



RELEASE NOTES

EMC®
Solutions Enabler
Version 6.4.1

Release Notes

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These release notes identify the Solutions Enabler V6.4.1 enhancements, any known functionality restrictions, and performance issues that may exist with this version of Solutions Enabler and your specific storage environment. These release notes provide the latest information not included in the EMC Solutions Enabler Version 6.4 documentation set.

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 Symmetrix Enginuity™ operating environment. 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: Component licensing](#)” on page 78 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 critical changes, new features, and software enhancements released with the EMC Solutions Enabler V6.4.1 product. These enhancements extend the existing functionality, providing you with the industry-leading technology you expect from EMC.

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, please refer to E-Lab Interoperability Navigator at:

<http://elabnavigator.EMC.com>

Note: Support for Solutions Enabler V5.5 ends 9/2008, 18 months after the release of Solutions Enabler V6.4. It is recommended that customers who are still running Solutions Enabler V5.5 upgrade to a newer version as soon as possible.

Solutions Enabler V6.4.1 enhancements

This section details the Solutions Enabler V6.4.1 features and enhancements specific to the following functionality areas:

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TimeFinder/Clone: Snap from clone target devices

Solutions Enabler V6.4.1 supports snap operations from clone target devices. This feature allows the target device of a clone session to be used as a source device for one or more snap sessions.

The following restrictions apply to snap off clone target devices:

- ◆ The original clone session (`symclone`) must be in the copied state; a clone emulation session (`symmir`) must be in the split state (not background split `-bg`).

- ◆ After one or more snap sessions begin using the original clone devices, the only actions permitted on the original clone session are terminate or cancel. All other actions are blocked until all of the snaps are terminated.
- ◆ The only actions permitted on a snap session with a clone session target as their source are activate and terminate. All other actions are blocked until the original clone session is terminated.

Symmetrix disk library in output

The output from the command `symcfg list -sid SymmID -v` will now indicate if the Symmetrix array is configured as a disk library. When set, the following output displays:

```
Symmetrix Disk Library           : Enabled
```

Symmetrix disk geometry in output

The output from the command `symcfg list -sid SymmID -v` will now indicate if the disk geometry is set on the Symmetrix array. When set, the following output displays:

```
FBA Geometry Emulation          : Enabled
```

On a Symmetrix where the disk geometry is not set, the following output displays:

```
FBA Geometry Emulation          : Native
```

Disk geometry can only be set by EMC Customer Service, and it can only be set on a Symm 7. When it is set, the devices in the Symm 7 will emulate the geometry of devices in a Symm 6 (valid only for Enginuity version 5772).

Solutions Enabler V6.4 enhancements

In addition to the new features in Solutions Enabler V6.4.1, the following section details the features delivered previously in Solutions Enabler V6.4:

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SRDF: Session Recovery

SRDF[®] Session Recovery is a utility initiated by the `symrecover` command. This utility runs in the background and monitors the state of SRDF/A or SRDF/S sessions. If the utility detects a session failure, an automatic recovery and restart of the session is attempted, based on preconfigured settings made in the `symrecover` options file. The options file also provides parameters for setting up error logging and

event notification through email, and additional parameters for monitor, recovery, and restart actions.

SRDF: Reserve Capacity

SRDF/A Reserve Capacity enhances SRDF/A's ability to maintain operational state when encountering resource shortfalls that would have previously suspended SRDF/A operations. With SRDF/A Reserve Capacity functions enabled, additional resource allocation can be applied to address temporary workload peaks, periods of network congestion, or even temporary network outages. The two functions that implement SRDF/A Reserve Capacity are Transmit Idle and Delta Set Extension (DSE), and they work together to maximize availability of continuous remote replication operations while minimizing operational overhead.

SRDF: Transmit Idle

The SRDF/A Reserve Capacity feature, Transmit Idle support, allows SRDF/A sessions to seamlessly tolerate a transient link failure. This feature provides an extra level of protection from sessions dropping when the RDF link cannot transmit data. When links associated with SRDF/A are unable to transmit, the Transmit Idle state is activated. This feature is enabled in a configuration change session (using the `symconfigure` command).

SRDF: Delta Set Extension

Delta Set Extension (DSE) provides a mechanism to allow some or all of the SRDF/A cache to be temporarily destaged to disk when cache utilization reaches a specified threshold.

DSE also uses disk for reserved capacity in the event of extended link outages. SRDF uses SRDF/A DSE pools to extend the cache space available for SRDF/A cycles by offloading some or all of the cycle data from cache to pre-configured disk storage pool. These pools are configured the same as Snap pools. Using SRDF/A DSE pools provides a safety net for running SRDF/A sessions, however, SRDF/A will continue to operate normally with this feature disabled.

When used together with Transmit Idle, when links associated with SRDF/A are unable to transmit, the Transmit Idle state is activated.

SRDF/A will use DSE pools to cache data until the links return to normal.

Solutions Enabler now supports the following DSE operations:

- ◆ Create, delete, add, and remove devices for DSE pools.
- ◆ Associate up to 4 DSE pools (of one particular emulation type) to a RDF Group.

Note: The pool emulation types that can be associated with a DSE RDF group are FBA, CKD-3380, CKD-3390, or AS400.

- ◆ Set the DSE threshold when a RDF group will start spilling into a DSE pool. The DSE pool threshold value specifies the percentage of the Symmetrix array's write pending limit. Once cache usage for all active groups exceeds this set limit, the data will begin to spillover into the DSE pools.
- ◆ Configure DSE autostart to automatically activate DSE when the SRDF/A session is activated.

SRDF: Supports greater than 64 RDF groups

Solutions Enabler has added support for 128 RDF groups and 32 RDF groups per director for arrays running Enginuity 5772.

Audit log security enhancements

With the release of Enginuity 5772, a new audit log repository has been created. The messaging has been expanded to include a Security data class. With the Solutions Enabler V6.4 release, the `symaudit` command will only read the new repository if the Symmetrix is running Enginuity 5772.

The Solutions Enabler SYMCLI control commands will only write to the new repository. Older versions of Solutions Enabler will continue to use the old audit log repository. However, it is recommended that all Symmetrix management hosts be upgraded to Solutions Enabler V6.4 to assure a complete audit record of management activities if your arrays are running Enginuity 5772.

When a Symmetrix array is upgraded from an earlier Enginuity release to version 5772, the upgrade process will read the old

repository and write its contents to the new repository. This will preserve the existing auditing information.

The filtering options have been expanded to include the Activity ID and filtering on multiple functions, actions, and application names.

In addition, when User Authorization is enabled, reading the audit log will require SecurityAdmin, Admin, or Auditor role. In prior releases of Solutions Enabler, only the Monitor role was required to read the audit log.

Dynamic Cache Partitioning

A new Dynamic Cache Partitioning feature is included with Enginuity 5772, and enabled through the `symqos` command, to allow the ability to create partitions for different device groupings in addition to the default partition that all devices belong to initially. Each partition will have a target cache percentage as well as a minimum and maximum percentage. The feature also provides the ability to donate unused cache to other partitions after a specified donation time.

Note: For 5772, SRDF/A requires that all devices be in the same cache partition.

Symmetrix Priority Control

With Enginuity 5772, the `symqos` command can also be used to enable and set the priority of service time of host I/O to a device, a range or devices, or devices in a device group. The priority values are from 1 to 16, with 1 being the highest. When this feature is enabled, all devices in the Symmetrix array are set to device priority 1 by default.

Device Masking: Set HBA port flags

Solutions Enabler V6.4 provides the ability to set HBA port flags on a per initiator basis. This feature is similar to the heterogeneous host feature, however the user is able to specify the settings that are enabled and disabled. It sets the record in the database to hold information on the HBA port setting that may differ than the current setting on the FA.

Device Masking: Dynamic LUNs

When adding a list of devices or a device range, you can specify the starting LUN address for each device using the `-lun` option. Or, have the SYMAPI server assign the LUN address using the `-dynamic_lun` option. With the dynamic LUN feature, the user is not required to specify a LUN address for each device. The LUN addresses will be assigned based on what may already be in use for that host HBA.

Optimizer: Migrating devices

Optimizer with Enginuity version 5772 introduces the ability to move existing devices from their current locations to a new set of disks or to a predefined location on another disk. When devices are moved to a new set of disks, this is called a *migration* or *virtual LUN*. A migration can be used to populate newly added disk drives, or to move devices between high performance and high capacity disks. Virtual LUN supports CKD devices.

Note: The protection types must be the same for the high performance and high capacity disks.

Installation: Native installation support

Solutions Enabler V6.4 has modified its installation program to utilize native host utilities for the installation processes. On UNIX, these native programs are driven through a universal installation script. Users that would like to directly utilize the native installation utilities, must be prepared to handle all pre-installation setup, which is normally handled by the universal installation script.

The Windows installation is based upon the standard Windows MSI.

Access Control updates

The Access Control parameters `PoolName` and `GroupName` have an 8 character maximum for Enginuity 5771 and earlier. With Enginuity 5772, the maximum has been increased to 32 characters.

User Authorization enhancements

A new Auditor role has been added which, when utilized, grants the ability to view, but not modify, security settings for a Symmetrix array (including reading the audit log, `symacl list`, and `symauth`) in addition to all Monitor operations. This is the minimum role required to view the Symmetrix audit log.

In addition, if GNS enabled, the modification of GNS groups can now be controlled under User Authorization. If User Authorization is enabled, GNS group modification operations now require a minimum role of StorageAdmin.

Support for RAID-6 devices

Solutions Enabler now supports RAID-6 devices with membership types (6+2) and (14+2).

TimeFinder/Snap: SAVE device drain

In prior versions of Solutions Enabler, SAVE devices with used tracks could not be removed from a pool until all virtual snap sessions using the pool were removed to free all tracks. Beginning with Solutions Enabler V6.4, SAVE devices containing used tracks can be disabled, which will cause any used tracks to be pushed, or drained, to other SAVE devices within the same pool until the SAVE device is free, at which time it can be safely removed.

Note: SAVE device pools created using Solutions Enabler V6.4 cannot be managed using previous versions of the Solutions Enabler.

TimeFinder/Mirror: Establish while standard processes a split

Solutions Enabler now supports establishing a different BCV device to a standard device when the standard device is processing a split request (for example, when a background split is running).

TimeFinder/Clone: Modifying a copy session mode

The `set mode` action can now be used to modify the mode between Precopy, Copy, and Nocopy on clone pairs after a copy was initiated or an activate was performed.

TimeFinder/Clone: Create clone copy session in Nocopy mode

In prior releases, after a Nocopy clone pair is activated, it is put into the CopyOnAccess state, which can hinder performance since a source to target track copy must be performed before a host's read request can be serviced. Now you can override this behavior by setting the SYMAPI_CLONE_COPY_ON_WRITE options file parameter to ENABLE prior to the create operation. This will put the clone pair in CopyOnWrite state after it is activated, which can increase performance because all reads will be handled from the source device and all writes, to either the source or target device, will result in data being copied to a target device.

