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Integrated Services Digital Network (ISDN); Freephone (FPH) supplementary service;
Functional capabilities and information flows

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Foreword

This ETSI Technical Report (ETR) has been produced by the Signalling Protocols and Switching (SPS) Technical Committee of the European Telecommunications Standards Institute (ETSI).

ETRs are informative documents resulting from ETSI studies which are not appropriate for European Telecommunication Standard (ETS) or Interim European Telecommunication Standard (I-ETS) status. An ETR may be used to publish material which is either of an informative nature, relating to the use or the application of ETSs or I-ETSs, or which is immature and not yet suitable for formal adoption as an ETS or an I-ETS.

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 ETR details the stage 2 aspects (functional capabilities and information flows) needed to support the Freephone (FPH) supplementary service. The stage 1 and stage 3 aspects are detailed in ETS 300 208 and ETS 300 210-1, respectively.

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1 Scope

This ETSI Technical Report (ETR) defines the stage two of the Freephone (FPH) supplementary service for the pan-European Integrated Services Digital Network (ISDN) as provided by European public telecommunications operators. Stage two identifies the functional capabilities and the information flows needed to support the stage one service description. The stage two description also identifies user operations not directly associated with a call (see CCITT Recommendation I.130 [3]).

NOTE: This stage 2 description reflects a premature status of the FPH supplementary service, i.e. the functional capabilities and information flows are not complete and may not be in full alignment with the corresponding stage 1 and stage 3 descriptions.

This ETR is specified according to the methodology specified in CCITT Recommendation Q.65 [5].

This ETR does not formally describe the relationship between this supplementary service and the basic call, but where possible this information is included for guidance.

In addition this ETR does not specify the requirements where the service is provided to the user via a private ISDN. This ETR does not specify the requirements for the allocation of defined Functional Entities (FEs) within a private ISDN; it does however define which FEs may be allocated to a private ISDN.

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

The FPH supplementary service allows the served user having one or several installations to be reached from all or part of the country, or internationally as appropriate, with a Freephone number and to be charged for this kind of call.

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

This ETR is applicable to the stage three standards for the ISDN FPH supplementary service. The term "stage three" is also defined in CCITT Recommendation I.130 [3]. Where the text indicates the status of a requirement, i.e. as strict command or prohibition, as authorization leaving freedom as a capability or possibility, this needs to be reflected in the text of the relevant stage 3 standards.

Furthermore, conformance to this ETR 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 ETR.

2 References

This ETR incorporates by dated and undated reference, provisions from other publications. These 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 ETR only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

- [1] CCITT Recommendation E.164 (1991): "Numbering plan for the ISDN era".
- [2] ITU-T Recommendation I.112 (1993): "Vocabulary of terms for ISDNs".
- [3] CCITT Recommendation I.130 (1988): "Method for the characterization of telecommunication services supported by an ISDN and network capabilities of an ISDN".
- [4] ITU-T Recommendation I.210 (1993): "Principles of telecommunication services supported by an ISDN and the means used to describe them".
- [5] CCITT Recommendation Q.65 (1988): "Stage 2 of the method for the characterisation of services supported by an ISDN".

- [6] CCITT Recommendation Q.71 (1988): "ISDN 64 kbit/s circuit mode switched bearer service".
- [7] CCITT Recommendation Z.100 (1988): "Specification and Description Language (SDL)".

3 Definitions

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

access arrangement: Installations and/or terminals connected to the served user's access.

freephone call: A call made to the freephone number.

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 [1]).

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

ISDN number: A number conforming to the numbering plan and structure specified in CCITT Recommendation E.164 [1].

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.

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

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

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.

service profile: A record containing instructions for freephone call handling.

supplementary service: See ITU-T Recommendation I.210 [4], subclause 2.4.

