NetApp

Supported configurations

Cloud Volumes ONTAP release notes

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Table of Contents

Supported configurations

Supported configurations for Cloud Volumes ONTAP in AWS

Several Cloud Volumes ONTAP configurations are supported in AWS.

Supported number of nodes

Cloud Volumes ONTAP is available in AWS as a single node system and as a high-availability (HA) pair of nodes for fault tolerance and nondisruptive operations.

Upgrading a single node system to an HA pair is not supported. If you want to switch between a single node system and an HA pair, then you need to deploy a new system and replicate data from the existing system to the new system.

Supported storage

Cloud Volumes ONTAP supports several types of EBS disks, and S3 object storage for data tiering. The maximum storage capacity is determined by the license that you choose.

Storage support by license

Each license supports a different maximum system capacity. The maximum system capacity includes disk-based storage plus object storage used for data tiering. NetApp doesn't support exceeding this limit.

Capacity-based licenses

	Freemium	Capacity-based license
Maximum system capacity (disks + object storage) [1]	500 GiB	Flexible [2]
Supported disk types	• General Purpose SSD (gp3 and gp2) [3],[5] • Provisioned IOPS SSD (io1) [3] • Throughput Optimized HDD (st1) [4]	
Cold data tiering to S3	Supported	

Notes:

1. For an HA pair, the capacity limit is for the entire HA pair. It's not per node. For example, if you use the Premium license, you can have up to 368 TiB of capacity between both nodes.

2. For some configurations, disk limits prevent you from reaching the capacity limit by using disks alone. In those cases, you can reach the capacity limit by tiering inactive data to object storage. For information about disk limits, refer to storage limits.

   With capacity-based licensing, each Cloud Volumes ONTAP system supports tiering to object storage. The total tiered capacity can scale up to the cloud provider's bucket limit. While the license does not impose capacity restrictions, you should follow the FabricPool Best Practices to ensure optimal performance, reliability, and cost efficiency when configuring and managing tiering.

3. Enhanced write performance is enabled when using SSDs with all Cloud Volumes ONTAP configurations.

4. Tiering data to object storage is not recommended when using Throughput Optimized HDDs (st1).

5. Cloud Volumes ONTAP configurations in AWS Local Zones only support the General Purpose SSD (gp2) disk type. No other disk types are supported in Cloud Volumes ONTAP in AWS Local Zones.

Node-based licenses

	PAYGO Explore	PAYGO Standard	PAYGO Premium	Node-based BYOL
Maximum system capacity (disks + object storage)	2 TiB	10 TiB	368 TiB [2]	368 TiB per license [2]
Supported disk types	• General Purpose SSD (gp3 and gp2) [3],[5] • Provisioned IOPS SSD (io1) [3] • Throughput Optimized HDD (st1) [4]			
Cold data tiering to S3	Not supported	Supported		

Notes:

1. For an HA pair, the capacity limit is for the entire HA pair. It's not per node. For example, if you use the Premium license, you can have up to 368 TiB of capacity between both nodes.

2. For some configurations, disk limits prevent you from reaching the capacity limit by using disks alone. In those cases, you can reach the capacity limit by tiering inactive data to object storage. For information about disk limits, refer to storage limits.

3. Enhanced write performance is enabled when using SSDs with all Cloud Volumes ONTAP configurations, except for PAYGO Explore.

4. Tiering data to object storage is not recommended when using Throughput Optimized HDDs (st1).

5. Cloud Volumes ONTAP configurations in AWS Local Zones only support the General Purpose SSD (gp2) disk type.

Supported disk sizes

In AWS, an aggregate can contain up to 6 disks that are all the same size. But if you have a configuration that supports the Amazon EBS Elastic Volumes feature, then an aggregate can contain up to 8 disks. Learn more about support for Elastic Volumes

General Purpose SSDs (gp3 and gp2)	Provisioned IOPS SSDs (io1)	Throughput Optimized HDDs (st1)
• 100 GiB • 500 GiB • 1 TiB • 2 TiB • 4 TiB • 6 TiB • 8 TiB • 16 TiB	• 100 GiB • 500 GiB • 1 TiB • 2 TiB • 4 TiB • 6 TiB • 8 TiB • 16 TiB	• 500 GiB • 1 TiB • 2 TiB • 4 TiB • 6 TiB • 8 TiB • 16 TiB

Supported EC2 compute

Each Cloud Volumes ONTAP license supports different EC2 instance types. For your convenience, the table below shows the vCPU, RAM, and bandwidth for each supported instance type. You should refer to AWS for the latest and complete details about EC2 instance types.

Cloud Volumes ONTAP can run on either a Reserved or On-demand EC2 instance. Solutions that use other instance types aren't supported.

The bandwidths shown in the table below match the documented AWS limits for each instance type. These limits don't completely align with what Cloud Volumes ONTAP can provide. For the expected performance, refer to NetApp Technical Report 4383: Performance Characterization of Cloud Volumes ONTAP in Amazon Web Services with Application Workloads.

