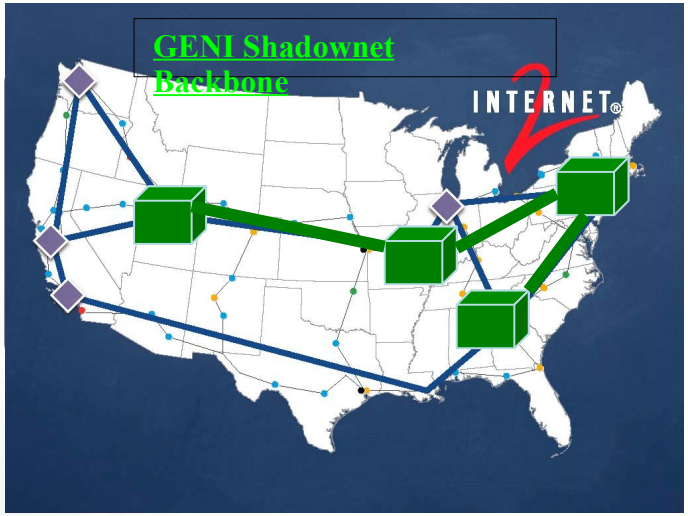
GENI Shadownet
Spiral 2 Year-end Project Review



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

Project Summary

The project has three main objectives:

1. To deploy “virtualizable” commercial routers—that support conventional measurement software—into the ProtoGENI backbone as the basis for a new ProtoGENI measurement infrastructure.
2. To add software support to these virtual routers that will enable per-slice (application-layer) monitoring and measurement, and
3. To develop tools and interfaces that will allow the slice users to control the new measurement infrastructure and access the measurement data collected in simple and easy to use ways.

The project leverages and builds on the ShadowNet software being developed at AT&T research and the INSTOOLS software being developed at the University of Kentucky, and it enhances the ProtoGENI backbone infrastructure by adding virtualizable Juniper routers at Internet2 co-location centers.

Milestone & QSR Status

ID	Milestone	Status	On Time?	On Wiki?	GPO signoff?
S2.a	Purchase four Juniper M7i routers and install three of them at ProtoGENI sites on Internet 2	Juniper routers have been purchased and are being configured for deployment during September to meet the milestone due date.	Not yet due	Yes	NA
S2.b	Develop standalone control software to virtualize the Juniper platform	We are developing an initial component manager that should be operational by the end of September to meet the due date	Not yet due	Yes	NA
S2.c	Develop a plan to incorporate the virtualized Juniper routers into ProtoGENI	Have been working with ProtoGENI team and believe we have a workable plan based in part on the SPP approach.	Not yet due	Yes	NA
S2.d	Develop and demonstrate software tools to collect measurement data from virtual Juniper routers	We are modifying the INSTOOLS software to be able to collect data from other sources (e.g., Juniper routers)	Not yet due	Yes	NA
S2.e	Become familiar with the perfSONAR data models and representation	We have been working with perfSONAR group to understand their models	Not yet due	Yes	NA
	QSR: 4Q2009	NA – prior to contract signing	NA	NA	NA
	QSR: 1Q2010	Submitted and posted on Wiki	OnTime	Yes	Yes
	QSR: 2Q2010	Submitted	OnTime	No	No

Accomplishments 1: Advancing GENI Spiral 2 Goals

GENI Spiral 2 Goals are described in "GENI Spiral 2 Overview", section 7. Project SoWs and milestones were crafted to support those goals. On this slide, summarize project accomplishments this year that contribute to the Spiral 2 goals.

Accomplishments toward Spiral 2 Goals:

- *Integration:* Our efforts to integrate a new resource into the ProtoGENI system contribute to the Spiral 2 goal of integration. In particular, we have worked with the Utah group to determine how the Juniper logical routers should be made available to users via a component manager.
- *Instrumentation and Measurement:* Although we are still in the early stages of instrumenting the Juniper routers, we have begun to modify the INSTOOLS design in order to support data collection from logical routers.

Accomplishments 2: Other Project Accomplishments

- Deployment of Juniper routers in the backbone of Internet 2 will give users the ability to control the way their packets are handled inside the backbone as well as at the edges of the network.
- We have initiated discussions with Juniper to get access to their SDK which will allow users to program the Juniper routers (i.e., carrier-grade routers in the backbone but yet offering users a familiar/conventional programming environment).
- We expect to support interfaces to the production Internet 2 network as well as the dedicated GENI wave.

Issues

We are unaware of any show-stoppers. However, some issues that could possibly affect our project include:

- Port availability on switches at the co-location points
- Publicly routable IP address availability for the Juniper routers
- Reduction of the Internet 2 wave from 10G to 1G

Plans

- What are you plans for the remainder of Spiral 2?
  - To complete the five milestones listed above
- The GPO is starting to formulate goals for Spiral 3. What are your thoughts regarding potential Spiral 3 work?
  - Our focus in spiral 3 will be fully integrating with ProtoGENI and making the resources available to GENI users.
  - We will also begin the process of integrating the INSTOOLS with the data collection capabilities of the Juniper routers.
  - Install the fourth Juniper router
  - Work with Delaware team to begin using the perfSONAR data model.