

Final draft **EN 301 062-1** V1.2.2 (1998-02)

European Standard (Telecommunications series)

**Integrated Services Digital Network (ISDN);
Signalling System No.7;
Support of Virtual Private Network (VPN) applications
with Private network Q reference point
Signalling System number 1 (PSS1) information flows;
Part 1: Protocol specification**

[ITU-T Recommendations Q.765.1 and Q.699.1, modified]



European Telecommunications Standards Institute

Reference

DEN/SPS-01032-1 (9u090ipc.PDF)

Keywords

ISDN, SS7, ISUP, TC, VPN, PINX, PSS1, DSS1

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Foreword

This European Standard (Telecommunications series) has been produced by ETSI Technical Committee Signalling Protocols and Switching (SPS), and is now submitted for the voting phase of the ETSI standards Two-step Approval Procedure.

Proposed national transposition dates	
Date of latest announcement of this EN (doa):	3 months after ETSI publication
Date of latest publication of new National Standard or endorsement of this EN (dop/e):	6 months after doa
Date of withdrawal of any conflicting National Standard (dow):	6 months after doa

Endorsement notice

The text of draft ITU-T Recommendations Q.765.1 and Q.699.1 was approved by ETSI as an EN with agreed modifications as given below.

NOTE 1: New or modified text is indicated using sidebars. In addition, underlining and/or strike-out are used to highlight detailed modifications where necessary.

NOTE 2: ITU-T Recommendations Q.765.1 and Q.699.1 had not yet been adopted by ITU-T prior to the submission for Vote of the present document. This endorsement is based upon the drafts of those Recommendations which accompany the present document, located in an archive file named 9u090ipc.lzh.

Scope and References clauses

Delete the clauses "Scope", "References" from ITU-T Recommendations Q.765.1 and Q.699.1 and replace with the following two clauses (Scope and Normative references):

Scope

The present document describes the extensions required for the support of Virtual Private Network (VPN) applications over the public Network Node Interface (NNI). This application makes use of the Application Transport Mechanism (APM) described in EN 301 069-1 for bearer related signalling, and the Transaction Capability (TC) for signalling involving no bearer. The present document specifies the respective users (i.e. APM-user, TC-user) to support the PSS1 information flows continuity in VPN applications (Transparent transfer of PSS1 information flows between PINX entities). The public NNI provides transparency to the services of the private network.

The private network functionality is defined by ISO in its series of standards for Private Integrated Services Network (PISN). In addition, the concept of a "Relay node" is introduced by the present document.

The present document provides for a number of network options. These are summarized in table 1.

Table 1: Network options

Option	Values	Remarks
Support of GFP functionality at transit PINX nodes (subclause 6.2.5)	Full support	
	Partial support	Not applicable in the international network (note 1)
Support of GFP functionality at gateway PINX nodes (subclause 6.2.6)	Full support	
	No support	(note 1)
Continuation of calls with no application association (subclause 6.2.6)	Supported	(note 2)
	Not supported	(note 3)
Relocation of gateway function (subclause 6.2.6)	Supported	
	Not supported	
NOTE 1: Use of these options might result in certain private network supplementary services behaving in an unexpected manner or not working at all.		
NOTE 2: In this case VPN calls has to be be routed using a mechanism which can correctly route the call to the terminating access without use of the VPN procedures specified in the present document.		
NOTE 3: In this case, it is required that the VPN procedures are only used on calls which are routed to addresses which are known to support the VPN application via signalling which supports the APM, otherwise the call will be released.		

In addition, this EN describes the interworking between Signalling System Number 7 (ISDN) and extended DSS1 for the support of VPN applications with PSS1 information flows. For the interworking in this EN related to ISUP, these replace that specified in ETS 300 899 whereas all other interworking of PSS1 information flows is according to that specified in ETS 300 899.

The interworking described here provides a sub-set of all possible interworking scenarios and is therefore intended to describe only the relevant mapping of information flows between the two interfaces being described.

