DSS1 ETSI Protocol Modules for TTCN-3 Toolset with TITAN, User Guide

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# Introduction

## Revision history

|  |  |  |  |
| --- | --- | --- | --- |
| Date | Rev | Characteristics | Prepared |
| 2005-04-18 | PA1 | First draft version | ETHLAFA |
| 2005-04-20 | PA2 | Updated after inspection | ETHLAFA |
| 2006-01-12 | PA3 | Functional protocol added | ETHLAFA |
| 2006-01-13 | PA4 | Updated after inspection | ETHLAFA |
| 2006-12-20 | PB1 | Updated for TITAN R7 | ETHBAAT |
| 2012-06-28 | PC1 | New operations for facility IE | ETHGBH |

## About this Document

### How to Read this Document

This is the User Guide for the DSS1 protocol module. The DSS1 Layer 3 protocol module is developed for the TTCN-3 Toolset with TITAN. This document should be read together with Product Revision Information [3] and Function Specification [4].

### Presumed Knowledge

To use this protocol module the knowledge of the TTCN-3 language [1] is essential.

DSS1 is specified in the Function Specification [5] and the Recommendation [6]. Functional protocol is described in [7] and in [8].

### References

1. ETSI ES 201 873-1 v.4.4.1 (2012)  
   The Testing and Test Control Notation version 3. Part 1: Core Language
2. 1/1553-CRL 113 200 Uen  
   User Documentation for the TITAN TTCN-3 Test Executor
3. 109 21-CNL 113 435 –3 Uen  
   DSS1 ETSI Protocol Modules for TTCN-3 Toolset with TITAN, Product Revision Information
4. 155 17-CNL 113 435  
   DSS1 ETSI Protocol Modules for TTCN-3 Toolset with TITAN, Function Specification
5. 13/155 17‑CRT 288 01 Uen Rev. C  
   DSS1 LAYER 3 PROTOCOL SPECIFICATION, INFORMATION ELEMENTS FOR BOTH BASIC CALL AND SUPPLEMENTARY SERVICE CONTROL, ISDN‑E
6. ITU-T Q.931 (03/93)  
   DIGITAL SUBSCRIBER SIGNALLING SYSTEM No. 1 (DSS 1) – ISDN USER-NETWORK INTERFACE LAYER 3 SPECIFICATION FOR BASIC CALL CONTROL
7. ETSI EN 300 196-1 V1.3.2 (2001-06)  
   ISDN: Generic functional protocol for the support of supplementary services
8. 30/155 17-APR 101 20 Uen Rev F  
   DSS1 LAYER 7 PROTOCOL SPECIFICATION, FACILITY CONTROL OF SUPPLEMENTARY SERVICES (DSS1 L7 PROTOCOL), ISDN-E

### Abbreviations

DSS1 Digital Subscriber Signaling System No. 1

ETSI European Telecommunications Standards Institute

GUI Graphical User Interface

ISDN Integrated Services Digital Network

SEA Simulated Environment Architecture

TTCN-3 Testing and Test Control Notation version 3

### Terminology

No specific terminology is used.

## 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 R7A (1.7.pl0) or higher installed. For installation guide see [2]. Please note: This version of the protocol module is not compatible with TITAN releases earlier than R7A.

# Protocol Modules

## Overview

Protocol modules implement the messages structure 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 [1] 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 [2] and hence are usable with the Titan test toolset only.

