FUJITSU Software BS2000 ARCHIVE

Version V11.0A
July 2017

Readme file

1   General

There will be no new edition of the user manual for ARCHIVE V11.0A. Therefore, the readme file refers to the user manual of ARCHIVE V9.0A:

Order number for the German edition: U3292-J-Z125-7

Order number for the English edition: U3292-J-Z125-7-76

The documentation is also available at http://manuals.ts.fujitsu.com.

1.1   Readme file

This readme file contains all modifications since the publication of the user manuals for ARCHIVE V9.0A. For work with ARCHIVE V11.0A you will need this readme file and the corresponding manual.

The current readme files are also provided on the manual server at http://manuals.ts.fujitsu.com.

ARCHIVE V11.0A has the same functionality as ARCHIVE V9.0A to V10.0A. ARCHIVE V11.0A supports HSMS V11.0A.

The present readme file describes ARCHIVE version 11.0A. Possible page references of this readme file correspond to the user manual of ARCHIVE V9.0A.

This readme file equates the release of July 2017.

2   Software Extensions

This chapter shows the description of additional functions and improvements for ARCHIVE V11.0A.

2.1   Extensions as of ARCHIVE V9.0A05

2.1.1   Automatic creation of missing Users-Ids during RESTORE

The Restore of a file is rejected with an error if the corresponding User-Id is missing. With the optional rep A0571160 a missing User-Id is created during an administrator restore and the file gets restored.

2.2   Extensions as of ARCHIVE V9.0A07

2.2.1   Language selection for HELP function

The HELP function uses German or English text for its text output according to the language of message output. The optional rep for language selection of the HELP function becomes superfluous with that.

2.3   Extensions as of ARCHIVE V9.0B00

2.3.1   Net-Storage support as of BS2000/OSD V9.0A

With Net-Storage it is possible to store BS2000 data via NFS on NAS file servers. Data on Net-Storage can be saved like local BS2000 data by means of ARCHIVE.

The user interface has not been extended, i.e. no additional operands have been introduced.

If applicable the system administrator can suppress the backup of data from Net-Storage, thus the parameter STORAGE-TYPE has been provided in the parameter file SYSPAR.ARCHIVE.090. With this parameter the behavior of any backup can be controlled.

```
*
*  STORAGE-TYPE          | ANY / PUBLIC-SPACE                *
*
STORAGE-TYPE=ANY
*
```

It is possible to specify NETSTOR as a value for the DEVICE operand.

When introducing the Net-Storage functionality the behavior of the FROM and TO operands has been changed. If the FROM operand is not specified within the FILES statement, all files are saved which are specified with the NAME operand for all pubsets, private disks and Net-Storage. Also, the catalog entries of files on magnetic tape cartridges are saved. In case FROM = PUBLIC is used, only those files are saved that are specified in the NAME operand and which are on public disk and on Net-Storage.

With STORAGE-TYPE parameter set to ANY (SYSPAR.ARCHIVE.vvv) and the FROM statement not specified, all files are saved which are specified with the NAME operand for all pubsets, private disks and Net-Storage. Also the catalog entries of files on magnetic tape cartridges are saved. If FROM = PUBLIC is specified, only those files are saved which are specified in the NAME operand and which are on public disk and on the Net-Storage.

With STORAGE-TYPE parameter set to PUBLIC-SPACE data is only saved from public disk, it is not saved from Net-Storage. The system administrator must ensure data security by backing up the file server by a different way.

This also applies for the TO operand of the FILES statement for reconstruction:

If STORAGE-TYPE = ANY and the TO operand is missing, the files are then reconstructed to their original data media. With TO=PUBLIC all files, including the files from private disks, are reconstructed to public disk while files from Net-Storage are restored on Net-Storage again. Files on Net-Storage are classified as public files.

If STORAGE-TYPE = PUBLIC-SPACE all files are reconstructed on the disks of the specified pubset, nevertheless from which media the files have been saved.

2.4   Extensions as of ARCHIVE V9.0B06

2.4.1   Input format of statements

Your input to ARCHIVE may consist of several statements, which must be separated from each other and must not exceed 1.000.000 characters. The series of statements is organized into an internal representation by ARCHIVE. If this causes an overflow of the input area the message ARC0141 is displayed.

2.5   Extensions as of ARCHIVE V9.0B10

2.5.1   MAREN-LOCATION operand for SAVE and EXPORT

SAVE and EXPORT statements support MAREN-LOCATION operand with the following meaning:

This operand specifies the MAREN storage location from which free volumes should be taken if no volume is specified in the statement and no volume is available in ARCHIVE directory pool.