Note: You cannot use this option to modify the default device pair state of CKD devices. If you attempt to use this option on CKD devices, their default pair state will remain CopyOnAccess.

TimeFinder/BCV: Changes to mirror state displays

The definition of the BCV State flag, AllReady, returned in the `symdev show display` is changed for any BCVs in TimeFinder®/Clone Emulation sessions. When the device Service State is not Failed, the CLI display will appear as follows:

```
BCV State Flags                                : (AllReady)
```

The definition of the State of BCV Mirrors as returned in the `symdev show display` is changed for any BCV device in TimeFinder/Clone Emulation sessions. The state is either Synchronized when AllReady or N/A. Emulation sessions no longer displayed as Detached in this field.

The `symmir verify -bcv_mirrors`, which previously used the Synchronized BCV mirror state to verify BCV mirrors, now uses the state described above.

The definition of `symmir verify -bcv_mirrors -ready` has been changed for all BCV devices to reflect the state of AllReady and no longer considers the Synchronized state.

Open Replicator: Restoring session data

For differential push operations only, the copy session can be restored back to the control device by pulling back only the changed tracks from the remote device. The session must have been created using the `-differential` option and must be in the copied state. Hot or cold differential push sessions can be restored.

For example, if a user copied all data from the control device to the remote device(s) and then made changes to the control device, they could then recover the original data from the remote device by using the `symrcopy restore` command. When the command is issued, the session is recreated in restore mode and automatically activated. At the start of the restore operation, all control devices will be set to Not Ready status. If running a hot session, control devices will be returned to Ready status at the end of the operation (as the data begins copying). If running a cold session, the control devices will remain in Not Ready status.

Open Replicator: Pre-Copy for hot push operations

Open Replicator now includes a Precopy mode for copying data in the background before a session has been activated. The Precopy mode can be set for a hot push operation by using the `symrcopy set mode precopy` command. Hot push sessions can also be set to Precopy mode by including the `-precopy` option with either the `create` or `recreate` command.

A hot push session that is in the Precopy state will immediately begin copying data in the background. Data begins copying before the session is activated. Session data will continue copying to the remote device until either the mode is changed to `nocopy`, `copy`, or the session is activated, at which time a point-in-time copy of the control device is made. After the session has been activated, copying will continue in the CopyOnWrite (`nocopy`) or CopyInProgress (`copy`) state. The Precopy feature is only available for hot push operations.

SRM: SRM daemon added OS non-root access support

The SRM daemon has added non-root access support for Tru64 UNIX, Linux, and Windows operating systems. The SRM daemon only supports local client connections. The application must run either on the same host or a different host and connect to a SYMAPI server that is local to the daemon. The application cannot communicate directly with a daemon on another host.

Note: Refer to the E-Lab Interoperability Navigator at <http://elabnavigator.EMC.com> for supported Solutions Enabler platforms.

SRM: Supported platforms and file systems

SRM file system commands are now supported for the VERITAS VxFS file system on Linux platforms.

Note: Refer to the E-Lab Interoperability Navigator at <http://elabnavigator.EMC.com> for supported Solutions Enabler platforms and a list of the supported logical volume managers for Solutions Enabler.

Monitoring of SAVE device pools

The `symcfg list -pools` and `symcfg show -pools` commands return monitoring information for all the types of pools. A set of filters are provided to target a specific pool.

Support added for copying device group to device group

Devices from an existing device group can now be copied into another existing device group of compatible type. When the `copy` action is used, one standard device is copied from the specified source device group to the destination device group. The source and destination device groups must have compatible types. When the `copyall` action is used, copies of all standard devices are copied from the specified source device group to the destination device group. The source and destination device groups must have compatible types. When performing a `-copyall` action, the types or number of devices that are included in the copy can be limited using the various filter options.

Move or copy composite group devices: Support added

Support has been added to move or copy devices from an existing composite group to another existing composite group of compatible type. When the `move ld` or `moveall` action is used, the devices are removed from the source composite group and added to the destination composite group. When the `copy ld` or `copyall` action is used, copies of the devices will be added to the destination composite group, and the source composite group will remain unchanged.

Statistics enhancements

The `symstat` command has been extended to include SRDF I/O statistics: device-level, RDF group-level, link-level, and director-level statistics. In addition, support has been added for SRDF/A DSE statistics, GigE network statistics, and Ficon mainframe director statistics.

Fixed problems

This section identifies problems fixed in Solutions Enabler V6.4.1. In addition to these release notes, Solutions Enabler fixes, known issues, and limitations (and other EMC product releases) can now be viewed, searched, and parsed online via the EMC Issue Tracker tool available from the EMC Powerlink website.

Note: Issue Tracker is the main source for details about all open and fixed Solutions Enabler issues. It is regularly updated to contain the most current information regarding all versions of the Solutions Enabler. Details from Issue Tracker can be viewed on screen, exported to Excel, and printed for your convenience. For more information on accessing and using EMC Issue Tracker, refer to [“Using Issue Tracker” on page 57](#).

Table 1 Solutions Enabler V6.4.1 fixed problems (1 of 4)

Issue	Feature type	Found in version	Problem summary/Symptom	Fix summary
18039110	Base Functionality	6.0.0.0	A time difference exists between the Symmetrix array and hosts as seen by symcfg list -timestamps -sid xxxx command. Solutions Enabler always assumes that the time returned by the Symmetrix array is in the eastern time zone and converts it to GMT, 5 hours added. This will not work in all time zones.	A fix has been made to Solutions Enabler to resolve this issue.
18350600	Base Functionality	6.4.0.0	Solutions Enabler 6.4.0 installer is overwriting the file snapapi.dll on Windows hosts that have Acronis True Image Agent installed. Unable to use Acronis True Image Agent software after a Solutions Enabler V6.4 install	The Solutions Enabler installation has been modified to not overwrite these files.
18187286	Base Functionality	6.4.0.0	Solutions Enabler installation issue on Solaris system. Under certain circumstances Solutions Enabler 6.4 installations may fail if the tr instance used is /usr/xpg4/bin/tr not /usr/bin/tr.	A change has been made to the Solutions Enabler installation script to resolve this issue.

Table 1 Solutions Enabler V6.4.1 fixed problems (2 of 4)

Issue	Feature type	Found in version	Problem summary/Symptom	Fix summary
18207442	Base Functionality	6.3.1.0	Unable to enable consistency using the symcg -cg xxx enable command after adding new devices to an RDF consistency group. If there is a large number of RDF devices in the consistency group, and not all the devices are contiguous, Solutions Enabler's calls to enable consistency on the Symmetrix can leave out pertinent consistency information that will cause the command to fail. This is due to a syncing problem in Solutions Enabler that prevents it from correctly seeing when a device has been enabled for consistency.	A fix has been made to Solutions Enabler to resolve this issue.
16318566	Base Functionality	6.0.3.0	The symaudit log shows an incorrect date timestamp. The year displays as a negative value. The format of the time fields in the audit record are in ASCII, which was causing the calculation problem. The Enginuity timestamp is now the source for the audit log record. Solutions Enabler converts the Enginuity time to the host time by compensating for the offset between the host's clock and array's clock.	A fix has been made to Solutions Enabler to resolve this issue.
17857532	Device Masking	6.3.2.0	Solutions Enabler fails to unmap a VCM device. This can occur when a host is connected to a Symmetrix array on a single port with more than one gatekeeper. That one gatekeeper is mapped to one or more ports not connected to host as well. As expected, attempts to unmap the last gatekeeper from the port connected to the host should fail. However, attempts to unmap the last gatekeeper device from the port not connected to the host should be allowed, but are currently being blocked.	A fix has been made to resolve this issue. For environments running the 6.3.2.x family of Solutions Enabler, hotfix 6.3.2.20 is also available on Powerlink for this issue.
18326606	Open Replicator	6.4.0.0	The symcopy recreate operation fails with Solutions Enabler V6.4.0. This operation worked with Solutions Enabler V6.3.1. Error returns when trying to recreate an Open Replicator session using Solutions Enabler 6.4.	A fix has been made to Solutions Enabler to resolve this issue.

Table 1 Solutions Enabler V6.4.1 fixed problems (3 of 4)

Issue	Feature type	Found in version	Problem summary/Symptom	Fix summary
17984980	Open Replicator	6.3.2.0	The remote Symmetrix array is not visible after SYMCLI discovery or sync operations. This issue occurs if a remote array has no FAs or all of the FAs are offline. When this occurs, the symcfg list command will not return the remote Symmetrix array.	A fix has been made to Solutions Enabler to resolve this issue.
16742030	Open Replicator	6.3.1.0	A symcopy recreate operation results in a core dump. This issue occurs due to a timing issue that may be caused by the back-end DA activity being too high, or the devices involved in the recreate operation are extremely large and therefore require a lot of time to resolve.	A fix has been made to Solutions Enabler to resolve this issue. For environments running the 6.3.2.x family of Solutions Enabler, hotfix 6.3.2.20 is also available on Powerlink for this issue.
18031536	SRDF Family	6.3.2.0	The symrdf -sid ### -f file -RDFG # query and receives following error: The RA groups of the devices are not the same, please specify devices of the same group. This occurs when the file contains consistent RDF R1 devices. In this case Solutions Enabler incorrectly uses the RDF group from the first device's m1 position instead of the RDF group that was passed in. For example, the following command is issued: <pre>symrdf -sid 1234 -f file -RDFG 8.</pre> In this example, assume that the file contains the following information: <pre>001 - m1 rdf group 4, m2 rdf group 8 002 - m1 rdf group 8, m2 rdf group 5 003 - m1 rdf group 8, m2 rdf group 5</pre> Notice that the first device, 001 m1 position has an RDF group of 4, which Solutions Enabler incorrectly uses to validate against the other devices. It should have used the RDFG group 8, which was passed in the command line. Solutions Enabler confirms that all devices are from the same RDF group before allowing the query. Instead of checking that all devices belonged to RDF group 8, it incorrectly checked that all RDF groups were from RDF group 4 (the RDF group from m1 of the first device).	A fix has been made to resolve this issue. For environments running Solutions Enabler V6.3.2, hotfix 6.3.2.20 is also available on Powerlink to resolve this issue.

Table 1 Solutions Enabler V6.4.1 fixed problems (4 of 4)

Issue	Feature type	Found in version	Problem summary/Symptom	Fix summary
18123016	SRM	6.4.0.0	Documentation and manpage incorrectly states that the storsybs12.5d daemon can connect to a Sybase ASE 12.0 server. The storsybs12.5d daemon can connect to 12.5 servers. It cannot connect to 11.9 or 12.0 servers. Error displays when trying to connect to Sybase ASE 11.9 or 12.0 servers with the storsybs12.5d daemon.	The manpage in the man directory has been updated to include this clarification. The Solutions Enabler Product Guides will be updated in a future release.
17849416	SRM	6.3.1.0	Mapping LVM logical volumes takes longer than previous versions of Solutions Enabler. Starting with Solutions Enabler V6.3, changes were made that removed performance optimization when mapping HP LVM logical volumes, which caused the timing delay.	A fix has been made to Solutions Enabler to resolve this issue. For environments running the 6.3.2.x family of Solutions Enabler, hotfix 6.3.2.20 is also available on Powerlink for this issue.
252966SE	TimeFinder Family	6.3.2.0	The symmir command ignores the SYMAPI_WAIT_FOR_BCV_SYNC=TRUE option file setting. This error occurs when using clone emulation.	A fix has been made to Solutions Enabler to resolve this issue. For environments running the 6.3.2.x family of Solutions Enabler, hotfix 6.3.2.20 is also available on Powerlink for this issue.

