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GENERAL RECOMMENDATIONS ON TELEPHONE SWITCHING AND SIGNALLING FUNCTIONS AND INFORMATION FLOWS FOR SERVICES IN THE ISDN

STAGE 2 DESCRIPTION FOR CHARGING SUPPLEMENTARY SERVICES

CLAUSE 3 – REVERSE CHARGING (REV)

ITU-T Recommendation Q.86

(Previously "CCITT Recommendation")

FOREWORD

The ITU Telecommunication Standardization Sector (ITU-T) is a permanent organ of the International Telecommunication Union. The ITU-T is responsible for studying technical, operating and tariff questions and issuing Recommendations on them with a view to standardizing telecommunications on a worldwide basis.

The World Telecommunication Standardization Conference (WTSC), which meets every four years, established the topics for study by the ITU-T Study Groups which, in their turn, produce Recommendations on these topics.

ITU-T Recommendation Q.86, clause 3 was prepared by the ITU-T Study Group XI (1988-1993) and was approved by the WTSC (Helsinki, March 1-12, 1993).

NOTES

1 As a consequence of a reform process within the International Telecommunication Union (ITU), the CCITT ceased to exist as of 28 February 1993. In its place, the ITU Telecommunication Standardization Sector (ITU-T) was created as of 1 March 1993. Similarly, in this reform process, the CCIR and the IFRB have been replaced by the Radiocommunication Sector.

In order not to delay publication of this Recommendation, no change has been made in the text to references containing the acronyms “CCITT, CCIR or IFRB” or their associated entities such as Plenary Assembly, Secretariat, etc. Future editions of this Recommendation will contain the proper terminology related to the new ITU structure.

2 In this Recommendation, the expression “Administration” is used for conciseness to indicate both a telecommunication administration and a recognized operating agency.

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CONTENTS

	<i>Page</i>
3 Reverse Charging (REV)	1
3.1 Scope	1
3.2 References.....	1
3.3 Definitions	1
3.4 Symbols and abbreviations	2
3.5 Description.....	2
3.6 Derivation of the functional model	3
3.7 Information flows	4
3.8 SDL diagrams for functional entities.....	21
3.9 Functional entity actions (FEAs).....	43
3.10 Allocation of functional entities to physical locations.....	45
Appendix I – Interworking requirement.....	46
I.1 Interworking of Reverse Charging with PSTN.....	46

SUMMARY

This Recommendation describes the Stage 2 of the Reverse Charging supplementary service, supported by an ISDN. The Stage 2 descriptions are comprised of the switching functions and signalling information flows. The Reverse Charging supplementary service allows:

- a) the *calling user*, on a per call basis, to request that the call be charged to the called party *at call set-up time* and the calling user has the opportunity to accept or reject these charges;
- b) the *calling user*, on a per call basis, to request that the call be charged to the called party from a time during the *active phase* of the call and the called party has the opportunity to accept or reject those charges; and
- c) the *called user*, on a per call basis, to request to be charged for the call from a time during the *active phase*.

STAGE 2 DESCRIPTION FOR CHARGING SUPPLEMENTARY SERVICES

(Helsinki, 1993)

3 Reverse Charging (REV)

3.1 Scope

This Recommendation defines the Stage 2 of the Integrated Services Digital Network (ISDN) as provided by the telecommunications operators for the Reverse Charging (REV) supplementary service. Stage 2 identifies the functional capabilities and the information flows needed to support the service description. The Stage 2 description also identifies user operations not directly associated with a call (see Recommendation I.130 [1]).

This Recommendation is defined according to the methodology specified in Recommendation Q.65 [2].

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

The Reverse Charging supplementary service is applicable to all telecommunication services.

This Recommendation is applicable to the Stage 3 Recommendation for the Reverse Charging supplementary service, as described in Recommendation I.130 [1].

3.2 References

These references are cited at the appropriate places in the text and the publications are listed hereafter. Dated references, subsequent amendments to, or revisions of any of these publications apply to this Recommendation only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

- [1] CCITT Recommendation *Method for the characterization of telecommunication services supported by an ISDN and network*, Rec. I.130, 1988.
- [2] CCITT Recommendation *Stage 2 of the method for the characterization of services supported by an ISDN*, Rec. Q.65, 1988.
- [3] CCITT Recommendation *Reverse Charging (REV) supplementary service; service description*, Rec. I.256.3.
- [4] CCITT Recommendation *Integrated Services Digital Network (ISDN); Basic call handling for circuit switched bearer services; Functional capabilities and information flows*, Rec. Q.71, 1992.
- [5] CCITT Recommendation *Vocabulary of terms for ISDNs*, Rec. I.112, 1988.
- [6] CCITT Recommendation *Principles of telecommunication services supported by an ISDN and the means to describe them*, Rec. I.210, 1988.

