



RELEASE NOTES

EMC® Solutions Enabler

Version 7.0

Release Notes

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Rev A01

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This A01 version includes the new features, fixes, and restrictions for Solutions Enabler V7.0.

These release notes describes the Solutions Enabler V7.0 features, fixes, any known functionality restrictions, and performance issues that may exist with this version of Solutions Enabler and your specific storage environment.

Before proceeding with any installation, be sure to read these release notes:

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Product description

The EMC® Solutions Enabler kit is the software that provides your host with the Symmetrix® Command Line Interface (SYMCLI), including the SYMAPI and CLARAPI shared libraries. SYMCLI is a comprehensive command set for managing your storage environment. SYMCLI can be used in many platforms, as defined in E-Lab™ Interoperability Navigator located at:

<http://elabnavigator.EMC.com>

The SYMCLI is used in single command line entries and scripts to monitor device configuration and status, and perform control operations on devices and data objects within a storage system. It is also used to map host applications to file systems and database objects toward the management of your storage environment.

The SYMCLI commands provide a full spectrum of storage management functionality that exploits the features of the Enginuity™ operating environment for Symmetrix. Solutions Enabler supports the following storage management tasks:

- ◆ Base monitoring and management of storage arrays, devices, and components
- ◆ Access Control, user authorization, device masking
- ◆ Business continuance, data replication/backup availability
- ◆ Configuration change
- ◆ Storage performance
- ◆ Storage Resource Management (SRM)

Refer to *EMC Solutions Enabler Installation Guide* for specific Solutions Enabler component functionality.

More recent versions of Solutions Enabler may be available; refer to the EMC Powerlink® website for updates:

<http://Powerlink.EMC.com>

New features and changes

This section highlights the new features and support updates with the EMC Solutions Enabler V7.0 release. For information on previously released Solutions Enabler features, refer to the corresponding release notes located on the EMC Powerlink website at:

<http://Powerlink.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 maintenance release, refer to “Fixed problems” on page 18.

EMC Symmetrix V-Max Series with Enginuity 5874 support

In addition to the current Enginuity levels supported for the Symmetrix DMX models, Solutions Enabler V7.0 supports the EMC Symmetrix V-Max™ Series with Enginuity version 5874.

Support announcements

EMC announces the End of Service Life (EOSL) dates for the versions of Solutions Enabler listed in Table 1. If you are running these or earlier product versions, EMC recommends that you upgrade to the current version as soon as possible.

Table 1 Solutions Enabler version EOSL dates (page 1 of 2)

Solutions Enabler version	GA date	EOSL date
6.4.3	November 2007	September 2010
6.4.2	August 2007	September 2010
6.4.1	April 2007	September 2010
6.4	March 2007	September 2010
6.3.2.20	February 2007	December 2009
6.3	September 2006	December 2009

Table 1 Solutions Enabler version EOSL dates (page 2 of 2)

Solutions Enabler version	GA date	EOSL date
6.2.2	October 2006	September 2009
6.2.1	June 2006	September 2009
6.2	March 2006	September 2009
6.0.3	January 2006	March 2009
6.0.2	August 2005	March 2009
6.0.1	May 2005	March 2009
6.0	February 2005	March 2009

You can find current information about the release dates and end of service dates (if applicable) for other EMC products, including Enginuity, on Powerlink.

- ◆ The monitoring kits are no longer available. However, you can achieve similar results through the Access Control feature, described in the *EMC Solutions Enabler Symmetrix Array Management CLI Product Guide*.
- ◆ Solutions Enabler V7.0 no longer supports Enginuity 5670 or Enginuity 5568. Solutions Enabler supports a minimum Enginuity 5671.
- ◆ The Storage Resource Management (SRM) component no longer supports the following:

Operating system:

- OSF/1 (all versions)

Databases:

- UDB (all versions)
- Informix (all versions)
- Sybase 12
- Sybase 12.5 (HP-UX only - will continue to support Sybase) 12.5 on SunOS

File systems/Volume managers:

- VxVM v3.4 and v3.5
- VxFS v3.4 and v3.5
- ◆ PowerPath consistency groups are no longer supported in Solutions Enabler V7.0. It is recommended that you use MSC consistency groups or RDF consistency groups.

New features

Table 2 lists the new features added to the following Solutions Enabler V7.0 components:

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Component	Feature	Description
Base	client/server communication sessions SECURE	In Solutions Enabler V7.0 the default for client/server communication sessions is SECURE. This means that client and server will try to communicate in a secure manner. If they can not communicate in a secure manner, communication will fail. For all platforms that supports secure communication, this change will not be a problem. If your environment contains platforms that do not support secure communications, then configuration changes can be made to allow these platforms to communicate with platforms that do support secure communications. For the server that is running on a platform that supports secure communications, the <code>security_level</code> option would be changed to <code>ANY</code> in the <code>daemon_options</code> file. For clients that are running on a platform that supports secure communications, you must modify the line in the <code>netcnfg</code> file that specifies the server host that does not support secure communications. In this case, the <code>security_level</code> option needs to be changed to <code>ANY</code>. For details on how to make this change, refer to <i>EMC Solutions Enabler Installation Guide, V7.0</i>.

Table 2 Solutions Enabler V7.0 (page 2 of 13)

Component	Feature	Description
Base (con't)	Support for listing host names in Open SSL certificate	The <code>list</code> command has been added to <code>manage_server_cert.bat</code> and <code>manage_server_cert.sh</code>. This command allows the listing of the host names in the OpenSSL certificate. The <code>list</code> command will list the host names in the certificate, <code>symapisrv_cert.pem</code>, that was created during a Solutions Enabler installation. If an additional argument is provided, the command will take this as a file name of a certificate to be listed. This can be used to list a customer replacement certificate. For example, from a command prompt on Windows go to the following directory and run this command : <pre>C:\Program Files\EMC\SYMCLI\bin\manage_server_cert.bat list</pre> A list of the machine host names returns. On UNIX or Linux, go to the following directory and run this command : <pre>/usr/storapi/bin/manage_server_cert.sh list</pre> A list of the machine host names returns.

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Component	Feature	Description
Base (con't)	SYMAPI database changes	The SYMAPI database (<code>symapi_db.bin</code>) uses a new format. Solution Enabler V7.0 can read a database written by an earlier version of Solutions Enabler; however, an earlier version of Solutions Enabler cannot read a database written in V7.0. When Solutions Enabler V7.0 writes to a previous version of the database, it will re-write it using the new format, thereby making it unreadable to earlier versions of Solutions Enabler. Earlier versions of Solutions Enabler will receive the following error when they attempt to read a V7.0 database: <pre>SymInit failed with code 668 (SYMAPI_C_DB_FILE_TOO_NEW). The DB file cannot be used because it was created by a newer version of SYMAPI than this one.</pre> Access to the SYMAPI database is now controlled with a lock on a lock file (<code>symapi_db.bin_xlock</code>) associated with the database. Earlier versions of Solutions Enabler used semaphores to serialize access to the database file. If you backup the <code>symapi_db.bin</code> file, you should backup this lock file the same way. The z/OS SYMAPI server no longer supports a z/OS style dataset for the SYMAPI database. The SYM\$DB DD statement is therefore no longer supported. In this and subsequent releases, the SYMAPI database must reside in the USS filesystem. This is a result of changes made to the internal structure of the database. If you have an existing database in USS, and the SYMAPI Base directory is the same for the Solutions Enabler install, no additional installation effort is required. If you have an existing database in a z/OS dataset which contains definitions that you want to retain, do the following to transfer the database to the USS filesystem: 1. Use the OVMS command to enter the USS filesystem and change directory to the location <code>[SYMAPI_Base_Dir]/db</code>. 2. Start an ftp session to the host you are on and, using binary transfer, get the z/OS SYMAPI database dataset. 3. Exit ftp and rename the transferred file to <code>symapi_db.bin</code>.
	Support for 64-bit counters on <code>symstat</code>	When using the Solutions Enabler V7.0 <code>symstat</code> command against Symmetrix arrays running Enginuity 5874, some device and director output fields have been changed to support 64-bit counters. You can return data as seen in earlier versions by running in compatibility mode.
	Access Control: Prevent removal of current access pin	Solutions Enabler V7.0 prevents the Access Control user access ID associated with the current access pin in use from being moved or removed. The following message will be displayed: <code>Cannot remove or move current user accid.</code>

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Component	Feature	Description
Base (con't)	SCSI-3 device reservations	The <code>-pgr</code> option has been added to the <code>symdev</code> command to return the WWN and reservation key of Symmetrix devices that have SCSI-3 persistent group reservations.
	VMware virtual disk mapping support	Solution Enabler can now resolve all virtual disks that have only one Symmetrix device in the VMware datastore (supported with ESX 3.5 and higher) once configured using <code>symcfg</code> authorization.
	Target mapping information support in <code>syminq</code>	The <code>syminq</code> command returns target mapping information when the <code>-mapinfo</code> option is specified. When the <code>syminq -mapinfo</code> command is called, the physical device name, HBA port WWN, and target port WWN is output for each host device.
	Change in lock release behavior	On an array running Enginuity 5874, if lock 15 is held by the configuration server, the SYMCLI will not allow the user to abort the configuration change session. Instead, the command will fail with a message that identifies the lock owner. Users can then use <code>symconfigure abort</code> command to abort the session. Therefore, when Solutions Enabler 7.0 is run against an array running Enginuity 5874, the <code>symcfg release</code> command determines the lock owner and releases the lock if held by an RDF control operation, or if held by the configuration change server, the SYMCLI will block the user command and print a failure message that identifies the lock owner. The lock owner can be a configuration change session, a migrate session, or an internal change. Abort the session using the new <code>symconfigure abort -session_id</code> option. If the configuration session has reached the point of no return, the abort will be denied.
	Support for 128 directors	With Solutions Enabler V7.0 and Symmetrix Enginuity version 5874, up to 128 directors are supported. The SYMCLI supports directors from 1A to 16H.
	Virtualizing the RAID architecture	Solutions Enabler has virtualized the RAID architecture so that RAID 1 and RAID 5 protection mechanisms have been virtualized behind the Symmetrix mirror positions, as RAID 6 was in Enginuity 5772 on Symmetrix DMX arrays.
Configuration Management	Concurrent provisioning	Up to four concurrent configuration change sessions are allowed to run at the same time, when they are non-conflicting. This means that multiple parallel configuration change sessions can run at the same time as long as the changes do not include any conflicts on the following: • Device back-end port • Device front-end port • Device Because up to four sessions can run at the same time, a <code>-session_id</code> has been added to provide easy management of sessions.

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Component	Feature	Description
Configuration Management (con't)	Create device enhancement	The syntax for the <code>create dev</code> command now allows users to specify the ports to which new devices are mapped, and also to turn on device attributes.
	All protection types allowed for DATA Devices	With Solutions Enabler V7.0 and Enginuity 5874, all blocks on the protection types for DATA devices have been lifted. In Solutions Enabler V7.0, DATA devices can have any protection.
	New device types	The following device types have been added in Solutions Enabler V7.0: • 2-WAY-DRV-MIR • DLDEV • RDF1+DLDEV • RDF2+DLDEV • RDF21+DLDEV
	Symmetrix attributes not supported on Enginuity 5874	The following Solutions Enabler Symmetrix attributes are not supported on arrays running Enginuity 5874: • <code>dynamic_rdf</code> • <code>concurrent_rdf</code> • <code>dynamic_concurrent_rdf</code> • <code>max_hypers_per_disk</code> • <code>spare_in_mirror4</code> • <code>fba_multi_access_cache</code> • <code>hot_swap_policy</code> Note: The <code>concurrent_rdf</code> , <code>dynamic_rdf</code> , and <code>dynamic_concurrent_rdf</code> settings are now enabled by default and therefore do not need to be set.
	Port attributes not supported on Enginuity 5874	The following Solutions Enabler port attributes are not supported on arrays running Enginuity 5874: • <code>HP3000_Mode</code> • <code>Sequent</code> • <code>Siemens</code> • <code>Sunapee</code> • <code>VCM_State</code>
	Striped metas of unequal size blocked	With Solutions Enabler V7.0, the <code>symconfigure</code> prevents the creation of striped metas, or adding members to an existing striped meta, if this leads to a striped meta configuration where the members have unequal sizes. This prevents users from creating striped metas of unequal sizes, which loses space. In addition, meta expansion with protection is not allowed.

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Component	Feature	Description
Configuration Management (con't)	Support for setting all DSE pool options in one command file	Prior to Solutions Enabler V.70, the DSE threshold had to be set in a separate command file from the other DSE options. With Solutions Enabler V.70, you can now set all DSE option in a single configuration change command file as long as the threshold setting is the first command listed in the file.
	Drop support for <code>invalidate = NONE</code> option	The <code>symconfigure add rdf mirror</code> and <code>symconfigure convert dev</code> commands no longer support using the <code>invalidate = NONE</code> option. Allowable values are R1 (invalidate the source) or R2 (invalidate the target).
	Meta reconfiguration change	The <code>symconfigure</code> command will no longer allow meta reconfiguration — removing devices and then adding or removing BCV attributes (if the device is BCV or STD which has a BCV relationship). The only two BCV states where those operations are allowed is <code>Never Establish Or Split No Inc.</code> If a relationship is in the <code>Split Bfr Sync Or Split Bfr Restore</code> state, you must perform following steps before performing a <code>symconfigure</code> operation: 1. Full establish or full restore respectively. 2. Wait until synchronization completes. 3. Split the BCV. 4. Cancel the BCV. Then proceed with the <code>symconfigure</code> operation.
Device Masking	Autoprovisioning Groups	Solutions Enabler V7.0 introduces an easier, faster way to provision storage on Symmetrix arrays running Enginuity 5874. Autoprovisioning Groups allow storage administrators to create groups of host initiators, front-end ports, and logical devices. These groups are then associated to form a masking view, from which all controls are managed. Using the <code>symaccess</code> command, you can create a group of devices, a group of director ports, a group of host initiators, and with one command, associate them in what is called a masking view. Once a masking view exists, devices, ports, and initiators can be easily added to or removed from their respective groups. This feature reduces the number of commands needed for masking devices, and allows for easy management of the masking view. There is a new port flag, <code>ACLX</code> , for Autoprovisioning Groups.
	Device Masking alias enhancement	For DMX arrays running Enginuity 5773 and earlier, Solutions Enabler 7.0 provides the <code>-host</code> option to allow the host alias name to be used instead of the initiator types (<code>wwn</code> , <code>alias</code> , or <code>iscsi</code>). In addition, <code>ALL</code> has been added as a value to the <code>-port</code> and <code>-director</code> options. These additions greatly reduce the number of commands required to mask devices.

