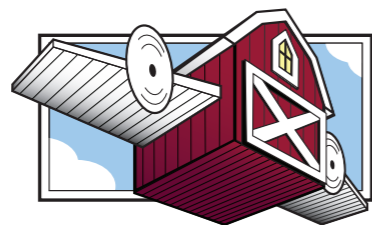


# Virtual Topology Service

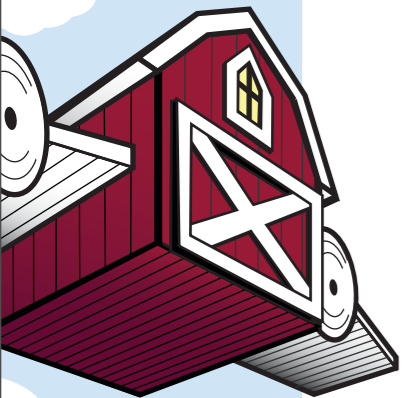
GEC 19



**BARNSTORMER**  
S O F T W O R K S

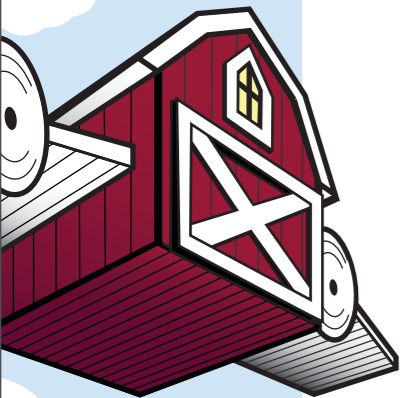
# Agenda

- Current Status
- Near-term features
- Scaling Factors
- Next Steps



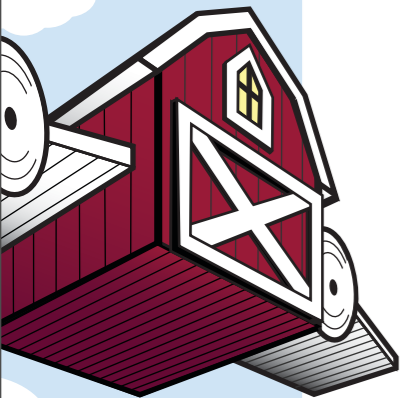
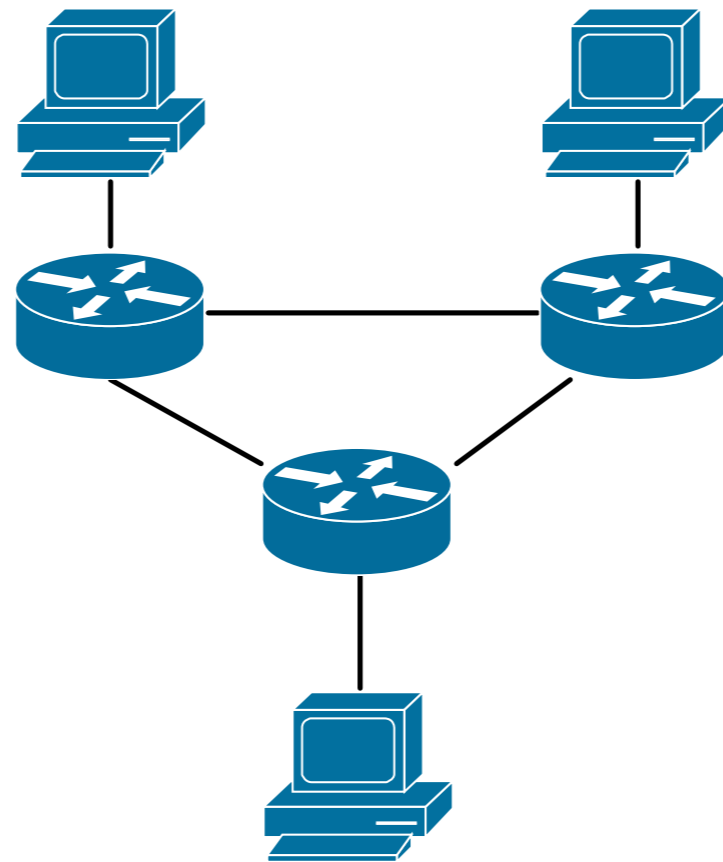
# Current Status

