

ONTAP 9.7 overview

Hardware support updates and features enhancement

Lenovo

New hardware and manageability enhancement

ONTAP 9.7 supports new hardware: the DM7100H, DM7100F, and DM240N. It also supports enhanced manageability. The major difference is the layout of the graphic user interface (GUI).

Click the items to see comparisons of the old and new versions of ONTAP.

Dashboard

Storage Volumes

Disk Inventory

Network Overview

Ethernet Ports

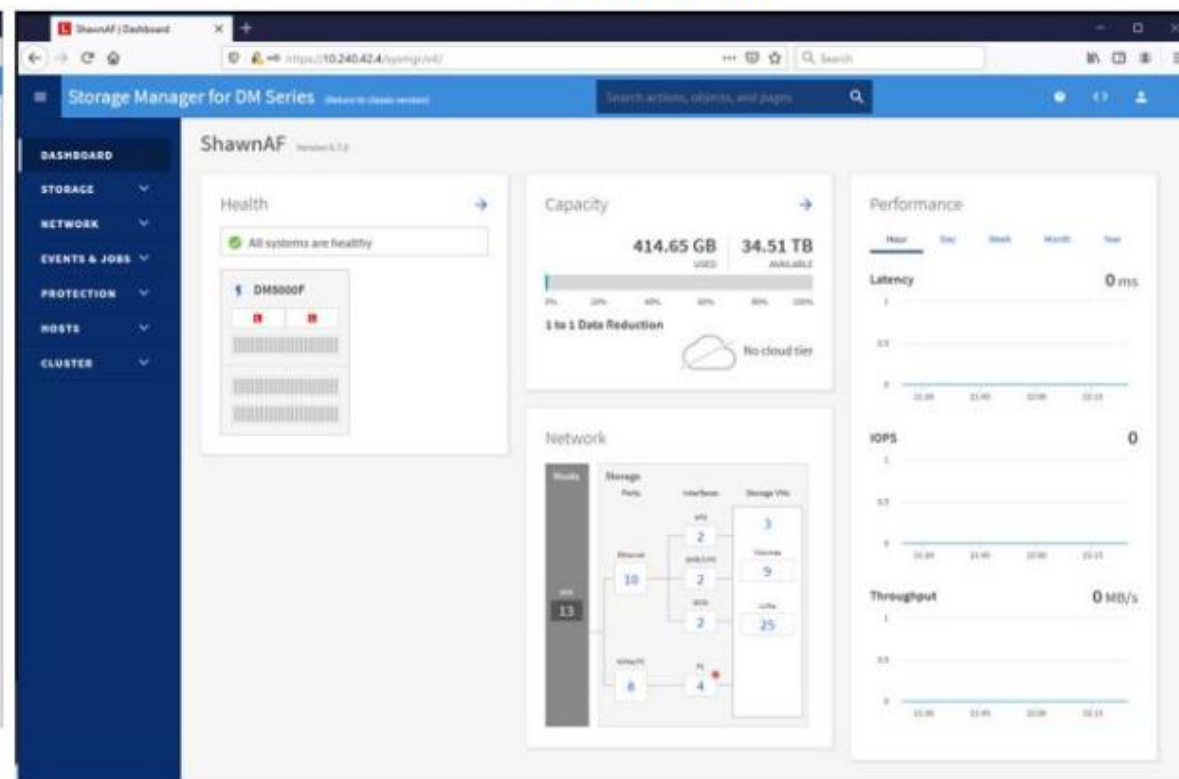
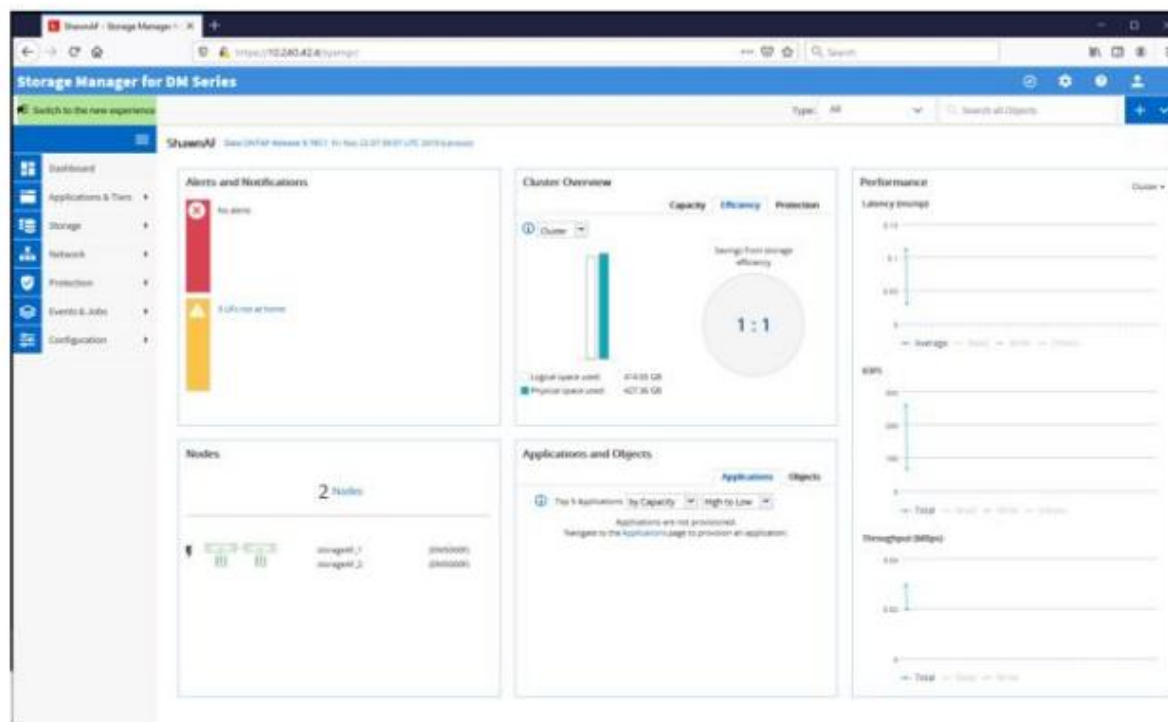
Fibre Channel Ports

