DHCPv6 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 DHCPv6 protocol modules. DHCPv6 protocol modules are developed for the TTCN-3 Toolset with TITAN.

Scope

The purpose of this document is to specify the content of the DHCPv6 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 DHCPv6 protocol (see [3], [4], [5], [6], [7]),

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
`ef_enc_PDU_DHCPv6`	PDU_DHCPv6	octetstring
`ef_dec_PDU_DHCPv6`	octetstring	PDU_DHCPv6
`ef_dec_PDU_DHCPv6_backtrack`	octetstring, PDU_DHCPv6	integer

Terminology

TITAN:
TTCN-3 Test Executor.

Abbreviations

IETF
: Internet Engineering Task Force

DHCPv6
: Dynamic Host Configuration 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 3646
DNS Configuration options for Dynamic Host Configuration Protocol for IPv6 (DHCPv6)

[4] IETF RFC 3736
Stateless Dynamic Host Configuration Protocol (DHCP) Service for IPv6

[5] IETF RFC 3315
Dynamic Host Configuration Protocol for IPv6 (DHCPv6)

[6] IETF RFC 3319
Dynamic Host Configuration Protocol (DHCPv6) Options for Session Initiation Protocol (SIP) Servers

[7] IETF RFC 1035
Domain names – implementation and specification

[8] IETF RFC 3633
IPv6 Prefix Options for Dynamic Host Configuration Protocol (DHCP) version 6