



# Use BlueXP economic efficiency

## BlueXP economic efficiency

NetApp

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# Table of Contents

- Use BlueXP economic efficiency ..... 1
- Evaluate a technology refresh ..... 1
- Review and remediate capacity issues ..... 9
- Review capacity planning status ..... 9
- Add capacity ..... 10
- Tier cold data to cloud storage and free up storage ..... 11
- Set reminders to check again ..... 12

# Use BlueXP economic efficiency

## Evaluate a technology refresh

If you have existing assets in place and want to determine whether a technology refresh is recommended, you can use the BlueXP economic efficiency Tech refresh options. You can either review a short assessment of your current workloads and get recommendations, or if you have sent AutoSupport logs to NetApp within the past 90 days, the service can provide a workload simulation to see how your workloads perform on new hardware.

- [Take a refresh assessment](#)
- [Simulate workloads on new hardware](#)

Systems are considered candidates for a tech refresh based on the following:

- Nearing the end of the Tech Support contract
- Nearing the end of the hardware lifecycle



You can access this feature either through BlueXP economic efficiency or through NetApp Digital Advisor.

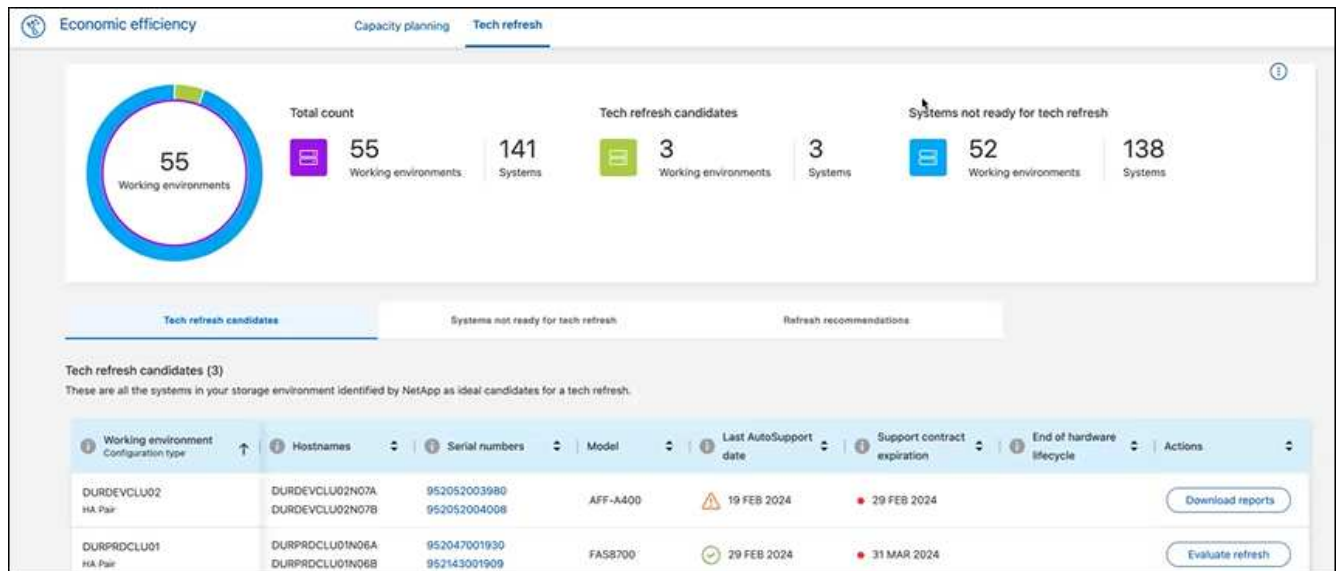
## Take a refresh assessment

The assessment includes the following steps:

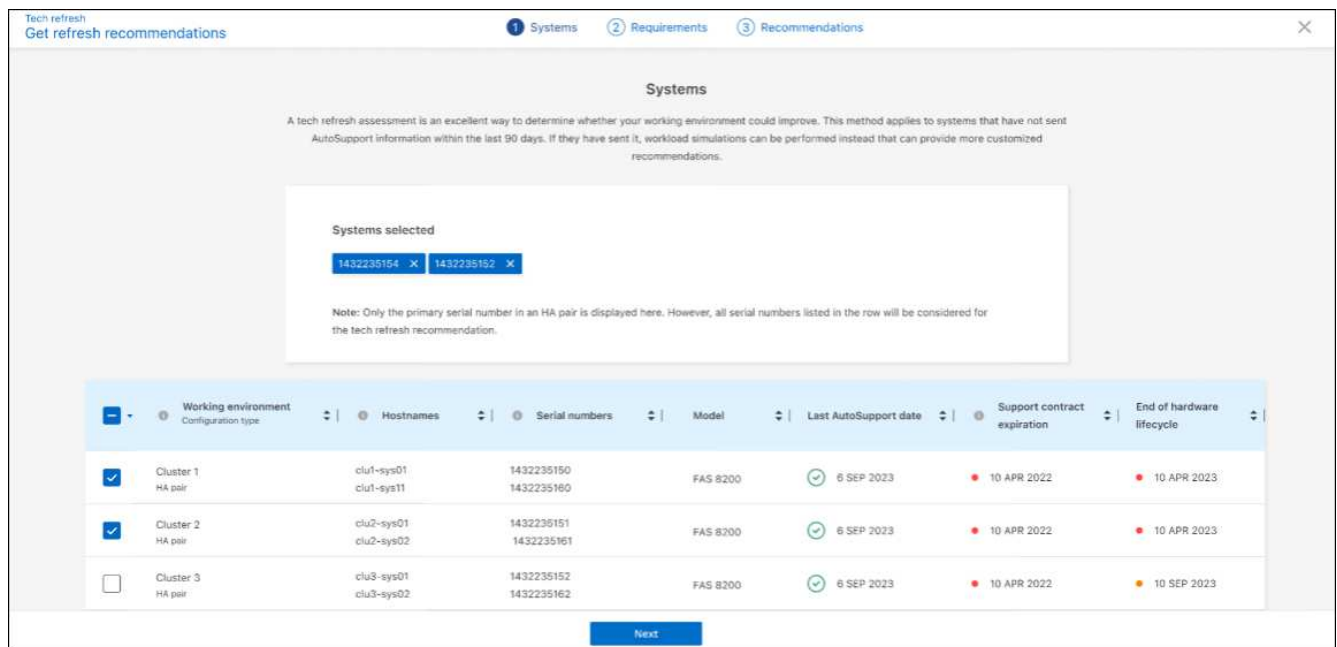
- Select the systems you want to assess.
- Specify your requirements regarding environments, workload types, capacity, performance, and budget.
- View the recommendations regarding appropriate products and cloud services that might improve performance in your environment.

### Steps

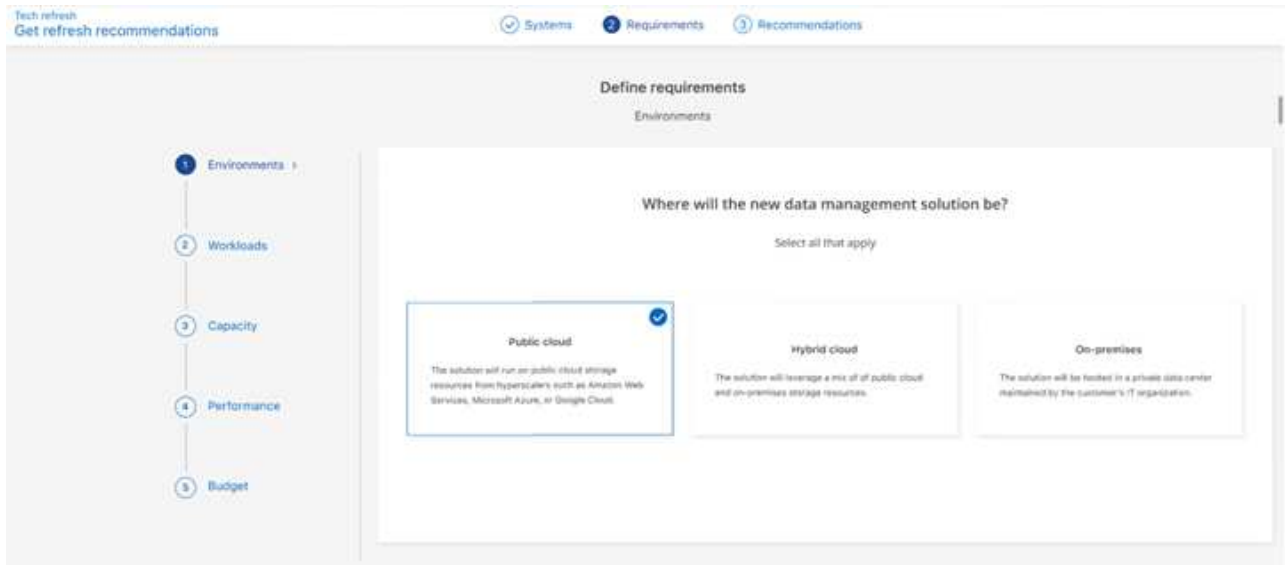
1. From the BlueXP left navigation, select **Governance > Economic efficiency > Tech refresh**.



