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Title	**Proposed Changes to the DL and UL Persistent Allocation A-MAP IEs in IEEE P802.16m /D2 (15.3.6.5.2.8)**
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Re:	Comments on IEEE P802.16m/D2 for IEEE 802.16 Working Group Letter Ballot Recirc #30a
Abstract	The contribution proposes updates to the text related to persistent allocation in the 802.16m/D2
Purpose	To be discussed and adopted by the IEEE 802.16 Working Group.
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Proposed Changes to the DL and UL Persistent Allocation A-MAP IEs in IEEE P802.16m/D2 (15.3.6.5.2.8)

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Introduction

P802.16m/D2 currently supports both Individual Persistent Allocation A-MAP IE and Composite Persistent Allocation A-MAP IE to signal the control information for Persistent Allocation. Even if the Individual IE is for single connection and the Composite IE is for multiple connections, the function of those two IEs is duplicated. Thus it is recommended to remove one of IEs.

Because the operation of Composite PA A-MAP IE is not clearly defined in P802.16m/D2, this contribution proposes to delete DL and UL Composite Persistent Allocation A-MAP IEs.

Text proposal for inclusion in P802.16m/D2

[Change the text starting from line 17, page 378 as follows:]

---------- Start Text Proposal ----------

15.3.6.5.2.8 DL PA A-MAP IE

The DL persistent allocation A-MAP IE is specified in Table xxx.

~~Table 811- DL Persistent A-MAP IE*~~

~~Syntax~~	~~Size in bits~~	~~Description/Notes~~
~~DL Persistent A-MAP_IE() {~~	~~-~~	~~-~~
~~A-MAP IE Type~~	~~4~~	~~DL Persistent A-MAP IE~~
~~if MCRC is masked with Station ID {~~		
~~DL Individual Persistent A-MAP_IE()~~		~~Refer to Table 812~~
~~} else if MCRC is masked with Composite ID {~~		
~~DL Composite Persistent A-MAP_IE()~~		~~Refer to Table 813~~
~~}~~		
~~}~~		

~~*A 16 bit CRC is generated based on the contents of the DL Individual or Composite Persistent A-MAP IE and the CRC is masked by Station ID or the Composite ID (well-known ID specified in the system, TBD) respectively.~~

~~DL Individual PA A-MAP IE~~

~~The DL individual persistent A-MAP IE is specified in Table 676.~~

Table xxx: DL ~~Individual~~ Persistent Allocation A-MAP IE

Syntax	Size in bits	Description/Notes
DL Persistent Allocation A-MAP–IE() {	-	-
A-MAP IE Type	4	DL Persistent Allocation A-MAP IE
Allocation Period	2	Period of persistent allocation If (Allocation Period ==0b00), it indicates the deallocation of a persistently allocated resource. 0b00: deallocation 0b01: 2 frames 0b10: 4 frames 0b11: 8 frames
If (Allocation Period ==0b00){		
Resource Index	11	Confirmation of the resource index for a previously assigned persistent resource that has been deallocated 5 MHz: 0 in first 2 MSB bits + 9 bits for resource index 10 MHz: 11 bits for resource index 20 MHz: 11 bits for resource index Resource index includes location and allocation size
Long TTI Indicator	1	Indicates number of AAI subframes spanned by the allocated resource. 0b0: 1 AAI subframe (default) 0b1: 4 DL AAI subframes for FDD or all DL AAI subframes for TDD
HFA	~~5~~6	Explicit Index for HARQ Feedback Allocation to acknowledge receipt of deallocation A-MAP IE
Reserved	~~*TBD*~~16	Reserved bits
} else if (Allocation != 0b00){		
$I_{SizeOffset}$	5	Offset used to compute burst size index
MEF	2	MIMO encoder format 0b00: SFBC 0b01: Vertical encoding 0b10: Horizontal encoding 0b11: n/a
if (MEF == 0b01){		Parameters for vertical encoding
Mt	3	Number of streams in transmission ~~for Nt = 8~~ ($M_t <= N_t$)

