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Title	Comment to RS network entry	
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Re:	IEEE 802.16j-07/013: "Call for Technical Comments Regarding IEEE Project 802.16j"	
Abstract	This contribution proposes in-band transparent relay frame structure	
Purpose	Text proposal for 802.16j Baseline Document	
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## Comment to RS network entry

### Introduction

We propose extra fields in RS\_path-REQ message for transparent RS and semi-transparent RS to perform path selection within a Virtual Group during network entry. The (semi)transparent RS shares the same preamble with other access stations. So, another mechanism is required to ensure that the RS won't go into "network entry loop", which is described below.

- 1) RS starts RS network entry by scanning for downlink channel
- 2) RS establishes downlink synchronization
- 3) RS performs initial ranging with random IR code
- 4) RS follows MS network entry procedures
- 5) RS is identified as 16j relay at SBC message exchanges stage
- 6) MR-BS requires RS to change its attaching access station by sending RS\_path-REQ message due to the routing optimization, the policy or hop count limit.
- 7) RS performs Path Selection, then go to 2)

Since the MR-BS cannot identify the re-entry (semi)transparent RS due to the fact that the RS acquires another random IR code, the loop between 2) to 7) will be repeated. The situation cannot be resolved by allowing the RS into operational state because the RS might not be operational due to the hop count limit.

Therefore, we propose to add a dedicated ranging code into RS\_path-REQ message to resolve above problem for transparent and semi-transparent RS, such that MR-BS is able to identify the re-entry RS and find a proper attaching access station.

According to the proposed text in IEEE 80216j-07/311, we propose the following changes.

## Proposed text changes

Table XXX. RS\_path-REQ message format.

Syntax	Size	Notes
RS_path request format {		
Management message type = 67	8 bits	
Path_REQ_Type	1 bits	0: RS network re-entry 1: RS movement
If (Path_REQ_Type = 0){	=	=
Preamble Index	87 bits	Preamble Index of the access station the RS shall attach to.
RS network re-entry optimization	8 bits	For each bit location, a value of '0' indicates the associated reentry management messages is required, a value of '1' indicates the reentry management message is omitted. Bit #0: Omit SBC-REQ/RSP management messages if set to '1' Bit #1: Omit PKM Authentication phase except TEK phase if set to '1'. Bit #2: Omit PKM TEK creation phase if set to '1'. Bit #3: Omit REG-REQ/RSP management if set to '1'. Bit #4: Omit neighbor station measurement report if set to '1'. Bit #5: Omit path selection phase if set to '1' Bit #6: Omit relay station operational parameter configuration if set to '1' Bit #7: Reserved
} else {	=	=
Lifetime of dedicated code	7 bits	Lifetime of dedicated ranging code (unit: frame)
Dedicated ranging code	8 bits	Dedicated CDMA ranging code for RS
}	=	=
}		

### Lifetime of dedicated ranging code

The lifetime, in unit of frame, of the dedicated CDMA ranging code referred to time that RS receiving RS\_path-REQ message. If the value is zero (0), it means the lifetime is infinite ( $\infty$ ).

### Dedicated CDMA ranging code

The dedicated CDMA ranging code assigned to RS to perform ranging process with transparent RS system. MR-BS should send the response containing the adjustments for the access station the RS shall attach to since MR-BS can distinguish the RS.

If a RS receiving another RS\_path-REQ message before the old dedicated code expired, RS should replace the old information (code and life-time) by the new one.