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Foreword

This European Telecommunication Standard (ETS) has been produced by the Signalling Protocols and Switching (SPS) Technical Committee of the European Telecommunications Standards Institute (ETSI).

This ETS is part 1 of a multi-part standard covering the Digital Subscriber Signalling System No. one (DSS1) protocol specification for the Integrated Services Digital Network (ISDN) telephony 7 kHz and videotelephony teleservices, as described below:

Part 1: **Protocol specification;**

Part 2: Protocol Implementation Conformance Statement (PICS) proforma;

Part 3: Test Suite Structure and Test Purposes (TSS&TP) for the user;

Part 4: Abstract Test Suite (ATS) and partial Protocol Implementation eXtra Information for Testing (PIXIT) proforma for the user;

Part 5: Test Suite Structure and Test Purposes (TSS&TP) for the network;

Part 6: Abstract Test Suite (ATS) and partial Protocol Implementation eXtra Information for Testing (PIXIT) proforma for the network.

NOTE: At the time of publication of this ETS, the final structure of the parts containing the test specifications was still under study.

Information in this ETS concerning usage of the in-band protocol has been prepared in association with the Terminal Equipment (TE) Technical Committee of ETSI; such information is outside the scope of the SPS Technical Committee but has been included here to improve the presentation for implementors.

In accordance with CCITT Recommendation I.130, the following three level structure is used to describe the telecommunication services as provided by European public telecommunications operators under the pan-European ISDN:

- Stage 1: is an overall service description, from the user's standpoint;

- Stage 2: identifies the functional capabilities and information flows needed to support the service described in stage 1; and,

- Stage 3: defines the signalling system protocols and switching functions needed to implement the service described in stage 1.

This ETS details the stage 3 aspects (DSS1 protocol) needed to support the telephony 7 kHz and videotelephony teleservices.

The telephony 7 kHz stage 1 and stage 2 aspects are detailed in ETS 300 263 (1994) and ETS 300 265 (1994), respectively.

The videotelephony stage 1 and stage 2 aspects are detailed in ETS 300 264 (1994) and ETS 300 266 (1994), respectively.

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1 Scope

This first part of ETS 300 267 specifies the stage three of the videotelephony and telephony 7 kHz teleservices for the pan-European Integrated Services Digital Network (ISDN) as provided by European public telecommunications operators at the T reference point or coincident S and T reference point (as defined in CCITT Recommendation I.411 [4]) by means of the Digital Subscriber Signalling System No. one (DSS1). Stage three identifies the protocol procedures and switching functions needed to support a telecommunications service (see CCITT Recommendation I.130 [3]).

In addition, this ETS specifies the protocol requirements at the T reference point where the service is provided to the user via a private ISDN.

This ETS does not specify the additional protocol requirements where the service is provided to the user via a telecommunications network that is not an ISDN.

For the telephony 7 kHz and videotelephony teleservice, this ETS specifies procedures for commencement of the in-band protocol by normative reference to the relevant in-band protocol ETSs.

This ETS also specifies additional procedures to those required to support basic call in ETS 300 102-1 [9] in order to support the two teleservices described in this ETS. These additional procedures may be used to support other basic telecommunication services.

The telephony 7 kHz teleservice is a real-time teleservice in which speech (7 kHz or 3,1 kHz bandwidth) can be interchanged using one circuit-mode 64 kbit/s connection.

The videotelephony teleservice is a real-time, audiovisual teleservice in which speech and moving pictures are interchanged by means of one or two 64 kbit/s circuit-mode connections in the ISDN. The picture information transmitted is sufficient for adequate representation of fluid movements of a person displayed in head and shoulders view.

Procedures for the correlation of two independent connections within the same videotelephony call are outside the scope of this ETS. This places responsibility on the user of this service to avoid situations where certain supplementary services are being used, and also situations where multiple calls are being presented to the same user at the same time.

Further parts of this ETS specify the method of testing required to identify conformance to this ETS.

This ETS is applicable to equipment supporting the videotelephony and telephony 7 kHz teleservices, to be attached at either side of a T reference point or coincident S and T reference point when used as an access to the public ISDN.

2 Normative references

This ETS incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this ETS only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

[1] CCITT Recommendation G.711 (1988): "Pulse code modulation (PCM) of voice frequencies".

[2] CCITT Recommendation I.112 (1988): "Vocabulary of terms for ISDNs".

[3] CCITT Recommendation I.130 (1988): "Method for the characterization of telecommunication services supported by an ISDN and network capabilities of an ISDN".

[4] CCITT Recommendation I.411 (1988): "ISDN user-network interfaces - Reference configurations".

[5] CCITT Recommendation Q.9 (1988): "Vocabulary of switching and signalling terms".

[6] ETS 300 082 (1992): "Integrated Services Digital Network (ISDN); 3,1 kHz telephony teleservice; End-to-end compatibility".

[7] ETS 300 092-1 (1992): "Integrated Services Digital Network (ISDN); Calling Line Identification Presentation (CLIP) supplementary service; Digital Subscriber Signalling System No. one (DSS1) protocol; Part 1: Protocol specification".

NOTE 1: ETS 300 092-1 (1992) was initially published as ETS 300 092 (1992) with identical contents.

[8] ETS 300 097-1 (1992): "Integrated Services Digital Network (ISDN); Connected Line Identification Presentation (COLP) supplementary service; Digital Subscriber Signalling System No. one (DSS1) protocol; Part 1: Protocol specification".

NOTE 2: ETS 300 097-1 (1992) was initially published as ETS 300 097 (1992) with identical contents.

[9] ETS 300 102-1 (1990): "Integrated Services Digital Network (ISDN); User-network interface layer 3; Specifications for basic call control".

[10] ETS 300 102-2 (1990): "Integrated Services Digital Network (ISDN); User-network interface layer 3; specification for basic call control; Specification Description Language (SDL) diagrams".

[11] ETS 300 143: "Integrated Services Digital Network (ISDN); Audiovisual services; Inband signalling procedures for audiovisual terminals using digital channels up to 2 048 kbit/s" (equivalent to ITU-T Recommendation H.242).

[12] ETS 300 144: "Integrated Services Digital Network (ISDN); Audiovisual services; Frame structure for a 64 kbit/s to 1 920 kbit/s channel and associated syntax for inband signalling" (equivalent to ITU-T Recommendation H.221).

[13] ETS 300 145: "Integrated Services Digital Network (ISDN); Audiovisual services; Videotelephone systems and terminal equipment operating on one or two 64 kbit/s channels".

[14] ETS 300 196-1 (1993): "Integrated Services Digital Network (ISDN); Generic functional protocol for the support of supplementary services; Digital Subscriber Signalling System No. one (DSS1) protocol; Part 1: Protocol specification".

NOTE 3: ETS 300 196-1 (1992) was initially published as ETS 300 196 (1992) with identical contents.

[15] ETS 300 263 (1994): "Integrated Services Digital Network (ISDN); Telephony 7 kHz teleservice; Service description".

[16] ETS 300 264 (1994): "Integrated Services Digital Network (ISDN); Videotelephony teleservice; Service description".

[17] I-ETS 300 281: "Integrated Services Digital Network (ISDN); Telephony 7 kHz teleservice; Terminal requirements necessary for end-to-end compatibility".

3 Definitions

For the purposes of this ETS, the following definitions apply:

Basic telecommunications service: a telecommunications service that is either a teleservice or a bearer service.

Bearer: an association of transmission channels or circuits, and switching, set up to provide a means for transfer of information between two or more points in a telecommunications network. It does not include control signalling.

Bearer capability: the type of transmission media provided by the network, and thus the type of the overall connection, and also the set of lower layer protocols required on the connection.

Bearer service: see CCITT Recommendation I.112 [2], § 2.2, definition 202.

Call: see CCITT Recommendation Q.9 [5], § 2.2, definition 2201.

Call control message: a message as defined in ETS 300 102-1 [9], subclause 3.1, which on sending or receipt causes a change of the call state at either the network or the user. A call control message thus indicates or causes a change in the state of the bearer. Call control messages also include the INFORMATION message and PROGRESS message.

Call reference: an identifier of a signalling transaction. The signalling transaction may either be bearer related, in which case the signalling transaction can be used to control that bearer, or bearer independent, in which case there is no bearer associated with that signalling transaction. Where there is only one bearer required for a call, then the call reference of the associated bearer-related signalling transaction may be used to identify the call.

Call state: a state as defined in ETS 300 102-1 [9] subclause 2.1 for either the user or the network as appropriate. A call state may exist for each call reference value (and for each additional responding CEI in the incoming call states). This represents the state of a state machine associated with a bearer-related or bearer-independent signalling transaction. For a bearer-related signalling transaction the call state also identifies the condition of the associated bearer, and where a call consists of only one bearer, may also identify the condition of the call.

Connection: see CCITT Recommendation Q.9 [5], § 0, definition 0011. In this ETS the use of this term is taken to include a bearer and its associated control signalling.

Connection type: see CCITT Recommendation I.112 [2], § 2.3, definition 316.

Data link connection endpoint identifier; Connection Endpoint Identifier (CEI): identifier used by a layer 3 protocol entity to address its peer entity.

Fallback: the mechanism for selecting, at the time of call request and establishment, an alternative bearer capability, or high layer compatibility, to that primarily requested by the calling user. Fallback may occur either due to the network being unable to provide the primarily requested bearer capability, or high layer compatibility, or due to the called user desiring an alternative bearer capability, or high layer compatibility.

High layer compatibility: the set of higher layer protocols required for the call; this information may also be used to define the basic telecommunications service as a particular teleservice.

In-band protocol entity: the protocol entity within the terminal responsible for the provision of the in-band procedures (e.g. ETS 300 082 [6], ETS 300 143 [11], I-ETS 300 281 [17]).

Integrated Services Digital Network (ISDN): see CCITT Recommendation I.112 [2], § 2.3, definition 208.

Network: the DSS1 protocol entity at the network side of the user-network interface.

Service; telecommunications service: see CCITT Recommendation I.112 [2], § 2.2, definition 201.

Teleservice: see CCITT Recommendation I.112 [2], § 2.2, definition 203.

User: the DSS1 protocol entity at the user side of the user-network interface.

4 Symbols and abbreviations

For the purposes of this ETS, the following abbreviations apply:

CEI	Connection Endpoint Identifier
DSS1	Digital Subscriber Signalling System No. one
ISDN	Integrated Services Digital Network
PSTN	Public Switched Telephone Network

5 Additional generic requirements for basic telecommunication services not defined in ETS 300 102-1

5.1 Description

Clause 5 provides generic requirements for the provision of the telephony 7 kHz and videotelephony basic telecommunication services that are not contained in other ETSs (e.g., ETS 300 102-1 [9]). The specification of a basic telecommunications service can be simplified by normative reference to the appropriate generic procedures within Clause 5. These generic procedures form requirements for a basic telecommunications service only when such a normative reference is made.

NOTE: This approach has been adopted in the specification of the telephony 7 kHz teleservice in Clause 6, and in the specification of the videotelephony teleservice in Clause 7. Other basic telecommunication services outside the scope of this ETS can be specified in this manner.

These additional generic requirements have been defined to be compatible with the existing requirements of ETS 300 102-1 [9].

5.2 Operational requirements

Operational requirements are specified for each basic telecommunications service (for example, see subclauses 6.2 and 7.2).

5.3 Coding requirements

The message structures defined in subclause 3.1 of ETS 300 102-1 [9] shall apply with the following additions (the use of these additions is defined in subclauses 5.5, 5.6, 6.5, 6.6, 7.5 and 7.6):

a) the Bearer capability information element may be repeated in SETUP message, not preceded by a Repeat indicator information element, in support of the fallback procedures. Where the Bearer capability information element is repeated in the SETUP message for these procedures, the inclusion of the Low layer compatibility information element shall not occur;

b) the High layer compatibility information element may be repeated in SETUP message, not preceded by a Repeat indicator information element, in support of the fallback procedures;

c) the Bearer capability information element may appear in the CONNECT message;

d) the Bearer capability information element may appear in a CALL PROCEEDING, an ALERTING, or a PROGRESS message in both directions. If the Bearer capability information element is included, then this message shall also contain a Progress indicator information element with a progress description of #5 "interworking has occurred and has resulted in a telecommunications service change";

e) the High layer compatibility information element may appear in the CONNECT message;

f) the High layer compatibility information element may appear in a CALL PROCEEDING, an ALERTING, or a PROGRESS message in both directions. If the High layer compatibility information element is included, then this message shall also contain a Progress indicator information element with a progress description of #5 "interworking has occurred and has resulted in a telecommunications service change".

The message structures defined in subclause 3.4 of ETS 300 102-1 [9] are applicable to accesses supporting the telephony 7 kHz and videotelephony teleservices, but their use is outside the scope of this ETS.

