
Fujitsu Technology Solutions

XML for openUTM (BS2000-, UNIX-, Linux-, Windows-systems)
Version V3.0A50
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Release Notice

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1 General

1 The open and universal transaction monitor openUTM is part of the comprehensive openSEAS offering and supports the creation and operation of transaction applications under the Fujitsu operating system BS2000/OSD () as well as under commonly available UNIX systems (Solaris, HP-UX, AIX), Linux and Windows.

*1 openUTM lets you implement client/server architectures with Unix-/Linux- or Windows-clients and create distributed transaction applications in homogenous and heterogeneous IT infrastructures.

The programming interface "XML for openUTM" or UTM-XML for short provides openUTM with a convenient interface for creating and processing data in the form of XML documents. The interface is available in C, C++ and COBOL and on all platforms on which openUTM runs.

This Release Notice is a summary of the most important information relating to the installation and operation of UTM-XML under the BS2000/OSD (*), Solaris, HP-UX, AIX, Linux and Windows operating systems.

*1 The contents correspond to release status V3.0A50 of November 2013.

*1 All changes since the release level from June 2009 are marked in the left margin.

*1 - Marking *1 = release level V3.0A50 from November 2013

This Release Notice is supplied with the product in the form of a README file. Changes which have become known subsequently are updated in this file.

The release notice is also to be found on the manual server under <http://manuals.ts.fujitsu.com>
For searching you can use "XML" or "openUTM XML V3.0".

(*) BS2000/OSD (R) is a trademark of Fujitsu Technology Solutions

1.1 Ordering

1.1.1 Licensing

*1 The software UTM-XML is an add-on to openUTM which is free of charge. UTM-XML contains the Open Source GNOME XML parser libxml2 which is provided under the conditions laid down in the MIT license. This license is supplied in the packages and can also be found on the Web under

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

1.2 Delivery

1.2.1 Download

UTM-XML is only available as a download on the Internet. You can download the platform-specific application ('rt') and source packages ('dev') for UTM-XML from the openUTM website:

<http://ts.fujitsu.com/products/software/openseas/openutm.html>

After you have downloaded the packages, you will have to transfer them to the target platforms as necessary. The packages are compressed and must be unpacked using the appropriate tools (tar, WinZip).

For BS2000, the packages are available in a ZIP archive. For further details, see section 3.3 "Product installation".

1.2.2 Product components

On the "XML Support" page, you will find packages containing the substring RT (RunTime) below the DOWNLOAD button. RT contains all the components that you need in addition to UTM for UTM-XML program units:

- | | |
|--|--------------------------------------|
| - license | License |
| - Liesmich and readme | This Release Notice |
| - documentation | Description of the UTM-XML functions |
| - COBOL copy element | |
| - C includes | |
| - Source code and Load modules of the UTM sample programs in COBOL and C | |
| - Load modules (BS2000)/libraries | |

Under the SOURCES button you will find packages with the substring DEV. They contain the UTM-XML source code, the source code for the Open Source GNOME XML parser, licenses and descriptions.

It is sufficient to install the RT components in order to use UTM-XML.

The lists below provide you with an overview of the libraries and files available on the website mentioned above.

ZIP files for BS2000/OSD

*1 BS2000 (/390, SPARC and x86).
- utmxmlrt_30A40_BS2.zip
- utmxmldev_30A40_BS2.zip

Package for Unix and Linux platforms

AIX 32-bit

- utmxmlrt_30A40_AIX_32_tar.Z
- utmxmldev_30A40_AIX_32_tar.Z

HP (PA-RISC) 32-bit

- utmxmlrt_30A40_HP_PA-RISC_32_tar.gz
- utmxmldev_30A40_HP_PA-RISC_32_tar.gz

HP (ia64) 32-bit

- utmxmlrt_30A40_HP_ia64_32_tar.gz
- utmxmldev_30A40_HP_ia64_32_tar.gz

HP (ia64) 64-bit

- utmxmlrt_30A40_HP_ia64_64_tar.gz
- utmxmldev_30A40_HP_ia64_64_tar.gz

Linux (Intel) 32-bit

- *1 - utmxmlrt_30A50_Linux_Intel_32_tar.gz
- *1 - utmxmldev_30A50_Linux_Intel_32_tar.gz

