

FUJITSU Software BS2000 OSD/XC

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Version V11.0B
June 2020

Release Notice

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1 General information

FUJITSU Software BS2000 OSD/XC V11.0 is the BS2000 Extended Configuration operating system package for the FUJITSU Server BS2000 SE Series (Server Units SU x86 and Server Units SU /390). OSD/XC consists of the operating system package BS2000 OSD/BC V11.0 and a range of system-related software products.

OSD/XC V11.0 contains the current version BS2000 OSD/BC V11.0. OSD/XC completely covers the unrestricted BS2000 function for the SE Server class. Existing customer applications run on an object-compatible basis on the SE Servers with OSD/XC.

OSD/XC operates all of the relevant function complexes for data center operations:

- Advanced, typical mainframe workload management for dialog and batch loads.
- Extensive scalability of processor performance, memory and I/O bandwidth.
- Automation of data center operations and data center operating processes.
- Operability of open applications
- Support for backup scenarios with Snapsets

The FUJITSU software package BS2000 OSD/XC consists in version V11.0B of the following software products:

Function	Product name	Version
Operating system	FUJITSU Software BS2000 OSD/BC	V11.0B
Print management	FUJITSU Software BS2000 RSO	V3.6
Job scheduling	FUJITSU Software BS2000 JV	V15.1
Communication	FUJITSU Software BS2000 openNet Server	V4.0
	FUJITSU Software BS2000 interNet Services	V3.4
	FUJITSU Software BS2000 TIAM	V13.2
Programming language	FUJITSU Software BS2000 CRTE	V11.0
Performance	FUJITSU Software BS2000 SCA	V20.0
Storage management	FUJITSU Software BS2000 ARCHIVE	V11.0
	FUJITSU Software BS2000 HSMS	V11.0
Utilities	FUJITSU Software BS2000 EDT	V17.0
	FUJITSU Software BS2000 LMS	V3.5
	FUJITSU Software BS2000 PERCON	V2.9
	FUJITSU Software BS2000 SORT	V8.0

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*5 This Release Notice contains a condensed form of the main extensions, dependencies and
 *5 operating instructions for the delivery components in the package OSD/XC V11.0. The content
 of the Release Notice of the OSD/BC V11.0 was supplemented in this Release Notice.

*5 The release date of the contents is June 2020.

*5 Changes to release level November 2019 are marked with *5.

*4 Changes to release level June 2019 are marked with *4.

*3 Changes to release level June 2018 are marked with *3.

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

*1 Changes to release level July 2017 are marked with *1.

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

The Release Notices for the technical delivery units and products supplied together with
 OSD/XC V11.0 must also be observed:

*4 SYSFGM.APACHE.024.E
 SYSFGM.ARCHIVE.110.E
 SYSFGM.CRTE.110.E
 *5 SYSFGM.CRTE-BAS.111.E
 SYSFGM.EDT.170.E
 SYSFGM.HSMS.110.E
 SYSFGM.IMON.033.E
 *1 SYSFGM.JENV.090.E
 *4 SYSFGM.JENV.081.E
 SYSFGM.JV.151.E
 SYSFGM.LMS.035.E
 *4 SYSFGM.INETSERV.034.E
 SYSFGM.ONETSERV.040.E
 SYSFGM.PERCON.029.E
 SYSFGM.POSIX-BC.110.E
 SYSFGM.RSO.036.E
 SYSFGM.SCA.200.E
 SYSFGM.SDF.047.E
 SYSFGM.SORT.080.E
 *1 SYSFGM.SPOOL.049.E
 SYSFGM.TIAM.132.E
 SYSFGM.WEBTRANS-OSD.075.E

The respective German version is available as a file with the file name suffix ".D".

*3 Please read the current Release Notice of the basis software (X2000, M2000 and HNC as of
 V6.1 for SE Servers) that belong to the corresponding SE Server lines.
 The Release Notices are available at https://bs2manuals.ts.fujitsu.com .

If one or more of the previous upgrades are skipped when this version is used, then the infor-
 mation in the release notices (or README files) for these previous versions must also be tak-
 en into account.

1.1 Order

OSD/XC V11.0 can be obtained from your own distributor.

The general contract terms and conditions concerning the use and support of software products are valid for the BS2000 OSD/XC V11.0.

*4 1.1.1 Additive Order to package components of OSD/XC V11.0

*4 For the products HSMS and CRTE contained in OSD/XC V11.0 the following new product
*4 versions have been released and can be ordered additively if required:

- *4 • CRTE V11.1
- *4 • HSMS V12.0

*4 The corresponding release notices are SYSFGM.CRTE.111.E and SYSFGM.HSMS.120.E.

1.2 Delivery

1.2.1 Delivery scope

The OSD extended configuration products (XC products) are supplied on DVD or by WWW-delivery in SOLIS/IMON format.

They are as follows with the setup DVD (UNIX format):

- SETUP OSD/XC (run BS2000-EXEC as disk image)
- OSDXC 1-2 (XC products in SOLIS/IMON format)
- UPDATE OSD/XC (corrections for XC products in SOLIS/IMON format)
- ADDON (individually ordered user software in SOLIS/IMON format)

The customer receives in addition to the SE Server the GoldenSet with the following DVD's: (M2000, X2000, HNC, StorMan, openSM2 (optional), ROBAR-SV (optional), openUTM (optional))

1.2.2 Delivery components of OSD/XC

The delivery structure of the OSD/XC package for OSD/XC V11.0 is as follows:

OSD/XC	V11.0
BS2GA.APACHE	11.0
BS2GA.BS2OSD	11.0
BS2GA.BS2IDE	11.0
BS2GA.CRTE-BAS	11.0
BS2GA.DSSM	11.0
BS2GA.IMON	11.0
BS2GA.JENV	11.0
BS2GA.LLMAM	11.0
BS2GA.PLAM	11.0
BS2GA.POSIX	11.0
BS2GA.SDF	11.0
BS2GA.SIR	11.0
BS2GA.SPOOL	11.0
BS2GA.STRT	11.0
BS2GA.WTOSD	11.0
CRTE	11.0
EDT	17.0
HSMS	11.0
ARCHIVE	11.0
JV	15.1
LMS	3.5
openNet Server	4.0
InterNet Services	3.4
PERCON	2.9
RSO	3.6
SCA	20.0
SORT	8.0
TIAM	13.2

Delivery components of OSD/BC respectively of delivery unit BS2GA

The following release units (RU) of the technical delivery units (DU) BS2GA are part of the delivery scope:

<u>LE / RU</u>	<u>Version</u>	<u>Remark</u>
<u>BS2GA.APACHE</u>		
*4	APACHE	2.4A
*4	PERL	52.4A
<u>BS2GA.BS2IDE</u>		
	BS2IDE	2.x only license paper, no files actual version "x" see download page
<u>BS2GA.BS2OSD</u>		
*3	ACS	20.0B
*3	AIDSYS	20.0B
*3	AIDSYSA	20.0B
*3	ANITA	20.0B
	ASE	1.0C
	ASSEMBH-GEN	1.3A
	ASTI	2.0G
*2	BINDER	2.8A
	BLSSEC	17.0A
*2	BLSSERV	2.9A
*3	BS2CP	20.0B
*3	BS2000-EXEC	20.0B
	BUILDER	1.0A
	C-TPR-LZS	2.6A
*3	CALENDAR	20.0B
	CALENDAR-TU	20.0A
	CAPRI	2.0B
	CHDATES	1.0A
*3	CCOPY	10.0C
	CONSTERM	6.0A
*3	CPR	20.0B
	CRYPT	2.0A
	C2H	1.0A
	DAMP	4.9A
*3	DCADITO	20.0B
*3	DIV	20.0B
	DIVTRAC	20.0A
	DLMUSER	20.0A
	DPAGE	17.0A
	DWS	11.0A
*3	ELFE	20.0B
	ELSA	1.7A
*3	FASTPAM	20.0B
	FITC	10.0A
*3	GCF	2.0B
	GET-TIME	20.0A
	GET-TIMX	20.0A
*3	HELGA	20.0B
	IDIAS	20.0A
	INIT	20.0A
	IOFCOPY	19.0A

*3	IOGEN	20.0B	Utility program
*3	IORM	11.0B	Utility program
*3	IOTRACE	20.0B	Utility program
	JITSYS	7.0A	
	JMP	2.0C	Utility program
*3	JMU	20.0B	Utility program
	JOBSCHED	20.0A	Utility program
*3	JPOPT	2.9B	
	KDCMON	20.0A	
	LMSCONV	3.5B	Utility program
*3	LNМ	20.0B	
*3	MIP	20.0B	
	MSCFANC	20.0A	
	MSGMAKER	1.2B	Utility program
	NDMDAMP	16.0A	
*5	NET-SNMP	5.7A20	
*3	NKISAM	20.0B	
	NKISTRAC	20.0A	Utility program
	NKS	20.0A	
*3	NKV	20.0B	
	NLMERVE	20.0A	Utility program
	ONETSTOR	3.0A	
	PAMCONV	12.1E	Utility program
*3	PAMINT	11.0B	
	PASSWORD	20.0A	Utility program
	PRSC	1.0A	Utility program
	PTHREADS	1.4A	
*3	PVSREN	7.0B	Utility program
*3	RESLOG	1.8B	
*3	REWAS	2.0C	
	RMS	7.1G	Utility program
	SANCHECK	3.0A	Utility program
*3	SCANET	20.0B	
*3	SCDM	11.0B	Utility program
	SHOW-FILE	17.1B	
	SMI	1.0A	
*3	SMPGEN-S	20.0B	Utility program
	SMPGEN-U	20.0A	
*3	SPCCNTRL	20.0B	Utility program
	STATUS	15.2A	
*3	SRPMNUC	20.0B	
*3	SYSFILE	20.0B	
	TANGBAS	1.8A	
	TANGRAM	1.8A	
	TPCOMP2	20.0A	Utility program
	TPRLAM	20.0A	
	TSOSLNK	21.0E	Utility program
	TULAM	20.0A	
	UTM-SM2	20.0A	
*3	VOLIN	20.0B	Utility program

