Source:	**TSG CN WG3**
Title:	**CR to Rel-5 on Work Item TEI5**
Agenda item:	**9.14**
Document for:	**APPROVAL**

Introduction:

This document contains **2** CRs on **Rel-5** to Work Item **"TEI5"**, that have been agreed by **TSG CN WG3**, and are forwarded to TSG CN Plenary meeting #15 for approval.

Doc-2nd-	Subject	Spec	CR	Rev	Cat	Phase	Versi	Workitem
N3-020100	Mobile terminated call with single numbering	27.001	075	1	B	Rel-5	5.0.0	TEI5
N3-020099	Mobile terminated call with single numbering	29.007	049	1	B	Rel-5	5.0.0	TEI5

CR-Form-v5

CHANGE REQUEST

| ⌘ | **29.007** CR **049** | ⌘ **rev** | **1** | ⌘ | 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: ⌘ (U)SIM ☐ ME/UE **X** Radio Access Network ☐ Core Network **X**

Title: ⌘	Mobile terminated call with single numbering scheme	
Source: ⌘	TSG_CN WG3	
Work item code: ⌘	TEI5	***Date:*** ⌘ 29.01.02
Category: ⌘ **B**		***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)

Reason for change: ⌘	The PLMN does not send any information about a requested services to the UE in case of mobile terminated calls when the single-numbering scheme is used in the HLR and the PLMN is not able to create a complete PLMN BC. The UE has to provide the PLMN BC without getting any information from the network.
Summary of change: ⌘	Information known by the MSC is sent to the UE in the call setup. The UE may use the information to deduce the requested service.
Consequences if not approved: ⌘	Success rate of mobile terminated calls will not be satisfactory when the mobile network uses the single-numbering scheme.

Clauses affected: ⌘	9.2.2.2, 10.2.2.4, 10.2.2.7
Other specs affected: ⌘	**X** Other core specifications ⌘ 24.008, 27.001 ☐ Test specifications ☐ O&M Specifications
Other comments: ⌘	

