

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

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How to Read This Document

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

Scope

The purpose of this document is to specify the content of the ICMP 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 ICMP protocol (see [3], [4], [5], [6], [7], [8], [9]), with the extensions for MIP available in [10], [11].

Modifications/Deviations Related to the Protocol Specification

Implemented Messages

All message types listed in protocol descriptions 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 updates the checksum field with the correct value. Implemented encoding/decoding functions:

| Name | Type of formal parameters | Type of return value |
|-----------------------------|---------------------------|----------------------|
| <code>f_enc_PDU_ICMP</code> | PDU_ICMP | octetstring |
| <code>f_dec_PDU_ICMP</code> | octetstring | PDU_ICMP |

Terminology

TITAN TTCN-3 Test Executor.

Abbreviations

IETF

Internet Engineering Task Force

IP

Internet Protocol

ICMP

Internet Control Message Protocol

MIP

Mobile IP

RFC

Request for Comments

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.3.1.1 (06/2005)

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

- [3] IETF [RFC 792](#)
Internet Control Message Protocol

- [4] IETF [RFC 950](#)
Internet Standard Subnetting Procedure

- [5] IETF [RFC 1256](#)
ICMP Router Discovery Messages

- [6] IETF [RFC 1393](#)
Traceroute Using an IP Option

- [7] IETF [RFC 1475](#)
TP/IX: The Next Internet

- [8] IETF [RFC 1788](#)
ICMP Domain Name Messages

- [9] IETF [RFC 2521](#)
ICMP Security Failures Messages

- [10] IETF [RFC 3344](#)
IP Mobility Support for IPv4

- [11] IETF [RFC 3012](#)
Mobile IPv4 Challenge/Response Extensions