**TSG RAN Meeting #21** **RP-030450**
**Frankfurt, Germany, 16 - 19 September 2003**

**Title** **CRs (Rel-5 only) to TS 25.423, TS 25.433 and TS 25.321 (RAN2) on MAC-hs Reordering Buffer Size**
**Source** **TSG RAN WG3**
**Agenda Item** **7.4.6**

| RAN3 Tdoc | Spec | curr. Vers. | new Vers. | REL | CR | Rev | Cat | Title | Work item |
|---|---|---|---|---|---|---|---|---|---|
| R3-031137 | 25.423 | 5.6.0 | 5.7.0 | REL-5 | 848 | 1 | F | MAC-hs Reordering Buffer Size | HSDPA-IubIur |
| R3-031138 | 25.433 | 5.5.0 | 5.6.0 | REL-5 | 875 | 1 | F | MAC-hs Reordering Buffer Size | HSDPA-IubIur |
| R2-031726 | 25.321 | 5.5.0 | 5.6.0 | REL-5 | - | - | F | Memory handling and reconfiguration of reordering buffer | TEI5 (?) |

**Note: IMPORTANT: Two RAN3 CRs are linked with a RAN2 CR which was NOT agreed in RAN2 (therefore the RAN2 CR is not attached).**

**3GPP TSG-RAN3 Meeting #37**
**Budapest, Hungary, 25th - 29th August 2003**

***Tdoc ⌘R3-031137***

*CR-Form-v7*

# CHANGE REQUEST

⌘ **25.423** **CR** **848** ⌘ **rev** **1** ⌘ Current version: **5.6.0** ⌘

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

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

| | | | | | |
|---|---|---|---|---|---|
| ***Title:*** | ⌘ | MAC-hs Reordering Buffer Size | | | |
| ***Source:*** | ⌘ | RAN3 | | | |
| ***Work item code:*** | ⌘ | HSDPA-IuBIur | ***Date:*** | ⌘ | 28/08/2003 |
| ***Category:*** | ⌘ | **F** | ***Release:*** | ⌘ | Rel-5 |

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

*Use one of the following releases:*
*2* *(GSM Phase 2)*
*R96* *(Release 1996)*
*R97* *(Release 1997)*
*R98* *(Release 1998)*
*R99* *(Release 1999)*
*Rel-4* *(Release 4)*
*Rel-5* *(Release 5)*
*Rel-6* *(Release 6)*

***Reason for change:*** ⌘ It is currently not possible to modify the MAC-hs Reordering Buffer Size. There are however situations when this is required. One example is described below.

Step 1: The UE (not in HS-DSCH state) has an Interactive/Background RAB established.

Step 2: The UE is moved to HS-DSCH state (Interactive/Background RAB mapped on HS-DSCH). The *MAC-hs Reordering Buffer Size* IE shall be set to "the total buffer size defined in UE capability minus the RLC AM buffer". Logically, there is no reason to restrict the memory allocated for HS-DSCH operation further than what is needed for the AM RLC entities pertaining to Signalling Radio Bearers and the Interactive/Background RAB.

Step 3: A request to establish a Streaming RAB is received from the SGSN (note that a PS Streaming RAB operates in AM). Furthermore, assume that the Interactive/Background RAB shall remain on HS-DSCH. The Node B needs to be informed that the amount of memory (in the UE) available for HS-DSCH operation shall be reduced (in order to account for the memory required for the AM RLC entity pertaining to PS Streaming).

***Summary of change:*** ⌘ Revision 1: *MAC-hs Reordering Buffer Size* IE has been defined as a single IE and the unit (i.e. kBytes) is added to the description. *HS-DSCH FDD Information* IE, *HS-DSCH Information To Modify* IE and *HS-DSCH TDD Information* IE have been updated with a reference to the *MAC-hs Reordering Buffer Size* IE. ASN.1 has been updated accordingly.

---
The *MAC-hs Reordering Buffer Size* IE has been added to the *HS-DSCH*

| | | |
|---|---|---|
| | | *Information To Modify* IE. Corresponding changes have been done to the ASN.1 code.<br><br>Impact assessment towards the previous version of the specification (same release):<br><br>This CR has isolated impact on the previous version of the specification (same release). The impact can be considered isolated because the change only affects HSDPA. This CR has an impact under functional point of view. |
| ***Consequences if not approved:*** | ⌘ | If the CR is not approved, the procedure for HS-DSCH modification is incomplete. |

| | | | | | |
|---|---|---|---|---|---|
| ***Clauses affected:*** | ⌘ | 9.2.1.30Q, 9.2.1.x, 9.2.2.19a, 9.2.3.3aa, 9.3.4 | | | |
| | | **Y** | **N** | | |
| ***Other specs affected:*** | ⌘ | **X** | | Other core specifications | ⌘ CR875 rev1 on TS25.433 v5.5.0<br>Tdoc R2-031726 on TS25.321 v5.5.0 |
| | | | **X** | Test specifications | |
| | | | **X** | O&M Specifications | |
| ***Other comments:*** | ⌘ | | | | |

**How to create CRs using this form:**

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

1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.
2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.
3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

## 9.2.1.30Q HS-DSCH Information To Modify

The *HS-DSCH Information To Modify* IE provides information for HS-DSCH to be modified.