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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.
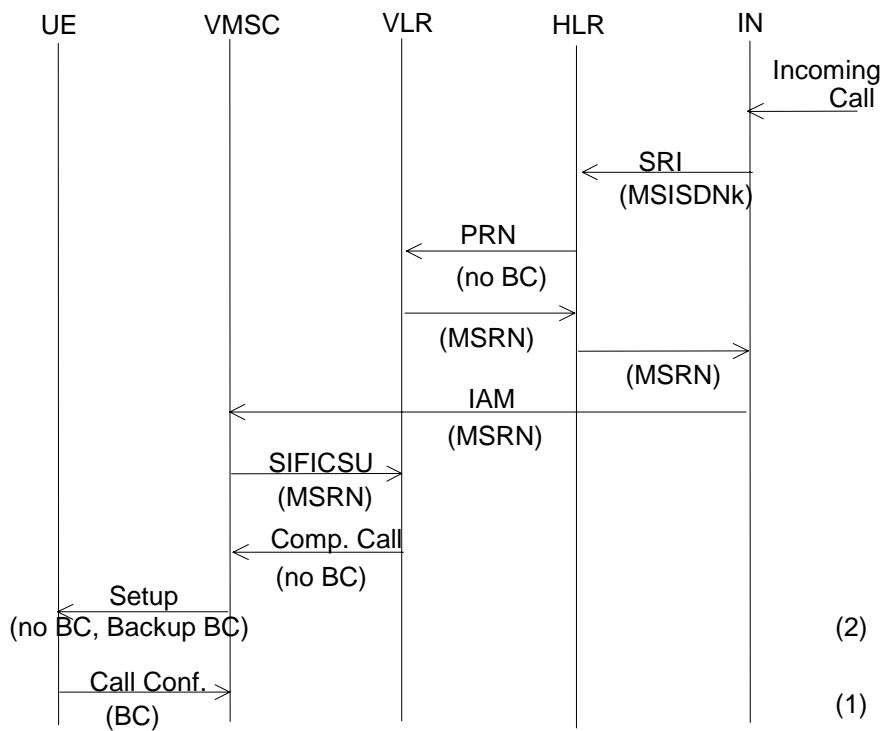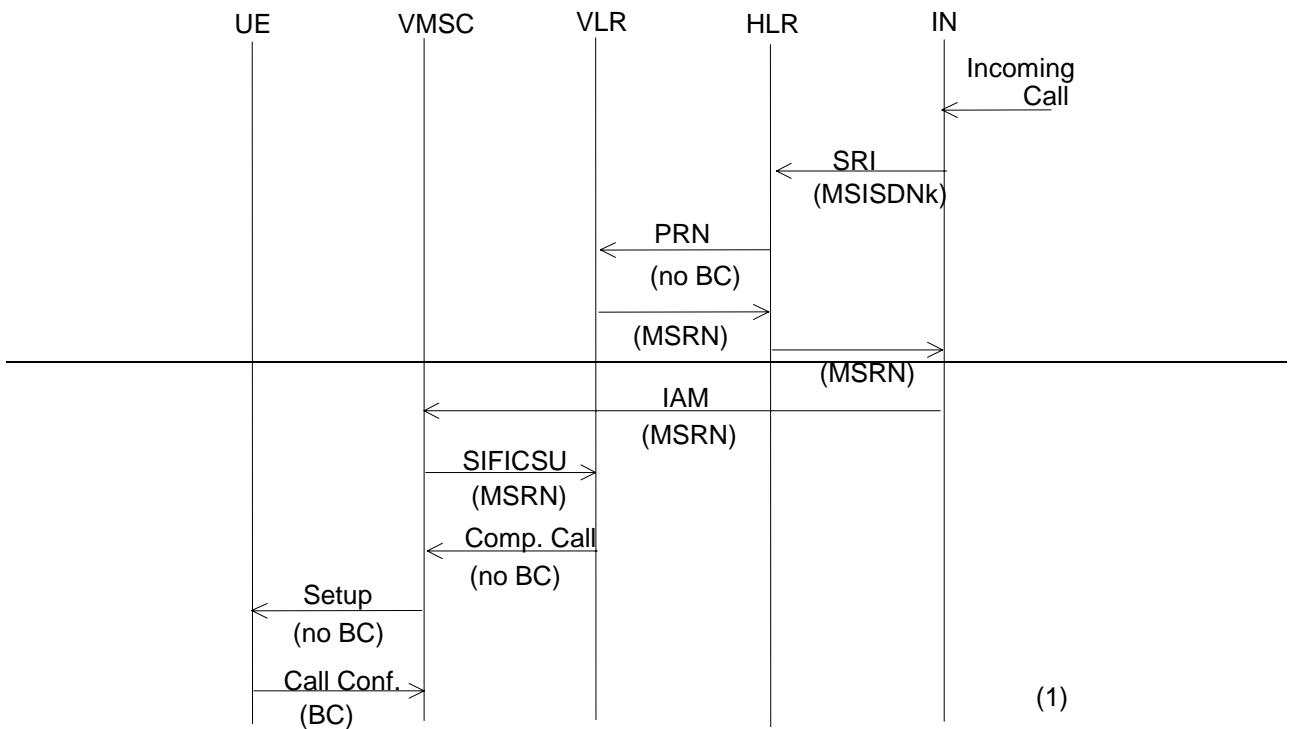
9.2.2.2 Single-numbering Scheme

In the single-numbering scheme, the HPLMN will allocate one MSISDN to a subscriber, applicable to all services.

In this case, when the HLR receives an interrogation relating to an incoming call without compatibility information exhaustive for deducing a PLMN Basic Service (i.e. the MAP "Send Routing Information" procedure), the request to the VLR for a roaming number will not contain compatibility information i.e. a PLMN BC.

At the VLR, when the incoming call arrives, there is no PLMN BC associated with the MSRN and so the call set-up to the mobile will not contain the PLMN BC element. However, the VMSC may include all available information in the BACKUP BC information element of the call set-up message, see subclause 10.2.2.7.

