Dell EMC Storage Systems Release Notes for the metro node appliance

Release Notes

Current Release Version: 7.0 Service Pack 1
Release Date: 2021-07-27
Release Type: Service (SR)

Topics:

This release notes contains supplemental information about metro node for Release 7.0, Patches, and Service Pack.

Revision history

Table 1. Document revision history

Document revision	Date	Description of changes
01	January 2021	7.0 Final Release
02	March 2021	7.0 Patch 1 Final Release
03	July 2021	7.0 Service Pack 1 Final Release

Product description

Dell EMC Storage metro node removes physical barriers within, across, and between data centers. Metro node-Local provides simplified management and non-disruptive data mobility across heterogeneous arrays. Metro node-Metro provides data access and mobility between two metro node clusters within synchronous distances. With advanced distributed coherency, metro node provides workload resiliency, automatic sharing, balancing and failover of storage domains, and enables both local and remote data access with predictable service levels.

Security information

For information on metro node security fixes, see the Dell Security Advisories(DSAs) available on Solve Online at https:// solveonline.emc.com/solve/home.

Default Service Password

For security reasons, it is strongly recommended to change the default service password. The Security Configuration Guide for metro node provides information on changing the service password. Notify your local Dell Field Engineer or SAM to have the password updated in the appropriate locations.

Open source licensing changes

This product is distributed with open source code, licensed to you in accordance with the applicable open source license. If you would like a copy of any such source code, Dell EMC can provide a copy of the source code that is required in accordance with the applicable open source license. Dell EMC may charge reasonable shipping and handling charges for such distribution. Please direct requests in writing to:

Dell EMC Corporation

Office of the General Counsel

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Hopkinton, MA 01748

ATTN: Open Source Program Office

For more information about the open source packages used in metro node and their applicable licenses, see the *Open Source Licenses Guide for the metro node appliance* available at www.dell.com/support.

New features

This section describes the new features that are added to metro node in the Release 7.0, Patches, and Service Pack:

Table 2. New features in Release 7.0 Service Pack 1

Functional area	Feature description	Summary
Cluster Witness	The support of Cluster Witness (CW) enables metro node solution to improve overall environment availability by arbitrating a pure communication failure between two primary sites, and an actual site failure in a multisite architecture.	For 7.0.1 and later, the systems can now rely on a component that is known as metro node Witness. The Witness is an optional component that is designed to be deployed in the customer environments where regular preference rule sets are insufficient to provide seamless zero or near-zero RTO storage availability in the presence of site disasters, metro node cluster and inter-cluster failures.
		For more information, see the configuration and troubleshooting guide available at https:// solveonline.emc.com/solve/home/74.
System configuration	SupportAssist MFT	Support for Managed File Transfer (MFT) feature allows support staff to easily push files to the customer systems. It is useful to deliver patches or hot-fixes to a customer system without a need of multihop file transfer process (manual). For all the required support scripts or any patch-related files, the technical support team performs manual transfer to the FTP site of customer. These files are pushed to the remote node from the FTP site. There is no ability to audit this type of system activity on the system, so SMEs investigating customer issues must infer that certain hot-fixes have or have not been applied to a system through checking for the side-

Table 2. New features in Release 7.0 Service Pack 1 (continued)

Functional area	Feature description	Summary
		effects of those fixes. It wastes time of the SME and delays time-to-resolution for the customer.
		The command is independent of system configuration or support-assisting configuration process. However, to use this feature, system configuration and support-assist configuration should be in place.
		List of commands supported : ● **Download Command** : Files can be downloaded either from the support-assist gateway, or from another node in the system. ● **Synchronize Command** : Synchronize all nodes to the set of files present on the node where the command is issued.
		Configure MFT: To download the files from support-assist gateway, or from another node in the system, run the command `/opt/dell/vplex/bin/supportassist_mft`.
System configuration	SupportAssist with Direct Connectivity	It supports the direct connectivity mode during SupportAssist configuration. **Configure Direct Connectivity** To enable SupportAssist with direct connectivity, a user changes the UseGateways option in SupportAssist gateways to false. For this feature, the DNS configuration is mandatory on the cluster. The DNS configuration is optional configuration, therefore it is done in the last phase of the system configuration. After the system configuration, DNS can be configured independently. **Command to configure DNS** To configure DNS on the cluster, run the command `vplex_system_config -interview --dns-config`.
Connectivity	32 GB FC Support	Supports 32 Gb FC speed connectivity for front-end and back-end ports.