4 Abbreviations

For the purposes of this ETR, the following abbreviations apply:

| | |
|------|--|
| CC | Call Control |
| CCA | Call Control Agent |
| FE | Functional Entity |
| FEA | Functional Entity Action |
| FPH | Freephone |
| FSC | Freephone Service Centre |
| ISDN | Integrated Services Digital Network |
| LE | Local Exchange |
| OLE | Originating Local Exchange |
| PTNX | Private Telecommunication Network eXchange |
| SDL | Specification and Description Language |
| TE | Terminal Equipment |
| TLE | Terminating Local Exchange |
| TR | Transit Exchange |

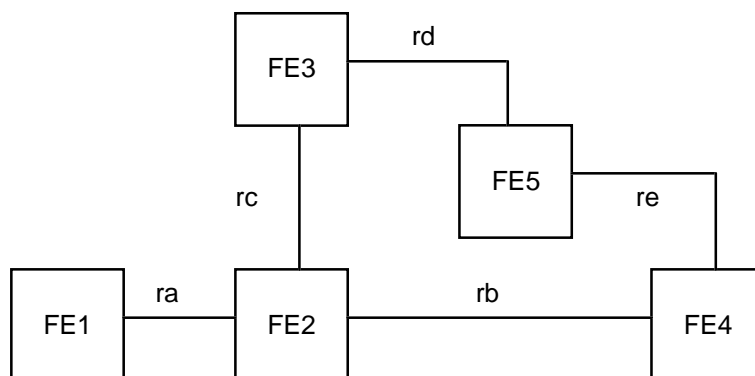
5 Description

Not applicable.

6 Derivation of the functional model

6.1 Functional model description

The functional model for the use of the FPH supplementary service is shown in figure 1.



NOTE 1: The functional entity FE5 is used only when the queuing facility is subscribed to.

NOTE 2: The charging function for the freephone call can be located either in FE2 or in FE3, depending on service provider implementation.

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Figure 1: Functional model
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6.2 Description of the FEs

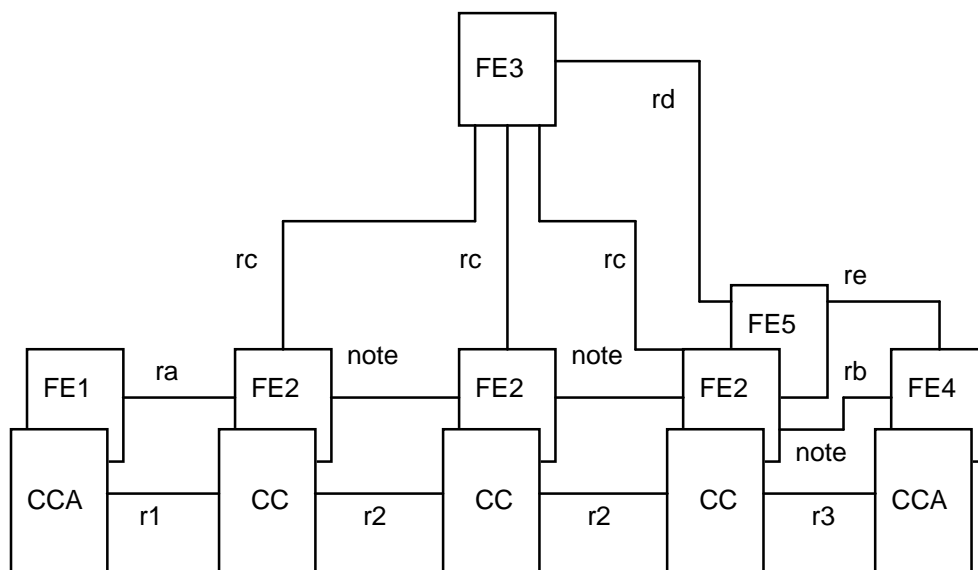
The FEs required by the FPH supplementary service in addition to those of the basic call shall be as follows:

- FE1: Originating FPH supplementary service entity;
- FE2: FPH supplementary service access entity;
- FE3: FPH supplementary service control entity;
- FE4: Terminating FPH supplementary service entity;
- FE5: FPH supplementary service busy monitoring entity.

6.3 Relationship with a basic service

The relationship of the FPH supplementary service functional model to a basic call functional model is shown in figure 2 for a "one network" service and in figure 3 for a "two network" service.

