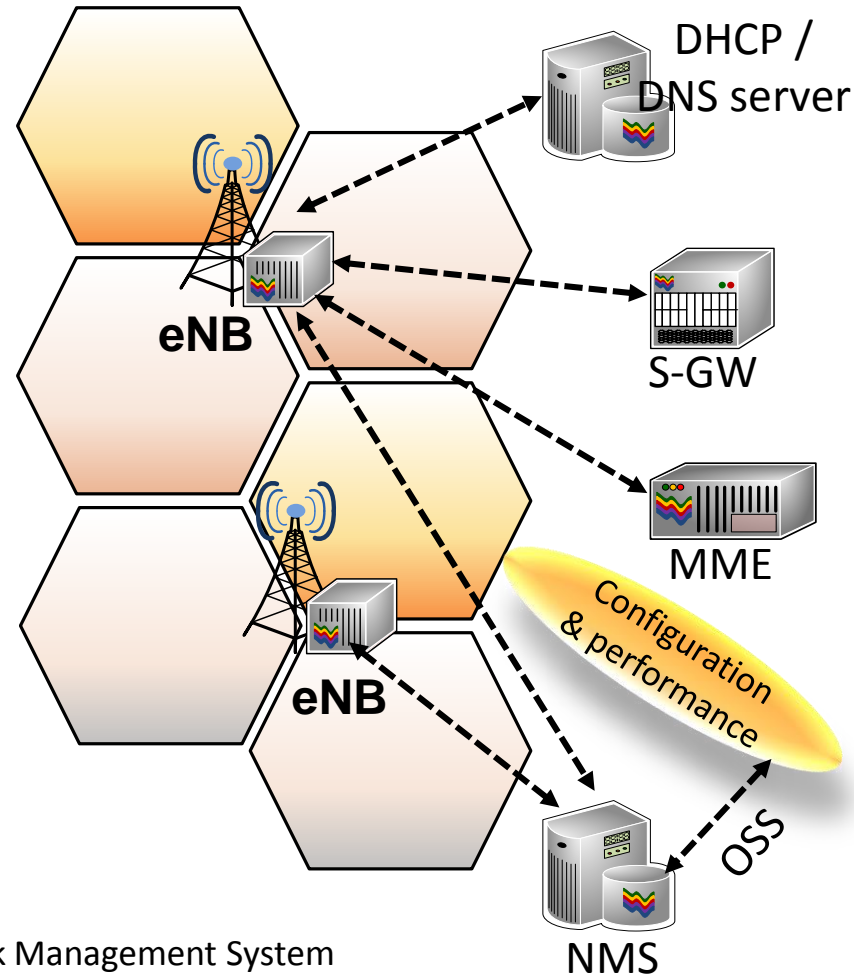


Automatic Neighbour Relationship (ANR)

Self-Configuration Example



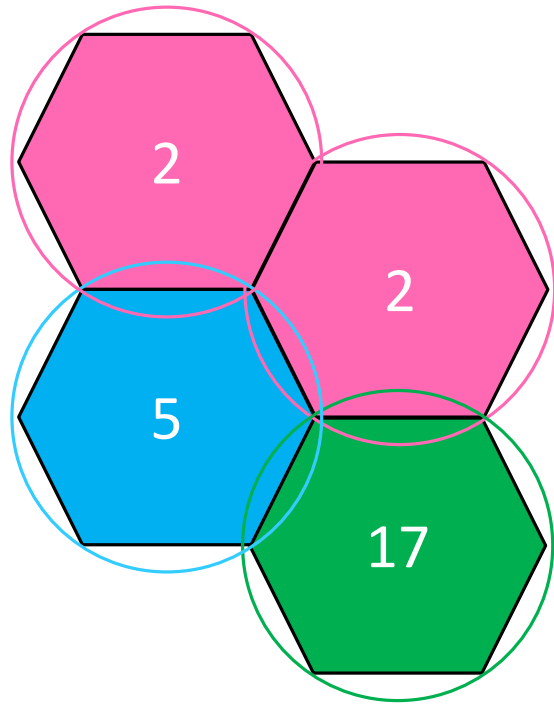
- When eNodeB is switched on for the first time, it requires minimal information as following:
 - Domain name of NMS
 - Domain name of its MME's
 - Domainname of S-GW
- eNodeB contacts the NMS:
 - Downloads the software (if required)
 - Download configuration parameters
 - TAC, PLMN identities, global cell id, power info
 - The Physical cell Id can be assigned or automatic
- Run S1 setup to establish connection with MME's