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Component	Feature	Description
Installation	validate host environment configuration settings	Solutions Enabler now includes a utility for validating your host environment configuration settings against those recommended for Solutions Enabler. The Symmetrix Software ConfigChecker (Symm SW ConfigChecker) utility retrieves information on the following settings, and then generates a report that you can save in XML, HTML, or text: - Database versions: - Oracle - Sybase - MSSQL - Symmetrix Enginuity version - Veritas Volume Manager version - Free space on the Symmetrix Performance Analyzer (SPA) installed partition - Operating system parameters, including semaphore count Symm SW ConfigChecker is a component of the Solutions Enabler runtime kit for the following operating systems: - Windows - x86 - Solaris - Sparc - Linux - x86 - HP-UX - PA-RISC
Migration	Enhanced Virtual LUN Technology	Enhanced Virtual LUN Technology, using Solutions Enabler <code>symmigrate</code> command allows storage administrators to quickly move an application's data to other storage within the same array. A migration can change the protection level and disk type of FBA, CKD, and iSeries Symmetrix devices. A migration can use the storage of existing devices that do not contain live data or unconfigured disk space. Virtual LUN migration is from source devices to equally-sized target devices, or disks with free space equal to the source devices. A migration will not disrupt hosts or internal applications. In addition, using Virtual LUN Technology does not disrupt the existing local and remote replication.

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Component	Feature	Description
Open Replicator	Open Replicator using VDEVs	Open Replicator has the capability to support copy operations for a cold push session from a Virtual Device (VDEV). To accomplish this, Open Replicator works in conjunction with TimeFinder/Snap operations by copying data from an existing Snap session. This feature provides an alternative to hot copying, where all mapped directors must participate in the session. In a cold push session from a VDEV, the VDEV is required to be mapped to at least one director, and at least one of the directors, which the device is mapped is required to be zoned to the remote device. Note: This functionality requires Enginuity version 5874 and a TimeFinder/Snap license in addition to the Open Replicator/DM license. To begin, a snapshot of the standard device data is created on a VDEV in a TimeFinder/Snap session. The VDEV is then used as the control device in the Open Replicator copy session. The directors to which the control device are mapped are not required to be zoned to the remote device. Only the directors to which the VDEV are mapped are required to adhere to the zoning rules for Open Replicator.
	symsan enhancement	The <code>symsan list</code> command used to list all director and port information for a specific CLARiiON by WWN and Symmetrix information for a specific director and port now includes a thin device indicator to indicate that a remote device is a thin device and a Symmetrix indicator to indicate that the remote device is a Symmetrix device.
	Hot pull operations	With Enginuity 5874, Open Replicator now allows a hot-pull operation to an SRDF R1 device that is Read/Write (RW) on the link and allows you to resume the R1->R2 data propagation if the Open Replicator hot-pull operation to the R1 is in progress.
	AS400 device support	With Solutions Enabler V7.0 and Symmetrix Enginuity version 5874, Open Replicator now supports <code>symrcopy</code> and <code>symsan</code> commands for AS400 devices as long as the remote device is a Symmetrix device.
SRDF Family	Support for 250 RDF groups	With Solutions Enabler V7.0 and Symmetrix Enginuity version 5874, up to 250 RDF groups can now be defined and a maximum of 64 RDF groups are supported per RDF director. Previously with Enginuity 5772 and 5773, only 128 of the 250 RDF groups could be defined and a maximum of 32 RDF groups per RDF director.

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Component	Feature	Description
SRDF Family (con't)	Extended Distance Protection (EDP)	Enginuity 5874 supports SRDF/Extended Distance Protection (SRDF/EDP). The purpose of EDP is to streamline a Cascaded RDF linkage out to the remote site with a direct (diskless) connection. In a cascaded EDP environment, the Cascaded R21 devices are designated as diskless devices. Diskless cascaded RDF support allows replication between the source (site A) and remote target (site C) without the need for disks or replication at the middle Symmetrix (site B). In comparison, a standard Cascaded RDF device in a Symmetrix array at the middle site (B), referred to as an R21 device, assumes a dual role of both an R1 and an R2 simultaneously in a mirror relationship to the local site (A) and the remote site (C). In this standard three site cascaded environment, a regular R21 disk device has its own local mirrors so there are three full copies of data, one at each of the three sites. However with EDP, a diskless R21 device at the middle site has no local mirrors. As it is in the middle Symmetrix at site B of the total RDF link to the remote target site, there are only two full copies of data, one on the source R1 disk device and one on the remote target R2 disk at site C device. The <i>EMC Solutions Enabler Symmetrix SRDF CLI Product Guide</i> provides more information about SRDF/EDP.
	SRDF hop2 controls	The SRDF <code>-hop2</code> control option is used to control SRDF devices that are 2 hops, or SRDF links, away. Beginning with Solutions Enabler V7.0, the <code>-hop2</code> control option can be used to control an RDF relationship that is two hops away when the concurrent RDF device that is one hop away is an R11, R21, or R22 device. The <i>EMC Solutions Enabler Symmetrix SRDF CLI Product Guide</i> provides more information about SRDF Hop 2 controls for concurrent and Cascaded SRDF devices.
	Star with an R22 site	With Enginuity 5874 and Solutions Enabler V7.0, Star configurations with concurrent R2 RDF sites are possible. Similar to concurrent R1 devices (referred to as R11 devices), concurrent R2 devices are referred to as R22 devices. R22 devices are based on a new concurrent R2 feature that allows an R2 device to have two RDF mirrors. Each R2 mirror is paired with a different R1 mirror, and only one of the R2 mirrors can be RW on the link at a time. The primary intended use for R22 devices is to simplify failover situations in Star configurations and to improve the Star environment resiliency. The use of R22 devices in a Star environment significantly reduces the amount of steps involved in some of the long running commands (such as <code>reconfigure</code>, <code>switch</code>, <code>connect</code>), thus enabling the command sequences to finish quicker. While designed primarily for SRDF/Star, R22 devices can be used for both concurrent and cascaded operations. The <i>EMC Solutions Enabler Symmetrix SRDF CLI Product Guide</i> provides more information about R22 devices for concurrent and cascaded operations.

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Component	Feature	Description
SRDF Family (con't)	SRDF consistency exemption	With Solutions Enabler V7.0 and Enginuity 5874, the consistency exempt option (<code>-cons_exempt</code>) provides the ability to dynamically add and remove device pairs from an active SRDF/A session without affecting the state of the session, or the reporting of RDF pair states for devices that are not the target of the operation. Prior to Solutions Enabler V7.0, the SRDF/A session had to be deactivated in order to add or remove device pairs. The consistency exempt option is provided for an SRDF/A environment to indicate that the devices should be temporarily considered exempt from the consistency requirements of the group. This allows the group to be dynamically expanded or decreased without deactivating the SRDF/A session. When adding or removing device pairs in an active session, devices are placed in a consistency exempt state and are excluded from the group's consistency check. The consistency exempt state will automatically be removed after the devices have been resumed and fully synchronized, and two full cycle switches have occurred, or they have been removed from the group. The <code>-cons_exempt</code> option is used with the <code>createpair</code>, <code>movepair</code>, and <code>suspend</code> commands.
	Dynamic RDF controls for composite groups	With Solutions Enabler V7.0, composite group operations using the <code>-cg</code> option have been enhanced to include operations with the <code>deletepair</code>, <code>half_deletepair</code>, <code>swap</code>, <code>half_swap</code>, and <code>failover</code> commands. Previously these operations were only allowed from a device group using the <code>-g</code> option. Composite group operations are now allowed on the following device lists: STD, BCV, RBCV, BRBCV, second hop STD, and second hop BCV. Note: Actions that change the device configuration on a subset of devices in any device list will cause the composite group to become invalid.
	symrdf list all option	With Solutions Enabler V7.0, the <code>symrdf list</code> command has been updated with the <code>-all</code> option to display both mirrors for concurrent RDF devices.
	SRDF/A consistency indicator	With Solutions Enabler V7.0 and Enginuity 5874, the <code>symrdf query</code> command output has been enhanced to include an SRDF/A consistency indicator to indicate whether the R1 and R2 data is consistent. Possible display values are TRUE and FALSE.
	Mirror SRDF/S consistency	With Solutions Enabler V7.0 and Enginuity 5874, support has been added to allow concurrent R1 devices to have 2 mirrors participating in different consistency groups to have SRDF/S consistency protection enabled.

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Component	Feature	Description
SRDF Family (con't)	Behavior change to REFRESH operation	A REFRESH R1 operation will be blocked if the device that contains the R2 mirror has local invalid tracks. Use of the <code>-force</code> flag will allow the operation to proceed. A REFRESH R2 operation will be blocked if the device that contains the R1 mirror has local invalid tracks. Use of the <code>-force</code> flag will allow the operation to proceed. When a concurrent diskless device is checked for local invalid tracks (for example, a DLR11, DLR21, or DLR22) the RDF mirror invalid track count will be returned as <i>other</i> since a diskless device does not technically have any local mirrors that can have invalid tracks.
	Link status suspend/resume timestamp	With Solutions Enabler V7.0 and Enginuity 5874, support has been added to show SRDF link status changes from Read/Write to Not Ready and from Not Ready to Read/Write. Suspend/resume Link status information is displayed in the RDF Information output section for the <code>symdev</code>, <code>sympd</code>, and <code>symlid show</code> commands. The timestamp is relative to the clock on the host where the command was issued and is reported for each RDF mirror on both R1 and R2 mirrors. Note: This timestamp is not associated with the R2 data for SRDF/A.
	Star automatic definition file distribution	Prior to V7.0 with Solutions Enabler, you had to manually distribute the Star definition files between sites. With the new <code>SYMCLI_STAR_AUTO_DISTRIBUTE_INTERNAL_FILE</code> option file setting set to Yes, the definition distributes to all sites automatically.
SRM	VMware File System (VMFS) on virtual machines	With Solutions Enabler V7.0, SRM commands support File System/Logical Volume mapping for the virtual disk on the virtual machines. VMware ESX Server V3.5 or above are supported. The <i>EMC Solutions Enabler Symmetrix Array Management CLI Product Guide</i> provides information for setting up VMware virtual disk mapping support.
	VMware and AIX VIO virtualized clients supported	VMware and AIX VIO virtualized clients support has been added to Solutions Enabler. The feature allows <code>symrslv</code> to resolve array devices behind the virtual disk. The host, with HBAs and Symmetrix array, creates virtualized environments, or guests. The host pools together disks and then can carve out virtual disks for the guests. Now, Solutions Enabler can identify Symmetrix devices behind the virtual disk.
	SRM support additions	• Support for Oracle 11g, including EMC Double Checksum • Support for HP-UX persistent device names VxFS/VxVM 4.1, HP LVM, HFS • Support for Windows 2008 Dynamic Disks

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Component	Feature	Description
TimeFinder family	Command scope	The scope of a TimeFinder clone and snap command determines what devices are to be considered for the operation. Scope is defined as the set of devices in a device group (DG) or composite group (CG), or the set of devices explicitly specified using the DG or CG LDEV syntax. Command scope limits the device selection process to only consider the source devices and sessions with target devices contained within the DG or CG when considering if the source device is already in the desired state. When limiting control commands with <code>COMMAND SCOPE</code> mode enabled, the source device selection criteria only considers pairings with potential targets that are within the scope of the command contained in the DG or CG for group commands or explicitly contained within a device list or logical device list. Return codes such as <code>ALREADY IN BCV STATE</code> will not occur as the result of a session whose target is outside of the scope of the devices that are the target of the command.
	Change to default attributes for clone sessions	In prior releases of Solution Enabler, clone sessions created without additional parameters were created as non-differential, nocopy sessions. Beginning with Solution Enabler V7.0, clone sessions are now created as differential, background copy sessions. This change applies to all Enginuity levels. Additional flags (<code>-nodifferential</code> and <code>-nocopy</code>) have been added to the <code>SYMCLI symclone create</code> command to enable the creation of nocopy and non-differential sessions.
	Replication support for different protection types	Solutions Enabler V7.0 with Enginuity 5874 supports local replication (TimeFinder emulation, clones, and snaps) on thin devices bound to data pools of all legal protection types.
	Clone from clone target	In environments running Enginuity 5874 with Solutions Enabler V7.0, the target device of a clone session can be used as the source for one or more clone sessions. Similar to a cascaded operation, this relationship allows a clone operation with a device that is already involved in a clone operation without ending the first clone session. Refer to the <i>EMC Solutions Enabler Symmetrix TimeFinder Family CLI Product Guide</i> for details.
	Snap recreate	Snap sessions can now be recreated on an existing virtual device (VDEV) in preparation to activate a new point-in-time image. <code>Snap recreate</code> is only valid when issued against sessions that have been previously activated. Since the <code>recreate</code> operation replaces the previous point-in-time image with a new one, the used tracks in the SAVE devices that were associated with the previous session are freed during the processing of this command. <code>Snap recreate</code> is available with Enginuity 5874 and later. Refer to the <i>EMC Solutions Enabler Symmetrix TimeFinder Family CLI Product Guide</i> for details.

