

Secure routing for structured peer-to-peer overlay networks

Description of the Topic:

Peer-to-peer (p2p) networking technologies have gained popularity as a mechanism for users to share files without the need for centralized servers. A p2p network provides a scalable and fault-tolerant mechanism to locate nodes anywhere on a network without maintaining a large amount of routing state. This allows for a variety of applications beyond simple file sharing. These provide a substrate for the construction of large-scale, decentralized applications including distributed storage, group communication, and content distribution. They provide a powerful platform for providing various decentralized services, but still lack security in routing. Messages can still be corrupted, incorrectly routed, and can be responded by illegitimate nodes. Because of their decentralized characteristics insecure routing can destroy the networks' integrity.

Reason I took this Topic and found this important:

Structured peer-to-peer overlay network are highly resilient; they can route messages correctly even when a large fraction of the nodes crash or the network partitions. But current overlays are not secured; even a small fraction of malicious nodes can prevent correct message delivery throughout the overlay. This problem is particularly serious in open peer-to-peer systems, where many diverse, autonomous parties without preexisting trust relationships wish to pool their resources. There are several solutions for this problem. Yet efficient solution was not proposed till date. Research is being done in this area. Though it seems a simple problem, lot of complex issues are hidden in this. I found this one interesting and important. So I like to do some research on this and like to know future solutions to this and existing solutions, their efficiencies.

Reason I want to give research paper:

This is a very huge and complex topic. Detailed explanation of solution has to be given to that problem and what are the pros and cons of that solution. It is not possible to explain minute things in presentation. So I would like to go with paper.