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

TSGRP#14(01) 0858

Title: **Agreed CRs to TS 25.425**

Source: **TSG-RAN WG3**

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

RP Tdoc	R3 Tdoc	Spec	CR_Num	Rev	Release	CR_Subject	Cat	Cur_Ver	New_Ver	Workitem
RP-010858	R3-013599	25.425	042	1	R99	Extension of USCH and DSCH data and control frames	F	3.5.0	3.6.0	TEI
RP-010858	R3-013313	25.425	039		Rel-4	Specification Notations	A	4.1.0	4.2.0	TEI
RP-010858	R3-013600	25.425	043	1	Rel-4	Extension of USCH and DSCH data and control frames	A	4.2.0	4.3.0	TEI
RP-010858	R3-013657	25.425	040	2	R99	Transport Bearer replacement for the DSCH	F	3.5.0	3.6.0	TEI
RP-010858	R3-013658	25.425	041	2	Rel-4	Transport Bearer replacement for the DSCH	A	4.1.0	4.2.0	TEI
RP-010858	R3-013598	25.425	037	1	Rel-4	Description of CRC	A	4.2.0	4.3.0	TEI
RP-010858	R3-013162	25.425	036		R99	Description of CRC calculation	F	3.5.0	3.6.0	TEI
RP-010858	R3-013312	25.425	038		R99	Specification Notations	F	3.5.0	3.6.0	TEI

3GPP TSG-RAN WG3 Meeting #25 ***R3-013162***
Makuhari, Japan, 26th – 30th November 2001

CR-Form-v3

CHANGE REQUEST

⌘ **25.425** **CR** **036** ⌘ rev **-** ⌘ Current version: **3.5.0** ⌘

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

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

Title:	⌘	Description of CRC
Source:	⌘	R-WG3
Work item code:	⌘	TEI
Date:	⌘	November 2001
Category:	⌘	**F**
Release:	⌘	R99

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

Use one of the following releases:
2 (GSM Phase 2)
R96 (Release 1996)
R97 (Release 1997)
R98 (Release 1998)
R99 (Release 1999)
REL-4 (Release 4)
REL-5 (Release 5)

Reason for change:	⌘	The current text might be misleading. Since a CRC is a checksum and not a polynomial it would be better to define, for example, the Header CRC in the following way:"Cyclic Redundancy Checksum calculated on the header of a data frame with polynomial X^7+X^6+X^2+1."
Summary of change:	⌘	The expression "Cyclic Redundancy Polynomial" is replaced by "Cyclic Redundancy Checksum". Impact Analysis: Impact assessment towards the previous version of the specification (same release): This CR has no impact with the previous version of the specification (same release) because the erroneous wording was obvious and the correct meaning was nevertheless clear.
Consequences if not approved:	⌘	If this CR is not approved, the explanation of CRC is incorrect in TS 25.425.

Clauses affected:	⌘	6.2.5.1, 6.2.5.14, 6.3.2.1		
Other specs affected:	⌘	**X** Other core specifications	⌘	25.425 CR 037, REL-4 25.435 CR 064, R99 25.435 CR 065, REL-4
		☐ Test specifications		
		☐ O&M Specifications		
Other comments:	⌘	This CR was in principle agreed at R3#24 meeting (R3-012995).		

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

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://www.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2000-09 contains the specifications resulting from the September 2000 TSG meetings.

3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

6.2.5 Coding of Information Elements in DATA FRAMEs

6.2.5.1 Header CRC

Description: Cyclic Redundancy ~~Polynomial~~ Checksum calculated on the header of a data frame with polynomial X^7+X^6+X^2+1. The CRC calculation shall cover all bits in the header, starting from bit 0 in the first byte (FT field) up to the end of the header.

Value range: {0-127}.

Field length: 7 bits.

[Partly omitted]

6.2.5.14 Payload CRC

Description: Cyclic Redundancy ~~Polynomial~~ Checksum calculated on the payload of a data frame with polynomial X^16+X^15+X^2+1. The CRC calculation shall cover all bits in the data frame payload, starting from bit 7 in the first byte up to bit 0 in the byte before the payload CRC.

Field length: 16 bits.

[Partly omitted]

6.3.2 Header structure of the control frames

6.3.2.1 Control frame CRC

Description: Cyclic Redundancy ~~Polynomial~~ Checksum calculated on a control frame with polynomial X^7+X^6+X^2+1. The CRC calculation shall cover all bits in the control frame, starting from bit 0 in the first byte (FT field) up to the end of the control frame.

Value range: {0-127}.

Field length: 7 bits.

3GPP TSG-RAN WG3 Meeting #25 ***R3-013598***
Makuhari, Japan, 26th – 30th November 2001

CR-Form-v3

CHANGE REQUEST

⌘ **25.425** **CR** **037** ⌘ rev **1** ⌘ Current version: **4.1.0** ⌘

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

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

Title:	⌘	Description of CRC
Source:	⌘	R-WG3
Work item code:	⌘	TEI
Date:	⌘	November 2001
Category:	⌘	**A**
Release:	⌘	REL-4

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

Use one of the following releases:

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

Reason for change:	⌘	The current text might be misleading. Since a CRC is a checksum and not a polynomial it would be better to define, for example, the Header CRC in the following way:"Cyclic Redundancy Checksum calculated on the header of a data frame with polynomial X^7+X^6+X^2+1."
Summary of change:	⌘	The expression "Cyclic Redundancy Polynomial" is replaced by "Cyclic Redundancy Checksum". Rev.1: Category changed to "A". Impact Analysis: Impact assessment towards the previous version of the specification (same release): This CR has no impact with the previous version of the specification (same release) because the erroneous wording was obvious and the correct meaning was nevertheless clear.
Consequences if not approved:	⌘	If this CR is not approved, the explanation of CRC is incorrect in TS 25.425.

Clauses affected:	⌘	6.2.5.1, 6.2.5.14, 6.3.2.1		
Other specs	⌘	**X** Other core specifications	⌘	25.425 CR 036, R99 25.435 CR 064, R99 25.435 CR 065, REL-4

affected:	☐ Test specifications ☐ O&M Specifications	
Other comments:	⌘ This CR was in principle agreed at R3#24 meeting (R3-012996).	

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2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://www.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2000-09 contains the specifications resulting from the September 2000 TSG meetings.

3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

6.2.5 Coding of Information Elements in DATA FRAMEs

6.2.5.1 Header CRC

Description: Cyclic Redundancy ~~Polynomial~~ Checksum calculated on the header of a data frame with polynomial X^7+X^6+X^2+1. The CRC calculation shall cover all bits in the header, starting from bit 0 in the first byte (FT field) up to the end of the header.

Value range: {0-127}.

Field length: 7 bits.

[Partly omitted]

6.2.5.14 Payload CRC

Description: Cyclic Redundancy ~~Polynomial~~ Checksum calculated on the payload of a data frame with polynomial X^16+X^15+X^2+1. The CRC calculation shall cover all bits in the data frame payload, starting from bit 7 in the first byte up to bit 0 in the byte before the payload CRC.

Field length: 16 bits.

[Partly omitted]

6.3.2 Header structure of the control frames

6.3.2.1 Control frame CRC

Description: Cyclic Redundancy ~~Polynomial~~ Checksum calculated on a control frame with polynomial X^7+X^6+X^2+1. The CRC calculation shall cover all bits in the control frame, starting from bit 0 in the first byte (FT field) up to the end of the control frame.

Value range: {0-127}.

Field length: 7 bits.

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

Tdoc R3-013312

CR-Form-v4

CHANGE REQUEST

⌘ **25.425** **CR** **038** ⌘ ev **-** ⌘ Current version: **3.5.0** ⌘

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

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

Title:	⌘	Addition of "Specification Notations" Section
Source:	⌘	R-WG3
Work item code:	⌘	TEI
Date:	⌘	November 2001
Category:	⌘	**F**
Release:	⌘	R99

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

Use one of the following releases:
2 *(GSM Phase 2)*
R96 *(Release 1996)*
R97 *(Release 1997)*
R98 *(Release 1998)*
R99 *(Release 1999)*
REL-4 *(Release 4)*
REL-5 *(Release 5)*

Reason for change:	⌘	A "Specification Notations" section is missing from the UP RNL protocol.
Summary of change:	⌘	A "Specification Notations" section was added to Section 3 "Definitions, symbols and abbreviations". Change from previous Motorola CR: - the new section was added to section 3 instead of section 4 (Note: section 4 "General Aspects" is related to the interface, not to the specification rules as in RNSAP and NBAP. So the new section is more appropriate for chapter 3, as "Specification Notations" are more related to Definitions than to the interface General Aspects). Some changes to the TS were also made for alignment with the new "Specification Notations" section: - tagging in headlines was corrected, - hyphen for taggings in the text was missing at several places, - some *IE name* were turned into *Italic style*. Impact Analysis: Impact assessment towards the previous version of the specification (same release): This CR has [no impact] with the previous version of the specification (same release) because this change is only adding rules on how the notations within the specification shall be written.
Consequences if not approved:	⌘	Notations used within the UP RNL might not be consistent with those used in the CP RNL.

Clauses affected:	⌘	3, 4, 5, 6

Other specs affected: ⌘	**X**	Other core specifications	⌘	TS 25.420 v3.3.0 CR 019 TS 25.420 v4.0.0 CR 020 TS 25.425 v4.1.0 CR 039 TS 25.427 v3.8.0 CR 070 TS 25.427 v4.2.0 CR 071 TS 25.430 v3.6.0 CR 026 TS 25.430 v4.1.0 CR 027 TS 25.435 v3.8.0 CR 066 TS 25.435 v4.2.0 CR 067
		Test specifications		
		O&M Specifications		
Other comments: ⌘	This Tdoc is a proposal for an update of Tdoc R3-013148			

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3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

1 Scope

The present document shall provide a description of the UTRAN RNS-RNS (Iur) interface user plane protocols for Common Transport Channel data streams as agreed within the TSG-RAN working group 3.

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 (11/1995): "B-ISDN ATM Layer Specification".

[2] ITU-T Recommendation I.363.2 (09/1997): "B-ISDN ATM Adaptation Layer specification: Type 2 AAL".

[3] ITU-T Recommendation I.366.1 (06/1998): "Segmentation and Reassembly Service Specific Convergence Sublayer for the AAL type 2".

[4] 3GPP TS 25.427: "UTRAN Iub/Iur Interface User Plane Protocols for DCH Data Streams".

[5] 3GPP TS 25.401: "UTRAN overall description".

[6] 3GPP TR 25.990: "Vocabulary".

[7] 3GPP TS 25.321: "Medium Access Control (MAC) protocol specification".

3 Definitions, symbols and abbreviations

3.1 Definitions

For the purposes of the present document, the terms and definitions in [5] and the following apply:

Common Transport Channel: it is defined as a transport channel that is shared by several users i.e. DSCH, USCH [TDD], CPCH [FDD], RACH, FACH

Transport Connection: service provided by the transport layer and used by Frame Protocol for the delivery of FP PDU

3.2 Symbols

No special symbols are defined in the present document.

3.3 Abbreviations

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

AAL2	ATM Adaptation Layer type 2
ATM	Asynchronous Transfer Mode
CFN	Connection Frame Number
CmCH	Common Transport Channel
CPCH	Common Packet Channel
C-RNC	Controlling Radio Network Controller
CRC	Cyclic Redundancy Checksum
DCH	Dedicated Transport Channel
DL	Downlink
D-RNTI	Drift RNTI
DSCH	Downlink Shared Channel
FACH	Forward Access CHannel
FP	Frame Protocol
FT	Frame Type
RACH	Random Access CHannel
RNC	Radio Network Controller
RNTI	Radio Network Temporary Identity
SRNC	Serving Radio Network Controller
S-RNTI	Serving RNTI
SSCS	Service Specific Convergence Sublayer
TB	Transport Block
TBS	Transport Block Set
TFI	Transport Format Indicator
ToA	Time of Arrival
TTI	Transmission Time Interval
UE	User Equipment
UL	Uplink
U-RNTI	UTRAN RNTI
USCH	Uplink Shared Channel

3.4 Specification Notations

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

[FDD]	This tagging of a word indicates that the word preceding the tag "[FDD]" applies only to FDD. This tagging of a heading indicates that the heading preceding the tag "[FDD]" and the section following the heading applies only to FDD.
[TDD]	This tagging of a word indicates that the word preceding the tag "[TDD]" applies only to TDD. This tagging of a heading indicates that the heading preceding the tag "[TDD]" and the section following the heading applies only to TDD.
[FDD - …]	This tagging indicates that the enclosed text following the "[FDD - " applies only to FDD. Multiple sequential paragraphs applying only to FDD are enclosed separately to enable insertion of TDD specific (or common) paragraphs between the FDD specific paragraphs.
[TDD - …]	This tagging indicates that the enclosed text following the "[TDD - " applies only to TDD. Multiple sequential paragraphs applying only to TDD are enclosed separately to enable insertion of FDD specific (or common) paragraphs between the TDD specific paragraphs.
Procedure	When referring to a procedure in the specification, the Procedure Name is written with the first letters in each word in upper case characters followed by the word "procedure", e.g. FACH Data Transfer procedure.
Frame	When referring to a control or data frame in the specification, the CONTROL/DATA FRAME NAME is written with all letters in upper case characters followed by the words "control/data frame", e.g. FACH FLOW CONTROL control frame.

IE When referring to an information element (IE) in the specification, the *Information Element Name* is written with the first letters in each word in upper case characters and all letters in Italic font followed by the abbreviation "IE", e.g. *Credits* IE.

Value of an IE When referring to the value of an information element (IE) in the specification, the "Value" is written as it is specified in subclause 6.2.5 or 6.3.3 enclosed by quotation marks, e.g. "0" or "255".

4 General Aspects

4.1 Common Transport Channel Data Streams User Plane Protocol Services

This subclause describes the services that the User Plane Protocols provide such as data transfer, flow control.

4.1.1 RACH/CPCH[FDD] Data Streams User Plane Protocol Services

RACH/CPCH[FDD] frame protocol provides the following services:

- Transport of MAC-c/sh SDUs from the DRNC to the SRNC for RACH/CPCH[FDD] common transport channels.

4.1.2 FACH Data Streams User Plane Protocol Services

FACH frame protocol provides the following services:

- Transport of MAC-c/sh SDUs from the SRNC to the DRNC for FACH common transport channel.
- Flow Control between MAC-d and MAC-c/sh.

4.1.3 [TDD - USCH]/DSCH Data Streams User Plane Protocol Services

[TDD - USCH]/DSCH frame protocol provides the following services:

- Transport of MAC-c/sh SDUs between the SRNC and the DRNC for [TDD - USCH] and DSCH common transport channels.
- Flow Control between MAC-d and MAC-c/sh.

4.2 Services expected from the Data Transport Network layer

The following services are expected from the transport layer:

- Delivery of Frame Protocol PDUs.

In sequence delivery is not required. However, frequent out-of-sequence delivery may impact the performance and should be avoided.

4.3 Protocol Version

This revision of the specification specifies version 1 of the protocols.

5 Common Transport Channel Data Streams User Plane Procedures

This clause specifies the user plane procedures for Common Transport Channels data streams. Typical related scenarios at Iur interface should be described.

For the user plane of the radio network layer there are four Common Transport Channel frame handling protocols:

1. Random Access Channel/Common Packet Channel [FDD] Frame Protocol (RACH/CPCH[FDD] FP) for transport of Iur data streams carried on RACH/CPCH[FDD] on the Uu-interface.
2. Forward Access Channel Frame Protocol (FACH FP) for transport of Iur data streams carried on FACH on the Uu-interface.
3. Downlink Shared Channel Frame Protocol (DSCH FP) for transport of Iur data streams carried on DSCH on the Uu-interface.
4. Uplink Shared Channel Frame Protocol ([TDD - USCH] FP) for transport of Iur data streams carried on USCH on the Uu-interface.

5.1 Data Transfer

5.1.1 RACH/CPCH[FDD] Data Transfer

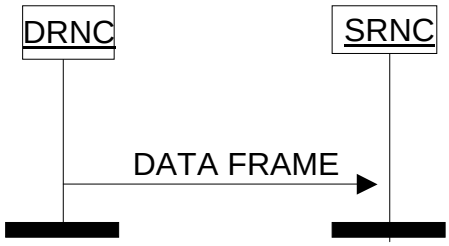

Figure 1: RACH/CPCH[FDD] Data Transfer procedure

Data received on the RACH/CPCH[FDD] transport channel is transmitted from the DRNC to the SRNC using RACH/CPCH[FDD] DATA FRAMEs. The data is protected by a mandatory payload CRC. Multiple MAC-c/sh SDUs of same length may be transmitted in the same RACH/CPCH[FDD] DATA FRAME.

5.1.2 FACH Data Transfer

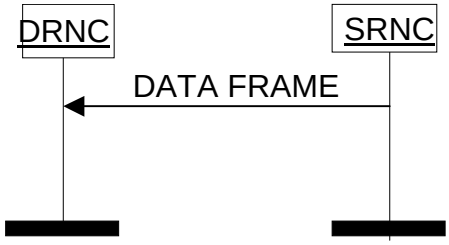

Figure 2: FACH Data Transfer procedure

Data to be transmitted on the FACH transport channel is transmitted from the SRNC to the DRNC using FACH DATA FRAMEs. Multiple MAC-c/sh SDUs of same length and same priority level (CmCH-PI) may be transmitted in the same FACH DATA FRAME. Within one priority level and size the MAC-c/sh SDUs shall be transmitted by the DRNS on the Uu interface in the same order as they were received from the SRNC.

The *UE-ID Type Indicator* IE indicates which UE-ID type MAC-c/sh shall include in the MAC header.

5.1.3 USCH Data Transfer [TDD]

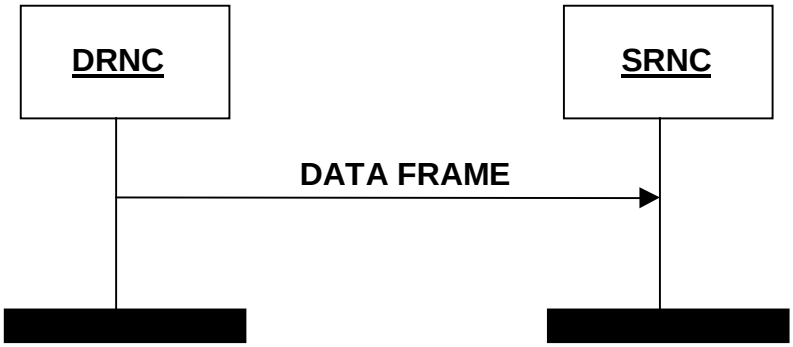

Figure 3: USCH Data Transfer procedure

Whenever there is USCH data in the DRNC, transfer is done immediately to the SRNC via the USCH Data Port using USCH DATA FRAMEs.

