Project	IEEE 802.16 Broadband Wireless Access Working Group <http://ieee802.org/16>
Title	**A More Flexible Dedicated Control for the Harmonized Map**
Date Submitted	**2005-03-17**
Source(s)	Mark Cudak, Brian Classon Mark.Cudak@motorola.com Motorola Inc.
Re:	Proposes a more efficient and flexible structure for Dedicated DL Control
Abstract	The normal map extension for HARQ has incorporated optional Dedicated DL Control into the HARQ sub burst IE formats for all types of HARQ—Chase, CTC IR and CC IR. The Dedicated Control IE as defined has several short comings with respect to efficiency, future expansion and flexibility that need to be resolved.
Purpose	Adoption
Notice	This document has been prepared to assist IEEE 802.16. It is offered as a basis for discussion and is not binding on the contributing individual(s) or organization(s). The material in this document is subject to change in form and content after further study. The contributor(s) reserve(s) the right to add, amend or withdraw material contained herein.
Release	The contributor grants a free, irrevocable license to the IEEE to incorporate material contained in this contribution, and any modifications thereof, in the creation of an IEEE Standards publication; to copyright in the IEEE's name any IEEE Standards publication even though it may include portions of this contribution; and at the IEEE's sole discretion to permit others to reproduce in whole or in part the resulting IEEE Standards publication. The contributor also acknowledges and accepts that this contribution may be made public by IEEE 802.16.
Patent Policy and Procedures	The contributor is familiar with the IEEE 802.16 Patent Policy and Procedures (Version 1.0) <http://ieee802.org/16/ipr/patents/policy.html>, including the statement "IEEE standards may include the known use of patent(s), including patent applications, if there is technical justification in the opinion of the standards-developing committee and provided the IEEE receives assurance from the patent holder that it will license applicants under reasonable terms and conditions for the purpose of implementing the standard." Early disclosure to the Working Group of patent information that might be relevant to the standard is essential to reduce the possibility for delays in the development process and increase the likelihood that the draft publication will be approved for publication. Please notify the Chair <mailto:r.b.marks@ieee.org > as early as possible, in written or electronic form, of any patents (granted or under application) that may cover technology that is under consideration by or has been approved by IEEE 802.16. The Chair will disclose this notification via the IEEE 802.16 web site <http://ieee802.org/16/ipr/patents/notices>.

Note: The purpose of this revision, r1, was to harmonize 132 with the accepted changes in 115r3

Introduction

The normal map extension for HARQ has incorporated two types of optional dedicated control fields into the HARQ sub burst IE formats for all types of HARQ—Chase, CTC IR and CC IR. The control fields are the CQICH Control and the Dedicated DL Control. These control fields are very similar in that they both add low-overhead when not used (a single bit indicates that the optional control fields are not present); are assigned on a per HARQ sub burst basis; are directed to the SS represented by the RCID and allocate specific fields when enabled. The Dedicated DL Control IE can contain several different types of dedicated control within it (e.g., SDMA); the very similar CQICH Control is specified by itself outside of the rest of the Dedicated DL Control.

The Dedicated DL Control IE as defined has several short comings. First, the Dedicated Control IE is not as efficient as it should be. When enabled each Dedicated Control IE consumes at least 12 bits. This is true even if only 1 additional bit needs to be communicated. This can be a significant burden if the Dedicated Control IE is used by all sub bursts within the allocated region. In addition, the Dedicated Control IE has limited capability for future enhancement. The Dedicated DL Control IE enables only four additional control fields; one of these fields has already been assigned. Finally, it is unusual that the CQICH Control fields have not been incorporated as part of the Dedicated DL Control IE. One might speculate that this was done to avoid the aforementioned inefficiencies of the Dedicated Control IE. In light of all these issues, it seems appropriate to restructure the Dedicated Control IEs to make them more efficient, allow for future expansion and eliminate any unnecessary special cases (e.g. CQICH control).

This contribution proposes a method to allow for the flexible assignment of dedicated control by leveraging the Downlink Channel Descriptor (DCD).

Requirements

The following are requirements that the newly proposed Dedicated DL Control IE must satisfy.

