Hewlett Packard
Enterprise

NimbleOS 5.1.4.0 Release Notes

Version 5.1.4.0

Published February, 2020

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Support

All documentation and knowledge base articles are available on HPE InfoSight at *https://infosight.hpe.com*.
To register for HPE InfoSight, click the *Create Account* link on the main page.

Email: *support@nimblestorage.com*

For all other general support contact information, go to *https://www.nimblestorage.com/customer-support/*.

Contents

NimbleOS 5.1.4.0

Version:	5.1.4.0
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The release notes describe the major changes, fixes, and known issues for this release of the NimbleOS. They do not include all individual fixes and internal changes.

For technical support, contact HPE Nimble Storage Support at:

mailto:support@nimblestorage.com
877-3-NIMBLE (877-364-6253), option 2.

Important Update Note

Updating NimbleOS can involve an update to component firmware on the standby controller. This can cause an email alert and automated case indicating "Standby Controller Not Available" when the firmware update process takes longer than five minutes. This is expected behavior and does not affect data services. At the end of the software update, you can check status of both controllers in the Web UI under **Manage** > **Hardware**. One controller will be ACTIVE and the other STANDBY under normal operating conditions following a successful software update.

All third-party software notices can be found on HPE InfoSight (*https://infosight.hpe.com*) on the **Resources** > **Documentation** page:

https://infosight.hpe.com/resources/nimble/docs

The Documentation page also includes the *General Terms and Conditions* document. You can display this document by performing the following steps:

1. In the navigation pane on the HPE InfoSight Documentation page, scroll through the Document Type list and select Support Policy.
2. In the page that appears, select General Terms and Conditions. This document opens in a browser tab.

Special Notes

Note	Description
CRITICAL	HPE Nimble Storage continues to qualify configurations between releases. The Validated Configuration Matrix provides information about validated configurations and is updated frequently. It is a good practice to check your system configuration against this online tool. The Validated Configuration Matrix tool is available on HPE InfoSight: *https://infosight.hpe.com/resources/nimble/validated-configuration-matrix*
CRITICAL	Arrays must be running NimbleOS 4.5.4.0 or 5.0.4.0 or later to upgrade to NimbleOS 5.1.4.0.
CRITICAL	Internet Explorer 10 and earlier versions are not supported in NimbleOS 4.x and later.

Note	Description
CRITICAL	An extended data services outage may occur with MS iSCSI initiator and Intel NICs using the built-in Windows driver e1q60x64.sys (version 11.0.5.21/11.0.5.22). If you encounter this problem, please update your system to use the latest Windows driver.
CRITICAL	A service outage may occur on Windows 2012 R2 hosts using Emulex or Broadcom Fibre Channel HBAs with firmware/driver prior to 11.2. Update the Emulex or Broadcom firmware/driver to 11.2 or later
CRITICAL	Due to a known Red Hat Enterprise Linux bug 1002727, while running virtualized in VMware ESX, manually rebooting the active controller in presence of heavy IOs using the **reboot --controller** command on a Fibre Channel array may trigger an incorrect retry initiated by RHEL guests running the following kernel versions: • 6.4 and earlier • 6.5 without the patch • 7.0 without the patch This incorrect retry logic may lead to unexpected application behavior. In these environments, we recommend the **failover** command instead.
CRITICAL	Due to a known Red Hat Enterprise Linux bug 3550561, unexpected application behavior may occur on RHEL 7.5 hosts with kernel-3.10.0-862.3.2.el7 or derivatives using Emulex FC FCoE HBAs (lpfc driver) and raw devices. To avoid this issue: • If running RHEL 7.6, update to kernel-3.10.0-957.el7 or later. • If running RHEL 7.5z, update to kernel-3.10.0-862.25.3.el7 or later.
CRITICAL	As outlined in the current Validated Configuration Matrix, HPE Nimble Storage fully supports Windows guest operating systems on Microsoft Hyper-V, including Virtual Fibre Channel (VFC) connectivity and multi-pathing with HPE Nimble Storage DSM and VSS support. However, Linux guest operating systems running in Hyper-V VFC configurations are not qualified. Running Red Hat Linux guest operating systems with the “Linux Integration Services” kit installed, or with hv_storvsc drivers in such configurations can lead to Red Hat bug 1364282, which can cause an unexpected service outage.
Important	Starting with NimbleOS 5.1.1.0, the size of the software package now exceeds 2 GB, which may lead to lengthier software download times. Previously, the sizes of the NimbleOS 5.0.x download packages were approximately 1.6 GB, and NimbleOS 4.x packages were approximately 900 MB.
Important	Starting with NimbleOS version 5.1.3.0, the array group now uses Java Development Kit (JDK) version 1.8.0.212. This addresses several security vulnerabilities identified in the previous version of the JDK listed *here*.

Note	Description
Important	HPE Nimble Storage CS2xx (except CS235) and CS4xx arrays are blocked from updating to NimbleOS 5.1.1.0 and later releases by default. These arrays will be allowed to update in special circumstances, such as for group merge and evacuation purposes, and temporary data migration workloads. Contact HPE Nimble Storage Support if you wish to update your CS2xx or CS4xx array to NimbleOS 5.1.x.x.
Important	After completing the NimbleOS update for array groups configured for Synchronous Replication, download the corresponding version of the *Synchronous Replication Witness* software, and update the witness host.
Important	Microsoft Offload Data Transfer (ODX) is not supported if the destination volume has synchronous replication enabled.
Important	Starting with NimbleOS version 5.0.7.0, the Fibre Channel HBAs will use an updated firmware (11.4.204). The new firmware addresses an issue in which some 16Gb Fibre Channel HBAs might not auto-negotiate to 16Gb on all ports due to a timing issue within the code of the previous version of the firmware.
Important	As of vSphere 6.5, VMware is discontinuing the Thick Client (also known as the desktop or C# Client). As a result, the HPE Nimble Storage vCenter Plugin is deprecating the Thick Client and future releases of NimbleOS will not support it.

<table>
<tr><th>Note</th><th>Description</th></tr>
<tr><td>Important</td><td>Starting with version 5.0.3.0, NimbleOS includes a restriction that prevents you from enabling deduplication when you are using a CS3000, CS5000, CS7000, HF20, HF40, or HF60 array that has fewer than six SSDs. This restriction is necessary to prevent the possibility of significant performance issues.

Because NimbleOS 5.0.2.0 and 5.0.1.0 did not enforce this restriction, arrays upgrading from those releases may already have volumes with deduplication enabled. Any array upgrading to 5.0.3.0 or later with deduplicated volumes will continue to operate as a dedupe capable array, regardless of the number of installed SSDs. Such configurations are not recommended by HPE Nimble Storage.