3.3 Definitions

For the purpose of this Recommendation, the following definitions apply:

Integrated Services Digital Network (ISDN): see 2.3/I.112 definition 308 [5].

Service: telecommunication service: see 2.2/I.112 definition 201[5].

Supplementary service: see 2.4/I.210 [6].

3.4 Symbols and abbreviations

For the purpose of this Recommendation the following abbreviations are used:

CC	Call Control
CCA	Call Control Agent
FE	Functional Entity
FEA	Functional Entity Action
ISDN	Integrated Services Digital Network
LE	Local Exchange
PNX	Private Network Exchange
REV	Reverse Charging
TE	Terminal Equipment

3.5 Description

3.5.1 General description

Reverse Charging is a service allowing a called user to be charged for the actual communication, that is for usage-based calls.

There are four cases of Reverse Charging:

- Case A – Reverse Charging requested by the calling user at the call set-up time.
- Case B – Reverse Charging requested by the calling user during the active phase of the call.
- Case C – Reverse Charging for the entire call requested by the called user during the active phase of the call.
- Case D – Reverse Charging unconditional.

3.5.1.1 Case A

This supplementary service allows a calling user, on a per-call basis, to request Reverse Charging at the call set-up time and the called user to accept or reject the charges including in the set-up response. If the called user accepts the request, the network starts charging the called user with notification of acceptance to the calling user and proceeds with the call. If the called user rejects or ignores the request, the network notifies the calling user and disconnects the call.

When a calling user does not explicitly request Reverse Charging, the calling user is charged as usual.

In order to use this service, the originating terminal needs to have the capability for requesting Reverse Charging while the destination terminal needs to have the capability for accepting or rejecting Reverse Charging.

3.5.1.2 Case B

This supplementary service allows a calling user, on a per-call basis, to request Reverse Charging during the active phase of the call and the called user to accept or reject the charges. If the called user accepts the request, the network starts charging the called user from that very moment on with notification of acceptance to the calling user and proceeds with the call.

If the called user rejects or ignores the request, the network notifies the calling user while the existing call remains unaffected and the calling user is charged continuously.

In order to use this service, the originating terminal needs to have the capability for requesting Reverse Charging while the destination terminal needs to have the capability for accepting or rejecting Reverse Charging.



3.5.1.3 Case C

This supplementary service allows a called user, on a per-call basis, to request Reverse Charging during the active phase of the call.

When a called user does not explicitly request Reverse Charging, the calling user is charged as usual.

With this service the usage-based charges are charged to the called user.

In order to use this service, the destination terminal needs to have the capability for requesting Reverse Charging.

3.5.1.4 Case D

Regardless whether a calling/called user requests Reverse Charging or not, all usage-based charges or some of them for selected services are charged to the called user.

With this service the usage-based charges are charged to the called user, even if the calling user is not an ISDN user.

3.5.2 Specific terminology

Throughout the stage 2 description for Reverse Charging, the following terminology will be used:

- *No Transfer mode* – This represents that the charging function is done at the originating side when the No Reverse Charging is invoked.
- *Transfer mode* – This represents that the charging function is done at the destination side when the Reverse Charging is invoked.

3.5.3 Qualification on the applicability to telecommunication services

This service is applicable to all telecommunication services.

3.6 Derivation of the functional model

3.6.1 Functional model description

The functional model used for illustrating the Reverse Charging service procedures is shown in Figure 3-1.

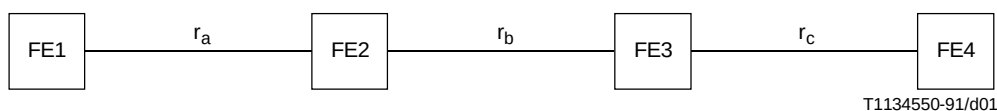


FIGURE 3-1/Q.86
Functional Model for Reverse Charging

3.6.2 Description of the functional entity

The functional entities required by the Reverse Charging service in addition to those of the basic call are as follows:

- FE1: Originating Reverse Charging Agent
This represents the entity that requests Reverse Charging service at the originating side.
- FE2: Originating Reverse Charging Control Entity
This represents the entity that controls Reverse Charging service at originating side.

- FE3: Destination Reverse Charging Control Entity
This represents the entity that controls Reverse Charging service at destination side.
- FE4: Destination Reverse Charging Agent
This represents the entity that accepts/rejects/requests Reverse Charging service at the destination side.

Both FE2 and FE3 has only the function that controls Reverse Charging service since the entity collecting the detail of a call for charging will be defined somewhere relating to the basic call control based on the future D-Series Recommendations.

3.6.3 Relationship with the basic service

Relationship functional model for Reverse Charging to basic service is shown in Figure 3-2.

