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Foreword

This ETSI Technical Report (ETR) has been produced by the Signalling Protocols and Switching (SPS) Technical Committee of the European Telecommunications Standards Institute (ETSI).

ETRs are informative documents resulting from ETSI studies which are not appropriate for European Telecommunication Standard (ETS) or Interim European Telecommunication Standard (I-ETS) status. An ETR may be used to publish material which is either of an informative nature, relating to the use or the application of ETSs or I-ETSs, or which is immature and not yet suitable for formal adoption as an ETS or an I-ETS.

In accordance with CCITT Recommendation I.130, the following three level structure is used to describe the supplementary telecommunications services as provided by European public telecommunications operators under the pan-European Integrated Services Digital Network (ISDN):

- Stage 1: is an overall service description, from the user's standpoint;

- Stage 2: identifies the functional capabilities and information flows needed to support the service described in stage 1; and

- Stage 3: defines the signalling system protocols and switching functions needed to implement the service described in stage 1.

This ETR details the stage 2 aspects (functional capabilities and information flows) needed to support the User-to-User Signalling (UUS) supplementary service. The stage 1 and stage 3 aspects are detailed in ETS 300 284 and ETS 300 286-1, respectively.

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1 Scope

This ETSI Technical Report (ETR) defines the stage two for the User-to-User Signalling (UUS) supplementary service of the pan-European Integrated Services Digital Network (ISDN) as provided by European public telecommunications operators. Stage two identifies the functional capabilities and the information flows needed to support the service description. The stage two description also identifies user operations not directly associated with a call (see CCITT Recommendation I.130 [2]).

NOTE: This stage 2 description reflects a premature status of the UUS supplementary service, i.e. the functional capabilities and information flows are not complete and may not be in full alignment with the corresponding stage 1 and stage 3 descriptions.

This ETR is specified according to the methodology specified in CCITT Recommendation Q.65 [4].

This ETR does not formally describe the relationship between this supplementary service and the basic call but, where possible this information is included for guidance.

In addition this ETR does not specify the requirements where the service is provided to the user via a private ISDN. This ETR does not specify the requirements for the allocation of defined functional entities within a private ISDN; it does however, define which functional entities may be allocated to a private ISDN.

This ETR does not specify the additional requirements where the service is provided to the user via a telecommunications network that is not an ISDN.

The UUS supplementary service enables a user to send/receive a limited amount of information to/from another user over the signalling channel in association with a call to the other user.

The UUS supplementary service is applicable to all circuit-switched telecommunications services.

This ETR is applicable to the stage three standards for the UUS service. The term stage three is also defined in CCITT Recommendation I.130 [2]. Where the text indicates the status of a requirement, i.e. a strict command or prohibition, as authorisation leaving freedom, as capability or possibility, this shall be reflected in the text of the relevant stage three standard.

Furthermore, conformance to this ETR is met by conforming to the stage three standards with the field of application appropriate to the equipment being implemented. Therefore, no method of testing is provided for this ETR.

2 Normative references

This ETR incorporates by dated and undated reference, provisions from other publications. These 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 ETR 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 I.112 (1993): "Vocabulary of terms of ISDN".

[2] CCITT Recommendation I.130 (1988): "Method for the characterisation of telecommunication services supported by an ISDN and network capabilities of an ISDN".

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

[4] CCITT Recommendation Q.65 (1988): "Stage 2 of the method for the characterisation of services supported by an ISDN".

[5] CCITT Recommendation Q.71 (1988): "ISDN 64 kbit/s circuit mode switched bearer service".

[6] CCITT Recommendation Z.100 (1988): "Specification and Description Language (SDL)".

3 Definitions

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

data unit: A unit of UUI to be transferred at any instance by the UUS supplementary service.

explicit request: The UUS supplementary service is considered as explicitly requested when a user requests the activation of the UUS supplementary service.

implicit request: The UUS supplementary service is considered as implicitly requested when no explicit request for the UUS supplementary service is made and UUI is sent by the user when originating a call.

Integrated Services Digital Network (ISDN): See ITU-T Recommendation I.112 [1], definition 308.

point-to-multipoint configuration: A situation where multiple responses to an incoming call can occur.

point-to-point configuration: A situation where multiple responses to an incoming call cannot occur.

service; telecommunication service: See ITU-T Recommendation I.112 [1], definition 201.

service 1: A form of the UUS supplementary service where UUI can be sent and received during the origination and termination of calls.

service 2: A form of the UUS supplementary service where UUI can be sent and received after the calling user has received an indication that the called user is being informed of the call and prior to the establishment of the connection.

service 3: A form of the UUS supplementary service where UUI can be sent and received only while the connection is established.

supplementary service: See ITU-T Recommendation I.210 [3], subclause 2.4.

"UUS not required" request: A request where originating a call shall continue even if the request for the UUS supplementary service cannot be accepted.

"UUS required" request: A request where originating a call shall be rejected if the request for the UUS supplementary service cannot be accepted.

4 Abbreviations

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

FEA	Functional Entity Action
ISDN	Integrated Services Digital Network
LE	Local Exchange
PTNX	Private Telecommunication Network Exchange
SDL	Specification and Description Language
TE	Terminal Equipment
UUI	User-to-User Information
UUS	User-to-User Signalling

5 Description

The user can transfer User-to-User Information (UUI) data units in different phases of the call depending on the service(s) to which the user subscribes. These are:

Service 1: the UUI data units are transferred during the setup and clearing phases of the call in association with basic call information flows (see CCITT Recommendation Q.71 [5]);

Service 2: the UUI data units are transferred during the alerting phase of the call (i.e. after REPORT (alerting) req.ind and before SETUP resp.conf) independently of the call messages. Two dedicated UUI data units can be transmitted in each direction;

Service 3: the UUI data units are transferred during the active phase of the call (i.e. after SETUP resp.conf) independently of the call control messages. The necessary limitation of the amount of UUI service 3 can be placed on the number of UUI data units transmitted or the throughput can be limited (network option).

Service 1, service 2 and service 3 allow the transmission of 128 octets per message as a maximum.

Service 1 and service 2 shall be requested by the calling user at the setup of the call, if UUI data units is desired in either direction. Service 3 may be requested by the calling user at the setup or during the active phase of the call. As a service provider option, service 3 can be requested by the called user only during the active phase of the call.

Service 2 and service 3 shall be explicitly requested. Service 1 may be implicitly or explicitly requested. The service is implicitly requested when UUI data units are included in the call request (i.e. the service is requested at the same time it is invoked).

At the call setup, the calling user can request service 1, service 2 and service 3 as "UUS required" and if UUI data units cannot be passed then the call is cleared. If service 3 is requested during the call, it cannot be requested as "UUS required".

For service 2 and service 3 the network shall confirm the request for the UUS supplementary service. This confirmation is preceded by an end-to-end check by the network for service availability.

When service 1 is explicitly requested, the network shall inform the remote user of the request. The remote user shall accept or reject the activation as described for service 2 and service 3.

For service 2 and service 3 the network shall interrogate the destination user for the service availability. No response from the destination user is taken by the network as a rejection of the UUS supplementary service request. The network shall explicitly indicate to the originating user whether the requested service has been successfully activated or not. In the case of unsuccessful activation, the network shall indicate whether this condition is due to the destination user or not.

When service 1 is explicitly requested, the network shall inform the destination user of the request. The destination party shall accept or reject the activation as described for service 2 and service 3.

6 Derivation of the functional model

6.1 Functional model description

The functional model for the UUS supplementary service is shown in figure 1.

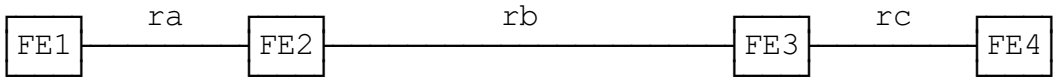


Figure 1: Functional model

6.2 Description of functional entities

The functional entities required for the UUS supplementary service above those of basic call are:

FE1: Requesting user's agent;
FE2: Requesting control entity;
FE3: Responding control entity;
FE4: Responding user's agent.

6.3 Relationship with the basic service

The relationship of the UUS supplementary service with the basic service is shown in figure 2.

NOTE: The basic call model is defined in CCITT Recommendation Q.71 [5], § 3.2.1 with the exception that r1 represents an outgoing call relationship from a CCA and r3 represents an incoming call relationship to a CCA.

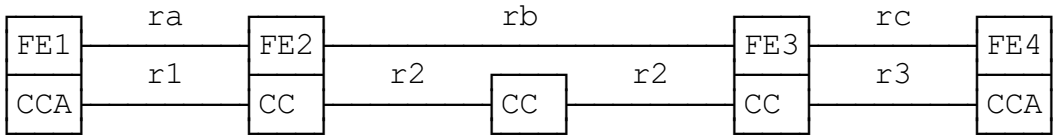


Figure 2: Relationship between the UUS supplementary service and the basic service

7 Information flows

7.1 Information flow diagrams

Figures 3 to 6 are related to service 1, figure 7 is related to service 2 and figures 8 and 9 are related to service 3.

7.1.1 Service 1

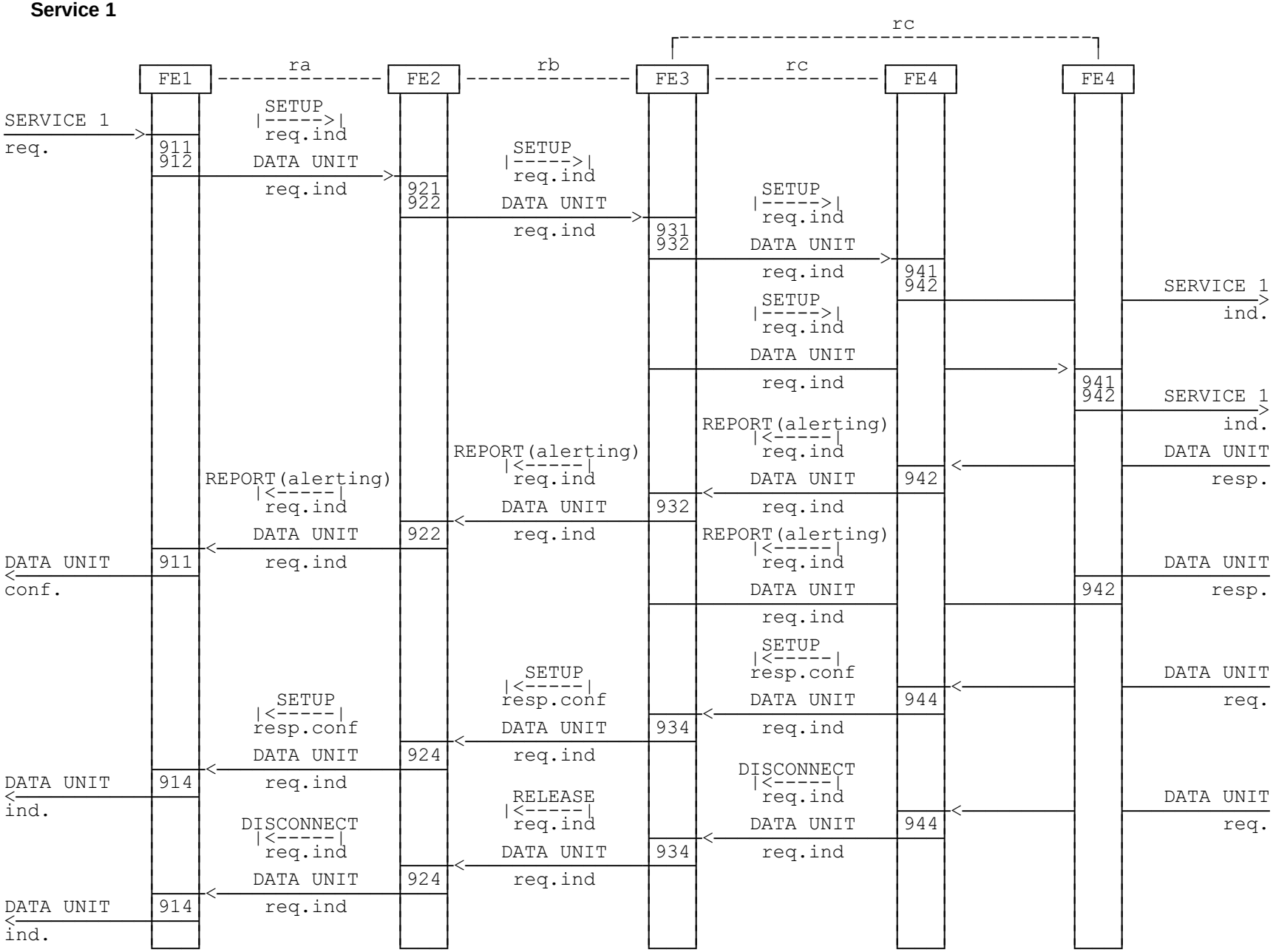


Figure 3: Service 1 of UUS supplementary service, successful implicit "UUS not required" request, called user is point-to-multipoint

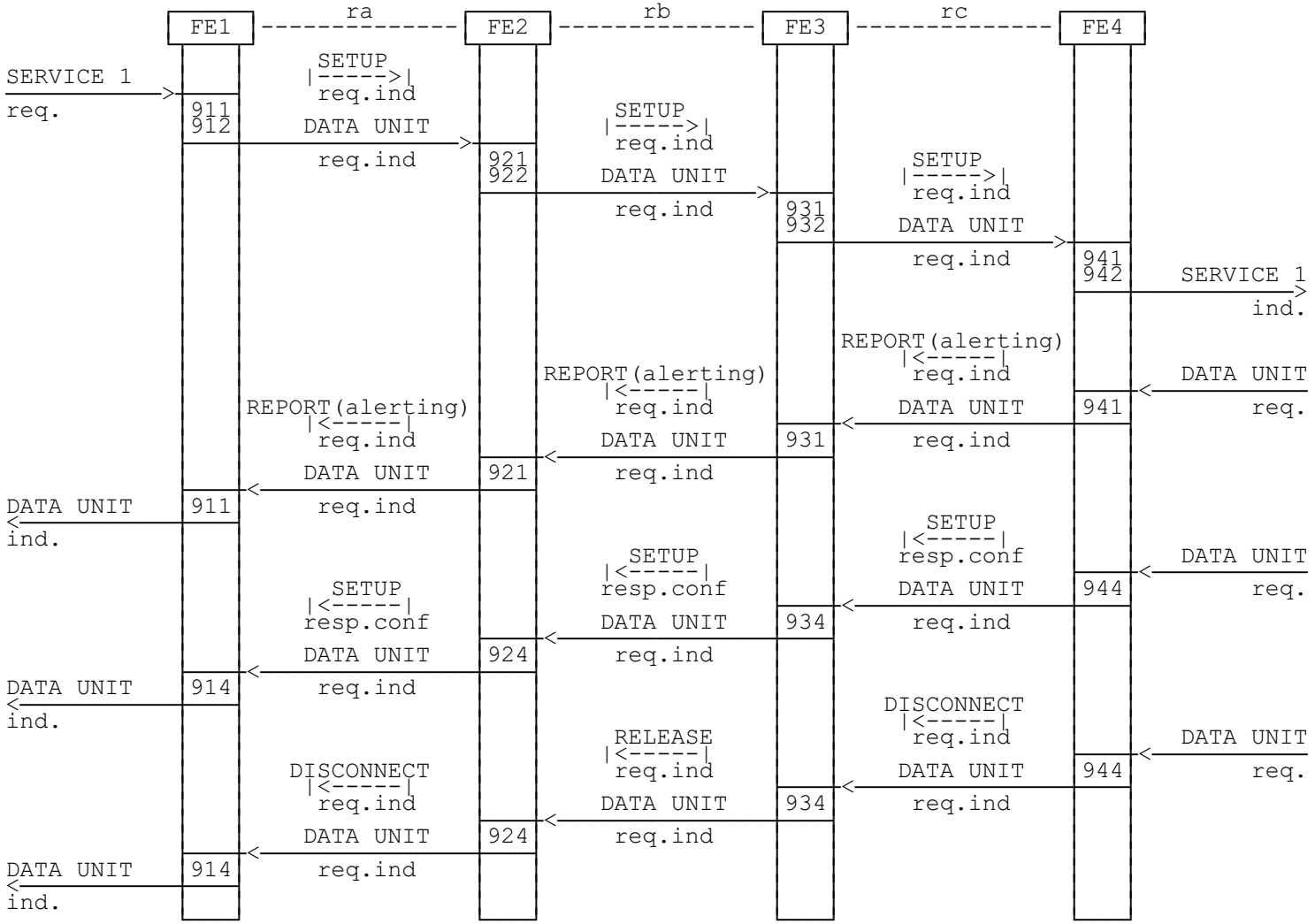


Figure 4: Service 1 of UUS supplementary service, successful implicit "UUS not required" request, called user is point-to-point

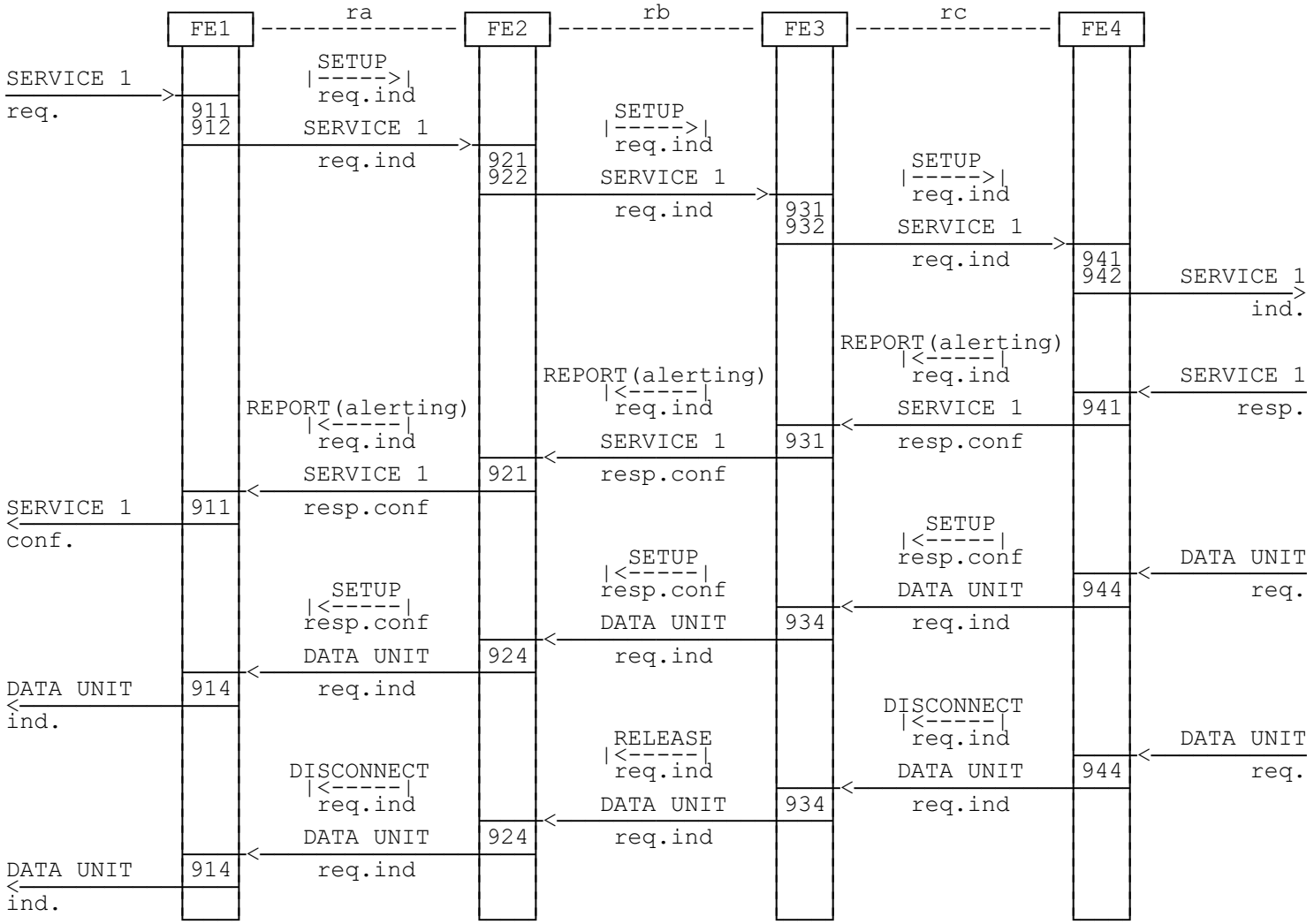


Figure 5: Service 1 of UUS supplementary service, successful explicit "UUS required" or "UUS not required" request, called user is point-to-point

