

Telenor Mobils

**Technical requirement spesification for
Signalling System No. 7 national interconnect
with**

Telenor

National interconnect ISUP versjon 4+

INNHALDSFORTEGNELSE

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4. TELENOR NATIONAL INTERCONNECT ISUP VERSION 2 PROTOCOL SPECIFICATION

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1. Signaling

1.1 Message Transfer Part (MTP)

MTP shall be implemented in accordance with ETSI specifications. Both ITU-T “White Book” and “Blue Book” based versions can be used.

When the signalling network is to be used for national interconnect, the network indicator value 11 (binary) “reserved for national use” (NI=3 decimally) is used, see chapter 2. If an agreement on transit of international signalling traffic is implemented, then links can be established with the network indicator value 00 (binary) “international network” (NI=0) for this purpose.

A 64 kbit/s transparent time slot (TS16 unless otherwise agreed) in a G.704 2,048 kbit/s frame shall be used as the transmission medium.

1.2 Signalling Connection Control Part (SCCP)

Handling of SCCP (connectionless) will also be required if an agreement is implemented for Global Title translation for GSM roaming.

ETSI specifications for SCCP shall be used. Both ITU-T “White Book” and “Blue Book” based versions can be used.

1.3 ISDN User Part (ISUP)

The signalling protocol ISUP shall be used for termination in TELENOR’s PSTN/ISDN points of interconnect (POI) of PSTN/ISDN traffic and services, including control of the media channels in relevant 2 Mbit/s G.704 frames. ISDN User Part (ISUP) shall be used in accordance with the specifications in Chapter 2. (Telenor mobil uses ISUP versjon 4+). Coding of the B number in the called party number in ISUP over the interconnect point shall be in accordance with Chapter 3.

1.4 “Compliance statement”

Before an interconnect agreement is entered into the TELECOM OPERATOR shall submit a “compliance statement” to TELENOR that describes characteristics of the TELECOM OPERATOR’s protocol implementation. A compliance statement shall be written as a delta document for TELENOR’s interface specifications. The purpose is to identify potential problems or exceptions that may be of significance to the interface protocol or the signalling tests that are to be executed, in addition to preventing misunderstandings associated with these issues.

The form provided by TELENOR shall be used and additional descriptions shall be given when appropriate.

When significantly new or additional functionality within the platform of TELECOM OPERATOR is implemented, a new compliance statement shall be provided.

2. TELENOR MOBIL NATIONAL INTERCONNECT ISUP VERSION 4+ PROTOCOL SPECIFICATION

2.1 Introduction

2.1.1 Foreword

Telenor Mobil runs an Ericsson version of ITU/ISUP version 2, called ISUP4+. ISUP4+ is mostly compliant with ITU/ISUP version 2, but the two vendors compliance lists should be compared. This PSTN/ISDN/GSM national interconnect ISUP interface is specified by Telenor Mobil .

Based on the above, the Parties shall agree on a common parameter- and message set for the interconnect interface as described by the ETSI standard ETS 300 303 (1994).

2.1.2 General requirements

The national interconnect ISUP version 4+ protocol on the interface shall be implemented such that it is protocol compatible with the national interconnect ETSI ISUP version 2, see ETS 300 646-1. This means that when received, messages and optional parameters defined in version 2, but not in version 4+, are discarded on the version 4+ interface according to Q.767 rules for handling unrecognised information, without interrupting the call. However, in order to maintain a high operational quality it is preferred that the messages, parameters and parameter values sent on the interface are restricted to those specified for the national interconnect ISUP version 4+ protocol when this version is used.

For transit national calls and transit ISUP calls to the international network, transparent signalling support of services according to this specification shall be provided, taking into account the exceptions listed in this specification and existing limitations in the international network. In case the call is routed on another signalling system, appropriate interworking shall be provided, based on ETS 300 343.

In case it is found that the interconnect ISUP protocol agreement has been violated by the other party concerning handling of number information, protection of Closed user group or coding of priority calls, some immediate reaction could be initiated.

