

# Fujitsu Software BS2000 OS DX

Version 1.0B

November 2023



## Release Notice

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**Release Notice BS2000 OS DX V1.0B**

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# 1 General information

This Release Notice contains a condensed form of the main extensions, dependencies and operating instructions for the delivery components in the package BS2000 OS DX V1.0. Changes refer to the version BS2000 OS DX V1.0A. Detailed changes from BS2000 OSD/XC V11.0 are included in previous release notes of BS2000 OS DX V1.0A.

The release level is that of: November 2023.

This and other actual Release Notices are available online at <https://bs2manuals.ts.fujitsu.com>.

The Release Notices for the technical delivery units and products supplied together with BS2000 OS DX V1.0B should also be observed:

APACHE V2.4A  
CRTE V21.0A  
EDT V17.0D  
HSMS V12.0E  
IMON V3.4A  
JENV V8.1B  
JENV V11.0A  
JV V15.2A  
LMS V3.6A  
InterNet Services V3.4B  
openNet Server V21.0B  
PERCON V3.0A  
POSIX V21.0A  
RSO V3.6A  
SCA V21.0B  
SDF V21.0A  
SORT V8.0A  
SPOOL V4.9A  
TIAM V13.3B  
WebTransactions V7.5C

Please read the current Release Notice of the basis software (X2000, M2000 and HNC as of V6.4 for SE Servers) that belong to the corresponding SE Server lines. The Release Notices are available at <https://bs2manuals.ts.fujitsu.com>.

Fujitsu Software BS2000 OS DX V1.0 is the BS2000 operating system package for the Fujitsu Server BS2000 SE Series (Server Units SU x86 and Server Units SU /390). The operating system package OS DX V1.0 consists of the operating system package BS2000 V21.0 and a range of system-related software products.

The operating system package OS DX V1.0 covers all 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.

The package of Fujitsu software BS2000 OS DX in version V1.0B consists of the following software products:

Functional Unit	Product Name	Release Unit	Package Version
Operating System	Fujitsu Software BS2000 OS DX	BS2OS.BS2000	V1.0B
	Fujitsu Software BS2000 POSIX	BS2OS.POSIX	V1.0A
Job Control	Fujitsu Software BS2000 JV	BS2OS.JV	V1.0A
	Fujitsu Software BS2000 SDF	BS2OS.SDF	V1.0A
Communication and Internet	Fujitsu Software BS2000 APACHE	BS2OS.APACHE	V1.0A
	Fujitsu Software BS2000 interNet Services	BS2OS.INETSERV	V1.0A
	Fujitsu Software BS2000 openNet Server	BS2OS.ONETSERV	V1.0B
	Fujitsu Software BS2000 TIAM	BS2OS.TIAM	V1.0B
openSEAS	Fujitsu Software BS2000 WTOSD	BS2OS.WTOSD	V1.0A
Performance	Fujitsu Software BS2000 SCA	BS2OS.SCA	V1.0B
Print Management	Fujitsu Software BS2000 RSO	BS2OS.RSO	V1.0A
	Fujitsu Software BS2000 SPOOL	BS2OS.SPOOL	V1.0A

Programming Systems	Fujitsu Software BS2000 BS2IDE	BS2OS.BS2IDE	V1.0A
	Fujitsu Software BS2000 CRTE	BS2OS.CRTE	V1.0A
	Fujitsu Software BS2000 JENV	BS2OS.JENV	V1.0A
Backup Management	Fujitsu Software BS2000 HSMS	BS2OS.HSMS	V1.0A
Utilities	Fujitsu Software BS2000 EDT	BS2OS.EDT	V1.0A
	Fujitsu Software BS2000 IMON	BS2OS.IMON	V1.0A
	Fujitsu Software BS2000 LMS	BS2OS.LMS	V1.0A
	Fujitsu Software BS2000 PERCON	BS2OS.PERCON	V1.0A
	Fujitsu Software BS2000 SORT	BS2OS.SORT	V1.0A

Notes on composition and structure:

The package components have the version of the package; the versions of the included products are not visible in the package

## 1.1 Order

BS2000 OS DX V1.0 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 OS DX V1.0.