The following table lists the number of SSDs required for the different arrays:

<table>
<tr><th>Array Model</th><th>Required Number of SSDs</th></tr>
<tr><td>HF20H</td><td>2 SSDs</td></tr>
<tr><td>HF20H upgraded to full population</td><td>4 SSDs</td></tr>
<tr><td>HF20H fully populated and upgraded to HF40H</td><td>4 SSDs</td></tr>
<tr><td>HF20, HF40, HF60</td><td>6 SSDs</td></tr>
<tr><td>CS500</td><td>4 SSDs</td></tr>
<tr><td>CS700</td><td>4 SSDs</td></tr>
<tr><td>CS1000</td><td>3 SSDs</td></tr>
<tr><td>CS3000</td><td>6 SSDs</td></tr>
<tr><td>CS5000</td><td>6 SSDs</td></tr>
<tr><td>CS7000</td><td>6 SSDs</td></tr>
</table>
</td></tr>
<tr><td>Important</td><td>You can enable deduplication for CS1000, CS3000, CS5000, CS7000, CS700, and CS500 arrays on a volume only if the corresponding storage pool has a Flash to Disk Ratio (FDR) greater than 4%. To calculate the FDR, obtain the "Total array capacity (MiB)" and "Total array cache capacity (MiB)" values by using the HPE Nimble Storage CLI command pool --info pool_name. This command returns the Pool capacity (MiB), which is the "Total array capacity (MiB)", and the Pool cache capacity (MiB), which is the "Total array cache capacity (MIB)".

Then perform the following calculation:

FDR = "Total array cache capacity (MiB)"/"Total array capacity (MiB)" * 100

If the array has sufficient capability for deduplication, the pool --info command will also show a value for dedupe capacity (MiB).

Note On the HF20H, HF20, HF40, and HF60 platforms, pool --info displays "N/A" as the value for dedupe capacity (MiB). This because you can enable deduplication for the entire array.</td></tr>
</table>

Note	Description
Important	For connections to the NimbleOS GUI, you must have port 5392 open for the Group Management IP address and both diagnostic IP addresses.
Important	VMware has announced End of General Support for vSphere 5.0, 5.1, and 5.5, which includes vSphere Hypervisor ESXi 5.0, 5.1, and 5.5, and vCenter Server 5.0, 5.1, and 5.5. To maintain your full level of support and subscription from VMware, you should upgrade to a supported version of vSphere. Refer to the VMware Knowledge Base article *KB51491*.
Important	During deployment of a desktop using VMware Horizon View, a VVol (mapping to a disposable disk) is created. A clone of this VVol is also created and placed within a directory under the virtual machine directory named `sdd`. When this desktop is deleted from Horizon View, VMware fails to delete the VVol clone of the disposable disk; only the disposable disk itself is deleted. This will be fixed in the next vSphere release. VMware bug number 1807857 should be used to track this fix. This issue occurs on all versions of VMware Horizon and vSphere that support VVols: • Horizon 6 version 6.1 and later • vSphere 6.0 and later
Important	On Windows Server 2012, 2012 R2, 2016, and 2019, the disk optimization process may record the following error in the Application event log: "The volume was not optimized because an error was encountered: Neither Slab Consolidation nor Slab Analysis will run if slabs are less than 8 MB. (0x8900002D)". Although Windows records this as an Error in the event log, the event can be safely ignored for HPE Nimble Storage volumes. HPE Nimble Storage volumes do not benefit from or require slab consolidation.
Important	Numerous host integration toolkits are supported in NimbleOS 5.1.4.0. It is strongly recommended that they be installed on all Windows, Linux, and VMware hosts. For more information about supported toolkits, refer to the Validated Configuration Matrix, which is available on HPE Nimble Storage InfoSight: *https://infosight.hpe.com/resources/nimble/validated-configuration-matrix*
Important	Hosts leveraging VSS integration with HPE Nimble Storage Windows Toolkit (NWT) 2.1 and earlier will not work with NimbleOS 3.x. and later.
Important	TRIM on ReFS is not supported by Microsoft on Windows Server versions prior to 2019.

Note	Description
Important	HPE Nimble Storage Connection Manager (NCM) for VMware 6.1.0 is signed by VMware for ESXi 6.x. It can be installed through the VMware Update Manager or esxcli command without the `--no-sig-check` flag. See NCM for VMware Release Notes 6.1.0 or later and the latest *VMware Integration Guide* for further details. To locate the latest version of the guide, log in to HPE InfoSight. Choose **Resources** > **Nimble Storage Documentation**. In the left pane, click **Integration Guide**, then click **Connection Manager (NCM) for VMware**. From the list displayed, choose the version of the guide that you want.
Important	Performing a group merge from a source group that contains running Hyper-V virtual machines requires additional care. Group merges require changes to the discovery IP address that can adversely impact running systems. Therefore, if you perform a group merge, you should plan a maintenance outage to gracefully stop all applications and Hyper-V virtual machines on the source group to eliminate unexpected downtime caused by changing IP address during the group merge process. A typical group merge should take only a few minutes to complete and then virtual machines and applications can be restarted. The group merge and pool merge operations will also have impact on SCVMM. The impact will depend on whether the source and destination groups or pools are under SCVMM's management. Please refer to the *SMI-S Integration Guide* which includes details about SCVMM and the impacts in these situations before performing merge operations.
Important	Various timeout values affect HPE Nimble Storage targets from Windows/Linux hosts. Before you update the NimbleOS, install the HPE Nimble Storage Windows Toolkit (NWT) or HPE Nimble Storage Linux Toolkit (NLT) on the host or tune the timeout values. Timeout details for various operating systems can be found on HPE InfoSight under **Resources** > **Documentation**. From the *HPE Nimble Storage Documentation* page, locate the article you want. The following **Knowledge Base** articles and Integration Guides explain how to configure and verify host timeout settings for the major supported operating systems (OS): • For Windows, refer to *KB-000052: Windows Host Disk Timeout Values*. In the context of Microsoft Windows, the following article should also be considered: *KB-000246 MPIO Timeout Parameters for MSDSM and NimbleDSM in Windows 2012 R2* • For VMware, refer to the **Common Tasks and Best Practices > Host Timeout Values** section of the *VMware Integration Guide*. • For Linux, refer to *KB-000304: Linux Host Disk Timeout Values*.

Note	Description
Important	The Backup Repository performance policy introduced in NimbleOS 4.2 cannot be used when replicating against a downstream array running an older release. Replicated volumes need to be associated at the time of creation with a performance policy that either exists downstream or that can be manually created on the downstream array.

New Features in 5.1.4.0

The following new features are introduced in NimbleOS 5.1.4.0.

SSL Certificate Management GUI Application

The SSL Certificate Management GUI application provides a user-friendly interface to install, import, create, verify and delete various kinds of certificates and certificate signing requests (CSR) for the Certificate Authority to process.

Usage Analytics

HPE Nimble Storage uses Google Analytics to gather data related to GUI usage. The data gathered is used to evaluate and improve the product.

Recent Release Features

The following features were release in NimbleOS 5.1.x:

Synchronous Replication

This feature provides the ability to synchronously replicate data between two arrays located in separate datacenters. Synchronous replication provides automatic protection against array or site failure.

Manual Group Leader Failover

This feature supports the ability to move the group leader functionality from one array to another when arrays are grouped. This allows the retirement of the array supporting the group leader functionality.

Group Scoped iSCSI Target

This feature allows multiple LUNs to be accessed through a single iSCSI target, which reduces the number of connections required when configuring a large number of LUNs.

Space Reporting Changes

This feature provides simplified space reporting when using data reduction tools, such as compression and deduplication. Arrays will now show logical mapped usage, which more closely aligns with HPE InfoSight and hosts in terms of pre-reduction space usage reported at the volume level. Going forward, reserves will only be thin (0%) or thick (100%). Volume quotas become volume limits. Snapshot quotas no longer exist.

