

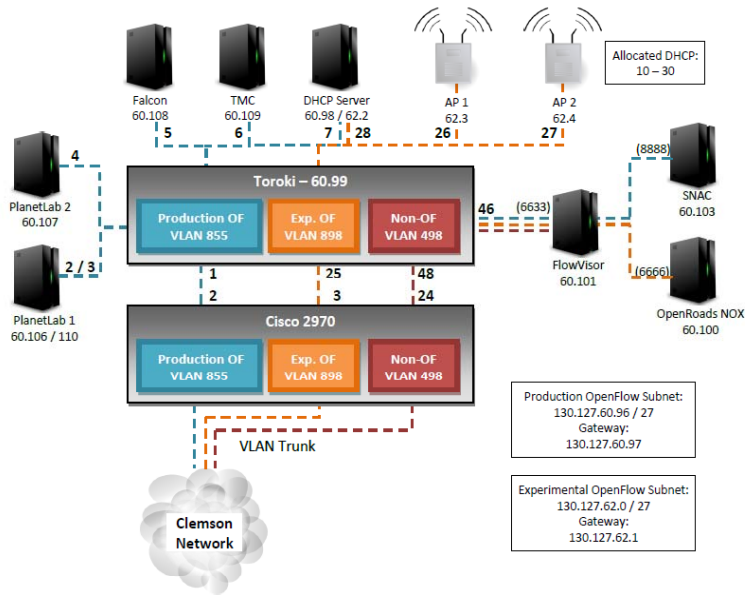
Project Scope

- OpenFlow Ethernet switches for campus buildings
- OpenFlow wireless access points along campus roads
 - Support for mesh networking and vehicle handoff
- Integration with campus Network Operations Center
- Participation in inter-campus OpenFlow trials

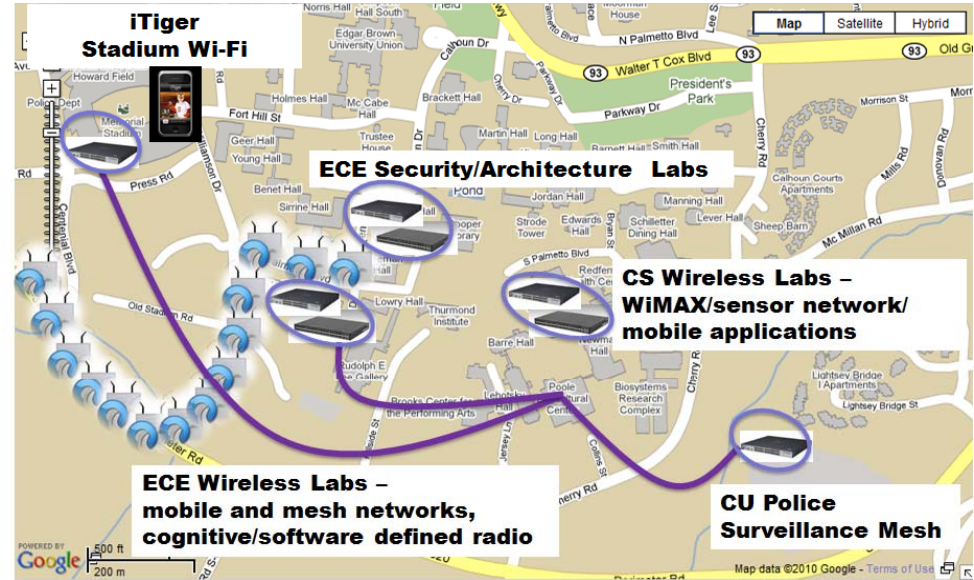
Motivation

- Establish Clemson-GENI connectivity
- Enable programmable wired/wireless network research
 - *Vehicular networks, mesh networks, network security*
- Provide network operation tools and policies for research and education use of campus network

Current OpenFlow Network in ECE Wireless Lab



Future Network across ECE/CS Buildings and Projects



- Same setup will be replicated in other buildings/closets
 - Except Cisco 2970 switch (used only in lab to expedite trial VLAN/subnet configurations)
- Currently used for OpenFlow team's daily Internet access
 - More opt-in users will be added once network is stable

- Next step deployment will span three ECE/CS buildings and potentially a few major networking project sites
 - ECE wireless, security, architecture, and p2p labs
 - CS wireless and sensor labs
 - Police video mesh and iTiger stadium Wi-Fi projects



Demo Components

Hardware

- Toroki LightSwitch 4810®
- 2 PC Engine access points
- 5 dell servers
- 2 Laptop clients

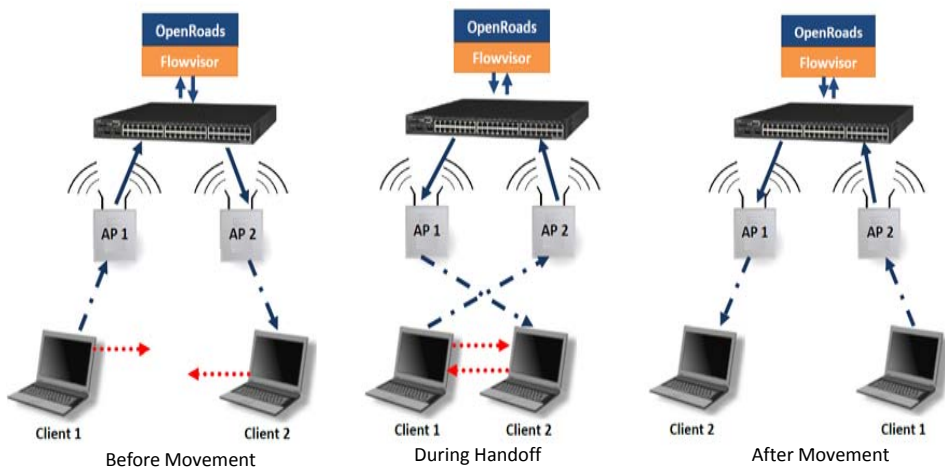
Software

- Flowvisor – v 0.4
- SNAC – v 0.4
- OpenRoads – v 0.4
- ENVI/LAVI – latest from git

Demo Overview

- Two clients connect to different APs and begin Skype Internet-based video conferencing session.
- Clients move along the red path, each starting from one end and ending at the other end.
- Shell script at each client initiates handoff when current AP signal strength becomes lower than the other AP.

Connectivity Graph During Demo



OpenFlow-Enabled Functionality

- Flowvisor – Two slices
 - OpenFlow Production
 - 130.127.60.96/27 subnet
 - SNAC controller
 - OpenFlow Experimental
 - 130.127.62.0/27 subnet
 - OpenRoads controller
- Flowvisor slices AP traffic from other network traffic
- OpenFlow's potential use for wireless research in our group:
 - Measurement and control of mesh network traffic
 - Handoff control for vehicle clients across mesh APs
 - Infrastructure wireless network optimization
 - Video streaming QoS control

Demo Track

