

FUJITSU Software BS2000 SHC-OSD

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Release Notice

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1 General

This Release Notice is a summary of the major extensions, dependencies and operating information with respect to SHC-OSD V12.0 under the BS2000 operating system.

- *4 The release level is that of SHC-OSD V12.0A04: October 2017.
- *4 Changes to release level SHC-OSD V12.0A03, June 2017 are marked with *4.
- *3 Changes to release level SHC-OSD V12.0A02, January 2017 are marked with *3.
- *2 Changes to release level SHC-OSD V12.0A01, November 2016 are marked with *2.
- *1 Changes to release level SHC-OSD V12.0A, June 2016 are marked with *1.

- *1 The SHC-OSD (STORAGE-HOST-COMPONENT) software product is the BS2000 host component for storage systems. SHC-OSD makes storage management functions available to the BS2000 operating system for the storage systems ETERNUS DX of FUJITSU resp. SymmetrixTM ¹, VMAX3TM and VMAX^R All Flash of EMC² Corporation.

SHC-OSD implements information services and control commands for local and remote replication functions of the storage systems. The replication functions are offered with functions of the storage systems:

- Equivalent Copy (EC), SnapOPC+ and Remote Equivalent Copy (REC) for ETERNUS DX.
 - TimeFinder/Mirror (BCV), TimeFinder/Clone, TimeFinder/Snap resp. TimeFinder SnapVX and Symmetrix-Remote-Copy-Facility (SRDFTM) for Symmetrix, VMAX3 resp. VMAX All Flash.
- *1

- *1 SHC-OSD V12.0 supports the functions Thin Provisioning and Advanced Storage Tiering on ETERNUS DX and offers support of Virtual Provisioning on Symmetrix, VMAX3 resp. VMAX All Flash.

This and other current Release Notices are shipped on the SoftBooks DVD and are available online at <http://manuals.ts.fujitsu.com>.

If one or more previous versions are skipped when this product version is used, the information from the Release Notices (and README files) of the previous versions must also be noted.

1.1 Ordering

SHC-OSDV12.0 can be ordered from your local distributors.

This software product is supplied subject to a single payment or payment by instalments.

1.2 Delivery

The SHC-OSD V12.0 files are supplied via SOLIS.

The StorMan V7.0 files are supplied on CD-ROM/DVD with installation instructions.

¹ 'Symmetrix', 'VMAX' and 'VMAX3' are registered trademarks of EMC corporation, Hopkinton/MA (USA).

The following delivery groups are part of the SHC-OSD V12.0 delivery scope:

SHC-OSD V12.0
STORMAN-CD V7.0

Release Unit SHC-OSD V12.0:

The following delivery components are required regardless of the HSI:

SINLIB.SHC-OSD.120	Library for POSIX functions
SIPLIB.SHC-OSD.120	TPR macro library
SYSDMP.SHC-OSD.120	Procedure file for DAMP
SYSDOC.SHC-OSD.120.OSS	License file for SHC-OSD
SYSENT.SHC-OSD.120	Enter file for SHC-OSD user task
SYSFGM.SHC-OSD.120.D	Release Notice (German)
SYSFGM.SHC-OSD.120.E	Release Notice (English)
SYSMES.SHC-OSD.120	Message file
SYSPAR.SHC-OSD.120	Parameter file for SHC-OSD
SYSPAR.SHC-OSD.120.PTH	Parameter file for PTHREAD options
SYSPRG.SHC-OSD.120	Program file SHC-OSD
SYSREP.SHC-OSD.120	REP file for SHC-OSD
SYSRME.SHC-OSD.120.D	Readme file (German), optional
SYSRME.SHC-OSD.120.D	Readme file (English), optional
SYSRMS.SHC-OSD.120	REP depot
SYSSDF.SHC-OSD.120	SDF syntax file
SYSSII.SHC-OSD.120	IMON installation information
SYSSMB.SHC-OSD.120	Symbol file for DAMP
SYSSPR.SHC-OSD.120	Start procedure for SHC-OSD user task
SYSSSC.SHC-OSD.120	Subsystem declarations

The following delivery components are only required on servers with /390-architecture:

SYSLNK.SHC-OSD.120	Load module library
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The following delivery components are only required on servers with x86-architecture:

SKMLNK.SHC-OSD.120	Load module library
--------------------	---------------------

Release Unit STORMAN-CD V7.0:

*4 StorMan V7.0.1-4 for Windows and Linux, as of Release 10.2017

Information about installation is available on CD in file readme_en.html.

