INTERNATIONAL TELECOMMUNICATION UNION

ITU-T

TELECOMMUNICATION
STANDARDIZATION SECTOR
OF ITU

Q.769.1

(12/99)

SERIES Q: SWITCHING AND SIGNALLING

Specifications of Signalling System No. 7 – ISDN user part

Signalling system No. 7 – ISDN user part enhancements for the support of number portability

ITU-T Recommendation Q.769.1

(Previously CCITT Recommendation)

ITU-T Q-SERIES RECOMMENDATIONS

SWITCHING AND SIGNALLING

SIGNALLING IN THE INTERNATIONAL MANUAL SERVICE	Q.1–Q.3
INTERNATIONAL AUTOMATIC AND SEMI-AUTOMATIC WORKING	Q.4–Q.59
FUNCTIONS AND INFORMATION FLOWS FOR SERVICES IN THE ISDN	Q.60–Q.99
CLAUSES APPLICABLE TO ITU-T STANDARD SYSTEMS	Q.100–Q.119
SPECIFICATIONS OF SIGNALLING SYSTEMS No. 4 AND No. 5	Q.120–Q.249
SPECIFICATIONS OF SIGNALLING SYSTEM No. 6	Q.250–Q.309
SPECIFICATIONS OF SIGNALLING SYSTEM R1	Q.310–Q.399
SPECIFICATIONS OF SIGNALLING SYSTEM R2	Q.400–Q.499
DIGITAL EXCHANGES	Q.500–Q.599
INTERWORKING OF SIGNALLING SYSTEMS	Q.600–Q.699
SPECIFICATIONS OF SIGNALLING SYSTEM No. 7	Q.700–Q.849
General	Q.700
Message transfer part (MTP)	Q.701–Q.709
Signalling connection control part (SCCP)	Q.711–Q.719
Telephone user part (TUP)	Q.720–Q.729
ISDN supplementary services	Q.730–Q.739
Data user part	Q.740–Q.749
Signalling System No. 7 management	Q.750–Q.759
ISDN user part	**Q.760–Q.769**
Transaction capabilities application part	Q.770–Q.779
Test specification	Q.780–Q.799
Q3 interface	Q.800–Q.849
DIGITAL SUBSCRIBER SIGNALLING SYSTEM No. 1	Q.850–Q.999
PUBLIC LAND MOBILE NETWORK	Q.1000–Q.1099
INTERWORKING WITH SATELLITE MOBILE SYSTEMS	Q.1100–Q.1199
INTELLIGENT NETWORK	Q.1200–Q.1699
SIGNALLING REQUIREMENTS AND PROTOCOLS FOR IMT-2000	Q.1700–Q.1799
BROADBAND ISDN	Q.2000–Q.2999

For further details, please refer to ITU-T List of Recommendations.

ITU-T RECOMMENDATION Q.769.1

SIGNALLING SYSTEM No. 7 – ISDN USER PART ENHANCEMENTS FOR THE SUPPORT OF NUMBER PORTABILITY

Summary

This Recommendation specifies the relevant ISDN user part enhancements for the support of number portability in a national environment.

Source

ITU-T Recommendation Q.769.1 was prepared by ITU-T Study Group 11 (1997-2000) and was approved under the WTSC Resolution No. 1 procedure on 3 December 1999.

FOREWORD

ITU (International Telecommunication Union) is the United Nations Specialized Agency in the field of telecommunications. The ITU Telecommunication Standardization Sector (ITU-T) is a permanent organ of the ITU. 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, establishes the topics for study by the ITU-T Study Groups which, in their turn, produce Recommendations on these topics.

The approval of Recommendations by the Members of the ITU-T is covered by the procedure laid down in WTSC Resolution No. 1.

In some areas of information technology which fall within ITU-T's purview, the necessary standards are prepared on a collaborative basis with ISO and IEC.

NOTE

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

INTELLECTUAL PROPERTY RIGHTS

The ITU draws attention to the possibility that the practice or implementation of this Recommendation may involve the use of a claimed Intellectual Property Right. The ITU takes no position concerning the evidence, validity or applicability of claimed Intellectual Property Rights, whether asserted by ITU members or others outside of the Recommendation development process.

