EUROPEAN TELECOMMUNICATION STANDARD

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Radio Equipment and Systems (RES);
Trans-European Trunked Radio (TETRA);
Voice plus Data (V+D);
Part 10: Supplementary services stage 1;
Part 10-19: Barring of incoming calls

ETSI

European Telecommunications Standards Institute

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Contents

Foreword

This European Telecommunication Standard (ETS) has been produced by the Radio Equipment and Systems (RES) Technical Committee of the European Telecommunications Standards Institute (ETSI).

This ETS is a multi-part standard and will consist of the following parts:

Part 1:	"General network design".
Part 2:	"Air Interface (AI)".
Part 3:	"Inter-working - Basic Operation", (DE/RES-06001-3).
Part 4:	"Gateways for Basic Services", (DE/RES-06001-4).
Part 5:	"Terminal equipment interface", (DE/RES-06001-5).
Part 6:	"Line connected stations", (DE/RES-06001-6).
Part 7:	"Security".
Part 8:	"Management services", (DE/RES-06001-8).
Part 9:	"Performance objectives", (DE/RES-06001-9).
Part 10:	**"Supplementary services stage 1".**
Part 11:	"Supplementary services stage 2", (DE/RES-06001-11).
Part 12:	"Supplementary services stage 3", (DE/RES-06001-12).
Part 13:	"SDL Model of the Air Interface", (DE/RES-06001-13).
Part 14:	"PICS Proforma", (DE/RES-06001-14).
Part 15:	"Inter-working - Extended Operations", (DE/RES-06001-15).
Part 16:	"Gateways for Supplementary Services", (DE/RES-06001-16).

Transposition dates	
Date of adoption of this ETS:	1 March 1996
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1 Scope

This European Telecommunication Standard (ETS) defines the stage 1 specifications of the Barring of Incoming Calls (BIC) supplementary service for the Trans-European Trunked Radio (TETRA) as provided by European operators. Stage 1 is an overall service description from the users point of view but does not deal with the details of the human interface itself.

The ETS specifies the service description of the supplementary service and the procedures to be expected with successful and unsuccessful outcomes. In addition this ETS specifies the interactions with other TETRA supplementary services and inter-working considerations.

Charging principles are outside the scope of this ETS.

The SS-BIC supplementary service enables barring restrictions for incoming calls to be set.

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 are 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.130 (1988): "Method for the characterization of telecommunication services supported by an ISDN and network capabilities of an ISDN".

[2]   ITU-T Recommendation Z.100 (1993): "Specification and Description Language (SDL)".

3 Definitions and abbreviations

3.1 Definitions

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

access control: The prevention of unauthorized use of resources, including the use of a resource in an unauthorized manner.

authorised user: The user who is permitted to bar incoming calls of defined users.

bearer service: A type of telecommunication service that provides the capability for the transmission of signals between user-network interfaces.

served user: The user who has the incoming calls barred.

Switching And Management Infrastructure (SwMI): All of the TETRA equipment for a Voice plus Data (V+D) network except for subscriber terminals. The SwMI enables subscriber terminals to communicate with each other via the SwMI.

teleservice: A type of telecommunications service that provides the complete capability, including terminal equipment functions, for communication between users according to agreed protocols.

3.2 Abbreviations

3.2.1 General abbreviations

For the purposes of this ETS, the following general abbreviations apply:

GTSI   Group TETRA Subscriber Identity
ISDN   Integrated Services Digital Network

ITSI	Individual TETRA Subscriber Identity
MS	Mobile Station
SDL	(Functional) Specification and Description Language
SS	Supplementary Service

> NOTE: The abbreviation SS is only used when referring to a specific supplementary service.

SwMI	Switching and Management Infrastructure
TETRA	Trans-European Trunked RAdio

3.2.2 Supplementary service abbreviations

For the purposes of this ETS, the following Supplementary Service abbreviations apply:

AL	Ambience Listening
AoC	Advice of Charge
AP	Access Priority
AS	Area Selection
BIC	Barring of Incoming Calls
BOC	Barring of Outgoing Calls
CAD	Call Authorized by Dispatcher
CCBS	Call Completion to Busy Subscriber
CCNR	Call Completion on No Reply
CFB	Call Forwarding on Busy
CFNRy	Call Forwarding on No Reply
CFNRc	Call Forwarding on Not Reachable
CFU	Call Forwarding Unconditional
CLIP	Calling Line Identification Presentation
CLIR	Calling/Connected Line Identification Restriction
COLP	COnnected Line identification Presentation
CR	Call Report
CRT	Call ReTention
CW	Call Waiting
DGNA	Dynamic Group Number Assignment
DL	Discreet Listening
HOLD	Call HOLD
IC	Include Call
LE	Late Entry
LSC	List Search Call
PC	Priority Call
PPC	Pre-emptive Priority Call
SNA	Short Number Addressing
TC	Transfer of Control
TPI	Talking Party Identification

4 SS-BIC stage 1 specification

4.1 Description

4.1.1 General description

Barring of Incoming Calls (BIC) is the facility whereby certain categories of incoming calls shall be barred. The categories for barring shall be set up and altered by the service provider. The authorized user may set the categories of the served users.

