

ISO 29281-1:2018 (E)

Intelligent transport systems — Localized communications — Part 1: Fast networking & transport layer protocol (FNTP)

Contents

	Foreword
	Introduction
1	Scope
2	Normative references
3	Terms and definitions
4	Abbreviated terms
5	General requirements
6	Architectures
6.1	General context and purpose of FNTP
6.2	FNTP reference architecture
6.3	Communication principles
6.3.1	Transmission
6.3.2	Reception
6.3.3	FNTP ITS-PNs
6.4	Implementation architectures
7	Protocol elements
7.1	Service access points
7.1.1	IN-SAP
7.1.2	NF-SAP
7.1.3	MN-SAP
7.1.4	SN-SAP
7.2	FNTP NPDU
7.2.1	General
7.2.2	Subtype zero
7.2.3	Subtype one
7.2.4	Subtype two
7.2.5	N-Extensions
7.2.6	TPID-FS field
7.2.7	TPID-FS zero - information dissemination mode
7.2.8	TPID-FS one - general session mode
7.2.9	TPID-FS two - LPP support mode
7.2.10	T-Extensions
7.2.11	FNTP body
7.3	Secure communications
7.4	Protocol management elements
7.4.1	ITS-AID look-up table
7.4.2	Service look-up table
7.4.3	Forwarding table
8	General protocol procedures
8.1	Port management
8.2	Maintenance of entries in forwarding tables
8.3	Notification of changes in forwarding tables
8.4	Initial settings of forwarding tables in ITS-S hosts
8.4.1	Allocation and deletion of a port

- 8.4.2 Assignment of communication interfaces
- 8.5 Initial settings of forwarding tables in ITS-S routers
- 8.6 CIP management
 - 8.6.1 Purpose of CIPs and basic procedures
 - 8.6.2 Forwarding of TX-CIPs from ITS-S host to ITS-S router
 - 8.6.3 Forwarding of CIPs from ITS-S router to ITS-S host
- 9 Transmitting packets procedures
 - 9.1 General
 - 9.2 NF-SAP transmission request
 - 9.3 Transport related TX procedures
 - 9.3.1 TPID-FS zero TX procedure
 - 9.3.2 TPID-FS one TX procedure
 - 9.3.3 TPID-FS two TX procedure
 - 9.3.4 T-Extensions TX procedures
 - 9.3.4.1 General
 - 9.3.4.2 Specific T-Extension TX procedure
 - 9.4 Network related TX procedures
 - 9.4.1 Subtype zero TX procedure
 - 9.4.2 Subtype one TX procedure
 - 9.4.2.1 Applicability and general requirements
 - 9.4.2.2 Subtype one forwarding from host to router TX procedure
 - 9.4.3 Subtype two TX procedure
 - 9.4.3.1 Applicability
 - 9.4.3.2 Initial transmission
 - 9.4.3.3 N-hop Forwarding
 - 9.4.4 N-Extensions TX procedures
 - 9.4.4.1 General
 - 9.4.4.2 N-Extension "Transmit Power Used" TX procedure
 - 9.4.4.3 N-Extension "Channel Number" TX procedure
 - 9.4.4.4 N-Extension "Data Rate" TX procedure
 - 9.4.4.5 N-Extension "Channel Load" TX procedure
 - 9.4.4.6 N-Extension "RX-CIP" TX procedure
 - 9.4.4.7 N-Extension "TX-CIP" TX procedure
 - 9.4.4.8 N-Extension "Channel busy ratio" TX procedure
 - 9.5 Send request procedure
 - 9.6 Subtype one forwarding from router to host TX procedure
- 10 Receiving packets procedures
 - 10.1 General
 - 10.2 Checking of FNTP N-Header
 - 10.3 Network related RX procedures
 - 10.3.1 Subtype zero RX procedure
 - 10.3.2 Subtype one RX procedure
 - 10.3.2.1 Applicability and general requirements
 - 10.3.2.2 Subtype one RX forwarded delivery procedure
 - 10.3.2.3 Subtype one RX forwarded transmit procedure
 - 10.3.3 Subtype two RX procedure
 - 10.3.4 N-Extensions RX procedures
 - 10.3.4.1 General
 - 10.3.4.2 N-Extension "Transmit Power Used" RX procedure
 - 10.3.4.3 N-Extension "Channel Number" RX procedure
 - 10.3.4.4 N-Extension "Data Rate" RX procedure
 - 10.3.4.5 N-Extension "Channel Load" RX procedure
 - 10.3.4.6 N-Extension "RX-CIP" RX procedure
 - 10.3.4.7 N-Extension "TX-CIP" RX procedure
 - 10.3.4.8 N-Extension "Channel busy ratio" RX procedure
 - 10.3.5 TPID-FS checking
 - 10.3.6 ITS-SFS check and forwarding table update
 - 10.4 Transport related RX procedures
 - 10.4.1 TPID-FS zero RX procedure
 - 10.4.2 TPID-FS one RX procedure
 - 10.4.3 TPID-FS two RX procedure
 - 10.4.4 T-Extension RX procedures

10.4.4.1	General
10.4.4.2	Specific T-Extension RX procedure
11	NF-SAP services
11.1	Overview
11.2	General NF-SAP services
11.3	NF-FNTP-PORT
11.3.1	NF-FNTP-PORT.request
11.3.2	NF-FNTP-PORT.confirm
11.4	NF-FNTP-COMM
11.4.1	NF-FNTP-COMM.request
11.4.2	NF-FNTP-COMM.confirm
11.4.3	NF-FNTP-COMM.indication
12	Dynamic data
13	Conformance
14	Test methods
Annex A	(normative) ASN.1 modules
A.1	Overview
A.2	Module ITSfntp
A.3	Definitions to be added to ISO 24102-1
A.3.1	General
A.3.2	ASN.1 module ITSmanagement
Annex B	(informative) ASN.1 modules from ISO 16460
B.1	General
B.2	ITSIm
B.3	ITSee
Annex C	(normative) Protocol Implementation Conformance Statement proforma
C.1	Guidance for completing the PICS proforma
C.1.1	Purposes and structure
C.1.2	Abbreviations and conventions
C.1.3	Instructions for completing the PICS proforma
C.2	Identification of the Implementation
C.2.1	Date of the statement
C.2.2	Identification of IUT
C.2.3	Identification of SUT
C.2.4	Product supplier
C.2.5	Client
C.2.6	PICS contact person
C.3	Identification of the implementation
C.4	Global statement of conformance
C.5	Detailed conformance statements
C.5.1	Design choices
C.5.2	Basic features
C.5.3	Message features
C.5.4	ITS architecture support
C.5.5	Protocol procedures
C.5.5.1	Receive procedures
C.5.5.2	Transmit procedures
C.5.5.3	NF-SAP service primitive procedures
C.5.6	Format and encoding
C.5.7	Management functionality
Annex D	(normative) Path and flow management support