Manage and monitor Keystone subscriptions

Keystone

NetApp
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Manage and monitor Keystone subscriptions

Understand the Keystone dashboard

Learn about the Keystone dashboard

The Keystone dashboard is your go-to solution for efficiently monitoring, analyzing, and managing your Keystone subscriptions. Through the Keystone dashboard, you can achieve the following goals:

- **Monitor subscription details**: View detailed information about your Keystone subscriptions, including performance service levels, capacity usage, assets, and alerts.
- **Track capacity usage and generate reports**: Keep track of current and historical capacity usage, and generate reports to analyze subscription data and make informed decisions.
- **View subscription timeline**: Stay informed about key dates and events by monitoring the timeline of your subscriptions.
- **Manage subscriptions**: Submit requests to modify performance service levels or other subscription parameters as your needs change.
- **Analyze volumes and objects**: Gain detailed insights into the volumes and objects of your subscriptions, including their capacity at both the volume and object levels.

Access the Keystone dashboard

You can access the Keystone dashboard through:

- **NetApp Console**: Access the dashboard from **Storage > Keystone > Overview** in the Console. To learn more, refer to Keystone dashboard in NetApp Console.
- **Active IQ Digital Advisor** (also known as Digital Advisor): Access the dashboard from **General > Keystone Subscriptions** in Digital Advisor. To learn more, refer to Keystone dashboard in Digital Advisor.

About NetApp Console

Keystone is accessible through the NetApp Console.

The NetApp Console provides centralized management of NetApp storage and data services across on-premises and cloud environments at enterprise scale. The Console is required to access and use NetApp data services. As a management interface, it enables you to manage many storage resources from one interface. Console administrators can control access to storage and services for all systems within the enterprise.

You don’t need a license or subscription to start using the Console and you only incur charges when you need to deploy Console agents in your cloud to ensure connectivity to your storage systems or NetApp data services. However, some NetApp data services accessible from the Console are licensed or subscription-based.

Learn more about the NetApp Console.

Note the following:

- While the Console and Digital Advisor offer some exclusive features, the Console provides administrative functionality for Keystone, allowing you to manage subscriptions and make necessary adjustments. To

learn more, refer to Keystone access roles in NetApp Console.

- Digital Advisor is integrated with the Console, allowing you to access all Digital Advisor features, including the Keystone dashboard, directly from the Console. To learn more, refer to Digital Advisor integration with NetApp Console.

Keystone features in NetApp Console and Digital Advisor

The following table shows the availability of features in the NetApp Console and Digital Advisor, helping you quickly identify the right platform for your needs:

Feature	NetApp Console	Digital Advisor
View your subscription details	Yes	Yes
Monitor current and historical capacity usage	Yes	Yes
Track subscription timeline	Yes	No
View assets associated with a Keystone subscription	Yes	Yes
View assets across multiple Keystone subscriptions	Yes	No
View and manage alerts and monitors	Yes	No
Generate reports	Yes	Yes
View volumes and objects details	Yes	Yes
View MetroCluster consumption and health	Yes (includes health status, topology view, and sync monitoring)	Yes (consumption data only)
View performance metrics	No	Yes

Related information

- Get started with the Keystone dashboard
- Keystone dashboard in NetApp Console
- Keystone dashboard in Digital Advisor

Get started with the Keystone dashboard

You can access the Keystone dashboard through the NetApp Console or Digital Advisor after subscribing to NetApp Keystone services.

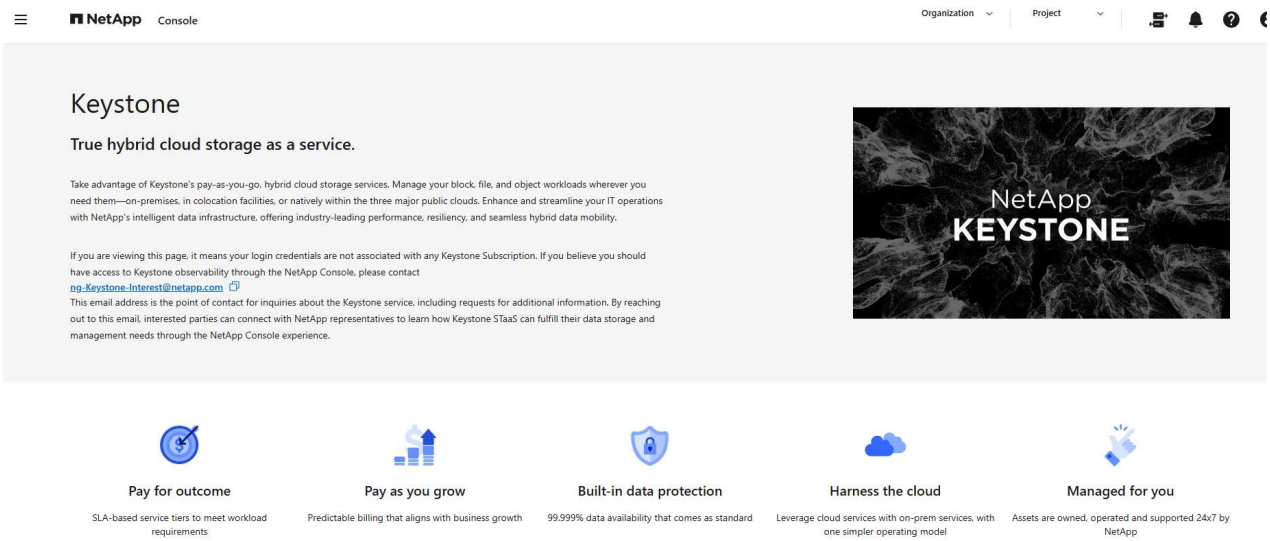
NetApp Console

Log in to the Console using your NetApp Support Site credentials or sign up for a NetApp cloud login using your email and a password. For details, see logging in to the Console.

Steps

1. Log in to the Console.
2. From the Console left navigation menu, select **Storage > Keystone**.

   The Keystone dashboard appears.



> Contact NetApp Keystone support if your login credentials are not linked to any Keystone subscriptions.

Digital Advisor

The Digital Advisor dashboard enables you to view the details of your Keystone subscriptions. To log in to Digital Advisor, you can use your NetApp Support Site credentials.

Steps

1. Open a web browser, and go to the Digital Advisor login page.
2. Provide your username and password and click **Sign In**.

   You can view the details of your subscription and usage, and see a summary of capacity usage against your purchased Keystone services, on the **Keystone Subscriptions** widget in the Digital Advisor dashboard. To learn more about the **Keystone Subscriptions** widget, refer to Keystone dashboard in Digital Advisor.

Related information

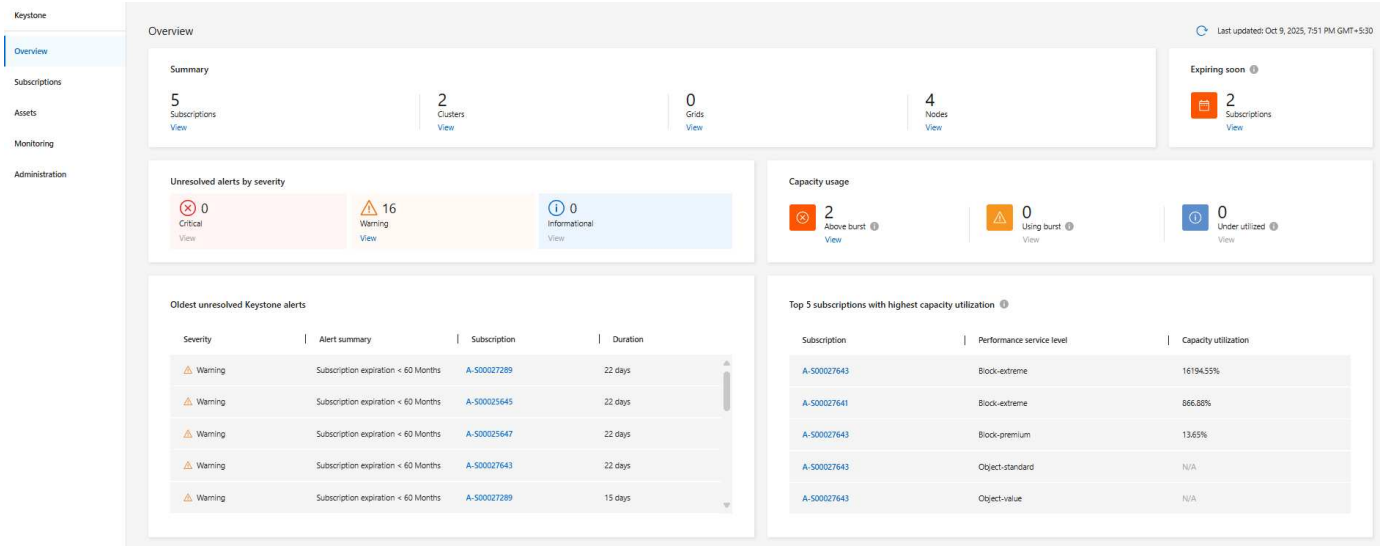
- Keystone dashboard in NetApp Console
- Keystone dashboard in Digital Advisor

- View your subscription details

Keystone dashboard in NetApp Console

You can use the **Overview** page to quickly determine the workloads at risk, view the capacity and expiry status of subscriptions, identify the unresolved alerts, and view the subscriptions with the highest capacity utilization. You can also view the status of your subscriptions across different versions of Keystone, highlighting any issues that need your attention.

To view the **Overview** page, from the Console left navigation menu, go to **Storage > Keystone > Overview**.



The **Overview** page offers the following insights:

- **Summary**: Displays the total number of subscriptions, ONTAP clusters, StorageGRID nodes, and ONTAP nodes. Each category has a **View** button to easily navigate to detailed sections on the **Subscriptions** or **Assets** tab.
- **Expiring soon**: The number of subscriptions expiring within 6 months. Click **View** to see these subscriptions in the **Subscriptions** tab.
- **Open requests**: The total number of open service requests.
- **Unresolved alerts by severity**: Lists the total unresolved alerts based on severity—Critical, Warning, and Informational. Each category includes a **View** button to review details and take further action.
- **Capacity usage**: The capacity consumption status for subscriptions that are above burst, using burst, and underutilized. Each category includes a **View** button to navigate to the **Subscriptions** tab with relevant filters applied.
- **Oldest unresolved Keystone alerts**: Displays a table of the oldest critical unresolved alerts across subscriptions.
- **Top 5 subscriptions with highest capacity utilization**: Displays a table of the top five Keystone subscriptions with the highest percentage of capacity utilization. You can click the subscription number from the **Subscription** column to get detailed insights.

Related information

- Learn about the Keystone dashboard
- Get started with the Keystone dashboard
- Keystone dashboard in Digital Advisor
- View your subscription details
- View your current consumption details
- View consumption trends

Keystone dashboard in Digital Advisor

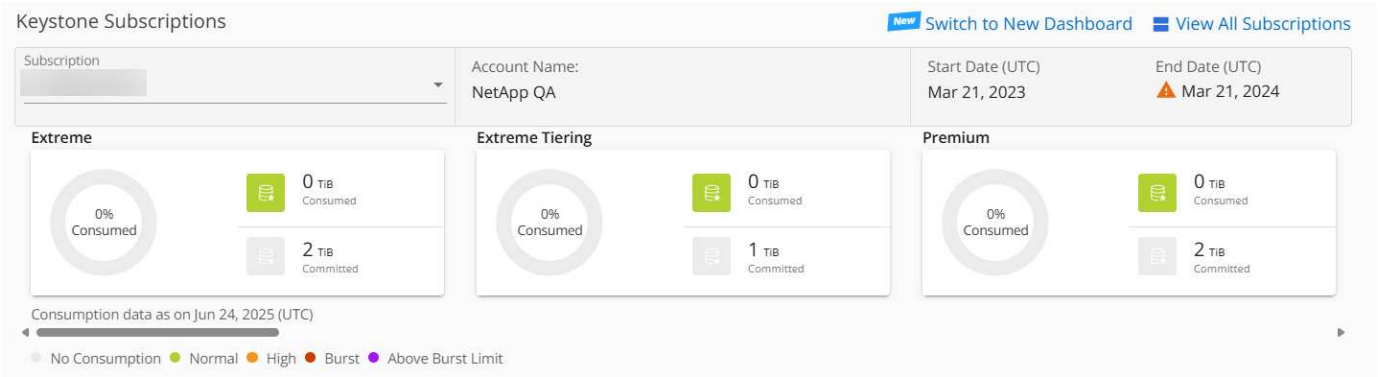
As a NetApp Keystone STaaS subscriber, you can get an overview of your subscriptions on the **Keystone Subscriptions** widget of the Digital Advisor dashboard.

You can search for a specific Keystone subscription by entering the first three characters of a customer or watchlist name, or the Keystone subscription number. For information about how to search Keystone STaaS subscriptions by watchlists, see Search by using Keystone watchlists.

Digital Advisor offers a unified dashboard that gives insights into various levels of your subscription data and usage information through the **Switch to old/new dashboard** button.

Default (old) dashboard

You can see your customer name and subscription number, account name, start and end dates of the subscription, and the capacity usage graphs as per your subscribed performance service levels. You can see the collection timestamp of the consumption data in UTC time.

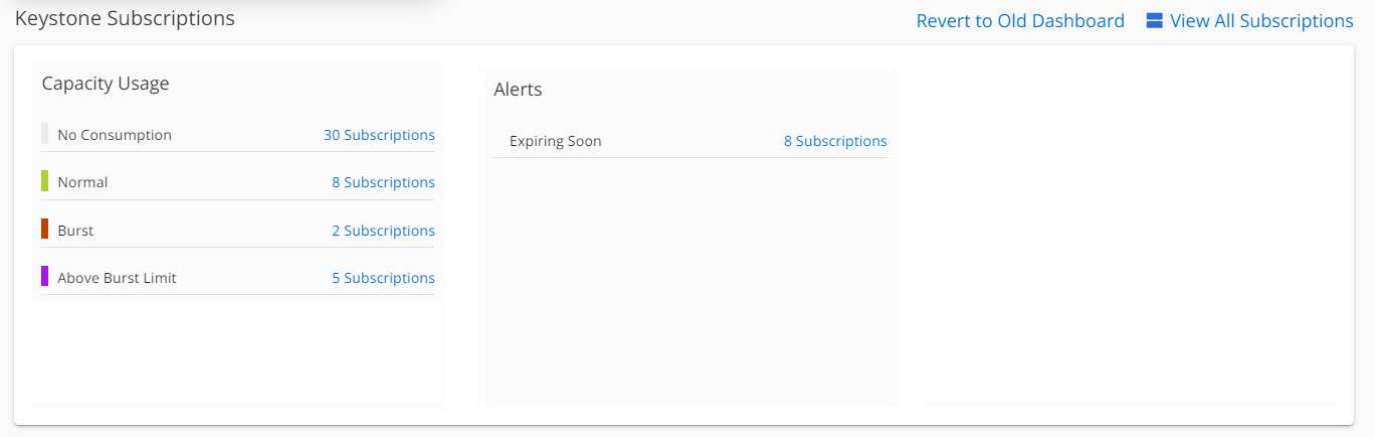


Alternative (new) dashboard

You can see the breakup of the capacity usage as per your subscriptions, and warnings and alerts that require immediate attention or action. The information appears selectively, depending on your subscriptions and the status of your usage. You can view this information:

- **Capacity usage**: Consumption data such as no usage, consumption exceeding 80% of the committed capacity, burst usage, and consumption above the burst capacity.
- **Alerts**: You see alerts for various scenarios if they are applicable to you.

Click the **Subscriptions** link to view the list of filtered subscriptions in the **Subscriptions** tab.



You can click **View All Subscriptions** to view the usage details and alerts on your volumes on the **Keystone Subscriptions** page.

The details of the subscriptions, usage charts for each performance service level, and volume details are displayed in the different tabs on the **Keystone Subscriptions** screen.

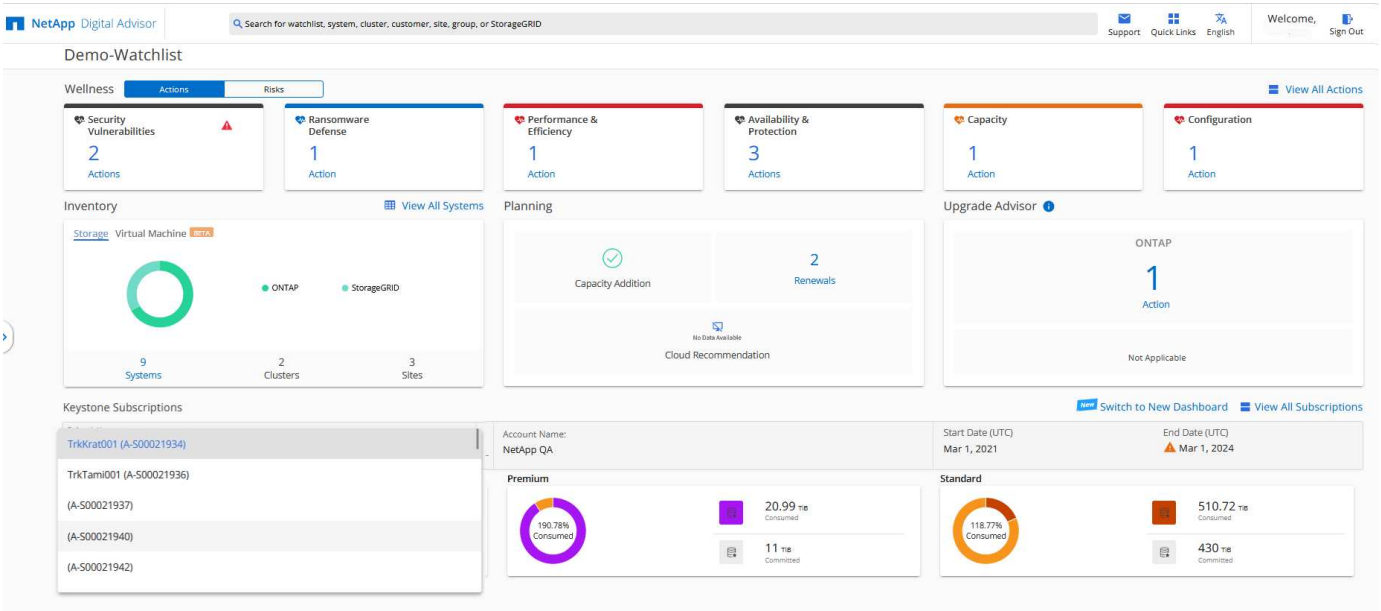
> Capacity consumption in Keystone subscriptions is displayed in TiBs on the dashboards and reports, and is rounded off to two decimal places. If the usage is less than 0.01 TiB, then the value is shown as 0 or No Usage. The data on these screens is displayed in UTC time (server timezone). When you enter a date for query, it is automatically considered to be in UTC time. To learn more about usage metrics, refer to Metrics measurement. For information about different capacities used in Keystone, see Supported storage capacities.

Search by Keystone watchlists

Watchlist is a feature available in Digital Advisor. For information, see Understand watchlist. For information about creating watchlists, see Create a watchlist.

You can create watchlists for customers or subscription numbers and search for a Keystone subscription using the first three characters of a subscription number or watchlist name on the Digital Advisor screen. When you search by a watchlist name, you can view the customers and their subscriptions in the **Subscription** drop-down list on the **Keystone Subscriptions** widget.

> A search by watchlists retrieves the list of subscriptions on the old dashboard. If a watchlist consists of subscription numbers, only the **Keystone Subscriptions** widget is displayed on the Digital Advisor dashboard.



