Hitachi Data Systems

Cloud Insights

NetApp
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Hitachi Vantara Command Suite data collector

The Hitachi Vantara Command Suite data collector supports the HiCommand Device Manager server. Cloud Insights communicates with the HiCommand Device Manager server using the standard HiCommand API.

Terminology

Cloud Insights acquires the following inventory information from the Hitachi Vantara Command Suite data collector. For each asset type acquired by Cloud Insights, the most common terminology used for this asset is shown. When viewing or troubleshooting this data collector, keep the following terminology in mind:

Vendor/Model Term	Cloud Insights Term
PDEV	Disk
Journal Pool	Disk Group
Storage Array	Storage
Port Controller	Storage Node
Array Group, HDS Pool	Storage Pool
Logical Unit, LDEV	Volume

Note: These are common terminology mappings only and might not represent every case for this data collector.

Storage

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

- Name – comes directly from HDS HiCommand Device Manager's "name" attribute via the GetStorageArray XML API call
- Model - comes directly from HDS HiCommand Device Manager's "arrayType" attribute via the GetStorageArray XML API call
- Vendor – HDS
- Family - comes directly from HDS HiCommand Device Manager's "arrayFamily" attribute via the GetStorageArray XML API call
- IP – this is the management IP address of the array, not an exhaustive list of all IP addresses on the array
- Raw Capacity – a base2 value representing the sum of the total capacity of all disks in this system, regardless of disk role.

Storage Pool

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

- Type: The value here will be one of:
  - RESERVED – if this pool is dedicated for purposes other than data volumes, i.e, journaling, snapshots
  - Thin Provisioning – if this is a HDP pool
  - Raid Group – you will not likely see these for a few reasons:

    Cloud Insights takes a strong stance to avoid double counting capacity at all costs. On HDS, one typically needs to build Raid Groups from disks, create pool volumes on those Raid Groups, and construct pools (often HDP, but could be special purpose) from those pool volumes. If Cloud Insights reported both the underlying Raid Groups as is, as well as the Pools, the sum of their raw capacity would vastly exceed the sum of the disks.

    Instead, Cloud Insights' HDS Command Suite data collector arbitrarily shrinks the size of Raid Groups by the capacity of pool volumes. This may result in Cloud Insights not reporting the Raid Group at all. Additionally, any resulting Raid Groups are flagged in a way such that they are not visible in the Cloud Insights WebUI, but they do flow into the Cloud Insights Data Warehouse (DWH). The purpose of these decisions is to avoid UI clutter for things that most users do not care about – if your HDS array has Raid Groups with 50MB free, you probably cannot use that free space for any meaningful outcome.
- Node - N/A, as HDS pools are not tied to any one specific node
- Redundancy - the RAID level of the pool. Possibly multiple values for a HDP pool comprised of multiple RAID types
- Capacity % - the percent used of the pool for data usage, with the used GB and total logical GB size of the pool
- Over-committed Capacity - a derived value, stating "the logical capacity of this pool is oversubscribed by this percentage by virtue of the sum of the logical volumes exceeding the logical capacity of the pool by this percentage"
- Snapshot - shows the capacity reserved for snapshot usage on this pool

Storage Node

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

- Name – The name of the Front-end director (FED) or Channel Adapter on monolithic arrays, or the name of the controller on a modular array. A given HDS array will have 2 or more Storage Nodes
- Volumes – The Volume table will show any volume mapped to any port owned by this storage node

Inventory Requirements

You must have the following in order to collect inventory data:

- IP address of the HiCommand Device Manager server
- Read-only user name and password for the HiCommand Device Manager software and peer privileges
- Port requirements: 2001 (http) or 2443 (https)
- Log into HiCommand Device Manager software using username and password
- Verify access to HiCommand Device Manager http://<HiCommand_Device_Manager_IP>:2001/service/StorageManager

Performance requirements

The following requirements must be met in order to collect performance data:

- HDS USP, USP V, and VSP performance
  - Performance Monitor must be licensed.
  - Monitoring switch must be enabled.
  - The Export Tool (Export.exe) must be copied to the Cloud Insights AU.
  - The Export Tool version must match the microcode version of the target array.
- AMS performance:
  - NetApp strongly recommends creating a dedicated service account on AMS arrays for Cloud Insights to use to retrieve performance data. Storage Navigator only allows a user account one concurrent login to the array. Having Cloud Insights use the same user account as management scripts or HiCommand may result in Cloud Insights, management scripts, or HiCommand being unable to communicate to the array due to the one concurrent user account login limit
  - Performance Monitor must be licensed.
  - The Storage Navigator Modular 2 (SNM2) CLI utility needs to be installed on the Cloud Insights AU.

