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Q.764

Amendment 3
(04/2004)

SERIES Q: SWITCHING AND SIGNALLING

Specifications of Signalling System No. 7 – ISDN user part

Signalling System No. 7 – ISDN user part signalling
procedures

Amendment 3

ITU-T Recommendation Q.764 (1999) – Amendment 3

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ITU-T Recommendation Q.764

Signalling System No. 7 – ISDN user part signalling procedures

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Summary

This Amendment 3 to the ISUP Specification Q.764 (12/1999) contains three modifications:

- 1) Fallback procedures;
modification of clause 2.5.2.2.2.
- 2) Procedures to support the calling party's category for calls from mobile terminals;
new procedures in a new clause 2.26.
- 3) Signalling procedures for automatic re-routing (crankback);
new procedures in a new clause 2.27.

NOTE – Previous amendments to ITU-T Rec. Q.764 (12/1999) still apply and need to be taken into account when applying this amendment.

Source

Amendment 3 to ITU-T Recommendation Q.764 (1999) was approved on 13 April 2004 by ITU-T Study Group 11 (2001-2004) under the ITU-T Recommendation A.8 procedure.

FOREWORD

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Signalling System No. 7 – ISDN user part signalling procedures

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1) Clause 2.5.2.2.2 Succeeding network does not have the capability of performing fallback

Modify the first paragraph as follows:

The intermediate exchange will include a transmission medium used parameter (which has been set according to the fallback connection type indicated in the transmission medium requirement prime parameter) in the address complete message ~~or call progress message~~ indicating that fallback has occurred for this call.

2) New clause 2.26 Calling party's category for calls from mobile terminals

2.26.1 General

For the purpose of this clause, the initiating exchange is the exchange which initiates the procedure, and the terminating exchange is the exchange which terminates the procedure.

The use of these specific calling party's category parameter values between network operators is based on bilateral agreements.

2.26.2 Actions at the initiating exchange

Once the initiating exchange has determined, either by indication from mobile network or by other means (e.g., number range), that the call is from a mobile terminal located in the home PLMN, then the calling party's category parameter is set to "mobile terminal located in the home PLMN".

If, for this call, the initiating exchange has determined that the call is from a mobile terminal located in a visited PLMN, then the calling party's category parameter is set to "mobile terminal located in a visited PLMN".

If there is no indication that the mobile initiated call has roamed or not, then the default setting of the calling party's category parameter for this procedure will be "mobile terminal located in the home PLMN".

2.26.3 Actions at the terminating exchange

The terminating exchange shall pass this information to the management system.

2.26.4 Actions at other exchanges

All other exchanges shall pass on these values of the calling party's category parameter.

3) New clause 2.27 Signalling procedures for automatic re-routing (crankback)

2.27.1 Introduction

The automatic re-routing (crankback) signalling procedure allows the call set-up to return to a preceding exchange so that the call can be automatically re-routed from there. Crankback is an optional signalling procedure that allows for sophisticated support of the automatic re-routing (ARR) capability (refer to ITU-T Rec. E.170). This procedure is an additional procedure to the unsuccessful call set-up procedures described in 2.2. An exchange invokes the automatic re-routing

signalling procedure when a call cannot be routed further from that exchange. There are three possible cases:

- 1) The process to select an outgoing circuit from the exchange fails.
- 2) A backward REL is received during the outgoing call set-up. The cause value received is either specific for the route chosen (e.g., bearer capability not implemented) or is temporary in nature (e.g., congestion).
- 3) The call cannot be established to the user at the destination local exchange.

The number of attempts to re-route a call is limited. This limit is a network specific value, not exceeding 63.

It needs to be emphasized that the automatic re-routing signalling procedure can only be effective when introduced on a network-wide basis.

2.27.2 Actions at an intermediate exchange

2.27.2.1 Sending a REL with the possible invocation of automatic re-routing

Automatic re-routing may or may not be invoked when the call cannot be routed further from an intermediate exchange as described in the cases 1 and 2 in 2.27.1. Invocation of automatic re-routing involves the setting or updating of the re-routing counter which keeps track of the number of re-routing attempts. A reason for not invoking automatic re-routing is when the counter has reached its upper limit.

Four cases can be distinguished in an intermediate exchange:

- a) Automatic re-routing is invoked and the automatic re-routing parameter has not been received in the IAM for the incoming call.
In this case, the intermediate exchange sends a REL towards the preceding exchange including the automatic re-routing parameter with the re-routing counter set to "*one*" and the re-routing inhibit indicator set to "*no indication*".
- b) Automatic re-routing is invoked and the automatic re-routing parameter has been received in the IAM for the incoming call.
In this case, the intermediate exchange sends a REL towards the preceding exchange including the automatic re-routing parameter with the re-routing counter incremented by one, and the re-routing inhibit indicator set to "*no indication*".
- c) Automatic re-routing is not invoked and the automatic re-routing parameter has or has not been received in the IAM for the incoming call.
In this case, the intermediate exchange sends a REL towards the preceding exchange including the automatic re-routing parameter with the re-routing inhibit indicator set to "*do not crankback*". The re-routing counter is not incremented if it was received in the incoming IAM.
- d) If the intermediate exchange does not support the automatic re-routing signalling procedure, no automatic re-routing parameter is sent in the REL message and thus a regular backward release, according to 2.2.2 or 2.2.3, takes place.

