3GPP TSG CN Plenary Meeting #21 **NP-030329**
17th - 19th September 2003. Frankfurt, Germany.

Source: TSG CN WG3

Title: CRs on Rel-4 and previous Work Item TEI.

Agenda item: 7.11

Document for: APPROVAL

Introduction:

This document contains **3** CRs on **Rel-4 and previous Work Item TEI,** including the corresponding mirror CRs (as required).

These CRs have been agreed by TSG CN WG3 and are forwarded to TSG CN Plenary meeting for approval.

WG_tdoc	Title	Spec	CR	Rev	Cat	Rel	C_Ver
N3-030570	Alignment of negotiation rules with 27.001	29.007	085		F	R99	3.12.0
N3-030571	Alignment of negotiation rules with 27.001	29.007	086		A	Rel-4	4.8.0
N3-030572	Alignment of negotiation rules with 27.001	29.007	081	1	A	Rel-5	5.6.0

3GPP TSG-CN WG3 Meeting #29 ***N3-030570***
Sophia Antipolis, France. 25th - 29th August 2003.

CR-Form-v7

CHANGE REQUEST

⌘ **29.007** **CR** **085** ⌘ **rev** **-** ⌘ Current version: **3.12.0** ⌘

*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 [X] Radio Access Network [ ] Core Network [X]

Title:	⌘	Alignment of negotiation rules with 27.001
Source:	⌘	TSG_CN WG3 [Siemens AG]
Work item code:	⌘	TEI
Date:	⌘	26/08/2003
Category:	⌘	**F**
Release:	⌘	R99

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:	⌘	This CR provides an alignment of the negotiation rules of the BC-IE between the UE and the MSC. The rules saying what the UE is allowed to negotiate are defined in TS 27.001 and do not need to be repeated in TS 29.007. Only related actions by the MSC should be specified in 29.007. Clause 10 containes also a change reagarding the negotiation of the FNUR where the MSC shall maintain a non-transparent call according to the WAIUR towards the UE. However, this value is not available if UEs do not support GSM. Here, the modified FNUR can be used instead of the WAIUR.
Summary of change:	⌘	See attached pages
Consequences if not approved:	⌘	Inconsistent rules in TS 27.001 and 29.007.

Clauses affected:	⌘	Clauses 9.2.1.1, 9.2.2.1 and 10

		Y	N		
Other specs affected:	⌘		X	Other core specifications	⌘
			X	Test specifications	
			X	O&M Specifications	
Other comments:	⌘				

How to create CRs using this form:
Comprehensive information and tips about how to create CRs can be found at http://www.3gpp.org/specs/CR.htm.
Below is a brief summary:

1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

First section modified

9.2.1 Network interworking mobile originated

9.2.1.1 Selection of interworking function

The interworking function will need to negotiate with the user to establish the appropriate modem selection e.g. data rate, modulation scheme, etc. In addition, it will also be required to convert the signalling format, from a combination of out of band and in band, to that suitable for controlling the modem and the autocalling line procedure function where applicable. In the following modem selection procedures it is assumed that the interworking function and modems will be associated with each MSC.

For a data call originated by a circuit mode data terminal on the PLMN, the modem selection is done by using the element "modem type" in the call set-up message (bearer capability).

In addition, other elements of the call setup will indicate the user rate, etc. to be used via that modem. The use of this information however means that the network is only able to select a modem from the modem pool which conforms to the speed which the terminal is utilizing at the DTE/DCE interface at the MS (e.g. V.22 for 1 200 bps). The exception to this is where the user has selected the non transparent service in which case either an autobauding or multi self selecting speed modem (e.g. V.32) may be used.

In case the PLMN-BC(s) received with the set-up message indicated a multislot, 14.4kbit/s, and EDGE-operation (refer to 3GPP TS 27.001) and the network does not support any of the required such services, the PLMN-BC(s) sent with the call proceeding message shall not contain the "fixed network user rate", "other modem type" and "user initiated modification indicator" parameters - the MSC shall discard the multislot or 14.4kbit/s and/or EDGE-related parameters and use the fall-back bearer service indicated by the remaining parameters of the PLMN-BS(s) on a singleslot configuration (refer to 3GPP TS 08.20 and 3GPP TS 04.21) on the MSC/IWF-BSS link. The MSC/IWF shall modify the relevant parameters in a possibly present LLC accordingly.

If the MSC supports the multislot, 14.4kbit/s and/or EDGE-operation, the PLMN-BC(s) shall include the "fixed network user rate", "other modem type" and if applicable the "user initiated modification indicator" parameters. The MSC shall apply on the MSC/IWF-BSS link a singleslot or multislot configuration according to the rules defined in 3GPP TS 04.21, 3GPP TS 08.20 and 3GPP TS 24.022. In case the MS signals an ACC containing TCH/F4.8 only and the network does not support TCH/F4.8 channel coding, then the MSC may act as if TCH/F9.6 were included in the ACC.

In case the PLMN-BC(s) received with the set-up message did not indicate a multislot, 14.4kbit/s or EDGE-operation, the MSC shall not include the "fixed network user rate", "other modem type" and "user initiated modification indicator" parameters in the PLMN-BC(s) of the call proceeding message - the MSC shall use a singleslot configuration on the MSC/IWF-BSS link.

The MSC may negotiate parameters with the MS according to the rules defined in 3GPP TS 27.001. ~~For multislot, 14.4 kbit/s, EDGE and Iu Mode operations t~~The MSC/IWF shall modify the relevant parameters in a possibly present LLC accordingly.

9.2.1.2 Modem Selection

In general terms the indication of the bearer capability parameter "Information Transfer Capability" will be utilized in the call set-up message to determine when the modem should be selected in the call.

In case of single calls, the modem function shall operate in the calling mode in case of mobile originated calls and in the answering mode in case of mobile terminated calls.

In case of dual data calls (alternate speech/facsimile group 3) the operation mode of the modem (working in calling or answering mode) depend on the initial call setup direction and on the optional parameter "Reverse Call Setup Direction" information element of the MODIFY message. If this information element is omitted the direction is derived from the initial call setup direction, i.e. the mode is the same as in case of single calls.

For the attribute value "3,1 kHz audio Ex PLMN" and "facsimile group 3", the modem will be selected immediately. The line procedure according to V.25 will then be carried out using the appropriate modem functions.

For the Teleservice 61 "Alternate speech/facsimile group 3", (if speech is selected as the first service), the modem is made available but not selected until the subscriber indicates the change of service request (see subclause 9.3).

