NetApp

9.3 Release Notes

Cloud Volumes ONTAP

NetApp
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9.3 Release Notes

What's new in ONTAP Cloud 9.3

ONTAP Cloud 9.3 includes several new features and enhancements.

ONTAP Cloud HA enhancements in AWS

The 9.3 release addresses the resiliency of ONTAP Cloud HA pairs to tolerate network glitches or transient higher latencies within the AWS ecosystem, and to ensure the availability of customer data during such events.

Support for the EU (Paris) region in AWS

ONTAP Cloud is now supported in the EU (Paris) region in AWS. Based on the supported instance types in this region, the following ONTAP Cloud configurations are available in the EU (Paris) region:

- ONTAP Cloud Standard (r4.xlarge)
- ONTAP Cloud Premium (r4.2xlarge)
- ONTAP Cloud BYOL (r4.xlarge and r4.2xlarge)

Enhanced write performance with Azure Premium disks

Write performance for ONTAP Cloud has been improved in Azure when using Premium Storage disks. The enhancement is supported with ONTAP Cloud Standard, Premium, and BYOL.

> ℹ️ Write performance enhancements are not supported when using the DS3_v2 virtual machine type.

Increased capacity limit for ONTAP Cloud Premium and BYOL in Azure

The capacity limit for ONTAP Cloud Premium and ONTAP Cloud BYOL has doubled to 252 TB when using the DS5_v2 or DS14_v2 virtual machine types.

> ℹ️ This change is possible due to an increase in the number of disks available per Azure virtual machine. It does not change the maximum capacity per aggregate.

Support for Azure US Gov regions

You can now deploy Cloud Manager and ONTAP Cloud BYOL in the following Azure regions:

- US Gov Arizona
- US Gov Texas
- US Gov Virginia

To deploy Cloud Manager in these regions, you must create a CentOS 7.3 virtual machine from the Azure Marketplace, download the Cloud Manager installer from the NetApp Support Site, and then install the software. After Cloud Manager is running, you can deploy ONTAP Cloud BYOL systems in the these regions just like any other region.

Support for SVM disaster recovery

ONTAP Cloud supports one data-serving SVM and one destination SVM used for disaster recovery. You can activate the destination SVM for data access if there's an outage on the source SVM.

SVM disaster recovery is the asynchronous mirroring of SVM data and configuration from a source SVM to a destination SVM. You can quickly activate a destination SVM for data access if the source SVM is no longer available.

> **ⓘ** Cloud Manager does not provide any setup or orchestration support for SVM disaster recovery. It also does not support storage-related tasks on any additional SVMs. You must use System Manager or the CLI for SVM disaster recovery.

SVM Disaster Recovery Preparation Express Guide

SVM Disaster Recovery Express Guide

Upgrade notes

- Upgrades must be completed from Cloud Manager. You should not upgrade ONTAP Cloud by using System Manager or the CLI. Doing so can impact system stability.
- You can upgrade to ONTAP Cloud 9.3 from ONTAP Cloud 9.2.
- The upgrade of a single node system takes the system offline for up to 25 minutes, during which I/O is interrupted.
- Upgrading an HA pair is nondisruptive and I/O is uninterrupted. During this nondisruptive upgrade process, each node is upgraded in tandem to continue serving I/O to clients.

Supported configurations for ONTAP Cloud 9.3

ONTAP Cloud is available in AWS and Azure in two pricing options: pay-as-you-go and Bring Your Own License (BYOL). For pay-as-you-go, you can choose from three configurations: Explore, Standard, or Premium.

ONTAP Cloud for AWS

In AWS, you can deploy ONTAP Cloud as a single system or an HA pair.

	Explore	Standard	Premium	BYOL
EC2 instance types	m4.xlarge	• m4.2xlarge • r4.xlarge	• c4.4xlarge • c4.8xlarge • m4.4xlarge • r4.2xlarge	• c4.4xlarge • c4.8xlarge • m4.xlarge • m4.2xlarge • m4.4xlarge • r4.xlarge • r4.2xlarge

	Explore	Standard	Premium	BYOL
Underlying storage	General Purpose SSDs, Provisioned IOPS SSDs, Throughput Optimized HDDs, and Cold HDDs, up to 16 TB per disk			
License capacity limit	2 TB	10 TB	368 TB	368 TB per license

Notes:

1. Pay-as-you-go configurations are not supported in GovCloud (US).

2. When you choose an EC2 instance type, you can specify whether it is a shared instance or a dedicated instance.

3. Enhanced write performance is supported when using EBS SSDs with ONTAP Cloud Standard, Premium, and BYOL.

4. Data tiering is supported with ONTAP Cloud Standard, Premium, and BYOL.

5. If you enable data tiering, a system's capacity limit stays the same. The capacity limit includes both disks and object storage.

