An Analysis of Peer-to-Peer Traffic over an Ad-Hoc Network

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Final Presentation

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• Introduction
  – Project Scope & Goal
• Peer-to-Peer over Ad-hock Network
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Project Scope

• QoS of P2P network of wireless nodes in the AODV routing
• Introducing noise to the network
  – Movement and background traffic
• Inquiry Packet Interference
  – Single node interference
  – Multiple nodes interference

Qos : Quality of Service
AODV : Ad-hoc On-Demand Distance Vector
Peer-to-Peer Architecture

• All nodes are both client and servers
  – Provide and consume data
  – Any node can initiate a connection

• No centralized data source
  – “The ultimate form of democracy on the Internet”
  – “The ultimate threat to copy-right protection on the Internet”
Benefits

• Efficient use of resources
• Scalability:
  – Consumers of resources also donate resources
  – Aggregate resources grow naturally with utilization
• Reliability
  – Replicas
  – Geographic distribution
  – No single point of failure
• Ease of administration
  – Nodes self organize
  – No need to deploy servers to satisfy demand
  – Built-in fault tolerance, replication, and load balancing
Ad-Hoc Network

- Collection of mobile wireless nodes forming a network without the aid of any infrastructure or centralized administration
- Nodes have limited transmission range
- Nodes act as routers
• Characteristics
  - Dynamic topologies
  - Limited channel bandwidth
  - Variable capacity links
  - Energy-constrained operation
  - Limited physical security

• Applications
  - Military battlefield networks
  - Personal Area Networks (PAN)
  - Disaster and rescue operation
  - Peer to peer networks
• **Peer-to-Peer Ad-hoc Networks:**
  (Re)Configuration Algorithms

• **Minimization of average Delay, Routing Load and Packet Loss Rate In AODV Routing Protocol**
Simulation

Scenario

➢ To observe the effects of noise on the Quality of Service over a mobile network

➢ 3 different scenarios.
Scenario 1: Two Mobile Nodes

- Scenario 1 will serve as a reference for Scenario 2 and 3 shows in Figure 5. This simulation tests an Ad-hoc network using the ADOV protocol.
Scenario 2 involves 5 nodes; four nodes are positioned at same distance away from each other and one node moves right to left parallel to other four nodes and then once the node pass all four nodes it moves up and away from the range of all the nodes.
This last simulation tests QoS of Ad-hoc network using AODV protocol when the background traffic is introduced. The specific types of data, constant bit rate, and pack drop rate will be compared for analysing the QoS of the network.
Results

• Ongoing

• Currently analysing baseline scenarios

• Focus will be on QoS between expected trends and observed trends
Simulation

Scenario 2: Topology

Window Size vs Time
Future Works

• Adding Movement and background traffic
  – How the network behave and traffic changes
  – Observe and analysis the changes in the traffic over the network

• Multiple nodes interference testing
  – How does the Ad-hoc network changes
Reference


The End

Thank you!