

# Veritas Flex Appliance Getting Started and Administration Guide

Release 1.3



# Veritas Flex Appliance Getting Started and Administration Guide

Last updated: 2020-05-11

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[https://sort.veritas.com/data/support/SORT\\_Data\\_Sheet.pdf](https://sort.veritas.com/data/support/SORT_Data_Sheet.pdf)

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# Product overview

This chapter includes the following topics:

- [Introduction to Veritas Flex Appliance](#)
- [About the Flex Appliance documentation](#)
- [Flex Appliance 1.3 new features, enhancements, and changes](#)
- [Supported upgrade paths to this release](#)
- [Operational notes](#)
- [Flex Appliance 1.3 release content](#)

## Introduction to Veritas Flex Appliance

Veritas Flex Appliance is a customizable data management solution that lets you consolidate multiple applications on a single hardware platform. With Flex Appliance, you can run concurrent instances of the following applications:

- NetBackup master server
- NetBackup media server with the following storage options:
  - Media Server Deduplication Pool (MSDP)
  - AdvancedDisk
  - Cloud Catalyst

---

**Note:** You cannot use both MSDP and Cloud Catalyst storage in the same application instance.

---

For a full list of supported applications and versions, see the following article on the Veritas Support website:

[Flex Appliance supported applications and usage information](#)

This release of Flex Appliance software is compatible with the following hardware:

- The Veritas 5340 Appliance, using PCIe-based I/O configuration A.  
See [Table 1-1](#) for additional details about I/O configuration A.
- An additional 5340 compute node for high availability (HA).
- The Veritas 5150 Appliance, supporting all PCIe-based I/O configurations.  
See the *Veritas 5150 Appliance Product Description* for additional details about the available I/O configurations.

**Table 1-1** Veritas 5340 Appliance I/O configuration details

I/O configuration option	Slot 1 *	Slot 2	Slot 3	Slot 4 *	Slot 5	Slot 6	Slot 7	Slot 8
A	QLogic QLE2692  16Gb FC HBA <sup>2</sup>	QLogic QLE8442  10GbE NIC <sup>1, 2</sup>	QLogic QLE8442  10GbE NIC <sup>1, 2</sup>	QLogic QLE2692  16Gb FC HBA <sup>2</sup>	QLogic QLE8442  10GbE NIC <sup>1, 2</sup>	QLogic QLE8442  10GbE NIC <sup>1, 2</sup>	Reserved	QLogic QLE8442  10GbE NIC <sup>1, 2</sup>

\* The 16Gb Fibre Channel HBA ports in slots 1 and 4 are used to connect the Veritas 5340 Appliance compute node to the Veritas 5U84 Primary Storage Shelf. As a result, slots 1 and 4 do not support standard network I/O operations.

**PCIe card cable connection types:**

- <sup>1</sup> Direct-Attach copper cable (also called a Twinaxial cable or Twinax)
- <sup>2</sup> Fiber optic cable

For more information, see the *Veritas 5340 Appliance Product Description*.

## About the Flex Appliance documentation

This guide contains all of the information you need to configure and use the Flex Appliance software.

The following documents contain information about the appliance hardware:

- The *Veritas 5340 Appliance Hardware Installation Guide*
- The *Veritas 5340 Appliance Product Description*
- The *Veritas 5150 Appliance Hardware Installation Guide*
- The *Veritas 5150 Appliance Product Description*



- The *Veritas Appliance Safety and Maintenance Guide*

Flex Appliance also uses Veritas AutoSupport to monitor the appliance. You can find additional information about AutoSupport in the *Veritas Appliance AutoSupport Reference Guide*.

You can find the latest documentation on the [Documentation page](#) of the Veritas Support website. Navigate to the **Documentation** tab, then select **Flex Appliance OS** on the left-hand side.

## Flex Appliance 1.3 new features, enhancements, and changes

The following list describes the new features, enhancements, and changes in the Flex Appliance 1.3 release:

- The Flex Appliance 1.3 release supports the new Veritas 5150 Appliance. The 5150 appliance is a compact appliance designed for constrained environments. It includes a total of 14 TB of usable backup capacity and consists of one 1U node.  
See the *Veritas 5150 Appliance Product Description* and the *Veritas 5150 Appliance Hardware Installation Guide* for more information.
- You can now install Flex Appliance updates in addition to upgrades. While an upgrade installs a new version of the Flex Appliance software, an update modifies the existing version. An update release is primarily comprised of fixes, though it may also include enhancements.  
Veritas recommends that you install updates and upgrades when available to make sure that you have the latest product features and fixes.  
See [“About Flex Appliance upgrades and updates”](#) on page 78.
- Starting with this release, you can install emergency engineering binaries (EEBs) and Veritas-provided plug-ins on NetBackup instances. The **Repository** page includes a new **Application add-ons** tab where you can add the add-ons, and you can install and manage them from the instance details page.  
See [“Managing application add-ons on instances”](#) on page 67.
- You can now create and manage bonds from the Flex Appliance Console.  
See [“Creating a network bond”](#) on page 33.

## Supported upgrade paths to this release

The following describes the supported direct upgrade paths and two-step upgrade paths for Flex Appliance version 1.3:

- Direct upgrade path  
You can upgrade directly from version 1.2 to version 1.3.
- Two-step upgrade path  
Any appliance running version 1.1 must first be upgraded to version 1.2. If you have a multi-node appliance, upgrade both nodes to version 1.2 before you upgrade to version 1.3.

## Operational notes

This topic explains important aspects of Flex Appliance 1.3 operations that may not be documented elsewhere in the documentation.

### Software operational notes

The following list contains the notes and the known issues that apply for the Flex Appliance 1.3 software:

- When you create a NetBackup media server instance, the Flex Appliance Console does not prevent entering the same hostname in both the **Hostname for NetBackup Media Server** and the **Master server hostname** fields, but that configuration is not supported. You must have a preexisting master server with a different hostname.
- The following NetBackup features are not supported on application instances:
  - Bare Metal Restore
  - NFS mounts
  - IPv6
  - OpenStorage plug-ins
- The Flex Appliance Shell allows you to log in using the IP address that you set for the Flex Appliance Console. Do not log in with the console IP address. You must always use the node IP address to log in to the Flex Appliance Shell.
- If an appliance node is powered off unexpectedly and then turned back on, an issue can occur that causes the Flex Appliance Console and all application instances to stop working. The Flex Appliance Shell displays the following error when you attempt to log in:  

```
Installation status: failed
```

If you encounter this issue, contact Veritas Technical Support for assistance. Ask your representative to reference article 100046737.
- If you add a node to a 5340 appliance, a known issue with the Qlogic FC adapter can cause the operation to fail.

If your attempt to add a node fails, restart the node that you were trying to add and retry the operation. If the issue persists, contact Veritas Technical Support for assistance. Ask your representative to review the `var/log/messages` log on the node.

- When you create a bond, do not give it a bond name that is all numbers. If you do so, you can no longer create any additional bonds on the appliance. If you were not aware of this limitation and have already created a bond name that is all numbers, contact Technical Support for assistance. Ask your representative to reference article 100046604.
- If you edit the MTU value of a network interface, the change is not preserved if the node restarts. If you need to change the MTU value permanently, contact Veritas Technical Support and ask your representative to reference article 100046433.
- If you upgrade an instance that supports rollback, the rollback may lead to inconsistencies between the NetBackup catalog and the media servers for all jobs that ran after the upgrade. These inconsistencies can affect future backups. See [“Warnings and considerations for instance rollbacks”](#) on page 76.
- If you remove a node from a multi-node appliance and then perform a factory reset on the node that you removed, the factory reset may fail with the following error:

```
Installing VxOS (Note - May take up to 15 minutes) [FAILED]
```

```
Task Name: Generating boot configuration
```

```
Error:
```

```
"AnsibleUndefinedVariable: 'kernel_map' is undefined"
```

If you encounter this issue, you must reimaged the node instead of performing the factory reset. Contact Veritas Technical Support and ask your representative to reference article 100044669.

- The following error message may display in the Flex Appliance Shell during an upgrade or a factory reset:

```
dracut:Failed to install module bnx2
```

This message displays in error and can be safely disregarded.

- If you attempt to upgrade Flex Appliance to this release when an instance operation is in progress or pending, the upgrade precheck fails with the following incorrect error message:  
“Error: VUF failed to install package.”

If you see this message, check the status of all instance operations and wait until they are complete before you try again. If an instance upgrade is pending, you must commit or roll back that upgrade before you can upgrade the appliance.

- If an instance rollback fails on a single-node appliance, and then you restart the appliance node, an issue can occur that causes the Flex Appliance Console to be unable to connect, and none of the application instances start. This issue does not apply to multi-node appliances.

If you encounter this issue, contact Veritas Technical Support and ask your representative to reference article 100046738.

- If any of your application instances have EEBs installed on them, those EEBs are removed when you upgrade to version 1.3. To keep the EEBs, perform the following steps:

- Before the upgrade:

Log in to each application instance as the **appadmin** user and run the following command:

```
ls -l /opt/veritas/add-ons/
```

Take note of each EEB that appears in the output. For example:

```
drwxr-xr-x 2 root root 4096 Jan  2 10:46 eeb-3956103
```

- After the upgrade:

Using the information that you noted in the previous step, reinstall the add-ons on each application instance. You do not need to add them to the repository first.

See [“Installing application add-ons”](#) on page 67.

- If you roll back the appliance after an upgrade and then start an instance, the start instance task may continue for up to an hour even after the instance started successfully. During this time, other instance operations or an appliance upgrade may fail. If you encounter this issue, wait an hour and then retry the failed operation.
- If you upgrade from version 1.1 to version 1.2 and then upgrade to 1.3, you must commit the upgrade to version 1.2 before you begin the upgrade to version 1.3. If the previous version has not been committed, the upgrade fails.  
If you were not aware of this issue and have encountered the upgrade failure, run the `system upgrade-commit` command to commit to version 1.2, then retry the upgrade to version 1.3. If you experience additional issues, contact Veritas Technical Support for assistance.
- If you upgrade to version 1.3 and then roll back, an issue can occur that causes the rollback to hang. The Flex Appliance Shell login page shows a banner that says “Completed,” but none of the instances are online.

If the rollback does not complete within two hours, run the following command to confirm that the instances are offline:

```
show instance running-instances
```

If no instances are running, restart the node to complete the rollback process.

- If there are multiple upgrade packages in the repository and you upgrade to version 1.3, the upgrade precheck fails, and the appliance enters a failed upgrade state. An error banner displays in the Flex Appliance Console, and some operations such as creating an instance are blocked.  
To avoid this issue, make sure that you only have one upgrade package in the repository when you upgrade.  
If you were not aware of this issue and encounter it, remove the additional upgrade packages and try the upgrade again. Full operations are restored after the upgrade is committed or rolled back.
- If you upgrade a node and elect not to restart it when prompted, the node must be restarted with the 'restart' command to complete the upgrade. If the node is restarted incorrectly due to a power outage, pressing the power button, or a similar scenario, the remaining upgrade steps fail.  
If you encounter this issue, roll back the node to the previous version and then re-run the upgrade.
- If you have a multi-node appliance and one of the nodes is turned off for any reason, do not restart the other node until they are both online. If a node is restarted while the other node is off, the Flex Appliance Console fails to load.  
If you encounter this scenario, contact Veritas Technical Support and ask your representative to reference article 100046118.
- Simultaneous multithreading (`smt`) is enabled by default on the Veritas 5340 Appliance. Note that the following vulnerabilities affect this feature:
  - CVE-2018-12130
  - CVE-2018-12126
  - CVE-2018-12127
  - CVE-2019-11091You can disable `smt` to address these vulnerabilities; however, if `smt` is disabled, backup performance is reduced by up to 60%. If you want to disable `smt`, contact Veritas Technical Support and ask your representative to reference article 100046154.
- When you create an instance, if you enter the IP address before you select a network interface, the **IP address** field displays the following error message: "IP address does not belong to the selected network's netmask."

This message still displays after you select the network interface that corresponds to the IP address. To clear the message, click inside the **IP address** field and then click or tab outside of it.

- After some operations in the Flex Appliance Shell, an “Operation successfully” message may display even if a failure occurred. Read all of the messages that display at the end of each task to make sure that no further action is required.
- The log view under the ‘show instance performance’ command does not show logs for your application instances or some of the infrastructure instances. To see logs for a NetBackup application instance, log in to the instance and navigate to /mnt/nblogs.
- When you upload a file to the repository, the upload fails if the file name includes a space or parentheses (). If you encounter this issue, remove the space or parentheses and try again.
- If you use the `set alerts email-hardware` or `set alerts email-software` command to add an email address for Call Home, you may see an error message similar to the following:

```
[Error] The appliance was able to connect to your SMTP server, but
either we were not able to authenticate properly, or your SMTP
server is preventing us from sending emails through it. Please
check your SMTP server for details.
```

```
V-475-2-1006 : Added email example@veritas.com not usable with
SMTP server.
```

However, the messages also states that the address was added successfully, as follows:

```
Email address(es) added successfully 1. example@veritas.com
```

If you encounter this message, the email address was added to the appliance successfully, but the test email did not go through. Verify the email address, Sender ID, and SMTP password that you entered on the appliance. If they are all correct, check the settings on your SMTP server.

- The `set appliance migrate` command does not apply to the 5150 appliance, even though it exists in the Flex Appliance Shell.
- If you see an error message similar to the following in this release, it can usually be safely ignored:

```
kernel:NMI watchdog: BUG: soft lockup - CPU#5 stuck for 23s!
[<process>:1]
```

Where `<process>` is the name of any Flex Appliance process.

If the message persists for an extended period of time, contact Veritas Technical Support to troubleshoot.

- If Call Home is enabled but cannot communicate with the AutoSupport server due to a firewall, the `set alerts email-smtp` and `delete alerts email-smtp` commands may take more than a minute to complete. Resolve the firewall issue or disable Call Home to remove the delay.
- The NetBackup 8.2 application does not support NetBackup notify scripts and therefore does not support the `cp-nbu-notify` utility. If an existing instance uses these scripts and you upgrade it to 8.2, the scripts no longer work.
- It is not currently possible to edit a network bond after it has been created. If you need to edit a bond, you must delete it and then create a new bond with the new settings.  
See [“Deleting a network bond”](#) on page 35.  
See [“Creating a network bond”](#) on page 33.
- If more than one user edits the network of an instance from the Flex Appliance Console at the same time, the second user’s changes overwrite the first user’s changes.
- IP forwarding is enabled in the Flex Appliance kernel by design; it is used to facilitate network communication between application instances and external networks.
- If the VLAN tags do not match between the nodes of a multi-node appliance, the following error appears when you attempt to relocate an instance:  
Failed to clear the fault on <network\_interface> on <node\_hostname>. Check /log/hostagent.log and VCS logs for more details.  
However, these logs do not include any additional details. If you encounter this issue, check the VLAN tags on the appliance from the **Settings > Network** page. Verify that all of the VLAN tags have been added on both nodes.
- When you create a media server instance with MSDP storage, you must tune the NetBackup parameters after you create the storage servers, and you may need to resize the MSDP storage partition. Make sure that you follow all of the steps that are listed in this document for creating a media server instance.  
See [“Creating a NetBackup media server instance”](#) on page 57.
- If you run any of the `system hardware-health` commands in the Flex Appliance Shell immediately after starting or restarting the appliance, you may see the following error message:

```
Unable to retrieve hardware information.
```

If you see this error, wait a few minutes and try again. This issue also applies during initial configuration, after you run the `setup configure-network` command.

- The Flex Appliance Shell does not currently support changing host network settings other than the DNS and Hosts file settings after initial configuration has been completed. If you need to change any of the other host network settings, you must perform a factory reset and then restart the initial configuration process.

## Flex Appliance 1.3 release content

The following list contains the known issues that were fixed and that are now included in this release of Flex Appliance.

