FUJITSU Software openUTM (BS2000)
FUJITSU Software openUTM CRYPT (BS2000)

Version 6.5A
*1   April 2018

Release Notice

1 General

The open and universal transaction monitor openUTM supports the creation and operation of transactional applications under the FUJITSU operating system BS2000 as well as under commonly available Unix systems (Solaris, HP-UX, AIX) or Linux and Windows systems.

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 the product openUTM:

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- The graphical User Interface WinAdmin for administration of UTM applications is shipped with media kit DVD.
  There is a separate Release Notice for WinAdmin.

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- The web based tool WebAdmin is available for administration of UTM applications via Internet browser.
  There is a separate Release Notice for WebAdmin.

- WS4UTM is a tool which offers 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.
  A separate Release Notice is available for UTM-XML.

- 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:

- FUJITSU Software openUTM Client is a product which allows client/server communication with openUTM server applications and is available as a separate product for the Fujitsu operating system BS2000 as well as for Unix, Linux and Windows systems.
  A separate Release Notice is available for openUTM-Client.

- The add-on product FUJITSU Software openUTM LU62 (Unix/Windows) V5.1 supports connections to CICS/IMS applications on IBM systems via SNA LU6.2.
  A separate Release Notice is available for openUTM LU62.

- 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.
  A separate Release Notice is available for BeanConnect.

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Encrypted transfer of messages between the UTM application and the client is provided by additional encryption software for openUTM and openUTM Client with the carrier system UPIC. The add-on product FUJITSU Software openUTM CRYPT (BS2000) is available for openUTM (BS2000).

More information about the above mentioned products and the data sheets are available at:
        http://ts.fujitsu.com/openUTM

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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

*1 This Release Notice is a summary of the major extensions, dependencies and operating information with respect to openUTM (BS2000) V6.5A and openUTM CRYPT (BS2000) V6.5A under the operating system BS2000 and all the information necessary for migrating from the predecessor version openUTM (BS2000) V6.4A.
Changes which have become known subsequently are updated and provided in this file.

*1 The content refers to release level: April 2018.

*1 All changes since the release level from December 2017 are marked in the left margin.
*1 - Marking *1 = release level V6.5A10 from April 2018

All BS2000 product Release Notices including this one are available on the Internet under the following URL:
http://manuals.ts.fujitsu.com

If you skip one or more previous versions when you install this product, you must heed the information from the Release Notices (and README files) of the previous versions.

The use of names, trademarks, etc. in this Release Notice does not entitle readers to assume that these names/designations may be used without restrictions by anyone. Often the names/ designations are protected by law or contract, even if this is not indicated here.

1.1 Ordering

*1 openUTM (BS2000) V6.5A and openUTM CRYPT (BS2000) V6.5A can be ordered from your local distributors.

*1 openUTM (BS2000) V6.5A and openUTM CRYPT (BS2000) V6.5A are subject to the general terms and conditions of the software product purchase, maintenance, use and service agreement.

1.1.1 Licensing

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

openUTM (BS2000) V6.5A 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 prcessing 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).

1.1.2 License for encryption

openUTM (BS2000) V6.5A ships without the encryption software. If you wish to employ the
encryption functions in the server product openUTM (BS2000) V6.5A, you have to separately order
the add-on product openUTM (BS2000) CRYPT V6.5A. With this the encryption functions for
openUTM (BS2000) V6.5A will be activated. This is not a lincense.

The delivery of openUTM CRYPT (BS2000) is subject to export restrictions. If openUTM (BS2000)
V6.5A is to be used outside Germany with encryption functions, a special export permit must be
obtained in advance.

1.1.3 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 V6.5A which is delivered with openUTM (BS2000) V6.5A a runtime
license for openUTM Client (BS2000) V6.5A 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 and whether if it
should be done with encryption.
CALLUTM-STD V1.0 could be used instead of CALLUTM V6.5A if openUTM CLIENT (BS2000)
V6.5A should not be licensed. It is delivered with openUTM (BS2000) V5.3A and V6.0A.
Pleace note that for CALLUTM-STD there is no maintenance i.e. there will be no error corrections
and no development.

