

## Bandwidth Request in 16m relay

### Scheduling mode in 16m relay

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Yanling Lu, Masato Okuda, Wei-Peng Chen  
Fujitsu

E-mail: okuda@jp.fujitsu.com

wei-peng.chen@us.fujitsu.com

Venue:

IEEE 802.16m-08/040," Call for Contributions and Comments on Project 802.16m System Description Document (SDD)".  
TGM SDD: Relay/Scheduling mode

Base Contribution:

This contribution proposes one BW request scheme for 16m relay.

Purpose:

To be discussed and adopted by TGM for SDD.

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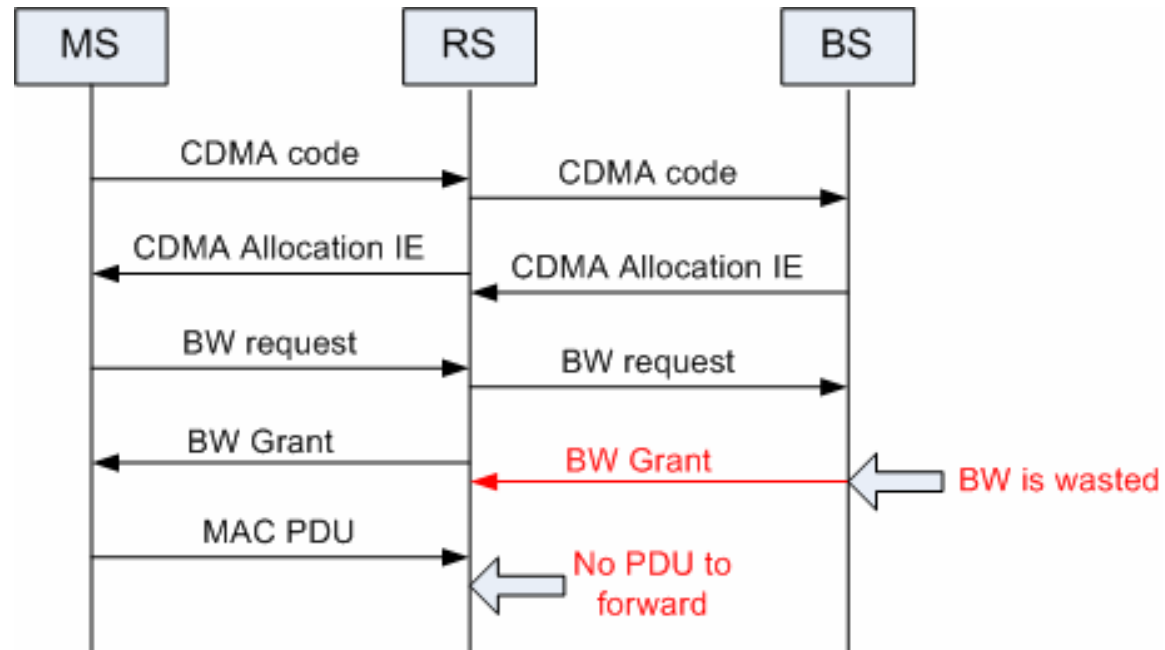
# Outline

- Issue with 16j BW request
- Main difference between 16j and 16m relay
- What has happened to BW request in 16m
- Proposed scheme
- Proposed text

## The issue with 16j BW request (2-1)

- Some interaction happens only between MS/RS and Access RS/supper-ordinate RS, no third part involved. For example: SA-TEK 3-way handshake procedure in distributed security mode.
- With optimized distributed BW request handling procedure, the BW request will be forwarded to the super-ordinate node further, ahead of upstream traffic arrival.
- Optimized BW request procedure can reduce latency obviously, however, wasting BW in the above case as well.

## The issue with 16j BW request (2-2)



16j can't address this issue with the restriction of relay unawareness of MS.

# Main difference between 16j and 16m relay

- 16j system
  - 16j MS has no awareness of relay.
  - From the viewpoint of 16j MS, the access link belonging to a multi-hop path is the same as single hop path.
- 16m system
  - 16m MS has awareness of relay.
  - 16m MS can discriminate access link of multi-hop path from single hop path.

# What has happened to BW REQ in 16m

- In SDD r5
  - *Bandwidth requests are used to provide information about the needed uplink bandwidth to the BS. Bandwidth requests are transmitted through indicators or messages.*
  - *Bandwidth request messages can include information about the status of queued traffic at the MS such as **buffer size and quality of service, including QoS identifiers.***
  - *Inclusion of additional information in a bandwidth request indicator such as **bandwidth request size, Station Identifier flow identifier, and quality of service including QoS identifiers is FFS***
- Inclusion of some kind of additional information in BW request has got consensus.

## Propose Scheme in 16m (2-1)

- In 16m, similar issue with 16j will happen if only single link BW is requested and no any optimization made for 16m BW request.
- Possibly, such cases include: distributed scheduling, distributed security, distributed CID allocation and so on.

## Proposed Scheme in 16m (2-2)

- Proposed solution:

- (1) MS/RS includes indicative information for BW request type (for access link only or whole path) in BW request message/indicator.
- (2) Access RS/super-ordinate RS allocates BW to MS/sub-ordinate RS, anyway.
- (3) Based on the BW request type, access RS/super-ordinate RS determines whether or not to request BW from its super-ordinate station ahead of upstream traffic arrival.
- (4) The detailed solution for BW request type( dedicated code/ indication bit/ TLV/..... ) is FFS.



# Proposed Texts

- 15 Support for multi-hop relay

- 15.x Relay scheduling

- 15.x.x Bandwidth request

- MS and RS should indicate the BW request type to its super-ordinate node in the case only single link BW is required. Based on the BW request type, the receiver can determine whether or not to forward the BW request further.