Priority-Based Random Access Control Mechanism for M2M Communications [?]

Yin-Hong, Hsu

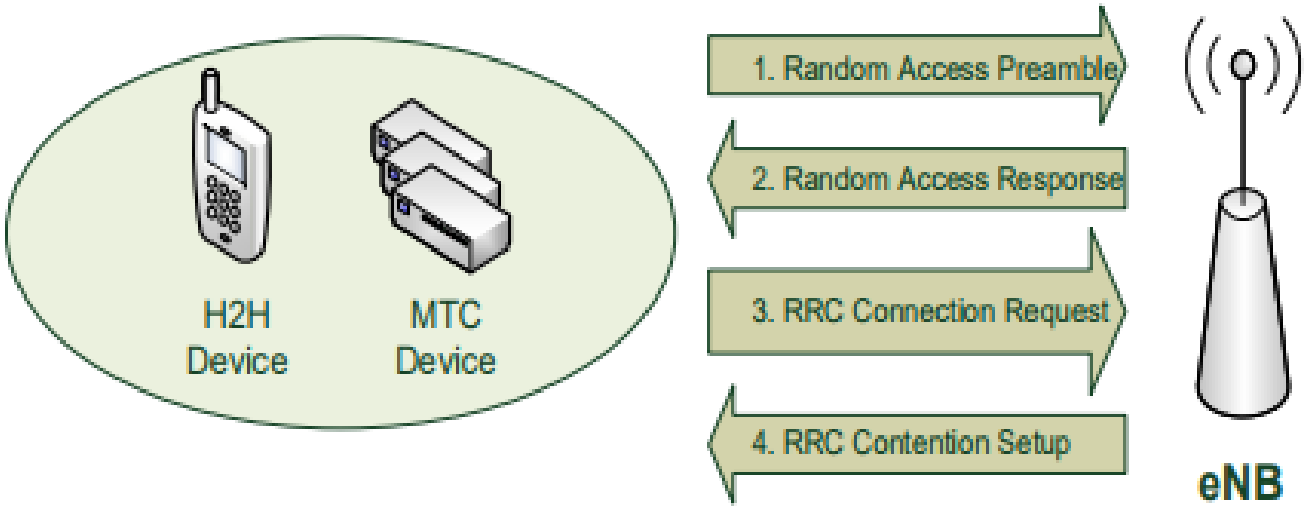
09/01, 2017

Outline

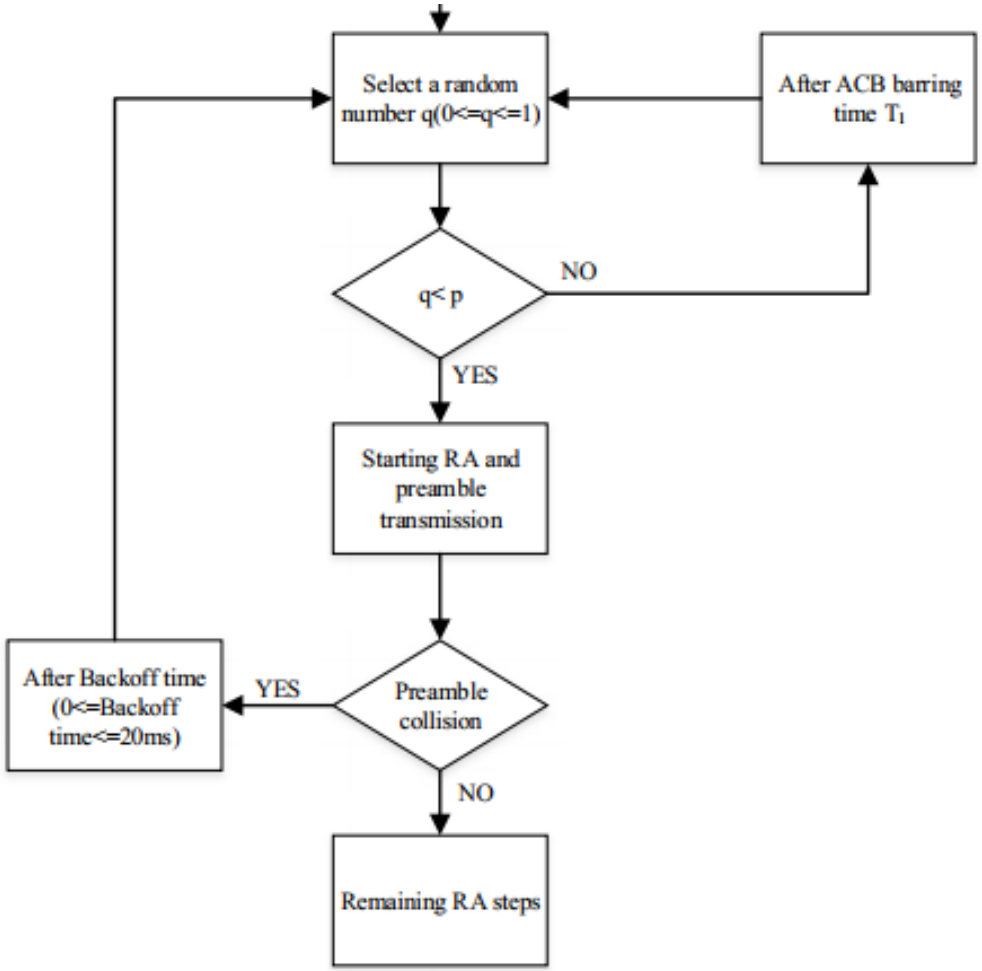
Introduction

- PBRA mechanism
- dynamically control the UEs' access
