

Network Entry and Neighborhood Discovery

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Purpose:

. Propose network entry and neighborhood discovery schemes for IEEE802.16j

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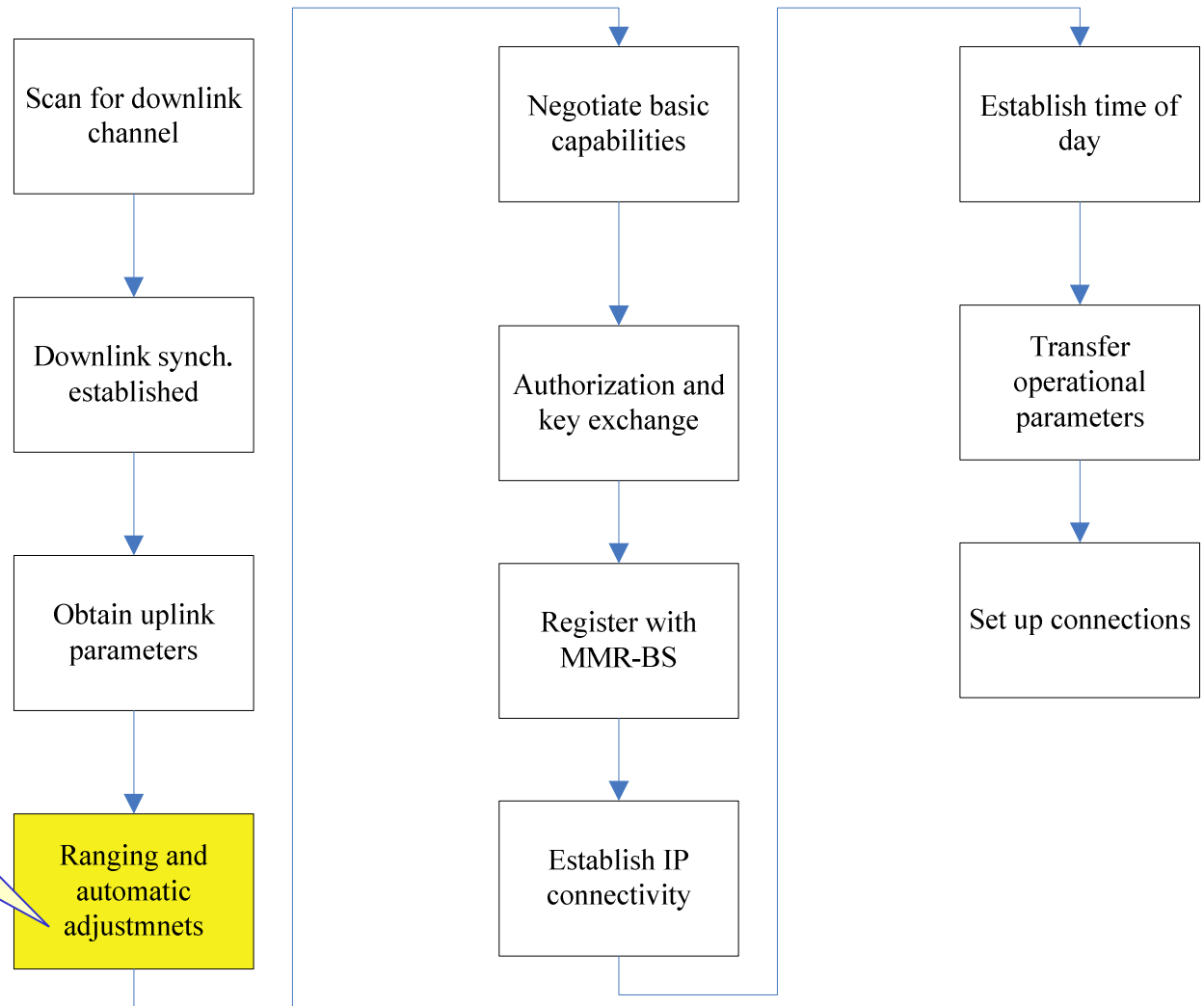
Outline

- MS / RS network entry and initialization
- Neighborhood Discovery
- Summary

Network Entry and Initialization

- MS entry and initialization process with RS involvement
 - BS performs access station selection and assignment in MS initialization
- RS entry and initialization process
 - Same to that of a MS, except that
 - RS identification by CDMA code or messages
 - Neighborhood discovery

