Technical Specification Group Services and System Aspects **TSGS#20(03)0201**
Meeting #20, Hämeenlinna, Finland, 09-12 June 2003

TSG-SA WG1 #20 **S1-030572**
Seoul, Korea, 7th–11th April 2003 **Agenda Item: 8.1**

Title: Clarification on MNP for Pre-paid Subscribers
Response to: S1-030347 (= N4-030319) LS on MNP for Pre-paid Subscribers
Release: Release 5 and 6
Work Item: MNP
Source: SA1
To: CN4, SA
Cc:

Contact Person:
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Attachments: S1-030568, S1-030571, S1-030569, S1-030564

1. Overall Description:

TSG SA WG1 wishes to thank TSG CN WG4 for their liaison statement (N4-021466) on MNP for Pre-paid Subscribers. The LS had identified a problem with the charging associated with pre-paid subscribers in the MNP environment:

Operators may apply different tariffs to calls established to their own subscribers and calls established towards subscribers belonging to other networks. However this faces the problem that:

- In scenarios without MNP, the B number (called party) indicates the network to which the subscriber belongs.
- In scenarios with MNP, the B number (called party) doesn't indicate the network to which the subscriber belongs.

CN 4 identified several alternatives to solve the problem which, as SA1 understood, had slight differences in the functionality they provide and implications they have. While CN4 had concluded that no SA1 requirement was needed CN4 indicated that there continued some questions on the requirements. CN4 also indicated that this was critical enough to be solved in Rel5.

The questions raised by CN4 and the answers given by SA1 are as follows:
CN4 questioned,

whether the proposed solutions introduce new charging methods.

and

whether the existing MNP requirements cover the correction, which is needed and agreed by CN4.

SA1 considers itself not to be in the position to answer the first question. Whether or not new charging methods are needed seem to be dependent on the way how charging requirements are implemented which is beyond SA1's scope.

The second question raised a discussion in SA1 on whether the existing MNP requirements [on charging] cover operator's needs. The following was observed:

Assuming that

- a call originates in PLMN X
- the called party's MSISDN has been ported from the number range of PLMN Y

the operator of X would like to apply different tariffs to the call based on the following two sets of mutually exclusive criteria:

(a) called party B is a subscriber to operator X (yes/no)
(b) called party B is not a Subscriber to operator X, but B's MSISDN (from PLMN Y) has same Country Code (CC) as number range of PLMN X (yes/no)
(c) called party B is a Subscriber to operator Z which is different from X, B's MSISDN has not the same CC as number range of PLMN X but the operator X has a business agreement with operator Z (yes/no)
(d) called party B is a Subscriber to operator Z which is different from X, B's MSISDN has not the same CC as number range of PLMN X, no business agreement between operator X and operator Z (yes/no)

(1) calling party A is subscriber to operator X (yes/no)
(2) calling party A is not a subscriber to operator X (i.e. A is an inbound roamer to X) (yes/no)

Concerning the relative importance of the different criteria the following was agreed:

	(1)	(2)
(a)	Essential, needs to be implemented in Release 5	
(b)	Essential, needs to be implemented in Release 5	
(c)		
(d)		

SA 1 would kindly ask CN4 to comment on the feasibility of the requirements indicated above, including the release issue and to implement these in release 5. SA1 has created corresponding CRs, which are attached and which will be presented for approval at the next SA plenary meeting, depending on comments from CN4.

2. Actions:

To CN4 group.

ACTION: SA1 asks CN4 to comment on the feasibility of the requirements indicated above and to implement them in release 5 if feasible.

To SA group.

ACTION: Based on CN4's comments SA is asked to endorse the work.

3. Date of Next TSG-SA1 Meetings:

SA1 SWGs #21	12 - 16 May 2003,	San Diego,USA
SA1#21	07 - 11 July 2003,	Sophia Antipolis, France

CR-Form-v7

CHANGE REQUEST

⌘ **22.115** **CR** **013** ⌘**rev** **-** ⌘ Current version: **6.0.0** ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: UICC apps⌘ ☐ ME ☐ Radio Access Network ☐ Core Network ☒

Title:	⌘	Charging Requirements in an MNP environment
Source:	⌘	Siemens
Work item code:	⌘	TEI
Date:	⌘	13/03/2003
Category:	⌘	**A**
Release:	⌘	Rel-6

