

RELEASE NOTES

EMC[®]
Unisphere[™] for VMAX[™]
Version 1.6.1

Release Notes

REV 04

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These release notes contain supplemental information about EMC Unisphere for VMAX V1.6.1. Topics include:

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Product description

EMC® Unisphere™ for VMAX™ offers big-button navigation and streamlined operations to simplify and reduce the time required to manage a data center. Unisphere for VMAX simplifies storage management under a common framework. You can use Unisphere to:

- ◆ Manage user accounts and roles
- ◆ Perform configuration operations (create volumes, mask volumes, set Symmetrix attributes, set volume attributes, set port flags, and create SAVE volume pools)
- ◆ Manage volumes (change volume configuration, set volume status, and create/dissolve meta volumes)
- ◆ Perform and monitor replication operations:
 - TimeFinder®/Snap
 - TimeFinder VP Snap
 - TimeFinder/Clone
 - TimeFinder/Mirror
 - Symmetrix Remote Data Facility (SRDF®)
 - Open Replicator for Symmetrix (ORS)
- ◆ Manage advanced Symmetrix features, such as:
 - Fully Automated Storage Tiering (FAST)
 - Fully Automated Storage Tiering for virtual pools (FAST VP)
 - Enhanced Virtual LUN Technology
 - Auto-provisioning Groups
 - Virtual Provisioning
 - Federated Live Migration
 - Federated Tiered Storage (FTS)
- ◆ Monitor alerts, including the ability to configure external alert notifications (email, SNMP, Syslog)

Performance option

In addition, with the Performance monitoring option, Unisphere for VMAX provides tools for analysis and historical trending of Symmetrix system performance data. You can use the Performance option to:

- ◆ Monitor performance and capacity over time
- ◆ Drill-down through data to investigate issues
- ◆ View graphs detailing system performance
- ◆ Set performance thresholds and alerts
- ◆ View high frequency metrics in real time
- ◆ Perform root cause analysis
- ◆ View Symmetrix system heatmaps
- ◆ Execute scheduled and ongoing reports (queries), and export that data to a file
- ◆ Utilize predefined dashboards for many of the system components
- ◆ Customize your own dashboard templates
- ◆ Execute scheduled export of performance dashboards

Performance Viewer

EMC Unisphere for VMAX V1.6 (and higher) includes a Performance Viewer which can be run on a VMPlayer to:

- ◆ Analyze/troubleshoot data off site
- ◆ Analyze/troubleshoot more days of diagnostic data than as compared to Unisphere
- ◆ Produce reports off site

The Performance Viewer is a separate installation and must be run offline.

For more information, refer to the *EMC Unisphere for VMAX Performance Viewer Installation Guide*.

New features and changes

For information on previously released Unisphere for VMAX features, refer to the corresponding release notes located on EMC Online Support at:

<https://support.EMC.com>

For detailed interoperability information, refer to E-Lab Interoperability Navigator at:

<http://elabnavigator.EMC.com>

For a list of fixes included in this feature release, refer to “Fixed problems” on page 8.

REST API support

Unisphere for VMAX V1.6 provides REST (Representational State Transfer) APIs for accessing diagnostic performance data from your VMAX hardware through robust APIs that communicate with Unisphere for VMAX. These APIs can be used in any of the programming environments that support standard REST clients such as web browsers and programming platforms that can issue HTTP requests.

The *EMC Unisphere for VMAX REST API Programmer's Guide* provides details.

Powerlink decommissioned: Visit EMC Online Support

EMC Online Support is now available to customers, partners, and EMC employees for all EMC products. It can be accessed at <https://support.EMC.com>.

The new site is a completely redesigned customer support portal that takes your online support experience to the next level, offering industry-leading self-service.

Support announcements

EMC lists the Service Life dates for the versions of Unisphere for VMAX on EMC Online Support:

https://support.emc.com/products/27045_Unisphere-for-VMAX

Unisphere for VMAX V1.6.1 new features

Unisphere for VMAX V1.6.1 is a service release. The fixed problems are listed in [Table 2 on page 8](#).

