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

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# Introduction

## Revision history

|  |  |  |  |
| --- | --- | --- | --- |
| Date | Rev | Characteristics | Prepared |
| 2005-05-19 | PA1 | First draft version | ETHLAFA |
| 2005-05-31 | A | Updated after inspection | ETHLAFA |
| 2007-01-02 | PB1 | Updated for TITAN R7 | ETHBAAT |
|  |  |  |  |

## About this Document

### How to Read this Document

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

### Presumed Knowledge

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

DUA is specified in the draft [5]. (A Function Specification was not available). DUA is an extension to IUA; thus, it may be useful to leaf through the draft for the latter one as well [6].

### References

[1] ETSI ES 201 873-1 v.2.2.1 (02/2003)  
The Testing and Test Control Notation version 3. Part 1: Core Language

[2] 1/1553-CRL 113 200 Uen  
User Documentation for the TITAN TTCN-3 Test Executor

[3] 109 21-CNL 113 449 –1 Uen  
DUA Protocol Modules for TTCN-3 Toolset with TITAN, Product Revision Information

[4] 155 17-CNL 113 449  
DUA Protocol Modules for TTCN-3 Toolset with TITAN, Function Specification

[5] [draft-ietf-sigtran-dua-08.txt](http://www.ietf.org/internet-drafts/draft-ietf-sigtran-dua-08.txt)  
 DPNSS/DASS 2 extensions to the IUA protocol

[6] [draft-ietf-sigtran-rfc3057bis-02.txt](http://www.ietf.org/internet-drafts/draft-ietf-sigtran-rfc3057bis-02.txt)  
ISDN Q.921-User Adaptation Layer

### Abbreviations

ASP Application Server Process

DASS Digital Access Signaling System

DLC Data Link Connection

DPNSS Digital Private Network Signaling System

DUA DPNSS/DASS 2 User Application Layer Protocol

ISDN Integrated Services Digital Network

IUA ISDN User Application Layer Protocol

MGC Media Gateway Controller

PDU Protocol Data Unit

TEI Terminal Endpoint Identifier

TTCN-3 Testing and Test Control Notation version 3

### Terminology

#### Application Server Process (ASP)

A process instance of an application Server. Examples of Application Server Processes are primary or backup MGC instances.

## 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 R7A (1.7.pl0) or higher installed. For installation guide see [2]. Please note: This version of the protocol module is not compatible with TITAN releases earlier than R7A.

# Protocol Modules

## Overview

Protocol modules implement the message structure of the related 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 messages and the corresponding TTCN-3 type records. Using those type records, templates can be defined to send and receive a given message.

The majority of the type records are imported from the IUA protocol module. These records are given left justified, whereas the ones defined in the DUA protocol module are shown right justified.

|  |  |  |  |
| --- | --- | --- | --- |
| Message name | Reference | Corresponding type record in | |
| **IUA\_Types.ttcn** | **DUA\_Types.ttcn** |
| Establish Request | [5] 2.2 |  | DUA\_EST\_REQ |
| Establish Confirm | [5] 2.2 |  | DUA\_EST\_CFM |
| Establish Indication | [5] 2.2 |  | DUA\_EST\_IND |
| Release Request | [5] 2.2 |  | DUA\_REL\_REQ |
| Release Confirm | [5] 2.2 |  | DUA\_REL\_CFM |
| Release Indication | [5] 2.2 |  | DUA\_REL\_IND |
| Data Request | [5] 2.2 |  | DUA\_DATA\_REQ |
| Data Indication | [5] 2.2 |  | DUA\_DATA\_IND |
| ASP Up | [6] 3.3.2.1 | IUA\_ASPUP |  |
| ASP Up Ack | [6] 3.3.2.2 | IUA\_ASPUP\_Ack |  |
| ASP Down | [6] 3.3.2.3 | IUA\_ASPDN |  |
| ASP Down Ack | [6] 3.3.2.4 | IUA\_ASPDN\_Ack |  |
| ASP Active | [6] 3.3.2.5 | IUA\_ASPAC |  |
| ASP Active Ack | [6] 3.3.2.6 | IUA\_ASPAC\_Ack |  |
| ASP Inactive | [6] 3.3.2.7 | IUA\_ASPIA |  |
| ASP Inactive Ack | [6] 3.3.2.8 | IUA\_ASPIA\_Ack |  |
| Heartbeat | [6] 3.3.2.9 | IUA\_BEAT |  |
| Heartbeat Ack | [6] 3.3.2.10 | IUA\_BEAT\_Ack |  |
| Error | [6] 3.3.3.1 | IUA\_ERR |  |
| Notify | [6] 3.3.3.2 | IUA\_NTFY |  |
| DLC Status Request | [5] 2.4 |  | DUA\_DLCs\_REQ |
| DLC Status Confirm | [5] 2.4 |  | DUA\_DLCs\_CFM |
| DLC Status Indication | [5] 2.4 |  | DUA\_DLCs\_IND |

Remark: there is a conflict between the drafts [5] and [6]. For message class 0 (Management Messages) and message type 5 they define two different messages: DLC Status Request in [5] and TEI Query Request in [6]. To resolve this contradiction, message types for MGNT messages defined in chapter 2.4 of [5] have been arbitrarily incremented by one. The new values are: 6 for DLC Status Request, 7 for DLC Status Confirm and 8 for DLC Status Indication.

## 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 DUA protocol is used as a part of a TTCN-3 test suite, this requires TTCN-3 Test Executor 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 section of [2].

# Example

There are no examples available for this protocol module.