FUJITSU Software BS2000 OSD/BC

Version V10.0A
*9 June 2020

Release Notice

1 General information

This Release Notice is a summary of the major extensions, dependencies and operating information about the delivery components of the offer package for the BS2000 OSD/BC V10.0, that are contained in the technical delivery units.

	BS2GA.APACHE V10.0,	BS2GA.BS2OSD V10.0,	BS2GA.BS2IDE.V10.0,
*8	BS2GA.CRTE-BAS V10.1,	BS2GA.DSSM V10.0,	BS2GA.IMON V10.0,
*4	BS2GA.JENV V10.0,	BS2GA.LLMAM V10.0,	BS2GA.PLAM V10.0,
	BS2GA.POSIX V10.0,	BS2GA.SDF V10.0,	BS2GA.SIR V10.0,
	BS2GA.SPOOL V10.0,	BS2GA.STRT V10.0,	BS2GA.WTOSD V10.0

*9 The contents relate to release level June 2020.

*9 Changes to release level November 2019 are marked with *9.
*8 Changes to release level June 2019 are marked with *8.
*7 Changes to release level June 2018 are marked with *7.
*6 Changes to release level October 2017 are marked with *6.
*5 Changes to release level June 2017 are marked with *5.
*4 Changes to release level February 2017 are marked with *4.
*3 Changes to release level June 2016 are marked with *3.
*2 Changes to release level November 2015 are marked with *2.
*1 Changes to release level April 2015 are marked with *1.

This and other current Release Notices are on the SoftBooks DVD and are also
*7 available online: https://bs2manuals.ts.fujitsu.com.

A separate Release Notice is available for the following technical delivery units:

*8 APACHE V2.4
*8 CRTE-BAS V10.1
IMON V3.3B
*8 JENV V8.1B and V9.0
*1 POSIX-BC V10.0
SDF V4.7
*6 SPOOL V4.9
*1 WEBTRANS-OSD V7.5

*7 The Release Notice for BS2000 OSD/XC V10.0 must also be taken into consideration for SE Servers.

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

1.1 Ordering

BS2000 OSD/BC V10.0 can be ordered from your local distributors.
The general contract terms and conditions concerning the use and support of software products are valid for the BS2000 OSD/BC V10.0.

1.2 Delivery

The BS2000 OSD/BC V10.0 files are delivered via SOLIS.

BS2000 OSD/BC V10.0 delivery components

The following release units (RU) of the technical delivery units (DU) are part of the delivery scope of BS2000 OSD/BC V10.0:

	LE / RU	Version	Remark
	BS2GA.APACHE		
*8	APACHE	2.4A	
*8	PERL	52.4A	
	TOMCAT	5.5A	
	BS2GA.BS2IDE		
*1	BS2IDE	2.x	only license paper, no files
*1			actual version “x”
*1			see download page
	BS2GA.BS2OSD		
	ACS	19.0A	
	ADAM	19.0A	
	AIDSYS	19.0A	
	AIDSYSA	19.0A	
*7	ANITA	20.0A	
*4	ASE	1.0C	
	ASSEMBH-GEN	1.3A	
*6	ASTI	2.0G	
*6	BINDER	2.8A	
	BLSSEC	17.0A	
*6	BLSSERV	2.9A	
	BS2CP	19.0A	
	BS2000-EXEC	19.0A	
	BUILDER	1.0A	
	C-TPR-LZS	2.6A	
	CALENDAR	19.0A	
	CALENDAR-TU	19.0A	
*1	CAPRI	2.0B	
*6	CCOPY	9.0C	
	CHDATES	1.0A	
	CONSTERM	6.0A	
	CPR	19.0A	
*6	CRYPT	2.0A	
*1	C2H	1.0A	Utility program
*7	DAMP	4.9A	Utility program
	DCADITO	19.0A	Utility program
	DIV	19.0A	
	DIVTRAC	19.0A	

	DLMUSER	19.0A	
	DPAGE	17.0A	Utility program
	DWS	11.0A	
	ELFE	19.0A	Utility program
	ELSA	1.7A	Utility program
	FASTPAM	19.0A	
	FIRST	19.0A	
	FITC	9.0A	
	GCF	1.9A	
	GET-TIME	19.0A	
	GET-TIMX	19.0A	
	GSMAN	19.0A	
*7	GSVOL	1.3B	
	HELGA	19.0A	Utility program
*7	HAP-OSD	1.0A	is no longer delivered
	IDIAS	19.0A	
	INIT	19.0A	Utility program
	IOCFCOPY	19.0A	Utility program
	IOGEN	19.0A	Utility program
	IORM	10.0A	Utility program
	IOTRACE	19.0A	Utility program
	JITSYS	7.0A	
	JMP	2.0C	Utility program
	JMU	19.0A	Utility program
	JOBSCHED	19.0A	Utility program
	JPPOPT	2.8A	
	KDCMON	19.0A	
*4	LMSCONV	3.5B	Utility program
	LNM	19.0A	
	MIP	19.0A	
	MSCFANC	19.0A	
	MSGMAKER	1.2B	Utility program
	NDMDAMP	16.0A	
	NKISAM	19.0A	
	NKISTRAC	19.0A	Utility program
	NKS	19.0A	
	NKV	19.0A	
	NLMSERVE	19.0A	Utility program
	ONETSTOR	2.0A	
*4	PAMCONV	12.1E	Utility program
*1	PAMINT	10.0B	
	PASSWORD	19.0A	Utility program
	PRSC	1.0A	
*7	PTHREADS	1.4A21	
	PVSREN	6.0A	Utility program
	RESLOG	1.7A	
*7	REWAS	2.0C	
	RMS	7.1G	Utility program
	SANCHECK	3.0A	Utility program
	SCANET	19.0A	
	SCDM	10.0A	Utility program
*4	SHOW-FILE	17.1B30	
	SMI	1.0A	
	SMPGEN-S	19.0A	Utility program
	SMPGEN-U	19.0A	
	SPACEPRO	1.0A	
	SPCCNTRL	19.0A	Utility program
	STATUS	15.2A	
	SRPMNUC	19.0A	
	SYSFILE	19.0A	
	TANGBAS	1.7A	
	TANGRAM	1.7A	

	TPCOMP2	19.0A	Utility program
	TPRLAM	19.0A	
	TSOSLNK	21.0E	Utility program
	TULAM	19.0A	
	UTM-SM2	19.0A	
	VOLIN	19.0A	Utility program
	WARTOPT	19.0A	

BS2GA.CRTE-BAS

*8	CRTE-BAS	10.1A	
*8	CRTE-BASYS	10.1A	
*8	CRTE-MSG	10.1A	
*8	POSIX-HEADER	10.1A	

BS2GA.DSSM

*4	DSSM	4.3D	
	ROSI	19.0A	Utility program
	SSCM	2.3B	Utility program

BS2GA.IMON

*7	IMON	3.3B	
*7	IMON-BAS	3.3B	
*7	IMON-GPN	3.3B	
*7	IMON-SIC	3.3B	

BS2GA.JENV

*8	JENV	8.1B	
*6	JENV	9.0A	

BS2GA.LLMAM

	LLMAM	3.4A	

BS2GA.PLAM

	PLAM	3.7A	
	PMLOG	3.7A	
	PMSYS190	3.7A	

BS2GA.POSIX

	POSIX-ADDON-LIB	2.1A30	
*5	POSIX-BC	10.0A45	
*5	POSIX-NSL	10.0A45	
*5	POSIX-SH	10.0A45	
*5	POSIX-SOCKETS	10.0A45	
	POSPRRTS	1.4A00	

BS2GA.SDF

	DISPLAY	1.1A	
	FHS-TPR	8.3B	
	SDF	4.7D	
	SDF-CONV	3.0B	
	SDF-I	4.1C	
*4	SDF-P-BASYS	2.5G	
	SDF-PAR	1.1A	
	SDF-SFC	3.1A	

	SDF-SRV	3.1A
	SDF-U	4.1G
	VAS	2.4B

BS2GA.SIR

	SIR	19.0A

BS2GA.SPOOL

*8	BS2ZIP	1.2M
*8	CONV2PDF	1.0C
	PRMMAN	1.4A
	PRMPRES	1.2B
	SNRTP	2.0C
	SPCONV	1.2A
	SPOOL	4.9A
*2	SPOOLSYS	3.0A
	SPSERVE	2.9B
	SPSRVMAN	2.4A

BS2GA.STRT

	IPL	19.0A
	SLED	19.0A
	STRT	19.0A

BS2GA.WTOSD

*1	WebTransactions for OSD	7.5B

The delivery components for the individual release units are listed in the SOLIS2 delivery letter.
The SOLIS2 delivery letter lists the individual files in conjunction with the current file and data medium characteristics.