## 1.2 Delivery

### 1.2.1 Delivery scope

The OS-DX-configuration products (OS-DX-products) are supplied by WWW-delivery in SOLIS/IMON format.

For the initial installation the customer receives the following data carriers:

- SETUP (run BS2000-EXEC as disk image)
- OS-DX1, OS-DX2 (OS DX products in SOLIS/IMON format)
- UPDATE OS-DX (corrections for OS DX products in SOLIS/IMON format)
- ADDON (individually ordered user software in SOLIS/IMON format)

**1.2.2 Delivery components of BS2000 OS DX**

Delivery components of BS2000 OS DX respectively of delivery unit BS2OS.

The following release units (RU) of the technical delivery units (DU) BS2OS are part of the delivery scope:

<u>LE / RU</u>	<u>Version</u>	<u>Remark</u>
<u>BS2OS.APACHE V1.0</u>		
APACHE	2.4A04	
PERL	52.4A04	
<u>BS2OS.BS2IDE V1.0</u>		
BS2IDE	2.x	only license paper, no files actual version "x" see download page
<u>BS2OS.BS2000 V1.0</u>		
ACS	21.0B	
AIDSYS	21.0B	
AIDSYSA	21.0B	
ANITA	21.0B	
ASE	21.0A	
ASSEMBH-GEN	1.4A10	
ASTI	21.0B03	
BINDER	21.0A01	
BLSSEC	21.0A	
BLSSERV	21.0A10	
BS2CP	21.0B	
BS2ZIP	21.0B	
BS2000-EXEC	21.0B	
BUILDER	1.0A	
C-TPR-LZS	2.6A	
CALENDAR	21.0B	
CALENDAR-TU	21.0B	
CAPRI	21.0A	
CCOPY	21.0B	
CHDATES	1.0A	
CLIP	21.0B	
CONV2PDF	21.0A01	
COSMOS-BC	21.0B	
CPR	21.0B	
CRYPT	21.0A	
C2H	1.0A01	
DAMP	21.0B	Utility program
DCADITO	21.0B	Utility program
DIV	21.0B	
DIVTRAC	21.0B	
DLMUSER	21.0B	
DPAGE	17.0A	Utility program
DSSM	21.0A	
DWS	11.0A	
ELFE	21.0B	Utility program
ELSA	1.7A10	Utility program
FASTPAM	21.0B	
FITC	21.0B	

GCF	21.0B	
GET-TIME	21.0B	
GET-TIMX	21.0B	
HELGA	21.0B	Utility program
IDIAS	21.0B	
INIT	21.0B	Utility program
IOFCOPY	21.0A	Utility program
IOGEN	21.0B	Utility program
IORM	21.0B	Utility program
IOTRACE	21.0B	Utility program
IPL	21.0B	
JITSYS	21.0A	
JMP	2.0C	Utility program
JMU	21.0B	Utility program
JOBSCHED	21.0B	Utility program
JPOPT	21.0B	
KDCMON	21.0B	
LLMAM	3.5A01	
LMSCONV	3.6A	Utility program
LNМ	21.0B	
MIP	21.0B	
MSCFANC	21.0B	
MSGMAKER	1.2B10	Utility program
NDMDAMP	21.0B	
NET-SNMP	5.8A32	
NKISAM	21.0B	
NKS	21.0B	
NKV	21.0B	
NLMSERVE	21.0B	Utility program
ONETSTOR	21.0B	
PAMCONV	21.0A01	Utility program
PAMINT	21.0A	
PASSWORD	21.0B	Utility program
PLAM	21.0B	
PMLOG	21.0B	
PRSC	1.0A	Utility program
PTHREADS	1.4A41	
PVSREN	21.0B	Utility program
RESLOG	21.0B	
REWAS	21.0B03	
RMS	7.1G01	Utility program
ROSI	21.0B	
SCANET	21.0B	
SCDM	21.0B	Utility program
SHOW-FILE	17.1B30	
SIR	21.0B	
SLED	21.0B	
SMI	1.0A10	
SMPGEN-S	21.0B	Utility program
SMPGEN-U	21.0B	
SPCCNTRL	21.0B	Utility program
SRPMNUC	21.0B	
SSCM	21.0A	Utility program
STATUS	21.0A10	
STRT	21.0B	
SYSFILE	21.0B	
SYSHOOK	21.0B	
TANGBAS	21.0B	
TANGRAM	21.0B	
TPCOMP2	21.0B	Utility program
TPRLAM	21.0B	
TSOSLNK	21.0E	Utility program

