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Foreword

This Technical Report (TR) was produced by ETSI Technical Committee Network Aspects (NA).

Introduction

Liberalization in providing services on the fixed public telephone networks will be introduced in most European countries in 1998. With full liberalization of voice telephony there is a great need to study the impact on networks, service provision and methods of carrier selection. Openness towards carrier selection is an essential requirement to ensure equal access to all players in a liberalized telecommunication market.

The users will be the ones to benefit most when the opportunity to choose an appropriate carrier and service provider becomes available. There may be different interests between users as the paying party and users being not concerned with cost related aspects such as those in companies with PBX- or corporate networks.

With the EU draft directive on ONP interconnection, the incumbent network operators, who are the predominant access providers, will be faced with demand for equal access after 1998.

1 Scope

The present document focuses on possible scenarios that can be considered in the light of the search for a means of introducing carrier selection capability within Europe. It defines the meaning of carrier selection within the context of the present document. The present document also identifies the essential requirements and related network capabilities involved. A variety of possible methods are considered and the likely impact of each is then assessed. Whilst should provide guidance, no recommendation is made regarding national calls. However, there may be some applications within the international network for which an ETS might be necessary. This has to be decided by a common agreement.

2 References

References may be made to:

- a) specific versions of publications (identified by date of publication, edition number, version number, etc.), in which case, subsequent revisions to the referenced document do not apply; or
- b) all versions up to and including the identified version (identified by "up to and including" before the version identity); or
- c) all versions subsequent to and including the identified version (identified by "onwards" following the version identity); or
- d) publications without mention of a specific version, in which case the latest version applies.

A non-specific reference to an ETS shall also be taken to refer to later versions published as an EN with the same number.

- [1] ITU-T Recommendation E.164: "Numbering plan for the ISDN era".
- [2] CEPT Recommendation T/SF 2 (T/CAC 02): "Subscriber Control Procedures for Supplementary Services in modern Telecommunications System".
- [3] CCITT Recommendation. E.161 (03/93): "Arrangement of digits, letters and symbols on telephones and other devices that can be used for gaining access to a telephone network.5pp E 3941 F 3940 S 3942 8 CHF".
- [4] ITU-T Recommendation E.132 (11/88): "Standardization of elements of control procedures for supplementary telephone services Blue Book Fasc. II.2".

3 Definitions, symbols and abbreviations

3.1 Definitions

For the purposes of the present document, the following definitions apply:

carrier: To be consistent with the ITU SG2 proposed terminology for the meaning of the word "carrier", access network provider and transport network provider are used within the present document. In some of the European countries the access provider is the local network operator and the transport provider is the carrier. In most European countries, the incumbent operators are both.

carrier networks: Carrier networks are all networks which fulfil the existing standards applicable to PSTN/ISDN including the required network- network interface and interworking capabilities with switching functions and which are able to deliver the call direct or via transit network to the called party address. Virtual or physical private networks are out of the scope of the present document.

selection: Selection means the opportunity for the users to select the required access, transport or service provider of their choice. In some cases no selection, but only identification, is possible.

default carrier: In the present document the default carrier is the carrier being selected by the access network operator for delivering the call without any additional action by the caller.

preselection: Preselection is a fixed set up procedure to reach a carrier network without any additional action for each call by the calling party. The normal dialling procedure is sufficient for the caller to be connected with the desired party or terminal using a preselected carrier.

preselected carrier: The preselected carrier is the carrier being preselected by the user.

Carrier Selection Code (CSC): Carrier Selection Code is a part of the dialling procedure, which indicates selection and provides information about the required transport network provider.

Carrier Access Code (CAC): Carrier Access Code is a digit /sequence of digits and/or characters indicating that the following digits are part of carrier identification code.

Carrier Identification Code (CIC): Carrier Identification Code is the digit/sequence of digits, containing the transport network identity.

point of selection (pos): point of selection is the physical place where number analysis and routing to the selected transport network takes place.

