Fujitsu Software openUTM Client (BS2000, Linux and Windows systems) Trägersystem UPIC

Version 7.0A
June 2024

Release Notice

1 General

This Release Notice relates to the following

- in BS2000 systems: Fujitsu Software openUTM Client (BS2000) V7.0A
- in Linux and Windows systems: Fujitsu Software openUTM Client (Linux and Windows systems) V7.0A and, as part of openUTM Client, also as a local or remote client in the openUTM Enterprise Edition.

openUTM Client V7.0A is available for the operating systems Fujitsu BS2000, Linux and Windows systems. Other market-relevant Unix systems (Solaris, HP-UX, AIX, etc.) on request.

openUTM Client programs serve as clients for openUTM server applications on all existing platforms.

This Release Notice is a summary of the major extensions, dependencies and operating information for openUTM Client V7.0A.

*4 The content refers to release level: June 2024

*1 Changes in openUTM Client V7.0A10 from June 2021 compared to November 2019 are marked
*1 with *1.
*2 Changes in openUTM Client V7.0A25 from November 2022 compared to June 2021 are marked
*2 with *2.
*3 Changes in openUTM Client V7.0A27 from November 2023 compared to November 2022 are
*3 marked with *3.
*4 Changes in openUTM Client V7.0A30 from June 2024 compared to November 2023 are marked
*4 with *4.

*4 The content to the release level V7.0A27 of openUTM Client (BS2000) has changed.
*4 It corresponds to the release level V7.0A30: June 2024.

*2 The content to the release level V7.0A00 of openUTM Client (Linux and Windows systems) has
*2 changed.
*2 It corresponds to the release level V7.0A25: November 2022.

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

If you skip one or more previous versions when you install this product, you must note 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.

Function overview:
The UPIC carrier system allows a client application in all above-named operating systems to communicate with a server application running under openUTM in BS2000 and/or Linux and Windows systems. For the purposes of communication, openUTM server programs and client programs that are based on the UPIC carrier system can use the program interfaces CPI-C and XATMI. These interfaces comply with the X/Open definitions.

With these interfaces, you can program the same way in the client as well as in the server. Furthermore, openUTM provides the ability to program in the server with KDCS and in the client with CPI-C. The interfaces can be used in a C/C++ environment and in a COBOL environment.

1.1 Ordering

The product can be ordered from your local distributors.
The product 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 an integral part of the contract that you concluded with Fujitsu Technology Solutions when you purchased openUTM Client.

openUTM Client is a licensed product, the use of which requires licenses.

In the UTM server application environment in BS2000 systems the openUTM Client licenses must be purchased for the number of users simultaneously accessing the server.

openUTM Client licenses must be purchased for one user each for development, testing and runtime or for runtime only. There are separate runtime licenses for the UPIC carrier system or in conjunction with the carrier systems openCPIC and UPIC. The software is purchased with a software package that contains the product CD and a user license for development.

In the UTM server application environment in Linux and Windows systems the openUTM Client licenses are included in the licenses for openUTM Enterprise Edition. The software is supplied on the openUTM EED-CD.

*1 For the encryption functionality openUTM Client V7.0A is using the OpenSSL Interface on Linux
*1 and Windows systems. On BS2000 systems either OpenSSL or BS2000-CRYPT is used.
*1 Therefore, OpenSSL is delivered as open Source with openUTM Client (BS2000) V7.0A. The delivery of the OpenSSL interface subjects to special export restrictions.
If the Encryption functionality is to be used outside Germany a special export permit must be obtained in advance.

1.2 Delivery

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

The current file and volume characteristics are listed in the SOLIS2 delivery cover letter.

openUTM Client V7.0A is supplied on the openUTM EED-CD which contains additional software products from the openUTM product family and communication products.

Additional licenses must be purchased for these products, insofar as they are not included in the licenses already purchased.

