



## **Generate custom reports**

Active IQ Unified Manager 9.12

NetApp

February 12, 2024

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# Generate custom reports

## Unified Manager reporting

Active IQ Unified Manager (formerly OnCommand Unified Manager) provides the ability to view, customize, download, and schedule reports for your ONTAP storage systems. The reports can provide details about the storage system capacity, health, performance, security, and protection relationships.

The new Unified Manager reporting and scheduling functionality introduced in Active IQ Unified Manager 9.6 replaces the previous reporting engine that was retired in Unified Manager version 9.5.

Reporting provides different views of your network, offering actionable intelligence on capacity, health, performance, security, and protection data. You can customize your views by showing, hiding, and rearranging columns, filtering data, sorting data, and searching the results. You can save custom views for reuse, download them as reports, and schedule them as recurring reports to distribute through email.

You can download views in Microsoft® Excel format and customize them. You can use advanced Excel features, such as complex sorts, layered filters, pivot tables, and charts. When satisfied with the resulting Excel report, you can upload the Excel file for use each time the report is scheduled and shared.

In addition to generating reports from the user interface, you can extract health, security, and performance data from Unified Manager using these additional methods:

- Using Open Database Connectivity (ODBC) and ODBC tools to directly access the database for cluster information
- Executing Unified Manager REST APIs to return the information you are interested in reviewing

From this release of Active IQ Unified manager, following enhancements are made to the reports:

- Email is sent for a report as per the configured schedule. Even when you generate an on-demand report, you will receive an email.
- The file name of the report and metadata of the report includes the hostname from where the report was generated. Even if any one changes the filename, still you can identify the hostname from where the report was generated due to this enhancement.

## Access points for generating reports

You can gather information in Unified Manager about your clusters to create reports from the UI, MySQL database queries, and REST APIs.

These sections describe Unified Manager reporting and scheduling through the UI.

There are three ways you can access the reporting capabilities provided by Unified Manager:

- Extracting data directly from the inventory pages in the UI.
- Using Open Database Connectivity (ODBC) and ODBC tools to access all the available objects.
- Executing Unified Manager REST APIs to return the information that you want to review.

These sections describe Unified Manager reporting and scheduling through the UI.

## Unified Manager databases accessible for custom reporting

Unified Manager uses a MySQL database to store data from the clusters that it is monitoring. Data is persisted into various schemas in the MySQL database.

All table data from the following databases are available:

Database	Description
netapp_model	Data about the objects on ONTAP controllers.
netapp_model_view	Data about the objects on ONTAP controllers, suitable for report tool consumption.
netapp_performance	Cluster specific performance counters.
ocum	Unified Manager application data and information to support UI filtering, sorting, and the calculation of some derived fields.
ocum_report	Data for inventory configuration and capacity-related information.
ocum_report_birt	Views for inventory configuration and capacity-related data, suitable for report tool consumption.
opm	Performance configuration settings and threshold information.
scalemonitor	Data about the Unified Manager application health and performance issues.
vmware_model	VMware object data for datastores hosted on NetApp storage.
vmware_model_view	Views for VMware object data for datastores hosted on NetApp storage, suitable for report tool consumption.
vmware_performance	VMware performance counter data for datastores hosted on NetApp storage.

A reporting user — a Database user with the Report Schema role — is able to access the data in these tables. This user has read-only access to reporting and other database views directly from the Unified Manager database. Note that this user does not have permission to access any tables that contain user data or cluster credential information.

## Unified Manager REST APIs that can be used for reporting

You can use REST APIs to help manage your clusters by viewing the health, capacity, performance, and security information captured by Unified Manager.

REST APIs are exposed through the Swagger web page. You can access the Swagger web page to display the Unified Manager REST API documentation, as well as to manually issue an API call. From the Unified Manager web UI, in the Menu Bar, click the **Help** button and then select **API Documentation**. For information about Unified Manager REST APIs, see [Getting started with Active IQ Unified Manager REST APIs](#).

You must have the Operator, Storage Administrator, or Application Administrator role to access the REST APIs.

## Understanding reports

Reports display detailed information about storage, network, quality of service, and protection relationships, helping you to identify and solve potential problems before they occur.

When you customize a view, you can save it with a unique name for future use. You can schedule a report based on that view to run on a regular basis and share it with others. You can also download the view in Excel to customize it using advanced Excel features, then upload that file back into Unified Manager. If you schedule a report using that view, it will use the Excel file you uploaded to create robust reports you can share.

You can manage all reports that have been scheduled from the Report Schedules page.



You must have the Application Administrator or Storage Administrator role to manage reports.

You can download reports as comma-separated values (CSV), Excel, or PDF files.

## Understanding the view and report relationship

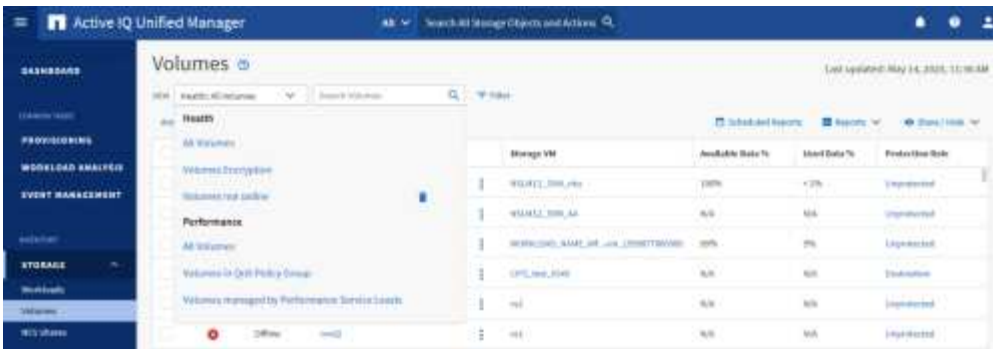
Views and inventory pages become reports when you download or schedule them.

You can customize and save views and inventory pages for reuse. Almost everything you can view in Unified Manager can be saved, reused, customized, scheduled, and shared as a report.

In the view drop down, items with the delete icon are existing custom views that you or another user have created. Items without an icon are default views provided with Unified Manager. Default views cannot be modified or deleted.



- If you delete a custom view from the list, it also deletes any Excel files or scheduled reports that use that view.
- If you change a custom view, reports that use that view will reflect the change the next time the report is generated and sent by email according to the report schedule. When changing views, make sure your changes work with any associated Excel customizations used for the reports. If needed, you can update the Excel file by downloading it, making the required changes, and uploading it as a new Excel customization for the view.



Only users with the Application Administrator or Storage Administrator role can see the delete icon, change or delete a view, or change or delete a scheduled report.

## Types of reports

This table provides a comprehensive list of the views and inventory pages that are available as reports that you can customize, download, and schedule.

### Active IQ Unified Manager reports

Type	Storage or network object
Capacity	<p>Clusters</p> <p>Aggregates</p> <p>Volumes</p> <p>Qtrees</p>
Health	<p>Clusters</p> <p>Nodes</p> <p>Aggregates</p> <p>Storage VMs</p> <p>Volumes</p> <p>SMB/CIFS shares</p> <p>NFS shares</p>

Type	Storage or network object
Performance	Clusters Nodes Aggregates Storage VMs Volumes LUNs NVMe namespaces Network Interfaces (LIFs) Ports
Quality of Service	Traditional QoS policy groups Adaptive QoS policy groups Performance Service Level policy groups
Volume protection relationships (available from the Volumes page)	All relationships Last 1 month transfer status Last 1 month transfer rate
Security	Storage VMs Clusters

## Reporting limitations

There are some limitations with the new Active IQ Unified Manager reporting functionality of which you should be aware.

### Existing reports from previous versions of Unified Manager

You can only edit the schedule and recipients for existing reports that were created and imported (as .rptdesign files) in Unified Manager 9.5 and earlier releases. If you customized any of the standard reports that were provided with Unified Manager 9.5 or earlier, these custom reports are not imported into the new reporting tool.

If you need to edit existing reports imported from .rptdesign files, do one of the following and remove the imported report:

- create a new view and schedule a report from that view (preferred)
- hover over the report, copy the SQL, and pull the data using an external tool

The default views can be generated as reports without the need for any customization. You can use the new reporting solution to recreate any custom reports.

### **Schedule and report relationship**

You can create many different schedules with any combination of recipients for each saved report. However, you cannot reuse the schedule for multiple reports.

### **Report protection**

Any user with the appropriate permissions can edit or delete reports. There is no way to prevent other users from removing or making changes to saved views or schedules.

### **Event reports**

Although you can customize the event view and download the resulting report in CSV format, you cannot schedule recurring event reports for generation and distribution.

### **Report attachments**

Reports cannot be sent in the body of an email. Instead, reports are only sent as PDF, Excel, or CSV attachments.

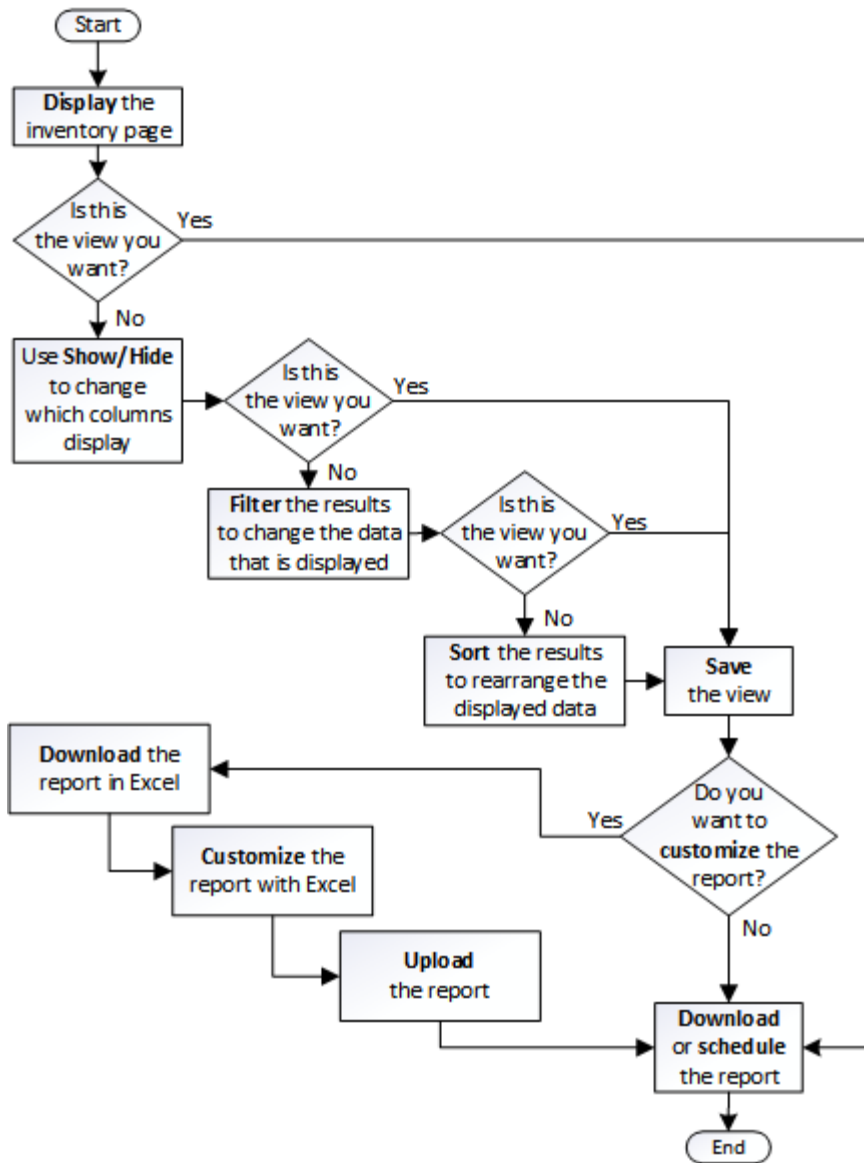
## **Working with reports**

Learn how to find and customize inventory page views into shareable scheduled reports.