Cluster \ Node Overview

Dashboard



ONTAP 9.7



Storage Volumes



ONTAP 9.7

Storage Manager for DM Series

Switch to the new experience

Volumes SRM

Search all objects

State	Name	Style	SRM	Aggregate	Thin Provision	Available	Total Size	W. Ch.	Type	Protection	Storage Efficiency	Application
+	OPS_VN_cool	FlexVol	OPS_VN	Multisart	No	975.41 MB	1 GB	0	No	No	Enabled	Adp
+	share1	FlexVol	OPS_VN	CR01	Yes	227.5 GB	250 GB	0	No	No	Enabled	N/A
+	share2	FlexVol	OPS_VN	CR02	No	227.5 GB	250 GB	0	No	No	Enabled	N/A
+	Mult1_cool	FlexVol	Mult1	Multisart	No	975.41 MB	1 GB	0	No	No	Enabled	N/A
+	Mult1_FC_1	FlexVol	Mult1	Multisart	No	1.19 TB	2.44 TB	0	No	No	Enabled	N/A
+	Mult1_FC_2	FlexVol	Mult1	CR01	No	1.27 TB	2.44 TB	0	No	No	Enabled	N/A
+	NFS_A	FlexVol	NFS	CR01	Yes	96.58 GB	100 GB	0	No	No	Enabled	N/A
+	NFS_B	FlexVol	NFS	Multisart	No	96.58 GB	100 GB	0	No	No	Enabled	N/A
+	NFS_cool	FlexVol	NFS	Multisart	No	975.41 MB	1 GB	0	No	No	Enabled	N/A

