



EUROPEAN
TELECOMMUNICATION
STANDARD

DRAFT
pr **ETS 300 392-11-14**

September 1996

Source: ETSI TC-RES

Reference: DE/RES-06001-11-14

ICS: 33.060, 33.060.50

Key words: TETRA, V+D, LE

**Radio Equipment and Systems (RES);
Trans-European Trunked Radio (TETRA);
Voice plus Data (V+D);
Part 11: Supplementary Services (SS) Stage 2;
Part 11-14: Late Entry (LE)**

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Foreword

This draft European Telecommunication Standard (ETS) has been produced by the Radio Equipment and Systems (RES) Technical Committee of the European Telecommunications Standards Institute (ETSI), and is now submitted for the Public Enquiry phase of the ETSI standards approval procedure.

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", (DE/RES-06001-7).
- Part 8: "Management services", (DE/RES-06001-8).
- Part 9: "Performance objectives", (DE/RES-06001-9).
- Part 10: "Supplementary Services (SS) Stage 1".
- Part 11: "Supplementary Services (SS) Stage 2".**
- Part 12: "Supplementary Services (SS) Stage 3".
- Part 13: "SDL Model of the Air Interface".
- Part 14: "PICS Proforma", (DE/RES-06001-14).
- Part 15: "Inter-working - Extended Operations", (DE/RES-06001-15).

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 European Telecommunication Standard (ETS) defines the stage 2 specifications of the Supplementary Service Late Entry (SS-LE) for the Trans-European Trunked Radio (TETRA).

The SS-LE allows radio users to be informed of and, if they are concerned, to join an already existing point-to-multipoint speech call.

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

Stage 2 describes the functional capabilities of the supplementary service introduced in stage 1 description. Stage 2 identifies the functional capabilities for the management of the service in the Switching and Management Infrastructure (SwMI), in the Mobile Station (MS) and in the Line Station (LS). Stage 2 also describes the information flows between these entities and also the flows sent over the Inter-System Interface (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 SwMI, MS and LS of the service.

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] prETS 300 392-11-16: "Radio Equipment and Systems (RES); Trans-European Trunked Radio (TETRA); Part 11: Supplementary Services (SS) Stage 2; Part 11-16: Pre-emptive Priority Call (PPC)".
- [2] prETS 300 392-12-16: "Radio Equipment and Systems (RES); Trans-European Trunked Radio (TETRA), Part 12: Supplementary Services (SS) Stage 3; Part 12-16: Pre-emptive Priority Call (PPC)".

3 Definitions and abbreviations

3.1 Definitions

For the purposes of this ETS, the following definitions apply:

authorized user: An identified user who is able to define and interrogate the SS-LE parameters. The definition procedure and principles for authorized user are outside the scope of SS-LE.

forced LE: The user should join the ongoing multipoint call as soon as he receives a late entry indication. If the user is already engaged in another communication, the user has to join the highest priority call.

LE acknowledgement: Indication sent in LE messages by a SwMI to inform a member who would like to join the call that he has to inform the SwMI of his entering the call.

LE broadcast: Indication sent by a SwMI to inform members of a multipoint call which are currently not already involved in this call that they can join directly an existing communication (a channel is already allocated in this cell).

LE paging: Indication sent by a SwMI to inform members of a multipoint call which are currently not already involved in this call that they need to ask for a communication channel for that call if they wish to participate the call (a channel is not yet allocated in this cell).

system 1: A TETRA system in which SS-LE can be defined and invoked. System 1 is the TETRA system which has same Mobile Network Identity (MNI) as the TETRA group identity to which SS-LE is defined.

system 2: A TETRA system to which SS-LE can be extended and invoked. System 2 is a TETRA system which has a different MNI as the TETRA group identity to which SS-LE is defined.

user A: Calling party in a call.

user B: In a group call a party that receives the SS-LE indications about an ongoing call.

3.2 Abbreviations

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

FE	Functional Entity
ISI	Inter-System Interface
LE	Late Entry
SS	Supplementary Service

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

SwMI	Switching and Management Infrastructure
(V)GTSI	Visiting TETRA Subscriber Group Identity

4 Supplementary Service Late Entry (SS-LE) stage 2 specification

4.1 Functional model

4.1.1 Functional model description

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

- FE1 user B's functional entity;
- FE2 SS-LE functional entity in system 1;
- FE3 authorized user's functional entity;
- FE4 SS-LE functional entity in system 2;
- FE5 user A's (calling party's) functional entity.

The following relationships shall exist between these FEs:

- ra between FE1 and FE2;
- rb between FE2 and FE4 in different TETRA systems;
- rc between FE2 and FE3;
- rd between FE2 and FE5;
- re between FE1 and FE4;
- rf between FE3 and FE4.

Figure 1 shows these FEs and relationships for the operational part, and Figure 2 for the management part.

