



Cisco HyperFlex Workload Profiler for Nutanix AHV

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CHAPTER 1

Introduction

- [Introduction, on page 1](#)

Introduction

Nutanix AHV Introduction

HX Workload Profiler is a Nutanix AHV characterization tool that can estimate the compute, storage, and network usage of hosts and VMs across multiple Nutanix AHV deployments. The output of the tool can be fed into the HxSizer product to size the HyperFlex cluster requirements. The workload requirements are estimated by the HX Profiler tool.

HX Workload Profiler key outputs:

- Summary of host-level compute metrics
- Detailed compute, storage, and network metrics for hosts and VMs for all Nutanix AHV profiled
- Detailed time series data to analyze trends of key metrics in the UI
- Download of time series data of all key metrics

The HX Workload Profiler tool is delivered as a VHDX file and can be used to monitor multiple Nutanix AHV clusters simultaneously.



CHAPTER 2

System Requirements

- [Nutanix AHV System Requirements, on page 3](#)

Nutanix AHV System Requirements

Requirement	Description
VMDK	<ul style="list-style-type: none">• vCPU: 4• RAM: 8 GB• Disk: 100 GB
Scale for end-points	<ul style="list-style-type: none">• Maximum number of simultaneous Nutanix Clusters: 16• Maximum number of hosts: 200• Maximum number of VMs: 4000
Credentials	<ul style="list-style-type: none">• Root/admin credentials
Browser support	<ul style="list-style-type: none">• Chrome: Chrome version 50 or later• Firefox: Unsupported• IE: Unsupported• Safari: Unsupported



CHAPTER 3

Setting Up the Virtual Appliance

- [Logging into the Profiler, on page 5](#)
- [HX Profiler Software License, on page 6](#)
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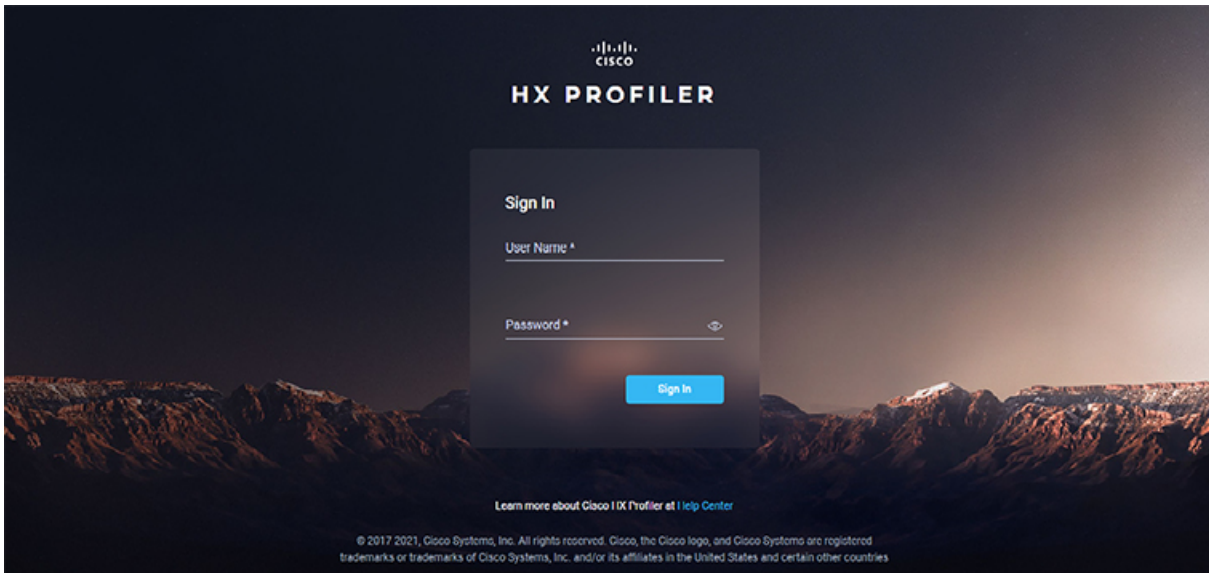
Logging into the Profiler

Logging in to the Profiler

The HX Workload Profiler user interface (UI) uses system credentials for authentication.

Step 1 To access the UI, launch a browser window and enter `http://<IP:>` or `http://< IP:8000 >` or `http://<IP>/profiler/index.html` or `http://<IP:8000>/profiler/index.html`, where the IP is the IP address of the VM.

The HX Profiler UI appears:

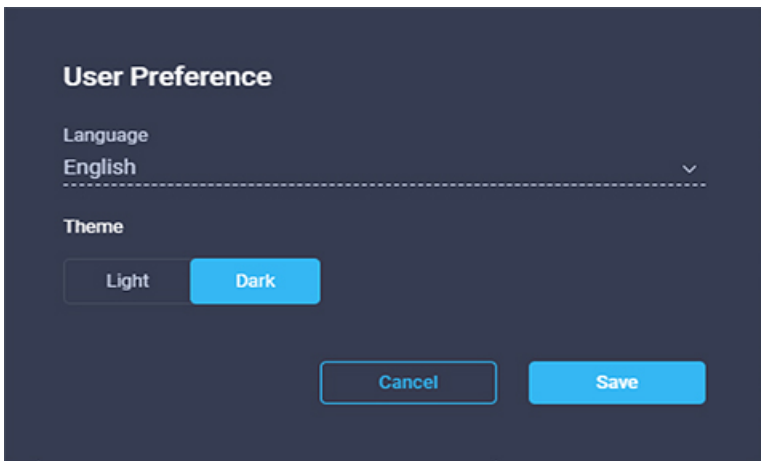


Step 2 When prompted, log in to the UI with the following credentials:

User name: **monitoring**

Password: **<new password set during the install workflow>**

Step 3 You can use the User Preference option in the top right corner of the UI to configure **Language** or **Theme**.

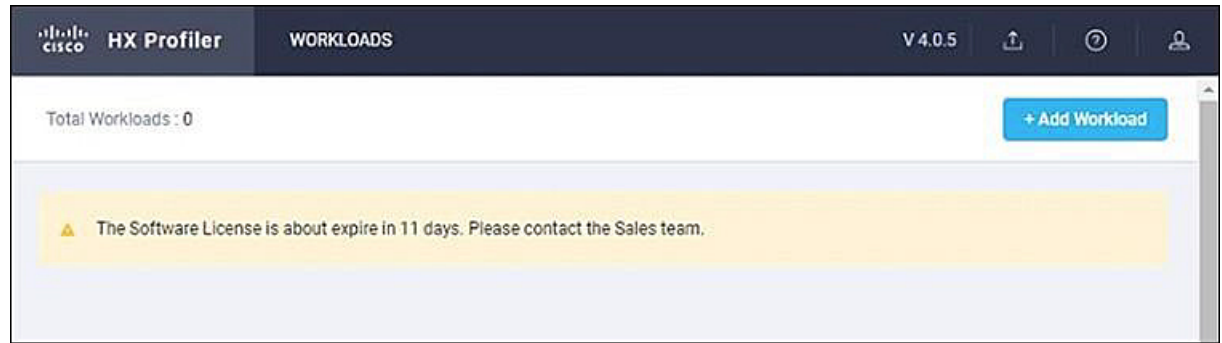


Click **Cancel** or **Save** to continue.

Step 4 When finished, you can end the user session by clicking **Logout** at the top right of the page.

HX Profiler Software License

The lifespan of the HX Profiler Software License is 45 days from the date of deployment. The HX Profiler displays a Software Expiration warning message after 30 days have elapsed after deployment.

