TSG-RAN Meeting #14
Kyoto, Japan, 11 - 14, December, 2001

TSGRP#14(01) 0847

Title: **Agreed CRs to TS 25.410**

Source: **TSG-RAN WG3**

Agenda item: **8.3.3/8.3.4/9.4.3**

RP Tdoc	R3 Tdoc	Spec	CR_Num	Rev	Release	CR_Subject	Cat	Cur_Ver	New_Ver	Workitem
RP-010847	R3-013618	25.410	030	1	R99	Addition of "Specification Notations" Section	F	3.5.0	3.6.0	TEI
RP-010847	R3-013619	25.410	031	1	Rel-4	Addition of "Specification Notations" Section	A	4.2.0	4.3.0	TEI
RP-010847	R3-013229	25.410	028		Rel-4	SCCP Connection Release Initiated by RNC in Abnormal case	A	4.2.0	4.3.0	TEI
RP-010847	R3-013228	25.410	027		R99	SCCP Connection Release Initiated by RNC in Abnormal case	F	3.5.0	3.6.0	TEI
RP-010847	R3-013510	25.410	026	1	Rel-4	Iu-BC Connectivity	A	4.2.0	4.3.0	TEI
RP-010847	R3-013509	25.410	025	1	R99	Iu-BC Connectivity CRx on TS 25.410 v3.5.0	F	3.5.0	3.6.0	TEI
RP-010847	R3-013092	25.410	024		Rel-4	SS7 point codes over Iu-cs	A	4.2.0	4.3.0	TEI
RP-010847	R3-013526	25.410	023	1	R99	SS7 point codes over Iu-cs	F	3.5.0	3.6.0	TEI

3GPP TSG-RAN3 Meeting #25 ***R3-013526***
Makuhari, Japan, 26-30 November 2001

CR-Form-v4

CHANGE REQUEST

⌘ **25.410** **CR** **023** ⌘ ev **2** ⌘ Current version: **3.5.0** ⌘

*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 ☐ Radio Access Network **X** Core Network **X**

Title:	⌘	SS7 point codes over Iu-cs
Source:	⌘	R-WG3
Work item code:	⌘	TEI
Date:	⌘	17-10-2001
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)*

Reason for change:	⌘	In TS 25.410, for the Iu-cs interface, the number of MTP3b point codes for RANAP and ALCAP is unclear for MSC side and RNC side. The figure 6.1 shows two different MTP3b protocol stacks that could be interpreted as two different point codes for RANAP and ALCAP. This could lead to interoperability problems between vendors over the Iu-cs interface.
Summary of change:	⌘	Rev 2 Update of CR cross-reference in the cover page. Rev1 Full flexibility is agreed for both R99 and R4, and the text is changed to reflect it. Rev0 For R99, it is proposed to restrict the number of point codes to one for RANAP and ALCAP for both sides, i.e. MSC and RNC. For R4 and further releases, as the MSC can be split into an MSC Server and one or more MGWs, it is proposed to mandate the RNC to support different point codes to RANAP and ALCAP. However, it is proposed to use the same point code for both RANAP and ALCAP at RNC side. Impact Analysis: This CR has no impact with the previous version of the specification (same release) with the assumed interpretation of the previous version of the specification. A different interpretation has an isolated impact i.e. it does not affect other specifications.
Consequences if not approved:	⌘	The number of point codes needed to access RANAP and ALCAP would remain unclear and there may be interoperability problems between vendors at the Iu-cs interface.

Clauses affected:	⌘	Addition of a new section 4.5.1.2

Other specs affected:	⌘	**X** Other core specifications Test specifications O&M Specifications	⌘	25.410 v4.2.0 CR024
Other comments:	⌘			

4.5.1 Use of Transport Network User Plane as Signalling Bearer

4.5.1.1 Use of SCCP

This section is unchanged

4.5.1.2 Use of MTP3b

- For a given MSC, the RNC shall be able to access RANAP and ALCAP either under the same MTP3b destination point code, or under different point codes;

- For a given RNC, the MSC shall be able to access RANAP and ALCAP either under the same MTP3b destination point code, or under different point codes;

3GPP TSG-RAN3 Meeting #24 ***R3-013092***
New York, NY, USA, 22-26 October 2001

CR-Form-v4

CHANGE REQUEST

⌘ **25.410** **CR** **024** ⌘ ev **1** ⌘ Current version: **4.2.0** ⌘

*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 ☐ Radio Access Network **X** Core Network **X**

Title:	⌘	SS7 point codes over Iu-cs
Source:	⌘	R-WG3
Work item code:	⌘	TEI
Date:	⌘	17-10-2001
Category:	⌘	**A**
Release:	⌘	R4

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: ⌘ In TS 25.410, for the Iu-cs interface, the number of MTP3b point codes for RANAP and ALCAP is unclear for MSC side and RNC side. The figure 6.1 shows two different MTP3b protocol stacks that could be interpreted as two different point codes for RANAP and ALCAP.
This could lead to interoperability between vendors over the Iu-cs interface.

Summary of change: ⌘ Rev1

Full flexibility is agreed for both R99 and R4, and the text is changed to reflect it.

Rev0

For R99, it is proposed to restrict the number of point codes to one for RANAP and ALCAP for both sides, i.e. MSC and RNC.

For R4 and further releases, as the MSC can be split into an MSC Server and one or more MGWs, it is proposed to mandate the RNC to support different point codes to RANAP and ALCAP. However, it is proposed to use the same point code for both RANAP and ALCAP at RNC side.

Impact Analysis:
This CR has no impact with the previous version of the specification (same release) with the assumed interpretation of the previous version of the specification. A different interpretation has an isolated impact i.e. it does not affect other specifications.

Consequences if not approved: ⌘ The number of point codes needed to access RANAP and ALCAP would remain unclear and there may be interoperability problems between vendors at the Iu-cs interface.