Related information

- Get started with Keystone dashboard
- Keystone dashboard in NetApp Console
- View your subscription details
- View your current consumption details
- View consumption trends

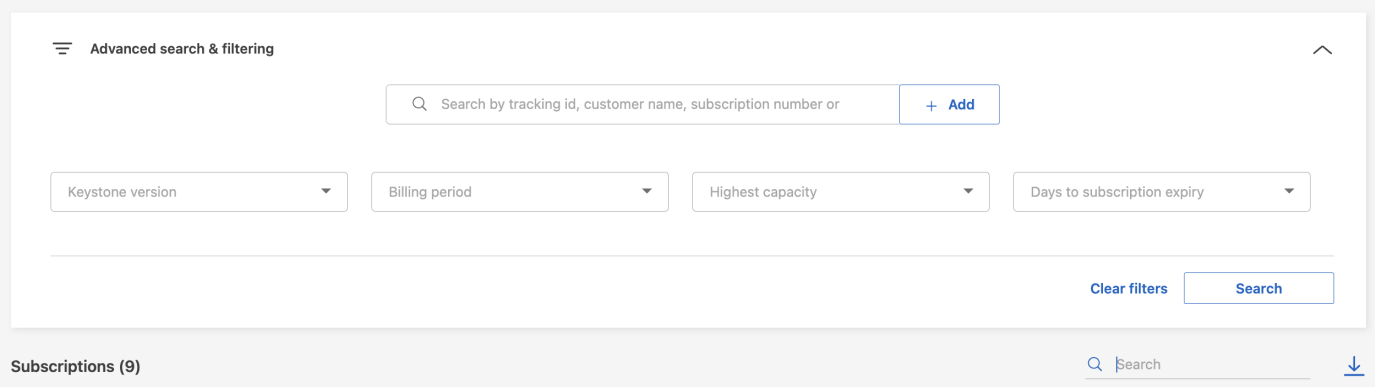
Search Keystone data, generate reports, and view alerts

You can search and filter your data, generate reports for subscriptions and usage, and view alerts to stay informed about your storage environment.

Search and filter data from NetApp Console

In the Console, you can search and filter Keystone data based on the column parameters available in the table within a tab. For example, in the **Subscriptions** tab under the **Subscriptions** page, you can filter data by entering the Keystone version in the search box. Similarly, in the **Volumes in clusters** tab under the **Assets** page, you can filter volumes by entering volume name in the search box.

You can refine your searches by using the advanced filter option where available. For example, in the **Subscriptions** tab, you can filter data by Keystone version, billing period, highest capacity, and days to subscription expiry, and in the **Volumes in clusters** tab, you can filter by volume name, cluster name, volume type, and more. Multiple filters can be applied simultaneously to narrow down your results with precision.



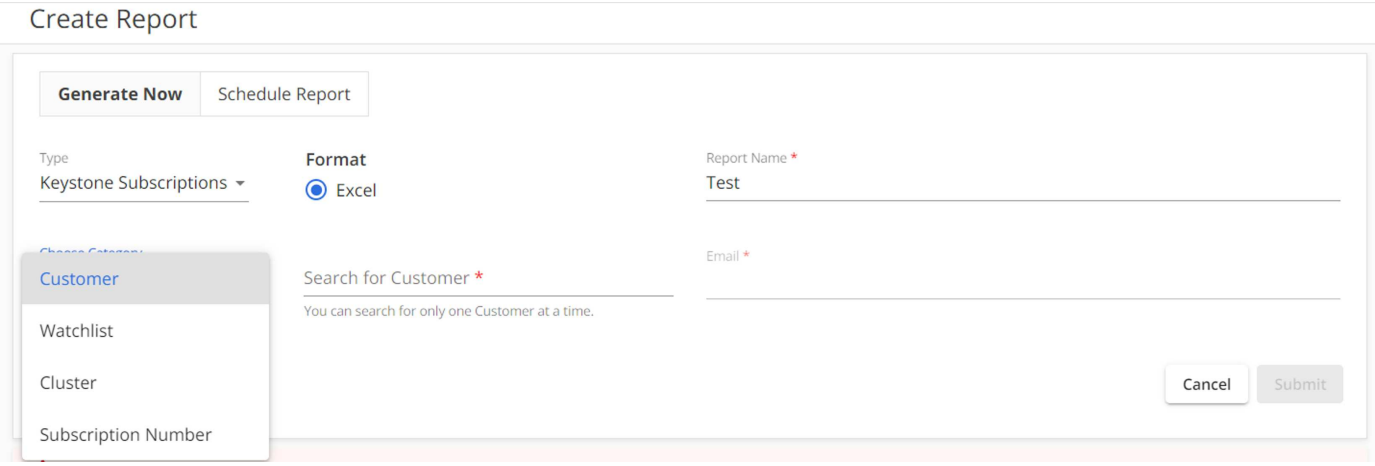
Generate reports from NetApp Console or Digital Advisor

You can generate and view reports for your Keystone data using the download button available in tabs within the Console or Digital Advisor. These tabs allow you to generate reports for your subscriptions, historical usage, burst usage, performance, assets, volumes and objects.

The details are generated in CSV format that you can save for future use and comparison.

Generate consolidated report from Digital Advisor

In Digital Advisor, you can generate and view a consolidated report for your subscriptions, historical usage, burst usage, performance, assets, and volumes and objects. To do this, select **Keystone Subscriptions** as the report type from the Report feature in Digital Advisor. You can generate these reports at the customer, cluster, watchlist, or subscription level.



The report is generated in Excel format, with each type of information, such as subscription details or usage history, displayed on separate sheets. These sheets are named according to the tabs on the **Keystone Subscriptions** page for easy viewing. You can save the report for future use.

To learn more about generating reports, refer to Generate custom reports.

View subscription insights

View details about your Keystone subscriptions

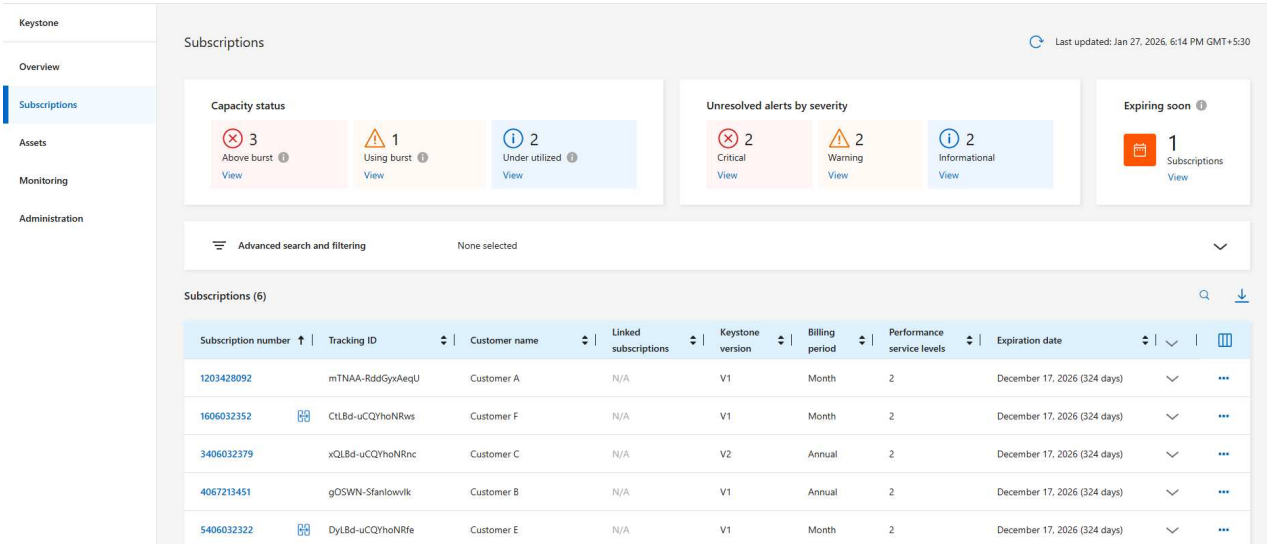
You can view a list of all your subscriptions from **Subscriptions** in the NetApp Console and Digital Advisor. This view provides easy-to-understand insights based on your subscription status and usage, helping you stay informed and take action when needed.

NetApp Console

To view detailed information for your subscriptions, follow these steps:

Steps

1. From the Console left navigation menu, select **Storage > Keystone > Subscriptions**.



You see the key metrics such as capacity usage, subscription expiry status, and unresolved alerts.

You can see the following details from the table:

- **Subscription number**: The subscription number of the Keystone subscription assigned by NetApp. Subscriptions with the icon are MetroCluster subscriptions. To learn more about MetroCluster subscriptions, refer to View consumption and health of your Keystone MetroCluster subscriptions.
- **Tracking ID**: The tracking ID assigned at the time of subscription activation. This is a unique ID for each subscription and site, used for tracking the subscription.
- **Customer name**: The name of the customer associated with the Keystone subscription.
- **Linked subscriptions**: If you have any secondary subscriptions linked to your primary subscription, this column lists the linked subscription numbers for the primary subscription. This subscription number can be of your primary or secondary (linked) subscription.
- **Keystone version**: The version of the Keystone service that is being used for the subscription. The rate plan rules for performance service levels may differ between subscription versions. To learn more about version v1, refer to Keystone subscription services | Version 1 documentation.
- **Usage type**: You might have subscribed to multiple Keystone versions. The rate plan rules for performance service levels may differ between subscription versions. By looking at the value in this column, you know whether the usage type is billed as per the provisioned, physical, or logical usage. To learn more about version 1, refer to Keystone subscription services | Version 1 documentation.
- **Billing period**: The invoicing period of the subscription.
- **Performance service levels**: The number of rate plans associated with the subscription, with each rate plan corresponding to a specific performance service level and committed capacity.
- **Highest capacity**: The maximum capacity consumed within the subscription.

- **Days to subscription expiry**: The number of days remaining until the subscription expires.

You can click the down arrow in the table header to expand all subscriptions and view the performance service levels information for each subscription simultaneously. This shows detailed capacity information including current usage, committed capacity, provisioned capacity, burst capacity, and available capacity for all subscriptions. Alternatively, you can click the down arrow next to the **Expiration date** column in individual subscription rows to expand them one at a time.

You can customize the columns displayed in the table using the column selector icon. For certain fields and columns, you might see information or warning icons and tooltips that provide you with additional information about the data.

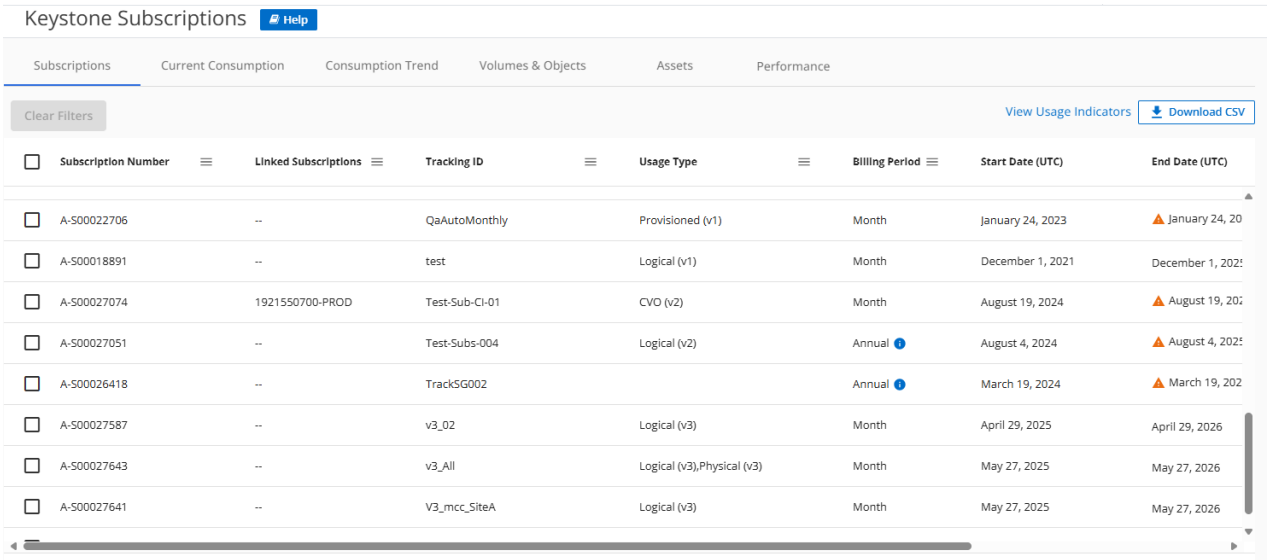
Digital Advisor

To view your subscriptions in Digital Advisor, follow these steps:

Steps

1. From the Digital Advisor left navigation pane, go to **General > Keystone Subscriptions > Subscriptions**.

   You can view all your subscriptions here, with detailed insights for each one.



   For certain fields and columns, you might see information or warning icons and tooltips that provide you with additional information about the data.

   - **Subscription Number**: The subscription number of the Keystone subscription assigned by NetApp.
   - **Linked Subscriptions**: This column is optionally available to you. If you have any secondary subscriptions linked to your primary subscription, this column lists the linked subscription numbers for the primary subscription. This subscription number can be of your primary or secondary (linked) subscription.
   - **Tracking ID**: The tracking ID assigned at the time of subscription activation. This is a unique ID for each subscription and site.

- **Usage Type**: You might have subscribed to multiple Keystone versions. The rate plan rules for performance service levels may differ between subscription versions. By looking at the value in this column, you know whether the usage type is billed as per the provisioned, physical, or logical usage. To learn more about version 1, refer to Keystone subscription services | Version 1 documentation.
- **Billing Period**: The invoicing period of the subscription.
- **Start Date**: The start date of the subscription.
- **End Date**: The end date of the subscription. If you have a monthly-billable subscription that renews automatically every month, you see `Month-on-month` instead of the end date. Based on this date, you might see notifications for subscriptions that are about to end or have auto-renewal policies attached.
- **Usage Status**: Displays the usage indicator to indicate whether the consumption is within or exceeding the subscription limit. You can sort the list by this column if you want to view the highest consumption records.
- : Clicking this icon for a subscription opens the **Current Consumption** tab with the usage details of that subscription.
- : Clicking this icon opens the **Consumption Trend** tab where you can see the historical usage data for each performance service level included in this subscription.

  You can refer to the usage indicators to check the usage status of each subscription:

  No consumption: No capacity usage recorded against the committed capacity of the performance service level.

  Normal: The consumption is normal.

  High: Maximum consumption, that is the usage is about to reach 100% or more of the committed capacity.

  Burst: The consumption is within the burst limit. The burst consumption is the consumption that tops the 100% committed capacity of a performance service level, and is within the agreed-upon burst usage limit.

  Above burst limit: Indicates consumption above the agreed-upon burst limit.

Related information

- Understand the Keystone dashboard
- View your current consumption details
- View consumption trends
- View your subscription timeline
- View your Keystone subscription assets
- View assets across your Keystone subscriptions

- View and manage alerts and monitors
- View volumes & objects details

View the current consumption of your Keystone subscriptions

You can gain insights into your subscription usage by viewing detailed information such as committed capacity, consumed capacity, and available capacity, with the current consumption status displayed and segregated by performance service levels.

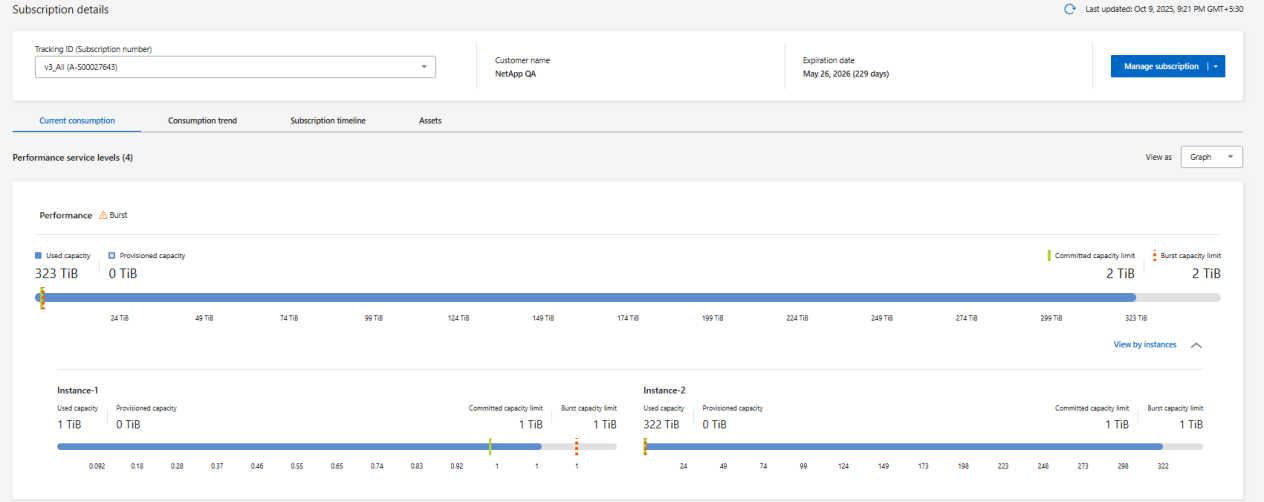
To view the current consumption status of your subscriptions through the NetApp Console or Digital Advisor, follow these steps:

NetApp Console

Steps

1. From the Console left navigation menu, select **Storage > Keystone > Subscriptions**.
2. Select the subscription number in the **Subscription number** column of the table to view the current consumption.

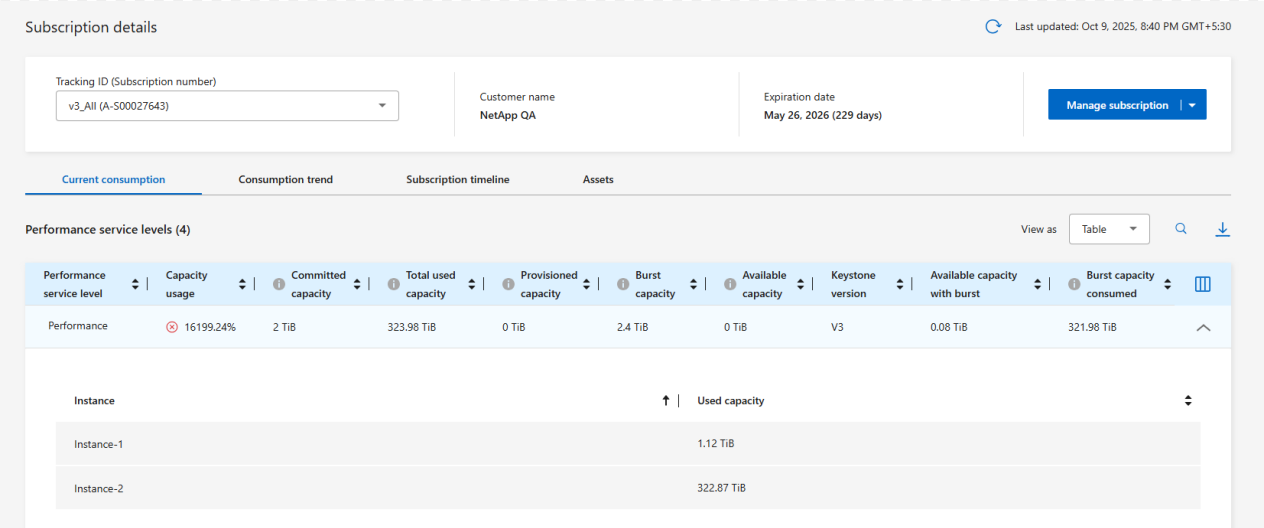
   You are redirected to the **Current consumption** tab.



For the selected subscription, you can view consumption details in either table or graphical format using the **Table** or **Graph** option from the **View as** dropdown. In the graphical view, you can see the current consumption per performance service level, including used capacity, provisioned capacity, committed capacity limit, and burst capacity limit.

