Datasheet
Fujitsu openUTM (BS2000/OSD) V6.1 Software

High-end Transaction Processing Platform

openUTM (BS2000/OSD)
openUTM in BS2000/OSD is the transaction oriented middleware platform for high-end requirements. It 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/OSD provides comprehensive transaction security for data, programs, message queues and client/server communication.
openUTM integrates heterogeneous environments (BS2000/OSD, 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/OSD 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 offers cluster support. Instead of a stand-alone application several identical copies of a UTM application in a multiple computer configuration can be consolidated to form a UTM-cluster application. This allows genuine 7x24h operation through maximum availability and online maintenance options like software upgrade and exchange of hardware.

openUTM (BS2000/OSD) V6.1
- Smart transition from stand-alone applications to cluster even for applications which are cluster-technologically sophisticated, e.g. using global UTM storage areas (GSSB and ULS).
- Cluster support even for dialog services which require restart: dialog services from users which are generated using "RESTART=YES" can be continued on another node.
- The graphical administration workplace WinAdmin has been reimplemented in Java technology and has been functionally enhanced.
### 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 multiprocessor architectures. The openUTM local client offers graphical interfaces to be connected to openUTM server applications. openUTM clients on Unix, Linux and Windows platforms connected remote via a network are available with two carrier systems (UPIC, OpenCPI) 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 Unix, Linux or Windows systems**

openUTM is available on BS2000/OSD, Unix, Linux, and Windows systems which are common source. openUTM servers on different computers will have their hardware and software platforms 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 full transaction secured or, as it is sufficient for pure dialog operation, be secured with suitable restart functions in the server.

**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 Atomic, Consistent, Isolation, and Durability. 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 defines the XA interface and this is used by openUTM. Most of the database systems (Oracle, Informix etc.) and other products (ISAM/ISA, MQSeries) provide this interface. The SESAM/SQL and UDS/SQL database systems have a comparable interface in terms of its functionality.

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 and the context of the chained transaction.

By choosing not to enable the restart functions it is possible to suppress the write-back of backup 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 delivers 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.

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

A sample application enables easy entry to OLTP operation with openUTM and gives a frame for the development of individual applications.

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 such all O-O design tools that generate C++ code, NetExpress (Micro Focus), Microsoft Visual Studio, Oracle Solaris Studio (formerly Sun Studio) and others.

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

**openUTM is easy to use and highly effective in operation**

The graphical administration workbench openUTM-WinAdmin on Windows makes administration so simple:
- openUTM applications can be administrated from a central point;
- Full compatibility with the legacy interfaces;
- High availability thanks to dynamical administration.

The openUTM applications may be distributed in a network and can run on different platforms.

WinAdmin communicates in parallel with openUTM applications and runs as a pure Java application e.g. on Windows.

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

The openUTM 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 openUTM application is independent of its environment, which means 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 (system 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.
Cluster support
Instead of a stand-alone application several identical copies of a UTM application in a multiple computer configuration can be consolidated to form a UTM-Cluster application. A UTM-Cluster application affords advantages in load balancing and high availability:

- Principal high availability functions like application monitoring, online import of application data and online update of application programs and openUTM updates ensure high availability of the cluster applications for 7x24h operation.
- For the communication of clients with a cluster application an external load balancer can be used to balance the load on the individual application nodes. For the communication based on UPIC openUTM offers a UPIC load balancer for the UPIC clients.
- For the communication of an UTM-Application with an UTM-cluster application via LU6.1 and OSI-TP openUTM allows load balancing using LPAP bundles.
- An UTM-Cluster application and an Oracle® RAC-Cluster configuration can be effectively integrated: Each UTM node can be assigned to a RAC node, while the other RAC nodes serve as failover nodes.
- To make the administration of an UTM-Cluster application comfortable, the graphical administration tool WinAdmin has been enhanced. You can administer a UTM-cluster application not only via the program interface for administration but also via the graphical administration interface WinAdmin. Depending on the administration task the effect of the administration task is either limited to the single application node on which you are signed on or global on all application nodes.

openUTM offers transaction-secured and active message queuing
Integrated message queues make openUTM especially interesting for mobile devices or workflow management. The message queuing system in openUTM includes delayed and timed transmission, acknowledgments, error queues, part-message 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 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 openUTM 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 openUTM 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 SDA 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 http://ts.fujitsu.com/openseas.

