The GENI ShadowNet Measurement Infrastructure

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Project Goals

1. Deploy "virtualizable" commercial routers (Juniper m7i) in the ProtoGENI backbone that support commercial OS/software.

2. Add software support to these virtual routers that will enable per-slice monitoring and measurement.

3. Develop tools and interfaces that will allow slice users to use the measurement infrastructure in simple and easy ways.
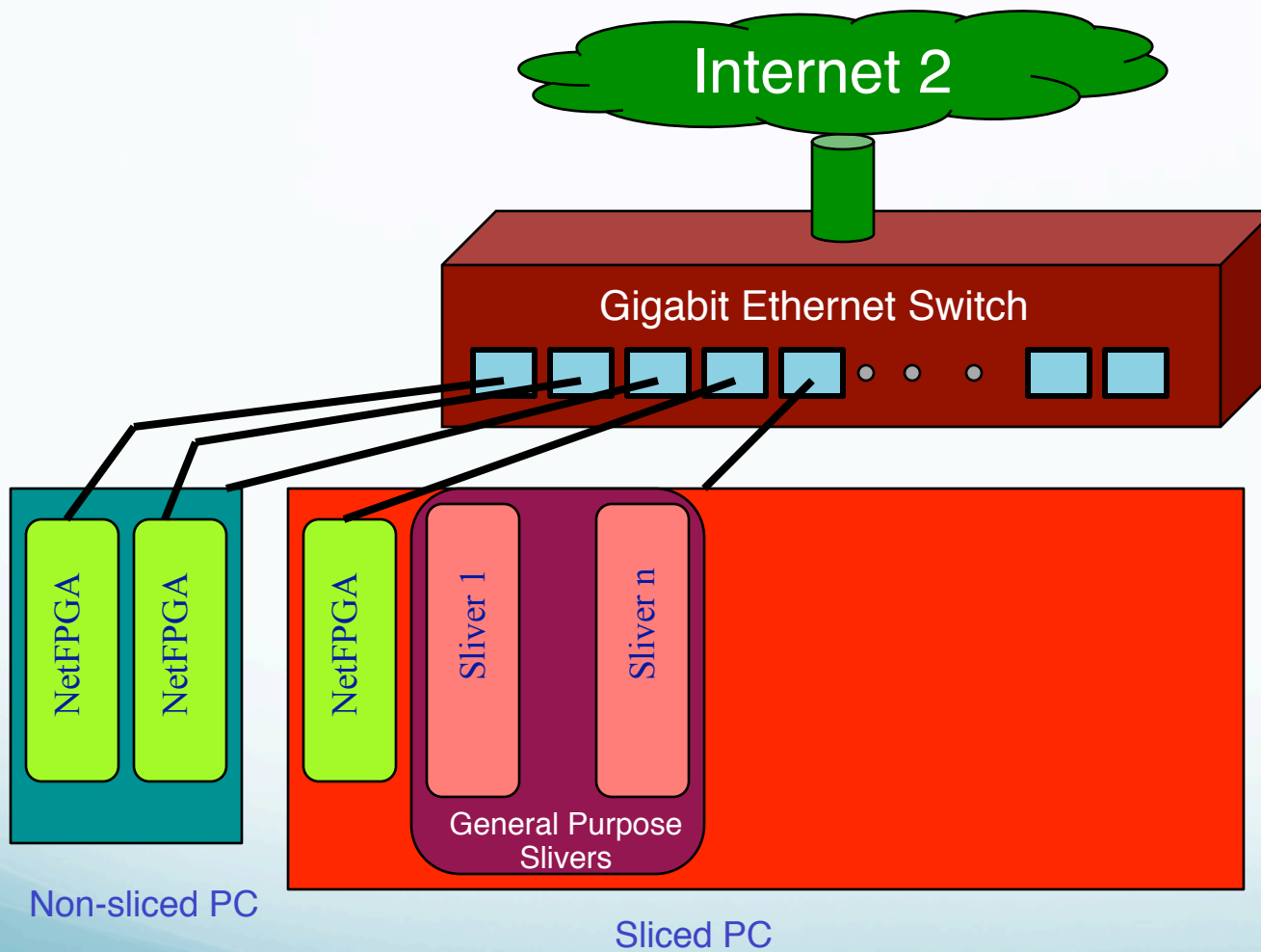
ProtoGENI Network
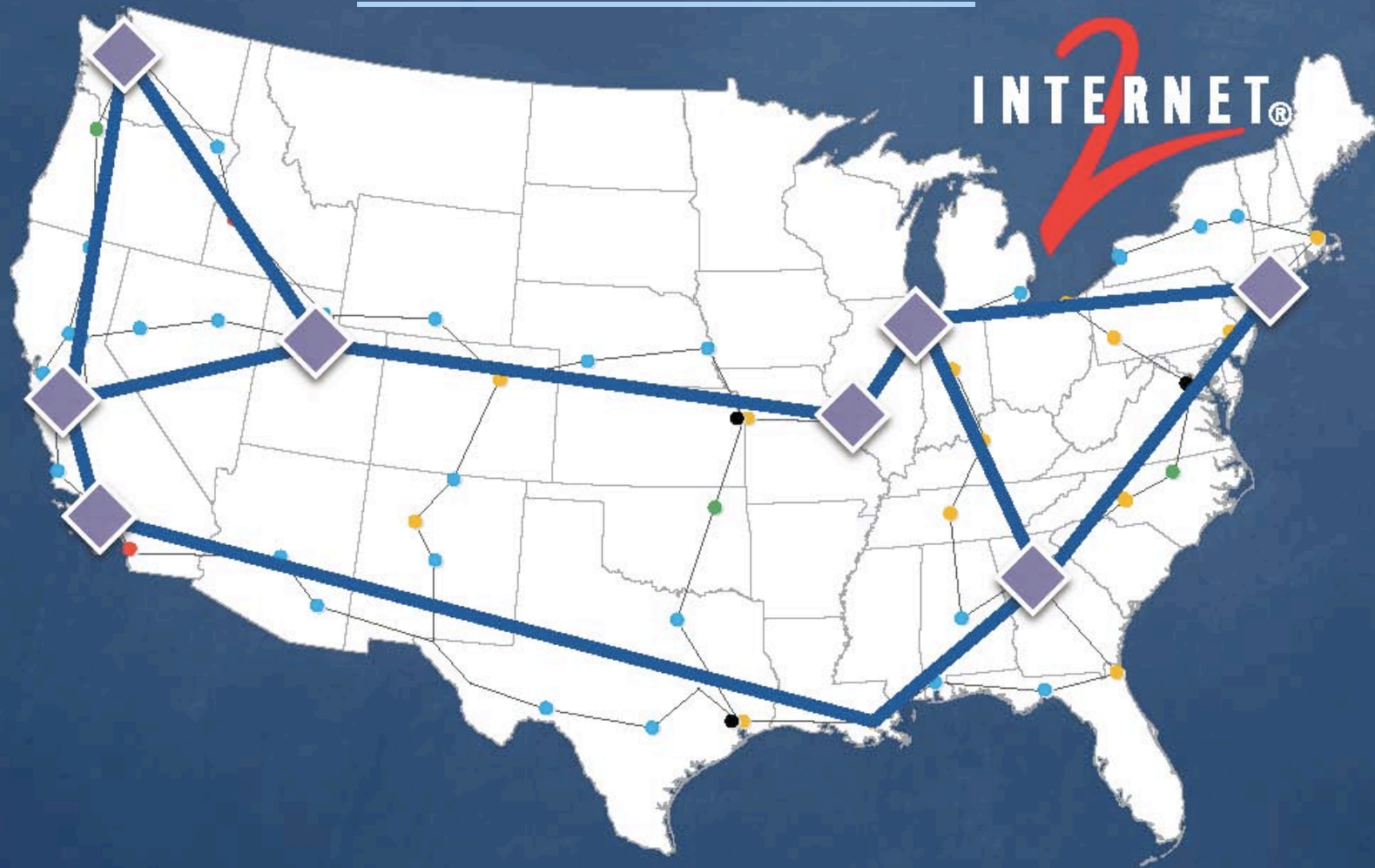
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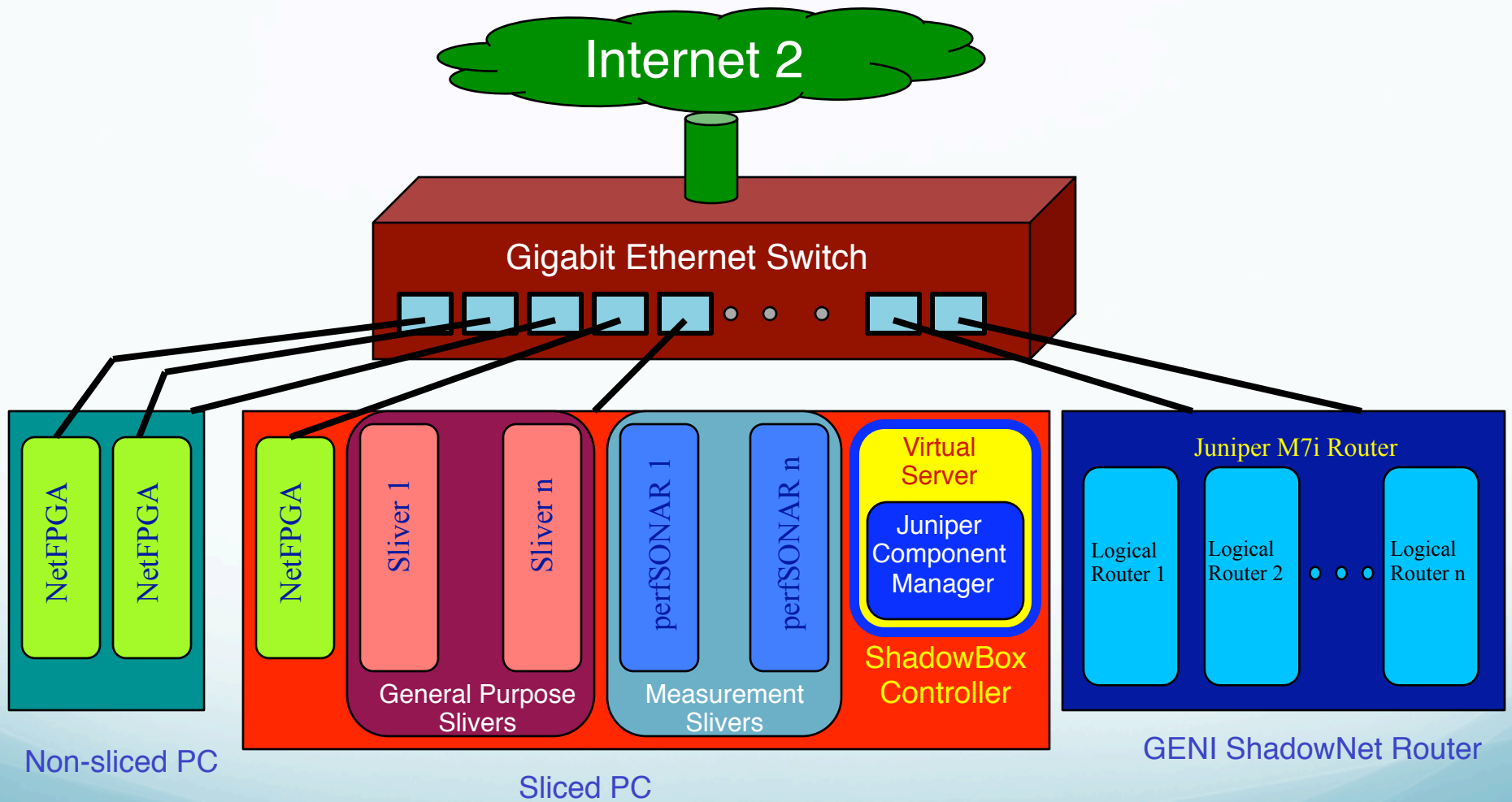
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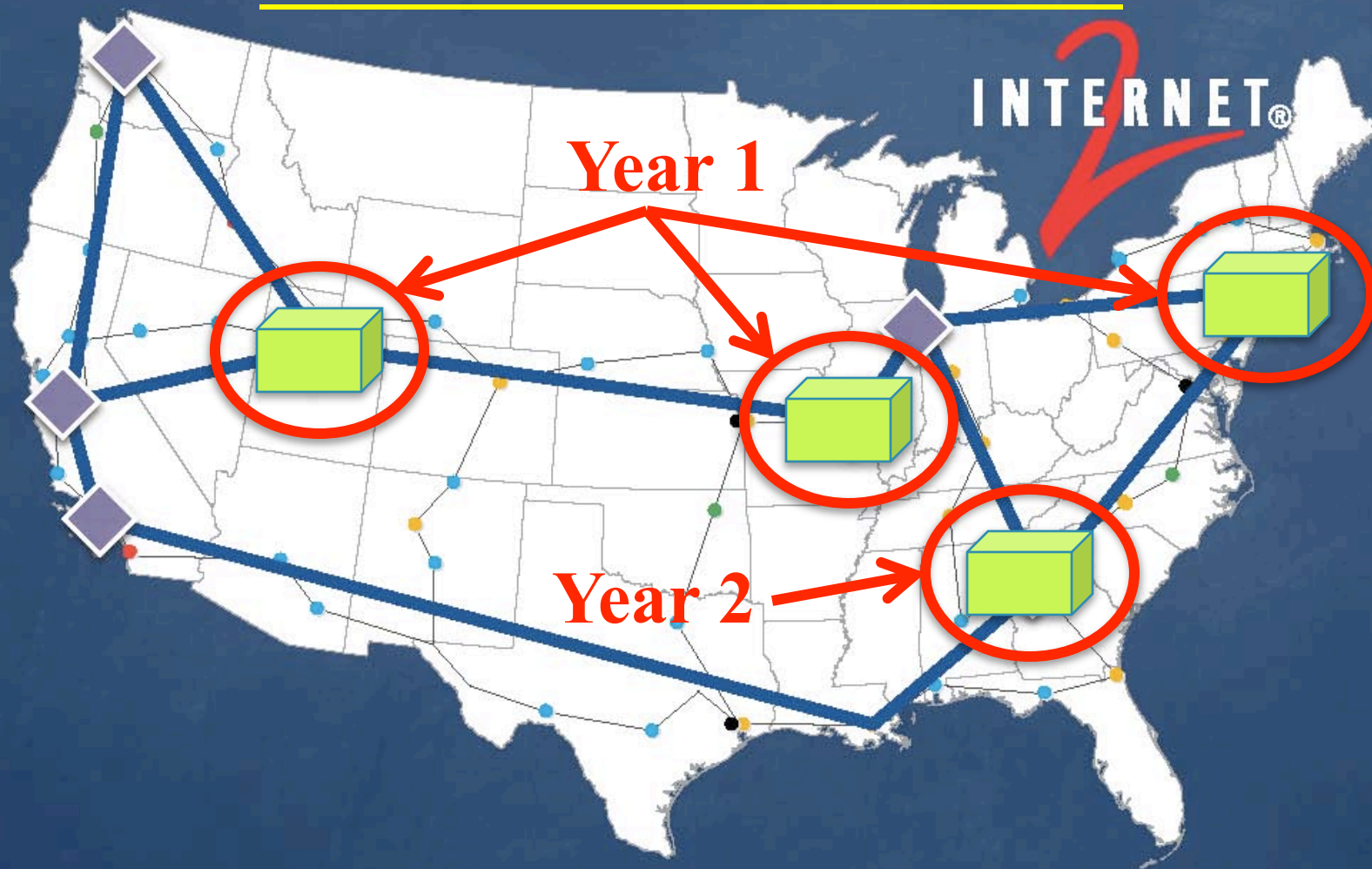
Year 1

Year 2

INTERNET®

Source: http://groups.geni.net/geni/attachment/wiki/presentations/protogeni_Ricci_gec3.pdf

ProtoGENI Backbone Node Architecture

Internet 2

Gigabit Ethernet Switch

NetFPGA

NetFPGA

NetFPGA

Sliver 1

Sliver n

General Purpose Slivers

Non-sliced PC

Sliced PC

ProtoGENI Backbone Node Architecture

Internet 2

Gigabit Ethernet Switch

NetFPGA
NetFPGA

Non-sliced PC

NetFPGA

Sliver 1
Sliver n

General Purpose Slivers

perfSONAR 1
perfSONAR n

Measurement Slivers

Virtual Server

Juniper Component Manager

ShadowBox Controller

Sliced PC

Juniper M7i Router

Logical Router 1
Logical Router 2
Logical Router n

GENI ShadowNet Router

Availability of Operational/Utilization Data

- **Infrastructure data:** We have the ability to collect physical router data for network operations:
  - Router/Link up/down status
  - Link utilization (#bits, #frames, #packets / second)
  - CPU utilization
  - Interface (link) error counters
  - Interface packet loss/drop counters

- **Slice-specific data**
  - Slice owner controls access to this data
  - May be made available to network operations

Thank You!