| IE/Group Name | Presence | Range | IE Type and Reference | Semantics Description | Criticality | Assigned Criticality |
|---|---|---|---|---|---|---|
| **HS-DSCH MAC-d Flow Specific Information** | | *0..<maxnoofMACdFlows>* | | | – | |
| >HS-DSCH MAC-d Flow ID | M | | 9.2.1.30O | | – | |
| >Allocation/Retention Priority | O | | 9.2.1.1 | | – | |
| >Transport Bearer Request Indicator | M | | 9.2.1.61 | | – | |
| >Traffic Class | O | | 9.2.1.58A | | – | |
| >Binding ID | O | | 9.2.1.3 | Shall be ignored if bearer establishment with ALCAP. | – | |
| >Transport Layer Address | O | | 9.2.1.62 | Shall be ignored if bearer establishment with ALCAP. | – | |
| **>Priority Queue Information** | | *0..<maxnoofPrioQueues>* | | | – | |
| >>Priority Queue ID | M | | 9.2.1.45A | | – | |
| >>Scheduling Priority Indicator | O | | 9.2.1.51A | | – | |
| >>T1 | O | | 9.2.1.54A | | – | |
| >>MAC-hs Window Size | O | | 9.2.1.34C | | – | |
| >>MAC-hs Guaranteed Bit Rate | O | | 9.2.1.34Aa | | – | |
| **>>MAC-d PDU Size Index** | | *0..<maxnoofMACdPDUindexes>* | | | – | |
| >>>SID | M | | 9.2.1.52D | | – | |
| >>>MAC-d PDU Size | O | | 9.2.1.34A | | – | |
| MAC-hs Reordering Buffer Size | O | | 9.2.1.x | | – | |
| CQI Feedback Cycle k | O | | 9.2.2.24a | For FDD only | – | |
| CQI Repetition Factor | O | | 9.2.2.24c | For FDD only | – | |
| ACK-NACK Repetition Factor | O | | 9.2.2.a | For FDD only | – | |
| CQI Power Offset | O | | 9.2.2.24b | For FDD only | – | |
| ACK Power Offset | O | | 9.2.2.b | For FDD only | – | |
| NACK Power Offset | O | | 9.2.2.26a | For FDD only | – | |
| HS-SCCH Power Offset | O | | 9.2.2.19d | For FDD only | – | |
| HS-SCCH Code Change Grant | O | | 9.2.1.30S | | – | |
| TDD ACK NACK Power Offset | O | | 9.2.3.7I | For TDD only | – | |

| Range bound | Explanation |
|---|---|
| *maxnoofMACdFlows* | Maximum number of MAC-d flows. |
| *maxnoofPrioQueues* | Maximum number of Priority Queues. |
| *maxnoofMACdPDUindexes* | Maximum number of MAC-d PDU Size Indexes (SIDs). |

### 9.2.1.x MAC-hs Reordering Buffer Size

The *MAC-hs Reordering Buffer Size* IE indicates the total buffer size defined in UE capability minus the RLC AM buffer in kBytes

| IE/Group Name | Presence | Range | IE Type and Reference | Semantics Description |
|---|---|---|---|---|
| MAC-hs Reordering Buffer Size | | | INTEGER (1..300,…) | |

## 9.2.2.19a HS-DSCH FDD Information

The *HS-DSCH FDD Information* IE provides information for HS-DSCH MAC-d flows to be established.

| IE/Group Name | Presence | Range | IE Type and Reference | Semantics Description | Criticality | Assigned Criticality |
|---|---|---|---|---|---|---|
| **HS-DSCH MAC-d Flow Specific Information** | | *1..<maxnoofMACdFlows>* | | | – | |
| >HS-DSCH MAC-d Flow ID | M | | 9.2.1.30O | | – | |
| >Allocation/Retention Priority | M | | 9.2.1.1 | | – | |
| >Traffic Class | M | | 9.2.1.58A | | – | |
| >Binding ID | O | | 9.2.1.3 | Shall be ignored if bearer establishment with ALCAP. | – | |
| >Transport Layer Address | O | | 9.2.1.62 | Shall be ignored if bearer establishment with ALCAP. | – | |
| **>Priority Queue Information** | | *1..<maxnoofPrioQueues>* | | | – | |
| >>Priority Queue ID | M | | 9.2.1.45A | | – | |
| >>Scheduling Priority Indicator | M | | 9.2.1.51A | | – | |
| >>T1 | M | | 9.2.1.54A | | – | |
| >>MAC-hs Window Size | M | | 9.2.1.34C | | – | |
| >>MAC-hs Guaranteed Bit Rate | O | | 9.2.1.34Aa | | – | |
| **>>MAC-d PDU Size Index** | | *1..<maxnoofMACdPDUindexes>* | | | – | |
| >>>SID | M | | 9.2.1.52D | | – | |
| >>>MAC-d PDU Size | M | | 9.2.1.34A | | – | |
| **UE Capabilities information** | | *1* | | | – | |
| >HS-DSCH Physical Layer Category | M | | 9.2.1.30Oa | | – | |
| >MAC-hs reordering buffer size | M | | 9.2.1.x~~INTEGER (1..300,...)~~ | ~~The total buffer size defined in UE capability minus the RLC AM buffer~~ | – | |
| CQI Feedback Cycle k | M | | 9.2.2.24a | | – | |
| CQI Repetition Factor | C-CQICyclek | | 9.2.2.24c | | – | |
| ACK-NACK Repetition Factor | M | | 9.2.2.a | | – | |
| CQI Power Offset | M | | 9.2.2.24b | | – | |
| ACK Power Offset | M | | 9.2.2.b | | – | |
| NACK Power Offset | M | | 9.2.2.26a | | – | |
| HS-SCCH Power Offset | O | | 9.2.2.19d | | – | |

| Condition | Explanation |
|---|---|
| CQICyclek | The IE shall be present if the *CQI Feedback Cycle k* IE is set to a value greater than 0. |

| Range bound | Explanation |
|---|---|
| *maxnoofMACdFlows* | Maximum number of MAC-d flows. |
| *maxnoofPrioQueues* | Maximum number of Priority Queues. |
| *maxnoofMACdPDUindexes* | Maximum number of MAC-d PDU Size Indexes (SIDs). |

## 9.2.3.3aa HS-DSCH TDD Information

The *HS-DSCH TDD Information* IE provides information for HS-DSCH to be established.

