

DDN GridScaler ZenPack

Support

This ZenPack is developed by DDN for modelling and monitoring of DDN's GridScaler storage solution. It will also support modelling for GridNAS storage solution.

Releases

Version: 0.0.7

Summary of changes: First release

Released on: 27/02/2015

Compatible with: Zenoss 4 & Zenoss 5

Background

DDN GridScaler ZenPack will provide modelling and monitoring functionality for DDN's GridScaler storage solutions. Additionally it models GridNAS as well.

Prerequisites

This zenpack is dependent on DDN Gridscaler API to be available on all NSD nodes. Additionally, this zenpack only works with latest GS API (10.1.18450+)

One can check the GS API installed as below.

```
[root@vmGSNSD01 ~]# /opt/ddn/directmon/gridscaler/scripts/get_gsapi_version.py  
10.1.18450
```

Installed Items

Installing the ZenPack will add the following items to your Zenoss system.

Device Classes

Following device classes will be created once this zenpack is installed.

- /Storage
- /Storage/DDN
- /Storage/DDN/GridScalerv2

Configuration Properties

Following configuration properties to be added which is required for this zenpack.

- **zCommandUsername**
 - name of the user through which Zenoss system communicates with the device (Ex: **root**).
- **zCommandPassword**
 - password of that particular user through which Zenoss system communicates with the device (Ex: **root**).
- **ZKeyPath**
 - If passwordless SSH is configured provide the path of the private key file path. (Ex: **~/.ssh/id_rsa**).
- **zGSNSDList**
 - Management network address of NSD servers to be monitored (Ex: **192.168.111.8,192.168.111.9**).Provide atleast 2 servers address to ensure continued monitoring on failed nodes.

Modeler Plugins

List of modeler plugins for Gridscaler and GridNAS.

GridScaler

- `ddn.GridScaler_ModelClientNode`
- `ddn.GridScaler_ModelFS`
- `ddn.GridScaler_ModelNSD`
- `ddn.GridScaler_ModelSFA`

GridNAS

- `ddn.GridNAS_Model_CIFS`
- `ddn.GridNAS_Model_Group`
- `ddn.GridNAS_Model_NFS`
- `ddn.GridNAS_Model_Shares`
- `ddn.GridNAS_Model_User`
- `ddn.GridNAS_Model_VIP`

Monitoring Templates

Defines the metrics, events and thresholds for modeled components.

Component Level

1. GS_FsList

- a. TotalAvailableLnodes
- b. TotalFreeSpace
- c. TotalInodes
- d. TotalSpace
- e. TotalUsedInodes
- f. TotalUsedSpace

2. GS_NsdServer

3. GS_NsdDisk

Graphs

1. GS_FsLists

- a. FileSystemUseage
- b. InodeUseage

Event Classes

- Perf/GridScalerv2/CN - Client Node
- Perf/GridScalerv2/FSLIST - Fs List
- Perf/GridScalerv2/NSD - Network Storage Device
- Perf/GridScalerv2/SFA - SFA

Thresholds

No Thresholds defined.

Detailed Overview

Device classes

Below screenshot give the list of device class available in this ZenPack.

The screenshot shows the Zenoss Core Infrastructure page. The left sidebar lists device classes under 'DEVICES (2)'. The main panel shows a table of devices.

Device	IP Address	Device Class
TestDevice	10.30.30.1	/Storage/DDN/GridScalerv2

DISPLAYING 1 - 1 of 1 ROWS

Device Components

1. List of GS_FsList

Below screenshot give the list of GridScaler GS_FsList in this ZenPack.

The screenshot shows the Zenoss Core Infrastructure page for the 'TestDevice'. The left sidebar lists components under 'Components'. The main panel shows a table of GS_FsList components.

Events	Name	diskStoragePools	logFileSize	indirectBlockSize	additionalMountOp	mtimeMountEnable	strictReplicaAlloc	defaultDataR
✓	fs2	system	4194304	16384	none	True	whenpossible	1
✓	gpfs	system	4194304	32768	none	True	whenpossible	1

Display: Graphs Range: Hourly

Number of operations per second

fs_counters_totalInodes	fs_counters_totalAvailableInodes	fs_counters_totalUsedInodes
cur: 7.40M	cur: 7.07M	cur: 326.64k
avg: 7.40M	avg: 7.07M	avg: 326.64k
max: -nan	max: -nan	max: -nan

2. List of GS_NsdServers

Below screenshot give the list of GridScaler GS_NsdServers in this ZenPack.

The screenshot shows the Zenoss Core interface for a device named 'TestDevice' (Storage/DDN/GridScalerv2, 10.30.30.1). The left sidebar lists components, with 'GS_NsdServers (4)' selected. The main panel displays a table of GS_NsdServers with the following data:

Events	Name	Responsibility	QuorumNode	Sfa Node	SecondaryServer	State	Monitored	Locking
✓	vmGSNSD...	clusterManager	Yes		no	active	✓	
✓	vmGSNSD...	None	Yes		Yes	active	✓	
✓	vmGSNSD...	None	Yes		no	unknown	✓	
✓	vmGSNSD...	manager	no		no	active	✓	

Below the table, there are controls for 'Display: Graphs', 'Range: Hourly', and a 'Reset' button. A 'No Graph Data' message is displayed. The bottom status bar shows '0 Jobs'.

