Vitis
A Gossip-based Hybrid Overlay for Internet-scale Publish/Subscribe

Goal:
A Completely decentralized topic-based publish/subscribe overlay network with unbounded number of users and topics

Trade-offs:
• Node degree
• Hit ratio
• Spam ratio
• Delivery latency

Solution:
Rendezvous routing on unstructured overlays

We construct a hybrid system by injecting structure into otherwise unstructured network. The resulting structure resembles a navigable small-world network, which spans along clusters of nodes that exhibit similar subscriptions.

To cluster the nodes, we take into account:
• Peer interest similarity
• Link cost (bandwidth and $)
• Topic publication rates

Performance evaluations:

Subscription traces from Twitter
• # sampled nodes: 10,000
• # subscriptions per node:
  - Average: 87.87
  - Variance: 171085.28

Churn traces from Skype
• # monitored nodes: 4,000
• Duration of monitoring: 1 month beginning September 12, 2005
• routing table size: 15

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