Clauses affected: ⌘ Addition of a new section 4.5.1.2

Other specs affected:	⌘	X	Other core specifications	⌘	25.410 v3.5.0 CR023
			Test specifications		
			O&M Specifications		
Other comments:	⌘				

4.5.1 Use of Transport Network User Plane as Signalling Bearer

4.5.1.1 Use of SCCP

This section is unchanged

4.5.1.2 Use of MTP3b

- For a given MSC, the RNC shall be able to access RANAP and ALCAP either under the same MTP3b destination point code, or under different point codes;

- For a given RNC, the MSC shall be able to access RANAP and ALCAP either under the same MTP3b destination point code, or under different point codes;

3GPP TSG-RAN WG3 Meeting #25
Makuhari, Japan, November 26th - 30th 2001

Tdoc R3-013509

CR-Form-v4

CHANGE REQUEST

⌘ **25.410** **CR** **025** ⌘ rev **1** ⌘ Current version: **3.6.0** ⌘

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Proposed change affects: ⌘ (U)SIM ☐ ME/UE ☐ Radio Access Network **X** Core Network **X**

Title:	⌘	Iu-BC Connectivity
Source:	⌘	R-WG3
Work item code:	⌘	TEI
Date:	⌘	26/11/2001
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)

Reason for change: ⌘ An RNC may not be connected to more than one CBC.

Summary of change: ⌘ According to 23.041: 'The BSC/RNC shall interface to only one CBC'. At present in 25.410 it is stated that 'There may be more than one Iu interface (Iu-BC) from an RNC towards the Broadcast domain.' Following instructions from S2 (see S2-012450.doc for details), 25.410 should be aligned to 23.041 (Clause 6).

Consequences if not approved: ⌘ It will remain ambiguous as to how many CBCs an RNC may connect to.

Impact Analysis

Impact assessment towards the previous version of the specification (same release):

This CR has isolated impact with the previous version of the specification (same release) as the connectivity of the Iu BC interface was not aligned with 23.041.

Clauses affected: ⌘ 4.1.1 and 4.1.2

Other specs affected: ⌘ **X** Other core specifications ⌘ ~~Mirror CR to R4~~ 25.410 v4.2.0 CR 26
☐ 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

4 General Aspects

4.1 UTRAN Architecture

4.1.1 Iu Interface Architecture

The overall UMTS architecture and UTRAN architectures are described in [1]. This subclause specifies only the architecture of the Iu interface, and shall not constrain the network architecture of either Core or Radio Access Networks.

The I_u interface is specified at the boundary between the Core Network and UTRAN. Figure 4.1 depicts the logical division of the I_u interface. From the Iu perspective, the UTRAN access point is an RNC.

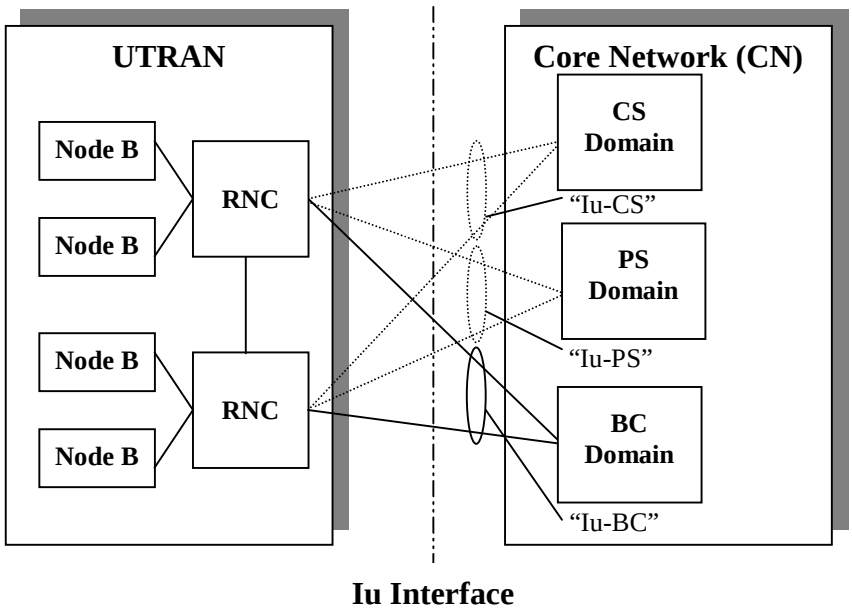

Figure 4.1: I_u Interface Architecture

The Iu interface towards the PS-domain of the core network is called Iu-PS, and the Iu interface towards the CS-domain is called Iu-CS. The differences between Iu-CS and Iu-PS are treated elsewhere in this specification. The Iu interface to the Broadcast domain is called Iu-BC.

There shall not be more than one Iu interface (Iu-CS) towards the CS domain and one Iu interface (Iu-PS) towards the PS-domain from any one RNC. There shall not be more than one ~~may be multiple~~ Iu interface~~s~~ (Iu-BC) from an RNC towards the Broadcast domain.

In the separated core network architecture, this means that there shall be separate signalling and user data connections towards the PS and CS domains – this applies in both transport and radio network layers.

In the combined architecture, there shall be separate connections in the user plane towards the PS and CS domains (in both transport and radio network layers). In the control plane, there shall be separate SCCP connections to the two logical domains.

In either architecture, there can be several RNCs within UTRAN and so UTRAN may have several I_u access points towards the Core Network. As a minimum, each Iu access point (in UTRAN or CN) shall independently fulfil the requirements of the relevant Iu specifications (25.41x series – see clause 7).

4.1.2 I_u connection principles

The Iu interface has a hierarchical architecture where one higher layer entity controls several lower layer entities. The hierarchy for the CN - UTRAN signalling connection end points is described below:

- Each CN Access Point may be connected to one or more UTRAN Access Points.
- For the PS and CS domains, each UTRAN Access Point shall not be connected to more than one CN Access Point per CN domain.
- For the BC domain, each UTRAN Access Point may be connected to one ~~or more~~ CN Access Point only~~s~~.

3GPP TSG-RAN WG3 Meeting #25
Makuhari, Japan, November 26th–30th 2001

Tdoc R3-013510

CR-Form-v4

CHANGE REQUEST

⌘ **25.410** **CR** **26** ⌘ rev **1** ⌘ Current version: **4.2.0** ⌘

*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 ☐ Radio Access Network **X** Core Network **X**

Title:	⌘	Iu-BC Connectivity
Source:	⌘	R-WG3
Work item code:	⌘	TEI
Date:	⌘	26/11/2001
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)*

Reason for change:	⌘	An RNC may not be connected to more than one CBC.
Summary of change:	⌘	According to 23.041: 'The BSC/RNC shall interface to only one CBC'. At present in 25.410 it is stated that 'There may be more than one Iu interface (Iu-BC) from an RNC towards the Broadcast domain.' Following instructions from S2 (see S2-012450.doc for details), 25.410 should be aligned to 23.041 (Clause 6).
Consequences if not approved:	⌘	It will remain ambiguous as to how many CBCs an RNC may connect to. Impact Analysis Impact assessment towards the previous version of the specification (same release): This CR has isolated impact with the previous version of the specification (same release) as the connectivity of the Iu BC interface was not aligned with 23.041.

