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Sub-part 5: List Search Call (LSC)

ETSI

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Contents

Foreword

This European Telecommunication Standard (ETS) has been produced by the Terrestrial Trunked Radio (TETRA) ETSI Project of the European Telecommunications Standards Institute (ETSI), and is now submitted for the Public Enquiry phase of the ETSI standards approval procedure.

This ETS consists of 14 parts as follows:

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 6:   "Line connected Station (LS)";

Part 7:   "Security";

Part 8:   "Network management services";

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".

Proposed transposition dates	
Date of latest announcement of this ETS (doa):	3 months after ETSI publication
Date of latest publication of new National Standard or endorsement of this ETS (dop/e):	6 months after doa
Date of withdrawal of any conflicting National Standard (dow):	6 months after doa

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1   Scope

This ETS specifies the stage 2 description of the Supplementary Service List Search Call (SS-LSC) for the Terrestrial Trunked RAdio (TETRA).

The LSC supplementary service allows an incoming call to be offered to a pre-defined list of attendants in sequence, until the incoming call is answered or the call set up attempt is considered to be unsuccessful.

Man-Machine Interface and charging principles are outside the scope of this ETS.

Supplementary service specifications are produced in three stages according to the method defined in CCITT Recommendation I.130 [1]. The stage 2 description identifies the functional capabilities and the information flows needed to support the supplementary service as specified in its stage 1 description (see ETS 300 392-10-2 [5]). The stage 2 description is followed by the stage 3 description, which specifies the protocols at the air interface and at the various Inter-System Interfaces (ISI) to support the service.

This ETS is applicable to MS/LS and SwMIs involved in the operation of those supplementary services. Specifications of inter-working gateways to non-TETRA networks (mainly PSTN and ISDN) while affected by that ETS are outside the scope of this ETS.

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

2   Normative references

This ETS incorporates by dated and 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".

[3]   ETS 300 392-2 (1995): "Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Part 2: Air Interface (AI)".

[4]   ETS 300 392-12-5 (1996): "Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Part 12: Supplementary services stage 3; Sub-part 5: List Search Call (LSC)".

[5]   ETS 300 392-10-2: "Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Part 10: Supplementary services stage 1; Sub-part 2: Call report".

3   Definitions, abbreviations and symbols

3.1   Definitions

For the purpose of this ETS, the following terms and definitions apply:

attendant: address within the search list which has been designated upon definition by the authorized user to receive calls.

authorized user: user authorized to define and activate the search list against an Individual TETRA Subscriber Identity (ITSI).

Base Station (BS): physical grouping of equipment which provides the fixed portion of the air interface. One base station transmits and receives radio signals to and from a single location area (a single region of geographical coverage). A BS contains at least one Base Radio Stack (BRS).

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

search list: group of attendants accessed by the infrastructure in sequence.

search list number: number (ITSI) to which a search list is assigned.

served user: user making an incoming call to the search list number.

Supplementary Service (SS): 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.

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

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
SDL	(Functional) Specification and Description Language
SLN	Search List Number
SS	Supplementary Service

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

SwMI	Switching and Management Infrastructure
TETRA	Terrestrial Trunked RAdio

3.2.2 Supplementary service abbreviations

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

AL	Ambience Listening
AS	Area Selection
BIC	Barring of Incoming 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
CW	Call Waiting
DL	Discreet Listening
LSC	List Search Call

PC	Priority Call
PPC	Pre-emptive Priority Call
SLN	Search List Number
SNA	Short Number Addressing
TPI	Talking Party Identification

3.3 Symbols

There are no other symbols in this ETS besides those symbols used in SDL diagrams according to ITU-T Recommendation Z.100 [2].

4 SS-LSC Stage 2 Specifications

4.1 Functional model

4.1.1 Functional model description

4.1.1.1 Functional model description for normal operation

The functional model shall comprise the following functional entities (FEs) for Individual Calls:

FE1 Originating SS-LSC Served user FE;

FE21 Originating SS-LSC Controlling FE;

FE24 List Search Call Controlling FE;

> NOTE 1: This FE corresponds to the Home SwMI function of SLN.

FE251 Terminating SS-LSC First Attendant Controlling FE;

FE252 Terminating SS-LSC Second Attendant Controlling FE;

FE25n Terminating SS-LSC nth attendant controlling FE;

FE51 Terminating SS-LSC Affected first attendant FE;

FE52 Terminating SS-LSC Affected second attendant FE;

FE5n Terminating SS-LSC Affected nth attendant FE.

> NOTE 2: FE25n has the same functions as FE25n-1; it acts as the Terminating SS-LSC Controlling FE in the case of several controlling successive FEs.

The following functional relationships shall exist between these FEs for Individual Calls:

ra between FE1 and FE21;

rb between FE21 and FE24;

rc between FE24 and FE251, between FE24 and FE252 or between FE24 and FE25n;

rd between FE251 and FE51, between FE252 and FE52 or between FE25n and FE5n.