In this the case the PLMN was not able to provide a PLMN BC, the MS will return a complete single or dual PLMN BC in the Call Confirmed message, indicating the service required by the mobile subscriber. The VMSC will analyse this PLMN BC and optionally perform subscription checking (see 3GPP TS 42.001). If the requested PLMN BC can be supported the call is established, otherwise the call will be released.

```
        UE          VMSC         VLR          HLR           IN
         |            |            |            |            |
         |            |            |            |            | Incoming
         |            |            |            |            |<─── Call
         |            |            |            |     SRI    |
         |            |            |            |<───────────|
         |            |            |            | (MSISDNk)  |
         |            |            |    PRN     |            |
         |            |            |<───────────|            |
         |            |            |  (no BC)   |            |
         |            |            |  (MSRN)    |            |
         |            |            |───────────>|            |
         |            |            |            |   (MSRN)   |
─────────────────────────────────────────────────|──────────|────────────
         |            |            |            |   (MSRN)   |
         |            |    IAM     |            |            |
         |            |<────────────────────────|            |
         |            |  (MSRN)    |            |            |
         |            | SIFICSU  > |            |            |
         |            |  (MSRN)    |            |            |
         |            | Comp. Call |            |            |
         |            |<───────────|            |            |
         |            |  (no BC)   |            |            |
         |   Setup    |            |            |            |
         |<───────────|            |            |            |
         |  (no BC)   |            |            |            |
         | Call Conf. >            |            |            |      (1)
         |    (BC)    |            |            |            |
```

```
        UE          VMSC         VLR          HLR           IN
         |            |            |            |            |
         |            |            |            |            | Incoming
         |            |            |            |            |<─── Call
         |            |            |            |     SRI    |
         |            |            |            |<───────────|
         |            |            |            | (MSISDNk)  |
         |            |            |    PRN     |            |
         |            |            |<───────────|            |
         |            |            |  (no BC)   |            |
         |            |            |  (MSRN)    |            |
         |            |            |───────────>|            |
         |            |            |            |   (MSRN)   |
         |            |            |            |───────────>|
         |            |    IAM     |            |            |
         |            |<────────────────────────|            |
         |            |  (MSRN)    |            |            |
         |            | SIFICSU  > |            |            |
         |            |  (MSRN)    |            |            |
         |            | Comp. Call |            |            |
         |            |<───────────|            |            |
         |   Setup    |  (no BC)   |            |            |
         |<───────────|            |            |            |
         | (no BC, Backup BC)      |            |            |      (2)
         | Call Conf. >            |            |            |
         |    (BC)    |            |            |            |      (1)
```

NOTE: (1) This BC is derived from information stored in the UE, according to its configuration. The UE may also use the information provided in the Backup BC.
        (2) The Backup BC may be included if the BC is missing.

(23) Abbreviations: see figure 2.

**Figure 3: 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 single MSISDN numbers (no corresponding BC stored). Per call MSRN allocation**

New section

10.2.2.7 Creation of Backup Bearer Capability Information Element

If the VMSC is not able to send a PLMN BC to the MS/UE in the case of mobile terminated calls, it may include all available information in the Backup BC information element (Backup BC IE) of the call set-up message.

In the following table 7C the comparison is drawn between parameters in the ISDN call set up request message and that of the PLMN call set up request message. In some cases no comparable values are available and these will be marked as such. In some cases it is not necessary to support a particular option, and in this case those parameters will be annotated appropriately.

The PLMN parameters and values shall as in 3GPP TS 24.008 in combination as in 3GPP TS 27.001. The ISDN parameters and values are as in Q.931 (05/98).

Table 7C: Setting of parameters in Backup BC IE

Octet	ISDN BC / LLC parameter value	Octet	BACKUP BC parameter value
1	**Bearer Capability IEI**	1	**Bearer Capability IEI**
2	**Length of BC contents**	2	**Length of BC contents**
	no comparable field	3 #7..6	**Radio channel requirement** full rate channel (these bits are spare)
3 #7..6	**Coding standard** CCITT standardized coding	3 #5	**Coding standard** GSM standardized coding
3 #5..1	**Information transfer capability** speech unrestricted digital 3,1 kHz audio no comparable value no comparable value 7 kHz audio video (note 23)	3 #3..1	**Information transfer capability** speech unrestricted digital 3,1 kHz audio ex PLMN (note2) facsimile group 3 (note 3) other ITC (see octet 5a) not supported not supported
		5a #7..6	**Other ITC** restricted digital
4 #7..6	**Transfer mode** circuit mode packet mode	3 #4	**Transfer mode** circuit mode not supported
	no comparable field	4 #7	**Compression** (note 18) data compression not possible
4a #7..5	no comparable field (note 4)	(4) 4 #6..5	**Structure** (note 9) SDU integrity unstructured
4a #4..3	no comparable field (note 4)	4 #3	**Configuration** point-to-point (note 5)
	no comparable field	4 #2	**NIRR** (note 17) No meaning
4a #2..1	no comparable field (note 4)	4 #1	**Establishment** demand (note 5)
5 #5..1	**User information layer 1 protocol** no comparable value CCITT V.110, I.460 / X.30 G.711 A-law CCITT X.31 flag stuffing no comparable value H.221 & H.242 (note 28) H.223 & H.245	5 #5..4	**Rate adaption** no rate adaption (note 11) V.110, I.460/X.30 rate adaption no comparable value not supported other rate adaption (see octet 5a)
		5a #5..4	**Other rate adaptation** H.223 & H.245 H.223 & H.245
	no comparable field	5 #3..1	**Signalling access protocol** I.440/I.450
	any of the above values	6 #5..2	**User information layer 1 protocol** default layer 1 protocol
5a #7	**Synchronous / asynchronous (note 30)** synchronous asynchronous	6 #1	**Synchronous/asynchronous** synchronous asynchronous
5a #6	**Negotiation** not possible inband neg, possible (note 16)	6a #6	**Negotiation** not possible (note 5) no comparable value
5a #5..1	**User rate** 0,3 kbit/s 1,2 kbit/s 2,4 kbit/s 4,8 kbit/s 9,6 kbit/s 12 kbit/s rate is indicated by Ebit as specified in rec. I.460 0,6 kbit/s 3,6 kbit/s 7,2 kbit/s 8 kbit/s 14,4 kbit/s 16 kbit/s	6a #4..1	**User rate (note 29)** 0,3 kbit/s 1,2 kbit/s 2,4 kbit/s 4,8 kbit/s 9,6 kbit/s 12 kbit/s (note 13) (note 16) not supported not supported not supported not supported (note 20) not supported

