# RS Neighborhood Discovery and Measurement for IEEE 802.16j Multi-hop Relay Network

**IEEE 802.16 Presentation Submission Template (Rev. 8.3)**

Document Number:

IEEE S802/16j-07/043

Date Submitted:

2007-1-17


Source:

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Venue:

IEEE 802.16 Session#47, London, UK

Base Document:

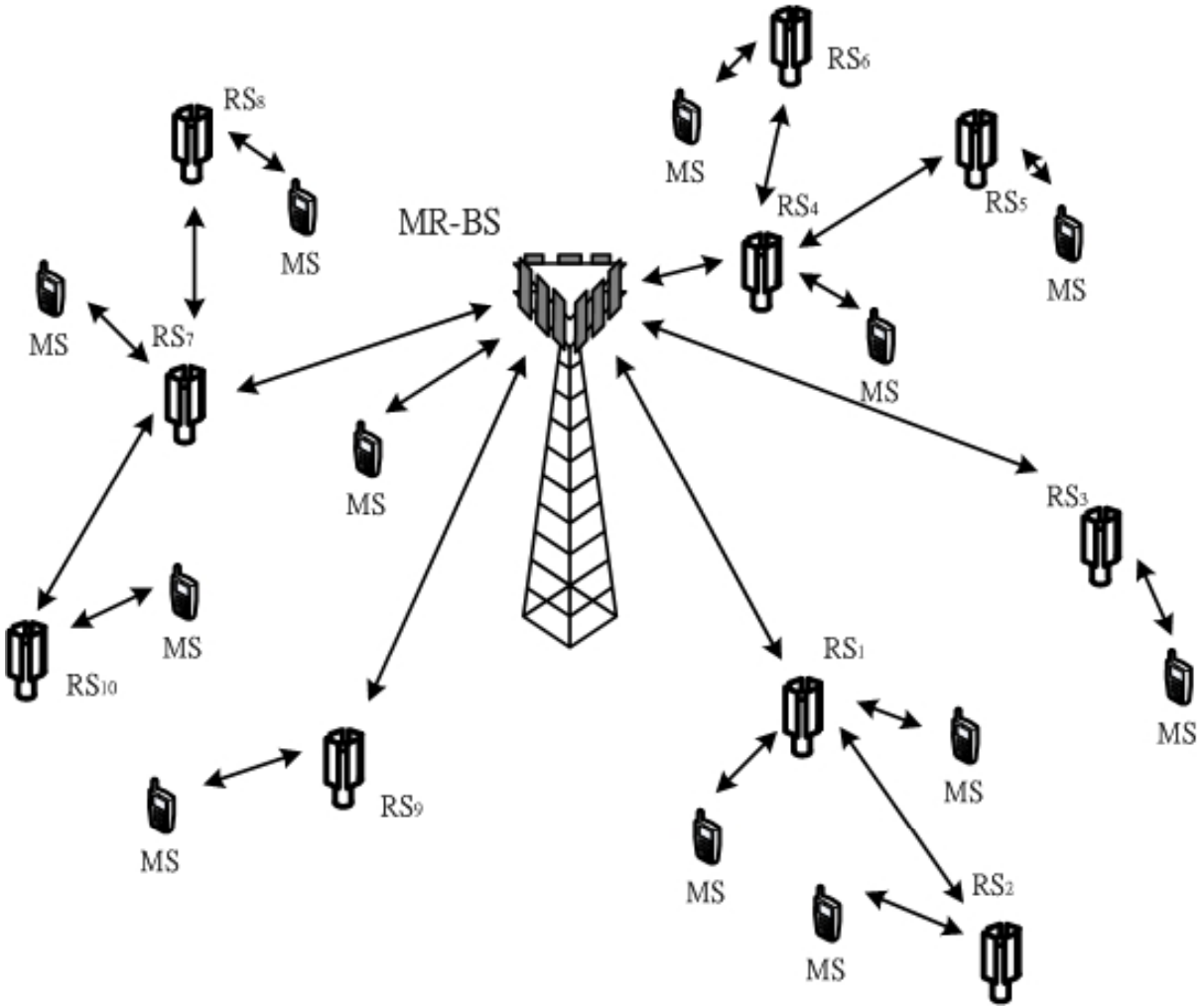
IEEE C802.16j-07/043r2

Purpose:

Introduce the concept of RS grouping and propose the required text revision

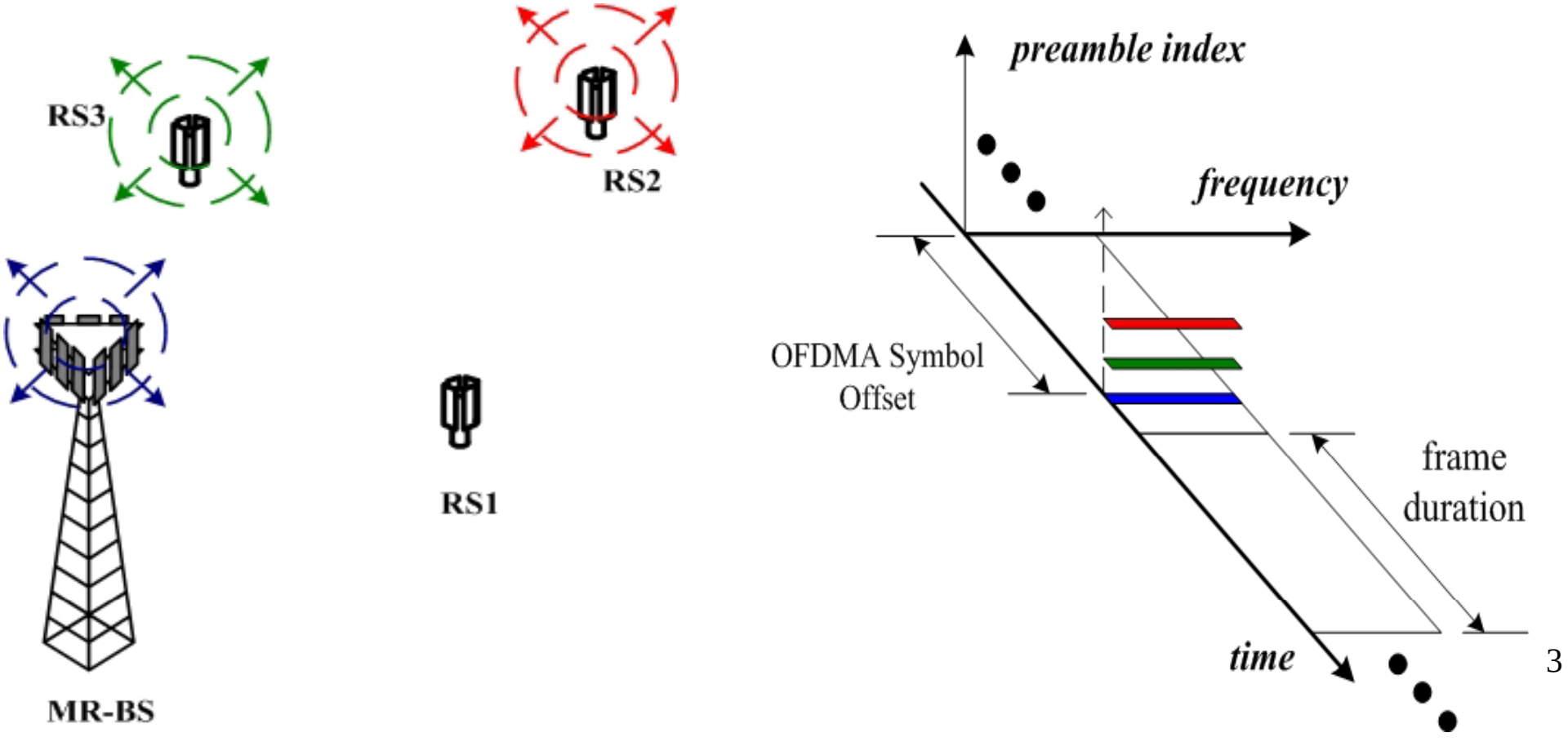
# Problem

- MR-network need to know the neighborhood of each RS
  - To facilitate the segment assignment, handover, interference management and etc.



# Fundamental Concept (1)

- MR-BS instruct
  1. one RS to scan the reference signal over the designated time
  2. Multiple RSs to transmit the reference signal over the same time



# Fundamental Concept (2)

- In stead of scanning the frame start preamble, the reason we need this kind of neighborhood discovery and measurement mechanism is:

    1. Not every RS transmit the preamble (e.g. transparent RS)

    2. For non-transparent RS, the position of RS amble may not be fixed in each frame.

    3. Not every RS transmit its own preamble (e.g. grouped RS)

  Therefore, some RSs may not be discovered if the new RS only scan the frame start preamble.

# Message Format (1)

| Syntax | Size | Notes |
|---|---|---|
| RS_NBR-MEAS-REQ_Message_Format() { | | |
| Management Message Type = TBD | 8 bits | |
| NBR_MEAS_MODE | 1 bit | 0: Receive mode<br>1: Transmit mode |
| Measurement Duration | 8 bits | Units are frames |
| Interleaving Interval | 8 bits | Units are frames |
| Measurement Iteration | 8 bits | Units are frames |
| Frame Number Offset | 8 bits | In unit of frames |
| If (NBR_ MEAS _MODE==0){ | | |
| N_NBR_LIST | 8 bits | Number of neighboring stations in the neighbor list |
| Begin PHY Specific Section { | | |
| For (i=0, i<N_NBR_LIST, i++){ | | |
| OFDMA Symbol Offset | 8 bits | The location to scan the reference signal |
| Preamble Index | 8 bits | Preamble index corresponds to position of the station in MR_NBR-INFO |
| } | | |
| Report Request TLVs | Variable | TLV specific |
| } | | |
| } | | |
| else { | | |
| OFDMA Symbol Offset | 8 bits | The location of the reference signal to be transmitted |
| } | | |
| } | | |

# Message Format (1)

| Syntax | Size | Notes |
|---|---|---|
| RS_NBR- MEAS - REP_Message_Format() { | | |
| Management Message Type = TBD | 8 bits | |
| N_NBR_LIST | 8 bits | Number of neighboring stations in the neighbor list |
| Begin PHY Specific Section { | | |
| For (i=0, i<N_NBR_LIST, i++){ | | |
| Preamble Index | 8 bits | Preamble index corresponds to position of the station in MR_NBR-INFO |
| Report Response TLVs | Variable | TLV specific |
| } | | |
| } | | |
| } | | |