Datasheet
Fujitsu Software openUTM Client V7.0

FUJITSU

Client Server Communication

openUTM Client

openUTM Client supports communication between an openUTM server application and a program part on a Unix, Linux or Windows system that realizes the mapping of application data into user interface.

Client program to be implemented by user takes following tasks:

- Secured access to openUTM application by using API of openUTM Client
- representation of data and functions of an openUTM application at user interface
- exchange of data and steering of services of openUTM application

For programming of client applications standard interfaces (CPI-C, TX and XATMI) are offered.

openUTM is part of the comprehensive product offering of openSEAS.
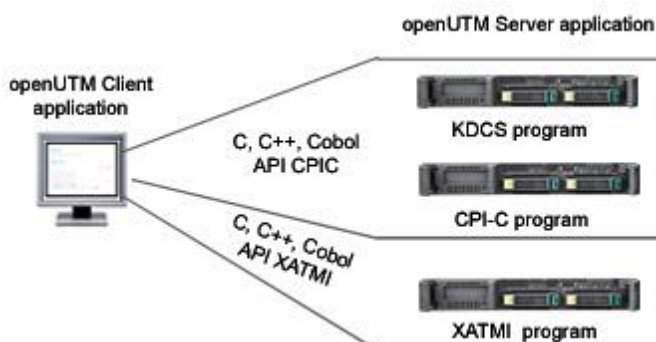
openUTM Client V7.0A

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

- **Encryption**
  Encryption functions in openUTM between a UTM application and a UPIC client were reworked. Some security leaks are closed, state of the art methods are supported and delivery is easier.

Features and benefits

MAIN FEATURES	BENEFITS

INTERFACES
- APIs CPI-C, TX and XATMI available
- Interfaces for COBOL and C available

- Uniform programming done for server and client
- Various possibilities for implementing

ENCRYPTION
- Encryption of access and user data
- Usage of a combination of DES/AES and RSA method
- Support of ENCRYPTION LEVEL 5

- Safety before unauthorized eavesdropping on news
- Higher security by key update
- Higher integrity of data

SAFETY AND RESTART
- Support of restart
- Usage of a saved context
- Provision of transaction state information

- Start with consolidated state of transaction
- Process optimization by context information
- Logical synchronisation with server transactions

CARRIER SYSTEM UPIC AND OPENCPIC
- Powerful carrier system UPIC
- Load balancing via UPIC
- Cluster support via UPIC
- Information about shutdown state

- Various possibilties of communication and processing by the client
- Load balancing to UTM applications via Round Robin method
- Identifying of active shutdown requests

WORKLOAD CAPTURE&REPLAY
- Recording the communication between openUTM applications and UPIC clients and playing with settable load profiles

- The behaviour of openUTM application can be tested using high workload under real conditions

OPENUTM CLIENT UND MS WINDOWS TERMINAL SERVER
- Common usage of openUTM and Windows Terminal Server
- Usage of a central Windows Terminal Server
- Central client applications

- Local and remote access to openUTM server applications
- Possible central installation and administration
- Simultaneous access of many users

Topics

openUTM-Client has two carrier systems:

- UPIC for client/server communication
- OpenCPIC for client/server and peer-to-peer communication

The two carrier systems provide a different pool of functions and interfaces.

Interfaces

openUTM and openUTM-Client offer the CPI-C, TX and XATMI program interfaces for communication. These interfaces were defined by X/Open.
These interfaces can be used for uniform programming in both the client and the server. openUTM also offers the facility for programming in the server with KDCS and in the client with CPI-C. The interfaces can be used in a C/C++ environment and a COBOL environment.
In a C/C++ environment, development tools such as VisualBasic and VisualC can be used to generate graphical interfaces for openUTM applications. In a C++ environment can be programmed object-oriented with VisualC++. Therefore C++ classes are ready to use.

Encryption of access and user data

Clients often access openUTM applications via open networks. This means there is a risk of unauthorized persons eavesdropping on the line and, for example, discovering passwords for openUTM user IDs or sensitive user data. To prevent this happening, openUTM and openUTM-Client, UPIC carrier system, support the encryption of passwords and user data for client connections.
For encryption, openUTM uses a combination of the DES/AES and the RSA method, named after its creators Rivest, Shamir and Adleman. The DES/AES key is generated by the UPIC client, while the RSA key pair (public key and private key) is generated by the server. The RSA keys can be changed in openUTM through administration.
It is also possible to store the public key locally in advance for the UPIC client. When a connection is established, the received public key is verified against the stored public key.
Encryption level 5:
openUTM Client (BS2000) supports communication to UTM applications, too, if ENCRYPTION-LEVEL 5 was generated for UPIC client. Level 5 uses the Diffie-Hellman method based on Elliptic Curves to agree the session key and encrypts input/output messages with the AES-GCM algorithm. openUTM Client (BS2000) V7.0 also supports communication with UTM applications of V7.0 where ENCRYPTION-LEVEL 5 was generated for the connections to the UPIC client.

Security and restart

openUTM's security and restart functions are supported.
With UPIC, PCs and workstations are incorporated into the openUTM access security strategy, together with their graphical environment. After a malfunction, applications can be restarted at the point which the transaction had last reached.
A UPIC client has the option of passing a transaction context to the openUTM server as a backup. In the event of a restart, openUTM then makes the saved context available to the client again. The context information can be useful to the client during a restart for optimizing its operations.