If a performance service level has multiple instances, you can expand **View by instances** in either view to see current consumption details for each instance separately. For example, if you have two instances of the Extreme performance service level within a subscription, each instance will display its own committed, consumed, and available capacities separately.

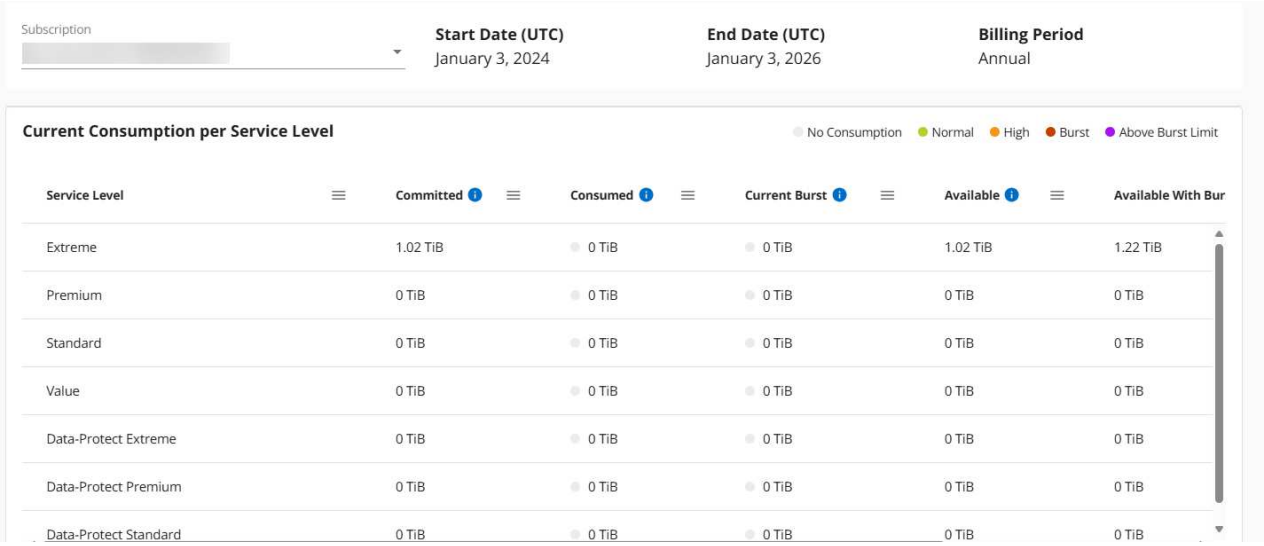
In the table view, you can see details like maximum capacity consumed and days remaining until expiration. As part of monitoring your subscription usage, you can view the performance service level name, capacity usage, committed and used capacities, provisioned and burst capacities, available capacity, and volumes. You can customize the table using the column selector icon.



Digital Advisor

Steps

1. From the Digital Advisor left navigation pane, go to **General > Keystone Subscriptions > Current Consumption**.
2. Select or search the required subscription number from the **Subscription** dropdown list.



For the selected subscription, you can view details, such as the start and end dates of the subscription, and the billing period, such as monthly or annual. As a part of the subscription usage, you can view the performance service level name, committed, consumed, available capacities, and current and accrued burst usage (in TiB). Specific performance service levels that record higher consumption are highlighted. You can also view warnings and alerts generated for your volumes.

If a performance service level has multiple instances, you can select the **Instances** tab to see current consumption details for each instance. For example, if you have two instances of the Extreme performance service level within a subscription, each instance will display its own committed, consumed, and available capacities separately. To learn more about the performance service levels, see Performance service levels in Keystone.

Coupled with the current consumption, you might want to view the historical usage data for comparison. Click the **View Historical Data** button to navigate to the **Consumption Trend** tab to view the historical data for the same subscription.

For information about your Keystone storage services and the relevant performance service levels, see Performance service levels in Keystone.

Related information

- Understand the Keystone dashboard
- View your subscription details
- View consumption trends
- View your subscription timeline
- View your Keystone subscription assets
- View assets across your Keystone subscriptions
- View and manage alerts and monitors
- View volumes & objects details

View consumption trends of your Keystone subscriptions

You can monitor your subscription usage by viewing historical data of your Keystone subscriptions for a specific period of time. This allows you to gain valuable insights into your usage patterns.

You can view historical data of your Keystone subscriptions through the NetApp Console or Digital Advisor:

NetApp Console

Steps

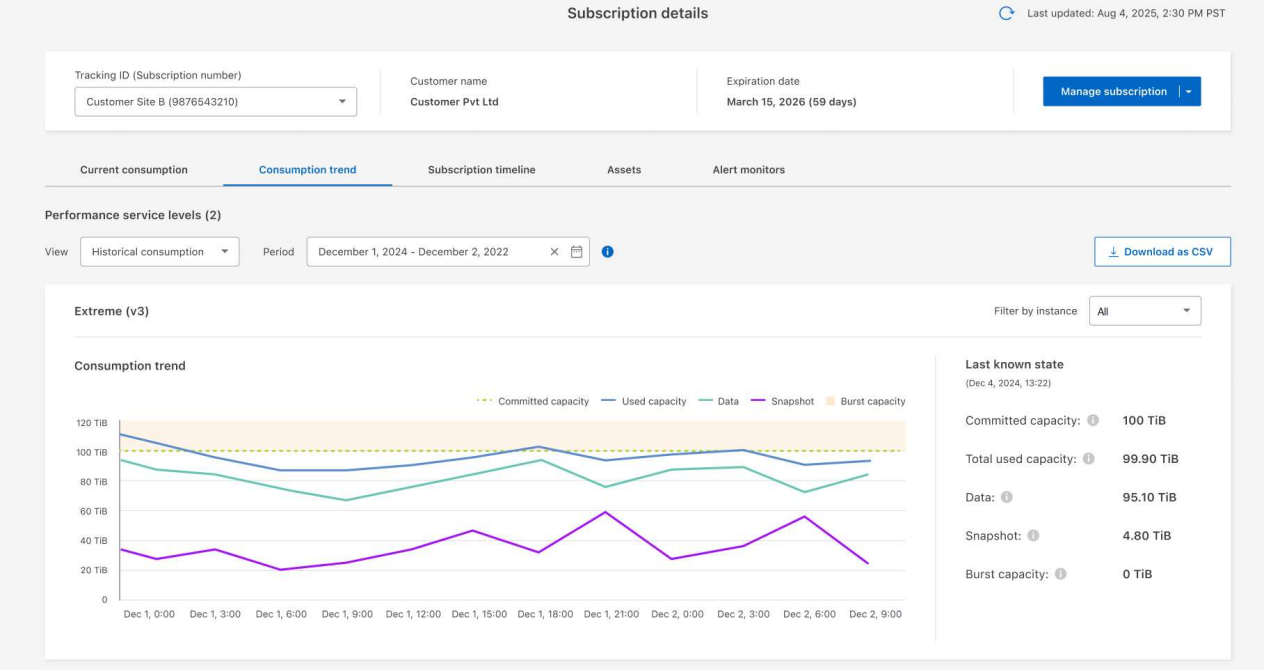
1. From the Console left navigation menu, select **Storage > Keystone > Subscriptions**.
2. Select the subscription number in the **Subscription number** column.

   You are redirected to the **Current consumption** tab.

3. Select the **Consumption trend** tab.
4. Select **Historical consumption** from the **View** dropdown and choose the time range using the calendar icon in the **Period** field to analyze capacity usage trends.

   The historical consumption data for each performance service level is displayed in a line graph based on the selected time range. If a Keystone subscription is modified or renewed, you can set the start date to a previous date to view past consumption data.

   You can select **Accrued burst** from the **View** dropdown if you want to view the historical burst usage data for which invoices have been generated. You can use this data to analyze the billed usage reflected in your invoice. To learn more, refer to View accrued burst.



The line graph displays historical consumption data and allows users to analyze trends over a selected date range. The graph shows metrics such as used capacity (total storage capacity, including both data and snapshot data), data (storage capacity used by user data), and snapshot (storage capacity used by snapshot data), along with committed and burst capacity. The date and time of each data point are displayed at the bottom of the graph. Based on the date range of your query, the usage charts show up to 30 data collection points. You can hover your mouse cursor over the graph to view the usage breakdown at each data collection point.

If a performance service level has multiple instances, you can filter by instance to view historical data for each one separately.

You can also view a summary of current consumption alongside historical consumption to get a clear understanding of your usage.

Digital Advisor

Steps

1. Click **General > Keystone Subscriptions > Consumption Trend**.
2. Select the required subscription for which you want to view the details. The first subscription in your account name is selected by default.
3. Select **Consumption Trend** if you want to view the historical data and analyze the capacity usage trend.

   You can select **Invoiced Accrued Burst** if you want to view the historical burst usage data for which invoices have been generated. You can use this data to analyze the billed usage reflected in your invoice. To learn more, refer to View accrued burst.

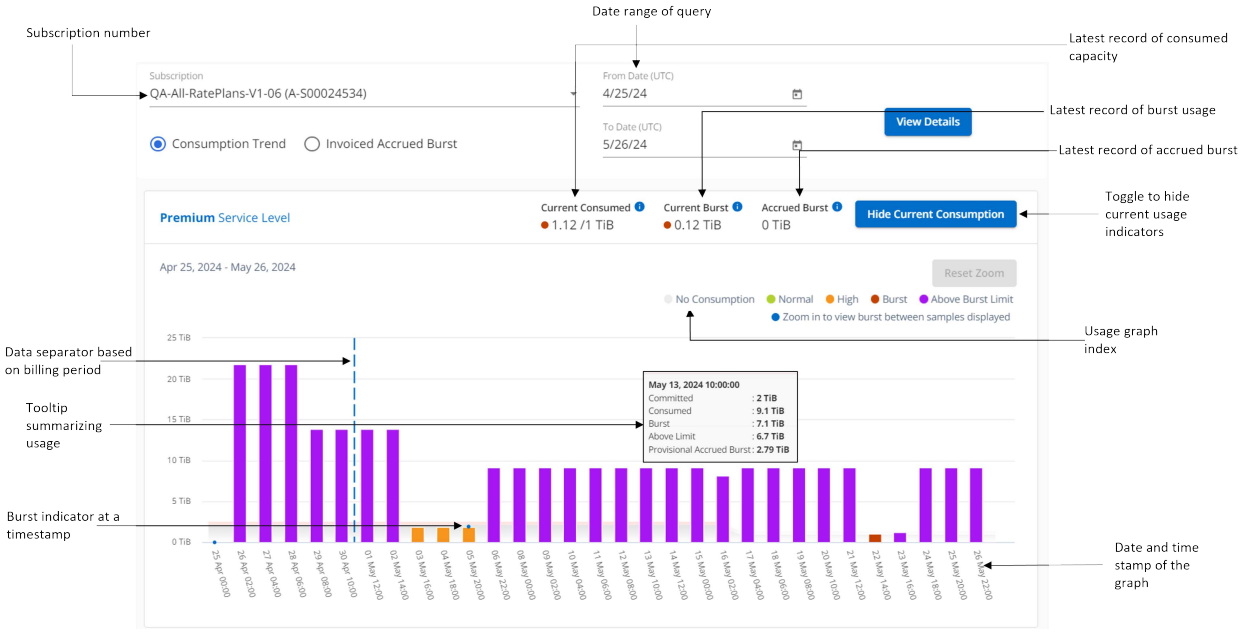
4. Select the time range from the calendar icons in the **From Date** and **To Date** fields. Select the date range for the query. The date range can be the beginning of the month or the subscription start date to the current date or the subscription end date. You cannot select a future date.

   For optimal performance and user experience, limit the date range of your query to three months.

5. Click **View Details**. The historical consumption data of the subscription for each performance service level is displayed based on the selected time range.

   The bar charts display the performance service level name and the capacity consumed against that performance service level for the date range. The date and time of the collection are displayed at the bottom of the chart. Based on the date range of your query, the usage charts are displayed in a range of 30 data collection points. You can hover your mouse cursor over the charts to view the usage breakdown in terms of committed, consumed, burst, and above the burst limit data at that data collection point.

   The bar charts display short-term bursts, and you can view these bursts by using the zoom-in feature. When a short-term burst is present, it is indicated by a blue dot on the corresponding bar or directly on the x-axis if no data is consumed. To view the details, click and hold on the bar or the x-axis where the blue dot appears, then drag the cursor across the chart to select the desired time interval, and release to confirm your selection. This action zooms into the data, providing a more granular view of the capacity used at that performance service level for the selected interval. You can click the **Reset Zoom** button to return to the original chart view.



Monthly data across the charts is separated by a vertical line.

> A blank chart indicates that there was no data available in your environment at that data collection point.

You can click the toggle button **Show Current Usage** to view the consumption, burst usage, and accrued burst data for the current billing period. These details are not based on the date range of the query.

- **Current Consumed**: Indicator for the consumed capacity (in TiB) defined for the performance service level. This field uses specific colors:
  - No color: Burst or above burst usage.
  - Grey: No usage.
  - Green: Within 80% of the committed capacity.
  - Amber: 80% of the committed to the burst capacity.
- **Current Burst**: Indicator for the consumed capacity within or above the defined burst limit. Any usage within the burst limit for your subscription, for example, 20% above the committed capacity is within the burst limit. Further usage is considered as usage above the burst limit. This field displays specific colors:
  - No color: No burst usage.
  - Red: Burst usage.
  - Purple: Above the burst limit.
- **Accrued Burst**: Indicator of the total burst capacity (in TiB) accumulated during each 2-minute interval within a month for the current billing cycle.

Accrued burst computation

The accrued burst usage for an entire month is calculated as this:

[sum of bursts in month / ((days in month) x 24 x 60)] x interval duration

You can calculate the accrued burst for short periods, such as every two minutes, using this:

[burst / ((days in month) x 24 x 60)] x interval duration

The burst is the difference between the consumed capacity and the committed capacity. For example, with a 30-day in month, if the consumed capacity reaches 120 TiB and the committed capacity is 100 TiB for a 2-minute interval, this results in a burst capacity of 20 TiB, equating to an accrued burst usage of 0.000925926 TiB for that interval.

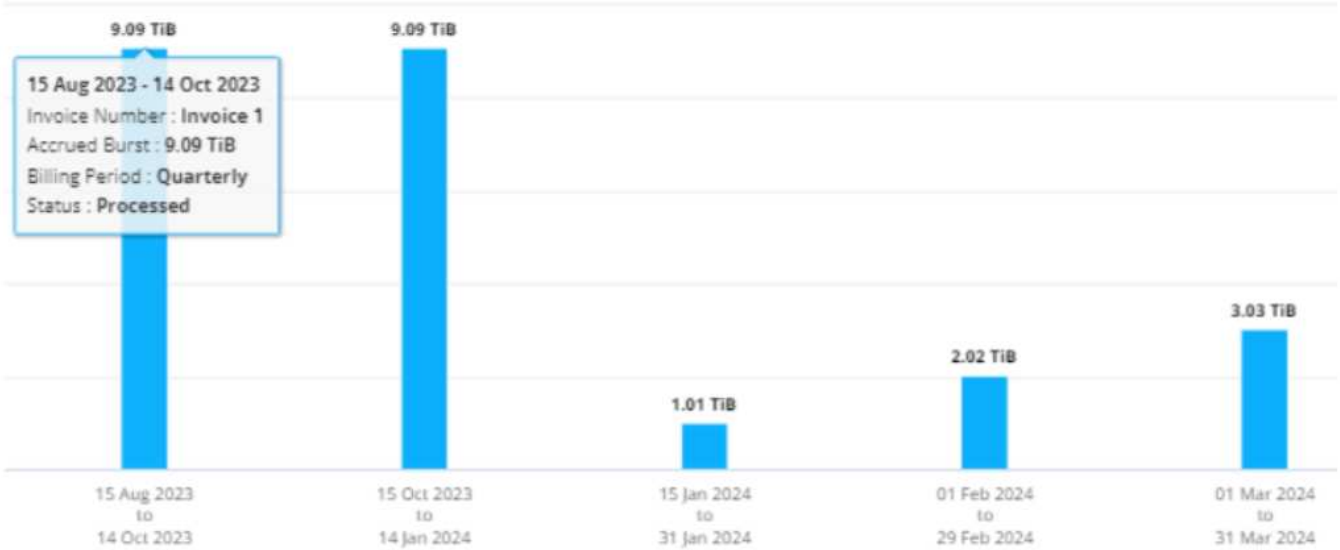
View accrued burst

You can view the accrued burst data usage through the Console or Digital Advisor. If you have selected **Accrued burst** from the **View** dropdown in the **Consumption trend** tab in the Console, or the **Invoiced Accrued Burst** option from the **Consumption Trend** tab in Digital Advisor, you can see accrued burst data usage on a monthly or quarterly basis, depending on your selected billing period. This data is available for the last 12 months that have been billed, and you can query by the date range for up to past 30 months.

- In the Console, you can interact with the accrued burst billing graph to filter daily data usage. To learn more, refer to View daily accrued burst data usage.
- The invoiced accrued burst usage is calculated per billing period, based on the committed and consumed capacity for a performance service level.

For a quarterly billing period, if the subscription starts on a date other than the 1st of the month, the quarterly invoice will cover the subsequent 90-day period. For example, if your subscription starts on August 15, the invoice will be generated for the period from August 15 to October 14.

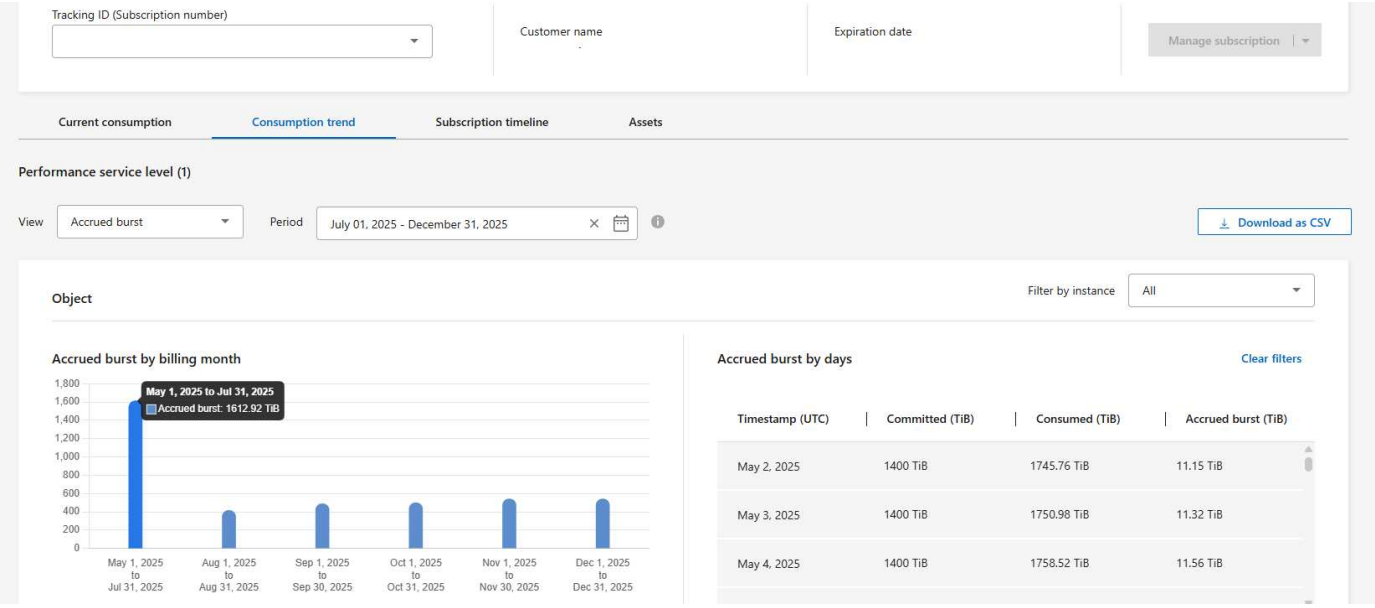
If you switch from quarterly to monthly billing, the quarterly invoice will still cover the 90-day period, with two invoices generated in the last month of the quarter: one for the quarterly billing period and another for the remaining days of that month. This transition allows the monthly billing period to start on the 1st of the following month. For example, if your subscription starts on October 15, you will receive two invoices in January—one for October 15 to January 14 and another for January 15 to 31—before the monthly billing period begins on February 1.