2.2 Application of ETS 300 303

2.2.1 Application of section 1 Scope

Applies, with the following clarification.

ETS 300 303 is an application of ETSI ISUP version 1 (ETS 300 121) for the international interface, modified to support the national interconnect ISUP interface. In addition to interconnect between fixed networks, ETS 300 303 also describes the effect as seen on the interface when one or both of the networks include mobility, i.e. with GSM accesses.

2.2.2 Application of section 2 Normative references

Applies, with the following additions.

ETS 300 303 (1994): “Integrated Services Digital Network (ISDN); ISDN - Global System for Mobile communications (GSM) Public Land Mobile Network (PLMN) signalling interface”.

ETS 300 482 (1996): “Integrated Services Digital Network (ISDN); ISDN - Global System for Mobile communications (GSM) Public Land Mobile Network (PLMN) signalling interface; Test specification”.

ETS 300 646-1 (1997): “Integrated Services Digital Network (ISDN); Signalling System No. 7; Digital cellular telecommunications system (Phase 2); Application of the ISDN User Part (ISUP) version 2 for the ISDN- Public Land Mobile Network (PLMN) signalling interface; Part 1: Protocol specification; (GSM 09.12)”.

2.2.3 Application of section 3 Symbols and abbreviations

Applies.

2.2.4 Application of section 4 Modifications to ETS 300 121

Applies, with the exceptions and clarifications in following sections.

2.2.5 Application of section 4.1 Formats and codes

Applies, with the indicated exceptions to annex B.

2.2.6 Application of section 4.2 Basic call

Applies, with the following exceptions and clarifications.

Table V.4-2.1

Bearer services (identified by the TMR value in ISUP)	Comments
Speech	Applies, with the exceptions and clarifications indicated in the text.
3.1 kHz audio	Applies, with the exceptions and clarifications indicated in the text.
64 kbit/s unrestricted	Applies, with the exceptions and clarifications indicated in the text.

Signalling requirements as indicated by the ISUP preference indicator (IPI) apply, i.e. the values “ISDN user part preferred all the way”, “ISDN user part not required all the way” and “ISDN user part required all the way” shall be supported. Separate traffic routing of different traffic types (i.e. different combinations of TMR/IPI values) within the Telenor Mobil network or on the national interconnect interface is not provided.

Provision of echo cancellers by each network operator should be agreed as appropriate. Echo cancellers should be provided when necessary for “speech” and “3.1 kHz audio” calls.

The echo control device indicator in the Nature of connection indicators parameter and the Backward call indicators parameter should only be coded “included” when echo cancellers actually are included.

Continuity check procedures shall not apply on the national interconnect interface, except when bilaterally agreed between two network operators.

CIC code numbering on the national interconnect interface shall start from 33 (decimal), i.e. 21 hexadecimal for TS1 of the first circuit group.

The procedures of Q.767 section D.2.10.1 for circuit selection apply. The hunting "method 2" shall be used, unless another method is agreed.

Recorded announcements can be applied by the destination network instead of immediate Release message in case of call failure. In this case an Address Complete message should be sent before application of the recorded announcements. In case a recorded announcement is sent to support a commercial service, Answer or Connect message should be sent from the destination side before the announcement is provided. Answer or Connect message should be sent by the destination exchange before throughconnect to an ISDN destination user.

An appropriate announcement instead of immediate Release in the backwards direction to support cause #20 shall be provided by mobile networks, except if it has been explicitly agreed with Telenor Mobil to use immediate REL(cause 20).

2.2.7 Application of section 5 Message Transfer Part (MTP) protocol requirements

Applicable, with the following exception and clarifications

MTP according to CCITT Blue Book or ITU-T “White Book” recommendations apply (ref. ETS 300 548).

For the national interconnect interface, network indicator NI = 11 (binary) “reserved for national use” (i.e. NI=3 decimal) shall be used. Signalling addresses (point codes) for NI=3 are allocated to the network operators by the Norwegian regulatory authorities.

