Datasheet
FUJITSU Software BS2000 SHC-OSD V14.0

Storage Host Component for BS2000

Storage management for BS2000

The SHC-OSD software product is the storage host component for the management of the main functions of the FUJITSU Storage ETERNUS DX and ETERNUS AF systems respectively EMC storage systems. It provides commands and information services for controlling the replication functions Equivalent Copy, QuickOPC, Remote Equivalent Copy (synchronous and asynchronous) and SnapOPC+ of the ETERNUS AF/DX storage systems and supports the ETERNUS SF functionalities Storage Cluster Options, Advanced Storage Tiering and Thin Provisioning. It also provides information services and commands for controlling the functions SRDF® (Symmetrix® Remote Data Facility) and TimeFinder® and supports Virtual Provisioning.

SHC-OSD allows the use and control of functions for local and remote replication of storage systems via BS2000 command interfaces. Control of these mirroring functions can be integrated into procedures. This results in a high level of automation and reliable processing in critical operating situations.

Green IT

® 'Symmetrix', 'SRDF' and 'TimeFinder' are trademarks of EMC Corporation

Topics

ETERNUS DX Functions

Information Function

A global Show function provides selected information about the configuration, of the ETERNUS DX, external ports and Snap Device and Thin pools. The device-specific Show function provides information about device names, device type, status, RAID mode, volume size, etc. The Show functions to the mirrored pairs allow the user to call up information about the status of local clone pairs and remote mirrored volumes. A Snap Show function displays the current processing status of snap pairs.
This functionality is not restricted to the volumes defined on the local BS2000 system. That means, for example, that volumes of multiple VM2000 or other systems as well as remote volumes can be controlled centrally from one BS2000 system without the need for additional I/O paths (particularly relevant with mirroring over long distances).
In addition to the information output at the interactive interface, information is also set in S variables.

Monitor Function

SHC-OSD provides for ETERNUS DX systems a monitoring function for the storage subsystem and for individual volumes, also with regard to active data mirroring. When status changes are detected, descriptive messages are output to the console, enabling manual or automatic responses to be made.

Local mirroring with Equivalent Copy (EC)

Equivalent Copy (EC) provides local, continuous mirroring on a volume basis with separable mirrors. A local mirror volume of identical size is allocated to an original volume and after initial synchronization is also carried as a mirror. The copy, referred to as clone unit, is available directly after its activation. Together, the original and clone unit form the clone pair, which is administrated via Equivalent Copy.
Equivalent Copy is integrated in the HSMS Concurrent Copy function, i.e. backup data can be read from split-off Clone units.

Local mirroring with QuickOPC

QuickOPC is a local replication function comparable to EC. A local mirror volume of the same size, called Clone-Unit, is also assigned to an original volume. QuickOPC creates consistent copies of the original data on another volume, which are active immediately after creation and directly accessible by the server.
A new status of the originals can be updated to the clone units at any time. The Clone Units are then available directly with the new status.
QuickOPC is integrated into the HSMS function Concurrent Copy, that means that the backup data can be read by split clone units

Local Snapshots with SnapOPC+

The function SnapOPC+ of ETERNUS DX storage systems offers the possibility to create one or multiple snapshots of a logical unit on base of 'copy-on-first-write'. The snapshot, which is also called a snap unit, is a logical copy of the original unit at a specific point in time. Whereas the data on the original unit is subsequently changed, the snap unit retains the state of the data at the time the snapshot was created. Starting from SHC-OSD V13.0 any Thin volumes and / or AST volumes can be used as snap-units.

Synchronous remote mirroring with Remote Equivalent Copy (REC)

It supports mirroring on a volume basis with separable mirrors between 2 or more ETERNUS DX systems. A mirror volume of identical size is allocated to a local original volume in the remote ETERNUS DX and after initial synchronization is also carried as a mirror. A maximum of 4 simultaneous REC mirrors are supported by SHC-OSD for one original (concurrent remote copy).

Asynchronous remote mirroring with Remote Equivalent Copy

SHC-OSD supports the asynchronous Remote Replication for disaster recovery scenarios for ETERNUS DX as of S3. Two different modes are available for the user:
In addition to a Consistency Mode, that ensures consistency in the remote storage system, a Stack Mode with delayed transmission for example for migration purposes is also supported.
The administration of asynchronous REC pairs is carried out via SHC-OSD commands and information functions.