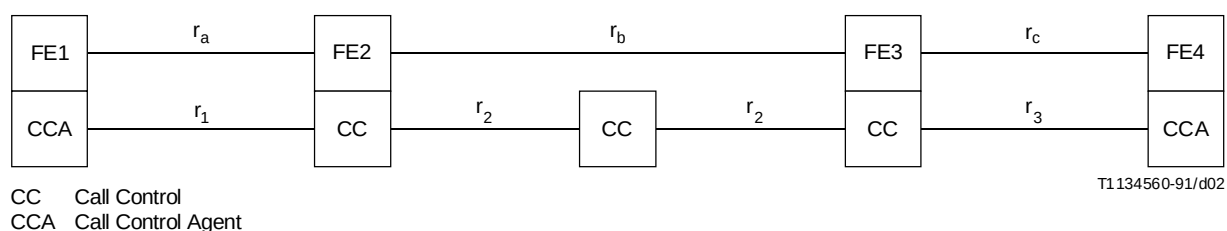


FIGURE 3-2/Q.86
Relationship to a basic service

3.7 Information flows

3.7.1 Information flow diagrams

This subclause contains the information flow diagrams for not only successful cases but also unsuccessful cases (i.e. rejection, ignoring).

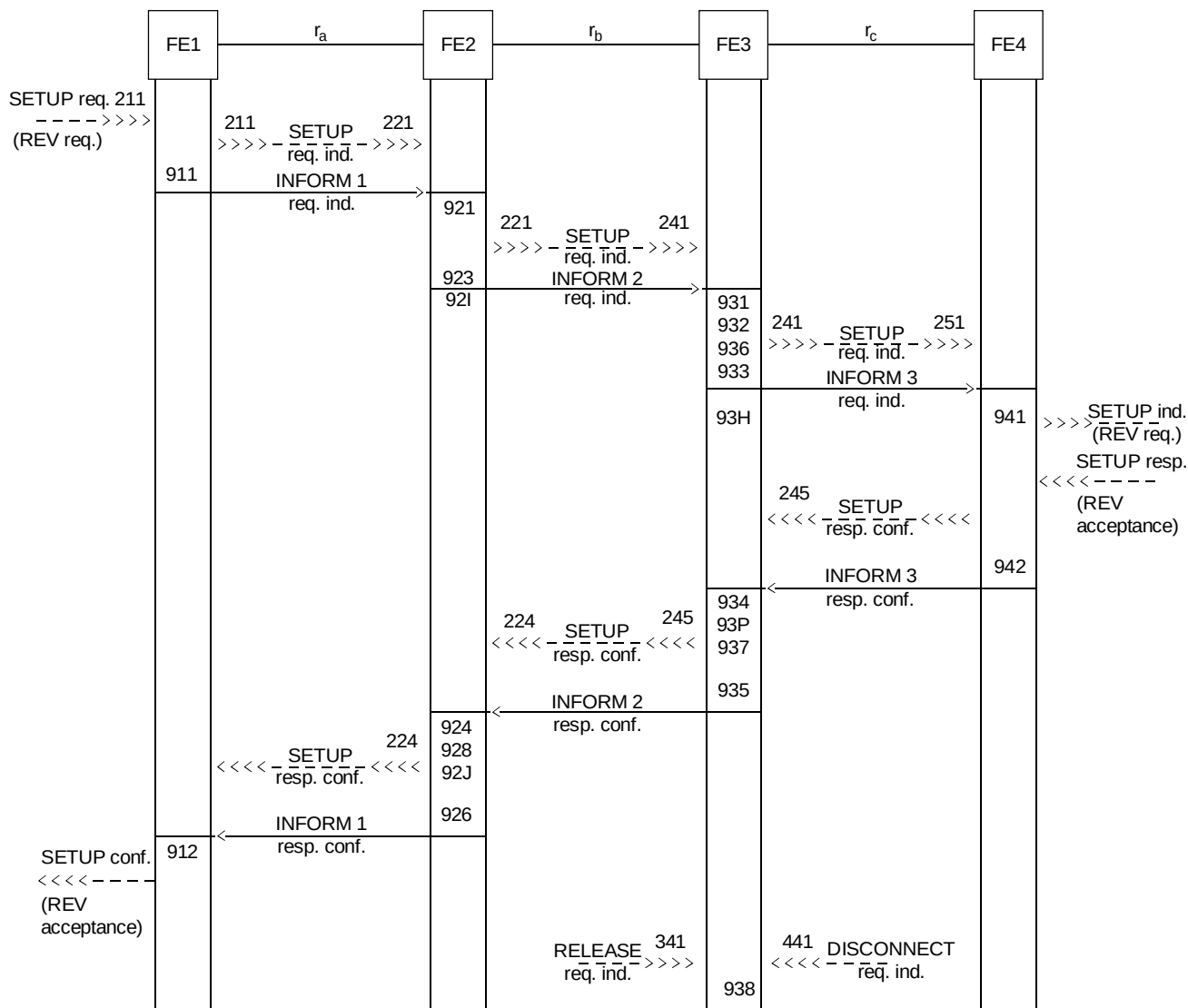
Two modes (i.e. No Transfer mode, Transfer mode) are given for each Case (Case A-Case D). No Transfer mode is defined as a basic mode in this service while Transfer mode may be adopted as a service provider option.