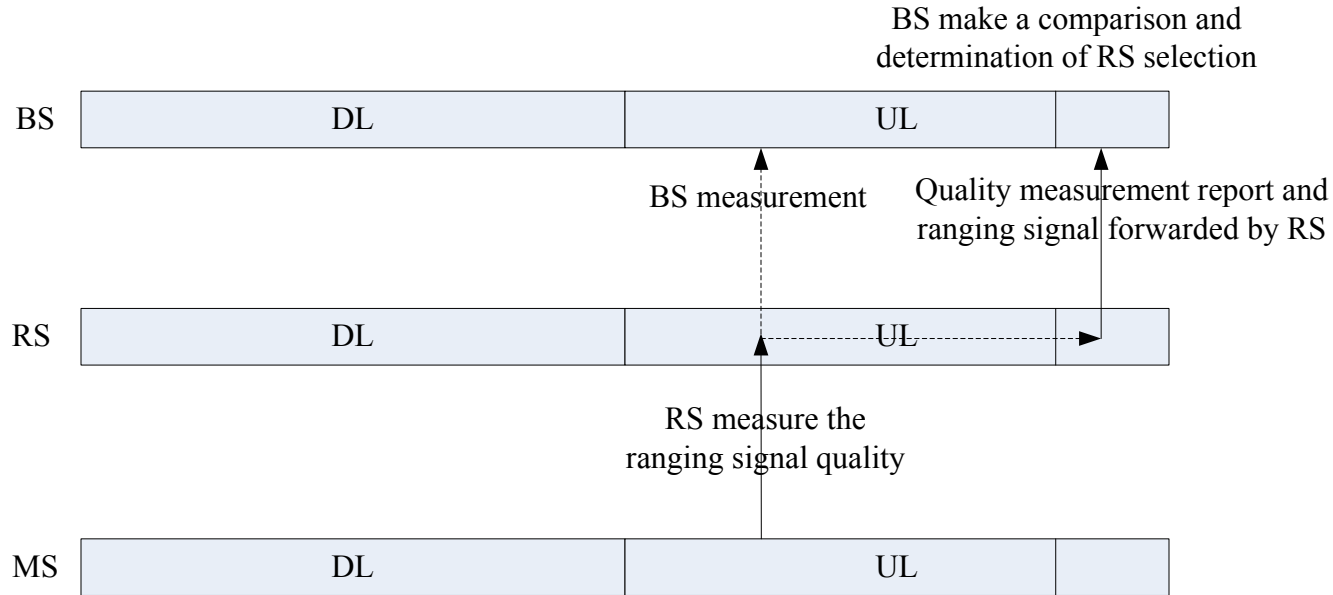
MS / RS Network Entry and Initialization



Perform access station selection to achieve an optimal path for each specified MS / RS

Ranging and automatic adjustmnets

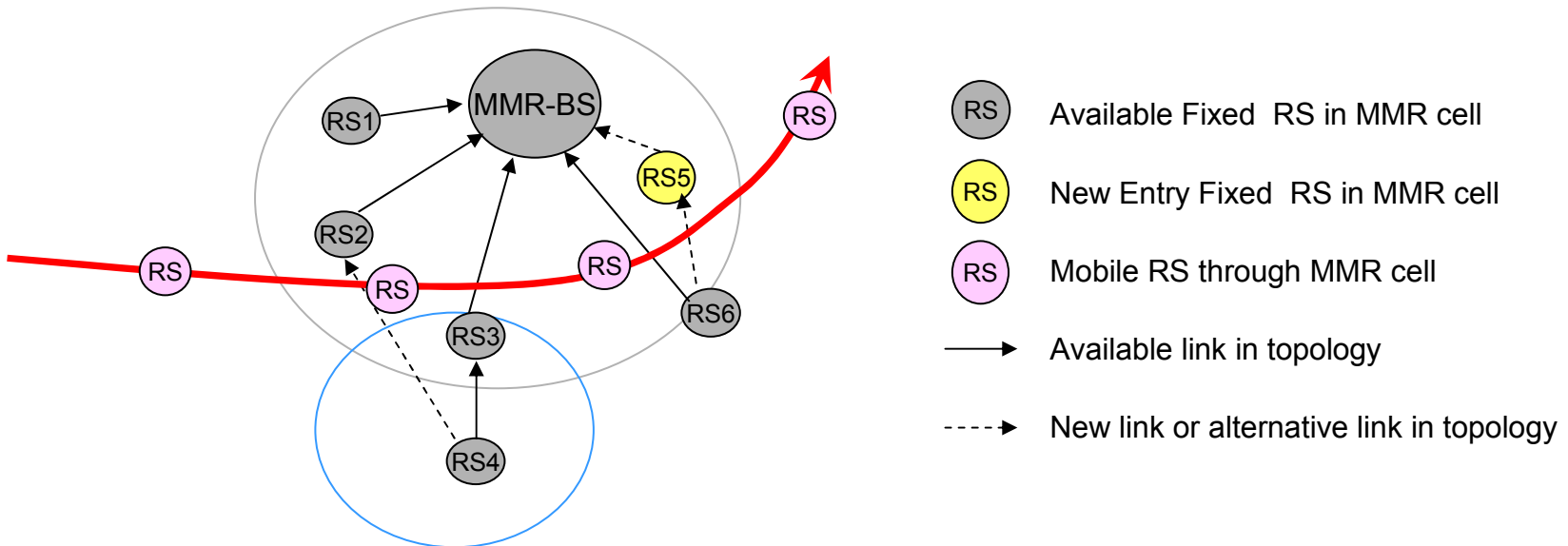
Access Station Selection via Ranging



- One ranging sub-channel allocated by BS
- RS monitor ranging requests
 - Measure the ranging signal quality
 - Forward ranging signal and measurement reports to BS
- BS performs access station selection for MS
 - Based on whole path evaluation instead of the access link only
 - Make a decision of access station to achieve the optimal relay path
- RNG-RSP for MS adjustment

Neighborhood Discovery

- Efficient radio resource allocation requires that MMR-BS has the knowledge of each RS and its neighborhood
- Topology change due to
 - New RS entry, mobile RS handover, RS exit , propagation environment change, and etc



Neighborhood Discovery Procedure

- Neighborhood table setup at new RS entry
 - BS create a neighborhood table for each new RS at its network entry
- RS neighborhood discovery
 - 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 neighbor stations of each RS and corresponding link qualities.

Summary

- Network entry and initialization with RS involvement
 - Access station selection through ranging signal measurement
 - Decision based on the whole path evaluation
 - RS and MS have the same entry procedure
- Neighborhood discovery
 - Neighborhood table maintained in BS to describe the link qualities between stations.