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**Terrestrial Trunked Radio (TETRA);
Voice plus Data (V+D);
Part 10: Supplementary services stage 1;
Sub-part 19: Barring of Incoming Calls (BIC)**



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Foreword

This European Standard (Telecommunications series) has been produced by ETSI Project Terrestrial Trunked Radio (TETRA).

The present document is part 10, sub-part 19 of a multi-part deliverable covering Voice plus Data (V+D), as identified below:

- EN 300 392-1: "General network design";
- EN 300 392-2: "Air Interface (AI)";
- EN 300 392-3: "Interworking at the Inter-System Interface (ISI)";
- ETS 300 392-4: "Gateways basic operation";
- EN 300 392-5: "Peripheral Equipment Interface (PEI)";
- EN 300 392-7: "Security";
- EN 300 392-9: "General requirements for supplementary services";
- EN 300 392-10: "Supplementary services stage 1";**
 - Sub-part 1: "Call identification";
 - Sub-part 2: "Call report";
 - Sub-part 3: "Talking Party Identification (TPI)";
 - Sub-part 4: "Call Forwarding (CF)";
 - Sub-part 5: "List Search Call (LSC)";
 - Sub-part 6: "Call Authorized by Dispatcher (CAD)";
 - Sub-part 7: "Short number addressing";
 - Sub-part 8: "Area selection";
 - Sub-part 9: "Access priority";
 - Sub-part 10: "Priority Call (PC)";
 - Sub-part 11: "Call Waiting (CW)";
 - Sub-part 12: "Call Hold (CH)";
 - Sub-part 13: "Call completion to busy subscriber";
 - Sub-part 14: "Late Entry (LE)";

- Sub-part 15: "Transfer of control";
- Sub-part 16: "Pre-emptive priority call";
- Sub-part 17: "Include Call (IC)";
- Sub-part 18: "Barring of Outgoing Calls (BOC)";
- Sub-part 19: "Barring of Incoming Calls (BIC)";**
- Sub-part 20: "Discreet Listening (DL)";
- Sub-part 21: "Ambience Listening (AL)";
- Sub-part 22: "Dynamic Group Number Assignment (DGNA)";
- Sub-part 23: "Call completion on no reply";
- Sub-part 24: "Call Retention (CRT)";
- EN 300 392-11: "Supplementary services stage 2";
- EN 300 392-12: "Supplementary services stage 3";
- ETS 300 392-13: "SDL model of the Air Interface (AI)";
- ETS 300 392-14: "Protocol Implementation Conformance Statement (PICS) proforma specification";
- TS 100 392-15: "TETRA frequency bands, duplex spacings and channel numbering";
- TS 100 392-16: "Network Performance Metrics";
- TS 100 392-17: "TETRA V+D and DMO Release 1.1 specifications".

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1 Scope

The present document defines the stage 1 specifications of the Barring of Incoming Calls (BIC) supplementary service for the Trans-European Trunked Radio (TETRA). 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 present document specifies the service description of the supplementary service and the procedures to be expected with successful and unsuccessful outcomes. In addition the present document specifies the interactions with other TETRA supplementary services and inter-working considerations.

Charging principles are outside the scope of the present document.

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

2 References

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 and/or edition number or version number) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies.

[1] ETSI ETS 300 392-10-4: "Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Part 10: Supplementary services stage 1; Sub-part 4: Call Forwarding (CF)".

[2] ITU-T Recommendation Z.100: "Specification and description language (SDL)".

3 Definitions and abbreviations

3.1 Definitions

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

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

affected user: user whose incoming service or services are barred

authorized user: user who is permitted to bar incoming calls of defined users

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

served user: 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

NOTE: The SwMI enables subscriber terminals to communicate with each other via the SwMI.

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

3.2 Abbreviations

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

AL	Ambience Listening
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
CFNRc	Call Forwarding on Not Reachable
CFNRy	Call Forwarding on No Reply
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
GTSI	Group TETRA Subscriber Identity
HOLD	Call HOLD
IC	Include Call
ISDN	Integrated Services Digital Network
ITSI	Individual TETRA Subscriber Identity
LE	Late Entry
LSC	List Search Call
PC	Priority Call
PPC	Pre-emptive Priority Call
SDL	(functional) Specification and Description Language
SDS	Short Data Service
NOTE:	The abbreviation SS is only used when referring to a specific supplementary service.
SNA	Short Number Addressing
SS	Supplementary Service
SwMI	Switching and Management Infrastructure
TETRA	Trans-European Trunked RAdio
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 incoming calls shall be barred. The barring can be set up and altered by the service provider. The authorized user may set and remove barrings of the affected users.

The barring of incoming calls is defined as ranges of barred numbers. Barring can be excluded for closed user groups and individual numbers inside the barred ranges of numbers as exceptions.

These ranges and exceptions may be applied independently to each service: circuit mode speech service, circuit mode data service and Short Data Service (SDS).

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

4.1.2 Qualifications on applicability to telecommunication services

This supplementary service may 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 affected 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. The authorized user and affected user(s) shall be defined upon provision.

The service provider may withdraw this service at any time without a prior announcement.

4.2.2 Normal procedures

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

4.2.2.1.1 Activation/Deactivation

The authorized user may activate/deactivate the SS-BIC barrings by definition process. This service may be permanently activated upon provision and deactivated upon withdrawal.