Data received on the USCH transport channel is transmitted from the DRNC to the SRNC using USCH DATA FRAMEs. The data is protected by a mandatory payload CRC. Multiple MAC-c/sh SDUs of same length may be transmitted in the same USCH DATA FRAME.

5.1.4 DSCH Data Transfer

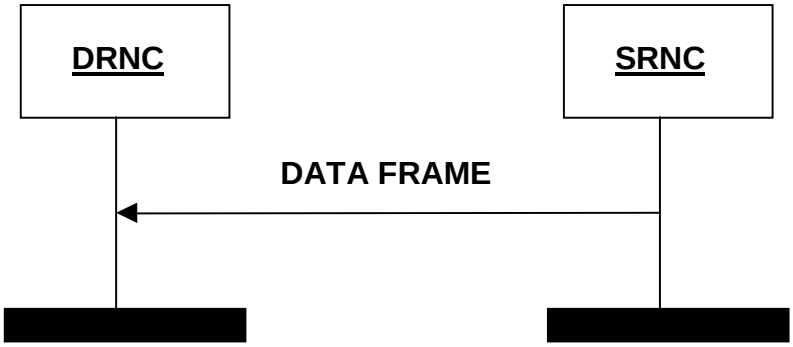

Figure 4: DSCH Data Transfer procedure

When the SRNC has been granted capacity by the DRNC via the DSCH CAPACITY ALLOCATION Control Frame and the SRNC has data waiting to be sent, then the DSCH DATA FRAME is used to transfer the data. When data is waiting to be transferred, and a CAPACITY ALLOCATION Control Frame is received, a DSCH DATAFRAME will be transmitted immediately according to allocation received.

Multiple MAC-c/sh SDUs of same length and same priority level (CmCH-PI) may be transmitted in the same DSCH DATA FRAME.

The DSCH DATAFRAME includes a *User Buffer Size* IE to indicate the amount of data pending for the respective UE for the indicated priority level. Within one priority level and size the MAC-c/sh SDUs shall be transmitted by the DRNS on the Uu interface in the same order as they were received from the SRNC.

5.2 Flow Control

5.2.1 FACH Flow Control

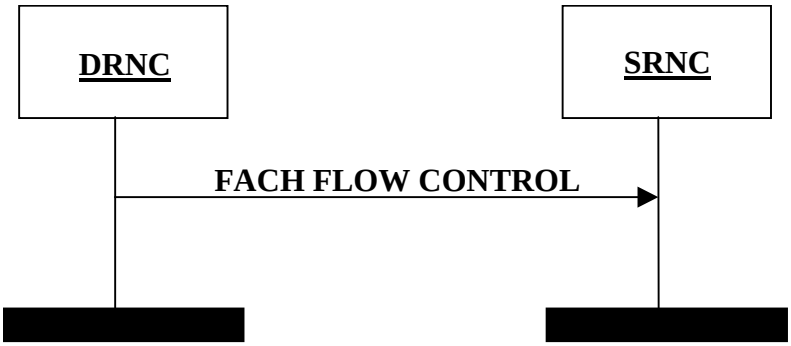

Figure 4A: FACH Flow Control procedure

The FACH Flow Control procedure is used by the DRNC to control the user data flow. It may be generated in response to a FACH Capacity Request procedure or at any other time. The *Credits* IE indicates the number of MAC-c/sh SDUs the SRNC is allowed to transmit for the UE identified by the *SRNTI* IE and the associated priority level indicated by the *Common Transport Channel Priority Indicator* IE.

The *Credits* IE indicates the total amount of credits granted. Any credits previously granted are withdrawn.

If *Credits* IE = 0 (e.g. due to congestion in the DRNC), the SRNC shall immediately stop transmission of MAC-c/sh SDUs.

Credits IE = 'unlimited' indicates that the SRNC may transmit an unlimited number of MAC-c/sh SDUs.

5.2.2 DSCH Capacity Request

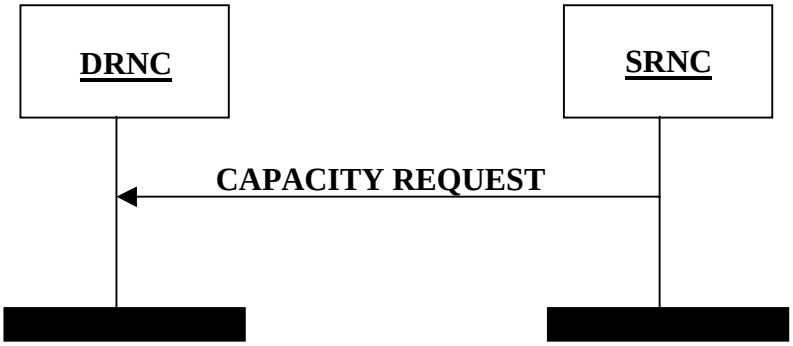

Figure 5: DSCH Capacity Request procedure

The DSCH Capacity Request procedure provides means for the SRNC to request DSCH capacity by indicating the user buffer size in the SRNC for a given priority level.

The SRNC is allowed to reissue the DSCH Capacity Request procedure if no CAPACITY ALLOCATION has been received within an appropriate time threshold.

5.2.3 DSCH Capacity Allocation

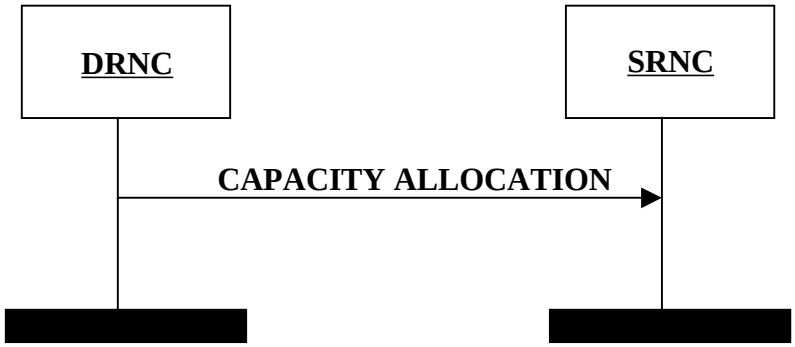

Figure 6: DSCH Capacity Allocation procedure

The DSCH Capacity Allocation procedure is generated within the DRNC. It may be generated either in response to the DSCH Capacity Request procedure or at any other time.

The DRNC may use this message to modify the capacity at any time, irrespective of the reported user buffer status.

The DSCH CAPACITY ALLOCATION frame is used by the DRNC to control the user data flow. *Credits* IE indicates the number of MAC-c/sh SDUs that the SRNC is allowed to transmit for the UE and the associated priority level indicated by the *Common Transport Channel Priority Indicator* IE.

The *Maximum. MAC- c/sh SDU Length*, *Credits*, *Interval* and *Repetition Period* IEs indicate the total amount of capacity granted. Any capacity previously granted is replaced.

If *Credits* IE = 0 (e.g. due to congestion in the DRNC), the SRNC shall immediately stop transmission of MAC-c/sh SDUs. If *Credits* IE = 255, the SRNC can transmit MAC-c/sh SDUs with unlimited capacity.

The IEs used in the DSCH CAPACITY ALLOCATION Control Frame are the *Common Transport Channel Priority Indicator*, *Credits*, *Maximum. MAC- c/sh SDU Length*, *Interval* and the *Repetition Period*.

If the Repetition Period IE = *'unlimited repetition period'* it indicates that the SRNC may transmit the specified number of MAC-c/sh SDUs for an unlimited period according to the bounds of *Maximum MAC-c/sh SDU Length*, *Credits* and *Interval* IEs.

5.2.4 FACH Capacity Request

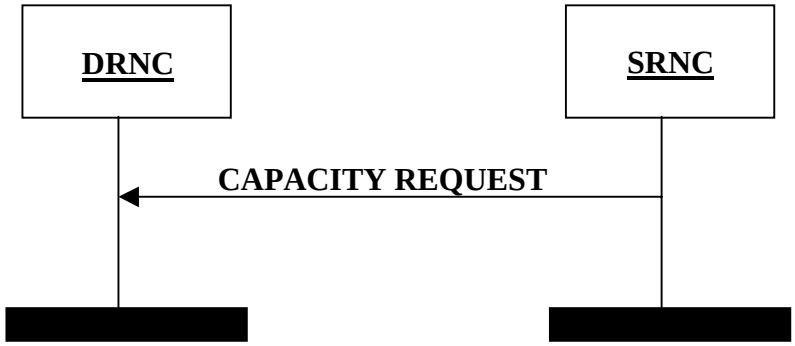

Figure 6A: FACH Capacity Request procedure

The FACH Capacity Request procedure provides the means for the SRNC to notify the DRNC about the user buffer size for a given priority level. It may be sent if no FACH FLOW CONTROL frame has been received within an appropriate time threshold, or to signal an event such as data arrival or user buffer discard.

6 Frame Structure and Coding

6.1 General

The general structure of a Common Transport Channel frame consists of a header and a payload. This structure is depicted in the figure 7.

Header	Payload: Data or Control Information

Figure 7: General Frame Structure

The header shall contain the frame type field and information related to the frame type.

There are two types of frames (indicated by the Frame Type field).

1. Data frame.
2. Control frame.

In the present document the structure of frames will be specified by using pictures similar to the following figure 8.

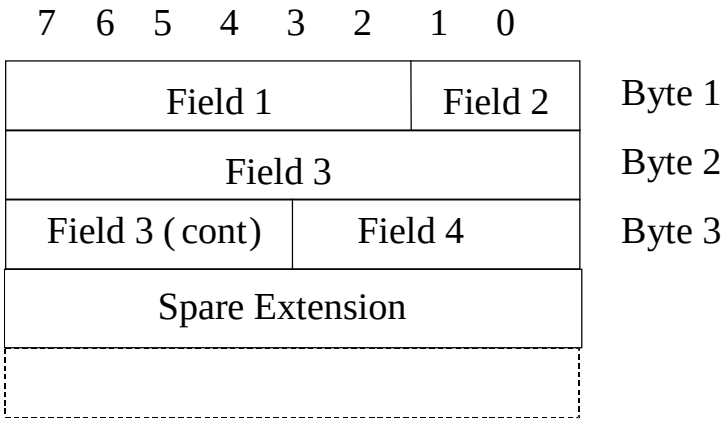

Figure 8: Example frame structure

Unless otherwise indicated, fields which consist of multiple bits within a byte will have the more significant bit located at the higher bit position (indicated above frame in figure 8). In addition, if a field spans several bytes, more significant bits will be located in lower numbered bytes (right of frame in figure 8).

On the Iur interface, the frame will be transmitted starting from the lowest numbered byte. Within each byte, the bits are sent according decreasing bit position (bit position 7 first).

The Spare Extension indicates the location where new IEs can in the future be added in a backward compatible way.

The Spare Extension shall not be used by the transmitter and shall be ignored by the receiver.

Spare bits shall be set to 0 by the transmitter and shall be ignored by the receiver.

The parameters are specified giving the value range and the step (if not 1). The coding is done as follows (unless otherwise specified):

- Lowest value (in the range) coded as a sequence of 0's;
- Highest value in the range coded as a sequence of 1's.

6.2 Data Frame structure

6.2.1 RACH/CPCH[FDD] Channels

RACH/CPCH[FDD] Iur data stream corresponds to the data stream of one specific UE. The used transport bearer for the transport of FACH/RACH or FACH/CPCH[FDD] is bi-directional.

The RACH/CPCH[FDD]/FACH FP does not facilitate multiplexing of data streams from different UEs onto the same data frame, but does allow multiple UEs to share the same transport bearer.

The RACH DATA FRAME structure is defined as common for FDD and TDD with conditional fields, and CPCH[FDD] DATA FRAME structure is defined as common for FDD only.

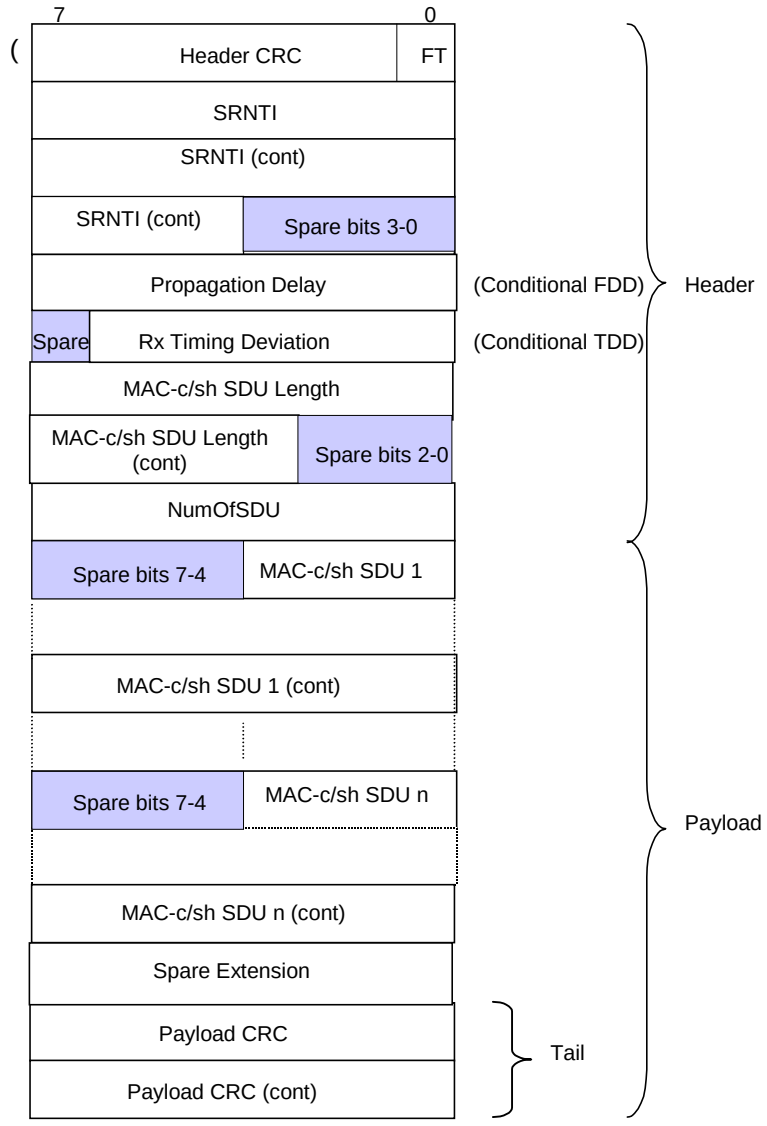

Figure 9: RACH/CPCH[FDD] DATA FRAME structure

Propagation delay is a conditional Information Element which is only present when the Cell supporting the RACH/CPCH[FDD] Transport Channel is a FDD Cell.

Rx Timing Deviation is a conditional Information Element which is only present when the Cell supporting the RACH Transport Channel is a TDD Cell.