NMS – Network Management System
MME – Mobility Management Entity
S-GW – Serving Gateway

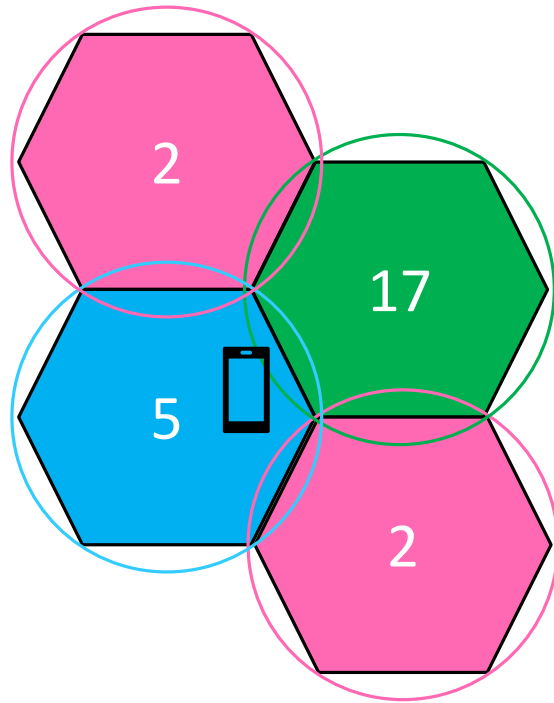
Physical Cell Identity (PCI)

- In LTE:
 - PCI can take 504 values, from 0 to 503.
 - PCI is calculated as $(3 \times \text{SSS}) + \text{PSS}$
 - Primary Synchronization Signal or PSS has 3 values i.e., 0 to 2
 - Secondary Synchronization Signal or SSS has 168 values i.e., 0 to 167
- The only difference in 5G NR is that SSS has 336 values i.e., 0 to 335
 - So 5G NR supports 1008 unique PCIs

