

Release Notice

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1 General

The open and universal transaction monitor openUTM supports the creation and operation of transactional applications under Fujitsu operating system BS2000, Linux and Windows systems. Some commonly available UNIX systems can be supported on special request.

Fujitsu Software openUTM lets you implement client/server architectures and create distributed transaction applications in homogenous and heterogeneous IT infrastructures (multi-tier architecture).

Some tools are included free of charge in openUTM product:

- Graphical User Interface openUTM WinAdmin for the administration of UTM applications is shipped with the WinAdmin CD. openUTM WinAdmin runs on Windows and Windows Server systems, as well as on Linux systems.
- The web based tool openUTM WebAdmin is ready for administration of UTM applications via Internet browser.
- *2 • WS4UTM is a tool offering a convenient method for making program units of a UTM application available as web services. It is possible to call a UTM Service as a web service from a web application implemented in Java. This allows UTM to be integrated into SOA solutions (SOA = Service Oriented Architecture).
- "XML for openUTM" provides openUTM with a convenient interface for creating and processing data in the form of XML documents.
- BizXML2Cobol permits the creation of Cobol data structures from existing service definitions (WSDL description or XML schema) and code, which can be integrated in existing transactional Cobol applications so that these implement the predefined service. Thus, the top-down approach (from the business-relevant definition to implementation) in SOA projects is also supported for the inclusion of existing program logic.

Additionally openUTM can be combined with further chargeable products:

- *2 • Fujitsu Software openUTM Client is a product allowing client/server communication with openUTM server applications and is available as a separate product for the Fujitsu operating system BS2000 as well as for Linux and Windows systems. Further commonly available UNIX systems can be supported on special request.
- *2 • The add-on product Fujitsu Software openUTM LU62 (UNIX, Linux and Windows systems) V5.1 supports connections to CICS/IMS applications on IBM systems via SNA LU6.2.
- *2 • The product Fujitsu Software BeanConnect enables UTM applications to connect to Java EE Application Servers. BeanConnect also includes a component for creating Java clients for openUTM.

Separate Release Notices are available for all tools.

- *2 More information about the products mentioned above and the data sheets are available on:
- *2 [openUTM - Transaction Monitor : Fujitsu EMEA](#)

openUTM is part of the comprehensive middleware suite openSEAS.

The middleware suite openSEAS enables the simple integration of individual applications and the interaction of existing and new applications. openSEAS perfectly complements the Fusion middleware of our strategic partner Oracle. Oracle Fusion middleware is a market-leading family of pre-integrated products, which ranges from application infrastructure development applications through to business intelligence.

Together this provides the platform for:

- individual business-critical IT solutions
- Company portals

- Integration solutions for service-oriented architectures
- Web applications and portals
- Business processes

This release note briefly contains the essential extensions, dependencies and operating instructions for openUTM (BS2000) V7.0A under the operating system BS2000 and all the information necessary for migrating from the predecessor version openUTM (BS2000) V6.5A.

*5 The Content refers to the release level: June 2024.

*2 Changes in openUTM (BS2000) V7.0A20 from November 2021 compared to November 2019 are marked with *2.

*3 Changes in openUTM (BS2000) V7.0A25 from November 2022 compared to November 2021 are marked with *3.

*4 Changes in openUTM (BS2000) V7.0A27 from November 2023 compared to November 2022 are marked with *4.

*5 Changes in openUTM (BS2000) V7.0A30 from June 2024 compared to November 2023 are marked with *5.

*5 The content to the release level V7.0A27 has changed.
*5 It corresponds to the release level V7.0A30: June 2024.

*2 This and other Release Notice(s) are available online at
*2 <https://bs2manuals.ts.fujitsu.com>.

If one or more predecessor versions are skipped when this current product version is in use, it may be necessary to also take account of the information from the Release Notices (and/or README files) of the previous versions.

1.1 Ordering

openUTM (BS2000) V7.0A can be ordered from your local distributors.

openUTM (BS2000) V7.0A is subject to the general terms and conditions of the software product purchase, maintenance, use and service agreement.

1.1.1 Licenses

The licenses are part of the contract that you entered into with Fujitsu Technology Solutions when you purchased openUTM (BS2000).

*2 openUTM (BS2000) is a product, for which user licenses are required and are available in variants according to the system performance, incl. a license per user class.
For distributed transaction processing there is an additional UTM-D user license per system (in variants depending on the performance class of the system, including license per user class).

openUTM (BS2000) is subject to export restrictions.

1.1.2 License for CALLUTM

The program CALLUTM is delivered with openUTM on BS2000 systems. It enables the call of UTM services out of an arbitrary BS2000 Batch or Dialog task. The program offers a SDF interface and can be called from the BS2000 command mode.