| IE/Group Name | Presence | Range | IE Type and Reference | Semantics Description | Criticality | Assigned Criticality |
|---|---|---|---|---|---|---|
| **HS-DSCH MAC-d Flow Specific Information** | | *1..<maxnoofMACdFlows>* | | | – | |
| >HS-DSCH MAC-d Flow ID | M | | 9.2.1.30O | | – | |
| >Allocation/Retention Priority | M | | 9.2.1.1 | | – | |
| >Traffic Class | M | | 9.2.1.58A | | – | |
| >Binding ID | O | | 9.2.1.3 | Shall be ignored if bearer establishment with ALCAP. | – | |
| >Transport Layer Address | O | | 9.2.1.62 | Shall be ignored if bearer establishment with ALCAP. | – | |
| **>Priority Queue Information** | | *1..<maxnoofPrioQueues>* | | | - | |
| >>Priority Queue ID | M | | 9.2.1.45A | | - | |
| >>Scheduling Priority Indicator | M | | 9.2.1.51A | | | |
| >>T1 | M | | 9.2.1.54A | | | |
| >>MAC-hs Window Size | M | | 9.2.1.34C | | – | |
| >>MAC-hs Guaranteed Bit Rate | O | | 9.2.1.34Aa | | | |
| **>>MAC-d PDU Size Index** | | *1..<maxnoofMACdPDUindexes>* | | | | |
| >>>SID | M | | 9.2.1.52D | | - | |
| >>>MAC-d PDU Size | M | | 9.2.1.34A | | - | |
| **UE Capabilities information** | | *1* | | | - | |
| >HS-DSCH Physical Layer Category | M | | 9.2.1.30Oa | | – | |
| >MAC-hs reordering buffer size | M | | 9.2.1.x~~INTEGER (1..300,...)~~ | ~~The total buffer size defined in UE capability minus the RLC AM buffer~~ | | |
| TDD ACK NACK Power Offset | M | | 9.2.3.7I | | – | |

| Range bound | Explanation |
|---|---|
| *maxnoofMACdFlows* | Maximum number of MAC-d flows. |
| *maxnoofPrioQueues* | Maximum number of Priority Queues. |
| *maxnoofMACdPDUindexes* | Maximum number of MAC-d PDU Size Indexes (SIDs). |

