**TSG RAN Meeting #28** **RP-050232**
**Quebec, Canada, 01 - 03 June 2005**

**Title** **CRs (Rel-6 cat. F ) on Coding of IP address in RANAP, RNSAP and NBAP messages**

**Source** **TSG RAN WG3**
**Agenda Item** **8.11**

| RAN3 Tdoc | Spec | CR | Rev | Cat | curr. Vers. | new Vers. | Rel | Work item | Title |
|---|---|---|---|---|---|---|---|---|---|
| R3-050526 | 25.414 | 86 | | F | 6.2.0 | 6.3.0 | Rel-6 | ETRAN-iptrans | Coding of IP address in RANAP, RNSAP and NBAP messages |
| R3-050528 | 25.426 | 46 | | F | 6.3.0 | 6.4.0 | Rel-6 | ETRAN-iptrans | Coding of IP address in RANAP, RNSAP and NBAP messages |
| R3-050530 | 25.434 | 34 | | F | 6.1.0 | 6.2.0 | Rel-6 | ETRAN-iptrans | Coding of IP address in RANAP, RNSAP and NBAP messages |
| | | | | | | | | | |

**3GPP TSG-RAN WG3 Meeting #47**
**Athens, Greece, 9th - 13th May 2005**

***Tdoc ⌘R3-050526***

*CR-Form-v7.1*

# CHANGE REQUEST

⌘ **25.414** **CR** **086** ⌘ **rev** **-** ⌘ Current version: **6.2.0** ⌘

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

***Proposed change affects:*** UICC apps⌘ ☐ ME ☐ Radio Access Network [X] Core Network [X]

| | | |
|---|---|---|
| ***Title:*** | ⌘ | Coding of IP address in RANAP, RNSAP and NBAP messages |
| ***Source:*** | ⌘ | RAN3 |
| ***Work item code:*** | ⌘ | ETRAN-iptrans |
| ***Date:*** | ⌘ | 22/04/2005 |
| ***Category:*** | ⌘ | **F** |
| ***Release:*** | ⌘ | Rel-6 |

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

*Use one of the following releases:*

| | |
|---|---|
| *Ph2* | *(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)* |
| *Rel-7* | *(Release 7)* |

| | | |
|---|---|---|
| ***Reason for change:*** | ⌘ | RANAP curremtly refers to 25.414 for details on the Transport Layer Information. 25.401 defines how "Transport Network Identifiers" are used and how they are carried in RANAP, RNSAP and NBAP messages. There is however no link from 25.414 to 25.401.<br>The title for 29.060 is wrong, it should be "General Packet Radio Service (GPRS); GPRS Tunnelling Protocol (GTP) across the Gn and Gp interface"<br>Section 4.2 talks about "slow bandwith links", the term "low" should have been used. |
| ***Summary of change:*** | ⌘ | A reference to 25.401 is added.<br>The reference to 25.401 is used to clearify in which format an IP address is exchanged over Iu-CS.<br>The title of 29.060 is corrected.<br>A couple of spelling error are also corrected.<br><br>Impact assessment towards the previous version of the specification (same release):<br><br>This CR has no impact towards the previous version of the specification (same release).<br><br>The impact can be considered none because it only affects new functionality added for IP transport. |
| ***Consequences if not approved:*** | ⌘ | Implementations might miss the important information in 25.401 and this may result in IOT issues. |

| | | | | | |
|---|---|---|---|---|---|
| ***Clauses affected:*** | ⌘ | 2, 4.2, 5.1.3.1 | | | |
| ***Other specs affected:*** | ⌘ | **Y** / **N**<br>**X** / | Other core specifications | ⌘ | 25.426 CR46 Rel6, 25.434 CR34 Rel6 |
| | | / **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.

# 2 References

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

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document*.


[1] ITU-T Recommendation I.361 (11/95): "B-ISDN ATM layer specification".

[2] ITU-T Recommendation I.363.2 (11/00): "B-ISDN ATM Adaptation layer specification: Type 2 AAL".

[3] ITU-T Recommendation I.363.5 (8/96): "B-ISDN ATM Adaptation layer specification: Type 5 AAL".

[4] ITU-T Recommendation I.366.1 (6/98): "Segmentation and Reassembly Service Specific Convergence Sublayer for the AAL type 2".

[5] ITU-T Recommendation E.164 (5/97): "The international public telecommunication numbering plan".

