NetBackup master server requires NetBackup version 8.1 or later.
- Media servers
  Two 53xx compute nodes, a node and the partner node. Both nodes must be identical with regard to the appliance software version (3.1 or later), the model number, and the I/O hardware configurations. For example:
  Use two 5330 compute nodes with the I/O configuration D. You cannot use a 5330 compute node with the I/O configuration D and a 5340 compute node with the I/O configuration D.
  The supported storage firmware version of the 53xx compute node is 08.20.20.00 or higher.
  The two nodes work as a pair and share the workload of the NetBackup operations for different services as follows:

**Note:** Currently, NetBackup 53xx HA solution only supports the following storage types. For other storage types, such as the OST devices and the tape device, you need to set the same configurations on both nodes. Otherwise, the functions cannot work after a switchover operation is performed.

| | |
|---|---|
| AdvancedDisk services | Both nodes directly handle the transaction data of the NetBackup processes. |
| MSDP service | Only the node where the MSDP service is running directly handles the transaction data of the NetBackup processes. The other node makes the fingerprint calculation of the transaction data. |

- NetBackup 53xx Primary Storage Shelf
- NetBackup 53xx expansion shelves
  Necessary number of the shelves (maximum of three)

## HA configuration requirements

- HA setup configuration
  In an HA setup, three host names with corresponding IP addresses are required as follows:
  - Two physical node host names and IP addresses
    A dedicated host name and IP address must be assigned to each of the two physical media server nodes. Each host name should resolve to its corresponding IP address in the same subnet.
    The first node that you configure is used to configure the HA setup. During that procedure, you are prompted to assign a new host name and IP address to that node as described in the next item.
  - Virtual host name and IP address
    When you configure the HA setup on the first configured node, the host name and the IP address of that node are elevated automatically to become the virtual host name and IP address for the HA setup. The virtual host name and IP address work as a pointer within the HA setup between the two nodes. For example, if one node is not running properly or is down for an upgrade or maintenance, the virtual host name automatically points to the node that is still operational.
    During the HA setup on the first node, you are prompted to assign a new host name and IP address for that node. Before the second (partner) node is configured and added to the HA setup, the new host name and IP address of the first node must first be added to the **Host Name Mappings** property in the NetBackup Administration Console.

- Approve **Host Name Mappings**
  Starting with release 3.1.2, to complete the HA setup you must approve the host name mappings in the NetBackup Administration Console on the associated master server. If the mappings are not approved, the MSDP service will not be online after a switchover.
  For complete details on adding and approving HA host name mappings, see the *NetBackup 53xx Appliance Initial Configuration Guide*.
- Checklist
  The following link leads to a checklist with the order of tasks to deploy a new appliance HA configuration. Use this checklist to help guide you through the process.
  See "Checklist for NetBackup Appliance high availability deployment" on page 32.

After the HA configuration is complete, the network information of the partner node is automatically added to the additional server list. The email notification settings are synchronized between the two nodes automatically. You can check the email notifications of HA configuration through your registered Hardware Administrator Email account.

To ensure that the NetBackup replication operations work correctly in a completed HA setup, you must set the virtual host name as the target storage server. After the HA setup is completed, use the following procedure to set the HA virtual host name as the target storage server.

**To set the HA virtual host name as the target storage server**

1. In the **NetBackup Administration Console**, expand **Media and Device Management > Credentials > Storage Server** in the left pane.
2. In the right pane, double click the desired storage server.
3. In the **Change Storage Server** dialog box, select the **Replication** tab.
   If you find the existing entry of the target storage server, and the value is the virtual host name, ignore this procedure. Otherwise, click **Add**.
4. In the **Add a Replication Target in a Different NetBackup domain** dialog box, click the drop-down list of the **Target master server**, and select **<Add a new Trusted Master Server>**.
5. In the **Add Trusted Master Server** dialog box, enter the host name of the master server and click **OK**.
6. In the **Add a Replication Target in a Different NetBackup domain** dialog box, fill in the information as follows:
   - Select the trusted master server you added.
   - Select the target storage server type as **media**.

- Enter the virtual host name of the HA configuration in the text box of **Target Storage Server type**.
- Enter the user name and the password of the authorized replication account, and click **OK**.
  If you do not have the password of the authorized replication account, run the command: `Main > Appliance > ShowDedupPassword`.

# Introduction to the NetBackup 53xx high availability operations

In an operational high availability (HA) configuration, you can run the following operations from the NetBackup Appliance Shell Menu:

- `Switchover`
  This command transfers the services and workload from one node to the other node. The command also automatically initiates email notifications to report the service status changes.
  Starting with release 4.0, HA node upgrades no longer require that you perform a manual switchover.
  See "About upgrades for NetBackup Appliance HA setups" on page 17.

  **Note:** You cannot perform this operation with the virtual hostname or the virtual IP address. You must use the physical host name or the physical IP address of the specific node.