Product Structure

openUTM in BS2000/OSD Version 6.1 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
- openUTM-Crypt: Supplement to openUTM for encryption
- openUTM-CL-Crypt: Supplement to openUTM-Client for encryption 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 add-on usage rights for openUTM-D available in the same range.

For client applications in BS2000/OSD there is add-on 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 http://ts.fujitsu.com/openutm

The software WebServices for openUTM (WS4UTM) is offered as project solution.

openUTM WinAdmin on Windows is included in openUTM in BS2000/OSD.

The following additional products are also part of the openUTM product line Version 6.1, but have their own usage rights:

- the client/server package openUTM Enterprise Edition (Unix systems/Linux/Windows) V6.1
- openUTM-Client (Unix/Linux/Windows) V6.1
- openUTM-LU62 (Unix/Windows) V5.1
Technical details

TECHNICAL REQUIREMENTS

HARDWARE
All systems of S series (/390 architecture)
All systems of SX series (SPARC architecture)
All systems of SQ series (x86 architecture)

Resource requirements:

Virtual adress space:
openUTM(BS2000/OSD) V6.1A: system code: 3850 KB; openUTM-CRYPT: 126 KB.
Each UTM task occupies additional memory in classes 5 and 6, whose size depends on the application configuration and the application programs.

Static disk storage space:
The openUTM(BS2000/OSD) V6.1A product files occupy approximately 24,000 PAM pages on S servers, 26,000 PAM pages on SX servers, 27,000 PAM pages on SX servers.

Dynamic disk storage space:
The space required for KDCFILE, USLOG, SYSLOG files and the application program depends on the size of the configuration.

Cluster configuration:
■ openUTM (BS2000/OSD) cluster configuration: cluster of these BS2000/OSD systems in a XCS cluster with HIPLEX-MSCF.
■ Nodes of a BS2000/OSD cluster can be different BS2000/OSD systems (S, SX, SQ) with different operation system versions. Nodes with other operation systems (UNIX systems, Linux, Windows) are not allowed.
■ The disk space for cluster global files depends on the size of the configuration.

SOFTWARE

BS2000/OSD as of V7.0 for S series (incl. cluster configuration)
OSD/XC as of V3.0 for SX series (incl. cluster configuration)
OSD/XC as of V4.0 for SQ series (incl. cluster configuration)
CRTE as of V2.7F for OSD V7.0; as of V2.8E for OSD V8.0, as of V2.9A for OSD V9.0
DSSM as of V4.1A
openNET Server as of V3.2A
(contains BCAM V18.0A, CMX V1.3A, DCAM V13.1B, ONETSERV V3.2A, SOCKETS V2.2A, VTSU-B V13.2A, XHCS V2.0A)
OSS as of V4.1 for OSI-TP connections
optional:
HIPLEX MSCF as of V5.0 for cluster support
IFG as of V8.3
FHS as of V8.3
JV as of V14.0B
RSO as of V3.5A
OMNIS as of V8.4A; OMNIS-MENU as of V3.4
DRIVE as of V3.1A
UDS/SQL as of V2.5A
SESAM/SQL as of V6.0A
LEASY as of V6.1A
ORACLE Database as of 10gR2
C/C++ as of V3.1A; COBOL85 as of V2.3A; COBOL2000 as of V1.3A; ASSEMBH as of V1.2C; 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 V2.3A.
FormplagDoors V3.0B;
SECOS as of V5.2 necessary for Kerberos
openUTM-CRYPT V6.1A if encryption is used in openUTM applications
openCRYPT-SERV as of V1.3 on S server for encryption with cryptobox (hardware encryption) and
without cryptobox (software encryption);
openCRYPT-SOFT as of V1.3 for SX server and SQ server;