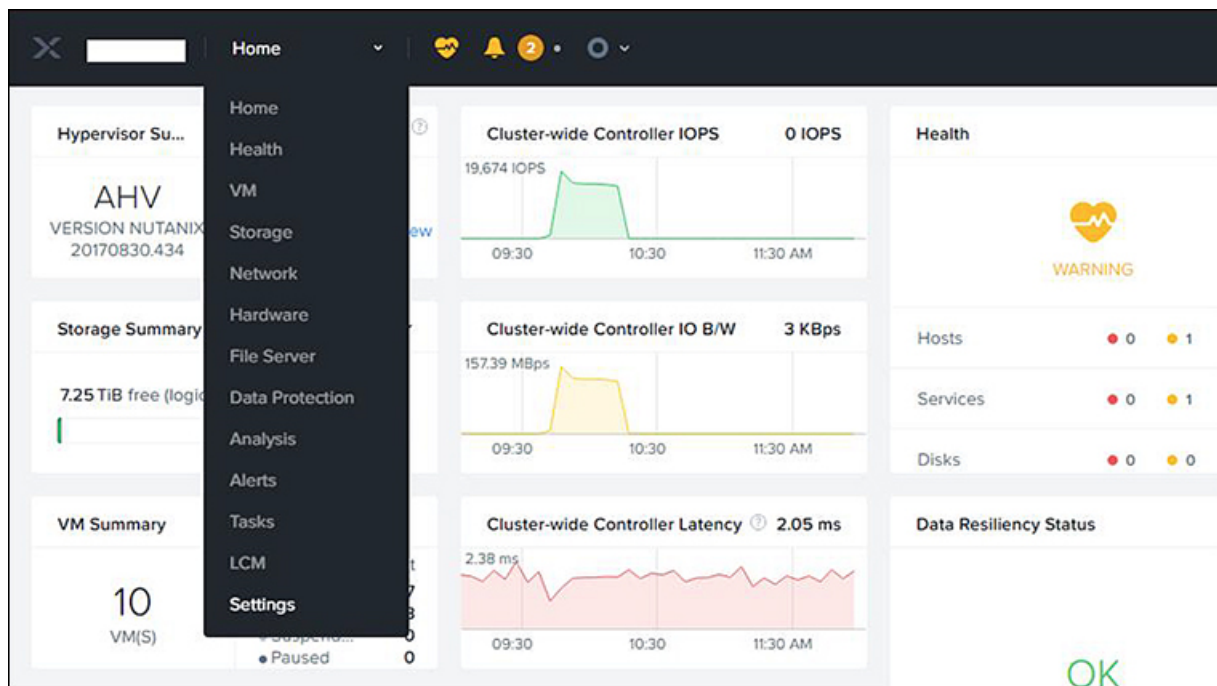


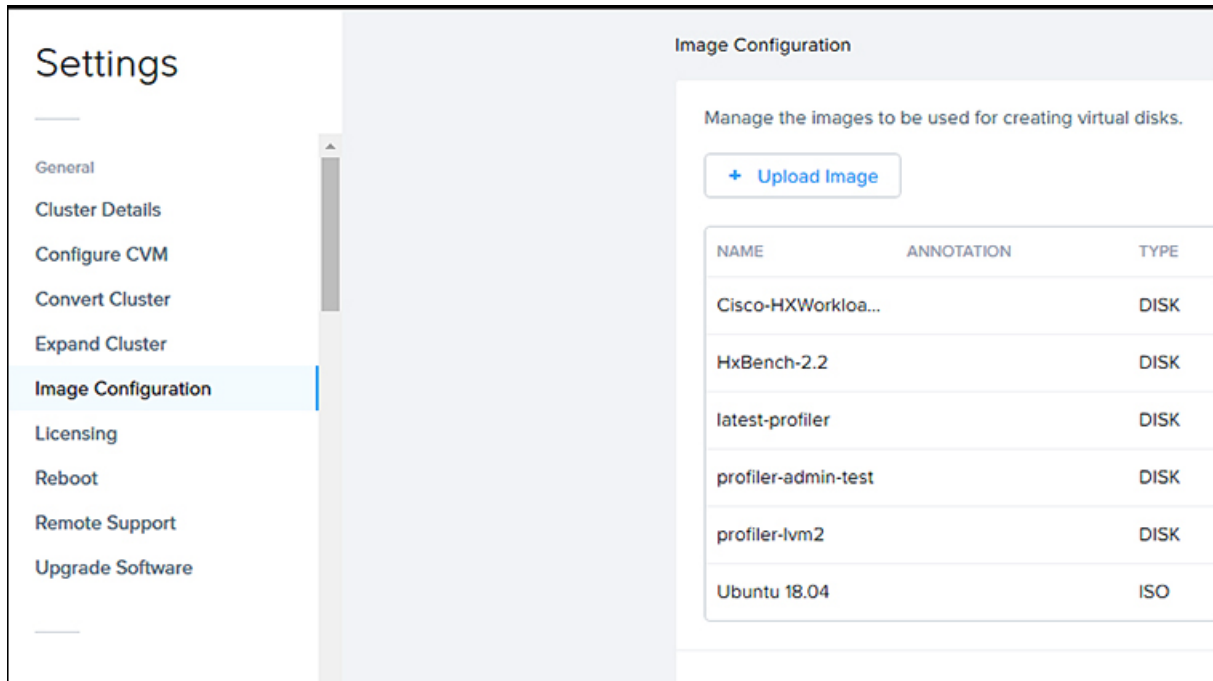
Deploying the Virtual Machine

Deploying the Nutanix AHV Virtual Machine

Step 1 Log into Nutanix AHV Prism central UI.

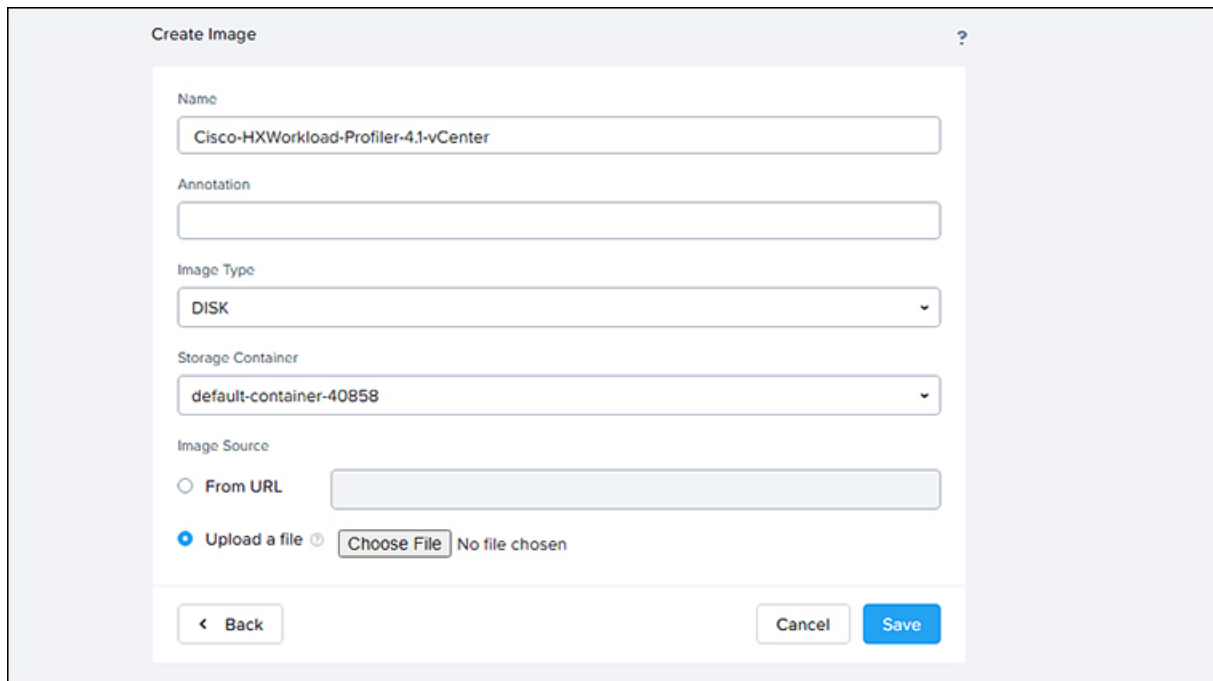
Step 2 Select **Home > Settings > Image Configuration > Upload Image**.





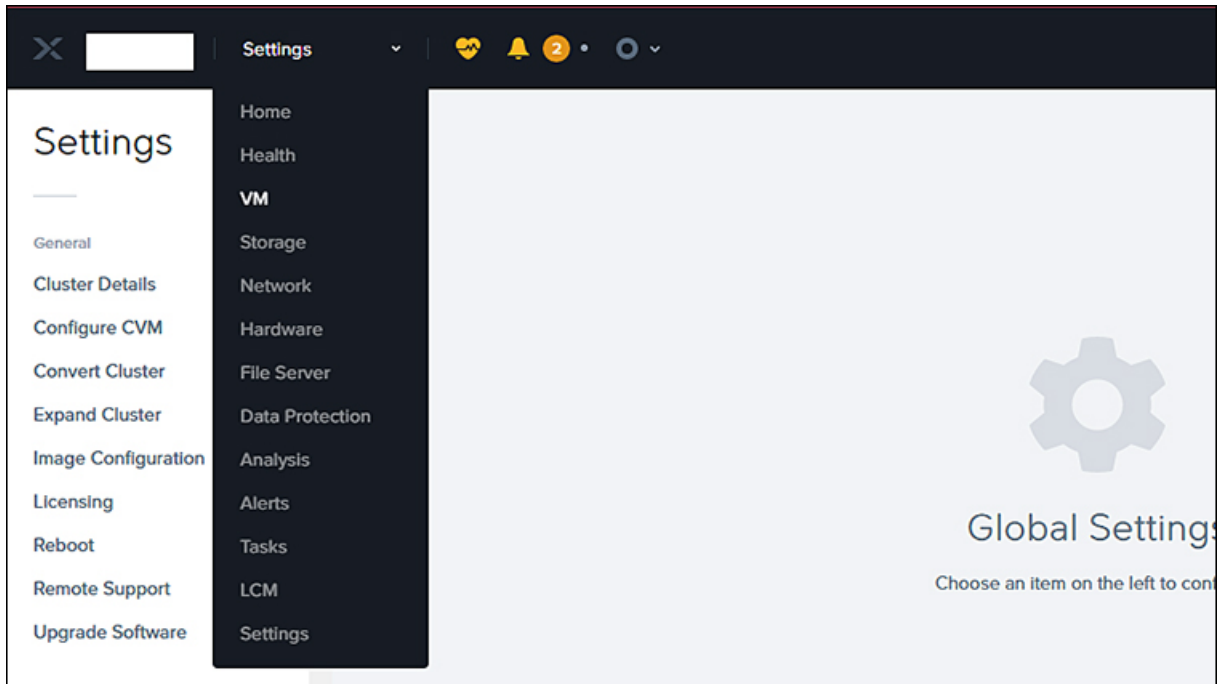
Step 3 Enter **Image name**, select **Image Type** as **Disk** and select desired **Storage Container**.

Step 4 Select **Upload a file** radio button and click on **Choose File** to select the VMDK file you want to upload.