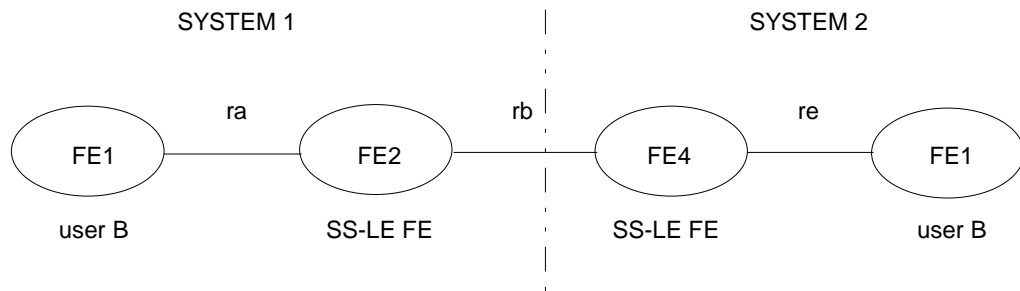


Figure 1: Functional model for the operational part of SS-LE

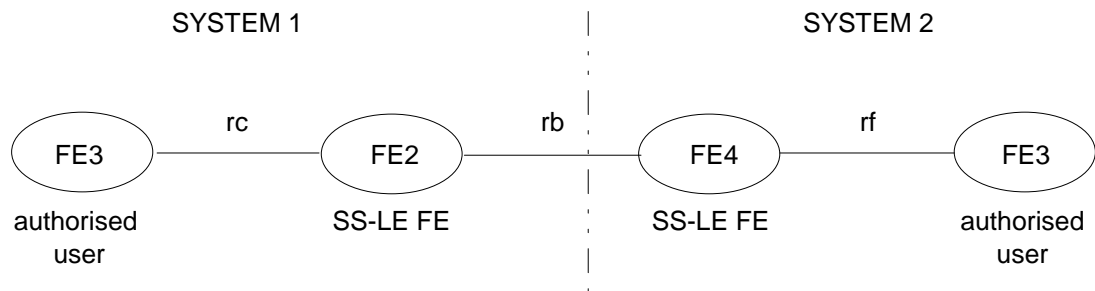


Figure 2: Functional model for the management part of SS-LE

4.1.2 Description of FEs

4.1.2.1 User B's functional entity, FE1

FE1 shall receive notifications of SS-LE from FE2 when SS-LE is invoked for a call. In case of LE acknowledgement, FE1 shall send the acknowledgement when it participates in an ongoing call. In case of LE paging, FE1 shall send the paging response when it aims to participate in an ongoing call. If FE1 is in system 2 FE1 shall send the messages to FE4.

4.1.2.2 SS-LE functional entity, FE2

At the reception of call invocation request from FE5, FE2 shall determine if the SS-LE is invoked. If so, FE1 shall determine the applied SS-LE type, the area etc. and shall invoke the SS-LE. FE2 sends the notifications of SS-LE to FE1s.

FE2 shall receive SS-LE definition requests from FE3s. FE2 shall analyse the requests and if they are found authorized and correct, FE2 shall make the definitions to the system and shall acknowledge to FE3. If not, FE2 shall reject the request and send a negative acknowledgement to FE3.

FE2 shall also receive SS-LE interrogation requests from FE3 about availability or state of a SS-LE service. FE2 shall fetch the response for the interrogation and if FE2 finds the request authorized it shall send the response to FE3.

If any FE1s or FE3s are in system 2 FE2 shall send and receive the messages from them via FE4. If the basic service to which SS-LE is defined, extends to another TETRA system (system 2), FE2 shall send a SS-LE information flow to system 2 to indicate if SS-LE should or should not be invoked in system 2.

4.1.2.3 Authorized user's functional entity, FE3

At the receipt of a request from service user, FE3 shall send SS-LE definition and interrogation requests to FE2. FE3 may perform local checks for the requests and if it finds them valid, FE3 shall send the requests to FE2. If FE3 rejects a request, it shall give an indication to the service user. At the reception of the responses, FE3 shall indicate the result to the service user.

If FE3 is in system 2, it shall send the messages to FE2 via FE4.

4.1.2.4 LE functional entity in system 2, FE4

FE4 shall deliver the different SS-LE related messages between FE2 and FE3. FE4 shall determine and add the routing address to the messages and deliver the information flows to either FE2 or FE3.

If a basic service extends to system 2, FE4 should receive a SS-LE information flow which indicates if FE2 should or should not invoke SS-LE for the call in system 2. If SS-LE is invoked in system 2 for the call, FE4 shall determine the SS-LE type for the call in system 2.

When the SS-LE service is invoked in the system 2, FE4 shall request assignment of (V)GTSI for the group, add (V)GTSI to the SS-LE messages, determine the area where SS-LE is sent and request allocation of traffic channels for the call.

4.1.3 Relationship with a basic service

In case of definition or interrogation of SS-LE the FEs shall not be collocated with CC or CCA.

4.1.3.1 LE broadcast

FE1 shall be collocated with CCA when FE1 receives the SS-LE indication included in the incoming call invocation.

FE2 shall be collocated with CC when FE2 invokes the SS-LE to a call.

FE4 shall be collocated with CC, when the SS-LE is activated in system 2 for a call.

4.1.3.2 LE acknowledgement

FE1 shall be collocated with CCA when FE1 receives the SS-LE indication included in the incoming call invocation.

FE2 shall be collocated with CC when FE2 invokes the SS-LE to a call.

FE4 shall be collocated with CC, when the SS-LE is activated in system 2 for a call.

4.1.3.3 LE paging

FE1 shall be collocated with CCA when FE1 receives the SS-LE indication included in the incoming call invocation.

FE2 shall be collocated with CC when FE2 invokes the SS-LE to a call. FE2 shall send paging requests, receive the responses to the requests and request call set-up for the FE1 that has sent the paging response.

