TSG-RAN Meeting #7
Madrid, Spain, 13 - 15 March 2000

TSGRP#7(00)0082

Title: **Agreed CRs to TS 25.414**

Source: **TSG-RAN WG3**

Agenda item: **6.4.3**

Tdoc_Num	Specification	CR_Num	Revision_Num	CR_Subject	CR_Category	WG_Status	Cur_Ver_Num	New_Ver_Num
R3-000394	25.414	001	1	Extension with Service Area Broadcast Protocol	B	agreed	3.2.0	3.3.0
R3-000146	25.414	003		Removal of ATM Protection Switching	C	agreed	3.2.0	3.3.0
R3-000356	25.414	004		Clarification to the use of SSSAR (ITU-T I.366.1)	C	agreed	3.2.0	3.3.0
R3-000633	25.414	007		IPv6 support as optional in Iu and Gn	F	agreed	3.2.0	3.3.0
R3-000634	25.414	002	1	Correction and clarification of IP over ATM in 25.414, rev 1	F	agreed	3.2.0	3.3.0
R3-000635	25.414	008		Clarification of Multi protocol encapsulation	F	agreed	3.2.0	3.3.0
R3-000636	25.414	009		Removal of UDP port description in 25.414	F	agreed	3.2.0	3.3.0
R3-000856	25.414	013	1	Quality of Service differentiation	F	agreed	3.2.0	3.3.0

				over Iu-PS				
R3-000971	25.414	011	1	Clarification of using IP over ATM	F	agreed	3.2.0	3.3.0
R3-000899	25.414	006	1	Formal cleanup of 25.414	F	agreed	3.2.0	3.3.0

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***Document* R3-000146**

CHANGE REQUEST

25.414 **CR** **003** Current Version: 3.2.0

↑ *CR number as allocated by MCC support team*

For submission to: TSG RAN#7 *list expected approval meeting # here ↑*

for approval [X] for information [ ]

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Form: CR cover sheet, version 2 for 3GPP and SMG *The latest version of this form is available from: ftp://ftp.3gpp.org/Information/CR-Form-v2.doc*

Proposed change affects: *(at least one should be marked with an X)* (U)SIM [ ] ME [ ] UTRAN / Radio [X] Core Network [X]

Source: TSG-RAN WG3 **Date:** 17th of Jan. 2000

Subject: Removal of ATM Protection Switching

Work item:

Category: *(only one category shall be marked with an X)*

F	Correction	[ ]
A	Corresponds to a correction in an earlier release	[ ]
B	Addition of feature	[ ]
C	Functional modification of feature	[X]
D	Editorial modification	[ ]

Release:

Phase 2	[ ]
Release 96	[ ]
Release 97	[ ]
Release 98	[ ]
Release 99	[X]
Release 00	[ ]

Reason for change: As explained in *R3-000145* the application of ITU-T I.630 for ATM layer Protection Switching in the UTRAN is not a reasonable approach due to several identified problems.

Clauses affected: Chapter 4.2

Other specs affected:

Other 3G core specifications	[ ]	→ List of CRs:
Other GSM core specifications	[ ]	→ List of CRs:
MS test specifications	[ ]	→ List of CRs:
BSS test specifications	[ ]	→ List of CRs:
O&M specifications	[ ]	→ List of CRs:

Other comments:

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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.
- A non-specific reference to an ETS shall also be taken to refer to later versions published as an EN with the same number.

[1] ITU-T Recommendation I.361 (2/1999): "B-ISDN ATM Layer Specification".

[2] ITU-T Recommendation I.363.2 (9/1997): "B-ISDN ATM Adaptation Layer Type 2 Specification".

[3] ITU-T Recommendation I.363.5 (8/1996): "B-ISDN ATM Adaptation Layer Type 5 Specification".

[4] ITU-T Recommendation I.366.1 (6/1998): "Segmentation and Reassembly Service Specific Convergence Sublayer for the AAL Type 2".

[5] ITU-T Recommendation E.164 (5/1997): "Numbering Plan for the ISDN Era".

[6] ITU-T Recommendation Q.2110 (7/1994): "B-ISDN ATM Adaptation Layer-Service Specific Connection Oriented Protocol (SSCOP)".

[7] ITU-T Recommendation Q.2140 (2/1995): "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 (1999): "B-ISDN ATM Adaptation Layer-Signalling Transport Converter for the MTP3b".

[9] ITU-T Recommendation Q.2210 (7/1996): "Message Transfer Part level 3 functions and messages using the services of ITU-T Recommendation Q.2140".

[10] ITU-T Recommendation Q.2630.1 (1999): "AAL type 2 Signalling Protocol (Capability Set 1)".

[11] ITU-T Recommendation X.213 (8/1997): "Information Technology-Open Systems Interconnection-Network Service Definitions".

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

[13] IETF RFC 791 (9/1981): "Internet Protocol".

[14] IETF RFC 1483 (7/1993): "Multiprotocol Encapsulation over ATM Adaptation Layer 5".

[15] IETF RFC 2225 (4/1998): "Classical IP and ARP over ATM".