Use one of the following categories:
F *(correction)*
A *(corresponds to a correction in an earlier release)*
B *(addition of feature),*
C *(functional modification of feature)*
D *(editorial modification)*
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Use one of the following releases:

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R98	*(Release 1998)*
R99	*(Release 1999)*
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Rel-5	*(Release 5)*
Rel-6	*(Release 6)*

Reason for change:	⌘	Add explicit charging requirements for MNP
Summary of change:	⌘	Operators shall be able to apply different tariffs to calls and short messages established/sent by their subscribers while roaming in their Home PLMN depending on the national called subscriber's Home PLMN rather than on the national called subscriber's MSISDN. This differentiation is needed in the case, where the called subscriber's MSISDN may have been ported by Mobile Number Portability. Also a reference to TS 22.066 (MNP) is added.
Consequences if not approved:	⌘	Operators cannot apply different tariffs to calls and short messages established/sent by their subscribers depending on the called subscriber's Home PLMN.

Clauses affected:	⌘	2, 4			
Other specs affected:	⌘	**Y**	**N**		
		X		Other core specifications	22.066, 23.066
			X	Test specifications	
			X	O&M Specifications	
Other comments:	⌘				

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2 References

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[1] 3GPP TS 22.101: "Service aspects; Service Principles".

[2] 3GPP TS 22.066: " Support of Mobile Number Portability (MNP)".

*** Next modified part ***

4 Main Requirements and High Level Principles

The main new requirements for 3GPP system charging and accounting are:

- to provide a call detail record for all charges incurred and requiring settlement between the different commercial roles;
- to allow fraud control by the Home Environment and the Serving network;
- to allow cost control by the charged party;
- to provide at the beginning of a chargeable event an indication to the charged party (if involved in the chargeable event) of the charges to be levied for this event;
- to allow itemised billing for all services charged to each subscription, including voice and data calls, and services offered by home environments.
- to enable the Home environment to provide a Prepay Service and to enable the serving network to support that Prepay Service for the Home environment's subscribers.
- to allow interconnect (inter-operator) charging including mobile operator to mobile operator, and mobile operator to fixed operator (circuit switched & IP), and mobile operator to IP network provider; and mobile operator to I-WLAN operator.
- to allow Network operator to 3rd party supplier (eg Value Added Service Provider) charging;
- to provide details required for Customer Care purposes
- to support the shared network architecture so that end users can be appropriately charged for their usage of the shared network, and network sharing partners can be allocated their share of the costs of the shared network resources.

The high level principles that will guide the charging requirements are summarised as follows:

- It must be possible to charge separately for each type of medium used (eg voice, video, data) in a session and for each service used (eg voice call, streaming video, file download);
- It must be possible to charge for different levels of QoS applied for and/or allocated during a session for each type of medium or service used;

- It must be possible to charge each "leg" of a session separately. This includes the incoming and outgoing legs and any forwarded/redirected legs. (Note: The legs mentioned here are logical legs, i.e. not necessarily identical to actual signal and traffic flow. Even though tromboning may be avoided by optimal routing, the operator should still be able to charge for the 'virtual legs' of the call)

- The user can be charged according to the service used irrespective of the technology used to deliver it. (That is, the charge is not derived from whether 2G or 3G is used);

- The user can be charged according to the technology used to deliver a service. (That is, different charges can be applied on 2G and 3G);

- It must be possible to charge a user according to the network resources used. For example, if a large bandwidth is required to use high quality video, the user could be charged accordingly. This is related to charging by QoS;

- It must be possible to charge users flexibly for the use of extra resources (in at least the same network) for all legs of the call. For example, if a video component is added to a voice call the use of extra radio resource at both ends of the call could be paid for by each user in the call or totally by the initiating user.

- It must be possible to suppress charging for certain types of connection e.g. when a customer receives tones or network announcements or during sessions such as automated pre-pay top-up.

- It must be possible for the home network to charge its customers while roaming in the same ways as when they are at home. For example, if duration based charging is used for charging for streaming music in the home network, then it must be possible to apply the same principle when the user is roaming.

- It must be possible for operators to have the option to apply charging mechanisms that are used in GSM/GPRS. For example for duration of a voice call, for the amount of data transmitted (eg for streaming, file download, browsing) and for an event (one-off charge).