- Available at 5 InstaGENI racks
  - NYSERNet
  - Illinois
  - MAX
  - GPO
  - UtahDDC



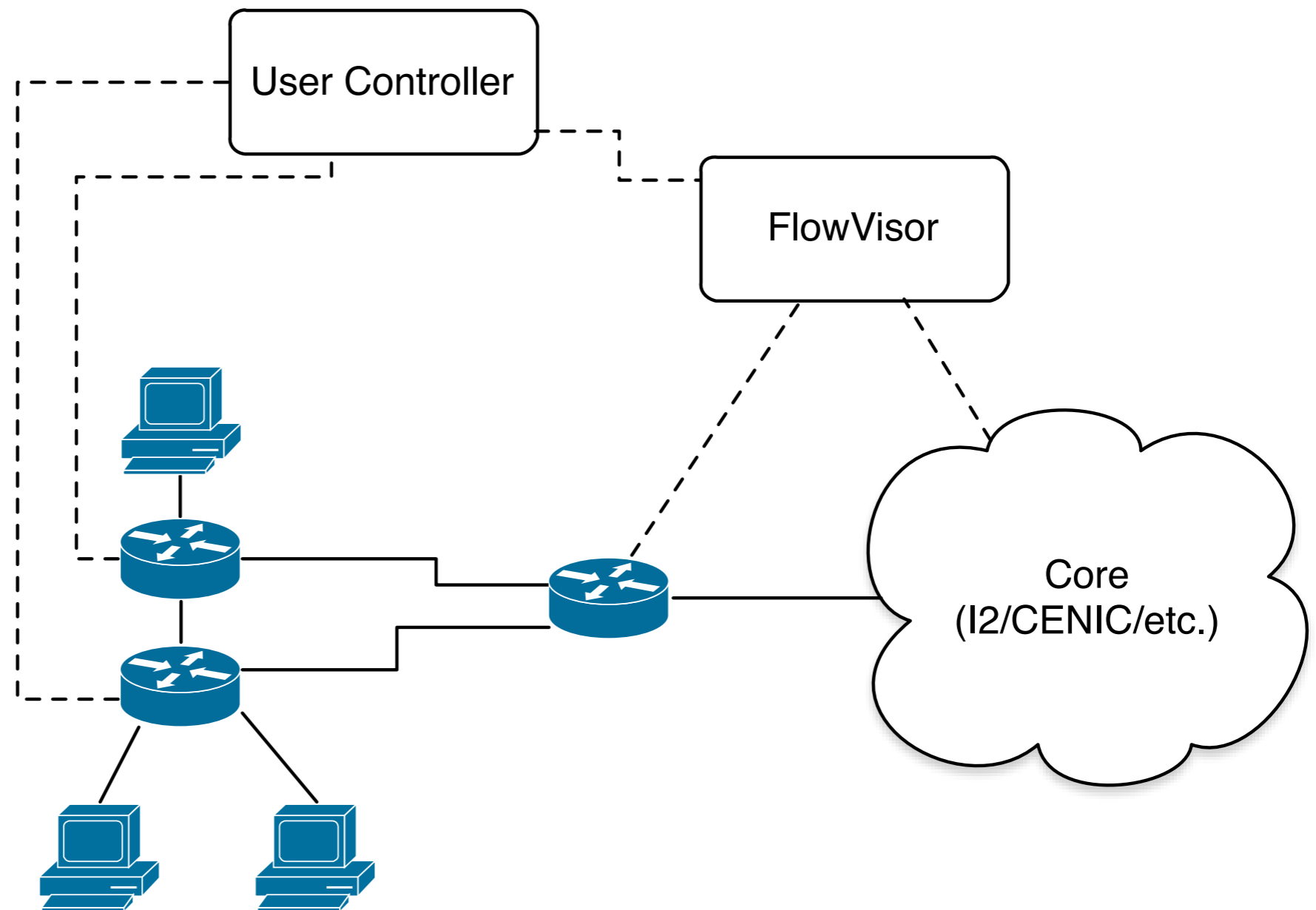
# Current Features

- Arbitrary intra-rack topologies



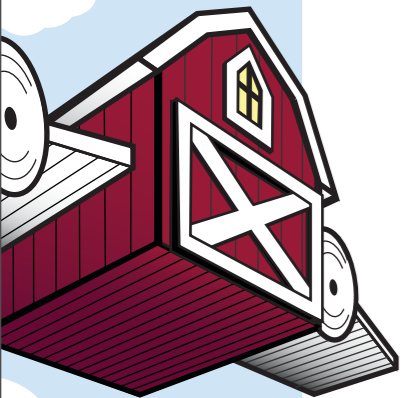
# Current Features

- Ability to connect to GENI OpenFlow core



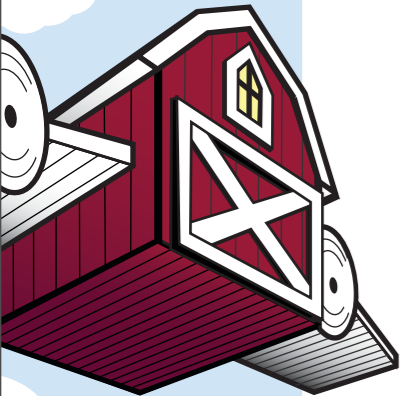
# Current Features

- Current available datapath is OVS 2.0.1, in either normal (L2 MAC learning) mode, or OpenFlow 1.0
- sFlow monitoring data available to your collector



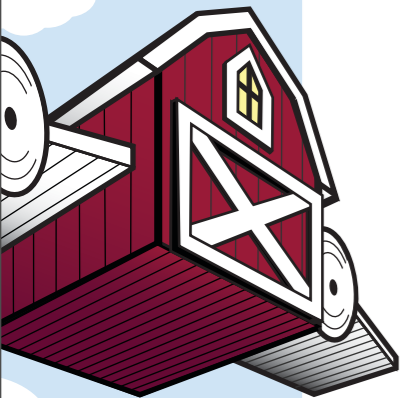
# Near-term Features

- More datapath images
  - Linc ([flowforwarding.org](http://flowforwarding.org))
  - Indigo Virtual Switch
- Netflow Monitoring
- SNMP endpoints
- WAN Circuits



# Near-term Features

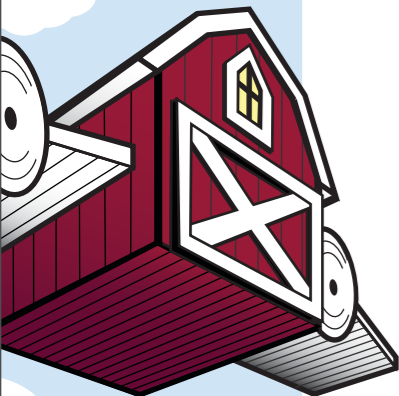
