

# Hands-on Tutorial on Science DMZ

## Session 2: perfSONAR



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# Hands-on Tutorials on Science DMZ

- Webpage with PowerPoint presentations:

[http://ce.sc.edu/cyberinfra/workshop\\_2022\\_cc\\_pi.html](http://ce.sc.edu/cyberinfra/workshop_2022_cc_pi.html)

- Session 1 (1:00-1:50pm): to access labs for Session 1 (TCP, buffers,...), register here:

<https://portal.netdevgroup.com/learn/ca3pgf/enroll/>

- Session 2 (2:15-3:05): to access labs for Session 2 (perfSONAR), register here:

<https://portal.netdevgroup.com/learn/j39z9e/enroll/>

# Registering to the Netlab Portal

1. Click on the enrollment link: <https://portal.netdevgroup.com/learn/j39z9e/enroll/>
2. Register and check your email for the verification key
3. Finalize the registration by claiming your free access

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A password or passphrase of 15 characters minimum is required.

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Please verify your email address!

In order to use our services the email address of your NDG Online Portal account must be verified. Look for the verification email and find the 6 character Verification Key. Enter it below to continue.

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Verification Key

[Verify](#)

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- I agree to the above NDG Terms of Use.
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- My full name to identify my use of NDG services.
- My email address to communicate with me for support and updates about my course access.

I would like NDG to send me additional information about surveys, new course content, new labs or additional information. This is optional and I may unsubscribe at any time.

[Complete Enrollment](#)

# Accessing the Virtual Labs

1. If already registered, login to the portal: <https://portal.netdevgroup.com/account/login>
2. Click on the course “*Tutorial on Science DMZ- Introduction to perfSONAR*”
3. Select the lab you want to run (e.g., Lab 4)

Account Management not logged in

Register Log In

Email address

Password

Forgot your password?

Log In

Sign in with Google



Tutorial on Science DMZ - Introduction to perfSONAR

Labs

- Lab 01: Configuring Administrative Information Using perfSONAR Toolkit GUI
- Lab 02: perfSONAR Metrics and Tools
- Lab 03: Configuring Regular Tests Using perfSONAR Graphical User Interface
- Lab 04: Configuring Regular Tests Using pScheduler CLI Part I
- Lab 05: Configuring Regular Tests Using pScheduler CLI Part II
- Lab 06: Bandwidth-Delay Product and TCP Buffer Size
- Lab 07: Configuring Regular Tests Using a pSConfig Template
- Lab 08: perfSONAR Monitoring and Debugging Dashboard
- Lab 09: pSConfig Web Administrator
- Lab 10: Configuring pScheduler Limits

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# perfSONAR Lab Series

# Lab Series: perfSONAR

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Lab 1: Configuring Admin. Information Using perfSONAR Toolkit GUI

Lab 2: PerfSONAR Metrics and Tools

Lab 3: Configuring Regular Tests Using perfSONAR GUI

Lab 4: Configuring Regular Tests Using pScheduler CLI Part I

Lab 5: Configuring Regular Tests Using pScheduler CLI Part II

Lab 6: Bandwidth-delay Product and TCP Buffer Size

Lab 7: Configuring Regular Tests Using a pSConfig Template

Lab 8: perfSONAR Monitoring and Debugging Dashboard

Lab 9: pSConfig Web Administrator

Lab 10: Configuring pScheduler Limits

# Organization of the Lab Manuals

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Each lab starts with a section *Overview*

- Objectives
- Lab topology
- Lab settings: passwords, device names
- Roadmap: organization of the lab