The following categories can be examples of baring of incoming calls:

- all incoming calls (presumes all basic services);

- all incoming calls when outside home Switching and Management Infrastructure (SwMI);

- all incoming calls from certain identified users;

-       all incoming calls from certain identified networks;

-       to group numbers;

-       call types.

These categories can be applied independently to each basic service.

The service provider may define certain numbers such as emergency numbers to remain outside of barring even though they are with the barring categories.

4.1.2   Qualifications on applicability to telecommunication services

This supplementary service shall be applicable independently to all TETRA circuit mode teleservices and bearer services and the short data service.

4.2   Procedures

4.2.1   Provision/Withdrawal

Provision and withdrawal of SS-BIC to the served user shall be by pre-arrangement with the service provider.

The provision of the service shall be on a per TETRA Individual TETRA Subscriber Identity (ITSI)/Group TETRA Subscriber Identity (GTSI) basis. It shall not be possible to prevent group calls from reaching a particular ITSI. Provision may include the selection of barring categories. The authorized user and served user(s) shall be defined upon provision.

4.2.2   Normal procedures

4.2.2.1   Activation, deactivation, definition, registration, interrogation and cancellation

4.2.2.1.1   Activation/Deactivation

The SS-BIC categories shall be activated/deactivated by the authorized user. This service may be permanently activated upon provision and deactivated upon withdrawal.

4.2.2.1.2   Definition

The authorized user shall be able to select barring categories for each served user.

4.2.2.1.3   Registration

The registration process shall take place upon provision and shall allow the identification of authorized users.

4.2.2.1.4   Interrogation

The infrastructure may provide interrogation on a per identity. If interrogation is provided, a SwMI shall support interrogation on a per number basis for:

-       barring category;

-       applicable basic service;

-       activation/deactivation state of the category.

4.2.2.1.5   Cancellation

Not applicable.

4.2.2.2   Invocation and operation

The supplementary service shall be invoked automatically by the infrastructure as a result of an incoming basic service request, and the barring category being activated for that basic service. As an implementation option the calling user may receive an indication of the reason for the failure of the call.

The incoming call shall not be offered to the served user.

The ability of the served user to originate calls shall not be affected.

4.2.3   Exceptional procedures

4.2.3.1   Activation, deactivation, definition, registration, interrogation and cancellation

4.2.3.1.1   Activation/Deactivation

When authorized user initiated activation or deactivation cannot be completed, an indication shall be returned to the authorized user. Possible causes for rejection can be:

-          activation or deactivation is not provided;

-          insufficient information;

-          basic service to which relevance is requested may not be subscribed to.

4.2.3.1.2   Definition

If the infrastructure cannot accept a definition request then the cause shall be returned to the authorized user.

4.2.3.1.3   Registration

Not applicable.

4.2.3.1.4   Interrogation

If the SwMI cannot accept an interrogation request, the interrogating user shall receive a notification that SS-BIC interrogation was unsuccessful. Possible causes for rejection can be:

-          user not authorized;

-          insufficient information;

-          basic service to which relevance is requested may not be subscribed to.

4.2.3.1.5   Cancellation

Not applicable.

4.2.3.2   Invocation and operation

If the infrastructure cannot invoke the service the incoming call shall be received, and the cause for the exception shall be returned.

4.3   Interactions with other supplementary services

Interactions with other TETRA supplementary services are specified below.

4.3.1   Calling Line Identification Presentation (CLIP)

Barring of incoming calls shall not have any interaction with SS-CLIP. The incoming call shall not be offered to the served user and therefore, this supplementary service shall not be invoked.

4.3.2 Connected Line Identification Presentation (COLP)

Barring of incoming calls shall not have any interaction with SS-COLP. (If the calling user has this supplementary service activated, the calling user shall receive an indication that the called users line was unavailable for presentation as a result of call barring).

4.3.3 Calling/Connected Line Identification Restriction (CLIR)

Barring of incoming calls shall not have any interaction with SS-CLIR.