In case of distributed transaction processing the following partner application server are supported:
  openUTM (BS2000/OSD) as of V5.3
  openUTM Enterprise Edition (Unix systems, Linux, Windows) as of V5.3
  (Note: For connection to openUTM versions earlier than 5.2 Fujitsu does not accept any
  obligation for bug fixing. In case of a bug the customer should update the partner
  application to openUTM version as of 5.2.)
  BeanConnect (Unix systems, Linux, Windows) as of V2.1
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:
  SNAP-IX as of Version 7.0.2.4 from Metaswitch Networks (Solaris)
  IBM Communications Server for Linux as of Version 6.2 (Linux)
  IBM Communications Server for Windows as of Version 6.1.2 (Windows)

The following versions are supported for distributed transaction processing with J2EE applications:
  BeanConnect (Unix systems, Linux, Windows) as of V2.1.

For client/server communication optionally:
  openUTM-Client (Unix systems, Linux, Windows) as of V5.3 (contains the carrier systems
  UPIC V5.3, openCPIC V4.0);
  openUTM-Client (Unix systems, Linux, Windows) as of V6.0 for client-side load distribution
  in the cluster;
  openUTM-Client (BS2000/OSD) as of V5.3;
  openUTM-Client (BS2000/OSD) as of V6.0 for client-side load distribution in the cluster;
  BeanConnect (Unix systems, Linux, Windows) as of V2.1 (contains openUTM-JConnect).

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<thead>
<tr>
<th>USER INTERFACE</th>
<th>English, German, user defined</th>
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<tbody>
<tr>
<td>INSTALLATION</td>
<td>By the customer on the basis of the release notice</td>
</tr>
<tr>
<td>DOCUMENTATION</td>
<td>Manuals (English and German) as PDF files on openUTM WinAdmin DVD, also available on the Internet via <a href="http://ts.fujitsu.com/openutm">http://ts.fujitsu.com/openutm</a></td>
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</tbody>
</table>
| DEMANDS ON THE USER        | Knowledge of BS2000 and if necessary knowledge of the partner system;
                            | Knowledge of XCS in case of cluster configuration
                            | Knowledge of KDCS and/or of XATMI/CPI-CTX interface
                            | Knowledge of COBOL or C
                            | Knowledge of database systems |
| TRAINING                   | For trainings see: [http://training.ts.fujitsu.com](http://training.ts.fujitsu.com) |
| CONDITIONS                 | This software product is supplied to the customer under the conditions for the use of software products in return for a single payment or for regular payment. |
| ORDERING AND DELIVERY      | This software product may be obtained from your local Fujitsu regional office. |
More information

Fujitsu platform solutions
In addition to Fujitsu openUTM, Fujitsu provides a range of platform solutions. They combine reliable Fujitsu products with the best in services, know-how and worldwide partnerships.

Dynamic Infrastructures
With the Fujitsu Dynamic Infrastructures approach, Fujitsu offers a full portfolio of IT products, solutions and services, ranging from clients to datacenter solutions, Managed Infrastructure and Infrastructure as a Service. How much you benefit from Fujitsu technologies and services depends on the level of cooperation you choose. This takes IT flexibility and efficiency to the next level.

Computing products
www.fujitsu.com/global/services/computing/
  ■ PRIMERGY: Industrial standard server
  ■ SPARC Enterprise: Unix server
  ■ PRIMEQUEST: Mission-critical IA server
  ■ ETERNUS: Storage system
  ■ BS2000 mainframes

Software
www.fujitsu.com/software/
  ■ Interstage: Application infrastructure software
  ■ Systemwalker: System management software

More information
Learn more about Fujitsu openUTM, please contact your Fujitsu sales representative, Fujitsu business partner, or visit our website.
www.ts.fujitsu.com/openUTM

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