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

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# Introduction

## Revision History

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| --- | --- | --- | --- |
| Date | Rev | Characteristics | Prepared |
| 2005-05-13 | PA1 | First draft version | ETHLAFA |
| 2005-05-31 | A | Updated after inspection | ETHLAFA |
| 2012-06-28 | PC1 | Backtrack decoder added | ETHGBH |
|  |  |  |  |

## How to Read this Document

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

## Scope

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

## References

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

[2] ETSI ES 201 873-1 v.4.4.1 (2012)  
The Testing and Test Control Notation version 3. Part 1: Core Language

[3] 109 21-CNL 113 439-4 Uen  
IUA Protocol Modules for TTCN-3 Toolset with TITAN, Product Revision Information

[4] 1/1553-CRL 113 200 Uen  
User Documentation for the TITAN TTCN-3 Test Executor

## Abbreviations

ISDN Integrated Services Digital Network

IUA ISDN User Application Layer Protocol

PDU Protocol Data Unit

TTCN-3 Testing and Test Control Notation version 3

## Terminology

TITAN TTCN-3 Test Executor (see [4]).

# 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 [2] 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 [4] 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 IUA protocol (see [1]).

## Modifications/deviations Related to the Protocol Specification

### Implemented messages

All IUA message types of message classes 0, 3, 4 and 5 as listed in chapter 3.1.2 of [1] will be implemented.

Parameters with the following identifiers will be implemented (see chapter 3.1.5 of [1]): 0x0001, 0x0003, 0x0004, 0x0005, 0x0007, 0x0008, 0x0009, 0x000b, 0x000c, 0x000d, 0x000e, 0x000f, 0x0010, and 0x0011.

### Protocol Modifications/Deviations

Although the interface identifier parameters 0x0001, 0x0008 (integer) and 0x0003 (text) are mutually exclusive (see e.g. chapter 3.3.2.5 in [1]), this restriction has not been implemented.

## 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. Via using the backtrack decoder function dynamic testcase error can be avoided when trying to decode invalid message (in this case the return value won’t be 0):

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

**dec\_PDU\_IUA\_backtrack octetstring, PDU\_IUA integer**

## 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.