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AMENDMENT 1
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**Intelligent transport systems —
Communication access for
land mobiles (CALM) — Non-IP
networking —**

**Part 1:
Fast networking & transport layer
protocol (FNTP)**

AMENDMENT 1

*Systèmes intelligents de transport — Accès aux communications des
services mobiles terrestres (CALM) — Réseautique non-IP —*

Partie 1: Réseautique rapide et protocole de la couche transport

AMENDEMENT 1



Reference number
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Amendment 1 to ISO 29281-1:2013 was prepared by Technical Committee ISO/TC 204, *Intelligent transport systems*.

A list of all parts in the ISO 29281 series can be found on the ISO website.

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Intelligent transport systems — Communication access for land mobiles (CALM) — Non-IP networking —

Part 1: Fast networking & transport layer protocol (FNTF)

AMENDMENT 1

Page 8, Table 1

In the second row “Port Number 0” and third column “Description”, add the following sentence at the end:

“PORT_SAM is of type PORT_REG.”

In the fourth row column for “Port Number”, replace “32717 - 32763” with “32717 - 32762” and insert this row below:

32763	PORT_RSM	Port number for the remote ITS-station management protocol (RSMP)	
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Page 8, Table 2

Rearrange the table as presented below:

B7	B6	B5	B4	B3	B2	B1	B0	Description
'0'	'0'	'0'	'0'	'0'	'0'	'0'	'0'	Used in the NF-FNTF-COMM service to indicate, that no extension is to be applied.
'1'								Option 0: ITS station-internal forwarding. The related Options field is present.
	'1'							Option 1: Support of secure communications. The related Options field is present.
		'1'						Option 2: N-hop broadcast. The related Options field is present.
			'1'					Option 3: LPP support. The related Options field is present.
				'1'				Option 4: CIP support. The related Options field is present.
					'1'			Option 5: So far undefined feature. The related Options field is of ASN.1 NULL type. Reserved for future.
						'1'		Option 6: So far undefined feature. The related Options field is of ASN.1 NULL type. Reserved for future.
							'1'	Option 7: So far undefined feature. The related Options field is of ASN.1 NULL type. Reserved for future.

Page 11, 6.2.3

Add the following sentence at the end of the paragraph before [Figure 11](#):

“The length field shall contain an unsigned Integer value in the range from 0 to 65 535, indicating the number of octets contained in the field ITS-FPDU.”

Page 11, Figure 11

Replace the figure and the figure title with the following:

FNTTP body	
Length	ITS-FPDU

Figure 11 — FNTTP body

Page 11, 6.2.3

Add the following Note below Figure 11:

NOTE The ASN.1 type used to model the FNTTP body with a two octet length indicator is ITSfpdu specified in A.2.

Page 15, 7.6.1

Replace the first paragraph and the subsequent bullet line with:

Upon a transmission request received via the NF-SAP by means of the service primitive NF-FNTTP-COMM.request, the FNTTP may first check whether the forwarding table contains an entry in support of the transmission request.

— If no such entry exists, the transmission request may be discarded. In case the transmission request is discarded, the FNTTP shall notify failure of transmission by means of the service primitive NF-FNTTP-COMM.confirm.

Page 19, 7.7.4

Replace the fifth bullet line with:

— If a bit for an unknown or non-supported option is set, this option shall be ignored if possible except it is the option for secure communications or the whole NPDU shall be discarded.

Page 22, 8.2.1

Replace the first bullet line with:

— request assignment of a locally valid port number which is unique in the ITS-SCU to the ITS-SP identified by “serviceRef” if parameter “port” is set to PORT_UNK, or shall use the well-known static port PORT_REG,

Page 22, 8.2.1

Convert the last bullet line of the first bullet list into the following Note:

NOTE The ITS station management notifies other ITS-SCUs in the same ITS-SU about the new entry.

Page 24, 8.3.1

Replace the second paragraph with:

Parameter “hopCount” shall indicate the initial value to be put into the element “FNTTP hop count” illustrated in Figure 9. For single-hop communications, this optional parameter either shall not be present or shall be set to zero.

Replace the whole annex with the following one:

Annex A (normative)

ASN.1 modules

A.1 Overview

The following ASN.1 module is specified in this annex:

— CALMfntp { ISO (1) standard (0) calm-nonip (29281) fntp (1) asnm-1 (1)}

In case the ASN.1 specifications given in this annex are not compliant with illustrations or specifications provided elsewhere in this document, the specifications given in this annex shall prevail.

A.2 Module CALMfntp

This module specifies ASN.1 type definitions together with useful ASN.1 value definitions.

It imports ASN.1 definitions from modules specified in ISO 21218, ISO 24102-1, ISO 24102-5 and ISO 29281-2.

Unaligned packed encoding rules (PER) as specified in ISO/IEC 8825-2 shall be applied for this ASN.1 module.

In order to achieve octet alignment enabling cheap implementations, “fill” bits were defined. All fill bits shall be set to the value ‘0’b.

```

CALMfntp { iso (1) standard (0) calm-nonip(29281) fntp(1) asnm-1 (1)}

DEFINITIONS AUTOMATIC TAGS::=BEGIN

IMPORTS

CIstatus, Link-ID, UserPriority FROM CALMllsap {iso(1) standard(0) calm-ll-sap(21218)
asnm-1 (1)}

ITS-scuId FROM CALMmanagement { iso (1) standard (0) calm-management (24102) local (1)
asnm-1 (1)}

COMMUPDOWN FROM CALMsap { iso (1) standard (0) calm-management (24102) msap (3) asnm-1
(1)}

FNTPlpp FROM CALMlegacySupport { iso (1) standard (0) calm-nonip(29281) legacy (2) asnm-1
(1)}

ServiceRef FROM CITSapplReq {iso(1) standard(0) cits-applReq (17423) asnm-1 (1)}
;
-- End of IMPORTS

-- Types

-- PDUs --

-- FNTF NPDU --

FNTFNPDU ::= SEQUENCE {
    header FNTFHeader,
    body ITSfpdu -- specific to an ITS-S application / message
}

FNTFHeader ::= SEQUENCE {
    sourcePort      PortNumber,
    destinationPort PortNumber,
    options          FntpOptions