1.2.1 Delivery components of openUTM Client (BS2000) V7.0A

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

	Module libraries:	Contens:
*1	SYSLIB.UTM-CLIENT.070	UPIC library, when using OpenSSL
*1	SYSLIB.UTM-CLIENT.070.PKCS	UPIC library, when using BS2000-CRYPT
	SYSLIB.UTM-CLIENT.070.WCMX	UPIC library, transport system PCMX

Sample programs / Utility routine:

SYSLIB.UTM-CLIENT.070.EXAMPLE	sample programs

Documentation:

SYSSII.UTM-CLIENT.070	Structure information for IMON

Information about Open Source Software:

SYSDOC.UTM-CLIENT.070.OSS	Information about licences of the delivered Open Source Software components

1.2.2 Delivery components of openUTM (Linux systems) V7.0A

-	COBOL COPY elements	<upicpath>/copy-cobol85
-	C header files	<upicpath>/include
-	makefile sample (Example of linking an UTM-UPIC program)	<upicpath>/shsc/upic.m
-	Sample program (incl. makefiles and runnable programs)	<upicpath>/sample
-	Link libraries	<upicpath>/sys
-	Link libraries on Systems with POSIX threads	<upicpath>/sys
-	Source file for the conversion tables	<upicpath>/kcsaeea.c

for XATMI

-	COBOL COPY elements	<upicpath>/xatmi/copy-cobol85
-	XATMIGEN utility routine	<upicpath>/xatmi/ex
-	C header files	<upicpath>/xatmi/include
-	Link libraries	<upicpath>/xatmi/sys

*2 openUTM Client V7.0A can only run on Linux systems in a 64-bit environment. 32-bit systems are
*2 no longer supported.

The Installation takes place under <install-PATH>/64/...
upicpath has the following equivalent:
<upicpath> == <install-PATH>/64

1.2.3 Delivery components of openUTM (Windows systems) V7.0A

Runtime system:
upicw64.dll
upicws64.dll
upicw.dll
utmcnv64.dll

These runtime libraries are installed under <install-PATH>\sys.

Development system:

upicw64.lib	Link library	<install-PATH>\sys
upicws64.lib	Link library	<install-PATH>\sys
upicw.lib	Link library	<install-PATH>\sys
upic.h	C header file	<install-PATH>\include
kcsaeea.c	ASCII-EBCDIC conversion table	<install-PATH>\utmcnv
resource.h	C header file	<install-PATH>\utmcnv
CMCOBOL	COBOL COPY element	<install-PATH>\copy-cobol

Examples:

Upicfile	Example of a side information file	<install-PATH>
	various sample programs	<install-PATH>\sample
UnInstall.cmd	Uninstallation program	<install-PATH>

for XATMI:

Runtime system:		
xatmigen.exe	XATMIGEN utility	<install-PATH>\ex
xtclt64.dll	Runtime library	<install-PATH>\sys
Development system:		
xtclt64.lib	Link library	<install-PATH>\sys
xatmi.h	C header file	<install-PATH>\include
xatmidef.h	C header file	<install-PATH>\include
Examples:		
	Various sample programs	<install-PATH>\samples

*2 openUTM Client V7.0A can only run on Windows systems in a 64-bit environment. 32-bit systems
*2 are no longer supported.

1.3 Documentation

1.3.1 Availability

The documentation is available on the Internet at
https://bs2manuals.ts.fujitsu.com/.

1.3.2 Documentation of the Open Group interfaces

Title:	Order number:
Distributed Transaction Processing The XCPI-C Specification, Version 2 X/Open CAE Specification	ISBN 1 85912 135 7
Reference Model X/Open Guide Distributed Transaction Processing: Reference Model, Version2	ISBN 1 85912 019 9
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 available on the internet (see above) or can be obtained in printed form from bookstores quoting the ISBN number.

