Scalable, Extensible and Safe Monitoring of GENI (S³ Monitor)

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http://illusion.hpl.hp.com/genis3monitor

Motivation
Provide monitoring information (especially network state information) to ProtoGENI system administrators and experimenters

Goals
Provide ProtoGENI system state in real-time
Obtain network (and may be node) state
Active and passive measurements
E2E or leverages network element information when available
Flexible and extensible
Easy to add new measurement tools to be developed
Configurable time scales (start time, frequency, number)
Share measurement info across applications/slices
Scalable, secure, and reliable

Challenges
Active measurement tools previously tested only in point-to-point configurations
Deployment in a large scale setting exposes several issues
Hard-coded port numbers leading to port conflicts
Need to be started at source and destination simultaneously
Large resource requirements leading to end-node crashes
Long running times leading to web server timeouts

Scalable Sensing Service (S³)

- Sensor pods
  - Measure system state from a node perspective
  - Web-service enabled collection of sensors

- Sensing Information manager
  - Controls pods and aggregates measurements
  - A portal to request and invoke measurements
  - Answer research queries

Year 1 Accomplishments
Integration with ProtoGENI API and mechanisms
S3Monitor platform v1.0 available for deployment
Sensor pod
Sensing Information manager
Support for on-demand and periodic measurements
Archiving and querying capabilities for measurement data

Year 2 Planned Work
Include measurement admission control
Extend deployment to PlanetLab and ORCA GENI clusters
Integrate S3Monitor data with GENI's I&M Measurement WG's data and meta-data formats
Enable and support experimenters for using S3 platform on GENI clusters

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