Datasheet
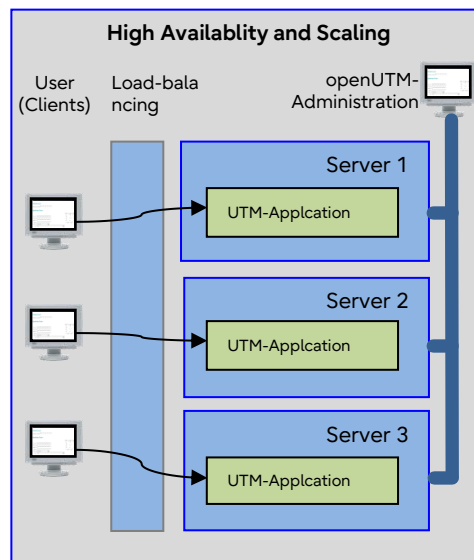## Fujitsu Software openUTM (BS2000) V7.0

FUJITSU

High-end Transaction Processing Platform

openUTM (BS2000)

openUTM is the transaction processing platform for high-end requirements. openUTM combines old and new applications for business processes with up to date technologies and tools. openUTM provides effective support for access via the web and for electronic commerce.

openUTM in BS2000 provides comprehensive transaction security for data, programs, message queues and client/server communication. openUTM integrates heterogeneous environments (BS2000, Unix, Linux and Windows platforms, databases, and networks). Additionally Distributed Transaction Processing with applications on IBM systems (e.g.CICS) or systems based on OSI-TP is possible. openUTM in BS2000 ensures that the load on available resources is ideally distributed and offers a continuous expansion path culminating in extremely large and complex multi-tier configurations.
openUTM allows genuine 7x24h operation through maximum availability and online maintenance options like software upgrade and exchange of hardware.

openUTM is part of the comprehensive product offering of openSEAS.

High Availablity and Scaling

User (Clients) — Load-balancing — openUTM-Administration

Server 1 — UTM-Applcation
Server 2 — UTM-Applcation
Server 3 — UTM-Applcation

openUTM   openSEAS

openUTM (BS2000) V7.0A

Compared to the previous version V6.5, the current version has been extended by several functions, such as:

- **UTM application as HTTP server**
- **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.
- **Subnets can also be generated.**
  OSI-TP Communication
  By generating the LISTENER-PORT of the partner application BCMAP entries are not necessary any more.
- **Access data for XA database connection**
  A modified but not yet activated username for the XA database connection can be read by administration (KDCADMI).
- **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.

Features and benefits

MAIN FEATURES	BENEFITS

SOLID CLIENT/SERVER ARCHITECTURES
- Load distribution on multiple processes
- Availability of client features
- Support of various platforms

- Processing of numerous requests at a time
- Graphical interfaces are possible by client functionality
- Clients' connections on Windows- or Unix platforms

LINK OF MAINFRAME WITH UNIX, LINUX AND WINDOWS
- Access via HTTP(S) protocol
- Availability on various platforms
- Transaction secured communication
- Secured communication between client and sever

- Accessibility of the application via additional clients
- Communication over hardware and software boundaries
- Applications' consistency is maintained
- Fully transaction secured communication or restart

COOPERATION WITH DATA BASES
- Usage of XA interface by X/Open
- Availability of ACID properties of transactions
- Useful usage of restart and save functions

- Transactional interoperability with BS2000 database systems
- Transaction integrity on base of processing and data access
- Higher performance for pure retrieval transactions

SIMPLE AND PORTABLE APPLICATIONS
- Usage of compatible programming interface KDCS (DIN66265)

- Usage of standard programming interfaces, XATMI, CPI-C and TX
- Availability of communication and transaction interfaces
- Provision of diagnosis tools
- Print support via spool also possible in groups

- Available interfaces for program management, data communication and memory management

- Availability of open standards

- Implementation of portable applications
- Test and diagnosis possibilities of applications
- Automatic routing for output to groups

COMFORTABLE AND EFFECTIVE ADMINISTRATION
- Provision of a GUI for administration
- Availability of a web based administration
- Integration into administration of SE series (SEM)

- Central administration of any distributed applications
- Possible administration from any computer within the net
- Unified interface of administration

