NetApp

Use Amazon FSx for NetApp ONTAP

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NetApp
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Create or discover an FSx for ONTAP working environment

Using BlueXP you can create or discover an FSx for ONTAP working environment to add and manage volumes and additional data services.

Create an FSx for ONTAP working environment

The first step is to create an FSx for ONTAP working environment. If you already created an FSx for ONTAP file system in the AWS Management Console, you can discover it using BlueXP.

Before you begin

Before creating your FSx for ONTAP working environment in BlueXP, you will need:

- The ARN of an IAM role that gives BlueXP the permissions needed to create an FSx for ONTAP working environment. See adding AWS credentials to BlueXP for details.
- The region and VPN information for where you will create the FSx for ONTAP instance.

Steps

1. In BlueXP, add a new Working Environment, select **Amazon Web Services**, and click **Add new** for Amazon FSx for NetApp ONTAP.
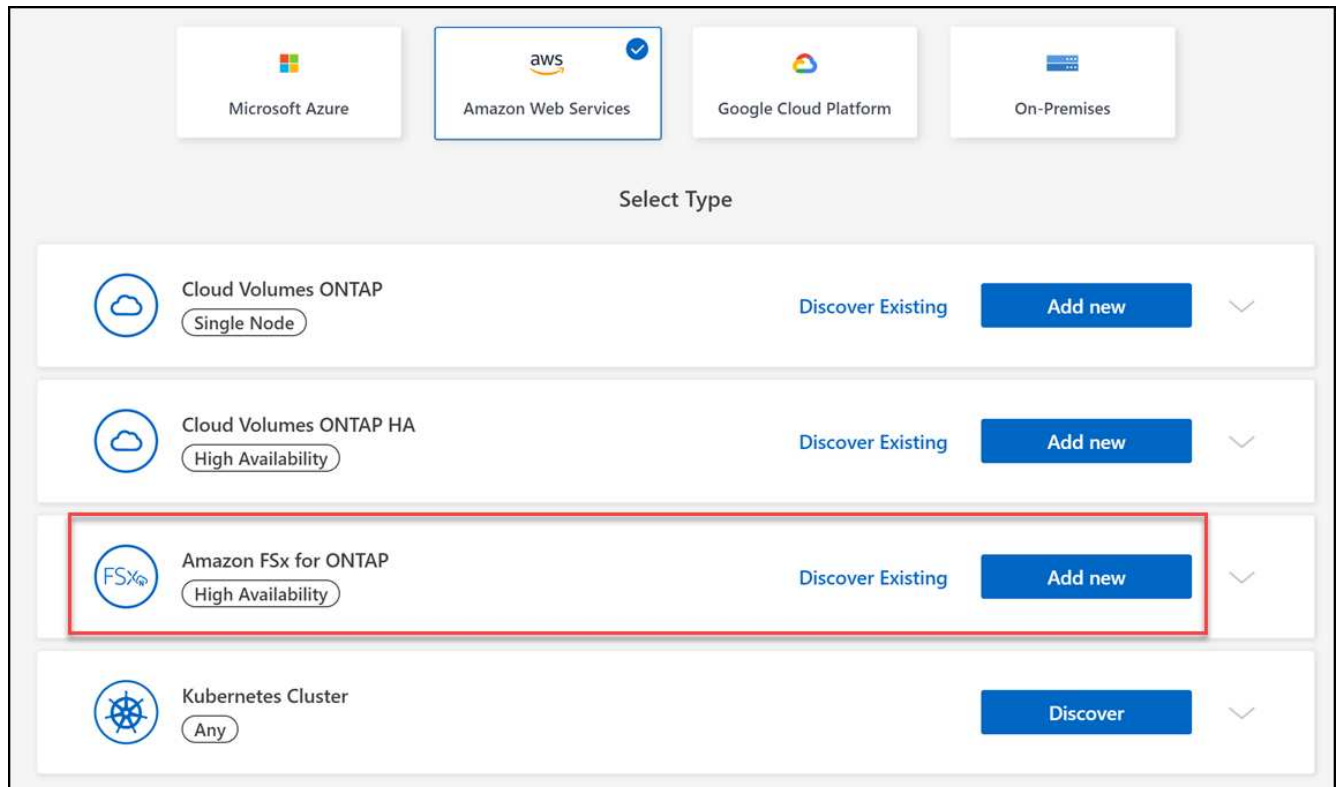
2. **FSx for ONTAP Authentication**
   a. If there is an existing IAM role in your account with the correct AWS permissions for FSx for ONTAP, select it from the dropdown.

    b. If there is no IAM role in your account, click **Credentials** and follow the steps in the wizard to add an ARN for an AWS IAM role with FSx for ONTAP credentials. See adding AWS credentials to BlueXP for details.

3. **Details and Credentials**

    a. Enter the working environment name you want to use.

    b. Optionally, you can create tags by clicking the plus sign and entering a tag name and value.

    c. Optionally, you can specify the start time for FSx for ONTAP to perform 30-minute weekly maintenance. This can be used to ensure maintenance does not coincide with critical business activities. If you select **No preference**, a random start time will be assigned. You can change this at any time.

    d. Enter and confirm the ONTAP Cluster password you want to use.

    e. Optionally, deselect the option to use the same password for your SVM user and set a different password.

4. **HA deployment model**

    a. Select a **Single Availability Zone** or **Multiple Availability Zones** HA deployment model. For multiple Availability Zones, select subnets in at least two Availability Zones so each node is in a dedicated Availability Zone.

    b. Select the Virtual Private Cloud (VPC) you want to associate with your file system.

    c. Use an existing security group or select **Generated security group** to enable BlueXP to generate a security group that allows traffic within the selected VPC only.

> ⓘ AWS security groups control inbound and outbound traffic. These are configured by your AWS admin and are associated with your AWS elastic network interface (ENI).

5. **Floating IP** (Multiple Availability Zones only)

Leave *CIDR Range* empty to automatically set an available range. Optionally, you can use AWS Transit Gateway to manually configure a range.