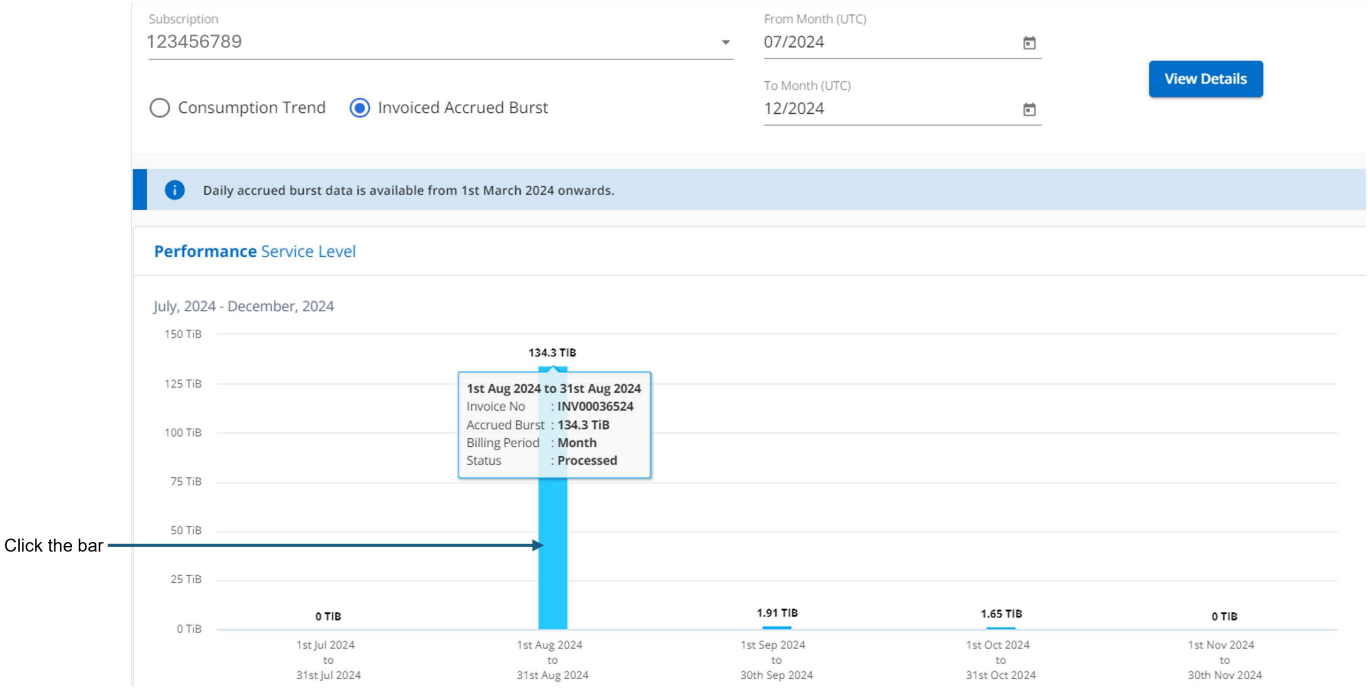
View daily accrued burst data usage

You can view daily accrued burst data usage for a monthly or quarterly billing period through the Console or Digital Advisor. In the Console, the **Accrued burst by days** table provides detailed data including the timestamp, committed, consumed, and accrued burst capacity if you select **Accrued burst** from the **View** dropdown in the **Consumption trend** tab.

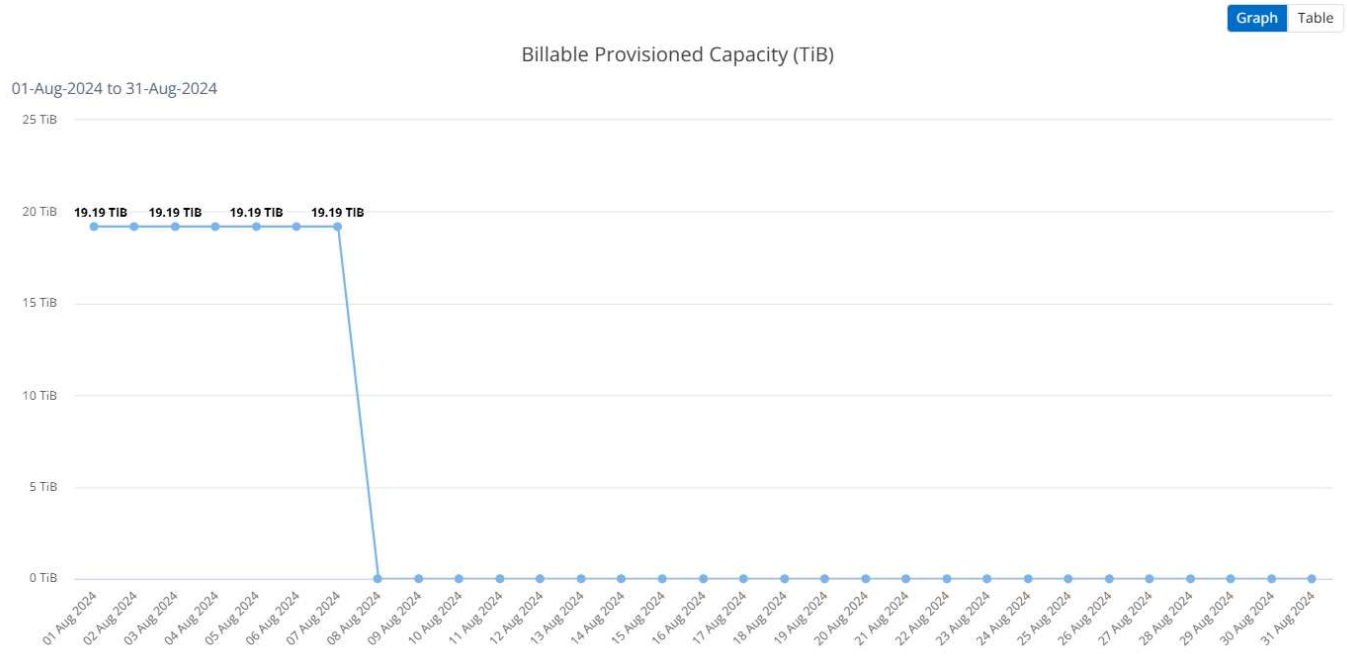
In the Console, you can filter the table by selecting any bar that represents a billing period in the accrued burst billing graph. When filtered, the table displays only the days within the selected billing period. To view the complete dataset again, use the **Clear filters** option. If no data is available for the selected period, a message displays indicating that no data is available.



In Digital Advisor, when you click the bar that displays the invoiced data from the **Invoiced Accrued Burst** option, you see the Billable Provisioned Capacity section below the bar chart, offering both graph and table viewing options. The default graph view displays daily accrued burst data usage in a line graph format, showing changes in usage over time.



An example image showing daily accrued burst data usage in a line graph:



You can switch to a table view by clicking the **Table** option at the top right corner of the graph. The table view provides detailed daily usage metrics, including performance service level, timestamp, committed capacity, consumed capacity, and billable provisioned capacity. You can also generate a report of these details in CSV format for future use and comparison.

View the timeline of your Keystone subscriptions

The Keystone dashboard in the NetApp Console provides a timeline view of your Keystone subscriptions, displaying events such as activation, modification, and renewal dates. This timeline view is not available in Digital Advisor.

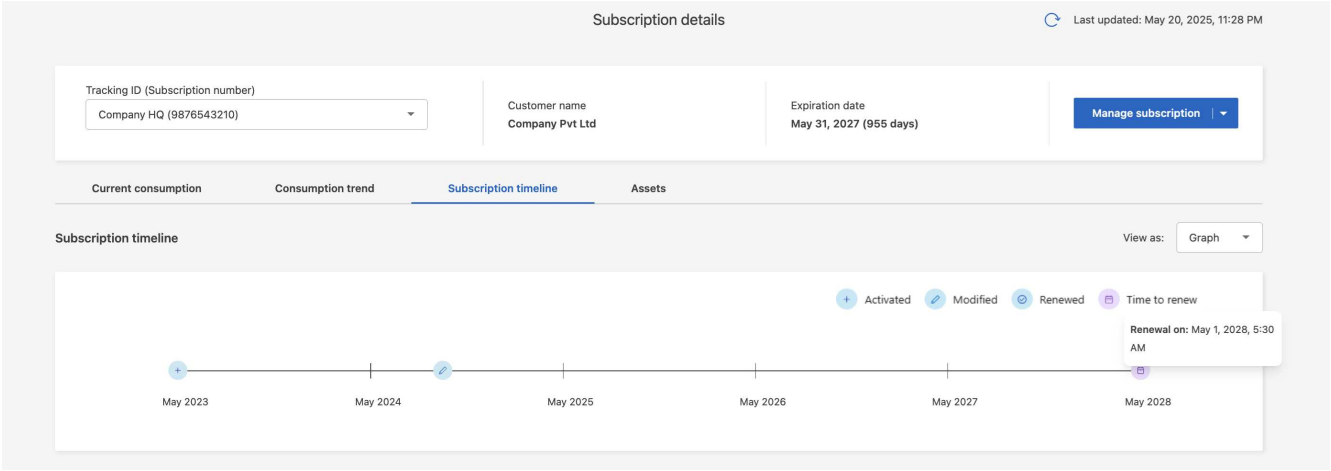
To view the subscription timeline, follow these steps:

Steps

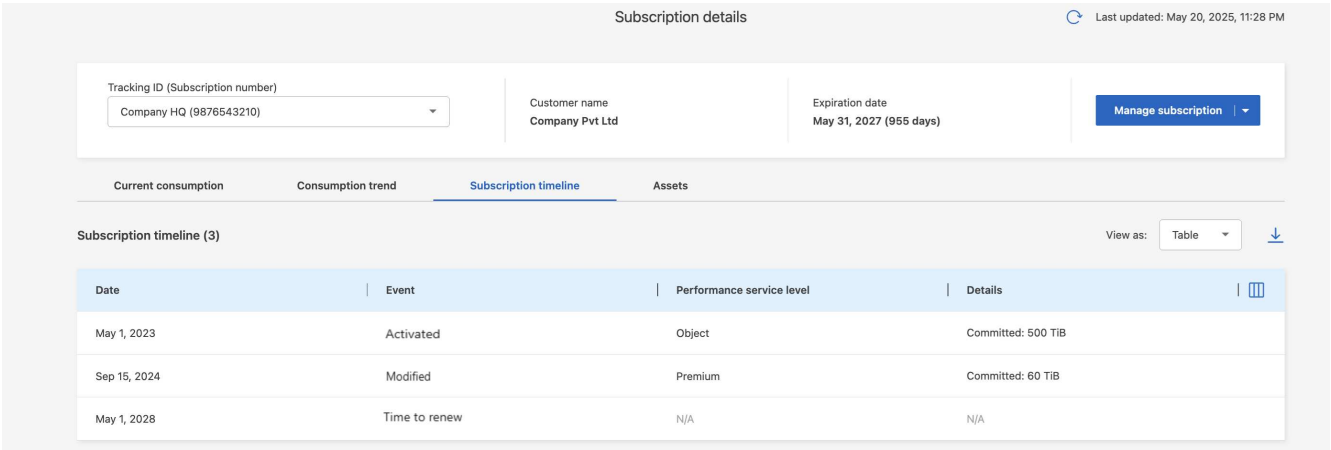
1. From the Console left navigation menu, select **Storage > Keystone > Subscriptions**.
2. Select the subscription number in the **Subscription number** column to view the subscription timeline.

   You are redirected to the **Current consumption** tab.

3. Select the **Subscription timeline** tab.



The subscription timeline is displayed as a line graph by default, with icons marking important events. Hover over an event to view details, including the date and committed capacity changes. To view these events in a table, select the **Table** option from the **View as** dropdown. To view other subscription timelines, select or search from the **Tracking ID** dropdown.



Related information

- Understand the Keystone dashboard
- View your subscription details
- View consumption trends
- View your Keystone subscription assets
- View assets across your Keystone subscriptions

- View and manage alerts and monitors
- View volumes & objects details

View consumption and health of your Keystone MetroCluster subscriptions

When you subscribe to the advanced data protection add-on service, you can view consumption data for your MetroCluster partner sites in either the NetApp Console or Digital Advisor. In the NetApp Console, you can also monitor the replication status and health of your MetroCluster setup.

View MetroCluster subscriptions consumption and health status

Follow the steps below:

NetApp Console

Steps

1. From the Console left navigation menu, select **Storage > Keystone > Subscriptions**.
2. Select the MetroCluster subscription in the **Subscription number** column.

   MetroCluster subscriptions are identified by the icon.

   The **Current consumption** tab opens and displays consumption insights for your subscribed base performance service levels and their corresponding advanced data protection performance service levels. You can view this information in a tabular or graphical format. To learn more, refer to View the current consumption of your Keystone subscriptions.

3. Select the **Advanced data protection (ADP)** tab.

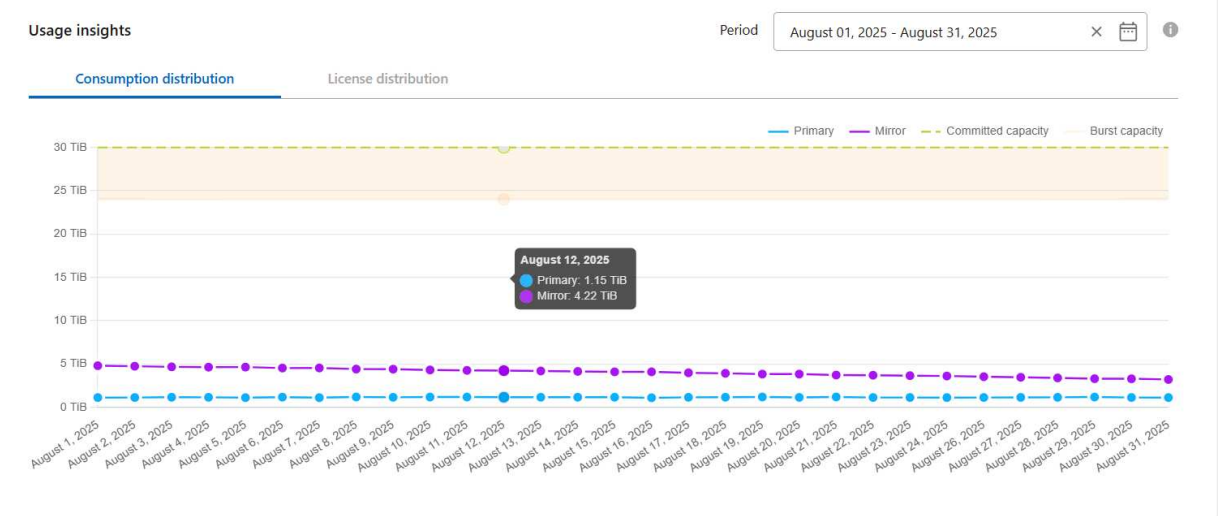
   On this tab, you can view consumption data for your base performance service levels at both primary and mirror sites, monitor the health status of your MetroCluster setup, and track its sync status.

   - View the consumption distribution chart for your selected time period.

     The chart shows consumption for both your primary and mirror sites. Hover over the chart to see the consumption breakdown in tebibytes (TiB) for each site.

     For the base performance service levels, each volume is charged as provisioned at both the primary and mirror sites. The chart is therefore split to reflect consumption at each site.

     Example:
     The tooltip displays consumption values such as 1.15 TiB for the primary site and 4.22 TiB for the mirror site.



   - Monitor the health status of your MetroCluster setup in the **ADP Topology** view.

     The topology displays the connection status between the primary and mirror sites (normal, degraded, disconnected, or initializing), the data synchronization status (in sync or out of sync), and the ONTAP Mediator status if configured. To learn more about ONTAP Mediator, refer to

Learn about ONTAP Mediator.

> You can select the Cluster B subscription (mirror) from the ADP topology to view it as the primary site.

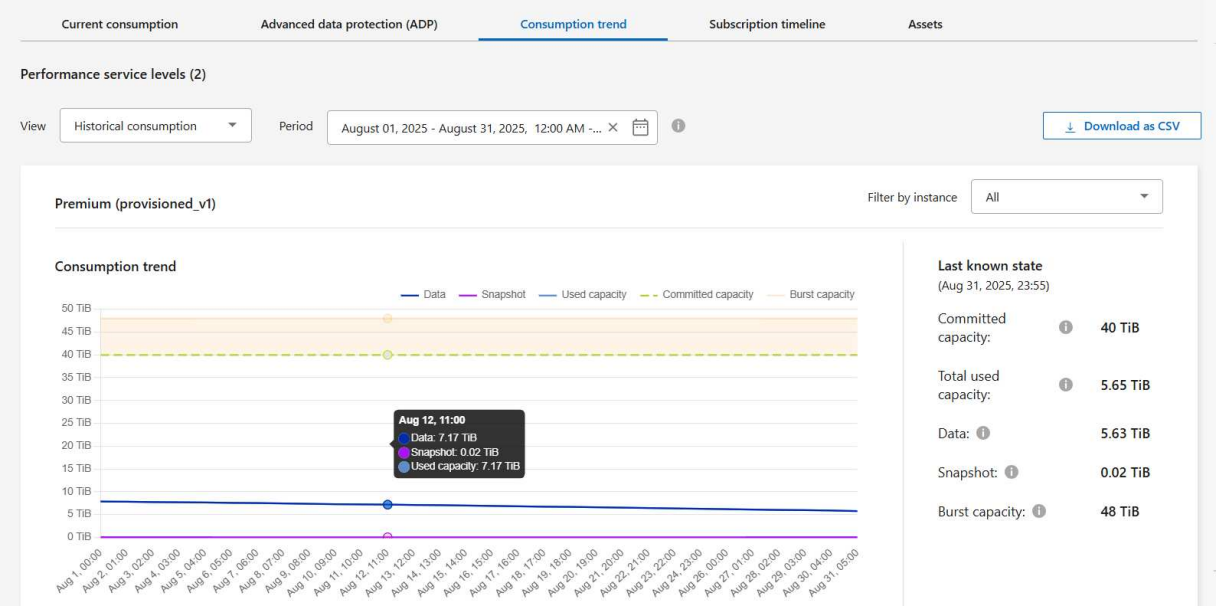
> If the sync status shows out of sync or the connection status shows degraded, refer to Get help with Keystone to troubleshoot the issue.

- View historical consumption trends for the primary or mirror site.

  Under **Capacity utilization**, select **View** next to either Cluster A (primary) or Cluster B (mirror).

  The **Consumption trend** tab opens and displays historical consumption data for the selected cluster over a specified date range. You can analyze capacity usage trends for both base and advanced data protection performance service levels. To learn more, refer to View consumption trends for your Keystone subscriptions.

  Example:
  The following chart shows consumption for the *Premium* performance service level (base) for the primary site (Cluster A):



  For the *Advanced Data-Protect premium* performance service level, the chart appears like this for the primary site (Cluster A):

For the *Advanced Data-Protect* performance service level, the total consumption is split between the primary and mirror sites, and the usage at each site is reflected and billed in a separate subscription; one subscription for the primary site, and another for the mirror site. That is the reason why, when you select the subscription number for the primary site on the **Consumption trend** tab, the consumption charts for the advanced data protection add-on service display the discrete consumption details of only the primary site. Because each partner site in a MetroCluster configuration acts both as a source and mirror, the total consumption at each site includes the source and the mirror volumes created at that site. For more information, refer to Advanced data protection add-on for Keystone.