For the use of CALLUTM V7.0A which is delivered with openUTM (BS2000) V7.0A a runtime license for openUTM Client (BS2000) V7.0A is required due to the UPIC library is linked dynamically when CALLUTM is called. The advantage of the dynamically linkage is that the user can choose whether the communication should be done via socket or via CMX.

1.2 Delivery

1.2.1 Software on data media

The openUTM (BS2000) V7.0A files are supplied via SOLIS.

The current files and volume characteristics of openUTM are listed in the SOLIS2 delivery cover letter.

The delivery includes all product components for openUTM (BS2000) V7.0A (incl. openUTM-D).

Delivery components of openUTM (BS2000) V7.0A

The openUTM (BS2000) V7.0A delivery components are listed below:

<u>File</u>	<u>Contents</u>
<u>Module libraries</u>	
SYSLNK.UTM.070.TPR	openUTM system code (TPR) for /390
SKMLNK.UTM.070.TPR	openUTM system code (TPR) für x86
SYSLNK.UTM.070	openUTM module library, TU code only
SYSLNK.UTM.070.SPLRTS	SPL runtime system for openUTM
SYSLNK.UTM.070.UTIL	Load library for UTM utility programs
SYSLIB.UTM.070.XOPEN	Components for X/OPEN interfaces XATMI, CPIC, TX
SYSLIB.UTM.070.SSL	UTM SSL-PROXY for HTTPS access
<u>Includes/COPY elements</u>	
SYSLIB.UTM.070.ASS	ASSEMBLER
SYSLIB.UTM.070.COB	COBOL
SYSLIB.UTM.070.C	C
SYSLIB.UTM.070.PLI1	PL/1
SYSLIB.UTM.070.PASC	PASCAL-XT
SYSLIB.UTM.070.FOR	FORTRAN
SYSLIB.UTM.070.SPL	SPL4
<u>openUTM messaging</u>	
SYSMESH.UTM.070.MSGFILE	Message definition file
SYSDAT.UTM.070.MTXTIN	Input for UTM tool KDCMTXT
<u>BS2000 messaging</u>	
SYSMES.UTM.070	BS2000 message file
<u>Syntax file</u>	
SYSSDF.UTM.070	
<u>Installation</u>	
*2 SYSSSC.UTM.070.200	SSD object for BS2000 OSD/XC V11.0
*2 SYSSSC.UTM.070.210	SSD object for BS2000 OS DC V1.0
SYSNRF.UTM.070	NOREF file
SYSRMS.UTM.070	RMS file
SYSSII.UTM.070	Structure information for IMON
<u>openUTM-Tools</u>	
SYSLNK.UTM.070.CALLUTM	UPIC-Application for Administration and Client Server Communication using a SDF command interface
SYSSDF.UTM.070.CALLUTM	SDF Syntax file for the Client program CALLUTM
<u>Examples</u>	
SYSPRC.UTM.070	Library containing precompiled sample procedures which can be executed on systems without SDF-P
SYSLIB.UTM.070.EXAMPLE	Library containing sample programs and sample procedures

Information on Open Source Software

SYSDOC.UTM.070.OSS

Information on the licenses of the delivered Open Software components

openUTM WinAdmin

*3 The openUTM (BS2000) V7.0A delivery includes on an own CD the product Fujitsu Software openUTM WinAdmin V7.0A for the last time, with which you can administer UTM applications with a convenient graphical user interface.

*2 For openUTM WinAdmin an own Release Notice is available.

Notice:

*3 If you are currently using openUTM WinAdmin, please switch to the product Fujitsu Software openUTM WebAdmin. openUTM WebAdmin also offers a graphical user interface for the administration of UTM applications.

1.2.2 Software for Download**openUTM WebAdmin**

Together with openUTM (BS2000) V7.0A the product Fujitsu Software openUTM WebAdmin V7.0A is released. openUTM WebAdmin provides an additional graphical user interface for administering UTM applications which runs on a web server in contrast to WinAdmin.

openUTM WebAdmin is available for downloading on the openUTM web site

*2 [openUTM - Transaction Monitor : Fujitsu EMEIA](#)

As an add-on to the SE Manager openUTM WebAdmin V7.0A is supplied on a CD/DVD and is also made available as an ISO image at the link specified above.

*2 For openUTM WebAdmin an own Release Notice is available.

XML for openUTM

The software "XML for openUTM" is a free add-on to openUTM which is free of charge. Fujitsu Technology Solutions does not accept obligation for bug-fixing.

Die Software is available under

*2 [openUTM - Transaction Monitor : Fujitsu EMEIA](#)

This component contains the Open Source GNOME XML parser, which is provided in accordance with the conditions of the MIT license. This is included in the application package ("rt") and is also available under

*2 <http://www.opensource.org/licenses/mit-license.html>

An own Release Notice is available.

1.2.3 Software for WS4UTM and BizXML2COBOL

Consulting project packages, in the context of which the software „WebServices for openUTM" (WS4UTM) and BizXML2Cobol is made available, can be purchased. For detailed information please contact your local Fujitsu regional office.