3.2 Symbols

For the purposes of the present document, the following symbols apply:

   = Terminals

 = Exchange

3.3 Abbreviations

For the purposes of the present document, the following abbreviations apply:

AAR	Automatic Alternate Routing
CAC	Carrier Access Code (outside E164)
CC	Country Code
CDB	code to access the Carrier Data Base
CIC	Carrier Identification Code
CLI	Calling line Identification
CPE	Customer Premised Equipment
CSC	Carrier Selection Code
CSI	Carrier Selection Indicator indicating that the following digits are part of the CSC
DN	Directory Number, normally Pt plus NSN
DSS1	Digital Signalling System no 1, signalling system used within the ISDN user-network interface
GSM	Global System for Mobile telecommunication
IE	International Exchange
IN	Intelligent Network
LE	Local Exchange
NDC	National Destination Code
NSN	National Significant Number
NNP	National Numbering Plan
P	Prefix
POS	Point Of Selection, last point before the selected carrier network
Pi	international Prefix
Ppn	private network Prefix
Pt	national trunk Prefix
S	Suffix with 1 or more digits, outside of the E.164 number, but used like an ISDN subaddress
SC	Service Code
Si	Suffix indicator, either a * or # or a short break followed by the suffix
SI	Supplementary Information as part of man-machine control procedure
SS	Special Sequence of digits used for carrier selection
SS7	Signalling System no 7, signalling system used in the ISDN
SN	Subscriber Number
TE	Trunk Exchange
TNS	Transit Network Selection, an information element in the SS7 and DSS1 protocol field
UPVP	User Provided Verified and Passed

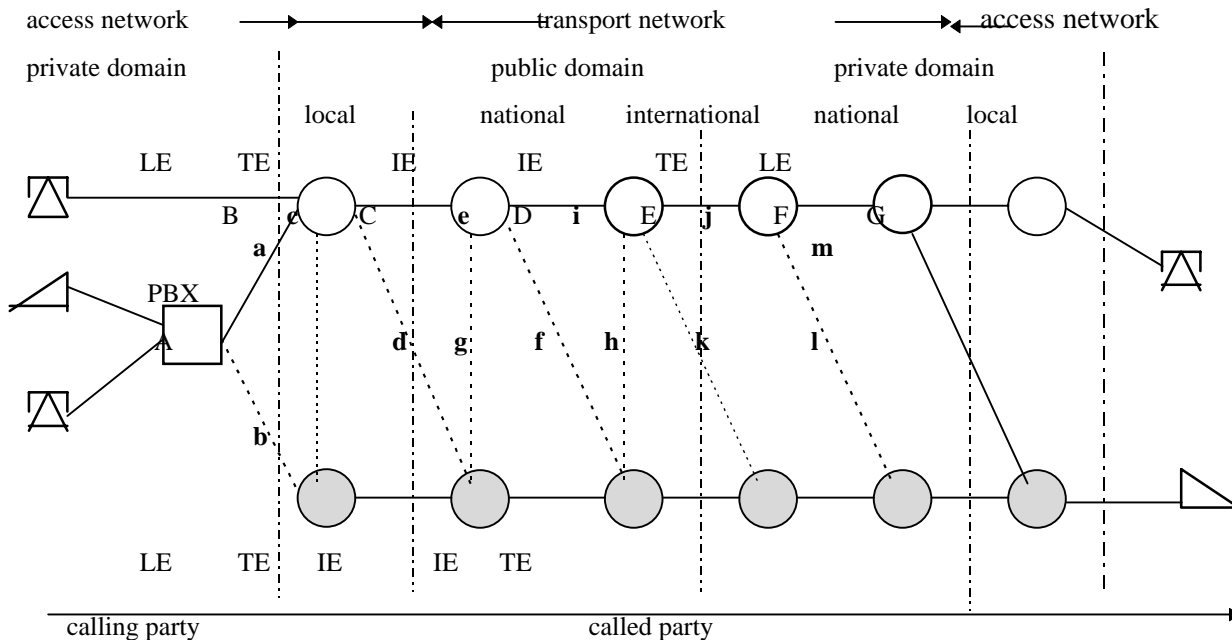
4 Criteria for consideration

The consideration related to open carrier selection depends on the different perspectives of various parties in the field of telecommunications. The following criteria should reflect the different points of concern:

