2023 Internet2 Technology Exchange

Science DMZs and Networking for All

Hands-on session 1: Configuring perfSONAR

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perfSONAR 5 Lab Library

- Lab experiments

  Lab 1: Introduction to Mininet

  Lab 2: Setting Administrative Information via perfSONAR Toolkit GUI

  Lab 3: Scheduling Regular Tests Using perfSONAR GUI

  Lab 4: Configuring Regular Tests Using pScheduler CLI Part I (throughput, latency, and traceroute)

  Lab 5: Configuring Regular Tests Using pScheduler CLI Part II (repeat, store, monitor, and cancel)

  Lab 6: Defining Regular Tests with a pSConfig Template

  Lab 7: Configuring pScheduler Limits

  Lab 8: Visualizing pScheduler Measurements using Grafana

  Lab 9: Observing the Impact of TCP Window Scaling and Small TCP Buffer Sizes

  Lab 10: Investigating the Effects of MTU Mismatch

Organization of the labs

Each lab starts with a section *Overview*
- ➢ Objectives
- ➢ Lab topology
- ➢ Lab settings: passwords, device names
- ➢ Roadmap: organization of the lab

Section 1
- ➢ Background information of the topic being covered (e.g., fundamentals of perfSONAR)
- ➢ Section 1 is optional (i.e., the reader can skip this section and move to lab directions)