License	Supported instance	vCPU	RAM	Flash Cache [1]	Network bandwidth (Gbps)	EBS bandwidth (Mbps)	High write speed [2]
Explore or any other license	m5.xlarge [6]	4	16	Not supported	Up to 10	Up to 4,750	Supported (single node only)
Standard or any other license	r5.xlarge [6]	4	32	Not supported	Up to 10	Up to 4,750	Supported (single node only)
	m5a.2xlarge	8	32	Not supported	Up to 10	Up to 2,880	Supported
	m5.2xlarge [6]	8	32	Not supported	Up to 10	Up to 4,750	Supported

License	**Supported instance**	**vCPU**	**RAM**	**Flash Cache [1]**	**Network bandwidth (Gbps)**	**EBS bandwidth (Mbps)**	**High write speed [2]**

License	Supported instance	vCPU	RAM	Flash Cache [1]	Network bandwidth (Gbps)	EBS bandwidth (Mbps)	High write speed [2]
Premium or any other license							
License	Supported instance	vCPU	RAM	Flash Cache [1]	Network bandwidth (Gbps)	EBS bandwidth (Mbps)	High write speed [2]

License	Supported instance	vCPU	RAM	Flash Cache[1]	Network bandwidth (Gbps)	EBS bandwidth (Mbps)	High write Speed[2]
				supported			
	r5.12xlarge[3]	48	384	Not supported	10	9,500	Supported
	r5.24xlarge	64[4]	384	Supported			Supported
	m6id.32xlarge	64[4]	512	Supported	50	40,000	Supported

1. Some instance types include local NVMe storage, which Cloud Volumes ONTAP uses as *Flash Cache*. Flash Cache speeds access to data through real-time intelligent caching of recently read user data and NetApp metadata. It's effective for random read-intensive workloads, including databases, email, and file services. Compression must be disabled on all volumes to take advantage of the Flash Cache performance improvements. Learn more about Flash Cache.

2. Cloud Volumes ONTAP supports high write speed with most instance types when using an HA pair. High write speed is supported with all instance types when using a single node system. Learn more about choosing a write speed.

3. The r5.12xlarge instance type has a known limitation with supportability. If a node unexpectedly reboots due to a panic, the system might not collect core files used to troubleshoot and root cause the problem. The customer accepts the risks and limited support terms and bears all support responsibility if this condition occurs. This limitation affects newly deployed HA pairs and HA pairs upgraded from 9.8. The limitation does not affect newly deployed single node systems.

4. While these EC2 instance types support more than 64 vCPUs, Cloud Volumes ONTAP only supports up to 64 vCPUs.

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

6. AWS Local Zones are supported in the following EC2 instance type families with sizes xlarge to 4xlarge: M5, C5, C5d, R5, and R5d. You should refer to AWS for the latest and complete details about supported EC2 instance types in Local Zones.

   High write speed isn't supported with these instance types in AWS Local Zones.

c4, m4, and r4 instances no longer supported

Cloud Volumes ONTAP no longer supports the c4, m4, and r4 EC2 instance types in AWS. If your system runs on a c4, m4, or r4 instance, change to a c5, m5, or r5 instance. You can't upgrade to this release until you change the instance type.

Learn how to change the EC2 instance type for Cloud Volumes ONTAP.

For more information, refer to:

- Knowledge base (KB) article: Converting an AWS Xen CVO instance to Nitro KVM
- KB article: Unable to change the instance type from r4 to r5 with disk count error
- Learn more about the end of availability and support for these instance types

Supported regions

For AWS region support, see Cloud Volumes Global Regions.

Supported configurations for Cloud Volumes ONTAP in Azure

Several Cloud Volumes ONTAP configurations are supported in Azure.

Supported configurations by license

Cloud Volumes ONTAP is available in Azure as a single node system and as a high-availability (HA) pair of nodes for fault tolerance and nondisruptive operations.

Upgrading a single node system to an HA pair is not supported. If you want to switch between a single node system and an HA pair, then you need to deploy a new system and replicate data from the existing system to the new system.

Cloud Volumes ONTAP can run on either a Reserved or On-demand VM instance from your cloud provider. Solutions that use other VM instance types aren't supported.

For supported instances specifications, refer to the Microsoft Azure documentation.

Single node systems

You can choose from the following capacity-based or node-based licensing configurations when deploying Cloud Volumes ONTAP as a single-node system in Azure.

Cloud Volumes ONTAP can run on either a Reserved or On-demand VM instance from your cloud provider. Solutions that use other VM instance types aren't supported.