*2 The manuals can be loaded from the web:

*2 <https://bs2manuals.ts.fujitsu.com>

*2 The use of the software is only permitted within the scope of the usage rights acquired in the project package.

*2 For further details, see the own Release Notice.

1.3 Documentation

The documentation is available in Internet:

<https://bs2manuals.ts.fujitsu.com>

The OSS and CMX documentation is also recommended for connection using the OSI-TP protocol.

1.3.1 Documentation of the Open Group interfaces

<u>Title:</u>	<u>Order number:</u>
Distributed Transaction Processing The XCPI-C Specification, Version 2 X/Open CAE Specification	ISBN 1 85912 135 7
Distributed Transaction Processing The XATMI Specification X/Open CAE Specification	ISBN 1 85912 130 6
Distributed Transaction Processing The TX (Transaction Demarcation) Specification X/Open CAE Specification	ISBN 1 85912 094 6

The X/Open manuals are on the internet (see above).
They can be purchased in printed form from bookstores using the ISBN number.

2 Software extensions

2.1 New functions in openUTM (BS2000) V7.0A

2.1.1 UTM as HTTP Server

A UTM application can also act as an HTTP server.

GET, PUT, POST and DELETE are supported as methods. In addition to HTTP, access via HTTPS is also supported.

The following interfaces have been changed:

- Generation
 - KDCDEF statement BCAMAPPL:
 - Additional specification for the transport protocol for the operand T-PROT= with value SOCKET:
 - *USP: The UTM socket protocol is to be used on connections from this access point.
 - *HTTP: The HTTP protocol is to be used for connections from this access point.
 - *ANY: Both the UTM socket protocol and the HTTP protocol are supported on connections from this access point.
 - Additional specification for encryption for the operand T-PROT= with value SOCKET:
 - SECURE: On connections from this access point, communication takes place using Transport Layer Security (TLS).
 - New operand USER-AUTH = *NONE | *BASIC:
 - Herewith you can specify which authentication mechanism HTTP clients must use for the access point.
 - KDCDEF statement HTTP-DESCRIPTOR
 - This statement defines a mapping of the path received in an HTTP request to a TAC and additional processing parameters can be specified.
 - KDCDEF statement CHAR-SET:
 - You can use this statement to assign up to four characters set names to each of the four conversion provided by openUTM.
- Programming
 - KDCS communication area (KB):
 - In the header of the KDCS communication area, there are new indicators for the client protocols HTTP, USP-SECURE, and HTTPS in the *kccp/KCCP* field.
 - KDCS call INIT PU:
 - The version of the interface has been increased to 7.
 - To obtain the complete available information, the value 372 must be specified in the KCLI field.
 - New fields for requesting (*KCHTTP/http_info*) and returning (*KCHTTPINF/httpInfo*) of HTTP-specific information.
- Administration interface KDCADMI
 - The data structure version of KDCADMI has been changed to version 11 (field *version_data* in the parameter area).

- New structure *kc_http_descriptor_str* in the identification area to support the HTTP descriptor.
- New structure *kc_character_set_str* in the identification area for supporting the HTTP character set.
- New fields *secure_soc* and *user_auth* in structure *kc_bcamappl_str* for the support of HTTP access points.
- UTM-HTTP program interface
In addition to the KDCS interface, UTM provides an interface for reading and writing HTTP protocol information and handling the HTTP message body.
The functions of the interface are briefly listed below:
 - Function *kcHttpGetHeaderByIndex()*
This function returns the name and value of the HTTP header field for the specified index.
 - Function *kcHttpGetHeaderByName()*
This function returns the value of the HTTP header field specified by the name.
 - Function *kcHttpGetHeaderCount()*
This function returns the number of header fields contained in the HTTP request that can be read by the program unit.
 - Function *kcHttpGetMethod()*
This function returns the HTTP method of the HTTP request.
 - Function *kcHttpGetMputMsg()*
This function returns the MPUT message generated by the program unit.
 - Function *kcHttpGetPath()*
This function returns the HTTP path of the HTTP request normalized with *KC_HTTP_NORM_UNRESERVED*.
 - Function *kcHttpGetQuery()*
This function returns the HTTP query of the HTTP request normalized with *KC_HTTP_NORM_UNRESERVED*.
 - Function *kcHttpGetRc2String()*
Help function to convert a function result of type enum into a printable zero terminated string.
 - Function *kcHttpGetReqMsgBody()*
This function returns the message body of the HTTP request.
 - Function *kcHttpGetScheme()*
This function returns the schema of the HTTP request.
 - Function *kcHttpGetVersion()*
This function returns the version of the HTTP request.
 - Function *kcHttpPercentDecode()*
Function to convert characters in percent representation in strings to their normal one-character representation.
 - Function *kcHttpPutHeader()*
This function passes an HTTP header for the HTTP response.
 - Function *kcHttpPutMgetMsg()*
This function passes a message for the program unit, which can be read with MGET.
 - Function *kcHttpPutRspMsgBody()*
This function passes a message for the message body of the HTTP response.
 - Function *kcHttpPutStatus()*
This function passes an HTTP status code for the HTTP response.
- Communication via Secure Socket Layer (SSL)
If a BCAMAPPL with T-PROT=(SOCKET,...,SECURE) has been generated for UTM application, an additional task is started with reverse proxy when UTM starts the application. The reverse proxy acts as the TLS Termination Proxy for the application and handles all SSL communication.