1.2 Delivery

1.2.1 Software on data media

The openUTM (BS2000) V6.5A and openUTM CRYPT (BS2000) V6.5A 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) V6.5A (incl. openUTM-D) but
does not include the encryption products.
The delivery of openUTM CRYPT (BS2000) V6.5A is subject to export restrictions; your local
distributors will provide you with information about this.

Delivery components of openUTM (BS2000) V6.5A

The openUTM (BS2000) V6.5A delivery components are listed below.

File   Contents

Module libraries

SYSLNK.UTM.065.TPR	openUTM system code (TPR) for /390
SKMLNK.UTM.065.TPR	openUTM system code (TPR) for x86
SYSLNK.UTM.065	openUTM module library, TU code only
SYSLNK.UTM.065.SPLRTS	SPL runtime system for openUTM
SYSLNK.UTM.065.UTIL	Load library for UTM utility programs
SYSLIB.UTM.065.XOPEN	Components for X/OPEN interfaces XATMI, CPIC, TX

Includes/COPY elements

SYSLIB.UTM.065.ASS	ASSEMBLER
SYSLIB.UTM.065.COB	COBOL
SYSLIB.UTM.065.C	C

```
SYSLIB.UTM.065.PLI1          PL/1
SYSLIB.UTM.065.PASC          PASCAL-XT
SYSLIB.UTM.065.FOR           FORTRAN
SYSLIB.UTM.065.SPL           SPL4
```

openUTM messaging

```
SYSMSH.UTM.065.MSGFILE    Message definition file
SYSDAT.UTM.065.MTXTIN     Input for UTM tool KDCMTXT
```

BS2000 messaging

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SYSMES.UTM.065            BS2000 message file
```

Syntax file

*1 SYSSDF.UTM.065   SDF syntax file for UTM tools

Installation

```
SYSSSC.UTM.065.190       SSD object for BS2000 OSD/BC V10.0 (/390 and x86)
SYSSSC.UTM.065.200       SSD object for BS2000 OSD/BC V11.0 (/390 and x86)

SYSNRF.UTM.065           NOREF file
SYSRMS.UTM.065           RMS file
SYSSII.UTM.065           Structure information for IMON
```

openUTM-Tools

```
SYSLNK.UTM.065.CALLUTM   UPIC-Application for Administration and Client Server
                         Communication using a SDF command interface
SYSSDF.UTM.065.CALLUTM   SDF Syntax file for the Client program CALLUTM
```

Examples

```
SYSPRC.UTM.065           Library containing precompiled sample procedures which can be
                         executed on systems without SDF-P
SYSLIB.UTM.065.EXAMPLE   Library containing sample programs and sample procedures
```


Documentation

