



EUROPEAN
TELECOMMUNICATION
STANDARD

ETS 300 208

March 1996

Source: ETSI TC-NA

Reference: DE/NA-012212

ICS: 33.040

Key words: ISDN, supplementary service

**Integrated Services Digital Network (ISDN);
Freephone (FPH) supplementary service
Service description**

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Foreword

This European Telecommunication Standard (ETS) has been produced by the Network Aspects (NA) Technical Committee of the European Telecommunications Standards Institute (ETSI).

In accordance with CCITT Recommendation I.130 [1], 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 1 aspects (overall service description) for the Freephone (FPH) supplementary service. The stage 2 and stage 3 aspects are detailed in ETR 209 (1996) and ETS 300 210 (1996), respectively.

Transposition dates	
Date of adoption of this ETS:	1 March 1996
Date of latest announcement of this ETS (doa):	30 June 1996
Date of latest publication of new National Standard or endorsement of this ETS (dop/e):	31 December 1996
Date of withdrawal of any conflicting National Standard (dow):	31 December 1996

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1 Scope

This standard defines the stage one of the Freephone (FPH) supplementary 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.

This standard defines the interworking requirements of private ISDNs with the public ISDN.

In addition this standard specifies the base functionality where FPH supplementary service is provided to the user via a private ISDN.

This standard does not specify the additional requirements where FPH supplementary service is provided to the user via a telecommunications network that is not an ISDN but does include interworking requirements of other networks with the public ISDN.

Interactions with supplementary services not listed in clause 8 are outside the scope of this standard.

Charging principles are outside the scope of this standard, unless specific service requirements are stated. These requirements deal with the allocation of certain call charges to particular users.

The FPH supplementary service enables to allocate to the served user the charges for calls placed to the freephone number.

The FPH supplementary service is applicable to all circuit-switched telecommunication services.

This standard is applicable to the stage two and stage three standards for the ISDN FPH supplementary 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 authorisation leaving freedom, or as a capability or possibility), this shall be reflected in the text of the relevant stage two and stage three standards.

Furthermore, conformance to this standard is met by conforming to the stage three standards with the field of application appropriate to the equipment being implemented. Therefore, no method of testing is provided for this standard.

2 Normative references

This standard 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 are listed hereafter. For dated references, subsequent amendments to, or revisions of any of these publications apply to this standard 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.130 (1988): "Method for the characterisation of telecommunication services supported by an ISDN and network capabilities of an ISDN".
- [2] CCITT Recommendation I.112 (1988): "Vocabulary of terms for ISDNs".
- [3] CCITT Recommendation I.210 (1988): "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] CCITT Recommendation E.164 (1991): "Numbering plan for the ISDN era".

3 Definitions

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

Integrated Services Digital Network (ISDN): see CCITT Recommendation I.112 [2], paragraph 2.3, definition 308.

Service; telecommunications service: see CCITT Recommendation I.112 [2], paragraph 2.3, definition 201.

Supplementary service: see CCITT Recommendation I.210 [3], paragraph 2.4.

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

Basic access: see CCITT Recommendation Q.9 [4], paragraph 1, definition 1551.

Primary rate access: see CCITT Recommendation Q.9 [4], paragraph 1, definition 1552.

Served user: the customer who has subscribed to the FPH supplementary service.

Freephone number: a set of digits assigned by the service provider to a served user upon subscription to the FPH supplementary service. The freephone number forms the subscriber number part of the ISDN number, and in conjunction with a service access code, the freephone number forms the national part of an ISDN number (see CCITT Recommendation E.164 [5]).

Freephone call: a call made to the freephone number.

Service access code: digits assigned to the FPH supplementary service, which forms the national destination code part of an ISDN number. In conjunction with a freephone number, the service access code forms the national part of an ISDN number.

Access arrangement: installations (e.g. PABX) and/or terminals connected to the served user's access (e.g. primary rate access).

Routing area: an area from which calls using a given freephone number are routed to one access arrangement or to a set of access arrangements according to other requirements.

Service profile: a record containing instructions for freephone call handling.

4 Symbols and abbreviations

FPH	Freephone
ISDN	Integrated Services Digital Network
PSTN	Public Switched Telephone Network

5 Description

5.1 Core requirements

The FPH supplementary service shall be available to users who are attached to the network via a basic access or a primary rate access.

The FPH supplementary service enables to allocate to the served user the charges for calls placed to the freephone number.

NOTE 1: For an interim period, some service providers may allocate charges to the calling user.

5.2 Optional requirements

5.2.1 General

The optional requirements contain functionalities additional to the core requirements, that customise the service according to specific subscriber's needs. These additional parts may be either offered to all service provider's customers, or to a group or even to a single customer.