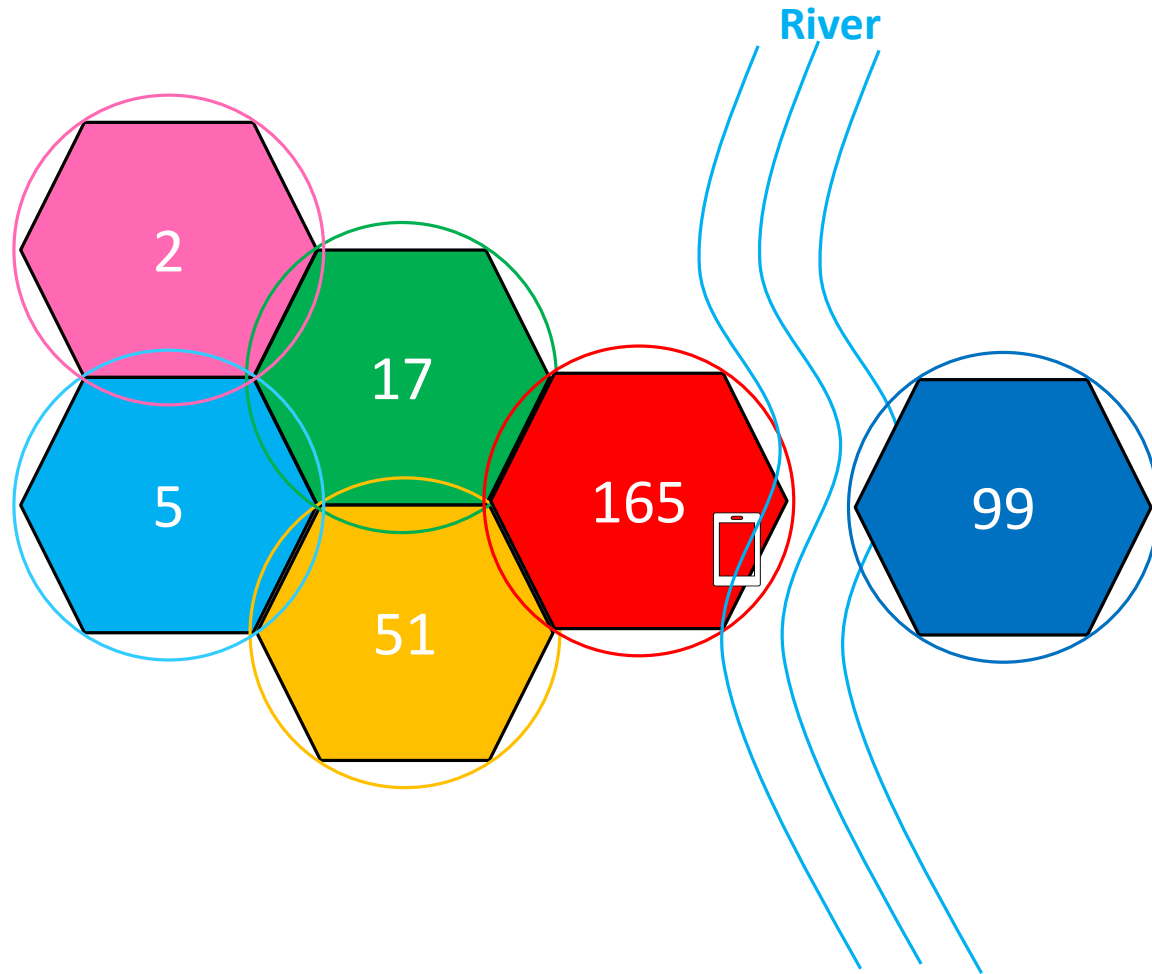
PCI Collision



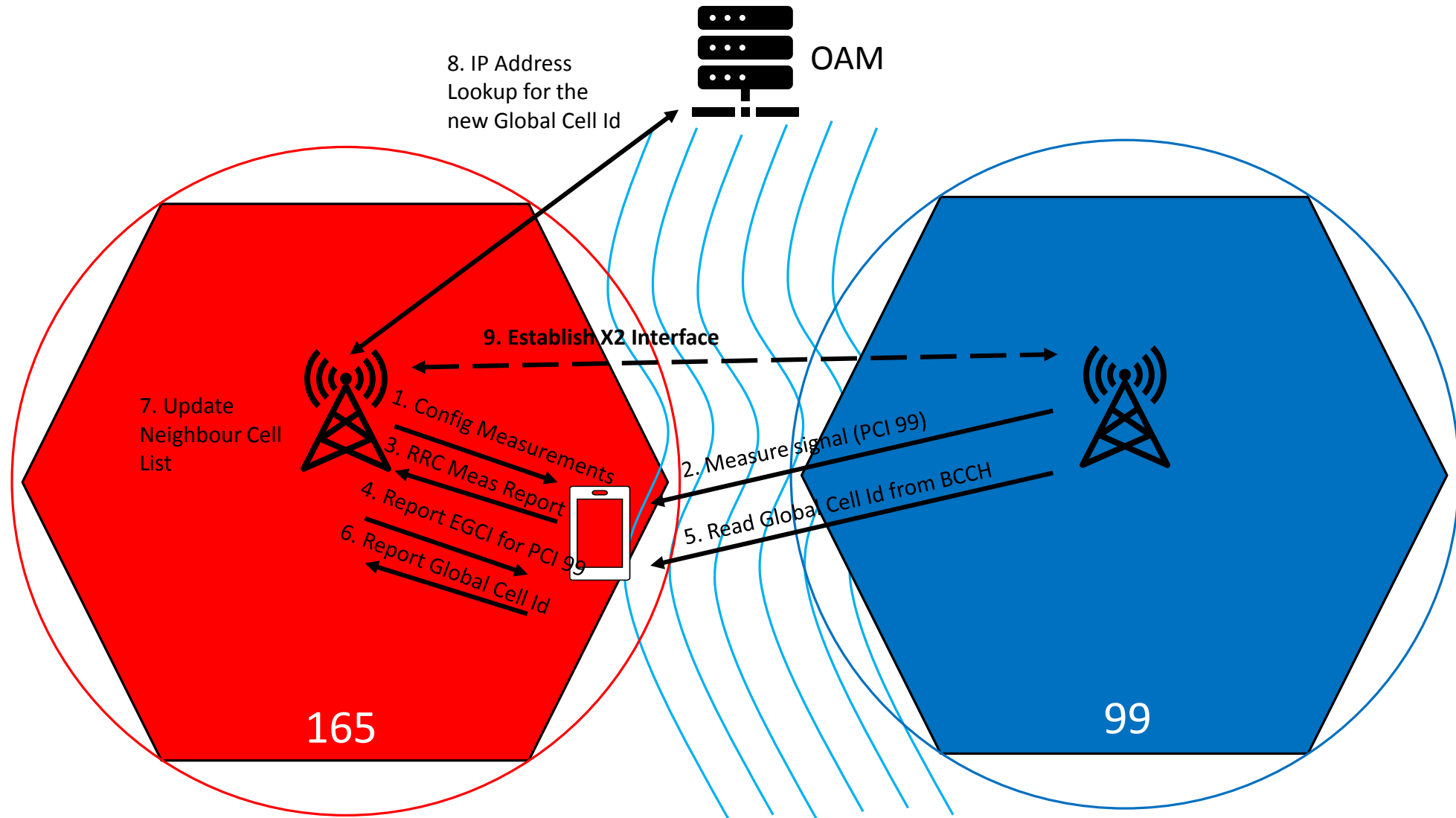
PCI Confusion



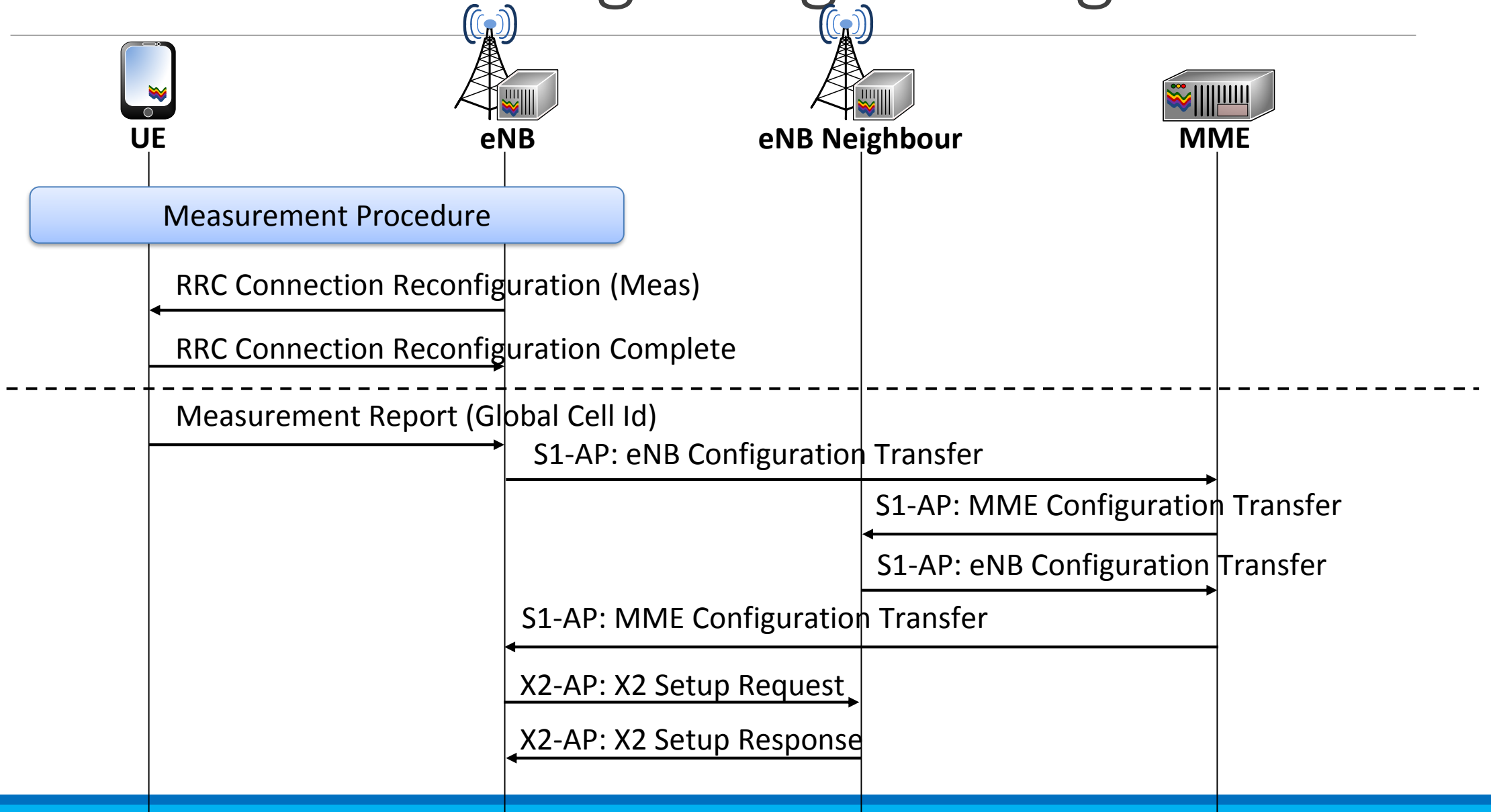
ANR Example



ANR Procedure Signaling



ANR Procedure Signaling Messages



Thank You

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