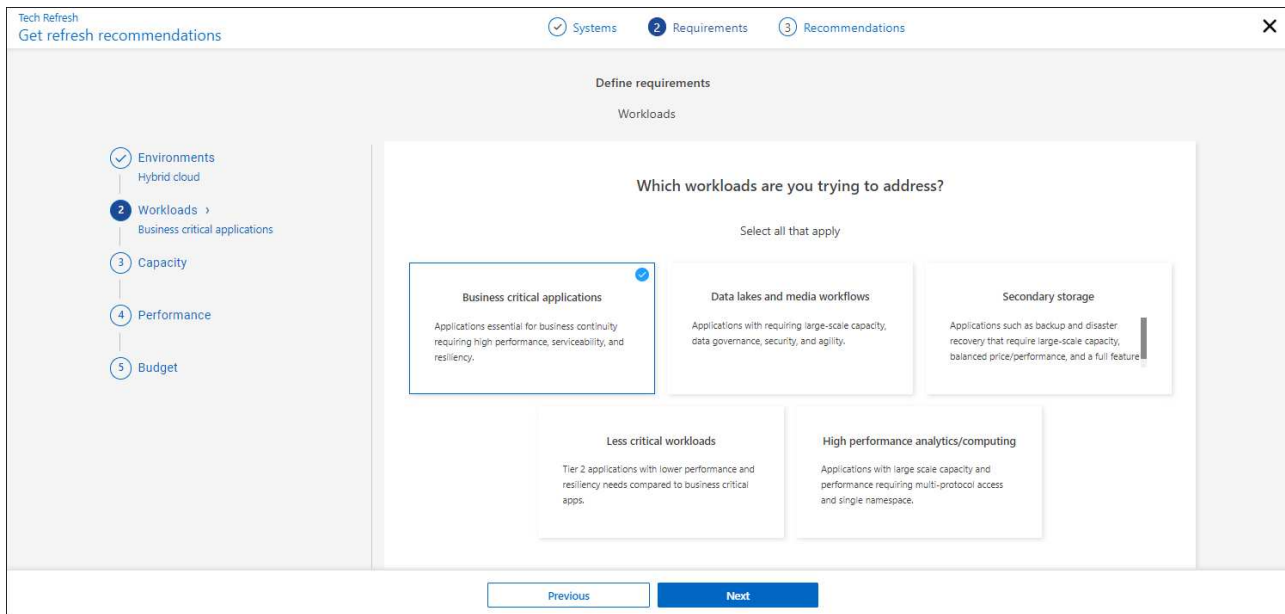
2. Look at the **Tech refresh candidates** tab, which lists all the working environments that might benefit from a tech refresh.
3. Select the working environment on which you want to obtain an assessment.
4. From the Actions column, select **Evaluate refresh**.



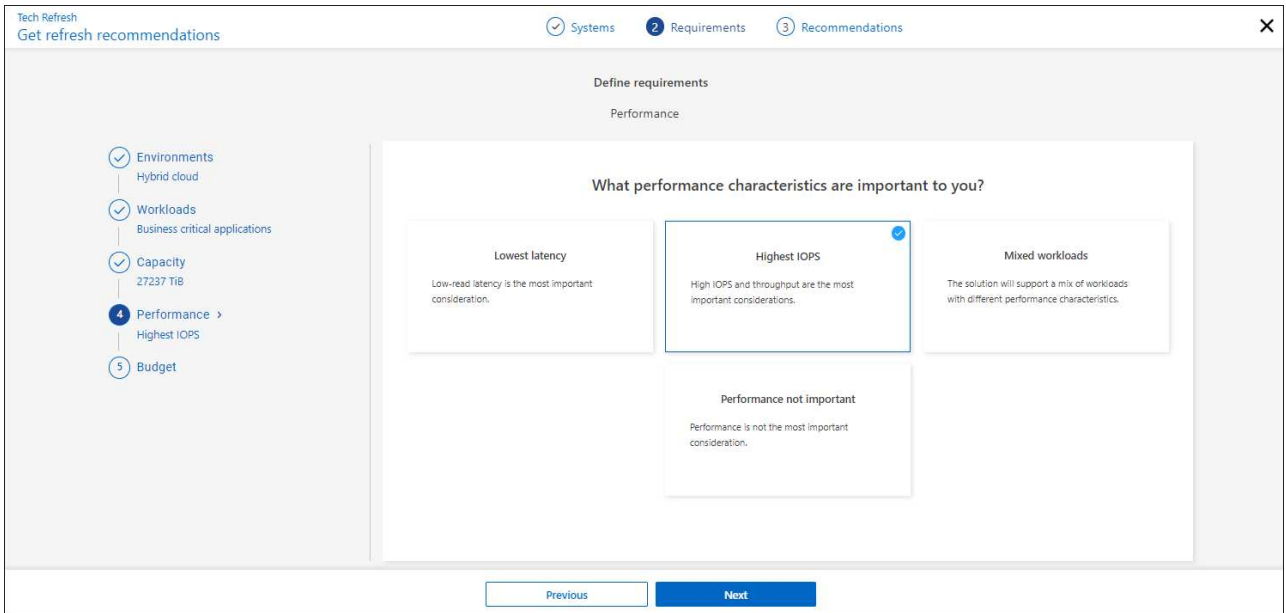
5. Select the system or systems on which you want the assessment performed and select **Next**.
6. Define the requirements:
  - a. **Environments:** Select the types of environment that you want: public cloud, hybrid cloud, or on-premises.