The implementation of the functional protocol is based on files contained in annex E of [7] and in [8]

The table below contains the implemented layer 3 messages and the corresponding TTCN-3 type records.

|  |  |  |
| --- | --- | --- |
| Message name | Reference | Corresponding type record in **DSS1\_Types.ttcn** |
| ALERTING | [5] 3.1.1 | PDU\_DSS1\_Alerting |
| CALL PROCEEDING | [5] 3.1.2 | PDU\_DSS1\_CallProceeding |
| CONGESTION CONTROL | [5] 3.1.3 | PDU\_DSS1\_CongestionControl |
| CONNECT | [5] 3.1.4 | PDU\_DSS1\_Connect |
| CONNECT ACKNOWLEDGE | [5] 3.1.5 | PDU\_DSS1\_ConnectAcknowledge |
| DISCONNECT | [5] 3.1.6 | PDU\_DSS1\_Disconnect |
| FACILITY | [5] 3.1.7 | PDU\_DSS1\_Facility |
| HOLD | [5] 3.1.8 | PDU\_DSS1\_Hold |
| HOLD ACKNOWLEDGE | [5] 3.1.9 | PDU\_DSS1\_HoldAcknowledge |
| HOLD REJECT | [5] 3.1.10 | PDU\_DSS1\_HoldReject |
| INFORMATION | [5] 3.1.11 | PDU\_DSS1\_Information |
| NATIONAL REGISTER | [5] 3.1.12 | PDU\_DSS1\_NationalRegister |
| NATIONAL REGISTER ACKNOWLEDGE | [5] 3.1.13 | PDU\_DSS1\_NationalRegisterAcknowledge |
| NOTIFY | [5] 3.1.14 | PDU\_DSS1\_Notify |
| PROGRESS | [5] 3.1.15 | PDU\_DSS1\_Progress |
| REGISTER | [5] 3.1.16 | PDU\_DSS1\_Register |
| RELEASE | [5] 3.1.17 | PDU\_DSS1\_Release |
| RELEASE COMPLETE | [5] 3.1.18 | PDU\_DSS1\_ReleaseComplete |
| RESTART | [5] 3.1.19 | PDU\_DSS1\_Restart |
| RESTART ACKNOWLEDGE | [5] 3.1.20 | PDU\_DSS1\_RestartAcknowledge |
| RESUME | [5] 3.1.21 | PDU\_DSS1\_Resume |
| RESUME ACKNOWLEDGE | [5] 3.1.22 | PDU\_DSS1\_ResumeAcknowledge |
| RESUME REJECT | [5] 3.1.23 | PDU\_DSS1\_ResumeReject |
| RETRIEVE | [5] 3.1.24 | PDU\_DSS1\_Retrieve |
| RETRIEVE ACKNOWLEDGE | [5] 3.1.25 | PDU\_DSS1\_RetrieveAcknowledge |
| RETRIEVE REJECT | [5] 3.1.26 | PDU\_DSS1\_RetrieveReject |
| SEGMENT | [5] 3.1.27 | PDU\_DSS1\_Segment |
| SETUP | [5] 3.1.28 | PDU\_DSS1\_Setup |
| SETUP ACKNOWLEDGE | [5] 3.1.29 | PDU\_DSS1\_SetupAcknowledge |
| STATUS | [5] 3.1.30 | PDU\_DSS1\_Status |
| STATUS ENQUIRY | [5] 3.1.31 | PDU\_DSS1\_StatusEnquiry |
| SUSPEND | [5] 3.1.32 | PDU\_DSS1\_Suspend |
| SUSPEND ACKNOWLEDGE | [5] 3.1.33 | PDU\_DSS1\_SuspendAcknowledge |
| SUSPEND REJECT | [5] 3.1.34 | PDU\_DSS1\_SuspendReject |
| USER INFORMATION | [5] 3.1.35 | PDU\_DSS1\_UserInformation |

## 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 (e.g. nedit, xemacs). Since the DSS1 ETSI 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 [2].

The files with extension '**asn**', the files **Facility\_EncDec.cc** and **Remote\_Operations\_Information\_Objects.asn** (CNL 113 369) are not needed unless use of the functional protocol is required. It is required if DSS1 parameters 'DSS1\_ExtendedFacility' or 'DSS1\_Facility' are in use and the coding of 'component' element as octetstring is not detailed enough for the test.

## Configuration

None.