Enhancements

The following enhancements have been made to Unisphere for VMAX:

- ◆ Unisphere for VMAX supports up to ten concurrent users.
- ◆ On the Home page, each Symmetrix system will show a green, yellow, or red icon for **% Busy** and Storage Group **Response Time**.
- ◆ When creating a thin pool, after selecting the disk technology, the **Protection Type** field automatically populates with volume types for the suggested RAID protections:
 - EFD — RAID5 (3+1)
 - FC — RAID1
 - SATA — RAID6(6+2)
 - External — Unprotected (unchanged)
- ◆ When creating meta volumes, Unisphere for VMAX attempts to instill EMC best practices in the creation process by setting the following defaults in the Create Meta Volume wizard:
 - Meta Volume Configuration = Striped
 - Meta Volume Member Count including Head = 8

Note: These best practices do not apply to volumes created with the CKD-3390 emulation type.

- ◆ When creating a port group, an informational message displays the following EMC best practices, when necessary:
 - Port groups should contain four or more ports.
 - Each port in a port group should be on a different director.
- ◆ A Symmetrix Performance Status dashboard has been added to the **Performance › Monitor › EMC Dashboards** view. The dashboard displays important performance related metrics for the selected Symmetrix system. Each table cell in the summary dashboards contains a color relating to the status of the component threshold, if

set. When no threshold has been set for that component, the table cell is clear. The Symmetrix Performance Status dashboard can be saved as a file or configured for a report.

- ◆ Two new metrics have been added to volumes and RDF groups:
 - Write Paced Delay (ms) — The delay time taken by the RDF directors to better serve the remote I/Os.
 - Average Write Paced Delay — Calculated value: (Write Paced Delay / Host Writes/sec)

These metrics display in Diagnostic view (volumes/RDF groups) and Historical view (RDF Groups).

Offline Performance Viewer

The following updates have been made to the offline Performance Viewer:

- ◆ The Time Range settings in Monitor view and Analyze view only contain the options available offline.
- ◆ Users can now upload STP message files using the Load Database dialog box.

Unisphere for VMAX V1.6 new features

[Table 1](#) describes the new features available exclusively with Unisphere for VMAX. For information on the new features available with both Solutions Enabler and Unisphere for VMAX, refer to the *Solutions Enabler V7.6 Release Notes*.

The new feature descriptions in the [Table 1](#) are organized by component:

Table 1 Unisphere for VMAX V1.6 new feature descriptions (page 1 of 2)

Component	Feature	Description
System	Audit log	View the audit records for visible Symmetrix systems.
	Spare drive replacement	Locate and replace failed Symmetrix disk drives.
	Runtime checks	Unisphere now routinely checks and logs the server runtime environment and will raise an alert when a value is returned outside the expected range.
	Hardware Dashboard	New view that allows you to view details on the overall Symmetrix configuration.
	Target Engenuity monitoring	Unisphere will now notify you when a Symmetrix system is running an Engenuity version lower than the minimum suggested version.
Storage	Provision Storage Wizard enhancements	The Provision Storage Wizard now allows you to expand an existing storage group.
Replication	Simplified clone creation	Unisphere now allows you to quickly create a clone copy of a storage group. When using this feature, the source and target volumes are added to a device group, a target storage group is created, and clone sessions are created between the source and target volumes.
Performance	In-context linking	Unisphere now provides the following in-context linking between an object's detail view and the Analyze and Monitor views: - Analyze view to Details view - Details view to Analyze view - Monitor view to Details view - Details view to Monitor view
	Export dashboards	Unisphere Performance provides the ability to export dashboards in PDF. You have the option to run the reports now or schedule a time for them to run daily.
	Export and Import alert settings	Performance settings has been expanded to allow for global alerts to be exported/imported across Symmetrix systems. The settings file is secured by a user-defined password.

Table 1 Unisphere for VMAX V1.6 new feature descriptions (page 2 of 2)

Component	Feature	Description
Performance (cont)	Time Range	The Performance Time Range has changed to: Now, By Day, and Fixed.
	New metrics	The following new metrics are in Performance: • XtremSW Cache • Optimized Read Miss • BE Director core utilization • External disk • Spare disk • BE low priority utilization • FAST federation
	Chart zoom	All time-series Performance views now support zooming in charts. The granularity of the data points in the charts increases and decreases with the zoom in/out function. The time range does not change.