The information elements defined in subclause 4.5 of ETS 300 102-1 [9] shall apply with the following additions (the use of these additions is defined in subclauses 5.5, 5.6, 6.5, 6.6, 7.5 and 7.6):

1) the Connected number and the Connected subaddress information elements defined in ETS 300 097-1 [8], Clause 7, shall apply;

2) in the Progress indicator information element, a progress description of #5 "interworking has occurred and has resulted in a telecommunications service change" is also defined. This progress description is used only where the call, up to the point where the progress indicator is generated, is known to be ISDN. This progress description is used only in the CALL PROCEEDING, ALERTING and PROGRESS messages;

3) in the High layer compatibility information element, a high layer characteristics identification field of "110 0000 - videotelephony (Recommendation F.721)" is also defined. This applies to only octet 4;

4) in the High layer compatibility information element, an extended audiovisual characteristics identification field (octet 4a) is defined. This octet can be used only in conjunction with the values defined in item 3) of this subclause. The values "000 0001 - capability set of initial channel of Recommendation H.221" and "000 0010 - capability set of subsequent channel of Recommendation H.221" are defined for this octet;

   NOTE: The ETS replacing ITU-T Recommendation H.221 is ETS 300 144 [12].

5) in the Bearer capability information element, the coding of the user information layer 1 protocol field (octet 5) set to "00101" is amended to read "Recommendations H.221 and H.242";

   NOTE: The ETSs replacing these ITU-T Recommendations are ETS 300 144 [12] (ITU-T Recommendation H.221) and ETS 300 143 [11] (ITU-T Recommendation H.242).

6) in the Bearer capability information element, the coding of the information transfer capability field (octet 3) set to "10001" is amended to read "unrestricted digital information with tones/announcements".

5.4 State definitions

The call states defined in subclause 2.1 of ETS 300 102-1 [9] shall apply.

The states defined in subclause 2.4 of ETS 300 102-1 [9] are applicable to accesses supporting the telephony 7 kHz and videotelephony teleservices, but are outside the scope of this ETS.

5.5 Signalling procedures at the coincident S and T reference point

5.5.1 Procedures for the originating user to indicate bearer capability selection is allowed

5.5.1.1 Normal operation

For some bearer services or teleservices, the originating user can indicate that:

- fallback to an alternative bearer capability is allowed; or

- fallback to an alternative bearer capability is not allowed.

If the calling user allows fallback to occur to an alternative bearer capability, then the user shall indicate this to the network by means of repeated Bearer capability information elements within the SETUP message sent to indicate the presence of a call request. This procedure allows a maximum of two Bearer capability information elements in the SETUP message.

The order of the information elements shall indicate the priority of the bearer capabilities. Bearer capability information elements shall be in ascending order of priority, i.e., a subsequent Bearer capability information element shall indicate a bearer capability with higher priority.

If fallback allowed is indicated in the SETUP message as described above, and fallback occurs at the destination user, or fallback does not occur, the originating network shall include in the CONNECT message sent to the calling user the Bearer capability information element of the resultant bearer service or teleservice.

If fallback allowed is indicated in the SETUP message as described above, and fallback occurs within the ISDN (e.g., bearer capability selection is not supported or the selected route does not support the preferred bearer capability), the originating network shall include in a PROGRESS message or other appropriate call control message sent to the calling user a Progress indicator information element with the progress description #5 "interworking has occurred and has resulted in a telecommunications service change". The originating network shall include the Bearer capability information element of the resultant bearer service or teleservice.

When a PROGRESS message is sent containing a Progress indicator information element with progress description #5 "interworking has occurred and has resulted in a telecommunications service change", neither the user nor the network shall stop timers described in ETS 300 102-1 [9] as a result of this action.

5.5.1.2 Exceptional procedures

The procedures of ETS 300 102-1 [9] subclause 5.8 shall apply, with the addition that:

a) if the calling user receives no Bearer capability information element in the CONNECT message, or prior to the CONNECT message in some other call control message, the user shall assume that the bearer service or teleservice corresponds to the first Bearer capability information element that the user included in the SETUP message;

b) if the calling user receives a Progress indicator information element with a progress description #1 "call is not end-to-end ISDN, further call progress information may be available in-band" or progress description #2 "destination address is non-ISDN" subsequent to a Progress indicator information element with a progress description #5 "interworking has occurred and has resulted in a

telecommunications service change", then the last received Progress indicator information element shall be taken account of. Where the progress description is #1 "call is not end-to-end ISDN, further call progress information may be available in-band" or progress description is #2 "destination address is non-ISDN" the user shall assume a bearer service category of circuit-mode 64 kbit/s 8 kHz structured usable for 3,1 kHz audio information transfer;

c) if the calling user includes a Low layer compatibility information element in a SETUP message containing a repeated Bearer compatibility information element, even though this is an error condition, the network shall continue normal call handling, i.e. transport the Low layer compatibility information element transparently across the network;

d) if the calling user receives a call control message other than the CONNECT message containing a Bearer capability information element but without a Progress information element, with progress description #5 "interworking has occurred and has resulted in a telecommunications service change", the calling user shall handle the call in the normal manner;

e) if the calling user receives no Bearer capability information element in a call control message other than CONNECT but the Progress information element, with progress description #5 "interworking has occurred" present, the calling user shall assume that the bearer service or teleservice corresponds to the first Bearer capability information element that was included in the SETUP message.

5.5.2 Procedures for bearer capability selection at the destination side

5.5.2.1 Normal operation

If the calling user and the network operator allow fallback to occur to an alternative bearer capability, then the destination network shall indicate this to the destination user by means of repeated Bearer capability information elements within the SETUP message sent to indicate the presence of a call request.

The order of the information elements shall indicate the priority of the bearer capabilities. Bearer capability information elements shall be in ascending order of priority, i.e., a subsequent Bearer capability information element shall indicate a bearer capability with higher priority.

If fallback allowed is indicated in the SETUP message as described above, and the user wishes to accept the call without having fallback occur, the user shall include in the CONNECT message sent to the network the Bearer capability information element of the requested bearer service or teleservice.

If fallback allowed is indicated in the SETUP message as described above, and the user wishes to accept the call with having fallback occur to the lowest priority alternative bearer capability, the user may, but need not, include in the CONNECT message sent to the network the Bearer capability information element of the alternative bearer service or teleservice.

If no Bearer capability information element is indicated by the called user, the network shall assume that the lowest priority bearer capability is selected.

If fallback allowed is indicated in the call request, and no interworking has been encountered (i.e. a progress description #1 "call is not end-to-end ISDN, further call progress information may be available in-band" or progress description #2 "destination address is non-ISDN" has not been sent), the destination network shall indicate the resultant bearer capability and connection type to the originating network at the time the bearer is established, even if no Bearer capability information element is received from the destination user.

5.5.2.2 Exceptional procedures

The procedures of ETS 300 102-1 [9] subclause 5.8 shall apply, with the addition that:

a) if a low layer compatibility information is received from the originating network for a connection request for which bearer capability selection is indicated, even though this is an error condition, the network shall include the low layer compatibility information in the Low layer compatibility information element in the SETUP message sent to the destination user;

b) if a Low layer compatibility information element is included in the received SETUP message containing a repeated Bearer capability information element, the destination user shall ignore the received Low layer compatibility information element;

c) if the called user sends a Bearer capability information element in the CONNECT message that contains an information transfer capability which is not that requested or the nominated alternative, the destination network shall clear the call using normal clearing procedures with clearing cause #111 "protocol error unspecified".

5.5.3 Procedures for the originating user to indicate high layer compatibility selection is allowed

5.5.3.1 Normal operation

In some networks, the originating user can indicate that:

- fallback to an alternative high layer compatibility is allowed; or

- fallback to an alternative high layer compatibility is not allowed.

If the calling user allows fallback to occur to an alternative high layer compatibility, then the user shall indicate this to the network by means of repeated High layer compatibility information elements within the SETUP message sent to indicate the presence of a call request. This procedure allows a maximum of two High layer compatibility information elements in the SETUP message.

The order of the information elements shall indicate the priority of the high layer compatibilities. High layer compatibility information elements shall be in ascending order of priority, i.e., a subsequent High layer compatibility information element shall indicate a high layer compatibility with higher priority.

If fallback allowed is indicated in the SETUP message as described above, and a high layer compatibility is received by the originating network at call completion (i.e. fallback occurs at the destination user, or fallback does not occur), the originating network shall include in the CONNECT message sent to the calling user the High layer compatibility information element of the resultant high layer compatibility.

If fallback allowed is indicated in the SETUP message as described above, and fallback occurs within the ISDN, the originating network shall include in a PROGRESS message or other appropriate call control message sent to the calling user a Progress indicator information element with the progress description #5 "interworking has occurred and has resulted in a telecommunications service change". If the originating network receives a high layer compatibility from the destination network, the originating network shall include the High layer compatibility information element of the resultant high layer compatibility.

When a PROGRESS message is sent containing a Progress indicator information element with progress description #5 "interworking has occurred and has resulted in a telecommunications service change", neither the user nor the network shall stop timers described in ETS 300 102-1 [9] as a result of this action.

5.5.3.2 Exceptional procedures

The procedures of ETS 300 102-1 [9] subclause 5.8 shall apply, with the addition that:

a) if the calling user receives no High layer compatibility information element in the CONNECT message, or prior to the CONNECT message in some other call control message, the user shall assume that the high layer compatibility is unknown;

   NOTE: It may be possible to subsequently identify the high layer compatibility from any in-band protocol within the B-channel.

b) if the user receives a Progress indicator information element with a progress description of #1 "call is not end-to-end ISDN, further call progress information may be available in-band" or progress description #2 "destination address is non-ISDN" subsequent to a Progress indicator information element with a progress description of #5 "interworking has occurred and has resulted in a telecommunications service change", then the last received Progress indicator information element shall be taken account of. Where the progress description is #1 "call is not end-to-end ISDN, further call progress information may be available in-band" or progress description is #2 "destination address is non-ISDN" the user shall assume a bearer service category of circuit-mode 64 kbit/s 8 kHz structured usable for 3,1 kHz audio information transfer.

5.5.4 Procedures for high layer compatibility selection at the destination side

5.5.4.1 Normal operation

If the calling user and the network operator allow high layer compatibility selection, then the destination network shall indicate this to the destination user by means of repeated High layer compatibility information elements within the SETUP message sent to indicate the presence of a call request.

The order of the information elements shall indicate the priority of the high layer compatibilities. High layer compatibility information elements shall be in ascending order of priority, i.e., a subsequent High layer compatibility information element shall indicate a high layer compatibility with higher priority.

If fallback allowed is indicated in the SETUP message as described above, and the user wishes to accept the call without having fallback occur, the user shall include in the CONNECT message sent to the network the High layer compatibility information element of the requested high layer compatibility.

If fallback allowed is indicated in the SETUP message as described above, and the user wishes to accept the call with having fallback occur to the lowest priority alternative high layer compatibility, the user may, but need not, include in the CONNECT message sent to the network the High layer compatibility information element of the alternative high layer compatibility.

If no High layer compatibility information element is indicated by the called user, the network shall assume that the lowest priority high layer compatibility is selected.

If fallback allowed is indicated in the call request, and no interworking has been encountered (i.e. a progress description #1 "call is not end-to-end ISDN, further call progress information may be available in-band" or progress description #2 "destination address is non-ISDN" has not been sent), the destination network shall indicate the resultant high layer compatibility to the originating network at the time the bearer is established, even if no High layer compatibility information element is received from the destination user.

5.5.4.2 Exceptional procedures

The procedures of ETS 300 102-1 [9] subclause 5.8 shall apply, with the addition that if the called user sends a High layer compatibility information element in the CONNECT message that is not as requested or the nominated alternative, the destination network shall pass this transparently towards the calling user.

5.5.5 Identification of the basic telecommunications service

5.5.5.1 Normal operation

Procedures for bearer capability selection are described in subclauses 5.5.1 and 5.5.2. Procedures for high layer compatibility selection are described in subclauses 5.5.3 and 5.5.4.

Each basic telecommunications service has the required bearer capability information element encodings, and if applicable the required High layer compatibility information element encodings, defined for that service (e.g., see Clauses 6 and 7).

The destination user shall identify the requested teleservice by taking the presented Bearer capability and High layer compatibility information elements in all combinations. Where a combination is not identified as a defined teleservice, that combination shall be ignored. Where a combination is identified as a defined teleservice, that combination may be considered for the purposes of compatibility checking. If there are no valid combinations, the presented Bearer capability information elements shall be considered in order to identify a bearer service.

The destination user shall identify the requested bearer services from the values of the presented Bearer capability information elements.

NOTE: These requirements do not preclude the user performing compatibility checking on all compatibility information according to Annex B of ETS 300 102-1 [9].

The originating network shall optionally perform subscription checks for the defined prime service only by use of the Bearer capability information element with the highest priority and, if available, the High layer compatibility information element with the highest priority. If the check is not successful, the call shall be released with cause #57 "bearer capability not authorised". The originating network shall check the applicability of supplementary services for the prime service only.

The destination network shall optionally perform subscription checks for all valid combinations defined for the particular service. If this check is successful for at least one of the defined combinations, the call shall be offered to the called user containing all received bearer capability and high layer compatibility information. If the check is not successful, the call shall be released with cause #57 "bearer capability not authorised". The destination network shall check the applicability of supplementary services for the prime service only.

5.5.5.2 Exceptional procedures

Not applicable.

