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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".**
- 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 Discreet Listening (DL) 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.

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 DL supplementary service shall enable an authorized user to listen to one or more communications between TETRA subscribers (Mobile Station (MS) or Line Station (LS)) without any indication to any user that the communication is being monitored.

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:

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

Mobile Station (MS): A physical grouping that contains all of the mobile equipment that is used to obtain TETRA services. By definition, a mobile station contains at least one Mobile Radio Stack (MRS).

monitoring party: The authorised user who requests the discreet listening.

Supplementary Service (SS): A supplementary service modifies or supplements a bearer service or a teleservice. A supplementary service cannot be offered to a customer as a stand alone service. It should be offered in combination with a bearer service or a teleservice.

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.

talk group: Those TETRA users, terminals or gateways between which any communication shall be monitored.

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
LS	Line Station
MS	Mobile Station
MRS	Mobile radio Stack
DL	(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-DL stage 1 specification

4.1 Description

4.1.1 General description

Discreet listening shall be defined as the facility whereby an authorized user may listen to one or more communications between TETRA subscribers (MS or Line Station (LS)) without any indication to any subscriber that the communication is being monitored. Identification of the talking parties shall be given to the monitoring party. As an implementation option the monitoring party may further be allowed to enter into the conversation and/or may clear the call if required.

4.1.2 Qualifications on applicability to telecommunication services

Discreet listening shall be applicable to all speech TETRA teleservices and bearer services.

4.2 Procedures

4.2.1 Provision/Withdrawal

This service shall be provided by prior arrangement with the service provider.

To provide DL, the served user shall supply to the operator:

- 1) the talk group which may be monitored:
- 2) the basic service which shall be applicable to the talk groups, e.g. clear speech group call.

Verification of the talk groups should be accomplished before completing the discreet listening provision. This verification shall be completed by a check of the talk group numbers to ascertain if the numbers are within the jurisdiction of the user, and within the allowed number range.

When the monitoring party is provided with SS-DL, the service provider shall return notification of acceptance or rejection of the request. This notification shall include the talk groups and/or basic services to which discreet listening is registered.

This service may be withdrawn by the service provider.

4.2.2 Normal procedures

4.2.2.1 Activation, Deactivation, Definition, Registration, Interrogation, Cancellation

4.2.2.1.1 Activation

The supplementary service shall be activated for a teleservice by the appropriate procedures being used by the monitoring party and only if the supplementary service is registered for that teleservice. The supplementary service may be activated on a per call basis.

Alternatively, the supplementary service may be permanently activated by the network at the request of the user.

To activate DL, the served user shall supply:

- 1) the talk group;
- 2) the basic service applicable to the talk group, e.g. clear speech group call.

NOTE: If no basic service is indicated by the user, this shall be interpreted as all services.

When the served user so activates DL, the service provider shall return notification of acceptance or rejection of the request (see exceptional procedures for a list of possible causes for rejection). Notification of acceptance shall include the talk group number and the basic service to which the DL shall be active.

4.2.2.1.2 Deactivation

The supplementary service shall be deactivated for a teleservice by appropriate procedures used by the monitoring party or if the supplementary service is withdrawn by the operator.

To deactivate DL, the served user shall supply:

- 1) the talk group;
- 2) the basic service applicable to the talk group, e.g. clear speech group call.

NOTE: If no basic service is indicated by the user, this is interpreted as all services.

4.2.2.1.3 Definition

Shall not be applicable.

4.2.2.1.4 Registration

In the event where the network resources are shared by different groups of users e.g. police, ambulance, private individuals etc., a registration procedure may be carried out by the service provider at the provision stage. The procedure shall include the determination of the talk groups which the served user shall be authorized to listen to.

4.2.2.1.5 Interrogation

The Switching and Management Infrastructure (SwMI) shall support interrogation on a per number basis for all basic services and/or for a user specified basic service. The TETRA response to an interrogation request may provide the following information to the user:

- activated or deactivated state of the supplementary service;
- talk groups;
- applicable basic services;
- whether there are any appropriate calls in progress.

4.2.2.1.6 Cancellation

Shall not be applicable.