NOTE: The basic call model is defined in CCITT Recommendation Q.71 [6], subclause 2.1



NOTE: This figure shows that the functional entity FE2 can be located in every CC but only one pair FE3-FE2 exists at the same time. For certain types of calls e.g. international, two different independent pairs of FE3-FE2 can be involved in that call (see figure 3).

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Figure 2

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Network A 1839fb4168d1/sist-tp-etsi-etr-209-e1-2005 Network B

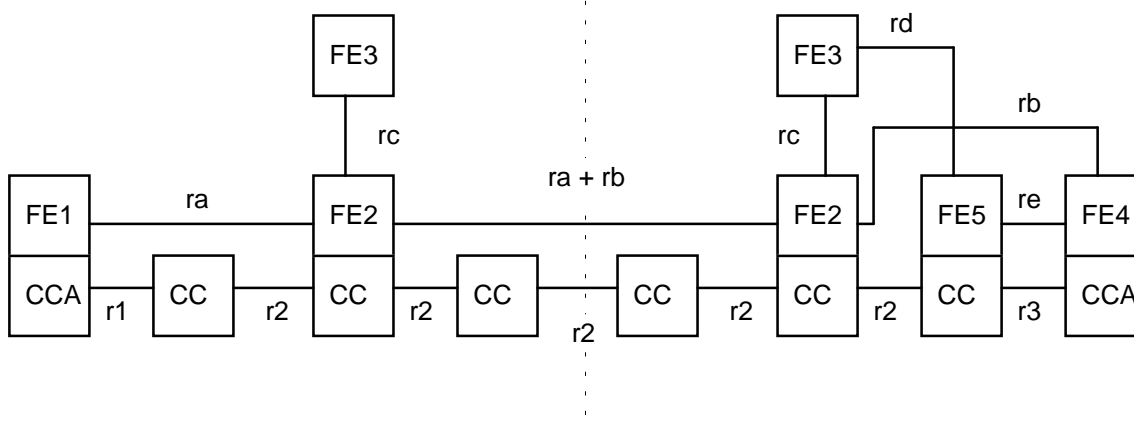


Figure 3

7 Information flows

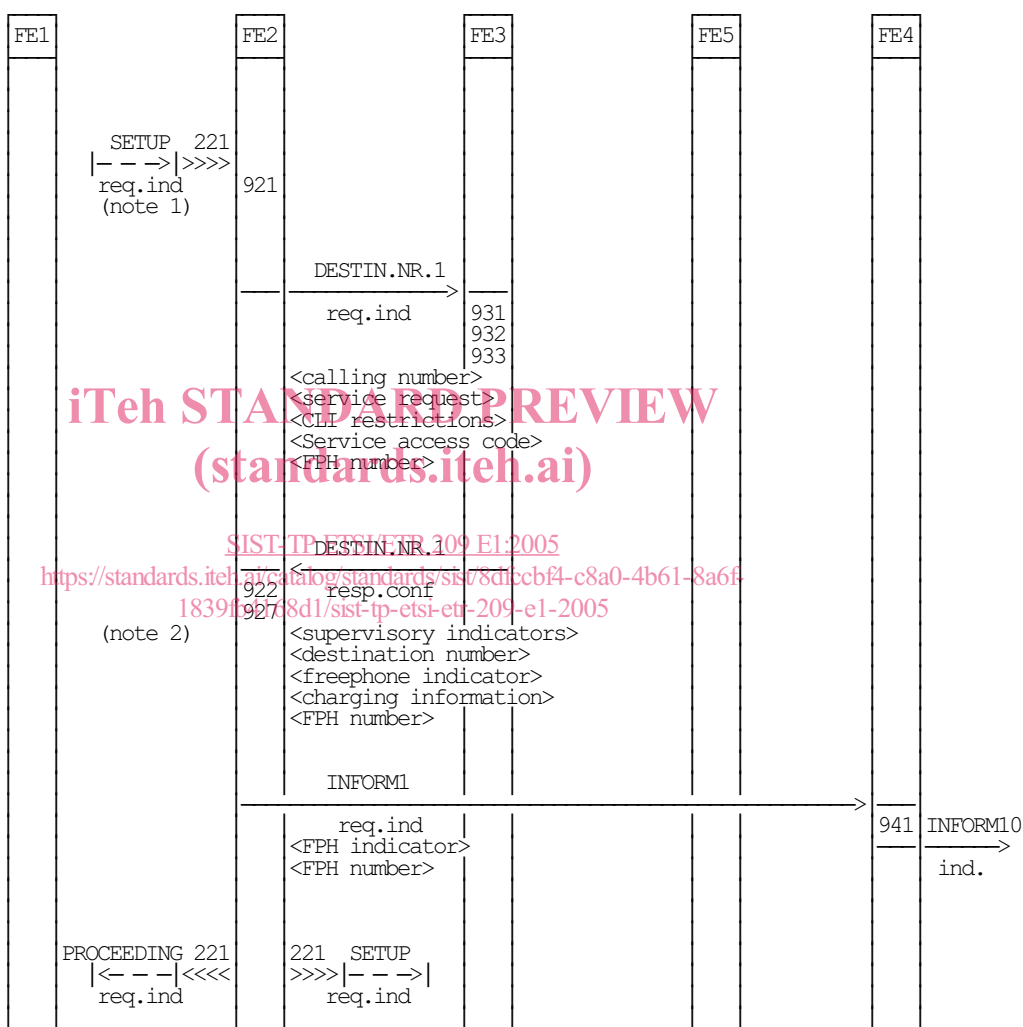
7.1 Information flow diagrams