Configuration

Field	Description
HiCommand Server	IP address or fully-qualified domain name of the HiCommand Device Manager server
User Name	User name for the HiCommand Device Manager server.
Password	Password used for the HiCommand Device Manager server.
Devices - VSP G1000 (R800), VSP (R700), HUS VM (HM700) and USP storages	Device list for VSP G1000 (R800), VSP (R700), HUS VM (HM700) and USP storages. Each storage requires: * Array's IP: IP address of the storage * User Name: User name for the storage * Password: Password for the storage * Folder Containing Export Utility JAR Files
SNM2Devices - WMS/SMS/AMS Storages	Device list for WMS/SMS/AMS storages. Each storage requires: * Array's IP: IP address of the storage * Storage Navigator CLI Path: SNM2 CLI path * Account Authentication Valid: Select to choose valid account authentication * User Name: User name for the storage * Password: Password for the storage
Choose Tuning Manager for Performance	Override other performance options

Field	Description
Tuning Manager Host	IP address or fully-qualified domain name of tuning manager
Override Tuning Manager Port	If blank, use the default port in the Choose Tuning Manager for Performance field, otherwise enter the port to use
Tuning Manager Username	User name for Tuning Manager
Tuning Manager Password	Password for Tuning Manager

Note: In HDS USP, USP V, and VSP, any disk can belong to more than one array group.

Advanced configuration

Field	Description
Connection Type	HTTPS or HTTP, also displays the default port
HiCommand Server Port	Port used for the HiCommand Device Manager
Inventory Poll Interval (min)	Interval between inventory polls. The default is 40.
Choose 'Exclude' or 'Include' to specify a list	Specify whether to include or exclude the array list below when collecting data.
Filter device List	Comma-separated list of device serial numbers to include or exclude
Performance Poll Interval (sec)	Interval between performance polls. The default is 300.
Export timeout in seconds	Export utility timeout. The default is 300.

Troubleshooting

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

Inventory

Problem:	Try this:
Error: User does not have enough permission	Use a different user account that has more privilege or increase the privilege of user account configured in the data collector
Error: Storages list is empty. Either devices are not configured or the user does not have enough permission	* Use DeviceManager to check if the devices are configured. * Use a different user account that has more privilege, or increase the privilege of the user account
Error: HDS storage array was not refreshed for some days	Investigate why this array is not being refreshed in HDS HiCommand.

Performance

Problem:	Try this:
Error: * Error executing export utility * Error executing external command	* Confirm that Export Utility is installed on the Cloud Insights Acquisition Unit * Confirm that Export Utility location is correct in the data collector configuration * Confirm that the IP of the USP/R600 array is correct in the configuration of the data collector * Confirm that the User name and password are correct in the configuration of the data collector * Confirm that Export Utility version is compatible with storage array micro code version * From the Cloud Insights Acquisition Unit, open a CMD prompt and do the following: - Change the directory to the configured installation directory - Try to make a connection with the configured storage array by executing batch file runWin.bat
Error: Export tool login failed for target IP	* Confirm that username/password is correct * Create a user ID mainly for this HDS data collector * Confirm that no other data collectors are configured to acquire this array
Error: Export tools logged "Unable to get time range for monitoring".	* Confirm performance monitoring is enabled on the array. * Try invoking the export tools outside of Cloud Insights to confirm the problem lies outside of Cloud Insights.
Error: * Configuration error: Storage Array not supported by Export Utility * Configuration error: Storage Array not supported by Storage Navigator Modular CLI	* Configure only supported storage arrays. * Use “Filter Device List” to exclude unsupported storage arrays.
Error: * Error executing external command * Configuration error: Storage Array not reported by Inventory * Configuration error:export folder does not contains jar files	* Check Export utility location. * Check if Storage Array in question is configured in HiCommand server * Set Performance poll interval as multiple of 60 seconds.