Table 2 Solutions Enabler V7.0 (page 13 of 13)

Component	Feature	Description
TimeFinder family (con't)	RDF group number required for remote operations	In some instances prior to Solutions Enabler V7.0, a remote operation could be performed that resulted in a source device being selected multiple times through different paths to the remote source target. To prevent an unambiguous selection of a remote source device, operations that were previously allowed may be blocked. Users are now required to specify the RDF group number indicating the path for the target device to be acted on. Specifying the RDF group number eliminates an unintentional selection of a source device as the target of two operations.
Virtual Provisioning™	Disable devices that have allocated tracks	On Enginuity 5874, you can disable devices that have allocated tracks, as long as number of the devices does not exceed twenty percent of the total number of enabled devices (disabled devices are not counted as part of devices in the pool).

Fixed problems

This section lists problems fixed in the Solutions Enabler V7.0. Details about the issues fixed can be found online in EMC Issue Tracker. EMC Issue Tracker offers online access for up-to-date product issue information. Product issues can be searched using a keyword, issue number, product feature, or product version. Issue Tracker can be accessed on the EMC Powerlink™ website at:

<http://Powerlink.EMC.com>

Table 3 Solutions Enabler V7.0 fixed problems (page 1 of 9)

Issue	Feature type	Found in version	Problem summary/Symptom	Fix summary
17629144	Base Functionality	6.4.0.0	The symling command does not pickup the serial number of the HP hardware storage array.	A fix has been made to Solutions Enabler to properly display the serial number of the HP hardware arrays.
21011534	Base Functionality	6.4.2.0	When selecting the kbytes read per second or kbytes written per second statistic, DMX-3 displays ranges in the 1.8E7 range (spikes).	A fix has been made to Solutions Enabler to return 64-bit counters and therefore prevent the overflow that created the spike.
21184900	Base Functionality	6.4.2.0	Instant splits are taking longer than 10 seconds causing Replication Manager jobs to fail.	A fix has been made to the storapid daemon to detect devices that are under cluster control, then implicitly avoid using them as gatekeepers.

Table 3 Solutions Enabler V7.0 fixed problems (page 2 of 9)

Issue	Feature type	Found in version	Problem summary/Symptom	Fix summary
21664536	Base Functionality	6.4.1.0	Following an IO error on a path, and although there are multiple paths each with multiple gatekeepers per path, Solutions Enabler was unable to get access to a gatekeeper. This resulted in a VCS timeout and a persistent lock on SYMAPI database.	When the storapid daemon detects that a gatekeeper open hangs, it will temporarily avoid all gatekeepers on the same path (path is defined as the same controller, director, and port) to facilitate failing-over to a gatekeeper on a different path. If no gatekeepers can be found on different paths, or all paths have been temporarily avoided, then storapid attempts to open gatekeepers on paths that have resulted in hangs. The abandoned_jobs_limit option now specifies the maximum gatekeepers to open attempts per path, per Symmetrix array.
21831054	Base Functionality	6.4.3.0	The symcfg list -dir # -address command returns a negative value for the available addresses.	A fix has been made to Solutions Enabler to resolve the duplicate mappings.
21833674	Base Functionality	6.4.2.0	The symcfg -sid xxx list -env_data fails with the error: The configuration server failed to process the request.	A fix has been made to Solutions Enabler to ensure the allocated buffer is large enough to accommodate the requested modules.
22966002	Base Functionality	7.0.0.0	The TimeFinder/Exchange Integration Module fails immediately as a result of an error sending a Symmetrix system call on the Exchange server.	A fix has been made to Solutions Enabler to resolve this issue.
23189610	Base Functionality	6.4.3.0	Getting S0C4 abends when trying to use SMC and Solutions Enabler.	A fix has been made to Solutions Enabler to properly handle NULL QoS requests from Enginuity when no FA directors are found.
23872162	Base Functionality	6.5.1.0	The storevntd process shutdowns after creating and deleting CLARiiON storage group.	A fix has been made to the storevntd daemon to resolve this issue.

Table 3 Solutions Enabler V7.0 fixed problems (page 3 of 9)

Issue	Feature type	Found in version	Problem summary/Symptom	Fix summary
24117502	Base Functionality	6.5.0.0	The storstopd daemon fails after changing the default location.	A fix has been made to Solutions Enabler to support an alternate path for the storstopd daemon.
24148920	Base Functionality	6.5.1.0	After creating snapshots with big names (each of 64 character length), creating a snapview session for those snapshots and activating it, cannot show details on the Snap information for the CLARiiON LUN.	A fix has been made to Solutions Enabler to avoid the buffer overrun situation. Solutions Enabler release 6.5.1.6 also resolves this issue.
24148920	Base Functionality	6.5.2.0, 6.5.0.0	After creating snapshots with big names (each of 64 character length), creating a snapview session for those snapshots and activating it, cannot show details on the Snap information for the CLARiiON LUN.	A fix has been made to Solutions Enabler to avoid the buffer overrun situation. Solutions Enabler release 6.5.0.19 also resolves this issue.
24857504	Base Functionality	7.0.0	All Solutions Enabler commands appear to hang and are streaming 3B1C errors and syscall 8114 failure occurs.	A fix has been made to Solutions Enabler to resolve the issue with the storapid daemon.
26424196	Base Functionality	6.4.2.0	The symcfg -sid 1243 list -env_data displays a different timestamp compared to the service processor and inlines.	A fix has been made to Solutions Enabler to use the director's time so that the host time when the environmental data was collected displays. The displayed time will be between the current (host) time and a number of minutes before that based upon when the environmental data was actually sampled.
26695656	Base Functionality	6.5.1.0	The symacl command returns the following error when Access IDs are too long: One or more arguments are invalid.	A fix has been made to Solutions Enabler so that if an invalid value is detected during the PREPARE operation, a message will display that the value has exceeded maximum length.
27889334	Base Functionality	6.5.2.0	The symlmf command does not update license information or return an error.	A fix has been made to the Solutions Enabler symlmf command.

Table 3 Solutions Enabler V7.0 fixed problems (page 4 of 9)

Issue	Feature type	Found in version	Problem summary/Symptom	Fix summary
28068578	Base Functionality	6.5.2.0	The XML Output of symcfg list -fa # -p # -v command doesn't show OS2007 flag.	A fix has been made to Solutions Enabler to update the XML output of to show SCSI_Support1(OS2007) flag in both xml element and attribute formats.
28213762	Base Functionality	6.5.2.0	The symcfg list -RA ALL -port does not indicate cable connect, even though the RA's are online.	A fix has been made to Solutions Enabler to properly return the connection status.
28258682	Base Functionality	6.5.2.0	The READ/sec metric in DIR-FIBRE statistics in WLA and STP data is incorrectly displaying a value of zero.	A fix has been made to Solutions Enabler to resolve this issue.
28555600	Base Functionality	6.5.2.0	The symdev show command may encounter a core dump on Open Replicator devices.	A fix has been made to Solutions Enabler correctly check if devices names need to have leading zeroes added to the string.
28677916	Base Functionality	6.5.2.0	The storapid and storsrvd daemons abnormally shutdown and need to be manually restarted.	A fix has been made to a Solutions Enabler memory issue that was causing the daemons to shutdown.
300332SE	Base Functionality	6.5.3.0	Daemons installed for autostart on Linux/UNIX do not restart.	A fix has been made to Solutions Enabler to correctly set permissions on the /etc/init.d script for Linux/UNIX environments.
25902164	Configuration Manager	6.5.1.0	Symconfigure allows expansion of striped meta with larger-sized members.	A fix has been made to Solutions Enabler to resolve this issue.

Table 3 Solutions Enabler V7.0 fixed problems (page 5 of 9)

Issue	Feature type	Found in version	Problem summary/Symptom	Fix summary
26536162	Configuration Manager	6.0.0.0	Dissolved several meta devices to create new ones; these meta devices are source and target devices with established Clone sessions. After creating new metas, the error 5F3E is logged.	"A fix has been made to Solutions Enabler to add checks for the change types below to block users from performing the change if the device has a native TimeFinder or TimeFinder/Clone emulation session running: Adding/Removing BCV, Removing Meta Member, Adding meta member, Dissolving meta device, Forming meta device, Converting meta device, Deleting device.
27768320	Configuration Manager	6.0.0.0	Attempted to create a new striped meta device followed by adding a member using protection.	A fix has been made to Solutions Enabler to support the creation of meta and adding meta members with and without a protection type.
27799738	Configuration Manager	6.5.1.0	Cannot enable the scsi3_persist_reserv or rdb_cksum attribute on an RDF device.	A fix has been made to Solutions Enabler to remove the block for setting scsi3_persist_reserv and rdb_cksum attributes on RDF devices for Symmetrix arrays running Enginuity 5771 or lower.
282008SE	Configuration Manager	6.5.1.0	symconfigure set dev geometry should block a fba held device. It is blocked for this device for the incorrect reason.	A fix has been made to Solutions Enabler to resolve this issue.
24998868	Device Masking	6.5.1.0	symmask with -file option fails with an error message that one or more arguments are invalid.	A fix has been made to Solutions Enabler to resolve this issue.
25857646, 28229830	Device Masking	6.5.1.0	The symmaskdb show command returns the incorrect capacity for LUNs over 2TB.	A fix has been made to symmaskdb command to obtain the capacity the same way the symdev command does and calculate the capacity in MBs.

Table 3 Solutions Enabler V7.0 fixed problems (page 6 of 9)

Issue	Feature type	Found in version	Problem summary/Symptom	Fix summary
294624SE	Device Masking	6.5.2.0	Device Masking operations take longer than expected when there CLARiiON arrays in the environment.	A fix has been made to Solutions Enabler to improve the performance.
297723SE	Device Masking	6.5.2.0	Solutions Enabler returns the error: An internal error occurred during a SYMAPI operation. This can occur when the following command is called: symmask -nop -sid # -dir # -p # -iscsi IQN add devs DevName.	A fix has been made to add a new error and message when attempting to mask an Open Replicator device when the director is non-participating.
26442268	Documentation	6.5.2.0	Unable to start the storapid daemon in Linux environment.	The Solutions Enabler V7.0 Release Notes have been updated to include the statement: Solution Enabler running on x86_64 platforms require zlib and glibc i386 rpms. The storapid daemon requires the 32-bit shared objects glibc and libz. By default, x86_64 rpms will be installed, which hold the 32- and 64-bit shared objects (glibc & libz).
26386850	Installation	6.5.2.0	Using the z/OS Solutions Enabler installation, having assembler defaults of COMPAT(CASE,MACROCASE,SYSLIST) caused the USS directory /var/symapi to be converted to /VAR/SYMAPI (uppercase) which did not exist on the system.	A fix has been made to Solutions Enabler install to add NOCOMPAT to the assembler options in the ASMDFLT step of #07DFLTS job in the RIMLIB.
299940SE	Installation	6.5.2.0	The MSI Windows installer will not install to a non-default location.	A fix has been made to the Solutions Enabler Windows installer to allow user to install to non-default locations.
26653918	Open Replicator	6.5.2.0	The storage agent for Symmetrix core dumps.	A fix has been made to Solutions Enabler to resolve this issue.
28555600	Open Replicator	6.5.2.0	During a recreate session, the symrcopy -name command fails to update the session name.	The Solutions Enabler product has been fixed to not perform a fast discover when the session rename option is requested.

Table 3 Solutions Enabler V7.0 fixed problems (page 7 of 9)

Issue	Feature type	Found in version	Problem summary/Symptom	Fix summary
28350734	Other	6.4.3.0	Symrecover doesn't recover SRDF/A group out of SUSPENDED state.	A fix has been made to the Solutions Enabler symrecover command to correctly handle dropped SRDF/A sessions, re-establishing them and returning it to the CONSISTENT state.
304517SE	Other	6.5.3.0	Unable to return volume statistics from a CLARiiON array.	A fix to Solutions Enabler to ignore the feature not supported error if SNAP is not installed and allow the statistics request to complete.
25765954	SRDF Family	6.4.1.0	The SRDF full establish fails.	A fix has been made to Solutions Enabler to resolve this issue.
26181974	SRDF Family	6.5.2.22	Attempting a symmir incremental establish operation using some of the same devices that SRDF/AR results in the operation timing out after a long time.	A fix has been made to Solutions Enabler only wait for the state to reach non-split instead of waiting two hours before timing out.
28448924	SRDF Family	6.5.2.23	While running a switch operation in a SRDF/Star environment to SiteA after a halt at SiteB an ESX server attempted to access devices, which may result in errors and invalid tracks.	Fixed the code to always write disable and NOT READY the R2 devices at the new workload site before swapping the devices to R1 and RW devices at the end of switch operations.
28532252	SRDF Family	6.5.2.0	The symrdf query command returns an error when LdevNames are specified.	Solutions Enabler has been updated to work properly with devices on a Symmetrix array running a version of Enginuity 5671 or earlier. With this fix, the reported error is only returned when the -rdfa option is specified in the query command and none of the selected devices are SRDF/A-backed.

