TSG RAN Meeting #24 **RP-040254**
Seoul, Korea, 2. – 4. June, 2004

Title **Completion of Rel-5 IP transport WI**
Source **Alcatel, Ericsson, Motorola, NEC, Nortel, Siemens, Nokia**
Agenda Item **7.4.2**

CR.	Rev.	Cat	Spec.	curr. Vers.	new Vers.	REL	Work Item	Title
085	-	F	25.401	5.7.0	5.8.0	REL-5	ETRAN-Iptrans	Completion of the REL-5 IP Transport WI
086	-	A	25.401	6.2.0	6.3.0	REL-6	ETRAN-Iptrans	Completion of the REL-5 IP Transport WI
053	-	F	25.410	5.3.0	5.4.0	REL-5	ETRAN-Iptrans	Completion of the REL-5 IP Transport WI
054	-	A	25.410	6.0.0	6.1.0	REL-6	ETRAN-Iptrans	Completion of the REL-5 IP Transport WI
080	-	F	25.414	5.5.0	5.6.0	REL-5	ETRAN-Iptrans	Completion of the REL-5 IP Transport WI
081	-	A	25.414	6.0.0	6.1.0	REL-6	ETRAN-Iptrans	Completion of the REL-5 IP Transport WI
042	-	F	25.420	5.1.0	5.2.0	REL-5	ETRAN-Iptrans	Completion of the REL-5 IP Transport WI
043	-	A	25.420	6.0.0	6.1.0	REL-6	ETRAN-Iptrans	Completion of the REL-5 IP Transport WI
041	-	F	25.426	5.4.0	5.5.0	REL-5	ETRAN-Iptrans	Completion of the REL-5 IP Transport WI
042	-	A	25.426	6.1.0	6.2.0	REL-6	ETRAN-Iptrans	Completion of the REL-5 IP Transport WI
051	-	F	25.430	5.2.0	5.3.0	REL-5	ETRAN-Iptrans	Completion of the REL-5 IP Transport WI
052	-	A	25.430	6.0.0	6.1.0	REL-6	ETRAN-Iptrans	Completion of the REL-5 IP Transport WI

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CHANGE REQUEST

⌘ **25.426** **CR** **041** ⌘ **rev** **-** ⌘ Current version: **5.4.0** ⌘

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

Title:	⌘	Completion of the Rel-5 IP transport WI
Source:	⌘	Alcatel, Ericsson, Motorola, NEC, Nortel, Siemens, Nokia
Work item code:	⌘	ETRAN-iptrans
Date:	⌘	02/06/2004
Category:	⌘	**F**
Release:	⌘	Rel-5

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

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Consequences if not approved:	⌘	If this CR is not approved, the last remaining open issue in Rel-5 WI on IP transport in UTRAN remains open.

Clauses affected:	⌘	2, 9.2, 9.3			
Other specs	⌘	Y: X / N:	Other core specifications	⌘	CR085 25.401 Rel-5 CR086 25.401 Rel-6 CR054 25.410 Rel-6

			CR080 25.414 Rel-5 CR081 25.414 Rel-6 CR042 25.420 Rel-5 CR043 25.420 Rel-6 CR041 25.426 Rel-5 CR042 25.426 Rel-6 CR051 25.430 Rel-5 CR052 25.430 Rel-6
affected:		**X** Test specifications	
		X O&M Specifications	
Other comments:	⌘		

2 References

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[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".

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[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".

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[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] "IP-ALCAP" [ffs]~~

[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".

<Unaffected parts are omitted>

9 Interworking between ATM and IP Transport Options

9.1 Introduction

This clause specifies the interworking between IP and ATM transport options. A UTRAN node supporting IP transport option shall provide interworking to a UTRAN node supporting only ATM transport option.

9.2 Interworking Alternatives

For interworking with a UTRAN node supporting only ATM option, the UTRAN node supporting IP option shall additionally support at least one of the following interworking mechanisms:

1) ~~1)~~ ATM&IP dual stack. An ALCAP protocol is not required in this interworking solution.

Annex B of [38] shows an example of protocols for the case the ATM&IP RAN/CN-node has no ATM connectivity.

2) ~~Interworking Function (IWF) as a logical part of the UTRAN node supporting IP option.~~ An Interworking Function (IWF), either internal or external to the RAN/CN node. AAL2 signalling protocol Capability Set 2 [22] shall be supported as ALCAP protocol between the Interworking Function and the UTRAN node supporting ATM transport option.

Annex B of [38] shows an example of a protocol stack for the bearer control protocol between the RAN/CN IP Node and its IWF for the case when the IWF is an external unit to the RAN/CN node. Other protocol stacks for this case are not precluded.

~~3) Interworking Unit (IWU) as a logically separate unit. An IP-ALCAP protocol shall be used in the interface between the UTRAN node supporting IP option and the Interworking Unit.~~

~~9.3 IP-ALCAP for the Interworking~~

~~In the third interworking alternative as introduced in chapter 9.2, IP-ALCAP protocol [35] is used as the IP-ALCAP protocol between the UTRAN node supporting IP option and the Transport Network Layer Interworking Unit.~~

~~*[ffs]*~~

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CHANGE REQUEST

⌘ **25.420** **CR** **042** ⌘ **rev** **-** ⌘ Current version: **5.1.0** ⌘

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

Title:	⌘	Completion of the Rel-5 IP transport WI
Source:	⌘	Alcatel, Ericsson, Motorola, NEC, Nortel, Siemens, Nokia
Work item code:	⌘	ETRAN-iptrans
Date:	⌘	02/06/2004
Category:	⌘	**F**
Release:	⌘	Rel-5

Use one of the following categories:
F *(correction)*
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Consequences if not approved:	⌘	If this CR is not approved, the last remaining open issue in Rel-5 WI on IP transport in UTRAN remains open.

Clauses affected:	⌘	8			
Other specs	⌘	**Y** X	**N**	Other core specifications	⌘ CR085 25.401 Rel-5 CR086 25.401 Rel-6 CR053 25.410 Rel-5 CR054 25.410 Rel-6

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affected:		**X**	Test specifications	
		X	O&M Specifications	
Other comments:	⌘			

8 I_{ur} Interface Protocol Structure

The Iur interface protocol architecture consists of two functional layers:

- Radio Network Layer, defines the procedures related to the interaction of two RNCs within a PLMN. The radio network layer consists of a Radio Network Control Plane and a Radio Network User Plane.

- Transport layer, defines procedures for establishing physical connections between two RNCs within a PLMN.

~~An IP ALCAP protocol may be supported depending on the ATM - IP inter-working solution selected. Further information on the ATM - IP interworking is provided in the transport layer specifications [15]~~