Table 3. New features in Release 7.0 and Patches

Functional area	Feature description	Summary
NDU	Non-Disruptive Upgrade (NDU) of the software can be performed on metro node using inbuilt design. The basic principle is the system is divided into two halves that are called **first upgraders (A directors)** and **second upgraders (B directors)**.	All the nodes of the first upgraders are upgraded to new software, and when it is stable and hosts recognize it, then the set of nodes in the second upgraders are upgraded. ⓘ **NOTE:** NDU start must be triggered from the second upgraders (B directors) only as it initiates a reboot for the first upgraders (A directors). The NDU consist of the following steps: ● `service@director-1-1-B:~>`: To upgrade the software on all the nodes, install the new version of NDU module and tools. ● `VPlexcli:/> ndu pre-check`: This command runs some pre-checks to verify whether the metro node configuration may have any errors that may prevent the NDU from running. ● From second upgrader: `VPlexcli:/> ndu start -u /home/service/vplex-node-upgrade-VPlex-`

Table 3. New features in Release 7.0 and Patches (continued)

Functional area	Feature description	Summary

		`<version>.tar: ndu start` triggers on second upgrader and upgrades the nodes of first upgraders.
		
		● From first upgrader: `VPlexcli:/> ndu complete`: `ndu complete` upgrades the second upgraders and completes the upgrade procedure.
		  ○ Once the NDU is complete, run the following commands:
		    ■ `systemctl start notifications`
		    ■ `systemctl start kafka`
		
		For more details, see the NDU-related documents available on SolVe online at https://solveonline.emc.com/solve/home/74.

New hardware platform	Metro node is the next generation hardware platform for storage virtualization. It is based on the Dell PowerEdge R640 Server that is designed with embedded storage management, I/O path simplification, and modern 32 Gb Fibre Channel.	Metro node Local configuration is a two node cluster that provides data protection and nondisruptive data mobility across storage-arrays.
		
		Highlighted features Include:
		● Active-Active architecture
		● Simple and intelligent Management and Serviceability
		  ○ Embedded management
		  ○ Modern HTML5 UI
		● Enterprise Data Services and High Availability
		● Block storage support
		● Compact 1U form factor for each node
		
		Each metro node consists of:
		
		● Two interdirector 10 GbE ports for data services communication
		● Two interdirector 10 GbE ports for storage management communication
		● One 10 GbE port for customer network management and administration
		● One 10 GbE port for direct service personnel accesses.
		● Dual redundant power supplies
		● Integrated Dell Remote Access Controller (iDRAC) for server management
		  (i) NOTE: The iDRAC is not accessible for customers.

System configuration	Configuration and installation of metro node	See the Configuration and Installation Guide for metro node, which is available here https://solveonline.emc.com/solve/home/74.
UI notifications page	The Notification page is the consolidated area of all the appliance alerts and events for the cluster. Events provide information about changes to the system, which indicate there is a problem with the system. Alerts are categorized by severity which indicates the urgency of the alert.	On the notifications tab, there are two alert tabs : **Platform Alerts**: You can monitor the status of metro node platform which includes alerts at director level and cluster level. In the Live alerts drop-down, you can view alerts that were created during the last 48 hours. **Hardware Alerts**: You can monitor the status of metro node hardware which includes alerts that are generated at hardware level. In the Live alerts drop-down, you can view alerts that were created during the last 48 hours. In the details of each alert, additional information can be found including the Severity, Message, Corrective Action, and other properties. This information is useful in troubleshooting scenarios and allows users to remediate issues seen on the system.

