



NIMBLE STORAGE INTEGRATION POWER-PACK

*INSTALLATION AND CONFIGURATION OF THE
NIMBLE STORAGE POWER-PACK*

Version: 7.7.0.2
Pack: Nimble Integration 0.5.0.15
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Author: ccordray/mmorin

ScienceLogic, Inc.
10700 Parkridge Blvd. Reston VA 20191

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CHAPTER 1

INTRODUCTION

WHAT IS NIMBLE STORAGE?

Nimble Storage is a flash-based, single storage consolidation architecture for enterprise applications. The platform consists of Nimble's CASL architecture and InfoSight, the software heart of the platform.



WHAT PRODUCTS ARE SUPPORTED?

The Nimble Storage Power-Pack is used to manage Nimble Storage Arrays using Nimble Insight SNMP version 2.3 or later

CHAPTER 2

TESTING TCP PORT CONNECTIVITY

The Nimble Storage Power-Pack requires SNMP access to the Nimble Insight SNMP agent. This service runs on **TCP port 161** from the primary IP address assigned to the Nimble array.

In order for ScienceLogic management systems to communicate with the Nimble Insight SNMP agent, TCP port 161 must be accessible from either the ScienceLogic collector, or a ScienceLogic All-In-One server.

Required Network Port Access

Protocol	Port
TCP	161

Before attempting to discover the Nimble Storage array in ScienceLogic, perform the following test on the command on the ScienceLogic collector or All-In-One server. Login as root on the collector and type the following command.

```
nmap -p 161 10.1.1.10
```

If TCP port 161 is open, the result should show the following message.

```
Starting Nmap 5.51 ( http://nmap.org ) at 2015-10-01 18:42 UTC
Nmap scan report for nimblestorage-001.mydomain.net (204.110.219.37)
Host is up (0.027s latency).
PORT      STATE SERVICE
161/tcp   open  https
```

```
Nmap done: 1 IP address (1 host up) scanned in 0.36 seconds
```

If the port does not appear, or it appears with the state of “filtered” check your firewall settings. If there is a firewall between the EM7 collector and the Nimble Storage API, make sure it can communicate over TCP port 443.

CHAPTER 3

INSTALLING THE POWER-PACK

OVERVIEW

In this chapter, we will install the Nimble Storage Power-Pack

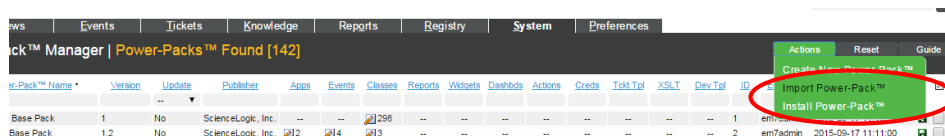
Requirements

A valid Read-Only SNMP community string

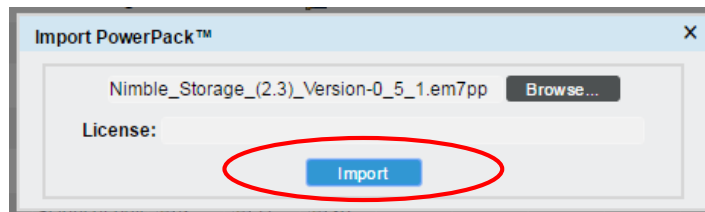
A valid admin user name and password for ScienceLogic

INSTALLATION

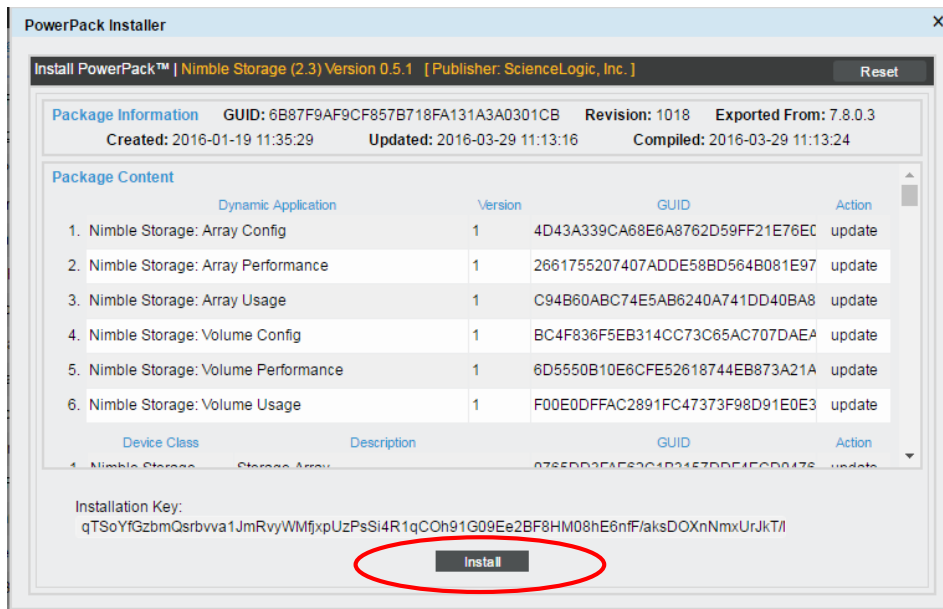
Obtain the latest copy of the Nimble Storage Integration Power-Pack. In this document, we will be using version 0.5.0.12 of the Power-Pack. Using normal Power-Pack installation procedures, go to the System tab, select Manage\Power-Packs, and then select the Action button, and select “Import Power-Pack”.



Locate the Power-Pack file, and then select the Import button.



Click “Install” to begin the import process.



Once the Power-Pack is installed proceed with a standard EM7 SNMP Discovery Process.

Discovery Session Editor | **Editing Session [13]** New Reset

Identification Information
Name 10.0.6.114 ? Description 10.0.6.114 ?

IP and Credentials
IP Address/Hostname Discovery List
10.0.6.114 ?

Upload File ?
Browse for file... Browse... ?

SNMP Credentials
[Cisco SNMPV2 - Example ?
Cisco SNMPV3 - Example ?
EM7 DefaultV2 ?
EM7 DefaultV3 ?
JPSLA Example ?
LifeSize: Endpoint SNMP ?
Nexus snmp ?
OpenStack ?
[SNMP Public V1] ?

Other Credentials
Basic/Snippet
[3PAR SMI-S Example ?
AWS Instance Types Reference ?
Citrix XenServer - BDLAB (Virt) ?
Citrix XenServer - Example ?
Citrix XenServer - Example(Virt) ?
Citrix XenServer | Example ?
Citrix XenServer | LAB ?
Cloudera CDH4 Example ?