Time slot 16 in the 2.048 kbit/s G.704 transmission frame should preferably be used for support of the Signalling system No.7 links on the national interconnect interface with network indicator 11 (binary) “reserved for national use” (NI=3).

2.2.8 Application of Annex A (normative): Considerations on supplementary services

Applies, with the following exceptions and clarifications

Table V.4-2.2

Supplementary services	Comments
Supplementary services offered on the access, but not visible on the ISUP interconnect interface.	Apply, with the following clarifications: Service interactions for network specific services should preserve the service integrity of the ETSI standardised services identified on the ISUP interconnect interface, see ETR164/Q.1600/DEN/SPS-01044-1.
Supplementary services which are only identified on the ISUP interconnect interface by the called party number.	Does not apply.

Table V.4-2.2 (continued)

Supplementary services	Comments
Call diversion	<p>Applies, with the following exceptions and clarifications:</p> <p>The Redirecting number parameter and the Original called number parameter shall be supported according to ETS 300 646-1.</p> <p>The number contained in the Redirecting number parameter sent on the ISUP interconnect interface shall be true and network provided/verified from the charging point of view. It is recognised, however, that it may not be possible to verify numbers passed in transit.</p> <p>When the Redirecting number parameter or the Original called number parameters are coded “presentation restricted”, the same restrictions for presenting or passing them to a third party apply as for the Calling party number parameter.</p>

Table V.4-2.2 (continued)

Supplementary services	Comments
Calling Line Identification Presentation (CLIP)	<p>Applies, with the following exceptions and clarifications:</p> <p>A-number in the Calling party number parameter should be provided, independent of origin.</p> <p>A-numbers coded “network provided” or “user provided, verified and passed” to be passed in the Calling party number ISUP parameter between network operators, should be only true network provided/verified E.164 numbers identifying the originating access of the call (the mobile telephone/SIM card).</p>
Calling Line Identification Restriction (CLIR)	<p>Applies, with the following exceptions and clarifications:</p> <p>A-numbers in the Calling party number parameter and coded “presentation restricted” should not be passed out of Norway.</p> <p>A-numbers in the Calling party number parameter coded “presentation restricted” should never be passed to a third party, except to:</p> <ul style="list-style-type: none"> --- specific authorities according to legal requirements, i.e. emergency calls to hospital/ fire station/police, and to police in case of criminal investigations (e.g. MCID). --- other PSTN/ISDN/GSM/NMT network operators within Norway, which agree to the same restrictions and are authorised to handle classified and confidential number information.
Connected Line Identification Presentation (COLP)	<p>Applies, with the following exceptions and clarifications:</p> <p>Requirements on the authenticity of the Connected number apply as for the Calling party number.</p>
Connected Line Identification Restriction (COLR)	<p>Applies, with the following exceptions and clarifications:</p> <p>Restrictions on the passing of the Connected number apply as for the Calling party number.</p>

Table V.4-2.2 (continued)

Supplementary services	Comments
Terminal portability (TP)	Not supported.

User-to-User Signalling service 1 implicit (UUS1 implicit)	Not Supported.
Closed User Group (CUG)	<p>Applies, with the following exceptions and clarifications:</p> <p>Each network operator has the following obligation: In all cases of interconnect (also to a third network operator) it should be verified that CUG calls are handled properly, see table E-2/Q.767, such that service requirements on security for the end users are taken care of.</p> <p>Network identities (NI) to be used in the Closed user group interlock codes are allocated to the network operators by the Norwegian regulatory authority.</p> <p>The Network identity 0471 is used by Telenor Mobil.</p> <p>In order to provide a closed user group service for the same customer on several accesses across different networks, an agreement between the network operators for common administration of CUG interlock codes is necessary.</p>
Subaddressing (SUB)	Applies.

2.2.9 Application of Annex B (normative): Formats and codes

Applies, with the following exceptions and clarifications.

B.1 General functions of messages and signals:

Applies, with the following exceptions and clarifications.

The Continuity message only applies in case of bilateral agreement.

