Learn about the new capabilities available in ONTAP 9.12.1. The release candidate version was made available on December 8, 2022. The general availability was made available on February 9, 2023.

The following features were announced with ONTAP 9.12.1:

Data protection

| **Update** | **Description** |
| --- | --- |
| [Support for larger FlexVol volumes with SnapMirror Synchronous](https://docs.netapp.com/us-en/ontap/data-protection/snapmirror-synchronous-disaster-recovery-basics-concept.html) | The maximum FlexVol volume size supported in SnapMirror Synchronous configurations has increased from 100 TB to 300 TB. Both the source and destination clusters must be running *ONTAP 9.12.1P2 or later*. |
| [Support for larger file and LUN sizes in SnapMirror Synchronous](https://docs.netapp.com/us-en/ontap/data-protection/snapmirror-synchronous-disaster-recovery-basics-concept.html) | The maximum file and LUN size supported in SnapMirror Synchronous configurations has increased from 16 TB to 128 TB. Both the source and destination clusters must be running ONTAP 9.12.1 P2 or later. |
| [Enhanced support for consistency groups](https://docs.netapp.com/us-en/ontap/consistency-groups/index.html) | * You can add and remove volumes from a consistency group, clone a consistency group (including from a Snapshot copy). * Consistency groups support application tagging to streamline data protection and management processes. * The ONTAP REST API supports configuring consistency groups with NFS/SMB volumes or NVMe namespaces. |
| [SnapMirror Synchronous NDO](https://docs.netapp.com/us-en/ontap/data-protection/snapmirror-synchronous-disaster-recovery-basics-concept.html#supported-features) | SnapMirror Synchronous supports non-disruptive operations (NDO) of HA takeover and giveback, volume move, and other maintenance-related operations. This feature is available only on AFF/ASA platforms. |
| [ONTAP Mediator 1.5 supports SnapMirror Business Continuity](https://docs.netapp.com/us-en/ontap/mediator/index.html) | ONTAP Mediator 1.5 is available for monitoring SnapMirror active sync relationships. |
| [SnapMirror active sync continuity enhancements](https://docs.netapp.com/us-en/ontap/snapmirror-active-sync/index.html) | SnapMirror active sync supports partial LUN restore from Snapshots. Additionally, Snapmirror active sync extends QoS to volumes not in the SnapMirror relationship. |
| [Data warehouse rebuild indicator for SnapMirror asynchronous](https://docs.netapp.com/us-en/ontap/data-protection/convert-snapmirror-version-flexible-task.html) | SnapMirror asynchronous provides an indicator showing how long a data warehouse rebuild takes after a disaster recovery rehearsal by displaying the percentage complete. |
| SnapLock option to set minimum retention time "unspecified" absolute retention time | SnapLock includes an option to set a minimum retention time when the absolute retention time is set to "unspecified". |
| [Tamperproof Snapshot copies](https://docs.netapp.com/us-en/ontap/snaplock/snapshot-lock-concept.html) | You can lock a Snapshot copy on a non-SnapLock volume to provide protection from ransomware attacks. Locking Snapshot copies helps ensure that they are not deleted accidentally or maliciously. |

File access protocols

| **Update** | **Description** |
| --- | --- |
| [Disable weak encryption types for Kerberos communication](https://docs.netapp.com/us-en/ontap/smb-admin/configure-kerberos-aes-encryption-concept.html) | A new SMB security option allows you to disable RC4 and DES in favor of Advanced Encryption Standard (AES) encryption types for Kerberos-based communication with the Active Directory (AD) KDC. |
| [S3 client access to NAS data](https://docs.netapp.com/us-en/ontap/s3-multiprotocol/index.html) | S3 clients can access the same NAS data as NFS and SMB clients without reformatting, making it easier to serve S3 applications that require object data. |
| [NFS extended attributes](https://docs.netapp.com/us-en/ontap/nfs-admin/ontap-support-nfsv42-concept.html) | NFS servers enabled for NFSv4.2 can store and retrieve NFS extended attributes (xattrs) from xattr-aware clients. |
| [NFSv4.2 sparse files and space reservation support](https://docs.netapp.com/us-en/ontap/nfs-admin/ontap-support-nfsv42-concept.html) | The NFSv4.2 client is able to reserve space for a sparse file. Space can also be deallocated and unreserved from a file. |