6.2.2 FACH Channels

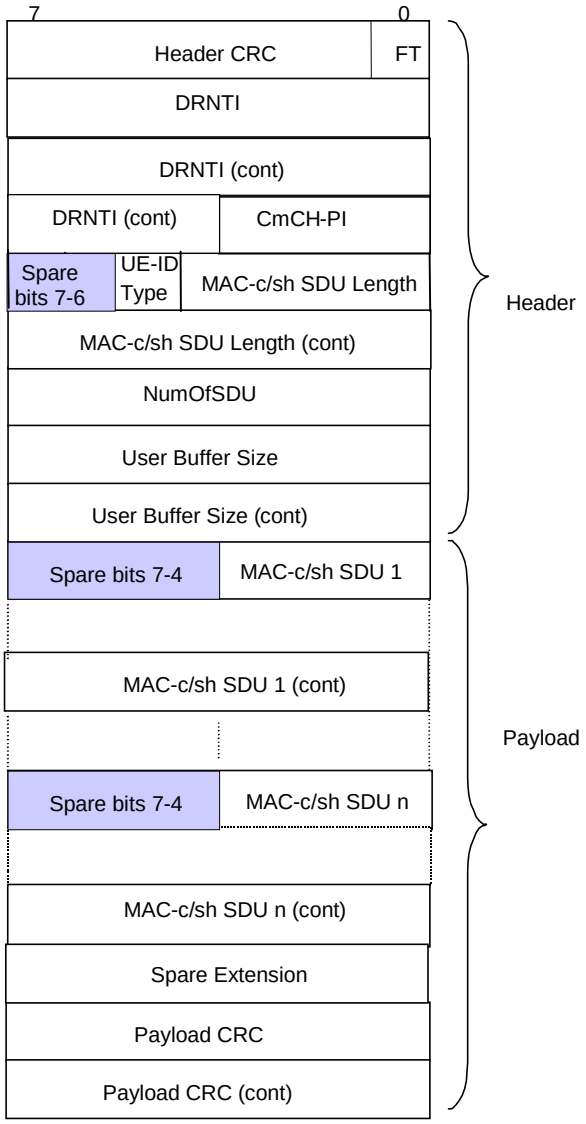

Figure 10: FACH DATA FRAME structure

6.2.3 USCH Channels [TDD]

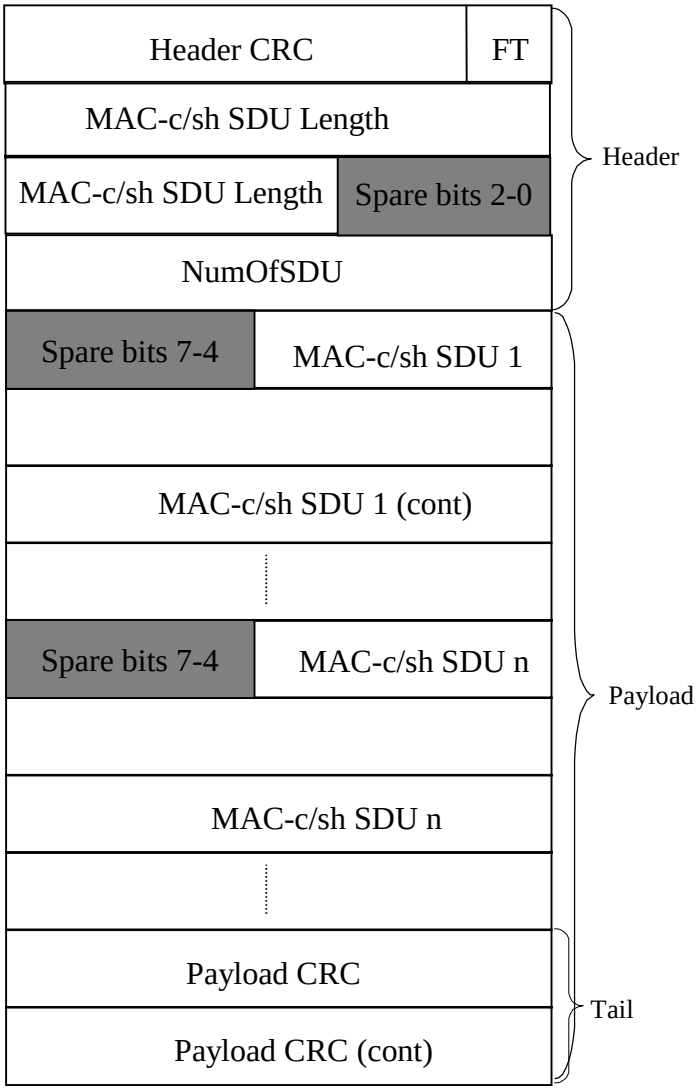

Figure 11: USCH DATA FRAME structure

6.2.4 DSCH Channels

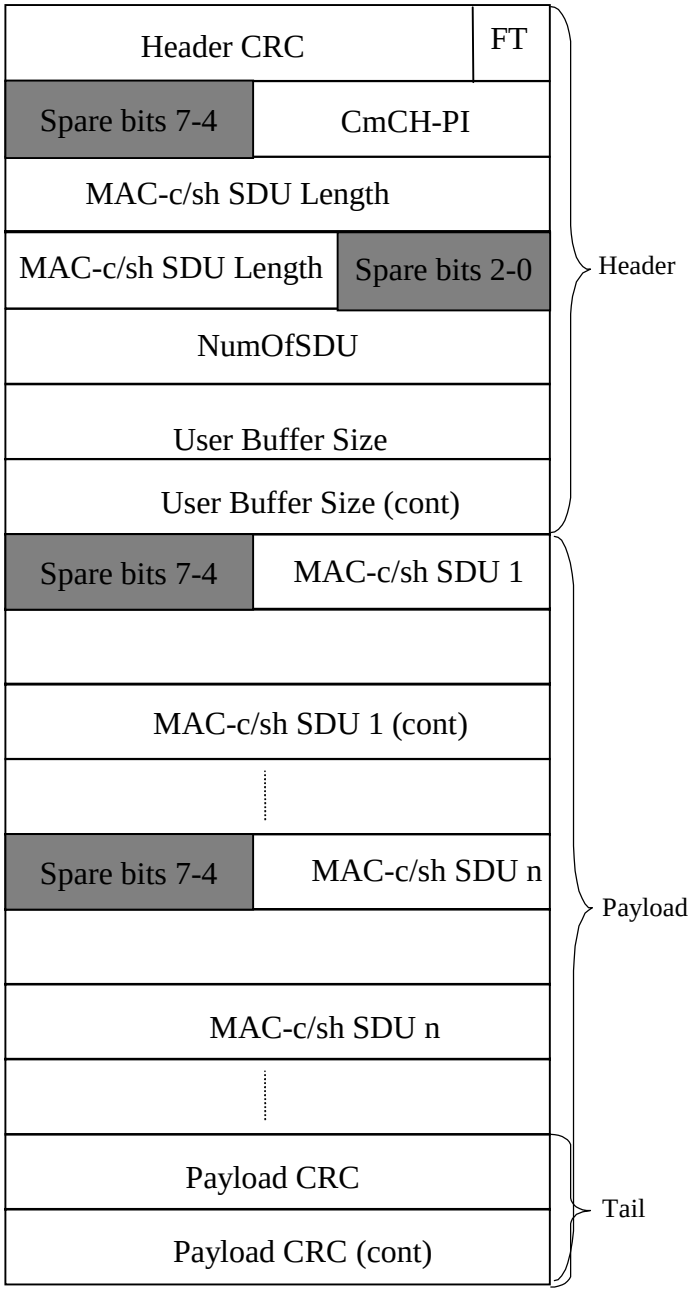

Figure 12: DSCH DATA FRAME structure

6.2.5 Coding of Information Elements in DATA FRAMEs

6.2.5.1 Header CRC

Description: Cyclic Redundancy Polynomial calculated on the header of a data frame with polynomial X^7+X^6+X^2+1. The CRC calculation shall cover all bits in the header, starting from bit 0 in the first byte (FT field) up to the end of the header.

Value range: {0-127}.

Field length: 7 bits.

6.2.5.2 Frame Type (FT)

Description: Describes if it is a control frame or a data frame.

Value range: {0=data, 1=control}.

Field Length: 1 bit.

6.2.5.3 D-RNTI

Description: Identifies the UE in the DRNC.

Value range: {0-1048575}.

Field length: 20 bits.

6.2.5.4 S-RNTI

Description: S-RNTI is defined in [5]. S-RNTI is used in UL control frames to identify the UE context in the SRNC.

Value range: {0-1048575}.

Field length: 20 bits.

6.2.5.5 UE-ID Type Indicator (UE-ID Type)

Description: Indicates the UE Identifier Type to be included by MAC-c/sh in the MAC header.

Value range: {0=U-RNTI, 1=C-RNTI}.

Field Length: 1 bit.

6.2.5.6 S-CCPCH Indicator (S-CI)

Void.

6.2.5.7 Common Transport Channel Priority Indicator (CmCH-PI)

Description: CmCH-PI is the relative priority of the data frame and the SDUs included.

Value range: {0-15, where 0=lowest priority, 15=highest priority}.

Field length: 4 bits.

6.2.5.8 MAC-c/sh SDU Length

Description: The value of that field indicates the length of every MAC-c/sh SDU in the payload of the FACH, DSCH and [TDD - USCH] DATA FRAME in number of bits.

Value range: {0-5000}.

Field Length: 13 bits.

6.2.5.9 NumOfSDU

Description: Indicates the number of MAC-c/sh SDUs in the payload.

Value range: {1-255}.

Field Length: 8 bits.

6.2.5.10 ~~[FDD -~~ Propagation delay~~]~~ [FDD]

Description: One-way air interface delay as measured during RACH access.

Value range: {0 - 765 chips}.

Granularity: 3 chips.

Field length: 8 bits.

6.2.5.11 ~~[TDD -~~ Rx Timing Deviation~~]~~ [TDD]

Description: Measured Rx Timing Deviation as a basis for timing advance.

Value range: {-256, ..., +256} chips

{N*4 - 256} chips ≤ RxTiming Deviation < {(N+1)*4 - 256} chips

With N = 0, 1, ...,127

Granularity: 4 chips.

Field length: 7 bits.

6.2.5.12 User Buffer Size

Description: Indicates the users' buffer size (i.e. the amount of data in the buffer) in octets for a given Common Transport Channel Priority Indicator level.

Value range: {0-65535}.

Field length: 16 bits.

6.2.5.13 MAC-c/sh SDU

Description: A MAC-c/sh SDU contains the *C/T* IE field [7] of the MAC header followed by one RLC PDU.Field length: See the value of the *MAC-c/sh SDU Length* IE.

6.2.5.14 Payload CRC

Description: Cyclic Redundancy Polynomial calculated on the payload of a data frame with polynomial X^16+X^15+X^2+1. The CRC calculation shall cover all bits in the data frame payload, starting from bit 7 in the first byte up to bit 0 in the byte before the payload CRC.

Field length: 16 bits.

6.2.5.15 Spare Extension

Description: Indicates the location where new IEs can in the future be added in a backward compatible way.

Field length: 0-2 octets.

6.3 Control Frame structure

6.3.1 Introduction

Control Frames are used to transport control information between SRNC and DRNC.

Figure 13 defines the Control Frame structure for common transport channels.

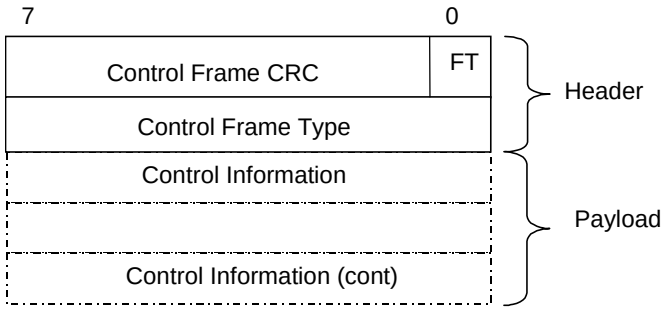

Figure 13: Iur Common Transport Channel Control Frame Format

The *Control Frame Type* IE defines the type of the control frames.

The length of the payload is variable accordingly to the control frame type.

The structure of the header and the payload of the control frames is defined in the following subclauses.

6.3.2 Header structure of the control frames

6.3.2.1 Control frame CRC

Description: Cyclic Redundancy Polynomial calculated on a control frame with polynomial X^7+X^6+X^2+1. The CRC calculation shall cover all bits in the control frame, starting from bit 0 in the first byte (FT field) up to the end of the control frame.

Value range: {0-127}.

Field length: 7 bits.

6.3.2.2 Frame type (FT)

Refer to subclause 6.2.5.2.

6.3.2.3 Control Frame Type

Description: Indicates the type of the control information (information elements and length) contained in the payload (=type of control frame).

Value: values of the *Control Frame Type* IE parameter are defined in the table 1.

Table 1: Control Frame Type

Type of control frame	Value
FACH Flow Control	0000 0010
FACH Capacity Request	0000 0011
DSCH Capacity Request	0000 0100
DSCH Capacity Allocation	0000 0101

6.3.3 Payload structure and information elements

6.3.3.1 FACH FLOW CONTROL

Figure 14 shows the payload structure when the control frame is used for the above mentioned purpose. This control information is sent in the UL only.

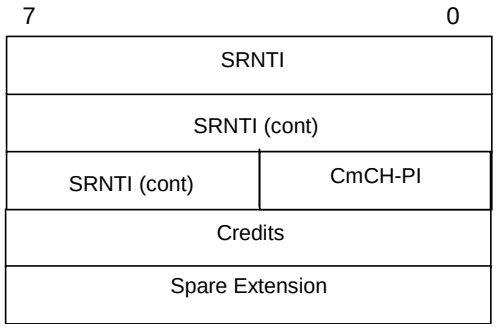

Figure 14: FACH FLOW CONTROL payload structure

6.3.3.1.1 S-RNTI

Refer to subclause 6.2.5.4.

6.3.3.1.2 Common Transport Channel Priority Indicator (CmCH-PI)

Refer to subclause 6.2.5.7.

6.3.3.1.3 Credits

Description: The *Credits* IE indicates the number of MAC-c/sh SDUs that a user may transmit.

Value range: {0-255, where 0=stop transmission, 255=unlimited}.

Field length: 8 bits.

6.3.3.1.4 Spare Extension

Description: Indicates the location where new IEs can in the future be added in a backward compatible way.

Field length: 0-32 octets.

6.3.3.2 DSCH CAPACITY REQUEST

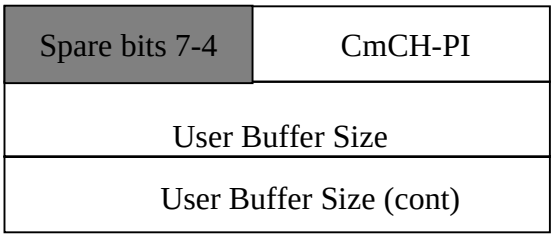

Figure 15: CAPACITY REQUEST payload structure

The DSCH CAPACITY REQUEST is sent to the DRNC for each priority level to indicate the user buffer size in the SRNC. The control frame is sent by the SRNC when the SRNC considers the user buffer size needs an increased buffer reporting frequency. This may be sent to signal an event, such as, data arrival or user-buffer discard. The CAPACITY REQUEST Control Frame is used to improve user-buffer reporting above the level produced by the user-buffer reporting associated with the DSCH DATA FRAMEs.

6.3.3.2.1 Common Transport Channel Priority Indicator (CmCH-PI)

Refer to subclause 6.2.5.7.

6.3.3.2.2 User Buffer Size

Refer to subclause 6.2.5.12.

6.3.3.3 DSCH CAPACITY ALLOCATION

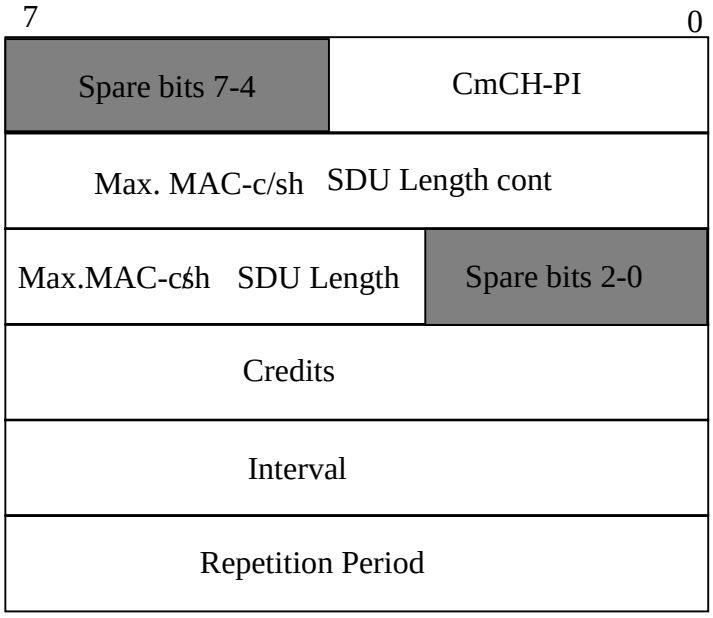

Figure 16: CAPACITY ALLOCATION payload structure

The CAPACITY ALLOCATION Control Frame describes an allocation that the SRNC may use. When the *Credits* IE has a value of 0 it signifies that there is no resources allocated for transmission and to thus stop transmission. When the *Credits* IE has a value of 255, it signifies unlimited capacity for transmission of SDUs. When the *Repetition Period* IE has a value of 0, it signifies that the allocation (*Maximum MAC-c/sh SDU Length*, *Credits* and *Interval* IEs) can be repeated without limit.

6.3.3.3.1 Common Transport Channel Priority Indicator (CmCH-PI)

Refer to subclause 6.2.5.7.

6.3.3.3.2 Maximum MAC-c/sh SDU Length

Description: The value indicates the maximum allowable SDU size. MAC-c/sh SDU contains the C/T field of the MAC header followed by one RLC PDU Field length: See the value of the *MAC-c/sh SDU Length* IE.

6.3.3.3.3 Credits

Refer to subclause 6.3.3.1.3.

6.3.3.3.4 Interval

Description: The value of this field indicates the time interval during which the *Credits* IE granted in the DSCH CAPACITY ALLOCATION Control Frame may be transmitted. This value is only applied to the DSCH transport channel.

Value range: {0-2550 ms}.

Granularity: 10ms.

Field Length: 8 bits.

6.3.3.3.5 Repetition Period

Description: The value of this field indicates the number of subsequent intervals that the *Credits* IE granted in the DSCH CAPACITY ALLOCATION Control Frame may be transmitted. These values represent an integer number of Intervals (see subclause 6.3.3.3.4). This field is only applied to the DSCH transport channel.

Value range: {0-255, where 0= unlimited repetition period}.

Field Length: 8 bits.

6.3.3.4 FACH CAPACITY REQUEST

Figure 17 shows the payload structure when the control frame is used for the above mentioned purpose. This control information is sent in the DL only.

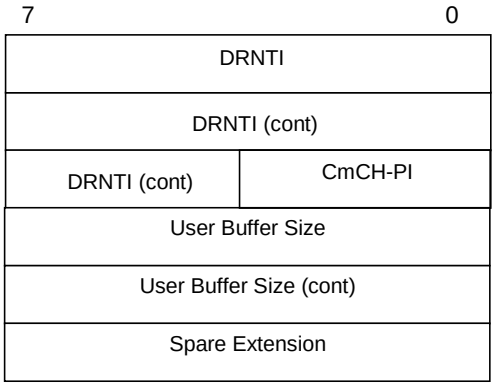

Figure 17: FACH CAPACITY REQUEST payload structure

6.3.3.4.1 D-RNTI

Refer to subclause 6.2.5.3.

6.3.3.4.2 Common Transport Channel Priority Indicator (CmCH-PI)

Refer to subclause 6.2.5.7.

6.3.3.4.3 User Buffer Size

Refer to subclause 6.2.5.12.

6.3.3.4.4 Spare extension

Refer to subclause 6.3.3.1.4.

7 Handling of Unknown, Unforeseen and Erroneous Protocol Data

7.1 General

A Frame Protocol frame with an unknown IE or an illegal IE value shall be ignored.

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

Tdoc R3-013313

CR-Form-v4

CHANGE REQUEST

⌘ **25.425** **CR** **039** ⌘ ev **-** ⌘ Current version: **4.1.0** ⌘

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

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

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

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

Use one of the following releases:
2 *(GSM Phase 2)*
R96 *(Release 1996)*
R97 *(Release 1997)*
R98 *(Release 1998)*
R99 *(Release 1999)*
REL-4 *(Release 4)*
REL-5 *(Release 5)*

Reason for change: ⌘ A "Specification Notations" section is missing from the UP RNL protocol.

Summary of change: ⌘ A "Specification Notations" section was added to Section 3 "Definitions, symbols and abbreviations".

Change from previous Motorola CR:

- the new section was added to section 3 instead of section 4 (Note: section 4 "General Aspects" is related to the interface, not to the specification rules as in RNSAP and NBAP. So the new section is more appropriate for chapter 3, as "Specification Notations" are more related to Definitions than to the interface General Aspects).

Some changes to the TS were also made for alignment with the new "Specification Notations" section:

- tagging in headlines was corrected,
- hyphen for taggings in the text was missing at several places,
- some *IE name* were turned into *Italic style*.

Impact Analysis:

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

This CR has [no impact] with the previous version of the specification (same release) because this change is only adding rules on how the notations within the specification shall be written.

Consequences if not approved: ⌘ Notations used within the UP RNL might not be consistent with those used in the CP RNL.

Clauses affected: ⌘ 3, 4, 5, 6

Other specs affected: ⌘	X	Other core specifications	⌘	TS 25.420 v3.3.0 CR 019 TS 25.420 v4.0.0 CR 020 TS 25.425 v3.5.0 CR 038 TS 25.427 v3.8.0 CR 070 TS 25.427 v4.2.0 CR 071 TS 25.430 v3.6.0 CR 026 TS 25.430 v4.1.0 CR 027 TS 25.435 v3.8.0 CR 066 TS 25.435 v4.2.0 CR 067
		Test specifications		
		O&M Specifications		
Other comments: ⌘	This Tdoc is a proposal for an update of Tdoc R3-013149			

How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at: http://www.3gpp.org/3G_Specs/CRs.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.

