

FUJITSU Software BS2000 HSMS

Version 11.0A

June 2019

Release Notice

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1 General

This Release Notice is a summary of major extensions, requirements and operating information with regard to HSMS V11.0A on BS2000 OSD/BC operating system.

*2 This release level is that of June 2019.

*1 Changes to release level June 2017 are marked with *1

*2 Changes to release level October 2017 are marked with *2

*2 This and other Release Notice(s) are contained on the Softbooks DVD and are also available online at <http://bs2manuals.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 be taken in account as well.

1.1 Ordering

HSMS V11.0A can be ordered from your local distributors.

1.2 Delivery

HSMS V11.0A files are supplied via SOLIS.

*2 The following release units belong to the delivery scope of HSMS V11.0A:

*2	HSMS	V11.0A
*2	ARCHIVE	V11.0A

*2 The current file and volume characteristics are listed in the SOLIS2 delivery cover letter.

1.3 Documentation

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

*2 The documentation is also available on the internet at <http://bs2manuals.ts.fujitsu.com> .

The following documentation is available for HSMS V11.0A:

HSMS V11.0 Band 1, Funktionen, Verwalten und Installation	U6043-J-Z125-16
HSMS V11.0 Volume 1, Functions, Management and Installation	U6043-J-Z125-16-76
HSMS V11.0 Band 2, Anweisungen	U41035-J-Z125-10
HSMS V11.0 Volume 2, Statements	U41035-J-Z125-10-76

The manuals may be supplemented with README files. These contain changes and extensions to the manual of the product concerned. The file names are made up as follows:

SYSRME.HSMS.110.D (file with German text)
SYSRME.HSMS.110.E (file with English Text)

*2 The following documentation is available for ARCHIVE V11.0A:
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Since no new user guides are published for ARCHIVE 11.0A, the previous user guides for ARCHIVE V09.0A must be used instead in conjunction with the README files of ARCHIVE V10.0A end eventually V11.0A. For product installation see also the handbooks of the BS2000 version used. They may be helpful and the user guide of the installation monitor IMON as well.

ARCHIVE V9.0 Benutzerhandbuch U3292-J-Z125-7

ARCHIVE V9.0 User Guide U3292-J-Z125-7-76

*2 The manuals may be supplemented with README files. These contain changes
*2 and extensions to the manual of the product concerned. The file names are made
*2 up as follows:
*2

*2 SYSRME.ARCHIVE.110.D.pdf (file with German text)

*2

*2

SYSRME.ARCHIVE.110.E.pdf((file with English text)

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 statement /MOUNT-NET-STORAGE) can be saved and restored.

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

Several HSMS statements 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

HSMS does not support any migration of data from Net-Storage. Therefore no changes at the user interface for migration statements.

- 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-FILES with improved selection of path names

Extension of parameter SELECTION-BOUNDARY to handle all 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 centre 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.

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 for S1-Storage-Level has been abolished by introducing a SM-Pubset with all its volume sets (except control volume set) instead of a SF-Pubset as S1-Storage-Level. Theoretically the size of a SM-Pubset can be up to 1024 TB. If the capacity of the volume set used for backup is not sufficient enough, another save file is created on a different volume set of the S1-SM-Pubset. To support this functionality the name of the save file has been extended by a sequence number. The name of this further save file differs from the original save file by a sequence number SEQ_NO being incremented by 1. One subtask can create up to 16 such save files (SEQ_NO 0-F). The extended save files can only be used if the HSMS parameter SAVE-FILE-PROCESSING = *HSMS-V10-COMP is switched on.

As the previous SF-Pubsets 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. With HSMS V10.0A the extended S1-Storage Level is not supported for SM-Pubsets.

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

- Extension of storage location for save files (TO-STORAGE) of //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 storage location for save files (TO-STORAGE) of //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.

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

- New name structure of save files for backup to disk (VSN independency)

:<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. (see “Support of a SM-Pubset with all its volume sets as S1-Storage-Level” as well).

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

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 additional overhead of net traffic for the MSCF connections.

- 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 PAM-Node-Files (supported with BS2000 OSD/BC as of V10.0A) stored on a Net-Storage volumes. With the new attribute FILE-TYPE=*ANY/*BS2000/*NODE-FILE one can distinguish Net-Storage files supported as of BS2000 OSD/BC V9.0 from Node-files. The following statements are affected:

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

- Compatibility with older HSMS versions

HSMS V10.0A supports full read access to all save files created with HSMS < V10.0A.

Save files on disk or Net-Storage created with HSMS 10.0A with the parameter SAVE-FILE-PROCESSING = *HSMS-V10-COMP cannot be processed with HSMS < V10.0A.

Due to the new name structure of save file created with HSMS >= V10.0A and the parameter SAVE-FILE-PROCESSING = *HSMS-V10-COMP there is a risk of save files can't be processed with HSMS < V10.0A. Therefore the parameter SAVE-FILE-PROCESSING = *HSMS-V10-COMP should only be used if all hosts within a data centre are updated to HSMS >= V10.0A.

- File 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 file higher expiration date. With HSMS V10.0A a warning is issued if a file with a higher file 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-Series

The SHOW functions and the reporting have been extended to meet the requirements of the BS2000 backup monitor of the SE-Manager. The status of HSMS requests can be reviewed and report file in PDF format can be retrieved, if applicable.