MetroCluster

| **Update** | **Description** |
| --- | --- |
| [ONTAP Mediator 1.5 is supported in a MetroCluster IP configuration](https://docs.netapp.com/us-en/ontap/mediator/index.html) | ONTAP Mediator 1.5 is available for monitoring MetroCluster IP configurations. |
| [IPsec support for front-end host protocol (such as NFS and iSCSI) is available in MetroCluster IP and MetroCluster fabric-attached configurations.](https://docs.netapp.com/us-en/ontap/configure_ip_security_@ipsec@_over_wire_encryption.html) | IPsec support for front-end host protocol (such as NFS and iSCSI) is available in MetroCluster IP and MetroCluster fabric-attached configurations. |
| [MetroCluster automatic forced switchover feature in a MetroCluster IP configuration](https://docs.netapp.com/us-en/ontap-metrocluster/install-ip/concept-risks-limitations-automatic-switchover.html) | You can enable the MetroCluster automatic forced switchover feature in a MetroCluster IP configuration. This feature is an extension of the Mediator-assisted unplanned switchover (MAUSO) feature. |
| [S3 on an SVM on an unmirrored aggregate in a MetroCluster IP configuration](https://docs.netapp.com/us-en/ontap-metrocluster/install-ip/concept-risks-limitations-automatic-switchover.html) | You can enable the MetroCluster automatic forced switchover feature in a MetroCluster IP configuration. This feature is an extension of the Mediator-assisted unplanned switchover (MAUSO) feature. |

To learn about platform and switch configuration enhancements for MetroCluster configurations, see the [*ONTAP 9 Release Notes*](https://library.netapp.com/ecm/ecm_download_file/ECMLP2492508).

Networking

| **Update** | **Description** |
| --- | --- |
| [LIF services](https://docs.netapp.com/us-en/ontap/system-admin/forward-command-history-log-file-destination-task.html) | You can use the management-log-forwarding service to control which LIFs are used to forward audit logs to a remote syslog serve |

S3 object storage

| **Update** | **Description** |
| --- | --- |
| [Expanded support for S3 actions](https://docs.netapp.com/us-en/ontap/s3-config/ontap-s3-supported-actions-reference.html) | The following Amazon S3 API actions are supported:   * CopyObject * UploadPartCopy * BucketPolicy (GET, PUT, DELETE) |

SAN

| **Update** | **Description** |
| --- | --- |
| [Increased maximum LUN size for AFF and FAS platforms](https://docs.netapp.com/san-admin/resize-lun-task.html) | Beginning with ONTAP 9.12.1P2, the maximum supported LUN size on AFF and FAS platforms increased from 16 TB to 128 TB. |
| [Increased NVMe limits](https://hwu.netapp.com/) | The NVMe protocol supports the following:   * 8K subsystems in a single storage VM and a single cluster * 12 node clusters NVMe/FC supports 256 controllers per port and NVMe/TCP supports 2K controllers per node. |
| [NVME/TCP support for secure authentication](https://docs.netapp.com/us-en/ontap/nvme/setting-up-secure-authentication-nvme-tcp-task.html) | Secure, unidirectional and bidirectional authentication between an NVMe host and controller is supported over NVMe/TCP using the DHHMAC-CHAP authentication protocol. |
| [MetroCluster IP support for NVMe](https://docs.netapp.com/us-en/ontap/asa/support-limitations.html) | The NVMe/FC protocol is supported on 4-node MetroCluster IP configurations. |

