

SmoothIT – Overview

Key Objectives

- To achieve a win-win solution for all parties involved in overlay applications by optimally structuring those overlays
- To design, prototype, and validate the necessary networking infrastructure and their components for ETM
- To verify ETM concepts through network operators, increasing applicability

Areas of work

- Overlay and P2P networks
- Economic Traffic Management (ETM)

Aspects addressed

- Incentives for co-operating end-users, overlay providers, and ISPs
- Self-organization mechanisms for ETM
- Privacy and security

Partners

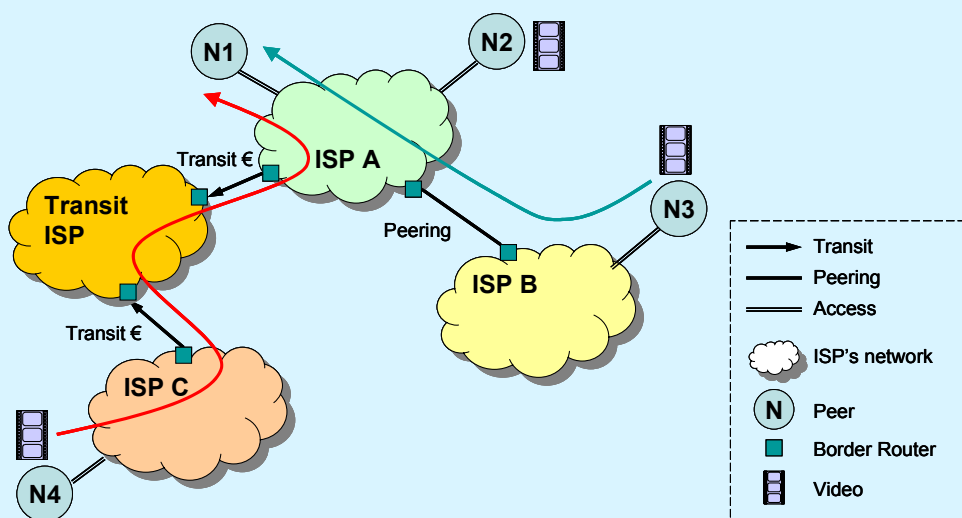


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Example Scenario: P2P Video Streaming



Problems

- Overlay traffic through ISP interconnections generates high costs
- Possible performance degradation

Goals

- Cost effective distribution of video
- High Quality-of-Experience (QoE)

Phases and Mechanisms

Phases:

1. Resource searching
2. "Best sources" finding
3. Resource transfer
4. Resource handling

Lack of support in finding best sources of resources

Mechanisms:

Indexing, e.g., DHT
Utility evaluation
Resource transfer protocol, e.g., TCP/IP protocol suite
Application specific

SmoothIT's contribution

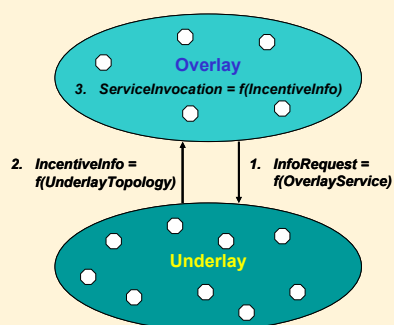
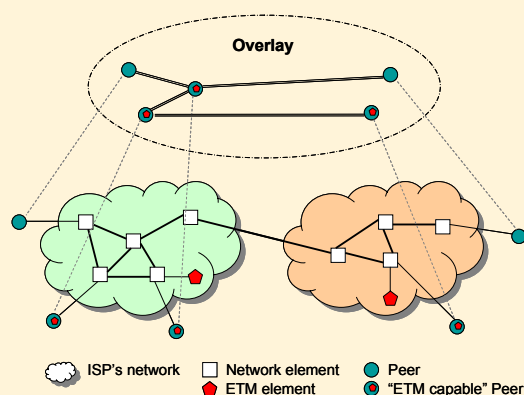
Approaches

- ETM elements within an ISP providing access to:
 - Locality information (intra- or inter-domain, peering, or transit)
 - Performance information (delay, bandwidth, or link load)
- Incentive schemes for end-users and ISPs, being part of distributed communication mechanisms and protocols

Preliminary Design of ETM

Goals

- A flexible, efficient, secure, scalable, and mechanism-independent ETM-capable system architecture
- Applicable to multiple ISPs in a co-operative and competitive environment



Design Parameters

- Types of ETM elements and the inter-ISP co-operation
- Pricing schemes: flat-rate, usage-based, combinations
- Types of incentives
- Utility function of each party

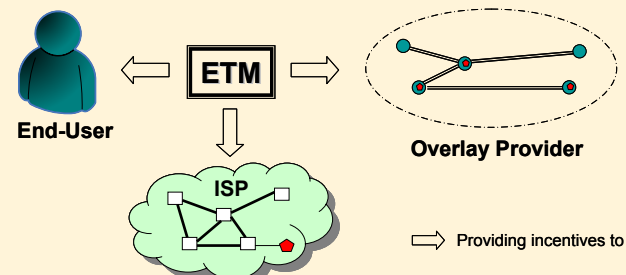
Incentives

End-Users

- Lower price
- Better QoE (higher performance)
- Higher reliability
- Higher security

Overlay Providers

- Lower costs, e.g., for bandwidth
- Better service for end-users



ISPs and Telcos

- Active role in traffic management
- Lower Capital Expenditures (CapEx) and Operational Expenditures (OpEx)
- Maintain users' loyalty