

White Paper

Fujitsu Software BS2000 OS DX V1.0B

The digital transformation continues - with the new operating system package BS2000 OS DX V1.0B we are expanding on the foundation we laid with BS2000 OS DX V1.0 and offering you extensive enhancements in the BS2000 software.

Content

BS2000 DX concept	3
The strategy	3
Continuation of the BS2000 DX concept	3
Agile provision of BS2000 Software	3
Information to Service Packs	4
New operating system package BS2000 OS DX V1.0B	4
Topics in BS2000 OS DX V1.0B	6
Security	6
Integration of BS2000 systems in SIEM platforms	6
Multifactor authentication (MFA) for access to the POSIX shell	6
Manageability	6
Check whether the reorganisation of an ISAM file is useful (CR A0615531)	6
EXIT-JOB – Sending of SYSLST / SYSOUT files by email with Suffix .txt (CR A0616494)	6
WAIT-EVENT – allow while a program is loaded (CR A0617175)	6
Changing the behavior of the WAIT-EVENT command – Possibility of aborting the wait state	7
Implementation of NKR0055 as answerable message (CR A0616389)	7
'grep' functions in BS2000 – new command FIND-CMD-OUTPUT	7
Net-Storage: Improvement of the information function LIST-NODE-FILE	7
Performance	7
Performant access to SAM node files	7

Performance optimisations in SLED	7
Diagnosis	8
Extended output of user address space information in x86 systems (CR A0615746).....	8
New command SET-SERSLOG-READ-MARK	8
DAMP – global variable.....	8
DAMP – New statement RELOAD-PRODAMP-OBJECT.....	8
TIAM – Improvements in diagnostic support – new message TIA1001.....	8
openNet Server V21.0B.....	9
Block unencrypted connection requests (CR A0616404).....	9
Displaying the processor name for stunnel connections (CR A0617156)	9
Extension of the netstat program to display the stunnel connection	9
New mode for syntax checking of BCAM commands (CR A0616430).....	9
Extension of the help text of message BCA0777 (CR A0617138)	9
Extension of the command SHOW-PROCESSOR-ATTRIBUTES.....	9
Enhancements in BS2000 and openSEAS software products.....	10
Release.....	11

BS2000 DX concept

The strategy

Modern mainframes integrate seamlessly into the digital ecosystems of companies and organizations. We ensure exactly that through the strategy of continuous innovation in our BS2000 portfolio. A higher pace of innovation also strengthens the innovative capacity of BS2000 customers. With modern development methods and the agile provision of BS2000 software, we guarantee that innovative software functions are available transparently and efficiently as required.



Current change statuses are bundled and made available every six months as part of service packs - plannable and transparent. A representation of the current service packs with the corresponding documentation is available on the BS2000 manual server, as is advance information on our website. The aim is a timely use and a largely automated installation of the current service pack. With our BS2000 System Health Check, we offer a tried and tested service for checking whether the installed software is up to date.

Fujitsu offers BS2000 customers continuously agile innovations. This approach ensures high efficiency with long-term support and ensuring compatibility.

Continuation of the BS2000 DX concept

Agile provision of BS2000 Software

Enhancement of the BS2000 software, as well as corrections, are made available as part of service packs. The software is released in the combinatorics of the service packs – therefore the complexity of the supported software configurations is reduced. The prompt use of the current service pack ensures the reliability and performance of the BS2000 systems..

The release of functional enhancements via change statuses makes it easier for our customers to upgrade BS2000 software products. Updating the BS2000 software is generally associated with significantly less effort. Since a new change status replaces the previous one, ensuring compatibility is of central importance. In addition, the development in change statuses offers the advantage that new orders are no longer required as standard for the use of extended functionalities.

The delivery letter is part of every BS2000 software delivery and installation guide. It describes, among other things, the components included in the delivery and information on installation. In order to simplify the installation, the delivery letter was fundamentally revised, the product-specific information was standardized and general information was concentrated centrally at the beginning of the delivery letter.