Table 3. New features in Release 7.0 and Patches (continued)

Functional area	Feature description	Summary
		When alerts are no longer relevant or are resolved, the system automatically clears the alerts with no user intervention. This action ensures that cleared alerts are hidden from the default view so that only relevant issues are displayed. Acknowledging an alert does not indicate that the issue is resolved. Acknowledged alerts can be viewed as well through table filtering options.

Configure Alerts

Under settings, go to **Notifications**. The user can also configure alerts at various levels.

- **Enable or disable alert at alert condition ID level**
  - For example: 0x30004 is the condition ID for **Storage Volume Unreachable** alert and if the customer wants to disable this alert, select that particular alert and disable 0x30004. With it, whenever metro node issues 0x30004, it will not be listed in UI, and also a dial home event will not be generated.
- **Configure alerts at component level**
  - When the user clicks **Configure notifications** button, then side panel shows the options to disable the alerts at components level. For example: If **System Volume** is disabled, then whenever metro node presses any system volume-related alerts, it will not be listed in UI, and also a dial home event will not be generated.

See the metro node support page on www.dell.com/support for detailed user documentation.

Configuration limits

The following table lists the configuration limits:

Table 4. Configuration limits

Object	Limit
Virtual volumes	On the metro node hardware: • 8000 (metro node Metro) • 10000 (metro node Local)
Storage volumes	On the metro node hardware: • 8000 (metro node Metro) • 10000 (metro node Local)
Distributed devices and remote devices (metro)	8000
Storage views	1000
Storage volume size	64 TB
Virtual volume size	64 TB
Consistency Groups	1024
Volumes per Consistency Group	1000
Clusters	2
Maximum round-trip-time (RTT) between clusters	10 msec
IT nexus per cluster	1600
IT nexus per front-end port	400

Software versions

The software versions are as follows:

Table 5. Software versions

Software Release	Software Version
Release 7.0 Service Pack 1	7.0.1.00.00.25
Release 7.0 P1	7.0.0.01.00.06
Release 7.0	7.0.0.00.00.47

The software version number can be interpreted as follows:

A.B.C.DD.EE.FF

Where each position has the following meaning:

Table 6. Software version numbers

Digit Position	Description
A	Major release number
B	Minor release number
C	Service pack number
DD	Patch number
EE	Hotfix number
FF	Build number

For example:

7.0.0.01.00.06

Table 7. Software version numbers

7	Major release number
0	Minor release number
0	Service pack number
01	Patch number
00	Hotfix number
06	Build number

Changed features

This section describes the changed features that are added to metro node in the Release 7.0, Patches, and Service Pack:

Table 8. Changed features in 7.0 Service Pack 1

Functional area	Feature description	Summary

CLI and UI	Added the port name and director columns to the front-port view in different CLI contexts and UI screens.	**CLI contexts**
		1. The port name column is added here:
		   a. Ports collection listing -ll /clusters/cluster-1/exports/ports/
		   b. Individual Port listing - ll /clusters/cluster-1/exports/ports/<name>/
		2. The port name and director columns are added here:

Table 8. Changed features in 7.0 Service Pack 1

Functional area	Feature description	Summary

		a. Storage views collection listing - ll /clusters/cluster-1/exports/storage-views/
		b. Individual Storage view listing - ll /clusters/cluster-1/exports/storage-views/<name>/
		UI screen
		1. The port name column is added here:
		  a. Port listing page
		  b. Port properties panel
		2. On the target ports tab of the Initiators properties panel, the complete port details (name, port name, and director) are added in a table.
		3. The port name and director columns are added here:
		  a. Storage view create wizard
		  b. Storage view properties panel ports tab
		  c. Storage view add/remove ports

See the metro node support page on www.dell.com/support for detailed user documentation.