Figure 1 shows these FEs and relationships.
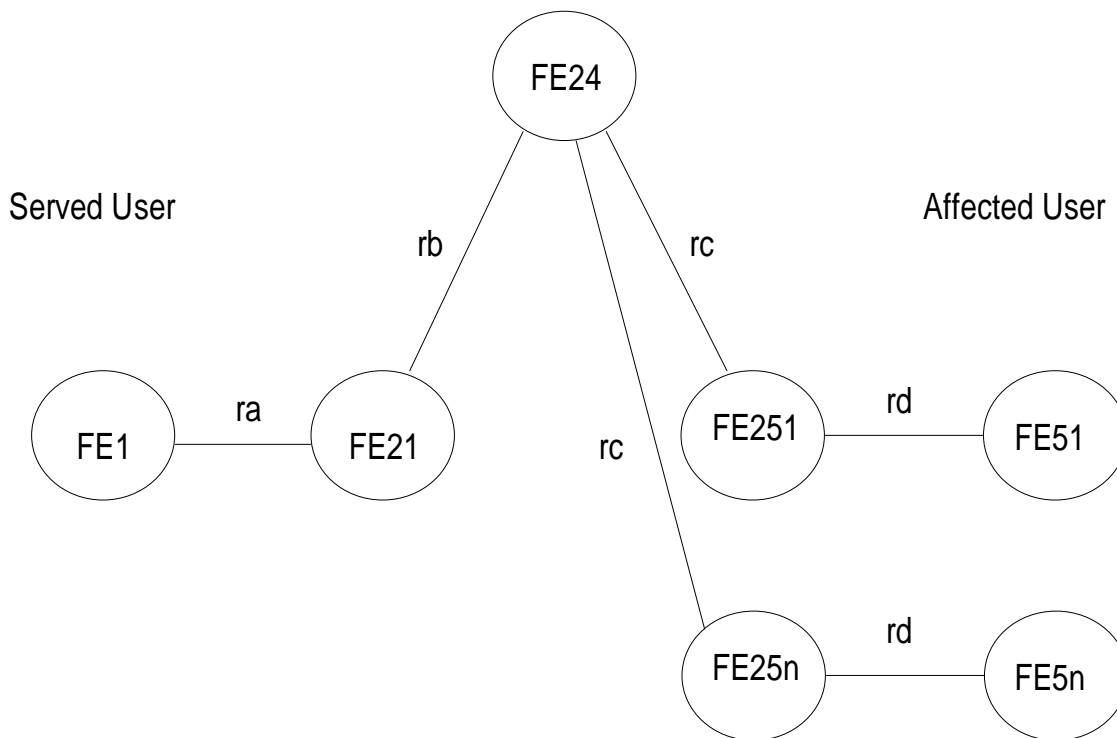
Figure 1: Functional model for SS-LSC individual call

4.1.1.2 Description of the functional entities

4.1.1.2.1 Originating SS-LSC served user FE, FE1

The FE that serves the served user (A) that sets up the call to the SLN.

4.1.1.2.2 Originating SS-LSC controlling FE, FE21

The FE within the network which sets up the call requested by FE1 and which routes the call to the SLN controlling entity FE24.

> NOTE: Both FE1 and FE21 are basic call control functional entities with the addition of the SS-LSC-INVOKED flow.

4.1.1.2.3 SS-LSC controlling FE, FE24

The FE that controls the operation of SS-LSC distributing the call to the different FEs depending on actual outcome of each call attempt.

4.1.1.2.4 Terminating SS-LSC controlling FE, FE25n

The FE within the network which co-operates with its peer (FE24) to provide basic call control information to FE24 so as to provide SS-LSC. It also interacts with FE5n to provide the basic call control.

> NOTE: The same description applies to FE251, FE252, etc.

4.1.1.2.5 Terminating SS-LSC FE, FE5n

The FE that serves the affected user (nth attendant).