2.1.2 Encryption

The encryption functionality in UTM between a UTM application and a UPIC Client has been revised. Security gaps have been closed, modern methods have been adopted and the delivery has been simplified as follows:

- UTM-CRYPT variant
Previously, the encryption functionality in UTM was only available if the product UTM-CRYPT had been installed. With openUTM (BS2000) V7.0 this is no longer necessary. With openUTM (BS2000) V7.0 only one variant will be delivered. As of this version, the decision as to whether or not to use the encryption functionality is made via generation or at the time of application start.
- Security
A vulnerability has been fixed in the communication between a UTM application and a UPIC Client.

Caution: This means that encrypted communication with a UTM application V7.0 is only possible together with UPIC client applications as of UPIC V7.0!

2.1.3 OSI-TP communication and port numbers

- KDCDEF statement OSI-CON
the operand LISTENER-PORT can also be specified on BS2000 systems.
- Administration interface KDCADMI
In the structure *kc_osi_con_str*, the port number is also displayed in the *listener-port* field on BS2000 systems.

2.1.4 Subnets

In a UTM application, subnets can also be generated on BS2000 systems in order to restrict access to UTM applications to defined IP address ranges. In addition, name resolution can be controlled via DNS.

The following interfaces have been changed for this purpose:

- Generation
 - KDCDEF statement SUBNET:
The SUBNET statement can also be specified on BS2000 systems.
 - KDCDEF statement SUBNET:
RESOLVE-NAMES=YES/NO can be used to specify whether or not a name resolution via DNS is to take place after a connection is established.

If name resolution takes place, the real processor name of the communication partner is displayed via the administration interface and in messages. Otherwise, the IP address of the communication partner and the name of the subnet defined in the generation are displayed instead of the processor name.

- Administration interface KDCADMI
The structures *kc_subnet_str* and *kc_tpool_str* contain a new field *resolve_names*.

2.1.5 Access data for the XA database connection

A modified not yet activated user name for the XA database connection can be read by Administration (KDCADMI):

- Operation code KC_GET_OBJECT:
Data structure *kc_db_info_str*: New field *db_new_userid*.

2.1.6 Reconnect for the XA database connection

If an XA action to control the transaction detects that the connection to the database has been lost, the system tries to renew the connection and repeat the XA action. Only if this is not successful, the affected UTM process and the UTM application are terminated abnormally. Previously, the UTM application was terminated abnormally, if a XA-Connection was lost without trying to reconnect.

2.1.7 Other changes

- XA messages
The messages regarding the XA interface were extended by the inserts UTM-Userid and TAC. The messages K204-K207, K212-K215 and K217-K218 are affected.
- UTM-Tool KDCEVAL
In the TRACE 2 record of KDCEVAL the type of the last order (bourse announcement) was recorded in the WAITEND record (first two bytes can be printed).

*2 2.2 New functions/changes in openUTM (BS2000) V7.0A20

- *2 • Redesign of the UTM spinlock algorithm
*2 The UTM spinlock algorithm has been redesigned and adapted to the current CPU scheduling
*2 methods.
- *2 • Procedures
*2 Revision of the procedure header, delivered with UTM.
- *2 • BS2000 OS XC V1.0
*2 With this correction-version openUTM (BS2000) V7.0 also supports BS2000 OS XC V1.0.
- *2 • The Assembler macros for the KDCS interface are adapted to openUTM V7.0.
- *2 • UTM-SSL Proxy
*2 - TLS versions V1 and V1.1 are no longer allowed.
*2 - Update of the open source information because OpenSSL version was changed from version
*2 1.0.2r to version 1.1.1k.
- *2 • Bug fixes
*2 openUTM (BS2000) V7.0A20 contains several bug fixes (s. \$.T.@INDOC.UTM.070).

*3 2.3 New functions/changes in openUTM (BS2000) V7.0A25

- *3 • Update of OpenSSL to version 1.1.1n
*3 With openUTM (BS2000) V7.0A25 OpenSSL was updated from version 1.1.1k to version
*3 1.1.1n.

*4 **2.4 New functions/changes in openUTM (BS2000) V7.0A27**

- *4 • Update of OpenSSL to version 1.1.1u
*4 With openUTM (BS2000) V7.0A27 OpenSSL was updated from version 1.1.1n to version
*4 1.1.1u.