- `Status`
  Use this command to check the status of the HA configuration and all the HA-related services.
- `RemoveNode`
  Use this command to remove the partner node from the HA setup to perform maintenance, replacement, or to re-purpose the partner node appliance. This command works only from the compute node. You must use the physical hostname or physical IP address of the nodes to perform this operation. You cannot use the virtual hostname or the virtual IP address.
  After the partner node is removed from the HA setup, perform the following tasks:
  - Disconnect the Ethernet cables from the removed node.
  - Disconnect the FC cables from the removed node.

- Perform a factory reset or re-image the removed node.

  **Warning:** Before you can perform a factory reset or a re-image on a node in an HA setup, you must first remove that node from the HA setup and disconnect all of its Ethernet and FC cables. Failure to observe this rule can cause HA issues that include data corruption and data loss.

  To add the removed node back to the HA setup, after completing the factory reset or re-image and reconnecting all cables, perform the initial configuration and **AddNode** operations. A reissue token is required.

  **Note:** If you remove a node from the HA setup, the node that remains in the setup cannot be upgraded. HA nodes must be upgraded from within an HA setup that contains both nodes.

- `GetAssetTag`

  You can retrieve the asset tag of the HA configuration to identify the hardware devices in your working environment.

  The asset tag works as the identity of an HA configuration. Once the HA configuration is complete, an asset tag is automatically attached to each firmware of the two nodes and the shared Primary Storage Shelf. To ensure that the changes take effect, Veritas recommends that you restart the two nodes.

  The values on the three components are identical. If the values vary, restart the node or nodes with the different value from the shared Primary Storage Shelf.

For the detailed usage of the respective commands, refer to *NetBackup Appliance Commands Reference Guide*.

Chapter 2

# Deployment of a high availability configuration

This chapter includes the following topics:



## Deployment methods for a NetBackup 53xx high availability configuration

This topic describes the supported HA deployment methods, the HA hardware configuration and connectivity, and the HA software requirements.

### Deployment methods

- New deployments
  This method is used for new installations. These deployments require two identical 53xx compute nodes that use the same software version.
- Converting existing systems to HA
  This method lets you use an existing operational 53xx appliance as the first node. Then, add a new 53xx compute node to complete the HA setup. These systems also require two identical 53xx nodes that use the same software version.
  - Existing systems configured for Copilot

Copilot functionality is not supported in NetBackup Appliance HA setups. If you plan to convert an existing 53xx appliance to an HA node, it is recommended that you use an appliance that does not use Copilot.

If you must use an appliance that currently uses the Copilot feature, make sure to perform the following tasks before you convert the existing appliance to an HA node:

- Expire all data images on all Standard, Optimized, and Universal Shares. For instructions, see the *NetBackup Administrator's Guide*.
- Delete all Standard, Optimized, and Universal Shares. For instructions, see the *NetBackup Appliance Administrator's Guide*

## Hardware configuration and connectivity

The following describes the basic hardware connectivity, software compatibility, and configuration requirements for an HA setup:

- Hardware connectivity
  - The 53xx nodes are connected to each other using the NIC3/eth2 and NIC4/eth3 Ethernet ports.
  - Both 53xx nodes are connected directly to the Primary Storage Shelf.
- If you use any third-party servers in the working environment, make sure that the HA configuration works correctly with the servers. The following tasks, along with others may be necessary:
  - Add the necessary information of the HA configuration.
  - Connect the hardware properly.
  - Grant the required access for the HA configuration.
  - Configure the necessary information on both nodes in the HA setup.

## Software requirements and configuration

- Software version compatibility
  - If the master server is a traditional NetBackup master server, it must use software version 8.1 or later. If the master server is a 52xx appliance, it must use software version 3.1 or later.

53xx node configuration

- The two 53xx nodes must use the same software version, 3.1 or later.
- The master server must use the same or a later software version than the 53xx nodes; 3.1 and later for a 52xx appliance master server, or 8.1 and later for a traditional NetBackup master server.

- The first 53xx compute node is configured using the traditional initial configuration process. After the initial configuration is complete, configure the HA setup with this node.
- The partner node only requires network and time zone configuration. After the configuration is complete, add the node to the HA setup.

Active Directory configuration

- If you plan to use Active Directory (AD) authentication, set up the HA configuration only after you first update the AD server with the following information:
  - The network information of the node you use for the setup
  - The new host name and the matched IP address
  - The network information of the partner node

If these updates are not done first, AD users may experience problems when accessing the system.

---

**Note:** AD authentication must be configured on both nodes in the HA setup to ensure correct operation in switchover or failover scenarios.

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NetBackup client updates

- If you use a NetBackup client to manage the NetBackup jobs, add the following information in the `bp.conf` file on the client:
  - The host name of the first configured node
  - The new host name
  - The host name of the partner node

# New deployment for a NetBackup 53xx high availability configuration

The new deployment for a NetBackup 53xx high availability (HA) configuration is slightly different from a non-HA appliance:

1. Install the components from the bottom of the rack in the following order:
   - NetBackup 53xx Expansion Storage Shelves
   - NetBackup 53xx Primary Storage Shelf
   - Two NetBackup 53xx compute nodes

2. Connect the Expansion Storage Shelves to the Primary Storage Shelf.
3. Connect one of the compute nodes to the Primary Storage Shelf.
4. Connect the partner node to the Primary Storage Shelf.
5. Connect the two nodes for communication.
6. Turn on the power to each component in the same order as the installation.
7. Configure the systems to work as the master server, such as the NetBackup 52xx appliance, with the master server role.
8. Perform the initial configuration on one of the NetBackup 53xx compute nodes from the NetBackup Appliance Web Console or the NetBackup Appliance Shell Menu.
9. Set up an HA configuration with the configured node from the NetBackup Appliance Web Console or the NetBackup Appliance Shell Menu.