1 Scope

The present document shall provide a description of the UTRAN RNS-RNS (Iur) interface user plane protocols for Common Transport Channel data streams as agreed within the TSG-RAN working group 3.

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 (11/1995): "B-ISDN ATM Layer Specification".

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

[3] ITU-T Recommendation I.366.1 (06/1998): "Segmentation and Reassembly Service Specific Convergence Sublayer for the AAL type 2".

[4] 3GPP TS 25.427: "UTRAN Iub/Iur Interface User Plane Protocols for DCH Data Streams".

[5] 3GPP TS 25.401: "UTRAN overall description".

[6] 3GPP TR 25.990: "Vocabulary".

[7] 3GPP TS 25.321: "Medium Access Control (MAC) protocol specification".

3 Definitions, symbols and abbreviations

3.1 Definitions

For the purposes of the present document, the terms and definitions in [5] and the following apply:

Common Transport Channel: it is defined as a transport channel that is shared by several users i.e. DSCH, USCH [TDD], CPCH [FDD], RACH, FACH

Transport Connection: service provided by the transport layer and used by Frame Protocol for the delivery of FP PDU

3.2 Symbols

No special symbols are defined in the present document.

3.3 Abbreviations

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

AAL2	ATM Adaptation Layer type 2
ATM	Asynchronous Transfer Mode
CFN	Connection Frame Number
CmCH	Common Transport Channel
CPCH	Common Packet Channel
C-RNC	Controlling Radio Network Controller
CRC	Cyclic Redundancy Checksum
DCH	Dedicated Transport Channel
DL	Downlink
D-RNTI	Drift RNTI
DSCH	Downlink Shared Channel
FACH	Forward Access Channel
FP	Frame Protocol
FT	Frame Type
RACH	Random Access Channel
RNC	Radio Network Controller
RNTI	Radio Network Temporary Identity
SRNC	Serving Radio Network Controller
S-RNTI	Serving RNTI
SSCS	Service Specific Convergence Sublayer
TB	Transport Block
TBS	Transport Block Set
TFI	Transport Format Indicator
ToA	Time of Arrival
TTI	Transmission Time Interval
UE	User Equipment
UL	Uplink
U-RNTI	UTRAN RNTI
USCH	Uplink Shared Channel

3.4 Specification Notations

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

[FDD] This tagging of a word indicates that the word preceding the tag "[FDD]" applies only to FDD. This tagging of a heading indicates that the heading preceding the tag "[FDD]" and the section following the heading applies only to FDD.

[TDD] This tagging of a word indicates that the word preceding the tag "[TDD]" applies only to TDD, including 3.84Mcps TDD and 1.28Mcps TDD. This tagging of a heading indicates that the heading preceding the tag "[TDD]" and the section following the heading applies only to TDD, including 3.84Mcps TDD and 1.28Mcps TDD.

[3.84Mcps TDD] This tagging of a word indicates that the word preceding the tag “[3.84Mcps TDD]” applies only to 3.84Mcps TDD. This tagging of a heading indicates that the heading preceding the tag “[3.84Mcps TDD]” and the section following the heading applies only to 3.84Mcps TDD.

[1.28Mcps TDD] This tagging of a word indicates that the word preceding the tag "[1.28Mcps TDD]" applies only to 1.28Mcps TDD. This tagging of a heading indicates that the heading preceding the tag "[1.28Mcps TDD]" and the section following the heading applies only to 1.28Mcps TDD.

[FDD - …] This tagging indicates that the enclosed text following the "[FDD - " applies only to FDD. Multiple sequential paragraphs applying only to FDD are enclosed separately to enable insertion of TDD specific (or common) paragraphs between the FDD specific paragraphs.

[TDD - …] This tagging indicates that the enclosed text following the "[TDD - " applies only to TDD including 3.84Mcps TDD and 1.28Mcps TDD. Multiple sequential paragraphs applying only to TDD are enclosed separately to enable insertion of FDD specific (or common) paragraphs between the TDD specific paragraphs.

[3.84Mcps TDD - …] This tagging indicates that the enclosed text following the "[3.84Mcps TDD - " applies only to 3.84Mcps TDD. Multiple sequential paragraphs applying only to 3.84Mcps TDD are enclosed separately to enable insertion of FDD and TDD specific (or common) paragraphs between the 3.84Mcps TDD specific paragraphs.

[1.28Mcps TDD - …] This tagging indicates that the enclosed text following the "[1.28Mcps TDD – " applies only to 1.28Mcps TDD. Multiple sequential paragraphs applying only to 1.28Mcps TDD are enclosed separately to enable insertion of FDD and TDD specific (or common) paragraphs between the 1.28Mcps TDD specific paragraphs.

Procedure When referring to a procedure in the specification, the Procedure Name is written with the first letters in each word in upper case characters followed by the word "procedure", e.g. FACH Data Transfer procedure.

Frame When referring to a control or data frame in the specification, the CONTROL/DATA FRAME NAME is written with all letters in upper case characters followed by the words "control/data frame", e.g. FACH FLOW CONTROL control frame.

IE When referring to an information element (IE) in the specification, the *Information Element Name* is written with the first letters in each word in upper case characters and all letters in Italic font followed by the abbreviation "IE", e.g. *Credits* IE.

Value of an IE When referring to the value of an information element (IE) in the specification, the "Value" is written as it is specified in subclause 6.2.5 or 6.3.3 enclosed by quotation marks, e.g. "0" or "255".

4 General Aspects

4.1 Common Transport Channel Data Streams User Plane Protocol Services

This subclause describes the services that the User Plane Protocols provide such as data transfer, flow control.

4.1.1 RACH/CPCH[FDD] Data Streams User Plane Protocol Services

RACH/CPCH[FDD] frame protocol provides the following services:

- Transport of MAC-c/sh SDUs from the DRNC to the SRNC for RACH/CPCH[FDD] common transport channels.

4.1.2 FACH Data Streams User Plane Protocol Services

FACH frame protocol provides the following services:

- Transport of MAC-c/sh SDUs from the SRNC to the DRNC for FACH common transport channel.
- Flow Control between MAC-d and MAC-c/sh.

4.1.3 [TDD - USCH]/DSCH Data Streams User Plane Protocol Services

[TDD - USCH]/DSCH frame protocol provides the following services:

- Transport of MAC-c/sh SDUs between the SRNC and the DRNC for [TDD - USCH] and DSCH common transport channels.
- Flow Control between MAC-d and MAC-c/sh.

4.2 Services expected from the Data Transport Network layer

The following services are expected from the transport layer:

- Delivery of Frame Protocol PDUs.

In sequence delivery is not required. However, frequent out-of-sequence delivery may impact the performance and should be avoided.

4.3 Protocol Version

This revision of the specification specifies version 1 of the protocols.

5 Common Transport Channel Data Streams User Plane Procedures

This clause specifies the user plane procedures for Common Transport Channels data streams. Typical related scenarios at Iur interface should be described.

For the user plane of the radio network layer there are four Common Transport Channel frame handling protocols:

1. Random Access Channel/Common Packet Channel [FDD] Frame Protocol (RACH/CPCH[FDD] FP) for transport of Iur data streams carried on RACH/CPCH[FDD] on the Uu-interface.
2. Forward Access Channel Frame Protocol (FACH FP) for transport of Iur data streams carried on FACH on the Uu-interface.
3. Downlink Shared Channel Frame Protocol (DSCH FP) for transport of Iur data streams carried on DSCH on the Uu-interface.
4. Uplink Shared Channel Frame Protocol ([TDD - USCH] FP) for transport of Iur data streams carried on USCH on the Uu-interface.

5.1 Data Transfer

5.1.1 RACH/CPCH[FDD] Data Transfer

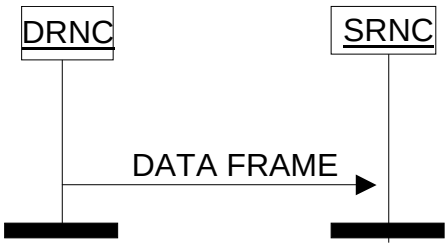

Figure 1: RACH/CPCH[FDD] Data Transfer procedure

Data received on the RACH/CPCH[FDD] transport channel is transmitted from the DRNC to the SRNC using RACH/CPCH[FDD] DATA FRAMEs. The data is protected by a mandatory payload CRC. Multiple MAC-c/sh SDUs of same length may be transmitted in the same RACH/CPCH[FDD] DATA FRAME.

5.1.2 FACH Data Transfer

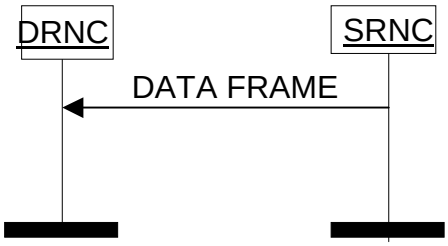

Figure 2: FACH Data Transfer procedure

Data to be transmitted on the FACH transport channel is transmitted from the SRNC to the DRNC using FACH DATA FRAMEs. Multiple MAC-c/sh SDUs of same length and same priority level (CmCH-PI) may be transmitted in the same FACH DATA FRAME. Within one priority and size the MAC-c/sh SDUs shall be transmitted by the DRNS on the Uu interface in the same order as they were received from the SRNC.

The *UE-ID Type Indicator* IE indicates which UE-ID type MAC-c/sh shall include in the MAC header.

5.1.3 USCH Data Transfer [TDD]

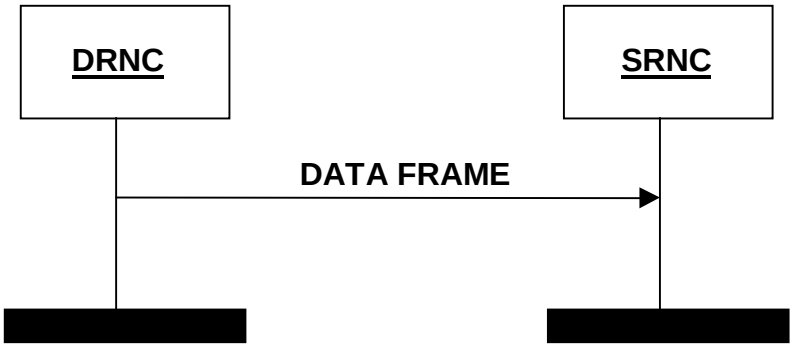

Figure 3: USCH Data Transfer procedure

Whenever there is USCH data in the DRNC, transfer is done immediately to the SRNC via the USCH Data Port using USCH DATA FRAMEs.

Data received on the USCH transport channel is transmitted from the DRNC to the SRNC using USCH DATA FRAMEs. The data is protected by a mandatory payload CRC. Multiple MAC-c/sh SDUs of same length may be transmitted in the same USCH DATA FRAME.

5.1.4 DSCH Data Transfer

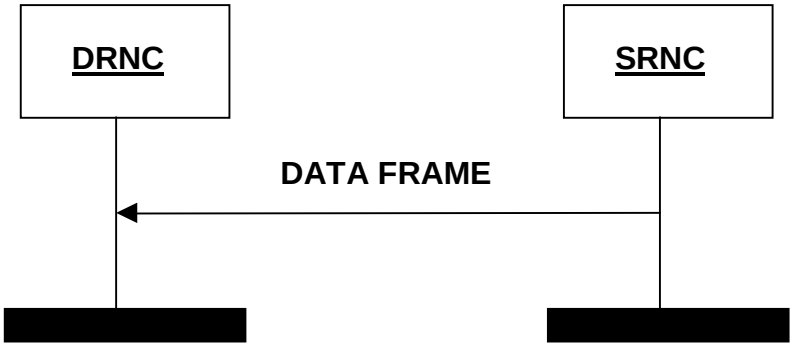

Figure 4: DSCH Data Transfer procedure

When the SRNC has been granted capacity by the DRNC via the DSCH CAPACITY ALLOCATION Control Frame and the SRNC has data waiting to be sent, then the DSCH DATA FRAME is used to transfer the data. When data is waiting to be transferred, and a CAPACITY ALLOCATION is received, a DATA FRAME will be transmitted immediately according to allocation received.

Multiple MAC-c/sh SDUs of same length and same priority level (CmCH-PI) may be transmitted in the same DSCH DATA FRAME.

The DSCH DATA FRAME includes a *User Buffer Size* IE to indicate the amount of data pending for the respective UE for the indicated priority level. Within one priority level and size the MAC-c/sh SDUs shall be transmitted by the DRNS on the Uu interface in the same order as they were received from the SRNC.

5.2 Flow Control

5.2.1 FACH Flow Control

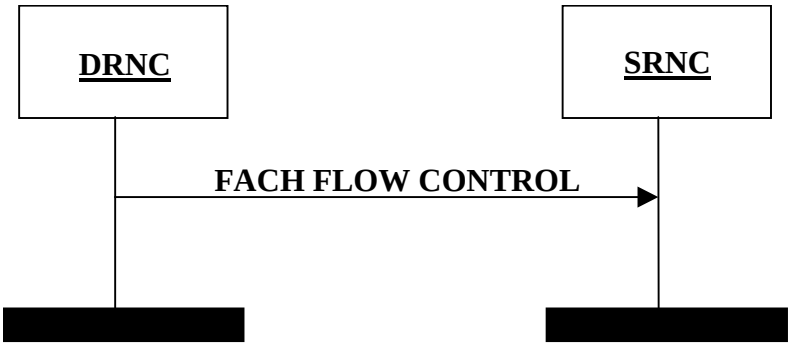

Figure 4A: FACH Flow Control procedure

The FACH Flow Control procedure is used by the DRNC to control the user data flow. It may be generated in response to a FACH Capacity Request procedure or at any other time. The *Credits* IE indicates the number of MAC-c/sh SDUs the SRNC is allowed to transmit for the UE identified by the *SRNTI* IE and the associated priority level indicated by the *Common Transport Channel Priority Indicator* IE.

The *Credits* IE indicates the total amount of credits granted. Any credits previously granted are withdrawn.

If *Credits* IE = 0 (e.g. due to congestion in the DRNC), the SRNC shall immediately stop transmission of MAC-c/sh SDUs.

Credits IE = 'unlimited' indicates that the SRNC may transmit an unlimited number of MAC-c/sh SDUs.

5.2.2 DSCH Capacity Request

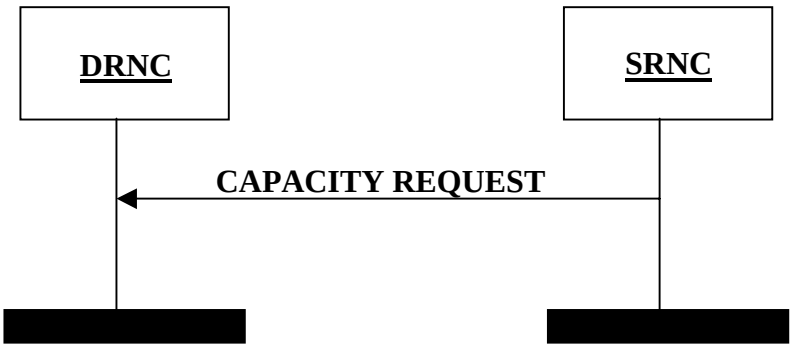

Figure 5: DSCH Capacity Request procedure

The DSCH Capacity Request procedure provides means for the SRNC to request DSCH capacity by indicating the user buffer size in the SRNC for a given priority level.

The SRNC is allowed to reissue the DSCH Capacity Request if no CAPACITY ALLOCATION has been received within an appropriate time threshold.

5.2.3 DSCH Capacity Allocation

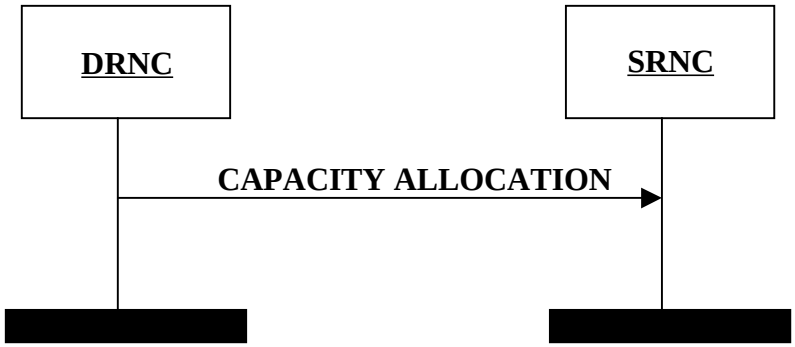

Figure 6: DSCH Capacity Allocation procedure

DSCH Capacity Allocation procedure is generated within the DRNC. It may be generated either in response to a DSCH Capacity Request or at any other time.

The DRNC may use this message to modify the capacity at any time, irrespective of the reported user buffer status.

The DSCH CAPACITY ALLOCATION frame is used by the DRNC to control the user data flow. *Credits* IE indicates the number of MAC-c/sh SDUs that the SRNC is allowed to transmit for the UE and the associated priority level indicated by the *Common Transport Channel Priority Indicator* IE.

The *Maximum. MAC- c/sh SDU length*, *Credits*, *Interval* and *Repetition Period* IEs indicates the total amount of capacity granted. Any capacity previously granted is replaced.

If *Credits* IE = 0 (e.g. due to congestion in the DRNC), the SRNC shall immediately stop transmission of MAC-c/sh SDUs. If *Credits* IE = 255, the SRNC can transmit MAC-c/sh SDUs with unlimited capacity.

The IEs used in the DSCH CAPACITY ALLOCATION Control Frame are the *Common Transport Channel Priority Indicator*, *Credits*, *Maximum MAC- c/sh SDU Length*, *Interval* and the *Repetition Period*.

If the Repetition Period IE = *'unlimited repetition period'* it indicates that the SRNC may transmit the specified number of MAC-c/sh SDUs for an unlimited period according to the bounds of *Maximum MAC-c/sh SDU Length*, *Credits* and *Interval* IEs.

5.2.4 FACH Capacity Request

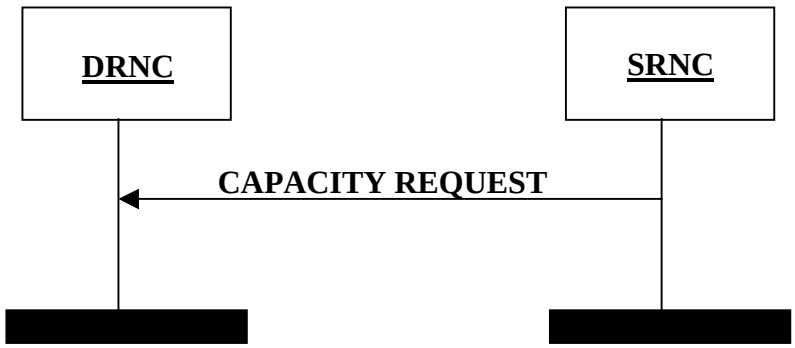

Figure 6A: FACH Capacity Request procedure

The FACH Capacity Request procedure provides the means for the SRNC to notify the DRNC about the user buffer size for a given priority level. It may be sent if no FACH FLOW CONTROL frame has been received within an appropriate time threshold, or to signal an event such as data arrival or user buffer discard.