TULAM	21.0B	
UTM-SM2	21.0A	
VOLIN	21.0B	Utility program

BS2OS.CRTE V1.0

CRTE	21.0A40	
CRTE-BASYS	21.0A40	
CRTE-MSG	21.0A40	
POSIX-HEADER	21.0A40	

BS2OS.EDT V1.0

EDT	17.0D31	
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BS2OS.HSMS V1.0

ARCHIVE	12.0E	
HSMS	12.0E	

BS2OS.IMON V1.0

IMON-BAS	3.4A22	
IMON-GPN	3.4A	
IMON-SIC	3.4A20	

BS2OS.INETSERV V1.0

INETSERV	3.4B11	
MAIL	3.4A07	
TCP-IP-AP	5.3A10	
TCP-IP-SV	3.3A11	

BS2OS.JENV V1.0

JENV	8.1B02	
JENV	11.0A10	

BS2OS.JV V1.0

JV	15.2A	
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BS2OS.LMS V1.0

LMS	3.6A	
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BS2OS.ONETSERV V1.0

BCAM	25.0B	
BCAM-DIAG	1.0A06	
BCAM-GEN	25.0B	
CMX	1.4A03	
DCAM	21.0B	
DCM-DIAG	1.1A01	
IPSEC	1.4A02	
LWRESD	21.0A	
PLUS	9.1B	
PRNGD	1.1A02	
SOCKETS	21.0B	
VTSU-B	21.0B	
VTSUTRAC	13.3A01	
XHCS-SYS	21.0A03	

BS2OS.PERCON V1.0

PERCON	3.0A
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BS2OS.POSIX V1.0

POSIX-ADDON-LIB	2.1A30
POSIX-BC	21.0A49
POSIX-NSL	21.0A49
POSIX-SH	21.0A49
POSIX-SOCKETS	21.0A49
POSPRRTS	1.4A10

BS2OS.RSO V1.0

RSO	3.6A
RSOSERVE	3.6B

BS2OS.SCA V1.0

SCA	21.0B
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BS2OS.SDF V1.0

DISPLAY	21.0A
FHS-TPR	8.3A
SDF	21.0A12
SDF-CONV	21.0A10
SDF-I	21.0A
SDF-P-BASYS	2.5I12
SDF-PAR	21.0A
SDF-SFC	21.0A
SDF-SRV	21.0B
SDF-U	21.0A
VAS	21.0A

BS2OS.SORT V1.0

SORT	8.0A
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BS2OS.SPOOL V1.0

PRMMAN	1.4A
PRMPRES	1.2A
SNRTP	2.0C
SPCONV	1.2A
SPOOL	4.9A06
SPOOLSYS	3.0A
SPSERVE	2.9B
SPSRVMAN	2.4A

BS2OS.TIAM V1.0

TIAM	13.3B
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BS2OS.WTOSD V1.0

WebTransactions for OSD	7.5C
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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 BS2000 OS DX V1.0 comprises the following components:

- The manuals for BS2000 OS DX V1.0, which form the basic literature.
- The manuals for package components.

The documentation is available on the internet at <https://bs2manuals.ts.fujitsu.com>. There you will find both individual manuals and (under the "Softbooks" tab) the ISO image of a DVD with the entire inventory.

The manuals may be supplemented with README files. These contain changes and extensions to the manual of the product concerned.  
The README files are also available online under <https://bs2manuals.ts.fujitsu.com>.

## 2 Software extensions

The following explains only the main extensions and enhancements compared to the version BS2000 OS DX V1.0A.

### 2.1 New features in BS2000 OS DX V1.0

Information of new features of the SW products included in BS2000 OS DX V1.0B can be found in the product-specific release notes.