```
SYSFGM.UTM.065.D  German Release Notice
SYSFGM.UTM.065.E  English Release Notice
```


*1 **Product files for openUTM CRYPT (BS2000) V6.5A**

*1 The openUTM CRYPT (BS2000) V6.5A delivery components are listed below.

*1 File   Contents

*1 SYSLNK.UTM-CRYPT.065   System code for platform /390
*1 SKMLNK.UTM-CRYPT.065   System code for platform x86
*1 SYSSII.UTM-CRYPT.065   Structure information for IMON

openUTM WinAdmin

The openUTM (BS2000) V6.5A delivery includes the product FUJITSU Software openUTM WinAdmin V6.5A with which you can administer UTM applications with a convenient graphical user interface.

1.2.2   Software for download

openUTM WebAdmin

Together with openUTM (BS2000) V6.5A the product FUJITSU Software openUTM WebAdmin V6.5A is released.

openUTM WebAdmin offers a graphic administration interface which runs on a web server in contrast to WinAdmin.
openUTM WebAdmin is available for downloading on the openUTM website
http://de.ts.fujitsu.com/openUTM.

XML for openUTM

The software "XML for openUTM" is a free additional component to openUTM. It is supplied "as is" and all use is at your own risk. The Software is available on the web under
http://de.ts.fujitsu.com/openutm

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 on the web under
http://www.opensource.org/licenses/mit-license.html

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 from your local Fujitsu regional office. The manuals can be downloaded from the Internet:
http://manuals.ts.fujitsu.com

The use of the software is only permitted within the framework of the license purchased in the project package.
For further details refer to the separate Release Notice.

1.3   Documentation

1.3.1   Availability

The documentation is available in Internet:
http://manuals.ts.fujitsu.com
The OSS and CMX documentation is also recommended for connection using the OSI-TP protocol.

1.3.2 Documentation of the Open Group interfaces

Title: Order number:
CPI-C
X/Open CAE Specification
Distributed Transaction Processing:
The CPI-C Specification, Version 2   ISBN 1 85912 135 7

Reference Model
X/Open Guide
Distributed Transaction Processing:
Reference Model, Version2   ISBN 1 85912 019 9

TX
X/Open CAE Specification
Distributed Transaction Processing:
The TX (Transaction Demarcation) Specification   ISBN 1 85912 094 6

XATMI
X/Open CAE Specification
Distributed Transaction Processing:
The XATMI Specification   ISBN 1 85912 130 6

The X/Open manuals are available on the web. They can be obtained in printed form from
bookstores quoting the ISBN number.

2 Software extensions

2.1 New functions in openUTM (BS2000) V6.5A

2.1.1 Long hostnames of up to 64 characters

OpenUTM supports names that can be up to 64 characters in length. This means it is no longer necessary to map the names from the UTM generation to a real long name using configuration or mapping files.
The following interfaces were extended to support this:

- Generation
    – KDCDEF statement CON, OSI-CON, PTERM and TPOOL:
      For PRONAM= or OSI-CON NETWORK-SELEKTOR=, a name of up to 64
      characters in length can be specified for the partner computer.
    – KDCDEF statement CON and PTERM with PTYPE=APPLI:
      The LISTENER-PORT= operand can also be specified on BS2000 systems. With
      this BCMAP entries for partner with PORT != 102 are no longer necessary.

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- Programming
  - KDCS call INFO SI:
      - To receive the available information in full, value 180 must be specified in the
        KCLA field.
      - New fields KCHSTNML and KCPRONML for returning long hostnames.
  - KDCS call INIT PU:
      - The interface version has been increased to 6.
      - To receive the available information in full, value 356 must be specified in the
        KCLI field.
      - New fields KCHSTNML and KCPRONML for returning the long hostnames.
  - KDCS call SIGN ST:
      - The interface version has been increased to 4.
      - To receive the available information in full, value 180 must be specified in the
        KCLA field.
      - The node name in the KCCLNODE field can be up to 64 characters in length.

- KDCADMI administration interface
    – New structure *kc_long_triple_str* in the identification area to support long
      hostnames. This structure must be used for all objects except KC_MUX. As a
      result, the data structure version of KDCADMI has changed to version 10
      (*version_data* field in the parameter area).