- the paying party should be able to choose the carrier (normally the calling party);
- carrier selection should be access network-independent;
- carrier selection solutions should take into account the development of various networks;
- carrier selection solutions should take into account the cost of implementation and administration and the benefit for the telecommunication market;
- possibility of optional carrier selection (preselection);
- carrier selection call-by-call with or without a default carrier;
- transparency in relation to different rates (possible future demand);
- standardized carrier identification codes across all networks;
- short carrier codes which are easy to remember;
- common/uniform and simple dialling procedures;
- carrier selection with billing arrangements and direct customer relationship;
- equal access for all access network subscribers;
- free choice exists for all users independent of network operators or service providers.

5 Carrier selection environment

Within a complete connection public local, national and international telecommunications networks as well as customer premises private networks may be involved, as shown in the following figure:



○ exchange of carrier x

● exchange of carrier y

LE= local exchange
TE= trunk exchange
IE= international exchange

- A = first point of selection e. g. a PBX, with the choice of access line **a** or **b**.
- B = second point of selection, local exchange with the choice of line **c** or **d** for a long distance carrier.
- C = third point of selection and usually the first point of interconnection, trunk exchange with the choice of line **e** or **f** for international carriers or **g** for national long distance carriers.
- D = fourth point of selection, international exchange in the originating or transit country with the choice of line **h** or **i** for international carriers.
- E = Fifth point of selection, international exchange in the destination country with the choice of line **j** or **k** for national carriers in the destination country.
- F, G = no points of selection, but points of network or service identification and parts of the E.164 terminating number. Line **l** identifies the local network and line **m** the access line of the terminal equipment.

Figure 1: Example of a Carrier Selection Environment

This example shows all places where carrier selection could happen.

6 Number structure of the Carrier Selection Code (CSC)

The CSC is either:

- 1) a sequence of CAC and CIC, e.g.:
10 123 for one carrier; and
10 456 for the other;
- 2) or a sequence of digits for each carrier;
e.g. 123 for one carrier and 705 for the other.

CSC is outside E.164. The different use of CSC is described in the following clauses/subclauses.

7 Carrier selection options

The present document is not restricted to numbering solutions. If there are other or better options for carrier selection with signalling capabilities and/or IN- features, these should be taken into account.

There is a variety of carrier selection options having different technical impacts. A carrier selection code consists of one or more digits outside the number defined in E.164 or a string of alphanumeric characters, or a combination of characters and digits. Using part of the E.164 number code as carrier network identification or destination network number is also a possibility (see subclause 7.1.1).

Besides this, the mechanisms to set up the call in connection with carrier selection procedures are variable. Usually the action between the caller and the network for set up is done in one step. But it is also possible to have two or more dialling stages, e.g. one for selection and one for connection.

7.1 Classification of carrier selection methods

Basically there are two different methods of providing carrier selection for the user:

- 1) call-by-call selection with or without a default carrier (case A);
- 2) preselection with or without the possibility to override the preselected carrier by call-by-call selection (case B).

The selection procedure normally runs in one stage from the user's point of view (case A and B). There might be situations where a two-stage process is more appropriate (case C).

7.1.1 Carrier selection on a call-by-call basis without a default carrier (case A)

This procedure is initiated in the subscriber's private domain by dialling a Special Sequence (SS) of digits. This option is divided into two sub-options:

SS is a portion of the E.164 number in the numbering plan applicable to that call (national or international).