HIGH AVAILABILITY
- Dynamic generation and administration of applications
- Recovery of an abnormally ended node applicatio

- Warranty of 7 by 24 hours operating
- Release of existing locks and availability

SECURITY
- Configuration of access rights
- Support of encryption techniques
- Transaction secured processing

- Restricted access for certain user from certain client
- Protection against unauthorized access by cryptographical means
- Data and applications consistency is ensured

MISCELLANEOUS
- Compliance with X/Open model of transaction processing

- Support of web services
- Transaction secured integration into IBM environment

- Required system parts are available (Communication, Transaction und Resource Manager, Application Management)
- openUTM applications can be used as web services
- Communication with TP monitor and CPI-C applications

Topics

openUTM provides a firm foundation for client/server architectures

Large numbers of clients (up to 500,000) send requests to servers which must be able to respond with maximum speed. openUTM enables effective processing of these requests, e.g. by using multiprocessing and multi-threading techniques and by load balancing across several parallel processes, thus making optimum use of multiprocessor architectures.

The openUTM local client enables graphical user interfaces to be connected to openUTM server applications. openUTM clients on Unix, Linux and Windows systems connected remote via a network are available with two carrier systems (UPIC, OpenCPIC) with different functionality.

For Java clients there is a component of the product BeanConnect which enables the connection to openUTM (see below).

openUTM links mainframes with Linux or Windows systems

openUTM is available on BS2000, Linux, and Windows systems based on common source. openUTM servers on different computers with different hardware and software platforms are able to communicate with each other. Communication is across hardware and application boundaries with transaction integrity secured (two-phase commit).

Client/server communication can likewise be fully transaction secured or, as it is sufficient for pure dialog operation, be secured with suitable restart functions in the server.

UTM application as HTTP server

A UTM application can also act as an HTTP server. The methods GET, PUT, POST and DELETE are supported. In addition to HTTP, access via HTTPS is also supported.

openUTM embodies the classic ACID properties of transaction processing in cooperation with database systems

A transaction involving data access and processing is processed by openUTM in conjunction with a data management system designed to preserve transaction integrity. ACID is the acronym for **A**tomicity, **C**onsistency, **I**solation and **D**urability.

The ACID properties are also guaranteed for the communication with other applications via LU6.1, LU6.2 and OSI TP.

openUTM can also accommodate access to different database systems in the course of a single transaction. To link data management systems providing transaction integrity to the TP monitor transaction, Open Group defined

the XA interface and this is used by openUTM. Most of the database systems (Oracle, Informix etc.) and other products (ISAM/XA, MQSeries) provide this interface. The SESAM/SQL and UDS/SQL database systems have a functionally equivalent interface.

openUTM guarantees that a transaction is processed completely or not at all. Conversations within a transaction and chained transactions can take place. If the connection is lost, openUTM restores the status that existed when the last transaction was committed as well as the context of the chained transaction.

By choosing not to enable the restart functions it is possible to suppress the writing of transaction logging information (may be appropriate for example in information-only applications).

The individual transactions are isolated from one another and do not affect or interfere with one another even where there is a high degree of concurrency.

openUTM allows portable easy-to-build applications

openUTM has easy to learn programming interfaces for writing user programs. The compatible interface KDCS (DIN 66265) contains calls for program management, data communication, memory management and user logging; it also contains the associated data structures in the C, C++ and COBOL environments.

For building portable applications, openUTM also offers the XATMI and CPI-C communication interfaces and the TX transaction interface from the Open Group.

A UTM application can also act as an HTTP server. The methods GET, PUT, POST and DELETE are supported. In addition to HTTP, access via HTTPS is also supported.

Testing and diagnosis are supported by clear, well-presented storage-dumps. Productive applications can be tested with the usual debuggers.

Printer spooling is supported. Printers can be combined into printer groups, with output to these groups being routed automatically for load balancing.

openUTM applications can be created in full or in part with the aid of popular tools.

XML for openUTM can be used to submit and receive data in heterogeneous environments using XML.

Production of UTM applications with BS2IDE

For production of UTM applications on BS2000 systems BS2IDE can be used, too.

BS2IDE is provided as a Plug-In for open SDK Eclipse. This Plug-In supports software developer in typical tasks and integrates the advantages of modern development kits.

