Modeling Mobile Code Acceleration in the Cloud

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Roadmap

- Motivation
- Background
 - Mobile offloading
- Problem statement
- SDN mobile code accelerator
 - Utility model
- Evaluation
 - Real deployment in Amazon EC2
- Conclusions



Motivation

- Factors that influence QoE
 - Energy
 - Performance



[IEEE Communications Magazine] Ickin, Selim, et al. "Factors influencing quality of experience of commonly used mobile applications." *IEEE Communications Magazine* 50.4 (2012).





Mobile computational offloading

• Opportunistic augmentation of resources



[IEEE Communications Magazine] Flores, H., Hui, P., Tarkoma, S., Li, Y., Srirama, S., & Buyya, R. (2015). Mobile code offloading: from concept to practice and beyond. *IEEE Communications Magazine*, *53*(3), 80-88.



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Mobile offloading models





WHAT IS THE PROBLEM?



Problem statement



Different mobile resources



Envisioned system





Network communication (3G/LTE)







SDN mobile code accelerator



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SDN-ACCELERATOR



Modeling mobile code acceleration





Levels of code acceleration











SDN mobile code accelerator



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EVALUATION



Mobile performance





Mobile performance





Workload management and fidelity







Accuracy





Workload management



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Workload management







Application fidelity









Conclusions

- Modeling code acceleration is a tough challenge. Segregation of computational infrastructure is not that obvious.
- Cloud can provision different levels of code acceleration
 - Opportunities for extending mobile hardware lifespan
- The response time of mobile applications can be moderated without further instrumentation by using software define techniques



QUESTIONS