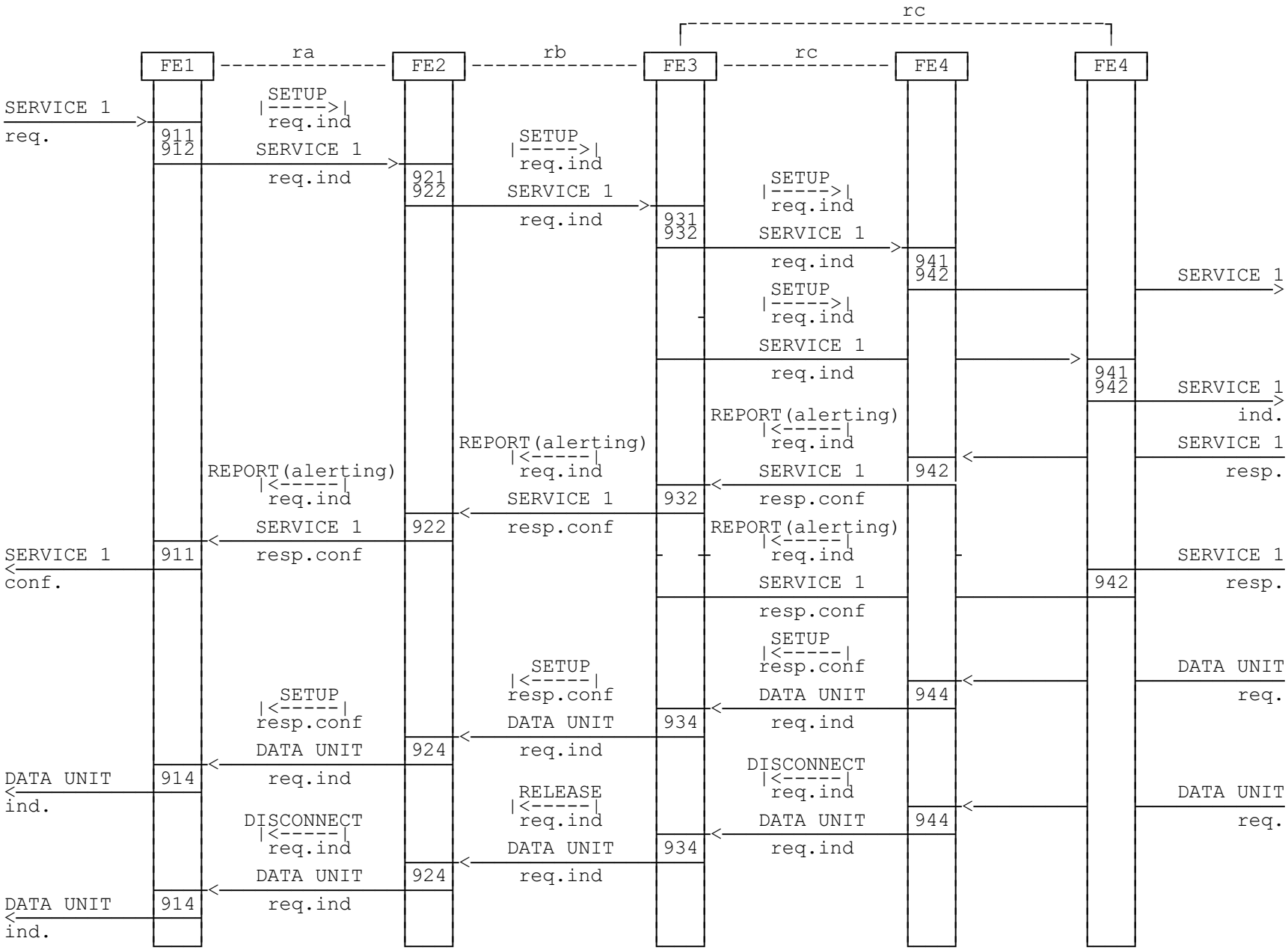


Figure 6: Service 1 of UUS supplementary service, successful explicit "UUS not required" request, called user is point-to-multipoint

7.1.2 Service 2

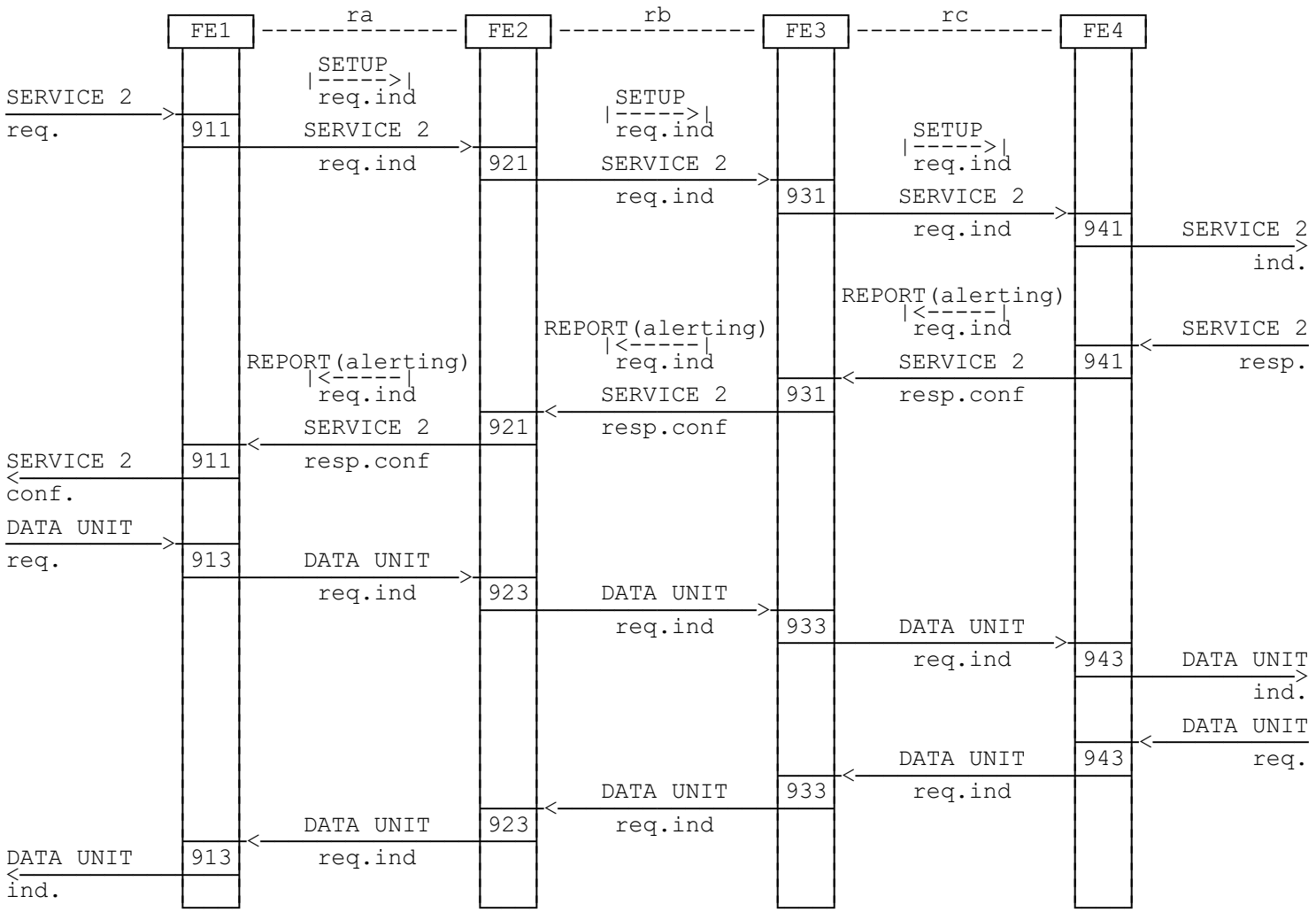


Figure 7: Service 2 of UUS supplementary service, successful "UUS required" or "UUS not required" request, called user is point-to-point

7.1.3 Service 3

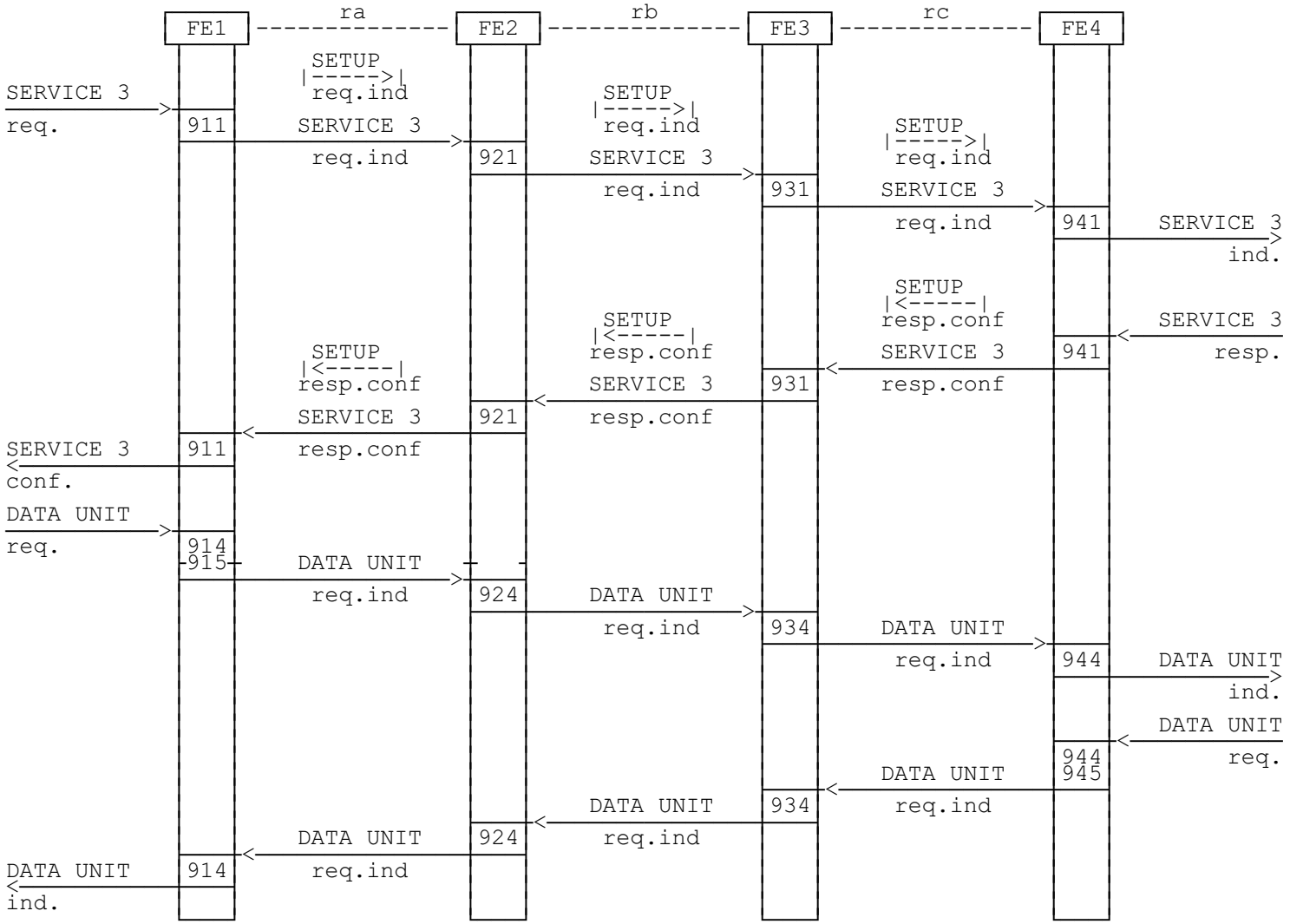
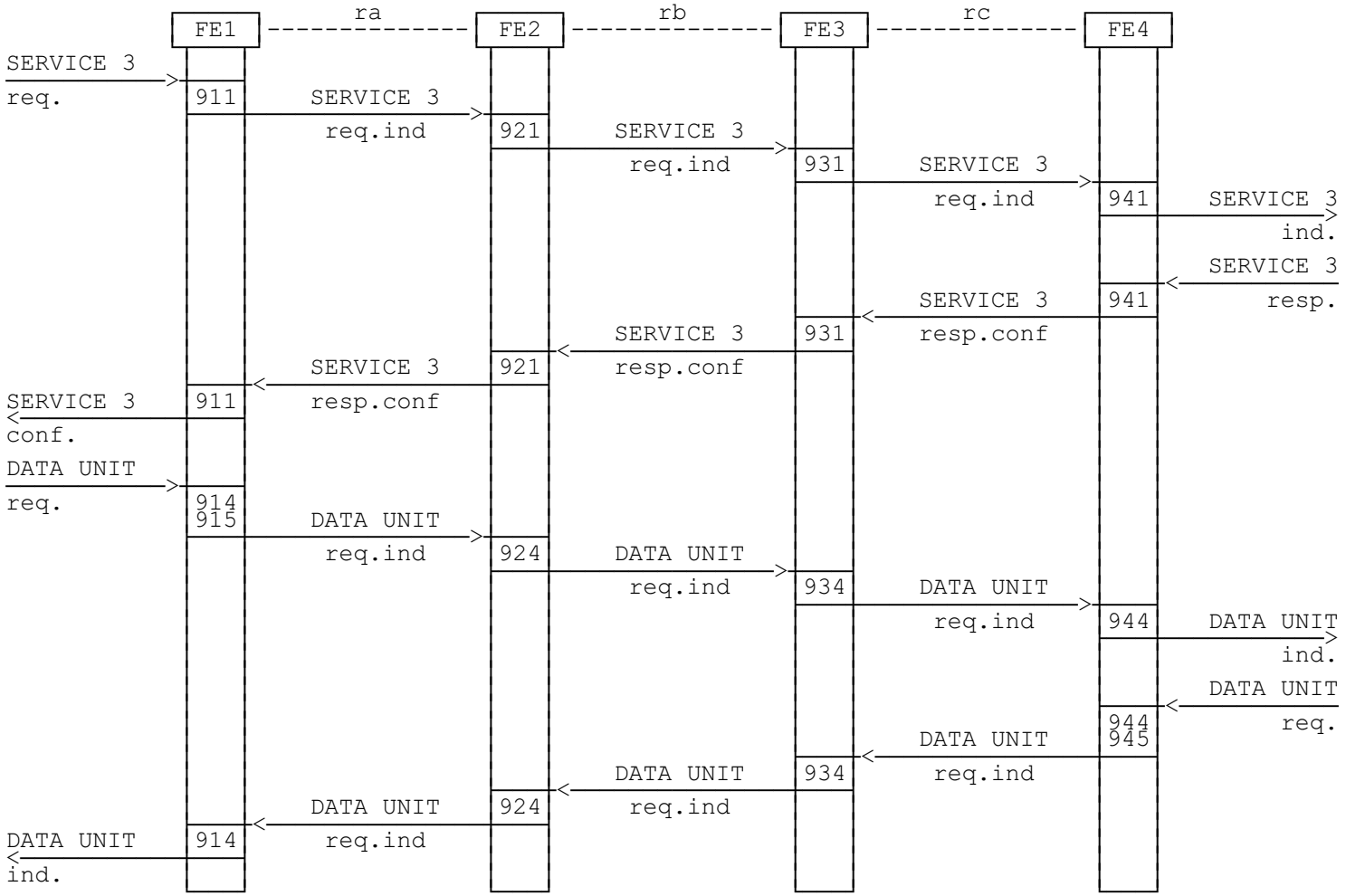


Figure 8: Service 3 of UUS supplementary service, successful "UUS required" or "UUS not required" request



NOTE: For the UUS supplementary service, the requesting user agent is always FE1. For a request during the active phase of basic call, FE1 is located at the calling side, or as a network option, at the called side.

Figure 9: Service 3 of UUS supplementary service, successful "UUS required" or "UUS not required" request

7.2 Definition of individual information flows

7.2.1 Relationship ra

7.2.1.1 SERVICE 1

The SERVICE 1 information flow is used to request and respond to the activation of service 1 of the UUS supplementary service.

The contents of the SERVICE 1 information flow are as contained in table 1.

Table 1: SERVICE 1 information flow

Parameter	Value	req.ind	resp.conf
Form	- UUS request required - UUS request not required	M	

7.2.1.2 SERVICE 1 REJECTED

The contents of the SERVICE 1 REJECTED information flow are as contained in table 2.

Table 2: SERVICE 1 REJECTED information flow

Parameter	Value	req.ind
Reason	- rejected by user - rejected by network	M

7.2.1.3 SERVICE 2

The SERVICE 2 information flow is used to request and respond to the activation of service 2 of the UUS supplementary service.

The contents of the SERVICE 2 information flow are as contained in table 3.

Table 3: SERVICE 2 information flow

Parameter	Value	req.ind	resp.conf
Form	- UUS request required - UUS request not required	M	

7.2.1.4 SERVICE 2 REJECTED

The contents of the SERVICE 2 REJECTED information flow are as contained in table 4.

Table 4: SERVICE 2 REJECTED information flow

Parameter	Value	req.ind
Reason	- rejected by user - rejected by network	M

7.2.1.5 SERVICE 3

The SERVICE 3 information flow is used to request and respond to the activation of service 3 of the UUS supplementary service.

The contents of the SERVICE 3 information flow are as contained in table 5.

Table 5: SERVICE 3 information flow

Parameter	Value	req.ind	resp.conf
Form	- UUS request required - UUS request not required	M	
NOTE: The value "UUS request required" shall only be used in conjunction with a request at call establishment.			

7.2.1.6 SERVICE 1 REJECTED

The contents of the SERVICE 1 REJECTED information flow are as contained in table 6.

Table 6: SERVICE 3 REJECTED information flow

Parameter	Value	req.ind
Reason	- rejected by user - rejected by network	M

7.2.1.7 DATA UNIT

The DATA UNIT information flow is used to transfer data during the invocation for all three services of the UUS supplementary service.

The contents of the DATA UNIT information flow are as contained in table 7.

Table 7: DATA UNIT information flow

Parameter	Value	req.ind
User protocol identifier		M
Data		O (NOTE 2)
More data		O (NOTE 1)
NOTE 1: Parameter is included for service 3 only. NOTE 2: Mandatory except in the case of a service 1 implicit request.		

7.2.1.8 FLOW CONTROL

The FLOW CONTROL information flow is used to indicate to the user agent the need to restrict the flow of data during service 3 of the UUS supplementary service.

The contents of the FLOW CONTROL information flow are as contained in table 8.

Table 8: FLOW CONTROL information flow

Parameter	Value	req.ind
Status	- On - Off	M

7.2.2 Relationship rb

7.2.2.1 SERVICE 1

The meaning and contents of the SERVICE 1 information flow are identical to those for relationship ra as shown in subclause 7.2.1.1.

7.2.2.2 SERVICE 1 REJECT

The meaning and contents of the SERVICE 1 REJECT information flow are identical to those for relationship ra as shown in subclause 7.2.1.2.

7.2.2.3 SERVICE 2

The meaning and contents of the SERVICE 2 information flow are identical to those for relationship ra as shown in subclause 7.2.1.3.

7.2.2.4 SERVICE 2 REJECT

The meaning and contents of the SERVICE 2 REJECT information flow are identical to those for relationship ra as shown in subclause 7.2.1.4.

7.2.2.5 SERVICE 3

The meaning and contents of the SERVICE 3 information flow are identical to those for relationship ra as shown in subclause 7.2.1.5.

7.2.2.6 SERVICE 3 REJECT

The meaning and contents of the SERVICE 3 REJECT information flow are identical to those for relationship ra as shown in subclause 7.2.1.6.

7.2.2.7 DATA UNIT

The meaning and contents of the DATA UNIT information flow are identical to those for relationship ra as shown in subclause 7.2.1.7.

7.2.3 Relationship rc

7.2.3.1 SERVICE 1

The meaning and contents of the SERVICE 1 information flow are identical to those for relationship ra as shown in subclause 7.2.1.1.

7.2.3.2 SERVICE 1 REJECTED

The contents of the SERVICE 1 REJECTED information flow are as contained in table 9.

Table 9: SERVICE 1 REJECTED information flow

Parameter	Value	req.ind
Reason	- rejected by user	M

7.2.3.3 SERVICE 2

The meaning and contents of the SERVICE 2 information flow are identical to those for relationship ra as shown in subclause 7.2.1.3.

7.2.3.4 SERVICE 2 REJECTED

The contents of the SERVICE 2 REJECTED information flow are as contained in table 10.

Table 10: SERVICE 2 REJECTED information flow

Parameter	Value	req.ind
Reason	- rejected by user	M

7.2.3.5 SERVICE 3

The meaning and contents of the SERVICE 3 information flow are identical to those for relationship ra as shown in subclause 7.2.1.5.

7.2.3.6 SERVICE 1 REJECTED

The contents of the SERVICE 1 REJECTED information flow are as contained in table 11.

Table 11: SERVICE 3 REJECTED information flow

Parameter	Value	req.ind
Reason	- rejected by user	M

7.2.3.7 DATA UNIT

The meaning and contents of the DATA UNIT information flow are identical to those for relationship ra as shown in subclause 7.2.1.7.

7.2.3.8 FLOW CONTROL

The meaning and contents of the FLOW CONTROL information flow are identical to those for relationship ra as shown in subclause 7.2.1.8.

8 SDL diagrams for functional entities

All Specification and Description Language (SDL) diagrams for FEs are described according to CCITT Recommendation Z.100 [6].

NOTE: The dotted elements in the following SDL diagrams are part of basic call model defined in CCITT Recommendation Q.71 [5], and are present for information purposes only.

8.1 SDL diagrams for FE1

The SDL diagrams for FE1 are shown in figures 10, 11 and 12.