    – New fields for the long hostnames:

Data structure	Field name(s)
kc_con_str	*proname_long*
kc_lses_str	
kc_lterm_str	
kc_pterm_str	
kc_tpool_str	
kc_osi_con_str	*network_selector_long*

- KDCADM command interface
  - KDCINF command:
    If an object of the type CON, LSES, LTERM, OSI-CON, PTERM, or TPOOL
    contains a long hostname, the information to this object is displayed within two
    lines.
  - Commands KDCLSES, KDCPOOL, KDCPTERM, and KDCSWTCH:
    If an object contains a long hostname, the information to this object is displayed
    within two lines.

- Messages
  Message K037 is output every time the long hostname is converted to the short local name
  and vice versa. This message is used for diagnosis of connection problems. Default target
  of this message is the SYSLOG file.

2.1.2 Load-module version *HIGHEST-EXISTING

A UTM application on a BS2000 system can be generated in such a way that the highest version of
the load module available in the library is always loaded, i.e., the version no longer has to be
explicitly specified.
The following interfaces have been changed to support this:

- Generation
  KDCDEF statement LOAD-MODULE:
  New operand values VERSION = *HIGHEST-EXISTING and *UPPER-LIMIT.
  *UPPER-LIMIT is a synonym for the VERSION=@ value that was already possible.

- KDCADMI administration interface
  Data structure kc_load_module_str:
  - version field: New values *HIGHEST-EXISTING and *UPPER-LIMIT. These can be
    specified when using KC_MODIFY_OBJECT to perform modifications.
  - New field *version_gen* for the version of the generated load module.

- KDCADM command interface
  - KDCINF command:
    For the LOAD-MODULE object type, the generated version of the load module is
    output in VERSION (GENERATED).
  - KDCPROG command:
    For the VERSION parameter, *HIGHEST-EXISTING and *UPPER-LIMIT can also
    be specified. In the line VERSION (GENERATED) of the output of KDCPROG, the
    generated version will will be shown.

2.1.3 Password length of up to 16 characters

The password for a UTM user ID can be up to 16 characters in length.

- Generation
  - KDCDEF statement USER:
    For PASS=, a password of up to 16 characters in length can be specified.
    For PROTECT-PW=, the maximum value for the minimum length has been
    increased to 16.
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- Programming
  - KDCS call SIGN ON, CK:
    In the KCLA field, value 16 must be specified
  - KDCS call SIGN CP:
    In the KCLA field, value 32 must be specified

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- KDCS call SIGN ST:
    - The interface version has been increased to 4.
    - To receive the available information in full, value 120 must be specified in the KCLA field.
    - New field KCRPASSL for returning the password from the UPIC protocol.

- KDCADMI administration interface
    - Data structure kc_user_str and kc_user_dyn2_str:
      New fields *password16* and *protect_pw16_lth.*

- KDCADM command interface
    - KDCUSER command
      For PASS= a password of up to 16 characters in length can be specified.

- Program CALLUTM
    - CREATE-CONFIGURATION statement:
      For PASS= a password of up to 16 characters in length can be specified.

2.1.4   Dead letter queue for LPAP and OSI-LPAP

Messages to LU6.1 or OSI-TP partners that are deleted because they could not be delivered due to a permanent error can now be saved in the dead letter queue.
The interfaces have been changed as follow to support this:

- Generation
  KDCDEF statements LPAP and OSI-LPAP:
  The new operand DEAD-LETTER-Q= controls whether undeliverable messages that are deleted from their message queue are to be saved in the dead letter queue.

- Programming
  For KDCS call DADM with KCOM=MV or MA (moving messages from the dead letter queue), an LPAP or OSI-LPAP partner can also be specified.

- KDCADMI administration interface
  Data structures *kc_lpap_str* and *kc_osi_lpap_str*:
  New field *dead_letter_q* for controlling the saving of undeliverable messages in the dead letter queue.

2.1.5   Code conversion tables

For code conversion between ASCII-compatible codes and EBCDIC codes, openUTM provides tables for four code conversions on all platforms (two 8-bit conversions and two 7-bit conversions). By default, openUTM uses an 8-bit conversion between ISO8859-i and EBCDIC.DF.04-i on BS2000, Unix, and Linux systems, and an 8-bit conversion between Windows-1252 and EBCDIC.DF.04-F on Windows systems.