Folder Level Space Enforcement

Expanded the functionality for enforcing space usage within individual folders. In addition, NimbleOS actually enforces limits, and introduces the concept of overdraft, which allows a folder to exceed the usage limit before the limit is enforced.

Multi-protocol (iSCSI/FC) Access to Same Array

This feature allows both the iSCSI and Fibre Channel protocols to be used simultaneously on a single array or group to access different LUNs.

Custom Password Management Policies

This feature provides improved password policies to enable greater security for user access to the HPE Nimble Storage array.

vCenter Plugin HTML5 Client

This feature improves the vCenter plugin by leveraging HTML5 technology to better interact with VMware vCenter.

Deduplication Support for CS1000 Hybrid Arrays

Deduplication is now available on HPE Nimble Storage CS1000 hybrid arrays.

Note Deduplication is not supported on HPE Nimble Storage CS1000H arrays.

There are certain restrictions for using this feature. Before you enable deduplication on hybrid arrays, review the product documentation for complete details.

Documentation

These Release Notes and other user documentation are available on HPE InfoSight:

https://infosight.hpe.com/resources/nimble/docs

You can manually reach the documentation page by logging onto HPE InfoSight and selecting **Resources** > **Nimble Storage** > **Documentation**.

Document Search Interface

There are several methods you can use to locate the documents you need.

The **Documentation** page provides a search interface that allows you to search for information across all documentation, including support and knowledge base articles, best practices, solutions and integration guides, product documentation, and configuration matrices.

To go directly to a document, use the navigation pane on the left side of the **Documentation** page. The navigation pane organizes documents into categories, including:

- Document Type
- Nimble Software and Solutions
- Software Version
- Integration
- Platform

You can use the page scroll bar to move up and down the navigation pane.

Third-Party Software Notices

All third-part software notices can be found in the Documentation Portal on HPE InfoSight.

Here are the steps to manually access the third-party software notices.

1. Log in to HPE InfoSight (https://infosight.hpe.com) .
2. From the menu, select Resources Nimble Documentation .
3. In the left navigation pane of the Documentation Portal, scroll through the Document Type section and select Support Policy.
4. From the list of documents, select General Terms and Conditions. The document opens in a new browser tab.

Core User Documentation

The following is the core user documentation for NimbleOS:

- *GUI Administration Guide*
- *CLI Administration Guide*
- *SNMP Reference*
- *Command Reference*
- *REST API Reference*

Workflow Documents

There are several workflow guides that contain procedures you can perform using either the CLI or the GUI. Each workflow guide covers a specific, frequently performed task related to HPE Nimble Storage products. Each task described by a workflow document is explained in detail in the *GUI Administration Guide* and the *CLI Administration Guide*.

Hardware

Documentation for all hardware components is available on HPE InfoSight. Click the Hardware Guide link in the **Document Type** category. Hardware documentation includes array and expansion shelf installation quick start guides, installation, upgrade, and replacement guides, and comprehensive hardware guides.

Host Integration Guides

Host Integration Guides are available from HPE InfoSight. To locate these documents on the HPE InfoSight **Documentation** page, scroll down the navigation pane to the section called **Integration Guide**. The available guides include the following:

- *Linux Integration Guide*
- *OpenStack Cinder Driver Integration Guide*
- *SMI-S Integration Guide*
- *UCS Director Open Automation Module Integration Guide*
- *VMware Integration Guide*
- *Windows Integration Guide*

Note The version numbers of the host integration guides match the version numbers of their companion Integration Toolkit software packages.

Integration Toolkits

The following Integration Kits include documents that are associated with the toolkit software. You can search for them by entering the HPE Nimble Storage software type and version. The following integration toolkits are supported:

- HPE Nimble Storage Adaptive Flash Cinder Driver for OpenStack
- HPE Nimble Storage AIX ODM
- HPE Nimble Storage Connection Manager (NCM) for Linux
- HPE Nimble Storage Connection Manager (NCM) for VMware
- HPE Nimble Storage PowerShell Toolkit (PSTK)
- HPE Nimble Storage Replication Adapter (SRA)
- HPE Nimble Storage UCS Director Open Automation for Cisco UCS Director
- HPE Nimble Storage Windows Toolkit (NWT)

Note To download Integration Kit software, go to HPE InfoSight (*https://infosight.hpe.com*), then choose **Resources** > **Software Downloads**.

Verified Update Paths

Table 1: From Versions 5.x

From Versions 5.x	
From Version	**To Version**
5.1.3.100	5.1.4.0
5.1.3.0	5.1.4.0
5.1.2.100	5.1.4.0
5.1.2.0	5.1.4.0
5.1.1.0	5.1.4.0
5.0.8.0	5.1.4.0

From Versions 5.x	
From Version	**To Version**
5.0.7.300	5.1.4.0
5.0.7.200	5.1.4.0
5.0.7.100	5.1.4.0
5.0.7.0	5.1.4.0
5.0.6.0	5.1.4.0
5.0.5.200	5.1.4.0
5.0.5.0	5.1.4.0
5.0.4.0	5.1.4.0
5.0.3.100	5.0.8.0
5.0.3.0	5.0.8.0
5.0.2.0	5.0.8.0
5.0.1.100	5.0.8.0
5.0.1.0	5.0.8.0

Table 2: From Versions 4.x

From Versions 4.x	
From Version	**To Version**
4.5.5.0	5.1.4.0
4.5.4.0	5.1.4.0
4.5.3.0	5.0.8.0
4.5.2.0	5.0.8.0
4.5.1.0	5.0.8.0
4.5.0.0	5.0.8.0
4.4.1.0	5.0.8.0
4.4.0.0	5.0.8.0
4.3.1.0	5.0.8.0
4.3.0.0	5.0.8.0
4.2.1.0	5.0.8.0
4.2.0.0	5.0.8.0
4.1.0.0	5.0.8.0

Table 3: From Versions 3.x

From 3.x Versions	
From Version	**To Version**
3.9.2.0	5.0.8.0
3.9.1.0	5.0.8.0
3.9.0.0	5.0.8.0
3.8.1.0	5.0.8.0
3.8.0.0	5.0.8.0
3.7.0.0	5.0.8.0
3.6.2.0	5.0.8.0
3.6.1.0	5.0.8.0
3.6.0.0	5.0.8.0
3.5.4.0	5.0.8.0
3.5.3.0	5.0.8.0
3.5.2.0	5.0.8.0
3.5.0.0	5.0.8.0
3.4.1.0	5.0.8.0
3.4.0.0	5.0.8.0
3.3.0.0	5.0.8.0
3.2.1.0	5.0.8.0
3.1.0.0	5.0.8.0