SS is outside the E.164 number and is therefore a prefix or a suffix.

Table 1 following table describes the different dialling procedures with prefix and suffix.

Table 1: Mechanism without default carrier

No	Dialling procedure	Type of call	POS	Notes
A1	Ppn CSC (NDC) (note) SN	local	A	
A2	CSC (NDC) (note) SN	loc/nat	B,C	CSC with a fixed format
A3	CSC Pt NDC SN	nat	B,C	
A4	Pt CSC NDC SN	nat	B,C	
A5	Pi CSC CC NDC SN	int	B,C,D	PI CSC with a fixed format;
A6	CSC Pi CC NDC SN	int	B,C,D	not in line with EU resolution
A7	(Pt NDC) SN SI CSC	loc/nat	B,C,D	not standardized, to be studied; SI is not
A8	Pi CC NDC SN SI CSC	int	B,C,D	necessary in NNP with fix number length
A9	CSC CIC1 CIC 2 (PI) (CC) NDC SN	nat/int	B,C,D	CSC and CIC`s for more than one selected carrier or one code for a combination of carriers

NOTE: In numbering plans with full national dialling, NDC is optional.

The CSC is a sequence of digits for carrier network identification. Without default or preselected carrier it is possible to use the complete NDC range;

e.g.: (Pt) CSC is (0) 1234, NDC 1234 as area code is possible.

Although the solutions A1 - A6 do not appear to be very user-friendly, A6 is in use in some countries.

7.1.2 Carrier selection on a call-by-call basis with default carrier (case A)

With this option it is up to the calling party to leave the selection of the carrier network to the access network provider or to select a carrier of his own choice. In the latter case, he has to dial additional digits to indicate the selection and to identify the selected carrier.

The dialling procedure will be described in subclause 7.1.4 because it is the same procedure as for overriding a default or a preselected carrier.

7.1.3 Preselection

The difference between default carrier and preselected carrier is that the choice of a default carrier is a matter decided by access network providers, whereas the choice of a preselected carrier is a matter decided by the calling party (see subclause 3.1). Common to both is that the normal dialling procedure is sufficient to set up the call. Preselection can be managed by contract between the favoured carrier, the calling party and the access provider. This means that changing carriers is a question of agreement among these entities. Users may demand in future the ability to change the preselected carrier by themselves.

7.1.3.1 Activation in the access network

Technically, this is like a dedicated routing facility, which could be used for each call independent of the dialled number or only for long distance and international calls. The distinctive criteria may be trunk prefix, NDC and international prefix. If preselection is independent of the dialled number the preselected carrier has to ensure the delivery of all calls including those to public services, e.g. to emergency service, that are directed to the specific locations which serve the calling parties area.

7.1.3.2 Control by the customer premises equipment

Normally, preselection is implemented by operational staff as described above, but it is conceivable that the subscriber is able to change his preselection by telephone commands via remote control. This requires enhanced terminal equipment as well as standardized procedures for the user-network interface.

One possible starting point is to use * and # as signalling parameters for activation, interrogation and deactivation according to CEPT Recommendation T/SF 2 [2].

The standard control procedure should be applied with the following syntax:

P SC * SI (*SI) #, where:

P is a prefix used in the following way;

- * registration and activation or registration or invocation;
- # deactivation without erasure;
- *# interrogation including data check, data request and status check;
- ** registration without activation;
- # # deactivation with erasure or erasure.

SC is a service code (09 is reserved for carrier selection);

* is a separator.

SI is supplementary information;

(*SI) further supplementary information;

is a suffix, the # should always be used as a procedure suffix.

Thus, carrier preselection control may have the following format;

activation: * 09 * xyz * PIN # to change the current value;

deactivation: # 09 *(xyz) * PIN # to return to the default value if applicable;

interrogation: *# 09 * PIN # to check the current value;

xyz is the sequence of digits identifying the carrier network; the same digits as for CIC could be used. This procedure is used like a supplementary service for the preselection option and needs further study regarding administration, charging/billing and legal aspects.