> ⚠ **IPs in the following ranges are not supported:**
> - 0.0.0.0/8
> - 127.0.0.0/8
> - 198.19.0.0/20
> - 224.0.0.0/4
> - 240.0.0.0/4
> - 255.255.255.255/32

6. **Route Tables** (Multiple Availability Zones only)

Select route tables that include routes to the floating IP addresses. If you have just one route table for the subnets in your VPC (the main route table), BlueXP automatically adds the floating IP addresses to that route table.

7. **Data Encryption**

Accept the default AWS master key or click **Change Key** to select a different AWS Customer Master Key (CMK). For more information on CMK, see Setting up the AWS KMS.

8. **Storage Configuration**

   a. Select the throughput, capacity, and unit. You can change throughput, storage capacity, and IOPS at any time.

   b. You can optionally specify an IOPS value. If you don't specify an IOPS value, BlueXP will set a default value based on 3 IOPS per GiB of the total capacity entered. For example, if you enter 2000 GiB for the total capacity and no value for the IOPS, the effective IOPS value will be set to 6000. You can change the IOPS value at any time.

   > ⓘ If you specify an IOPS value that does not meet the minimum requirements, you'll receive an error when adding the working environment.

9. **Review**

   a. Click the tabs to review your ONTAP properties, provider properties, and networking configuration.

   b. Click **Previous** to make changes to any settings or **Add** to accept the settings and create your Working Environment.

Result

BlueXP displays your FSx for ONTAP configuration on the Canvas. You can now add volumes to your FSx for ONTAP working environment using BlueXP.


Discover an existing FSx for ONTAP file system

If you previously provided your AWS credentials to BlueXP, **My estate** can automatically discover and suggest FSx for ONTAP file systems to add and manage using BlueXP. You can also review available data services.

About this task

You can discover FSx for ONTAP file systems when you Create an FSx for ONTAP working environment or by using the **My estate** page. This task describes discovery using **My estate**

Steps

1. In BlueXP, click the **My estate** tab.

2. The count of discovered FSx for ONTAP file systems displays. Click **Discover**.
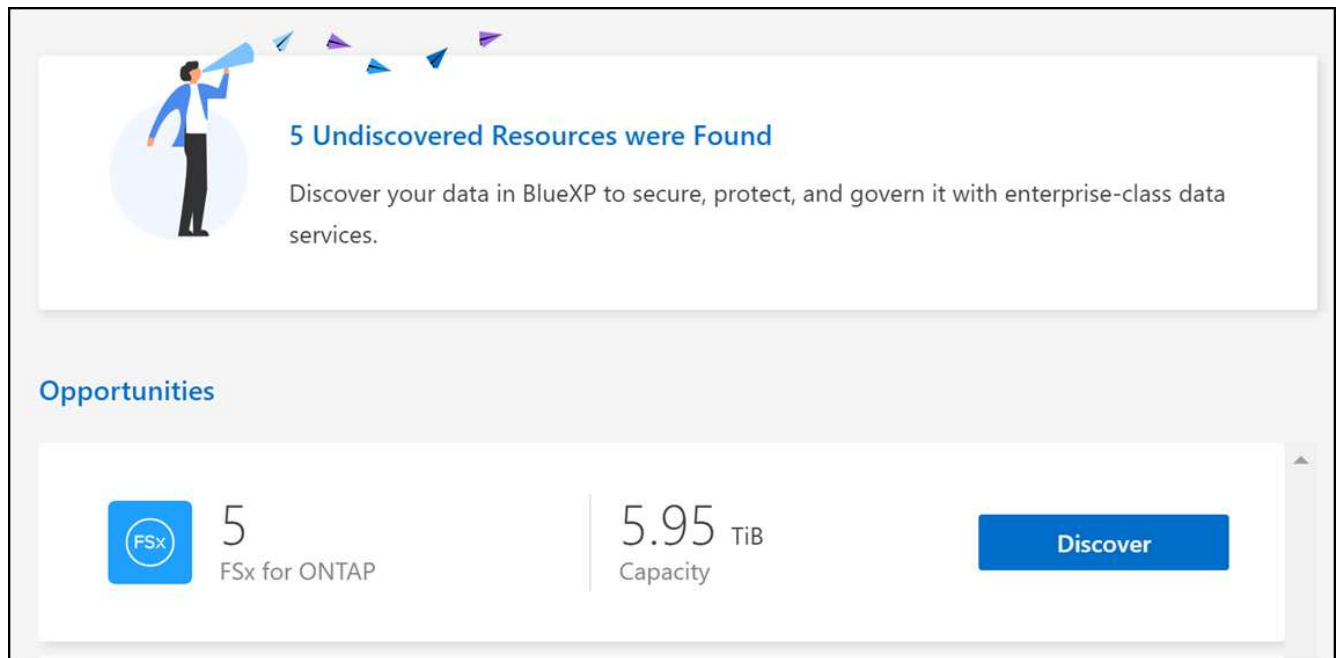
3. Select one or more file systems and click **Discover** to add them to the Canvas.

> ℹ️
> - If you select an un-named cluster, you will receive a prompt to enter a name for the cluster.
> - If you select a cluster that doesn't have the credentials required to allow BlueXP to manage the FSx for ONTAP file system, you'll receive a prompt to select credentials with the required permissions.

Result

BlueXP displays your discovered FSx for ONTAP file system on the Canvas. You can now add volumes to your FSx for ONTAP working environment using BlueXP.

Manage an FSx for ONTAP working environment

BlueXP enables you to manage your FSx for ONTAP working environment. You can enable automatic capacity management, change throughput and storage capacity and IOPS, remove or delete the working environment, and manage data services such as backup and recovery, copy and sync, classification, replication, and volume caching.

Manage automatic capacity

You can choose to enable automatic capacity management to add incremental storage based on demand. Automatic capacity management polls the cluster at regular intervals to assess demand and automatically increases storage capacity in increments of 10% up to 80% of the the cluster's maximum capacity.