A central objective of the BS2000 DX concept is an automated installation of the BS2000 software deliveries. In particular in the IMON installation monitor, but also in BS2000 software products (see section "Extensions to BS2000 and openSEAS software products"), additional automation steps have been taken:

- Since BS2000 OS DX V1.0, BS2000 products, including their POSIX components, can be automatically and completely uninstalled with IMON and updated to a new version. This saves manual intervention during installation with IMON.
- The product versions installed on a BS2000 system can be automatically updated to the latest delivered versions / statuses. This function is optional, the individual products can be selected for installation via a mask.

Information to Service Packs

A transparent description of the current service packs with an overview of products with extended functionality is available on the BS2000 manual server. The information relevant to the release of the service packs is provided in a separate release notice centrally on the manual server. This representation supplements the information on service packs on our BS2000 software web pages.

Information about the service pack installed in the system can be obtained using the SHOW-SYSTEM-INFORMATION command.

The BS2000 System Health Check (BS2HC) provides information on whether the installed BS2000 software is up to date. He proactively contributes to the smooth, secure operation of BS2000 systems by identifying potential disruptive factors at an early stage and making recommendations on how to remedy them. The BS2HC helps customers to avoid system interruptions that may occur due to missing correction and version statuses. The BS2000 System Health Check, used regularly and after major configuration changes, is a valuable component to ensure the reliability and performance of BS2000 systems.

The BS2HC has been available as part of the operating system for some time and is becoming increasingly important, also as an important part of the BS2000 DX concept.

New operating system package BS2000 OS DX V1.0B

The basis for the BS2000 DX concept is the new operating system package Fujitsu software BS2000 OS DX V1.0. It is the successor of the OSD/XC package and flexible with regard to the change status or versions of the individual components. The delivery units of the components have the version of the package, e. g. BS2OS.BS2000 V1.0B. When ordering, you will always receive the latest version of the components included.

Overview of the components (delivery units) of the new operating system package:

Funktionseinheit	Komponente
Operating System	BS2000
	POSIX
Job Control	JV
	SDF
Communicatin and Internet	APACHE
	INETSERV
	ONETSERV
	TIAM
openSEAS	WTOSD
Performance	SCA
Print Management	RSO
	SPOOL
Programming Systems	CRTE
	JENV
Storage Management	HSMS
Utilities	BS2IDE
	EDT
	IMON
	LMS
	PERCON
	SORT

Topics in BS2000 OS DX V1.0B

Security

Integration of BS2000 systems in SIEM platforms

BS2000 OS DX V1.0B provides the BS2000 subsystem CLIP V1.0 (Common Logging Interface Provider) to ensure real-time export of security relevant BS2000 events (SATLOG) via SYSLOG protocol for integration into SIEM systems.

For this purpose, BS2000 OS DX V1.0B provides an initial development status in order to gain experience of this concept together with our customers.

Multifactor authentication (MFA) for access to the POSIX shell

With BS2000 OS DX V1.0B, multifactor authentication (MFA) for POSIX OpenSSH access using a time-based one-time password algorithm is provided in INETSERV V3.4B. Authenticator apps (Android/iOS: Google Authenticator, Microsoft Authenticator, FreeOTP) support this password algorithm according to RFC 6238, which is a time-based one-time password procedure.

Manageability

Check whether the reorganisation of an ISAM file is useful (CR A0615531)

BS2000 V21.0B introduces a counter that indicates the number of free bytes in the index blocks of index level 1 of an ISAM file. The number of free bytes can be output 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 serves as a decision criterion whether a reorganisation of the ISAM file makes sense or not, which can accelerate file processing. The command supports structured output in S variables.