The call set up is outside the controlling procedure and will follow the normal dialling procedure.

NOTE: The above described controlling procedure requires DTMF terminal capability.

If national and international carriers have different CIC's (xyz) activation and as well as deactivation has to be done separately.

7.1.4 Preselection with the ability to override the preselected carrier

An easier way of changing a preselected carrier from the user point of view is to have preselection and call-by-call selection available. Call-by-call selection overrides preselection, that means priority for the call-by-call selected carrier. Table 2 describes some different dialling procedures with carrier selection codes as prefixes and suffixes.

Table 2: Call-by-call procedures with a preselected carrier (case B)

No	Dialling procedure	Types of call	POS	Notes
B1	Ppn CSC (NDC) (note) SN	loc	A	CSC-digit(s) cannot be used for SN
B2	CSC (NDC) (note) SN	loc/nat	B,C	CSC-digit(s) cannot be used for SN
B3	CSC Pt NDC SN	nat	B,C	CSC-digit(s) cannot be used for SN
B4	PT CSC NDC SN	nat	B,C	CSC with fix format not used as NDC
B5	CSC Pi CC NDC SN	int	B-D	
B6	(Pt NDC) SN Si CSC	nat	B,C,D	needs further study
B7	Pi CC NDC SN Si CSC	int	B,C,D	needs further study
B8	CSC CIC1 CIC2 (Pi CC) NDC SN	nat/int	B-D	CSC and CIC` s for more than one selected carrier or one code for a combination of carriers
B9	* CIC (#) (Pi CC) NDC SN	nat/int	B-D	* as CSI and possibly # as separator
NOTE: in numbering plans with full national dialling, NDC is optional				

As Carrier Selection Indicator (CSI) a character like * may be used, if DTMF signalling is available. This procedure is for further study and should be in accordance with the relevant ETS TC HF and CEPT Recommendation (see subclause 7.1.3.2).

* and # could be mapped into a free hexadecimal value in the SS7 protocol and indicates start and end of CIC.

The questions regarding the procedure in B8 as to selecting more than one carrier, are whether there should be a separation between the CICs and how to realize the relation between the CICs and the selected part of the network in the dialling procedure. Instead of different CICs only one CSC for a defined sequence of carriers may also be possible, e.g. one for the national and another for the international part of an international call.

7.2 Two-stage-dialling

Although this method is in use to access X.25 networks from the PSTN/ISDN (X.31 case A) and for calling card services, it has to be studied in detail particularly the billing and charging aspects. This method of carrier selection is the only one now being applicable for users not using their own access line. Table 3 lists possible dialling procedures.

Table 3: Procedures with two- stage-dialling

No	Dialling procedure	Type of call	POS	Note
Two-stage-dialling procedure with a PIN code				
C1	1st stage: CSC 2nd stage: PIN (Pt) NDC SN	nat	B	after the PIN the caller has to wait for a backward signal e.g. a tone,
C2	1st stage: CSC 2nd stage: PIN (Pi) CC NDC SN	int	B,C	PIN code with fixed format, needs further study

In two-stage-dialling procedures, a digit string (CSC) is first dialled conventionally, then the call is answered by the selected long distance carrier network, and the second stage digits (PIN DN) are keyed in within the voiceband.

For any PSTN/ISDN relying on basic telephony SS 7 signalling may be jeopardized. Pt CSC may have the same sequence of digits as in the one-step procedure. Alternatively a freephone number could be used to access the carrier network.