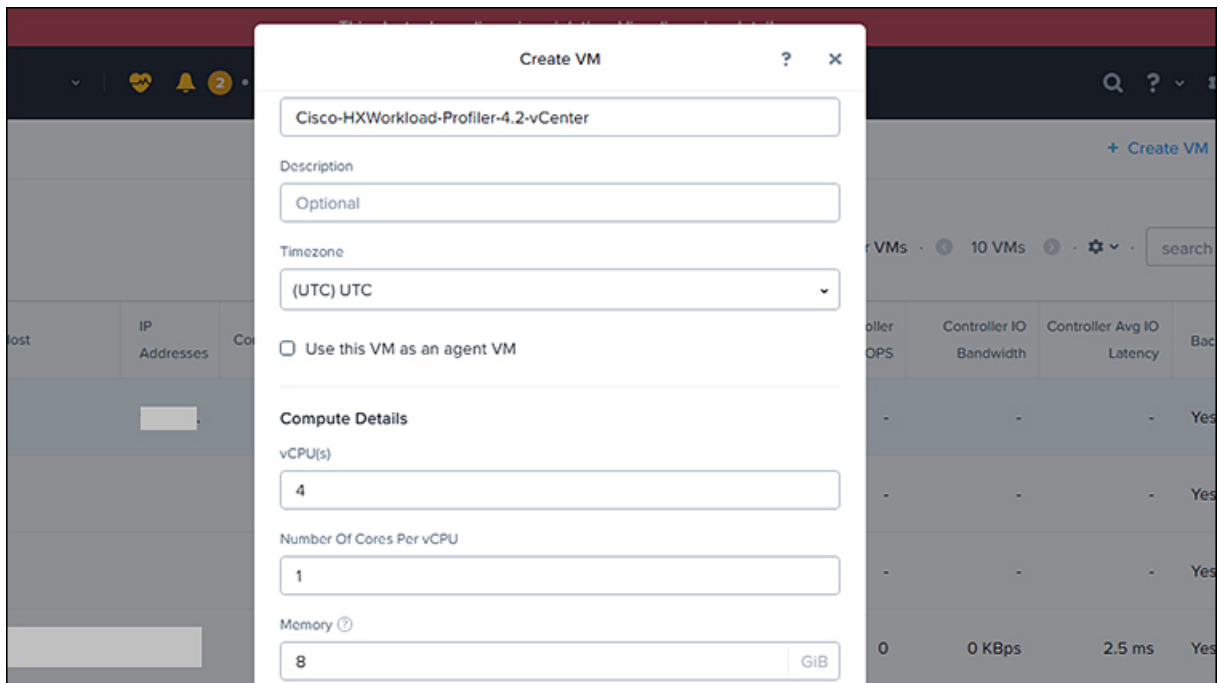


Step 5 Click on **Save**.

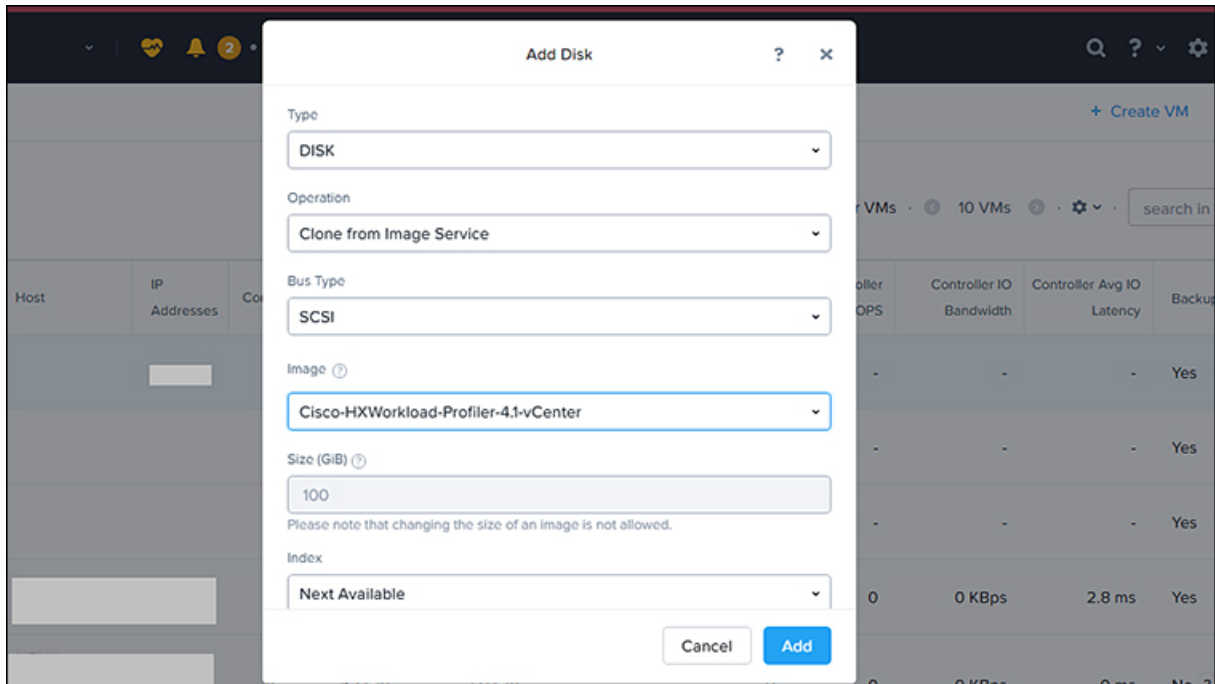
Step 6 Navigate to **VM** page, and click on **Create VM**.



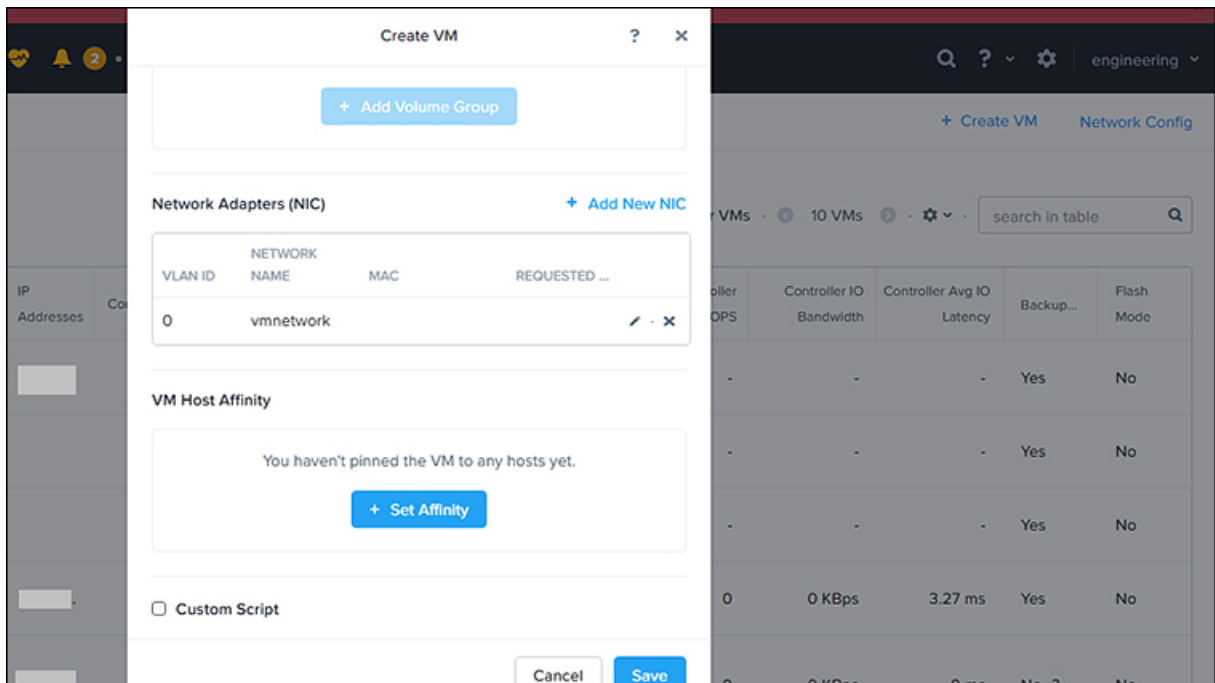
Step 7 Enter the **VM name**, provide **vCPU(s)** as 4 and **Memory** as 8.



Step 8 In the **Disks** section, click on **Add New Disk**, select **Type** as **Disk** and **Operation** as **Clone from Image Service**. Select the desired image from **Image** drop down list and click on **Add** button.



Step 9 Add New NIC under Network Adapters section.



Step 10 Click on **Save**, the VM will be deployed.

Step 11 Select the deployed VM and click on **Power On** button.

Step 12 Click on **Launch Console** to connect to the console.

Step 13 Change the password from the console. While changing the password, use the default user name and password as monitoring/monitoring.

- Step 14** Configure the static or DHCP IP from terminal for the first login. Follow the instruction prompted in the terminal.
- Step 15** After IP configuration, enter the new password as prompted in the terminal. The machine will not reboot if DHCP and reboots with static IP selection.
- Step 16** After all IP configuration changes, if any changes are required or any wrong entry IP is entered, edit the interfaces file, using the VIM editor under the following path: `/etc/network/interfaces`.
- Step 17** If you edit the above file, then reboot/reset the machine.

Configuring and Using the Profiler Application

Configuring and Using the Nutanix AHV Profiler Application

Perform the HX Workload Profiler application configuration and operations from the web-based UI.

The following table shows the high-level steps for configuring the application.

Task	See
Addition of a poller, which is referred to as a workload or node.	Adding Nutanix AHV to the Profiler, on page 13
Configuration of the profiling attributes.	Starting Nutanix AHV Data Profiling, on page 15
Start the polling operation.	Starting the Profiler Service, on page 11

Using the Profiler Service

Using the Profiler Service

The Hx Workload Profiler start and stop services use the `profiler_service.sh` command.

The following table shows the high-level steps for using the profile service.

