



SLOVENSKI STANDARD SIST ETS 300 481 E1:2003

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Terminalska oprema (TE) – Enota za združevanje kanalov (CAU) B v digitalnem omrežju z integriranimi storitvami (ISDN) – Postopki in terminalske zahteve

Terminal Equipment (TE); Integrated Services Digital Network (ISDN); B-Channel Aggregation Unit (CAU); Procedures and terminal requirements

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35.180	Terminalska in druga periferna oprema IT	IT Terminal and other peripheral equipment

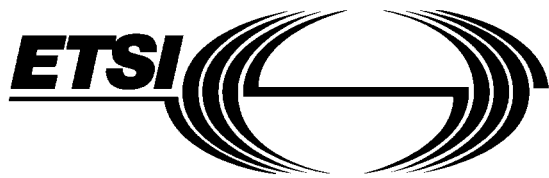
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Foreword

This European Telecommunication Standard (ETS) has been produced by the Terminal Equipment (TE) Technical Committee of the European Telecommunications Standards Institute (ETSI).

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Date of adoption of this ETS:	17 May 1996
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1 Scope

This European Telecommunication Standard (ETS) defines protocols for the synchronisation and aggregation of multiple ISDN channels at 64 kbit/s, these channels being with a differential delay in the range of \pm one second and with or without octet integrity structure. It also addresses the case of interworking with a digital network restricted to a rate of 56 kbit/s. It is applicable to a wide range of user data transport up to 63 channels using ISO/IEC 13871 [1], but special provision is made for audiovisual systems according to ETS 300 144 [2], up to 24 channels; the aggregation may be network-based or associated with Customer-Premises Equipment. The available operating modes (B1, B2, B3, H2) provide options with/without transmission-management overhead and user-data rates at or less than the exact multiples of 64 kbit/s or 56 kbit/s.

The number of aggregated channels may be varied dynamically during a session. Procedures are given for dealing with faults, including loss of channels and slip.

Call control is outside the scope of this ETS.

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 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] ISO/IEC 13871: "Information Technology - Telecommunications and information exchange between systems - Private telecommunications networks - Digital channel aggregation".
- [2] ETS 300 144: "Integrated Services Digital Network (ISDN); Audiovisual services; Frame structure for a 64 to 1 920 kbit/s channel and associated syntax for inband signalling".
- [3] 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".
- [4] ITU-T Recommendation H.320 (1993): "Narrow-band visual telephone systems and terminal equipment".
- [5] ETS 300 145: "Integrated Services Digital Network (ISDN); Audiovisual services; Videotelephone systems and terminal equipment operating on one or two 64 kbit/s channels".
- [6] ITU-T Recommendation H.242 (1993): "System for establishing communication between audiovisual terminals using digital channels up to 2 Mbit/s".

3 Definitions

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

called end: The Channel Aggregation Unit (CAU) or Multiple Channel Equipment (MCE) which **accepts** the first 64/56 channel connection request of the whole session, resulting in the establishment of the "initial channel". If during fault-recovery procedures the initial channel is transferred to another connection, this does not affect the definition (see note 1).

calling end: The CAU or MCE which **requests** the first 64/56 channel connection of the whole session, resulting in the establishment of the "initial channel". If during fault-recovery procedures the initial channel is transferred to another connection, this does not affect the definition (see note 1).

Channel Aggregation Unit (CAU): A device having both multiple 64 kbit/s accesses and a single access at a higher bitrate. Reference in this ETS to "CAU" or "aggregator" means equipment conforming to this ETS.

compatibility bits: Bit 8 of the first sixteen octets in every timeslot of a single channel except Time-slot 1.

external setting: Term used to express operations outside the scope of this ETS which determine the behaviour of a CAU as to choice of option or timing of its action.

H.221 frame structure, H.221 framing: Frame structure according to ITU-T Recommendation H.221, as set out in ETS 300 144 [2].

H.320 terminal: A terminal that conforms to ITU-T Recommendation H.320 [4] (note 2).

Mode H2: Modes of aggregation by the method given in clauses 7 and 8 of this ETS.

Modes B1, B2, B3: Modes of aggregation by the method of ISO/IEC 13871 [1], see subclause 5.2.

Multiple Channel Equipment (MCE): A terminal or other unit (such as a Local Area Network (LAN) gateway) directly attached to an ISDN (through one or more ISDN accesses, whether basic accesses or primary rate access(es)).

No Terminal Aggregator Communication case (ISO Aggregation case): No in-band management communication between Single Channel Equipment (SCE) and CAU takes place - the single channel is only a clear path for the data which will be wholly transmitted to the remote party; any communication between the terminal and the CAU is by means not specified in this ETS (see clause 9).

redundant command: A Bit Allocation Signal (BAS) command which repeats, unchanged, a previously transmitted mode value which is still in force.

Single Channel Equipment (SCE): A terminal or other unit (such as a LAN interface) having a single serial bi-directional digital interface.

H.244 Aggregation case: In-band communication between SCE and CAU takes place using ITU-T Recommendation H.221 BAS codes (see clauses 7 and 8 of this ETS).

user information: The application data streams passing (in both directions) between CAU and SCE (note 3).

NOTE 1: The significance of "calling" and "called" end-points is mentioned in subclause 8.1.3.

NOTE 2: ETS 300 145 [5] is the ETSI equivalent to ITU-T Recommendation H. 320 [4]. The scope of ETS 300 145 [5] is, however, restricted to systems supporting 1B or 2B access.

NOTE 3: In the audiovisual cases, the application data stream includes the ITU-T Recommendation H.221 frame structure.