- b. **Workloads:** Select all the types of workloads that you want to handle: Business critical applications, high performance analytics and computing, data lakes and media workflows, secondary storage, or less critical workloads.



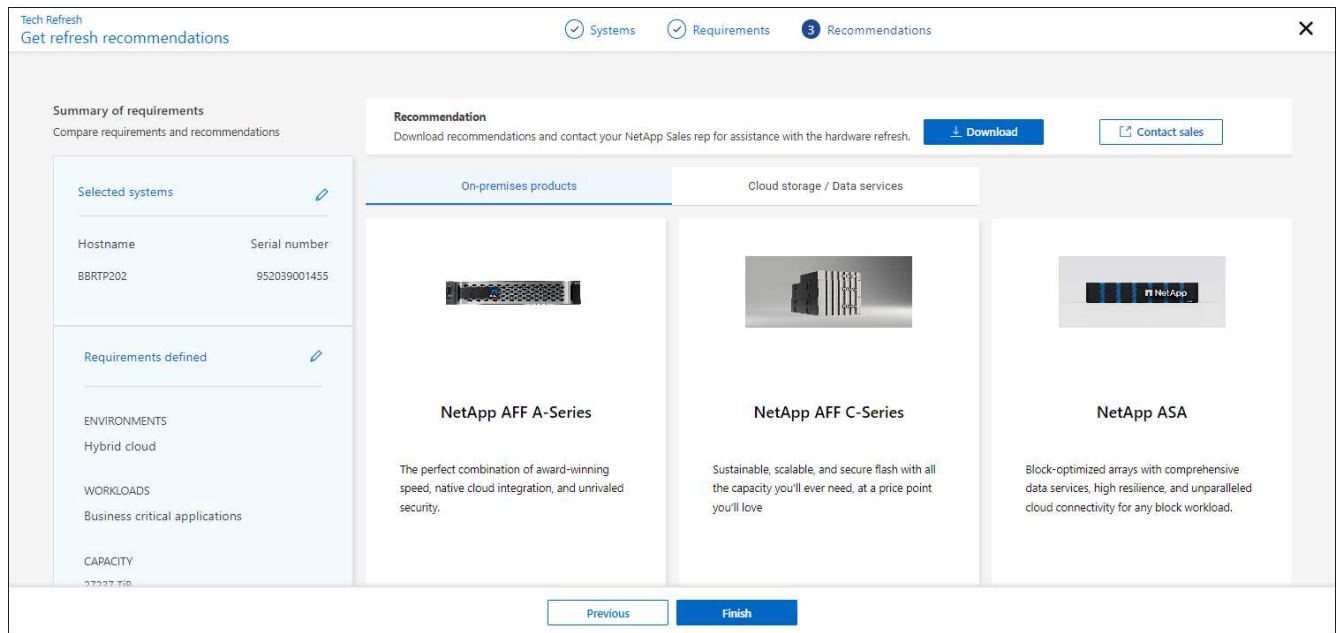
- c. **Capacity:** Enter the capacity requirements in TiB, slide the slider to the value, or place your cursor on the value in the slider and select **Next**.
- d. **Performance:** Select the performance aspects that you want to be able to handle: lowest latency, highest IOPS, mixed workloads, or performance not important and select **Next**.



e. **Budget:** Enter a budget in US dollars, slide the slider to the value, or place your cursor on the value in the slider and select **Next**.