3. List of GS_NsdDisks

Below screenshot give the list of GridScaler GS_NsdDisks in this ZenPack.

The screenshot shows the Zenoss Core interface for the same device 'TestDevice'. The left sidebar lists components, with 'GS_NsdDisks (3)' selected. The main panel displays a table of GS_NsdDisks with the following data:

Events	Name	Status	Sector Size	nsdServers	storagePool	holdData	type	availability
✓	sfa...	ready	512	[u]vmGSNSD0...	system	True	nsd	up
✓	sfa...	ready	512	[u]vmGSNSD0...	system	False	nsd	up
✓	sfa...	ready	512	[u]vmGSNSD0...	system	True	nsd	up

Below the table, there are controls for 'Display: Graphs', 'Range: Hourly', and a 'Reset' button. A 'No Graph Data' message is displayed. The bottom status bar shows '0 Jobs'.

4. List of GS_ClientNodes

Below screenshot give the list of GridScaler GS_ClientNodes in this ZenPack.

The screenshot shows the Zenoss Core interface for a device named 'TestDevice' (IP: 10.30.30.1). The left sidebar lists components, with 'GS_ClientNodes (36)' selected. The main panel displays a table of GS_ClientNodes with columns: Events, Name, Responsibility, QuorumNode, State, Monitored, and Locking. The table lists 8 entries, all with 'None' for Responsibility and 'no' for QuorumNode. The first 6 are 'gs_vmclient1' through 'gs_vmclient6' (all 'active'), and the last 2 are 'gsclient204' and 'gsclient205' (both 'unknown'). Below the table, there are controls for 'Display' (set to 'Graphs'), 'Range' (set to 'Hourly'), and buttons for 'Reset', 'Link Graphs?', and 'Refresh'. A 'No Graph Data' message is displayed below these controls.

Events	Name	Responsibility	QuorumNode	State	Monitored	Locking
✓	gs_vmclient1	None	no	active	✓	
✓	gs_vmclient2	None	no	active	✓	
✓	gs_vmclient3	None	no	active	✓	
✓	gs_vmclient4	None	no	active	✓	
✓	gs_vmclient5	None	no	active	✓	
✓	gs_vmclient6	None	no	active	✓	
✓	gsclient204	None	no	unknown	✓	
✓	gsclient205	None	no	unknown	✓	

Below components and screenshots are visible, only if the solution is configured as GridNAS as well.

5. List of GNAS_NetworkShares

Below screenshot give the list of GridNAS GNAS_NetworkShares in this ZenPack.

The screenshot shows the Zenoss Core interface for the same device 'TestDevice'. The left sidebar shows 'GNAS_NetworkShares (1)' selected. The main panel displays a table of GNAS_NetworkShares with columns: Events, Name, Path, Options, Monitored, and Locking. The table lists 1 entry: 'myshare' with Path '/gpfs/myshare' and Options 'abe=n'. Below the table, there are controls for 'Display' (set to 'Graphs'), 'Range' (set to 'Hourly'), and buttons for 'Reset', 'Link Graphs?', and 'Refresh'. A 'No Graph Data' message is displayed below these controls.

Events	Name	Path	Options	Monitored	Locking
✓	myshare	/gpfs/myshare	abe=n	✓	

6. List of GNAS_VirtualNetworks

Below screenshot give the list of GridNAS GNAS_VirtualNetworks in this ZenPack.

The screenshot shows the Zenoss Core interface for a device named 'TestDevice' (IP: 10.30.30.1). The left sidebar lists components, with 'GNAS_VirtualNetworks (3)' selected. The main panel displays a table of virtual networks.

Events	Name	Network Address	Network Mask	ActiveNode	ActiveInterface	StandbyNode	Monitored	Locking
✓	VirtualIP_1...	192.168.111.30	24	vmGSNSD01	eth0	[vmGSNSD02]	✓	
✓	VirtualIP_1...	192.168.111.31	24	vmGSNSD03	eth0	[vmGSNSD01]	✓	
✓	VirtualIP_1...	192.168.111.32	24	vmGSNSD02	eth0	[vmGSNSD03]	✓	

Below the table, there are controls for 'Display' (set to Graphs), 'Range' (set to Hourly), and a 'Reset' button. A 'No Graph Data' message is displayed in the graph area.

7. List of GNAS_CIFSs

Below screenshot give the list of GridNAS GNAS_CIFSs in this ZenPack.

The screenshot shows the Zenoss Core interface for the same device 'TestDevice'. The left sidebar has 'GNAS_CIFSs (3)' selected. The main panel displays a table of CIFS shares.

