

11th NDN Hackathon

Mini-NDN Improvements

Saurab Dulal
Justin Presley
Adam Thieme
Ashiq Rahman
Alexander Lane

Mini-NDN Problems

The current Mini-NDN extremely useful but;

- Is a bit tricky to install and use, especially for people new to NDN. Packages are compiled from the source, many weak spots that lead to installation failure.
- Lacks basic helper scripts e.g. traffic generator, consumer-producer, file transfer etc
- Some of the documents and video demo are outdated

GUI for topology creation visualization would have been great

Solutions

- Installation
 - Mini-NDN vagrant box with Vagrantfile
 - mini-ndn docker
- Refactor installation script and added helper script for ndn-traffic-generator, catchunks, consumer-producer
- Added new GUI topology editor based on Mininet-wifi's version of MiniEdit with Improved documentation and demo video

Vagrant Box and Docker Image

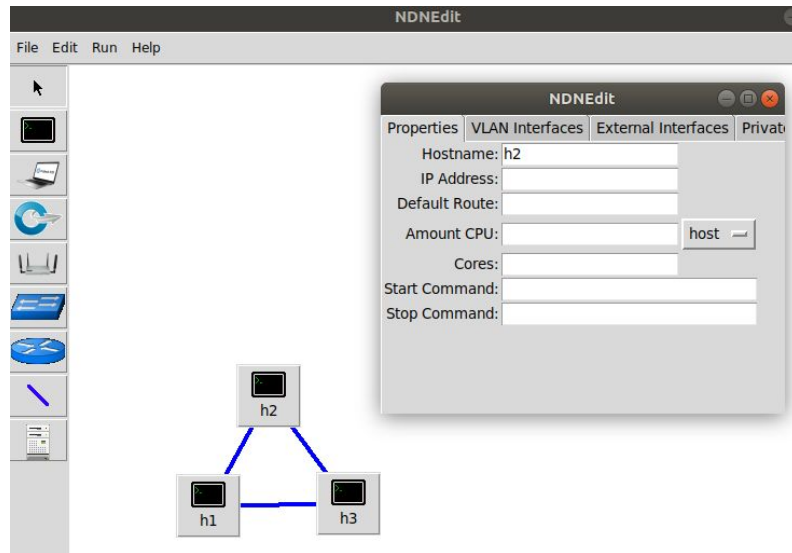
- Pre-installed Mini-NDN using the install script
 - Uses PPA for packages, except for mininet, there's no package for 20.04 yet.
- Mini-NDN Vagrant Box:
 - This box is terminal only (Ubuntu Server 20.04 LTS) for now.
 - <https://app.vagrantup.com/ashiq/boxes/minindn>
 - GUI tested separately for now and should be easily included in a basebox with desktop env.
- Docker:
 - CLI works perfectly.
 - Pre-built image, ready to pull from DockerHub:
 - **`docker pull marahman/minindn`**
 - Dockerfile for local build from scratch with a single line command.
 - <https://github.com/ashiqopu/docker-minindn>
 - Xterm on macOS 11 does not seem to work (XQuartz appears broken). 🙄
 - Should work on Linux.
 - This takes us one step closer to: <https://github.com/play-with-docker/play-with-docker>, hope in the very near future we can play with Mini-NDN online in browser

Mini-NDN GUI topology editor and documentation

- A visual without taking away *functionality*
 - Every item placed can be configured to meet desired needs
- Mimics Mininet's GUI
- To get started, documentation is a one shop stop to get started.

Misc:

- Improved documentation and adding demo video
- Fixes for default topologies, improved comments on experiments



Using external tools with Mini-NDN

ndn-traffic-generator, catchunks, (in progress) consumer/producer

- Installed via Mini-NDN installation script
 - Installation script is refactored to
 - resolve python dependency issues
 - provide options to install ndn software from source or ppa (default)
 - remove deprecated packages
- Added helper experiment for traffic generator ([traffic_generator.py](#)), catchunks ([chunks.py](#)), and consumer/producer (consumer-producer)
- consumer/producer example and the documentation is in progress

Future work:

- address feedback received on the patches
- create helper classes the tools
- complete the documentation

GUI Demo

