

## FUJITSU Software BS2000 HSMS

Version 10.0A  
November 2015

Release Notice

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<b>1 General</b>	<b>2</b>
1.1 Ordering	2
1.2 Delivery	2
1.3 Documentation	4
<b>2 Software extensions</b>	<b>5</b>
2.1 Extensions from HSMS V9.0A to V9.0B	5
2.2 Extensions from HSMS V9.0B to V10.0A	6
2.3 Hints for using Tape Encryption	9
<b>3 Technical information</b>	<b>10</b>
3.1 Resource requirements	10
3.2 Software configuration	10
3.3 Product installation	10
3.4 Product use	11
3.5 Obsolete functions (and those to be discontinued)	11
3.6 Incompatibilities	11
3.6.1 General	11
3.6.2 HSMS V9.0A	11
3.6.3 HSMS V9.0B	11
3.6.4 HSMS V10.0A	11
3.6.5 SYSPAR.ARCHIVE.100	12
3.7 Restrictions	12
3.8 Procedure in the event of errors	12
<b>4 Hardware support</b>	<b>12</b>

# 1 General

This Release Notice is a summary of major extensions, requirements and operating information with regard to HSMS V10.0A under the BS2000 \* operating system.

This release level is that of November 2015.

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.

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 be taken in account as well.

## 1.1 Ordering

HSMS V10.0A can be ordered from your local distributors.

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

## 1.2 Delivery

HSMS V10.0A files are supplied via SOLIS.

### HSMS :

The following delivery components are required regardless of the HSI:

SYSFGM.HSMS.100.D	Release notice (German)
SYSFGM.HSMS.100.E	Release Notice (English)
SYSFHS.HSMS.100	Library with FHS masks
SYSLIB.HSMS.100	Macro library with HSMS macro
SYSLNK.HSMS.100	Load module library for non-privileged part of HSMS
SYSMES.HSMS.100	Message file
SYSNRF.HSMS.100	NOREF file for REP processing when loading the HSMS Sub-System
SYSPRC.HSMS.190	Procedures for SE Backup Manager support
SYSPRG.HSMS.100	Load module (TU program)
SYSRME.HSMS.100.D	README file (German), if any
SYSRME.HSMS.100.E	README file (English), if any
SYSRMS.HSMS.100	Object corrections RMS format
SYSSDF.HSMS.100	Sub-System syntax file (HSMS commands)
SYSSII.HSMS.100	IMON structure and installation information file
SYSSSC.HSMS.100	Sub-System declarations

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The following delivery components are only required on S- and SE-Servers (SE500/SE700):

SYSLNK.HSMS.100.TPR	Object module library for loading the HSMS modules (/390-HSI)
---------------------	---------------------------------------------------------------

The following delivery components are only required on SQ- and SE-Servers (SE300):

SKMLNK.HSMS.100.TPR	Object module library for loading the ARCHIVE modules (X86-HSI)
---------------------	-----------------------------------------------------------------

#### HSMS-API :

The following delivery components are required regardless of the HSI:

SYSLIB.HSMS-API.100	Macro library for program interface
SYSRMS.HSMS-API.100	Object corrections RMS format
SYSSII.HSMS-API.100	IMON structure and installation information file
SYSSSC.HSMS-API.100	Sub-System declarations

The following delivery components are only required on S- and SE-Servers (SE500/SE700):

SYSLNK.HSMS-API.100.TPR	Object module library for loading the HSMS modules (/390-HSI)
-------------------------	---------------------------------------------------------------

The following delivery components are only required on SQ- and SE-Servers (SE300):

SKMLNK.HSMS-API.100.TPR	Object module library for loading the ARCHIVE modules (X86-HSI)
-------------------------	-----------------------------------------------------------------

### 1.3 Documentation

The following documentation is available for HSMS V10.0A:

HSMS V10.0 Funktionen, Band 1	U6043-J-Z125-15
HSMS V10.0 Functions, Volume 1	U6043-J-Z125-15-76
HSMS V10.0 Anweisungen, Band 2	U41035-J-Z125-9
HSMS V10.0 Statements, Volume 2	U41035-J-Z125-9-76

and eventually

SYSRME.HSMS.100.D (file with German text)  
SYSRME.HSMS.100.E (file with English Text)

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

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

The documentations are shipped as PDF files on the SoftBooks-DVD.

