Vinifera
A Gossip-based Hybrid Overlay for Content-based Publish/Subscribe

**Goal:** Design a genuinely decentralized Internet-scale content-based publish/subscribe system

**Current State-of-the-art Solutions:**
- High delivery latency
- High relay overhead
- No delivery guarantees
- Unbalanced load on the nodes
- High subscription maintenance cost

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**The Key Design Principles of Vinifera**

The use of **order preserving hashing** to enable routing towards ranges.

The utilization of a **showering technique** for routing towards ranges for subscription installation. Each node sends its subscription along the path towards the rendezvous nodes for one attribute.

The **aggregation** of the subscription requests along the routing path, and exploitation of a **clusterization** technique that connects together nodes that exhibit similar subscriptions.

The events are delivered to the subscribers along the reverse routing paths.

The use of a novel **load balancing technique**, in order to deal with non-uniform subscriptions.

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**Performance evaluations:**

- Skype churn trace: obtained from monitoring nodes: 4,000, Duration of monitoring: 1month, beginning September 12, 2005
- Random subscriptions over one attribute