4.1.1.3 Relationship of functional model to basic call functional model

An example of a relationship between the FEs for SS-LSC and FEs for the basic individual call is shown in figure 2.
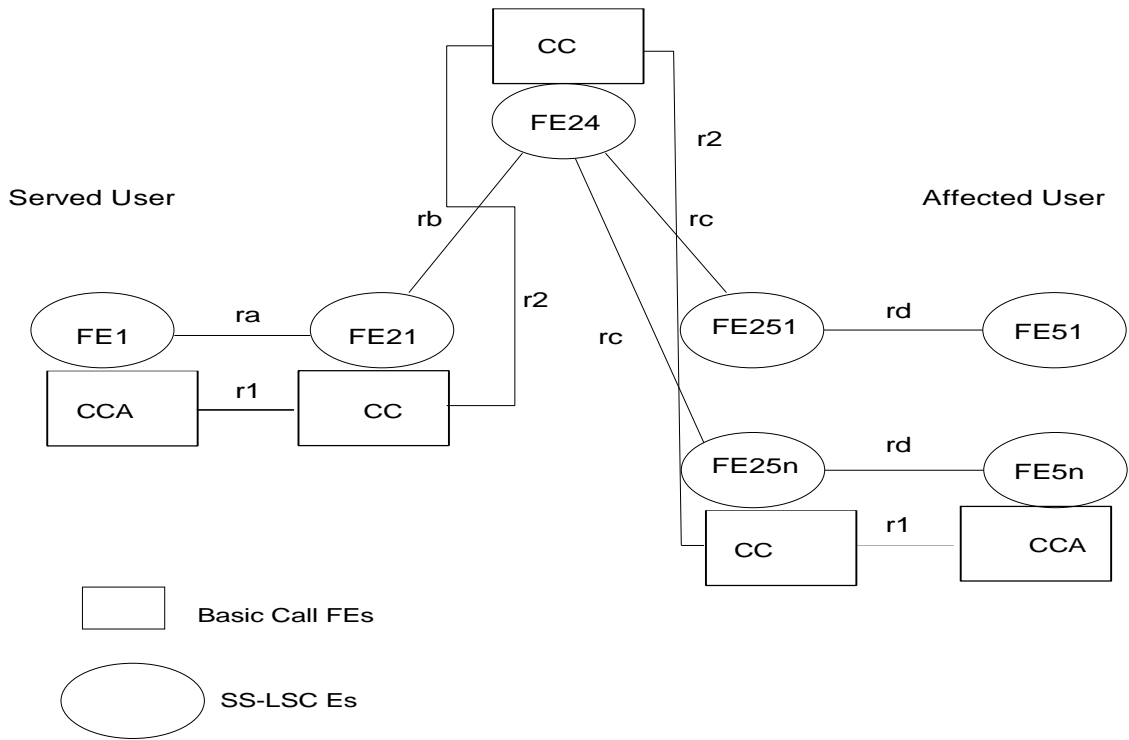
Figure 2: Example Relationship between model for SS-LSC and Basic Individual Call

4.1.2 Functional model description for SS-LSC management

4.1.2.1 Functional model description for management operation

The functional model shall comprise the following Functional Entities (FEs) for managing SS-LSC in the case where the authorized user is different from the served user:

FE20: Managed user home SwMI FE;

FE3: Authorized user's functional entity.

The relationship rx shall exist between FE3 and FE20. Figure 3 shows these FEs and relationship for the management part of SS-LSC.
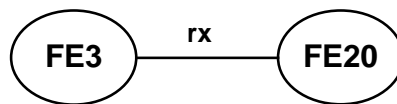
Figure 3: Functional model for the management part of SS-LSC

4.1.2.2 Description of the functional entities

4.1.2.2.1 Authorized user's functional entity, FE3

If the activation/deactivation and/or definition and/or interrogation procedures are supported by the authorized user MS/LS, FE3 shall send SS-LSC activation/deactivation, definition or interrogation requests to FE20. FE3 may perform local checks for the corresponding requests before sending them: it shall then send them only if it finds them valid. If FE3 rejects a request, it shall indicate it to the user application. At the reception of the response from FE20, FE3 shall forward the result to the user application.

4.1.2.2.2 Functional entity managed user home SwMI FE, FE20

If the optional activation/deactivation procedure is supported by the home SwMI of the managed user, FE20 shall receive SS-LSC activation/deactivation requests from FE3 and check them. For those requests that FE20 finds authorized and correct, it shall carry out the corresponding activations/deactivations in the SwMI and shall confirm their completions to FE3. As to the others, FE20 shall reject them and inform FE3.

The same shall apply for the definition procedure and for the interrogation procedure if they are supported by the home SwMI(s) of the managed user(s) for these procedures.

> NOTE: In the case of SS-LSC, the managed user is the same for the activation/deactivation procedure, for the definition procedure and for the interrogation procedure.

4.2 Service Primitives

This clause lists SS-LSC service primitives used to invoke or being a result of information flow sequences. The SS-LSC service primitives are defined in ETS 300 392-12-5 [4], subclause 4.2 and the basic call service primitives are defined in ETS 300 392-2 [3], clause 11.

The SS-LSC service primitives at the authorized user MS/LS TNSS-SAP shall be:

- ACTIVATE request;
- ACTIVATE ACK indication;
- DEACTIVATE request/indication;
- DEACTIVATE ACK response/confirmation;
- DEFINE request/indication;
- DEFINE ACK response/confirmation;
- INTERROGATE request/indication;
- INTERROGATE ACK response/confirmation.

The SS-LSC service primitive at the calling user MS/LS TNSS-SAP shall be:

- LSC INVOKED TO CALLING USER request/indication.

The SS-LSC service primitive at the called n attendant MS/LS TNSS-SAP shall be:

- LSC INVOKED request/indication.

4.3 Information flows

4.3.1 Definition of information flows

In the tables listing the service elements in information flows, the column headed "Type" for indicates which of these service elements are mandatory (M) and which are optional (O) in an information flow.

> NOTE: Information flows are shown for users A and B having not migrated.

4.3.1.1 ACTIVATE request/indication

ACTIVATE is an unconfirmed information flow across relationship rx from FE3 to FE20 which activates or deactivates SS-LSC for one SLN considered both as an ITSI (the number to be called to invoke SS-LSC) and a Search List identifier.

> NOTE: The response/confirmation information flow corresponding to the ACTIVATE request/indication information flow is ACTIVATE ACK (see subclause 5.1).

Table 1 lists the elements within the ACTIVATE information flow.