Capacity-based licenses

	Freemium	Optimized [5]	Capacity-based license (Essentials and Professional)
Maximum system capacity (disks + object storage)	500 GiB		With capacity-based licensing, each Cloud Volumes ONTAP system supports tiering to object storage. The total tiered capacity can scale up to the cloud provider's bucket limit. While the license does not impose capacity restrictions, you should follow the FabricPool Best Practices to ensure optimal performance, reliability, and cost efficiency when configuring and managing tiering.

	Freemium	Optimized [5]	Capacity-based license (Essentials and Professional)
Supported virtual machine types	• DS4_v2 [1] • DS5_v2 [1] • DS13_v2 [1] • DS14_v2 [1] • DS15_v2 [1] • E4s_v3 [1] • E8s_v3 [1] • E32s_v3 [1,3] • E48s_v3 [1,3] • E64is_v3 [1,3] • E4ds_v4 • E8ds_v4 • E32ds_v4 [3] • E48ds_v4 [3] • E80ids_v4 [3] • E4ds_v5 • E8ds_v5 • E20ds_v5 [3] • E32ds_v5 [3] • E48ds_v5 [3] • E64ds_v5 [3] • E4ds_v6 [6] • E20ds_v6 [6] • E32ds_v6 [6] • E48ds_v6 [6] • E64ds_v6 [6] • L8s_v3 [2] • L16s_v3 [2] • L32s_v3 [2] • L48s_v3 [2] • L64s_v3 [2]	• DS4_v2 [1] • DS13_v2 [1] • E4s_v3 [1] • E8s_v3 [1] • E4ds_v4 [3] • E8ds_v4 [3] • E4ds_v5 • E8ds_v5	• DS4_v2 [1] • DS5_v2 [1] • DS13_v2 [1] • DS14_v2 [1] • DS15_v2 [1] • E4s_v3 [1] • E8s_v3 [1] • E32s_v3 [1,3] • E48s_v3 [1,3] • E64is_v3 [1,3] • E4ds_v4 [3] • E8ds_v4 [3] • E32ds_v4 [3] • E48ds_v4 [3] • E80ids_v4 [3] • E4ds_v5 • E8ds_v5 • E20ds_v5 [3] • E32ds_v5 [3] • E48ds_v5 [3] • E64ds_v5 [3] • E4ds_v6 [6] • E20ds_v6 [6] • E32ds_v6 [6] • E48ds_v6 [6] • E64ds_v6 [6] • L8s_v3 [2] • L16s_v3 [2] • L32s_v3 [2] • L48s_v3 [2] • L64s_v3 [2]
Supported disk types [4]	Standard HDD Managed Disks, Standard SSD Managed Disks, Premium SSD Managed Disks, and Premium SSD v2 Managed Disks.		

Notes:

1. [1] The DS_v2 and Es_v3 machine families are no longer available for selection on the NetApp Console when deploying new instances of Cloud Volumes ONTAP in Azure. These families will be retained and supported only in older, existing systems. New deployments of Cloud Volumes ONTAP are supported in Azure only from the 9.12.1 release. We recommend that you switch to either Es_v4 or any other series compatible with Cloud Volumes ONTAP 9.12.1 and later. The DS_v2 and Es_v3 series machines, however, will be available for new deployments made through the API.

2. [2] This VM type includes local NVMe storage, which Cloud Volumes ONTAP uses as *Flash Cache*. Flash Cache speeds access to data through real-time intelligent caching of recently read user data and NetApp metadata. It is effective for random read-intensive workloads, including databases, email, and file services. Learn more.

   The minimum ONTAP version required for configuring Flash Cache on Azure is 9.13.1 GA.

3. [3] These VM types use an Ultra SSD for VNVRAM, which provides better write performance.

   If you choose any of these VM types when you deploy a new Cloud Volumes ONTAP system, you can't change to another VM type that *doesn't* use an Ultra SSD for VNVRAM. For example, you can't change from E8ds_v4 to E8s_v3, but you can change from E8ds_v4 to E32ds_v4 because both of those VM types use Ultra SSDs. Conversely, if you deployed Cloud Volumes ONTAP using any other VM type, you won't be able to change to another that uses an Ultra SSD for VNVRAM. For example, you can't change E8s_v3, which doesn't use Ultra SSD for VNVRAM, to E8ds_v4 that does.

   Similarly, if you choose Premium SSD Managed Disks for an environment that fulfils the criteria for Premium SSD v2 Managed Disks, the Console automatically deploys Premium SSD v2 Managed Disks. You cannot switch to Premium SSD v1 Managed Disks.

4. [4] For information about the supported disk types in single node deployments, refer to Azure (single node). High write speed is supported with all instance types when using a single node system. You can enable high write speed from the Console during deployment or any time after. Learn more about choosing a write speed. Enhanced write performance is enabled when using SSDs.

5. [5] Beginning on August 11, 2025, the Cloud Volumes ONTAP Optimized license is deprecated and will no longer be available for purchase or renewal in the Azure marketplace for pay-as-you-go (PAYGO) subscriptions. For more information, refer to End of availability of Optimized licenses.