Since no new user guide will be published for ARCHIVE 10.0A, the previous user guide for ARCHIVE V09.0A must be used instead in conjunction with the README file of ARCHIVE V09.0B end eventually V10.0A. For product installation see also the manuals of the BS2000 version used. They may be helpful and the user guide of the installation monitor IMON as well.

## 2 Software extensions

### 2.1 Extensions from HSMS V9.0A to V9.0B

#### Net-Storage support

With the implementation of Net-Storage support files on mounted UFS file server (BS2000 command /MOUNT-NET-STORAGE) can be saved and restored.

The new switch „STORAGE-TYPE“ for ARCHIVE, residing in SYSPAR.ARCHIVE.100, was introduced to control the storage type of files to be handled when working with ARCHIVE only.

Several HSMS commands had been extended with the parameter „STORAGE-TYPE“ to control the storage type of files to be handled. HSMS statements affected:

- //ARCHIVE-FILES
- //BACKUP-FILES
- //RESTORE-FILES
- //SELECT-FILE-NAMES
- //EXPORT-FILES
- //IMPORT-FILE

Any migration of Net-Storage files to S1 or S2 storage level is not supported as it makes no sense. Therefore no change at the user interface for migration commands.

#### SHOW-ARCHIVE with selection of a save version according to a given search string

With SHOW-ARCHIVE save versions can be determined containing a given search string stored in previously entered comments (User Information):

```
SELECT=*SAVE-VERSIONS(INFORMATION=*SUMMARY(SEARCH-STRING=...)).
```

Additionally a list of all „save-version-id’s“ and their corresponding „user-information“ can be displayed.

#### BACKUP-NODE-FILE with improved selection of path names

Extension of parameter SELECTION-BOUNDARY to handle only files located in the local BS2000-UFS (\*ALL-LOCAL-FILE-SYSTEMS). Up to now it was only possible to handle all files of all file systems including remotely mounted file systems (\*ALL-FILE-SYSTEMS) or files located in a locally mounted but another Posix container are excluded (\*CURRENT-FILE-SYSTEM) or only files with the specified path name are handled (\*SPECIFIED-PATHS). Furthermore a double backup of files is avoided when for instance „/“ and „/var“ is specified.

#### IMPORT-FILES

The statement //IMPORT-FILES has been extended by the operand DATE-AND-PROTECTION = \*STD-ATTRIBUTES / \*ORIGINAL-ATTRIBUTES to be analogous to the HSMS statement //RESTORE-FILES. With this improvement a disaster recovery in a different data center is much easier.

It is also possible to restore a directory file from a disk save file if the SFID and the corresponding pubset are known. The operand SAVE-FILE was extended by \*BY-PUBLIC-DISK(SAVE-FILE-ID=<sfid>,PUBSET-ID=<pubset-id>)

#### Support of directory name in //MODIFY-ARCHIVE-ATTRIBUTES

The statement //MAA has been extended with the operand DIRECTORY-CATID to allow an easy change of the Catid of a corresponding Directory. This is very useful if the Pubset was renamed beforehand. At the moment there is still no automatic update of an existing MAREN catalogue, the MAREN administrator has to modify each volume concerned by hand (//MOD-VOL-ATTR).

## 2.2 Extensions from HSMS V9.0B to V10.0A

### Support of a SM pubset with all its volume sets as S1 Storage Level

With HSMS V10.0A the limitation of 4 TB per SF pubset for S1-Storage-Level has been abolished by introducing a SM pubset with all its volume sets (except control volume set) as \*S1-Storage-Level. Theoretically the size of a SM pubset can be up to 1024 TB. If the capacity of the volume set concerned is insufficient for the backup, another save file is created on a different volume set of the S1-SM pubset. Its name differs from the original save file by the sequence number SEQ\_NO being incremented by 1. A subtask can create up to 16 such save files (SEQ\_NO 0-F).

A S1-SM pubset can be used on one host as a global S1 pubset for all SF pubsets, for a selection of SF Pubsets or for a single SF pubset. SM pubsets are currently not supported.

The usage of the S1-SM pubset on several hosts simultaneously as a data center global S1-SM pubsets for all SF pubsets is possible. A simultaneous start of migrations on several host should be avoided (time stamp within the file name) and is liable to the responsibility of the HSMS administrator.

