Comcast Technical Engagement with the P2P Community

P2P Media Summit – LA

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Technical Engagements with the P2P Community

- Comcast network modifications
  - Migrating to a capacity management technique that is protocol agnostic by year end
  - Deploying DOCSIS 3.0 and adding upstream capacity as needed
- Engagement with BitTorrent
  - Collaboration to optimize P2P content delivery over broadband networks
  - Working with the industry on optimal client-side and network management techniques
- Engagement with Pando
  - Participation in Pando trial of P4P control plane
- Engagement with the P4P Working Group and DCIA
  - Participation as a P4PWG core participant
  - Support for the DCIA Best Practices initiative
- Engagement with the IETF
  - Participation in the IETF Workshop hosted by MIT on May 28

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Recent DOCSIS Specifications and Updates

- DOCSIS 3.0 "Bronze" qualification phase
  - Downstream channel bonding (DCB)
  - Basic IPv6 support (IPv6 for cable modem management)
- DOCSIS 3.0 "Silver" qualification phase
  - Upstream channel bonding (UCB)
  - Multicast improvements (IGMPv3, MLDv2)
  - IPDR enhancements (streaming, additional data)
  - AES encryption, S-CDMA support, …
- DOCSIS 3.0 "Full" qualification phase

- Comcast update
  - April 3: Initial DOCSIS 3.0 CMTS production deployment in Minneapolis including 50/5 tier

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P4P Control Plane Benefits

- Enables backbone bandwidth optimization
    - Reduction in ISP "hop count"
    - Increased traffic localization within ISP backbone
    - Increased traffic localization within ISP metro regions
- Improves P2P download performance
    - Improvement in data delivery speed
    - Increased file transfer rates for P2P customers

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Current Technical Limitations of P4P

- Focuses on backbone bandwidth optimization
- Assumes a simple split of customers
  - e.g. DSL/FTTH split by subnet or AS
- Currently considers only P2P bandwidth usage
- Currently assumes cooperative iTrackers
  - How to avoid 'hot potato routing' by independent iTrackers?
- Focuses on control plane, not data plane

Potential P4P Technical Improvements

- Enable P2P tracker awareness of per-user bandwidth variation
  - Bandwidth tiers and network management
  - Should local congestion or outages be reported?
- Enable P2P cache discovery
- Enable multiple cooperative iTrackers
  - Potentially through a clearinghouse
- Extend P4P to data plane
  - Leverage multiple network traffic priorities
  - Extend consumer priority control and visibility through P2P client