

A Dynamic Publish-subscribe Overlay Network

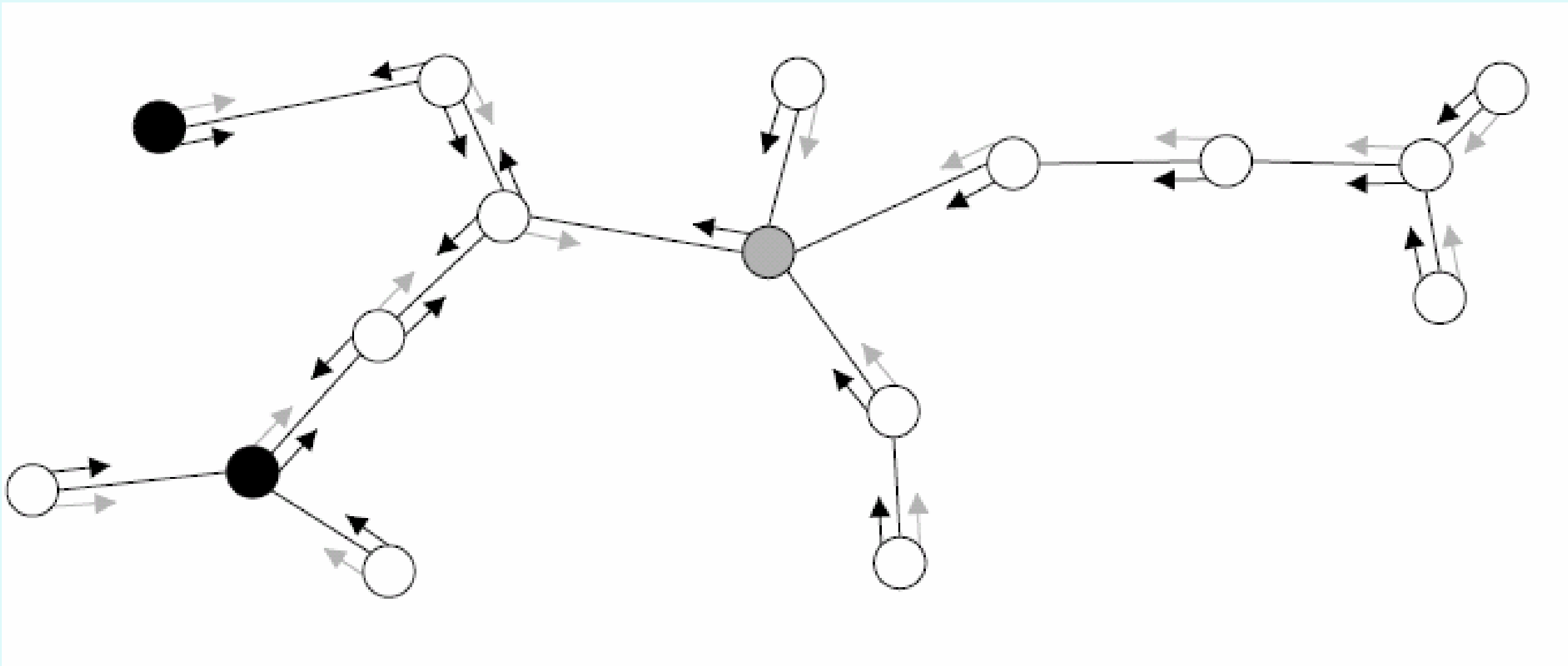
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Motivations

- Large-scale publish-subscribe overlay networks
- Connectivity is not reliable
- Frequent topological reconfiguration



Our goal

- Increase event delivery while at the same time, decrease number of messages generated

Important factors

- Different system sizes (number of brokers);
- Different rates of link failure;
- Different routing information propagation rates.

Mathematical Models

- Probability approach
 - A broker randomly chooses subset of its links to forward an event;
 - A broker forwards an event at most once.

$$c_i = \frac{N - C_{i-1}}{N} c_{i-1} \lceil Lp \rceil \frac{L-1}{L}$$

$$C_i = C_{i-1} + c_i \quad \text{if } i > 0$$

- Ripple propagation

- A broker propagates its subscription information h hops away;
- A broker forwards an event only if its neighbors asked this event;