### Extension of target locations (TO-STORAGE) for //ARCHIVE-FILES

To harmonize the syntax of all backup statements with HSMS V10.0A it is possible to archive files not only to tapes (\*S2-STORAGE-LEVEL) but to disk (\*S1-STORAGE-LEVEL and \*PUBLIC-DISK) and to Net-Storage (\*NET-STORAGE) as well.

### Extension of target locations (TO-STORAGE) for //COPY-SAVE-FILE

In dependence of the input archive with HSMS V10.0A it is possible to copy save files not only to tapes (\*S2-STORAGE-LEVEL) but to disk (\*S1-STORAGE-LEVEL, \*PUBLIC-DISK and \*PRIVATE-DISK) and to Net-Storage (\*NET-STORAGE) as well.

<b>TO-STORAGE</b>	<b>S2-storage-level</b>	<b>S1-storage-level</b>	<b>*Private-disk</b>	<b>*Net-storage</b>	<b>*Public-disc</b>
<b>original archive type</b>					
<b>single-svid backup</b>	supported	supported	supported	supported since HSMS 9.0B	<b>new in HSMS V10.0A (SF environment only)</b>
<b>several-svid backup</b>	supported	<b>new in HSMS V10.0A</b>	<b>new in HSMS V10.0A</b>	supported since HSMS 9.0B	<b>new in HSMS V10.0A (SF environment only)</b>
<b>long term</b>	supported	<b>new in HSMS V10.0A</b>	not supported	<b>new in HSMS V10.0A</b>	<b>new in HSMS V10.0A</b>
<b>migration</b>	supported	not supported	not supported	not supported	not supported

New name structure of SAVE-FILES for backup to disk (VSN independency)

While introducing a SM pubset with all its volume sets as S1 pubset the name structure of the disk save files had to be changed as well as a save files could spread over several volume sets (with its max.16 files, governed by HSMS). In addition to the Subsave-Number (SSN) a new Sequence-Number (SEQ\_NO) 0-F has been introduced.

:<cat\_id>:<user\_id>ARCHIVE.SAVE.FILE.date.time.SSN.**SEQ\_NO**

During a backup to Net-Storage the name structure of the disk save file has been changed as well to support a VSN independency. Same name structure as S1-SM pubset but SEQ\_NO „0“ has been applied.

	<b>Version 9</b>	<b>Version 10 (new in red)</b>
HSMS save files	ARCHIVE.SAVE.FILE(date-time-subsave# -O) when backing up to tape  ARCHIVE.SAVE.FILE.date.time.vsn when backing up to private disk and Net-Storage  ARCHIVE.SAVE.FILE.date.time.0 when backing up to S1 and pubset	ARCHIVE.SAVE.FILE(date-time-subsave# -O) when backing up to tape  ARCHIVE.SAVE.FILE.date.time.vsn when backing up to private disk  ARCHIVE.SAVE.FILE.date.time. <b>ssn.0</b> when backing up to Net-Storage volumes  ARCHIVE.SAVE.FILE.date.time. <b>ssn.seq_no</b> when backing up to S1 and pubset
ARCHIVE save files	ARCHIVE.SAVE.FILE(date-time-subsave#-O) ARCHIVE.SAVE.FILE(date-time-subsave#-I)  ARCHIVE.SAVE.FILE.date.time.vsn for save runs to (private or public) disk or Net-Storage.	ARCHIVE.SAVE.FILE(date-time-subsave#-O) ARCHIVE.SAVE.FILE(date-time-subsave#-I)  ARCHIVE.SAVE.FILE.date.time.vsn for save runs to (private or public) disk  ARCHIVE.SAVE.FILE.date.time.vsn when backing up to Net-Storage volumes
Volumes in HSMS directory	Tape: vsn Public-disc: pseudo-vsn (ssn:cat_id) Private-disc: vsn NetStor volume: vsn	Tape: vsn Public-disc: pseudo-vsn (ssn:cat_id) Private-disc: vsn NetStore volume: <b>pseudo-vsn (ssn:cat_id)</b>
Volumes in ARCHIVE directory	Tape: vsn Public-disc: vsn Private-disc: vsn NetStor volume: vsn	Tape: vsn Public-disc: vsn Private-disc: vsn Net-Stor volume: vsn

Therefore save files on disk (except for those on private disks) can be swapped from one file path to another.