Octet	ISDN BC / LLC parameter value	Octet	BACKUP BC parameter value
	19.2 kbit/s		(note 20)
	28.8 kbit/s		(note 20)
	32 kbit/s		(note 20)
	38.4 kbit/s		(note 20)
	48 kbit/s		(note 20)
	56 kbit/s		(note 20)
	57.6 kbit/s		not supported
	0,1345 kbit/s		not supported
	0,1 kbit/s		not supported
	75 bit/s / 1,2 kbit/s		not supported
	1,2 kbit/s / 75 bit/s		not supported
	0,110 kbit/s		not supported
	0,2 kbit/s		not supported
	no comparable value		unknown
5b #7..6	**Intermediate rate** any value	6b #7..6	**Intermediate rate** (note 6) 8 kbit/s 16 kbit/s
5b #5	**NIC on Tx** (note 14) does not require requires	6b #5	**NIC on Tx** does not require (note 5) requires (note 13)
5b #4	**NIC on Rx** (note 14) cannot accept can accept	6b #4	**NIC on Rx** cannot accept (note 5) can accept (note 13)
5c #7..6	**Number of stop bits** 1 bit 2 bits not used 1.5 bits	6a #7	**Number of stop bits** 1 bit (note 5) 2 bits no comparable value not supported
5c #5..4	**Number of data bits** 7 bits 8 bits not used 5 bits	6a #5	**Number of data bits** 7 bits 8 bits (note 5) no comparable value not supported
5c #3..1	**Parity information** odd even none forced to 0 forced to 1	6b #3..1	**Parity information** odd even none (note 5) forced to 0 forced to 1
	no comparable field	6c #7..6	**Connection element** (note 1) transparent non-transparent (RLP) both, transp. preferred both, non-transp preferred
5d #7	**Duplex mode** half duplex full duplex	4 #4	**Duplex mode** half duplex (note 13) full duplex (note 5)
5d #6..1	**Modem type** reserved V.21 V.22 V.22bis V.23 V.26ter V.32 V.26 V.26bis V.27 V.27bis V.29 no comparable value	6c #5..1	**Modem type** (note 12) none (note 7) V.21 V.22 V.22bis not supported V.26ter V.32 not supported not supported not supported not supported not supported autobauding type 1 (note 16)
5a #5..1	**User rate** no comparable value 9,6 kbit/s 14,4 kbit/s 19,2 kbit/s	6d #5..1	**Fixed network user rate** (note 20) FNUR not applicable / unknown 9,6 kbit/s 14,4 kbit/s 19,2 kbit/s

Octet	ISDN BC / LLC parameter value	Octet	BACKUP BC parameter value
	28,8 kbit/s 32.0 kbit/s 38,4 kbit/s 48 kbit/s 56 kbit/s no comparable value		28,8 kbit/s 32.0 kbit/s (note 27) 38,4 kbit/s 48,0 kbit/s 56,0 kbit/s 64,0 kbit/s (note 22)
	Modem type no comparable value (note 21) V.34	6d #7..6	**Other modem type** No other modem type V.34
	no comparable field	6e #7..6	**Acceptable channel codings** spare
	no comparable field	6e #5..1	**Maximum number of traffic channels** spare