Table 3 Solutions Enabler V7.0 fixed problems (page 8 of 9)

Issue	Feature type	Found in version	Problem summary/Symptom	Fix summary
275948SE	SRDF Family	6.5.0.0	Memory address argument is invalid errors appear in the SYMAPI log every time a symrdf command is run. The command completes without problems, but this error is logged.	A fix has been made to Solutions Enabler to properly return this error when necessary.
275949SE	SRDF Family	6.5.0.0	Finding sporadic transient errors in the log file when running Solutions Enabler symrdf est -full command.	A fix has been made to Solutions Enabler to resolve this issue.
301321SE	SRDF Family	6.5.3.0	The symrdf addgrp command returns the error: The inlines command timed out.	A fix has been made to Solutions Enabler to handle this error gracefully.
21432130	SRM	6.4.2.0	The symvg command is showing N/A in several fields for MPIO device on Linux.	A fix has been made to Solutions Enabler to return the correct data for MPIO devices.
27887350	SRM	6.4.3.0	Some checksum extents appear to be unavailable in symchksum verify command, even though the symchksum enable command was succeeded for the extent.	A fix has been made to Solutions Enabler to resolve the output problem with the symchecksum verify command.
283365SE	SRM	6.5.2.0	Incorrect FS extents. There are two extents on two different devices and the symhostfs return only one, but the symmapLVShow returns both devices.	A fix has been made to Solutions Enabler to resolve this issue.
25839696	TimeFinder Family	6.5.1.0	The symdev show output for a BCV that was not established is displaying a current date/time for the time of last BCV action.	A fix has been made to Solutions Enabler to resolve this issue.
26043774	TimeFinder Family	6.5.1.0	The symsnap monitor fails on Solutions Enabler V6.4.x to 6.5.x.	A fix has been made to Solutions Enabler to report all SAVE devices on Symmetrix arrays running Enginuity 5670 as enabled. In addition, report poolname as N/A for SAVE devices on Symmetrix arrays running Enginuity 5670.
26130024	TimeFinder Family	6.5.1.0	"The TimeFinder incremental establish operation fails when the command prompt does not return.	A fix has been made to Solutions Enabler to resolve this issue. Solutions Enabler V6.5.2.6 also resolves this issue.

Table 3 Solutions Enabler V7.0 fixed problems (page 9 of 9)

Issue	Feature type	Found in version	Problem summary/Symptom	Fix summary
26130024	TimeFinder Family	6.5.2.0	"The TimeFinder incremental establish operation fails when the command prompt does not return.	A fix has been made to Solutions Enabler to resolve this issue. Solutions Enabler V6.5.2.6 also resolves this issue.
26498618	TimeFinder Family	6.5.1.0	SRDF/A in a multi-Symmetrix MSC environment did not cycle switch.	A fix has been made to Solutions Enabler to resolve this issue.
27851986	TimeFinder Family	6.5.2.0	Cannot issue an srdf swap operation against an SRDF pair that has an R1 clone source established to a target.	A fix has been made to the Solutions Enabler PAIRING_IN_PROG flag for emulation sessions so that when performing a swap, the operation will not be blocked when the BCV is in a syncinprog state with the STD device.
28011672	TimeFinder Family	6.5.1.0	BCV metamembers display as SplitBfrSync even after a full establish or split is issued.	A fix has been made to Solutions Enabler so that these devices will no longer show any TimeFinder sessions, or appear in symmir list command output.
28593590	TimeFinder Family	6.5.1.0	The symsnap create fails with SYMAPI_C_INV_LOCAL_MIRRORS for thin devices when it has invalid track counts on the M1 and M2.	A fix has been made to Solutions Enabler to load invalid data indicators from Symmetrix arrays running Engenuity 5773 even when there are no RAID5 or RAID6 devices configured."

Environment and system requirements

Refer to the *Solutions Enabler Installation Guide* for details on environment and system requirements.

Host systems and Enginuity support

Solutions Enabler runs on a wide range of operating systems and works with certain Symmetrix Enginuity versions. For detailed interoperability information, refer to the E-Lab Interoperability Navigator:

<http://elabnavigator.EMC.com>.

Known problems and limitations

This section identifies:

- ◆ Limitations to the functionality of this release
- ◆ Other issues, such as known performance limits under certain conditions

Functionality restrictions and limitations

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

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Note: Updated restrictions for Solutions Enabler V7.0 are indicated with a Y in the **Updated** column.

Table 4 Known problems and limitations (page 1 of 26)

Product	Update	Number	Description
Access Control	N	1100.01	Use of the Symmetrix Access Control feature requires the help of EMC Customer Service to initially set up your Symmetrix array. For more information, contact your EMC Representative and refer to the <i>EMC Solutions Enabler Symmetrix Array Management CLI Product Guide</i> .
	N	1100.02	Since host access IDs are tied to the host hardware, upgrading or changing hardware components might result in a change to the host access ID. If the host access ID changes, the host may be denied access, or assume a different set of privileges, if the default access ID is present. For more information, refer to "Access Control setup" on page 55. For more information about Access Control environments, refer to the <i>EMC Solutions Enabler Symmetrix Array Management CLI Product Guide</i>.
AIX-specific	N	200.01	When you power down or reboot an AIX host, it will no longer recognize your mapped BCV devices. To fix this problem, you must run a special BCV script (mkbcv). The following command procedure can be run to work around this problem: <pre>cd / ./inq.AIX more (look for no gaps in the numbers, ie.. rhdisk0, rhdisk1, rhdisk3... - rhdisk2 is missing) cd /usr/lpp/Symmetrix/bin ./mkbcv -a ALL cd / ./inq.AIX more (look for no gaps in the numbers, ie.. rhdisk0, rhdisk1, rhdisk2... - rhdisk2 is not missing)</pre> It is recommended to have <code>./mkbcv -a ALL</code> in your AIX boot procedures. The above mentioned inquiry and make files can be downloaded from the following EMC ftp locations: <pre>Hostname : ftp.emc.com Username : anonymous Directory: /pub/symm3000/inquiry/ File : inq.aix...[select file for your system here] Directory: /pub/symm3000/aix/ODM_DEFINITIONS/ File : mkbcv</pre>
	N	200.02	If you delete a PowerPath® pseudo device (hdiskpower) using <code>rmdevice -d</code>, and then add the native device into a composite group, the device will not persist when you reboot. Also, if you delete a <code>powerpath0</code> device, all of the non-visible composite group members become lost upon reboot. When you have to delete these devices, use: <pre>rmdevice -l</pre>

Table 4 Known problems and limitations (page 2 of 26)

Product	Update	Number	Description
AIX-specific (con't)	N	200.03	When performing certain dynamic SRDF operations, the R1/R2 inquiry bit settings might get swapped. Without re-scanning the AIX host to update the ODM configuration, the R1/R2 device definitions are not correct. If these devices are mapped to an AIX host, the ODM database may be left with stale data. Using ODM information, you get the incorrect device attributes and inquiry data. For instance, an R1 device will remain an R1 device node, but it really is an R2 device. SYMAPI software does direct SCSI inquiry to the devices and can still recognize the new device configuration. The same criteria holds true for configuration change operations where BCV or SRDF device attributes are being changed. The ODM configuration will not reflect the latest changes without device re-scanning on the AIX host. Even after a rescan on the AIX host, the former R1 devices will appear in the <i>defined</i> state and new device nodes for the R2 appear in the <i>available</i> state. It is recommended in this case to manually delete the <i>defined</i> devices.
	N	200.04	On AIX, when a CLARiiON device is accessed as part of an active volume group, or by another application, the device is blocked from any further I/O. As a result, the <code>syminq</code> command may report incorrect device serial numbers.
	Y	200.05	On AIX machines, SYMAPI operations may fail because the <code>storapid</code> or <code>storsrvd</code> daemons run out of memory. AIX has a limit on the amount of data that a process can allocate. Therefore, if the daemon is being used heavily, the daemon may run out of memory, even when there is enough physical memory available on the system. In such cases, the daemons executable can be modified to use a larger amount of memory by issuing the following set of commands: 1. Stop all Solutions Enabler services: <pre>stordaeon shutdown all -immediate</pre> 2. Run the <code>ldedit</code> command (this increases the default data allocation limit of an AIX process from 256 MB to 2GB). For <code>storapid</code> enter: <pre>/usr/ccs/bin/ldedit -bmaxdata:0x80000000</pre> <pre>/usr/symcli/daemons/storapid</pre> For <code>storsrvd</code> enter: <pre>/usr/ccs/bin/ldedit -bmaxdata:0x80000000</pre> <pre>/usr/symcli/daemons/storsrvd</pre> 3. Restart everything.
Base Management	N	500.01	The <code>sympd list -vm</code> command on an ESX Server 3.0.2 returns N/A for the VM device name. To correct this, enable the SPC-2 flag. This flag does not need to be enabled on ESX Server 3.5 and later.
	N	500.02	The device label/relabel feature using the <code>symlabel</code> command is restricted to Windows devices only.

Table 4 Known problems and limitations (page 3 of 26)

Product	Update	Number	Description
Base Management (con't)	N	500.03	The following are limitations when using a remote SYMAPI server: • SYMCLI command <code>symchg</code> is not supported. • When using the database mapping commands of SYMCLI (unless they are set on the client side), you must set Oracle variables <code>ORACLE_HOME</code> and <code>ORACLE_SID</code> for networked services on the server side. • SYMCLI command <code>symmir</code> with the instant split <code>-vxfs</code> and <code>-ppath</code> options are not supported in a client/server environment.
	N	500.04	For systems running Enginuity 5671 and later, the maximum number of logical devices per Symmetrix array has increased to 16,000 devices for 5671 and 64,000 devices for 5771 and later. As a result, the output format of <code>syminq</code> has changed. The device serial number format has been expanded to <code>SSNNNNNDP</code>. The port number (<i>P</i>) still shows the MSB for devices between 4 K and 8 K, but can now be ignored because of the expanded serial number format. To determine the correct port number in these cases, subtract 8 from the <i>P</i> field. <4 K device Device Serial Number: 1800014130 SymDevName: 014 Port: 0 >4 K, <8 K device Device Serial Number: 1801014138 SymDevName: 1014 Port: 0 >8 K device Device Serial Number: 1802014130 SymDevName: 2014 Port: 0
	N	500.05	When specifying a username and password within the <code>SYMCLI_RDB_CONNECT</code> environment variable, the user must supply a non-NULL string for both. Therefore, the username being supplied must have a non-NULL password associated with it.
	N	500.06	When creating a composite group, characters other than the alpha numeric characters should be avoided because it requires the use of quotes (" ") around group names at all times when performing operations on composite groups.
	N	500.07	While performing an online Enginuity update on a Symmetrix array (including a configuration change), the GNS group definitions stored on that Symmetrix array are unavailable. The groups will become visible again once the update completes.

Table 4 Known problems and limitations (page 4 of 26)

Product	Update	Number	Description
Base Management (con't)	N	500.08	When group names are duplicated across a GNS environment (GNS groups of the same name defined on different Symmetrix arrays), SYMAPI attempts to resolve the conflict by renaming the group with an extension to the duplicate group name (such as changing group <code>MyGroup</code> to <code>MyGroup0003</code>). When group names exceed 24 characters, it becomes difficult for SYMAPI to recover. Therefore, it is recommended that you limit GNS group names to less than 20 characters to avoid this issue.
	N	500.09	The GNS daemon can be configured using the <code>gns_remote_mirror</code> setting within the <code>daemon_options</code> file, to mirror local device groups to remote Symmetrix arrays. This remote mirroring will not be performed if the remote (via SRDF) Symmetrix is also directly connected to the local host. For example, if local Symmetrix S1 is SRDF-connected to Symmetrix S2 and S2 is also connected locally to the host, groups on S1 will not be mirrored to S2.
	N	500.10	When using the GNS daemon and the <code>gns_remote_mirror</code> capability, any groups defined as type RDF2 must not contain devices whose remote R1 mirrors are also BCVs.
	N	500.11	Running the <code>storapid</code> daemon makes it possible to allow non-privileged users (UNIX, non-Root; Windows, non-Administrator users) to execute SYMAPI applications. However, these users must be given proper access rights to the SYMAPI configuration database file. On UNIX, either read or read/write access to this file is required, depending on the types of operations you wish to allow the user to perform. For example, if the user will be making changes to the database file, such as in a discover operation or defining a SYMAPI group, the user would require read/write access. On Windows, read/write access to the file is required regardless of the type of operation being performed. For non-root or non-administrator users to be able to make use of the Solutions Enabler daemons, their names must be listed in the <code>.../config/daemon_users</code> file.
	N	500.12	When VCM is enabled, and all devices are unmasked (not visible) on a port, the <code>symsan</code> command still returns one record. This is because the SCSI specification states that LUN 0 must always respond to SCSI commands on a given port. In this case, the device will be marked Not Ready and may or may not correspond to a mapped device.
	N	500.13	Unconfigured (empty) disks do not list properly. When all devices on a disk are removed, the <code>syndisk list</code> command output still shows the disk as not empty. To fix this issue, delete the database (<code>symapi_db.bin</code>) and issue a <code>discover</code> command.
	N	500.14	Optimizer rollback will fail if the previous move left a physical disk empty (without hypervolumes). In the event that this happens, you will have to manually move the devices back, instead of using the rollback feature.

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Product	Update	Number	Description
Configuration Manager	N	1300.01	Before issuing a <code>symconfigure</code> command to Symmetrix arrays containing both open system and mainframe devices, you must verify that the mainframe Missing Interrupt Handler (MIH) period is set to at least 2 minutes.
	N	1300.02	A backward compatibility issue exists when adding metadevices on Enginuity 5772. Enginuity 5772 now supports both 3+1 and 7+1 RAID-5 devices in the Symmetrix array. As a result, Solutions Enabler now requires the membership count to be specified. In previous Enginuity versions, Solutions Enabler could determine the membership automatically. This information now has to be supplied.
	N	1300.05	You cannot convert a Parity RAID (RAID-S) type device to any other device configuration except unprotected.
	N	1300.06	When using the <code>symconfigure</code> command, SRDF changes require access to the service processors of the local and remote Symmetrix arrays that are being affected by the change. If the service processors are busy with other activities (such as running the Optimizer product), it may not be possible to complete the configuration changes. A symptom of this will be TIMEOUT error messages in the SYMAPI log file. Try to coordinate configuration changes between other activities on the service processor to avoid this conflict.
	N	1300.07	Before changing the IP address of a Gig-E front-end port with a configuration change operation, take the port offline.
	N	1300.08	RA groups and their device members must be in the correct state before a group swap can be performed. At the group level, SRDF/A and Link Domino cannot be enabled and the group cannot contain a mix of dynamic and static SRDF devices. At the device level: • R1/R2 devices must be the same size. • R1 devices cannot have multiple R2 devices. • There cannot be any active Open Replicator sessions. • Devices must be Not Ready, Write Disabled, or unmapped. • When R1 is being refreshed, the R2 cannot have any invalid tracks. • When R2 is being refreshed, the R1 cannot have any invalid tracks. • Parity RAID devices cannot be swapped. • The device cannot be part of an enabled consistency group. • Any BCV devices in either group cannot be established.
	N	1300.09	If the FarPoint™ Technologies director feature is enabled in the Symmetrix array, all devices in the RA group must have the same attribute of either R1 or R2 when swapping an SRDF group.
	N	1300.10	For non-dynamic RDF devices, before converting RDF devices to non-RDF devices, ensure that the SRDF pair devices being converted are in the split state or failed over. If the devices are failed over, the R1 devices must be unmapped.