1.3 Documentation

The BS2000 documentation is available on DVD, in German and English, under the title BS2000 SoftBooks.
The SoftBooks DVD also includes the BS2000 Release Notices.

*7 The documentation is also available on the internet at: https://bs2manuals.ts.fujitsu.com.

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 at:
*7 https://bs2manuals.ts.fujitsu.com.

The corresponding HW documentation is required in order to use the HW peripheral devices.

2 Software extensions

The following explains only the main extensions and enhancements compared to the previous version BS2000/OSD-BC V9.0.
Components, whose latest version only supports BS2000 OSD/BC V10.0, are not mentioned separately.

2.1 Support for the new FUJITSU Server BS2000 SE series

2.1.1 Support for the Server Units /390 and x86 in the SE Server

*9 OSD/BC V10.0 supports the SE Servers with the Server Units /390 and x86.
The SE Servers combine the S and SQ Server lines.
The Server Units and the peripherals that can be used together are integrated in a common rack. The peripherals are connected via FC channel; channel type S is not supported on SE Servers.

The monitoring, administration and operation of all SE components is via the web-based user interface of the SE Manager (SEM) which runs in the
Management Unit (MU). The MARS and SKP 3970 functionality is combined in SE Manager.

The SE Servers are offered in these model versions:

*7	-	SE710	with SU /390	V10.0 as VM2000 guest system only
*7	-	SE310	with SU x86	V10.0 as VM2000 guest system only
*6	-	SE700 / SE700B	with SU /390 (Fuji-C9) and optional SU x86	
*6	-	SE500 / SE500B	with SU /390 (ASO-A9) and optional SU x86	
*6	-	SE300 / SE300B	with SU x86	

SU x86 requires X2000 as of V6.0A as a carrier system.

*9 BS2000 OSD/BC V10.0 is offered for Server Units in the SE Server only as part of the
*9 OSD/XC package.

More information is in the Release Notice for BS2000 OSD/XC V10.0 and the manuals for the SE Server.

2.1.2 BS2000 Web-Service API: New REWAS subsystem

Communication between the SE Manager and the BS2000 components of the SE Server is via the new privileged subsystem REWAS (RESTful Web API Service) in BS2000. REWAS requires the subsystem ASTI.
Internal BS2000 components can exchange messages with the SE Manager via the Web-Service API.

2.1.3 Support for the new 8 Gbit/s and 10 Gbit/s Ethernet FC channel

A new fibre channel with 8 Gbit/s and 10Gbit/s Ethernet is available for the Server Units /390 in the SE Server. More than 256 devices can be connected per channel path. The Concurrent Sense function (IO status and sense in an IO) is also supported in order to improve performance. The display of the utilization as a percentage has been adapted in the products SM2 and IORM.

2.1.4 Look at future functionality

The High Availability function and Live Migration (HA/LM) are supported in a follow-up version of the SE Servers.
With HA-Failover a BS2000 guest system no longer available is started on another server unit. Both server units x86 and /390 are supported.
Live Migration permits a BS2000 guest system, that is running on a /390 Server Unit, to be moved without any interruption. The SU x86 also permits the move of native systems. The status of a BS2000 guest system on SU /390 is monitored by the subsystem HAP-OSD; communication with the SE Manager is via the above subsystem REWAS.

2.2 Extended integration of Net-Storage

2.2.1 Inter-operability with other operating systems

As of BS2000/OSD-BC V9.0, BS2000 files can be saved and processed on Net-Storage, e.g. via NAS memories that can be accessed and processed by NFS.
Files that were saved on Net-Storage units could previously only be processed by BS2000 systems; UNIX/Windows systems only had read access.
The extended Net-Storage functionality in OSD/BC V10.0 allows BS2000 to import and process files created by UNIX/Linux systems if the file names comply with BS2000 conventions. And vice versa, UNIX/Linux systems can process files created by the BS2000.
The new file feature **Node File** was introduced for this purpose. Node files are managed as PAM files in BS2000 OSD/BC V10.0 (FILE-STRUC=PAM, BLK-CTRL=NO).
The file is stored on Net-storage in user-specific directories beneath the net-storage volume. The directories contain the name of the BS2000 user ID.
Node files can be changed by UNIX/Linux systems, which is why the user is responsible for data consistency (see "Authorization concept").
FGGs, data in PAM key format and temporary files are not supported on Net-Storage as before. Node files cannot be encrypted.
BS200 version < OSD/BC V10.0 cannot access node files.

Authorization concept for node files

To ensure that node files can be accessed from BS2000 and UNIX systems, the user administration in BS2000 and UNIX must be aligned with each other.
The same user and group numbers are entered via
MODIFY-POSIX-USER-ATTRIBUTES for BS2000 user IDs as in the UNIX systems connected to the same Net-Storage.
When using NFSv4 it is also necessary to link the Net-Clients and Net-Servers to LDAP.
The file system mechanisms are valid for access rights to the files.
The BS2000 specific protection measures, such as GUARDS, are only effective in BS2000.

Extended and new commands for node files

- CREATE-FILE, DELETE-FILE, EXPORT-FILE and SHOW-FILE-ATTRIBUTES have been extended in the STORAGE-TYPE operand to include the parameter FILE-TYPE=*NODE-FILE.

- When output in a structure variable SHOW-FILE-ATTRIBUTES has been extended with FILE-TYPE=BS2000 and/or FILE-TYPE=NODE.

- MODIFY-FILE-ATTRIBUTES has been extended in the operand SUPPORT to include FILE-TYPE=*NODE-FILE when specifying the storage location.

- IMPORT-NODE-FILE imports UNIX/Linux files from Net-Storage, and updates and creates the entries in TSOSCAT and BS2FSCAT. The file is catalogued in BS2000 in PAM format (BLKCTRL=NO); the file itself is not modified.

- EXPORT-NODE-FILE deletes the catalogue entries of the node file in TSOSCAT and BS2FSCAT. The file itself remains on the Net-Storage.

- LIST-NODE-FILES lists the files that are located in the stated user-specific directory on Net-Storage and which comply with BS2000 file name conventions, e.g. can be imported via IMPORT-NODE-FILE.

2.2.2 SCANET for faster access to Net-Storage files

The time required to create new Net-Storage files previously depended on the BS2FSCAT filling level as the entire catalogue was searched. This dependency is eliminated by the new subsystem SCANET. SCANET is comparable with the Speedcat implementation for Pubsets and enables an even and constant performance when accessing Net-Storage files.
SCANET must be started explicitly and is used when the subsystem is started. The subsystem can be terminated at any time.

2.2.3 Support for redundant paths

As of OSD/BC V10.0, redundant paths can be defined for the Net-Client running in the HNC. The redundancy connection is defined by the administrator via a command. If the Net-Client fails, the connection is set up again on the redundant HNC. The switchover process can generate delays for the affected applications.

2.2.4 Handling pubset clones

Files on Net-Storage are not cloned. If pubset mirrors are detached which contain catalogue entries for Net-Storage files, the references to these files must thus be rendered invalid.
Previously, only the Net-Storage volume entries in the TSOSCAT are set to "invalid" and then automatically removed during a later imcat. As of OSD/BC V10.0,
the catalogue entries of the Net-Storage files are also removed from the TSOSCAT of the clone.

2.3 Last Byte Pointer (LBP) support

To support interoperability of file processing with open systems (UNIX/Windows), the new attribute “last byte pointer” (LBP) is introduced in the catalogue entry of files as of OSD/BC V10.0. In PAM files the last byte pointer (LBP) points to the last valid byte of the last logical block of the PAM file. Thus later an application is able to extrapolate the file byte precise after close and reopen.
To the user the extended functionality is visible on program level (FSTAT macro, C-library functions) and is included in the output of SHOW-FILE. Applications, which do not evaluate the LBP, are further fully supported.