As of the date of approval of this Recommendation, the ITU had not received notice of intellectual property, protected by patents, which may be required to implement this Recommendation. However, implementors are cautioned that this may not represent the latest information and are therefore strongly urged to consult the TSB patent database.

CONTENTS

		Page
1	Scope	1
2	References	2
3	Definitions	2
4	Abbreviations	3
5	Conventions	3
6	Call control and signalling procedures	3
6.1	Separate Directory Number Addressing method	4
6.1.1	Handling of network routing number and directory number	4
6.1.2	Handling of an incomplete directory number	4
6.2	Other addressing methods	4
6.3	Actions required in the originating network	4
6.3.1	Onward Routing	4
6.3.2	All Call Query	5
6.4	Actions required in the donor network	5
6.4.1	Onward Routing	5
6.4.2	All Call Query	5
6.5	Actions required in a transit network	5
6.5.1	Onward Routing	5
6.5.2	All Call Query	5
6.6	Actions required in the recipient network	5
Annex A – Procedures for the Concatenated Addressing method		6
A.1	General	6
A.2	Exceptions to clause 6 of this Recommendation	6
Annex B – Procedures for the Separate Network Routing Number Addressing method		7
B.1	General	7
B.2	Exceptions to clause 6 of this Recommendation	7
Annex C – Procedures to support Query on Release		8
C.1	General	8
C.2	Procedures for QoR with the forward and the backward indications	8
C.2.1	Normal procedures	8
C.2.2	Exceptional procedures	9

Page

C.3 Procedures for QoR with the backward indication only 10
C.3.1 Normal procedures 10
C.3.2 Exceptional procedures 11

Annex D – Procedures to support Dropback 11
D.1 General 11
D.2 Actions required in the networks involved in the first leg 11
D.2.1 Actions required in the originating network 11
D.2.2 Actions required in the transit network 11
D.2.3 Actions required in the donor network 11
D.3 Actions required in the networks involved in the second leg 12
D.3.1 Actions required in the transit network 12
D.3.2 Actions required in the rerouting network 12
D.4 Actions required in the networks involved in the third leg 12
D.4.1 Actions required in a transit network 12
D.4.2 Actions required in the recipient network 12

Annex E – Procedures for forward transfer of number portability status information 13
E.1 General 13
E.2 Normal procedures 13
E.2.1 Actions required at an initiating exchange 13
E.3 Exceptional procedures 13

Recommendation Q.769.1

SIGNALLING SYSTEM No. 7 – ISDN USER PART ENHANCEMENTS FOR THE SUPPORT OF NUMBER PORTABILITY

(Geneva, 1999)

1 Scope

In a national environment with support of number portability, the existing ISUP procedures as specified in Recommendation Q.764 [1] apply with the modifications as specified in this Recommendation.

NOTE – ISUP formats and codes are described in Recommendation Q.763 [2].

The addressing method for number portability in a network will have an impact on existing functions and services. The impact is network and implementation dependent and outside the scope of this Recommendation.

With the introduction of the procedures for number portability as defined in this Recommendation, backwards compatibility with the ISUP according to Recommendation Q.767 is not possible.

In addition to the main text, the following annexes are part of this Recommendation:

- Annex A describes an alternative addressing method making use of a concatenated addressing format. This addressing method may typically be useful as an intermediate solution in some networks as it may limit the impact on existing functions and services.
- Annex B describes another addressing method making use of the Separate Network Routing Number Addressing method. It may be used within the network of a service provider. This addressing method may typically be useful in some networks as it may limit the impact on existing network functions and service handling.
- Annex C describes the additional network capabilities for Query on Release that may be used within the network of a service provider. These additional capabilities may typically be useful in some networks for network efficiency reasons.
- Annex D describes the additional network capabilities for Dropback that may be used within the network of a service provider. These capabilities make use of the procedures for Pivot Routing or Redirection as specified in Recommendation Q.730 [3]. These additional capabilities may typically be useful in some networks for network efficiency reasons.
- Annex E describes the procedures for forward transfer of number portability status information that may be used within the network of a service provider. This service logic may be used in some networks in order to minimize the number of number portability data base queries and reduce the risk of looping due to number portability data base mismatches.