5.5.6 Procedures for establishment of a second or subsequent connection within the same call

5.5.6.1 Normal operation

Where the basic telecommunications service requires a second or subsequent connection, in addition to a first connection the following procedures apply:

a) the originating user shall include in the Bearer capability information element, included in the SETUP message requesting the first connection, a specification of an appropriate in-band signalling protocol;

NOTE 1: ETS 300 144 [12] and ETS 300 143 [11] form an appropriate in-band signalling protocol which can be requested within the Bearer capability information element by setting the information transfer field to "unrestricted digital information" or "unrestricted digital information with tones/announcements" and by setting the layer one protocol field to "Recommendations H.221 and H.242".

b) the originating user shall establish the second or subsequent connection after the CONNECT message has been received by the originating user for the first connection or previous subsequent connection respectively, and the compatibility checking and in-band signalling procedures have identified a common mode which requires a second (or subsequent) connection;

c) the originating user shall include in the Bearer capability information element included in the SETUP message requesting the subsequent connection a specification of the same in-band signalling protocol as specified for the first connection.

NOTE 2: These procedures provide no mechanism for ensuring that a request for a new connection presented subsequent to a connection of an already answered call is a request that relates to the same call. With these procedures, it is a subscriber's responsibility, subsequent to answer, to ensure that both connections relate to the same call. Advice on the limitations of the service will then be required.

NOTE 3: Because these procedures provide no information within the network as to the relationship between the connections comprising a call, supplementary services (if invoked) will act independently on each connection. It is the subscriber's responsibility to ensure that these independent actions are appropriately correlated. For example, call forwarding should not be invoked in such a way that connection one is forwarded to a location different from that of connection two, or so that one connection is forwarded and the other connection is not. Advice on the limitations of the service will then be required.

5.5.6.2 Exceptional procedures

The procedures of ETS 300 102-1 [9] shall apply with the exception that if the incoming SETUP message to the destination user provides a means to distinguish between the first and the second or subsequent connection, then when a second or subsequent connection is presented to a user, and this user has not connected to a first connection, then this user shall reject the second connection in accordance with ETS 300 102-1 [9], subclause 5.3 indicating cause #21 "call rejected".

5.5.7 Provision of in-band tones and announcements

The procedures for the provision of tones and announcements as specified in ETS 300 102-1 [9], subclauses 5.1.3, 5.1.7 and Annex N for when the information transfer capability field specifies "speech" and "3,1 kHz audio", shall be applicable when the information transfer capability field specifies "unrestricted digital information with tones/announcements".

In addition, the procedures specified in ETS 300 102-1 [9], subclauses 5.1.6, 5.2.6, 5.3.4.1 and 5.4 that relate to the provision of tones and announcements are valid when the information transfer capability field specifies "unrestricted digital information with tones/announcements".

Tones and announcements shall be encoded as specified in CCITT Recommendation G.711 [1] and shall be presented to the user as specified in ETS 300 082 [6], Clause 6.

5.6 Procedures for interworking with private ISDNs

5.6.1 Procedures for the originating user to indicate bearer capability selection is allowed

The procedures of subclause 5.5.1 shall apply.

5.6.2 Procedures for bearer capability selection at the destination side of a public ISDN

5.6.2.1 Normal operation

If a private ISDN is attached to the access at the destination interface, the following procedures are applicable at call request. The private ISDN acts as the called user.

If the calling user allows fallback to occur to an alternative bearer capability, then the network shall indicate this to the called user by means of repeated Bearer capability information elements within the SETUP message sent to indicate the presence of a call request.

The order of the information elements shall indicate the priority of the bearer capabilities. Bearer capability information elements shall be in ascending order of priority, i.e., a subsequent Bearer capability information element shall indicate a bearer capability with higher priority.

If fallback allowed is indicated in the SETUP message as described above, and fallback occurs at the destination user (beyond the private ISDN) or fallback does not occur, the user shall include in the CONNECT message sent to the network the Bearer capability information element of the resultant bearer service or teleservice.

If fallback allowed is indicated in the SETUP message as described above, and fallback occurs within the private ISDN, the user shall include in a PROGRESS message or other appropriate call control message sent to the network a Progress indicator information element with a progress description #5 "interworking has occurred and has resulted in a telecommunications service change". The user shall include the Bearer capability information element of the resultant bearer service or teleservice.

When a PROGRESS message is sent containing a Progress indicator information element with progress description #5 "interworking has occurred and has resulted in a telecommunications service change", neither the user nor the network shall stop timers described in ETS 300 102-1 [9] as a result of this action.

5.6.2.2 Exceptional procedures

The procedures of ETS 300 102-1 [9] subclause 5.8 shall apply, with the addition that:

a) if the network receives no Bearer capability information element in the CONNECT message, or prior to the CONNECT message in some other call control message, the network shall assume that the bearer service or teleservice corresponds to the first Bearer capability information element that the network included in the SETUP message;

b) if the network receives a Progress indicator information element with a progress description #1 "call is not end-to-end ISDN, further call progress information may be available in-band" or progress description #2 "destination address is non-ISDN" subsequent to a Progress indicator information element with a progress description #5 "interworking has occurred and has resulted in a telecommunications service change", then the last received Progress indicator information element shall be taken account of. Where the progress description is #1 "call is not end-to-end ISDN, further call progress information may be available in-band" or the progress description is #2 "destination address is non-ISDN" the network shall assume a bearer service category of circuit-mode 64 kbit/s 8 kHz structured usable for 3,1 kHz audio information transfer;

c) if a low layer compatibility information is received from the originating network for a connection request for which bearer capability selection is indicated, even though this is an error condition, the network shall include the low layer compatibility information in the Low layer compatibility information element in the SETUP message sent to the destination user;

d) if the network includes a Low layer compatibility information element in a SETUP message containing a repeated Bearer compatibility information element, even though this is an error condition, the user shall continue normal call handling, i.e. transport the Low layer compatibility information element transparently across the private network;

e) if the called user sends a Bearer capability information element in any call control message that contains an information transfer capability which is not that requested or the nominated alternative, the destination network shall clear the call using normal clearing procedures with clearing cause #111 "protocol error, unspecified";

f) if the network receives a call control message other than the CONNECT message containing a Bearer capability information element but without a Progress indicator information element, with progress description #5 "interworking has occurred and has resulted in a telecommunications service change", the network shall act as if the Progress indicator information element, with progress description #5 "interworking has occurred and has resulted in a telecommunications service change", was present and handle the call in the normal manner;

g) if the network receives no Bearer capability information element in a call control message other than CONNECT but the Progress information element, with progress description #5 "interworking has occurred and has resulted in a telecommunications service change" present, the network shall assume that the bearer service or teleservice corresponds to the first Bearer capability information element that the network included in the SETUP message.

5.6.3 Procedures for the originating user to indicate high layer compatibility selection is allowed

The procedures of subclause 5.5.3 shall apply.

5.6.4 Procedures for high layer compatibility selection at the destination side of a public ISDN

5.6.4.1 Normal operation

If a private ISDN is attached to the access at the destination interface, the following procedures are applicable at call request. The private ISDN acts as the called user.

If the calling user allows fallback to occur to an alternative high layer compatibility, then the network shall indicate this to the called user by means of repeated High layer compatibility information elements within the SETUP message sent to indicate the presence of a call request.

The order of the information elements shall indicate the priority of the high layer compatibilities. High layer compatibility information elements shall be in ascending order of priority, i.e., a subsequent High layer compatibility information element shall indicate a high layer compatibility with higher priority.

If fallback allowed is indicated in the SETUP message as described above, and fallback occurs at the destination user (beyond the private ISDN) or fallback does not occur, the user shall include in the CONNECT message sent to the network the High layer compatibility information element of the resultant high layer compatibility.

If fallback allowed is indicated in the SETUP message as described above, and fallback occurs within the private ISDN, the user shall include in a PROGRESS message or other appropriate call control message sent to the network a Progress indicator information element with a progress description #5 "interworking has occurred and has resulted in a telecommunications service change". The user shall include the High layer compatibility information element of the resultant high layer compatibility.

When a PROGRESS message is sent containing a Progress indicator information element with progress description #5 "interworking has occurred and has resulted in a telecommunications service change", neither the user nor the network shall stop timers described in ETS 300 102-1 [9] as a result of this action.

5.6.4.2 Exceptional procedures

The procedures of ETS 300 102-1 [9] subclause 5.8 shall apply, with the addition that:

a) if the network receives no High layer compatibility information element in the CONNECT message, or prior to the CONNECT message in some other call control message, the network shall assume that the high layer compatibility is unknown;

NOTE: It may be possible to subsequently identify the high layer compatibility from any in-band protocol within the B-channel.

b) if the network receives a Progress indicator information element with a progress description of #1 "call is not end-to-end ISDN, further call progress information may be available in-band" or progress description #2 "destination address is non-ISDN" subsequent to a Progress indicator information element with a progress description of #5 "interworking has occurred and has resulted in a telecommunications service change", then the last received Progress indicator information element shall be taken account of. Where the progress description is #1 "call is not end-to-end ISDN, further call progress information may be available in-band" or progress description is #2 "destination address is non-ISDN" the network shall assume a bearer service category of circuit-mode 64 kbit/s 8 kHz structured usable for 3,1 kHz audio information transfer.

5.6.5 Identification of the basic telecommunications service

5.6.5.1 Normal operation

Procedures for bearer capability selection are described in subclauses 5.6.1 and 5.6.2. Procedures for high layer compatibility selection are described in subclauses 5.6.3 and 5.6.4.

Each basic telecommunications service has the required bearer capability information element encodings, and if applicable the required High layer compatibility information element encodings, defined for that service (e.g., see Clauses 6 and 7).

The user (the private ISDN) shall identify the requested teleservices by taking the presented Bearer capability and High layer compatibility information elements in all combinations. Where a combination is not identified as a defined teleservice, that combination shall be ignored. Where a combination is identified as a defined teleservice, that combination may be considered for the purposes of service provision.

The user (the private ISDN) shall identify the requested bearer services from the values of the presented Bearer capability information elements.

5.6.5.2 Exceptional procedures

Not applicable.

5.6.6 Procedures for the establishment of a second connection within the same call

The procedures of subclause 5.5.6 shall apply.

5.6.7 Provision of in-band tones and announcements

The procedures of subclause 5.5.7 shall apply.

5.7 Interactions with other networks

No additional generic procedures apply for interworking with non-ISDNs.

NOTE: Procedures for interworking with non-ISDNs can be found in ETS 300 102-1 [9].

5.8 Parameter values (timers)

Not applicable.

5.9 Dynamic description (SDLs)

The specification of ETS 300 102-2 [10] shall apply.

NOTE: ETS 300 102-2 [10] provides a state machine that represents the reception and transmission of messages. As these procedures only reflect the addition of new information elements, no additional dynamic description is required.

6 Telephony 7 kHz teleservice

6.1 Description

At call establishment, this teleservice allows, with permission from the calling user, fallback to occur to the telephony 3,1 kHz teleservice.

It is mandatory for users and networks supporting the telephony 7 kHz teleservice to support the telephony 3,1 kHz teleservice.

The 7 kHz teleservice uses the connection type "unrestricted digital information with tones/announcements".

This Clause identifies the relevant procedures for this teleservice.

NOTE 1: Where the user is attached to a network that does not support this teleservice, the user may obtain an equivalent service, possibly without tones and announcements, by requesting the circuit-mode 64 kbit/s unrestricted 8 kHz structured bearer service category. The network may provide the capabilities of transferring the remaining appropriate Bearer capability and High layer compatibility information element encodings. In order for this alternative service mechanism to operate, the destination user will also have to support the reception of calls using the circuit-mode 64 kbit/s unrestricted 8 kHz structured bearer service category.

NOTE 2: The procedures of this Clause are designed to allow for interworking at the destination side, where fallback is allowed, with existing terminals supporting the telephony 3,1 kHz teleservice.

NOTE 3: The stage one description for this teleservice allows the user to initiate renegotiation of this service once the connection is established. This is performed using the in-band protocol. If this action takes place after a telephony 7 kHz teleservice connection is established, then the network entities involved in the call will continue to treat the call as a call of the telephony 7 kHz teleservice. Where renegotiation is made to a telephony 3,1 kHz style of operation, the terminal will have to provide any required echo-cancellation devices and A-law/μ-law convertors. Where renegotiation is made to a videotelephony style of operation, the network may preclude establishment of a second connection. Where the original call was established as a call of the telephony 3,1 kHz teleservice, and renegotiation is made using the in-band protocol to a telephony 7 kHz style of operation, communication may be impaired or rendered impossible by included network devices such as A-law/μ-law converters and echo-cancellation devices.

6.2 Operational requirements

6.2.1 Provision and withdrawal

The telephony 7 kHz teleservice shall be either provided after prior arrangement with the service provider or be available on a general basis.

Withdrawal shall be at the request of the customer or for administrative reasons.

Various optional subscription arrangements are defined in subclause 3.1 of ETS 300 263 [15].

6.2.2 Requirements on the originating network side

The requirements of the originating network side are covered in subclause 6.5.

6.2.3 Requirements on the destination network side

The requirements of the destination network side are covered in subclause 6.5.