Table 4: From Versions 2.x

From 2.2.x, 2.3.x Versions		From 2.1.x Versions		From 2.0.x Versions	
From Version	**To Version**	**From Version**	**To Version**	**From Version**	**To Version**
2.3.18.0	4.5.5.0	2.1.9.1	2.3.18.0	2.0.8.0	2.1.9.1
2.3.16.0	4.5.5.0	2.1.9.0	2.3.18.0	2.0.7.0	2.1.9.1
2.3.15.0	4.5.5.0	2.1.8.0	2.3.18.0	2.0.6.*	2.1.9.1
2.3.14.0	4.5.5.0	2.1.7.0	2.2.9.0	2.0.5.0	2.1.9.1
2.3.12.*	4.5.5.0	2.1.6.0	2.2.9.0	2.0.4.0	2.1.9.1
2.3.9.*	4.5.5.0	2.1.5.0	2.2.9.0		
2.3.8.0	4.5.5.0	2.1.4.0	2.2.9.0		
2.3.7.0	4.5.5.0	2.1.3.0	2.2.9.0		
2.3.6.0	4.5.5.0	2.1.2.0	2.2.9.0		
2.3.4.0	4.5.5.0	2.1.1.0	2.1.9.1		

From 2.2.x, 2.3.x Versions		From 2.1.x Versions		From 2.0.x Versions	
From Version	To Version	From Version	To Version	From Version	To Version
2.3.3.0	4.5.5.0	2.1.0.0	2.1.9.1		
2.3.2.1	4.5.5.0				
2.3.2.0	4.5.5.0				
2.3.1.0	4.5.5.0				
2.2.11.0	3.9.2.0				
2.2.10.0	3.9.2.0				
2.2.9.0	3.9.2.0				
2.2.7.*	3.9.2.0				
2.2.6.0	3.9.2.0				
2.2.5.*	3.9.2.0				
2.2.3.*	2.2.11.0				
2.2.2.0	2.2.11.0				
2.2.1.0	2.2.11.0				
2.2.0.0	2.2.11.0				

Table 5: From Versions 1.x

From 1.4.x Versions		From 1.3, 1.2, 1.1 Versions		From 1.0.x Versions	
From Version	To Version	From Version	To Version	From Version	To Version
1.4.12.0	2.1.9.1	1.3.*.*	1.4.6.0	1.0.7.*	Contact Support
1.4.11.0	2.1.9.1	1.2.*.*	1.4.6.0	1.0.6.*	Contact Support
1.4.10.0	2.1.9.1	1.1.*.*	1.2.2.0		
1.4.9.0	2.1.9.1				
1.4.8.0	2.1.9.1				
1.4.7.0	2.1.9.1				
1.4.*.*	1.4.12.0				

Known Critical Issues

Known Critical Issues in NimbleOS version 5.1.4.0				
ID	**Component**	**Title**	**Description**	**Workaround**
AS-77607	Data Service	Removing member array from multi-array group may cause IO disruption to scaled vVol environments	Scaled vVol environments with 500 vVol VDI VMs or more than 5000 Nimble vVol volumes may experience IO disruption when removing a member array from group. Symptom of problem would appear as vVol datastores being (inaccessible). Virtual Machine status would also appear as (inaccessible).	When planning to remove a member array from group, schedule a planned maintenance window and place all ESX hosts into maintenance mode to minimize impact to availability. ESX typically resumes connection to vVol datastores, and reconnects to VMs, after a period of 15-30 minutes automatically without a manual intervention.
AS-95470	Data Service	Pool merge fails due to too many pending deletes	When attempting to perform a pool merge operation, if there are a large number of volumes that must be striped across the pool, and one of the arrays has a large number of pending deletes, then it is possible for the operation to fail due to the Data Service being overloaded. Symptoms of this behavior are if the pool merge operation hangs for several minutes and returns the following message: The request could not be understood by the server.	Not applicable
AS-100561	Host Integration	Delay for first vVol datastore becoming accessible	On new array installations, when creating the first vVol datastore on the host, there is a possibility that the datastore is inaccessible initially. However, it will become accessible within 5 minutes.	Not applicable

Known Critical Issues in NimbleOS version 5.1.4.0				
ID	**Component**	**Title**	**Description**	**Workaround**
AS-95087	Platform	Unexpected controller takeover due to out-of-memory condition	The array runs post-mortem analysis when one of the essential NimbleOS services terminates abnormally. In rare occasions, such analysis may consume enough memory to trip the out-of-memory threshold, at which point, the controller is rebooted in an attempt to restore normal service. HPE Nimble Storage is currently studying ways to run post-mortem analysis with a lower memory footprint impact.	None. The controller reboot is enough to restore the High Availability state.
AS-94737	System Management	No Automatic Failover in the event the host loses all FC connectivity to an array	An Automatic Failover (AFO) of the Group Management Services will not be initiated if all Fibre Channel (FC) interfaces on the Group Leader array fail on both controllers.	A Manual Group Leader Failover will be required to restore Fibre Channel connectivity to the hosts.
AS-93553	System Management	Automatic Failover of Group Services is not supported for Encrypted Volumes	If encrypted volumes are configured and Automatic Failover happens, encrypted volumes wont come online automatically after the other array takes over Group Management services. The user will need to enter the passphrase on new group leader array in order to bring the encrypted volumes back online.	Reenter passphrase after Automatic Failover.
AS-89701	System Management	Automatic Switchover Service restarts due to thread limitations	The Automatic Switchover Service internally creates and closes threads each time during Automatic Failover (AFO) quorum set-up and tear down. This may cause the service to eventually crash after reaching the maximum thread limit. The system recovers automatically when the Automatic Switchover Service restarts.	Not applicable

Known Critical Issues in NimbleOS version 5.1.4.0				
ID	**Component**	**Title**	**Description**	**Workaround**
AS-65615	System Management	Group Management Service must be restarted to unlock additional volume limits after controller upgrade	When performing a controller upgrade to a high-end model, the object limits will still show the lower limits if the Group Management Service is not restarted.	A failover can be initiated in order to restart the Group Management Service. You may also contact HPE Nimble Storage Support to restart the service manually.
AS-100254	System Management	Group Management Service restarts under heavy load	A system management process can restart when the system is under heavy load. The system recovers automatically. The Data service is not affected.	Not applicable
AS-81279	System Management	Group Data Service may restart when the array is under heavy load during software update	The underlying scale-out database competes with CASL and other system processes for IOPS. During software update, a migration script runs against the database. Under heavy file system load, the migration steps may not complete within the expected amount of time. As a result, the migration may timeout leading to a restart of the Group Data Service. After the restart, the migration should eventually complete as normal without any user impact or intervention.	There is no workaround. To avoid encountering this issue, reduce IO load when performing software update.
AS-69561	System Internals	Data Service can restart unexpectedly during shutdown process	Due to a race condition, the Data Service can crash during a graceful shutdown causing unexpected Data Services restart messages to be generated. This should not cause any I/O impact because the Data Service is already in the process of shutting down.	Not applicable

Resolved Critical Issues

Resolved Critical Issues in NimbleOS version 5.1.4.0				
ID	**Component**	**Title**	**Description**	**Workaround**
AS-98539	Data Service	Unexpected Data Service restarts on CS1000 arrays with deduplication enabled	As in-memory space for Fingerprint Index (FI) is consumed, the array switches to higher adaptive sampling levels in order to reduce the rate of utilization of FI memory. However, if the array consumes FI memory too quickly, which typically happens during a Data Service restart, this creates a race condition where two different threads are changing adaptive sampling levels at the same time. This may lead to additional Data Service restarts. The problem is more pronounced in CS1000 arrays that have deduplication enabled.	Not applicable
AS-98356	Data Service	Unexpected Data Service restarts on arrays with a large number of SSDS	Under certain conditions, on arrays with a large number of SSDs - additional expansion shelves and/or larger SSDs - the number of SSD segments populated can exceed the limit that the paged vector can hold. Once the vector runs out of entries, the Data Service may restart unexpectedly.	Not applicable
AS-99900	Data Service	After an update, encryption may be disabled and hosts may experience I/O outage	During a software update, after the standby controller is updated to the newer version and a failover is performed to the standby controller, under certain conditions, encryption may get disabled, and volumes may possibly go offline. This can happen when updating from NimbleOS version 5.1 and above.	Not applicable