### **Report workflow**

Decision tree that describes the report workflow.





## Reporting quick start

Create a sample custom report to experience exploring views and scheduling reports. This quick start report finds a list of volumes that you might want to move to the cloud tier because there is a fair amount of inactive (cold) data. You will open the Performance: All Volumes view, customize the view using filters and columns, save the custom view as a report, and schedule the report to share once a week.

### What you'll need

- You must have the Application Administrator or Storage Administrator role.
- You must have configured FabricPool aggregates and have volumes on those aggregates.

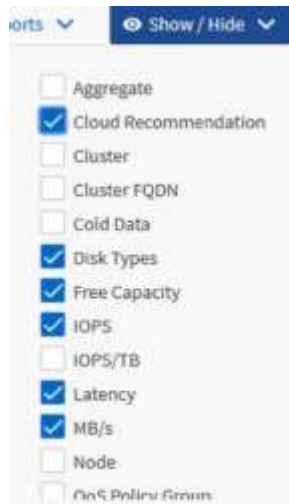
Follow the steps below to:

- Open the default view
- Customize the columns by filtering and sorting the data

- Save the view
- Schedule a report to be generated for the custom view

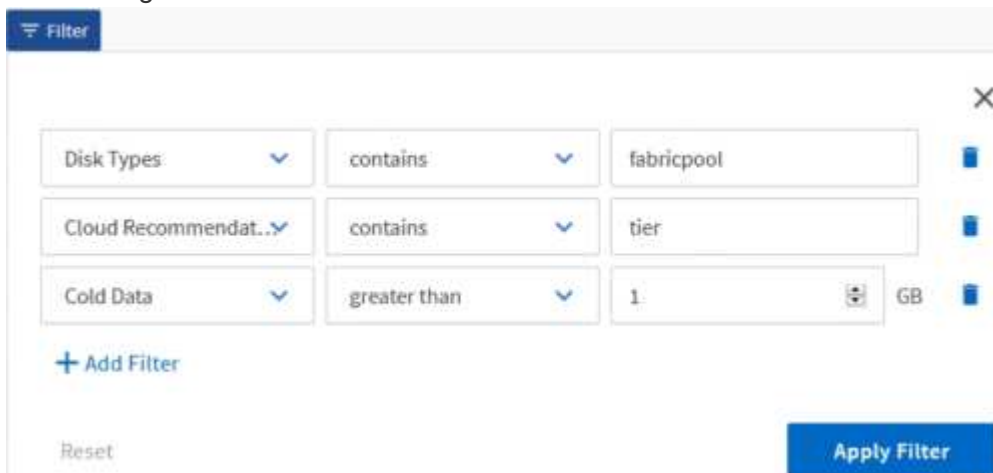
## Steps

1. In the left navigation pane, click **Storage > Volumes**.
2. In the View menu, select **Performance > All Volumes**.
3. Click **Show/Hide** to make sure the “Disk Types” column appears in the view.



Add or remove other columns to create a view that contains the fields that are important for your report.

4. Drag the “Disk Types” column next to the “Cloud Recommendation” column.
5. Click the filter icon to add the following three filters, and then click **Apply Filter**:
  - Disk Types contains FabricPool
  - Cloud Recommendation contains tier
  - Cold Data greater than 10 GB



Note that each filter is joined with a logical AND so that all volumes returned must meet all the criteria. You can add a maximum of five filters.

6. Click the top of the Cold Data column to sort the results so that the volumes with the most cold data appear at the top of the view.

- When the view is customized, the view name is Unsaved View. Name the view to reflect what the view is showing, for example “Vols change tiering policy”. When done, click the check mark or press **Enter** to save the view with the new name.

Volumes - Performance / Vols change tiering policy ⓘ Last updated: Feb 8, 2019, 12:26 PM ↻

Latency, IOPS, MBps are based on hourly samples averaged over the previous 72 hours.

View: Vols change tiering policy 🔍 Search Volumes ⚙️

Assign Performance Threshold Policy Clear Performance Threshold Policy Scheduled Reports Reports Show Hide

Volume	Cold Data	Tiering Policy	Disk Types	Cloud Recommendation	Free Capacity	Total Capacity
nfs_vol4	38 GB	Snapshot Only	SSD (FabricPool)	Tier	2.62 TB	3 TB
kjagntsdst	28 GB	Snapshot Only	SSD (FabricPool)	Tier	121 GB	150 GB

- Download the report as a **CSV**, **Excel**, or **PDF** file to see the output before you schedule or share it.

Open the file with an installed application, such as Microsoft Excel (CSV or Excel) or Adobe Acrobat (PDF), or save the file.



You can further customize your report using complex filters, sorts, pivot tables, or charts by downloading the view as an Excel file. After you open the file in Excel, use the advanced features to customize your report. When satisfied, upload the Excel file. This file, with its customizations, is applied to the view when the report is run.

For more information on customizing reports using Excel, see *Sample Microsoft Excel reports*.

- Click the **Scheduled Reports** button on the inventory page. All scheduled reports relating to the object, in this case volumes, appear in the list.

Assign Performance Threshold Policy Clear Performance Threshold Policy Scheduled Reports

Volumes - Scheduled Reports View all Scheduled Reports

Add Schedule

Schedule Name	View	Recipients	Frequency	Format	
Weekly / Vols c... tiering policy	Performance / V... tiering policy	user@company.com	Weekly - Monday 1:00 PM	CSV	⋮

- Click **Add Schedule** to add a new row to the Report Schedules page so you can define the schedule characteristics for the new report.
- Enter a name for the report and complete the other report fields, then click the check mark (✓) at the end of the row.

The report is sent immediately as a test. After that, the report generates and is sent by email to the recipients listed using the specified frequency.

The following sample report is in CSV format:

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
1	Report: Performance - Vols change tiering policy (Latency, IOPS, MBps are based on hourly samples averaged over March 24, 2019, 11:52 PM - March 28, 2019, 12:52 PM)																
2	Generated At: March 28, 2019, 12:52 PM																
3																	
4	Status	Volume	Volume Id	Tiering Policy	Cold Data (GB)	Free Capacity (GB)	Total Capacity (GB)	Cluster	Cluster Id	Node	Node Id	Aggregate	Aggregate Id				
5	Ok	kjagnfsdst1	101510	Snapshot	28.01	121.32	150	ocum-mo	99001	ocum-mo	99018	aggr5_vs	99040				
6	Ok	nfs_vol4	102294	Snapshot	379.64	2676.57	3072	ocum-mo	99001	ocum-mo	99113	aggr4	99141				

The following sample report is in PDF format:

Report: Performance - Vols change tiering policy (Latency, IOPS, MBps are based on hourly samples averaged over March 24, 2019, 11:51 PM - March 28, 2019, 12:51 PM)  
Generated At: March 28, 2019, 12:51 PM

Status	Volume	Tiering Policy	Cold Data (GB)	Free Capacity (GB)	Total Capacity (GB)	Cluster	Node	Aggregate
Ok	kjagnfsdst1	Snapshot	28.01	121.32	150	ocum-mo	ocum-mo-01-02	aggr5_vs
Ok	nfs_vol4	Snapshot	379.64	2676.57	3072	ocum-mo	ocum-mo-01-02	aggr4

Based on the results shown in the report, you might want to use ONTAP System Manager or the ONTAP CLI to change the tiering policy to “auto” or “all” for certain volumes to offload more cold data to the cloud tier.

## Searching for a scheduled report

You can search for scheduled reports by name, view name, object type, or recipients.

1. In the left navigation pane, click **Storage Management > Report Schedules**.
2. Use the **Search Scheduled Reports** text field.

To find reports by ...	Try ...
Schedule name	Type part of the report schedule name.
View name	Type part of the report view name. Default views and custom views appear in the view list.
Recipient	Type part of the email address.
File type	Type "PDF", "CSV", or "XLSX".

3. You can click a column heading to sort reports in ascending or descending order by that column, such as schedule name or format.

## Customizing reports

There are many ways you can customize views so that you can create a report that contains all the information you need to manage your ONTAP clusters.

Start with a default inventory page or a custom view, then customize it by adding or removing columns, changing the column order, filtering the data, or sorting on a specific column in ascending or descending order.

Starting in Unified Manager 9.8, you can also download the view in Excel to customize it using advanced features. When done, upload the customized Excel file. If you schedule a report using that view, it uses the customized Excel file to create robust reports you can share.

For more information on customizing reports using Excel, see *Sample Microsoft Excel reports*.



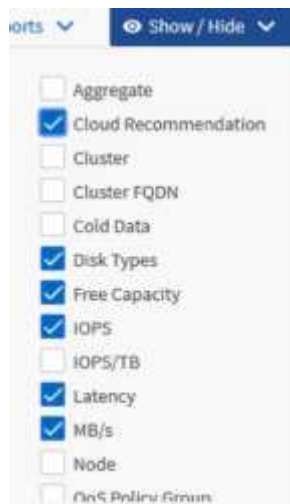
You must have the Application Administrator or Storage Administrator role to manage reports.

## Customizing columns

Use **Show/Hide** to choose the columns you want to use in your report. Drag the columns on the inventory page to rearrange them.

### Steps

1. Click **Show/Hide** to add or remove columns.



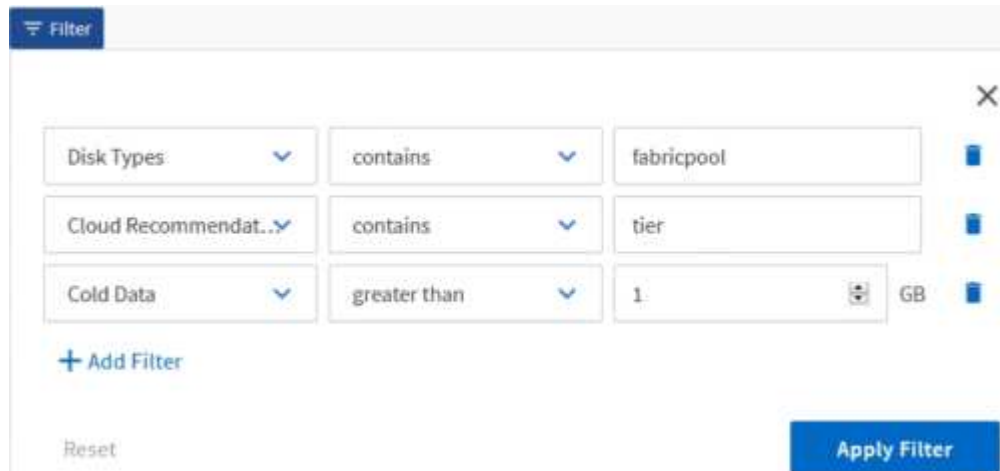
2. On the inventory page, drag columns to rearrange them in the order you want in your report.
3. Name the unsaved view to save your changes.

## Filtering data

Filter the data to make sure the results match your report requirements. Filtering enables you to display only the data in which you are interested.

### Steps

1. Click the filter icon to add filters to focus the results you want to view, and then click **Apply Filter**.



2. Name the unsaved view to save your changes.

## Sorting data

To sort the results, click a column and indicate ascending or descending order. Sorting data prioritizes the information you need for the report.

### Steps

1. Click the top of a column to sort the results so that the most important information appears at the top of the view.
2. Name the unsaved view to save your changes.