Implementation of a dedicated BACKUP-SERVER

A backup server is a dedicated BS2000 system which handles all backup requests from other BS2000 systems sharing the same shared pubsets (SF and SM) with the backup server. The backup server does not need to be master of the pubsets to be saved, that means that requests are sent from pubset master to slave to discharge the productive system (master) of backup requests. However there is one disadvantage, an overhead of additional TransData-IOs.

#### Performance enhancements

- Reducing of SYNC-I/Os  
To improve the cooperation with native LTO drives furthermore the amount of SYNC-I/Os has been reduced once again by approx. 50%. But even with V10 the LTO cache will be cleared by SYNC early. With a compression rate of 3:1 on LTO6 drives the drive cache will be cleared already after it is filled by one third.
- Performance enhancements while saving on Net-Storage  
Again, with some measures the access to Net-Storage has been improved.

#### Improvement of supporting Net-Storage (NODE files)

With V10.0A it is now possible to backup and restore UNIX files placed on a Net-Storage volume. These files will be identified by \*NODE-FILE with the new attribute FILE-TYPE=\*ANY/\*BS2000/\*NODE-FILE. The following statements are affected:

```
//BACKUP-FILES and //RESTORE-FILES as well as
//EXPORT-FILES, //IMPORT-FILES and //SELECT-FILE-NAMES
```

#### Correction of documentation and syntax errors

While preparing V10.0A tests an extensive syntax test revealed some inconsistencies and errors which have been corrected in the documentation and syntax file.

#### Compatibility with older HSMS versions

HSMS V10.0 supports full read access to all save files created with HSMS < V10.0. A continuation of these save files is only possible if HSMS 10.0 has been started in HSMS-V9-COMP mode. This is controlled by the new HSMS parameter SAVE-FILE-PROCESSING.

Save files created by HSMS V10.0 can only be processed by HSMS < V10.0 if HSMS V10.0 has been started in \*HSMS-V9-COMP mode, otherwise the name structure of the save files is different and these save file are not recognized by HSMS < V10.0. Therefore HSMS V10.0 must be started in \*HSMS-V9-COMP mode as long as any system with shared pubsets uses HSMS < V10.0 in a computer network.

When using HSMS 10.0 in \*HSMS-V9-COMP mode the usage of a S1-SM pubset is not possible as a S1-SM pubset is only supported with the new name structure for save files.

#### Support of virtual Eternus-CS LTO-4 drives

Up to now only virtual tape drives TAPE-C4 were supported within an Eternus-CS system. As the maximum block counter is limited to  $2^{22}-1$  for TAPE-C4 "large" logical Eternus-CS volumes could only be filled partly. While using LTO-4 drives the maximum block counter is  $2^{31}-1$  and high capacity Eternus-CS volumes can be filled completely.

#### Expiration date and long term archival

The user can delete a save file whose expiration date has been expired at any time, even if the save file itself contains files with a higher expiration date. With HSMS V10.0 a warning is issued if a file with a higher expiration date should be added to a save file with a lower expiration date.

#### Importing of single files and JVs from disk save files

Today many users store their backups on disk instead on tape. As of HSMS V10.0 the import of single files and JVs from disk save files is possible, similar the import from tape.

### Support of Fujitsu Server BS2000 SE Serie

The SHOW functions and the reporting have been extended to meet the requirements of the Data Backup Manager of a SE Manager.

## **2.3 Hints for using Tape Encryption**

In connection with BS2000 as of V8.0A and MAREN as of V12.0A and LTO4/5/6 tape drives a customer related tape encryption is possible to avoid illegal access to "stolen" tapes. Tape encryption can easily used by declaring a special volume type (TAPE-U4E/U5E/U6E) within HSMS.

Further information concerning tape encryption can be obtained from the MAREN V12.0A user manuals.

## 3 Technical information

### 3.1 Resource requirements

The following storage space is required for HSMS operation:

- |                                                              |                 |
|--------------------------------------------------------------|-----------------|
| 1. Virtual address space (memory class 5):                   | less than 1 MB  |
| 2. Static disk storage space:                                | less than 22 MB |
| 3. Dynamic disk storage space:                               | not relevant    |
| 4. Special hardware/firmware/<br>processor/real main memory: | not relevant    |

### 3.2 Software configuration

HSMS V10.0A requires BS2000/OSD-BC as of V08.0A.

