

Relay Support for QoS

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Purpose:

- Propose relay support for QoS

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Introduction

- As RSs are introduced between BS and MS, some mechanisms are required to support QoS across relays
- This contribution proposes mechanisms and specification changes for the above
- The proposal considers the following scheduling control models
 - centralized control by BS
 - distributed control in RS with BS coordination

QoS Support for Centralized Scheduling

- Centralized scheduling is characterized by the MMR-BS control on scheduling
- The QoS model remains the same for 802.16j. RS simply relays the messages between MMR-BS and MS.
- The MMR-BS makes decision about Service Flow (SF) QoS scheduling on each RS and provides instruction to RSs using MAP.
- The dynamic service establishment and two-phase activation model remain the same and performed between the MMR-BS and MSs without RS involvement.

QoS Support for Distributed Scheduling

- The QoS model remains similar for MMR except some enhancement in SF Management and SF Scheduling
- Service Flow QoS scheduling is performed by MMR-BS and all the RSs on the path.
 - Each RS on the path performs service flow QoS scheduling based on the QoS requirement for the service flow distributed by the MMR-BS.
- Two-phase activation model remains the same

Service Flow Management (1/2)

- SF management is performed between MMR-BS and MS (i.e., DSx messages are processed only by MMR-BS and MSs).
- RS doesn't manage the SF and simply relays the DSx messages. A single Auth module is placed in MMR-BS.

Reasons:

- In a dynamic authorization model, the authorization module needs to communicate through a separate interface to an independent policy server. If each RS on the path would perform authorization, the processing overhead and the signaling overhead increases significantly.
- Keep RS functionality simple and MMR-BS functionality at the same level as in 16e

Service Flow Management Procedure for RS

- MMR-BS sends AC-REQ with SF information to all the RSs on the path to perform resource based admission control
- RSs retrieves the SF information and stores it for future scheduling service and then reply with an AC-RSP message.
- MMR-BS uses the results carried in AC-RSP from each RS to make the admission control decision.
- Admission or Activation of SF is done by setting SF Parameter: QoS Parameter Set Type
- The transmission schemes for AC-REQ and AF-REQ are specified in Nokia Contribution “Transmission Scheme for MAC Management Message for a Group of RS”.

Conclusion

- The contribution provides text for supporting QoS across relay– Section 6.3.14
- Proposed for both centralized and distributed scheduling
- No change in centralized scheduling
- Minimal changes for distributed scheduling
 - Keeps RS simple by keeping SF management in the MMR-BS
 - Proposed to keep SF management unchanged (DSx messages are not processed by RS).
 - Proposed only two signaling messages for propagating SF to the relays