For information about how MetroCluster protects your data, see Understanding MetroCluster data protection and disaster recovery.

Digital Advisor

Steps

1. Select **General > Keystone Subscriptions > Consumption Trend**.
2. Select the MetroCluster subscription.

   If the clusters in your ONTAP storage environment are configured in a MetroCluster setup, the consumption data of your Keystone subscription is split in the same historical data chart to display the consumption at the primary and mirror sites for the base performance service levels.

   The consumption bar charts are split for only the base performance service levels. For advanced data protection add-on service, that is the *Advanced Data-Protect* performance service level, this demarcation does not appear.

   The tooltip next to the tracking ID of your subscription in the **Current Consumption** tab helps you identify the partner subscription in the MetroCluster setup.

Advanced data protection performance service level

For the Advanced Data-Protect performance service level, the total consumption is split between the partner sites, and the usage at each partner site is reflected and billed in a separate subscription; one subscription for the primary site, and another for the mirror site. That is the reason why, when you select the subscription number for the primary site on the Consumption Trend tab, the consumption charts for the advanced data protection add-on service display the discrete consumption details of only the primary site. Because each partner site in a MetroCluster configuration acts both as a source and mirror, the total consumption at each site includes the source and the mirror volumes created at

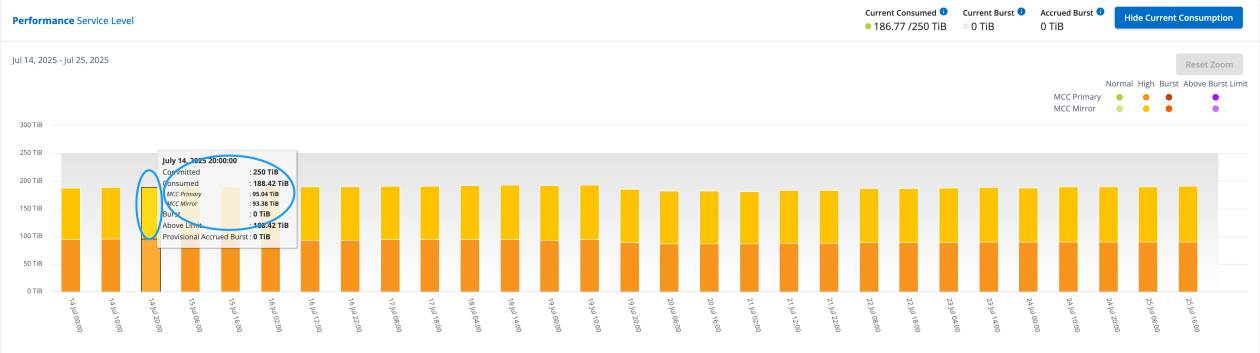
that site.

Base performance service levels

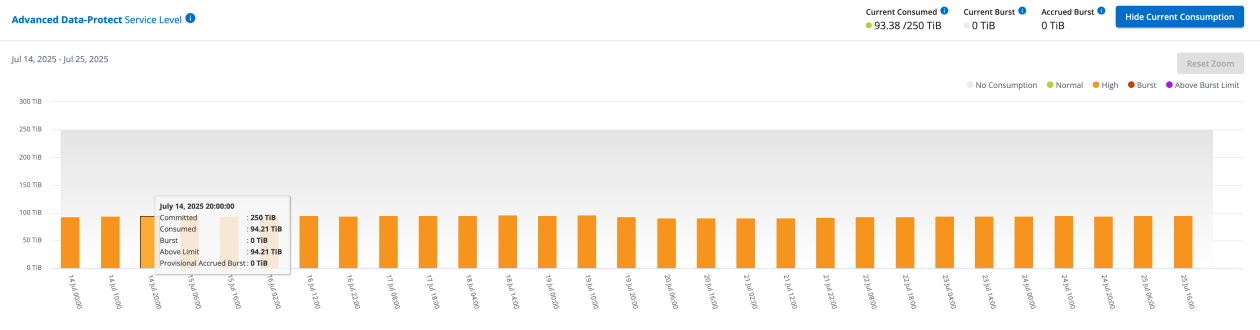
For the base performance service levels, each volume is charged as provisioned at the primary and mirror sites, and hence the same bar chart is split according to the consumption at the primary and mirror sites.

Primary subscription view

The following image displays the charts for the *Performance* service level (base performance service level). The same historical data chart also indicates the mirror site consumption in a lighter shade of the same color code used for the primary site. Hover over the chart to view the consumption breakdown in TiB for each site. In this example, the values are 95.04 TiB for the primary site and 93.38 TiB for the mirror site.



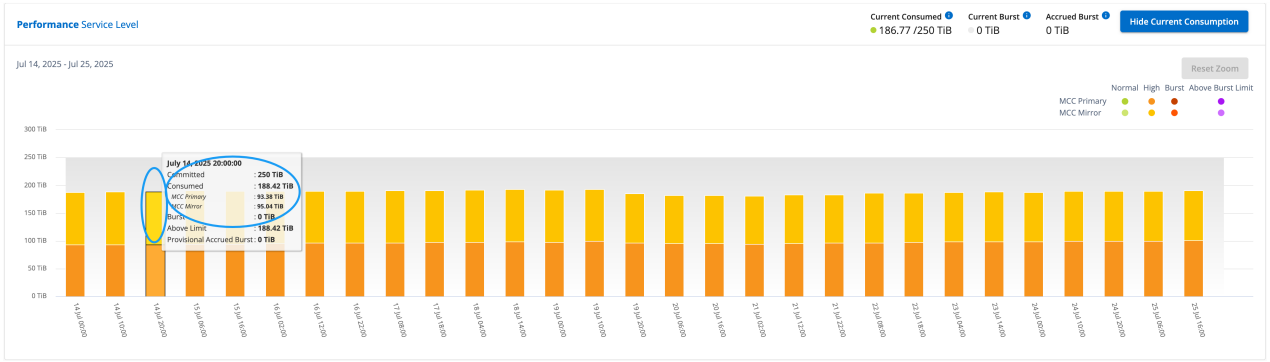
For the *Advanced Data-Protect* performance service level, the chart appears like this:



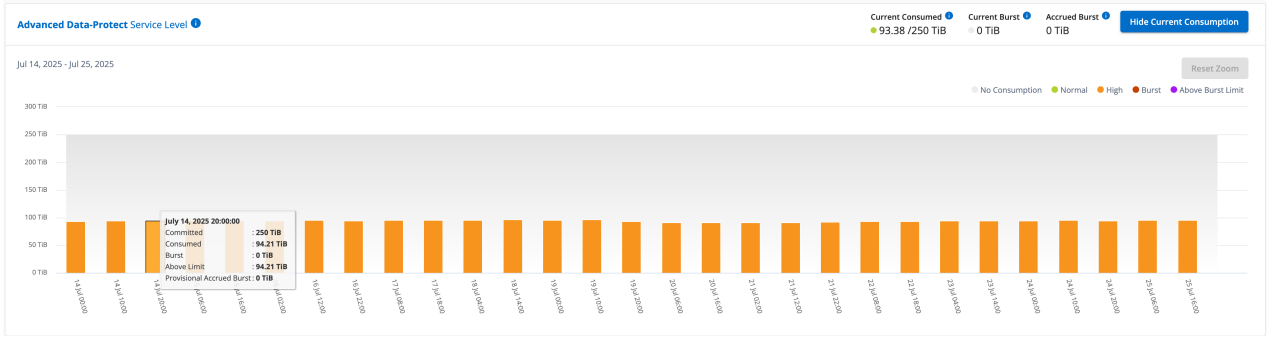
The displayed consumption of 94.21 TiB represents the usage for the primary subscription. Given that advanced data protection splits consumption between partner sites with separate subscriptions, this chart shows only the primary site usage. To learn about pricing for the advanced data protection add-on service, refer to Understand pricing.

Mirror subscription view

When you check the mirror subscription, you can see that the bar chart for the *Performance* service level (base performance service level) at the same data collection point as the partner site is reversed, and the consumption breakup at the primary and mirror sites is 93.38 TiB and 95.04 TiB respectively.



For the *Advanced Data-Protect* performance service level, the chart appears like this for the same collection point as at the partner site:



For information about how MetroCluster protects your data, see Understanding MetroCluster data protection and disaster recovery.

Related information

- Understand the Keystone dashboard
- View your subscription details
- View your current consumption details
- View consumption trends
- View your subscription timeline
- View your Keystone subscription assets

View assets

View assets associated with a Keystone subscription

You can view detailed information about ONTAP clusters and nodes, and StorageGRID grids, sites, and nodes, managed by a single Keystone subscription. You can access these subscription assets in the Keystone dashboard from the NetApp Console or Digital Advisor.

View Keystone subscription assets from NetApp Console

The **Assets** tab in the **Subscriptions** page shows detailed information about volumes in clusters, StorageGRID nodes, and ONTAP nodes associated with the subscription, including various details and capacity status.

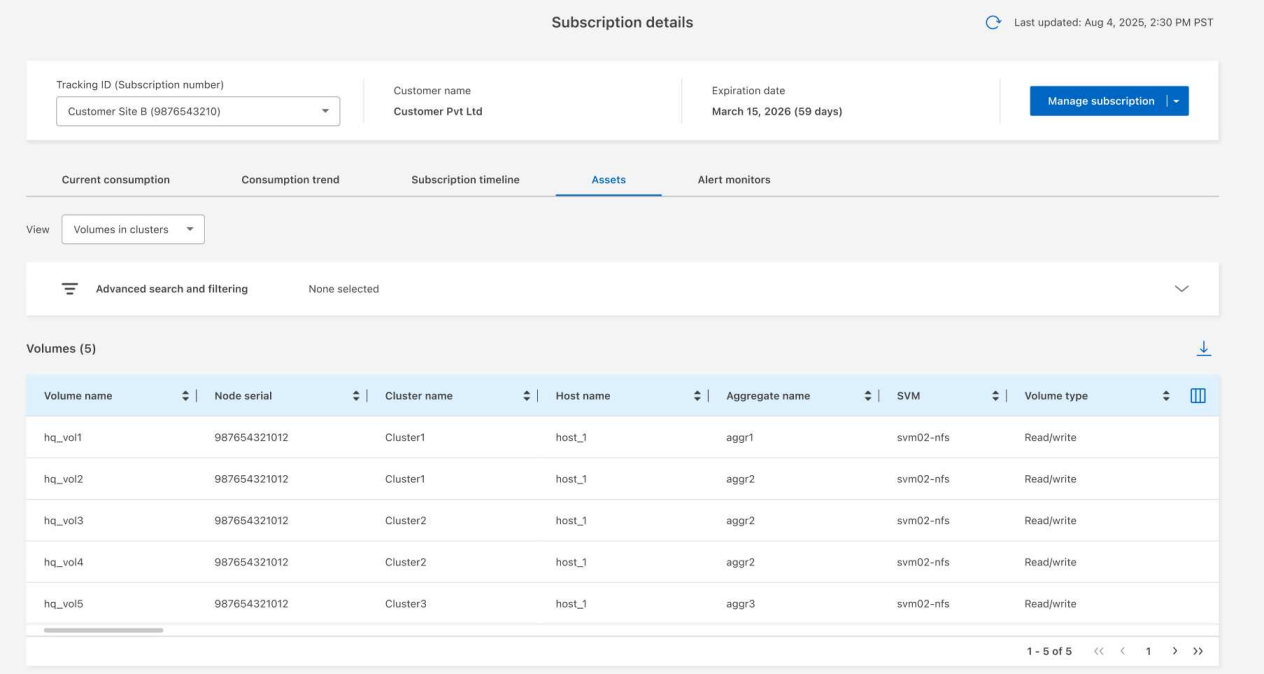
- This view is limited to one Keystone subscription at a time. You can also see the assets of other subscriptions by selecting from the **Tracking ID** dropdown list. The Keystone dashboard in NetApp Console allows you to view assets across multiple Keystone subscriptions. To learn more, refer to View assets across your Keystone subscriptions.
- The **View** dropdown options depend on your Keystone subscription platforms. **Volumes in clusters** and **Nodes in clusters** are available for ONTAP. For StorageGRID, the **View** dropdown is not available, the **Nodes in grids** table displays automatically. If your subscription includes both platforms, all three options are available.

You can view this information by following these steps:

Volumes in clusters

Steps

1. From the Console left navigation menu, select **Storage > Keystone > Subscriptions**.
2. Select the subscription number in the **Subscription number** column of the table.
3. Select the **Assets** tab.
4. Select **Volumes in cluster** from the **View** dropdown.



You see the detailed information about volumes in clusters including volume name, node serial number, cluster name, host name, and performance service levels. You can also monitor the provisioned capacity, logical and physical utilization, and cold data.

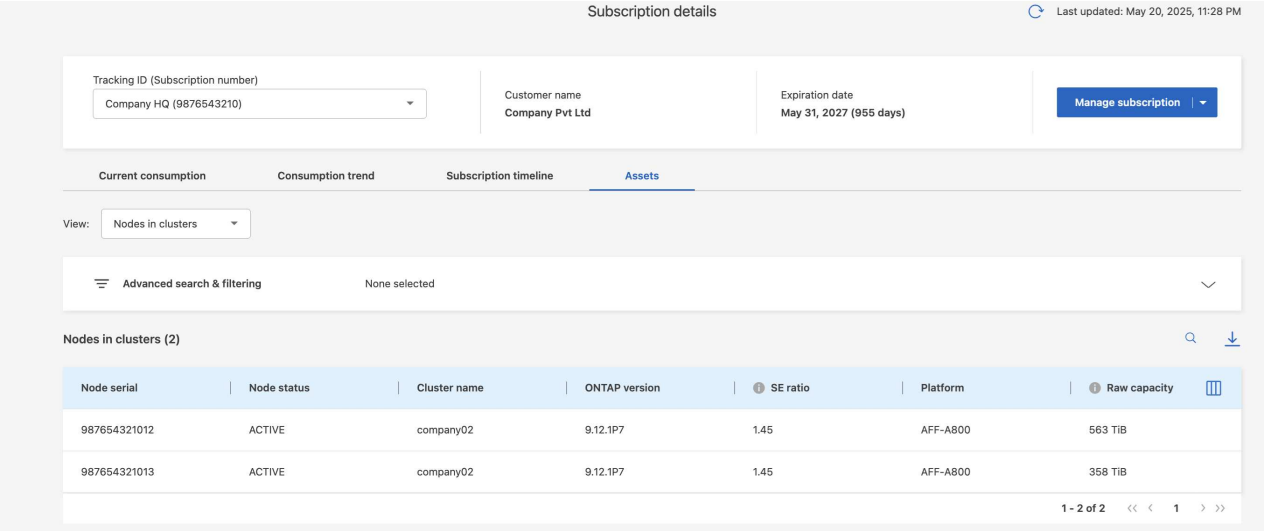
You can customize the table using the column selector icon and use the search bar at the top to search and filter table data based on the column parameters.

Nodes in clusters

Steps

1. From the Console left navigation menu, select **Storage > Keystone > Subscriptions**.
2. Select the subscription number in the **Subscription number** column of the table.

   The system opens the **Current consumption** tab.
3. Select the **Assets** tab.
4. Select **Nodes in clusters** from the **View** dropdown.



You see ONTAP cluster details, broken down by storage efficiency settings, platform type, and capacity details.

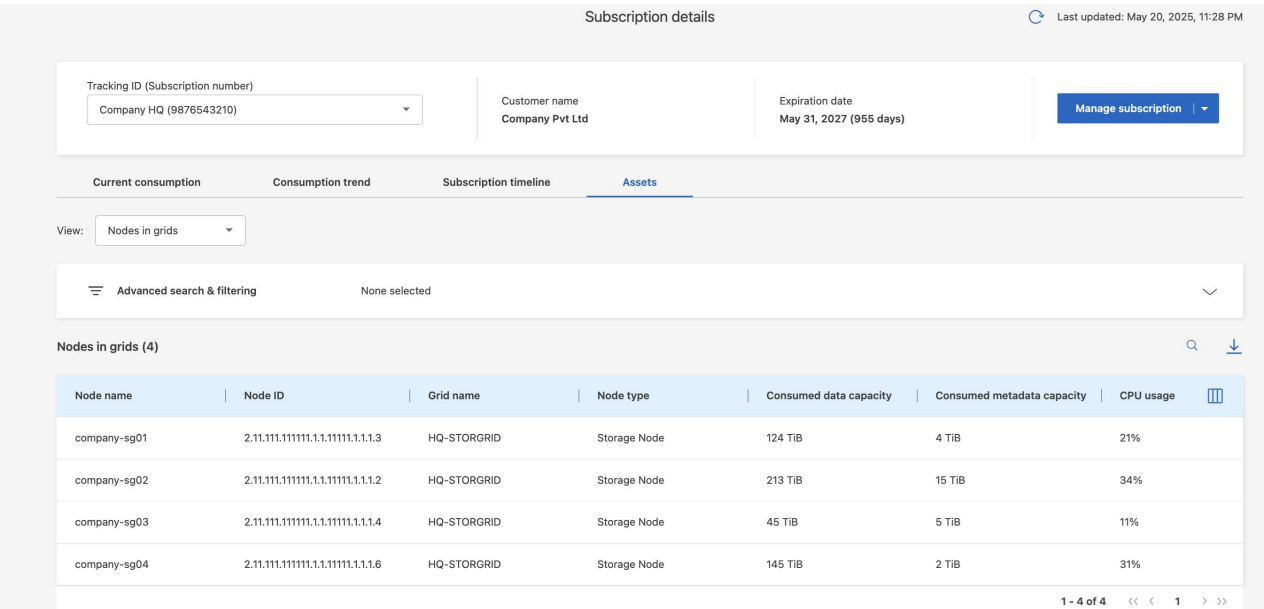
You can customize the table using the column selector icon and use the search bar at the top to search and filter table data based on the column parameters.

Nodes in grids

Steps

1. From the Console left navigation menu, select **Storage > Keystone > Subscriptions**.
2. Select the subscription number in the **Subscription number** column of the table.

   The system opens the **Current consumption** tab.
3. Select the **Assets** tab.
4. Select **Nodes in grids** from the **View** dropdown.



You can view detailed information about nodes in grids, including node name, node status, grid name, node type, and customer. You can also monitor consumed and available data capacity, CPU usage, and usable data capacity.

You can customize the table using the column selector icon and use the search bar at the top to search and filter table data based on the column parameters.