The use of these annexes is up to network operator decisions, bilateral agreement, regulatory demands and/or implementation reasons. These considerations and possible pre-conditions are outside the scope of this Recommendation.

Number portability introduces new requirements to retain full service transparency of ISDN supplementary services like Completion of Calls to Busy Subscriber (CCBS), which use non-circuit related signalling. The identified relay functions to meet these requirements are elaborated in Recommendation Q.730 [3], subclause "Relay methods for non-circuit related signalling".

2 References

The following ITU-T Recommendations and other references contain provisions which, through reference in this text, constitute provisions of this Recommendation. At the time of publication, the editions indicated were valid. All Recommendations and other references are subject to revision; all users of this Recommendation are therefore encouraged to investigate the possibility of applying the most recent edition of the Recommendations and other references listed below. A list of the currently valid ITU-T Recommendations is regularly published.

[1] ITU-T Recommendation Q.764 (1999), *Signalling System No. 7 – ISDN User Part signalling procedures*.

[2] ITU-T Recommendation Q.763 (1999), *Signalling System No. 7 – ISDN User Part formats and codes*.

[3] ITU-T Recommendation Q.730 (1999), *ISDN User Part supplementary services*.

3 Definitions

This Recommendation defines the following terms:

3.1 Directory number: A number in the national numbering scheme that is allocated to a customer for a telephony service. Allocation of the directory number is made directly by the numbering plan authority to the customer, or indirectly when blocks of numbers are managed by service providers.

3.2 Donor exchange: The initial exchange where a number was located before ever being ported.

3.3 Donor network: The initial network where a number was located before ever being ported.

3.4 Initiating exchange: An exchange that requires and obtains the routing information for number portability.

3.5 Initiating network: A network that requires and obtains the routing information for number portability.

3.6 Network routing number: A number that is derived and used by the network to route the call towards a ported number.

3.7 Originating exchange: The exchange serving a calling end user. For most incoming international calls, the originating exchange is effectively the international gateway. For carrier selection, the first exchange of the selected carrier effectively becomes the entry to the originating network for routing purposes.

3.8 Originating network: The network serving a calling end user. For most incoming international calls, the originating network is effectively the network containing the international gateway. For carrier selection, the first exchange of the selected carrier effectively becomes the entry to the originating network for routing purposes.

3.9 Recipient exchange: The exchange where a number is located after being ported.

3.10 Recipient network: The network where a number is located after being ported.

3.11 Transit exchange: An exchange between two exchanges, e.g. between the initiating exchange and the recipient exchange.

3.12 Transit network: A network between two networks, e.g. between the initiating network and the recipient network.

3.13 Rerouting: Pivot routing or redirection as specified in [3].

4 Abbreviations

This Recommendation uses the following abbreviations:

ACM Address Complete message

ANM Answer message

CON Connect message

CPG Call Progress message

DN Directory number

IAM Initial Address message

ISUP ISDN User Part

NoA Nature of Address indicator

NRN Network routing number

QoR Query on Release

SAM Subsequent Address message

SDM Subsequent Directory Number message

5 Conventions

1) The name of each element of the following classes of terms is capitalized:

   - indicators;
   - parameters;
   - messages;
   - methods/functions.

   Examples: Called Party Number parameter, Initial Address message, All Call Query, Query on Release, Separate Directory Number Addressing method, Separate Network Routing Number Addressing method.

2) The definition of a parameter value is written in *italics* and is put between quotation marks.

   Example: NoA value 0000011 – "*national (significant) number*".

6 Call control and signalling procedures

This clause describes the call control and signalling procedures for the methods All Call Query and Onward Routing (see [4] and [5], Bibliography).

In a number portability environment, the directory number (DN) is not sufficient to route the call. There is a need to derive a network routing number (NRN) (see [4] and [5], Bibliography). Once the NRN has been determined, the routing in the network will be based on this NRN. As the NRN is always a complete address, sending of additional digits in overlap operation applies only to the directory number (DN) information. The DN is transferred along with the call to identify the called ported subscriber. The following subclauses describe the handling of the NRN and DN.

