Decision method of relayed MS in MMR-enabled networking

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Information

Decision method of relayed MS in MMR-enabled networking

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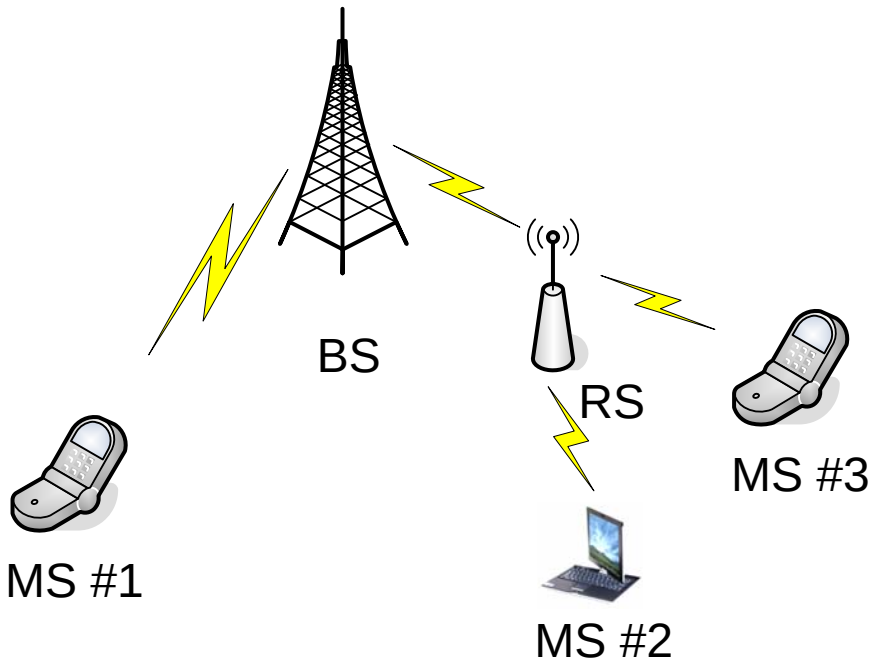
Current discussed RS

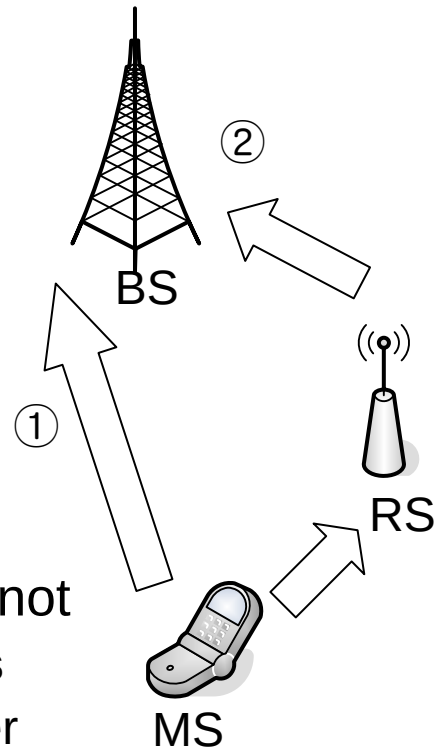
- There is no indication to determine relayed MS
  - Which MS communicates directly with BS or indirectly with BS via RS



Proposed scheme

To determine relayed MS

- All relaying transmissions are indicated by the BS
- The conditions of determination relayed MS
  - **For enhanced throughput**
  - **and extended cell coverage by using RS**
  - **When UL signal quality of the MS is changed**
- BS uses UL signal qualities of the MS
  - **Directly: Between BS and MS**
  - **Indirectly: Between BS and MS via RS**
    - RS detects UL signal quality of the MS
    - and after reports it to the BS
- Determines whether the MS will be relayed or not
  - **BS compares UL signal qualities of two paths**
    - Selected value of the two path values is better than the other and a certain value



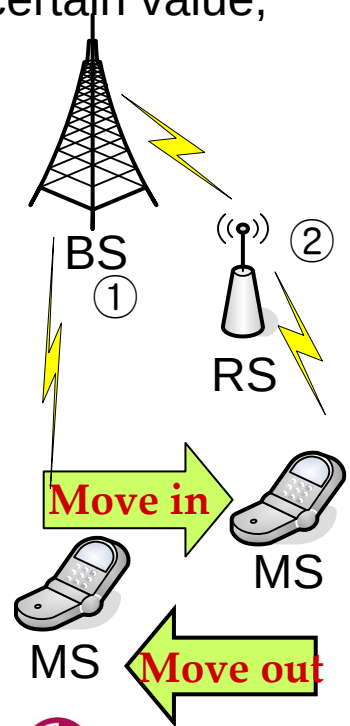
Reporting method

- The reporting method of MS UL signal quality
  - Consider backward compatibility with 802.16 TGe PMP mode
    - **CQICH (Channel Quality Information Channel)**
    - **MAC management message**