Resolved issues

The following issues are resolved in the Release 7.0, Patches, and Service Pack:

Table 9. Resolved issues in Release 7.0 Service Pack 1

Issue ID	Functional area	Description
VPLEX-19254	CLI	If a back-end storage-array LUN is discovered as default LUN0 (DL0), and then a real LUN0 is provisioned with the same LUID, then changing the default LUN0 (DL0) to a real LUN0 prevents the real LUN0 from being displayed in CLI. In Release 7.0.1, this issue has been fixed, and the new real LUN0 is now properly displayed in the VPlexcli under the relevant storage array's "logical-unit" context.
VPLEX-28907	CLI	The RxPower, TxPower, and Temp SFP fields miss the values for the front-end and back-end HBA ports (IO-00, IO-01, IO-02, IO-03) and WAN COM ports (WC-00, WC-01). In Release 7.0.1, this issue has been fixed. ⓘ **NOTE:** By design, the local com ports (LC-00, LC-01) are copper ports not optical, so the local com ports (LC-00, LC-01) do not report power or temperature levels.
VPLEX-29041	UI	When attempting to run unclaim actions through the HTML5 UI, the overlapping character strings for storage-volume and provision-type hampers the text display. In Release 7.0.1, this issue has been fixed.
VPLEX-30207	UI	The width of several modal dialogs, wizards, and property windows has been increased to better accommodate the information they contain.
VPLEX-31899	UI	In Release 7.0.1, the issue that prevents the VPlex Python SDK from working on python3.7+ has been fixed.
VPLEX-31964	System configuration	In Release 7.0.1, the issue that rarely prevents the web server or CLI session from starting has been fixed.
VPLEX-32314	CLI	The port-group 'subnet' sub-context displays the empty values until the 'member-ports' sub-context is listed. The 'subnet' sub-context should always display the correct values. In Release 7.0.1, this issue has been fixed.
VPLEX-32425	UI	The width of the HTML5 UI columns is fixed, and the user cannot alter them. In Release 7.0.1, this issue has been fixed.
VPLEX-32906	CLI	All 'report' CLI commands have been removed: ● report aggregate-monitors

Table 9. Resolved issues in Release 7.0 Service Pack 1 (continued)

Issue ID	Functional area	Description
		• report capacity-arrays • report capacity-cluster • report capacity-hosts • report create-monitors • report poll-monitors
VPLEX-33717	Firmware	The director firmware may fail due to an internal deadlock race condition, which can occur when FC logins are established or terminated while periodic internal checks (wedgedPortMonitor) are performed. In Release 7.0.1, this issue has been fixed.
VPLEX-34282	UI	In Release 7.0.1, the issue that prevents filtering of resource path attributes with the entire path has been fixed. Now, the filtering is based on resource base name only.
VPLEX-34445	BEPM	In the context of a round of ITL health probing I/O, the last available ITL on a degraded IT becomes unavailable and re-available many times. It can cause one or more directors to assert due to improper handling of these departures. In Release 7.0.1, this issue has been fixed.
VPLEX-34695	UI	Add remote mirrors wizard only adds the first distributed virtual volume to the chosen consistency group. In Release 7.0.1, this issue has been fixed.
VPLEX-35291	UI	The Create consistency group wizard takes a long time while trying to load the virtual volumes. In Release 7.0.1, this issue has been fixed.
VPLEX-35347	UI	In HTML5 UI, the Create distributed devices wizard is substantially slower than anticipated. In Release 7.0.1, this issue has been fixed.
VPLEX-35398	UI	In Release 7.0.1, the Consistency Group - Add Virtual Volumes wizard has been fixed to display exported virtual volumes correctly in the HTML5 UI.
VPLEX-35399	UI	In Release 7.0.1, the issue has been fixed that prevents the display of Consistency Groups with an empty **storage-at-clusters** property in the HTML5 UI.
VPLEX-35620	UI	For 7.x releases, the underscore character is not allowed to be used while registering a host initiator name from the HTML5 UI. In Release 7.0.1, this issue has been fixed. Now, When registering initiator names, the underscore character is now allowed.
VPLEX-35710	CLI	In Release 7.0.1, the command `show-use-hierarchy` correctly indicates the inability to issue remote commands when used on a distributed device during a cluster outage, instead of a confused error message.
VPLEX-36475		Historically, for Asymmetric Logical Unit Access (ALUA) storage-array types, the back-end path management code uses any AAN (non-optimized) paths if all available AAO (optimized) paths are full (default 5 outstanding requests per path). For PowerStore arrays, if AAO paths are available, then do not use AAN paths. PowerStore does not have dynamic trespassing and automatic load balancing. Some customer reported performance issues when AAN paths are used in addition to AAO paths. In Release 7.0.1, this issue has been fixed. The PowerStore array is now configured to not use AAN paths until all AAO paths are full.
VPLEX-36715	System configuration	The connection from a laptop to a metro node service port (EC-00) does not work on the first try. Switching the ethernet adapter of laptop, changing the port speed from auto-negotiate to 1 Gbps, or unplugging/re-plugging the cable is not shown to be reliable. As a workaround, access the iDRAC over the micro USB port (special cable is required), then configure the metro node system configuration through the iDRAC console interface. In Release 7.0.1, the issue has been fixed.