Logical synchronization with the global server transactions is possible for the UPIC client. In the event of a restart, the status of the last transaction can be requested using a separate service request (transaction code).
OpenCPIC clients can set the transaction brackets themselves via the TX interface. This ensures the global backup of all client/server communications.

Workload Capture & Replay

The function "Workload capture & replay" is used to record the communication between UTM applications and UPIC clients and then played with settable load profiles. The behaviour of the UTM application can thus be tested using high workload under real conditions.

UPIC carrier system

UPIC is a lean, easily deployable and very powerful carrier system. With UPIC, the initiative for communication always lies with the openUTM client program. The UPIC protocol is used as the transaction protocol.
Multi-conversation and multi-threading of openUTM-Client UPIC applications permits better use of hardware facilities.
Multi-threading is offered on Unix, Linux and Windows based systems with POSIX threads, so that a number of simultaneous conversations are possible here too.
UPIC offers calls which allow a time-driven, non-blocking conversation with the server application.
The transfer of format names from server to client is important for users who have previously worked with terminals and would like to migrate to PCs. The server programs do not have to be modified for the migration to UPIC PC clients.
The installation and configuration of UPIC is simple thanks to use of the socket interface RFC1006 and a side information file.
The ASCII-EBCDIC conversion can be adapted by the customer.

Load balancing UPIC Client

openUTM Client complements the UTM-cluster support. The communication of UPIC clients with a UTM-Cluster application can be configured in a way which allows to distribute the jobs of the UPIC clients to the cluster application on the individual UTM application nodes.
When a connection is established, a suitable node is selected for the UPIC communication from a list of application nodes (random Round Robin method).

Shutdown warn/grace for openUTM (node) applications

Via CPI-C interface the shutdown state. Thus the user is able to see wether there is a shutdown order at the node application of an openUTM cluster application. Likewise the shutdown time can be polled.

OpenCPIC carrier system

OpenCPIC is a powerful and more complex client carrier system used mainly for communication with openUTM server applications. OpenCPIC applications can also communicate with one another or with other CPI-C applications.
Clients implemented with OpenCPIC, acting as transaction coordinators, can determine the beginning and end of the global

transactions and be integrated into the global transaction sequence (2-Phase-Commit).

In the case of OpenCPIC, the initiator of communication is not defined, it may be either of the two communication partners. OSI TP is used as the transaction protocol, thereby also permitting communication with all applications on alien systems that also use OSI TP as the communication protocol.

To program communication, the interfaces of X/Open: XATMI, CPI-C and TX, can be used. TX is used to control the transaction.

openUTM Client and MS Windows Terminal Server
By using both openUTM and the Microsoft Windows Terminal Server, the user gains the following benefits:

- An openUTM client application can be centrally installed and managed.
- The openUTM client applications can access openUTM server applications locally as well as remotely.
- Thanks to the openUTM interoperability, it can be used in heterogeneous environments.
- "Thin clients" can be employed in an openUTM environment.

openUTM client applications can be installed on a computer functioning as the Microsoft Windows Terminal Server. From all client types supported by Microsoft Terminal Server an access to openUTM server applications is given. The Microsoft Windows Terminal Server lets many users access an openUTM client application simultaneously without any special multi-user programming.

Product structure
In the context of openUTM server applications in the BS2000 the usage rights of openUTM clients have to be acquired for the number of users communicating with the server at the same time.

openUTM Client licenses may be obtained for 1 user each for developing/testing/runtime or for runtime only.

Licenses are available separately for the UPIC carrier system or for both UPIC and openCPIC carrier systems.

In the context of openUTM server applications on Linux or Windows systems the rights of use of openUTM Enterprise Edition package have to be licensed additionally.

The software is supplied on the openUTM product DVD, purchased with one usage right for development.

The documentation is available only in the internet.

Technical Details

Technical requirements Hardware
Support is provided for the hardware, on which the mentioned operating system versions can run. This includes all systems based on Intel x86 technology, such as laptops, PCs, PRIMERGY systems; other platforms on request. Resource requirements: see in Release Notice

Technical requirements Software
Carrier system UPIC: Linux(SuSE) x86 64 Bit as of SLES 11 PL4 Linux(RedHat) x86 64 Bit as of RHEL 7.2 Windows 8.x / Windows 10 64 Bit Windows Server 2016 / Windows Sever 2019 For Windows systems: Visual Studio 2010 or higher Carrier system openCPIC: Linux(SuSE) x86 64 Bit as of SLES 11 PL4 Linux(RedHat) x86 64 Bit as of RHEL 7.2 Windows 8.x / Windows 10 Windows Server 2016 / Windows Server 2019 For Windows systems: Visual Studio 2010 or higher PCMX is required for communication via TCP/IP. The required versions of PCMX are included in the product DVD. PCMX(Linux x86) 6.0B33 PCMX-64(Windows) 5.0B20 Only in connection with openUTM the use of PCMX does not need to be licensed separately. For client-server communication: openUTM(BS2000) ab V6.4 openUTM Enterprise Edition as of V6.4

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

Installation	
Installation	By the customer according to the release notice
Implementation language	C

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 development of application programs on Unix, Linux, Windows systems; Knowledge of CPI-C/XATMI interface.

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.

Contact