

- Demonstrate GENI Clearinghouse & control framework in Spiral 1 projects as a central GENI concept.
- Demonstrate End-to-end slices across multiple technologies in Spiral 1 projects as a central GENI concept.
- Identify and exercise important interfaces between projects and between GENI components and existing networks.
- Support detailed integration of these interfaces with each project's technical staff.
- Feed prototyping and integration experience into Working Group deliverables, and vice versa.
- Support early experimental users of Spiral 1 prototypes as much as possible.
- Spiral 1 should be up and running April-October 2009 (ongoing).

Spiral 1 simultaneously moves ahead with demonstrations *and* with defining interfaces. Demonstration interfaces may be rough and may work for a single project, but interfaces (APIs/protocols) suitable for a wider community should result from integration as Spiral1 progresses.



2009	2009
 PlanetLab 12/05: Component and clearinghouse release v0.1 √ PlanetLab: 04/01 Component and clearinghouse release v0.2 PlanetLab: 04/01 Make testbed available to GENI users. PlanetLab: 04/01 Open testbed to GENI researchers PlanetLab: 09/01 Document architecture for v0.2 PlanetLab: 09/01 Establish direct connectivity between project facilities and Internet 2 PlanetLab: 09/01 Complete integration of v0.2 sw into CF cluster aggregates PlanetLab: 10/01 Make CF available for use by students PlanetLab: 10/01 Open integrated cluster testbed to users 2010 PlanetLab: 09/01 Complete integration of v0.3 sw into CF cluster aggregates 	 ENTGENI: 04/01 Version 0 Aggregate/Component Manager ENTGENI: 04/01 Draft API/protocol between ENTGENI AM and Clearinghouse (Lightweight) ENTGENI: 07/01 Deploy Phase 0 Enterprise GENI network at Stanford ENTGENI: 07/01 Start integrating interfaces from ENTGENI AM to Clearinghouse (ongoing) ENTGENI: 10/01 Demonstrate OpenFlow in GENI ENTGENI: 10/01 Integrate EntGENI with GENI virtual ethernets 2010 ENTGENI: 07/01 Expand Stanford Deployment ENTGENI: 07/01 Deploy Phase 1 Enterprise GENI at a second campus (possibly Princeton) ENTGENI: 10/01 Integrate campus deployments with GENI clearinghouse and infrastructure ENTGENI: 10/01 Open Phase 1 testbed to users (limited)



Year 1

- a) Implement Version 0 Aggregate Component manager for an OpenFlow network. (6 months)
- b) Deploy Phase 0 of Enterprise GENI comprising an OpenFlow network of few switches and wireless APs and a couple of computers in the Gates building of Stanford campus. (9 months)
- c) Start work with other parties to agree on the API/protocol between the GENI Clearing
- House and Aggregate Component Manager. (begin in 6 months and then ongoing)
- d) Start integrating interfaces to a GENI control framework clearinghouse in an aggregate component manager for an OpenFlow network. (begin in 9 months and then ongoing)
- e) Integrate Enterprise GENI Stanford deployment with the GENI Spiral 1 switched Ethernet VLAN infrastructure assuming tunneling to Internet2. (12 months)
- f) Host an OpenFlow workshop at Stanford to educate university researchers and CIO organization about the technology and how it can enable networking research on their campuses -- outreach activity. (9-12 months)
- g) Collaborate with GENI O&M and Security teams on enterprise network topics. This work will be part of working group participation. (on going)
- h) Demonstrate use of OpenFlow switches with a GENI clearinghouse in the Phase 0 deployment. Present demonstration at a GEC meeting -- outreach activity. (9-12 months)

Year 1

- a) Implement Version 0 Aggregate Component manager for an OpenFlow network. (6 months)
- b) Deploy Phase 0 of Enterprise GENI comprising an OpenFlow network of few switches and wireless APs and a couple of computers in the Gates building of Stanford campus. (9 months)
 c) Start work with other parties to agree on the API/protocol between the GENI Clearing
- House and Aggregate Component Manager. (begin in 6 months and then ongoing)
- d) Start integrating interfaces to a GENI control framework clearinghouse in an aggregate component manager for an OpenFlow network. (begin in 9 months and then ongoing)
 e) Integrate Enterprise GENI Stanford deployment with the GENI Spiral 1 switched Ethernet VLAN infrastructure assuming tunneling to Internet2. (12 months)
- f) Host an OpenFlow workshop at Stanford to educate university researchers and CIO organization about the technology and how it can enable networking research on their campuses -- outreach activity. (9-12 months)
- g) Collaborate with GENI O&M and Security teams on enterprise network topics. This work will be part of working group participation. (on going)
- h) Demonstrate use of OpenFlow switches with a GENI clearinghouse in the Phase 0 deployment. Present demonstration at a GEC meeting -- outreach activity. (9-12 months