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Digitalno omrežje z integriranimi storitvami (ISDN) - Daljinsko ukrepanje - Opis storitev

Integrated Services Digital Network (ISDN); Teleaction teleservice; Service description

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ETSI

Postal address
F-06921 Sophia Antipolis Cedex - FRANCE

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Office address
650 Route des Lucioles - Sophia Antipolis
Valbonne - FRANCE
Tel.: +33 4 92 94 42 00 Fax: +33 4 93 65 47 16
Siret N° 348 623 562 00017 - NAF 742 C
Association à but non lucratif enregistrée à la
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Internet
secretariat@etsi.fr
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SIST EN 301 131:2000

Contents

iTeh STANDARD PREVIEW
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SIST EN 301 131:2000
https://standards.iteh.ai/catalog/standards/sist/164a8c77-4d32-43a8-94a4-a53cdf4a4b93/sist-en-301-131-2000

SIST EN 301 131:2000

iTeh STANDARD PREVIEW
(standards.iteh.ai)
SIST EN 301 131:2000
https://standards.iteh.ai/catalog/standards/sist/164a8c77-4d32-43a8-94a4-a53cdf4a4b93/sist-en-301-131-2000

SIST EN 301 131:2000

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Foreword

This European Standard (Telecommunications series) has been produced by ETSI Technical Committee Network Aspects (NA).

In accordance with CCITT Recommendation I.130 [1], the following three level structure is used to describe the supplementary telecommunications services 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;
- Stage 3: defines the signalling system protocols and switching functions needed to implement the service described in stage 1.

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The present document relates to stage 1 (overall service description) for the teleaction bearer service in ISDN.

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SIST EN 301 131:2000

1 Scope

The present document defines the stage one of the teleaction bearer service for the pan-European Integrated Services Digital Network (ISDN) as provided by European public telecommunications operators. Stage one is an overall service description from the user's point of view (see CCITT Recommendation I.130 [1]), but does not deal with the details of the human interface itself.

The present document defines the interworking requirements for the teleaction bearer services supported by networks other than ISDN (including private ISDNs) with the teleaction bearer services described in the present document.

The present document does not specify the additional requirements where the service is provided to the user via a telecommunications network that is not ISDN but does include interworking requirements of other networks with the public ISDN.

Charging principles are outside the scope of the present document.

Teleaction is a service providing for reliable low volume data communication and allied processing service to the users. The teleaction bearer service can be used for applications such as monitoring, indicating, controlling or verifying of remote events, operations, and measurements.

The present document is applicable to the stage two and stage three standards for the ISDN teleaction bearer service. The terms "stage two" and "stage three" are also defined in CCITT Recommendation I.130 [1]. Where the text indicates the status of a requirement (i.e. as strict command or prohibition, as authorization leaving freedom, or as a capability or possibility), this needs to be reflected in the text of the relevant stage two and stage three standards. Furthermore, conformance to the present document is met by conforming to the stage three standard with the field of application appropriate to the equipment being implemented. Therefore, no method of testing is provided for the present document.

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2 References

SIST EN 301 131:2000
https://standards.iteh.ai/catalog/standards/sist/164a8c77-4d32-43a8-94a4-a53cdf4a4b93/sist-en-301-131-2000

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies.
- A non-specific reference to an ETS shall also be taken to refer to later versions published as an EN with the same number.

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

[2] ITU-T Recommendation I.112 (1993): "Vocabulary of terms for ISDNs".

[3] ITU-T Recommendation I.210 (1993): "Principles of telecommunication services supported by an ISDN and the means to describe them".

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

[5] EN 50136-1-1 (1996): "Alarm systems, Alarm transmission systems and equipment - Part 1-1: General requirements for alarm transmission systems".

[6] ITU-T Recommendation X.2 (1996): "International user classes of service in, and categories of access to, public data networks and Integrated Services Digital Networks (ISDNs)".