Cascaded and Concurrent Remote Copy

The functions Cascaded and Concurrent Remote Copy form the basis for combined HA/DR configurations and offer a significant extension of the configuration options.
With Cascaded Remote Copy the target unit of a synchronous REC pair is simultaneously also the source unit of a cascaded remote copy replication (synchronous or asynchronous) on a further target unit via remote connection. Concurrent Remote Copy describes the simultaneous mirroring (synchronous or asynchronous) on multiple target units. Cascaded REC and Concurrent REC including the asynchronous remote replication are supported for ETERNUS DX S3.

Thin Provisioning

Thin provisioning helps to avoid unused, cost-intensive memory and to improve performance. It is based on Thin Provisioned Volumes (TPV), i.e. volumes which are configured from a server point of view with a capacity that is larger than its actually existing capacity and Thin Provisioned Pools (TPP), i.e. pre-defined pools of physical disks for the provision of physical storage space. From a server point of view, a TPV does not differ from a normal volume.
SHC-OSD supports Thin Provisioning with the information and monitoring functions and so enables the operator to use this highly modern functionality for BS2000 applications in a safe and integrated way.

Automated Storage Tiering

The Automated Storage Tiering functionality automatically moves the storage resources between different storage tiers (SSD, SAS, NL-SAS) within one ETERNUS and offers at any time optional performance and resource utilization also on changing performance requirements. The definition of the pools/volumes and the administration of policies is carried out via ETERNUS SF. SHC-OSD integrates the Automated Storage Tiering for BS2000 by providing information and monitoring functions for monitoring the AST volumes and pools and by active management of replication functions (EC, QuickOPC, REC, SnapOPC+).

Storage Cluster Options

The Storage Cluster Option (SCO) combines two ETERNUS AF/DX storage systems to a failsafe storage cluster. SHC-OSD supports SCO with following functions:

- Output of information and monitoring of the storage cluster
- Control of the additive replication functions, supported for SCO
- Manual failover and failback for Storage Cluster

Functions of EMC storage systems

Information Function

The global Show function provides selected information about the configuration of the storage system. The device-specific Show function provides information about device names, device type, status, RAID mode, volume size, etc.
The SRDF Show functions allow the user to call up information about the status of remote mirrored volumes and about SRDF settings. The TimeFinder Show function displays the current processing status of the local mirroring function.
This functionality is not restricted to the volumes defined on the local BS2000 system. That means, for example, that volumes of multiple VM2000 or other systems as well as remote volumes (single hop, i.e. only one connection node allowed) can be controlled centrally from one BS2000 system without the need for additional I/O paths (particularly relevant with SRDF over long distances).
In addition to the information output at the interactive interface, information is also set in S variables.

Monitor Function

SHC-OSD provides a monitoring function to detect status changes in the configuration and status changes in volumes, TimeFinder and SRDF pairs. When status changes are detected, descriptive messages are output to the console, enabling manual or automatic responses to be made.

TimeFinder Functions

Commands for the TimeFinder functions can control the mirroring of volumes on additional volumes supporting mirroring by TimeFinder Clone, TimeFinder SnapVX™ and TimeFinder Snap.

TimeFinder Clone is a flexible, highly functional way to create pointer-based full volume copies of volumes, also usable for volume migration.
With the function Cascaded TimeFinder Clone for VMAX, a clone unit can be used simultaneously also as an original for a further TimeFinder Clone mirroring.
For VMAX3 / VMX AFA TimeFinder Clone is emulated on base of TimeFinder SnapVX.

TimeFinder Snap is a flexible, highly functional way to create pointer-based space-saving copies of volumes.
TimeFinder Snap is integrated in BS2000 with the Snapset features.

TimeFinder SnapVX is the product for data replication for use on VMAX3 /VMAX AFA. The Snapset functionality of BS2000 on base of TimeFinder SnapVX is also available.

SRDF Function

SHC-OSD can also be used to set and dissolve dynamically remote mirroring. It is differentiated between synchronous (SRDF/S), asynchronous consistent (SRDF/A) and self-adapting modes. Similarly, it is possible to define the response required if errors occur in the remote configuration or in connections to the remote configuration. The functions Concurrent SRDF and Switched SRDF open an additional variety of configuration options and scenarios.
With the function ‚Cascaded' SRDF a SRDF mirroring can be cascaded, i.e. a SRDF target unit can be simultaneously used as an SRDF source unit for a further SRDF mirroring.

Virtual Provisioning

Virtual provisioning is based on the option of configuring a large so-called "thin" device (i.e. volume) for a server or application and of making it accessible. Depending on requirements, this thin device uses physical memory from a jointly used "thin pool". Sufficient capacity, which can be dynamically extended, is provided in the thin pool for the applications.
SHC-OSD supports Virtual Provisioning and so enables the operator to use this highly modern functionality for BS2000 applications in a safe and integrated way.