- *4 • Bug fixes
*4 openUTM (BS2000) V7.0A27 contains several bug fixes.

*5 **2.5 New functions/changes in openUTM (BS2000) V7.0A30**

- *5 • Update of OpenSSL to version 3.0.11
*5 With openUTM (BS2000) V7.0A30 OpenSSL was updated from version 1.1.1u to version
*5 3.0.11.

- *5 • Bug fixes
*5 openUTM (BS2000) V7.0A30 contains several bug fixes.

2.6 Implemented change requests (CR)

None.

3 Technical information

3.1 Resource Requirements

Virtual address space

openUTM (BS2000) V7.0A has the following memory requirements:

System code: 4 MB

Each UTM task occupies additional memory in classes 5 and 6 whose size depends on the application configuration and the application program.

Static disk storage space

The openUTM (BS2000) V7.0A product files occupy approximately 35.000 – 40.000 PAM pages on /390 computers and x86 computers.

Dynamic disk storage space

The space required for KDCFILE, USLOG, SYSLOG files and the application program depends on the size of the configuration.

3.2 Software Configurations

*3	BS2000 OSD/XC	as of V11.0	
*2	BS2000 OS DX	as of V1.0	
	DSSM	as of V4.3B	
*3	openNet Server	as of V4.0A	contains BCAM, CMX, DCAM, ONETSERV, SOCKETS, VTSU-B, XHCS for Unicode support, etc.
	OSS	as of V4.1D	for OSI-TP applications
	FHS	as of V8.3B	for using formats with CCSNAME for asynchronous formatting and for Unicode support
	IFG	as of V8.3A	
*3	JV	as of V15.1A	
	RSO	as of V3.6A	
*2	OMNIS	as of V8.5A	
*2	OMNIS-MENU	as of V3.5A	
	DRIVE	as of V3.1A	
	UDS/SQL	as of V2.9A	
*3	SESAM/SQL	as of V9.1A	
	LEASY	as of V6.2A	
*3	ORACLE	as of 12.2	XA connection only
*3	CRTE	as of V11.0A	
	SPL4	as of V2.9A	
	C/C++	as of V3.2A	
	COBOL85	as of V2.3A	
	COBOL2000	as of V1.5A	
	ASSEMBH	as of V1.3	
	FOR1	as of V2.2C	
	FORTTRAN90	as of V1.0A	
	PASCAL-XT	as of V2.2B	
	PLI1	V4.2A	
	FormplagDoors	as of V3.0B	
*3	SECOS	as of V5.5	necessary for Kerberos

If problems occur with older compiler versions and runtime systems that Fujitsu Technology Solutions is no longer obligated to maintain, the user has no right to warranty or correction claims. In this case we recommend that you update to current versions of compilers and/or runtime systems.

*2 **Note: The Assembler macros for the KDCS interface are adapted to openUTM V7.0.** For
 *2 FORTRAN, PASCAL-XT and PL/1 the include files correspond to the state of openUTM V4.0.

The following versions are supported for distributed transaction processing with other UTM applications:

*3 openUTM (BS2000) as of V7.0A
 *3 openUTM (Unix, Linux and Windows systems) as of V7.0A

*3 If problems occur with UTM versions less than V7.0 that Fujitsu Technology Solutions is no longer
 *3 obliged to maintain, the user is not entitled to warranty or correction claims. In this case we
 recommend that you update to current versions higher/equal V7.0 of openUTM.

The following products can be used for communication with IBM-SNA systems via LU6.2:

openUTM LU62(Unix, Linux and Windows systems) as of V5.1
 and depending on the operating system, the following third-party products also:
 Linux: IBM Communications Server for Linux as of version 6.4
 *3 Windows: IBM Communications Server for Windows as of version 6.4
 Solaris: SNAP-IX as of version 7.0.2.4; from Metaswitch Networks

The following versions are supported for distributed transaction processing with Java EE applications:

*2 BeanConnect as of V6.5

For client/server communication optionally:

*3 openUTM Client (Linux and Windows systems) as of V7.0A
 (contains carrier systems UPIC V7.0; OpenCPIC V4.0)
 *3 openUTM Client (BS2000) as of V7.0A
 BeanConnect as of V6.5A
 (contains the component openUTM JConnect)
 *3 CALLUTM (BS2000) as of V7.0A

Caution: Encrypted communication with a UTM application V7.0 is only possible together with UPIC client applications as of UPIC V7.0!

For administering UTM applications via graphical interfaces:

openUTM WinAdmin V7.0A
 openUTM WebAdmin V7.0A

*3 Note:
 *3 With Fujitsu Software openUTM (BS2000) V7.0A25 openUTM WinAdmin will be supported **for the**
 *3 **last time.**

Note:

The software configuration includes some products that are still technically usable but for which later versions are available. You should always try and use the latest versions that are available.