8.1.1 Service 1

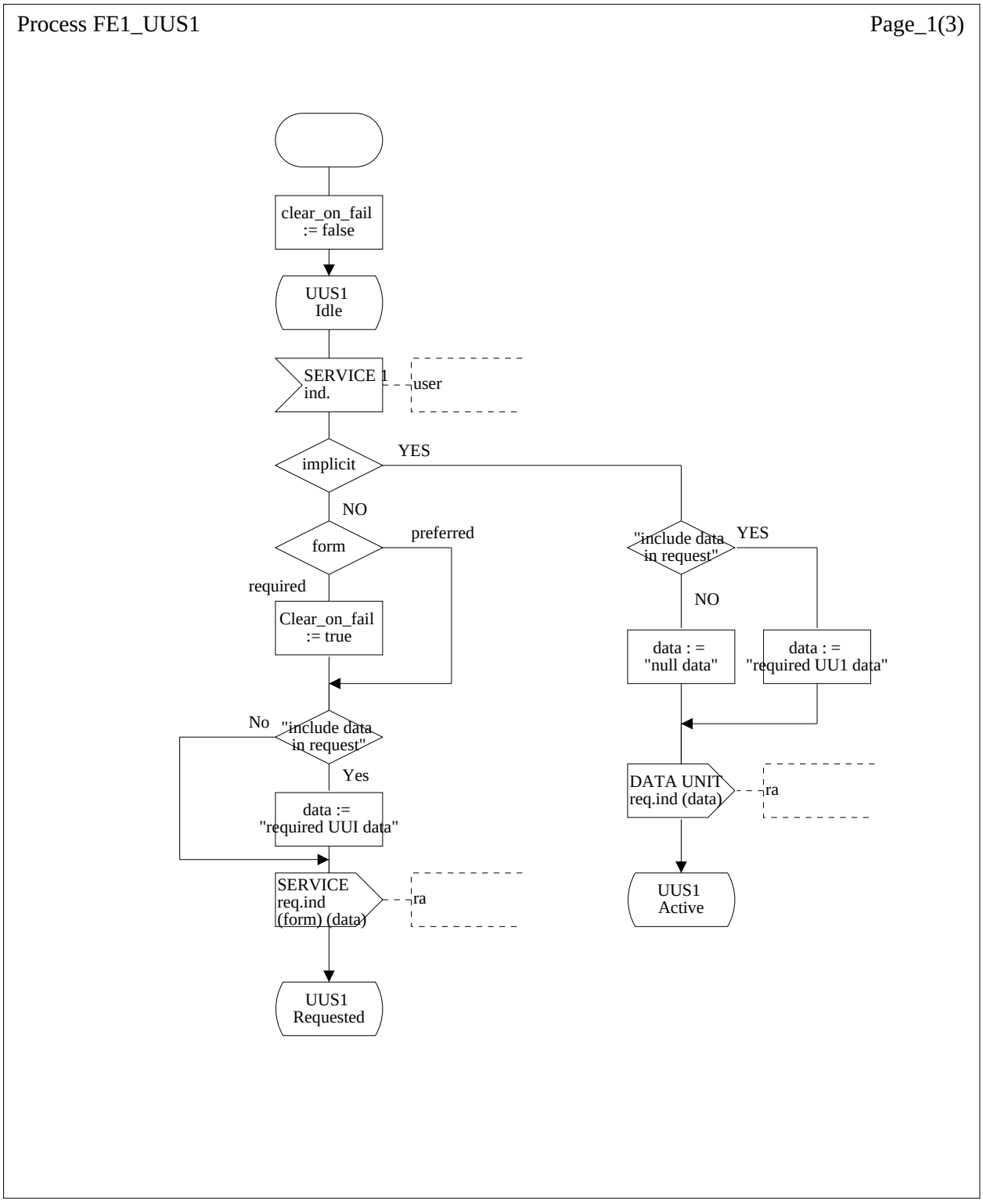


Figure 10 (sheet 1 of 3)

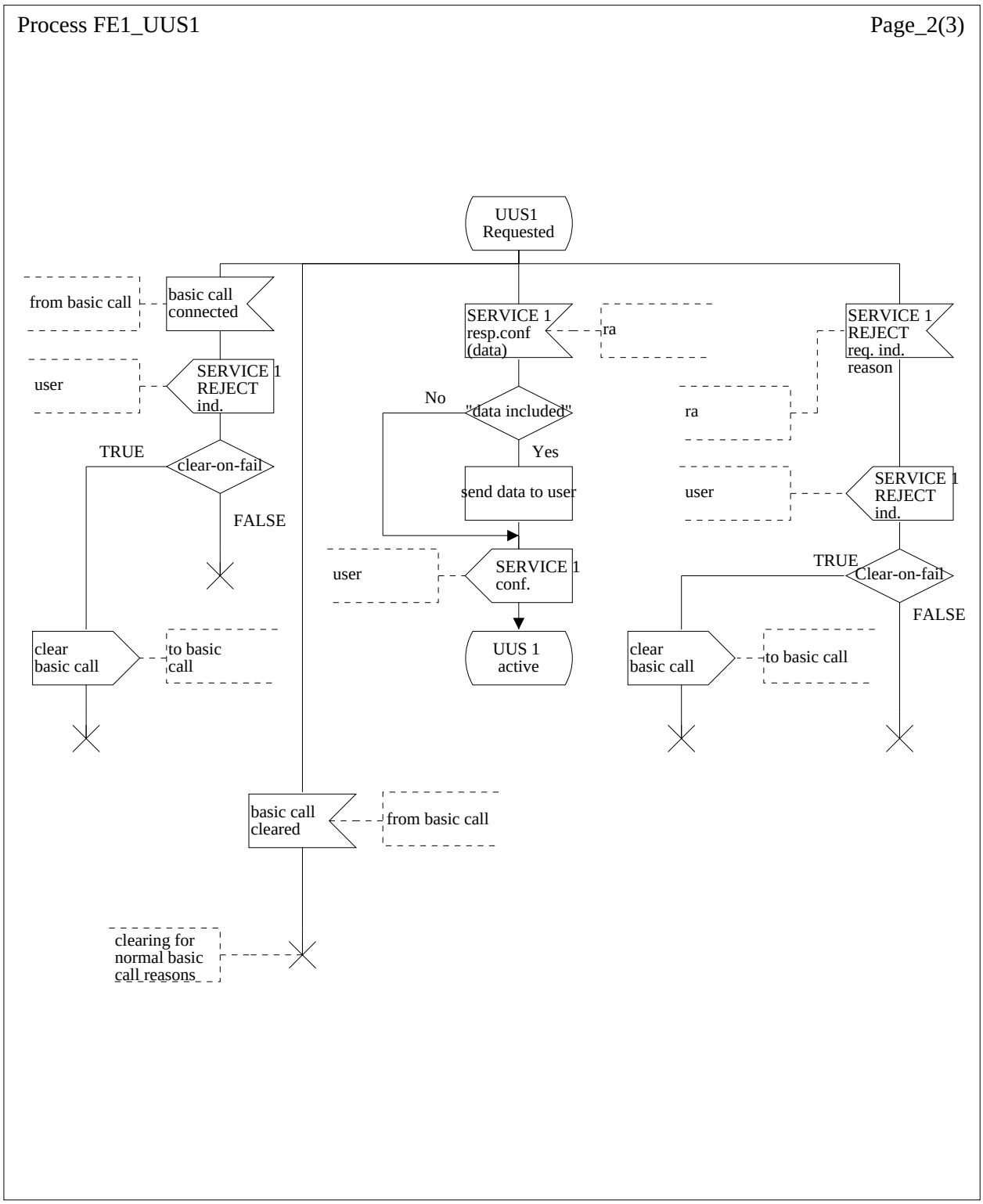


Figure 10 (sheet 2 of 3)

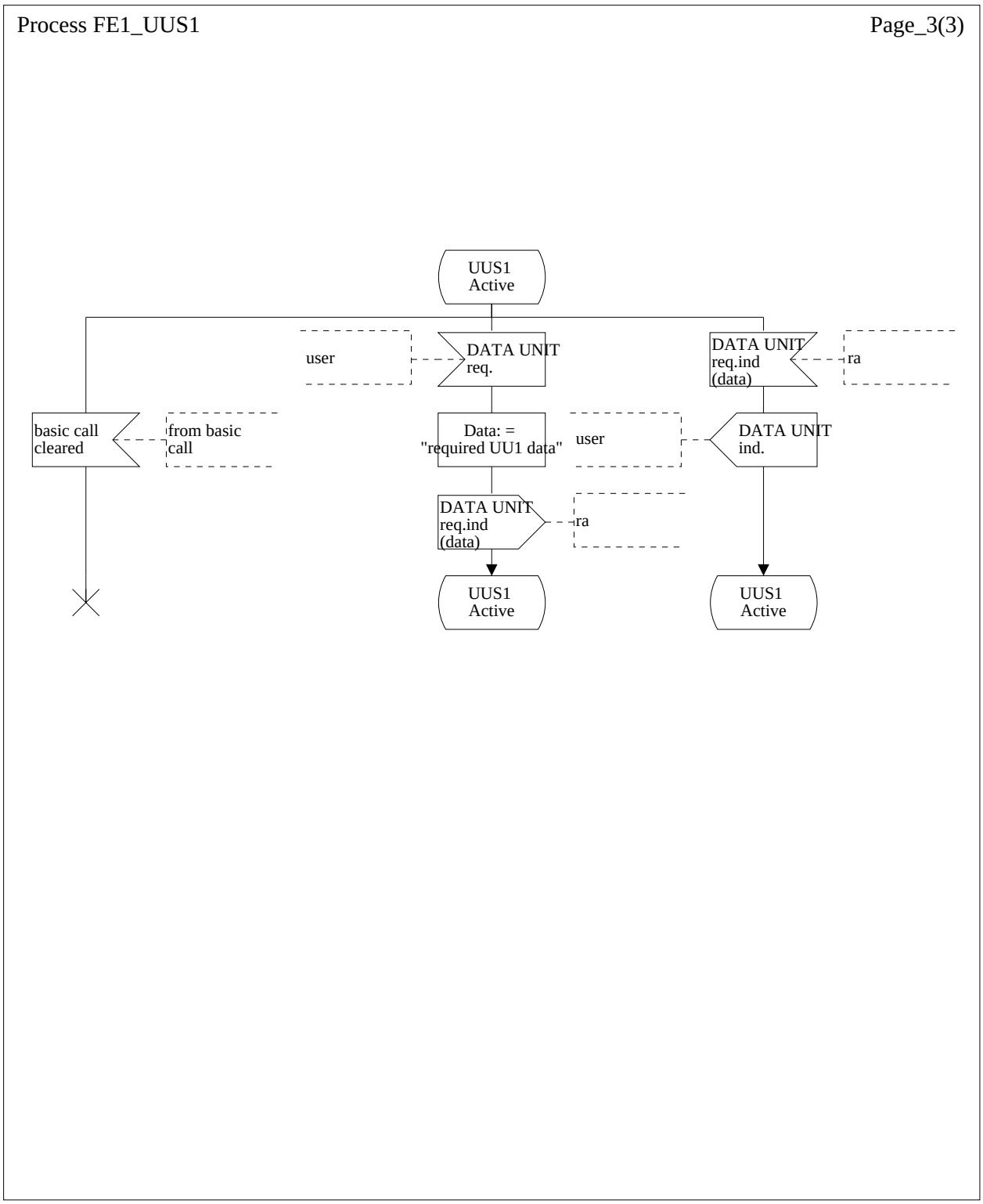


Figure 10 (sheet 3 of 3)

8.1.2 Service 2

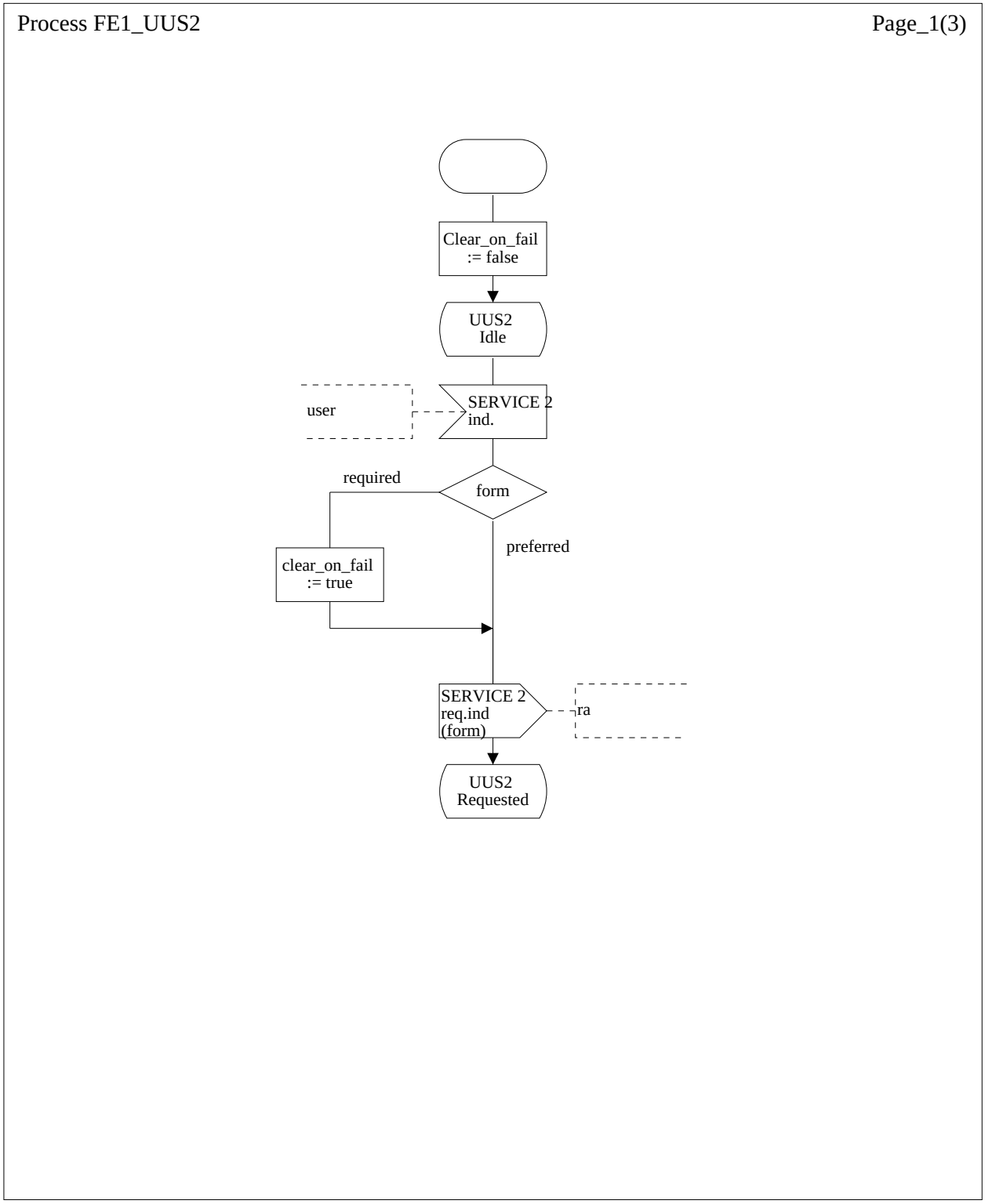


Figure 11 (sheet 1 of 3)

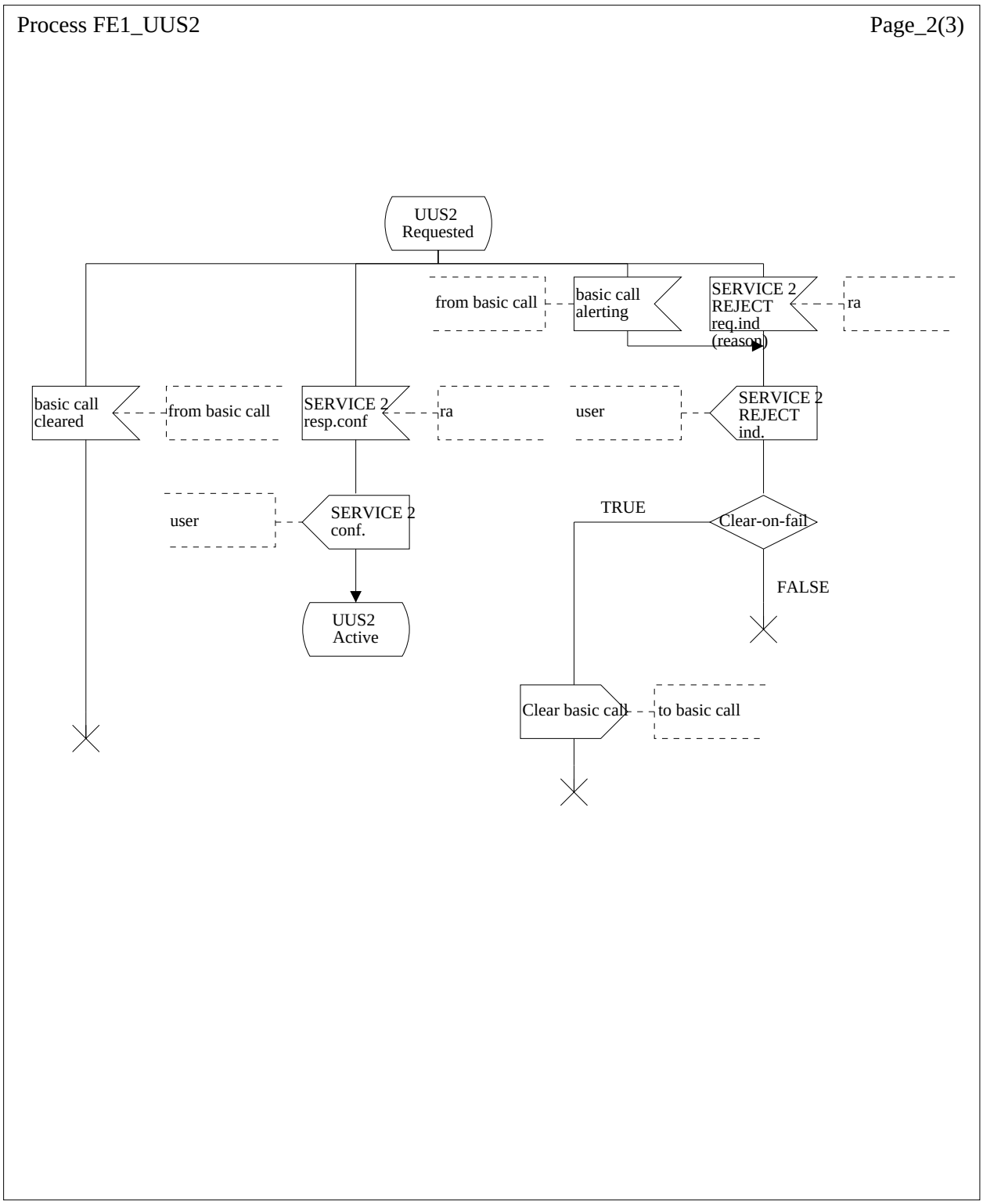


Figure 11 (sheet 2 of 3)

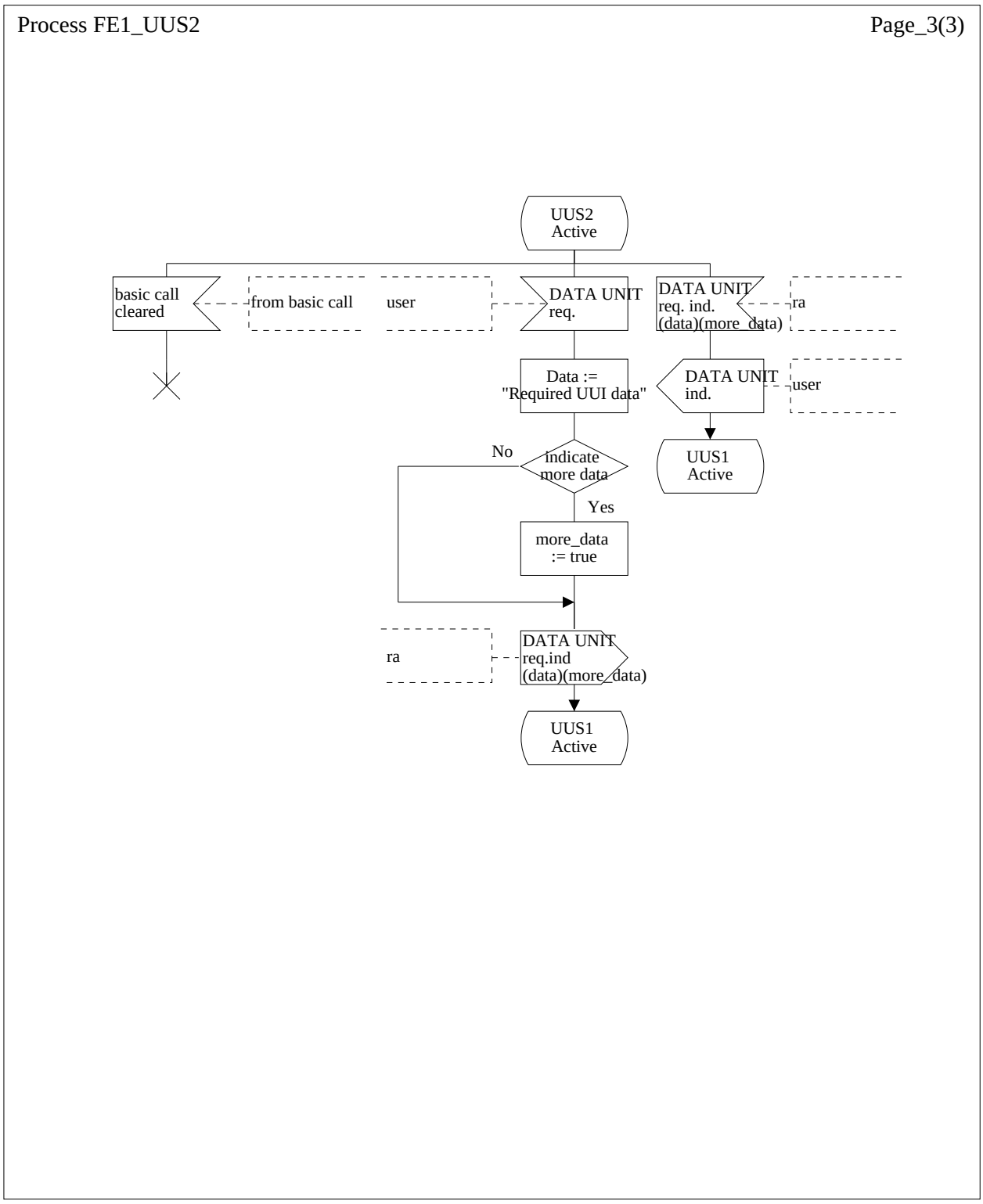


Figure 11 (sheet 3 of 3)