1) *Future Expansion* – Future features may require additional types of dedicated DL control fields. These control fields will have to be backwards compatible and therefore parsable by older generations of 802.16e equipment. Therefore, a mechanism must exist within the current specification that will allow for the definition of new dedicated DL control fields having arbitrary length.
2) *Efficiency* – The dedicated DL control fields may be contained as part of every HARQ sub-burst allocation within a H-ARQ DL MAP IE, and therefore they must consume very little overhead. TLV encoding is an impractical solution for this particular case.

3) ***Flexibility*** – Not all dedicated control options will be appropriate for all deployments and all base station implementations. Therefore, the overhead associated with unused Dedicated DL Control Fields will be inappropriate for systems that do not employ the desired feature. Moreover, features that are appropriate for first generation systems may not be effective or desirable in later generations. Static dedicated control assignment will burden future system to support legacy overhead.

Concept

In order to facilitate future proofing, efficiency and flexibility, it is proposed that the structure of the dedicated control be configured as part of the DCD. This approach is very similar to how the burst profiles are configured per DIUC. Four parameters would completely specify the dedicated control, one global parameter and three per indicator parameters:

> ***Number of Dedicated DL Control Indicators*** – A base station can enable one or more dedicated control indicators to be included in the HARQ sub-burst. Typically only one or two might be included. However, many more types of dedicated control indicators may exist.

> ***Position of Dedicated DL Control Indicator*** – The position of the current dedicated control indicator within the enabled list of dedicated control IEs.

> ***Type of Dedicated DL Control Indication*** – The type of the dedicated control being indicated. Possible types might include CQICH, SDMA or some future capability.

> ***Length of the Dedicated DL Control IE*** – The length in bits of the dedicated control IE. This field provides the necessary future expansion capability. SS which belong to an older generation who are unaware of the particular type of dedicated control will be able to parse sub bursts intended for SS of a newer generation with this knowledge.

The configuration of the dedicated control within the DCD allows for a very efficient implementation within the HARQ sub-burst. A simple loop which iterated by the "Number of Dedicated DL Control Indicators" specified can be used to cycle through the potential dedicated control indications. If no dedicated control indications are configured, then absolutely no overheard is incurred within the HARQ sub-burst. If a single dedicated control is configured, the overhead would be equivalent to the overhead as currently specified for the CQICH control.

Editorial Instructions

On page 258, line 1 replace section 8.4.5.3.21.1 Dedicated DL Control with the following

8.4.5.3.21.1 Dedicated DL Control

Multiple optional types of dedicated downlink control may be configured as part of the HARQ sub-burst allocations. The particular dedicated downlink control types enabled for a system are defined within the DCD.

8.4.5.3.21.1.1 Dedicated DL Control Configuration

Table 285KA defines the format for the dedicated downlink control configuration which is used in the DCD message. The configuration defines the number dedicated downlink control types enabled and the respective size of each dedicated control IE. The order of the dedicated control indications within the HARQ sub-burst is identical to the order in which they are defined in the dedicated control configuration. If the Dedicate DL Control Configuration is not present in the DCD, then there are no dedicated control indicators in the DL HARQ sub-burst IEs.

Table 285KA Dedicated DL Control Configuration

Syntax	Size	Notes
Dedicated DL Control Configuration {		
Type	8 bits	Type value within the DCD message
Length	8 bits	
Number Dedicated DL Control Indicators	4 bits	Number of dedicated control indicators enabled within the HARQ sub-burst
For (k=0; k< Number Dedicated DL Control Indicators; k++){		
Dedicated DL Control Type	8 bits	Type of the dedicated control enabled
Dedicated DL Control Length	4 bits	Length of the dedicated control IE in bits
}		
Padding	Variable	Used to match octet boundary
}		

8.4.5.3.21.1.2 Dedicated DL Control IE Types

Table 285KB lists the current types of dedicated control defined in this standard.