> ⓘ If you did not manually specify an IOPS value when creating the working environment, BlueXP will increase the IOPS by 3 IOPS per GiB of the new total capacity. If you specified an IOPS value, BlueXP will not adjust the IOPS. For details on configuring IOPS, refer to create a working environment.

Automatic capacity management is disabled by default. You can manage automatic capacity with or without an active Connector in AWS.

Manage automatic capacity without an active Connector

You can manage automatic capacity without an active Connector in AWS.

Steps

1. Select the working environment on the canvas and select **Enter Working Environment**.

2. Select the pencil icon (✏️) to open the **Automatic capacity management** page.

   > ⓘ All other options require a Connector and are disabled.

   ◦ Select the box to enable automatic capacity management.

   ◦ Deselect the box to disable automatic capacity management if it was previously enabled.

3. Select **Apply**.

Manage automatic capacity with an active Connector

You can manage automatic capacity with an active Connector in AWS.

Steps

1. Open the FSx for ONTAP working environment.

2. From the **Overview** tab, select **Features**.

3. Select the pencil icon (✏️) to open the **Automatic capacity management** page.

4. On the **Automatic capacity management** page:

   ◦ Select the box to enable automatic capacity management.

   ◦ Deselect the box to disable automatic capacity management if it was previously enabled.

5. Select **Apply**.

Change throughput capacity

You can change the throughput capacity at any time after you create the FSx for ONTAP working environment.

Before you begin

You need an active Connector in AWS.

Steps

1. Open the FSx for ONTAP working environment.

2. From the **Overview** tab, select **Features**.

3. Select the pencil icon (✏️) to open the **Throughput Capacity** edit page.

4. Select a new throughput capacity from the dropdown and select **Update**. This change can take up to 25 minutes to take effect and does not disrupt data access.

Change storage capacity and IOPS

You can change the storage capacity and IOPS at any time after you create the FSx for ONTAP working environment.

Before you begin

You need an active Connector in AWS.

Steps

1. Open the FSx for ONTAP working environment.

2. From the **Overview** tab, select **Features**.

3. Select the pencil icon (✏️) to open the **Storage Capacity & IOPS** edit page.

4. You can change the storage capacity and IOPS once every six hours. If you attempt to make changes more frequently, you will receive an error.

- ◦ The recommended maximum storage capacity utilization is 80% to maintain Data Tiering performance and allow capacity for additional data.

- ◦ Selecting **Automatic** IOPS maintains a ratio of three provisioned SSD IOPS per GiB of primary storage up to 160,000. You cannot manually provision an IOPS value of greater than 160,000.

5. Select the checkbox to confirm you understand changing storage capacity impacts the cost of the FSx for ONTAP service and that additional changes cannot be made for six hours.

6. Select **Update** to confirm your changes.

Remove FSx for ONTAP from the project or workspace

You can remove FSx for ONTAP from BlueXP without deleting your account or volumes. You can add the FSx for ONTAP working environment back to BlueXP at any time.

Steps

1. Open the working environment. If you don't have a Connector in AWS, you will see the prompt screen. You can ignore this and proceed with removing the working environment.

2. At the top right of the page, select the actions menu and select **Remove from workspace**.
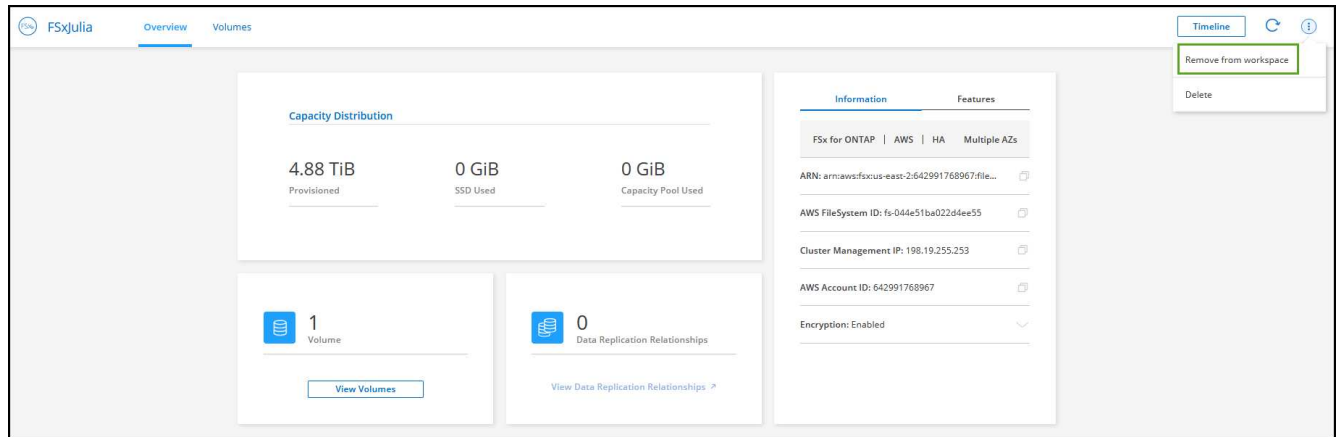
3. Select **Remove** to remove FSx for ONTAP from BlueXP.

Delete the FSx for ONTAP working environment

You can delete the FSx for ONTAP from BlueXP.

> ⚠️ This action will delete all resources associated with the working environment. This action cannot be undone.

**Before you begin**

Before deleting the working environment, you must:

- Break all replication relationships with this working environment.
- Delete all volumes associated with the file system. You will need an active Connector in AWS to remove or delete volumes.

> ℹ️ Failed volumes must be deleted using the AWS Management Console or CLI.

Steps

1. Open the working environment. If you don't have a Connector in AWS, you will see the prompt screen. You can ignore this and proceed to deleting the working environment.

