

Mobile Broadband Working Group

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Two Studies: Depth and Breadth

	AT&T/FaceTime Case Study	Mobile Broadband Ecosystem
Scope	Mobile network operators (carriers)	Mobile broadband ecosystem
Openness	Transparency, blocking, traffic discrimination	Incentivizing innovation in mobile broadband
Time frame	Short term, single timely event	Long-term trends and principles

AT&T/FaceTime

- Apple FaceTime
 - High-quality video chat
 - Originally only on WiFi
 - Cellular starting Jun'12



- AT&T restrictions
 - Initially limited to MobileShare plan
 - Claims that AT&T violated the OIO
 - AT&T disagreed with these claims
 - AT&T gradually relaxed restrictions

AT&T/FaceTime Issues

- Pre-loaded application
 - Available to all users of popular phone
 - Accessed via device's core calling features
- High bandwidth requirements
 - Symmetric usage, with asymmetric capacity
 - Limited adaptation in the face of congestion
- Staged deployment
 - Rapid adoption could lead to unpredictable load
 - Initially limit the number of users accessing an app
- Enforcement point
 - Usage limited on the device, not in the network

AT&T/FaceTime Perspectives

- Application developers
 - Blocking lawful applications chills innovation
 - Better to manage congestion directly
 - E.g., rate limits or usage-based pricing
- Carriers
 - AT&T has many “unlimited plan” customers
 - Staged deployment to prevent an overload
 - Apple allowed carriers to manage the app
- Equipment vendors
 - Pre-installed app that aggressively uses bandwidth
 - Alternative traffic-management approaches could have reduced overall quality of the customer experience

Mobile Broadband Ecosystem

- Seemingly virtuous cycle
 - Networks, mobile devices, apps, and users
- Complex inter-relationships
 - Apps, operating systems, and devices
 - Carriers and network equipment vendors
- Small number of dominant players
 - Smartphones: Apple, Samsung, LG
 - Operating systems: Google Android, Apple IOS
 - Carriers: Verizon, AT&T, Sprint, T-Mobile
 - Radio net: Ericsson, Alcatel-Lucent, Nokia-Siemens

Four Case Studies

- App stores
 - Screening, revenue sharing, app promotion,
 - Longer-term trend of HTML5
- Carrier service agreements
 - Device locking, tethering and app restrictions
 - Trend toward two-sided pricing (EU, Asia)
- Network-unfriendly apps
 - Chatty, unfair, or inefficient apps
 - Educating app developers and users
- WiFi offloading
 - Low-cost alternative for wireless broadband
 - Variable performance, security, and mobility
 - Enables greater competition and user choice

Conclusions

- Consider interactions between *all* players
 - Even those not subject to the OIO
- Track the trends affecting competition
 - HTML5, WiFi offloading, two-sided pricing, ...
- Foster healthy mobile broadband ecosystem
 - Transparency
 - Education
 - Competition