If the software product MAREN is not installed or started, the operand has no effect. If the software product MAREN is installed, the specified MAREN-LOCATION may be overwritten implicitly by MAREN EXITS or a reservation file. In this case the user is not informed about the change. If however the run should be aborted, the MAREN-Parameter OVERRULE-LOCATION = *REJECT needs to be set (from MAREN V12.5A). If MAREN exits and/or a reservation file are used, it is recommended not to specify a MAREN-LOCATION in the SAVE or EXPORT statements.

2.6   Extensions as of ARCHIVE V9.0B12

2.6.1   Restrictions for Net-Storage node files

ARCHIVE V9.0B does not support working with Net-Storage node files. The new message ARC0512 has been introduced in order to reject and indicate a restoring attempt of Net-Storage node files which can only be handled with ARCHIVE/HSMS of higher versions (as of 10.0A). During a save run these files are ignored without any further notice.

ARC0512 RESTORE OF NET-STORAGE NODE FILES NOT POSSIBLE. FILE NOT PROCESSED.

2.7   Extensions as of ARCHIVE V9.0B13

2.7.1   Correction of RESTORE command
The restoration processing has been modified in order to work correctly when only the catalog entries of tape and Net-Storage files are restored in BS2000 OSD/BC V10.0A.

2.7.2   Support of files with Last-Byte-Pointer (LBP)
Files with LBP are PAM files which have a length of byte boundary (not multiple of 2048 bytes). ARCHIVE V09.0B13 supports working with files with LBP like with usual PAM files.

For restoration files with LBP > 0 and BLKCONTR=PAMKEY to a nonkey pubset it is necessary to use an up-to-date version of PAMINT. During a restore run with an older PAMINT version files with LBP > 0 and BLKCONTR=PAMKEY are ignored with the new error message ARC0513.

ARC0513 IT IS IMPOSSIBLE TO CONVERT FILES WITH NONZERO LAST BYTE POINTER WITH CURRENT VERSION OF PAMINT. FILE NOT (FULLY) RESTORED.

2.8   Extensions as of ARCHIVE V10.0A00

2.8.1   Supporting Net-Storage node files

With BS2000 OSD/BC V10 a new file type on Net-Storage was introduced, the so called node files. ARCHIVE V10.0A supports this new file type.

Net-Storage node files enable the interoperability between BS2000 and open systems. They are located in user specific directories on a Net-Storage volume. For details see manual "BS2000 OSD/BC V10 Introductory Guide to DMS".

In ARCHIVE no additional operands or operand values are introduced. Accordingly, *Net*-Storage node files can be selected like other files which are located on Net-Storage. Extensions are introduced in HSMS.

It is not possible to restore Net-Storage node files to storage different from Net-Storage. During a restore run to a not Net-Storage device Net-Storage node files are ignored with the new error message ARC0511.

ARC0511 RESTORE OF NET-STORAGE NODE FILES NOT POSSIBLE TO THIS TYPE OF DISK. FILE NOT RESTORED.

2.8.2   Optimization of performance for save onto disk

To provide optimized performance for save on disk, the primary and secondary allocation should be adapted to the expected amount of save data. The high value of primary and secondary allocation is preferable for saving on disk.

For a Net-Storage save file, the primary allocation has already provided with a high value of primary allocation.

2.8.3   New global ARCHIVE parameter MEMORY-POOL-SIZE

New ARCHIVE parameter MEMORY-POOL-SIZE is introduced:

Parameter	Statement	Permissible values/syntax	Presetting
MEMORY-POOL-SIZE	⎯⎯	64/128/256/512	64

This parameter allows customizing the memory pool size (64, 128, 256, 512 MB) via a SYSPAR parameter in ARCHIVE. When the size of the memory pool is run out, during save/restore processing, ARC0291 message is displayed in the report. ARC0433, ARC0436 messages are displayed on the console during the ARCHIVE startup in the case of erroneous values specified in ARCHIVE parameter file.

2.8.4   Support of TAPE-U4 (LTO4) for Eternus CS

The additional volume type TAPE-U4 for ETERNUS CS on FC is supported from ARCHIVE V10.0A.
Support of these tapes gives possibility to save 2^{32}-1 blocks on 1 tape.