Table 1: Contents of ACTIVATE

Element	Type
Activated/deactivated identity	M (notes 1, 2)
Activation/deactivation request	M
Basic service	M
NOTE 1: May be repeated.	
NOTE 2: Both an ITSI and a SLN.	

The element activated/deactivated identity shall include an ITSI.

The element activation/deactivation request, defined in subclause 5.2.2 of ETS 300 392-12-5 [4], indicates possible activation options of SS-LSC.

4.3.1.2   ACTIVATE ACK response/confirmation

ACTIVATE ACK is actually the response/confirmation information flow corresponding to the ACTIVATE request/indication information flow. It is thus across relationship rx from FE20 to FE3. It is used to acknowledge the activation/deactivation state of SS-LSC for one or more identities.

> NOTE: The definition of how a given ACTIVATE ACK information flow relates to the corresponding ACTIVATE information flow is outside the scope of the stage 2 description: it will be given in the stage 3 description.

Table 2 lists the elements within the ACTIVATE ACK information flow.

Table 2: Contents of ACTIVATE ACK

Element	Type
Activated/deactivated identity	M (note 1)
Activation/deactivation result	M (note 2)
Activation state	C (notes 2 and 3)
NOTE 1: May be repeated.	
NOTE 2: Shall be repeated as appropriate if the element activated / deactivated identity is repeated.	
NOTE 3: Present if activation/deactivation result is positive.	

The element activation/deactivation result, defined in subclause 5.2.2. of ETS 300 392-12-5 [4], indicates if the ACTIVATE information flow request/indication has been successful or not. If it has been successful, the element activation state, defined in subclause 5.2.2 of ETS 300 392-12-5 [4], gives the detail about SS-LSC activation/deactivation.

4.3.1.3   DEFINE

DEFINE is an unconfirmed information flow across relationship rx from FE3 to FE20 which defines the parameters (specify which are those parameters) of one or more individual identities for SS-LSC.

> NOTE: The response/confirmation information flow corresponding to the DEFINE request/indication information flow is DEFINE ACK (see subclause 5.1).

Table 3 lists the elements within the DEFINE information flow.

Table 3: Contents of DEFINE

Element	Type
Identity (SLN)	M (note 1)
Basic Service	M (note 2)
Number of Attendant (n)	M (note 2)
Attendant 1 full ITSI/GTSI	M
…/…	
Attendant n full ITSI/GTSI	M (note 2)
NOTE 1: May be repeated.	
NOTE 2: Shall be repeated if the element individual identity is repeated.	

4.3.1.4 DEFINE ACK response/confirmation

DEFINE ACK is actually the response/confirmation information flow corresponding to the DEFINE request/indication information flow. It is thus across relationship rx from FE20 to FE3. This flow is used to inform FE3 about the completion of the corresponding definition request.

> NOTE: The definition of how a given DEFINE ACK information flow relates to the corresponding DEFINE information flow is outside the scope of the stage 2 description: it is given in the stage 3 description.

Table 4 lists the elements within the DEFINE ACK information flow.

Table 4: Contents of DEFINE ACK

Element	Type
Identity (SLN)	M (note 1)
Definition result	M (note 2)
Reject cause	C (note 3)
NOTE 1: May be repeated.	
NOTE 2: Shall be repeated as appropriate if the element identity is repeated.	
NOTE 3 Present if the definition result is negative.	

The element definition result, defined in subclause 5.2.2 of ETS 300 392-12-5 [4], indicates if the DEFINE information flow request/indication has been successful or not. If it has been successful, the element activation state, defined in subclause 5.2.2 of ETS 300 392-12-5 [4], gives the detail about SS-LSC activation/deactivation.

4.3.1.5 INTERROGATE request/indication

INTERROGATE is an unconfirmed information flow across relationship rx from FE3 to FE20 which is used to interrogate the home SwMI of a List Search Call known by its identity (SLN) about:

- the activation state of SS-LSC for this SLN considered as an user;

- other specific SS-LSN parameters related to this SLN considered as an user.

> NOTE: The response/confirmation information flow corresponding to the INTERROGATE request/indication information flow is INTERROGATE ACK (see subclause 5.1).

Table 5 lists the elements within the INTERROGATE information flow.

Table 5: Contents of INTERROGATE

Element	Type
Interrogated identity (SLN)	M (note)
Basic service	M (note)
NOTE: May be repeated.	

4.3.1.6   INTERROGATE ACK response/confirmation

INTERROGATE ACK is actually the response/confirmation information flow corresponding to the INTERROGATE request/indication information flow. It is thus across relationship rx from FE20 to FE3. It is used to respond to the corresponding interrogation request.

> NOTE: The definition of how a given INTERROGATE ACK information flow relates to the corresponding INTERROGATE information flow is outside the scope of the stage 2 description: it is given in the stage 3 description.

Table 6 lists the elements within the INTERROGATE ACK information flow.