Resolved Critical Issues in NimbleOS version 5.1.4.0				
ID	**Component**	**Title**	**Description**	**Workaround**
AS-95944	Data Service	Unexpected Data Service restart when a host requests data block allocation status for a large offset range on a vVol volume which is highly fragmented.	If a vVol is highly fragmented, the array may experience an unexpected Data Service restart when the host requests data block allocation status for a large offset range on that volume.	Not applicable.
AS-41965	Data Service	Data migration or space deletion may pause momentarily due to Data Service processing	In rare instances, data migration or space deletion may pause when the Data Service internal processing isnt prioritized correctly.	Not applicable.
AS-101583	SAN	Data Service may restart if there are more than 16 iSCSI target portals configured for Group-Scoped Targets on each array	For iSCSI Group-Scoped Targets (GST), each iSCSI Data IP Address is treated as a separate iSCSI target port. If there are more than 16 iSCSI target ports configured on an array, the SCSI RTPG (Report Target Port Group) command received on a Group-Scoped target may cause memory inconsistency. As a result, the Data Service may experience multiple restarts.	Not applicable
AS-94871	System Management	Encrypted volumes may require passphrase reentry following a software update	Under certain conditions, an array group with encrypted volumes and with Encryption security mode set to Secure may require the reentry of a passphrase following a software update. These volumes will be inaccessible until the passphrase is re-entered.	Change the Encryption security mode to Available mode before attempting the software update. It can be changed back to Secure after the Software Update has been completed. Encryption security mode can be modified within the GUI via Administration > Security > Encryption > System Startup Mode Or, via CLI, issue the following command: group --edit --encryption_mode available

Resolved Critical Issues in NimbleOS version 5.1.4.0				
ID	**Component**	**Title**	**Description**	**Workaround**
AS-95763	System Management	Group Management and Group Data service restarts after Group Leader Failover.	Under rare circumstances, following a Group Leader Failover, the Group Management and Group Data service may become unavailable. This may occur when the Configuration Database is marked with completion state and the transaction to update Scale-Out Database fails or times out. This causes a mismatch between the Configuration and Scale-Out Databases.	The Backup Group Leader name will need to be updated in the Scale-Out Database. Please contact HPE Nimble Storage Support.
AS-95637	System Management	Passwordless-SSH connection fails between Group Leader and Backup Group Leader	In certain situations, information about the Group Leaders SSH key may be misconfigured. This may lead to failures in passwordless-SSH connections between the Group Leader and Backup Group Leader arrays. When this happens, it may take longer to set up the Backup Group Leader, and in some cases, the group setup will go out-of-sync.	Please contact HPE Nimble Storage Support.
AS-60659	System Management	Group Management service may restart while collecting user information from Active Directory	In environments with an array integrated with Active Directory, the create/validate session code holds a lock on an underlying sessions table and then goes to Active Directory to collect more information about the user. If this operation takes too long, the Group Management service may timeout to free this lock.	Confirm all Domain Controllers in the Active Directory environment that is integrated with the array are reachable.
AS-96222	System Management	Global Search Issues within the Array GUI	There are currently issues with global search functionality within the Nimble array GUI. Currently, the Admin User search is not case sensitive. Also, the Volume Collection, Performance Policy, and Chap Account searches do not display filtered results properly.	Not applicable

Resolved Issues

Resolved Issues in NimbleOS version 5.1.4.0				
ID	**Component**	**Title**	**Description**	**Workaround**
AS-70534	Data Service	Disk index synchronization not processing deletions fast enough	Dynamic CPU and disk weight currently depend on the number of internal data structures and disk space. There is no mechanism to increase this weight dependent on the amount of pending deletions. By the time the weight increases because of low disk space, a large amount of deletions have already accumulated and the array encounters other disk space delay mechanisms.	Not applicable
AS-77907	Data Service	Checksum operations running on a system may cause deleted space to be freed slowly.	Deleted space may be freed slowly because checksum operations are running when the system is critically low on space.	Not applicable.
AS-102347	Not applicable	dHCI setup error during deployment - vCenter OVA is missing from the array	When creating a new vCenter Server during dHCI setup, some customers may see an error message stating that the vCenter OVA is missing from the array due to an API failure. The issue might arise from a failed or expired session.	To workaround this issue, refresh the web page and login to the array again to restart the setup process. However, in some instances, you may need to contact HPE Nimble Storage Support in order to have the arrays web service restarted.
AS-94673	System Management	Array management service restarted due to race condition.	Under rare circumstances, the Array Management service may restart on member array after a failover occurs. While in the process of setting the role for the member array, a notification is sent from the Group Leader, which can lead to a race condition causing the service restart.	Not applicable

Resolved Issues in NimbleOS version 5.1.4.0				
ID	**Component**	**Title**	**Description**	**Workaround**
AS-97005	System Management	Group Management service unavailable during pool merge	In certain situations, the pool merge operation may cause resource contention, resulting in replication operations to fail a health check. This may also cause the Group Management Service and the Nimble array GUI to become temporarily unavailable.	Pause replication until the pool merge successfully completes
AS-96004	System Management	Group Management Service restarts when trying to create key-value (KV) pair metadata	The Group Management Service may restart unexpectedly when attempting to create for key-value (KV) pair metadata for system objects such as Volumes, Snapshots, Snapshot Collections etc. This could happen only when the KV scrubber task (scheduled to run once weekly) is running at the same time the Group Management Service is also trying to create new KV pair metadata.	No workaround.
AS-95263	System Management	Issuing group --migrate could result with no Group Leader if there is a failure on Backup leader	In rare instances, if the group --migrate command is issued on the Group Leader array and the Backup Group Leaders Automatic Switchover Service happens to restart at the same time (due to different reason), it is possible that the Backup Group Leader wont be able to promote itself as leader.	Restarting the Automatic Switchover service on the Backup Group Leader recovers from this failure. This can be done by issuing a failover on the Backup Group Leader.
AS-95493	System Management	Array Switchover Service restarts due to memory issues	The witness log collection requested through the Array Switchover Service causes the array to exceed memory allocations. If the Array Switchover Service exceeds the memory limits, the service is restarted by Process Management Service as a precaution.	Not applicable. The Array Switchover Service recovers after the restart.