4.2.2.2 Invocation and operation

4.2.2.2.1 Basic operation

This service shall be invoked by the monitoring party activating the service and there being an applicable call in progress, or it may be invoked by the network (if the service is permanently activated) at the point when the applicable call is successfully set up.

The network shall acknowledge this request. If there is an appropriate communication in progress the network shall include the monitoring party in the call. If there is no appropriate communication in progress, the network shall inform the monitoring party and shall wait until such a communication commences, unless instructed otherwise by the monitoring party.

Once the network detects an appropriate call, the monitoring party shall be informed and given the opportunity to be connected to the call. The monitoring party shall be given an indication of the identities of the talk group and the talking party.

The monitoring party may release from the listened-to call at any time, and may return to the call at any time.

4.2.2.2.2 Forced release

As an implementation option the monitoring party (served user) may be able to force release the call. An indication of the successful force release shall be notified to the served user, and the parties in the forced released call.

4.2.2.2.3 Intrusion

As an implementation option the monitoring party (served user) may be able to enter into the conversation of the ongoing call at any time.

4.2.3 Exceptional procedures

4.2.3.1 Activation, Deactivation, Definition, Registration, Interrogation, Cancellation

4.2.3.1.1 Activation

If the system cannot accept an activation request, the served LS (or MS) subscriber shall receive a notification that discreet listening activation was not successful. Possible causes can be:

- talk group was not active;
- talk group unauthorized;
- talk group is the served user's number;
- insufficient information;
- repeated request from the served user;
- service not available.

4.2.3.1.2 Deactivation

If the infrastructure cannot accept a LS (or MS) subscriber's request for deactivation, the cause shall be returned to the subscriber, such as:

- service not subscribed to;
- insufficient information;
- inconsistent with activation;
- incorrect talk group.

If the infrastructure deactivates discreet listening without the served user having requested deactivation (e.g. when an exceptional condition occurs), the served user shall receive notification accompanied with the cause.

4.2.3.1.3 Definition

Shall not be applicable.

4.2.3.1.4 Registration

If the system cannot accept a registration request, the service provider shall receive a notification that discreet listening registration was not successful. Possible causes can be:

- talk group number is invalid directory number;
- insufficient information;

- talk group number is the directory number of the LS (or MS) subscriber itself;
- teleservice not provisioned.

4.2.3.1.5 Interrogation

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

- service or option not subscribed to;
- insufficient information;
- basic service to which relevance is requested is not subscribed to.

4.2.3.1.6 Cancellation

Shall not be applicable.

4.2.3.2 Invocation and operation

If the infrastructure cannot invoke the service, the cause shall be returned to the subscriber.

4.3 Interactions with other supplementary services

4.3.1 Calling Line Identification Presentation (CLIP)

Discreet listening shall not have any interaction with SS-CLIP.

4.3.2 Connected Line Identification Presentation (COLP)

Discreet listening shall not have any interaction with SS-COLP.

4.3.3 Calling/Connected Line Identification Restriction (CLIR)

Discreet listening shall not have any interaction with SS-CLIR.

4.3.4 Call Report (CR)

Discreet listening shall not have any interaction with SS-CR.

4.3.5 Talking Party Identification (TPI)

Discreet listening shall not have any interaction with SS-TPI.

4.3.6 Call Forwarding Unconditional (CFU)

Discreet listening shall not have any interaction with SS-CFU.

4.3.7 Call Forwarding on Busy (CFB)

Discreet listening shall not have any interaction with SS-CFB.

4.3.8 Call Forwarding on No Reply (CFNRy)

Discreet listening shall not have any interaction with SS-CFNRy.

4.3.9 Call Forwarding on Not Reachable (CFNR)

Discreet listening shall not have any interaction with SS-CFNR.

4.3.10 List Search Call (LSC)

Discreet listening shall not have any interaction with SS-LSC. A list search can be incorporated in the determination of an appropriate call to be monitored.

4.3.11 Call Authorized by Dispatcher (CAD)

This interaction shall not be allowed. It is unlikely that a user who is authorized to make discreet listening calls shall need to seek authorization from a dispatcher to make a call. In the event that the two supplementary services are registered against one user, then the service provider shall be required to resolve the conflict.