## *Section 1*

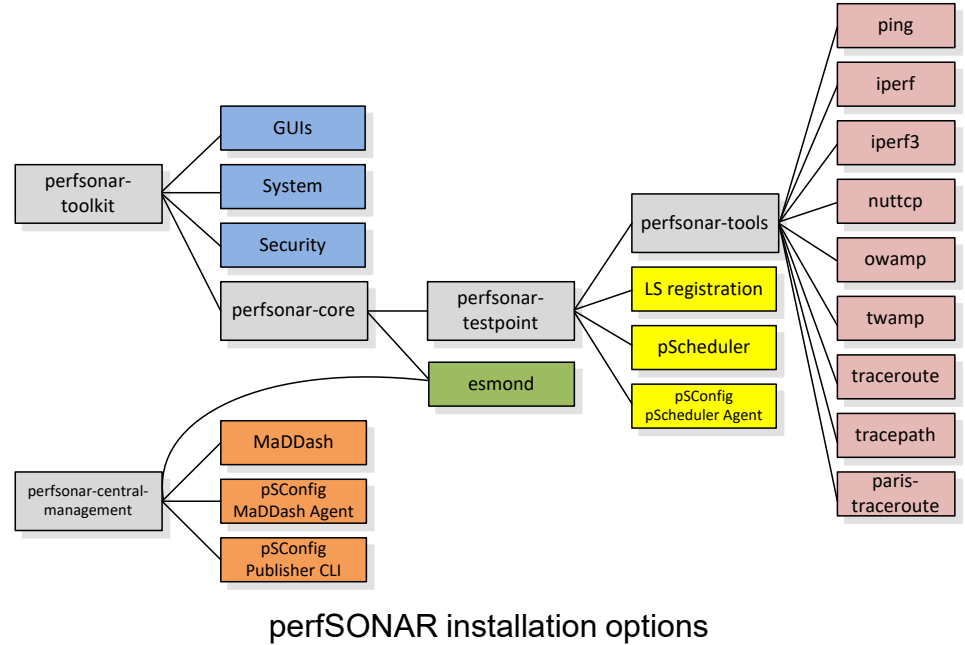
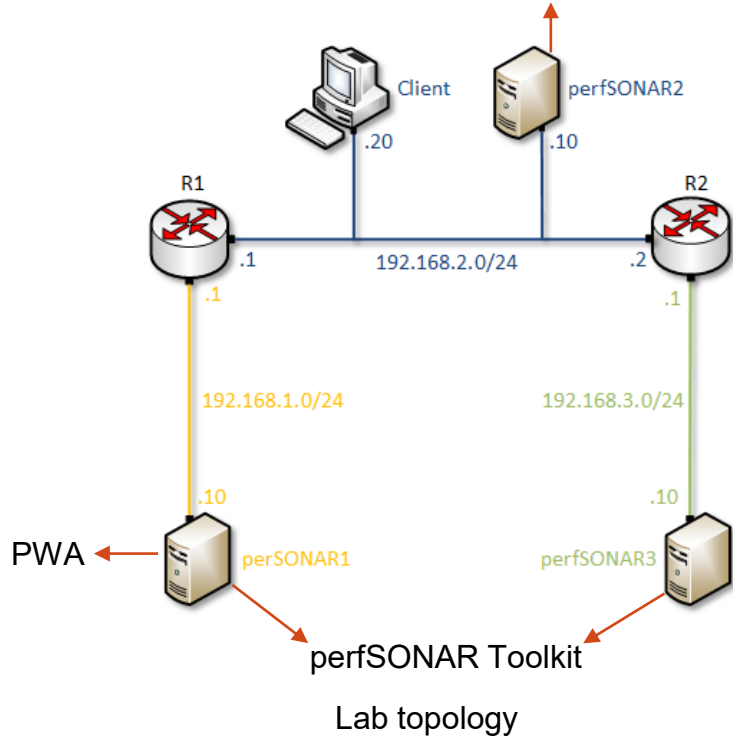
- Background information of the topic being covered (e.g., fundamentals of perfSONAR)
- Section 1 is optional (i.e., the reader can skip this section and move to lab directions)