6. For AWS region support, see Cloud Volumes Global Regions.

ONTAP Cloud for Azure

In Azure, you can deploy ONTAP Cloud as a single node system.

	Explore	Standard	Premium	BYOL
Virtual machine types	DS3_v2	• DS4_v2 • DS13_v2	• DS5_v2 • DS14_v2	• DS3_v2 • DS4_v2 • DS5_v2 • DS13_v2 • DS14_v2
Underlying storage	Standard HDD Managed Disks, Standard SSD Managed Disks, and Premium SSD Managed Disks, up to 32 TB per disk			
License capacity limit	2 TB	10 TB	368 TB	368 TB per license

Notes:

1. Enhanced write performance is supported when using Azure Premium Storage disks with ONTAP Cloud Standard, Premium, and BYOL, but not when using the DS3_v2 virtual machine type.

2. For Azure region support, see Cloud Volumes Global Regions.

Storage limits for ONTAP Cloud 9.3

ONTAP Cloud has storage configuration limits to provide reliable operations. For best performance, do not configure your system at the maximum values.

The following sections list limits for aggregates, volumes, LUNs, and related storage objects. Note that the maximum capacity for an ONTAP Cloud system is model specific. ONTAP Cloud configurations that support a lower raw capacity limit cannot reach some of the size and disk limits.

Physical storage limits for ONTAP Cloud in AWS

Physical storage	Parameter	Limit
Aggregates and disks	Maximum number of aggregates	34 for single-node configurations 18 per node in an HA configuration [1]
	Maximum aggregate size	96 TB of raw capacity
	Disks per aggregate	1-6 [2]
	Maximum disk size	16 TB
	Maximum number of data disks across all aggregates [3]	34 for single-node configurations 31 per node in an HA configuration
RAID groups	Maximum per aggregate	1

Notes:

1. It is not possible to create 18 aggregates on both nodes in an HA pair because doing so would exceed the data disk limit.

2. All disks in an aggregate must be the same size.

3. The data disk limit is specific to disks that contain user data. The boot disk and root disk for each node are not included in this limit.

Physical storage limits for ONTAP Cloud in Azure

Physical storage	Parameter	Limit
Aggregates and disks	Maximum number of aggregates	63
	Maximum aggregate size	200 TB of raw capacity
	Disks per aggregate	1-12 [1]
	Maximum disk size	32 TB
	Maximum number of data disks across all aggregates [2]	• DS3_v2: 15 • DS4_v2: 31 • DS5_v2: 63 • DS13_v2: 31 • DS14_v2: 63
RAID groups	Maximum per aggregate	1

Notes:

1. All disks in an aggregate must be the same size.
2. The data disk limit is specific to disks that contain user data. The boot disk and root disk for each node are not included in this limit.

Logical storage limits

Logical storage	Parameter	Limit
Storage virtual machines (SVMs)	Maximum number for ONTAP Cloud (HA pair or single node)	One data-serving SVM and one destination SVM used for disaster recovery. You can activate the destination SVM for data access if there's an outage on the source SVM. [1] The one data-serving SVM spans the entire ONTAP Cloud system (HA pair or single node).
Files	Maximum size	16 TB
	Maximum per volume	Volume size dependent, up to 2 billion
FlexClone volumes	Hierarchical clone depth [2]	499
FlexVol volumes	Maximum per node	500
	Minimum size	20 MB
	Maximum size	AWS: Dependent on the size of the aggregate [3] Azure: 100 TB
Qtrees	Maximum per FlexVol volume	4,995
Snapshot copies	Maximum per FlexVol volume	255

Notes:

1. Cloud Manager does not provide any setup or orchestration support for SVM disaster recovery. It also does not support storage-related tasks on an additional SVM. You must use System Manager or the CLI for SVM disaster recovery.
   - SVM Disaster Recovery Preparation Express Guide
   - SVM Disaster Recovery Express Guide
2. Hierarchical clone depth is the maximum depth of a nested hierarchy of FlexClone volumes that can be created from a single FlexVol volume.
3. Less than 100 TB is supported because aggregates for this configuration are limited to 96 TB of *raw* capacity.

iSCSI storage limits

iSCSI storage	Parameter	Limit
LUNs	Maximum per node	1,024
	Maximum number of LUN maps	1,024
	Maximum size	16 TB
	Maximum per volume	512
igroups	Maximum per node	256
Initiators	Maximum per node	512
	Maximum per igroup	128
iSCSI sessions	Maximum per node	1,024
LIFs	Maximum per port	32
	Maximum per portset	32
Portsets	Maximum per node	256

Known issues for ONTAP Cloud 9.3

Known issues identify problems that might prevent you from using this release of the product successfully.