4.3.12 Short Number Addressing (SNA)

Discreet listening shall not have any interaction with SS-SNA.

4.3.13 Area Selection (AS)

Discreet listening shall not have any interaction with SS-AS.

4.3.14 Access Priority (AP)

Discreet listening shall not have any interaction with SS-AP.

4.3.15 Priority Call (PC)

Discreet listening shall not have any interaction with SS-PC.

4.3.16 Call Waiting (CW)

Discreet listening shall not have any interaction with SS-CW. During the time that discreet listening is active the monitoring party should be informed of any incoming calls waiting for himself/herself.

4.3.17 Call Hold (HOLD)

Discreet listening shall not have any interaction with SS-HOLD.

4.3.18 Automatic call completion

Discreet listening shall not have any interaction with automatic call completion.

4.3.19 Late Entry (LE)

Discreet listening shall not have any interaction with SS-LE.

4.3.20 Transfer of Control (TC)

Discreet listening shall not have any interaction with SS-TC.

4.3.21 Pre-emptive Priority Call (PPC)

Discreet listening shall not have any interaction with SS-PPC.

4.3.22 Include Call (IC)

Discreet listening shall not have any interaction with SS-IC.

4.3.23 Advice of Charge (AC)

Discreet listening shall not have any interaction with SS-AC.

4.3.24 Barring of Outgoing Calls (BOC)

Not applicable.

4.3.25 Barring of Incoming Calls (BIC)

Not applicable.

4.3.26 Discreet Listening (DL)

Not applicable.

4.3.27 Ambience Listening (AL)

Discreet listening shall not have any interaction with ambience listening.

4.3.28 Dynamic Group Number Assignment (DGNA)

Discreet listening shall not have any interaction with SS-DGNA.

4.4 Inter-working considerations

Discreet listening shall not be available across the intersystem interface.

4.5 Overall SDL

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

Input signals from the left and output signals to the left represent primitives to and from the monitoring party.