Task	See
Starting the Profiler Service	Starting the Profiler Service, on page 11
Stopping the Profiler Service	Stopping the Profiler Service, on page 12
Restarting the Profiler Service	Restarting the Profiler Service, on page 12

Starting the Profiler Service

To start the profiler service:

Run the following command: `sudo service hxpmonitor start.`

Stopping the Profiler Service

Complete the following steps to stop the profiler service:

Step 1 Run the following command: `sudo service hxpmonitor stop.`

Step 2 Run the following command: `sudo service hxpcontroller stop.`

Restarting the Profiler Service

Complete the following steps to restart the profiler service:

Step 1 Run the following command: `sudo service hxpcontroller restart.`

Step 2 Run the following command: `sudo service hxpmonitor restart.`

Locating the Application Logs

Locating the Application Logs

You can find HX Workload Profiler logs in the following locations:

Table 1: Application Logs

Log	Path
Server	/home/monitoring/monitor/server.log
Controller	/home/monitoring/controller/logs/*
Monitor	/home/monitoring/monitor/monitor/monitor.log



CHAPTER 4

Configuring and Using the Profiler Application

- [Adding Nutanix AHV to the Profiler, on page 13](#)
- [Starting Nutanix AHV Data Profiling, on page 15](#)
- [Downloading Nutanix AHV Profiling Results, on page 17](#)
- [Viewing Data Collections from Nutanix AHV Server , on page 18](#)
- [Upload 30-Days Sizing Summary Report, on page 24](#)

Adding Nutanix AHV to the Profiler

At the first login following installation of the HX Workload Profiler, you are redirected to the landing page where you can find the + **Add Workload** option on the top right corner of the page. You can select Nutanix, then you can add multiple Nutanix clusters.

To calculate the metrics for a host, the Profiler captures the metrics for all the VMs on the Host.

The workflow includes:

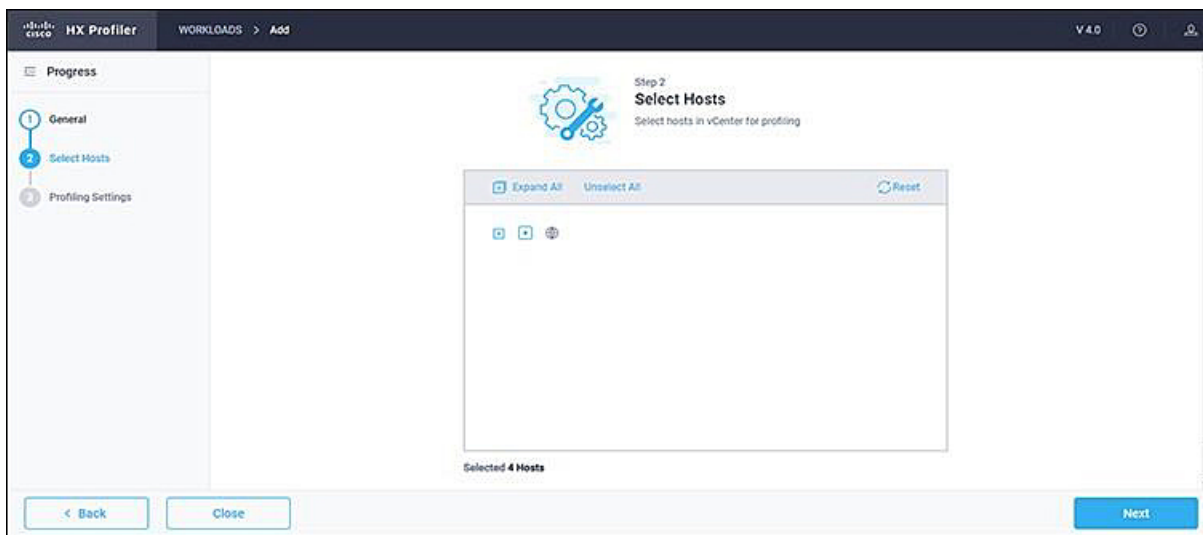
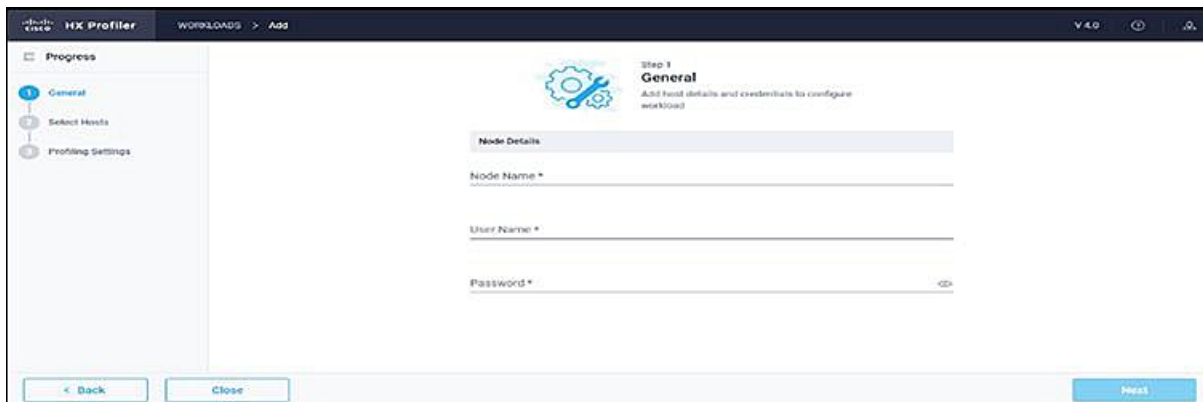
- **Node Details** tab: Records your Nutanix AHV prism details and then connects to the Nutanix REST API. If the connection succeeds, the **Next** button displays enabling you to select the hosts for profiling.
- **Select Hosts** tab: Provides hierarchy of Hosts, with the option to select hosts to Profile.
- **Profiling Setting** tab, which provides:
 - **Profile Name:** The name of the profile. Profile names must be unique.
 - **Profile period:** User defined number of polling days. The default is 7 days, and the minimum is 1 day.
 - **Polling Interval:** Frequency for which polling should occur.

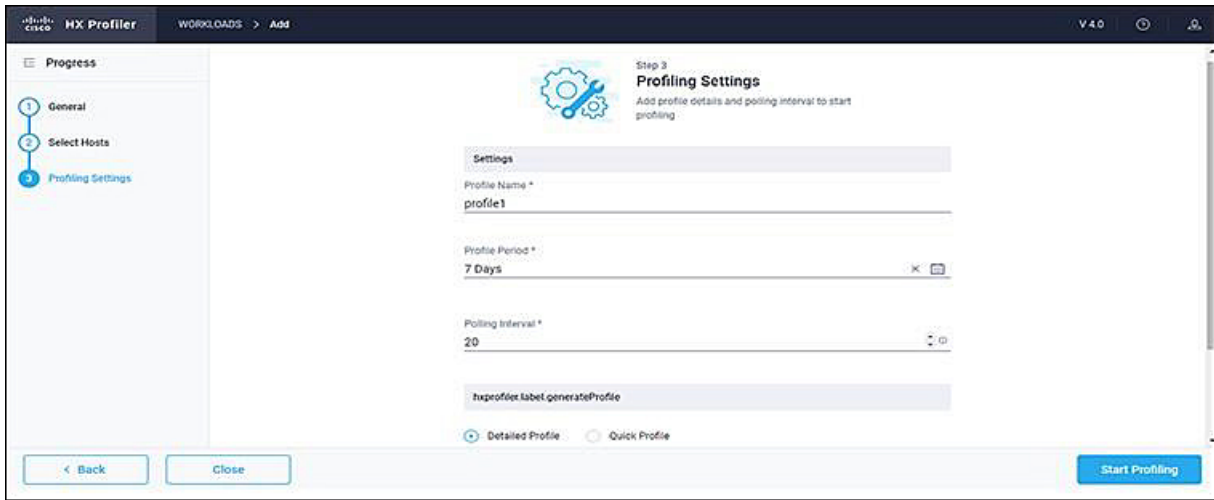
Step 1 Log into the Profiler. See [Logging in to the Profiler, on page 5](#).

Step 2 Follow the steps provided to enter values for the following options:

Item	Description
Node Name	Nutanix AHV Prism central IP/Cluster External IP you are adding.
User Name	Name of the user as part of the login credentials for the Prism central.

Item	Description
Password	The password set as part of the login credentials for Prism central.
Polling Interval	The interval at which you want polling to occur. The default is 20 seconds. You can change the interval to between 20-120 seconds, based on the number of hosts and VMs being polled in that Nutanix AHV.





- Step 3** Click **Start Profiling**. The Profiler service starts automatically.
- Step 4** When the connection status indicates successful connection, click **Next**.
- Step 5** On the **Poll filter** tab, review the hierarchy values.

Starting Nutanix AHV Data Profiling

Following the successful addition of a Nutanix AHV workload, the new Nutanix AHV displays on the Data Inventory (home) page. You configure the profiling attributes by providing the profile name and duration.