- During a rollback after an instance upgrade, the **Activity Monitor** erroneously showed the following error message:  
Failed to clear the fault on <instance\_name>\_appVols on <node\_name>. Check /log/hostagent.log and VCS logs for more details.
- If you resized the storage on an instance to a smaller amount and the storage reduction took longer than an hour, the Activity Monitor timed out, and the resize status showed as **Failed**. However, the resize operation continued running in the background, and if it completed after the time-out, the status changed to **Successful**.
- If you upgraded an appliance node to Flex Appliance 1.2 and then rolled back the version to 1.1, an issue could occur that caused the Flex Appliance Console to be unable to load. In addition, if you ran the command `show appliance status` in the Flex Appliance Shell, the `infra_svc` service showed as `OFFLINE` for all appliance nodes, as follows:

```
B infra_svc nbapp834 Y N OFFLINE
B infra_svc nbapp835 Y N OFFLINE
```

- During an upgrade from Flex Appliance 1.1 to version 1.2, a restart prompt appeared in the Flex Appliance Shell. If you responded with **No** or gave an invalid response, the following, incorrect error message may have displayed:

```
Operation failed
```

- On a Veritas 5340 Appliance, a receive transmission (RX) error message appeared for 10GbE ports in Slot 8. These ports experienced a 20% backup performance degradation in comparison to the 10GbE ports in other slots, which were not affected.



# Getting started

This chapter includes the following topics:

- [Initial configuration guidelines and checklist](#)
- [Performing the initial configuration](#)
- [Adding a node](#)
- [Accessing and using the Flex Appliance Shell](#)
- [Accessing and using the Flex Appliance Console](#)
- [Installing the NetBackup Administration Console and client packages](#)
- [Common tasks in Flex Appliance](#)

## Initial configuration guidelines and checklist

Review the following information before you perform the initial configuration on a new Veritas Flex appliance:

**Table 2-1** Flex Appliance configuration guidelines and checklist

Parameter	Description
Network cabling for the Veritas 5340 Appliance	<p>The following Veritas 5340 Appliance ports must be connected to the network for initial configuration:</p> <ul style="list-style-type: none"> <li>■ The remote management (IPMI) port Used to connect to the Veritas Remote Management Interface. <b>Note:</b> The remote management port must be configured before you begin initial configuration. If it is not configured, contact Technical Support and ask your representative to reference article 100042482.</li> <li>■ host1 or host0 Used to connect to the Flex Appliance Console. Veritas recommends that you connect both host1 and host0 for maximum resiliency, but only one of them is required. <b>Note:</b> These ports are labeled ETH0 and ETH1 on the 5340 nodes.</li> <li>■ privnic1 and privnic0 (multi-node appliances only) Used for communication between nodes. <b>Note:</b> These ports are labeled ETH2 and ETH3 on the 5340 nodes.</li> <li>■ One to ten 10Gb NICs per node Used for the application instances.</li> </ul> <p>See the <i>Veritas 5340 Appliance Hardware Installation Guide</i> or the <i>Veritas 5340 Appliance Product Description</i> for more details.</p>
Network cabling for the Veritas 5150 Appliance	<p>The following Veritas 5150 Appliance ports must be connected to the network for initial configuration:</p> <ul style="list-style-type: none"> <li>■ The remote management (IPMI) port <b>Note:</b> The remote management port must be configured before you begin initial configuration. If it is not configured, refer to the <i>Veritas 5150 Appliance Hardware Installation Guide</i> for the procedure. Used to connect to the Veritas Remote Management Interface.</li> <li>■ host0 Used to connect to the Flex Appliance Console.</li> <li>■ One or two 10Gb NICs Used for the application instances.</li> </ul> <p>See the <i>Veritas 5150 Appliance Hardware Installation Guide</i> or the <i>Veritas 5150 Appliance Product Description</i> for more details.</p>

**Table 2-1** Flex Appliance configuration guidelines and checklist (*continued*)

Parameter	Description
Connectivity during initial configuration	<p>When you perform the appliance initial configuration, you must take precautions to avoid loss of connectivity. Any loss of connectivity during initial configuration results in failure.</p> <p>The computer that you use to configure the appliance should be set up to avoid the following events:</p> <ul style="list-style-type: none"><li>■ Conditions that cause the computer to go to sleep</li><li>■ Conditions that cause the computer to turn off or to lose power</li><li>■ Conditions that cause the computer to lose its network connection</li></ul>
Required names and addresses	<p>Before the configuration, gather the following information:</p> <ul style="list-style-type: none"><li>■ (5340 appliance only) IP address for the Flex Appliance Console</li><li>■ (5340 appliance only) Hostname for the Flex Appliance Console</li><li>■ IP address for each node in the appliance</li><li>■ Hostname for each node in the appliance</li><li>■ Default gateway</li><li>■ Netmask</li><li>■ (Optional) DNS server IP address</li><li>■ DNS domain</li><li>■ (Optional) Search domain</li></ul> <p><b>Note:</b> If you plan to use DNS, make sure that forward and reverse DNS lookups are configured properly in your environment. If a forward or a reverse DNS lookup returns multiple records, the initial configuration may fail. You can check the DNS configuration with the following commands for each node. Each command should return only one entry.</p> <p>Linux:</p> <pre>dig +short @&lt;DNS server IP address&gt; a &lt;node FQDN&gt; dig +short @&lt;DNS server IP address&gt; -x &lt;node IP address&gt;</pre> <p>Windows:</p> <pre>nslookup &lt;node IP address&gt; nslookup &lt;node hostname&gt;</pre>

**Table 2-1** Flex Appliance configuration guidelines and checklist (*continued*)

Parameter	Description
Default username and password	<p>New appliances are shipped with the following default login credentials:</p> <ul style="list-style-type: none"> <li>■ Username: <b>hostadmin</b></li> <li>■ Password: <b>P@ssw0rd</b></li> </ul> <p><b>Note:</b> When you perform the initial configuration, you are not required to change the default password. However, to increase the security of your environment, Veritas recommends that you change the default password immediately with the <code>set user password</code> command. As a best practice, the password should be changed periodically. Make sure to keep a record of the current password in a secure location.</p>
Firewall port usage	<p>Make sure that the following ports are open if a firewall exists between the appliance and the network:</p> <ul style="list-style-type: none"> <li>■ 22 (SSH) must be allowed to each node.</li> <li>■ 443 (HTTPS) must be allowed to the Flex Appliance Console.</li> </ul>
(5340 appliance only) Memory requirements for expanded MSDP storage configurations	<p>For all storage configurations with an aggregate total of all MSDP pools equaling 960TB or larger, Veritas strongly recommends upgrading the memory capacity to 1536GB.</p> <p>For complete details on the supported expanded storage configurations, see the <i>NetBackup 5340 Appliance Product Description Guide</i> and refer to the topic "Available appliance storage options".</p>

## Performing the initial configuration

The following procedure explains how to configure the Veritas Flex Appliance software on a new appliance.

### To configure Flex Appliance

- 1 Review the initial configuration guidelines and checklist to make sure that you have all of the necessary information to complete this procedure.

See ["Initial configuration guidelines and checklist"](#) on page 17.

- 2 Use the following steps to access the Flex Appliance Shell from the Veritas Remote Management Interface:
  - Open a supported web browser on a system that has a network connection to the appliance. Flex Appliance supports the following browsers:
    - Google Chrome version 57 or higher
    - Mozilla Firefox version 52 or higher

- Enter the IP address that is assigned to the remote management (IPMI) port of the appliance node. If you have a multi-node appliance, select one of the nodes to use to begin the initial configuration.
- Log in to the Veritas Remote Management Interface with the following default credentials:
  - **Username:** `sysadmin`
  - **Password:** `P@ssw0rd`
- Change the **sysadmin** password from the known default password as follows:
  - Navigate to **Configuration > Users** and select the **sysadmin** user.
  - Click **Modify User**.
  - Select the **Change Password** check box and enter a new password.
- Do one of the following to launch the Flex Appliance Shell:
  - Navigate to **Remote Control > Console Redirection** and click **Launch Console**.
  - If available, navigate to **Remote Control > iKVM over HTML5** and click **Launch Console over HTML5**.

---

**Note:** Availability of the HTML5 option depends on the appliance firmware version. You can check the version from the **System > System Information** page. The BIOS ID must show version 00.01.0016 or later.

---

**3** Log in to the Flex Appliance Shell with the following default credentials:

- Username: `hostadmin`
- Password: `P@ssw0rd`

A welcome message appears in the Flex Appliance Shell with the available commands `setup` and `system`.

**4** Enter the following command to configure the host network:

```
setup configure-network
```

Follow the prompts to enter the host network information. You can enter multiple DNS server IP addresses or search domains using a comma-separated list.

**5** If you did not fill in the optional DNS parameters or want to bypass DNS for specific hosts, use the following steps to add the hostname resolution information to the appliance `Hosts` file:

- Enter the following command:

```
system add-host
```

- One at a time, enter the required information for the node and the Flex Appliance Console if the `setup configure-network` prompts asked for it. You can also add the information for any instances you plan to create, or you can add that information later.

- 6 Enter the following command to configure the Flex Appliance Console:

```
setup configure-console
```

Follow the prompts as applicable to your appliance to enter the console network information.

---

**Note:** Depending on the number of storage shelves you have in the appliance, this step may take up to 15 minutes to complete. When it is complete, the shell refreshes with new command options.

---

- 7 Enter the following command to change the **hostadmin** password from the known default password:

```
hostadmin: set user password
```

Follow the prompts to enter the new password.

- 8 (Optional) Use the `set date` commands to set the date and time for the appliance. See [“Setting the date and time for appliance nodes”](#) on page 36.

- 9 If you have a single-node appliance, the initial configuration process is now complete. Proceed to the next steps that are listed at the end of this topic.

If you have a multi-node appliance, add the second node. Then proceed to the next steps that are listed at the end of this topic.

See [“Adding a node”](#) on page 23.

---

**Note:** If any part of the initial configuration fails, refer to the error message to resolve the issue and try again. If you resolve the error but experience the same failure, perform a factory reset and a storage reset to return the appliance to its factory configuration. Then restart the initial configuration process.

See [“Performing a factory reset”](#) on page 94.

See [“Performing a storage reset”](#) on page 97.

---

## Next steps

After you have completed the initial configuration, you must perform the following tasks before you can create an application instance and start using Flex Appliance:

- Verify that you can access the Flex Appliance Console.  
See [“Accessing and using the Flex Appliance Console”](#) on page 28.
- Configure at least one network interface. You can configure a physical interface, add a VLAN tag, or create a bond.  
See [“Configuring a network interface”](#) on page 35.  
See [“Creating a network bond”](#) on page 33.
- Add the applications that you want to use to the repository.  
See [“Managing the repository”](#) on page 50.
- Add at least one tenant.  
See [“Adding a tenant”](#) on page 40.
- Veritas also recommends that you register your appliance to ensure that you receive maximum support in the event of a failure. Registration helps Veritas to contact the right person and to dispatch field services to the correct location for repairs.  
See [“Registering an appliance”](#) on page 82.

Once all of these tasks have been completed, you are ready to create an instance and start using Flex Appliance.

See [“Creating application instances”](#) on page 53.

## Adding a node

Flex Appliance supports up to two nodes on the Veritas 5340 Appliance. You can add a second node during initial configuration or any time after.

A multi-node appliance provides the following benefits:

- Increased efficiency with a shared workload
- Automatic failover for a single-node failure

Adding a second node consists of the following tasks:

- Perform the host network configuration on the new node.
- From the existing node, add the new node to the appliance.
- Complete the initial configuration on the new node.

## Tasks for adding a node

### To perform the host network configuration on the new node

- 1 Verify the version compatibility between the new node and the node that you want to add it to. The nodes must be running the same upgrade version of Flex Appliance, but they can have different update versions. For example, if your existing node has the 1.3.1 update installed on it, you can add a node that is running version 1.3. However, you cannot add a node that is running version 1.2.

If the existing node is at a lower version that does not meet these requirements, upgrade that node before you add the new one. If the new node is at a lower version that does not meet these requirements, it must be reimaged to the later version. Contact Veritas Technical Support for assistance and ask your representative to reference article 100044669.

Veritas also recommends that you install any missing updates after you add the node so that both nodes are running the same version.

- 2 Gather the following details for the new node that you want to add to the appliance:

- IP address
- Hostname

Gather the following details from the appliance that you want to add the node to:

- Default gateway
- Netmask
- (Optional) DNS server IP address
- DNS domain
- (Optional) Search domain

- 3 Use the following steps to access the Flex Appliance Shell from the Veritas Remote Management Interface:
  - Open a supported web browser on a system that has a network connection to the appliance. Flex Appliance supports the following browsers:
    - Google Chrome version 57 or higher
    - Mozilla Firefox version 52 or higher
  - Enter the IP address that is assigned to the remote management port of the new node.



- Log in to the Veritas Remote Management Interface with the following default credentials:
  - **Username:** `sysadmin`
  - **Password:** `P@ssw0rd`
- Change the **sysadmin** password from the known default password as follows:
  - Navigate to **Configuration > Users** and select the **sysadmin** user.
  - Click **Modify User**.
  - Select the **Change Password** check box and enter a new password.
- Navigate to **Remote Control > Console Redirection** and click **Launch Console** to launch the Flex Appliance Shell.

**4** Log in to the Flex Appliance Shell with the following default credentials:

- Username: `hostadmin`
- Password: `P@ssw0rd`

A welcome message appears in the Flex Appliance Shell with the available commands `setup` and `system`.

**5** Enter the following command to configure the host network:

```
setup configure-network
```

Follow the prompts to enter the host network information. You can enter multiple DNS server IP addresses or search domains using a comma-separated list.

**6** If you did not fill in the optional DNS parameters or want to bypass DNS for the new node, enter the following command to add the hostname resolution information to the appliance `Hosts` file:

```
system add-host
```

Follow the prompts to enter the required information for the new node.

### To add the new node to the appliance

- 1 Log in to Flex Appliance Shell from the other, preexisting node that was previously configured for the appliance.
- 2 From the preexisting node, enter the following command to add the new node to the appliance:

`setup add-node with-response new_node=<hostname>`, where *<hostname>* is the hostname of the node that you want to add.

Follow the prompts to add the node. When you are prompted for the new node's password, enter **P@ssw0rd**.

---

**Note:** Do not perform any other tasks on the appliance until the `add-node` operation is complete.

---

### To complete the initial configuration on the new node

- 1 Log back in to the Flex Appliance Shell from the new node that you just added to the appliance. The shell should now display additional command options.
- 2 Enter the following command to change the **hostadmin** password from the known default password:

**hostadmin:** `set user password`

Follow the prompts to enter the new password.

- 3 If you added this node as part of the appliance initial configuration, return to the initial configuration procedure and refer to the next steps at the end of the procedure to get started using the appliance.

See [“Performing the initial configuration”](#) on page 20.

## Accessing and using the Flex Appliance Shell

You can use the Flex Appliance Shell to perform the initial configuration, monitor the appliance hardware, and manage some of the settings.

### Accessing the Flex Appliance Shell

To access the Flex Appliance Shell, open an SSH session to the appliance node and log in with the username **hostadmin** and the password that you set during initial configuration. If you have not completed the initial configuration yet, use the default password **P@ssw0rd**.

---

**Note:** If you have a multi-node appliance, you must log in to each node individually.

---

When you log in for the first time, the available commands are limited to those that you can run on an unconfigured appliance. Complete the initial configuration to gain access to the rest of the command options. See [“Performing the initial configuration”](#) on page 20.

## Navigating the Flex Appliance Shell

The Flex Appliance Shell includes the following command views:

- `setup`  
Includes all of the commands for initial configuration
- `system`  
Includes the commands you can use to monitor the appliance hardware or access privileged operations, including security settings, upgrades, and factory reset
- `show`  
Includes the commands you can use to show the current appliance settings
- `set`  
Includes the commands you can use to modify the appliance settings
- `delete`  
Includes the commands you can use to remove appliance settings

The following is a list of tips on how to use the Flex Appliance Shell:

- You can press the `?` key at any time to display more information about the commands or sub-views. If you press `?` after you enter a command, the format and usage of the parameters for that command is displayed.
- To type a `?` without displaying the help, first press **Ctrl + v**.
- You can press **Alt + s** at any time to view a list of shell shortcuts and additional features.
- The Flex Appliance Shell works similarly to the Bourne-Again Shell (BASH) and supports all of the same keyboard shortcuts.
- Additional Linux commands are available by typing the full path to the command. For example: `/usr/bin/top`.  
The available commands are dependent on the security permission settings of the user.
- In the documentation, command variables are italicized or in angular brackets (`<>`). Replace these variables with the appropriate information for each command.