FE4 shall be collocated with CC, when the SS-LE is activated in system 2 for a call.

4.1.3.4 The relationships with basic service

Figure 3 shows the relationship of SS-LE with basic service.

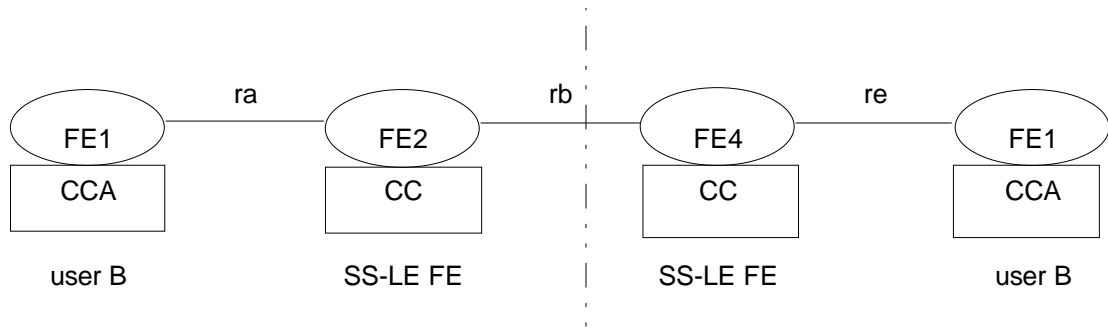


Figure 3: The relationships with a basic service

4.2 Information flows

4.2.1 Definition of information flows

In the tables listing the elements in information flows, the column headed "Type" indicates which if these elements are Conditional (C), Optional (O) and Mandatory (M).

4.2.1.1 Definition

Only authorized user (FE3) shall make SS-LE definitions. The definition can be to one group identity or a list or range of group identities. FE2 shall acknowledge the definition request. FE2 shall save the SS-LE definitions in SwMI in the system 1 for the defined group identity/identities, if the definition request was accepted.

The LE type can be defined. The LE type can be defined either as LE paging applied or No LE paging applied. If LE paging is applied only for cells in which a traffic channel has not been allocated for the call. Once a traffic channel is allocated, SS-LE type shall be changed to LE Broadcast or LE Acknowledgement depending on the basic service type. If the LE type is omitted in the definition, it is outside the scope of this ETS, which LE type shall be applied and the decision can be made e.g. depending on the congestion in the system.

SS-LE can be defined to be invoked over ISI to extend to several TETRA systems. Or, the SS-LE can be defined not to extend over ISI.

4.2.1.1.1 DEFINE request

DEFINE shall be an information flow for the relationship rc, rb and rf, and from FE3 to FE2 or from FE3 to FE4 and then to FE2. The flow shall be used to define SS-LE for one group or a list or range of groups. Table 1 lists the elements within the DEFINE information flow.

Table 1: Contents of DEFINE

Element	Type
Defining authorized user	M
Defined group identity/identities	M
LE Type	O
LE used over ISI	O
Basic service type(s)	O
Repetition rate	O

4.2.1.1.2 DEFINE-ACK

DEFINE-ACK shall be an information flow for the relationship rc, rb and rf, and from FE2 to FE3 or from FE2 to FE4 and then to FE3. The flow shall be used in order to acknowledge a definition request made for one group or a list or range of groups. Table 2 lists the elements within the LE DEFINE-ACK information flow.

Table 2: Contents of DEFINE-ACK

Element	Type
Defining authorized user	M
Defined group identity/identities	M
Result for definition	M

4.2.1.2 Operation

There shall be four different SS-LE types. These four types are LE broadcast, LE acknowledgement, LE paging and forced LE and they have the following characteristics:

LE broadcast shall be used for unacknowledged group calls. It shall be used to inform users about an ongoing group call. The users may join the call immediately after the reception of LE broadcast information flow. If the user joins the call, it shall move to the allocated traffic channel, if any.

LE acknowledgement shall be used for acknowledged group calls. It shall be used to inform users about an ongoing group call and to request an acknowledgement from a user that joins the call. The users may join the call immediately after the reception of LE acknowledgement information flow. If the user joins the call, it shall move to the allocated traffic channel, if any, and it shall send the acknowledgement after moving to the traffic channel. If there is not the traffic channel allocated for the indicated call, the user shall send the acknowledgement without moving to another channel.

LE paging shall be used to inform a users about an ongoing group call. LE paging should be used when the traffic channel is not yet allocated for the call in a cell. So, LE paging should be used to request a paging response from users that wish to join the call, so that the SwMI can allocate the traffic channels after the subscribers have indicated the need. FE2/FE4 shall start LE paging by sending the Paging indication, to which FE1 shall send a response, if it wishes to join the call. When FE2/FE4 receives the paging response from FE1, FE2/FE4 shall send LE broadcast information flow to FE1. Or, if the applied LE type shall be LE acknowledgement, FE2 shall send LE acknowledgement information flow to FE1. The LE broadcast/LE acknowledgement information flow shall be sent in order to allow FE1 to participate the call.

Forced LE can be used to force the user to join an ongoing multipoint call even if the user is engaged to an other (lower priority) call. Forced LE is implemented by using the pre-emptive values of "Call priority" element within basic service information flow as described in ETS 300 392-11-16 [1] and ETS 300 392-12-16 [2].