Detection and Scanning
Initial Scan Level
[System Default (recommended)] ?
Scan Throttle
[System Default (recommended)] ?
Port Scan All IPs
[System Default (recommended)] ?
Port Scan Timeout
[System Default (recommended)] ?
Detection Method & Port
[Default Method] ?
UDP: 161 SNMP
TCP: 1 - tcpmux
TCP: 2 - compressnet
TCP: 3 - compressnet
TCP: 5 - rje
TCP: 7 - echo
TCP: 9 - discard
TCP: 11 - systat
TCP: 13 - daytime
TCP: 17 - qotd
TCP: 18 - msp
TCP: 19 - chargen
TCP: 20 - ftp-data
TCP: 21 - ftp
TCP: 22 - ssh
TCP: 23 - telnet
TCP: 24 - rrv-mail

Basic Settings
Discover Non-SNMP ☐ ? Model Devices ☒ ? DHCP ☐ ? Duplication Protection ☒ ?
Collection Server PID: 1
[_bd_em7_alo_6_68] ?
Organization
[System] ?
Add Devices to Device Group(s)
Please create a device group first ?

Apply Device Template
[Choose a Template] ?

Log All ☐ ?

Save Save As

- Use the IP Address of the Nimble Array
- Ensure the proper Read-Only SNMP credential is aligned
- Assign a Unique Name and click “**Save As**”

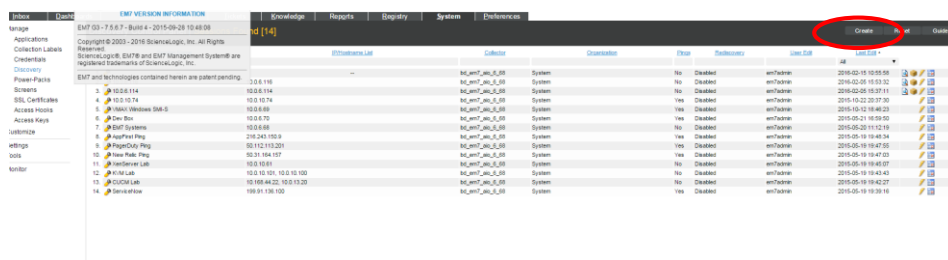
CHAPTER 4

DISCOVERING NIMBLE STORAGE

CREATE A DISCOVERY SCOPE

The Nimble Storage Integration Power-Pack uses SNMP to align to arrays. In order to discover a Nimble Storage Array, the array must be able to support Nimble Insight SNMP version 2.3 or later.

Navigate to Systems> Manage > Discovery and click the “Create” button



Index	Queue	EMT VERSION INFORMATION	Knowledge	Reports	Registry	System	Preferences
Manage	EMT 03 - 7.5.6.7 - Build 4 - 2015-09-28 10:48:08	Copyright © 2003 - 2016 ScienceLogic, Inc. All Rights Reserved. ScienceLogic, EMT® and EMT Management System® are registered trademarks of ScienceLogic, Inc.	id [14]				
Applications							
Collection Labels							
Credentials							
Discovery							
PowerPacks							
Scripts							
SSL Certificates							
Access Hosts							
Access Keys							
Listeners							
Adapters							
Units							
Monitor							

Discovery Session Editor | Editing Session [13] New Reset

Identification Information
Name: 10.0.6.114 Description: 10.0.6.114

IP and Credentials
IP Address/Hostname Discovery List
10.0.6.114
Upload File Browse...
SNMP Credentials
[Cisco SNMPV2 - Example]
[Cisco SNMPV3 - Example]
[EM7 DefaultV2]
[EM7 DefaultV3]
[IPSLA Example]
[LifeSize: Endpoint SNMP]
[Nexus snmp]
[OpenStack]
[SNMP Public V1]
Other Credentials
Basic/Snippet
[3PAR SMI-S Example]
[AWS Instance Types Reference]
[Citrix XenServer - BDLAB (Virt)]
[Citrix XenServer - Example]
[Citrix XenServer - Example(Virt)]
[Citrix XenServer | Example]
[Citrix XenServer | LAB]
[Cloudera CDH4 Example]

Detection and Scanning
Initial Scan Level
[System Default (recommended)]
Scan Throttle
[System Default (recommended)]
Port Scan All IPs
[System Default (recommended)]
Port Scan Timeout
[System Default (recommended)]
Detection Method & Port
[Default Method]
UDP: 161 SNMP
TCP: 1 - tcpmux
TCP: 2 - compressnet
TCP: 3 - compressnet
TCP: 5 - rje
TCP: 7 - echo
TCP: 9 - discard
TCP: 11 - systat
TCP: 13 - daytime
TCP: 17 - qotd
TCP: 18 - msp
TCP: 19 - chargen
TCP: 20 - ftp-data
TCP: 21 - ftp
TCP: 22 - ssh
TCP: 23 - telnet
TCP: 24 - smtp-mail

Basic Settings
Discover Non-SNMP ☐ Model Devices ☒ DHCP ☐ Duplication Protection ☒
Collection Server PID: 1
[lbd_em7_alo_6_68]
Organization
[System]
Add Devices to Device Group(s)
Please create a device group first
Apply Device Template
[Choose a Template]

Save Save As Log All ☐

- Use the IP Address of the Nimble Array
- Ensure the proper Read-Only SNMP credential is aligned
- Assign a Unique Name and click “Save As”

Run the Discovery in the Discovery Control Panel by clicking the lightning bolt icon next to your Nimble Discovery Scope

Discovery Control Panel | Sessions Found [2] Create Reset Go

Session Name	IP/Hostname List	Collector	Organization	Pin	Rediscovery	User Edit	Last Edit	
1. rpure-02.rdu.epus.lab	10.33.3.102	em7-01a	System	No	Disabled	em7admin	2016-01-21 10:52:13	
2. rpure-01.rdu.epus.lab	10.33.3.99	em7-01a	System	No	Disabled	em7admin	2016-01-21 10:52:13	

When complete, click on the grey icon on your newly discovered Nimble Storage Array.

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Discovery Session Discovery Session Complete				Refresh
	Date Time	Discovery Log Message	Class Type	
1.	2016-01-21 12:33:04	Auto-discovery session registered...	--	--
2.	2016-01-21 12:33:05	Collector is working...	--	--
3.	2016-01-21 12:33:07	Beginning auto-discovery session	--	--
4.	2016-01-21 12:33:11	10.33.3.99 (*IP) Discovered and modeled existing device	Generic SNMP	
5.	2016-01-21 12:33:13	Auto-discovery session completed	--	--

