**Abstract:**

**New Congestion Avoidance Methods during Planned and Unplanned Failures for IP Network Architectures**

To successfully transport data, voice, video, video games, on-line business transactions and TV broadcast across IP network backbones, Internet Service Providers (ISPs) need to ensure that they allocate network resources in accordance with traffic demands. Otherwise ISPs will fail to meet the service level agreements (SLAs) that they have in place with key customers. Balancing traffic distribution across the Internet Backbones can be achieved through manipulation of IP routing protocols.

Shutting down a route for purposes of scheduled routine maintenance by engineers is said to be a planned failure. Before shutting down a route, engineers reroute traffic by updating link cost. Performing link cost update for several different routes is a permutation problem. Finding a sequence order which is congestion free of huge permutation results is not a practical computation time.

Major system or equipment failure is said to be unplanned failure. In this case, we need to configure backup routes in advance. When a failure is detected, the affected traffic is immediately rerouted to backup routes.

This presentation discusses the design methods to avoid congestion in Internet Backbones during planned and unplanned failures. The methods that split traffic on overloaded routes to other routes by considering network conditions.