8.1.3 Service 3

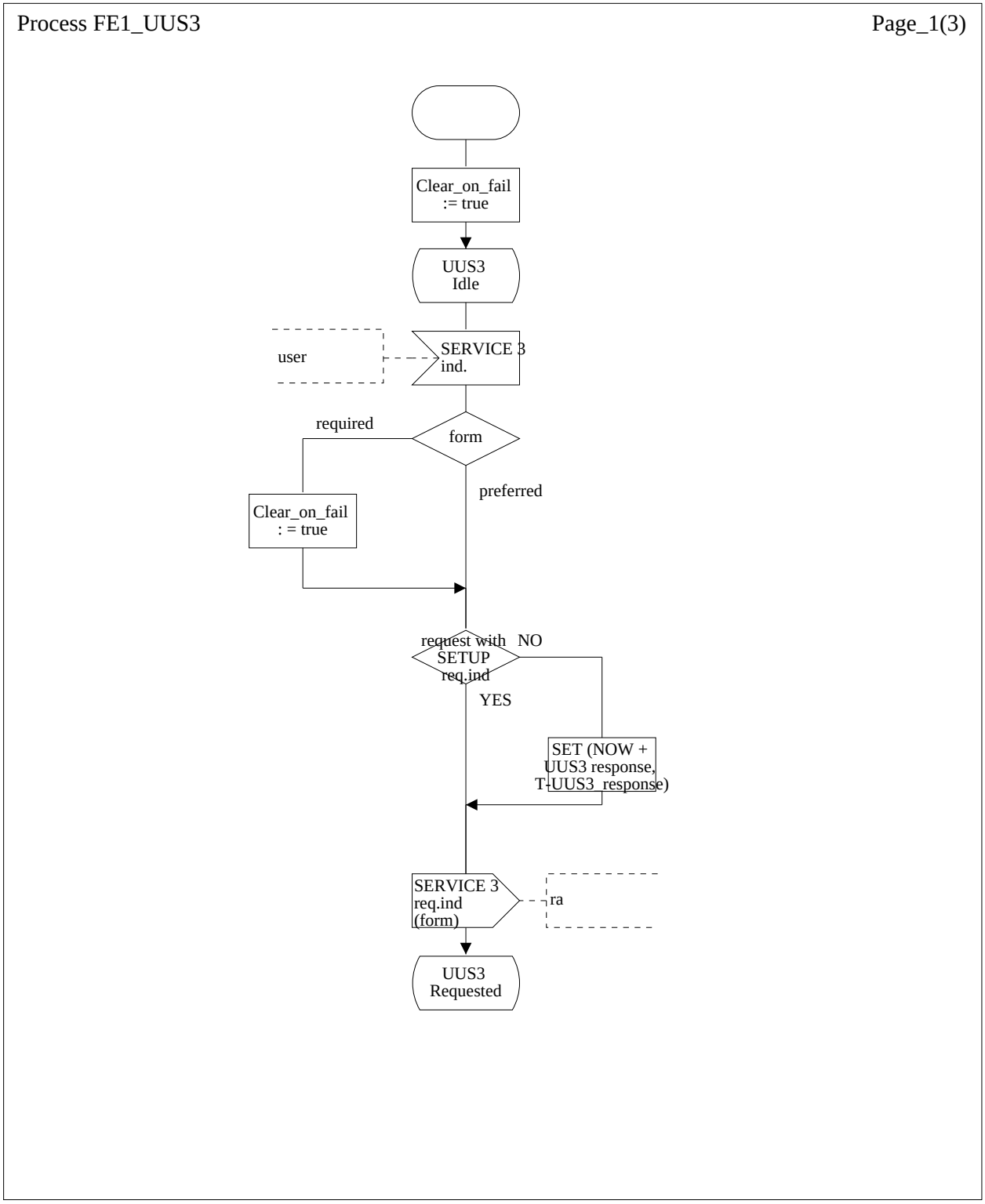


Figure 12 (sheet 1 of 3)

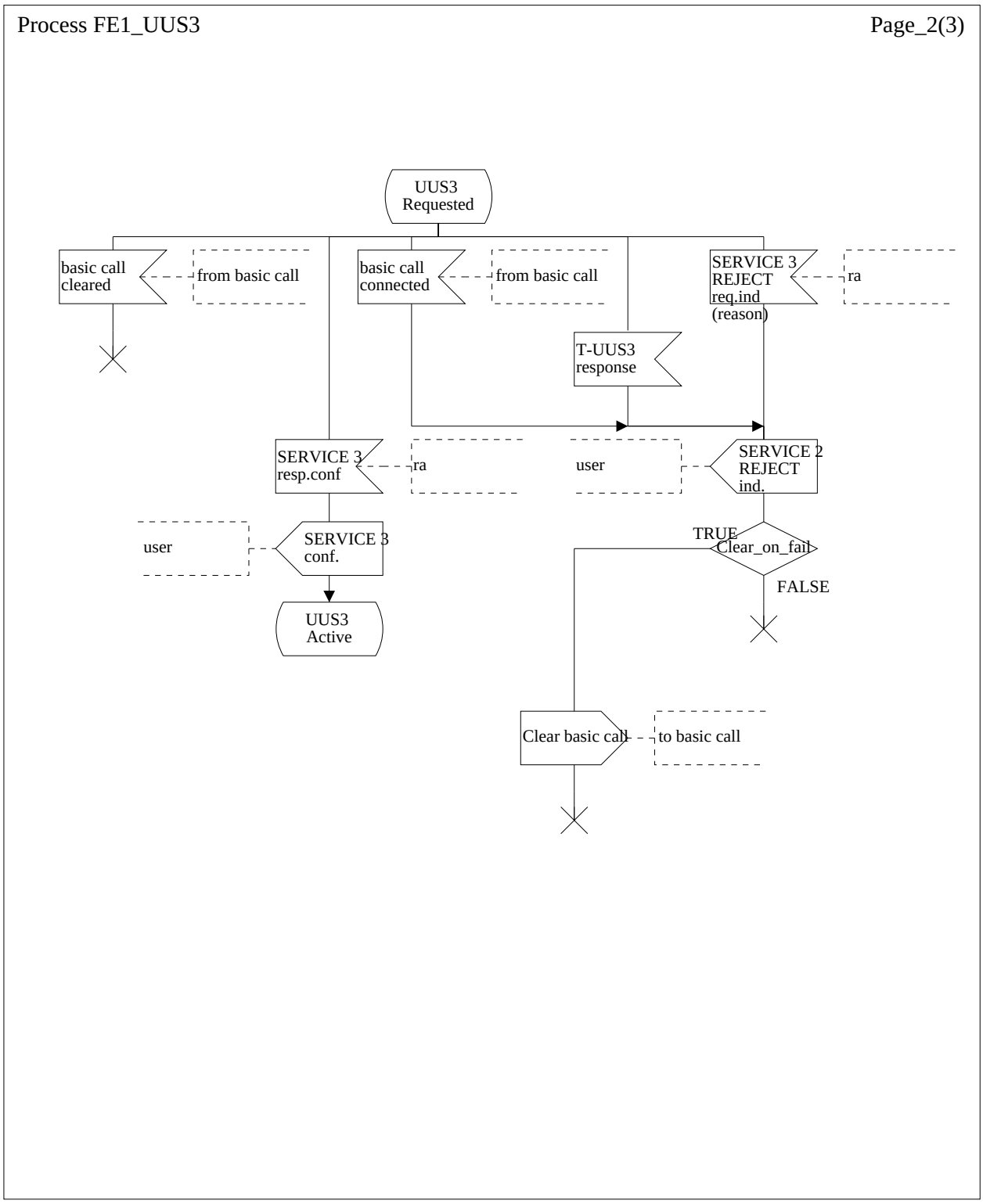


Figure 12 (sheet 2 of 3)

Process FE1_UUS3 page_3(3)

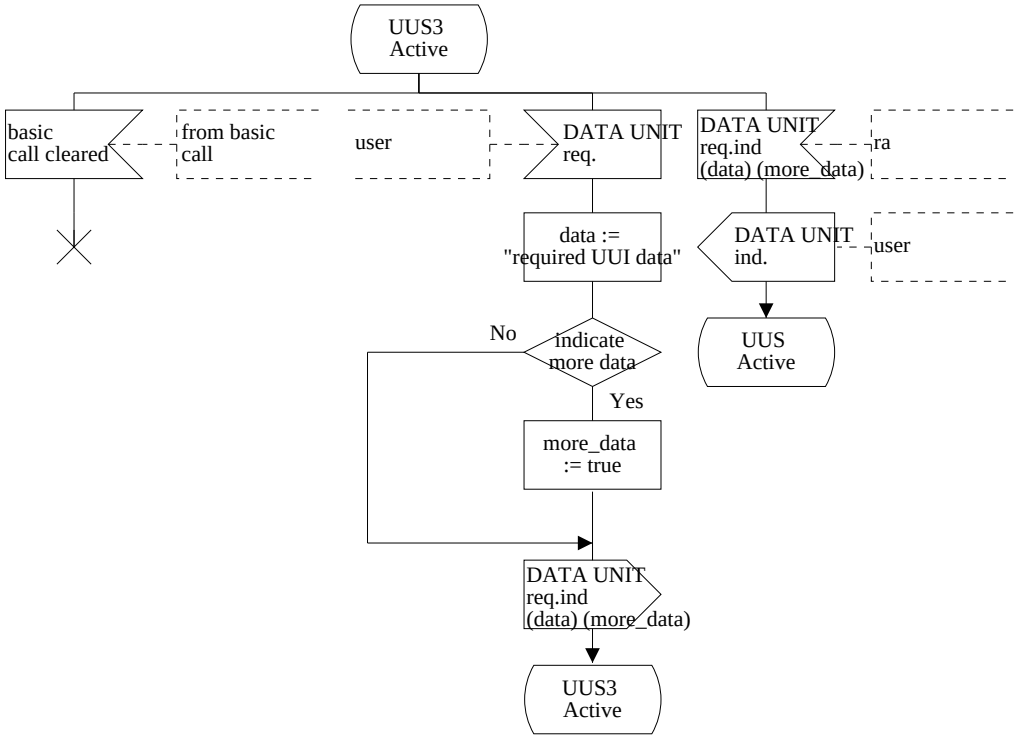


Figure 12 (sheet 3 of 3)

8.2 SDL diagrams for FE2

The SDL diagrams for FE2 are shown in figures 13, 14 and 15.

8.2.1 Service 1

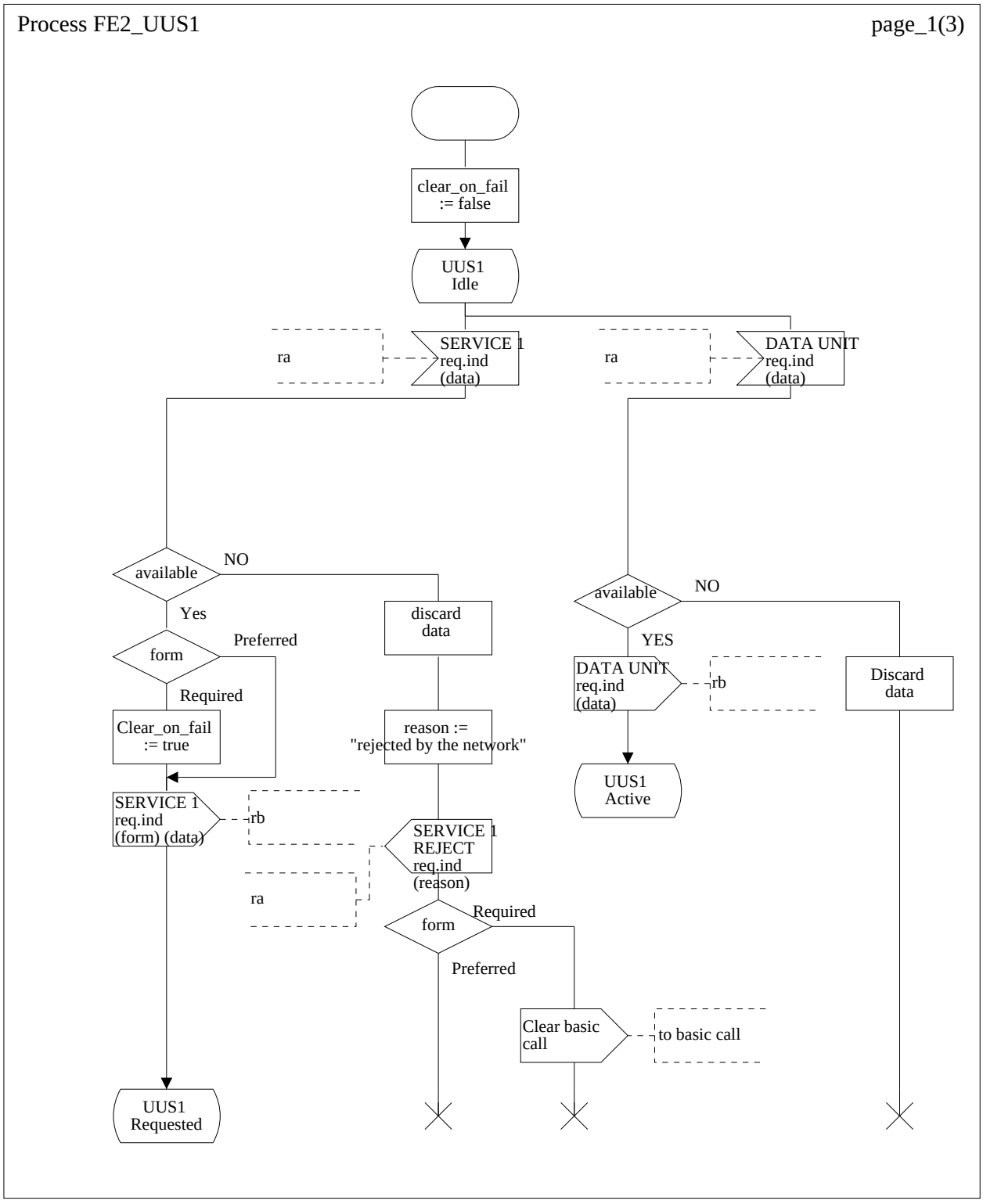


Figure 13 (sheet 1 of 3)

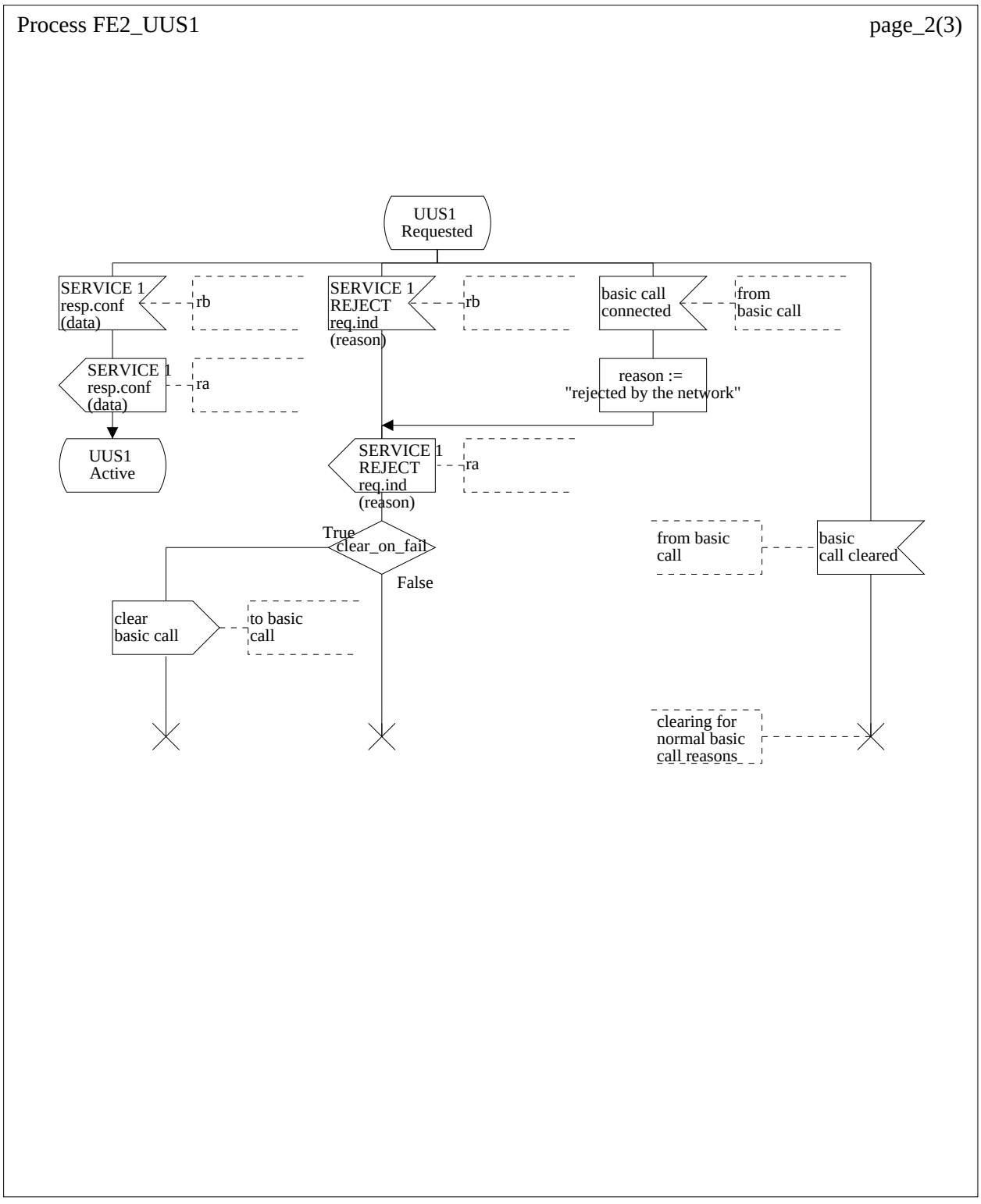


Figure 13 (sheet 2 of 3)

Process FE2_UUS1 page_3(3)

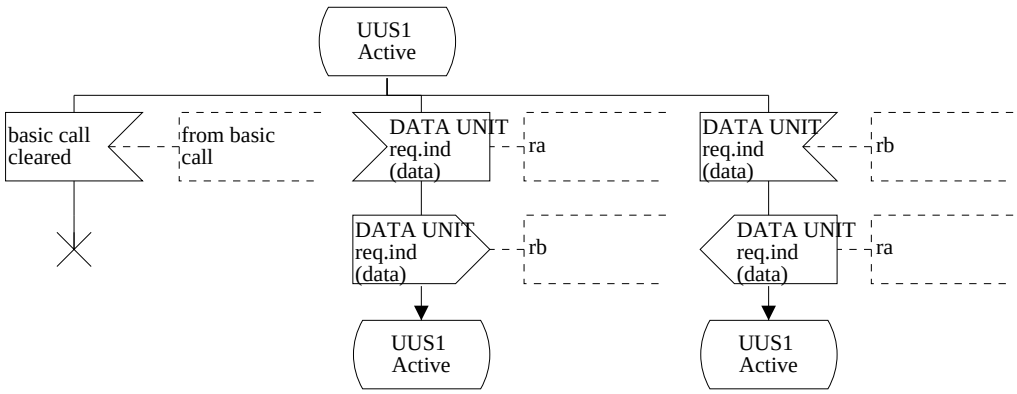


Figure 13 (sheet 3 of 3)

8.2.2 Service 2

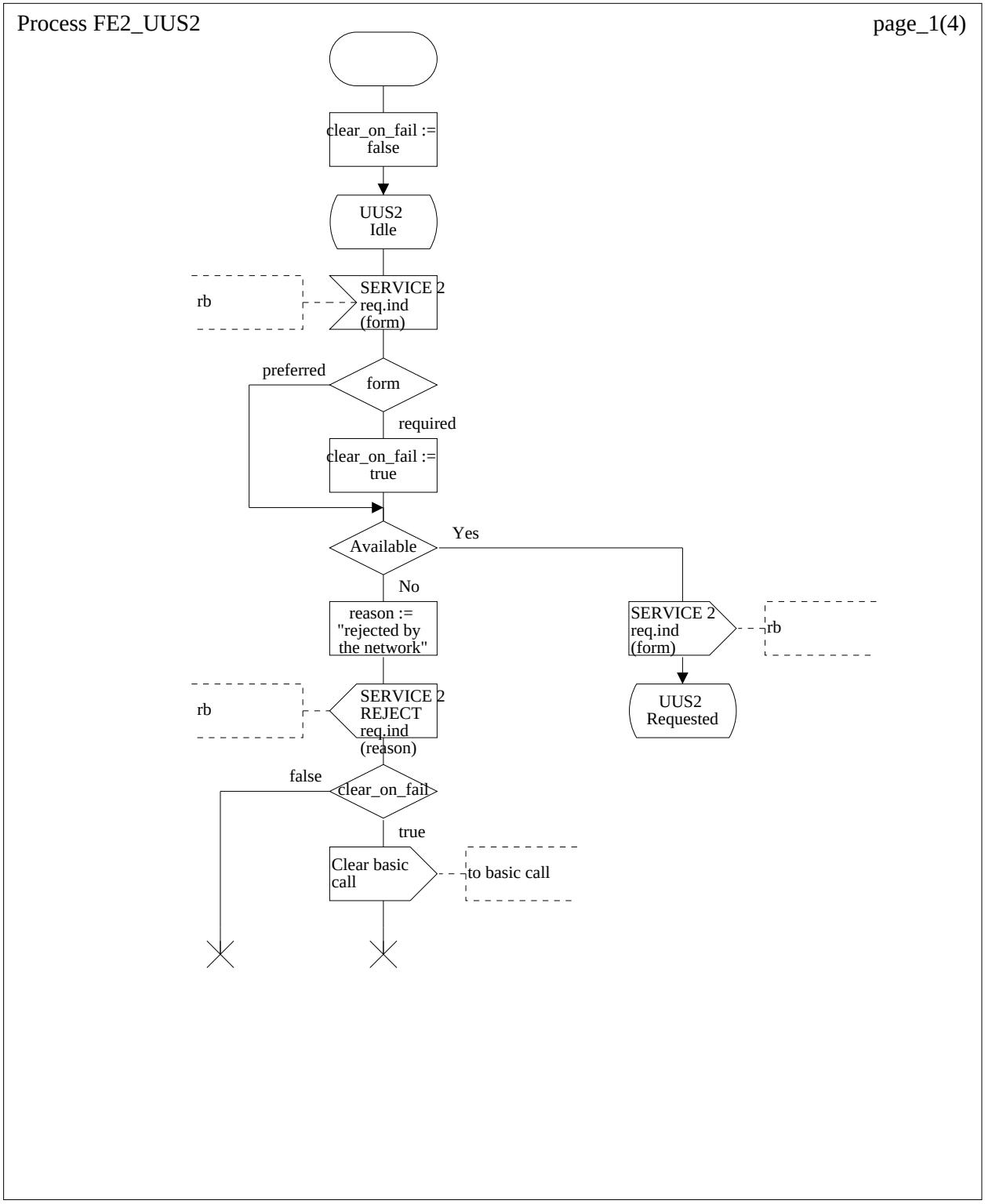


Figure 14 (sheet 1 of 4)

Process FE2_UUS2 page_2(4)