2.1.6   Access data for the XA database connection

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- The access data for the XA database connection can optional (as was previously the case) be specified in the start parameters.

- The user name and the password for the XA database connection can be changed via administration (KDCADMI):
    - Operation code KC_MODIFY_OBJECT:
        - New object type KC_DB_INFO
        - New values KC_IMMEDIATE and KC_DELAY in the *subopcode1* field for controlling the time of the password change.
    - Data structure *kc_db_info_str*: New fields *db_userid*, *db_password*.

- The access data for the XA database connection can be transferred with KDCUPD:
  - TRANSFER statement: New operand DB-CREDENTIALS=.

2.1.7   KDCUPD with changed number of databases

KDCUPD transfers all data even if the number of databases in the new generation increases. Prerequisites for this are that the openUTM version does not change and the sequence of existing databases in the generation remains unchanged.

2.1.8   Multi DBs on BS2000 systems

Up to three databases can be generated on BS2000 systems.

2.1.9   Moving pending asynchronous messages for LTERM, LPAP, and OSI-LPAP bundles

For LTERM, LPAP, and OSI-LPAP bundles, pending asynchronous messages for slave LTERMs, slave LPAPs, or slave OSI-LPAPs can be automatically moved to a slave with an established connection after the waiting time has elapsed.

- Generation, KDCDEF statement MAX:
  New operand MOVE-BUNDLE-MSGS= for controlling automatic moving.

- Administration interface KDCADMI, data structure *kc_max_par_str*:
  New field *move_bundle_msgs* for output of the generated value.

2.1.10   Other changes

- Output of the generation time at the administration interface
  - KDCADMI data structure *kc_curr_par_str*:
    New fields *gen_date_xxx* and *gen_time_xxx* for the output of the date and time of generation.
  - Command KDCINF STAT:
    Additional output of the date and time of generation.

- Message when a message to OSI TP and LU6.1 partner is lost
  If a message to an OSI TP and LU6.1 partner is deleted because it could not be delivered due to a permanent error, the new message K239 is output.

- Improved performance during communication between UPIC clients and UTM server applications.

- New startparameter ENTER-PROC-INPUT.

- New example prozedur START-APPL-ENTER-PROC.

- The UTM tool KDCEVAL has been extended as follows:
  - New operand SHOW-TSN in the KDCEVAL command OPTION for activating or deactivating the repeated output of the TSN or the PID in the TRACE2 list.
  - Additional outputs in the list header, such as appli mode or test mode.

- Encryption
  The encryption functionality of the BS2000 system is used.

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2.2 Implemented change requests (CR)

Some of the new functions listed in section 2.1 were implemented as a result of change requests.

- Long hostnames of up to 64 characters.
- Load-module version *HIGHEST-EXISTING"
*1   • KDCEVAL – output of the TSN in the TRACE2 list

3 Technical information

3.1 Resource requirements

Virtual address space

openUTM (BS2000) V6.5A has the following memory requirements:

     System code: 4 MB
*1   openUTM CRYPT: 126 KB

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

Static disk storage space

The openUTM (BS2000) V6.5A product files occupy approximately 30.000 – 35.000 PAM pages on /390 computers and x86 computers.
*1 The openUTM CRYPT (BS2000) V6.5A product files occupy approximately 300 PAM pages.

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

	OSD/BC	as of V10.0	for /390
	OSD/XC	as of V10.0	for x86
*1	openUTM CRYPT	V6.5A	if encryption is used in the UTM applications
	DSSM	as of V4.3A	
	openNet Server	as of V3.6A	contains BCAM, CMX, DCAM, ONETSERV, SOCKETS, VTSU-B, XHCS for Unicode support, etc.
	OSS	as of V4.1D	for OSI-TP applications
*1	FHS	as of V8.3B	
	IFG	as of V8.3A	
	JV	as of V15.0A	
	HIPLEX-MSCF	as of V7.0	for UTM-Cluster applications
	RSO	as of V3.6A	
*1	OMNIS	as of V8.5A	
*1	OMNIS-MENU	as of V3.5A	
	DRIVE	as of V3.1A	
	UDS/SQL	as of V2.7A	
	SESAM/SQL	as of V7.0A	
		as of V8.0A	for UTM-Cluster applications
	LEASY	as of V6.2A	
	ORACLE	as of 11.2	XA connection only
	CRTE	as of V10.0A	
	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	
FORTRAN90	as of V1.0A	
PASCAL-XT	as of V2.2B	
PLI1	V4.2A	
FormplagDoors	as of V3.0B	
SECOS	as of V5.2B	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.

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