3.3 Product installation

The installation of the product openUTM (BS2000) with the IMON installation monitor is mandatory. You must follow the information concerning installation in the delivery cover letter and in the product documentation as well as the information in this Release Notice.

The necessary inputs and the sequence of the installation are described in the IMON documentation.

For the following product files, *DEFAULT-USERID is preset as the default user ID in the SSD objects:

SYSLNK.UTM.070.TPR Load library for /390 hardware
 SKMLNK.UTM.070.TPR Load library for x86

3.3.1 The UTM subsystem

The entire UTM system code, including the mapping module to BS2000 and UTM-D system code, is loaded and administered by DSSM as one subsystem. The time at which the UTM system code is to be loaded is defined in the DSSM statements for the UTM subsystem.

The default is CREATIM=AT-CREATION-REQUEST, meaning that the UTM subsystem must be started by issuing a command.

During a standard installation, SOLIS automatically creates an entry in the subsystem catalog.

The following SSD objects are supplied for entry into the subsystem catalog:

- *2 SYSSC.UTM.070.200 for BS2000 OSD/XC V11.0
- *2 SYSSC.UTM.070.210 for BS2000 OS DX V1.0

3.3.2 Coexistence of multiple UTM versions (parallel operation)

It is possible to load multiple UTM versions on the same BS2000 system and run them at the same time in production mode.

Parallel operation is possible with all UTM versions that have been approved for the respective BS2000 system.

If you do this, keep the following in mind:

- Should older versions be retained, this must be explicitly specified with the installation in IMON. The standard situation is that they are deinstalled.
- The subsystems must be started with the
VERSION-PARALLELISM=*COEXISTENCE-MODE parameter in the
/START-SUBSYSTEM command.
- Two UTM applications with the same application name cannot run in different UTM versions at the same time. openUTM would prevent the second application from starting.

3.3.3 UTM-SM2 subsystem

With the BS2000 SM2 measurement monitor, you can display the current performance of UTM applications on the screen and collect the values in the SM2 measurement value file for later analyses.

The UTM-SM2 module is used for communication between openSM2 and openUTM (BS2000). It is implemented as an independent BS2000 subsystem.

The UTM-SM2 subsystem files ship with BS2000-GA. The entry for UTM-SM2 in the subsystem catalog is created automatically during BS2000 installation.

The following versions of UTM-SM2 must be used:

- *2 UTM-SM2 V20.0 for BS2000 OSD/XC V11.0
- *2 UTM-SM2 V21.0 for BS2000 OS DX V1.0

SOLIS automatically generates the entry for UTM-SM2 in the subsystem catalog during standard installation. The following files are required for using UTM-SM2:

Load libraries:

- *2 SYSLNK.UTM-SM2.200 for BS2000 OSD/XC V11.0 /390
- *2 SKMLNK.UTM-SM2.200 for BS2000 OSD/XC V11.0 x86
- *2 SYSLNK.UTM-SM2.210 for BS2000 OS DX V11.0 /390
- *2 SKMLNK.UTM-SM2.210 for BS2000 OS DX V11.0 x86

REP file:

SYSREP.UTM-SM2.nnn

SSD objects:

- *2 SYSSSC.UTM-SM2.200 for BS2000 OSD/XC V11.0
- *2 SYSSSC.UTM-SM2.210 for BS2000 OS DX V1.0

The following default values are preset in the SSD object:

- Load time : Loading with DSSM command required
- Load library: \$TSOS.SYSLNK.UTM-SM2.nnn or
 \$TSOS.SKMLNK.UTM-SM2.nnn
- REP file: \$TSOS.SYSREP.UTM-SM2.nnn

Suffix nnn = 200 for UTM-SM2 V20.0
 Suffix nnn = 210 for UTM-SM2 V21.0

*2

The system administrator must not change the preset load time!

3.3.4 KDCMON subsystem

KDCMON is a tool for measuring UTM applications and is implemented as a separate subsystem. With KDCMON, you can measure UTM applications running on one BS2000 system under different UTM versions. The KDCMON subsystem files ship with BS2000-GA. The entry for KDCMON in the subsystem catalog is created automatically during installation of BS2000.