Table 9. Resolved issues in Release 7.0 Service Pack 1 (continued)

Issue ID	Functional area	Description
		ⓘ **NOTE:** This fix has not been applied to factory shipped metro_node systems (yet.) After systems are updated to 7.0.1, then the EC-00 will work reliably.
VPLEX-36969	Configuration	Noisy journal log writers can push critical log messages out of the journal, making troubleshooting of historical issues difficult. In Release 7.0.1, the maximum size of the journal has been increased from 500 MB to 4 GB, and an FLLS component log series has been introduced.
VPLEX-37475	UI	The following drop-down boxes in the HTML5 UI are now arranged alphabetically rather than arbitrarily: 1. Virtual-volume-export: Storage View Name drop-down 2. Add-remote-mirrors (devices): Consistency Group drop-down and Rule Set drop-down 3. Claim storage array: Select Array Name drop-down 4. Provision from storage volume: Select Array Name drop-down and Storage view drop-down 5. Create distributed devices: Consistency Group drop-down and Rule Set drop-down 6. Create local virtual volumes: Select Storage Array drop-down 7. Distributed provision from storage volumes: Select a Detach Rule drop-down, Select Array name drop-down, and Storage view drop-down 8. Provision from pools in virtual volumes: Detach rule set drop-down, Storage Array drop-down, Policy drop-down, and Storage view drop-down
VPLEX-37544	CLI	If the `collect-diagnostics` command is required to collect large files (such as large core files), then the command may have timed out (failed) after 5 minutes. In Release 7.0.1, this issue has been improved, the `collect-diagnostics` now waits for 30 minutes for the file collection to complete.
VPLEX-37751	CLI	When `cluster status` reports iDRAC alerts under health-indications, then clear the iDRAC alerts from the UI if these alerts are present. Re-run `cluster status` to see if iDRAC alerts are being reported. If iDRAC alerts are being reported, then the iDRAC alerts can be ignored because this is a CLI reporting issue. If there is parallel execution of cluster status, then health indications are refreshed in parallel, and there are chances of false iDRAC alerts in `cluster status` command output. In Release 7.0.1, the issue has been fixed.

Table 10. Issues fixed in Release 7.0 Patch 1

Issue ID	Functional area	Description
VPLEX-32782	UI	In the HTML5 UI, the functionality has been corrected to properly honor filtering, add or remove all items, and add or remove shift+click selecting of filtered items for the following wizards and menus: • Add or Remove virtual volume from consistency group • Add or Remove virtual volume from storage view • Add or Remove ports from storage view • Add or Remove initiators from storage view • Add or Remove virtual volume from distributed device • Create virtual volume from devices wizard • Export virtual volume wizard • Add local mirror to device wizard • Add remote mirror to device wizard • Add remote mirror to virtual volume wizard • Claim storage-volume wizard from array • Create consistency group wizard • Create distributed consistency group wizard

Table 10. Issues fixed in Release 7.0 Patch 1

Issue ID	Functional area	Description
		- Create device wizard - Create distributed device wizard - Create storage view wizard