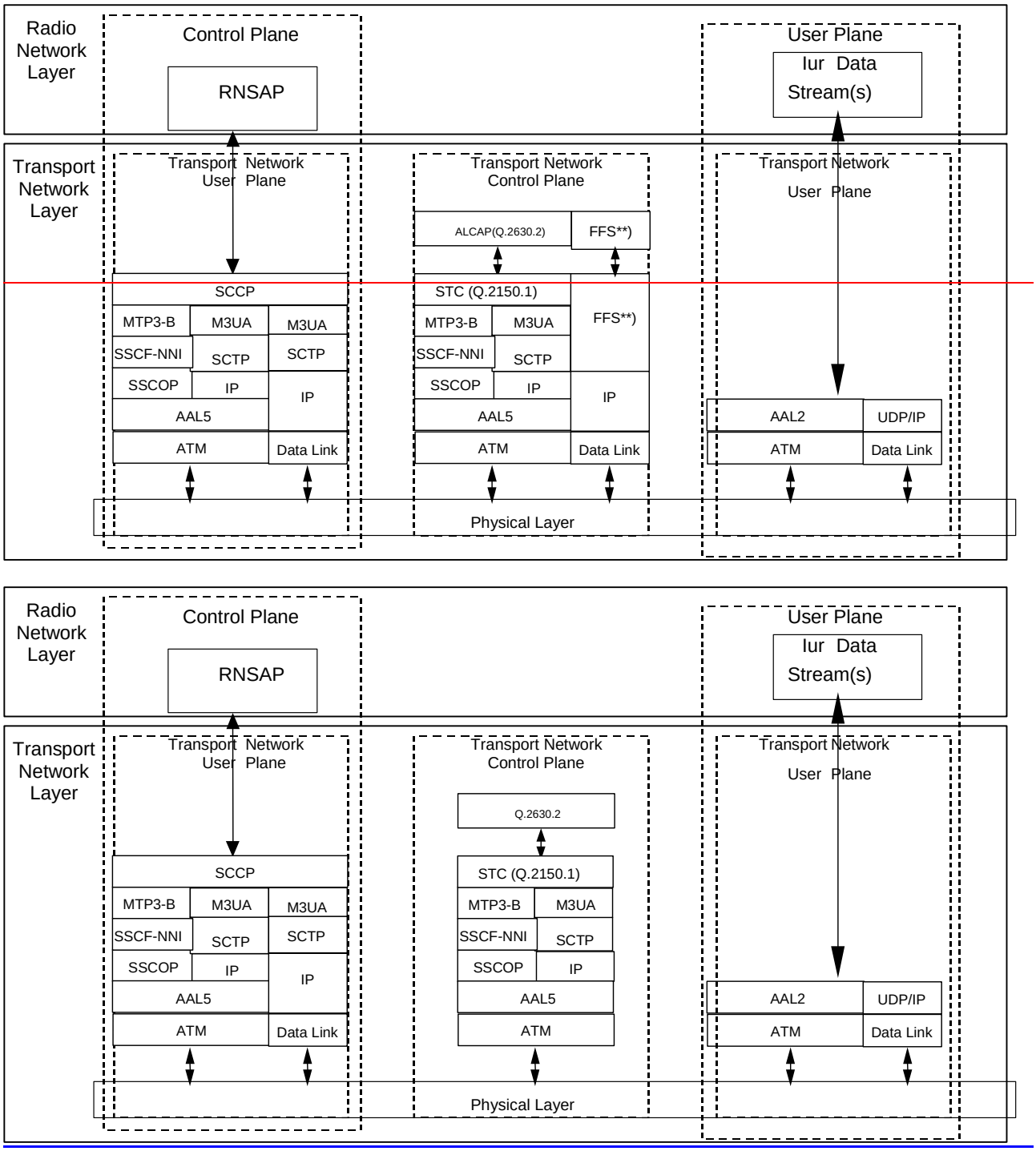

Figure 4: Iur Interface Protocol Structure

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⌘ **25.426** **CR** **042** ⌘ **rev** **-** ⌘ Current version: **6.1.0** ⌘

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Release:	⌘	Rel-6

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affected:		**X**	Test specifications	
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~~*[ffs]*~~

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CHANGE REQUEST

⌘ **25.420** **CR** **043** ⌘ **rev** **-** ⌘ Current version: **6.0.0** ⌘

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Release:	⌘	Rel-6

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				CR080 25.414 Rel-5 CR081 25.414 Rel-6 CR042 25.420 Rel-5 CR041 25.426 Rel-5 CR042 25.426 Rel-6 CR051 25.430 Rel-5 CR052 25.430 Rel-6
affected:		**X**	Test specifications	
		X	O&M Specifications	
Other comments:	⌘			

8 I_{ur} Interface Protocol Structure

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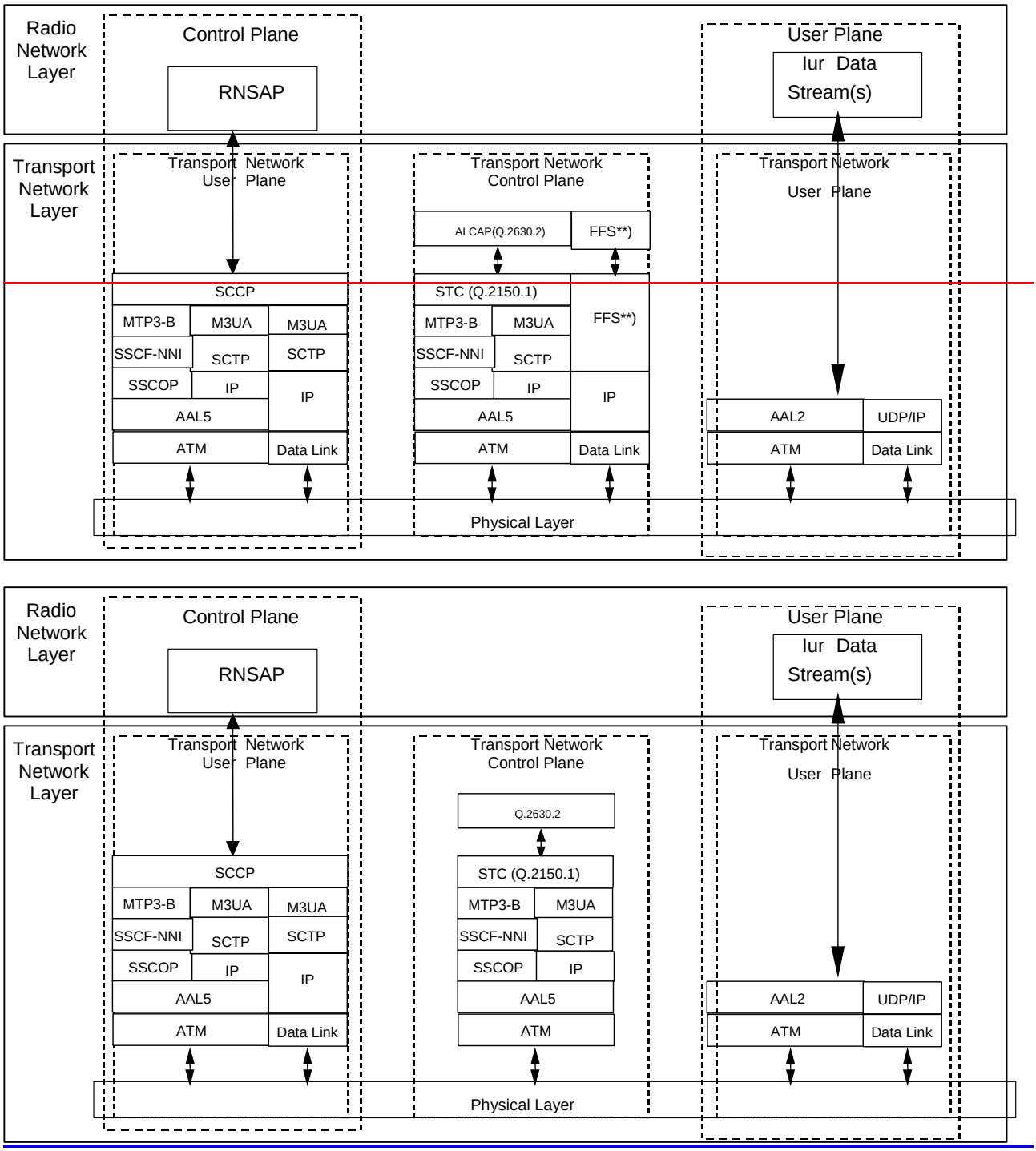

Figure 4: Iur Interface Protocol Structure

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CHANGE REQUEST

⌘ **25.430** **CR** **051** ⌘ **rev** **-** ⌘ Current version: **5.2.0** ⌘

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Source:	⌘	Alcatel, Ericsson, Motorola, NEC, Nortel, Siemens, Nokia
Work item code:	⌘	ETRAN-iptrans
Date:	⌘	02/06/2004
Category:	⌘	**F**
Release:	⌘	Rel-5

Use one of the following categories:
F *(correction)*
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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)
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R99 (Release 1999)
Rel-4 (Release 4)
Rel-5 (Release 5)
Rel-6 (Release 6)

Reason for change:	⌘	To close the final open issue in Rel-5 WI on IP transport in UTRAN
Summary of change:	⌘	The 3rd ATM-IP interworking option is removed from the specifications while the other two options remain. The application of Q.2631.1 is given as one example of the existing option 2 in an informative annex of the CR080 25.414 Rel-5. This informative annex also gives an example of how to enable the use of ATM&IP dual stack in case there is no access to ATM network in the IP UTRAN/CN node. Impact Analysis Impact assessment towards the previous version of the specification (same release): this CR has isolated impact on the previous version of the specification (same release) because only one optional function is impacted. This CR has an impact under functional and protocol point of view. The impact can be considered as isolated as it affects only the IP-ATM Interworking function.
Consequences if not approved:	⌘	If this CR is not approved, the last remaining open issue in Rel-5 WI on IP transport in UTRAN remains open.

