

QoE in Wireless Pricing

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What affects my QoE?

- (Arguably) three important factors
 - What I'm viewing
 - What the network is doing
 - What I'm paying



End User Pricing QoE

- Bad revenue
 - Paying \$100 to send an email after landing in Europe
- Good revenue
 - Paying extra so I can fly a drone with my phone

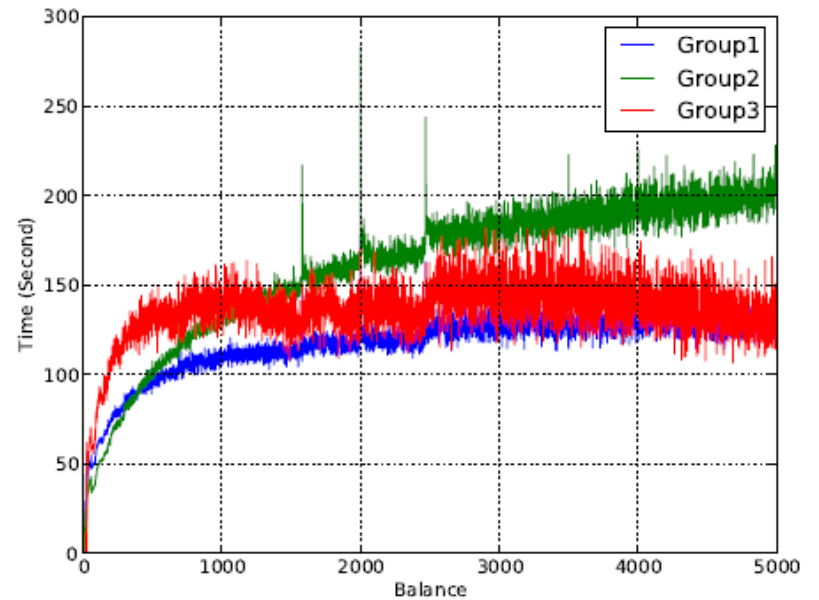
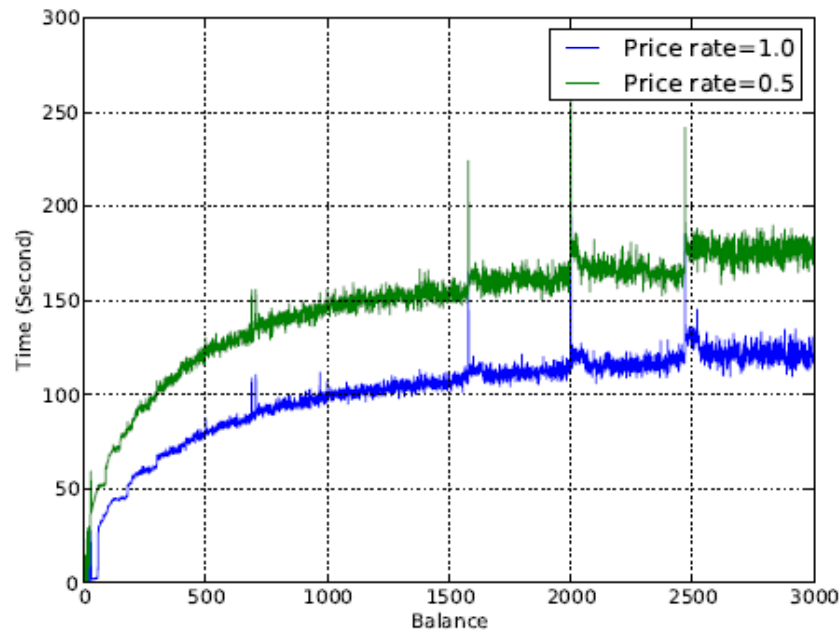


Three Research Directions From White Paper

- Quota Dynamics
- Content Provider QoE
- Unified framework for pricing optimization