1.3 Documentation

The BS2000 documentation is available in German and English on DVD with the title BS2000 Softbooks.

The documentation is also available on the internet at <http://manuals.ts.fujitsu.com>. Manuals which are displayed with an order number can also be ordered in printed form.

The manuals may be supplemented with README files. These contain changes and extensions to the manual of the product concerned. The README files are available on the SoftBooks-DVD or online under <http://manuals.ts.fujitsu.com>

2 Software extensions

Only the extensions and improvements over the previous version SHC-OSD V11.0 are described in the following section.

2.1 Extensions for ETERNUS DX storage systems

Support of the storage system ETERNUS DX8700 S3.

SHC-OSD V12.0 supports the storage system ETERNUS DX8700 S3 in BS2000/OSD-BC as of V9.0 on S server and SE server (SU300 with X2000 as of V6.1).

2.2 Extensions for EMC storage systems

*1 Integration of SYMAPI V8.3

The SYMAPI server is no longer installed in BS2000. The server is now located on one or more external management servers.
The BS2000 supply unit SYMAPI, gatekeeper devices defined in BS2000 IO configuration and the SYMAPI-D subsystem are no longer required.
The SYMAPI client is integrated in SHC-OSD.

Support of multiple SYMAPI servers by SHC-OSD:

- input in list form for SYMAPI-HOST and SYMAPI-PORT in parameter file SYSPAR.SHC-OSD.120
- manual or automatic switchover to an alternate SYMAPI server

Decoupling of SHC-OSD version and SYMAPI version:

- *1 - SHC-OSD as of V12.0 works with any version of SYMAPI as of V8.3.

*1 For diagnostic purpose on EMC storage systems log settings on SYMAPI client side can be set by command

```
*1 /MODIFY-SHC-PROCESSING TRACE=*PARAMETERS(
*1 SYMAPI-DEBUG=*ON)
```

*1 or at SHC-OSD subsystem start with

```
*1 /START-SUBSYSTEM SHC-OSD SUBSYSTEM-PARAM='DEBUG=ON'.
```

*1 Support of the EMC VMAX3 and VMAX All Flash families

*1 SHC-OSD V12.0 supports the EMC VMAX3 and VMAX All Flash families in BS2000/OSD-BC as of V9.0 on S, SQ210 and SE server (SU300 with X2000 as of V6.1).

*1 The function TimeFinder SnapVX replaces on VMAX3 and VMAX All Flash the previous function TimeFinder/Snap. Currently SHC-OSD supports TimeFinder SnapVX compatible with the function scope of TimeFinder/Snap.

2.3 Changed commands

ACTIVATE-SNAP

- *1 - VMAX3, VMAX All Flash
only the operand NEW-PUBSET for renaming is applicable

MODIFY-SHC-ENVIRONMENT

- new operand CONNECTED-SYMAPI
provides the dynamic exchange of the connected SYMAPI server

- new command return codes (NDE1702, NDE1730, NDE1731, NDE1732, NDE1733) and console messages (NDE1735, NDE1736) when changing the SYMAPI server

RESTORE-FROM-SNAP

- *1 - ETERNUS DX S3 (FW level as of V10L50)
synchronous waiting for completion will now be supported
- VMAX3, VMAX All Flash
WAIT=*UNTIL-RESTORED is always applied