Some possible service provider's options are listed hereafter, but the service provider may offer other additional options.

5.2.2 Time dependent control

The served user is enabled to modify the handling of the call according to the time interval (e.g., time of day, day of week) in which the call is placed.

5.2.3 Time dependent routing

The served user is enabled to specify the routing destination(s), e.g. access arrangement(s) or announcement(s), according to the date and time when the call was originated. The time interval may be specified by the served user.

5.2.4 Origin dependent control

The served user is enabled to select the origination (e.g., calling line identity, geographic area) from which the service may be used.

5.2.5 Origin dependent routing

The served user is enabled to specify the routing destination(s), i.e. access arrangement(s) or announcement(s), according to the area from which the call was originated. The routing area(s) may be specified by the served user.

5.2.6 Call limiter

The served user is enabled to specify the maximum number of simultaneous calls to a given access arrangement. Alternative action shall be taken on calls exceeding the call limit, e.g. rejection.

5.2.7 Call distribution

The served user is enabled to specify the distribution mechanism for calls to be shared between different access arrangements.

The distribution mechanism is outside the scope of this standard. It may be, for example, percentage-based, i.e. the calls are routed to the different access arrangements according to a percentage, or circular, i.e. the calls are routed to the different access arrangements with a uniform load.

5.2.8 Alternative destination on busy/no reply

The served user is enabled to re-route to an alternative access arrangement freephone calls meeting busy condition or no positive response at the scheduled destination.

5.2.9 Call queueing

The served user is enabled to place in queue freephone calls meeting a busy condition, and to connect them as soon as a free condition is detected. The calling user shall be given an indication that the call is queued. The queueing mechanism is outside the scope of this standard.

5.2.10 Indication of freephone call

The served user may receive an indication that the incoming call is the result of an invocation of the FPH supplementary service.

5.2.11 Presentation of freephone number

The served user may receive the freephone number which is at the origin of the invocation of the FPH supplementary service.

5.2.12 Customer service profile management

The served user may customise one or several handling service profiles (or records) either in operation or not in operation. The management mechanism is outside the scope of this standard.

5.2.13 Statistical information

The served user is enabled to obtain, from the network, statistical information on freephone incoming calls, which may include itemised billing. The procedures for the generation and reporting of such information are outside the scope of the standard.

6 Procedures

6.1 Provision and withdrawal

The FPH supplementary service shall be provided by prior arrangement with the service provider.

On subscription to the FPH supplementary service, a freephone number shall be allocated.

Two methods of service provision are envisaged for the FPH supplementary service in an international environment.

Method 1: The served user contracts with the service provider within which the freephone calls terminate. The FPH supplementary service is provided on the basis of a bilateral arrangement between the originating and terminating service providers.

Method 2: The served user contracts with the service provider from which calls are originated. The originating service provider is then responsible for routing the call to an ordinary ISDN number and for the call logging and subsequent billing of the served user. With this method the served user may require access to the originating service provider's network, in order to modify the call handling service profile.

On subscription to the FPH supplementary service the service provider may offer optional features to enable the FPH supplementary service to be customised according to specific subscriber needs.

The served user can also specify that different actions be taken for different basic services.

On subscription to the FPH supplementary service, the service provider can indicate that the values of the subscription options shall be fixed, or that the served user can amend all or part of the information.

NOTE: The procedures for registration and erasure of information are outside the scope of this standard.

The FPH supplementary service shall be withdrawn by the service provider upon request of the served user or for service provider reasons.

6.2 Normal procedures

6.2.1 Core requirements

6.2.1.1 Registration and erasure

Following the arrangement between the service provider and the subscriber, the service provider provides for the initial registration of the served user service profile in the network.

The served user service profile consists of parameters stored in a record used by the network to handle freephone calls (running record).

6.2.1.2 Activation and deactivation

The FPH supplementary service is activated on provision and deactivated on withdrawal.

6.2.1.3 Invocation and operation

In accordance with the basic call procedures, the calling user can originate a call indicating the service access code and the freephone number identifying the served user.

Calling user procedures to call a freephone served user in another country are the same as those used for a national freephone call.

The FPH supplementary service shall be invoked and the call shall be processed according to the served user's requirements contained in the running record, i.e. offered to the served user or connected to an announcement.

The calling user shall receive indications about the success or failure of the request.

Charges for the call shall be allocated to the served user.

6.2.1.4 Interrogation

Not applicable.

6.2.2 Optional requirements

6.2.2.1 Registration and erasure

The served user can control a number of service profiles, the maximum number of which is a service provider option.

