

Some GENI thoughts

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All opinions are my own



GENI's Vision Appears to be Separate Testbeds

- GENI appears to be a group of separate facilities:
- The *Emulab*-style component:
 - Centralized cluster
 - Interconnect is as critical as processing
 - Commercial equivalent:
EC2 with VLANs
- The *Planetlab*-style component:
 - Many distributed endpoints over commodity Internet
 - Diversity of locations is the greatest asset
 - Commercial equivalent:
Akamai

The Emulab Component: Federation Considered Dangerous

- For small experiments, federation doesn't help
 - It will fit in a single sub-testbed
- For large experiments, federation is ***dangerous***
 - Unless the experimental topology's bottlenecks match those in the federation's arrangement, the experiment ***can't be mapped***
- Focus on federation distracts from the proper structure:
All emulab-style components should be in a ***single, centralized facility***
 - Bandwidth bottlenecks can not be ***economically*** removed
 - Compare the price of 10 Gbps national links to the price of 10-Gig Ethernet cables
 - Latency bottlenecks ***can never be removed***

The PlanetLab Component: Needs *Many* More Endpoints

- Goal should be 2000+ end-points, worldwide, as close to the end-users as possible.
 - This requires that ISPs *want* to deploy Geni-PlanetNodes
- Develop an *application* which saves *everybody* money
 - P2P without caches is *very bad* for ISPs and customers
 - P2P *with caches* is *very good* for ISPs, customers, and content providers
- EG. A BitTorrent cache architecture
 - Troll for torrents
 - Connect only with *isp local* clients and trade cache data
 - Handle the DMCA complaints automatically
 - If the infrastructure is missing, applications still work unchanged
 - Calculate bandwidth savings on the nodes
 - A fraction of the saved bandwidth is now available for Geni-Planetlab style experiments