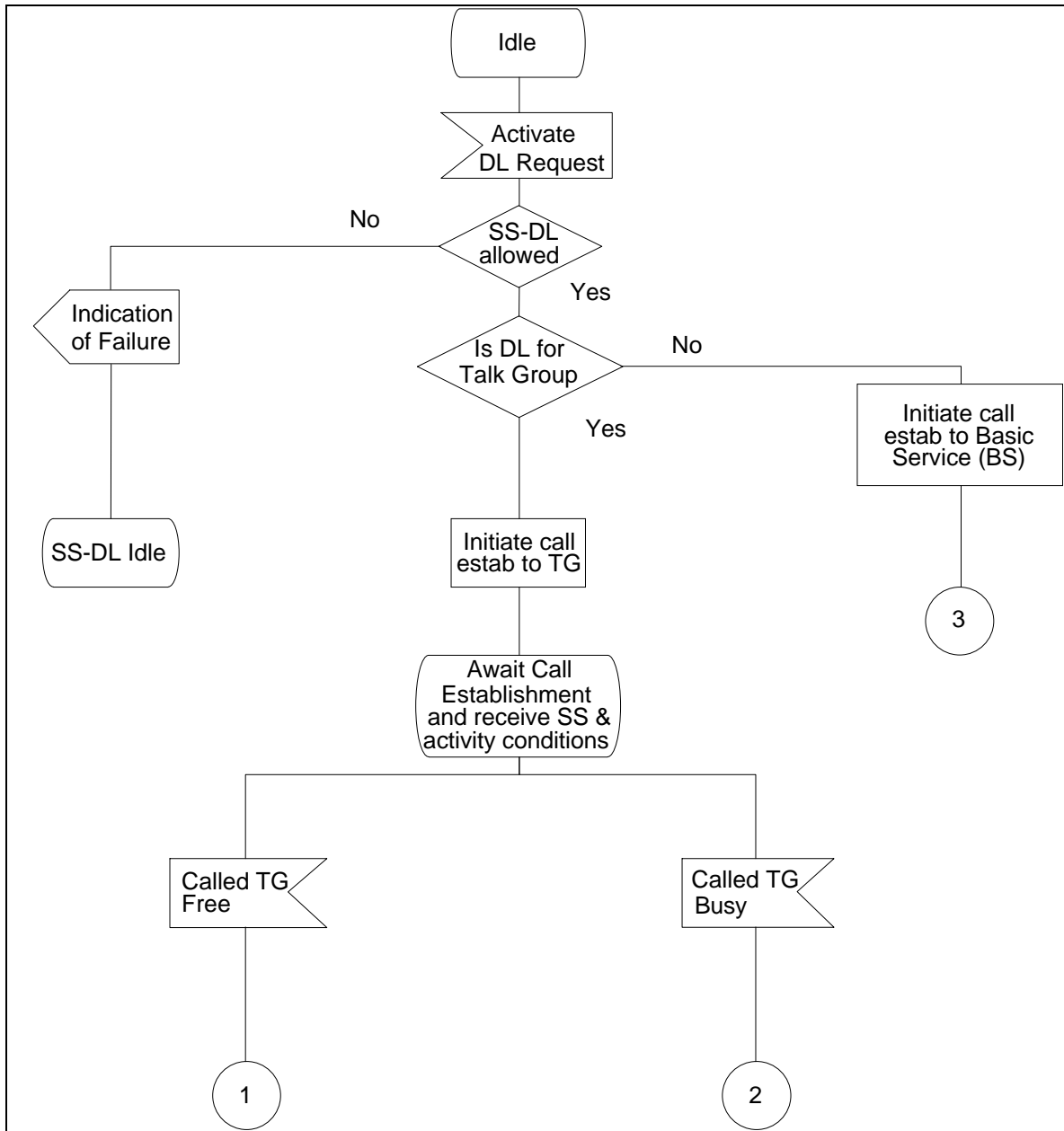


Figure 1: sheet 1 of 4, SS-DL, overall SDL.

