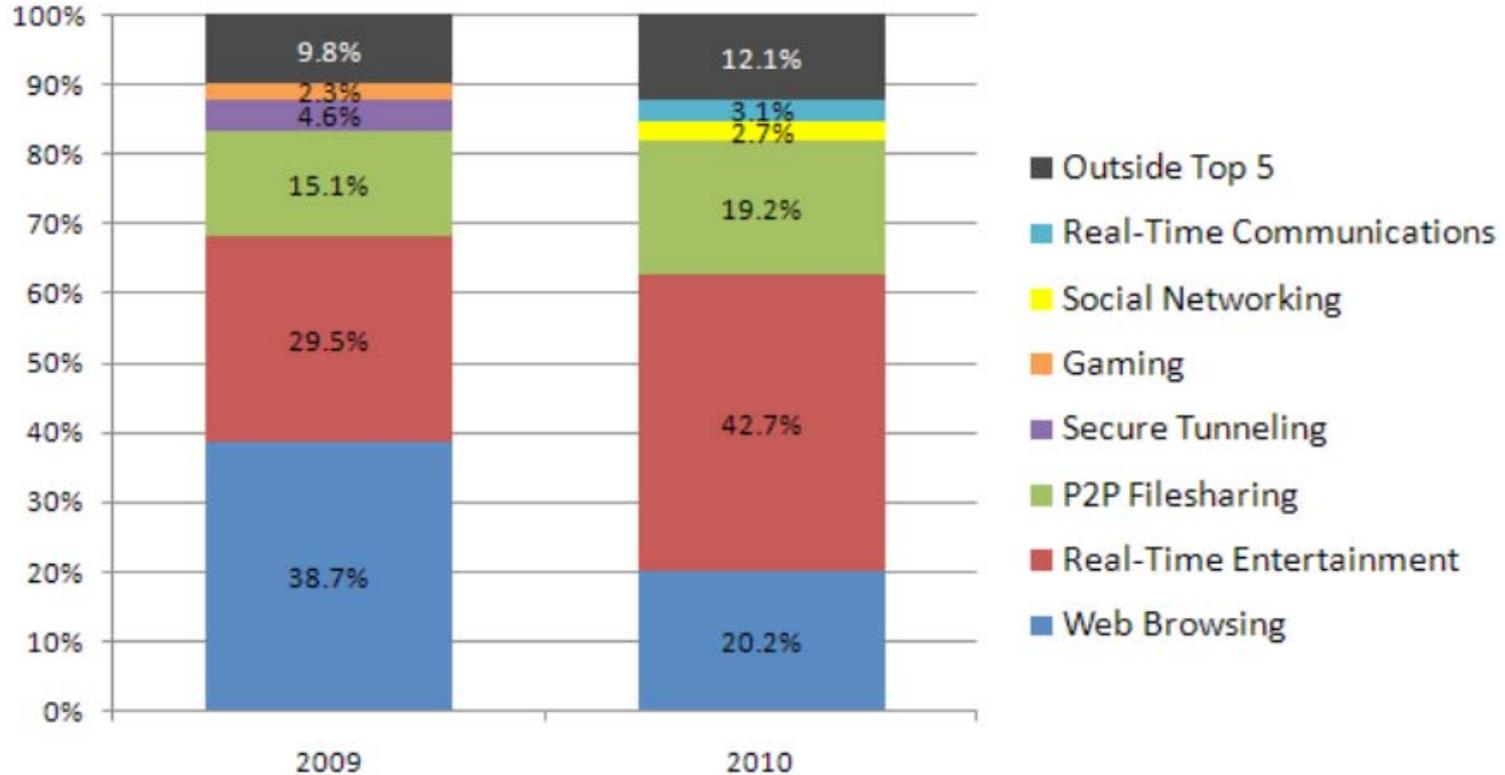


A Survey on Peer-to-Peer Video Streaming Systems

Yong Liu · Yang Guo · Chao Liang · Moritz Steiner

Motivation



Peak Hours, Fixed Network, Downstream, North America

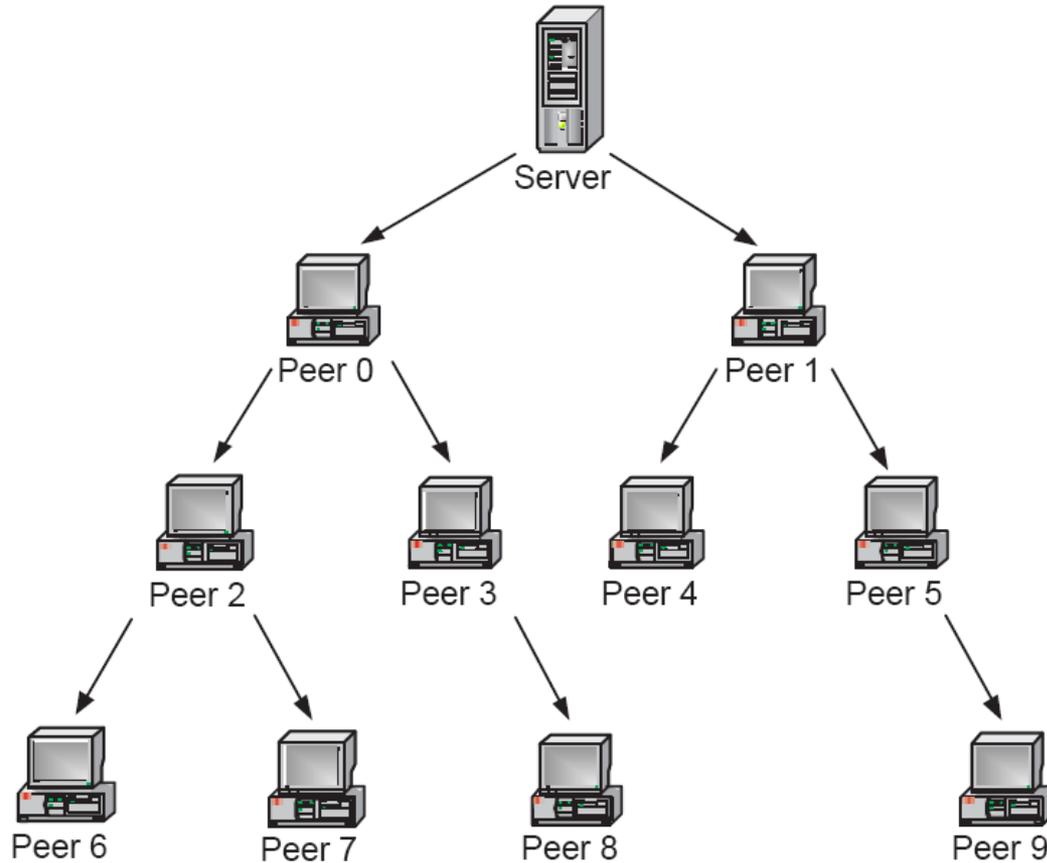
