DECADE Problem Statement

draft-song-decade-problem-statement-02
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Changes Since Last Version

• Align text with charter
  – Not limited to a single data transport protocol (multiple underlying protocols will be evaluated)
  – Reuse exiting protocols and mechanisms as much as possible
• Consideration to resource control policies
  – The granularity of resource control policies could be either individual remote peers or application
• Protocol perspective considerations
  – Scale to a large number of users without substantial increase of operational complexity to storage provider
  – Easy for applications to integrate
Open Issues

• Need more analysis on security aspects
P2P Contributes Significant Traffic

• 40-70% traffic in many networks

Source: ipoque Internet study 2008/2009
P2P Stress on Infrastructure

• Pure overlay distribution is inefficient
  – Transit
  – Backbone
  – Last mile
In-Network Storage

Effective technique to increase efficiency is to introduce *In-Network Storage*
Problem 1: Weakness of Existing P2P Caches

• Tight coupling with P2P application protocol
  – Cache must implement specific protocol for each application
  – Large number of widely-used, evolving P2P protocols
    • File sharing: Bittorrent, eMule, Pando
    • Streaming: PPLive, PPStream, UUSee, Zattoo, Kontiki, TVAnts, Sopcast, Abacast, Solid State Networks, OctoShape...

• Implication
  – Cache vendor and ISP create and support complex production software
Problem 2: Weak/No Integration with Applications

• Caches only consider policy from ISP perspective
  – *Application is out of the loop*
  – However, some P2P applications rely on resource (e.g. bandwidth) allocation amongst peers

• Implications
  – Application requirements/policies are not reflected by Caches
DECADE Overview

- Reduce production complexity and provide open access
- Integrate with application policies
Use Case 1: P2P Users Sharing Content
Use Case 2: Content Publisher
Distributing Content
Key Benefits

• Reduced complexity compared with existing cache
• Integration with application policies
• Robustness and incremental deployment
  – P2P applications can still use existing mechanisms
• Open access to applications
• Open innovation by applications
Key Components

• Data access
• Authorization
• Resource control
Next Step

• Ready for a WG draft?
Thank You!