## Using search to refine your view

After you have the view you want, you can further refine the results using the Search field to focus on the results that you want to include in the report.

### Steps

1. Open the custom or default view that you want to use as the basis of your report.
2. Type in the Search field to refine the data listed in the view. You can enter partial data in any of the displayed columns. For example, if you want to search for nodes that include "US\_East" in the name, you can refine the full list of nodes.

The results of your search are saved in the custom view and used in the resulting scheduled report.

3. Name the unsaved view to save your changes.

## Using Excel to customize your report

After you have saved the view, you can download it in Excel Workbook format (.xlsx). When you open the Excel file, you can use advanced Excel features to customize your report.

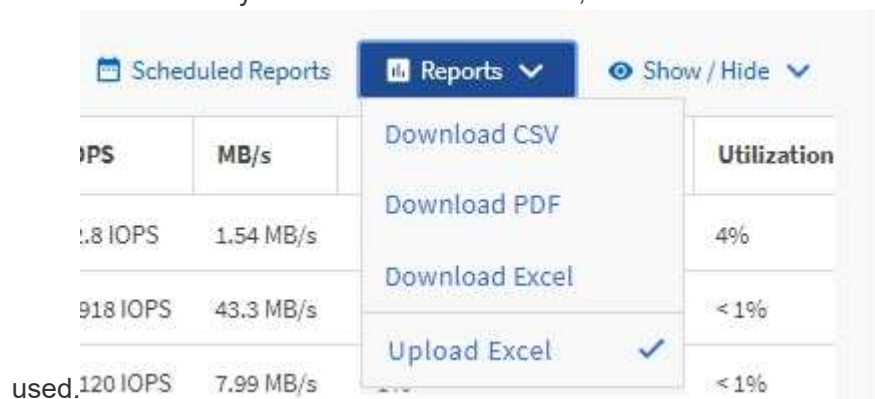
### What you'll need

You can only upload an Excel Workbook file with the .xlsx extension.

For example, some advanced Excel features you can use in your report include:

- Multi-column sort
- Complex filtering
- Pivot tables
- Charts

- The downloaded Excel file uses the default file name for the view, not your saved name.
  - The format is <View Area>-<Day>-<Month>-<Year>-<Hour>-<Minute>-<Second>.xlsx.
  - For example, a custom saved view named Volumes-not online has a file name of health-volumes-05-May-2020-19-18-00.xlsx if saved at that day and time.
- You can add sheets to the Excel file, but do not change existing sheets.
  - Do not change the existing sheets, data and info. Instead, copy the data to a new page that you create.
  - One exception to the above rule is that you can create formulas on the “data” page. Use the data page formulas to create charts on new pages.
  - Do not name a new sheet data or info.
- If a customized Excel file exists, there is a check mark beside the **Reports > Upload Excel** menu item. When you download the Excel file, the version with the customizations is



## Steps

1. Open the default, custom, or saved view that you want to use as the basis of your report.
2. Select **Reports > Download Excel**.
3. Save the file. The file is saved to your downloads folder.
4. Open the saved file in Excel. Do not move the file to a new location, or if you do your work in another location, save the file back to the original location using the original file name before uploading the file.
5. Customize the file using Excel features, such as complex sorts, layered filters, pivot tables, or charts. For more information, see the Microsoft® Excel documentation.
6. Select **Reports > Upload Excel** and select the file that you modified. The most recently downloaded file is uploaded from the same file location.
7. Send yourself a test report using the **Scheduled Reports** feature.

## Downloading reports

You can download reports and save the data to a local or network drive as a comma-separated values (CSV) file, a Microsoft Excel (.XLSX) file, or a PDF file. You can open CSV and XLSX files with spreadsheet applications, such as Microsoft Excel, and PDF files with readers such as Adobe Acrobat.

## Steps

1. Click the **Reports** button to download the report as one of the following:

Choose	To...
Download CSV	Save the report as a comma-separated values (CSV) file.
Download PDF	Save the report as a .pdf file.
Download Excel	Save the report as a Microsoft Excel (XLSX) file.

## Scheduling reports

After you have a view you want to reuse and share as a report, you can schedule it using Active IQ Unified Manager. You can manage scheduled reports, changing the recipients and distribution frequency for each report schedule.

You can schedule most views or inventory pages in Unified Manager. Exceptions are events, which are reports you can download as CSV files, but you cannot schedule events for regeneration and sharing. You also cannot download or schedule the dashboards, favorites, or configuration pages.

Starting in Active IQ Unified Manager 9.8, you can download views in Microsoft® Excel format and customize them. You can use advanced Excel features such as complex sorts, layered filters, pivot tables, and charts. When satisfied with the resulting Excel report, you can upload the Excel file for use each time the report is scheduled and shared.

You can schedule the built in views or views you customize. You can choose which file type to send, either CSV, PDF, or XSLX. When you schedule a report for the first time, you can download it and assign yourself as the only recipient to see the report as your recipients will see it.

### Scheduling a report

After you have a view or Excel file that you want to schedule for regular generation and distribution, you can schedule the report.

#### What you'll need

- You must have the Application Administrator or Storage Administrator role.
- You must have configured the SMTP server settings in the **General > Notifications** page so that the reporting engine can send reports as email attachments to the list of recipients from the Unified Manager server.
- The email server must be configured to allow attachments to be sent with the generated emails.

Use the following steps to test and schedule a report to be generated for a view. Select or customize the view you want to use. The following procedure uses a network view that shows the performance of your network interfaces, but you can use any view you want.

#### Steps

1. Open your view. This example uses the default network view that shows LIF performance. In the left



navigation pane, click **Network > Network Interfaces**.

2. Customize the view as needed using the built-in Unified Manager features.
3. After you customized the view, you can provide a unique name in the **View** field and click the check mark to save it.



4. You can use the advanced features of Microsoft® Excel to customize your report. For details, see [Using Excel to customize your report](#).
5. To see the output before you schedule or share it:

Option	Description
If you used Excel to customize the report	View the existing downloaded Excel file.
If you did not use Excel to customize the report	Download the report as a <b>CSV</b> , <b>PDF</b> or <b>XLSX</b> file.

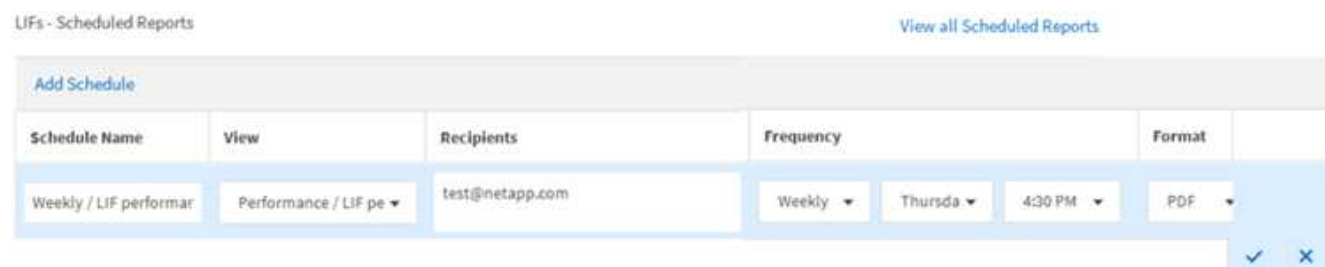
Open the file with an installed application, such as Microsoft Excel (CSV/XSLX) or Adobe Acrobat (PDF).

6. If you are satisfied with the report, click **Scheduled Reports**.
7. In the Report Schedules page, click **Add Schedule**.
8. Accept the default name, which is a combination of the view name and the frequency, or customize the **schedule name**.
9. To test the scheduled report the first time, only add yourself as the **recipient**. When satisfied, add the email addresses for all report recipients.
10. Specify how frequently the report will be generated and sent to the recipients. You can choose **Daily**, **Weekly**, or **Monthly**.
11. Select the format, either **PDF**, **CSV**, or **XSLX**.



For reports where you used Excel to customize the content, always select **XSLX**.

12. Click the checkmark (✓) to save the report schedule.



The report is sent immediately as a test. After that, the report generates and is sent by email to the recipients listed using the scheduled frequency.

## Scheduling imported .rptdesign reports

You can schedule existing reports that were created and imported in an earlier release of Unified Manager.

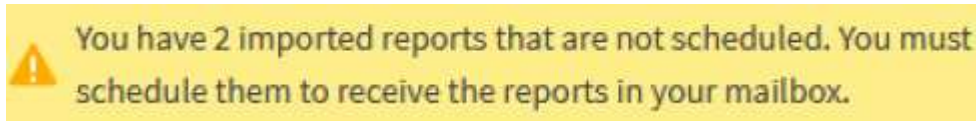
Scheduling imported reports requires the following:

- imported BIRT designed .rptdesign file reports in an earlier Unified Manager release
- applicable when upgrading to Unified Manager 9.6 GA or later

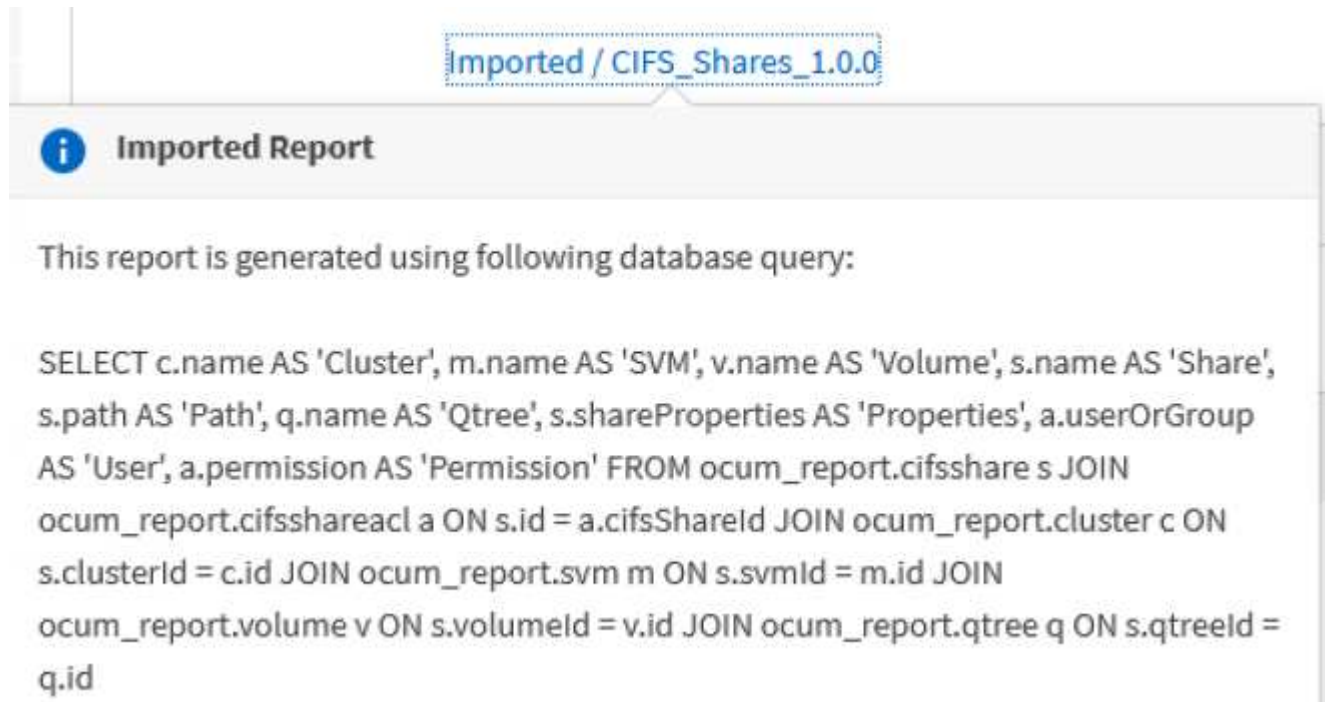
After upgrading to Unified Manager 9.6 GA or later, the Report Schedules page lists the imported reports. You can edit the schedule for these reports to specify the recipient email addresses, frequency, and format (PDF or CSV). Otherwise these reports cannot be edited or viewed in the Unified Manager UI.