2 Software extensions

2.1 New functions in openUTM Client V7.0A

2.1.1 Encryption

The encryption functionality in openUTM Client has been revised. Security gaps have been closed, modern methods have been adopted and delivery has been simplified as follows:

- UTM-CLIENT-CRYPT variant
  Until now, the encryption functionality in openUTM Client was only available if the product UTM-CLIENT-CRYPT was installed. With openUTM Client V7.0A this is no longer necessary. As of this version, it is decided at runtime whether the encryption functionality is available or not.

- Security
  A vulnerability has been fixed when communicating with a UTM application.

- Encryption Level 5
  The openUTM Client V7.0A also supports communication with UTM V7.0 applications when ENCRYPTION-LEVEL 5 was generated for the connections to the UPIC client.
  With Level 5 the Diffie-Hellman method, based on Elliptic Curves, is used to agree on the session key. Input/output messages are encrypted using the AES-GCM algorithm. AES-GCM is an authenticated encryption algorithm designed to provide both data authenticity (integrity) and confidentiality.
  Level 5 is supported by the openUTM Client on all platforms.

2.1.2 Other changes

- Encryption BS2000
  openUTM Client (BS2000) V7.0A uses OpenSSL instead of BS2000-CRYPT like openUTM Client (Linux and Windows systems) V7.0A.

*1 2.2 New functions/changes in openUTM Client (BS2000) V7.0A10

*1 - With the Version openUTM Client (BS2000) V7.0A10 several errors/defects are closed (s. *1 $.T.@INDOC.UTM-CLIENT.070).

*1 - openUTM Client (BS2000) V7.0A10 uses OpenSSL when the client is linked with the UPIC *1 library SYSLIB.UTM-CLIENT.070.
*1 openUTM Client (BS2000) V7.0A10 uses BS2000-CRYPT when the client is linked with the *1 UPIC library SYSLIB.UTM-CLIENT.070.PKCS.

*1 - Update of the open source software OpenSSL from version 1.0.2r to version 1.1.1k.

*2 2.3 New functions/changes in openUTM Client (Linux and Windows systems) V7.0A25

*2 - Support of Micro Focus COBOL compiler V5, V6, V7
*2 With openUTM Client (Linux and Windows systems) V7.0A25 the versions 5, 6 and 7 of the *2 Micro Focus COBOL compiler are supported.

*2
- OpenSSL deprecated message
  As of openUTM-Client V7.0A25 the user will be informed that the application uses a deprecated OpenSSL version. When using OpenSSL versions < 1.1.1 during a CMENAB call the UPIC library prints a deprecated message to the UPIC Trace if the trace functionality is activated.

*2 2.4 New functions/changes in openUTM Client (BS2000) V7.0A25

*2
- Update of OpenSSL to version 1.1.1n
  As of openUTM Client (BS2000) V7.0A25 the OpenSSL version is updated from version 1.1.1k to version 1.1.1n.

*3 2.5 New functions/changes in openUTM Client (BS2000) V7.0A27

*3
- Update of OpenSSL to version 1.1.1u
  As of openUTM Client (BS2000) V7.0A27 the OpenSSL version is updated from version 1.1.1n to 1.1.1u.

*4 2.6 New functions/changes in openUTM Client (BS2000) V7.0A30

*4
- Update of OpenSSL to version 3.0.11
  As of openUTM Client (BS2000) V7.0A30 the OpenSSL version is updated from version 1.1.1u to 3.0.11.

2.7 Realized change requests (CR)

None.