6 Frame Structure and Coding

6.1 General

The general structure of a Common Transport Channel frame consists of a header and a payload. This structure is depicted in the figure 7.

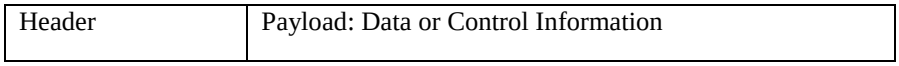

Figure 7: General Frame Structure

The header shall contain the frame type field and information related to the frame type.

There are two types of frames (indicated by the Frame Type field).

1. Data frame.
2. Control frame.

In the present document the structure of frames will be specified by using pictures similar to the following figure 8.

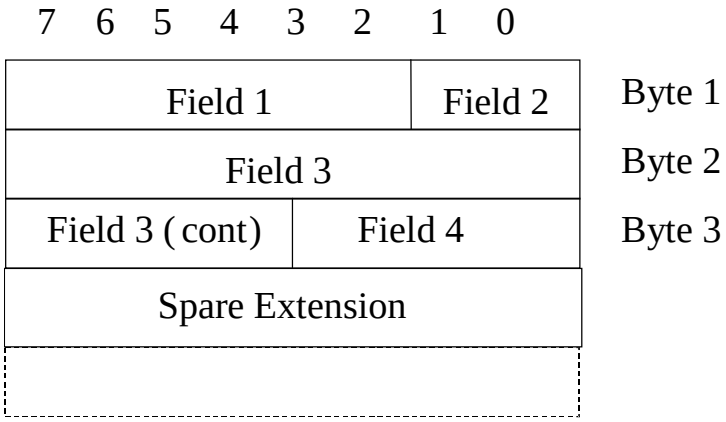

Figure 8: Example frame structure

Unless otherwise indicated, fields which consist of multiple bits within a byte will have the more significant bit located at the higher bit position (indicated above frame in figure 8). In addition, if a field spans several bytes, more significant bits will be located in lower numbered bytes (right of frame in figure 8).

On the Iur interface, the frame will be transmitted starting from the lowest numbered byte. Within each byte, the bits are sent according decreasing bit position (bit position 7 first).

The Spare Extension indicates the location where new IEs can in the future be added in a backward compatible way.

The Spare Extension shall not be used by the transmitter and shall be ignored by the receiver.

Spare bits shall be set to 0 by the transmitter and shall be ignored by the receiver.

The parameters are specified giving the value range and the step (if not 1). The coding is done as follows (unless otherwise specified):

- Lowest value (in the range) coded as a sequence of 0's;
- Highest value in the range coded as a sequence of 1's.

6.2 Data Frame structure

6.2.1 RACH/CPCH[FDD] Channels

RACH/CPCH[FDD] Iur data stream corresponds to the data stream of one specific UE. The used transport bearer for the transport of FACH/RACH or FACH/CPCH[FDD] is bi-directional.

The RACH/CPCH[FDD]/FACH FP does not facilitate multiplexing of data streams from different UEs onto the same data frame, but does allow multiple UEs to share the same transport bearer.

The RACH DATA FRAME structure is defined as common for FDD and TDD with conditional fields, and CPCH[FDD] DATA FRAME structure is defined as common for FDD only.

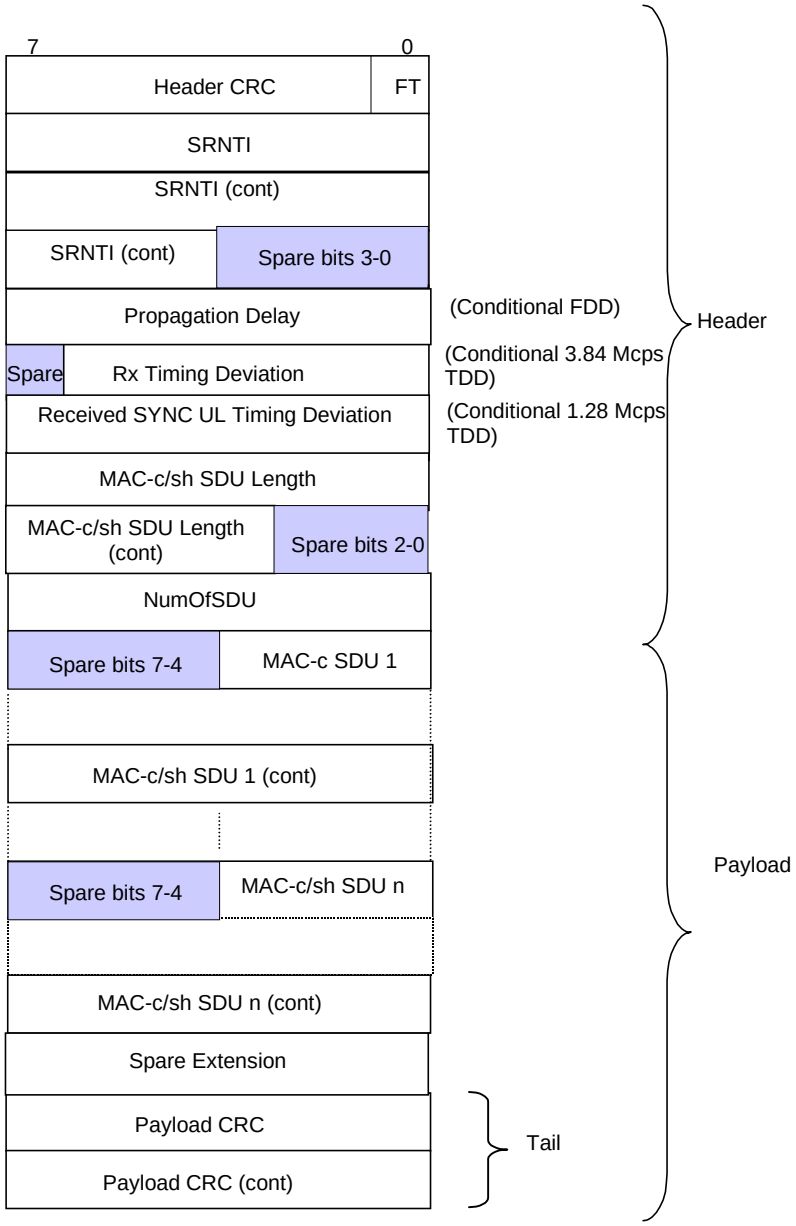

Figure 9: RACH/CPCH[FDD] DATA FRAME structure

Propagation delay is a conditional Information Element which is only present when the Cell supporting the RACH/CPCH[FDD] Transport Channel is a FDD Cell.

Rx Timing Deviation is a conditional Information Element which is only present when the Cell supporting the RACH Transport Channel is a 3.84 Mcps TDD Cell.

Received SYNC UL Timing Deviation is a conditional Information Element which is only present when the Cell supporting the RACH Transport Channel is a 1.28 Mcps TDD Cell.

6.2.2 FACH Channels

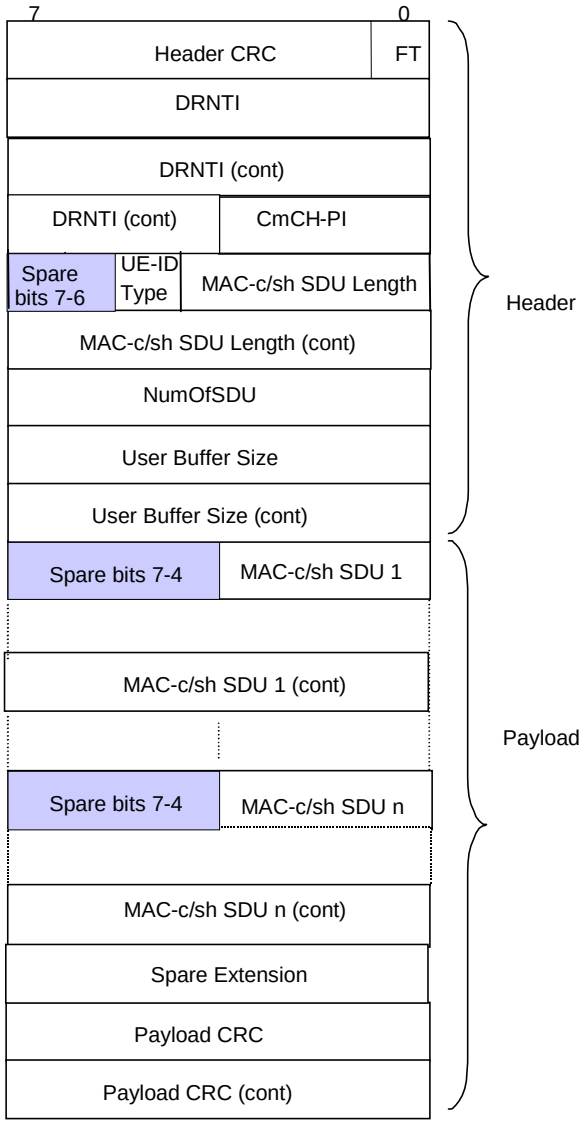

Figure 10: FACH DATA FRAME structure

6.2.3 USCH Channels [TDD]

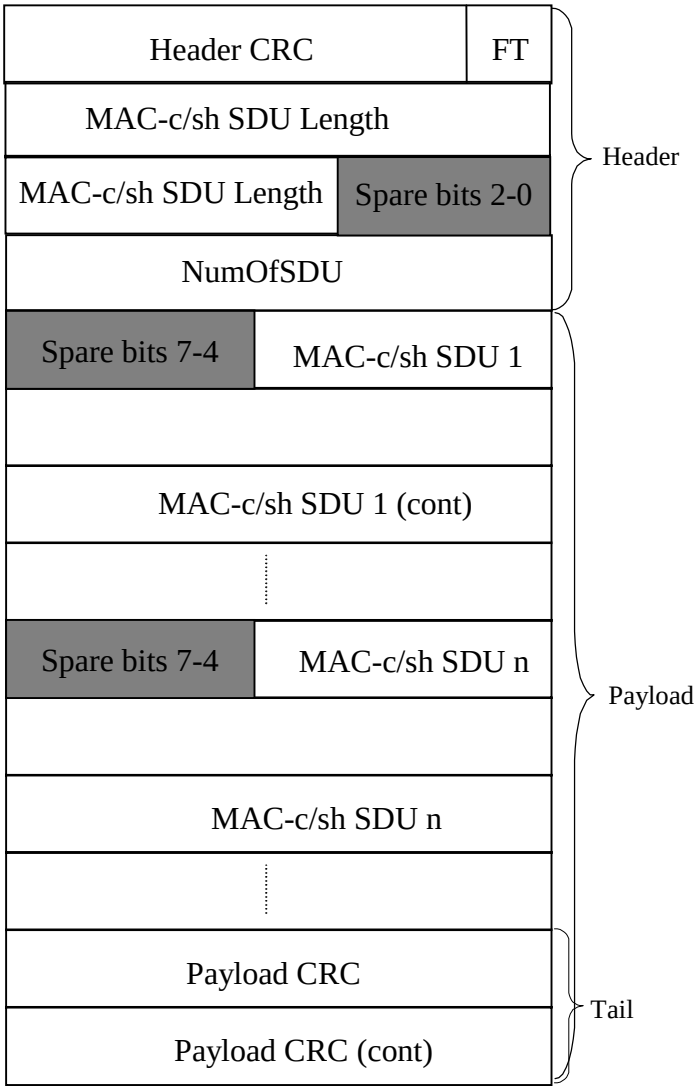

Figure 11: USCH DATA FRAME structure

6.2.4 DSCH Channels

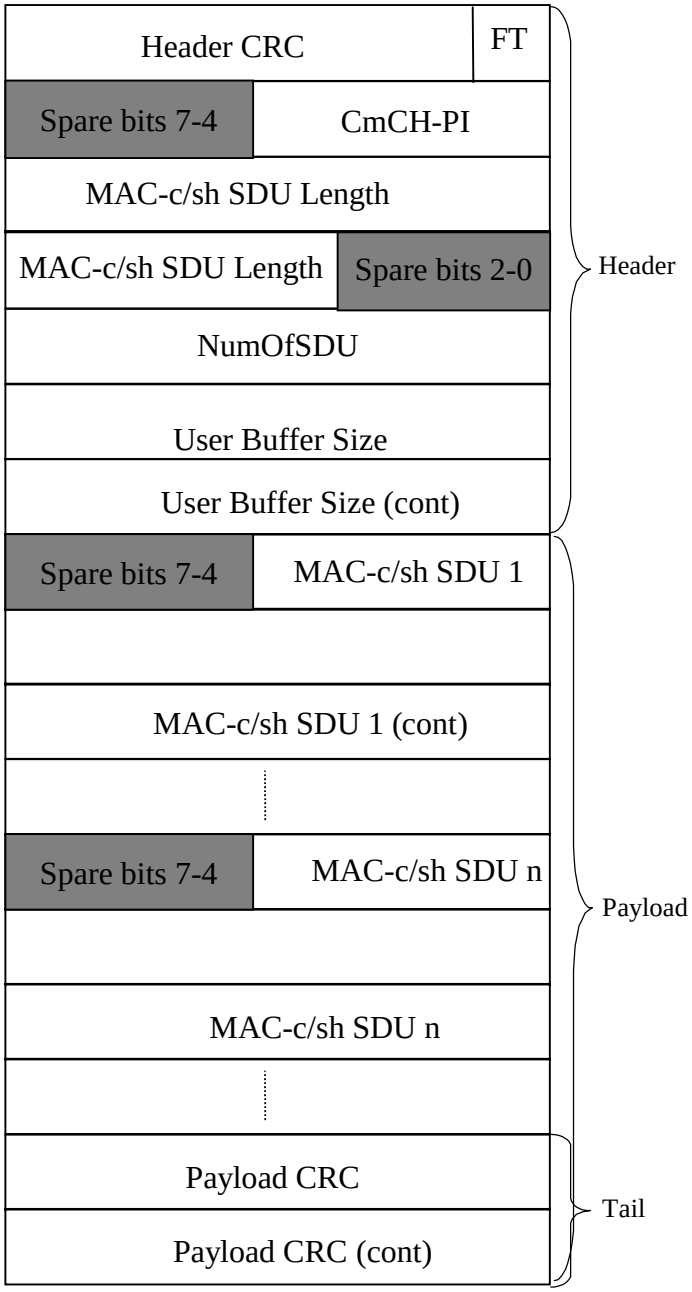

Figure 12: DSCH DATA FRAME structure

6.2.5 Coding of Information Elements in DATA FRAMEs

6.2.5.1 Header CRC

Description: Cyclic Redundancy Polynomial calculated on the header of a data frame with polynomial X^7+X^6+X^2+1. The CRC calculation shall cover all bits in the header, starting from bit 0 in the first byte (FT field) up to the end of the header.

Value range: {0-127}.

Field length: 7 bits.

6.2.5.2 Frame Type (FT)

Description: Describes if it is a control frame or a data frame.

Value range: {0=data, 1=control}.

Field Length: 1 bit.

6.2.5.3 DRNTI

Description: Identifies the UE in the DRNC.

Value range: {0-1048575}.

Field length: 20 bits.

6.2.5.4 S-RNTI

Description: S-RNTI is defined in [5]. S-RNTI is used in UL control frames to identify the UE context in the SRNC.

Value range: {0-1048575}.

Field length: 20 bits.

6.2.5.5 UE-ID Type Indicator (UE-ID Type)

Description: Indicates the UE Identifier Type to be included by MAC-c/sh in the MAC header.

Value range: {0=U-RNTI, 1=C-RNTI}.

Field Length: 1 bit.

6.2.5.6 S-CCPCH Indicator (S-CI)

Void.

6.2.5.7 Common Transport Channel Priority Indicator (CmCH-PI)

Description: CmCH-PI is the relative priority of the data frame and the SDUs included.

Value range: {0-15, where 0=lowest priority, 15=highest priority}.

Field length: 4 bits.

6.2.5.8 MAC-c/sh SDU Length

Description: The value of that field indicates the length of every MAC-c/sh SDU in the payload of the FACH, DSCH and [TDD - USCH] DATA FRAME in number of bits.

Value range: {0-5000}.

Field Length: 13 bits.

6.2.5.9 NumOfSDU

Description: Indicates the number of MAC-c/sh SDUs in the payload.

Value range: {1-255}.

Field Length: 8 bits.

6.2.5.10 ~~[FDD -~~ Propagation delay~~]~~ [FDD]

Description: One-way air interface delay as measured during RACH access.

Value range: {0 - 765 chips}.

Granularity: 3 chips.

Field length: 8 bits.

6.2.5.11 ~~[3.84Mcps TDD -~~ Rx Timing Deviation~~]~~ [3.84Mcps TDD]

Description: Measured Rx Timing Deviation as a basis for timing advance.

Value range: {-256, ..., +256} chips

{N*4 - 256} chips ≤ RxTiming Deviation < {(N+1)*4 - 256} chips

With N = 0, 1, ...,127

Granularity: 4 chips.

Field length: 7 bits.

6.2.5.11A ~~[1.28Mcps TDD -~~ Received SYNC UL Timing Deviation~~]~~ [1.28Mcps TDD]

Description: Measured Received SYNC UL Timing Deviation as a basis for propagation delay.

Value range: {0, ..., +256} chips

Granularity: 1 chip.

Field length: 8 bits.

6.2.5.12 User Buffer Size

Description: Indicates the users' buffer size (i.e. the amount of data in the buffer) in octets for a given Common Transport Channel Priority Indicator level.

Value range: {0-65535}.

Field length: 16 bits.

6.2.5.13 MAC-c/sh SDU

Description: A MAC-c/sh SDU contains the *C/T* IE field [7] of the MAC header followed by one RLC PDU.Field length: See the value of the *MAC-c/sh SDU Length* IE.

6.2.5.14 Payload CRC

Description: Cyclic Redundancy Polynomial calculated on the payload of a data frame with polynomial X^16+X^15+X^2+1. The CRC calculation shall cover all bits in the data frame payload, starting from bit 7 in the first byte up to bit 0 in the byte before the payload CRC.

Field length: 16 bits.

6.2.5.15 Spare Extension

Description: Indicates the location where new IEs can in the future be added in a backward compatible way.

Field length: 0-2 octets.

6.3 Control Frame structure

6.3.1 Introduction

Control Frames are used to transport control information between SRNC and DRNC.

Figure 13 defines the Control Frame structure for common transport channels.

