Resource Request for Bandwidth

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Purpose:

This contribution proposes MS sleep mode interworking with RS. It also proposes RS sleep mode procedure.

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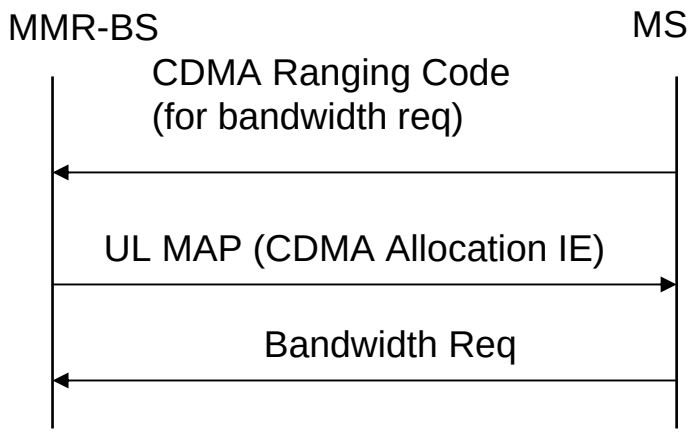
Introduction

- In the existing spec, a CDMA ranging code is used for requesting UL allocation
- It is used for bandwidth request, and ranging procedures
- This contribution extends the same mechanism for Relays