Normative references

References may be made to:

- a) specific versions of publications (identified by date of publication, edition number, version number, etc.), in which case, subsequent revisions to the referenced document do not apply; or
- b) all versions up to and including the identified version (identified by "up to and including" before the version identity); or
- c) all versions subsequent to and including the identified version (identified by "onwards" following the version identity); or
- d) publications without mention of a specific version, in which case the latest version applies.

A non-specific reference to an ETS shall also be taken to refer to later versions published as an EN with the same number.

- [1] ISO/IEC 11574: "Information technology -- Telecommunications and information exchange between systems -- Private Integrated Services Network -- Circuit-mode 64 kbit/s bearer services -- Service description, functional capabilities and information flows".
- [2] ISO/IEC 11572 Second edition and Amendments 1 and 2: "Information technology -- Telecommunications and information exchange between systems -- Private Integrated Services Network -- Circuit mode bearer services -- Inter-exchange signalling procedures and protocol".
- [3] ISO/IEC 11582: "Information technology -- Telecommunications and information exchange between systems -- Private Integrated Services Network -- Generic functional protocol for the support of supplementary services -- Inter-exchange signalling procedures and protocol".
- [4] ISO/IEC 11579-1: "Information technology -- Telecommunications and information exchange between systems -- Private integrated services network -- Part 1: Reference configuration for PISN Exchanges (PINX)".
- [5] ISO/IEC 15055: "Information technology -- Telecommunications and information exchange between systems -- Private Integrated Services Network -- Specification, functional model and information flows -- Transit counter additional network feature".
- [6] ISO/IEC 15056: "Information technology -- Telecommunications and information exchange between systems -- Private Integrated Services Network -- Inter-exchange signalling protocol -- Transit counter additional network feature".
- [7] ETS 300 009 (1991): "Integrated Services Digital Network (ISDN); CCITT Signalling System No.7; Signalling Connection Control Part (SCCP) [connectionless service] to support international interconnection".
- [8] EN 300 356-1 (V3.1): "Integrated Services Digital Network (ISDN); Signalling System No. 7; ISDN User Part (ISUP) version 3 for the international interface; Part 1: Basic services [ITU-T Recommendations Q.761 to Q.764 (1997), modified]".
- [9] ETS 300 121 (1993): "Integrated Services Digital Network (ISDN); Application of the ISDN User Part (ISUP) of CCITT Signalling System No.7 for international ISDN interconnections (ISUP version 1)".
- [10] ETS 300 134 (1993): "Integrated Services Digital Network (ISDN); CCITT Signalling System No.7; Transaction Capabilities Application Part (TCAP)".
- [11] EN 301 060-1: "Integrated Services Digital Network (ISDN); Digital Subscriber Signalling System No. one (DSS1) protocol; Basic call applications; Enhancement at the "b" service entry point for Virtual Private Network (VPN) applications; Part 1: Protocol specification".
- [12] EN 301 061-1: "Integrated Services Digital Network (ISDN); Digital Subscriber Signalling System No. one (DSS1) protocol; Generic functional protocol for the support of supplementary services for Virtual Private Network (VPN) applications; Part 1: Protocol specification".
- [13] EN 301 069-1 (1997): "Integrated Services Digital Network (ISDN); Signalling System No.7; ISDN User Part (ISUP); Application Transport Mechanism (APM); Part 1: Protocol specification".

- [14] ITU-T Recommendation Q.1400 (1993): "Architecture framework for the development of signalling and OA&M protocols using OSI concepts".
- [15] ITU-T Recommendations:
 X.680 (1994): "Information technology - Abstract Syntax Notation One (ASN.1): Specification of basic notation";
 X.681 (1994): "Information Technology - Abstract Syntax Notation One (ASN.1): Information object specification";
 X.682 (1994): "Information technology - Abstract Syntax Notation One (ASN.1): Constraint specification";
 X.683 (1994): "Information technology - Abstract Syntax Notation One (ASN.1): Parameterization of ASN.1 specifications".
- [16] ETS 300 899: "Integrated Services Digital Network (ISDN); Signalling System No. 7; Interworking between ISDN User Part (ISUP) version 2 and Digital Subscriber Signalling System No. one (DSS1) [ITU-T Recommendation Q.699, modified]".

