

# Experiment Automation and Topology Generation Tools for the DETER Testbed

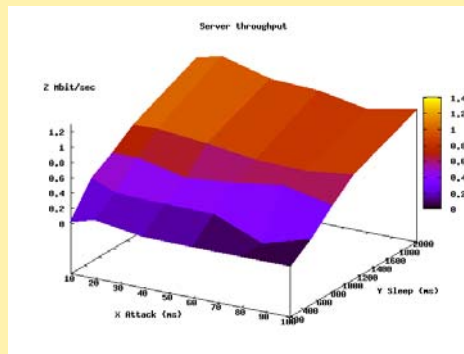
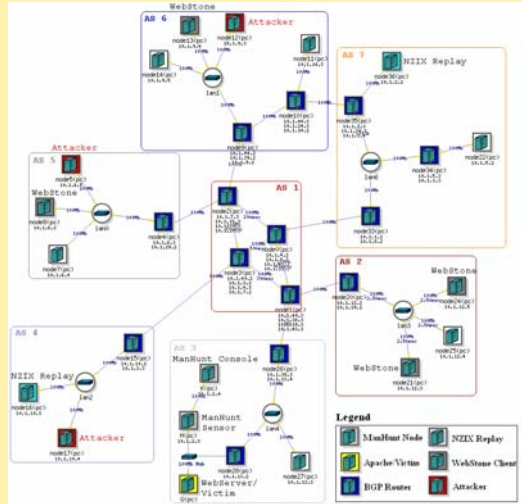


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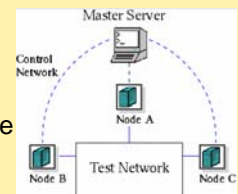
<http://www.cs.purdue.edu/~fahmy/software/emist/>

A key goal of the EMIST project is to conduct realistic experiments with Internet attacks and defenses. Large scale experiments on an emulation testbed require topology generation, extensive router configuration, and automated node control. Hence, it is important to create an infrastructure for fast experiment creation and automation, especially with BGP/OSPF routing.



Results of a TCP-targeted low-rate attack aimed at a Web server on a manually-configured 14-router network comprised of 7 Autonomous Systems (ASes).

A master server processes a series of time sequenced events, causing their execution on the test nodes. The system additionally supports a callback feature where events are triggered upon the completion of previously scheduled tasks.



The experiment above was manually configured. It takes almost a day to create a new medium sized experiment; hence, automation of the process is crucial.

Derive a topology from measured data.

Derive a topology from a topology generator.

- Many sources for AS-level topologies, e.g., RouteViews
- RocketFuel provides router-level topologies. For intra-domain links, it provides inferred OSPF weights
- However, no BGP policies; we infer them by L. Gao's inference algorithm

- Create a topology with GT-ITM topology generator
- Assign ASes to router nodes
- Configure all routers