2.3 Extensions from HSMS V10.0A to V11.0A

- Support of all volume sets with usage HSMS-CONTROLLED of a SM-Pubset as S1-Storage-Level

To solve the restriction of 4 TB as S1-Storage-Level in SM environment HSMS as of V11.0A supports several volume sets instead of only one single volume set. All volume sets with usage HSMS-CONTROLLED can be used as S1-Storage-Level *but only in*

*1 *connection with BS2000 OSD/BC as of V11.0A.*

This functionality is only available if HSMS runs in HSMS-V10 compatible mode. See “New name structure of save files for backup to disk (VSN independency)” in chapter 2.2 as well.

If all volume sets with usage HSMS-CONTROLLED of a SM-Pubset should be used as S1-Storage-Level only NK2 formatted volume sets are selected by BS2000 and HSMS. A KEY formatted volume set can only be used as a single volume set for S1-Storage-Level.

- Support of SAM-Node-Files on Net-Storage with SE-Server

With HSMS V11.0A SAM-Node-Files on Net-Storage can be saved and restored, with or without saving the SAM structure (*on SE-Server only in connection with BS2000 OSD/BC as of V11.0A*).

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A backup without SAM structure saves the data exactly how the files are stored on Net-Storage, no conversion takes place. Therefore the backup runs with a very good performance. But saving without SAM structure a restore is solely possible on Net-Storage. If a Net-Storage device is no longer available a restore of these files is no longer possible as well.

Due to a necessary conversion and editing a backup of SAM-Node-Files with SAM structure take a lot more time, but on the other hand the files can be restored as Node-Files on Net-Storage or as ordinary SAM files of type BS2000 on Net-Storage or public space as well.

For any long term backup (ARCHIVE-FILES) or for transferring files to a different data centre (EXPORT-FILES) SAM-Node-Files should always be saved with SAVE-SAM-

STRUCTURE=*YES to avoid any loss of data. If these files must be restored on public space the operand „NEW-SUPPORT=*PUBLIC-DISK(STORAGE-TYPE=*PUBLIC-SPACE)“ is mandatory for any RESTORE-FILES or IMPORT-FILES runs.

- EXPORT-FILE to disk

With HSMS as of 11.0A it is possible to EXPORT-FILES to disk as well (with or without directory). This results in changes for the user interface of the statements EXPORT-FILES, UPDATE-EXPORT-SAVE-FILE, COPY-EXPORT-SAVE-FILE and IMPORT-FILES.

- Usage of CONV2PDF api

With HSMS as of 11.0A the sub system CONV2PDF, if installed, is used to create PDF reports on SE server. If the sub system CONV2PDF is not available the TU program CONV2PDF is used as beforehand including the creation of own task.

- Choice of STANDARD-OUTPUT of a HSMS report

With HSMS AS of 11.0A a new global HSMS parameter OUTPUT has been introduced to set STANDARD-OUTPUT to *PRINTER or to *MAIL. With the new option *STD for the operand OUTPUT of the corresponding HSMS statement the report will be issued according to the setting of the global parameter OUTPUT.

2.4 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/
processor/real main memory: not relevant

3.2 Software configuration

- HSMS V11.0A requires BS2000 OSD/BC as of V10.0A.
- HSMS V11.0A requires ARCHIVE V11.0A.
- optional MAREN for tape administration as of V12.0A
- LMS as of V03.4A
- PAMINT of the corresponding BS2000 version.

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 the installation displayed 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 V11.0A contains same installation information as well which must be taken in account before installing HSMS V11.0A.

3.4 Product use

None

3.5 Obsolete functions (and those to be discontinued)

3.5.1 HSMS V9.0A

- HSMS-SV is no longer supplied as HSMS-CLIENT is no longer supplied as well.

3.5.2 HSMS V11.0A

- HSMS-API is no longer supplied (HyperTape of „Multistream / BridgeHead Software“ is no longer supported due to lack of applications).

- SPARC HSI is no longer supported and corresponding libraries will be no longer delivered.
- HSMS V11.0A will be not delivered for the SQ hardware range.

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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 V9.0B

- 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 V9.0B) is not possible.

3.6.3 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 files has been altered. Compatibility with previous HSMS versions is controlled by the new HSMS-parameter SAVE-FILE-PROC. Backups on private disks are not affected by this change.

Public/Net-Storage

:<cat_id>:\$<user_id>.ARCHIVE.SAVE.FILE.<date>.<time>.<ssn>.<seq-no>

Private disk (unchanged)

:<cat_id>:\$<user_id>.ARCHIVE.SAVE.FILE.<date>.<time>.<vsn>

- The extensions in HSMS V10.0A entail an incompatibility in the layout of the HSMS 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 as of 10.0A and BS2000 OSD/BC as of V10.0A.

3.6.4 HSMS V11.0A

- The extensions in HSMS V11.0A entail an incompatibility in the layout of the HSMS control file. For any back step the control file of the previous HSMS version must be kept and saved.
- Net-Storage files of file type *SAM-Node-File (FNOD) can only be processed with HSMS as of 11.0A and BS2000 OSD/BC as of V11.0A. During an eventually backup

with HSMS < 11.0A SAM-Node-Files are ignored without any comment, during a restore these files are rejected with ARC0512.

- To ensure the best possible compatibility with HSMS/ARCHIVE 10.0A HSMS as of 10.0A06 and ARCHIVE as of 10.0A07 should be used on the corresponding hosts.

3.6.5 SYSPAR.ARCHIVE.110

See release notice of ARCHIVE V11.0A.

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
- 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 V11.0A can be used on all hosts supported by BS2000 OSD/BC as of V10.0A and supports all disk and tape drives supported by BS2000 OSD/BC as of V10.0A as well.