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Technical Specification

**Digital cellular telecommunications system (Phase 2+) (GSM);
Universal Mobile Telecommunications System (UMTS);
Support of Mobile Number Portability (MNP);
Service description;
Stage 1
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Contents

Foreword	4
1 Scope.....	5
2 References.....	5
3 Definitions and abbreviations	5
3.1 Definitions.....	5
3.2 Abbreviations	6
4 Applicability	6
5 Description.....	7
6 Normal procedures with successful outcome.....	7
7 Exceptional procedures.....	8
8 Addressing	8
9 Supplementary Services and Service Interworking	8
9.1 Calling line identification presentation (CLIP)	8
9.2 Calling line identification restriction (CLIR)	8
9.3 Connected line identification presentation COLP).....	8
9.4 Connected line identification restriction (COLR)	8
9.5 Call Forwarding Unconditional (CFU).....	9
9.6 Call Forwarding on mobile subscriber Busy (CFB)	9
9.7 Call Forwarding on No Reply (CFNRy)	9
9.8 Call Forwarding on mobile subscriber Not Reachable (CFNRc)	9
9.9 Call Waiting (CW)	9
9.10 Call hold (HOLD).....	9
9.11 Multiparty services (MPTY).....	9
9.12 Closed User Group	9
9.13 Advice of Charge services	9
9.14 Barring of All Outgoing Calls (BAOC).....	9
9.15 Barring of Outgoing International Calls (BOIC)	9
9.16 Barring of Outgoing International Calls except those directed to the Home PLMN Country (BOIC-exHC).....	9
9.17 Barring of All Incoming Calls (BAIC)	10
9.18 Barring of Incoming Calls when roaming outside the home PLMN country (BIC-Roam)	10
9.19 Explicit Call Transfer (ECT)	10
9.20 Completion of Calls to Busy Subscriber (CCBS).....	10
9.21 Support of Private Numbering Plan (SPNP).....	10
9.22 Multiple Subscriber Profile (MSP)	10
9.23 enhanced Multi-Level Priority and Pre-emption (eMLPP).....	10
10 Interworking with other network features.....	10
10.1 Customised Applications for Mobile network Enhanced Logic (CAMEL).....	10
10.2 Support of Optimal Routing (SOR)	10
11 Networking interworking.....	10
12 Charging aspects	11
13 Lawful Interception Issues.....	11
Annex A (informative): Change history	12

Foreword

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1 Scope

The present document defines the stage one description of the Support of Mobile Number Portability between networks in the same country as well as PCS-1900 cross-sector portability (i.e.: number portability between fixed and PCS-1900 mobile networks). Stage one is an overall service description, primarily from the service subscriber's and user's points of view, but does not deal with the details of the human interface itself.

Mobile Number Portability (MNP) is applicable only to those telecommunication services identified by an MSISDN.

The present document includes information applicable to network operators, service providers and terminal, switch and database manufacturers.

The present document contains the core requirements for the Support of Mobile Number Portability between network operators in the same country as well as PCS-1900 cross-sector portability which are sufficient to provide a complete service.

Other cross-sector portability options (e.g. number portability between fixed and mobile networks) are outside the scope of this technical specification. It is highly desirable however, that technical solutions for MNP should be sufficiently flexible to allow for possible enhancements, e.g. cross-sector number portability, and MNP between analogue and digital mobile networks. Additional functionalities not documented in the present document may implement requirements which are considered outside the scope of the present document. This additional functionality may be on a network-wide basis, nation-wide basis or particular to a group of users. Such additional functionality shall not compromise conformance to the core requirements of the service.

Porting between Service Providers (i.e. service provider portability) which does not involve a change of Network Operator is outside the scope of the present document.

The relationship between Service Providers and Network Operators is outside the scope of the present document.

The relationship between a Service Provider and subscriber is outside the scope of the present document. The interface between the Mobile Station (MS) and any external applications are outside the scope of the present document. Charging principles are outside the scope of the present document except where explicitly stated in the text.

2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies.

[1] GSM 01.04 (ETR 350): "Digital cellular telecommunications system (Phase 2+); Abbreviations and acronyms".

[2] TR 21.905: "Vocabulary for 3GPP Specifications".

3 Definitions and abbreviations

3.1 Definitions

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

number range owner network: network to which the number range containing the ported number has been allocated.

directory number: any E.164 dialable number assigned to a wireline or a wireless subscriber. A DN can be a 10-digit number in the context of the North American Numbering Plan (without a country code) or up to 15 digits for an international number(country code included).

donor network: subscription network from which a number is ported in the porting process. This may or may not be the number range owner network.

mobile number portability: ability for a mobile subscriber to change digital mobile subscription network within the same country or within an FCC regulated geographical area within North America whilst retaining their original DN(s).

network operator: PLMN operator.