For "alternate speech/facsimile group 3" calls refer to 3GPP TS 03.45 and 03.46 (GSM).

9.2.1.3 Mapping of BC-IE from PLMN to ISUP (or other)

As it cannot be determined from the called address whether the distant network is a PSTN or an ISDN the same mapping takes place as for ISDN calls (see table 7A), if ISDN signalling is used between different MSCs (e.g. on the link VMSC - GMSC).

9.2.2 Network Interworking Mobile terminated PSTN Originated

This subclause describes the interworking of calls where the calling subscriber cannot generate or communicate Compatibility Information exhaustive for deducing a PLMN Basic Service to a PLMN (gateway MSC/interrogating node) because of lack of ISDN signalling capability. Thus the HLR is relieved from any compatibility checking for such calls.

Two methods of allocating MS International ISDN Numbers (MSISDNs) are allowed: Firstly, a separate MSISDN may be allocated for each service, or service option, which a subscriber uses for incoming calls; or, alternatively, a single number, applicable for all incoming calls is used.

It should be noted that it is possible for both schemes to co-exist within the PLMN and that they are not mutually exclusive.

a) Multiple MSISDNs are used ("The Multi-numbering Scheme"). See figure 2.

b) A single MSISDN is used ("The Single-numbering Scheme"). See figure 3.

9.2.2.1 Multi-numbering Scheme

In this scheme, the HPLMN will allocate a number of MSISDNs to a subscriber and associate with each of these numbers a Bearer Capability to identify a Bearer or a Teleservice. This Bearer Capability comprises a complete PLMN Bearer Capability (PLMN BC) information element with contents according to 3GPP TS 27.001 and coded as per 3GPP TS 24.008. In either case, when the HLR receives an interrogation relating to an incoming call (i.e. the MAP "Send Routing Information" procedure), it requests a roaming number (MSRN) from the VLR. This request will contain the PLMN BC reflecting the service associated with the called MSISDN, i.e. the PLMN BC is passed to the VLR within the MAP parameter "GSM Bearer Capability" of the message "Provide Roaming Number".

At the VMSC, when the incoming call arrives, the PLMN BC associated with the MSRN are retrieved from the VLR and sent to the MS at call set-up.

Where the PLMN specific parameters "connection element" and "radio channel" requirements contained in the retrieved PLMN BC-IE, indicate dual capabilities then the VMSC shall set them according to its capabilities/preferences. Additionally the parameters correlated to those mentioned above shall be modified in accordance with 3GPP TS 27.001.

The same applies to the parameter modem type if "autobauding type 1" is indicated but the IWF does not support this feature. The parameter "data compression" may also be modified according to the capabilities of the IWF.

Where single capabilities are indicated then the VMSC shall use the requested values if it is able to support the service requested. If it is unable to support the requested service then it shall set them according to its capabilities/preferences.

Where the Compatibility Information is provided in a degree exhaustive to deduce a PLMN Basic Service (see application rules in subclause 10.2.2), then the VMSC in providing the PLMN BC IE in the setup message shall set the PLMN specific parameters to its capabilities/preferences.

On receipt of a Set-up message containing the compatibility information, the MS will analyse the contents to decide whether the service can be supported (with or without modification, see 3GPP TS 27.001) and the call will be accepted or rejected as appropriate.

The UE may negotiate parameters with the MSC according to the rules defined in 3GPP TS 27.001. If the UE proposes to the network to modify the User Rate as well as the correlated parameters Modem Type and Intermediate Rate in the call confirmed message or if the UE proposes to the network to modify the Fixed Network User Rate and Other Modem

Type parameters for multislot, 14.4kbit/s, EDGE and Iu Mode operations, the network may accept or release the call (see 3GPP TS 27.001).

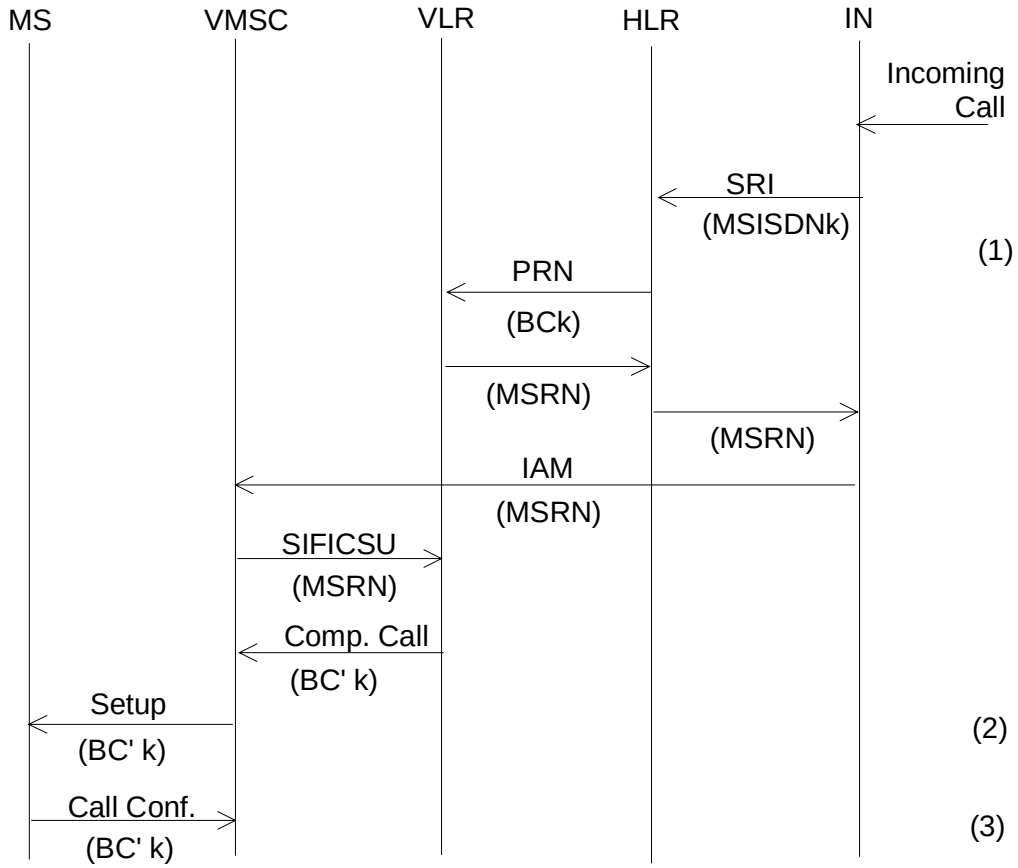
~~These negotiable parameters in the PLMN BC IE are: Connection Element (Transparent\non-transparent), Data Compression, number of data bits, number of stop bits and parity as well as the correlated parameters Structure, Intermediate Rate, Modem Type and User Information Layer 2 Protocol. Additionally, for multislot, 14.4 kbit/s and EDGE operations the parameters Fixed Network User Rate, Other Modem Type and User Initiated Modification Indicator, and for Iu Mode operations the parameters Fixed Network User Rate and Other Modem Type, can be negotiated. For FTM, PIAFS and Multimedia, Rate adaption/Other rate adaption can be negotiated. For FTM and PIAFS, Synchronous/asynchronous can be negotiated, see 3GPP TS 27.001.~~

This negotiation takes place by means of the MS reflecting back to the MSC a complete bearer capability information element in the call confirm message, with the relevant parameters changed. If this does not take place (i.e. if there is no PLMN BC present in the call confirmed message), than the MSC will assume that the values originally transmitted to the MS are accepted.