See [“Common tasks in Flex Appliance”](#) on page 31.

# Accessing and using the Flex Appliance Console

After you have configured Flex Appliance, you can sign in to the Flex Appliance Console to use and manage the appliance software.

## Accessing the Flex Appliance Console

### To access the Flex Appliance Console

- 1 Open a web browser on a system that has a network connection to the appliance. Flex Appliance supports the following browsers:

- Google Chrome version 57 or higher
- Mozilla Firefox version 52 or higher

---

**Note:** These browsers may display a **Privacy error** or **Insecure Connection** page when you access the Flex Appliance Console. Use the **Advanced** option on the page to proceed.

---

- 2 Navigate to `https://console.domain`, where *console.domain* is one of the following:
  - If you have a Veritas 5150 Appliance, *console.domain* is the fully qualified domain name (FQDN) or the IP address that you entered during initial configuration.
  - If you have a Veritas 5340 Appliance, *console.domain* is the fully qualified domain name (FQDN) or the IP address that you entered for the Flex Appliance Console during initial configuration.
- 3 When you sign in for the first time, use the following default credentials:
  - **Username:** admin
  - **Password:** P@ssw0rd

---

**Warning:** The default password is well documented and available online. For security purposes, Veritas recommends that you change the **admin** user password the first time you sign in. See [“Changing a user password in the Flex Appliance Console”](#) on page 45.

---

After you have signed in, you can create other users from the **User management** page. See [“Managing Flex Appliance Console users and tenants”](#) on page 40.

---

**Note:** All users are signed out after one hour for security reasons, even if they are active. Sign back in if you need to continue using the console.

---

## Navigating the Flex Appliance Console

Use the left-side navigation bar to navigate the Flex Appliance Console. The navigation bar uses icons to indicate the various pages. To see the page names, hover over the icons or use the >> icon at the top to expand the entire bar.

The Flex Appliance Console includes the following pages:

### Home



The home page shows a small overview of the system topology and a getting-started flow for first-time users. To return to the home page at any time, click the **Home** icon in the left-side navigation bar.

### System topology



The **System topology** page shows a complete overview of the appliance nodes, storage, and instances. To access this page, click the **System topology** box on the home page or click the **System topology** icon in the left-side navigation bar.

---

**Note:** The **System topology** page shows the full capacity of the appliance storage. However, not all of the storage is available for use. You can see the usable storage capacity when you create or resize an instance.

---

### Activity Monitor



The **Activity Monitor** page shows the tasks that have been performed on the Flex Appliance Console and their current status. To access this page, click the **Activity Monitor** icon in the left-side navigation bar.

### Repository



The **Repository** page lets you manage the applications and upgrade packages for Flex Appliance. To access this page, click the **Repository** icon in the left-side navigation bar.

### Tenants



The **Tenants** page lets you manage tenants. To access this page, click the **Tenants** icon in the left-side navigation bar.

### User management



The **User management** page lets you manage users for the Flex Appliance Console. To access this page, click the **User management** icon in the left-side navigation bar.

### Network interfaces



The **Network interfaces** page lets you view and configure the appliance's network interfaces. To access this page, click the **Network interfaces** icon in the left-side navigation bar.

See [“Common tasks in Flex Appliance”](#) on page 31.

# Installing the NetBackup Administration Console and client packages

To create and manage NetBackup instances, you need access to the NetBackup Administration Console or the NetBackup Remote Administration Console. Use the NetBackup Remote Administration Console if you want to manage your instances from a computer that does not have NetBackup software installed.

You also need access to the NetBackup client software so that you can install it on the computers that you want to back up.

The NetBackup Administration Console and the NetBackup client packages are included with the Electronic Software Distribution (ESD) images for NetBackup product installation. You can download the NetBackup ESD images from the **Downloads** page on the [Veritas Support website](#).

For more information about the interfaces or installing the client software, refer to the *NetBackup Installation Guide*, which is accessible from the [NetBackup page](#) on the Support website.

## Common tasks in Flex Appliance

The following table contains quick links on how to perform common tasks in Veritas Flex Appliance.

Table 2-2

Task	Quick links
Configuring Flex Appliance	See <a href="#">“Performing the initial configuration”</a> on page 20. See <a href="#">“Adding a node”</a> on page 23.
Managing tenants and users	See <a href="#">“Managing Flex Appliance Console users and tenants”</a> on page 40. See <a href="#">“Managing NetBackup application instance users”</a> on page 46.
Modifying settings	See <a href="#">“Configuring a network interface”</a> on page 35. See <a href="#">“Creating a network bond”</a> on page 33. See <a href="#">“Setting the date and time for appliance nodes”</a> on page 36.

Table 2-2 (continued)

Task	Quick links
Configuring Call Home	See <a href="#">“About AutoSupport and Call Home”</a> on page 82. See <a href="#">“Viewing Call Home information”</a> on page 85. See <a href="#">“Configuring Call Home settings”</a> on page 86. See <a href="#">“Deleting and disabling Call Home settings”</a> on page 88.
Monitoring the appliance	See <a href="#">“Monitoring the hardware from the Flex Appliance Shell”</a> on page 89. See <a href="#">“Viewing hardware faults”</a> on page 92. See <a href="#">“Viewing system data”</a> on page 92.
Adding files to the repository	See <a href="#">“Managing the repository”</a> on page 50.
Creating instances	See <a href="#">“Creating application instances”</a> on page 53. See <a href="#">“Managing application instances”</a> on page 64.



# Modifying settings

This chapter includes the following topics:

- [Creating a network bond](#)
- [Deleting a network bond](#)
- [Configuring a network interface](#)
- [Setting the date and time for appliance nodes](#)
- [Changing DNS or Hosts file settings](#)

## Creating a network bond

If you have more than one node, you must create a network bond on each appliance node after all of the nodes are added. Use the same slaves and bonding mode on each node on the appliance.

## To create a network bond

- 1 On the Flex Appliance Console, click the **Network interfaces** icon in the left-side navigation bar to open the **Network interfaces** page.

It may take a few minutes to load.

Network interfaces									
Click a network interface to configure the settings, or select interfaces to perform an action.									
<div> + Create bond + Add VLAN tag - Delete bond - Remove VLAN tag - Remove settings Node: All Search... </div>									
	Network interface	Speed	MTU	Netmask	Gateway	Node	Link status	Bonded interfaces	VLAN ID
<input checked="" type="checkbox"/>	bond0	30Gb/s	1500			nbapp831	UP	nic0,nic1,nic2,n...	
<input type="checkbox"/>	nic0	0 Gb/s	1500			nbapp831	DOWN		
<input type="checkbox"/>	nic1	0 Gb/s	1500			nbapp831	DOWN		
<input type="checkbox"/>	nic2	10Gb/s	1500			nbapp831	UP		

- 2 Select the check box next to the name of each network interface that you want to include in the bond, then click **Create bond**.
- 3 Enter a unique bond name and select the bond mode.

The following bond modes are available:

- 802.3ad (LACP) - this is the default bond mode value

**Note:** If you select this bond mode, all of the network interfaces in the bond must be on the same port channel. If they are not, the bond speed is less than the sum of the interface speeds. If the bond speed is not as expected after you create the bond, run the following command in the Flex Appliance Shell:

```
/bin/grep "Aggregator ID" /proc/net/bonding/<bond name>
```

The Aggregator IDs should all be the same. If they are not, run the following command and check the Aggregator ID of each interface to determine which one is on a different port channel:

```
/bin/cat /proc/net/bonding/<bond name>
```

- balance-rr
- active-backup
- balance-xor
- broadcast

- balance-tlb - This bond mode is not supported due to a known issue in Red Hat. However, Veritas does not block this bond mode. If you want to use this bond mode, see the following article from Red hat before you proceed:  
<https://access.redhat.com/solutions/67546>
  - balance-alb - This bond mode is not supported due to a known issue in Red Hat. However, Veritas does not block this bond mode. If you want to use this bond mode, see the following article from Red hat before you proceed:  
<https://access.redhat.com/solutions/67546>
- 4 Click **Create**.
  - 5 Configure the new bond.
- See “[Configuring a network interface](#)” on page 35.

## Deleting a network bond

Follow these steps to delete a network bond.

### To delete a network bond

- 1 From the **System topology** page on the Flex Appliance Console, click on each of your application instances and verify that the bond is not listed in the **IP address and interface pairs** field.
- 2 If the bond is listed for one or more instances, edit the network of each instance to remove the bond. You may need to add a different IP address and interface pair if the bond is the only interface that is assigned to the instance.  
See “[Editing instance network settings](#)” on page 66.
- 3 Navigate to the **Network interfaces** page and select the bond that you want to delete.
- 4 Click **Delete bond**.

## Configuring a network interface

Before you can create an instance, you must configure a network interface. The information that you enter when you configure an interface is used to populate the network information fields when you create a new instance.

To configure a network interface

- 1 On the Flex Appliance Console, click the **Network interfaces** icon in the left-side navigation bar to open the **Network interfaces** page.

It may take a few minutes to load.

Network interfaces									
Click a network interface to configure the settings, or select interfaces to perform an action.									
<div><div>Create bond</div><div>Add VLAN tag</div><div>Delete bond</div><div>Remove VLAN tag</div><div>Remove settings</div><div>Node: All</div><div>Search</div></div>									
	Network interface	Speed	MTU	Netmask	Gateway	Node	Link status	Bonded interfaces	VLAN ID
<input type="checkbox"/>	bond0	30Gb/s	1500			nbapp831	UP	nic0,nic1,nic2,ni...	
<input type="checkbox"/>	nic0	0 Gb/s	1500			nbapp831	DOWN		
<input type="checkbox"/>	nic1	0 Gb/s	1500			nbapp831	DOWN		
<input type="checkbox"/>	nic2	10Gb/s	1500			nbapp831	UP		

- 2 Do one of the following to enter network information:

**Note:** Do not enter the same VLAN ID or netmask and gateway pair for more than one interface.

- If you want to use VLAN tagging, select the check box next to the name of the network interface, click **Add VLAN Tag**, and then enter the VLAN ID, netmask, and default gateway. Use CIDR format for the netmask and gateway.

**Note:** If you have more than one node, you must set the VLAN tag for each node.

- If you do not want to use VLAN tagging, click the name of the network interface, and then enter the netmask and gateway in CIDR format.

- 3 Click **OK**.

See [“Creating a network bond”](#) on page 33.

# Setting the date and time for appliance nodes

Follow these steps to set the date and time for all appliance nodes.

### To set the date and time using NTP

- 1 Log in to the Flex Appliance Shell, and then type the following:

```
set date ntp ntp=<IP address or hostname>
```

- 2 Press **Enter**.

### To set the date and time by entering the date and time manually

- 1 Log in to the Flex Appliance Shell, and then type the following:

```
set date manual-date
```

- 2 Press **Enter**.

- 3 Type the date and time, and then press **Enter**.

### To set the time zone

- 1 Log in to the Flex Appliance Shell, and then type the following:

```
set date timezone
```

- 2 Press **Enter**.

- 3 Type the number that corresponds to your country, and then press **Enter**.

- 4 Type the number that corresponds to your time zone, and then press **Enter**.

- 5 Type **1** to verify that the time zone is correct, and then press **Enter**.

## Changing DNS or Hosts file settings

Use the following procedures to change the DNS or `Hosts` file settings after initial configuration.

### Changing DNS settings

#### To change the DNS server IP address or search domain

- 1 From the Flex Appliance Shell, run the following command:

```
system set-DNS
```

- 2 Follow the prompts to change the DNS settings as follows:

- To replace the existing settings with new parameters, enter the new information in the appropriate fields. You can enter multiple DNS server IP addresses or search domains using a comma-separated list.
- To remove the DNS settings, leave the fields blank.

---

**Warning:** If you remove existing DNS settings, you must add the hostname resolution information to the appliance `Hosts` file. See [the section called “Changing Hosts file settings”](#) on page 38.

---

## Changing Hosts file settings

If you do not want to use DNS or want to bypass DNS for specific hosts, you can use the appliance `Hosts` file to manage the hostname resolution information.

### To add entries to the `Hosts` file

- 1 Gather the following information for all appliance nodes and for the Flex Appliance Console, if applicable:
  - IP address
  - Hostname
  - Domain
- 2 From the Flex Appliance Shell, run the following command:
 

```
system add-host
```
- 3 One at a time, enter the required information for the nodes and the Flex Appliance Console, if applicable.

### To remove an entry from the `Hosts` file

- 1 From the Flex Appliance Shell, run the following command:
 

```
system remove-host
```
- 2 Enter the IP address of the host that you want to remove.

# Managing users

This chapter includes the following topics:

- [Overview of the Flex Appliance default users](#)
- [Managing Flex Appliance Console users and tenants](#)
- [Changing the hostadmin user password in the Flex Appliance Shell](#)
- [Managing NetBackup application instance users](#)

## Overview of the Flex Appliance default users

Flex Appliance comes with default users for the Flex Appliance Console, the Flex Appliance Shell, and the NetBackup application instances.

The following list describes the default users and their functions:

- The **admin** user  
This user is the default user for the Flex Appliance Console. Use this user to sign in to the console for the first time.
- The **hostadmin** user  
This user is the default user for the Flex Appliance Shell. Use this user to perform the initial configuration and for any other tasks that involve the shell.
- The **appadmin** user  
This user is the default user for all of your NetBackup application instances. Use this user to open SSH sessions to the instances. The **appadmin** user has the NetBackup security administrator role and access to the NetBackup web UI.

---

**Warning:** The default password for these users is well documented and available online. For security purposes, Veritas recommends that you change the passwords the first time that you use the accounts.

See [“Changing a user password in the Flex Appliance Console”](#) on page 45.

See [“Changing the hostadmin user password in the Flex Appliance Shell”](#) on page 46.

See [“Changing a user password on a NetBackup instance”](#) on page 48.

---

## Managing Flex Appliance Console users and tenants

You can manage all of your Flex Appliance Console users from the **User management** page. To access the **User management** page, sign in to the console and click the **User management** icon in the left-side navigation bar.

Users are assigned to tenants. A tenant is a separate space for a specific group of users and for a specific use. Different tenants can be allocated for different user groups.

See [“Adding a tenant”](#) on page 40.

---

**Note:** In this version of Flex Appliance, all users are assigned to all tenants.

---

### User types

The following types of users are supported on the Flex Appliance Console:

- Local users  
See [“Adding a local user to the Flex Appliance Console”](#) on page 42.
- Active Directory users  
See [“Importing an Active Directory user or user group to the Flex Appliance Console”](#) on page 44.

### User access roles

In this version of Flex Appliance, only the super administrator role is available. A super administrator has access to all areas of the Flex Appliance Console and can perform all operations.

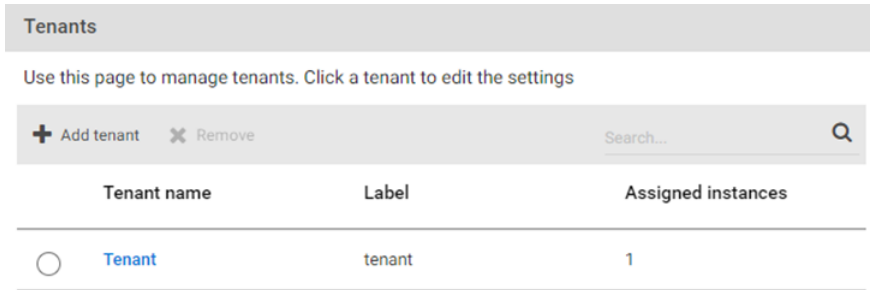
## Adding a tenant

Follow these steps to add a tenant.



### To add a tenant

- 1 On the Flex Appliance Console, click the **Tenants** icon in the left-side navigation bar to open the **Tenants** page.



- 2 Click **Add tenant**.
- 3 Enter a tenant name and location.
- 4 Complete the following network configuration settings:

---

**Note:** The network configuration information that you enter here is used to populate the network information fields when you create a new instance. You can also enter this information when you create an instance.

