



Course Modules: Demo in Class or Assign as Homework



Education Modules

 geni portal	 geni desktop	 Web Server
GENI Setup Introduces the basics of GENI Portal, and Flack by walking through the process of creating a slice, designing a network, and adding resources to a slice.	Instrumentation Introduces the basics of GENI Desktop, walking through the process of instrumentizing a slice and opening graphs and SSH sessions for the nodes.	Web Server A hands-on experience installing and interacting with a web server. First, install and start a web server. Then, generate a simple HTML file and retrieve it on a client node.
 TCP Traffic	 Effect of RTT and Window Size on TCP Throughput	 Traffic Analysis
TCP Traffic Generate and analyze TCP flows. Iperf is used to create a flow and view the sawtooth behavior. Then, a second flow is introduced to show how TCP flows share a link.	Effect of RTT and Window Size on TCP Throughput Experiment with how RTT and TCP window size affect TCP throughput. Learn how to adjust the RTT of a TCP connection by adding delay, as well as how to adjust the window size of an iperf TCP flow.	Traffic Analysis Introduces key tools for network traffic analysis, featuring ping and topdump.
 OSPF	 TCP vs. UDP	 Traffic Generation
OSPF Use Traceroute to understand how OSPF dynamically changes routes in a network.	TCP vs. UDP Demonstrates differences in how TCP and UDP share link resources.	Traffic Generation Generate realistic traffic using Tmix.
 Exploring Queues		
Exploring Queues Explore the effects of queue size on packet loss and delay.		

Teach networking principles using our simple education modules.

Resources

- What you can expect as an instructor:
- A short video to demo in class
 - Step-by-step tutorial for you and your students to run the experiment(s)
 - A homework assignment for your students
 - A sample solution for you

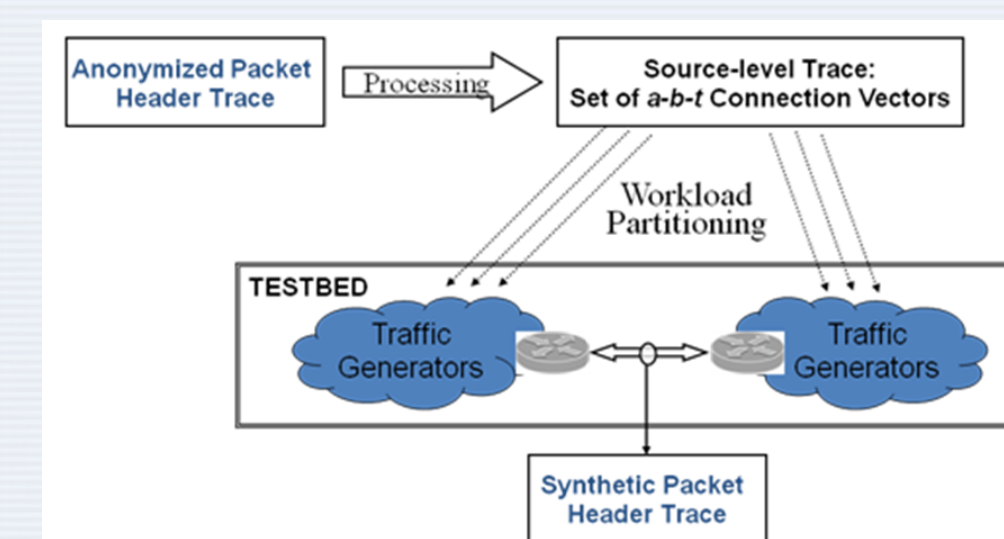
Exploring Queues

Give students the opportunity to:

- ✓ Experiment with router queues
- ✓ throttle traffic on a link
- ✓ adjust the router queue size
- ✓ understand the effect of queue size on packet loss and delay



Traffic Generation



- ✓ This module introduces students to the principles of traffic generation using Tmix
- ✓ Tmix is a tool for generating realistic network traffic from captured packet headers.

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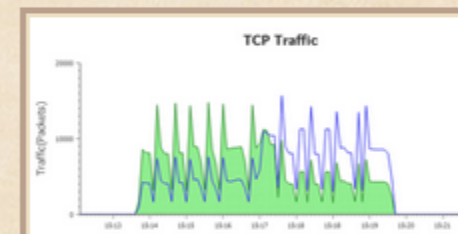
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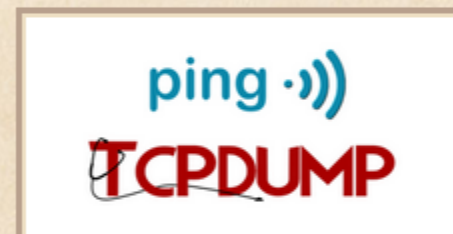
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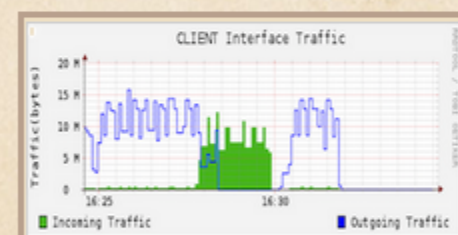
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TCP vs. UDP Demonstrates differences in how TCP and UDP share link resources.



Traffic Generation Generate realistic traffic using Tmxx.



Exploring Queues Explore the effects of queue size on packet loss and delay.