Outline

- P2P Live Streaming
- P2P Video on Demand
- Traffic Locality

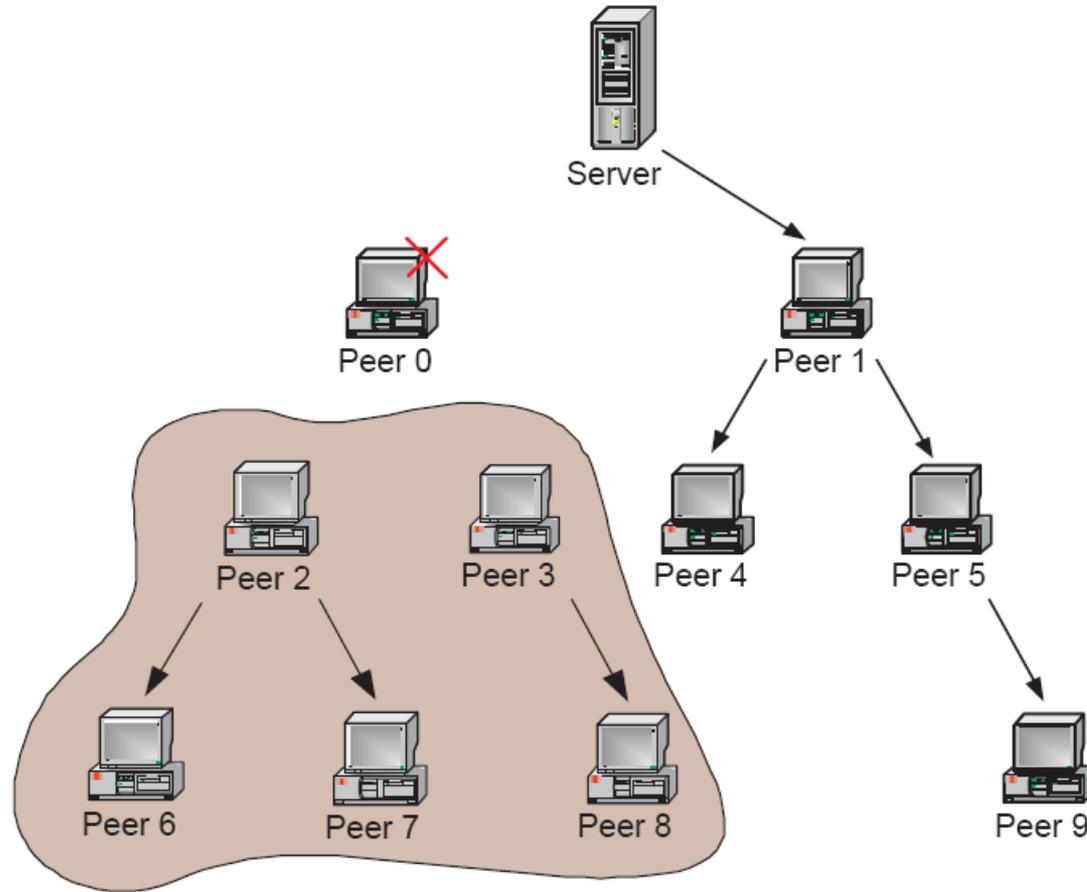
Outline

- P2P Live Streaming
 - **Tree-based Systems**
 - Mesh-based Systems
- P2P Video on Demand
- Traffic Locality