6.1 Separate Directory Number Addressing method

6.1.1 Handling of network routing number and directory number

The network routing number and the directory number are transferred in the Initial Address message (IAM) as follows.

The network routing number (NRN) is transferred in the Called Party Number parameter and the directory number (DN) is transferred in the Called Directory Number parameter.

The Called Party Number parameter is coded with NoA value 0000110 – "*network routing number in national (significant) number format*", and the Called Directory Number parameter is coded with NoA value 0000011 – "*national (significant) number*".

NOTE – For specific applications, the NoA values 0000011 – "*national (significant) number*" and 0000111 – "*network routing number in network specific number format*" may alternatively be chosen by certain operators for the coding of the Called Party Number parameter, possibly with additional information to maintain the number portability routing efficiency.

6.1.2 Handling of an incomplete directory number

If the complete directory number is not available, the following procedures are required:

a) *Actions at the initiating exchange*

Called directory number digits received after the Initial Address message (IAM) has been sent shall be sent in Subsequent Directory Number message(s) (SDM) instead of Subsequent Address message(s) (SAM).

b) *Actions at the intermediate exchange*

An intermediate exchange shall transit the SDM message and shall preserve the received additional digits related to the directory number information as part of the stored IAM information. SDMs received during the circuit selection process may be included in the IAM.

NOTE – The storage of additional digits is required to avoid loss of digits in case an automatic repeat attempt is required, see 2.8.1/Q.764 [1].

c) *Actions at the recipient exchange*

The exchange that is addressed by the NRN, i.e. the node that completes the call with the directory number, shall accept additional digits received in a SDM as part of the directory number.

6.2 Other addressing methods

Instead of the addressing method according to 6.1, network operators may alternatively decide to apply the Concatenated Addressing method (see Annex A) or the Separate Network Routing Number Addressing method (see Annex B).

NOTE – Existing ISUP procedures may be applied on the interconnection interface between networks. In this case, the DN is contained in the Called Party Number parameter with NoA value 0000011 – "*national (significant) number*", although in that case no additional routing information is transferred.

6.3 Actions required in the originating network

6.3.1 Onward Routing

The originating network will apply the procedures as defined in Recommendation Q.764 [1].

6.3.2 All Call Query

When the initiating exchange is located in the originating network, it has to determine whether the DN is ported or not.

If the DN is not ported, the existing ISUP procedures apply without modification.

If the DN is ported, the initiating exchange shall derive the network routing number and shall route the call towards the recipient network. The transfer of the NRN and DN shall be made according to 6.1.

6.4 Actions required in the donor network

6.4.1 Onward Routing

Since the donor network acts as the initiating network in this case, it shall determine whether the DN is ported or not.

If the DN is not ported, the existing ISUP procedures apply without modification.

If the DN is ported, the initiating exchange shall derive the network routing number and shall route the call towards the recipient network. The transfer of the NRN and DN shall be made according to 6.1.

6.4.2 All Call Query

When the initiating exchange is located in the donor network, the same procedures apply as specified in 6.3.2.

6.5 Actions required in a transit network

6.5.1 Onward Routing

With the Onward Routing method, there is no impact on a transit network between the originating and the donor networks.

For a transit network between the donor network and the recipient network, the NRN and the DN are handled according to 6.1.

6.5.2 All Call Query

When the initiating exchange is located in a transit network, the same procedures apply as specified in 6.3.2.

For a transit network between the initiating network and the recipient network, the NRN and the DN are handled according to 6.1.

6.6 Actions required in the recipient network

This subclause applies independently of the method used for number portability, e.g. Onward Routing or All Call Query.

The recipient network handles the received NRN and DN according to 6.1.

Depending on the agreement, the recipient network may find and use its own NRN, or use the NRN received. The NRN is used to reach the recipient exchange of the called ported subscriber. The recipient exchange uses the DN to identify the called ported subscriber and completes the call.