Section 2… n
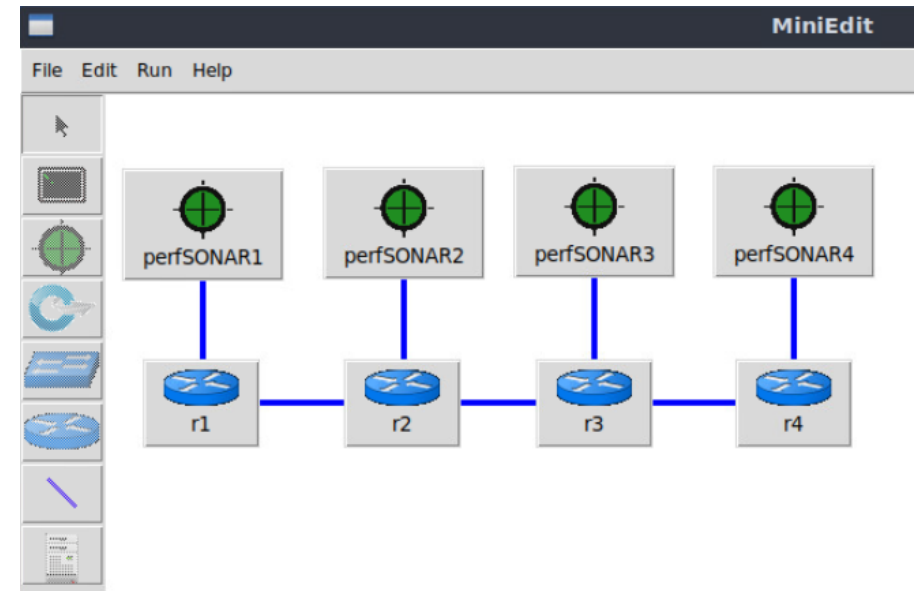- ➢ Step-by-step directions

Lab Description

- This lab shows how to use pScheduler to run latency, throughput, and trace tests.
- The lab shows how to use the default and specific tools.
- The user will interact with a perfSONAR node via the CLI
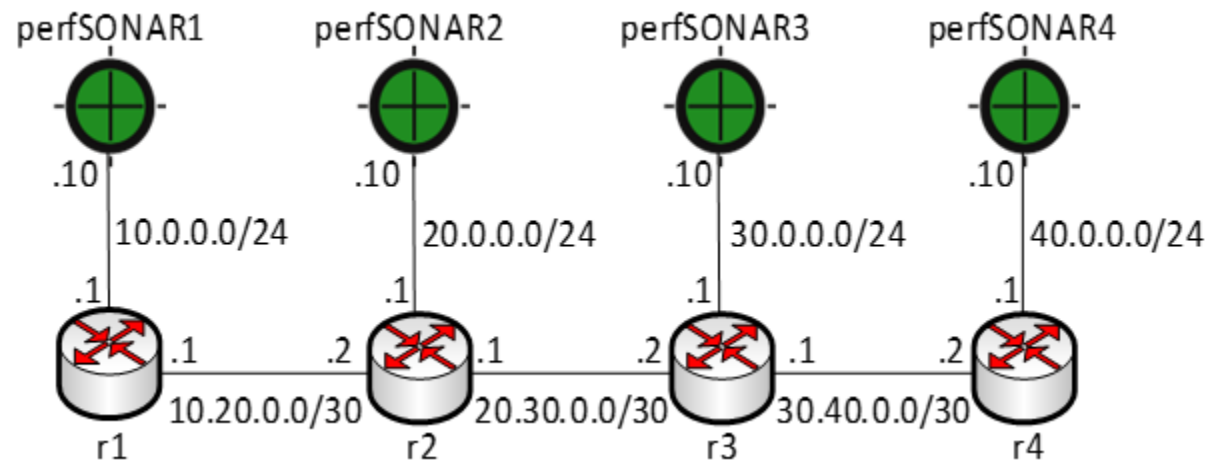
Lab scenario

Mininet topology

Lab Description

- The user can coordinate regular test between local and remote nodes for troubleshooting purposes.

```
pscheduler task throughput --source 10.0.0.10 --dest 20.0.0.10
```
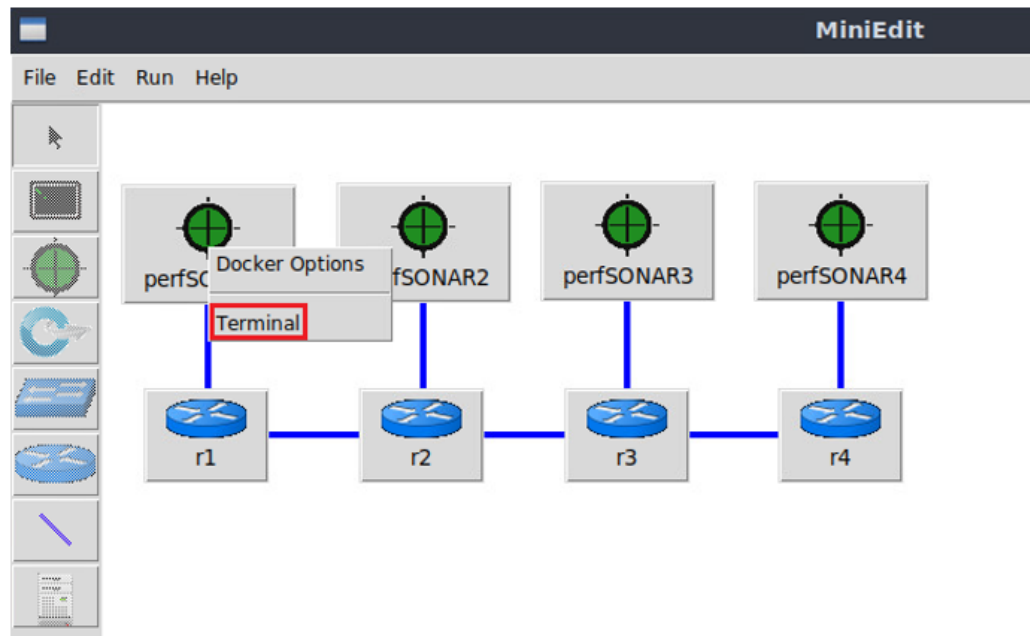