In case the PLMN-BC sent with the set-up message contained the "fixed network user rate", "other modem type" and "user initiated modification parameter" parameters and no multislot, 14.4 kbit/s, and/or EDGE related parameters (refer to 3GPP TS 27.001) are received in the PLMN-BC of the call confirmed message or no PLMN-BC is received, the MSC shall discard the "fixed network user rate", "other modem type" and "user initiated modification parameter" parameters - the MSC shall use the fall-back bearer service indicated by the remaining parameters of the PLMN-BC on a singleslot configuration (refer to 3GPP TS 08.20 and 3GPP TS 04.21) on the MSC/IWF-BSS link.

On the other hand, if the PLMN-BC received with the call confirmed message contain(s) multislot, 14.4kbit/s or EDGE-related parameters the MSC shall apply on the MSC/IWF-BSS link a singleslot or multislot configuration according to the rules defined in 3GPP TS 04.21, 3GPP TS 08.20 and 3GPP TS 24.022. In case the MS signals an ACC containing TCH/F4.8 only and the network does not support TCH/F4.8 channel coding, then the MSC may act as if TCH/F9.6 were included in the ACC.

~~In addition the MS may propose to the network to modify the User Rate as well as the correlated parameters Modem Type and Intermediate Rate in the CALL CONFIRMED message. The network may accept or release the call. For multislot, 14.4kbit/s, EDGE and Iu Mode operations, the MS may also propose to the network to modify the Fixed Network User Rate and Other Modem Type parameters (see 3GPP TS 27.001).~~



NOTES: (1) The HLR translates the received MSISDN_ called address (MSISDNk) into the relevant bearer capability information (BCk).
(2) Some parameters of BCk may be provided/modified according to the MSC's capabilities/preferences. See subclause 9.2.2.
(3) In the "Call Confirmed" message, the MS may modify some parameters of the BC. See subclause 9.2.2.

Abbr.:
SRI - Send Routing Information.
PRN - Provide Roaming Number.
MSRN - Mobile Station Roaming Number.
IAM - Initial Address Message.
SIFICSU - Send Information For Incoming Call Set Up.

Figure 2: Call Flow for a mobile terminated, PSTN originated call where the compatibility information provided are not exhaustive for deducing a PLMN Bearer Service; HLR uses multiple MSISDN numbers with corresponding BCs

Next section modified

10 Interworking to the ISDN

The interworking to the ISDN is specified on the principle of the network supporting standardized associated signalling protocol as outlined in clause 6, i.e. DSS1 and ISUP. An ISDN not complying with this definition differs - for the purpose of the present document - in that it does not support the compatibility information to that degree necessary for deducing a PLMN Basic Service. These networks will find their reflection in the following where those implications are to be set out.

The calling address sent in a mobile originated call to the ISDN is always the basic MSISDN even if the ISDN user shall use a different MSISDN (multi numbering scheme, see 9.2.2 case a) for a mobile terminated call (call back) as only the basic MSISDN is available at the VLR (see 3GPP TS 29.002).

The scope of this clause is to describe the handling of the content of the Information Elements where "content" is understood to be the value of the parameter fields of the Information Elements, namely BC-IE, HLC and LLC, after the length indicator. For the transport of these Information Elements within the PLMN refer to 3GPP TS 29.002.

The handling of multislot, 14.4kbit/s, EDGE and Iu Mode related parameter of the call control signalling and the applicability of single- or multislot configurations (refer to 3GPP TS 08.20 and 3GPP TS 04.21) is the same as for the PSTN interworking cases.

The UE may negotiate parameters with the MSC according to the rules defined in 3GPP TS 27.001. If the UE proposes to the network to modify the User Rate as well as the correlated parameters Modem Type and Intermediate Rate in the call confirmed message, the network may accept or release the call (see 3GPP TS 27.001). For multislot, 14.4kbit/s, EDGE and Iu Mode operations, the MS may also propose to the network to modify the Fixed Network User Rate and Other Modem Type parameters (see 3GPP TS 27.001). In case a transparent service is used, the call shall be released. For a non-transparent service with flow control, the MSC/IWF shall use towards the fixed network the unmodified "fixed network user rate" and shall use the "wanted air interface user rate" or the modified "fixed network user rate" towards the mobile station.

3GPP TSG-CN WG3 Meeting #29 ***N3-030571***
Sophia Antipolis, France. 25th - 29th August 2003.

CR-Form-v7

CHANGE REQUEST

⌘ **29.007** **CR** **086** ⌘ **rev** **-** ⌘ Current version: **4.8.0** ⌘

*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 [X] Radio Access Network [ ] Core Network [X]

Title:	⌘	Alignment of negotiation rules with 27.001
Source:	⌘	TSG_CN WG3 [Siemens AG]
Work item code:	⌘	TEI
Date:	⌘	26/08/2003
Category:	⌘	**A**
Release:	⌘	Rel-4

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:	⌘	This CR provides an alignment of the negotiation rules of the BC-IE between the UE and the MSC. The rules saying what the UE is allowed to negotiate are defined in TS 27.001 and do not need to be repeated in TS 29.007. Only related actions by the MSC should be specified in 29.007. Clause 10 containes also a change reagarding the negotiation of the FNUR where the MSC shall maintain a non-transparent call according to the WAIUR towards the UE. However, this value is not available if UEs do not support GSM. Here, the modified FNUR can be used instead of the WAIUR.
Summary of change:	⌘	See attached pages
Consequences if not approved:	⌘	Inconsistent rules in TS 27.001 and 29.007.