   In this procedure, the newly assigned network information of this node is automatically added to the additional server list on the master server.
10. Perform the initial configuration on the partner node from the NetBackup Appliance Shell Menu.
11. Add the configured partner node to complete the HA configuration from the NetBackup Appliance Web Console or the NetBackup Appliance Shell Menu.

    In this procedure, the network information of the partner node is automatically added to the additional server list on the master server.

For the detailed instructions, refer to the following documents:

- For the hardware installation instructions, refer to *NetBackup 5330 Appliance Hardware Installation Guide* or *NetBackup 5340 Appliance Hardware Installation Guide*.
- For the initial configuration instructions, refer to *NetBackup 52xx Appliance Initial Configuration Guide* or *NetBackup 53xx Appliance Initial Configuration Guide*.

# Converting existing systems to a NetBackup 53xx high availability configuration

This following describes the order of required tasks to convert existing systems to a high availability (HA) configuration.

**Note:** Optimized Shares are not supported in appliance HA setups. If you plan to convert an existing 53xx appliance with Optimized Shares to an HA node, you must first expire all backup images on those shares, and then delete the shares. To expire the backup images, see the *NetBackup Administrator's Guide*. To delete Optimized Shares after the backup images have been expired, see the *NetBackup Appliance Administrator's Guide*.

1. Install the new 53xx compute node (partner node) in the rack with the existing 53xx appliance.
2. Connect the partner node to the Primary Storage Shelf.
3. Connect the partner node to the existing node.
4. Turn on the power to the partner node.
5. Upgrade the software version of the existing master server as follows:

   For a traditional NetBackup master server, upgrade the server to version 8.1 or later.

   For an appliance master server, upgrade the server to software version 3.1 or later.
6. Upgrade the existing 53xx compute node to software version 3.1 or later.

   **Note:** Make sure that the software version you upgrade to on the existing compute node matches the version on the new partner node. If necessary, upgrade the partner node if it has an earlier version than the upgraded existing compute node.

7. Log in to the NetBackup Appliance Web Console or the NetBackup Appliance Shell Menu on the existing node and configure an HA setup. In this procedure, the newly assigned network information of this node is automatically added to the additional server list on the master server.

   **Note:** When you convert an existing 53xx appliance for HA, the configuration for the HA setup may fail and report the following error message: **[Error] V-409-955-4011: Failed to create the MSDP disk service. Refer to the TechNote 000127738**. If this problem occurs, do not refer to TechNote 000127738. Instead, contact Veritas Support and inform the representative to see article 100044266 to help you resolve the issue.

8. Perform the initial configuration on the partner node from the NetBackup Appliance Shell Menu.

9. On the existing node, add the partner node to the HA setup to complete the configuration.

   This task also adds the network information of the partner node to the additional server list on the master server, automatically.

For complete instructions, refer to the following documents:

*NetBackup 5330 Appliance Hardware Installation Guide* or *NetBackup 5340 Appliance Hardware Installation Guide*

*NetBackup 52xx Appliance Initial Configuration Guide* or *NetBackup 53xx Appliance Initial Configuration Guide*

# About upgrades for NetBackup Appliance HA setups

The following describes the upgrade requirements for nodes in a high availability (HA) setup:

- NetBackup Appliance Shell Menu
  Use this interface to upgrade the nodes.

  **Note:** The **Appliance Management Console** does not support upgrades for HA nodes.

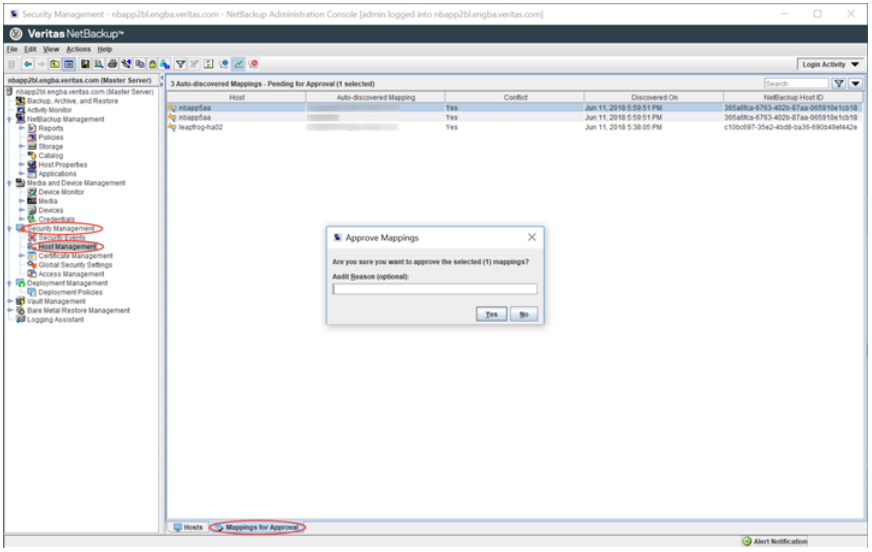
- One or two nodes in the HA setup
  HA nodes must be upgraded from within the HA setup. If you remove a node from the HA setup, you can still upgrade the node that remains.
- One node at a time
  Only one node can be upgraded at a time so that the workload can continue on the other node.
- One software version
  Both nodes must use the same appliance software version. Once you have upgraded one node, you must upgrade the other node immediately.
- Node upgrade order
  Start the upgrade process on the node where the MSDP service and the virtual IP service are offline, typically, the partner node.

