Technical Report

Tiering cold data to low-cost object storage

Cloud Manager 3.5

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Tiering cold data to low-cost object storage

You can reduce storage costs in AWS and Azure by combining an SSD or HDD performance tier for "hot" data with an object storage capacity tier for "cold" data. For a high-level overview, see Data tiering overview.

To set up data tiering, you simply need to do the following:

[A diagram that shows the workflow for enabling tiering: choose a supported configuration, ensure that connectivity is available between tiers, and then choose a tiering policy when creating, modifying, or replicating a volume.]

What's not required for data tiering

- You do not need to install a feature license to enable data tiering.
- You do not need to create the capacity tier (either an S3 bucket or an Azure Blob container). Cloud Manager does that for you.

Configurations that support data tiering

You can enable data tiering when using specific configurations and features:

- Data tiering is supported with Cloud Volumes ONTAP Standard, Premium, and BYOL, starting with version 9.2 in AWS and version 9.4 in Microsoft Azure.

  Data tiering is not supported in Azure with the DS3_v2 virtual machine type.

- In AWS, the performance tier can be General Purpose SSDs, Provisioned IOPS SSDs, or Throughput Optimized HDDs.
- In Azure, the performance tier can be either Premium SSD managed disks or Standard HDD managed disks.
- Data tiering is supported with AWS-managed encryption and Azure-managed encryption.
- Thin provisioning must be enabled on volumes.

Requirements for tiering data in AWS

You must ensure that Cloud Volumes ONTAP has a connection to S3. The best way to provide that connection is by creating a VPC Endpoint to the S3 service. For instructions, see AWS Documentation: Creating a Gateway Endpoint.

When you create the VPC Endpoint, be sure to select the region, VPC, and route table that corresponds to the Cloud Volumes ONTAP instance. You must also modify the security group to add an outbound HTTPS rule that enables traffic to the S3 endpoint. Otherwise, Cloud Volumes ONTAP cannot connect to the S3 service.

If you experience any issues, see AWS Support Knowledge Center: Why can't I connect to an S3

bucket using a gateway VPC endpoint?.

Requirements for tiering data in Microsoft Azure

You do not need to set up a connection between the performance tier and the capacity tier as long as Cloud Manager has the required permissions. Cloud Manager enables a VNet service endpoint for you if the Cloud Manager policy has the appropriate permission:

"Microsoft.Network/virtualNetworks/subnets/write",

That permission is included in the latest Cloud Manager policy. For details about providing permissions, see Granting Azure permissions.

If your network configuration uses route tables, then Cloud Manager also requires the following permission: Microsoft.Network/routeTables/join/action

Tiering data on read-write volumes

Cloud Volumes ONTAP can tier cold data on read-write volumes to cost-effective object storage, freeing up the performance tier for hot data.

Steps

1. In the working environment, create a new volume or change the tier of an existing volume:

Task	Action
Create a new volume	Click **Add New Volume**.
Modify an existing volume	Select the volume and click **Change Disk Type & Tiering Policy**.

2. Select the Snapshot Only policy or the Auto policy.

   For a description of these policies, see Data tiering overview.

   Example

   [Screenshot that shows the icon to enable tiering to object storage.]

   Cloud Manager creates a new aggregate for the volume if a data tiering-enabled aggregate does not already exist.

If you prefer to create aggregates yourself, you can enable data tiering on aggregates when you create them.

Tiering data on data protection volumes

Cloud Volumes ONTAP can tier data from a data protection volume to a capacity tier. If you activate the destination volume, the data gradually moves to the performance tier as it is read.

Steps

1. On the Working Environments page, select the working environment that contains the source volume, and then drag it to the working environment to which you want to replicate the volume.
2. Follow the prompts until you reach the tiering page and enable data tiering to object storage.

   Example

   [Screenshot that shows the S3 tiering option when replicating a volume.]

   For help with replicating data, see Replicating data to and from the cloud.

Changing the tiering level

When you enable data tiering, Cloud Volumes ONTAP tiers cold data to the S3 *Standard* storage class in AWS or to the *hot* storage tier in Azure. After you deploy Cloud Volumes ONTAP, you can reduce your storage costs by changing the tiering level for cold data that has not been accessed for 30 days. The access costs are higher if you do access the data, so you must take that into consideration before you change the tiering level.

About this task

The tiering level is system wide—it is not per volume.

In AWS, you can change the tiering level so cold data moves to the *Standard-Infrequent Access* storage class or to the *One Zone-Infrequent Access* storage class after 30 days of inactivity.

In Azure, you can change the tiering level so cold data moves to the *cool* storage tier after 30 days of inactivity.

For more information about how tiering levels work, see Data tiering overview.

Steps

1. From the working environment, click the menu icon and then click **Tiering Level**.
2. Choose the tiering level and then click **Save**.