The Continuity indicators only applies in case of bilateral agreement.

The Redirecting number parameter and the Original Called number parameter apply according to ETS 300 646-1.

B.2 Formats and codes:

Applies, with the following exceptions and clarifications.

In the Range and status parameter only ranges within the same 2.048 Mbit/s frame shall be indicated.

It should be possible to receive the Redirection information parameter coded with both one or two octets when the value of the redirection counter is equal to 1.

The Redirecting number parameter and the Original Called number parameter apply according to ETS 300 646-1.

The User Service Information parameter will only contain octets 1-3 for calls originated in the Telenor Mobil network.

2.2.10 Application of Annex C (informative): Examples of echo control procedure

Applies (informative), with the published corrigenda, in case of GSM calls.

2.2.11 Application of Annex D (informative): Bibliography

Applies (informative).

3. Telenor Mobil national interconnect ISUP protocol specification for coding of called party number

The Called party number parameter shall be coded according to ETS 300 646-1, except that the carrier selection prefix (possibly followed by other prefixes) can be included in the address digits when the nature of address is coded “national(significant)number”.

When the number to be transferred is longer than what is allowed in the Called party number parameter (i.e. 16 digits), over-lap signalling shall be used. With over-lap signalling the maximum number length is 20 digits.

Abbreviations: TON= Type of number, NTADDR= Nature of address, CC= Country code, IP= International prefix (= 00), PC= Prefix for carrier selection (indirect access).

Interpretation of the coding is shown by examples in the following table.

Table V.4-3.1

Type of call	Dialled by the customer	Coding on the interconnect interface
Transit call to the national network	<u>ISDN/GSM access:</u> TON= unknown, Digits= abc..... TON= national, Digits= abc..... TON= international, Digits= 47-abc.....	NTADDR= national (significant) number, Digits= abc.....
Transit call to the international network	<u>ISDN/GSM access:</u> TON= unknown, Digits= IP-CC-uuu... TON= international, Digits= CC-uuu...	NTADDR= international number, Digits= CC-uuu...

Table V.4-3.3 (continued)

Type of call	Dialled by the customer	Coding on the interconnect interface
Indirect access call to the national network	<u>ISDN/GSM access:</u> TON= unknown, Digits= PC-xxx..... TON= national, Digits= PC-xxx.....	NTADDR= national (significant) number, Digits= PC-xxx.....
Indirect access call to the international network	<u>ISDN/GSM access:</u> TON= unknown, Digits= PC-IP-CC-uuu... TON= national, Digits= PC-IP-CC-uuu...	NTADDR= national (significant) number, Digits= PC-IP-CC-uuu...

4. TELENOR NATIONAL INTERCONNECT ISUP VERSION 2 PROTOCOL SPECIFICATION

4.1 Introduction

4.1.1 Foreword

This PSTN/ISDN/GSM national interconnect ISUP interface is specified by TELENOR.

This interconnect interface ISUP version 2 protocol is based on the ETSI standard ETS 300 646-1 (1997).

4.1.2 General requirements

The national interconnect ISUP version 2 protocol based on ETS 300 646-1 as implemented by TELENOR is not peer to peer protocol compatible on the interface with the national interconnect ISUP version 1 protocol based on ETS 300 303, because it is always required that the multi-use bearer service is supported on the version 2 protocol interface. When TELEOPERATØR (during a transition period) uses the interconnect ISUP version 1 protocol on his side of the interface, the interconnect ISUP version 1 protocol shall also be used by TELENOR instead of the interconnect ISUP version 2 protocol.

Messages or parameters in addition to those specified in this specification are not allowed to be sent on the national interconnect ISUP version 2 interface. In case they are sent by error, they shall be discarded by the gateway according to the procedures for handling unrecognised/unexpected information.

When an interconnect agreement is negotiated between Telenor Mobil and Teleoperatør, a compliance statement shall be provided by both Parts in order to identify possible technical problems. See Vedlegg 8.