### Steps

1. Open the Report Schedules page. If you have imported reports, a message appears.



2. Click the **View** name to display the SQL query that is being used to generate the report.



3. Click the more icon , click **Edit**, define the report schedule details, and save the report.




You can also delete any unwanted reports from the more icon .

# Managing report schedules

You can manage your report schedules from the Report Schedules page. You can view, modify, or delete existing schedules.

## What you'll need





You cannot schedule new reports from the Report Schedules page. You can only add scheduled reports from the object inventory pages.

- You must have the Application Administrator or Storage Administrator role.

## Steps

1. In the left navigation pane, click **Storage Management > Report Schedules**.
2. On the Report Schedules page:

If you want to...	Then...
View an existing schedule	Scroll through the list of existing reports using the scroll bars and page controls.
Edit an existing schedule	<div>a. Click the more icon  for the schedule you want to use.</div> <div>b. Click <b>Edit</b>.</div> <div>c. Make the necessary changes.</div> <div>d. Click the check mark to save your changes.</div>
Delete an existing schedule	<div>a. Click the more icon  for the schedule you want to use.</div> <div>b. Click <b>Delete</b>.</div> <div>c. Confirm your decision.</div>

## Editing scheduled reports

After reports are scheduled, you can edit them on the Report Schedules page.

## What you'll need

- You must have the Application Administrator or Storage Administrator role.

## Steps

1. In the left navigation pane, click **Storage Management > Report Schedules**.


## Scheduled Reports

View and modify existing report scheduling information. To add a new report and create a schedule for the report, click 'Schedule Report' from any Storage / Network inventory page.

Search Scheduled Reports					
Schedule Name	View	Recipients	Frequency	Format	
Weekly / Node performance	<a href="#">Performance / Tom_test</a>	test@netapp.com	Weekly - Monday 5:30 PM	PDF	
Weekly / my view	<a href="#">Health / my view</a>	test@netapp.com	Weekly - Friday 5:30 PM	PDF	
Weekly / LIF performance	<a href="#">Performance / LIF performance</a>	test@netapp.com	Weekly - Thursday 4:30 PM	PDF	



If you have the appropriate permissions you can alter any report and its schedule in the system.

2. Click the more icon  for the schedule you want to change.
3. Click **Edit**.
4. You can change the **Schedule Name**, **Recipient** list, **Frequency**, and **Format** for the report schedule.
5. When done, click the check mark to save your changes.

## Deleting scheduled reports

After reports are scheduled, you can delete them from the Report Schedules page.

### What you'll need

- You must have the Application Administrator or Storage Administrator role.

### Steps

1. In the left navigation pane, click **Storage Management > Report Schedules**.


## Scheduled Reports

View and modify existing report scheduling information. To add a new report and create a schedule for the report, click 'Schedule Report' from any Storage / Network inventory page.

Search Scheduled Reports					
Schedule Name	View	Recipients	Frequency	Format	
Weekly / Node performance	<a href="#">Performance / Tom_test</a>	test@netapp.com	Weekly - Monday 5:30 PM	PDF	
Weekly / my view	<a href="#">Health / my view</a>	test@netapp.com	Weekly - Friday 5:30 PM	PDF	
Weekly / LIF performance	<a href="#">Performance / LIF performance</a>	test@netapp.com	Weekly - Thursday 4:30 PM	PDF	



If you have the appropriate permissions you can remove any report and its schedule in the system.

2. Click the more icon  for the schedule you want to remove.
3. Click **Delete**.

#### 4. Confirm your decision.

The scheduled report is removed from the list and will no longer be generated and distributed on the set schedule.



If you delete a custom view from the inventory page, any custom Excel files or scheduled reports that use that view are also deleted.

## Sample custom reports

These sample custom reports are commonly used to help you identify potential problems and respond to potential issues before problems occur.

The list of reports in this section is not exhaustive and will grow over time. You can suggest custom reports to add to this section by providing documentation feedback.



You must have the Application Administrator or Storage Administrator role to manage reports.

## Customizing cluster storage reports

The sample cluster storage reports in this section are just samples to help you understand how to create reports about cluster capacity to help you monitor your storage system resources.

### Creating a report to view capacity by cluster model

You can create a report to analyze storage capacity and utilization of clusters based on storage system model.

#### What you'll need

- You must have the Application Administrator or Storage Administrator role.

Use the following steps to create a custom view that displays capacity by cluster model, and then schedule a report to be generated for that view.

#### Steps

1. In the left navigation pane, click **Storage > Clusters**.
2. In the View menu, select **Capacity > All Clusters**.
3. Select **Show/Hide** to remove any columns, such as "Cluster FQDN" and "OS Version", that you do not want in the report.
4. Drag the "Total Raw Capacity", the "Model/Family", and the three aggregate columns near the "Cluster" column.
5. Click the top of the "Model/Family" column to sort the results by cluster type.
6. Save the view with a specific name that reflects what the view is showing, for example, "Capacity by Cluster Model".
7. Click the **Scheduled Reports** button on the inventory page.

8. Click **Add Schedule** to add a new row to the **Report Schedules** page so that you can define the schedule characteristics for the new report.
9. Enter a name for the report schedule and complete the other report fields, then click the check mark (✓) at the end of the row.

The report is sent immediately as a test. After that, the report generates and is sent by email to the recipients listed using the specified frequency.

Based on the results shown in the report, you might want to add more capacity to certain clusters, or upgrade older cluster models.

### Creating a report to identify clusters with the most unallocated LUN capacity

You can create a report to find the clusters with the most unallocated LUN capacity, greater than .5 TB, to help identify where you can add additional workloads.

**What you'll need** \* You must have the Application Administrator or Storage Administrator role.

Use the following steps to create a custom view that displays clusters with the most unallocated LUN capacity, and then schedule a report to be generated for that view.

#### Steps

1. In the left navigation pane, click **Storage > Clusters**.
2. In the View menu, select **Capacity > All Clusters**.
3. Select **Show/Hide** to remove any columns you do not want in the report.
4. Drag the "Unallocated LUN Capacity" column near the "HA Pair" column.
5. Click the filter icon, add the following filter, and then click **Apply Filter**:
  - Unallocated LUN capacity greater than 0.5 TB
6. Click the top of the "Unallocated LUN Capacity" column to sort the results by the greatest amount of unallocated LUN capacity.
7. Save the view with a specific name that reflects what the view is showing, for example "Most unallocated LUN capacity" and click the check mark (✓).
8. Click the **Scheduled Reports** button on the inventory page.
9. Click **Add Schedule** to add a new row to the Report Schedules page so that you can define the schedule characteristics for the new report.
10. Enter a name for the report schedule and complete the other report fields, then click the check mark (✓) at the end of the row.

The report is sent immediately as a test. After that, the report generates and is sent by email to the recipients listed using the specified frequency.

Based on the results shown in the report, you might want to use the unallocated LUN capacity of the cluster.

### Creating a report to view HA pairs with the most available capacity

You can create a report to find the high availability (HA) pairs with the most capacity to provision new volumes and LUNs.

## What you'll need

- You must have the Application Administrator or Storage Administrator role.

Use the following steps to create a custom view that displays HA pairs sorted by the most available capacity to provision new volumes and LUNs, and then schedule a report to be generated for that view.

### Steps

1. In the left navigation pane, click **Storage > Clusters**.
2. In the View menu, select **Capacity > All Clusters**.
3. Select **Show/Hide** to remove any columns you do not want in the report.
4. Drag the "Aggregate Unused Capacity" column near the "HA Pair" column.
5. Click the filter icon, add the following filter, and then click **Apply Filter**:
  - Aggregate Unused Capacity greater than 0.5 TB
6. Click the top of the "Aggregate Unused Capacity" column to sort the results by the greatest amount of unused aggregate capacity.
7. Save the view with a specific name that reflects what the view is showing, for example, "Least used aggregate capacity", and click the check mark (✓).
8. Click the **Scheduled Reports** button on the inventory page.
9. Click **Add Schedule** to add a new row to the Report Schedules page so that you can define the schedule characteristics for the new report.
10. Enter a name for the report schedule and complete the other report fields, then click the check mark (✓) at the end of the row.

The report is sent immediately as a test. After that, the report generates and is sent by email to the recipients listed using the specified frequency.

Based on the results shown in the report, you might want to balance HA pairs based on aggregate capacity.

## Creating a report to view nodes running older versions of ONTAP

You can create a report to display the version of ONTAP software that is installed on all cluster nodes so that you can see which nodes you should upgrade.

## What you'll need

- You must have the Application Administrator or Storage Administrator role.

Use the following steps to create a custom view that displays nodes running older versions of ONTAP, and then schedule a report to be generated for that view.

### Steps

1. In the left navigation pane, click **Storage > Nodes**.
2. Select **Show/Hide** to remove any columns that you do not want in the report.
3. Drag the "OS Version" column near the "Node" column.
4. Click the top of the "OS Version" column to sort the results by oldest version of ONTAP.
5. Save the view with a specific name that reflects what the view is showing, for example, "Nodes by ONTAP

version”.

6. Click the **Scheduled Reports** button on the inventory page.
7. Click **Add Schedule** to add a new row to the Report Schedules page so that you can define the schedule characteristics for the new report.
8. Enter a name for the report schedule and complete the other report fields, then click the check mark (✓) at the end of the row.

The report is sent immediately as a test. After that, the report generates and is sent by email to the recipients listed using the specified frequency.

Based on the results shown in the report, you might want to upgrade nodes running older versions of ONTAP.

## Customizing aggregate capacity reports

These sample custom reports are used to help you identify and respond to potential problems related to aggregate storage capacity.

The reports in this section are just samples to help you understand how to create reports about aggregate capacity to help you monitor your storage system resources.

### Creating a report to view aggregates reaching full capacity

You can create a report to find the aggregates that are reaching full capacity so that you can add more capacity or move workloads to other aggregates.

#### What you'll need

- You must have the Application Administrator or Storage Administrator role.

Use the following steps to create a custom view that displays aggregates reaching full capacity, then schedule a report to be generated for that view.

#### Steps

1. In the left navigation pane, click **Storage > Aggregates**.
2. In the View menu, select **Capacity > All Aggregates**.
3. Select **Show/Hide** to remove any columns you do not want in the report.
4. Click the filter icon, add the following filter, and then click **Apply Filter**:
  - Days to Full less than 45 Days
5. Click the top of the “Days to Full” column to sort the results by the least number of days remaining to reach full capacity.
6. Save the view with a specific name that reflects what the view is showing, for example, “Days to full aggregate capacity”, and click the check mark (✓).
7. Click the **Scheduled Reports** button on the inventory page.
8. Click **Add Schedule** to add a new row to the **Report Schedules** page so that you can define the schedule characteristics for the new report.
9. Enter a name for the report schedule and complete the other report fields, then click the check mark (✓) at the end of the row.



The report is sent immediately as a test. After that, the report generates and is sent by email to the recipients listed using the specified frequency.

Based on the results shown in the report, you might want to increase storage on aggregates reaching full capacity. Additionally, you might want to increase the Days Until Full capacity threshold to more than the default 7 days so that you receive events that provide more time to react to space getting low on aggregates.