7.3 Three-stage-dialling

In a kind of on-line procedure using the voiceband the calling party may be able to access a data base, get charge information and select the desired carrier in three stages which is demonstrated in table 4:

Table 4: Three stage dialling procedure using IN capabilities

No	Dialling procedure	Type of call	POS	Notes
C3	1st stage : CDB	nat/ int	B,C D	access network Carrier Data Base (CDB)
	2nd stage: Pt NDC SN or Pi CC NDC SN			dial DN, receive rate information
	3rd stage: PIN CSC			select carrier, complete the call

CDB in **C3** is a service access code to enter the access network carriers data base for relevant information about tariffs and rates. This option requires a multi-carrier-data base with direct access to the calling party on the access network side and advanced terminal equipment on the user side. CDB and CSC should not consist of the same sequence of digits because the purpose is different, the CDB is intended for SS7 routing to the SMF (IN-management function) and CSC for user channel routing to the carrier network.

The following example should demonstrate the use of C3:

first stage: 0800 1234567 provides access to access network carrier's data base;
 second stage: 00 49 228 1812266 supplies carrier's rate information to the calling party;
 third stage: 9175(PIN) 101(CSC) completes the call with CSC and DN from stage two.

Such a procedure using new IN capabilities is a more future oriented vision and requires direct subscriber access to IN data bases with the ability to receive the relevant information about carrier's rates. The question is whether there is a need for this from the user's point of view.

The PIN code is only necessary for authentication when the caller is not using his own terminal.

8 Network requirements

8.1 Selection by the calling party

For all call-by-call procedures CSC added to the existing routing tables may be used without a new software upgrade. If the entire number has to be transmitted through different switches, the transit network selection element in the SS7 protocol may be used for routing purposes (case A). If the transport provider charges the caller, he needs the CLI information and possibly PIN code from the access network provider. With CLI and PIN code the transport network provider may use a screening function to check the calling party's contractual relationship.

For preselection (case B), either an additional subscriber data base is required or the existing data base has to be extended for each subscriber line (origin dependent routing).

The information about the preselected carrier in the subscriber local exchange data base may be mapped into the TNS in the SS7 protocol during set up. The call will then be routed to the selected networks by analysing the TNS. If there is a transit network between the access network and selected carrier network, the TNS or carrier information has to be transmitted across the network boundary. In that case a standardized interface could be required.

The same information element could be used for a sequence of CSC (B8). In DSS1 protocol field the number of transit network information elements is restricted to four elements. The call would be routed through the selected networks following the TNS sequence step by step.

Changing the preselected carrier on the CPE side whenever the customer wants is a future requirement with direct access to the IN data base, and is a technical as well as a commercial and security problem to be solved.

NOTE: The use of TNS may offer a possible way forward, but will need further study.

8.2 Selection by the called party

For services like freephone or shared cost preselection by the called party's choice is primarily a commercial problem regarding sharing network intelligence and transport function among different providers. For routing purpose, the same mechanism could be used for the second part of the connection to reach the carrier's network after the mapping process corresponding to the customer's service profile.

8.3 Selection for packet switched connections

For ISDN X.25 subscribers a single preselected carrier could be inserted in the Packet Handler (PH) data base.

Besides preselection for customers with X.25 D- channel-access in ISDN (X.31 case B), call-by call carrier selection may be available using X.25 procedures within the user network interface of the DSS1 protocol. There is an "ROA Selection Subscription Element", in which the selected carrier could be inserted.

8.4 Interconnection aspects

Depending on who is the billing party and on the interconnection agreements including use of transit networks there are some requirements concerning CLI and routing and charging information transfer.

Care should be taken that the correct CLI is used for accounting purposes. For example a given PBX customer connection could have a CLI for presentation purposes (unrelated to the network address), one containing user provided verified and passed (UPVP) PBX extension digits, and a network CLI consisting of the base address of the customer. The CLI used for accounting should not contain user provided unscreened components in order to avoid a risk of fraud.

It may not be practicable to provide generic CLI validation tables which verifies that the CLI belongs to the customer of the transport network provider at every point of interconnection between the access network and transport network operator. Therefore, the point of interconnection that will be used by each customer should be agreed in advance. This is complicated where numbers have been geographically ported and the NDC in the CLI of the ported number does not correspond to the normal NDC of where the numbers resides.