For transit national calls and transit ISUP calls to the international network, transparent signalling support of services according to this specification shall be provided, taking into account the exceptions listed in this specification and existing limitations in the international network. In case the call is routed on another signalling system, appropriate interworking shall be provided, based on ETS 300 360.

In case it is found by Telenor Mobil that the interconnect ISUP protocol agreement has been violated by Teleoperatør concerning handling of number information, protection of Closed user group or coding of priority calls, some immediate reaction could be initiated by Telenor Mobil.

4.2 Application of ETS 300 646-1

4.2.1 Application of section 1 Scope

Applies, with the following clarification.

ETS 300 646-1 is an application of ETSI ISUP version 2 (ETS 300 356-1,...,19) for the international interface, modified to support the national interconnect ISUP interface. In addition to interconnect between fixed networks, ETS 300 646-1 also describes the effect as seen on the interface when one or both of the networks include mobility, i.e. with GSM accesses.

4.2.2 Application of section 2 Normative references

Applies, with the following additions.

ETS 300 303 (1994): “Integrated Services Digital Network (ISDN); ISDN - Global System for Mobile communications (GSM) Public Land Mobile Network (PLMN) signalling interface”.

ETS 300 482 (1996): “Integrated Services Digital Network (ISDN); ISDN - Global System for Mobile communications (GSM) Public Land Mobile Network (PLMN) signalling interface; Test specification”.

ETS 300 646-1 (1997): “Integrated Services Digital Network (ISDN); Signalling System No. 7; Digital cellular telecommunications system (Phase 2); Application of the ISDN User Part (ISUP) version 2 for the ISDN- Public Land Mobile Network (PLMN) signalling interface; Part 1: Protocol specification; (GSM 09.12)”.

4.2.3 Application of section 3 Definitions and abbreviations

Applies.

4.2.4 Application of section 4 General principles

Applies, with the exceptions and clarifications in following sections.

4.2.5 Application of section 5 Exceptions and clarifications for basic call

Applies, with the exceptions and clarifications in following sections.

4.2.6 Application of section 5.1 Formats and codes

Applies, with the indicated exceptions to annex B.

4.2.7 Application of section 5.2 Basic call signalling procedures

Applies, with the following exceptions and clarifications.

Table V.4-4.1

Bearer services (identified by the TMR value in ISUP)	Comments
Speech	Applies, with the exceptions and clarifications indicated in the text. See ITU-T rec. I.231.2
3.1 kHz audio	Applies, with the exceptions and clarifications indicated in the text. See ITU-T rec. I.231.3
64 kbit/s unrestricted	Applies, with the exceptions and clarifications indicated in the text. See ITU-T rec. I.231.1
64 kbit/s unrestricted preferred	Applies, with the exceptions and clarifications indicated in the text. See ITU-T rec. I.231.9
2x64 kbit/s unrestricted	Not applicable. Applies only according to bilateral agreements, with the exceptions and clarifications indicated in the text. Implemented according to ETSI, with support of the multiple-rate bearer service with n=2. I.e. it is not compatible with the ITU-T 2x64 kbit/s unrestricted bearer service. See ITU-T rec. I.231.10 and I.231.5
384 kbit/s unrestricted	Not applicable. Applies only according to bilateral agreements, with the exceptions and clarifications indicated in the text. See ITU-T rec. I.231.6
1536 kbit/s unrestricted	Not applicable. Applies only according to bilateral agreements, with the exceptions and clarifications indicated in the text. See ITU-T rec. I.231.7
1920 kbit/s unrestricted	Not applicable. Applies only according to bilateral agreements, with the exceptions and clarifications indicated in the text. See ITU-T rec. I.231.8

Signalling requirements as indicated by the ISUP preference indicator (IPI) apply, i.e. the values “ISDN user part preferred all the way”, “ISDN user part not required all the way” and “ISDN user part required all the way” shall be supported on the national interconnect interface. Separate traffic routing of different traffic types (i.e. different combinations of TMR/IPI values) within the Telenor Mobil network or on the national interconnect interface is not provided.