Fixed problems

[Table 2](#) lists problems fixed in Unisphere for VMAX V1.6.1.

Table 2 Unisphere for VMAX V1.6.1 fixed problems

Issue	Found in version	Problem summary
54496790	1.5.0.0	The STP daemon displays all Write Pending statistics for SRDF/A Groups as 0.
55220424	1.6.0.0	Receiving an insufficient disk space error when there is plenty of disk space available.
55595740	1.6.0.0	A daily alert displays regarding insufficient disk space when running on vApp.
55543830	1.6.0.0	Unisphere for VMAX is incorrectly reporting that the Symmetrix array is not running Enginuity at target code.
55162200	1.6.0.0	The Unisphere for VMAX (Performance/Settings) Reports page displays "Updating...Please wait..." indefinitely.
54925594	1.6.0.0	The Max/Avg tool tip displays in the incorrect order in Unisphere for VMAX Performance diagnostic when Avg is removed and added back using the Change Layout option.

Table 2 Unisphere for VMAX V1.6.1 fixed problems

Issue	Found in version	Problem summary
54841824	1.5.0.0	AD domain user lost admin permission after login Unisphere for VMAX.
54410754	1.5.0.0	Unisphere can not discover any Symmetrix arrays (Turkish locale). Non English characters are in <code>run.log</code> .

Environment and system requirements

Refer to the *Unisphere for VMAX Installation Guide* for environment and system requirements.

Solutions Enabler

Solutions Enabler V7.6 64-bit is the minimum supported version, in local or client/server mode. In client/server mode, the Solutions Enabler version running on the server must be greater than or equal to the version running on the client. In addition, the storsrvd daemon must be running on the server.

EMC ControlCenter

Unisphere cannot be installed on the same host as EMC ControlCenter agents because Unisphere requires a 64-bit version of Solutions Enabler and ControlCenter agents require a 32-bit version of Solutions Enabler.

Symmetrix Management Console

Unisphere cannot be installed on the same host as SMC because Unisphere for VMAX and SMC / SPA are not qualified to run on the same machine together due to system resource requirements. However, they can be can run on separate virtual machines on the same server, provided that each VM meets the system and memory requirements.

Symmetrix Enginuity

Unisphere for VMAX supports the following Symmetrix Enginuity versions:

- ◆ Symmetrix VMAX 10K/20K/VMAX Series systems running Enginuity 5874 or higher.
- ◆ Symmetrix VMAX 40K Series systems running Enginuity 5875 or higher
- ◆ Symmetrix DMX systems running Enginuity 5671 or higher.

Host systems and Enginuity support

Unisphere for VMAX runs on a wide range of operating systems and works with certain Symmetrix Enginuity™ versions. For detailed interoperability information, refer to E-Lab Interoperability Navigator at:

<https://support.EMC.com>

Known problems and limitations

The following are known problems, performance, or functionality restrictions/limitations that may apply to your specific storage environment or host platform.

The known limitations and restrictions have been organized into the following functional sections:

- ◆ [Administration](#) 10
- ◆ [Data Protection](#) 11
- ◆ [Hosts](#) 11
- ◆ [Installation.....](#) 11
- ◆ [Performance.....](#) 12
- ◆ [REST API.....](#) 13
- ◆ [Storage](#) 13
- ◆ [System.....](#) 13
- ◆ [Usability.....](#) 15

Note: Updated restrictions for Unisphere for VMAX are indicated with a **Y** in the **Updated** column.

Table 3 Known problems and limitations (page 1 of 6)

Feature	Updated	Number	Description
Administration			
Alerts	N	300.00	The alert numbers reported in the Home section only include Array and Performance alerts; System alerts (e.g., not enough gatekeepers, an aborted connection to the SYMAPI server, etc.) are not included. System alerts are, however, reported in the Alerts New section of the status bar and visible in each system's Alert view.