For running HSMS V10.0A following software requirements are mandatory:

- PAMINT of the corresponding BS2000-Version
- LMS as of V03.4A
- CCOPY with version as delivered in the installed version of BS2000 for Backup with Concurrent-Copy=\*Yes
- SHC-OSD with actual version and correction step as released for installed version of BS2000 for use with CCOPY
- FHS for HSMS show commands with version V8.3 or newer, needed for syslst output of the 43 line masks
- SECOS with versions as released for the installed BS2000 version for function CoOwing of Archives
  
- optional JV with version corresponding to BS2000 version for providing control JVs by HSMS
- POSIX for work on node files with versions as released for the installed BS2000 version
- optional MAREN for tape administration as of V12.0A

### 3.3 Product installation

The installation of the product HSMS with the installation monitor IMON is mandatory, as the execution of the product requires a consistent Software Configuration Inventory (SCI). The information concerning installation in the delivery cover letter and in the product documentation must be followed as well as the information given below. The necessary inputs and the sequence of the installation are described in the IMON documentation.

The release notice of ARCHIVE V10.0A too contains same installation information which must be taken in account before installing HSMS V10.0A.

### 3.4 Product use

None

### 3.5 Obsolete functions (and those to be discontinued)

As of HSMS V09.0A the product HSMS-SV will no longer be offered.

### 3.6 Incompatibilities

#### 3.6.1 General

Refer to the section on downgrading to earlier versions described in the HSMS user guide of HSMS V10.0A.

The HSMS control file of the previous versions V6.0A to V9.0B is only compatible upwards for subsequent use while switching to HSMS V10.0A. The control file of the previous version has to be saved for an eventual later downgrade to the previous version. At loading time of the HSMS Sub-System an invalid control file will produce the abortion of this loading instead of a switching to DEFINE-SHOW mode.

Generally an existing request file must be deleted before switching to a different HSMS version.

#### 3.6.2 HSMS V9.0A

- The primary allocation for a backup on disk is now of 36 PAM pages. The secondary allocation of 1 to 35 is no more allowed.
- The default value of SAVE-ACL parameter stays set to YES, although BS2000 from V5 cancels ACL support and HSMS then ignores the SAVE-ACL Option.
- The default value of the operand FILE-CONVERSION in the HSMS statements RESTORE-FILES and IMPORT-FILES is changed from \*NO to \*STD.
- Save files on disk are created in a neutral NK file format, independently of the pubset format. Therefore continuation of disk save files from previous versions (less than 7.0A) is not possible.

#### 3.6.3 HSMS V9.0B

None.

#### 3.6.4 HSMS V10.0A

- To support a VSN independency and to support save files spreading over several volume sets of the newly introduced S1-SM pubset the name structure of disk save file has been changed. A compatibility with older HSMS versions is controlled by the new HSMS-parameter SAVE-FILE-PROC.

public/  
Net-Storage :<cat\_id>:<user\_id>ARCHIVE.SAVE.FILE.date.time.SSN.SEQ\_NO  
  
private disk :<cat\_id>:<user\_id>ARCHIVE.SAVE.FILE.date.time.VSN

- These extensions entail an incompatibility in the layout of the HSMS V10.0 control file as well. For any back step the control file of the previous HSMS version must be saved.
- Net-Storage files of file type \*NODE-FILE can only be used with HSMS >= 10.0A and BS2000 as of V10.0A.

### **3.6.5 SYSPAR.ARCHIVE.100**

See release notice of ARCHIVE V10.0.

## **3.7 Restrictions**

None.

## **3.8 Procedure in the event of errors**

If an error occurs, the following error information is required for further diagnosis:

- CONSLOG
- Runtime logging (SYSOUT protocol)
- REP files for HSMS and ARCHIVE
- HSMS report file ("REPORT=FULL")
- DIRECTORY file, if there are write/read or SHOW-ARCHIVE errors
- Hypertape-Media-Report, if used and HSMS-API errors
- ARCHIVE checkpoint file, if the error occurred during write or read jobs
- Dump, if any
- SERSLOG file
- HSMS trace, if any

# **4 Hardware support**

HSMS V10.0A can be used on all systems supported by BS2000/OSD-BC as of V08.0A and supports all disk and tape types that are also supported by BS2000/OSD-BC as of V08.0A.