		0b000: 1 stream 0b001: 2 streams 0b010: 3 streams 0b011: 4 streams 0b100: 5 streams 0b101: 6 streams 0b110: 7 streams 0b111: 8 streams
Reserved	1	Reserved bits
} else if(MEF == 0b10){		Parameters for horizontal encoding
Si	4	Index to identify the combination of the number of streams and the allocated pilot stream index in a transmission with MU-MIMO , and the modulation constellation of paired user in the case of 2 stream transmission 0b0000: 2 streams with PSI=stream1 and other modulation =QPSK 0b0001: 2 streams with PSI=stream1 and other modulation =16QAM 0b0010: 2 streams with PSI=stream1 and other modulation =64QAM 0b0011: 2 streams with PSI=stream1 and other modulation information not available 0b0100: 2 streams with PSI=stream2 and other modulation =QPSK 0b0101: 2 streams with PSI=stream2 and other modulation =16QAM 0b0110: 2 streams with PSI=stream2 and other modulation =64QAM 0b0111: 2 streams with PSI=stream2 and other modulation information not available 0b1000: 3 streams with PSI=stream1 0b1001: 3 streams with PSI=stream2 0b1010: 3 streams with PSI=stream3 0b1011: 4 streams with PSI=stream1 0b1100: 4 stream with PSI=stream2 0b1101: 4 streams with PSI=stream3 0b1110: 4 streams with PSI=stream4 0b1111: n/a
}		
Resource Index	11	5 MHz: 0 in first 2 MSB bits + 9 bits for resource index 10 MHz: 11 bits for resource index 20 MHz: 11 bits for resource index Resource index includes location and allocation size
Long TTI Indicator	1	Indicates number of AAI subframes spanned by the allocated resource. 0b0: 1 AAI subframe (default)

		0b1: 4 DL AAI subframes for FDD or all DL AAI subframes for TDD
HFA	~~5~~6	Explicit Index for HARQ Feedback Allocation
ACID	4	HARQ channel identifier. The ACID field shall be set to the initial value of HARQ channel identifier for implicit cycling of HARQ channel identifiers. N_ACIDs: Number of ACIDs for implicit cycling of HARQ channel identifier N_ACID=Floor{ PA_Max_ReTx_Delay/ (Allocation Period*Frame_length) }+1
}		
Reserved	~~*TBD*~~1	Reserved bits
~~Padding~~	~~*Variable*~~	~~Padding to reach byte boundary~~
}	-	-

The Resource Index field in the DL Individual Persistent A-MAP IE is interpreted as in the DL Basic Assignment A-MAP IE.

The maximum HARQ retransmission delay for persistent allocation, *PA_Max_ReTx_Delay* can be computed from *N_Max_ReTx*, the maximum number of retransmission and *PA_ReTx_Interval*, the allowable delay between consecutive retransmission of persistent allocation as follows.

*PA_Max_ReTx_Delay = N_Max_ReTx * PA_ReTx_Interval*

where *PA_ReTx_Interval* is determined from *Long TTI Indicator*, T_{proc}, the data burst processing time, and *Frame_length*, the frame length as follows.

If $T_{proc} \leq 3$ and *Long_TTI_Indicator* = 0, *PA_ReTx_Interval = Frame_length*, else *PA_ReTx_Interval = 2*Frame_length.*

