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Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Part 11: Supplementary services stage 2; Sub-part 18: Barring of Outgoing Calls (BOC)

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Foreword

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

The present document had been submitted to Public Enquiry as ETS 300 392-11-18. During the processing for Vote it was converted into an EN.

The present document is part 11, sub-part 18 of a multi-part deliverable covering Voice plus Data (V+D), as identified below:

Part 1: "General network design";

Part 2: "Air Interface (AI)";

Part 3: "Interworking at the Inter-System Interface (ISI)";

Part 4: "Gateways basic operation";

Part 5: "Peripheral Equipment Interface (PEI)";

Part 7: "Security";

Part 9: "General requirements for supplementary services";

Part 10: "Supplementary services stage 1";

Part 11: "Supplementary services stage 2";

Part 12: "Supplementary services stage 3";

Part 13: "SDL model of the Air Interface (AI)";

Part 14: "Protocol Implementation Conformance Statement (PICS) proforma specification";

Part 15: "TETRA frequency bands, duplex spacings and channel numbering";

Part 16: "Network Performance Metrics";

Part 17: "TETRA V+D and DMO Release 1.1 specifications".

National transposition dates	
Date of adoption of this EN:	3 August 2001
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1 Scope

The present document defines the stage 2 specification of the Supplementary Service Barring of Outgoing Calls (SS-BOC) for the Terrestrial Trunked Radio (TETRA) as provided by European operators.

SS-BOC enables barring restriction for outgoing calls to be set. SS-BOC specifies the definition, interrogation and operation of the supplementary service. The Switching and Management Infrastructure (SwMI) applies the SS-BOC definitions when the restricted user requests an outgoing service.

The SS-BOC actions are defined for the SwMI, for the Mobile Station (MS) and for the Line Station (LS). The SS-BOC information flows may be delivered over the Inter-System Interface (ISI). SS-BOC may also be invoked for services, e.g. calls, within one TETRA system or for services that extend over the ISI to several TETRA systems.

Man-Machine Interface (MMI) and charging principles are outside the scope of the present document.

Stage 2 describes the functional capabilities of the Supplementary Service introduced in stage 1 description. Stage 2 identifies the functional capabilities for the management and operation of the service in the SwMI, in the MS and in the LS. Stage 2 describes also the information flows exchanged between these entities and the flows sent over the ISI.

NOTE: The stage 2 description is followed by the stage 3 description, which specifies the encoding rules for the information flows and process behaviour for the different entities in the SwMI, in the MS and in the LS.

Aspects relating to all supplementary services are detailed in EN 300 392-9 [6].

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 EN 300 392-2: "Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D);
        Part 2: Air Interface (AI)".

[2]   ETSI EN 300 392-12-18: "Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D);
        Part 12: Supplementary services stage 3; Sub-part 18: Barring of Outgoing Calls (BOC)".

[3]   ETSI EN 300 392-11-19: "Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D);
        Part 11: Supplementary services stage 2; Sub-part 19: Barring of Incoming Calls (BIC)".

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

[5]   ETSI ETS 300 392-10-6: "Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D);
        Part 10: Supplementary services stage 1; Sub-part 6: Call Authorized by Dispatcher (CAD)".

[6]   ETSI EN 300 392-9: "Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D);
        Part 9: General requirements for supplementary services".

3   Definitions and abbreviations

3.1   Definitions

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

affected user: user who has outgoing calls barred

authorized user: user who is permitted to bar outgoing calls on affected user's behalf

packet data service: packet mode data service, see EN 300 392-2, clause 28

3.2   Abbreviations

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

CC	Call Control functional entity
CCA	Call Control functional entity Agent
FE	Functional Entity
ISI	Inter-System Interface
LS	Line Station
MS	Mobile Station
SDL	(Functional) Specification and Description Language
SS-BOC	Supplementary Service Barring of Outgoing Calls
SwMI	Switching and Management Infrastructure
TETRA	Terrestrial Trunked Radio
V+D	Voice plus Data

4   SS-BOC stage 2 specification

4.1   Functional model

4.1.1   Functional model description

The functional model shall comprise the following Functional Entities (FEs):

FE1   affected user's (calling party's) FE for SS-BOC in MS/LS;

FE2   SS-BOC FE in SwMIs;

FE3   authorized party's FE for SS-BOC in MS/LS;

FE5   called party's FE for SS-BOC in MS/LS;

CC   call control functional entity in SwMI;

CCA   call control functional entity agent in MS/LS.

NOTE: CC/CCA refers to any basic service sub-entity or packet mode data service entity, which shall be used in conjunction with SS-BIC.

The following relationships shall exist between these FEs:

- ra between FE1 and FE2;

- rb between FE2s in different TETRA systems;

- rc between FE2 and FE3;

- rd between FE2s in different TETRA systems;

- re between FE1 and visited SwMI FE2;

- rf between FE3 and visited SwMI FE2;

- rg between FE2 and FE5.