  After the upgrade on the first node has completed, immediately perform the following tasks in the order as shown:

- On the upgraded node, run the `Support > Test Software` command to verify the status of various appliance software components.
- If the test passes, log in to the other node and upgrade it in the same manner as the first node.

- MSDP configuration
  Starting with release 4.0, HA nodes can be upgraded even if MSDP storage is not configured.
- Downloading packages from the NetBackup Appliance Shell Menu
  You only need to download rpm packages to one node. After you run the `Manage > Software > List Downloaded` command on the HA node with the downloaded package, run the command on the other node to make the package available on that node.
- Approve host name mappings
  Before you upgrade from software versions 3.1.1 and earlier, you must first approve the host name mappings for HA appliances in the NetBackup Administration Console on the associated master server. Otherwise, the preflight check does not allow the upgrade to start.

  To approve the host name mappings, do the following:
  - On the associated master server, log in to the NetBackup Administration Console.
  - In the left pane, click **Security Management** to expand its properties, then click **Host Management**.
  - In the lower-left of the right pane, click **Mappings for Approval**
  - At the top of the right pane, click on any host mapping that is pending approval. When the **Approve Mappings** dialog box appears that prompts for approval, click **Yes**. Repeat this task for each host mapping that is pending approval.


Security Management - nbapp2bl.engba.veritas.com - NetBackup Administration Console [admin logged into nbapp2bl.engba.veritas.com]
Veritas NetBackup
File Edit View Actions Help
Login Activity
nbapp2bl.engba.veritas.com (Master Server)
Backup, Archive, and Restore
Activity Monitor
NetBackup Management
Reports
Policies
Storage
Catalog
Host Properties
Applications
Media and Device Management
Device Monitor
Media
Devices
Credentials
Security Management
Security Events
Host Management
Certificate Management
Global Security Settings
Access Management
Deployment Management
Deployment Policies
Vault Management
Bare Metal Restore Management
Logging Assistant
3 Auto-discovered Mappings - Pending for Approval (1 selected)
Search
Host
Auto-discovered Mapping
Conflict
Discovered On
NetBackup Host ID
nbapp5aa
Yes
Jun 11, 2018 5:59:51 PM
365a6fca-6763-402b-87aa-065910e1cb18
nbapp5aa
Yes
Jun 11, 2018 5:59:51 PM
365a6fca-6763-402b-87aa-065910e1cb18
leapfrog-ha02
Yes
Jun 11, 2018 5:38:05 PM
c10bc697-35e2-40d8-ba36-690b49ef442e
Approve Mappings
Are you sure you want to approve the selected (1) mappings?
Audit Reason (optional):
Yes
No
Hosts
Mappings for Approval
Alert Notification

Chapter 3

# Configuration and performance guidelines

This chapter includes the following topics:



## Configuration requirements for features and options in NetBackup appliance high availability setups

In most cases, features and options are configured only on the node that runs the MSDP services. This node is the first high availability (HA) node that you configure and is also used to create the HA setup.

Some features and options require configuration on both nodes to ensure correct operation in switchover or failover scenarios. The configuration settings for each of these features or options must match. If you change the settings on the MSDP node, you must make the same changes on the partner node.

The following describes the features and the options that require configuration on both HA nodes:

### STIG feature

For complete details about enabling the Security Technical Implementation Guides (STIG) feature, see the *Veritas NetBackup Appliance Commands Reference Guide*.

### FIPS

You can enable the Federal Information Processing Standard 140-2 (FIPS) feature on both nodes only after you have completed configuration of the HA setup. The FIPS configuration must match on both the nodes. If FIPS is enabled on either node before the HA setup is completed, you must disable FIPS on that node before you complete the HA setup.

### AD and LDAP server users

The user and the user group registration for Active Directory (AD) and Lightweight Directory Access Protocol (LDAP) servers on both nodes must match. For complete details about authenticating AD and LDAP users, see the *Veritas NetBackup Appliance Security Guide*.

### Deduplication settings for MSDP

The `pd.conf` file stores the deduplication settings for MSDP. To ensure the quality of the data deduplication in an HA configuration, the files on both nodes must match. Otherwise, the deduplication performance may degrade after a switchover. For complete details about editing the MSDP `pd.conf` file, see the *Veritas NetBackup Deduplication Guide*.