## 9.3.4 Information Element Definitions

```
-- **************************************************************
--
-- Information Element Definitions
--
-- **************************************************************

/* partly omitted */

-- H

HARQ-MemoryPartitioning    ::= CHOICE {
   implicit        HARQ-MemoryPartitioning-Implicit,
   explicit        HARQ-MemoryPartitioning-Explicit,
   ...
   }

HARQ-MemoryPartitioning-Implicit    ::= SEQUENCE {
   number-of-Processes         INTEGER (1..8,...),
   iE-Extensions               ProtocolExtensionContainer { { HARQ-MemoryPartitioning-Implicit-ExtIEs } }
   OPTIONAL,
   ...
}

HARQ-MemoryPartitioning-Implicit-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
   ...
}

HARQ-MemoryPartitioning-Explicit    ::= SEQUENCE {
   hARQ-MemoryPartitioningList        HARQ-MemoryPartitioningList,
   iE-Extensions                      ProtocolExtensionContainer { { HARQ-MemoryPartitioning-Explicit-ExtIEs
}         OPTIONAL,
   ...
}

HARQ-MemoryPartitioning-Explicit-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
   ...
}

HARQ-MemoryPartitioningList    ::= SEQUENCE (SIZE (1..maxNrOfHARQProc)) OF HARQ-MemoryPartitioningItem

HARQ-MemoryPartitioningItem ::= SEQUENCE {
   process-Memory-Size                ENUMERATED {
                                      hms800, hms1600, hms2400, hms3200, hms4000,
                                      hms4800, hms5600, hms6400, hms7200, hms8000,
                                      hms8800, hms9600, hms10400, hms11200, hms12000,
                                      hms12800, hms13600, hms14400, hms15200, hms16000,
                                      hms17600, hms19200, hms20800, hms22400, hms24000,
                                      hms25600, hms27200, hms28800, hms30400, hms32000,
                                      hms36000, hms40000, hms44000, hms48000, hms52000,
                                      hms56000, hms60000, hms64000, hms68000, hms72000,
                                      hms76000, hms80000, hms88000, hms96000, hms104000,
                                      hms112000, hms120000, hms128000, hms136000, hms144000,
                                      hms152000, hms160000, hms176000, hms192000, hms208000,
                                      hms224000, hms240000, hms256000, hms272000, hms288000,
                                      hms304000,...},
   iE-Extensions                      ProtocolExtensionContainer { { HARQ-MemoryPartitioningItem-ExtIEs } }
       OPTIONAL,
   ...
}

HARQ-MemoryPartitioningItem-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
   ...
}
HCS-Prio  ::= INTEGER (0..7)
-- 0 = lowest priority, ...7 = highest priority

HSDSCH-FDD-Information ::= SEQUENCE {
   hSDSCH-MACdFlow-Specific-Info          HSDSCH-MACdFlow-Specific-InfoList,
   uE-Capabilities-Info                   UE-Capabilities-Info,
   cqiFeedback-CycleK                     CQI-Feedback-Cycle,
   cqiRepetitionFactor                    CQI-RepetitionFactor          OPTIONAL,
   -- This IE shall be present if the CQI Feedback Cycle k is greater than 0
   cqiPowerOffset                         CQI-Power-Offset,
   ackNackRepetitionFactor                AckNack-RepetitionFactor,
   ackPowerOffset                         Ack-Power-Offset,
   nackPowerOffset                        Nack-Power-Offset,
```

```
   hsscch-PowerOffset                      HSSCCH-PowerOffset            OPTIONAL,
   iE-Extensions                           ProtocolExtensionContainer { { HSDSCH-FDD-Information-ExtIEs } }
        OPTIONAL,
   ...
}

HSDSCH-FDD-Information-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
   ...
}

HSDSCH-FDD-Information-Response ::= SEQUENCE {
   hSDSCH-MACdFlow-Specific-InfoList-Response     HSDSCH-MACdFlow-Specific-InfoList-Response,
   hSSCCH-Specific-InfoList-Response              HSSCCH-FDD-Specific-InfoList-Response,
   measurement-Power-Offset                       Measurement-Power-Offset        OPTIONAL,
   hARQ-MemoryPartitioning                        HARQ-MemoryPartitioning,
   iE-Extensions                                  ProtocolExtensionContainer { { HSDSCH-FDD-Information-
Response-ExtIEs } }       OPTIONAL,
   ...
}

HSDSCH-FDD-Information-Response-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
   ...
}

HSDSCH-Information-to-Modify ::= SEQUENCE {
   hSDSCH-MACdFlow-Specific-InfoList-to-Modify    HSDSCH-MACdFlow-Specific-InfoList-to-Modify
   OPTIONAL,
   mAChs-Reordering-Buffer-Size                   MAChsReorderingBufferSize              OPTIONAL,
   cqiFeedback-CycleK                             CQI-Feedback-Cycle             OPTIONAL,   -- For FDD only
   cqiRepetitionFactor                            CQI-RepetitionFactor           OPTIONAL,   -- For FDD only
   ackNackRepetitionFactor                        AckNack-RepetitionFactor       OPTIONAL,   -- For FDD only
   cqiPowerOffset                                 CQI-Power-Offset               OPTIONAL,   -- For FDD only
   ackPowerOffset                                 Ack-Power-Offset               OPTIONAL,   -- For FDD only
   nackPowerOffset                                Nack-Power-Offset              OPTIONAL,   -- For FDD only
   hsscch-PowerOffset                             HSSCCH-PowerOffset             OPTIONAL,   -- Only for FDD
   hSSCCH-CodeChangeGrant                         HSSCCH-Code-Change-Grant       OPTIONAL,
   tDDAckNackPowerOffset                          TDD-AckNack-Power-Offset       OPTIONAL,   -- For TDD only
   iE-Extensions                                  ProtocolExtensionContainer { { HSDSCH-Information-to-Modify
ExtIEs } }         OPTIONAL,
   ...
}

HSDSCH-Information-to-Modify-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
   ...
}

/* partly omitted */

-- M

MaxNrOfUL-DPCHs             ::= INTEGER (1..6)

MAC-c-sh-SDU-Length         ::= INTEGER (1..5000)

MAC-c-sh-SDU-LengthList ::= SEQUENCE(SIZE(1..maxNrOfMACcshSDU-Length)) OF MAC-c-sh-SDU-Length

MACdPDU-Size ::= INTEGER (1..5000,...)

MACdPDU-Size-IndexList ::= SEQUENCE (SIZE (1..maxNrOfPDUIndexes)) OF MACdPDU-Size-IndexItem

MACdPDU-Size-IndexItem ::= SEQUENCE {
    sID                                 SID,
    mACdPDU-Size                        MACdPDU-Size,
    iE-Extensions                       ProtocolExtensionContainer { { MACdPDU-Size-IndexItem-ExtIEs } }
    OPTIONAL,
    ...
}

MACdPDU-Size-IndexItem-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

MACdPDU-Size-IndexList-to-Modify ::= SEQUENCE (SIZE (1..maxNrOfPDUIndexes)) OF MACdPDU-Size-IndexItem-to-
Modify

MACdPDU-Size-IndexItem-to-Modify ::= SEQUENCE {
    sID                                 SID,
    mACdPDU-Size                        MACdPDU-Size                            OPTIONAL,
```

```
    iE-Extensions                       ProtocolExtensionContainer { { MACdPDU-Size-IndexItem-to-Modify-ExtIE
} }         OPTIONAL,
    ...
}

MACdPDU-Size-IndexItem-to-Modify-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

MAChsGuaranteedBitRate ::= INTEGER (0..16777215,...)

MAChsReorderingBufferSize ::= INTEGER (1..300,...)
-- Unit kBytes

MAC-hsWindowSize        ::= ENUMERATED {v4, v6, v8, v12, v16, v24, v32,...}

MaximumAllowedULTxPower     ::= INTEGER (-50..33)

MaxNrDLPhysicalchannels     ::= INTEGER (1..224)
-- 1.28Mcps TDD 97 – 224 are unused

MaxNrDLPhysicalchannelsTS   ::= INTEGER (1..16)

MaxNrTimeslots              ::= INTEGER (1..14)
-- 1.28Mcps values 7-14 are unused

MaxNrULPhysicalchannels     ::= INTEGER (1..2)

/* partly omitted */

-- U

UARFCN                  ::= INTEGER (0..16383,...)
-- Corresponds to: 0.0Hz..3276.6Mhz. See 25.101, 25.105

UDRE ::= ENUMERATED {
    lessThan1,
    between1-and-4,
    between4-and-8,
    over8,
    ...
}

UE-Capabilities-Info ::= SEQUENCE {
    hSDSCH-Physical-Layer-Category      INTEGER (1..64,...),
    mAChs-Reordering-Buffer-Size        MAChsReorderingBufferSizeINTEGER (1..300,...),
    iE-Extensions                       ProtocolExtensionContainer { { UE-Capabilities-Info-ExtIEs } }
    OPTIONAL,
    ...
}
```

**3GPP TSG-RAN3 Meeting #37**
**Budapest, Hungary, 25th - 29th August 2003**

***Tdoc ⌘R3-031138***

*CR-Form-v7*

# CHANGE REQUEST

⌘ **25.433** **CR** **875** ⌘ **rev** **1** ⌘ Current version: **5.5.0** ⌘

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

| | | | | | |
|---|---|---|---|---|---|
| ***Title:*** | ⌘ | MAC-hs Reordering Buffer Size | | | |
| ***Source:*** | ⌘ | RAN3 | | | |
| ***Work item code:*** | ⌘ | HSDPA-IuBIur | ***Date:*** | ⌘ | 28/08/2003 |
| ***Category:*** | ⌘ | **F** | ***Release:*** | ⌘ | Rel-5 |

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***Reason for change:*** ⌘ It is currently not possible to modify the MAC-hs Reordering Buffer Size. There are however situations when this is required. One example is described below.