	No comparable field	6f
		#7..5
			User initiated modification indicator (note 1) (note 25)
			User initiated modification not
			   required
			User initiated modification upto 1
			   TCH/F may be requested
			User initiated modification upto 2
			   TCH/F may be requested
			User initiated modification upto 3
			   TCH/F may be requested
			User initiated modification upto 4
			   TCH/F may be requested

	no comparable field	6f #4..1	**Wanted air interface user rate** spare
	no comparable field	6g #7..5	**Acceptable channel codings extended** spare
	no comparable field	6g #4..3	**Asymmetry indications** spare
6 #5..1	**User information layer 2 protocol (note 10)** Q.921 (I.441) X.25, link level no comparable value no comparable value	7	**User information layer 2 protocol (note 8)** no comparable value not supported ISO 6429, codeset 0 unknown

General notes:

1) Only the PLMN BC parameter values listed in the table may be generated (comparable values) during a mobile-terminated call by mapping the ISDN BC parameter values, exception see (10).

2) According to Q.931 (05/98) and 3GPP TS 24.008, respectively, the octets are counted from 1 to n onwards; the bit position in a particular octet is indicated by #x..y, with {x,y} = 1..8 (bit 1 is the least and bit 8 the most significant bit).

3) If octets of the ISDN BC are absent but present in the LLC, the LLC octets should apply for the mapping.

4) The number of octets which shall be encoded for the Backup BC-IE must comply to encoding rules in 3GPP TS 24.008 and the combination of the different parameter values shall be in accordance to 3GPP TS 27.001 with the modification that some parameters may be absent, if a whole octet is absent, and some parameters may get values defined for the Backup BC only. However, parameter values that are valid for both the PLMN BC and the Backup BC shall not be in contradiction to 3GPP TS 27.001.

Notes regarding particular entries in table 7C:

1) This PLMN parameter value is inserted according to user rate requirements and network capabilities / preferences.

2) This PLMN parameter value is inserted, if the information transfer capability in ISDN BC is "3,1kHz audio" and a comparable modem type is specified.

3) This PLMN parameter value is inserted, if the information transfer capability is "3,1 kHz audio" and the content of the HLC-IE, if any, indicates "facsimile group 2/3", (for details refer to subclause 10.2.2 case 3 for HLR action and case 5 for VMSC action).

4) When interworking with an ISDN according to ETS 300 102-1, octets 4a and 4b may be present. The values are ignored and PLMN values are set according to notes 5 and 9.

5) This PLMN parameter value is inserted if the comparable ISDN parameter value is missing.

6) The value of the Intermediate Rate field of the PLMN Bearer Capability information element shall only depend on the value of the user rate in the same information element. If the connection element is "transparent", the value is 16 kbit/s, if the user rate is 9.6 or 12 kbit/s, and 8 kbit/s otherwise. For any other connection element setting the value is 16 kbit/s. If the user rate value is "unknown" any value can be used, it has to be ignored by the UE

7) This PLMN BC parameter value is inserted, if the PLMN BC parameter "Information Transfer Capability" indicates "Unrestricted digital information "or "facsimile group 3".

8) Where the network indicates "asynchronous" and connection elements "non-transparent", "both, transparent preferred" or "both, non-transparent preferred" , then the PLMN BC should be forwarded without parameter user information layer 2 protocol, see also (10).

9) The PLMN parameter value shall be set to "unstructured" where the network indicates connection element "transparent". Where the network indicates connection elements "non transparent" "both, transparent preferred" or "both, non transparent preferred" the value of the parameter structure shall be set to "SDU Integrity".

10) Mapping of parameter values of this octet to PLMN BC parameters and values are subject to specific application rules, i.e. unless otherwise explicitly stated in an appropriate TS mapping to PLMN BC parameters shall not take place.

11) This value shall be used when the value of the PLMN BC parameter "Information Transfer Capability" indicates the value "3,1 kHz audio ex PLMN" or "facsimile group 3".

12) The modem encoding of both Q.931 (05/98) and ETS 300 102-1 version 1 shall be accepted and mapped according to 3GPP TS 24.008.

13) Value not used for currently defined bearer services and Teleservices.

14) NIC is only supported in A/Gb mode for "3,1 kHz Ex PLMN audio" interworking with synchronous data transmission.

15) void.

16) If in case of 3,1 kHz audio interworking "inband negotiation possible" is indicated and the parameter user rate is set to "rate is indicated by E bits specified in Recommendation I.460 or may be negotiated inband" the user rate in the PLMN BC-IE shall be set according to a network preferred value. If ISDN-BC parameter modem type is present, its value shall be ignored. The PLMN-BC parameter modem type shall be set according to the user rate in case of connection element "transparent" and to "autobauding type 1" in case of connection element "non transparent", "both, transparent preferred" or "both, non transparent preferred". In case of data compression high speed modems, like V.32bis, V.34 and/or V.90 may be used in the IWF. Autobauding may also be used to support user rates less than 9.6 kbit/s towards the PSTN.