Table 6: Contents of INTERROGATE ACK

Element	Type
Interrogated identity	M (note 1)
Interrogation result	M (note 2)
Activation state	C (notes 2 and 3)
Number of attendants (n)	C (note 3)
SS-LSC attendant 1 ITSI	C (note 2)
SS-LSC attendant 2 ITSI	C (note 2)
…/…	C (note 2)
SS-LSC attendant n ITSI	C (note 2)
NOTE 1: May be repeated.	
NOTE 2: Shall be repeated as appropriate if the element interrogated identity is repeated.	
NOTE 3: Conditional on the value of the element interrogation result.	
NOTE 4: May be absent even with an interrogation result positive.	

4.3.1.7   LSC INVOKED TO CALLING USER request/indication

LSC INVOKED TO CALLING USER is an unconfirmed information flow across relationship ra from FE21 to FE1 which is used to indicate to the calling user FE1 that the call has resulted in an invocation of SS-LSC. There are no parameters associated with this information flow. This information flow has several uses: it informs the calling user application that it may have to wait a longer time to connect than in a normal call, may be used in billing and also informs the calling user application that it may speaking to different successive entities.

4.3.1.8   LSC INVOKED request/indication

LSC INVOKED is an unconfirmed information flow across relationship rd from FE25n to FE5n which is used to indicate to the called attendant application FE5n that the incoming call is the result of an invocation of SS-LSC. There are no parameters associated with this information flow. This information flow informs the nth attendant MS/LS application that the call it is getting is of a different nature than a usual call to its ITSI/GTSI.

4.3.2 Relationship of information flows to basic individual call information flows

The ACTIVATE, ACTIVATE ACK, DEFINE, DEFINE ACK, INTERROGATE and INTERROGATE ACK information flows are independent of basic call information flows. The LSC INVOKED TO CALLING USER request/indication information flow is call related, may be independent of basic call information flows or not. The LSC INVOKED request/indication information flow is presented with a basic call setup. Table 7 summarizes the relationship of the SS-LSC information flows to those of basic call.

Table 7: Relationship of SS-LSC information flows to Basic Call

Information flow	Independent of basic call?	With basic call flow?	Basic call flows
Activate	yes	no	
Activate ack	yes	no	
Define	yes	no	
Define ack	yes	no	
Interrogate	yes	no	
LSC invoked	no	yes	SETUP
LSC invoked to calling user	Yes	yes	disconnect/release/alerting/connect

4.3.3 Examples of information flow sequences

A stage 3 ETS for SS-LSC shall provide signalling procedures in support of the information flow sequences specified below. In addition, signalling procedures should be provided to cover other sequences arising from error situations, interactions with basic call, interactions with other supplementary services, different topologies, etc...

In the figures, SS-LSC information flows are represented by solid arrows and basic call information flows are represented by broken arrows. An ellipse embracing two information flows indicates that the two information flows occur simultaneously. Within a column representing an SS-LSC functional entity, the numbers refer to functional entity actions listed below.

4.3.3.1 Activation/deactivation

Figure 4 shows the information flow sequence of SS-LSC activation/deactivation.
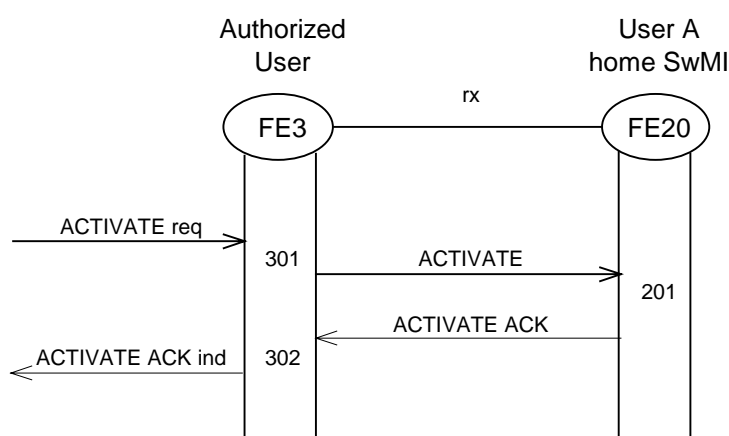
NOTE 1:   The same figure applies replacing ACTIVATE by DEACTIVATE.

NOTE 2:   User A is equivalent to user defined by ITSI = SLN.

Figure 4: Activation/Deactivation of SS-LSC

4.3.3.2 Definition

Figure 5 shows the information flow sequence of SS-LSC definition.
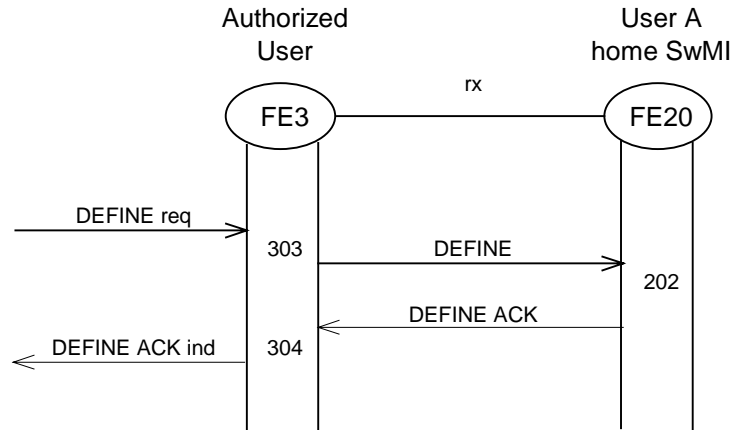
NOTE: User A is equivalent to user defined by SLN.