### OpenStorage plug-ins

For complete details about configuring OpenStorage (OST) plug-ins, see the *Veritas NetBackup Appliance Administrator's Guide*.

### VLAN settings

For complete details about configuring Virtual Local Area Networks (VLANs), see the *Veritas NetBackup Appliance Administrator's Guide*.

### HA service group in a faulted state

If the Veritas Cluster Service (VCS) is unable to bring any service online on an HA node, its service group may go into a faulted state. If any resource is in a faulted state or is offline when it should be online, contact Veritas Support for assistance.

# Performance tuning for the failover scenarios

In a complete high availability configuration, Veritas recommends that you can improve the performance in the following two failover scenarios:

- While the NetBackup jobs are running, the node where the virtual host name is running crashes or is turned off.
  See “Performance tuning for the node failure” on page 22.

- While the NetBackup jobs are running, the Fibre Channel (FC) cable is physically disconnected from the node where the virtual host name is running.
  See "Performance tuning for the FC disconnection" on page 23.

## Performance tuning for the node failure

In a complete high availability (HA) configuration, when the NetBackup jobs are running, the node where the virtual host name is running may crash or be turned off. It typically can take more than 25 minutes to invoke the automatic failover function.

You can reduce the response time as follows:

**Reducing the interval of the time consuming parameters**

1. In the Java-based **NetBackup Administration Console**, expand **NetBackup Management > Host Properties > Master Servers** in the left pane.
2. In the right pane, select the master server.
3. On the **Actions** menu, click **Properties**.
4. In the properties dialog box left pane, select **Timeouts**.
5. Change the value of the **Job retry delay** to **1**.

   The expected time interval for the services to be switched over is one minute.
6. Change the value of the **Schedule backup attempts** to **12 tries per 1 hour**.

   This change increases the retry frequency. In this case, the retry limitation may not cause the retry failure.
7. Click **Apply** to make the changes take effect.
8. On the master server, locate the file `/etc/sysctl.conf`.
9. Use a text editor, such as vi, to open the file.
10. Change the value of the **net.ipv4.tcp_keepalive_time** to 60.
11. Make the change take effect by executing the following command:

    ```
    sysctl -p /etc/sysctl.conf
    ```
12. Verify that the change takes effect by executing the following command:

    ```
    sysctl -a|grep tcp_keepalive
    ```

After these changes take effect, the automatic failover for the node failure only takes three minutes to take effect.

# Performance tuning for the FC disconnection

In a complete high availability (HA) configuration, when the NetBackup jobs are running, the Fibre Channel (FC) may be disconnected from the node where the virtual host name is running. It usually takes more than 25 minutes to invoke the automatic failover function.

You can reduce the response time as follows:

**Reducing the interval of the time consuming parameters**

1. In the Java-based **NetBackup Administration Console**, expand **NetBackup Management > Host Properties > Master Servers** in the left pane.
2. In the right pane, select the master server.
3. On the **Actions** menu, click **Properties**.
4. In the properties dialog box left pane, select **Timeouts**.
5. Change the value of the **Job retry delay** to **1**.

   The expected time interval for the services to be switched over is one minute.
6. Change the value of the **Schedule backup attempts** to **12 tries per 1 hour**.

   This change increases the retry frequency. In this case, the retry limitation may not cause the retry failure.
7. Click **Apply** to make the changes take effect.

After these changes take effect, the automatic failover for the FC disconnection only takes two minutes to take effect.

Chapter 4

# Disaster recovery

This chapter includes the following topics:



## Disaster recovery in a NetBackup 53xx high availability configuration

In current high availability (HA) solution, the disaster recovery solution differs for the single-node failure and the two-node failure.

For the detailed disaster recovery instruction for each disaster scenario:


See "Disaster recovery for one-node failure" on page 24.

See "Disaster recovery for two-node failure" on page 26.


For the detailed information about disaster recovery, refer to *About disaster recovery* in *NetBackup Appliance Administrator's Guide*.

### Disaster recovery for one-node failure

**To recover the failure node**

1. On the node that works properly, log on to the NetBackup Appliance Shell Menu as `admin`.
2. Go to `Main > Manage > HighAvailability`.

3 Remove the failed node with the following command:

```
RemoveNode HostName
```

Where *HostName* is the host name of the disaster node.

---

**Note:** To avoid any data loss, make sure that you perform the following procedures after the node is removed:

Disconnect the Ethernet cables from the removed node.

Disconnect the Fibre Channel cables from the removed node.

---

4 On the removed node, log in to the NetBackup Appliance Shell Menu as `admin`.

If the failure is severe enough to bring the node down, and the NetBackup Appliance Shell Menu is not accessible, refer to the section *About disaster recovery* in the *NetBackup Appliance Administrator's Guide*.

5 Go to `Main > Support`.

6 Reset the removed node to its factory default settings with the following command:

```
FactoryReset
```

7 Perform the initial configuration on the removed node from the NetBackup Appliance Shell Menu.

For detailed instructions, refer to the section *Performing the initial configuration on the partner node for a NetBackup 53xx high availability configuration from the NetBackup Appliance Shell Menu* in the document *NetBackup 53xx Appliance Initial Configuration Guide*.