*1 Linux (Intel) 64-Bit

- *1 - utmxmlrt_30A50_Linux_Intel_64_tar.gz
- *1 - utmxmldev_30A50_Linux_Intel_64_tar.gz

Linux (Itanium) 64-bit

- utmxmlrt_30A40_Linux_ia64_64_tar.gz
- utmxmldev_30A40_Linux_ia64_64_tar.gz

SUN Solaris 32-bit

- utmxmlrt_30A40_SunOS_32_tar.Z
- utmxmldev_30A40_SunOS_32_tar.Z

SUN Solaris 64-bit

- utmxmlrt_30A40_SunOS_64_tar.Z
- utmxmldev_30A40_SunOS_64_tar.Z

Package for Windows

Windows

- *1 - utmxmlrt_30A50_WIN.zip
- *1 - utmxmldev_30A50_WIN.zip

1.3 Documentation

The English and German documentation is available online in the UTM-XML packages. The license file with the filename extension '.txt' can be read using any text editor. The README files and the interface descriptions with the filename extension '.pdf' can be read using Acrobat Reader. Binary mode must be used for any transfers of pdf files (e.g. by specifying 'bin' with FTP).

The manual and the release notice are also to be found on the manual server under <http://manuals.ts.fujitsu.com>

For searching you can use "XML" or "openUTM XML V3.0".

2 Software extensions

2.1 New functions in UTM-XML V3.0

- XML schema support

UTM-XML provides the following new functions to provide support for XML schema functionality:

KXLConvDocToObjAndValid	Converts an XML document and performs schema validation
KXLParseSchema	Parses an XML schema in memory
KXLParseSchemaFile	Parses an XML schema file
KXLValidDoc	Validates an XML object against a schema
KXLValidDocBuf	Validates an XML document present in memory against a schema
KXLFreeSchema	Releases the schema storage areas

- Other new functions

KXLInitEnv	Initializes the UTM-XML interface
KXLGetEncodingAlias	Reading the encoding the alias name is assigned to
KXLSetEncodingAlias	Assigning an alias name to an encoding

2.2 New functions in UTM-XML V3.0A40

KXLFindNode Reads an element via local name, that means without regarding namespaces

2.3 New functions in UTM-XML V3.0A50

- *1 - NetCOBOL compiler support
- *1 Cobol programs can be compiled on Unix and Windows systems using the
- *1 NetCOBOL compiler from Fujitsu.
- *1 - Visual COBOL compiler support
- *1 Cobol programs can be compiled on Unix and Windows systems with the compiler
- *1 Visual COBOL from Micro Focus.

3 Technical information

3.1 Resource requirements

3.1.1 Virtual address space

The storage space required for UTM-XML is as follows:

Static disk storage space:

When it has been downloaded and unpacked, the UTM-XML application package ('rt') occupies the following storage space:

in BS2000/OSD	approx. 6700 PAM pages.
in AIX	approx. 5.4 MB
in HP-PA-RISC	approx. 16.3 MB
in HP Itanium 32-bit	approx. 13.3 MB
in HP Itanium 64-bit	approx. 13.9 MB
in Linux Intel	approx. 6.2 MB
in Linux Itanium	approx. 12.6 MB
in Solaris 32-bit	approx. 14 MB
in Solaris 64-bit	approx. 16 MB
in Windows	approx. 3.1 MB