If a call for which SS-LE has been defined extends to system 2, FE2 in system 1 shall indicate to FE4 in system 2 whether SS-LE should or should not be applied in system 2. FE4 in system 2 should invoke the LE Broadcast or LE Acknowledgement depending on the call type. Whether FE4 applies LE Paging first is up to system 2 and is outside the scope of this ETS.

4.2.1.2.1 INFORM1 for LE broadcast

INFORM1 shall be an information flow for LE broadcast. The flow shall be valid for the relationship ra and re and from FE2/FE4 to FE1. The flow shall be sent by FE4 if the user B is in system 2. The flow shall inform the user B about an ongoing group call.

INFORM1 shall be used in case of LE broadcast; INFORM1 shall also be used when a user has responded to LE paging and when FE2/FE4 has changed the LE type to LE broadcast and FE2/FE4 informs FE1 about the allocated traffic channel and thus FE2/FE4 shall allow FE1 to participate the call. Table 3 lists the elements within the INFORM1 information flow.

Table 3: Contents of INFORM1

Element	Type
Invoked group call number	M
Call identifier	M
LE broadcast indication	M
Allocated traffic channel	O

4.2.1.2.2 INFORM2 for LE acknowledgement

INFORM2 shall be an information flow for LE acknowledgement for the relationship ra and re and from FE2/FE4 to FE1. The flow shall be sent from FE4 to FE1 if the user B is in system 2. It shall inform the user B about an ongoing group call and request an acknowledgement response, if the user B participates the call.

INFORM2 shall be used in case of LE acknowledgement; INFORM2 shall also be used when a user has responded to LE paging and when FE2/FE4 has changed the LE type to LE acknowledgement and FE2 informs FE1 about the allocated traffic channel and thus FE2/FE4 shall allow FE1 to participate the call.

NOTE: If LE type is changed from LE paging to LE acknowledgement, the traffic channel should be given in INFORM2 information flow.

Table 4 lists the elements within the INFORM2 information flow.

Table 4: Contents of INFORM2

Element	Type
Invoked group call number	M
Call identifier	M
LE acknowledgement indication	M
Allocated traffic channel	O

4.2.1.2.3 INFORM2-ACK for LE acknowledgement

INFORM2-ACK shall be an information flow for LE acknowledgement and for the relationships ra, rb and re and from FE1 to FE2 or from FE1 to FE4 and to FE2. The message shall be sent from FE1 to FE2 via FE4 if the user B is in system 2. The flow shall inform the system about a user B that participates the call. If a user does not participate the call, the user shall not send LE acknowledgement message.

FE1 should only send one LE acknowledgement response per one call (one call item).

FE1 shall send the acknowledgement in the traffic channel allocated for the call and indicated in INFORM2 information flow. However, if the traffic channel is not indicated in the SS-LE information flow, FE1 shall send the acknowledgement in the control channel.

If the user leaves a group call, where LE acknowledgement is applied and the user has acknowledged the group call, the FE1 can send a disconnection indication which indicates that the sending user leaves the call.

Table 5 lists the elements within the INFORM2-ACK information flow.

Table 5: Contents of INFORM2-ACK

Element	Type
Acknowledging subscriber number	M
Invoked group call number	M
Call identifier	M

4.2.1.2.4 INFORM3 for LE paging

INFORM3 shall be an information flow for LE paging for the relationship ra and re from FE2/FE4 to FE1. The flow shall be sent from FE4 to FE1 if the user B is in system 2. The flow shall inform the user B about a group call and request a response, if the user B wishes to participate the call. As LE paging is used when the traffic channel has not been allocated for the call in the cell, there shall be no indication of an allocated traffic channel in INFORM3.

Table 6 lists the elements within the INFORM3 information flow.

Table 6: Contents of INFORM3

Element	Type
Invoked group call number	M
Call identifier	M
LE paging indication	M

4.2.1.2.5 INFORM3-ACK for LE paging

INFORM3-ACK shall be an information flow for LE paging for the relationship ra and re and from FE1 to FE2 or from FE1 to FE4. The flow shall be sent to FE4 if the user B is in system 2. It shall inform the system about a user B that wishes to join the call.

The user B shall send this response only when he wishes to participate the call.

The LE paging shall end when FE2 receives the paging acknowledgement from FE1 and the SS-LE type is changed to LE broadcast.

Table 7 lists the elements within the INFORM3-ACK information flow.

Table 7: Contents of INFORM3-ACK

Element	Type
Acknowledging subscriber number	O
Invoked group call number	M
Paging response	M
Call identifier	M

4.2.1.3 Routing between different TETRA systems

FE2 can request invocation of SS-LE in another TETRA system (system 2).

4.2.1.3.1 INFORM4

LE used over ISI shall be an information flow for the relationship rb and between FE2 and FE4. The flow shall be used when SS-LE should be invoked for the call in two or more TETRA systems. Or, the flow is used to indicate, that SS-LE should not be invoked over Inter System Interface in another TETRA system. Table 8 lists the information elements within the LE for ISI information flow.

If the basic service type is acknowledged multipoint call, the acknowledgement received from FE1 should be routed to FE2 in system 1.

Table 8: INFORM4 information flow

Element	Type
Invoked group call number	M
Call identifier	M
LE applied/not applied over ISI	M
Basic service type	M

4.2.1.4 Interrogation

FE3 can interrogate SS-LE definitions from FE2. The interrogation can be made to one group identity or a list or range of group identities. A member of a group is authorized to interrogate the SS-LE of the group.