Figures 1 and 2 show these FEs and their relationships. Figure 1 gives the functional model for the management part and figure 2 gives the functional model for the operational part.
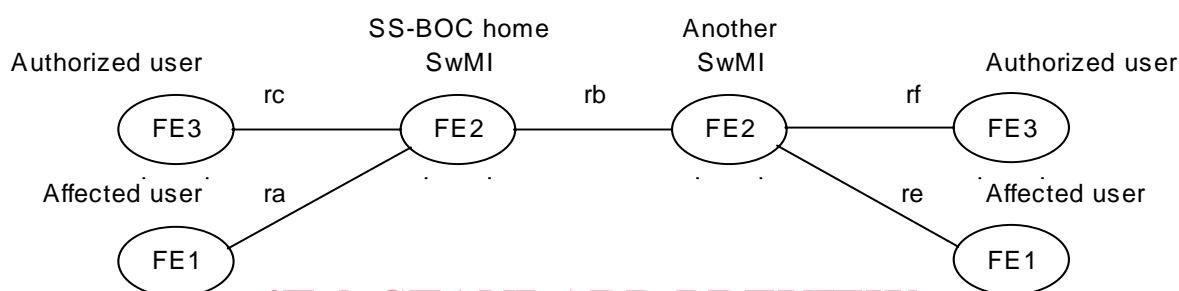

Figure 1: Functional model for the management part

NOTE: Called party FE5 does not receive any indication of the barred service.

Figure 2: Functional model for the operational part

4.1.2   Description of FEs

4.1.2.1   Affected user's FE, FE1

The functional tasks of FE1 shall be the following:

- upon reception of an SS-BOC definition indication from the SwMI, if FE1 supports the information procedure, FE1 shall inform the user application;

- upon reception of an SS-BOC interrogation request from the user application, FE1 shall send the interrogation request to the SwMI;

- upon reception of an SS-BOC interrogation response from the SwMI, FE1 shall inform the user application;

- upon reception of a barring indication from the SwMI, FE1 shall inform the user application of the barring of the basic or packet data service.

4.1.2.2   SS-BOC FE in the SwMI, FE2

The functional tasks of FE2 shall be the following in the home system of the affected user:

-    upon reception of an SS-BOC definition request from FE3, FE2 shall save the definition in the SwMI and acknowledge the request to FE3. FE2 shall send the SS-BOC definition indication(s) to FE1(s), if requested by FE3 in the definition request;

-    upon reception of an SS-BOC interrogation request from FE1 or FE3, FE2 shall send the interrogation response to FE1 or FE3 respectively;

-    upon reception of an outgoing basic or packet data service request from FE1, for which the SS-BOC restrictions apply, FE2 shall bar the request and inform FE1 about the barring.

The functional tasks of FE2 shall be the following in the visited system of the affected user:

-    upon reception of an SS-BOC interrogation request from FE1 or FE3, FE2 shall send the interrogation response to FE1 or FE3 respectively, if the visited system knows the SS-BOC definition;

-    upon reception of an outgoing basic or packet data service request from FE1, for which the SS-BOC restrictions apply, FE2 shall bar the request and inform FE1 about the barring, if the visited system knows the SS-BOC definition;

-    upon reception of an outgoing basic or packet data service request from FE1, FE2 may send the service request to the home system and bar the call, if indicated by the home system. FE2 shall inform FE1 about the barring of the service.

4.1.2.3   Authorized user's FE, FE3

The functional tasks of FE3 shall be the following:

-    upon reception of an SS-BOC definition request from the user application, FE3 shall send the request to the SwMI;

-    upon reception of an SS-BOC definition acknowledgement from the SwMI, FE3 shall inform the user application of the acknowledgement;

-    upon reception of an SS-BOC interrogation request from the user application, FE3 shall send the request to the SwMI;

-    upon reception of an SS-BOC interrogation response from the SwMI, FE3 shall inform the user application of the response.

4.1.2.4   SS-BOC FE2 in visited SwMI

The visited SwMI FE2 shall have as it functional tasks the following tasks, refer EN 300 392-9 [6]:

-    upon reception of an SS-BOC information flow over the ISI from home SwMI FE2 to FE1 or to FE3, the visited SwMI FE2 shall transport the flow to FE1 or to FE3 respectively;

-    upon reception of an SS-BOC information flow from FE1 or FE3 to home SwMI FE2, the visited SwMI FE2 shall transport the flow over the ISI to home SwMI FE2.

4.1.2.5   Called party's FE, FE5

FE5 does not have any actions related to SS-BOC. The FE is only presented to clarify the service behaviour.