Security

In October 2022, NetApp implemented changes to reject AutoSupport message transmissions that are not sent by either HTTPS with TLSv1.2 or secure SMTP. For more information, see [SU484: NetApp will reject AutoSupport messages transmitted with insufficient transport security](https://kb.netapp.com/Support_Bulletins/Customer_Bulletins/SU484).

| **Feature** | **Description** |
| --- | --- |
| [Autonomous Ransomware Protection interoperability enhancements](https://docs.netapp.com/us-en/ontap/anti-ransomware/use-cases-restrictions-concept.html#supported-configurations) | Autonomous Ransomware Protection is available for these configurations:   * Volumes protected with SnapMirror * SVMs protected with SnapMirror * SVMs enabled for migration (SVM data mobility) |
| [Multifactor authentication (MFA) support for SSH with FIDO2 and PIV (both used by Yubikey)](https://docs.netapp.com/us-en/ontap/authentication/setup-ssh-multifactor-authentication-task.html) | SSH MFA can use hardware-assisted public/private key exchange with username and password. Yubikey is a physical token device that is plugged into the SSH client to increase MFA security. |
| [Tamper-proof logging](https://docs.netapp.com/us-en/ontap/system-admin/ontap-implements-audit-logging-concept.html) | All ONTAP internal logs are tamperproof by default, ensuring that compromised administrator accounts cannot hide malicious actions. |
| [TLS transport for events](https://docs.netapp.com/us-en/ontap/error-messages/configure-ems-events-notifications-syslog-task.html) | EMS events can be sent to a remote syslog server using the TLS protocol, thereby enhancing protection over the wire for central external audit logging. |

Storage efficiency

| **Update** | **Description** |
| --- | --- |
| [Temperature-sensitive storage efficiency](https://docs.netapp.com/us-en/ontap/volumes/change-efficiency-mode-task.html) | Temperature-sensitive storage efficiency is enabled by default on new AFF C250, AFF C400, AFF C800 platforms and volumes. TSSE is not enabled by default on existing volumes but can be enabled manually using the ONTAP CLI. |
| [Increase in usable aggregate space](https://docs.netapp.com/us-en/ontap/volumes/determine-space-usage-volume-aggregate-concept.html) | For All Flash FAS (AFF) and the FAS500f platforms, the WAFL reserve for aggregates greater than 30TB is reduced from 10% to 5%, resulting in increased usable space in the aggregate. |
| [File System Analytics: Top directories by size](https://docs.netapp.com/us-en/ontap/concept_nas_file_system_analytics_overview.html) | File System Analytics now identifies the directories in a volume that are consuming the most space. |

Storage resource management enhancements

| **Update** | **Description** |
| --- | --- |
| [FlexGroup rebalancing](https://docs.netapp.com/us-en/ontap/flexgroup/manage-flexgroup-rebalance-task.html#flexgroup-rebalancing-considerations) | You can enable automatic nondisruptive FlexGroup volume rebalancing to redistribute files between FlexGroup constituents.   |  |  | | --- | --- | |  | It's recommended that you do not use automatic FlexGroup rebalancing after a FlexVol to FlexGroup conversion. Instead, you can use the disruptive retroactive file move feature available in ONTAP 9.10.1 and later, by entering the volume rebalance file-move command. For more information and command syntax, see [the ONTAP Command Reference](https://docs.netapp.com/us-en/ontap-cli-9121/volume-rebalance-file-move-start.html). | |
| [SnapLock for SnapVault support for FlexGroup volumes](https://docs.netapp.com/us-en/ontap/snaplock/commit-snapshot-copies-worm-concept.html) | SnapLock for SnapVault support for FlexGroup volumes |

SVM management enhancements

| **Update** | **Description** |
| --- | --- |
| [SVM data mobility enhancements](https://docs.netapp.com/us-en/ontap/svm-migrate/index.html) | Cluster administrators can non-disruptively relocate an SVM from a source cluster to a destination cluster using FAS, AFF platforms, on hybrid aggregates. Support for both disruptive SMB protocol and Autonomous Ransomware Protection have been added. |

