Extending TIED to Federate GENI Facilities: A ProtoGENI Plug-in

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TIED

System for creating experimental environments using resources from many facilities
Provides a unified mechanism to:

- Access Facilities
- Allocate Resources
- Create Unified Environment

Extensible to new facilities via Plug-in Architecture: Now with ProtoGENI

Joining

Create a plug-in to carry out TIED functions
- Defined Interfaces
- Existing Code

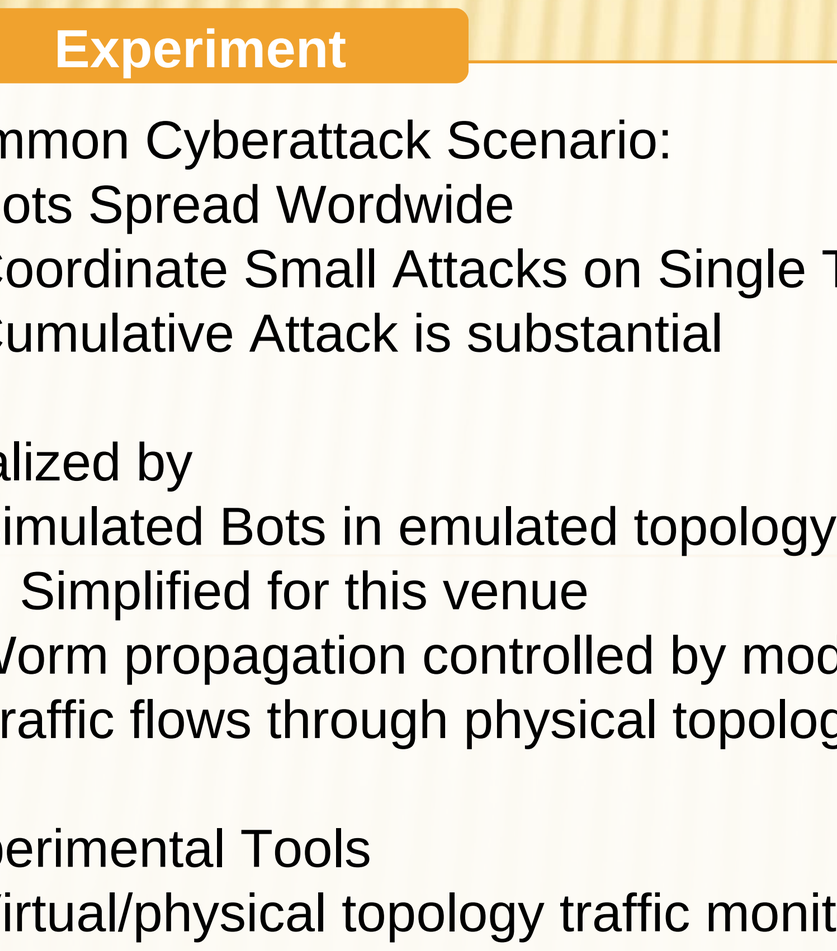
Specification documents at
- http://groups.geni.net/geni/wiki/TIED
- http://fedd.isi.deterlab/net

Benefits

Resource and tool sharing
- Export resources and tools to others
- Import resources and tools
- Connectivity services

New Experiment Models
- Adversarial/competitive

Architecture



Demonstration

Resources controlled w/ new ProtoGENI plug-in
Experiment comprised of resources from:
- 3 Experimental Facilities
  - 2 Emulabs
  - 1 ProtoGENI
- 2 Connectivity Providers
  - DRAGON Provisioned network
    - Most heavily used link is in DRAGON
  - Encrypted Internet

Shared Experimental Infrastructure
Powerful Interactive Experiment Control (SEER)

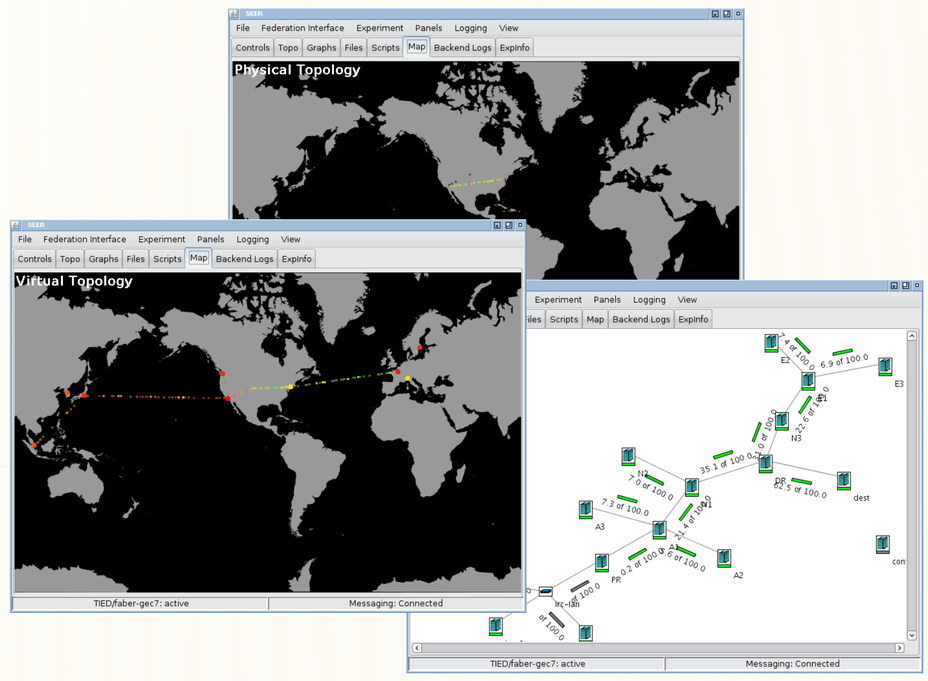
Experiment

Common Cyberattack Scenario:
- Bots Spread Wordwide
- Coordinate Small Attacks on Single Target
- Cumulative Attack is substantial

Realized by
- Simulated Bots in emulated topology
  - Simplified for this venue
- Worm propagation controlled by model
- Traffic flows through physical topology

Experimental Tools
- Virtual/physical topology traffic monitoring
- Real time experiment controls

Visualizations



Experimenters can view the experiment as:
- A Virtual WorldwideTopology
- A Physical Worldwide Topology
- A Logical Topology

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