PCS-1900 number portability: ability for a subscriber to change subscription between PCS-1900 and other subscription networks within an FCC regulated geographical area within North America.

originating network: network where the calling party is located.

ported number: is a MSISDN that has undergone the porting process.

ported subscriber: subscriber of a ported number.

porting process: description of the transfer of a number between network operators.

recipient network: network which receives the number in the porting process. This network becomes the subscription network when the porting process is complete.

service provider: entity which offers service subscriptions to individual subscribers and contracts with a network operator to implement services for a specific DN. A service provider may contract with more than one network operator.

service provider portability: transfer of numbers between two unique Service Providers.

subscription network: network with which the customer's Service Provider has a contract to implement the customer's services for a specific DN.

NOTE: The term "recipient network" is used during the porting process. The recipient network becomes the "subscription network" after the completion of the porting process.

3.2 Abbreviations

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

DN	Directory Number
MMI	Man Machine Interface
MNP	Mobile Number Portability
MSISDN	Mobile Station ISDN number
PLMN	Public Land Mobile Network
PNP	PCS-1900 Number Portability
SIM	Subscriber Identity Module
USIM	Universal Subscriber Identity Module

Further related abbreviations are given in GSM 01.04 [1] and TR 21.905 [2].

4 Applicability

Mobile Number Portability cannot be offered to a subscriber as a stand alone service. Mobile Number Portability is applicable to all teleservices (e.g. SMS, voice, fax) and bearer services (e.g. data), except for TS12 (emergency call).

The implementation of MNP shall be flexible enough to apply to each DN of a subscriber separately. Where the DNs used in the donor network are ported to different recipient mobile networks then a new IMSI (and SIM/USIM) will be required for each recipient network. The basic and supplementary services provisioned in the recipient network shall not be dependent on those that were provisioned in the donor network.

5 Description

Mobile Number Portability (MNP) is the ability for a mobile subscriber to change digital mobile subscription networks within the same country or within an FCC regulated geographical area within North-America whilst retaining her original DN or DNs.

PCS-1900 Number Portability (PNP) is the ability for a subscriber to change subscription between PCS-1900 and other subscription networks within an FCC regulated geographical area within North-America.

The IMSI shall not be ported, hence the recipient mobile network of the porting process will issue a new IMSI for the ported subscription. The porting process may, but need not, include a change in service provider.

The ported subscriber can use exactly the same services as non-porting customers in the same subscription network. That is: whether the DN of a subscriber belongs to a subscription network or is ported to the subscription network shall have no influence on the services offered to the customer by that subscription network.

The services offered by the number range owner network and/or the donor network have no influence on the services offered by the subscription network. When a subscriber ports a DN to a new network then the donor network no longer provides support for the services of the ported number (this includes supplementary and value added services).

NOTE: This also implies that if a service supported in the donor network is not available on the recipient network then number portability mechanisms need not provide that service for the ported subscriber.

A network can be a donor of numbers and a recipient of numbers. A DN can be ported more than once; a ported number can be ported back to its number range owner network. Even after multiple portings, the technical solution shall involve only the number range owner network and recipient network.

The solution for MNP/PNP shall have a minimal adverse effect upon the quality of service offered to ported and non-porting subscribers. It may be the case that the quality of service for ported and non-porting subscribers differs slightly (e.g. due to additional call set-up delay).

Any additional delay in call set-up to ported numbers shall be minimised.

The process of porting a number may involve a disruption in service to the customer. The time that no service is available shall be minimised.

The technical implementation of the support of MNP/PNP in a network should not impede number availability and efficient use of numbers.

The technical implementation for the support of MNP/PNP shall not involve loss of functionality in the number range owner, donor or subscription network.

The technical implementation of MNP/PNP shall support optimisation of the use of network and inter-network resources so as to minimise costs associated with transport of traffic and/or appropriate signalling and/or processing activities (e.g. optimal routing).

In addition, for the porting process an efficient and effective way is needed to exchange porting information between all types of network operators.

6 Normal procedures with successful outcome

Mobile Number Portability is offered to all subscribers of telephone services subject to regulatory requirements.

A porting process is initiated at a subscriber's request on their selected DN(s) with the relevant networks. Initiation of the porting process is an off-line administrative process and cannot be invoked via a specific MMI on the hand-set.

After successful porting the subscriber, is able to use the provisioned telephone services and network specific services of the subscription network as offered to non-porting subscribers on that network. Porting will effectively initiate a new subscription.

