

# Priority-Based Random Access Control Mechanism for M2M Communications [1]

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# Outline

Introduction

Mechanism

Evaluation

References

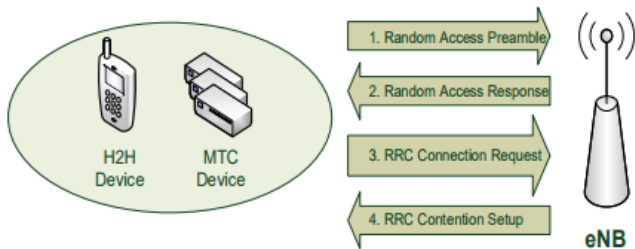


# Introduction

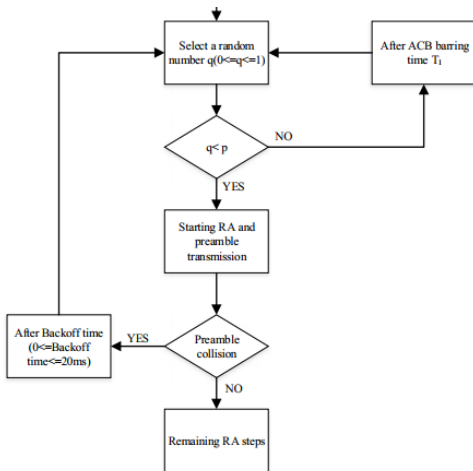
- ▶ PBRA mechanism
- ▶ dynamically control the UEs' access
- ▶ according to the number of access attempts and their priority



# Random Access Procedure



# Access Class Barring



# Priority Classification

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

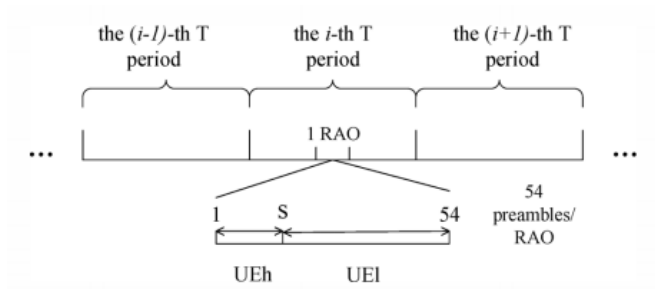


# Preamble split

- ▶ **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



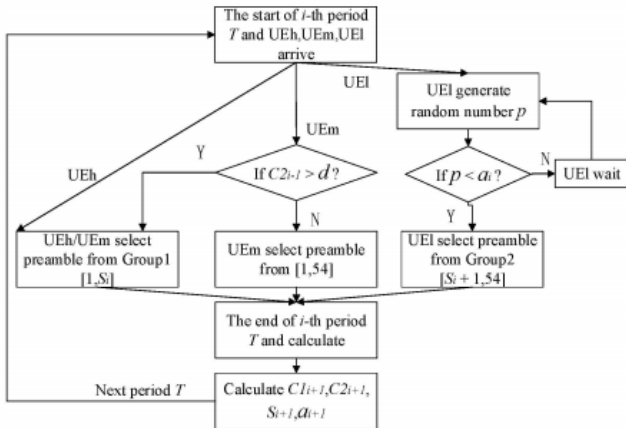


# Estimation and Strategy

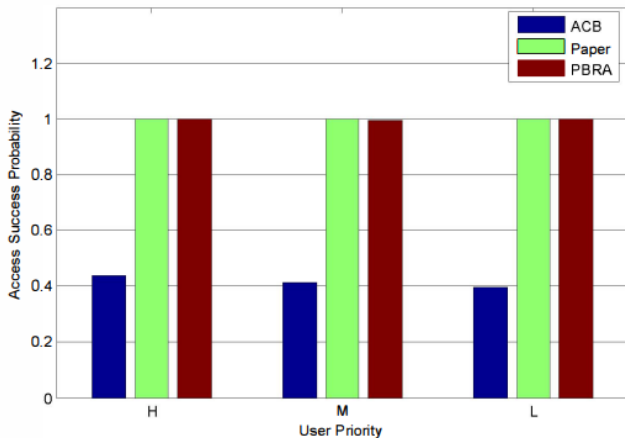
## ► Three steps

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

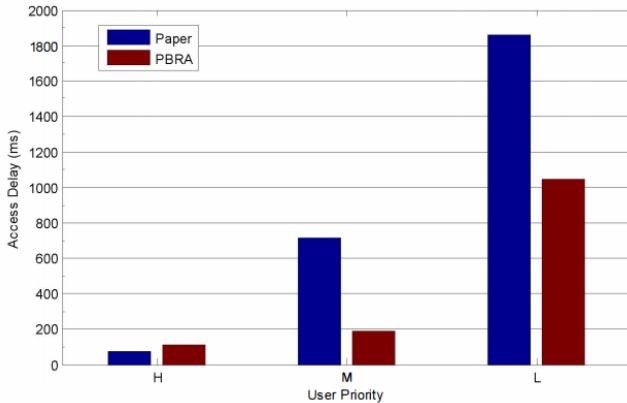
# Estimation and Strategy



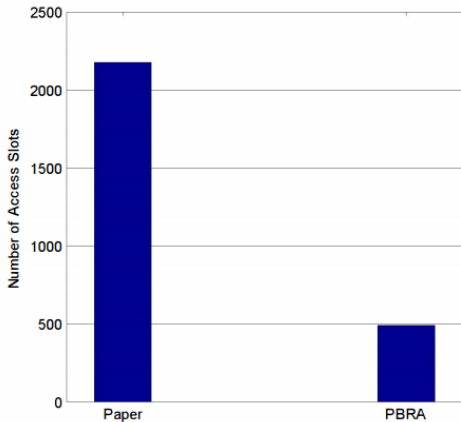
# Success Probability[2]



# Access Delay[2]



## Number of Access Slot[2]



# References

- [1] L. Guan, B. Yan, Z. Guo, and Y. Gong, "Priority-based random access control mechanism for m2m communications," in *2016 2nd IEEE International Conference on Computer and Communications (ICCC)*, Oct 2016, pp. 2313–2317.
- [2] N. Zangar, S. Gharbi, and M. Abdennebi, "Service differentiation strategy based on macb factor for m2m communications in lte-a networks," in *2016 13th IEEE Annual Consumer Communications Networking Conference (CCNC)*, Jan 2016, pp. 693–698.