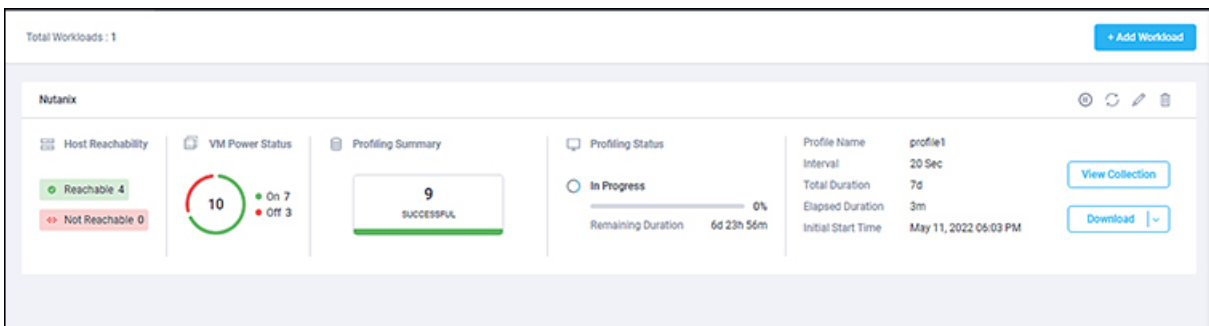
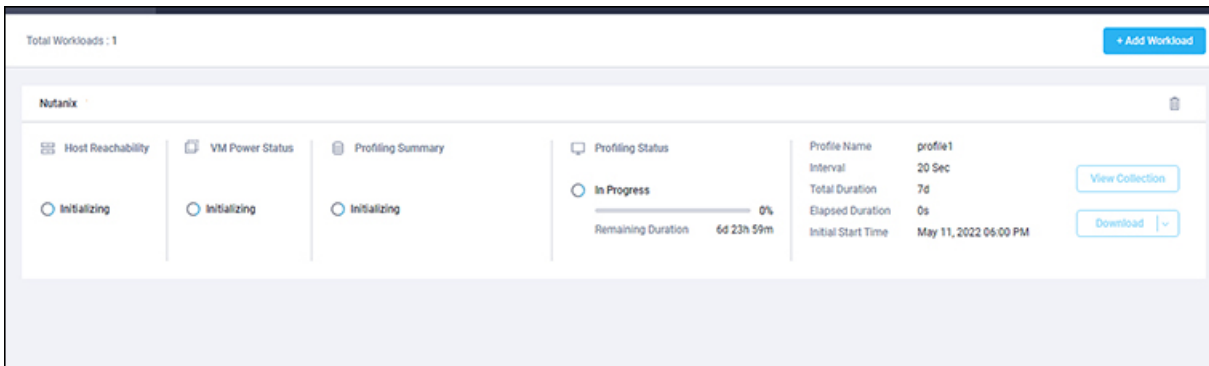
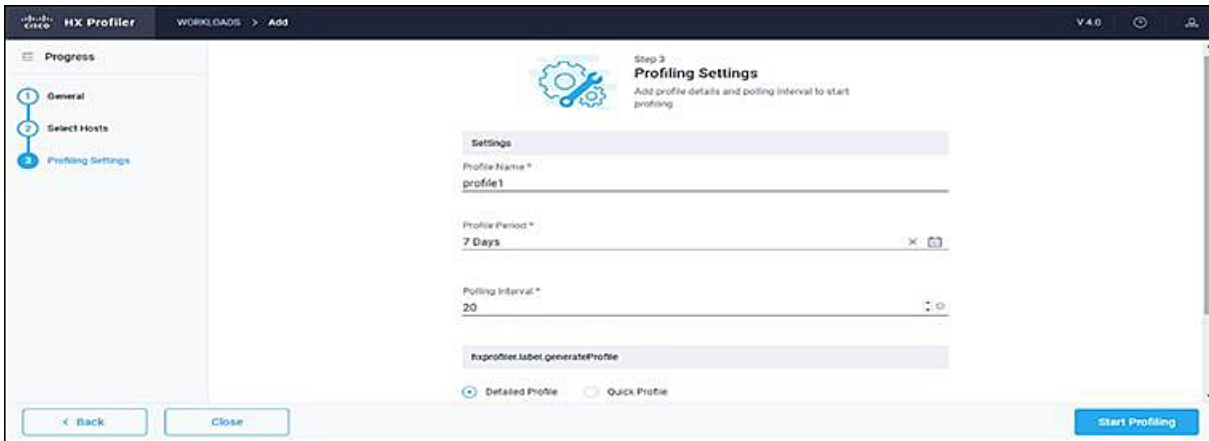
Table 2: Profiling Operation Options

Item	Description
Delete (trash can)	Deletes a previously added Nutanix AHV.
Edit (pen)	Edit Nutanix AHV properties to add or remove hosts for polling.
Stop (symbol)	Stops the profiling so you can resume it later.
Reset (refresh symbol)	Performs a reset operation, which creates a new profile and starts polling. When you trigger reset, the profiler stops the active/running profile and creates a new one. A prompt asks for confirmation.
View Collection	Opens the View Collection page so you can browse through the collected data as part of the profiling to review the HOST and VM level data.

Polling starts as soon as you enter the profiler name, days, and polling period.

- Step 1** In the dialog that displays, perform the following steps:
 - a) Enter a name for the profile.

- b) Select a duration value from the **Profiling Period** down-drop list.
- c) Click **Ok**.



Following successful profile creation, the Profiler begins polling the selected hosts and all the VMs on those hosts. When the polling starts, the data collector runs as a background process. The Datacenter Inventory page displays information about the hosts and polling, showing number of hosts and the status of the polling.

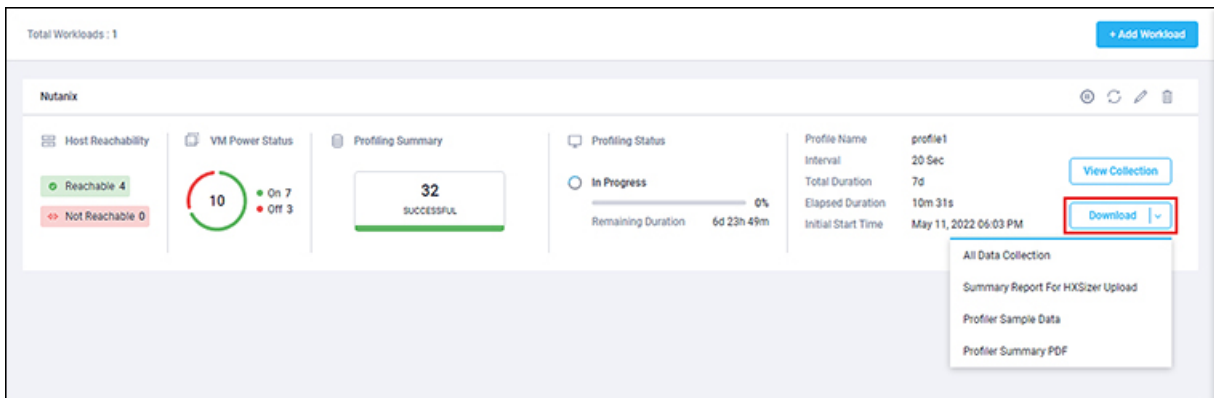
- Step 2** (Optional) To stop an in-progress profiling operation so you can resume it later, see [Stopping the Profiler Service, on page 12](#).
- Step 3** (Optional) To stop an in-progress profiling operation, click **Reset**. You can then start a new one.
- Step 4** (Optional) To browse through the collected data, see [Viewing Data Collections from Nutanix AHV Server , on page 18](#).
- Step 5** (Optional) To download profiling data, see [Downloading Nutanix AHV Profiling Results, on page 17](#).

Downloading Nutanix AHV Profiling Results

Step 1 On the Datacenter Inventory page, locate and select the profile whose data you want to download.

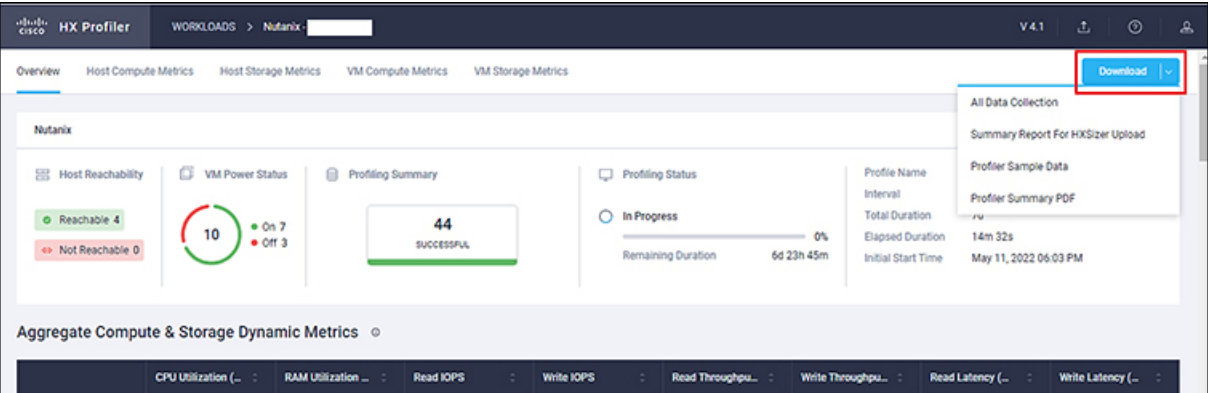
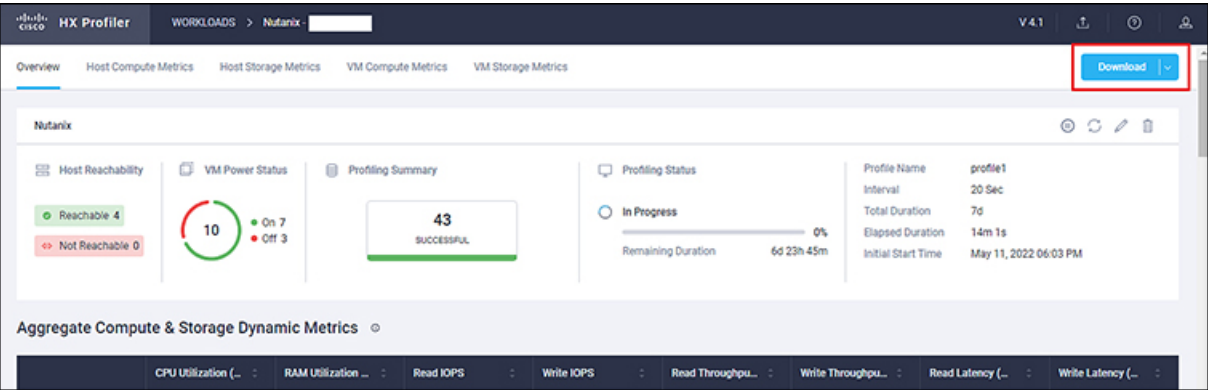
Step 2 Use the **Download** option to select one of the following:

Option	Description
All Data Collection	Downloads sizer summary, time series, and CVS for both the host and VM along with PDF report.
Summary Report for HxSizer Upload	The download provides the output in CSV format and can be directly uploaded to the Compute and Capacity Workload of HxSizer.
Profiler Sample Data	Downloads the sampled data for the selected profile in the following formats: <ul style="list-style-type: none"> • Summarize host data (CVS) • Summarize VM data (CVS) • Time series data of host (zipped CSV file) • Time series data of VM (zipped CSV file)
Profiler Summary PDF	PDF download



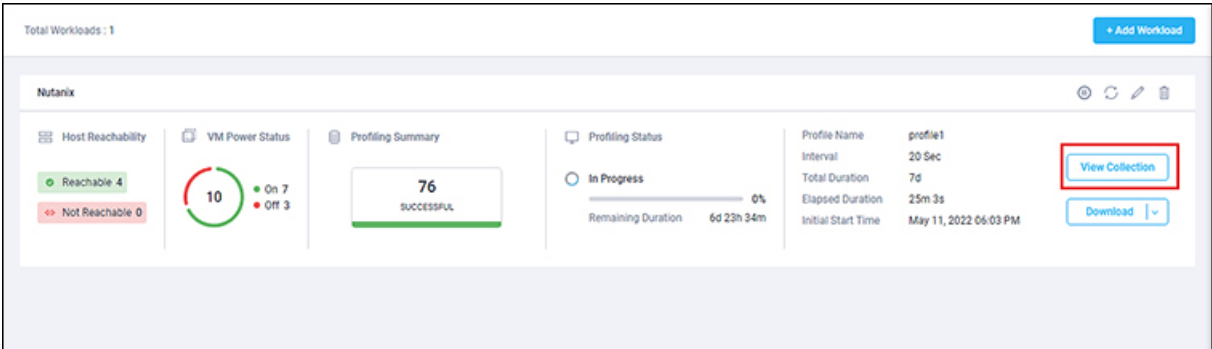
Step 3 You can still download the profiling results when viewing the compute, storage, and network data of various hosts and VMs by clicking on the **Download** button on the top right corner of the UI.

Viewing Data Collections from Nutanix AHV Server



Viewing Data Collections from Nutanix AHV Server

The View Collection page has five tabs at the top left of the page, Overview, Host Compute Metrics, Host Storage Metrics, VM Compute Metrics, VM Storage Metrics. When clicked, they show summary data described in his section. The View Collection page also provides the summarized data for Compute Summary and Storage Summary of individual host and VMs. You can also fetch the data for specific period of profiling using the predefined filter present on the top right corner of the page with the minimum being 30minutes or the user can also use the time line to select the time period. The following sections describe the summary data shown through filter tool use and in that shown in each tab and view.



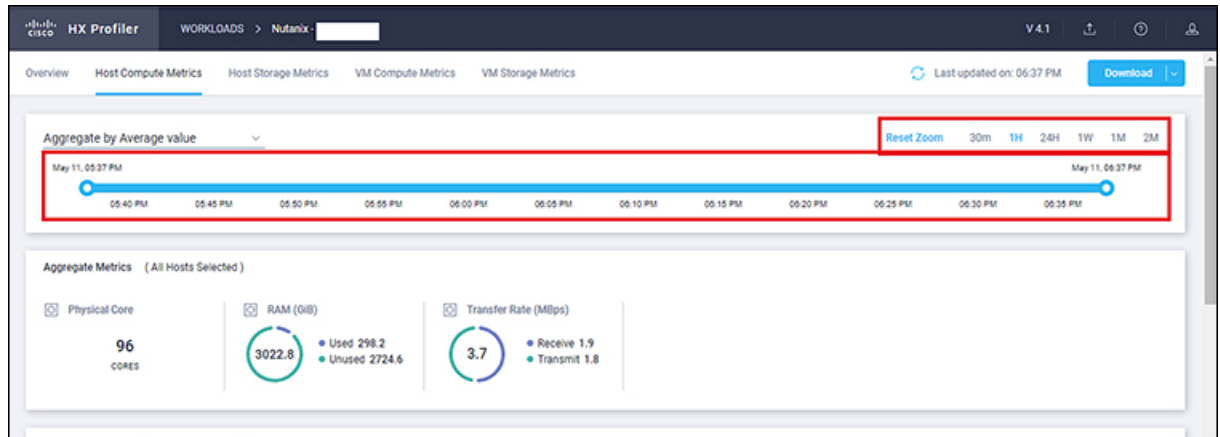
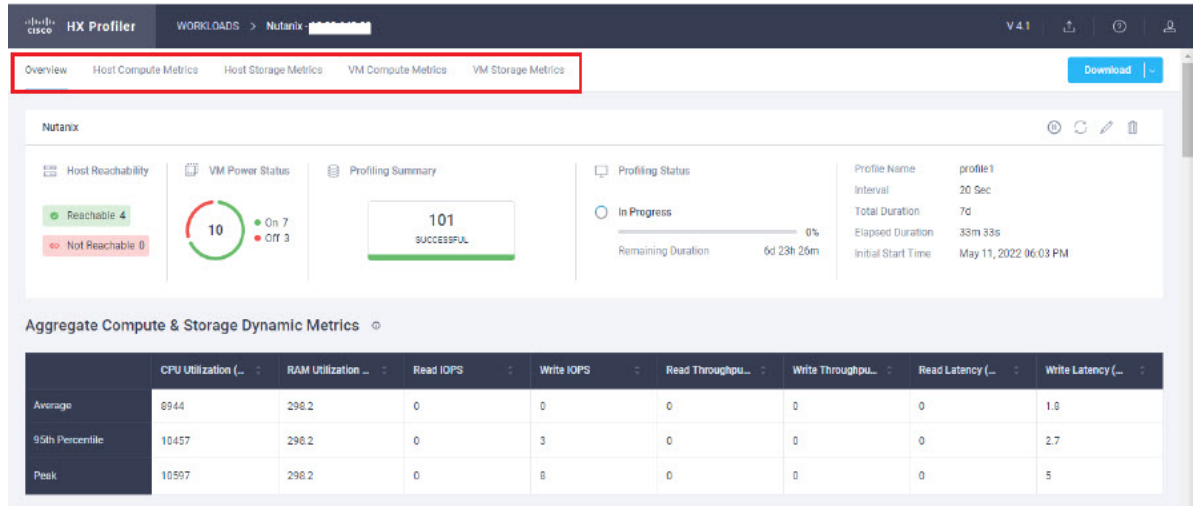
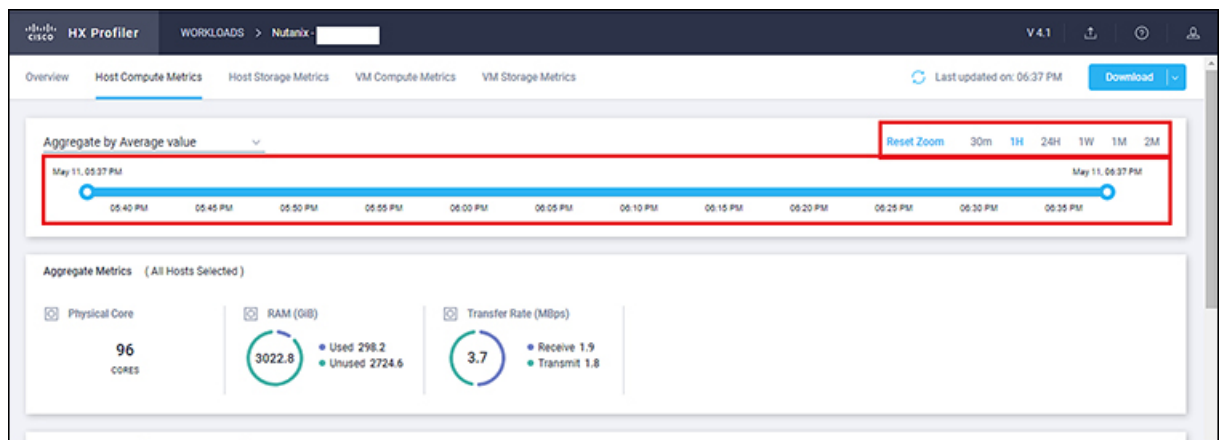
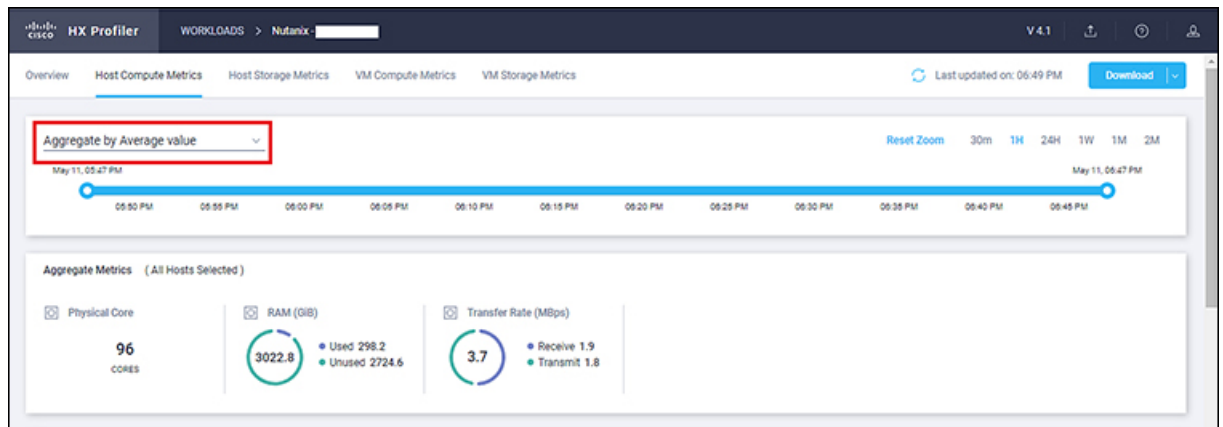