openUTM (BS2000)	as of V6.3
openUTM (Unix, Linux and Windows systems)	as of V6.3

If problems occur with UTM versions less than V6.3 that Fujitsu Technology Solutions is no longer 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 V6.3 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:
Solaris: SNAP-IX as of version 7.0.2.4; from Metaswitch Networks
Linux: IBM Communications Server for Linux as of version 6.4
Windows: IBM Communications Server for Windows as of version 6.1.2

The following versions are supported for distributed transaction processing with Java EE applications:
BeanConnect (Unix, Linux and Windows systems)   as of V3.0B

For client/server communication optionally:

openUTM Client (Unix, Linux and Windows systems)   as of V6.3A
    (contains carrier systems UPIC V6.3; OpenCPIC V4.0)

openUTM Client (BS2000)   as of V6.3A

BeanConnect (Unix, Linux and Windows systems)   as of V3.0B
    (contains the component JConnect)

CALLUTM (BS2000)   as of V6.3

For the administration using graphical interfaces:
openUTM WinAdmin   V6.5A
openUTM WebAdmin   V6.5A

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.065.TPR   Load library for /390 hardware
SKMLNK.UTM.065.TPR   Load library for x86
SYSREP.UTM.065   REP file

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. Only the "Basic UTM system with UTM-D" case still exists.

The following SSD objects are supplied for entry into the subsystem catalog:
SYSSSC.UTM.065.190 for BS2000 OSD/BC V10.0 for /390 and x86
SYSSSC.UTM.065.200 for BS2000 OSD/BC V11.0 for /390 and x86

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 Product installation of openUTM CRYPT (BS2000)

Consider the following paragraph when installing openUTM CRYPT (BS2000):

The system code of openUTM (BS2000) V6.5A and in the load library for the UTM utility programs
includes the module KCNOCRYP as the substitute for the encryption code. If you want to use the
encryption functions with openUTM (BS2000) V6.5A, you then have to change the following before
starting the UTM subsystem:
   In the library with the UTM system code and in the load library for the UTM utility programs the
   module KCNOCRYP has to be replaced by the module KCECRYP and KCECRYPU.
   The SYSPRC.UTM.065(COPY-CRYPT) procedure is available to the user for both these actions.

3.3.4 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
analysis.
The UTM-SM2 module is used for communication between openSM2 and openUTM (BS2000). It is
implemented as a 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:
UTM-SM2 V19.0   for BS2000 OSD/BC V10.0 for /390 and x86
UTM-SM2 V20.0   for BS2000 OSD/BC V11.0 for /390 and x86

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:

SYSLNK.UTM-SM2.190 for BS2000/OSD-BC V10.0 for /390
SKMLNK.UTM-SM2.190 for BS2000/OSD-BC V10.0 for x86
SYSLNK.UTM-SM2.200 for BS2000/OSD-BC V11.0 for /390
SKMLNK.UTM-SM2.200 for BS2000/OSD-BC V11.0 for x86

REP file:

SYSREP.UTM-SM2.nnn REP file

SSD objects:

SYSSSC.UTM-SM2.190 for BS2000 OSD/BC V10.0 for /390 and x86
SYSSSC.UTM-SM2.200 for BS2000 OSD/BC V11.0 for /390 and x86

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 = 190 for UTM-SM2 V19.0A
      Suffix nnn = 200 for UTM-SM2 V20.0A

The system administrator must not change the preset load time!

3.3.5 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:

    KDCMON V19.0A   in BS2000 OSD/BC V10.0 for /390 and x86
    KDCMON V20.0A   in BS2000 OSD/BC V11.0 for /390 and x86

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

Load libraries:

SYSLNK.KDCMON.190 for BS2000 OSD/BC V10.0 for /390
SKMLNK.KDCMON.190 for BS2000 OSD/BC V10.0 for x86
SYSLNK.KDCMON.200 for BS2000 OSD/BC V11.0 for /390
SKMLNK.KDCMON.200 for BS2000 OSD/BC V11.0 for x86

REP file:

SYSREP.KDCMON.nnn REP file

SSD objects:

SYSSSC.KDCMON.190 for BS2000 OSD/BC V10.0 for /390 and x86
SYSSSC.KDCMON.200 for BS2000 OSD/BC V11.0 for /390 and x86

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 = 190 for KDCMON V19.0A
        Suffix nnn = 200 for KDCMON V20.0A

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

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

3.4 Product use

3.4.1 Notes for upgrading to openUTM (BS2000) V6.5A

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) V6.5A:
- Generate KDCFILE and KDCROOT with the KDCDEF of openUTM (BS2000) V6.5A (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) V6.5A to the new KDCFILE if the data is relevant