Events	Name	Network Address	Status	ActiveDirectoryStat	Monitored	Locking
✓	CIFS_vmGSNSD01	192.168.111.8	Running	Not Joined	✓	
✓	CIFS_vmGSNSD02	192.168.111.9	Running	Not Joined	✓	
✓	CIFS_vmGSNSD03	192.168.111.10	Running	Not Joined	✓	

Similar to the first screenshot, there are controls for 'Display' (Graphs), 'Range' (Hourly), and a 'Reset' button. A 'No Graph Data' message is shown in the graph area.

8. List of GNAS_NFSs

Below screenshot give the list of GridNAS GNAS_NFSs in this ZenPack.

The screenshot shows the Zenoss Core interface. The left sidebar lists components, with **GNAS_NFSs (3)** selected. The main panel displays a table of GNAS_NFSs.

Events	Name	Network Address	Status	Monitored	Locking
✓	NFS_vmGSNSD01	192.168.111.8	Running	✓	
✓	NFS_vmGSNSD02	192.168.111.9	Running	✓	
✓	NFS_vmGSNSD03	192.168.111.10	Running	✓	

Below the table, there are controls for 'Display: Graphs', 'Range: Hourly', and a 'Reset' button. A 'No Graph Data' message is displayed in the graph area.

9. List of GNAS_NasUsers

Below screenshot give the list of GridNAS GNAS_NasUsers in this ZenPack.

The screenshot shows the Zenoss Core interface. The left sidebar lists components, with **GNAS_NasUsers (2)** selected. The main panel displays a table of GNAS_NasUsers.

Events	Name	UID	Primary Group	Enabled	Monitored	Locking
✓	Administrator	600000	Local Admins (...)	yes	✓	
✓	Guest	600001	Local Guests (...)	no	✓	

Below the table, there are controls for 'Display: Graphs', 'Range: Hourly', and a 'Reset' button. A 'No Graph Data' message is displayed in the graph area.

10. List of GNAS_Groups

Below screenshot give the list of GridNAS GNAS_Groups in this ZenPack.

The screenshot shows the Zenoss Core interface. The top navigation bar includes DASHBOARD, EVENTS, INFRASTRUCTURE, REPORTS, and ADVANCED. The left sidebar shows the device 'TestDevice' with various components listed, including 'GNAS_Groups (6)'. The main content area displays a table of GNAS_Groups for the device.

Events	Name	GID	Domain	Monitored	Locking
✓	Administrators	600003	BUILTIN	✓	
✓	Guests	600005	BUILTIN	✓	
✓	Local Admins	600002	MARYLANDNA...	✓	
✓	Local Guests	600001	MARYLANDNA...	✓	
✓	Local Users	600000	MARYLANDNA...	✓	
✓	Users	600004	BUILTIN	✓	

Below the table, there are controls for 'Display' (set to Graphs), 'Range' (set to Hourly), and a 'Reset' button. A 'Link Graphs?' checkbox is checked, and a 'Refresh' button is present. A message box indicates 'No Graph Data'.

ZenPack Installation

1. Download the appropriate egg file for the version of the Zenoss you are running.
2. Ensure you are logged in as Zenoss user.

```
>>> su - zenoss
```

3. Install ZenPack

a. Zenoss 4

```
>>> zenpack -- install ZenPacks.DDN.GridScalerv2 -*.egg
```

b. Zenoss 5

```
>>> sudo serviced service run zenpack install ZenPacks.DDN.GridScalerv2 -*.egg
```

4. Restart Zenoss

a. Zenoss 4

```
>>> zenoss restart
```

b. Zenoss 5

```
>>> sudo serviced service stop <service name>
      [Get the service name by running command "sudo serviced service status"]
>>> sudo serviced service start <service name>
```

To list all installed ZenPacks

- a. Zenoss 4

```
>>> zenpack -- list
```
- b. Zenoss 5

```
>>> sudo serviced service run zope zenpack list
```

Steps to uninstall ZenPacks

- a. Zenoss4

```
>>> zenpack -- remove <zen pack>
```
- b. Zenoss 5

```
>>> sudo serviced service run zope zenpack uninstall <zen pack>
```

Instructions to model Gridscaler through Zenoss

A Gridscaler solution is a cluster of devices. So it cannot be modeled and monitored like other devices. This zenpack expects a pseudo network device to be created locally. This pseudo network device shall be used to register the cluster. A zProperty ('zGSNSDList') is defined to map the network address of NSD Servers in the cluster.

Follow the below instructions to model a gridscaler solution through zenoss:

1. Create a pseudo network device:
 - a. `sudo ip link add link em1 address 44:44:44:44:44:44 em1:10 type macvlan`
 - b. `sudo ifconfig em1:10 10.1.1.4 netmask 255.255.224.0`

Note : Change the ip and MAC address accordingly
2. Add this IP (10.1.1.4) into newly created device
You can choose to use any local private IP instead of 10.1.1.4
3. Update the zProperty accordingly before modeling. For ex. if you have 4 NSD Nodes reachable at address (IP1, IP2, IP3, IP4) [management interfaces], you can either add them all or atleast 2 to ensure connectivity even on node failure. Using one valid IP will also complete the modeling successfully.