NOTE: For the relation to the basic call, shown in the flows, FE2 is supposed to be allocated in the Originating Local Exchange (OLE). The SDL diagrams will show the relations for the other allocations.

7.1.1 Call with no facility active

7.1.1.1 Call set up to destination

The flow for the call set up to the destination is shown in figure 4.



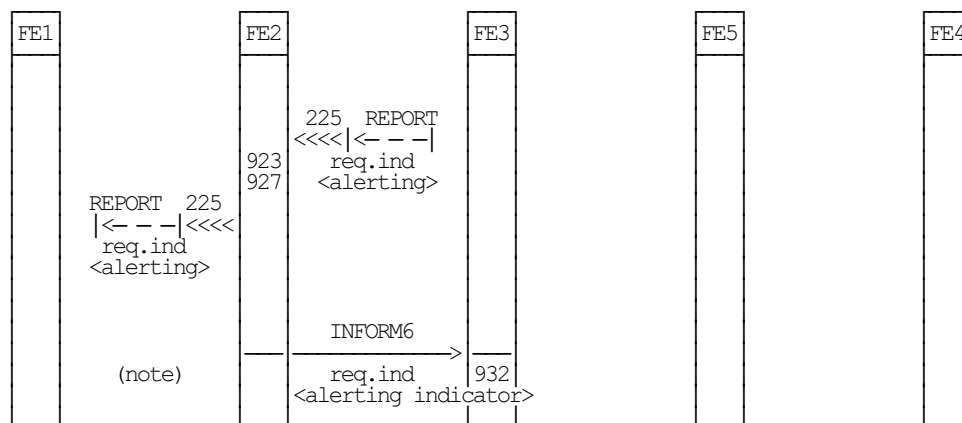
NOTE 1: For this call, the called number is composed of the service access code plus the freephone number.

NOTE 2: The supervisory flags as shown in table 17 (see subclause 7.2.6) can be set at FE2 on request by FE3.

Figure 4

7.1.1.2 Call alerting

The flow for the call completion is shown in figure 5.