ANNEX A

Procedures for the Concatenated Addressing method

A.1 General

This annex describes the procedures for the Concatenated Addressing method. It specifies the exceptions to clause 6 which are needed for the support of the Concatenated Addressing method.

A.2 Exceptions to clause 6 of this Recommendation

To clause 6 Call control and signalling procedures:

No exception.

To 6.1.1 Handling of network routing number and directory number:

The text is replaced by the following:

The network routing number and directory number are transferred in the Initial Address message as follows.

The DN is contained in the Called Party Number parameter and is prefixed by some digits used as a NRN. Two alternatives for the coding of the NoA parameter field are possible:

NoA value 0000011 – "*national (significant) number*";

NoA value 0001000 – "*network routing number concatenated with called directory number*".

To 6.1.2 Handling of an incomplete directory number:

Not applicable. Overlap procedures as described in 2.1.2/Q.764 [1] apply.

To 6.2 Other addressing methods:

In this case, the Concatenated Addressing method is applied.

To 6.3 Actions required in the originating network:

To 6.3.1 Onward Routing:

No exception.

To 6.3.2 All Call Query:

No exception.

To 6.4 Actions required in the donor network:

To 6.4.1 Onward Routing:

No exception.

To 6.4.2 All Call Query:

No exception.

To 6.5 Actions required in a transit network:

To 6.5.1 Onward Routing:

No exception.

To 6.5.2 All Call Query:

No exception.

To 6.6 Actions required in the recipient network:

No exception.

ANNEX B

Procedures for the Separate Network Routing Number Addressing method

B.1 General

This annex describes the procedures for the Separate Network Routing Number Addressing method. It specifies the exceptions to clause 6 which are needed for the support of the Separate Network Routing Number Addressing method.

B.2 Exceptions to clause 6 of this Recommendation

To clause 6 Call control and signalling procedures:

No exception.

To 6.1.1 Handling of network routing number and directory number:

The text is replaced by the following:

The network routing number and directory number are transferred in the Initial Address message as follows.

The NRN is transferred in the Network Routing Number parameter. The DN is transferred in the Called Party Number parameter with NoA value 0000011 – "*national (significant) number*".

To 6.1.2 Handling of an incomplete directory number:

Not applicable, the text is replaced by the following:

Overlap procedures as described in 2.1.2/Q.764 [1] apply with the following exception.

The routing is performed based on the contents of the Network Routing Number parameter. The digits in the SAMs are not relevant for routing the call, but relate only to the DN. The SAMs have to be processed accordingly.

To 6.2 Other addressing methods:

In this case, the Separate Network Routing Number Addressing method is applied.

To 6.3 Actions required in the originating network:

To 6.3.1 Onward Routing:

No exception.

To 6.3.2 All Call Query:

No exception.

To 6.4 Actions required in the donor network:

To 6.4.1 Onward Routing:

No exception.

To 6.4.2 All Call Query:

No exception.

To 6.5 Actions required in a transit network:

To 6.5.1 Onward Routing:

No exception.

To 6.5.2 All Call Query:

No exception.

To 6.6 Actions required in the recipient network:

No exception.

ANNEX C

Procedures to support Query on Release

C.1 General

This annex describes the procedures for the support of Query on Release.

NOTE – Since this number portability method may result in an increased number of Release messages from specific destinations (and in particular Release messages before answer), measures may be necessary to avoid possible blocking of circuits and possible faulty generation of alarms as a result of the deployed network management functionality.

C.2 Procedures for QoR with the forward and the backward indications

This procedure requires the use of optional forward information. The procedure provides a general mechanism that can be used by an exchange that decides that the call should be released because the called number is ported out. If the QoR Capability parameter is present in the IAM, such an exchange can invoke the QoR mechanism to request a preceding exchange, involved in the call, to route that call to the recipient network. If none of the preceding nodes support QoR (i.e. the QoR Capability parameter is not received), then this exchange shall forward the call on to the new called number (e.g. using Onward Routing as a fallback method).

General interactions with supplementary services are for further study.