EXIT-JOB – Sending of SYSLST / SYSOUT files by email with Suffix .txt (CR A0616494)

With the command EXIT-JOB and the operand SYSTEM-OUTPUT, the SYSLST and SYSOUT files can be sent to the user by e-mail attachment. With BS2000 OS DX V1.0B, the suffix .txt is added to the system files (S.OUT.xxx / S.LST.xxx). This allows the e-mail attachment to be opened immediately with the standard text editor on a Windows system without having to make a selection of the editor beforehand.

WAIT-EVENT – allow while a program is loaded (CR A0617175)

As of BS2000 V21.0B, the WAIT-EVENT command and the ISP command WHEN can also be executed while a program is loaded. This does not terminate the program. Until now, the command was rejected when the program was loaded.

This changed behavior can be activated by means of an optional REP; the default setting remains unchanged.

Changing the behavior of the WAIT-EVENT command – Possibility of aborting the wait state

If the command /WAIT-EVENT *PERIOD/*DATE is used in dialogue mode, the user can cancel the waiting state by pressing the [K2] key as of BS2000 V21.0B. In this case, the system then outputs the new message EXC0869.

Implementation of NKR0055 as answerable message (CR A0616389)

If a path failure was detected in NKR, the message NKR0150 with extended message text is output to BS2000 V21.0B as a first step at the console in a way that can be acknowledged.

,grep' functions in BS2000 – new command FIND-CMD-OUTPUT

In BS2000 V21.0B a first step of a 'grep' functionality is realised in BS2000. With the command FIND-CMD-OUTPUT, SYSOUT outputs of commands can be filtered specifically according to a string. The controllable output returns the lines that contain the specified search string. The command FIND-CMD-OUTPUT can be called under any identifier.

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

In BS2000 V21.0B 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.

Performance

Performant access to SAM node files

File access to SAM node files requires many resources in the Net client in X2000 or HNC.

Performance can be improved if the application defines to write only serially record by record with OPEN OUTPUT or EXTEND - without positioning functions. A special OPEN mode has been introduced for this purpose. In this case, the internal positioning list of the Net Client, which can become very large depending on the file size, does not have to be maintained. Purely sequential processing then takes place without repositioning. This is expected to accelerate SAM processing.

Performance optimisations in SLED

By combining several blocks into one I/O when writing to the SLEDFILE, there is an optimisation of performance due to the improvements in startup, SLED and memory management.

Diagnosis

Extended output of user address space information in 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 task (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

Corresponding to the command SET-CONSLOG-READ-MARK, a command for pseudo-closing the SERSLOG is introduced. The command SET-SERSLOG-READ-MARK sets a "read mark" at the current end of the SERSLOG file. Logging continues without interruption after the read mark. The contents of the SERSLOG file before the read mark can then be accessed without having to close the SERSLOG file first.

DAMP – global variable

Pointers to global structures and some other global values (version of the subsystem) had to be defined and initialized in every procedure in DAMP until now, or the values had to be transmitted as parameters.

As of DAMP V21.0B, global variables can now be created with the keyword GLOBAL before the variable declaration. With LOAD_GLOBAL followed by the procedure name, all global variables declared in this procedure are loaded so that they can be used in any procedure.

DAMP – New statement RELOAD-PRODAMP-OBJECT

The RELOAD-PRODAMP-OBJECTS statement provides the user with the ability to reload objects from the assigned PRODAMP library. The objects to be reloaded from the PRODAMP library into DAMP can be selected by name or with the keyword ALL in the OBJECTS operand.

TIAM – Improvements in diagnostic support – new message TIA1001

If TIAM receives an erroneous return code from BCAM, the return code is logged to CONSOLE and SERSLOG to simplify diagnosis at BCAM. For this purpose, the new message TIA1001 is introduced as of BS2000 V21.0B.

openNet Server V21.0B

Block unencrypted connection requests (CR A0616404)

To increase the security of a system, a functionality was desired to accept only encrypted connections to BS2000 (stunnel).