[16] IETF RFC 2460 (12/1998): "Internet Protocol, Version 6 (IPv6) Specification".

[17] 3G TS 29.060: "3GPP; TSG CN; GPRS; GPRS Tunnelling Protocol (GTP)".

~~[18] ITU-T Rec. **I.630** (2/99): "ATM Protection Switching".~~

4.1 General

ATM shall be used in the transport network user plane and the transport network control plane according to I.3610.

~~4.2 Protection Switching at ATM Layer~~

~~If redundancy of pathways at ATM layer between CN and RNC is supported, it shall be implemented using ATM Protection Switching according to I.630 [18].~~

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***Document* R3-000356**

CHANGE REQUEST

25.414 **CR** **004** Current Version: 3.2.0

↑ *CR number as allocated by MCC support team*

For submission to: TSG RAN#7 *list expected approval meeting # here ↑*

for approval [X] for information [ ]

strategic [ ] non-strategic [ ] *(for SMG use only)*

Form: CR cover sheet, version 2 for 3GPP and SMG *The latest version of this form is available from: ftp://ftp.3gpp.org/Information/CR-Form-v2.doc*

Proposed change affects: *(at least one should be marked with an X)* (U)SIM [ ] ME [ ] UTRAN / Radio [X] Core Network [X]

Source: TSG-RAN WG3 **Date:** 27th of Jan. 2000

Subject: Clarification to the use of SSSAR (ITU-T I.366.1)

Work item:

Category: *(only one category shall be marked with an X)*

F	Correction	[ ]
A	Corresponds to a correction in an earlier release	[ ]
B	Addition of feature	[ ]
C	Functional modification of feature	[X]
D	Editorial modification	[ ]

Release:

Phase 2	[ ]
Release 96	[ ]
Release 97	[ ]
Release 98	[ ]
Release 99	[X]
Release 00	[ ]

Reason for change: The ambiguity in TS25.414 in the application of AAL2 SAR SSCS shall be removed. This is done by stating explicitly that only SSSAR feature of the three Service Specific features (SSSAR, SSTED and SSADT) of ITU-T I.366.1 is applied.

Clauses affected: 5.1.2.1.

Other specs affected:

Other 3G core specifications	[ ]	→ List of CRs:
Other GSM core specifications	[ ]	→ List of CRs:
MS test specifications	[ ]	→ List of CRs:
BSS test specifications	[ ]	→ List of CRs:
O&M specifications	[ ]	→ List of CRs:

Other comments:

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

Service Specific Segmentation and Reassembly (SSSAR) sublayer of I.366.1 [4] is used for the segmentation and reassembly of AAL2 SDUs (i.e., only SSSAR is used from I.366.1).~~AAL2 segmentation and reassembly shall be used according to I.366.1 [4].~~

5.1.2.2 AAL2-specification (I.363.2)

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***Document* R3-000394**
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25.414	CR	001r1	Current Version:	3.2.0

GSM (AA.BB) or 3G (AA.BBB) specification number ↑ *↑ CR number as allocated by MCC support team*

For submission to: TSG RAN#7	for approval	X	strategic		(for SMG use only)
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Form: CR cover sheet, version 2 for 3GPP and SMG *The latest version of this form is available from: ftp://ftp.3gpp.org/Information/CR-Form-v2.doc*

Proposed change affects: *(at least one should be marked with an X)*	(U)SIM		ME		UTRAN / Radio	X	Core Network	X

Source: TSG-RAN WG3 **Date:** 27-1-2000

Subject: Extension with Service Area Broadcast Protocol

Work item:

Category: *(only one category shall be marked with an X)*

F	Correction		**Release:**	Phase 2	
A	Corresponds to a correction in an earlier release			Release 96	
B	Addition of feature	X		Release 97	
C	Functional modification of feature			Release 98	
D	Editorial modification			Release 99	X
				Release 00	

Reason for change: Addition of Service Area Broadcast Protocol

Clauses affected: §2, §3.3, §7 (new),

Other specs affected:

Other 3G core specifications		→ List of CRs:
Other GSM core specifications		→ List of CRs:
MS test specifications		→ List of CRs:
BSS test specifications		→ List of CRs:
O&M specifications		→ List of CRs:

Other comments: Section 7.1.3 shall be changed to apply the proposed changes in CR2 77 and CR5 357.


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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.
- A non-specific reference to an ETS shall also be taken to refer to later versions published as an EN with the same number.

[1] ITU-T Recommendation I.361 (2/1999): "B-ISDN ATM Layer Specification".

[2] ITU-T Recommendation I.363.2 (9/1997): "B-ISDN ATM Adaptation Layer Type 2 Specification".

[3] ITU-T Recommendation I.363.5 (8/1996): "B-ISDN ATM Adaptation Layer Type 5 Specification".

[4] ITU-T Recommendation I.366.1 (6/1998): "Segmentation and Reassembly Service Specific Convergence Sublayer for the AAL Type 2".

[5] ITU-T Recommendation E.164 (5/1997): "Numbering Plan for the ISDN Era".