- according to the number of access attempts and their priority

Random Access Procedure



Access Class Barring



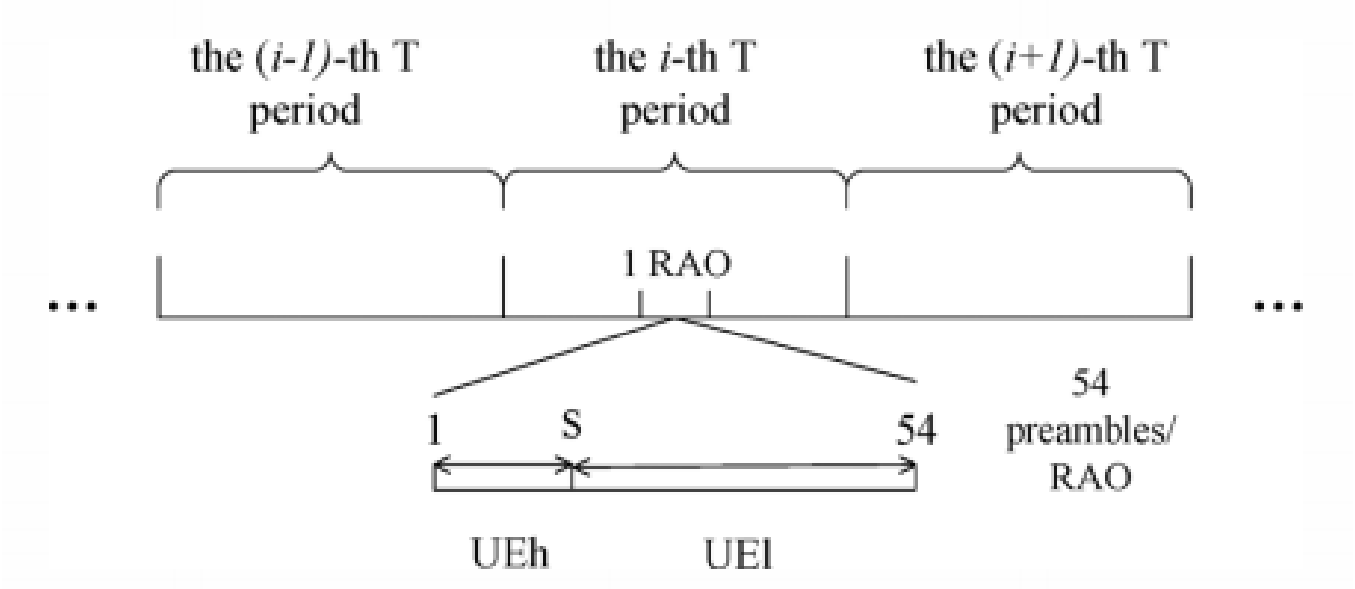
Priority Classification

- Classify according to their delay sensibility
- high priority
- medium priority
- low priority