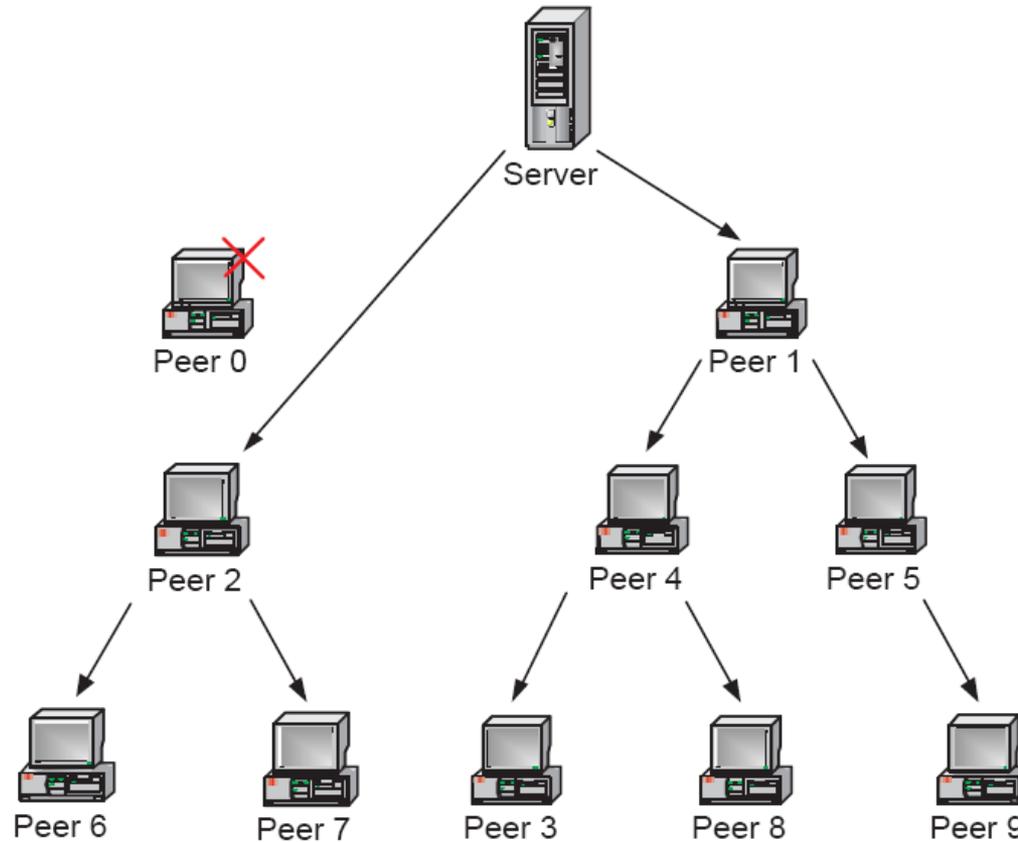
Tree-Based: Single Tree



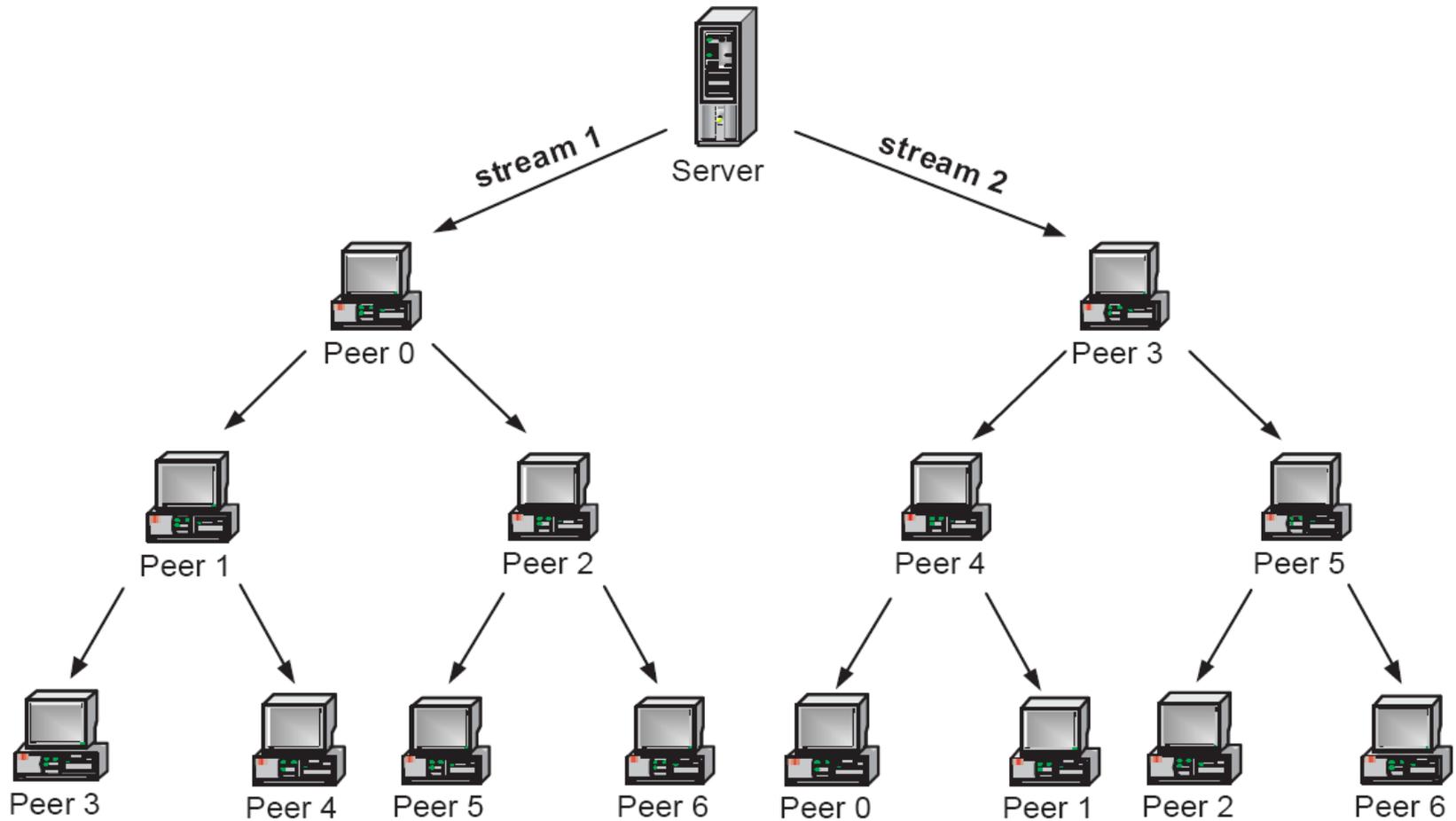
Vulnerability to Peer Churn



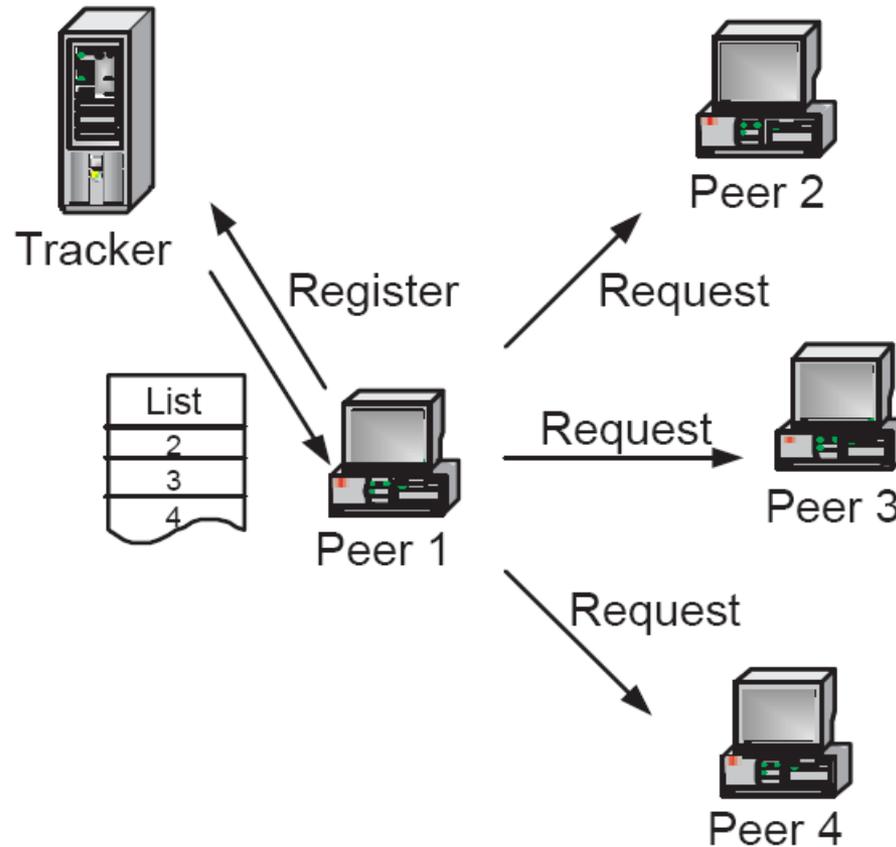