Resolved Issues in NimbleOS version 5.1.4.0				
ID	**Component**	**Title**	**Description**	**Workaround**
AS-92937	System Management	Group Management Service Restarts after deleting replication partner	Under rare circumstances, the Group Management service on the array may restart unexpectedly after a replication partner is deleted. This occurs if a periodic connection task between the partners happens to be running at the same time.	Not applicable
AS-98990	System Management	Partner creation fails during group merge operation due to network issue and Synchronous Replication config	Pool partner creation may fail during a group merge if Synchronous Replication is being configured when network outage is taking place.	Not applicable
AS-89950	System Management	Replication partner throttle limit is displayed incorrectly	When running the partner --list command via the array CLI, the output shows a large throttle limit set for the replication partner. This information is inaccurate.	Not applicable
AS-87192	System Management	Group Management Service may restart due to snapcoll creation/deletion workflows	In rare instances, the Group Management Service of an array group may restart unexpectedly due to race conditions that exist within the internal processing of snapshot collection creation and deletions.	Not applicable
AS-94429	System Management	Replica volume cannot be deleted	A replica volume cannot be deleted, which is why the delete operation is not available within the HPE Nimble Storage Array GUI.	If a user needs to delete a replica volume, the replica volume must first be claimed (i.e., change ownership to the current group). The CLAIM option is available in the detail page for the replica volume.

Resolved Issues in NimbleOS version 5.1.4.0				
ID	**Component**	**Title**	**Description**	**Workaround**
AS-99849	System Management	After update to 5.1.x.x, volumes in a folder with a limit are taken offline due to folder limit being exceeded	Upon updating from a pre-5.1.x.x software version to a post-5.1.x.x version, volumes can be taken offline/read-only due to folder limits being enforced post-5.1.x.x and changes to the way that volume usage is reported. There is a conversion that occurs on the limit to help account for this difference in usage; however, it does not account for clone savings. This can cause the limit to not be increased sufficiently to account for the new method of space reporting.	Increase the limit of the folder to be larger than the current mapped usage of the folder and bring the necessary volumes back online. View the Offline Reason of the volume in the GUI or CLI using the following command: vol --list View if a volume is non-writable in the GUI or CLI with this command: vol --info <volume name> | grep non_writable To take volume out of read-only mode from CLI use the following command: vol --edit <volume name> --readonly no
AS-93297	System Management	Unexpected Group Management Service Restart when user is deleted while user action is pending	Due to a timing issue, the Group Management Service may restart unexpectedly when a user is deleted while a user task is still pending.	Not applicable

Known Issues

Known Issues in NimbleOS version 5.1.4.0				
ID	**Component**	**Title**	**Description**	**Workaround**
AS-81863	Data Service	Data Service may restart unexpectedly when RAID is in degraded mode	When RAID is degraded, IO needs to be reconstructed by reading from multiple disks, and an internal buffer may exhaust its allocated resources. In rare cases when multiple disks are degraded, the Data Service may restart unexpectedly.	If RAID is degraded for an extended period and Data Service restarts occur, contact HPE Nimble Storage to assess adjusting allocated buffer resources.

Known Issues in NimbleOS version 5.1.4.0				
ID	**Component**	**Title**	**Description**	**Workaround**
AS-99647	Data Service	Space reporting discrepancy between upstream and downstream volume in Synchronous Replication configuration	When zero data is written to an upstream volume involved in Synchronous Replication, an internal flag is not passed properly among various layers from upstream to downstream. Then, zero data on the upstream is treated as SCSI unmaps on the downstream. As a result, a large space reporting discrepancy can occur between the upstream and downstream volumes.	Not applicable
AS-86720	Data Service	Unassigning and reassigning array to a pool within 5 minutes will fail	Assigning an array to a pool immediately after unassigning it from the same pool will fail with the following error - Failed to assign arrays to the pool: A service is not running or is not reachable	Retry operation after a few minutes to reassign array to pool.
AS-92898	Host Integration	Error: Could not find pool in vVol datastore creation wizard	When attempting to create a vVol datastore, changing the selection of the group does not fetch the latest group-related pools data. This is caused by a caching issue.	To see the correct pools within the group, close the createDatastore dialog and launch the dialog again, selecting the group for creating datastore.
AS-99566	Host Integration	Datastore list is not displaying properly if previous and next buttons are rapidly clicked repeatedly.	The list view result is not displayed properly after switching between the VMFS/vVOL datastore when clicking pagination rapidly, without waiting for the resulting pages to load.	When this problem occurs, click on any item in the menu (Home, vVOLVMs, etc). and then click on the datastore to show the proper results.
AS-99177	Host Integration	Instead of vVol VM name, blank space is displayed in vCenter plugin	When you use the HPE Nimble Storage vCenter Plugin for the HTML 5 client, the NimbleOS array table header displays a blank instead of displaying the vVol virtual machine title. This does not affect how the client performs.	No workaround

Known Issues in NimbleOS version 5.1.4.0				
ID	**Component**	**Title**	**Description**	**Workaround**
AS-96053	Platform	NDER process may lead to host reconnects	The Nimble Drive Error Recovery (NDER) is activated for drives failing I/O in an attempt to recover the drive. In rare cases, the process surpass the typical SCSI timeout of 60 seconds, causing host I/O inaccessibility.	Not applicable
AS-49747	Platform	Data Service disrupted when standby controller is in a reboot loop	In a rare case, when the standby controller is in a reboot loop, this may disrupt the Data Service. As a result, the array will report several failed SSDs.	Active controller will operate as expected after the faulty standby controller is disabled. (1) Remove the rebooting standby controller from the chassis or contact HPE Nimble Storage Support to remotely power off the rebooting standby controller from the arrays active controller. (2) Then reseat or disk --remove | add the failed SSDs to recover the SSDs.
AS-101570	Platform	Delay with Data Service starting during shelf state change	On rare occasions, the array groups Data Service may fail to initialize if a shelf state change occurs simultaneously.	No workaround is required. The array will recover itself automatically by restarting the Data Service.
AS-56942	Platform	Multi-bit Error-Correcting Code (ECC) errors on NVRAM card caused Data Service restart	In rare cases, multi-bit ECC errors on the NVRAM card may cause the Data Service to restart unexpectedly.	Contact HPE Nimble Storage Support.
AS-55765	Platform	Network storm causes writes to slow down to a point where Data Service restarts due to a health check failure	On lower-end platforms with a lower number of CPU cores, a network storm could keep the kernel busy serving network interrupt requests, and ultimately delay IO requests. This in turn causes IOs to timeout and causes a Data Service restart to recover.	Address the network storm, and then perform a controller failover.

Known Issues in NimbleOS version 5.1.4.0				
ID	**Component**	**Title**	**Description**	**Workaround**
AS-56600	Platform	NVRAM overloaded on high end platforms under heavy stress	In rare cases, heavy load compounded by unaligned workloads on high-end platforms with many CPU cores can cause the NVRAM driver to become overloaded when all cores are busy. The Data Service may restart unexpectedly with a health check error.	Contact HPE Nimble Storage Support.
AS-32895	Platform	Removing an array from a group leaves the array in an unusable state.	Upon removing an array from a group and removing any expansion shelves from that array, the array will need to be re-imaged prior to any array reuse.	Schedule time for a Sales Engineer to field-image the array.
AS-33725	Platform	Unexpected controller takeover due to incorrect state of the SAS HBA	When the SAS HBA detects faulty states, to recover, the array needs to reset the SAS HBA's firmware. The SAS HBA firmware reset can block disk I/Os significantly longer than our High Availability monitoring timeouts allow. Instead, a controller reboot is triggered immediately if this state is detected, resulting in an unexpected takeover event.	Contact HPE Nimble Storage Support.
AS-95054	Not applicable	Addition of a server with expired ESXi license fails	When adding a server with an expired ESXi license through the vCenter plugin, you may see an error saying - Failed to submit a task to add server.	A valid ESXi license must be assigned to the server.