Figure 5: Definition of SS-LSC

4.3.3.3 Interrogation

Figure 6 shows the information flow sequence for normal operation of SS-LSC interrogation.
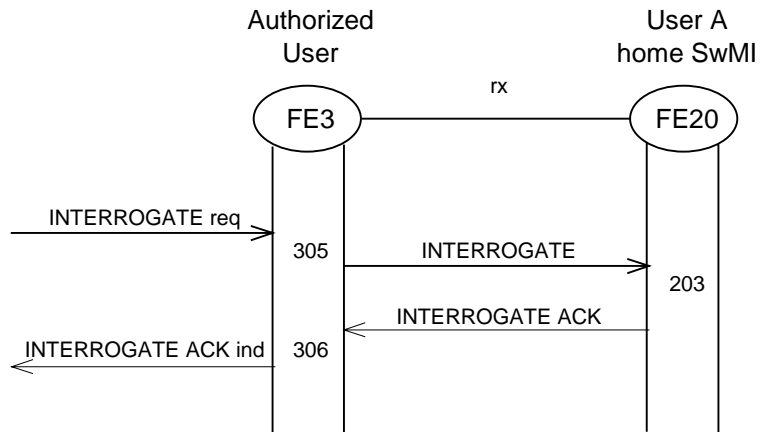
NOTE: User A is equivalent to user identified by SLN.

Figure 6: Interrogation of SS-LSC using SLN

4.3.3.4 Successful invocation of SS-LSC in case of attendant 1 busy

Figure 7 shows the information flow sequence for successful invocation of SS-LSC in the case of attendant 1 busy.

NOTE 1:   This is shown in the case of first attendant UDUB. In the case where the first attendant is NDUB, the basic call D-SETUP to the first attendant FE251 is not necessary.

NOTE 2:   The actual occurrence of the information flow LSC-INVOKED may be anywhere during the call setup.

NOTE 3:   The actual information flow is LSC INVOKED TO CALLING USER.

Figure 7: Successful invocation of SS-LSC in case of Attendant 1 busy

4.3.3.5 **Successful invocation of SS-LSC in case of attendant 1 no reply**

Figure 8 shows the information flow sequence for successful invocation of SS-LSC in the case of attendant 1 no reply.

NOTE 1:   The actual occurrence of the information flow LSC-INVOKED may be anywhere during the call setup.

NOTE 2:   FE24 invokes SS-LSC after expiration of an SS-LSC timer which is implementation dependent.

NOTE 3:   Once FE24 invokes SS-LSC after expiration of this timer, it ends the call set-up towards the first attendant by sending a D-DISCONNECT at the same time it sends the new set-up towards the next attendant in the list.

NOTE 4:   The actual information flow is LSC INVOKED TO CALLING USER.

Figure 8: Successful invocation of SS-LSC in case of Attendant 1 no reply

4.3.3.6   Successful invocation of SS-LSC in case of attendant 1 not reachable.

Figure 9 shows the information flow sequence for successful invocation of SS-LSC in the case of attendant 1 no reply.
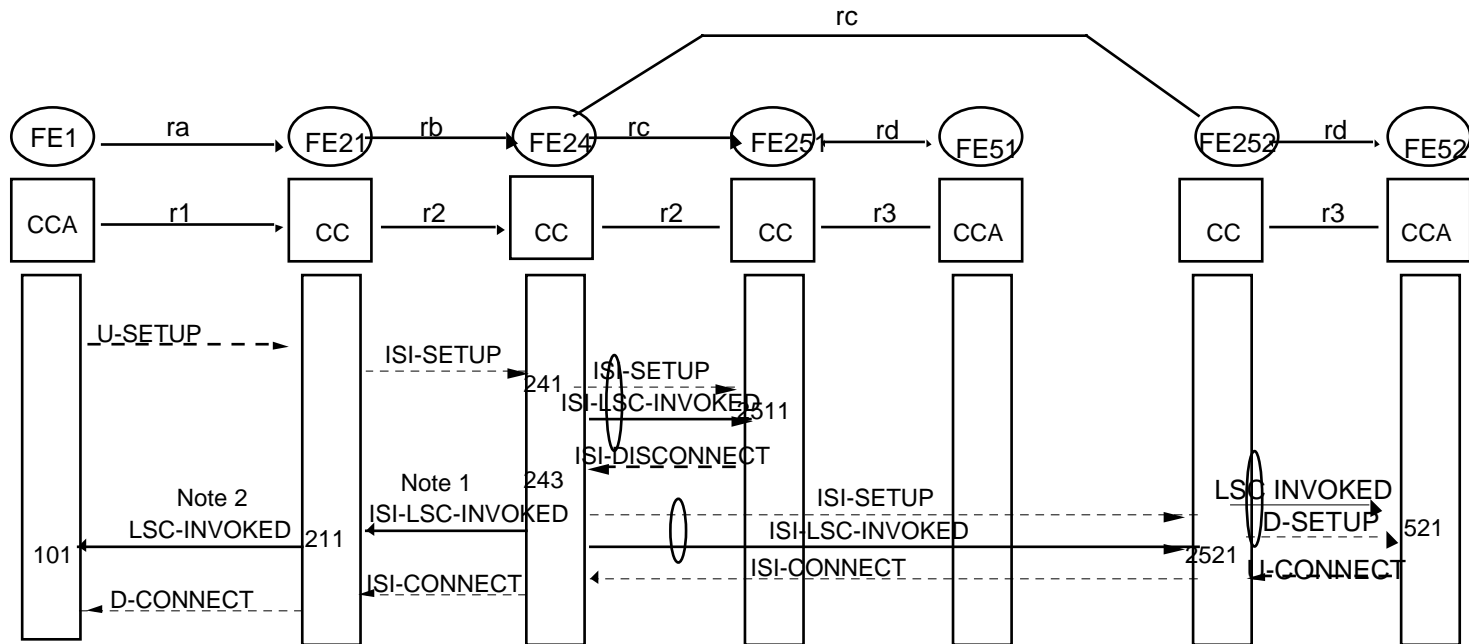
NOTE 1:   The actual occurrence of the information flow LSC-INVOKED may be anywhere during the call setup.