Known issues

At the time of release, metro node has the following known issues:

Table 11. Known issues

Issue number	Functional area	Description	Workaround
VPLEX-26775	UI	When there are no storage views present on the system, then you are not able to go to the Storage View page from the System Status and System Health dashboards directly.	Go to the Storage View page through the Provision Storage menu, then from the drop-down select **Storage Views** from the **View By** drop-down, then select**Create**. Once one storage view is created, then from the main status dashboard click the **Storage Views** circle to create the storage views.
VPLEX-27760	UI	Performance Dashboard hover-over statistics window may get stuck across other pages.	Refresh the page from your browser.
VPLEX-28757	UI	Online Help page navigation buttons (back, forward, up, print) may cut by page content and be difficult to use.	Buttons are still clickable with careful attention.
VPLEX-29215	CLI	`health-check --configuration` shows several unexpected errors.	It is not supported.
VPLEX-37220	System configuration	If re-typed new password entry does not match with the new password entry, then system prompts again for new password, and it goes in loop.	Give the new password and re-type the password correctly in the first attempt. If the system request for new password again and again, then press Ctrl+C to start the process again.
VPLEX-37442	System configuration	The command `vplex system config —reset` fails because the WAN COM ports are not present at the NSFW level during the reset.	For `vplex system config —reset` to work, the WAN COM ports must be available at the NSFW level.
VPLEX-37482	CLI	If a part of the collection takes more than 2 hours to finish, the collect-diagnostics command may appear to fail. Although the CLI session ends with the message "`Connection closed by foreign host`," but the collection continues in the background. The user is unable to re-enter the CLI to continue monitoring the process.	For collection progress, monitor the file `/diag/collect-diagnostics-tmp/collect-diagnostics-<date>-<time>.log`. For a final collect-diagnostics bundle, when the collection starts, the content of the files in `/diag/collect-diagnostics-out/` should match.
VPLEX-37535	Upgrade	When a user chooses to roll forward, the SCIF is inconsistent after **ndu recover**.	To resolve SCIF inconsistency, run `vplex_system_config port_toggle enable IO-00 -n director-1-1-A` on any of the first upgraders.

Table 11. Known issues (continued)

Issue number	Functional area	Description	Workaround
VPLEX-37552	System configuration	A user cannot run `system_config --cw-reset` on a partly configured CWS. If the CWS configuration fails, the user should not run the CWS reset option.	The CWS reset option is not supported on a partially configured setup.
VPLEX-37688	UI	The HTML5 UI performance dashboard charts may appear 'choppy', or have missing data points between the lines plotted.	Follow the KBA 000331967 (Delete perpetual monitors and restart the VPlexCLI which will automatically re-create the monitors).
VPLEX-37720	UI	Unable to update the LDAP/AD certificates in metro node.	Remove existing LDAP/AD configuration and reconfigure using updated certificates. For removing and configuring LDAP/AD, see Authenticate Directory Service document available at www.solveonline.emc.com/solve/home/74.
VPLEX-37787	UI	The LDAP/AD configuration in metro node is not backward compatible.	Before upgrading from 7.0/7.0 P1 to 7.0.1, remove existing LDAP/AD configuration and reconfigure it post upgrade to 7.0.1. For removing and configuring LDAP/AD, see Authenticate Directory Service document available at www.solveonline.emc.com/solve/home/74.
VPLEX-38097	CLI	For <director>/ports/<port>::sfp-status, the CLI displays a value of DIAG_PAGE_CHECKSUM_FAILED.	Ignore this parameter and the SFP status, this concept does not apply to the metro node platform.
VPLEX-38208	System configuration	If a collect-diagnostics is running and a system_config operation that updates the config (SCIF) file is performed, then the collect-diagnostics process will restart and the system tar file will be missing in the output .tar.gz file. The system tar file is not generated.	Avoid making system configuration changes while a collect-diagnostics is running. If the collect-diagnostics file is missing key files after a system_config change, then to get the missing system tar file either re-run the entire collect-diagnostics or re-run only the new collect-diagnostics collection part using the linux command: curl -X POST (www.localhost:9007/vplex/diag/collect-jobs).
VPLEX-38239	System configuration	In rare cases, a metro node director is unavailable to boot waiting on a user input with `CBL0009: Backplane connector is not connected`.	Restart the director. It resolves the issue as it was discovered to be a false negative when BIOS/POST checks for the presence of internal connection within the chassis.