6. [6] Edsv6 VM types are supported for new deployments of Cloud Volumes ONTAP 9.17.1 and later. You cannot switch an existing deployment with any other VM type, for example, from Edsv5 to Edsv6; only size changes among Edsv6 variants (for example E20ds_v6 → E32ds_v6) are supported. For information about this VM type, refer to the Azure documentation: Edsv6 sizes series.

Node-based licenses

	PAYGO Explore	PAYGO Standard	PAYGO Premium	Node-based BYOL
Maximum system capacity (disks + object storage)	2 TiB [5]	10 TiB	368 TiB	368 TiB per license

	PAYGO Explore	PAYGO Standard	PAYGO Premium	Node-based BYOL
Supported virtual machine types	• E4s_v3 [1] • E4ds_v4 [3] • E4ds_v5 • E4ds_v6 [6]	• DS4_v2 [1] • DS13_v2 [1] • E8s_v3 [1] • E8ds_v4 [3] • E8ds_v5 • L8s_v3 [2]	• DS5_v2 [1] • DS14_v2 [1] • DS15_v2 [1] • E32s_v3 [1,3] • E48s_v3 [1,3] • E64is_v3 [1,3] • E32ds_v4 [3] • E48ds_v4 [3] • E80ids_v4 [3] • E20ds_v5 [3] • E32ds_v5 [3] • E48ds_v5 [3] • E64ds_v5 [3] • E20ds_v6 [6] • E32ds_v6 [6] • E48ds_v6 [6] • E64ds_v6 [6]	• DS4_v2 [1] • DS5_v2 [1] • DS13_v2 [1] • DS14_v2 [1] • DS15_v2 [1] • E4s_v3 [1] • E8s_v3 [1] • E32s_v3 [1,3] • E48s_v3 [1,3] • E64is_v3 [1,3] • E4ds_v4 [3] • E8ds_v4 [3] • E32ds_v4 [3] • E48ds_v4 [3] • E80ids_v4 [3] • E4ds_v5 • E8ds_v5 • E20ds_v5 [3] • E32ds_v5 [3] • E48ds_v5 [3] • E64ds_v5 [3] • E4ds_v6 [6] • E20ds_v6 [6] • E32ds_v6 [6] • E48ds_v6 [6] • E64ds_v6 [6] • L8s_v3 [2] • L16s_v3 [2] • L32s_v3 [2] • L48s_v3 [2] • L64s_v3 [2]
Supported disk types [4]	Standard HDD Managed Disks, Standard SSD Managed Disks, and Premium SSD Managed Disks			

Notes:

1. [1] The DS_v2 and Es_v3 machine families are no longer available for selection on the Console when

deploying new instances of Cloud Volumes ONTAP in Azure. These families will be retained and supported only in older, existing systems. New deployments of Cloud Volumes ONTAP are supported in Azure only from the 9.12.1 release. We recommend that you switch to either Es_v4 or any other series compatible with Cloud Volumes ONTAP 9.12.1 and later. The DS_v2 and Es_v3 series machines, however, will be available for new deployments made through the API.

2. [2] This VM type includes local NVMe storage, which Cloud Volumes ONTAP uses as *Flash Cache*. Flash Cache speeds access to data through real-time intelligent caching of recently read user data and NetApp metadata. It is effective for random read-intensive workloads, including databases, email, and file services. Learn more.

3. [3] These VM types use an Ultra SSD for VNVRAM, which provides better write performance.

   If you choose any of these VM types when you deploy a new Cloud Volumes ONTAP system, you can't change to another VM type that *doesn't* use an Ultra SSD for VNVRAM. For example, you can't change from E8ds_v4 to E8s_v3, but you can change from E8ds_v4 to E32ds_v4 because both of those VM types use Ultra SSDs. Conversely, if you deployed Cloud Volumes ONTAP using any other VM type, you won't be able to change to another that uses an Ultra SSD for VNVRAM. For example, you can't change E8s_v3, which doesn't use Ultra SSD for VNVRAM, to E8ds_v4 that does.

   Similarly, if you choose Premium SSD Managed Disks for an environment that fulfils the criteria for Premium SSD v2 Managed Disks, the Console automatically deploys Premium SSD v2 Managed Disks. You cannot switch to Premium SSD v1 Managed Disks.

4. [4] High write speed is supported with all instance types when using a single node system. You can enable high write speed from the Console during deployment or any time after. Learn more about choosing a write speed. Enhanced write performance is enabled when using SSDs.

5. [5]Data tiering to Azure Blob storage isn't supported with PAYGO Explore.

6. [6] Edsv6 VM types are supported for new deployments of Cloud Volumes ONTAP 9.17.1 and later. You cannot switch an existing deployment with any other VM type, for example, from Edsv5 to Edsv6; only size changes among Edsv6 variants (for example E20ds_v6 → E32ds_v6) are supported. For information about this VM type, refer to the Azure documentation: Edsv6 sizes series.

