Performance Criteria for Routing in Survivable Networks

Mohammad Abdul Jabbar, David Hutchison, and James P.G. Sterbenz – www.ittc.ku.edu/resilinets

Routing in Survivable Networks

- Existing routing protocols
  - designed for a specific scenario
  - application specific optimization criteria
  - limited performance evaluation of proposals
  - low efficiency in heterogeneous networks
- Adaptability issues
  - not adaptive to network & resource changes
  - poor cross-network performance
  - reuse on new networks is difficult

Objectives

- Standard development platform
  - taxonomy to characterize network space
  - standard routing performance metrics
  - optimal region of operation for each protocol
- Simulation modules for:
  - episodic time varying channels
  - practical as well as ideal mobility models
- Adaptive routing in survivable networks
  - routing based on current state & resources

Performance Metrics

- Network parameters: randomly time varying
  - network density: geographic and radio
  - channel: bandwidth, delay, error, connectivity
  - node resources: computing, memory & power
  - mobility model, network traffic model
- Protocol performance evaluation
  - survivability and resilience as a QoS metric
  - goodput, end-to-end delay
  - message delivery ratio, resources consumed
  - metrics based on interdependent parameters

Simulation Model