#### 2.1.1 Functional extensions for BS2000 OS DX V1.0B

##### Manageability

###### **Information about the index blocks of an ISAM file (CR A0615531)**

- With BS2000 OS DX V1.0B a counter is implemented to indicate the number of free bytes in the primary index blocks of an ISAM file. The output of this value is displayed with the command /SHOW-INDEX-ATTRIBUTES INFO=\*INDEX-STATISTICS. In addition, the highest index level and the number of all index blocks of index level 1 are output with this command.

This information helps as a decision criterion for the reorganization of an ISAM file.

###### **EXIT-JOB: Sending an email with suffix .txt (CR A0616494)**

- With the command EXIT-JOB and operand SYSTEM-OUTPUT SYSLST- and SYSOUT files can be send to an user as email attachment.

With BS2000 OS DX V1.0B the suffix .txt is added to the system files (S.OUT.xxx/S.LST.xxx). The email attachment can be opened immediately with the text editor on a Windows system.

###### **WAIT-EVENT while loaded program (CR A0617175)**

- Command WAIT-EVENT and ISP command WHEN are rejected while a program is loaded.

With BS2000 OS DX V1.0B the commands can be executed while a program is loaded by using an optional REP.

###### **Possibility of aborting the wait state of WAIT-EVENT (CR A0616764)**

- With BS2000 OS DX V1.0B the user can cancel the waiting state by pressing the [K2] key, if the command /WAIT-EVENT \*PERIOD/\*DATE is used in dialogue mode. This results in the output of the new system message EXC0869.

###### **Implementation of NKR0055 as answerable message (CR A0616389)**

- If a path failure was detected in NKR, as of BS2000 OS DX V1.0B the message NKR0150 with extended message text is displayed at the console in a way that can be acknowledged.

###### **„grep“ function in BS2000 - new command FIND-CMD-OUTPUT**

- As of BS2000 OS DX V1.0B the new command FIND-CMD-OUTPUT is implemented. The command FIND-CMD-OUTPUT allows a user to search the SYSOUT output of BS2000 commands for a string and print the result.

**Net-Storage: Improvement of the information function LIST-NODE-FILE**

- With BS2000 OS DX V1.0B the information function for node files is improved. The option SELECT=\*NOT-IMPORTED can be used to display files that are not imported into BS2000.

**Security****Integration of BS2000 systems in SIEM platforms**

- With BS2000 OS DX V1.0B the BS2000 subsystem CLIP V21.0B (Common Logging Interface Provider) is provided. This ensures real-time export of safety related BS2000 events (SATLOG) via SYSLOG-protocol (RFC-5424 standard) for integration into SIEM systems.

**Performance****Improved access to SAM node files**

- File access to SAM node files requires many resources in X2000 or HNC due to internal positioning list of the Net Client.  
As of BS2000 OS DX V1.0B performance is improved with a new OPEN mode by sequential processing without repositioning.

**Improved performance in SLED due to optimization when writing**

- With BS2000 OS DX V1.0B several blocks of an I/O are combined while writing to the SLEDFILE and this improves the performance.

**Diagnosis****Extended output of SHOW-ADDRESS-SPACE-STATUS on x86 systems (CR A0615746)**

- As of BS2000 V21.0B, the SHOW-ADDRESS-SPACE-STATUS command provides an additional column per task to display the maximum size of class 5 and class 6 memory under 2GB in the user address space during the runtime of the specified tasks (only on SU x86).

This information is used to improve the diagnosis (System Health Check) of the user address space. A corresponding OPS variable has also been introduced. If several tasks are displayed, this is done in descending order of the new value.

**New command SET-SERSLOG-READ-MARK**

- With BS2000 OS DX V1.0B a new command is implemented for pseudo-closing the SERSLOG corresponding to the command SET-CONSLOG-READ-MARK. The command SET-SERSLOG-READ-MARK sets a „read mark“ at the end of the current SERSLOG (logging is not interrupted after the read mark). Read access to the content of the current SERSLOG before the „read mark“ is possible.

**Implementing a global variables in DAMP**

- Until now in each procedure in DAMP pointers to global structures and other global values had to be defined and initialized or values had to be transmitted as parameters. As of DAMP V21.0B global variables can be created with the keyword GLOBAL before variable declaration. With LOAD\_GLOBAL followed by procedure name, all global variables declared in this procedure are loaded.