There are no known issues in this release specific to ONTAP Cloud.

You can find known issues for ONTAP software in the ONTAP Release Notes.

Known limitations for ONTAP Cloud 9.3

Known limitations identify platforms, devices, or functions that are not supported by this release of the product, or that do not interoperate correctly with it. Review these limitations carefully.

General limitations

The following limitations apply to ONTAP Cloud in AWS and in Azure.

Software updates must be completed by Cloud Manager

Upgrades of Cloud Volumes ONTAP must be completed from Cloud Manager. You should not upgrade Cloud Volumes ONTAP by using System Manager or the CLI. Doing so can impact system stability.

Encryption is not supported on boot and root disks

If you enabled an option from your cloud provider that automatically encrypts all new volumes or disks, then you must temporarily disable that option when deploying ONTAP Cloud. If you don't, then deployment of ONTAP Cloud will fail. Encryption is not supported on the boot and root disks for the ONTAP Cloud system.

ONTAP Cloud deployment must not be modified from your cloud provider's console

Changes to an ONTAP Cloud configuration from your cloud provider's console results in an unsupported configuration. Any changes to the ONTAP Cloud resources that Cloud Manager creates and manages can impact system stability and Cloud Manager's ability to manage the system.

Disks and aggregates must be managed from Cloud Manager

All disks and aggregates must be created and deleted directly from Cloud Manager. You should not perform these actions from another management tool. Doing so can impact system stability, hamper the ability to add disks in the future, and potentially generate redundant cloud provider fees.

SnapManager licensing limitation

SnapManager per-server licenses are supported with ONTAP Cloud. Per-storage system (SnapManager suite) licenses are not supported.

Unsupported ONTAP features

The following features are not supported with ONTAP Cloud:

- Aggregate-level inline deduplication
- Aggregate-level background deduplication
- Disk maintenance center
- Disk sanitization
- Fibre Channel (FC)
- Flash Pools
- FlexCache
- FlexGroup volumes
- Infinite Volumes
- Interface groups
- Intranode LIF failover
- MetroCluster
- Multi-tenancy (only one data-serving SVM is supported)
- NetApp Volume Encryption
- RAID4, RAID-DP, RAID-TEC (RAID0 is supported)
- Service Processor
- SnapLock
- SnapMirror Synchronous
- VLANs

Known limitations for ONTAP Cloud in AWS

The following known limitations affect ONTAP Cloud in AWS.

False alarms reported by Amazon CloudWatch

ONTAP Cloud does not release CPUs when idle, so Amazon CloudWatch can report a high CPU warning for the EC2 instance because it sees 100% usage. You can ignore this alarm. The ONTAP statistics command displays the true usage of the CPUs.

ONTAP Cloud HA pairs do not support immediate storage giveback

After a node reboots, the partner must sync data before it can return the storage. The time that it takes to resync data depends on the amount of data written by clients while the node was down and the data write speed during the time of giveback.

Limitations with the AWS GovCloud (US) region

- Cloud Manager must be deployed in an AWS GovCloud (US) region if you want to launch Cloud Volumes ONTAP instances in any AWS GovCloud (US) region.
- The ONTAP Cloud pay-as-you-go AMI is not supported in the AWS GovCloud (US) region.
- When deployed in the AWS GovCloud (US) region, Cloud Manager cannot discover ONTAP clusters in a NetApp Private Storage for Microsoft Azure configuration or a NetApp Private Storage for SoftLayer configuration.

Detaching and reattaching EBS volumes is not supported

Detaching an EBS volume from an ONTAP Cloud instance and then reattaching it to another ONTAP Cloud instance is not supported. You should use Cloud Manager to replicate data between instances.

Encryption limitations

- LUN move is not supported on systems that have ONTAP Cloud encryption enabled.
- ONTAP Cloud sends encryption keys to key managers even for aggregates that it failed to create.

  You must manually delete the keys from key managers.

Known limitations for ONTAP Cloud in Azure

The following known limitations affect ONTAP Cloud in Azure.

ONTAP Cloud pay-as-you-go not available for CSP partners

If you are a Microsoft Cloud Solution Provider (CSP) partner, you cannot deploy ONTAP Cloud Explore, Standard, or Premium because pay-as-you-go subscriptions are not available for CSP partners. You must purchase a license and deploy ONTAP Cloud BYOL.