With the help of the command `MODIFY-BCAM-OPTIONS AVAILABILITY-OPTIONS=*PARAMETERS(SECURE-CONNECTION=*ON/*OFF)` the rejection of unencrypted connection requests can be activated or deactivated again. The commands `SHOW-BCAM-OPTIONS OPTION=*AVAILABILITY` or `SHOW-BCAM-OPTIONS` can be used to display whether access restrictions are currently activated.

Corresponding access rules can be stored in the file `SYSDAT.BCAM.APPLICATIONS` as of BCAM V25.0B. Conditions for rejecting defined NEA applications (REJECT list) and exceptions to them (EXCEPTION list) can be defined here. They only apply if `SECURE-CONNECTION=*ON` is set. Optionally, if `SECURE-CONNECTION=*ON` is set, rejected connection attempts can be logged in `SATLOG`.

Displaying the processor name for stunnel connections (CR A0617156)

For some years now, there has been the possibility of an encrypted connection to a BS2000 system via stunnel. Currently, however, the host name is entered instead of the processor name for corresponding connections via the stunnel - the real processor name is not visible.

As of BCAM V25.0B, the real processor name is now determined and passed on. This means that the real processor name is available for the `SHOW-JOB-STATUS` command and in SECOS even for stunnel connections.

Extension of the netstat program to display the stunnel connection

With the function "`netstat -tpo`", connection information on the current, own stunnel connection can be output in future.

New mode for syntax checking of BCAM commands (CR A0616430)

The command `CALL-BCAM-COMMANDS` enables the syntax check of BCAM commands in an SDF file. For each command, it is returned whether it is syntactically correct.

To make the output clearer, an option is offered with which an output is only made to the screen if the command syntax is incorrect. For this purpose, a new value `*ERROR-ONLY` is added for the operand `SYNTAX-CHECK-ONLY`.

Extension of the help text of message BCA0777 (CR A0617138)

The help text of the message BCA0777 is extended on customer request. Thus, occurring errors in connection with a message BCA0777 can be better understood by users and measures can be taken more quickly.

Extension of the command SHOW-PROCESSOR-ATTRIBUTES

According to the command `SHOW-ROUTE-ATTRIBUTES`, the value `*OWN` can also be specified in the operand `PROCESSOR-NAME` of the command `SHOW-PROCESSOR-ATTRIBUTES` as of BCAM V25.0B.

Enhancements in BS2000 and openSEAS software products

An overview of the BS2000 software products for which functional enhancements are released with BS2000 OS DX V1.0B as part of Service Pack 23.2 will be provided with the release of Service Pack 23.2.

Information about extensions in the subsequent service packs can be accessed via the [Fujitsu Software BS2000](#) website.

An overview of the current status of the BS2000 software products released in BS2000 OS DX V1.0 can be found in the document [Inform Software Konfiguration BS2000 OS DX V1.0](#).

Release

Dates

- Pilot release: September 08, 2023
- General release: November 30, 2023, with Service Pack 23.2

Supported servers

SE Server (supported models SE310, SE320, SE330, SE700B, SE710 and SE730)

SE-SW as of V6.4 SP2

Details of the supported hardware can be found in the relevant release notice after the product has been released.

About Fujitsu

In addition to Fujitsu Software BS2000, Fujitsu provides a range of platform solutions. They combine reliable Fujitsu products with the best in services, know-how and worldwide partnerships. Fujitsu Portfolio Built on industry standards, Fujitsu offers a full portfolio of IT hardware and software products, services, solutions and cloud offering, ranging from clients to datacenter solutions and includes the broad stack of Business Solutions, as well as the full stack of Cloud offerings. This allows customers to select from alternative sourcing and delivery models to increase their business agility and to improve their IT operation's reliability.

Learn more about Fujitsu Software BS2000, please contact your Fujitsu sales representative or Fujitsu Business partner, or visit our website.

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