



# SLOVENSKI STANDARD

## SIST ETS 300 138-1 E1:2005

01-julij-2005

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Integrated Services Digital Network (ISDN); Closed User Group (CUG) supplementary service; Digital Subscriber Signalling System No. one (DSS1) protocol; Part 1: Protocol specification

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**Ta slovenski standard je istoveten z: ETS 300 138-1 Edition 1**

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**ICS:**

33.080	Digitalno omrežje z integriranimi storitvami (ISDN)	Integrated Services Digital Network (ISDN)
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**SIST ETS 300 138-1 E1:2005**

**en**

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**E**UROPEAN  
**T**ELECOMMUNICATION  
**S**TANDARD

**ETS 300 138-1**

May 1992

Source: ETSI TC-SPS

Reference: T/S 46-33H

ICS: 33.080

**Key words:** ISDN, supplementary service

**Integrated Services Digital Network (ISDN);  
Closed User Group (CUG) supplementary service;  
Digital Subscriber Signalling System No. one (DSS1) protocol;  
Part 1: Protocol specification**

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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) Closed User Group (CUG) supplementary service, as described below:

- Part 1: "Protocol specification";**
- Part 2: "Protocol Implementation Conformance Statement (PICS) proforma specification";
- Part 3: "Test Suite Structure and Test Purposes (TSS&TP) specification for the user";
- Part 4: "Abstract Test Suite (ATS) and partial Protocol Implementation eXtra Information for Testing (PIXIT) proforma specification for the user";
- Part 5: "TSS&TP specification for the network";
- Part 6: "ATS and partial PIXIT proforma specification for the network".

In accordance with CCITT Recommendation I.130, the following three level structure is used to describe the supplementary telecommunications services as provided by European public telecommunications operators under the pan-European Integrated Services Digital Network (ISDN):

- Stage 1: is an overall service description, from the user's stand-point;
- 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 (signalling system protocols and switching functions) needed to support the Closed User Group (CUG) supplementary service. The stage 1 and stage 2 aspects are detailed in ETS 300 136 (1992) and ETS 300 137 (1992), respectively.

This reprint includes all previous Corrigenda as shown in the History box at the last page.

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## 1 Scope

This first part of ETS 300 138 specifies the stage three of the Closed User Group (CUG) supplementary service 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 [1]) 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 [2]).

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

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

The CUG supplementary service enables users to form groups, to and from which access is restricted. A specific user may be a member of one or more closed user groups. Members of a specific closed user group can communicate among themselves but not, in general, with users outside the group.

The CUG supplementary service is applicable to all telecommunication services.

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

This standard is applicable to equipment, supporting the CUG supplementary service, to be attached at either side of a T reference point or coincident S and T reference points when used as an access to the public ISDN.

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## 2 Normative references (standards.iteh.ai)

This ETS incorporates by dated and 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.

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|-----|--|
| [1] | CCITT Recommendation I.411 (1988): "ISDN user-network interfaces - Reference configurations".  |
| [2] | CCITT Recommendation I.130 (1988): "Method for the characterisation of telecommunications services supported by an ISDN and network capabilities of an ISDN".                                  |
| [3] | CCITT Recommendation I.112 (1988): "Vocabulary of terms for ISDNs".  |
| [4] | CCITT Recommendation I.210 (1988): Principles of telecommunication services supported by an ISDN and the means used to describe them".   |
| [5] | CCITT Recommendation E.164 (1988): "Numbering plan for the ISDN era".  |
| [6] | ETS 300 136 (1992): "Integrated Services Digital Network (ISDN); Closed User Group (CUG) supplementary service; Service description".  |
| [7] | ETS 300 195-1: "Integrated Services Digital Network (ISDN); Supplementary service interactions; Digital Subscriber Signalling System No. one (DSS1) protocol; Part 1: Protocol specification". |
| [8] | CCITT Recommendation X.208 (1988): "Open Systems Interconnection (OSI); Model and Notation: Service definition: Specification of Abstract Syntax Notation One (ASN.1)".                        |

- [9] CCITT Recommendation X.209 (1988): "Open Systems Interconnection (OSI); Model and Notation: Service definition: Specification of basic encoding rules for Abstract Syntax Notation One (ASN.1)".
- [10] ETS 300 102-1 (1990): "Integrated Services Digital Network (ISDN); User-network interface layer 3; Specifications for basic call control".
- [11] ETS 300 102-2 (1990): "Integrated Services Digital Network (ISDN); User-network interface layer 3; Specifications for basic call control; Specification Description Language (SDL) diagrams".
- [12] ETS 300 196-1: "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".
- [13] CCITT Recommendation X.219 (1988): "Remote Operations: Notation and Service Definition".
- [14] CCITT Recommendation Z.100 (1988): "Functional Specification and Description Language (SDL)".

### 3 Definitions

For the purpose of this standard, the following definitions apply:

**Basic telecommunication service:** a bearer service or teleservice. The terms "bearer service" and "teleservice" are defined in CCITT Recommendation I.112 [3], § 2.2, definitions 202 and 203.

