



NetApp ONTAP Data Management Software data collector

Cloud Insights

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NetApp ONTAP Data Management Software data collector

This data collector acquires inventory and performance data from storage systems running ONTAP using read-only API calls from an ONTAP account. This data collector also creates a record in the cluster application registry to accelerate support.

Terminology

Cloud Insights acquires inventory and performance data from the ONTAP data collector. For each asset type acquired, the most common terminology used for the asset is shown. When viewing or troubleshooting this data collector, keep the following terminology in mind:

Vendor/Model Term	Cloud Insights Term
Disk	Disk
Raid Group	Disk Group
Cluster	Storage
Node	Storage Node
Aggregate	Storage Pool
LUN	Volume
Volume	Internal Volume

ONTAP Data Management Terminology

The following terms apply to objects or references that you might find on ONTAP Data Management storage asset landing pages. Many of these terms apply to other data collectors as well.

Storage

- **Model** – A comma-delimited list of the unique, discrete node model names within this cluster. If all the nodes in the clusters are the same model type, just one model name will appear.
- **Vendor** – same Vendor name you would see if you were configuring a new data source.
- **Serial number** – The array serial number. On cluster architecture storage systems like ONTAP Data Management, this serial number may be less useful than the individual “Storage Nodes” serial numbers.
- **IP** – generally will be the IP(s) or hostname(s) as configured in the data source.
- **Microcode version** – firmware.
- **Raw Capacity** – base 2 summation of all the physical disks in the system, regardless of their role.
- **Latency** – a representation of what the host facing workloads are experiencing, across both reads and writes. Ideally, Cloud Insights is sourcing this value directly, but this is often not the case. In lieu of the array offering this up, Cloud Insights is generally performing an IOPs-weighted calculation derived from the individual internal volumes’ statistics.
- **Throughput** – aggregated from internal volumes.
- **Management** – this may contain a hyperlink for the management interface of the device. Created

programmatically by the Cloud Insights data source as part of inventory reporting.

Storage Pool

- Storage – what storage array this pool lives on. Mandatory.
- Type – a descriptive value from a list of an enumerated list of possibilities. Most commonly will be “Aggregate” or “RAID Group”.
- Node – if this storage array’s architecture is such that pools belong to a specific storage node, its name will be seen here as a hyperlink to its own landing page.
- Uses Flash Pool – Yes/No value – does this SATA/SAS based pool have SSDs used for caching acceleration?
- Redundancy – RAID level or protection scheme. RAID_DP is dual parity, RAID_TP is triple parity.
- Capacity – the values here are the logical used, usable capacity and the logical total capacity, and the percentage used across these.
- Over-committed capacity – If by using efficiency technologies you have allocated a sum total of volume or internal volume capacities larger than the logical capacity of the storage pool, the percentage value here will be greater than 0%.
- Snapshot – snapshot capacities used and total, if your storage pool architecture dedicates part of its capacity to segments areas exclusively for snapshots. ONTAP in MetroCluster configurations are likely to exhibit this, while other ONTAP configurations are less so.
- Utilization – a percentage value showing the highest disk busy percentage of any disk contributing capacity to this storage pool. Disk utilization does not necessarily have a strong correlation with array performance – utilization may be high due to disk rebuilds, deduplication activities, etc in the absence of host driven workloads. Also, many arrays’ replication implementations may drive disk utilization while not showing as internal volume or volume workload.
- IOPS – the sum IOPs of all the disks contributing capacity to this storage pool.
Throughput – the sum throughput of all the disks contributing capacity to this storage pool.

Storage Node

- Storage – what storage array this node is part of. Mandatory.
- HA Partner – on platforms where a node will fail over to one and only one other node, it will generally be seen here.
- State – health of the node. Only available when the array is healthy enough to be inventoried by a data source.
- Model – model name of the node.
- Version – version name of the device.
- Serial number – The node serial number.
- Memory – base 2 memory if available.
- Utilization – On ONTAP, this is a controller stress index from a proprietary algorithm. With every performance poll, a number between 0 and 100% will be reported that is the higher of either WAFL disk contention, or average CPU utilization. If you observe sustained values > 50%, that is indicative of undersizing – potentially a controller/node not large enough or not enough spinning disks to absorb the write workload.
- IOPS – Derived directly from ONTAP ZAPI calls on the node object.

- Latency – Derived directly from ONTAP ZAPI calls on the node object.
- Throughput – Derived directly from ONTAP ZAPI calls on the node object.
- Processors – CPU count.