View Keystone subscription assets from Digital Advisor

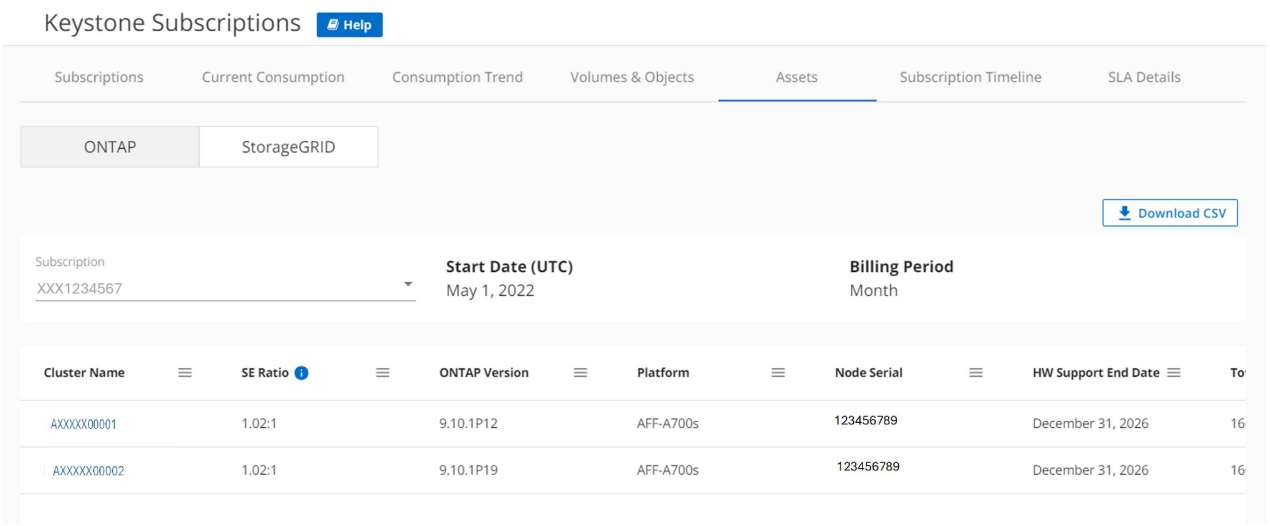
The **Assets** tab of the Keystone dashboard in Digital Advisor includes two sub-tabs: **ONTAP** and **StorageGRID**. This tab accumulates cluster-level information for ONTAP and grid-level information for StorageGRID based on your subscriptions, segregating and presenting the data with accurate details. You can view this information by clicking the respective sub-tabs.

ONTAP

Steps

1. Select **General > Keystone Subscriptions > Assets > ONTAP**.
2. Select the subscription number for which you want to view the clusters.

   You see the cluster details, broken down by storage efficiency settings, platform type, and capacity details. Clicking on one of the clusters takes you to the **Clusters** widget on the Digital Advisor screen, where you get additional information for that cluster. Digital Advisor provides a comprehensive inventory-level information of your deployments.

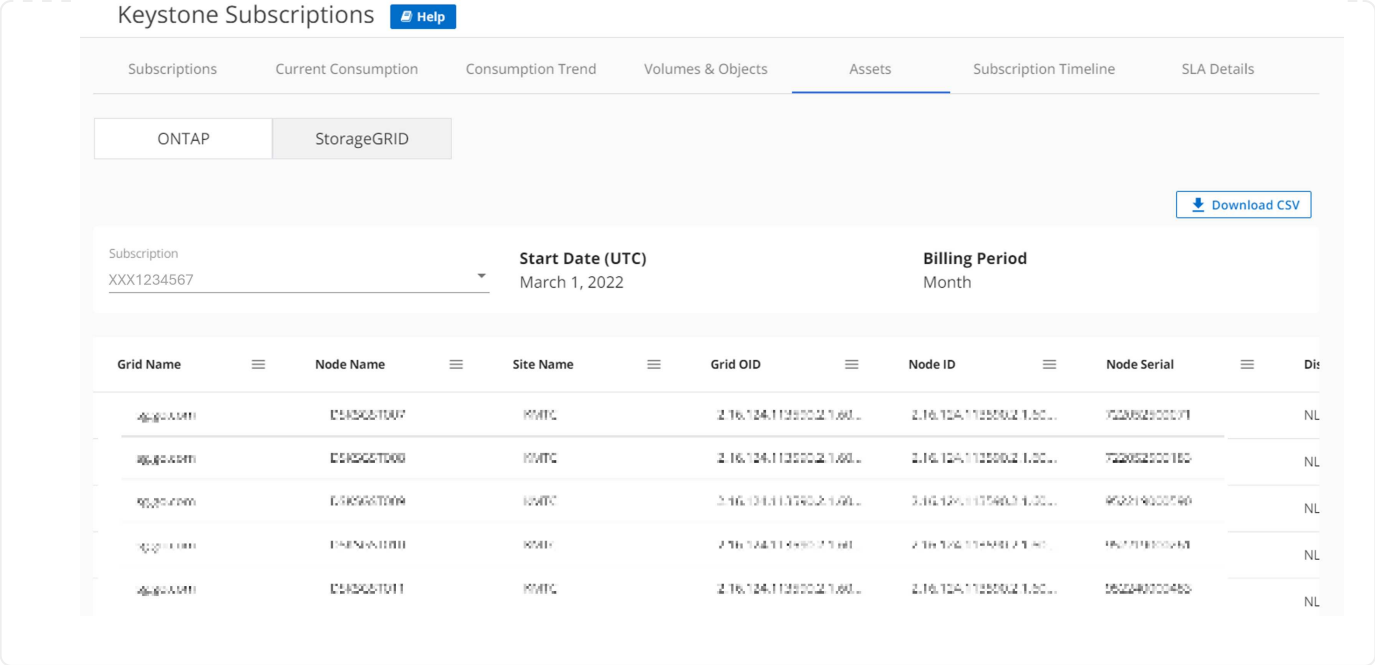


StorageGRID

Steps

1. Select **General > Keystone Subscriptions > Assets > StorageGRID**.
2. Select the subscription number.

   You see the grid details, categorized by grid and node identifiers, site information, hardware specifications, and capacity details, which help in monitoring and managing nodes in your StorageGRID infrastructure.



Related information

- Understand the Keystone dashboard
- View your subscription details
- View your current consumption details
- View consumption trends
- View your subscription timeline
- View assets across your Keystone subscriptions
- View and manage alerts and monitors
- View volumes & objects details

View assets across multiple Keystone subscriptions

The Keystone dashboard in the NetApp Console allows you to view detailed information about nodes in clusters, provisioned volumes, and StorageGRID nodes across multiple Keystone subscriptions, according to your access permissions. This view is not available in Digital Advisor.

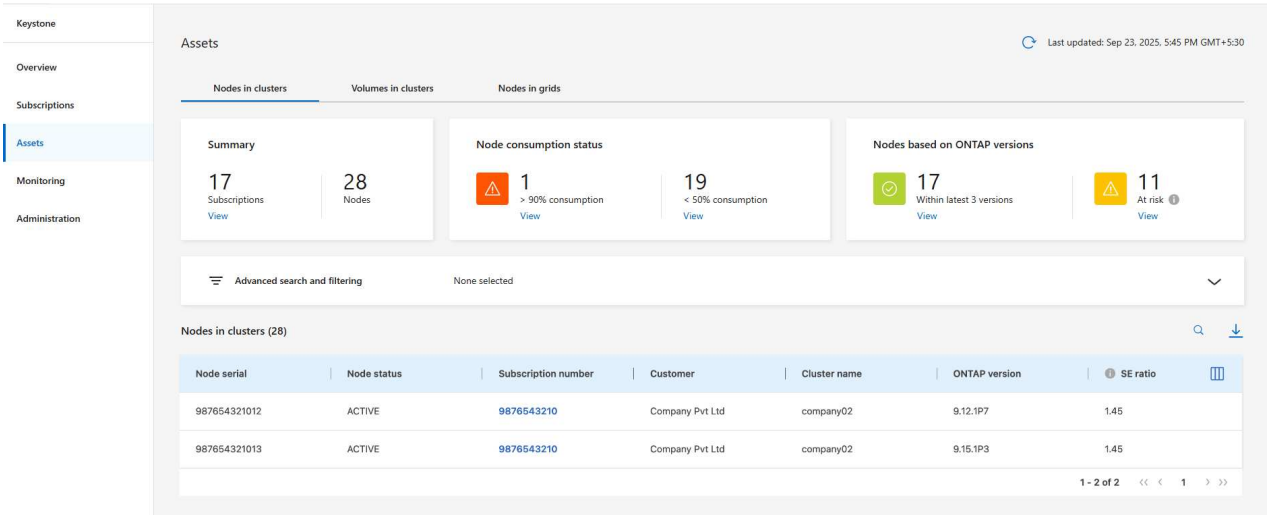
The **Assets** page displays tabs based on the platforms associated with your Keystone subscriptions. For ONTAP, both **Nodes in clusters** and **Volumes in clusters** tabs are available. For StorageGRID, the **Nodes in grids** table displays directly without a tab selection. If subscriptions include both platforms, all three tabs are available.

Nodes in clusters

Steps

1. From the Console left navigation menu, select **Storage > Keystone > Assets**.

   The **Assets** page displays the **Nodes in cluster** tab.



   You can view detailed information about all nodes in clusters across Keystone subscriptions, including node serial numbers, status, storage efficiency settings, platform type, and capacity details. You also get an overview of:

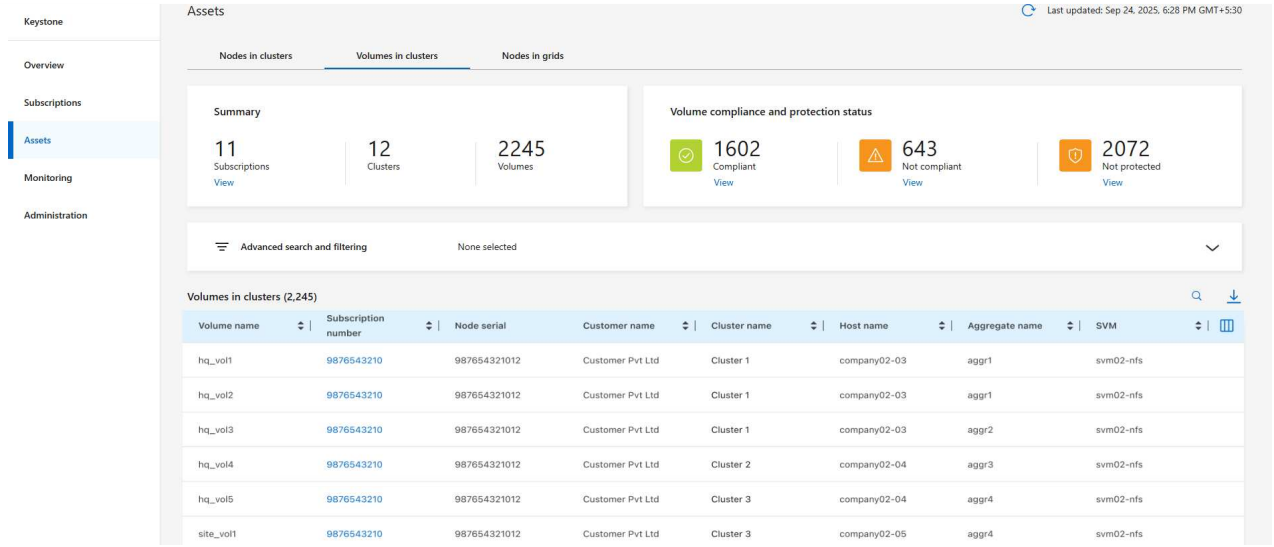
   - Total number of subscriptions and ONTAP nodes.
   - Node capacity consumption, with a clickable **View** button to filter the table and display assets that meet specific criteria (> 90% consumed or < 50% consumed).
   - Nodes based on ONTAP versions, with the **View** button to filter for nodes within the latest three versions or older.

   You can customize the table using the column selector icon and use the search bar at the top to search and filter Keystone data based on the column parameters.

Volumes in clusters

Steps

1. From the Console left navigation menu, select **Storage > Keystone > Assets**.
2. Select the **Volumes in clusters** tab.



You see the detailed information about all volumes in clusters across Keystone subscriptions including volume name, subscription number, node serial number, compliance with QoS policies, cluster name, host name, and performance service levels. You can monitor the provisioned capacity, logical and physical utilization, and cold data. You also get an overview of:

- The total number of subscriptions, clusters, and volumes.
- Volume compliance and protection status, with a **View** button to filter the table and display assets based on criteria such as compliant, not compliant, or not protected.

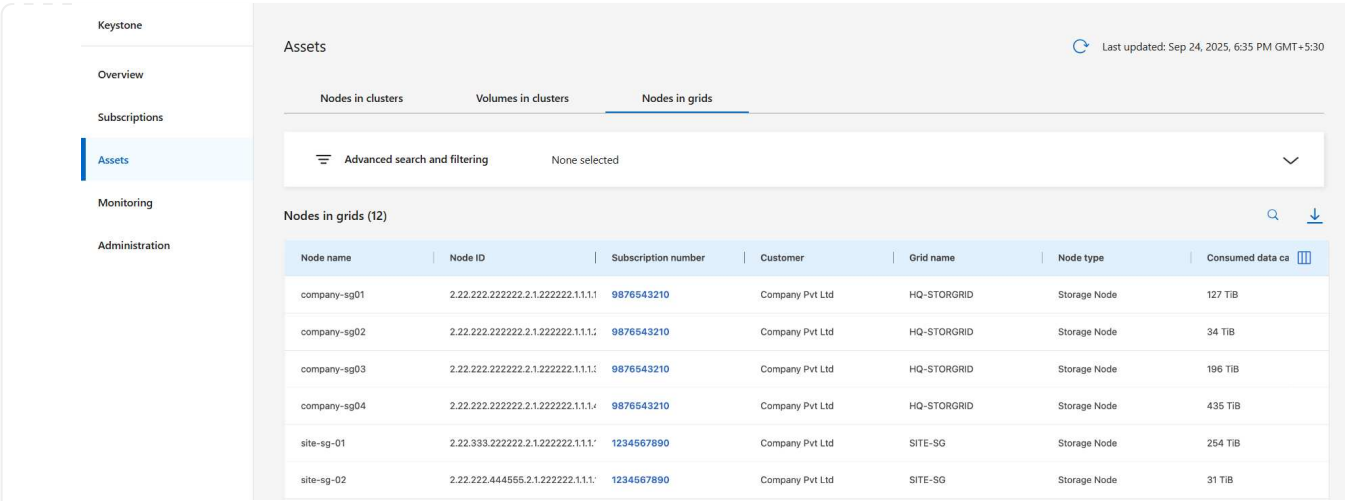
You can customize the table using the column selector icon and use the search bar at the top to search and filter Keystone data based on the column parameters.

You can click a subscription number in the **Subscription number** column to go to the **Subscriptions** tab, where you can view subscription consumption details, timelines, and associated asset information. To learn more, refer to View your current consumption details.

Nodes in grids

Steps

1. From the Console left navigation menu, select **Storage > Keystone > Assets**.
2. Select the **Nodes in grids** tab.



You can view detailed information about all nodes in grids across Keystone subscriptions including node name, node ID, subscription number, grid name, node type, and customer. You can monitor the consumed and available data capacity, CPU usage, and usable data capacity.

You can customize the table using the column selector icon and use the search bar at the top to search and filter Keystone data based on the column parameters.

You can click a subscription number in the **Subscription number** column to go to the **Subscriptions** tab, where you can view subscription consumption details, timelines, and associated asset information. To learn more, refer to View your current consumption details.

Related information

- Understand the Keystone dashboard
- View your subscription details
- View your current consumption details
- View consumption trends
- View your subscription timeline
- View your Keystone subscription assets
- View and manage alerts and monitors
- View volumes & objects details

View and manage alerts and monitors

View and manage alerts for Keystone subscriptions

The Keystone dashboard in the NetApp Console allows you to view and manage active alerts in your Keystone storage environment. You can see both system-generated alerts and user-defined alerts for capacity usage and subscription expiration. From this view, you can quickly assess alert severity, identify storage issues, and take corrective actions. This view is not available in Digital Advisor.

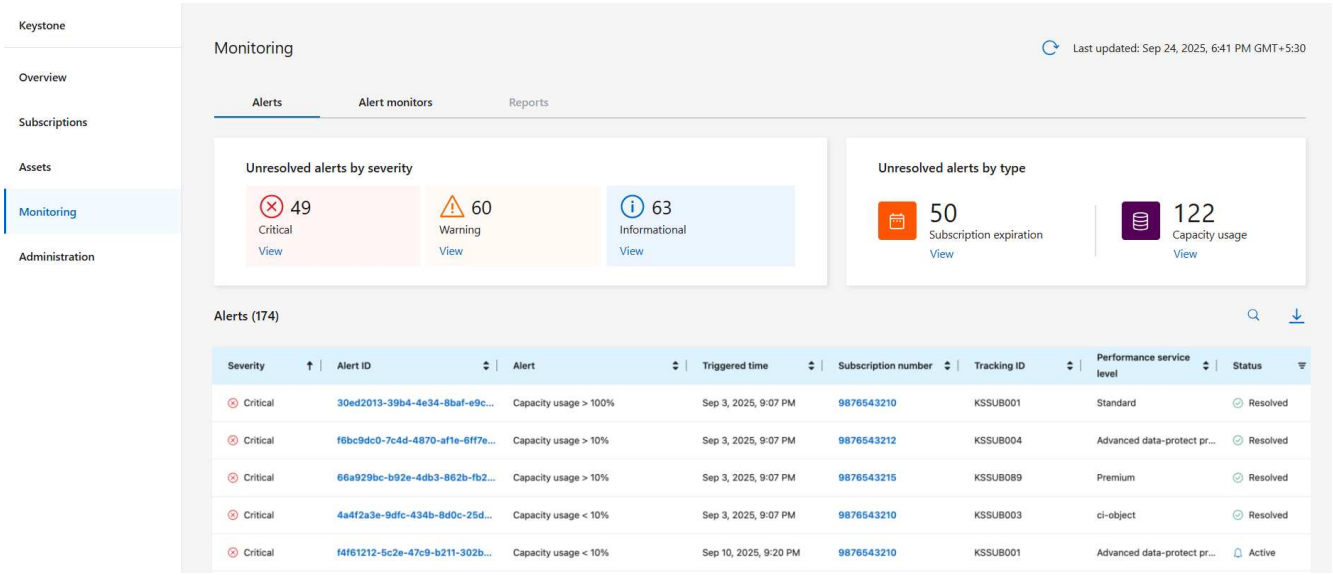
To configure user-defined alerts, refer to Create and manage alert monitors.

View alerts

To view active alerts, follow these steps:

Steps

1. From the Console left navigation menu, select **Storage > Keystone > Monitoring > Alerts**.



You can view alert details such as severity, ID, description, triggered time, subscription number, tracking ID, performance service level, and status. The page also shows the total unresolved alerts by severity and type.

> The **Reports** tab is currently unavailable for Keystone subscriptions.

Manage alerts

From the **Alerts** tab, you can perform the following actions:

- **Review and resolve alerts**: Select the alert ID number to open a detailed view of the alert. This view displays the alert description and suggested resolution steps. From this detailed view, you can:
  - Mark the alert as resolved by selecting the **Edit** button after addressing the issue.
  - Add supporting notes by selecting the **Add note** button if required.

> Editing alerts requires the **Keystone admin** role. The **Keystone viewer** role can only view alert details. To learn more, refer to Keystone access roles in NetApp Console.

- **Filter alerts**: Use the filter icon in the **Status** column to view only active alerts, resolved alerts, or both.
- **View subscription details**: Select the subscription number from the **Subscription** column to access subscription details, consumption trends, and asset information that can help you understand and address the alert. For more information, refer to View your current consumption details.