Environment and system requirements

The following should be considered when working with Solutions Enabler V6.4.1.

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, please refer to E-Lab Interoperability Navigator, which can be reached at <http://elabnavigator.EMC.com>.

Disk space requirements

The disk space requirements (shown in MBs) are listed in three tables:

- ◆ [Disk space requirements for AIX, Solaris, Tru64 UNIX 19](#)
- ◆ [Disk space requirements for HP-UX and Linux..... 20](#)
- ◆ [Disk space requirements for Windows..... 21](#)

Note: A value of 0 MBs means the component is not supported on that platform

Table 2 Disk space requirements for AIX, Solaris, Tru64 UNIX (1 of 2)

Install components (in MBs)	AIX	Solaris x86	Solaris	Tru64 UNIX
Persistent Data Files	1	1	1	1
Core Components	27	11	18	6
Base Storage Libraries	12	10	23	3
Base Mapping Libraries	2	2	3	1
Control Storage Libraries	7	5	8	1
Command Line Tools (optional component)	62	42	55	60
Database Mappings (optional component)	1	0	1	1
Enable 64-bit Component install (optional component)	7	6	10	5

Table 2 Disk space requirements for AIX, Solaris, Tru64 UNIX (2 of 2)

Install components (in MBs)	AIX	Solaris x86	Solaris	Tru64 UNIX
Base Storage 64-bit Libraries (optional component)	10	9	13	8
Base Mapping 64-bit Libraries (optional component)	10	2	4	1
Full SRM (optional component)	48	0	16	1
SMI-S Provider (optional component)	0	0	111	0
Java Native Interface (optional component)	56	0	85	0
PERL 5.8 for STAR and symrecover (optional component)	20	17	19	19

Table 3 Disk space requirements for HP-UX and Linux (1 of 2)

Install components (in MBs)	HP-UX	HP-UX (IA64)	Linux	Linux (IA64)	Linux (AMD64)
Persistent Data Files	1	1	1	1	1
Core Components	27	37	11	25	13
Base Storage Libraries	32	46	16	42	19
Base Mapping Libraries	4	8	2	7	3
Control Storage Libraries	11	27	5	24	10
Command Line Tools (optional component)	63	151	43	105	46
Database Mappings (optional component)	1	1	1	0	0
Enable 64-bit Component install (optional component)	7	1	0	12	6
Base Storage 64-bit Libraries (optional component)	11	0	0	19	9
Base Mapping 64-bit Libraries (optional component)	9	0	0	3	2
Full SRM (optional component)	37	1	4	1	1

Table 3 Disk space requirements for HP-UX and Linux (2 of 2)

Install components (in MBs)	HP-UX	HP-UX (IA64)	Linux	Linux (IA64)	Linux (AMD64)
SMI-S Provider (optional component)	0	0	74	0	0
Java Native Interface (optional component)	81	0	49	0	0
PERL 5.8 for STAR and symrecover (optional component)	20	25	18	21	18

Table 4 Disk space requirements for Windows

Install components (in MBs)	Windows (x64)	Windows (IA64)	Windows (x86)
Persistent Data Files	1	1	1
Core Components	17	42	17
Base Storage Libraries	41	83	26
Base Mapping Libraries	6	16	3
Control Storage Libraries	16	53	7
Command Line Tools (optional component)	12	123	11
Database Mappings (optional component)	0	0	1
Enable 64-bit Component install (optional component)	9	22	0
Base Storage 64-bit Libraries (optional component)	14	40	0
Base Mapping 64-bit Libraries (optional component)	3	8	0
Full SRM (optional component)	2	2	3
SMI-S Provider (optional component)	0	0	51
Java Native Interface (optional component)	0	0	45
PERL 5.8 for STAR and symrecover (optional component)	36	22	19

Client/server interoperability

The server component of Solutions Enabler V6.4.1 SYMAPI is compatible with the client component of older SYMAPI versions from V5.5 and up. When planning to upgrade from V5.5, or V6.x to V6.4.1, it is possible to do so in a staged fashion, upgrading the server(s) first, and then the client(s). If access to V6.4.1 enhanced features is required only from the server systems, then there is no requirement to upgrade client systems. For clients to gain access to V6.4.1 enhanced features, they must be upgraded.

If an V6.4.1 client application connects to an older server and attempts to call, or to access, the enhanced SYMAPI functions, the error SYMAPI_C_NO_SERVER_SUPPORT is returned and new structure fields will be zero.

Secured sessions using SSL are only available when both the client and server are running Solutions Enabler V6.0 or higher. However, both V6.0 client and server by default will negotiate a non-secured session if the remote peer is using a version prior to V6.0 software, or if the remote peer is V6.0 but is running on a platform which is not SSL-capable. This behavior is intended to support a transition period where server and clients are not upgraded simultaneously. For more information, see the *EMC Solutions Enabler Version 6.4 Installation Guide*.

Secure communications requirements

You can optionally configure SSL to provide secure communication and allow Client and Server to communicate over an authenticated, encrypted connection.

[Table 5](#) lists the host operating systems that support SSL.

Table 5 Host operating system support for SSL

Supported operating system
AIX (32- and 64-bit)
HP-UX (32- and 64-bit) HP-UX Itanium (64-bit)
Tru64 UNIX (64-bit)
Linux (32-bit) Linux Itanium (64-bit) Linux AMD/EMT64 (64 bit)
Solaris (32- and 64-bit)
Windows (32-bit) Windows Itanium (64-bit) Windows AMD (64-bit)
z/OS

Note: Only platforms that support multi-threading support secure connections. Only multithreaded libraries support secure sessions.

z/OS-specific requirements

The following are the z/OS-specific requirements. For details on configuring your z/OS environment, refer to the *EMC Solutions Enabler Installation Guide*.

Note: The following Solutions Enabler features are not supported on z/OS: RDF daemon, GNS, SRM, and STAR.

Platform requirements

EMC Solutions Enabler for z/OS runs on the following platforms:

- ◆ All IBM supported releases of z/OS.
- ◆ Language Environment version supported by the host operating system.
- ◆ UNIX System Services socket support.

Note: Solutions Enabler does not support older HPNS or IUCV sockets (non-integrated sockets).

- ◆ TCP/IP protocol stack which can connect to USS socket support. Only IBM TCP/IP has been qualified by EMC. Support for other protocol stacks must be requested through the EMC Request for Price Quotation (RPQ) process.

There are no special requirements to enable IBM TCP/IP support, and there are no known fixes that must be applied.

EMC supporting software requirements

EMC Solutions Enabler requires EMC ResourcePak[®] Base Version 5.4.0 or higher, which includes the EMC Symmetrix Control Facility (SCF) server software. Before installing Solutions Enabler, install ResourcePak Base. You should have received all the installation materials and documentation with your EMC ControlCenter[®] Solutions Enabler package.

Solutions Enabler (FMID SSEM640) is installed into the same SMP/E zone as SCF (FMID SSCF540). The SEMJCL installation JCL customization tool and instructions help guide you through the installation steps for Solutions Enabler.

z/OS-specific directory structure requirements

With the introduction of SSL-protected client/server sessions in Solutions Enabler V6.2, the installation process looks for the installer's instructions about where to place the SYMAPI base directory. The base directory specifies a high level location where the standard SYMAPI directory will reside. Since use of SSL was optional, the USS directories were not required to be created.

The SYMAPI directory structure is required on any host running Solutions Enabler V6.3 or higher. Configuration files must reside in the `config` directory under the base directory, and log files will be stored in the `log` directory.

USS file system requirements

The following are z/OS USS file system requirements.

Configuration

Solutions Enabler has traditionally avoided requiring the use of the USS file system (HFS or z/FS) for configuration and log data.

On Solutions Enabler V6.3 or higher, some configuration files will be supported in USS. Refer to the *EMC Solutions Enabler Installation Guide*, V6.4 for more details.

Logging

Previously, the SYMAPI Server has written its log data to the `ANRLOG DD` statement of the `#SEMAGNT RIMLIB` member. This `DD` statement customarily directed output to a JES spool file. The log data was written continuously to the same file and no management of the log data was supported.

With Solutions Enabler V6.3 or higher, the server, base, and event daemon will write data to log files in the USS file system. Summary log data is written to `SYSPRINT DD`, but the comprehensive detail is written to USS files.

SYMAPI log file

In previous releases, the SYMAPI log file data has been written to the `SYM$LOG DD` statement of the `#09IVP`, `#10ECCIN`, and `#SEMAGNT RIMLIB` members (directed to JES spool by default, but can be directed to disk if desired). With Solutions Enabler V6.3 or higher, all SYMAPI log data will be written to a standard dated log file in the SYMAPI log directory.

USS file system options

The following USS file system options can be configured to meet your environment.

SSL certificates

Solutions Enabler supports SSL-protected transmission of client/server data. SSL protection is optional, and is disabled by default.

Note: Note: For Solutions Enabler V6.4.x or higher, the certificate installation now takes place on the Windows host from which the z/OS installation files were uploaded. A batch file must be run to generate and upload the certificates to the correct USS location on the z/OS host. Refer to the *EMC Solutions Enabler Installation Guide*, V6.4 for more information.

SYMAPI database

Solutions Enabler V6.3 or higher provides the option of storing the SYMAPI Database in a USS file. In this release, the default will be to continue to use a z/OS data set. By removing the SYM\$DB DD statement, the customer can direct SYMAPI to use a USS file to store the database. It is highly recommended that a USS file be used to store the database.

Symmetrix Avoid, Gatekeeper Avoid and Select, and INQ files

If the base daemon is running and any of the select or avoid files are in use, the SYMAPI server may be configured to look for these files in USS. This configuration will eliminate the need to duplicate this information in the PARMLIB dataset, where it was previously stored. By removing the relevant DD statements (SYM\$AVD, SYM\$GAVD, SYM\$GSEL, and/or SYM\$INQ), SYMAPI will automatically look in USS for these files.

Running z/OS as a guest

When running z/OS as a guest under the VM operating system, the TimeFinder and SRDF utilities require special consideration. Devices must be defined to VM (SET RDEV) as:

```
TYPe UNSUPported DEVCLass DASD DPS Yes RESERVE_RELRelease Yes
```

These devices must be attached to the z/OS guest.

Note: VM does not allow volumes defined as unsupported to be attached to SYSTEM, or used to IPL a virtual machine.