Preamble split

- Seperate 54 preambles into 2 groups
- Group 1: 1 to S
- Group 2: S+1 to 54
- S will rise while the congestion in Group 1 increase

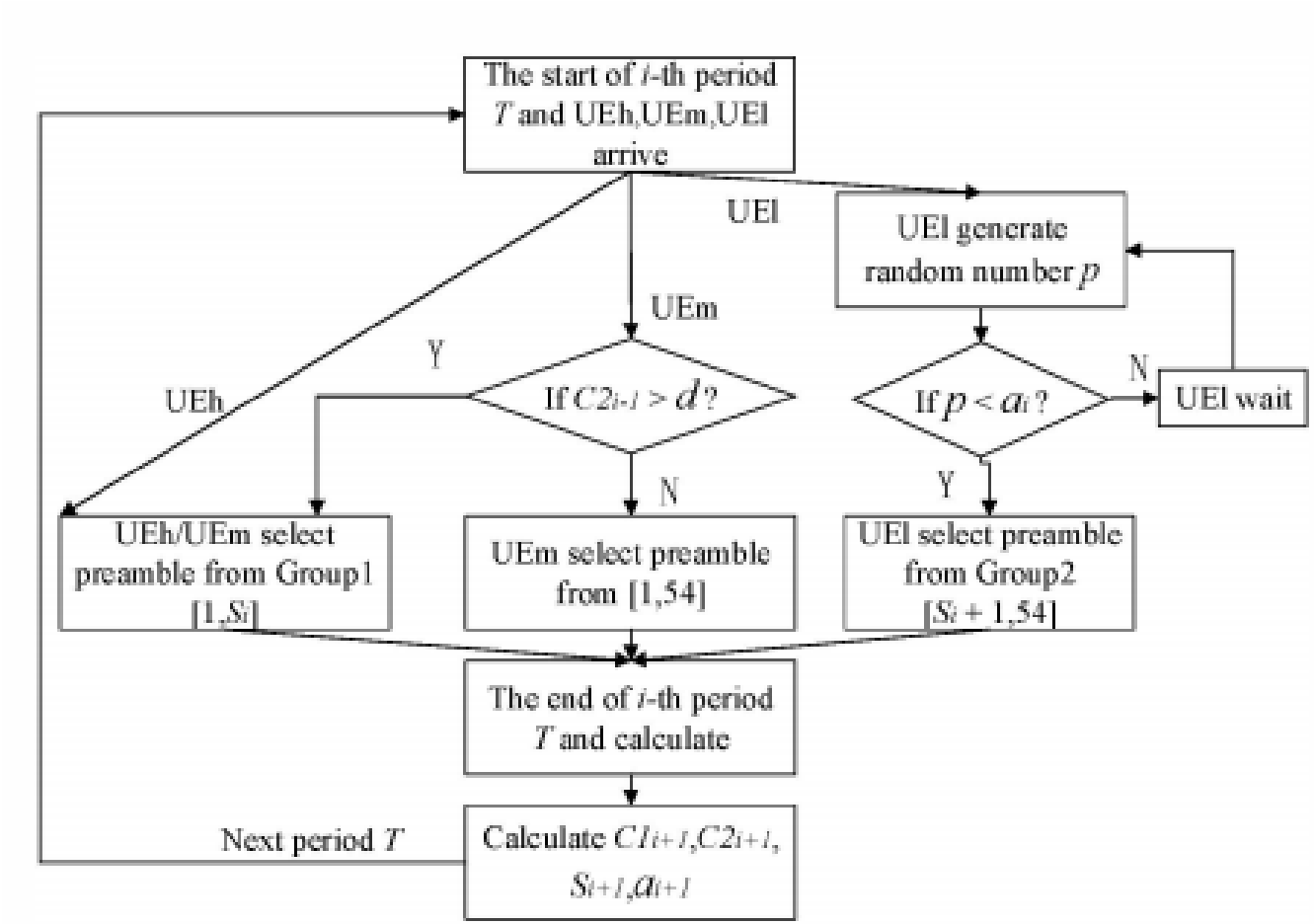
Preamble split



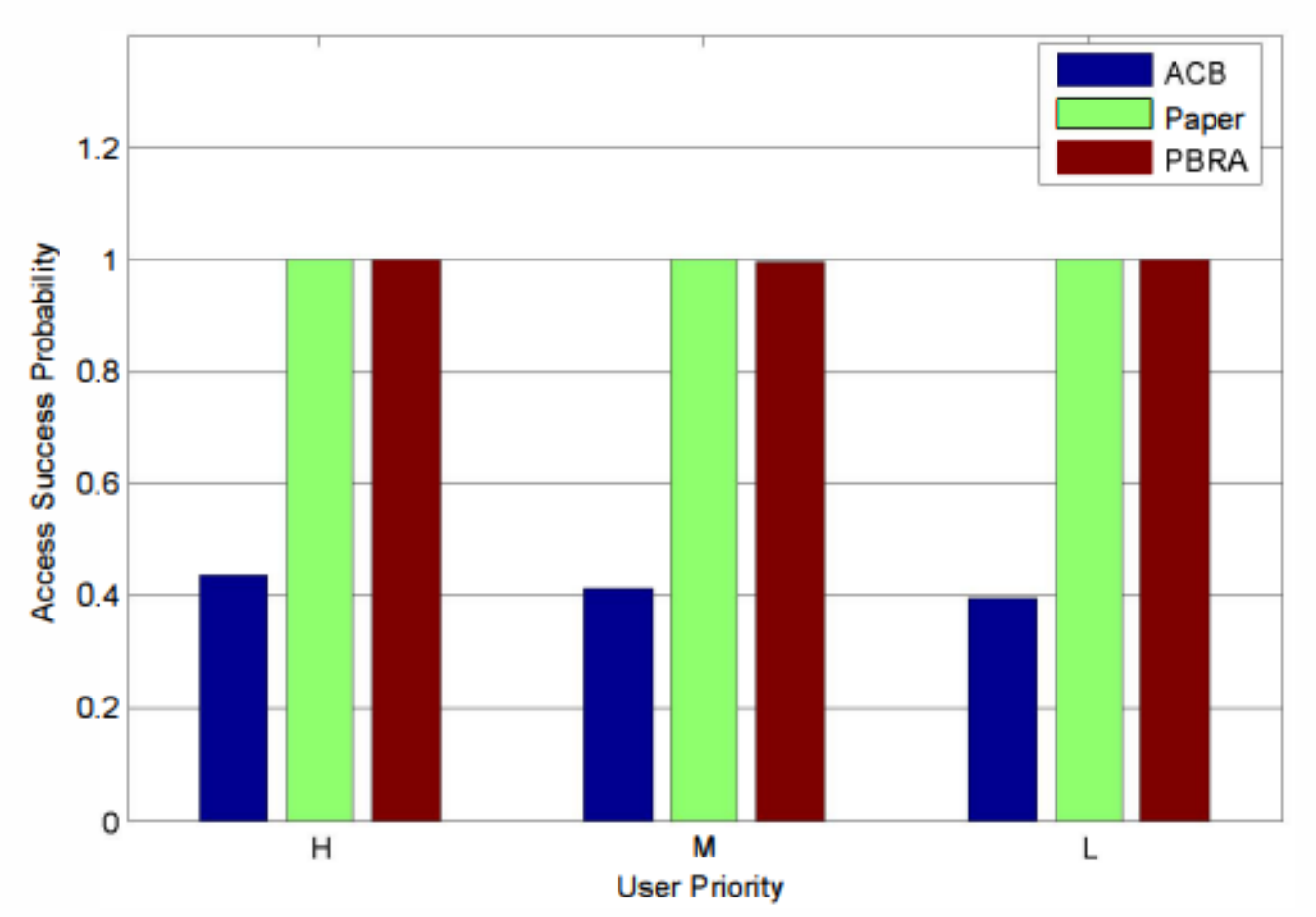
Estimation and Strategy

- **Three steps**
  - Initialization
    - set all variable to 0
  - Detection
    - calculate the total number of conflicted preambles
  - Implementation
    - calculate the average preamble collision ratio of each group
    - Ci: collision ratio of group i
    - $S_i = S_{i-1} \cdot \lfloor (C1_{i-1} - 0.05) \cdot b \rfloor$
    - $a_i = 1 - C2 \cdot g$