Clauses affected:	⌘	Clauses 9.2.1.1, 9.2.2.1 and 10

	Y	N		
Other specs affected: ⌘		X	Other core specifications	⌘
		X	Test specifications	
		X	O&M Specifications	

Other comments:	⌘	

How to create CRs using this form:
Comprehensive information and tips about how to create CRs can be found at http://www.3gpp.org/specs/CR.htm.
Below is a brief summary:

1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

First section modified

9.2.1 Network interworking mobile originated

9.2.1.1 Selection of interworking function

The interworking function will need to negotiate with the user to establish the appropriate modem selection e.g. data rate, modulation scheme, etc. In addition, it will also be required to convert the signalling format, from a combination of out of band and in band, to that suitable for controlling the modem and the autocalling line procedure function where applicable. In the following modem selection procedures it is assumed that the interworking function and modems will be associated with each MSC.

For a data call originated by a circuit mode data terminal on the PLMN, the modem selection is done by using the element "modem type" in the call set-up message (bearer capability).

In addition, other elements of the call setup will indicate the user rate, etc. to be used via that modem. The use of this information however means that the network is only able to select a modem from the modem pool which conforms to the speed which the terminal is utilizing at the DTE/DCE interface at the MS (e.g. V.22 for 1 200 bps). The exception to this is where the user has selected the non transparent service in which case either an autobauding or multi self selecting speed modem (e.g. V.32) may be used.

In case the PLMN-BC(s) received with the set-up message indicated a multislot, 14.4kbit/s, and EDGE-operation (refer to 3GPP TS 27.001) and the network does not support any of the required such services, the PLMN-BC(s) sent with the call proceeding message shall not contain the "fixed network user rate", "other modem type" and "user initiated modification indicator" parameters - the MSC shall discard the multislot or 14.4kbit/s and/or EDGE-related parameters and use the fall-back bearer service indicated by the remaining parameters of the PLMN-BS(s) on a singleslot configuration (refer to 3GPP TS 48.020 and 3GPP TS 44.021) on the MSC/IWF-BSS link. The MSC/IWF shall modify the relevant parameters in a possibly present LLC accordingly.

If the MSC supports the multislot, 14.4kbit/s and/or EDGE-operation, the PLMN-BC(s) shall include the "fixed network user rate", "other modem type" and if applicable the "user initiated modification indicator" parameters. The MSC shall apply on the MSC/IWF-BSS link a singleslot or multislot configuration according to the rules defined in 3GPP TS 44.021, 3GPP TS 48.020 and 3GPP TS 24.022. In case the MS signals an ACC containing TCH/F4.8 only and the network does not support TCH/F4.8 channel coding, then the MSC may act as if TCH/F9.6 were included in the ACC.

In case the PLMN-BC(s) received with the set-up message did not indicate a multislot, 14.4kbit/s or EDGE-operation, the MSC shall not include the "fixed network user rate", "other modem type" and "user initiated modification indicator" parameters in the PLMN-BC(s) of the call proceeding message - the MSC shall use a singleslot configuration on the MSC/IWF-BSS link.

The MSC may negotiate parameters with the MS according to the rules defined in 3GPP TS 27.001. ~~For multislot, 14.4 kbit/s, EDGE and Iu Mode operations t~~The MSC/IWF shall modify the relevant parameters in a possibly present LLC accordingly.

9.2.1.2 Modem Selection

In general terms the indication of the bearer capability parameter "Information Transfer Capability" will be utilized in the call set-up message to determine when the modem should be selected in the call.

In case of single calls, the modem function shall operate in the calling mode in case of mobile originated calls and in the answering mode in case of mobile terminated calls.

In case of dual data calls (alternate speech/facsimile group 3) the operation mode of the modem (working in calling or answering mode) depend on the initial call setup direction and on the optional parameter "Reverse Call Setup Direction" information element of the MODIFY message. If this information element is omitted the direction is derived from the initial call setup direction, i.e. the mode is the same as in case of single calls.

For the attribute value "3,1 kHz audio Ex PLMN" and "facsimile group 3", the modem will be selected immediately. The line procedure according to V.25 will then be carried out using the appropriate modem functions.

For the Teleservice 61 "Alternate speech/facsimile group 3", (if speech is selected as the first service), the modem is made available but not selected until the subscriber indicates the change of service request (see subclause 9.3).

For "alternate speech/facsimile group 3" calls refer to 3GPP TS 43.045 (GSM) and 3GPP TS 23.146 (UMTS).

9.2.1.3 Mapping of BC-IE from PLMN to ISUP (or other)

As it cannot be determined from the called address whether the distant network is a PSTN or an ISDN the same mapping takes place as for ISDN calls (see table 7A), if ISDN signalling is used between different MSCs (e.g. on the link VMSC - GMSC).

9.2.2 Network Interworking Mobile terminated PSTN Originated

This subclause describes the interworking of calls where the calling subscriber cannot generate or communicate Compatibility Information exhaustive for deducing a PLMN Basic Service to a PLMN (gateway MSC/interrogating node) because of lack of ISDN signalling capability. Thus the HLR is relieved from any compatibility checking for such calls.

Two methods of allocating MS International ISDN Numbers (MSISDNs) are allowed: Firstly, a separate MSISDN may be allocated for each service, or service option, which a subscriber uses for incoming calls; or, alternatively, a single number, applicable for all incoming calls is used.

It should be noted that it is possible for both schemes to co-exist within the PLMN and that they are not mutually exclusive.

a) Multiple MSISDNs are used ("The Multi-numbering Scheme"). See figure 2.

b) A single MSISDN is used ("The Single-numbering Scheme"). See figure 3.

9.2.2.1 Multi-numbering Scheme

In this scheme, the HPLMN will allocate a number of MSISDNs to a subscriber and associate with each of these numbers a Bearer Capability to identify a Bearer or a Teleservice. This Bearer Capability comprises a complete PLMN Bearer Capability (PLMN BC) information element with contents according to 3GPP TS 27.001 and coded as per 3GPP TS 24.008. In either case, when the HLR receives an interrogation relating to an incoming call (i.e. the MAP "Send Routing Information" procedure), it requests a roaming number (MSRN) from the VLR. This request will contain the PLMN BC reflecting the service associated with the called MSISDN, i.e. the PLMN BC is passed to the VLR within the MAP parameter "GSM Bearer Capability" of the message "Provide Roaming Number".

At the VMSC, when the incoming call arrives, the PLMN BC associated with the MSRN are retrieved from the VLR and sent to the MS at call set-up.