NOTE: If a member of group interrogates the group, the INTERROGATE/INTERROGATE-ACK is applied for the interrogation.

4.2.1.4.1 INTERROGATE

INTERROGATE shall be an information flow for the relationship rc, rb and rf, and from FE3 to FE2 or from FE3 to FE4 and then to FE2. The flow shall be used in order to interrogate the SS-LE for one group or a list or range of groups.

Table 9 lists the elements within the INTERROGATE information flow.

Table 9: Contents of INTERROGATE

Element	Type
Interrogating authorized user	M
Interrogated group identity/identities	M

4.2.1.4.2 INTERROGATE-ACK

INTERROGATE-ACK shall be an information flow for the relationship rc, rb and rf, and from FE2 to FE3 or from FE2 to FE4 and then to FE3. It shall be used in order to respond to the LE interrogation request for one group or a list or range of groups. Table 10 lists the elements within the INTERROGATE-ACK information flow. Acknowledgement shall be sent for each requested TETRA identity.

Table 10: Contents of INTERROGATE-ACK

Element	Type
Interrogating authorized user	M
Interrogated group identity/identities	M
Result for definition	M
LE Type	C (note)
LE used over ISI	C (note)
Basic service type(s)	C (note)
Repetition rate	C (note)
NOTE: The parameters shall be returned, if defined.	

4.2.2 Relationship of information flows to basic call information flows

Table summarizes the relationship of the SS-LE information flows with those of the basic call.

Table 11: The relationship between SS-LE information flows and basic service information flows

Information flow	Dependent of basic call flow	Basic call flow
DEFINE	no	
DEFINE-ACK	no	
INTERROGATE	no	
INTERROGATE-ACK	no	
INFORM1	yes	D-SETUP
INFORM2	yes	D-SETUP
INFORM2-ACK	no	
INFORM3	no	D-SETUP
INFORM3-ACK	no	
INFORM4	yes	D-SETUP
NOTE: Any of the information flows may be added to any basic service information flows, if the basic service flow can contain the SS-FACILITY element.		

4.2.3 Information flow sequences

Signalling procedures shall be provided in support of the information flow sequences specified below. In addition, signalling procedures should be provided to cover other sequences arising from service specific error situations, interactions with basic call, interactions with other supplementary services, different topologies etc.

In the figures, SS-LE 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 together. Within a column representing an SS-LE FE, the numbers refer to FE actions listed in subclause 4.2.3.

No timers are used in the figures.

NOTE: The information flow sequences are examples and they may not cover all possible variations of the service.

4.2.3.1 Definition

Figure 4 shows the information flow sequence of SS-PC definition when authorized user is in system 1.

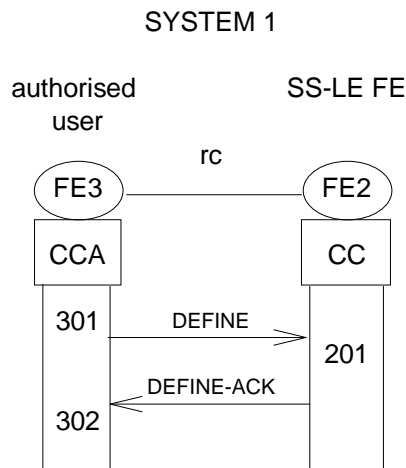


Figure 4: Definition of SS-LE

4.2.3.2 Normal definition of LE when FE3 in system 2

Figure 5 shows the information flow sequence of SS-PC definition when authorized user is in system 2.

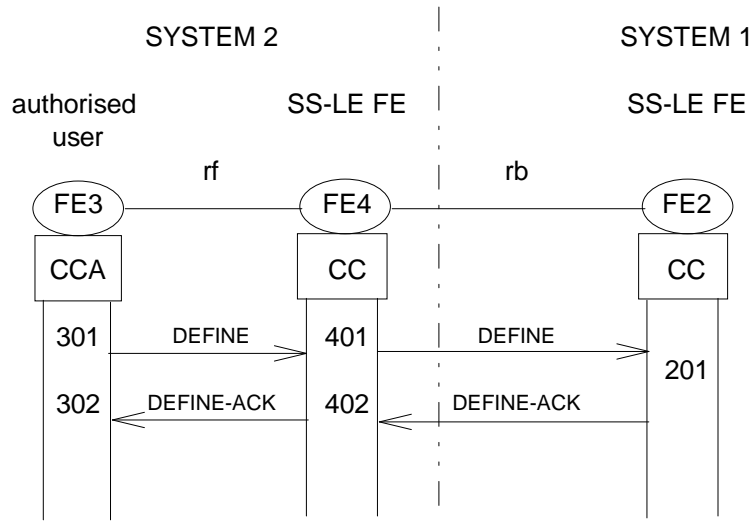


Figure 5: Definition of SS-LE when FE3 is in system 2

4.2.3.3 Operation of LE broadcast

Figure 6 shows the information flow sequence of LE broadcast operation when user A (calling party) and one user B is in system 1 and another user B is in system 2.

