DUA Protocol Modules for TTCN-3 Toolset with TITAN, Function Specification

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# Introduction

## Revision History

|  |  |  |  |
| --- | --- | --- | --- |
| Date | Rev | Characteristics | Prepared |
| 2005-05-13 | PA1 | First draft version | ETHLAFA |
| 2005-05-31 | A | Updated after inspection | ETHLAFA |

## How to Read this Document

This is the Function Specification for the set of DUA protocol modules. DUA protocol modules are developed for the TTCN-3 Toolset with TITAN. This document should be read together with the Product Revision Information [4].

## Scope

The purpose of this document is to specify the content of the DUA protocol modules.

## References

[1] [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

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

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

[4] 109 21-CNL 113 449-1 Uen  
DUA Protocol Modules for TTCN-3 Toolset with TITAN, Product Revision Information

[5] 1/1553-CRL 113 200 Uen  
User Documentation for the TITAN TTCN-3 Test Executor

## 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

PDU Protocol Data Unit

TEI Terminal Endpoint Identifier

TTCN-3 Testing and Test Control Notation version 3

## Terminology

TITAN TTCN-3 Test Executor (see [5]).

# General

Protocol modules implement the message structures 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 [3] 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 [5] and hence are usable with the Titan test toolset only.

# Functional Specification

## Protocol Version Implemented

This set of protocol modules implements protocol messages and constants of a draft DUA protocol (see [1]). DUA is an extension to IUA; thus, part of the messages is defined in the draft IUA protocol [2].

## Modifications/deviations Related to the Protocol Specification

### Implemented messages

The following messages will be implemented: Establish Request, Establish Confirm, Establish Indication, Release Request, Release Confirm, Release Indication, Data Request, Data Indication, ASP Up, ASP Up Ack, ASP Down, ASP Down Ack, ASP Active, ASP Active Ack, ASP Inactive, ASP Inactive Ack, Heartbeat, Heartbeat Ack, Error, Notify, DLC Status Request, DLC Status Confirm, DLC Status Indication.

The underscores messages are defined in [1], whereas the remaining ones have their definition in [2].

### Protocol Modifications/Deviations

There is a conflict between the drafts [2] and [1]. For message class 0 (Management Messages) and message type 5 they define two different messages: DLC Status Request in [2] and TEI Query Request in [1]. To resolve this contradiction, message types for MGMT messages defined in chapter 2.4 of [2] 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.

## Encoding/Decoding and Other Related Functions

This product also contains encoding/decoding functions that assure correct encoding of messages when sent from Titan and correct decoding of messages when received by Titan. Implemented encoding/decoding functions:

Name Type of formal parameters Type of return value  
**enc\_PDU\_DUA PDU\_DUA octetstring  
dec\_PDU\_DUA octetstring PDU\_DUA**

## Limitations

Debug log generation is not supported when this revision of this product is used with TITAN version R7A (1.7pl0), because the encoder/decoder functions, automatically generated by TITAN version R7A (1.7pl0) doesn't contain logging functions. Newer versions of TITAN supports the debug logging within the automatically generated encoder/decoder functions that can be activated by allowing the DEBUG\_ENCDEC (see TITAN TTCN-3 Test Executor Technical Reference, clause 7.2.3.2) in TITAN runtime configuration files.