Adopt-A-GENI: Bringing Users into the GENI Community

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Objective

➢ Integrate GENI more tightly with Software Defined Networking (SDN)

  ➢ Leverage the SDN movement sweeping over the industry

  ➢ Capitalize on the SDN network infrastructure deployed on university campus networks (due to NSF CCNIE programs)

  ➢ Incorporate the SDNs into the GENI framework better and attract non-traditional users into the GENI community

Challenges

- GENI support for SDN netwokrs include
  - OpenFlow aggregates: Flowvisor controller and Flowvisor OpenFLow Aggregate Manager (FOAM)

- Users of GENI OpenFlow networks need to
  - deploy and manage their own controller
  - configure and program the controller to manage the OpenFlow switches
  - understand complicated forwarding rules

- The goal of this project is to make it easy for users to route and send their traffic across the OpenFLow switches included in their slice without knowledge of complicated OpenFlow rules

Approaches

➤ Develop an Adopt-A-GENI (AAG) controller to control the flow space associated with OpenFlow switches in a slice

➤ Develop software to allow users to specify user-defined routes that will be instantiated by the AAG controller

➤ Incorporate FOAM resource allocation functions into Jacks/Flack to include OpenFlow resources together with other resource from InstaGENI, ExoGENI in a user slice

➤ Integrate AAG controller with GENI Desktop to facilitate the interaction of users with the AAG controller, such as specifying user-defined routes

➤ Provide monitoring capability to verify correct connectivity and functioning of user-defined SDN-controlled path

Architecture

GENI Desktop

Jacks/Flack

GN

AAG Controller

FOAM

User Slice

Linux node

Linux node

FlowVisor

OF node

OF node