

M3UA Protocol Modules for TTCN-3 Toolset with TITAN, User Guide

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About This Document

How to Read This Document

This is the User Guide for the M3UA protocol module. The M3UA protocol module is developed for the TTCN-3 Toolset with TITAN. This document should be read together with Function Specification [4].

Presumed Knowledge

To use this protocol module the knowledge of the TTCN-3 language [1] is essential.

System Requirements

Protocol modules are a set of TTCN-3 source code files that can be used as part of TTCN-3 test suites only. Hence, protocol modules alone do not put specific requirements on the system used. However in order to compile and execute a TTCN-3 test suite using the set of protocol modules the following system requirements must be satisfied:

- TITAN TTCN-3 Test Executor installed. For installation guide see [3].

Protocol Modules

Overview

Protocol modules implement the message structures of the corresponding protocol in a formalized way, using the standard specification language TTCN-3. This allows defining of test data (templates) in the TTCN-3 language [1] and correctly encoding/decoding messages when executing test suites using the TITAN TTCN-3 test environment.

Protocol modules are using TITAN's RAW encoding attributes [2] and hence are usable with the TITAN test toolset only.

The table below contains the implemented M3UA messages and the corresponding TTCN-3 type records. Using those type records, templates can be defined to send and receive a given message.

Message name	Reference	Corresponding type record in M3UA_Types.ttcn
Payload Data Message	[5] 3.3.1.	M3UA_DATA
Destination Unavailable	[5] 3.4.1.	M3UA_DUNA
Destination Available	[5] 3.4.2.	M3UA_DAVA
Destination State Audit	[5] 3.4.3.	M3UA_DAUD
Signalling Congestion	[5] 3.4.4.	M3UA_SCON

Message name	Reference	Corresponding type record in M3UA_Types.ttcn
Destination User Part Unavailable	[5] 3.4.5.	M3UA_DUPU
Destination Restricted	[5] 3.4.6.	M3UA_DRST
ASP Up	[5] 3.5.1.	M3UA_ASPUP
ASP Up Acknowledgement	[5] 3.5.2.	M3UA_ASPUP_Ack
ASP Down	[5] 3.5.3.	M3UA_ASPDN
ASP Down Acknowledgement	[5] 3.5.4.	M3UA_ASPDN_Ack
Heartbeat	[5] 3.5.5.	M3UA_BEAT
Heartbeat Acknowledgement	[5] 3.5.6.	M3UA_BEAT_Ack
Registration Request	[5] 3.6.1.	M3UA_REG_REQ
Registration Response	[5] 3.6.2.	M3UA_REG_RSP
Deregistration Request	[5] 3.6.3.	M3UA_DEREG_REQ
Deregistration Response	[5] 3.6.4.	M3UA_DEREG_RSP
ASP Active	[5] 3.7.1.	M3UA_ASPAC
ASP Active Ack	[5] 3.7.2.	M3UA_ASPAC_Ack
ASP Inactive	[5] 3.7.3.	M3UA_ASPIA
ASP Inactive Ack	[5] 3.7.4.	M3UA_ASPIA_Ack
Error	[5] 3.8.1.	M3UA_ERR
Notify	[5] 3.8.2.	M3UA_NOTIFY

Installation

The set of protocol modules can be used in developing TTCN-3 test suites using any text editor. However to make the work more efficient a TTCN-3-enabled text editor is recommended (e.g. [nedit](#), [xemacs](#)). Since the M3UA protocol module is used as a part of a TTCN-3 test suite, this requires TTCN-3 Test Executor and a C compiler be installed before the module can be compiled and executed together with other parts of the test suite. For more details on the installation of TTCN-3 Test Executor see the relevant parts of [2].

Encoding and Decoding Functions

For encoding and decoding the message two functions are available:

- Function `enc_PDU_M3UA` makes simple RAW encoding without any modification on the input M3UA message.
- Function `dec_PDU_M3UA` makes simple RAW decoding without any modification on the input octetstring.

Terminology

TITAN TTCN-3 Test Executor.

Abbreviations

IETF

Internet Engineering Task Force

IP

Internet Protocol

MTP3

Message Transfer Part 3

M3UA

MTP3 User Adaptation Part

RFC

Request for Comments

TTCN-3

Testing and Test Control Notation version 3

References

- [1] ETSI ES 201 873–1 v.3.1.1 (06/2005)The Testing and Test Control Notation version 3. Part 1: Core Language
- [2] Programmer’s Technical Reference for the TITAN TTCN-3 Test Executor
- [3] Installation Guide for the TITAN TTCN-3 Test Executor
- [4] M3UA Protocol Modules for TTCN-3 Toolset with TITAN, Function Specification
- [5] IETF [RFC 3332](#)
Signaling System 7 (SS7) Message Transfer Part 3 (MTP3) – User Adaptation Layer (M3UA)