For unrestricted digital interworking the call shall be rejected if these values are indicated.
If the PLMN-BC parameter modem type indicates "autobauding type 1" or "none", then the PLMN-BC parameter other modem type shall be set to "no other modem type".

17) An indication of NIRR is not possible in the Backup BC because it has to be negotiated by parameter values in the PLMN BC.

18) An indication of compression is not possible in the Backup BC because it has to be negotiated by parameter values in the PLMN BC.

19) void.

20) The user rate of the PLMN BC is set to the value for the fall-back bearer service. In case the user equipment does not support the fixed network user rate (i.e. the call confirmation message does not contain the fixed network user rate parameter), the network may release the call for a transparent connection element.

21) The modem type parameter of the PLMN -BC is taken into account, only.

22) In case no LLC is received and the ISDN-BC received consists of octets 1 to 4 only, coded:

Coding standard:	CCITT
Information Transfer capability:	UDI
Transfer mode:	circuit
Information transfer rate:	64kbit/s

the following PLMN -BC parameters, shall be set to:

fixed network user rate:	64 kbit/s
connection element:	transparent
	bothNT or bothT (If IWF supports FTM)

The other parameters of the PLMN -BC shall be set to values indicating a fall-back service.

23) When the MSC is directly connected to a restricted 64 kbit/s network, the ISDN BC-IE is coded with an ITC = RDI.
An ISDN BC-IE, as specified in ETR 018 and shown below, shall be taken to indicate that interworking with an indirectly connected restricted 64 kbit/s network is required:

Coding standard:	CCITT
Information Transfer capability:	UDI
Transfer mode:	circuit
Information transfer rate:	64 kbit/s
User information layer 1 protocol:	V.110/X.30
Synchronous/Asynchronous:	synchronous
Negotiation:	In-band negotiation not possible
User rate:	56 kbit/s

In this case the PLMN BC parameter Information Transfer Capability is set to „Other ITC" and Other ITC parameter is set to „restricted digital".If ISDN LLC exists, all the corresponding fields in the PLMN BC shall be derived from the ISDN LLC. Otherwise, the corresponding fields in the PLMN BC shall be derived from the ISDN BC. In the above both case, Connection element is set as follows.

Connection element:	transparent
	bothNT or bothT (If IWF supports FTM)

24) void.

25) This parameter is only included in case of non-transparent multislot connections.

26) This value was used by services defined for former PLMN releases and does not need to be supported.

27) Following BC parameters in SETUP message shall be set to:

Fixed network user rate	32 kbit/s
Connection element	transparent (for multimedia)

28) UIL1P is set to "H.221 & H.242" or "H.223 & H.245" by H.324/I. In the case where UIL1P is set to "H.221 and H.242", this should be mapped to "H.223 & H.245".

29) In Iu mode, if the User Rate of the ISDN BC is less than 9,6 kbit/s and the Connection Element is mapped to "NT", then FNUR is fixed to 9,6 kbit/s.

30) If this parameter value is missing, the Backup BC shall not contain parameter octets 6 and higher.

CR-Form-v5

CHANGE REQUEST

	27.001 CR **075**	⌘rev	**1**	⌘	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: ⌘   (U)SIM ☐   ME/UE **X**   Radio Access Network ☐   Core Network ☐

Title: ⌘	Mobile terminated call with single numbering scheme	
Source: ⌘	TSG_CN WG3	
Work item code: ⌘	TEI5	***Date:*** ⌘ 29.01.02

Category: ⌘ **B**	***Release:*** ⌘ Rel-5
Use <u>one</u> 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 <u>TR 21.900</u>.	Use <u>one</u> 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)

Reason for change: ⌘	The PLMN does not send any information about a requested services to the UE in case of mobile terminated calls when the single-numbering scheme is used in the HLR and the PLMN is not able to create a complete PLMN BC. The UE has to provide the PLMN BC without getting any information from the network.
Summary of change: ⌘	Information known by the MSC is sent to the UE in the call setup. The UE may use the information to deduce the requested service.
Consequences if not approved: ⌘	Success rate of mobile terminated calls will not be satisfactory when the mobile network uses the single-numbering scheme.