A set of recommendations appears in different tabs for the options you chose.

7. Review the recommendations.



8. Do one or both of the following:

- a. To download a PDF of the recommendations, select **Download**.
- b. To connect with a NetApp Sales Representative regarding the recommendations, select **Contact Sales**. A web page shows options you can choose from to contact a NetApp Sales Representative.

9. Select **Finish**.

## View technology refresh assessments already taken

You might want to review the technology refresh assessments that you already took and review the recommendations again.

### Steps

1. From the BlueXP left navigation, select **Governance > Economic efficiency > Tech refresh**.
2. Select the **Tech refresh candidates** tab, which lists all the systems on which you took a technology refresh assessment. Then, from the Actions menu on the row for that system, select to view the assessments and recommendations for that system.
3. In the Evaluate refresh options page, select **View recommendation**.
4. View the refresh recommendations.

The screenshot displays the 'Tech Refresh' interface. At the top, there are three tabs: 'Systems', 'Requirements', and 'Recommendations' (which is active). Below the tabs, there's a 'Summary of requirements' section on the left, which includes a table of 'Selected systems' and a list of 'Requirements defined'. The 'Selected systems' table has columns for 'Hostname' and 'Serial number', with one entry: 'BBRTP202' and '952039001455'. The 'Requirements defined' section lists 'ENVIRONMENTS: Hybrid cloud', 'WORKLOADS: Business critical applications', and 'CAPACITY: 27227.7TB'. The main content area is titled 'Recommendation' and contains a 'Download' button and a 'Contact sales' button. Below this, there are three product cards: 'NetApp AFF A-Series', 'NetApp AFF C-Series', and 'NetApp ASA'. Each card has an image of the hardware and a brief description. At the bottom, there are 'Previous' and 'Finish' buttons.

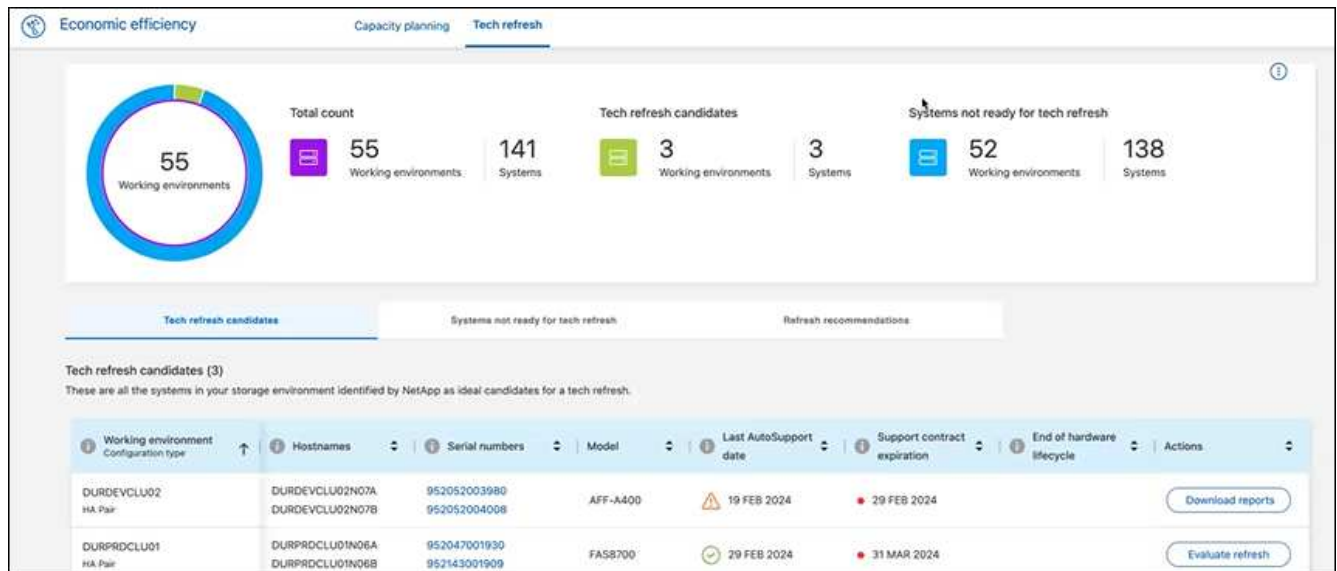
## Simulate workloads on new hardware

If you have sent AutoSupport logs in to NetApp within the past 90 days, NetApp is able to provide a simulation to see how your workloads perform on new hardware.