Throughout the text of ITU-T Recommendations Q.765.1 and Q.699.1

Replace references as shown below.

Reference in ITU-T Recommendations Q.765.1 and Q.699.1	Modified reference
ITU-T Recommendations Q.711 to Q.716	ETS 300 009 [7]
ITU-T Recommendation Q.761	EN 300 356-1 [8]
ITU-T Recommendation Q.762	EN 300 356-1 [8]
ITU-T Recommendation Q.763	EN 300 356-1 [8]
ITU-T Recommendation Q.764	EN 300 356-1 [8]
ITU-T Recommendation Q.767	ETS 300 121 [9]
ITU-T Recommendations Q.771 to Q.775	ETS 300 134 [10]
ITU-T Recommendation Q.931/Annex M	EN 301 060-1 [11]
ITU-T Recommendation Q.932/Annex D	EN 301 061-1 [12]
ITU-T Recommendation Q.765	EN 301 069-1 [13]
ITU-T Recommendation Q.765.1	The present document
ITU-T Recommendation Q.699	ETS 300 899 [16]
Annex T	EN 300 356-1 [8]

Throughout the text of ITU-T Recommendations Q.765.1 and Q.699.1 replace "ISUP '92" by "ISUP v2".

Throughout the text of ITU-T Recommendations Q.765.1 and Q.699.1 replace "ISUP '97" by "ISUP v3".

Modifications to ITU-T Recommendation Q.765.1

Annex T (temporary), changes to Q.763

Not supported (see EN 300 356-1 [8]).

Modifications to ITU-T Recommendation Q.699.1

None.

Annex A (normative): Modifications to ITU-T Recommendation Q.765.1

The following modifications to ITU-T Recommendation Q.765.1 are expected to be agreed by ITU-T. This annex will be removed from the published version of the present document.

This annex is divided into two clauses containing:

- those modifications which will be moved to the clause "Modification to ITU-T Recommendation Q.765.1" within the body of this EN on publication, if they are not previously agreed by ITU-T; and
- those modifications which will simply be removed from this EN on publication.

A.1 Modifications to be included in this EN if not adopted by ITU-T

Clause 4, Abbreviations:

Add the following:

ACM	Address Complete Message
ANM	Answer message
APP	Application Transport parameter
CNID	Corporate Telecommunications Network Identifier
CON	Connect message
CPG	Call Progress message
IAM	Initial Address message
IN	Intelligent Network
PRI	Pre-Release Information message
REL	Release message

Amend the following abbreviations:

APM	Application Transportation Mechanism
APM-user	Application Transportation Mechanism User Application
CLIP	Calling Party Number Line Identification Presentation Service
CLIR	Calling Party Number Line Identification Presentation Restriction Service
COLP	Connected Number Line Identification Presentation Service
COLR	Connected Number Line Identification Presentation Restriction Service

Clause 5, Recommendation structure

Modify the 5th paragraph as follows:

The connection oriented signalling association without a bearer is subdivided into two parts: Connection Oriented ~~PSS1~~ Corporate telecommunications Network (COPSS1 ASE), and Transaction Capability (TC ASE). These are coordinated by the Single Association Coordination Function (SACF).

Subclause 6.2.2, General model

Modify item b) as follows:

- b) Interface to PSS1 ASE which defines ~~the protocol control procedures and~~ the formats and codes in the APP for the support of PSS1 information flows in VPN applications: see subclause 10.1.

Subclause 7.2.1, Introduction

Add, after the second paragraph, a new paragraph:

It is the responsibility of the VPN Application Process to ensure that the public basic call and PSS1 Call Control states remain aligned.

A.2 Modifications to be removed from this EN on publication

Subclause 7.2.3.2.4, Acknowledgement from peer application (overlap sending)

Amend the first paragraph (Procedures at the PAN) as follows:

On reception of the PC_More_Information.Request primitive, the AP will send a PSS1_Data.request primitive indicating "Setup Acknowledgement" ~~in conjunction with the primitive corresponding to a suitable first backwards ISUP message (ACM, or APM) causing an APM message~~ to be sent towards the PIN.