---

<b>Domain name</b>	Type the domain name for this tenant. You can enter only one domain name.
<b>Search domains</b>	To enter multiple search domains, type a comma and a space after each search domain.
<b>Name servers</b>	Type the IP addresses for the name servers for this tenant. To enter multiple name servers, type a comma and a space after each name server.
<b>Hosts file entries</b>	Type the <code>Hosts</code> file entries for this tenant if you do not want to use DNS or want to bypass DNS for specific hosts. Include entries for all hosts that you want your instances to communicate with.

- 5 Click **Save**.

After you add a tenant, you can assign instances to it.

See [“Creating application instances”](#) on page 53.

## Editing a tenant

Follow these steps to change the settings for a tenant.

### To edit a tenant

- 1 On the Flex Appliance Console, click the **Tenants** icon in the left-side navigation bar.
- 2 Click the name of the tenant that you want to edit.
- 3 Change the appropriate settings.
- 4 Click **Save**.

## Removing a tenant

Follow these steps to remove a tenant.

### To remove a tenant

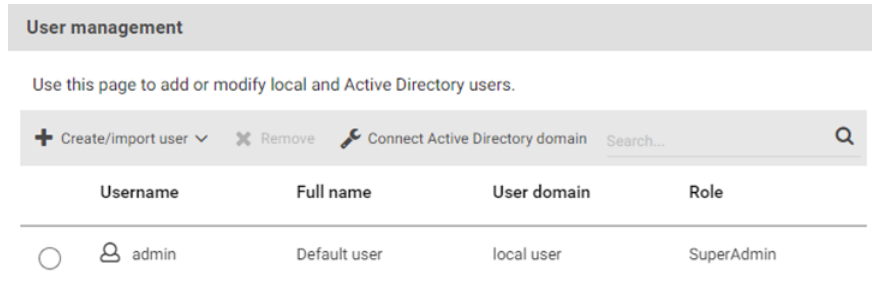
- 1 On the Flex Appliance Console, click the **Tenants** icon in the left-side navigation bar.
- 2 Select the tenant that you want to remove, then click **Remove**.

## Adding a local user to the Flex Appliance Console

Follow these steps to add a local user.

### To add a local user

- 1 On the Flex Appliance Console, click the **User management** icon in the left-side navigation bar to open the **User management** page.



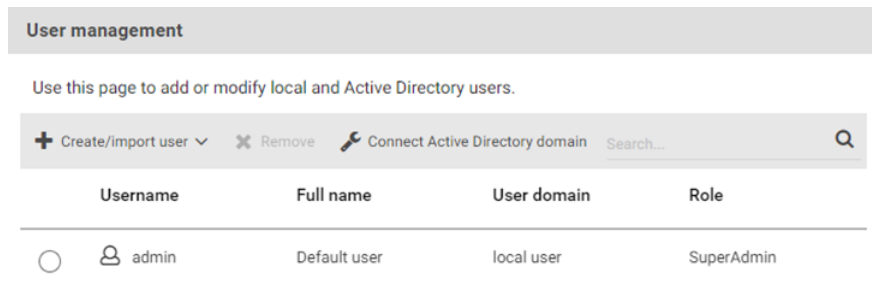
- 2 Click **Create/import user > Add local user**.
- 3 Enter a username, the user's full name, and a password.
- 4 Click **Save**.

## Connecting an Active Directory domain to the Flex Appliance Console

Follow these steps to connect an Active Directory (AD) domain.

### To connect an AD domain

- 1 On the Flex Appliance Console, click the **User management** icon in the left-side navigation bar to open the **User management** page.



- 2 Click **Connect Active Directory domain**.
- 3 Fill in the required parameters and click **Save**.

Once the AD domain has been connected, you can import AD users and user groups to grant them access to the Flex Appliance Console.

See [“Importing an Active Directory user or user group to the Flex Appliance Console”](#) on page 44.

## Importing an Active Directory user or user group to the Flex Appliance Console

Follow these steps to import an Active Directory (AD) user or user group.

---

**Note:** Nested user groups are not supported. To import the users of a nested group, you must perform this procedure for the group that they directly belong to.

---

### To import an AD user or user group

- 1 On the Flex Appliance Console, click the **User management** icon in the left-side navigation bar.
- 2 If you have not done so already, connect the AD domain that the user or the user group belongs to.  
  
See [“Connecting an Active Directory domain to the Flex Appliance Console”](#) on page 43.
- 3 Click **Create/import user > Import Active Directory users**.
- 4 Select **User** or **User group**.
- 5 Depending on your selection, enter the username or the group name. Do not include the domain name.
- 6 Click **Import**.

After you have imported the user or the user group, you can view the details on the **User management** page.

---

**Note:** You cannot view the members of a user group from the Flex Appliance Console. Use the AD server to manage the users within a group.

---

## Editing an Active Directory domain in the Flex Appliance Console

Follow these steps to make changes to an Active Directory (AD) domain that is connected to Flex Appliance.

### To edit an AD domain

- 1 From the **Home** page of the Flex Appliance Console, click the **User management** icon in the left-side navigation bar.
- 2 Click **Update Active directory domain**.
- 3 Modify the parameter fields as necessary and click **Save**.

---

**Note:** Changing the server name or IP address overwrites the existing AD domain with a new domain. Any imported users or user groups that are not part of the new domain are then unable to log in. If you do not plan to add these users to the new domain, you can remove them from the **User management** page.

See [“Removing a user from the Flex Appliance Console”](#) on page 45.

---

## Changing a user password in the Flex Appliance Console

Follow these steps to change the password of a local user or the default **admin** user.

---

**Note:** Active Directory user passwords cannot be changed from the Flex Appliance Console. They must be changed from the server on which they reside.

---

### To change a user password

- 1 Sign in to the Flex Appliance Console from the user account that you want to change the password for.
- 2 In the top-right corner of the screen, click the black circle icon that includes the user’s initials. For example, if the user’s full name is Default User, the icon includes the initials DU.



- 3 Click **Change password**.
- 4 Fill in the required fields and click **Save**.

## Removing a user from the Flex Appliance Console

Follow these steps to remove a user.

---

**Note:** The default **admin** user cannot be removed, and users cannot remove their own user accounts.

---

**To remove a user**

- 1 On the Flex Appliance Console, click the **User management** icon in the left-side navigation bar.
- 2 Select the user that you want to remove, then click **Remove**.

## Changing the hostadmin user password in the Flex Appliance Shell

Follow these steps to change the **hostadmin** user password.

**To change a hostadmin user password**

- 1 Log in to the Flex Appliance Shell, and then type the following:

```
set user password
```

- 2 Press **Enter**.
- 3 Type a new password.

A password must be between 8 and 512 characters, and must contain at least one upper-case letter and one number.

## Managing NetBackup application instance users

After you create a NetBackup application instance, you can log in to the instance with the **appadmin** user account to add and manage additional users.

The following types of users are supported on NetBackup instances:

- Local users
  - See [“Adding and removing local NetBackup instance users”](#) on page 46.
  - See [“Changing a user password on a NetBackup instance”](#) on page 48.
- Active Directory (AD) and Lightweight Directory Access Protocol (LDAP) users
  - See [“Connecting a remote user domain to a NetBackup instance”](#) on page 47.

### Adding and removing local NetBackup instance users

Use the following procedures to add or remove local users on a NetBackup instance.

## Adding local users to a NetBackup instance

### To add a local user

- 1 Open an SSH session to the instance as the **appadmin** user.
- 2 Run the following command:

```
sudo useradd <username>
```

Where *<username>* is the username of the user that you want to add.

- 3 Run the following command to set a password for the new user:

```
sudo passwd <username>
```

Where *<username>* is the username that you added in the previous step.

## Removing local users from a NetBackup instance

### To remove a local user

- 1 Open an SSH session to the instance as the **appadmin** user.
- 2 Run the following command:

```
sudo userdel <username>
```

Where *<username>* is the username of the user that you want to remove.

## Connecting a remote user domain to a NetBackup instance

NetBackup application instances support Active Directory (AD) and Lightweight Directory Access Protocol (LDAP) users. Use the following procedure to connect a remote user domain to a master server application instance.

### To connect a remote user domain

- 1 From the Flex Appliance Console, verify that the master server instance is on the same network as the AD or the LDAP domain. If it is not, edit the settings so that the instance can reach the domain. See [“Editing instance network settings”](#) on page 66.
- 2 Open the following ports if they are not already open:
  - 139
  - 145

- 3 Open an SSH session to the master server instance as the **appadmin** user and run the following command:

```
sudo realm join <domain name> -v
```

Where *<domain name>* is the AD or the LDAP domain that you want to connect.

Enter the **appadmin** user password when prompted.

- 4 When the following prompts appear, enter the password for the AD or the LDAP domain:

```
Password for Administrator:
```

```
Enter Administrator's password:
```

- 5 Wait for the process to complete. The following message should appear:

```
Successfully enrolled machine in realm
```

- 6 When the connection is complete, sign in to the instance as the **appadmin** user from the NetBackup web UI. Add and configure the remote users that you want to have access to the instance. See the *NetBackup Web UI Security Administrator's Guide* for details.

## Changing a user password on a NetBackup instance

Follow these steps to change the password of a local user or the default **appadmin** user on a NetBackup application instance.

---

**Note:** Active Directory user passwords cannot be changed from an instance. They must be changed from the server on which they reside.

---

### To change a user password from that user's account

- 1 Open an SSH session to the instance as the user that you want to change the password for and run the following command:

```
passwd
```

- 2 Follow the prompt to change the password.



**To change another user's password from the appadmin account**

- 1 Open an SSH session to the instance as the **appadmin** user and run the following command:

```
sudo passwd <username>
```

Where *<username>* is the username of the user whose password you want to change.

- 2 Follow the prompt to change the password.

# Using Flex Appliance

This chapter includes the following topics:

- [Managing the repository](#)
- [Creating application instances](#)
- [Managing application instances](#)
- [Upgrading application instances](#)
- [About Flex Appliance upgrades and updates](#)

## Managing the repository

Before you can create an application instance, install an application add-on, or upgrade or update the appliance software, you must first add the applicable files to the repository.

To access the repository, sign in to the Flex Appliance Console and click the **Repository** icon in the left-side navigation bar.

The **Repository** page consists of the following tabs:

- **Applications**  
Use this tab to manage your applications for creating and upgrading instances. The tab displays the applications that are in the repository and their versions.
- **Application add-ons**  
Use this tab to manage application add-ons for your instances. The tab displays the add-ons that are in the repository and details about each, such as type, version, and the application they can be installed on.
- **Appliance upgrades and updates**  
Use this tab to manage upgrade and update packages for Flex Appliance. The repository can only hold one upgrade or update package at a time. The tab

displays the package that is currently in the repository and details relevant to installing the upgrade or update.

Use the Repository tabs to do the following:

- Add files to the repository  
See [“Adding files to the repository”](#) on page 51.
- Remove the current Flex Appliance upgrade or update package from the repository  
See [“Removing the current appliance upgrade or update package from the repository”](#) on page 52.
- Update Flex Appliance  
See [“Updating Flex Appliance”](#) on page 80.

## Adding files to the repository

Use the following procedure to download and add files to the Flex Appliance repository.

Guidelines for adding files to the repository:

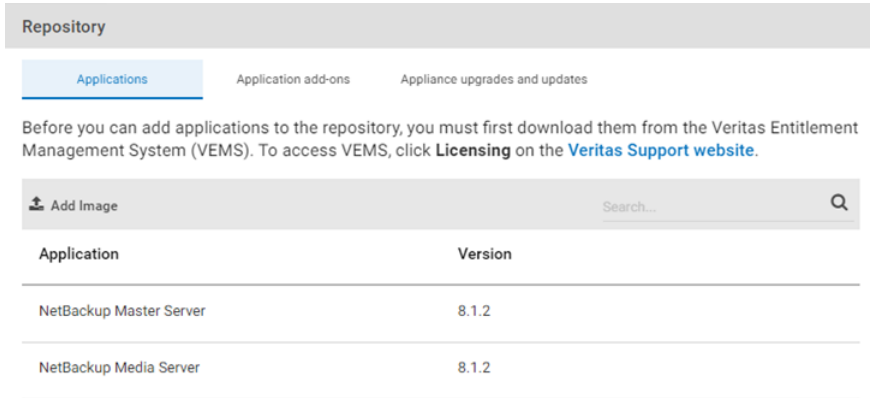
- Only add files that have been downloaded from or provided by Veritas.
- Do not change or modify the file names.

### To download and add files to the repository

- 1 From a computer within your appliance domain, download the appropriate file from one of the following locations:
  - Applications and appliance upgrade or update packages:  
Download these files from the **Downloads** page on the [Veritas Support website](#).
  - Application add-ons:

Download these files from the **Downloads** page on the [Veritas Support website](#) or from Veritas [SORT](#).

- 2 From the same computer, sign in to the Flex Appliance Console and click the **Repository** icon in the left-side navigation bar to open the **Repository** page.



- 3 On the **Repository** page, navigate to the **Applications**, **Application add-ons**, or **Appliance upgrades and updates** tab, depending on the type of file that you want to add.
- 4 Click **Add Image** or **Add Package**.
- 5 In the dialog box that appears, do the following:
  - At the top of the dialog box, click on the drop-down and navigate to the location where you downloaded the file from Veritas.
  - Select the downloaded file from the list of items that appears, then click **Open**.

If you added an upgrade or update package, a progress banner appears at the top of the screen. When the task is complete, the new file should appear on the page.

If you added an application or application add-on, you are redirected to the Activity Monitor to view the progress. When the task is complete, return to the **Repository** page to see the new file at the top of the list.

## Removing the current appliance upgrade or update package from the repository

The Flex Appliance repository can only hold one appliance upgrade or update package at a time. Use the following procedure to remove the current package.

**To remove an appliance upgrade or update package from the repository**

- 1 Sign in to the Flex Appliance Console and click the **Repository** icon in the left-side navigation bar.
- 2 On the **Repository** page, navigate to the **Appliance upgrades and updates** tab.
- 3 Click **Remove package**.

## Creating application instances

You can create application instances from the **System topology** page of the Flex Appliance Console. Navigate to the **Application instances** section and click **Create instance** to open a new page that lets you create instances of the following applications:

- NetBackup master server
- NetBackup media server with the following storage options:
  - Media Server Deduplication Pool (MSDP)
  - AdvancedDisk
  - Cloud Catalyst

---

**Note:** You cannot use both MSDP and Cloud Catalyst storage in the same application instance.

---

For a full list of supported applications and versions, see the following article on the Veritas Support website:

[Flex Appliance supported applications and usage information](#)

When you create a NetBackup instance, you need to complete additional configuration steps from within NetBackup. Use the following procedures as a guide and refer to the [NetBackup documentation](#) for additional details.

See [“Creating a NetBackup master server instance”](#) on page 54.

See [“Creating a NetBackup media server instance”](#) on page 57.

---

**Note:** When you create an instance, the new instance displays on the **System topology** page after it has been created but before it has been configured. If the instance configuration fails, the **System topology** page still shows the instance with an **ONLINE** status, but the **Activity Monitor** shows an error message. If you encounter this scenario, refer to the error message to fix the failure from within the instance, or delete the instance and try again.

---

## Creating a NetBackup master server instance

Use the following procedure to create a NetBackup master server instance in Flex Appliance.

### To create a NetBackup master server instance

- 1 Make sure that the NetBackup master server application you want to use is located in the repository. See [“Managing the repository”](#) on page 50.
- 2 Perform the following tasks if you have not already:
  - Configure at least one network interface. You can configure a physical interface, add a VLAN tag, or create a bond.  
See [“Configuring a network interface”](#) on page 35.  
See [“Creating a network bond”](#) on page 33.
  - Add at least one tenant.  
See [“Adding a tenant”](#) on page 40.
- 3 Gather the following information for the new instance:

---

**Note:** The hostname and IP address must not be in use anywhere else in your domain.

---

- Tenant that you want to assign it to
- Hostname (maximum of 63 characters including the domain name)
- IP address
- Network interface
- Domain name
- Name servers
- Search domains
- Smart Meter customer registration key (NetBackup 8.1.2 and later)  
Veritas Smart Meter helps you manage your NetBackup deployment more efficiently, spot trends, and plan for the future. To obtain a key, log in to the

[Veritas Smart Meter](#) site with your VEMS credentials and go to the **Registration Keys** page to download the key.