When it has been downloaded and unpacked, the UTM-XML source package ('dev') occupies the following storage space:

in BS2000/OSD	approx. 3800 PAM pages.
in AIX	approx. 4.7 MB
in HP-PA-RISC	approx. 6 MB
in HP Itanium 32-bit	approx. 5 MB
in HP Itanium 64-bit	approx. 5 MB
in Linux Intel	approx. 4.9 MB
in Linux Itanium	approx. 4.9 MB
in Solaris 32-bit	approx. 4.8 MB
in Solaris 64-bit	approx. 9.5 MB
in Windows	approx. 5.6 MB

Dynamic disk storage space:

The maximum space required for the XML trace files is approx. 2 * 16,400 KB

3.2 Software configuration

The UTM-XML program package can be used on the following systems:

*1	BS2000/OSD	as of V5.0	for /390
*1	OSD/XC	as of V3.0	for SX-Systems
*1	OSD/XC	as of V4.0	for SQ-Systems
	Solaris 32/64-bit	as of V9	
*1	Linux(SuSE) 32/64-bit	as of SLES 9	
*1	Linux(RedHat) 32/64-bit	as of RHEL 4	
	Linux(SuSE)- Itanium 64-bit	as of SLES 9	
	Linux(RedHat) - Itanium 64-bit	as of RHEL 4	
	HP-UX (PA-RISC) 32-bit	as of V11i	
	HP-UX (Itanium) 32/64-bit	as of V11.23	
	IBM-AIX 32-bit	as of V5.3	
*1	Windows XP / Server 2003 32 bit		
*1	Windows Vista / Server 2008 32 bit		
*1	Windows 7 / Server 2008 R2 32 bit		

The following UTM versions are supported for using the XML interface in UTM applications:

openUTM(BS2000/OSD)	as of V5.3
openUTM(UNIX)	as of V5.3
openUTM(Windows)	as of V5.3

The following are optionally required for BS2000/OSD:

CRTE	as of V2.5
C/C++	as of V3.1A
COBOL2000	as of V1.2A

*1 The following COBOL compiler versions are supported for using the XML interface in UTM applications on Unix- and Windows-systems:

*1	NetCOBOL	as of V10.4 (Linux 64bit)	
*1	NetCOBOL	as of V10.1 (Windows)	
*1	MicroFocus Server Express	as of V5.1 (Unix and Linux systems)	and
*1	MicroFocus Net Express	as of V5.1 (Windows);	
*1	Micro Focus Visual COBOL for Eclipse	as of V2.0	
*1	Micro Focus Visual COBOL for Visual Studio	as of V2.0 (Windows);	

*1 For using a Micro Focus compiler there are Cobol runtime licenses required.

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

3.3.1 BS2000/OSD

After downloading the product, unpack the ZIP file which contains the files in three subdirectories:

ftp	with the LMS library SYSLIB.UTM-XML.030A40.RT or -.DEV
openFT	with the LMS library SYSLIB.UTM-XML.030A40.RT or -.DEV
doc	with the documentation (license, readme, functional description)

Transfer the LMS library from the ftp subdirectory to your BS2000 computer using ftp (binary) or from the openft subdirectory to your BS2000 computer using openFT (file type: binary, transfer mode: transparent). When this has been done, they are available as an LMS library.

3.3.2 UNIX systems and Linux Systems

On UNIX and Linux platforms, you may have to transfer the packages to the target machine after they have been downloaded.

After this, the packages with suffix .Z must be uncompressed with uncompress and the packages with suffix .gz must be uncompressed with gunzip. Packages with suffix .tar must be unpacked with tar -xvf.

If the sample application 'sample' is installed in UTM, UTM-XML is expected as the default under \$UTMPATH/xml. You can, however, specify a different directory.

3.3.3 Windows

After you have downloaded the packages, you will have to transfer them to the target machine as necessary. They must then be unpacked using WinZip.

Use the install.cmd script to copy the components to the relevant directories. To do this for the RT package, the environment variable \$UTMPATH must be set to the current UTM directory. When the ZIP file is unpacked and the associated install.cmd script is started, a file tree with the relevant directories is created in the UTM directory and the XML components are installed here. In the case of

the DEV package, the components are copied to the file tree xml/opensource in the current directory when install.cmd is called.