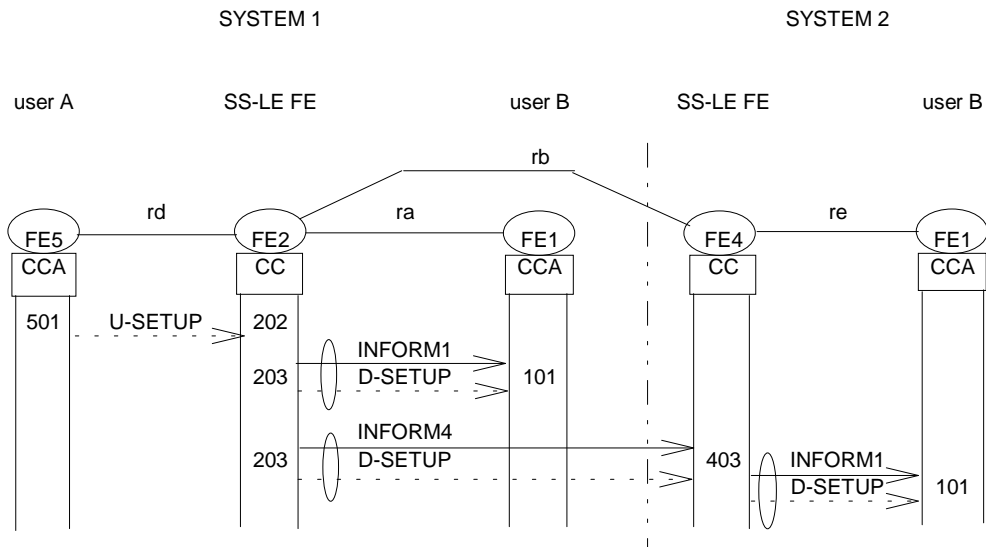


Figure 6: Operation of LE broadcast

FE2 shall start the sending of LE broadcast messages at call invocation. Only the first sent LE messages are shown in the figure.

4.2.3.4 Operation of LE acknowledgement

Figure 7 shows the information flow sequence of LE acknowledgement operation when user A (calling party) and one user B is in system 1 and another user B is in system 2. D-INFO message can be used to inform FE5 about acknowledgements that FE2 has received from FE1s, see ETS 300 392-2 [2], clause 14.

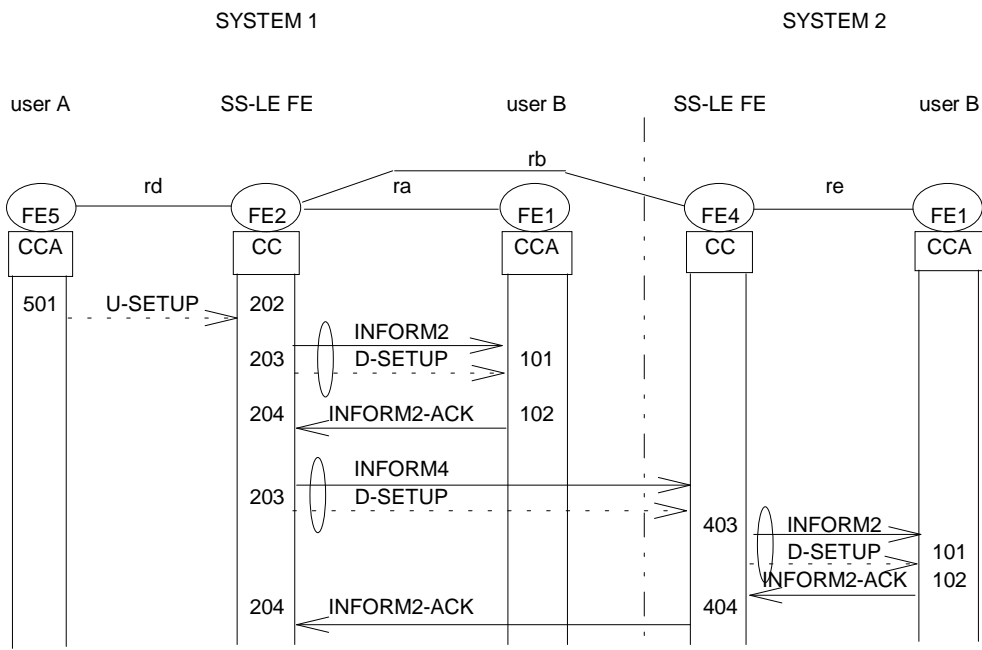


Figure 7: Operation of LE acknowledgement

FE2 shall start the sending of LE acknowledgement messages at call invocation. Only the first sent LE messages are shown in the figure.

4.2.3.5 Operation of LE paging

Figure 8 shows the information flow sequence of LE paging operation when user A (calling party) and one user B is in system 1 and another user B is in system 2.