In BS2IDE most important tools of software develoment process are combined in one user interface and BS2IDE supports the developer with diagnosis.

openUTM is easy to use and highly effective in operation

The graphical administration workbench openUTM-WebAdmin makes administration so simple:

- UTM applications can be administrated from a central point;
- Full compatibility with the legacy interfaces;
- High availability thanks to dynamical administration.

The UTM applications may be distributed in a network and can run on different platforms.
openUTM WebAdmin communicates with openUTM applications and runs as a pure Java application on Windows, Linux or Solaris systems.
openUTM WebAdmin is available, providing a graphical inter face. openUTM WebAdmin runs on a web server and can be called via a browser running on any computer.

Administration via SE Manager

openUTM WebAdmin can be installed as Add On on Management Unit (SE Manager) of an SE server and provides in general the same functionality as via processing outside the SE Manager.

openUTM allows round-the-clock (7x24) operation

The UTM application can be dynamically administrated and generated locally or in a client/server environment. New or updated programs can be swapped in and out during live operation.
The UTM application is independent of its environment, which means that the environment can change without the application programs having to be changed.
Transactions and application data are transferred from one application run to the next even after changes to the configuration.
Journal information (user log) can be written from the application program with transaction security, and system information (system log) can be evaluated by the administrator.
Program errors do not put down roots and the entire application does not crash because of a single program error.

openUTM offers maximum protection against unauthorized access

openUTM is able to restrict access to applications, and certain services within an application can be made available only to certain users or from certain clients.
A sophisticated system of access authorizations is provided to meet the most stringent security requirements.
Integration in a single sign-on concept is supported.
Encryption technics (RSA / AES) provide maximum protection against unwanted access.

openUTM enables optimum integration into an IBM environment

openUTM application servers can communicate with TP monitor applications in the IBM environment across hardware and application boundaries, with transaction security (two-phase commit). This form of processing is possible with IBM systems as openUTM supports SNA protocol LU6.1 directly and SNA protocol LU6.2 via the openUTM LU62 add-on product.
This means that not only TP monitor applications can be used in the IBM environment (CICS/IMS) but CPI-C programs can be connected to openUTM.

openUTM offers transaction-secured and active message queueing

Integrated message queues make openUTM especially interesting for mobile devices or workflow management.
The message queueing system in openUTM includes delayed and timed transmission, acknowledgments, error queues, message-part collections, active queues with automatic start of the desired service, queue administration, service and spoolout queues, restriction of queues and block-by-block transfer for printer output queues.
With service-controlled queues it is possible to realize mail-boxes, alarm mechanisms, output of openUTM messages to the openUTM-administrator's workbench WinAdmin and accordingly WebAdmin or communication between independent processes of an application.

WebServices for openUTM (WS4UTM)

WS4UTM provides a tool offering a convenient method of making program units of a UTM application available as Web services. This is achieved by sending SOAP messages via Tomcat and Axis to openUTM.
WebServices for openUTM (WS4UTM) consist of 2 components, WS4UTMDeploy and WS4UTMAxis.
WS4UTMDeploy is a graphical deployment tool which allows to generate UTM applications as web services and to deploy them on Axis.
WS4UTM Axis is a class library loaded by Axis. It manages the communication of client and UTM service.

openUTM complies with the recommendations and definitions of X/Open (The Open Group)

Like the Open Group model for distributed transaction processing, openUTM consists of the following:

■ Communication Manager
openUTM supports OSI TP and LU6, which means it can communicate with other open systems.

■ Transaction Manager
This operates locally using commit/rollback mechanisms and as a distributed application in a network (two-phase commit). Chained and isolated transactions are possible. The transaction is linked to the database by openUTM via an interface with the same functionality as the Open Group XA interface.

■ Resource Manager
This provides all necessary resources in such a way that transaction integrity is preserved. These resources include message queues, operating logs and storage areas (memory) allocated to conversations, programs, clients/terminals, the application or the user.