[6] ITU-T Recommendation Q.2110 (7/1994): "B-ISDN ATM Adaptation Layer-Service Specific Connection Oriented Protocol (SSCOP)".

[7] ITU-T Recommendation Q.2140 (2/1995): "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 (1999): "B-ISDN ATM Adaptation Layer-Signalling Transport Converter for the MTP3b".

[9] ITU-T Recommendation Q.2210 (7/1996): "Message Transfer Part level 3 functions and messages using the services of ITU-T Recommendation Q.2140".

[10] ITU-T Recommendation Q.2630.1 (1999): "AAL type 2 Signalling Protocol (Capability Set 1)".

[11] ITU-T Recommendation X.213 (8/1997): "Information Technology-Open Systems Interconnection-Network Service Definitions".

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

[13] IETF RFC 791 (9/1981): "Internet Protocol".

[14] IETF RFC 1483 (7/1993): "Multiprotocol Encapsulation over ATM Adaptation Layer 5".

[15] IETF RFC 2225 (4/1998): "Classical IP and ARP over ATM".

[16] IETF RFC 2460 (12/1998): "Internet Protocol, Version 6 (IPv6) Specification".

[17] 3G TS 29.060: "3GPP; TSG CN; GPRS; GPRS Tunnelling Protocol (GTP)".

[18] ITU-T Rec. **I.630** (2/99): "ATM Protection Switching".

[19] IETF RFC 793 (9/1981): “TCP, Transmission Control Protocol”

3.3 Abbreviations

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

AAL	ATM Adaptation Layer
AESA	ATM End System Address
ALCAP	Access Link Control Application Part
ARP	Address Resolution Protocol
ATM	Asynchronous Transfer Mode
SA	Service Area
SABP	Service Area Broadcast Protocol
SABS	Service Area Broadcast Service
RFC	Request For Comment
CN	Core Network
GTP	GPRS Tunnelling Protocol
IP	Internet Protocol
MTP3b	Message Transfer Part level 3 for Q.2140
NSAP	Network Service Access Point
PDU	Protocol Data Unit
RNC	Radio Network Controller
SAR	Segmentation and Reassembly
SCCF-NNI	Service Specific Coordination Function-Network Node Interface
SSCOP	Service Specific Connection Oriented Protocol
SSCS	Service Specific Convergence Sublayer
TCP	Transmission Control Protocol
UDP	User Datagram Protocol
VC	Virtual Circuit

7 Broadcast Domain

7.1 Transport network user plane

7.1.1 General

The following figure shows the protocol stack for the transport network user plane on the Iu interface towards the Broadcast domain.

TCP
IP
AAL5
ATM

The protocol architecture for the Service Area Broadcast Plane of the Iu interface shall be TCP over IP over AAL5 over ATM.

7.1.2 TCP /IP

The path protocol used shall be TCP, which is specified in RFC793. Both the Ipv4.0 and Ipv6.0 protocols shall be supported which are specified in RFC791 (IPv4.0) or RFC2460 (IPv6.0)

7.1.3 ATM Adaptation Layer Type 5 (I.363.5)

AAL5 shall be used according to I.363.5.

AAL5 virtual circuits are used to transport the IP packets across the Iu interface toward the packet switched domain. Multiple VCs can be used over the interface. There is a one-to-one relationship between the VC and the IP address as required by Classical IP over ATM. An association must be made between a peer node's IP address and a VC. This association can be made using O&M or using ATM Inverse ARP according to Classical IP over ATM when PVCs are used.

7.1.4 IP/ATM

Classical IP over ATM protocols are used to carry the IP packets over the ATM transport network when PVCs are used. Classical IP over ATM is specified in IETF RFC 2225. Multiprotocol Encapsulation over AAL5 is specified in IETF RFC 1483.

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Sophia, France, 28 Feb – 3 March 2000

***Document* R3-000633**
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25.414	CR	007	Current Version:	3.2.0

GSM (AA.BB) or 3G (AA.BBB) specification number ↑ *↑ CR number as allocated by MCC support team*

For submission to:	RAN#7	for approval	X	strategic		(for SMG use only)
list expected approval meeting # here ↑		for information		non-strategic		

Form: CR cover sheet, version 2 for 3GPP and SMG *The latest version of this form is available from: ftp://ftp.3gpp.org/Information/CR-Form-v2.doc*

Proposed change affects: *(at least one should be marked with an X)*	(U)SIM		ME		UTRAN / Radio	X	Core Network	X

Source: RAN-WG3 **Date:** 21.2.2000

Subject: IPv6 support as optional in Iu

Work item:

Category: *(only one category shall be marked with an X)*

F	Correction	X	**Release:**	Phase 2	
A	Corresponds to a correction in an earlier release			Release 96	
B	Addition of feature			Release 97	
C	Functional modification of feature			Release 98	
D	Editorial modification			Release 99	X
				Release 00	

Reason for change: Alignment of SA2 decision (CR23060-100r1, Tdoc S2-000215) to make IPv6 support optional.