Table 3 Known problems and limitations (page 2 of 6)

Feature	Updated	Number	Description
Data Protection			
FLM control ports	N	700.00	When creating an FLM session, the directors/ports selected in the Replicator SAN View will be the only directors/ports available in the Create FLM Session wizard. To avoid this, you must select the All folder in the Control Ports filter, or multi-select all of the ports required to create the session.
Detaching preferred pairs	N	700.02	The Detach button will not work when attempting to perform the operation from a single pair session level.
Open Replicator cold push	N	700.03	Unisphere will fail when activating a COLD PUSH session with one control volume and multiple remote volumes. Instead, you must perform the operation on all the pairs at once.
Open Replicator SAN View	N	700.04	In the Open Replicator SAN View, the following columns display incorrect data for AS/400 volumes: Remote Volume WWN, Volume, LUN, Emulation, Thin, and In Session.
Hosts			
Masking views	N	600.01	An informational prompt displays when adding and removing ports from a masking view to inform users if there are RecoverPoint-enabled volumes. However, the information prompt does not display when deleting a masking view.
Installation			
Uninstall from the command line	N	100.00	When uninstalling Unisphere from the command line, the <code>-uninstall</code> option is not supported. For instructions on uninstalling Unisphere for VMAX, refer to the <i>EMC Unisphere for VMAX Install Guide</i> .
Linux systems	N	100.01	Before opening Unisphere for VMAX from a Linux system, clear the DISPLAY variable to avoid the system hanging or stopping.
Virtual Appliance upgrade	N	100.03	Note the following restrictions before upgrading to the Unisphere for VMAX Virtual Appliance: • Direct upgrade of the SPA Virtual Appliance is only supported from V7.3.3. To upgrade from an earlier version of the virtual appliance, upgrade to V7.3.3 first, and then to the Unisphere for VMAX Virtual Appliance. • When upgrading the SMC V7.3.3 Virtual Appliance to the Unisphere for VMAX Virtual Appliance from a zip file, you must use the same hostname and IP address; otherwise, the persistent data will not transfer with the upgrade. • Unisphere for VMAX local users will not be visible in vApp Manager.

Table 3 Known problems and limitations (page 3 of 6)

Feature	Updated	Number	Description
Installation (cont)			
Upgrade from 32-bit SMC	N	100.04	Direct upgrade from 32-bit SMC is not supported. To upgrade in this scenario, upgrade to Unisphere for VMAX 1.0.0 first, and then to Unisphere for VMAX V1.6 or higher.
Upgrade to Unisphere for VMAX with Performance option	N	100.05	Upgrade to Unisphere for VMAX with Performance V1.6.1 requires that the system have as much free disk space as the size of the performance database. For example, if the database is 50 GB, the system must have at least 50 GB of free disk space.
SUSE install	N	100.06	After installing on a SUSE host, you can ignore the following erroneous message: The installation of EMC Unisphere for VMAX is finished, but some errors occurred during the install. Please see the log for details.
Browser displays status error	N	100.07	After installation or server restart, the browser displays an HTTP Status 404 message. If you get this message, wait a few minutes and try again.
Upgrade from 64-bit SMC to 64-Bit Unisphere	N	100.08	Direct upgrade from 64-bit SMC to 64-bit Unisphere is not supported. To upgrade in this scenario, upgrade to Unisphere for VMAX 1.0.0 first, and then to Unisphere for VMAX V1.6 or higher.
Global languages	Y	100.09	Before installing Unisphere for VMAX on Windows, make sure the language for the system location is correct. (Control Panel > Region and Language > Administrative tab, Language for non-Unicode programs) This avoids undecipherable characters on the install screens.
Upgrade to Unisphere for VMAX	Y	100.10	After upgrading to Unisphere for VMAX V1.6.x, if the old Unisphere version number still displays, clear the browser history. If this does not fix the problem, clear the browser cache and restart the browser. For instructions on clearing the browser's history/cache, refer to the browser's online help.
Performance			
Heatmaps	N	800.01	On large systems with more than 16 back-end directors, the Diagnostic version of the heatmap does not display correctly. The chart overlaps the right margin and some of the director data is not shown on screen.
Performance charts	N	800.02	The chart of Average Queue Depth for a disk (reached from Disk Group) may show inaccurate data. The related metric Avg Queue Depth in the Disk tab may show the same inaccuracy.

