



EUROPEAN
TELECOMMUNICATION
STANDARD

ETS 300 064-1

October 1991

Source: ETSI TC-SPS

Reference: T/S 46-33A

ICS: 33.080

Key words: ISDN, supplementary service

**Integrated Services Digital Network (ISDN);
Direct Dialling In (DDI) 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) Direct Dialling In (DDI) 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 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 (signalling system protocols and switching functions) needed to support the Direct Dialling In (DDI) supplementary service. The stage 1 and stage 2 aspects are detailed in ETS 300 062 (1991) and ETS 300 063 (1991), 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 300 064 specifies the stage three of the Direct Dialling In (DDI) 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]).

The DDI supplementary service enables a user to call directly via a public ISDN a user on a private ISDN by using the public ISDN numbering plan.

The DDI supplementary service is applicable to all telecommunications 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 DDI supplementary service, 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 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 I.411 (1988): "ISDN user-network interfaces - Reference configurations".
- [2] CCITT Recommendation I.130 (1988): "Method for the characterisation of telecommunication services supported by an ISDN and network capabilities of an ISDN".
- [3] CCITT Recommendation E.164 (1988): "Numbering plan for the ISDN era".
- [4] ETS 300 102-1 (1990): "Integrated Services Digital Network (ISDN); User-network interface layer 3; Specification for basic call control".
- [5] 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".
- [6] ETS 300 195-1: "Integrated Services Digital Network (ISDN); Supplementary service interactions; Digital Subscriber Signalling System No. one (DSS1) protocol; Part 1: Protocol specification".
- [7] CCITT Recommendation I.112 (1988): "Vocabulary of terms for ISDNs".
- [8] CCITT Recommendation I.210 (1988): "Principles of telecommunication services supported by an ISDN and the means to describe them".

3 Definitions

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

Integrated Services Digital Network (ISDN): see CCITT Recommendation I.112 [7], § 2.3, definition 308.

Service; telecommunications service: see CCITT Recommendation I.112 [7], § 2.2, definition 201.

Supplementary service: see CCITT Recommendation I.210 [8], § 2.4.

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

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

ISDN number: a number conforming to the numbering plan and structure specified in CCITT Recommendation E.164 [3].

International number: an ISDN number structured as specified in, § 3.2 (in the paragraphs relating to international number) of CCITT Recommendation E.164 [3].

National number: National significant number: an ISDN number structured as specified in, § 3.2, (in the paragraphs relating to national significant number) of CCITT Recommendation E.164 [3].

Subscriber number: an ISDN number structured as specified in, § 3.2, (in the paragraphs relating to subscriber number) of CCITT Recommendation E.164 [3].

DDI number: the DDI number shall be at least that part of the ISDN number which shall be significant to the private ISDN.

NOTE: National or international prefixes cannot form part of the DDI number.

4 Symbols and abbreviations

DDI	Direct Dialling In.
DSS1	Digital Subscriber Signalling System No. one.
ISDN	Integrated Services Digital Network.
PSTN	Public Switched Telephone Network.

5 Description

The DDI supplementary service shall be based on the use of the ISDN number and shall not include subaddressing.

NOTE: CCITT Recommendation E.164 [3] provides the flexibility to administrations to use national numbering plans of fixed or variable number lengths. This flexibility also applies to DDI numbers.

In networks with an open numbering plan, the length of the DDI number can be unknown to the servicing local exchange or to any other entity of the public network.

The DDI number shall be transferred en-bloc or by overlap receiving from the network to the user, which shall finally and automatically establish a call to the destination without assistance of an operator.

6 Operational requirements

6.1 Provision and withdrawal

The DDI supplementary service shall be provided after prior arrangement with the administration and shall be withdrawn on the subscriber's request or for administrative reasons.

NOTE: Subscription to the multiple subscriber number and DDI supplementary services is mutually exclusive. However, in some networks both supplementary services could co-exist on the same access (e.g. for future extension of service provision).

6.2 Requirements on the originating network side

The basic call control procedures according to ETS 300 102-1 [4], subclause 5.1, shall apply.

6.3 Requirements on the destination network side

When the DDI supplementary service is provided to the called user, at least the DDI number shall be passed to the user in the Called party number information element. The en-bloc or the overlap receiving procedure shall be used to transfer the number information according to the rules specified in ETS 300 102-1 [4], subclause 5.2.

7 Coding requirements

The Called party number information element coded as in ETS 300 102-1 [4], subclause 4.5.8, shall be used to indicate the DDI number.

8 State definitions

The states associated with basic call control according to ETS 300 102-1 [4] shall apply.

9 Signalling procedures at the coincident S and T reference point

Not applicable.

NOTE: If the network knows that an equipment attached to the access is not a private ISDN, then it does not need to implement the procedures of Clause 10 and thus does not need to provide the DDI supplementary service for that access. If the network does not know whether the attached equipment is a terminal or a private network then the procedures of Clause 10 should be provided to that access if the DDI supplementary service is subscribed.

10 Procedures for interworking with private ISDNs

10.1 Activation, deactivation and registration

Not applicable.

10.2 Delivery of the DDI number

10.2.1 Normal operation

The DDI number shall be delivered from the network to the called user in the "number digits" field of the Called party number information element, according the procedures of ETS 300 102-1 [4], subclause 5.2.

In the case where only the latter part of the ISDN number is sent to the called user, the network shall code the "numbering plan identification" field as "ISDN/telephony numbering plan (CCITT Recommendation E.164/E.163)" and the "type of number" field as "unknown".

In the case where the full ISDN number is sent to the called user, the network shall code the "numbering plan identification" field as "ISDN/telephony numbering plan (CCITT Recommendation E.164/E.163)" and the "type of number" field as "national number", "international number" or "subscriber number".

NOTE: This coding is independent of the use of en-bloc procedures (where the Called party number is sent in a single message) or overlap receiving procedures (where the Called party number is sent in segments in several messages as it becomes available).

10.2.2 Exceptional procedures

The exceptional procedures of basic call shall apply (see ETS 300 102-1 [4]).

NOTE: As an alternative to clearing the call when incomplete or invalid digits are received, the user may accept the call. This has no impact on the protocol at the user-network access. The procedures at the user (DSS1 protocol entity in a private network) where correct ISDN numbers received within the Called party number information element do not match a destination in a private network are outside the scope of this standard.

11 Interactions with other networks

No special requirements for interaction with other networks are necessary.

NOTE: The DDI supplementary service may be used to enable successful terminal selection within the private ISDN when some compatibility information is absent when a call originates in a PSTN.

12 Interactions with other supplementary services

The interactions of the DDI supplementary service with other supplementary services shall be as specified in ETS 300 195-1 [6].

13 Parameter values (timers)

The timers associated with basic call control according to ETS 300 102-1 [4] shall apply.

14 Dynamic description (SDLs)

ETS 300 102-2 [5] shall apply.

Annex A (informative): Signalling flows

No DDI supplementary service specific signalling flow is necessary in addition to basic call control according to ETS 300 102-1 [4].

History

Document history	
October 1991	First Edition
April 1994	Corrigendum to First Edition: change to part 1 of a multi-part standard
March 1996	Converted into Adobe Acrobat Portable Document Format (PDF) and incorporation of all prior Corrigenda