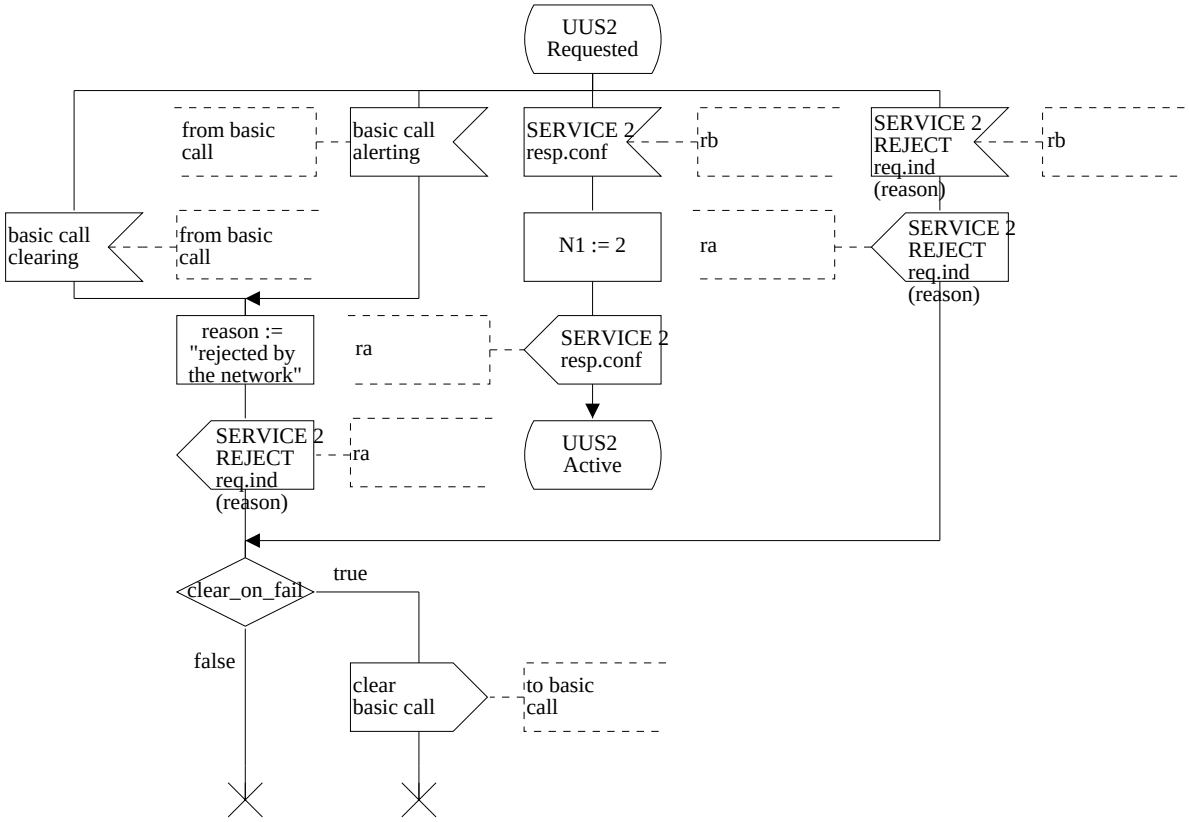


Figure 14 (sheet 2 of 4)

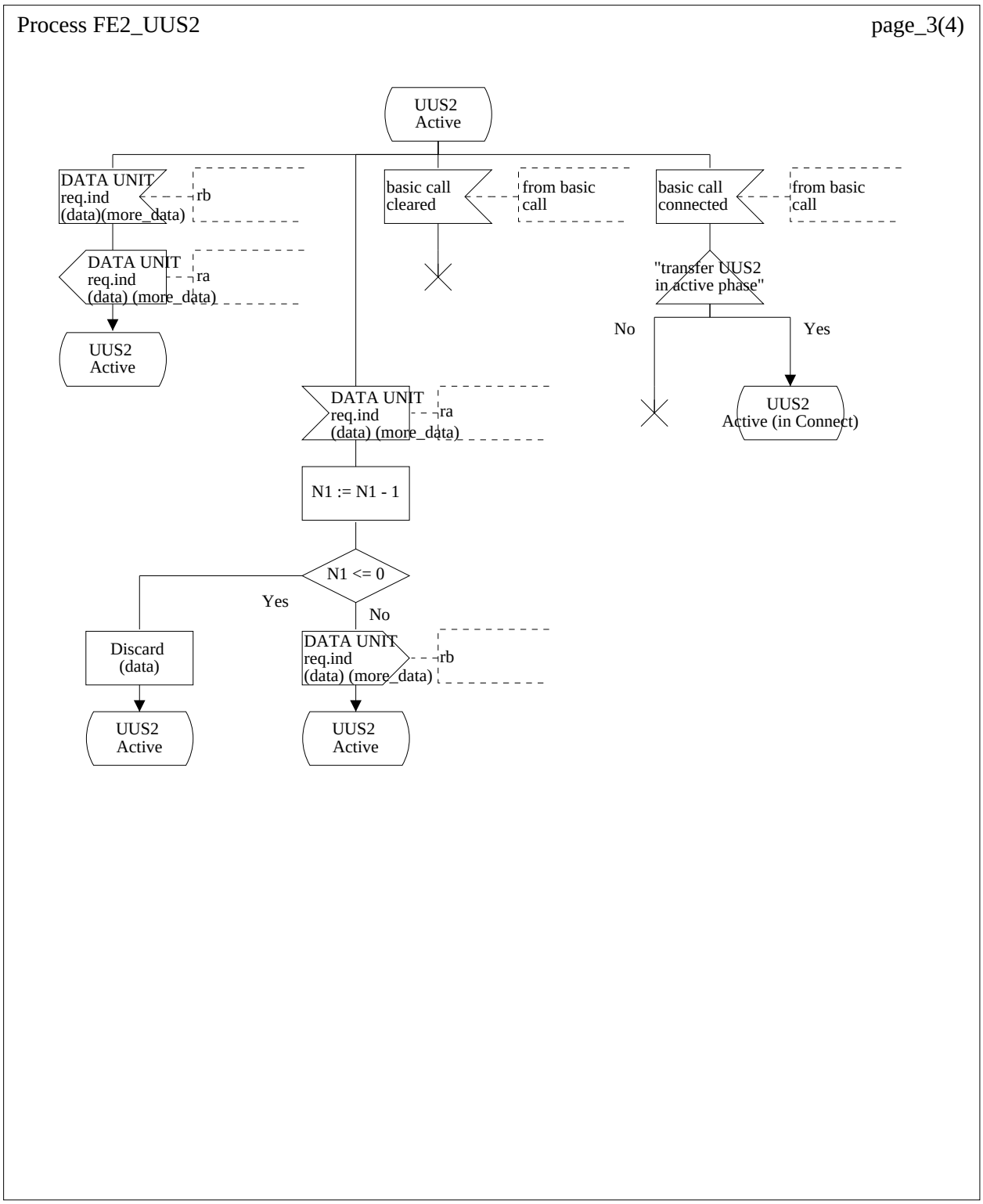


Figure 14 (sheet 3 of 4)

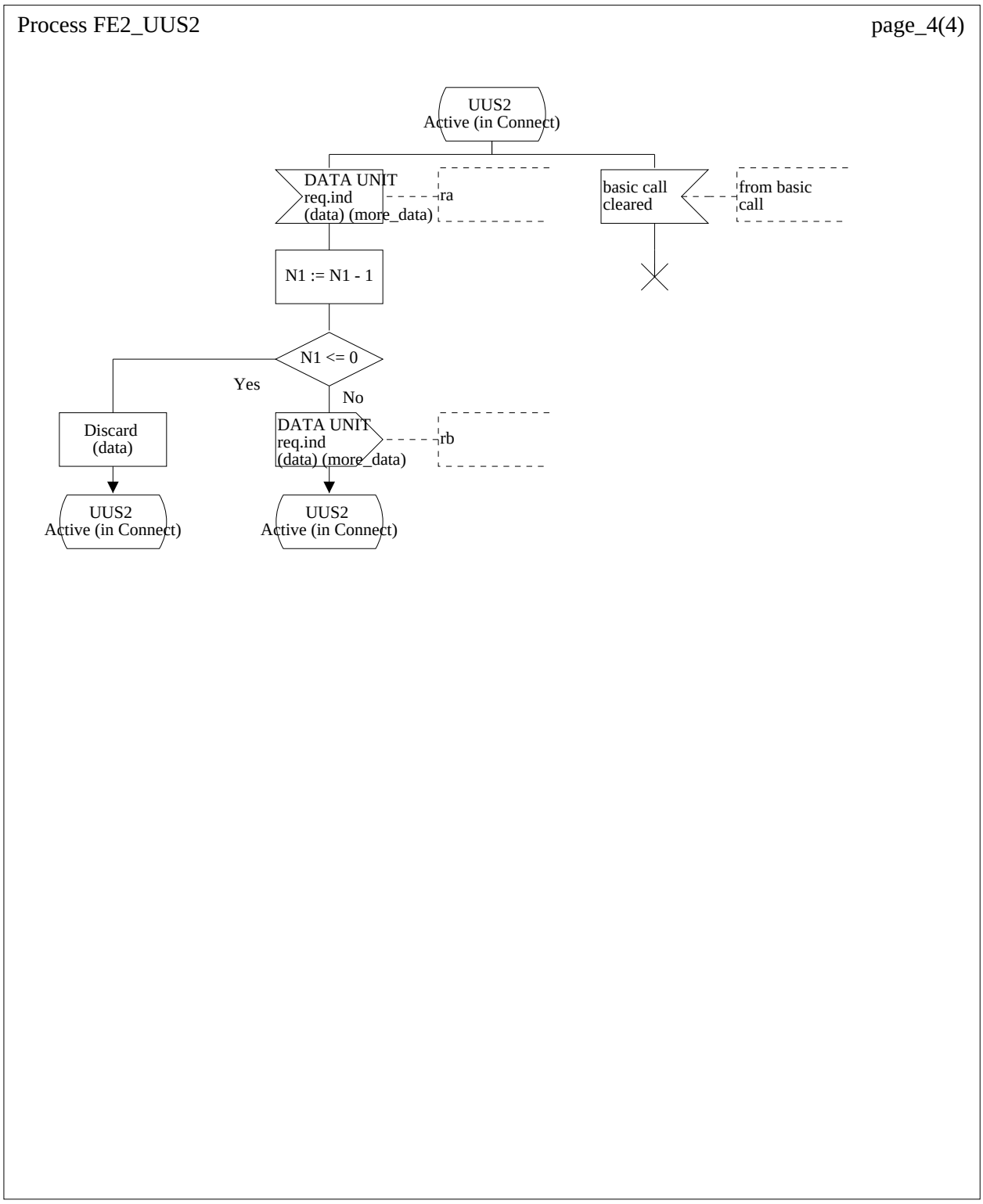


Figure 14 (sheet 3 of 4)

8.2.3 Service 3

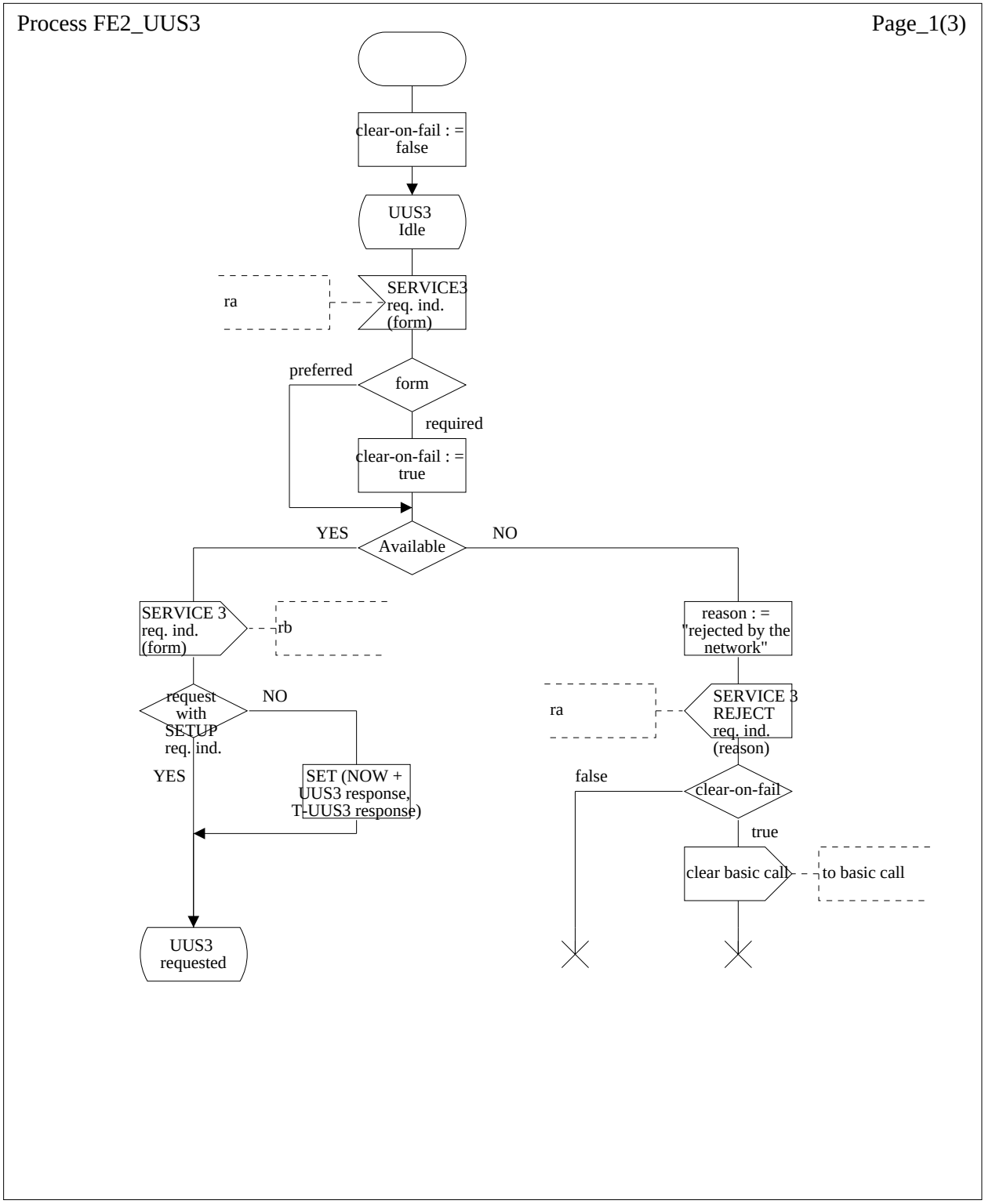


Figure 15 (sheet 1 of 3)

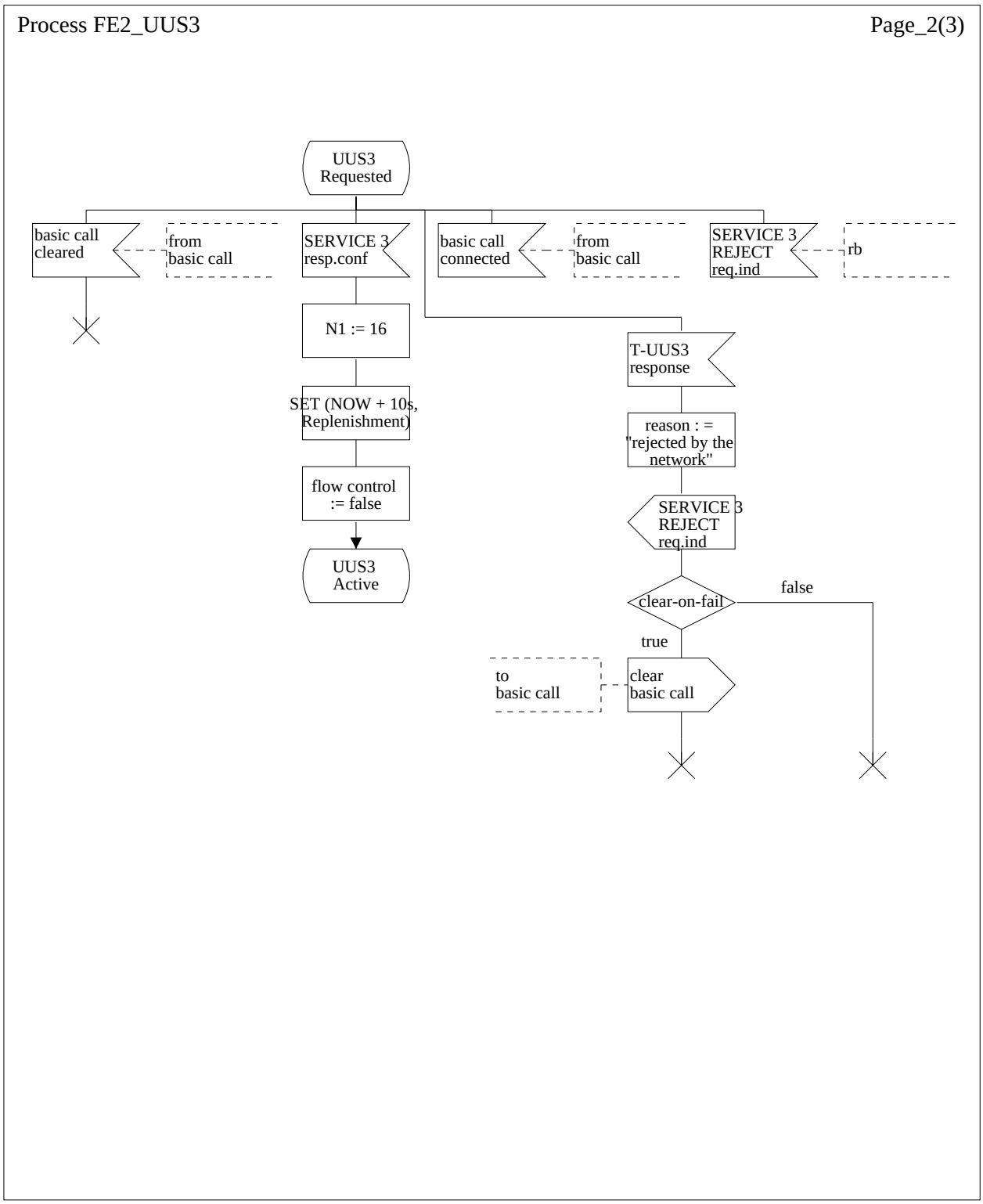


Figure 15 (sheet 2 of 3)

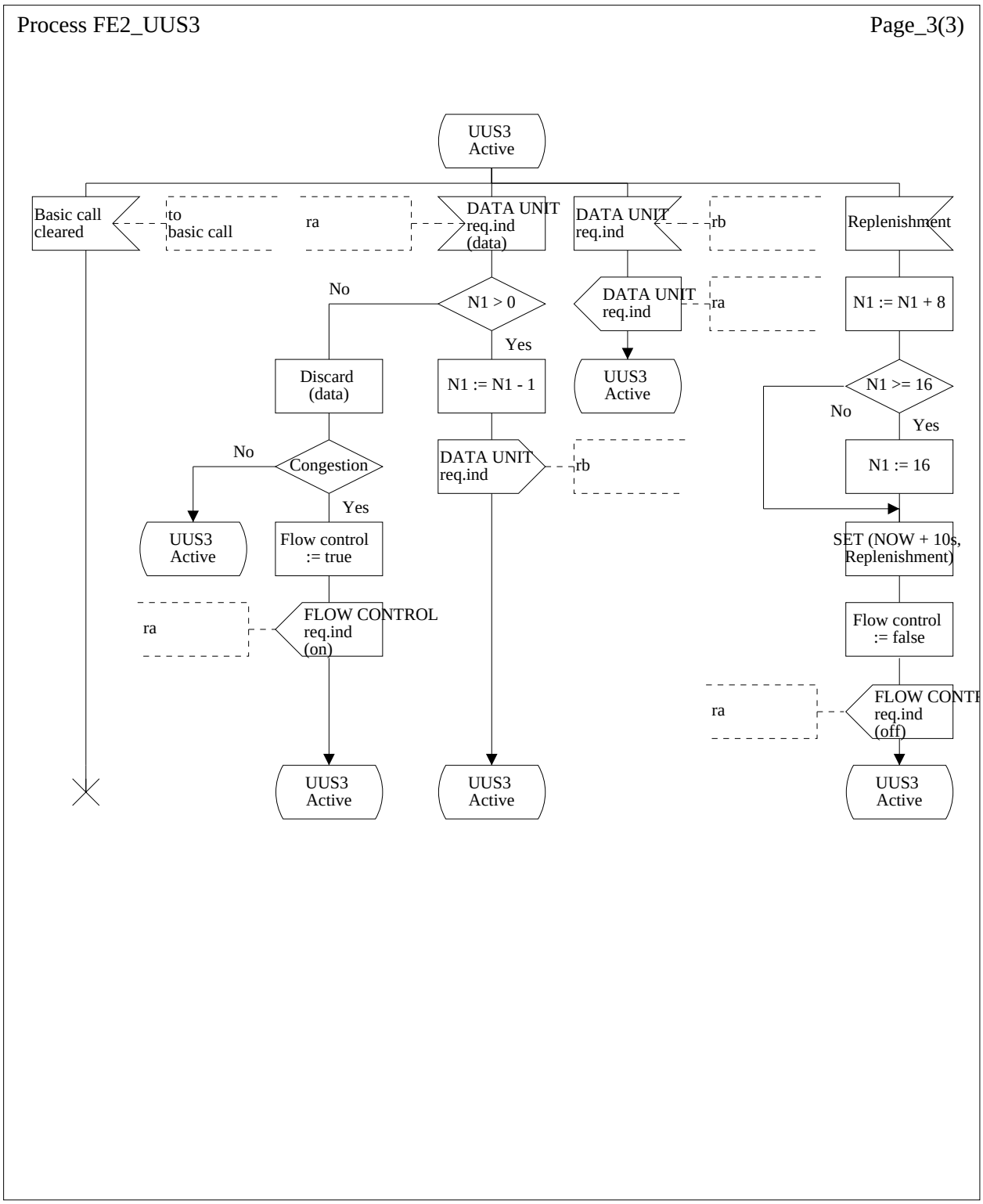


Figure 15 (sheet 3 of 3)

8.3 SDL diagrams for FE3

The SDL diagrams for FE3 are shown in figures 16, 17 and 18.