~~DL Composite PA A-MAP IE~~

~~The DL composite persistent A-MAP IE is specified in Table 813.~~

~~Table 813: DL Composite Persistent A-MAP IE~~

~~Syntax~~	~~Size in bits~~	~~Description/Notes~~
~~DL Composite Persistent A-MAP_IE() {~~	~~-~~	~~-~~
~~Number of allocations~~	~~5~~	~~Number of allocation specified~~
~~RCID Type~~	~~2~~	~~0b00: Normal CID 0b01: RCID11 0b10: RCID7 0b11: RCID3~~
~~For (j=0;j<Number of allocations;~~		~~For loop where each loop element specifies information for~~

j++) {		one allocation.
Persistent Flag	1	0 = non-persistent 1 = persistent
RCID	variable	Specifies the station ID in RCID format, type defined by RCID Type
if (Persistent Flag == 1) {		
Allocation Period	2	Period of persistent allocation If (Allocation Period ==0b00), it indicates the deallocation of a persistently allocated resource. 0b00: deallocation 0b01: 2 frames 0b10: 4 frames 0b11: 8 frames
Allocation Period and ACID Indicator	1	If Allocation Period and ACID Indicator is 1, it indicates that allocation information (allocation period, Number of ACID (ACID) is explicitly assigned for this allocation. Otherwise, this allocation will use the same allocation period as the previous allocation. If j is 0 then this indicator shall be 1.
if (Allocation Period and ACID Indicator == 1) {	-	-
Allocation Periodicity (AP)	5	Period of the persistent allocation is this field value plus 1 (unit is sub-frame/frame TBD)
}		
ACID	4	Number of HARQ channels associated with this persistent assignment is this field value plus 1 N_ACIDs: Number of ACIDs for implicit cycling of HARQ channel identifier N_ACID=Floor{ PA_Max_ReTx_Delay/ (Allocation Period*Frame_length) }+1
if (Persistent Flag ==1 & Allocation Period==0b00){		
Resource Index	11	Confirmation of the resource index for a previously assigned persistent resource that has been deallocated 5 MHz: 0 in first 2 MSB bits + 9 bits for resource index 10 MHz: 11 bits for resource index 20 MHz: 11 bits for resource index Resource index includes location and allocation size
Long TTI Indicator	1	Indicates number of AAI subframes spanned by the

		allocated resource. 0b0: 1 AAI subframe (default) 0b1: 4 DL AAI subframes for FDD or all DL AAI subframes for TDD
HFA	5	Explicit Index for HARQ Feedback Allocation to acknowledge receipt of deallocation A-MAP IE
}else{		
Allocation MCS indicator	1	If Allocation MCS Indicator is 1, it indicates that $I_{SizeOffset}$ is explicitly assigned for this allocation. Otherwise, this allocation will use the same $I_{SizeOffset}$ as the previous subburst. If j is 0 then this indicator shall be 1.
if (Allocation MCS indicator == 1) {		
$I_{SizeOffset}$	5	Offset used to compute burst size index
}		
MEF	2	MIMO encoder format 0b00: SFBC 0b01: Vertical encoding 0b10: Horizontal encoding 0b11: n/a
if (MEF == 0b01){		Parameters for vertical encoding
if(Nt == 2){		
Mt	1	Number of streams in transmission for Nt = 2 (Mt <= Nt) 0b0: 1 stream 0b1: 2 streams
}else if(Nt == 4){		
Mt	2	Number of streams in transmission for Nt = 4 (Mt <= Nt) 0b00: 1 stream 0b01: 2 streams 0b10: 3 streams 0b11: 4 streams
}else if(Nt == 8){		
Mt	3	Number of streams in transmission for Nt = 8 (Mt <= Nt) 0b000: 1 stream 0b001: 2 streams 0b010: 3 streams 0b011: 4 streams 0b100: 5 streams 0b101: 6 streams 0b110: 7 streams