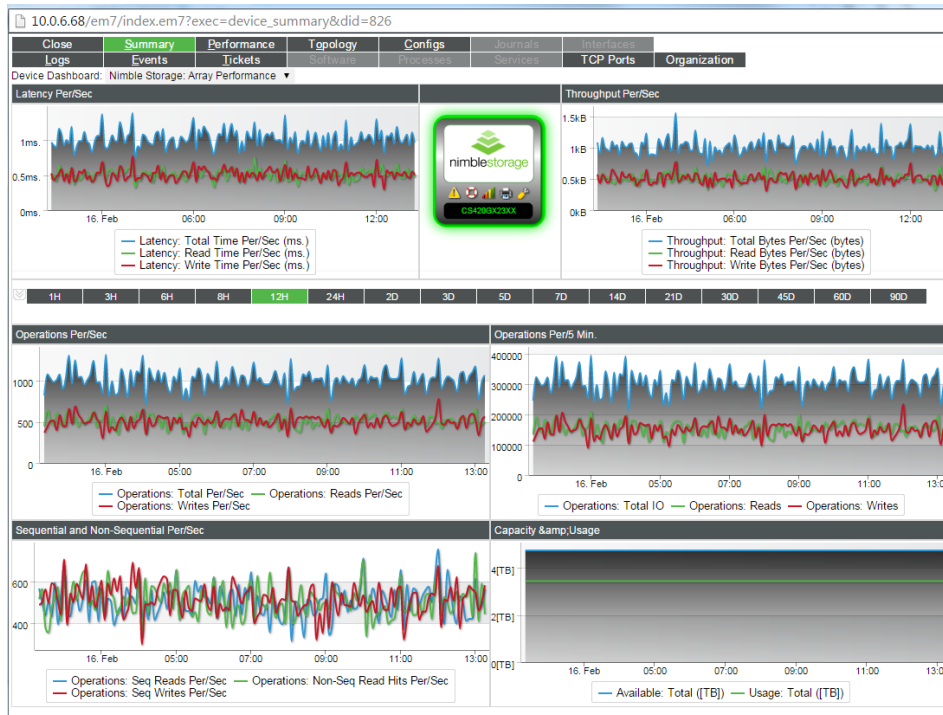
Select the “Collections” tab to view aligned Nimble Storage Dynamic Applications.

10.128.82.64/em7/index.em7?exec=device_collections&did=116

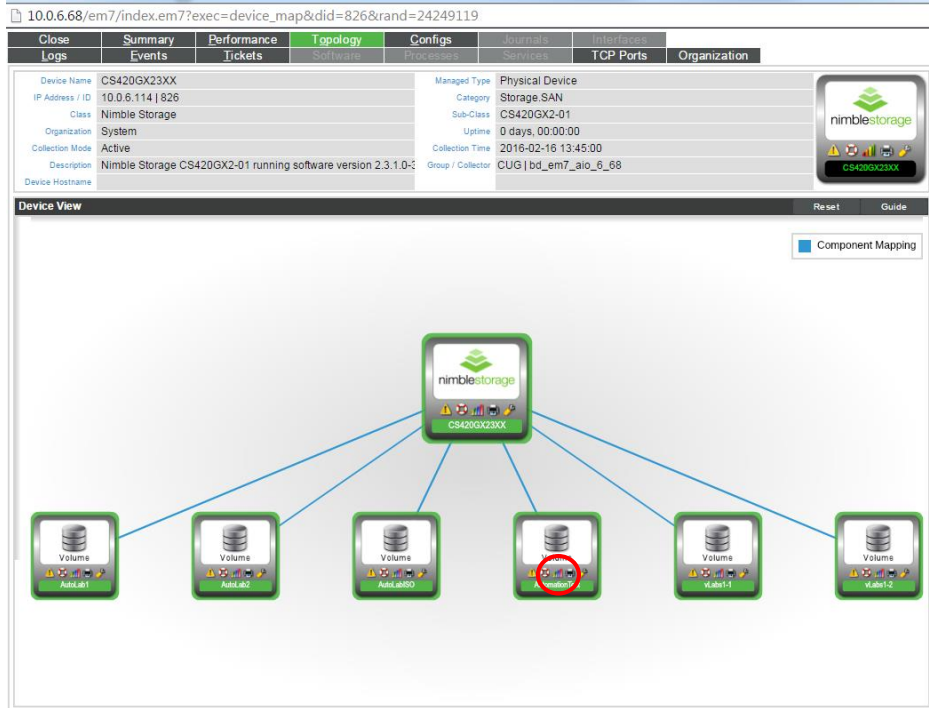
Close	Properties	Thresholds	Collections	Monitors	Schedule		
Logs	Toolbox	Interfaces	Relationships	Tickets	Redirects	Notes	Attributes
Device Name CS420GX23XX IP Address / ID 10.128.83.206 116 Class Nimble Storage Organization Nimble Storage Collection Mode Active Description Nimble Storage CS420GX2-01 running software version 2.3.1.0 Device Hostname		Managed Type Physical Device Category Storage.SAN Sub-Class Storage Array Uptime 0 days, 00:00:00 Collection Time 2016-11-22 18:05:00 Group / Collector CUG BD-AIO-DEMO					
Dynamic Application™ Collections				Expand	Actions	Reset	Guide
Dynamic Application				ID	Poll Frequency	Type	Credential
+ Nimble Storage: Array Performance				1829	5 mins	SNMP Performance	Default SNMP Credential
+ Nimble Storage: Array Usage				1834	5 mins	Snippet Performance	Default SNMP Credential
+ Nimble Storage: Array Config				1830	2 mins	Snippet Configuration	Default SNMP Credential

[Select Action]
Go

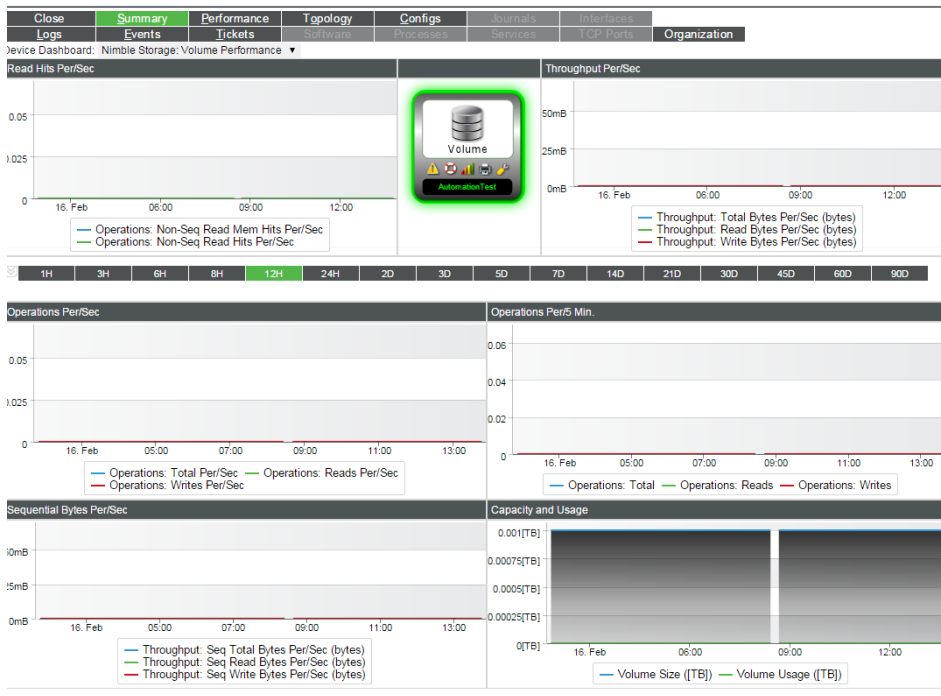
Click the performance chart icon on the Nimble Storage logo to view a Performance Summary Dashboard of the array.