4.3.4 Call Report (CR)

Barring of incoming calls shall not have any interaction with SS-CR. (As another possibility, the calling party shall not be able to leave a report at the served user, and the invocation of this supplementary service by the calling user shall be rejected).

4.3.5 Talking Party Identification (TPI)

Barring of incoming calls shall not have any interaction with SS-TPI.

4.3.6 Call Forwarding Unconditional (CFU)

SS-BIC takes precedence if additionally SS-CFU has been activated at the barred user, and the incoming call shall not be forwarded.

If the diverted-to user is the barred user, the call shall not be connected.

4.3.7 Call Forwarding on Busy (CFB)

SS-BIC takes precedence if additionally SS-CFB has been activated at the barred user, and the incoming call shall not be forwarded.

4.3.8 Call Forwarding on No Reply (CFNRy)

SS-BIC takes precedence if additionally SS-CFNRy has been activated at the barred user, and the incoming call shall not be forwarded.

4.3.9 Call Forwarding on Not Reachable (CFNRc)

SS-BIC takes precedence if additionally SS-CFNRc has been activated at the barred user, and the incoming call shall not be forwarded.

4.3.10 List Search Call (LSC)

Barring of incoming calls shall not have any interaction with SS-LSC.

4.3.11 Call Authorized by Dispatcher (CAD)

Barring of incoming calls shall not have any interaction with SS-CAD. If additionally SS-CAD has been activated at the barred user for incoming calls, the incoming call shall be offered to the dispatcher for authorization.

4.3.12 Short Number Addressing (SNA)

Barring of incoming calls shall not have any interaction with SS-SNA.

4.3.13 Area Selection (AS)

Barring of incoming calls shall not have any interaction with SS-AS.

4.3.14 Access Priority (AP) call

Barring of incoming calls shall not have any interaction with SS-AP call.

4.3.15 Priority Call (PC)

Barring of incoming calls shall not have any interaction with SS-PC. An incoming priority call shall not be offered to the barred user.

4.3.16 Call Waiting (CW)

Barring of incoming calls shall not have any interaction with SS-CW. Incoming calls are not offered to the barred user.

4.3.17 Call Hold (HOLD)

Barring of incoming calls shall not have any interaction with SS-HOLD. If barring of incoming calls is activated after a call hold is invoked on an incoming call, the held call can be retrieved.

4.3.18 Call Completion to Busy Subscriber (CCBS)

Barring of incoming calls shall not have any interaction with SS-CCBS.

4.3.19 Late Entry (LE)

Barring of incoming calls shall not have any interaction with SS-LE. If SS-BIC is activated to a GTSI then the GTSI shall not be offered incoming calls and therefore SS-LE shall not apply.

4.3.20 Transfer of Control (TC)

Barring of incoming calls shall not have any interaction with SS-TC. It shall be possible for another user to transfer the control of an incoming call to the served user.

4.3.21 Pre-emptive Priority Call (PPC)

Barring of incoming calls shall not have any interaction with SS-PPC. A PPC shall not be offered to the barred user.

4.3.22 Include Call (IC)

Barring of incoming calls shall not have any interaction with SS-IC.

4.3.23 Advice of Charge (AC)

Barring of incoming calls shall not have any interaction with SS-AC.

4.3.24 Barring of Outgoing Calls (BOC)

Barring of incoming calls shall not have any interaction with SS-BOC.

4.3.25 Barring of Incoming Calls (BIC)

Not applicable.

4.3.26 Discreet Listening (DL)

Barring of incoming calls shall not have any interaction with SS-DL.

4.3.27 Ambience Listening (AL)

SS-AL shall take precedence and it shall be possible to invoke SS-AL to the barred user.

4.3.28 Dynamic Group Number Assignment (DGNA)

Not applicable.

4.3.29 Call Completion on No Reply (CCNR)

Barring of incoming calls shall not have any interaction with SS-CCNR.

4.3.30 Call Retention (CRT)

Barring of incoming calls shall not have any interaction with SS-CRT.

4.4 Inter-working considerations

SS-BIC shall be available across the intersystem interface.

