

# GENI Substrate

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*Environment \* Topology \* Architecture \* Philosophy*

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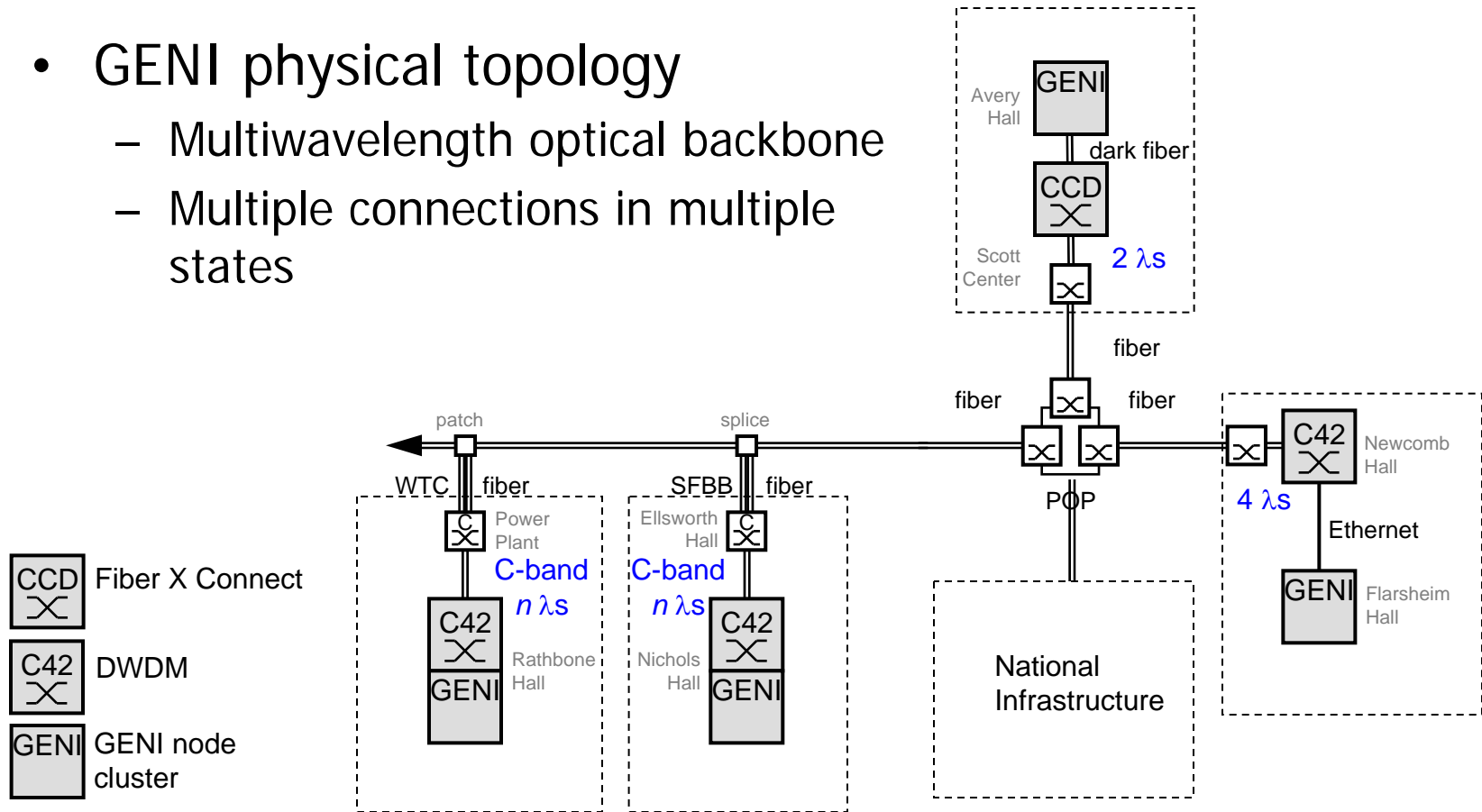
# GENI

## Environment for Network Innovation

- Proposed infrastructure and environment
  - in support of GENI spiral development
- Collaboration among
  - Researchers
  - Campus networks
  - State and regional networks
  - National networks
  - International networks

# GENI Physical Topology

- GENI physical topology
  - Multiwavelength optical backbone
  - Multiple connections in multiple states



# GENI

## Node Architecture

- GENI node: flexible and programmable at all layers

L1+2: optical switch

L3: programmable router

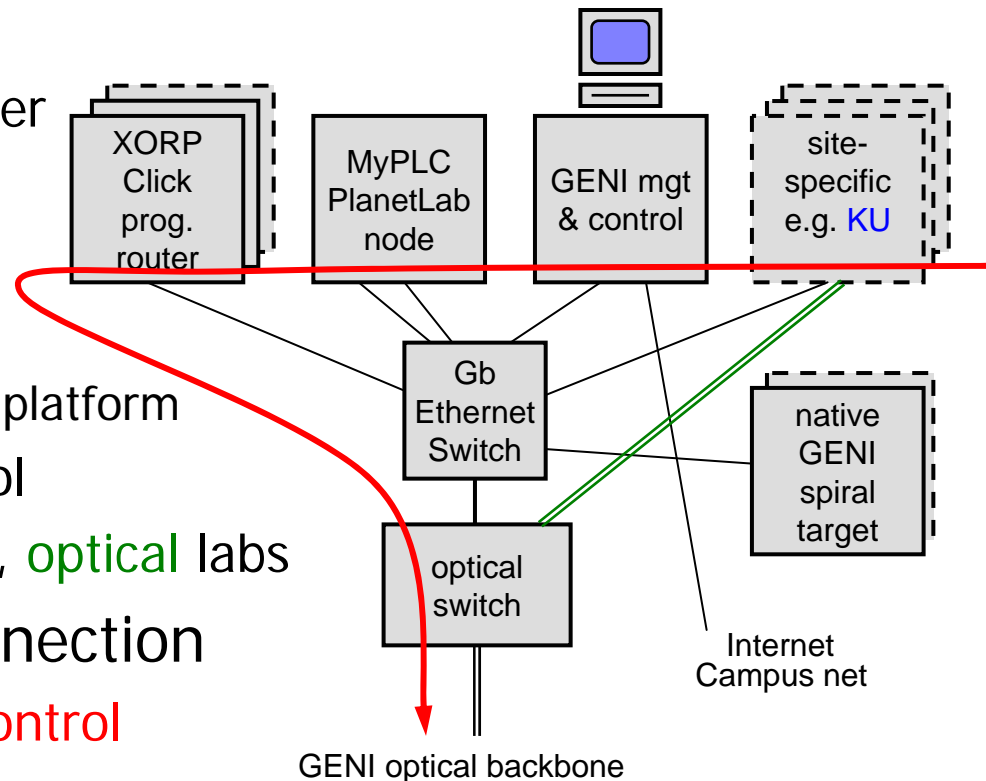
- XORP, Click, ...

L4+7: PlanetLab node

- GENI node
  - runs evolving GENI platform
- GENI mgt. and control
- site-specific: **wireless**, **optical** labs

- GbEthernet interconnection

- **flexible experiment control**



# GENI

## Node Philosophy

- Programmability at all layers
- (Almost) immediately available to the community
  - private PlanetLab experiments from day one (MyPLC)
  - manual experiment control and slice configuration
- Development and integration of layers
  - GENI experiments → PlanetLab → XORP,Click → Substrate
  - develop tools to automate and slice lower layers
- Spiral development toward GENI
  - processor(s) to try evolving GENI platforms
  - open access to GENI community
  - scalable per node and number of nodes (anybody can play!)