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Product	Update	Number	Description
Configuration Manager (con't)	N	1300.11	When swapping the personality of ESCON directors, be aware that FarPoint buffer settings cannot be adjusted using Configuration Manager. If your FarPoint buffers are set to anything other than default values, EMC Customer Service will need to be engaged to set the buffers after the swap has taken place.
	N	1300.12	Occasionally, attempts to form metas using the auto-select feature (for example: <code>form meta from dev 24A , count=5;</code>) and mapping the meta heads by specifying a range of devices in the map command will result in a validation failure and the following error will appear in the SYMAPI log file: Only Meta Heads can be assigned to the host. Volume <xxx> violates this condition There are 2 known workarounds for this problem: - Using 2 change sessions — Break the changes into 2 sets and perform each one in a separate configuration change session. In the first session execute all the changes to form the metadvice and in the second session map the devices. - Using 1 change Session — Define the changes to form the meta but don't use the range feature when mapping the meta heads. Individually map the meta heads by defining a separate change to map each meta head in a separate command.
Device Masking	N	900.01	An error may return when masking a device if the Symmetrix array director is nonparticipating.
	Y	900.02	If you wish to use Symmetrix Device Masking on Symmetrix arrays running 5773.x or earlier to limit access to your storage, you must ensure that all Symmetrix FC ports connected to your hosts are VCM-enabled.
	N	900.03	When listing HP-UX hosts that are logged in using the <code>symmask list logins</code> command, <code>No</code> is usually reported in the <code>Logged In</code> column, even when your host is still connected. This is due to the HP-UX driver logging out between I/O requests. It will only report as <code>Logged In</code> while I/O is active on the connection.
	Y	900.04	If a host converts a VC MDB to Type 5 (Solutions Enabler V6.0 and Engenuity 5671 or later) database, other connected hosts running older versions of Solutions Enabler will not be able to access the database.
	N	900.05	The VC MDB should be mapped to all ports on the Symmetrix if you plan to run any of the following commands from any host that has multipathing software (PowerPath or other software implementations) installed: <pre>symmask list hba symmask discover hba [-rename]</pre> If not mapped properly, invalid results or failure can occur.

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Product	Update	Number	Description
Device Masking (con't)	Y	900.06	Using the <code>symmask</code> command you cannot add or remove device ranges that include any invalid devices (such as metamembers) on Symmetrix arrays running Enginuity 5874. It is recommended that you use <code>symaccess</code> to perform this operation on Symmetrix arrays running Enginuity 5874.
	Y	900.07	Attempting to restore a backup file may fail to restore all masking data after a configuration change that results in empty groups. For example, lets assume you have a port group that contains an FA that was ACLX-enabled when the backup was created. After a configuration change operation that same FA is no longer ACLX-enabled. This port will be removed from the port group and any view that contained this group will not be restored. if either the SG or the IG within the view belong to another view that is restored, the masking data is not properly restored.
Double Checksum	N	1200.01	EMC Double Checksum and Generic SafeWrite are not supported with TimeFinder/Snap, thin devices, R2 devices of SRDF/S, or RAID-6. EMC Double Checksum is not supported on HP-UX IA or Solaris X86.
	N	1200.02	When using Veritas VxVM with Double Checksum, rejected I/O may cause plexes to become detached. To return to normal operations, use <code>vxedit</code> to remove the failing status and run <code>vxplex</code> to reattach the plex.
	N	1200.03	The Logical Volume Manager (LVM) is not supported for Double Checksum on AIX.
	N	1200.05	The checksum validate option (<code>-validate</code>) does not collapse the extents reported. This may cause the validate action to incorrectly report that too many extents need to be displayed. Typically this would occur in logical volume environments where more than 31 data files (this value is 200 for Enginuity level 5670.50 and above) are housed in a single volume group. If the validate action returns an error about the number of extents, it is likely that the <code>enable</code> or <code>disable</code> operations would succeed. Despite this warning, continue with your <code>enable/disable</code> operations.
	N	1200.06	When discard is used, the I/O is processed in 32 kilobyte chunks (or 64 starting with Enginuity 57xx). If an I/O is rejected, it is rejected in that granularity as well. Therefore, some good blocks may be rejected along with the bad block(s) if they fall within the same chunk.
	N	1200.07	An operating system patch is required before using EMC Double Checksum on HP-UX 11.11 or HP-UX 11.23. The patch addresses a retry looping condition when a bad I/O is rejected by the Symmetrix array. To check and/or fix this problem, consult your HP representative for the Oracle Hard Integrity error patch.

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Product	Update	Number	Description
Double Checksum (con't)	N	1200.09	Veritas RAID-5 volumes are not supported when creating an Oracle tablespace, where the device has the checksum flag turned on and <code>db_block_checksum=TRUE</code> . For the <code>sycksum enable CLI</code> command, the <code>-tbs TBSNAME -reject_io</code> option returns the following error message: <code>VxVM RAID-5 is not currently supported.</code> Note: The <code>reject_io</code> feature is not supported at this time because Veritas incorrectly handles failed writes.
	N	1200.10	The <code>-check_dba</code> feature is not supported on AIX at this time.
	N	1200.11	EMC Double Checksum <code>-check_dba</code> feature is not supported on Oracle ASM logical volumes in Solutions Enabler V6.3 or later.
	N	1200.12	Oracle ASM is not supported for Double Checksum on Linux at this time.
	N	1200.13	While setting up Oracle ASM's redundancy characteristics when defining a disk group, make sure that External redundancy is chosen. Normal and High redundancy are not supported.
HP-UX- and Solaris-specific	N	2000.01	When mounting a Solutions Enabler installation disc in an HP-UX Version 11.11, use the following command: <code>pfs_mount -t rrip /dev/dsk/cxtxdx /cdrom</code>
	N	2000.02	On the HP-UX 32-bit platform if secure remote transmissions is set up for client/server, and EMC ControlCenter is executed, it could cause EMC ControlCenter to terminate. As a work around, set remote transmission to NONSECURE in the <code>netcnfg</code> file located in the <code>config</code> directory.
	N	2000.03	For multithreaded environments on HP and Solaris platforms, when you get a bus error after a <code>pthread_create()</code> call, you can increase your host system stack size setting up to 2 MB or more to circumvent these errors.
	N	2000.04	EMC Solutions Enabler V6.5 and higher does not provide support for Solaris containers.
	N	2000.05	The option <code>SYMAPI_ENHANCED_USER_AUTHENTICATE</code> is not supported on Solaris 8 and 9, and must be set to DISABLED. If it is enabled accidentally, a SYMCLI operation may return the error: <code>unable to initialize mechanism library [/usr/lib/gss/so/mech_krb5.so]</code> To avoid this error, enhanced user authentication must be disabled. This feature works on Solaris 10.

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Product	Update	Number	Description
HP-UX- and Solaris-specific (con't)	N	2000.06	For the Sun Solaris platforms when using the default (CopyOnAccess mode), you cannot access all the tracks on the disk. If you are in CopyOnAccess mode, you will not be able to access every track, such that the Copy State will change to Copied. Because of a restriction on the Solaris platform, 30 tracks, or 2 cylinders, are not accessible to applications. Therefore, the following command will never complete: <code>symclone verify -copied -i Interval</code>
	N	2000.07	The <code>syminq hba</code> requires that system log files exist in <code>/var/adm</code> to successfully discover HBAs that are not SNIA compliant. These HBAs may not be reported if the log files are aged, moved, or renamed. Rebooting the host will refresh HBA information in the system logs, allowing <code>syminq</code> to report the HBA information.
Installation	Y	100.01	The Solutions Enabler monitoring kits are no longer available.
	N	100.02	Users of the SMI-S Provider, VDS Provider, and/or VSS Provider that are upgrading to Solutions Enabler V7.0 must upgrade their provider. Earlier versions of the Providers are not compatible with Solutions Enabler V7.0.
	Y	100.03	Upgrading from a natively installed Solutions Enabler V6.3.x on Solaris, HP-UX, and AIX to Solutions Enabler V7.0 will leave the old V6.3.x single-threaded libraries. Follow these steps before upgrading, if you have installed V6.3.x with native installers: 1. Check for the existence of single-threaded libraries: <pre>lsldpp -L grep SYMCLI.STLIBS.rte (AIX) swlist -l fileset grep SYMCLI.STLIBS (HP-UX) pkginfo grep SYMstlibs (SunOS)</pre> 2. If present, uninstall single-threaded libraries before installing V7.0: <pre>installp -u SYMCLI.STLIBS.rte (AIX) swremove SYMCLI.STLIBS (HP-UX) pkgrm SYMstlibs (SunOS)</pre> 3. Run the V7.0 install script to upgrade. The Solutions Enabler V7.0 installer requires temporary disk space in <code>/var</code>. Lack of free disk space in <code>/var</code> will cause the install to exit with a failure on some UNIX platforms.

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Product	Update	Number	Description
Installation (con't)	N	100.04	The HP-UX native installation package for Solutions Enabler SYMCLI contains 2 sets of filesets. One set gets installed under <code>/opt/emc</code> (default install root directory) and the other gets installed under <code>/usr/emc</code> (default working root directory). These default directories can also be changed during installation. Since there are two installation directories for the same package, after installation, the <code>swlist</code> command will show 2 entries for SYMCLI as shown in the following example: <pre>swlist grep SYMCLI SYMCLI V7.0.0.0 EMC Data Storage Systems Private Limited SYMCLI V7.0.0.0 EMC Data Storage Systems Private Limited</pre>
	Y	100.05	Solutions Enabler V7.0 is installed using native installation utilities. Therefore, if you want to install an earlier version of Solutions Enabler, you must uninstall Solutions Enabler V7.0 before reinstalling the earlier version.
	N	100.06	In a Windows environment, EMC Solutions Enabler requires the Microsoft Windows Installer version 3.1 redistributable package, <code>WindowsInstaller-KB893803-v2-x86.exe</code>. Note: If you have previous pre-release versions of Visual C++ 2005 or Visual Studio 2005, such as Beta 1, Beta 2, or Community Technical Preview (CTP) builds installed on the host, you must uninstall these versions via Add/Remove Programs in Control Panel before installing version 3.1.
	N	100.07	When installing Solutions Enabler on the Windows Server 2003 platform in a cluster node environment, do not use terminal services for remote install.
	N	100.08	If the Windows Services Manager application is open while upgrading from a previous version, the installation may fail with the following message: <pre>Could not uninstall SYMAPI server.</pre> Closing the Services Manager will remedy this problem.
	N	100.09	When uninstalling Solutions Enabler V6.5 and higher from a SuSE Linux platform, the following message might occur: <pre>/dev: is a directory</pre> Ignore this occurrence as it is not a concern.

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Product	Update	Number	Description
Installation (con't)	Y	100.10	Solutions Enabler V7.0 requires GNU Compiler Collection (GCC) standard C++ library <code>/usr/lib/libstdc++.so.5</code> for its dynamically linked C++ binaries. This generally comes with <code>libstdc++</code> rpm. Some new versions of Linux (RH Enterprise Linux Server release 5, SuSE 10, some RH Enterprise Linux Server 4 and SuSE 9) come with <code>/usr/lib/libstdc++.so.6</code>. This is found in systems with GCC version 3.4 and above or systems with <code>libstdc++</code> version 3.4 and above. In these systems, make sure that <code>compat-libstdc++</code> rpm (<code>compat-libstdc++-33</code> in Redhat Linux) is installed before installing Solutions Enabler. <code>compat-libstdc++</code> rpm provides compatible C++ libraries. Run the following command to check for compatibility: <pre>rpm -qa grep libstdc++ libstdc++-4.1.1-52.el5 libstdc++-devel-4.1.1-52.el5 compat-libstdc++-33-3.2.3-61</pre> <pre>rpm -ql compat-libstdc++-33-3.2.3-61 /usr/lib/libstdc++.so.5 /usr/lib/libstdc++.so.5.0.7</pre> If you do not have the correct version installed, obtain and install it before proceeding with the Solutions Enabler installation. The library can be installed by running the following command: <pre>rpm -ivh compat-libstdc++*.rpm</pre>
	N	100.11	For proper TimeFinder/Mirror operations with Veritas (VxVM) environments, you must run: <pre>vxddctl enable</pre>
	N	100.12	When manually creating certificates for secure remote transmissions, there is a possibility that the space in the certificate for server information could be exceeded. During the execution of <code>manage_server_cert.bat</code> or <code>manage_server_cert.csh</code> you would see the following error: <pre>problems making Certificate Request 16745:error:0D07A097:asn1 encoding routines:ASN1_mbstring_ncopy:string too long :a_mbstr.c:154:maxsize=64</pre> The space is limited to 64 characters. This includes <code>storsrvd</code> that is added to this space by default. As a workaround, host names or cluster names can be shortened from the fully qualified names to simple names. For example, you could change host name <code>foo.emc.com</code> to <code>foo</code>. Refer to the <i>EMC Solutions Enabler Installation Guide</i>, V7.0 for details on modifying the certificate.