Table 3: Host View Filter Options

Item	Description
Aggregation	<p>Filters to view the summarizations based on peak or average selections. Your selection determines the display of the table metrics and trends. The summarized values represent the following:</p> <ul style="list-style-type: none"> • Peak: Peak value of all the metrics in the selected interval • Average: Averages of all the values in the selected interval

You can filter Host metrics using the search option by host name only. For VM metrics, you can filter either by the Host name to which the VM belongs or directly with the VM name, using the search option.



Host and VM Summarized Metrics

Based on your time period and parameters selections, the Profiler computes and populates the compute and storage metrics. Metrics display for the following values:

Host View Compute Table

- Host_Name
- Processor Type
- Clock (GHz)
- #Physical Cores
- CPU Util (%)
- RAM (GB)
- RAM Util (GB)
- Network Throughput- Rx (MBps)
- Network Throughput- Tx (MBps)

Host View Storage Table

- Provisioned Capacity (TB)

- Used Storage Capacity (TB)
- Read Throughput (MBps)
- Write Throughput (MBps)
- Read (%)
- Write (%)
- Read IOPS
- Write IOPS
- Read Latency (ms)
- Write Latency (ms)

VM View Compute Table

- Cores
- VM Name
- Status
- Host_Name
- CPU Util (%)
- RAM (GiB)
- RAM Util (GiB)
- Network Throughput- Rx (MBps)
- Network Throughput- Tx (MBps)

VM View Storage Table

- VM Name
- Host_Name
- Disk Capacity (GiB)
- Disk Used (GiB)
- Read Throughput (MBps)
- Write Throughput (MBps)
- Read (%)
- Write (%)
- Read IOPS
- Write IOPS
- Read Latency (ms)

- Write Latency (ms)

Host and VM Trends

The View Collection page provides trend charts and an overview of various parameters at a host level and VM level for both compute and storage parameters. The overview provides information aggregate storage and compute matrix. You can view the trend charts by selecting the host or the VM from the table.

Metrics for the following values display in the trend charts:

Host View Compute Trends

- CPU Utilization (%)
- RAM Utilization (GiB)
- Receive Rate (Mbps)
- Transmit Rate (Mbps)

VM View Compute Trends

- CPU Utilization (%)
- RAM Utilization (GB)
- Receive Rate (Mbps)
- Transmit Rate (Mbps)

Host and VM View Storage Trends

- Read Throughput (MBps)
- Write Throughput (MBps)
- Read Ratio
- Write Ratio
- Read IOPS
- Write IOPS
- Read Latency (ms)
- Write Latency (ms)

Viewing a Nutanix AHV Collection

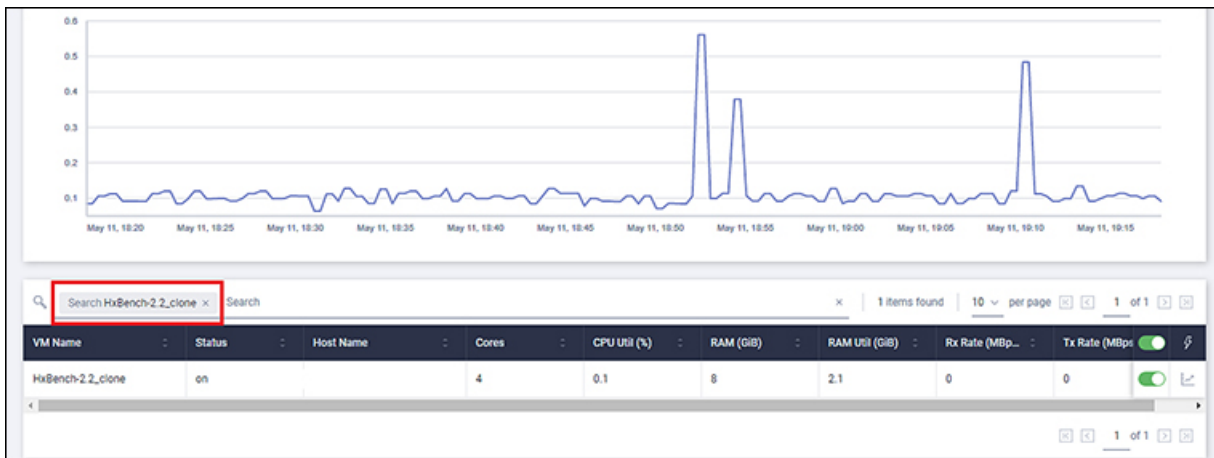
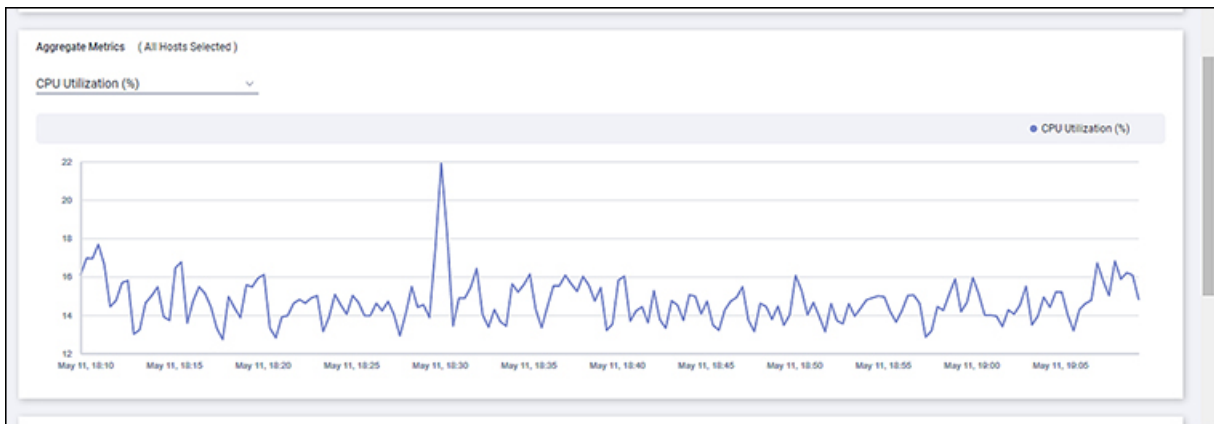
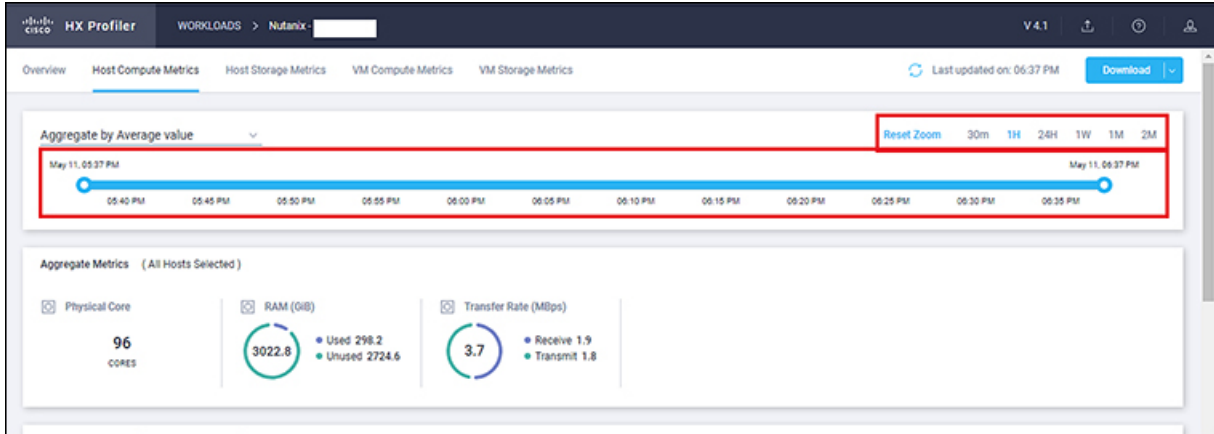
You can also use the filter tool or the filter and search tool in the Hosts and VM views to display only those hosts and VMs that you want to see.

Step 1 In the Datacenter Inventory page, click **View Collection** to browse through the collected data.

Step 2 In the View Collection page, select between **Host Compute Metrics**, **Host Storage Metrics**, **VM Compute Metrics** or **VM Storage Metrics**

Step 3 In the **Select VMs** tab, select or unselect the toggle switch for the VMs you want to view, then click **Next**. All VMs are selected by default.

Step 4 To view data for a different time period, select from the options in the top right corner with the default minimum value of 30 minutes. Use the time slider above the fixed time period selection to view data for a specific time range from the selected time period.