Clauses affected: ⌘	8.3.3.1	
Other specs affected: ⌘	**X** Other core specifications ⌘ ☐ Test specifications ☐ O&M Specifications	24.008, 29.007
Other comments: ⌘		

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8.3.3   Indication of Compatibility Requirements to the PLMN

8.3.3.1   Indication in case of Mobile terminating calls

In support of:

- PSTN originated calls; and

- ISDN originated calls using 3,1 kHz audio Bearer Capability (BC); as well as

- ISDN originated calls using unrestricted digital Bearer Capability but not specifying all parameters for deducing a Bearer Service.

Mobile specific requirements to be dealt with in the Bearer Capability information element the call confirmed message has been introduced in the call control protocol (3GPP TS 24.008). This also allows for renegotiation of specific parameters at the beginning of the connection set-up process. The specific parameters are:

a) mobile specific requirements:

- Connection element (transparent/non transparent);

- Structure (note 1);

- Synchronous/Asynchronous (note 8);

- Rate adaptation/other rate adaptation (note 9);

- User information layer 2 protocol (note 1);

- Intermediate rate (note 2), (note 3);

- Modem Type (note 1), (note 3);

- User Rate (note 3);

- Compression ,

- Fixed network user rate, (note 3) (note 4);

- Other modem type, (note 3) (note 4);

- User initiated modification indication (note 4).

The following parameters are indicated by the MS to the network, only:

- Radio Channel Requirement;

- Acceptable channel codings (note 5);

- Maximum number of traffic channels, (note 5);

- Wanted air interface user rate (note 6) (note 7);

- Asymmetry preference indication (note 7).

NOTE 1: This parameter is correlated with the value of the parameter connection element.

NOTE 2: For non-transparent services this parameter is correlated with the value of the parameter negotiation of intermediate rate requested.

NOTE 3: Modification of these parameters may be proposed by the MS. The Network may accept it or not.

NOTE 4: This parameter shall be included by the MS only in case it was received from the network.

NOTE 5: This parameter shall be included only in case the parameter 'fixed network user rate' is included.

NOTE 6: This parameter shall be included only for non-transparent services and in case the parameter 'fixed network user rate' is included.

NOTE 7: This parameter has to be included if EDGE channel coding(s) are included in Acceptable channel codings. In cases where this parameter would not otherwise be included, the value is set to 'Air interface user rate not applicable' or 'User initiated modification not requested' or "No preference".

NOTE 8: For FTM and PIAFS, this parameter may be negotiated as in table B.4e. How the subscription for BS20 is assured, is an operator matter.

NOTE 9: For FTM, PIAFS or Multimedia, this parameter may be negotiated as in table B.4f.

b) requirements with effects at the partner terminal:

- Number of data bits;

- Number of stop bits;

- Parity.

The MS indicates the radio channel requirement in the call confirmed message. If the MS indicates the support of "dual" (HR and FR channels) the final decision, which radio channel is chosen, is done by the network in an RR message. The radio channel requirement is ignored in UTRAN Iu mode, see Table B.5a in Annex B.

If the network proposes optional support of both transparent and non transparent connection elements, but does not indicate a user information layer 2 protocol, the MS shall set the appropriate value, if choosing non transparent in the call confirmed message and out-band flow control is not requested, see B.1.1.2.

Additionally the values of the parameters structure, modem type and intermediate rate have to be set in conformance with the values of the parameters radio channel requirements, negotiation of intermediate rate requested and connection element.

Subclause B.1.1.2 and table B.1 in the annex B describe the negotiation procedure. Annex B table B.4 describes the selection of the modem type and the dependence on the value of the parameter connection element. Annex B table B.4 describes the selection of the intermediate rate and user rate and their dependence upon the value of the NIRR parameter and the equipment capabilities.

The following MT cases can be deduced from the individual call set-up request conditions:

a) If the set-up does not contain a BC information element, the MS in the call confirmed message shall include any BC information (single or multiple BC-IE). The MS may use the information provided in the BACKUP BC information element (ref. to 3GPP TS 29.007 and 3GPP TS 24.008) to deduce the requested service. Note, that the presence of the BACKUP BC-IE does not change the condition of "no BC-IE received", that means in particular that the MS shall include any BC-IE (as mentioned before) and shall not negotiate parameter values where the MSC has to offer a value in the BC-IE first, as e.g., for the parameter "compression". In case of multiple BC-IEs one BC-IE shall indicate the information transfer capability "speech". A speech BC-IE together with a 3,1kHz multimedia BC-IE indicates the support of a fallback to speech (ref. to 3GPP TS 29.007 and 3GPP TS 24.008).