Related information

- Understand the Keystone dashboard
- View your subscription details
- View consumption trends
- View your subscription timeline
- View your Keystone subscription assets
- View and create alert monitors
- View volumes and objects details

View and create alert monitors for Keystone subscriptions

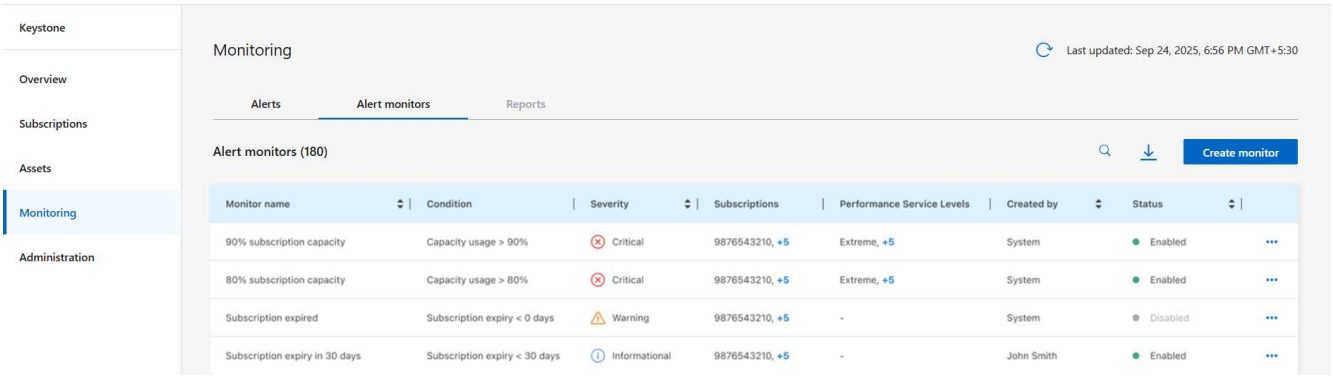
You can view and create alert monitors for your Keystone subscriptions from the Keystone dashboard in the NetApp Console. The dashboard shows both system-generated and user-defined monitors for capacity usage and subscription expiration. You can create monitors to set thresholds, choose alert severity, and add email recipients for notifications. You can address coverage gaps by adding monitors to uncovered subscriptions or resolving unused monitors. This functionality is not available in Digital Advisor.

View alert monitors

To view alert monitors, follow these steps:

Steps

1. From the Console left navigation menu, select **Storage > Keystone > Monitoring > Alert monitors**.



   You can view a list of alert monitors across your Keystone subscriptions, including monitor names, alert conditions that trigger notifications, severity levels, subscription numbers, performance service levels, and status. You can check the **Created by** column to see whether the alert monitors are system-generated or user-defined.

   The **Reports** tab is currently unavailable for Keystone subscriptions.

Create and manage alert monitors

From the **Alert monitors** tab, you can create monitors to track capacity usage and subscription expiration. You can also edit, duplicate, or delete existing monitors as needed.

You must be assigned to the **Keystone admin** role to create and manage alert monitors. To learn more, refer to Keystone access roles in NetApp Console.

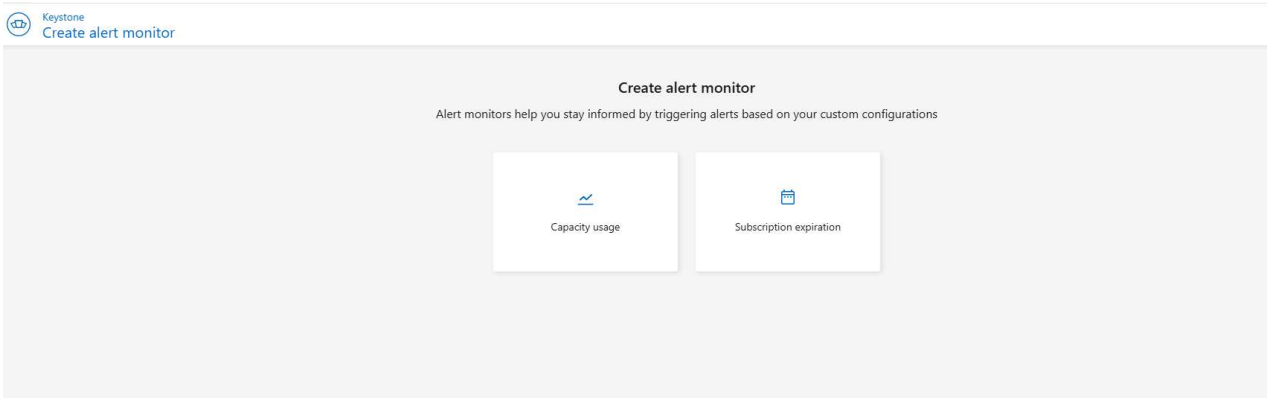
Create a monitor

To create a alert monitor, follow these steps:

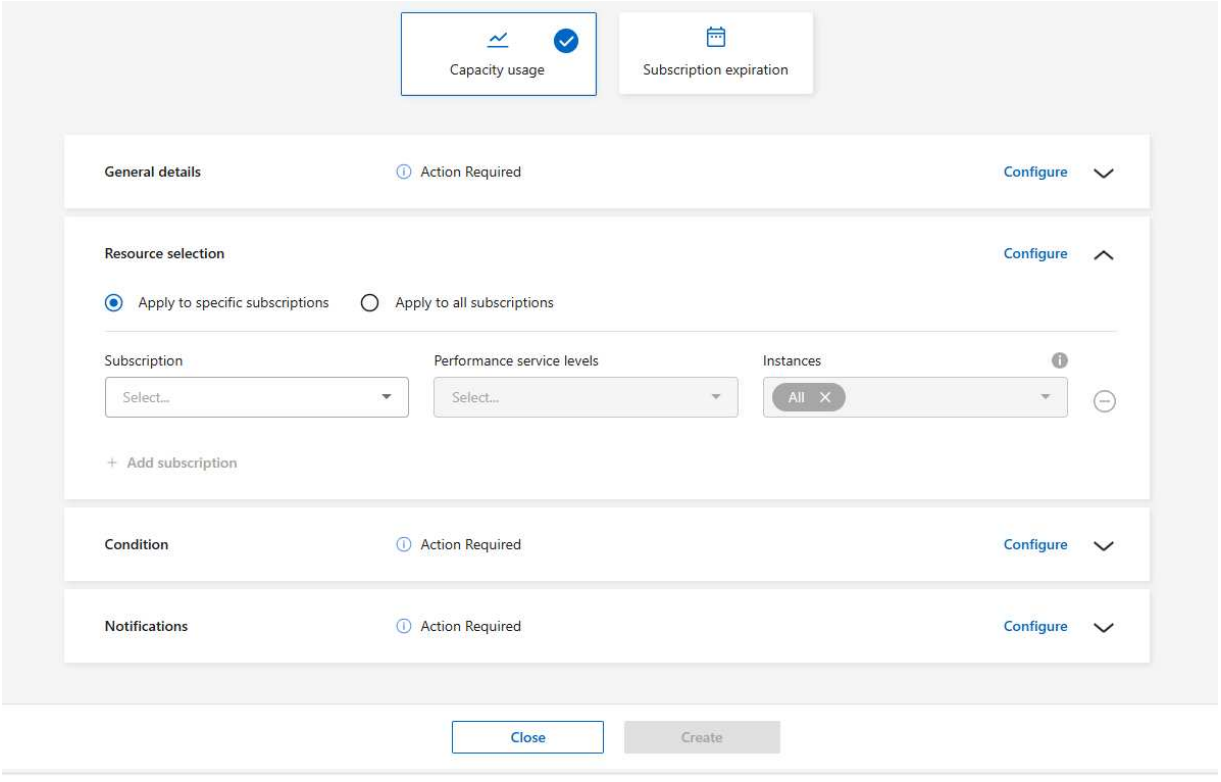
Steps

1. Select the **Create monitor** button.

   The **Create alert monitor** page appears.



2. Select either **Capacity usage** or **Subscription expiration** to define the monitor type. Based on your selection, provide the following details:
   - **General details**: Provide an alert name and select the severity level.
   - **Resource selection**: Choose to create the monitor for specific subscriptions or all subscriptions. Based on your monitor type selection, fill in the required fields that appear, such as subscription numbers and performance service levels for capacity usage monitors, or only subscription numbers for subscription expiration monitors.



- **Condition**: Set the threshold condition that triggers the alert. For example, trigger an alert when capacity usage exceeds a specified percentage.
- **Notifications**: Select the users to receive alert notifications.

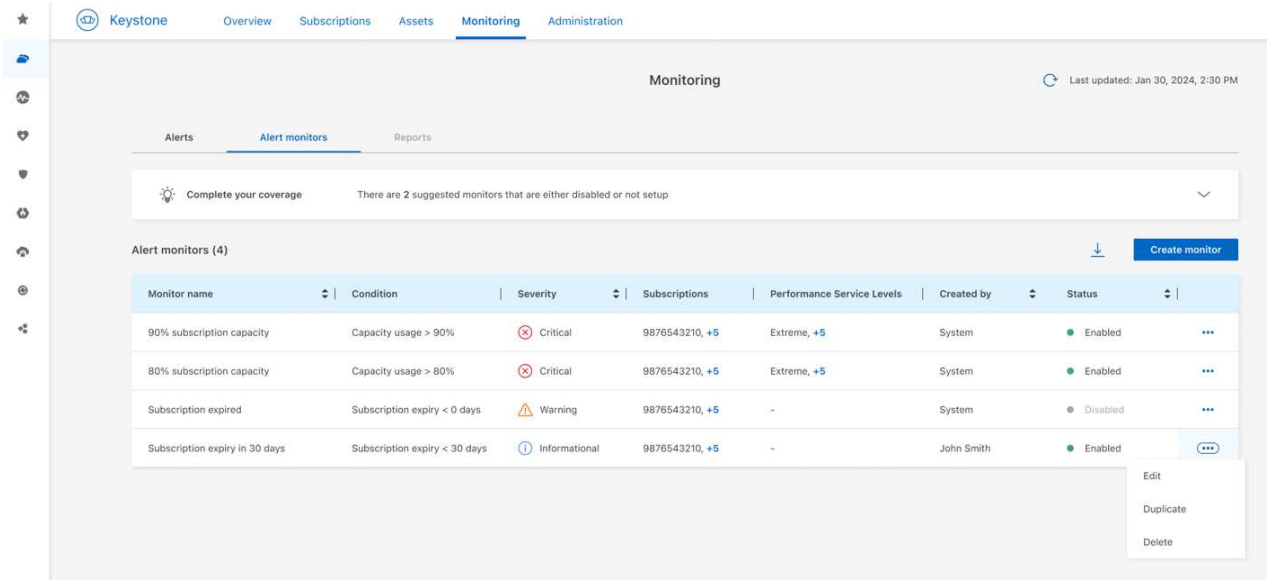
3. Click **Create**.

   After you create the monitor, the system returns you to the **Alert monitors** page and displays the new alert monitor in the list with active status.

Edit monitor

Steps

1. Select the ellipsis icon for the alert monitor you want to change.



2. Select **Edit**.

   The **Edit alert monitor** page appears with the current monitor configuration.

3. Change the needed fields. For field descriptions, refer to Create a monitor.

   For system-generated alert monitors, you can only modify subscription numbers and performance service levels for capacity usage monitors, and only subscription numbers for subscription expiration monitors.

4. Select **Save changes**.

   The system returns you to the **Alert monitors** page, where the updated monitor appears in the list.

Duplicate monitor

Steps

1. Select the ellipsis icon for the monitor you want to copy.
2. Select **Duplicate**.

   The **Create alert monitor** page appears with the existing field values already filled in.

3. Change the fields you need and click **Create**.

   A new alert monitor is created with the updated configuration and appears in the **Alert monitors** list.

Delete monitor

Steps

1. Select the ellipsis icon for the monitor you want to remove.
2. Select **Delete** and confirm the deletion.

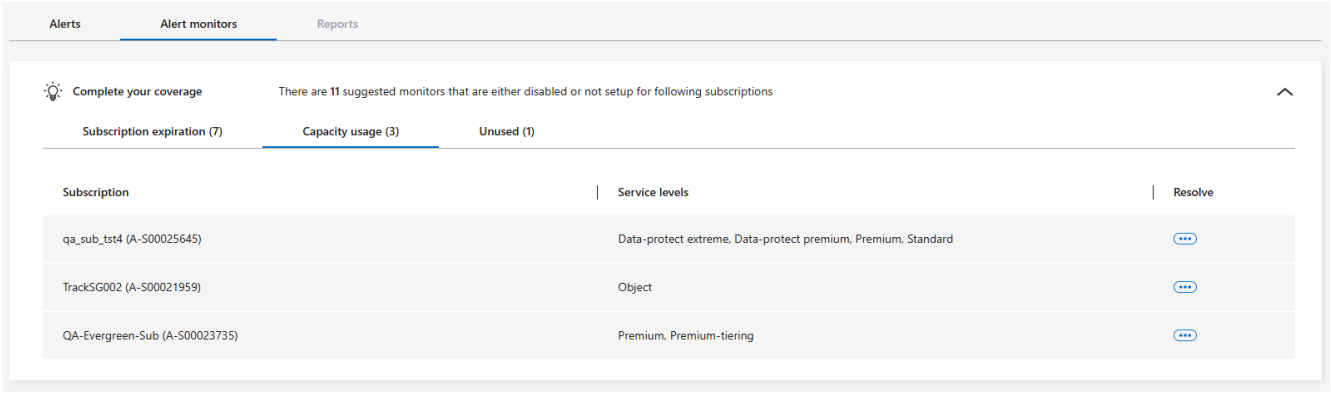
   After deletion, the subscriptions connected to the monitor stop getting notifications.

   System-generated monitors cannot be deleted by users.

Manage coverage gaps

A collapsible **Complete your coverage** notification box appears above the alert monitors list when action is required. It helps you:

- Identify and address subscriptions that do not have a capacity usage or subscription expiration monitor.
- Review and manage monitors that are not currently associated with any subscriptions.



To fix subscriptions without monitors or unused monitors, follow these steps:

Subscriptions without monitors

Steps

1. Select the **Subscriptions expiration** or **Capacity usage** tab.
2. In the **Resolve** column, select the ellipsis icon for the subscription you want to address.
3. Choose one:
   - **Add to existing monitor**: A pop-up appears. Select a monitor and confirm.
   - **Create new monitor**: The system displays the **Create alert monitor** page. Follow the steps in Create a monitor to create a new monitor.

     The subscription disappears from the tab after coverage is added.

Unused monitors

Steps

1. Select the **Unused** tab.
2. In the **Resolve** column, select the ellipsis icon for the monitor you want to address.
3. Choose one:
   - **Edit**: The system displays the **Edit alert monitor** page. Change the needed fields and save. To learn more, refer to see Edit monitor.
   - **Delete**: Confirm the deletion to remove the monitor.

     The monitor is removed from the tab after you add subscriptions or delete it.

Related information

- Understand the Keystone dashboard
- View your subscription details
- View your current consumption details
- View consumption trends
- View your subscription timeline
- View your Keystone subscription assets
- View and manage alerts
- View volumes & objects details
- View and manage alerts for Keystone subscriptions

View service requests for Keystone subscriptions

You can view and track service requests for modifying Keystone subscriptions through the NetApp Console, providing a quick summary and monitoring progress.

To view the progress or cancel a request, follow these steps:

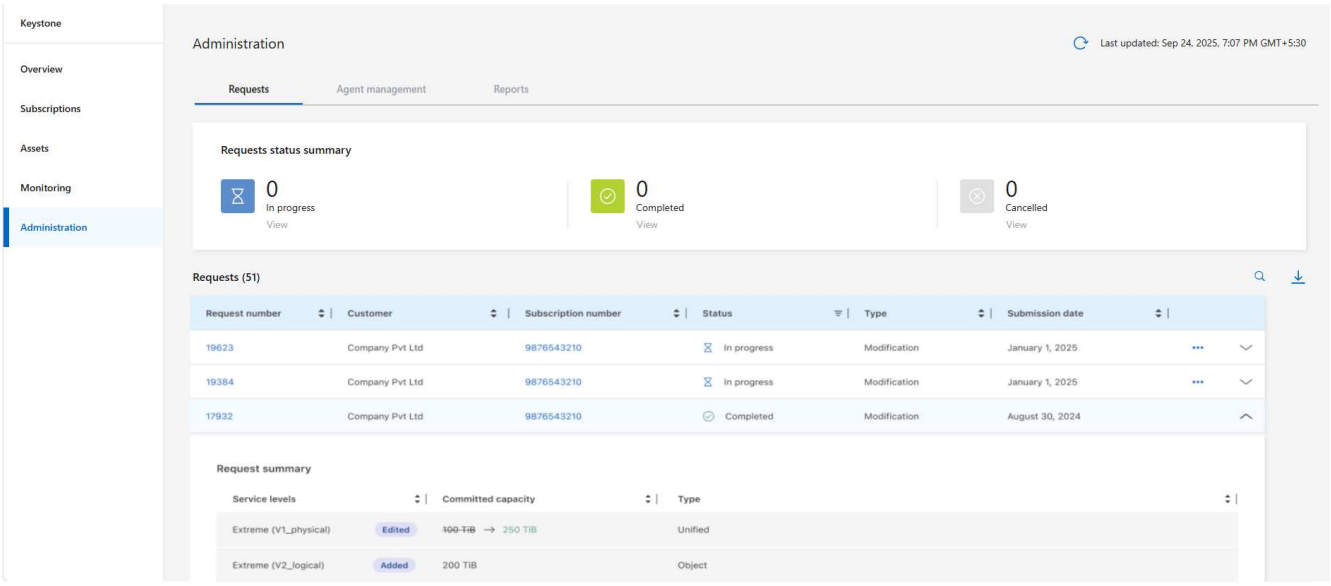
Steps

1. From the Console left navigation menu, select **Storage > Keystone > Administration > Requests**.

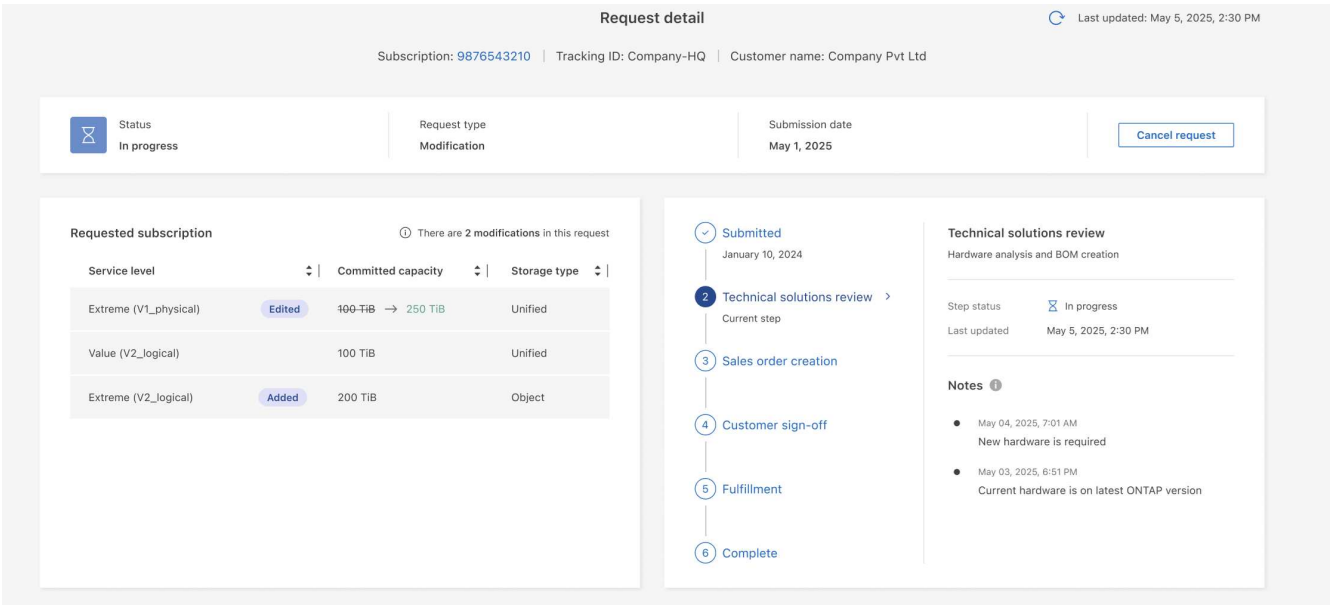
   You see a list of all service requests, including the request number, type of request, and current status.

   > The **Agent management** and **Reports** tabs are currently unavailable for Keystone subscriptions.

2. You can click the icon next to the **Submission date** column to expand the request number and view details. You see the performance service levels for which the requests are raised.