For example

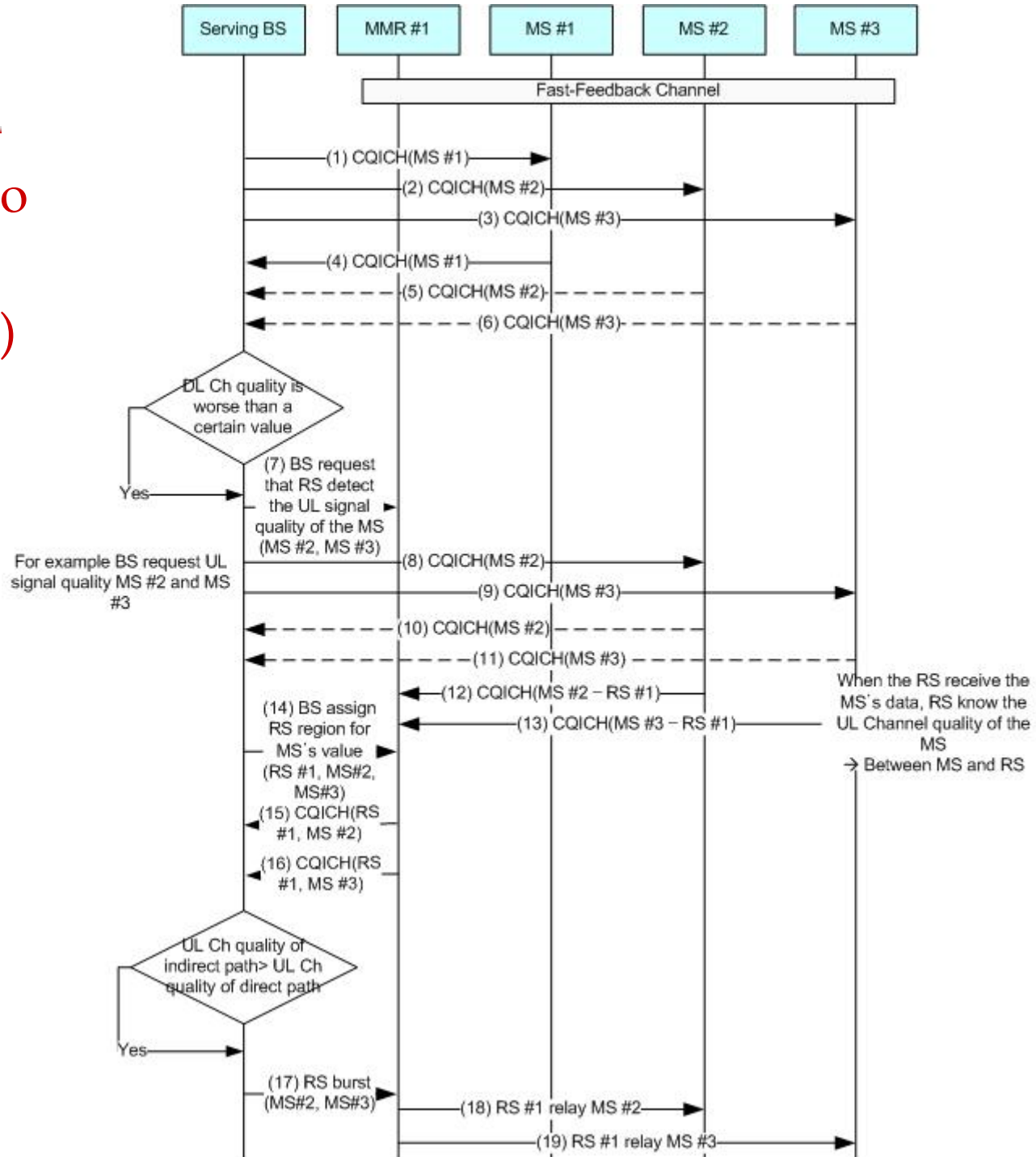
When BS tries to connect relaying transmission(1/2)

- MS is located in BS coverage
- MS communicates directly with the BS,
  - **BS receives UL signal quality of MS, directly**
  - **When the MS moves in RS service region,**
    - The values go from bad to worse and worse than a certain value, gradually.
  - **When BS wants to change modulation to provide higher throughput to the MS,**
- BS receives UL signal quality of the MS via RS
  - **RS detects UL signal quality of the MS and reports it to the BS**
  - **BS compares UL signal qualities of two paths**
    - If indirect path UL signal quality is better than direct path UL signal quality of MS, BS tries to connect relaying transmission to the MS
- MS communicates with BS via RS, indirectly.



When BS tries to connect relaying transmission(2/2)

- CQICH method



When BS tries to disconnect relaying transmission

- MS is located out of BS coverage
- MS communicates indirectly with BS via RS
  - **BS receives UL signal quality of MS, indirectly**
  - **When the MS moves out RS service region,**
    - The values go from bad to worse, gradually and worse than a certain value
  - **When BS wants to disconnect relaying transmission to the MS**
- BS requests UL signal quality to the MS, directly
  - **BS compares UL signal qualities of two paths**
    - If direct path UL signal quality is better than indirect path UL signal quality of the MS and a certain value,
  - **BS tries to disconnect relaying transmission to the MS**
- MS communicates with BS, directly.

Summary

To determine relayed MS

- The conditions of determination relayed MS
  - **For enhanced throughput**
  - **and extended cell coverage by using RS**
  - **When UL signal quality of MS is changed**
- BS uses UL signal qualities of MS
  - **Directly**
  - **Indirectly**
- BS compares UL signal quality of two paths
- BS decides whether the MS will be relayed or not
- The reporting method for UL signal quality of MS
  - **CQICH**
  - **MAC management message**