8.3.1 Service 1

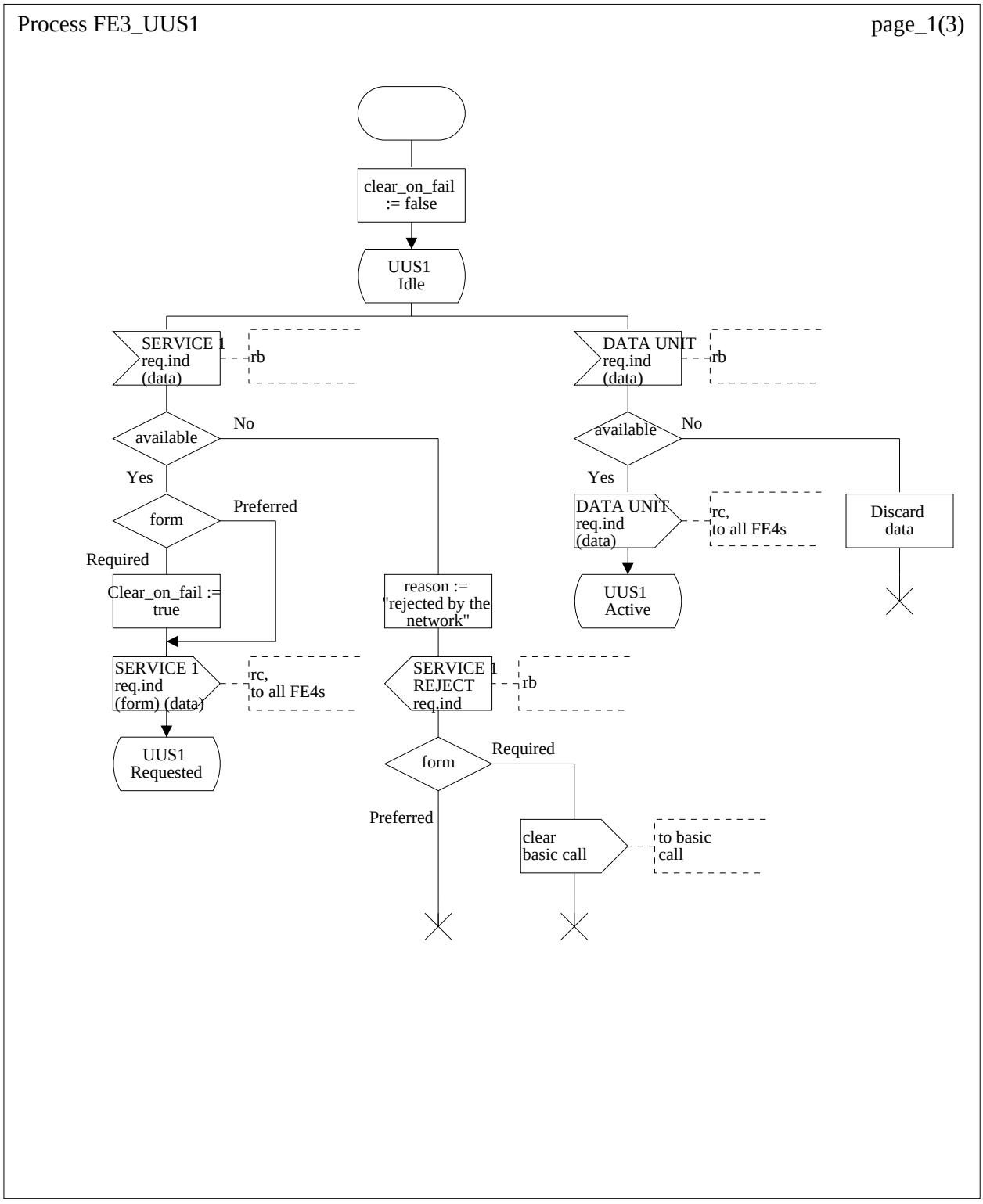


Figure 16 (sheet 1 of 3)

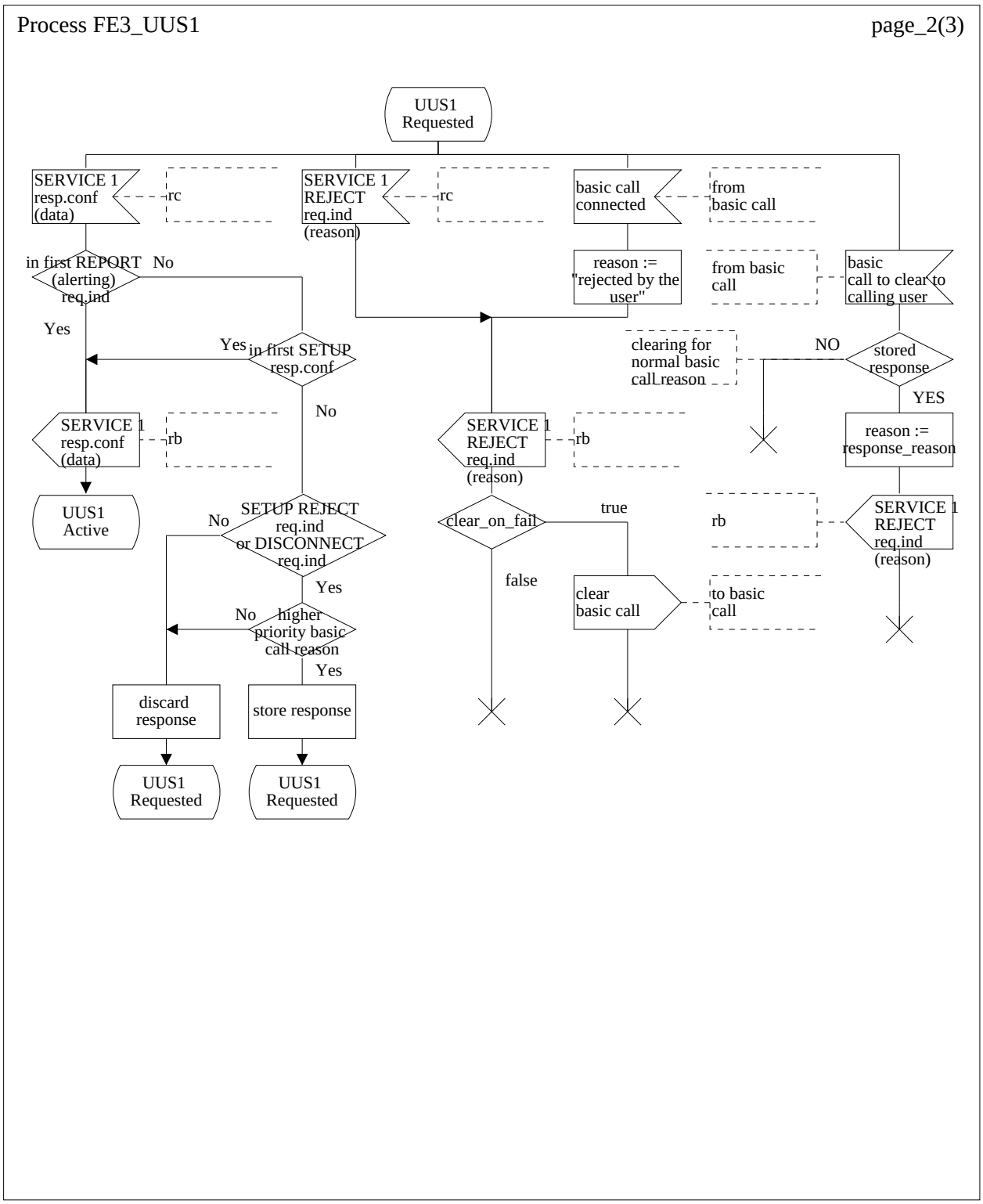


Figure 16 (sheet 2 of 3)

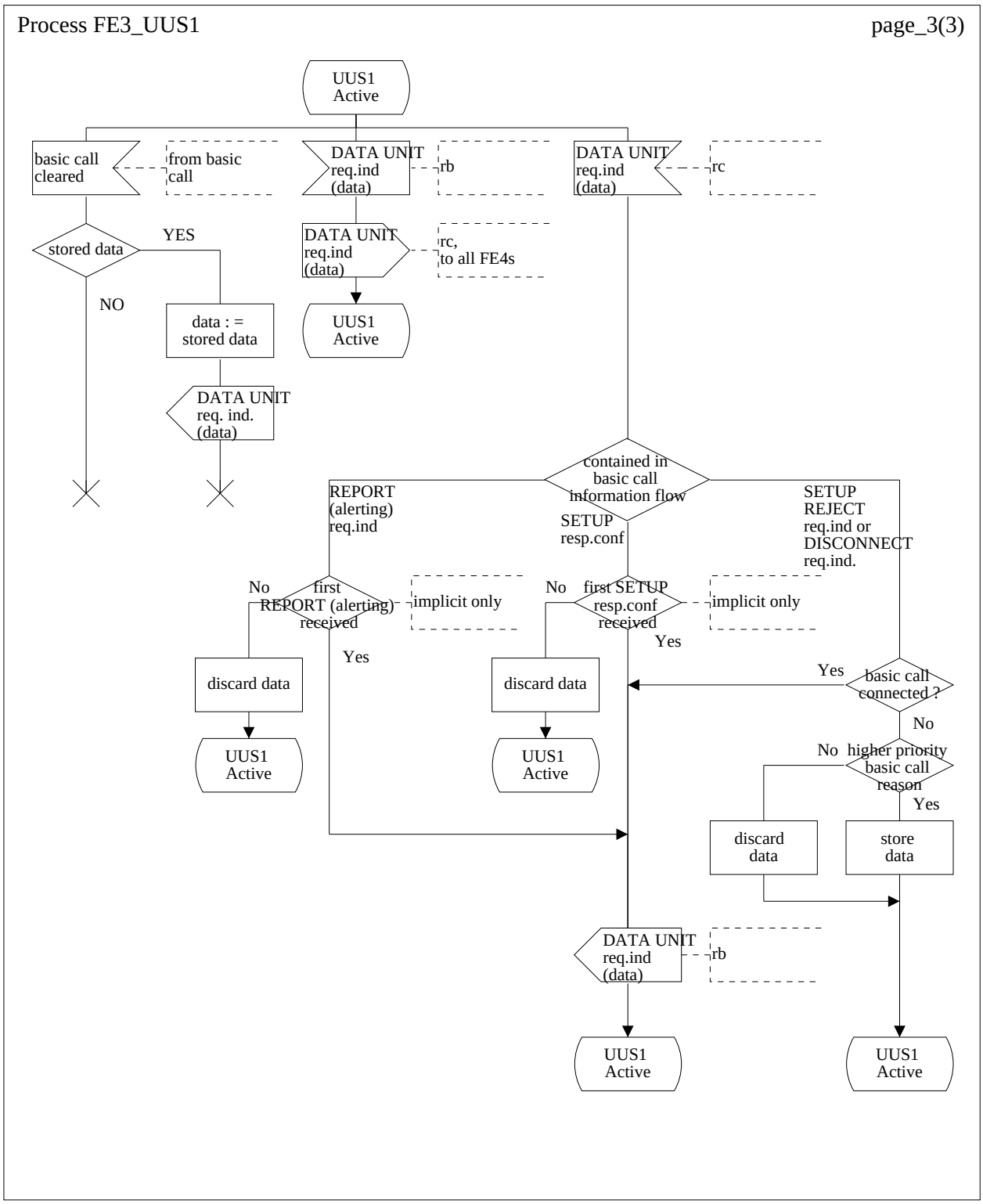


Figure 16 (sheet 3 of 3)

8.3.2 Service 2

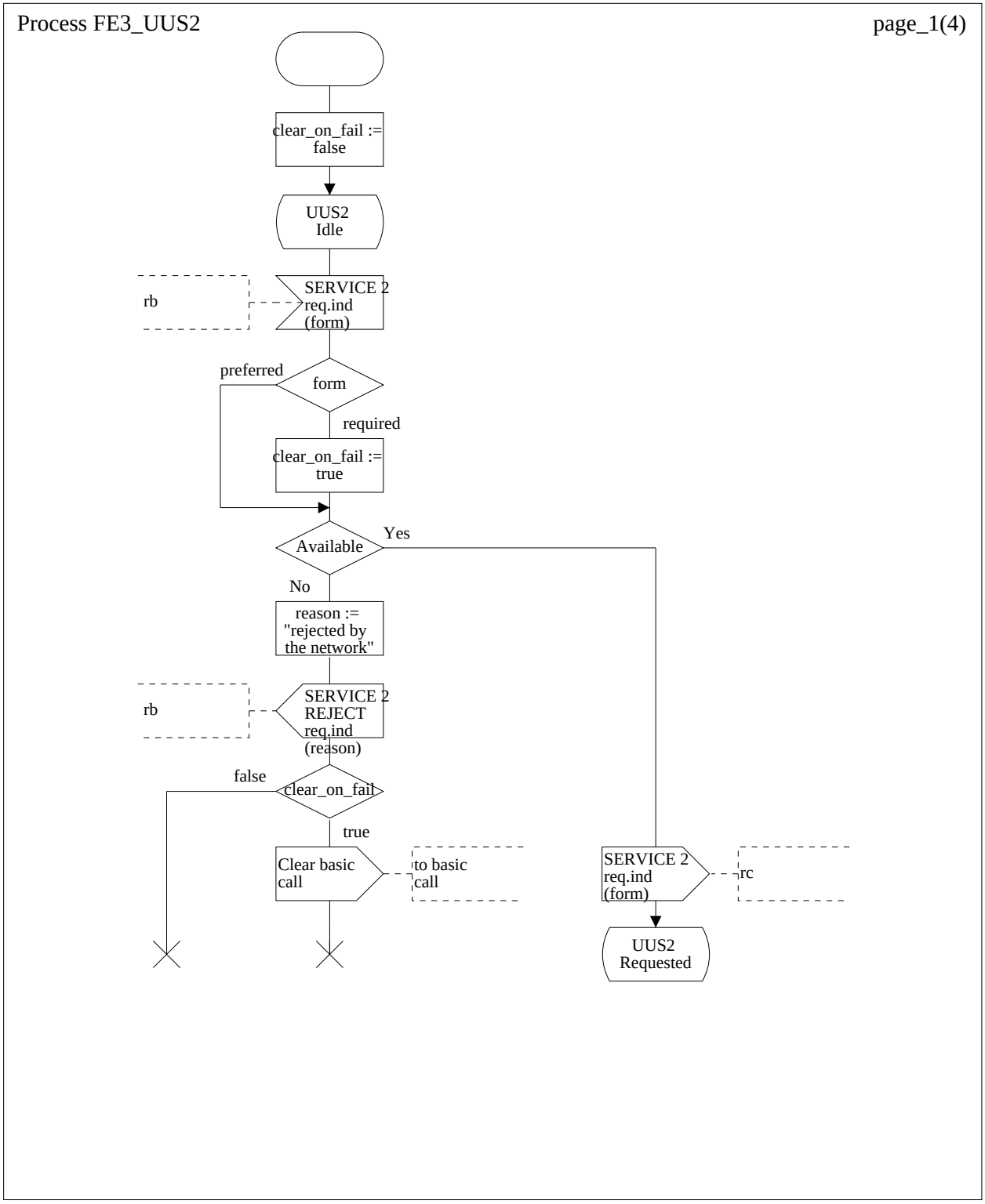


Figure 17 (sheet 1 of 4)

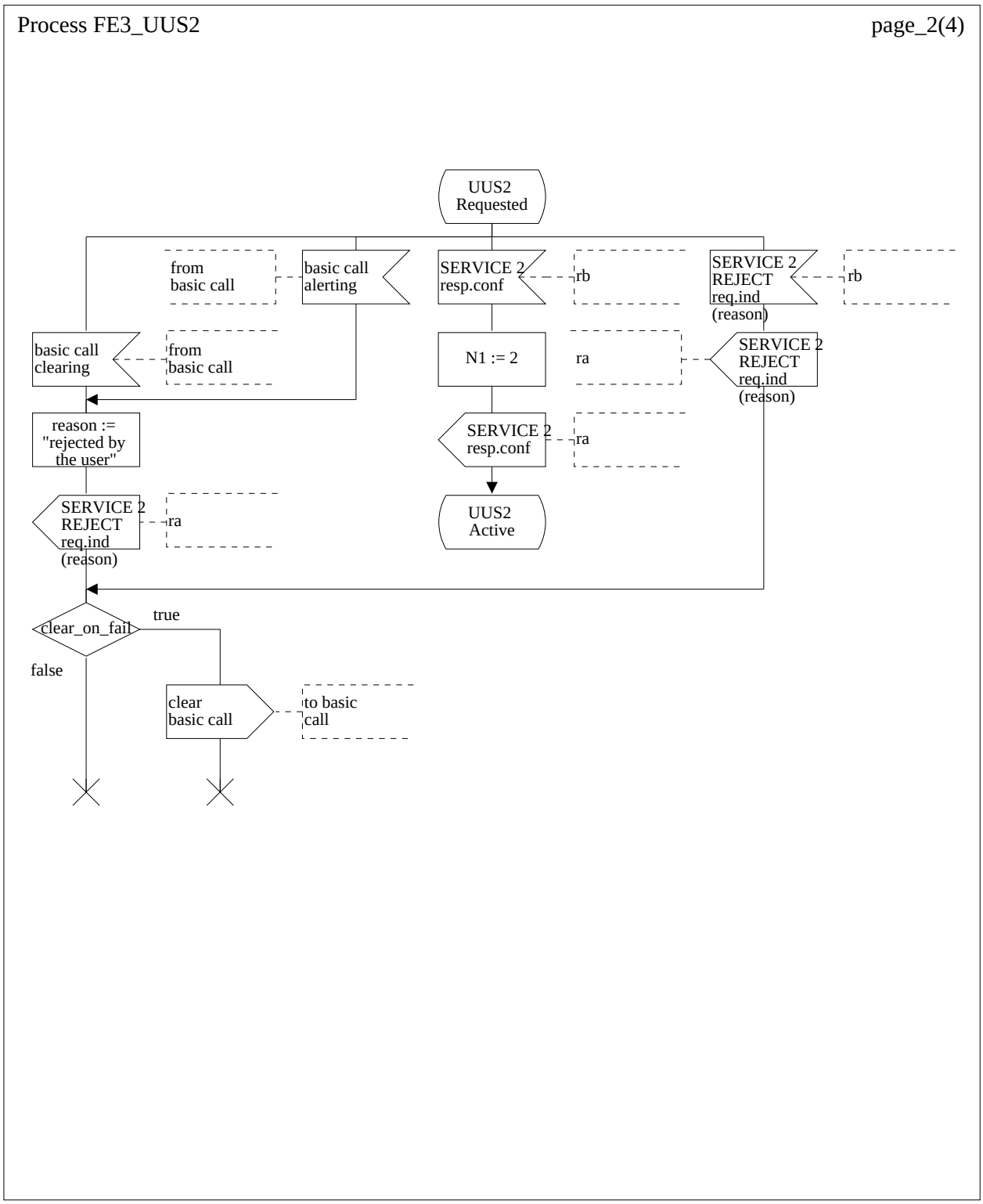


Figure 17 (sheet 2 of 4)

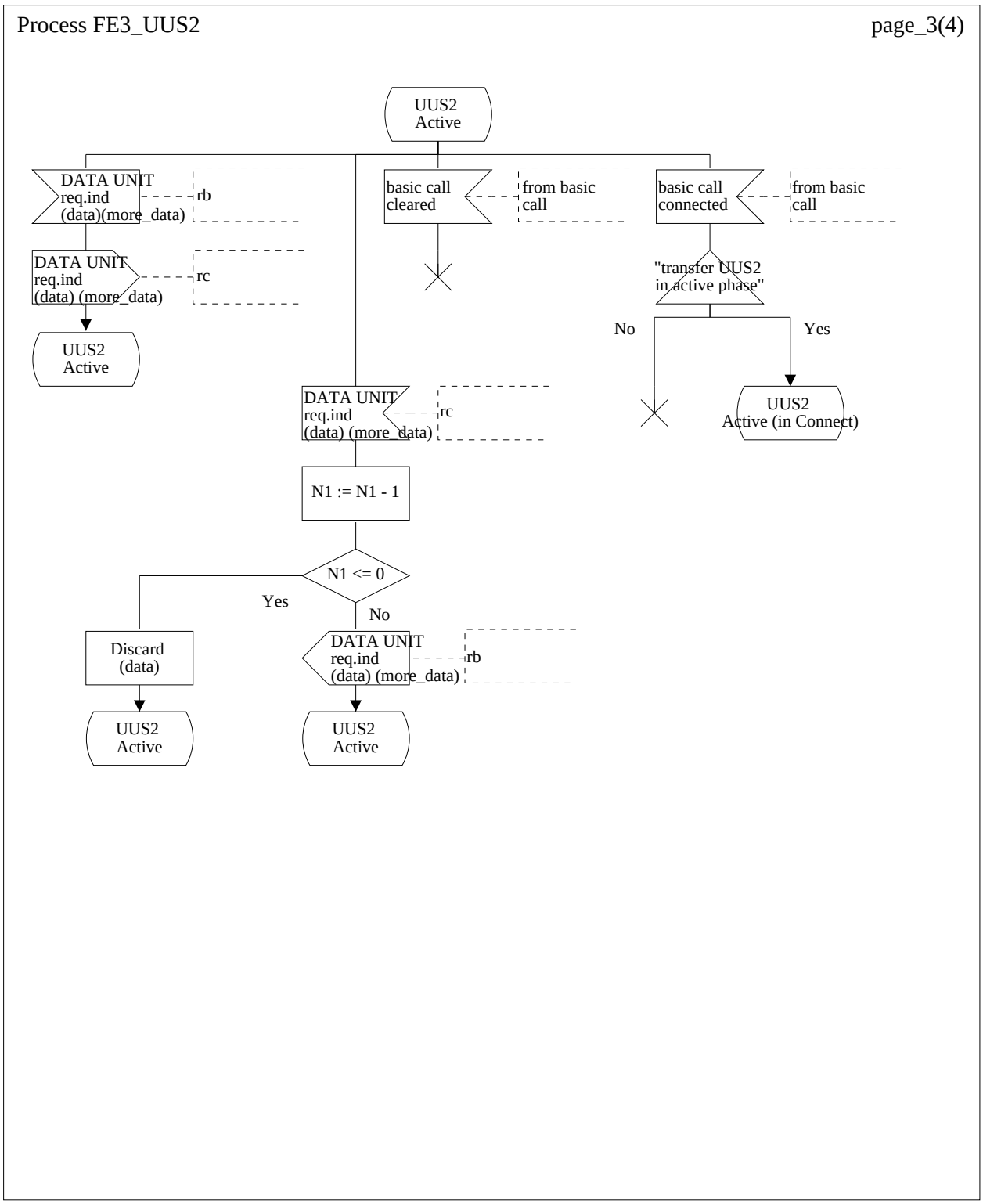


Figure 17 (sheet 3 of 4)

Process FE3_UUS2 page_4(4)