The following KDCMON versions must be used:

- *2 KDCMON V20.0 in BS2000 OSD/XC V11.0
- *2 KDCMON V21.0 in BS2000 OS DX V1.0

SOLIS automatically generates the entry for KDCMON in the subsystem catalog during standard installation. The following files are required for using KDCMON:

Load libraries:

- *2 SYSLNK.KDCMON.200 for BS2000 OSD/XC V11.0 for /390
- *2 SKMLNK.KDCMON.200 for BS2000 OSD/XC V11.0 for x86
- *2 SYSLNK.KDCMON.210 for BS2000 OS DX V1.0 for /390
- *2 SKMLNK.KDCMON.210 for BS2000 OS DX V1.0 for x86

REP file:

SYSREP.KDCMON.nnn

SSD objects:

- *2 SYSSSC.KDCMON.200 for BS2000 OSD/XC V11.0
- *2 SYSSSC.KDCMON.210 for BS2000 OS DX V1.0

Executable programs:

SYSPRG.KDCMON.nnn Program for starting KDCMON
 SYSPRG.KDCMON.nnn.KDCPMSM Program for converting measurement data

Message file:

SYSMES.KDCMON.nnn BS2000 message file

The following default values are set in the SSD object:

- Load time: implicit with the first call
- Load library: \$TSOS.SYSLNK.KDCMON.nnn or
\$TSOS.SKMLNK.KDCMON.nnn
- REP file: \$TSOS.SYSREP.KDCMON.nnn

Suffix nnn = 200 for KDCMON V20.0
Suffix nnn = 210 for KDCMON V21.0

*2

The system administrator must not change the load time default setting!

KDCMON is loaded by starting the program SYSPRG.KDCMON.nnn under \$.

3.4 Product Use

3.4.1 Notes for upgrading to openUTM (BS2000) V7.0A

Components of different UTM versions may not be mixed. The version check of openUTM guarantees that the versions of the product components match.

Carry out the following steps when upgrading from an earlier version to openUTM (BS2000) V7.0A:

- Generate KDCFILE and KDCROOT with the KDCDEF of openUTM (BS2000) V7.0A (take any KDCDEF changes into account)
- Compile the ROOT source
- Compile any application-specific administration programs, if present
- Compile the MSGTAC program unit if present and, where applicable, separate asynchronous programs if their TAC was defined as the message target via the KDCDEF statement MSG-DEST
- If application-specific message modules are used, the source for the message modules must first be newly generated with KDCMMOD and then compiled again (take deleted messages and changed message targets into account)
- Link the application program
- Transfer the user data with the KDCUPD of openUTM (BS2000) V7.0A to the new KDCFILE if the data is relevant

KDCUPD of openUTM (BS2000) V7.0A supports the following version upgrades:

openUTM (BS2000) V6.4A	→	openUTM (BS2000) V7.0A
openUTM (BS2000) V6.5A	→	openUTM (BS2000) V7.0A
openUTM (BS2000) V7.0A	→	openUTM (BS2000) V7.0A

With openUTM (BS2000) V7.0 only one variant will be delivered. In this variant the encryption functionality is available by default.

The decision whether the encryption features shall be used or not can be made by the generation or at runtime.

*2 **3.4.2 Notes for upgrading openUTM (BS2000) V7.0A00 to openUTM (BS2000) V7.0A20**

*2 openUTM (BS2000) V7.0A20 is compatible with openUTM (BS2000) V7.0A00. After the UTM
*2 subsystem has been restarted with the openUTM (BS2000) V7.0A20 system code, UTM
*2 applications and KDCFILE that were used in V7.0A00 can also be used without changes in
*2 V7.0A20. Users, who want to use all corrections, have to generate all application components
*2 again.

*2 KDCS program units in Assembler, which use the macros KCKBA, KCINFA or KCDADA, must be
*2 compiled before starting the application under UTM V7.0A20.

*3 **3.4.3 Notes for upgrading openUTM (BS2000) V7.0A20 to openUTM (BS2000) V7.0A25**

*3 openUTM (BS2000) V7.0A25 is compatible with openUTM (BS2000) V7.0A20. After the UTM
*3 subsystem has been restarted with the openUTM (BS2000) V7.0A25 system code, UTM
*3 applications and KDCFILE that were used in V7.0A20 can also be used without changes in
*3 V7.0A25. Users, who want to use all corrections, have to generate all application components
*3 again.

*4 **3.4.4 Notes for upgrading openUTM (BS2000) V7.0A25 to openUTM (BS2000) V7.0A27**

*4 openUTM (BS2000) V7.0A27 is compatible with openUTM (BS2000) V7.0A25. After the UTM
*4 subsystem has been restarted with the openUTM (BS2000) V7.0A27 system code, UTM
*4 applications and KDCFILE that were used in V7.0A20 can also be used without changes in
*4 V7.0A27. Users, who want to use all corrections, have to generate all application components
*4 again.

*5 **3.4.5 Notes for upgrading openUTM (BS2000) V7.0A27 to openUTM (BS2000) V7.0A30**

*5 openUTM (BS2000) V7.0A30 is compatible with openUTM (BS2000) V7.0A27. After the UTM
*5 subsystem has been restarted with the openUTM (BS2000) V7.0A30 system code, UTM
*5 applications and KDCFILE that were used in V7.0A27 can also be used without changes in
*5 V7.0A30. Users, who want to use all corrections, have to generate all application components
*5 again.