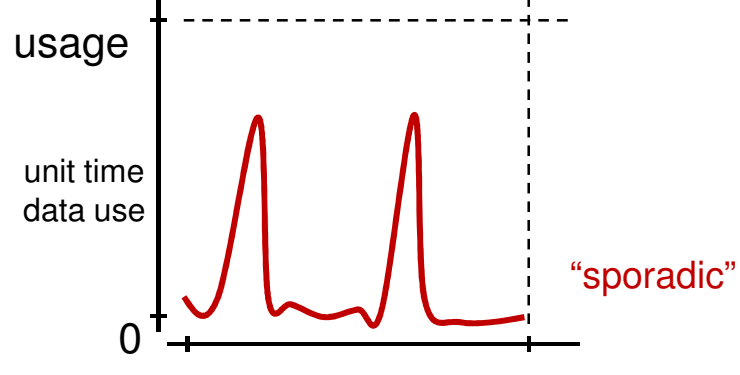
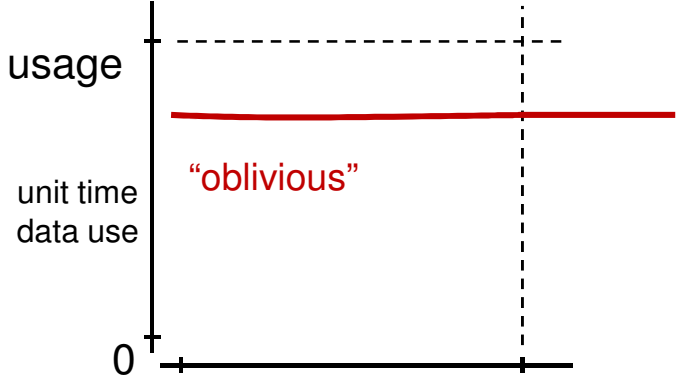
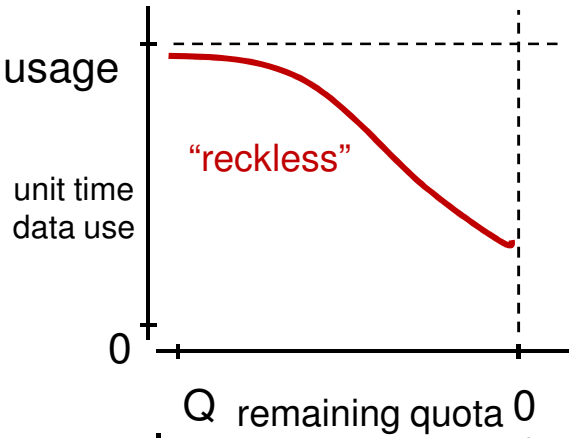
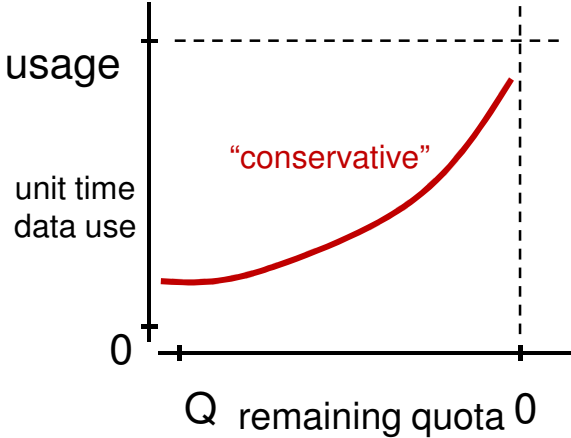
Quota Dynamics

- Call duration as function of remaining pre-paid balance (voice)



Quota Dynamics

- Possible types of data users



Content Provider QoE

Sponsored Data for Mobile


www.att.com/att/sponsoreddata/#fbid=PalZMqR8key

Personal Business About AT&T Wireless Coverage Maps Find a Store Language Register | Log In

Shop myAT&T Support Search

Wireless Bundles Digital TV Internet Home Phone U-verse Digital Life Special Offers Shopping Help