Provision of echo cancellers by each network operator shall be agreed as appropriate. Echo cancellers shall be provided when necessary for “speech”, “3.1 kHz audio” and “64 kbit/s unrestricted preferred” calls.

The echo control device indicator in the Nature of connection indicators parameter and the Backward call indicators parameter shall only be coded “included” when echo cancellers actually are included (or available to be included in case of fallback for TMR= 64 kbit/s unrestricted preferred). The interpretation of the ETS 300 646-1 echo control procedure for TMR= 64 kbit/s unrestricted preferred shall be according to ITU-T rec. Q.115. Note for information: The appropriate ISUP coding is also explicitly described in ANSI T1.113-1995, section 29C.6.

Continuity check procedures shall not apply on the national interconnect interface, except when bilaterally agreed between two network operators.

CIC code numbering on the national interconnect interface shall start from 33 (decimal), i.e. 21 hexadecimal for TS1 of the first circuit group.

The procedures of Q.767 section D.2.10.1 for circuit selection apply. The hunting "method 2" shall be used, unless another method is agreed.

Recorded announcements can be applied by the destination network instead of immediate Release message in case of call failure. In this case an Address Complete message shall be sent before application of the recorded announcements. In case a recorded announcement is sent to support a commercial service, Answer or Connect message shall be sent from the destination side before the announcement is provided. Answer or Connect message shall be sent by the destination exchange before throughconnect to an ISDN destination user.

An appropriate announcement instead of immediate Release in the backwards direction to support cause #20 shall be provided by the mobile network, except if it has been explicitly agreed with Telenor Mobil to use immediate REL(cause 20).

Calling party's category = “data call (voice band data)” can be mapped to “ordinary calling subscriber” by the TELENOR incoming gateway.

The national/international call indicator can be modified to “call to be treated as an international call” by the incoming TELENOR national interconnect gateway.

The charge indicator in the Backward call indicators parameter can be modified to “charge” by the outgoing TELENOR gateway.

4.2.8 Application of section 6 Exceptions and clarifications on supplementary services

Applies, with the following exceptions and clarifications

Table V.4-4.2

Supplementary services	Comments
Supplementary services offered on the access, but not visible on the ISUP interconnect interface.	<p>Apply, with the following clarifications:</p> <p>Service interactions for network specific services shall preserve the service integrity of the ETSI standardised services identified on the ISUP interconnect interface, see ETR164/Q.1600.</p>
Supplementary services which are only identified on the ISUP interconnect interface by the called party number.	<p>Apply, with the following clarifications:</p> <p>Interconnect for such services are expressed by traffic routing and accounting agreements for specific number series. See separate documents.</p> <p>Service interactions for network specific services shall preserve the service integrity of the ETSI standardised services identified on the ISUP interconnect interface, see ETR164/Q.1600.</p>
The TELENOR supplementary service Priority (PRI)	<p>Not required. However, the following restrictions apply for coding of the Calling party's category:</p> <p>In order not to disrupt traffic routing mechanisms in the network, Calling party's category = "calling subscriber with priority" shall be reserved only for calls with considerable public importance. Examples of such calls can be calls originating from fire department, hospital, police, military commands, airport control centre, etc. or emergency calls (i.e. calls to 110, 112, 113). In case regulations for application of priority calls are available from the Norwegian regulatory authorities, those shall be followed. It is assumed that calls e.g. could be given priority by a routing algorithm for certain routes which only permits the last free circuit at any moment to be seized by a call with Calling party's category = "calling subscriber with priority".</p>

Table V.4-4.2 (continued)

Supplementary services	Comments
<p>Calling Line Identification Presentation (CLIP)</p>	<p>Applies, with the following exceptions and clarifications: A-numbers in the Calling party number parameter shall be provided.</p> <p>A-numbers coded “network provided” or “user provided, verified and passed” to be passed in the Calling party number ISUP parameter between network operators, shall be only true network provided/verified E.164 numbers identifying the originating access of the call (or the mobile telephone/SIM card in case of NMT/GSM).</p> <p>Note: In case of Calling party numbers received from another network operator, it is not always possible to verify the contents of the received A-number. In case of call diversion within TUP or private networks, the A-number in the Calling party number parameter could be indicating the forwarding access.</p> <p>Note: The Generic number parameter (coded “additional calling party number”) will be discarded by the gateway. Any use of the Generic number parameter will have to be specially agreed between the Parts.</p>