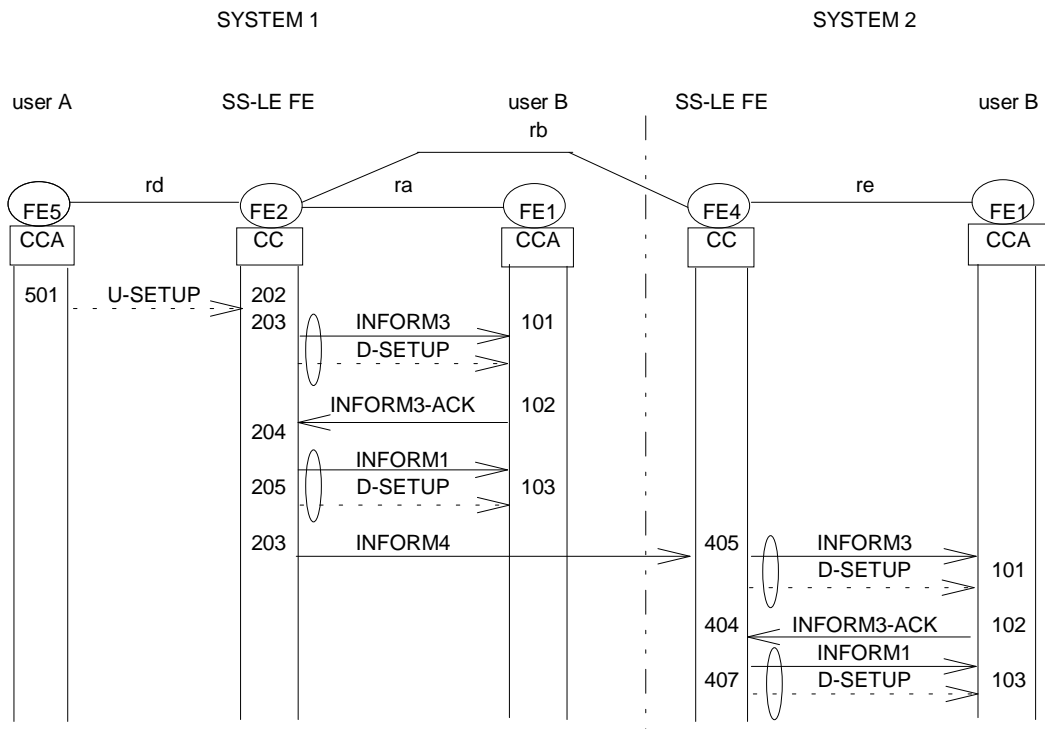


Figure 8: Operation of LE paging

FE2 shall start the sending of LE paging messages at call invocation. At the reception of a LE paging response, FE2 (FE4) shall allocate the traffic channel for the call and change LE paging to LE broadcast. In case of acknowledged group call, the LE type should be changed to LE acknowledgement. Only the first sent LE messages are shown in the figure.

4.2.3.6 Operation of LE broadcast when user A (calling party) is in system 2

Figure 9 shows the information flow sequence of LE broadcast operation when user A (calling party) in system 2 and two user Bs are in system 1.

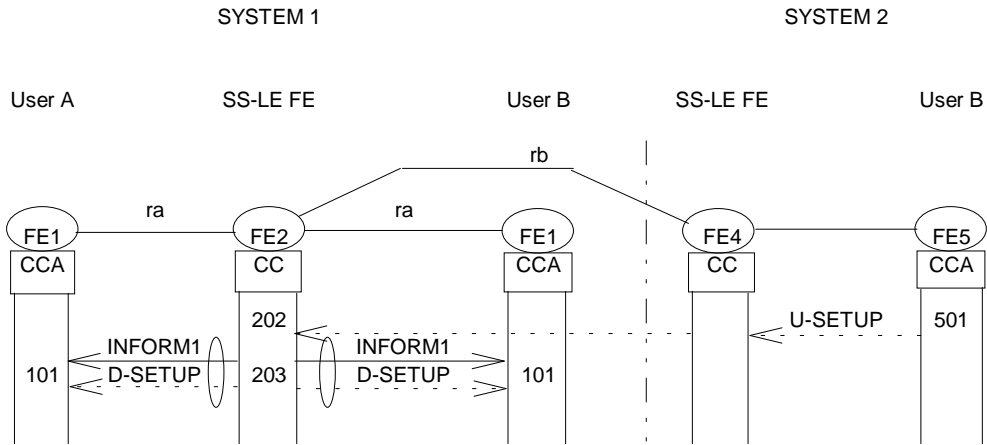


Figure 9: Operation of LE broadcast

FE2 shall start the sending of SS-LE broadcast messages at call invocation. Only the first sent LE messages are shown in the figure. The call invocation messages sent to FE5 are not shown in the figure 9, the call invocation to FE5 shall follow the general call invocation methods applied over ISI in TETRA networks.

4.2.3.7 Interrogation of SS-LE

Figure 10 shows the information flow sequence for normal operation of SS-LE interrogation when authorized user is in system 1.

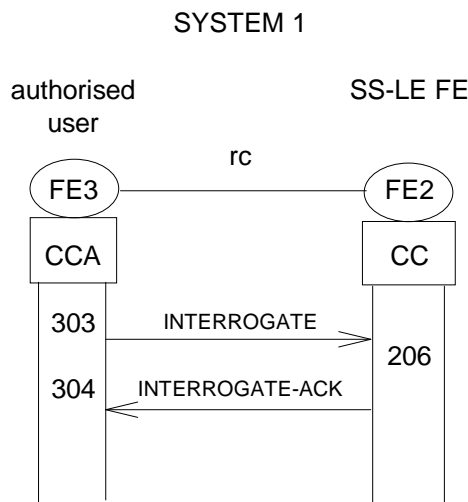


Figure 10: Interrogation of SS-LE

4.2.3.8 Interrogation of SS-LE when FE3 in system 2

Figure 11 shows the information flow sequence for normal operation of SS-LE interrogation when authorized user is in system 2.