## *Section 2... n*

- Step-by-step directions

# Pod Design

## perfSONAR Toolkit + Central Management

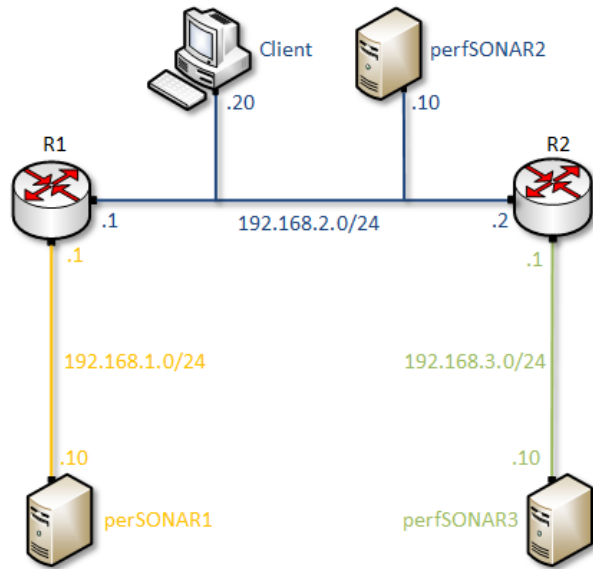




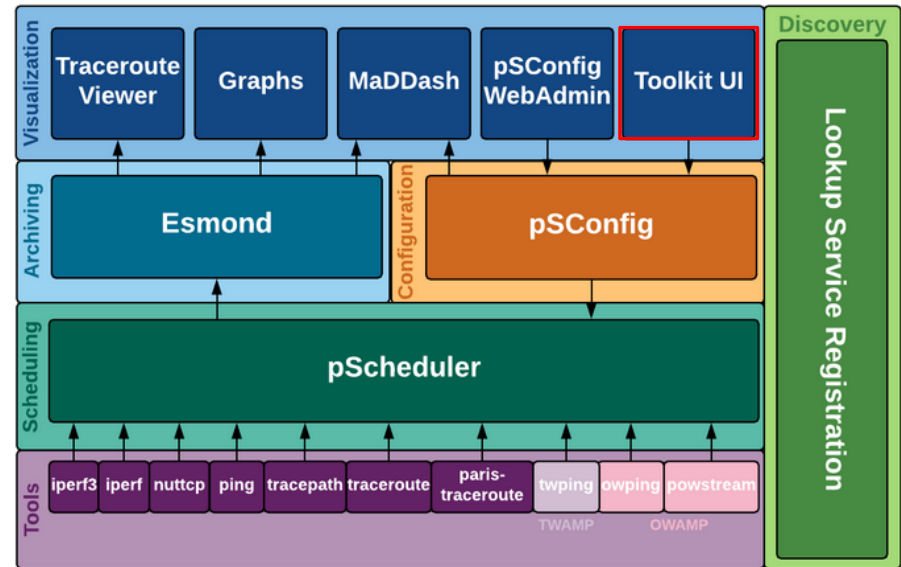
## **Lab 3: Configuring Regular Tests using perfSONAR GUI**

# perfSONAR Toolkit GUI

The user can configure administrative information and regular tests via perfSONAR Toolkit GUI



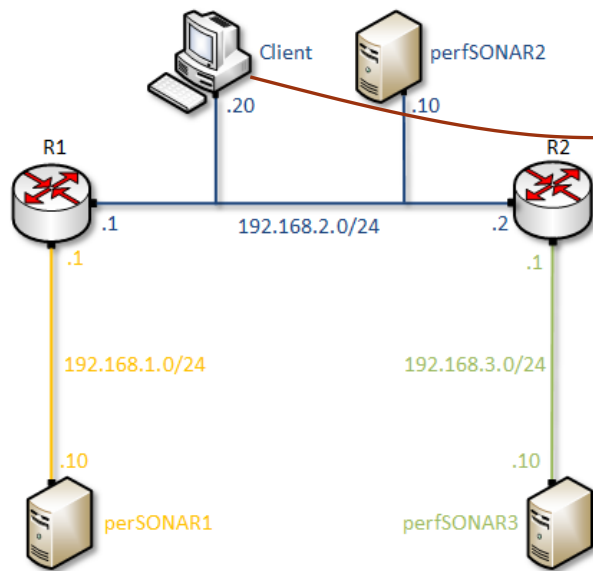
Lab topology



perfSONAR layers

# perfSONAR Toolkit GUI

The user can configure administrative information and regular tests via perfSONAR Toolkit GUI



Lab topology

perfSONAR Toolkit on perfSONAR-Toolkit

**perfSONAR-Toolkit**

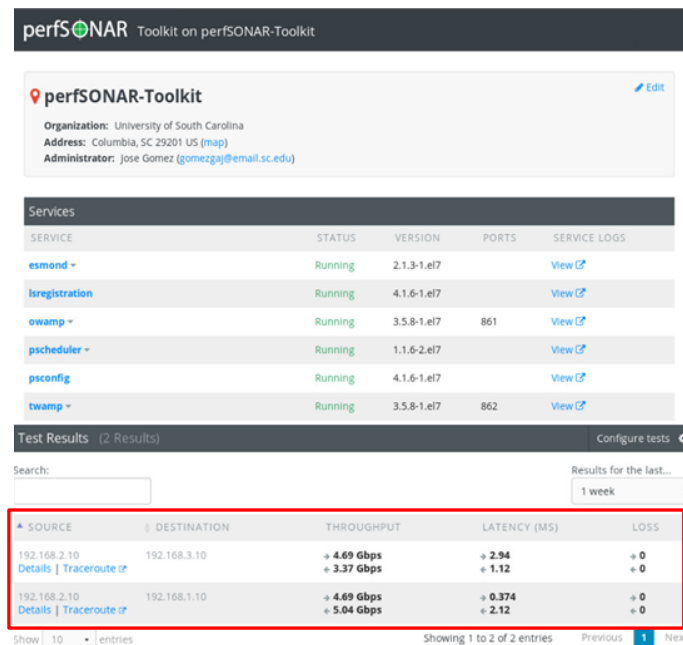
Organization: University of South Carolina  
Address: Columbia, SC 29201 US (map)  
Administrator: Jose Gomez (gomezgaj@email.sc.edu)