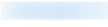


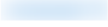

- (Optional) NetBackup license key  
NetBackup applications come with an evaluation license key. You must add a permanent NetBackup license key before the evaluation key expires. You can add your permanent key when you create the instance to avoid future issues.

**Note:** If the evaluation key expires before you create the instance, the instance creation fails. Make sure that you have a valid license key before you create an instance.

- (Optional) External Certificate Authority (CA) information:
  - External certificate, in PEM format
  - Custom CRL files, if needed

- 4 From the **System topology** page of the Flex Appliance Console, navigate to the **Application instances** section.

Application instances (1/2)  
You must stop an instance before you can delete it or resize the storage.

<div><div>+ Create instance</div><div>↺ Relocate</div><div>■ Stop</div><div>⏻ Start</div><div>🔧 Manage ▾</div><div>Search...</div><div>🔍</div></div>						
Name	Tenant	Type	Version	Node	Status	
 	tenant	NetBackup Master Server	8.1.2	nbapp865	 OFFLINE	
 	tenant	NetBackup Media Server	8.1.2	nbapp866	 ONLINE	

- 5 Click **Create instance**.
- 6 Select the appropriate master server application from the repository list that appears, making sure to verify the version number. Click **Next**.

- 7 Follow the prompts to create the instance. When you are done, you can view the progress in the Activity Monitor, which is accessible from the left pane of the Flex Appliance Console.

---

**Note:** If you do not want to use DNS or want to bypass DNS for certain hosts, verify that the hostname resolution information is included in the **Hosts file entries** field. You must include entries for the media servers and any other NetBackup hosts that you want to communicate with the instance.

---

- 8 Once the instance has been created successfully, you must change the password from the known default password.

---

**Warning:** You cannot access the NetBackup web UI to manage the instance until you have changed the password.

---

To change the password, open an SSH session to the instance and log in with the following credentials:

- Username: **appadmin**
- Password: **P@ssw0rd**

Follow the prompt to enter a new password.

- 9 (Optional) If you want to configure this instance to use an external CA-signed certificate, you can do so now or at a later time. Use an SCP tool to copy the files to the following locations:

- Copy the external certificate to the `/mnt/nbdata/hostcert/` directory on the instance.
- If needed, copy the certificate revocation lists (CRLs) to the `/mnt/nbdata/hostcert/crl` directory on the instance.

Complete the external CA configuration from NetBackup. See the *NetBackup Security and Encryption Guide* for details.

---

**Note:** Do not configure AdvancedDisk storage on a NetBackup master server instance. The NetBackup Administration Console lets you create an AdvancedDisk storage server on a master server instance, but Flex Appliance does not support storage configuration on master server instances. Create a separate NetBackup media server instance if you want to use AdvancedDisk storage.

---

See [“Managing application instances”](#) on page 64.



## Creating a NetBackup media server instance

Use the following procedure to create a NetBackup media server instance in Flex Appliance.

### To create a NetBackup media server instance

- 1 Make sure that the NetBackup media server application you want to use is located in the repository. See [“Managing the repository”](#) on page 50.
- 2 Perform the following tasks if you have not already:
  - Configure at least one network interface. You can configure a physical interface, add a VLAN tag, or create a bond.  
See [“Configuring a network interface”](#) on page 35.  
See [“Creating a network bond”](#) on page 33.
  - Add at least one tenant.  
See [“Adding a tenant”](#) on page 40.
- 3 Gather the following information for the new instance:

---

**Note:** The hostname and IP address must not be in use anywhere else in your domain.

---

- Tenant that you want to assign it to
- Hostname (maximum of 63 characters including the domain name)
- IP address
- Network interface
- Domain name
- Name servers
- Search domains
- Master server hostname
- Certificate Authority (CA) information for one of the following:

For a NetBackup CA:

- CA certificate fingerprint

If the master server is a Flex instance, you can locate this information from the instance details page of the master server instance. Click on the instance name under **Application instances** on the **System topology** page.

If the master server is not a Flex instance, see the *NetBackup Security and Encryption Guide* for the steps to locate this information from NetBackup.

- (Optional) Token for host ID-based certificate  
Depending on the master server security level, the host may require an authorization or a reissue token. If you do not specify a token when you create the instance, the wizard attempts to automatically obtain the certificate.

For an external CA (available for NetBackup 8.2 and later):

- Trust store, in PEM format
- Host certificate, in PEM format
- Private key, in PEM format
- (Optional) Passphrase of the private key  
A passphrase is required if the key is encrypted.
- (Optional) Custom CRL files
- (Optional) Password for host name-based certificate  
A host name-based certificate is mandatory for Cloud Catalyst storage or if Enhanced Auditing is enabled on the master server. You can specify the password when you create the instance, or you can deploy the certificate from the master server later.
- (Optional) NetBackup license key  
NetBackup applications come with an evaluation license key. You must add a permanent NetBackup license key before the evaluation key expires. You can add your permanent key when you create the instance to avoid future issues.

---

**Note:** If the evaluation key expires before you create the instance, the instance creation fails. Make sure that you have a valid license key before you create an instance.

---

- 4 Add the hostname for the new instance to the **Media Servers** list or the **Additional Servers** list on the master server, as follows:
  - Log on to the NetBackup Administration Console as the administrator.
  - In the main console window, in the left pane, click **NetBackup Management > Host Properties > Master Servers**.
  - In the right pane, double click on the master server hostname.

- In the **Master Server Properties** window, click one of the following:
    - If you want MSDP or Cloud Catalyst storage on the instance, click **Servers > Additional Servers**.
    - If you do not want MSDP or Cloud Catalyst storage on the instance, click **Servers > Media Servers**.
  - Click **Add** and enter the hostname for the new instance. The hostname should appear in the list.
  - Click **OK**.
- 5 If a firewall exists between the master server and the new instance, open the following ports on the master server to allow communication:
- vnetd: 13724
  - bprd: 13720
  - PBX: 1556
  - If the master server is a NetBackup appliance that uses TCP, open the following ports:  
443, 5900, and 7578.
- 6 From the **System topology** page of the Flex Appliance Console, navigate to the **Application instances** section.

## Application instances (1/2)

You must stop an instance before you can delete it or resize the storage.

+ Create instance   ✕ Relocate   ■ Stop   ⏻ Start   🔧 Manage ▾   Search...   🔍						
	Name	Tenant	Type	Version	Node	Status
		tenant	NetBackup Master Server	8.1.2	nbapp865	■ OFFLINE
		tenant	NetBackup Media Server	8.1.2	nbapp866	● ONLINE

- 7 Click **Create instance**.
- 8 Select the appropriate media server application from the repository list that appears, making sure to verify the version number. Click **Next**.

- 9 Follow the prompts to create the instance. When you are done, you can view the progress in the Activity Monitor, which is accessible from the left pane of the Flex Appliance Console.

---

**Note:** If you do not want to use DNS or want to bypass DNS for certain hosts, verify that the hostname resolution information is included in the **Hosts file entries** field. You must include entries for the master server and any other NetBackup hosts that you want to communicate with the instance.

---

- 10 Once the instance has been created successfully, you must change the password from the known default password. To change the password, open an SSH session to the instance and log in with the following credentials:

- Username: **appadmin**
- Password: **P@ssw0rd**

Follow the prompt to enter a new password.

- 11 Create the storage servers for your selected storage, as follows:

- Log on to the NetBackup Administration Console and select either **NetBackup Management** or **Media and Device Management**.
- If you selected AdvancedDisk or Media Server Deduplication Pool (MSDP) storage for the instance, click **Configure Disk Storage Servers** and follow the prompts to create the storage servers. Enter the following storage information for AdvancedDisk and MSDP:
  - AdvancedDisk storage volume: `/mnt/advanceddisk/vol*`
  - MSDP storage path: `/mnt/msdp/vol0`

---

**Note:** If the MSDP disk pool spans multiple volumes, only select vol0.

---

- If you selected a Cloud Catalyst cache for the instance, click **Configure Cloud Storage Servers** and follow the prompts to create the storage servers. Enter the following local cache directory for Cloud Catalyst:  
`/mnt/cloudcatalyst`

See the following guides for more information on NetBackup storage configuration:

- *The NetBackup AdvancedDisk Storage Solutions Guide*
- *The NetBackup Deduplication Guide*

**12** (Optional) If you need to upload custom CRL files for an external CA, perform the following steps:

- Use an SCP tool to copy the files to the `/mnt/nbdata/hostcert/crl/` directory on the instance.
- Run the following commands on the instance to enable the CRL check using the custom files:

```
sudo nbsetconfig ECA_CRL_CHECK = CHAIN
sudo nbsetconfig ECA_CRL_PATH = /mnt/nbdata/hostcert/crl/
```

See the *NetBackup Security and Encryption Guide* for more information on the CRL configuration options.

**13** If you plan to or have created multiple instances with MSDP or Cloud Catalyst storage, Veritas recommends that you tune the MaxCacheSize according to the following guidelines:

- Allocate .75 to 1 GB of RAM for each TiB of storage that is allocated to MSDP or Cloud Catalyst on the instance. For example, if the storage pool has 80 TiB allocated, the MaxCacheSize should be 60 to 80 GB of RAM.
- The sum of the MaxCacheSize for all instances with MSDP or Cloud Catalyst storage should not exceed 70% of the physical RAM on the appliance.

To tune the MaxCacheSize:

- Run one of the the following commands:

- For MSDP:

```
sudo /usr/opensv/pdde/pdag/bin/pdcfg --write
/mnt/msdp/vol0/etc/puredisk/contentrouter.cfg --section
CACHE --option MaxCacheSize --value <percent%>
```

- For Cloud Catalyst:

```
sudo /usr/opensv/pdde/pdag/bin/pdcfg --write
/mnt/cloudcatalyst/storage/etc/puredisk/contentrouter.cfg
--section CACHE --option MaxCacheSize --value <percent%>
```

Where *<percent%>* is the percentage of the appliance RAM to use for the cache on the instance.

- Restart the `pdde-storage` process with the following commands:

```
sudo /etc/init.d/pdde-storage force-stop
sudo /etc/init.d/pdde-storage start
```

- 14** If you did not select MSDP storage for the instance, the instance creation is now complete. You can skip the remaining steps in this procedure.

If you did select MSDP storage for the instance, log in to the instance. Run the following command to create a backup policy to protect the MSDP catalog:

```
sudo /usr/openv/pdde/pdcr/bin/drcontrol --new_policy --residence
<storage unit> [--policy <policy name>] [--client<instance
hostname>]
```

Where *<storage unit>* is the name of the storage unit on which to store the MSDP catalog backups, and *[--policy <policy name>]* and *[--client <instance hostname>]* are optional.

See the *NetBackup Deduplication Guide* for the other options that are available with the `drcontrol` utility.

- 15** (Pre-8.2 instances only) Use one of the following procedures to tune the NetBackup parameters.

---

**Warning:** Tuning the NetBackup parameters optimizes backup performance and memory usage for the instance. If you skip this step, you may experience backup failures and other performance degradation.

---

To tune the NetBackup parameters on a Veritas 5340 Appliance:

- Log in to the instance and run the following command:
 

```
sudo /opt/veritas/vxapp-manage/tune -s
```
- From the **appadmin** home or **tmp** directory, restart the `pdde-storage` and `mtstrmd` processes with the following commands:
 

```
sudo /etc/init.d/pdde-storage force-stop
sudo /etc/init.d/pdde-storage start
sudo /usr/openv/pdde/pdag/bin/mtstrmd -terminate
sudo /usr/openv/pdde/pdag/bin/mtstrmd
```

To tune the NetBackup parameters on a Veritas 5150 Appliance:

- Log in to the instance and run the following command to create the tune script:
 

```
sudo vi /tmp/tune_msdp.sh
```
- In the editor that opens, enter the following information:
 

```
#!/bin/bash
. /opt/veritas/vxapp-manage/include
PATH=${ENV_NB_HOME}/pdde/pdag/bin/:${PATH}
CONTENT_ROUTER_CFG_LOCATION="${ENV_DD_DATA}/etc/puredisk/contentrouter.cfg"
```

```
MTSTRMD_CFG_LOCATION="/usr/opensv/lib/ost-plugins/mtstrmd.conf"
declare -r CONTENT_ROUTER_CFG_LOCATION
pdcfg --write $CONTENT_ROUTER_CFG_LOCATION --section
CONTENTROUTER --option MaxRetryCount --value 30
pdcfg --write $CONTENT_ROUTER_CFG_LOCATION --section CACHE
--option MaxCacheSize --value 60%
pdcfg --write $CONTENT_ROUTER_CFG_LOCATION --section
CRDATASTORE --option WriteThreadNum --value 1
pdcfg --write $MTSTRMD_CFG_LOCATION --section PROCESS --option
MaxConcurrentSessions --value 3
pdcfg --write $MTSTRMD_CFG_LOCATION --section THREADS --option
BackupFpThreads --value 4
```

- Run the following command to make the script executable:  
`sudo chmod +x /tmp/tune_msdp.sh`
- Run the following command to run the script:  
`sudo /tmp/tune_msdp.sh`
- Restart the `pdde-storage` and `mtstrmd` processes with the following commands:  
`sudo /etc/init.d/pdde-storage force-stop`  
`sudo /etc/init.d/pdde-storage start`  
`sudo /usr/opensv/pdde/pdag/bin/mtstrmd -terminate`  
`sudo /usr/opensv/pdde/pdag/bin/mtstrmd`

- 16** (Pre-8.2 instances on 5340 appliance only) If you allocated more than 80 TB of MSDP storage for the instance, you need to resize the MSDP storage partition. Run the following command:

```
sudo /opt/veritas/vxapp-manage/resize
```

---

**Note:** You also need to perform this step if you provision more than 80 TB of storage for MSDP at a later time. You do not need to perform this step if you resize a smaller amount of existing MSDP storage over 80 TB after you create the instance.

---

See [“Managing application instances”](#) on page 64.

# Managing application instances

You can manage your application instances from the **System topology** page of the Flex Appliance Console. To access your existing instances, click on the **System topology** box on the home page or the **System topology** icon in the left-side navigation bar, then navigate to the **Application instances** section.

Under **Application instances**, you can perform the following tasks:

- Create a new instance.  
See [“Creating application instances”](#) on page 53.
- Select an existing instance to to:
  - Relocate it to another node if you have a multi-node appliance.
  - Stop or start it.

---

**Note:** When you start an instance, Flex Appliance automatically determines which node to start it on for optimal load balancing. Therefore, it may not start on the same node that it was located on when it was stopped. If you want the instance to run on a specific node, you can relocate it after it starts.

---

- Use the **Manage** drop-down to delete it.
- Use the **Manage** drop-down to resize the storage.  
See [“Resizing instance storage”](#) on page 65.
- Use the **Manage** drop-down to upgrade it.  
See [“Upgrading application instances”](#) on page 74.
- Click on an existing instance to perform the following tasks:
  - View the instance details.
  - Edit the network settings, including IP address and interface pairs.  
See [“Editing instance network settings”](#) on page 66.
  - Manage add-ons.  
See [“Managing application add-ons on instances”](#) on page 67.

You can also perform the following tasks outside of the Flex Appliance Console:

- View live performance metrics of all of the instances on your appliance from the Flex Appliance Shell. See [“Viewing instance performance metrics”](#) on page 69.
- Run NetBackup commands on a NetBackup master or media server instance from an SSH session. See [“Running NetBackup commands on an application instance”](#) on page 70.



- Set environment variables on NetBackup 8.2 or later master server instances. See [“Setting environment variables on NetBackup instances”](#) on page 73.
- Modify or disable the `nbdeployutil` utility.

The `nbdeployutil` utility may adversely affect performance of NetBackup applications instances on a Veritas 5150 Appliance. If you do not need this feature or if you determine that it causes performance issues due to high CPU usage, you can modify the configuration or disable it as follows:

  - Log in to the master server instance and create the following **nbdeployutil** configuration file if it is not present:  

```
/usr/opensv/var/global/nbdeployutilconfig.txt
```
  - Refer to the topic “Scheduling capacity licensing reports” in the *NetBackup Administrator's Guide, Volume II* for the procedure to use custom values for the capacity licensing report.