2.8.5   Changes in packet generation

1. ARCHIVE creates 1 packet per CATID-USERID in case DRIVES = 1.
2. When DRIVES > 1, ARCHIVE creates 4 packets per CATID-USERID as in ARCHIVE V8 and V9.
3. For Net-Storage files (which are located on Net-Storage volumes) amount of packets depend on amount of using volumes. For example, if during backup run only Net-Storage files were selected and all these files are located on 1 Net-Storage volume, ARCHIVE creates only 1 packet per CATID-USERID even if DRIVE is 2 or more. All other packets will be empty. But when files from Net-Storage and, for example, public disk were selected in one backup run, ARCHIVE creates 4 packets in case DRIVES is 2 or more.

4.

2.9   Extensions as of ARCHIVE V10.0A02

2.9.1   LBP improvements

With BS2000 OSD/BC V10 and also in lower OSD versions with introduction of correction packet 2/2014 a new file attribute was introduced: the last byte pointer (LBP). By means of the LBP the logical end of file can be determined byte-exactly.

Files with LBP cannot be restored to private disks. During restore run to a private disk files with LBP are ignored with error message ARC0514.

Together with this ARCHIVE version it is mandatory to install also PAMINT V10.0B (both are part of correction packet 2/2015). During a restore run of PAM files with PAMKEY and LBP with an older PAMINT version the LBP will be lost.

2.10   Extensions as of ARCHIVE V10.0A04

2.10.1   Restriction on amount of volumes when saving a large file

Currently one BS2000 file can only be spread on about 300 volumes maximum within ARCHIVE/HSMS because of the restriction of directory record length.(The value can differ depending on save options, for example, when SAVE-PLAM-INFO = *YES the value decreases to about 294 volumes). In case storing the file has required more volumes during save runs of ARCHIVE/HSMS, it is impossible to write the full information on the saved file into the concerned directory. This can happen when an extremely large file (more than 3TB) is written on logical volumes up to a size of 2 GB. Such requests will terminate as "COMPLETED WITH ERRORS" with issuing ARC0176 message into the report since ARCHIVE V10.0A04.

In order to avoid such information inconsistency in directories it is recommended to use more capacitive volumes (more than 2GB) during saving an extremely large file.

2.10.2   DIRCONV function REORGANIZE-DIRECTORY

It is possible to reorganize directories within DIRCONV statement REORGANIZE-DIRECTORY from ARCHIVE v10.0A04.

2.10.2.1   Reorganize Directories

The DIRCONV statement REORGANIZE-DIRECTORY can be used to reorganize records with information on files or/and job-variables saved within the directory. (The DIRCONV

The reorganization removes empties which might have occurred after purging save versions. Such reorganization is necessary to avoid reaching the limit for amount of the records for a file/job-variable. This can lead to impossibility of writing information on saved files/JVs into the directory and is reflected with issuing ARC0176. The limit can be reached in case of saving one and the same file have been done a lot of times within the same archive (approximately 8160 times, the number may be higher and lower depending on save types, for example, the number can be much higher in case of incremental backups or lower in case of saving PLAM-info). If purging of save versions from the archive takes place from time to time, the reorganization of the directory will reduce the number of used records and thus such overflowing of the directory will be avoided.

So, it is recommended to run REORGANIZE-DIRECTORY function of DIRCONV from time to time in case of such usage in order to avoid overflowing of directories.

During the reorganization of directory its copy is being created and reorganized. After successful reorganization this copy can be used instead of the original directory. In case of successful reorganization DIRCONV outputs the message

THE DIRECTORY HAS BEEN REORGANIZED

In case it was found that reorganization is not possible (for example, either the directory is already reorganized, or there has not been any empties to be removed) the message

THE DIRECTORY ALREADY REORGANIZED

is issued.

2.10.2.2 Statement REORGANIZE-DIRECTORY

This statement can be used in order to reorganize directory and repository files.

REORGANIZE-DIRECTORY
DIRECTORY-NAME = <full-filename 1..54>
NEW-DIRECTORY-NAME = <filename 1..54>

DIRECTORY-NAME = <full-filename 1..54>
Fully qualified path name of the directory or repository file which will be reorganized.

NEW-DIRECTORY-NAME = <filename 1..54>
Fully qualified path name of the new directory or repository file. It should be different
from file name specified in the **DIRECTORY-NAME** operand**.**
The directory specified here should not exist or alternatively should be at least empty.