- Operational Actions
  - Tap any circuit (get pcap file)
  - Up/down any circuit
  - Reprovision circuit bandwidth





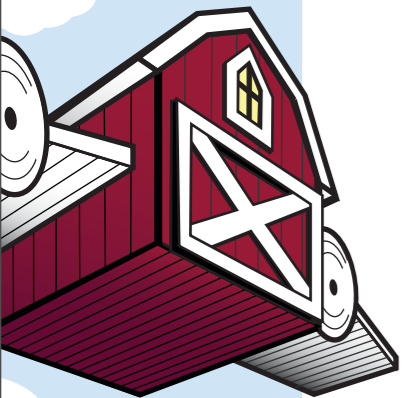
# Scaling Factors

- Most InstaGENI sites only have 1 gigabit dataplane WAN uplinks
- HP core switches only support ~700 VTS WAN mapper entries
  - Support for ~500k dataplane MACs
- Local connectivity at racks with raw PCs is limited to 6Gbps



# Next Steps

- Arbitrary untrusted datapath images
  - Allow experimenters to upload untrusted code and connect it to circuit endpoints
- Use DCN AMs under the covers to allocate disparate paths
- Still limited by rack upstream port speed



# Next Steps

- More Sites
- ExoGENI support
- Get away from using raw PCs at each site
  - This is a waste of a relatively scarce resource