b) If the set-up message contains a single BC-IE, the MS in the call confirm message shall use either a single BC-IE, if it wants to negotiate mobile specific parameter values or, unless otherwise specified in annex B, no BC-IE, if it agrees with the requested ones.

c) If the set-up contains a multiple BC-IE, the MS in the call confirmed message shall use either a multiple BC-IE, if it wants to negotiate mobile specific parameter values or, unless otherwise specified in annex B, no BC-IE, if it agrees with the requested ones. In case of a 3,1kHz multimedia setup the MS may either accept the possibility of a fallback to speech by responding with two BC-IEs, or with no BC-IEs, or turn the call to a speech call by sending only a speech BC-IE in the call confirm message or turn the call to a multimedia only call (i.e. no fallback to speech allowed) by sending only a multimedia BC-IE, in the call confirm message. Alternatively, a single BC-IE, containing fax group 3 only, shall be used if a multiple BC-IE requesting speech alternate fax group 3 is received and the MS is not able to support the speech capability. Annex B, table B.7, describes the negotiation rules.

If the BC-IE contains 3,1 kHz ex PLMN, the MS is allowed to negotiate all mobile specific parameter values listed above. If the BC-IE contains facsimile group 3, the MS is allowed to negotiate the connection element (transparent/non

transparent) only. In any case, if the set-up message requests a "single service", the MS shall not answer in the call confirmed message requesting a "dual service" and vice versa.

However, for dual services with repeat indicator set to circular (alternate) the MS may change the sequence of dual BC-IEs within the call confirmed message (preceded by the same value of the repeat indicator), if it wants to start with a different Bearer Capability than proposed by the network as the initial one.

In addition, the MS may propose to the network to modify User Rate, Modem Type and Intermediate Rate in the CALL CONFIRMED message. The network may accept or release the call.

If the BC-IE received from the network contains the parameters 'fixed network user rate', 'other modem type' and possibly the 'user initiated modification', the MS may either:

a) if in A/Gb mode, discard these parameters; or

b) include the possibly modified values for the 'fixed network user rate' and 'other modem type' in the BC-IE of the call confirmed message. The network might accept or reject the modified values. In this case the MS shall also include the parameters 'maximum number of traffic channels' and 'acceptable channel codings'. Additionally for non-transparent services, the MS shall also include the parameters 'wanted air interface user rate' and the 'user initiated modification indication'.

In case a), the MS shall use the fall-back bearer service indicated by the remaining parameters of the BC-IE on a single slot configuration (reference 3GPP TS 44.021).

In A/Gb mode case b), a single slot configuration shall be used by the MS, in case the 'maximum number of traffic channels' is set to "1 TCH" and the 'user initiated modification indication' is set either to "user initiated modification not required" or to "user initiated modification up to 1TCH may be requested"; other wise the MS shall use a multislot configuration (reference 3GPP TS 44.021).

In case the 'acceptable channel codings' is indicated by the MS, the decision which channel coding is used is done by the network and indicated to the mobile station with a RR message. This RR message may also assign an asymmetric channel coding. The 'acceptable channel codings' parameter takes precedence over the 'negotiation of intermediate rate requested' parameter for non-transparent services. Also the intermediate rate and user rate per traffic channel in a multislot configuration are not indicated by the 'intermediate rate' and 'user rate' parameters of the BC-IE, but depend on the chosen channel coding only.

 If the MS receives a BC-IE in the SETUP message containing the parameters 'fixed network user rate', 'other modem type', the MS may include these parameters in the BC-IE of the CALL CONFIRMED message (i.e. octets 6d, 6e, 6f, and 6g ref. 3GPP TS 24.008), with parameter values negotiated according to Annex B. If no BC-IE is received in the SETUP message, the MS may include these parameters in the CALL CONFIRMED message. However, in this case, the network may release the call if it does not support these parameters.

If FNUR = 33.6 kbit/s is agreed on in the setup of a 3.1 kHz multimedia call, the modems may handshake to 31.2 or 28.8 kbit/s. In this case the MS receives a MODIFY message from the MSC to indicate the new data rate, and shall respond with a MODIFY COMPLETE message (ref. to 3GPP TS 24.008), if it supports the requested modification. If the MS does not support the requested modification, it shall respond with a MODIFY REJECT message. The MT shall indicate the new data rate to the TE (e.g. using the ITU-T V.80 inband signaling) in order to cause the TE to use stuffing to adapt the 31.2 or 28.8 kbit/s data rate to the 33.6 kbit/s traffic channel between the TE and IWF.