Showing 1 - 9

Storage Manager for DM Series

Search articles, objects, and pages

Volumes

+ Add

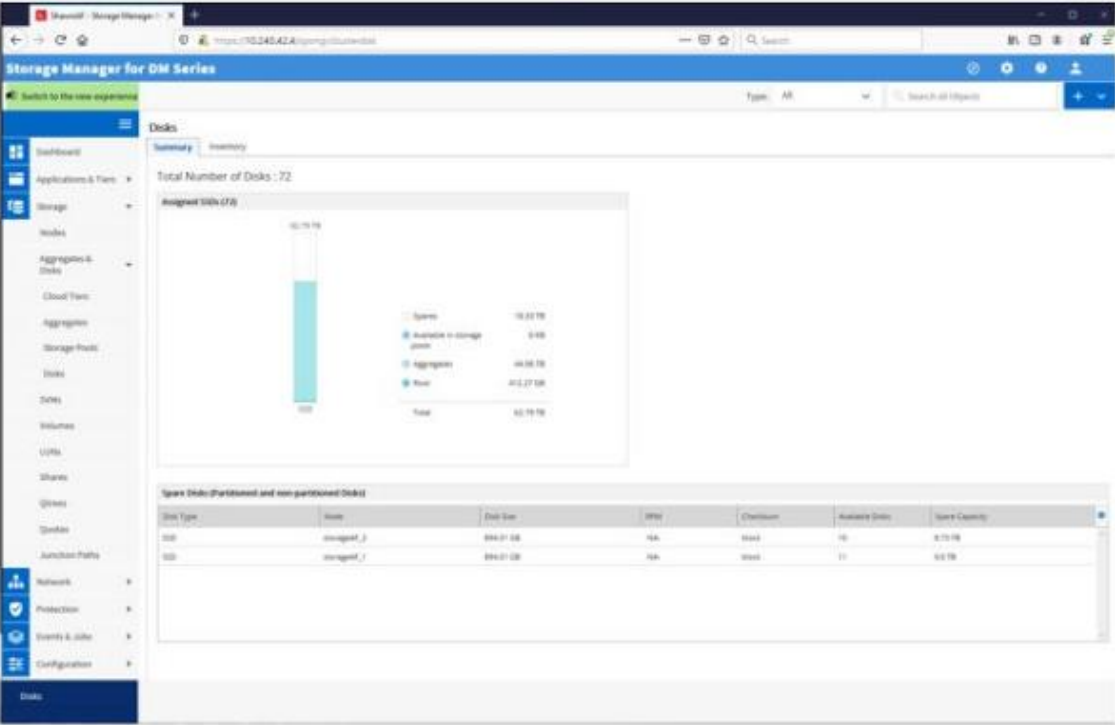
Name	Storage VM	Status	Capacity (available / total)	IOFS	Latency (ms)	Throughput (MB/s)	Protection
OPS_VN_cool	OPS_VN	Online	975.41 MB / 1 GB	0	0	0	🟢
Mult1_cool	Mult1	Online	975.41 MB / 1 GB	0	0	0	🟢
Mult1_FC_1	Mult1	Online	1.19 TB / 2.44 TB	0	0	0	🟢
Mult1_FC_2	Mult1	Online	1.27 TB / 2.44 TB	0	0	0	🟢
NFS_A	NFS	Online	96.58 GB / 100 GB	0	0	0	🟢
NFS_B	NFS	Online	96.58 GB / 100 GB	0	0	0	🟢
NFS_cool	NFS	Online	975.41 MB / 1 GB	0	0	0	🟢
share1	OPS_VN	Online	227.5 GB / 250 GB	0	0	0	🟢
share2	OPS_VN	Online	227.5 GB / 250 GB	0	0	0	🟢

→ Total 100 MB / 100 MB

Disk Inventory



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Storage Manager for DM Series

Search actions, objects, and pages

Disks (72)

Name	State	Shelf Name	Bay	Serial No...	Size	Type	Owner	Model	Vendor	Encryption...
1.0.0	Present	1.0	0	S08NAOK...	804.01 GB	SSD	storage1_1	X375_1043000	NETAPP	-
1.0.1	Present	1.0	1	S08NAOK...	804.01 GB	SSD	storage1_2	X375_1043000	NETAPP	-
1.0.2	Present	1.0	2	S08NAOK...	804.01 GB	SSD	storage1_1	X375_1043000	NETAPP	-
1.0.3	Present	1.0	3	S08NAOK...	804.01 GB	SSD	storage1_2	X375_1043000	NETAPP	-
1.0.4	Present	1.0	4	S08NAOK...	804.01 GB	SSD	storage1_1	X375_1043000	NETAPP	-
1.0.5	Present	1.0	5	S08NAOK...	804.01 GB	SSD	storage1_2	X375_1043000	NETAPP	-
1.0.6	Present	1.0	6	S08NAOK...	804.01 GB	SSD	storage1_1	X375_1043000	NETAPP	-
1.0.7	Present	1.0	7	S08NAOK...	804.01 GB	SSD	storage1_2	X375_1043000	NETAPP	-
1.0.8	Present	1.0	8	S08NAOK...	804.01 GB	SSD	storage1_1	X375_1043000	NETAPP	-
1.0.9	Present	1.0	9	S08NAOK...	804.01 GB	SSD	storage1_2	X375_1043000	NETAPP	-
1.0.10	Present	1.0	10	S08NAOK...	804.01 GB	SSD	storage1_1	X375_1043000	NETAPP	-
1.0.11	Present	1.0	11	S08NAOK...	804.01 GB	SSD	storage1_2	X375_1043000	NETAPP	-
1.0.12	Present	1.0	12	S08HYOK...	804.01 GB	SSD	storage1_1	X375_1043000	NETAPP	-
1.0.13	Present	1.0	13	S08HYOK...	804.01 GB	SSD	storage1_2	X375_1043000	NETAPP	-
1.0.14	Present	1.0	14	S08HYOK...	804.01 GB	SSD	storage1_1	X375_1043000	NETAPP	-
1.0.15	Present	1.0	15	S08HYOK...	804.01 GB	SSD	storage1_2	X375_1043000	NETAPP	-
1.0.16	Present	1.0	16	S08HYOK...	804.01 GB	SSD	storage1_1	X375_1043000	NETAPP	-
1.0.17	Present	1.0	17	S08HYOK...	804.01 GB	SSD	storage1_2	X375_1043000	NETAPP	-