Coming Soon

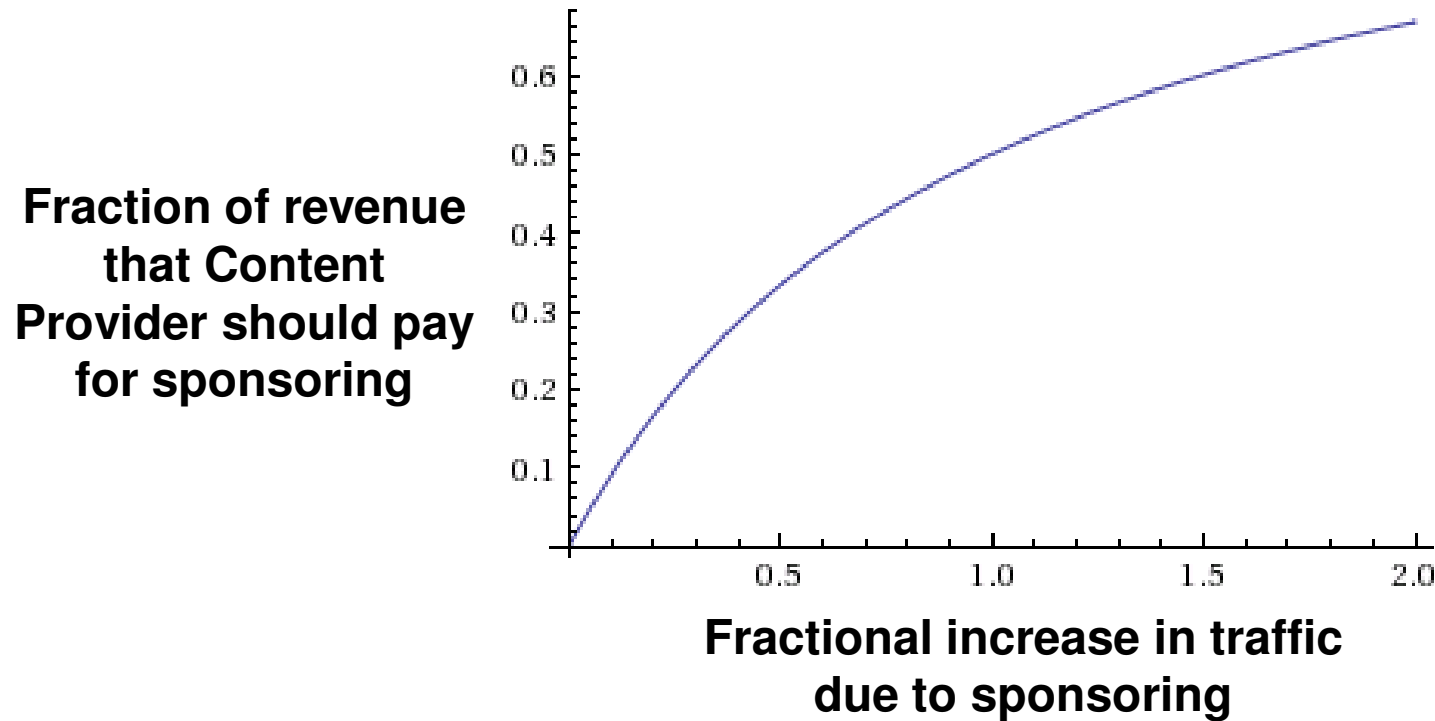
 **sponsored data**

*Browse.
Stream.
Enjoy.*

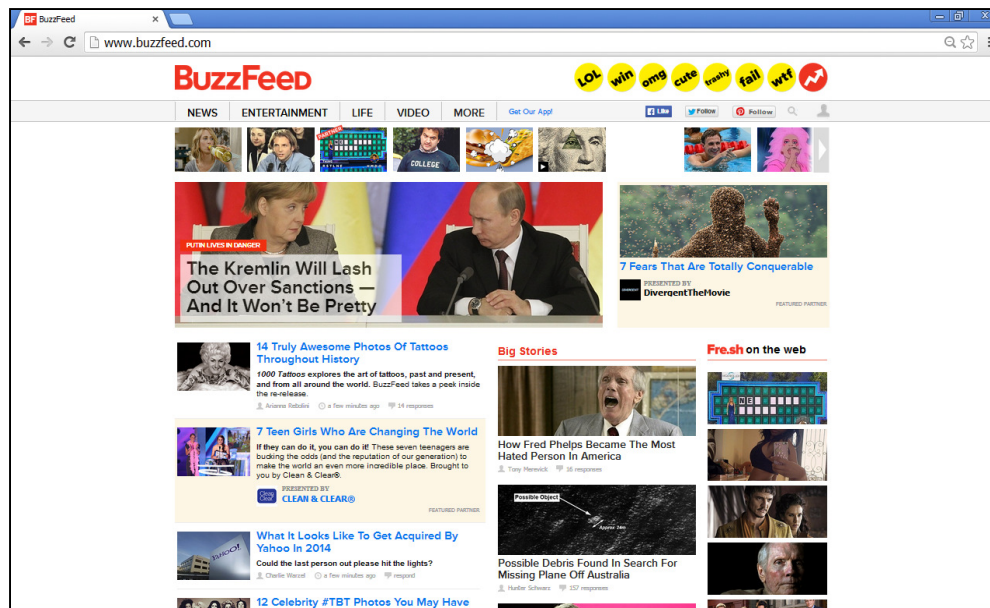
With AT&T Sponsored Data, you can browse websites, stream video and enjoy apps on your wireless device without impacting your monthly data allowance.*

[View Press Release](#)

Is Sponsoring Beneficial to Content Provider?



Case Study for BuzzFeed



- If sponsoring cost is \$15 per GB:
 - Only worthwhile if traffic increase is 375%
- If sponsoring cost is \$5 per GB:
 - Worthwhile if traffic increase is 33%

Unified Pricing Model

- Most pricing models studied in isolation
 - Shared-data plans
 - Quota trading
 - Sponsored content
- Can we put them in common framework to compare the QoE they offer to end users and Content Providers?

Unified Pricing Model

- Idealized pricing scheme
 - For each transaction, charge end user and Content Provider according to their utility
- How close can we come with practical schemes?

$$\max_Q \sum_{q_{ik} \in Q} (U_i(q_{ik}) + \max_j V_j(q_{ik}) - C(Q))$$