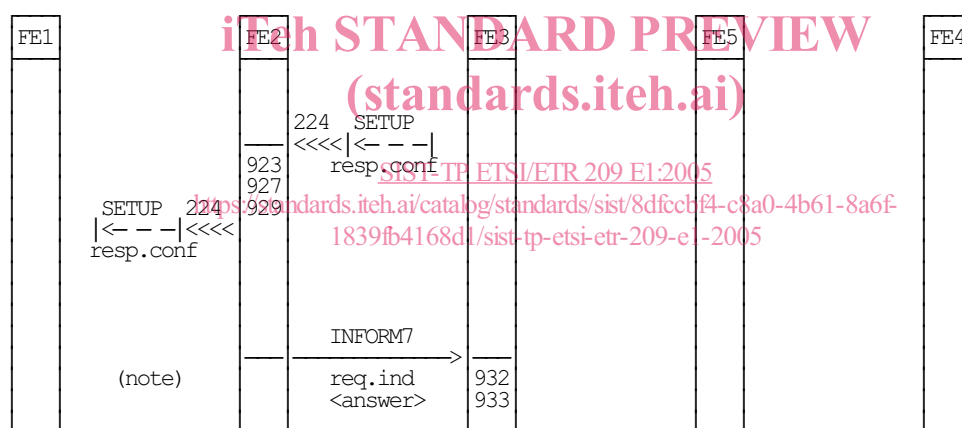


NOTE: INFORM6 is not sent if the supervisory flag for the corresponding event is OFF.

Figure 5

7.1.1.3 Call answer

The flow for the call answer is shown in figure 6.



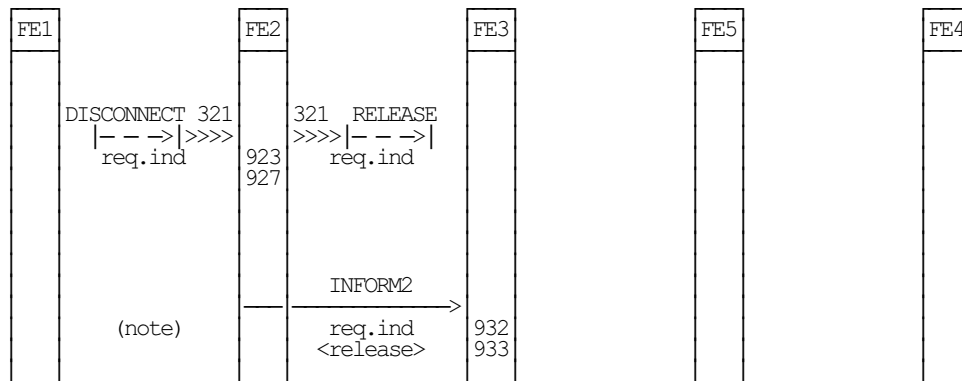
NOTE: INFORM7 is not sent if the supervisory flag for the corresponding event is OFF.

Figure 6

7.1.1.4 Call clear

7.1.1.4.1 Call clear from calling side

The flow for the call cleared from the calling side is shown in figure 7.

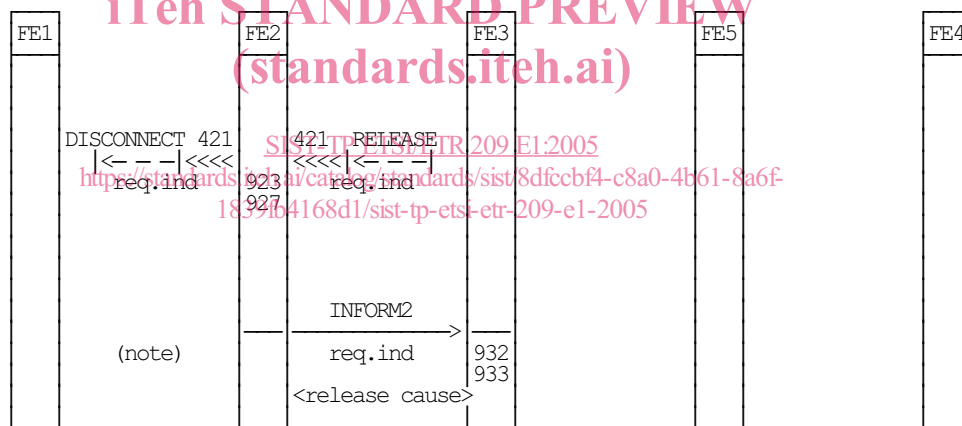


NOTE: INFORM2 is not sent if the supervisory flag for the corresponding event is OFF.

Figure 7

7.1.1.4.2 Call clear from the served user destination side

The flow for the call cleared from the destination side is shown in figure 8.



NOTE: INFORM2 is not sent if the supervisory flag for the corresponding event is OFF.

Figure 8