Clauses affected: 6.1.3

Other specs affected:

Other 3G core specifications		→	List of CRs:
Other GSM core specifications		→	List of CRs:
MS test specifications		→	List of CRs:
BSS test specifications		→	List of CRs:
O&M specifications		→	List of CRs:

Other comments:

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6.1.3 UDP /IP

The path protocol used shall be UDP [12], which is specified in RFC 768. ~~Both the~~ IPv4 [13] (RFC 791) ~~and IPv6 0 IP protocols~~ shall be supported, IPv6 [16] (RFC 2460) support is optional. ~~which are specified in RFC 791 (IPv4) or RFC 2460 (IPv6).~~

The IP addresses for the CN and RNC nodes are exchanged using RANAP signalling. The packet processing function in the CN sends downstream packets to the RNC IP address received in the RANAP signalling. The packet processing function in the RNC sends upstream packets to the CN IP address received in the RANAP signalling.

The GTP UDP port number as defined in GTP[17] is used for the destination port for GTP-U control messages and T-PDUs. The sending node locally allocates the UDP source port number. For GTP-U control messages, the UDP destination port is the value of the UDP source port of the corresponding GTP-U control message. The UDP source port is the value of the UDP destination port of the corresponding GTP-U control message.

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***Document* R3-000634**
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25.414	CR	002r1	Current Version:	3.2.0

GSM (AA.BB) or 3G (AA.BBB) specification number ↑ *↑ CR number as allocated by MCC support team*

For submission to:	RAN#7	for approval	X	strategic		(for SMG use only)
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Form: CR cover sheet, version 2 for 3GPP and SMG *The latest version of this form is available from: ftp://ftp.3gpp.org/Information/CR-Form-v2.doc*

Proposed change affects: *(at least one should be marked with an X)*	(U)SIM		ME		UTRAN / Radio	X	Core Network	X

Source: RAN-WG3 **Date:** 21.2.2000

Subject: Correction and clarification of IP over ATM in 25.414, rev 1

Work item:

Category: *(only one category shall be marked with an X)*				**Release:**	
F	Correction			Phase 2	
A	Corresponds to a correction in an earlier release			Release 96	
B	Addition of feature			Release 97	
C	Functional modification of feature			Release 98	
D	Editorial modification	X		Release 99	X
				Release 00	

Reason for change:

This CR proposes

- Removal of an incorrect sentence *"There is a one-to-one relationship between the VC and the IP address as required by Classical IP over ATM. "* that is not in line with RFC 2225 'Classical IP and ARP over ATM'
- Clarifying text of the use of IP addresses and VCs to make the specification clearer and unambiguous

The motivation for the changes is described in an associated contribution Tdoc R3-000076

This CR 002r1proposes editorial modification to the text of the approved CR 002 as follows:

In 6.1.4, the current text:

"An association must be made between a VC and the IP addresses that are related to this VC in the peer node side."

Should be changed to:

"An association shall be made between a VC and the IP addresses that are related to this VC in the peer node side."

Clauses affected: 6.1.4

Other specs affected:				
Other 3G core specifications		→	List of CRs:	
Other GSM core specifications		→	List of CRs:	
MS test specifications		→	List of CRs:	
BSS test specifications		→	List of CRs:	
O&M specifications		→	List of CRs:	

Other comments:	This CR relates to an associated CR 006 ‘Formal cleanup of 25.414’.

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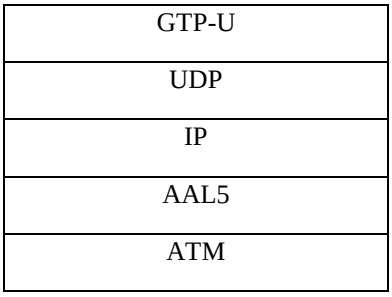
6 Packet switched domain

6.1 Transport network user plane

6.1.1 General

The following figure shows the protocol stack for the transport network user plane on the Iu interface towards the packet switched domain.



The protocol architecture for the User Plane of the Iu interface towards the packet switched domain shall be GTP-U over UDP over IP over AAL5 over ATM. One or several AAL5/ATM permanent VC's may be used as the common layer 2 resources between the UTRAN and the packet switched domain of the CN.

One switched VC may be used per user flow. The standardisation of the procedures and protocols for use of Switched VC is outside the scope of 3GPP.

Congestion control shall be performed over the Iu user plane toward the packet switched domain using buffer management and no flow control.

6.1.2 GTP-U

The GTP-U protocol shall be used over the Iu interface toward the packet switched domain.

6.1.3 UDP /IP

The path protocol used shall be UDP, which is specified in RFC 768. Both the IPv4 and IP protocols shall be supported which are specified in RFC 791 (IPv4) or RFC 2460 (IPv6).

~~The IP addresses for the CN and RNC nodes are exchanged using RANAP signalling.~~ There may be one or several IP addresses in the RNC and in the CN. The packet processing function in the CN sends downstream packets of a given RAB to the RNC IP address (received in ~~the~~ RANAP) ~~signalling~~ associated to that particular RAB. The packet processing function in the RNC sends upstream packets of a given RAB to the CN IP address (received in ~~the~~ RANAP) ~~signalling~~associated to that particular RAB.