### Creating a report to view aggregates that are 80% or more full

You can create a report to highlight the aggregates that are 80% or more full.

#### What you'll need

- You must have the Application Administrator or Storage Administrator role.

Use the following steps to create a custom view that displays aggregates that are 80% or more full, then schedule a report to be generated for that view.

#### Steps

1. In the left navigation pane, click **Storage > Aggregates**.
2. In the View menu, select **Capacity > All Aggregates**.
3. Select **Show/Hide** to remove any columns you do not want in the report.
4. Drag the "Available Data %" and the "Used Data %" columns near the "Aggregate" column.
5. Click the filter icon, add the following filters, and then click **Apply Filter**:
  - Used Data % is greater than 80%
6. Click the top of the "Used Data %" column to sort the results by capacity percent.
7. Save the view with a specific name that reflects what the view is showing, for example, "Aggregates nearing full", and click the check mark (✓) .
8. Click the **Scheduled Reports** button on the inventory page.
9. Click **Add Schedule** to add a new row to the Report Schedules page so that you can define the schedule characteristics for the new report.
10. Enter a name for the report schedule and complete the other report fields, then click the check mark (✓) at the end of the row.

The report is sent immediately as a test. After that, the report generates and is sent by email to the recipients listed using the specified frequency.

Based on the results shown in the report, you might want to move some data from certain aggregates.

### Creating a report to view aggregates that are overcommitted

You can create a report to analyze storage capacity and use of aggregates, and to view aggregates that are overcommitted.

#### What you'll need

- You must have the Application Administrator or Storage Administrator role.

Use the following steps to create a custom view that displays aggregates that are exceeding the

overcommitted threshold, then schedule a report to be generated for that view.

### Steps

1. In the left navigation pane, click **Storage > Aggregates**.
2. In the View menu, select **Capacity > All Aggregates**.
3. Select **Show/Hide** to remove any columns that you do not want in the report.
4. Drag the “Overcommitted Capacity %” column near the “Aggregate” column.
5. Click the filter icon, add the following filters, and then click **Apply Filter**:
  - Overcommitted Capacity % is greater than 100%
6. Click the top of the “Overcommitted Capacity %” column to sort the results by capacity percent.
7. Save the view with a specific name that reflects what the view is showing, for example, “Aggregates overcommitted”, and click the check mark (✓).
8. Click the **Scheduled Reports** button on the inventory page.
9. Click **Add Schedule** to add a new row to the Report Schedules page so that you can define the schedule characteristics for the new report.
10. Enter a name for the report schedule and complete the other report fields, then click the check mark (✓) at the end of the row.

The report is sent immediately as a test. After that, the report generates and is sent by email to the recipients listed using the specified frequency.

Based on the results shown in the report, you might want to add some more capacity to aggregates, or move some data from certain aggregates.

## Customizing volume capacity reports

These sample custom reports are used to help you identify and respond to potential problems related to volume capacity and performance.

### Creating a report to identify volumes nearing full capacity that have Snapshot Autodelete turned off

You can create a report that contains the list of volumes that are approaching full capacity with the Snapshot Autodelete feature disabled. The results can help identify volumes where you might want to configure Snapshot Autodelete.

### What you'll need

- You must have the Application Administrator or Storage Administrator role.

Follow the steps below to create a custom view that displays the required columns in the correct order, and then schedule a report to be generated for that view.

### Steps

1. In the left navigation pane, click **Storage > Volumes**.
2. In the View menu, select **Capacity > All Volumes**.
3. Select **Show/Hide** to remove any columns you do not want in the report.

4. Drag and drop the “Snapshot Autodelete” and “Days To Full” columns near the “Available Data Capacity” column.
5. Click the filter icon, add the following two filters, and then click **Apply Filter**:
  - Days To Full less than 30 days
  - Snapshot Autodelete is Disabled
6. Click the top of the **Days To Full** column so that the volumes with the fewest remaining days appear at the top of the list.
7. Save the view with a specific name that reflects what the view is showing, for example “Vols near capacity”.
8. Click the **Scheduled Reports** button on the inventory page.
9. Enter a name for the report schedule and complete the other report fields, then click the check mark (✓) at the end of the row.

The report is sent immediately as a test. After that, the report generates and is sent by email to the recipients listed using the specified frequency.

Based on the results shown in the report, you might want to enable Snapshot Autodelete on the volumes or find a way to increase the available space.

### Creating a report to identify space used by volumes with thin provisioning disabled

When a volume is not thin provisioned it takes up the full amount of space on the disk as defined when the volume was created. Identifying volumes that have thin provisioning disabled helps you decide whether you want to enable thin-provisioning on certain volumes.

#### What you'll need

- You must have the Application Administrator or Storage Administrator role.

Follow the steps below to create a custom view that displays the required columns in the correct order, and then schedule a report to be generated for that view.

#### Steps

1. In the left navigation pane, click **Storage > Volumes**.
2. In the View menu, select **Capacity > All Volumes**.
3. Select **Show/Hide** to remove any columns you do not want in the report.
4. Drag and drop the “Used Data %” and the “Thin Provisioned” columns near the “Available Data Capacity” column.
5. Click the filter icon, add the following filter, **Thin provisioned** is **No**, and then click **Apply Filter**.
6. Click the top of the “Used Data %” column to sort the results so that the volumes with the highest percentage appear at the top of the list.
7. Save the view with a name to reflect what the view is showing, for example “Vols no thin provisioning”.
8. Click the **Scheduled Reports** button on the inventory page.
9. Click **Add Schedule** to add a new row to the **Report Schedules** page so you can define the schedule characteristics for the new report.

10. Enter a name for the report schedule and complete the other report fields, then click the checkmark (✓) at the end of the row.

The report is sent immediately as a test. After that, the report generates and is sent by email to the recipients listed using the specified frequency.

Based on the results shown in the report, you might want to enable thin provisioning on certain volumes.

### **Creating a report to identify volumes on FabricPool aggregates that should move data to the cloud tier**

You can create a report that contains the list of volumes that currently reside on FabricPool aggregates, that have a cloud recommendation of Tier, and that have a large amount of cold data. This report can help you decide if you should change the tiering policy for certain volumes to “auto” or “all” to offload more cold (inactive) data to the cloud tier.

#### **What you'll need**

- You must have the Application Administrator or Storage Administrator role.
- You must have configured FabricPool aggregates and have volumes on those aggregates.

Follow the steps below to create a custom view that displays the required columns in the correct order, and then schedule a report to be generated for that view.

#### **Steps**

1. In the left navigation pane, click **Storage > Volumes**.
2. In the View menu, select **Performance > All Volumes**.
3. In the column chooser, make sure that the “Disk Type” column appears in the view.

Add or remove other columns to create a view that is important for your report.

4. Drag and drop the “Disk Type” column near the “Cloud Recommendation” column.
5. Click the filter icon, add the following three filters, and then click **Apply Filter**:
  - Disk Type contains FabricPool
  - Cloud Recommendation contains tier
  - Cold Data greater than 10 GB

Filter configuration interface showing three filters:

- Disk Types: contains fabricpool
- Cloud Recommendation: contains tier
- Cold Data: greater than 10 GB

Buttons: + Add Filter, Reset, Cancel, Apply Filter

- Click the top of the Cold Data column so that the volumes with the most cold data appear at the top of the view.
- Save the view with a name to reflect what the view is showing, for example “Vols change tiering policy”.

Volumes - Performance / Vols change tiering policy

Last updated: Feb 8, 2019, 12:26 PM

Latency, IOPS, MBps are based on hourly samples averaged over the previous 72 hours.

View: Vols change tiering policy  3

<a href="#">Assign Performance Threshold Policy</a>		<a href="#">Clear Performance Threshold Policy</a>		<a href="#">Schedule Report</a>		
Volume	Cold Data	Tiering Policy	Disk Types	Cloud Recommendation	Free Capacity	Total Capacity
<a href="#">nfs_vol4</a>	38 GB	Snapshot Only	SSD (FabricPool)	<a href="#">Tier</a>	2.62 TB	3 TB
<a href="#">kjagnfsdst</a>	28 GB	Snapshot Only	SSD (FabricPool)	<a href="#">Tier</a>	121 GB	150 GB

- Click the **Scheduled Reports** button on the inventory page.
- Click **Add Schedule** to add a new row to the Report Schedules page so that you can define the schedule characteristics for the new report.
- Enter a name for the report schedule and complete the other report fields, then click the check mark (✓) at the end of the row.

The report is sent immediately as a test. After that, the report generates and is sent by email to the recipients listed using the specified frequency.

Based on the results shown in the report, you might want to use System Manager or the ONTAP CLI to change the tiering policy to “auto” or “all” for certain volumes to offload more cold data to the cloud tier.

## Customizing Qtree capacity reports

These sample custom reports are used to help you identify and respond to potential problems related to Qtree capacity.

## Creating a report to view qtrees that are nearly full

You can create a report to analyze storage capacity and utilization of qtrees, and to view qtrees that are nearly full.

### What you'll need

- You must have the Application Administrator or Storage Administrator role.

Use the following steps to create a custom view that displays qtrees that are nearly full, and then schedule a report to be generated for that view.

### Steps

1. In the left navigation pane, click **Storage > Qtrees**.
2. Select **Show/Hide** to remove any columns you do not want in the report.
3. Drag the "Disk Used %" column near the "Qtrees" column.
4. Click the filter icon, add the following filters, and then click **Apply Filter**:
  - Disk Used % is greater than 75%
5. Click the top of the "Disk Used %" column to sort the results by capacity percent.
6. Save the view with a specific name that reflects what the view is showing, for example, "Qtrees nearing full", and click the check mark (✓).
7. Click the **Scheduled Reports** button on the inventory page.
8. Click **Add Schedule** to add a new row to the **Report Schedules** page so you can define the schedule characteristics for the new report.
9. Enter a name for the report schedule and complete the other report fields, then click the check mark (✓) at the end of the row.

The report is sent immediately as a test. After that, the report generates and is sent by email to the recipients listed using the specified frequency.

Based on the results shown in the report, you might want to adjust the disk hard and soft limits (if set), or balance data across the qtrees.

## Customizing NFS share reports

You can customize NFS share reports to analyze information about NFS export policies and rules for volumes on your storage systems. For example, you can customize reports to display volumes with inaccessible mount paths and volumes with the default export policy.

### Creating a report to view volumes that have an inaccessible mount path

You can create a report to find volumes that have an inaccessible mount path.

### What you'll need

- You must have the Application Administrator or Storage Administrator role.

Use the following steps to create a custom view for volumes that have an inaccessible mount path, and then schedule a report to be generated for that view.

### Steps

1. In the left navigation pane, click **Storage > NFS Shares**.
2. Select **Show/Hide** to remove any columns that you do not want in the report.
3. Click the filter icon, add the following filter, and then click **Apply Filter**:
  - Mount Path Active is No
4. Save the view with a specific name that reflects what the view is showing, for example “Volumes with an inaccessible mount path” and click the check mark (✓).
5. Click the **Scheduled Reports** button on the inventory page.
6. Click **Add Schedule** to add a new row to the Report Schedules page so you can define the schedule characteristics for the new report.
7. Enter a name for the report schedule and complete the other report fields, then click the check mark (✓) at the end of the row.

The report is sent immediately as a test. After that, the report generates and is sent by email to the recipients listed using the specified frequency.

Based on the results shown in the report, you might want to correct the inaccessible mount paths.

### Creating a report to view volumes that are using the default export policy

You can create a report to find volumes that are using the default export policy.

#### What you'll need

- You must have the Application Administrator or Storage Administrator role.

Use the following steps to create a custom view for volumes that are using the default export policy, and then schedule a report to be generated for that view.