3.7.1.1 Information flows for Case A

- Figure 3-3: Successful information flows for Case A (No Transfer mode)
- Figure 3-4: Successful information flows for Case A (Transfer mode)
- Figure 3-5: Unsuccessful information flows for Case A (Reject)
- Figure 3-6: Unsuccessful information flows for Case A (Ignoring)

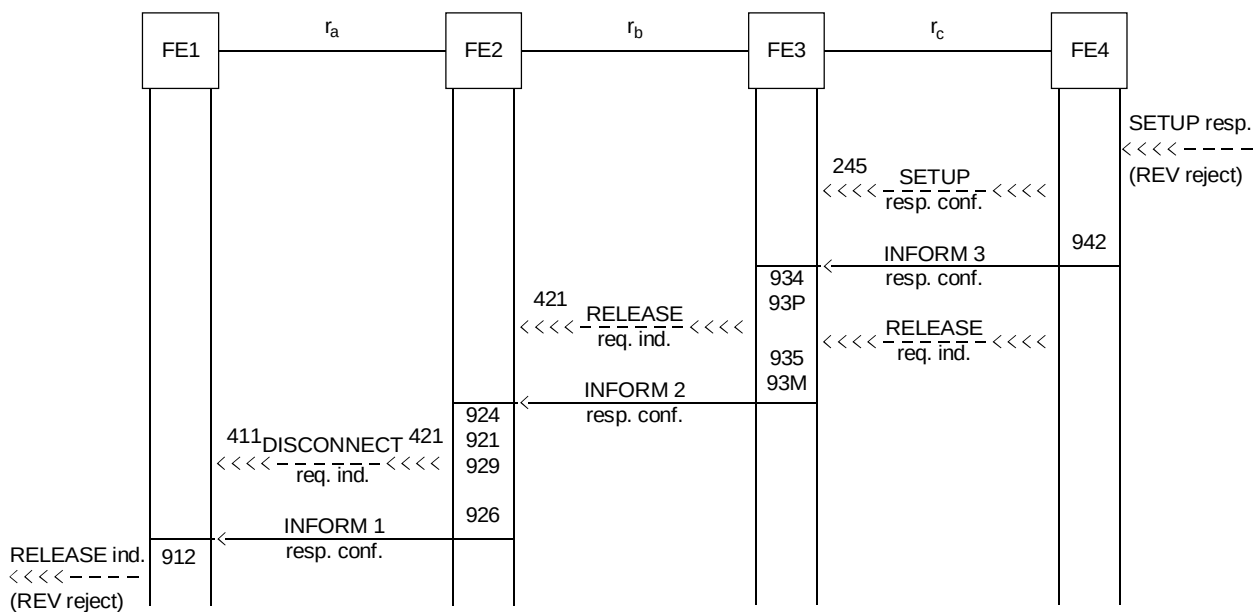
3.7.1.2 Information flows for Case B

- Figure 3-7: Successful information flows for Case B (No Transfer mode)
- Figure 3-8: Successful information flows for Case B (Transfer mode)
- Figure 3-9: Unsuccessful information flows for Case B (Reject)
- Figure 3-10: Unsuccessful information flows for Case B (Ignoring)