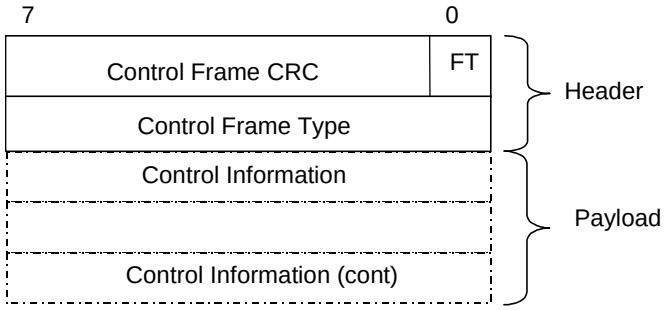

Figure 13: Iur Common Transport Channel Control Frame Format

The *Control Frame Type* IE defines the type of the control frames.

The length of the payload is variable accordingly to the control frame type.

The structure of the header and the payload of the control frames is defined in the following subclauses.

6.3.2 Header structure of the control frames

6.3.2.1 Control frame CRC

Description: Cyclic Redundancy Polynomial calculated on a control frame with polynomial X^7+X^6+X^2+1. The CRC calculation shall cover all bits in the control frame, starting from bit 0 in the first byte (FT field) up to the end of the control frame.

Value range: {0-127}.

Field length: 7 bits.

6.3.2.2 Frame type (FT)

Refer to subclause 6.2.5.2.

6.3.2.3 Control Frame Type

Description: Indicates the type of the control information (information elements and length) contained in the payload (=type of control frame).

Value: values of the *Control Frame Type* IE parameter are defined in the table 1.

Table 1: Control Frame Type

Type of control frame	Value
FACH Flow Control	0000 0010
FACH Capacity Request	0000 0011
DSCH Capacity Request	0000 0100
DSCH Capacity Allocation	0000 0101

6.3.3 Payload structure and information elements

6.3.3.1 FACH FLOW CONTROL

Figure 14 shows the payload structure when the control frame is used for the above mentioned purpose. This control information is sent in the UL only.

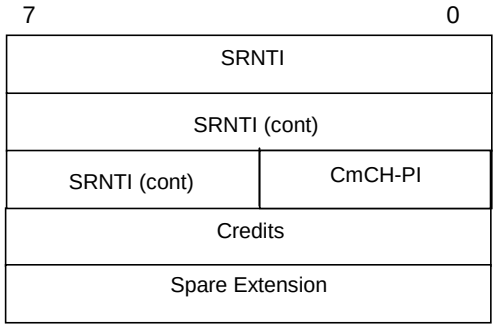

Figure 14: FACH FLOW CONTROL payload structure

6.3.3.1.1 S-RNTI

Refer to subclause 6.2.5.4.

6.3.3.1.2 Common Transport Channel Priority Indicator (CmCH-PI)

Refer to subclause 6.2.5.7.

6.3.3.1.3 Credits

Description: The *Credits* IE indicates the number of MAC-c/sh SDUs that a user may transmit.

Value range: {0-255, where 0=stop transmission, 255=unlimited}.

Field length: 8 bits.

6.3.3.1.4 Spare Extension

Description: Indicates the location where new IEs can in the future be added in a backward compatible way.

Field length: 0-32 octets.

6.3.3.2 DSCH CAPACITY REQUEST

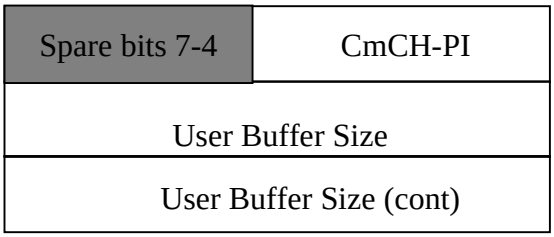

Figure 15: CAPACITY REQUEST payload structure

DSCH Capacity Request is sent for each priority group to indicate the user buffer size. The control frame is sent by the DSCH CAPACITY REQUEST is sent for each priority group to indicate the user buffer size. The control frame is sent by the SRNC when the SRNC considers the user buffer status needs an increased buffer reporting frequency. This may be sent to signal an event, such as, data arrival or user-buffer discard. This control frame is used to improve user-buffer reporting above the level produced by the user-buffer reporting associated with the DSCH DATA FRAMEs.

6.3.3.2.1 Common Transport Channel Priority Indicator (CmCH-PI)

Refer to subclause 6.2.5.7.

6.3.3.2.2 User Buffer Size

Refer to subclause 6.2.5.12.

6.3.3.3 DSCH CAPACITY ALLOCATION

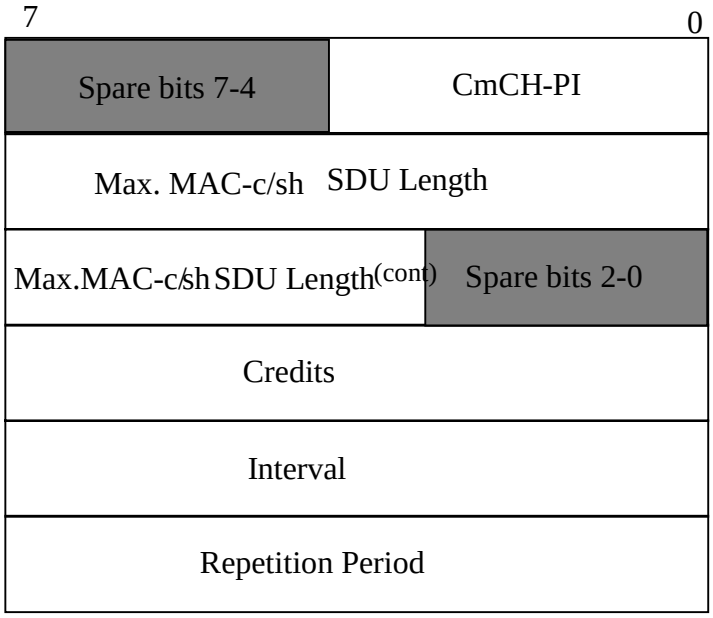

Figure 16: CAPACITY ALLOCATION payload structure

The CAPACITY ALLOCATION Control Frame describes an allocation that the SRNC may use. When the *Credits* IE has a value of 0 it signifies that there is no resources allocated for transmission and to thus stop transmission. When the *Credits* IE has a value of 255, it signifies unlimited capacity for transmission of SDUs. When the *Repetition Period* IE has a value of 0, it signifies that the allocation (*Maximum MAC-c/sh SDU Length, Credits* and *Interval* IEs) can be repeated without limit.

6.3.3.3.1 Common Transport Channel Priority Indicator (CmCH-PI)

Refer to subclause 6.2.5.7.

6.3.3.3.2 Maximum MAC-c/sh SDU Length

Description: The values indicated the maximum allowable SDU size. MAC-c/sh SDU contains the C/T field of the MAC header followed by one RLC PDU.

Field length: See the value of the *MAC-c/sh SDU Length* IE.

6.3.3.3.3 Credits

Refer to subclause 6.3.3.1.3.

6.3.3.3.4 Interval

Description: The value of this field indicates the time interval during which the *Credits* IE granted in the DSCH CAPACITY ALLOCATION Control Frame may be transmitted. This value is only applied to the DSCH transport channel.

Value range: {0-2550 ms}.

Granularity: 10ms.

Field Length: 8 bits.

6.3.3.3.5 Repetition Period

Description: The value of this field indicates the number of subsequent intervals that the *Credits* IE granted in the DSCH CAPACITY ALLOCATION Control Frame may be transmitted. These values represent an integer number of Intervals (see subclause 6.3.3.3.4). This field is only applied to the DSCH transport channel.

Value range: {0-255, where 0= unlimited repetition period}.

Field Length: 8 bits.

6.3.3.4 FACH CAPACITY REQUEST

Figure 17 shows the payload structure when the control frame is used for the above mentioned purpose. This control information is sent in the DL only.

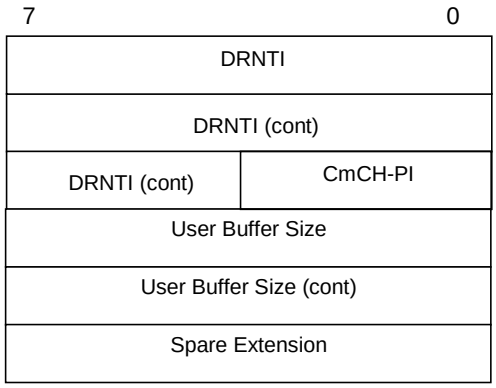

Figure 17: FACH CAPACITY REQUEST payload structure

6.3.3.4.1 D-RNTI

Refer to subclause 6.2.5.3.

6.3.3.4.2 Common Transport Channel Priority Indicator (CmCH-PI)

Refer to subclause 6.2.5.7.

6.3.3.4.3 User Buffer Size

Refer to subclause 6.2.5.12.

6.3.3.4.4 Spare extension

Refer to subclause 6.3.3.1.4.

7 Handling of Unknown, Unforeseen and Erroneous Protocol Data

7.1 General

A Frame Protocol frame with an unknown IE or an illegal IE value shall be ignored.

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

Tdoc R3-013657

CR-Form-v3

CHANGE REQUEST

⌘ **25.425** **CR** **40** ⌘ rev **2** ⌘ Current version: **3.5.0** ⌘

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

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

Title:	⌘	Transport Bearer replacement for the DSCH
Source:	⌘	R-WG3
Work item code:	⌘	TEI
Date:	⌘	November 2001
Category:	⌘	**F**
Release:	⌘	R99

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

Use one of the following releases:

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

Reason for change:	⌘	The RNSAP specification offers the possibility in the Synchronised Radio Link Reconfiguration to replace the transport bearer used for the DSCH. However, the exact behaviour for such a transport bearer replacement is not specified.
Summary of change:	⌘	R2: Correction to the used terminology. R0: A new subclause clarifying the behaviour for a DSCH transport bearer replacement is added in TS 25.425. This change has isolated impact As a clarification, this change is in line with the intention of the specification, thus it has no impact on implementations behaving like indicated in the CR.
Consequences if not approved:	⌘	If this CR is not approved, the specification will remain incomplete.

Clauses affected:	⌘	2, 5.3		
Other specs affected:	⌘	**X** Other core specifications	⌘	TS 25.425 v4.1.0 CR 41 TS 25.423 v3.7.0 CR 526 TS 25.423 v4.2.0 CR 527
		☐ Test specifications		
		☐ 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/3G_Specs/CRs.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://www.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2000-09 contains the specifications resulting from the September 2000 TSG meetings.

3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

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 (11/1995): "B-ISDN ATM Layer Specification".

[2] ITU-T Recommendation I.363.2 (09/1997): "B-ISDN ATM Adaptation Layer specification: Type 2 AAL".

[3] ITU-T Recommendation I.366.1 (06/1998): "Segmentation and Reassembly Service Specific Convergence Sublayer for the AAL type 2".

[4] 3GPP TS 25.427: "UTRAN Iub/Iur Interface User Plane Protocols for DCH Data Streams".

[5] 3GPP TS 25.401: "UTRAN overall description".

[6] 3GPP TR 25.990: "Vocabulary".

[7] 3GPP TS 25.321: "Medium Access Control (MAC) protocol specification".

[8] 3GPP TS 25.423: "UTRAN Iur Interface RNSAP Signalling"

5.3 General

5.3.1 DSCH transport bearer replacement

As described in RNSAP [8], transport bearer replacement can be achieved for a DSCH by using the Synchronised Radio Link Reconfiguration Preparation procedure in combination with the Synchronised Radio Link Reconfiguration Commit procedure. The following steps can be discerned:

1) The new transport bearer is established after which 2 transport bearers exist in parallel.

2) The transport channel(s) is/are switched to the new transport bearer.

3) The old transport bearer is released.

In step 1), communication on the old transport bearer continues as normal.

In step 2), the moment of switching is determined as follows:

- The DSCH DATA FRAMEs shall be transported on the new transport bearer from the CFN indicated in the RADIO LINK RECONFIGURATION COMMIT message.

Starting from this CFN the RNCs shall support all the applicable Common Transport Channels frame protocol procedures on the new transport bearer and no requirements exist regarding support of Common Transport Channels frame protocol procedures on the old transport bearer.

Finally in step 3), the old transport bearer is released.

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

Tdoc R3-013658

CR-Form-v3

CHANGE REQUEST

⌘ **25.425** **CR** **41** ⌘ rev **2** ⌘ Current version: **4.1.0** ⌘

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

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

Title:	⌘	Transport Bearer replacement for the DSCH
Source:	⌘	R-WG3
Work item code:	⌘	TEI
Date:	⌘	November 2001
Category:	⌘	**A**
Release:	⌘	REL-4

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

Use one of the following releases:

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

Reason for change:	⌘	The RNSAP specification offers the possibility in the Synchronised Radio Link Reconfiguration to replace the transport bearer used for the DSCH. However, the exact behaviour for such a transport bearer replacement is not specified.
Summary of change:	⌘	R2: Correction to the used terminology. R0: A new subclause clarifying the behaviour for a DSCH transport bearer replacement is added in TS 25.425. This change has isolated impact As a clarification, this change is in line with the intention of the specification, thus it has no impact on implementations behaving like indicated in the CR.
Consequences if not approved:	⌘	If this CR is not approved, the specification will remain incomplete.

Clauses affected:	⌘	2, 5.3		
Other specs affected:	⌘	**X** Other core specifications	⌘	TS 25.425 v3.5.0 CR 40 TS 25.423 v3.7.0 CR 526 TS 25.423 v4.2.0 CR 527
		☐ Test specifications		
		☐ O&M Specifications		
Other comments:	⌘			

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

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://www.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2000-09 contains the specifications resulting from the September 2000 TSG meetings.

3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

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 (11/1995): "B-ISDN ATM Layer Specification".

[2] ITU-T Recommendation I.363.2 (09/1997): "B-ISDN ATM Adaptation Layer specification: Type 2 AAL".

[3] ITU-T Recommendation I.366.1 (06/1998): "Segmentation and Reassembly Service Specific Convergence Sublayer for the AAL type 2".

[4] 3GPP TS 25.427: "UTRAN Iub/Iur Interface User Plane Protocols for DCH Data Streams".

[5] 3GPP TS 25.401: "UTRAN overall description".

[6] 3GPP TR 25.990: "Vocabulary".

[7] 3GPP TS 25.321: "Medium Access Control (MAC) protocol specification".

[8] 3GPP TS 25.423: "UTRAN Iur Interface RNSAP Signalling"

5.3 General

5.3.1 DSCH transport bearer replacement

As described in RNSAP [8], transport bearer replacement can be achieved for a DSCH by using the Synchronised Radio Link Reconfiguration Preparation procedure in combination with the Synchronised Radio Link Reconfiguration Commit procedure. In both cases the following steps can be discerned:

1) The new transport bearer is established after which 2 transport bearers exist in parallel.

2) The transport channel(s) is/are switched to the new transport bearer.

3) The old transport bearer is released.

In step 1), communication on the old transport bearer continues as normal.

In step 2), the moment of switching is determined as follows:

- The DSCH DATA FRAMEs shall be transported on the new transport bearer from the CFN indicated in the RADIO LINK RECONFIGURATION COMMIT message.

Starting from this CFN the RNCs shall support all the applicable Common Transport Channels frame protocol procedures on the new transport bearer and no requirements exist regarding support of Common Transport Channels frame protocol procedures on the old transport bearer.

Finally in step 3), the old transport bearer is released.

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

R3-013599

CR-Form-v4

CHANGE REQUEST

⌘ **25.425** **CR** **042** ⌘ ev **1** ⌘ Current version: **3.5.0** ⌘

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

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

Title:	⌘	Extension of USCH and DSCH data and control frames.
Source:	⌘	R-WG3
Work item code:	⌘	TEI
Date:	⌘	November, 2001
Category:	⌘	**F**
Release:	⌘	R99

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

Use one of the following releases:
2 (GSM Phase 2)
R96 (Release 1996)
R97 (Release 1997)
R98 (Release 1998)
R99 (Release 1999)
REL-4 (Release 4)
REL-5 (Release 5)

Reason for change:	⌘	R1: Updated due to erroneous Tdoc number. R0: The Spare extension fields are missing in the USCH and DSCH data and control frames over Iur. Consequently there is no backward compatible mechanism in place for those frames to enable future extensions. Backward compatibility to R99 can only be realised if the spare extension fields are also present in the R99 specifications. Therefore it is considered justifiable to make this change at such a late stage to R99.
Summary of change:	⌘	The spare extension fields have been added. After this addition all frames in this specification have a spare extension field.
Consequences if not approved:	⌘	If this CR is not approved, the DSCH/USCH data and control frames will not be extendible. Impact Analysis: This CR has isolated impact to the previous version of the specification because it adds a new spare extension field into DSCH/USCH data/control frames. The impact is isolated to USCH & DSCH channels. Note that there is no immediate backward incompatibility problem. A backward compatibility problem may only arise if information is added into the spare extension field in the future.

Clauses affected:	⌘	6.2.3, 6.2.4, 6.3.3.2, 6.3.3.3		
Other specs affected:	⌘	**X** Other core specifications ☐ Test specifications	⌘	CR043 25.425 v4.1.0

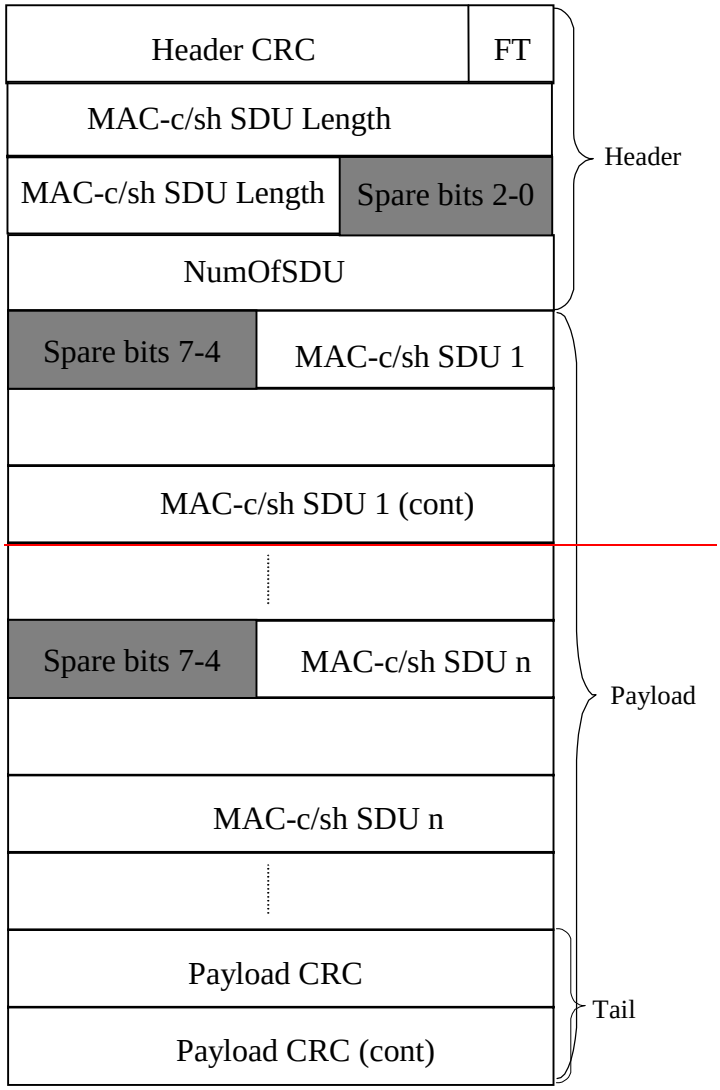
	☐ O&M Specifications	
Other comments:	⌘	

How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at: http://www.3gpp.org/3G_Specs/CRs.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.