Problem:	Try this:
Error: * Error Storage navigator CLI * Error executing auperform command * Error executing external command	* Confirm that Storage Navigator Modular CLI is installed on the Cloud Insights Acquisition Unit * Confirm that Storage Navigator Modular CLI location is correct in the data collector configuration * Confirm that the IP of the WMS/SMS/SMS array is correct in the configuration of the data collector * Confirm that Storage Navigator Modular CLI version is compatible with micro code version of storage array configured in the data collector * From the Cloud Insights Acquisition Unit, open a CMD prompt and do the following: - Change the directory to the configured installation directory - Try to make a connection with the configured storage array by executing following command “auunitref.exe”
Error: Configuration error: Storage Array not reported by Inventory	Check if Storage Array in question is configured in HiCommand server
Error: * No Array is registered with the Storage Navigator Modular 2 CLI * Array is not registered with the Storage Navigator Modular 2 CLI * Configuration error: Storage Array not registered with StorageNavigator Modular CLI	* Open Command prompt and change directory to the configured path * Run the command “set=STONAVM_HOME=.” * Run the command “auunitref” * Confirm that the command output contains details of the array with IP * If the output does not contain the array details then register the array with Storage Navigator CLI: - Open Command prompt and change directory to the configured path - Run the command “set=STONAVM_HOME=.” - Run command “auunitaddauto -ip ${ip}”. Replace ${ip} with real IP

Additional information may be found from the Support page or in the Data Collector Support Matrix.

Configuring the Hitachi Vantara NAS data collector

The Hitachi Vantara NAS data collector is an inventory and configuration data collector that supports discovery of HDS NAS clusters. Cloud Insights supports discovering NFS and CIFS shares, file systems (Internal Volumes), and spans (Storage Pools).

Terminology

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

Vendor/Model Term	Cloud Insights Term
Tier	Disk Group
Cluster	Storage

Vendor/Model Term	Cloud Insights Term
Node	Storage Node
Span	Storage Pool
System Drive	Backend Lun
Files System	Internal Volume

Note: These are common terminology mappings only and might not represent every case for this data collector.

Requirements

- Device IP address
- Port 22, SSH protocol
- Username and password - privilege level: Supervisor
- Note: This data collector is SSH based, so the AU that hosts it must be able to initiate SSH sessions to TCP 22 on the HNAS itself, or the Systems Management Unit (SMU) that the cluster is connected to.

Configuration

Field	Description
HNAS Host	IP address or fully-qualified domain name of HNAS Management Host
User Name	User name for HNAS CLI
Password	Password used for HNAS CLI

Advanced configuration

Field	Description
Inventory Poll Interval (min)	Interval between inventory polls. The default is 30 minutes.

Troubleshooting

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

Inventory

Problem:	Try this:
"Error connecting" with error messages “Error setting up shell channel:”or “Error opening shell channel”	Likely caused by network connectivity issues or SSH is misconfigured. Confirm connection with alternate SSH client
"Timeout" or “Error retrieving data" with error messages “Command: XXX has timed out."	* Try the command with alternate SSH client * Increase timeout

Problem:	Try this:
"Error connecting " or “Invalid login credentials" with error messages “Could not communicate with the device:"	* Check IP address * Check user name and password * Confirm connection with alternate SSH client

Additional information may be found from the Support page or in the Data Collector Support Matrix.

Hitachi Ops Center data collector

This data collector uses Hitachi Ops Center’s integrated suite of applications to access inventory and performance data of multiple storage devices. For inventory and capacity discovery, your Ops Center installation must include both the "Common Services" and "Administrator" components. For performance collection, you must additionally have "Analyzer" deployed.

Terminology

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

Vendor/Model Term	Cloud Insights Term
Storage Systems	Storage
Volume	Volume
Parity Groups	Storage Pool(RAID), Disk Groups
Disk	Disk
Storage Pool	Storage Pool(Thin, SNAP)
External Parity Groups	Storage Pool(Backend), Disk Groups
Port	Storage Node → Controller Node → Port
Host Groups	Volume Mapping and Masking
Volume Pairs	Storage Synchronization

Note: These are common terminology mappings only and might not represent every case for this data collector.

Inventory Requirements

You must have the following in order to collect inventory data:

- IP address of the Ops Center server
- Read-only user name and password for the Ops Center software and peer privileges

Configuration

Field	Description
Hitachi Ops Center IP Address	IP address or fully-qualified domain name of the Ops Center server hosting the "Common Services" component
User Name	User name for the Ops Center server.
Password	Password used for the Ops Center server.

Advanced configuration

Field	Description
Connection Type	HTTPS (port 443) is the default
Override TCP Port	Specify the port to use if not the default
Inventory Poll Interval (min)	Interval between inventory polls. The default is 40.
Choose 'Exclude' or 'Include' to specify a list	Specify whether to include or exclude the array list below when collecting data.
Filter device List	Comma-separated list of device ID’s or array names to include or exclude
Performance Poll Interval (sec)	Interval between performance polls. The default is 300.

Additional information may be found from the Support page or in the Data Collector Support Matrix.