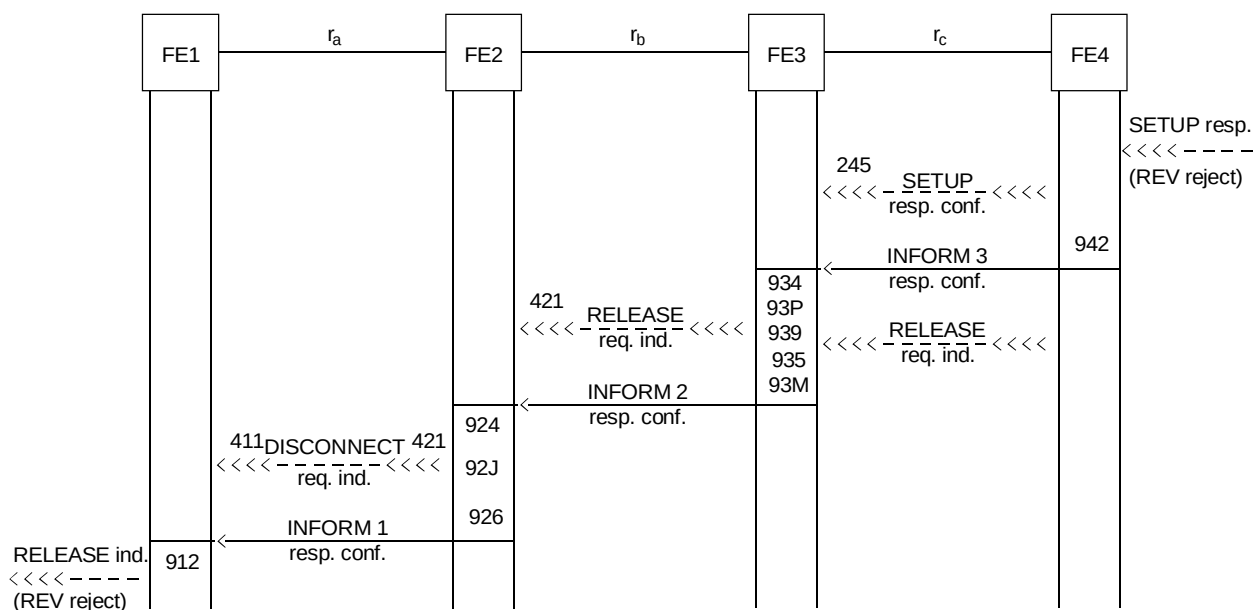


T1143930-92/d04

FIGURE 3-4/Q.86
Successful information flows for Case A (Transfer mode)