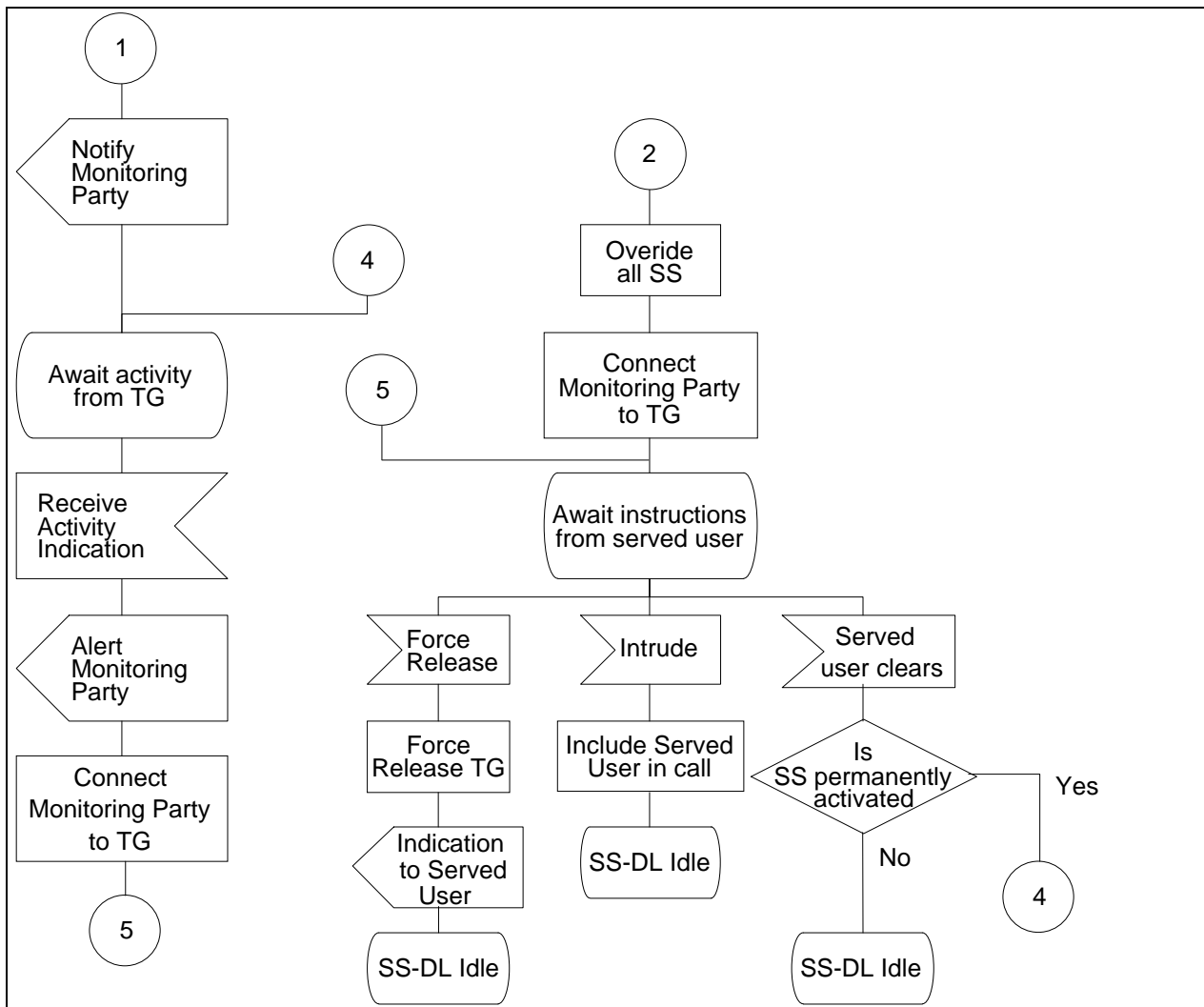


Figure 1: sheet 2 of 4, SS-DL, overall SDL.

