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Re:	IEEE P802.16REVd/D5-2004	
Abstract	Boundaries of permutation/STC/AAS zones are not defined. This contribution proposes to add indication in the map and ZoneSwitch / AAS_IE.	
Purpose	Adopt changes.	
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Definitions for boundaries of permutation zones

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1. Motivation

There is no clear definition of the boundaries of permutation/STC/AAS zones. An interpretation of the ZoneSwitchIE and AAS_IE as an information element which only changes attributes (such as permutation) of the following allocations without defining a physical boundary between zones does not hold, since the permutation affects pilot locations (which are not related to specific bursts), and STC requires a specific definition of which symbol is combined with which.

If there is a zone switch between burst N and burst N+1, and there is a gap between the bursts (burst N+1 doesn't begin 1 symbol after the last symbol of burst N), then it is not clear where the new permutation/STC/AAS zone begins.

2. Details

We considered several possible definitions:

(1) The zone starts at the symbol following the maximal symbol of all bursts defined so far (i.e. at the next empty symbol).
(2) The zone starts at the first symbol of the next allocation.
(3) Add a symbol offset to the zoneSwitch.

The last definition gives the most flexibility to the BS, and since the OFDMA symbol index appears in each DL-MAP_IE, there seems to be little damage in adding an 8 bit OFDMA symbol index to the zone switch (since the zone switch is rare). The advantages of this solution are in simplicity and clearness, in the fact that complicated processing on the map is not required (zone switch IE can be processed immediately), and in giving the BS more flexibility to determine the boundaries of the zone. This is especially important in case multiple BS synchronize the location of the zones, however not always there is data to fill the zone.

In order to complete the definition, the length of the entire DL subframe should be indicated, otherwise the end of the last zone is undetermined. The proposed solution is similar to the solution in the uplink map (following comment #5 contribution C80216e-04/182). The length of the first zone is indicated in the header of the DL map, and each ZoneSwitch contains the length of the zone.

3. Changes summary

6.3.2.3.2 Downlink map (DL-MAP) message

[add the following line after "Begin PHY Specific Section {"]

No. OFDMA symbols	8 bits	Number of OFDMA symbols in the first DL zone, excluding the preamble (OFDMA PHY only).

8.4.5.6.1 Compressed DL-MAP

[add the following line after "Sector ID"]

No. OFDMA symbols	8 bits	Number of OFDMA symbols in the first DL zone, excluding the preamble.

8.4.5.3.3 AAS IE format

[note to the editor: The length of AAS_IE is wrong, and without this comment should have been 0x2, however if this comment is accepted make sure Length=0x03]

[Add the following field in table 276 following "Length"]

AAS Zone length	8 bits	Denotes the length of the AAS zone in OFDMA symbols.

8.4.5.3.4 Transmit diversity (TD)/Zone switch IE format

[note to the editor: The length of AAS_IE is wrong, and without this comment should have been 0x2, however if this comment is accepted make sure Length=0x03]

[Make the following changes to table 277]

Length	4 bits	Length = ~~0x02~~ 0x03
Zone length	8 bits	Denotes the length of the zone in OFDMA symbols.

4. Appendix – changes for option 1

8.4.5.3.3 AAS IE format

[Add the following text before table 276]

The AAS zone begins at the symbol following the end of all previous allocations (i.e. maximum on last symbol of all previous allocations, plus 1).

8.4.5.3.4 Transmit diversity (TD)/Zone switch IE format

[Add the following text before table 277]

The permutation/STC zone begins at the symbol following the end of all previous allocations (i.e. maximum on last symbol of all previous allocations, plus 1).