MQTT v3.1.1 Protocol Module for TTCN-3 Toolset with TITAN, Function Description

# Abstract

This is the MQTT version 3.1.1 protocol module. The MQTT v3.1.1 protocol module is developed for the TTCN-3 Toolset with TITAN. This document should be read together with Product Revision Information [5].

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# Functionality

The MQTT v3.1.1 protocol module implements 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.

## Implemented protocols

This protocol module implements the protocol messages and constants of the MQTT v3.1.1 protocol [4].

## Modifications/deviations related to the protocol specification

### Unimplemented Messages, Information Elements and Constants

#### None

### Ericsson-specific changes

None

## Backward incompatibilities

None

## System Requirements

Protocol modules are a set of TTCN-3 source code files that can be used as part of TTCN-3 test suites only. Hence, protocol modules alone do not put specific requirements on the system used. However, in order to compile and execute a TTCN-3 test suite using the set of protocol modules the following system requirements must be satisfied:

* Titan TTCN-3 Test Executor version CRL 113 200/5 R4A (5.4.pl0) or higher installed. For Installation Guide see [2]. Please note: This version of the test port is not compatible with Titan releases earlier than CRL 113 200/5 R4A.

# Usage

## Installation

The set of protocol modules can be used in developing TTCN-3 test suites using any text editor; however, to make the work more efficient a TTCN‑3‑enabled text editor is recommended (for example nedit, xemacs). Since the MQTT v3.1.1 protocol is used as a part of a TTCN-3 test suite, this requires TTCN-3 Test Executor be installed before the module can be compiled and executed together with other parts of the test suite. For more details on the installation of TTCN-3 Test Executor see the relevant section of [3].

## Configuration

None.

## Examples

None.

# Interface description

## Top Level PDU

The top level PDU is the TTCN-3 union MQTT\_v3\_1\_1\_Message.

## Encoding/decoding and other related functions

This product also contains encoding/decoding functions, which assure correct encoding of messages when sent from TITAN and correct decoding of messages when received by TITAN.

### Implemented encoding and decoding functions

Name Type of formal parameters Type of return value

f\_MQTT\_v3\_1\_1\_enc in MQTT\_v3\_1\_1\_Message integer  
 out octetstring

f\_MQTT\_v3\_1\_1\_dec in octetstring integer  
 out MQTT\_v3\_1\_1\_Message

# Terminology

## Abbreviations

PDU Protocol Data Unit

TTCN-3 Testing and Test Control Notation version 3

MQTT v3.1.1 MQTT Version 3.1.1 Protocol

## Terminology

TITAN TTCN-3 Test Executor (see [2]).

# References

1. ETSI ES 201 873-1 v4.5.1 (2013-04)   
   The Testing and Test Control Notation version 3. Part 1: Core Language
2. 1/ 198 17-CRL 113 200/5 Uen   
   User Guide for TITAN TTCN-3 Test Executor
3. 2/198 17-CRL 113 200/5 Uen  
   Programmer’s Technical Reference for Titan TTCN–3 Test Executor
4. MQTT Version 3.1.1  
   http://docs.oasis-open.org/mqtt/mqtt/v3.1.1/os/mqtt-v3.1.1-os.html
5. 109 21-CNL 113 831-1 Uen  
   MQTT v3.1.1 Protocol Module for TTCN-3 Toolset with TITAN, Product Revision Information

# Change Information

## R1A

Initial implementation