BS2GA.CRTE-BAS

*4	CRTE-BAS	11.1A	
*4	CRTE-BASYS	11.1A	
*4	CRTE-MSG	11.1A	
*4	POSIX-HEADER	11.1A	

BS2GA.DSSM

	DSSM	4.3D	
*3	ROSI	20.0B	Utility program

	SSCM	2.3B	Utility program
	<u>BS2GA.IMON</u>		
*3	IMON	3.3B	
*3	IMON-BAS	3.3B	
*3	IMON-GPN	3.3B	
*3	IMON-SIC	3.3B	
	<u>BS2GA.JENV</u>		
*4	JENV	8.1B	
*2	JENV	9.0A	
	<u>BS2GA.LLMAM</u>		
	LLMAM	3.4A	
	<u>BS2GA.PLAM</u>		
	PLAM	3.7A	
	PMLOG	3.7A	
	PMSYS200	3.7A	
	<u>BS2GA.POSIX</u>		
	POSIX-ADDON-LIB	2.1A30	
	POSIX-BC	11.0A45	
	POSIX-NSL	10.0A45	
	POSIX-SH	10.0A45	
	POSIX-SOCKETS	10.0A45	
	POSPRRTS	1.4A10	
	<u>BS2GA.SDF</u>		
	DISPLAY	1.1A	
	FHS-TPR	8.3A	
	SDF	4.8A	
	SDF-CONV	3.0B	
	SDF-I	4.1C	
	SDF-P-BASYS	2.5G	
	SDF-PAR	1.1A	
	SDF-SFC	3.1A	
	SDF-SRV	3.1A	
	SDF-U	4.1G	
	VAS	2.4B	
	<u>BS2GA.SIR</u>		
	SIR	20.0A	
	<u>BS2GA.SPOOL</u>		
*4	BS2ZIP	1.2M	
*5	CONV2PDF	1.0C20	
	PRMMAN	1.4A	
	PRMPRES	1.2A	
	SNRTP	2.0C	
	SPCONV	1.2A	
	SPOOL	4.9A	
	SPOOLSYS	3.0A	
	SPSERVE	2.9B	

	SPSRVMAN	2.4A
	<u>BS2GA.STRT</u>	
*3	IPL	20.0B
*3	SLED	20.0B
*3	STRT	20.0B
	<u>BS2GA.WTOSD</u>	
*5	WebTransactions for OSD	7.5C

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 documentation for OSD/XC V11.0 comprises the following components:

- The manuals for BS2000 OSD/BC V11.0, which form the basic literature for OSD/XC V11.0.
- SE-specific manuals, which describe the SE line server concepts and operation.

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.

*3 The documentation is also in the Internet: <https://bs2manuals.ts.fujitsu.com>.

README files may also be available for these manuals. They include changes and supplements to the manual for each product.

*3 README files are on the SoftBooks DVD or online at: <https://bs2manuals.ts.fujitsu.com>.

1.4 On-site consultation and a customer workshop

In order to provide intensive consultation and training, a customer workshop with the following contents is offered:

Administration and operation of the SE business servers

- SE Line - overview
Hardware installation of the SE Servers, interfaces, operating controls and networking of the server from an administration viewpoint.
- The operating concept of the SE Servers
Overview of all operating components in the Management Unit (MU) and the operating concept of the SE Manager (SEM) administration application.
- Remote operation via PC
SW prerequisites and configuration of the PC workplaces for remote operation of the SE Server.
- SE Manager
Web-based user interface SE Manager functions for the comprehensive administration of the installed Server Units and integrated peripherals.
- Authorization concept
SE Manager role and user concept for local and central user administration.
Handling SSL certificates when using the SE Manager interface.
- Network connection options
Overview of the Net unit and options for networking the SE Server, internally and externally.
- Operating
Configuration options for the user interface, operations for server switch on/off, to start/end the operating system, operation of the BS2000 instance.
- Live Migration and Management Cluster
Connection between two SE Server to a Management Cluster and their administration.
An overview of the function Live Migration and the administration of the migrating BS2000 system from one Server Unit to the other Server Unit without having an effect for the user on the availability of the BS2000 and the loaded tasks.

Security concepts for SE Business Server

- Clarify IT security guidelines (security management, action catalogs, company security guidelines, manufacturer's security information)
- Map corporate security guidelines to the role and user concept for SE Servers (role concept, permissions, person-related IDs and local/central authentication)
- Encryption of communication between Operating workplace and SE Server
- Network services and firewall, if required restriction of communication to individual workplaces
- Security of FUJITSU remote service access
- Training in using the secure administration concept for the SE Server
- If required: consultation regarding a joint security concept for SE Servers together with systems in the BS2000 environment, such as ROBAR servers and FUJITSU ETERNUS CS and their implementation.

If you are interested in this offer, please contact your sales representative.

2 Software extensions

The following explains only the main extensions and enhancements compared to the previous version BS2000 OSD/BC V10.0 resp. OSD/XC V10.0.

2.1 Availability improvements in OSD/BC resp. OSD/XC V11.0

2.1.1 Rounding off the Live Migration functionality on SE Server

In OSD/BC V11.0 further changes in the I/O management took place, which allow an interruption-free migration (Live Migration LM) of a BS2000 guest system. In case of SU /390 only a guest system under VM2000 is supported for migration and for SU x86 also the migration of a native system is possible. The requirements for the LM are VM2000 V11.5, a uniform I/O generation of involved systems and at least SE base software V6.2.

2.1.2 Increase of system availability during storage failure

In OSD/BC V11.0, in order to increase the system availability in case of storage failure, information for all known pubsets and paging disks from the system shall preventively be provided (catalog ID, name of the PUBRES and paging disks as well as related DRV, REC or SRDF mirror disks) and stored in the main memory. Data gathering takes place periodically through the I/O resource manager (IORM). In case of a storage failure the information on the mirror disks are available immediately. OSD/BC V11.0 uses mirror information in the function "Attach Pubset" and for handling paging I/O problems.

2.2 Extended integration of Net-Storage in OSD/BC V11.0

2.2.1 Support of text files on Net-Storage (SAM node files)

In OSD/BC V10.0 the new file type Node-File was introduced. Node-Files are located on Net-Storage and can be processed by both BS2000 systems and open systems. In OSD/BC V10.0 only PAM files were supported as Node-Files.

OSD/BC V11.0 supports also SAM files (RECFORM=V, BLKCTRL=DATA) for the purpose of text-based processing on Net-Storage in a format understandable by open systems.

When a SAM block is stored on Net-Storage, the SAM specific structure information (block control field, the data length field and the record length fields) is removed, a Line Feed (LF) is inserted after each record and, if necessary, the code is converted from EBCDIC into an ASCII/ISO character set.

While reading a SAM block, the block control field, the data length field and one record length field per record are injected and a reverse conversion in EBCDIC is carried out.

Note:

SAM node files require at least SE base software V6.2.

Code Conversion

In OSD/BC V11.0 the Net-Storage coded character set name NETCCSN is introduced, through which character sets are defined for the open world. The character set for code conversion can be configured specifically for each file. The used character sets are recorded in the catalog entry of the file. Through the new system parameter NETCODE a standard character set can be defined.

This setting is taken over in the user's NETCCSN when creating a new user (see also HOSTCODE). When creating SAM node files, the names for the coded character set and net coded character set of the file are derived from the user's coded character set name and net coded character set name. Only conversions from EBCDIC into ISO character sets are possible. Conversions from EBCDIC into UTF character sets are not possible. Files with CCS already being an ISO or UTF character set are not converted, e.g. depending on the transmission direction of the data only BLKCTRL and length fields are removed or added.

User Interface

In order to support SAM node files the command IMPORT-NODE-FILE was expanded by the specification *SAM in the FILE-STRUCTURE operand.

When creating a SAM node file the character set with operand NET-CODED-CHAR-SET can be set at CREATE-FILE. SAM node files are also supported by a number of products (e.g. LMS, EDT, SYSFILE).

Note:

FGGs, data in Pamkey format and temporary files are still not supported on Net-Storage. Encrypting node files is not possible.

BS2000 version < OSD/BC V11.0 cannot access SAM node files.

2.2.2 Other extensions for Net-Storage

- *2 FUJITSU Storage ETERNUS DX500 S3 / DX600 S3 as NAS storage for Net-Storage
- *2 With OSD/BC V11.0 it is also possible to store Net-Storage files on the unified storage of ETERNUS DX500 S3 / DX600 S3. Net-Storage on ETERNUS DX is released only for
- *2 NFSv3.
- *3

Live Migration support

After a VM guest system (on SU x86 as guest or native system, on SU /390 as guest system only) has been migrated, Net-Storage can be accessed again. Therefore, prior to the migration, the connections to the net server are terminated and then built up again on the target computer via the net client.

Requirements:

- SE base software as of V6.2
- For SU /390: The net client(HNC) must be accessible via the same ip-address in both systems.

Identification of net client

So far, the BCAM name of the net client could not be used for identification of the net client. As of OSD/BC V11.0 either the IP address or the BCAM name can be entered e.g. in commands SHOW-NET-STORAGE or MOUNT-/UNMOUNT-NET-STORAGE.

2.3 Performance Improvements in OSD/BC resp. OSD/XC V11.0

OSD/BC V11.0 contains a number of measures for improved performance.

2.3.1 Increased number of “big pages” for JIT

So far, in the running system the maximum number of JIT big pages could only be reduced, yet not increased back to the original maximum value. This was enabled in OSD/BC V11.0 by extending the command MODIFY-MEMORY-PARAMETERS by the operand EXTEND-BIG-PAGES.