Notice:

*1 **LBP should not be used until all systems, with which data exchange occurs (e.g.**
*1 **via shared pubsets, EXPORT-PUBSET/IMPORT-PUBSET or Filetransfer) have acti-**
*1 **vated correction package 2/2015.**
*1 **For detailed information please refer to**
*1 http://docs.ts.fujitsu.com/dl.aspx?id=22aafa65-9393-4a28-95fd-4959fc6aa77d

Files, which are generated in a system with LBP support, should not be processed in an environment without LBP support.
*1 Trying to copy files with LBP to private disks or tapes or to encrypt is rejected with
*1 DMS0D09.

2.4 Performance improvements

OSD/BC V10.0 includes a range of measures to improve performance.
The measures have no impact on the user interface.
Only the main changes are listed below.

Avoid compulsory CPU removal under nucleus lock
Once the maximum hypervisor time slice expires, a virtual CPU is replaced by the real CPU. If this enforced removal is under nucleus lock, there can be a negative impact on the performance behaviour of the other virtual CPUs; the impact increases, the more virtual CPUs are used.
OSD/BC V10.0 thus has a communication mechanism between BS2000 and the Hypervisor which prevents the removal of the real CPU under nucleus-lock.

Allocator improvements
In order to increase performance, the strategy to search allocator tables has been optimized in OSD/BC V10.0, especially for small and medium-sized memory requirements.

SNAP improvements
Performance in SNAP is improved via several measures:
- Data in the real memory is copied to the SNAP file asynchronously.
- SNAP meta data is only stored in the SNAP file at the beginning and end of the SNAP process. SNAP meta data were previously written to the file at regular intervals between the real memory data.
- With a main memory configuration > 2 Gbyte and just a few CL4-pages fewer than 2 Gbyte, these pages are copied together with the CL3 pages.

2.5 Extensions in SANCHECK V3.0

- Support of Brocade virtual fabrics

- Support of NPIV-compatible F-ports on the FC switch

- Showing SAN information on the SE Manager on the SE server

- Preliminary activities to support the future function "Live Migration on SE Server"

  Note:
  With the SU /390, SANCHECK must be installed for the native or monitor system in order to determine the current IORSF.

  The execution of SANCHECK in BS2000 is not necessary on SU x86. The command START-SANCHECK is rejected with the message SAN0I05.

2.6 Integrated development environment for BS2000: BS2IDE

BS2IDE (IDE= **I**ntegrated **D**evelopment **E**nvironment) is an integrated development environment for BS2000 and is offered as a plug-in for Eclipse with restricted maintenance.

BS2IDE supports the BS2000 developer in a modern development environment, in that BS2000 files or library elements in the Remote System Explorer (RSE) can be opened via openFT connections, edited in the integrated editor and written back. The compilation in BS2000 can be initiated directly from Eclipse. The result of the compilation procedure is displayed in the development environment; errors are displayed directly in the editor at the appropriate location in the program code, and information is provided about the possible cause of the error.
The languages C/C++, ASSEMBH and COBOL incl. ESQL-COBOL are supported.
A link is possible to administration systems in the open world (e.g. subversion) as well as to BS2000 media, such as PLAM libraries.

The access data to download BS2IDE is supplied in a license document supplied with OSD/BC V10.0. Detailed information is also available about the installation requirements and BS2IDE functionality.

2.7 Other new features in OSD/BC V10.0

2.7.1 Extension with the generation FUJITSU Storage ETERNUS DX S3

*2 The generation ETERNUS DX500 S3, DX600 S3 and ETERNUS DX8700 S3 are supported in BS2000 OSD/BC V10.0 in addition to the currently released models of the ETERNUS DX storage systems.

2.7.2 New volume type in FUJITSU Storage ETERNUS CS[1]

As of OSD/BC V10.0, ETERNUS CS with LTO4 emulation and TAPE-U4 volumes support high-capacity volumes with up to 2^{32} blocks per volume.
ETERNUS CS was previously operated with TAPE-C4 volumes which only permit 2^{22} -1 blocks.

2.7.3 Support of libraries > 1Tbyte

PLAM V3.7 supports libraries > 1 Tbyte as the field for the number of blocks has been enlarged. Libraries can thus become just as big as other BS2000 files.

2.7.4 Assistance for the system address area

The burden on the system address area is reduced by memory management, DAB and openSM2/COSMOS regularly swapping out data to data spaces. The bind procedure for the BS2000-EXEC also permits finer scaling of the configurable size of the system address area. This means that new functions use additional system address area or non-privileged applications can use a larger user address area.

[1] This document uses the term ETERNUS CS to cover all the currently supported models of the ETERNUS CS virtual archive system.

2.8 New functions in BS2000 OSD/BC V10.0A with Correction Package 2/2015

2.8.1 Last Byte Pointer (LBP) support by the concerned software products

*1 As of correction package 2/2015 all software products support the last byte pointer
*1 (LBP). The LBP should not be used until all systems, with which data exchange occurs,
*1 have activated correction package 2/2015.
*1 For detailed information please refer to
*1 http://docs.ts.fujitsu.com/dl.aspx?id=22aafa65-9393-4a28-95fd-4959fc6aa77d

2.8.2 New utility program C2H for the technical support

*1 By means of C2H (Configuration to HTML) the configuration-, status- and diagnose
*1 information, as well as important system files of a BS2000 can be automatically written
*1 into a HTML-File and be displayed with a Web Browser after the transfer to a PC.
*1 C2H is installed in the userid $SERVICE and is intended for the use by the technical
*1 support of FUJITSU.
*1 You will find information for the installation of C2H in chapter “Product Installation”.

2.9 New functions in BS2000 OSD/BC V10.0A with Correction Package 1/2016

2.9.1 New Subsystem CONV2PDF V1.0A

*2 Up to now CONV2PDF was part of the product SPOOLSYS. As of correction package
*2 1/2016 CONV2PDF will be delivered as a separate product within the delivery unit
*2 SPOOL. For functions and extensions please refer to release notice for
*2 SPOOL V4.9.

2.9.2 Support of online backup with Snapsets for Dell EMC VMAX3

*2 Snapset usage on storage system VMAX3 requires SHC-OSD as of V12.0.
*2 X2000 as of V6.1 is required for SU300 server.
*2 Snapsets are not supported at the SRDF target of inhomogeneous SRDF configurations
*2 between Symmetrix and VMAX3.

*2 VMAX3 knows no special snap volumes. When BS2000 volumes on VMAX3 are to be
*2 used automatically as snap units, they must be initialized in advance with the VOLIN
*2 utility and attached to the specific system. The special notation S#<mn> is introduced as
*2 the VSN for these volumes e.g. S#5234, where <mn> is the device mnemonic.

*2 For details see current manuals of BS2000 OSD/BC V10.0:
*2 - System Administration
*2 - Commands Volume 5 and Volume 7

2.10 New functions in BS2000 OSD/BC V10.0A with Correction Package 1/2017

*4 Besides a change request in ASTI 2.0G and corrections the correction package 1/2017
*4 doesn’t contain further functional extensions.

2.11 New functions in BS2000 OSD/BC V10.0A with Correction Package 1/2018

2.11.1 Support of new Hardware

*6 Correction package 1/2018 supports new FUJITSU Storage ETERNUS DX disk sys-
*6 tems.

2.11.2 Encryption in BS2000: new subsystem CRYPT

*6 The new BS2000 part CRYPT V2.0A was delivered with OSD/BC 11.0 for the first time.
*6 As of correction package 1/2018 CRYPT V2.0 is also available in OSD/BC V10.0.

*6 With it cryptographic functions are available on all servers for applications and internal
*6 components as an integral part of the operating system BS2000.
*6 The elementary operations for encryption and decryption are realized as a software solu-
*6 tion in the new subsystem CRYPT and are, therefore, CPU-intensive. For larger
*6 amounts of data this must be taken into account.
*6 Among others, CRYPT is used by the commands ENCRYPT-FILE and DECRYPT-FILE.
*6 The BS2000 release unit CRYPT replaces the openCRYPT products.