4 Symbols and abbreviations

4.1 Symbols

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

NOTE: For readability, the capability and command values listed in ETS 300 144 [2] are referred to in this ETS by their names rather than codepoint byte values; the use of {*name*} for capabilities and [*name*] for commands serves to distinguish between these.

N an integer, applied to 64/56 channels to define a parallel (un-aggregated) bitstream of rate $N \times 64$ kbit/s.

n	an integer, applied to 64 kbit/s to define a serial (or otherwise aggregated) bitstream of rate $n \times 64$ kbit/s.
N_a	the number of active 64/56 channels between CAU and MCE or between two CAUs.
N_m	the maximum number of 64/56 channels which can be accepted by a CAU transmitting the value $\{N_m \times B\}$.
N'_m	used to denote the incoming value of N_m from the remote CAU, or equivalent from an MCE.
N_d	the number of connections requested by the calling end, the lower of N_m and N'_m .
$\{N \times 64k\}$	capabilities in the series $\{1B\}, \{2B\}, \{3B\}, \dots$ corresponding to $N=1, 2, 3, \dots$, (applies to Mode H2 only).
$\{n \times 64k\}$	capabilities in the series $\{64k\}, \{128k\}, \{192k\}, \dots$ corresponding to $n=1, 2, 3, \dots$.
n_m	such that $\{n_m \times 64k\}$ is the highest transfer-rate capability incoming from the SCE for which the continuous series of rate capabilities $\{(n_m-1) \times 64k\}, \{(n_m-2) \times 64k\}, \dots, \{2 \times 64k\}$ is also present in the capset.
$[N \times 64]$	Multiple-channel commands (as defined in ETS 300 144 [2]).
$[n \times 64k]$	Single-channel commands (as defined in ETS 300 144 [2]).
$[capex]$	command issued by a CAU (see subclause 7.3.6.3) to an SCE to stimulate a capability exchange.
$[AggIN]^*$	a double SBE symbol indicating the number n as determined by the process of subclause 7.3.4.2; see the procedure described in clause 8 (see ETS 300 144 [2]).
$\{\text{null}\}$	capability having no significance other than as a filler; only ever transmitted by a CAU, and therefore it identifies the capset as having last come from, or been forwarded by, a CAU; SCE ignores any number of these in an incoming capset (see ETS 300 144 [2]).
$\{\text{SM-comp}\}$	capability to transmit and receive user information without using any compatibility bits, setting these to 1 (see ETS 300 144 [2]).
$[\text{SM-comp}]$	user information is not contained in the compatibility bits (and is not sent in the compatibility bits in the reverse direction either). See ETS 300 144 [2].
Σ	Audible signal (to be defined), which would be recognised by a human user as a call progress tone (he would not hang up).

4.2 Abbreviations

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

BAS	Bit Allocation Signal
Capset	Capability set
CAU	Channel Aggregation Unit
FAS	Frame Alignment Signal
H.221	See subclause 3.1, H.221 frame structure, H.221 framing
MC (side)	Multiple Channel (side, of a CAU)
MCE	Multiple-Channel Equipment
NII	Network Indicate Incompatible - aggregators
ISO Aggregation	No Terminal-Aggregator Communication

SC (side)	Single Channel (side, of a CAU)
SCE	Single-Channel Equipment
SM-comp	Single-Multiple compatibility
H.244 Aggregation	Terminal-Aggregator Communication
UD	Unspecified Data

5 General

5.1 Application of this ETS

On the single-channel connections, which may be very short if the terminal and CAU are co-located, or much longer if a telecommunications link is involved, two options are covered by this ETS:

- no in-band management communication on the single channel, this being only a clear path for the data which will be wholly transmitted to the remote party; any communication between the terminal and the CAU is by means not specified in this ETS; this is referred to as the "ISO Aggregation" case - No Terminal-Aggregator Communication;
- in-band communication as specified in this ETS, using the BAS codes defined in ETS 300 144 [2] and the procedures of ETS 300 143 [3]; this is referred to as the "H.244 Aggregation" case - Terminal-Aggregator Communication. This corresponds to the use of Mode H2 (see subclause 5.2, figure 8 and associated text).

5.1.1 Intercommunication of audiovisual equipments

For audiovisual terminals conforming to ETS 300 144 [2] and ETS 300 143 [3], this ETS provides for synchronisation and aggregation of up to 24 channels of 64 kbit/s or 56 kbit/s, each being with or without octet integrity and relative transmission delay in the range ± 1 second.

Provision is made for the following intercommunication Cases A to C.

5.1.1.1 Case A

For interconnection of a Single-Channel Equipment (SCE) and a Multiple-Channel Equipment (MCE) audiovisual end-point, both conforming to ETS 300 144 [2] and ETS 300 143 [3], only the H.244 Aggregation approach can be followed (see figure 1); this involves only one CAU, which may be within the network or close to the single-channel end-point.

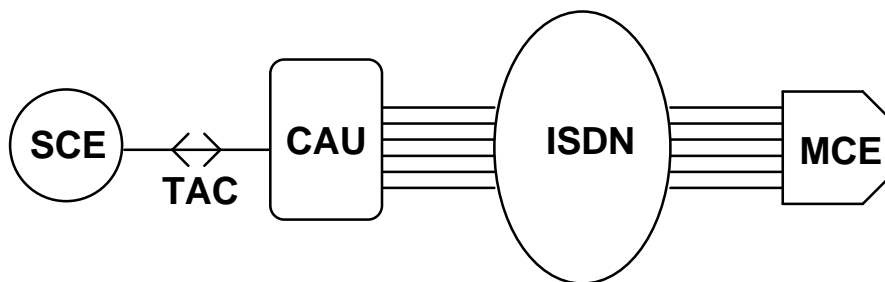


Figure 1: Case A