Neighborhood Discovery and Topology Learning

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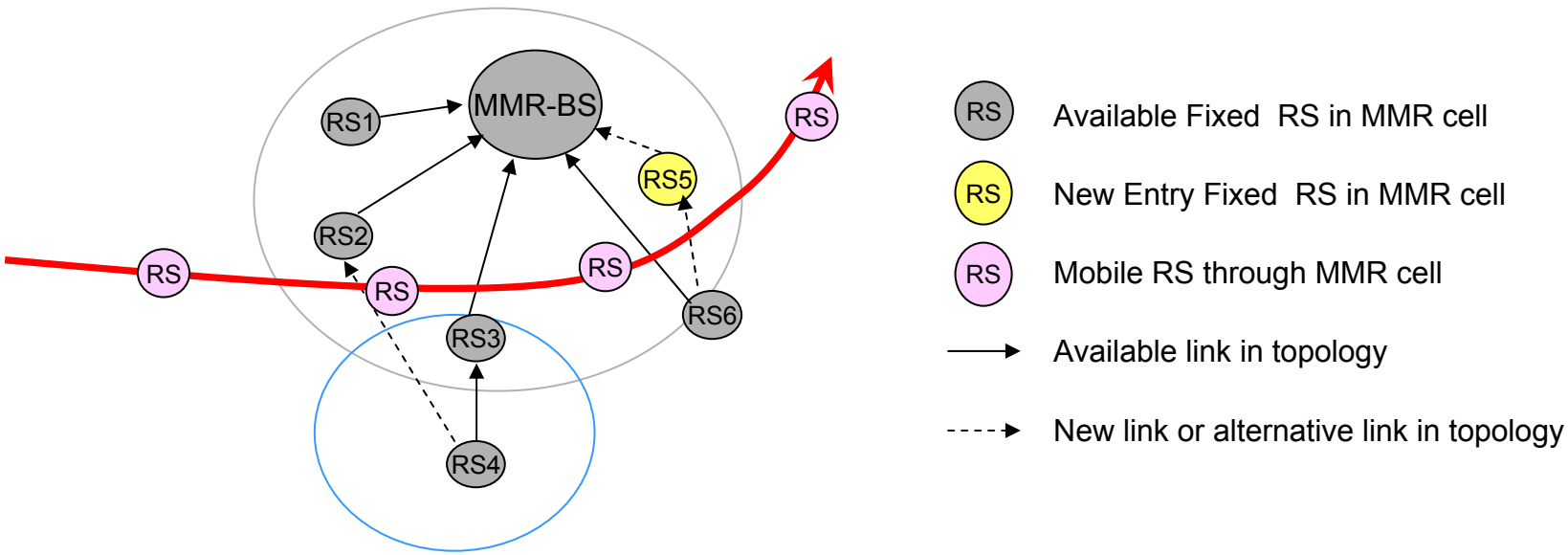
Purpose:

. Propose neighborhood discovery schemes for IEEE802.16j

Neighborhood Discovery

- Efficient radio resource allocation requires that MMR-BS has the knowledge of each RS and its neighbors
  - Neighbors only refers to the RSs which have good radio link quality with the designated RS rather than all RSs in one MR cell
    - MR-BS only maintain the radio link between each RS and its neighbors
    - Decrease the work burden of BS and speed up the path selection
- Neighborhood discovery may be triggered due to
  - New RS entry, mobile RS handover, RS exit , propagation environment change, and etc

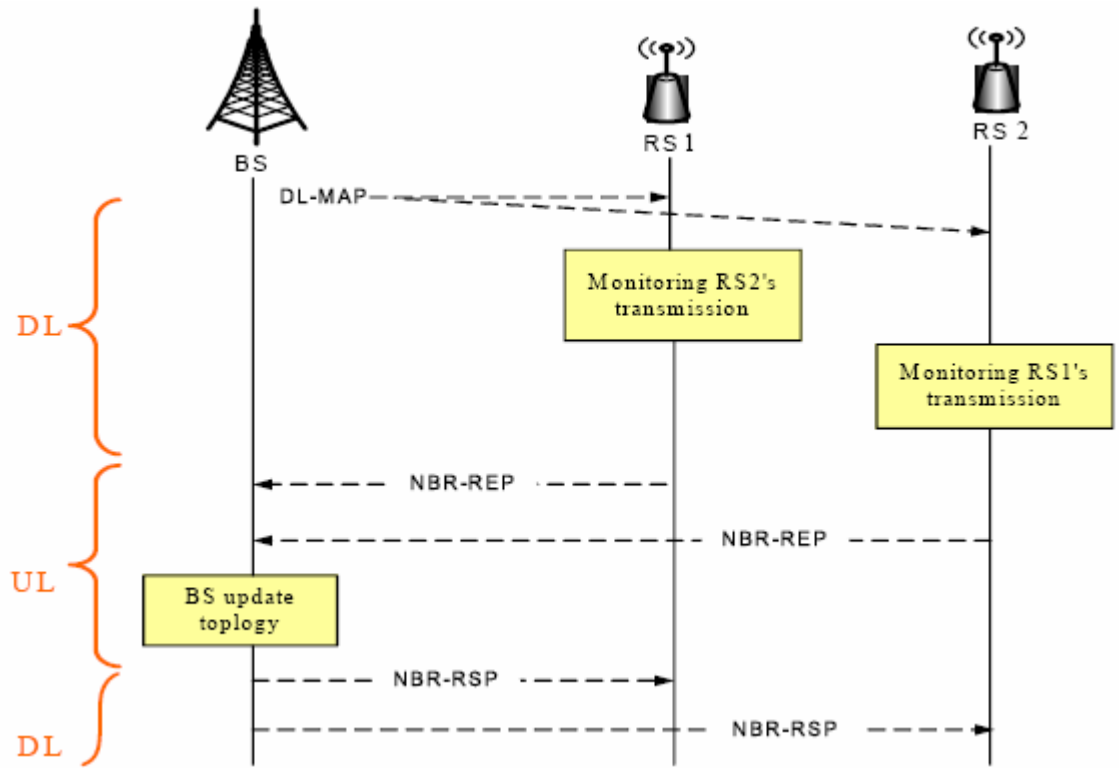


Neighborhood Discovery Mechanism

- Neighborhood table setup at new RS entry
  - BS create a neighborhood table for each RS at its network entry
- RS neighborhood discovery procedures
  - Measurement
    - RS measures signals from other RSs periodically or requested by MMR-BS
  - Link report
    - If the signal quality (e.g CINR/RSSI) is greater than a threshold, RS report to MMR-BS the existence of a neighbor and link qualities.
  - Table update
    - MMR-BS will process the received reports and update the topology and neighborhood table of corresponding RS

New MAC message introduced

- NBR_REP for reporting measurement result
- NBR_RSP for transporting neighborhood update information



Summary

- Key points of the proposal
  - Neighborhood discovery/topology learning mechanism
  - Neighborhood discovery procedures
  - New MAC message definition to support the transportation of related information