2.11.3 Snapset adaption to extended functionality of ETERNUS DX

*6 Operating of Snapsets based on the extended Snap functionality (FDEV, TDEV instead
*6 of SDV) and BS2000 online backup based on QuickOPC (clone type *COPY) is support-
*6 ed by CCOPY V9.0C.

2.12 New functions in BS2000 OSD/BC V10.0A with Service Pack 19.1

*7 Service Pack 19.1 contains only corrections, no functional enhancements for delivery
*7 unit BS2OSD.

2.12.1 Support of new Hardware

*7 The server generations SE710 and SE310 with SE base software V6.3 are supported in
*7 addition to the previous SE Servers.

2.13 New functions in BS2000 OSD/BC V10.0A with Service Pack 19.2

*8 Service Pack 19.2 contains only corrections, no functional enhancements for delivery
*8 unit BS2OSD.

2.14 Additional Peripheral Support in BS2000 OSD/BC V10.0A

*9 New peripheral devices FUJITSU ETERNUS DX500/DX600 S5 and AF650 S3 are
*9 supported since 04/2020. When SHC-OSD is used, at least SHC-OSD V14.0 is
*9 required.

2.15 Implemented change requests / extended commands

2.15.1 New commands for supporting HA functionality

As preparation for the future HA functionality for SE servers, new or extended information/administration commands are offered in BS2000.

SHOW-SYSTEM-INFORMATION
The command has been extended with the operand SERVER-UNIT. It can accept the values *STD / *INITIAL / *CURRENT. The new Class2 parameter MIGHOST defines the value of *STD valid on a global system basis. The operand has no impact on the command output result until after a Live Migration.

SHOW-LIVE-MIGRATION-DEFAULTS / MODIFY-LIVE-MIGRATION-DEFAULTS
System features change in a Live Migration. This change is mirrored in the output of programs or commands that these features scan, e.g. the output of SHOW-SYSTEM-INFORMATION.
SHOW-LIVE-MIGRATION-DEFAULTS shows the default settings for these commands and programs on a task-specific basis. MODIFY-LIVE-MIGRATION-DEFAULTS is used to modify settings on a task-specific basis.

SHOW-LIVE-MIGRATION_HISTORY
The command provides information about previous Live Migrations and the corresponding variable data for the selected server units. The size of output can be defined via the command operand INFORMATION.

SUSPEND-IO / RESUME-IO
These two commands help minimize the interruption times for the guest systems during a planned site switchover, e.g. during the downtime of the server unit and the disk storage system.

2.15.2 New command SHOW-ADDRESS-SPACE-STATUS

The command SHOW-ADDRESS-SPACE-STATUS provides information about the assignment of the individual memory classes of the system address area and the assignment of the user address area. The size of the output can be defined via the command parameters. IDs with a standard privilege only display the assignment of the user address area for their own tasks.

2.15.3 New commands for Net-Storage

The new commands for the Net-Storage functionality node file are described in section 2.2.1.

SET-NET-CLIENT-ALTERNATE
This command assigns an alternative net client for high-availability.

SHOW-NET-CLIENT-ALTERNATE
This command displays the alternative net clients for high-availability.

LIST-NET-DIRECTORIES
This command shows the net server directories released for net storage.

SHOW-NET-STORAGE
The command has been extended by the operand UPDATE-VOLUMES.
UPDATE-VOLUMES accepts the values *NO/*YES. The operand defines whether the Net-Storage-Volumes table are updated for the specified directory before the output.

2.15.4 New SHOW command in HELGA

HELGA V19.0A offers a new SHOW command. This command lists all the CHANGE commands specified in the own task plus all the information relevant for resetting changes.

2.15.5 Program interface for EDIT commands

BS2000/OSD-BC V9.0 introduced a range of new EDIT commands, e.g. EDIT-JOB-OPTIONS or EDIT-MASTER-CATALOG-ENTRY.

*1 As of OSD/BC V10.0 these commands (see manual “Executive Macros”) can also be
*1 executed via the program interface (CMD macro), if they are encapsulated in the
*1 command INCLUDE-CMD. This is also valid for other commands that are implemented
*1 as procedures and for plain procedures (/CALL, CALL-PROCEDURE, /DO).
*1 INCLUDE-COMMAND interrupts the program to call the procedure or the command
*1 implemented by the procedure and returns to the program after procedure (command)
*1 end. The procedure may not contain any command that will unload the program. The
*1 command INCLUDE-CMD is described in the SDF-P manual.

2.15.6 Implemented change requests in pubset management

Changing the PUBRES mnemonic
As of OSD/BC V10.0, the PUBRES mnemonic can be modified via the commands EDIT-MASTER-CATALOG-ENTRY and MODIFY-MASTER-CATALOG-ENTRY.

Display the PUBRES mnemonic
As of OSD/BC V10.0, SHOW-MASTER-CATALOG-ENTRY identifies the mnemonic of the PUBRES disk independent of the pubset status.

2.15.7 Class2-Parameter CONSDDE7

The Class2 parameter CONSDDE7 defines, if the message DMS0DE7 is displayed only on sysout or on sysout and console.
As of BS2000 OSD/BC V10.0 the parameter CONSDDE7 can be modified dynamically with the command MODIFY-SYSTEM-PARAMETERS.

2.15.8 CONSLOG output of TSN

The new Class2 parameter NBLOGT0 defines whether the TSN in the CONSLOG is always output as four digits, e.g. including all leading zeros. With several leading zeros the default is only one zero is output and the TSN is displayed with fewer than four digits, e.g. 0A instead of 000A.

2.15.9 Extended message EXC0420

The utilized CPU time, the user ID and the task ID are output with the LOGOFF message EXC0420.
OSD/BC V10.0 extends this message EXC0420 with the job name.

2.15.10 Implemented change requests / extended commands with correction package 2/2015

*1 RESTORE-PUBSET-FROM-SNAPSET
*1 As of BS2000 OSD/BC V10.0 it is possible for ETERNUS DX storage systems to select
*1 an arbitrary snapset to restore a pubset via command RESTORE-PUBSET-FROM-
*1 SNAPSET. For Symmetrix storage systems still the latest snapset must be used.

2.15.11 Implemented change requests / Extended commands with Correction Package 1/2016

*2 ASTI
*2 As of ASTI 2.0F it is possible to specify a MONJV in the statement START-SERVICE.
*2 Only the first task that has been created for the service is monitored by the MONJV.

*2 BINDER
*2 As of BINDER V2.7 so called DATA SPACES are used for the ESV (External Symbols
*2 Vector) to release user and system address space.

2.15.12 Implemented change requests / Extended commands with Correction Package 1/2017

*4 ASTI
*4 Until now the command SHOW-SERVICE-STATUS displayed to all users the userid,
*4 which has started the service. As of ASTI 2.0G only the user with administration rights
*4 can see the userid of the service.

2.15.13 Implemented change requests / Extended commands with Correction Package 1/2018

*6 BINDER
*6 The C compiler in POSIX uses the BINDER interface BINDERX for the creation of LLMs.
*6 As of BINDER V2.8 the interface BINDERX offers two new parameters – SLICDEF and
*6 SLDEFOP – for the creation of LLMs.

3 Technical information

3.1 Resource requirements

Compared to BS2000/OSD-BC V9.0, the additional CPU requirements in OSD/BC V10.0 can be up to 2%, depending on the server model and applications involved.

Main memory requirements / additional main memory requirements:

The recommended minimum main memory configuration required for using OSD/BC V10.0 depends on the BS2000 server model and has not changed in comparison to BS2000/OSD-BC V9.0. The values for the previously released servers are in the Performance Manual BS2000/OSD-BC V9.0.

There are no exact values available regarding additional static and dynamic requirements.
The estimated additional static requirement compared to BS2000/OSD-BC V9.0 is 3 MB;
The estimated dynamic requirement is 10 KB per task, depending on the size of the occupied user address area.
The installation-related resource requirement must be clarified with the regional service before making the version change.

Disk storage:

The requirement for disk storage in the SOLIS2 delivery for OSD/BC V10.0 is in the SOLIS2 delivery letter. The space requirement for the system files (PAGING area, TSOSCAT, CONSLOGs, SERSLOGs, etc.) must also be planned.