		0b111: 8 streams
}		
} else if(MEF == 0b10){		Parameters for horizontal encoding
if(Nt == 2){		
PSI	1	Allocated pilot stream index for Nt = 2 0b0: #1 stream 0b1: #2 stream
M_p	2	Modulation constellation of the paired user 0b00: QPSK 0b01: 16 QAM 0b10: 64 QAM 0b11: n/a
} else{		
Si	4	Index used to identify the combination of the number of streams and the allocated pilot stream index in a transmission with MU-MIMO , and the modulation constellation of paired user in the case of 2 stream transmission 0b0000: 2 streams with PSI=stream1 and other modulation =QPSK 0b0001: 2 streams with PSI=stream1 and other modulation =16QAM 0b0010: 2 streams with PSI=stream1 and other modulation =64QAM 0b0011: 2 streams with PSI=stream1 and other modulation information not available 0b0100: 2 streams with PSI=stream2 and other modulation =QPSK 0b0101: 2 streams with PSI=stream2 and other modulation =16QAM 0b0110: 2 streams with PSI=stream2 and other modulation =64QAM 0b0111: 2 streams with PSI=stream2 and other modulation information not available 0b1000: 3 streams with PSI=stream1 0b1001: 3 streams with PSI=stream2 0b1010: 3 streams with PSI=stream3 0b1011: 4 streams with PSI=stream1 0b1100: 4 stream with PSI=stream2 0b1101: 4 streams with PSI=stream3 0b1110: 4 streams with PSI=stream4 0b1111: n/a
}		
}		
RAI	2	Resource Allocation Indicator (RAI) 0b00: It indicates that resource allocation information is

		explicitly assigned for this subburst. 0b01: It indicates that resource offset is explicitly assigned for this subburst and this subburst will use the same duration as the previous subburst. 0b10: It indicates that this subburst will use the same duration as the previous subburst and follow the previous subburst. 0b11: Rsvd If j is 1 then this indicator shall be 0b00.
if (RAI ==0b00) {		
Resource Index	11	5 MHz: 0 in first 2 MSB bits + 9 bits for resource index 10 MHz: 11 bits for resource index 20 MHz: 11 bits for resource index Resource index includes location and allocation size
}		
} else if (RAI == 0b01) {		
Resource offset	7	It indicates the start position of resource region for this subburst
}		
Long TTI Indicator	1	Indicates number of AAI subframes spanned by the allocated resource. 0b0: 1 AAI subframe (default) 0b1: 4 DL AAI subframes for FDD or all DL AAI subframes for TDD
HFA	5	Explicit Index for HARQ Feedback Allocation
}		
}		
}		

The Resource Index field in the DL Composite Persistent A-MAP IE is interpreted as in the DL Basic Assignment A-MAP IE.

15.3.6.5.2.9 UL PA A-MAP IE

The UL persistent allocation A-MAP IE is specified in Table yyy.

Table 814 - UL Persistent A-MAP IE*

Syntax	Size in bits	Description/Notes
UL Persistent A-MAP_IE() {	-	-
A-MAP IE Type	4	UL Persistent A-MAP IE
If MCRC is masked with Station ID {		
UL Individual Persistent A-MAP_IE()		Refer to Table 815
} else if MCRC is masked with Composite		

~~ID {~~		
~~UL Composite Persistent A-MAP_IE()~~		~~Refer to Table 813~~
~~}~~		
~~}~~		

~~*A 16 bit CRC is generated based on the contents of the UL Individual or Composite Persistent A-MAP IE and the CRC is masked by Station ID or the Composite ID (well-known ID specified in the system, TBD) respectively.~~

~~UL Individual PA A-MAP IE~~

~~The UL individual persistent A-MAP IE is specified in Table 679.~~

Table yyy - UL ~~Individual~~ Persistent Allocation A-MAP IE

Syntax	Size in bits	Description/Notes
UL Persistent Allocation A-MAP–IE() {	-	-
A-MAP IE Type	4	UL Persistent Allocation A-MAP IE
Allocation Period	2	Period of persistent allocation If (Allocation Period ==0b00), it indicates the deallocation of a persistently allocated resource. 0b00: deallocation 0b01: 2 frames 0b10: 4 frames 0b11: 8 frames
if (Allocation Period ==0b00){		
Resource Index	11	Confirmation of the resource index for a previously assigned persistent resource that has been deallocated 5 MHz: 0 in first 2 MSB bits + 9 bits for resource index 10 MHz: 11 bits for resource index 20 MHz: 11 bits for resource index Resource index includes location and allocation size
Long TTI Indicator	1	Indicates number of AAI subframes spanned by the allocated resource. 0b0: 1 AAI subframe (default) 0b1: 4 DL AAI subframes for FDD or all DL AAI subframes for TDD
HFA	~~5~~6	Explicit Index for HARQ Feedback Allocation to acknowledge receipt of deallocation A-MAP IE
Reserved	16	Reserved bits
} else if (Allocation Period != 0b00){		
$I_{SizeOffset}$	5	Offset used to compute burst size index