Clauses affected:	⌘	7			
Other specs	⌘	Y: X / N:	Other core specifications	⌘	CR085 25.401 Rel-5 CR086 25.401 Rel-6 CR053 25.410 Rel-5 CR054 25.410 Rel-6

				CR080 25.414 Rel-5 CR081 25.414 Rel-6 CR042 25.420 Rel-5 CR043 25.420 Rel-6 CR041 25.426 Rel-5 CR042 25.426 Rel-6 CR052 25.430 Rel-6
affected:		**X**	Test specifications	
		X	O&M Specifications	
Other comments:	⌘			

7 Iub Interface Protocol Structure

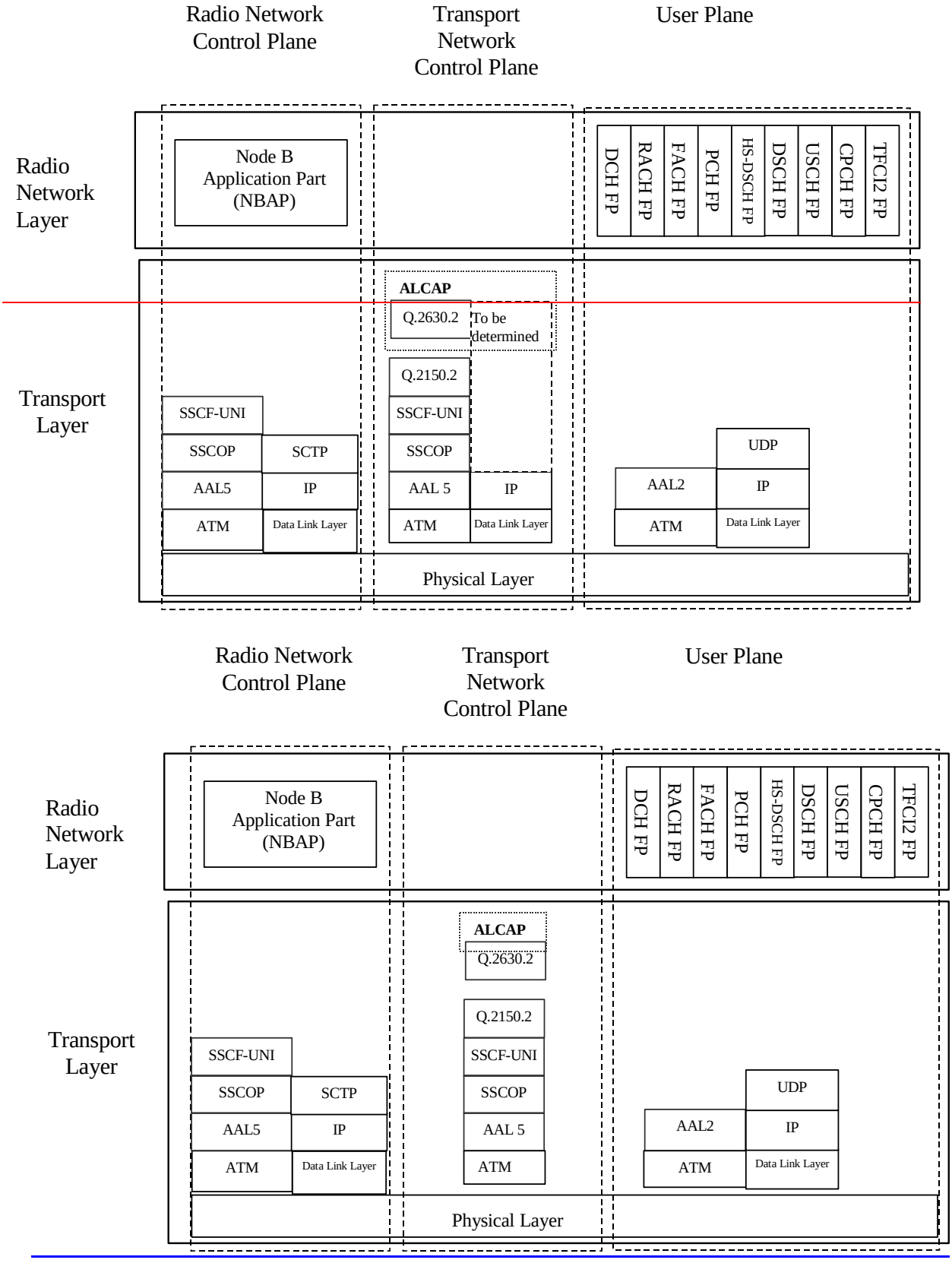

Figure 7: Iub Interface Protocol Structure.

The Iub interface protocol architecture consists of two functional layers:

1. Radio Network Layer, defines procedures related to the operation of Node B. The radio network layer consists of a radio network control plane and a radio network user plane.

2. Transport Layer, defines procedures for establishing physical connections between Node B and the RNC.

There shall be one dedicated AAL2 or UDP/IP transport bearer for each RACH, one for each FACH transport channel, and one for each CPCH [FDD].

~~An IP ALCAP protocol may be supported by an IP UTRAN node depending on the ATM – IP inter-working solution selected. Further information on the ATM - IP interworking is provided in the transport layer specification [10].~~

8 Other Iub Interface Specifications

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CHANGE REQUEST

⌘ **25.430** **CR** **052** ⌘ **rev** **-** ⌘ Current version: **6.0.0** ⌘

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

Title:	⌘	Completion of the Rel-5 IP transport WI
Source:	⌘	Alcatel, Ericsson, Motorola, NEC, Nortel, Siemens, Nokia
Work item code:	⌘	ETRAN-iptrans
Date:	⌘	02/06/2004
Category:	⌘	**A**
Release:	⌘	Rel-6

Use one of the following categories:
F *(correction)*
A *(corresponds to a correction in an earlier release)*
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Use one of the following releases:
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R96 (Release 1996)
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R98 (Release 1998)
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Rel-5 (Release 5)
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Reason for change:	⌘	To close the final open issue in Rel-5 WI on IP transport in UTRAN
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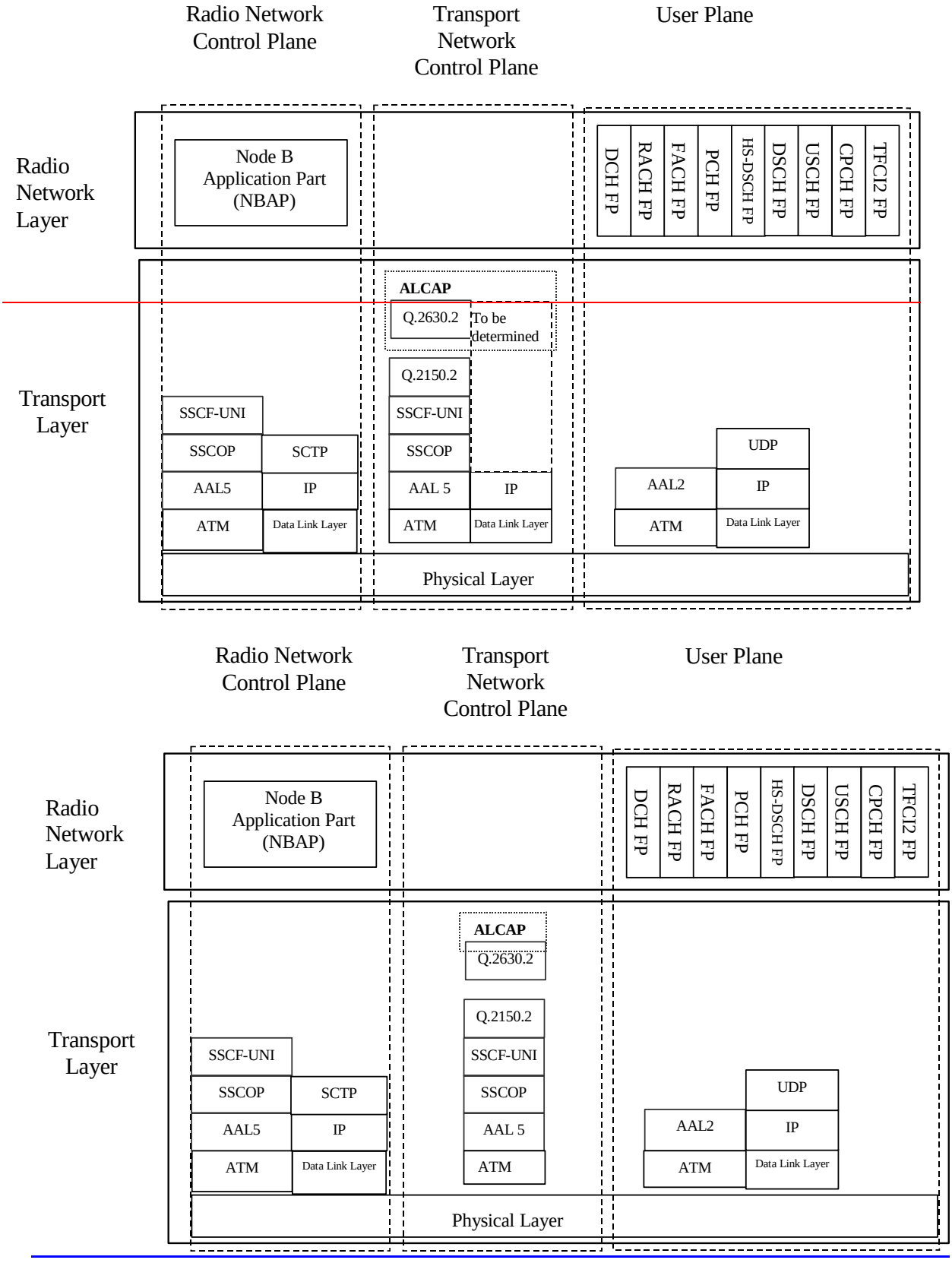
Other specs	⌘	Y: X / N:	Other core specifications	⌘	CR085 25.401 Rel-5 CR086 25.401 Rel-6 CR053 25.410 Rel-5 CR054 25.410 Rel-6