Table V.4-4.2 (continued)

Supplementary services	Comments
Calling Line Identification Restriction (CLIR)	<p>Applies, with the following exceptions and clarifications:</p> <p>A-numbers in the Calling party number parameter and coded “presentation restricted” shall not be passed out of Norway.</p> <p>A-numbers in the Calling party number parameter and coded “presentation restricted” shall never be passed to a third party, except to:</p> <ul style="list-style-type: none"> --- specific authorities according to legal requirements, i.e. emergency calls to hospital/ fire station/police, and to police in case of criminal investigations (e.g. MCID). --- other PSTN/ISDN/GSM/NMT network operators within Norway, which agree to the same restrictions and are authorised to handle classified and confidential number information. <p>The same restrictions apply for sending and presenting the Generic number coded “presentation restricted” as for the Calling party number in the Calling party number parameter.</p>
Connected Line Identification Presentation (COLP)	<p>Applies, with the following exceptions and clarifications:</p> <p>Requirements on the authenticity of the Connected number apply as for the Calling party number.</p>
Connected Line Identification Restriction (COLR)	<p>Applies, with the following exceptions and clarifications:</p> <p>Restrictions on the passing of the Connected number apply as for the Calling party number in the Calling party number parameter.</p> <p>The same restrictions apply for sending and presenting the Generic number coded “presentation restricted” as for the Calling party number in the Calling party number parameter.</p>

Table V.4-4.2 (continued)

Supplementary services	Comments
Terminal Portability (TP)	Applies
User-to-User Signalling (UUS, i.e. UUS1 implicit, UUS1 explicit, UUS2, UUS3)	<p>Applies, with the following exceptions and clarifications:</p> <p>It is recognised that in some cases User-to-User information may be discarded without notification in the User-to-user indicators in the backward direction. In case the User-to-user indicators parameter in either direction is discarded by a transit network, it is the responsibility of the originating exchange to take proper action.</p> <p>Note: It is required that flow control is implemented on the access according to ETSI standards.</p>
Closed User Group (CUG)	<p>Applies, with the following exceptions and clarifications:</p> <p>Each network operator has the following obligation: In all cases of interconnect (also to a third network operator) it shall be verified that CUG calls are handled properly, see table E-2/Q.767, such that service requirements on security for the end users are taken care of.</p> <p>Network identities (NI) to be used in the Closed user group interlock codes are allocated to the network operators by the Norwegian regulatory authority. The Network identity 0471 is used by Telenor Mobil.</p> <p>In order to provide a closed user group service for the same customer on several accesses across different networks, an agreement between the network operators for common administration of CUG interlock codes is necessary.</p>
Subaddressing (SUB)	Applies.
Malicious Call Identification (MCID)	The ISUP request procedure is not applicable.
Conference Call, add on (CONF)	Applies.

Table V.4-4.2 (continued)