a) No Transfer Mode

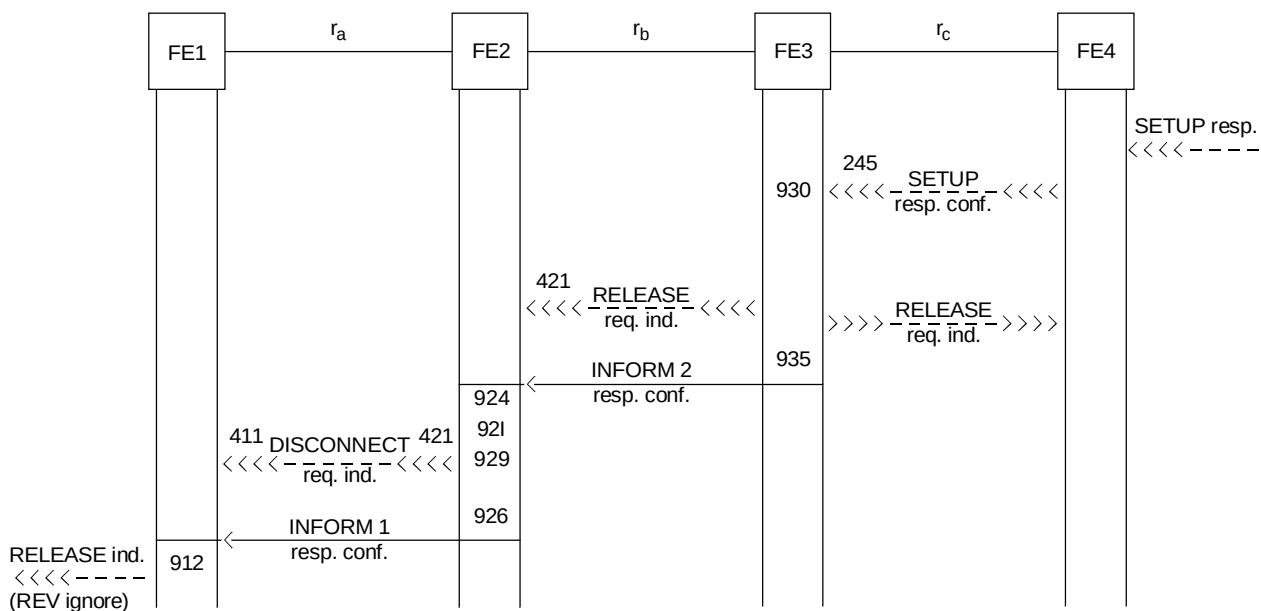


b) Transfer Mode

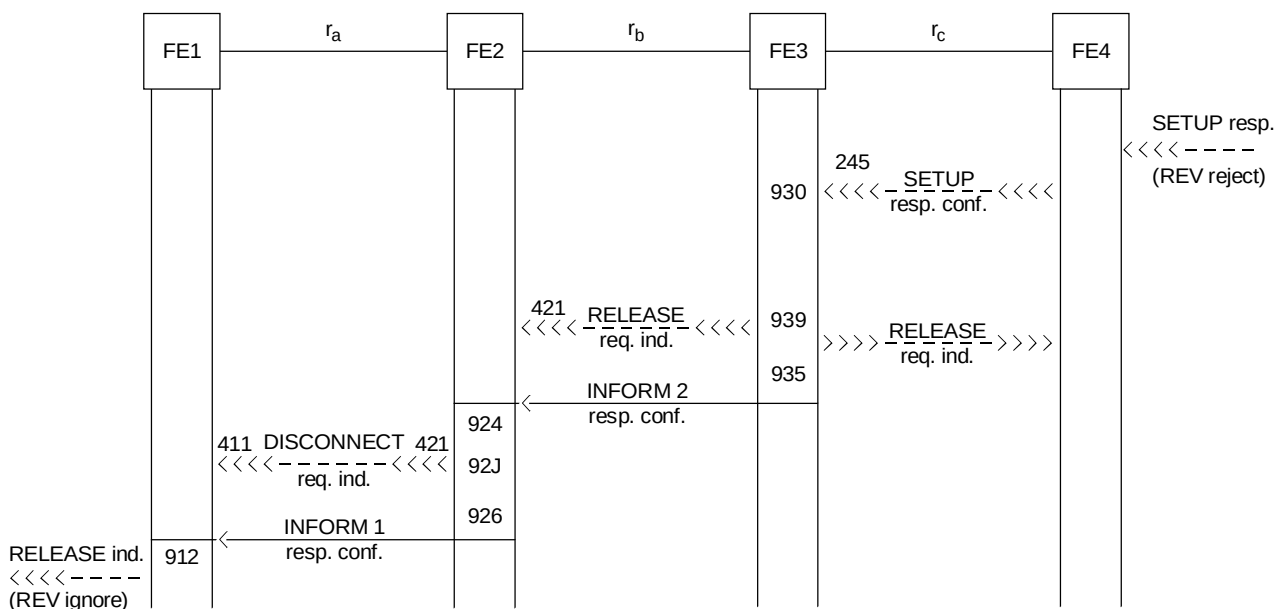
T1143940-92/d05

NOTE – These information flows follow the Reverse Charging request information flows which are shown in Figure 3-3 (No Transfer mode) and Figure 3-4 (Transfer mode).

FIGURE 3-5/Q.86
Unsuccessful information flows for Case A (Reject)