The GTP UDP port number as defined in GTP[17] is used for the destination port for GTP-U control messages and T-PDUs. The sending node locally allocates the UDP source port number. For GTP-U control messages, the UDP destination port is the value of the UDP source port of the corresponding GTP-U control message. The UDP source port is the value of the UDP destination port of the corresponding GTP-U control message.

6.1.4 ATM Adaptation Layer Type 5 (I.363.5)

AAL5 shall be used according to I.363.5.

AAL5 virtual circuits are used to transport the IP packets across the Iu interface toward the packet switched domain. Multiple VCs can be used over the interface. ~~There is a one-to-one relationship between the VC and the IP address as required by Classical IP over ATM. An association must be made between a peer node's IP address and a VC~~ An association ~~must~~ shall be made between a VC and the IP addresses that are related to this VC in the peer node side. This association can be made using O&M or using ATM Inverse ARP according to Classical IP over ATM when PVCs are used.

6.1.5 IP/ATM

Classical IP over ATM protocols are used to carry the IP packets over the ATM transport network when PVCs are used. Classical IP over ATM is specified in IETF RFC 2225. Multiprotocol Encapsulation over AAL5 is specified in IETF RFC 1483.

6.2 Transport network control plane

ALCAP is not required over the Iu interface towards the packet switched domain.

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***Document* R3-000635**
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25.414	CR	008	Current Version:	3.2.0

GSM (AA.BB) or 3G (AA.BBB) specification number ↑ *↑ CR number as allocated by MCC support team*

For submission to:	RAN#7	for approval	X	strategic		(for SMG use only)
list expected approval meeting # here ↑		for information		non-strategic		

Form: CR cover sheet, version 2 for 3GPP and SMG *The latest version of this form is available from: ftp://ftp.3gpp.org/Information/CR-Form-v2.doc*

Proposed change affects: *(at least one should be marked with an X)*	(U)SIM		ME		UTRAN / Radio	X	Core Network	X

Source: RAN-WG3 **Date:** 21.2.2000

Subject: Clarification on usage of multiprotocol encapsulation on Iu

Work item:

Category: *(only one category shall be marked with an X)*			**Release:**	
F	Correction	X	Phase 2	
A	Corresponds to a correction in an earlier release		Release 96	
B	Addition of feature		Release 97	
C	Functional modification of feature		Release 98	
D	Editorial modification		Release 99	X
			Release 00	

Reason for change:

Current text in 25.414 does not mandate the use of multiprotocol (LLC/SNAP) encapsulation (RFC 1483) on Iu. However, RFC 2225 states

> RFC 2225, Chapter 6: "Implementations MUST support IEEE 802.2 LLC/SNAP encapsulation as described in [2]. LLC/SNAP encapsulation is the default packet format for IP datagrams.
>
> This memo recognizes that other encapsulation methods may be used however, in the absence of other knowledge or agreement, LLC/SNAP encapsulation is the default."

Thus it is proposed to clarify the text to mandate multiprotocol encapsulation on Iu accordingly.

Clauses affected: 6.1.5

Other specs affected:

Other 3G core specifications		→ List of CRs:
Other GSM core specifications		→ List of CRs:
MS test specifications		→ List of CRs:
BSS test specifications		→ List of CRs:
O&M specifications		→ List of CRs:

Other comments:


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6.1.5 IP/ATM

Classical IP over ATM protocols and Multiprotocol Encapsulation over AAL5 are used to carry the IP packets over the ATM transport network when PVCs are used. Classical IP over ATM is specified in IETF RFC 2225 [15]. Multiprotocol Encapsulation over AAL5 is specified in IETF RFC 1483 [14].

3GPP TSG-RAN-WG3 Meeting #11
Sophia, France, 28 Feb – 3 March 2000

***Document* R3-000636**
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CHANGE REQUEST

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25.414	CR	009	Current Version:	3.2.0

GSM (AA.BB) or 3G (AA.BBB) specification number ↑ *↑ CR number as allocated by MCC support team*

For submission to:	RAN#7	for approval	X	strategic		(for SMG use only)
list expected approval meeting # here ↑		for information		non-strategic		

Form: CR cover sheet, version 2 for 3GPP and SMG *The latest version of this form is available from: ftp://ftp.3gpp.org/Information/CR-Form-v2.doc*

Proposed change affects: *(at least one should be marked with an X)*	(U)SIM		ME		UTRAN / Radio	X	Core Network	X

Source: RAN-WG3 **Date:** 21.2.2000

Subject: Removal of UDP port description in 25.414

Work item:

Category: *(only one category shall be marked with an X)*

F	Correction	X	**Release:**	Phase 2	
A	Corresponds to a correction in an earlier release			Release 96	
B	Addition of feature			Release 97	
C	Functional modification of feature			Release 98	
D	Editorial modification			Release 99	X
				Release 00	

Reason for change:

Usage of UDP port numbers for GTP protocol is defined in GTP specification (29.060). It is unnecessary to have this description also in 25.414, since it is clearly a part of 29.060.

Thus, this CR proposes to remove the UDP port description from 25.414.