Add to the end of the second paragraph (Procedures at the PIN):

The Sending Complete parameter may also be sent according to the PSS1 Call Control overlap procedures.

Subclause 7.2.6, Primitive contents

Add to table 6, a new row:

Parameter: "Sending Complete"	Mandatory/Optional: "O"
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Add to table 8, first row (IAM) and last row (APM):

"Sending Complete (O)"

Subclause 11.8, ASN.1 module

Add after the definition of the CalledPartyNumber type:

-- The ISUP parameter name and length octets are not included.

Add after the definition of the Cause type:

-- The information element identifier and length octets are not included.

Amend the definition of the maxCauseLength value as follows:

maxCauseLength INTEGER ::= 320

Subclause 14.1, Private network specific information to be carried within the Application Transport Parameter

Add to table 27, a new row:

Information Element: "Sending Complete" Ref.: "[2]/[21](i)" Type: "O" Length: "1"

Add below table 27, a new note:

(iii) The information elements carried in the Application Transport Parameter are taken into account whatever the order of receipt with the exception of the Locking and Non-locking shift information elements which operate in the specified way.

Subclause 14.2, NNI specific Information to be transported in the Application Transport Parameter

Modify item g) Corporate Telecommunications Network Identifier length (CNID length) as follows:

- g) Corporate Telecommunications Network Identifier length (CNID length)
 Number of octets containing CNID

When the CNID indicator is coded 00 "Not included", then CNID length is omitted ~~equals zero (0)~~

Annex B (normative): Modifications to ITU-T Recommendation Q.699.1

The following modifications to ITU-T Recommendation Q.699.1 are expected to be agreed by ITU-T. This annex will be removed from the published version of the present document.

This annex is divided into two clauses containing:

- those modifications which will be moved to the clause "Modification to ITU-T Recommendation Q.699.1" within the body of this EN on publication, if they are not previously agreed by ITU-T; and
- those modifications which will simply be removed from this EN on publication.

B.1 Modifications to be included in this EN if not adopted by ITU-T

Clause 4, Abbreviations

Add the following abbreviations:

ACM	Address complete message
ANM	Answer message
APP	Application Transport parameter
CNID	Corporate Telecommunications Network Identifier
CN	Corporate telecommunications Network
CON	Connect message
CPG	Call Progress message
DSS1	Digital Subscriber Signalling System No. 1
IAM	Initial Address message
IN	Intelligent Network
ISDN	Integrated Services Digital Network
ISUP	ISDN User Part
PINX	Private Integrated Services Network Exchange
PISN	Private Integrated Services Network
PRI	Pre-Release Information message
PSS1	Private network Q reference point signalling system number 1
REL	Release message

Amend the abbreviations below as shown:

APM	Application Transportation Mechanism
APM-user	Application Transportation Mechanism User Application
CLIP	Calling Party Number Line Identification Presentation Service
CLIR	Calling Party Number Line Identification Presentation Restriction Service
COLP	Connected Number Line Identification Presentation Service
COLR	Connected Number Line Identification Presentation Restriction Service

Subclause 5.3.1, Sending of the Initial address message (IAM)

Item Generic number

Add "node" after each occurrence of the word "IN" in the first paragraph of this item.

Subclause 5.3.1, Table 2/Q.699.1

Replace "IE" in the first row by "information element".

Subclause 6.1.1, Table 25/Q.699.1

Replace the 2nd row of table 25 by the following row:

Content	Setup invoke SetUpArg parameter
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Subclause 6.1.2, Table 26/Q.699.1

Replace the 2nd row of table 26 by the following row:

Content	Connect invoke ConnectArg parameter <i>with contents of VPNTransport as shown below:</i>
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B.2 Modifications to be removed from this EN on publication

None.

History

Document history				
V1.1.1	August 1997	Public Enquiry	PE 9748:	1997-08-01 to 1997-11-28
V1.2.2	February 1998	Vote	V 9815:	1998-02-10 to 1998-04-10