Where the PLMN specific parameter "connection element" contained in the retrieved PLMN BC-IE, indicates dual capabilities then the VMSC shall set it according to its capabilities/preferences. Additionally the parameters correlated to "connection element" shall be modified in accordance with 3GPP TS 27.001.

The same applies to the parameter modem type if "autobauding type 1" is indicated but the IWF does not support this feature. The parameter "data compression" may also be modified according to the capabilities of the IWF.

Where single capabilities are indicated then the VMSC shall use the requested values if it is able to support the service requested. If it is unable to support the requested service then it shall set them according to its capabilities/preferences.

Where the Compatibility Information is provided in a degree exhaustive to deduce a PLMN Basic Service (see application rules in subclause 10.2.2), then the VMSC in providing the PLMN BC IE in the setup message shall set the PLMN specific parameters to its capabilities/preferences.

On receipt of a Set-up message containing the compatibility information, the MS will analyse the contents to decide whether the service can be supported (with or without modification, see 3GPP TS 27.001) and the call will be accepted or rejected as appropriate.

The UE may negotiate parameters with the MSC according to the rules defined in 3GPP TS 27.001. If the UE proposes to the network to modify the User Rate as well as the correlated parameters Modem Type and Intermediate Rate in the call confirmed message or if the UE proposes to the network to modify the Fixed Network User Rate and Other Modem

Type parameters for multislot, 14.4kbit/s, EDGE and Iu Mode operations, the network may accept or release the call (see 3GPP TS 27.001).

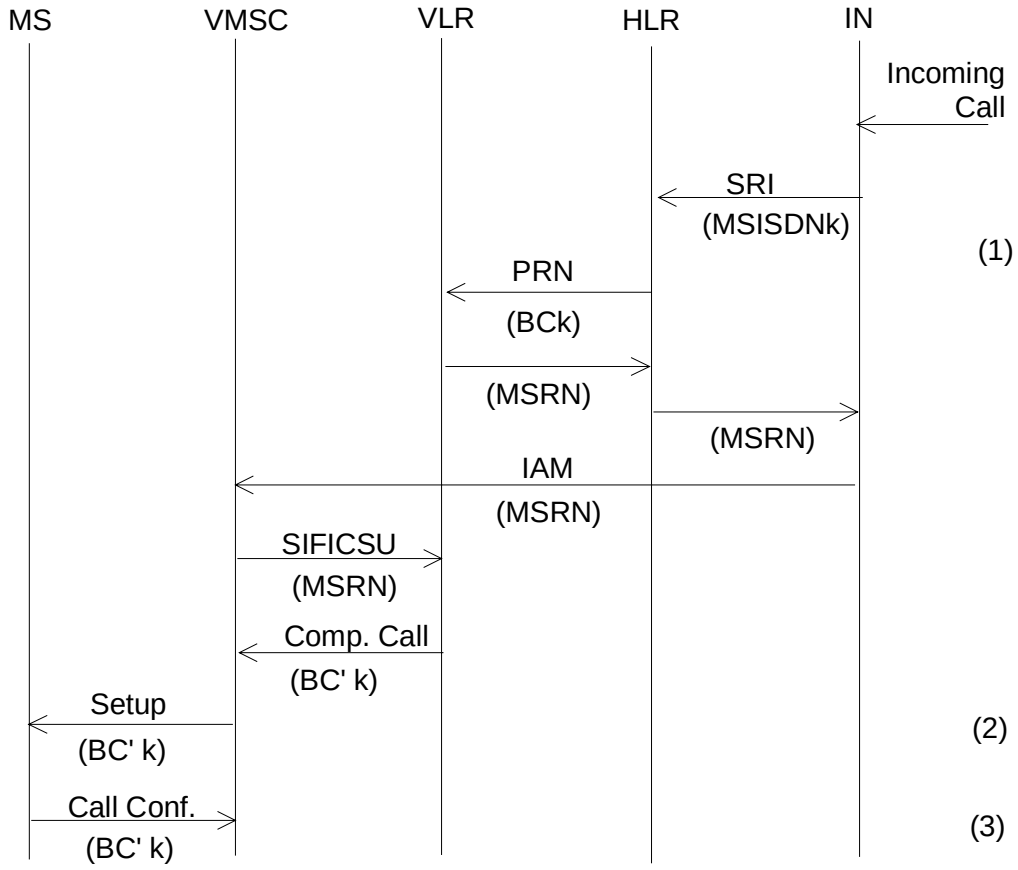
~~These negotiable parameters in the PLMN BC IE are: Connection Element (Transparent\non-transparent), Data Compression, number of data bits, number of stop bits and parity as well as the correlated parameters Structure, Intermediate Rate, Modem Type and User Information Layer 2 Protocol. Additionally, for multislot, 14.4 kbit/s and EDGE operations the parameters Fixed Network User Rate, Other Modem Type and User Initiated Modification Indicator, and for Iu Mode operations the parameters Fixed Network User Rate and Other Modem Type, can be negotiated. For FTM, PIAFS and Multimedia, Rate adaption/Other rate adaption can be negotiated. For FTM and PIAFS, Synchronous/asynchronous can be negotiated, see 3GPP TS 27.001.~~

This negotiation takes place by means of the MS reflecting back to the MSC a complete bearer capability information element in the call confirm message, with the relevant parameters changed. If this does not take place (i.e. if there is no PLMN BC present in the call confirmed message), than the MSC will assume that the values originally transmitted to the MS are accepted.

In case the PLMN-BC sent with the set-up message contained the "fixed network user rate", "other modem type" and "user initiated modification parameter" parameters and no multislot, 14.4 kbit/s, and/or EDGE related parameters (refer to 3GPP TS 27.001) are received in the PLMN-BC of the call confirmed message or no PLMN-BC is received, the MSC shall discard the "fixed network user rate", "other modem type" and "user initiated modification parameter" parameters - the MSC shall use the fall-back bearer service indicated by the remaining parameters of the PLMN-BC on a singleslot configuration (refer to 3GPP TS 48.020 and 3GPP TS 44.021) on the MSC/IWF-BSS link.

On the other hand, if the PLMN-BC received with the call confirmed message contain(s) multislot, 14.4kbit/s or EDGE-related parameters the MSC shall apply on the MSC/IWF-BSS link a singleslot or multislot configuration according to the rules defined in 3GPP TS 44.021, 3GPP TS 48.020 and 3GPP TS 24.022. In case the MS signals an ACC containing TCH/F4.8 only and the network does not support TCH/F4.8 channel coding, then the MSC may act as if TCH/F9.6 were included in the ACC.