3. Select the request number to view detailed information, including modification details for the requested subscription and the current progress status.



View ONTAP volumes and object storage details for Keystone subscriptions

If you want to view capacity details at the volume or object storage level, you can navigate to the **Volumes & Objects** tab in Digital Advisor. For StorageGRID, you can use this tab to read the usage by the individual nodes in your object storage environment.

You can refer to the **Assets** page in the NetApp Console to view these details. To view the details for a specific Keystone STaaS subscription, refer to View assets associated with a Keystone subscription. If you want to view details across multiple Keystone subscriptions, refer to View assets across your Keystone subscriptions.

> The title of this tab varies with the nature of deployment at your site. If you have both ONTAP and object storage, the title of the tab appears as **Volumes & Objects**. For only ONTAP, the name appears **Volumes**. For StorageGRID object storage, you can see the **Objects** tab.

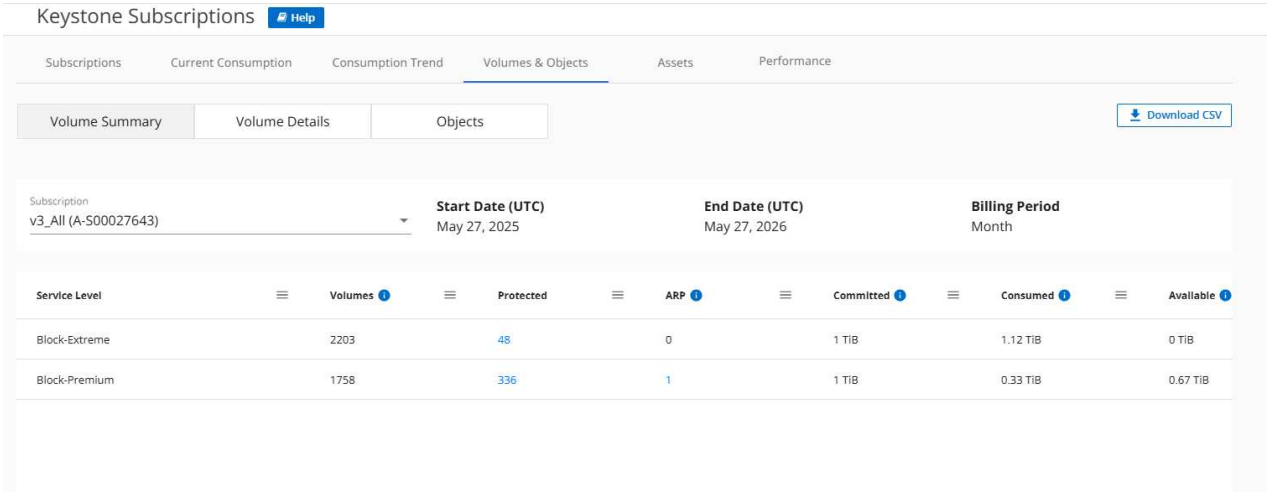
View ONTAP volumes and object storage details

The **Volumes & Objects** tab offers insights into ONTAP system volumes and object storage at different levels of detail. For ONTAP volumes, there are two sub-tabs: **Volume Summary**, which provides an overall count of the volumes mapped to the subscribed performance service levels, and **Volume Details**, which lists these volumes again with their specific particulars. The **Objects** sub-tab provides details on object storage for subscriptions that include performance service levels for both file and object storage.

Volume Summary

1. From the Digital Advisor left navigation pane, go to **General > Keystone Subscriptions > Volumes & Objects > Volume Summary**.
2. Select the subscription number.

   For the selected Keystone STaaS subscription, you can see the total number of volumes, count of protected volumes, anti ransomware protection status, and the total committed, consumed, and available capacity in all those volumes. If you click the number of protected volumes, it takes you to the **Volume Details** tab, where you can view a filtered list showing the protected volumes, based on your selection.

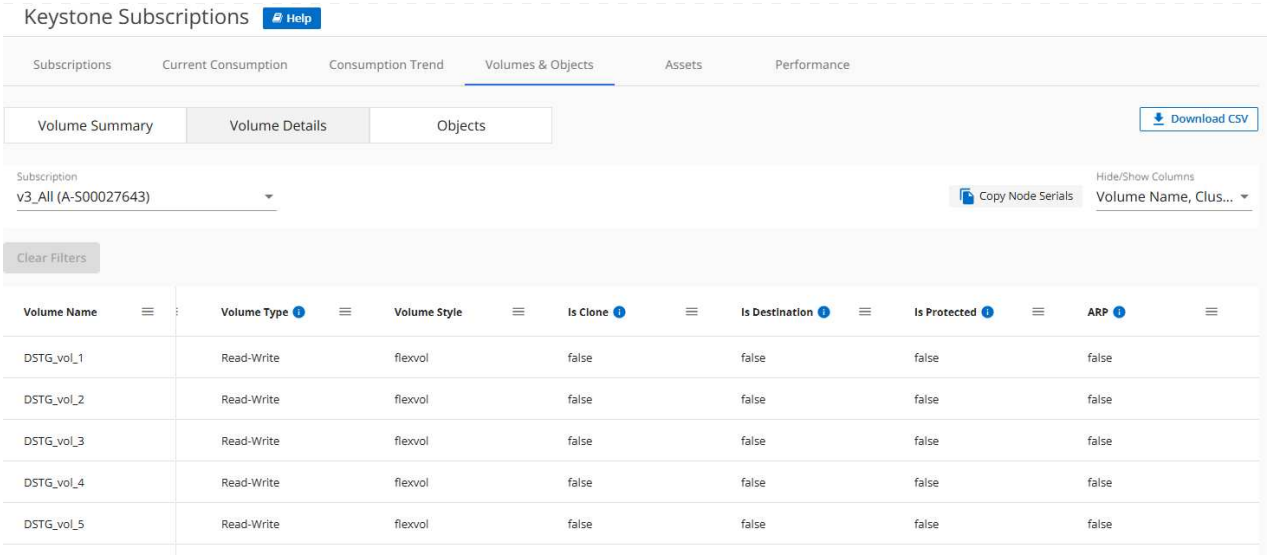


Volume Details

1. From the Digital Advisor left navigation pane, go to **General > Keystone Subscriptions > Volumes > Volume Details**.
2. Select the subscription number.

   You can see the tabular listing of the volumes, such as capacity usage, volume type, cluster, aggregate, and the assigned Keystone performance service levels. You can scroll across the columns and learn more about them by hovering your mouse on the information icons beside the column headings. You can sort by the columns and filter the lists to view specific information.

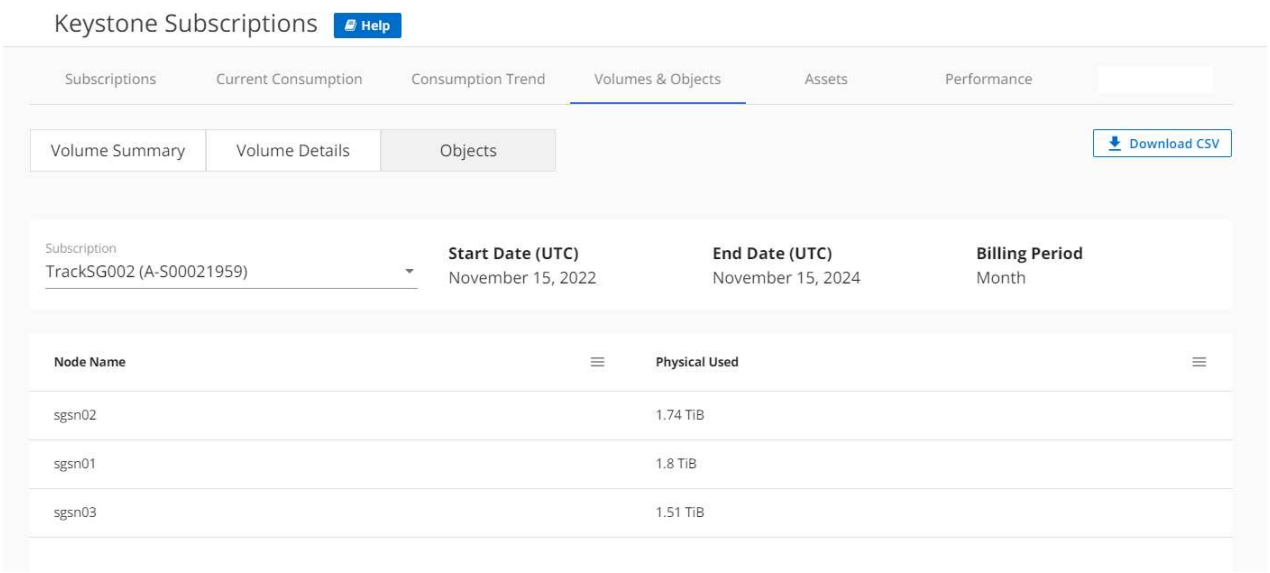
   You can use **Hide/Show Columns** to add or remove columns displayed in the table. By default, the table shows your previously saved column preferences. Newly added columns, such as the **Department** or **Total Footprint** columns, are hidden by default and should be manually selected to appear in the table. You can select or deselect any columns, and your preferences will be saved for later use. When downloading the CSV report, all available columns are included in the export regardless of your display preferences.



Objects

1. From the Digital Advisor left navigation pane, go to **General > Keystone Subscriptions > Objects**.
2. Select the subscription number. By default, the first available subscription number is selected if the previously selected subscription does not include performance service levels for both file and object storage.

For StorageGRID, this tab displays the physical usage for the nodes for object storage.



Related information

- Understand the Keystone dashboard
- View your subscription details
- View your current consumption details
- View consumption trends
- View your subscription timeline

- View your Keystone subscription assets
- View assets across your Keystone subscriptions
- View performance metrics

View performance metrics for Keystone subscriptions

To monitor the performance of your systems, you can view performance metrics of the ONTAP volumes managed by your Keystone subscriptions.

This tab is optionally available to you in Digital Advisor. Contact support for viewing this tab. It is not available in the NetApp Console.

To view this tab in Digital Advisor, follow these steps:

Steps

1. Select **General > Keystone Subscriptions > Performance**.
2. Select the subscription number. By default, the first subscription number is selected.
3. Select the required volume name from the list.

   Alternately, you can click the icon against an ONTAP volume in the **Volumes** tab to navigate to this tab.

4. Select the date range for the query. The date range can be the beginning of the month or the subscription start date to the current date or the subscription end date. You cannot select a future date.

The retrieved details are based on the performance service level objective for each performance service level. For example, the peak IOPS, maximum throughput, target latency, and other metrics are determined by the individual settings for the performance service level. For more information about the settings, see Performance service levels in Keystone.

If you select the **SLO Reference Line** check box, the IOPS, throughput, and latency graphs are rendered based on the performance service level objective for the performance service level. Else, they are displayed in actual numbers.

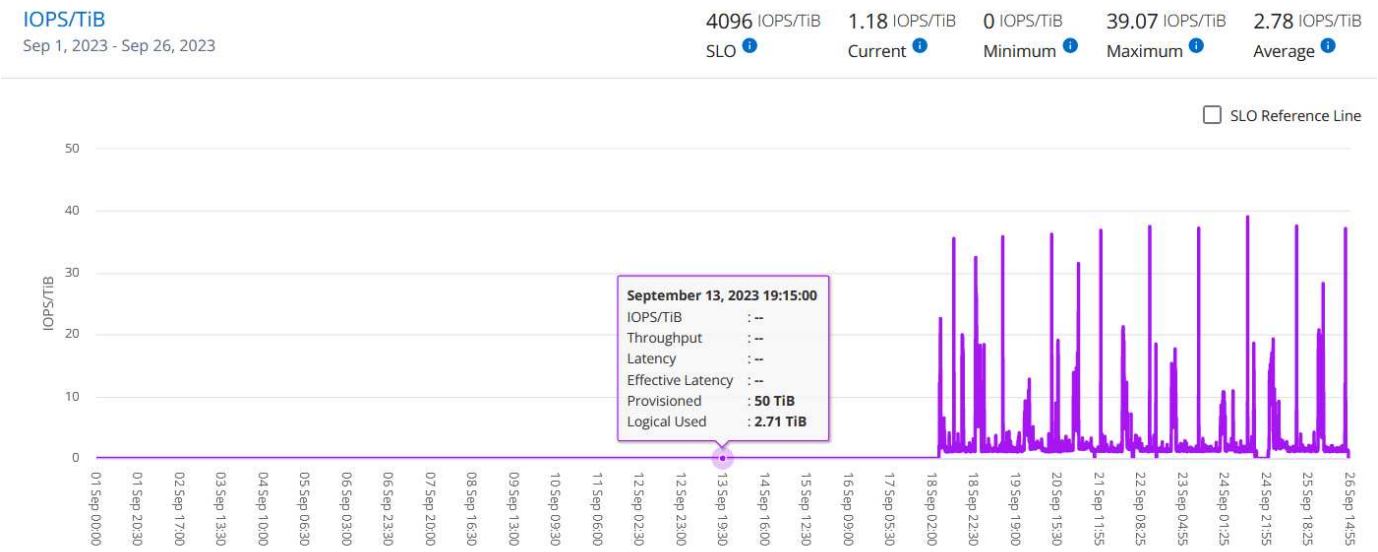
The performance data displayed on the horizontal graph is an average at every five-minute interval, and arranged as per the date range of the query. You can scroll across the graphs and hover your mouse over specific data points to drill further down into the collected data.

You can view and compare the performance metrics in the following sections based on the combination of the subscription number, volume name, and the date range selected. The details are displayed as per performance service level assigned to the volume. You can see the cluster name and volume type, that is, the read and write permissions assigned to the volume. Any warning message associated with the volume is also displayed.

IOPS

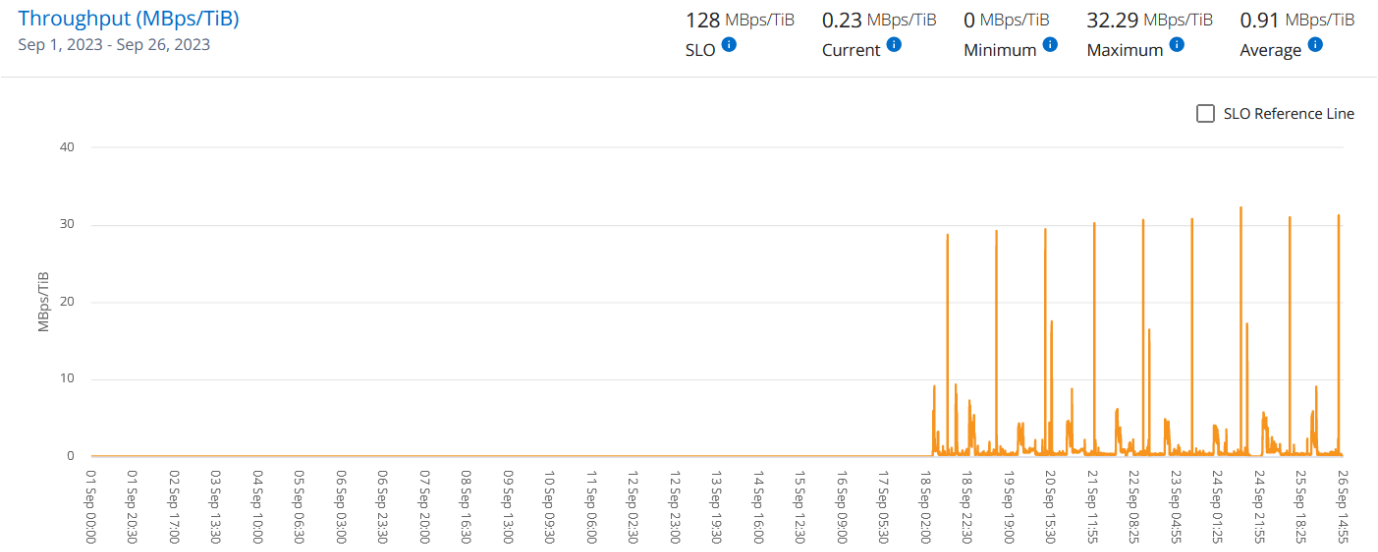
This section displays the input-output graphs for the workloads in the volume based on the date range of the query. The peak IOPS for the performance service level and the current IOPS (in the last five minutes, not based on the date range of the query) are displayed, along with the minimum, maximum, and average IOPS

for the time range, in IOPS/Tib.



Throughput

This section displays the throughput graphs for the workloads in the volume based on the date range of the query. The maximum throughput for the performance service level (SLO Max), and current throughput (in the last five minutes, not based on the date range of the query) are displayed, along with the minimum, maximum, and average throughput for the time range, in MBps/TiB.



Latency (ms)

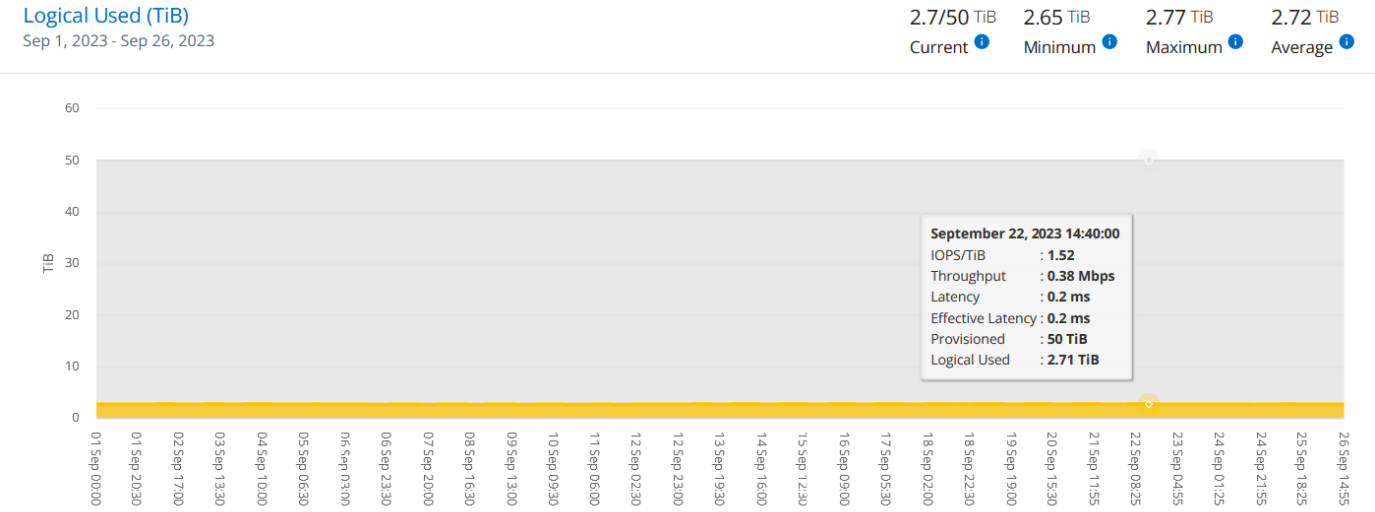
This section displays the latency graphs for the workloads in the volume based on the date range of the query. The maximum latency for performance service level (SLO Target), and current latency (in the last five minutes, not based on the date range of the query) are displayed, along with the minimum, maximum, and average latency for the time range, in milliseconds.

This graph has the following colors:

- Light blue: *Latency*. This is the actual latency that includes any latency other than your Keystone service. This might include additional latency, such as the latency occurring between your network and client.
- Dark blue: *Effective latency*. Effective latency is the latency applicable only to your Keystone service with respect to your SLA.

Logical Used (TiB)

This section displays the provisioned and the logical used capacities of the volume. The current logical used capacity (in the last five minutes, not based on the date range of the query), along with the minimum, maximum, and average usage for the time range are displayed in TiBs. On this graph, the grey area represents the committed capacity, and the yellow graph indicates the logical use.



Related information

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