# TRAFFIC MANAGEMENT BY USING AD – HOC NETWORK

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**Introduction**

Ad hoc networks are decentralized wireless networks where nodes communicate directly with each other without relying on a fixed infrastructure. They are particularly useful in scenarios like emergency response, military operations, and temporary events. Efficient data collection and routing in such networks are crucial for ensuring reliable communication and network performance.

The Optimized Link State Routing (OLSR) algorithm is a proactive routing protocol designed to optimize the performance of ad hoc networks by maintaining up-to-date routing tables and minimizing control message overhead. This project aims to leverage the OLSR algorithm to improve data collection efficiency in ad hoc networks.

**Technology Overview**

**Ad Hoc Network:**

* A network of wireless nodes that dynamically form a temporary network without a centralized management system.
* Nodes can join or leave the network freely, requiring robust protocols to manage routing and data exchange.

**Data Collection Framework:**

* Design a framework to gather data related to network performance, node behaviour, and routing efficiency.
* Metrics to be collected include packet delivery ratio, end-to-end delay, and network throughput

**Algorithm: Optimized Link State Routing (OLSR)**

**Implementation:**

* Develop an implementation of the OLSR algorithm tailored for the data collection framework.
* Implement key features of OLSR such as MPR selection, periodic hello messages, and topology control messages.

**Optimization:**

* Fine-tune the OLSR parameters to improve data collection efficiency and network performance.
* Explore enhancements to the OLSR algorithm to better support data-intensive applications.

**Development and Testing**

**Development:**

* Simulation Environment: Use network simulation tools like NS-3 or OMNeT++ to create a virtual environment for testing.
* Code Implementation: Implement the OLSR algorithm and data collection framework using a suitable programming language (e.g., C++, Python).

**Testing:**

* Test Scenarios: Create various scenarios to test the performance of the data collection system under different network sizes, mobility patterns, and node densities.
* Performance Evaluation: Measure key performance indicators such as data collection accuracy, network overhead, and algorithm efficiency.
* Benchmarking: Compare the OLSR-based system with other routing protocols (e.g., AODV, DSR) to evaluate its relative performance.

**Conclusion**

* Summarize the findings and contributions of the project.
* Discuss the implications of the results for future research and practical applications in ad hoc networks