3 Technical information

3.1 Resource requirements

Required hard disk space for the installation:

*1 BS2000: approx. 16 MB (8000 PAM PAGES)
Linux: < 10 MB
Windows: < 10 MB

3.2 Software configuration

3.2.1 openUTM Client (BS2000) V7.0A

*2	BS2000	as of V11.0	
	DSSM	as of V4.3B	
*2	JV	as of V15.1A	
*2	openNet Server	as of V4.0A	contains BCAM, CMX, DCAM, ONETSERV, SOCKETS, VTSU-B, XHCS for Unicode support etc.
*2	CRTE	as of V11.0A	
	C/C++ (BS2000)	as of V3.2A	
	COBOL85	as of V2.3A	
	COBOL2000	as of V1.5A	

3.2.2 openUTM Client (Linux systems) V7.0A

*2	Linux (SuSE)	as of SLES 12
*2	Linux (RedHat)	as of RHEL 7.8

Further Unix systems on demand

The following are supplied with the product for communication over TCP/IP:

PCMX (Linux)	6.0B33

The use of PCMX is only license-free in connection with openUTM Client.
When using openUTM Client V7.0A with runtime system CMX, the version supplied with the CD has to be used.

For the use of the encryption functionality on Linux systems OpenSSL has to be provided by the customer:

OpenSSL V1.0	as of V1.0.2r
OpenSSL V1.1	as of V1.1.1c

See also www.openssl.org

3.2.3 openUTM Client (Windows systems) V7.0A

*2	Windows	Windows 10 / Windows11
*2	Windows Server	Windows Server 2019 / Windows Server 2022
	Visual Studio	as of Visual Studio 2010

For the use of the encryption functionality on Windows systems OpenSSL has to be provided by the customer:

OpenSSL V1.0	as of V1.0.2r
OpenSSL V1.1	as of V1.1.1c

See also www.openssl.org

PCMX64 as of V5.0B20 (64-bit)

3.2.4 For Client-Server communication

*2 openUTM (BS2000) as of V7.0
*2 openUTM Enterprise Edition as of V7.0

3.3 Product installation

3.3.1 BS2000 systems

The product installation of openUTM Client (BS2000) has to be executed with the Installation monitor IMON. The information of the installation has to be followed as described in the supply letter and the manual of the product.
The necessary inputs and the process of the installation with IMON are described in the manual of IMON.

3.3.2 Linux systems

openUTM Client (Linux systems) is installed using the installation methods usual on the computer system concerned.

rpm is used for installation on **Linux systems**:

rpm -i --nodeps <CD>/<package>.rpm --ignorearch [--prefix=<location>]

3.3.3 Windows systems

The installation is started by upic.msi.
The remainder of the procedure is self-explanatory.
The product must be installed under the Administrator account on Windows.
2 components are offered during installation:
- UPIC carrier system
- XATMI

A "Details" button is provided for each of these components. Clicking this button shows the following breakdown of the installation (subcomponents):

UPIC carrier system
- UPIC Runtime with PCMX
- UPIC Runtime w/o PCMX
- UPIC Development
- Samples

XATMI
- XATMI Runtime
- XATMI Development
- XATMI Sample

By default, the product is installed on the drive C into the following folder
"\<environment variable ProgramFiles>\upicw64"

openUTM Client V7.0A although allows a non-operational installation (“silent installation”). A description you will find in the manual “openUTM Client V7.0 for the UPIC Carrier System”.

The product can be uninstalled by calling UnInstall.cmd.
openUTM Client V7.0A can also be uninstalled from the Control Panel. The Control Panel is opened by selecting Start/Settings/Control Panel. Double-click on the "Add/Remove Programs" icon to open the Software Properties dialog box. Proceed as described in this dialog box.
Files and folders which were not created by the installation program are not deleted. These files and any superordinate folders must be deleted manually.

3.4 Product use

3.4.1 Notes for migration to openUTM Client V7.0A (Linux and Windows systems)

Any UPIC programs previously created will still run.
For an encryption an appropriate OpenSSL library is needed on the system. The assignment of the OpenSSL library is done by the environment variable

UPIC_SSL_LIBRARY.

UPIC_SSL_LIBRARY defines the name of the OpenSSL library.
If this variable is not set default values are used:

Unix and Linux systems:	libssl.so
Windows systems:	libeay32.dll

The encryption functionality is disabled if the OpenSSL library cannot be loaded.