4.5 Overall SDL

Figure 1 contains the dynamic description of SS-BIC using the Specification Description Language (SDL) defined in ITU-T Recommendation Z.100 [2]. The SDL process represents the behaviour of the network in providing SS-BIC.
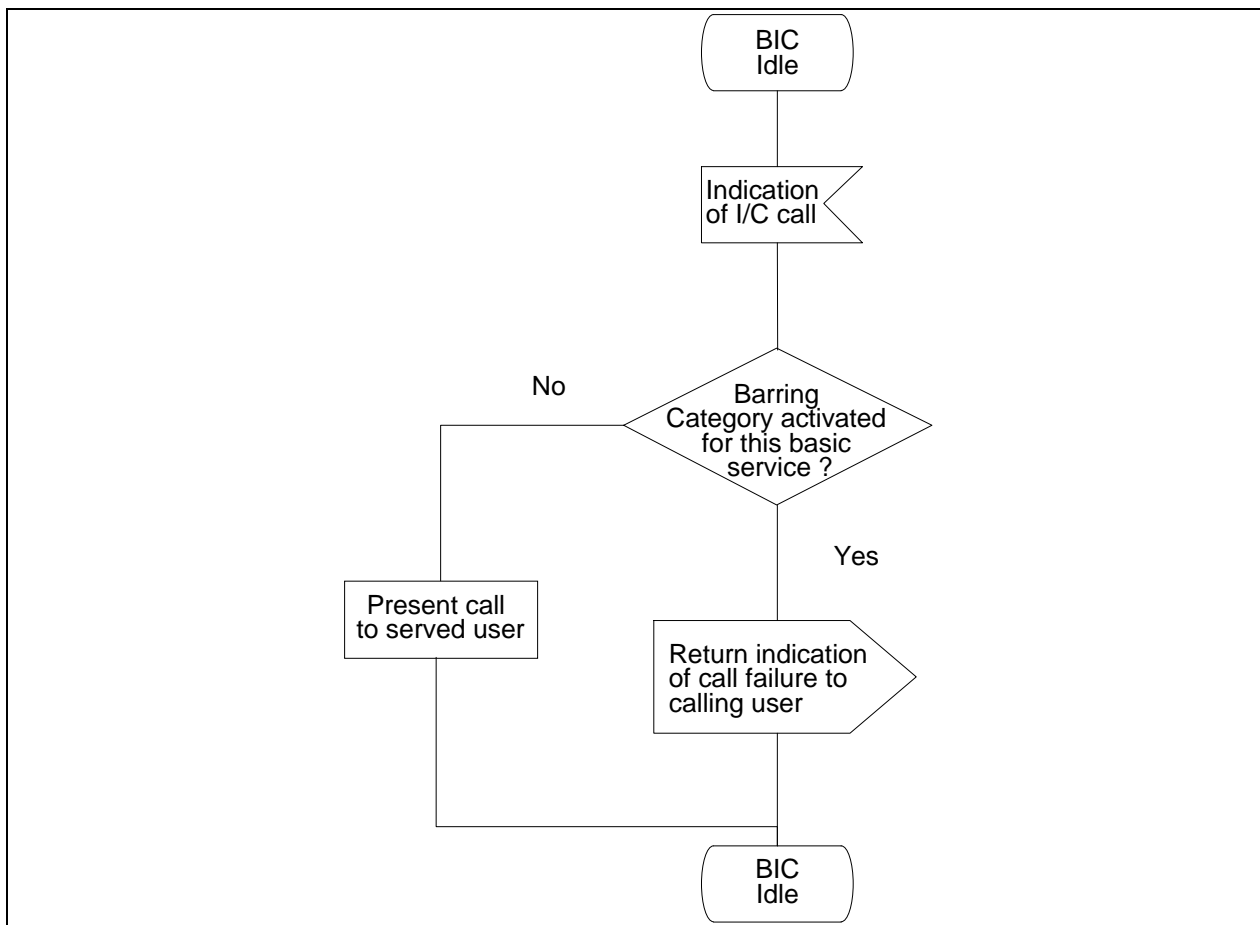
```
                          ┌─────────┐
                          │  BIC    │
                          │  Idle   │
                          └─────────┘
                               │
                          ┌─────────┐
                          │Indication│
                          │of I/C call│
                          └─────────┘
                               │
                               │
                    No    ╱────┴────╲
              ┌──────────┤  Barring   │
              │          │Category activated│
              │          │for this basic│
              │          │  service ? │
              │           ╲────┬────╱
              │                │  Yes
       ┌──────────────┐        │
       │ Present call │   ┌─────────────┐
       │to served user│   │Return indication│
       └──────────────┘   │of call failure to│
              │           │calling user │
              │           └─────────────┘
              │                │
              └────────┬───────┘
                  ┌─────────┐
                  │  BIC    │
                  │  Idle   │
                  └─────────┘
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Figure 1: SS-BIC, overall SDL

History

Document history			
November 1994	Public Enquiry	PE 73:	1994-11-07 to 1995-03-03
December 1995	Vote	V 94:	1995-12-27 to 1996-02-16
April 1996	First Edition		