In addition, big pages, which were cancelled as a part of core saturation, will automatically be set up again as soon as there is enough memory available.

2.3.2 Acceleration of command REPAIR-DISK-FILES

The command REPAIR-DISK-FILES can take a couple of hours with very large ISAM files. By taking various actions, such as using large data buffers when reading or implementing optimized sorting algorithms, the performance of OSD/BC V11.0 was significantly improved. Further time savings can be achieved by using DAB caches. For using the VERIFY functionality with DAB procedure templates are available in the file SYSPRC.BS2CP.200.TEMPLATE.

Note:

DAB is a product with extra costs.

2.3.3 Optimized multi-processor performance

With an extremely high I/O load we observed, on servers with a very high multi-processor degree, a much worse throughput than on smaller models.

The main reason for this was a high number of cache-to-cache misses due to frequent access to the central lock fields. Thanks to the improvements on the shared-lock usage, the number of cache-to-cache misses was minimized and, therefore, the performance of multi-processors was optimized.

2.3.4 Other Performance Improvements

- I/O performance optimization for NK2 disks on SU /390
- Thanks to optimization of the sorting algorithm the access to files or job variables for SHOW-FILE-ATTRIBUTES and SHOW-JV-ATTRIBUTES could be accelerated for large semi-sorted data amounts.

2.4 Encryption in BS2000 (CRYPT)

As of OSD/BC V11.0 cryptographic functions are available on all servers for applications and internal components as an integral part of the operating system BS2000.

The elementary operations for encryption and decryption are realized as a software solution in the new subsystem CRYPT and are, therefore, CPU-intensive. For larger amounts of data this must be taken into account.

Among others, CRYPT is used by the commands ENCRYPT-FILE and DECRYPT-FILE. The BS2000 release unit CRYPT replaces the openCRYPT products, which are withdrawn with the release of OSD/BC V11.0.

2.5 Extension of system limits in OSD/BC resp. OSD/XC V11.0

2.5.1 Support of main memory > 256 GB through SNAP dump

Up to OSD/BC V10.0 SNAP dump supports main memory up to 256 GB. As of OSD/BC V11.0 SNAP dump can address a main memory up to 1 TB. The system function SNAP dump interrupts the operating system for a short time and ensures specific memory areas in a consistent manner.

2.5.2 Support of SLEDFILE > 32GB

The maximum size of SLEDFILES is extended from 32 GB to 256 GB. In the SLEDFILE the product SLED saves important memory areas required for the diagnostics, e.g. the system memory and selected TU pages.

2.5.3 Support of files >32 GB on home pubset

In order to optionally store also large SLEDFILES on the home pubset, files > 32 GB are generally supported in the BS2000 OSD/BC V11.0 on the home pubset. Apart from adjustments in DMS this extension required a number of further supplies:

- SIR must allow the attribute LARGE-FILES-ALLOWED=YES for bootable disks
- STARTUP must allow loading BS2000 from home pubsets with the attribute LARGE-FILES-ALLOWED=YES

2.6 Other new features in OSD/BC resp. OSD/XC V11.0

2.6.1 Adjustments in POSIX

POSIX version A45 was extended by the following functions:

- Synchronization with BCAM for dynamic changes
- Support of the command sudo
- Tools zip and unzip
- Extension for TCP_KEEPALIVE
- Extension for the function sysconf()
- Increase of maximal values for NOSTTY

More detailed information can be found in the release notice for POSIX-BC V11.0.

2.6.2 Introducing NK-ISAM as a default value

Until now K-ISAM files were created on K disks and NK-ISAM files on keyless disks according to the disk type, if no file format was specified for the creation of ISAM files. As of OSD/BC V11.0 NK-ISAM files are also created for K disks by default. The default value can be changed via the new system parameter ISBLKCTL. The function range is identical for both formats, the user interface does not necessitate any changes. A K-ISAM file can still be created if the setting BLKCTRL=PAMKEY is selected explicitly.

2.6.3 HELGA: new command HISTORY

Under TSOS information about the running system can be retrieved by using the program HELGA. In OSD/BC V11.0 the program HELGA is extended by the command HISTORY. HISTORY shows previously entered HELGA orders within a TSOS session.

2.6.4 Support of 4k HDDs with 512e sectors

BS2000 supports in FUJITSU Storage ETERNUS DX S3 systems also disks, which are divided into physical sectors of 4096 bytes (so-called 4k HDDs) and run in emulation modes of 512 bytes (512e).

2.6.5 Catalog format EXTRA LARGE as standard format

So far the following catalog formats were available: NORMAL, LARGE and EXTRA LARGE. Formats NORMAL and LARGE had to be used for importing pubsets also in versions BS2000/OSD-BC <= V5.0. As of BS2000 OSD/BC V 11.0 only EXTRA LARGE is used, as far as it is possible. Catalogs with format NORMAL or LARGE are automatically converted in the format EXTRA LARGE, if a pubset is imported exclusively or as master.

2.7 Functional extensions for SW products in OSD/XC V11.0

The following functional extensions or changes are available with package OSD/XC in the new versions of the particular products:

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CRTE V11.0B

Adaptation to BS2000 OSD/BC V11.0 (technically coupled product)

HSMS V11.0

- Export of files to disk storage
- Extension of memory level S1 to SM pubsets
- The standard output medium for reports is enhanced
- Support of SAM node files

interNet Services V3.4B (INETSERV)

- UNIX-compatible output for MLSx commands
- Support of FileZilla
- Rebasing openSSL/openSSH/Postfix/BIND

JV V15.1B

- Optimization of the sorting algorithm in the SH-JV-ATTR command

openNet Server V4.0 (ONETSERV)

- Performance improvement
- New informative function: BCAM processor names and FQDN

SCA V20.0

Adaptation to BS2000 OSD/BC V11.0 (technically coupled product)

2.8 New functions in BS2000 OSD/BC resp. OSD/XC V11.0 with Correction Package 1/2018

2.8.1 Support of new Hardware

- *1 Correction package 1/2018 supports new FUJITSU Storage ETERNUS DX disk
- *1 memory controllers.

2.8.2 New SNMP support by NET-SNMP V5.7A (OSS)

- *2 NET-SNMP V5.7A (OSS) provides generally the basic functionality for SNMP manage-
- *2 ment within the BS2000 delivery scope.
- *2 The package contains the SNMP demon, the SNMP Trapdemon and the SNMP Client
- *2 Tools. The package supports the MIBs MIB-II (RFC1213), HOST-RESOURCES,
- *2 DISMAN-EVENT and DISMAN-SCHED.
- *2 The new innovated SNMP management can be installed in parallel to the previously de-
- *2 livered Emanate based products SBA-BS2 and SSC-BS2.
- *2
- *2 NET-SNMP V5.7A (OSS) is delivered with correction package 1/2018 as part of BS2000
- *2 OSD/BC V11.0.
- *2 Simultaneous with correction package 1/2018 an update of openNet Server V4.0 is
- *2 delivered, which contains a SNMP subagent for BCAM adjusted to NET-SNMP V5.7A.
- *2
- *3 Additional SNMP subagents for NET-SNMP V5.7A are provided by the products
- *3 SNMP-AGENTS V1.0, interNet Services as of V3.4B01 und SESAM as of V9.1A10.

2.8.3 Snapset adaption to extended functionality of FUJITSU Storage ETERNUS DX

- *2 Operating of Snapsets based on the extended Snap functionality (FDEV, TDEV instead of
- *2 SDV) and BS2000 online backup based on QuickOPC (clone type *COPY) is supported
- *2 by CCOPY V10.0B.

2.9 New functions in BS2000 OSD/BC resp. OSD/XC V11.0B with Service Pack 19.1

2.9.1 Support of FUJITSU Server SE710 und SE310

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In the BS2000 OSD/BC V11.0B the SE710 and SE310 models are supported in addition to the previous SE Servers as of SE basic software V6.3.
The SU710 will only be released with the 16 Gbit/s FC channel.

2.9.2 Peripheral Support of new LTO-7 device

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In BS2000 OSD/BC V11.0B the device type LTO-7 is supported in addition to the already supported LTO device types. More details can be found in chapter 4.6 Magnetic tape devices.
The encryption function for LTO-7, implemented in conjunction with MAREN, is not supported with Service Pack 19.1.

2.9.3 FastDPAV

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The function „FastDPAV“, an optimized DPAV, is offered for the Server Unit SU710. To support FastDPAV alias devices, the new device type D3435-FP (internal A6) and the new device states ENABLED and DISABLED have been introduced.
More information about generating and usage of FastDPAV can be found in the manual “Introduction to System Administration (SE Server)”.

2.9.4 Extensions for future HSMS functions

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For the use by future HSMS versions the new file attribute NUM-OF-BACKUP-VERS is introduced.
A general default value for the file attribute NUM-OF-BACKUP-VERS can be set by the new system parameter NUMBACK.

2.10 New functions in BS2000 OSD/BC resp. OSD/XC V11.0B with Service Pack 19.2

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The restriction regarding encryption with LTO-7 tapes has been lifted.

2.10.1 APACHE

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Apache was updated to version V2.4 (2.4.41) and PERL to version V52.4 (5.24.4).

2.10.2 BS2IDE Release 2.9

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- Comparison funktion for file in BS2000 Remote Build Project with his „delegate“
- Output of same details like Variables View in the Expressions View
- The BS2000 Watchpoint could be set also from Expressions View (currently only from Variables View)
- Grouping of RSE filters within user defined folder
- Support of user defined element types
- Declaration of standard editors for any pattern in files

2.11 New functions in BS2000 OSD/BC resp. OSD/XC V11.0B with Service Pack 20.1

2.11.1 POSIX A45

- *5 The DDL module L/DLLGM is available in the LMS library SINLIB.POSIX-BC.xxx.ROOT.
- *5 The copy of the DLL module into the LMS library is no longer necessary.