				CR080 25.414 Rel-5 CR081 25.414 Rel-6 CR042 25.420 Rel-5 CR043 25.420 Rel-6 CR041 25.426 Rel-5 CR042 25.426 Rel-6 CR051 25.430 Rel-5
affected:		**X**	Test specifications	
		X	O&M Specifications	
Other comments:	⌘			

7 Iub Interface Protocol Structure



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8 Other Iub Interface Specifications

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Seoul, Korea, 2. – 4. June, 2004

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⌘ **25.410** **CR** **053** ⌘ **rev** **-** ⌘ Current version: **5.3.0** ⌘

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

Title:	⌘	Completion of the Rel-5 IP transport WI
Source:	⌘	Alcatel, Ericsson, Motorola, NEC, Nortel, Siemens, Nokia
Work item code:	⌘	ETRAN-iptrans
Date:	⌘	02/06/2004
Category:	⌘	**F**
Release:	⌘	Rel-5

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

Use one of the following releases:

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

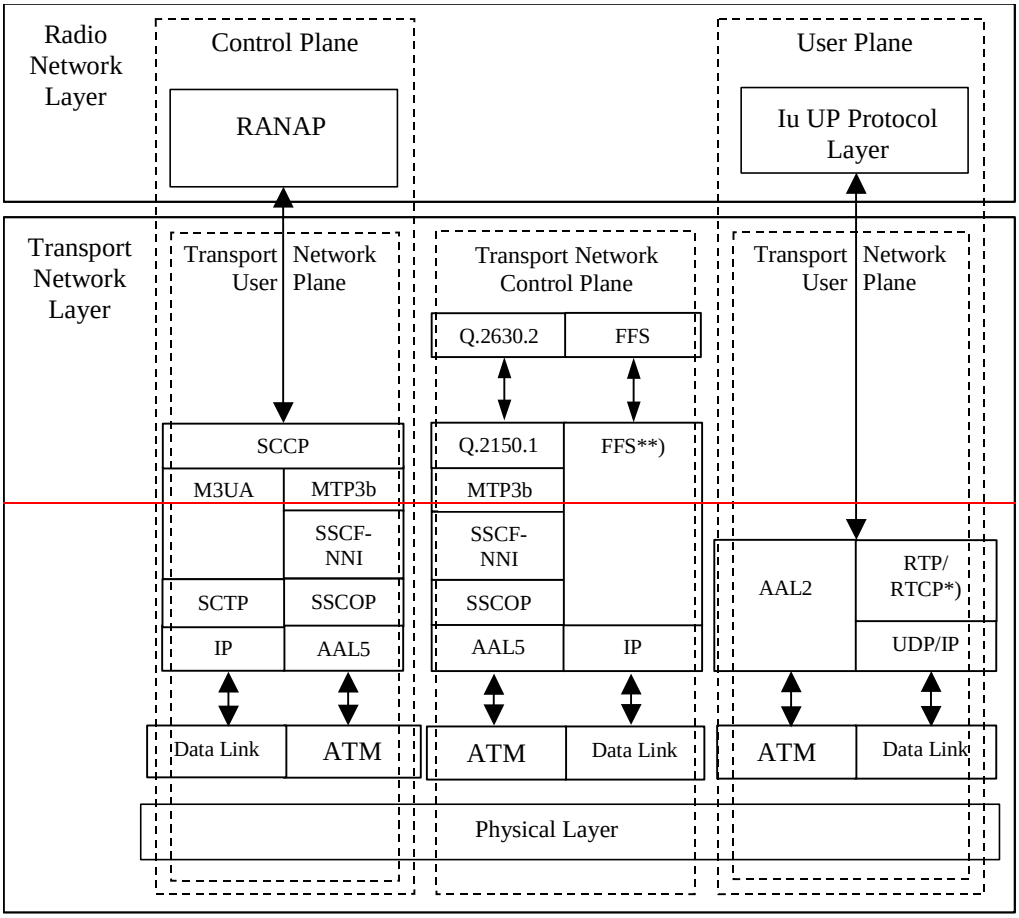
Reason for change:	⌘	To close the final open issue in Rel-5 WI on IP transport in UTRAN
Summary of change:	⌘	The 3rd ATM-IP interworking option is removed from the specifications while the other two options remain. The application of Q.2631.1 is given as one example of the existing option 2 in an informative annex of the CR080 25.414 Rel-5. This informative annex also gives an example of how to enable the use of ATM&IP dual stack in case there is no access to ATM network in the IP UTRAN/CN node. Impact Analysis Impact assessment towards the previous version of the specification (same release): this CR has isolated impact on the previous version of the specification (same release) because only one optional function is impacted. This CR has an impact under functional and protocol point of view. The impact can be considered as isolated as it affects only the IP-ATM Interworking function.
Consequences if not approved:	⌘	If this CR is not approved, the last remaining open issue in Rel-5 WI on IP transport in UTRAN remains open.

Clauses affected:	⌘	6.2			
Other specs	⌘	**Y** X	**N**	Other core specifications	⌘ CR085 25.401 Rel-5 CR086 25.401 Rel-6 CR054 25.410 Rel-6 CR080 25.414 Rel-5

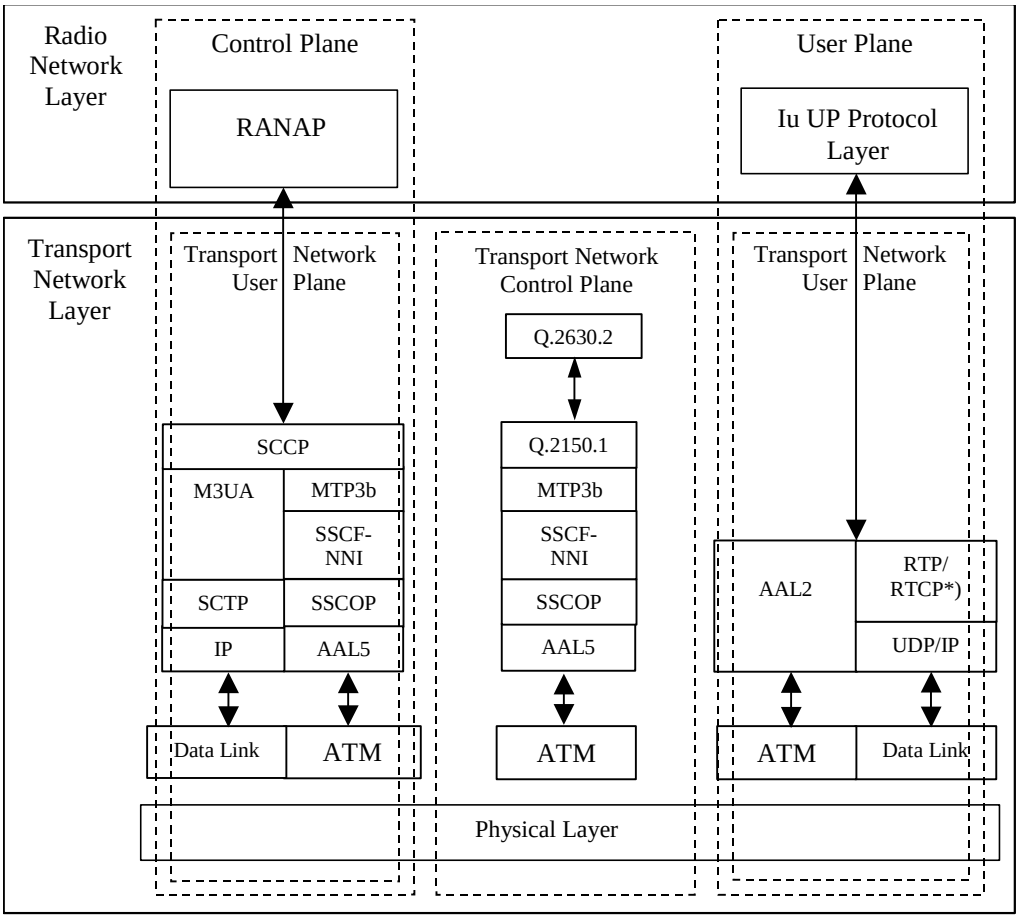
			CR081 25.414 Rel-6 CR042 25.420 Rel-5 CR043 25.420 Rel-6 CR041 25.426 Rel-5 CR042 25.426 Rel-6 CR051 25.430 Rel-5 CR052 25.430 Rel-6
affected:		**X**	Test specifications
		X	O&M Specifications
Other comments:	⌘		

6.2 Iu-CS

Figure 6.1 shows the protocol structure for I_u-CS, following the structure described in [1].