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Step 2: The UE is moved to HS-DSCH state (Interactive/Background RAB mapped on HS-DSCH). The *MAC-hs Reordering Buffer Size* IE shall be set to "the total buffer size defined in UE capability minus the RLC AM buffer". Logically, there is no reason to restrict the memory allocated for HS-DSCH operation further than what is needed for the AM RLC entities pertaining to Signalling Radio Bearers and the Interactive/Background RAB.

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***Summary of change:*** ⌘ Revision 1: *MAC-hs Reordering Buffer Size* IE has been defined as a single IE and the unit (i.e. kBytes) is added to the description. *HS-DSCH FDD Information* IE, *HS-DSCH Information To Modify* IE and *HS-DSCH TDD Information* IE have been updated with a reference to the *MAC-hs Reordering Buffer Size* IE. ASN.1 has been updated accordingly.

---
The *MAC-hs Reordering Buffer Size* IE has been added to the *HS-DSCH*

| | | |
|---|---|---|
| | | *Information To Modify* IE. Corresponding changes have been done to the ASN.1 code.<br><br>Impact assessment towards the previous version of the specification (same release):<br><br>This CR has isolated impact on the previous version of the specification (same release). The impact can be considered isolated because the change only affects HSDPA. This CR has an impact under functional point of view. |
| ***Consequences if not approved:*** | ⌘ | If the CR is not approved, the procedure for HS-DSCH modification is incomplete. |

| | | | | | |
|---|---|---|---|---|---|
| ***Clauses affected:*** | ⌘ | 9.2.1.31H, 9.2.1.x, 9.2.2.18D, 9.2.3.5F, 9.3.4 | | | |
| | | **Y** | **N** | | |
| ***Other specs*** | ⌘ | **X** | | Other core specifications | ⌘ CR848 rev1 on TS25.423 v5.6.0<br>Tdoc R2-031726 on TS25.321 v5.5.0 |
| ***affected:*** | | | **X** | Test specifications | |
| | | | **X** | O&M Specifications | |
| ***Other comments:*** | ⌘ | | | | |

**How to create CRs using this form:**

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

1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.
2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.
3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

## 9.2.1.31H HS-DSCH Information To Modify

The HS-DSCH Information To Modify provides information for HS-DSCH to be modified.

| IE/Group Name | Presence | Range | IE Type and Reference | Semantics Description | Criticality | Assigned Criticality |
|---|---|---|---|---|---|---|
| **HS-DSCH MAC-d Flow Specific Information** | | *0..<maxnoofMACdFlows>* | | | – | |
| >HS-DSCH MAC-d Flow ID | M | | 9.2.1.31I | | – | |
| >Allocation/Retention Priority | O | | 9.2.1.1A | | – | |
| >Transport Bearer Request Indicator | M | | 9.2.1.62A | | – | |
| >Binding ID | O | | 9.2.1.4 | Shall be ignored if bearer establishment with ALCAP. | – | |
| >Transport Layer Address | O | | 9.2.1.63 | Shall be ignored if bearer establishment with ALCAP. | – | |
| **>Priority Queue Information** | | *0..<maxnoofPrioQueues>* | | | – | |
| >>Priority Queue ID | M | | 9.2.1.49C | | – | |
| >>Scheduling Priority Indicator | O | | 9.2.1.53H | | – | |
| >>T1 | O | | 9.2.1.56a | | – | |
| >>MAC-hs Window Size | O | | 9.2.1.38B | | – | |
| >>MAC-hs Guaranteed Bit Rate | O | | 9.2.1.38Aa | | – | |
| **>>MAC-d PDU Size Index** | | *0..<maxnoofMACdPDUindexes>* | | | – | |
| >>>SID | M | | 9.2.1.53I | | – | |
| >>>MAC-d PDU Size | O | | 9.2.1.38A | | – | |
| MAC-hs Reordering Buffer Size | O | | 9.2.1.x | | – | |
| CQI Feedback Cycle k | O | | 9.2.2.21B | For FDD only | – | |
| CQI Repetition Factor | O | | 9.2.2.4Cb | For FDD only | – | |
| ACK-NACK Repetition Factor | O | | 9.2.2.a | For FDD only | – | |
| CQI Power Offset | O | | 9.2.2.4Ca | For FDD only | – | |
| ACK Power Offset | O | | 9.2.2.b | For FDD only | – | |
| NACK Power Offset | O | | 9.2.2.23a | For FDD only | – | |
| HS-SCCH Power Offset | O | | 9.2.2.18I | For FDD only | – | |
| Measurement Power Offset | O | | 9.2.2.21C | For FDD only | – | |
| HS-SCCH Code Change Grant | O | | 9.2.1.31L | | – | |
| TDD ACK NACK Power Offset | O | | 9.2.3.18F | For TDD only | – | |

### 9.2.1.x MAC-hs Reordering Buffer Size

The *MAC-hs Reordering Buffer Size* IE indicates the total buffer size defined in UE capability minus the RLC AM buffer in kBytes

| IE/Group Name | Presence | Range | IE Type and Reference | Semantics Description |
|---|---|---|---|---|
| MAC-hs Reordering Buffer Size | | | INTEGER (1..300,…) | |