KDCUPD of openUTM (BS2000) V6.4A supports the following version upgrades:

openUTM (BS2000) V6.3A ===> openUTM (BS2000) V6.5A
openUTM (BS2000) V6.4A ===> openUTM (BS2000) V6.5A
openUTM (BS2000) V6.5A ===> openUTM (BS2000) V6.5A

*1 **3.4.2 Using openUTM CRYPT (BS2000) V6.5A in openUTM (BS2000) V6.5A**

*1 As standard openUTM (BS2000) V6.5A is shipped without encryption software. If you want to use
*1 the encryption functions in the server product openUTM (BS2000) V6.5A, the add-on product
*1 openUTM CRYPT (BS2000) V6.5A has to be ordered separately. The encryption functions for
*1 openUTM (BS2000) V6.5A will be activated with this.

3.4.3 Notes on migrating from /390 to SQ

If you migrate a UTM application from a BS2000 system /390 to a BS2000 system / SQ (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.

3.4.4 Optional REPs

Currently, no optional REPs are shipped with openUTM (BS2000) V6.5A.

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 USER:
  Operanden CERTIFICATE= and CERTIFICATE-AUTHORITY= for assigning certificates.
- KDCDEFstatement DATABASE:
  Operand value TYPE=PRISMA for the database system PRISMA.

3.5.2   Interfaces to be discontinued

- Encryption
  With openUTM V6.5 following encryption Level are supported for the last time:
    - Encryption level 1 and 2 for PTERM and TPOOL
      ENCRYPTION-LEVEL=1 (length of RSA key 200 Bit, DES method)
      ENCRYPTION-LEVEL=2 (length of RSA key 512 Bit, AES method)

    - Encryption level 1 for TAC
      Operand value ENCRYPTION-LEVEL=1 for KDCDEF statement TAC
      (Encryption with the DES method)

3.6   Incompatible changes

- KDCS interface
    - call INFO SI
      The length of the data, returned by the KDCDEF call INFO SI, has been changed.
      Existing programs get the return code 01Z in openUTM V6.5. To avoid this return
      code, these programs have to be translated new with the data structure of
      openUTM V6.5.
    - calls SIGN ON, CK and CP
      At SIGN ON and SIGN CK the parameter KCLA have set to 16 (up to now 8) and at
      SIGN CP to 32 (up to now 16), otherwise the call delivers the return code 43Z.
    - call DADM RQ
      At DADM RQ the parameter KCLA have set to 54 (up to now 53), otherwise the call
      delivers the return code 01Z.

- Administration
    - Program interface in general:
      The program interface of the administration has changed incompatible. Existing
      programs are not affected.
      If administration programs will be translated and *version_data* will be set to the
      actual version 10 (KC_VERSION_DATA_10), the new fields for the long
      hostnames must be served respectively for calls to modify objects. For calls to read
      object characteristics in the IdArea and the SelectionArea the fields for the long
      hostnames must be served also. Affected are the objects KC_CON, KC_LSES,
      KC_PTERM, KC_TPOOL, and KC_CLUSTER_NODE.
      KC_GET_OBJECT: for the object types KC_LPAP, KC_OSI_CON, KC_PTERM,
      and KC_TPOOL in the field *map* the value ‚1' instead of ‚S' for SYS1 will be
      returned in the data structures *kc_lpap_str*, *kc_osi_con_str*, *kc_ptrm_str* and
      kc_tpool_str .
    - Program interface *obj_type*=KC_DB_INFO:
      As of openUTM V6.5 you have to specify *id_lth =2* for calls at the program interface
      with *opcode*=KC_GET_OBJECT and *obj_type*=KC_DB_INFO. Up to now *id_lth = 0*
      has had to be specified.

- Program interface *obj_type*=KC_USER:
  Administration programs, which sets a new, already encrypted, password
  (*pw_encrypted* = `Y`/`A`) for a user, have to set the version of the program
  interface of the administration (*version_data*) to the actual version 10
  (KC_VERSION_DATA_10) and to write the new encrypted password in the new
  field *password16*.
- Program exchange:
  At the program exchange with KDCPROG the appropriate program interface of the
  administration the load-modul is already surched in the library at the processing of
  the administration call in UTM V6.5. Is the load-module not available, the
  administration call is rejected.
  Up to now, the administration call is always accepted und only at the point of
  loading the load-modul was accessed in the library. If the load-modul was not in the
  library at access time, a BIND error occurred.

- Messages
  The messages K028 and K121 are omitted. They will no longer used by openUTM V6.5.
  For the messages K004 and K006 message texts have changed.

*1
*1
*1
*1
- Standard login method and intermediate dialog of a logon process