Table 3 Known problems and limitations (page 4 of 6)

Feature	Updated	Number	Description
Real Time charts	N	800.03	Monitoring Real Time charts may trigger memory overuse on a client, especially when running in a Chrome browser.
STP data collection	N	800.05	Registration for STP data collection can only be accepted from a single IP address.
Database restore	N	800.06	Symmetrix database restores should only be performed one at a time.
REST API	N	900.00	If you create a REST API iterator and set the “from” to be before the gap and the “to” to be after, you will get back more records than expected. This is caused by the server creating “empty” data points for the missing timestamps. This shows as a gap in the Performance charts.
Storage			
DATA volumes in FTS	N	500.01	DATA volumes are not allowed in external pools containing encapsulated volumes. However, when attempting to create DATA volumes and assign them to such a pool, Unisphere will create the DATA volumes before failing to add them to the pool, leaving the new volumes behind. As a result, you can either delete the DATA volumes or assign them to another pool.
Renaming failed drive replacement jobs	N	500.02	Unisphere does not support the renaming of “Failed Drive Replacement” job. Attempting to do so will produce the following error message: Exceeded the maximum number of retry attempts To clear this error condition, rename the job to its original name and run it again.
Creating cascaded storage groups from the Symmetrix service processor	N	500.03	From the Symmetrix service processor, you cannot use the Provisioning Storage wizard to create cascaded storage groups, as the page for selecting the child storage groups will be empty. You can, however, use the Create Storage Group wizard to create cascaded storage groups.
Adding AS/400 devices to storage groups	Y	500.04	The Create Storage Group and Expand Storage Group wizards do not support adding AS/400 volumes. To create a storage group of AS/400 volumes, you must create an empty storage group, and then add the volumes to it using the Add feature of the storage group's volume list view (Storage > Storage Groups > View Details > Related Objects > Volumes). Similarly, to add additional AS/400 volumes to an existing storage group, you must also use the Add feature of the storage group's volume list view.
System			

Table 3 Known problems and limitations (page 5 of 6)

Feature	Updated	Number	Description
Dynamic Cache Partitions	N	400.00	Unisphere for VMAX currently supports assigning thin pools to dynamic cache partitions. Future versions of Unisphere for VMAX will support assigning snap and DSE pools.

Table 3 Known problems and limitations (page 6 of 6)

Feature	Updated	Number	Description
Usability			
Not Licensed message	N	200.00	Licensing a Symmetrix system will not clear the “Not Licensed” message on the System Dashboard . To clear this message, log out/log in.
Navigation	N	200.01	If a Unisphere link or control does not work after a breadcrumb navigation, return to the original window using the menu buttons.

Technical notes

This section provides technical notes for advanced configuration of Unisphere for VMAX V1.6.1.

Flash drive best practice

The number of EFDs per engine should be in multiples of 8 per engine. For example, 10K (959) = 8 per engine, 10K (987) = 16 per engine.

Managing thin pools

It is recommended that thin pools contain DATA volumes of the roughly the same size.

SYMAPI server

If you want to change which SYMAPI server that Unisphere is pointing to, you must uninstall Unisphere, and then reinstall it.

During the install, you will supply the new SYMAPI host name and network port number. The *Unisphere for VMAX Installation Guide* provides more information on these requirements.

Advanced configuration settings

Unisphere provides a dialog box for setting Symmetrix preferences, including debug settings. The debug settings are restricted to Unisphere administrators.



Use the debug settings only at the direction of EMC Customer Service.

Local replication management

Unisphere manages replication operations (TimeFinder Family) through device groups. If the SMAS server does not have visibility to the device groups used to manage replication, then you will not be able to perform any replication actions in Unisphere. Similarly, replication sessions managed exclusively by device files cannot be managed by Unisphere.