```

```

    }

FntpOptions ::= SEQUENCE {
    intForw      FNT PintForwarding OPTIONAL,
    sec          FNT Psecurity OPTIONAL,
    hops         FNT PhopCount OPTIONAL,
    lpp          FNT Plpp OPTIONAL,
    cip          FNT PCIPheader OPTIONAL,
    opt5         NULL OPTIONAL,
    opt6         NULL OPTIONAL,
    opt7         NULL OPTIONAL
}

FNT PintForwarding ::= SEQUENCE {
    hostITS-scuId ITS-scuId,
    link          Link-ID,
    counter       FNT PpacketCounter,
    sourcePort    PortNumber,
    destinationPort PortNumber
}

FNT PpacketCounter ::= INTEGER (0..255)

FNT Psecurity ::= OCTET STRING (SIZE(0..65535))

FNT PhopCount ::= INTEGER (0..255)

FNT PCIPheader ::= SEQUENCE {
    rxCIP  RXcip,
    txCIP  TXcip
}

RXcip ::= OCTET STRING (SIZE(0..255))

TXcip ::= OCTET STRING (SIZE(0..255)) -- may optionally be forwarded to peer ITS station

-- Managements SAP service primitives --
-- Payload definitions for primitives defined in ISO 24102 --

-- MN-SAP --

-- FWTxxx --

DeleteFNT P ::= SEQUENCE {
    reference    INTEGER (0..noFNT PfwtEntries)
}

DeleteNotFNT P ::= SEQUENCE {
    reference    INTEGER (0..noFNT PfwtEntries)
}

SetFNT P ::= SEQUENCE {
    remotePort   PortNumber,
    linkId       Link-ID,
    ciStatus     C Istatus,
    linkPort     PortNumber,
    serviceInfo  HostServiceInfo, --formerly ServiceNWref
    priority     UserPriority,
    timeout      NTtimeout
} -- SetConfFNT P will return the reference pointing to the new entry.

SetConfFNT P ::= SEQUENCE {
    reference    INTEGER (0..noFNT PfwtEntries)
}

HostServiceInfo ::= SEQUENCE {
    servicePort   PortNumber,
    hostITSscu    ITS-scuId,
    servicePriority UserPriority
}

```

```

NTtimeout ::= INTEGER(0..65535) -- in s

SetNotFNTF ::= SEQUENCE{
    reference      INTEGER(0..noFNTFpwtEntries),
    remotePort     PortNumber,
    linkID         Link-ID,
    ciStatus       CISTatus,
    linkPort       PortNumber,
    serviceInfo    HostServiceInfo,
    priority       UserPriority,
    timeout        NTtimeout
}

UpdateFNTF ::= SEQUENCE{
    fill          BIT STRING (SIZE(1)),
    reference      INTEGER(0..noFNTFpwtEntries),
    remotePort     PortNumber OPTIONAL,
    linkID         Link-ID OPTIONAL,
    ciStatus       CISTatus OPTIONAL,
    linkPort       PortNumber OPTIONAL,
    serviceInfo    HostServiceInfo OPTIONAL,
    priority       UserPriority OPTIONAL,
    timeout        NTtimeout OPTIONAL
}

UpdateNotFNTF ::= SEQUENCE{
    fill          BIT STRING (SIZE(1)),
    reference      INTEGER(0..noFNTFpwtEntries),
    remotePort     PortNumber OPTIONAL,
    linkID         Link-ID OPTIONAL,
    ciStatus       CISTatus OPTIONAL,
    linkPort       PortNumber OPTIONAL,
    serviceInfo    HostServiceInfo OPTIONAL,
    priority       UserPriority OPTIONAL,
    timeout        NTtimeout OPTIONAL
}

-- NF-SAP --

NFSAP ::= COMMUPDOWN

NFsapPrimitivesDown ::= SEQUENCE{
    spRef          NFSAP.&primitiveRef ({NFsapspdown}),
    servPrimitive  NFSAP.&Primitive ({NFsapspdown}{@spRef})
}

NFsapspdown NFSAP ::= {fntfPortRequest | fntfCommRequest, ...}

fntfPortRequest  NFSAP ::= {&primitiveRef 0, &Primitive NFfntfPortRequest}
fntfCommRequest  NFSAP ::= {&primitiveRef 1, &Primitive NFfntfCommRequest}

NFsapPrimitivesUp ::= SEQUENCE{
    spRef          NFSAP.&primitiveRef ({NFsapspup}),
    servPrimitive  NFSAP.&Primitive ({NFsapspup}{@spRef})
}

NFsapspup NFSAP ::= {fntfPortConfirm | fntfCommConfirm | fntfCommIndication, ...}

fntfPortConfirm  NFSAP ::= {&primitiveRef 0, &Primitive NFfntfPortConfirm}
fntfCommConfirm  NFSAP ::= {&primitiveRef 1, &Primitive NFfntfCommConfirm}
fntfCommIndication NFSAP ::= {&primitiveRef 2, &Primitive NFfntfCommIndication}

NFfntfPortRequest ::= SEQUENCE{
    serviceRef     ServiceRef,
    operation       PortOp,
    portno         PortNumber,
    priority        UserPriority
}

PortOp ::= INTEGER{

```