Click on **Topology** to see Volumes associated to the Nimble Array. Note the Performance Chart Icon underneath the volumes.

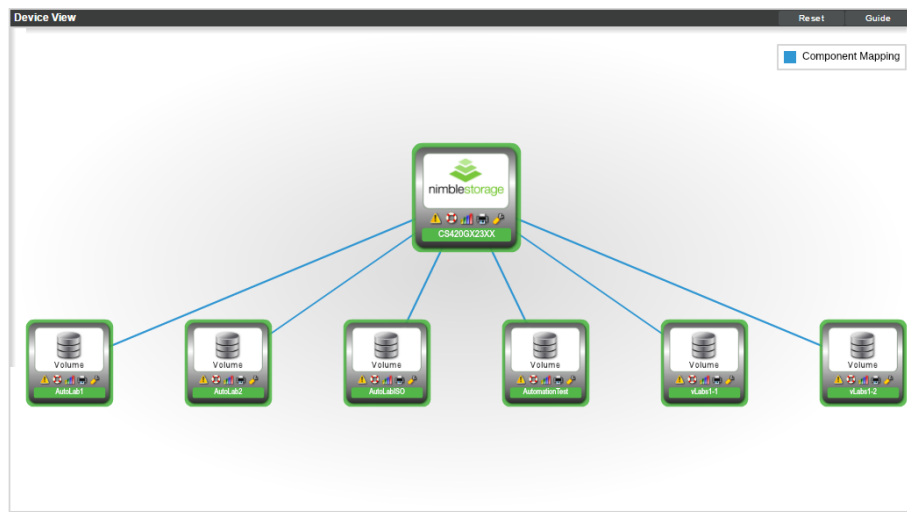


Click the Performance Chart icon to see the Volume Performance Summary of that Volume.



VIEWING TOPOLOGY

All Nimble Storage Dynamic Applications operate between 5 and 15-minute collection frequency, as a result, it may take several minutes for all topology and related devices to be discovered. Once complete, you may view the Component tree in the Views tab.



Commented [MM1]:

CHAPTER 5

ALERTS AND EVENTS

OVERVIEW

The Nimble Storage Power-Pack includes support for SNMP trap and includes 191 Event Policies to consume and trigger events inside of EM7.

Event Policy Name *		Type	State	P-Pack	Severity	Weight	ID	Expiry	Time
Nimble									
1	Nimble Storage: A Duplicate Of IP Address Is Found In The Network	Trap	Enabled	Yes	Minor	0	4363	0 Min.	0 Min.
2	Nimble Storage: All Data IP Interfaces Unavailable	Trap	Enabled	Yes	Critical	0	4365	0 Min.	0 Min.
3	Nimble Storage: Array Space Utilization OK	Trap	Enabled	Yes	Warning	0	4343	15 Min.	0 Min.
4	Nimble Storage: Backplane Over-temperature	Trap	Enabled	Yes	Major	0	4302	0 Min.	0 Min.
5	Nimble Storage: Cache Cleared By User	Trap	Enabled	Yes	Notice	0	4478	30 Min.	0 Min.
6	Nimble Storage: Controller Over-temperature	Trap	Enabled	Yes	Minor	0	4307	0 Min.	0 Min.
7	Nimble Storage: Controller Takeover Occurred	Trap	Enabled	Yes	Minor	0	4313	0 Min.	0 Min.
8	Nimble Storage: Could Not Assemble RAID Array	Trap	Enabled	Yes	Major	0	4385	0 Min.	0 Min.
9	Nimble Storage: Created Secure Tunnel To Nimble Storage Support	Trap	Enabled	Yes	Notice	0	4429	30 Min.	0 Min.
10	Nimble Storage: Critically High Array Space Utilization	Trap	Enabled	Yes	Critical	0	4340	0 Min.	0 Min.
11	Nimble Storage: Critically High System Utilization	Trap	Enabled	Yes	Critical	0	4324	0 Min.	0 Min.
12	Nimble Storage: Critically Low Space For Writing	Trap	Enabled	Yes	Critical	0	4321	0 Min.	0 Min.
13	Nimble Storage: Critically Low Space For Writing	Trap	Enabled	Yes	Critical	0	4322	0 Min.	0 Min.
14	Nimble Storage: Disk Added	Trap	Enabled	Yes	Notice	0	4315	30 Min.	0 Min.
15	Nimble Storage: Disk Failed	Trap	Enabled	Yes	Major	0	4316	0 Min.	0 Min.
16	Nimble Storage: Disk Failed Critical	Trap	Enabled	Yes	Critical	0	4317	0 Min.	0 Min.
17	Nimble Storage: Disk Marked As Spare	Trap	Enabled	Yes	Notice	0	4392	30 Min.	0 Min.
18	Nimble Storage: Disk Missing	Trap	Enabled	Yes	Major	0	4314	0 Min.	0 Min.
19	Nimble Storage: Disk Removed	Trap	Enabled	Yes	Notice	0	4319	30 Min.	0 Min.
20	Nimble Storage: Disks Missing From RAID Array	Trap	Enabled	Yes	Major	0	4387	0 Min.	0 Min.
21	Nimble Storage: Excessive Controller Restarts Detected	Trap	Enabled	Yes	Major	0	4306	0 Min.	0 Min.
22	Nimble Storage: Excessive Replication Delay	Trap	Enabled	Yes	Notice	0	4396	30 Min.	0 Min.
23	Nimble Storage: Excessive Replication Delay Warning	Trap	Enabled	Yes	Minor	0	4397	0 Min.	0 Min.
24	Nimble Storage: Failed To Download Software Update Package	Trap	Enabled	Yes	Notice	0	4457	30 Min.	0 Min.
25	Nimble Storage: Failed To Halt Controller Per User Request	Trap	Enabled	Yes	Minor	0	4480	0 Min.	0 Min.
26	Nimble Storage: Failed To Reboot Controller Per User Request	Trap	Enabled	Yes	Minor	0	4482	0 Min.	0 Min.
27	Nimble Storage: Fan Stopped	Trap	Enabled	Yes	Notice	0	4332	30 Min.	0 Min.
28	Nimble Storage: Fan In High Speed	Trap	Enabled	Yes	Major	0	4327	0 Min.	0 Min.
29	Nimble Storage: Fan In Low Speed	Trap	Enabled	Yes	Notice	0	4328	30 Min.	0 Min.
30	Nimble Storage: Fan Is OK	Trap	Enabled	Yes	Notice	0	4330	30 Min.	0 Min.
31	Nimble Storage: Fan Missing	Trap	Enabled	Yes	Notice	0	4329	30 Min.	0 Min.
32	Nimble Storage: Fan Sensor Stopped	Trap	Enabled	Yes	Notice	0	4331	30 Min.	0 Min.
33	Nimble Storage: Foreign Disk Detected	Trap	Enabled	Yes	Minor	0	4318	0 Min.	0 Min.
34	Nimble Storage: Foreign SSD Detected	Trap	Enabled	Yes	Minor	0	4439	0 Min.	0 Min.
35	Nimble Storage: Group IP Interface Unavailable	Trap	Enabled	Yes	Major	0	4368	0 Min.	0 Min.
36	Nimble Storage: Halting Controller On User Request	Trap	Enabled	Yes	Notice	0	4479	30 Min.	0 Min.
37	Nimble Storage: High Array Space Utilization	Trap	Enabled	Yes	Notice	0	4342	30 Min.	0 Min.
38	Nimble Storage: High Array Space Utilization Warning	Trap	Enabled	Yes	Major	0	4341	0 Min.	0 Min.
39	Nimble Storage: High System Utilization	Trap	Enabled	Yes	Major	0	4325	0 Min.	0 Min.
40	Nimble Storage: Invalid Disk Size For This Model	Trap	Enabled	Yes	Notice	0	4320	30 Min.	0 Min.
41	Nimble Storage: IP Connectivity Lost	Trap	Enabled	Yes	Major	0	4364	0 Min.	0 Min.
42	Nimble Storage: IP Interface Down	Trap	Enabled	Yes	Major	0	4366	0 Min.	0 Min.
43	Nimble Storage: IP Interface Up	Trap	Enabled	Yes	Notice	0	4369	30 Min.	0 Min.