[7] ITU-T Recommendation X.25 (1996): "Interface between Data Terminal Equipment (DTE) and Data Circuit-terminating Equipment (DCE) for terminals operating in the packet mode and connected to public data networks by dedicated circuit".

SIST EN 301 131:2000

[8] ETS 300 011: "Integrated Services Digital Network (ISDN); Primary rate user-network interface; Layer 1 specification and test principles".

[9] ETS 300 012: "Integrated Services Digital Network (ISDN); Basic user-network interface; "Layer 1 specification and test principles".

[10] ETS 300 049: "Integrated Services Digital Network (ISDN); ISDN Packet Mode Bearer Service (PMBS); ISDN Virtual Call (VC) and Permanent Virtual Circuit (PVC) bearer services provided by the D-channel of the user access - basic and primary rate".

[11] ETS 300 402-1: "Integrated Services Digital Network (ISDN); Digital Subscriber Signalling System No. one (DSS1) protocol; Data link layer; Part 1: General aspects [ITU-T Recommendation Q.920 (1993), modified]".

3 Definitions and abbreviations

3.1 Definitions

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

Integrated Services Digital Network (ISDN): See ITU-T Recommendation I.112 [2], paragraph 2.3, definition 308.

service; telecommunications service: See ITU-T Recommendation I.112 [2], paragraph 2.2, definition 201.

supplementary service: See ITU-T Recommendation I.210 [3], paragraph 2.4.

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Basic Network Provider (BNP): The one responsible for the installation and the maintenance of the network supporting the teleaction bearer service.

Teleaction Management Function Provider (TMFP): The one responsible for the installation and maintenance of one or more of the TMFs. A TMFP may be the same as the BNP.

SIST EN 301 131:2000
https://standards.iteh.ai/catalog/standards/sist/164a8c77-4d32-43a8-94a4-a53cdf4a4b93/sist-en-301-131-2000

Teleaction Management Function (TMF): Set of network functions added to either the public ISDN, a private ISDN or assigned to a separate public, or private, network entity. The tasks of the TMF are:

- ensure reliable communication paths between the End User Terminals (EUTs) and the Service Provider Terminal (SPT), i.e. to ensure available and secure access for the EUTs to the network and communication paths for the SPT in the ISDN, respectively;
- authorization of connected EUTs/SPTs;
- EUT/SPT functionality check;
- address the appropriate EUT/SPT for transfer of information generated by SPT/EUT;
- as a TMFP option, broadcast appropriate EUTs for transfer of information generated by a SPT.

The TMF executes these functions by polling the EUTs and the SPTs. The TMF stores status information obtained through the polling procedures. Depending on the application, EUT status information may be sent to the SPT either on request or immediately after a change of status has occurred.

NOTE 1: If the SP operates through the Packet Switched Data Network or a dedicated network, the TMF is considered to be the interworking unit and is, therefore, required to perform adequate protocol translation/conversion.

NOTE 2: In this description it is expected that all information transfer between an EUT and a SPT is routed via a TMF. This will allow the TMF to verify that an EUT - SPT communication path is available. However, paths directly between EUT and SPT may also be used if the TMF can verify that such a path is available. This is for further study (see also note 4).

SIST EN 301 131:2000

NOTE 3: It is expected that the basic ISDN at a later phase will include maintenance functions which may be used to ensure reliable communications paths between EUTs and SPTs (e.g. maintenance of subscriber access). The TMF may take advantage by using these functions after they will have became available. The ISDN maintenance functions are for further study.

NOTE 4: The possibility of performing TMF functions by means other than polling, e.g. reporting procedures, is for further study.

Authorization and functionality check of the SPT and EUT are outside the scope of the present document.

End User (EU): The one to whom a teleaction application service is provided or who is affected by that application service.

Service Provider (SP): The one who, by using one or more TMFs, provides a teleaction application service to one or more EUs.

NOTE 5: The SP may be the BNP, the TMFP, or another organization responsible for one or more SPT.