a) No Transfer Mode

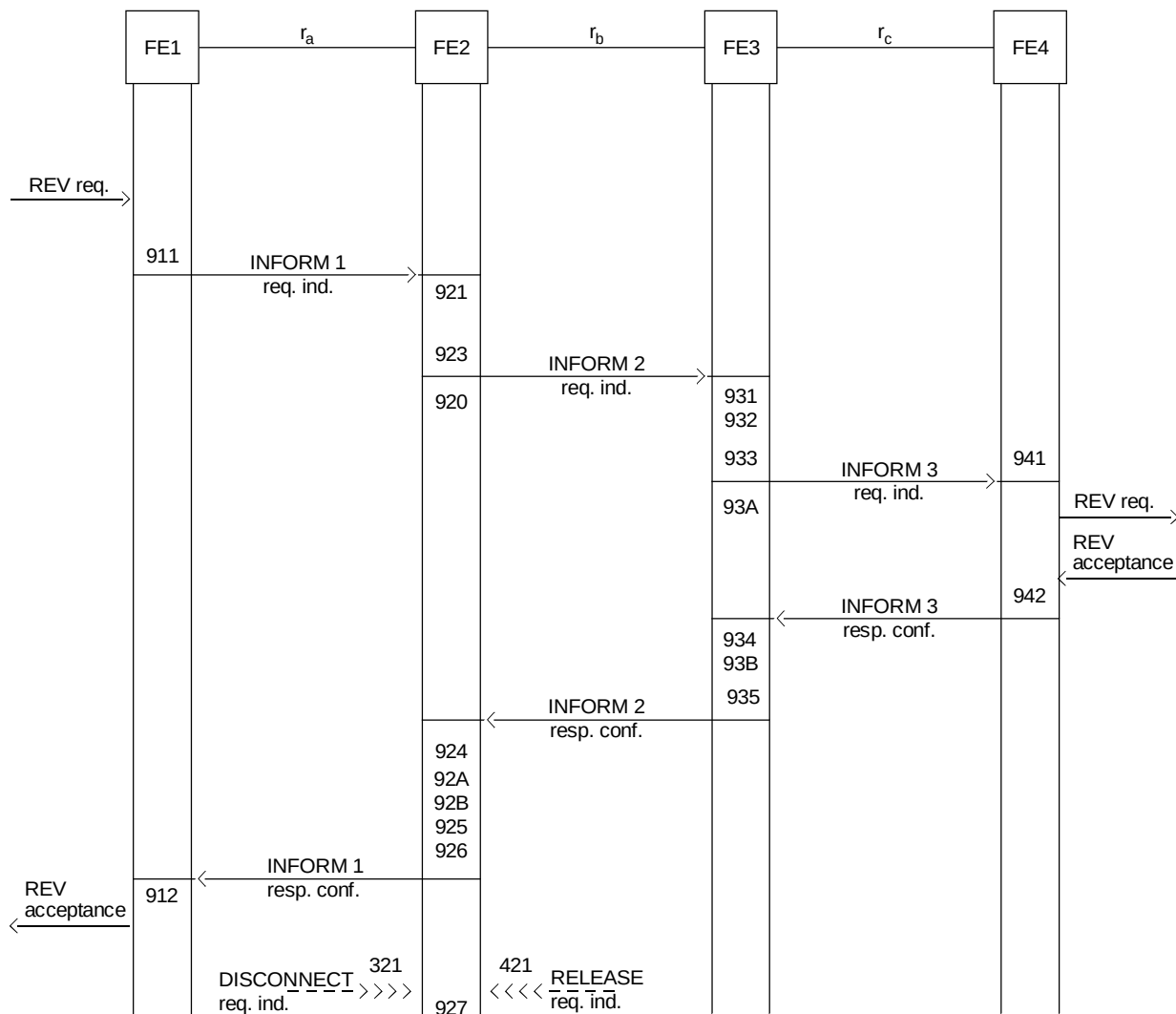


T1143950-92/d06

b) Transfer Mode

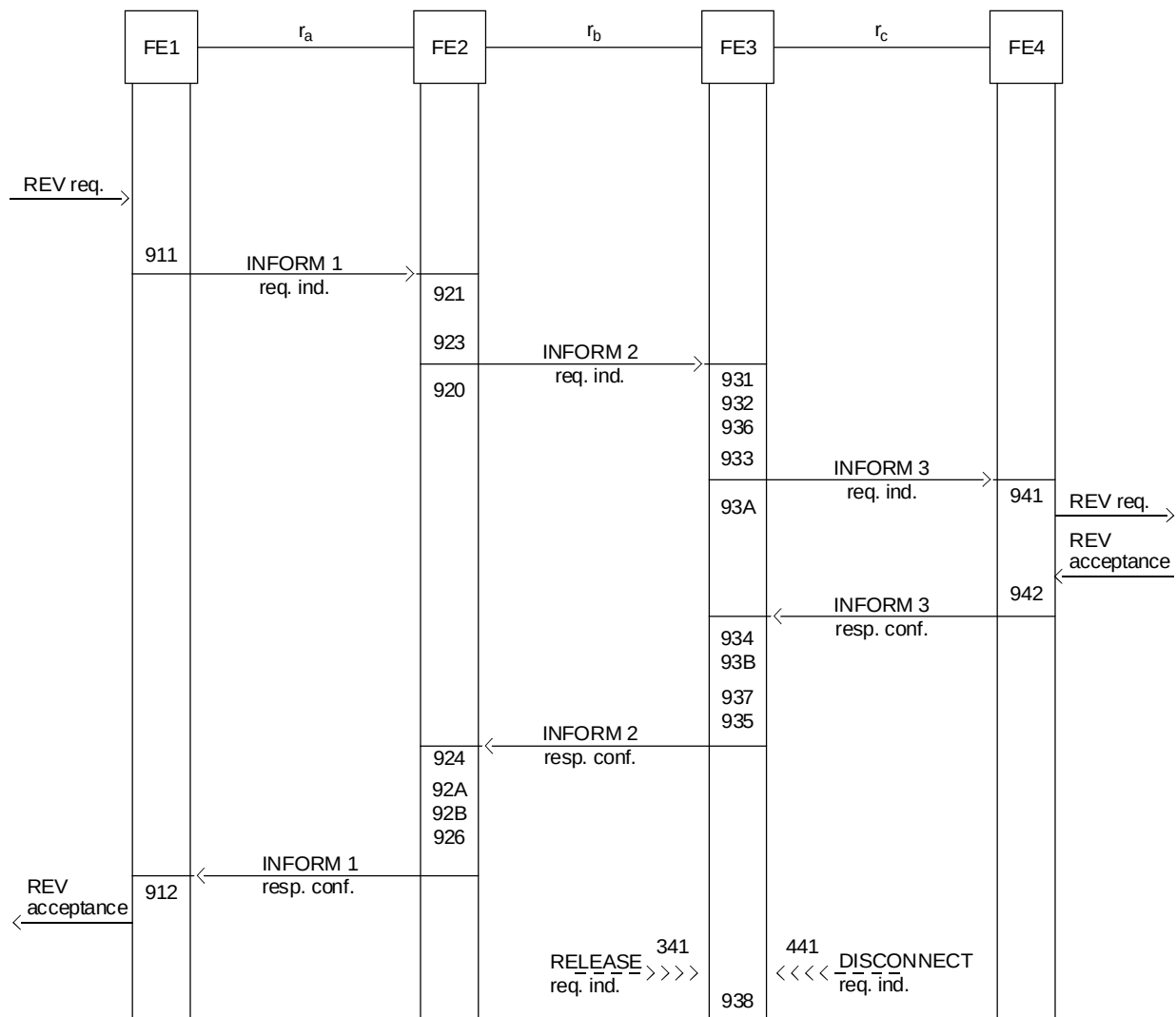
NOTE – These information flows follow the Reverse Charging request information flows which are shown in Figure 3-3 (No Transfer mode) and Figure 3-4 (Transfer mode).