You can include or exclude specific workloads from the simulation. You can also add workloads if they don't appear in the existing workload list.

### Steps

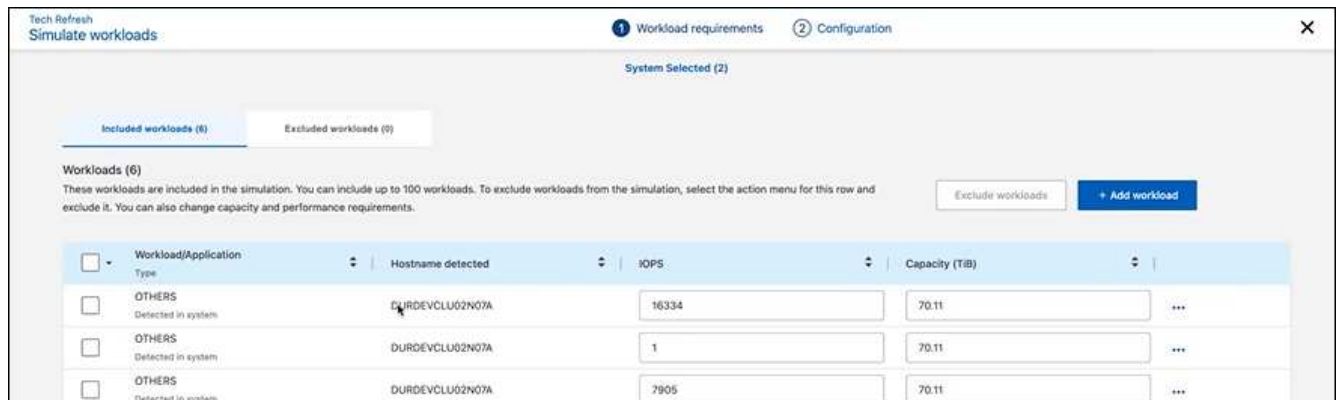
1. From the BlueXP left navigation, select **Governance > Economic efficiency > Tech refresh**.



2. Look at the **Tech refresh candidates** tab, which lists all the working environments that might benefit from a tech refresh.
3. Select the working environment on which you want to obtain an assessment.
4. In the Actions column, select **Evaluate refresh**.



The service imports workload details in preparation for the simulation.



5. In the Simulate workloads > Workload requirements page, do the following:
  - a. To add a workload not already in the list, select **Add workload**. For details, see [Add a workload](#).
  - b. **IOPS**: Optionally, change the IOPs that you want for your new hardware.
  - c. **Capacity (TiB)**: Optionally, change the capacity that you want for your new hardware.
6. To exclude workloads, in the Actions column, select the **Exclude workload from simulation** option.



To include previously excluded workloads, select the **Excluded workloads** tab and select the **Include workload in simulation** option.  
.. Select **Next**.

7. Review the simulated results on new hardware on the Configuration page:



Tech Refresh  
Simulate workloads

Workload requirements 2 Configuration

Summary of requirements  
Summary of your workload requirements

Selected systems

HOSTNAME	SERIAL NUMBER
DURDEVCLU02N07A	952052003980
DURDEVCLU02N07B	952052004008

Workload requirements

Included workloads  
6 workloads

Performance required

IOPS 29002+

Capacity in current selection

Raw 1129.53 TB

Recommendations  
Download recommendations and contact your NetApp Sales rep for assistance with the hardware refresh.

Download Contact

AFF A400A FC Bundle  
SSD

2 nodes 9.13.1 ONTAP

See specs

Max Performance ⓘ

IOPS 150114 Best

Throughput 3.17 GBps Best

AFF A250A  
NVMe SSD

2 nodes 9.13.1 ONTAP

See specs

Max Performance ⓘ

IOPS 0

Throughput 0 GBps

AFF A800A  
NVMe SSD

2 nodes 9.13.1 ONTAP

See specs

Max Performance ⓘ

IOPS 0

Throughput 0 GBps

Previous Finish



The best recommendations are denoted with a "Best" indication.

8. To download a PDF of the recommendations, select **Download**.
9. To connect with a NetApp Sales representative regarding the recommendations:
  - a. Select **Contact**.
  - b. Enter contact details.
  - c. Add special notes for the NetApp Sales Representative.
  - d. Select **Confirm and submit**.
10. Select **Finish**.

## Result

The recommendations from the workload simulation are sent to a NetApp Sales Representative. You will also receive an email confirming the recommendations. A NetApp Sales Representative will respond to your request.

## Add a workload

You can add a workload that is not already listed to the workload simulation.