~~In addition the MS may propose to the network to modify the User Rate as well as the correlated parameters Modem Type and Intermediate Rate in the CALL CONFIRMED message. The network may accept or release the call. For multislot, 14.4kbit/s, EDGE and Iu Mode operations, the MS may also propose to the network to modify the Fixed Network User Rate and Other Modem Type parameters (see 3GPP TS 27.001).~~



NOTES: (1) The HLR translates the received MSISDN_ called address (MSISDNk) into the relevant bearer capability information (BCk).
(2) Some parameters of BCk may be provided/modified according to the MSC's capabilities/preferences. See subclause 9.2.2.
(3) In the "Call Confirmed" message, the MS may modify some parameters of the BC. See subclause 9.2.2.

Abbr.:
SRI - Send Routing Information.
PRN - Provide Roaming Number.
MSRN - Mobile Station Roaming Number.
IAM - Initial Address Message.
SIFICSU - Send Information For Incoming Call Set Up.

Figure 2: Call Flow for a mobile terminated, PSTN originated call where the compatibility information provided are not exhaustive for deducing a PLMN Bearer Service; HLR uses multiple MSISDN numbers with corresponding BCs

Next section modified

10 Interworking to the ISDN

The interworking to the ISDN is specified on the principle of the network supporting standardized associated signalling protocol as outlined in clause 6, i.e. DSS1 and ISUP. An ISDN not complying with this definition differs - for the purpose of the present document - in that it does not support the compatibility information to that degree necessary for deducing a PLMN Basic Service. These networks will find their reflection in the following where those implications are to be set out.

The calling address sent in a mobile originated call to the ISDN is always the basic MSISDN even if the ISDN user shall use a different MSISDN (multi numbering scheme, see subclause 9.2.2 case a) for a mobile terminated call (call back) as only the basic MSISDN is available at the VLR (see 3GPP TS 29.002).

The scope of this clause is to describe the handling of the content of the Information Elements where "content" is understood to be the value of the parameter fields of the Information Elements, namely BC-IE, HLC and LLC, after the length indicator. For the transport of these Information Elements within the PLMN refer to 3GPP TS 29.002.

The handling of multislot, 14.4kbit/s, EDGE and Iu Mode related parameter of the call control signalling and the applicability of single- or multislot configurations (see 3GPP TS 48.020 and 3GPP TS 44.021) is the same as for the PSTN interworking cases.

The UE may negotiate parameters with the MSC according to the rules defined in 3GPP TS 27.001. If the UE proposes to the network to modify the User Rate as well as the correlated parameters Modem Type and Intermediate Rate in the call confirmed message, the network may accept or release the call (see 3GPP TS 27.001). For multislot, 14.4kbit/s, EDGE and Iu Mode operations, the MS may also propose to the network to modify the Fixed Network User Rate and Other Modem Type parameters (see 3GPP TS 27.001). In case a transparent service is used, the call shall be released. For a non-transparent service with flow control, the MSC/IWF shall use towards the fixed network the unmodified "fixed network user rate" and shall use the "wanted air interface user rate" or the modified "fixed network user rate" towards the mobile station.

3GPP TSG-CN WG3 Meeting #29 ***N3-030572***
Sophia Antipolis, France. 25th - 29th August 2003.

CR-Form-v7

CHANGE REQUEST

⌘ **29.007** **CR** **081** ⌘ **rev** **1** ⌘ Current version: **5.6.0** ⌘

*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 [X] Radio Access Network [ ] Core Network [X]

Title:	⌘	Alignment of negotiation rules with 27.001
Source:	⌘	TSG_CN WG3 [Siemens AG]
Work item code:	⌘	TEI
Date:	⌘	26/08/2003
Category:	⌘	**A**
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:	⌘	This CR provides an alignment of the negotiation rules of the BC-IE between the UE and the MSC. The rules saying what the UE is allowed to negotiate are defined in TS 27.001 and do not need to be repeated in TS 29.007. Only related actions by the MSC should be specified in 29.007. Clause 10 containes also a change reagarding the negotiation of the FNUR where the MSC shall maintain a non-transparent call according to the WAIUR towards the UE. However, this value is not available if UEs do not support GSM. Here, the modified FNUR can be used instead of the WAIUR.
Summary of change:	⌘	See attached pages
Consequences if not approved:	⌘	Inconsistent rules in TS 27.001 and 29.007.

Clauses affected:	⌘	Clauses 9.2.1.1, 9.2.2.1 and 10

		Y	N		
Other specs affected:	⌘		X	Other core specifications	⌘
			X	Test specifications	
			X	O&M Specifications	
Other comments:	⌘				

How to create CRs using this form:
Comprehensive information and tips about how to create CRs can be found at http://www.3gpp.org/specs/CR.htm.
Below is a brief summary:

1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

First section modified

9.2.1 Network interworking mobile originated

9.2.1.1 Selection of interworking function

The interworking function will need to negotiate with the user to establish the appropriate modem selection e.g. data rate, modulation scheme, etc. In addition, it will also be required to convert the signalling format, from a combination of out of band and in band, to that suitable for controlling the modem and the autocalling line procedure function where applicable. In the following modem selection procedures it is assumed that the interworking function and modems will be associated with each MSC.

For a data call originated by a circuit mode data terminal on the PLMN, the modem selection is done by using the element "modem type" in the call set-up message (bearer capability).

In addition, other elements of the call setup will indicate the user rate, etc. to be used via that modem. The use of this information however means that the network is only able to select a modem from the modem pool which conforms to the speed which the terminal is utilizing at the DTE/DCE interface at the UE (e.g. V.22 for 1 200 bps). The exception to this is where the user has selected the non transparent service in which case either an autobauding or multi self selecting speed modem (e.g. V.32) may be used.

In case the PLMN-BC(s) received with the set-up message indicated a multislot, 14.4kbit/s, and EDGE-operation (refer to 3GPP TS 27.001) and the network does not support any of the required such services, the PLMN-BC(s) sent with the call proceeding message shall not contain the "fixed network user rate", "other modem type" and "user initiated modification indicator" parameters - the MSC shall discard the multislot or 14.4kbit/s and/or EDGE-related parameters and use the fall-back bearer service indicated by the remaining parameters of the PLMN-BS(s) on a singleslot configuration (refer to 3GPP TS 48.020 and 3GPP TS 44.021) on the MSC/IWF-RAN link. The MSC/IWF shall modify the relevant parameters in a possibly present LLC accordingly.