Table 285KB Dedicated DL Control Configuration

Type		Value	IE Length	Notes	
CQICH DL Control		0	16 bits	Parameters for allocating and deallocation CQICH feedback.	
SDMA DL Control		1	4 bits	Indicates the activation of SDMA	
CQICH Disable DL Control IE		2	0 bits	CQICH Disable requires no additional parameters beyond the indicator bit.	
Reserved		3-255			

8.4.5.3.21.1.2.1 CQICH Dedicated DL Control

Table 285KC defines the content of the CQICH Dedicated DL Control IE

Table 285KC CQICH Dedicated DL Control IE

Syntax		Size	Notes	
Allocation Index		6 bits	Index to the channel in a frame the CQI report should be transmitted by the SS	
Period (p)		3 bits	A CQI feedback is transmitted on the CQI channels indexed by the (CQI Channel Index) by the SS in every 2^p frames.	
Frame offset		3 bits	The MSS starts reporting at the frame of which the number has the same 3 LSB as the specified frame offset. If the current frame is specified, the MSS should start reporting in 8 frames.	
Duration (d)		4 bits	A CQI feedback is transmitted on the CQI channels indexed by the (CQI Channel Index) by the SS for $2^{(d-1)}$ frames. If d is 0b0000, the CQICH is de-allocated. If d is 0b1111, the MSS should report until the BS command for the MSS to stop	

8.4.5.3.21.1.2.2 SDMA Dedicated DL Control

Table 285KD defines the content of the SDMA Dedicated DL Control IE

Table 285KD SDMA Dedicated DL Control IE

Syntax		Size	Notes	
Num SDMA Layers		2 bits	Number of SDMA layers minus 1	

The Dedicated DL Control IE with SDMA Control Indicator =1 shall be present within the first sub-burst allocation of each layer of SDMA allocations (including the first layer). Each SDMA layer has is own pilot pattern (layer n uses the pilot pattern defined for antenna n, see 8.4.8). When the SDMA control info is present, the OFDMA Symbol offset and Subchannel offset shall be reset to the beginning of the two dimensional data region defined in the HARQ DL MAP IE.

8.4.5.3.21.1.2.3 CQICH Disable Dedicated DL Control IE

Dedicated Control IE is length zero. When the CQICH Disable Indicator is set to 1, the SS is instructed to deallocate all CQI feedback when the current ACID is completed successfully.

8.4.5.3.21.2 Dedicated UL Control

Multiple optional types of dedicated uplink control may be configured as part of the HARQ sub-burst allocations. The particular dedicated uplink control types enabled for a system are defined within the DCD.

8.4.5.3.21.2.1 Dedicated UL Control Configuration

Table 285KE defines the format for the dedicated uplink control configuration which is used in the DCD message. The configuration defines the number dedicated uplink control types enabled and the respective size of each dedicated uplink control IE. The order of the dedicated uplink control indications within the HARQ sub-burst is identical to the order in which they are defined in the dedicated control configuration. If the Dedicate UL Control Configuration is not present in the DCD, then there are no dedicated control indicators in the uplink HARQ sub-burst IEs.

Table 285KE Dedicated UL Control Configuration

Syntax	Size	Notes
Dedicated UL Control Configuration {		
Type	8 bits	Type value within the DCD message
Length	8 bits	
Number Dedicated UL Control Indicators	4 bits	Number of dedicated control indicators enabled within the HARQ sub-burst

For (k=0;
      k< Number Dedicated UL
        Control Indicators;
      k++){		

Dedicated UL Control Type	8 bits	Type of the dedicated control enabled
Dedicated UL Control Length	4 bits	Length of the dedicated control IE in bits
}		
Padding	Variable	Used to match octet boundary
}		

8.4.5.3.21.2.2 Dedicated UL Control IE Types

Table 285KF lists the current types of dedicated control defined in this standard.

Table 285KF Dedicated UL Control Configuration

Type		Value	IE Length	Notes	
SDMA Control		0	4 bits	Indicates the activation of SDMA	
Reserved		1-255			

8.4.5.3.21.2.2.21 SDMA Dedicated UL Control

Table 285KD defines the content of the SDMA Dedicated UL Control IE

Table 285KG SDMA Dedicated UL Control IE

Syntax		Size		Notes	
Num SDMA Layers		2 bits		Number of SDMA layers minus 1	
Pilot pattern		2 bit		00 = pattern A 01 = pattern B 10 = pattern C 11 = pattern D	

The Dedicated UL Control IE with SDMA Control Info =1 shall be present within the first sub-burst allocation of each layer of SDMA allocations. When the SDMA control info is present, the OFDMA Symbol offset and Subchannel offset shall be reset to the Start OFDMA Symbol offset and Start Subchannel offset of the HARQ UL MAP IE. The specified pilot pattern (see 8.4.8.1.5) is used for all sub-burst allocations until the next occurrence of SDMA Control Info or until the end of the current HARQ UL MAP IE. The information specified in this SDMA control info is first applied to the same sub-burst allocation that contains the Dedicated UL Control IE..