Resetting CST system fingerprint

Solutions Enabler includes a CLI utility for synchronizing the host system fingerprint. To use this utility:

1. Stop the SMAS service.
2. Obtain the hostname by either searching for the CST_HOSTNAME in the SMAS install log (the most accurate method) or running the hostname command.
3. Change directory location to:

```
install_location\jboss\standalone\bin
```

4. Enter the following command:

```
cstadmin.exe reset-lockbox -cstdir=..\data\cst
```

5. Enter the lockbox passphrase:

```
host_name@Smas-1
```

Note: If the cstadmin command fails, verify that you are pointing to the following libraries:

Linux: export LD_LIBRARY_PATH=../lib:\$LD_LIBRARY_PATH

Windows: set PATH=..\lib;%PATH%;

6. Start the SMAS service.

Configuring idle user timeout

By default, the client's browser will initiate an automatic logout after 480 minutes (8 hours). To change this value, set the parameter value of the **sagelidleUserTimeoutInMinutes** context parameter (found in **smc.ear/smc.war/WEB-INF/web.xml file**) to any positive integer and reboot the server.

Alerts

By default, most Unisphere status alerts are disabled. For instructions on enabling them, see *Managing alert policies* in the Unisphere help.

Virtual Appliance Technical notes

The following technical notes are specific to the Virtual Appliance.

Setting the LDAP user

When LDAP is already configured from Unisphere for VMAX, the LDAP users need to be added to vApp Manager as admin. This process requires logging into vApp Manager before disabling local directory from Unisphere for VMAX.

vApp Manager does not support assigning LDAP Group to the admin role.

Note: Unisphere for VMAX local users will not be visible in vApp Manager.

Gatekeeper volumes

For ESX V4.0 and earlier, vApp Manager will not allow more than 14 gatekeeper volumes to be added to the Virtual Appliance. Attempting to add more than 14 gatekeepers returns an error message.

Host ESX Server configuration

Host ESX Server authentication is validated each time you select the Gatekeeper Config tab. If the authentication fails, the host ESX Server login credentials and hostname information will be removed from the virtual appliance records and must be added again.

Unisphere daemon service

When you shutdown the SMAS daemon service from vApp Manager, you will be prompted to terminate the browser session, and the browser session ends. You must then start a new web session after a few minutes.

Server hostname requirement

For the virtual appliance to resolve a hostname, only use the fully qualified hostname (as entered in DNS server) while configuring nethosts and ESX Servers (for adding gatekeeper volumes).

SSL certificate generation

The virtual appliance generates an SSL certificate (storsrvd - client/server setup) during the initial boot after the IP address is provided, and during every IP change or reboot.

Changing the IP address

Stop all daemons with vApp Manager before changing the IP address of the appliance.

SYMCLI commands executed/submitted as root

When using vApp Manager with the seconfig account, SYMCLI commands are executed/submitted as root.

Least privileged permission requirements

Consult the appropriate VMware documentation for guidance on the least privileged permissions required to deploy a virtual appliance.

Adding Gatekeeper volumes

After adding Gatekeeper volumes to the virtual appliance, you must restart the SMAS daemon from vApp Manager; otherwise, the Unisphere for VMAX GUI will not be able to see the attached Symmetrix volumes.

Documentation

These release notes provide the latest information not included in the following documentation:

- ◆ *Unisphere for VMAX Installation Guide*,
- ◆ *Unisphere for VMAX online help (Product Guide)*
- ◆ *Unisphere for VMAX Performance Viewer Installation Guide*

Related documentation

In addition, conceptual information about Symmetrix management and SYMCLI can be found in the following Solutions Enabler documents:

- ◆ *EMC Solutions Enabler Release Notes*
- ◆ *EMC Solutions Enabler Symmetrix Array Management CLI Product Guide*
- ◆ *EMC Solutions Enabler Symmetrix Array Controls CLI Product Guide*
- ◆ *EMC Solutions Enabler Symmetrix CLI Command Reference*
- ◆ *EMC Solutions Enabler Installation Guide*
- ◆ *EMC Solutions Enabler Symmetrix SRM CLI Product Guide*
- ◆ *EMC Solutions Enabler Symmetrix TimeFinder Family CLI Product Guide*
- ◆ *EMC Solutions Enabler Symmetrix SRDF Family CLI Product Guide*
- ◆ *EMC Solutions Enabler Symmetrix Migration CLI Product Guide*
- ◆ *EMC Symmetrix Security Configuration Guide*