4.2.2.1.2 Definition

The authorized user may be able to set and remove barring for those affected users defined upon provision.

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 for authorized users on the same affected users as the authorized user is allowed to use definition of barring. If interrogation is provided, SwMI shall support interrogation per affected user number.

4.2.2.1.5 Cancellation

Not applicable.

4.2.2.2 Invocation and operation

The supplementary service shall be invoked by the infrastructure as a result of an incoming basic service request. As an implementation option the calling user may receive an indication of the reason for the failure of the call and/or a notification indication.

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

NOTE: The ability of the served user to originate calls is not affected by SS-BIC and he may call to numbers barred as incoming calls.

4.2.3 Exceptional procedures

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

4.2.3.1.1 Activation/Deactivation

Activation and deactivation is performed upon definition and there no additional exceptional procedures for activation nor deactivation.

4.2.3.1.2 Definition

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

Possible causes may be:

- request failed for any reason;
- accepted, but definition values changed by SwMI;
- user not authorized;
- unknown TETRA identity;
- parameters not valid; or
- insufficient information.

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 may be:

- request failed for any reason;
- accepted, but definition values changed by SwMI;
- user not authorized;
- unknown TETRA identity;
- parameters not valid; or
- insufficient information.

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 no cause for the exception shall be sent to the calling nor affected user.

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 is not offered to the served user and therefore, this supplementary service will 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 only an indication that the call failed 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 the call set-up to the affected user fails due to the SS-BIC the SS-CR cannot be invoked.

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 to SS-CFU and both SS-BIC and SS-CFU cannot be activated at the same time to the same user, refer to ETS 300 392-10-4 [1].

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

NOTE: The barring is checked during call set-up operation based on the diverted-to user SS-BIC and it is irrelevant that the call was a forwarded call.

4.3.7 Call Forwarding on Busy (CFB)

SS-BIC takes precedence to SS-CFB and both SS-BIC and SS-CFB cannot be activated at the same time to the same user, refer to ETS 300 392-10-4 [1].

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

NOTE: The barring is checked during call set-up operation based on the diverted-to user SS-BIC and it is irrelevant that the call was a forwarded call.

4.3.8 Call Forwarding on No Reply (CFNRy)

SS-BIC takes precedence to SS-CFNRy and both SS-BIC and SS-CFNRy cannot be activated at the same time to the same user, refer to ETS 300 392-10-4 [1].

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

NOTE: The barring is checked during call set-up operation based on the diverted-to user SS-BIC and it is irrelevant that the call was a forwarded call.

4.3.9 Call Forwarding on Not Reachable (CFNRc)

SS-BIC takes precedence to SS-CFNRc and both SS-BIC and SS-CFNRc cannot be activated at the same time to the same user, refer to ETS 300 392-10-4 [1].

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

NOTE: The barring is checked during call set-up operation based on the diverted-to user SS-BIC and it is irrelevant that the call was a forwarded call.

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 Void

4.3.21 Pre-emptive Priority Call (PPC)

Barring of incoming calls shall not have any interaction with SS-PPC. An incoming pre-emptive priority call 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 Void

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.

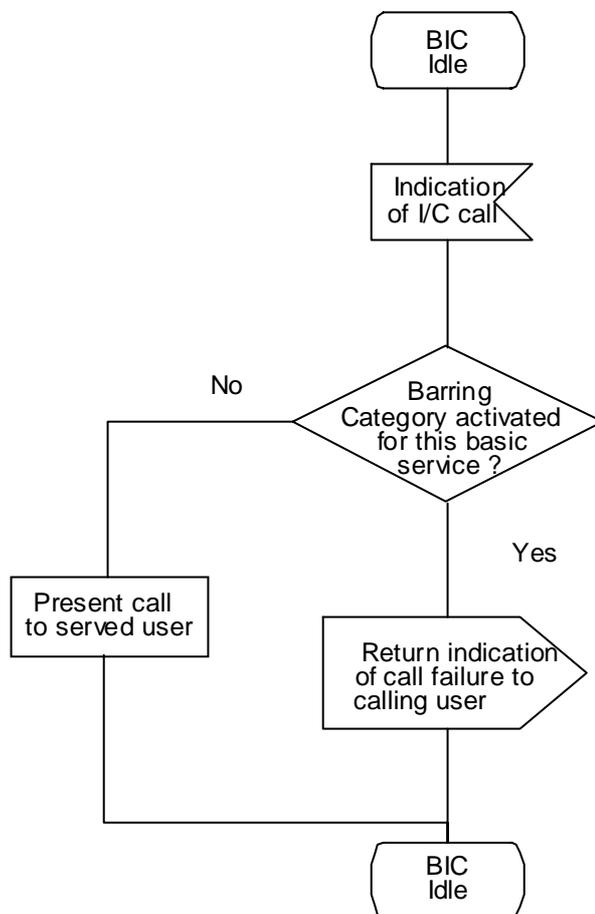


Figure 1: SS-BIC, overall SDL

Annex A (informative): Bibliography

ITU-T Recommendation I.130: "Method for the characterization of telecommunication services supported by an ISDN and network capabilities of an ISDN".

History

Document history		
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