### Steps

1. In the left navigation pane, click **Storage > NFS Shares**.
2. Select **Show/Hide** to remove any columns that you do not want in the report.
3. Drag the “Export Policy” column near the “Volume” column.
4. Click the filter icon, add the following filter, and then click **Apply Filter**:
  - Export Policy contains default
5. Save the view with a specific name that reflects what the view is showing, for example “Volumes with a default export policy” and click the check mark (✓).
6. Click the **Scheduled Reports** button on the inventory page.
7. Click **Add Schedule** to add a new row to the Report Schedules page so you can define the schedule characteristics for the new report.
8. Enter a name for the report schedule and complete the other report fields, then click the check mark (✓) at the end of the row.

The report is sent immediately as a test. After that, the report generates and is sent by email to the

recipients listed using the specified frequency.

Based on the results shown in the report, you might want to configure a custom export policy.

## Customizing storage VM reports

You can create storage VM reports to analyze volume information and to view overall health and storage availability. For example, you can create reports to display SVMs reaching the maximum volume count and to analyze stopped SVMs.

### Creating a report to view storage VMs reaching the maximum volume limit

You can create a report to find SVMs that are reaching the maximum volume limit.

#### What you'll need

- You must have the Application Administrator or Storage Administrator role.

Use the following steps to create a custom view that displays storage VMs that are reaching the maximum volume limit, and then schedule a report to be generated for that view.

#### Steps

1. In the left navigation pane, click **Storage > Storage VMs**.
2. Select **Show/Hide** to remove any columns you do not want in the report.
3. Drag the "Volume Count" and "Maximum Allowed Volumes" columns near the "Storage VM" column.
4. Click the top of the "Maximum Allowed Volumes" column to sort the results by the highest number of volumes.
5. Save the view with a specific name that reflects what the view is showing, for example "SVMs reaching max volumes" and click the check mark (✓).
6. Click the **Scheduled Reports** button on the inventory page.
7. Click **Add Schedule** to add a new row to the **Report Schedules** page so that you can define the schedule characteristics for the new report.
8. Enter a name for the report schedule and complete the other report fields, then click the check mark (✓) at the end of the row.

The report is sent immediately as a test. After that, the report generates and is sent by email to the recipients listed using the specified frequency.

Based on the results shown in the report, you might want to balance the volumes assigned to storage VMs or, if possible, use ONTAP System Manager to change the maximum allowed volumes.

### Creating a report to view stopped storage VMs

You can create a report to display a list of all stopped SVMs.

#### What you'll need

- You must have the Application Administrator or Storage Administrator role.



Use the following the steps to create a custom view that displays stopped storage VMs, and then schedule a report to be generated for that view.

### Steps

1. In the left navigation pane, click **Storage > Storage VMs**.
2. In the View menu, select **Health > All Storage VMs**.
3. Select **Show/Hide** to remove any columns that you do not want in the report.
4. Drag the “State” column near the “Storage VM” column.
5. Click the filter icon, add the following filter, and then click **Apply Filter**:
  - State is Stopped
6. Save the view with a specific name that reflects what the view is showing, for example “Stopped SVMs” and click the check mark (✓).
7. Click the **Scheduled Reports** button on the inventory page.
8. Click **Add Schedule** to add a new row to the **Report Schedules** page so that you can define the schedule characteristics for the new report.
9. Enter a name for the report schedule and complete the other report fields, then click the check mark (✓) at the end of the row.

The report is sent immediately as a test. After that, the report generates and is sent by email to the recipients listed using the specified frequency.

Based on the results shown in the report, you might want to investigate why the SVM is stopped to see if you should restart the stopped SVMs.

## Customizing volume relationship reports

The Volume Relationships Inventory report enables you to analyze the storage inventory details in a cluster, understand the degree of protection that is required for volumes, and filter the volume details based on source of failure, pattern, and schedules.

### Creating a report to group volume relationships by source of failure

You can create a report that groups volumes by the reason the relationship is in an unhealthy state.

#### What you'll need

- You must have the Application Administrator or Storage Administrator role.

Use the following steps to create a custom view that groups volumes by source of failure, and then schedule a report to be generated for that view.

### Steps

1. In the left navigation pane, click **Storage > Volumes**.
2. In the View menu, select **Relationship > All Relationships**.
3. Select **Show/Hide** to make sure the “Relationship Health” and “Unhealthy Reason” columns appear in the view.

Add or remove other columns to create a view that is important for your report.

4. Drag the “Relationship Health” and “Unhealthy Reason” columns near the “State” column.
5. Click the filter icon, add the following filter, and then click **Apply Filter**:
  - Relationship health is bad
6. Click the top of the “Unhealthy Reason” column to group the volume relationships by source of failure.
7. Save the view with a specific name that reflects what the view is showing, for example, “Vol relationships by failure”.
8. Click the **Scheduled Reports** button on the inventory page.
9. Enter a name for the report schedule and complete the other report fields, then click the check mark (✓) at the end of the row.

The report is sent immediately as a test. After that, the report generates and is sent by email to the recipients listed using the specified frequency.

Based on the results shown in the report, you can investigate the source and impact of each type of failure.

### Creating a report to group volume relationships by issue

You can create a report that groups volume relationships by issue.

#### What you'll need

- You must have the Application Administrator or Storage Administrator role.

Use the following steps to create a custom view that groups volume relationships by issue, and then schedule a report to be generated for that view.

#### Steps

1. In the left navigation pane, click **Storage > Volumes**.
2. In the View menu, select **Relationship > All Relationships**.
3. Select **Show/Hide** to remove any columns you do not want in the report.
4. Drag the “Unhealthy Reason” column near the “State” column.
5. Click the top of the “Unhealthy Reason” column to group the volumes by issue.
6. Save the view with a specific name that reflects what the view is showing, for example, “Vol relationships by issue”.
7. Click the **Scheduled Reports** button on the inventory page.
8. Enter a name for the report schedule and complete the other report fields, then click the check mark (✓) at the end of the row.

The report is sent immediately as a test. After that, the report generates and is sent by email to the recipients listed using the specified frequency.

Based on the results shown in the report, you can investigate the source and impact of each type of issue.

## Creating a report to view volume transfer trends at specific time intervals

You can create a report that displays volume transfer trends at specific time intervals.

### What you'll need

- You must have the Application Administrator or Storage Administrator role.

Use the following steps to create a custom view for volumes at specific time intervals, and then schedule a report to be generated for that view.

### Steps

1. In the left navigation pane, click **Storage > Volumes**.
2. In the View menu, select **Relationship > Last 1 month Transfer Status**.
3. Select **Show/Hide** to remove any columns you do not want in the report.
4. Drag the Transfer Duration column near the "Operational Result" column.
5. Click the filter icon, add the following filter, and then click **Apply Filter**:
  - Transfer End Time in the last 7 Days
6. Click the top of the "Transfer Duration" column to sort the volumes by time interval.
7. Save the view with a specific name that reflects what the view is showing, for example "Volumes by duration".
8. Click the **Scheduled Reports** button on the inventory page.
9. Enter a name for the report schedule, set the frequency as **Weekly**, and complete the other report fields, then click the check mark (✓) at the end of the row.

The report is sent immediately as a test. After that, the report generates and is sent by email to the recipients listed using the specified frequency.

Based on the results shown in the report, you can investigate the transfer time intervals.

## Creating a report to view failed or successful volume transfer

You can create a report that displays the status of volume transfers. You can view both failed and successful volume transfers in this report.

### What you'll need

- You must have the Application Administrator or Storage Administrator role.

Use the following steps to create a custom view to show which transfers failed and which were successful, and then schedule a report to be generated for that view.

### Steps

1. In the left navigation pane, click **Storage > Volumes**.
2. In the View menu, select **Relationship > Last 1 month Transfer Status**.
3. Select **Show/Hide** to remove any columns that you do not want in the report.
4. Drag the "Operation Result" column near the "State" column.

5. Click the top of the “Operation Result” column to sort the volumes by the status.
6. Save the view with a specific name that reflects what the view is showing, for example “Volumes by transfer status”.
7. Click the **Scheduled Reports** button on the inventory page.
8. Enter a name for the report schedule and complete the other report fields, then click the check mark (✓) at the end of the row.

The report is sent immediately as a test. After that, the report generates and is sent by email to the recipients listed using the specified frequency.

Based on the results shown in the report, you can investigate the transfer status.

### Creating a report to view volume transfers based on transfer size

You can create a report to view volume transfers based on transfer size.

#### What you'll need

- You must have the Application Administrator or Storage Administrator role.

Use the following steps to create a custom view for volume transfers based on transfer size, and then schedule a report to be generated for that view.

#### Steps

1. In the left navigation pane, click **Storage > Volumes**.
2. In the View menu, select **Relationship > Last 1 month Transfer Rate**.
3. Click the top of the “Total Transfer Size” column to sort the volume transfers by size.
4. Save the view with a specific name that reflects what the view is showing, for example “Volumes by transfer size”.
5. Click the **Scheduled Reports** button on the inventory page.
6. Enter a name for the report schedule and complete the other report fields, then click the check mark (✓) at the end of the row.

The report is sent immediately as a test. After that, the report generates and is sent by email to the recipients listed using the specified frequency.

Based on the results shown in the report, you can investigate the volume relationships by transfer size.

### Creating a report to view volume transfers grouped by day

You can create a report to view volume transfers grouped by day.

#### What you'll need

- You must have the Application Administrator or Storage Administrator role.

Use the following steps to create a custom view for volume transfers grouped by day, and then schedule a report to be generated for that view.

#### Steps

1. In the left navigation pane, click **Storage > Volumes**.
2. In the View menu, select **Relationship > Last 1 month Transfer Rate**.
3. Click the top of the “Day” column to sort the volume transfers by day.
4. Save the view with a specific name that reflects what the view is showing, for example “Volume transfers by day”.
5. Click the **Scheduled Reports** button on the inventory page.
6. Enter a name for the report schedule and complete the other report fields, then click the check mark (✓) at the end of the row.

The report is sent immediately as a test. After that, the report generates and is sent by email to the recipients listed using the specified frequency.

Based on the results shown in the report, you can investigate the volume transfers by day.

## Customizing volume performance reports

These sample custom reports are used to help you identify and respond to potential problems related to volume performance.

### Creating a report to view volumes with a high amount of cold data on an aggregate that is not FabricPool-enabled

You can create a report to display volumes with a high amount of cold data on a non-FabricPool aggregate. This can help you identify volumes that should be moved to a FabricPool aggregate.

#### What you'll need

- You must have the Application Administrator or Storage Administrator role.

Use the following steps to create a custom view for volumes with a high amount of cold data on a non-FabricPool-enabled aggregate, and then schedule a report to be generated for that view.

#### Steps

1. In the left navigation pane, click **Storage > Volumes**.
2. In the View menu, select **Performance > All Volumes**.
3. Select **Show/Hide** to make sure the “Disk Type” column appears in the view.

Add or remove other columns to create a view that is important for your report.

4. Drag the “Disk Type” column near the “Cold Data” column.
5. Click the filter icon, add the following filter, and then click **Apply Filter**:
  - Cold Data greater than 100 GB
  - Disk Type contains SSD
6. Click the top of the “Disk Type” column to sort the volumes by disk type so that the disk type SSD (FabricPool) is at the bottom.
7. Save the view with a specific name that reflects what the view is showing, for example “Cold data vols not

FabricPool”.

8. Click the **Scheduled Reports** button on the inventory page.
9. Enter a name for the report schedule and complete the other report fields, then click the check mark (✓) at the end of the row.

The report is sent immediately as a test. After that, the report generates and is sent by email to the recipients listed using the specified frequency.