Clauses affected: 6.1.3

Other specs affected:

Other 3G core specifications		→ List of CRs:
Other GSM core specifications		→ List of CRs:
MS test specifications		→ List of CRs:
BSS test specifications		→ List of CRs:
O&M specifications		→ List of CRs:

Other comments:


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6.1.3 UDP /IP

The path protocol used shall be UDP [12], which is specified in RFC 768. Both the IPv4 [13] and IPv6 [16] IP protocols shall be supported which are specified in RFC 791 (IPv4) or RFC 2460 (IPv6).

The IP addresses for the CN and RNC nodes are exchanged using RANAP signalling. The packet processing function in the CN sends downstream packets to the RNC IP address received in the RANAP signalling. The packet processing function in the RNC sends upstream packets to the CN IP address received in the RANAP signalling.

~~The GTP-UDP port number as defined in GTP[17] is used for the destination port for GTP-U control messages and T-PDUs. The sending node locally allocates the UDP source port number. For GTP-U control messages, the UDP destination port is the value of the UDP source port of the corresponding GTP-U control message. The UDP source port is the value of the UDP destination port of the corresponding GTP-U control message.~~

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Sophia Antipolis, France, 28th Feb–3rd Mar 2000

Document R3-000856
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CHANGE REQUEST

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25.414	CR	013r1	Current Version:	3.2.0

GSM (AA.BB) or 3G (AA.BBB) specification number ↑ *↑ CR number as allocated by MCC support team*

For submission to:	TSG-RAN#7	for approval	X	strategic		(for SMG use only)
list expected approval meeting # here ↑		for information		non-strategic		

Form: CR cover sheet, version 2 for 3GPP and SMG *The latest version of this form is available from:* ftp://ftp.3gpp.org/Information/CR-Form-v2.doc

Proposed change affects: *(at least one should be marked with an X)*	(U)SIM		ME		UTRAN / Radio	X	Core Network	X

Source: RAN-WG3 **Date:** 25 Feb 2000

Subject: Quality of Service Differentiation over Iu-PS

Work item:

Category: *(only one category shall be marked with an X)*

F	Correction	X	**Release:**	Phase 2	
A	Corresponds to a correction in an earlier release			Release 96	
B	Addition of feature			Release 97	
C	Functional modification of feature			Release 98	
D	Editorial modification			Release 99	X
				Release 00	

Reason for change:

When PVCs are used over the Iu-PS, quality of service differentiation shall only be based on diffserv at the IP layer. No differentiation shall be done at the ATM layer. Currently 25.414 specifies that ATM is used for layer 2 functionality. IP is used for layer 3 functionality which includes quality of service differentiation.

Diffserv is required according to 23.107: TSG SA; QoS Concept and Architecture. Over the Iu-PS, classical IP over ATM is used so a direct correspondence exists between an IP address and an ATM VC. If an ATM VC is dedicated to a specific quality of service class then each IP address would also be dedicated to a specific quality of service. This restricts implementation flexibility and is not consistent with diffserv principles that say an IP address supports multiple quality of services. For example, it would not be possible to have a node with only one IP address. Quality of service should not be used to restrict how resources are used in a node. If this is allowed interoperability could be affected.

Clauses affected: 2, 6.1.4

Other specs affected:

Other 3G core specifications		→ List of CRs:
Other GSM core specifications		→ List of CRs:
MS test specifications		→ List of CRs:
BSS test specifications		→ List of CRs:
O&M specifications		→ List of CRs:

Other comments:


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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.
- A non-specific reference to an ETS shall also be taken to refer to later versions published as an EN with the same number.

[1] ITU-T Recommendation I.361 (2/1999): "B-ISDN ATM Layer Specification".

[2] ITU-T Recommendation I.363.2 (9/1997): "B-ISDN ATM Adaptation Layer Type 2 Specification".

[3] ITU-T Recommendation I.363.5 (8/1996): "B-ISDN ATM Adaptation Layer Type 5 Specification".

[4] ITU-T Recommendation I.366.1 (6/1998): "Segmentation and Reassembly Service Specific Convergence Sublayer for the AAL Type 2".

[5] ITU-T Recommendation E.164 (5/1997): "Numbering Plan for the ISDN Era".

[6] ITU-T Recommendation Q.2110 (7/1994): "B-ISDN ATM Adaptation Layer-Service Specific Connection Oriented Protocol (SSCOP)".

[7] ITU-T Recommendation Q.2140 (2/1995): "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 (1999): "B-ISDN ATM Adaptation Layer-Signalling Transport Converter for the MTP3b".

[9] ITU-T Recommendation Q.2210 (7/1996): "Message Transfer Part level 3 functions and messages using the services of ITU-T Recommendation Q.2140".

[10] ITU-T Recommendation Q.2630.1 (1999): "AAL type 2 Signalling Protocol (Capability Set 1)".

[11] ITU-T Recommendation X.213 (8/1997): "Information Technology-Open Systems Interconnection-Network Service Definitions".

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

[13] IETF RFC 791 (9/1981): "Internet Protocol".

