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## 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", (DE/RES-06001-3).
- Part 4: "Gateways", (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", (DE/RES-06001-10).**
- 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).

<b>Transposition dates</b>	
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 Supplementary Service Call Retention (SS-CRT) 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.

This 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-CRT enables a served user to protect established calls against pre-emption.

## 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] 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:

**Call Retention Value (CRV):** SS-CRT priority is a service which defines the relative level of protection of the established call against the probability of having the resources pre-empted. In the event of a pre-emption of resources the call with the lowest CRV should be taken. On networks which do not implement SS-CRT, it is assumed that all calls have the same CRV.

**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.

**served user:** The user wishing to protect calls from pre-emption.

### 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
ISI	Inter System Interface
ITSI	Individual TETRA Subscriber Identity
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
CRV	Call Retention Value
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 Supplementary Service Call Retention (SS-CRT) stage 1 specification

### 4.1 Description

#### 4.1.1 General description

SS-CRT enables the user to define a relative level of call protection, (once established), against the probability of having the network connection resources pre-empted.

It is envisaged that every call in a Switching and Management Infrastructure (SwMI) shall be assigned a Call Retention Value (CRV), and, in the event that resources are required, the call with the lowest CRV, using the required resources, shall be pre-empted. Pre-emption of resources may be necessary because the resources are required by pre-emptive priority calls. In the event where all calls have the same CRV, another mechanism may be used to determine which resource to take e.g. oldest, type of call, user.

The user shall be able to use this supplementary service to enhance the CRV of calls in order to protect against pre-emption.

The home network operator shall be required to provide a correspondence between priority values and CRVs.

#### 4.1.2 Qualifications on applicability to telecommunication services

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



## **4.2 Procedures**

### **4.2.1 Provision and withdrawal**

Provision and withdrawal of SS-CRT shall be by pre-arrangement with the service provider or shall be generally available.

The provision of the service shall be on a per TETRA Individual TETRA Subscriber Identity (ITSI) basis. For each ITSI, the supplementary service may be subscribed to for every basic service subscribed to at that ITSI/ Group TETRA Subscriber Identity (GTSI) or for only some of the basic services subscribed to at that ITSI.

A user may be provided with a range of CRVs within which he may select on a per call basis.

NOTE: In the case of GTSIs, each member of the group may be downloaded with the associated CRV or CRV range at the same time as being downloaded with the GTSI.

### **4.2.2 Normal procedures**

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

##### **4.2.2.1.1 Activation and deactivation**

SS-CRT shall be activated by the service provider upon provision and deactivated upon withdrawal.

If the supplementary service is made generally available, then the served user shall be able to activate and invoke the service within the call set-up message.

##### **4.2.2.1.2 Remote activation and deactivation**

As an implementation option it may be possible for an authorized/registered user to remotely activate and deactivate SS-CRT on behalf of the served user within the range of CRVs that have been provided.

##### **4.2.2.1.3 Definition**

As an implementation option, authorized/registered users may dynamically define the CRV or CRV range for each registered ITSI/GTSI.

NOTE: This process supplements the provision process, where the ITSIs are allocated a CRV range upon provision, and facilitates the "on line" change of CRV ranges.

The user shall not be able to change the CRV after the call has been set up.

##### **4.2.2.1.4 Registration**

As an implementation option authorized users, capable of defining and/or remotely activating or deactivating the CRV or CRV range, shall be registered with the applicable ITSI/GTSI range.

##### **4.2.2.1.5 Interrogation**

The infrastructure may provide interrogation, which can be local, remote or both.

If interrogation is provided, a SwMI shall support interrogation on a per ITSI/GTSI basis for:

- provided/not provided;
- default CRV;
- SS-CRT value range;
- applicable basic service.

#### **4.2.2.1.6 Cancellation**

Cancellation shall not be applicable to SS-CRT.

#### **4.2.2.2 Invocation and operation**

The supplementary service shall be invoked automatically by the infrastructure as a result of the served user making a call. Unless otherwise instructed, the CRV shall correspond to the default CRV of the basic service, pre-assigned upon provision.

Alternatively, the served user may wish to dynamically assign a CRV for the call, and this shall be sent in the initial call set up message.

If the service has been made generally available then the served user, shall be able to activate and invoke SS-CRT as part of the initial call set up, and shall send the required CRV value for the call.

SS-CRT may also be provided on a GTSI basis. If the caller is a member of the group and he dials the GTSI then the appropriate CRV associated with the GTSI shall be used. If the caller is not a member of the group, one of his own CRVs shall be used.

#### **4.2.3 Exceptional procedures**

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

###### **4.2.3.1.1 Activation and deactivation**

Exceptional procedures for activation and deactivation shall not be applicable to SS-CRT.