[6] ITU-T Recommendation Q.2110 (7/94): "B-ISDN ATM adaptation layer - Service Specific Connection Oriented Protocol (SSCOP)".

[7] ITU-T Recommendation Q.2140 (2/95): "B-ISDN ATM adaptation layer - Service Specific Coordination Function for Support of Signalling at the Network Node Interface (SSCF-NNI)".

[8] ITU-T Recommendation Q.2150.1 (12/99): "AAL type 2 signalling transport converter on broadband MTP".

[9] ITU-T Recommendation Q.2210 (7/96): "Message transfer part level 3 functions and messages using the services of ITU-T Recommendation Q.2140".

[10] ITU-T Recommendation Q.2630.1 (12/99): "AAL type 2 signalling protocol (Capability Set 1)".

[11] ITU-T Recommendation X.213 (11/95): "Information technology - Open systems interconnection - Network Service Definitions".

[12] IETF RFC 768 (Auguest 1980): "User Datagram Protocol".

[13] IETF RFC 791 (September 1981): "Internet Protocol".

[14] IETF RFC 2684 (September 1999): "Multiprotocol Encapsulation over ATM Adaptation Layer 5".

[15] IETF RFC 2225 (April 1998): "Classical IP and ARP over ATM".

[16] IETF RFC 2460 (December 1998): "Internet Protocol, Version 6 (IPv6) Specification".

[17] 3GPP TS 29.060: "General Packet Radio Service (GPRS) ~~Service description~~; GPRS Tunnelling Protocol (GTP) across the Gn and Gp interface ~~Stage 2~~".

[18] IETF RFC 793 (September 1981): "Transmission Control Protocol".

[19] IETF RFC 2474 (December 1998): "Definition of the Differentiated Services Field (DS Field) in the Ipv4 and Ipv6 Headers".

[20] ITU-T Implementor's guide (12/99) for recommendation Q.2210 (07/96).

[21] ITU-T Recommendation Q.2630.2 (12/00): "AAL type 2 signalling protocol (Capability Set 2)".

[22] IETF RFC 1889 (January 1996): "RTP: A Transport Protocol for Real Time Applications".

[23] IETF RFC 1890 (January 1996): "RTP Profile for Audio and Video Conferences with Minimal Control".

[24] 3GPP TS 25.415: "UTRAN Iu Interface User Plane Protocols"

[25] IETF RFC 1661 (July 1994): "The Point-to-Point Protocol (PPP)".

[26] IETF RFC 1662 (July 1994): "PPP in HDLC-like Framing".

[27] IETF RFC 2507 (February 1999): "IP header compression".

[28] IETF RFC 1990 (August 1996): "The PPP Multilink Protocol (MP)".

[29] IETF RFC 2686 (September 1996): "The Multi-Class Extension to Multi-Link PPP".

[30] IETF RFC 2509 (February 1999): "IP Header Compression over PPP".

[31] Void[32] IETF RFC 3153 (August 2001): "PPP Multiplexing".

[33] IETF RFC 2364 (July 1998): "PPP over AAL5".

[34] IETF RFC 3031 (January 2001): "Multiprotocol Label Switching Architecture".

[35] ITU-T Recommendation E.191 (03/00): "B-ISDN addressing".

[X] 3GPP TS 25.401: “UTRAN overall description”

## 4.2 IP Transport Option

An RNC/CN-node supporting IP transport option on the Iu interface shall support PPP protocol with HDLC framing [25], [26].

NOTE: This does not preclude the single implementation and use of any other protocols (e.g. PPPMux/AAL5/ATM, PPP/AAL2/ATM, Ethernet, MPLS/ATM, etc.) fulfilling the UTRAN requirements toward the upper layers.

An RNC/CN-node supporting IP transport option on the Iu interface and having interfaces connected via ~~slow~~ low bandwidth PPP links like E1/T1/J1 shall also support IP Header Compression [27] and the PPP extensions ML/MC-PPP [28], [29]. In this case the negotiation of header compression [27] over PPP shall be performed via [30].

# 5 Circuit switched domain

## 5.1 Transport network user plane

### 5.1.1 General

There are two options for the transport layer for data streams over Iu-CS:

1) ATM based Transport (ATM transport option)

2) IP based Transport (IP transport option)

The following figure shows the protocol stacks of the two options.