3.2 SW configuration

The following SOLIS correction versions in the initial version are a prerequisite for installing OSD/BC V10.0:
BS2000/OSD-BC V9.0 as of correction version A42
BS2000/OSD-BC V8.0 as of correction version A42

Important note:
If a guest system OSD/BC V10.0 is to be operated under VM2000 V10.0, a minimum of **SOLIS correction version A41** (released in June 2014) is required with a REP correction in the hypervisor (A0599109).

If there is data exchange with BS2000/OSD-BC V8.0 or V9.0 (for example via RFA, shared Pubset, import/export of pubsets), correction version A42 must be installed on these partners due to LBP support.

When deploying OSD/BC V10.0, numerous new versions of the software products must also be implemented.
The following table shows the version required for use under BS2000 OSD/BC V10.0.
*6 Released software configurations require product versions, which not yet reached end of
*6 maintenance
*6 The actual supported software configuration is also available online:
*6 Inform: Software Konfiguration BS2000 OSD/BC V11.0 und V10.0
*6 or in English under
*6 Inform: Software configuration BS2000 OSD/BC V11.0 and V10.0

	Product	Version
*4	AID	V3.4
*8	ARCHIVE	V10.0 / V11.0 / V12.0
	ASSEMBH	V1.3
	AVAS/AVAS-SV	V8.5
*8	C/C++	V3.2 / V4.0
	COBOL85	V2.3
*6	COBOL2000	V1.5 / V1.6
	COLUMBUS85	V1.1
*8	CRTE	V2.9 / V10.0 / V10.1
	DAB	V9.4
	Distributed Print Services	V1.2
	DRIVE	V3.1
	DRIVE-COMP	V3.1
	DRV	V3.2
*4	EDT	V17.0
	ESQL-COBOL	V3.0
*4	FDDRL	V19.0 / V20.0
	FHS	V8.3
	FMS	V2.4
	FOR1	V2.2
	HIPLEX AF	V3.3
	HIPLEX MSCF	V8.0
*8	HSMS	V10.0 / V11.0 / V12.0
	IFG	V8.3
*4	interNet Services	V3.4
*4	JV	V15.1
*1	LEASY	V6.2
*4	LMS	V3.5
*4	MAREN	V12.0 / V12.5
	NFS	V3.0
	OMNIS	V8.5

	OMNIS-MENU	V3.5
	OMNIS-PROP	V3.2
*6	openFT (BS2000)	V12.0 / V12.1
*6	openFT-AC (BS2000)	V12.0 / V12.1
*6	openFT-CR (BS2000	V12.0 / V12.1
*6	openFT-FTAM (BS2000)	V12.0 / V12.1
*6	openFT-FTP (BS2000)	V12.0 / V12.1
*4	openNet Server	V3.6 / V4.0
*8	openUTM (BS2000)	V6.2 / V6.3 / V6.4 / V6.5 / V7.0
*8	openUTM-CLIENT (BS2000)	V6.2 / V6.3 / V6.4 / V6.5 / V7.0
*8	openUTM-CRYPT (BS2000)	V6.2 / V6.3 / V6.4 / V6.5 / V7.0
	openSM2 (BS2000) (also includes COSMOS)	V10.0
	Oracle	11g Release 2
	OSS (BS2000)	V4.1
	PASCAL-XT	V2.2
	PLI1	V4.2
	PCS	V3.1
*1	PERCON	V2.9
	PROP-XT	V1.3
	RAV	V5.1
	RFA	V19.0
*8	ROBAR	V7.0 / V7.5 / V7.6
	RPG3	V4.0
*1	RSO	V3.6
	SBA-BS2	V6.2
	SCA	V19.0
	SDF-A	V4.1
	SDF-P	V2.5
*6	SECOS	V5.4 / V5.5
*8	SESAM/SQL-Server	V7.0 / V8.0 / V9.0 / V9.1
*8	SESAM/SQL-DCN	V7.0 / V8.0 / V9.0 / V9.1
*8	SESAM/SQL-LINK	V7.0 / V8.0 / V9.0 / V9.1
*9	SHC-OSD	V11.0 / V12.0 / V13.0 / V14.0
	SM2-PA	V2.0
	SORT	V8.0
	SPACEOPT	V7.0
	SSA-OUTM-BS2	V5.0
	SSA-SM2-BS2	V5.0
	SSC-BS2	V6.0
	TASKDATE	V19.0
	TIAM	V13.2
	TOMDOORS-M	V5.0
	TOM-DOC	V3.2
	TOM-GEN	V2.1
	TOM-REF	V3.0
	TOM-TI	V3.0
*5	UDS-D	V2.6 / V2.7 / V2.8 / V2.9
*5	UDS/SQL	V2.6 / V2.7 / V2.8 / V2.9
	UDS-IQS	V4.0
	VM2000	V10.0 / V11.0
	WebTransactions for openUTM	V7.5

In order to operate guest systems OSD/BC V10.0 under VM2000 V10.0, the **SOLIS correction version A41** is required with a correction in hypervisor.
At least correction versions from the SOLIS delivery release on **01.12.2014 (correction version A42)** are a prerequisite in the software configuration products.

*1 The use of the Last Byte Pointer (LBP) requires correction level of the SOLIS delivery
*1 release from November 2015 (correction level A52)

3.3 Product installation

OSD/BC V10.0 must be installed using the installation monitor IMON. The prerequisite for the installation is IMON V3.3, because the target version OSD/BC V10.0 cannot be specified until IMON V3.3.
The installation information in the delivery letter, manual, or Release Notice for the respective product must also be taken into account.

The required inputs and installation process via IMON are described in the IMON manual (and readme file).

CRTE-BASYS:

*8 The subsystem CRTEBASY of the product CRTE-BASYS V10.1 is available as runtime environment for internal BS2000 applications.

The subsystem should only be loaded if this is recommended in the Release Notice of another installed product.
The subsystem is loaded in the top class 4 memory by default.
Alternatively, using the SYSSSC file with the ending LOW
*8 (SYSSSC.CRTE-BASYS.101.LOW), the subsystem can be loaded with less than 16 MB in class 4 memory if there is sufficient space available.
IMON also copies the modules IC@RTSXS, IC@STLNK and IC@ULINK
*8 from the library SYSLNK.CRTE-BASYS.101.CLIB to CLIB.
If a $.CLIB file does not exist in the output system, it is created by IMON. This $.CLIB can be used for programs which have been compiled with C V2.0 or lower.

CRTE-BASYS is also used to install the compatibility library SYSLNK.ILCS.

If a default user ID (system parameter DEFLUID) is used which deviates from TSOS, please note that not all the libraries will be automatically installed on the default user ID when installing CRTE-BASYS.
Once the installation has been completed with IMON, the file $TSOS.CLIB must be copied to $<default user id>.CLIB.

PLAM
The library SYSLNK.PMLOG.037 must be provided under the default user ID ($.).
If the default user ID is not TSOS, then $.SYSLNK.PMLOG.037 must be copied to $TSOS.PLAMLIB if the products explicitly require the file $TSOS.PLAMLIB.

PRSC

PRSC is used to forward important (error) messages via remote service. The connection to the teleservice is carried out

- on SU /390 via the Management Unit (MU)
- on SU x86 via X2000

PRSC is installed in BS2000 under the ID $SERVICE. The FUJITSU service configures and activates it on each server in agreement with the local contact person (under VM2000 only in the monitor system, as this collects all important messages from guest systems).
In particular, the PRSC configuration includes

*1 - at least one BCMAP entry for port number 1156. A second entry may exist in case a
*1 second MU exists.
(command BCMAP FU=DEF,SUB=GLOB,NA=PRSCX,ES=<name>,PORT#=1156, PTSEL-I='PRSCX ')
<name> here means the BCAM partner used for Teleservice communication, e.g. L#MANLO1.
- the enter job $SERVICE.SYSENT.PRSC.010 is started as a daily repeat job.

*7 This configuration should remain unchanged afterwards.