On page 476, line 47, Section 11.4 add the following line to the table 358a

Table 358a DCD Channel Encoding

Name	Type (1 byte)	Length	Value (variable length)		PHY Scope
Dedicated DL Control Configuration	51	Variable	See 8.4.5.3.21.1.1		OFDMA
Dedicated UL Control Configuration	52	Variable	See 8.4.5.3.21.1.2		OFDMA

On page 260, section 8.4.5.3.22 HARQ DL MAP IE make the following edits to Tables 285n, 285o, and 285p

Tables 285n, 285o, 285p below include editing instructions to implement this solution and those recommended in C80216e-05_115r3.doc. The editor should implement these changes for tables 285n, 285o, 285p from this contribution in place of those in C80216e-05_115r3.doc.

Table 285n—DL HARQ Chase sub-burst IE format

DL H-ARQ Chase Sub-Burst IE {		
~~DIUC~~	~~4 bits~~	
~~Repetition Coding Indication~~	~~2 bits~~	~~0b00 – No repetition coding~~ ~~0b01 – Repetition coding of 2 used~~ ~~0b10 – Repetition coding of 4 used~~ ~~0b11 – Repetition coding of 6 used~~
N sub burst	5 bits	Number of sub-bursts in 2D region
Reserved	3 bits	
For (j=0; j< N sub burst; j++){		
RCID_IE()	Variable	
Duration	10 bits	Duration in slots
Sub-Burst DIUC Indicator	1 bit	If Sub-Burst DIUC Indicator is 1, it indicates that DIUC is explicitly assigned for this sub-burst. Otherwise, the this sub-burst will use the same DIUC as the previous sub-burst If j is 0 then this indicator shall be 1.
Reserved	1 bit	
If(Sub-Burst DIUC Indicator == 1){		
DIUC	4 bits	
Repetition Coding Indication	2 bits	0b00 – No repetition coding 0b01 – Repetition coding of 2 used 0b10 – Repetition coding of 4 used 0b11 – Repetition coding of 6 used
Reserved	2 bits	
}		
ACID	4 bits	
AI_SN	1 bit	
ACK disable	1 bit	When this bit is "1" no ACK channel is allocated and the SS shall not reply with an ACK.

For (k=0;
    k< Number Dedicated DL
        Control Indicators;
    k++){
		Number Dedicated DL Control Indicators as specified in the DCD

If (Dedicated DL Control Indicator *k* ==1) {	1	*k-th* dedicated DL control indicator as configured in the DCD

Dedicated DL Control IE *k* ()	Length as specified in DCD	*k-th* dedicated DL control IE as configured in the DCD
}		
Reserved	Variable	0 to 3 bits to preserve nibble dependent on the DL control indicator
~~CQICH Control Indicator~~	~~1 bits~~	
~~If(CQICH Control Indicator == 1){~~		
~~Allocation Index~~	~~6 bits~~	~~Index to the channel in a frame the CQI report should be transmitted by the SS~~
~~Period (p)~~	~~3 bits~~	~~A CQI feedback is transmitted on the CQI channels indexed by the (CQI Channel Index) by the SS in every 2^p frames.~~
~~Frame offset~~	~~3 bits~~	~~The MSS starts reporting at the frame of which the number has the same 3 LSB as the specified frame offset. If the current frame is specified, the MSS should start reporting in 8 frames.~~
~~Duration (d)~~	~~4 bits~~	~~A CQI feedback is transmitted on the CQI channels indexed by the (CQI Channel Index) by the SS for $2^{(d-1)}$ frames. If d is 0b0000, the CQICH is de-allocated. If d is 0b1111, the MSS should report until the BS command for the MSS to stop~~
~~}~~		
~~Dedicated DL Control Indicator~~	~~1 bit~~	
}		
}		