Expected behaviors

This section describes expected behaviors in metro node.
- System volumes such as metadata and logging volumes are supported on thin devices. However, metro node relies on these volumes for system operations. All extents should be pre-allocated, to prevent out-of-space conditions.
- While the clusters are in contact, metro node prevents the same storage volume from being claimed at each cluster. However, if the clusters are partitioned, metro node cannot prevent the same storage volume from being claimed at both clusters. If this happens, once metro node detects this, a call home is sent. This issue should be corrected when it is detected.

- When one leg of a distributed device within a consistency group is unhealthy and marked for a rebuild, you are prevented from removing the unhealthy leg. A distributed consistency group requires two-legged distributed device members. To avoid this issue:
  1. Use the `attach mirror` command to attach a new mirror to the healthy leg.
  2. Detach the old unhealthy mirror.
- If the metadata usage at a cluster exceeds 90%, metro node triggers a call home event. If the metadata on the other cluster also exceeds 90% within 8 hours of the first cluster, metro node does not trigger a call home event. This is by design and occurs in metro node Metro configurations.
- In Unisphere, Provision by pools and Provision by Storage volumes wizards allow you to select only consistency groups that have a value set for storage-at-clusters property.
- If host I/O performance is impacted during a data migration or during a rebuild, then lower the rebuild transfer-size setting for the devices, or reduce the number of concurrent migrations/rebuilds. For more information, see the Admin guide for metro node feature available at www.dell.com/support.
- Ensure that the host resources are sufficient to handle the number of paths provisioned for the metro node system.
- Poor QoS on the WAN-COM link in a Metro configuration could lead to undetermined behavior and data unavailability in extreme cases. Please follow the Best Practices to configure and monitor WAN-COM links.
- Metro node in Metro configurations does not provide native encryption over the IP WAN COM link. Customers should deploy an external appliance to achieve data encryption over the IP WAN links between clusters.
- When a claimed storage volume becomes hardware dead metro node automatically probes the storage volume within 20s. If the probe succeeds, metro node removes the "dead" status from the volume, thus returning it to a healthy state.

  ⚠ **CAUTION: While the device is hw-dead, do not perform operations that change data on the storage volumes underneath metro node RAID 1 (through maintenance or replacing disks within the array). If such operations are required, first detach the storage volumes from the metro node RAID 1, perform the data changing operations, and then re-add the storage volumes to the metro node RAID 1 as necessary to trigger a rebuild. Failure to follow these steps changes data underneath metro node without its knowledge. Without a data rebuild, the RAID 1 legs might be inconsistent and this may lead to data corruption on resurrection.**
- Storage volumes that are used as system volumes (metro node metavolume RAID 1 mirror legs, logging volumes, and backups for the metavolume) must be formatted/zeroed out before being used by metro node as a system volume.
- There are two types of failure handling for back-end array interactions.
  - The unambiguous failure responses, such as requests rejected by storage volume or port leaving the back-end fabric.
  - The condition where storage arrays enter fault modes such that one or more of its target ports remained on the fabric, while all SCSI commands sent to it by the initiator (metro node) timed out.

  Metro node isolates the paths which remain on the fabric but stay unresponsive. In this case, I/O requests sent by a host initiator to metro node virtual volumes are redirected away from unresponsive paths to the back-end array, onto paths that are responsive. At the time of isolation, metro node issues a call home event.

- The `export port summary` of a front-end port with `no-link` status has the export status as `suspended`.

Limitations

This section lists the limitations for metro node in the Release 7.0, Patches, and Service Pack.