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44		Nimble Storage: Migrating IP NIC Configuration	Trap	Enabled	Yes	Notice	0	4370	30 Min.	0 Min.
45		Nimble Storage: Migrating Route NIC Configuration	Trap	Enabled	Yes	Notice	0	4399	30 Min.	0 Min.
46		Nimble Storage: Migrating Subnet NIC Configuration	Trap	Enabled	Yes	Notice	0	4441	30 Min.	0 Min.
47		Nimble Storage: Multi Initiator Login	Trap	Enabled	Yes	Notice	0	4373	30 Min.	0 Min.
48		Nimble Storage: NIC For IP Missing	Trap	Enabled	Yes	Notice	0	4371	30 Min.	0 Min.
49		Nimble Storage: NIC For Route Missing	Trap	Enabled	Yes	Notice	0	4400	30 Min.	0 Min.
50		Nimble Storage: NIC For Subnet Missing	Trap	Enabled	Yes	Notice	0	4442	30 Min.	0 Min.
51		Nimble Storage: NVRAM Batteries Are Disabled Critical	Trap	Enabled	Yes	Critical	0	4378	0 Min.	0 Min.
52		Nimble Storage: NVRAM Battery Has Finished Charging	Trap	Enabled	Yes	Notice	0	4375	30 Min.	0 Min.
53		Nimble Storage: NVRAM Battery Is Charging	Trap	Enabled	Yes	Notice	0	4376	30 Min.	0 Min.
54		Nimble Storage: NVRAM Battery Is Disabled	Trap	Enabled	Yes	Minor	0	4377	0 Min.	0 Min.
55		Nimble Storage: NVRAM Battery Is OK	Trap	Enabled	Yes	Healthy	0	4379	15 Min.	0 Min.
56		Nimble Storage: NVRAM Version Is Incompatible	Trap	Enabled	Yes	Notice	0	4380	30 Min.	0 Min.
57		Nimble Storage: Over-temperature Shutdown	Trap	Enabled	Yes	Critical	0	4381	0 Min.	0 Min.
58		Nimble Storage: Partner Synchronization Failed	Trap	Enabled	Yes	Major	0	4395	0 Min.	0 Min.
59		Nimble Storage: Power Supply Fail	Trap	Enabled	Yes	Major	0	4382	0 Min.	0 Min.
60		Nimble Storage: Power Supply Is OK	Trap	Enabled	Yes	Healthy	0	4384	15 Min.	0 Min.
61		Nimble Storage: Power Supply Missing	Trap	Enabled	Yes	Notice	0	4383	30 Min.	0 Min.
62		Nimble Storage: RAID Array Degraded	Trap	Enabled	Yes	Major	0	4386	0 Min.	0 Min.
63		Nimble Storage: RAID Array Rebuild Failed	Trap	Enabled	Yes	Major	0	4389	0 Min.	0 Min.
64		Nimble Storage: RAID Array Rebuild Failed Read	Trap	Enabled	Yes	Major	0	4390	0 Min.	0 Min.
65		Nimble Storage: RAID Array Rebuild Is Done	Trap	Enabled	Yes	Healthy	0	4388	15 Min.	0 Min.
66		Nimble Storage: RAID Array Rebuild Started	Trap	Enabled	Yes	Notice	0	4391	30 Min.	0 Min.
67		Nimble Storage: Rebooting Controller On User Request	Trap	Enabled	Yes	Minor	0	4481	0 Min.	0 Min.
68		Nimble Storage: Replication Succeeded	Trap	Enabled	Yes	Healthy	0	4398	15 Min.	0 Min.
69		Nimble Storage: Restarting Controller To Recover Service	Trap	Enabled	Yes	Notice	0	4433	30 Min.	0 Min.
70		Nimble Storage: Reverting Software To Previous Version	Trap	Enabled	Yes	Notice	0	4470	30 Min.	0 Min.
71		Nimble Storage: Rolling Back Software	Trap	Enabled	Yes	Notice	0	4471	30 Min.	0 Min.
72		Nimble Storage: Scheduled Snapshot Failed	Trap	Enabled	Yes	Major	0	4401	0 Min.	0 Min.
73		Nimble Storage: Scheduled Snapshot Failed	Trap	Enabled	Yes	Major	0	4412	0 Min.	0 Min.
74		Nimble Storage: Scheduled Snapshot Failed VMware Disabled	Trap	Enabled	Yes	Major	0	4411	0 Min.	0 Min.
75		Nimble Storage: Scheduled Snapshot Failed VMware Volume Empty	Trap	Enabled	Yes	Major	0	4419	0 Min.	0 Min.
76		Nimble Storage: Scheduled Snapshot Failed VMware Connection Refused	Trap	Enabled	Yes	Major	0	4404	0 Min.	0 Min.
77		Nimble Storage: Scheduled Snapshot Failed VMware Connection Reset	Trap	Enabled	Yes	Major	0	4405	0 Min.	0 Min.
78		Nimble Storage: Scheduled Snapshot Failed VMware Connection Socket	Trap	Enabled	Yes	Major	0	4406	0 Min.	0 Min.
79		Nimble Storage: Scheduled Snapshot Failed VMware Connection Timeout	Trap	Enabled	Yes	Major	0	4407	0 Min.	0 Min.
80		Nimble Storage: Scheduled Snapshot Failed VMware Connection Unreachable	Trap	Enabled	Yes	Major	0	4408	0 Min.	0 Min.
81		Nimble Storage: Scheduled Snapshot Failed VMware Credential	Trap	Enabled	Yes	Major	0	4409	0 Min.	0 Min.
82		Nimble Storage: Scheduled Snapshot Failed VMware DC Not Found	Trap	Enabled	Yes	Major	0	4410	0 Min.	0 Min.
83		Nimble Storage: Scheduled Snapshot Failed VMware Encoding Plan	Trap	Enabled	Yes	Major	0	4413	0 Min.	0 Min.
84		Nimble Storage: Scheduled Snapshot Failed VMware No Route to Connection	Trap	Enabled	Yes	Major	0	4403	0 Min.	0 Min.
85		Nimble Storage: Scheduled Snapshot Failed VMware Null	Trap	Enabled	Yes	Major	0	4414	0 Min.	0 Min.
86		Nimble Storage: Scheduled Snapshot Failed VMware Object Not Found	Trap	Enabled	Yes	Major	0	4415	0 Min.	0 Min.
87		Nimble Storage: Scheduled Snapshot Failed VMware Permission Denied	Trap	Enabled	Yes	Major	0	4416	0 Min.	0 Min.
88		Nimble Storage: Scheduled Snapshot Failed VMware Unknown	Trap	Enabled	Yes	Major	0	4418	0 Min.	0 Min.