Table 285o—DL HARQ IR CTC sub-burst IE format

DL H-ARQ IR Sub-Burst IE {		
N sub burst	5 bits	
Reserved	3 bits	
For (j=0; j< N sub burst; j++){		
RCID_IE()	Variable	
Nep	4 bits	
Nsch	4 bits	
SPID	2 bits	
ACID	4 bits	
AI_SN	1 bit	
ACK disable	1 bit	When this bit is "1" no ACK channel is allocated and the SS shall not reply with an ACK.
Reserved	2 bits	
For (k=0;		Number Dedicated DL Control Indicators as

k< Number Dedicated DL Control Indicators; k++){		specified in the DCD	
If (Dedicated DL Control Indicator *k* ==1) {	1	*k-th* dedicated DL control indicator as configured in the DCD	
Dedicated DL Control IE *k* ()	Length as specified in DCD	*k-th* dedicated DL control IE as configured in the DCD	
}			
Reserved	Variable	0 to 3 bits to preserve nibble dependent on the DL control indicator	
~~CQICH Control Indicator~~	~~1 bits~~		
~~If(CQICH Control Indicator == 1){~~			
~~Allocation Index~~	~~6 bits~~	~~Index to the channel in a frame the CQI report should be transmitted by the SS~~	
~~Period (p)~~	~~3 bits~~	~~A CQI feedback is transmitted on the CQI channels indexed by the (CQI Channel Index) by the SS in every 2^p frames.~~	
~~Frame offset~~	~~3 bits~~	~~The MSS starts reporting at the frame of which the number has the same 3 LSB as the specified frame offset. If the current frame is specified, the MSS should start reporting in 8 frames.~~	
~~Duration (d)~~	~~4 bits~~	~~A CQI feedback is transmitted on the CQI channels indexed by the (CQI Channel Index) by the SS for 2^(d-1) frames. If d is 0b0000, the CQICH is de-allocated. If d is 0b1111, the MSS should report until the BS command for the MSS to stop~~	
~~}~~			
~~Dedicated DL Control Indicator~~	~~1 bit~~		
~~If (Dedicated DL Control Indicator ==1) {~~			
}			
}			

Table 285p—DL HARQ IR CC sub-burst IE format

DL H-ARQ IR CC Sub-Burst IE {			
~~DIUC~~	~~4 bits~~		
~~Repetition Coding Indication~~	~~2 bits~~	~~0b00 No repetition coding~~ ~~0b01 Repetition coding of 2 used~~ ~~0b10 Repetition coding of 4 used~~ ~~0b11 Repetition coding of 6 used~~	
N sub burst	5 bits		
Reserved	3 bits		
For (j=0; j< N sub burst; j++){			
RCID_IE()	Variable		

Duration		10 bits	Duration in slots
Sub-Burst DIUC Indicator		1 bit	If Sub-Burst DIUC Indicator is 1, it indicates that DIUC is explicitly assigned for this sub-burst. Otherwise, the this sub-burst will use the same DIUC as the previous sub-burst If j is 0 then this indicator shall be 1.
Reserved		1 bit	
If(Sub-Burst DIUC Indicator == 1){			
DIUC		4 bits	
Repetition Coding Indication		2 bits	0b00 – No repetition coding 0b01 – Repetition coding of 2 used 0b10 – Repetition coding of 4 used 0b11 – Repetition coding of 6 used
Reserved		2 bits	
}			
ACID		4 bits	
AI_SN		1 bit	
SPID		2 bits	
ACK disable		1 bit	When this bit is "1" no ACK channel is allocated and the SS shall not reply with an ACK.

For (k=0;
    k< Number Dedicated DL
        Control Indicators;
    k++){
			Number Dedicated DL Control Indicators as specified in the DCD

If (Dedicated DL Control Indicator k ==1) {		1	k-th dedicated DL control indicator as configured in the DCD
Dedicated DL Control IE k ()		Length as specified in DCD	k-th dedicated DL control IE as configured in the DCD
}			
Reserved		Variable	0 to 3 bits to preserve nibble dependent on the DL control indicator
CQICH Control Indicator		1 bits	
If(CQICH Control Indicator == 1){			
Allocation Index		6 bits	Index to the channel in a frame the CQI report should be transmitted by the SS
Period (p)		3 bits	A CQI feedback is transmitted on the CQI channels indexed by the (CQI Channel Index) by the SS in every 2^p frames.
Frame offset		3 bits	The MSS starts reporting at the frame of which the number has the same 3 LSB as the specified frame offset. If the current frame is specified, the MSS should start reporting in 8 frames.
Duration (d)		4 bits	A CQI feedback is transmitted on the CQI channels indexed by the (CQI Channel Index) by the SS for $2^{(d-1)}$ frames. If d is 0b0000, the

