



# Preparing the source and target

## Cloud Manager

Ben Cammett

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# Table of Contents

- Preparing the source and target ..... 1
  - Supported sync relationships ..... 1
  - Networking for the source and target ..... 9
  - Source and target requirements. .... 10
  - Permissions for a SnapMirror destination. .... 14

# Preparing the source and target

Prepare to sync data by verifying that your source and target are supported and setup.

## Supported sync relationships

Cloud Sync enables you to sync data from a source to a target (this is called a *sync relationship*). You should understand the supported relationships before you get started.

Source location	Supported target locations
AWS EFS	<ul style="list-style-type: none"><li>• AWS EFS</li><li>• AWS S3</li><li>• Azure Blob</li><li>• Azure NetApp Files (NFS)</li><li>• Cloud Volumes ONTAP (NFS)</li><li>• Cloud Volumes Service (NFS)</li><li>• IBM Cloud Object Storage</li><li>• Google Cloud Storage</li><li>• NFS server</li><li>• On-premises ONTAP cluster</li><li>• StorageGRID</li></ul>

Source location	Supported target locations
AWS S3	<ul style="list-style-type: none"> <li>• AWS EFS</li> <li>• AWS S3</li> <li>• Azure Blob</li> <li>• Azure NetApp Files</li> <li>• Cloud Volumes ONTAP</li> <li>• Cloud Volumes Service</li> <li>• IBM Cloud Object Storage</li> <li>• Google Cloud Storage</li> <li>• NFS server</li> <li>• On-premises ONTAP cluster</li> <li>• SMB Server</li> <li>• StorageGRID</li> </ul>
Azure Blob	<ul style="list-style-type: none"> <li>• AWS EFS</li> <li>• AWS S3</li> <li>• Azure Blob</li> <li>• Azure NetApp Files</li> <li>• Cloud Volumes ONTAP</li> <li>• Cloud Volumes Service</li> <li>• Google Cloud Storage</li> <li>• IBM Cloud Object Storage</li> <li>• NFS server</li> <li>• On-premises ONTAP cluster</li> <li>• SMB Server</li> <li>• StorageGRID</li> </ul>

Source location	Supported target locations
Azure NetApp Files (NFS)	<ul style="list-style-type: none"> <li>• AWS EFS</li> <li>• AWS S3</li> <li>• Azure Blob</li> <li>• Azure NetApp Files (NFS)</li> <li>• Cloud Volumes ONTAP (NFS)</li> <li>• Cloud Volumes Service (NFS)</li> <li>• IBM Cloud Object Storage</li> <li>• Google Cloud Storage</li> <li>• NFS server</li> <li>• On-premises ONTAP cluster</li> <li>• StorageGRID</li> </ul>
Azure NetApp Files (SMB)	<ul style="list-style-type: none"> <li>• AWS S3</li> <li>• Azure Blob</li> <li>• Azure NetApp Files (SMB)</li> <li>• Cloud Volumes ONTAP (SMB)</li> <li>• Cloud Volumes Service (SMB)</li> <li>• Google Cloud Storage</li> <li>• IBM Cloud Object Storage</li> <li>• On-premises ONTAP cluster</li> <li>• SMB Server</li> <li>• StorageGRID</li> </ul>

Source location	Supported target locations
Cloud Volumes ONTAP (NFS)	<ul style="list-style-type: none"> <li>• AWS EFS</li> <li>• AWS S3</li> <li>• Azure Blob</li> <li>• Azure NetApp Files (NFS)</li> <li>• Cloud Volumes ONTAP (NFS)</li> <li>• Cloud Volumes Service (NFS)</li> <li>• IBM Cloud Object Storage</li> <li>• Google Cloud Storage</li> <li>• NFS server</li> <li>• On-premises ONTAP cluster</li> <li>• StorageGRID</li> </ul>
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Source location	Supported target locations
Cloud Volumes Service (NFS)	<ul style="list-style-type: none"> <li>• AWS EFS</li> <li>• AWS S3</li> <li>• Azure Blob</li> <li>• Azure NetApp Files (NFS)</li> <li>• Cloud Volumes ONTAP (NFS)</li> <li>• Cloud Volumes Service (NFS)</li> <li>• IBM Cloud Object Storage</li> <li>• Google Cloud Storage</li> <li>• NFS server</li> <li>• On-premises ONTAP cluster</li> <li>• StorageGRID</li> </ul>
Cloud Volumes Service (SMB)	<ul style="list-style-type: none"> <li>• AWS S3</li> <li>• Azure Blob</li> <li>• Azure NetApp Files (SMB)</li> <li>• Cloud Volumes ONTAP (SMB)</li> <li>• Cloud Volumes Service (SMB)</li> <li>• Google Cloud Storage</li> <li>• IBM Cloud Object Storage</li> <li>• On-premises ONTAP cluster</li> <li>• SMB Server</li> <li>• StorageGRID</li> </ul>