## 9.2.2.18D HS-DSCH FDD Information

The HS-DSCH Information provides information for HS-DSCH MAC-d flows to be established.

| IE/Group Name | Presence | Range | IE Type and Reference | Semantics Description | Criticality | Assigned Criticality |
|---|---|---|---|---|---|---|
| HS-DSCH MAC-d Flow Specific Information | | *1..<maxnoofMACdFlows>* | | | – | |
| >HS-DSCH MAC-d Flow ID | M | | 9.2.1.31I | | – | |
| >Allocation/Retention Priority | M | | 9.2.1.1A | | – | |
| >Binding ID | O | | 9.2.1.4 | Shall be ignored if bearer establishment with ALCAP. | – | |
| >Transport Layer Address | O | | 9.2.1.63 | Shall be ignored if bearer establishment with ALCAP. | – | |
| **>Priority Queue Information** | | *1..<maxnoofPrioQueues>* | | | – | |
| >>Priority Queue ID | M | | 9.2.1.49C | | – | |
| >>Scheduling Priority Indicator | M | | 9.2.1.53H | | – | |
| >>T1 | M | | 9.2.1.56a | | – | |
| >>MAC-hs Window Size | M | | 9.2.1.38B | | – | |
| >>MAC-hs Guaranteed Bit Rate | O | | 9.2.1.38Aa | | – | |
| **>>MAC-d PDU Size Index** | | *1..<maxnoofMACdPDUIndexes>* | | | – | |
| >>>SID | M | | 9.2.1.53I | | – | |
| >>>MAC-d PDU Size | M | | 9.2.1.38A | | – | |
| **UE Capabilities Information** | | *1* | | | – | |
| >HS-DSCH Physical Layer Category | M | | 9.2.1.31Ia | | – | |
| >MAC-hs Reordering Buffer Size | M | | 9.2.1.x~~INTEGER (1..300,...)~~ | ~~The total buffer size defined in UE capability minus the RLC AM buffer.~~ | – | |
| CQI Feedback Cycle k | M | | 9.2.2.21B | | – | |
| CQI Repetition Factor | C-CQICyclek | | 9.2.2.4Cb | | – | |
| ACK-NACK Repetition Factor | M | | 9.2.2.a | | – | |
| CQI Power Offset | M | | 9.2.2.4Ca | | – | |
| ACK Power Offset | M | | 9.2.2.b | | – | |
| NACK Power Offset | M | | 9.2.2.23a | | – | |
| HS-SCCH Power Offset | O | | 9.2.2.18I | | – | |
| Measurement Power Offset | O | | 9.2.2.21C | | – | |

| Condition | Explanation |
|---|---|
| CQICyclek | The IE shall be present if the *CQI Feedback Cycle k* IE is set to a value greater than 0. |

| Range Bound | Explanation |
|---|---|
| *maxnoofMACdFlows* | Maximum number of HS-DSCH MAC-d flows |
| *maxnoofPrioQueues* | Maximum number of Priority Queues |
| *maxnoofMACdPDUindexes* | Maximum number of different MAC-d PDU SIDs |

### 9.2.3.5F HS-DSCH TDD Information

The HS-DSCH TDD Information provides information for HS-DSCH MAC-d flows to be established.

| IE/Group Name | Presence | Range | IE Type and Reference | Semantics Description | Criticality | Assigned Criticality |
|---|---|---|---|---|---|---|
| **HS-DSCH MAC-d Flow Specific Information** | | *1..<maxnoofMACdFlows>* | | | – | |
| >HS-DSCH MAC-d Flow ID | M | | 9.2.1.31I | | – | |
| >Allocation/Retention Priority | M | | 9.2.1.1A | | – | |
| >Binding ID | O | | 9.2.1.4 | Shall be ignored if bearer establishment with ALCAP. | – | |
| >Transport Layer Address | O | | 9.2.1.63 | Shall be ignored if bearer establishment with ALCAP. | – | |
| **>Priority Queue Information** | M | *1..<maxnoofPrioQueues>* | | | – | |
| >>Priority Queue ID | M | | 9.2.1.49C | | – | |
| >>Scheduling Priority Indicator | M | | 9.2.1.53H | | – | |
| >>T1 | M | | 9.2.1.56a | | – | |
| >>MAC-hs Window Size | M | | 9.2.1.38B | | – | |
| >>MAC-hs Guaranteed Bit Rate | O | | 9.2.1.38Aa | | – | |
| **>>MAC-d PDU Size Index** | | *1..<maxnoofMACdPDUindexes>* | | | – | |
| >>>SID | M | | 9.2.1.53I | | – | |
| >>>MAC-d PDU Size | M | | 9.2.1.38A | | – | |
| **UE Capabilities Information** | | *1* | | | – | - |
| >HS-DSCH Physical Layer Category | M | | 9.2.1.31Ia | | – | |
| >MAC-hs Reordering Buffer Size | M | | 9.2.1.x~~INTEGER (1..300,...)~~ | ~~The total buffer size defined in UE capability minus the RLC AM buffer.~~ | – | |
| TDD ACK NACK Power Offset | M | | 9.2.3.18F | | – | |

| Range Bound | Explanation |
|---|---|
| *maxnoofMACdFlows* | Maximum number of HS-DSCH MAC-d flows |
| *maxnoofPrioQueues* | Maximum number of Priority Queues |
| *maxnoofMACdPDUindexes* | Maximum number of different MAC-d PDU SIDs |