Virtual Provisioning (on VMAX3 / VMX AFA)

The storage system VMAX3 / VMX AFA is completely ‘virtual provisioned'. The information to virtual provisioning is provided by SHOW commands.

Architecture

ETERNUS DX

Management of ETERNUS AF/DX for BS2000 is performed with SHC-OSD via StorMan on an external server with StorMan taking on the encapsulation for the storage systems.
On the SE servers the StorMan is integrated on the Management Unit. The SMI-S provider used by StorMan is part of the ETERNUS AF/DX firmware and provides the complete management functionality. StorMan is supplied with SHC-OSD by default.

EMC storage systems

SHC-OSD is based on open interface SYMAPI from EMC Corp., available to EMC partners. The SYMAPI server is running on an external server (Windows/Linux) and is controlled remote from BS2000 / SHC-OSD. The SYMAPI client is integrated as POSIX application in SHC-OSD.

™ 'VMAX3' and 'SnapVX' are trademarks of EMC Corporation

Technical Details

Requirements	
Technical Requirements Hardware	BS2000 SE Server from V6.2 SP1 FUJITSU Storage ETERNUS systems - ETERNUS AF650 S2 / S3 - ETERNUS DX500/DX600 S3 / S4 / S5 - ETERNUS DX8700 S3 For the use of „Thin Provisioning", „Automated Storage Tiering" and „Storage Cluster Option" and for use of replication functions the corresponding hardware licenses of ETERNUS storage system are required. EMC storage systems - EMC VMAX3 / VMAX AFA with HYPERMAX OS 5978 and SYMAPI from V9.0 - EMC Symmetrix VMAX with Enginuity 5876 and SYMAPI from V9.0 Using EMC storage systems requires an external management server with „Solutions Enabler" or „Unisphere for VMAX". A license is required to use SHC-OSD with SYMAPI. Use of SRDF and TimeFinder functions requires the corresponding firmware licenses.
Technical Requirements Software	OSD/XC V10.0 and V11.0B from SP 19.2 StorMan V9.0 (release unit of SHC-OSD V14.0) optional: SDF-P (if S variables are used)
Demands on the user	Knowledge of BS2000
Installation and operation	
Operating mode	Interactive (dialog) and batch mode
Implementation language	C, SPL, Assembler
User interface	Commands in English, message texts in German/English (optional)
Installation	By the customer according to the release notice
Documentation and training	
Documentation	SHC-OSD User guide StorMan User guide
Training	See course offer (German)
Purchasing	
Conditions	This software product can be leased by the customer in accordance with the conditions for the use of software products.
Ordering and delivery	This software product may be obtained from your local Fujitsu Technology Solutions GmbH regional office.

More information

Fujitsu products, solutions & services

Products
http://www.fujitsu.com/fts/products/
In addition to BS2000, Fujitsu offers a full portfolio of other computing products:

- Storage systems: ETERNUS
- Server: PRIMERGY, PRIMEQUEST, Fujitsu SPARC M10, BS2000 Mainframe
- Client Computing Devices: LIFEBOOK, STYLISTIC, ESPRIMO, FUTRO, CELSIUS
- Peripherals: Fujitsu Displays, Accessories
- Software
- Network

Solutions
http://www.fujitsu.com/fts/solutions
Infrastructure Solutions are customer offerings created by bringing Fujitsu's products, services and technologies together with those from partners.
Industry Solutions are tailored to meet the needs of specific verticals.
Business and Technology Solutions provide a variety of technologies developed to tackle specific business issues such as security and sustainability, across many verticals.
Services
www.fujitsu.com/fts/services/
Application Services support the development, integration, testing, deployment and on-going management of both custom developed and packaged applications.
Business Services respond to the challenge of planning, delivering and operating IT in a complex and changing IT environment.
Managed Infrastructure Services enable customers to deliver the optimal IT environment to meet their needs.

More information

To learn more about BS2000, please contact your Fujitsu sales representative, Fujitsu business partner, or visit our website.
http://www.fujitsu.com/fts/bs2000

Fujitsu green policy innovation

www.fujitsu.com/global/about/environment/
Fujitsu Green Policy Innovation is our worldwide project for reducing burdens on the environment. Using our global know-how, we aim to resolve issues of environmental energy efficiency through IT.
Please find further information at:
www.fujitsu.com/global/about/environment/

Copyright

Disclaimer

Contact
Fujitsu Technology Solutions GmbH
Mies-van-der-Rohe-Straße 8, 80807 München
Website: www.fujitsu.com/fts
April 30, 2020 EN