*) RTCP is optional
**) depends on the interworking alternative selected (see [7])



*) RTCP is optional.

Figure 6.1: I_u –Interface Protocol Structure towards CS Domain

6.3 I_u-BC

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⌘ **25.410** **CR** **054** ⌘ **rev** **-** ⌘ Current version: **6.0.0** ⌘

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

Title:	⌘	Completion of the Rel-5 IP transport WI
Source:	⌘	Alcatel, Ericsson, Motorola, NEC, Nortel, Siemens, Nokia
Work item code:	⌘	ETRAN-iptrans
Date:	⌘	02/06/2004
Category:	⌘	**A**
Release:	⌘	Rel-6

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

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

Reason for change:	⌘	To close the final open issue in Rel-5 WI on IP transport in UTRAN
Summary of change:	⌘	The 3rd ATM-IP interworking option is removed from the specifications while the other two options remain. The application of Q.2631.1 is given as one example of the existing option 2 in an informative annex of the CR081 25.414 Rel-6. This informative annex also gives an example of how to enable the use of ATM&IP dual stack in case there is no access to ATM network in the IP UTRAN/CN node. Impact Analysis Impact assessment towards the previous version of the specification (same release): this CR has isolated impact on the previous version of the specification (same release) because only one optional function is impacted. This CR has an impact under functional and protocol point of view. The impact can be considered as isolated as it affects only the IP-ATM Interworking function.
Consequences if not approved:	⌘	If this CR is not approved, the last remaining open issue in Rel-5 WI on IP transport in UTRAN remains open.

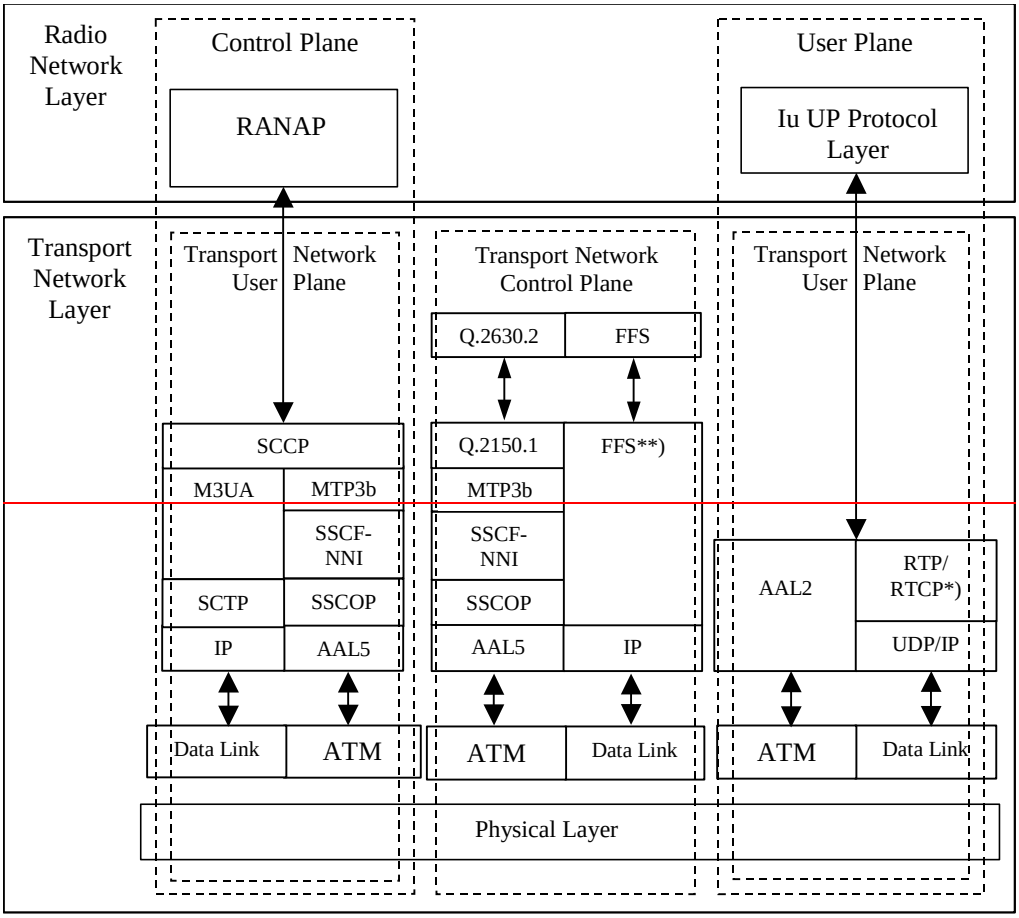
Clauses affected:	⌘	6.2

		Y	N			
Other specs	⌘	**X**		Other core specifications	⌘	CR085 25.401 Rel-5 CR086 25.401 Rel-6 CR053 25.410 Rel-5 CR080 25.414 Rel-5

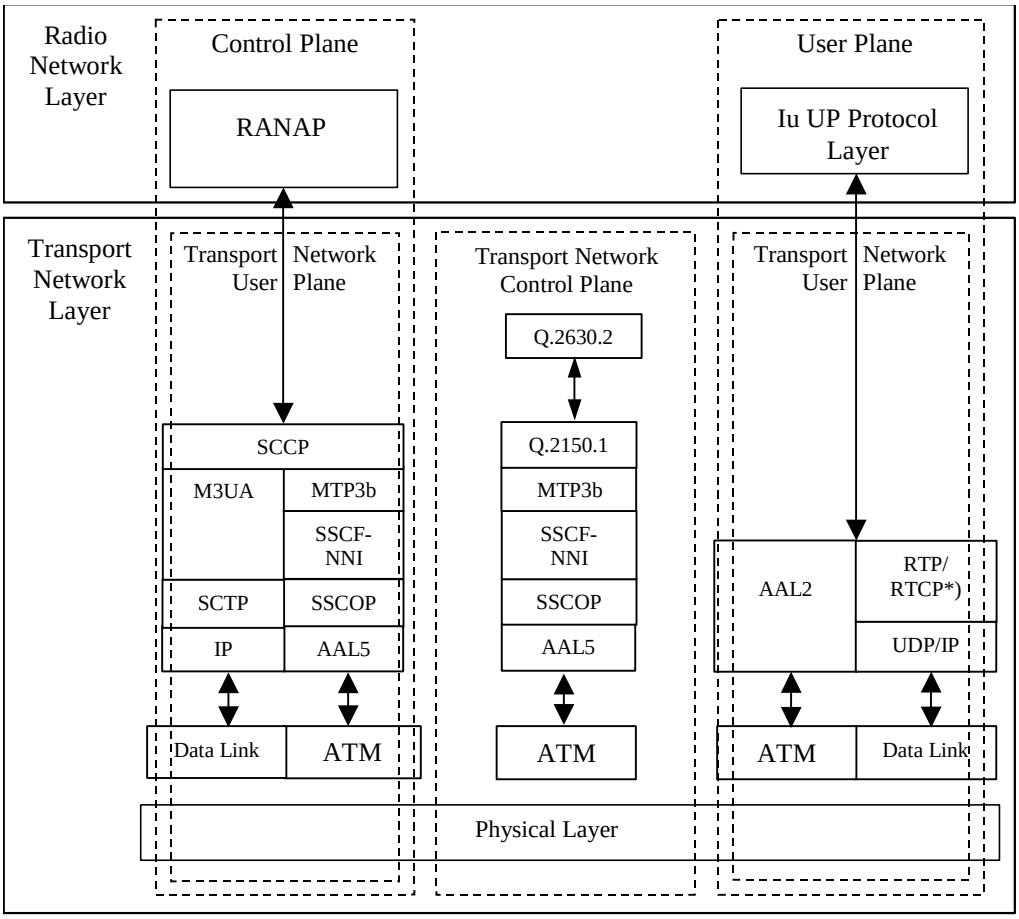
			CR081 25.414 Rel-6 CR042 25.420 Rel-5 CR043 25.420 Rel-6 CR041 25.426 Rel-5 CR042 25.426 Rel-6 CR051 25.430 Rel-5 CR052 25.430 Rel-6
affected:		**X**	Test specifications
		X	O&M Specifications
Other comments:	⌘		

6.2 Iu-CS

Figure 6.1 shows the protocol structure for I_u-CS, following the structure described in [1].