---

**Note:** Flex Appliance does not support adding local directories or manually editing most files on application instances. If you create a local directory or manually edit a file and the instance is relocated or stopped for any reason, the changes are not maintained when the instance restarts.

However, if you must store a small amount of critical data on an instance, you can store it in the `/mnt/nblogs` directory. Note that this directory has 250GB of storage space that cannot be resized. If you use too much storage space, the instance may be affected.

See [“Storing custom data on a NetBackup instance”](#) on page 73.

---

## Resizing instance storage

Use the following procedure to change the storage allocations on an existing application instance in Flex Appliance.

### To resize the instance storage

- 1 From the **System topology** page of the Flex Appliance Console, navigate to the **Application instances** section.
- 2 Locate the instance that you want to modify. If it is running, select it and click **Stop**.
- 3 Select the instance, then click **Manage > Resize instance storage**.

- 4 Follow the prompts to enter new storage allocations for each volume, then click **Resize**.
- 5 Wait for the resize operation to complete. You can monitor the progress in the Activity Monitor, which is accessible from the left pane of the Flex Appliance Console.

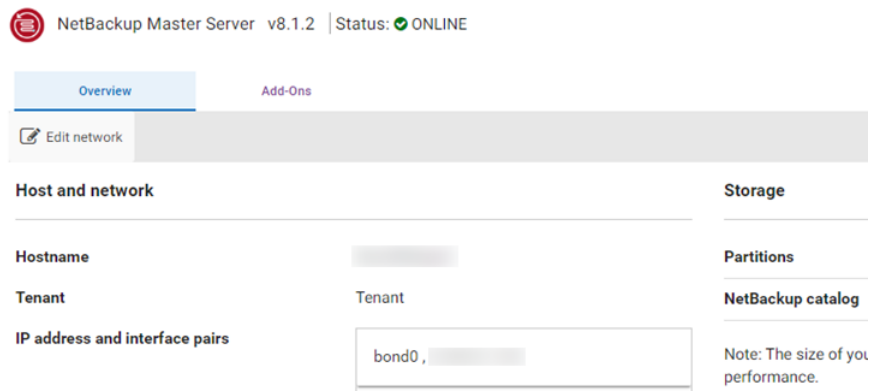
When the resize is complete, you can view the new storage allocations by clicking on the instance name under **System topology > Application instances**.

## Editing instance network settings

Use the following procedure to edit the network settings of an existing application instance in Flex Appliance.


### To edit the instance network settings

- 1 From the **System topology** page of the Flex Appliance Console, navigate to the **Application instances** section.
- 2 Locate the instance that you want to edit. If it is running, select it and click **Stop**.
- 3 Click on the instance name to open the instance details page.



NetBackup Master Server v8.1.2 | Status: ✔ ONLINE

Overview Add-Ons

 Edit network

Host and network		Storage
Hostname	<input type="text"/>	Partitions
Tenant	Tenant	NetBackup catalog
IP address and interface pairs	<input type="text" value="bond0 ,"/>	Note: The size of you performance.

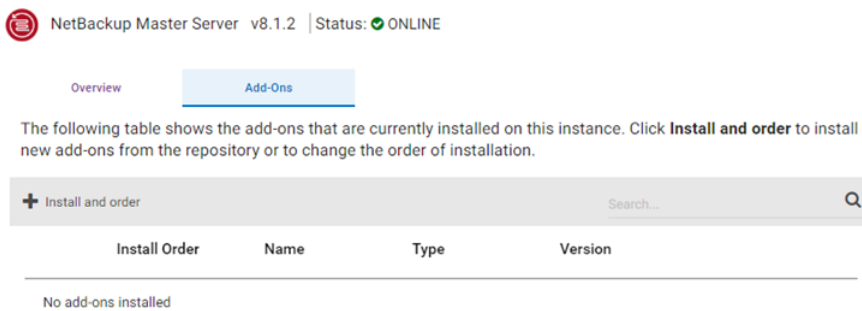
- 4 At the top of the details page, click **Edit network**.
- 5 Make the required changes. If you want to add or remove IP address and interface pairs, click **Manage pairs**.
- 6 When you are done, click **Save**.

# Managing application add-ons on instances

Flex Appliance instances support the following types of add-ons:

- NetBackup emergency engineering binaries (EEBs)
- Veritas-provided plug-ins

You can view and manage the add-ons on an instance from the **Application instances** section of the **System topology** page. Click on the instance name to open the instance details page, then navigate to the **Add-ons** tab. From there, you can view the currently installed add-ons and make changes.



You can also use the **Manage** drop-down in the **Application instances** section to install and order add-ons on the instance.

- See [“Installing application add-ons”](#) on page 67.
- See [“Uninstalling application add-ons”](#) on page 68.
- See [“Changing the application add-on installation order”](#) on page 68.

## Installing application add-ons

Use the following procedure to install an add-on on an instance.

### To install an add-on

- 1 Make sure that the add-on you want to install is located in the repository. See [“Managing the repository”](#) on page 50.
- 2 From the **System topology** page of the Flex Appliance Console, navigate to the **Application instances** section.
- 3 Locate the instance on which you want to install the add-on. If it is running, select it and click **Stop**. You can also wait to stop the instance until the Flex Appliance Console prompts you to if you prefer.

- 4 Select the instance, then click **Manage > Install and order add-ons**. Alternatively, click on the instance name, navigate to the **Add-ons** tab, and click **Install and order**.
- 5 Select the appropriate add-on from the repository list that appears. If you want to install multiple add-ons, you can select more than one in this step. When you are done, click **Next**.
- 6 On the following page, you have the option to change the add-on installation order. In most cases, the install order does not affect operation, and you can skip this step. However, if recommended by Veritas Support or otherwise required, you can use the up and down arrows to change the order. If any of the add-ons have conflicting changes, the one that is installed last takes precedence.

---

**Note:** Changing the add-on installation order is only supported for NetBackup 8.2 and later instances. Although the Flex Appliance Console allows changing the order on an earlier instance, any changes you make do not go into effect.

---

- 7 Click **Install**.

## Uninstalling application add-ons

Use the following procedure to uninstall an add-on from an instance.

### To uninstall an add-on

- 1 From the **System topology** page of the Flex Appliance Console, navigate to the **Application instances** section.
- 2 Locate the instance from which you want to uninstall the add-on. If it is running, select it and click **Stop**. You can also wait to stop the instance until the Flex Appliance Console prompts you to if you prefer.
- 3 Click on the instance name to open the instance details page.
- 4 At the top of the details page, navigate to the **Add-ons** tab.
- 5 Click the **X** icon next to the add-on that you want to uninstall.

## Changing the application add-on installation order

In most cases, the order in which add-ons are installed on an instance does not affect operation. However, if recommended by Veritas Support or otherwise required, use the following procedure to change the order. If any of the add-ons have conflicting changes, the one that is installed last takes precedence.

---

**Note:** Changing the add-on installation order is only supported for NetBackup 8.2 and later instances. Although the Flex Appliance Console allows changing the order on an earlier instance, any changes you make do not go into effect.

---

#### To change the add-on install order

- 1 From the **System topology** page of the Flex Appliance Console, navigate to the **Application instances** section.
- 2 Locate the instance that you want to modify. If it is running, select it and click **Stop**. You can also wait to stop the instance until the Flex Appliance Console prompts you to if you prefer.
- 3 Select the instance, then click **Manage > Install and order add-ons**. Alternatively, click on the instance name, navigate to the **Add-ons** tab, and click **Install and order**.
- 4 In the wizard that appears, click **Next** to skip the add-on installation step.
- 5 Use the up and down arrows to change the add-on install order as needed.
- 6 Click **Install**.

## Viewing instance performance metrics

You can view live performance metrics of all of the instances on your appliance from the `show` command view in the Flex Appliance Shell.

#### To view instance performance metrics

- 1 Log in to the Flex Appliance Shell on the node that you want to view performance metrics for.
- 2 Enter the following command:

```
show instance performance
```

The following information displays for each of the instances on the node, including the Flex Appliance infrastructure instances:

- **CID:** An instance identifier
- **CPU:** The CPU usage of the instance
- **MEM:** The memory usage of the instance
- **NET RX/TX:** The amount of data that is being transmitted and received
- **IO R/W:** The amount of data that is being read from and written to the instance storage disk(s)

- **PIDS:** The total number of processes that are running on the instance
- 3** When you are done reviewing the information, enter **q** to return to the main Flex Appliance Shell view.

---

**Warning:** Do not stop an instance from the `instance performance` view of the Flex Appliance Shell. Stopping an instance from this view can cause an appliance failure. If you want to stop an instance, use the **Application instances** section of the Flex Appliance Console. See [“Managing application instances”](#) on page 64.

---

## Running NetBackup commands on an application instance

Flex Appliance provides the capability for the **appadmin** user to run NetBackup commands on all NetBackup master and media server instances.

---

**Note:** Flex Appliance does not support adding local directories or manually editing any of the files on application instances. If you create a local directory or manually edit a file and the instance is relocated or stopped for any reason, the changes are not maintained when the instance restarts.

---

To run NetBackup commands on an instance, open an SSH session to the instance and log in as the **appadmin** user. For each command that you want to run, specify `sudo` and enter the absolute or the relative path. For example:

```
sudo /opt/veritas/vxapp-manage/tune -s
```

You can run commands for the following directories and executables on master and media server instances:

- `/opt/veritas/vxapp-manage/cp-nbu-config`  
See [“Creating a NetBackup touch file on an application instance”](#) on page 71.
- `/opt/veritas/vxapp-manage/cp-nbu-notify` (Not supported in NetBackup 8.2)
- `/usr/opensv/netbackup/bin`
- `/usr/opensv/netbackup/bin/admincmd`
- `/usr/opensv/netbackup/bin/goodies`
- `/usr/opensv/netbackup/bin/support`
- `/usr/opensv/volmgr/bin`
- `/usr/opensv/volmgr/bin/goodies`

You can run commands for the following directories and executables on media server instances only:

- `/opt/veritas/vxapp-manage/resize`

---

**Note:** This command should only be used during instance creation. If you want to resize the storage on an existing instance, use the Flex Appliance Console.

---

- `/opt/veritas/vxapp-manage/tune`
- `/usr/openv/pdde/pdag/bin/mtstrmd`
- `/usr/openv/pdde/pdag/bin/pdcfg`
- `/usr/openv/pdde/pdag/bin/pdusercfg`
- `/usr/openv/pdde/pdconfigure/pdde`
- `/usr/openv/pdde/pdcr/bin`
- `/usr/sbin/mount.nfs`
- `/usr/sbin/mount.nfs4`
- `/usr/sbin/umount.nfs`
- `/usr/sbin/umount.nfs4`

---

**Note:** The `df` command may show incorrect usage information for application instances. However, the total storage and the available storage are correct. To determine the correct usage information, subtract the available storage from the total storage.

---

For more information on NetBackup commands, refer to the *NetBackup Commands Reference Guide*.

## Creating a NetBackup touch file on an application instance

The `cp-nbu-config` command copies the NetBackup configuration file from the user's home space to the specified NetBackup configuration destination directory. A NetBackup administrator can use the `cp-nbu-config` command to create and edit a NetBackup touch configuration file in any of the following directories:

- `/usr/openv/netbackup`
- `/usr/openv/netbackup/bin`
- `/usr/openv/java`

- /usr/openv/lib/ost-plugins
- /usr/openv/netbackup/bin/snapcfg
- /usr/openv/netbackup/db/cloudSnap/credential
- /usr/openv/netbackup/db/cloudSnap/proxy
- /usr/openv/netbackup/db/config
- /usr/openv/netbackup/db/event
- /usr/openv/netbackup/db/images
- /usr/openv/netbackup/db/media
- /usr/openv/netbackup/ext/db\_ext
- /usr/openv/netbackup/ext/db\_ext/db2
- /usr/openv/var
- /usr/openv/volmgr
- /usr/openv/volmgr/database

### To create or edit a touch configuration file

- 1 Log in to the NetBackup application instance.
- 2 Create a new configuration file in the NetBackup administrator home directory, or use the `cp` command to copy an existing configuration file from its original location to the home directory.

For example:

```
cp /usr/openv/lib/ost-plugins/pd.conf ~/
```

- 3 Make changes to the file in the home directory.
- 4 Run the following command to install the file in its original directory or a supported destination directory:

```
sudo /opt/veritas/vxapp-manage/cp-nbu-config <configuration-file>  
<destination>
```

Where *<configuration-file>* is the file that you created or edited, and *<destination>* is the directory where it needs to be installed.

For example:

```
sudo /opt/veritas/vxapp-manage/cp-nbu-config ~/pd.conf  
/usr/openv/lib/ost-plugins
```



## Setting environment variables on NetBackup instances

NetBackup 8.2 and later supports setting environment variables on application instances.

### To add an environment variable

- 1 Log in to the instance as the **appadmin** user.
- 2 Navigate to one of the following locations:
  - If you want to set a variable for both interactive and non-interactive user sessions, navigate to `/etc/profile.d/custom.sh`.
  - If you want to set a variable for interactive user sessions only, navigate to `/etc/profile.d/sh.local`.
- 3 Edit the file to add the new variable.

## Storing custom data on a NetBackup instance

Flex Appliance does not generally support adding or editing directories and files on application instances. If you create or edit a directory or file and the instance is relocated or stopped for any reason, the changes are not maintained when the instance restarts.

However, if you have critical data that you must store on a NetBackup application instance, use the following procedure to add it to the `/mnt/nblogs` directory.

---

**Warning:** The `/mnt/nblogs` directory is used for NetBackup logs and has 250GB of storage space that cannot be resized. The data that you add to this directory must be critical and small in size. If you use too much storage space, the instance may be affected.

---

### To store custom data on a NetBackup instance

- 1 Log in to the instance as the **appadmin** user.
- 2 Run the following command to create a directory under `/mnt/nblogs`:

```
sudo mkdir /mnt/nblogs/<directory>
```

where *<directory>* is the name of the new directory.

For example, if you need to store SSH `authorized_key` files on the instance, you can make the following directory:

```
sudo mkdir /mnt/nblogs/authorized_keys
```

- 3 If required, run the following command to create a subdirectory:

```
sudo mkdir /mnt/nblogs/<directory>/<subdirectory>, where <directory>
is the name of the directory that you created in the previous step and
<subdirectory> is the name of the subdirectory.
```

In the `authorized_keys` example, you can create the following subdirectory to store a specific user's `authorized_key` file:

```
sudo mkdir /mnt/nblogs/authorized_keys/example_user
```

- 4 Add the required information to the new directory.

## Establishing trust with a NetBackup 7.7.3 master server instance

To establish a trust relationship between a NetBackup 7.7.3 master server instance and a NetBackup 8.1 or later master server, you must perform the following steps.

### To establish trust with a NetBackup 7.7.3 master server instance

- 1 Log in to the instance as the **appadmin** user and use the following command to enable the **root** account and set the password:

```
sudo passwd
```

---

**Warning:** The **root** account is a restricted user account that can put the system at risk. It should only be enabled during configuration procedures or under the direct supervision of Veritas Technical Support.

---

- 2 Establish trust between the source and the target domains. Use the **root** account to add the 7.7.3 instance as a trusted master server. Refer to the NetBackup documentation for specific instructions.
- 3 Run the following command on the instance to disable the **root** account:

```
sudo passwd -l root
```

## Upgrading application instances

Use the following procedure to upgrade an existing instance in Flex Appliance.

### To upgrade an instance

- 1 Make sure that the new version of the application is located in the repository. See [“Managing the repository”](#) on page 50.
- 2 From the **System topology** page of the Flex Appliance Console, navigate to the **Application instances** section.

- 3 Locate the instance that you want to upgrade. If it is stopped, select it and click **Start** before you begin the upgrade so that the upgrade precheck can run.
- 4 Stop all current backup operations on the instance.
- 5 From the **Application instances** section, select the instance, then click **Manage > Upgrade instance**.
- 6 Select the version that you want to upgrade to and click **Precheck**.
- 7 If the precheck passes, click **Next** to continue. If the application needs any additional configuration parameters, you are prompted to enter them. Enter the parameters and click **Next**. Then verify the selection summary and click **Upgrade** to begin the upgrade process.