If the MSC supports the multislot, 14.4kbit/s and/or EDGE-operation, the PLMN-BC(s) shall include the "fixed network user rate", "other modem type" and if applicable the "user initiated modification indicator" parameters. The MSC shall apply on the MSC/IWF-RAN link a singleslot or multislot configuration according to the rules defined in 3GPP TS 44.021, 3GPP TS 48.020 and 3GPP TS 24.022. In case the UE signals an ACC containing TCH/F4.8 only and the network does not support TCH/F4.8 channel coding, then the MSC may act as if TCH/F9.6 were included in the ACC.

In case the PLMN-BC(s) received with the set-up message did not indicate a multislot, 14.4kbit/s or EDGE-operation, the MSC shall not include the "fixed network user rate", "other modem type" and "user initiated modification indicator" parameters in the PLMN-BC(s) of the call proceeding message - the MSC shall use a singleslot configuration on the MSC/IWF-RAN link.

The MSC may negotiate parameters with the UE according to the rules defined in 3GPP TS 27.001. ~~For multislot, 14.4 kbit/s, EDGE and Iu Mode operations t~~The MSC/IWF shall modify the relevant parameters in a possibly present LLC accordingly.

9.2.1.2 Modem Selection

In general terms the indication of the bearer capability parameter "Information Transfer Capability" will be utilized in the call set-up message to determine when the modem should be selected in the call.

In case of single calls, the modem function shall operate in the calling mode in case of mobile originated calls and in the answering mode in case of mobile terminated calls.

In case of dual data calls (alternate speech/facsimile group 3) the operation mode of the modem (working in calling or answering mode) depend on the initial call setup direction and on the optional parameter "Reverse Call Setup Direction" information element of the MODIFY message. If this information element is omitted the direction is derived from the initial call setup direction, i.e. the mode is the same as in case of single calls.

For the attribute value "3,1 kHz audio Ex PLMN" and "facsimile group 3", the modem will be selected immediately. The line procedure according to ITU-T Recommendation V.25 will then be carried out using the appropriate modem functions.

For the Teleservice 61 "Alternate speech/facsimile group 3", (if speech is selected as the first service), the modem is made available but not selected until the subscriber indicates the change of service request (see subclause 9.3).

For "alternate speech/facsimile group 3" calls refer to 3GPP TS 43.045 (A/Gb mode) and 3GPP TS 23.146 (UTRAN Iu mode).

9.2.1.3 Mapping of BC-IE from PLMN to ISUP (or other)

As it cannot be determined from the called address whether the distant network is a PSTN or an ISDN the same mapping takes place as for ISDN calls (see table 7A), if ISDN signalling is used between different MSCs (e.g. on the link VMSC - GMSC).

9.2.2 Network Interworking Mobile terminated PSTN Originated

This subclause describes the interworking of calls where the calling subscriber cannot generate or communicate Compatibility Information exhaustive for deducing a PLMN Basic Service to a PLMN (gateway MSC/interrogating node) because of lack of ISDN signalling capability. Thus the HLR is relieved from any compatibility checking for such calls.

Two methods of allocating UE International ISDN Numbers (MSISDNs) are allowed: Firstly, a separate MSISDN may be allocated for each service, or service option, which a subscriber uses for incoming calls; or, alternatively, a single number, applicable for all incoming calls is used.

It should be noted that it is possible for both schemes to co-exist within the PLMN and that they are not mutually exclusive.

a) Multiple MSISDNs are used ("The Multi-numbering Scheme"). See figure 2.

b) A single MSISDN is used ("The Single-numbering Scheme"). See figure 3.

9.2.2.1 Multi-numbering Scheme

In this scheme, the HPLMN will allocate a number of MSISDNs to a subscriber and associate with each of these numbers a Bearer Capability to identify a Bearer or a Teleservice. This Bearer Capability comprises a complete PLMN Bearer Capability (PLMN BC) information element with contents according to 3GPP TS 27.001 and coded as per 3GPP TS 24.008. In either case, when the HLR receives an interrogation relating to an incoming call (i.e. the MAP "Send Routing Information" procedure), it requests a roaming number (MSRN) from the VLR. This request will contain the PLMN BC reflecting the service associated with the called MSISDN, i.e. the PLMN BC is passed to the VLR within the MAP parameter "GSM Bearer Capability" of the message "Provide Roaming Number".

At the VMSC, when the incoming call arrives, the PLMN BC associated with the MSRN are retrieved from the VLR and sent to the UE at call set-up.

Where the PLMN specific parameter "connection element" contained in the retrieved PLMN BC-IE, indicates dual capabilities then the VMSC shall set it according to its capabilities/preferences. Additionally the parameters correlated to "connection element" shall be modified in accordance with 3GPP TS 27.001.

The same applies to the parameter modem type if "autobauding type 1" is indicated but the IWF does not support this feature. The parameter "data compression" may also be modified according to the capabilities of the IWF.

Where single capabilities are indicated then the VMSC shall use the requested values if it is able to support the service requested. If it is unable to support the requested service then it shall set them according to its capabilities/preferences.

Where the Compatibility Information is provided in a degree exhaustive to deduce a PLMN Basic Service (see application rules in subclause 10.2.2), then the VMSC in providing the PLMN BC IE in the setup message shall set the PLMN specific parameters to its capabilities/preferences.

On receipt of a Set-up message containing the compatibility information, the UE will analyse the contents to decide whether the service can be supported (with or without modification, see 3GPP TS 27.001) and the call will be accepted or rejected as appropriate.

The UE may negotiate parameters with the MSC according to the rules defined in 3GPP TS 27.001. If the UE proposes to the network to modify the User Rate as well as the correlated parameters Modem Type and Intermediate Rate in the call confirmed message or if the UE proposes to the network to modify the Fixed Network User Rate and Other Modem Type parameters for multislot, 14.4kbit/s, EDGE and Iu Mode operations, the network may accept or release the call (see 3GPP TS 27.001).

