

GENI: Global Environment for Network Innovations

Despite its tremendous success, the Internet architecture is showing its age. Security is weak and the problems are worsening; availability continues to be a challenge; network management is complex and expensive; and mobile hosts are difficult to handle. Yet, researchers interested in designing new network architectures face a difficult quandary. New ideas are not likely to see significant adoption without evaluation of prototype systems under realistic conditions, and yet deploying a prototype in a production network is difficult without first demonstrating the value. The GENI initiative at the U.S. National Science Foundation aims to break this cycle by providing the networking research community with a controlled and realistic environment to evaluate new network architectures. This talk will provide an overview of GENI and its three main features---virtualization, programmability, and user opt-in---as well as the current thinking about the design of the various components.