2. At the top right of the page, select the actions menu and select **Delete**.
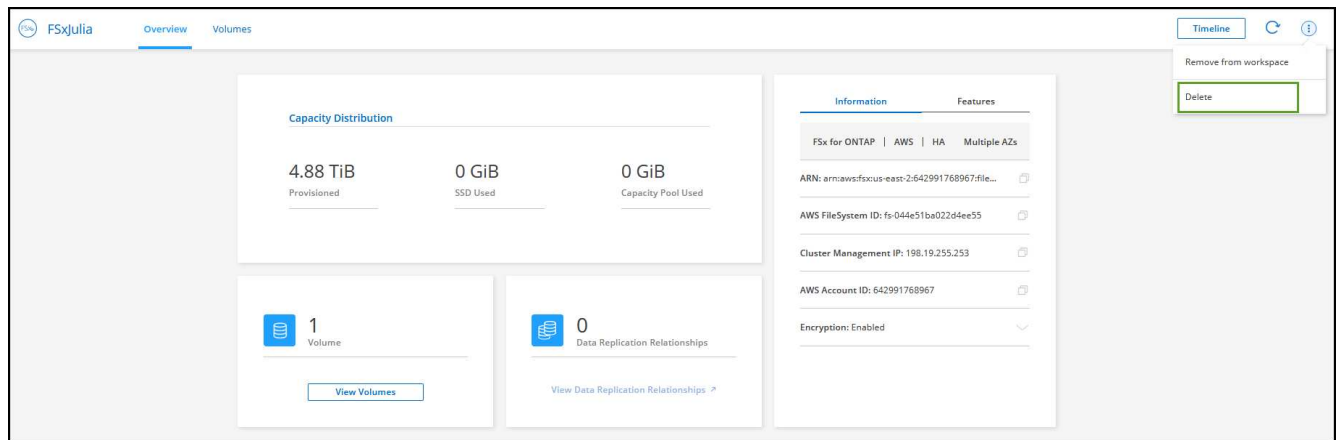
3. Enter the name of the working environment and select **Delete**.

Manage data services

You can manage additional data services from the FSx for ONTAP working environment.
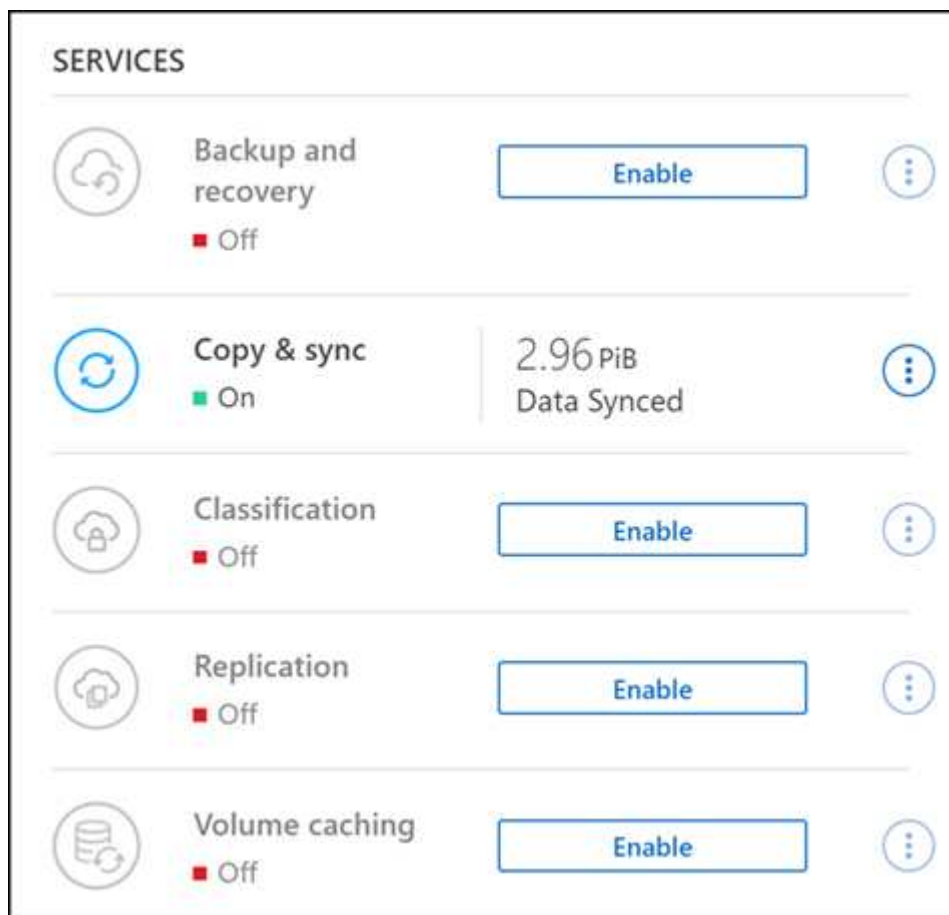
For details on configuring data services, refer to:

- BlueXP backup and recovery provides efficient, secure, and cost-effective data protection for NetApp ONTAP data, Kubernetes persistent volumes, databases, and virtual machines, both on premises and in the cloud.

- BlueXP copy and sync is a cloud replication and synchronization service for transferring NAS data between on-premises and cloud object stores.

- BlueXP classification enables you to scan and classify data across your organization's hybrid multicloud.
- Replicate data between ONTAP storage systems to support backup and disaster recovery to the cloud or between clouds.
- Volume caching provides a persistent, writable volume in a remote place. You can use BlueXP volume caching to speed up access to data or to offload traffic from heavily accessed volumes.

Create volumes for FSx for ONTAP

After you set up your working environment, you can create and mount FSx for ONTAP volumes.

Create volumes

You can create and manage NFS, CIFS, and iSCSI volumes from your FSx for ONTAP working environment in BlueXP. Volumes created using ONTAP CLI will also be visible in your FSx for ONTAP working environment.

About this task

You can add volumes by opening the working environment and selecting the **Volumes** tab or simply using working environment **Details** panel from the Canvas. This task describes adding volumes using the **Details** panel.