SHOW-SHC-ENVIRONMENT

- provides information about other configured SYMAPI servers

SHOW-SHC-PROCESSING

- extended output for configured SYMAPI servers

SHOW-SNAP-SESSION-STATUS

- ETERNUS DX S3 (FW level as of V10L50)
displays active restore-from-snap processing

START-SNAP-SESSION

- *1 - VMAX3, VMAX All Flash
snap pairs will be immediately activated, support of the operands HOLD-IO and NEW-PUBSET

STOP-SNAP-SESSION

- *1 - VMAX3, VMAX All Flash
support of operand SNAP-VSN=*DESTROY/*UNUSED

3 Technical information

3.1 Resource requirements

The address space in the user catalogue must be set for the user TSOS and SYSROOT at least to 512 MB.
Approx. 200 MB must be provided for SHC-OSD in the POSIX /var file system.
The paging area should be extended at least by 512 MB.

These values only meet minimum requirements.

3.2 Software configuration

SHC-OSD V12.0 requires BS2000/OSD as of V9.0 on S servers, OSD/XC as of V9.0 on SQ210 servers, resp. OSD/XC as of V9.5 on SE servers.

The respective current correction level of BS2000 must be used. At least required is:

- for S server
BS2000/OSD V9.0 or V10.0
as of correction package 2/2015, release date November 2015
- for SQ210 server
OSD/XC V9.0 or V10.0
as of correction package 2/2015, release date November 2015
- for SE server
OSD/XC V9.5 or V10.0
as of correction package 2/2015, release date November 2015

Using ETERNUS DX disk storage systems requires:

- *4 - StorMan V7.0,
as of correction level 7.0.1-4, release date October 2017

Using ETERNUS DX replication functions with SHC-OSD requires acquisition and installation of additional products in BS2000:

- SHC-CM-LR V12.0 for local replication (EC or SnapOPC+)
- SHC-CM-RR V12.0 for remote replication (REC)

Using EMC storage systems with SHC-OSD requires an external management server with „Solutions Enabler“ resp. „Unisphere for VMAX“.

*1 Snap usage resp. BS2000 online backup with snapsets on storage systems VMAX3 or VMAX All Flash requires at least the following correction levels:

- for S server
BS2000/OSD V9.0 or V10.0
as of correction package 1/2016, release date June 2016
- for SE server
OSD/XC V9.5 or V10.0
as of correction package 1/2016, release date June 2016
X2000 as of V6.1 for SU300

*1 Online backup with snapsets on VMAX3 or VMAX All Flash is not available for SQ server.

3.3 Product installation

Installation of the product SHC-OSD V12.0 with the IMON installation monitor is mandatory. You must follow the information concerning installation in the delivery cover letter and in the product documentation as well as the information in this Release Notice.

Install and configure StorMan (ETERNUS DX) on the external StorMan server resp. SYMAPI (EMC storage systems) on the external SYMAPI server, before installation of SHC-OSD in BS2000.

- *4 In case of migration to SHC-OSD V12.0A04 and ETERNUS DX usage, an upgrade to
- *4 the current release of StorMan V7.0 is required in advance.

3.3.1 Installation/Configuration of external components

3.3.1.1 StorMan (ETERNUS DX)

The installation of the StorMan delivery components takes place on one or more external servers (Management Unit (MU), MARS, Linux or Microsoft Windows). LAN (TCP/IP) is used for communication between SHC-OSD and StorMan. StorMan needs a LAN connection to the managed storage systems. CIMOM server settings (IP address and access data of the SMI-S provider) must be stored internally in StorMan by use of StorMan or via SHC-OSD (command /MODIFY-SHC-ENVIRONMENT). Details see manual SHC-OSD V12.0.

3.3.1.2 SYMAPI (EMC storage systems)

EMC demands a management server with „Solutions Enabler“ resp. „Unisphere for VMAX“. The server needs FC connections to the Symmetrix systems and the gatekeeper devices.

LAN (TCP/IP) is used for communication between SHC-OSD (SYMAPI client) and the SYMAPI server. Only the IPv4 protocol is approved by EMC for BS2000 usage.

