OFCLEM Project Status Report
Period: 10/1/2009-12/31/2009

I. Major accomplishments

The project contract is fully executed on 11/30/09. The project will deploy an OpenFlow testbed on the Clemson University campus and connect with wireless mesh access points and mobile terminals. This trial will conduct OpenFlow experimentation focused on OpenFlow enabled network operation solutions as a precursor to deployment into Clemson research and production networks.

During this period, key achievements include:

a) Project kickoff meeting at GEC6 (11/16-18, 2009).
b) Confirmed GEC7 demo plan.
c) Acquired one Toroki OpenFlow switch.
d) Began installation of NOX, FlowVisor, OpenFlow controllers, PC Engine OpenFlow implementation, and PlanetLab.

A. Milestones achieved

The only one planned milestone for this reporting period is to select OpenFlow switch vendors before 12/31/09.

We have acquired one Toroki switch. We have been communicating with Juniper extensively during this period to urge it to support OpenFlow. According to Juniper, it currently does not support OpenFlow, but only make its SDK compatible for customers to integrate their own OpenFlow implementation. With Stanford, we continue to approach Juniper urging its support for OpenFlow v1.0.

B. Deliverables made

a) GEC7 demo plan

II. Description of work performed during last quarter

A. Activities and findings

a) GEC7 demo plan (Mar. 2010)

   The GEC7 Clemson demo will consist of the following components:

   1) Minimum 3-switch configuration: One Toroki switch + two PC engines AP.
   2) 1 OpenFlow VLAN + 1 non-OpenFlow VLAN serving servers/laptops in our lab.
   3) Nicira NOX, FlowVisor, Nicira OpenFlow controller with Net Admin Console
   4) Optional functionality: Stanford OpenRoads controller, mesh network handoff/routing on PC engines AP.

   The base demo will show the proper functioning of the 3-switch network. The optional components are dependent on working progress and will be shown if available.

b) Switch acquisition

   The Clemson project has two missions – campus network integration and wireless mesh network for mobile access. For campus integration, we proposed to create a test network closely mirroring Clemson's production network (currently based on Cisco and Juniper switches). To produce convincing results for our production network integration, it is our IT's request that the test be conducted with our same Cisco and Juniper switches.

In this last quarter, we have communicated extensively with Cisco and Juniper regarding their OpenFlow releases. So far Cisco and Juniper switches are not OpenFlow-ready for our trials.

As a low cost ($4,500) and immediately available option, we acquired one Toroki switch (90-day evaluation, 11/30/09-03/01/10; official purchase will be in Jan/Feb 2010 if integration is successful) to begin our trial configuration. The unit has arrived and is currently being configured.

B. Project participants

The project team members are:

PI: Kuang-Ching Wang
ECE graduate research assistants: Sajindra Pradhananga (MS), Glenn Evans (MS)
ECE undergraduate students: Bradley Collins (senior), Aaron Rosen (senior)

C. Publications (individual and organizational)

Not available at this time.

D. Outreach activities

a) An announcement has been made to recruit two South Carolina high school students to participate in a 6-week summer internship program with this project group.

E. Collaborations

The project is conducted in collaboration with campuses and backbone providers on the OpenFlow trial. We have so far worked more closely with:

a) Nick McKeown, Guru Parulkar, Guido Appenzeller and the Stanford OpenFlow group, assisting us in the acquisition, installation, configuration, and testing of OpenFlow software.

F. Other Contributions

Not available at this time.