			CQICH is de-allocated. If d is 0b1111, the MSS should report until the BS command for the MSS to stop
~~}~~			
~~Dedicated DL Control Indicator~~		~~1 bit~~	
~~If (Dedicated DL Control Indicator ==1) {~~			
~~}~~			
~~}~~			

On page 349, section 8.4.5.3.25HARQ UL MAP IE make the following edits to Tables 302m, 302n, and 302o

Tables 302m, 302n, and 302o below combine editing instructions to implement this solution in this contribution and those recommended in C80216e-05_115r3.doc. The editor should implement these changes for Tables 302m, 302n, and 302o from this contribution in place of 302m, 302n, and 302o from C80216e-05_115r3.doc.

Table 302m—UL HARQ Chase sub-burst IE format

HARQ Chase UL Sub-Burst IE {		
RCID IE()	Variable	
~~Dedicated UL Control Indicator~~	~~1 bit~~	
~~If (Dedicated UL Control Indicator ==1) {~~		
~~Dedicated UL Control IE ()~~	~~variable~~	
~~}~~		
For (k=0; k< Number Dedicated UL Control Indicators; k++){		Number Dedicated UL Control Indicators as specified in the DCD
If (Dedicated UL Control Indicator k ==1) {	1	k-th dedicated UL control indicator as configured in the DCD
Dedicated UL Control IE k ()	Length as specified in DCD	k-th dedicated UL control IE as configured in the DCD
}		
Reserved	Variable	0 to 3 bits to preserve nibble dependent on the UL control indicator
UIUC	4 bits	
Repetition Coding Indication	2 bits	0b00 – No repetition coding 0b01 – Repetition coding of 2 used 0b10 – Repetition coding of 4 used 0b11 – Repetition coding of 6 used
Duration	10 bits	
ACID	4 bits	
AI_SN	~~4~~ 1 bit	
ACK disable	1 bit	
Reserved	1 bits	
}		

Table 302n UL HARQ IR CTC Sub-Burst IE Format

HARQ IR UL Sub-Burst IE {				
RCID IE()		Variable		
~~Dedicated UL Control Indicator~~		~~1 bit~~		
~~If (Dedicated UL Control Indicator ==1) {~~				
~~Dedicated UL Control IE ()~~		~~variable~~		
~~}~~				

For (k=0;
k< Number Dedicated UL
Control Indicators;
k++){
			Number Dedicated UL Control Indicators as specified in the DCD	

If (Dedicated UL Control Indicator k ==1) {		1	k-th dedicated UL control indicator as configured in the DCD	
Dedicated UL Control IE k ()		Length as specified in DCD	k-th dedicated UL control IE as configured in the DCD	
}				
Reserved		Variable	0 to 3 bits to preserve nibble dependent on the UL control indicator	
Nep		4 bits		
Nsch		4 bits		
SPID		2 bits		
ACID		4 bits		
AI_SN		1 bit		
ACK disable		1 bit		
Reserved		3 bits		
}				

Table 302o UL HARQ IR CC Sub-Burst IE Format

HARQ Chase UL Sub-Burst IE {				
RCID IE()		Variable		
~~Dedicated UL Control Indicator~~		~~1 bit~~		
~~If (Dedicated UL Control Indicator ==1) {~~				
~~Dedicated UL Control IE ()~~		~~variable~~		
~~}~~				

For (k=0;
k< Number Dedicated UL
Control Indicators;
k++){
			Number Dedicated UL Control Indicators as specified in the DCD	

If (Dedicated UL Control Indicator k ==1) {		1	k-th dedicated UL control indicator as configured in the DCD	
Dedicated UL Control IE k ()		Length as specified in	k-th dedicated UL control IE as configured in the DCD	

		DCD	
}			
Reserved		Variable	0 to 3 bits to preserve nibble dependent on the UL control indicator
UIUC		4 bits	
Repetition Coding Indication		2 bits	0b00 – No repetition coding 0b01 – Repetition coding of 2 used 0b10 – Repetition coding of 4 used 0b11 – Repetition coding of 6 used
Duration		10 bits	
SPID		2 bits	
ACID		4 bits	
AI_SN		1 bit	
ACK disable		1 bit	
Reserved		3 bits	
}			