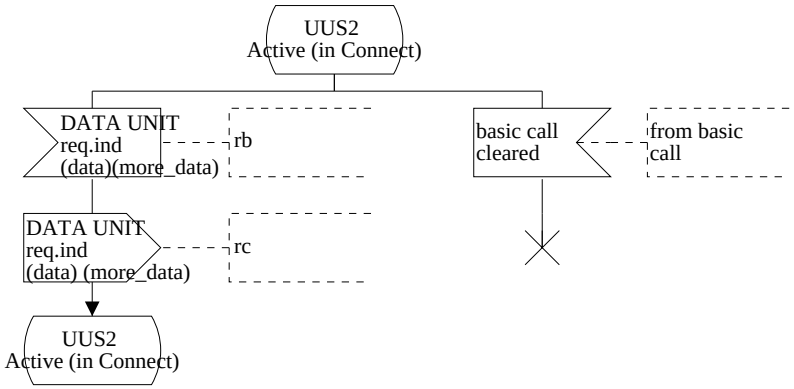


Figure 17 (sheet 3 of 4)

8.3.3 Service 3

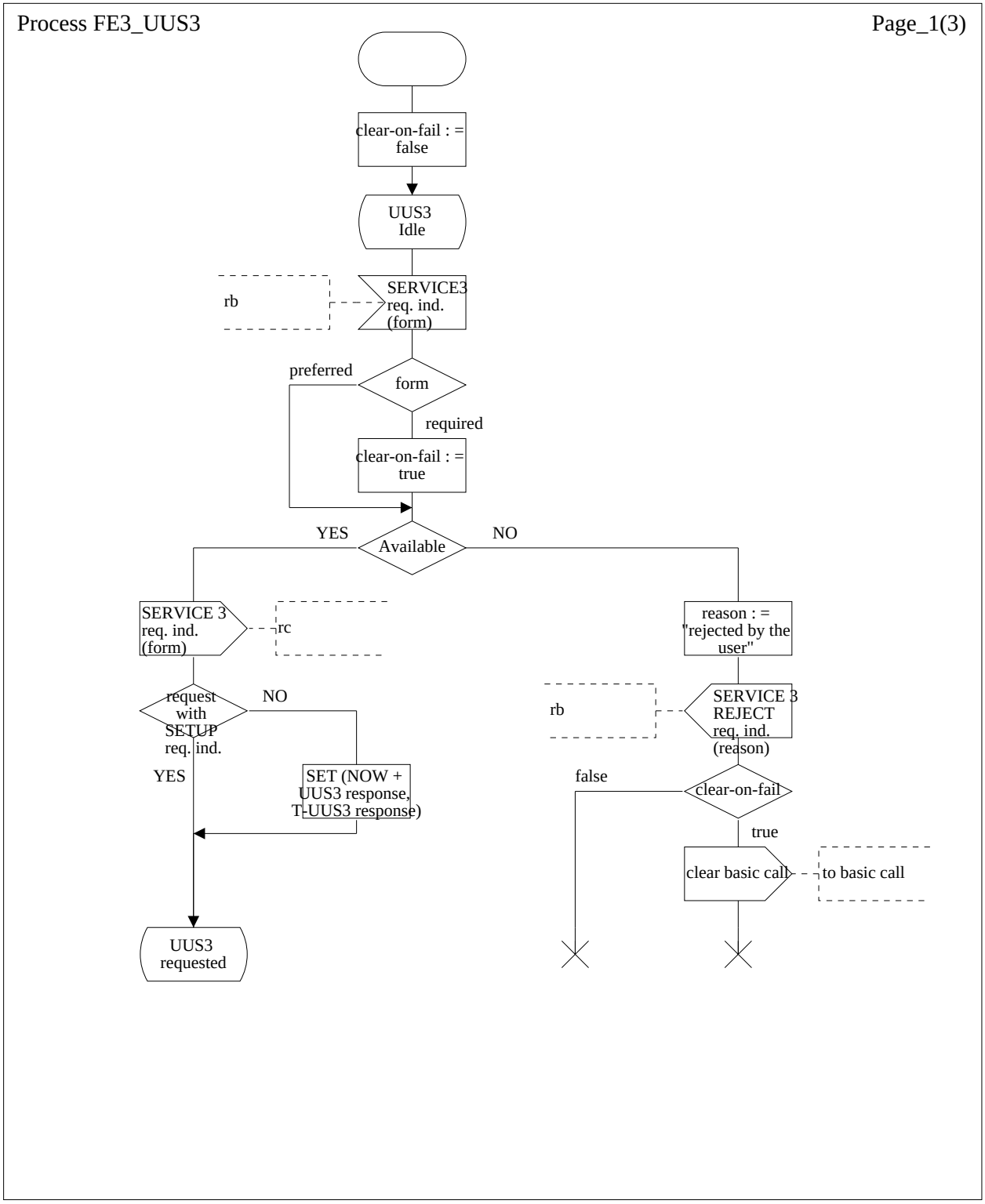


Figure 18 (sheet 1 of 3)

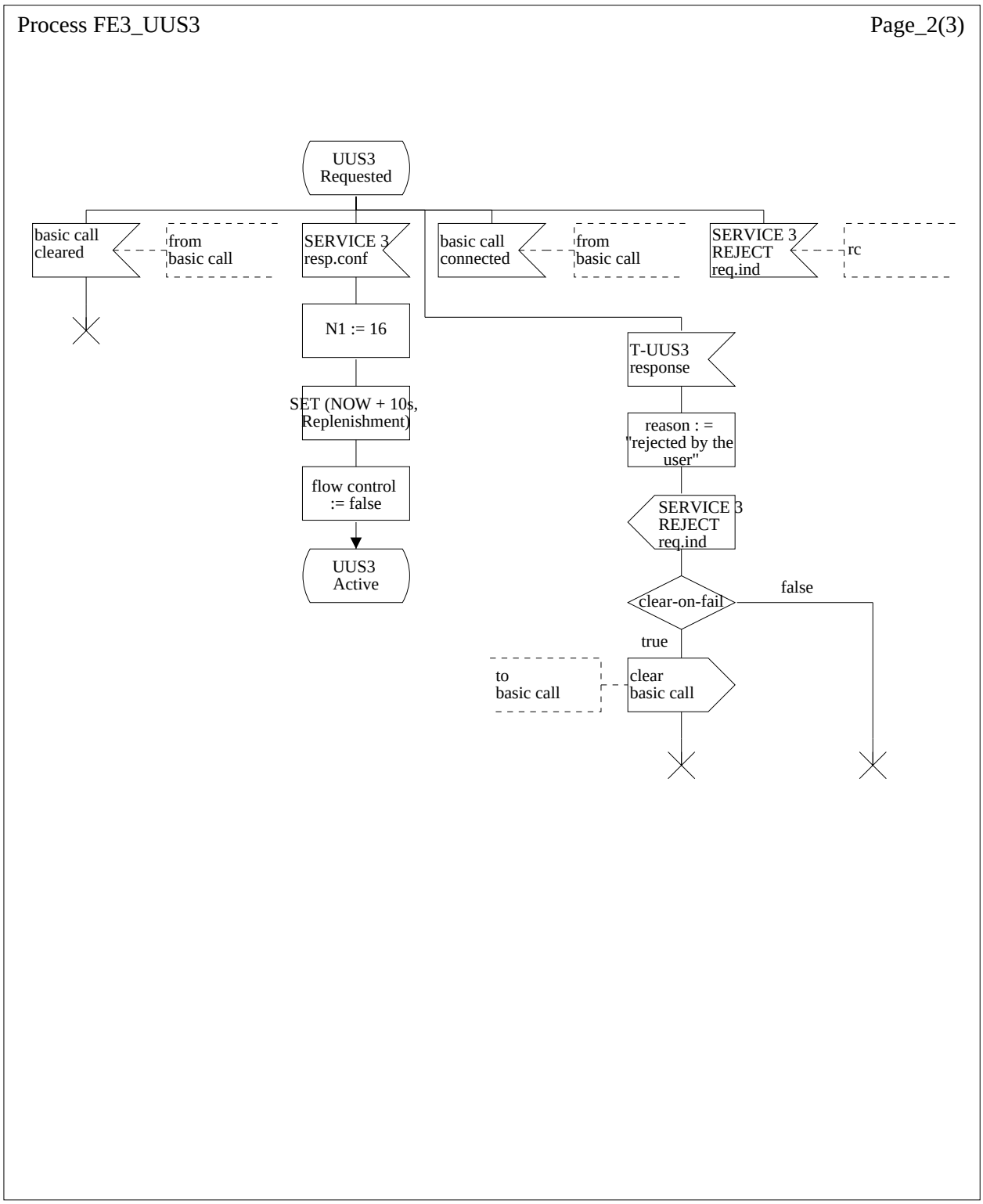


Figure 18 (sheet 2 of 3)

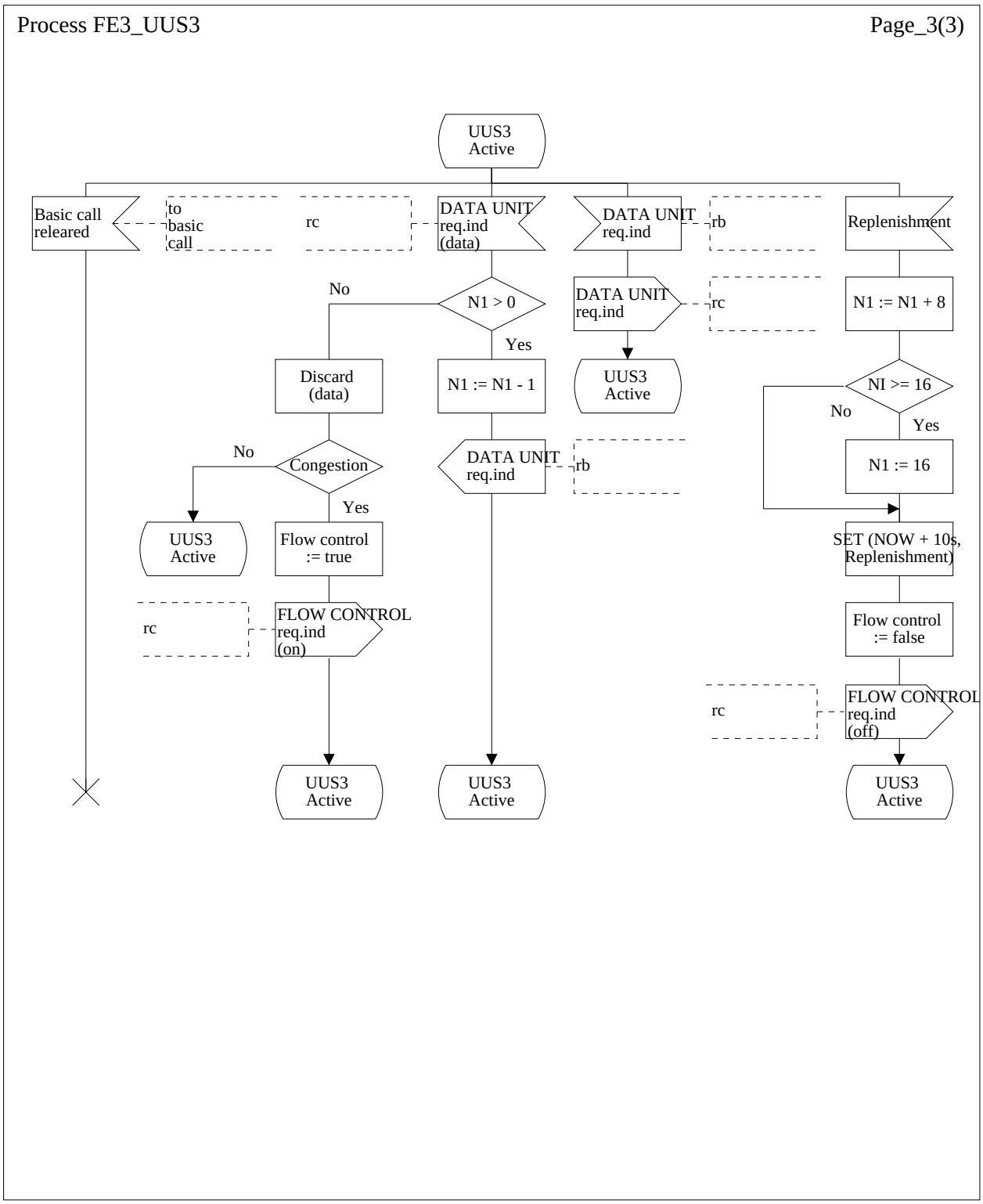


Figure 18 (sheet 3 of 3)

8.4 SDL diagrams for FE4

The SDL diagrams for FE4 are shown in figures 19, 20 and 21.

8.4.1 Service 1

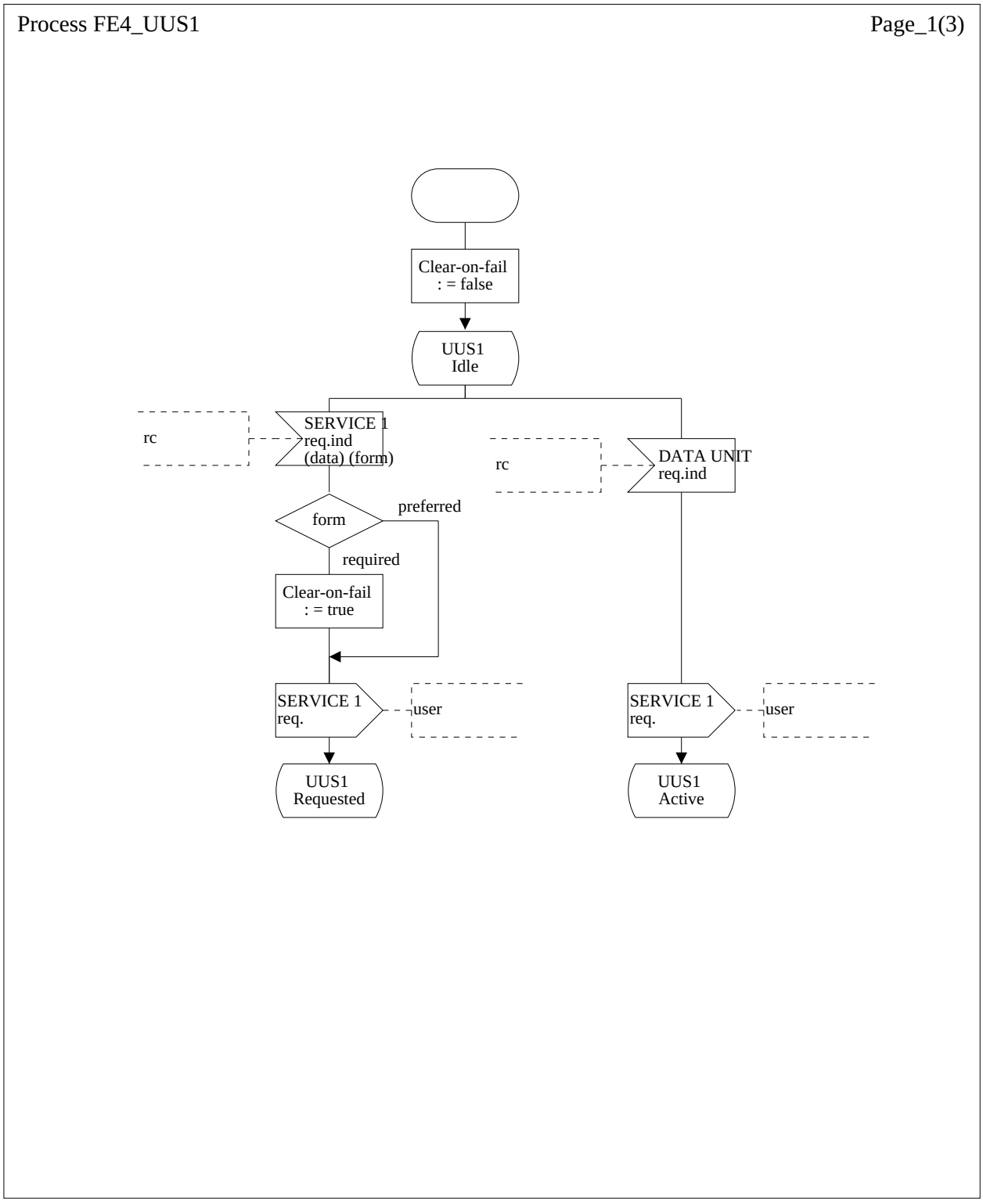


Figure 19 (sheet 1 of 3)

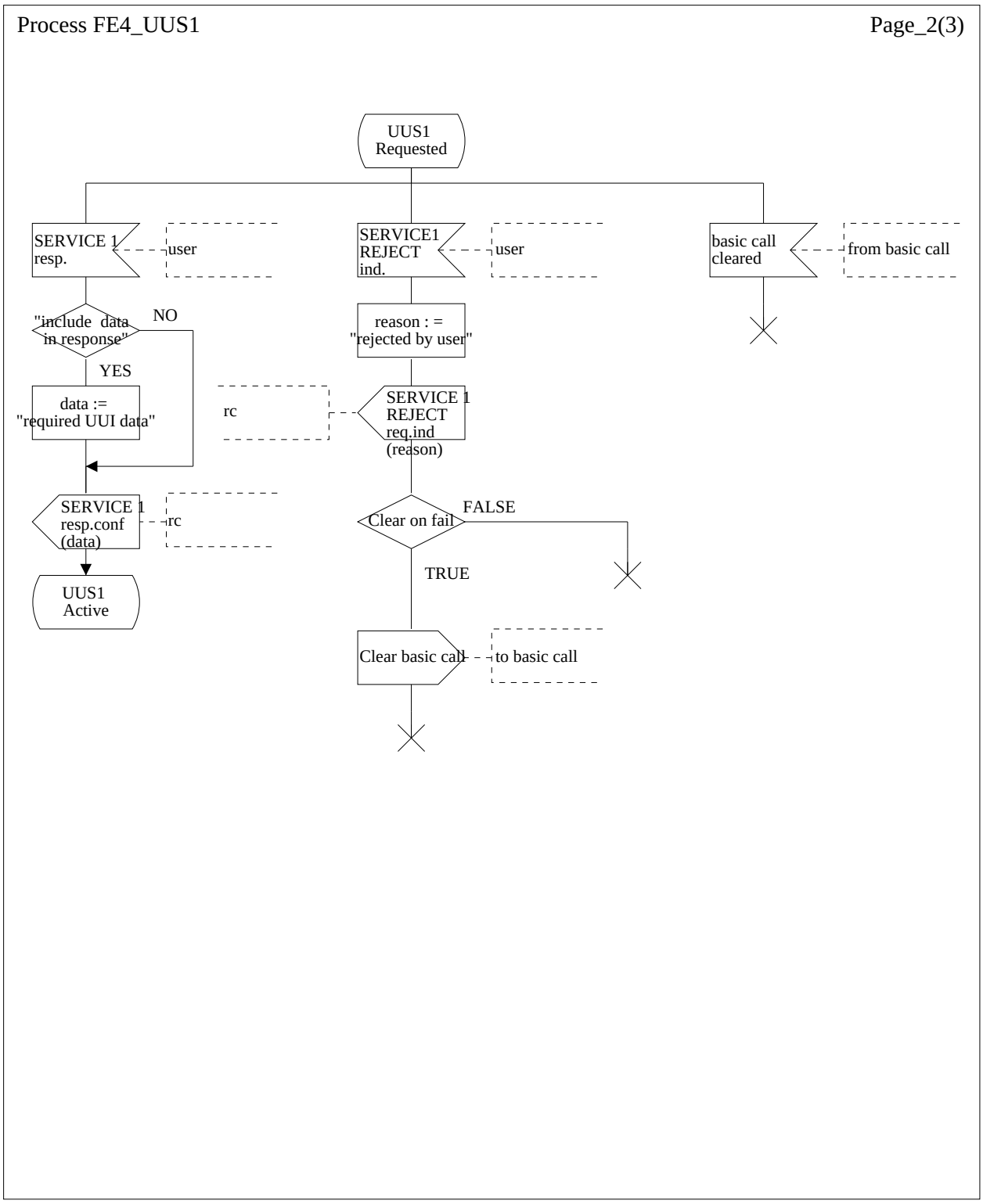


Figure 19 (sheet 2 of 3)

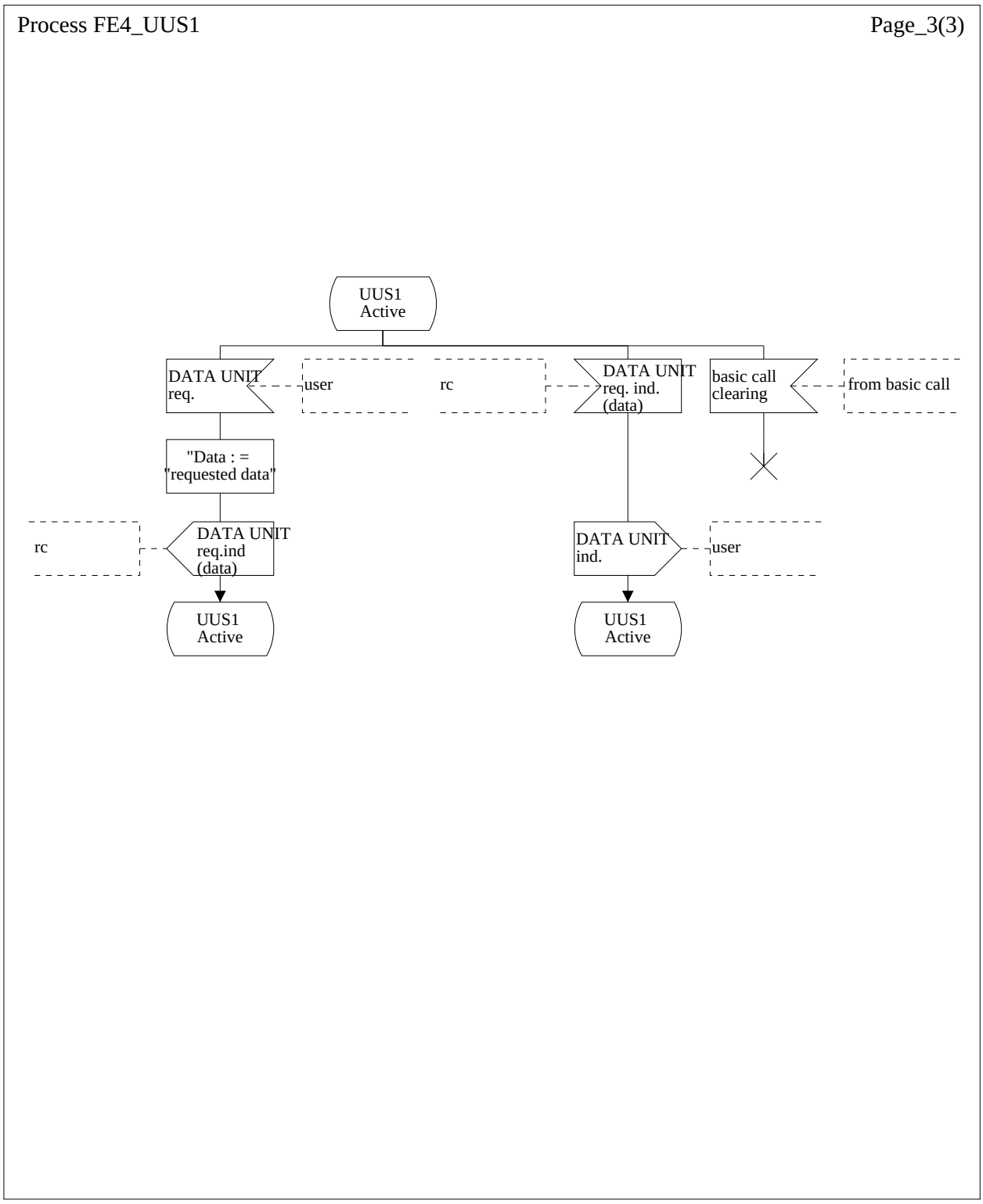


Figure 19 (sheet 3 of 3)