Before you begin

- You need an active Connector in AWS.
- If you want to use SMB, you must have set up DNS and Active Directory. For more information on DNS and Active Directory network configuration, see AWS: Prerequisites for using a self-managed Microsoft AD.

Steps

1. Select the FSx for ONTAP working environment on the Canvas. If you don't have a Connector enabled, you'll be prompted to add one.

2. In the **Details** panel, use the three dots (⋮) to open the options menu. Click **Add Volume**.
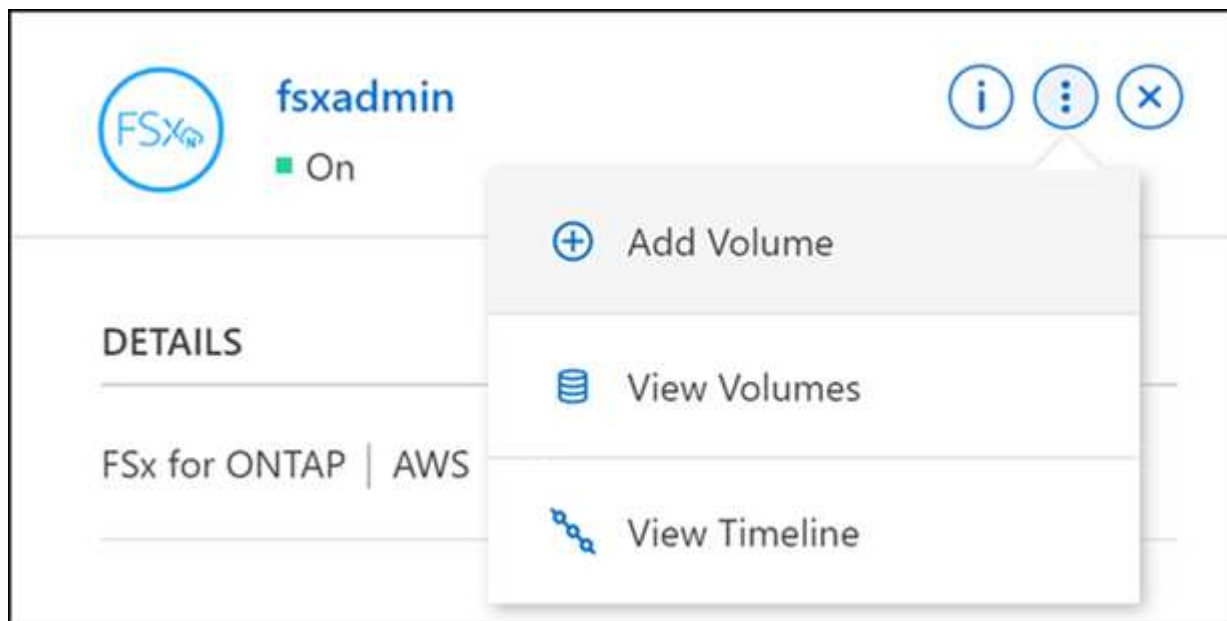
3. **Volume details, protection, & tags**

    a. Enter a name for your new volume.

    b. The Storage VM (SVM) field auto-populates the SVM based on the name of your working environment.

    c. Enter the volume size and select a unit (GiB or TiB). Note that the volume size will grow with usage.

    d. Select a snapshot policy. By default, a snapshot is taken every hour (keeping the last six copies), every day (keeping the last two copies), and every week (keeping the last two copies).

    e. Optionally, create tags to categorize your volumes by clicking the plus sign and entering a tag name and value.

    f. Optionally, select the optimization option to create a FlexGroup and distribute volume data across the cluster.

> ⓘ   FlexGroup distribution is available for NFS and CIFS volume protocols only.

4. **Volumes protocol**:

    a. Select an NFS, CIFS, or iSCSI volume protocol.

NFS

1. Select an Access Control policy.
2. Select the NFS versions.
3. Select a Custom Export Policy. Click the information icon for valid value criteria.

Volumes Protocol

Select the volume's protocol: ● NFS Protocol ○ CIFS Protocol ○ iSCSI Protocol

Access Control

Custom_export_policy

Select NFS Version

☑ NFSv3 ☑ NFSv4

Custom Export Policy ⓘ

0.0.0.0/0

CIFS

1. Enter a Share Name.
2. Enter users or groups separated by a semicolon.
3. Select the permission level for the volume.

Volumes Protocol

Select the volume's protocol: ○ NFS Protocol ● CIFS Protocol ○ iSCSI Protocol

Share Name

tami_share

Users/Groups ⓘ

Everyone;

Permissions

Full Control

4. If this is the first CIFS volume for this working environment, you will be prompted to configure CIFS connectivity using an *Active Directory* or *Workgroup* setup.
   - If you select a Workgroup setup, enter the server and workgroup name for a workgroup configured for CIFS.
   - If you select an Active Directory setup, you'll need to provide the following configuration information.

Field	Description
DNS Primary IP Address	The IP addresses of the DNS servers that provides name resolution for the CIFS server. The listed DNS server must contain the service location records (SRV) needed to locate the Active Directory LDAP servers and domain controllers for the domain the CIFS server will join.
Active Directory Domain to join	The FQDN of the Active Directory (AD) domain you want the CIFS server to join.
Credentials authorized to join the domain	The name and password of a Windows account with sufficient privileges to add computers to the specified Organizational Unit (OU) within the AD domain.
CIFS server NetBIOS name	A CIFS server name that is unique in the AD domain.
Organizational Unit	The organizational unit within the AD domain to associate with the CIFS server. The default is CN=Computers.
DNS Domain	The DNS domain for the storage virtual machine (SVM). In most cases, the domain is the same as the AD domain.
NTP Server	Select **Enable NTP Server Configuration** to configure an NTP server using the Active Directory DNS. If you need to configure an NTP server using a different address, then you should use the API. See the BlueXP automation docs for details.

iSCSI

You can connect your LUN using an existing initiator group or by creating a new one. To map an existing initiator group, select your operating system and one or more initiator groups.