Vulnerability to Peer Churn



Tree-Based: Multiple Trees



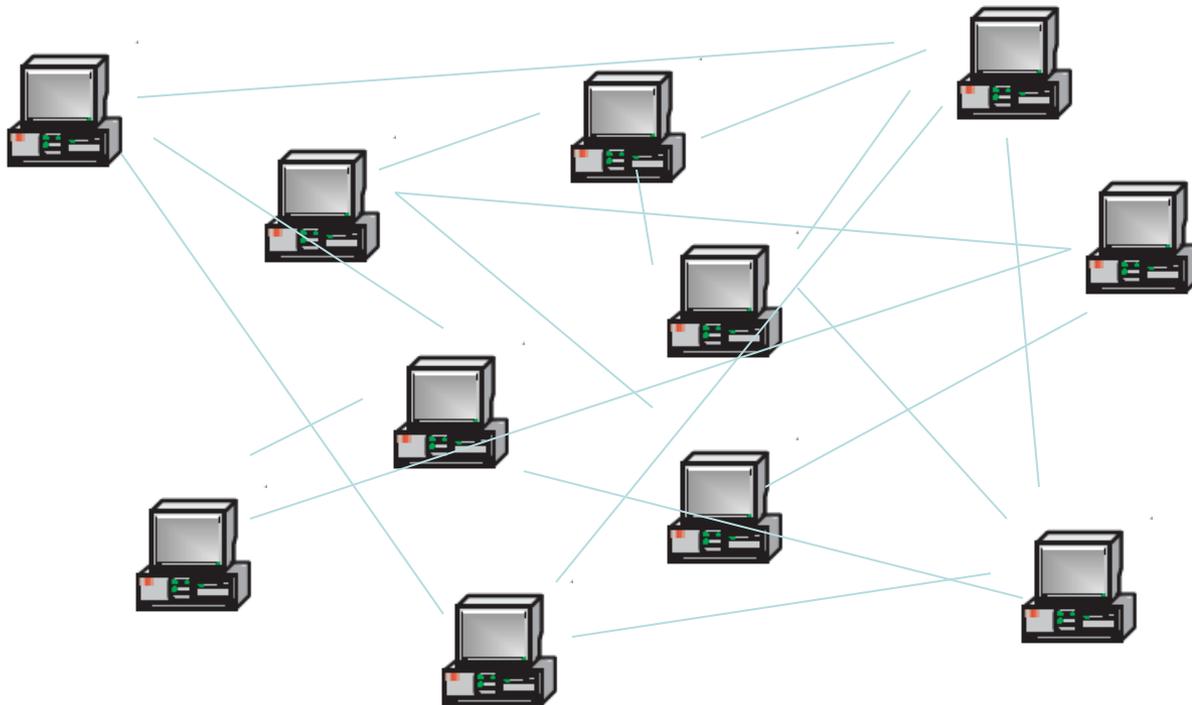
Tree Construction and Maintenance



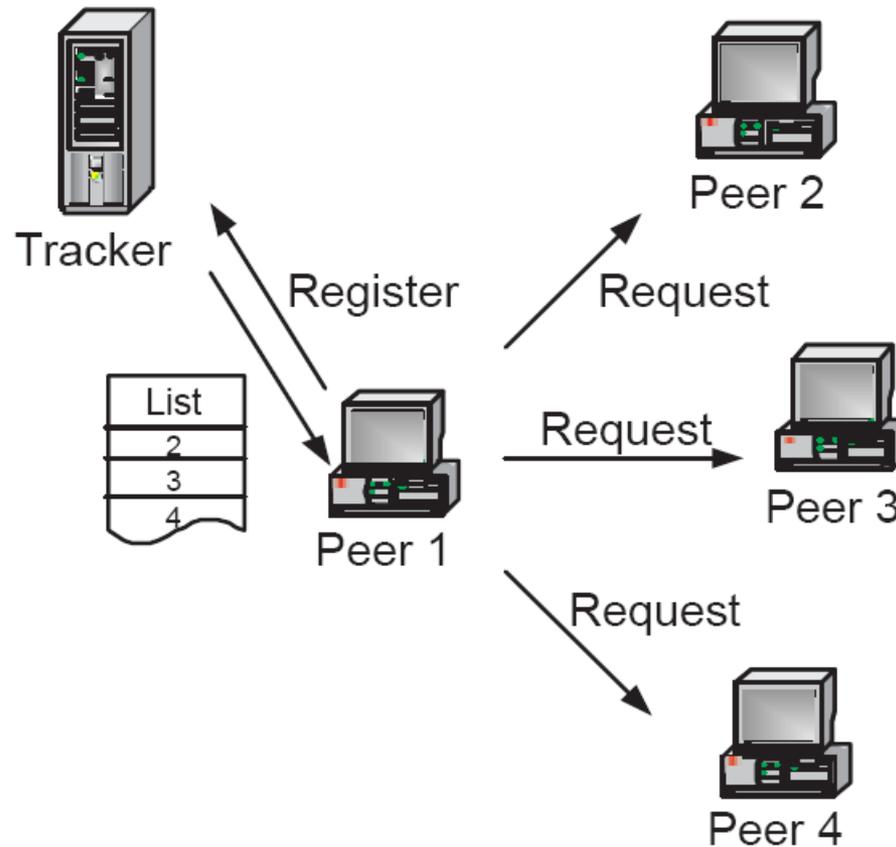