8 Reconnect the Ethernet cables and the Fibre Channel cables to the node.

9 Once the initial configuration is complete and all cables are reconnected, add the configured node to the HA setup as follows:

- On the node that is in the HA setup, log on to the NetBackup Appliance Shell Menu as `admin`.
- Go to `Main > Manage > HighAvailability`.
- Add the configured node to the HA setup with the following command:

  ```
  AddNode hostname
  ```

  Where *hostname* is the short host name or the fully qualified domain name (FQDN) of the configured node.
- When the following message appears, make sure that you checked the SSH ECDSA fingerprint directly on the partner node:

```
Do the fingerprint values match? [yes, no] (no)
```

To make sure that the network is safe, you need to confirm that the SSH ECDSA fingerprint of the partner node is correct. For the instructions on how to check the identity of the appliance, refer to the *NetBackup Appliance Command Reference Guide*.

If the values match, enter **yes**.

- After the pre-check has passed, when the following message appears, enter a reissue token to trust the host ID-based certificate:

  ```
  Reissue token is mandatory. Enter the reissue token for the
  required host to obtain a host-ID based certificate:
  ```

  For more information about security certificates, refer to the chapter *Security certificates in NetBackup* in the *NetBackup Security and Encryption Guide*.

- When the following message appears, enter yes to continue with adding the node:

  ```
  >> Do you want to continue? [yes, no] (no)
  ```

  When a message shows that the procedure is successful, the HA setup is complete.

# Disaster recovery for two-node failure

If the two-node failure occurs in your high availability (HA) configuration, Veritas recommends that you recover the system and the data as follows:

- Change the two-node failure disaster to the regular appliance disaster.

  **Note:** Numerous situations can cause fatal conditions and result in the need for disaster recovery. In a disaster recovery situation, it is critical to determine the cause of the disaster and recover as much data from the system as possible. Therefore, before you attempt to recover your HA configuration, contact Veritas Technical Support.

- Recover the appliance.
- Create the HA configuration again.

In the recovery procedures, use the following system settings as the example:

- The host name of the master server: `host-master`
- The original host name of the node that you used to set up the HA configuration: `host-origin`
- The new host name of the node that you used to set up the HA configuration: `host-setup`

- The host name of the node that you add as the partner node: `host-partner`

**To change the two-node failure disaster to the regular appliance disaster**

1. On the master server, log on to the administration console.
2. Check the status of the NetBackup objects as follows:
   - Check the status of the media servers in your working system with the following command:

     *host-master*:/opt/IMAppliance/nbaha-media/server/bin # vmoprcmd

     The following is an output example:

     ```
     HOST STATUS
     Host Name                                Version   Host Status
     =======================================  =======   ===========
     host-master                              801000    ACTIVE-DISK
     host-setup                               810000    OFFLINE
     host-partner                             810000    OFFLINE
     ```

   - Check the storage servers information with the following command:

     *host-master*:/opt/IMAppliance/nbaha-media/server/bin #
     nbdevquery -liststs

     The following is an output example:

     ```
     V7.5 host-setup   AdvancedDisk 5
     V7.5 host-partner AdvancedDisk 5
     V7.5 host-master  PureDisk 9
     ```

   - Check the status of the AdvancedDisk Pool with the following command:

     *host-master*:/opt/IMAppliance/nbaha-media/server/bin #
     nbdevquery -listdp -U -stype AdvancedDisk

     The following is an output example:

     ```
     Disk Pool Name   : dp_adv_host-origin
     Disk Pool Id     : dp_adv_host-origin
     Disk Type        : AdvancedDisk
     Status           : UP
     …
     Storage Server   : host-setup (UP)
     Storage Server   : host-partner (UP)
     ```

   - Check the status of the MSDP Disk Pool with the following command:

     *host-master*:/opt/IMAppliance/nbaha-media/server/bin #
     nbdevquery -listdp -U -stype PureDisk

The following is an output example:

```
Disk Pool Name   : dp_disk_host-origin
Disk Pool Id     : dp_disk_host-origin
Disk Type        : PureDisk
Status           : UP
…
Storage Server   : host-origin (UP)
```

3 Make sure that all the existing storage units can use any available media server after the recovery procedures with the following commands:

```
/usr/openv/netbackup/bin/admincmd/bpsturep -label
AdvanceDisk-storage-unit -nodevhost
```

```
/usr/openv/netbackup/bin/admincmd/bpsturep -label
MSDP-storage-unit -nodevhost
```

4 Rename the media server on the node that you used to set up the HA configuration with the following command:

```
/usr/openv/netbackup/bin/admincmd/nbemmcmd -renamehost
-machinename host-setup -machinetype media -newmachinename
[host-origin]
```

5 Check the status of the NetBackup objects again as follows:

- Check the status of the media servers in your working system with the following command:
  *host-master*:/opt/IMAppliance/nbaha-media/server/bin # vmoprcmd
  The following is an output example:

```
HOST STATUS
Host Name                                Version   Host Status
=======================================  =======   ===========
host-master                              801000    ACTIVE-DISK
host-origin                              810000    OFFLINE
host-partner                             810000    OFFLINE
```