- It must be possible for a network operator to charge its users for activities while roaming so that the home network will get the capability to raise service charges depending on the roamed to network, e.g. because of inter operator charges for the use of service capabilities within the visited network which will in general depend on the serving network. The ability to supply all the necessary information for all the charging options will depend on the capability of the visited network. For service capabilities which are provided by the home network, however, it is required that the call data records created allow to identify the serving network of the served subscriber.

- It must be possible for charging to be applied based on location, presence, push services etc

- It must be possible to charge using pre-pay, post-pay, advice of charge, 3rd party charging techniques.

- It must be possible for the home network to apply different tariffs to national calls and short messages established/sent by their subscribers while roaming in their Home PLMN depending on the called subscriber's Home PLMN rather than on the called subscriber's MSISDN.
  Note: This distinction is necessary only in the case, where the called subscriber's MSISDN may have been ported by Mobile Number Portability.

These new requirements and principles will allow users more freedom to obtain service when roaming, whilst providing effective cost and credit control for the Home Environment and User.

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CHANGE REQUEST

⌘ **22.066** **CR** **005** ⌘**rev** **-** ⌘ Current version: **5.0.0** ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: UICC apps⌘ ☐ ME ☐ Radio Access Network ☐ Core Network ☒

Title:	⌘	Charging Requirements in an MNP environment
Source:	⌘	Siemens
Work item code:	⌘	TEI5
Date:	⌘	13/03/2003
Category:	⌘	**F**
Release:	⌘	Rel-5

Use one of the following categories:
F *(correction)*
A *(corresponds to a correction in an earlier release)*
B *(addition of feature),*
C *(functional modification of feature)*
D *(editorial modification)*
Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:

2	*(GSM Phase 2)*
R96	*(Release 1996)*
R97	*(Release 1997)*
R98	*(Release 1998)*
R99	*(Release 1999)*
Rel-4	*(Release 4)*
Rel-5	*(Release 5)*
Rel-6	*(Release 6)*

Reason for change:	⌘	Add explicit charging requirements for MNP
Summary of change:	⌘	This change adds the requirement for operators to be able to apply different tariffs to calls and short messages established/sent by their subscribers while roaming in their Home PLMN depending on the called subscriber's subscription network rather than on the called subscriber's MSISDN.
Consequences if not approved:	⌘	Operators cannot apply different tariffs to calls and short messages established/sent by their subscribers depending on the called subscriber's subscription network.

Clauses affected:	⌘	12			
Other specs affected:	⌘	Y / N		⌘	
		X /	Other core specifications		22.115, 23.066
		/ X	Test specifications		
		/ X	O&M Specifications		
Other comments:	⌘				

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12 Charging aspects

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

Enough information shall be collected to allow different tariffs to be applied to calls and short messages in the following case:

- The calling subscriber is roaming in her home PLMN

and

- The called subscriber is a subscriber of any of the PLMNs in the country of the calling subscriber's home PLMN

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

CR-Form-v7

CHANGE REQUEST

⌘ **22.066** **CR** **006** ⌘**rev** **-** ⌘ Current version: **6.0.0** ⌘

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Proposed change affects: UICC apps⌘ ☐ ME ☐ Radio Access Network ☐ Core Network ☒

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Source:	⌘	Siemens
Work item code:	⌘	TEI
Date:	⌘	13/03/2003
Category:	⌘	**A**
Release:	⌘	Rel-6

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Reason for change:	⌘	Add explicit charging requirements for MNP
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Consequences if not approved:	⌘	Operators cannot apply different tariffs to calls and short messages established/sent by their subscribers depending on the called subscriber's subscription network.

Clauses affected:	⌘	12			
Other specs affected:	⌘	Y / N		⌘	
		X /	Other core specifications		22.115, 23.066
		/ X	Test specifications		
		/ X	O&M Specifications		
Other comments:	⌘				

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CR-Form-v7

CHANGE REQUEST

⌘ **22.115** **CR** **012** ⌘**rev** **-** ⌘ Current version: **5.2.0** ⌘

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- to allow itemised billing for all services charged to each subscription, including voice and data calls, and services offered by home environments.
- to enable the Home environment to provide a Prepay Service and to enable the serving network to support that Prepay Service for the Home environment's subscribers.
- to allow interconnect (inter-operator) charging including mobile operator to mobile operator and mobile operator to fixed operator (circuit switched & IP) and mobile operator to IP network provider;
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- to provide details required for Customer Care purposes

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These new requirements and principles will allow users more freedom to obtain service when roaming, whilst providing effective cost and credit control for the Home Environment and User.