

# ICMPv6 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 ICMPv6 protocol modules. ICMPv6 protocol modules are developed for the TTCN-3 Toolset with TITAN.

## Scope

The purpose of this document is to specify the content of the ICMPv6 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 ICMPv6 protocol (see [\[3\]](#) and [\[4\]](#)),

### 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_ICMPv6</code>	PDU_ICMPv6, OCT16, OCT16	octetstring
<code>f_dec_PDU_ICMPv6</code>	octetstring	PDU_ICMPv6

There is also a function which verifies the `checksum` field in an encoded ICMPv6 message:

Name	Type of formal parameters	Type of return value
<code>f_ICMPv6_verify_checksum</code>	octetstring, OCT16, OCT16	boolean

## Terminology

TITAN TTCN-3 Test Executor.

## Abbreviations

### IETF

Internet Engineering Task Force

### ICMPv6

Internet Control Message Protocol for IPv6

### IPv6

Internet Protocol Version 6

### 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 4443](#)

Internet Control Message Protocol (ICMPv6) for the Internet Protocol Version 6 (IPv6) Specification

[4] IETF [RFC 4861](#)

Neighbor Discovery for IP version 6 (IPv6)