6.3 Coding requirements

The Bearer capability information element uses the following codings:

a) for the information transfer capability field, "speech" and "unrestricted digital information with tones/announcements";

b) where the information transfer capability field is set to "speech", for the user information layer one protocol, "G.711 A-law" as described in ETS 300 102-1 [9]; and,

c) where the information transfer capability field is set to "unrestricted digital information with tones/announcements", for the user information layer one protocol, "Recommendations H.221 and H.242" as described in subclause 5.3 of this ETS.

NOTE: The ETSs replacing these ITU-T Recommendations are ETS 300 144 [12] (ITU-T Recommendation H.221) and ETS 300 143 [11] (ITU-T Recommendation H.242).

The High layer compatibility information element shall use the coding of "telephony" in the high layer characteristics field.

6.4 State definitions

The states for this teleservice are defined in subclause 5.4.

6.5 Signalling procedures at the coincident S and T reference point

6.5.1 Call establishment at the originating interface

Where fallback is not allowed the procedures of ETS 300 102-1 [9] subclause 5.1 and ETS 300 092-1 [7] subclause 9.2 shall be used with the following additions:

1) in the SETUP message, the user shall set the high layer characteristics identification field of the High layer compatibility information element to "telephony" and shall include a single Bearer capability information element with the information transfer capability field set to "unrestricted digital information with tones/announcements";

2) where ETS 300 102-1 [9], as modified by subclause 5.5.7 of this ETS, specifies that tones or announcements should be provided, the in-band protocol entity associated with the user shall initiate the in-band procedures as specified in ETS 300 082 [6], Clause 6 in order to receive the tones and announcements;

3) when a CONNECT message is received the in-band protocol entity associated with the user shall initiate the in-band signalling procedures as specified in I-ETS 300 281 [17], Clause 6.

Where fallback is allowed the procedures of ETS 300 102-1 [9] subclause 5.1 and ETS 300 092-1 [7] subclause 9.2 shall be used with the following additions:

a) the generic procedures for bearer capability selection at the originating side, as specified in subclause 5.5.1, shall be used. In the SETUP message, to indicate that a telephony teleservice is required, the user shall set the high layer characteristics identification field of the High layer compatibility information element to "telephony" and, shall set the information transfer capability field of the first Bearer capability information element included in the SETUP message to "speech" and the information transfer capability field of the second Bearer capability information element included in the SETUP message to "unrestricted digital information with tones/announcements". The Low layer compatibility information element shall not be included in the SETUP message; any necessary low layer information shall be included in the Bearer capability information element;

   NOTE: When this setting is used, the network will reserve any required echo cancellation devices, A-to-μ law convertors, etc. in case a speech information transfer capability is used for the resultant connection.

b) if the optional subscription check for the prime service defined in table 1 is successful, the originating network shall establish the call; if the optional subscription check is not successful, the originating network shall release the call with cause #57 "bearer capability not authorised";

Table 1: Possible Bearer capability and High layer compatibility information element codepoints indicated in a telephony 7 kHz call request and resultant basic telecommunications services

	1st Bearer capability = speech	2nd Bearer capability = unrestricted digital information with tones/announcements
1st High layer compatibility = telephony	Unnotified fallback telephony 3,1 kHz	Prime telephony 7 kHz

Key:

Prime: This is the basic telecommunications service that gives a quality of communication that is the best choice if the destination user supports this basic telecommunications service.

Unnotified fallback: This is a fallback basic telecommunications service where the resultant basic telecommunications service may not be indicated by the destination user or the network. If no indication is given, then this basic telecommunications service should be assumed by the receiving network or user respectively. This is to enable communication with terminals supporting the existing telephony 3,1 kHz teleservice.

c) the network shall, except where fallback occurs in the network, indicate, according to the procedures of subclause 5.5.1, the resultant basic telecommunications service of the call by including a Bearer capability information element in the CONNECT message with the information transfer capability field set to "unrestricted digital information with tones/announcements" or "speech" in which case an ordinary telephony 3,1 kHz teleservice call exists. Where the Bearer capability information element is not present in the CONNECT message, fallback to the telephony 3,1 kHz teleservice shall be assumed to have occurred;

d) the network shall, where fallback occurs in the network, indicate, according to the procedures of subclause 5.5.1, the resultant basic telecommunications service of the call by including a Bearer capability information element, in the same message as the relevant Progress indicator information element, with the information transfer capability field set to "speech" in which case an ordinary telephony 3,1 kHz teleservice call exists. Where the Bearer capability information element is not present in the same message as the related Progress indicator information element, fallback to the telephony 3,1 kHz teleservice shall be assumed to have occurred;

e) if fallback does not occur, when a CONNECT message is received the in-band protocol entity associated with the user shall initiate the in-band signalling procedures as specified in I-ETS 300 281 [17], Clause 6;

NOTE: On calls originally offered as the videotelephony teleservice (see subclause 7.5, table 2) and if the originating user does not support the telephony 7 kHz teleservice, and for which fallback occurred to the telephony 7 kHz teleservice, the in-band protocol entity associated with the originating user may be unable to establish a 7 kHz mode.

f) if fallback does occur to the telephony 3,1 kHz teleservice, when a CONNECT message is received the in-band protocol entity associated with the user shall initiate the in-band procedures as specified in ETS 300 082 [6], Clause 6;

g) where ETS 300 102-1 [9], as modified by subclause 5.5.7 of this ETS, specifies that tones or announcements should be provided, the in-band protocol entity associated with the user shall initiate the in-band procedures as specified in ETS 300 082 [6], Clause 6 in order to receive the tones and announcements.

6.5.2 Call establishment at the destination interface

Where fallback is not allowed the procedures of ETS 300 102-1 [9] subclause 5.2 and ETS 300 097-1 [8] subclause 9.2 shall be used with the following additions:

1) in the SETUP message, the network shall set the high layer characteristics identification field of the High layer compatibility information element to the value included by the originating user (i.e. "telephony"); and shall include a single Bearer capability information element with the information transfer capability field set to "unrestricted digital information with tones/announcements";

2) when a CONNECT ACKNOWLEDGE message is received the in-band protocol entity associated with the user shall initiate the in-band signalling procedures as specified in I-ETS 300 281 [17], Clause 6.

Where fallback is allowed the procedures of ETS 300 102-1 [9] subclause 5.2 and ETS 300 097-1 [8] subclause 9.2 shall be used with the following additions:

a) the generic procedures for bearer capability selection at the destination side, as specified in subclause 5.5.2, shall be used. In the SETUP message, the network shall set the high layer characteristics identification field of the High layer compatibility information element to the value included by the originating user (i.e. "telephony"); shall include a first Bearer capability information element with the information transfer capability field set to "speech"; and shall include a second Bearer capability information element with the information transfer capability field set to "unrestricted digital information with tones/announcements". The Low layer compatibility information element shall not be included in the SETUP message; any necessary low layer information shall be included in the Bearer capability information element;

b) the destination user shall assume the basic telecommunication services defined in table 1 and shall apply the procedures of Annex B of ETS 300 102-1 [9] to each of these basic telecommunication services according to the destination user requirements;

c) the destination user may indicate the resultant basic telecommunications service of the call by including a Bearer capability information element in the CONNECT message with the information transfer capability field set to "unrestricted digital information with tones/announcements" or "speech" in which case an ordinary telephony 3,1 kHz teleservice call exists. Where the Bearer capability information element is not present in the CONNECT message, fallback to the telephony 3,1 kHz teleservice shall be assumed to have occurred;

d) if fallback does not occur, when a CONNECT ACKNOWLEDGE message is received the in-band protocol entity associated with the user shall initiate the in-band signalling procedures as specified in I-ETS 300 281 [17], Clause 6;

NOTE: A user accepting calls as the telephony 7 kHz teleservice which were originally offered with the videotelephony teleservice as the prime service (see subclause 7.5, table 2; i.e. the originating user does not support the telephony 7 kHz teleservice) may be unable to establish a 7 kHz mode in the in-band protocol.

e) if fallback does occur to the telephony 3,1 kHz teleservice, when a CONNECT ACKNOWLEDGE message is received the in-band protocol entity associated with the user shall initiate the in-band procedures as specified in ETS 300 082 [6], Clause 6.

6.5.3 Call clearing

The procedures of ETS 300 102-1 [9] subclause 5.3 shall be used.

For presenting tones and announcements on clearing, the procedures of ETS 300 102-1 [9] subclause 5.3.4.1 shall be used. When a call of the telephony 7 kHz teleservice is in progress in a 7 kHz mode, the tone or announcement shall be presented in a 3,1 kHz mode, encoded according to CCITT Recommendation G.711 [1] A-law. The in-band protocol entity associated with the user shall switch to A-law as specified in I-ETS 300 281 [17], Clause 6.

6.5.4 In-band tones and announcements

The procedures of ETS 300 102-1 [9] subclause 5.4, as modified by subclause 5.5.7 of this ETS, shall be used only during connection establishment.

NOTE: The in-band protocol entity associated with the user cannot, on the basis of user information in the B-channel, switch from 7 kHz mode to a mode where it can decode tones and announcements encoded in A-law according to Recommendation G.711 [1]. However, if the end-to-end connection is interrupted the terminal will consider this as a failure situation and will switch to mode 0. This is not regarded as an acceptable way of switching to mode 0 to provide tones and announcements.

6.5.5 Restart procedure

The procedures of ETS 300 102-1 [9] subclause 5.5 are outside the scope of this ETS.

NOTE: The restart procedures defined in subclause 5.5 of ETS 300 102-1 [9] are not service specific and, where implemented, are used independently of individual calls and service requests.

6.5.6 Call rearrangements

The procedures of ETS 300 102-1 [9] subclause 5.6 shall be used. Prior to these procedures the in-band protocol entity associated with the user shall switch to mode 0U (unframed), A-law as specified in I-ETS 300 281 [17], Clause 6.

On receipt of the RESUME ACKNOWLEDGE message, the in-band protocol entity associated with the user shall initiate the in-band signalling procedures as specified in I-ETS 300 281 [17], Clause 6.

NOTE: Where the terminal portability supplementary service is subscribed to and used, the full procedures of subclause 5.6 of ETS 300 102-1 [9] shall be provided. Where the terminal portability supplementary service is not subscribed to, only the rejection procedures need to be provided.

6.5.7 Call collisions

The procedures of ETS 300 102-1 [9] subclause 5.7 shall apply.

6.5.8 Handling of error conditions

The procedures of ETS 300 102-1 [9] subclause 5.8 shall apply.

NOTE: Where the user requests the telephony 7 kHz teleservice with fallback allowed from a network that does not support the telephony 7 kHz teleservice then the network will discard the second Bearer capability information element and will proceed with the call as a telephony 3,1 kHz call. No explicit indication of fallback will be given in this case.

6.5.9 User notification procedure

The procedures of ETS 300 102-1 [9] subclause 5.9 and ETS 300 196-1 [14] Clause 9 shall apply.

6.5.10 Status request procedures

The support of the status request procedure according to subclause 10.3 of ETS 300 196-1 [14] is mandatory for any implementation conforming to this ETS and to be connected to the coincident S and T reference point.

6.6 Procedures for interworking with private ISDNs

There is no in-band protocol entity associated with the user where the user is a private ISDN, therefore the procedures of subclause 6.5 concerning in-band protocol entities do not apply.

The procedures of subclause 6.5 shall apply for the user and the network with the exception that the following procedures shall apply at the destination interface instead of subclause 6.5.2.

If a private ISDN is attached to the access at the destination interface, the following procedures are applicable at call request. The private ISDN acts as the called user.

Where fallback is not allowed the procedures of ETS 300 102-1 [9] subclause 5.2 and ETS 300 097-1 [8] subclause 9.2 shall be used with the following additions:

- in the SETUP message, the network shall set the high layer characteristics identification field of the High layer compatibility information element to the value included by the originating user (i.e. "telephony"); and shall include a single Bearer capability information element with the information transfer capability field set to "unrestricted digital information with tones/announcements".

Where fallback is allowed the procedures of ETS 300 102-1 [9] subclause 5.2 and ETS 300 097-1 [8] subclause 9.2 shall be used with the following additions:

a) the generic procedures for fallback at the destination side to a private ISDN, as specified in subclause 5.6, shall be used. In the SETUP message, to indicate that a telephony teleservice is required, the network shall set the high layer characteristics identification field of the High layer compatibility information element to "telephony", and shall set the information transfer capability field of the first Bearer capability information element included in the SETUP message to "speech" and the information transfer capability field of the second Bearer capability information element included in the SETUP message to "unrestricted digital information with tones/announcements". The Low layer compatibility information element shall not be included in the SETUP message; any necessary low layer information shall be included in the Bearer capability information element;

NOTE: When this setting is used, the private ISDN will reserve any required echo cancellation devices, A-to-μ law convertors, etc. in case a speech information transfer capability is used for the resultant connection.

b) the destination user shall assume the basic telecommunication services defined in table 1;

c) the destination user shall, except where fallback occurs in the private ISDN, indicate, according to the procedures of subclause 5.6, the resultant basic telecommunications service of the call by including a Bearer capability information element in the CONNECT message with the information transfer capability field set to "unrestricted digital information with tones/announcements" or "speech" in which case an ordinary telephony 3,1 kHz teleservice call exists. Where the Bearer capability information element is not present in the CONNECT message, fallback to the telephony 3,1 kHz teleservice shall be assumed to have occurred;

d) the destination user shall, where fallback occurs in the private ISDN, indicate, according to the procedures of subclause 5.6, the resultant basic telecommunications service of the call by including a Bearer capability information element, in the same message as the relevant Progress indicator information element, with the information transfer capability field set to "speech" in which case an ordinary telephony 3,1 kHz teleservice call exists. Where the Bearer capability information element is not present in the same message as the related Progress indicator information element, fallback to the telephony 3,1 kHz teleservice shall be assumed to have occurred.

