Abstract

Wireless mesh networks has rapid development over the last few years. However, due to properties such as distributed infrastructure and interference, which strongly affect the performance of wireless mesh networks, developing technology has to face the challenge of architecture and protocol design issues. Traditional layered protocols do not function efficiently in multi-hop wireless environments. To get deeper understanding on interaction of the layered protocols and optimize the performance of wireless mesh network, more recent researches are focusing on cross-layer measurement schemes and cross-layer protocol design. The goal of this project is to implement a distributed monitoring mechanism for IEEE802.11 based wireless mesh networks. This module is event-based and has modular structure that makes it flexible to be extended. This project results a novel Cross-Layer Monitoring Module, CLMM, which is a prototype that monitors each layer of the nodes locally and dynamically, calculates the average values of the metrics, compares these values with thresholds and handles the cross-layer messages of each node. The CLMM also has a routing module structure that can be extended to distribute the metrics to its neighbors. Two simulations are analyzed to verify functionality of this module. The future work of the cross-layer monitoring module will also be discussed.