*1 C2H
*1 By means of C2H (Configuration to HTML) the configuration-, status- and diagnose in-
*1 formation as well as important system files of a BS2000 system can be automatically
*1 written into a HTML-File. After the transfer to a PC the generated HTML file can then be
*1 displayed after transfer to a PC with a web browser.
*7 C2H is installed in the userid $TSOS and is intended for use by FUJITSU technical sup-
*1 port.

*7 The library $TSOS.SYSPRC.C2H.010 contains everything needed for C2H in BS2000.
*7 C2H now supports SDF commands for the first time.
*7 The SHOW-C2H-CMD command lists all commands available for C2H and BS2HC
*7 (BS2000 System Health Check).

*7 BS2HC can be used to proactively detect vulnerabilities and deficiencies in BS2000 sys-
*7 tems. The following items are checked:
*7 - Whether the correction state of the installed software is up to date
*7 - Corrections (Rep, Source) reported by HotInfo are in use
*7 - User and system address space validation

*7 The following data is collected from each local customer system.
*7 - Installed Software Products SHOW-SUPPLY-UNITS
*7 - REP information (all Subno´s from the installed Repfiles and the Replog)
*7 - SYSTEM Information (SHOW-SYST-INF)
*7 - Information on the user/system address space

*7 The collected data is encrypted with AES256 and must be sent to the central BS2000
*7 support: bs2000-service@ts.fujitsu.com

*7 You will receive the result of the System Health Check by e-mail. The System Health
*7 Check should be performed regularly (e.g. every 3 months) or after a major configuration
*7 change.
*7
*7 For detailed information on C2H and BS2HC, please refer to the README file contained
*7 in the ZIP archive $TSOS.SPCDAT.C2H.010.ZIP.
*7 Transfer the file $TSOS.SPCDAT.C2H.010.ZIP with openFT(BS2000) or with ftp in
*7 binary mode to your PC in any folder.

3.4 Product use

All conversion activities for OSD/BC V10.0 are described in the OSD/BC V10.0 Migration Guide for SE Servers.

A version change to OSD/BC V10.0 is possible based on the BS2000 versions: BS2000/OSD-BC V8.0 and BS2000/OSD-BC V9.0. With all the older BS2000 versions, there must be an initial installation for OSD/BC V10.0. With the shared pubset network via MSCF configurations are possible with BS2000/OSD-BC V8.0 and BS2000/OSD-BC V9.0 as of change version A42 (corrections in BS2000/OSD-BC, HIPLEX MSCF V6.0, openNet Server V3.3).

For availability reasons it is definitely not recommended to make an update installation on the active home pubset!

An initial installation is coupled to specific hardware requirements:
The installed hardware configuration must be a superset of the minimum configuration, e.g. contain at least one server with an input/output system and an operating station with the corresponding service processor as well as a tape controller with a tape device and a disk system with two disk devices.

Note: emulated tape devices:
The tape emulation for the Linux-based X2000 is provided on SE Servers. The data format of the emulated tape files is identical to the format used on SKP 3970-xx.
The emulated tape devices are generated with device type E8 in BS2000.
The CD or DVD can thus be used as data media for SW deliveries.
Further information about using emulated tape devices:
http://globalsp.ts.fujitsu.com/dmsp/Publications/public/wp_emulated-tapes.pdf

CALENDAR:
The public holiday file (file for managing public holidays) must be created by system support from the sample file $TSOS.SYSDAT.CALENDAR.190.HOLIDAY or from an earlier public holiday file:
/COPY-FILE FROM-FILE=$TSOS.SYSDAT.CALENDAR.190.HOLIDAY,
TO-FILE=$TSOS.SYSDAT.CALENDAR.HOLIDAY,PROTECTION=*SAME

MSGMAKER:
Messages can be replaced or integrated via COPY-MSG-FILES and MERGE-MSG-FILES.
For performance reasons, larger quantities should be processed with MERGE-MSG-FILES.
The command is not listed when MSGMAKER is started. Branch to the dialog by entering '?' in the 'command' field of the screen mask. The call can also be submitted via the batch interface.
Please note that the respective output file must be empty.

BCAM memory values:
The values for the maximum size of the resident and page-interchange memory for data transfer are calculated by BCAM from the size of the system memory at start (BS2000 system value MEMSIZE).
The parameters RESMEM and PAGMEM in the BCAM commands DCSTART, DCOPT and BCMOD should usually not be specified. Their values set by BCAM are retained.
Memory monitoring can be activated (RECORD=(RES-MEMORY, PAG-MEMORY)) via the BCAM command BCMON in order to detect whether the current values reach tolerance values.
Any modifications to the memory values must be made in agreement with the respective first-level support.

SIR
A SIR version is generally coupled to a specific BS2000 version.
This means run version <= target version is always valid. For example, SIR V19.0 can only create IPL-compatible pubsets for OSD/BC V10.0 (= target version). As far as version conversions are concerned, the SIR of a higher BS2000 version can be started in a BS2000 version, but not the SIR of a lower BS2000 version.
This means that a reverse conversion is not possible. The user must either retain a boot disk of the old version or must use the offline initial installation for BS2000/OSD-BC V8.0 or V9.0.

*1 The Last Byte Pointer (LBP) is not supported by the SIR function “copy from tape”.
*1 Therefore as of correction package 1/2015 SOLIS deliveries must be installed with
*1 ARCHIVE. For this ARCHIVE is delivered as part of the FIRST installation tape.
*1 Further information is also available under
*1 http://docs.ts.fujitsu.com/dl.aspx?id=22aafa65-9393-4a28-95fd-4959fc6aa77d
*1 The function “copy from disk” supports the LPB as of correction package 2/2014.

DSSM/SSCM
For reasons of compatibility, DSSM V4.3 supports all catalogues which have been created by SSCM < V2.3B. The old catalogues can be modified and converted to the SSCM V2.3B format.
The catalogues created by SSCM V2.3B can be used in DSSM versions as of V3.6.

Parameter service:

Class-2 system parameters

The following class 2 system parameters have been supplemented:

- MIGHOST
  The parameter defines how the new command operand SERVER-UNIT=*STD with SHOW-SYSTEM-INFORMATION is to be interpreted on a global system basis.
  It accepts the two values X‘00‘ and X‘01‘.
  X‘00‘: the value *INITIAL is accepted for SERVER-UNIT.
  X‘01‘: the value *CURRENT is accepted.
  The default value is X‘00‘, the parameter can be modified dynamically.

- NBLOGT0
  The new parameter defines whether all leading zeros are output for TSN. The parameter can accept the values N/Y. Default is N.

The following class 2 system parameters no longer apply:

- None –

The following class 2 system parameters have been modified:

- None -

Changes in the parameter records:

- None -

Hardware generation:

The product IOGEN is available for generating I/O configuration data

The I/O configuration file is only required for SU /390 of the SE Server.

*1 Specifics for Server Units /390 of the SE Servers
*2 - the hardware of type 2-channel (IBL) an type S-channel (IBS) is no more supported
*1 - the channel numbers 00 and 01 are reserved for the internal channel FCLINK
*2 - for the connection of MU and HNC fixed preset channels are planned. Which chan-
*2 nels must be reserved is determined during the installation discussion with the
*2 hardware service and depends on the equipment of the processor and the MUs and
*2 HNCs to connect.
*1 - for logic controllers with identical WWPN overlapping of LUNs is allowed. The mes-
*1 sage NGC0A59 is no more displayed.
*1 - virtual consoles at a virtual type S-channel must be defined with **MODE CNC** and
*1 channel number **FE,** if a new generation is required.

3.5 Cancelled (terminated) functions

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

- Remote diagnostics with DAMP V4.7
- EDIT function with SLED

The following functions are supported for the last time as of this version:

- SLED on tape
  The function of moving a SLED to a physical tape is supported for the last time in OSD/BC V10.0. This function is no longer described in the OSD/BC V10.0 manual. SLED can still be moved to an emulated tape (EMTAPE) if the emulated tape is initialized with a standard label that can be read by the BS2000.

*2 - SIR: copy from tape
*2 The SIR function “copy from tape” is supported for the last time in OSD/BC V10.0.
*2 For information about installation of SOLIS deliveries please refer to chapter
*2 “Product Use”.

*5 - OSD/BC V10.0 is the last version to support the usage of BS2000 snapset at the
*5 SRDF target of Dell EMC storage systems with Release Unit CCOPY V9.0B and up
*5 to and including SHC-OSD V12.0.