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89		Nimble Storage: Scheduled Snapshot Failed VMware Unknown Host	Trap	Enabled	Yes	Major	0	4417	0 Min.	0 Min.
90		Nimble Storage: Scheduled Snapshot Skipped	Trap	Enabled	Yes	Notice	0	4421	30 Min.	0 Min.
91		Nimble Storage: Scheduled Snapshot Skipped Exists	Trap	Enabled	Yes	Notice	0	4420	30 Min.	0 Min.
92		Nimble Storage: Scheduled Snapshot Succeeded	Trap	Enabled	Yes	Notice	0	4422	30 Min.	0 Min.
93		Nimble Storage: Scheduled Snapshot Succeeded Laginfo	Trap	Enabled	Yes	Notice	0	4423	30 Min.	0 Min.
94		Nimble Storage: Scheduled Snapshot Succeeded With Warning	Trap	Enabled	Yes	Minor	0	4402	0 Min.	0 Min.
95		Nimble Storage: Sensor Missing or Does Not Exist	Trap	Enabled	Yes	Notice	0	4426	30 Min.	0 Min.
96		Nimble Storage: Sensor: Alert Cleared	Trap	Enabled	Yes	Notice	0	4424	30 Min.	0 Min.
97		Nimble Storage: Sensor: Alert Cleared	Trap	Enabled	Yes	Notice	0	4427	30 Min.	0 Min.
98		Nimble Storage: Sensor: Alert Raised	Trap	Enabled	Yes	Minor	0	4425	0 Min.	0 Min.
99		Nimble Storage: Sensor: Alert Raised Warning	Trap	Enabled	Yes	Major	0	4428	0 Min.	0 Min.
100		Nimble Storage: Service Essential Stopped Unexpectedly	Trap	Enabled	Yes	Major	0	4432	0 Min.	0 Min.
101		Nimble Storage: Service Started	Trap	Enabled	Yes	Notice	0	4434	30 Min.	0 Min.
102		Nimble Storage: Service Stopped Unexpectedly Dead Restart	Trap	Enabled	Yes	Major	0	4431	0 Min.	0 Min.
103		Nimble Storage: Service Stopped Unexpectedly No Restart	Trap	Enabled	Yes	Major	0	4430	0 Min.	0 Min.
104		Nimble Storage: Software Update Cannot Be Applied	Trap	Enabled	Yes	Notice	0	4455	30 Min.	0 Min.
105		Nimble Storage: Software Update Failed	Trap	Enabled	Yes	Major	0	4459	0 Min.	0 Min.
106		Nimble Storage: Software Update Failed, /tmp Is Full	Trap	Enabled	Yes	Major	0	4461	0 Min.	0 Min.
107		Nimble Storage: Software Update Failed, /var Is Full	Trap	Enabled	Yes	Major	0	4463	0 Min.	0 Min.
108		Nimble Storage: Software Update Failed, Configuration Space Is Full	Trap	Enabled	Yes	Major	0	4458	0 Min.	0 Min.
109		Nimble Storage: Software Update Failed, Recovery OS Space Is Full	Trap	Enabled	Yes	Major	0	4462	0 Min.	0 Min.
110		Nimble Storage: Software Update Failed, Scratch Space Is Full	Trap	Enabled	Yes	Major	0	4460	0 Min.	0 Min.
111		Nimble Storage: Software Update Failed, Update Cannot Be Applied While Services Cannot Be Failed Over To Other Controller	Trap	Enabled	Yes	Major	0	4456	0 Min.	0 Min.
112		Nimble Storage: Software Update Package Has Wrong Checksum	Trap	Enabled	Yes	Notice	0	4467	30 Min.	0 Min.
113		Nimble Storage: Software Update Package Has Wrong Signature	Trap	Enabled	Yes	Notice	0	4468	30 Min.	0 Min.
114		Nimble Storage: Software Update Package Was Not Found	Trap	Enabled	Yes	Notice	0	4466	30 Min.	0 Min.
115		Nimble Storage: Software Update Precheck Failed, Network Connectivity Will Degrade After Software Update	Trap	Enabled	Yes	Major	0	4464	0 Min.	0 Min.
116		Nimble Storage: Software Update Precheck Failed, Network Connectivity Will Degrade After Software Update	Trap	Enabled	Yes	Major	0	4465	0 Min.	0 Min.
117		Nimble Storage: Software Update Reboot	Trap	Enabled	Yes	Notice	0	4474	30 Min.	0 Min.
118		Nimble Storage: Software Update Started	Trap	Enabled	Yes	Notice	0	4472	30 Min.	0 Min.
119		Nimble Storage: Space For Writing Reclaimed	Trap	Enabled	Yes	Notice	0	4323	30 Min.	0 Min.
120		Nimble Storage: SSD Added	Trap	Enabled	Yes	Notice	0	4437	30 Min.	0 Min.
121		Nimble Storage: SSD Failed	Trap	Enabled	Yes	Major	0	4438	0 Min.	0 Min.
122		Nimble Storage: SSD Missing	Trap	Enabled	Yes	Major	0	4436	0 Min.	0 Min.
123		Nimble Storage: SSD Removed	Trap	Enabled	Yes	Notice	0	4440	30 Min.	0 Min.
124		Nimble Storage: Standby Controller Available	Trap	Enabled	Yes	Notice	0	4308	30 Min.	0 Min.
125		Nimble Storage: Standby Controller Has Better Network Connectivity, Failing Services Over To Standby Controller	Trap	Enabled	Yes	Notice	0	4367	30 Min.	0 Min.
126		Nimble Storage: Standby Controller Not Available	Trap	Enabled	Yes	Notice	0	4309	30 Min.	0 Min.
127		Nimble Storage: Standby Controller Not Available Critical	Trap	Enabled	Yes	Critical	0	4310	0 Min.	0 Min.
128		Nimble Storage: Standby Controller Not Available For An Extended Period	Trap	Enabled	Yes	Minor	0	4311	0 Min.	0 Min.
129		Nimble Storage: Standby Controller Not Available For An Extended Period	Trap	Enabled	Yes	Minor	0	4312	0 Min.	0 Min.
130		Nimble Storage: Successfully Updated Software	Trap	Enabled	Yes	Notice	0	4473	30 Min.	0 Min.
131		Nimble Storage: System Temperature Is Cold	Trap	Enabled	Yes	Notice	0	4444	30 Min.	0 Min.
132		Nimble Storage: System Temperature Is Ok	Trap	Enabled	Yes	Healthy	0	4446	15 Min.	0 Min.
133		Nimble Storage: System Temperature Is Warm	Trap	Enabled	Yes	Major	0	4443	0 Min.	0 Min.