Table 12. Limitations

Functional area	Limitation	Affected Platforms/Models
Array support	Metro node supports the following storage arrays: ● Dell EMC PowerStore ● Dell EMC Unity XT ● Third party arrays-HPE 3PAR 84xx/94, Hitachi F/G Series, IBM A9000, and Huawei V5 and V6 series	**Dell EMC PowerStore** ● **Supported model number**-500T, 1000T, 3000T, 5000T, 7000T 9000T, 1000X, 3000X, 5000X, 7000X, 9000X ● **Environment-** Dell EMC PowerStoreOS: 1.0 Dell EMC PowerStoreOS: 2.0 **Dell EMC Unity XT** ● **Supported model number**-300, 300F, 350F, 380, 380F 400, 400F, 450F, 480, 480F 500,

Table 12. Limitations (continued)

Functional area	Limitation	Affected Platforms/Models
		500F, 550F 600, 600F, 650F, 680, 680F, 880, 880F
		● **Environment**-Dell EMC Unity OE: 5.0
IPv6 support	For Release 7.0, 7.0 Patch 1, and 7.0.1, IPv6 for the Ethernet ports is not supported.	-
License support	For Release 7.0, 7.0 Patch 1, and 7.0.1, licensing is not supported in metro node. Ignore any CLI or UI errors that are related to the license status errors.	-
SNMP support	For Release 7.0, 7.0 Patch 1, and 7.0.1, SNMP is not supported.	-
VIAS support	For Release 7.0, 7.0 Patch 1, and 7.0.1, VPLEX Integrated Array Services (VIAS) is not supported.	-
Upgrade support	**Upgrade Support to 7.0 Service Pack 1 on unconfigured system** ⓘ **NOTE:** NDU is only supported on the configured systems. ⓘ **NOTE:** Imaging to newer code versions of newly deployed, but not yet configured systems are supported in a future release. For now, it is recommended that perform the following steps before connecting any hosts to the system: 1. Complete the system configuration steps and include the **Create meta-volume backup**. ⓘ **NOTE:** See the system configuration steps in the *Configuration and Installation Guide for the metro node appliance* available at SolVe (www.solveonline.emc.com/solve/home/74). 2. Use NDU to perform the upgrade to 7.0 Patch 1. For more details, see the *Metro node NDU Upgrade Guide* available at SolVe (www.solveonline.emc.com/solve/home/74). ⓘ **NOTE:** Once the system is upgraded, then configuration of additional functionality can continue as per the Configuration and Installation guide including the connecting of hosts to the system.	-

Installation

To install and set up a new metro node implementation, use the documents in the following order:
1. *Metro node Hardware Installation Guide* available at www.dell.com/support.
2. *Configuration and Installation Guide for the metro node appliance* available on SolVe online at https://solveonline.emc.com/solve/home/74.

Documentation

The following documentation is available to support metro node:

Name of the document	Link
Administration Guide for the metro node appliance	https://www.dell.com/support
Product Guide for the metro node appliance	https://www.dell.com/support

Name of the document	Link
CLI Guide for the metro node appliance	https://www.dell.com/support
Metro node Hardware Installation Guide	https://www.dell.com/support
Configuration and Installation guide for the metro node appliance, and other supporting documents	https://solveonline.emc.com/solve/home/74

Where to get help

Dell Technologies support, product, and licensing information can be obtained as follows:

Dell Technologies maintains support pages for all products at https://www.dell.com/support.

The product support pages provide important information about the products. This information includes product and user documentation, knowledge base articles, drivers and other software installation packages downloads, advisories, knowledge base articles, and more.

A valid support contract and registration may be required to access all the information available on the product support sites.

Notes, cautions, and warnings

(i) **NOTE:** A NOTE indicates important information that helps you make better use of your product.

⚠ **CAUTION: A CAUTION indicates either potential damage to hardware or loss of data and tells you how to avoid the problem.**

⚠ **WARNING: A WARNING indicates a potential for property damage, personal injury, or death.**