8.4.2 Service 2

Process FE4_UUS2 Page_1(3)

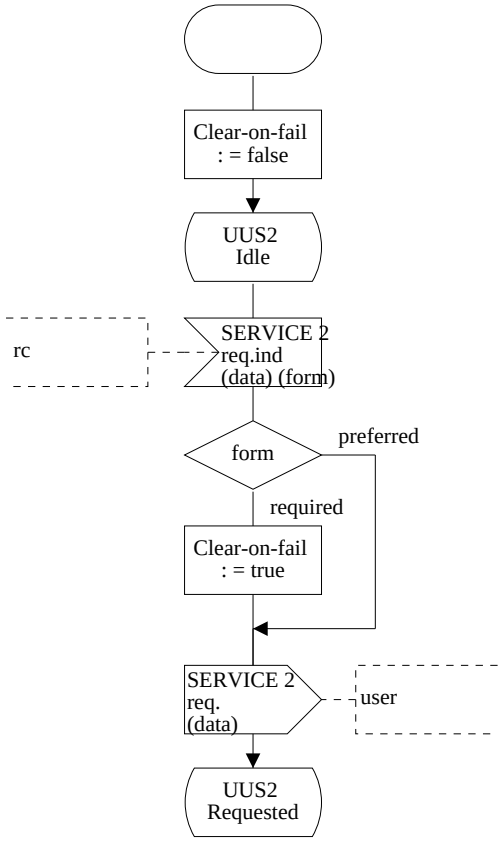


Figure 20 (sheet 1 of 3)

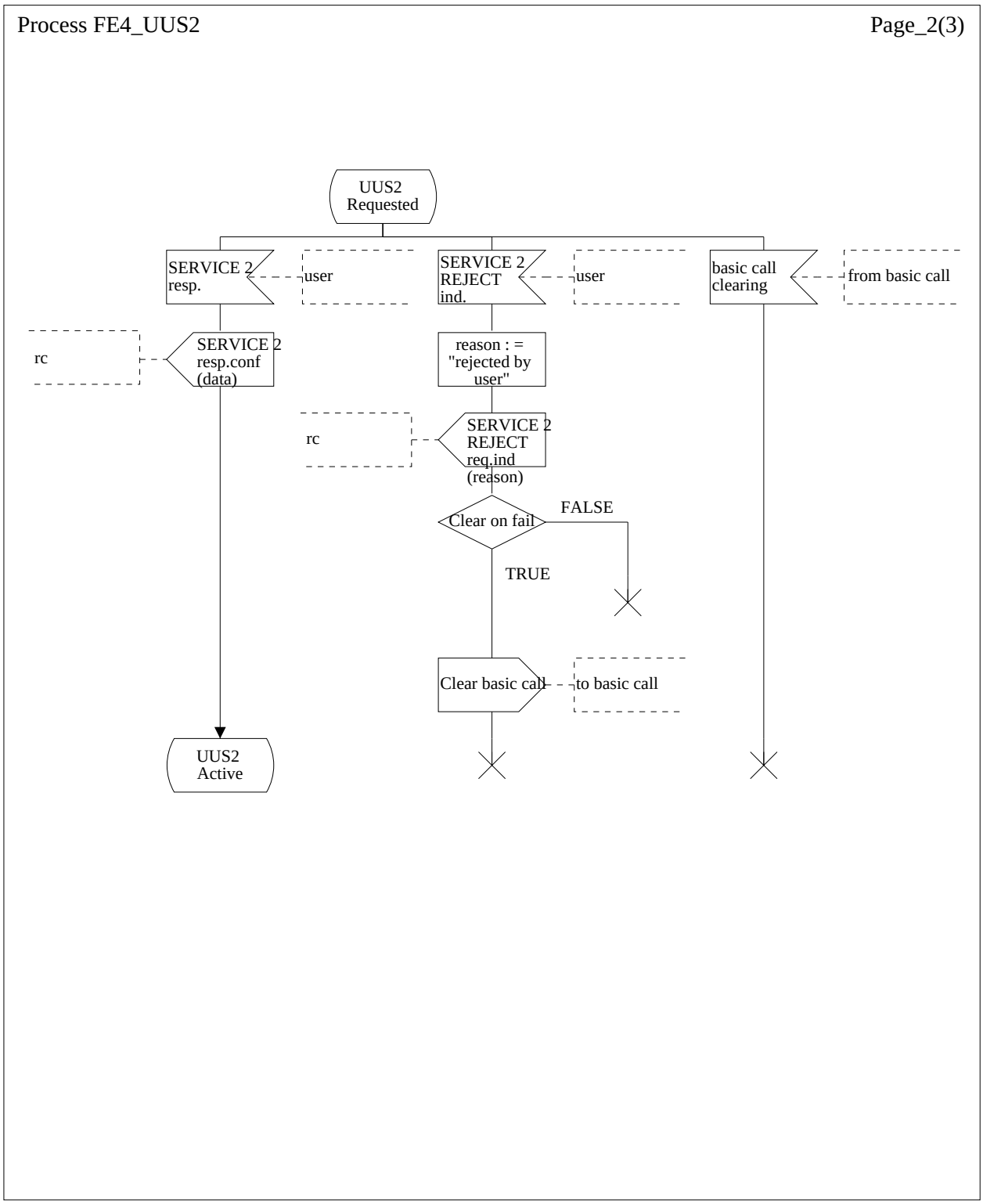


Figure 20 (sheet 2 of 3)

Process FE4_UUS2 Page_3(3)

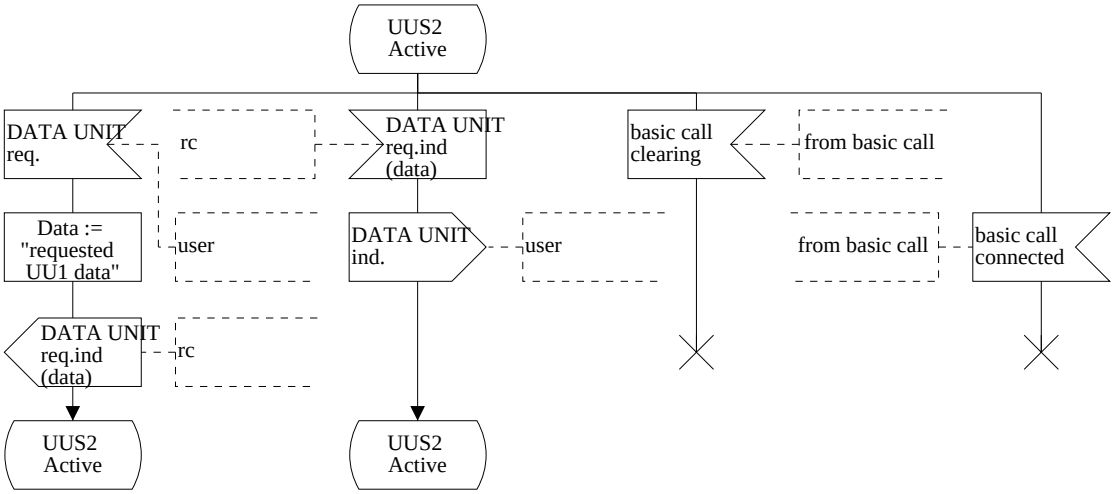


Figure 20 (sheet 3 of 3)

8.4.3 Service 3

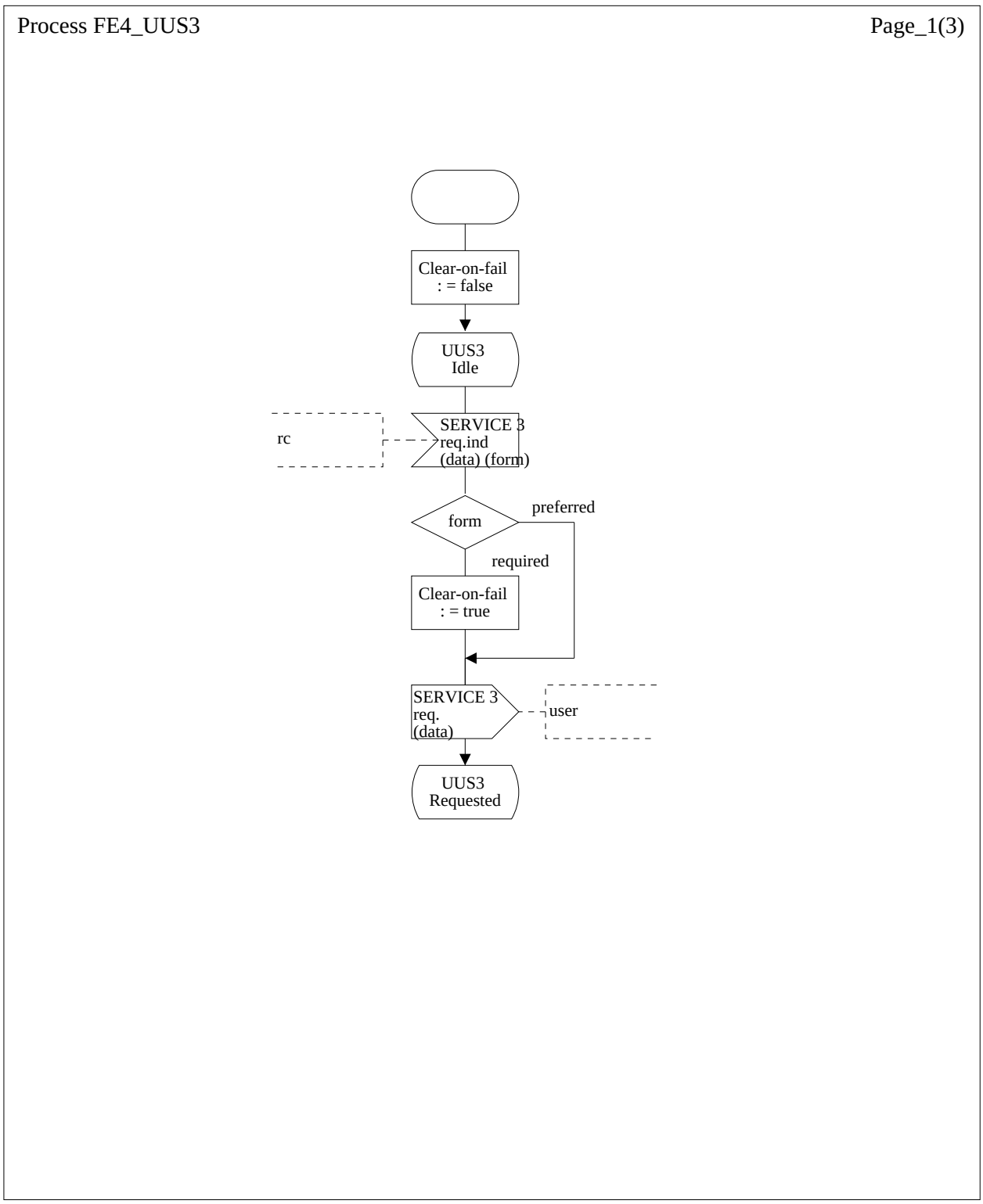


Figure 21 (sheet 1 of 3)

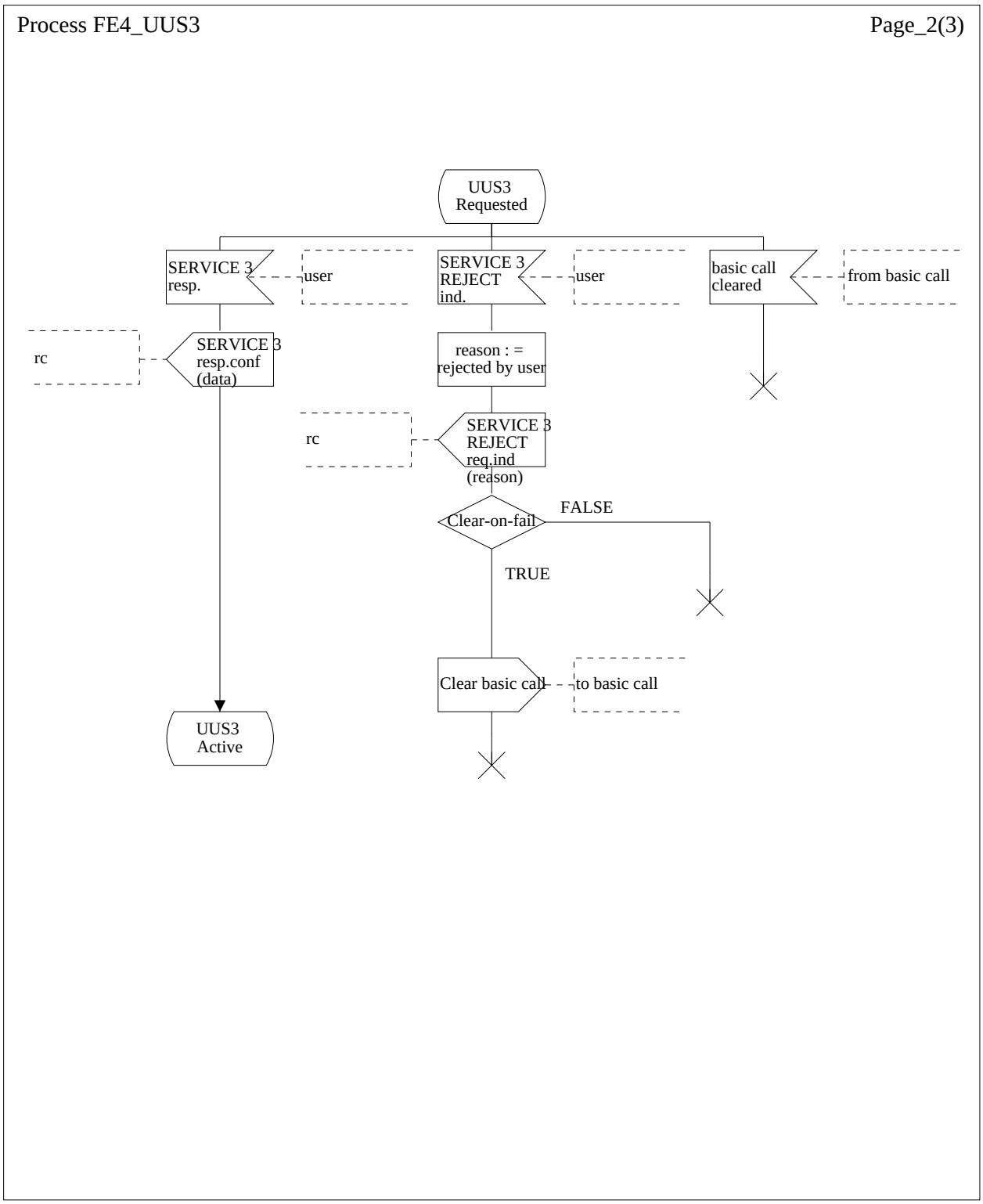


Figure 21 (sheet 2 of 3)

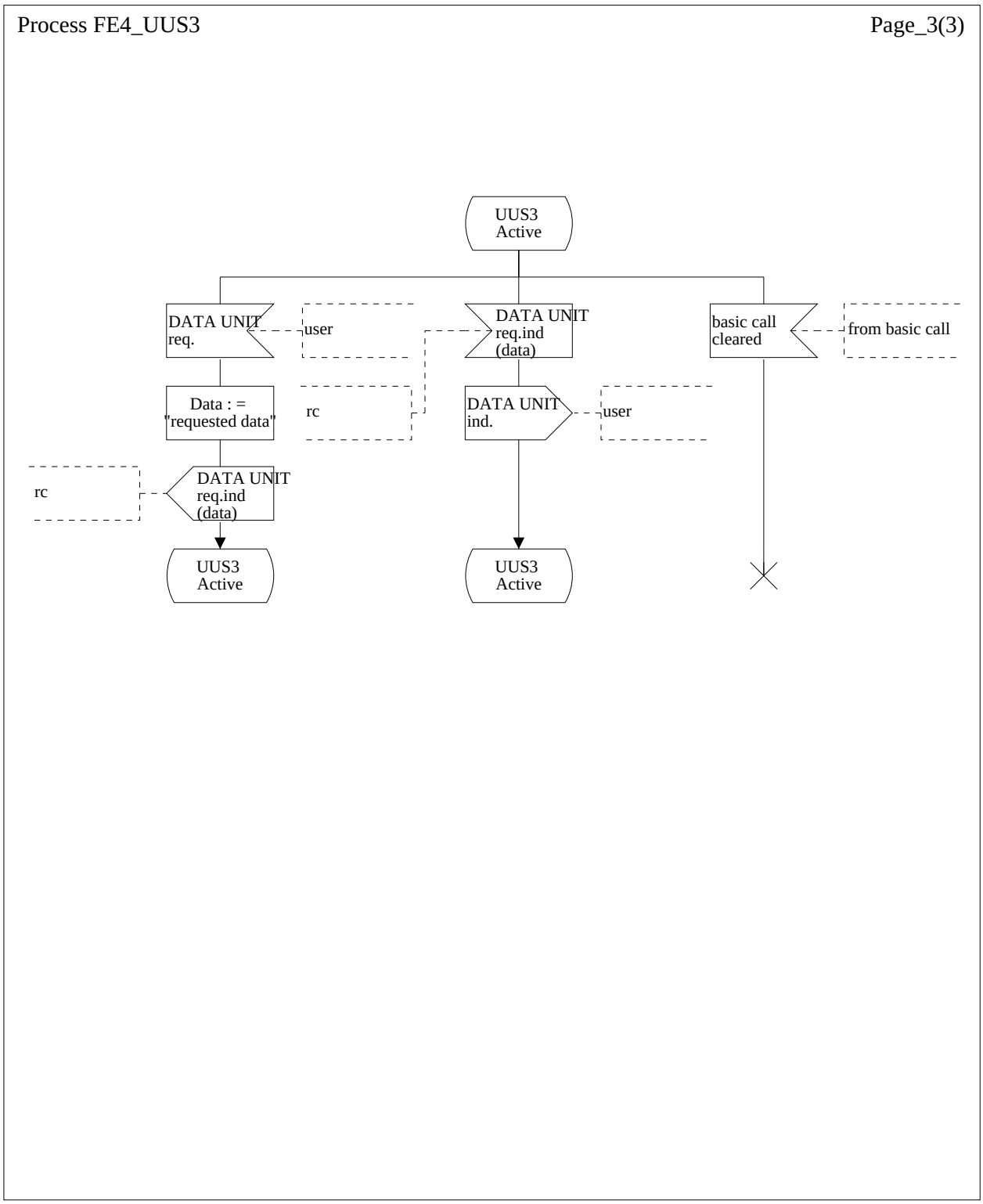


Figure 21 (sheet 3 of 3)

9 Functional Entity Actions (FEAs)

9.1 FEAs of FE1

911: Service request for UUS services.

912: Handling of explicit or implicit UUS service 1.

913: Handling of UUS service 2.

914: Handling of UUS service 3.

9.2 FEAs of FE2

921: Service request for UUS services.

922: Handling of explicit or implicit UUS service 1.

923: Handling of UUS service 2.

924: Handling of UUS service 3.

925: Flow control for UUS service 3.

9.3 FEAs of FE3

931: Service request for UUS services.

932: Handling of explicit or implicit UUS service 1.

933: Handling of UUS service 2.

934: Handling of UUS service 3.

935: Flow control for UUS service 3.

936: Subsequent DATA UNIT req.ind information flows received from other FE4s after the first DATA UNIT req.ind information flow are discarded and no action is taken.

9.4 FEAs of FE4

941: Service request for UUS services.

942: Handling of explicit or implicit UUS service 1.

943: Handling of UUS service 2.

944: Handling of UUS service 3.

10 Allocation of functional entities to physical locations

The allocation of functional entities to physical locations is shown in table 12.

Table 12

Scenario	FE1	FE2	FE3	FE4
Scenario 1	Orig. TE	Orig. LE	Dest. LE	Dest TE
Scenario 2	Orig. TE	Orig. PTNX	Dest. LE	Dest TE
Scenario 3	Orig. TE	Orig. LE	Dest. PTNX	Dest TE
Scenario 4	Orig. TE	Orig. PTNX	Dest. PTNX	Dest TE
Scenario 5	Dest. TE	Dest. LE	Orig. LE	Orig. TE
Scenario 6	Dest. TE	Dest. PTNX	Orig. LE	Orig. TE
Scenario 7	Dest. TE	Dest. LE	Orig. PTNX	Orig. TE
Scenario 8	Dest. TE	Dest. PTNX	Orig. PTNX	Orig. TE
NOTE: Scenarios 5, 6, 7 and 8 are only applicable for service 3 of the UUS supplementary service when the network provides the option of the called user requesting the service in the active state.				

History

Document history	
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