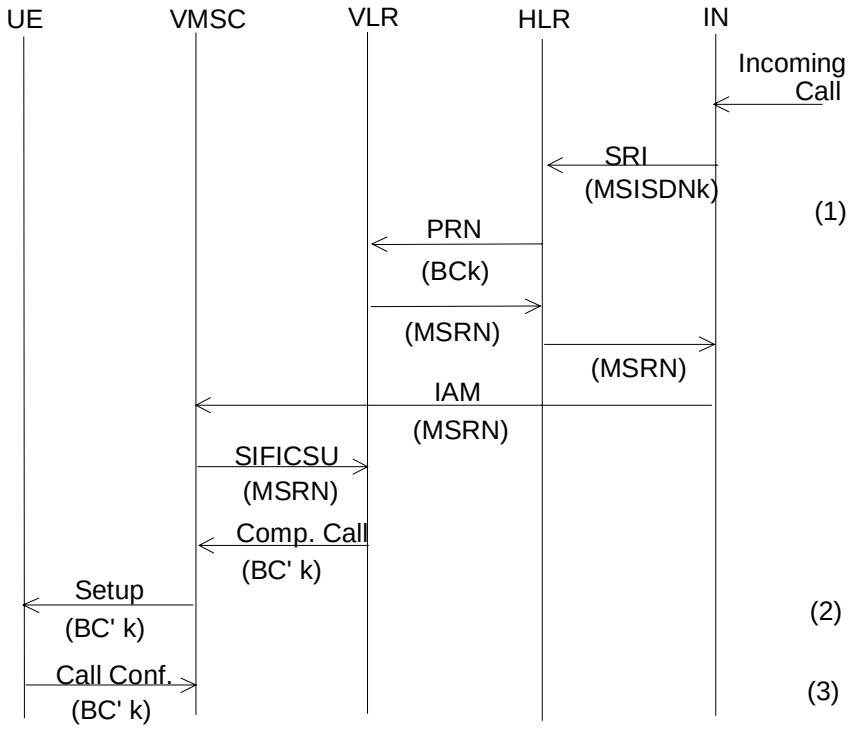
~~These negotiable parameters in the PLMN BC IE are: Connection Element (Transparent\non-transparent), Data Compression, number of data bits, number of stop bits and parity as well as the correlated parameters Structure, Intermediate Rate, Modem Type and User Information Layer 2 Protocol. Additionally, for multislot, 14.4 kbit/s and EDGE operations the parameters Fixed Network User Rate, Other Modem Type and User Initiated Modification Indicator, and for Iu Mode operations the parameters Fixed Network User Rate and Other Modem Type, can be negotiated. For FTM, PIAFS and Multimedia, Rate adaption/Other rate adaption can be negotiated. For FTM and PIAFS, Synchronous/asynchronous can be negotiated, see 3GPP TS 27.001.~~

This negotiation takes place by means of the UE reflecting back to the MSC a complete bearer capability information element in the call confirm message, with the relevant parameters changed. If this does not take place (i.e. if there is no PLMN BC present in the call confirmed message), than the MSC will assume that the values originally transmitted to the UE are accepted.

In case the PLMN-BC sent with the set-up message contained the "fixed network user rate", "other modem type" and "user initiated modification parameter" parameters and no multislot, 14.4 kbit/s, and/or EDGE related parameters (refer to 3GPP TS 27.001) are received in the PLMN-BC of the call confirmed message or no PLMN-BC is received, the MSC shall discard the "fixed network user rate", "other modem type" and "user initiated modification parameter" parameters - the MSC shall use the fall-back bearer service indicated by the remaining parameters of the PLMN-BC on a singleslot configuration (refer to 3GPP TS 48.020 and 3GPP TS 44.021) on the MSC/IWF-RAN link.

On the other hand, if the PLMN-BC received with the call confirmed message contain(s) multislot, 14.4kbit/s or EDGE-related parameters the MSC shall apply on the MSC/IWF-RAN link a singleslot or multislot configuration according to the rules defined in 3GPP TS 44.021, 3GPP TS 48.020 and 3GPP TS 24.022. In case the UE signals an ACC containing TCH/F4.8 only and the network does not support TCH/F4.8 channel coding, then the MSC may act as if TCH/F9.6 were included in the ACC.

~~In addition the UE may propose to the network to modify the User Rate as well as the correlated parameters Modem Type and Intermediate Rate in the CALL CONFIRMED message. The network may accept or release the call. For multislot, 14.4kbit/s, EDGE and Iu Mode operations, the UE may also propose to the network to modify the Fixed Network User Rate and Other Modem Type parameters (see 3GPP TS 27.001).~~



NOTES: (1) The HLR translates the received MSISDN_ called address (MSISDNk) into the relevant bearer capability information (BCk).
(2) Some parameters of BCk may be provided/modified according to the MSC's capabilities/preferences. See subclause 9.2.2.
(3) In the "Call Confirmed" message, the UE may modify some parameters of the BC. See subclause 9.2.2.

Abbr.:
SRI - Send Routing Information.
PRN - Provide Roaming Number.
MSRN - Mobile Station Roaming Number.
IAM - Initial Address Message.
SIFICSU - Send Information For Incoming Call Set Up.

Figure 2: Call Flow for a mobile terminated, PSTN originated call where the compatibility information provided are not exhaustive for deducing a PLMN Bearer Service; HLR uses multiple MSISDN numbers with corresponding BCs

Next section modified

10 Interworking to the ISDN

The interworking to the ISDN is specified on the principle of the network supporting standardized associated signalling protocol as outlined in clause 6, i.e. DSS1 and ISUP. An ISDN not complying with this definition differs - for the purpose of the present document - in that it does not support the compatibility information to that degree necessary for deducing a PLMN Basic Service. These networks will find their reflection in the following where those implications are to be set out.

The calling address sent in a mobile originated call to the ISDN is always the basic MSISDN even if the ISDN user shall use a different MSISDN (multi numbering scheme, see 9.2.2 case a) for a mobile terminated call (call back) as only the basic MSISDN is available at the VLR (see 3GPP TS 29.002).

The scope of this clause is to describe the handling of the content of the Information Elements where "content" is understood to be the value of the parameter fields of the Information Elements, namely BC-IE, HLC and LLC, after the length indicator. For the transport of these Information Elements within the PLMN refer to 3GPP TS 29.002.

The handling of multislot, 14.4kbit/s, EDGE and Iu Mode related parameters of the call control signalling and the applicability of single- or multislot configurations (refer to 3GPP TS 48.020 and 3GPP TS 44.021) is the same as for the PSTN interworking cases.

The UE may negotiate parameters with the MSC according to the rules defined in 3GPP TS 27.001. If the UE proposes to the network to modify the User Rate as well as the correlated parameters Modem Type and Intermediate Rate in the call confirmed message, the network may accept or release the call (see 3GPP TS 27.001). For multislot, 14.4kbit/s, EDGE and Iu Mode operations, the UE may also propose to the network to modify the Fixed Network User Rate and Other Modem Type parameters (see 3GPP TS 27.001). In case a transparent service is used, the call shall be released. For a non-transparent service with flow control, the MSC/IWF shall use towards the fixed network the unmodified "fixed network user rate" and shall use the "wanted air interface user rate" or the modified "fixed network user rate" towards the user equipment.