*) RTCP is optional
**) depends on the interworking alternative selected (see [7])



*) RTCP is optional.

Figure 6.1: I_u –Interface Protocol Structure towards CS Domain

6.3 I_u-BC

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⌘ **25.414** **CR** **080** ⌘ **rev** **-** ⌘ Current version: **5.5.0** ⌘

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

Title:	⌘	Completion of the Rel-5 IP transport WI
Source:	⌘	Alcatel, Ericsson, Motorola, NEC, Nortel, Siemens, Nokia
Work item code:	⌘	ETRAN-iptrans
Date:	⌘	11/03/2004
Category:	⌘	**F**
Release:	⌘	Rel-5

Use one of the following categories:
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Consequences if not approved:	⌘	If this CR is not approved, the last remaining open issue in Rel-5 WI on IP transport in UTRAN remains open.

Clauses affected:	⌘	2, 5.3.2, 5.3.3, Annex B			
Other specs	⌘	**Y** / **N**: **X** /	Other core specifications	⌘	CR085 25.401 Rel-5 CR086 25.401 Rel-6 CR053 25.410 Rel-5 CR054 25.410 Rel-6 CR081 25.414 Rel-6

			CR042 25.420 Rel-5 CR043 25.420 Rel-6 CR041 25.426 Rel-5 CR042 25.426 Rel-6 CR051 25.430 Rel-5 CR052 25.430 Rel-6
affected:		**X**	Test specifications
		X	O&M Specifications
Other comments:	⌘		

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; 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] 3G 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] "IP_ALCAP" [ffs.]ITU-T Recommendation Q.2631.1 (10/2003): "IP Connection Control Protocol – Capability Set 1"~~

[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".

<Unaffected parts omitted>

5.3 Interworking between ATM and IP Transport Options

5.3.1 Introduction

This clause specifies the interworking between IP and ATM transport options. An RNC/CN-node supporting IP transport option shall provide interworking to a CN-node/RNC supporting only ATM transport option.

5.3.2 Interworking Alternatives

For interworking with a CN-node/RNC supporting only ATM transport option, the RNC/CN-node supporting IP transport option shall additionally support at least one of the following interworking mechanisms:

1) ATM&IP dual stack. An IP-ALCAP protocol is not required in this interworking solution.

Annex B of this technical specification shows an example of protocols for the case the ATM&IP RAN/CN-node has no ATM connectivity.

2) ~~Interworking Function (IWF) as a logical part of the RNC/CN-node supporting IP transport option. An IP-ALCAP protocol is not required in this interworking solution.~~ An Interworking Function (IWF), either internal or external to the RAN/CN node.

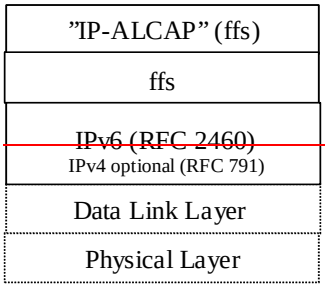
Annex B of this technical specification shows an example of a protocol stack for the case when the IWF is an external unit to the RAN/CN node. Other protocol stacks for this case are not precluded.

~~3) Interworking Unit (IWU) as a logically separate unit. An IP-ALCAP protocol shall be used in the interface between the RNC/CN node supporting IP transport option and the Interworking Unit.~~

~~5.3.3 IP-ALCAP for the Interworking~~

~~In the third interworking alternative as introduced in subclause 5.3.2, [31] is used as the IP-ALCAP protocol between the RNC/CN node supporting IP transport option and the Transport Network Layer Interworking Unit.~~

~~The following figure shows the protocol stack for IP-ALCAP over Iu-CS in the third interworking alternative as introduced in subclause 5.3.2.~~



~~Figure 2a. Signalling bearer for IP-ALCAP.~~

6 Packet switched domain

<Unaffected parts omitted>

Annex B (informative):

Application of IP tunnelling in IP-ATM interworking alternative 1 in case of no direct ATM connectivity at the IP&ATM dual stack RNC/CN-node

One possibility of enabling ATM connectivity to the IP&ATM dual stack RNC/CN-node in the IP-ATM interworking alternative 1 scenario specified in chapter 5.3.2 is to use any ATM emulation over IP protocol from the IETF standards e.g. via tunnelling techniques.

Application of IP-ALCAP in IP-ATM interworking alternative 2

One example scenario of IP-ATM interworking alternative 2 of section 5.3.2 is to use IP-ALCAP as specified in ITU-T Recommendation Q.2631.1 (10/2003) as the bearer control protocol between the UTRAN/CN Node and its external IWF. The following figure shows the corresponding protocol stack.

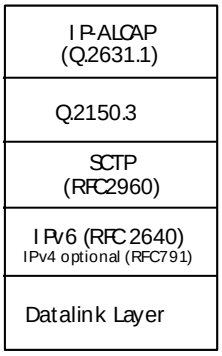


Figure B.1. Protocol stack for IP-ALCAP in IP-ATM interworking alternative 2

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⌘ **25.414** **CR** **081** ⌘ **rev** **-** ⌘ Current version: **6.0.0** ⌘

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

Title:	⌘	Completion of the Rel-5 IP transport WI
Source:	⌘	Alcatel, Ericsson, Motorola, NEC, Nortel, Siemens, Nokia
Work item code:	⌘	ETRAN-iptrans
Date:	⌘	02/06/2004
Category:	⌘	**A**
Release:	⌘	Rel-6

Use one of the following categories:
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B *(addition of feature),*
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D *(editorial modification)*
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Use one of the following releases:

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R97	*(Release 1997)*
R98	*(Release 1998)*
R99	*(Release 1999)*
Rel-4	*(Release 4)*
Rel-5	*(Release 5)*
Rel-6	*(Release 6)*

Reason for change:	⌘	To close the final open issue in Rel-5 WI on IP transport in UTRAN
Summary of change:	⌘	The 3rd ATM-IP interworking option is removed from the specifications while the other two options remain. The application of Q.2631.1 is given as one example of the existing option 2 in an informative annex of the specification. New informative annex also gives an example of how to enable the use of ATM&IP dual stack in case there is no access to ATM network in the IP UTRAN/CN node. Impact Analysis Impact assessment towards the previous version of the specification (same release): this CR has isolated impact on the previous version of the specification (same release) because only one optional function is impacted. This CR has an impact under functional and protocol point of view. The impact can be considered as isolated as it affects only the IP-ATM Interworking function.
Consequences if not approved:	⌘	If this CR is not approved, the last remaining open issue in Rel-5 WI on IP transport in UTRAN remains open.

Clauses affected:	⌘	2, 5.3.2, 5.3.3, Annex B

		Y	N			
Other specs	⌘	**X**		Other core specifications	⌘	CR085 25.401 Rel-5 CR086 25.401 Rel-6 CR053 25.410 Rel-5 CR054 25.410 Rel-6 CR080 25.414 Rel-5

			CR042 25.420 Rel-5 CR043 25.420 Rel-6 CR041 25.426 Rel-5 CR042 25.426 Rel-6 CR051 25.430 Rel-5 CR052 25.430 Rel-6
affected:		**X**	Test specifications
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Other comments:	⌘		

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[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; 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] 3G 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] "IP-ALCAP" [ffs.]~~

[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".

<Unaffected parts omitted>

5.3 Interworking between ATM and IP Transport Options

5.3.1 Introduction

This clause specifies the interworking between IP and ATM transport options. An RNC/CN-node supporting IP transport option shall provide interworking to a CN-node/RNC supporting only ATM transport option.

5.3.2 Interworking Alternatives

For interworking with a CN-node/RNC supporting only ATM transport option, the RNC/CN-node supporting IP transport option shall additionally support at least one of the following interworking mechanisms:

1) ~~1)~~ ATM&IP dual stack. An IP-ALCAP protocol is not required in this interworking solution.

Annex B of this technical specification shows an example of protocols for the case the ATM&IP RAN/CN-node has no ATM connectivity.