The Solutions Enabler manuals listed above are available on EMC Online Support at:

<https://support.EMC.com>

Software media, organization, and files

The Unisphere for VMAX V1.6.1 software and documentation is available on EMC Online Support at:

<https://support.EMC.com>

It consists of the following:

- ◆ For Windows 64-bit: **UNIVMAX_V1.6.1.x_WINDOWS_X86_64.exe**
- ◆ For Linux 64-bit: **UNIVMAX_V1.6.1.x_LINUX_X86_64.bin**
- ◆ For Virtual Appliance:
 - univmax161_x_suse11_x86_64_vapp_OVF10.ova**
 - or
 - univmaxpa161_x_suse11_x86_64_vapp_OVF10.ova** (includes Performance option)
- ◆ *Unisphere for VMAX Installation Guide*
- ◆ *Unisphere for VMAX Product Guide*
- ◆ These release notes

Installation

Detailed installation and upgrade procedures are provided in the *Unisphere for VMAX Installation Guide*.

Online help is available when installing from the command line by entering -?.

Note: The host system must have connectivity to one or more Symmetrix systems to add users and set permissions in Unisphere.

Before you begin

Before installing Unisphere on a local Linux 64-bit host, you must do the following:

1. Set the event and statistics daemons to autostart using the following commands:

```
stordaeomon install storevntd -autostart
stordaeomon install storstopd -autostart
```

2. Start the same daemons using the following commands:

```
stordaeomon start storstopd  
stordaeomon start storevntd
```

General Installation procedure

The general installation strategy follows:

1. Before installing, read these release notes and verify your operating system is supported by Unisphere.
2. Download and install the software from the Online Support website. For a first install, use the procedures detailed in the *EMC Unisphere for VMAX Installation Guide*.

Note: Before launching a Unisphere client, you must enter the name of the SMAS server (`http://ServerName:PortNum`) in your browser pop-up blocker. Or disable pop-up blockers on your client browser.

3. Once you have installed the software on your host system, your access will be confined to the Base component functionality and any other functionality that you may have licensed with a previous installation. To gain access to other component task areas you have purchased, you must register (enable) licenses. For more information, see *Understanding licenses* and *Installing licenses* in the Unisphere help.

Troubleshooting and getting help

When experiencing difficulties with your host and connected storage environment, be sure to examine “[Known problems and limitations](#)” on page 10 and “[Technical notes](#)” on page 16 to see if your difficulty is a known problem recognized by EMC.

Some functions described in these release notes and/or in the Unisphere for VMAX documentation set may not be supported by all versions of Enginuity or Unisphere for VMAX in use.

To ensure your host operating system is supported, check all specifications and limitations defined in E-Lab Interoperability Navigator, which can be reached at:

<https://elabnavigator.EMC.com>

Examine the Symmetrix system you are managing, noting its version of the Symmetrix Enginuity operating environment. Correlate Enginuity feature behaviors and problems while referencing parameters and limitations. If a Unisphere for VMAX feature does not function properly, or does not function as described in the Unisphere for VMAX documentation, contact the EMC Customer Support Center for assistance.

Where to get help

EMC support, product, and licensing information can be obtained on EMC Online Support as described next.

Note: To open a service request through EMC Online Support, you must have a valid support agreement. Contact your EMC sales representative for details about obtaining a valid support agreement or to answer any questions about your account.

Product information

For documentation, release notes, software updates, or for information about EMC products, licensing, and service, go to EMC Online Support (registration required) at:

<https://support.EMC.com>

Technical support

EMC offers a variety of support options.

Support by Product — EMC offers consolidated, product-specific information on the Web at:

<https://support.EMC.com>

The Support by Product web pages offer quick links to Documentation, White Papers, Advisories (such as frequently use Knowledgebase articles), and Downloads, as well as more dynamic content, such as presentations, discussion, relevant Customer Support Forum entries, and a link to EMC Live Chat.

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