Based on the results shown in the report, you can find volumes that are good candidates to be moved to FabricPool aggregates.

## Sample Microsoft Excel reports

These sample Microsoft Excel reports are intended to introduce reporting options available using Excel advanced features.

The advanced functionality of Excel can create a wide array of reports specific to your needs. For full information on how to use Excel, see the product documentation.



You must have the Application Administrator or Storage Administrator role to manage reports.

### Creating a report to show an aggregate capacity table and chart

You can create a report to analyze capacity in an Excel file by using summed totals and the clustered column chart format.

#### What you'll need

- You must have the Application Administrator or Storage Administrator role.


Use the following steps to open a Health: All Aggregates view, download the view in Excel, create an available capacity chart, upload the customized Excel file, and schedule the final report.

#### Steps

1. In the left navigation pane, click **Storage > Aggregates**.
2. Select **Reports > Download Excel**.



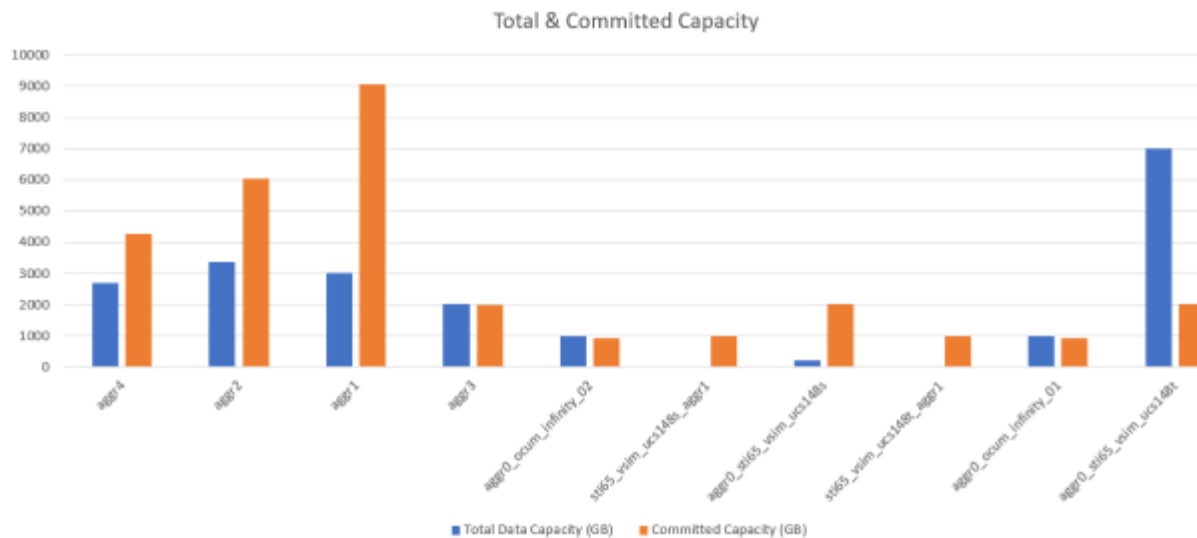
Depending on your browser, you might need to click **OK** to save the file.

3. If needed, click **Enable Editing**.
4. In Excel, open the downloaded file.
5. Create a new sheet (  ) after the `data` sheet and name it **Total Data Capacity**.
6. Add the following columns on the new Total Data Capacity sheet:
  - a. Total Data Capacity (GB)
  - b. Committed Capacity (GB)
  - c. Used Data Capacity (GB)
  - d. Available Data Capacity (GB)
7. In the first row of each column, enter the following formula, making sure that it references the data sheet (`data!`), and references the correct column and row specifiers for the data captured (Total Data Capacity pulls data from column E, rows 2 through 20).
  - a. `=SUM(data!E$2:data!E$20)`
  - b. `=SUM(data!F$2:data!F$50)`
  - c. `=SUM(data!G$2:data!G$50)`
  - d. `=SUM(data!H$2:data!H$50)`

The formula totals each column based on the current data.

Total Data Capacity (GB)	Committed Capacity (GB)	Used Data Capacity (GB)	Available Data Capacity (GB)
5380.31	6892.47	11764.27	3911.03

1. On the data sheet, select the **Total Data Capacity (GB)** and **Committed Capacity (GB)** columns.
2. Select **Recommended Charts** from the **Insert** menu and select the **Clustered Column** chart.
3. Right-click the chart and select **Move chart** to move the chart to the `Total Data Capacity` sheet.
4. Using the **Design** and **Format** menus, which are available when the chart is selected, you can customize how the chart looks.
5. When satisfied, save the file with your changes. Do not change the file name or location.



6. In Unified Manager, select **Reports > Upload Excel**.



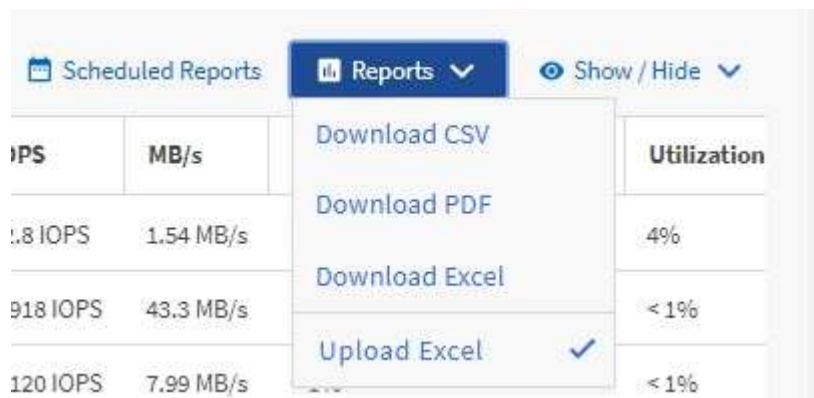
Make sure you are in the same view where you downloaded the Excel file.

7. Select the Excel file you have modified.

8. Click **Open**.

9. Click **Submit**.

A check mark appears beside the **Reports > Upload Excel** menu item.



10. Click **Scheduled Reports**.

11. Click **Add Schedule** to add a new row to the Report Schedules page so that you can define the schedule characteristics for the new report.



Select the **XLSX** format for the report.

12. Enter a name for the report schedule and complete the other report fields, then click the check mark (✓) at the end of the row.

The report is sent immediately as a test. After that, the report generates and is sent by email to the recipients listed using the specified frequency.



Based on the results shown in the report, you might want to investigate how to best use the available capacity across your network.

## Creating a report to show aggregate total versus available capacity charts

You can create a report to analyze storage total and committed capacity in an Excel chart format.

### What you'll need

- You must have the Application Administrator or Storage Administrator role.

Use the following steps to open a Health: All Aggregates view, download the view in Excel, create a total and committed capacity chart, upload the customized Excel file, and schedule the final report.

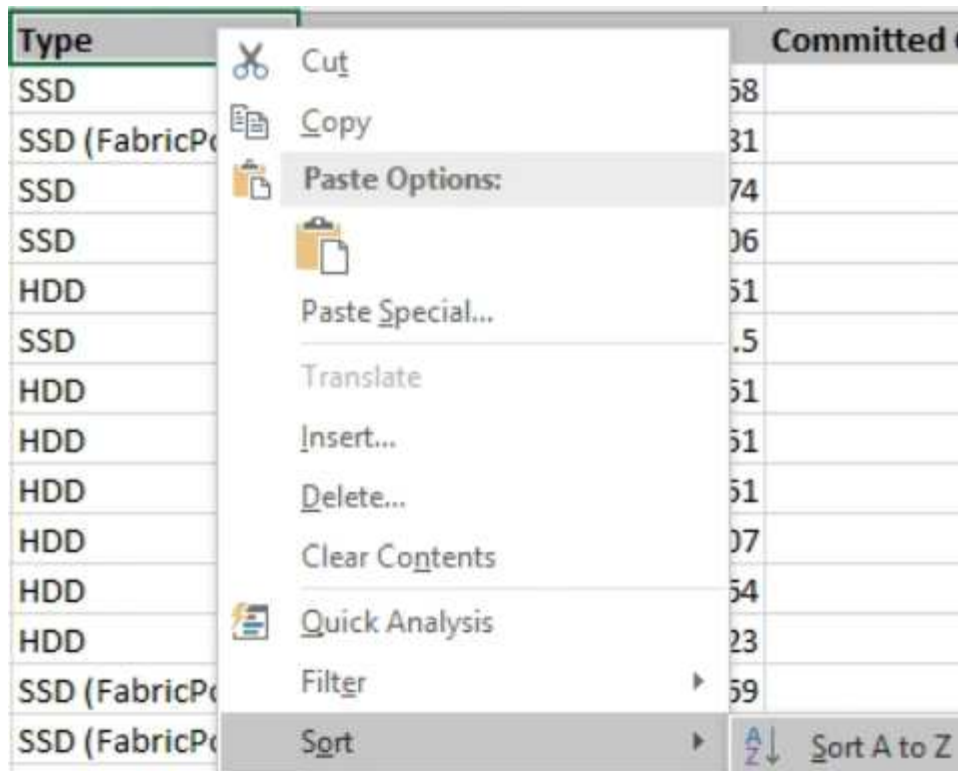
### Steps

1. In the left navigation pane, click **Storage > Aggregates**.
2. Select **Reports > Download Excel**.



Depending on your browser, you might need to click **OK** to save the file.

3. In Excel, open the downloaded file.
4. If needed, click **Enable Editing**.
5. On the data sheet, right-click the Type column and select **Sort > Sort A to Z**.

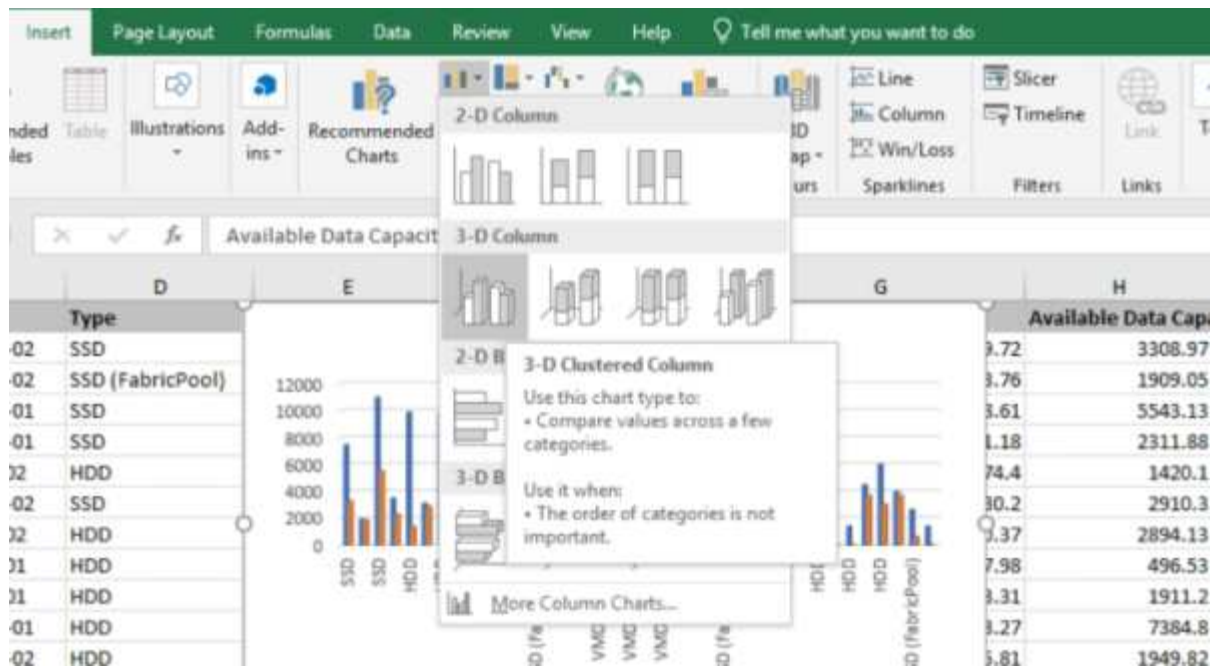


This will arrange your data by storage type, such as:

- HDD
- Hybrid
- SSD
- SSD (FabricPool)

6. Select the **Type**, **Total Data Capacity**, and **Available Data Capacity** columns.
7. On the **Insert** menu, select a 3-D column chart.

