

NEAAR perfSONAR Training Workshops

Indiana University (IU) is jointly leading the Networks for European, American, and African, and Research (NEAAR) collaboration with GÉANT, the European Research and Education Network (REN), in a cooperative partnership with the African regional RENS: the UbuntuNet Alliance, the Arab States Research and Education Network (ASREN), and the West and Central African Research and Education Network (WACREN). As part of the NEAAR Collaboration, International Networks at Indiana University (IN@IU) is working to expand the number of perfSONAR deployments in Africa by offering hands on perfSONAR training workshops, procurement of low-cost testpoint nodes, and assistance in distributing and deploying them.

Why perfSONAR?

International science collaboration and data mobility rely heavily on network infrastructure to transfer data between sites, which involves multiple network administrative domains. Ensuring that things are operating well, on an end-to-end basis, is critical. While monitoring within a single domain is a common and accepted practice; cross-domain performance monitoring is difficult to do with traditional tools. Within the research and education (R&E) networking community, the perfSONAR toolkit has been broadly deployed to monitor and ensure network performance, with over 2,000 publicly accessible test points worldwide.

Training Workshops

Organizations investigating perfSONAR deployments are often limited by resources - especially for larger first-time deployments. In these cases, it is often advantageous for RENS to have access to low-cost, smaller perfSONAR nodes and to participate in in-depth, hands-on training workshops to learn how to effectively utilize the perfSONAR toolkit. The NEAAR partners work with RENS in Africa to help identify the need for perfSONAR deployments, to fund low-cost nodes, and to deliver relevant training to local network engineers. NEAAR-supported training workshops provide these engineers with an overview of the perfSONAR toolkit, a hands-on experience installing and using it, and an introduction to interpreting output and troubleshooting any observed network issues.

Interested in a perfSONAR workshop?

The NEAAR collaboration considers perfSONAR training requests on a first come, first served basis. If you are interested in requesting training, please review the following requirements for funding, scheduling, and planning a workshop:

NEAAR-supported training **WILL** provide assistance with:

- Procurement and shipping of equipment
- Trainer travel to local host location
- Trainer accommodations
- Access to online training materials and exercises

NEAAR-supported training **WILL NOT** provide assistance with:

- Travel or lodging for local or regional participants for workshops
- Venue costs (including room with keyboards/mice/monitors/network enough for each participant and trainer, a projector and screen for trainer use, and/or other on site resources)
- Meal costs for workshop participants

Required document submission timeline:

- Training Request questionnaire: Completed and submitted 6 months prior to potential workshop date
- Technical questionnaire: Completed 4 months before scheduled workshop date
- Logistics questionnaire: Completed 2 months before scheduled workshop date
- IP address space for all equipment: Available 1 month before scheduled workshop date
- Post-workshop results checklist: Results within 1 month of workshop completion

To formally request a workshop, please submit a completed Training Request questionnaire to:
EngageUs@iu.edu

Training Request Questionnaire

- What scope of training are you requesting? Introduction (2 days), Hands on (4 days), or something different?

Note:

- **2-day training is an in-depth overview of perfSONAR installation and use without gear deployment and/or extensive hands-on experience**
- **4-day training is a bare-metal to perfSONAR mesh deployment workshop which includes hands-on experience installing, configuring, and using perfSONAR including setup of a MeshConfig and measurement archive host.**

- Is your collaboration requesting NEAAR-sponsored equipment for this training, or do you have alternative means of procuring perfSONAR equipment?

- Are you requesting nodes? Can you provide an estimate of how many?

- Are you requesting a MeshConfig/Measurement Archive host?

- Is your collaboration already using perfSONAR or other monitoring tools in any manner?

- If so, what testing methodology and/or tools are already in place?

- How many people do you anticipate participating in the requested training?

Note:

- **Ideally, workshops will include between 7 and 20 participants.**

- What is your preferred date range for this training to take place?