Accessing perfSONAR's CLI

Running a regular test with pScheduler

Accessing the Platform

- Please use the following link to access the platform:
  - https://netlab.cec.sc.edu/
- Login using your credentials
- **Username:** user1, user2, …., userN
- **Temporary Password:** nsf2023

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Accessing the Platform

- Click on New Lab Reservation
- Click on Schedule Lab for Myself
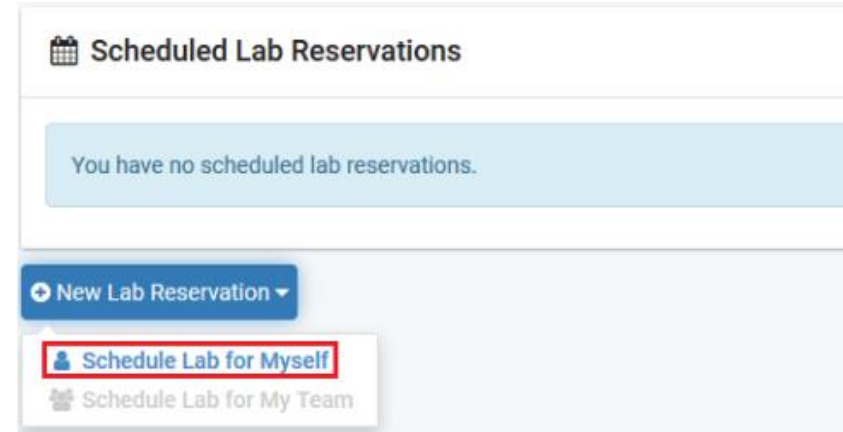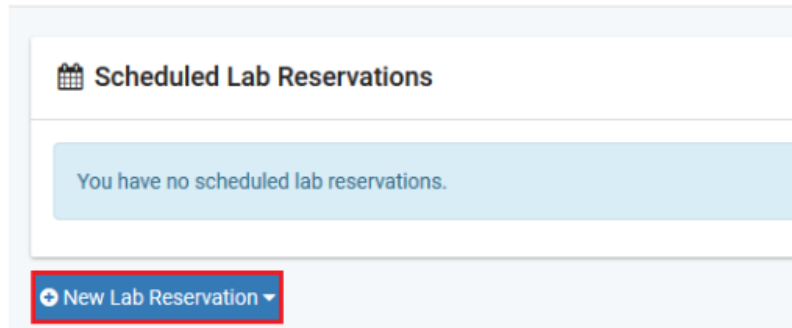
Accessing the Platform

- Select the course
- For this session, we will use "Introduction to perfSONAR with Mininet"

Accessing the Platform

- Select the Lab
- For this session, we will run:
  - Lab 3: Configuring Regular Tests Using pScheduler CLI Part I (throughput, latency, and traceroute)

🧪 This lab series focuses on perfSONAR using Mininet

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Lab Name	Action
Lab 1: Setting up Administrative Information via perfSONAR Toolkit GUI	▼
Lab 2: Scheduling Regular Tests Using perfSONAR GUI	▼
Lab 3: Configuring Regular Tests Using pScheduler CLI Part I (throughput, latency, and traceroute)	▼
Lab 4: Configuring Regular Tests Using pScheduler CLI Part II (repeat, store, monitor, and cancel)	▼
Lab 5: Defining Regular Tests with a pSConfig Template	▼
Lab 6: Configuring pScheduler Limits	▼
Lab 7: Visualizing pScheduler Measurements using Grafana	▼
Lab 8: Observing the Impact of TCP Window Scaling and Small TCP Buffer Sizes	▼
Lab 9: Investigating the Effects of MTU Mismatch	▼
Lab 10: Observing the Effects of Packet Reordering	▼

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Accessing the Platform

- Select the next available POD and allocate time

Accessing the Platform

We will use the NETLAB virtual platform:

- **URL:** https://netlab.cec.sc.edu/
- **Username:** user1, user2, …., userN
- **Temporary Password:** nsf2023