6.2.3 USCH Channels [TDD]



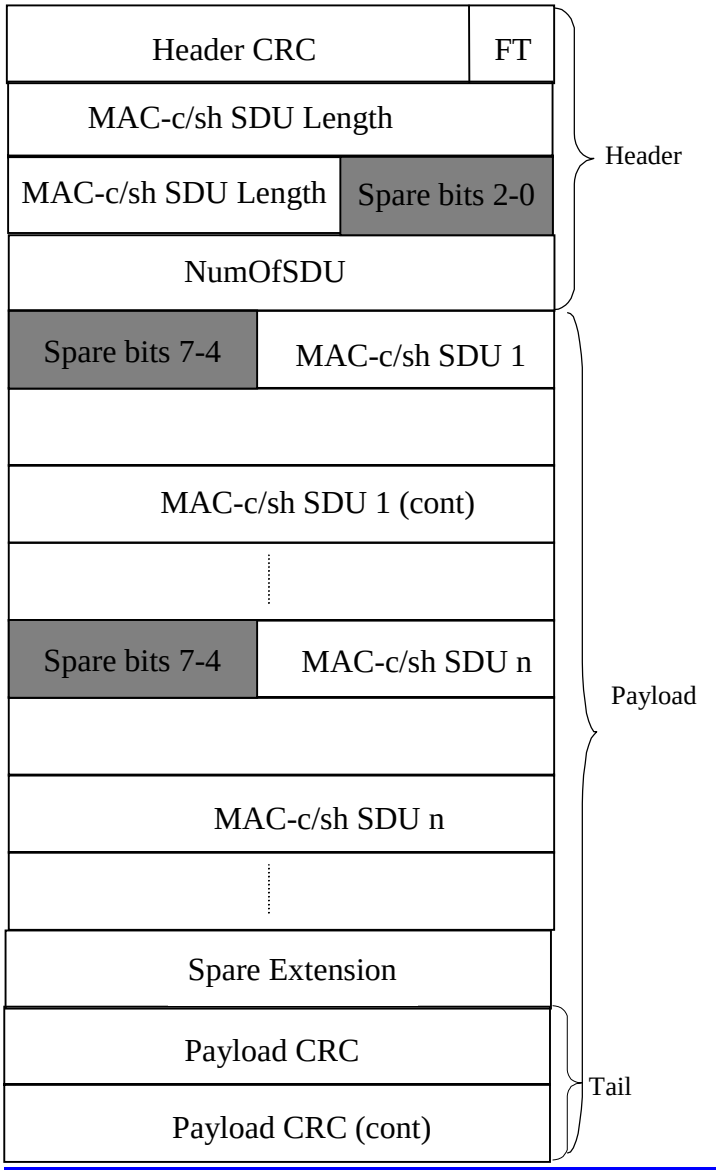
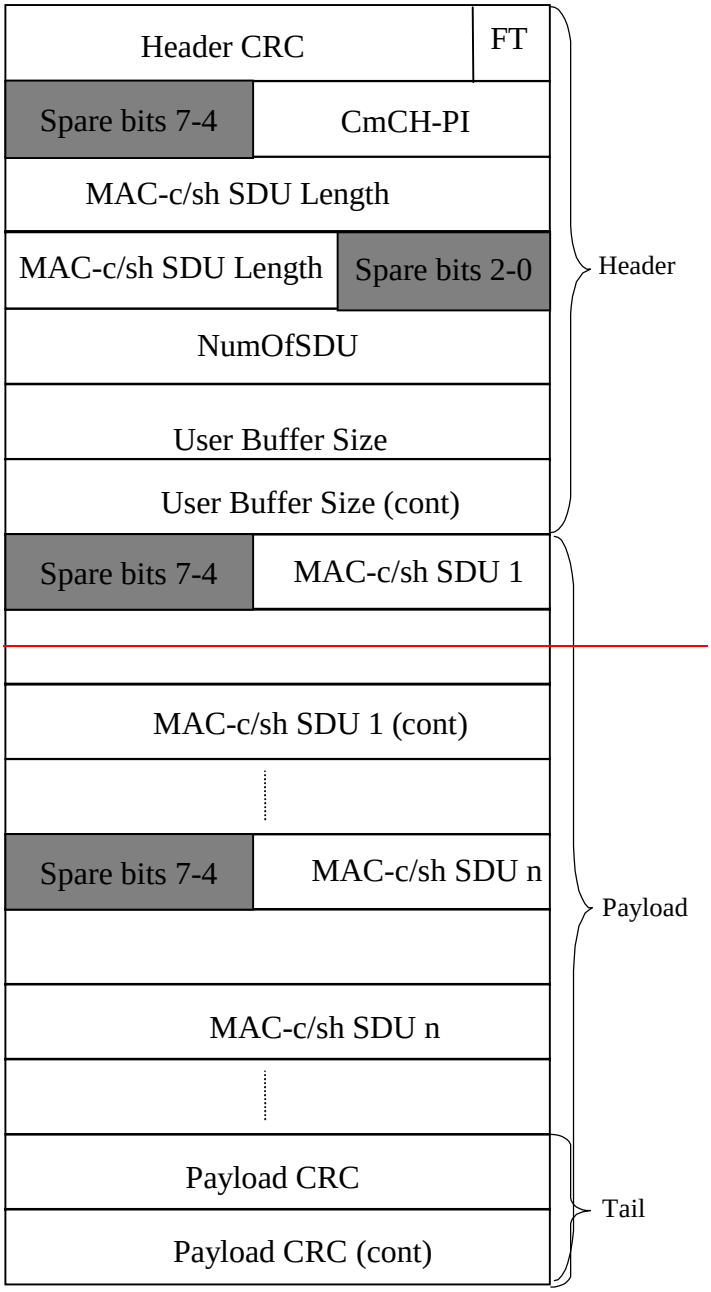


Figure 11: USCH DATA FRAME structure

6.2.4 DSCH Channels



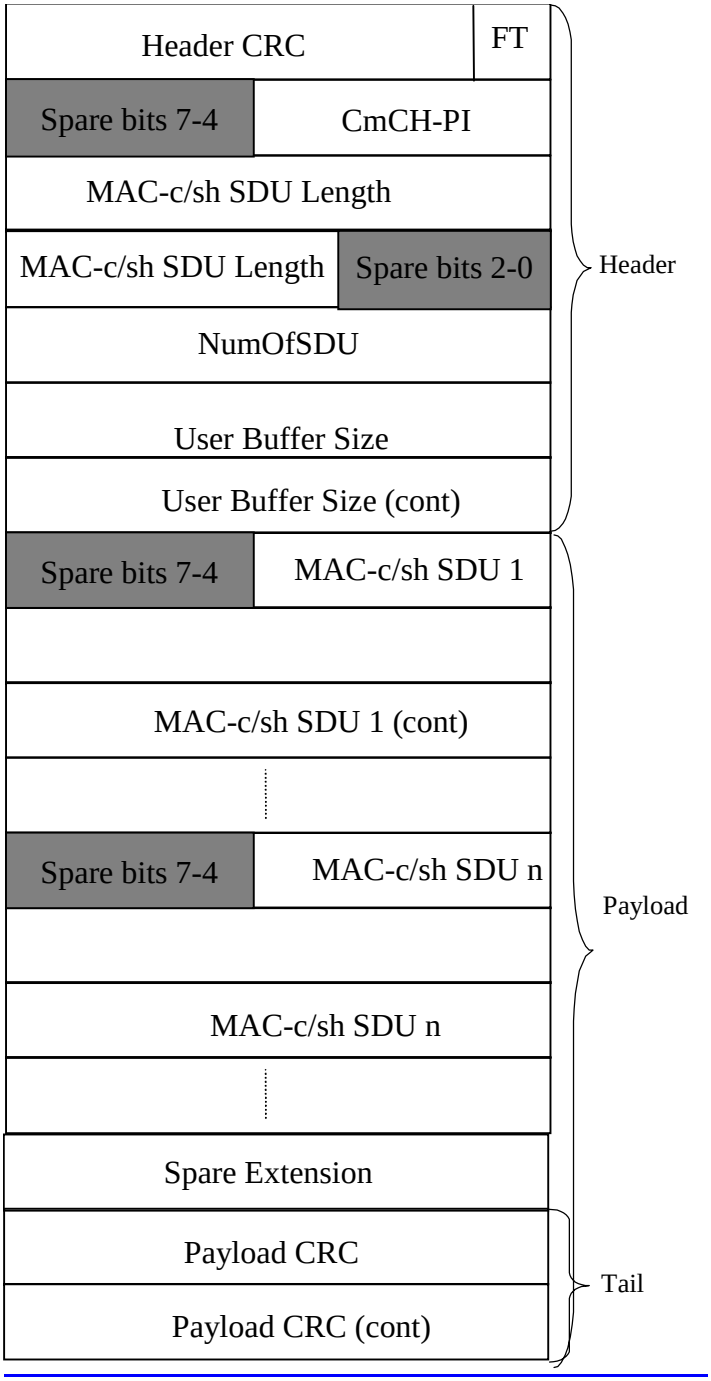


Figure 12: DSCH DATA FRAME structure

6.3.3.2 DSCH CAPACITY REQUEST

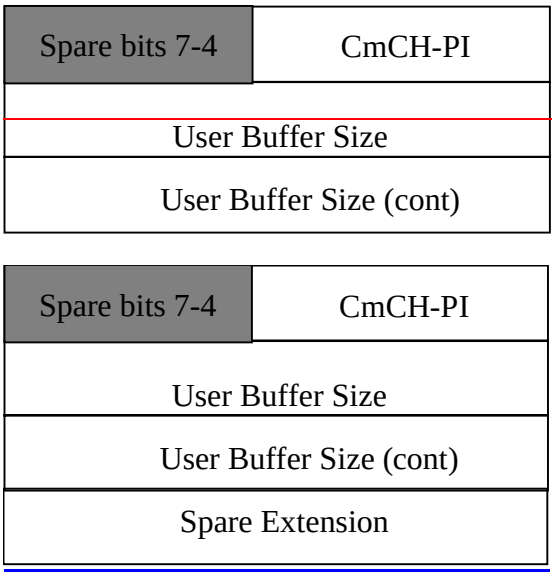


Figure 15: CAPACITY REQUEST payload structure

The DSCH CAPACITY REQUEST is sent to the DRNC for each priority level to indicate the user buffer size in the SRNC. The control frame is sent by the SRNC when the SRNC considers the user buffer size needs an increased buffer reporting frequency. This may be sent to signal an event, such as, data arrival or user-buffer discard. The CAPACITY REQUEST Control Frame is used to improve user-buffer reporting above the level produced by the user-buffer reporting associated with the DSCH DATA FRAMEs.

6.3.3.2.1 Common Transport Channel Priority Indicator (CmCH-PI)

Refer to subclause 6.2.5.7.

6.3.3.2.2 User Buffer Size

Refer to subclause 6.2.5.12.

6.3.3.2.3 Spare Extension

Refer to subclause 6.3.3.1.4.

6.3.3.3 DSCH CAPACITY ALLOCATION

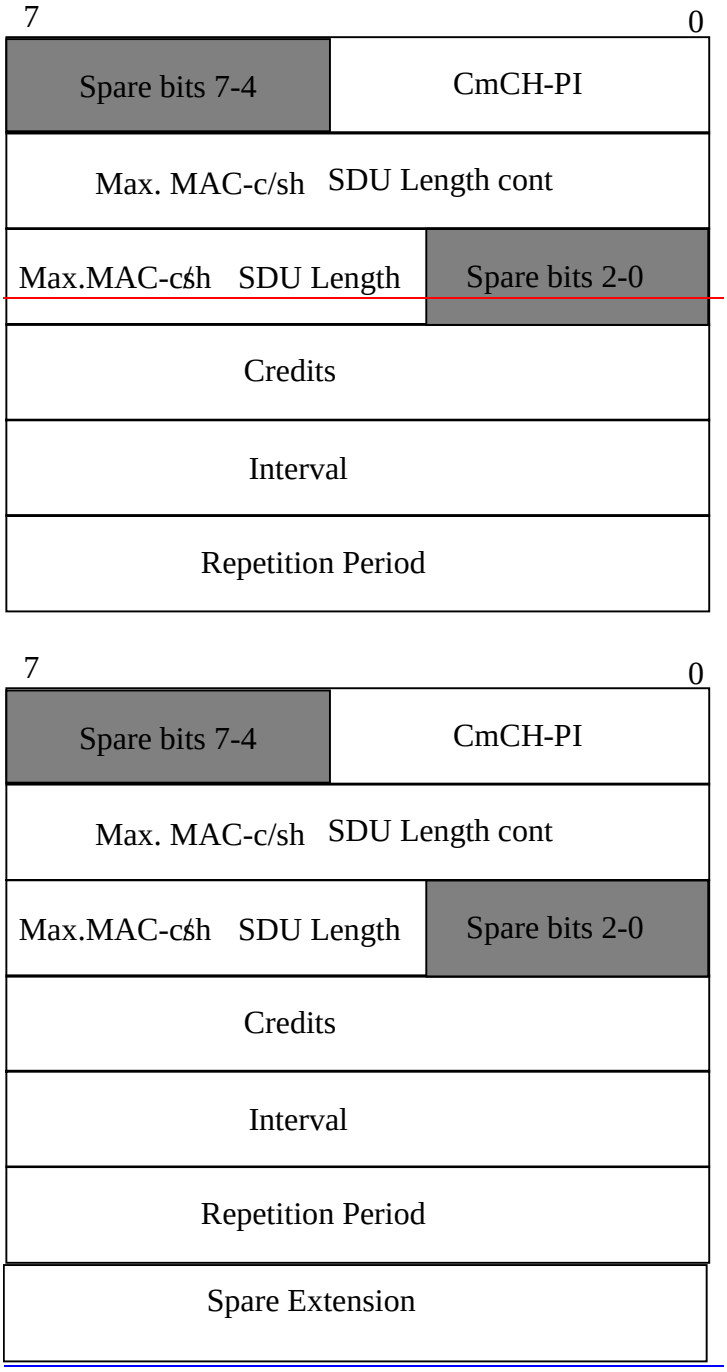


Figure 16: CAPACITY ALLOCATION payload structure

The CAPACITY ALLOCATION Control Frame describes an allocation that the SRNC may use. When the *Credits* IE has a value of 0 it signifies that there is no resources allocated for transmission and to thus stop transmission. When the *Credits* IE has a value of 255, it signifies unlimited capacity for transmission of SDUs. When the *Repetition Period* IE has a value of 0, it signifies that the allocation (*Maximum MAC-c/sh SDU Length*, *Credits* and *Interval* IEs) can be repeated without limit.

6.3.3.3.1 Common Transport Channel Priority Indicator (CmCH-PI)

Refer to subclause 6.2.5.7.

6.3.3.3.2 Maximum MAC-c/sh SDU Length

Description: The value indicates the maximum allowable SDU size. MAC-c/sh SDU contains the C/T field of the MAC header followed by one RLC PDU Field length: See the value of the MAC-c/sh SDU Length IE.

6.3.3.3.3 Credits

Refer to subclause 6.3.3.1.3.

6.3.3.3.4 Interval

Description: The value of this field indicates the time interval during which the *Credits* IE granted in the DSCH CAPACITY ALLOCATION Control Frame may be transmitted. This value is only applied to the DSCH transport channel.

Value range: {0-2550 ms}.

Granularity: 10ms.

Field Length: 8 bits.

6.3.3.3.5 Repetition Period

Description: The value of this field indicates the number of subsequent intervals that the *Credits* IE granted in the DSCH CAPACITY ALLOCATION Control Frame may be transmitted. These values represent an integer number of Intervals (see subclause 6.3.3.3.4). This field is only applied to the DSCH transport channel.

Value range: {0-255, where 0= unlimited repetition period}.

Field Length: 8 bits.

6.3.3.3.6 Spare Extension

Refer to subclause 6.3.3.1.4.

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

R3-013600

CR-Form-v4

CHANGE REQUEST

⌘ **25.425 CR 043** ⌘ ev **1** ⌘ Current version: **4.1.0** ⌘

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

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

Title:	⌘	Extension of USCH and DSCH data and control frames.
Source:	⌘	R-WG3
Work item code:	⌘	TEI
Date:	⌘	November, 2001
Category:	⌘	**A**
Release:	⌘	REL-4

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

Use one of the following releases:
2 *(GSM Phase 2)*
R96 *(Release 1996)*
R97 *(Release 1997)*
R98 *(Release 1998)*
R99 *(Release 1999)*
REL-4 *(Release 4)*
REL-5 *(Release 5)*

Reason for change: ⌘

R1:
Updated due to erroneous Tdoc number.

R0:
The Spare extension fields are missing in the USCH and DSCH data and control frames over Iur. Consequently there is no backward compatible mechanism in place for those frames to enable future extensions.

This is category A CR corresponding the similar R99 CR.

Summary of change: ⌘

The spare extension fields have been added. After this addition all frames in this specification have a spare extension field.

Consequences if not approved: ⌘

If this CR is not approved, the DSCH/USCH data and control frames will not be extendible.

Impact Analysis:
This CR has isolated impact to the previous version of the specification because it adds a new spare extension field into DSCH/USCH data/control frames. The impact is isolated to USCH & DSCH channels.

Note that there is no immediate backward incompatibility problem. A backward compatibility problem may only arise if information is added into the spare extension field in the future.

