Mini-NDN: A Lightweight and Scalable Mininet based Emulation Environment for NDN

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Need for Mini-NDN

- Shared emulation environment (ex: Emulab)
  - Problems with many users, long wait time
- Simulation environments (ex: ndnSIM)
  - Real world applications may need to be modified
  - NFD version may not be the very latest commit on Github
  - Cannot interact directly in real time (visualization is possible)
- Introducing Mini-NDN, Mininet based network emulator
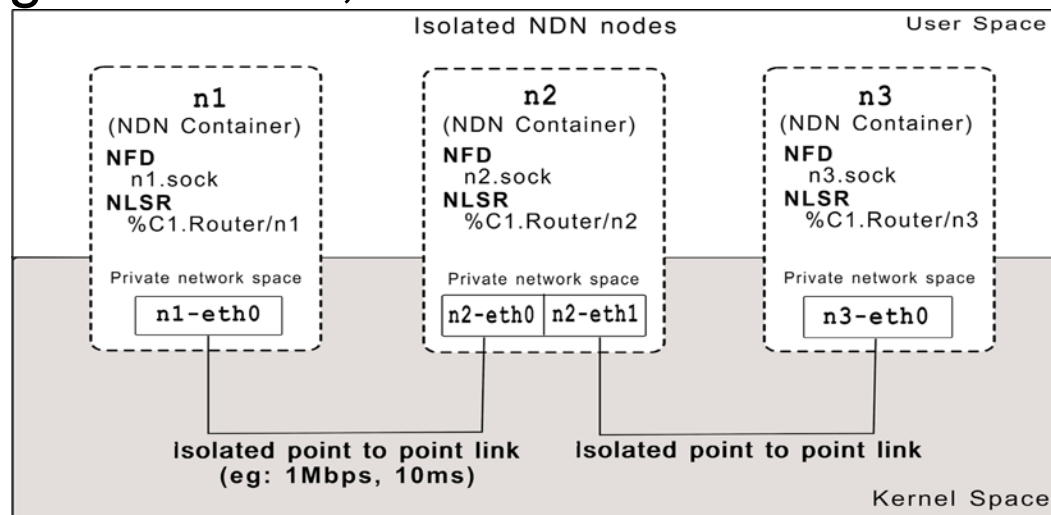
Mini-NDN challenges

- Usability
  - Must be easy to configure and use
  - Support new use cases easily
- Scalibility
  - Mini-NDN runs actual instances of NFD, NLSR
  - Number of nodes emulated $\propto$ CPU power
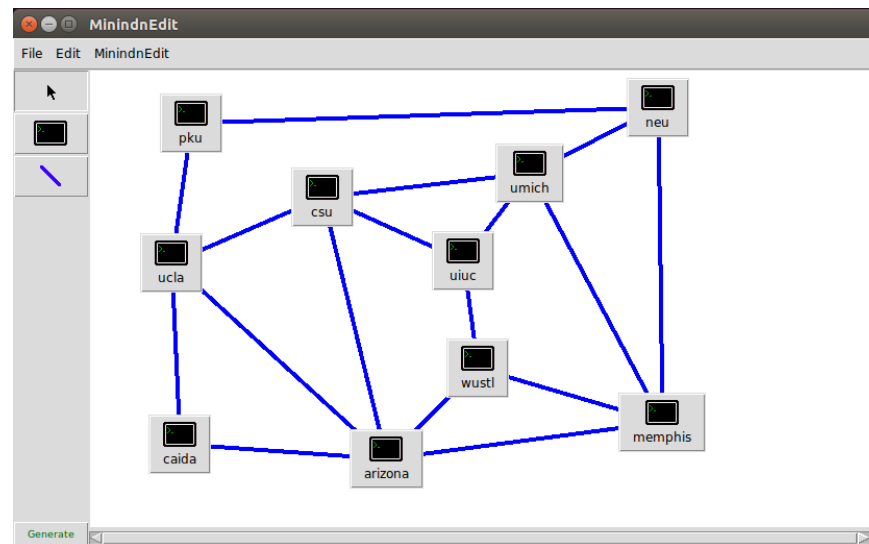
Mini-NDN features

- Topology can be configured using a simple topology file
  - Can be generated via GUI
- Experimental framework is provided to write new experiments
- Mini-NDN cluster edition is developed to scale Mini-NDN across a cluster
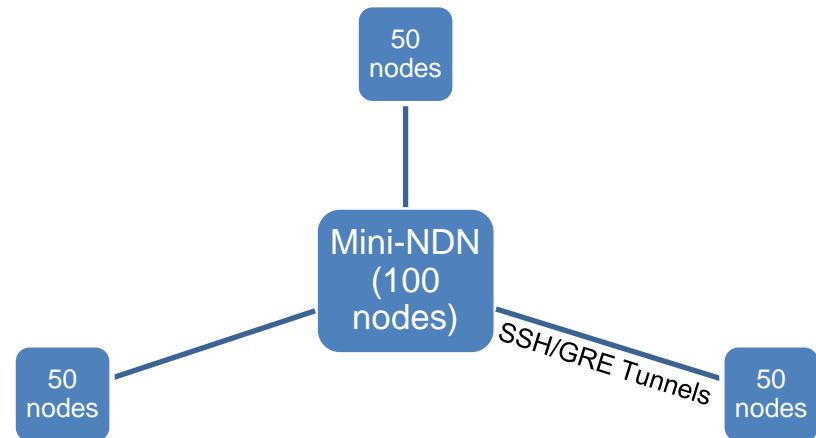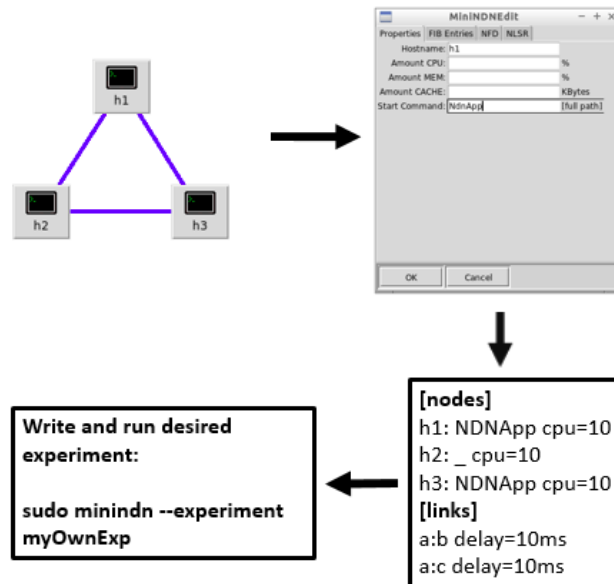
Mini-NDN use cases

- Evaluation of HR
  - Emulate Testbed for preparation of deployment
- Evaluation of PSync and Chronosync
- Evaluation of NDN-BMS
- Being used to test NLSR patches on gerrit

NDN-Robot

Patch Set 4: Verified-Integration+1

NLSR tester bot:

All tests passed!

4 node convergence test

4 node mcn failure convergence test