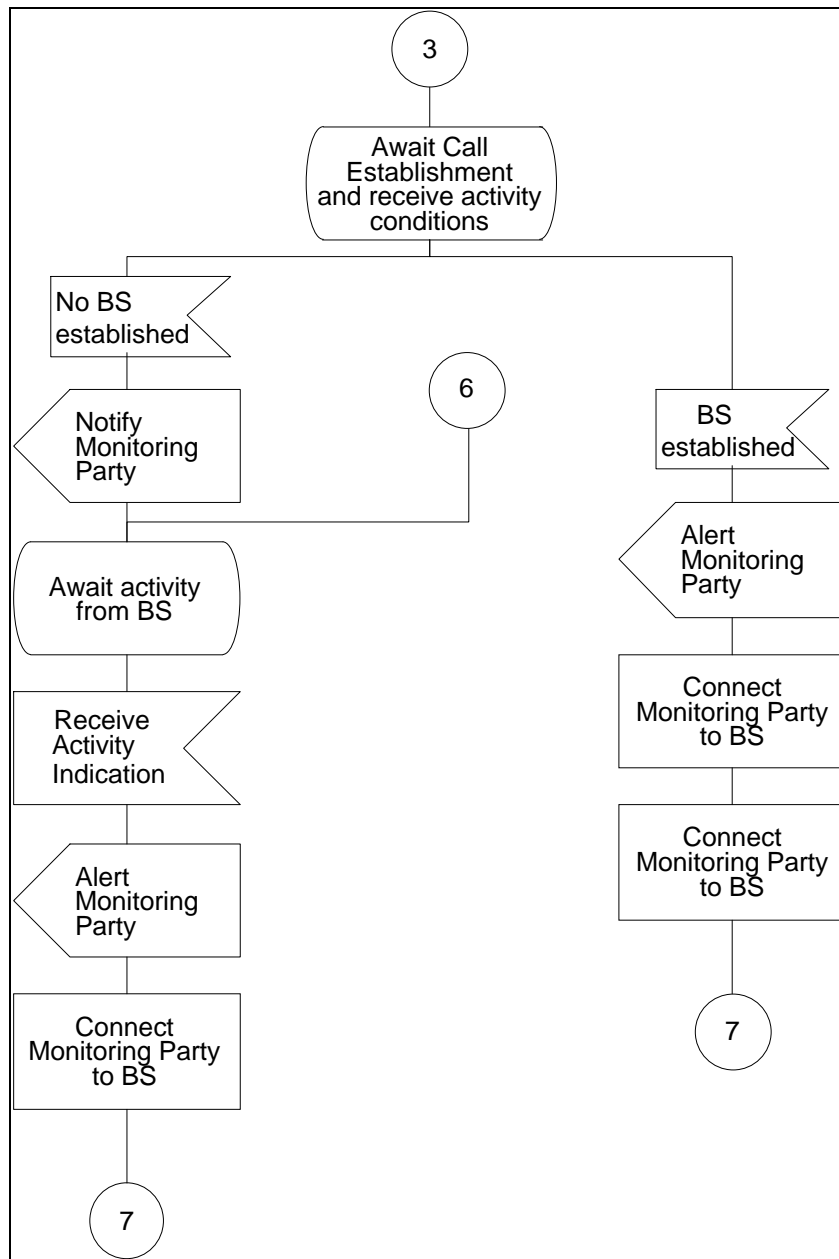


Figure 1: sheet 3 of 4, SS-DL, overall SDL.

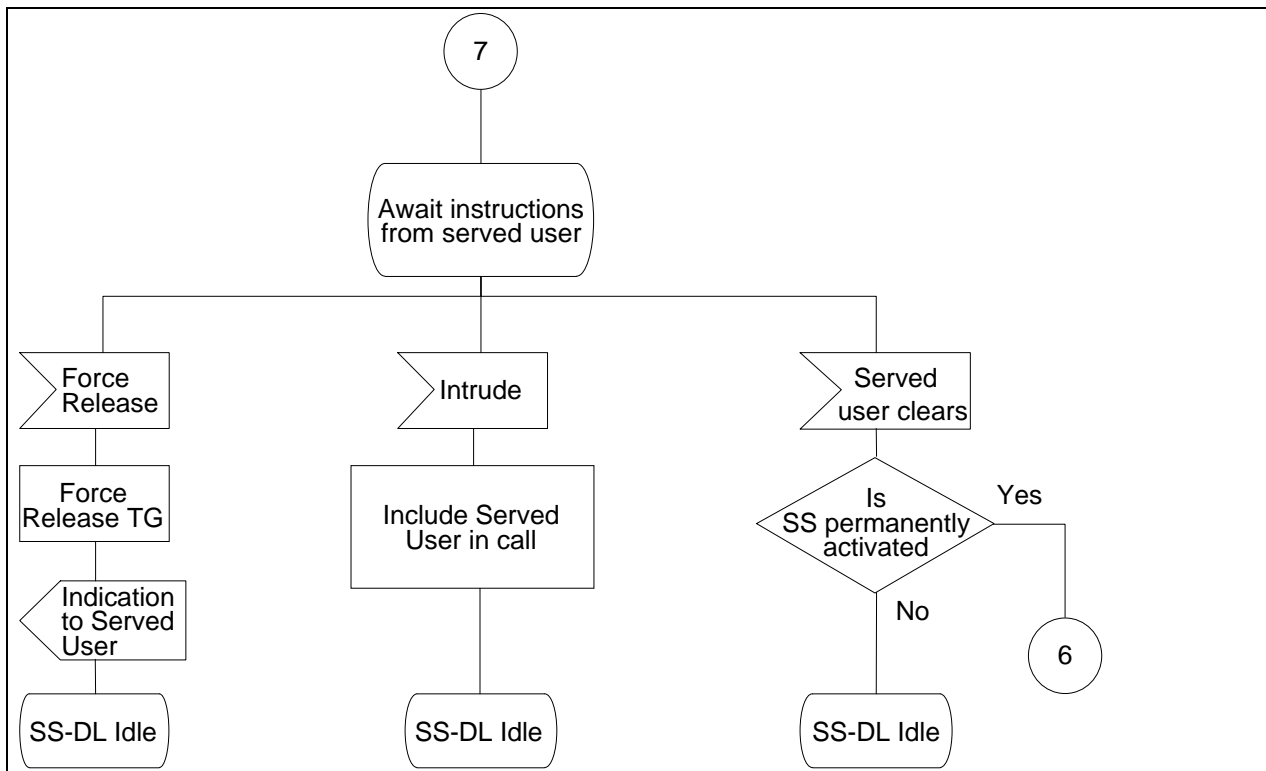


Figure 1: sheet 4 of 4, SS-DL, overall SDL.

History

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