The served user access to register or erase records may be subject to:

- a previous agreement with the service provider;
- a check on the authorisation;
- a restriction on the set of parameters including the range of values.

The mechanisms of authorisation procedures applied to the access for control, the nature of information stored by the network, and the mechanisms for registering and amending information, are outside the scope of this standard.

The service provider can also register and erase records containing information registered for the FPH supplementary service.

6.2.2.2 Activation and deactivation

The served user can indicate which of the service profiles is to be used for control of the FPH supplementary service. When the served user indicates that a service profile is to be used for control of the FPH supplementary service, this shall replace any service profile currently in use.

The served user can, either directly or through service provider action, activate or deactivate a record.

6.2.2.3 Invocation and operation

The FPH supplementary service shall be invoked and the call shall be processed according to the served user's requirements contained in the running record, i.e. offered to the served user or connected to an announcement. Possible served user's requirements are listed in subclause 5.2, e.g. time and origin dependent routing.

As a service provider option, the user can receive an indication that the call is a result of the invocation of the FPH supplementary service. As a further option, the service access code and the freephone number can be given to the user.

6.2.2.4 Interrogation

The served user may interrogate the network by means of an appropriate control procedure. The mechanisms of authorisation procedures are outside the scope of this standard.

The network, following a positive validation of the user access, shall provide the required information on parameter values of the served user's service profile(s).

6.3 Exceptional procedures

6.3.1 Registration and erasure

Not applicable.

6.3.2 Activation and deactivation

Not applicable.

6.3.3 Invocation and operation

If, for any reason, the FPH supplementary service cannot be invoked on a call, the call shall be rejected and the calling user shall be informed.

6.3.4 Interrogation

Not applicable.

7 Intercommunication considerations

The FPH supplementary service shall be supported across the internetwork interface of different networks. For example, a remote network, to which the user is not attached, will need to know whether, or not, a user's access arrangements are busy in order to offer a call to that user, or send the call elsewhere.

7.1 Interworking with non-ISDNs

When interworking between Public Switched Telephone Network (PSTN) and ISDN occurs, no additional freephone requirements are necessary over and above those for the basic call.

When interworking between a mobile network and ISDN occurs, the mobile network provider shall not charge their calling users for use of mobile network resources, e.g. use of the radio link.

NOTE: For an interim period, some service providers may allocate charges to the calling user.

7.2 Interworking with private ISDNs

The FPH supplementary service shall be supported across the internetwork interface between the public and the private network.

Users attached to a private ISDN can be the destination for freephone calls. In such cases, the FPH supplementary service could operate in one network, and users can reside in the other network. The private ISDN shall perform the procedures for monitoring the user, and shall report the status to the public ISDN in order to support the FPH supplementary service.

8 Interaction with other supplementary services

Interactions with supplementary services not listed below are outside the field of application of this standard.

8.1 Advice of charge services

8.1.1 Charging information at call set-up time

Calling user:

No impact, i.e. neither supplementary service shall affect the operation of the other supplementary service.

User who receives freephone calls:

Advice of charge information shall not be sent to the user who receives the freephone call.

8.1.2 Charging information during the call

Calling user:

No impact, i.e. neither supplementary service shall affect the operation of the other supplementary service.

User who receives freephone calls:

Advice of charge information shall not be sent to the user who receives the freephone call.

8.1.3 Charging information at the end of the call

Calling user:

No impact, i.e. neither supplementary service shall affect the operation of the other supplementary service.

User who receives freephone calls:

Advice of charge information shall not be sent to the user who receives the freephone call.

8.2 Call waiting

No impact, i.e. neither supplementary service shall affect the operation of the other supplementary service.

8.3 Call hold

No impact, i.e. neither supplementary service shall affect the operation of the other supplementary service.

8.4 Explicit call transfer

If a freephone call is delivered to user A, i.e. user A is an answering point for the FPH supplementary service, and the freephone call is transferred due to the explicit call transfer supplementary service in operation at user A's access arrangement, the user who called the freephone number shall neither receive information that the call has been transferred, nor receive the transferred-to number.

NOTE: If user A originates a freephone call and transfers it to another user, then, on transfer, the freephone number will be used in any indications to the other user.

8.5 Number identification services

8.5.1 Calling line identification presentation

No impact, i.e. neither supplementary service shall affect the operation of the other supplementary service.

8.5.2 Calling line identification restriction

During the call: No impact, i.e. neither supplementary service shall affect the operation of the other supplementary service.

After the call: When the calling line identification restriction supplementary service has been activated and statistical reports are to be provided, then the calling line identity shall not be contained in the statistical reports.

8.5.3 Connected line identification presentation

The calling user shall not be given the connected line identity of the user to whom the freephone call is presented. The calling user shall be given a number consisting of the service access code and the freephone number.