The SYMAPI server has to accept unencrypted connections from the SYMAPI client:

```
SYMAPI_SECURITY_LEVEL= ANY
in file ../EMC/SYMAPI/config/options.
```

To allow the modification of diagnostic settings by SHC-OSD:

```
Set storsrvd:permit_symapi_debug = CLIENT
in file ../EMC/SYMAPI/config/daemon_options.
```

More details see manual SHC-OSD V12.0.

3.3.2 Installation/Configuration of the BS2000 components

The supply unit SYMAPI, gatekeeper devices defined in BS2000 IO configuration and the SYMAPI-D subsystem are no longer required with SHC-OSD as of V12.0. The SYMAPI client is integrated in SHC-OSD.

In case of product upgrade stop the subsystem SHC-OSD before calling IMON.

1) Installation with IMON.

Install SHC-OSD V12.0 on BS2000 and POSIX.

ETERNUS DX:

```
Install software licences CM-LR V12.0 and/or CM-RR V12.0
on BS2000 and POSIX.
```

2) Customize SYSPAR.SHC-OSD.120.

ETERNUS DX:

```
Parameters STORMAN-HOST, STORMAN-PORT, ...
```

- *2 Remove, if applicable, the parameter SYMAPI-HOST=127.0.0.1 of
- *2 a previous installation.

EMC storage systems:

```
Parameters SYMAPI-HOST, SYMAPI-PORT, ...
```


- 3) Activation of the release unit SHC-OSD:
 - a) by means of IMON (POSIX must be started, no BS2000 shutdown required)
//ACTIVATE-UNITS UNIT-NAME=*SUPPLY-UNIT(UNIT-NAME=SHC-OSD)
 - b) alternatively /SHUTDOWN and restart of BS2000 and POSIX

3.4 Product use

The Storage Cluster Option (SCO) on ETERNUS DX S3 is not supported by SHC-OSD V12.0. When volumes of the storage system are in use with SCO, these volumes must be assigned by StorMan to a separate pool before starting SHC-OSD.

With Symmetrix DMX-4, Enginuity 5773, the function MULTI-SNAP must be disabled in case of TimeFinder/Snap usage on THIN devices (in parameter file SYSPAR.SHC-OSD.120 or by command /MODIFY-SHC-PROCESSING).

- *4 During a VM migration no SHC-OSD actions are allowed in the guest system.

Common hints:

In backup scenarios the duration of START-SNAP-SESSION up to and including ACTIVATE-SNAP (resp. CREATE-SNAPSET) and START-CLONE-SESSION up to and including ACTIVATE-CLONE must be taken into consideration.

There are HW-dependent differences between EMC storage systems and ETERNUS DX at the replication functions. Please observe the manual when changing the hardware platform of the disk storage system.

3.5 Discontinued functions (and those to be discontinued)

The following functions are no longer supported as of this version:

- Storage systems connected to BS2000 via channel type S

- *4 The following functions are supported the last time as of this version:

- *4 - Operation on SQ Server
- *4 - EMC storage system Symmetrix DMX-4
- *4 - TimeFinder/Mirror (BCV)
- *4 - BS2000 Snapset usage at the SRDF target of EMC storage systems
- *4 - ENABLE-REMOTE-LINK-DIRECTOR / DISABLE-REMOTE-LINK-DIRECTOR

3.6 Incompatibilities

The automatic fail detection for EMC storage systems in BS2000 by message NDE0008 is no longer possible because of changes in the structure of the SYMAPI server.

No EMC storage data from SM2 with following settings of statement //SET-STORAGE-SYSTEM-PARAMETERS:

- ADDITIONAL-DATA= *ALL
- ADDITIONAL-DATA= *SYMMETRIX(TYPE=*ALL)
- ADDITIONAL-DATA= *SYMMETRIX(TYPE=*DIRECTOR)

When BS2000 volumes on VMAX3 or VMAX All Flash are to be used automatically as snap units, they must be initialized in advance with the VOLIN utility and attached to the specific system. The special notation S#<mn> is introduced as the VSN for these volumes, e.g. S#5234, where <mn> is the device mnemonic.