###### **4.2.3.1.2 Remote activation and deactivation**

The remote activator may select a CRV which is not within the range of CRVs provided. The service shall not be activated and a notification shall be returned to the remote activator.

###### **4.2.3.1.3 Definition**

The authorized user may attempt to select a larger range than allowed. A notification shall be returned to the authorized user.

###### **4.2.3.1.4 Registration**

Exceptional procedures for registration shall not be applicable to SS-CRT.

###### **4.2.3.1.5 Interrogation**

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

- supplementary service not subscribed to;
- insufficient information;
- basic service to which relevance is requested is not subscribed to;
- unauthorized user.

#### **4.2.3.2 Invocation and operation**

If the user attempts to make a call and establish a CRV which is outside normal range, the infrastructure shall automatically adjust the CRV to either the maximum or minimum nearest value as appropriate for the served user and proceed with the call. A notification may be returned to the served user.

SS-CRT shall be rejected by the TETRA if the served user does not have the appropriate profile to use the service.

If the infrastructure cannot invoke the service, the cause shall be returned to the subscriber. Nevertheless the call may be allowed to proceed.

##### **4.2.3.2.1 Cancellation**

Cancellation is not applicable to SS-CRT.

#### **4.3 Interactions with other supplementary services**

Interactions with other TETRA supplementary services are specified below.

##### **4.3.1 Calling Line Identification Presentation (SS-CLIP)**

SS-CRT shall not have any interaction with SS-CLIP.

##### **4.3.2 Connected Line identification Presentation (SS-COLP)**

SS-CRT shall not have any interaction with SS-COLP.

##### **4.3.3 Calling/Connected Line identification Restriction (SS-CLIR)**

SS-CRT shall not have any interaction with SS-CLIR.

##### **4.3.4 Call Report (SS-CR)**

SS-CRT shall not have any interaction with SS-CR.

##### **4.3.5 Talking Party Identification (SS-TPI)**

SS-CRT shall not have any interaction with SS-TPI.

##### **4.3.6 Call Forwarding Unconditional (SS-CFU)**

SS-CRT shall not have any interaction with SS-CFU.

##### **4.3.7 Call Forwarding on Busy (SS-CFB)**

SS-CRT shall not have any interaction with SS-CFB.

##### **4.3.8 Call Forwarding on No Reply (SS-CFNRY)**

SS-CRT shall not have any interaction with SS-CFNRY.

##### **4.3.9 Call Forwarding on Not Reachable (SS-CFNRC)**

SS-CRT shall not have any interaction with SS-CFNRC.

##### **4.3.10 List Search Call (SS-LSC)**

SS-CRT shall not have any interaction with SS-LSC.

**4.3.11 Call Authorized by Dispatcher (SS-CAD)**

SS-CRT shall not have any interaction with SS-CAD.

**4.3.12 Short Number Addressing (SS-SNA)**

SS-CRT shall not have any interaction with SS-SNA.

**4.3.13 Area Selection (SS-AS)**

SS-CRT shall not have any interaction with SS-AS.

**4.3.14 Access Priority (SS-AP)**

SS-CRT shall not have any interaction with SS-AP.

**4.3.15 Priority Call (SS-PC)**

SS-CRT shall not have any interaction with SS-PC.

**4.3.16 Call Waiting (SS-CW)**

SS-CRT shall not have any interaction with SS-CW.

**4.3.17 Call Hold (SS-HOLD)**

SS-CRT shall not have any interaction with SS-HOLD.

**4.3.18 Call Completion to Busy Subscriber (SS-CCBS)**

SS-CRT shall not have any interaction with SS-CCBS.

**4.3.19 Late Entry (SS-LE)**

SS-CRT shall not have any interaction with SS-LE.

**4.3.20 Transfer of Control (SS-TC)**

SS-CRT shall not have any interaction with SS-TC.

**4.3.21 Pre-emptive Priority Call (SS-PPC)**

SS-CRT shall not have any interaction with SS-PPC.

**4.3.22 Include Call (SS-IC)**

SS-CRT shall not have any interaction with SS-IC.

**4.3.23 Advice of Charge (SS-AoC)**

SS-CRT shall not have any interaction with SS-AoC.

**4.3.24 Barring of Outgoing Calls (SS-BOC)**

SS-CRT shall not have any interaction with SS-BOC.

**4.3.25 Barring of Incoming Calls (SS-BIC)**

SS-CRT shall not have any interaction with SS-BIC.

**4.3.26 Discreet Listening (SS-DL)**

SS-CRT shall not have any interaction with SS-DL.

**4.3.27 Ambience Listening (SS-AL)**

SS-CRT shall not have any interaction with SS-AL.