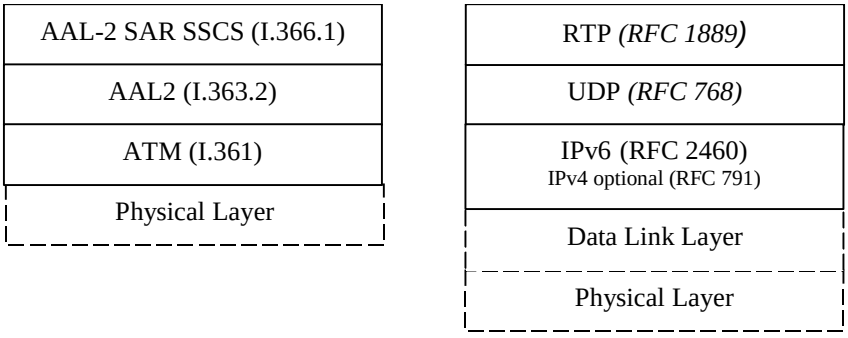



**Figure 1. Transport network layer for data streams over Iu-CS.**

### 5.1.2 ATM Transport Option

#### 5.1.2.1 ATM Adaptation Layer 2

##### 5.1.2.1.1 AAL2-Segmentation and Reassembly Service Specific Convergence Sublayer (I.366.1)

Service Specific Segmentation and Reassembly (SSSAR) sublayer of ITU-T Recommendation I.366.1 [4] is used for the segmentation and reassembly of AAL2 SDUs (i.e., only SSSAR is used from ITU-T Recommendation I.366.1).

#### 5.1.2.1.2 AAL2-specification (I.363.2)

AAL2 shall be used according to ITU-T Recommendation I.363.2 [2].

## 5.1.3 IP Transport Option

### 5.1.3.1 General

In the IP transport option RTP over UDP over IP shall be supported as the transport for data streams on the Iu-CS interface. The data link layer is as specified in subclause 4.2.

The transport bearer is identified by the UDP port number and the IP address (source UDP port number, destination UDP port number, source IP address, destination IP address).

The source IP address and destination IP address exchanged via RANAP on the Iu-CS interface shall use the NSAP structure. See sub clause 6.1.8.2 in [X].

### 5.1.3.2 UDP/IP

The path protocol used shall be UDP [12].

An IP RNC/CN-node shall support IPv6. The support of IPv4 is optional.

NOTE: This does not preclude single implementation and use of IPv4.

IP dual stack support is recommended for the potential transition period from IPv4 to IPv6 in the transport network.

There may be one or several IP addresses in the RNC and in the CN. The packet processing function in the CN shall send downstream packets of a given RAB to the RNC IP address / UDP port (received in RANAP) associated to that particular RAB. The packet processing function in the RNC shall send upstream packets of a given RAB to the CN IP address / UDP port (received in RANAP) associated to that particular RAB. If there is no RNC IP address / UDP port yet associated to the packet processing function in the CN for a RAB not yet finally set-up, the packet processing function in the CN for that RAB shall extract the source IP address / UDP port from the first received IP packet to identify the peer IP/UDP entity. The packet processing function in the RNC shall use the same source IP address / UDP port as is sent to CN in RANAP.

The RNC/CN-node shall use two consecutive port numbers for the RTP bearer and for the optional RTCP connection that transport a single Iu UP connection. Two such consecutive port numbers are termed “port number block” in what follows. The first port number shall be even and shall be assigned to the RTP protocol. The next port number shall be assigned to the RTCP protocol. This port shall be reserved even if the optional RTCP protocol is not used.

Each RNC/CN-node shall administer the port numbers it intends to use for RTP/RTCP port number blocks.

**3GPP TSG-RAN WG3 Meeting #47**
**Athens, Greece, 9th - 13th May 2005**

***Tdoc ⌘R3-050528***

*CR-Form-v7.1*

# CHANGE REQUEST

⌘ **25.426** **CR** **046** ⌘**rev** **-** ⌘ Current version: **6.3.0** ⌘

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

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

| | | |
|---|---|---|
| ***Title:*** | ⌘ | Coding of IP address in RANAP, RNSAP and NBAP messages |
| ***Source:*** | ⌘ | RAN3 |
| ***Work item code:*** | ⌘ | ETRAN-iptrans |
| ***Date:*** | ⌘ | 22/04/2005 |
| ***Category:*** | ⌘ | **F** |
| ***Release:*** | ⌘ | Rel-6 |

