Global Environment for Network Innovations

The Global Environment for Network Innovations (GENI) is a project sponsored by the National Science Foundation to provide collaborative and exploratory environments for academia, industry, and the public to catalyze groundbreaking discoveries and innovation in global networks. GENI, a virtual laboratory for exploring future Internets at scale, creates major opportunities to understand, innovate, and transform global networks and their interactions with society. Dynamic and adaptive, GENI opens up new areas of research at the frontiers of network science and engineering, and increases the opportunity for significant social and economic impact. GENI:

- Supports at-scale experimentation on shared, heterogeneous, highly instrumented infrastructure
- Enables deep programmability throughout the network, promoting innovations in network science, security, technologies, services, and applications
- Provides collaborative and exploratory environments for academia, industry, and the public to catalyze groundbreaking discoveries and innovation

GENI Deployment Models

GENI racks are typically deployed in one of the following configurations, with size indicated by number of virtual machines (VMs).

<table>
<thead>
<tr>
<th>Kit</th>
<th>Size (VMs)</th>
<th>Description</th>
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<tbody>
<tr>
<td>Starter Kit</td>
<td>~20</td>
<td>A low-end, early solution</td>
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<tr>
<td>InstaGENI</td>
<td>~60</td>
<td>A mid-range-cost, expandable solution that can be deployed at a large number of organizations, delivering Internet cloud application support along with OpenFlow and VLAN network services that are normally deployed outside the campus firewall</td>
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<tr>
<td>ExoGENI</td>
<td>100–200 Note: Cisco UCS® supports 240 VMs.</td>
<td>A higher-cost, flexible virtual networking deployment including OpenFlow that also delivers a powerful platform for a multinode cloud application and is typically deployed as an integrated part of a university’s campus network</td>
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Cisco GENI Rack

Cisco has collaborated with RENCI, NetApp, and ePlus to build a GENI Rack based on Cisco® products, the RENCI ExoGENI software stack, a NetApp storage solution, and ePlus installation and support services. The Cisco GENI Rack brings a high-performance compute cluster with leading-edge network capabilities, including 100-Gbps OpenFlow-capable switches to the GENI community, enabling larger, more complex experiments while integrating transparently with existing campus data center infrastructure.

Cisco GENI Rack includes:

- **Software**: Proven GENI rack software stack provided by the RENCI ExoGENI project
- **Compute**: Cisco Unified Computing System™ (Cisco UCS) B-Series Blade Servers
- **Network**: Cisco Nexus® 3000 or 7000 Series Switches for the data network, Cisco Catalyst® Series Switches for the management network, and a Cisco ASA Adaptive Security Appliance
- **Storage**: Onboard Cisco UCS disks with the ability to integrate a NetApp FAS Series system to provide a data-center-class scalable storage option
- **Installation and Support**: Services offered by ePlus, a leading integrator of technology solutions and technology reseller

For more information on the Cisco GENI Rack solution, please contact your account team representative or email geni-racks@cisco.com.