6.7 Interactions with other networks

Where the calling user has indicated that fallback is allowed, interworking with the PSTN shall occur according to the procedures of subclauses 5.1.6 and 5.2.7 of ETS 300 102-1 [9], and a Progress indicator information element with a progress description #1 "call is not end-to-end ISDN, further call progress information may be available in-band" shall be sent to the calling user. If interworking does occur to the PSTN, when a CONNECT message is received the in-band protocol entity associated with the user shall initiate the in-band procedures as specified in ETS 300 082 [6], Clause 6.

When fallback is not allowed, no interworking with the PSTN shall occur, and the call shall be cleared with a cause value of #65 "bearer capability not implemented".

6.8 Parameter values (timers)

The parameter values specified in ETS 300 102-1 [9] Clause 9 shall apply.

6.9 Dynamic description (SDLs)

The dynamic description of ETS 300 102-2 [10] shall apply.

7 Videotelephony teleservice

7.1 Description

At call establishment, this teleservice allows, with permission from the calling user, fallback to occur to the telephony 7 kHz or telephony 3,1 kHz teleservices.

It is mandatory for users and networks supporting the videotelephony teleservice to support the telephony 3,1 kHz teleservice. It is optional for users and networks supporting the videotelephony teleservice to support the telephony 7 kHz teleservice.

Compatibility checking, as described in this ETS, shall be consistent with the basic telecommunication services supported.

The videotelephony teleservice uses the connection type "unrestricted digital information with tones/announcements" for the first connection and the connection type "unrestricted digital information" for the second connection.

This Clause identifies the relevant procedures for this teleservice.

NOTE 1: Where the user is attached to a network that does not support this teleservice, the user may obtain an equivalent service, without fallback and possibly without tones and announcements, by requesting the circuit-mode 64 kbit/s unrestricted 8 kHz structured bearer service category. The network may provide the capabilities of transferring the remaining appropriate Bearer capability and High layer compatibility information element encodings. In order for this alternative service mechanism to operate, the destination user will also have to support the reception of calls using the circuit-mode 64 kbit/s unrestricted 8 kHz structured bearer service category.

NOTE 2: The procedures of this Clause are designed to allow for interworking at the destination side, where fallback is allowed, with existing terminals supporting the telephony 3,1 kHz teleservice.

NOTE 3: The stage one description for this teleservice allows the user to initiate renegotiation of this service once the connection is established. This is performed using the in-band protocol. If this action takes place after a videotelephony teleservice connection is established, then the network entities involved in the call will continue to treat the call as a call of the videotelephony teleservice. Where renegotiation is made to a telephony 3,1 kHz style of operation, the terminal will have to provide any required echo-cancellation devices and A-law/μ-law convertors. Where the original call was established as a call of the telephony 3,1 kHz teleservice, and renegotiation is made using the in-band protocol to a videotelephony style of operation, communication may be impaired or rendered impossible by included network devices such as A-law/μ-law converters and echo-cancellation devices.

7.2 Operational requirements

7.2.1 Provision and withdrawal

The videotelephony teleservice shall be either provided after prior arrangement with the service provider or be available on a general basis.

Withdrawal shall be at the request of the customer or for administrative reasons.

Various optional subscription arrangements are defined in subclause 3.1 of ETS 300 264 [16].

7.2.2 Requirements on the originating network side

The requirements of the originating network side are covered in subclause 7.5.

7.2.3 Requirements on the destination network side

The requirements of the destination network side are covered in subclause 7.5.

7.3 Coding requirements

The Bearer capability information element uses the following codings:

a) for the information transfer capability field, "speech", "unrestricted digital information with tones/announcements" and "unrestricted digital information";

b) where the information transfer capability field is set to "speech", for the user information layer one protocol, "G.711 A-law" as described in ETS 300 102-1 [9];

c) where the information transfer capability field is set to "unrestricted digital information with tones/announcements", for the user information layer one protocol, "Recommendations H.221 and H.242" as described in subclause 5.3 of this ETS; and,

d) where the establishment of an additional channel is required, and the user information transfer capability field is set to "unrestricted digital information", for the user information layer one protocol, "Recommendations H.221 and H.242" as described in subclause 5.3 of this ETS.

NOTE: The ETSs replacing these ITU-T Recommendations are ETS 300 144 [12] (ITU-T Recommendation H.221) and ETS 300 143 [11] (ITU-T Recommendation H.242).

The High layer compatibility information element shall use the codings of "telephony" and "videotelephony" in the high layer characteristics field.

The High layer compatibility information element uses the codings of "capability set of initial channel of Recommendation H.221" and "capability set of subsequent channel of Recommendation H.221" in the extended audiovisual characteristics identification field.

7.4 State definitions

The states for this teleservice are defined in subclause 5.4.

7.5 Signalling procedures at the coincident S and T reference point

7.5.1 Call establishment at the originating interface

Where fallback is not allowed the procedures of ETS 300 102-1 [9] subclause 5.1 and ETS 300 092-1 [7] subclause 9.2 shall be used with the following additions:

1) in the SETUP message, the user shall set the high layer characteristics identification field of the High layer compatibility information element to "videotelephony", the extended audiovisual characteristics identification field of the High layer compatibility information element to "capability set of initial channel of Recommendation H.221", and shall include a single Bearer capability information element with the information transfer capability field set to "unrestricted digital information with tones/announcements";

2) where ETS 300 102-1 [9], as modified by subclause 5.5.7 of this ETS, specifies that tones or announcements should be provided, the in-band protocol entity associated with the user shall initiate the in-band signalling procedures as specified in ETS 300 082 [6], Clause 6 in order to provide the tones and announcements;

3) when a CONNECT message is received the in-band protocol entity associated with the user shall initiate the in-band signalling procedures as specified in ETS 300 143 [11], and refined by ETS 300 145 [13], Clause 6.

Where fallback is allowed the procedures of ETS 300 102-1 [9] subclause 5.1 and ETS 300 092-1 [7] subclause 9.2 shall be used with the following additions:

a) the generic procedures for bearer capability selection at the originating side, as specified in subclause 5.5.1, and the generic procedures for high layer compatibility selection at the originating side, as specified in subclause 5.5.3, shall be used. In the SETUP message, to indicate that a videotelephony teleservice is required, with fallback allowed to telephony 7 kHz or telephony 3,1 kHz, the user shall set the high layer characteristics identification field of the first High layer compatibility information element included in the SETUP message to "telephony", the high layer characteristics identification field of the second High layer compatibility information element included

in the SETUP message to "videotelephony", the extended audiovisual characteristics identification field of the second High layer compatibility information element to "capability set of initial channel of Recommendation H.221", and, shall set the information transfer capability field of the first Bearer capability information element included in the SETUP message to "speech" and the information transfer capability field of the second Bearer capability information element included in the SETUP message to "unrestricted digital information with tones/announcements". The Low layer compatibility information element shall not be included in the SETUP message; any necessary low layer information shall be included in the Bearer capability information element;

NOTE 1: When this setting is used, the network will reserve any required echo cancellation devices, A-to-μ law convertors, etc. in case a speech information transfer capability is used for the resultant connection.

b) if the optional subscription check for the prime service defined in table 2 is successful, the originating network shall establish the call; if the optional subscription check is not successful, the originating network shall release the call with cause #57 "bearer capability not authorised";

Table 2: Possible combinations of Bearer capability and High layer compatibility information element codepoints in a videotelephony call request and resultant basic telecommunication services

	1st Bearer capability = speech	2nd Bearer capability = unrestricted digital information with tones/announcements
1st High layer compatibility = telephony	Unnotified fallback telephony 3,1 kHz	Fallback telephony 7 kHz
2nd High layer compatibility = videotelephony	Not interpreted	Prime videotelephony

Key:

Prime: This is the basic telecommunications service that gives a quality of communication that is the best choice if the destination user supports this basic telecommunications service.

Fallback: This is a basic telecommunications service that is legal but is not the best choice to fulfil the requirements of the originating user.

Unnotified fallback: This is a fallback basic telecommunications service where the resultant basic telecommunications service may not be indicated by the destination user or the network. If no indication is given, then this basic telecommunications service should be assumed by the receiving network or user respectively. This is to enable communication with terminals supporting the existing telephony 3,1 kHz teleservice.

Not interpreted: This is a combination which shall not be used for any identification of a basic service, neither by the network nor by the user.

c) the network shall, except where fallback occurs in the network, indicate, according to the procedures of subclauses 5.5.1 and 5.5.3, the resultant basic telecommunications service of the call by including in the CONNECT message a Bearer capability information element with the information transfer capability field set to "unrestricted digital information with tones/announcements" or "speech" in which case an ordinary telephony 3,1 kHz teleservice call exists, and, if received, a High layer compatibility information element with the received value, i.e. a high layer characteristics field set to "videotelephony" or "telephony" and, for the high layer characteristics field set to

"videotelephony", an extended audiovisual characteristics identification field set to "capability set of initial channel of Recommendation H.221". Where neither the Bearer capability information element nor the High layer compatibility information element is present in the CONNECT message, fallback to the telephony 3,1 kHz teleservice shall be assumed to have occurred. Where the High layer compatibility information element is not present in the CONNECT message, the resultant teleservice is unknown;

NOTE 2: It may be possible to subsequently identify the high layer compatibility, and thus the teleservice, from any in-band protocol within the B-channel.

d) the network shall, where fallback occurs in the network, indicate, according to the procedures of subclause 5.5.1, the resultant basic telecommunications service of the call by including, in the same message as the relevant Progress indicator information element, a Bearer capability information element with the information transfer capability field set to "speech" in which case an ordinary telephony 3,1 kHz teleservice call exists, and, if such information has been received, a High layer compatibility information element with a high layer characteristics field set to "videotelephony" or "telephony". If the High layer characteristics field is set to "videotelephony", and if an extended audiovisual characteristics identification field is included, the network shall set it to the received value, i.e. "capability set of initial channel of Recommendation H.221". Where neither the Bearer capability information element nor the High layer compatibility information element is present in the same message as the related Progress indicator information element, fallback to the telephony 3,1 kHz teleservice shall be assumed to have occurred. Where the High layer compatibility information element is not present in the same message as the related Progress indicator information element, the resultant teleservice is unknown;

NOTE 3: It may be possible to subsequently identify the high layer compatibility, and thus the teleservice, from any in-band protocol within the B-channel.

e) if fallback does not occur, when a CONNECT message is received the in-band protocol entity associated with the user shall initiate the in-band signalling procedures as specified in ETS 300 143 [11] and refined by ETS 300 145 [13], Clause 6;

f) if fallback does occur to the telephony 3,1 kHz teleservice, when a CONNECT message is received the in-band protocol entity associated with the user shall initiate the in-band signalling procedures as specified in ETS 300 082 [6], Clause 6;

g) if fallback does occur to the telephony 7 kHz teleservice, further procedures shall be as defined in Clause 6 of this ETS;

h) where ETS 300 102-1 [9], as modified by subclause 5.6.7 of this ETS, specifies that tones or announcements should be provided, the in-band protocol entity associated with the user shall initiate the in-band procedures as specified in ETS 300 082 [6], Clause 6 in order to receive the tones and announcements.

If fallback does not occur, and the resultant mode of the videotelephony call, as determined by the in-band procedures, requires a second connection, this shall be established according to the procedures of subclause 5.5.6. The Bearer capability information element included in the SETUP message shall have the information transfer capability field set to "unrestricted digital information". The High layer compatibility information element included in the SETUP message shall have the high layer characteristics field set to "videotelephony", and the extended audiovisual characteristics identification field of the High layer compatibility information element to "capability set of subsequent channel of Recommendation H.221".

When a CONNECT message is received the in-band protocol entity associated with the user shall initiate the in-band signalling procedures as specified in ETS 300 143 [11] and refined by ETS 300 145 [13], Clause 6.

7.5.2 Call establishment at the destination interface

Where fallback is not allowed the procedures of ETS 300 102-1 [9] subclause 5.2 and ETS 300 097-1 [8] subclause 9.2 shall be used with the following additions:

1) in the SETUP message, the network shall set the high layer characteristics identification field and the extended audiovisual characteristics identification field of the High layer compatibility information element to the values included by the originating user (i.e. "videotelephony" and "capability set of initial channel of Recommendation H.221"); and shall include a single Bearer capability information element with the information transfer capability field set to "unrestricted digital information with tones/announcements";

2) when a CONNECT ACKNOWLEDGE message is received the in-band protocol entity associated with the user shall initiate the in-band signalling procedures as specified in ETS 300 143 [11] and refined by ETS 300 145 [13], Clause 6.