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

*Use one of the following releases:*
*Ph2* *(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)*
*Rel-7* *(Release 7)*

| | | |
|---|---|---|
| ***Reason for change:*** | ⌘ | RNSAP and NBAP curremtly refers to 25.426 for details on the Transport Layer Information.<br>25.401 defines how "Transport Network Identifiers" are used and how they are carried in RANAP, RNSAP and NBAP messages. There is however no link from 25.426 to 25.401.<br>Section 4.2 talks about "slow bandwith links", the term "low" should have been used. |
| ***Summary of change:*** | ⌘ | A reference to 25.401 is added.<br>The reference to 25.401 is used to clearify in which format an IP address is exchanged by the RNL over Iu/Iur.<br>The spelling error is also corrected.<br><br>Impact assessment towards the previous version of the specification (same release):<br><br>This CR has no impact towards the previous version of the specification (same release).<br><br>The impact can be considered none because it only affects new functionality added for IP transport. |
| ***Consequences if not approved:*** | ⌘ | Implementations might miss the important information in 25.401 and this may result in IOT issues. |

| | | |
|---|---|---|
| ***Clauses affected:*** | ⌘ | 2, 4.2, 5.3 |

| | | Y | N | | | |
|---|---|---|---|---|---|---|
| ***Other specs affected:*** | ⌘ | X | | Other core specifications | ⌘ | 25.414 CR86 Rel6, 25.434 CR34 Rel6 |
| | | | 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.

# 2 References

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

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document*.

[1] 3GPP TS 25.427: "UTRAN Iur and Iub User interface plane protocols for DCH data streams".

[2] ITU-T Recommendation I.361 (11/95): "B-ISDN ATM layer specification".

[3] ITU-T Recommendation I.363.2 (11/2000): "B-ISDN ATM Adaptation Layer specification; Type 2 AAL".

[4] ITU-T Recommendation I.366.1 (6/98): "Segmentation and Reassembly Service Specific Convergence Sublayer for the AAL type 2".

[5] ITU-T Recommendation Q.2630.1 (12/99): "AAL type 2 signalling protocol (Capability Set 1)".

[6] ITU-T Recommendation E.191 (03/00): "B-ISDN addressing".

[7] ITU-T Recommendation X.213 (11/95): "Information Technology - Open Systems Interconnection - Systems Interconnection - Network Service Definition".

[8] ITU-T Recommendation Q.2110 (7/94): "B-ISDN ATM adaptation layer - Service Specific Connection Oriented Protocol (SSCOP)".

[9] ITU-T Recommendation Q.2130 (7/94): "B-ISDN signalling ATM adaptation layer - Service Specific Coordination Function for Support of Signalling at the User-Network Interface (SSCF at UNI)".

[10] ITU-T Recommendation Q.2150.2 (12/99): "AAL type 2 signalling transport converter on SSCOP)".

[11] ITU-T Recommendation Q.2210 (7/96): Message transfer part level 3 functions and messages using the services of the ITU-T Recommendation Q.2140".

[12] ITU-T Recommendation Q.2140 (2/95): "B-ISDN ATM adaptation layer - Service Specific Coordination Function for Support of Signalling at the Network Node Interface (SSCF at NNI)".

[13] ITU-T Recommendation Q.2150.1 (12/99): "AAL type 2 signalling transport converter on broadband MTP".

[14] IETF RFC 791 (September 1981): "Internet Protocol".

[15] IETF RFC 1483 (July 1993): "Multiprotocol Encapsulation over ATM Adaptation Layer 5".

[16] IETF RFC 2225 (April 1998): "Classical IP and ARP over ATM".

[17] IETF RFC 768 (August 1980): "User Datagram Protocol".

[18] IETF RFC 2960 (October 2000): "Stream Control Transmission Protocol".

[19] G. Sidebottom et al, "SS7 MTP3 - User Adaptation Layer", draft-ietf-sigtran-m3ua-12.txt (Work In Progress), IETF, February 2002.

[20] ITU-T Recommendation I.630 (2/99): "ATM protection switching".

[21] ITU-T Recommendation Q.Imp2210: "Implementor's guide (03/99) for Recommendation Q.2210 (07/96)".

[22] ITU-T Recommendation Q.2630.2 (12/2000): "AAL type 2 signalling protocol (Capability Set 2)".