■ Application management
This starts, ends and manages applications (in addition to the model of the Open Group).

openUTM is part of the comprehensive openSEAS product suite
The innovative products of the openSEAS product suite utilize sophisticated openUTM technology:
■ BeanConnect
is a JCA (Java EE Connector Architecture) compliant adapter connecting UTM applications to Java EE application servers.
■ BizXML2Cobol
From existing service definitions (as a WSDL description or XML file) BizXML2Cobol permits the creation of Cobol data structures 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) is also supported in SOA projects for the inclusion of existing program logic.
■ WebTransactions,
in combination with openUTM, enables modern web applications. Existing applications can be connected to the internet and integrated in portals without any modification.'Any' in italics, because the entire server application is left as it is, but web presentation can be designed in many ways. Web hosting can be stored on the central host itself or on an independent web server.

For further information please see
fujitsu.com/emeia/openseas.

Product Structure
openUTM (BS2000) Version 7.0 is a software product consisting of the following usage rights:
- openUTM
- openUTM-D: Supplement to openUTM for Distributed Transaction Processing, the software is integrated in openUTM, the right of usage must be ordered separately
- openUTM Client: Supplement to openUTM for client/server communication; the right of usage must be ordered separately.

Usage rights are offered for a system (in variants made for performance classes) and in the performance classes as usage rights for user classes.
For distributed transaction processing there are additional usage rights for openUTM-D available in the same range.
For client applications in BS2000 there is additional software with according usage rights.
The software XML for openUTM is an add-on to openUTM which is free of charge. Fujitsu Technology Solutions does not accept obligation for bug-fixing. The software is obtainable via https://fujitsu.com/emeia/openutm
The software WebServices for openUTM (WS4UTM) is offered as project solution.
openUTM WinAdmin on Windows is included in openUTM in BS2000 and is delivered on CD.
openUTM WebAdmin is included in openUTM in BS2000 as well. It is available for download at
https://fujitsu.com/emeia/openutm.

The following additional products are also part of the openUTM product line Version 7.0, but have their own usage rights:
- openUTM Enterprise Edition V7.0
- openUTM Client V7.0
- openUTM-LU62 (Unix, Linux, Windows systems) V5.1

Technical Details

All systems S series (/390 architecture)
All systems of SE series (/390 and X86 architecture)

Resource requirements: see Release note

BS2000 OSD/BC as of V10.0
BS2000 OSD/XC as of V10.0
CRTE as of 10.0A
DSSM as of V4.3B
openNET Server V3.6A for BS2000 OSD/BC V10.0, V4.0A for OSD/BC V11.0
OSS as of V4.1D for OSI-TP connections

optional:
IFG as of V8.3A
FHS as of V8.3B
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 V2.8A
SESAM/SQL as of V8.0A
LEASY as of V6.2A
ORACLE Database as of 11gR2
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; RPG3 V4.0B; SPL4 as of V2.9A;
SECOS as of V5.3 necessary for Kerberos;

If problems occur with older compiler versions and runtime systems that Fujitsu 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.

In case of distributed transaction processing the following partner application server are supported:
openUTM (BS2000) as of V6.4
openUTM Enterprise Edition (Unix, Linux, Windows systems) as of V6.4
For LU6.2 connection to IBM-SNA systems via LU6.2:
openUTM-LU62(Unix systems, Linux,Windows) as of V5.1
and, depending on the operating system, the following third-party products also:
IBM Communications Server for Linux as of Version 6.4 (Linux)
IBM Communications Server for Windows as of Version 6.1.2 (Windows)

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

For client/server communication optionally:
>> openUTM-Client (Unix, Linux, Windows systems) as of V6.4 (contains the carrier systems UPIC V6.4, openCPIC V4.0)
>> openUTM-Client (BS2000) as of V6.4
> BeanConnect (Unix, Linux, Windows systems) as of V3.0B (contains openUTM-JConnect).

User interface	
Language	Commands in English, message texts in German/English

Installation	
Installation	By the customer according to the release notice
Operating mode	Interactive (dialog), transaction and batch mode
Implementation language	Assembler, SPL, C, graphical interface in Java

Documentation	
Manuals	Manuals (German and English) for users and system administrators as files in PDF format; https://bs2manuals.ts.fujitsu.com/ files over the Internet

Demands on the user	
Demands on the user	Knowledge of BS2000

Training	
Training	See training offer at: https://fujitsu.docebosaas.com/customer

Conditions	
Conditions	This software product can be leased by the customer in accordance with the conditions for the use of software products.

Ordering and delivery	
Ordering	The software product can be obtained from your local Fujitsu region.

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