**New statements RELOAD-PRODAMP-OBJECT and CANCEL-PRODAMP-PROGRAM in DAMP**

- As of DAMP V21.0B there is the possibility to reload objects from the assigned PRODAMP library by using the statement RELOAD-PRODAMP-OBJECTS. The objects to be reloaded from the PRODAMP library can be selected by name or by keyword \*ALL in the operand OBJECTS.
- The instruction CANCEL-PRODAMP-PROGRAM is used to unload a PRODAMP program. The program to be unloaded can be selected by its name or the keyword \*INTERRUPTED.

**Improvements in diagnostics support in TIAM**

- As of BS2000 OS DX V1.0B the new message TIA1001 will be displayed in console and SERSLOG, if TIAM receives an incorrect return code from BCAM. This simplifies diagnosis in BCAM.

**Further extensions****BS2IDE Release 2.17**

- New guided dialog to easily run parameterized procedures from BS2000 Explorer.
- Improved parameters syntax proposals support in SDF Editor.
- Sorting of files in BS2000 Explorer by table columns.
- Setting custom breakpoint name also in AID.
- Terminal and BS2000 Debugger performance improvement.

**BS2ZIP V21.0B**

- Correction of compatibility issues related to Coded Character Sets (CCS) and archives with WINZIP-format:  
When extracting files from these archives, the files sometimes got a wrong CCS and were no longer readable in BS2000. If these problems occur with programs that use the API of a BS2ZIP version smaller than V21.0B, they must be produced again with BS2ZIP V21.0B.

## 3 Technical information

### 3.1 Resource requirements

Compared to BS2000 OS DX V1.0A, the additional CPU requirements in BS2000 OS DX V1.0B is between -4% and +4% depending on the server model and applications involved.

#### Main memory requirements / additional main memory requirements:

The recommended minimum main memory configuration required for using BS2000 OS DX V1.0B depends on the BS2000 server model and has not changed in comparison to BS2000 OS DX V1.0A.

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 OS DX V1.0 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, SERSLOG, etc.) has also to be planned.

### 3.2 Software configuration

#### 3.2.1 Fujitsu Server BS2000 SE Serie

##### **Software components**

Information on the software products of a SE Server (M2000, HNC, X2000 and StorMan) can be found in the corresponding release notes.

##### **Optional extensions with SE Manager or X2000 dependencies**

The versions of StorMan, ROBAR-SV, openSM2, openUTM and NUX 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 OS DX V1.0 can be operated in native mode, as monitor system (VM2000 as of V12.0) or as a guest system under VM2000 on the Server Units (SU) of the SE Servers.

#### 3.2.2 SW configuration for BS2000 OS DX V1.0

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

The actual supported software configuration is also available online

[Released software configurations](#)

### 3.3 Product installation

The installation must be done with the installation monitor as of IMON V3.3B.

Depending on the correction status of IMON-BAS, use one of the following values as the version of the target system for installation

- with IMON-BAS V3.3B10 (OSD/XC V11.0): 21.0
- as of IMON-BAS V3.4A00 (BS2000 OS DX): 21.0 respectively \*CURRENT

The installation information in the delivery letter, manual, or Release Notice for the respective product have also to be taken into account.

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

#### CRTE-BASYS:

The subsystem CRTEBASY of the product CRTE-BASYS V21.0A is available as runtime environment for internal BS2000 applications.

The subsystem should be preloaded 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 (SYSSSC.CRTE-BASYS.210.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 from the library SYSLNK.CRTE-BASYS.210.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.

#### 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>,PPORT#=1156,PTSEL-I='PRSCX ')  
<name> here means the BCAM partner used for Teleservice communication, e.g. L#MANLO1.
- the batch job which is to be started in ID \$SERVICE with daily repetition (REPEAT=\*DAILY).

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 with a web browser.

The additional parameter FT-PARTNER=\*M2000 of the command /CREATE-C2H-REPORT transfers the HTML file to the MU and can be displayed in SEM or downloaded.

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

The library \$TSOS.SYSPRC.C2H.010 contains everything needed for C2H in BS2000.

C2H supports SDF commands.