**4.3.28 Dynamic Group Number Assignment (SS-DGNA)**

SS-CRT shall not have any interaction with SS-DGNA.

If the served user has dynamically assigned a new group then the CRV from the served user shall be downloaded to the members of the new group.

**4.3.29 Call Completion on No Reply (SS-CCNR)**

SS-CRT shall not have any interaction with SS-CCNR.

**4.3.30 Call Retention (SS-CRT)**

If the calling user has invoked SS-PPC and SS-CRT at the same time there shall be no interaction.

If the calling user has invoked SS-PPC and the user is engaged on a call and SS-CRT has been invoked for that call then the CRV shall be checked before the call can be pre-empted under normal procedures of the supplementary services. If the CRV is sufficiently high, The pre-emptive priority call may not be able to pre-empt the ongoing call.

**4.4 Inter-working considerations**

When the served user moves to another SwMI, he/she shall be informed of the existence of, or change to, his/her CRV.

#### 4.5 Overall SDL

Figure 1 contains the dynamic description of SS-CRT using the Specification Description Language (SDL) defined in ITU-T Recommendation Z.100 [1]. The SDL process represents the behaviour of the network in providing SS-CRT.

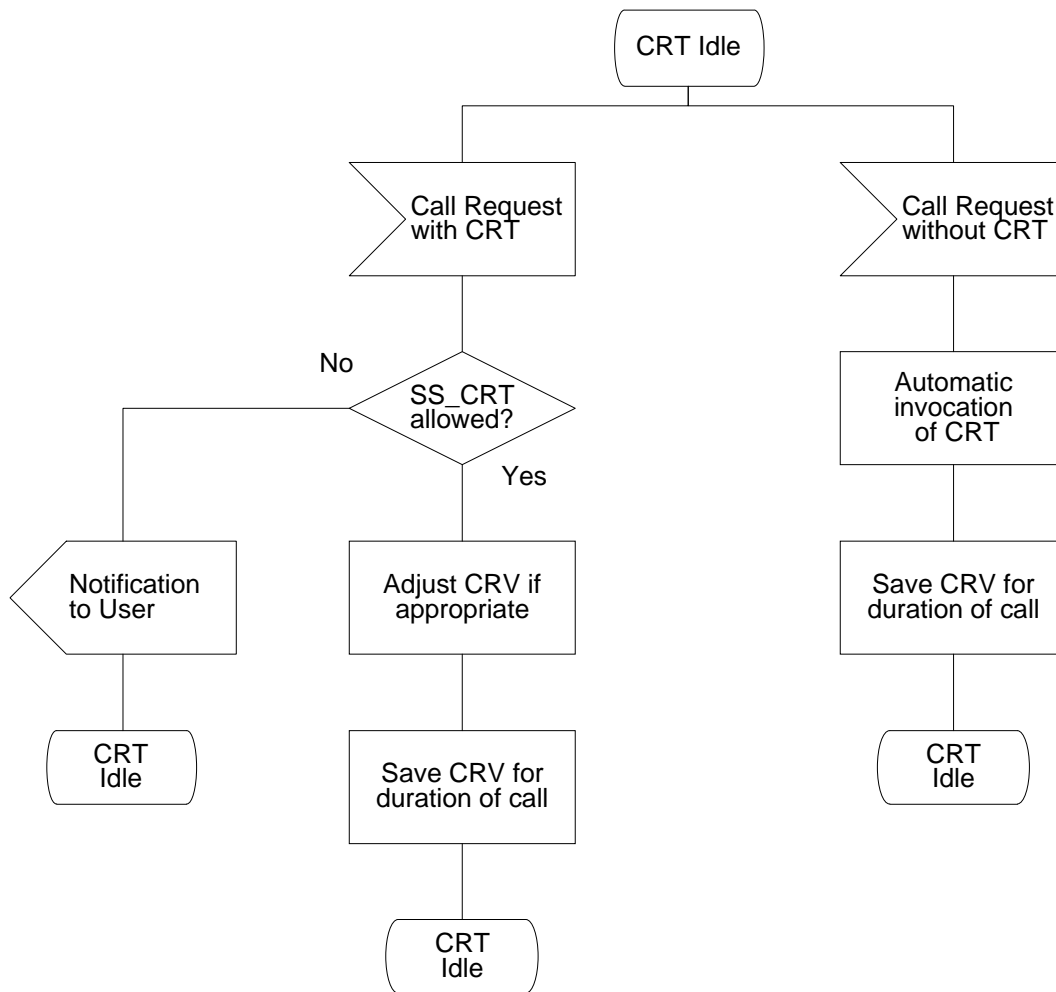


Figure 1: SS-CRT supplementary service, overall SDL

## History

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