Clauses affected:	⌘	4.1.1 and 4.1.2		
Other specs affected:	⌘	**X** Other core specifications ☐ Test specifications ☐ O&M Specifications	⌘	~~Mirror CR to R99~~ 25.410 v3.6.0 CR 25
Other comments:	⌘			

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http://www.3gpp.org/3G_Specs/CRs.htm. Below is a brief summary:

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The I_u interface is specified at the boundary between the Core Network and UTRAN. Figure 4.1 depicts the logical division of the I_u interface. From the Iu perspective, the UTRAN access point is an RNC.

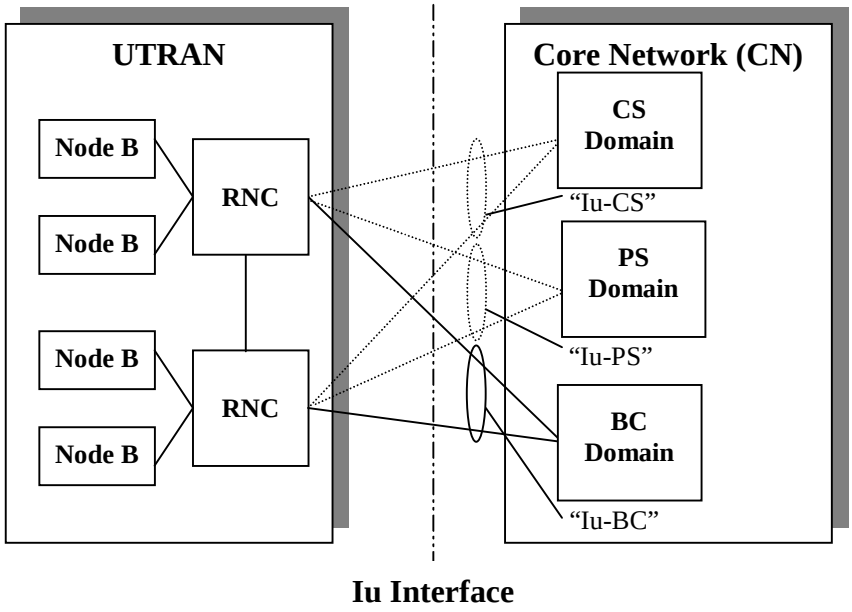

Figure 4.1: I_u Interface Architecture

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There shall not be more than one Iu interface (Iu-CS) towards the CS domain and one Iu interface (Iu-PS) towards the PS-domain from any one RNC. Each RNC shall not have more than one Iu interface (Iu-CS) towards its default CN node within the CS domain, but may also have further Iu interfaces (Iu-CS) towards other CN nodes within the CS domain. (See [6] for definition of Default CN node.) These further Iu interfaces (Iu-CS) shall only be used as a result of intra-MSC inter-system handover or SRNS relocation, in the case the anchor CN node directly connects to the target RNC. There shall not be more than one ~~may be multiple~~ Iu interface~~s~~ (Iu-BC) from an RNC towards the Broadcast domain.

In the separated core network architecture, this means that there shall be separate signalling and user data connections towards the PS and CS domains – this applies in both transport and radio network layers.

In the combined architecture, there shall be separate connections in the user plane towards the PS and CS domains (in both transport and radio network layers). In the control plane, there shall be separate SCCP connections to the two logical domains.

In either architecture, there can be several RNCs within UTRAN and so UTRAN may have several I_u access points towards the Core Network. As a minimum, each Iu access point (in UTRAN or CN) shall independently fulfil the requirements of the relevant Iu specifications (25.41x series – see clause 7).

4.1.2 I_u connection principles

The Iu interface has a hierarchical architecture where one higher layer entity controls several lower layer entities. The hierarchy for the CN - UTRAN signalling connection end points is described below:

- Each CN Access Point may be connected to one or more UTRAN Access Points.
- For the PS domain, each UTRAN Access Point shall not be connected to more than one CN Access Point per CN domain.
- For the CS ~~and BC~~ domain~~s~~, each UTRAN Access Point may be connected to one or more CN Access Points.
- For the BC domain, each UTRAN Access Point ~~shall~~may ~~not~~ be connected to one~~more than one~~ CN Access Point only.

END OF CHANGES

3GPP TSG-RAN3 Meeting #25
Makuhari, Japan, 26th – 30th November, 2001

Tdoc R3-013228

CR-Form-v3

CHANGE REQUEST

⌘ **25.410** **CR** **27** ⌘ rev ⌘ Current version: **3.5.0** ⌘

*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 ☐ Radio Access Network **X** Core Network **X**

Title:	⌘	SCCP Connection Release Initiated by RNC in Abnormal case
Source:	⌘	R-WG3
Work item code:	⌘	TEI
Date:	⌘	2001-November
Category:	⌘	**F**
Release:	⌘	R99

Use one of the following categories:
F *(essential 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 current 25.410 specifies that it is always the CN initiates the SCCP connection release procedure. However, according to the ITU-T specification Q.714, e.g. due to the timer expiry of inactivity test, the SCCP will initiate the connection release message. Therefore, it should be specified that it is always the CN initiates the SCCP connection release procedure in normal case but the RNC can also initiate the SCCP connection release procedure in any abnormal case.
Summary of change:	⌘	In order to follow the ITU-T specification Q.714, the chapter 4.5.1.1.3 in 25.410 shall specify that the RNC may initiate the SCCP connection release procedure in any abnormal case.
Consequences if not approved:	⌘	If this is not approved, it may contradict the ITU-T specification Impact Analysis: Impact assessment towards the previous version of the specification (same release): This CR has [isolated impact] with the previous version of the specification (same release) because maybe some existing implementation restrict the initiation of SCCP connection release procedure in abnormal case. ONLY if there is impact: This CR has an impact under [functional] point of view. The impact [can] be considered isolated because the change affects [one] [system function] namely the SCCP connection release function.