End User Terminal (EUT): A device (or location of a device) that, depending on the application (e.g. by monitoring of subdevices):

- on the basis of local conditions or by interrogation, generates information and presents this information for transmission by the network to a SPT;
- receives information from a SPT in order to affect local conditions;
- upon polling requests received from a TMF executes the requested local actions (e.g. authorization, functionality checks, etc.) and sends appropriate responses to the TMF.

NOTE 6: Authorization and functionality checks are outside the scope of the present document.

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Service Provider Terminal (SPT): A device (or location of such a device) which, depending on the application:

- receives information from one or more EUTs for handling and processing in accordance with the application service offered by the Service Provider (SP);
- generates control messages and information requests and presents that information for transmission to one or more EUTs;
- monitors EUTs on the network, either by retrieving EUT status information stored in TMFs, and/or by receiving status information automatically from TMFs (e.g. alarms);
- receives polling requests from TMFs and sends appropriate responses to the TMF;
- transfers to the TMF information to be broadcasted to the EUTs, if the broadcast functionality is supported by the TMF.

SIST EN 301 131:2000
https://standards.iteh.ai/catalog/standards/sist/a8c77-4d32-43a8-94a4-a53cdf4a4b93/sist-en-301-131-2000

NOTE 7: Execution of local procedures such as authorization and functionality check are outside the scope of the present document.

EU access capability: The telecommunication means used between an EUT and a TMF (e.g. ISDN bearer service, dedicated connection, etc.).

SPT access capability: The telecommunication means used between a SPT and a TMF (e.g. ISDN bearer service, dedicated connection, etc.).

Teleaction application: The teleaction application is one specific end to end application offered by a service provider using the teleaction bearer service.

Teleaction bearer service: The teleaction bearer service is the transport mechanism used by a teleaction application.

SIST EN 301 131:2000

3.2 Abbreviations

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

BNP	Basic Network Provider
DTN	Dedicated Teleaction Network
EU	End User
EUT	End User Terminal
ISDN	Integrated Services Digital Network
PLL	Permanent Logical Link
SP	Service Provider
SPT	Service Provider Terminal
TMF	Teleaction Management Function
TMFP	Teleaction Management Function Provider

4 Description

Teleaction is a service providing for reliable low volume data communication and allied processing service to the users. The teleaction bearer service can be used for applications such as monitoring, indicating, controlling or verifying of remote events, operations, and measurements.

The teleaction bearer service allows the exchange of low volume digital information between the End User (EU) and SP. A two-way simultaneous information transfer shall be continuously available during the information transfer phase. This shall apply also in such cases where only one-way information transfer is required by the application. The teleaction bearer service shall connect EUs to one or more SPs. Each EUT is logically associated with only one SPT. An EU may consist of more than one EUT. Messages from EUs shall be conveyed to one or more SPs, and vice versa.

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NOTE 1: The context where one EUT communicates with several SPTs is outside the scope of the present document.

SIST EN 301 131:2000

EUs and SPs shall access the network via ISDN T reference point, or coincident S and T reference point using standardized protocols defined for teleaction.

https://standards.iteh.ai/catalog/standards/sist/
d53cdf4a4b93/sist-en-301-131-2000

NOTE 2: SPs may be connected to networks other than ISDN. Interworking with these networks will then be necessary.

The applications of the teleaction bearer service can be divided into two basic categories, each with its own network implications and specific security functions. These categories are:

1) applications without other specific requirements regarding service reliability and security functions than those offered by the bearer service, i.e. **non-sensitive** applications;

2) applications with additional security and reliability requirements, i.e. **sensitive** applications.

Several levels of reliability and security shall, therefore, be offered with the teleaction bearer service in order to ensure reliable communications paths between the EUs and the SPs, and to prevent unauthorized data traffic or unauthorized access to EU data. To achieve this goal, TMFs shall be either added to the basic ISDN network or be assigned to a separate entity. The level of reliability and security shall be application dependent (see clause 8). Transmission delay between EUT and SPT shall conform to the delay categories defined in subclause 8.4.1 as appropriate for the service application.