C.2.1 Normal procedures

C.2.1.1 Originating exchange

An originating exchange that wishes to offer to perform the QoR function shall store the sent IAM information (and the SAM information, if any) and shall send the QoR Capability parameter in the IAM with a parameter compatibility information. The IAM information (and the SAM information, if any) must be retained until:

- the ACM message with a Called Party's Status indicator (Backward Call Indicators parameter) set to "*subscriber free*"; or
- the CPG message with a Called Party's Status indicator (Backward Call Indicators parameter) set to "*subscriber free*"; or
- the CPG message with a Event indicator (Event Information parameter) set to "*alerting*"; or
- the CON message; or
- the ANM message,

is received.

C.2.1.2 Intermediate exchange

The intermediate exchange with QoR capability (capable to perform the query) shall store the received IAM (and the SAM information, if any) and shall pass unchanged the QoR Capability parameter along with parameter compatibility information to the subsequent exchange.

An intermediate exchange may also be the first exchange to indicate that QoR is possible, in which case it performs the actions described for the originating exchange in C.2.1.1.

The IAM information (and the SAM information, if any) must be retained until:

- the ACM message with a Called Party's Status indicator (Backward Call Indicators parameter) set to "*subscriber free*"; or
- the CPG message with a Called Party's Status indicator (Backward Call Indicators parameter) set to "*subscriber free*"; or
- the CPG message with a Event indicator (Event Information parameter) set to "*alerting*"; or
- the CON message; or
- the ANM message,

is received.

The intermediate exchange with no QoR capability (it is not capable to perform the query but it may know about the QoR Capability parameter) shall pass the QoR Capability parameter unchanged along with parameter compatibility information to the subsequent exchange either because it has the knowledge of the QoR Capability parameter or through the normal compatibility procedures.

C.2.1.3 Gateway exchange

A gateway exchange shall discard the QoR Capability parameter either because it has the knowledge of this parameter or through the normal compatibility procedures.

C.2.1.4 Donor exchange

An exchange which determines that a called number is ported out and which wishes to invoke the QoR procedure shall check the presence of the QoR Capability parameter to determine whether QoR is possible for the current call. If QoR is possible, it shall release the call, using the cause value #14 (QoR: ported number).

C.2.1.5 Exchange receiving a Release message with the QoR cause value

The actions at an exchange having the QoR capability and receiving a Release message with the cause value #14 (QoR: ported number) will depend on whether the IAM received from the prior exchange, if any, had included a QoR Capability parameter and on the service logic at that exchange as follows:

1) If a prior exchange had the QoR capability and the service logic determines that a prior exchange should perform the query, then the Release message is passed back unchanged.

2) If
   - the service logic determines that this exchange should perform the query; or
   - there is no exchange with the QoR capability; or
   - there is no prior exchange,

   then the exchange (having the QoR capability) should perform the query to the database and progress the call.

C.2.2 Exceptional procedures

If a Release message with the cause value #14 (QoR: ported number) is received in the originating exchange and that exchange had not sent the QoR Capability parameter in the IAM, the call shall be released with cause value #31 (normal, unspecified).

C.3 Procedures for QoR with the backward indication only

These procedures apply within networks where at least one exchange always exists with QoR capability. They provide a general mechanism that can be used by an exchange that decides that the call should be released because the called number is ported out. Such an exchange can invoke the QoR mechanism to request a preceding exchange involved in the call to route that call to the recipient network.

General interactions with supplementary services are for further study.

C.3.1 Normal procedures

C.3.1.1 Originating exchange

An originating exchange that wishes to offer to perform the QoR function shall store the sent IAM information (and the SAM information, if any).

The IAM information (and the SAM information, if any) must be retained until:

- the ACM message with a Called Party's Status indicator (Backward Call Indicators parameter) set to "*subscriber free*"; or
- the CPG message with a Called Party's Status indicator (Backward Call Indicators parameter) set to "*subscriber free*"; or
- the CPG message with a Event indicator (Event Information parameter) set to "*alerting*"; or
- the CON message; or
- the ANM message,

is received.

C.3.1.2 Intermediate exchange

The intermediate exchange that wishes to offer to perform the QoR function shall store the received IAM (and the SAM information, if any).