2) ~~Interworking Function (IWF) as a logical part of the RNC/CN node supporting IP transport option. An IP-ALCAP protocol is not required in this interworking solution.~~An Interworking Function (IWF), either internal or external to the RAN/CN node.

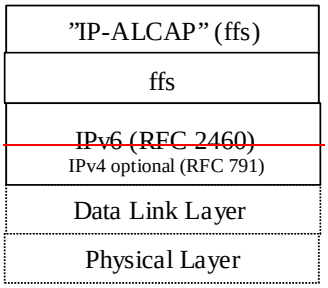
Annex B of this technical specification shows an example of a protocol stack for the case when the IWF is an external unit to the RAN/CN node. Other protocol stacks for this case are not precluded.

~~3) Interworking Unit (IWU) as a logically separate unit. An IP-ALCAP protocol shall be used in the interface between the RNC/CN node supporting IP transport option and the Interworking Unit.~~

~~5.3.3 IP-ALCAP for the Interworking~~

~~In the third interworking alternative as introduced in subclause 5.3.2, [31] is used as the IP-ALCAP protocol between the RNC/CN node supporting IP transport option and the Transport Network Layer Interworking Unit.~~

~~The following figure shows the protocol stack for IP-ALCAP over Iu-CS in the third interworking alternative as introduced in subclause 5.3.2.~~



~~Figure 2a. Signalling bearer for IP-ALCAP.~~

6 Packet switched domain

<Unaffected parts omitted>

Annex B (informative):

Application of IP tunnelling in IP-ATM interworking alternative 1 in case of no direct ATM connectivity at the IP&ATM dual stack RNC/CN-node

One possibility of enabling ATM connectivity to the IP&ATM dual stack RNC/CN-node in the IP-ATM interworking alternative 1 scenario specified in chapter 5.3.2 is to use any ATM emulation over IP protocol from the IETF standards e.g. via tunnelling techniques.

Application of IP-ALCAP in IP-ATM interworking alternative 2

One example scenario of IP-ATM interworking alternative 2 of section 5.3.2 is to use IP-ALCAP as specified in ITU-T Recommendation Q.2631.1 (10/2003) as the bearer control protocol between the UTRAN/CN Node and its external IWF. The following figure shows the corresponding protocol stack.

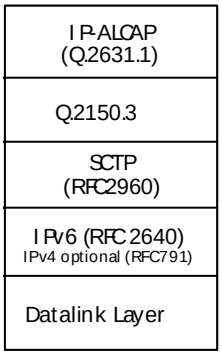


Figure B.1. Protocol stack for IP-ALCAP in IP-ATM interworking alternative 2

3GPP TSG-RAN Plenary meeting #24
Seoul, Korea, 2.-4.June, 2004

Tdoc ⌘RP-040254

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CHANGE REQUEST

⌘ **25.401** **CR** **085** ⌘ **rev** **-** ⌘ Current version: **5.7.0** ⌘

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

Title:	⌘	Completion of the Rel-5 IP transport WI
Source:	⌘	Alcatel, Ericsson, Motorola, NEC, Nortel, Siemens, Nokia
Work item code:	⌘	ETRAN-iptrans
Date:	⌘	02/06/2004
Category:	⌘	**F**
Release:	⌘	Rel-5

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

Use one of the following releases:

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

Reason for change:	⌘	To close the final open issue in Rel-5 WI on IP transport in UTRAN
Summary of change:	⌘	The 3rd ATM-IP interworking option is removed from the specifications while the other two options remain. The application of Q.2631.1 is given as one example of the existing option 2 in an informative annex of the specification. New informative annex also gives an example of how to enable the use of ATM&IP dual stack in case there is no access to ATM network in the IP UTRAN/CN node. Impact Analysis Impact assessment towards the previous version of the specification (same release): this CR has isolated impact on the previous version of the specification (same release) because only one optional function is impacted. This CR has an impact under functional and protocol point of view. The impact can be considered as isolated as it affects only the IP-ATM Interworking function.
Consequences if not approved:	⌘	If this CR is not approved, the last remaining open issue in Rel-5 WI on IP transport in UTRAN remains open.

Clauses affected:	⌘	2, 11, 11.3.3			
Other specs	⌘	**Y**: **X** / **N**:	Other core specifications	⌘	CR086 25.401 Rel-6 CR053 25.410 Rel-5 CR054 25.410 Rel-6 CR080 25.414 Rel-5 CR081 25.414 Rel-6

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affected:		**X**	Test specifications
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[3] 3GPP TS 25.211: "Physical channels and mapping of transport channels onto physical channels (FDD)".

[4] 3GPP TS 25.442: "UTRAN Implementation Specific O&M Transport".

[5] 3GPP TS 25.402: "Synchronisation in UTRAN, Stage 2".

[6] 3GPP TS 23.003: "Numbering, Addressing and Identification".

[7] 3GPP TS 25.331: "RRC Protocol Specification".

[8] 3GPP TS 23.101: "General UMTS Architecture".

[9] 3GPP TS 25.414: " UTRAN Iu Interface Data Transport & Transport Signalling".

[10] 3GPP TS 25.424: "UTRAN Iur Interface Data Transport & Transport Signalling for Common Transport Channel Data Streams".

[11] 3GPP TS 25.434: "UTRAN Iub Interface Data Transport & Transport Signalling for Common Transport Channel Data Streams".

[12] IETF RFC 2460: "Internet Protocol, Version 6 (Ipv6) Specification".

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

[14] IETF RFC 768: "User Datagram Protocol", (8/1980)

[15] "Information technology – Open Systems Interconnection – Network service definition", X.213, ISO/IEC 8348.

[16] "Information technology – Open Systems Interconnection – Network service definition Amendment 1: Addition of the Internet protocol address format identifier", X.213/Amd.1, ISO/IEC 8348.

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

[18] 3GPP TS 25.426: "UTRAN Iur and Iub Interface Data Transport & Transport Signalling for DCH Data Streams".

~~[19] TBD.~~

[20] 3GPP TS 23.236: "Intra-domain connection of Radio Access Network (RAN) nodes to multiple Core Network (CN) nodes".

[21] 3GPP TR 43.930: "Iur-g interface; Stage 2".

<Unaffected parts omitted>

11.1.3 Vertical Planes

11.1.3.1 Control Plane

The Control Plane Includes the Application Protocol, i.e. RANAP, RNSAP or NBAP, and the Signalling Bearer for transporting the Application Protocol messages.

Among other things, the Application Protocol is used for setting up bearers for (i.e. Radio Access Bearer or Radio Link) in the Radio Network Layer. In the three plane structure the bearer parameters in the Application Protocol are not directly tied to the User Plane technology, but are rather general bearer parameters.

The Signalling Bearer for the Application Protocol may or may not be of the same type as the Signalling Protocol for the ALCAP. The Signalling Bearer is always set up by O&M actions.

11.1.3.2 User Plane

The User Plane Includes the Data Stream(s) and the Data Bearer(s) for the Data Stream(s). The Data Stream(s) is/are characterised by one or more frame protocols specified for that interface.

11.1.3.3 Transport Network Control Plane

The Transport Network Control Plane does not include any Radio Network Layer information, and is completely in the Transport Layer. It includes the ALCAP protocol(s) that is/are needed to set up the transport bearers (Data Bearer) for the User Plane. It also includes the appropriate Signalling Bearer(s) needed for the ALCAP protocol(s).

The Transport Network Control Plane is a plane that acts between the Control Plane and the User Plane. The introduction of Transport Network Control Plane is performed in a way that the Application Protocol in the Radio Network Control Plane is kept completely independent of the technology selected for Data Bearer in the User Plane. Indeed, the decision to actually use an ALCAP protocol is completely kept within the Transport Network Layer.

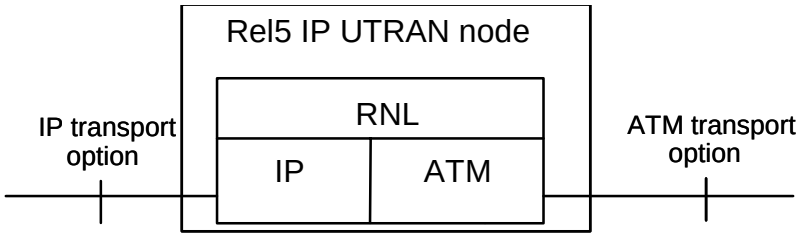
It should be noted that ALCAP might not be used for all types Data Bearers. If there is no ALCAP signalling transaction, the Transport Network Control Plane is not needed at all. This is the case when pre-configured Data Bearers are used or when the IP UTRAN option is used between two IP UTRAN nodes or between an IP UTRAN node and an IP CN node.