FIGURE 3-6/Q.86
Unsuccessful information flows for Case A (Ignore)



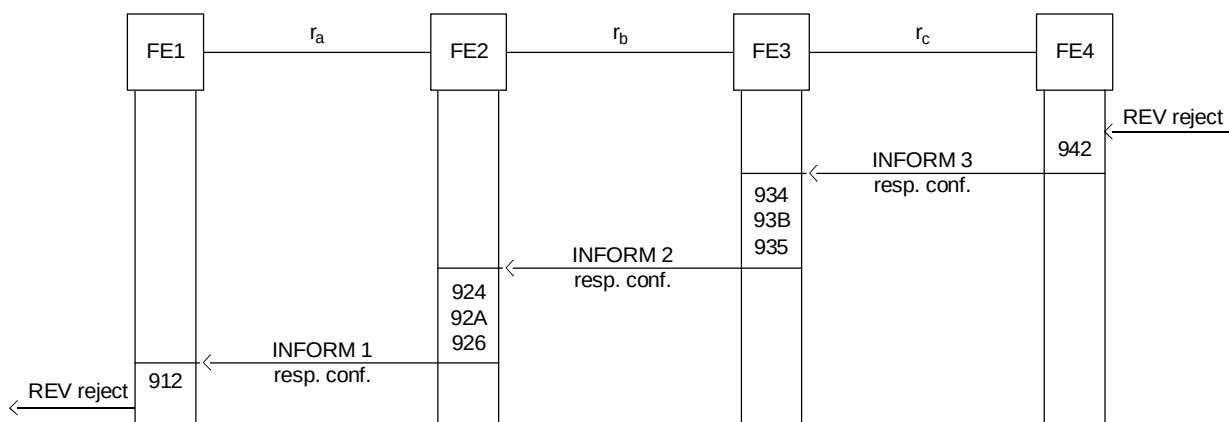
T1143960-92/d07

FIGURE 3-7/Q.86
Successful information flows for Case B during active phase
of a call (No Transfer mode)

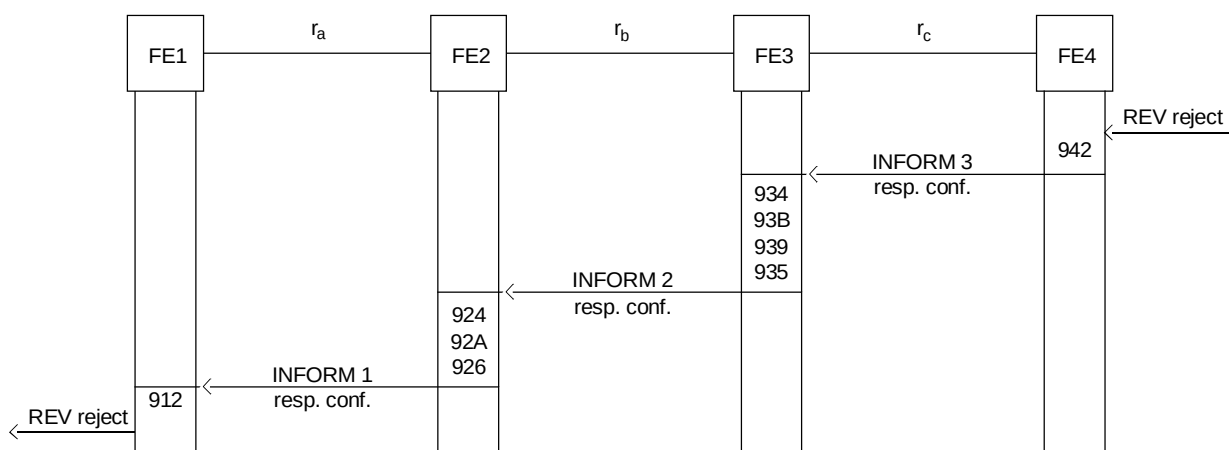


T1143970-92/d08

FIGURE 3-8/Q.86
Successful information flows for Case B during active phase
of a call (Transfer mode)



a) No Transfer Mode



T1143980-92/d09

b) Transfer Mode

NOTE – These information flows follow the Reverse Charging request information flows which are shown in Figure 3-7 (No Transfer mode) and Figure 3-8 (Transfer mode).

FIGURE 3-9/Q.86
Unsuccessful information flows for Case B during
active phase of a call (Reject)