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Product	Update	Number	Description
Installation (con't)	N	100.13	When Solutions Enabler is installed, a certificate is created for securing remote transmissions for client/server operations. This certificate has an interval of time that it is valid, from when it is created to 10 years in the future. The interval start date is the current date and time set on the machine on which the certificate is created. If the date and time of the client is significantly behind the server this could cause a handshake error at the client during client/server communications. This problem can be verified on the server by looking at the <code>storsrvd.log</code> in the log directory and seeing if there is a Bad Certificate error. The solution to this problem is to correct the date and time of the machine on which <code>storsrvd</code> is running.
	N	100.15	When client/server is running on a multi-homed host (that is, a host with multiple host names), a client or server may not be able to verify the certificate being sent by the other host. This occurs because only one fully qualified name, which is obtained from the <code>hostname</code> command, is written to the certificate during installation. To correct this problem, you can create a certificate for the multi-homed host containing all of its host names by running the following command from the <code>cert</code> directory: In UNIX and Linux environments, run the following: <pre>/usr/storapi/bin/manage_server_cert.sh create multi-homed-name1 multi-homed-name2</pre> In Windows environments, you must specify the full path to the <code>bin</code> directory along with the command: <pre>\Program Files\EMC\SYMCLI\bin\manage_server_cert.bat create multi-homed-name1 multi-homed-name2</pre> For example, running the following command in a UNIX environment: <pre>/usr/storapi/bin/manage_server_cert.sh create foo1.emc.com foo2.emc.com foo3.emc.com</pre> produces output similar to the following: <pre>/usr/storapi/bin/manage_server_cert.sh using /usr/storapi/bin/storssl64 to create keys Generating a 1024 bit RSA private key++++++++++++ writing new private key to 'symapisrv_key.pem' ----- Signature ok subject=/CN=storsrvd foo1.emc.com foo2.emc.com foo3.emc.com/ST=Massachusetts/C=US/L=Hopkinton/emailAddress=support_t@emc.com/O=EMC Corporation/OU=Storage Platform Enablers and Applications Getting CA Private Key The files symapisrv_cert.pem and symapisrv_key.pem were created in the directory /var/symapi/config/cert.</pre>

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Product	Update	Number	Description
Installation (con't)	N	100.16	AIX and OSF/1 do not allow changes to the destination path during installation. All binaries and libraries are installed under <code>/opt/emc</code>. If there is insufficient disk space under <code>/opt</code>, create a soft link to <code>/opt/emc/</code> as shown below and run the installer: <pre>ln -s NewInstallationDir /opt/emc</pre> The root must have write permission on the <code>NewInstallationDir</code>.
	N	100.17	The length of a database daemon binary name along with its corresponding environment variable for the instance name cannot exceed 32 characters. For example, if users are running 64 bit Sybase Server version 12.5, the corresponding daemon's binary name is <code>storsybs12.5_64d</code>, and the corresponding environment variable for the instance name is <code>DSQUERY</code>. If <code>DSQUERY</code> is set to the value <code>SYSBASE_HOST1</code>, the combined length of <code>storsybs12.5_64dSYSBASE_HOST1</code> cannot exceed 32 characters.
	Y	100.18	Installation of the Solutions Enabler V7.0 HP-UX PA/RISC kit on HP-UX Itanium Platform requires that the HP-UX PA/RISC utilities are first in the environment <code>PATH</code> variable. For instance, to use the Solutions Enabler V7.0 HP-UX PA/RISC kit on HP-UX Itanium hardware, the KORN shell <code>PATH</code> variable could be set as follows: <pre>export PATH=/usr/ccs/pa/usr/ccs/bin:/usr/ccs/pa/usr/ccs/sbin:\$PATH</pre>
	Y	100.19	Solution Enabler running on <code>x86_64</code> platforms require <code>zlib</code> and <code>glibc i386</code> rpms. The <code>storapid</code> daemon requires the 32-bit shared objects <code>glibc</code> and <code>libz</code>. By default, <code>x86_64</code> rpms will be installed, which hold the 32- and 64-bit shared objects (<code>glibc & libz</code>).
	Y	100.20	The <code>swverify</code> command fails on HP-UX (PA-RISC and IA64) hosts after a Solutions Enabler V7.0 installation, because the product installation path (<code>/opt/emc</code>) differs from link creation path (<code>/</code>).
	Y	100.21	On OSF1 and HP-UX, after uninstalling Solutions Enabler V7.0, Pure native commands like <code>swremove</code> and <code>setld -d</code> may return a few empty Solutions Enabler directories and Perl files in location <code>/opt/emc/SYMCLI</code>. These can be safely ignored.
	Y	100.22	On Linux (x64 and <code>x86_64</code>) hosts, the Solutions Enabler installation wrapper script doesn't prompt for installing JNI components with the command given below: <pre>./se7000_install.sh -install</pre> The JNI components can be installed using silent install (<code>-increment</code>, <code>-all</code>, and <code>-jni</code>) options.

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Product	Update	Number	Description
Installation (con't)	Y	100.23	On UNIX installs, the following file is installed for managing OpenSSL certificates: <code>/usr/storapi/bin/manage_server_cert.sh</code> The installation incorrectly installs an additional file, <code>manage_server_cert.csh</code> , which is no longer used or supported. Ignore this file and only use <code>manage_server_cert.sh</code> .
	Y	100.25	Solutions Enabler V7.0 installations on OSF1 (HP Tru64) fail to generate an SSL certificate, when installed using SE install script (<code>se7000_install.sh</code>). This problem will be seen on new installs; not on Solutions Enabler upgrades. If you need to generate the SSL certificate for client-server configuration, perform the following steps. 1. Change to subdirectory <code>/var/symapi/config/cert</code>. 2. Run the <code>manage_server_cert.sh</code> script to generate the SSL certificate: <code>/usr/symcli/bin/manage_server_cert.sh create</code> 3. The following should display in the <code>/var/symapi/config/cert</code> directory after the SSL certificate is generated: <pre>ls -l total 8 lrwxrwxrwx 1 root system 19 Apr 2 02:23 7af0234a.0 -> symapisrv_trust.pem lrwxrwxrwx 1 root system 18 Apr 2 02:23 f6d39126.0 -> symapisrv_cert.pem -rw----- 1 root system 1024 Apr 2 02:23 ssl.rnd -rw-r--r-- 1 root system 1119 Apr 2 02:23 symapisrv_cert.pem -rw-r--r-- 1 root system 880 Apr 2 02:12 symapisrv_install.cnf -rw-r--r-- 1 root system 887 Apr 2 02:23 symapisrv_key.pem -rw-r--r-- 1 root system 1103 Apr 2 02:12 symapisrv_trust.pem -rw-r--r-- 1 root system 887 Apr 2 02:12 symapisrv_trustkey.pem</pre>
Migration	Y	1800.01	The limit on the number of devices currently actively migrating (in a session that is not in the migrated state) is 128 times the number of nodes in the array.
OpenVMS-specific	N	1600.01	The <code>symoptmz</code> command should not be used while the <code>storapid</code> daemon is running. Doing so can cause Symmetrix Optimizer to hang.
	N	1600.02	The ability to automatically start the base daemon when a <code>sym*</code> command is executed as indicated in the installation guide is not supported.
	N	1600.03	If you copy an OpenVMS installation save set from Powerlink via FTP the following command should be executed against the save set: <code>set file/attr=(RFM:FIX,LRL:32256) <save set filename></code>

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Product	Update	Number	Description
OpenVMS-specific (con't)	N	1600.04	Only the following daemons are supported on OVMS: <code>storapid</code> , <code>storsrvd</code> , <code>storwatchd</code> , and <code>storevntd</code> .
	N	1600.05	Solutions Enabler does not support MultiNet for OpenVMS from Process Software, LLC.
	Y	1600.06	The following is not supported for OpenVMS: SRDF/Star, SRDF/A MSC, ECA, or the <code>storstp</code> , <code>storevntd</code> , and <code>storstp</code> daemons.
Open Replicator	Y	700.01	The Open Replicator for Symmetrix operations are limited to FBA type devices that can be mapped to the host through Fibre Channel directors. The following device types that could be mapped to the host are not supported: • CKD • VDEV (cold push only is allowed) • VCM • WORM • Metamembers
	N	700.02	Copying device data from one device to another must execute across a network (SAN) with a switch in the network path. You cannot copy device-to-device within the same Symmetrix array.
	N	700.03	• Maximum active sessions for Enginuity 5772 or lower is 512. The default is 512 active sessions. Maximum active sessions for Enginuity 5773 or later is 1024. The default is 1024 active sessions. Use the option <code>SYMAPI_RCOPY_SESSION_LIMIT</code> to decrease the session limit. Note: Setting the session limit above the 128 default in Enginuity 5771 may result in slower performance of other SYMCLI operations, such as synchronization. Set the <code>SYMAPI_RCOPY_INTERACTION_CHECKS</code> option file value to <code>DISABLE</code> to remove the sync operation of Open Replicator data and the checking of Open Replicator interactions with SRDF and TimeFinder operations. When disabled, it is left to the user to determine that there will be no interactions with existing Open Replicator sessions when performing SRDF or TimeFinder operations. • Maximum sessions on a given device is 15. • Maximum concurrent remote devices is 16 per session.

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Product	Update	Number	Description
Open Replicator (con't)	N	700.04	Copying is device-based (no extent copying supported). You cannot make device configuration changes during an Open Replicator session, as making device changes may lead to inconsistent data on the local device if pulling, or on the remote device if pushing data. The Open Replicator cannot detect changes to a remote device during, or between incremental copies. Before each session, check to ensure there are no changes being made to the remote device. The Open Replicator command can only accept a <code>clardev</code> entry for a remote device if the CLARiiON array was discovered by the host where the command is executing.
	N	700.05	Open Replication now blocks the following operations: • <code>TimeFinder establish</code> (full or incremental) when the BCV device is in a push session in the restored state with donor update. • <code>TimeFinder establish</code> (full or incremental) when the BCV device is in a push session in the created, recreated or failed state. • <code>TimeFinder restore</code> when the STD device is in a push session in the restored state with donor update. • <code>TimeFinder restore</code> when the STD device is in a push session in the created, recreated or failed state. • <code>Clone create, recreate, incremental establish or full establish</code> when the BCV device is in a push session in the restored state with donor update. • <code>Clone create, recreate, incremental establish or full establish</code> when the BCV device is in a push session in the created, recreated or failed state.
	N	700.06	To <code>rename, remove, recreate, restore, terminate or create a session</code> on the same control device when the session has the <code>-donor_update</code> option enabled, you must use the <code>-force</code> option.
QoS	Y	1900.01	For QoS cache partitioning, if a host licensed for cache partitioning enables cache partitioning on a Symmetrix array and then a second host that is not licensed for cache partitioning cannot analyze nor disable cache partitioning. To set analyze mode from the non-licensed host, the licensed host must disable cache partitioning.
SDDF	N	1000.01	The <code>symchg</code> command cannot be used for remote operations. In addition, the <code>symchg</code> command fails if the following occurs: • On IBM AIX platforms, if a physical device is a member of a volume group. In this case, AIX places a SCSI reservation on the device, which prevents <code>symchg</code> from opening the device properly. • A failed device is encountered. If <code>symchg delete</code> fails, you must apply the command to one device at a time for all devices of the group.

Table 4 Known problems and limitations (page 17 of 26)

Product	Update	Number	Description
SRDF restrictions	N	600.01	SRDF control operations will not work on an RDF2 composite group that contains both remote mirrors of a single concurrent RDF R1 device.
	N	600.02	On Symmetrix arrays running Enginuity 5772 up to Enginuity 5773.x, Solutions Enabler will support a maximum of 128 RDF groups per Symmetrix arrays. Valid SRDF group numbers are 1-250 (inclusive). By default, Solutions Enabler will support a maximum of 32 SRDF groups per director.
	N	600.03	MSC consistency may potentially experience failures. If you plan to use the MSC consistency feature, refer to Primus case EMC130865.
	N	600.04	You should perform an SRDF establish and not a SRDF failback operation on the non-SA mapped R1 devices if one the following criteria is met after a split operation: The R1 device(s) or device group contain one or more R1 devices that are not mapped to an SA, and you do not want to restore R2 data changes back to the R1 sources.
	N	600.05	When considering dynamic SRDF swap operations on device pairs that were created in a device file using the <code>symrdf createpair</code> action, you cannot then specify individual devices in the command line to select for a subsequent <code>swap</code> action, as this violates the basis of a device group assignment.
	N	600.06	When using concurrent SRDF with the R1 device write enabled, and if an operation is performed on either concurrent link that temporarily or permanently write disables the R1 device, the state of the other link will be affected. This could cause problems for an application writing to the R1 device. If you have a concurrent SRDF device with one of the links in the R1 updated state, and you perform a restore operation on the other link, you will cause the R1 updated link to become invalid. If you have a concurrent SRDF device where one remote mirror has a link status of Read/Write and the other has a link status of Not Ready, the SYMAPI will incorrectly allow the remote mirror with the Not Ready link status to be the target of an incremental establish. This is true even if the remote mirror with the Not Ready link status has remote R2 invalid tracks that will automatically be propagated to the R1 and then to the remote mirror that originally had the Read/Write link status.
	N	600.07	When consistency is enabled on a device, you cannot have Domino mode turned on and vice versa.
	N	600.08	The <code>symrdf set nr_if_invalid</code> action does not immediately take effect over the SRDF link for both regular and consistency group environments.