Network Overview



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Storage Manager for DM Series

Switch to the new experience

Network Interfaces

Interface Name	Storage VM	IP Address/Netmask	Current Port	Home Port	Data Protocol/Status	Management	Subnet	Role	UP
PC_16	Multi	20.00.00.00/24.00.00.00	storageAF_16	No	FC	No	NA	Data	No
PC_17	Multi	20.01.00.00/24.00.00.00	storageAF_17	No	FC	No	NA	Data	No
PC_18	Multi	20.02.00.00/24.00.00.00	storageAF_18	No	FC	No	NA	Data	No
PC_19	Multi	20.03.00.00/24.00.00.00	storageAF_19	No	FC	No	NA	Data	No
CP1_1	CP1_101	16.1.1.101	storageAF_101	No	eth	No	NA	Data	No
CP1_2	CP1_102	16.1.1.102	storageAF_102	No	eth	No	NA	Data	No
ShowerAF-01_cha1	Cluster	168.254.168.30	storageAF_103	No	none	No	NA	Cluster	No
ShowerAF-02_cha1	Cluster	168.254.168.110	storageAF_104	No	none	No	NA	Cluster	No
ShowerAF-03_cha1	Cluster	168.254.168.200	storageAF_105	No	none	No	NA	Cluster	No
iscsi1	Multi	16.1.1.101	storageAF_106	No	none	No	NA	Data	No
iscsi2	Multi	16.1.1.102	storageAF_107	No	none	No	NA	Data	No
AF1	AF1	16.1.1.111	storageAF_108	No	eth	No	NA	Data	No
AF2	AF2	16.1.1.112	storageAF_109	No	eth	No	NA	Data	No
ShowerAF-01_mgmt	ShowerAF	16.240.40.127	storageAF_110	No	none	No	NA	Cluster Management	No

General Properties

Network Address/Netmask: 20.00.00.00/24.00.00.00

Role: Data

IPspace: NA

Broadcast Domain: NA

Administration Status: Enabled

ONOS Status: NA

Table Properties

Home Port: storageAF_101 (NA)

Current Port: storageAF_102 (NA)

Network Policy: disabled

Failover Group: NA

Failover State: NA

Storage Manager for DM Series

Overview

IPspaces

Cluster	Broadcast Domains
Default	Broadcast Domains
VMware	Storage VMs

Broadcast Domains

Cluster	3000 MTU	IPspace Cluster
Default	1500 MTU	IPspace Default

Network Interfaces

Name	Status	Storage VM	IPspace	Address	Current Node	Current Port	Protocol	Type
PC_16	✖	Multi		20.00.00.00/24.00.00.00	storageAF_1	No	FC	Data
PC_17	✖	Multi		20.01.00.00/24.00.00.00	storageAF_1	0F	FC	Data
PC_18	✖	Multi		20.02.00.00/24.00.00.00	storageAF_2	No	FC	Data
PC_19	✖	Multi		20.03.00.00/24.00.00.00	storageAF_2	0F	FC	Data
ShowerAF-01_mgmt	✔		Default	16.240.40.127	storageAF_1	eth		Cluster/Node Mgmt
ShowerAF-01_cha1	✔		Cluster	168.254.168.30	storageAF_1	eth		Cluster
ShowerAF-02_cha1	✔		Cluster	168.254.168.110	storageAF_1	eth		Cluster
iscsi1	✔	Multi	VMware	16.1.1.101	storageAF_1	eth	iSCSI	Data
ShowerAF-03_cha1	✔		Cluster	168.254.168.200	storageAF_2	eth		Cluster