HA pairs

You can choose from the following configurations when deploying Cloud Volumes ONTAP as an HA pair in Azure.

HA pairs with shared managed disks

You can choose from the following configurations when deploying Cloud Volumes ONTAP as an HA pair in Azure.

Capacity-based licenses

	Freemium	**Optimized** [7]	**Capacity-based license (Essentials and Professional)**
Maximum system capacity (disks + object storage)	500 GiB	With capacity-based licensing, each Cloud Volumes ONTAP system supports tiering to object storage. The total tiered capacity can scale up to the cloud provider's bucket limit. While the license does not impose capacity restrictions, you should follow the FabricPool Best Practices to ensure optimal performance, reliability, and cost efficiency when configuring and managing tiering.	
Supported virtual machine types	• E8ds_v4 • E32ds_v4 [1] • E48ds_v4 [1] • E80ids_v4 [1,2] • E8ds_v5 [4] • E20ds_v5 [1,4] • E32ds_v5 [1,4] • E48ds_v5 [1,4] • E64ds_v5 [1,4] • E20ds_v6 [8] • E32ds_v6 [8] • E48ds_v6 [8] • E64ds_v6 [8] • L8s_v3 [1,3,5] • L16s_v3 [1,3,5] • L32s_v3 [1,3,5] • L48s_v3 [1,3,5] • L64s_v3 [1,3,5]	• E8ds_v4 • E8ds_v5 [4]	• E8ds_v4 • E32ds_v4 [1] • E48ds_v4 [1] • E80ids_v4 [1,2] • E8ds_v5 [4] • E20ds_v5 [1,4] • E32ds_v5 [1,4] • E48ds_v5 [1,4] • E64ds_v5 [1,4] • E20ds_v6 [8] • E32ds_v6 [8] • E48ds_v6 [8] • E64ds_v6 [8] • L8s_v3 [1,3,5] • L16s_v3 [1,3,5] • L32s_v3 [1,3,5] • L48s_v3 [1,3,5] • L64s_v3 [1,3,5]
Supported disk types [6]	Premium SSD Managed Disks or Premium SSD v2 Managed Disks.		

Notes:

1. [1] Cloud Volumes ONTAP supports high write speed with these VM types when using an HA pair. You can enable high write speed from the Console during deployment or any time after. Learn more about choosing a write speed.

2. [2] This VM is recommended only when Azure maintenance control is needed. It's not recommended for any other use case due to the higher pricing.

3. [3] Multiple availability zone support starts from ONTAP version 9.13.1.

4. [4] Multiple availability zone support starts from ONTAP version 9.14.1 RC1.

5. [5] This VM type includes local NVMe storage, which Cloud Volumes ONTAP uses as *Flash Cache*. Flash Cache speeds access to data through real-time intelligent caching of recently read user data and NetApp metadata. It is effective for random read-intensive workloads, including databases, email, and file services. Learn more.

6. [6] If you choose Premium SSD Managed Disks for an environment that fulfils the criteria for Premium SSD v2 Managed Disks, the Console automatically deploys Premium SSD v2 Managed Disks. You cannot switch to Premium SSD v1 Managed Disks. For information about the internal disks for system data for HA deployments single and multiple availability zones, refer to Azure (HA pair).

7. [7] Beginning on August 11, 2025, the Cloud Volumes ONTAP Optimized license is deprecated and will no longer be available for purchase or renewal in the Azure marketplace for pay-as-you-go (PAYGO) subscriptions. End of availability of Optimized licenses.

8. [8] Edsv6 VM types are supported for new deployments of Cloud Volumes ONTAP 9.17.1 and later. You cannot switch an existing deployment with any other VM type, for example, from Edsv5 to Edsv6; only size changes among Edsv6 variants (for example E20ds_v6 → E32ds_v6) are supported. For information about this VM type, refer to the Azure documentation: Edsv6 sizes series.

Node-based licenses

	PAYGO Standard	PAYGO Premium	Node-based BYOL
Maximum system capacity (disks + object storage)	10 TiB	368 TiB	368 TiB per license
Supported virtual machine types	• E8ds_v4 [4] • E8ds_v5 • L8s_v3 [4,5]	• E32ds_v4 [1,4] • E48ds_v4 [1,4] • E80ids_v4 [1,2,4] • E20ds_v5 [1] • E32ds_v5 [1] • E48ds_v5 [1] • E64ds_v5 [1] • E20ds_v6 [6] • E32ds_v6 [6] • E48ds_v6 [6] • E64ds_v6 [6] • L16s_v3 [1,4,5] • L32s_v3 [1,4,5] • L48s_v3 [1,4,5] • L64s_v3 [1,4,5]	• E8ds_v4 [4] • E32ds_v4 [1,4] • E48ds_v4 [1,4] • E80ids_v4 [1,2,4] • E4ds_v5 • E8ds_v5 • E20ds_v5 [1] • E32ds_v5 [1] • E48ds_v5 [1] • E64ds_v5 [1] • E20ds_v6 [6] • E32ds_v6 [6] • E48ds_v6 [6] • E64ds_v6 [6] • L16s_v3 [1,4,5] • L32s_v3 [1,4,5] • L48s_v3 [1,4,5] • L64s_v3 [1,4,5]
Supported disk types	Premium SSD Managed Disks or Premium SSD v2 Managed Disks.		