To create a new initiator group:

1. Select **Create new**.

2. Select your operating system.

3. Click to add one or more host iSCSI qualified names (IQN). You can select existing IQNs or add new IQNs. For details on how to find the IQN for a volume, see Connect a host to a LUN.

4. Enter an **Initiator Group Name**.

5. **Usage Profile and Tiering**

   a. By default, **Storage Efficiency** is disabled. You can change this setting to enable deduplication and compression.

   b. By default, **Tiering Policy** is set to **Snapshot Only**. You can select a different tiering policy based on your needs.

   c. If you selected optimization (FlexGroup), you must specify the number of constituents to distribute

volume data across. We strongly recommend using an even number of constituents to ensure even data distribution.

6. **Review**: Review your volume configuration. Click **Previous** to change settings or **Add** to create the volume.

Result

The new volume is added to the working environment.

Mount volumes

Access mounting instructions from within BlueXP so you can mount the volume to a host.

About this task

You can mount volumes by opening the working environment and selecting the **Volumes** tab or simply using working environment **Details** panel from the Canvas. This task describes adding volumes using the **Details** panel.

Steps

1. Select the FSx for ONTAP working environment on the Canvas.

2. In the **Details** panel, use the three dots icon (⋮) to open the options menu. Click **View Volumes**.
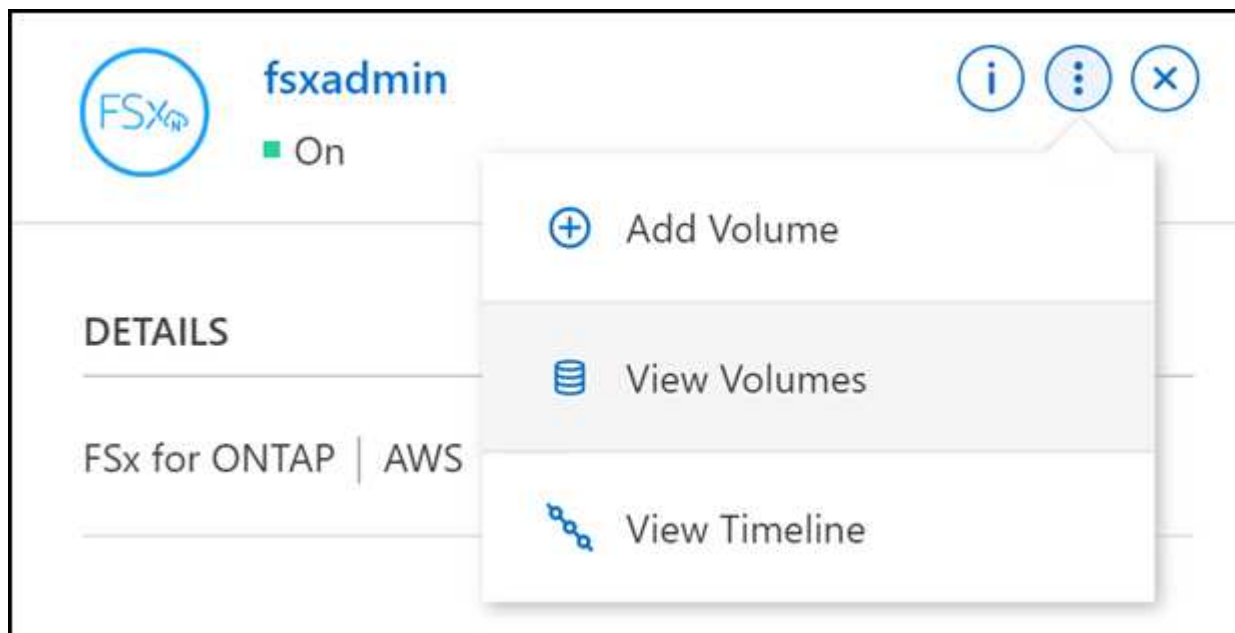
3. Use **Manage Volumes** to open the **Volume Actions** menu. Click **Mount command** and follow the instructions to mount the volume.
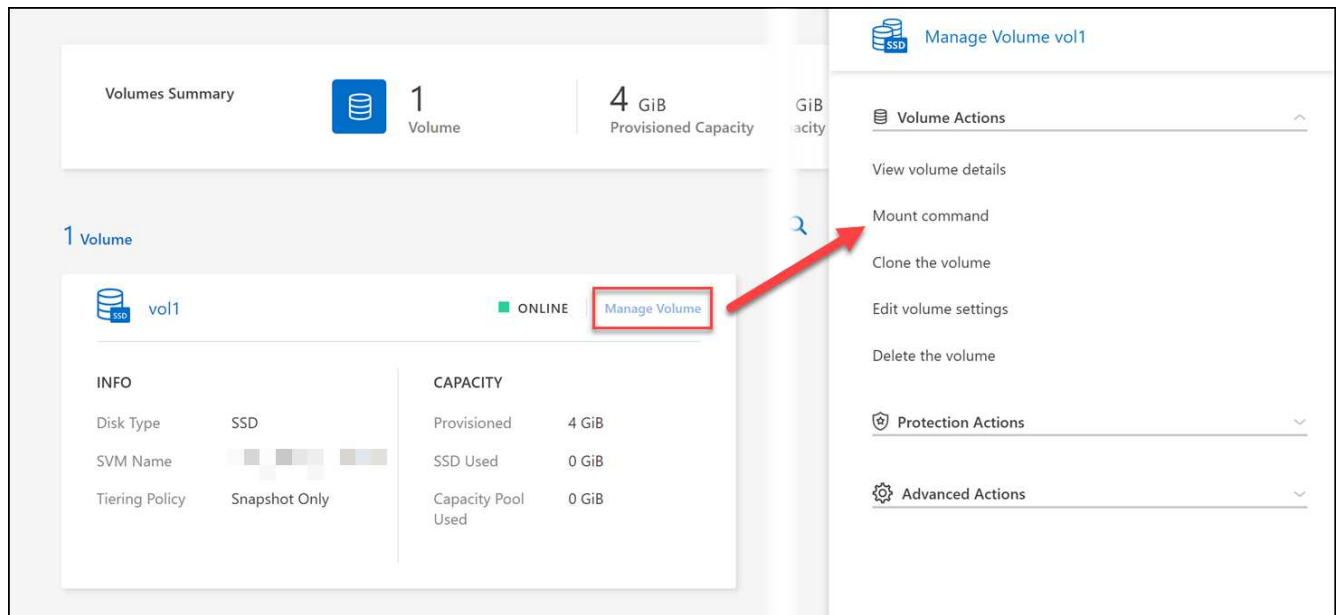
Result

Your volume is now mounted to the host.