The following products are delivered for the last time as of this version:

*2 - Subsystem ADAM
*2 The access method ADAM allows the use of devices, which are not supported by
*2 the logical access methods of BS2000. So far only the service used this function and
*2 is no longer needed.

*2 - WARTOPT
*2 WARTOPT allows monitoring of the userid $SERVICE and the execution of special
*2 service functions. WARTOPT is delivered for the last time with OSD/BC V10.0, as
*2 the service does not need WARTOPT anymore.

*2 - GSVOl and GSMAN
*2 GSVOL and GSMAN support Global Store. Global Store is supported for the last
*2 time in OSD/BC V10.0. Therefore GSMAN and GSVOL are no longer required and
*2 are delivered with OSD/BC V10.0 for the last time.

3.5.1 Cancelled macros

- None -

3.5.2 Cancelled commands

*4 JMP statement CONVERT-JOBPOOL into formats BS2000/OSD-BC < V3.0

*4 With the JMP statement CONVERT-JOBPOOL it is possible, to generate a new jobpool
*4 file from the actual jobpool file for a newer or older version of the operating system.
*4 As of BS2000/OSD-BC V9.0 conversion into a format for BS2000/OSD-BC V1.0 or V2.0
*4 is no more supported.

3.6 Incompatibilities to BS2000/OSD-BC V9.0

- None -

3.7 Restrictions

*1 For files on emulated tapes of device type BM1662FS (tape emulation on SKP 3970 as
*1 EMFILE (for files in Linux file system or for files on DVD/CD)) these attributes are not al-
*1 lowed to be set:
*1 - DESTOC=YES (macro FILE)
*1 - DESTROY=YES (macro CATAL)
*1 - DESTROY-BY-DELETE=*YES (command CREATE-FILE)
*1 - DESTROY-OLD-CONTENTS=*YES (command ADD-FILE-LINK)
*1 This normally causes to overwrite the tape “after the file end” but for EMFILES it starts
*1 too early and destroys the tape content.

3.8 Procedure in the event of errors

General information about creating error documents

In order to successfully diagnose and eliminate software problems, sufficient error documentation must be created and saved as early as possible.
If possible, the documentation for software problems should be supplied in the form of files so that it can be analyzed using diagnostics tools.

Reproducible errors are to be described by the user so that the error can be generated.
If necessary, procedures, enter jobs, protocols, etc. must be provided in order to reproduce the error situation.

Information about the system environment

In addition to the error documentation, the following general details are important for error diagnostics:
- BS2000 operating system version number and correction version (loader version and any modifications in the BS2000)
- Version numbers of subsystems involved in the problem, OSD/BC version independent products or TU programs and their patches / correction versions or rep files
- Specification about the system exits that were active
- Information about the connected hardware peripherals

Document types

In the event of a fault, the following documents are required depending on the situation.

- SLED (after system crash)
- SNAPFILE
- SYSTEMDUMP (after system dump message)
- SYSOUT/SYSLST protocols
- STARTUP parameter files
- USERDUMP
- Diagnostics dump (IDIAS call: CREATE-SYSTEM-DUMP <tsn>)
- SERSLOG file
- CONSLOG file
- System rep file
- Rep files and any associated subsystems and decoupled products
- HERSFILE and any IOTRACE with I/O problems
- or device error messages

User documentation

The following documents are necessary depending on the error conditions:
User files, tapes, procedures, job streams (specifying the job class),
Programs (source listing, load module and libraries, process protocol,
printer protocol - if possible in file form)

Functional errors require the specification of commands, and program inputs, etc..

Documents for special problems

Performance problems and in task management:
- any COSMOS list, tape or SM2 reports

Job management problems:
- List of SHOW-JOB-CLASS or SHOW-JOB-STREAM
- Compilation list of the own scheduler
- SJMSFILE
- SYSTEM-JOBPOOL
- Entry in user catalog of the affected user IDs
- In exceptional cases, a diagnostic dump can be run instead of a SLED
- SCHEDLOG file

Problems in the bind load system:
- Reproducibility: libraries and phase involved
- SHARE problems: Console protocol and complete class-4 memory dump
- ELDE problems: Phase

SYSFILE management problems:
- Procedure/enter jobs in file form
- SYSOUT or SYSLST protocol

NDM problems:
- NDMDAMP (PRODAMP procedure, see “Diagnostics manual” DAMP)
- CONSLOG file

BCAM problems:
- DCM traces
  Activate all traces with /DCDIAG DCM.,MODE=SAVE
  having reproduced the error with /DCDIAG DCM.,MODE=CLOSE save the created trace files S.DCTRAC.* or, using /DCDIAG DCM.,MODE=HOLD, provide the diagnostic information in the main memory and evaluate with ASTRID.

Hardware and software interface problems:
- HERSFILE
- Hardware and software configuration
- Any IOTRACE list

Tape problems:
- If possible, the original tape must be submitted for error diagnostics.
  Otherwise at least a list of all tape labels and initial
  data blocks
- SYSOUT protocol and CONSLOG file.

IORM problems:
- IORM dump
- CONSLOG file
- If problems occur with the IORM functions DPAV, DDAL or IOLVM, the following documents are required from the guest and the monitor system with VM operation.

DSSM problems:
- CONSLOG file
- SERSLOG file
- Subsystem catalog
- SYSLST/SYSOUT protocols
- DSSMLOG file (if available)

With STRT problems
- SLED (with IPL or startup problems)
- SLED from SLED (with SLED problem)
- Rep files for IPL, STRT, SLED and BS2000

PTHREADS problems:
- Application dump
- SYSOUT protocol
- stderr protocol when running under POSIX
- LOGFILE of the internal LOGGING function (if available)

Note:
For the internal LOGGING function, at least 20 MB free space is required in a mounted POSIX file system.

Net-Storage problems:
- SYSOUT or SYSLST protocol
- CONSLOG file
- SERSLOG file
- NDMDAMP (PRODAMP procedure, see “Diagnostics manual” DAMP)
- BCAM trace files:
  Activate
  /DCDIAG ONETSTOR,MODE=SAVE
  /DCDIAG DCM.CON,MODE=SAVE
  /DCDIAG DCM.TRANS, MODE=SAVE
  Deactivate:
  /DCDIAG MODE=CLOSE

Note:
The above description does not contain any details about the creating documentation in conjunction with using BS2000 tracers (see description for each tracer).

4 Hardware support and firmware versions

*5 Released configurations always require hardware, which currently not yet reached end
*5 of maintenance by the manufacturer.

4.1 FUJITSU server BS2000

4.1.1 Supported FUJITSU Server BS2000

OSD/BC V10.0 supports SE Servers with the Server Units SU /390 and SU x86.
*6 The HW abstraction layer X2000 as of V6.0 with Linux as a carrier system is a prerequisite for using OSD/BC V10.0 on SE Servers with SU x86.

BS2000 SE series:

*7	SE710	(SU /390)	V10.0 as VM2000 guest system only
*7	SE310	(SU x86)	V10.0 as VM2000 guest system only
*6	BS2000 SE700 / SE700B	(SU /390 on HW basis Fuji-C9 and possibly SU x86)	
*6	BS2000 SE500 / SE500B	(SU /390 on HW basis ASO-A9 and possibly SU x86)	
*6	BS2000 SE300 / SE300B	(only SU x86)	

*7 The SE base software V6.3 is required for the use of SE710 and SE310.

At least the following HCP (Hardware-Control-Program) versions are required to use OSD/BC V10.0:

*6	- E90L01G-03X+040	für Business Server SE500, SE500B, SE700, SE700B
*7	- E92L01G-01P+092	für SU /390 der SE Server SE710

The HCP version or SE base software required for OSD/BC V10.0 can be obtained via the regional Service.

4.1.2 Cancelled support

The following is no longer supported in OSD/BC V10.0:

Business Server S145
Business Server S155
Business Server S180
Business Server S190
*9 Business Server S165
*9 Business Server S175
*9 Business Server S200
*9 Business Server S210
Business Server SQ100
*9 Business Server SQ200
*9 Business Server SQ210

*2 Global Store is supported for the last time as of OSD/BC V10.0

4.1.3 Extended support

- None -

4.2 Channels

4.2.1 Support of channels

All BS2000 servers supported by BS2000 OSD/BC V10.0 can be equipped with the FC channel type.

