

progress report

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Outline

Papers

brief describe of these paper

Classification

Comparison

References



Papers

- ▶ Retransmission-based Access Class Barring for RAN overload control in Machine Type Communications[1]
- ▶ Efficient LTE Access with Collision Resolution for Massive M2M Communications [2]
- ▶ Adaptive RACH Congestion Management to Support M2M Communication in 4G LTE Networks [3]

for RAN overload control in Machine Type Communications

- ▶ Classify into several groups by the number of retransmission. Each group were assigned a weight which means the proportion of RACH resource they get.
- ▶ The way to control the proportion of RACH resource is dynamic change their ACB factor



Resolution for Massive M2M Communications

- ▶ Proposed a collision resolution algorithm. The algorithm use q-ary tree spliting to split the set of available preable
- ▶ Revise MSG4 to make UE next contention attempt use the sub-set of available preamble on dedicate RAO(random access oppo rtunity)



Support M2M Communication in 4G LTE Networks

- ▶ With several known algorithm for congestion control, and seperate congestion situation in three level.
- ▶ Propose an algorithm “ARC”, to apply the best congestion control algo to correspond congestion level.



what this paper modify [1]

- ▶ MSG3- include number of preamble transmission
- ▶ SIB2- dynamic ACB factor



what this paper modify [2]

- ▶ MSG4- propose MSG4b to notify the UE about collision and specifying detail of next contention.



what this paper modify [3]

- ▶ eNB- about congestion control strategy



similarity

- ▶ restrict RAP
- ▶ get higher success probability



difference

- ▶ [1]- use feedback from MSG3
- ▶ [2]- deal with all collision, get higher delay
- ▶ [3]- use multiple algo to handle different situation

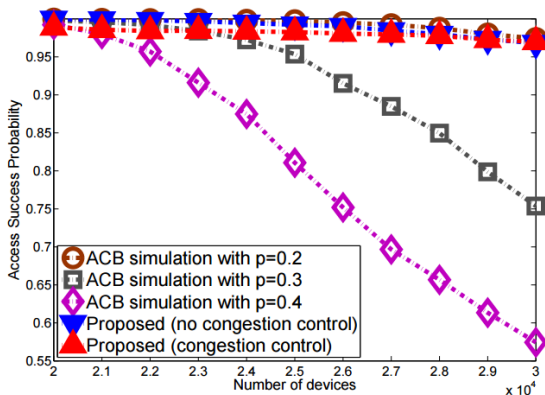


Access success probability and delay

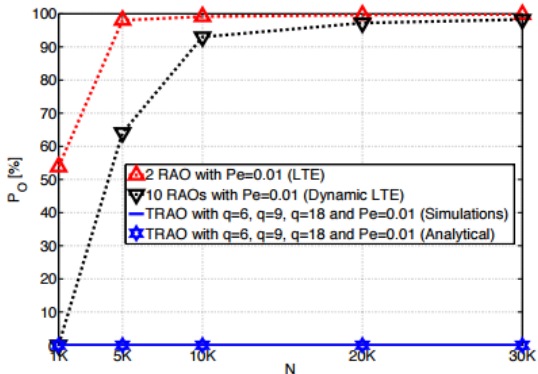
| | [1] | [2] | [3] |
|----------------------------|-----|-----|-----|
| Access success probability | 2 | 3 | 1 |
| Access delay | 1 | 3 | 2 |



[1] access success probability



[2] outage probability



[3] access success probability

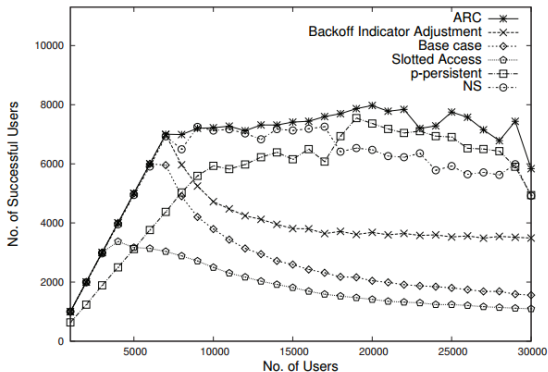
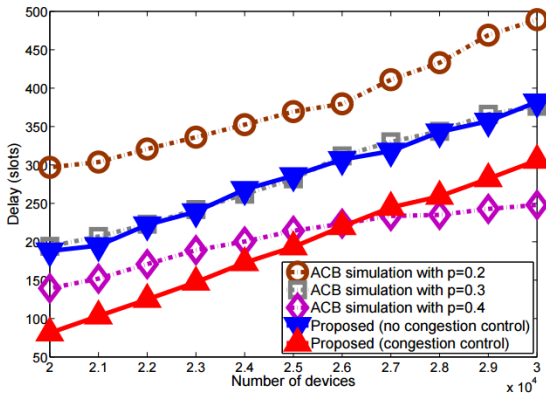


Fig. 2: Number of Successful Users

[1] access delay



[2] access delay

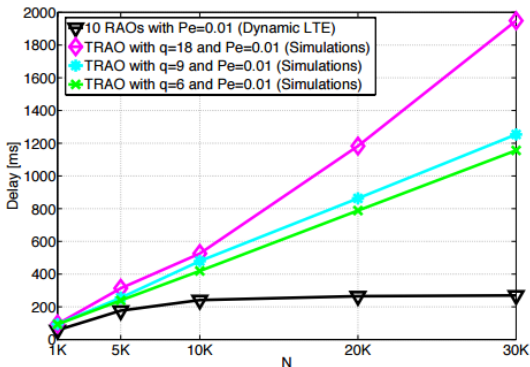


Fig. 7. Average delay experienced by resolved devices.

[3] access delay

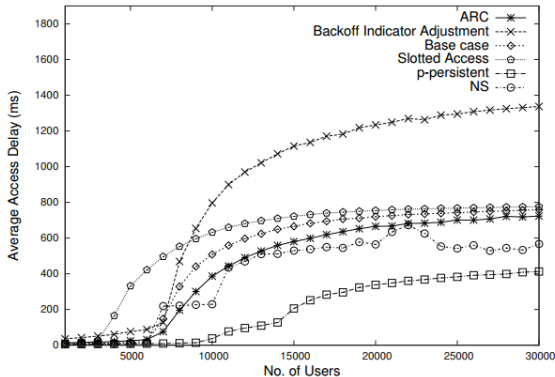


Fig. 3: Average Access Delay

References

- [1] J. W. Chiou and S. Cheng, "Retransmission-based access class barring for ran overload control in machine type communications."
- [2] G. C. Madueo, . Stefanovi, and P. Popovski, "Efficient lte access with collision resolution for massive m2m communications," in *2014 IEEE Globecom Workshops (GC Wkshps)*, Dec 2014, pp. 1433–1438.
- [3] M. K. Giluka, A. Prasannakumar, N. Rajoria, and B. R. Tamma, "Adaptive rach congestion management to support m2m communication in 4g lte networks," in *2013 IEEE International Conference on Advanced Networks and Telecommunications Systems (ANTS)*, Dec 2013, pp. 1–6.

Thanks for Your Attentions