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134.		Nimble Storage: System Utilization OK	Trap	Enabled	Yes	Healthy	0	4326	15 Min.	0 Min.
135.		Nimble Storage: Temperature Sensor Failed	Trap	Enabled	Yes	Major	0	4445	0 Min.	0 Min.
136.		Nimble Storage: Temperature Sensor Is Ok	Trap	Enabled	Yes	Healthy	0	4447	15 Min.	0 Min.
137.		Nimble Storage: Test Alert	Trap	Enabled	Yes	Notice	0	4449	30 Min.	0 Min.
138.		Nimble Storage: Test Alert	Trap	Enabled	Yes	Minor	0	4450	0 Min.	0 Min.
139.		Nimble Storage: Test Alert	Trap	Enabled	Yes	Notice	0	4451	30 Min.	0 Min.
140.		Nimble Storage: Test Alert	Trap	Enabled	Yes	Notice	0	4452	30 Min.	0 Min.
141.		Nimble Storage: Test Alert	Trap	Enabled	Yes	Notice	0	4453	30 Min.	0 Min.
142.		Nimble Storage: Test Alert Critical	Trap	Enabled	Yes	Critical	0	4448	0 Min.	0 Min.
143.		Nimble Storage: Test Alert Warning	Trap	Enabled	Yes	Major	0	4454	0 Min.	0 Min.
144.		Nimble Storage: The Quota For Volume Is Being Set To 100% Because It Is Above Its Current Quota	Trap	Enabled	Yes	Notice	0	4349	30 Min.	0 Min.
145.		Nimble Storage: The Snapshot Quota For Volume Is Being Set To Unlimited Because It Is Above Its Snapshot Quota	Trap	Enabled	Yes	Notice	0	4357	30 Min.	0 Min.
146.		Nimble Storage: Too Many iSCSI Connections	Trap	Enabled	Yes	Minor	0	4372	0 Min.	0 Min.
147.		Nimble Storage: Too Many Unaligned iSCSI Reads/Writes	Trap	Enabled	Yes	Major	0	4374	0 Min.	0 Min.
148.		Nimble Storage: Total Number Of Volumes Approaching System Limit	Trap	Enabled	Yes	Minor	0	4491	0 Min.	0 Min.
149.		Nimble Storage: Total Number Of Volumes Below Warning Threshold	Trap	Enabled	Yes	Healthy	0	4492	15 Min.	0 Min.
150.		Nimble Storage: Tunnel To Nimble Storage Support Has Been Terminated	Trap	Enabled	Yes	Notice	0	4435	30 Min.	0 Min.
151.		Nimble Storage: Unhandled Controller Exception	Trap	Enabled	Yes	Minor	0	4303	0 Min.	0 Min.
152.		Nimble Storage: Unhandled Controller Exception Critical	Trap	Enabled	Yes	Critical	0	4304	0 Min.	0 Min.
153.		Nimble Storage: Unhandled Controller Exception Warning	Trap	Enabled	Yes	Major	0	4305	0 Min.	0 Min.
154.		Nimble Storage: Unpacked Update Package Done	Trap	Enabled	Yes	Notice	0	4475	30 Min.	0 Min.
155.		Nimble Storage: Unpacking Update Package Failed	Trap	Enabled	Yes	Major	0	4476	0 Min.	0 Min.
156.		Nimble Storage: Unpacking Update Package Started	Trap	Enabled	Yes	Notice	0	4477	30 Min.	0 Min.
157.		Nimble Storage: Update Package Pre-check Failed	Trap	Enabled	Yes	Major	0	4469	0 Min.	0 Min.
158.		Nimble Storage: Used Space Above Critical Level	Trap	Enabled	Yes	Critical	0	4337	0 Min.	0 Min.
159.		Nimble Storage: Used Space Above Warning Limit	Trap	Enabled	Yes	Major	0	4339	0 Min.	0 Min.
160.		Nimble Storage: Used Space Below Critical Limits	Trap	Enabled	Yes	Notice	0	4336	30 Min.	0 Min.
161.		Nimble Storage: Used Space Below Warning Limits	Trap	Enabled	Yes	Notice	0	4338	30 Min.	0 Min.
162.		Nimble Storage: Volume Being Taken Offline Because It Is Above Its Quota	Trap	Enabled	Yes	Minor	0	4348	0 Min.	0 Min.
163.		Nimble Storage: Volume Being Taken Offline Because It Is Above Its Reserve And System Is Out Of Free Space	Trap	Enabled	Yes	Minor	0	4351	0 Min.	0 Min.
164.		Nimble Storage: Volume Being Taken Offline Because It Is Above Its Snapshot Quota	Trap	Enabled	Yes	Minor	0	4356	0 Min.	0 Min.
165.		Nimble Storage: Volume Being Taken Offline Because It Is Above Its Snapshot Reserve And System Is Out Of Free Space	Trap	Enabled	Yes	Minor	0	4359	0 Min.	0 Min.
166.		Nimble Storage: Volume Collection Handover Completed	Trap	Enabled	Yes	Notice	0	4394	30 Min.	0 Min.
167.		Nimble Storage: Volume Replication Stalled	Trap	Enabled	Yes	Major	0	4393	0 Min.	0 Min.
168.		Nimble Storage: Volume Reserve Is Being Set To Zero Because It Is Above Its Reserve And System Is Out Of Free Space	Trap	Enabled	Yes	Major	0	4352	0 Min.	0 Min.
169.		Nimble Storage: Volume Snapshot Reserve Is Being Set To Zero Because It Is Above Its Reserve And System Is Out Of Free Space	Trap	Enabled	Yes	Major	0	4360	0 Min.	0 Min.
170.		Nimble Storage: Volume Snapshot Space Usage Approaching Quota	Trap	Enabled	Yes	Critical	0	4335	0 Min.	0 Min.
171.		Nimble Storage: Volume Snapshot Space Usage Approaching Quota Critical	Trap	Enabled	Yes	Major	0	4334	0 Min.	0 Min.
172.		Nimble Storage: Volume Snapshot Space Usage Below Critical Limit	Trap	Enabled	Yes	Notice	0	4333	30 Min.	0 Min.
173.		Nimble Storage: Volume Snapshot Space Usage Below Quota	Trap	Enabled	Yes	Notice	0	4355	30 Min.	0 Min.
174.		Nimble Storage: Volume Snapshot Space Usage Below Warning Limit	Trap	Enabled	Yes	Notice	0	4487	30 Min.	0 Min.
175.		Nimble Storage: Volume Snapshot Space Usage Below Warning Limit	Trap	Enabled	Yes	Notice	0	4361	30 Min.	0 Min.
176.		Nimble Storage: Volume Snapshot Space Usage Below Warning Limit	Trap	Enabled	Yes	Notice	0	4489	30 Min.	0 Min.
177.		Nimble Storage: Volume Snapshot Space Usage Over Quota	Trap	Enabled	Yes	Notice	0	4358	30 Min.	0 Min.
178.		Nimble Storage: Volume Snapshot Space Usage Over Quota	Trap	Enabled	Yes	Notice	0	4488	30 Min.	0 Min.
179.		Nimble Storage: Volume Snapshot Space Usage Over Warning Limit	Trap	Enabled	Yes	Minor	0	4362	0 Min.	0 Min.
180.		Nimble Storage: Volume Snapshot Space Usage Over Warning Limit	Trap	Enabled	Yes	Minor	0	4490	0 Min.	0 Min.
181.		Nimble Storage: Volume Space Usage Approaching Quota	Trap	Enabled	Yes	Critical	0	4345	0 Min.	0 Min.
182.		Nimble Storage: Volume Space Usage Approaching Quota	Trap	Enabled	Yes	Major	0	4346	0 Min.	0 Min.
183.		Nimble Storage: Volume Space Usage Below Critical Limit	Trap	Enabled	Yes	Notice	0	4344	30 Min.	0 Min.
184.		Nimble Storage: Volume Space Usage Below Quota	Trap	Enabled	Yes	Notice	0	4483	30 Min.	0 Min.
185.		Nimble Storage: Volume Space Usage Below Warning Limit	Trap	Enabled	Yes	Minor	0	4353	0 Min.	0 Min.
186.		Nimble Storage: Volume Space Usage Below Warning Limit	Trap	Enabled	Yes	Minor	0	4485	0 Min.	0 Min.
187.		Nimble Storage: Volume Space Usage Is Now Below The Configured Quota	Trap	Enabled	Yes	Notice	0	4347	30 Min.	0 Min.
188.		Nimble Storage: Volume Space Usage Is Over The Configured Quota	Trap	Enabled	Yes	Major	0	4350	0 Min.	0 Min.
189.		Nimble Storage: Volume Space Usage Over Quota	Trap	Enabled	Yes	Major	0	4484	0 Min.	0 Min.
190.		Nimble Storage: Volume Space Usage Over Warning Limit	Trap	Enabled	Yes	Major	0	4354	0 Min.	0 Min.
191.		Nimble Storage: Volume Space Usage Over Warning Limit	Trap	Enabled	Yes	Major	0	4486	0 Min.	0 Min.