2.11.2 WebTA für OSD V7.5C

- *5 - Single Sign On possible with Kerberos Authentication Protocol
- *5 - Support of Rest/JSON interface

2.11.3 BS2IDE Release 2.10

- *5 - RSE Plugin is no longer necessary
- *5 - Code Folding for (Columbus) Assembler and SDF Editor
- *5 - Code completion for SDF editor
- *5 - Optional saving and reuse of Code Folding State
- *5 - Manual migration of old RSE projects and connections
- *5 - Jumping to declaration of locally defined labels in BS2000 Assembler Editor
- *5 - Improvements and bug fixes

2.12 Implemented change requests / extended commands

2.12.1 Improvements in Pubset Management

- Extended command SET-PUBSET-ATTRIBUTES
The command SET-PUBSET-ATTRIBUTES was extended by the function ALTERNATE-MASTER.
The parameter defines if the BACKUP-MASTER can carry out a MASTER-import in case there is no MASTER, or if it is necessary to wait until the designated MASTER becomes active.
The parameter can accept the values *NONE or *BACKUP-MASTER.
As previously, *NONE means that it is necessary to wait for the MASTER.
- Extended options for the following commands
FORCE-PUBSET-EXPORT: Record keeping at the console
SHOW-PUBSET-IMPORT-EXPORT: Status information for CCOPY and Net-Storage

2.12.2 Extensions of PAGING-AREA commands

- The commands for administration of the paging area were extended in the operand *VOLUME. As of OSD/BC V11.0 in the operand *VOLUME also the catid of a pubset can be specified, beside the VSN of a pubset volume.
- In the command CREATE-PAGING-FILE the value range of the operand SIZE was increased. A single paging file can have a size up to 2 TB in OSD/BC V11.0.

2.12.3 Equalization of saturation levels for the paging area

So far, the threshold of free 4K-pages in the paging area was set at 0 – 3 (saturation level). Upon reaching level 2 or 3 batch or dialog tasks were suspended at class 6 memory requirements, for TP tasks the request was rejected.
The two new MEMORY parameters, PAGING-SATURATION-WARNING-LIMIT and PAGING-SATURATION-LIMITS-QUOTA, allow the configuration of the threshold values for the saturation levels and the minimum number of free pages. (see chapter 3.4)

2.12.4 Installation of SANCHECK on SU /390

If the new version OSD/BC V11.0 is installed in the monitoring or the native system of SU /390, SANCHECK does no longer need to be installed to allow establishing the FC configuration for the FC networks in SE manager. The required data is gathered by a new interface in BS2000.

2.12.5 Program interface for SHOW-MEMORY-POOL-STATUS

The functionality of the command SHOW-MEMORY-POOL-STATUS is available as of OSD/BC V11.0 at program level in the form of a new macro SHOWMP. SHOWMP or SHOW-MEMORY-POOL-STATUS provides information about currently created memory pools and the active participants.
The output from SHOW-MEMORY-POOL-STATUS is also possible in OPS-variable (S variable).

2.12.6 Extension of the command MODIFY-MEMORY-PARAMETERS

The command was extended by the operand EXTEND-BIG-PAGES.
By this, performed reducing of big pages can be undone.

2.12.7 Support of OPS variables for SHOW commands in the memory mangement

The SHOW commands of the memory management

SHOW-ADDRESS-SPACE-STATUS
 SHOW-MEMORY-CONFIGURATION
 SHOW-MEMORY-POOL-STATUS
 SHOW-PAGING-CONFIGURATION

support the output in OPS variable (S variable) in OSD/BC V11.0.

2.12.8 Enhancements in operating

- The number of logical consoles has been increased from 192 to 512. The number of consoles with a fixed permission name has been extended from 63 to 384.
- To limit the output the command SHOW-CONSOLE-STATUS has been extended in the parameter *ALL by the selection criteria TYPE and STATE.

2.12.9 Display of Last Byte Pointer (LBP)

The Last Byte Pointer shows for PAM files the last valid byte of the last logical block. This file attribute was introduced in BS2000 with correction package 2/14.

In OSD/BC V 11.0 this file attribute is displayed to the user of the command SHOW-FILE-ATTRIBUTES and can be specified as a selection criterion.

2.12.10 Other implemented Change Requests

- System parameter CONSDDE7
 The system parameter CONSDDE7 can be changed dynamically. CONSDDE7 defines, if the message DMS0DE7 is displayed only on SYSOUT or also on the control station.
- System parameters PWACTIVE, PWENTERD, PWERRORS, PWPENTI
 As of OSD/BC V11.0 these system parameters can be changed dynamically by MODIFY-SYSTEM-PARAMETER. The system parameters define system behavior regarding file passwords.
- New message NSI00BF
 In case a system parameter file contains an invalid system parameter, the message NSI00BF is displayed and the startup is continued without input request.
- New function in DAMP
 There is a new function COMPILE-PROCEDURE in DAMP for compiling PRODAMP procedures. The function can be retrieved in the dialog in DAMP as well as in SDF procedures or batch jobs.
- Dialog startup issue NSI1126 removed
 Since now, the security query NSI1126 in dialog startup is not required anymore.
- New system user IDs: SYSDB, SYSFJAM, SYSSAG
 As of OSD/BC V11.0 SYSDB, SYSFJAM and SYSSAG are system user IDs. System user IDs are automatically created during creation of a new pubset.

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2.12.11 New features in SYSFILE management

- Notification of lack of storage space on console
If logging to a file is not possible due to lack of disk space, logging is terminated and the new error message SSM2076 is displayed on the console in OSD/BC V11.0. If MAREN was active, so far only the error message SSM2033 was displayed and the logging was terminated in case no tape devices were available.
- Disk space usage through system files
So far, the system files were not taken into account in the user's disk space consumption. As a result, it can happen that a normal user fills the entire pubset. With the new system parameter SSMPNOQ it can be determined, if the system files should be treated as normal files or taken into account of the user's disk space consumption. In this case the new message SSM2078 instead of SSM2035 is displayed when reaching the disk space limits.
- Maximum number of link names for SYSFILE
If the maximum number of link names for SYSFILE has been reached for a task, the task is terminated and the new notification SSM2077 is displayed.

**2.12.12 Implemented change requests / Extended commands with Correction
Package 1/2018**

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

2.12.13 Implemented change requests / Extended commands with Service Pack 19.1

- *3 Extended commands/macros
 *3 - Introduction of new file attribute (NUM-OF-BACKUP-VERS):
 *3 Extensions in CMS and in some DMS commands/macros for creation of files and
 *3 display or modification of file attributes (affected among other things CREATE-FILE,
 *3 SHOW-FILE-ATTR, MODIFY-FILE-ATTR, COPY-FILE).
 *3 Other implemented Change Requests
 *3 - The message EXC0070 is extended by the User ID and the Job name of the affect-
 *3 ed task: "EXC0070 BATCH JOB WITH TSN: , USER ID: AND JOB NAME: HAS
 *3 REACHED TIME RUNOUT".

2.12.14 Implemented change requests / Extended commands with Service Pack 19.2

- *4 CONV2PDF V1.0C
 *4 Extended file selection when converting text files to PDF
 *4 POSIX-BC V11.0A45
 *4 Extension of the number of characters in EXEC-POSIX-CMD up to 1500

2.12.15 Implemented change requests / Extended commands with Service Pack 20.1

- *5 Extended commands/macros
- *5 With the new SDF- instructions in NET-SNMP V5.7A20
- *5 START-NET-SNMP
- *5 STOP-NET-SNMP
- *5 RESTART-NET-SNMP
- *5 SHOW-NET-SNMP-STATUS
- *5 the status of the NET-SNMP agent can be controlled and its state can be output.

- *5 POSIX-BC V11.0A45
- *5 The DLL module is also available in the LMS library.

3 Technical information

3.1 Resource requirements

Compared to BS2000 OSD/BC V10.0, the additional CPU requirements in OSD/BC V11.0 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 V11.0 depends on the BS2000 server model and has not changed in comparison to BS2000 OSD/BC V10.0. The values for the previously released servers are in the BS2000 Performance Handbook OSD/BC V11.0.

There are no exact values available regarding additional static and dynamic requirements.

The installation-related resource requirement must be clarified with the regional service before making the version change.

Disk memory requirements

The SOLIS2 delivery for the entire OSD Extended Software Configuration requires approx. 2 500 000 PAM pages (monomodal) and 5 000 000 PAM pages (multimodal). The space requirement for the system files (PAGING area, TSOSCAT, CONSLOG, SERS-LOG, etc.) must also be planned

3.2 Software configuration

3.2.1 FUJITSU Server BS2000 SE Series

Software components

The following software products are part of an SE Server and are supplied together with the server without having to be ordered by the customer. The installation happens during the assembling at FUJITSU. Error corrections or function extensions are always installed remotely or on-site by the HW-Service.

- M2000 as of V6.2SP1 for SE300/ SE300B/ SE500/ SE500B/ SE700/ SE700B (installed on all Management Units)
- HNC as of V6.2SP1 for SE500/ SE500B SE700/ SE700B (installed on all HNC Units)
- X2000 as of V6.2SP1 for SE300/ SE300B (installed on the Server Units)
- M2000 as of V6.3 for SE710/ SE310 (installed on all Management Units)
- HNC as of V6.3 for SE710 (installed on all HNC Units)
- X2000 as of V6.3 for SE310 (installed on the Server Unit)
- StorMan as of V7.0 (installed on the Management Unit)

Optional extensions with SE Manager or X2000 dependencies

- The version of openSM2, ROBAR-SV, openUTM depends on the M2000 version. More information can be found in the release note of M2000.

SW prerequisites for SUs: operating system and additional SW products

- BS2000 OSD/XC V11.0 can be operated in native mode or as a guest system under VM2000 on the SE Server.
- VM2000
 - For SE300/SE300B/SE500/SE500B/SE700/SE700B
 - as monitor system under VM2000 as of V11.0
 - as guest system under VM2000 as of V11.0
 - For SE310 und SE710
 - as monitor system under VM2000 as of V11.5
 - as guest system under VM2000 as of V11.5
 - VM2000 as of V11.5 with Live migration
- If SHC-OSD is used, at least SHC-OSD V12.0 must be used.