Ethernet Ports



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Storage Manager for DM Series

Ethernet Ports

Port	Node	Broadcast Domain	Physical	Type	Administrative Status
eth0	storage1_1	Default	Default	physical	Online
eth1	storage1_1	Cluster	Cluster	physical	Online
eth2	storage1_1	Cluster	Cluster	physical	Online
eth3	storage1_1	10.14	10.14	physical	Online
eth4	storage1_1	10.14	10.14	physical	Online
eth5	storage1_1	Default	Default	physical	Online
eth6	storage1_1	Cluster	Cluster	physical	Online
eth7	storage1_1	Cluster	Cluster	physical	Online
eth8	storage1_1	10.14	10.14	physical	Online
eth9	storage1_1	10.14	10.14	physical	Online

Ethernet Port Properties

Administration	Operational
Auto Negotiation: None	Auto Negotiation: true
Duplex Mode: full	Duplex Mode: full
Speed: 1000	Speed: 1000
MTU Size (in Bytes): 1500	Health Status: Healthy

Interfaces on the Port

Interface Name	Node	IP Address	All Hosts
storage1_1_10.14.0.101	storage1_1	10.14.0.101	yes

Details Performance

Storage Manager for DM Series

Ethernet Ports

Node	Port	Physical
storage1_1	eth0	10.14.0.101
storage1_1	eth1	10.14.0.102
storage1_1	eth2	10.14.0.103
storage1_1	eth3	10.14.0.104
storage1_1	eth4	10.14.0.105
storage1_1	eth5	10.14.0.106
storage1_1	eth6	10.14.0.107
storage1_1	eth7	10.14.0.108
storage1_1	eth8	10.14.0.109
storage1_1	eth9	10.14.0.110

Ethernet Port Properties

Administration	Operational
Auto Negotiation: None	Auto Negotiation: true
Duplex Mode: full	Duplex Mode: full
Speed: 1000	Speed: 1000
MTU Size (in Bytes): 1500	Health Status: Healthy

Interfaces on the Port

Interface Name	Node	IP Address	All Hosts
storage1_1_10.14.0.101	storage1_1	10.14.0.101	yes

Details Performance

Fibre Channel Ports



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Storage Manager for DM Series

FC/CoE and NvMe Adapters

Node	Node Name	Size	Data Protection	Capacity	Status	Speed
10.10.10.100-10.10.10.100	storage1_1	10	Rep	10.10.10.100-10.10.10.100	Link not connected	Auto
10.10.10.100-10.10.10.100	storage1_2	10	Rep	10.10.10.100-10.10.10.100	Link not connected	Auto
10.10.10.100-10.10.10.100	storage1_3	10	Rep	10.10.10.100-10.10.10.100	Link not connected	Auto
10.10.10.100-10.10.10.100	storage1_4	10	Rep	10.10.10.100-10.10.10.100	Link not connected	Auto
10.10.10.100-10.10.10.100	storage1_5	10	Rep	10.10.10.100-10.10.10.100	Link not connected	Auto
10.10.10.100-10.10.10.100	storage1_6	10	Rep	10.10.10.100-10.10.10.100	Link not connected	Auto
10.10.10.100-10.10.10.100	storage1_7	10	Rep	10.10.10.100-10.10.10.100	Link not connected	Auto
10.10.10.100-10.10.10.100	storage1_8	10	Rep	10.10.10.100-10.10.10.100	Link not connected	Auto
10.10.10.100-10.10.10.100	storage1_9	10	Rep	10.10.10.100-10.10.10.100	Link not connected	Auto
10.10.10.100-10.10.10.100	storage1_10	10	Rep	10.10.10.100-10.10.10.100	Link not connected	Auto

Adapter Details

Node Type	Port to Port	Port Address	0
Connection Established	Info	Link Up Rate	0.0%
Ports Established	New		
Speed	Automatic		

Details Performance

Storage Manager for DM Series

FC Ports

Node	10	10	10	10
10.10.10.100-10.10.10.100	10.10.10.100-10.10.10.100	10.10.10.100-10.10.10.100	10.10.10.100-10.10.10.100	10.10.10.100-10.10.10.100
10.10.10.100-10.10.10.100	10.10.10.100-10.10.10.100	10.10.10.100-10.10.10.100	10.10.10.100-10.10.10.100	10.10.10.100-10.10.10.100

