

<p align="center"><b>Campus Operational Requirements for GENI projects/infrastructure (deployments outside isolated labs)</b></p>	<p><b>Rating</b>  <b>C=critical</b>  <b>show-</b>  <b>stopper</b>  <b>H=High</b>  <b>importance</b>  <b>M=Medium</b>  <b>L=Low</b></p>
Supportability	
Production warranty support for hardware and software (email, on-call, and spares support)	H
Ability to separate research and production users and networks, and to manage that separation with configuration and tools (not hardwired)	H
Uptime percentage consistent with existing commercial equipment (e.g. 99.999% up per node)	H
Minimal number of outages (differs from aggregate uptime percentage)	H
Configurable event logging (ability to collect and configure events from logs in related systems. Implies NTP usually)	
Web access to GENI calendar and tickets for scheduled/unscheduled outages, installation, maintenance	
Authenticated list of GENI contacts (e.g. for communicating emergency stop requests) for operational systems	
Ability to track GENI access to "registered" users (both on-campus and off-campus users)	H
Secure remote access for support (e.g. SSH key IP network access to console, OOB console access)	
Redundancy/Failover	
Can be monitored by existing campus tools (e.g. Nagios, SNMP, XML RPC)	
Ability to shut down a running GENI experiment's access to campus resources	H
Ability to detect resource exhaustion (e.g. memory use, bandwidth) or excess for GENI resources on campus	H
Security	
Complies with campus security policies (policies vary by campus)	C
Adequate logging and log file management to support operations security activities, including audits	
Uses approved Oses and particular patch levels of Oses specified for the campus (most campuses don't do this, but it is critical for those that do)	
Complies with data privacy policies (e.g. managing access to collected data that includes personally identifying information)	
Ability to shut down a running GENI experiment's access to campus resources	

Ability to track GENI access to "registered" users (both on-campus and off-campus users)	
<b>User Management</b>	
Ability for users to opt-in to GENI experiments and services	
Ability for IT managers to add/delete/ban users	
Ability for IT managers to opt site out of individual GENI experiments (for example for not complying with access rules)	
Services support large number of users on campus (thousands)	
Services retain large number of users (e.g. retained users/year)	
<b>Network Management</b>	
Ability for IT managers to limit GENI access to specific configurable networks, subnetworks, VLANs etc.	
Ability for IT managers to limit access for particular machines (e.g. by MAC address)	
Ability for IT managers to limit access for particular machines based on security access rules (e.g. with access rule applications)	
GENI Network performance tools (e.g. FrameNet/Internet2 GRNOC throughput tools)	
GENI Network interface statistics access (port up/down, drops, errors, etc.)	
GENI Network alert access (e.g. GRNOC AlertMon)	
Compatibility with Cisco, Juniper, wireless mesh, and/or optical switch equipment on campus	H
<b>Other</b>	
Minimum rack space usage	
Minimum power usage	
Efficient support for large bulk data moves (e.g. ESNET data transfers)	
Open source software (access to source code included) to support researchers	
Minimum cost to purchase and maintain	H
Scalable to entire campus	

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Collected from campuses in GENI Spiral 2. List includes only requirements provided by multiple campuses.