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3.2.2 SW configuration for BS2000 OSD/BC resp. OSD/XC V11.0

The following SOLIS correction versions in the initial version are a prerequisite for installing OSD/BC V11.0B:

BS2000 OSD/BC V10.0 as of correction version A71

BS2000 OSD-BC V11.0A as of correction version A08 (correction package 1/2018)

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Important note:

If there is data exchange with BS2000 OSD/BC < V11.0 (for example via RFA, shared Pubset, import/export of pubsets), **correction version A71** must also be installed on these partners. With older correction versions pubsets, which have been imported in OSD/BC V11.0, can no more be imported in BS2000 OSD/BC V10.0

When deploying OSD/BC V11.0, numerous new versions of the software products must also be implemented.

The following table shows the version required for use under BS2000 OSD/BC V11.0.

Released software configurations require product versions, which not yet reached end of maintenance.

The actual supported software configuration is also available online

[Inform: Software configuration BS2000 OSD/BC V11.0 and V10.0](#)

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<u>Product</u>	<u>Version</u>	
AID	V3.4	
ASSEMBH	V1.3	
AVAS	V8.5	
*4 C/C++	V3.2 / V4.0	
COBOL85	V2.3	
*2 COBOL2000	V1.5 / V1.6	
COLUMBUS85	V1.1	
*4 CRTE	V10.0 / V10.1 / V11.0 / V11.1	
DAB	V9.5	
Distributed Print Services	V1.2	
DRIVE	V3.1	
DRIVE-COMP	V3.1	
DRV	V3.2	
EDT	V17.0D20	(Support SAM node files)
ESQL-COBOL	V3.0	
FDDRL	V20.0	
FHS	V8.3	
FMS	V2.4	
FOR1	V2.2	

	HIPLEX MSCF	V11.0	
*4	HSMS	V11.0 / V12.0	(ARCHIVE included)
	IFG	V8.3	
	interNet Services	V3.4B	
	JV	V15.1B	
	LEASY	V6.2	
	LMS	V3.5B	(Support SAM node files)
	MAREN	V12.5	
	NFS	V3.0	
	OMNIS	V8.5	
	OMNIS-MENU	V3.5	
*2	openFT (BS2000)	V12.0 / V12.1	
*2	openFT-AC (BS2000)	V12.0 / V12.1	
*2	openFT-CR (BS2000)	V12.0 / V12.1	
*2	openFT-FTAM (BS2000)	V12.0 / V12.1	
*2	openFT-FTP (BS2000)	V12.0 / V12.1	
	openNet Server	V4.0	
*4	openUTM (BS2000)	V6.4A10 ¹ / V6.5 / V7.0	
*4	openUTM-CLIENT (BS2000)	V6.4 / V6.5 / V7.0	
*4	openUTM-CRYPT (BS2000)	V6.4 / V6.5 / V7.0	
	openSM2 (BS2000)	V11.0	
	(also includes COSMOS)		
	Oracle	11g Release 2	
	OSS (BS2000)	V4.1	
	PASCAL-XT	V2.2	
	PLI1	V4.2	
	PCS	V3.2	
	PERCON	V2.9C	
	PROP-XT	V1.3	
	RFA	V20.0	
*4	ROBAR	V7.5 / V7.6	
	RPG3	V4.0	
	RSO	V3.6	
	SBA-BS2	V6.2	
	SCA	V20.0	
	SDF-A	V4.1	
	SDF-P	V2.5	
*2	SECOS	V5.4 / V5.5	
*3	SESAM/SQL-Server	V8.0 / V9.0 / V9.1	
*3	SESAM/SQL-DCN	V8.0 / V9.0 / V9.1	
*3	SESAM/SQL-LINK	V8.0 / V9.0 / V9.1	
*5	SHC-OSD	V12.0 / V13.0 / V14.0	
	SM2-PA	V2.0	
*5	SNMP-AGENTS	V1.0 / V1.1	
	SORT	V8.0	
	SPACEOPT	V8.0	
	SSA-OUTM-BS2	V5.0	
	SSA-SM2-BS2	V5.0	
	SSC-BS2	V6.0	
	TASKDATE	V20.0	
	TIAM	V13.2	
	TOMDOORS-M	V5.0	
	TOM-DOC	V3.2	
	TOM-GEN	V2.1	
	TOM-REF	V3.0	
	TOM-TI	V3.0	
*1	UDS-D	V2.8 / V2.9	
*1	UDS/SQL	V2.8 / V2.9	
	UDS-IQS	V4.0	

VM2000	V11.0 / V11.5	(SE Servers. LM requires V11.5)
WebTransactions for openUTM	V7.5	

¹⁾ **Important note:**

OSD/BC V11.0 can be operated as of **openUTM V6.4A10**.

openUTM V6.4A10 contains the connection module for OSD/BC V11.0, functional extensions compared to openUTM V6.4A00 are not implemented.

The subsystems openUTM V6.2A and V6.3A can no more be created.

3.3 Product installation

The installation must be implemented with the installation monitor 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:

*4 The subsystem CRTEBASY of the product CRTE-BASYS V11.1 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.

*4 Alternatively, using the SYSSSC file with the ending LOW (SYSSSC.CRTE-BASYS.111.LOW), the subsystem can be loaded with less than 16 MB in class 4 memory if there is sufficient space available.

*4 IMON also copies the modules IC@RTSXS, IC@STLNK and IC@ULINK from the library SYSLNK.CRTE-BASYS.111.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

- at least one BCMAP entry for port number 1156. A second entry may exist in case a 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.

*3 This configuration should remain unchanged afterwards.

C2H

By means of C2H (Configuration to HTML) the configuration-, status- and diagnose information as well as important system files of a BS2000 system can be automatically written into a HTML-File. After the transfer to a PC the generated HTML file can then be displayed after transfer to a PC with a web browser.

*3 C2H is installed in the userid \$TSOS and is intended for use by FUJITSU technical support.

*3 The library \$TSOS.SYSPRC.C2H.010 contains everything needed for C2H in BS2000. C2H now supports SDF commands for the first time.

*3 The SHOW-C2H-CMD command lists all commands available for C2H and BS2HC (BS2000 System Health Check).

*3 BS2HC can be used to proactively detect vulnerabilities and deficiencies in BS2000 systems. The following items are checked:

- *3 - Whether the correction state of the installed software is up to date
- *3 - Corrections (Rep, Source) reported by HotInfo are in use
- *3 - User and system address space validation

*3 The following data is collected from each local customer system.

- *3 - Installed Software Products SHOW-SUPPLY-UNITS
- *3 - REP information (all Subno's from the installed Replibes and the Replug)
- *3 - SYSTEM Information (SHOW-SYST-INF)
- *3 - Information on the user/system address space

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

*3 You will receive the result of the System Health Check by e-mail. The System Health Check should be performed regularly (e.g. every 3 months) or after a major configuration change.

*3 For detailed information on C2H and BS2HC, please refer to the README file contained in the ZIP archive \$TSOS.SPCDAT.C2H.010.ZIP.

*3 Transfer the file \$TSOS.SPCDAT.C2H.010.ZIP with openFT(BS2000) or with ftp in binary mode to your PC in any folder.

Privileged subsystems:

Privileged subsystems for OSD/XC V11.0 are supplied in all HSI versions. The appropriate version is automatically implemented when installing the delivery units with IMON and when loading the subsystems with DSSM.

Non-privileged subsystems:

Most non-privileged subsystems are supplied in the /390 variant and run on SE Servers (x86) under OSD/XC in /390 mode under the /390 firmware. Some subsystems that run as non-privileged systems are also available in HSI-dependent form and then executed directly on the CPU.

Insofar as no other default settings are installed, the HSI-dependent version is used when loading the subsystems with DSSM.

Emergency system:

The Server Units are delivered with an already pre-installed emergency system. This emergency system can be used for IPL. It should only be used for installation and diagnose reasons and not for normal customer operations.

3.4 Product use

A version change to OSD/BC V11.0 is possible based on the BS2000 versions BS2000/OSD-BC V9.0 and BS2000 OSD/BC V10.0. With all the older BS2000 versions, there must be an initial installation for OSD/BC V11.0. With the shared pubset network via MSCF configurations are possible with BS2000 OSD/BC V10.0 as of change version A61.

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

Note: emulated tape devices:

On SE Servers SU /390 both the CD/DVD drive and the EMFILES on the Management Unit (MU) are supported.

On SE Servers SU x86 both the CD/DVD drive and the EMFILES on the Server Unit (SU) are supported.

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.

