

FUJITSU Software openUTM (BS2000)

Version 7.0A  
November 2019

Release Notice

All rights reserved, including intellectual property rights.  
Technical data subject to modifications and delivery subject to availability. Any liability that the data and illustrations are complete, actual or correct is excluded. Designations may be trademarks and/or copyrights of the respective manufacturer, the use of which by third parties for their own purposes may infringe the rights of such owner.

© 2019 Fujitsu Technology Solutions GmbH

Fujitsu and the Fujitsu logo are trademarks or registered trademarks of Fujitsu Limited in Japan and other countries. BS2000 is a trademark of Fujitsu Technology Solutions GmbH in Germany and other countries.

<b>1</b>	<b>GENERAL</b>	<b>1</b>
1.1	<b>Ordering</b>	<b>2</b>
1.1.1	Licenses	2
1.1.2	License for CALLUTM	3
1.2	<b>Delivery</b>	<b>3</b>
1.2.1	Software on data media	3
1.2.2	Software for download openUTM WebAdmin XML for openUTM	4
1.2.3	Software for WS4UTM and BizXML2COBOL	5
1.3	<b>Documentation</b>	<b>5</b>
1.3.1	Availability	5
1.3.2	Documentation of the Open Group interfaces	5
<b>2</b>	<b>SOFTWARE EXTENSIONS</b>	<b>6</b>
2.1	<b>New functions in openUTM (BS2000) V7.0A</b>	<b>6</b>
2.1.1	UTM as HTTP Server	6
2.1.2	Encryption	8
2.1.3	OSI-TP communication and port numbers	8
2.1.4	Subnets	8
2.1.5	Access data for the database connection	9
2.1.6	Reconnect for the XA database connection	9
2.1.7	Other changes	9
2.2	<b>Implemented change requests (CR)</b>	<b>9</b>
<b>3</b>	<b>TECHNICAL INFORMATION</b>	<b>9</b>
3.1	<b>Resource requirements</b>	<b>9</b>
3.2	<b>Software configurations</b>	<b>10</b>
3.3	<b>Product installation</b>	<b>11</b>
3.3.1	The UTM subsystem	11
3.3.2	Coexistence of multiple UTM versions (parallel operation)	12
3.3.3	UTM-SM2 subsystem	12
3.3.4	KDCMON subsystem	13
3.4	<b>Product use</b>	<b>14</b>
3.4.1	Notes for upgrading to openUTM (BS2000) V7.0A	14
3.4.2	Notes on migrating from /390 to x86	14
3.4.3	Optional REPs	14
3.5	<b>Obsolete functions and those to be discontinued</b>	<b>15</b>
3.5.1	Obsolete functions	15
3.5.2	Interfaces to be discontinued	15
3.6	<b>Incompatible changes</b>	<b>15</b>
3.7	<b>Restrictions</b>	<b>15</b>
3.8	<b>Procedure in the event of errors</b>	<b>15</b>



# 1 General

The open and universal transaction monitor openUTM supports the creation and operation of transactional applications under the 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 openUTM applications via Internet browser.
- 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.
- 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.
- 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.
- 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.

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

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. Changes which have become known subsequently are updated and provided in this file.

The content refers to the release level: November 2019.

All BS2000 product Release Notices including this one are available on the Internet under the following URL:

<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.

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**

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).

openUTM (BS2000) V7.0A 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) for 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

### Includes/COPY elements

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

### openUTM messaging

SYSMESH.UTM.070.MSGFILE	Message definition file
SYSDAT.UTM.070.MTXTIN	Input for UTM tool KDCMTXT

### BS2000 messaging

SYSMES.UTM.070	BS2000 message file
----------------	---------------------

### Syntax file

SYSSDF.UTM.070
----------------

### Installation

SYSSSC.UTM.070.190	SSD object for BS2000 OSD/BC V10.0 (/390 and x86)
SYSSSC.UTM.070.200	SSD object for BS2000 OSD/BC V11.0 (/390 and x86)

SYSNRF.UTM.070	NOREF file
SYSRMS.UTM.070	RMS file
SYSSII.UTM.070	Structure information for IMON

#### openUTM-Tools

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

#### Examples

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
--------------------	---

#### Documentation

SYSFGM.UTM.070.D	German Release Notice
SYSFGM.UTM.070.E	English Release Notice

### **openUTM WinAdmin**

The openUTM (BS2000) V7.0A delivery includes on an own CD the product FUJITSU Software openUTM WinAdmin V7.0A 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) 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

<http://ts.fujitsu.com/openUTM>

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.

### **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.

The Software is available under

<http://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 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. For detailed information please contact your local Fujitsu regional office.

## 1.3 Documentation

### 1.3.1 Availability

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.

### 1.3.2 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 in 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 statements 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 character 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 KDCADM 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 *kcHttpGetHeaderByCount()*  
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 a UTM application, an additional task is started with a 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 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 database connection

A modified but 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 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 programs.

### 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

OSD/BC	as of V10.0	for /390
OSD/XC	as of V10.0	for x86
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
FHS	as of V8.3B	for using formats with CCSNAME for asynchronous formatting and for Unicode support
IFG	as of V8.3A	
JV	as of V15.0A	
RSO	as of V3.6A	
OMNIS	as of V8.4A	
OMNIS-MENU	as of V3.4A	
DRIVE	as of V3.1A	
UDS/SQL	as of V2.9A	
SESAM/SQL	as of V9.0A	
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	
FORTTRAN90	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 V6.4
openUTM (Unix, Linux and Windows systems)	as of V6.4

If problems occur with UTM versions less than V6.4 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 V6.4 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
Windows: IBM Communications Server for Windows	as of version 6.1.2
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:

BeanConnect as of V3.0B

For client/server communication optionally:

openUTM Client (Unix, Linux and Windows systems) as of V6.4A  
(contains carrier systems UPIC V6.4; OpenCPIC V4.0)

openUTM-Client (Linux and Windows systems) as of V7.0A  
when using encryption  
(contains carrier systems UPIC V7.0; OpenCPIC V4.0)

openUTM Client (BS2000) as of V6.4A

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

CALLUTM (BS2000) as of V6.4

**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

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:  
SYSSSC.UTM.070.190 for BS2000 OSD/BC V10.0 for /390 and x86  
SYSSSC.UTM.070.200 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 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 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!

### 3.3.4 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:

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

SSD objects:

SYSSC.KDCMON.190 for BS2000 OSD/BC V10.0 for /390 and x86  
SYSSC.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:

SYSTEMS.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) 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 features are available as standard.

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

### 3.4.2 Notes on migrating 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.

### 3.4.3 Optional REPs

Currently, no optional REPs are shipped 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.

## 3.6 Incompatible changes

Returned length KCRLM at MGET with KCRCCC 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

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
  - 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 support

openUTM (BS2000) V7.0A 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) V7.0A can be found in the manual "openUTM V7.0 Generating Applications".