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 - **Mesh-based Systems**
- P2P Video on Demand
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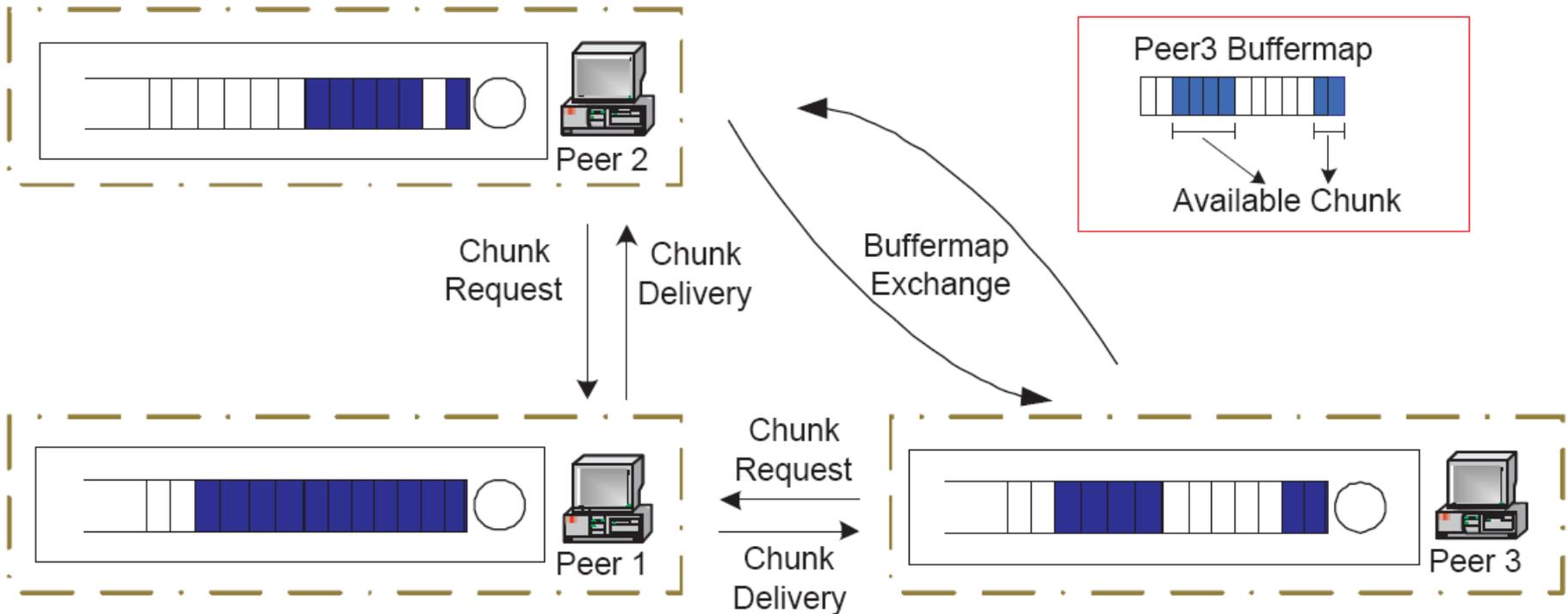
Mesh-based Systems