3.4 Product use

3.4.1 Notes on migration

*1 Customers with UTM-XML V2.0 who wish to migrate UTM applications to UTM-XML V3.0A50 must carry out the following steps:

- Recompile the XML program units
- Link the application program

3.4.2 BS2000/OSD

Compilation:

When compiling the programs containing the interface calls, assign the SYSLIB.UTM-XML.030A40.RT library with the option USER-INCLUDE-LIBRARY.

C program units containing calls to the existing API must be compiled and linked as LLMs.

The module KXLCVLT.C contain various encoding tables from ASCII to EBCDIC and reverse. If you want to change these tables you can do that in the source code (in SYSLIB.UTM-XML.030A40.DEV) Then you have to compile the source with the C-Compiler using the following Compiler-Option:

```
MODIFY-MODULE-PROPERTIES LOWER-CASE-NAMES=*YES
```

COBOL program units, that contain the UTM-XML interface calls, must contain the copy element KXLCOBOL (COPY instruction). For compiling the program units you must link the library SYSLIB.UTM-XML.030A40.RT with one of the link names COBLIB, COBLIBn (n=1,...,9). Additionally you must specify the following compiler option:
P[ERMIT]-S[TANDARD]-D[EVIATION]=YES

Note:

If you only dispose of the COBOL85 Compiler you can use UTM-XML V3.0A40 with the following modification and restriction:

- In COBOL copy KXLCOBOL replace the lines

```
43 ENC-FUNC-TO-UTF8    USAGE PROGRAM-POINTER.
```

```
43 ENC-FUNC-FROM-UTF8  USAGE PROGRAM-POINTER.
```

with the lines marked with the comment *COB85:

```
43 ENC-FUNC-TO-UTF8    PIC X(8).
```

```
43 ENC-FUNC-FROM-UTF8  PIC X(8).
```

- With this modification you can't define a user specific encoding with your own encoding functions in the function KXLInitEnv (Initialization of the UTM-XML API). I.e. the parameters ENC-FUNC-TO-UTF8 and ENC-FUNC-FROM-UTF8 must have the value LOW-VALUE.

Linking:

If you want to link a program unit containing calls of the UTM-XML interface in your UTM applications, insert a RESOLVE statement referencing SYSLIB.UTM-XML.030A40.RT.

If the UTM application is generated on the basis of the BLS interface, SYSLIB.UTM-XML.030A40.RT can be assigned in the start procedure using the link name BLSLIBnn instead.

If you have changed the module KXLCVLT.C you must link the compiled module explicitly.

3.4.3 UNIX-, Linux-systems

*1 When compiling components that call the UTM-XML interface, the directories /include and, for COBOL, /copy-cobol85 respectively /netcobol must be taken into account.

COBOL program units that use the COPY element KXLCOBOL must be compiled without the option NOMF when using the MicroFocus compiler, otherwise compilation errors will occur. When using other compilers, the fields VAL-FLOAT and VAL-DOUBLE must be adjusted accordingly. If there is no corresponding type for Float and Double, the fields should be set as follows:

```
43 VAL-FLOAT      PIC X(4).
43 VAL-DOUBLE     PIC X(8).
```

The corresponding functions KXLFromFloat, KXLFromDouble, KXLToFloat, KXLToDouble can then not be used in COBOL.

When linking an XML application in UTM (client/server), the following libraries must be taken into account:

```
libutmxml.a      (static) and
libutmxml.so/sl  (dynamic)
```

The module kxlcvt.c contains various encoding tables. If you want to make minimal changes in these tables, you can adapt the tables in the source and compile it with the C compiler. For linking your application, the created object kxlcvt.o must be specified before libutmxml.a or libutmxml.so.

In addition, the mathematical functions library must be linked in by specifying -lm.

Precise details on implementation can be seen in the sample application (a component of openUTM).

3.4.4 Windows

*1 When compiling components that call the UTM-XML interface, the directories \include and, for COBOL, \copy-cobol85 respectively \netcobol must be taken into account.