- Check the storage servers information with the following command:
  *host-master*:/opt/IMAppliance/nbaha-media/server/bin #
  nbdevquery -liststs
  The following is an output example:

```
V7.5 host-origin  AdvancedDisk 5
V7.5 host-partner AdvancedDisk 5
V7.5 host-origin  PureDisk 9
```

- Check the status of the AdvancedDisk Pool with the following command:

  *host-master*:/opt/IMAppliance/nbaha-media/server/bin #
  nbdevquery -listdp -U -stype AdvancedDisk

  The following is an output example:

```
Disk Pool Name   : dp_adv_host-origin
Disk Pool Id     : dp_adv_host-origin
Disk Type        : AdvancedDisk
Status           : UP
…
Storage Server   : host-origin (UP)
Storage Server   : host-partner (UP)
```

- Check the status of the MSDP Disk Pool with the following command:

  *host-master*:/opt/IMAppliance/nbaha-media/server/bin #
  nbdevquery -listdp -U -stype PureDisk

  The following is an output example:

```
Disk Pool Name   : dp_disk_host-origin
Disk Pool Id     : dp_disk_host-origin
Disk Type        : PureDisk
Status           : UP
…
Storage Server   : host-origin (UP)
```

**6** Remove the AdvancedDisk storage servers on the partner node from the existing AdvancedDisk pool with the following command:

```
/usr/openv/netbackup/bin/admincmd/nbdevconfig -changedp -stype
AdvancedDisk -dp AdvancedDisk-pool -del_storage_servers
host-partner
```

---

**Note:** The AdvancedDisk storage servers to be removed are created in previous HA configuration creation procedures.

---

7 Delete the removed AdvancedDisk storage servers from your working system with the following command:

```
/usr/openv/netbackup/bin/admincmd/nbdevconfig -deletests
-storage_server host-partner -stype AdvancedDisk
```

8 Move the backup data from the media servers from the partner node to the media server on the node that you use to set up the HA configuration:

```
/usr/openv/netbackup/bin/admincmd/bpmedia -movedb -allvolumes
-oldserver host-partner -newserver host-origin
```

9 Delete the media servers on the partner node:

```
/usr/openv/netbackup/bin/admincmd/nbemmcmd -deletehost
-machinename host-partner -machinetype media
```

10 Revoke the host ID-based security certificate for the node that you used to set up the HA configuration with the following command:

```
/usr/openv/netbackup/bin/nbcertcmd -revokeCertificate -host
host-setup
```

When the procedures are complete, the two-node failure disaster is changed to a regular appliance disaster. For the recovery procedures for a regular appliance disaster, refer to the section *About disaster recovery* in the document *NetBackup Appliance Administrator's Guide*.

After the regular appliance disaster is recovered, perform the following procedures to recovery the HA configuration:

**To recover the HA configuration**

1 Perform the initial configuration on the appliance you recovered.

During the initial configuration procedure, you need to input the reissue token for the appliance.

When the following message appears, input **no**:

```
>> Do you want to clean up existing storage objects? [yes,no]
```

2 Set up the HA configuration with the node that you performed the initial configuration.

3 Perform the initial configuration on the partner node.

4 Add the configured partner node to complete the HA configuration.

---

**Note:** During the procedure, you need to input the reissue token for the partner node.

---

For detailed instructions, refer to *NetBackup 53xx Appliance Initial Configuration Guide*.

Appendix A

# HA Deployment Checklist

This appendix includes the following topics:



## Checklist for NetBackup Appliance high availability deployment

Use this checklist to prepare for deploying a new appliance high availability (HA) setup. The items appear in the order that you should follow when deploying a new HA installation. Put a mark in the **Check** column as you address each item.

**Table A-1** Checklist for HA deployment

| Check | Item | Description |
|---|---|---|
| | 1. Master server type | Determine the master server type to use. Supported master server types are as follows:<br>■ Appliance master server<br>■ Traditional (non-appliance) master server<br>■ Clustered master server (traditional non-appliance)<br>**Note:** If you plan to use a clustered master server, contact Veritas Technical Support before you configure the HA setup (Item 6) ask the representative to refer to article 100042620.<br>The master server must be configured and reachable on your network before you configure the compute node, the HA setup, and the partner node. |