Mesh Formation and Maintenance



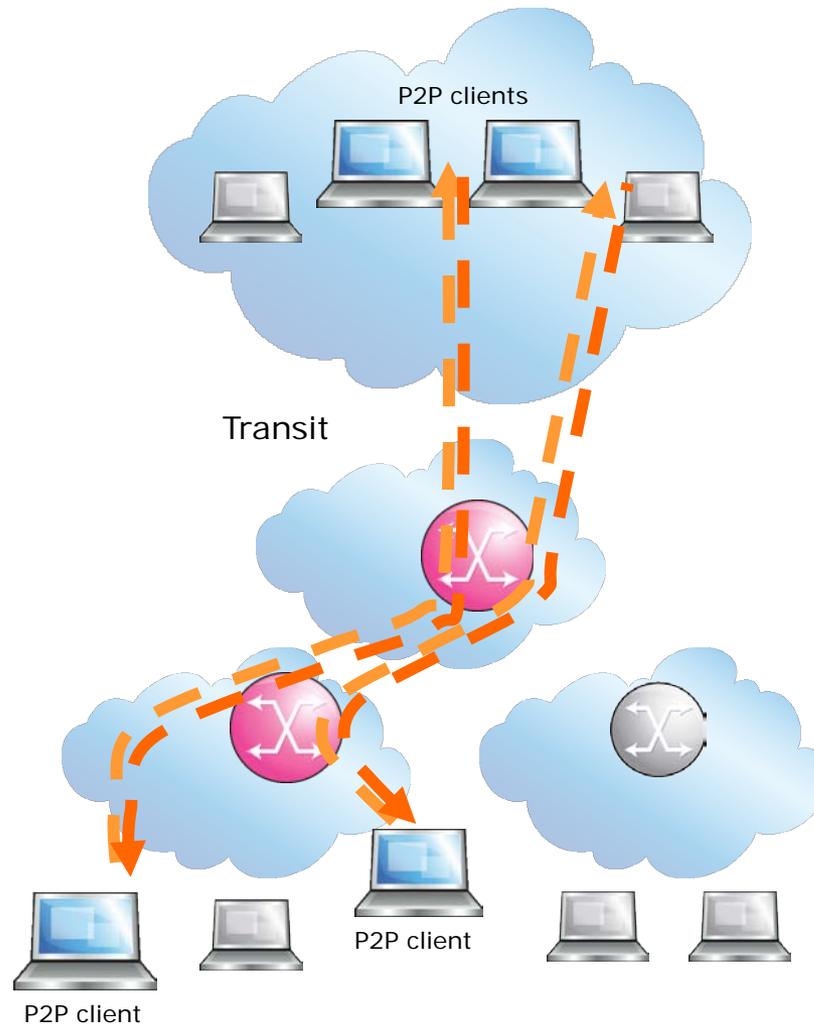
Mesh-Pull: Buffer Map



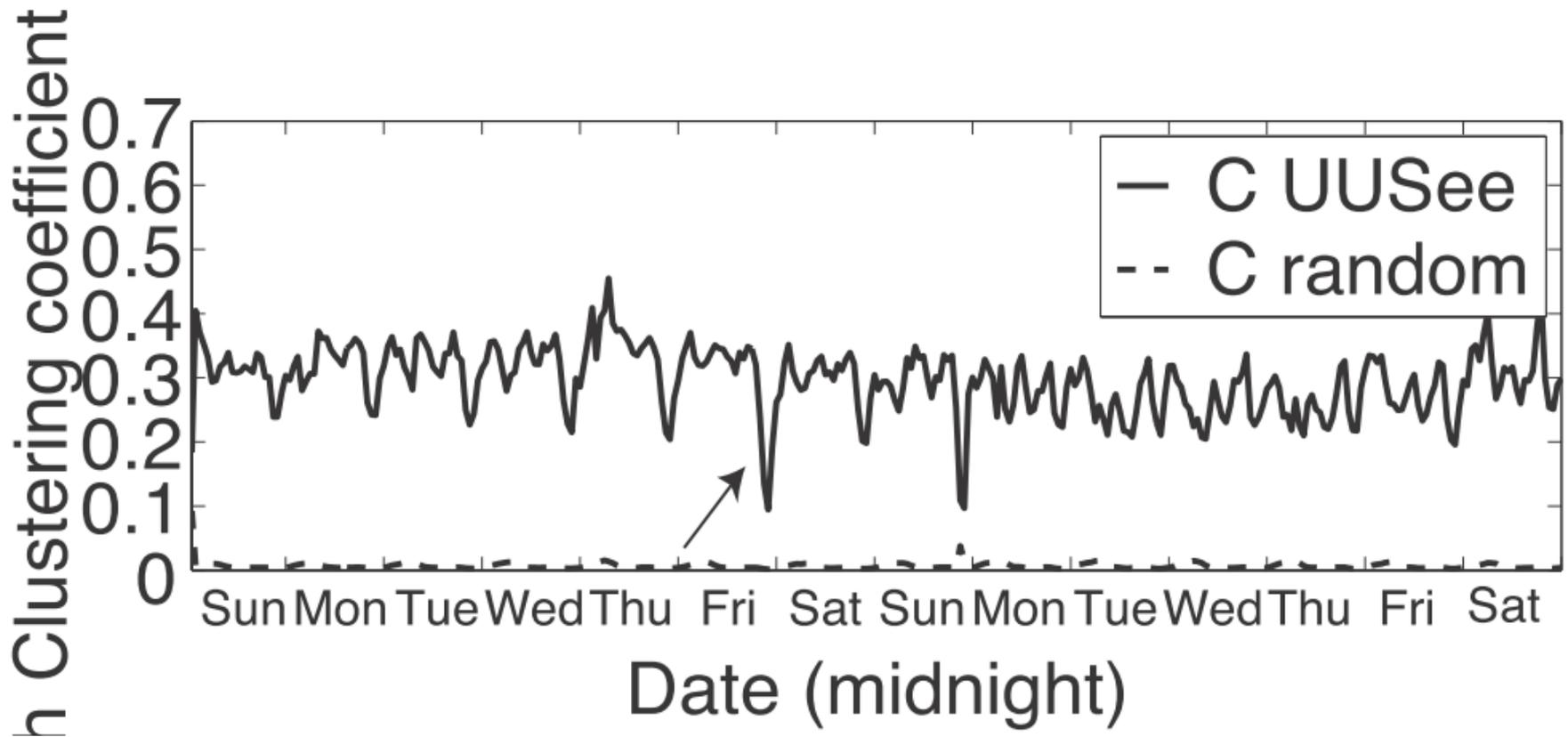
Outline

- P2P Live Streaming
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- P2P Video on Demand
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Traffic Un-Locality

