

**Network Aspects (NA);
Public Switched Telephone Network (PSTN);
General aspects of standardization of PSTN services
related to the transfer of identification information
over the PSTN**



European Telecommunications Standards Institute

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Foreword

This Technical Report (TR) has been produced by ETSI Technical Committee Network Aspects (NA)

The present document addresses general aspects of the transfer of identification information and enhancements to the transfer of identification information.

1 Scope

The present document is aimed at identifying the history of activity and future activity needs relating the development of the European protocol supporting the transmission of Calling Line Identification (CLI) information and related services. It is produced without impeding the progression of the work already being carried out.

Included is a general overview of the Calling Line Identification Presentation (CLIP) and related services.

2 Abbreviations

For the purposes of the present document, the following abbreviations apply:

AN	Access Network
CLI	Calling Line Identity
CLIP	Calling Line Identification Presentation
CLIR	Calling Line Identification Restriction
CPE	Customer Premises Equipment
DTMF	Dual Tone Multi-Frequency
ISDN	Integrated Services Digital Network
LE	Local Exchange
PBX	Private Branch eXchange
PLMN	Public Land Mobile Network
PSTN	Public Switched Telephone Network
TE	Terminal Equipment
CW	Call Waiting
COLP	COnnected Line identification Presentation
MWI	Message Waiting Indication
UNI	User Network Interface

3 Introduction

The CLIP supplementary service is essentially a service that allows for the presentation of the calling user's number, either prior to ringing, during ringing or during a call, on the called user's terminal equipment. The served user may then accept or reject the call on the basis of the number displayed.

The basic telephony service for the Public Switched Telephone Network (PSTN) has not been standardized and this should be taken into account whilst standardizing supplementary services for the basic PSTN telephony service.

There have been discussions in a number of bodies on the regulatory impact of the service. It has generally been recognized that the capability to provide numbering information to the public could be abused.

4 Current offerings

The PSTN CLIP service is offered in the United States of America based upon the Bellcore specification in an ad-hoc way since different operators have interpreted the service in different ways. Some US operators state that users should not be provided with the capability to block the display of their number whereas other US operators state that users should be provided with the capability to block the display of their number. As a consequence numbers are only displayed on calls made within that operator's domain. This information should not be ignored since parallels could potentially be drawn between operation through America and Europe, which also consists of different operators in different countries with different expectations.

Within Europe (e.g. UK and Sweden) service providers are offering CLIP services.

A very similar CLIP supplementary service can already be offered over digital networks such as the Integrated Services Digital Network (ISDN), as a result of international agreement. CLIP is also extensively used in private networks and internally in businesses where extensions are connected through a Private Branch Exchange (PBX) or private exchange.

5 European Service standardization

5.1 ETS 300 648 Calling Line Identification Presentation (CLIP)

The present document defines the stage one of the CLIP supplementary service for the PSTN as provided by European public network operators. Stage one is an overall service description from the user's point of view.

The present document defines the interworking requirements between PSTN and private networks, PSTN and ISDN and Public Land Mobile Network (PLMNs).

The CLIP supplementary service provides the called party with the possibility of receiving identification of the calling party.

5.2 ETS 300 649 Calling Line Identification Restriction (CLIR)

The present document defines the stage one of the Calling Line Identification Restriction (CLIR) supplementary service for the PSTN as provided by European public network operators. Stage one is an overall service description from the user's point of view.

The present document defines the interworking requirements between PSTN and private networks, PSTN and ISDN and PLMNs.

The CLIR supplementary service enables the calling party to prevent presentation of its Calling Line Identity (CLI) to the called party.

6 Main protocol developments

6.1 ETS 300 659 PSTN: Subscriber line protocol over the local loop for display (and related) services

Published as two documents ETS 300 659-1 (part 1) and ETS 300 659-2 (part 2).

The first part of ETS 300 659 specifies the subscriber line protocol for the support of PSTN display services at Terminal Equipment (TE) in "on hook" state. The subscriber line protocol is accomplished by using asynchronous voice-band modem. In addition, annex C is provided in order to allow the continuation of use in those networks that already implemented a Dual Tone Multi-Frequency (DTMF) based subscriber line protocol.

The requirements imposed on the modem-based subscriber line protocol deal with data encoding, data transmission requirements and the three layers of the interface at the network end of the interface: Presentation layer, Data Link layer and Physical layer.

The requirements imposed on the DTMF-based subscriber line protocol deal with the transfer of the DTMF coded display information. The procedures and encoding arrangements are specified in annex C of ETS 300 659 part 1.

TE can be connected by analogue access directly to the Local Exchange (LE) or through an Access Network (AN). In the latter case, data transmission can be applied from the LE or from elsewhere in the network hence a transmission path needs to exist from the LE to the TE before data transmission. It is the network operator's responsibility to ensure that the relevant protocol supports transmission path establishment.

The second part of ETS 300 659 specifies the subscriber line protocol for the support of PSTN display services at LE when Customer Premises Equipment (CPE) is in "off-hook" state by using asynchronous voice-band FSK signalling. The specification is a complement of part 1. This part only contains differences and extensions to part 1.

7 Summary

Although the service descriptions only cover CLIP and CLIR the protocols have been designed to cater for foreseen future developments such as, for example, CLIP with Call Waiting (CW), COnnected Line identification Presentation (COLP) and Message Waiting Indication (MWI). The protocols listed in the present document are seen as important to transfer of telecommunications identification information.

Annex A: Review of existing standards

A.1 Standards for the User Network Interface (UNI) at regional level

The following national standards/specifications have been identified:

USA

Bellcore specification	Bellcore CLASS signalling requirements used in Bellcore clients' networks in North America.
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Sweden

Telia Specification 8211-A331	Transfer of number information on an analogue exchange line, incoming traffic.
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Telia Specification 8211-A332	Transfer of number information on a digital exchange line, incoming traffic.
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Netherlands

Netherlands protocol	Netherlands protocol to support CLI within the Netherlands network.
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UK

SIN 227	BT Suppliers Information Note.
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France

ST/LAA/TCS/SSP/188	Service definition of CLIP.
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ST/LAA/TCS/SSP/189	User-network interface characteristics for CLIP.
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Italy

SASCN 2-2380/1	Identification of calling party.
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CEPT

CEPT Recommendation T/CS 46-02	Multifrequency signalling system to be used for push-button telephones.
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A.2 Inter-network standards

The following inter-network standards relate transfer of CLI information but are not all PSTN specific. These are given for information of the reader:

ETS 300 648	CLIP.
ETS 600 649	CLIR.
ETS 300 659-1 (1997)	PSTN: Subscriber line protocol over the local loop for display (and related) services; part 1: On hook data transmission.
ETS 300 659-2 (1997)	PSTN: Subscriber line protocol over the local loop for display (and related) services; part 2: Off-hook data transmission.
ETS 300 089 (1992)	ISDN; CLIP supplementary service; Service description.
ETS 300 090 (1992)	ISDN; CLIP supplementary service; Service description.
CCITT Recommendation I.251.3 (1992)	CLIP.
CCITT Recommendation I.251.4 (1992)	CLIR.
ITU-T Recommendation Q series	Stage 2 and 3 for CLI Presentation/Restriction.
ETS 300 091, 092, 093	Stage 2 and Stage 3 standards.
CEPT Handbook	Handbook of Services and Facilities within the Public Network (1981).

History

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