Cluster \ Node Overview



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The screenshot shows the 'Nodes' tab in the 'Storage Manager for DM Series' interface. The table lists two nodes, 'storage1_1' and 'storage1_2', both in a 'Up' state. The 'Log Time' for both is '4 days 10:27:58'. The 'Data ONTAP Release' is '9.7.0', and the 'System ID' is '603719128'. The 'Serial No.' is 'A21410000014' for 'storage1_1' and 'A21410000015' for 'storage1_2'. The 'System Type' is 'M710' for both.

Name	State	Log Time	Data ONTAP Release	System ID	Serial No.	System Type	System Type M710
storage1_1	Up	4 days 10:27:58	Data ONTAP Release 9.7.0	603719128	A21410000014	M710	7941-CT05WW
storage1_2	Up	4 days 10:27:58	Data ONTAP Release 9.7.0	603719128	A21410000015	M710	7941-CT05WW

Below the table, there is a section for 'Details' and 'Performance'.

The screenshot shows the 'Overview' tab in the 'Storage Manager for DM Series' interface. The 'Overview' section displays the cluster name 'storage1', the version 'Data ONTAP Release 9.7: Thu Jan 09 17:51:21 UTC 2020 (Lenovo)', and the system ID '603719128'. The 'Log Time' is '4 days 10:27:58'. The 'Serial No.' is 'A21410000014' for 'storage1_1' and 'A21410000015' for 'storage1_2'. The 'System Type' is 'M710' for both.

Nodes	Name	Up Time	Serial Number	Managed IP	Service Process IP	System ID
storage1_1	storage1_1	1 day 10:27:58	A21410000014	10.240.40.1	10.240.40.1	603719128
storage1_2	storage1_2	1 day 10:27:58	A21410000015	10.240.40.2	10.240.40.2	603719128

The 'Nodes' section also includes a diagram showing the cluster topology.

Data protection enhancements

Data-at-rest encryption by default:

- Whenever an external or onboard key manager is configured, new aggregates will have NetApp Aggregate Encryption (NAE) enabled by default. New volumes that are not part of an NAE aggregate will have NetApp Volume Encryption (NVE) enabled by default.

SnapMirror Synchronous enhancements:

- Added FC-NVMe (NVMe over Fibre Channel) protocol and namespace support
- Support for LUN clone replication
- Support for the replication of application-created Snapshot copies

File access protocol enhancements

Keytab files for SVM authentication with Active Directory (AD) servers:

- AD administrators can provide keytab files to ONTAP administrators when Kerberos authentication is required with the AD domain.

Encryption and signing performance improvements:

- A new encryption off-load algorithm can enable better performance when using SMB signing or encrypting SMB traffic. SMB signing and encryption offload is enabled by default when SMB signing or encryption is enabled.

MetroCluster enhancements

MetroCluster FC configuration platform support:

- Support for the DM7100F and DM7100H

ONTAP Mediator is supported in MetroCluster IP configurations:

- The ONTAP Mediator service can assist the MetroCluster IP configuration in performing an automatic unplanned switchover by providing a physically separate repository for status information.

FabricPool mirrors on MetroCluster configurations:

- You can set up a mirrored FabricPool on a MetroCluster configuration to tier cold data to two different fault zones.

MetroCluster compliant switches:

- MetroCluster IP configurations can support switches which are not NetApp validated provided that they are compliant with NetApp specifications.

Networking and security enhancements

Improved performance for LDAP directory netgroup-by-host searches

- Network Information Service (NIS) `netgroup.byhost` entries can be cached using the `vserver services name-service nis-domain netgroup-database` command.
 - This command rebuilds the NIS `group.byuser` DB for a given Vserver if NIS is added as a source for the group and an active nis-domain exists.
 - This command is available to cluster and Vserver administrators at the advanced privilege level.

SAN enhancements

Symmetric active-active:

- Symmetric active-active is a multipathing solution in which all paths are active/optimized. In the event of a storage failover, the host does not need to wait for the Asymmetric Logical Unit Access (ALUA) transition of the failover paths to resume I/O. This reduces time to failover. Symmetric active-active is only available on All SAN Arrays.