The IAM information (and the SAM information, if any) must be retained until:

- the ACM message with a Called Party's Status indicator (Backward Call Indicators parameter) set to "*subscriber free*"; or
- the CPG message with a Called Party's Status indicator (Backward Call Indicators parameter) set to "*subscriber free*"; or
- the CPG message with a Event indicator (Event Information parameter) set to "*alerting*"; or
- the CON message; or
- the ANM message,

is received.

C.3.1.3 Donor exchange

An exchange which determines that a called number is ported out and wishes to invoke the QoR procedure shall release the call, using the cause value #14 (QoR: ported number).

C.3.1.4 Exchange receiving a Release message with the QoR cause value

The actions at an exchange receiving a Release message with the cause value #14 (QoR: ported number) will depend on the service logic at that exchange as follows:

1) If the service logic determines that a prior exchange should perform the query, then the Release message is passed back unchanged.

2) If:

- the service logic determines that this exchange should perform the query; or
- there is no prior exchange,

then the exchange should perform the query to the database and progress the call.

C.3.2 Exceptional procedures

If a Release message with cause value #14 (QoR: ported number) is received in an exchange which is not capable to perform the query, and there is no prior exchange, then the call shall be released with cause value #31 (normal, unspecified).

ANNEX D

Procedures to support Dropback

D.1 General

This annex describes the procedures for the support of the Dropback method.

These procedures make use of the Pivot Routing mechanism or Redirection mechanism as specified in Recommendation Q.730 [3]. Which mechanism is used is left to the network operator.

NOTE – Since this number portability method may result in an increased number of Release messages from specific destinations (and in particular Release messages before answer), measures may be necessary to avoid possible blocking of circuits and possible faulty generation of alarms as a result of the deployed network management functionality.

D.2 Actions required in the networks involved in the first leg

This subclause describes the behaviour of the networks involved in the first leg, i.e. the leg from the originating network to and including the donor network.

D.2.1 Actions required in the originating network

The originating network will apply the procedures as in Recommendation Q.764 [1].

An originating network that offers to perform the rerouting function (i.e. Pivot Routing or Redirection function) shall send the appropriate parameter(s) in the IAM according to Recommendation Q.730 [3]. The originating network shall include in the IAM the Pivot Routing (or Redirect) Forward Information parameter with Performing Pivot (or Redirect) indicator with the appropriate Performing Pivot (or Redirect) Reason value(s) (e.g. "*service provider portability*") and Pivot (or Redirect) Possible indicator value(s).

D.2.2 Actions required in the transit network

The transit network in the first leg will apply the procedures as in Recommendation Q.764 [1].

A transit network may also be the first network to indicate that a rerouting function is possible (or is possible for a particular reason), in which case it performs the actions described for the originating network in D.2.1.

D.2.3 Actions required in the donor network

Since the donor network acts as the initiating network for Dropback, it shall determine whether the directory number (DN) is ported or not.

If the result is that the DN is not ported, the existing ISUP procedures apply without modification.

If the result is that the DN has been ported, the initiating network shall derive the network routing number and invoke the Dropback procedure.

The network routing number (NRN) shall be sent back to the preceding network by using the Facility message (Pivot Routing method) or the Release message (Redirection method). The invoking reason for rerouting information (with value indicating the reason for the Dropback, e.g. "*service provider portability*") shall be returned within the backward message.

The network routing number (NRN) is transferred backward in the Redirection Number parameter.

The Redirection Number parameter is coded with NoA value 0000110 – "*network routing number in national (significant) number format*".

NOTE – For specific applications the NoA values 0000011 – "*national (significant) number*" and 0000111 – "*network routing number in network specific number format*" may be chosen by certain operators for the coding of the Redirection Number parameter, possibly with additional information to maintain the number portability routing efficiency.

If the preceding network(s) have not offered to perform the rerouting function, the action required in the donor network is the same as described in 6.4.1.

D.3 Actions required in the networks involved in the second leg

This subclause describes the behaviour of the networks involved in the second leg, i.e. the leg from the donor network to and including the rerouting network (i.e. the network which performs the Pivot Routing or redirects the call as specified in Recommendation Q.730 [3]).