CALENDAR:

The public holiday file (file for managing public holidays) must be created by system support from the sample file \$TSOS.SYSDAT.CALENDAR.200.HOLIDAY or from an earlier public holiday file:

```
/COPY-FILE FROM-FILE=$TSOS.SYSDAT.CALENDAR.200.HOLIDAY,  
TO-FILE=$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 V20.0 can only create IPL-compatible pubsets for OSD/BC V11.0 (= 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 V9.0 or BS2000 OSD/BC V10.0

Parameter service:System parameters

The following system parameters have been supplemented:

- ISBLKCTL
As of OSD/BC V 11.0 ISAM files should be created on key disks by default as NK IS-AM files. This is controlled by the new system parameter ISBLKCTL. The parameter accepts both NONKEY and PAMKEY values. The default value is NONKEY.
- NETCODE
OSD/BC V11.0 supports also text files (SAM) on Net-Storage. NETCODE defines a standard net coded character set. The value is taken in the user entry when a user is created (ADD-USER).
The default value for NETCODE is *ISO. If the user creates SAM node files, they receive by default the net coded character set from the user entry.
- SSMPNOQ
SSMPNOQ determines, if the system files are included or not in user's PUBLIC-SPACE-LIMIT.
The system parameter can take the value YES or NO. The default value is YES, which means that the system files are, as before, **not** included in user's PUBLIC-SPACE-LIMIT. The system parameter can be changed dynamically.
- *3 - NUMBACK
*3 As of OSD V11.0B a new system parameter NUMBACK is introduced.
*3 This system parameter defines a default value for the new file attribute
*3 NUM-OF- BACKUP-VERS, if a file is created without explicitly specifying the
*3 attribute.
*3 The system parameter can take the values 0-32. The default value is 0.
*3 The system parameter can be changed dynamically.

The following system parameters no longer apply:

- NBLDADMP
The system parameter determined, if operands of DADM command containing passwords are also logged in CONSLOG. With the elimination of the DADM command the system parameter NBLDADMP is also redundant and therefore no longer offered in OSD/BC V11.0.
- CCPUNORM
The system parameter CCPUNORM has no longer been evaluated since BS2000/OSD-BC V5.0 and from BS2000 OSD/BC V11.0 it is no longer offered. CCPUNORM determined how the CPU time consumption on SR2000 systems was measured.

- DELLOGLN
The system parameter allowed overwriting ADD-PASSWORD/REMOVE-PASSWORD on certain data stations. These stations are, however, no longer used. As of BS2000 OSD/BC V11.0 this parameter is no longer offered.

The following system parameters have been modified:

- None -

Changes in the parameter records:

Parameter set: MEMORY:

- PAGING-SATURATION-WARNING-LIMIT
Through the parameter PAGING-SATURATION-WARNING-LIMIT a threshold value can be defined for display of notification EXC0873 level 1, which is bigger than the one for level 2. The parameter can be specified in units of 4KB or 1MB. At present the default value for paging saturation level 2 is 256 free 4K pages.
For larger values both below notifications are displayed additionally:
EXC0873 NEW PAGING MEMORY SATURATION LEVEL = 1
EXC0873 NEW PAGING MEMORY SATURATION LEVEL = 0
The specified threshold is related to the number of unreserved pages of the paging area (= difference between the total size and the reserved size of the paging area).
- PAGING-SATURATION-LIMITS-QUOTA
Through parameter PAGING-SATURATION-LIMITS-QUOTA threshold can be changed for display of notification EXC0873 level 2, 3 and 0, so that the notification EXC0873 for level 2 and 3 is displayed earlier and for level 0 later than it is defined in the default settings.
The input is in % and can accept the range of values $100 \leq <n> \leq 1638500$ in %.

Parameter set VM2000

The default value for the VM2000 version in the VM2000 parameter set is VERSION=V11.5.

OSD/BC V11.0 is used as monitoring system and should use a VM2000 version different from VM2000 V11.5, then this has to be specified explicitly.

3.4.1 Test and diagnostics

The products DAMP and AID are available for the testing and diagnosis of non-privileged customer programs.

3.4.2 Startup/shutdown

System initiation FUJITSU Server BS2000 SE Series

System initiation can be implemented via the SE Manager.

The following steps are necessary (see Manual "FUJITSU Server BS2000 SE700/ SE500/ SE300, operation and administration"):

Under "*Systems*", select the appropriate SU and then select the tab "*BS2000 operation mode*".

- The current operating mode is displayed in the work area and, if necessary, can be switched via the action icon.
- In native mode: click on the action icon "*BS2000 IPL*" in the work area under "*Server Unit ... BS2000:actions*".
- In VM2000 mode: Select the required VM under "*Systems*" and click on the action icon "*BS2000 IPL*" in the work area under "*Server Unit ...: BS2000-VM:actions*".

The following also applies for the Server Unit SU /390:

Alternatively, the IPL can also be initiated on an SVP console of the Server Unit via *SVP* commands.

3.4.3 Use of VM2000

When backing up data with HSMS/ARCHIVE, please note that the CPU requirement for the local backup in BS2000 is approx. 1 RPF for a throughput of 1 MB/second. If the complete CPU performance is not available during backup, e.g. because the CPU utilization on the guest system is restricted (MAX-CPU-UTILIZATION), a low throughput to the magnetic tape device must be expected.

3.4.4 Hardware generation

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

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

Specifics for server units /390 of the SE Servers

- as of BS2000 OSD/BC V11.0 only peripheral devices are supported, that are connected via channel type FC.
- the channel numbers 00 and 01 are reserved for the internal channel FCLINK
- for the connection of MU and HNC the channels are predetermined. During the installation talk with the service, the channels needed will be reserved, dependant of the configuration of the MUs and HNCs.
- for logic controllers with identical WWPN overlapping of LUNs is allowed. The message NGC0A59 is no more displayed.
- virtual consoles at a virtual type S-channel must be defined with **MODE CNC** and channel number **FE**, if a new generation is required.

3.5 Cancelled (terminated) functions

Information on the discontinued and cancelled functions of the SW products included in the OSD/XC package can be found in the product-specific release notes.

The following functions and products in OSD/BC are no longer supported as of this version:

- SLED on tape
The function of output a SLED to a physical tape is no longer supported as of OSD/BC V11.0. SLED can still be output to an emulated tape (EMTAPE), provided that the emulated tape is initialized with a standard label that can be read by the BS2000.
- SIR: copy from tape
The SIR function "copy from tape" is not supported any longer as of OSD/BC V11.0.
- JMP statement CONVERT-JOBPOOL into formats BS2000/OSD-BC < V3.0
With the JMP statement CONVERT-JOBPOOL it is possible, to generate a new jobpool file from the actual jobpool file for a newer or older version of the operating system. As of BS2000/OSD-BC V11.0 conversion into a format for BS2000/OSD-BC V1.0 or V2.0 is no more supported.
- FIRST
FIRST is used for offline initial installation of the so-called starter kit on /390 servers. In case of SU x86 and SU /390 of SE Server the installation is performed uniformly via a standby pubset.
FIRST is, therefore, no longer delivered with OSD/BC V11.0. In BS2000 OSD/BC V10.0 FIRST is still available.
- Support of Global Store (GS)
OSD/BC V11.0 does not support Global Store any longer. Both delivery groups GSVOL and GSMAN are therefore, no longer delivered with OSD/BC V11.0.
- Access method ADAM
The access method ADAM allows use of devices, which are not supported by the logical access methods of BS2000. Most recently ADAM was only used by the service to read out error information on the SVP hard disk. As the service does not need this function any longer, the release unit ADAM is not delivered with OSD/BC V11.0 anymore and the SVCs 46 and 115 are deactivated.
- HPC-BS2
The product HPC-BS2 was used for quick communication during offloading and was available only for special release. In the meantime, the performance was improved by optimization in BCAM. HPC-BS2 is, therefore, no longer delivered with BS2000 OSD/BC V11.0.
- SPACEPRO
SPACEPRO is no longer delivered as integral part of OSD/BC V11.0 and the related commands are withdrawn. SPACEPRO allowed monitoring the storage space capacity of pubset and, if needed, an automatic extension of the pubset.
- TOMCAT
APACHE TOMCAT in BS2000 is a porting of TOMCAT 5.5.26 and is technically only executable up to JENV V6.0. This version, however, cannot be applied in OSD/BC V11.0. Therefore, as of BS2000 OSD/BC V11.0 TOMCAT is no longer delivered as an integral part of APACHE.

- WARTOPT