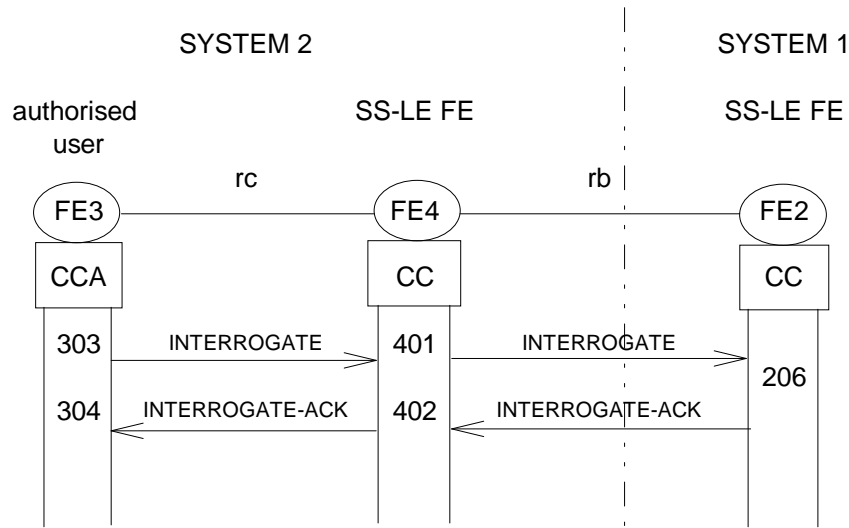


Figure 11: Interrogation of LE when FE3 in system 2

4.2.4 FE actions

4.2.4.1 FE actions of FE1

101 At the reception of the SS-LE information flows:

- INFORM1 with SETUP;
- INFORM2 with SETUP;
- INFORM3;
- FE1 collocated to CCA shall receive information about the SS-LE related to a call.

102 FE1 shall acknowledge to SwMI if the MS joins the call. FE1 shall send:

- INFORM2-ACK as a response to INFORM2;
- INFORM3-ACK as a response to INFORM3.

103 FE1 shall receive the INFORM1 information flow that is sent with SETUP in case of LE paging. In case of acknowledged group call, the INFORM2 shall be used.

4.2.4.2 FE actions of FE2

201 At the reception of DEFINE information flow, FE2 shall detect the user request for defining the SS-LE definition. FE2 shall verify the given SS-LE group identity, teleservice/bearer service type and the authorization for the request. If these checks do not fail, FE2 shall make the SS-LE definition to the system. FE2 shall return DEFINE-ACK as an acknowledgement for the service request to FE3.

202 At the reception of the call invocation, FE2 checks if the SS-LE shall be invoked for the call. If SS-LE is activated FE2 shall determine the SS-LE type and parameters.

203 FE2 shall send the SS-LE operation information flows to FE1s.

204 FE2 shall record the acknowledgement received from FE1.

205 FE2 shall send the call invocation message with channel information to FE1.

206 At the reception of SS-LE interrogation, FE2 shall verify that the request is allowed and its parameters valid. If FE2 finds the request valid, it shall fetch the SS-LE data and send the requested response to FE3. If the request is not valid or authorized, FE2 shall return an error indication to FE3.

4.2.4.3 FE actions of FE3

301 FE3 shall detect the user request for defining a SS-LE definition. Local checks on the suitability of the definition may be made and the request rejected on the basis of such checks. If the definition is not barred locally the definition request shall be sent to FE2.

302 At the receipt of definition acknowledgement, FE3 shall inform the user of the result. The result may be successful or unsuccessful definition. FE3 shall indicate the result for the service user.

303 FE3 shall detect the user's request for interrogation. Local checks on the suitability may be made and the request rejected on the basis of such checks. If the request is not barred locally, an interrogation request shall be sent to FE2.

304 On the receipt of the interrogation response, FE3 shall give the information for the requesting user.

4.2.4.4 FE actions of FE4

401 FE4 shall add the routing address of FE2 to the message. FE4 may also bar the service request, e.g. on the basis of authority checks.

402 At the reception of the response for the request, FE4 shall deliver it to FE3. If FE4 barred the request, this is indicated in the response.

403 FE4 shall determine the subscriber's location site, shall determine the applied SS-LE type, allocate the traffic channel for the call, if needed, and change the group identity to the corresponding system 2 group identity. Then, FE4 shall send the SS-LE messages to FE1.

404 FE4 shall receive the acknowledgement sent by FE1.

405 FE4 shall determine the subscriber's location site, shall determine the applied SS-LE type and change the group identity to the system 2 group identity. Then, FE4 shall send the SS-LE messages to FE1.

4.2.4.5 FE actions of FE5

501 The CCA of the user A's unit shall send the call invocation to the system.

4.3 Allocation of FEs to physical equipment

Table 12 shows the Allocation of FE to physical equipment.

Table 12: Allocation of FE to physical equipment

FE/PE	SwMI	LS	MS
FE1	-	+	+
FE2	+	-	-
FE3	-	+	+
FE4	+	-	-
FE5	-	+	+
Key: + = applicable - = not applicable			

4.4 Inter-working considerations

The SS-LE may extend to several TETRA networks. If supported, the TETRA system 1 (which initially invokes the service) and the TETRA system 2 (the additional system to which the service extends) need to be able to deliver the SS-LE specific information over the Inter System Interface (ISI) and they need to be able to invoke SS-LE.

History

Document history	
September 1996	Public Enquiry PE 114: 1996-09-23 to 1997-01-17