Clauses affected:	⌘	4.5.1.1.3		
Other specs	⌘	**X** Other core specifications	⌘	25.410 CR28 Rel4

affected:	☐ Test specifications ☐ O&M Specifications	
Other comments: ⌘		

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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://www.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2000-09 contains the specifications resulting from the September 2000 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.

4.5.1.1.2.2 Establishment procedure in case ii

The SCCP signalling connection establishment is initiated, by the Core Network, in connection with performing a Relocation.

Initiation

The Core Network initiates the connection establishment by sending an SCCP connection request message to the RNC. Optionally, a RANAP message may be included in the user data field of the SCCP connection request message.

Termination

- **successful outcome**
  - The SCCP connection confirm message, which may optionally contain a connection oriented RANAP message in the user data field, is returned to the Core Network.
- **unsuccessful outcome**
  - If the SCCP signalling connection establishment fails, an SCCP connection refusal message will be sent back to the Core Network. This message may contain a RANAP message in the user data field.

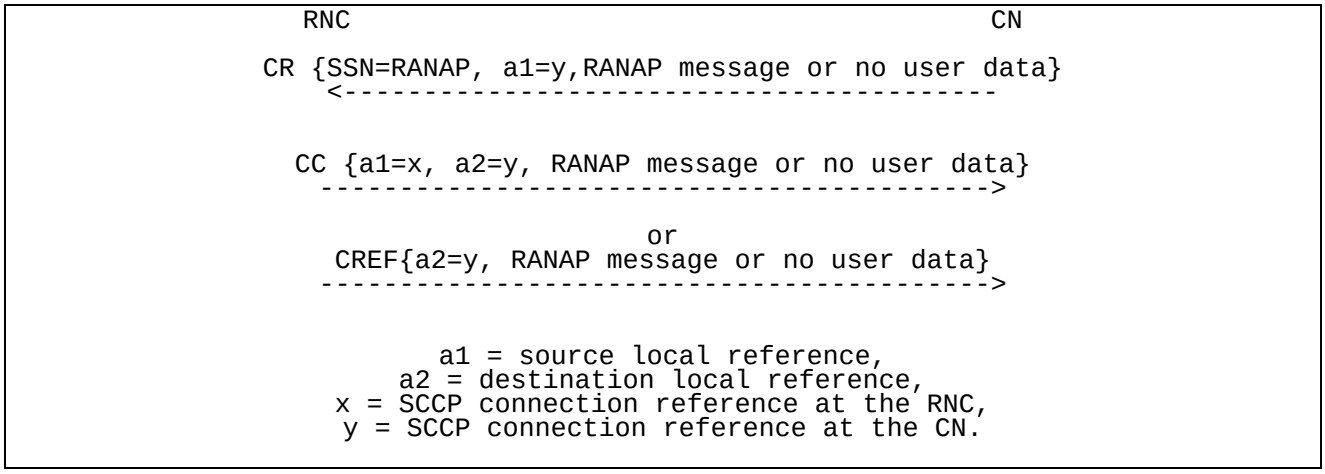

Figure 4.3: Setting-up of CN Initiated SCCP Signalling Connection

4.5.1.1.3 SCCP connection release

This procedure is always initiated at the Core Network side in normal release case.

An SCCP connection is released when the CN realises that a given signalling connection is no longer required.

The CN sends a SCCP Released message.

The procedure may be initiated at the Core Network side and the RNC side in any abnormal release case

3GPP TSG-RAN3 Meeting #25
Makuhari, Japan, 26th – 30th November, 2001

Tdoc R3-013229

CR-Form-v3

CHANGE REQUEST

⌘ **25.410** **CR** **28** ⌘ rev ⌘ Current version: **4.2.0** ⌘

*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 ☐ Radio Access Network **X** Core Network **X**

Title:	⌘	SCCP Connection Release Initiated by RNC in Abnormal case
Source:	⌘	R-WG3
Work item code:	⌘	TEI
Date:	⌘	2001-November
Category:	⌘	**A**
Release:	⌘	Rel4

Use one of the following categories:
F *(essential 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 current 25.410 specifies that it is always the CN initiates the SCCP connection release procedure. However, according to the ITU-T specification Q.714, e.g. due to the timer expiry of inactivity test, the SCCP will initiate the connection release message. Therefore, it should be specified that it is always the CN initiates the SCCP connection release procedure in normal case but the RNC can also initiate the SCCP connection release procedure in any abnormal case.

Summary of change: ⌘ In order to follow the ITU-T specification Q.714, the chapter 4.5.1.1.3 in 25.410 shall specify that the RNC may initiate the SCCP connection release procedure in any abnormal case.

Consequences if not approved: ⌘ If this is not approved, it may contradict the ITU-T specification

Impact Analysis:

Impact assessment towards the previous version of the specification (same release):

This CR has [isolated impact] with the previous version of the specification (same release) because maybe some existing implementation restrict the initiation of SCCP connection release procedure in abnormal case.

ONLY if there is impact:

This CR has an impact under [functional] point of view.
The impact [can] be considered isolated because the change affects [one] [system function] namely the SCCP connection release function.

Clauses affected: ⌘ 4.5.1.1.3

Other specs ⌘ **X** Other core specifications ⌘ 25.410 CR27 Rel99

affected:	☐ Test specifications ☐ O&M Specifications	
Other comments: ⌘		

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

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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.

4.5.1.1.2.2 Establishment procedure in case ii

The SCCP signalling connection establishment is initiated, by the Core Network, in connection with performing a Relocation.

Initiation

The Core Network initiates the connection establishment by sending an SCCP connection request message to the RNC. Optionally, a RANAP message may be included in the user data field of the SCCP connection request message.

Termination

- **successful outcome**
  - The SCCP connection confirm message, which may optionally contain a connection oriented RANAP message in the user data field, is returned to the Core Network.
- **unsuccessful outcome**
  - If the SCCP signalling connection establishment fails, an SCCP connection refusal message will be sent back to the Core Network. This message may contain a RANAP message in the user data field.