WARTOPT allows monitoring of the user ID \$SERVICE and the execution of special service functions. As the service does not use this functionality anymore, WARTOPT is no longer delivered with OSD/BC V11.0 and SVC 48 is deactivated.
- Shared Private Disk (SPD)
Shared Private Disks are connected via channel type S. Channel type S is no longer supported by OSD/BC V11.0. Therefore, support of Shared Private Disks (SPD) was cancelled.

The following functions in OSD/BC are supported for the last time as of this version:

- OSD/BC V11.0 is the last version to support user PFA (user-controlled Performant File Caching). The related commands (such as START-PUBSET-CACHING) are, therefore, also available for the last time in OSD/BC V11.0.
- *1 - OSD/BC V11.0 is the last version to support the usage of BS2000 snapset at the
*1 SRDF target of Dell EMC storage systems with release unit CCOPY V10.0A and up
*1 to and including SHC-OSD V12.0.

3.5.1 Cancelled macros

- None -

3.5.2 Cancelled commands

As of BS2000 OSD/BC V11.0 all commands of the cancelled functions/products are omitted.

- All commands in support of SPACEPRO
MODIFY-PUBSET-SPACEPRO-OPTIONS
MODIFY-SPACEPRO-PARAMETERS
MOVE-SPACEPRO-DISK
SHOW-PUBSET-SPACEPRO-HISTORY
SHOW-PUBSET-SPACEPRO-OPTIONS
SHOW-SPACEPRO-STATUS
SIMULATE-SPACEPRO-EVENT
START-SPACEPRO-MONITORING
STOP-SPACEPRO-MONITORING
- All commands in support of Global Store
ATTACH-GS-UNIT / DETACH-GS-UNIT
CONNECT-GS-SERVER / DISCONNECT-GS-SERVER
COPY-GS-PARTITION
CREATE-GS-COMPLEX
CREATE-GS-PARTITION / DELETE-GS-PARTITION
CREATE-GS-VOLUME / DELETE-GS-VOLUME
FORCE-DESTROY-GS-PARTITION
MODIFY-GS-COMPLEX
MODIFY-GSMAN-PARAMETERS
SHOW-GS-COMPLEX-CONFIGURATION
SHOW-GS-STATUS
SHOW-GS-VOLUME-ATTRIBUTES
START-GS-TRACE / STOP-GS-TRACE

3.6 Incompatibilities

- None -

3.7 Restrictions

- Restrictions, which affect the operating concept of the SE Server or X2000, are included in the Release Notices for X2000, M2000 and HNC

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.

Diagnostic files in M2000/X2000/HNC

Exact description of the error situation and specification determining whether and how the error can be reproduced.

The service engineer can use the command `save_diagnostics` to create diagnostic files. The administrator or operator can use the SE Manager with *Hardware* → *Server* → (MU) → *Service* → *Diagnostics* → „create new diagnostic data“.

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 and so on.

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).

3.9 Performance information

Fundamental statements about performance are in the BS2000 performance manual. It is available online at <https://bs2manuals.ts.fujitsu.com/>. (see Concept Descriptions)

*3

Important server information is available in the following sections:

- Section 6: Performance behavior of the server
- Section 7: Performance behavior of the peripherals
- Section 9: Performance aspects with VM2000 operation
- Appendix: Values for the BS2000 servers

4 Hardware support and firmware versions

Note: Released configurations always require hardware, which currently not yet reached end of maintenance.

4.1 FUJITSU Server BS2000

OSD/BC V11.0 runs on all models of the FUJITSU servers BS2000 of the SE Serie. The memory configurations of the **SE models** are in the following tables:

4.1.1 Supported FUJITSU Server BS2000 SE Series

SE Series:

- | | | |
|----|--|---|
| *3 | - SE710 | with SU /390 with 16Gbit/s FC channel and optional Application Units (AU) x86 *) |
| *3 | - SE700/ SE700B | with SU /390 and optional 1-2 SU x86 and Application Units (AU) x86 *) |
| | - SE500 ^{s)} / SE500B ^{s)} | with SU /390 and optional 1-2 SU x86 and Application Units (AU) x86 *) |
| *3 | - SE310 | with SU x86 and optional Application Units (AU) x86 *) |
| | - SE300/ SE300B | with SU x86 and optional 1 or 2 additional SU x86 units and Application Units (AU) x86 *) |

*) see Release Notice M2000

s) available as special release only

Following HCP versions (Hardware Control Program) at least must be installed

- | | | |
|----|-------------------|---|
| *3 | - E90L01G-03X+040 | for SU /390 on SE Server SE700(B)/ SE500(B) |
| *3 | - E92L01G-01P+092 | for SU /390 on SE Server SE710 |

The HCP version or SE base software required for OSD/BC V11.0B can be obtained via the regional Service.

Basic configuration: SE710

Modell	BS2000-CPU ¹⁾	System-boards	Main Memory [GB] in basic configuration	Max. phys. Main Memory [GB]	number of FC-channel/ number of CHE-Box in basic configuration ^{3) 4)}	Number of IOPs
SE710 - 10A	1	1	4	128	14/2	2
SE710 - 10B	1	1	6	128	14/2	2
SE710 - 10C	1	1	6	128	14/2	2
SE710 - 10D	1	1	8	128	14/2	2
SE710 - 20A	2	1	8	128	14/2	2
SE710 - 20B	2	1	8	128	14/2	2
SE710 - 20C	2	1	12	128	14/2	2
SE710 - 20D	2	1	12	128	14/2	2
SE710 -30	3	1	24	128	14/2	2
SE710 -40	4	1	24	128	14/2	2
SE710 -50	5	1	32	128	14/2	2
SE710 -60	6	1	32	128	18/3	2
SE710 -70	7	1	48	128	18/3	2
SE710 -100	10	2	48	256	22/3	2
SE710 -120	12	2	48	256	22/3	2
SE710 -140	14	2	64	256	22/3	2
SE710 -150	15	2	64	256	22/3	2
SE710 - 160 ²⁾	16	2	64	256	22/3	2

1) In addition all SE710 models are equipped with a spare processor ("Hot Spare CPU").
(except SE710 -160)

2) Available as special release only

3) The maximum number of FC channels is 126

4) Each MU and each HNC are occupying at least 1 FC

Basic configuration: SE700/ SE700B

Model	Number of BS2000 processors ¹⁾ .	Number System boards ²⁾	HSP (GB) in basic configuration	Number of channel boxes ³⁾	FC channels ³⁾
SE700 -20	2	1	12	2	14
SE700 -30	3	1	16	2	14
SE700 -40	4	1	20	2	14
SE700 -50	5	1	24	2	14
SE700 -60	6	1	32	3	18
SE700 -70	7	1	32	3	18
SE700 -100	10	2	48	3	22
SE700 -120	12	2	48	3	22
SE700 -140	14	2	64	3	22
SE700 -150	15	2	64	3	22
SE700 -160 ⁴⁾	16	2	64	3	22

- 1) All SE700 models are also equipped with a spare processor ("Hot Spare CPU")
- 2) Each system board has 2 IOPs, up to 8 BS2000 CPUs and up to 128 GB main memory.
- 3) Up to 8 channel modules, each with 2 FC channels can be installed in each channel box; exception: the first slot in the first channel box is used by the system. Up to 8 channel boxes and up to 126 FC channels can be configured in an SE700.
- 4) Available as special release only.

Basic configuration: SE500/ SE500B

Model	Number of BS2000 processors ¹⁾ .	Number of system boards ²⁾	Main memory (GB) in the basic configuration	Number of channel boxes ³⁾	FC channels ³⁾
SE500 -10A	1	1	2	2	10
SE500 -10B	1	1	4	2	10
SE500 -10C	1	1	4	2	12
SE500 -10D	1	1	4	2	12
SE500 -10E	1	1	6	2	12
SE500 -20B	2	1	6	2	12
SE500 -20C	2	1	8	2	14
SE500 -20D	2	1	8	2	14
SE500 -20E	2	1	8	2	14
SE500 -30E	3	1	12	2	14
SE500 -40E ⁴⁾	4	1	16	2	14

- 1) All SE500 models except SE500-40E are also equipped with a spare processor ("Hot Spare CPU")
- 2) The system board has 2 IOPs, up to 4 BS2000 CPUs and up to 64 GB main memory.
- 3) Up to 8 channel modules, each with 2 FC channels can be installed in each channel box; exception: the first slot in the first channel box is used by the system. Up to 6 channel boxes and up to 94 FC channels can be configured in an SE500.
- 4) Available as special release only.

Basic configuration: SE310

Modell	BS2000-CPU's	E/A-CPU's (Cores) in basic configuration	Processor-chips / Cores in basic configuration	Main Memory [GB] phys / only for BS2000 ¹⁾	Default Main Memory for BS2000 incl. JIT [GB] ¹⁾
SE310 - 10R	1	16	4 / 64	128 / 67	16
SE310 - 10	1	16	4 / 64	128 / 67	16
SE310 - 20	2	16	4 / 64	128 / 67	24

- 1) If several guest systems are used on SU310, the memory of the basic configuration must be suitably extended. When dimensioning a memory extension, the fact that approx. 25% of the memory, but at most 16 GB, is used by the SU310 firmware and about 40% of the rest for BS2000 guest systems is needed for the JIT should be taken into account. Thus, the BS2000 net memory is about 45% of the total memory. The really used memory (incl JIT) by BS2000 native or guest systems is configured in X2000. The model dependent default value can be found in the right column, it can be the maximum of the BS2000 memory but may not exceed the upper limit of 496 GB.

Basic configuration: SE300

Model	BS2000 CPUs	Processor chips / cores	Main memory (GB) complete / for guest systems / BS2000 without JIT	Max. total main memory ¹⁾ (GB)	PCIe Slots
SE300 -10A	1	2 / 24	32 / 24 / 14.4	736	4
SE300 -10B	1	2 / 24	32 / 24 / 14.4	736	4
SE300 -10C	1	2 / 24	32 / 24 / 14.4	736	4
SE300 -10D	1	2 / 24	32 / 24 / 14.4	736	4
SE300 -10E	1	2 / 24	32 / 24 / 14.4	736	4
SE300 -10F	1	2 / 24	32 / 24 / 14.4	736	4
SE300 -20A	2	4 / 48	64 / 48 / 28.8	1472	10
SE300 -20F	2	4 / 48	64 / 48 / 28.8	1472	10
SE300 -30F	3	4 / 48	64 / 48 / 28.8	1472	10
SE300 -40F	4	4 / 48	64 / 48 / 28.8	1472	10
SE300 -50F	5	4 / 48	64 / 48 / 28.8	1472	10
SE300 -60F	6	4 / 48	64 / 48 / 28.8	1472	10
SE300 -80F	8	4 / 48	64 / 48 / 28.8	1472	10
SE300 -100F	10	4 / 48	96 / 80 / 48	1504	10
SE300 -120F	12	4 / 48	96 / 80 / 48	1504	10
SE300 -160F	16	4 / 48	96 / 80 / 48	1504	10