4.2.2 Cancelled support

*2 - Connection of disk systems and tape devices via channel Type S (ESCON channel)
*2 is supported for the last time as of OSD/BC V10.0.

*2 - Shared Private Disk (SPD) operation is not supported for disks via FC connection.

4.3 FC switches

4.3.1 Supported FC switches

The following Brocade FC switches are supported:

	Model designation	Order number
	FC-Switch 300	D:FCSW-300L, D:FCSW-300E
	Director DCX 8510	only on SE Servers
	FC-Switch 6505, 6510, 6520	only on SE Servers
*7	FC-Switch G610, G620, G630, X6-4, X6-8	only on SE Servers

Note:

*5 On SU700 and SU700B as well as on SU500 und SU500B at least the HCP level
*5 **E90L01G-04A+034** is required for the use of FOS as of v8.1.0a in connected Brocade
*5 FC switches.

A special release can be provided for FC switches from CISCO. However, SANCHECK is not supported for these switches:

4.3.2 Cancelled support

In OSD/BC V10.0, the following FC switches from Brocade are no longer supported on SQ and S Servers:

	Model designation	Order number
	FC-Switch 4100	D:FCSWR-32P4100L, D:FCSWR-32P4100E D:FCSW-32P4116L
	FC-Switch 4900	D:FCSW-64P4932L, D:FCSW-64P4932E
	FC-Switch 5000	D:FCSW-32P5000L, D:FCSW-32P5000E
*7	FC-Switch 5100	D:FCSW-5100L, D:FCSW-5100E
*9	FC-Switch 5300	D:FCSW-5300L, D:FCSW-5300E
	FC-Switch 200E	D:FCSWR-16P200EL, D:FCSWR-16P200EE, D:FCSWR-08P200EL, D:FCSWR-08P200EE, D:FCSW-16P200EL, D:FCSW-16P200EE
*7	Director 48K	D:FCSW-48K various order numbers
*7	Director DCX	various order numbers
*7	Director DCX-4S	various order numbers

4.4 Disk systems

4.4.1 Supported disk systems

In OSD/BC V10.0, the following controller units for the disk storage units are supported, which are connected to channel Type FC:

Dell EMC Symmetrix systems:

	VMAX	as of microcode 5876	
	VMAX 20K	as of microcode 5876	
	VMAX 40K	as of microcode 5876	(release by Dell EMC)
*2	VMAX3	as of HYPERMAX OS	5977
*5	VMAX All Flash	as of HYPERMAX OS	5977.945.890

*2 Administration of the VMAX3 mirror functions via BS2000 requires SHC-OSD as of V12.0.

FUJITSU Storage ETERNUS DX disk systems:

	DX8700 S2	as of FW version	V10L55
	DX500 S3	as of FW version	V10L20
	DX600 S3	as of FW version	V10L20
*2	DX8700 S3	as of FW version	V10L52

*2 Administration of the DX8700 S3 mirror functions via BS2000 requires SHC-OSD as of V12.0.

*6	DX500 S4	as of FW version	V10L80
*6	DX600 S4	as of FW version	V10L80
*6	AF650 S2	as of FW version	V10L80
*6		support only on SE Server	

*6 Administration of the ETERNUS DX S4 or ETERNUS AF S2 mirror functions via BS2000 requires SHC-OSD as of V13.0B.

*9	DX500 S5	as of FW version	V11L30
*9	DX600 S5	as of FW version	V11L30
*9	AF650 S3	as of FW version	V11L30

*9 Administration of the ETERNUS DX S5 or ETERNUS AF S3 mirror functions via BS2000 requires SHC-OSD as of V14.0A.

*6 Storage Cluster Option (SCO)

*6 BS2000 OSD/BC V10.0 requires optional fixes to use the Storage Cluster Option of *6 ETERNUS DX / AF with SU /390:

*6 A0611672 (NKV), A0611677 (BS2000-GA), A0612287 (BS2000-GA)

Net-Server platforms for Net-Storage:

*7	FUJITSU Storage ETERNUS CS8000	NAS-Interface
*7	FUJITSU Storage ETERNUS DX500/600 S3 Unified	NAS-Interface

Additional Net-Storage devices, e.g. from NetApp, can be qualified on request (on special release).

See Release Notice for BS2000 OSD/XC V10.0 for additional disk systems that are only supported by SE Servers.

4.4.2 Cancelled support

In OSD/BC V10.0, the following Symmetrix systems from manufacturer Dell EMC are no longer supported:

	DMX800, DMX801	(channel type FC)
	DMX1000, DMX2000	(channel type S, type FC)
	DMX3000	(channel type S, type FC)
*7	DMX-3	
*7	DMX-3_950	
*7	DMX-4	
*7	DMX-4_950	

*7 In OSD/BC V10.0 the following FUJITSU Storage ETERNUS DX disk systems are no longer supported:

*7 DX8400, DX8700
*7 DX410, DX440
*7 DX410 S2, DX440 S2

4.5 Magnetic tape devices

4.5.1 Supported magnetic tape devices

The following magnetic tape devices are supported on all server lines in BS2000 OSD/BC V10.0. Further magnetic tape devices, which are only supported by SE Servers, are listed in the Release Notice for BS2000 OSD/XC V10.0.

Tape cartridge archive systems Scalar from manufacturer Quantum:

*7	Scalar i2000	with LTO-4
*7	Scalar i6000	with LTO-4, LTO5 in Scalar i2000 compatible mode
*7	Scalar i6000	with LTO-4, LTO-5, LTO-6
*1		At Scalar i6000 LTO-6 devices are only supported via direct
*1		connection, e.g. without IO-Blade.
*7	Scalar i500	with LTO-4, LTO-5, LTO-6

Scalar libraries only support IBM drives
All Scalar libraries are connected via channel TYPE FC.

*7 The Scalar i500 and Scalar i2000/i6000 are not supported on SE710 and SE310.

Virtual archive systems

FUJITSU Storage ETERNUS CS8000

*6 - ETERNUS CS8050, CS8200, CS8400, CS8800 (channel type FC)
*7 - ETERNUS CS900 Entry (channel type FC) (on special release only)

4.5.2 Cancelled support

Discontinued HW support in OSD/BC V10.0:

MTC archive systems / MTC drives

	Quantum Scalar i2000	with LTO-2	
	Quantum Scalar i6000	with LTO-2	(in Scalar i2000 compatibility mode)
*7	Quantum Scalar 10K		
*7	LTO-3		

CentricStor

CentricStor VTA	(Virtual Tape Appliance, channel type S, FC)
CentricStor VTC	(Virtual Tape Appliance, channel type S, FC)
CentricStor SBU-BS2	(Smart Backup Unit, channel type S, FC)

*7 Virtual archive systems
*7
*7 FUJITSU Storage ETERNUS CS HE
*7 - Virtual Tape Libraries (VTL-Systeme)
*7 ETERNUS CS500, CS1000, CS1500, CS2000, CS3000, CS4000, CS5000
*7 - Disk Library Systeme
*7 ETERNUS CS500 DL, CS1500DL
*7 - Virtual Tape Contoller (VTC)
*7 ETERNUS CS50

4.6 Printers

4.6.1 Supported printers

*9 In OSD/BC V10.0 the printers available on the market are only supported via LAN connection.

The product RSO (not free-of-charge) allows operation of almost all the market-relevant PCL/Postscript printers:
Further information:
https://partners.ts.fujitsu.com/com/products/servers/bs2000/peripher/print/Pages/default-de.aspx

4.7 Other peripherals

4.7.1 Other supported peripherals

OSD/BC V10.0 supports the following:
*9 Information can be found in the Release Notice OSD/XC V10.0.

4.7.2 Cancelled support

*7	- LAN channel connection on S Server	HNC-IV	91853
*9	- LAN channel connection	HNC-V	91854 (channel type FC)
*9		HNC, VI	91855 (channel type FC)

*9 - CD/DVD drive on the service console processor SKP 3970 (emulated tape device)