SERVICE	STATUS	VERSION	PORTS	SERVICE LOGS
esmond	Running	2.1.3-1.e17		<a href="#">View</a>
lsregistration	Running	4.1.6-1.e17		<a href="#">View</a>
owamp	Running	3.5.8-1.e17	861	<a href="#">View</a>
pscheduler	Running	1.1.6-2.e17		<a href="#">View</a>
psconfig	Running	4.1.6-1.e17		<a href="#">View</a>
twamp	Running	3.5.8-1.e17	862	<a href="#">View</a>

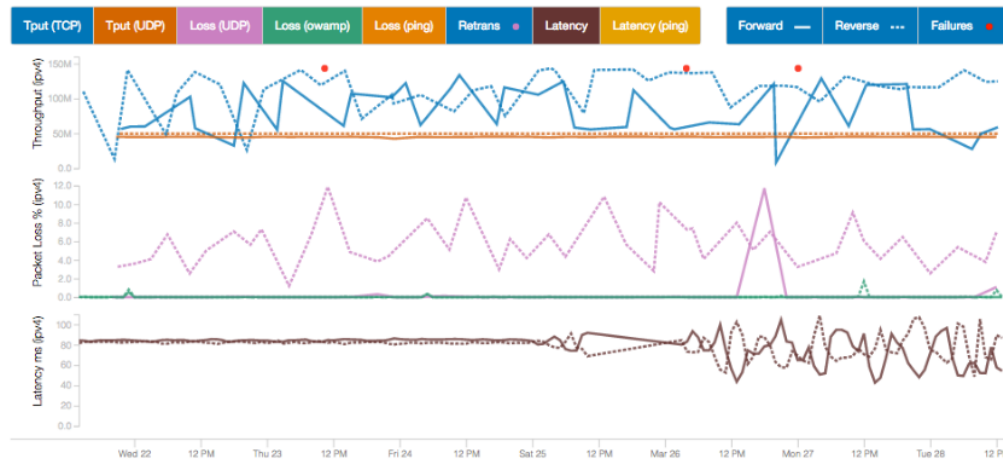
perfSONAR Toolkit GUI

# perfSONAR Toolkit GUI

Results are displayed in the perfSONAR Toolkit GUI (e.g., throughput, latency, packet loss, traceroute)