TimeFinder SnapVX doesn't support mixed operation of the native SnapVX function and TimeFinder/Clone or TimeFinder/Mirror (BCV) (both emulated by TimeFinder SnapVX) on the same logical volume.

The software product SCCA-BS2 is obsolete.

3.7 Restrictions

ETERNUS DX

- The Storage Cluster Option (SCO) is not supported by SHC-OSD.

*1

VMAX3, VMAX All Flash

- The functions eManagement (usage of the embedded „Solutions Enabler“) and SRDF-Metro are not supported by SHC-OSD.

3.8 Procedure in the event of errors

If an error occurs, the necessary error documents for diagnose are described in manual SHC-OSD V12.0.

4 Hardware requirements

SHC-OSD V12.0 runs on S server as of BS2000/OSD V9.0, on SQ210 server as of OSD/XC V9.0 and on SE server as of OSD/XC V9.5.

4.1 Requirements for X2000

SHC-OSD V12.0 can be used with all current versions as of X2000 V5.3.

4.2 Disk storage systems

SHC-OSD V12.0 supports the following ETERNUS DX models:

Model	Remarks
DX410 S2	
DX440 S2	
DX8700 S2	
DX500 S3	
DX600 S3	
DX8700 S3	S and SE server only; SU300 as of X2000 V6.1

In order to use EC, SnapOPC+ or REC functions of ETERNUS DX S2 the appropriate BS2000 independent firmware licenses must be installed in the ETERNUS storage system.

In order to use Thin Provisioning and Automated Storage Tiering (AST), the BS2000 independent firmware license 'Thin Provisioning Feature' must be installed in the ETERNUS storage system.

SHC-OSD V12.0 supports the following EMC models:

Model	Remarks
DMX-4	not channel type S
VMAX-1	
VMAX 20K	
VMAX 40K	
VMAX3	no SRDF with DMX-4; SU300 as of X2000 V6.1
VMAX All Flash	no SRDF with DMX-4; SU300 as of X2000 V6.1

*1

In order to use SRDF and/or TimeFinder with Symmetrix the appropriate licenses are necessary.

The EMC engineer must apply appropriate settings to the EMC storage systems for SRDF and/or TimeFinder usage (except TimeFinder/Clone).

5 Firmware levels

5.1 ETERNUS DX storage systems

With ETERNUS DX following FW levels are required at least:

*4	<u>ETERNUS DX S2 storage Systems</u>	
*4	Model	FW level as of
*4	DX410 S2	V10L64
*4	DX440 S2	V10L64
*4	DX8700 S2	V10L64

*4	<u>ETERNUS DX S3 storage Systems</u>	
*4	Model	FW level as of
*4	DX500 S3	V10L70-5000 SAN
*4	DX600 S3	V10L70-5000 SAN
*4	DX500 S3	V10L71-3000 Unified
*4	DX600 S3	V10L71-3000 Unified
*4	DX8700 S3	V10L70-5000 SAN

5.2 EMC storage systems

*1 The following Enginuity resp. HYPERMAX OS and SYMAPI versions will be supported:

*1	<u>DMX and VMAX storage systems</u>		
*1	Model	Enginuity	SYMAPI as of
*1	DMX-4	e5773	V8.3
1	VMAX-1	e5876 ¹	V8.3
1	VMAX 20K	e5876 ¹	V8.3
1	VMAX 40K	e5876 ¹	V8.3

*1 ¹ For SRDF connections to VMAX3 or VMAX All-Flash a suitable correction level should be coordinated with EMC support.

*1	<u>VMAX3 and VMAX All Flash storage systems</u>		
*1	Modell	HYPERMAX OS as of	SYMAPI as of
*1	VMAX3	5977	V8.3
*1	VMAX All Flash	5977.945.890	V8.3