  The standard logon method of UTM and the intermediate dialog of a logon process have
  been converted to output minimum of information about the validity of user ID and
  password if the credentials are invalid.

  The messages K004 and K006 can no longer be differentiated when issued to the targets,
  STATION, SYSOUT, and SYSLST, because the texts of these messages are adapted. For
  the message targets MSGTAC, SYSLOG, and USER-DEST the messages K004 and K006
  can be differed furthermore.

  For a user, generated with identification and dark password, in openUTM V6.5 it is asked
  for the password before asking for the identification (up to now it was in reverse order).

  If the end of the validity of the password has reached and the application is generated
  without Grace-Sign-On, the message K092 is outputted first (up to now K120). This
  happens for users with light or with dark password, but only no login operation is active.
  After the input of the password the message K120 is output, if the password was correct.
  Message K006 is issued alternatively.

  Has the validity of the password ended and the application is generated with Grace-Sign-
  On, the message K092 will be put out first (up to now K155). This happens for user with
  light or with dark password. For user with dark password this happens also in an
  intermediate dialog of a login process. If the old Password is given correctly, than one of
  the messages K097, K120, K125, or K155 will be output depending on the situation.
  Message K006 is issued alternatively.

  For a user with a dark password, which expires shortly, the message K092 is issued (up to
  now K121). If the old Password is given correctly, than the message K122 will be issued
  together with the message K008. The user has the new occasion to change the password
  not before the next login.

  For user with dark password, for which the minimum of validity has not reached, the
  message K092 is issued for the requirement of the password (up to now K028). Changes a
  user the password in the message K092, although it is forbidden at that time, the user will
  be signed in and openUTM issues together with the message K008 the new message K112
  (A password change is not possible at this time).

  Is user locked or already signed in, than the password will be checked first. Therefor the
  message K092 is issued first if applicable. This happens for users with dark password also
  in an intermediate dialog of a login process. If the password is inserted correctly, one of the
  messages K005 or K007 is issued depending on the situation. Message K006 is issued
  alternatively.

In the case the inserted login name is unknown for the application it will be prompted for input with message K092 first. Only after an input of a password the login of the unknown user will be refused.

The changes in the output of the messages during the login of a user have to be considered by programs, which emulates a terminal interface, i.e. by DCAM applications, generated in openUTM with PTYPE=APDN.

- MSGTAC program
  The interface of the MSGTAC program has changed incompatible. Fields, containing the hostname or passwords are extended to 64 bytes. The MSGTAC user programs have to be adapted respectively.
  At an evaluation of the SYSLOG file by an own program users have to respect the changed MSGTAC structures.

- Logging Exit
  The interface to the Logging Exit has changed incompatible. The fields, containing the hostnames, are extended to 64 bytes.
  The user programs for the Logging Exit have to be adapted respectively.

- BCAM Trace in openUTM
  The maximum length of data, which can be recorded at online BCAM trace function, is shorted by 56 bytes. The actual maximum value is now 32.624.

- Generation
  – MAX TRMSGLTH
    Independent of the generated value for MAX TRMSGLTH KDCDEF takes always the maximum value of 32700 for TRMSGLTH.

3.7   Restrictions

not applicable

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

- BS2000 version with correction status and loader ID

- 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

- 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

4 Hardware support

openUTM (BS2000) V6.5A will run on all CPUs supported by the following BS2000 versions:

BS2000 OSD/BC as of V10.0 and V11.0 (/390 and x86 architecture)

A list of all devices supported by openUTM (BS2000) V6.5A can be found in the manual "openUTM Generating Applications".