Notes:

1. [1] Cloud Volumes ONTAP supports high write speed with these VM types when using an HA pair. You can enable high write speed from the Console during deployment or any time after. Learn more about choosing a write speed.

2. [2] This VM is recommended only when Azure maintenance control is needed. It's not recommended for any other use case due to the higher pricing.

3. [3] These VM types are only supported for HA pairs in a single availability zone configuration running on shared managed disks.

4. [4] These VM types are supported for HA pairs in single availability zone and multiple availability zone configurations running on shared managed disks. For Ls_v3 VM types, multiple availability zone support starts from ONTAP version 9.13.1. For Eds_v5 VM types, multiple availability zone support starts from ONTAP version 9.14.1 RC1.

5. [5] This VM type includes local NVMe storage, which Cloud Volumes ONTAP uses as *Flash Cache*. Flash Cache speeds access to data through real-time intelligent caching of recently read user data and NetApp metadata. It is effective for random read-intensive workloads, including databases, email, and file services. Learn more.

6. [6] Edsv6 VM types are supported for new deployments of Cloud Volumes ONTAP 9.17.1 and later. You cannot switch an existing deployment with any other VM type, for example, from Edsv5 to Edsv6; only size changes among Edsv6 variants (for example E20ds_v6 → E32ds_v6) are supported. For information about this VM type, refer to the Azure documentation: Edsv6 sizes series.

HA pairs with page blob

You can use the following configurations with the existing Cloud Volumes ONTAP HA page blob deployments in Azure.

ⓘ   Azure page blobs are not supported for any new deployment.

Capacity-based licenses

	Freemium	Optimized [4]	Capacity-based license (Essentials and Professional)
Maximum system capacity (disks + object storage)	500 GiB	With capacity-based licensing, each Cloud Volumes ONTAP system supports tiering to object storage. The total tiered capacity can scale up to the cloud provider's bucket limit. While the license does not impose capacity restrictions, you should follow the FabricPool Best Practices to ensure optimal performance, reliability, and cost efficiency when configuring and managing tiering.	
Supported virtual machine types	• DS4_v2 • DS5_v2 [1] • DS13_v2 • DS14_v2 [1] • DS15_v2 [1] • E8s_v3 • E48s_v3 [1] • E8ds_v4 [3] • E32ds_v4 [1,3] • E48ds_v4 [1,3] • E80ids_v4 [1,2,3] • E8ds_v5 • E20ds_v5 [1] • E32ds_v5 [1] • E48ds_v5 [1] • E64ds_v5 [1]	• DS4_v2 • DS13_v2 • E8s_v3 • E8ds_v4 [3] • E8ds_v5	• DS4_v2 • DS5_v2 [1] • DS13_v2 • DS14_v2 [1] • DS15_v2 [1] • E8s_v3 • E48s_v3 [1] • E8ds_v4 [3] • E32ds_v4 [1,3] • E48ds_v4 [1,3] • E80ids_v4 [1,2,3] • E8ds_v5 • E20ds_v5 [1] • E32ds_v5 [1] • E48ds_v5 [1] • E64ds_v5 [1]
Supported disk types	Page blobs		

Notes:

1. [1] Cloud Volumes ONTAP supports high write speed with these VM types when using an HA pair. You can enable high write speed from the Console during deployment or any time after. Learn more about choosing a write speed.

2. [2] This VM is recommended only when Azure maintenance control is needed. It's not recommended for any other use case due to the higher pricing.

3. [3] These VMs are only supported in deployments of Cloud Volumes ONTAP 9.11.1 or earlier. With these VM types you can upgrade an existing page blob deployment from Cloud Volumes ONTAP 9.11.1 to 9.12.1. You cannot perform new page blob deployments with Cloud Volumes ONTAP 9.12.1 or above.

4. [4] Beginning on August 11, 2025, the Cloud Volumes ONTAP Optimized license is deprecated and will no longer be available for purchase or renewal in the Azure marketplace for pay-as-you-go (PAYGO) subscriptions. For more information, refer to End of availability of Optimized licenses.