Where fallback is allowed the procedures of ETS 300 102-1 [9] subclause 5.2 and ETS 300 097-1 [8] subclause 9.2 shall be used with the following additions:

a) the generic procedures for bearer capability selection at the destination side, as specified in subclause 5.5.2, and the generic procedures for high layer compatibility selection at the destination side, as specified in subclause 5.5.4, shall be used. In the SETUP message, the network shall set the high layer characteristics identification field of the first and second High layer compatibility information element to the values included by the originating user (i.e. "telephony" and "videotelephony" respectively); shall set the extended audiovisual characteristics field of the second High layer characteristics field to the value included by the originating user (i.e. "capability set of initial channel of Recommendation H.221"); shall include a first Bearer capability information element with the information transfer capability field set to "speech"; and shall include a second Bearer capability information element with the information transfer capability field set to "unrestricted digital information with tones/announcements". The Low layer compatibility information element shall not be included in the SETUP message; any necessary low layer information shall be included in the Bearer capability information element;

b) the destination user shall assume the basic telecommunication services defined in table 2 and shall apply the procedures of Annex B of ETS 300 102-1 [9] to each of these basic telecommunication services according to the destination user requirements;

c) the destination user may indicate the resultant basic telecommunications service of the call by including in the CONNECT message a Bearer capability information element with the information transfer capability field set to "unrestricted digital information with tones/announcements" or "speech" in which case an ordinary telephony 3,1 kHz teleservice call exists, and a High layer compatibility information element with a high layer characteristics field set to "videotelephony" or "telephony"; and, if included in the received High layer compatibility information element, shall set the extended audiovisual characteristics field of the second High layer characteristics field to the value included by the in the SETUP message (i.e. "capability set of initial channel of Recommendation H.221"). Where the Bearer capability information element is not present in the CONNECT message, fallback to the telephony 3,1 kHz teleservice shall be assumed to have occurred. Where the High layer compatibility information element is not present in the CONNECT message, fallback to the telephony 7 kHz or telephony 3,1 kHz teleservices shall be assumed to have occurred;

d) if fallback does not occur, when a CONNECT ACKNOWLEDGE message is received the in-band protocol entity associated with the user shall initiate the in-band signalling procedures as specified in ETS 300 143 [11] and refined by ETS 300 145 [13], Clause 6;

e) if fallback does occur to the telephony 3,1 kHz teleservice, when a CONNECT ACKNOWLEDGE message is received the in-band protocol entity associated with the user shall initiate the in-band signalling procedures as specified in ETS 300 082 [6], Clause 6;

f) if fallback does occur to the telephony 7 kHz teleservice, the procedures of Clause 6 of this ETS shall be followed.

If fallback does not occur, and the resultant mode of the videotelephony call, as determined by the in-band procedures specified in ETS 300 143 [11], requires a second connection, this shall be established according to the procedures of subclause 5.5.6. The Bearer capability information element included in the SETUP message shall have the information transfer capability field set to "unrestricted digital information". The High layer compatibility information element included in the SETUP message shall be set to the value included by the originating user, i.e. the high layer characteristics field set to "videotelephony" and the extended audiovisual characteristics field set to "capability of subsequent channel of Recommendation H.221".

If a SETUP message is received with a high layer characteristics field of the High layer compatibility information element set to "videotelephony", and the extended audiovisual characteristics identification field of the High layer compatibility information element set to "capability set of subsequent channel of Recommendation H.221", then, to accept the call, the destination user shall not send the ALERTING message, but shall automatically accept the call with a CONNECT message.

When a CONNECT ACKNOWLEDGE message is received the in-band protocol entity associated with the user shall initiate the in-band signalling procedures as specified in ETS 300 143 [11], and refined by ETS 300 145 [13], Clause 6.

7.5.3 Call clearing

The procedures of ETS 300 102-1 [9] subclause 5.3 shall be used for clearing each connection.

For presenting tones and announcements on clearing, the procedures of ETS 300 102-1 [9] subclause 5.3.4.1 shall be used. When a call of the videotelephony teleservice is in progress, the tone or announcement shall be presented in a 3,1 kHz mode on the first connection, encoded according to CCITT Recommendation G.711 [1] A-law. The in-band protocol entity associated with the user shall switch to A-law as specified in ETS 300 145 [13], Clause 6.

7.5.4 In-band tones and announcements

The procedures of ETS 300 102-1 [9] subclause 5.4, as modified by subclause 5.5.7 of this ETS, shall be used only during establishment of the first connection.

NOTE: The in-band protocol entity associated with the user cannot, on the basis of user information in the B-channel, switch from 7 kHz or a videotelephony mode to a mode where it can decode tones and announcements encoded in A-law according to Recommendation G.711 [1]. However, if the end-to-end connection is interrupted, the terminal will consider this as a failure situation and will switch to mode 0. This is not regarded as an acceptable way of switching to mode 0 to provide tones and announcements.

7.5.5 Restart procedures

The procedures of ETS 300 102-1 [9] subclause 5.5 are outside the scope of this ETS.

NOTE: The restart procedures defined in subclause 5.5 of ETS 300 102-1 [9] are not service specific and, where implemented, are used independently of individual calls and service requests.

7.5.6 Call rearrangements

The procedures of ETS 300 102-1 [9] subclause 5.6 shall be used for each connection. Prior to these procedures the in-band protocol entity associated with the user shall switch to mode 0U (unframed), A-law as specified in ETS 300 145 [13], subclause 6.3.1.2.

On receipt of the RESUME ACKNOWLEDGE message, the in-band protocol entity associated with the user shall initiate the in-band signalling procedures as specified in ETS 300 145 [13], subclause 6.3.1.2.

NOTE: Where the terminal portability supplementary service is subscribed to and used, the full procedures of subclause 5.6 of ETS 300 102-1 [9] shall be provided. Where the terminal portability supplementary service is not subscribed to, only the rejection procedures need to be provided.

Where two connections exist for a call, each connection shall be suspended with a different value of the Call identity information element. It is the responsibility of the terminal to generate these information elements from values supplied by the human user.

7.5.7 Call collisions

The procedures of ETS 300 102-1 [9] subclause 5.7 shall apply.

7.5.8 Handling of error conditions

The procedures of ETS 300 102-1 [9] subclause 5.8 shall apply.

NOTE: Where the user requests the videotelephony teleservice with fallback allowed from a network that does not support the videotelephony teleservice then the network will discard the second Bearer capability information element and the second High layer compatibility information element and will proceed with the call as a telephony 3,1 kHz call. No explicit indication of fallback will be given in this case.

7.5.9 User notification procedure

The procedures of ETS 300 102-1 [9] subclause 5.9 and ETS 300 196-1 [14] Clause 9 shall apply.

NOTE: Where two connections exist, in some circumstances, notifications will be applied only to the first connection; in other circumstances identical notifications will be applied to both connections.

7.5.10 Status request procedures

The support of the status request procedure according to subclause 10.3 of ETS 300 196-1 [14] is mandatory for any implementation conforming to this ETS and to be connected to the coincident S and T reference point.

7.6 Procedures for interworking with private ISDNs

There is no in-band protocol entity associated with the user where the user is a private ISDN, therefore the procedures of subclause 7.5 concerning in-band protocol entities do not apply.

The procedures of subclause 7.5 shall apply for the user and the network with the exception that the following procedures shall apply at the destination interface instead of subclause 7.5.2.

If a private ISDN is attached to the access at the destination interface, the following procedures are applicable at call request. The private ISDN acts as the called user.

Where fallback is not allowed the procedures of ETS 300 102-1 [9] subclause 5.1 and ETS 300 092-1 [7] subclause 9.2 shall be used with the following additions:

- in the SETUP message, the network shall set the high layer characteristics identification field and the extended audiovisual characteristics identification field of the High layer compatibility information element to the value included by the originating user (i.e. "videotelephony" and "capability set of initial channel of Recommendation H.221"); and shall include a single Bearer capability information element with the information transfer capability field set to "unrestricted digital information with tones/announcements".

Where fallback is allowed the procedures of ETS 300 102-1 [9] subclause 5.1 and ETS 300 092-1 [7] subclause 9.2 shall be used with the following additions:

a) the generic procedures for bearer capability selection at the destination side to a private ISDN, as specified in subclause 5.6.2, and the generic procedures for high layer compatibility selection at the destination side to a private ISDN, as specified in subclause 5.6.4, shall be used. In the SETUP message, to indicate that a videotelephony teleservice is required, the network shall set the high layer characteristics identification field of the first and second High layer compatibility information element to the values included by the originating user (i.e. "telephony" and "videotelephony"; shall set the extended audiovisual characteristics field of the second High layer characteristics field to the value included by the originating user (i.e. "capability set of initial channel of Recommendation H.221"); and, shall set the information transfer capability field of the first Bearer capability information element included in the SETUP message to "speech" and the information transfer capability field of the second Bearer capability information element included in the SETUP message to "unrestricted digital information with tones/announcements". The Low layer compatibility information element shall not be included in the SETUP message; any necessary low layer information shall be included in the Bearer capability information element;

   NOTE 1: When this setting is used, the private ISDN will reserve any required echo cancellation devices, A-to-μ law convertors, etc. in case a speech information transfer capability is used for the resultant connection.

b) the destination user shall assume the basic telecommunication services defined in table 2;

c) the destination user shall, except where fallback occurs in the private ISDN, indicate, according to the procedures of subclauses 5.6.2 and 5.6.4, the resultant basic telecommunications service of the call by including in the CONNECT message a Bearer capability information element with the information transfer capability field set to "unrestricted digital information with tones/announcements" or "speech" in which case an ordinary telephony 3,1 kHz teleservice call exists, and a High layer compatibility information element with a high layer characteristics field set to "videotelephony" or "telephony". Where neither the Bearer capability information element nor the High layer compatibility information element is present in the CONNECT message, fallback to the telephony 3,1 kHz teleservice shall be assumed to have occurred. Where the High layer compatibility information element is not present in the CONNECT message, the resultant teleservice is unknown;

   NOTE 2: It may be possible to subsequently identify the high layer compatibility, and thus the teleservice, from any in-band protocol within the B-channel.

d) the destination user shall, where fallback occurs in the network, indicate, according to the procedures of subclause 5.5.2, the resultant basic telecommunications service of the call by including, in the same message as the relevant Progress indicator information element, a Bearer capability information element with the information transfer capability field set to "speech" in which case an ordinary telephony 3,1 kHz teleservice call exists, and, if received from the destination private network, a High layer compatibility information element with a high layer characteristics field set to "videotelephony" or "telephony". Where neither the Bearer capability information element nor the High layer compatibility information element is present in the same message as the related Progress indicator information element, fallback to the telephony 3,1 kHz teleservice shall be assumed to have occurred. Where the High layer compatibility information element is not present in the same message as the related Progress indicator information element, the resultant teleservice is unknown.

   NOTE 3: It may be possible to subsequently identify the high layer compatibility, and thus the teleservice, from any in-band protocol within the B-channel.

If fallback does not occur, and the resultant mode of the videotelephony call, as determined by the in-band procedures, requires a second connection, this shall be established according to the procedures of subclause 5.6.6. The Bearer capability information element included in the SETUP message shall have the information transfer capability field set to "unrestricted digital information". The High layer compatibility information element included in the SETUP message shall be set to the value included by the originating user, i.e. the high layer characteristics field set to "videotelephony" and the extended audiovisual characteristics field set to "capability of subsequent channel of Recommendation H.221".

7.7 Interactions with other networks

Where the calling user has indicated that fallback is allowed, interworking with the PSTN shall occur according to the procedures of subclauses 5.1.6 and 5.2.7 of ETS 300 102-1 [9], and a Progress indicator information element with a progress description #1 "call is not end-to-end ISDN, further call progress information may be available in-band" shall be sent to the calling user.

When fallback is not allowed, no interworking with the PSTN shall occur, and the call shall be cleared with a cause value of #65 "bearer capability not implemented".

Interworking shall not occur on the second connection request.

7.8 Parameter values (timers)

The parameter values specified in ETS 300 102-1 [9] Clause 9 shall apply.

7.9 Dynamic description (SDLs)

The dynamic description of ETS 300 102-2 [10] shall apply.

Annex A (informative): Signalling flows for the telephony 7 kHz teleservice

This annex gives some example signalling flows for successful calls where the telephony 7 kHz teleservice was requested. The examples are:

Figure A.1: Fallback not allowed, no interworking with PSTN;

Figure A.2: Fallback allowed, but does not occur;

Figure A.3: Fallback allowed, and occurs to telephony 3,1 kHz within the network beyond the indicated interface;

Figure A.4: Fallback allowed, and occurs to telephony 3,1 kHz at the destination terminal interface;

Figure A.5: Fallback allowed, interworking with PSTN beyond indicated interface.

Each figure contains cases corresponding to the four interfaces within the scope of this ETS. These are shown side by side to indicate related messages for each interface.

Table A.1 gives the key for the interpretation of the symbols used in figures A.1 to A.5.

