

PURDUE

U N I V E R S I T Y

Context



- Our research focus: Enabling performance-aware enterprise applications on the cloud, building systems adapting to cloud dynamics.
- Why GENI?
 - Experiments on real clouds in the wild – insightful, but not repeatable.
 - Reproduce critical issues seen on clouds, emulate cloud dynamics.
 - Highly programmable and user controllable experiments.
 - Multiple sites can be used to emulate multiple cloud data-centers.

Experiments

- A dynamic scheme adapting to cloud dynamics integrated with the Day Trader Application on GENI.
- Experiments done to study the adaptability of the system in multi data-center (Utah-Kentucky) with constant delay across one component pair.
- Dynamically controlling link characteristics with delay node on ProtoGENI is where we want to go.
- Studied the dynamic response behavior of the system in emulated multi-dc on Emulab , by subjecting it to a Step-Up input reference waveform.
- Future experiments aim at creating real cloud dynamics by controlling the loss rate and bandwidth across link with cross traffic.

Feedback

- GENI Tools: Flack, Omni, OnTimeMeasure being used.
- Delay node functionality addition to Flack very helpful.
- Progress in experiments with two ProtoGENI aggregates and delay nodes.
- Using Emulab to dynamically change delay, bandwidth or loss rate.
- Want to use dynamic event scheduling to change link characteristics in multi GENI aggregates.
- Immediate support from dev team on issues related to Flack , Rspec.

Feedback (contd.)

- Foresee potential need for increased node availability during critical days.
- Links with delay nodes sometimes don't ping or are down. Known bug with asymmetric routes and reverse path filtering.
- Occasionally no reason for links to be down. Have to swap out experiment and back in.
- Great support from dev team in debugging such issues.
- Need for maintaining documentation on known bugs.
- List of standard images supported on aggregates brought in Flack – very useful. Can be added in wiki.
- Very good documentation in the tutorials and wiki. Active support for queries in mailing lists.

Thank you