[23] IETF STD 51, RFC 1661 (July 1994): "The Point-To-Point Protocol (PPP)".

[24] IETF STD 51, RFC 1662 (July 1994): "PPP in HDLC-like Framing".

[25] IETF RFC 2507, (February 1999): "IP header compression".

[26] IETF RFC 1990 "The PPP Multilink Protocol (MP)".

[27] IETF RFC 2686 "The Multi-Class Extension to Multi-Link PPP".

[28] IETF RFC 2509, (February 1999):"IP Header Compression over PPP".

[29] IETF RFC 2460 "Internet Protocol, Version 6 (IPv6) Specification".

[30] IETF RFC 2474 (December 1998): "Definition of the Differentiated Services Field (DS Field) in the IPv4 and IPv6 Headers".

[31] IETF RFC 768 (8/1980): "User Datagram Protocol".

[32] IETF RFC 3153 (August 2001): "PPP Multiplexing".

[33] IETF RFC 2364 (July 1998): "PPP over AAL5".

[34] IETF RFC 3031 (January 2001): "Multiprotocol Label Switching Architecture".

[35] Void[36] ITU-T Recommendation E.164 (5/97): " The international public telecommunication numbering plan ".

[37] RFC 3309: "SCTP Checksum Change".

[38] 3GPP TS 25.414: " UTRAN Iu Interface Data Transport & Transport Signalling".

[X] 3GPP TS 25.401: “UTRAN overall description”

## 4.2 IP Transport Option

A UTRAN node supporting IP transport option shall support PPP protocol [23] with HDLC framing [24].

NOTE: This does not preclude the single implementation and use of any other L2/L1 protocols (e.g. PPPMux/AAL5/ATM [32], [33], PPP/AAL2/ATM, Ethernet, MPLS/ATM [34], etc.) fulfilling the UTRAN requirements towards the upper layers.

A UTRAN node supporting IP transport option and having interfaces connected via ~~slow~~ low bandwidth PPP links like E1/T1/J1 shall also support IP Header Compression [25] and the PPP extensions ML/MC-PPP [26], [27]. In this case the negotiation of header compression [20] over PPP shall be performed via [28].

# 5 $I_{ur}$ and $I_{ub}$ Data Transport for DCH Data Streams

## 5.1 Introduction

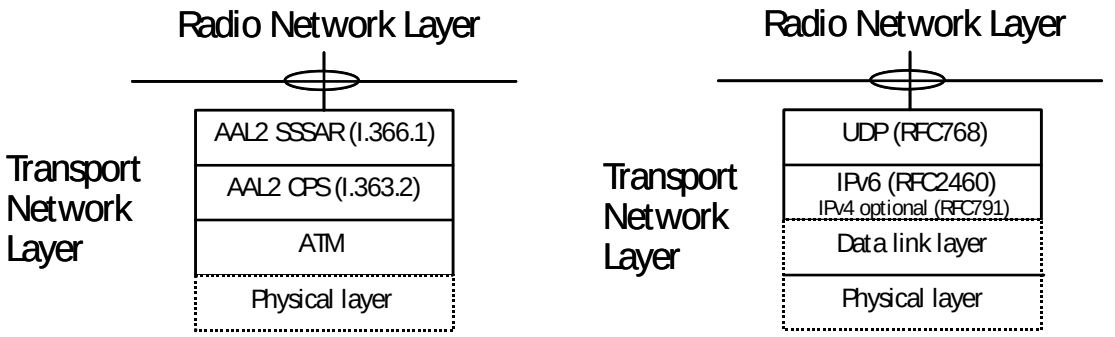
The Frame Protocol for DCH data streams [1] is the user of the transport layer specified in the present document.

There are two options for the transport layer of the DCH data streams in Iur and Iub:

1) ATM based transport (ATM Transport Option)

2) IP based transport (IP Transport Option)

The following figure shows the protocol stacks of the two options.




Protocol stack for ATM transport option Protocol stack for IP transport option

**Figure 1: Transport network layer for DCH data streams over Iur and Iub interfaces**

## 5.2 ATM Transport Option

Asynchronous Transfer Mode (ATM) [2] and ATM Adaptation Layer type 2 (AAL2) [3, 4] are used as a transport layer for DCH data streams on Iur and Iub interfaces. Service Specific Segmentation and Reassembly (SSSAR) sublayer for AAL2 is used for the segmentation and reassembly of AAL2 SDUs.