- 2) If several guest systems are used on SU300, the memory of the basic configuration must be suitably extended. When dimensioning a memory extension, the fact that approx. 25% of the memory, but at most 16 GB, is used by the SU300 firmware and about 40% of the rest for BS2000 guest systems is needed for the JIT should be taken into account. Thus, the BS2000 net memory is about 45% of the total memory. Each individual BS2000 guest system can be allocated a maximum of 528 GB main memory, so that the upper limit of 512 GB is not exceeded for the BS2000 memory.

Basic configuration: SE300B

Model	BS2000 CPUs	Processor chips / cores	Main memory (GB) complete / for guest systems / BS2000 without JIT ¹⁾	Max. total main memory ²⁾ (GB)	PCIe Slots
SE300B -10A	1	2 / 36	32 / 24 / 14,4	2976	4
SE300B -10B	1	2 / 36	32 / 24 / 14,4	2976	4
SE300B -10C	1	2 / 36	32 / 24 / 14,4	2976	4
SE300B -10D	1	2 / 36	32 / 24 / 14,4	2976	4
SE300B -10E	1	2 / 36	32 / 24 / 14,4	2976	4
SE300B -10F	1	2 / 36	32 / 24 / 14,4	2976	4
SE300B -20A	2	4 / 72	64 / 48 / 28,8	2880	10
SE300B -20F	2	4 / 72	64 / 48 / 28,8	2880	10
SE300B -30F	3	4 / 72	64 / 48 / 28,8	2880	10
SE300B -40F	4	4 / 72	64 / 48 / 28,8	2880	10
SE300B -50F	5	4 / 72	64 / 48 / 28,8	2880	10
SE300B -60F	6	4 / 72	64 / 48 / 28,8	2880	10
SE300B -80F	8	4 / 72	64 / 48 / 28,8	2880	10
SE300B -100F	10	4 / 72	96 / 80 / 48	2912	10
SE300B -120F	12	4 / 72	96 / 80 / 48	2912	10
SE300B -160F	16	4 / 72	96 / 80 / 48	2912	10

- 1) If several guest systems are used on SU300B, the memory of the basic configuration must be suitably extended. When dimensioning a memory extension, the fact that approx. 25% of the memory, but at most 16 GB, is used by the SU300B firmware and about 40% of the rest for BS2000 guest systems is needed for the JIT should be taken into account. Thus, the BS2000 net memory is about 45% of the total memory.
Each individual BS2000 guest system can be allocated a maximum of 528 GB main memory, so that the upper limit of 496 GB is not exceeded for the BS2000 memory;
- 2) In the SU300B not more than 512 GB physical main memory is released at the moment otherwise it needs a special release.

4.1.2 Cancelled support

*5 SQ server and S Server

4.2 Console / terminals

4.2.1 Supported consoles

An integrated rack console is used for local administration and operation. The SE Server remote service (with AIS Connect) is provided via the Management Unit (MU).

Virtual consoles are generated for SU /390 via a (virtual) channel type S.

4.2.2 Cancelled support

- None -

4.3 Peripheral types

4.3.1 Supported peripheral types

- **Bus peripherals**

Under OSD/BC V11.0 devices can be operated via local bus connections (bus peripherals) on SE Servers (SU x86). The devices are connected via the SAS interface (Serial Attached SCSI).

*5

The SAS interface is not supported.

- **Fibrechannel**

Peripheral connection is supported via FibreChannel on SE Servers (SU /390 and SU x86).

On SU /390 same as with S-Servers the connection of disk and tape peripherals is supported only via FC switch.

4.3.2 Cancelled support

*5

Channel type S

4.4 FC switches

4.4.1 Supported FC switches

The following Brocade FC switches are supported:

Model designation	Order number
FC-Switch 300 Director DCX 8510	D:FCSW-300L, D:FCSW-300E various order numbers
FC-Switch 6505, 6510, 6520 FC-Switch G610, G620, G630, X6-4, X6-8	

*3

Note:

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

4.4.2 Cancelled support

In OSD/BC V11.0, the following FC switches from Brocade are no longer supported:

Model designation	Order number
Director 48K	D:FCSW-48K various order numbers
Director DCX	various order numbers
Director DCX-4S	various order numbers
FC-Switch 5100	D:FCSW-5100L, D:FCSW-5100E
FC-Switch 5300	D:FCSW-5300L, D:FCSW-5300E

*3

*3

*3

*5

4.5 Disk peripherals

4.5.1 Supported disk peripherals

	FC	SAS	Firmware ⁴⁾ Minimum version	BS2000 disk type ⁵⁾	Remark
*3					
	X		V10L64	D3435 D3475-8F	-
*3	X		V10L82	D3435 D3475-8F	-
*3	X		V10L82	D3435 D3475-8F	-
*3	X		V10L83	D3435 D3475-8F	-
*3	X		V10L82	D3435 D3475-8F	as of SHC-OSD V13.0B as of SE base software V6.2
*3	X		V11L30	D3435	as of SHC-OSD V14.0 as of SE-base software V6.2 SP1
*5	X		V10L82	D3435 D3475-8F	as of SHC-OSD V13.0B as of SE base software V6.2
*5	X		V11L30	D3435	as of SHC-OSD V14.0 as of SE-base software V6.2 SP1
*1	X			D3435	not supported via SHC-OSD only one path connection
*3	X		5977	D3435 D3475-8F	-
*3	X		5977	D3435 D3475-8F	as of SHC-OSD V12.0A01
	X		5876	D3435 D3475-8F	-
	X		5876	D3435 D3475-8F	-
		SU 300(B)		D3475-8F	not supported via SHC-OSD

SFG Special release

Technically not possible

X Supported on SE Servers (SU /390 and SU x86)

1) The combined RA/CA connection is not supported in BS2000/OSD.

*3 **2)** The storage cluster option (Transparent FailOver (TFO)) feature requires at least FW V10L80 and SHC-OSD as of V13.0

*1

3) Only one SAS RAID controller can be used for the connection of JX40 disk subsystem only on SU300/ SU300B. Both ports of this SAS RAID controller may only have one JX40 box connected!

4) The firmware versions supported by SHC-OSD are included in the corresponding Release Notice.

5) Basically only disks of the format D3435 are supported on the FC. The disk type D3475-8F is intended only for SU300/ SU300B for internal disks connected via SAS.

6) Administration of mirror functions via BS2000 requires SHC-OSD as of V12.0

*1 **7)** Administration of mirror functions via BS2000 requires SHC-OSD as of V13.0B

*5 **8)** Administration of mirror functions via BS2000 requires SHC-OSD as of V14.0

*3 **9)** Support only on SU310

FC connection of supported disk peripherals

SU /390: The FC connection is supported only via FC switch.

- *3 **SU x86:** Only the FC connection via FC switch is supported.
- *3 Exception: The FUJITSU ETERNUS DX100 (on SU310) is only supported with a one path direct connection.
- *3

4.5.2 Cancelled support

Disk storage controllers:

- Dell EMC Symmetrix DMX-3, DMX-4 (channel type FC)
- FUJITSU ETERNUS DX8700, DX8400 (channel type FC)
- FUJITSU ETERNUS DX410, DX440
- *3 ○ FUJITSU ETERNUS DX410 S2, DX440 S2

4.6 Net-Storage

4.6.1 Supported Net-Storage hardware

- *3 FUJITSU ETERNUS CS with NAS interface
- FUJITSU ETERNUS DX500/600 S3 Unified, NAS-Interface
- Additional devices, e.g. from NetApp, can be qualified on request.

4.7 Magnetic tape devices

4.7.1 Supported magnetic tape devices

	Connec- tion	Via FC					Via SAS		File Sys- tem / DVD of MU	File System / DVD of SU
		LTO4	LTO5	LTO6	LTO7	T-C4	LTO4	LTO5	T9G	T9G
*3 Archive system	Drive type Man- agement									
Quantum Scalar i500 ²⁾	ROBAR	X	X	X	X					
Quantum Scalar i2000 ²⁾	ROBAR	X								
Quantum Scalar i6000 ²⁾ (i2K comp.-M)	ROBAR	X	X							
Quantum Scalar i6000 ²⁾	ROBAR	X	X	X						
FUJITSU ETERNUS CS8000 ¹⁾	ROBAR	X				X				
*3 *3 *3 *3 *3 *3 *3 FUJITSU ETERNUS LT40 S2	BS2000/ X2000	SU300 (B)	SU300 (B)	SU300 (B)	SU300 (B)		SU300 (B)	SU300 (B)		
*3 *3 *3 *3 FUJITSU ETERNUS LT140	BS2000/ X2000			SU310	SU310					
Tape emulation Linux file	BS2000/ X2000								SU /390	SU x86
Type emulation DVD	BS2000/ X2000								SU /390	SU x86

Remark:

X Supported on SE Server (SU /390 and SU x86)

1) **FUJITSU ETERNUS CS8000**

FUJITSU ETERNUS CS8050, CS8200, CS8400, CS8800

FUJITSU ETERNUS CS900 Entry (only special release)

*3 2) No support on SE710 and SE310

FC-Connection of the supported tape peripherals

SU /390: The FC connection is supported only via FC switch.

- *3 **SU 300(B):** The FC connection of an FUJITSU ETERNUS CS and the MTC archive system
- *3 FUJITSU ETERNUS LT40 is directly (without FC switch) and via FC switch possible.
The connection of Quantum Scalar systems are supported only via FC switch.
- *3 **SU310:** The FC connection of an FUJITSU ETERNUS CS is possible directly (without FC switch)
- *3 and via FC switch. For each FUJITSU ETERNUS LT140 only one drive and only the FC direct con-
- *3 nection is supported.

Quantum Scalar support:

Quantum Scalar i2000/i6000:

- *3
 - LTO-4 – LTO-5 : Data and control path via FC to I/O blade
 - LTO-6 Control path via FC to the I/O Blade, data path without I/O Blade

Quantum Scalar i500:

- *3
 - LTO-4 – LTO-7 Data and control path always without I/O Blade

4.7.2 Cancelled support

MB archive systems:

- *3 - Quantum Scalar 10k drive LTO-3, LTO-4, LTO-5 (channel type FC)
- *3 - Quantum Scalar i500 LTO-3
- *3 - Quantum Scalar i2000/i6000 LTO-3

Virtual archive systems:

- *3 - FUJITSU ETERNUS CS HE
- *3 FUJITSU ETERNUS CS500, CS500 DL, CS1000, CS1500,
- *3 CS1500 DL, CS2000, CS3000, CS4000, CS5000
- *3 FUJITSU ETERNUS CS50

4.8 Other peripherals

4.8.1 Other supported peripherals

OSD/BC V11.0 supports the following:

- LAN channel connection on SE Server HNC as of V6.2

4.8.2 Cancelled support

- *3 - LAN channel connection on SE Server HNC V6.1

4.9 Printers

4.9.1 Supported printers

*5 In OSD/BC V11.0 the printers available on the market are only supported via LAN connection.

The product RSO (not free-of-charge) allows operation of almost all market-relevant PCL/Postscript printers:

Further information:

<https://partners.ts.fujitsu.com/products/p/srv/bs2000/peripher/print/Pages/default.aspx>