D.3.1 Actions required in the transit network

If the transit network is not the rerouting network, it will apply the actions as described for intermediate exchanges in Recommendation Q.730 [3].

D.3.2 Actions required in the rerouting network

The rerouting network will apply a rerouting procedure as specified in Recommendation Q.730 [3]. The IAM toward the recipient network will contain the NRN as received from the donor network and the DN as stored in rerouting network.

D.4 Actions required in the networks involved in the third leg

This subclause describes the behaviour of the networks involved in the third leg, i.e. the leg from the rerouting network to and including the recipient network.

D.4.1 Actions required in a transit network

For a transit network between the rerouting network and the recipient network, the NRN and DN are handled according to clause 6.

D.4.2 Actions required in the recipient network

The actions required in the recipient network are specified in 6.6.

ANNEX E

Procedures for forward transfer of number portability status information

E.1 General

This annex describes the procedures for the support of forward transfer of number portability status information in addition to the call control and signalling procedures as defined in clause 6. These procedures provide a mechanism that may be used to signal an indication as to whether the number portability status of the called number has been determined. This indication may be included for both ported and non-ported numbers.

NOTE – Support of all or part of these procedures for the support of forward transfer of number portability status information depends on the service logic of each exchange in the network.

E.2 Normal procedures

E.2.1 Actions required at an initiating exchange

The following procedures support the handling of number portability status information on determination by an initiating exchange as to whether a call is ported or not:

1) If the DN is determined not to be ported, a Number Portability Forward Information parameter shall be sent in the IAM with the Number Portability Status indicator set to "*number portability query done for called number, non-ported called subscriber*".

2) If the DN is determined to be ported, a Number Portability Forward Information parameter shall be sent in the IAM with the Number Portability Status indicator set to "*number portability query done for called number, ported called subscriber*".

The following procedures support the handling of the Number Portability Status indicator on receipt of a Number Portability Forward Information parameter by a subsequent initiating exchange:

1) If the value carried in the Number Portability Status indicator is either "*no indication*" or "*number portability query not done for called number*", then the exchange shall determine whether the DN is ported or not.

2) If the value carried in the Number Portability Status indicator is either "*number portability query done for called number, non-ported called subscriber*" or "*number portability query done for called number, ported called subscriber*", then the exchange may determine again whether the DN is ported or not, depending on the service logic of the exchange.

E.3 Exceptional procedures

If an IAM is received in an initiating exchange with a Number Portability Status indicator with the value "*number portability query done for called number, ported called subscriber*" but without a network routing number, then the exchange shall determine whether the DN is ported or not.

Bibliography

The following documents contain background information.

[4] ITU-T Supplement 4 to the Q-series Recommendations (1998), *Number portability – Call control for capability set 1 service provider portability (All Call Query and Onward Routing)*.

[5] ITU-T Supplement 3 to the Q-series Recommendations (1998), *Number portability – Scope and capability set 1 architecture*.

ITU-T RECOMMENDATIONS SERIES

Series A	Organization of the work of the ITU-T
Series B	Means of expression: definitions, symbols, classification
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
Series G	Transmission systems and media, digital systems and networks
Series H	Audiovisual and multimedia systems
Series I	Integrated services digital network
Series J	Transmission of television, sound programme and other multimedia signals
Series K	Protection against interference
Series L	Construction, installation and protection of cables and other elements of outside plant
Series M	TMN and network maintenance: international transmission systems, telephone circuits, telegraphy, facsimile and leased circuits
Series N	Maintenance: international sound programme and television transmission circuits
Series O	Specifications of measuring equipment
Series P	Telephone transmission quality, telephone installations, local line networks
Series Q	**Switching and signalling**
Series R	Telegraph transmission
Series S	Telegraph services terminal equipment
Series T	Terminals for telematic services
Series U	Telegraph switching
Series V	Data communication over the telephone network
Series X	Data networks and open system communications
Series Y	Global information infrastructure
Series Z	Languages and general software aspects for telecommunication systems

17787

Printed in Switzerland
Geneva, 2000