Support for large I/O:

- FC-NVMe supports I/O of up to 1 MB.

Storage resource management enhancements

FlexVol volumes:

- The maximum number of supported FlexVol volumes on AFF platforms with at least 128 GB of memory has increased to 2,500 FlexVol volumes per node for primary workloads

FlexCache volume enhancements:

- Anti-virus at the origin volume
- Auditing at the origin volume
- FPolicy at the origin volume
- MetroCluster configuration
- Thin provisioning at the FlexCache volume
- FabricPool at the FlexCache volume
- Compaction at the FlexCache volume
- Cross-volume deduplication
- FlexGroup as a FlexCache origin

Storage resource management enhancements - continued

FlexGroup volume enhancements:

- You can now clone FlexGroup volumes
- You can back up FlexGroup volumes to tape and restore them using NDMP
- You can access FlexGroup volumes using NFSv4 and NFSv4.1
- VMware vStorage APIs for Array Integration (VAAI)
- Conversion of a FlexVol volume to a FlexGroup volume
- FlexCache as a FlexGroup origin

FabricPool mirror:

- You can use FabricPool mirroring to tier cold data to two object stores simultaneously

FabricPool mirrors on MetroCluster configurations:

- You can set up a mirrored FabricPool on a MetroCluster configuration to tier cold data to two different fault zones

Non-transparent HTTP and HTTPS proxy:

- You can use a non-transparent HTTP and HTTPS proxy to manage client access and for reporting capabilities

API enhancements

Changes to the ONTAP REST API in ONTAP 9.7:

- ONTAP 9.7 extends the functional scope of the ONTAP REST API by introducing three new resource categories, each with several REST endpoints:
 - NDMP
 - Object store
 - SnapLock

ONTAP 9.7 also introduces one or more new REST endpoints in several of the existing resource categories:

- Cluster
- NAS
- Networking
- NVMe
- SAN
- Security
- Storage
- Support

Support for performance metrics in the ONTAP REST API

DM series ONTAP update

An ONTAP update can be performed from either the SSH CLI or the Storage Manager GUI. This section introduces an ONTAP update from the ONTAP 9.7 Storage Manager GUI. Refer to course [ES71914B - Servicing the Lenovo ThinkSystem DM Series storage](#) for the CLI update method.

Click each step in turn to see the procedure.

Step



DM series ONTAP update

- There are three stages to a firmware update: Select, Validate, and Update.
- From the **Cluster** → **Update** page, files can be uploaded from an http or ftp server (with no authentication). They can also be uploaded directly from the client that the Systems Manager is running on.
- After the file has been uploaded, it will be visible in **Available Software Image**.


Select an ONTAP image to update

Either add an image from your local machine server or local client or choose an existing image below.

+ Add Image

AVAILABLE SOFTWARE IMAGE

☐ 9.7RC1 (Image build time: Friday, Nov 22, 2019, 2:39 AM) 

☐ 9.7X1 (Image build time: Wednesday, Jul 31, 2019, 1:33 AM) 

Step



DM series ONTAP update

- At this point, you should select the image you want to use, and then click **Next**.
- Click **Validate**.
- You will receive a series of **Warnings** about certain actions if your system is active


Warnings			
Pre-Update Check	Status	Error	Advice
CIFS status	⚠	CIFS is currently in use. Any unprotecte...	Stop all unprotected CIFS workloads bef...
Manual checks	⚠	Manual validation checks need to be p...	Refer to the Upgrade Advisor Plan or "P...
NFS mounts	⚠	This cluster is serving NFS clients. If NF...	Use NFS hard mounts, if possible.
Name Service Configuration DNS Check	⚠	None of the configured DNS servers ar...	Delete the DNS server, or verify that the...
SAN compatibility	⚠	Since this cluster is configured for SAN,...	All SAN components-Including target Da...

Step





DM series ONTAP update

- If everything is OK, proceed with the installation.
- The **Update** phase will begin.
- Select **Update**, and the additional validation process will be performed.
- Check the box that says **Continue update with warnings**, and then select **Continue**.
- The update will start on the first node.
- The process will take over an hour. As each node is updated, its status will change in Systems Manager.

 Update in progress...

Estimated Time Left: 1 hour 26 minutes 13 seconds

Approximate Time Elapsed: 47 seconds

Node	Status	Approximate Time Elapsed
FAS8200_Dev_1		1 seconds
FAS8200_Dev_2		1 seconds

Step