## 9.3.4 Information Elements Definitions

```
--**************************************************************************
--
-- Information Element Definitions
--
--**************************************************************************

/* partly omitted */

-- ==========================================
--  H
-- ==========================================


HARQ-MemoryPartitioning ::= CHOICE {
    implicit        HARQ-MemoryPartitioning-Implicit,
    explicit        HARQ-MemoryPartitioning-Explicit,
    ...
    }

HARQ-MemoryPartitioning-Implicit    ::= SEQUENCE {
    number-of-Processes         INTEGER (1..8,...),
    iE-Extensions               ProtocolExtensionContainer { { HARQ-MemoryPartitioning-Implicit-ExtIEs } }
    OPTIONAL,
    ...
}

HARQ-MemoryPartitioning-Implicit-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

HARQ-MemoryPartitioning-Explicit    ::= SEQUENCE {
    hARQ-MemoryPartitioningList         HARQ-MemoryPartitioningList,
    iE-Extensions                       ProtocolExtensionContainer { { HARQ-MemoryPartitioning-Explicit-ExtIE
} }         OPTIONAL,
    ...
}

HARQ-MemoryPartitioning-Explicit-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

HARQ-MemoryPartitioningList ::= SEQUENCE (SIZE (1..maxNrOfHARQProcesses)) OF HARQ-MemoryPartitioningItem

HARQ-MemoryPartitioningItem ::= SEQUENCE {
    process-Memory-Size                 ENUMERATED {
                                        hms800, hms1600, hms2400, hms3200, hms4000,
                                        hms4800, hms5600, hms6400, hms7200, hms8000,
                                        hms8800, hms9600, hms10400, hms11200, hms12000,
                                        hms12800, hms13600, hms14400, hms15200, hms16000,
                                        hms17600, hms19200, hms20800, hms22400, hms24000,
                                        hms25600, hms27200, hms28800, hms30400, hms32000,
                                        hms36000, hms40000, hms44000, hms48000, hms52000,
                                        hms56000, hms60000, hms64000, hms68000, hms72000,
                                        hms76000, hms80000, hms88000, hms96000, hms104000,
                                        hms112000, hms120000, hms128000, hms136000, hms144000,
                                        hms152000, hms160000, hms176000, hms192000, hms208000,
                                        hms224000, hms240000, hms256000, hms272000, hms288000,
                                        hms304000,...},
    iE-Extensions                       ProtocolExtensionContainer { { HARQ-MemoryPartitioningItem-ExtIEs } }
        OPTIONAL,
    ...
}

HARQ-MemoryPartitioningItem-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

HS-DSCHProvidedBitRate ::= SEQUENCE (SIZE (1..16)) OF HS-DSCHProvidedBitRate-Item

HS-DSCHProvidedBitRate-Item ::= SEQUENCE {
    schedulingPriorityIndicator         SchedulingPriorityIndicator,
    hS-DSCHProvidedBitRateValue         HS-DSCHProvidedBitRateValue,
    iE-Extensions                       ProtocolExtensionContainer { { HS-DSCHProvidedBitRate-Item-ExtIEs} }
    ...
}
```

```
HS-DSCHProvidedBitRate-Item-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

HS-DSCHProvidedBitRateValue ::= INTEGER(0..16777215,...)
-- Unit bit/s, Range 0..2^24-1, Step 1 bit


HS-DSCHRequiredPower ::= SEQUENCE (SIZE (1..16)) OF HS-DSCHRequiredPower-Item

HS-DSCHRequiredPower-Item ::= SEQUENCE {
    schedulingPriorityIndicator             SchedulingPriorityIndicator,
    hS-DSCHRequiredPowerValue               HS-DSCHRequiredPowerValue,
    hS-DSCHRequiredPowerPerUEInformation    HS-DSCHRequiredPowerPerUEInformation,
    iE-Extensions                           ProtocolExtensionContainer { { HS-DSCHRequiredPower-Item-ExtIEs}
    ...
}

HS-DSCHRequiredPower-Item-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

HS-DSCHRequiredPowerValue ::= INTEGER(0..1000)
-- Unit %, Range 0 ..1000, Step 0.1%

HS-DSCHRequiredPowerPerUEInformation ::= SEQUENCE (SIZE (1.. maxNrOfContextsOnUeList)) OF HS-
DSCHRequiredPowerPerUEInformation-Item


HS-DSCHRequiredPowerPerUEInformation-Item ::= SEQUENCE {
    cRNC-CommunicationContextID             CRNC-CommunicationContextID,
    hS-DSCHRequiredPowerPerUEWeight         HS-DSCHRequiredPowerPerUEWeight     OPTIONAL,
    iE-Extensions                           ProtocolExtensionContainer { { HS-
DSCHRequiredPowerPerUEInformation-Item-ExtIEs} }        OPTIONAL,
    ...
}

HS-DSCHRequiredPowerPerUEInformation-Item-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

HS-DSCHRequiredPowerPerUEWeight ::= INTEGER(0..100)
-- Unit %, Range 0 ..100, Step 1%


HSDSCH-FDD-Information ::= SEQUENCE {
    hsDSCH-MACdFlow-Specific-Info       HSDSCH-MACdFlow-Specific-InfoList,
    ueCapability-Info                   UE-Capability-Information,
    cqiFeedback-CycleK                  CQI-Feedback-Cycle,
    cqiRepetitionFactor                 CQI-RepetitionFactor            OPTIONAL,
    -- This IE shall be present if the CQI Feedback Cycle k is greater than 0
    ackNackRepetitionFactor             AckNack-RepetitionFactor,
    cqiPowerOffset                      CQI-Power-Offset,
    ackPowerOffset                      Ack-Power-Offset,
    nackPowerOffset                     Nack-Power-Offset,
    hsscch-PowerOffset                  HSSCCH-PowerOffset              OPTIONAL,
    measurement-Power-Offset            Measurement-Power-Offset        OPTIONAL,
