Mini-NDN Wi-Fi

Ashlesh Gawande (agawande@memphis.edu), Muktadir Chowdhury (mrchwdhr@memphis.com)

Motivation

Currently, no emulation framework exists for emulating NDN over Wi-Fi. Hence, similar to what Mini-NDN did with Mininet, Mininet-Wifi should be used to develop Mini-NDN Wi-Fi.

Contribution to NDN

Mini-NDN Wi-Fi should able to provide a rapid prototyping experimental environment for development and testing of NDN networks over Wi-Fi. Mininet-Wifi can be used to emulate mobile networking scenarios and can be extended to emulate VANET (Vehicular Ad-Hoc Networking). This can benefit the NDN project by providing an alternative experimentation tool for vehicular networking other than ndnSIM.

Tasks

- Determine how to use Mininet-Wifi and how it works. Further determine how run static and mobile experiments
- Run NDN over the Wi-Fi capable nodes and enable mobility
- Write/Modify framework to experiment and test NDN scenarios over wireless networks
- Enable Ad-Hoc functionality in the Wi-Fi nodes
- Set-up a vehicular ad-hoc networking experiment environment using the Wi-Fi nodes

Required Knowledge for Participants

- NDN (ndn-cxx, NFD)
- Python, Shell
- Mininet, Mininet-Wifi

Expected Outcome

- Mininet-Wifi is successfully used to run NDN over every node
- Develop some tests for testing the Wi-Fi functionalities of NFD
- Enable MiniNDN-Wifi nodes to run on Ad-hoc mode.
- Some preliminary experimental scenarios for testing vehicular Ad-Hoc networking.