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

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

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

The following data is collected from each local customer system.

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

The collected data is encrypted with AES256 and must be sent to the central BS2000 support: [bs2000-service@ts.fujitsu.com](mailto:bs2000-service@ts.fujitsu.com)

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.

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

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 BS2000 OS DX V1.0 are supplied in all ordered HSI versions. The appropriate version is automatically used 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) 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 upgrade to BS2000 OS DX V1.0 is possible based on the BS2000 version BS2000 OSD/XC V11.0.

Coupling between BS2000 OS DX V1.0B with BS2000 OSD/XC V11.0 or BS2000 OS DX V1.0A is only possible if they have Service Pack SP 23.1 or newer.

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

Note for 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. The emulated tape devices are generated with device type E8 in BS2000.

Note on Net Storage:

In a shared pubset network with BS2000 OS DX V1.0 for BS2000 OSD/XC V11.0 at least Service Pack SP 21.1 must be in effect. This should also be noted if a pubset with Net-Storage usage was exclusively imported into BS2000 OS DX V1.0 and is to be imported into a lower BS2000 version.

In lower BS2000 versions than BS2000 OS DX V1.0, the SHOW-NET-STORAGE and SHOW-PUBSET-NET-STORAGE commands for NETVOL Net-Storage volumes display the status "NO SUP" (not supported).

CALENDAR:

The public holiday file (file for managing public holidays) has to be created by system support from the sample file \$TSOS.SYSDAT.CALENDAR.210.HOLIDAY or from an earlier public holiday file:

```
/COPY-FILE FROM-FILE=$TSOS.SYSDAT.CALENDAR.210.HOLIDAY,  
TO-FILE=$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

The SIR version is generally coupled to a specific BS2000 version.

This means run version  $\leq$  target version is always valid. For example, SIR V21.0 can only create IPL-compatible pubsets for BS2000 OS DX V1.0 (= 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 has either to retain a boot disk of the old version or must contact service.

### 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 accomplished via the SE Manager.

The following steps are necessary (see Manual "Fujitsu Server BS2000 SE Series, Administration and Operation"):

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

- The current operation mode is displayed in the work area and, if necessary, can be switched via the action icon or button "Reload IORSF file / Change BS2000 operation mode".
- In native Mode: select under "*Systems*" the native system (*BS2000*) and click on the action "BS2000 IPL" in the work area of the "*Operation*" tab.
- In VM2000 mode: Select the required VM under "*Systems*" and click on the action "*BS2000 IPL*" in the work area of the "*Operation*" tab.

Alternatively, the IPL of the monitor system can also be initiated on the SVP console of the Server Unit /390.

### 3.4.3 Use of HSMS/ARCHIVE in VM mode

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 should 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

- 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, dependent on the configuration of the MUs and HNCs.
- for logic controllers with identical WWPN overlapping of LUNs is allowed.
- 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 and terminated functions

Information on the discontinued and cancelled functions of the SW products included in BS2000 OS DX V1.0 can be found in the product-specific release notes.

The following functions and components are no longer supported:

#### **PVSREN V21.0A**

The command CREATE-PUBSET-FROM-MIRROR is removed.

### 3.6 Incompatibilities

#### **Changing default value of system parameter SSMCOPT**

The default value of the system parameter SSMCOPT is changed to "Y" (previously: "N")  
The value can still be set to "N" in the BS2000 parameter file and is interpreted accordingly.

#### **Setting default value for system parameter TEMPFILE fixed to #**

The default value of the system parameter TEMPFILE is set fixed to „#“ (previously: „NO“).  
As of BS2000 OS DX V1.0B if the value of TEMPFILE is „NO“ or „@“ in the BS2000 parameter file, the value is automatically changed to the value „#“ while system run. A corresponding message is displayed on console for information purpose.

#### **Setting default user fixed to TSOS**

The default user (DEFLUID) is set to TSOS.  
As of BS2000 OS DX V1.0B if the value of DEFLUID has values not equal "TSOS" in the BS2000 parameter file, the value is automatically changed while system run. A corresponding message is displayed on console for information purpose.

### 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
- If there is a shared pubset network with BS2000 OSD/XC V11.0B and BS2000 OS DX V1.0 and Net-Storage volumes of type NETVOL are used, BS2000 OSD/XC V11.0B must have Service Pack SP21.1 or newer.
- Coupling between BS2000 OS DX V1.0B with BS2000 OSD/XC V11.0 or BS2000 OS DX V1.0A is only possible if they have Service Pack SP 23.1.
- DRV and Net-Storage volumes  
Rename via DRV V3.2A is not allowed for pubsets with Net-Storage volumes of type NETVOL.
- SPACEOPT and DAB  
During reorganization of pubsets or files by means of SPACEOPT, problems may occur if the pubsets or files are supported by DAB caching. Therefore, any DAB caches are to be deleted before using SPACEOPT.

- BS2ZIP V21.0B  
Correction of compatibility issues related to Coded Character Sets (CCS) and archives with WINZIP-format:  
When extracting files from these archives, the files sometimes got a wrong CCS and were no longer readable in BS2000. If these problems occur with programs that use the API of a BS2ZIP version smaller than V21.0B, they must be produced again with BS2ZIP V21.0B.
- CLIP V21.0B  
Due to architecture, the SAT events ZBG/ZND cannot be transferred.

### 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 has to 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_diag` to create diagnostic files.

The administrator or operator can use the SE Manager on the Management Unit to generate diagnostic data from the Diagnostics tab of the Hardware -> Units (SEnnn) -> <name> (SUnnn) -> Service -> Diagnostics" menu.

In V6.5 the diagnostic data is generated under "Service -> Units (SEnnn) -> <name> (MU) -> Diagnostics".

The file can be downloaded or transferred directly from the service via AIS Connect via FileTransfer.

#### Information about the system environment

In addition to the error documentation, the following general details are important for error diagnostics:

- BS2000 operating system version and correction version (loader version and any modifications in the BS2000)
- Versions of subsystems involved in the problem, 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 has to 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, these 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

CLIP problems:

- CONSLOG file
- SYSLOG.CLIP.SUBS.<timestamp> file
- SYSLOG.CLIP.TU.<timestamp> file
- SECOS SAT configuration