Problem in using Ranging Code procedure with Relays

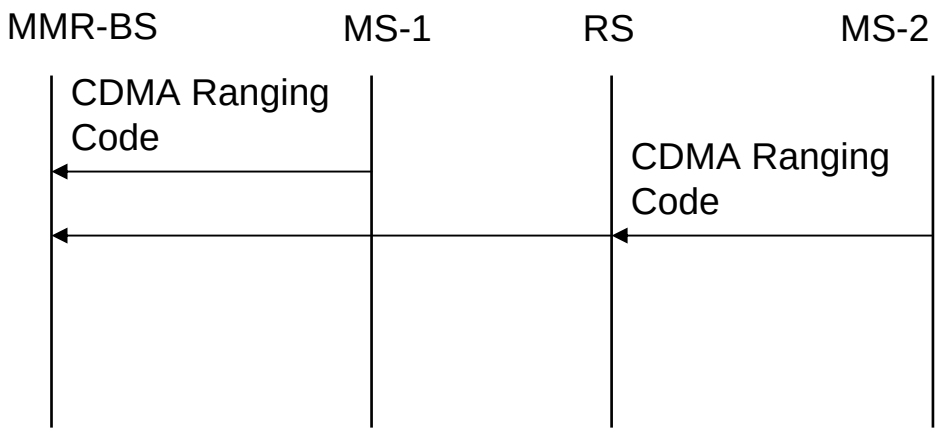
Without Relay

- MMR-BS receives code directly and does UL allocation for the only link



With Relay

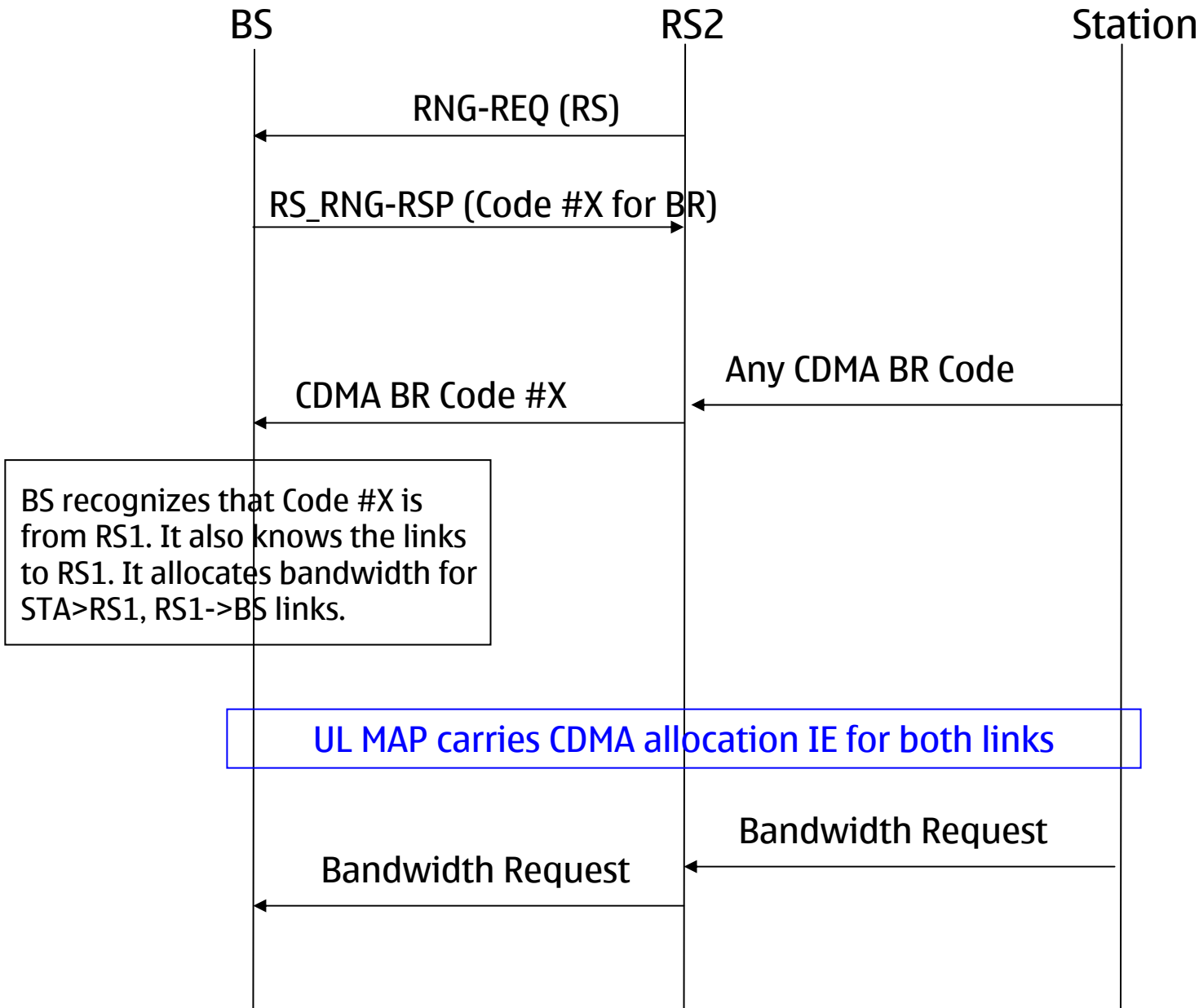
- MS-1 needs UL allocation for MS-1 -> MMR-BS link
- MS-2 needs UL allocation for MS-2 -> RS & RS->MMR-BS link
- How MMR-BS can distinguish the above with only CDMA code?