3.4.6 Notes on migration from /390 to x86

If you migrate a UTM application from a BS2000 system /390 to a BS2000 system x86, the timer values that were generated for this application may have to be adjusted.

This applies especially to the timers that monitor the runtime of the application programs that have been generated with the TAC TIME parameter. After a conversion, the values that were generated for CPU and real time monitoring must be checked and adjusted if necessary.

3.4.7 Optional REPs

Currently, no optional REPs are delivered with openUTM (BS2000) V7.0A.

3.5 Obsolete functions and those to be discontinued

3.5.1 Obsolete functions

Several functions have been deleted and can no longer be generated in KDCDEF. If they are still specified, this will be rejected with a syntax error in the KDCDEF run. The following has been deleted:

- KDCDEF statement PTERM
Operand values 1 and 2 for *ENCRYPTION-LEVEL*

- KDCDEF statement TPOOL
Operand values 1 and 2 for *ENCRYPTION-LEVEL*
- KDCDEF statement TAC
Operand value 1 for *ENCRYPTION-LEVEL*

3.5.2 Interfaces to be discontinued

- UTM Cluster
UTM cluster applications are no longer supported on BS2000 systems
- Fujitsu Software openUTM WinAdmin
With this version WinAdmin will be supported for the last time
- FORTRAN, PASCAL-XT and PL/1
With openUTM V7.0A20 the KDCS interface for the programming languages FORTRAN, PASCAL-XT and PL/1 will be supported for the last time

*2
*2
*2

3.6 Incompatible changes

3.6.1 Returned length KCRLM at MGET with KCSRCC 02Z at USP Clients

If a program unit is reading a message part with MGET and the length in parameter KCLA is smaller than the actual length of the (remaining) message part, the KDCS return code 02Z is set and the actual length of the (remaining) message part is returned in the return field KCRLM now and not the value of KCLA.

Example at a message part with length 20:

MGET KCLA=5 -> 02Z, KCRLM=20 (instead of KCRLM=5)

MGET KCLA=7 -> 02Z, KCRLM=15 (instead of KCRLM=7)

MGET KCLA=8 -> 000, KCRLM=8

3.7 Restrictions

- *2 The data structures in the UTM include files for the languages Pascal, FORTRAN and PL/1, which
*2 are delivered with the Libraries SYSLIB.UTM.070.PASC, SYSLIB.UTM.070.FOR and
*2 SYSLIB.UTM.070.PLI1, correspond to the status of openUTM V4.0 from 1997.

3.8 Procedure in the event of errors

The following documentation is required for diagnosis if an error occurs:

- Detailed description of the error situation and indication whether and how the error can be reproduced
- *2 - BS2000 version with correction status, loader ID and SYSREP.BS2.xxx
- openUTM-specific documentation:
 - UTM version with correction status
 - List of control statements for KDCDEF
 - For warm start errors or errors in KDCUPD and abnormal application end with PMIO20/PMIO22, the KDCFILE files are needed
 - Binder lists of the application program

- DBL list of the application (dynamic link loader)
 - Compilation lists of affected program units
 - When reproducing errors, turn on TESTMODE=ON; TRACEREC should be set to at least 3000 (10000 if using UTM-D)
 - UTM dumps; remember to include the dumps of all tasks that were active at the time of the error
 - SYSLOG file
 - User dumps in case of XT58/XT5C, etc.
 - SYSLST/SYSOUT logs
- For errors in connection with FHS also include:
- Which FHS version was used
 - Format printout with IFG
 - Ready-to-use format module in file form or printout of the format with LMS or DPAGE
 - User dump at the time of the error in file form
- For errors in connection with databases, see the Release Notice for the respective database system
- For errors with KDCUPD:
- SYSOUT/SYSLST log for the KDCUPD run
 - UTM dump, provided one was generated
 - KDCDEF control statements for old and new KDCFILE if data security allows
 - Old KDCFILE
 - New KDCFILE with status prior to the KDCUPD run, or KDCDEF input data for new KDCFILE as a file
- For errors in connection with RSO, see the information about the OLTP interface in the manual and the Release Notice for the version of RSO used
- For distributed processing over LU6.1:
- Any BCAM trace (PORT trace)
 - Any UTM-BCAM trace (BTRACE)
- For heterogeneous connections, generation information and trace from openUTM LU6.2 and its SNA components and from IBM-SNA system
- When using communication over OSI TP:
Activate the OSS trace in the UTM application
- When using communication over HTTPS Clients:
- User-Dumps generated by the UTM SSL-Proxy process
 - SYSLST and SYSOUT protocol of the UTM SSL-Proxy process

4 Hardware requirements

openUTM (BS2000) V7.0A will run on all CPUs supported by the following BS2000 versions:

*3 BS2000 OS DX V1.0 and BS2000 OSD/XC as of V11.0.

A list of all devices supported by openUTM (BS2000) V7.0A can be found in the manual “openUTM V7.0 Generating Applications”.