**CUG call:** see ETS 300 136 [6], Clause 3. (standards.iteh.ai)

**CUG index:** the closed user group index is a parameter used by the calling user to select a particular closed user group when originating a call. The index is also used by the network to indicate to the called user the closed user group from which an incoming call has originated. This index has only local significance, i.e. the index used by the calling user is, in general, different from the index used by the called user to identify the same closed user group.

**CUG interlock code:** this is a means of identifying closed user group membership within the network. At the calling side, if a closed user group match exists, the CUG index identifying a closed user group maps to the closed user group interlock code for that closed user group. If a closed user group match exists at the called side the closed user group interlock code identifying a closed user group maps to the CUG index representing that closed user group. Closed user group interlock code is not an access concept, but is used for clarity during the descriptions of signalling procedures and flows.

**Default number:** an ISDN number registered within the public ISDN following prior agreement between the third user and the public ISDN.

**Incoming access:** see ETS 300 136 [6], Clause 3.

**Incoming calls barred within a closed user group:** see ETS 300 136 [6], Clause 3.

**Integrated Services Digital Network (ISDN):** see CCITT Recommendation I.112 [3], § 2.3, definition 308.

**ISDN number:** a number conforming to the numbering plan and structure specified in CCITT Recommendation E.164 [5].

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

**Outgoing access:** see ETS 300 136 [6], Clause 3.

**Outgoing calls barred within a closed user group:** see ETS 300 136 [6], Clause 3.

**Preferential CUG:** a closed user group user subscribing to preferential closed user group nominates a CUG index which the network uses as a default to identify the required closed user group in the absence of any closed user group information in the outgoing call request. A preferential closed user group applies to an ISDN number (or to an ISDN number/service - see subclause 6.1) and not to a specific closed user group.

**Service; Telecommunications service:** see CCITT Recommendation I.112 [3], § 2.2, definition 201.

**Supplementary service:** see CCITT Recommendation I.210 [4], § 2.4.

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

## 4 Symbols and abbreviations

CES	Connection Endpoint Suffix
CUG	Closed User Group
DSS1	Digital Subscriber Signalling System No. one
IA	Incoming Access
ICB	Incoming Calls Barred within a closed user group
ISDN	Integrated Services Digital Network
OA	Outgoing Access
OCCB	Outgoing Calls Barred within a closed user group

## 5 Description

Essentially normal call establishment procedures shall apply but, additionally, to provide the CUG supplementary service, the network shall analyse the call request from the calling user in conjunction with the closed user group attributes associated with both the calling and called users (as identified by their ISDN numbers). As a result of this analysis the call can either fail for CUG supplementary service reasons or be allowed to proceed.

The network provider may define the maximum number of closed user groups of which a user can be a member.

Since the fundamental purpose of the CUG supplementary service is to prevent certain connections the network shall strictly control interactions with some other supplementary services to protect closed user group integrity.

## 6 Operational requirements

### 6.1 Provision and withdrawal

The provision of the CUG supplementary service to a new member and also the assignment of the various CUG supplementary service options to a new or existing member, shall require a prior arrangement between the member and the network provider.

The CUG supplementary service shall be provided on a subscription basis. As a network provider option, the CUG supplementary service may be offered with subscription options.

The options can be divided into two groups:

- a) the options shown in table 1 shall apply per ISDN number. The option values may be assigned individually for each basic service, or set of basic services, available at the ISDN number with the CUG supplementary service.
- b) the option shown in table 2 shall apply per closed user group provided at the ISDN number with the CUG supplementary service.

**Table 1: Options available per ISDN number**

Option (NOTE)	Values
1) Preferential CUG	Nominated CUG index, or none designated.
2) Outgoing access	Allowed, or not allowed.
3) Incoming access	Allowed, or not allowed.
NOTE: If, for a user with the CUG supplementary service, a basic service, or set of basic services, is not included in at least one closed user group, then: <ul style="list-style-type: none"> <li>- preferential CUG shall have the "none designated" option value;</li> <li>- outgoing access shall have the "allowed" option value if normal outgoing calls using that basic service, or set of basic services, are required;</li> <li>- incoming access shall have the "allowed" option value if incoming calls using that basic service, or set of basic services, are required.</li> </ul>	

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**Table 2: Options available per closed user group**

Option	Values
1) Barring within the closed user group	None, incoming calls, or outgoing calls.

The options assigned to a closed user group member shall be stored in the network.

Withdrawal of the CUG supplementary service shall be as a result of network provider action either at the request of a particular member, or for administrative reasons.

## 6.2 Requirements on the originating network side

For correct interactions with certain other supplementary services, the originating network side shall store, for the duration of the call, details of whether a normal or a CUG call was requested in the information sent to the destination network side. The CUG interlock code (if any) of the call request to the destination network side shall also be retained. However, if the network knows that such interactions are not possible (e.g. the user has only the CUG supplementary service) then the information may be discarded.

## 6.3 Requirements on the destination network side

For correct interactions with certain other supplementary services, the destination network side shall store, for the duration of the call, details of whether a normal or a CUG call request was passed to the called user. The CUG interlock code (if any) of the call request shall also be retained. However, if the network knows that such interactions are not possible (e.g. the user has only the CUG supplementary service) then the information may be discarded.