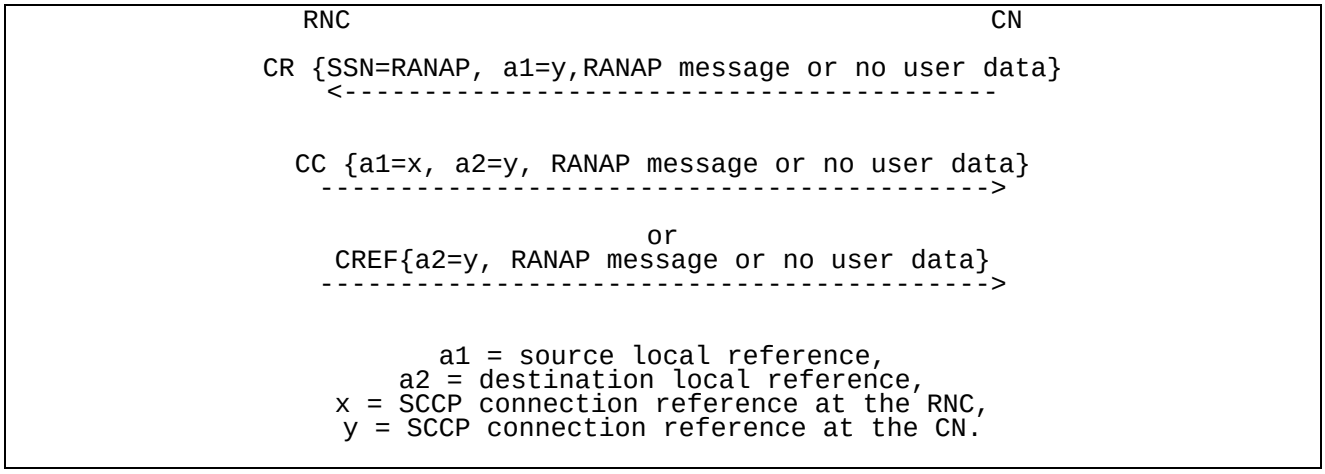

Figure 4.3: Setting-up of CN Initiated SCCP Signalling Connection

4.5.1.1.3 SCCP connection release

This procedure is always initiated at the Core Network side in normal release case.

An SCCP connection is released when the CN realises that a given signalling connection is no longer required.

The CN sends a SCCP Released message.

The procedure may be initiated at the Core Network side and the RNC side in any abnormal release case

3GPP TSG-RAN WG3 Meeting #25
Makuhari, Japan, November 26th-30th, 2001

Tdoc R3-013618

CR-Form-v4

CHANGE REQUEST

⌘	25.410	CR	030	⌘ rev	1	⌘	Current version:	3.5.0	⌘

*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 ☐ Radio Access Network X Core Network X

Title:	⌘	Addition of "Specification Notations" Section
Source:	⌘	R-WG3
Work item code:	⌘	TEI
Date:	⌘	November 2001
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)

Reason for change:	⌘	A "Specification Notations" section is missing for Iu General Aspects and Principles.
Summary of change:	⌘	A "Specification Notations" section was added to Section 3. Some changes to the TS were made for alignment with the new section: - capital letters in messages, - for procedure the first letter of each word was changed to capital. Note: "IE" and "Value of an IE" were not included because unused. Impact Analysis: Impact assessment towards the previous version of the specification (same release): This CR has [no impact] with the previous version of the specification (same release) because this change is only adding rules on how the notations within the specification shall be written.
Consequences if not approved:	⌘	Notations used within the spec might be unclear/ inconsistent with those used for other Iu specs.

Clauses affected:	⌘	3, 4.5.1.1.2, 4.5.1.1.2.1, 4.5.1.1.2.2, 4.5.1.3			
Other specs affected:	⌘	X	Other core specifications	⌘	TS 25.410 v4.2.0 CR 031 TS 25.420 v3.3.0 CR 019 TS 25.420 v4.0.0 CR 020 TS 25.425 v3.5.0 CR 038 TS 25.425 v4.1.0 CR 039

		TS 25.427 v3.8.0 CR 070 TS 25.427 v4.2.0 CR 071 TS 25.430 v3.6.0 CR 026 TS 25.430 v4.1.0 CR 027 TS 25.435 v3.8.0 CR 066 TS 25.435 v4.2.0 CR 067 TS 25.450 v5.0.0 CR 002
	Test specifications	
	O&M Specifications	

Other comments: ⌘

How to create CRs using this form:

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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.

3 Definitions and abbreviations

3.1 Definitions

For the purposes of the present document, the terms and definitions given in [1] apply.

3.2 Abbreviations

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

3G-MSC	3rd Generation Mobile Switching Centre
3G-SGSN	3rd Generation Serving GPRS Support Node
AAL	ATM Adaptation Layer
ATM	Asynchronous Transfer Mode
BC	Broadcast
BSSMAP	Base Station Subsystem Management Application Part
CBS	Cell Broadcast Service
CC	Connection Confirm
CN	Core Network
CR	Connection Release
CREF	Connection Refusal
CS	Circuit Switched
GT	Global Title
GTP-U	GPRS Tunnelling Protocol
IMSI	International Mobile Subscriber Identity
IP	Internet Protocol
ISDN	Integrated Services Digital Network
LA	Location Area
NAS	Non Access Stratum
O&M	Operation and Maintenance
PS	Packet Switched
PSTN	Public Switched Telephone Network
PVC	Permanent Virtual Circuit
QoS	Quality of Service
RA	Routing Area
RAB	Radio Access Bearer
RANAP	Radio Access Network Application Part
RLP	Radio Link Protocol
RNC	Radio Network Controller
RNL	Radio Network Layer
RRC	Radio Resource Control
SA	Service Area
SABP	Service Area Broadcast Protocol
SAP	Service Access Point
SCCP	Signalling Connection Control Part
SPC	Signalling Point Code
SRNS	Serving Radio Network Subsystem
SSN	Sub-System Number
SVC	Switched Virtual Circuit
TCP	Transmission Control Protocol
UE	User Equipment
UDP	User Datagram Protocol
UP	User Plane
URA	UTRAN Registration Area
UTRAN	UMTS Terrestrial Radio Access Network
VC	Virtual Circuit

3.3 Specification Notations

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

Procedure	When referring to a procedure in the specification the Procedure Name is written with the first letters in each word in upper case characters followed by the word "procedure", e.g. Radio Network Layer procedures.
Message	When referring to a message in the specification the MESSAGE NAME is written with all letters in upper case characters followed by the word "message", e.g. RADIO LINK SETUP REQUEST message.
Frame	When referring to a control or data frame in the specification the CONTROL/DATA FRAME NAME is written with all letters in upper case characters followed by the words "control/data frame", e.g. DCH transport frame.

