

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

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Table of Contents

How to Read This Document	1
Scope	1
General	1
Functional Specification	1
Protocol Version Implemented	1
Modifications/Deviations Related to the Protocol Specification	1
Implemented Messages	1
Protocol Modifications/Deviations	1
Encoding/Decoding and Other Related Functions	2
Terminology	2
Abbreviations	2
References	3

How to Read This Document

This is the Function Specification for the set of TCP protocol modules. TCP protocol modules are developed for the TTCN-3 Toolset with TITAN.

Scope

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

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 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 [\[1\]](#) and hence are usable with the TITAN test toolset only.

Functional Specification

Protocol Version Implemented

This protocol module contains the protocol messages and elements of the TCP protocol (see [\[3\]](#)),

Modifications/Deviations Related to the Protocol Specification

Implemented Messages

All message types listed in protocol description are implemented.

Protocol Modifications/Deviations

None.

Encoding/Decoding and Other Related Functions

This product also contains encoding/decoding functions that provide for the correct encoding of messages when sent from TITAN and correct decoding of messages when received by TITAN. The encoder can be instructed to update the checksum field with the correct value. The encoder can also be instructed to update the data offset field with the correct value. Implemented encoding/decoding functions:

Name	Type of formal parameters	Type of return value
<code>f_enc_PDU_TCP</code>	IP_Address, //src. IPv4 or IPv6 address IP_Address, //dest. IPv4 or IPv6 address PDU_TCP, boolean // automatically calculate data offset boolean // automatically calculate checksum	octetstring
<code>f_dec_PDU_TCP</code>	octetstring	PDU_TCP

There is also a function which verifies the `checksum` field in an encoded TCP message:

Name	Type of formal parameters	Type of return value
<code>f_TCP_verify_checksum</code>	octetstring, IP_Address, IP_Address	boolean

Terminology

TITAN TTCN-3 Test Executor.

Abbreviations

IETF

Internet Engineering Task Force

RFC

Request for Comments

TCP

Transmission Control Protocol

TTCN-3

Testing and Test Control Notation version 3

References

[1] Programmer's Technical Reference for the TITAN TTCN-3 Test Executor

[2] ETSI ES 201 873-1 v.4.1.1 (2009-06)

The Testing and Test Control Notation version 3. Part 1: Core Language

[3] IETF [RFC 793](#)

Transmission Control Protocol