Clauses affected: ⌘ 6.2.3, 6.2.4, 6.3.3.2, 6.3.3.3

Other specs affected: ⌘

X	Other core specifications	CR042 25.425 v3.5.0
☐	Test specifications	
☐	O&M Specifications	

Other comments: ⌘	

How to create CRs using this form:

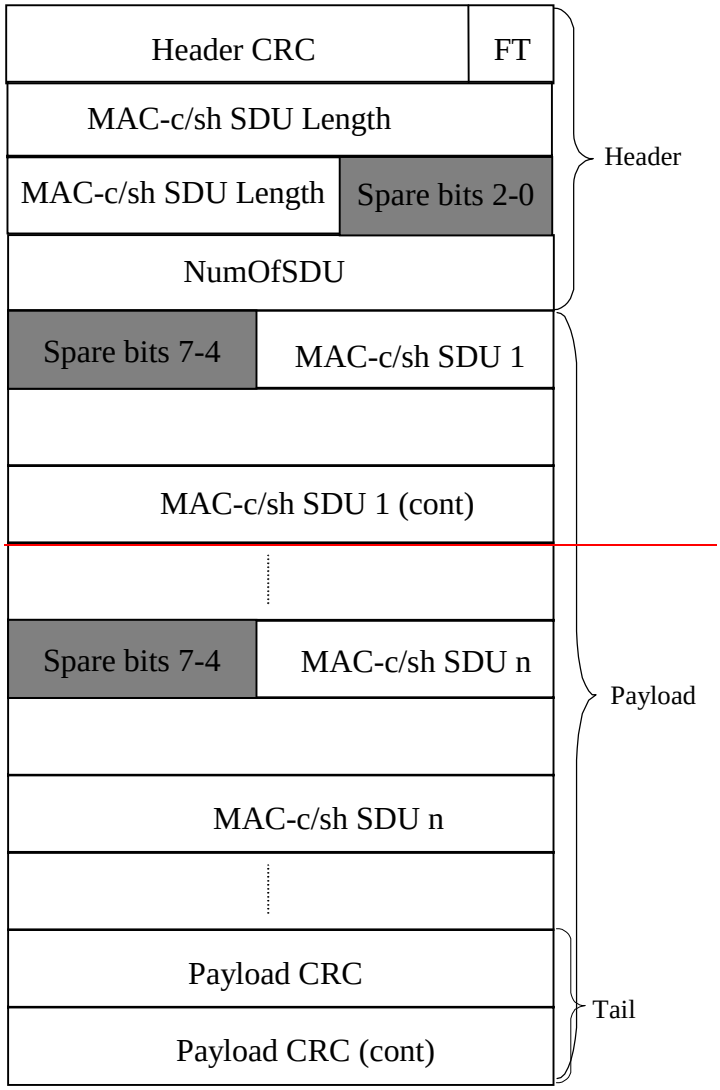
Comprehensive information and tips about how to create CRs can be found at: http://www.3gpp.org/3G_Specs/CRs.htm. Below is a brief summary:

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.

6.2.3 USCH Channels [TDD]



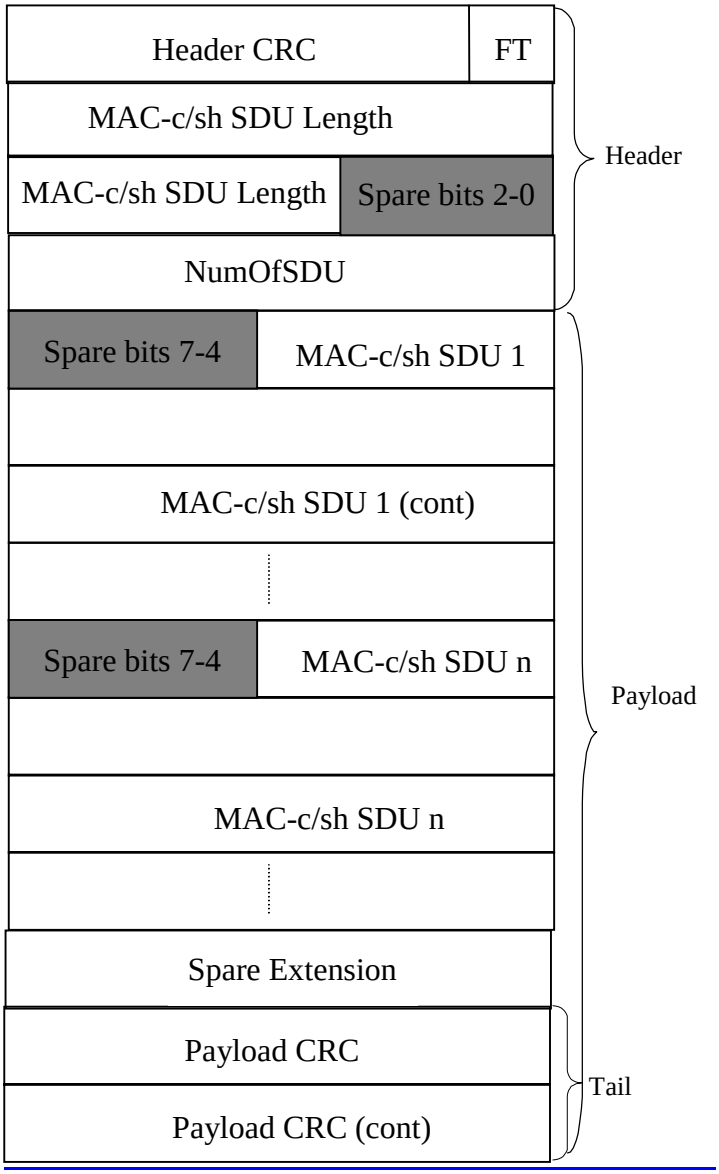
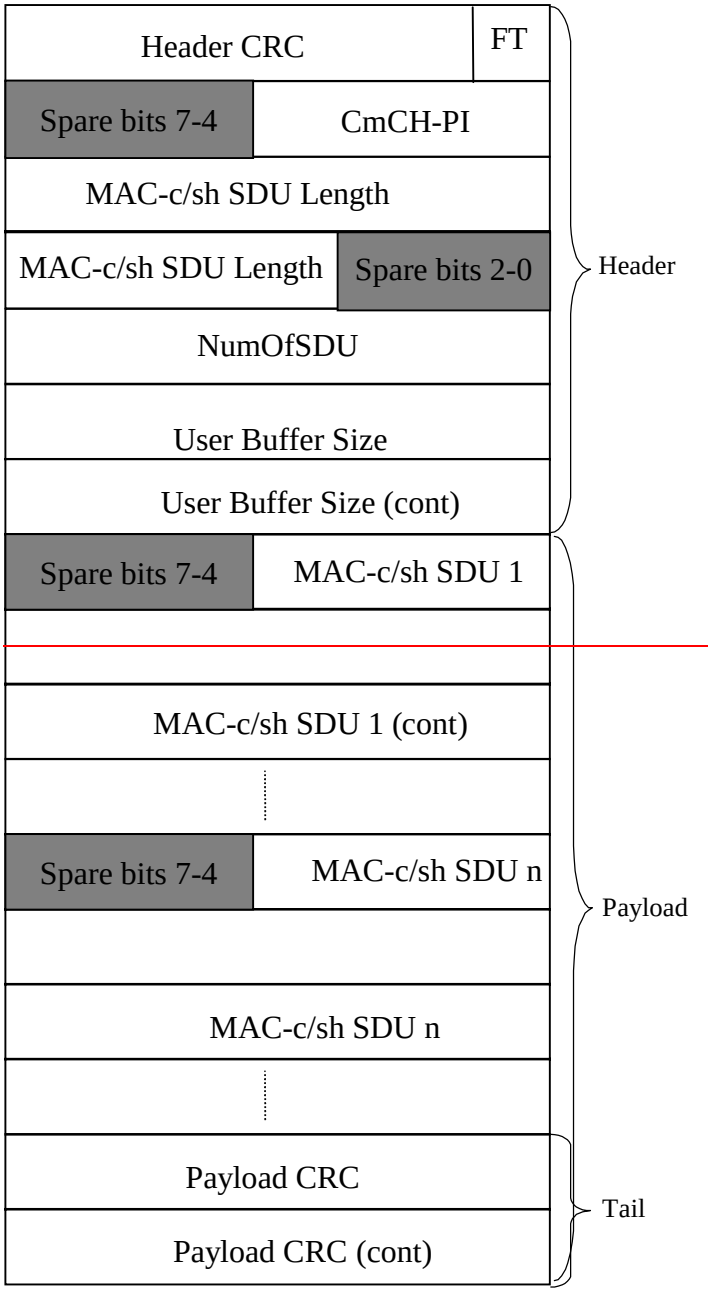


Figure 11: USCH DATA FRAME structure

6.2.4 DSCH Channels



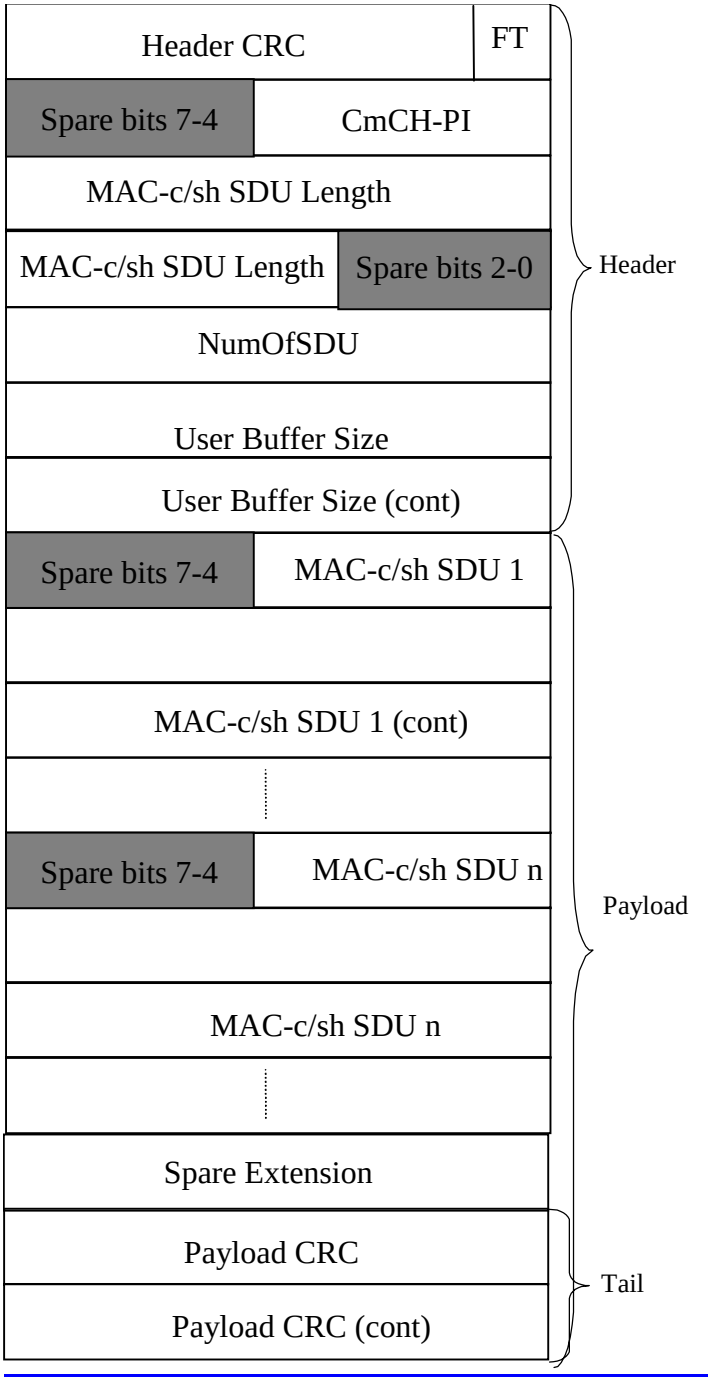


Figure 12: DSCH DATA FRAME structure

6.3.3.2 DSCH CAPACITY REQUEST

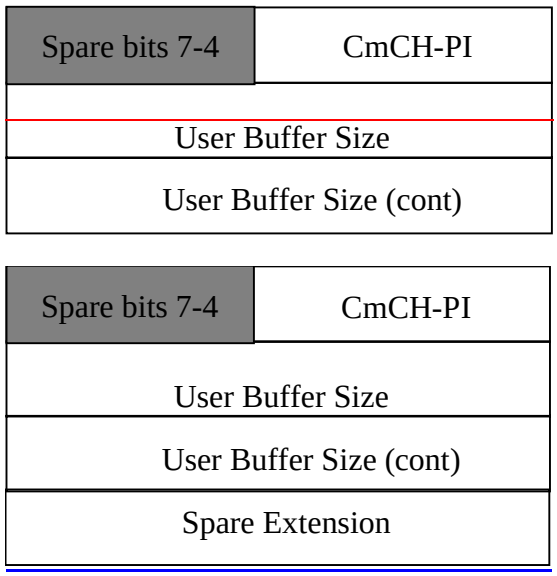


Figure 15: CAPACITY REQUEST payload structure

DSCH Capacity Request is sent for each priority group to indicate the user buffer size. The control frame is sent by the DSCH CAPACITY REQUEST is sent for each priority group to indicate the user buffer size. The control frame is sent by the SRNC when the SRNC considers the user buffer status needs an increased buffer reporting frequency. This may be sent to signal an event, such as, data arrival or user-buffer discard. This control frame is used to improve user-buffer reporting above the level produced by the user-buffer reporting associated with the DSCH DATA FRAMEs.

6.3.3.2.1 Common Transport Channel Priority Indicator (CmCH-PI)

Refer to subclause 6.2.5.7.

6.3.3.2.2 User Buffer Size

Refer to subclause 6.2.5.12.

6.3.3.2.3 Spare Extension

Refer to subclause 6.3.3.1.4.

6.3.3.3 DSCH CAPACITY ALLOCATION

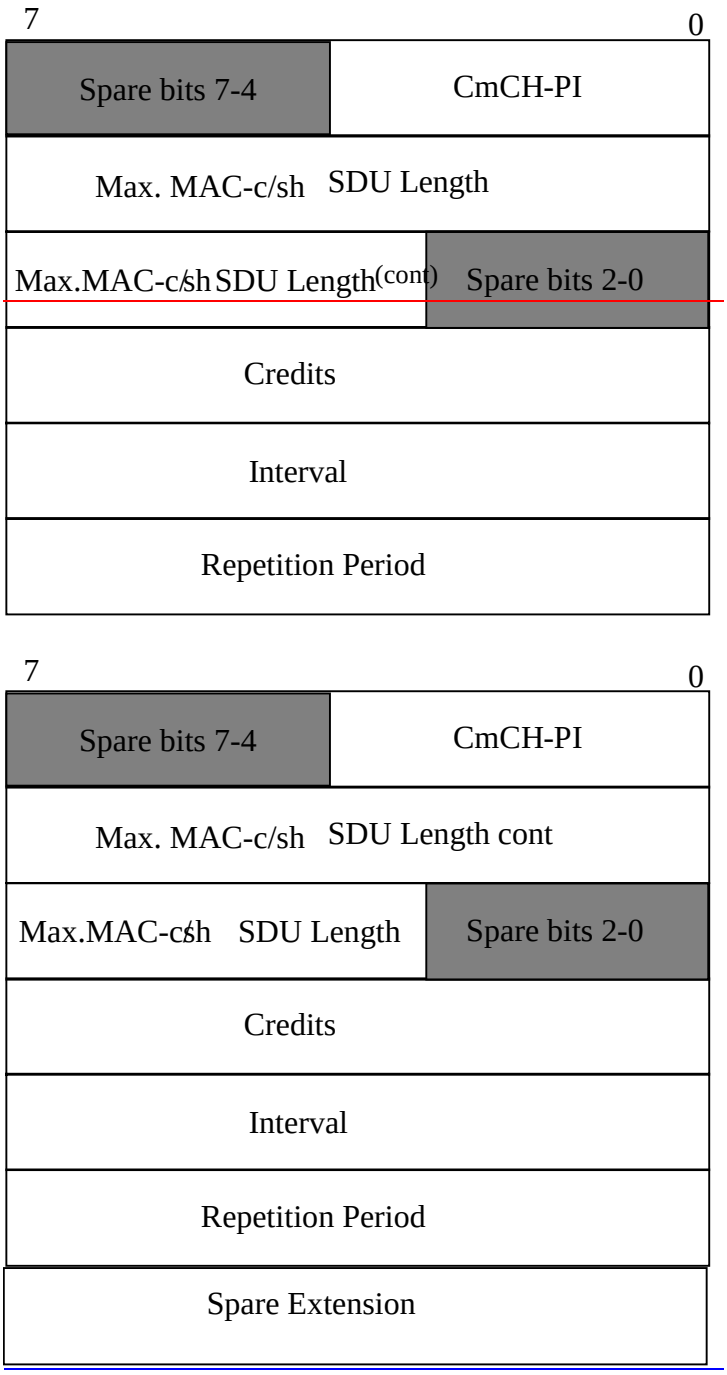


Figure 16: CAPACITY ALLOCATION payload structure

The CAPACITY ALLOCATION Control Frame describes an allocation that the SRNC may use. When the *Credits* IE has a value of 0 it signifies that there is no resources allocated for transmission and to thus stop transmission. When the *Credits* IE has a value of 255, it signifies unlimited capacity for transmission of SDUs. When the *Repetition Period* IE has a value of 0, it signifies that the allocation (*Maximum MAC-c/sh SDU Length*, *Credits* and *Interval* IEs) can be repeated without limit.

6.3.3.3.1 Common Transport Channel Priority Indicator (CmCH-PI)

Refer to subclause 6.2.5.7.

6.3.3.3.2 Maximum MAC-c/sh SDU Length

Description: The values indicated the maximum allowable SDU size. MAC-c/sh SDU contains the C/T field of the MAC header followed by one RLC PDU.

Field length: See the value of the MAC-c/sh SDU Length IE.

6.3.3.3.3 Credits

Refer to subclause 6.3.3.1.3.

6.3.3.3.4 Interval

Description: The value of this field indicates the time interval during which the *Credits* IE granted in the DSCH CAPACITY ALLOCATION Control Frame may be transmitted. This value is only applied to the DSCH transport channel.

Value range: {0-2550 ms}.

Granularity: 10ms.

Field Length: 8 bits.

6.3.3.3.5 Repetition Period

Description: The value of this field indicates the number of subsequent intervals that the *Credits* IE granted in the DSCH CAPACITY ALLOCATION Control Frame may be transmitted. These values represent an integer number of Intervals (see subclause 6.3.3.3.4). This field is only applied to the DSCH transport channel.

Value range: {0-255, where 0= unlimited repetition period}.

Field Length: 8 bits.

6.3.3.3.6 Spare Extension

Refer to subclause 6.3.3.1.4.