If two stage dialling is used, then there will be discrepancy between the length of the call as perceived by the calling party, and the length of the call as measured by the access network. This is because the call is answered at the end of the first stage as far as the access network is concerned, but at the beginning of the called party's answer as far as the calling party is concerned. Therefore agreements may be required between the access network operator and the transport network operator with respect to the process to estimate this discrepancy.

For subscriber with tariff check meter based on analogue charge pulse there is a need for enabling the access provider to send the correct on-line pulse frequency to these subscribers during the call.

9 Restrictions

9.1 Selection by the called party

As stated in clause 4, the paying party should be able to choose the carrier. Regarding toll free calls the paying party is the called party. It may be agreed to have a preselected carrier - even more than one - that is different from the customer's service provider. Providing the called party with the ability to choose among different carriers for the entire connection, seems to be a difficult problem to solve, because information identifying the selected carrier has to be available at all points of selection. Use of IN-capabilities is conceivable, but this has to be studied in more detail. Call-by-call selection on the called party side is impossible because the carrier is already selected when the called party can take action.

9.2 Selection by the calling party

9.2.1 Number length

For options on a call-by-call basis not using a default or preselected carrier, the question is whether the originating terminals and switching equipment and the signalling networks are able to store and forward the number of digits dialled in case of international calls, which may be more than 15 digits, when the procedures mentioned above are used. There are restrictions in the DSS1 protocol, in the GSM specifications and in the SS7 protocol.

It should be noted that the requirement to handle the long number length will be primarily on the access network, rather than the transport network.

9.2.2 EU resolution

For international calls and dialling procedures with carrier selection on a compulsory basis (call-by-call selection without default or preselected carrier) the European Council resolution 92/264/EEC on harmonized international access (00 CC) is not fulfilled.

9.2.3 Technical and commercial barriers

Where CLI is necessary for charging, carrier selection is not possible, if the caller is connected to an electromechanical local exchange.

The use of character like letters and other figures and symbols defined in CCITT Recommendation E.161 [3] is only possible if the originating terminal has the capability of Dual Tone MultiFrequency dialling (DTMF) and if the local exchange to which the subscriber line is connected can analyse the DTMF signals. Using * and # in the middle of the dialling procedure is not in line with ITU-T Recommendation E.132 [4].

Number analysis in the international telephone network is restricted to seven digits. Therefore, information in the subsequent digits cannot be used for service or network identification in the originating international exchange. In these cases a solution using the signalling network is required.

At the time being, the only possibility for the calling party is to choose the carrier within the local or trunk exchange of origin. In countries having carrier selection, the selection can be done only for the complete connection. Selection of several long distance carriers in sequence (B8), i.e. one for the originating network, one for the transit or intermediate network, and one for the destination or terminating network is not available world-wide at present. Scenarios involving a sequence of selected carriers are under study in ITU SG2.

9.2.4 Available number space

In the case of using an access code accompanying a default or preselected carrier, these digits can not be used in the local area as subscriber numbers.

In the case of using a trunk prefix before the access code, the digits for the carrier selection cannot be used as NDC in the national E.164 number.

For example: as 0901 - 0910 is used to access the transport network followed by NDC and SN, then NDC 901-910 should remain free.

10 ITU considerations

During 1992 - 1996 ITU SG 2 study period meeting some participants worked on a summary of contributions from previous SG 2 meetings. The essential aspects of this have been taken into account in the preparation of the present document.

At the time being agreement has not been reached on a final text in ITU SG 2 encompassing all carrier selection demands.

It should be noted that in ITU SG2 there was a contribution proposing an amendment in E.164 by adding the words "Where there is a national requirement for further discrimination between international operators or the different network services they provide, the method for accommodating this need is a national matter." Accordingly, this is not an ITU issue, although activities on a European level are not precluded.