Known Issues in NimbleOS version 5.1.4.0				
ID	**Component**	**Title**	**Description**	**Workaround**
AS-94539	SAN	Data Service or SCSI High Availability Service Restart when processing Fibre Channel connections	In NimbleOS, the Data Service and the SCSI High Availability Service use the same logic for processing Fibre Channel connections. Due to a software defect in the Fibre Channel connection termination logic, either of these services may stop unexpectedly with a corefile and restart. The software defect occurs when code-paths related to connection termination are simultaneously processed: - processing a Connection_Loss event from the FC driver, for connection A - performing an implicit logout of connection A, due to receipt of a New_Connection event for a conflicting connection B (between the same host/array ports). The restart of the affected service causes a brief interruption in the arrays ability to service incoming requests.	None
AS-89933	SAN	Data Service may restart unexpectedly during shutdown	When shutting down or rebooting the array in a planned or unplanned fashion, or working with HPE Nimble Storage Support to restart the service individually, the Data Service may crash unexpectedly during its normal shutdown sequence. The service will recover automatically. There should be no impact since the service is already in the shutdown sequence.	Not applicable
AS-56019	Security	Group Management restarts while shutting down	While the group management process is shutting down, it may experience a fault that causes a restart attempt.	None required. The process is shutting down.

Known Issues in NimbleOS version 5.1.4.0				
ID	**Component**	**Title**	**Description**	**Workaround**
AS-82317	System Management	The Event service may crash during application context switch	Due to the use of SIGALARM signals to indicate a DNS timeout in libcurls standard system resolver, when the signal happens it can sometimes switch the application context to the signal handler, causing the Event service to crash unexpectedly.	Validate the DNS servers defined on the array and eliminate any inaccessible or unresponsive DNS servers. If all defined DNS servers have been confirmed and the Event service continues to crash, contact HPE Nimble Storage Support.
AS-68651	System Management	Flood of timeouts causing Event Management service restart	We create multiple threads to deliver emails, but we use a non-threadsafe libcurl call to dispatch them. Therefore, the lock needs to be around libcurl call. If there is a misconfigured DNS or SMTP server, the curl call will timeout. If there are greater than 7 emails waiting to be delivered and all are suffering a timeout, we will starve the health checking for more than the 300-second health check timeout causing the Event Management service to restart.	Correct the DNS or SMTP configuration to a valid address by ensuring that a ping to the defined address succeeds.
AS-28992	System Management	Array removal might not complete in time	In some cases when there is high load, array removal can take longer than usual and timeout, which leads to an intermediate state where the group leader believes the array still belongs to the group, but the array has been removed.	Re-run array removal to clear the group leader metadata.
AS-71090	System Management	No Audit Log entry is created if user does not have the privilege to create user	If a user tries to create a new user account, but the user doesnt have the privilege to do so, the user creation will fail. However, an audit log entry is not created.	Not applicable
AS-55005	System Management	Unexpected Group Management restart due to memory inconsistency	In rare cases, a memory inconsistency causes an unexpected Group Management Daemon (GMD) restart.	Not applicable

Known Issues in NimbleOS version 5.1.4.0				
ID	**Component**	**Title**	**Description**	**Workaround**
AS-94683	System Management	Network isolation of the Group Leader and Backup Group Leader array may lead to Automatic Switchover service restarts	In Automatic Switchover environments, in rare instances, network isolation of the Group Leader and Backup Group Leader may cause the service that handles the automatic switchovers to restart unexpectedly.	No workaround is needed. The service recovers on its own.
AS-98953	System Management	Array Management Service restarts during Backup Group Leader discovery	The arrays database system may become unavailable for a limited time when there is a failure in setting up the Backup Group Leader. When attempting to discover a new Backup Group Leader, the Array Management Service may restart due to a race condition.	This restart is non-disruptive to the data on the array, and the Array Management recovers after the restart occurs.
AS-99702	System Management	Backup Group Leader is not assigned due to power outage	Following a power outage, it is possible that the Backup Group Leader is not assigned to the group. This may occur if the SODB database does not start due to an SSH key issue.	Please contact HPE Nimble Support.
AS-74242	System Management	Force deletion of user defined performance policy should not be supported	There is a --force switch available when deleting a performance policy via the HPE Nimble Storage Array CLI. This --force switch does not work and will fail with the following: ERROR: Failed to delete performance policy. Resource busy. The --force command is not supported since the specified performance policy should not be removed without first checking its volume or folder associations.	Not applicable

Known Issues in NimbleOS version 5.1.4.0				
ID	**Component**	**Title**	**Description**	**Workaround**
AS-90633	System Management	Error No message received after issuing CLI command	Under system busy conditions, when an excessive amount of operations are being issued in parallel or too many internal retries are occurring to perform tasks, you may receive a No message received error after issuing a CLI command.	Please reissue the command. If the operation was already performed by the earlier command, an appropriate message will be returned.
AS-89124	System Management	Synchronous Replication Volume Count Limit	The group --list_limits CLI command does not list the Synchronous Replication volume count Limit. Synchronous Replication on 5.1.0.0 and later can protect up to 128 volumes.	Not applicable
AS-98561	System Management	While editing the schedule to assign the Synchronous Replication partner for a volume collection, the following error occurs: Failed to synchronize configuration to partner.	Some internal operations may timeout when configuring the replication partner, and the following error message occurs: Failed to synchronize configuration to partner. Internally, it will retry as needed in order to complete the necessary process to set the Synchronous Replication partner. No user action is necessary.	Not applicable
AS-28589	System Management	Network issues may cause restart of Group Management service	On rare occasions, a very slow network (or network issues like dropped packets) can cause a restart of the Group Management services. However, replication and other services will resume where they left off prior to the restart.	Not applicable

Known Issues in NimbleOS version 5.1.4.0				
ID	**Component**	**Title**	**Description**	**Workaround**
AS-44941	System Management	Adding/removing volumes while replication is in progress may cause Group Management restart	Adding or removing volumes to a volume collection while replication is in progress for that volume collection could potentially lead to a restart of the Group Management services. This does not have a significant impact however, since replication (and other services) resume where they left off before the restart	Not applicable
AS-100171	System Management	Group Management Service restarts unexpectedly when snapshot is deleted	In a rare timing issue, the Group Management Service for an array group may restart unexpectedly if a snapshot is deleted while its checksums are being sent to the downstream array.	Not applicable
AS-93113	System Management	Unmanaged snapshots remain after cleanup is enabled	If clones are created using an unmanaged snapshot, then this unmanaged snapshot will not be deleted even if cleanup is enabled.	Not applicable
AS-100382	System Management	Array Management Service restarts unexpectedly following automatic Group Leader Failover	The Array Management Service may restart unexpectedly when the array is under heavy load, has many snapshots scheduled, has performed a group merge in the past, and has recently performed an automatic Group Leader Failover.	Not applicable