Table 4 Known problems and limitations (page 18 of 26)

Product	Update	Number	Description
SRDF restrictions (con't)	N	600.09	The following SRDF/AR option file parameters should not be used unless directed by an EMC representative: • SYMCLI_REPLICATE_GEN_TIME_LIMIT • SYMCLI_REPLICATE_RDF_TIME_LIMIT • SYMCLI_REPLICATE_BCV_TIME_LIMIT • SYMCLI_REPLICATE_GEN_SLEEP_TIME • SYMCLI_REPLICATE_RDF_SLEEP_TIME • SYMCLI_REPLICATE_BCV_SLEEP_TIME
	N	600.10	If Solutions Enabler is to be installed to a different directory and a <code>symreplicate</code> session is running, the replication session must be stopped before the installation. Additionally, on Windows, the <code>symreplicate</code> service must be uninstalled prior to installing Solutions Enabler to a different directory.
	N	600.12	TimeFinder/Snap copying of an SRDF/A R2 device is not currently allowed in Solutions Enabler. TimeFinder/Clone copying of an SRDF/A R2 device is permissible, provided you include the <code>-precopy</code> option in the command.
	N	600.13	The SRDF/A checkpoint all command (<code>symrdf -g DgName -all checkpoint</code>) is not currently supported if the SRDF/A device group contains both standard and BCV devices.
	N	600.14	The <code>symstar</code> command does not currently support Solutions Enabler client/server mode.
	N	600.15	When all SRDF devices at one site are not mapped to any SCSI channel director (SA) ports on the target (R2) side, and a <code>symstar isolate</code> command is run against this site, <code>symstar query</code> will report the site state as disconnected instead of isolated.
SRM	N	1400.01	Some SRM functionality may not be available in environments running ASM on Oracle 10g database server. To gain access to all available SRM functionality, upgrade your existing Oracle 10g installation by applying patch 10.2.0.4 or above.
	N	1400.02	Extent mapping of Veritas multi-volume file systems is not currently supported.
	N	1400.03	Solutions Enabler does not support system-generated Oracle ASM filenames at this time.
	N	1400.04	When performing Oracle database mapping from a 64-bit SYMAPI kit against a 32-bit Oracle instance, a runtime error can occur.
	N	1400.05	With the exception of the Oracle database, mapping function calls from a given host require that the SDK for the specific database application be installed.

Table 4 Known problems and limitations (page 19 of 26)

Product	Update	Number	Description
SRM (con't)	N	1400.06	For IBM DB2 databases, you can startup and shutdown the database with the <code>symrdb</code> command, but none of the options supplied with the syntax of these operations will function.
	N	1400.07	For logical volume mapping operations on Solaris Solstice Disk Suite, the, hot spares, trans meta devices, and hybrid configurations are not supported.
	N	1400.08	If a non-root process is using <code>libasm.so</code> (Oracle), it is necessary to have EMC PowerPath installed and running on the host to be able to discover disks using this library. PowerPath allows processes without root privilege to access devices, using the SCSI <code>ioctl(2)</code> interface.
	N	1400.09	The <code>symlv</code> command, when used with the EMC PowerPath volume manager, is case insensitive. That is, the volume group names, logical volume names, and path names are case insensitive. The EMC PowerPath volume manager maintains all the names in lower case letters on the system.

Table 4 Known problems and limitations (page 20 of 26)

Product	Update	Number	Description
SRM (con't)	N	1400.10	For Oracle database sites that employ user security profiles on Oracle 9i or later, granting <code>SELECT_ANY_TABLE</code> will no longer work for Solutions Enabler database mapping (SRM) operations. To set up site-defined users for Solutions Enabler database mapping, use one of the following options in the site-defined user profile: • Grant <code>SELECT_CATALOG_ROLE</code> • Grant <code>SYSDBA</code> • Grant <code>SYS[TEM]</code> • Grant <code>SELECT</code> on each of the following Oracle objects: <code>ALL_OBJECTS</code> <code>DBA_DATA_FILES</code> <code>DBA_EXTENTS</code> <code>DBA_FREE_SPACE</code> <code>DBA_INDEXES</code> <code>DBA_NESTED_TABLES</code> <code>DBA_OBJECTS</code> <code>DBA_SEGMENTS</code> <code>DBA_TAB_PARTITIONS</code> <code>DBA_TABLES</code> <code>DBA_TABLESPACES</code> <code>DBA_USERS</code> <code>V_\$CONTROLFILE</code> <code>V_\$DATAFILE</code> <code>V_\$INSTANCE</code> <code>V_\$LOG</code> <code>V_\$LOGFILE</code> <code>V_\$PARAMETER</code> <code>V_\$SYSTEM_PARAMETER</code> <code>V_\$VERSION</code>
	N	1400.12	On the Linux platform, file system extent mapping may fail for newly created files on Veritas VxFS file systems. As a workaround, unmount and then remount the file system on which the failures are occurring, or just mount with this option: <pre>... -o convosync=direct</pre>
	N	1400.13	Mapping of volumes in volume groups with duplicate names in Veritas volume sets is not supported with Veritas V4.0 and above.

Table 4 Known problems and limitations (page 21 of 26)

Product	Update	Number	Description
SRM (con't)	N	1400.14	On AIX 64-bit platforms, Oracle database mapping calls with 64-bit Oracle instances occasionally produce a core dump. This problem is a known Oracle problem. The work around is to set a variable named BEQUEATH_DETACH to YES in the file <code>sqlnet.ora</code> , which can be found in the directory <code>\$ORACLE_HOME/network/admin</code> . The Oracle instance should be started with this variable set.
	N	1400.15	When adding SQL Server data sources to ODBC on IA-64 systems, Solutions Enabler requires that you use the ODBC driver (<code>odbcad32.exe</code>) located in <code>%SYSTEMROOT%\SysWow64</code> to add SQL Server system DSNs.
	N	1400.16	HP-UX IA64 SRM support for Oracle is not provided with the Solutions Enabler release. Please contact EMC Customer Service to obtain HP-UX IA64 SRM support for Oracle.
	N	1400.17	Any client connecting to an Informix server must use the TCP/IP protocol. No other protocols are supported.
	N	1400.18	For Informix environments, <code>symrdb list</code> actions might ignore showing physical devices that have empty database tables or indexes.
	N	1400.19	When creating volume groups or named volumes with the <code>symvg</code> or <code>symlv</code> commands for Linux or HP-UX logical volume managers, names in excess of 15 characters will not display properly for the <code>show</code> and <code>list</code> commands. For display purposes, it is recommended that you do not create volume names that exceed 15 characters in length.
	N	1400.20	On the Linux platform, if there is only a single Linux LVM volume group, it is recommended not to perform a deport operation (<code>symvg deport</code>). Once deported, the volume group cannot be displayed (<code>symvg list</code>) or imported (<code>symvg import</code>) using the <code>symvg</code> command.
	N	1400.21	To successfully return SRM logical volume statistics via the <code>symlv stats</code> command on a host running HP-UX 11.0, you must install patch PHKL_19573.
	N	1400.22	On the Linux platform (LVM version 2.02.06), the <code>symvg list</code> and <code>symvg show</code> commands display zeros for the fields Max Number of Devices in Group and Max Number of Volumes in Group.
	N	1400.23	On the Linux platform, file system extent mapping may fail for newly created files on GFS file systems. The work around for these failures is to unmount and then remount the file system on which the failures are occurring. Also, mounting the GFS file system with the option <code>-o sync</code> may eliminate this problem.
	N	1400.24	SRM does not support Veritas 4.3 on Windows x64 platforms due to limitations in Veritas 4.3.
	N	1400.25	Veritas 5.0 on Windows x64 platforms is supported with the addition of Veritas patch 290983.

Table 4 Known problems and limitations (page 22 of 26)

Product	Update	Number	Description
SRM (con't)	N	1400.26	Occasionally, when new files are created on XFS and the <code>symrslv</code> command is used to attempt to resolve the file object, it will fail, returning an error that the object to be resolved is not a regular file. This can occur when the vendor-specific API or utility to flush log files to disk is unavailable. To capture all possible file information and flush the meta data to disk, you must unmount and remount the filesystem.
	N	1400.27	On the HP-UX platform with HP-UX LVM, the <code>symvg import</code> action is not supported for multi-path configurations. As a work around, it is recommended to use the HP-UX export/import command, as shown in the example below: <pre>/usr/sbin/vgexport -m mapfile -v -f outfile vg_name /usr/sbin/vgimport -m mapfile -v -f infile vg_name</pre> Refer to the HP-UX man pages for more details.
TimeFinder	N	1500.01	SAVE device pools created using Solutions Enabler V6.5 and higher cannot be managed using previous versions of Solutions Enabler.
	N	1500.02	When locally performing a <code>symmir query</code> out to a remote Symmetrix, the command always returns a 0 value for the invalid tracks of the remote standard device(s) when these devices are in the split state. When a restore to the R1 device is ready on the link, the <code>-remote</code> option must be specified to acknowledge the remote copy. When the <code>SYMAPI_WAIT_FOR_BCV_SYNCH</code> option is set to TRUE and large devices are in use, a timeout error can result, during a full or incremental establish, or incremental restore operation.
	N	1500.03	For TimeFinder/Clone operations, the <code>symrdf set mode async</code> command will fail if the R2 device has at least one of the following sessions: VDEV, Clone NoCopy, or Clone Copy. However, a clone session in the PRECOPY, COPIED, SPLIT, or RESTORED state will not prevent you from setting the mode to async. As expected, the <code>symsnap create</code> and <code>activate</code> operations will be blocked if the R2 is in async mode. In addition, the following <code>symclone</code> operations will fail if source device is R2 in async mode: <code>create</code>, <code>recreate</code>, <code>full establish</code>, <code>inc establish</code>, <code>set mode copy</code>, and <code>set mode nocopy</code>. Also, <code>symsnap full restore</code> and <code>symsnap inc restore</code> will be blocked if the target device is an R2 device in async mode.

Table 4 Known problems and limitations (page 23 of 26)

Product	Update	Number	Description
TimeFinder (con't)	N	1500.04	When operations are performed on a device group, with the <code>-exact</code> option, the pairings of the devices are preserved as they were entered in the device group. However, when operations are performed on the local devices in a composite group with the <code>-exact</code> option, the exact pairing operation considers the context of the local Symmetrix array when performing the exact pairing of the STDs and BCVs. When operations are performed on the remote devices in a composite groups with the <code>-exact</code> option, the exact pairing operation considers the context of the Symmetrix array and associated SRDF group when performing the exact pairing of the STDs and BCVs.
	N	1500.05	For proper TimeFinder/Mirror operations with Veritas (VxVM) environments, you must run: <code>vxctl enable</code>
	N	1500.06	For TimeFinder, performing a consistent split of a specific database (<code>symmir -rdb -db dbname</code>) for RDBM systems sharing common files/spaces for multiple databases, may produce inconsistent results. For this reason, avoid allocating data files for two different databases located on the same physical device. Note that Informix physical and logical logs are shared across all databases.
	N	1500.07	For Informix environments, <code>symmir</code> and <code>symrdb</code> list actions might ignore showing physical devices that have empty database tables or indexes.

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Product	Update	Number	Description
TimeFinder (con't)	N	1500.08	The Enginuity Consistency Assist (ECA) feature can be used to perform consistent split operations. This feature is implemented using the <code>-consistent</code> option with the <code>symmir split</code>, <code>symsnap activate</code>, <code>symclone activate</code>, <code>symclone establish</code>, and <code>symrcopy activate</code>. ECA can also be used with replicate data (<code>symreplicate</code>) across multiple, heterogeneous hosts without the use of PowerPath support. In addition the <code>symsnap activate</code> and <code>symclone activate</code> commands take advantage of the consistency feature. To consistently split BCV pairs using ECA you must have either a control host where you are not running data write I/O, or a database host with a dedicated channel to perform the consistent split. Once the <code>symmir split -consistent</code> command is issued, I/O to the device group is frozen and a 30 second Enginuity protection timer begins and opens an ECA window. After 30 seconds, the I/O channels are thawed, granting (pent up) operations access to the standard devices. Splits across all devices in a group are considered <i>consistent</i> if the BCV split execution is performed within that window. If for some unknown host or I/O channel reason, not all devices are split within the 30 second window, <code>symmir</code> returns the following at completion: Consistency window was closed on some devices before the operation completed. At this point, the final successful split outside the window is no longer considered <i>consistent</i> in execution across the device group. For consistency and reliability, you should re-establish the device group and then (later) attempt the consistent split again.
	N	1500.09	There are possible instances in a client/server environment that the return error message for a failed TimeFinder operation is vague or incomplete, as shown in the following example with no text after the colon: "BCV Library error is:" When this occurs, view the SYMAPI log file on the server for the complete error message statement.
	N	1500.10	When using <code>symmir -rrbcv</code> to verify the states with a LDEV list, always specify the standard and target pairs. Only specifying the standard devices in the LDEV list may not return the correct result.
Virtual Provisioning	Y	800.01	Solutions Enabler supports Virtual Provisioning with Open Replicator, SRDF/Synchronous, SRDF/Asynchronous, SRDF Data Mobility (SRDF/DM), TimeFinder/Clone, and TimeFinder/Snap. Other replication technologies are restricted. For example, Virtual Provisioning is not supported with the combination of SRDF/Asynchronous and Clone or Snap. TimeFinder/Mirror is not supported.
	N	800.02	When cloning or snapping a thin device, the target must be another thin device.