4.5 I_u Interface Characteristics

4.5.1 Use of Transport Network User Plane as Signalling Bearer

4.5.1.1 Use of SCCP

4.5.1.1.1 General

The SCCP is used to support signalling messages between the CNs and the RNC. One user function of the SCCP, called Radio Access Network Application Part (RANAP), is defined. The RANAP uses one signalling connection per active UE and CN for the transfer of layer 3 messages.

Both connectionless and connection-oriented procedures are used to support the RANAP. TS 25.413 explains whether connection oriented or connectionless services should be used for each layer 3 procedure.

RANAP may use SSN, SPC and/or GT and any combination of them as addressing schemes for the SCCP. Which of the available addressing scheme to use for the SCCP is an operator matter.

When GT addressing is utilised, the following settings shall be used:

- SSN Indicator = 1 (RANAP SSN as defined in [13] shall always be included).
- Global Title Indicator = 0100 (GT includes translation type, numbering plan, encoding scheme and nature of address indicator).
- Translation Type = 0000 0000 (not used).
- Numbering Plan = 0001 (E.163/4).
- Nature of Address Indicator = 000 0100 (International Significant Number).
- Encoding Scheme = 0001 or 0010 (BCD, odd or even).
- Routing indicator = 0 or 1 (route on GT or PC/SSN).

When used, the GT shall be the E.164 address of the relevant node.

The following subclauses describe the use of SCCP connections for RANAP transactions. Subclause 4.5.1.2 describes the connection establishment procedures. Subclause 4.5.1.3 describes the connection release procedures. Subclause 4.5.1.4 describes abnormal conditions.

4.5.1.1.2 SCCP Cconnection Eestablishment procedure

A new SCCP connection is established when information related to the communication between a UE and the network has to be exchanged between RNC and CN, and no SCCP connection exists between the CN and the RNC involved, for the concerned UE.

Various SCCP connection establishment cases have to be distinguished:

i) RNC Initiated SCCP Signalling Connection;

ii) CN Initiated SCCP Signalling Connection.

The above cases are the only cases currently identified for SCCP connection establishment. Others may emerge in the future.

4.5.1.1.2.1 Establishment procedure in case i

The SCCP signalling connection establishment is initiated, by the RNC, at the reception of the first layer 3 non access stratum message from the UE.

Initiation

The RNC sends SCCP ~~connection request~~ CONNECTION REQUEST message to the Core Network. A RANAP message is included in the user data field of the SCCP ~~connection request~~ CONNECTION REQUEST message.

Termination

- **successful outcome**
  - The SCCP ~~connection confirm~~ CONNECTION CONFIRM message, which may optionally contain a connection oriented RANAP message in the user data field, is returned to the RNC.
- **unsuccessful outcome**
  - If the SCCP signalling connection establishment fails, an SCCP ~~connection refusal~~ CONNECTION REFUSAL message will be sent back to the RNC. This message may contain a RANAP message in the user data field.

For more information on how the RANAP procedure Initial UE M~~m~~essage is handled, please see the elementary procedure Initial UE M~~m~~essage in TS 25.413 [6].

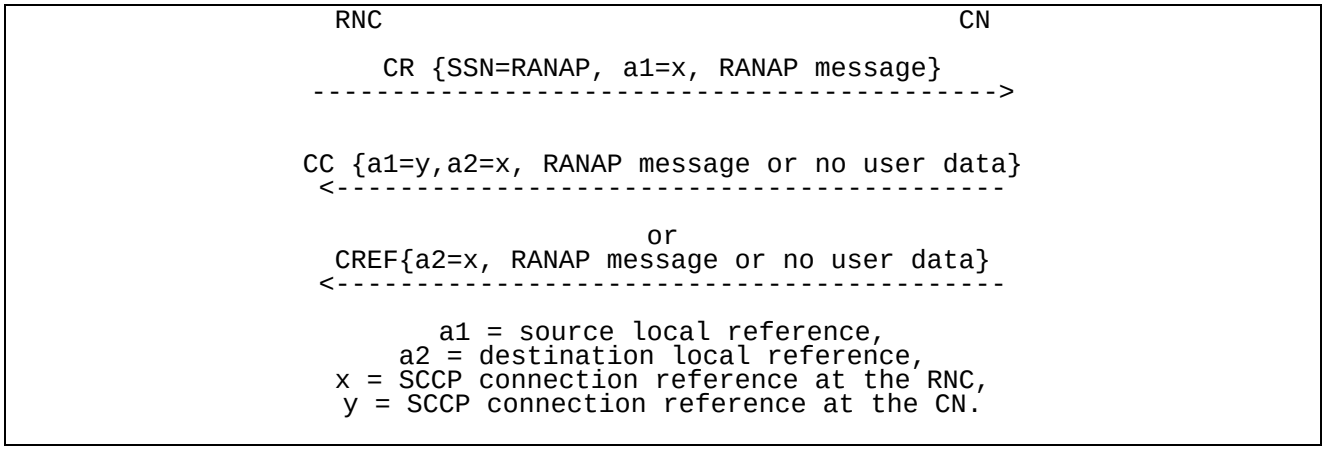

Figure 4.2: Setting-up of RNC Initiated SCCP Signalling Connection

4.5.1.1.2.2 Establishment procedure in case ii

The SCCP signalling connection establishment is initiated, by the Core Network, in connection with performing a Relocation.

Initiation

The Core Network initiates the connection establishment by sending an SCCP ~~connection request~~ CONNECTION REQUEST message to the RNC. Optionally, a RANAP message may be included in the user data field of the SCCP ~~connection request~~ CONNECTION REQUEST message.

