

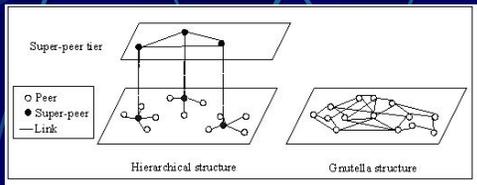
An Interactive Visualization of Super-peer P2P Networks

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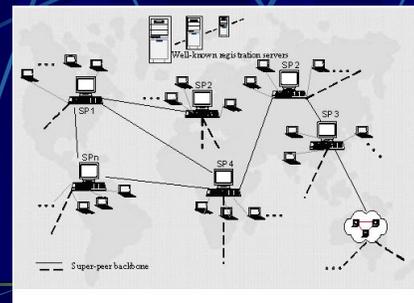
Project Domain and Background

- P2P computing has become increasingly popular nowadays
- Locating content in an efficient and scalable way is challenging
- Efficient Clustered Super-peer P2P modal is a novel approach to address this issue
- An Efficient Flooding Algorithm(EFA) is proposed

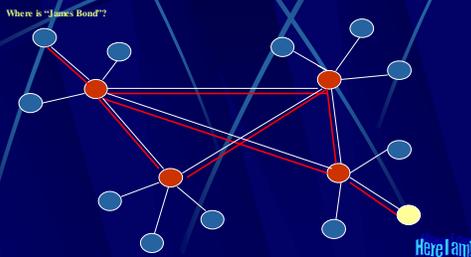
Hierarchical structure vs. Gnutella structure



System Architecture



Content Searching



Motivation

- P2P network tends to be large scale (1000 nodes)
- It's hard for people to have an overall picture of the hierarchical super-peer P2P networks, and the internal structure of each cluster of peers
- We want to see the effect of the Efficient Flooding Algorithm (EFA)
- We want to verify that EFA is more efficient than simple flooding Algorithm

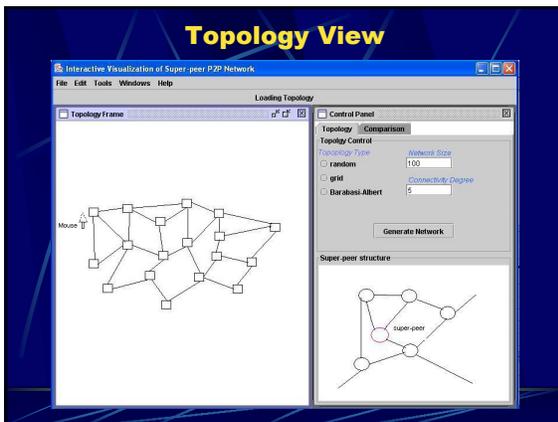
Dataset

- A program is implemented for generating networks in different topologies:
 - Random
 - Grid
 - Barabasi-Albert

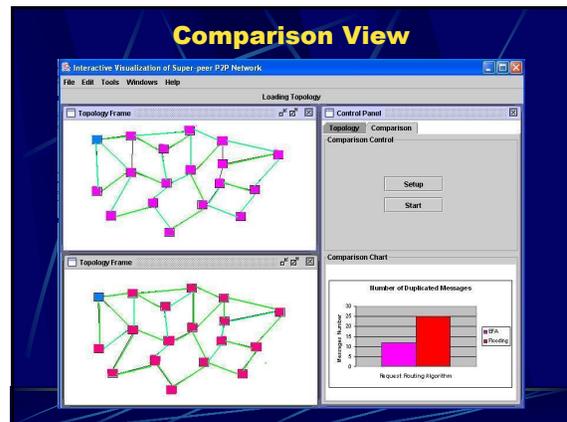
InfoVis Solution

- Task #1: visualize super-peer P2P networks
 - Overview + detail
 - Interaction
- Task #2: visualize the effect of the EFA
 - Animation
 - Color scheme
- Task #3: verify the efficiency of EFA
 - Side-by-side comparison
 - Patten match (Bar chart and color match)

Topology View



Comparison View



Implementation Approach

- Java2D and Swing
- InfoVis toolkit

MileStones

- March 15th: completing interface design and implementation
- March 25th: completing task #1 --- Visualizing super-peer P2P networks
- April 5th: completing task #2 --- visualizing the effect of the Efficient Flooding Algorithm
- April 15th: completing task #3 --- verifying the efficiency of EFA
- April 20th: completing final report.