Requirements

The following are requirements to configure and use this data collector:

- You must have access to an Administrator account configured for read-only API calls.
- Account details include username and password.
- Port requirements: 80 or 443
- Account permissions:
 - Read only role name to ontapi application to the default Vserver
 - You may require additional optional write permissions. See the Note About Permissions below.
- ONTAP License requirements:
 - FCP license and mapped/masked volumes required for fibre-channel discovery

Configuration

Field	Description
NetApp Management IP	IP address or fully-qualified domain name of the NetApp cluster
User Name	User name for NetApp cluster
Password	Password for NetApp cluster

Advanced configuration

Field	Description
Connection type	Choose HTTP (default port 80) or HTTPS (default port 443). The default is HTTPS
Override Communication Port	Specify a different port if you do not want to use the default
Inventory Poll Interval (min)	Default is 60 minutes.
For TLS for HTTPS	Only allow TLS as protocol when using HTTPS
Automatically Lookup Netgroups	Enable the automatic netgroup lookups for export policy rules
Netgroup Expansion	Netgroup Expansion Strategy. Choose <i>file</i> or <i>shell</i> . The default is <i>shell</i> .
HTTP read timeout seconds	Default is 30
Force responses as UTF-8	Forces data collector code to interpret responses from the CLI as being in UTF-8

Field	Description
Performance Poll Interval (sec)	Default is 900 seconds.
Advanced Counter Data Collection	Enable ONTAP integration. Select this to include ONTAP Advanced Counter data in polls. Choose the desired counters from the list.

A Note About Permissions

Since a number of Cloud Insights' ONTAP dashboards rely on advanced ONTAP counters, you must enable **Advanced Counter Data Collection** in the data collector Advanced Configuration section.

You should also ensure that write permission to the ONTAP API is enabled. This typically requires an account at the cluster level with the necessary permissions.

To create a local account for Cloud Insights at the cluster level, log in to ONTAP with the Cluster management Administrator username/password, and execute the following commands on the ONTAP server:

1. Create a read-only role using the following commands.

```
security login role create -role oci_readonly -cmddirname DEFAULT
-access readonly
security login role create -role oci_readonly -cmddirname security
-access readonly
security login role create -role oci_readonly -access all -cmddirname
"cluster application-record create"
```

2. Create the read-only user using the following command. Once you have executed the create command, you will be prompted to enter a password for this user.

```
security login create -username oci_user -application ontapi
-authentication-method password -role oci_readonly
```

If AD/LDAP account is used, the command should be

```
security login create -user-or-group-name DOMAIN\aduser/adgroup
-application ontapi -authentication-method domain -role oci_readonly
```

The resulting role and user login will look something like this:

```

Role Command/ Access
Vserver Name Directory Query Level
-----
cluster1 oci_readonly DEFAULT read only
cluster1 oci_readonly security readonly

```

```

cluster1::security login> show
Vserver: cluster1
Authentication Acct
UserName      Application      Method      Role Name      Locked
-----
ci_user       ontapi          password    oci_readonly   no

```

Troubleshooting

Some things to try if you encounter problems with this data collector:

Inventory

Problem:	Try this:
Receive 401 HTTP response or 13003 ZAPI error code and ZAPI returns "Insufficient privileges" or "not authorized for this command"	Check username and password, and user privileges/permissions.
Cluster version is < 8.1	Cluster minimum supported version is 8.1. Upgrade to minimum supported version.
ZAPI returns "cluster role is not cluster_mgmt LIF"	AU needs to talk to cluster management IP. Check the IP and change to a different IP if necessary
Error: "7 Mode filers are not supported"	This can happen if you use this data collector to discover 7 mode filer. Change IP to point to cdot cluster instead.
ZAPI command fails after retry	AU has communication problem with the cluster. Check network, port number, and IP address. User should also try to run a command from command line from the AU machine.
AU failed to connect to ZAPI via HTTP	Check whether ZAPI port accepts plaintext. If AU tries to send plaintext to an SSL socket, the communication fails.
Communication fails with SSLException	AU is attempting to send SSL to a plaintext port on a filer. Check whether the ZAPI port accepts SSL, or use a different port.

Problem:	Try this:
<p>Additional Connection errors:</p> <p>ZAPI response has error code 13001, “database is not open”</p> <p>ZAPI error code is 60 and response contains “API did not finish on time”</p> <p>ZAPI response contains “initialize_session() returned NULL environment”</p> <p>ZAPI error code is 14007 and response contains “Node is not healthy”</p>	<p>Check network, port number, and IP address. User should also try to run a command from command line from the AU machine.</p>

Performance

Problem:	Try this:
<p>“Failed to collect performance from ZAPI” error</p>	<p>This is usually due to perf stat not running. Try the following command on each node:</p> <pre>> system node systemshell -node * -command "spmctl -h cmd --stop; spmctl -h cmd --exec"</pre>

Additional information may be found from the [Support](#) page or in the [Data Collector Support Matrix](#).

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