The chart appears on the data sheet.



8. Right-click the chart and select **Move Chart**.

9. Select **New sheet** and name the sheet **Total Storage Charts**.

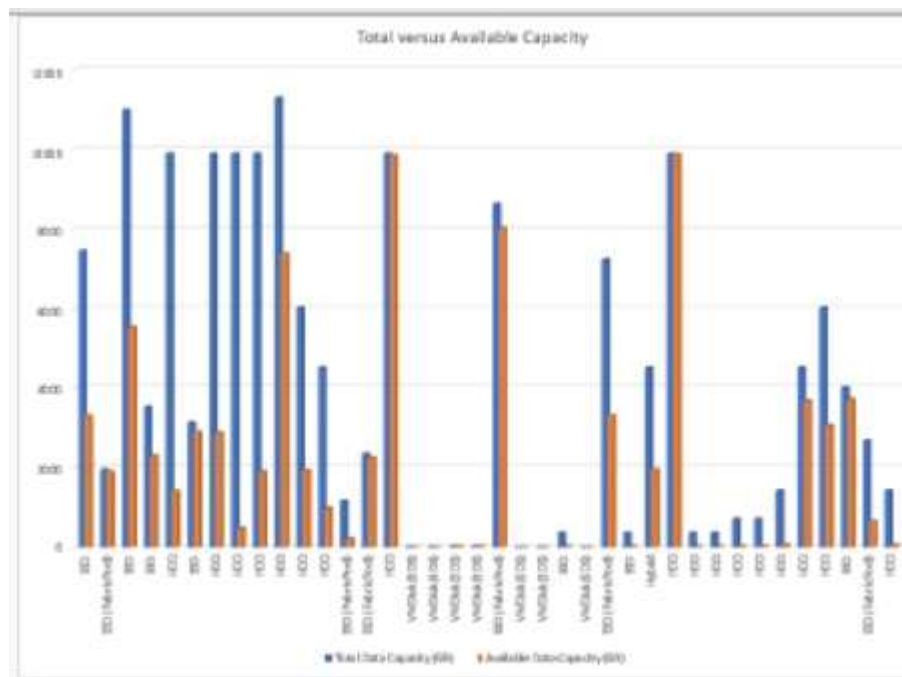


Make sure the new sheet appears after the info and data sheets.

10. Name the chart title **Total versus Available Capacity**.

11. Using the **Design** and **Format** menus, available when the chart is selected, you can customize how the chart looks.

12. When satisfied, save the file with your changes. Do not change the file name or location.



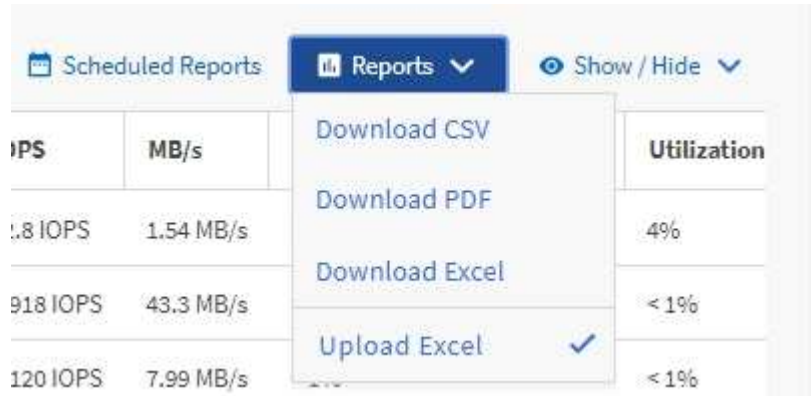
13. In Unified Manager, select **Reports > Upload Excel**.



Make sure you are in the same view where you downloaded the Excel file.

14. Select the Excel file you have modified.
15. Click **Open**.
16. Click **Submit**.

A check mark appears beside the **Reports > Upload Excel** menu item.



17. Click **Scheduled Reports**.
18. Click **Add Schedule** to add a new row to the **Report Schedules** page so that you can define the schedule characteristics for the new report.



Select the **XLSX** format for the report.

19. Enter a name for the report schedule and complete the other report fields, then click the check mark (✓) at the end of the row.

The report is sent immediately as a test. After that, the report generates and is sent by email to the recipients listed using the specified frequency.

Based on the results shown in the report, you might want to balance the load on your aggregates.

## Creating a report to view available volume capacity charts

You can create a report to analyze available volume capacity in an Excel chart.

### What you'll need

- You must have the Application Administrator or Storage Administrator role.

Use the following steps to open a Health: All Volumes view, download the view in Excel, create an available capacity chart, upload the customized Excel file, and schedule the final report.

### Steps

1. In the left navigation pane, click **Storage > Volumes**.
2. Select **Reports > Download Excel**.



Depending on your browser, you might need to click **OK** to save the file.

3. If needed, click **Enable Editing**.
4. In Excel, open the downloaded file.
5. On the data sheet, select the data that you want to use in the `Volume` and `Available Data %` columns.
6. On the **Insert** menu, select a 3-D piechart.

The chart shows which volumes have the largest available space. The chart appears on the data sheet.



Depending on your network configuration, selecting the entire columns or too many data rows might make your pie chart unreadable. This sample uses the 3-D pie chart, but you can use any chart type. Use the chart that best displays the data you want to capture.

7. Name the chart title **Available Capacity**.
8. Right-click the chart and select **Move Chart**.
9. Select **New sheet** and name the sheet **Storage Volume Charts**.



Make sure the new sheet appears after the info and data sheets.



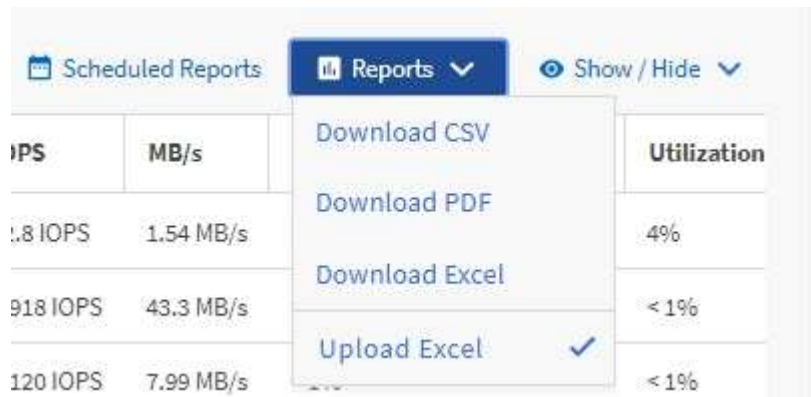
10. Using the **Design** and **Format** menus, available when the chart is selected, you can customize how the chart looks.
11. When satisfied, save the file with your changes.
12. In Unified Manager, select **Reports > Upload Excel**.



Make sure you are in the same view where you downloaded the Excel file.

13. Select the Excel file you have modified.
14. Click **Open**.
15. Click **Submit**.

A check mark appears beside the **Reports > Upload Excel** menu item.



16. Click **Scheduled Reports**.
17. Click **Add Schedule** to add a new row to the **Report Schedules** page so that you can define the schedule characteristics for the new report.
18. Enter a name for the report schedule and complete the other report fields, then click the check mark (✓) at the end of the row.



Select the **XLSX** format for the report.

The report is sent immediately as a test. After that, the report generates and is sent by email to the recipients listed using the specified frequency.

Based on the results shown in the report, you might want to balance the load on your volumes.

## Creating a report to view aggregates that have the most available IOPS

This report shows which aggregates have the most available IOPS per aggregate type on which you can provision new workloads.

### What you'll need

- You must have the Application Administrator or Storage Administrator role.

Use the following steps to open a Health: All Volumes view, download the view in Excel, create an available capacity chart, upload the customized Excel file, and schedule the final report.

## Steps

1. In the left navigation pane, click **Storage > Aggregates**.
2. Select **Performance: All Aggregates** from the **View** drop-down.
3. Select **Show/Hide** to show the Available IOPS column and hide the Cluster FQDN, Inactive Data Reporting, and Threshold Policy columns.
4. Drag and drop the Available IOPS and Free Capacity columns next to the Type column.
5. Name and save the custom view Available IOPS Per Aggr.
6. Select **Reports > Download Excel**.



Depending on your browser, you might need to click **OK** to save the file.

7. If needed, click **Enable Editing**.
8. In Excel, open the downloaded file.
9. On the data sheet, click the little triangle at the top-left of the sheet to select the entire sheet.
10. On the **Data** ribbon, select **Sort** from the Sort & Filter area.
11. Set the following sort levels:
  - a. Specify the **Sort by** as Available IOPS (IOPS), the **Sort On** as Cell Values, and the **Order** as Largest to Smallest.
  - b. Click **Add Level**.
  - c. Specify the **Sort by** as Type, the **Sort On** as Cell Values, and the **Order** as Z to A.
  - d. Click **Add Level**.
  - e. Specify the **Sort by** as Free Capacity (GB), the **Sort On** as Cell Values, and the **Order** as Largest to Smallest.
  - f. Click **OK**.
12. Save and close the Excel file.
13. In Unified Manager, select **Reports > Upload Excel**.

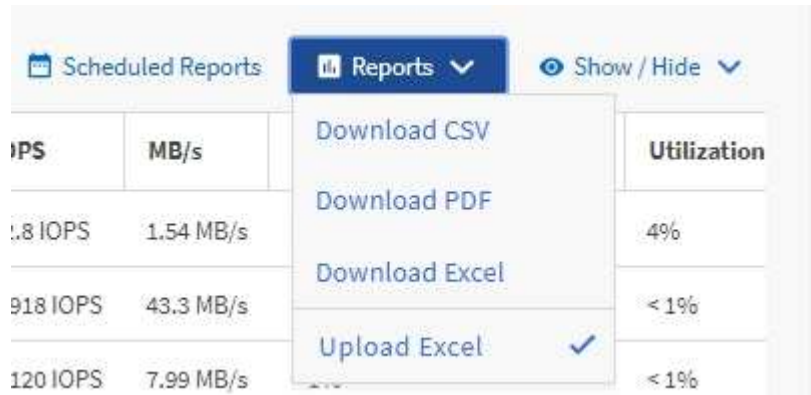


Make sure you are in the same view where you downloaded the Excel file.

14. Select the Excel file you have modified, in this case performance-aggregates-<date>.xlsx.

15. Click **Open**.
16. Click **Submit**.

A check mark appears beside the **Reports > Upload Excel** menu item.



17. Click **Scheduled Reports**.
18. Click **Add Schedule** to add a new row to the Report Schedules page so that you can define the schedule characteristics for the new report.
19. Enter a name for the report schedule and complete the other report fields, then click the check mark (✓) at the end of the row.



Select the **XLSX** format for the report.

The report is sent immediately as a test. After that, the report generates and is sent by email to the recipients listed using the specified frequency.

Based on the results shown in the report, you might want to provision new workloads on the aggregates that have the greatest available IOPS.



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