Mt	1	Number of streams in transmission (M_t<= N_t), up to 2 streams per AMS supported 0b0: 1 stream 0b1: 2 streams
TNS	2	Total number of streams in the LRU for CSM 0b00: reserved 0b01: 2 streams 0b10: 3 streams 0b11: 4 streams
if (TNS > Mt){		Parameters for CSM
if(TNS == 2){		
SI	1	First pilot index for CSM with TNS = 2
} else{		
SI	2	First pilot index for CSM with TNS = 3,4
}		
}		
else if (TNS == Mt) {		Parameters without CSM
MEF	1	MIMO encoder format 0b0: SFBC 0b1: Vertical encoding
}		
PF	1	Precoding Flag 0b0: non adaptive precoding 0b1: adaptive codebook precoding using the precoder of rank Mt of MS's choice
Resource Index	11	5 MHz: 0 in first 2 MSB bits + 9 bits for resource index 10 MHz: 11 bits for resource index 20 MHz: 11 bits for resource index Resource index includes location and allocation size
Long TTI Indicator	1	Indicates number of AAI subframes spanned by the allocated resource. 0b0: 1 AAI subframe (default) 0b1: 4 UL AAI subframes for FDD or all UL AAI subframes for TDD If number of DL AAI subframes, *D* is less than number of UL AAI subframes, *U*, Long TTI Indicator= 0b1
HFA	~~5~~6	Explicit Index for HARQ Feedback Allocation
ACID	3	HARQ channel identifier N_ACIDs: Number of ACIDs for implicit cycling of HARQ

		channel identifier N_ACID=Floor{ PA_Max_ReTx_Delay/ (Allocation Period*Frame_length) }+1
}		
Reserved	~~*TBD*~~2	Reserved bits
~~Padding~~	~~*Variable*~~	~~Padding to reach byte boundary~~
}	-	-

The Resource Index field in the UL Individual Persistent A-MAP IE is interpreted as in the DL Basic Assignment A-MAP IE.

~~UL Composite PA A-MAP IE~~

~~The UL composite persistent A-MAP IE is specified in Table 816.~~

~~Table 816 - UL Composite Persistent A-MAP IE~~

~~Syntax~~	~~Size in bits~~	~~Description/Notes~~
~~UL Composite Persistent A-MAP_IE() {~~	~~-~~	~~-~~
~~Number of allocations~~	~~5~~	~~Number of allocation specified~~
~~RCID Type~~	~~2~~	~~0b00: Normal CID 0b01: RCID11 0b10: RCID7 0b11: RCID3~~
~~For (j=0;j<Number of allocations; j++) {~~		~~For loop where each loop element specifies information for one allocation.~~
~~Persistent Flag~~	~~1~~	~~0 = non-persistent 1 = persistent~~
~~RCID~~	~~*variable*~~	~~Specifies the station ID in RCID format, type defined by RCID Type~~
~~if (Persistent Flag == 1) {~~		
~~Allocation Period~~	~~2~~	~~Period of persistent allocation If (Allocation Period ==0b00), it indicates the deallocation of a persistently allocated resource. 0b00: deallocation 0b01: 2 frames 0b10: 4 frames 0b11: 8 frames~~
~~Allocation Period and ACID Indicator~~	~~1~~	~~If Allocation Period and ACID Indicator is 1, it indicates that allocation information (allocation period, Number of ACID (ACID) is explicitly assigned for this allocation. Otherwise, this allocation will use the same allocation period~~