If the precheck returns with any error messages, resolve the issues before continuing with the upgrade.

If the upgrade fails for any reason, the instance automatically rolls back to the previous version. You can find more detailed information on the failure in the Activity Monitor. Resolve any issues before restarting the upgrade procedure.

- 8 If your application does not support rollback, the upgrade is now complete.

If your application does support rollback, the instance version remains in a pending state for the next 24 hours. You must decide within that time period whether you want to commit to the new version or roll back to the previous version.

---

**Warning:** Performing a rollback may lead to inconsistencies between the NetBackup catalog and the media servers for all jobs that ran after the upgrade. These inconsistencies can affect future backups.

See [“Warnings and considerations for instance rollbacks”](#) on page 76.

---

To commit or roll back the instance version, navigate to the **System topology > Application instances** section and do one of the following:

- To commit to the new version, select the instance name and click **Manage > Upgrade instance > Commit**. You can also click on the instance name to open the instance details page, then click **Commit** at the top of the screen.
- To roll back to the previous version, stop all current backup operations on the instance. Then select the instance name and click **Manage > Upgrade instance > Roll back**. You can also click on the instance name to open the instance details page, then click **Roll back** at the top of the screen.

---

**Warning:** Before you roll back the version of a master server instance, check the versions of all media servers and clients that are used with it. The version of the master server after rollback must be equal to or later than the versions of the connected hosts, including media server instances.

---

---

**Caution:** If you do not commit or roll back within 24 hours of the upgrade, the new instance version is committed automatically.

---

See [“Upgrading Flex Appliance”](#) on page 78.

## Warnings and considerations for instance rollbacks

If you need to roll back an instance upgrade, review the following information before you begin.

- Instances with Cloud Catalyst storage do not support rollback. If you experience an upgrade failure that you cannot resolve, contact Veritas Technical Support for assistance.
- Rollback of other instances should only be attempted as a last resort if there were serious problems with the upgrade.
- A rollback restores the instance to a pre-upgrade checkpoint and reverses all operations that were performed after the upgrade, including backup data. For this reason, backup operations should be kept at a minimum for testing purposes only while the instance upgrade is in a pending state. Do not perform production operations until you commit or roll back the upgrade.
- Do not resize the instance storage until you commit or roll back the upgrade.
- If you create or modify more than 100 GB of data on the instance after the upgrade, you can no longer roll back. The 100-GB limitation includes data from running backups, deleting backups, or any other modifications.  
If you surpass 100 GB, the rollback fails, and you must commit to the new version.
- If a rollback is performed, there is a risk of data loss and data leakage for all operations that are performed after the upgrade. The longer the system was up and running before a rollback, the greater the chance of data loss and leakage. The data loss is not limited to losing backup data for the jobs that ran before the rollback. Future backups can be affected as well.  
The following inconsistencies can occur if you decide to roll back:
  - Incremental or transaction log-based database backups:

If transaction logs were truncated after the upgrade and before the rollback, the database may not be protected.

To resolve this issue, perform a full database backup after the rollback.

- **Incremental Windows file system backups:**

If the archive bit is used for incremental backup, it is reset upon completion of an incremental backup. If a rollback occurs, the incremental backup is lost, and subsequent incremental backups do not detect that these files changed. The files are not backed up again until a full backup is performed. To resolve this issue, perform a full backup after the rollback. If any files were modified in the lost incremental and then deleted before the next full backup, those files are lost.

- **Backup expiration catalog and storage inconsistency:**

If backup images expire and cleanup begins after the upgrade and before the rollback, backup data may be removed from storage units external to the instance. For example, this behavior can happen with an MSDP media server, Cloud or Cloud Catalyst storage, OST storage, or tape storage. When a rollback of the master server catalog occurs, the catalog indicates that there is a valid backup even though the data was removed from storage. This inconsistency results in backup data that cannot be restored, duplicated, or replicated. It may also affect scheduling of subsequent backups (delaying backups or performing incrementals instead of fulls).

- **Orphaned backups on storage:**

If backup images are created on external storage after the upgrade and before the rollback of the master server, the backup images exist on storage but not in the NetBackup catalog. This discrepancy results in situations where the backups are never removed from storage (data leakage).

To resolve this issue, import the images from storage or use the consistency check tools.

- **Backup considerations if the instance is a media server:**

- The backups between the upgrade and rollback are not restorable even though NetBackup has them in the catalog.

- Unfinished SLP jobs fail, causing inconsistencies between the NetBackup master server and the storage.

If any backups were deleted after the upgrade and before the rollback, those backups come back as storage leak.

# About Flex Appliance upgrades and updates

Flex Appliance provides product enhancements and fixes with the following types of releases:

- Upgrades

An upgrade release contains new features, enhancements, and fixes. An upgrade installs a new version of the Flex Appliance software, including the operating system and the appliance interfaces.

The version number for an upgrade release includes a single decimal point. For example, 1.3.

- Updates

An update release is primarily comprised of fixes, though it may also include enhancements. An update modifies the existing version of Flex Appliance by making changes to the operating system, the appliance interfaces, or both.

The version number for an update release includes the version number of the release it modifies, followed by another decimal point and the update number. For example, 1.3.1 would be an update for release 1.3.

Veritas recommends that you install updates and upgrades when available to make sure that you have the latest product features and fixes.

See [“Upgrading Flex Appliance”](#) on page 78.

See [“Updating Flex Appliance”](#) on page 80.

## Upgrading Flex Appliance

Use the following procedure to upgrade the Flex Appliance software.

### To upgrade Flex Appliance

- 1 On the Flex Appliance Console, click the **Repository** icon in the left-side navigation bar and navigate to the **Appliance upgrades and updates** tab.
- 2 Make sure that the upgrade package you want to use is located in the repository. See [“Managing the repository”](#) on page 50.
- 3 Navigate to **System topology > Application instances** to check the status of the application instances.
- 4 Do one of the following:
  - If you have a single-node appliance, stop all running instances.
  - If you have a multi-node appliance, stop all running instances or select the node that you want to upgrade first and relocate all of its instances to the other node.

- 5 On the node that you want to upgrade, use the Veritas Remote Management Interface to log in to the Flex Appliance Shell. If you have a multi-node appliance and chose to relocate instances, log in to the node that has no running instances.

---

**Note:** Veritas recommends that you log in from the Veritas Remote Management Interface instead of an SSH session to perform an upgrade. To access the Veritas Remote Management Interface, refer to the initial configuration procedure. See [“Performing the initial configuration”](#) on page 20.

---

- 6 Enter the following command:

```
system upgrade
```

Follow the prompts to enter the file name of the upgrade package and start the upgrade.

---

**Note:** The upgrade progress pauses around 30% for approximately 15 minutes. This behavior is normal.

---

- 7 After the upgrade processes run, a prompt appears to restart the node. Confirm the restart to complete the upgrade, or you can restart it at a later time with the `system restart` command.

---

**Warning:** If you have a multi-node appliance, do not restart both nodes at the same time.

---

- 8 If you have a multi-node appliance, refresh your browser cache and sign back in to the Flex Appliance Console to stop or relocate all instances on the other node.

Then repeat the upgrade on the other node.

---

**Note:** Flex Appliance operations are restricted when the nodes are running different software versions. You must upgrade both nodes and complete the rest of this procedure to restore full functionality.

---

- 9 Once the upgrade has completed on all nodes, you must decide whether you want to commit the new version or roll back to the previous version.

Do one of the following:

- To commit the new version, run the following command.

```
system upgrade-commit
```

If you have a multi-node appliance, you only need to run this command on one of the nodes.

- To roll back to the previous version, stop all instances on the appliance and then run the following command:

```
system rollback
```

Restart the node when prompted. If you have a multi-node appliance, you must run this command on all nodes.

---

**Warning:** If you have a multi-node appliance, you must roll back all nodes before you perform any other operations, including retrying an upgrade. Complete the rollback and restart on the first node before proceeding with the next node.

---

- 10 The upgrade is now complete. Refresh your browser cache before you sign back in to the Flex Appliance Console.

See [“Upgrading application instances”](#) on page 74.

## Updating Flex Appliance

Use the following procedure to update the Flex Appliance software.

### To update Flex Appliance

- 1 On the Flex Appliance Console, click the **Repository** icon in the left-side navigation bar and navigate to the **Appliance upgrades and updates** tab.
- 2 Make sure that the update package you want to use is located in the repository. See [“Managing the repository”](#) on page 50.
- 3 Navigate to **System topology > Application instances** to check the status of the application instances.
- 4 Do one of the following:
  - If you have a single-node appliance, stop all running instances.
  - If you have a multi-node appliance, stop all running instances or select the node that you want to update first and relocate all of its instances to the other node.



- 5 Select the node that you want to update and click **Update** or **Update and restart**.

---

**Note:** If the update requires a restart, you can monitor the restart progress from the Veritas Remote Management Interface. To access the Veritas Remote Management Interface, refer to the initial configuration procedure. See [“Performing the initial configuration”](#) on page 20.

---

- 6 If you have a multi-node appliance, wait for the update process to complete on the selected node, then repeat this procedure on the other node.
- 7 If the update release that you installed supports rollback, you must decide whether you want to commit the new version or roll back to the previous version.

Log in to the appliance shell and do one of the following:

- To commit the new version, run the following command.

```
system upgrade-commit
```

If you have a multi-node appliance, you only need to run this command on one of the nodes.

- To roll back to the previous version, stop all instances on the appliance and then run the following command:

```
system rollback
```

Restart the node when prompted. If you have a multi-node appliance, you must run this command on all nodes.

---

**Warning:** If you have a multi-node appliance, you must roll back all nodes before you perform any other operations, including retrying an update. Complete the rollback and restart on the first node before proceeding with the next node.

---

# Monitoring the appliance

This chapter includes the following topics:

- [About AutoSupport and Call Home](#)
- [Monitoring the hardware from the Flex Appliance Shell](#)
- [Viewing hardware faults](#)
- [Viewing system data](#)

## About AutoSupport and Call Home

Veritas AutoSupport is a set of infrastructures, processes, and systems that enhance the support experience through proactive monitoring of Veritas Appliance hardware and software. AutoSupport also provides automated error reporting and support case creation.

AutoSupport correlates the Call Home data with other site configuration data held by Veritas, for technical support and error analysis. With AutoSupport, Veritas greatly improves the customer support experience.

Call Home provides information regarding appliance component states and status. Call Home is enabled by default. This chapter explains how to view information, configure Call Home, and delete or disable Call Home settings.

More information about AutoSupport and Call Home is available in the *Veritas Appliance AutoSupport 2.0 Reference Guide* at the following site:

[Appliance documentation](#)

## Registering an appliance

The appliance registration is centralized to the MyAppliance portal.

Registering your appliance is a vital step in allowing Veritas the ability to help maximize availability of your appliance, and provide proactive monitoring support. Registration provides Veritas with accurate contact details and site-specific information, which aids in expediting support, field services, and customer notification of failures.

Registration also provides access to additional reporting capabilities for your appliances, such as:

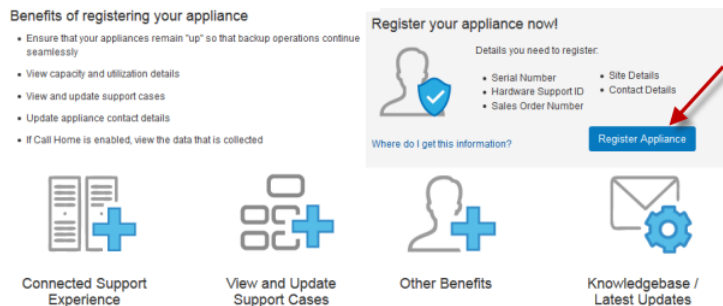
- An overview of all registered appliances
- Capacity and utilization details
- The ability to update contact and site information

Registration also ensures that you are alerted to product updates and other important information about your appliance.

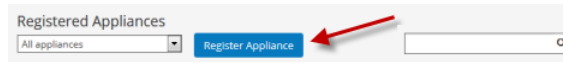
If your appliance has access either directly or through a proxy to the Internet, the registration details populate automatically. If the appliance is not provisioned, the message to verify and update the appliance registration information is displayed.

### To register an appliance from the MyAppliance portal

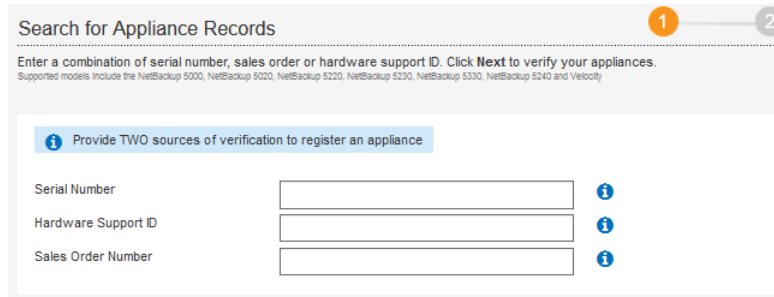
- 1 Log on to the [MyAppliance portal](#) and start the registration process with one of the following methods:
  - If it is your first visit to the portal, an information page appears. Click on **Register Appliance**.



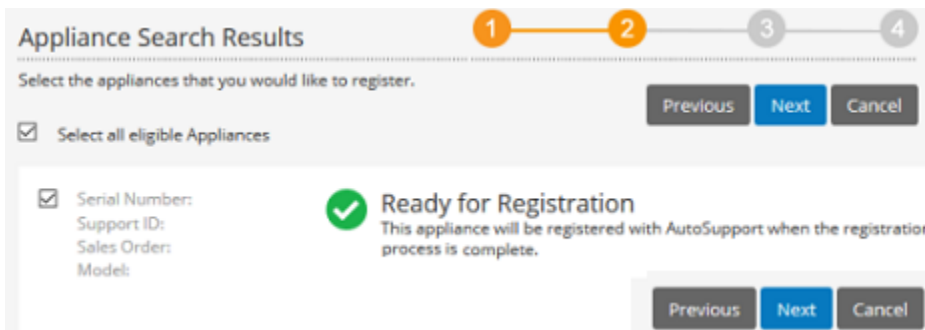
- If you have previously registered appliances on your account, navigate to **Appliances > My Appliances** page and click on **Register Appliance**.



- 2 Input the sources of verification. Only two sources are required to register an appliance.



- 3 Click **Next** to initiate a search.
- 4 Choose the appliance you want to register.



- 5 Click **Next** to enter the **Register a New Appliance** page.

---

**Note:** Any field highlighted with an asterisk is compulsory for registration. Move to the next step only after you have entered the required information.

---

- 6 In the basic information column, input your company name.
- 7 In the **Appliance Location** column, click the **Add New Site** button to create a new site.
- 8 In the pop-up dialog box, input the site name, site address and other information.

- 9 In the **Select Site** field, choose the site you created .
- 10 In the **Contact Information** column, click the **Add New Contact** button to create a new primary contact person.
- 11 In the pop-up dialog box, input contact name, email address, phone number and other information. You can add a total of twenty contacts per appliance.
- 12 In the **Select Contact** field, choose the contact person you created.

---

**Note:** The **Receive Call Home transmission failure alert** option is checked by default to enable alerts in the event that Veritas has not received a valid Call Home data transmission for over 28 hours. The alert will repeat every 24 hours until a valid data transmission is received.

If you have spam filtering enabled, configure your filtering settings to allow emails from this sender ID: appliance.veritas.com.

Uncheck the option if you no longer want to receive an alert from Veritas for Call Home transmission failure.

---

- 13 Verify the information and click **Submit**.

A notification informs you that your appliance is registered successfully.

## Viewing Call Home information

An appliance has the ability to send an email to a local administrator when a hardware failure is detected. You can configure the email address that you want to use for hardware failure notifications from the Flex Appliance Shell. The contents of the email identifies the type of hardware failure that occurred and the status of the failure.

This section provides the information that is specific to the settings and configuration for the Call Home feature.

The available information is provided in the following table.