Source location	Supported target locations
Google Cloud Storage	<ul style="list-style-type: none"> <li>• AWS EFS</li> <li>• AWS S3</li> <li>• Azure Blob</li> <li>• Azure NetApp Files</li> <li>• Cloud Volumes ONTAP</li> <li>• Cloud Volumes Service</li> <li>• Google Cloud Storage</li> <li>• IBM Cloud Object Storage</li> <li>• NFS server</li> <li>• On-premises ONTAP cluster</li> <li>• SMB Server</li> <li>• StorageGRID</li> </ul>
IBM Cloud Object Storage	<ul style="list-style-type: none"> <li>• AWS EFS</li> <li>• AWS S3</li> <li>• Azure Blob</li> <li>• Azure NetApp Files</li> <li>• Cloud Volumes ONTAP</li> <li>• Cloud Volumes Service</li> <li>• Google Cloud Storage</li> <li>• IBM Cloud Object Storage</li> <li>• NFS server</li> <li>• On-premises ONTAP cluster</li> <li>• SMB Server</li> <li>• StorageGRID</li> </ul>



Source location	Supported target locations
NFS server	<ul style="list-style-type: none"> <li>• AWS EFS</li> <li>• AWS S3</li> <li>• Azure Blob</li> <li>• Azure NetApp Files (NFS)</li> <li>• Cloud Volumes ONTAP (NFS)</li> <li>• Cloud Volumes Service (NFS)</li> <li>• IBM Cloud Object Storage</li> <li>• Google Cloud Storage</li> <li>• NFS server</li> <li>• On-premises ONTAP cluster</li> <li>• StorageGRID</li> </ul>
On-prem ONTAP cluster (NFS)	<ul style="list-style-type: none"> <li>• AWS EFS</li> <li>• AWS S3</li> <li>• Azure Blob</li> <li>• Azure NetApp Files (NFS)</li> <li>• Cloud Volumes ONTAP (NFS)</li> <li>• Cloud Volumes Service (NFS)</li> <li>• IBM Cloud Object Storage</li> <li>• Google Cloud Storage</li> <li>• NFS server</li> <li>• On-premises ONTAP cluster</li> <li>• StorageGRID</li> </ul>

Source location	Supported target locations
On-prem ONTAP cluster (SMB)	<ul style="list-style-type: none"> <li>• AWS S3</li> <li>• Azure Blob</li> <li>• Azure NetApp Files (SMB)</li> <li>• Cloud Volumes ONTAP (SMB)</li> <li>• Cloud Volumes Service (SMB)</li> <li>• Google Cloud Storage</li> <li>• IBM Cloud Object Storage</li> <li>• On-premises ONTAP cluster</li> <li>• SMB Server</li> <li>• StorageGRID</li> </ul>
ONTAP S3 Storage	<ul style="list-style-type: none"> <li>• StorageGRID</li> </ul>
SMB server	<ul style="list-style-type: none"> <li>• AWS S3</li> <li>• Azure Blob</li> <li>• Azure NetApp Files (SMB)</li> <li>• Cloud Volumes ONTAP (NFS)</li> <li>• Cloud Volumes Service (NFS)</li> <li>• IBM Cloud Object Storage</li> <li>• Google Cloud Storage</li> <li>• On-premises ONTAP cluster</li> <li>• SMB Server</li> <li>• StorageGRID</li> </ul>