Table A.1: Key to figures A.1 to A.5

BC	Bearer capability information element
BC1	First Bearer capability information element
BC2	Second Bearer capability information element
HLC	High layer compatibility information element
PI	Progress indicator information element
O	Optional information in the context of bearer capability selection

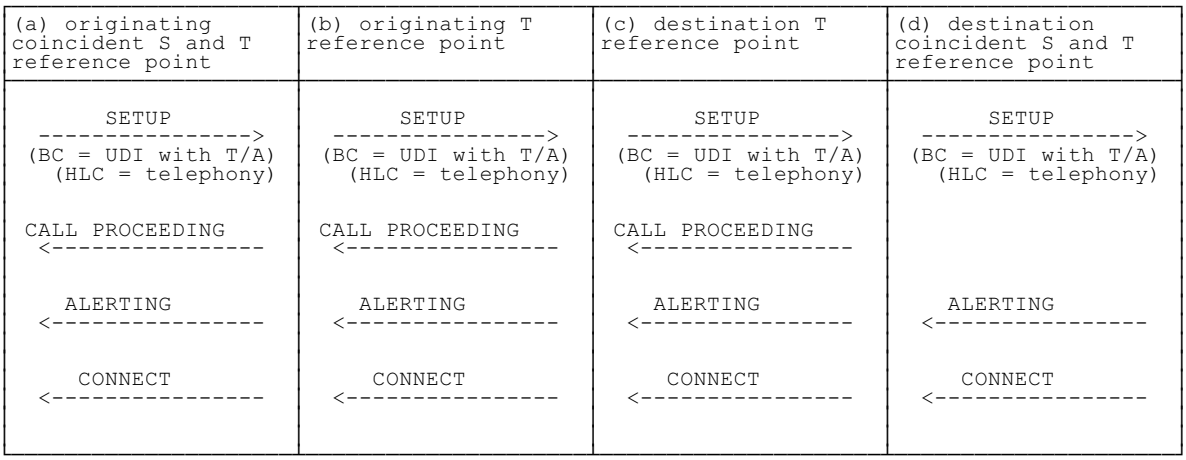


Figure A.1: Fallback not allowed, no interworking with PSTN

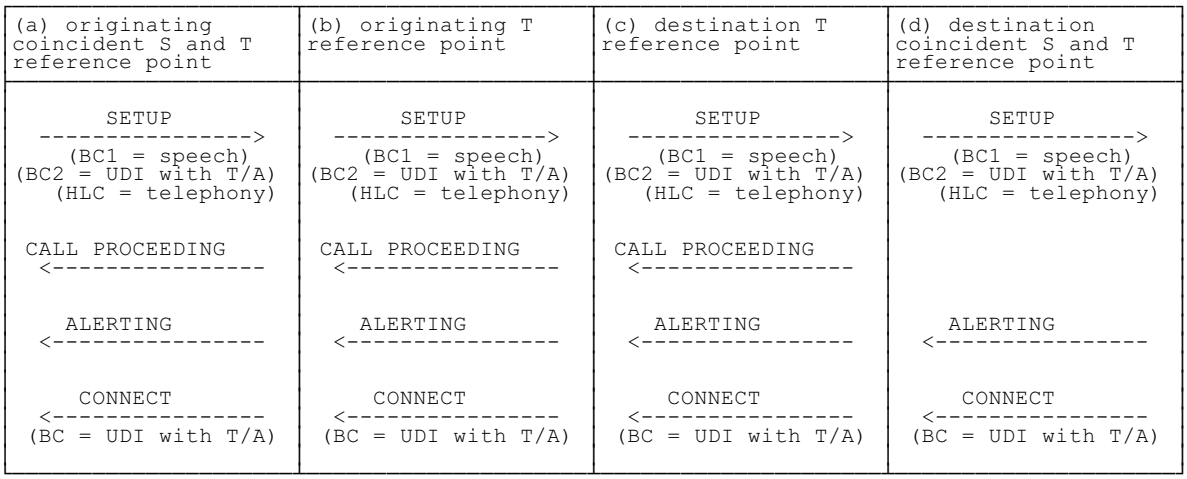
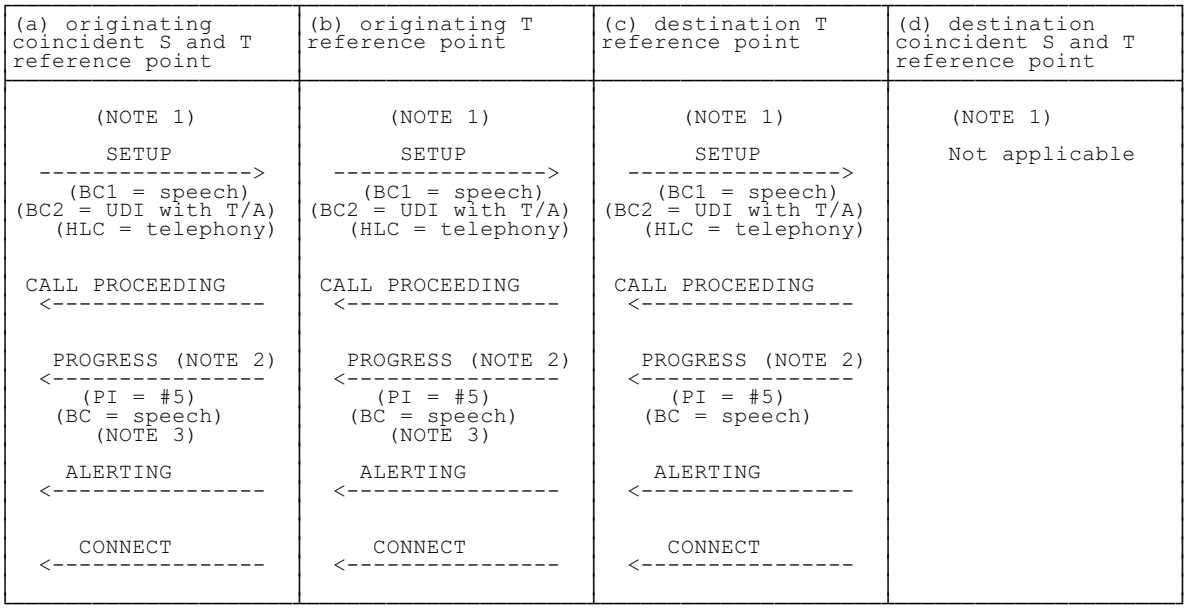


Figure A.2: Fallback allowed, but does not occur



NOTE 1: If the fallback occurred in the network prior to this interface, then the procedures on this interface will be a basic call providing the telephony 3,1 kHz teleservice.

NOTE 2: Any appropriate call control message may also carry this information.

NOTE 3: Where this information element is not present, the resultant Bearer capability information element shall be identified as described in the exceptional procedures for bearer capability selection.

Figure A.3: Fallback allowed, and occurs to telephony 3,1 kHz within the network beyond this interface

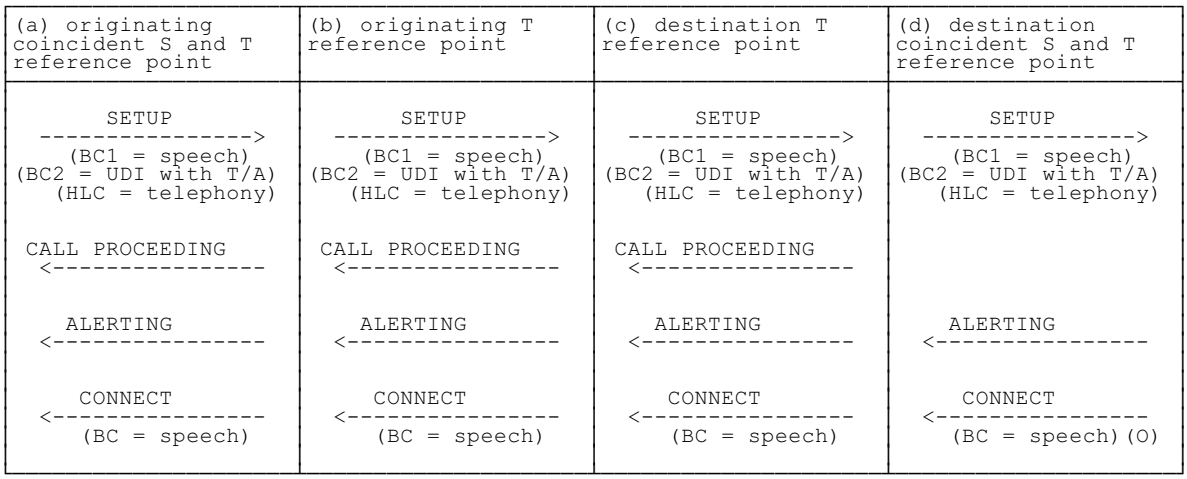
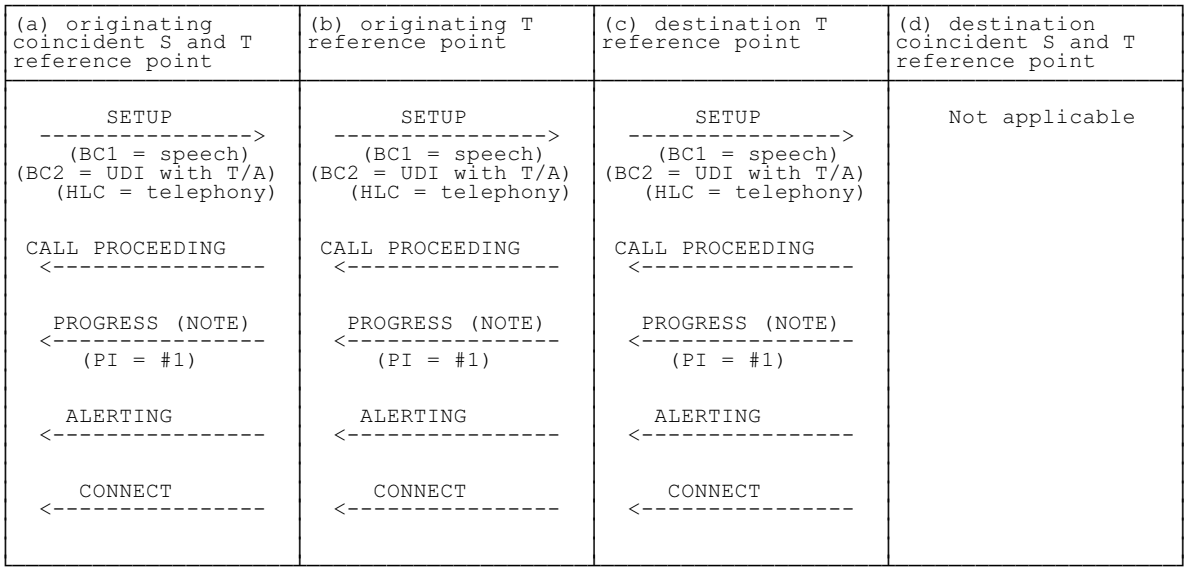


Figure A.4: Fallback allowed, and occurs to telephony 3,1 kHz at the destination interface



NOTE: Any appropriate call control message may also carry this information.

Figure A.5: Fallback allowed, interworking with PSTN beyond indicated interface

Annex B (informative): Signalling flows for the videotelephony teleservice

This annex gives some example signalling flows for successful calls where the videotelephony teleservice was requested. The examples are:

Figure B.1: Fallback not allowed, no interworking with PSTN;

Figure B.2: Fallback allowed, but does not occur;

Figure B.3: Fallback allowed, and occurs to telephony 3,1 kHz within the network beyond the indicated interface;

Figure B.4: Fallback allowed, and occurs to telephony 3,1 kHz at the destination terminal interface;

Figure B.5: Fallback allowed, and occurs to telephony 7 kHz at the destination terminal interface;

Figure B.6: Fallback allowed, interworking with PSTN beyond indicated interface.

Each figure contains four cases corresponding to the four interfaces within the scope of this ETS. These are shown side by side to indicate related messages for each interface.

For convenience, only figure B.1 shows the establishment of a second connection for use in videotelephony mode 2. This second connection is also allowed in figure B.2.

Table B.1 gives the key for the interpretation of the symbols used in figures B.1 to B.5.

