Information Flows in an Economic Aware Context

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Workshop on Novel Networking and Relationship with Applications
FIA Aalborg
May 10, 2012
SmoothIT’s *Economic Traffic Management*

- Employs mechanisms based on the incentives of players
  - That are not contradictory to users’ benefit but act complementary to the self-organization of the overlay
- Objective:
  - To bridge the *information* gap between overlay and underlay
  - To optimize overlay traffic mutually beneficially for all: ISP, user, application provider →”TripleWin”
- Under TripleWin the system operates in an equilibrium point
  - Traditional traffic optimization would aim at a global optimum of a single combined optimization metric
- ETM mechanisms are a means to lead the system to a desirable equilibrium
  - Are highly distributed and scalable
  - Stimulate *information sharing* among players
  - Do not impose decisions - can be bypassed

* The SmoothIT project: [http://www.smoothit.org](http://www.smoothit.org)
The SmoothIT Information Service (SIS)

- Each SIS component can convey information between overlay and underlay
- Overlay components interact with SIS to select “better” peers
- The application client can ignore SIS recommendations if not beneficial!

Candidates: P1,P2,…,P9
Sorted List: P1,P2,P3,P7,…
SIS-compatible/-enabled ETM mechanisms

• BGP-based Locality Promotion
  – Neighbors list provided by peer requesting ‘advice’
  – A server provides proximity-related information/’advice’

• Insertion of ISP-owned Peer(s)
  – Intervention of resourceful caches in the overlay, transparently or not
  – Transparent: Selected by regular peers only based on overlay criterion (e.g. T4T)
  – Non-transparent: Advertised by SIS (or possibly the overlay tracker)

• Promotion of Highly Active Peer(s)
  – ISP boosts regular high activity peers’ capacity
  – Evaluates their behavior, e.g. large seeding time
  – Incentive for regular peers to act as IoPs

• All provide freedom to peers to decide whether they will adopt them
Exchange of Information*
*accepted as a new seed in FIArch’s document on FI Design Principles (collaboration with FP7 SESERV)

- Address the Information Asymmetry between players and players
- Design for Tussle (introduced by D. D. Clark)
- Abstraction – Exposure – Collection – Assessment – Decision Making
- Aim at *All-Win*
Thank you for your attention!