    iE-Extensions                       ProtocolExtensionContainer { { HSDSCH-FDD-Information-ExtIEs} }
    ...
}

HSDSCH-FDD-Information-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

HSDSCH-TDD-Information ::= SEQUENCE {
    hsDSCH-MACdFlow-Specific-Info       HSDSCH-MACdFlow-Specific-InfoList,
    ueCapability-Info                   UE-Capability-Information,
    tDD-AckNack-Power-Offset            TDD-AckNack-Power-Offset,
    iE-Extensions                       ProtocolExtensionContainer { { HSDSCH-TDD-Information-ExtIEs} }
    ...
}

HSDSCH-TDD-Information-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}
```

```
HSDSCH-MACdFlow-Specific-InfoList ::= SEQUENCE (SIZE (1..maxNrOfMACdFlows)) OF HSDSCH-MACdFlow-Specific-
InfoItem

HSDSCH-MACdFlow-Specific-InfoItem ::= SEQUENCE {
    hsDSCH-MACdFlow-ID                  HSDSCH-MACdFlow-ID,
    allocationRetentionPriority         AllocationRetentionPriority,
    bindingID                           BindingID                   OPTIONAL,
    transportLayerAddress               TransportLayerAddress       OPTIONAL,
    priorityQueueInfo                   PriorityQueue-InfoList,
    iE-Extensions                       ProtocolExtensionContainer { { HSDSCH-MACdFlow-Specific-InfoItem-
ExtIEs} }       OPTIONAL,
    ...
}

HSDSCH-MACdFlow-Specific-InfoItem-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

HSDSCH-Information-to-Modify ::= SEQUENCE {
    hsDSCH-MACdFlow-Specific-Info-to-Modify         HSDSCH-MACdFlow-Specific-InfoList-to-Modify
    mAChs-Reordering-Buffer-Size                    MAChsReorderingBufferSize       OPTIONAL,
    cqiFeedback-CycleK                              CQI-Feedback-Cycle              OPTIONAL,   -- For FDD
only
    cqiRepetitionFactor                             CQI-RepetitionFactor            OPTIONAL,   -- For FDD
only
    ackNackRepetitionFactor                         AckNack-RepetitionFactor        OPTIONAL,   -- For FDD
only
    cqiPowerOffset                                  CQI-Power-Offset                OPTIONAL,   -- For FDD
only
    ackPowerOffset                                  Ack-Power-Offset                OPTIONAL,   -- For FDD
only
    nackPowerOffset                                 Nack-Power-Offset               OPTIONAL,   -- For FDD
only
    hsscch-PowerOffset                              HSSCCH-PowerOffset              OPTIONAL,   -- only for
FDD
    measurement-Power-Offset                        Measurement-Power-Offset        OPTIONAL,   -- For FDD
only
    hSSCCHCodeChangeGrant                           HSSCCH-Code-Change-Grant        OPTIONAL,
    tDDAckNackPowerOffset                           TDD-AckNack-Power-Offset        OPTIONAL,   -- For TDD
only
    iE-Extensions                                   ProtocolExtensionContainer { { HSDSCH-Information-to-
Modify-ExtIEs} }        OPTIONAL,
    ...
}

HSDSCH-Information-to-Modify-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

/* partly omitted */

-- ==========================================
--  M
-- ==========================================

MACdPDU-Size ::= INTEGER (1..5000,...)

MACdPDU-Size-Indexlist ::= SEQUENCE (SIZE (1..maxNrOfMACdPDUIndexes)) OF MACdPDU-Size-IndexItem

MACdPDU-Size-IndexItem ::= SEQUENCE {
    sID                                 INTEGER (0..7),
    macdPDU-Size                        MACdPDU-Size,
    iE-Extensions                       ProtocolExtensionContainer { { MACdPDU-Size-IndexItem-ExtIEs} }
    ...
}

MACdPDU-Size-IndexItem-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

MACdPDU-Size-Indexlist-to-Modify ::= SEQUENCE (SIZE (1..maxNrOfMACdPDUIndexes)) OF MACdPDU-Size-IndexItem-to-
Modify

MACdPDU-Size-IndexItem-to-Modify ::= SEQUENCE {
    sID                                 INTEGER (0..7),
    macdPDU-Size                        MACdPDU-Size
    iE-Extensions                       ProtocolExtensionContainer { { MACdPDU-Size-IndexItem-to-Modify-
ExtIEs} }       OPTIONAL,
```

```
    ...
}

MACdPDU-Size-IndexItem-to-Modify-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

MAChsGuaranteedBitRate ::= INTEGER (0..16777215,...)

MAChsReorderingBufferSize ::= INTEGER (1..300,...)
-- Unit kBytes

MAC-hsWindowSize        ::= ENUMERATED {v4, v6, v8, v12, v16, v24, v32,...}

MaximumDL-PowerCapability ::=  INTEGER(0..500)
-- Unit dBm, Range 0dBm .. 50dBm, Step +0.1dB

/* partly omitted */

-- ==========================================
--  U
-- ==========================================

UARFCN ::= INTEGER (0..16383, ...)
-- corresponds to 1885.2MHz .. 2024.8MHz

UC-Id ::= SEQUENCE {
    rNC-ID              RNC-ID,
    c-ID                C-ID,
    iE-Extensions           ProtocolExtensionContainer { {UC-Id-ExtIEs} } OPTIONAL,
    ...
}
UC-Id-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

UDRE ::= ENUMERATED {
    udre-minusequal-one-m,
    udre-betweenoneandfour-m,
    udre-betweenfourandeight-m,
    udre-greaterequaleight-m
}


UE-Capability-Information ::= SEQUENCE {
    hSDSCH-Physical-Layer-Category          INTEGER (1..64,...),
    mAChs-Reordering-Buffer-Size            MAChsReorderingBufferSizeINTEGER (1..300,...),
    iE-Extensions                       ProtocolExtensionContainer { { UE-Capability-Information-ExtIEs } }
        OPTIONAL,
    ...
}

UE-Capability-Information-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

UL-CapacityCredit ::= INTEGER (0..65535)

UL-DL-mode ::= ENUMERATED {
    ul-only,
    dl-only,
    both-ul-and-dl
}
```