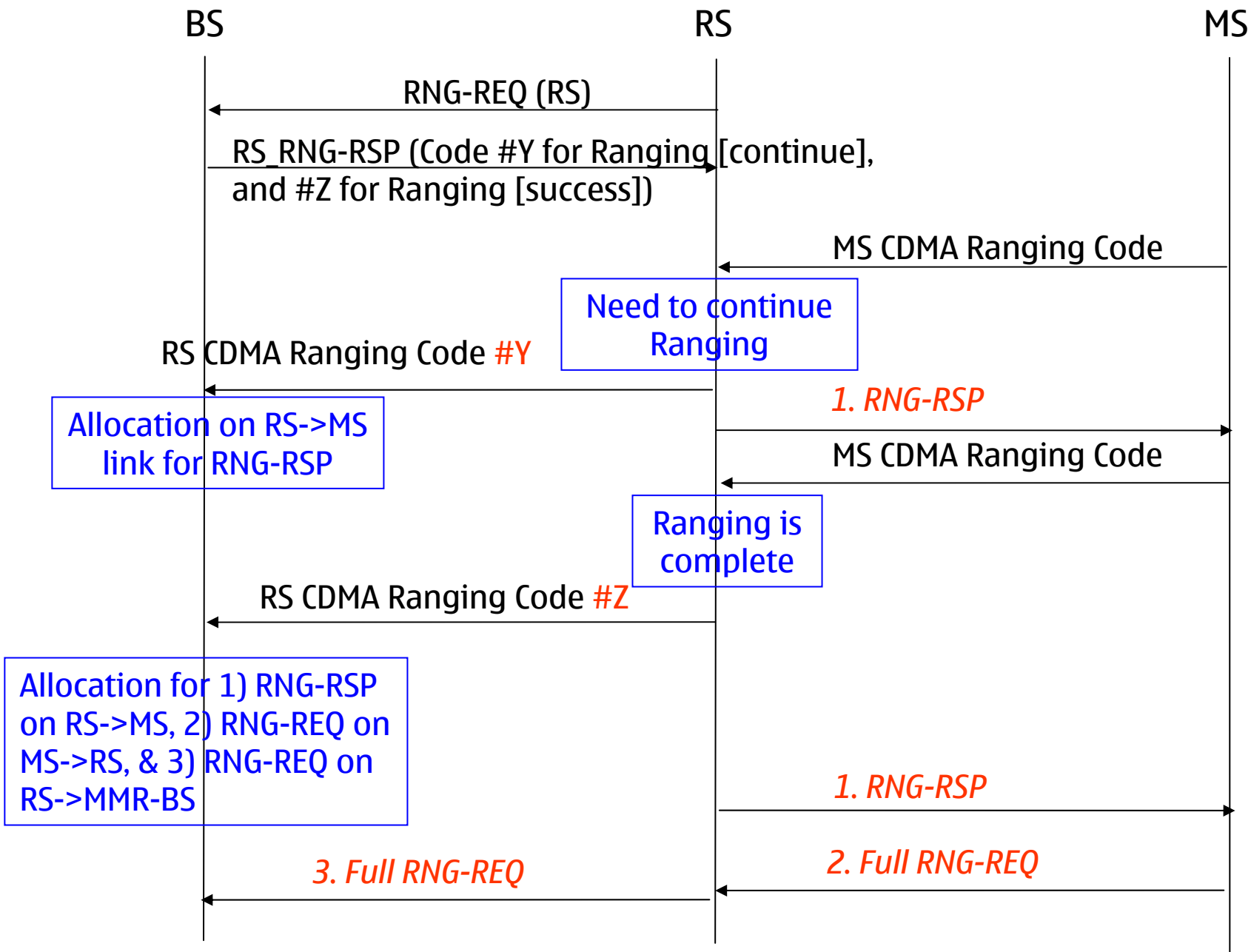
Solution

- The MMR-BS allocates a set of CDMA codes for RS.
- A station performs initial ranging with the MMR-BS with a code broadcast in the UCD.
  - If the station is RS, RS_CDMA_Codes is assigned in RS_RNG-RSP.
  - If the station is MS/SS, no code assignment is done.
- The MMR-BS finds the path to the RS by using Path Determination procedure to an RS. (separate contribution)
- When a station in the system needs bandwidth, it sends a ranging code on the access link.
  - If the station is one hop away, the MMR-BS receives a ranging code and does UL allocation as in existing section 6.3.6.5.
  - If the station is multiple hops away, the access RS replaces the received code and replaces it with its assigned RS ranging code. The code is relayed toward the MMR-BS. The MMR-BS recognizes the RS with the help of the assigned RS code. It assigns uplink allocation for each relay link and the access link.

Using Assigned BR Code



Using Assigned RS Ranging Code



Proposed Additions in the Spec

- RNG-REQ to carry RS indication, needed by other contributions also
- RS_RNG-RSP to carry RS CDMA ranging code list
- Description of the bandwidth request and ranging procedures

Advantages

- Solves the problem not only for Bandwidth Request, but for also initial ranging and periodic ranging.
- Same for fixed, nomadic, and mobile RS.
- Completely transparent to the exiting procedures, and requires no changes on the MS.
- Same for two hop or more than two hop relay network.
- Minimal additions to the specifications