Virtual memory requirements

EMC Solutions Enabler software always uses allocated memory above the 16 MB line. The actual region required depends on many factors such as the number of active tasks and connections, the number of managed Symmetrix arrays, and devices. EMC recommends specifying `REGION=0M` on the JOB card or EXEC card for the following jobs:

- ◆ `#09IVP`
- ◆ `#01ECCIN`
- ◆ `#SEMAGNT` and any other JCL which uses `#STORSRV` as a model
- ◆ `#STORAPI` and any other JCL which uses `#STORAPI` as a model
- ◆ `#STOREVT` and any other JCL which uses `#STOREVT` as a model

These members are distributed with `REGION=0M` already specified on the EXEC cards. Your site may have SMF or JES exits or security rules established which restrict the use of `REGION=0M`. Check with your system programmer to verify that the submitting user has the authority to use `REGION=0M`.

Backward/forward compatibility for applications

An application built to run against any Solutions Enabler V5.x or V6.x version will execute with V6.4.1 SYMAPI runtime libraries without modification. Applications built to run a newer version of SYMAPI can successfully access any configuration database created by an earlier SYMAPI application.

Note: SYMAPI database access is not forward compatible because a SYMAPI library cannot access a database created by a newer version of a SYMAPI application. If, for example, the version of the local library becomes out of sync with the version of the local SYMAPI database (as a V5.5, or V6.x SYMAPI library call within EMC ControlCenter attempting to access a V6.4.x database) it will return error: `SYMAPI_C_DB_FILE_TOO_NEW`.

This restriction relates only to local databases. In client/server environments, accesses to a server database of a later version are automatically resolved by the SYMAPI, which performs all necessary translation of information between the client and the server.

Known problems and limitations

The following are performance or functionality restrictions and limitations that may apply to your specific storage environment or host platform.

In addition to these release notes, Solutions Enabler fixes, known issues, and limitations (and other EMC product releases) can now be viewed, searched, and parsed online via the EMC Issue Tracker tool available from the EMC Powerlink website.

Note: Issue Tracker is the main source for details about all open and fixed Solutions Enabler issues. It is regularly updated to contain the most current information regarding all versions of the Solutions Enabler. Details from Issue Tracker can be viewed on screen, exported to Excel, and printed for your convenience. For more information on accessing and using EMC Issue Tracker, refer to [“Using Issue Tracker” on page 57](#).

Functionality restrictions and limitations

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

◆ Installation-specific restrictions	29
◆ Operating system-specific	34
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◆ SDDF-specific restrictions	48
◆ Access Control-specific restrictions	48
◆ Double Checksum-specific restrictions	49
◆ Configuration Manager-specific restrictions	51
◆ SRM-specific restrictions	53

Installation-specific restrictions

The following are the installation-specific performance or functionality restrictions:

UNIX Interactive installation

The UNIX Interactive installation incorrectly allows the user to select the permission bits of `/var/symapi`. However, there are restriction for the permission bits. The owner field value must be 7 (read, write, and execute permissions), the group and other field can have values of 0,1,4,5, or 7. For example, valid permission values for `/var/symapi` directory would be 7, 7, 7 (owner,group,other).

Monitoring Kits

The Solutions Enabler monitoring kits are no longer available on the product CD. They may still be obtained on the EMC Powerlink website at <http://Powerlink.EMC.com>.

Solutions Enabler V6.4.x upgrade requires a Provider upgrade

Users of the SMI-S Provider, VDS Provider, and/or VSS Provider that are upgrading to Solutions Enabler V6.4.x must upgrade their provider to V3.2. Earlier versions of the Providers are not compatible with Solutions Enabler V6.4.x.

Upgrading Solutions Enabler on Windows

When upgrading from a Solutions Enabler V6.3 to Solutions Enabler V6.4, you may encounter an error message stating that the installation is aborting because of a version mismatch.

This occurs because older versions of Solutions Enabler may leave behind data in the `HKEY_LOCAL_MACHINE\SOFTWARE\EMC` registry key. To correct this problem, delete the `HKEY_LOCAL_MACHINE\SOFTWARE\EMC` registry key (if possible), or try deleting the `EMC\EMC Solutions Enabler` registry key, and then retry the installation.

HP-UX installs and swlist command

The HP-UX native installation package for Solutions Enabler SYMCLI contains 2 sets of filesets. One set gets installed under `/opt/emc` (default install root directory) and the other gets installed under `/usr/emc` (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 `swlist` command will show 2 entries for SYMCLI as shown in the following example:

```
swlist | grep SYMCLI
SYMCLI          V6.4.0.0      EMC Data Storage Systems Private Limited
SYMCLI          V6.4.0.0      EMC Data Storage Systems Private Limited
```

Solutions Enabler V6.4 cannot be rolled back

Solutions Enabler V6.4 is installed using native installation utilities. Therefore, if you want to install an earlier version of Solutions Enabler, you must uninstall Solutions Enabler V6.4 before reinstalling the earlier version.

Windows environment

In a Windows environment, EMC Solutions Enabler requires the Microsoft Windows Installer version 3.1 redistributable package, `WindowsInstaller-KB893803-v2-x86.exe`.

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.

Windows Server 2003 Cluster installation

When installing Solutions Enabler on the Windows Server 2003 platform in a cluster node environment, do not use terminal services for remote install.

Windows Service Manager causes failure on upgrade

If the Windows Services Manager application is open while upgrading from a previous version, the installation may fail with the following message:

```
Could not uninstall SYMAPI server.
```

Closing the Services Manager will remedy this problem.

Installing (mount) Solutions Enabler on all Linux platforms

When mounting the installation CD-ROM on Linux, use the following mount command:

```
mount -t iso9660 -o ro /dev/cdrom /cdrom
```

Uninstalling Solutions Enabler V6.4 on SUSE Linux

When uninstalling Solutions Enabler V6.4 from a SUSE Linux platform, the following message might occur:

```
/dev: is a directory
```

Ignore this occurrence as it is not a concern.

Red Hat Linux library compatibility issue

Solutions Enabler requires the library `/usr/lib/libstdc++.so.5` (included in the `compat-libstdc++-33` library in Red Hat Linux). Run the following command to check for compatibility:

```
rpm -qa | grep libstdc++
libstdc++-4.1.1-52.el5
libstdc++-devel-4.1.1-52.el5
compat-libstdc++-33-3.2.3-61

rpm -ql compat-libstdc++-33-3.2.3-61
/usr/lib/libstdc++.so.5
/usr/lib/libstdc++.so.5.0.7
```

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:

```
rpm -ivh compat-libstdc++*.rpm
```

Solutions Enabler install on Linux

Solutions Enabler requires GCC standard C++ library `/usr/lib/libstdc++.so.5` for its dynamically linked C++ binaries. This generally comes with `libstdc++` 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 `/usr/lib/libstdc++.so.6`. This is found in systems with GCC version 3.4 and above or systems with `libstdc++` version 3.4 and above.

In these system, make sure that `compat-libstdc++` rpm (`compat-libstdc++-33` in Redhat Linux) is installed before installing Solutions Enabler. `compat-libstdc++` rpm provides compatible C++ libraries.

To check for compatibility standard C++ libraries use the following command:

```
[root@RHLSR5 ~]# rpm -qa | grep libstdc++
libstdc++-4.1.1-52.el5
libstdc++-devel-4.1.1-52.el5
compat-libstdc++-33-3.2.3-61
[root@RHLSR5 ~]# rpm -ql compat-libstdc++-33-3.2.3-61
/usr/lib/libstdc++.so.5
/usr/lib/libstdc++.so.5.0.7
[root@RHLSR5 ~]#
```

If `compat-libstdc++ rpm` is not installed, install it before proceeding with the Solutions Enabler installation. They can be found in the Linux OS installation CD or can be downloaded from www.rpmfind.net. To install `compat-libstdc++ rpm`, use the following command,

```
#rpm -ivh compat-libstdc++*.rpm
```

Uninstalling Solutions Enabler 6.4 on Windows IA-64

When uninstalling Solutions Enabler V6.4 from a Windows IA-64 platform, the following files still remain in the

C:\WINDOWS\SYSTEM32 directory and should be removed manually:

```
sympi.dll
symlvm.dll
```

VERITAS file systems with TimeFinder requirement

For proper TimeFinder/Mirror operations with VERITAS (VxVM) environments, you must run:

```
vxctl enable
```

SSL Certificates: Manual creation error

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 `manage_server_cert.bat` or `manage_server_cert.csh` you would see the following error:

```
problems making Certificate Request
16745:error:0D07A097:asn1 encoding
routines:ASN1_mbstring_ncopy:string too long
:a_mbstr.c:154:maxlength=64
```

The space is limited to 64 characters. This includes `storsrvd` 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 `foo.emc.com` to `foo`. Refer to the *EMC Solutions Enabler Installation Guide*, V6.4 for details on modifying the certificate.

SSL Certificates: Correct date and time

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 `storsrvd.log` 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 `storsrvd` is running.

Operating system-specific

The following are the operating system-specific performance or functionality restrictions:

AIX lost BCVs after reboot

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:

```
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)
```

It is recommended to have `./mkbcv -a ALL` in your AIX boot procedures. The above mentioned inquiry and make files can be downloaded from the following EMC ftp locations:

```
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
```

AIX lost composite group devices

If you delete a PowerPath[®] pseudo device (hdiskpower) using `rmdevice -d`, and then add the native device into a composite group, the device will not persist when you reboot. Also, if you delete a `powerpath0` device, all of the non-visible composite group members become lost upon reboot. When you have to delete these devices, use:

```
rmdevice -l
```

AIX dynamic RDF and Configuration Change operations

When performing certain dynamic RDF 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 RDF 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 *defined* state and new device nodes for the R2 appear in the *available* state. It is recommended in this case to manually delete the *defined* devices.

AIX CLARiiON device inquiry restriction

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 `syminq` command may report incorrect device serial numbers.

AIX memory issue

On AIX machines, SYMAPI operations may fail because the API daemon (`storapi`) runs out of memory. AIX has a limit on the amount of data that a process can allocate. Therefore, if the `storapi` 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 API daemon executable can be modified to use a larger amount of memory by issuing the following set of commands

1. Stop all Solutions Enabler services.

```
stordaeomon shutdown all -immediate
```

2. Run the `ldedit` command (this increases the default data allocation limit of an AIX process from 256 MB to 2GB):

```
/usr/ccs/bin/ldedit -bmaxdata:0x80000000  
/usr/symcli/daemons/storapid
```

3. Restart everything.

HP-UX 32 bit platform: securing remote transmissions for client/server and EMC Control Center

On the HP-UX 32 bit platform if secure remote transmissions is set up for client/server and EMC Control Center is executed it could cause EMC Control Center to terminate. As a workaround, set remote transmission to NONSECURE in the `netcnfg` file located in the `config` directory.

HP and Solaris: Bus errors in multithreaded applications

For multithreaded environments on HP and Solaris platforms, when you get a bus error after a `pthread_create()` call, you can increase your host system stack size setting up to 2 MB or more to circumvent these errors.

Solaris 10 containers, not supported

EMC Solutions Enabler V6.4 does not provide support for Solaris containers.