Source location	Supported target locations
StorageGRID	<ul style="list-style-type: none"> <li>• AWS EFS</li> <li>• AWS S3</li> <li>• Azure Blob</li> <li>• Azure NetApp Files</li> <li>• Cloud Volumes ONTAP</li> <li>• Cloud Volumes Service</li> <li>• IBM Cloud Object Storage</li> <li>• Google Cloud Storage</li> <li>• NFS server</li> <li>• On-premises ONTAP cluster</li> <li>• ONTAP S3 Storage</li> <li>• SMB Server</li> <li>• StorageGRID</li> </ul>

Notes:

1. You can choose a specific Azure Blob storage tier when a Blob container is the target:
  - Hot storage
  - Cool storage
2. You can choose a specific S3 storage class when AWS S3 is the target:
  - Standard (this is the default class)
  - Intelligent-Tiering
  - Standard-Infrequent Access
  - One Zone-Infrequent Access
  - Glacier
  - Glacier Deep Archive

## Networking for the source and target

- The source and target must have a network connection to the data broker.

For example, if an NFS server is in your data center and the data broker is in AWS, then you need a network connection (VPN or Direct Connect) from your network to the VPC.

- NetApp recommends configuring the source, target, and data broker to use a Network Time

Protocol (NTP) service. The time difference between the three components should not exceed 5 minutes.

## Source and target requirements

Verify that your source and targets meet the following requirements.

### AWS S3 bucket requirements

Make sure that your AWS S3 bucket meets the following requirements.

#### Supported data broker locations for AWS S3

Sync relationships that include S3 storage require a data broker deployed in AWS or on your premises. In either case, Cloud Sync prompts you to associate the data broker with an AWS account during installation.

- [Learn how to deploy the AWS data broker](#)
- [Learn how to install the data broker on a Linux host](#)

#### Supported AWS regions

All regions are supported except for the China and GovCloud (US) regions.

#### Permissions required for S3 buckets in other AWS accounts

When setting up a sync relationship, you can specify an S3 bucket that resides in an AWS account that isn't associated with the data broker.

[The permissions included in this JSON file](#) must be applied to that S3 bucket so the data broker can access it. These permissions enable the data broker to copy data to and from the bucket and to list the objects in the bucket.

Note the following about the permissions included in the JSON file:


1. *<BucketName>* is the name of the bucket that resides in the AWS account that isn't associated with the data broker.
2. *<RoleARN>* should be replaced with one of the following:
  - If the data broker was manually installed on a Linux host, *RoleARN* should be the ARN of the AWS user for which you provided AWS credentials when deploying the data broker.
  - If the data broker was deployed in AWS using the CloudFormation template, *RoleARN* should be the ARN of the IAM role created by the template.

You can find the Role ARN by going to the EC2 console, selecting the data broker instance, and clicking the IAM role from the Description tab. You should then see the Summary page in the

IAM console that contains the Role ARN.

## Summary

Delete role

**Role ARN** `arn:aws:iam::142799178898:role/tanyaBroker0304-DataBrokerIamRole-1VMHWXMW3AQ05` 

[Role description](#) [Edit](#)

## Azure Blob storage requirements

Make sure that your Azure Blob storage meets the following requirements.