## 5.3 IP Transport Option

UDP [17] over IP shall be supported as the transport for DCH data streams on Iub and Iur interfaces. The data link layer is as specified in chapter 4.2.

An IP UTRAN Node shall support IPv6. The support of IPv4 is optional.

NOTE: This does not preclude single implementation and use of IPv4.

IP dual stack support is recommended for the potential transition period from IPv4 to IPv6 in the transport network.

The transport bearer is identified by the UDP port number and the IP address (source UDP port number, destination UDP port number, source IP address, destination IP address).

The source IP address and destination IP address exchanged via Radio Network Layer on the Iur/Iub interface shall use the NSAP structure. See sub clause 6.1.8.2 of [X].

IP Differentiated Services code point marking [30] shall be supported. The mapping between traffic categories and Diffserv code points shall be configurable by O&M. Traffic categories are implementation-specific and may be determined from the application parameters.

**3GPP TSG-RAN WG3 Meeting #47**
**Athens, Greece, 9th - 13th May 2005**

***Tdoc ⌘R3-050530***

*CR-Form-v7.1*

# CHANGE REQUEST

⌘ **25.434** **CR** **034** ⌘ **rev** **-** ⌘ Current version: **6.1.0** ⌘

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

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

| | | |
|---|---|---|
| ***Title:*** | ⌘ | Coding of IP address in RANAP, RNSAP and NBAP messages |
| ***Source:*** | ⌘ | RAN3 |
| ***Work item code:*** | ⌘ | ETRAN-iptrans |
| ***Date:*** | ⌘ | 22/04/2005 |
| ***Category:*** | ⌘ | **F** |
| ***Release:*** | ⌘ | Rel-6 |

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

*Use one of the following releases:*

| | |
|---|---|
| *Ph2* | *(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)* |
| *Rel-7* | *(Release 7)* |

| | | |
|---|---|---|
| ***Reason for change:*** | ⌘ | RNSAP and NBAP curremtly refers to 25.434 for details on the Transport Layer Information.<br>25.401 defines how “Transport Network Identifiers” are used and how they are carried in RANAP, RNSAP and NBAP messages. There is however no link from 25.434 to 25.401.<br>Section 4.2 talks about “slow bandwith links”, the term “low” should have been used. |
| ***Summary of change:*** | ⌘ | The reference to 25.401 is used to clearify in which format an IP address is exchanged by the RNL over Iu/Iur.<br>The spelling error is also corrected.<br><br>Impact assessment towards the previous version of the specification (same release):<br><br>This CR has no impact towards the previous version of the specification (same release).<br><br>The impact can be considered none because it only affects new functionality added for IP transport. |
| ***Consequences if not approved:*** | ⌘ | Implementations might miss the important information in 25.401 and this may result in IOT issues. |

| | | |
|---|---|---|
| ***Clauses affected:*** | ⌘ | 4.2, 5.3 |

Y | N

| | | | | | | |
|---|---|---|---|---|---|---|
| ***Other specs affected:*** | ⌘ | X | | Other core specifications | ⌘ | 25.414 CR86 Rel6, 25.426 CR46 Rel6, |
| | | | 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.

## 4.2 Data Link Layer for IP Transport Option

An RNC or Node B supporting IP Transport Option shall support the PPP protocol with HDLC framing [16], [17].

NOTE: This does not preclude the single implementation and use of any other L2/L1 protocols (e.g. PPPMux/AAL5/ATM [24][25], PPP/AAL2/ATM, Ethernet, MPLS/ATM [26], etc.) fulfilling the UTRAN requirements towards the upper layers.

An RNC or Node B supporting IP transport option and having interfaces connected via ~~slow~~ low bandwidth PPP links like E1/T1/J1 shall also support IP Header Compression [18] and the PPP extensions ML/MC-PPP [19], [20]. In this case, negotiation of header compression [18] over PPP shall be performed via [21].

# 5 $I_{ub}$ Data Transport for Common Transport Channel Data Streams

## 5.1 Introduction

This subclause specifies the transport layers that support Common Transport Channel (FACH, RACH, CPCH [FDD], PCH, DSCH, HS-DSCH, USCH [TDD]) data streams.