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Product	Update	Number	Description
Virtual Provisioning (con't)	N	800.03	When performing SRDF sync or Adaptive Copy operations on a thin device, the target must be another thin device (2 site only). Concurrent and Cascaded SRDF operations are not supported with thin devices.
	N	800.04	TimeFinder/Snap and TimeFinder/Clone operations are not supported when SRDF devices are in Asynchronous mode.
	Y	800.05	On Symmetrix arrays running Enginuity 5773, DATA devices can be disabled only if they have no allocated tracks. However, when DATA devices are enabled in a pool, they may have tracks from most of the thin devices associated with the pool. Therefore, to disable a DATA device, you must disable all of the thin devices bound to that pool. If the data on the thin devices is needed, then you must backup the thin devices before unbinding them, as the act of unbinding will destroy all the data on the thin devices. On Enginuity 5874, you can disable devices that have allocated tracks, as long as number of the devices does not exceed twenty percent of the total number of enabled devices (disabled devices are not counted as part of devices in the pool).
Windows-specific	N	300.02	On Windows x64 and IA64 platforms client/server can only be run in NONSECURE mode when using a 32-bit kit. To enable client/server to work on 64-bit Windows platforms when a 32-bit kit has been installed, you must change the securing remote transmissions security level to NONSECURE. Open the <code>daemon_options</code> file, located in the <code>config</code> directory, and change the <code>storsrvd:security_level</code> variable to NONSECURE.
	N	300.03	The <code>symhost stat</code> or <code>symlvm stat</code> commands will not run on Windows 2003.
	N	300.04	When installing Solutions Enabler on a Windows host, the option to install/start the performance collector service (<code>storstopd</code> daemon) in the Select Services dialog box will only install the daemon; it will not start it. To start the daemon after you have finished the installation, use the following command: <pre>stordaeomon start storstopd</pre>
zLinux-specific	N	1700.01	When running zLinux as guest, CKD devices must be defined as unsupported and dedicated to the zLinux guest.
	N	1700.02	The FBA devices mapped to the connected port and generated on the VM side can be added to the guest and be used regardless of masking. So adding devices to the guest systems shows to be controlled by the VM and not the VCM.
	N	1700.03	When CKD BCVs are online to the host, the establish or restore for TimeFinder mirror will be rejected with the message that the devices is online.
	N	1700.04	There are no PDEV for non-active CKDs when zLinux is run as a guest.

Table 4 Known problems and limitations (page 26 of 26)

Product	Update	Number	Description
zLinux-specific (con't)	N	1700.05	The following is not supported for zLinux: SRDF/Star, SRDF/A MSC, ECA, or the <code>storstp</code> and <code>storevntd</code> daemons.
z/OS-specific	N	400.01	If the Symmetrix array is running Enginuity 5771 or later, do not delete the default Access Control group called UnknwGrp. In addition, the access IDs and access groups should not be removed from the UnknwGrp group. If these items are removed, the Symmetrix array will not be properly discovered.
	N	400.02	VDEVs may not be used as gatekeepers on z/OS. Exclude all VDEVs using the <code>SYM\$GAVD DD</code> statement (or it's USS equivalent <code>gkavoid</code>). Refer to the <i>EMC Solutions Enabler Installation Guide, V7.0</i> for more information.
	N	400.03	During the SSL handshake process, the SSL-enabled client does a reverse lookup of host name using the IP address of the SE server to which it is connecting. If the fully qualified host name from the lookup does not match the host's fully qualified name, an SSL handshake error will occur. To resolve this, the z/OS certificates may be generated with additional hostnames when the <code>zoscert</code> command is run. For example, add an alternate hostname like this when prompted by the <code>zoscert</code> command: Fully qualified z/OS hostname []: a1.host.domain b2.host.domain

Technical notes

This section provides technical notes for advanced configuration of Solutions Enabler V7.0.

VMware setup

At least three unique gatekeepers must be assigned to each virtual machine, as a raw device, to provide Solutions Enabler capabilities to each virtual machine. Based on the number of applications running on the guest, more gatekeepers may be required. Individual applications may have specific requirements for gatekeepers; refer to the appropriate release notes or install documents.

Network IPsec features not supported

The following network IPsec features are not supported with Solutions Enabler V7.0:

- ◆ Can only target and manage Port 0 IPsec parameters on the directors. Port 1 not supported. The `symipsec` commands will always default to Port 0.
- ◆ Compression Parameter Indexing (CPI) (inbound and outbound processing) for manual mode is not supported.
- ◆ For authentication modes, Compression and Authentication header (AH) in policy proposals are not supported.
- ◆ DSA and RSA authentication methods are not supported in IKE transforms. Only the pre-shared key method is supported.

Access Control setup

Use of the Symmetrix Access Control feature requires the help of EMC Customer Service to initially set up your Symmetrix array. For more information, contact your EMC Representative and refer to the *EMC Solutions Enabler Symmetrix Array Management CLI Product Guide*.

The Solutions Enabler (`symacl`) command provides full support for open systems. Access Control can be enforced for SYMAPI-based applications on z/OS platforms. However, z/OS and AS/400 cannot be used as the Access Control administration node.

Possible impact from host upgrades

Since host access IDs are tied to the host hardware, upgrading or changing hardware components might result in a change to the host access ID. If the host access ID changes, the host may be denied access or assume a different set of privileges if the default access ID is present. If the host being upgraded had its access ID registered in a Symmetrix Access Control group then you must make sure that the host's Access Control privileges do not change as a result of the host upgrade.

For a host that is not an Access Control administrative host, the `symacl list -acl` command shows the Access Control group to which the host belongs. If after the host upgrade the group name changes, then it will be necessary to remove this host's old access ID from the Access Control database and replace it with the new access ID. The `symacl -unique` command can be run on the upgraded host to obtain the new host access ID.

If the host being upgraded is an administrative host, and a second Access Control administrative host does not exist, one should be setup temporarily as an Access Control administrator in case the access ID of the primary administrative host changes. This will allow the access ID of the main administrative host to be upgraded without loss of administrative control. After the upgrade of the administrative host, execute a list action:

```
symacl list -v -sid SymmID
```

If the host no longer has ADMIN or ADMINRD privilege, then the access ID of the host has changed and the new ID must be entered. To refer to the new host ID, enter:

```
symacl -unique
```

On the secondary administrative host, the old access ID of the primary administrative host can be removed and the new access ID can be added to the proper Access Control group.

Use of an alternate access ID

The following new options file setting, if set to ENABLE, allows you to the `symacl -unique` command to generate a random Access ID for the host that is not tied to its hardware:

```
SYMAPI_ALTERNATE_ACCESS_ID = ENABLE|DISABLE
```

Note: This option is for x86 (32-bit Intel), x86_64 (64-bit), and IA64 hardware platforms only.

When this option is changed, you must run the following command to refer to the new host ID:

```
symacl -unique
```

When this mode is used, the access ID is stored on disk in a file maintained by Solutions Enabler (LockBox). If that file is lost, your access IDs are lost and the host may not be able to access the arrays if Access Control is enabled. It is recommended that you back up this file.

z/OS technical notes

The following technical notes are specific to the z/OS operating environment.

#04DDDEF

Since you will install Solutions Enabler into the same SMP/E zone as the SSCF560 FMID, #04DDDEF will replace temporary and permanent DD definitions in the target and distribution zones. If these DD definitions do not exist, the SMP/E DDDEF REPLACE statement will end with condition code 4, indicating that there was nothing to replace. This is generally expected, and is not an error.

#05RECEV

The #05RECEV job may end with a return code of 16 if your site default assembler version does not point to IEV90. The SMP/E message will be:

```
GIM23401T ** PROGRAM IEV90 WAS REQUIRED FOR SMP/E PROCESSING BUT WAS NOT AVAILABLE.
GIM20501I      RECEIVE PROCESSING IS COMPLETE. THE HIGHEST RETURN CODE WAS 16.
```

If this message appears, customize and run the ASMHA job provided in the RIMLIB and then resubmit #05RECEV.

#12CNTRL

The #12CNTRL enables control operations which are disabled by default. You must make one manual change to the input statements for the AMASPZAP utility. Each REP statement is commented out; before you submit the job, you must remove the asterisk from the first column of each REP statement that you want to activate. Comments in the JCL indicate the correspondence of REP statements to the control functions they enable.

STEPLIB APF authorization

Since Solutions Enabler needs SCF to run, the SCF link lib must be included in the STEPLIB concatenation for the RMLIB members #09IVP, #10ECCIN, #SEMAGNT, #STORAPI, and #STOREVT. The SCF link library must already be authorized for SCF to execute, so if SCF is active, and if your Solutions Enabler load library is APF authorized, the APF requirements for these three jobs are satisfied.

Note that the SCF link library may also be specified in the system link list or LPA, in which case you may comment out the DD statement that points to the SCF link library.

Gatekeeper assignment

Unlike the open systems environment where gatekeepers can be selected, in an IBM operating system, the first on-line UCB address is used as a gatekeeper. Because a large number of I/O operations may be issued to the device, system performance may be degraded if a paging or spool file is selected as a gatekeeper. To prevent the server from selecting an unsuitable device as a gatekeeper, add the device to the gatekeeper avoid file (SYM\$GAVD). For more information, refer to the *EMC Solutions Enabler Installation Guide*, V7.0.



CAUTION

When using Solutions Enabler for z/OS with the EMC Symmetrix Dynamic Address Switching (S/DAS) utility, you must ensure any online SRDF device that is a candidate for swapping is never used as a gatekeeper device, by adding it to the gatekeeper avoid file. In addition, VDEVs may not be used as Gatekeepers on z/OS. Exclude all VDEVs via the `SYM$GAVD` DD statement (or its USS equivalent `gkavoid`). Refer to the *EMC Solutions Enabler Installation Guide*, V7.0 for more information.

Enabling control functions

All the control functions are disabled when shipped. When the control functions are enabled, they will execute in an *unprotected* state.

A zap is provided in the RIMLIB that allows these functions to be turned on if a site determines it is necessary to do so. This zap job (job #12CNTRL in the RIMLIB) allows open system hosts to establish and split BCV and SRDF pairs outside the IBM environment.



CAUTION

Be careful when turning on these functions, because security checks are not performed.



CAUTION

If security is an issue at your installation, *do not* install the control functions on your workstations and *do not* apply the optional PTF.

Documentation

These release notes accompany the EMC Solutions Enabler V7.0 documentation set:

- ◆ *EMC Solutions Enabler Documentation Roadmap*
- ◆ *EMC Solutions Enabler Installation Guide*
- ◆ *EMC Solutions Enabler Symmetrix CLI Quick Reference*
- ◆ *EMC Solutions Enabler Symmetrix CLI Command Reference HTML Help* — **NEW**
- ◆ *EMC Solutions Enabler Symmetrix Array Management CLI Product Guide*
- ◆ *EMC Solutions Enabler Symmetrix Array Controls CLI Product 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 Open Replicator CLI Product Guide*

The Solutions Enabler manuals listed above can all be found on the EMC Powerlink website:

<http://Powerlink.EMC.com>

Note: For detailed interoperability information, refer to the E-Lab Interoperability Navigator, which can be reached at <http://elabnavigator.EMC.com>.

Software media, organization, and files

This section describes the Solutions Enabler kit and the Solutions Enabler z/OS Kit.

EMC Solutions Enabler kit

The EMC Solutions Enabler kit contains a set of runtime libraries required by the SYMAPI, CLARAPI, and STORAPI application programming interfaces, and a comprehensive Symmetrix Command Line Interface (SYMCLI), enabling you to manage and control all aspects of your storage environment. SYMCLI is a special command set that runs on various open system platforms and supports client/server computing environments.

Note: For detailed interoperability information, refer to E-Lab Interoperability Navigator at <http://elabnavigator.EMC.com>.

Solutions Enabler contains two distinct components:

- ◆ A storage component that supports storage arrays, including the EMC Symmetrix and CLARiiON storage arrays.
- ◆ A Storage Resource Management (SRM) component that supports storage management resources, including database management systems (DBMS), file systems, logical volume managers (LVMs), and statistics.

Solutions Enabler z/OS kit

The z/OS installation kit should be downloaded from Powerlink to a PC running Microsoft Windows. An installation batch file has been provided (`uploadSE.bat`) to transfer the software kit to the target z/OS machine, after which the normal electronic kit installation process is used to extract and install the software. In the z/OS environment, Solutions Enabler contains a storage component that supports EMC Symmetrix storage arrays. Executable components are:

- ◆ SYMAPI server daemon for remote client connections (`storsrvd`)
- ◆ Base daemon for offloaded discovery and gatekeeper management (`storapid`)

- ◆ Event daemon; required by EMC Symmetrix Management Console (storevntd)
- ◆ stordaeomon CLI to manage the daemons

Note: The Solutions Enabler SYMCLI is NOT included in the z/OS runtime kit. You may use the SYMCLI from open systems hosts to connect to the SYMAPI server daemon.

Installation

Detailed installation and upgrade procedures are provided in the *EMC Solutions Enabler Installation Guide, V7.0*.

Troubleshooting and getting help

When experiencing difficulties with your host and connected storage environment, be sure to examine the [“Known problems and limitations” on page 28](#) and the [“Technical notes” on page 55](#) to see if your difficulty is a known problem recognized by EMC.

Some functions described in these release notes and/or in the Solutions Enabler documentation set may not be supported by all versions of Enginuity or Solutions Enabler in use. Check all specifications and limitations defined in E-Lab Interoperability Navigator, which can be reached at <http://elabnavigator.EMC.com>, to ensure your host operating system is supported. Also examine the Symmetrix you are managing, noting its version of the Symmetrix Enginuity operating environment. Correlate Enginuity feature behaviors and problems while referencing parameters and limitations. If an EMC Solutions Enabler feature does not function properly, or does not function as described in the Solutions Enabler documentation set, contact the EMC Customer Service for assistance.

Where to get help

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

Product information — For documentation, release notes, software updates, or for information about EMC products, licensing, and service, go to the EMC Powerlink website (registration required) at:

<http://Powerlink.EMC.com>

Technical support — For technical support, go to EMC Customer Service on Powerlink. To open a service request through Powerlink, you must have a valid support agreement. Please contact your EMC sales representative for details about obtaining a valid support agreement or to answer any questions about your account.

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