### Supported data broker locations for Azure Blob

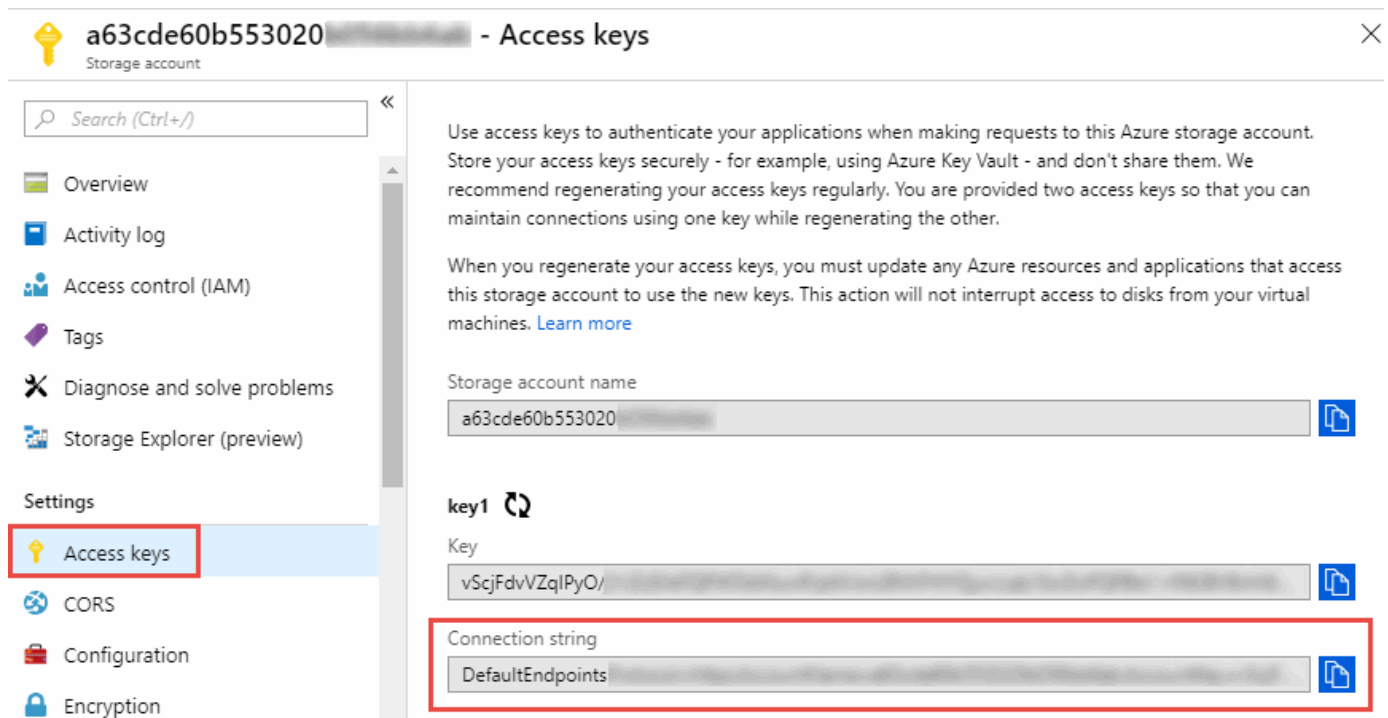
The data broker can reside in any location when a sync relationship includes Azure Blob storage.

### Supported Azure regions

All regions are supported except for the China, US Gov, and US DoD regions.

### Connection string required for relationships that include Azure Blob and NFS/SMB

When creating a sync relationship between an Azure Blob container and an NFS or SMB server, you need to provide Cloud Sync with the storage account connection string:



**a63cde60b553020** - Access keys

Storage account

Search (Ctrl+)

Overview

Activity log

Access control (IAM)

Tags

Diagnose and solve problems

Storage Explorer (preview)

Settings

**Access keys**

CORS

Configuration

Encryption

Use access keys to authenticate your applications when making requests to this Azure storage account. Store your access keys securely - for example, using Azure Key Vault - and don't share them. We recommend regenerating your access keys regularly. You are provided two access keys so that you can maintain connections using one key while regenerating the other.

When you regenerate your access keys, you must update any Azure resources and applications that access this storage account to use the new keys. This action will not interrupt access to disks from your virtual machines. [Learn more](#)

Storage account name

a63cde60b553020

**key1**

Key

vScjFdvVZqIPyO/

Connection string

DefaultEndpoints

If you want to sync data between two Azure Blob containers, then the connection string must include a [shared access signature](#) (SAS). You also have the option to use a SAS when syncing between a Blob container and an NFS or SMB server.

The SAS must allow access to the Blob service and all resource types (Service, Container, and Object). The SAS must also include the following permissions:

- For the source Blob container: Read and List
- For the target Blob container: Read, Write, List, Add, and Create

**a63cde60b553020 - Shared access signature**

Storage account

Search (Ctrl+ /)

Overview

Activity log

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Tags

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Storage Explorer (preview)

Settings

Access keys

CORS

Configuration

Encryption

**Shared access signature**

Firewalls and virtual networks

Advanced Threat Protection (pr...