There are two options for protocol suites for transport of RACH, CPCH [FDD], FACH, USCH [TDD], DSCH and HS-DSCH Iub data streams:

1) ATM Transport Option
2) IP Transport Option

The following figure 1 shows the protocol stacks of these two options:

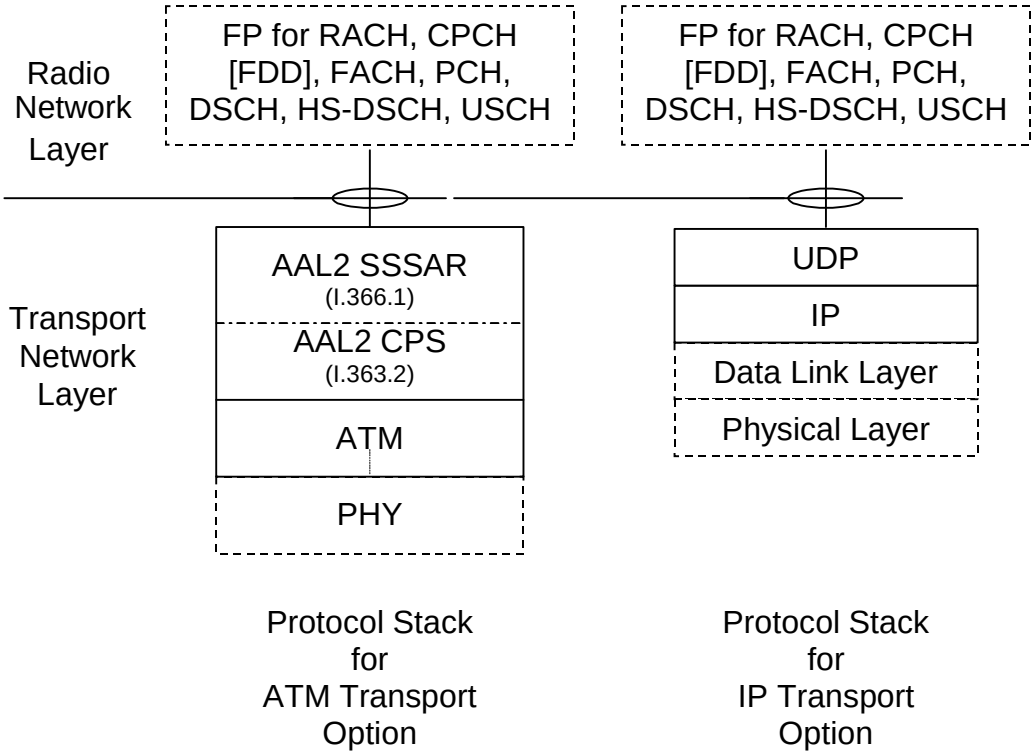



**Figure 1: Protocol stack for the transport of RACH, CPCH [FDD], FACH, PCH, DSCH, HS-DSCH and USCH [TDD] Iub data streams**

## 5.2 ATM Transport Option

ATM and AAL2 (I.363.2 [1] and I.366.1 [2]) are used at the standard transport layer for Iub RACH, CPCH [FDD] FACH, PCH, DSCH, HS-DSCH, USCH [TDD] data streams.

The Service Specific Segmentation and Reassembly (SSSAR) sublayer is used for the segmentation and reassembly of AAL2 SDUs (i.e. SSSAR is only considered from ITU-T Recommendation I.366.1).

## 5.3 IP Transport Option

UDP [12] over IP shall be supported as the transport for RACH, CPCH [FDD], FACH, PCH, DSCH, HS-DSCH and USCH [TDD] data streams on Iub Interface. The data link layer is as specified in chapter 4.2

An IP UTRAN node shall support IPv6 [13]. The support of IPv4 [14] is optional.

NOTE: This does not preclude single implementation and use of IPv4.

IP dual stack is recommended for the potential transition period from IPv4 to IPv6 in the transport network.

The transport bearer is identified by the UDP port number and the IP address (source UDP port number, destination UDP port number, source IP address, destination IP address).

The source IP address and destination IP address exchanged via Radio Network Layer on the Iur/Iub interface shall use the NSAP structure. See sub clause 6.1.8.2 of [22].

IP Differentiated Services code point marking [15] shall be supported. The mapping between traffic categories and Diffserv code points shall be configurable by O&M for each traffic category. Traffic categories are implementation-specific and may be determined from the application parameters.