Termination

- **successful outcome**
  - The SCCP ~~connection confirm~~ CONNECTION CONFIRM message, which may optionally contain a connection oriented RANAP message in the user data field, is returned to the Core Network.
- **unsuccessful outcome**
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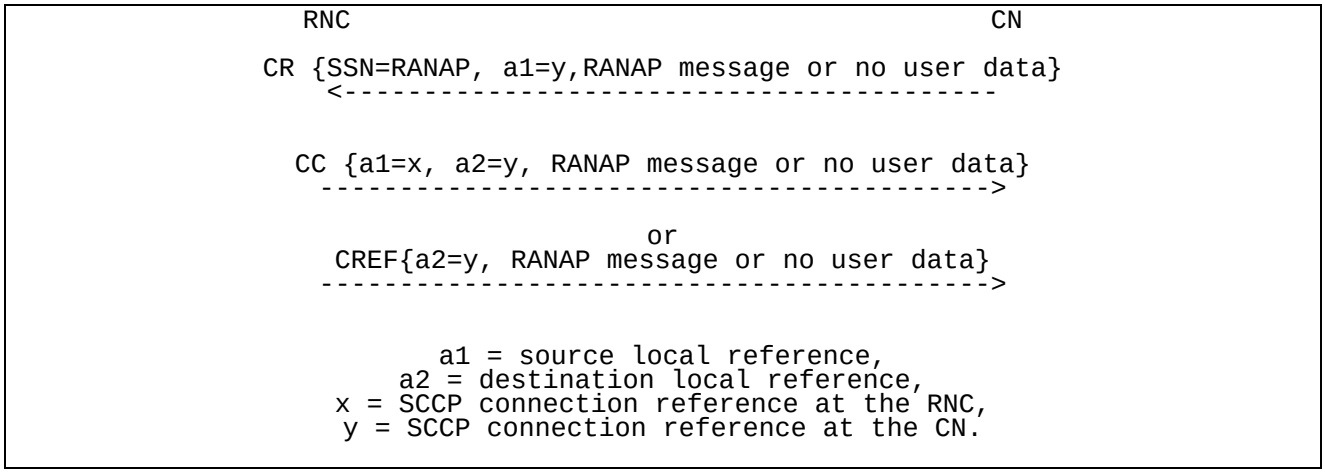

Figure 4.3: Setting-up of CN Initiated SCCP Signalling Connection

4.5.1.1.3 SCCP Cconnection Rrelease procedure

This procedure is always initiated at the Core Network side.

An SCCP connection is released when the CN realises that a given signalling connection is no longer required.

The CN sends a SCCP ~~Released~~ RELEASED message.

3GPP TSG-RAN WG3 Meeting #25
Makuhari, Japan, November 26th-30th, 2001

Tdoc R3-013619

CR-Form-v4

CHANGE REQUEST

⌘	25.410	CR	031	⌘ rev	1	⌘	Current version:	4.2.0	⌘

*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 ☐ Radio Access Network X Core Network X

Title:	⌘	Addition of "Specification Notations" Section
Source:	⌘	R-WG3
Work item code:	⌘	TEI
Date:	⌘	November 2001
Category:	⌘	**A**
Release:	⌘	REL-4

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Reason for change:	⌘	A "Specification Notations" section is missing for Iu General Aspects and Principles.
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Consequences if not approved:	⌘	Notations used within the spec might be unclear/ inconsistent with those used for other Iu specs.

Clauses affected:	⌘	3, 4.5.1.1.2, 4.5.1.1.2.1, 4.5.1.1.2.2, 4.5.1.3
Other specs affected:	⌘	X Other core specifications ⌘ TS 25.410 v3.5.0 CR 030 TS 25.420 v3.3.0 CR 019 TS 25.420 v4.0.0 CR 020 TS 25.425 v3.5.0 CR 038 TS 25.425 v4.1.0 CR 039 TS 25.427 v3.8.0 CR 070

		TS 25.427 v4.2.0 CR 071 TS 25.430 v3.6.0 CR 026 TS 25.430 v4.1.0 CR 027 TS 25.435 v3.8.0 CR 066 TS 25.435 v4.2.0 CR 067 TS 25.450 v5.0.0 CR 002
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CREF	Connection Refusal
CS	Circuit Switched
GT	Global Title
GTP-U	GPRS Tunnelling Protocol
IMSI	International Mobile Subscriber Identity
IP	Internet Protocol
ISDN	Integrated Services Digital Network
LA	Location Area
NAS	Non Access Stratum
O&M	Operation and Maintenance
PS	Packet Switched
PSTN	Public Switched Telephone Network
PVC	Permanent Virtual Circuit
QoS	Quality of Service
RA	Routing Area
RAB	Radio Access Bearer
RANAP	Radio Access Network Application Part
RLP	Radio Link Protocol
RNC	Radio Network Controller
RNL	Radio Network Layer
RRC	Radio Resource Control
SA	Service Area
SABP	Service Area Broadcast Protocol
SAP	Service Access Point
SCCP	Signalling Connection Control Part
SPC	Signalling Point Code
SRNS	Serving Radio Network Subsystem
SSN	Sub-System Number
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TCP	Transmission Control Protocol
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Frame When referring to a control or data frame in the specification the CONTROL/DATA FRAME NAME is written with all letters in upper case characters followed by the words "control/data frame", e.g. DCH transport frame.

4.5 I_u Interface Characteristics

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4.5.1.1.1 General

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- Translation Type = 0000 0000 (not used).
- Numbering Plan = 0001 (E.163/4).
- Nature of Address Indicator = 000 0100 (International Significant Number).
- Encoding Scheme = 0001 or 0010 (BCD, odd or even).
- Routing indicator = 0 or 1 (route on GT or PC/SSN).

When used, the GT shall be the E.164 address of the relevant node.

The following subclauses describe the use of SCCP connections for RANAP transactions. Subclause 4.5.1.2 describes the connection establishment procedures. Subclause 4.5.1.3 describes the connection release procedures. Subclause 4.5.1.4 describes abnormal conditions.

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A new SCCP connection is established when information related to the communication between a UE and the network has to be exchanged between RNC and CN, and no SCCP connection exists between the CN and the RNC involved, for the concerned UE.

Various SCCP connection establishment cases have to be distinguished:

i) RNC Initiated SCCP Signalling Connection;

ii) CN Initiated SCCP Signalling Connection.