## Steps

1. From the BlueXP left navigation, select **Governance > Economic efficiency > Tech refresh**.

Economic efficiency Capacity planning Tech refresh

Total count: 55 Working environments

Tech refresh candidates: 3 Working environments

Systems not ready for tech refresh: 52 Working environments

141 Systems

3 Systems

138 Systems

Tech refresh candidates (3)

These are all the systems in your storage environment identified by NetApp as ideal candidates for a tech refresh.

Working environment Configuration type	Hostnames	Serial numbers	Model	Last AutoSupport date	Support contract expiration	End of hardware lifecycle	Actions
DURDEVCLU02 HA Pair	DURDEVCLU02N07A DURDEVCLU02N07B	952052003980 952052004008	AFF-A400	19 FEB 2024	29 FEB 2024		Download reports
DURPRDCLU01 HA Pair	DURPRDCLU01N06A DURPRDCLU01N06B	952047001930 952143001909	FAS8700	29 FEB 2024	31 MAR 2024		Evaluate refresh

2. Select the working environment.
3. In the Actions column, select **Evaluate refresh**.

Tech Refresh Simulate workloads

1 Workload requirements 2 Configuration

System Selected (2)

Included workloads (6) Excluded workloads (0)

Workloads (6)

These workloads are included in the simulation. You can include up to 100 workloads. To exclude workloads from the simulation, select the action menu for this row and exclude it. You can also change capacity and performance requirements.

Exclude workloads + Add workload

Workload/Application Type	Hostname detected	IOPS	Capacity (TiB)	Actions
<input type="checkbox"/> OTHERS Detected in system	DURDEVCLU02N07A	16334	70.11	...
<input type="checkbox"/> OTHERS Detected in system	DURDEVCLU02N07A	1	70.11	...
<input type="checkbox"/> OTHERS Detected in system	DURDEVCLU02N07A	7905	70.11	...

4. In the Simulate workloads > Workload requirements page, select **Add workload**.

Tech Refresh Simulate workloads

1 Workload requirements 2 Configuration

Workloads (6)

Add Workload

Workload profiles

Database IO profiles vary greatly. The default values for each prescribed sizing profile were chosen based on NetApp customer implementations:

- Low IO (10K blocks/sec)
- Typical IO (100K blocks/sec)
- IO-intensive (400K blocks/sec)

Disclaimer: These values are based on database block operations per second, not individual IO operations per second. The reason is the majority of database IO is sequential IO. At a storage level, this means that multiple database blocks are read in a single IO operation. The result is, for example, 10K blocks/sec corresponds to far fewer IOPS. In addition, as database size increases, the percentage of these multi-block operations as a share of overall IO increases. If you believe your database has a different IO profile, the IO calculations can be changed using

General details

Application: Microsoft SQL Server

Workload name: Microsoft SQL Server

Workload profile: Small

Capacity requirements

Size (in TiB): 100

Performance requirements

Blocks per second: 10000

Database block size: 8K

Advanced options

Restore defaults

Storage efficiency

Data reduction ratio: 2 : 1

Read/write pattern: 100%

Random reads %: 66

Sequential reads %: 8

Random writes %: 18

Sequential writes %: 8

5. Select the application, enter a workload name, and select a workload size.
6. Enter the workload's expected capacity and performance values.



If you chose the workload size of small, typical or one that is IO intensive, default values appear.

7. Optionally, select the Advanced options arrow and change the defaults for the following information:
  - **Storage efficiency:** A typical data reduction ratio might be 2 to 1.
  - **Random reads %:** A typical average IO size for a random read is 16K.
  - **Sequential reads %:** A typical read pattern is 50% random and 50% sequential.
  - **Random writes %:** A typical average IO size for a random write is 32K.
  - **Sequential writes %:** A typical write pattern is 50% random and 50% sequential.

## Review and remediate capacity issues

Capacity planning involves identifying low-capacity areas in your environment, both current and forecasted. BlueXP economic efficiency uses AI to forecast data growth to help in the planning process. The economic efficiency service identifies those low-capacity areas in your environment and provides recommendations on ways to resolve the issues.

Using BlueXP economic efficiency, you can accomplish these goals:

- [Review capacity planning status](#)
- [Add capacity](#)
- [Tier cold data to cloud storage and free up storage](#)
- [Select no action and set reminders to check again](#)

## Review capacity planning status

If storage assets in your environment are currently below or forecasted to be below the threshold of 90% capacity, the economic efficiency service identifies those as low-capacity resources and alerts you. Additionally, the economic efficiency service provides recommendations on whether you should tier data or obtain additional capacity.