Linux systems:

For the use of the encryption functionality, it is assumed that there exists a library named libcrypto.so under /usr/lib or /usr/lib64.
After the installation of OpenSSL it is possible that no library named libcrypto.so will exist under /usr/lib or /usr/lib64, only a library named libcrypto.so.<version>.
In this case you should create a symbolic link:

ln -s libcrypto.so.<version> libcrypto.so

All other information relevant for using the product can be found in the manual openUTM Client V7.0A for the UPIC Carrier System.

3.4.2 Compilation, linking and starting in BS2000 systems

A client application can be linked with the BINDER. The SYSLIB.UTM-CLIENT.070 library contains a sample procedure, with which you can link a client application.

It is although possible to load the UPIC libraries dynamically at start time of the UPIC Client program. The advantage of the dynamical load is that you can define at each program start whether the communication should be done over socket or over CMX.

The SYSLIB.UTM-CLIENT.070.EXAMPLE library that is supplied with the product contains the member UPTAC.C. This C source is a simple sample program for creating a client.

Note that the "partner name" in the upicfile must always be specified in two parts.
UPIC on BS2000 systems is not multithreading-capable.

3.4.3 Notes for use on Windows systems

One of the libraries upicw64.lib, upicws64.lib or upicw.lib must be linked in when linking a UPIC application.

The library xtclt64.lib must be linked in when linking an XATMI application.
For UPIC on Windows systems is multithreading-capable.

3.4.4 Notes for use of the openUTM Client encryption functionality on Windows systems

When executing an openUTM Client application, it has to be ensured that the OpenSSL library will be found. If necessary, the PATH variable has to be adapted.

3.4.5 Notes for use on Linux systems

The library <install-PATH>/sys/libutmconvt.so must be linked in when linking a UPIC application. For linking and for starting the environment variable LD_LIBRARY_PATH or LD_LIBRARY_PATH_64 must be set to <install-PATH>/sys.
UPIC on Linux systems is multithreading-capable depending on the UPIC library which is used (libupiccmx, libupicsoc or libupicsocmt).

3.5 Discontinued functions (and those to be discontinued)

Following functions are no longer supported:

- 32-bit operating
  This version no longer supports running of UPIC applications in 32-bit mode on Linux and Windows systems.

- TNS use
  In openUTM Client V7.0A the TNS functionality will be no longer supported.
  In following versions the address information must be specified completely in the UPICFILE or at the CPIC program interface.

- Encryption
  UPIC call *Set_Conversation_Encryption_Level* (CMSCEL):
  operand value encryption_level = CM_ENC_LEVEL_1
  operand value encryption_level = CM_ENC_LEVEL_2

*2 - NetCOBOL
*2 With openUTM Client V7.0A the COBOL compiler NetCOBOL is no longer supported.

3.6 Incompatibilities

None.

3.7 Restrictions

UPIC variation of interface CPI-C version 1:
openUTM Client as of V6.5A programs are supported only compatible to the object code when the calls at the CPI-C interface are implemented with the semantic of CPI-C version 1.

A compilation of these programs with the header files of UPIC V7.0A is no more possible without program adaptions!

3.8 Procedure in the event of errors

The following information is required to pinpoint the causes of errors:

- exact description of the error situation
- version information of the software involved
- information about computer type

The following may be useful as error documentation:

- UPIC program as source
- Side information file (upicfile)
- executable UPIC program with runtime environment
- UPIC trace files and UPIC logging file
- XATMI trace when using XATMI applications

For errors that occur in combination with the UTM application, the following additional UTM documentation is required:

- UTM-KDCDEF generation
- UTM dumps
- USER dumps (on BS2000 systems)
- SYSLOG

4 Hardware requirements

Support is provided for the hardware on which the operating system versions named in Chapter 3.2 can run. Included are:
All systems based on Intel c86 technology, e.g. laptops, PCs, PRIMERGY systems

Other platforms on request.

2 GHz CPU or better, at least 256 MB RAM