Supplementary services	Comments
Explicit Call Transfer (ECT)	<p>Applies.</p> <p>Support for the Call transfer number and the loop prevention procedure is considered optional.</p> <p>The same restrictions apply for sending and presenting the Call transfer number coded “presentation restricted” as for the Calling party number in the Calling party number parameter.</p>
Call diversion	<p>Applies, with the following exceptions and clarifications:</p> <p>The number contained in the Redirecting number parameter sent on the ISUP interconnect interface shall be true and network provided/verified from the charging point of view. It is recognised, however, that it may not be possible to verify numbers passed in transit.</p> <p>When the Redirecting number parameter or the Original called number parameters are coded “presentation restricted”, the same restrictions for presenting or passing them to a third party apply as for the Calling party number parameter.</p> <p>The Redirection number parameter, the Redirection number restriction parameter, the Call diversion information parameter, the Generic notification parameter and the Event information parameter (containing diversion information) could be present on the interconnect interface. These parameters could be discarded by the national interconnect outgoing gateway receiving those parameters, or handled according to ETS 300 646-1.</p> <p>If the Redirection number parameter is present it shall only be passed in the backwards direction with the same agreement on restrictions as for Calling party number. It shall be assumed by default that the Redirection number parameter is coded “presentation restricted”, unless the Redirection number restriction parameter coded “presentation allowed” has been received by the originating exchange, and not contradicted in a later message, including ANM or CON.</p> <p>The same restrictions apply for sending and presenting the Generic number coded “presentation restricted” as for the Calling party number in the Calling party number parameter.</p>

Table V.4-4.2 (continued)

Supplementary services	Comments
Call Hold (HOLD)	Applies.
Call Waiting (CW)	Applies.
Completion of Calls to Busy Subscriber (CCBS)	Applies. The SCCP Global Title called address and calling address shall always be coded with Nature of address= “international number” (i.e. with address digits = 47 xxxxxxxx for calls within Norway). SCCP Global Title translation shall be provided by the national interconnect gateway exchanges.
Three Party (3PTY)	Applies.

4.2.9 Application of section 7 Message Transfer Part (MTP) protocol requirements

Applicable, with the following exception and clarifications

MTP according to CCITT Blue Book or ITU-T “White Book” recommendations apply (ref. ETS 300 548).

For the national interconnect interface, network indicator NI = 11 (binary) “reserved for national use” (i.e. NI=3 decimal) shall be used. Signalling addresses (point codes) for NI=3 are allocated to the network operators by the Norwegian regulatory authorities.

Time slot 16 in the 2.048 kbit/s G.704 transmission frame shall preferably be used for support of the Signalling system No.7 links on the national interconnect interface with network indicator 11 (binary) “reserved for national use” (NI=3). When time slot 16 is used for control of echo cancellers, another time slot (1 or 17) can be used instead for the signalling link according to specific agreement.

4.2.10 Application of Annex A (informative): Considerations on teleservices

Applies.

The table only applies for GSM.

4.2.11 Application of Annex B (informative): Considerations on bearer services

Applies for GSM only.

4.2.12 Application of Annex C (informative): Mapping of parameters between ISUP and MAP

Applies for GSM only.

4.2.13 Application of Annex D (normative): Formats and codes

Applies, with the following exceptions and clarifications.

D.1 Exceptions to table 4/Q.763 of ITU-T recommendation Q.763 as modified by ETS 300 356-1:

Applies, with the following exceptions and clarifications.

The Identification request message does not apply.

The Identification response message does not apply.

The Continuity message only applies in case of bilateral agreement.

D.1 Exceptions to table 5/Q.763 of ITU-T recommendation Q.763 as modified by ETS 300 356-1:

The MCID request indicators parameter does not apply.

The MCID response indicators parameter does not apply.

The Continuity indicators parameter only applies in case of bilateral agreement.

D.1 Exceptions to table 4/Q.763 of ITU-T recommendation Q.763 as modified by ETS 300 356-1:

Applies, with the following exceptions and clarifications.

In the Range and status parameter only ranges within the same 2.048 Mbit/s frame shall be indicated.

It shall be possible to receive the Redirection information parameter coded with both one or two octets when the value of the redirection counter is equal to 1.

The value 0000 “unknown” shall be used as default for the original redirection reason in the Redirection information parameter in case another value is received.

The values 001 “ISDN numbering plan (E.164)” and 101 “private numbering plan” are allowed for the numbering plan indicator in the Generic number parameter.

The value 00 “user provided, not verified”/”spare” is allowed for the screening indicator in the Generic number parameter. This value shall be used as default if another value is received.

4.2.14 Application of Annex E (informative): Examples of echo control procedure

Applies (informative), with the published corrigenda, in case of GSM calls.