Known Issues in NimbleOS version 5.1.4.0				
ID	**Component**	**Title**	**Description**	**Workaround**
AS-98694	System Management	Snapshot limit warning alarms persist after update to 5.1.x.x or later	After the update to 5.1.x.x or later, the Snapshot limit warning alarm is no longer used. This presents a situation where stale alarms are present on the array and they will not be cleared even if the space situation is rectified. The alarm follows the following format: WARNING Mon DD YYYY HH:MM:SS Acknowledged - Volume <volume name> snapshot space usage is over the configured warning limit.	The alarms can be deleted manually either in the GUI or on the CLI.
AS-49590	System Management	Unexpected Group Management restart due to high memory utilization	In rare cases, the standard memory allocator does not reuse freed memory efficiently during heavy workloads. When Group Management Daemon (GMD) utilization becomes too high, GMD may restart to recover.	Not applicable
AS-72559	System Management	Group management service may restart during software update	Group management service may restart during software update due to race condition involving unlocking the download lock file.	Not applicable
AS-95212	System Management	HPE Nimble Storage array compatibility issues with MIT Kerberos trust types	When the HPE Nimble Storage array is configured to use Active Directory integration, the array is joined to one specific domain, as a domain member. Under normal circumstances, users in trusted domains will also be able to authenticate to the array. If one or more trusted domains are joined to the forest using an MIT Kerberos type trust relationship, users and groups in any trusted domain (e.g. not the domain the array is joined to) will be unable to authenticate to the array.	Not applicable

Known Issues in NimbleOS version 5.1.4.0				
ID	**Component**	**Title**	**Description**	**Workaround**
AS-86545	System Management	Unable to create dedupe enabled volumes on a new install	After a CSx000 array is installed, it takes one minute for the array to determine its deduplication capability. If a volume is created prior to this, it will not have dedupe enabled even if the array is dedupe capable.	Once the array is able to determine its deduplication capability, all newly created volumes will have dedupe enabled, if specified. In order to enable dedupe on the previously created volumes, you may run the following command via the HPE Nimble Storage Array CLI: vol --edit <vol_name> --dedupe_enabled yes
AS-101535	System Management	Group Management Service is temporarily unavailable after deleting volumes	Enabling and disabling the dedupe setting on volumes and concurrently deleting volumes can cause the Group Management Services to become temporarily unavailable on the array.	The Group Management Service will eventually restart itself
AS-92157	System Management	No CLI support for changing the Witness Port	Currently, there is no CLI support for changing the witness port. The nimble-witnessd.service file needs to be edited manually.	Not applicable
AS-100989	System Management	User is able to submit empty FQDN or IP Addresses when requesting custom certificate	When generating a custom certificate, the user is allowed to add empty FQDN or IP Address input fields on the form and then click the GENERATE button. This will produce an error message popup (modal) returned from the network (backend).	Click the X-icon button to delete any unused/empty input fields under the section of FQDN or IP Addresses.
AS-99584	System Management	Only one certificate may be selected at a time.	On the certificate list page, although every listed certificate entry has a checkbox next to it, the user cannot choose multiple selections for deletion. The user is allowed to only select one entry to delete at a time.	Not applicable
AS-99343	System Management	Custom SSL certificate import not supported on older versions of Google Chrome	Within the HPE Nimble Storage array GUI, customer SSL certificate import is only supported on Google Chrome version 71 or later.	Not applicable

Known Issues in NimbleOS version 5.1.4.0				
ID	**Component**	**Title**	**Description**	**Workaround**
AS-99353	System Management	Ambiguity of PASSWORD when importing a PKCS12 bundle	The PASSWORD refers to the one the user needs to enter for the PKCS12 bundle file to be imported. The correct phrasing should be BUNDLE PASSWORD.	Not Applicable
AS-100463	System Management	Clicking save without updating the user analytics checkbox value incorrectly shows a successful message	Within the Nimble Array GUI when browsing to the Diagnostics page under Alerts and Monitoring, clicking save without updating the user analytics checkbox value incorrectly shows a successful message.	Not applicable
AS-98177	System Management	Setting alarm reminder frequency to the same value from GUI does not change next reminder time	When updating an alarm from the Events > Alarms page in GUI, selecting an alarm and clicking CHANGE REMINDER button, without changing the reminder frequency time, and clicking SAVE button, does not change next reminder time. This behavior is different from CLI. Setting alarm reminder frequency to the same value from CLI resets the next reminder time based on the current time.	To keep the same reminder frequency and reset the next reminder time based on the current time, change the reminder frequency to a different value, save it, and change it back and save it, or use CLI to make the change.
AS-87701	System Management	Incorrect information on hardware page displayed when controller is down	When a controller is down, the user may see incorrect representation of physical ports within the Hardware Page of the array GUI. This is due to the lack of information from the missing controller.	When the controller is back up, all the information is displayed correctly on hardware page.
AS-77372	System Management	Group Merge via GUI unable to process large amount of conflicts	Currently within the HPE Nimble Storage Array GUI, when performing a group merge, if there is a large amount of group merge conflicts (1000 or more), the GUI is unable to process and resolve all of them.	To work around this issue: 1. Log into the destination array to resolve the conflicts. 2. Attempt the group merge again.

Known Issues in NimbleOS version 5.1.4.0				
ID	**Component**	**Title**	**Description**	**Workaround**
AS-21697	System Management	GUI shows a general error message during group merge when, for the two groups, the total number of snapshot schedules with a snapshot interval of less than five minutes exceeds five	The GUI shows a general error message during group merge when the total count of snapshot schedules with a snapshot interval of less than five minutes exceeds five: System limits for the number of protection schedules would be violated after adding the array. Current limit is 5.	Delete the appropriate protection schedule with a snapshot interval of less than five minutes to meet the system limits of these protections schedules, and retry the group merge operation.
AS-99656	System Management	Stack Vision menu displays the Details Page instead of Summary Page	The Stack Vision menu when clicked should always show the Summary page as the landing page. When clicked for the first time it correctly shows the Summary page as the landing page. If the user then navigates to the Details page and again clicks on the Stack vision menu, the landing page is the Details page instead of Summary page.	The user can navigate to the Stack Vision Summary page from the link at the top of the page
AS-95591	System Management	Incorrect ordering of pool merge error messages when Synchronous Replication and Witness are configured	Pool merge is not allowed if Synchronous Replication is enabled and pool merge is not allowed when a witness configured. If an array group has a witness configured for Automatic Switchover and has Synchronous Replication configured, when a user tries to perform a pool merge, the following error is generated: “pool merge is not allowed when witness is configured”. In this case, if the user removes the witness and then re-attempts the pool merge, the following error is then generated: “Pool merge is not allowed when involved in sync replication”. This error should supersede the previous error.	

Known Issues in NimbleOS version 5.1.4.0				
ID	**Component**	**Title**	**Description**	**Workaround**
AS-93157	System Management	Array GUI does not specify which snapshots are unmanaged	The Array GUI does not specify which snapshots are unmanaged and no longer belong to a volume collection.	Run the following command via CLI: snap --list --all --unmanaged
AS-99024	System Management	Browser becomes unstable upon certificate change	After changing a certificate, the GUI may present an error such as follows: The web service is very slow or unreachable...	After a new custom certificate has been imported or existing certificate is deleted, please close the browser where the action was performed and reopen a new one to guarantee a new connection request to the NimbleOS web interface.