When Transport Network Control Plane is used, the transport bearers for the Data Bearer in the User Plane are set up in the following fashion. First there is a signalling transaction by the Application Protocol in the Control Plane, which triggers the set up of the Data Bearer by the ALCAP protocol that is specific for the User Plane technology.

~~For interworking of an IP UTRAN node with another UTRAN node using only the ATM transport option, an IP ALCAP protocol may be supported depending on the interworking solution selected:~~ The following interworking alternatives are specified for the IP-ATM interworking:

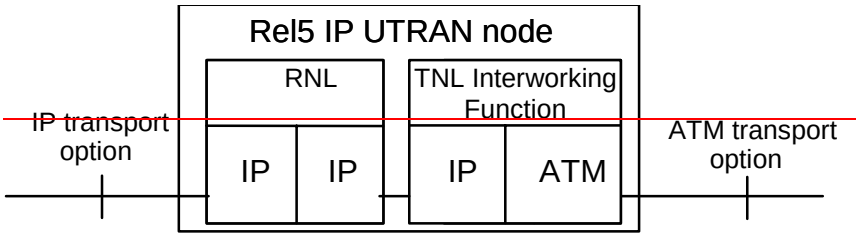
1) ATM/IP Dual Stack supported in the IP UTRAN node. When an ATM/IP dual stack is implemented in the IP UTRAN node, support of an IP ALCAP protocol is not required.

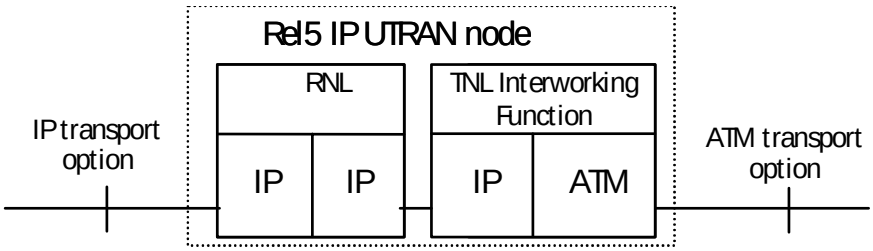
Annex B of [9] shows an example of protocols for the case the ATM&IP RAN/CN-node has no ATM connectivity.



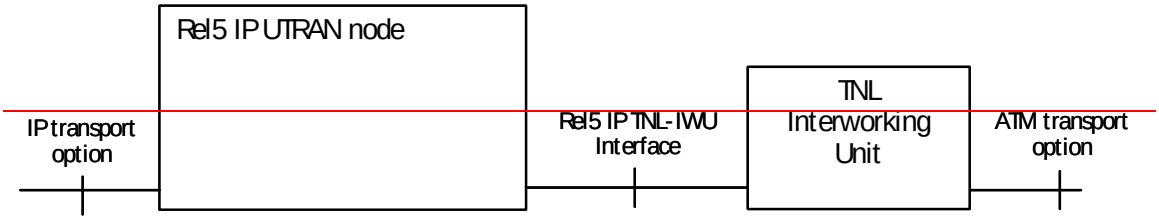
2) ~~Use of an interworking function (IWF) as logical part of the IP UTRAN node. When the IWF is implemented in the IP UTRAN node, support of an IP ALCAP protocol is not required.~~An Interworking Function (IWF), either internal or external to the RAN/CN node.

Annex B of [9] shows an example of a protocol stack for the case when the IWF is an external unit to the RAN/CN node. Other protocol stacks for this case are not precluded.





~~3) Use of an interworking unit (IWU) as a separate logical unit. When a separate logical IWU is used to perform the interworking, [19] shall be used as the signalling protocol to control the establishment of the connections between the IP UTRAN node and this IWU.~~



~~It should also be noted that the ALCAP protocol(s) in the Transport Network Control Plane is/are not used for setting up the Signalling Bearer for the Application Protocol or for the ALCAP during real time operation.~~

~~The Signalling Bearer for the ALCAP may or may not be of the same type as the Signalling Bearer for the Application Protocol. The Signalling Bearer for ALCAP is always set up by O&M actions.~~

11.1.3.4 Transport Network User Plane

3GPP TSG-RAN Plenary meeting #24
Seoul, Korea, 2.-4.June, 2004

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CHANGE REQUEST

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

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

Title:	⌘	Completion of the Rel-5 IP transport WI
Source:	⌘	Alcatel, Ericsson, Motorola, NEC, Nortel, Siemens, Nokia
Work item code:	⌘	ETRAN-iptrans
Date:	⌘	02/06/2004
Category:	⌘	**A**
Release:	⌘	Rel-6

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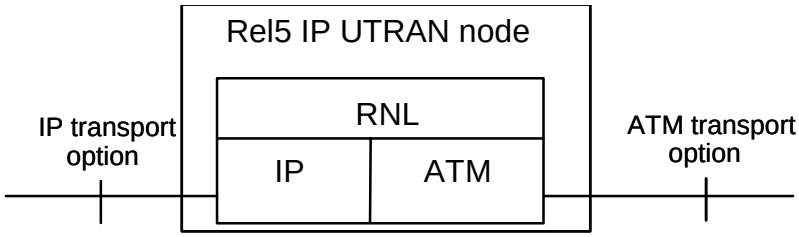
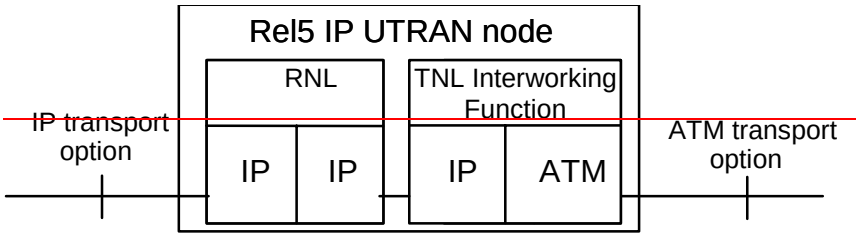
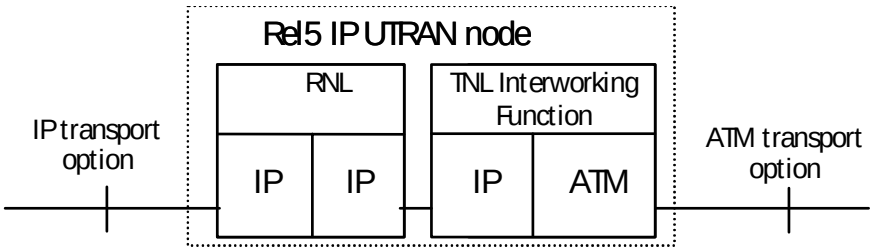


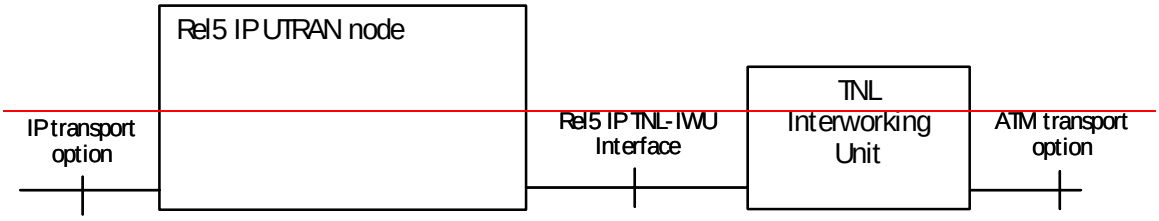
2) ~~Use of an interworking function (IWF) as logical part of the IP UTRAN node. When the IWF is implemented in the IP UTRAN node, support of an IP ALCAP protocol is not required.~~An Interworking Function (IWF), either internal or external to the RAN/CN node.

Annex B of [9] shows an example of a protocol stack for the case when the IWF is an external unit to the RAN/CN node. Other protocol stacks for this case are not precluded.





~~3) Use of an interworking unit (IWU) as a separate logical unit. When a separate logical IWU is used to perform the interworking, [19] shall be used as the signalling protocol to control the establishment of the connections between the IP UTRAN node and this IWU.~~



~~It should also be noted that the ALCAP protocol(s) in the Transport Network Control Plane is/are not used for setting up the Signalling Bearer for the Application Protocol or for the ALCAP during real time operation.~~

~~The Signalling Bearer for the ALCAP may or may not be of the same type as the Signalling Bearer for the Application Protocol. The Signalling Bearer for ALCAP is always set up by O&M actions.~~

11.1.3.4 Transport Network User Plane