When linking an XML application in UTM (client/server), the following libraries must be taken into account:

```
libutmxml.lib and
libutmxml.dll
```

Furthermore, the following object must be linked in when using COBOL:

```
kxlcob2c.obj
```

On Windows platforms it is not possible to change the code tables directly in the module kxlcvt.c. For changing code tables you have to copy them with a new name to a new module. The encoding functions using these tables must be announced to the parser with xmlNewCharEncodingHandler (see documentation, sections 3.9 and 10.2)

Precise details on implementation can be seen in the QuickStart Kit (a component of openUTM).

3.5 Obsolete functions (and those to be discontinued)

not applicable

3.6 Incompatible changes

COBOL program units that use the COPY element KXLCOBOL must be compiled without the option NOMF on open platforms when using the MicroFocus compiler, otherwise compilation errors will occur. When using other compilers, the fields VAL-FLOAT and VAL-DOUBLE must be adjusted accordingly. If there is no corresponding type for Float and Double, the fields should be set as follows:

```
43 VAL-FLOAT      PIC X(4).
```

43 VAL-DOUBLE PIC X(8).

The corresponding functions KXLFromFloat, KXLFromDouble, KXLToFloat, KXLToDouble can then not be used in COBOL.

The default home encoding in BS2000 and z/OS is EDF04DRV (EBCDIC up to now), in the other systems it is UTF-8 (up to now it was MSDosLatin on Window systems and ISO-8859-1 on Unix systems). You can change the home encoding by calling KXLInitEnv, e.g. in the start exit of the UTM application (samples are kxlstart.c and KXLCOBST.cbl).

3.7 Restrictions

General:

No warranty is offered for the components of UTM-XML and no service commitment is entered into.

Known errors:

Not applicable

3.8 Procedure in the event of errors

In the event of an error, the following documentation is required for diagnosis:

- Detailed description of the error situation and indication whether and how the error can be reproduced.
- XML trace file (with trace mode = F).
- Operating system version and correction status / loader ID (BS2000/OSD).
- Software involved with version and correction status.
- SYSLST/SYSOUT log or stdout/stderr logs of the XML application processes.
- Linker and compiler lists.
- UTM or user dumps, if available.

An attempt should be made to reproduce the error using static libraries.

Procedure in the event of errors:

- Analyze the XML trace file
- *1 - Reproduce the error using a suitable debugger such as AID (BS2000/OSD), dbx, gdb, sdb, adb

In the event of errors which occur in conjunction with other software components (openUTM, database, formatting), store or create the necessary documentation for these components also.

4 Hardware support

UTM-XML will run on all CPUs supported by the following BS2000/OSD versions:

BS2000/OSD as of V5.0 (/390, SPARC and x86)

UTM-XML can also be used on

*1

- Fujitsu Technology Solutions PRIMEPOWER systems
 - SPARC systems
 - Other UNIX systems (see 1.3 Product components)
 - All systems based on Intel technology, such as laptops, PCs,
 - PRIMERGY systems
- CPU at least 250 MHz, RAM at least 128 MB

5 Appendix

5.1 Information on the Gnome parser

- You will find up-to-date information on the Gnome parser under:

<http://xmlsoft.org/index.html>

- Unlike the UTM-XML V2.0, the names of the parser modules remain unchanged.
- As of version UTM-XML V3.0, the parser version libxml2 V2.6.27 is used, which is not compatible with the version used in V2.0 in respect of a number of minor functions:
 - Memory required by the parser is requested using `xmlMalloc` and must be released using `xmlFree`.
 - Code conversion routines return the number of converted characters on success and not 0.
- The parser functions can also be called directly by the user. They are only documented in-line and are only available under the C interface. All input and output strings are expected and returned in UTF-8.
- Code changes in the Gnome parser modules (for integration into UTM and BS2000, error correction) are identified with 'UTM-XML V<version>' in the source code.