8.5.4 Connected line identification restriction

It should not be possible to restrict the presentation of the number consisting of the service access code and the freephone number to the calling user.

8.6 Closed user group

No impact, i.e. neither supplementary service shall affect the operation of the other supplementary service.

8.7 Completion of calls to busy subscribers

A request for the completion of calls to busy subscribers supplementary service on a call to a freephone number shall be rejected. Freephone calls shall take precedence over request for the completion of calls to busy subscribers.

8.8 Conference services

8.8.1 Conference call, add-on

No impact, i.e. neither supplementary service shall affect the operation of the other supplementary service.

8.8.2 Meet-me conference

No impact, i.e. neither supplementary service shall affect the operation of the other supplementary service.

8.9 Direct dialling in

No impact, i.e. neither supplementary service shall affect the operation of the other supplementary service.

8.10 Diversion services

8.10.1 Call forwarding unconditional

Forwarding to a freephone number

The number of diversions of the call should not be lost after having been subjected to the FPH supplementary service.

Forwarding of a freephone call

According to a service provider option, freephone calls shall be forwarded in one of the following ways:

- freephone calls which are allocated to a user shall override the call forwarding unconditional supplementary service, if activated. Such calls shall be subject to other mechanisms for allocating the call to another user. The procedures for this are outside the scope of this standard; or
- freephone calls which are allocated to a user shall be subject to the call forwarding unconditional supplementary service if it has been activated by that user. If a freephone call is forwarded, the calling user shall not receive the ISDN number of the forwarded-to user.

8.10.2 Call forwarding busy

Forwarding to a freephone number

The number of diversions of the call should not be lost after having been subjected to the FPH supplementary service.

Forwarding of a freephone call

According to a service provider option, freephone calls shall be forwarded in one of the following ways:

- freephone calls which are allocated to a user shall override the call forwarding busy supplementary service, if activated. Such calls shall be subject to other mechanisms for allocating the call to another user. The procedures for this are outside the scope of this standard; or
- freephone calls which are allocated to a user shall be subject to the call forwarding busy supplementary service if it has been activated by that user. If a freephone call is forwarded, the calling user shall not receive the ISDN number of the forwarded-to user.

8.10.3 Call forwarding no reply

Forwarding to a freephone number

The number of diversions of the call should not be lost after having been subjected to the FPH supplementary service.

Forwarding of a freephone call

According to a service provider option, freephone calls shall be forwarded in one of the following ways:

- freephone calls which are allocated to a user shall override the call forwarding no reply supplementary service, if activated. Such calls shall be subject to other mechanisms for allocating the call to another user. The procedures for this are outside the scope of this standard; or
- freephone calls which are allocated to a user shall be subject to the call forwarding no reply supplementary service if it has been activated by that user. If a freephone call is forwarded, the calling user shall not receive the ISDN number of the forwarded-to user.

8.10.4 Call deflection

Deflecting to a freephone number

The number of diversions of the call should not be lost after having been subjected to the FPH supplementary service.

Deflecting of a freephone call

According to a service provider option, freephone calls shall be forwarded in one of the following ways:

- freephone calls which are allocated to a user shall override the call deflection supplementary service and shall not be deflected; or
- freephone calls which are allocated to a user shall be subject to the call deflection supplementary service. If a freephone call is deflected, the calling user shall not receive the ISDN number of the deflected-to user.

8.11 Freephone

If a user's access arrangement is the destination for more than one freephone number, either in the same network or in different networks, then queueing and call distribution mechanisms interact. The processing of multiple queues and call distribution mechanisms, the order and priorities assigned, are outside the scope of this standard.

8.12 Malicious call identification

In addition to the number of the user to whom the freephone call is presented, the service access code and the freephone number shall be registered.

NOTE: During a certain period, after the introduction of ISDN, some networks may not support the registration of the called freephone number.

8.13 Multiple subscriber number

No impact, i.e. neither supplementary service shall affect the operation of the other supplementary service.

8.14 Subaddressing

No impact, i.e. neither supplementary service shall affect the operation of the other supplementary service.

8.15 Terminal portability

No impact, i.e. neither supplementary service shall affect the operation of the other supplementary service.

8.16 Three party

No impact, i.e. neither supplementary service shall affect the operation of the other supplementary service.

8.17 User-to-user signalling

Any charge for the use of the user-to-user signalling supplementary service in a freephone call should be applied to the served user of the FPH supplementary service.

History

Document history			
October 1992	Public Enquiry	PE 33:	1992-10-26 to 1993-02-19
December 1995	Vote	V 94:	1995-12-27 to 1996-02-16
March 1996	First Edition		