Node-based licenses

	PAYGO Standard	**PAYGO Premium**	**Node-based BYOL**
Maximum system capacity (disks + object storage)	10 TiB	368 TiB	368 TiB per license
Supported virtual machine types	- DS4_v2 - DS13_v2 - E8s_v3 - E8ds_v4 [3] - E8ds_v5	- DS5_v2 [1] - DS14_v2 [1] - DS15_v2 [1] - E48s_v3 [1] - E32ds_v4 [1,3] - E48ds_v4 [1,3] - E80ids_v4 [1,2,3] - E20ds_v5 [1] - E32ds_v5 [1] - E48ds_v5 [1] - E64ds_v5 [1]	- DS4_v2 - DS5_v2 [1] - DS13_v2 - DS14_v2 [1] - DS15_v2 [1] - E8s_v3 - E48s_v3 [1] - E8ds_v4 [3] - E32ds_v4 [1,3] - E48ds_v4 [1,3] - E80ids_v4 [1,2,3] - E4ds_v5 - E8ds_v5 - E20ds_v5 [1] - E32ds_v5 [1] - E48ds_v5 [1] - E64ds_v5 [1]
Supported data disk types	Page blobs		

Notes:

1. [1] Cloud Volumes ONTAP supports high write speed with these VM types when using an HA pair. You can enable high write speed from the Console during deployment or any time after. Learn more about choosing a write speed.

2. [2] This VM is recommended only when Azure maintenance control is needed. It's not recommended for any other use case due to the higher pricing.

3. [3] These VMs are only supported in deployments of Cloud Volumes ONTAP 9.11.1 or earlier. With these VM types you can upgrade an existing page blob deployment from Cloud Volumes ONTAP 9.11.1 to 9.12.1. You cannot perform new page blob deployments with Cloud Volumes ONTAP 9.12.1 or above.

Supported disk sizes

In Azure, an aggregate can contain up to 12 disks that are all the same type and size.

Single node systems

Single node systems use Azure Managed Disks. The following disk sizes are supported:

Premium SSD	Standard SSD	Standard HDD
• 500 GiB • 1 TiB • 2 TiB • 4 TiB • 8 TiB • 16 TiB • 32 TiB	• 100 GiB • 500 GiB • 1 TiB • 2 TiB • 4 TiB • 8 TiB • 16 TiB • 32 TiB	• 100 GiB • 500 GiB • 1 TiB • 2 TiB • 4 TiB • 8 TiB • 16 TiB • 32 TiB

HA pairs

HA pairs use Azure Managed Disks. The following disk type and sizes are supported.

(Page blobs are supported with HA pairs deployed before the 9.12.1 release.)

Premium SSD

- 500 GiB
- 1 TiB
- 2 TiB
- 4 TiB
- 8 TiB
- 16 TiB (managed disks only)
- 32 TiB (managed disks only)

Supported regions

For Azure region support, see Cloud Volumes Global Regions.

Supported configurations for Cloud Volumes ONTAP in Google Cloud

Several Cloud Volumes ONTAP configurations are supported in Google Cloud.

Supported configurations by license

Cloud Volumes ONTAP is available in Google Cloud as a single node system and as a high-availability (HA) pair of nodes for fault tolerance and nondisruptive operations.

Upgrading a single node system to an HA pair isn't supported. If you want to switch between a single node system and an HA pair, then you need to deploy a new system and replicate data from the existing system to the new system.

Cloud Volumes ONTAP can run on either a Reserved or On-demand VM instance from your cloud provider. Solutions that use other VM instance types aren't supported.

Capacity-based licenses

	Freemium	Optimized [4]	Capacity-based license (Essentials and Professional)
Maximum system capacity (disks + object storage)	500 GiB	With capacity-based licensing, each Cloud Volumes ONTAP system supports tiering to object storage. The total tiered capacity can scale up to the cloud provider's bucket limit. While the license does not impose capacity restrictions, you should follow the FabricPool Best Practices to ensure optimal performance, reliability, and cost efficiency when configuring and managing tiering.	
Supported machine types [1]	• n1-standard-8 [1] • n1-standard-32 [1] • n2-standard-4 • n2-standard-8 • n2-standard-16 • n2-standard-32 • n2-standard-48 • n2-standard-64	• n2-standard-4 • n2-standard-8	• n1-standard-8 [1] • n1-standard-32 [1] • n2-standard-4 • n2-standard-8 • n2-standard-16 • n2-standard-32 • n2-standard-48 • n2-standard-64
Supported disk types [2]	Balanced persistent disks [3], Performance (SSD) persistent disks [3], and Standard (HDD) persistent disks.		

Notes:

1. [1] The n1 series machines are no longer available for selection on the NetApp Console when deploying new instances of Cloud Volumes ONTAP in Google Cloud. The n1 series machines will be retained and supported only in older, existing systems. New deployments of Cloud Volumes ONTAP are supported in Google Cloud only from the 9.8 release. We recommend that you switch to the n2 series machines that are compatible with Cloud Volumes ONTAP 9.8 and later. The n1 series machines, however, will be available for new deployments made through the API.