As a network option, the reason for invoking or not invoking automatic re-routing can be indicated in the automatic re-routing parameter. This information could be helpful for operations and maintenance purposes. For example, it could be important to know whether an invocation (and, in particular, a re-routing inhibit) is based on:

- a cause code as received in a REL received during outgoing call set-up;

- trunk group data (which could, for instance, indicate that re-routing is useless since no other trunk group in the network exists to the final destination of the call);
- routing data (which could, for instance, indicate that re-routing is useless since no other route exists to the final destination of the call).

2.27.2.2 Receiving a REL with the automatic re-routing parameter

An intermediate exchange can take four possible actions when it receives a REL from the succeeding exchange with the automatic re-routing parameter:

- a) It attempts to re-route the call to an alternative route if:
 - automatic re-routing has been invoked (re-routing counter greater or equal to one and re-routing inhibit indicator coded as "no indication");
 - autonomous logic in the exchange indicates that re-routing should be applied in this exchange.

If an alternate route is available and the maximum number of re-routing attempts has not been exceeded, the exchange includes the automatic re-routing parameter into the IAM to indicate how many automatic re-routing (crankback) attempts have already occurred. If no alternative route is available, or the re-routing counter exceeds the maximum number of re-routing attempts allowed by the network, the received REL shall be passed towards the preceding exchange with the inclusion of the automatic re-routing parameter as received.

NOTE 1 – The maximum number of re-routing attempts is network specific.

- b) It does not attempt re-routing but passes the received REL towards the preceding exchange with the inclusion of the automatic re-routing parameter as received if the re-routing inhibit indicator is coded as "*do not crankback*".

NOTE 2 – The re-routing inhibit indicator is the means by which a succeeding exchange can explicitly prevent a preceding exchange from performing automatic re-routing.

- c) It does not attempt re-routing but passes the received REL towards the preceding exchange with the inclusion of the automatic re-routing parameter as received if the re-routing inhibit indicator is coded as "*no indication*", and autonomous logic in the exchange indicates that no re-routing should be applied in this exchange. If the intermediate exchange wants to inhibit re-routing, it includes the re-routing inhibit indicator set to "*do not crankback*" in the automatic re-routing parameter.
- d) It handles the automatic re-routing parameter as an unrecognized parameter according to 2.9.5.3.2 if the exchange does not support the automatic re-routing signalling procedure and, as a result, does not recognize the parameter. This may render the automatic re-routing mechanism ineffective.

2.27.2.3 Receiving an IAM with the automatic re-routing parameter

The intermediate exchange may receive the automatic re-routing parameter in an IAM. This parameter is passed on if the call is routed to the succeeding exchange. If the call cannot be routed to the succeeding exchange, clause 2.27.2.1 applies.

Procedures for unrecognized parameters apply if the intermediate exchange does not support the automatic re-routing signalling procedure and, as a result, does not recognize the parameter; see 2.9.5.3.2. This may render the automatic re-routing mechanism ineffective.

2.27.3 Actions at a gateway exchange

The actions as described in 2.27.2 apply. However, passing of the automatic re-routing parameter in the IAM and REL messages between networks depends on bilateral agreement (e.g., exchanging automatic re-routing information may not be deemed desirable when crossing a network boundary).

2.27.4 Actions at the originating exchange

The originating exchange performs the same actions as described in 2.27.2.2 with the exception that the call is released according to the normal release procedures if it is not re-routed.

2.27.5 Actions at the destination exchange

When a destination local exchange cannot establish a call towards a user (case 3 in 2.27.1) and the incoming call is to be released:

- the same actions as described in 2.27.2.1 apply if it is known that the user is connected to at least one other exchange over a physically separate link;
- the destination local exchange shall not invoke the automatic re-routing signalling procedure if it is known that the user is not connected to any other exchange over a physically separate link or if there is no sufficient knowledge about an alternate link to the user; the automatic re-routing parameter with the re-routing inhibit indicator coded as "*do not crankback*" shall be included in the REL.

No automatic re-routing parameter is sent in the REL message and thus a regular backward release according to 2.2.1 takes place if the destination local exchange does not support the automatic re-routing signalling procedure.

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- Series C General telecommunication statistics
- Series D General tariff principles
- Series E Overall network operation, telephone service, service operation and human factors
- Series F Non-telephone telecommunication services
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