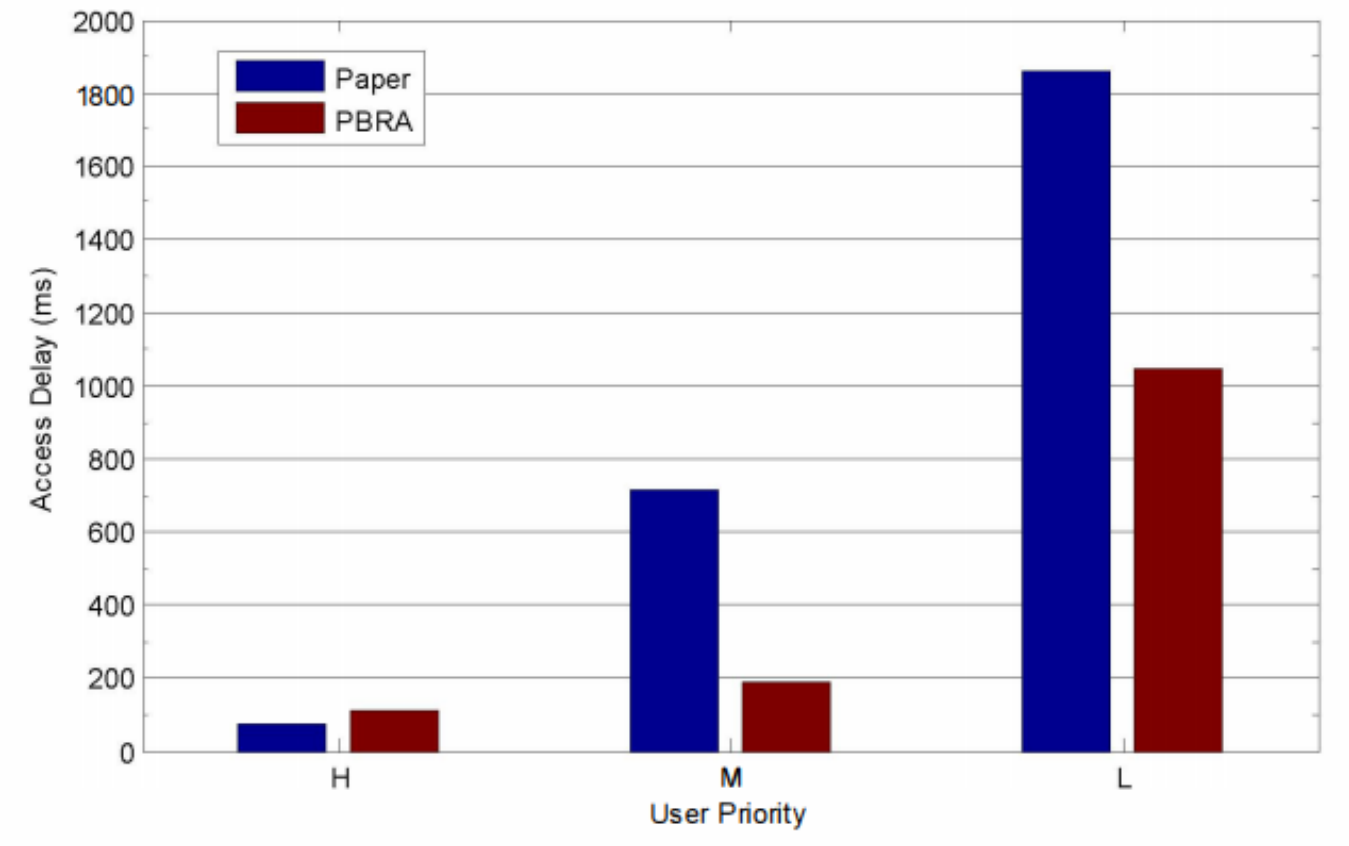
Estimation and Strategy



Success Probability[?]



Access Delay[?]



Number of Access Slot[?]