Manage volumes for FSx for ONTAP

You can view and manage volumes, clones, and snapshots, and change tiering policies for FSx for ONTAP using BlueXP.

View volume details

After you create a volume, you can view the configuration details.

1. Open the working environment.

   > ℹ️ You can hover over the volume name to display the volume type.

2. Open the volume tab and select **Manage Volume** to open the **Volume Actions** menu.
3. Select **View volume details**.

Edit volumes

After you create a volume, you can modify it at any time.

Steps

1. Open the working environment.
2. Open the volume tab and select **Manage Volume** to open the **Volume Actions** menu.
3. Select **Edit volume settings**.
4. Select **Apply**.

Clone volumes

After you create a volume, you can create a new read-write volume from a new Snapshot.

Steps

1. Open the working environment.

2. Open the volume tab and select **Manage Volume** to open the **Volume Actions** menu.

3. Select **Clone the volume**.

4. Enter a name for the cloned volume.

5. Select **Clone**.

Manage volume tags

You can add, modify, or delete volume tags. Tags added in BlueXP are reflected in the AWS Management Console. It can take up to an hour to synchronize tags with the AWS Management Console.

> ⓘ You cannot edit volume tags you created in BlueXP until they sync with AWS. This can take up to an hour. If the **Manage volume tags** option is grayed out, AWS has not yet synced the volume tags.

Steps

1. Open the working environment.

2. Open the volume tab and select **Manage Volume** to open the **Volume Actions** menu.

3. Select **Manage volume tags**.

4. Select **Save** to apply your changes.

Manage Snapshot copies

Snapshot copies provide a point-in-time copy of your volume. Create Snapshot copies and restore the data to a new volume.

Steps

1. Open the working environment.

2. Open the volume tab and select **Manage Volume** to open the **Protection Actions** menu.

3. Select one of the available options to manage Snapshot copies:

   ◦ **Create a Snapshot copy**

   ◦ **Restore from a Snapshot copy**

4. Follow the prompts to complete the selected action.

Change the tiering policy

Change the tiering policy for the volume.

Steps

1. Open the working environment.

2. Open the volume tab and select **Manage Volume** to open the **Advanced Actions** menu.

3. Select **Change Tiering policy**.

4. Select a new volume tiering policy and click **Change**.

Delete volumes

Delete the volumes that you no longer need.

Before you begin

You cannot delete a volume that was previously part of a SnapMirror relationship using BlueXP. SnapMirror volumes must be deleted using the AWS Management Console or CLI.

Steps

1. Open the working environment.

2. Open the volume tab and select **Manage Volume** to open the **Volume Actions** menu.

3. Select **Delete the volume**.

4. Enter the working environment name and confirm that you want to delete the volume. It can take up to an hour before the volume is completely removed from BlueXP.

> (i) If you try to delete a cloned volume, you will receive an error.

Add and manage storage VMs for FSx for ONTAP

After you create your working environment, you can add, view, and manage a storage virtual machine (VM)--also referred to as an *SVM*--on a managed FSx for ONTAP cluster.

Add a storage VM

Using BlueXP, you can add storage VMs to the FSx for ONTAP file system up to the maximum number allowed. Refer to AWS: Managing FSx for ONTAP storage virtual machines for details.

About this task

You can add a storage VM by opening the working environment and selecting the **Storage VMs** tab or from the working environment **Overview** panel. This task describes adding a storage VM using the **Storage VMs** panel.

Before you begin

- You need an active Connector in AWS.

- Create one or more storage VMs. Refer to Manage storage VMs in BlueXP for details.

Steps

1. Select the FSx for ONTAP working environment on the Canvas. If you don't have a Connector enabled, you'll be prompted to add one.

2. Select the **Storage VMs** panel. Existing SVMs are displayed. Select **Add SVM** to add a new SVM.
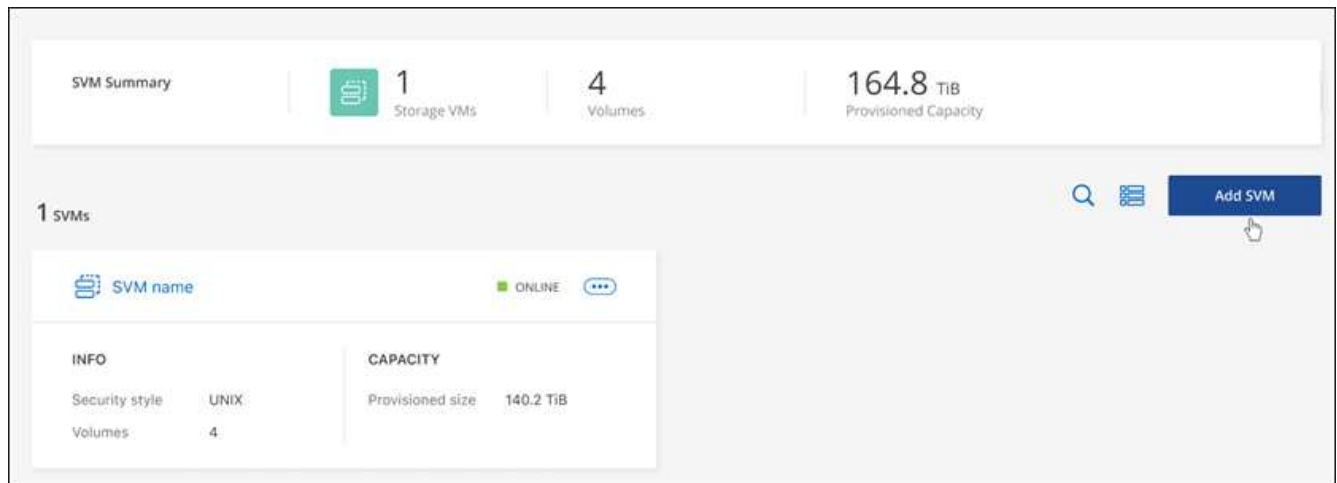
3. **Add storage virtual machine**

   a. Enter the name of your storage VM.