As part of the porting process, the donor, number range owner and recipient networks shall update their relevant network elements in order to perform the porting. After the porting process is complete, the subscription details related to the ported DN on the donor network shall not be required and can be deleted. Therefore, only the number range owner network and the recipient network are involved in the MNP/PNP solution for support of service to the ported subscriber.

The originating network may not be aware of the ported nature of the number; therefore the technical solution shall work even if networks other than the number range owner and recipient have no knowledge of the ported nature of the number.

NOTE: Other networks may be involved to increase the efficiency of call-set-up to ported numbers.

When a ported subscriber takes an additional DN at her subscription network that additional DN should not have to come from the number range owner network(s) of the subscriber's ported numbers.

Where number ranges are assigned to network operators, the number range owner network shall receive the ported number back from the recipient network when the subscriber relinquishes the ported number, i.e. when the ported number ceases to be an active service number.

7 Exceptional procedures

Service related data (e.g. numbers used in the call-forwarding service, etc.) may not be transferred to the recipient network during the porting process.

8 Addressing

As a consequence of MNP, the DN of a subscriber may no longer explicitly identify the subscription network of that subscriber.

9 Supplementary Services and Service Interworking

The support of mobile Number Portability in a network shall not affect the handling of supplementary service for the subscribers, i.e. there shall be no difference in the handling of the supplementary services between ported in and normal subscribers of the same network.

9.1 Calling line identification presentation (CLIP)

No impact.

9.2 Calling line identification restriction (CLIR)

No impact.

9.3 Connected line identification presentation (COLP)

No impact.

9.4 Connected line identification restriction (COLR)

No impact.

9.5 Call Forwarding Unconditional (CFU)

No impact.

9.6 Call Forwarding on mobile subscriber Busy (CFB)

No impact.

9.7 Call Forwarding on No Reply (CFNRy)

No impact.

9.8 Call Forwarding on mobile subscriber Not Reachable (CFNRc)

No impact.

9.9 Call Waiting (CW)

No impact.

9.10 Call hold (HOLD)

No impact.

9.11 Multiparty services (MPTY)

No impact.

9.12 Closed User Group

No impact.

9.13 Advice of Charge services

No impact.

9.14 Barring of All Outgoing Calls (BAOC)

No impact.

9.15 Barring of Outgoing International Calls (BOIC)

No impact.

9.16 Barring of Outgoing International Calls except those directed to the Home PLMN Country (BOIC-exHC)

No impact.

9.17 Barring of All Incoming Calls (BAIC)

No impact.

9.18 Barring of Incoming Calls when roaming outside the home PLMN country (BIC-Roam)

No impact.

9.19 Explicit Call Transfer (ECT)

No impact.

9.20 Completion of Calls to Busy Subscriber (CCBS)

No impact.

9.21 Support of Private Numbering Plan (SPNP)

No impact.

9.22 Multiple Subscriber Profile (MSP)

The porting process may apply on a per profile basis.

9.23 enhanced Multi-Level Priority and Pre-emption (eMLPP)

No impact.

10 Interworking with other network features

10.1 Customised Applications for Mobile network Enhanced Logic (CAMEL)

No impact.

10.2 Support of Optimal Routing (SOR)

No impact.

NOTE: This is a service requirement. However, it may be difficult to find an MNP solution with no impact on Optimal Routing.

11 Networking interworking

All services offered in co-operation with other types of networks shall still be offered in combination with MNP. This includes the basic services, all supplementary services and all network features.

12 Charging aspects

No additional charging mechanisms relating to the calling party are to be standardised.

Enough information should be collected to allow the involved networks to workout inter-network charging.

13 Lawful Interception Issues

Lawful interception shall be possible on a ported MSISDN.

Annex A (informative): Change history

Change history										
TSG SA#	SA Doc.	SA1 Doc	Spec	CR	Rev	Rel	Cat	Subject/Comment	Old	New
Jun 1999			02.66					Transferred to 3GPP SA1	7.0.0	
SA#04			22.066					Version 3.0.0 Approved		3.0.0
SP-05	SP-99479	S1-99621	22.066	001		R99	D	Editorial changes for alignment to 3GPP	3.0.0	3.0.1
SP-07	SP-000061	S1-000134	22.066	002		R99	B	PCS-1900 Service Provider Number Portability impacts for Mobile Number Portability	3.0.1	3.1.0

Version	Date	Information about changes
V3.0.0	July 1999	Transferred to TSG SA at ETSI SMG#29. Under TSG TSG SA Change Control.
V3.0.1	October 1999	Inclusion of CRs at SA#05
V3.1.0	March 2000	Inclusions of CRs at SA#07.

History

Document history		
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