11 Network management aspects

Users selecting a carrier of their own free choice may raise the question of what features are required to set up the call, particularly in cases where an explicit choice of one network or network element is not available. Besides the necessity of additional routing tables and translation capability, the following options should be considered at the point of selection if the selected network or network element is not available:

- 1) reject the call with busy signal (engaged) tone for the calling party;
- 2) reject the call with announcement for the calling party and release after that;
- 3) route the call to the next available network element/carrier, if there is an agreement between the parties involved regarding billing and accounting.

In order to ensure quality of service levels equivalent to those experienced when the existing transport network is utilized, it may be appropriate to implement Automatic Alternate Routing (AAR) to a second point of interconnection between the access network and the transport network operator. If this is to be done, then there should be a prior agreement between the network operators, because the transport network operator will need to ensure that the validation keys (i.e. CLI and/or PIN) are active at the second alternative point of interconnection. This implies the writing of contingency plans for network failure in advance, and the ability of the transport network provider to quickly load data into the network (i.e. archiving of data).

12 Data Protection and Security

In case of carrier selection using remote controlled selection procedures (see subclause 7.1.3.2), the preselected carrier could be changed without consent of the subscriber such that he is not informed of who the actual default carrier is. In these cases, a remote preselection procedure using a PIN code and having status check capability may be needed to satisfy security requirements of the paying party.

13 Need for harmonization

From the user's point of view, a common dialling procedure is desirable. From the operator's point of view the choice of the procedure is significant. The selected mechanism allows more or less competition depending on the length and complexity of the dialling procedure and on the overall method of setting up a default carrier. The less complex the set-up, the more open the system will be.

Harmonization of carrier selection procedures is essential for opening up fair competition in the European telecommunications market see (note) On the one hand, if procedures are not harmonized, some operators will benefit from favourable procedures outside their countries. On the other, this will enable fair reciprocity when operators access other operators domestic markets.

NOTE: The UK does not agree that harmonization of carrier selection methods is essential to achieve open and fair competition, since a range of other policies are in place to stimulate open and fair competition. In the UK, for example, equal access and carrier selection are not part of current regulatory policy.

Harmonization of carrier selection procedures in a synchronized way will obviously stimulate fair competition. Moreover, the European Council has the ability to impose the choice of mechanism on the countries of the Union. This may be the basis for extending harmonization of carrier selection procedures to other CEPT countries by means of multilateral agreements.

The main impediments to harmonization are the existing procedures in several countries. Harmonization should be undertaken quickly to anticipate further implementation of carrier selection in individual countries. Prompt harmonization of procedures will prevent complex anti-competitive situations and assure fairness for all market participants.

14 Contents of harmonization

The key elements are the dialling procedures and the default mechanism.

Is there a need for having the same syntax or even more common access codes across Europe?

The main problem may be to find a common short code.

From another point of view, the carrier identification code will depend on the numbering systems in each country and the number of small operators carrying traffic only in their domestic market. Because of the regionally restricted significance of such small operators, carrier selection would be a national matter here.

Technical implementation of the mechanism should remain the responsibility of each national regulator, particularly in light of cost-sharing aspects, and the regulator in turn may decide to leave the issue to the operators themselves.

15 Assessment and recommendation of different options

As this document mentions some arguments in favour of and against various options it may be interesting to define some criteria for evaluation. Those criteria should be focused on cost and benefit. The main benefit is expected to be at the user side. Evaluation of cost should be restricted to more or less easier ways of implementing carrier selection on network operator as well as customer perspective.

To summarize the result of this document is to state that a general assessment is not appropriate to recommend a certain option, because the national numbering schemes and networks in Europe are too different. Besides this different carrier selection mechanism already exists in some countries. For options having impact in the international network, e.g. selection of carrier outside the home country across network and geographical borders standardized solutions may be required.

History

Document history		
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