Properties

Locks

**Allowed services**

☒ Blob ☐ File ☐ Queue ☐ Table

**Allowed resource types**

☒ Service ☒ Container ☒ Object

**Allowed permissions**

☒ Read ☒ Write ☒ Delete ☒ List ☒ Add ☒ Create ☐ Update ☐ Process

**Start and expiry date/time**

Start

2018-10-23 10:07:32 AM

End

2019-10-23 6:07:32 PM

(UTC-04:00) --- Current Time Zone ---

**Allowed IP addresses**

for example, 168.1.5.65 or 168.1.5.65-168.1.5.70

**Allowed protocols**

☒ HTTPS only ☐ HTTPS and HTTP

**Signing key**

key1

**Generate SAS and connection string**

## Azure NetApp Files requirement

Use the Premium or Ultra service level when you sync data to or from Azure NetApp Files. You might experience failures and performance issues if the disk service level is Standard.



Consult a solutions architect if you need help determining the right service level. The volume size and volume tier determines the throughput that you can get.

[Learn more about Azure NetApp Files service levels and throughput.](#)

## Google Cloud Storage bucket requirements

Make sure that your Google Cloud Storage bucket meets the following requirements.

### Supported data broker locations for Google Cloud Storage

Sync relationships that include Google Cloud Storage require a data broker deployed in GCP or on your premises. Cloud Sync guides you through the data broker installation process when you create a sync relationship.

- [Learn how to deploy the GCP data broker](#)
- [Learn how to install the data broker on a Linux host](#)

### Supported GCP regions

All regions are supported.

## NFS server requirements

- The NFS server can be a NetApp system or a non-NetApp system.
- The file server must allow the data broker host to access the exports.
- NFS versions 3, 4.0, 4.1, and 4.2 are supported.

The desired version must be enabled on the server.

- If you want to sync NFS data from an ONTAP system, ensure that access to the NFS export list for an SVM is enabled (`vserver nfs modify -vserver svm_name -showmount enabled`).



The default setting for showmount is *enabled* starting with ONTAP 9.2.

## ONTAP S3 Storage requirements

When you set up a sync relationship that includes [ONTAP S3 Storage](#), you'll need to provide the following:

- The IP address of the LIF that's connected to ONTAP S3
- The access key and secret key that ONTAP is configured to use

## SMB server requirements

- The SMB server can be a NetApp system or a non-NetApp system.
- The file server must allow the data broker host to access the exports.
- SMB versions 1.0, 2.0, 2.1, 3.0 and 3.11 are supported.

- Grant the "Administrators" group with "Full Control" permissions to the source and target folders.

If you don't grant this permission, then the data broker might not have sufficient permissions to get the ACLs on a file or directory. If this occurs, you'll receive the following error: "getxattr error 95"

### **SMB limitation for hidden directories and files**

An SMB limitation affects hidden directories and files when syncing data between SMB servers. If any of the directories or files on the source SMB server were hidden through Windows, the hidden attribute isn't copied to the target SMB server.

### **SMB sync behavior due to case-insensitivity limitation**

The SMB protocol is case-insensitive, which means uppercase and lowercase letters are treated as being the same. This behavior can result in overwritten files and directory copy errors, if a sync relationship includes an SMB server and data already exists on the target.

For example, let's say that there's a file named "a" on the source and a file named "A" on the target. When Cloud Sync copies the file named "a" to the target, file "A" is overwritten by file "a" from the source.

In the case of directories, let's say that there's a directory named "b" on the source and a directory named "B" on the target. When Cloud Sync tries to copy the directory named "b" to the target, Cloud Sync receives an error that says the directory already exists. As a result, Cloud Sync always fails to copy the directory named "b."

The best way to avoid this limitation is to ensure that you sync data to an empty directory.

## **Permissions for a SnapMirror destination**

If the source for a sync relationship is a SnapMirror destination (which is read-only), "read/list" permissions are sufficient to sync data from the source to a target.



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