**Table 6-1** Call Home information

Command	Description
callhome	Shows the current Call Home settings
callhome-registration node-name=<node_name>	Shows Call Home registration information based on the node hostname

**Table 6-1** Call Home information (*continued*)

Command	Description
<code>callhome-test</code>	Sends a test to verify that Call Home is functional
<code>email</code>	Shows the email and the SMTP settings
<code>email-test</code>	Tests SMTP and sends an email about hardware data

**To view information about Call Home**

- 1 Log in to the Flex Appliance Shell, and type any of the following as needed.

```
show alerts callhome
show alerts callhome-registration node-name=<node_name>
show alerts callhome-test
show alerts email
show alerts email-test
```

- 2 Press **Enter** after each string to display the information.

## Configuring Call Home settings

Call Home is enabled by default. This section provides the specific information for the settings and configuration for the Call Home feature.

The available options are provided in the following table.

**Table 6-2** Call Home options

Command	Description
<code>callhome</code>	Enable the Call Home feature
<code>callhome-proxy</code>	Enable the Call Home proxy server
<code>callhome-proxy-server</code>	Enter the Call Home proxy server settings
<code>callhome-proxy-tunnel</code>	Enable the Call Home proxy tunneling
<code>email-smtp</code> <code>smtp_account=&lt;smtp_account&gt;</code>	(Optional) Enter the name of the account that is used for authentication to the SMTP server
<code>email-smtp</code> <code>smtp_password=&lt;smtp_password&gt;</code>	(Optional) Enter the password for authentication to the SMTP server

**Table 6-2** Call Home options (*continued*)

Command	Description
email-smtp smtp_server=<smtp_server>	Enter the SMTP server that is used to send email
email-notification-interval interval=<interval>	Enter the time (in minutes from 1 to 44640) between alert emails that are sent to the administrator. The default value is 1440 minutes.
email-sender-id email_address=<email_address>	Enter an email ID or account for emails that are received from the appliance
email-hardware email_address=<email_address>	Add hardware administrator email accounts

**To configure Call Home settings**

- 1 Log in to the Flex Appliance Shell, and type the following as needed. Press **Enter** after each string to display the information.
- 2 Enable Call Home.  

```
set alerts callhome
```
- 3 Set the Call Home proxy, proxy server, and proxy tunnel.  

```
set alerts callhome-proxy  
set alerts callhome-proxy-server  
set alerts callhome-proxy-tunnel
```
- 4 Set the SMTP server.  

```
set alerts email-smtp smtp_server=<smtp_server>
```
- 5 (Optional) Set the SMTP account and password.  

```
set alerts email-smtp smtp_account=<smtp_account>  
set alerts email-smtp smtp_password=<smtp_password>
```

- 6 Set the interval in minutes between email notifications.

```
set alerts email-notification-interval interval=<interval>
```

- 7 Set the sender and hardware administrator email addresses.

```
set alerts email-sender-id email_address=<email_address>
```

```
set alerts email-hardware email_address=<email_address>
```

You can enter multiple hardware administrator email addresses using a comma-separated list or by running the command once for each email address.

## Deleting and disabling Call Home settings

Call Home is enabled by default. You can delete or disable Call Home settings as needed. Call Home is not required, but it serves as a critical step to proactive customer support and incident response for failures.

This section provides the information that is specific to the settings and configuration for the Call Home feature.

The available options are provided in the following table.

**Table 6-3** Call Home disable and delete options

Command	Description
callhome	Disable the Call Home feature
callhome-proxy	Disable the Call Home proxy server
callhome-proxy-tunnel	Disable Call Home proxy tunneling
email-sender-id	Delete the email ID for emails that are received from the appliance
email-smtp	Delete the SMTP server that is used by the appliance
email-hardware email_address=<email_address>	Delete hardware administrator email accounts

### To delete Call Home settings

- 1 Log in to the Flex shell, and type any of the following as needed. Press **Enter** after each string to display the information.
- 2 Disable the Call Home feature.

```
delete alerts callhome
```



- 3 Disable the Call Home proxy settings.

```
delete alerts callhome-proxy
delete alerts callhome-proxy-tunnel
```

- 4 Delete the appliance sender ID and the SMTP settings.

```
delete alerts email-sender-id
delete alerts email-smtp
```

- 5 Delete the hardware administrator email address.

```
delete alerts email-hardware email_address=<email-hardware>
```

## Monitoring the hardware from the Flex Appliance Shell

Use the Flex Appliance Shell to obtain information about hardware components. This interface provides tab-completed items to monitor your Flex appliance.

Before you configure the appliance and your network the `system` command is available to provide hardware monitoring information.

The following section describes the additional commands that are available after configuration is complete.

See [“Accessing and using the Flex Appliance Shell”](#) on page 26.

### To view the hardware monitoring information

- 1 Log in to the compute node using the following default credentials or use the unique credentials that you set during the initial configuration.

Username: **hostadmin**

Password: **P@ssw0rd**

- 2 Enter `system` and press **tab** to obtain further options.

- 3 Use one of the following strings. Enter `all` or a specific component where indicated.

- `system hardware-health node node_component=<component>`
- (Veritas 5340 Appliance only) `system hardware-health primaryshelf primaryshelf_component=<component>`

The parameter `primaryshelf_component` is required.

- (Veritas 5340 Appliance only) `system hardware-health expansionsshelf expansionsshelf_component=<component> shelf_id=<shelf number, starting from 1>`  
The parameter `shelf_id` is required.
- `system hardware-errors`

Refer to the following sections for monitoring information about compute node and storage shelf components.

See [“Viewing node information”](#) on page 90.

See [“Viewing Primary Storage Shelf information on a Veritas 5340 Appliance”](#) on page 91.

See [“Viewing Expansion Storage Shelf information on a Veritas 5340 Appliance”](#) on page 91.

## Viewing node information

You can view data about the following compute node components from the shell. Details are provided as needed.

- All (components)
- Connection (Veritas 5340 Appliance only - between the appliance and the Primary Storage Shelf)
- CPU
- DIMM
- Disk
- Fan
- Firmware
- Network
- PCI
- Power
- Product
- RAID
- SSD (Veritas 5150 Appliance only)
- StorageStatus (Veritas 5340 Appliance only)
- Temperature

**To view node component health**

- 1 Log in to the Flex Appliance Shell, and type the following.

```
system hardware-health node node_component=<component>
```

- 2 Press **Enter** to view the data.

## Viewing Primary Storage Shelf information on a Veritas 5340 Appliance

You can view data about the following Primary Storage Shelf components from the shell. Details are provided as needed.

- All (components)
- BBU (battery backup unit)
- Controller
- Disk
- Fan
- Firmware
- Power
- Product
- Temperature
- Volume
- VolumeGroup

**To view Primary Storage Shelf component status**

- 1 Log in to the Flex Appliance Shell, and type the following.

```
system hardware-health primaryshelf  
primaryshelf_component=<component>
```

- 2 Press **Enter** to display the information.

## Viewing Expansion Storage Shelf information on a Veritas 5340 Appliance

You can view data about the following Expansion Storage Shelf components from the shell. Details are provided as needed.

- All (components)

- Disk
- Fan
- Firmware
- Power
- Product
- Temperature
- Volume
- VolumeGroup

#### To view Expansion Storage Shelf status

- ◆ Log in to the Flex Appliance Shell, and type the following.

```
system hardware-health expansionshelf
expansionshelf_component=<component>
```

## Viewing hardware faults

From the Flex Appliance Shell you can run a command that shows only hardware component faults.

#### To view hardware faults

- 1 Log in to the Flex Appliance Shell, and type the following.

```
system hardware-errors
```

- 2 Press **Enter** to display the data.

## Viewing system data

In addition to individual hardware component data you can obtain information about the appliance system. The `self-test` command captures more data than the `hardware-health` command. It includes a health check all the way to the NetBackup application layer.

This section provides the information that is specific to the output from the `self-test` commands. The available information is provided in the following table.

**Table 6-4** Self-test data

Command	Description
<code>disk</code>	Shows the current status of the storage array.

**Table 6-4** Self-test data (*continued*)

Command	Description
<code>software</code>	Shows the current status of the various appliance software components.
<code>hardware</code>	Shows the current status of the various appliance hardware components.
<code>network</code>	Shows the current status of the network connections.

**To view appliance system data**

- 1 Log in to the Flex Appliance Shell, and type any of the following as needed.

```
system self-test disk  
  
system self-test software  
  
system self-test hardware  
  
system self-test network
```

- 2 Press Enter after each string to view the data.

Refer to the following section for information to obtain DataCollect logs.

See [“Gathering device logs on a Flex appliance”](#) on page 99.

# Reconfiguring the appliance

This chapter includes the following topics:

- [Performing a factory reset](#)
- [Recovering storage data after a factory reset](#)
- [Performing a storage reset](#)
- [Removing a node](#)

## Performing a factory reset

The purpose of a factory reset is to return a node to a clean, unconfigured, factory state. A factory reset discards all configuration data but does not affect the storage data.

---

**Note:** If you have a multi-node appliance, a factory reset only affects the node that you run this procedure from. If you want to reset both nodes, repeat the procedure on the other node.

---

After you perform a factory reset, you can also reset the storage if desired.

### To perform a factory reset

- 1 Log in to the Flex Appliance Shell from the node that you want to reset, and then type the following:

```
system factory-reset
```

- 2 Press **Enter**.

- 3 Type `yes` to continue, and then press **Enter**.

---

**Note:** Once you have started the `factory-reset` operation, do not perform any other tasks on the appliance until the reset is complete.

---

When the process is complete, you are prompted to restart. The factory reset is not complete until after the system is restarted. The system continues to run with the current configuration until after the restart is completed.

- 4 Do one of the following:

- To restart the node now, type `yes`, and then press **Enter**.
- To restart the node later, type `no`, and then press **Enter**.  
You can type the following command at any time to restart:

```
system restart
```

## Next steps for a single-node appliance

After the factory reset is complete, do one of the following:

- If you want to delete the existing storage data, perform a storage reset and then perform the initial configuration again to reconfigure your settings.  
See [“Performing a storage reset”](#) on page 97.  
See [“Performing the initial configuration”](#) on page 20.
- If you do not want to delete the storage data, you can recover the appliance with the existing storage data.  
See [“Recovering storage data after a factory reset”](#) on page 96.
- If the node was never configured with the `configure-console` command, proceed with the initial configuration.  
See [“Performing the initial configuration”](#) on page 20.

## Next steps for a multi-node appliance

After the factory reset is complete, do one of the following:

- If you performed the factory reset on only one of the nodes, add the reset node back to the appliance. See [“Adding a node”](#) on page 23.
- If you performed the factory reset on both nodes and want to delete the existing storage data, perform a storage reset and then perform the initial configuration again to reconfigure your settings.  
See [“Performing a storage reset”](#) on page 97.  
See [“Performing the initial configuration”](#) on page 20.

- If you performed the factory reset on both nodes and do not want to delete the storage data, you can recover the appliance with the existing storage data. See [“Recovering storage data after a factory reset”](#) on page 96.

## Recovering storage data after a factory reset

If you performed a factory reset and want to keep the existing storage data, use the following procedure to recover the appliance.

---

**Note:** If you have a multi-node appliance, you only need to use this procedure if you performed a factory reset on both nodes. If you only reset one of the nodes, add that node back to the appliance. See [“Adding a node”](#) on page 23.

---

### To recover the appliance

- 1 Make sure that no new storage has been attached to the appliance that was not added to the appliance before the factory reset.
- 2 Log in to the Flex Appliance Shell and run the following command:

```
system appliance-recover
```

If you have a multi-node appliance, select one of the nodes to run the recovery from.

---

**Warning:** Do not run the `system appliance-recover` command from both nodes.

---

- 3 Follow the prompts to recover the appliance.
- 4 If you have a Veritas 5150 Appliance, add the applications that you have instances of and the add-ons that are installed on them to the repository before you start the instances. See [“Adding files to the repository”](#) on page 51.
- 5 If your appliance was previously configured for Call Home and email alerts, you must reconfigure the Call Home settings with the `set alerts` commands. See [“Configuring Call Home settings”](#) on page 86.
- 6 If you have a multi-node appliance, add the node that you did not recover back to the recovered appliance. See [“Adding a node”](#) on page 23.



## Performing a storage reset

The purpose of a storage reset is to remove existing data and instances. In most cases, you should perform a storage reset after a factory reset. Make sure that the factory reset completed successfully on all appliance nodes before you begin a storage reset.

---

**Warning:** If you have a multi-node appliance, resetting the storage from one node removes the data for both nodes.

---

### To perform a storage reset

- 1 Log in to the Flex Appliance Shell and run the following command:

```
system storage-reset
```

- 2 Enter **yes** to continue, and then enter **DELETE DATA** to confirm.

---

**Note:** Do not perform any other tasks on the appliance until the `storage-reset` operation is complete.

---

## Removing a node

Use the following procedure to remove a node from a multi-node Flex appliance.

### To remove a node

- 1 From the Flex Appliance Console, make sure that there are no instances running on the node that you want to remove. Use the **System topology** page to view all of the running instances and relocate them as necessary.
- 2 Log in to the Flex Appliance Shell on the node that you want to keep in the appliance and enter the following command:

```
setup remove-node with-response remove_node=<hostname>, where  
<hostname> is the hostname of the node that you want to remove.
```

---

**Note:** Do not perform any other tasks on the appliance until the `remove-node` operation is complete.

---

# Troubleshooting guidelines

This chapter includes the following topics:

- [General troubleshooting steps](#)
- [Gathering device logs on a Flex appliance](#)

## General troubleshooting steps

If you experience any issues with Flex Appliance, use the following steps as a guide to help you resolve the problem.

**Table 8-1** Steps for troubleshooting Flex Appliance problems

Step	Action	Description
Step 1	Note the error message	<p>Error messages are usually the vehicle for telling you something went wrong. If you receive an error message, first follow any troubleshooting steps that are listed in the message.</p> <p>Some error messages begin with a Unique Message Identifier (UMI) code. UMI codes consist of the letter V followed by a string of numbers in the following format: V-123-456-789.</p> <p>To find additional troubleshooting information for specific error messages, perform a search for the message or the UMI code on the <a href="#">Veritas Support website</a>.</p>
Step 2	Check the appliance monitoring information	<p>If you cannot resolve the issue based on the error message, or if you don't see an error message in an interface but still suspect a problem, you can:</p> <ul style="list-style-type: none"><li>■ Use the hardware monitoring information to check for hardware errors. See <a href="#">"Monitoring the hardware from the Flex Appliance Shell"</a> on page 89.</li><li>■ Run an appliance self-test. See <a href="#">"Viewing system data"</a> on page 92.</li></ul>

**Table 8-1** Steps for troubleshooting Flex Appliance problems (*continued*)

Step	Action	Description
Step 3	Gather information for Technical Support	<p>If you cannot resolve the issue on your own, you may need to contact Technical Support for assistance.</p> <p>Before you contact Support, gather the following information:</p> <ul style="list-style-type: none"> <li>■ Relevant error messages Record or take screen shots of any error messages you received, including the UMI code if applicable.</li> <li>■ DataCollect logs Gather the DataCollect logs from the Flex Appliance Shell. See "<a href="#">Gathering device logs on a Flex appliance</a>" on page 99.</li> <li>■ Appliance serial number Locate and record the serial number of the appliance node. If you have a multi-node appliance, record the serial number of both nodes. For more information on locating serial numbers, see the <i>Product Description</i> guide for your particular appliance hardware.</li> </ul> <p>Also make sure that Call Home is enabled for maximum supportability.</p>
Step 4	Contact Technical Support	Contact Veritas Technical Support from the <a href="#">Veritas Support website</a> .

## Gathering device logs on a Flex appliance

DataCollect logs provide Support personnel detailed information about your appliance. You can share these device logs with the Veritas Support team to resolve device-related issues. The logs are generated into a zip file that includes the following information.

- Release information
- Disk performance logs
- Command output logs
- CPU information
- Memory information
- Operating system logs
- Patch logs
- Storage logs
- File system logs
- AutoSupport logs

- Sysinfo logs
- Veritas Volume Manager (VxVM) logs

**To obtain DataCollect logs**

- 1** From the Flex Appliance Shell, run the following command to verify that Call Home is enabled and working:

```
show alerts callhome-test
```

- 2** If Call Home is not enabled, enable it. See [“Configuring Call Home settings”](#) on page 86.

- 3** Run the following command:

```
system data-collect
```

The appliance generates the .zip file in the */log* directory and sends it to the AutoSupport servers.