[14] IETF RFC 1483 (7/1993): "Multiprotocol Encapsulation over ATM Adaptation Layer 5".

[15] IETF RFC 2225 (4/1998): "Classical IP and ARP over ATM".

[16] IETF RFC 2460 (12/1998): "Internet Protocol, Version 6 (IPv6) Specification".

[17] 3G TS 29.060: "3GPP; TSG CN; GPRS; GPRS Tunnelling Protocol (GTP)".

[18] ITU-T Rec. **I.630** (2/99): "ATM Protection Switching".

[19] IETF RFC 2475 (12/1998): “An Architecture for Differentiated Services”.

6.1.4 ATM Adaptation Layer Type 5 (I.363.5)

AAL5 shall be used according to I.363.5 0.

AAL5 virtual circuits are used to transport the IP packets across the Iu interface toward the packet switched domain. Multiple VCs can be used over the interface. There is a one-to-one relationship between the VC and the IP address as required by Classical IP over ATM. An association must be made between a peer node's IP address and a VC. This association can be made using O&M or using ATM Inverse ARP according to Classical IP over ATM when PVCs are used.

When PVCs are used, quality of service differentiation shall only be performed at the IP layer using differentiated services [19].

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Sophia, France, 28 Feb – 3 March 2000

***Document* R3-000899**
e.g. for 3GPP use the format TP-99xxx
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CHANGE REQUEST

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25.414	**CR**	**006r1**	Current Version:	3.2.0

GSM (AA.BB) or 3G (AA.BBB) specification number ↑ *↑ CR number as allocated by MCC support team*

For submission to:	RAN#7	for approval	X	strategic		(for SMG use only)
list expected approval meeting # here ↑		for information		non-strategic		

Form: CR cover sheet, version 2 for 3GPP and SMG *The latest version of this form is available from: ftp://ftp.3gpp.org/Information/CR-Form-v2.doc*

Proposed change affects: *(at least one should be marked with an X)*	(U)SIM		ME		UTRAN / Radio	X	Core Network	X

Source: RAN-WG3 **Date:** 2000-03-02

Subject: Formal cleanup of 25.414

Work item:

Category: *(only one category shall be marked with an X)*

F	Correction	X	**Release:**	Phase 2	
A	Corresponds to a correction in an earlier release			Release 96	
B	Addition of feature			Release 97	
C	Functional modification of feature			Release 98	
D	Editorial modification			Release 99	X
				Release 00	

Reason for change: Current 25.414 uses expressions like ‘is’, ‘are’, etc that are not appropriate for specification text. This CR proposes to change the wording to use expressions like ‘shall’, ‘may’, etc.

Clauses affected: 6.1

Other specs affected:

Other 3G core specifications		→ List of CRs:
Other GSM core specifications		→ List of CRs:
MS test specifications		→ List of CRs:
BSS test specifications		→ List of CRs:
O&M specifications		→ List of CRs:

Other comments: The same editorial corrections should also be made to approved CR 002, Tdoc R3-000077. This is proposed in a revised CR 002r1.


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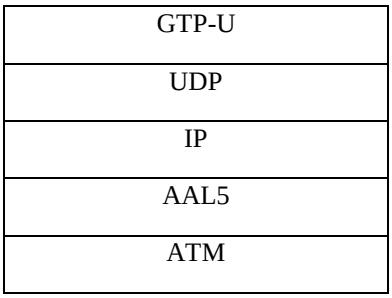
6 Packet switched domain

6.1 Transport network user plane

6.1.1 General

The following figure shows the protocol stack for the transport network user plane on the Iu interface towards the packet switched domain.



The protocol architecture for the User Plane of the Iu interface towards the packet switched domain shall be GTP-U [17] over UDP over IP over AAL5 over ATM. One or several AAL5/ATM permanent VC's may be used as the common layer 2 resources between the UTRAN and the packet switched domain of the CN.

One switched VC may be used per user flow. The standardisation of the procedures and protocols for use of Switched VC is outside the scope of 3GPP.

Congestion control shall be performed over the Iu user plane toward the packet switched domain using buffer management and no flow control.

6.1.2 GTP-U

The GTP-U [17] protocol shall be used over the Iu interface toward the packet switched domain.

6.1.3 UDP /IP

The path protocol used shall be UDP [12], which is specified in RFC 768. Both the IPv4 [13] and IPv6 [16] IP protocols shall be supported which are specified in RFC 791 (IPv4) or RFC 2460 (IPv6).

The IP addresses for the CN and RNC nodes are exchanged using RANAP signalling. The packet processing function in the CN shall send~~s~~ downstream packets to the RNC IP address received in the RANAP signalling. The packet processing function in the RNC shall send~~s~~ upstream packets to the CN IP address received in the RANAP signalling.

The GTP UDP port number as defined in GTP [17] ~~is~~ shall be used for the destination port for GTP-U control messages and T-PDUs. The sending node shall locally allocate~~s~~ the UDP source port number. For GTP-U control messages, the UDP destination port ~~is~~ shall be the value of the UDP source port of the corresponding GTP-U control ~~-~~message. The UDP source port ~~is~~ shall be the value of the UDP destination port of the corresponding GTP-U control message.