perfSONAR Toolkit GUI

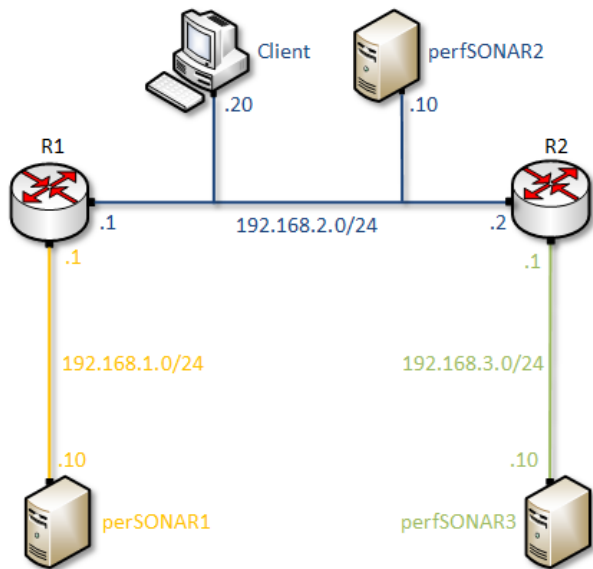


perfSONAR test results

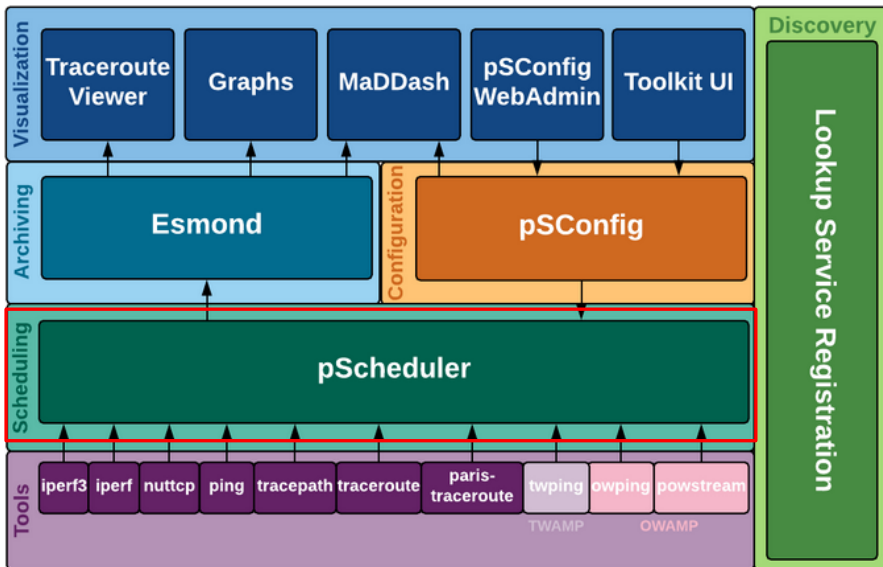
## **Lab 4: Configuring Regular Tests using pScheduler CLI**

# The pScheduler Command

The pScheduler coordinates, executes, and optionally stores network measurements (e.g., latency, packet loss rate, throughput)



Lab topology

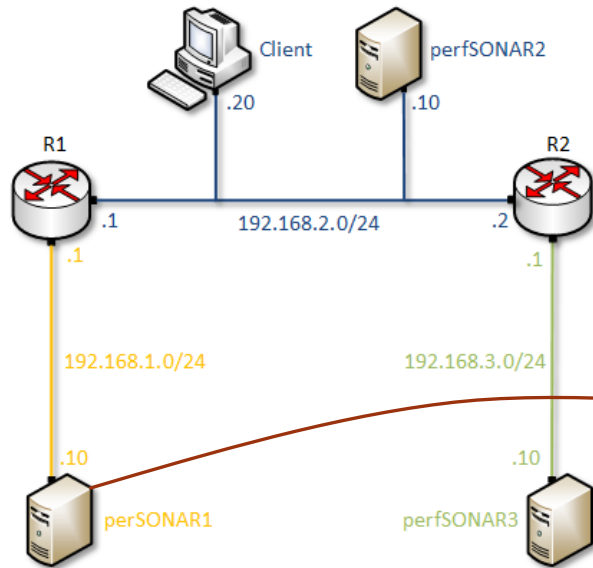


perfSONAR layers

# The pScheduler Command

The pScheduler command creates new tasks.

```
pscheduler task throughput --source 192.168.1.10 --dest 192.168.2.10
```



Lab topology

```
admin@perfsonar1 ~1$ pscheduler task throughput --source 192.168.1.10 --dest 192.168.2.10
Submitting task...
Task URL:
https://192.168.1.10/pscheduler/tasks/396795a3-abad-4fc8-ba64-66c304bc2247
Running with tool 'iperf3'
Fetching first run...

Next scheduled run:
https://192.168.1.10/pscheduler/tasks/396795a3-abad-4fc8-ba64-66c304bc2247/runs/1f09ecf8-3875
fa4-f9adc8cc4a17
Starts 2019-07-27T21:22:37Z (~7 seconds)
Ends 2019-07-27T21:22:56Z (~18 seconds)
Waiting for result...

* Stream ID 5
Interval      Throughput    Retransmits   Current Window
0.0 - 1.0    6.01 Gbps     156           800.74 KBytes
1.0 - 2.0    5.51 Gbps     283           773.23 KBytes
2.0 - 3.0    5.75 Gbps     211           495.22 KBytes
3.0 - 4.0    5.77 Gbps     0             773.23 KBytes
4.0 - 5.0    5.69 Gbps     22           722.55 KBytes
5.0 - 6.0    5.67 Gbps     0             896.31 KBytes
6.0 - 7.0    5.28 Gbps     69           600.92 KBytes
7.0 - 8.0    5.23 Gbps     136          868.80 KBytes
8.0 - 9.0    5.18 Gbps     178          786.26 KBytes
9.0 - 10.0   5.59 Gbps     27           991.88 KBytes

Summary
Interval      Throughput    Retransmits
0.0 - 10.0    5.56 Gbps     1082

No further runs scheduled.
admin@perfsonar1 ~1$
```

Throughput task