Table B.1: Key to figures B.1 to B.5

BC	Bearer capability information element
BC1	First Bearer capability information element
BC2	Second Bearer capability information element
HLC	High layer compatibility information element
HLC1	First High layer compatibility information element
HLC2	Second High layer compatibility information element
PI	Progress indicator information element
O	Optional information in the context of bearer capability and high layer compatibility selection

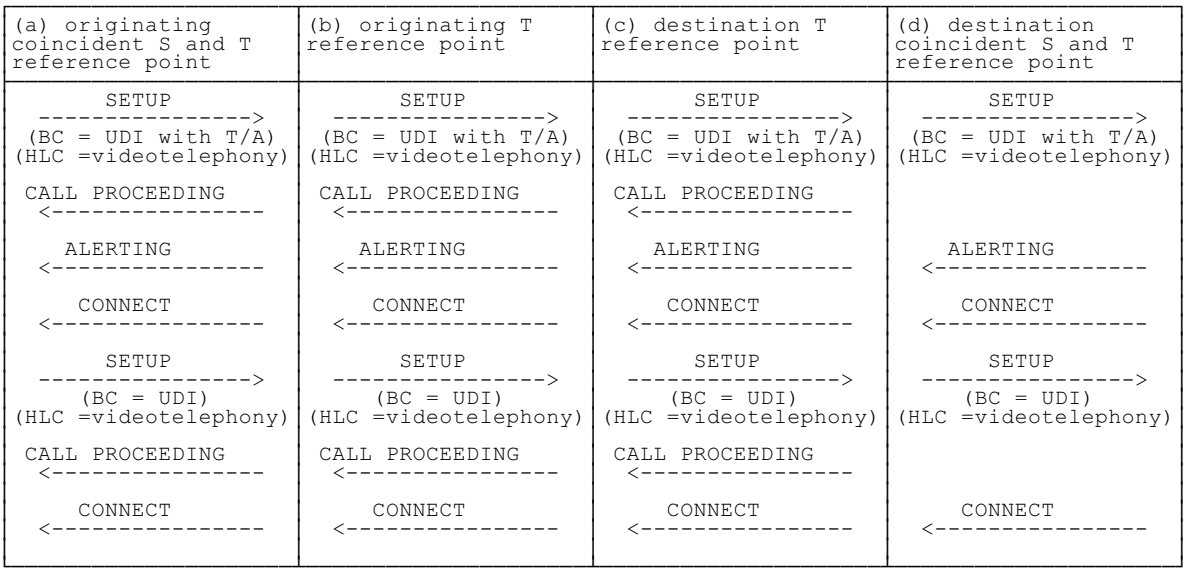


Figure B.1: Fallback not allowed, no interworking with PSTN

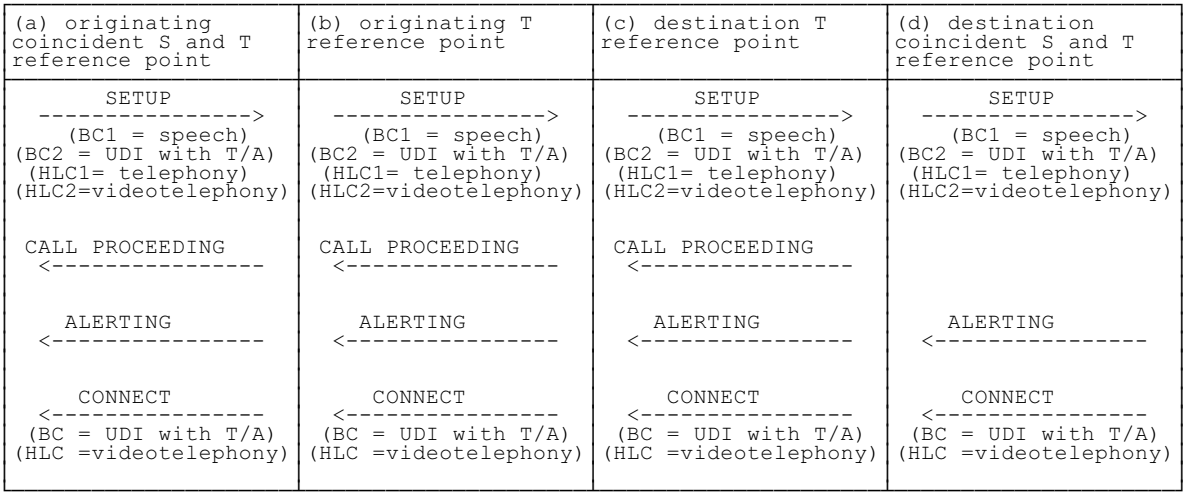
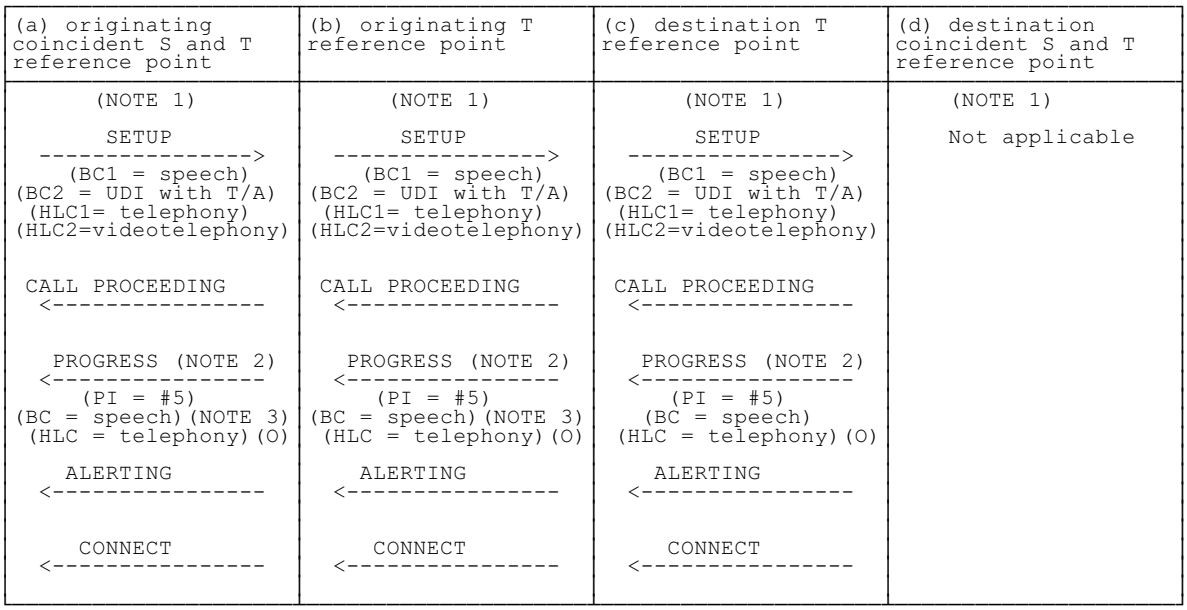


Figure B.2: Fallback allowed, but does not occur



NOTE 1: If the fallback occurred in the network prior to this interface, then the procedures on this interface will be a basic call providing the telephony 3,1 kHz teleservice.

NOTE 2: Any appropriate call control message may also carry this information.

NOTE 3: Where this information element is not present, the resultant Bearer capability information element shall be identified as described in the exceptional procedures for bearer capability selection.

Figure B.3: Fallback allowed, and occurs to telephony 3,1 kHz within the network beyond this interface

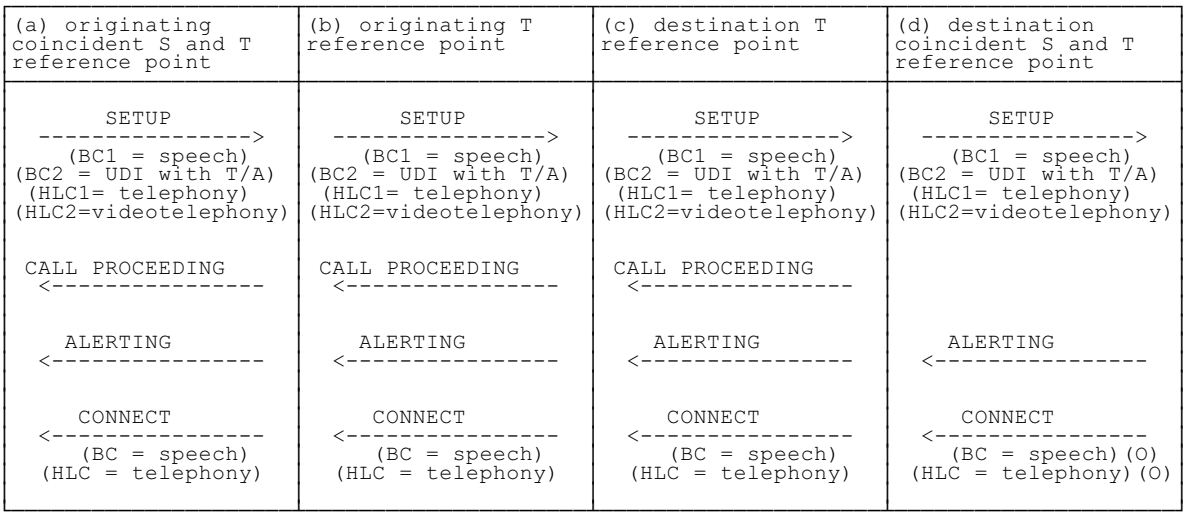


Figure B.4: Fallback allowed, and occurs to telephony 3,1 kHz at the destination interface

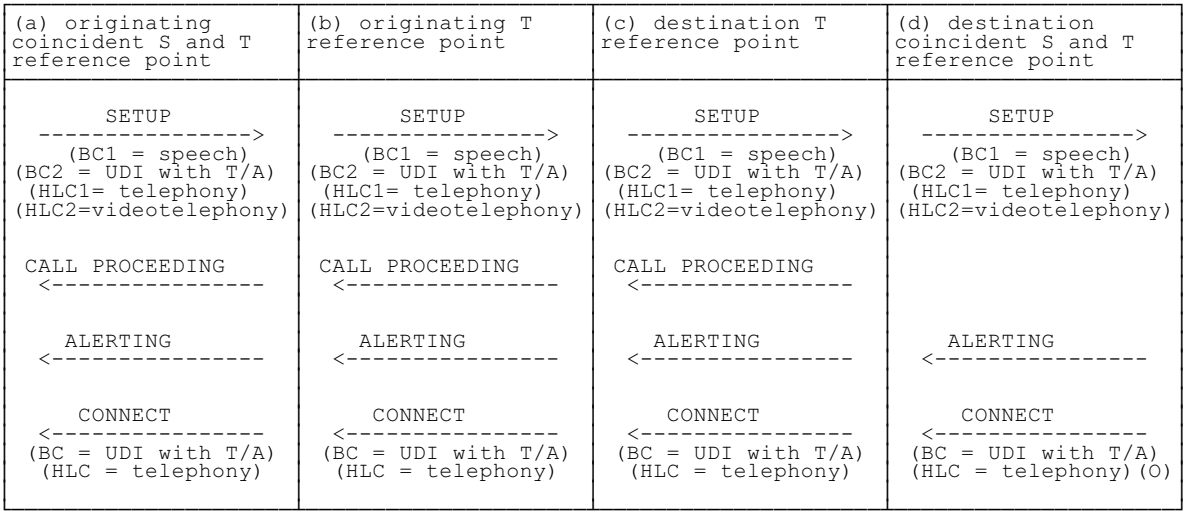
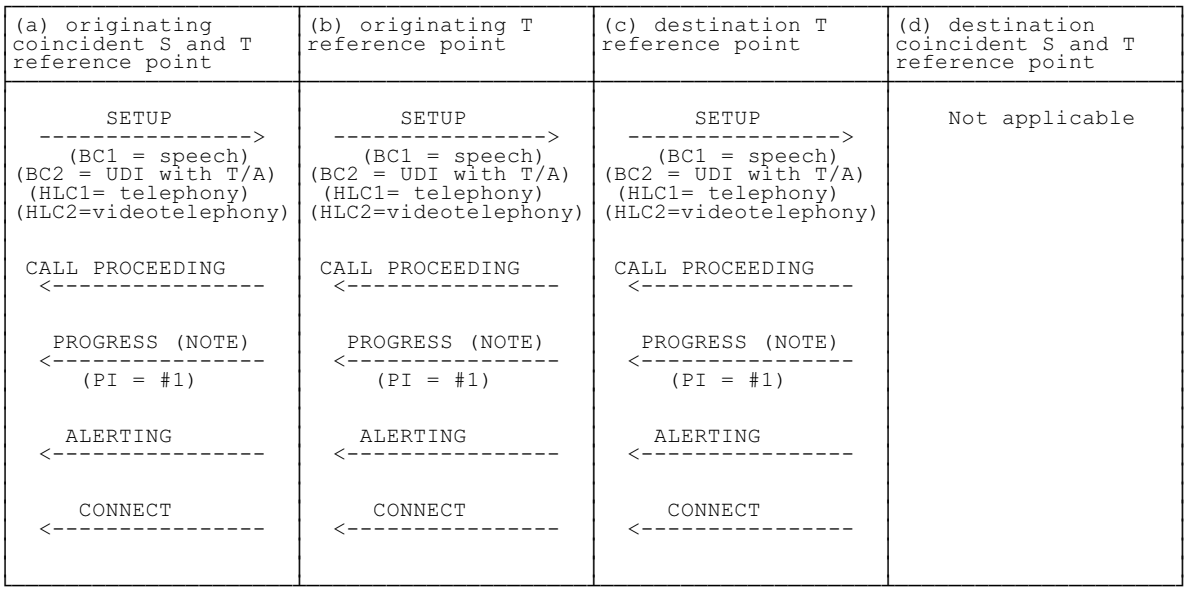


Figure B.5: Fallback allowed, and occurs to telephony 7 kHz at the destination interface



NOTE: Any appropriate call control message may also carry this information.

Figure B.6: Fallback allowed, interworking with PSTN beyond indicated interface

Annex C (informative): Bibliography

1) CCITT Recommendation F.721 (1992): "Videotelephony service for ISDN".

2) ITU-T Recommendation H.221 (1993): "Frame structure for a 64 to 1 920 kbit/s channel in audiovisual teleservices".

3) ITU-T Recommendation H.242 (1993): "System for establishing communication between audiovisual terminals using digital channels up to 2 Mbit/s".

History

Document history	
February 1994	First Edition
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