6.1.4 ATM Adaptation Layer Type 5 (I.363.5)

AAL5 shall be used according to I.363.5 [3].

AAL5 virtual circuits ~~are~~ shall be used to transport the IP packets across the Iu interface toward the packet switched domain. Multiple VCs ~~can~~ may be used over the interface. There is a one-to-one relationship between the VC and the IP address as required by Classical IP over ATM. An association ~~must~~ shall be made between a peer node's IP address and a VC. This association ~~can~~ shall be made using O&M or using ATM Inverse ARP according to Classical IP over ATM when PVCs are used.

6.1.5 IP/ATM

Classical IP over ATM protocols ~~are~~ shall be used to carry the IP packets over the ATM transport network when PVCs are used. Classical IP over ATM is specified in IETF RFC 2225 [15]. Multiprotocol Encapsulation over AAL5 is specified in IETF RFC 1483 [14].

6.2 Transport network control plane

ALCAP is not required over the Iu interface towards the packet switched domain.

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***Document* R3-000971**
e.g. for 3GPP use the format TP-99xxx
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CHANGE REQUEST

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25.414	CR	011r1	Current Version:	3.2.0

GSM (AA.BB) or 3G (AA.BBB) specification number ↑ *↑ CR number as allocated by MCC support team*

For submission to:	RAN#7	for approval	X	strategic		(for SMG use only)
list expected approval meeting # here ↑		for information		non-strategic		

Form: CR cover sheet, version 2 for 3GPP and SMG *The latest version of this form is available from:* ftp://ftp.3gpp.org/Information/CR-Form-v2.doc

Proposed change affects: *(at least one should be marked with an X)* (U)SIM [ ] ME [ ] UTRAN / Radio [X] Core Network [X]

Source: RAN-WG3 , Lucent **Date:** 25.2.2000

Subject: Need for IP routing capabilities in the SGSN

Work item:

Category: *(only one category shall be marked with an X)*

F	Correction	X	**Release:**	Phase 2	
A	Corresponds to a correction in an earlier release			Release 96	
B	Addition of feature			Release 97	
C	Functional modification of feature			Release 98	
D	Editorial modification			Release 99	X
				Release 00	

Reason for change:

According to TS 23.121 v 3.2.0 [3], the SGSN acts as a router for IP packet forwarding during the Relocation procedure when the source RNC receives the IP address of the target RNC in the 'Relocation Command' message. The source RNC and the target RNC are not in the same LIS (Logical IP Subnet), so a routing function is required to deliver the data.

According to TS 25.414 [2] Classical IP over ATM is required at the Iu interface when PVCs are used. Classical IP over ATM (RFC 2225) [1] allows a router to be a member in a LIS, therefore routers are allowed also at the Iu interface.

The following is stated in RFC 2225:

RFC 2225, Ch. 5.2:

> *The requirements for IP members (hosts, routers) operating in an ATM LIS configuration are:…*

RFC 2225, Ch. 4:

> *"One IP subnet is used for many hosts and routers. Each VC directly connects two IP members within the same LIS."*

RFC 2225, Ch. 5.1:

> *"Communication to hosts located outside of the local LIS is provided via an IP router. This router is an ATM endpoint attached to the ATM network that is configured as a member of one or more LISs."*

Clauses affected: 3.3, 6.1.5

Other specs affected:

Other 3G core specifications	[ ]	→ List of CRs:	
Other GSM core specifications	[ ]	→ List of CRs:	

MS test specifications		→ List of CRs:	
BSS test specifications		→ List of CRs:	
O&M specifications		→ List of CRs:	

Other comments:	.

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3.3 Abbreviations

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

AAL	ATM Adaptation Layer
AESA	ATM End System Address
ALCAP	Access Link Control Application Part
ARP	Address Resolution Protocol
ATM	Asynchronous Transfer Mode
RFC	Request For Comment
CN	Core Network
GTP	GPRS Tunnelling Protocol
IP	Internet Protocol
LIS	Logical IP Subnet
MTP3b	Message Transfer Part level 3 for Q.2140
NSAP	Network Service Access Point
PDU	Protocol Data Unit
RNC	Radio Network Controller
SAR	Segmentation and Reassembly
SCCF-NNI	Service Specific Coordination Function-Network Node Interface
SSCOP	Service Specific Connection Oriented Protocol
SSCS	Service Specific Convergence Sublayer
UDP	User Datagram Protocol
VC	Virtual Circuit

6.1.5 IP/ATM

Classical IP over ATM protocols are used to carry the IP packets over the ATM transport network when PVCs are used. Classical IP over ATM is specified in IETF RFC 2225 [15]. Multiprotocol Encapsulation over AAL5 is specified in IETF RFC 1483 [14].

Classical IP over ATM allows routers to be members of one or more LISs. The CN side of the Iu interface shall provide IP routing functionalities. The RNC side of the Iu interface may provide routing functionalities. If the RNC side of the Iu interface does not provide routing functionalities, the RNC routing tables shall include default route entries.