		as the previous allocation. If j is 0 then this indicator shall be 1.
if (Allocation Period and ACID Indicator == 1) {	-	-
Allocation Periodicity (AP)	5	Period of the persistent allocation is this field value plus 1 (unit is sub-frame/frame TBD)
}		
ACID	4	Number of HARQ channels associated with this persistent assignment is this field value plus 1 N_ACIDs: Number of ACIDs for implicit cycling of HARQ channel identifier N_ACID=Floor{ PA_Max_ReTx_Delay/ (Allocation Period*Frame_length) }+1
if (Persistent Flag ==1 && Allocation Period==0b00){		
Resource Index	11	Confirmation of the resource index for a previously assigned persistent resource that has been deallocated 5 MHz: 0 in first 2 MSB bits + 9 bits for resource index 10 MHz: 11 bits for resource index 20 MHz: 11 bits for resource index Resource index includes location and allocation size
Long TTI Indicator	1	Indicates number of AAI subframes spanned by the allocated resource. 0b0: 1 AAI subframe (default) 0b1: 4 DL AAI subframes for FDD or all DL AAI subframes for TDD
HFA	5	Explicit Index for HARQ Feedback Allocation to acknowledge receipt of deallocation A-MAP IE
}else{		
Allocation MCS indicator	1	If Allocation MCS Indicator is 1, it indicates that MCS is explicitly assigned for this allocation. Otherwise, this allocation will use the same MCS as the previous subburst. If j is 0 then this indicator shall be 1.
if (Allocation MCS indicator == 1) {		
$I_{SizeOffset}$	5	Offset used to compute burst size index
}		
Mt	1	Number of streams in transmission ($M_t <= N_t$), up to 2 streams per AMS supported 0b0: 1 stream 0b1: 2 streams
TNS	2	Total number of streams in the LRU for CSM

		0b00: reserved 0b01: 2 streams 0b10: 3 streams 0b11: 4 streams
if (TNS > Mt){		Parameters for CSM
if(TNS == 2){		
SI	1	First pilot index for CSM with TNS = 2
} else{		
SI	2	First pilot index for CSM with TNS = 3,4
}		
}		
else if (TNS == Mt) {		Parameters without CSM
MEF	1	MIMO encoder format 0b0: SFBC 0b1: Vertical encoding
}		
PF	1	Precoding Flag 0b0: non adaptive precoding 0b1: adaptive codebook precoding using the precoder of rank Mt of MS's choice
RAI	2	Resource Allocation Indicator (RAI) 0b00: It indicates that resource allocation information is explicitly assigned for this subburst. 0b01: It indicates that resource offset is explicitly assigned for this subburst and this subburst will use the same duration as the previous subburst. 0b10: It indicates that this subburst will use the same duration as the previous subburst and follow the previous subburst. 0b11: Rsvd If j is 1 then this indicator shall be 0b00.
if (RAI ==0b00) {		
Resource Index	11	5 MHz: 0 in first 2 MSB bits + 9 bits for resource index 10 MHz: 11 bits for resource index 20 MHz: 11 bits for resource index Resource index includes location and allocation size
} else if (RAI == 0b01) {		
Resource offset	7	It indicates the start position of resource region for this subburst
}		
Long TTI Indicator	1	Indicates number of AAI subframes spanned by the

		allocated resource. 0b0: 1 AAI subframe (default) 0b1: 4 DL AAI subframes for FDD or all DL AAI subframes for TDD If number of DL AAI subframes, *D* is less than number of UL AAI subframes, *U*, Long TTI Indicator= 0b1
HFA	5	Explicit Index for HARQ Feedback Allocation
}		
}		
}		

The Resource Index field in the UL Composite Persistent A-MAP IE is interpreted as in the DL Basic Assignment A-MAP IE.

---------- End of Proposed Text ----------