You can review the following types of data to assist in the capacity issue resolution.

- Platform
- Country where asset is located
- Current and forecasted capacity by month
- Capacity utilization and percent
- Latency trends
- IOPS trends

## Steps

1. From the BlueXP left navigation, select **Governance > Economic efficiency > Capacity planning**.
2. Select **Evaluate Storage Options** for the asset.
3. Choose one of the options:
  - **Add Capacity**: Continue by [adding capacity](#).
  - **Tier cold data**: Continue by [tiering cold data to cloud storage and freeing up storage](#).
  - **No action needed**: Continue by [selecting no action and setting reminders to check again](#).

## Add capacity

BlueXP economic efficiency provides recommendations for AFF systems based on forecasted data growth. You can accept the forecast or enter your own forecast. Based on this, the service presents recommendations that satisfy the capacity growth projections and are most optimal for the asset configuration.

One of the recommendations might be to add capacity by adding shelves to your existing serial number.

You can easily submit the recommendation as a request for a quote or a request for alternative options to the NetApp Sales team.

## Steps

1. From the BlueXP left navigation, select **Governance > Economic efficiency > Capacity planning**.
2. Select **Evaluate Storage Options** for the asset.
3. Select **Add Capacity**.

The asset's data appears.

- Review the forecast, utilization, latency trend, and IOPS trend.
- To obtain recommendations, select **Evaluate Storage Options**.

The Define Capacity Requirements page shows a current and projected capacity forecast and recommended add-on storage based on projected growth.

4. Select one of the options on the right:
  - **Recommend add-on storage based on forecasted growth** and optionally add a buffer percentage.
  - **Recommend add-on storage based on custom data growth** and enter the total add-on capacity that you want, not what is recommended.
5. Select **Continue**.

A set of recommendations appears.

6. Review the recommendation for the asset serial numbers you selected.
7. Do one of the following:
  - To accept the recommendation, select **Next**. The request is sent to a NetApp Sales expert who will work with you to get you the additional capacity you need.
  - To request different options, select **Request Alternate Options**, enter your request, and select **Send email**. An email is forwarded to a NetApp Sales expert who will contact you to address capacity

requirements.

8. Review the request for additional capacity and select **Confirm and Submit**.

The Capacity Planning Status page appears.

9. Review the status on the Capacity Planning Status page.

## Tier cold data to cloud storage and free up storage

BlueXP economic efficiency provides recommendations based on forecasted data growth. You can accept the forecast or enter your own forecast. Based on this, the service presents recommendations that satisfy the projected capacity growth and are most optimal for the storage asset configuration. One of the recommendations might be to tier cold data to cloud storage to free up capacity. This recommendation initiates the connection to NetApp BlueXP tiering, another BlueXP service.

From there, you can tier the data and easily return to BlueXP economic efficiency to take action on other systems.

The cloud tiering process includes these processes:

- Deploy a Connector
- Discover the cluster
- Set up tiering to the cloud

### Steps

1. From the BlueXP left navigation, select **Governance > Economic efficiency > Capacity planning**.
2. Select **Evaluate Storage Options** for the asset.
3. Select **Tier Cold Data**.
4. The next steps depend on whether you have a BlueXP Connector deployed already and the cluster discovered:
  - If you need to deploy the BlueXP Connector, refer to the BlueXP documentation that describes [How to create a connector](#). Otherwise, if you already deployed the Connector, the option to deploy the connector does not appear.
  - If the service needs to discover the cluster, refer to [Discover on-premises ONTAP clusters](#). Otherwise, if the cluster has already been discovered, the option to discover the cluster does not appear.

BlueXP economic efficiency initiates the connection to the BlueXP tiering service.

5. Select **Add Connector**.
6. Choose a cloud provider, and select **Continue**.
7. Select **Continue** or **Skip to Deployment**.

After deploying a Connector, BlueXP tiering discovers the cluster, if not already discovered.

8. After the cluster is discovered, set up the tiering.

For details about tiering, refer to [BlueXP tiering documentation](#).

# Set reminders to check again

Rather than add capacity or tier cold data, you can choose no action required at this time and set reminders for yourself to check again after 30, 60, or 90 days.

## Steps

1. From the BlueXP left navigation, select **Governance > Economic efficiency > Capacity planning**.
2. Select **Evaluate Storage Options** for the asset.
3. Select **No action needed**.
4. Choose when you want to be notified again of a potential low-capacity issue: 30, 60, or 90 days.
5. Select **Save**.

## Result

After that time elapses, the risk appears again in the list of risks.

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