System Manager

Beginning with ONTAP 9.12.1, System Manager is integrated with BlueXP. With BlueXP, administrators can manage the hybrid multicloud infrastructure from a single control plane while retaining the familiar System Manager dashboard. When signing into System Manager, administrators are given the option of accessing the System Manager interface in BlueXP or accessing System Manager directly. Learn more about [System Manager integration with BlueXP](https://docs.netapp.com/us-en/ontap/sysmgr-integration-bluexp-concept.html).

| **Update** | **Description** |
| --- | --- |
| [System Manager support for SnapLock](https://docs.netapp.com/us-en/ontap/snaplock/create-snaplock-volume-task.html) | SnapLock operations, including Compliance Clock initialization, SnapLock volume creation, and WORM file mirroring are supported in System Manager. |
| [Hardware visualization of cabling](https://docs.netapp.com/us-en/ontap/task_admin_troubleshoot_hardware_problems.html) | System Manager users can view connectivity information about the cabling between hardware devices in their cluster to troubleshoot connectivity issues. |
| [Support for multifactor authentication with Cisco DUO when logging in to System Manager](https://docs.netapp.com/us-en/ontap/system-admin/configure-saml-authentication-task.html) | You can configure Cisco DUO as a SAML identity provider (IdP), enabling users to authenticate using Cisco DUO when they log in to System Manager. |
| [System Manager networking enhancements](https://docs.netapp.com/us-en/ontap/nfs-rdma/index.html) | System Manager offers more control over the subnet and home port selection during network interface creation. System Manager also supports the configuration of NFS over RDMA connections. |
| [System display themes](https://docs.netapp.com/us-en/ontap/system-admin/access-cluster-system-manager-browser-task.html) | System Manager users can select a light or dark theme for the display of the System Manager interface. They can also choose to default to the theme used for their operating system or browser. This capability allows users to specify a setting that is more comfortable for reading the display. |
| [Improvements to local tier capacity details](https://docs.netapp.com/us-en/ontap/concepts/capacity-measurements-in-sm-concept.html) | System Manager users can view capacity details for specific local tiers to determine if the space is over-committed, which might indicate that they need to add more capacity to ensure the local tier doesn't run out of space. |
| [Improved searching](https://docs.netapp.com/us-en/ontap/task_admin_search_filter_sort.html) | System Manager has an improved search capability that lets users search and access relevant and context-sensitive support information and System Manager product document from the NetApp Support Site directly through the System Manager interface. This allows users to acquire information they need to take appropriate action without having to search in various locations on the support site. |
| [Volume provisioning improvements](https://docs.netapp.com/us-en/ontap/task_admin_add_a_volume.html) | Storage administrators can choose a Snapshot copy policy when creating a volume using System Manager rather than using the default policy. |
| [Increase the size of a volume](https://docs.netapp.com/us-en/ontap/task_admin_expand_storage.html#increase-the-size-of-a-volume) | Storage administrators can view the impact on data space and Snapshot copy reserve when they use System Manager to resize a volume. |
| [Storage pool](https://docs.netapp.com/us-en/ontap/disks-aggregates/create-ssd-storage-pool-task.html) and [Flash Pool](https://docs.netapp.com/us-en/ontap/disks-aggregates/create-flash-pool-aggregate-ssd-storage-task.html?) management | Storage administrators can use System Manager to add SSDs to an SSD storage pool, create Flash Pool local tiers (aggregate) using SSD storage pool allocation units, and create Flash Pool local tiers using physical SSDs. |
| [NFS over RDMA support in System Manager](https://docs.netapp.com/us-en/ontap/nfs-rdma/index.html) | System Manager supports network interface configurations for NFS over RDMA and identifies RoCE capable ports. |