2.10.2.3 Usage model

Example 1.

```
ARC0176 message issued.
Try to reorganize the directory:

/START-DIRCONV       <-------------------------------------------<-+
   |                                                               |
   |                                                               ^
   V                                                               |
 ---------------------------------                                 |
|REORGANIZE-DIRECTORY -           |                                 |
|DIRECTORY-NAME = original-filename,-|                             |
|NEW-DIRECTORY-NAME = new-filename   |                             |
 ---------------------------------                                 |
Successfully executed? ------------ NO ----- > follow instructions |
   |                                           of the error message|
   |                                                               |
   |                                                               |
  Yes                                                              |
   |                                                               |
   |                                                               ^
   V                                                               |
Directory reorganized?------------ NO ------> Purge some obsolete -->-+
   |                                           save versions
   |                                           and try again to
   |                                           reorganize  the directory
  Yes
   |
   |
   V
try to continue with reorganized directory
/MODIFY-FILE-ATTRIBUTES FILE-NAME=orig-filename,NEW-NAME=save-filename
/MODIFY-FILE-ATTRIBUTES FILE-NAME=filename,NEW-NAME=orig-filename
```

2.11   Extensions as of ARCHIVE V10.0A05

2.11.1   Check of inconsistencies in a save block
The new message ARC0515 is introduced, which is output if the internal ARCHIVE check detects an inconsistency in a save block.

2.12   Extensions as of ARCHIVE V10.0A07

2.12.1   Restrictions for Net-Storage SAM node files

ARCHIVE V10.0A does not support Net-Storage SAM node files introduced in BS2000 OSD/BC V11.0A. Such files are ignored during save/export from a disk without any further notice. During restore/import processes, Net-Storage SAM node files (saved with ARCHIVE/HSMS V11.0A or higher) are rejected with error message ARC0512. The message ARC0512 has been modified to describe the case. However, Net-Storage SAM node files can be saved, i.e. copied, from an input tape, where they have been written to by higher ARCHIVE versions.

A new save type FNOD is introduced in ARCHIVE V11.0A for denoting Net-Storage SAM node files saved without SAM structure. As of ARCHIVE V10.0A07 "FNOD" is displayed as a save type in the report file or with INQUIRE command in respect to Net-Storage SAM node which have been saved without SAM structure within ARCHIVE V11.0A or higher using the same directory.

2.13   Extensions as of ARCHIVE V11.0A00

2.13.1   Changes in MAREN affecting ARCHIVE functionality

Changes to MAREN V12.5A functionality affect the statements EXPORT and SAVE, in particular the operand MAREN-LOCATION. From now, MAREN determines if the specified MAREN-LOCATION should be overruled by MARENLM or MAREN exits.

2.13.2   Net-Storage SAM node files support

With BS2000 OSD/BC V11 a new file type on Net-Storage was introduced, the so called SAM node files. ARCHIVE V11.0A supports this new file type.

SAM node files enable the interoperability between BS2000 and open systems for text based processing. They are located in user specific directories on a Net-Storage volume. For details see manual "BS2000 OSD/BC V11.0 Introductory Guide to DMS".

In ARCHIVE no additional operands or operand values are introduced. Accordingly, SAM node files can be selected like other files which are located on Net-Storage. Extensions are introduced in HSMS.

In ARCHIVE SAM node files are saved without SAM structure. A new save type FNOD is introduced in ARCHIVE V11.0 for denoting SAM node files saved without SAM structure.

It is not possible to restore SAM node files to private disks, public space or to a Net-Storage file with file type BS2000, if SAM structure was not saved. During a restore run to a non Net-Storage device SAM node files, which were saved without SAM structure, are ignored with the new error message ARC0519.

ARC0519 SAM NODE FILE SAVED WITH 'SAVE-SAM-STRUCTURE=NO'. FILE NOT RESTORED.

It is possible to restore SAM node files to public space or to Net-Storage, if ARCHIVE works with a directory, which was used in HSMS during a save run with SAM node files with SAM structure (FULL save type).

3 Changed or new messages

The following messages are new or have been modified (ARCHIVE V11.0A versus V9.0A):

ARC0081
ARC0112
ARC0127
ARC0501
ARC0503
ARC0504
ARC0505
ARC0506
ARC0507
ARC0508
ARC0511
ARC0512
ARC0513
ARC0514
ARC0515
ARC0517
ARC0518
ARC0519
ARC0521
ARC0881
ARC0882

The text of each message as well as the text of the meaning and help information can be displayed online by the command /HELP-MSG.

The utility program MSGMAKER can be used to list all messages with their meaning and help texts. The name of your actual message file is provided by the command:

/SHOW-INSTALLATION-PATH INSTALLATION-UNIT=ARCHIVE(VERSION=V10.0),-
                        LOGICAL-ID=SYSMES