CHAPTER 6

PERFORMANCE DATA AND DASHBOARDS

PERFORMANCE METRICS

The Nimble Storage Power-Pack includes support for over 50 different performance metrics

Array Performance
Latency: Read Time
Latency: Read Time Per/Sec
Latency: Total Time
Latency: Total Time Per/Sec
Latency: Write Time
Latency: Write Time Per/Sec
Operations: Non-Seq Read Hits
Operations: Non-Seq Read Hits Per/Sec
Operations: Reads
Operations: Reads Per/Sec
Operations: Seq Reads
Operations: Seq Reads Per/Sec
Operations: Seq Writes
Operations: Seq Writes Per/Sec
Throughput: Read Bytes
Throughput: Read Bytes Per/Sec
Throughput: Seq Read Bytes
Throughput: Seq Read Bytes Per/Sec
Throughput: Seq Write Bytes
Throughput: Seq Write Bytes Per/Sec
Throughput: Total Bytes
Throughput: Total Bytes Per/Sec
Throughput: Write Bytes
Throughput: Write Bytes Per/Sec

Array Usage
Available: Total
Available: Total (%)

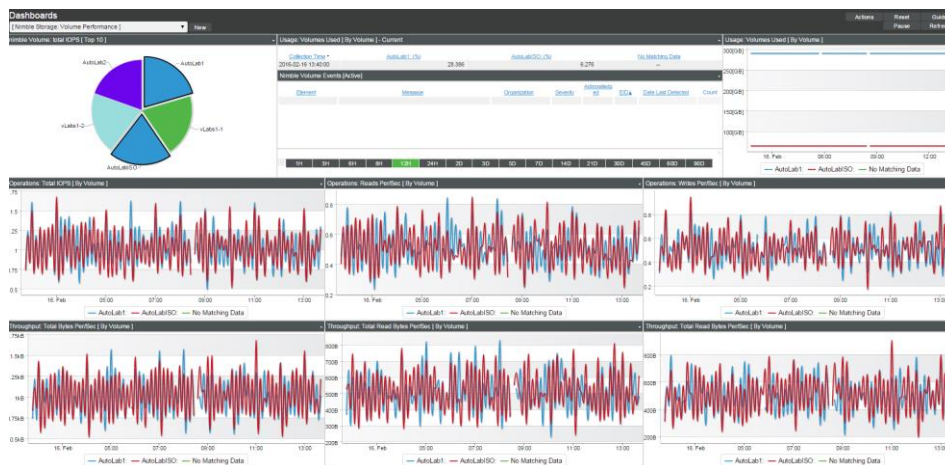
Usage: Reserved
Usage: Snapshots
Usage: Total
Usage: Total (%)
Usage: Volumes
Volumes Size

Volume Performance
Connections
Operations: Non-Seq Read Hits
Operations: Non-Seq Read Hits Per/Sec
Operations: Non-Seq Read Mem Hits
Operations: Non-Seq Read Mem Hits Per/Sec
Operations: Read Time
Operations: Read Time Per/Sec
Operations: Reads
Operations: Reads Per/Sec
Operations: Seq Writes
Operations Total
Operations: Total Per/Sec
Operations: Write Time
Operations: Write Time Per/Sec
Operations: Writes
Operations: Writes Per/Sec
Throughput: Read Bytes
Throughput: Read Bytes Per/Sec
Throughput: Seq Read Bytes
Throughput: Seq Read Bytes Per/Sec
Throughput: Seq Total Bytes Per/Sec
Throughput: Seq Write Bytes
Throughput: Seq Write Bytes Per/Sec
Throughput: Total Bytes
Throughput: Total Bytes Per/Sec
Throughput: Write Bytes
Throughput: Write Bytes Per/Sec

Volume Usage
Volume Size
Volume Usage
Volume Usage (%)
Volume Usage (GB)
Volume Usage: Reserved

DASHBOARDS

The Nimble Storage Power-Pack includes one built-in overview dashboard for viewing Nimble Volume Performance.



DASHBOARD CAVEATS

Dashboards use normalized data and require the ScienceLogic normalization process to run at least once to begin populating dashboard data. This process runs every hour and can take up to 2 hours before you begin seeing dashboard data. If you see the following message in the Top left most widget, then either the normalization process has not yet run, or data is not being collected for the specified device. Allow at least 2 hours for the normalization process to populate initial data.

Messages		
	200	no data
	11	No data was found for the specified collection and/or time-frame