Upload 30-Days Sizing Summary Report

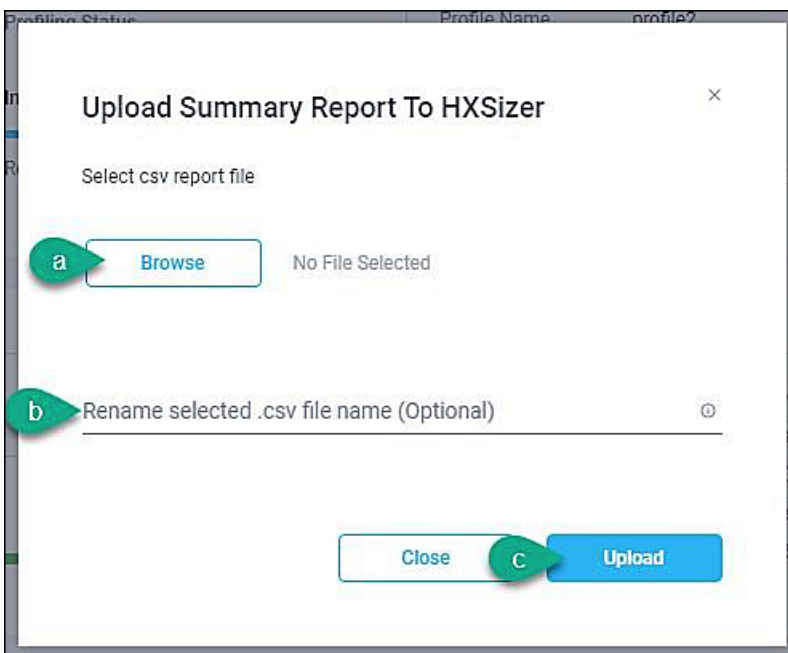
You can upload the 30-Days Sizing Summary Report to the HxSizer application from HxProfiler. When the report upload is successful, a reference number is generated. View the history of uploads along with the reference number from the HxProfiler application. In addition to identifying the report, the reference number may be used to claim the scenario from the HxSizer application.

Perform the following steps in the Cisco HX Profiler dashboard to upload the 30-Days Sizing Summary report:

- Step 1** Click the **Upload** icon on the HX Profiler ribbon and select **Upload To HXSizer**. The **Upload Summary Report To HXSizer** window appears.

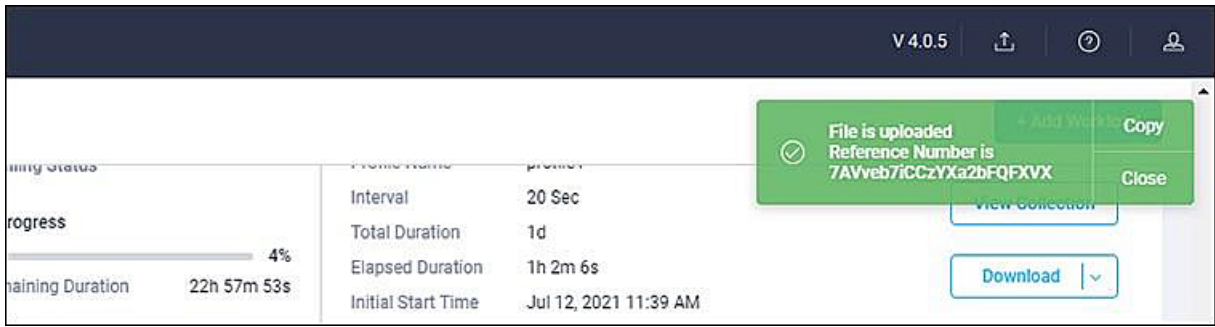


- Step 2** Click the **Browse** button to navigate to the local .csv file that needs to be uploaded to the HXSizer portal.



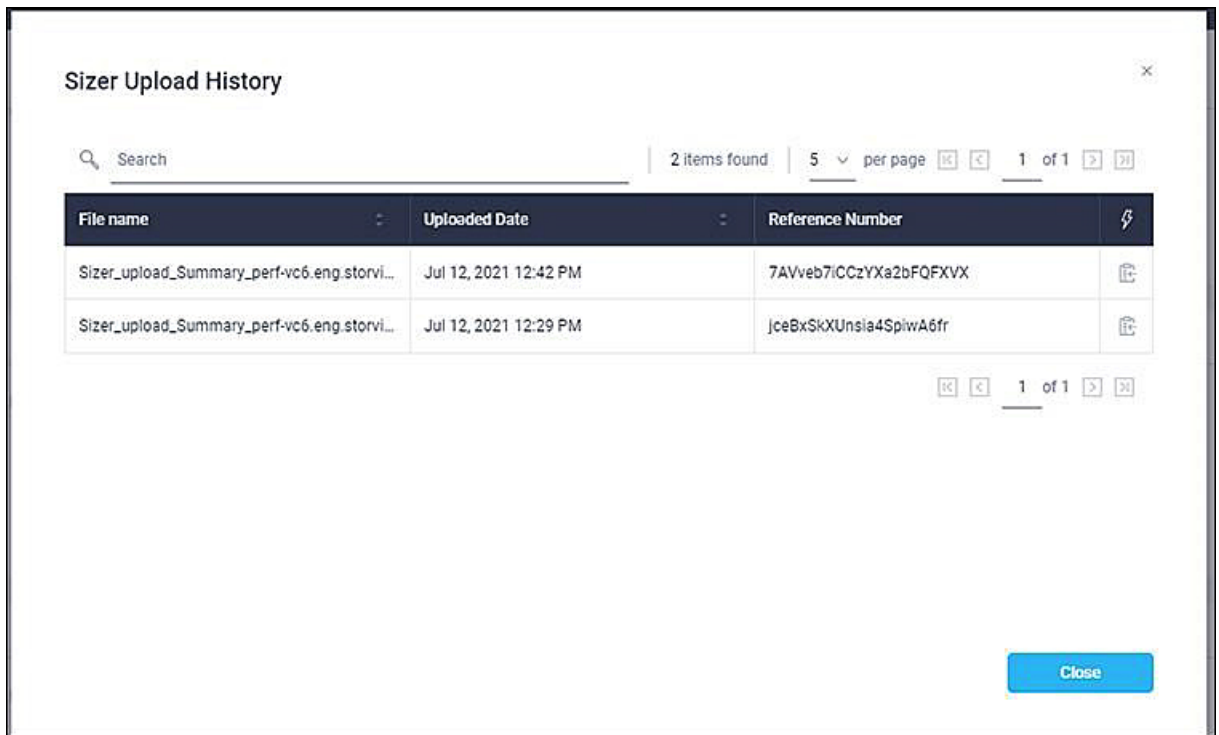
- Select the desired .csv file.
- (Optional) To modify the csv file name, type a new name in the **Rename selected .csv file name** field.
- Click **Upload**.

A reference number indicates a successful upload. Use the **Copy** button to copy the reference number and use it to claim the scenario in the HXSizer application.



Step 3 (Optional) View Upload History

- a) Click the **Upload** icon on the HX Profiler ribbon and select **Upload History** to view the list of 30-Days sizing summary .csv files that have been uploaded to the sizer application from profiler.





CHAPTER 5

Monitoring Approach

- [Download Quick Profile \(30-Days\) Nutanix AHV Host Summary Statistics and Data](#) , on page 27
- [Profiler Data Collection Architecture](#), on page 27
- [Performing Profiler Clean-up](#), on page 28

Download Quick Profile (30-Days) Nutanix AHV Host Summary Statistics and Data

You can download the Quick Profile (30-days) Nutanix AHV Host Summary statistics/data report from the Profiler Home page > **Download Results** option. To use this monitoring option, see [Downloading Nutanix AHV Profiling Results, on page 17](#) for Nutanix AHV.

Report characteristics:

- Includes VM/host level compute and storage capacity metrics
- Does not include deep storage or compute metrics or metrics for individual VMs
- Data downloads in CSV format and can be uploaded to the Compute and Capacity workload in the Hx Sizer tool

Profiler Data Collection Architecture

Understanding the Nutanix AHV Profiler Data Collection Architecture

The Profiler connects to Nutanix AHV server using the root admin credentials.

Architecture characteristics:

- The Profiler directly collects the Nutanix AHV Inventory information (Hosts, VMs, and basic metrics) and the compute metrics from Nutanix REST API itself.
- The Profiler also collects deep storage metrics for each VM and aggregates these metrics at a host-level.

Performing Profiler Clean-up

Performing Nutanix AHV Profiler VM Clean-up

After you complete your profiling activities, follow the best practice of performing the Profiler VM clean-up to achieve a thorough shutdown and exit of the Profiler.

-
- Step 1** Download the profiled data with the following steps:
- Launch the Profiler application.
 - Download the data (CSV format) from the Home page. See [Downloading Nutanix AHV Profiling Results, on page 17](#).
 - Save the CSV for further analysis.
- Step 2** To stop the Profiler Service, run the following commands:
- sudo service hxpmonitor stop**
 - sudo service hxpcontroller stop**
- Step 3** Shut down the VM.
- Step 4** Delete the VM if it is no longer required to profile the data for the environment.
-



CHAPTER 6

Troubleshooting

- [Troubleshooting, on page 29](#)

Troubleshooting

Troubleshooting Section for Nutanix AHV

1. If the selected hosts are not reachable, then perform the following steps:
 - Check the connection status of the hosts in Nutanix.
 - Make sure all the selected hosts connection status is **Connected**.
2. If you forgot the Profiler VM password, then perform the following step:
 - Delete the old deployed machine and redeploy the new one.