NOTE 2:   The actual information flow is LSC INVOKED TO CALLING USER.

Figure 9: Successful invocation of SS-LSC in case of Attendant 1 not reachable

4.3.3.7 Unsuccessful invocation of SS-LSC in case of attendants 1 and 2 busy

Figure 10 shows the information flow sequence for unsuccessful invocation of SS-LSC in the case of n attendants busy. For illustration purpose, n=2.

NOTE 1:   This is shown in the case of first attendant UDUB. In the case where the first attendant is NDUB, the basic call D-SETUP to the first attendant FE251 is not necessary.
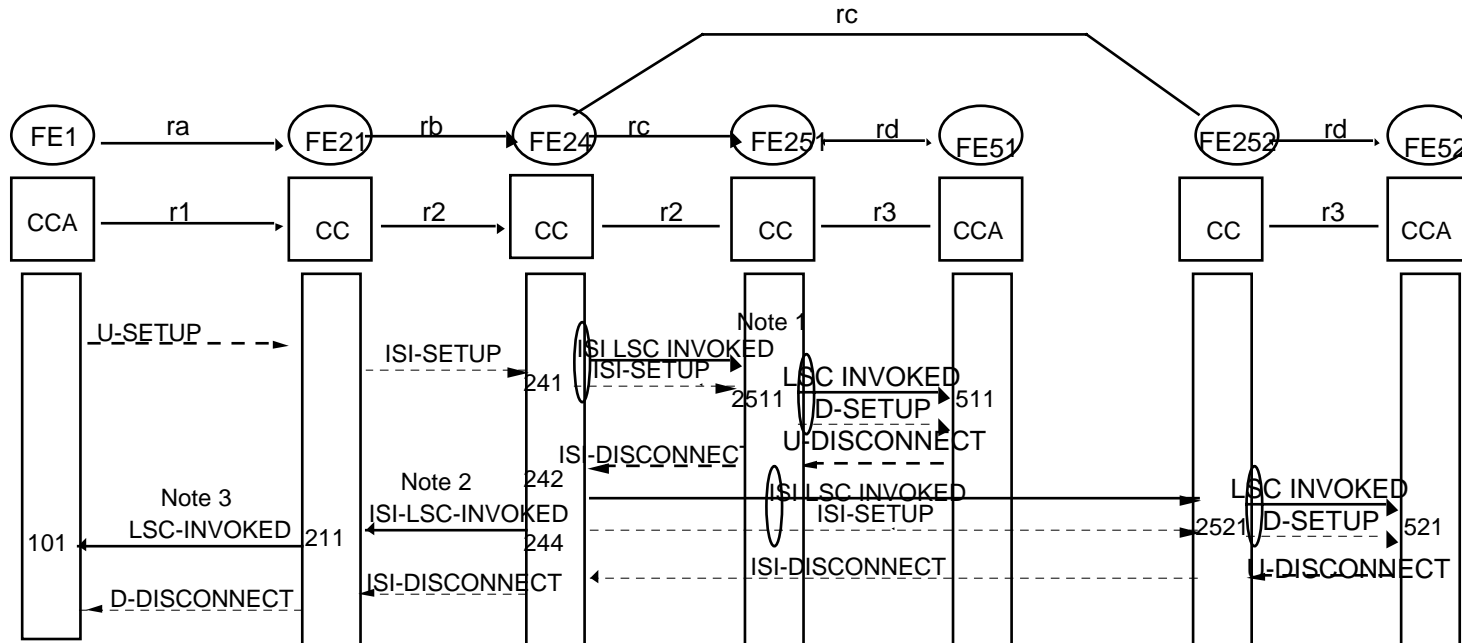
NOTE 2:   The actual occurrence of the information flow LSC-INVOKED may be anywhere during the call setup.

NOTE 3:   The actual information flow is LSC INVOKED TO CALLING USER.

