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LLC (V7.1.0) Protocol Modules for TTCN-3 Toolset with TITAN, Function Specification

Contents

1 Introduction

1.1 Revision history

Date	Rev	Characteristics	Prepared
2008-01-22	PA1	First draft version	ETHEKR
2008-01-23	PA2	Updated after inspection	ETHEKR

1.2 How to Read this Document

This is the Function Specification for the set of LLC protocol modules. LLC protocol modules are developed for the TTCN-3 Toolset with TITAN. This document should be read together with Product Revision Information [3].

1.3 Scope

The purpose of this document is to specify the content of the LLC protocol modules. Basic knowledge of TTCN-3 [2] and TITAN TTCN-3 Test Executor [4] is valuable when reading this document.

1.4 References

[1] 3GPP TS 44.064 V7.1.0 (2007-03) 3rd Generation Partnership Project; Technical Specification Group Core Network; Mobile Station - Serving GPRS Support Node (MS-SGSN); Logical Link Control (LLC) layer specification (Release 7)

[2] ETSI ES 201 873-1 v.3.2.1 (2007-02)
The Testing and Test Control Notation version 3. Part 1: Core Language

[3] 109 21-CNL 113 577-1 Uen
LLC (V7.1.0) Protocol Modules for TTCN-3 Toolset with TITAN, Product Revision Information

[4] 1/198 17-CRL 113 200/3 Uen
User Guide for the TITAN TTCN-3 Test Executor

[5] 2/198 17-CRL 113 200/3 Uen
Programmer's Technical Reference for the TITAN TTCN-3 Test Executor

1.5 Abbreviations

TTCN-3 Testing and Test Control Notation version 3

LLC Logical Link Control

1.6 Terminology

No specific terminology is used.

2 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 [2] and correctly encoding/decoding messages when executing test suites using the Titan TTCN-3 test environment [4].

Protocol modules are using Titan's RAW encoding attributes [5] and hence are usable with the Titan test toolset only.

3 Functional specification

3.1 Protocol version implemented

This set of protocol modules implements protocol messages and constants of the LLC protocol. The modules are based on 44.064 V7.1.0 (see [1]) with the modifications specified in 3.1.

3.1.1 Unimplemented Messages, Information Elements and Constants

Combined Information (I) and Supervisory (S) frames (Section 6.4.3) and fields used only in these frames are not implemented.

3.1.2 Protocol Modifications/Deviations

None.

3.2 Encoding/Decoding and Other Related Functions

This product also contains encoding/decoding functions which assure correct RAW encoding of messages when sent from Titan and correct RAW decoding of messages when received by Titan. Implemented encoding/decoding functions:

Name	Type of formal parameters	Type of return value
enc_PDU_LLC	PDU_LLC	octetstring
dec_PDU_LLC	octetstring	PDU_LLC

The encoding function changes the XID parameter length format to the long length format in case the transmitted TTCN-3 template uses the short length format but the actual length value calculated by the RAW encoder makes the long length format necessary. (The XID parameter appears in the U frames when XID, SABM or UA format is selected.)

The encoding function automatically calculates the FCS field when the FCS field is set to ‘000000’O or when it is omitted, otherwise its TTCN-3 value is sent out.

The decoder checks the FCS field of the received frame. If the FCS is OK, the value ‘000000’O is set, otherwise the received value is returned to TTCN-3.

The N202 parameter is defined as 4 in the beginning of the encoder function. The tester needs to edit this in the encoder if the value has to be changed. (For UI frames transmitted in unprotected mode the FCS is calculated over the frame header and N202 octets of the information.)