**Table A-1** Checklist for HA deployment *(continued)*

| Check | Item | Description |
|---|---|---|
| | 2. Compute node and partner node installation | Install the compute node and the partner node as described in the *NetBackup 5330 Appliance Hardware Installation Guide* or the *NetBackup 5340 Appliance Hardware Installation Guide*.<br><br>The following describes the order of the main installation tasks that must be done before you perform any initial configuration on the nodes and before you configure the HA setup:<br><br>■ Both nodes connected to the storage shelves.<br>■ Both nodes connected to each other.<br>■ Expansion storage shelves turned on first and booted up completely.<br>■ Primary storage shelf turned on and booted up completely.<br>■ Compute node turned on and booted up completely.<br>■ Partner node turned on and booted up completely. |
| | 3. HA host names and IP addresses | Determine the host names and the IP addresses for the virtual environment that encompasses the whole HA setup and the physical nodes:<br><br>■ Virtual<br>Host name: _____<br>IP address: _____<br>■ Compute node<br>Host name: _____<br>IP address: _____<br>■ Partner node<br>Host name: _____<br>IP address: _____ |
| | 4. Compute node configuration | Configure the compute node using the methods described in the *NetBackup 53xx Appliance Initial Configuration Guide*.<br><br>Be sure to enter the virtual host name and IP address during this configuration. When you start the HA setup configuration (Item 6), that process prompts you to enter a new host name and IP address for this node.<br><br>**Note:** Do not create a bond on ports NIC3 (eth2) or NIC4 (eth3). These ports are required exclusively for HA connectivity and any existing bond prevents you from adding the partner node to the HA setup (Item 8). See the following article for more details:<br><br>https://www.veritas.com/support/en_US/article.100039911 |

**Table A-1** Checklist for HA deployment *(continued)*

| Check | Item | Description |
|---|---|---|
| | 5. Host name mapping updates | On the master server, log in to the NetBackup Administration Console and do the following:<br>■ Navigate to **NetBackup Management > Host Management** and click the **Hosts** tab in the right pane.<br>■ Enter the host name for the compute node from Item 3. Make sure to enter both the FQDN and the short name.<br>The virtual host name that you used for the initial configuration of the compute node should already appear on the hosts tab.<br>**Note:** If the compute node host name is not added to the host name mappings before you configure the HA setup and the partner node, the HA setup process can fail. |
| | 6. Start HA setup configuration | Before you start this task, check the following:<br>■ If you are using a clustered master server, contact Veritas Technical Support and ask the representative to refer to article 100042620.<br>■ On the configured compute node that you use to create the HA setup, run the following command to make sure that all NetBackup processes are running:<br>`Main > Support > Processes > NetBackup > Show`<br>If any NetBackup processes are not running, refer to the following article to resolve the issue:<br>https://www.veritas.com/support/en_US/article.100039808<br>After these items have been addressed, configure the HA setup from the compute node as described in the *NetBackup 53xx Appliance Initial Configuration Guide*. Refer to the topic "Configuring a NetBackup 53xx high availability setup".<br>During the HA setup, the host name and the IP address of the compute node are elevated and become the virtual host name and IP address. When prompted, enter the host name and IP address for the compute node from Item 3. |

**Table A-1** Checklist for HA deployment *(continued)*

| Check | Item | Description |
|---|---|---|
| | 7. Partner node configuration | Configure the partner node as described in the *NetBackup 53xx Appliance Initial Configuration Guide*. Refer to the topic "Performing the initial configuration on the partner node for a NetBackup 53xx high availability configuration".<br><br>Note the following about partner node configuration:<br><br>■ Do not create a bond on ports NIC3 (eth2) or NIC4 (eth3). These ports are required exclusively for HA connectivity and any existing bond prevents you from adding the partner node to the HA setup (Item 8). See the following article for more details: https://www.veritas.com/support/en_US/article.100039911<br>■ To ensure that both nodes properly communicate and detect the storage array, perform the following tasks before you add the partner node to the HA setup:<br>  ■ Reboot the partner node after you have completed the initial configuration.<br>  ■ On the compute node, run the `Manage > Storage > Scan` command.<br>  ■ On the partner node, run the `Manage > Storage > Scan` command.<br>■ Make sure that NetBackup processes are running on both nodes and on the master server.<br>On each HA node and the master server, run the `Support > Processes > NetBackup Show` command to verify that all NetBackup processes are running. If any processes are not running, restart all NetBackup processes by running the `Support > Processes > NetBackup Stop` command, followed by running the `Support > Processes > NetBackup Start` command. |
| | 8. Complete HA setup with partner node | After the partner node has completed the reboot and you have run the storage scan command on both nodes, add the partner node to the HA setup as described in the *NetBackup 53xx Appliance Initial Configuration Guide*. Refer to the topic "Adding the partner node to the NetBackup 53xx high availability configuration".<br><br>Starting with appliance release 3.1.2, host name mappings also require approval. The procedure to add the partner node to the HA setup includes a step to approve the host name mappings. |

**Table A-1** Checklist for HA deployment *(continued)*

| Check | Item | Description |
|---|---|---|
| | 9. Post HA deployment tasks | After you have completed the HA setup, check the following items and address them as described:<br>■ If you plan to run optimized-deduplication between the local HA MSDP and a remote MSDP, see the following article for details: https://www.veritas.com/support/en_US/article.100043126<br>■ Switchover issues<br>After you perform a switchover, it is normal and expected behavior for the MSDP service to take from 5 to 10 minutes to come back online. The MSDP size also affects how long MSDP is back online after a switchover. Possible issues related to a switchover are as follows:<br>■ The MSDP size is larger than 38TB.<br>■ A switchover that fails because of a timeout (longer than 10 minutes).<br>If you observe or experience either of these issues, see the following article for details and contact Veritas Technical Support for assistance to resolve the issue:<br>https://www.veritas.com/support/en_US/article.100042933 |

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