Figure 10: Unsuccessful invocation of SS-LSC in case of n Attendants busy (n = 2)

4.4 Functional entity actions

NOTE: FE5n has only basic call actions.

4.4.1 Functional entity actions of FE1

101 FE1 receives the notification LSC-INVOKED and presents that notification to the calling user application.

4.4.2 Functional entity actions of FE21

211 FE21 receives through ISI the information flow LSC-INVOKED and sends to FE1 the notification at the air interface LSC-INVOKED.

4.4.3 Functional entity actions of FE24

241 FE24 receives a basic call request from the calling user FE21 through ISI, recognizes that the address for the called entity is an SLN address, checks whether SS-LSC is activated for that SLN and for that basic service; upon invocation of SS-LSC, FE24 sets up an ISI-IC call to the first attendant in the LSC list with the information flow LSC-INVOKED.

FE24 receives an ISI-DISCONNECT, recognizes that this disconnect is related to a call established due to SS-LSC invocation, checks the next attendant in the SS-LSC list and prepares to setup a call to the next attendant in the list.

FE24 sends LSC-INVOKED information flow to the calling user FE21.

FE24 determines that all attendants in the SS-LSC list are not able to accept the SS-LSC related call and sends an ISI-IC-DISCONNECT to the calling user FE21.

4.4.4 Functional entity actions of FE251

FE251 receives the basic call ISI-IC-CONNECT with the associated information flow LSC-INVOKED; either FE251 supports SS-LSC and FE251 presents the call to FE51 as a normal basic call information flow with a notification LSC INVOKED; or FE251 does not support SS-LSC and shall either setup the call as a basic call ignoring the LSC INVOKED indication or disconnect the basic call.

NOTE: The functional entity actions of FE25n are identical to that of FE251.

4.4.5 Functional entity actions of FE51

On receipt of LSC INVOKED notification as well as a basic call setup, present to the attendant 1 MS/LS application the LSC INVOKED notification regardless of whether that MS/LS supports SS-LSC or not.

NOTE: The functional entity actions of FE5n are identical to that of FE51.

4.4.6 Functional entity actions of FE3

301 On receipt of user application request for activation, send to FE20 the corresponding ACTIVATE request/indication information flow.

302 Deliver to the user application the information received in ACTIVATE ACK.

303 On receipt of user application request for defining an SS-XXX definition, send to FE20 the corresponding DEFINE request/indication information flow.

304 Deliver to the user application the information received in DEFINE ACK.

305 On receipt of user application request for interrogation based on identity/identities, send to FE20 the corresponding INTERROGATE request/indication information flow.

306 Deliver to the user application the information received in INTERROGATE ACK.

4.4.7 Functional entity actions of FE20

201 On receipt of ACTIVATE, verify that the request is allowed. If the request is allowed and its parameters are valid, activate the SS-LSC and send the ACTIVATE ACK information flow to FE3. If the request is not valid or authorized, return an error indication to FE3.

202 On receipt of DEFINE request/indication information flow, verify the identity/identities and the authorization for the request. If the definition is acceptable, make the SS-LSC definition to the SwMI and send the DEFINE ACK information flow to FE3.

203 On receipt of INTERROGATE request/indication information flow, verify that the request is allowed and its parameters are valid. If the request is valid, fetch the SS-LSC data and send it in the INTERROGATE ACK information flow to FE3. If the request is not valid or authorized, return an error indication to FE3.

4.5 Allocation of functional entities to physical equipment

The allocations of FEs to physical equipment for normal operation shown in table 8 shall apply.

Table 8: Scenarios for the allocation of FEs to physical equipment in case of individual call

Scenario	Functional Entities			
	User A		Attendant n	
	FE1	FE21	FE251	FE51
1 Users A and Attendants n in same SwMI	MS/LS	SwMI	SwMI	MS/LS
2 User A in SwMI, Attendant n in other SwMI	MS/LS	SwMI A	SwMI B	MS/LS
NOTE: The case of inter working with another network is not considered in this ETS.				

The possible scenarios for the allocation of SS-LSC management functional entities to SwMIs and MS/LSs are shown in table 9.

Table 9: Scenarios for the allocation of FEs to physical equipment/SwMIs in the case of management

	FE3	FE20
Scenario 1	MS/LS	Home SwMI of affected user (SLN)
Scenario 2	Home SwMI of affected user (note)	Home SwMI of affected user (SLN)
NOTE: This scenario is outside the scope of SS-LSC standardization.		

NOTE: Table 9 does not take into account the possible assignment of definition to MS/LSs.

4.6 Inter-working considerations

N/A.

NOTE: There is no external network supporting SS-LSC; ISDN and GSM support message waiting (which indicates voice message waiting); PISN does not support Call Report.

Annex A (informative): Bibliography

The following material, though not specifically referenced in the body of the present document (or not publicly available), gives supporting information.

ITU-T Recommendation I.210 (1993): "Principles of telecommunication services supported by an ISDN and the means to describe them".

ETS 300 392-10-5 (1999): "Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Part 10: Supplementary services stage 1; Sub-part 5: List search call".

History

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February 2000	Public Enquiry	PE 200022: 2000-02-02 to 2000-06-02