   The custom-4-16384 machine type is no longer supported with new Cloud Volumes ONTAP systems. If you have an existing system running on this machine type, you can keep using it, but we recommend switching to the n2-standard-4 machine type.

2. [2] Disk limits can prevent you from reaching the maximum system capacity limit by using disks alone. You can reach the capacity limit by tiering inactive data to object storage.

   Learn more about disk limits in Google Cloud.

3. [3] Enhanced write performance is enabled when using Balanced persistent disks and Performance (SSD) persistent disks.

   Beginning with Cloud Volumes ONTAP 9.13.0, *Flash Cache*, high write speed, and a higher maximum transmission unit (MTU) of 8,896 bytes, are available for the following HA pair deployment instances:

- n2-standard-16
- n2-standard-32
- n2-standard-48
- n2-standard-64

You can enable *Flash Cache*, and high write speed when deploying an eligible instance type. To enable the higher maximum transmission unit of 8,896 bytes, you must chose VPC-1, VPC-2, or VPC-3 for the deployment. The higher MTU enables higher network throughput. For more information on launching one of these deployments, see Launching an HA pair in Google Cloud.

ⓘ *Flash cache*, high write mode, and an MTU of 8,896 are feature-dependent and cannot be disabled individually within a configured instance.

4. [4] Beginning on August 11, 2025, the Cloud Volumes ONTAP Optimized license is deprecated and will no longer be available for purchase or renewal in the Google Cloud marketplace for pay-as-you-go (PAYGO) subscriptions. For information, refer to What's new in Cloud Volumes ONTAP.

Node-based licenses

	PAYGO Explore	PAYGO Standard	PAYGO Premium	Node-based BYOL
Maximum system capacity (disks + object storage)	2 TB [2]	10 TiB	368 TiB	368 TiB per license
Supported machine types [3]	• n2-standard-4	• n1-standard-8 [3] • n2-standard-8	• n1-standard-32 [3] • n2-standard-16 • n2-standard-32 • n2-standard-48 • n2-standard-64	• n1-standard-8 [3] • n1-standard-32 [3] • n2-standard-4 • n2-standard-8 • n2-standard-16 • n2-standard-32 • n2-standard-48 • n2-standard-64
Supported disk types	Balanced persistent disks [4], Performance (SSD) persistent disks [4], and Standard (HDD) persistent disks.			

Notes:

1. [1] Disk limits can prevent you from reaching the maximum system capacity limit by using disks alone. You can reach the capacity limit by tiering inactive data to object storage.

   Learn more about disk limits in Google Cloud.

2. [2] Data tiering to Google Cloud Storage isn't supported with PAYGO Explore.

3. [3] The n1 series machines are no longer available for selection on the Console when deploying new instances of Cloud Volumes ONTAP in Google Cloud. The n1 series machines will be retained and supported only in older, existing systems. New deployments of Cloud Volumes ONTAP are supported

in Google Cloud only from the 9.8 release. We recommend that you switch to the n2 series machines that are compatible with Cloud Volumes ONTAP 9.8 and later. The n1 series machines, however, will be available for new deployments performed through the API.

The custom-4-16384 machine type is no longer supported with new Cloud Volumes ONTAP systems. If you have an existing system running on this machine type, you can keep using it, but we recommend switching to the n2-standard-4 machine type.

4. [4] Enhanced write performance is enabled when using Balanced persistent disks and Performance (SSD) persistent disks.

The Console shows an additional supported machine type for Standard and BYOL: n1-highmem-4. However, this machine type isn't meant for production environments. We've made it available for a specific lab environment only.

Starting with Cloud Volumes ONTAP software version 9.13.0, *Flash Cache*, high write speed, and a higher maximum transmission unit (MTU) of 8,896 bytes, are available for the following HA pair deployment instances:

- n2-standard-16
- n2-standard-32
- n2-standard-48
- n2-standard-64

You can enable *Flash Cache*, and high write speed when deploying an eligible instance type. To enable the higher maximum transmission unit of 8,896 bytes, you must chose VPC-1, VPC-2, or VPC-3 for the deployment. The higher MTU enables higher network throughput. For more information on launching one of these deployments, see Launching an HA pair in Google Cloud.

> ⓘ *Flash cache*, high write mode, and an MTU of 8,896 are feature-dependent and cannot be disabled individually within a configured instance.

For more information about specific machine types, refer to the Google Cloud documentation:

- n1 series general-purpose machine types
- N2 series general-purpose machine types

Supported disk sizes

In Google Cloud, an aggregate can contain up to 6 disks that are all the same type and size. The following disk sizes are supported:

- 100 GB
- 500 GB
- 1 TB
- 2 TB
- 4 TB
- 8 TB
- 16 TB

- 64 TB

Supported regions

For Google Cloud region support, see Cloud Volumes Global Regions.