The above cases are the only cases currently identified for SCCP connection establishment. Others may emerge in the future.

4.5.1.1.2.1 Establishment procedure in case i

The SCCP signalling connection establishment is initiated, by the RNC, at the reception of the first layer 3 non access stratum message from the UE.

Initiation

The RNC sends SCCP CONNECTION REQUEST~~connection request~~ message to the Core Network. A RANAP message is included in the user data field of the SCCP CONNECTION REQUEST~~connection request~~ message.

Termination

- **successful outcome**
  - The SCCP CONNECTION CONFIRM~~connection confirm~~ message, which may optionally contain a connection oriented RANAP message in the user data field, is returned to the RNC.
- **unsuccessful outcome**
  - If the SCCP signalling connection establishment fails, an SCCP CONNECTION REFUSAL~~connection refusal~~ message will be sent back to the RNC. This message may contain a RANAP message in the user data field.

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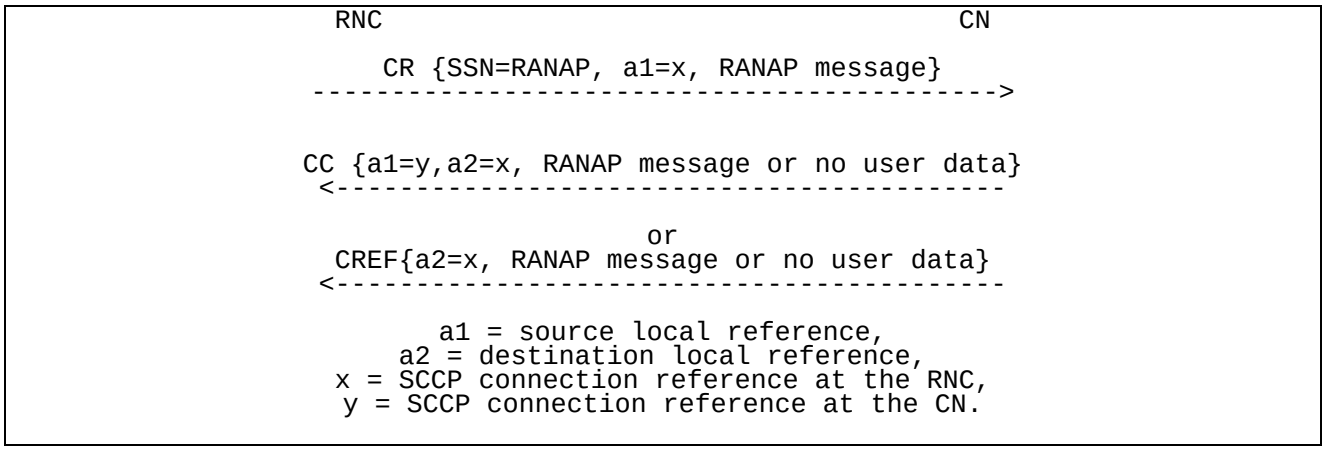

Figure 4.2: Setting-up of RNC Initiated SCCP Signalling Connection

4.5.1.1.2.2 Establishment procedure in case ii

The SCCP signalling connection establishment is initiated, by the Core Network, in connection with performing a Relocation.

Initiation

The Core Network initiates the connection establishment by sending an SCCP CONNECTION REQUEST~~connection request~~ message to the RNC. Optionally, a RANAP message may be included in the user data field of the SCCP CONNECTION REQUEST~~connection request~~ message.

Termination

- **successful outcome**
  - The SCCP CONNECTION CONFIRM ~~connection confirm~~ message, which may optionally contain a connection oriented RANAP message in the user data field, is returned to the Core Network.
- **unsuccessful outcome**
  - If the SCCP signalling connection establishment fails, an SCCP CONNECTION REFUSAL~~connection refusal~~ message will be sent back to the Core Network. This message may contain a RANAP message in the user data field.

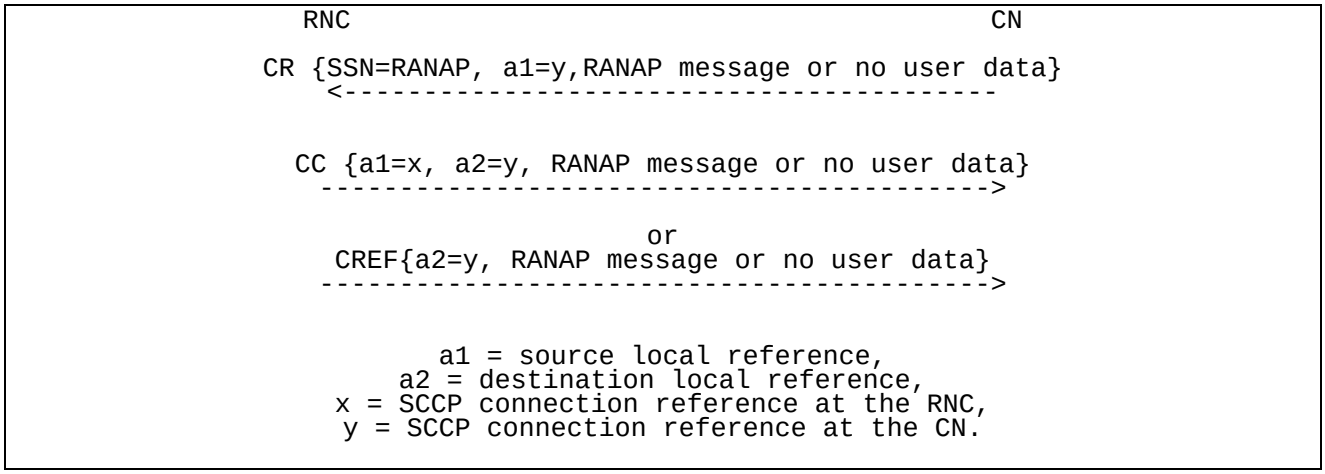

Figure 4.3: Setting-up of CN Initiated SCCP Signalling Connection

4.5.1.1.3 SCCP Cconnection Rrelease procedure

This procedure is always initiated at the Core Network side.

An SCCP connection is released when the CN realises that a given signalling connection is no longer required.

The CN sends a SCCP ~~Released~~ RELEASED message.