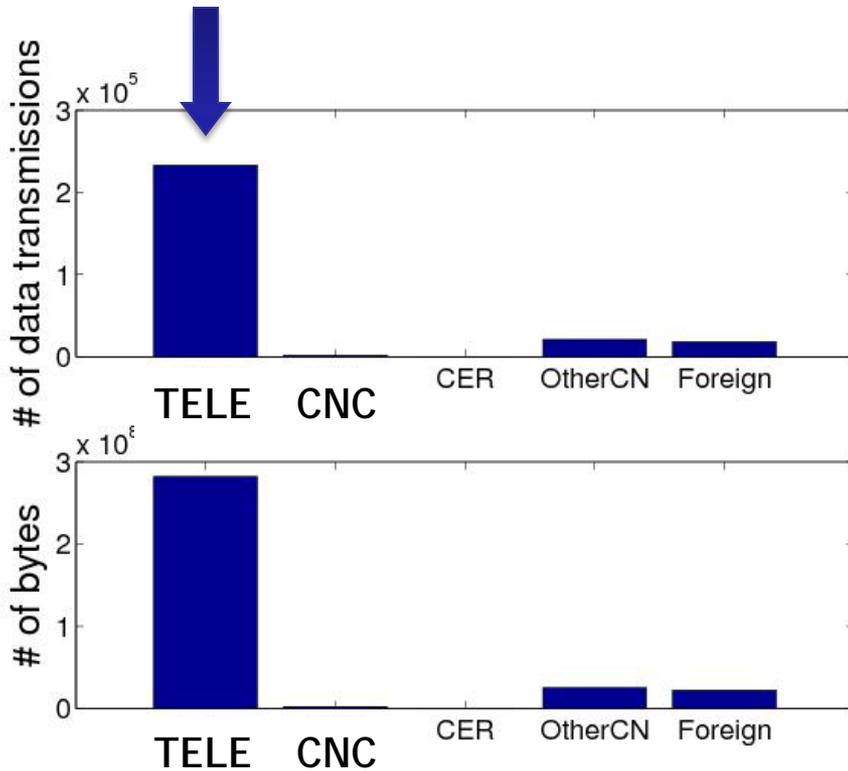


Clustering

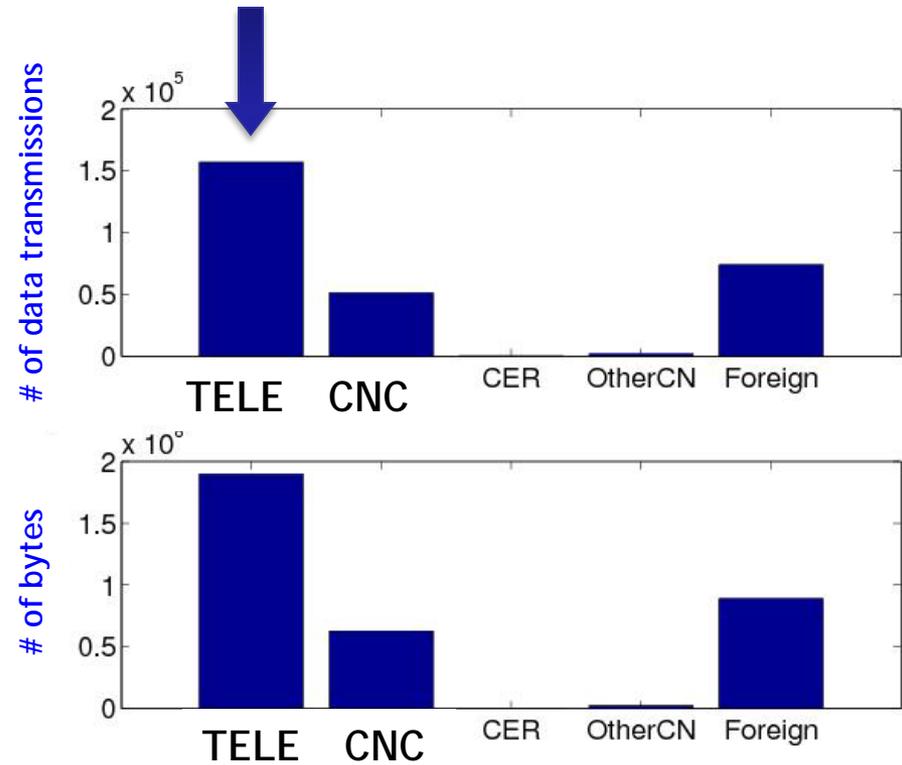


Clustering Effect

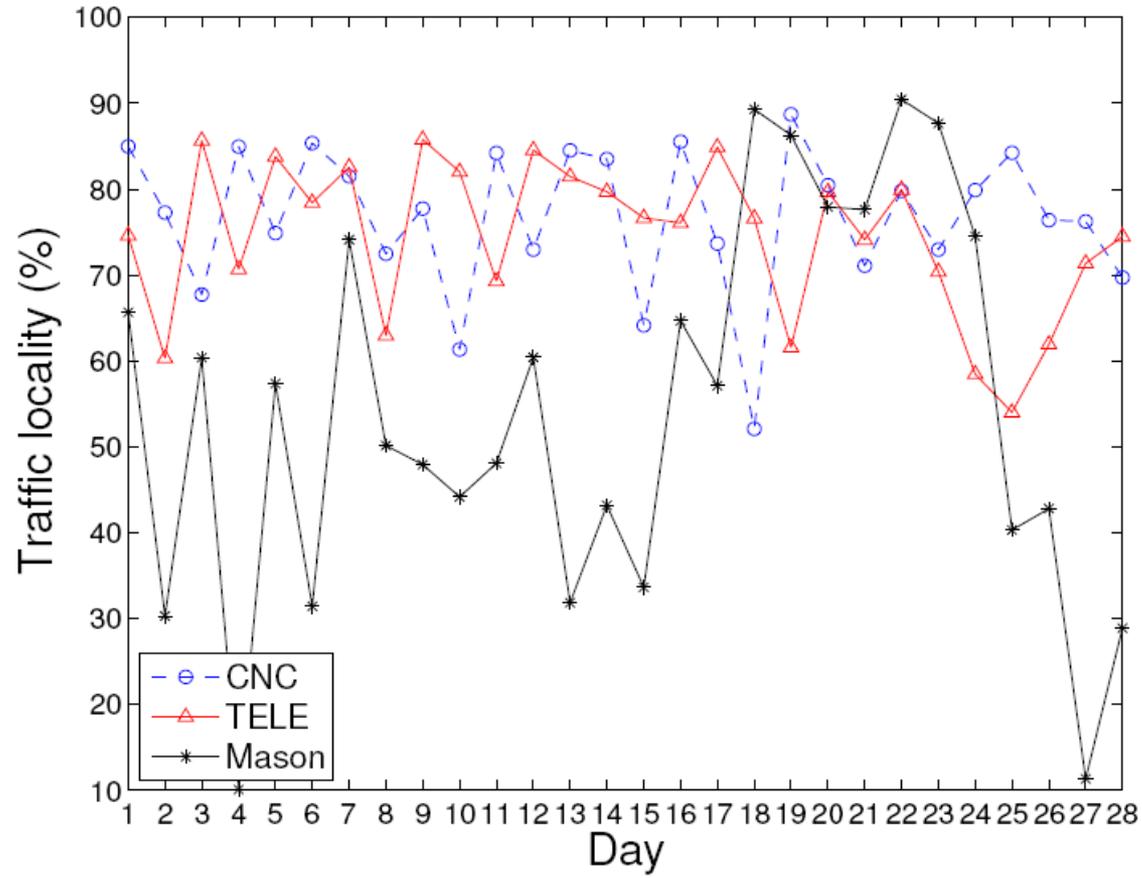
China-TELE watching Popular



China-TELE watching unpopular



Traffic Locality



Traffic Locality achieved!

- Addresses the topology mismatch issue to a large extent.
- Achieved without any special requirements such as ISP or CDN support.
- Uses a decentralized, latency based, neighbor referral policy.
- Top connected peers have smaller Round-trip time values.
- Enhances both user- and network- level performance.

Conclusion

- Design
 - Overlay topology
 - Peering connections
- Limitations in Quality of Experience
 - Startup delay
 - Video quality
 - Long-tail unpopular content
- Surprisingly well localized traffic!