Enhanced User Authentication fails on Solaris 8 and 9

The option `SYMAPI_ENHANCED_USER_AUTHENTICATE` 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:

```
unable to initialize mechanism library
[/usr/lib/gss/do/mech_krb5.so]
```

To avoid this error, enhanced user authentication must be disabled. This feature works on Solaris 10.

Solaris disk limitations: Clone behavior

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:

```
symclone verify -copied -i Interval
```

Solaris hosts: Discovery of non-SNIA compliant HBAs

The `syminq hba` requires that system log files exist in `/var/adm` 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 `syminq` to report the HBA information.

Windows platforms: Removing SYMCLI

Before uninstalling Solutions Enabler from the Windows platforms, it is recommended that the SYMAPI server process be stopped and the service be removed from the **Control Panel >Services**, by entering at the DOS prompt:

```
symapisrv stop  
symapisrv uninstall
```

Once the server process stops and the service removed from the **Control Panel**, you can then uninstall Solutions Enabler using the **Control Panel >Add/Remove Programs**.

Windows x64 and IA64 32-bit kit client/server restriction

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 `daemon_options` file, located in the `config` directory, and change the `storsrvc:security_level` variable to NONSECURE.

Host statistics: Windows 2000 SP4 restriction

The `symhost stat` or `symhvm stat` commands will not run on Windows 2000 SP4.

z/OS and Access Controls

If the Symmetrix array is running Enginuity version 5771, 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.

Gatekeeper limitations with VDEVs on z/OS

VDEVs may not be used as Gatekeepers on z/OS. Exclude all VDEVs via the `SYM$GAVD DD` statement (or it's USS equivalent `gkavoid`). Refer to the EMC Solutions Enabler Version 6.4 Installation Guide for more information.

Base management-specific restrictions

The following are the base management performance or functionality restrictions:

Relabel restricted platforms

The device label/relabel feature using the `symlabel` command is restricted to Windows devices only.

Remote SYMAPI server restrictions

The following are limitations when using a remote SYMAPI server:

- ◆ SYMCLI command `symchg` is not supported.
- ◆ When using the database mapping commands of SYMCLI (unless they are set on the client side), you must set Oracle variables `ORACLE_HOME` and `ORACLE_SID` for networked services on the server side.
- ◆ SYMCLI command `symmir` with the instant split `-vxfs` and `-ppath` options are not supported in a client/server environment.

syminq unique output

For systems running Enginuity 5671 and higher, the maximum number of logical devices per Symmetrix array has increased to 16,000 devices for 5671 and 64,000 devices for 5771 and higher. As a result, the output format of `syminq` has changed. The device serial number format has been expanded to `SSNNNNNDDP`. The port number (*P*) 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 *P* field.

Table 6 **Device serial number formats**

	<4 K device	>4 K, <8 K device	>8 K device
Device Serial Number	1800014130	1801014138	1802014130
SymDevName	014	1014	2014
Port	0	0	0

Environment variable RDB Connect

When specifying a username and password within the `SYMCLI_RDB_CONNECT` 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.

Composite groups

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.

GNS: Group definitions unavailable during Enginuity updates

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.

GNS: Recommended group name limitation

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 `MyGroup` to `MyGroup0003`). 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.

GNS: Remote mirroring not performed on local arrays

The GNS daemon can be configured using the `gns_remote_mirror` setting within the `daemon_options` 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.

GNS: RDF2 device group restriction

When using the GNS daemon and the `gns_remote_mirror` capability, any groups defined as type RDF2 must not contain devices whose remote R1 mirrors are also BCVs.

Setup to allow non-privileged user access

Running the `storapid` 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.

Note: 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 `.../config/daemon_users` file.

SRDF-specific restrictions

The following are the SRDF-specific performance or functionality restrictions:

RDF control limitations with composite groups

RDF control operations will not work on an RDF2 composite group that contains both remote mirrors of a single concurrent RDF R1 device.

RDF group restriction

Beginning with Engenuity 5772, Solutions Enabler will support a maximum of 128 RDF groups per Symmetrix arrays. Valid RDF group numbers are 1-250 (inclusive). By default, Solutions Enabler will support a maximum of 32 RDF groups per director.

SRDF MSC consistency problem

MSC consistency may potentially experience failures. If you plan to use the MSC consistency feature, refer to Primus case EMC130865.

Use establish rather than failback

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.

RDF swap limitation

When considering dynamic RDF swap operations on device pairs that were created in a device file using the `symrdf createpair` action, you cannot then specify individual devices in the command line to select for a subsequent swap action, as this violates the basis of a device group assignment.

Concurrent RDF

When using concurrent RDF 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 RDF 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 RDF 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.

RDF consistency and Domino mode

When consistency is enabled on a device, you cannot have Domino mode turned on and vice versa.

Set not ready if invalid may delay

The `symrdf set nr_if_invalid` action does not immediately take effect over the SRDF link for both regular and consistency group environments.

SRDF/AR options file

The following SRDF/AR option parameters, configurable in the options file, 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
```

Replicate (SRDF/AR) session restrictions

If Solutions Enabler is to be installed to a different directory and a `symreplicate` session is running, the replication session must be stopped before the installation. Additionally, on Windows, the `symreplicate` service must be uninstalled prior to installing Solutions Enabler to a different directory.

Limitation for PowerPath and consistency groups

Consistency groups with PowerPath cannot be used with the SYMAPI library that is provided for 64-bit applications.

SRDF/A with TimeFinder/Snap and TimeFinder/Clone restriction

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 `-precop` option in the command.

SRDF/A checkpoint all

The SRDF/A checkpoint all command (`symrdf -g DgName -all checkpoint`) is not currently supported if the SRDF/A device group contains both standard and BCV devices.

symstar client/server restriction

The `symstar` command does not currently support Solutions Enabler client/server mode.

Open Replicator-specific restrictions

The following are the Open Replicator performance or functionality restrictions:

Device types

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
- VCM
- WORM
- Metamembers

SAN requirement

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.

Session limitations

- ◆ Maximum active sessions is 128 for Enginuity 5671 and 512 for Enginuity Version 5x71 (use the option `SYMAPI_RCOPY_SESSION_LIMIT` to increase 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 `SYMAPI_RCOPY_INTERACTION_CHECKS` option file value to `DISABLE` to remove the sync operation of Open Replicator data and the checking of Open Replicator interactions with RDF 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 RDF or TimeFinder operations.

- ◆ Maximum sessions on a given device is 15.

- ◆ Maximum concurrent remote devices is 16 per session.

Copy limitations

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 `clardev` entry for a remote device if the CLARiiON array was discovered by the host where the command is executing.

TimeFinder-specific restrictions

The following are the TimeFinder-specific performance or functionality restrictions:

TimeFinder/Snap restrictions

SAVE device pools created using Solutions Enabler V6.4 cannot be managed using previous versions of Solutions Enabler.

TimeFinder usage

When locally performing a `symmir query` 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 `-remote` option must be specified to acknowledge the remote copy.

When the `SYMAPI_WAIT_FOR_BCV_SYNCH` 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.

TimeFinder/Clone operations blocked

For TimeFinder/Clone operations, the `symrdf set mode async` 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 `symsnap create` and `activate` operations will be blocked if the R2 is in async mode.

In addition, the following `symclone` operations will fail if source device is R2 in `async` mode: `create`, `recreate`, `full establish`, `inc establish`, `set mode copy`, and `set mode nocopy`. Also, `symsnap full restore` and `symsnap inc restore` will be blocked if the target device is an R2 device in `async` mode.

-exact option behavior with composite groups

When operations are performed on a device group, with the `-exact` 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 `-exact` 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 group with the `-exact` option, the exact pairing operation considers the context of the Symmetrix array and associated RDF group when performing the exact pairing of the STDs and BCVs.

TimeFinder with VERITAS file systems requirement

For proper TimeFinder/Mirror operations with VERITAS (VxVM) environments, you must run:

```
vxctl enable
```

Device and database sharing problem

For TimeFinder, performing a consistent split of a specific database (`symmir -rdb -db dbname`) 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.

Informix device list behavior

For Informix environments, `symmir` and `symrdb list` actions might ignore showing physical devices that have empty database tables or indexes.

Engenuity Consistency Assist (ECA)

Beginning with Solutions Enabler V5.1, you can use the Engenuity Consistency Assist (ECA) feature to perform consistent split operations. This feature is implemented using the `-consistent` option with the `symmir split`, `symsnap activate`, `symclone activate`, `symclone establish`, and `symrcopy activate`.

ECA can also be used with replicate data (`symreplicate`) across multiple, heterogeneous hosts without the use of PowerPath support. In addition the `symsnap activate` and `symclone activate` 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 `symmir split -consistent` command is issued, I/O to the device group is frozen and a 30 second Engenuity 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 *consistent* 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, `symmir` 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 *consistent* 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.

Vague error messages in the client/server environment

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.

RRBCV syntax recommendation: Verify

When using `symmir -rrbcv` 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.

Device Masking-specific restrictions

The following are the Device Masking-specific performance or functionality restrictions:

Director targeting restriction

If you wish to use Symmetrix Device Masking to limit access to your storage, you must ensure that all Symmetrix FC ports connected to your hosts are VCM enabled. Also, for Enginuity versions prior to 5670, all FC ports must have the VCMDB device mapped to them.

HP-UX hosts

When listing HP-UX hosts that are logged in using the `symmask list logins` command, `No` is usually reported in the `Logged In` 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 `Logged In` while I/O is active on the connection.

Type 4 or 5 databases and mixed Solutions Enabler versions

If a host converts a VCMDB to Type 4 (Solutions Enabler V5.5 and Enginuity 5670 or higher) or Type 5 (Solutions Enabler V6.0 and Enginuity 5671 or higher) database, other connected hosts running older versions of Solutions Enabler will not be able to access the database.

If some reason you need to downgrade the host back to an older version of Solutions Enabler and have already upgraded the VCMDB to Type 5, you will need to first initialize or restore from a backup file to a Type 3 or 4 database before beginning the downgrade.

VCMDB mapping requirement

The VCMDB should be mapped to all ports on the Symmetrix if they plan to run any of the following commands from any host that has PowerPath installed:

```
symmask list hba
symmask discover hba [-rename]
```

If not mapped properly, invalid results or failure can occur.

SDDF-specific restrictions

The following are the SDDF-specific performance or functionality restrictions:

symchg restrictions

The `symchg` command cannot be used for remote operations. In addition, the `symchg` 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 `symchg` from opening the device properly.
- ◆ A failed device is encountered. If `symchg delete` fails, you must apply the command to one device at a time for all devices of the group.

Access Control-specific restrictions

The following are the Access Control-specific performance or functionality restrictions:

Setup restriction

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*.

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. For more information, refer to [“Access Control setup” on page 68](#).

For more information about access control environments, refer to the *EMC Solutions Enabler Symmetrix Array Management CLI Product Guide*.

Double Checksum-specific restrictions

The following are the Double Checksum-specific performance or functionality restrictions:

VERITAS Volume Manager with EMC Double Checksum behavior

When using VERITAS VxVM with Double Checksum, rejected I/O may cause plexes to become detached. To return to normal operations, use `vxedit` to remove the **failing** status and run `vxplex` to reattach the plex.

LVM not supported on AIX

The Logical Volume Manager (LVM) is not supported for Double Checksum on AIX.

Double Checksum reject I/O in Enginuity 556x

For the `synchksum` command, the `-fractured_reject_io` option does not detect all fractured cases in Enginuity 556x. However, use of this command is effective and a recommended discipline.

Validate action

The checksum validate option (`-validate`) 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 `enable` or `disable` operations would succeed. Despite this warning, continue with your `enable/disable` operations.

Double Checksum discard

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. The `-discard` option is only supported on Enginuity 5567, 5670, and 5x71.

EMC Double Checksum on HP-UX patch needed

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.

EMC Double Checksum straddle test

In Enginuity 5670.75.70 and below, the straddle test is always enabled for Double Checksum. The straddle test checks that either a write command range is contained within one extent, or a write command that spans multiple extents has the whole write range covered by extents and that the flags of all these extents are identical.

VxVM RAID-5 support

VERITAS RAID-5 volumes are not supported when creating an Oracle tablespace, where the device has the checksum flag turned on and `db_block_checksum=TRUE`.

For the `sychksum enable CLI` command, the `-tbs TBSNAME -reject_io` option returns the following error message: VxVM RAID-5 is not currently supported. I/O is rejected for the Double Checksum feature due to VERITAS Volume Manager faulty error handling.

CheckDBA feature support on AIX

The CheckDBA feature is not supported on AIX at this time.

CheckDBA feature not supported on Oracle ASM

EMC Double Checksum `check_dba` feature is not supported on Oracle ASM logical volumes in Solutions Enabler V6.3 or higher.

Configuration Manager-specific restrictions

The following are the Configuration Manager-specific performance or functionality restrictions:

Sharing devices with mainframe and open system platforms



CAUTION

Before issuing a `symconfigure` 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.

Member count usage with RAID-5 and RAID-6: Enginuity 5772

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.

SRDF/A enable 5670 limitation

The SRDF/A disable/enable functionality is only applicable to Enginuity 5670. With 5671, all RDF groups are considered to be SRDF/A capable.

However, enabling of SRDF/A in 5670 environments is not recommended, as it requires the creation of COVD devices, which may impact system performance. Contact your EMC Representative if you would like to enable or expand your SRDF/A 5670 Symmetrix environment.

VDEV create support limitation

Creating virtual devices (VDEVs) devices is restricted to Symmetrix Enginuity 5671 and higher environments.

Parity RAID device restriction

You cannot convert a Parity RAID (RAID-S) type device to any other device configuration except unprotected.

Timeout errors

When using the `symconfigure` command, RDF 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.

IP address change of Gig-E ports

Before changing the IP address of a Gig-E front-end port with a configuration change operation, take the port offline.

RDF swap restrictions

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 RDF 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.

R1/R2 swap with FarPoint director

If the FarPoint[™] Technologies director feature is enabled in the Symmetrix array, then all devices in the RA group must have the same attribute of either R1 or R2 when swapping an RDF group.

Converting RDF devices to non-RDF

For non-dynamic RDF devices, before converting RDF devices to non-RDF devices, ensure that the RDF pair devices being converted are in the split state or failed over. If the devices are failed over, the R1 devices must be unmapped.

RA personality swap

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.

SRM-specific restrictions

The following are the SRM-specific performance or functionality restrictions:

Extent mapping of VERITAS Multi-Volume File Systems

Extent mapping of VERITAS multi-volume file systems is not currently supported.

System-generated Oracle ASM filenames

Solutions Enabler does not support system-generated Oracle ASM filenames at this time.

Oracle instance 32-bit/64-bit incompatibility

When performing Oracle database mapping from a 64-bit SYMAPI kit against a 32-bit Oracle instance, a runtime error can occur.

Mapping database application requirements

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.

IBM DB2 startup/shutdown options

For IBM DB2 databases, you can startup and shutdown the database with the `symrdb` command, but none of the options supplied with the syntax of these operations will function.

Solstice Solstice Disk Suite device restrictions

For logical volume mapping operations on Solaris Solstice Disk Suite, the, hot spares, trans meta devices, and hybrid configurations are not supported

Solaris ASM library usage limitation

If a non-root process is using `libasm.so` (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 `ioctl(2)` interface.

symmv case sensitivity: PowerPath

The `symmv` 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.

Oracle9i user environment requirements

For Oracle database sites that employ user security profiles on Oracle 9i or higher, granting `SELECT_ANY_TABLE` 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 `SELECT_CATALOG_ROLE`
- ◆ Grant `SYSDBA`
- ◆ Grant `SYS[TEM]`
- ◆ Grant `SELECT` on each of the following Oracle objects:

`ALL_OBJECTS`
`DBA_DATA_FILES`
`DBA_EXTENTS`
`DBA_FREE_SPACE`
`DBA_INDEXES`
`DBA_NESTED_TABLES`
`DBA_OBJECTS`
`DBA_SEGMENTS`
`DBA_TAB_PARTITIONS`
`DBA_TABLES`
`DBA_TABLESPACES`
`DBA_USERS`
`V_$CONTROLFILE`
`V_$DATAFILE`
`V_$INSTANCE`
`V_$LOG`
`V_$LOGFILE`
`V_$PARAMETER`
`V_$SYSTEM_PARAMETER`
`V_$VERSION`

VERITAS file systems with TimeFinder requirement

For proper TimeFinder/Mirror operations with VERITAS (VxVM) environments, you must run:

```
vxdctl enable
```

Extent mapping failure for VERITAS VxFS file systems on Linux

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:

```
... -o convosync=direct
```

Mapping of volumes in volume groups with duplicate names

Mapping of volumes in volume groups with duplicate names in VERITAS volume sets is not supported with VERITAS V4.0 and above.

Oracle instances on AIX 64-bit platforms

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 `sqlnet.ora`, which can be found in the directory `$ORACLE_HOME/network/admin`. The Oracle instance should be started with this variable set.

SQL server on IA-64 systems

When adding SQL Server data sources to ODBC on IA-64 systems, Solutions Enabler requires that you use the ODBC driver (`odbcad32.exe`) located in `%SYSTEMROOT%\SysWOW64` to add SQL Server system DSNs.

HP-UX IA64 SRM support for Oracle

HP-UX IA64 SRM support for Oracle is not provided with the Solutions Enabler V6.4 release. Please contact EMC Customer Support to obtain HP-UX IA64 SRM support for Oracle.

Informix server protocol limitation

Any client connecting to an Informix server must use the TCP/IP protocol. No other protocols are supported.

Informix device list behavior

For Informix environments, `symrdb list` actions might ignore showing physical devices that have empty database tables or indexes.

Logical volume naming on Linux and HP-UX

When creating volume groups or named volumes with the `symvg` or `symlv` commands for Linux or HP-UX logical volume managers, names in excess of 15 characters will not display properly for the `show` and `list` commands. For display purposes, it is recommended that you do not create volume names that exceed 15 characters in length.

Single Linux LVM volume group

On the Linux platform, if there is only a single Linux LVM volume group, it is recommended not to perform a deport operation (`symvg deport`). Once deported, the volume group cannot be displayed (`symvg list`) or imported (`symvg import`) using the `symvg` command.

SRM host statistics on HP-UX patch requirement

To successfully return SRM logical volume statistics via the `symlv stats` command on a host running HP-UX 11.0, you must install patch PHKL_19573.

Using Issue Tracker

Solutions Enabler fixes, issues, and limitations (and other EMC product releases) can now be viewed, searched, and parsed online using the EMC Issue Tracker tool available from the EMC Powerlink website:

<http://Powerlink.EMC.com>

This section provides information on how to:

- ◆ Access Issue Tracker on Powerlink
- ◆ Create and view Issue Tracker searches and results
- ◆ View issue details

With Issue Tracker you can look up the following types of Solutions Enabler issues:

- ◆ Open (or known) issues identified by customers or EMC
- ◆ Fixed issues; previously opened issues that have been resolved in a specific version
- ◆ Open or fixed issues for, since, or prior to a specific release; such as open and fixed issues since the release of Solutions Enabler V6.2

Logging in to Powerlink

To access Issue Tracker, you must log in to the EMC Powerlink website using the following steps:

1. From a browser, connect to Powerlink at:
<http://Powerlink.EMC.com>
2. Enter your valid Powerlink username and password on the User Login dialog box. If you are a new Powerlink user, select **New Member Registration**, and a username and password will be sent to you via e-mail.
3. Click **Login** to open the Powerlink home page. If a security message appears, click **Yes** to continue.

Opening Issue Tracker

- To open Issue Tracker from the Powerlink home page, mouse over the **Support > E-Lab Issue Tracker Information** and select **E-Lab Issue Tracker**, or select **E-Lab Issue Tracker** from the **Tools** menu, as shown in [Figure 1](#).

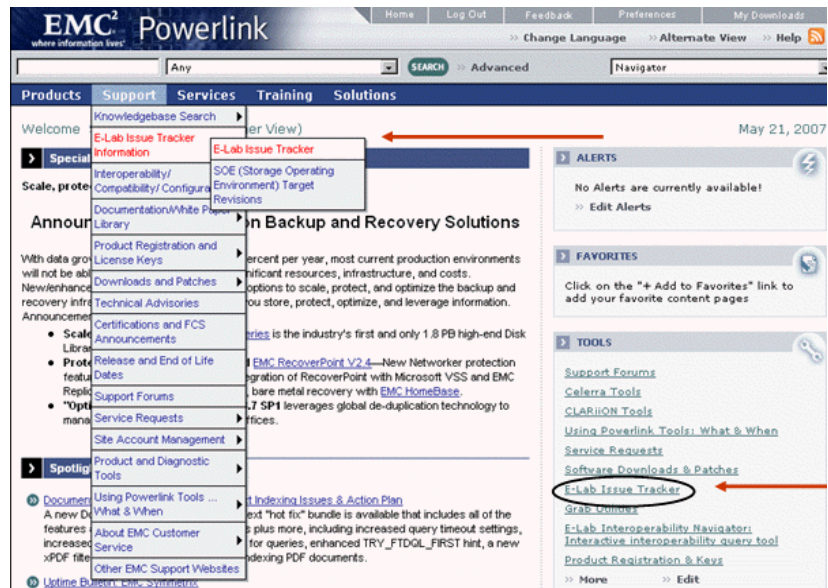


Figure 1 Navigate to Issue Tracker

The E-Lab Issue Tracker: Search screen displays, as shown in [Figure 2 on page 59](#).

Products Support Services Training Solutions

Home > Support > Self-Help Tools > E-Lab Issue Tracker Information > E-Lab Issue Tracker

E-Lab Issue Tracker

E-Lab Issue Tracker: Search

Quick Search

Issue Number: Search Clear

Advanced Search

Keywords: ☒ Any ☐ All

Product:

Product Family:

Product Feature:

Found In Version:

Fixed In Version:

EMC Technical Advisory (ETA) :

Product Name:

Status:

Severity:

Host OS Vendor:

Host OS:

Search Clear

Figure 2 E-Lab Issue Tracker: Search

Note: You can select **E-Lab Issue Tracker Help** from the upper right corner of all Issue Tracker screens.

- If you know the **Issue Number**, you can enter it in the **Quick Search** field to display the issue details. For more information, refer to [“Quick Search” on page 66](#).

To search for all, or a selection of Solutions Enabler-related issues, you must first select **Symmetrix** from the **Product Family** drop-down list. The **E-Lab Issue Tracker: Search** screen refreshes with data after the product family selection is made. Then, select **Solutions Enabler** from the **Product Name** drop-down menu. The **E-Lab Issue Tracker: Search** screen again refreshes with data after the product selection is made. You can then search for Solutions Enabler issues according to your desired criteria. To return all Solutions Enabler issues, accept the default selections by clicking the **Search** button at the bottom of the screen. An example of an expanded **E-Lab Issue Tracker: Search** window with Solutions Enabler selected as the product appears in [Figure 3](#).

For additional information on using the advanced search features, refer to [“Additional search options” on page 66](#).

E-Lab Issue Tracker: Search » E-Lab Issue Tracker Help

Quick Search
 Issue Number:

Advanced Search
 Keywords: ☒ Any ☐ All

Product Family: Symmetrix	Product Name: Solutions Enabler
Product Feature: Base Functionality Configuration Manager Device Masking Open Replicator Optimizer	Status: Fixed Open
Found In Version: 5.2.0.0 5.3.0.0 5.3.1.0 5.4.0.0	Severity: 1 - Critical 2 - Medium 3 - Low
Fixed In Version: 5.5.1.0 5.5.1.5 6.0.0.0	Host OS Vendor: Any Host
EMC Technical Advisory (ETA): No	Host OS: AIX Any OS HP-UX

Figure 3 Solutions Enabler selected as a product

Viewing Solutions Enabler-related issues

When you click **Search**, a list of Solutions Enabler-related issues that meet your search criteria will return on the **E-Lab Issue Tracker - Solutions Enabler** search results screen, as shown in [Figure 4](#).

» E-Lab Issue Tracker - Solutions Enabler » E-Lab Issue Tracker Help

[Go To New Search](#) [Export to Excel](#)

1 to 25 of 202 To sort the results click on the column header. 1 [2](#) [3](#) [4](#) [5](#) [6](#) [7](#) [8](#) [9](#) [Next](#)

Issue Number ▲	Product Feature	Found In	Status	Severity	Knowledgebase ID	Problem Summary
10887931	Base Functionality	5.3.1.0	Fixed	1 - Critical		The SIU CLI results in a kernel exception.
10920153	Base Functionality	5.3.0.0	Fixed	2 - Medium		Solutions Enabler host upgrade failure.
11038510	TimeFinder	5.5.0.0	Fixed	3 - Low		Replication manager fails to process TimeFinder establish operations.
11255291	TimeFinder	5.4.2.0	Fixed	3 - Low		A TimeFinder operation stops when it encounters a BCV in a transient state.
11389920	Base Functionality	5.4.2.0	Fixed	2 - Medium		The symling hba command does not find specific HBAs.
11425499	Base Functionality	5.4.2.0	Fixed	2 - Medium		Discovery of remote arrays fails when the Solutions Enabler Access Control UNKNOWN group is removed.
11511623	SRDF	5.4.0.0	Fixed	2 - Medium	emc95580	Failure of RDF operations on open systems when mainframe extent-based clones exist on devices.
11632211	Optimizer	5.3.1.0	Fixed	2 - Medium		Optimizer fails to open a session on the remote client.
11677358	Base Functionality	5.2.0.0	Fixed	2 - Medium		Solutions Enabler can only find and list 10000 devices on HP-UX hosts.
11793508	Configuration Manager	5.5.0.0	Fixed	2 - Medium		After removing meta members, the meta member devices remain locked.

Figure 4 Example results of Solutions Enabler issues

[Table 7](#) describes the fields that appear in the Issue Tracker search results window.

Table 7 Issue Tracker search results fields

Column	Brief description	Required field Y/N
Issue Number	A unique case number used to track the product issue. If you reported the problem to EMC Customer Support, use the case number. Other case numbers are used to reflect issues found internally during product testing. Internally-found Solutions Enabler issues appear with a suffix of SE.	Yes
Product Feature	Product feature categories vary for individual EMC products. The Solutions Enabler categories include: Base Functionality TimeFinder SRDF Open Replicator SRM Device Masking Configuration Manager Documentation	Yes
Found In Version	Version in which the issue was found.	Yes
Status	Status of the issue being reported, including: - Open — Escalated to EMC Engineering and under investigation. - Fixed — Investigated and resolved in an available EMC software release or patch. To determine where the fix was made, check the Fixed In Version field.	Yes
Severity	Identifies the severity of the issue. Possible values are: 1 - Critical 2 - Medium 3 - Low 4 - Enhancement	Yes
Knowledge Base ID	EMC Knowledge Base ID for the EMC Knowledge Base article.	No
Problem Summary	Brief summary of the product issue.	Yes

Viewing issue details

From the list of issues that appear in the search results, you can view additional details about each issue. To view details of a particular issue, click the **Issue Number** or right-click the **Issue Number** and select **Open**. The **Issue Detail** screen opens to display the details for that issue (Figure 5).

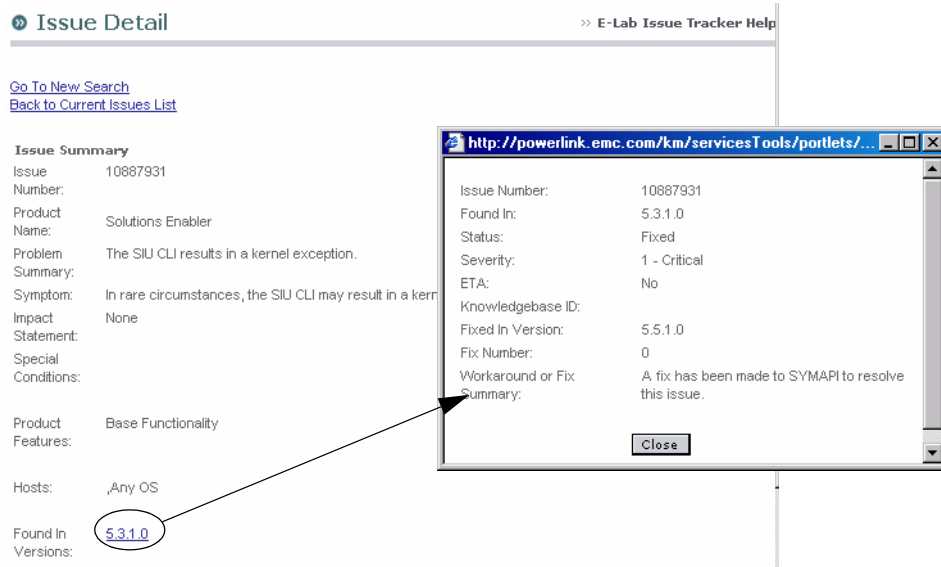


Figure 5 Issue Detail shown with fix details pop-up window

The **Issue Detail** contains additional details about the issue. To return to the list of issues, click the **Back to Current Issues List** link.

Note: If an issue has been fixed, the **Found-In Version** data will be shown as a link (in blue). Clicking on that link will display the fix details in a pop-up window as shown in Figure 5.

[Table 8](#) describes the **Issue Details** fields.

Table 8 Issue Details fields

Field	Description	Required field Yes/No
Issue Number	A unique case number used to track the product issue. If you reported the problem to EMC Customer Support, use the case number. Other case numbers are used to reflect issues found internally during product testing. Internally-found Solutions Enabler issues appear with a suffix of SE.	Yes
Product Name	EMC product name, for example, Solutions Enabler.	Yes
Problem Summary	Brief summary of the product issue.	Yes
Symptom	Detail the symptoms of the product issue.	Yes
Impact Statement	A description of how the problem could affect a system's environment.	No
Special Conditions	A brief description of the unique scenarios that may need to occur in order to reproduce the issue.	No
Product Feature	Product feature categories that vary for individual EMC products.	Yes
Hosts	Host operating system where the issue was found.	No
Found In Version	Version in which the issue was found. If an issue has been fixed, the Found-In Version data will be shown as a link (in blue). Clicking on that link will display the fix details in a pop-up window. The fix details fields are described in Table 9 on page 65 .	Yes
Additional Feature	Additional information for issues within a product feature set.	No
Fix Summary	Work around if available for Open issues or a summary of what was fixed to resolve the product issue.	Yes
Fixed In Version	Version which includes a fix for the issue.	No Remains blank until the issue is resolved.
Knowledge Base ID	EMC Knowledge Base ID for the EMC Knowledge Base article.	No
Fix Number	The number of a patch or fix released by EMC for individual EMC products.	No

Fixed issues [Table 9](#) describes the fields contained in the fixed issues pop-up window.

Table 9 Issue details: Fixed fields

Field	Description	Required field Yes/No
Issue Number	A unique case number used to track the product issue. If you reported the problem to EMC Customer Support, use the case number. Other case numbers are used to reflect issues found internally during product testing. Internally-found Solutions Enabler issues appear with a suffix of SE.	Yes
Found In Version	Version in which the issue was found. If an issue has been fixed, the Found-In Version data will be shown as a link (in blue). Clicking on that link will display the fix details in a pop-up window. The fix details fields are described in Table 9 on page 65 .	Yes
Status	Status of the issue being reported, including: - Open — Escalated to EMC Engineering and under investigation. - Fixed — Investigated and resolved in an available EMC software release or patch. To determine where the fix was made, check the Fixed In Version field.	Yes
Severity	Identifies the severity of the issue. Possible values are: 1 - Critical 2 - Medium 3 - Low 4 - Enhancement	Yes
ETA	EMC Technical Advisory (ETA), shows whether the issue is being tracked by that committee.	No
Knowledge Base ID	EMC Knowledge Base ID for the EMC Knowledge Base article.	No
Fixed In Version	Version which includes a fix for the issue.	No Remains blank until the issue is resolved.
Fix Number	The number of a patch or fix released by EMC for individual EMC products.	No
Workaround or Fix Summary	Work around if available for Open issues or a summary of what was fixed to resolve the product issue.	Yes

Additional search options

You can start a new search by clicking the **Go to New Search** link near the top of Issue Tracker screen.

The Issue Tracker Search screen is divided into two areas:

- ◆ Quick Search
- ◆ Advanced Search

Quick Search

Use the Quick Search option to quickly locate a particular issue: Enter the Issue Number in the **Quick Search** field, and then click **Search** to display the issue in the Issue Tracker search results screen.

If you reported the issue to EMC Customer Support, use the case number. Other case numbers are used to reflect issues found internally during product testing. Internally-found Solutions Enabler issues appear with a suffix of SE.

Make sure you capitalize the SE (suffix) portion of your Issue Number (if applicable), or your search will fail.

If no issue exists for that Issue Number, the following message appears:

No issues were found that match your criteria.

Advanced Search

Using the **E-Lab Issue Tracker: Search** screen you can limit your search results to only include issues that match particular search criteria. Use any combination of the **Advanced Search** criteria, and then click **Search** at the bottom of the screen.

Remember to select **Symmetrix** from the **Product Family** drop-down list and **Solutions Enabler** from the **Product Name** drop-down menu first, wait for the screen to refresh with Solutions Enabler data, and then begin selecting your advanced search criteria.

Table 10 describes the advanced search criteria.

Table 10 Issue Tracker advanced search criteria

Search criteria	Description
Keywords Any	To limit your search results to only include issues that have a particular phrase or word associated with it (for example: masking, or alerts), select the Any Keyword radio button and then type in the phrase or keyword.
Keyword All	To search for an issue that contains more than one desired word in its title or description, select the All Keyword radio button, then enter one word, then a space, then the next word, and so on. For example, to search for an issue that contains the words Symmetrix <i>and</i> the word mapped, enter: Symmetrix mapped
Product Feature	To limit your search results to only include feature-specific issues, click to select a feature from the list box. To select more than one feature, hold down the CTRL key while clicking. The default is any , which does not initiate feature-specific searching.
Status	To limit your search to only include issues that have a specific status associated with them, select a status from the list box. To select more than one status, hold down the CTRL key while clicking. The default is any , which does not initiate status-specific searching.
Severity	To limit your search to only include issues that have a specific severity level associated with them, select an impact level from the list box. To select more than one impact level, hold down the CTRL key while clicking. The default is any , which does not initiate severity-specific searching.
Found In Version	To limit your search results to include only those issues that were found in a particular software version, select a version from the list box. To select more than one version, hold down the CTRL key while clicking. If Found In Version is not available for a particular issue, the field appears blank.
Fixed In Version	To limit your search results to include only those issues that were fixed in a particular software version, select a feature from the list box. To select more than one feature, hold down the CTRL key while clicking.
Host OS Vendor	To limit your search results to include only those issues that effect a specific host vendor, select a vendor from the list.
Host OS	To limit your search results to include only those issues that effect a specific host OS type, select a host OS from the list.
EMC Technical Advisory (ETA)	To limit your search results to include only those issues that either have or don't have an ETA, select a value from the list.

Technical notes

This section provides technical notes for advanced configuration of Solutions Enabler V6.4.x.

VMware setup

A unique gatekeeper must be assigned to each virtual machine, in raw mode, to provide gatekeeper capabilities to each virtual machine.

SYMAPI control operations that act on Symmetrix devices can only be used in a configuration where each Symmetrix device is mapped to only one virtual machine.

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 access control (`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 hosts 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.

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 SSCF540 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 Version 6.4 Installation Guide*.



CAUTION

When using Solutions Enabler for z/OS with the EMC Symmetrix Dynamic Address Switching (S/DAS) utility, you must ensure any online RDF 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 it's USS equivalent **gkavoid**). Refer to the *EMC Solutions Enabler Version 6.4 Installation Guide* 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 systems hosts to establish and split BCV and RDF 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 provide the latest information not included in the following EMC Solutions Enabler V6.4 documentation set:

EMC Solutions Enabler Symmetrix CLI Quick Reference

EMC Solutions Enabler Symmetrix Array Management CLI Product Guide

EMC Solutions Enabler Symmetrix Array Controls CLI Product Guide

EMC Solutions Enabler Symmetrix CLI Command Reference

EMC Solutions Enabler Symmetrix SRM CLI Product Guide

EMC Solutions Enabler Installation 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

EMC Solutions Enabler Documentation Roadmap

The Solutions Enabler manuals listed above can all be found on the EMC Powerlink website (<http://Powerlink.EMC.com>).

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

Documentation roadmap

For a complete list of all Solutions Enabler product guides and white papers, refer to the *EMC Solutions Enabler Documentation Roadmap*, V6.4 supplied with your software kit.

Documentation errors and omissions

Solutions Enabler Symmetrix Array Management CLI Product Guide

The RDF privilege was incorrectly omitted from the table of access control privileges (Table 4-3 in the 6.3 version of the manual, Table 7 in the 6.4 version).

Solutions Enabler Symmetrix Array Controls CLI Product Guide

- ◆ In Table 11 on page 126, the **Requirements** heading for the third Linux entry (with config flag LINUX_DMP_VCS) should have **Veritas Cluster Server**, and the **Bits** set are **D**, **C**, and **SC3**.
- ◆ The following line appears after Table 11 (heterogeneous host):

SC3* Bit will only be set if Enginuity Version 5670 or lower

This should read:

SC3* Bit will only be set if Enginuity Version is lower than 5670

Solutions Enabler Symmetrix CLI Command Reference

The following error occurs in the symqos manpage:

```
symqos -pst -sid SymmID -range <SymdevStart:SymdevEnd>
set hostio_priority <Value>
symqos -pst -g DgName [-std] [-bcv]
set hostio_priority <Value>
```

The set `hostio_priority` incorrectly includes an underscore. The correct syntax is:

```
set hostio priority <Value>
```

The list `hostio_priority` syntax does require the underscore.

Software media, organization, and files

This section described 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 systems platforms and supports client/server computing environments.

Note: For detailed interoperability information, please 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.

Note: The Linux/390 kit is no longer available.

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 the following components:

- ◆ 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`)
 - The `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

Detail installation and upgrade procedures are provided in the *EMC Solutions Enabler Installation Guide*. The general installation strategy follows:

1. Before installing/upgrading, read these release notes and verify your operating system is supported by Solutions Enabler V6.4.1 as defined in E-Lab Interoperability Navigator at <http://elabnavigator.emc.com>.
2. Download the Solutions Enabler V6.4.1 software from the Powerlink website. To install the software, refer to [“Installing the V6.4.1 distribution” on page 77](#) for a typical Solutions Enabler installation.
3. Once you have installed or upgraded your host system, your access will be confined to the Base Management component functionality. To gain access to other component task areas you have purchased, you will need to register (enable) licenses. Locate your license key cards and proceed to [“EMC Solutions Enabler: Component licensing” on page 78](#).

Installing the V6.4.1 distribution

Solutions Enabler V6.4.1 is an electronic distribution archive containing platform-specific software. Solutions Enabler is now installed using native installation utilities.

Typical install

Platform-specific Solutions Enabler V6.4.1 archives are available for typical installations. Choose the distribution file that supports your operating system.

Installation requirements

To install your Solutions Enabler V6.4.1 software:

- ◆ On UNIX platforms, extract the TAR image and follow the documentation provided in the *EMC Solutions Enabler Installation Guide, V6.4*, omitting steps that describe CD-specific instructions.
- ◆ On Windows platforms, launch the self-extracting executable and follow the documentation provided in the *EMC Solutions Enabler Installation Guide, V6.4*.

Note: On platforms that support 32- and 64-bit libraries, selecting Y[es] to the install prompt `Install Solutions Enabler 64-bit Shared libraries?` in the installation script, will install both the 32- and 64-bit libraries for your selected platform.

EMC Solutions Enabler: Component licensing

EMC Solutions Enabler offers advanced functionality beyond what is delivered with your Base Kit. (Refer to the quick reference card for a spectrum of all possible SYMCLI commands and their component license requirements.)

License keys that enable the advanced components are available with EMC software products. Some of these products that typically utilize SYMCLI (such as TimeFinder/Mirror, SRDF/Synchronous, and TimeFinder/Snap) only require a license key to unlock specific functionality already provided with your EMC Solutions Enabler software.

Note: Customers upgrading to V6.4.1 from a version prior of Solutions Enabler should take note of the new license keys listed in [Table 11](#), as you may require additional license keys to enable your desired functionality. If you require additional licenses, contact software@EMC.com or 1-800-782-4362 option 4 to obtain the new license keys to which you are entitled.

Note: Previously required Solutions Enabler CLARiiON license keys for configuration, Device Masking, MirrorView™ and SnapView™ have been removed. For CLARiiON arrays, Solutions Enabler requires that you can perform CLARiiON Device Masking.

[Table 11](#) lists the possible Solutions Enabler keys:

Table 11 License matrix (1 of 3)

Required component license	Command available
SYMAPI Server	symapisrv
	storsrvd
Base	symacl
	symaudit
	symauth
	symbcv
	symcfg
	symcg
	symcli
	symdev
	symdg
	symdisk
	symdrv
	symevent
	symgate
	syminq
	symlabel
	symld
	sympd
	symqos
	symreturn
	symstat
Configuration Manager	symconfigure
DeltaMark (Change Tracker)	symchg

Table 11 License matrix (2 of 3)

Required component license	Command available
Device Masking	symconnect
	symmask
	symmaskdb
Double Checksum (Oracle PAK)	symchksum
Dynamic Cache Partitioning	symqos -cp
Mapping Solution (SRM)	symhost
	symhostfs
	symioctl
	symlv
	sympart
	symrdb
	symrslv
	symvg
Open Replicator/LM ^a Open Replicator/DM ^b	symrcopy
Optimization (Control)	symoptmz
SRDF/Synchronous	symrdf
	symioctl
SRDF/A	symrdf set mode async (Asynchronous mode support)
SRDF/Automated Replication	symreplicate ^c
SRDF/Consistency Groups	symcg -cg <i>CgName</i> enable
SRDF/Star	symstar ^d
Symmetrix Priority Control	symqos -pst
TimeFinder or TimeFinder/Mirror	symioctl
	symmir
	symreturn

Table 11 License matrix (3 of 3)

Required component license	Command available
TimeFinder/Clone	symclone symmir ^e
TimeFinder/Consistency Groups	symmir split -consistent symreplicate start -consistent symsnap activate -consistent symclone activate -consistent
TimeFinder/Snap	symsnap

- a. Online Pull only.
- b. All functions except Online Pull.
- c. Also requires SRDF and TimeFinder licenses.
- d. Also requires SRDF/A, SRDF/Synch, and SRDF/CG licenses.
- e. For Emulation mode.

Enable Solutions Enabler components

To enable an advanced component:

1. Ensure that Solutions Enabler is already installed on your host system.
2. Locate your license key card(s) and run the License Management Facility (`symLMF`) as described in the *EMC Solutions Enabler Installation Guide*.

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 68 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 Support Center 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.

Legal notices

This section provides legal attribution for acknowledging open-source and third-party software copyright and licensing requirements.

OpenSSL copyright information

Solutions Enabler uses OpenSSL.

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3. All advertising materials mentioning features or use of this software must display the following acknowledgment:

This product includes software developed by the OpenSSL Project for use in the OpenSSL Toolkit (<http://www.openssl.org/>).

4. The names "OpenSSL Toolkit" and "OpenSSL Project" must not be used to endorse or promote products derived from this software without prior written permission. For written permission, contact openssl-core@openssl.org.
5. Products derived from this software may not be called "OpenSSL" nor may "OpenSSL" appear in their names without prior written permission of the OpenSSL Project.
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