   b. Select the configured storage VM root volume security style. Valid values are **UNIX**, **NTFS**, or **Mixed**.

   c. Optionally, specify a storage VM administrative password.

   d. Optionally, create up to fifty tags to categorize your SVM by clicking the plus sign and entering a tag name and value.

   e. Select **Add** to add the storage VM.

Result

The new storage VM is added to the working environment and the FSx for ONTAP file system.

Manage a storage VM

You can view storage VM details, manage tags, set up an SMB/CIFS connection, or delete a storage SVM.

Before you begin

You need an active Connector in AWS.

Steps

1. Select the FSx for ONTAP working environment on the Canvas. If you don't have a Connector enabled, you'll be prompted to add one.

2. Select the **Storage VMs** panel.

3. Use the three dots (⋮) to open the options menu for the storage VM.
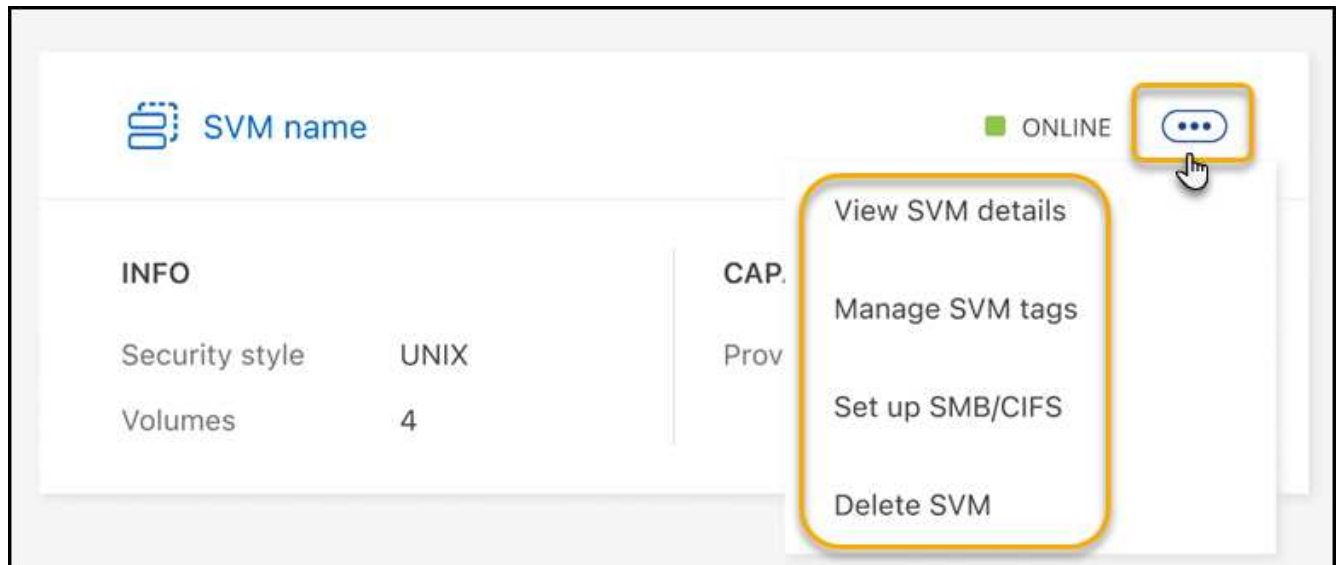
4. Select a menu option to view or manage the storage VM settings.

   ◦ **View SVM details**: You can review details including root volume, security style, allowed protocols, Active Directory domain, and tags.

   ◦ **Manage SVM tags**: You can add, edit, or remove storage VM tags. Changes you make will sync with the AWS Management Console.

   ◦ **Set up SMB/CIFS**: If this is the first CIFS connection for this working environment, you will be prompted to configure CIFS connectivity using an *Active Directory* or *Workgroup* setup.

     ▪ If you select a Workgroup setup, enter the server and workgroup name for a workgroup configured for CIFS.

     ▪ If you select an Active Directory setup, you'll need to provide the following configuration information.

Active Directory configuration

Field	Description
DNS Primary IP Address	The IP addresses of the DNS servers that provides name resolution for the CIFS server. The listed DNS server must contain the service location records (SRV) needed to locate the Active Directory LDAP servers and domain controllers for the domain the CIFS server will join.
Active Directory Domain to join	The FQDN of the Active Directory (AD) domain you want the CIFS server to join.
Credentials authorized to join the domain	The name and password of a Windows account with sufficient privileges to add computers to the specified Organizational Unit (OU) within the AD domain.
CIFS server NetBIOS name	A CIFS server name that is unique in the AD domain.
Organizational Unit	The organizational unit within the AD domain to associate with the CIFS server. The default is CN=Computers.
DNS Domain	The DNS domain for the storage virtual machine (SVM). In most cases, the domain is the same as the AD domain.
NTP Server	Select **Enable NTP Server Configuration** to configure an NTP server using the Active Directory DNS. If you need to configure an NTP server using a different address, then you should use the API. See the BlueXP automation docs for details.

◦ **Delete SVM**: You can delete the storage VM. You must verify the storage VM name to delete it.

ⓘ   You must delete all volumes on the storage VM before deleting the storage VM.