Final 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.

## 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

BS2000 OS DX V1.0 runs on the released models of the Fujitsu servers BS2000 of SE Series.

Supported Fujitsu Server BS2000 SE Series:

- SE730
- SE710
- SE700B
- SE330
- SE320
- SE310

Further information (e.g. models of the SE Server) can be found in the data sheet of the corresponding server in the internet under [Fujitsu Server BS2000](#).

### 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

Normally the peripherals on SE Servers are connected via FibreChannel. External disk and tape peripherals must be connected via FC switch with the exception of 4.5. supported disk peripherals and 4.7 magnetic tape devices.

The LAN connection of Net-Storage is implemented on the SU /390 via the HNC connected to the FibreChannel.

#### 4.3.2 Cancelled support

- None -

### 4.3.3 Overview of device and volume types no longer known by BS2000 OS DX V1.0

As of BS2000 OS DX V1.0, different types of discs, tape devices, tape volumes and other devices are not supported device anymore. These internal types, maybe still be contained in catalogue entries of DMS, MAREN or HSMS global parameters or archive definitions, are no longer known in this BS2000 version and are therefore not converted to the associated names.

SDF commands such as /SHOW-FILE-ATTRIBUTES or /SHOW-DEVICE-CONFIGURATION display "?xx?" for no longer known types instead of the name. (xx = internal type as per tables above). Even in operands of SDF commands, which are based on the device and volume tables, the names mentioned no longer appear in the dialog.

The effected types of devices and volumes can be found in the previous release notes of BS2000 OS DX V1.0A.

Before migrating from BS2000 OSD/XC V11.0 to BS2000 OS DX V1.0, the auxiliary procedure SHOW-UNSUPPORTED-DEVICES should be started in the library SYSPRC.BS2CP.200.TEMPLATE in order to determine and remove affected volume types in MAREN and HSMS. The procedure is delivered for BS2000 OSD/XC V11.0 with SP 21.1. It is also available under BS2000 OS DX V1.0 and can also be used there. We strongly recommend that you clean up the volume types before converting to BS2000 OS DX V1.0, as afterwards, for example, in MAREN it is no longer possible to select tape volumes according to the volume types concerned.

## 4.4 FC switches

### 4.4.1 Supported FC switches

You can find the supported Brocade FC switches and FOS versions currently approved for BS2000 in the support matrix "FC-SWITCH Support" under "Fujitsu Server BS2000 - Server Connectivity - FC-Switch" at <https://bs2manuals.ts.fujitsu.com>.

### 4.4.2 Cancelled support

- None -

## 4.5 Disk peripherals

### 4.5.1 Supported disk peripherals

	FC	Firmware <sup>1)</sup> Minimum version	BS2000- disk type	Remark
Fujitsu ETERNUS DX8900 S4	SU /390 SU x86	V11L60	D3435	FC connection supported only via FC switch
Fujitsu ETERNUS DX500 S4 SAN DX600 S4 SAN	SU /390 SU x86	V10L90	D3435	FC connection supported only via FC switch
Fujitsu ETERNUS DX500 S5 SAN DX600 S5 SAN	SU /390 SU x86	V11L60	D3435	FC connection supported only via FC switch
Fujitsu ETERNUS DX900 S5	SU /390 SU x86	V11L60	D3435	FC connection supported only via FC switch
Fujitsu ETERNUS DX100 S4	SU /390 SU x86	V10L90	D3435	not supported via SHC-OSD only one path direct connection
Fujitsu ETERNUS DX100-S5	SU x86	V11L60	D3435	not supported via SHC-OSD only one path direct connection
Fujitsu ETERNUS AF650 S2	SU /390 SU x86	V10L90	D3435	FC connection supported only via FC switch
Fujitsu ETERNUS AF650 S3	SU /390 SU x86	V11L60	D3435	FC connection supported only via FC switch

#### SFG Special release

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

You can find the firmware version currently approved for BS2000 in the FW support matrix "ETERNUS AF/DX FW Support" under "Fujitsu Server BS2000 - Server Connectivity - Storage" at <https://bs2manuals.ts.fujitsu.com>.

### 4.5.2 Cancelled support

- None -

## 4.6 Net-Storage

### 4.6.1 Supported Net-Storage hardware

For Net-Storage, volumes of type NETSTOR  
Fujitsu ETERNUS CS with NAS Interface

For Net-Storage, volumes of type NETVOL  
ETERNUS CS8000, NAS Interface  
NetApp ONTAP System from NetApp Release 9.7P  
Additional NAS file servers on request.

### 4.6.2 Cancelled Net-Storage hardware

- None -

## 4.7 Magnetic tape devices

### 4.7.1 Supported magnetic tape devices

	Connection	Via FC <sup>2)</sup>					Via SAS	File System / DVD of MU	File System / DVD of SU
		Drive type	LTO-4	LTO-6	LTO-7	LTO-8			
Archive system	Management	LTO-4	LTO-6	LTO-7	LTO-8	T-C4	LTO-5	T9G	T9G
Fujitsu ETERNUS CS8000 <sup>1)</sup>	ROBAR	SU /390 SU x86				SU /390 SU x86			
Fujitsu ETERNUS LT140	BS2000/ X2000		SU310 SU320 SU330	SU310 SU320 SU330	SU310 SU320 SU330				
Tape emulation Linux file	BS2000/ X2000							SU /390	SU x86
Type emulation DVD	BS2000/ X2000							SU /390	SU x86

Remark:

1) **Fujitsu ETERNUS CS8000**

Details for the supported hardware and software versions can be found in the support matrix "ETERNUS CS8000 Support" under "Fujitsu Server BS2000 - Server Connectivity - Storage" at <https://bs2manuals.ts.fujitsu.com> and in the release notes of ROBAR-SV

2) **SU /390 und SU x86:**

The FC connection is supported only via FC switch.

Exceptions: Fujitsu ETERNUS LT140 can also be connected via FC direct connection for SU x86.

### 4.7.2 Cancelled support

- None -

## **4.8 Printers**

### **4.8.1 Supported printers**

In BS2000 OS DX V1.0 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://www.fujitsu.com/de/products/computing/servers/mainframe/bs2000/software/printing/>