Note:

- **We need a minimum of 6 months after the receipt of a request or 4 months after the completion of the technical questionnaire to properly plan, procure, and ship hardware.**
- Has your need for training been previously discussed with your regional REN and/or the African Training Initiative? (Note, this is not required, this is for internal administrative purposes only.)

- What is the current capacity of the network you are planning to measure in general terms? (100M, 1GE, 10GE, mix)

- Please provide a current network diagram for the network you would like to measure.

Note:

- **We will need as detailed a network diagram as you can provide including all transport devices to be included in the path of your transport network and any national, regional, and international connections in-place. This is necessary for both determining where to place devices as well as troubleshooting soft-failures discovered through testing later.**
- **A MeshConfig/Measurement Archive host will be required for the training AND for coordination of your perfSONAR Nodes after the training.**

Technical Questionnaire

Once your training request has been approved and a firm date for the workshop has been set, IN@IU trainers will need additional information in order to successfully prepare for the workshop. 4 months prior to the scheduled workshop, trainers will work with you and your collaboration to address the following questions:

1. What specific equipment (if any), and how many are you requesting as part of the training:
 - Small nodes (can measure up to a 1G network): _____
 - Rack-mounted nodes (can measure up to a 10 G network): _____
 - MeshConfig/Measurement Archive: _____

Note:

- **We are currently recommending the following equipment:**
 - **Small nodes:**
 - **Intel NUC5CPYH:** 1GE capable small node, used for larger deployments (10+) with low test frequency, 32GB 2.5" SSD/HDD
 - **Intel NUC7i3NBH/K:** 1GE capable small node, used for smaller deployments (<10), meets pS base Hardware Recommendations
 - **Rack mounted nodes:**
 - **SuperMicro:** 10GE capable, rack-mounted, half-depth model
 - **MeshCONfig/Archive host:**
 - **SuperMicro:** 10GE capable, rack-mounted, half-depth model, recommend 1TB HDD for storage

2) Please confirm how many nodes are being planned for or are involved in the initial setup. This should include both the requested nodes, listed above, as well as any nodes that you will be providing:

3) Where will the MeshConfig archive and/or Measurement Archive be located? This must be accessible to each of the testing nodes:

Note:

- **This appliance should be setup and available at least one month in advance of the workshop and tested from the location where the workshop will be held to ensure connectivity.**
 - Will this location be set prior to the training?
 - Will it be accessible from the location of training?
 - If not, will there be a temporary resource available on-site to use as an archive?
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4) Where will the devices be placed within your network (refer to your network diagrams) and to where will they be testing? (Regional, National, International?)

5) For throughput and latency test results a minimum distance of 7ms or greater is recommended. Are the placements you are considering above that threshold already?

6) Who is providing the IP-space for each device?

Note:

- **We request IP-space be in place at least one month prior to training.**

7) Who will be maintaining the devices after they are deployed??

Logistics

Many of the on-the-ground logistics for a training workshop are the responsibility of the local REN host. Finalizing the workshop logistics as soon as possible in the planning process is very important to the overall success of the workshop. IN@IU trainers require the following questions be addressed a minimum of two months prior to the scheduled training.

Note:

- **The venue will need to accommodate the desired number of participants, 2-3 trainers, and be outfitted with wired network, wifi, a keyboard/mouse/monitor for each attendee, a projector for the trainer laptop, white-board(s) for adhoc mapping and illustration.**

1) Please confirm the venue for the training:

- Provide address and contact info (with email and phone number):
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2) Please list the suggested nearby hotel/lodging facilities?

- If none are available, where will trainers be housed?

3) Will trainers have access to airport transport? (Is Uber/Lyft available?)

4) Will meals be provided onsite?

- If so, who will be funding/providing meals?
- If not, is food available for purchase at the site?

5) Please confirm the names and contact information of each workshop attendee

Note:

- **A separate attendee spreadsheet will be created for each workshop**

6) May the NEAAR Collaboration invite a small number of engineers from RENs outside of your immediate collaboration to attend the workshop?

7) Is there anything else our trainers need to know about this location/country/workshop?

Post-workshop Expectations

To maximize the value of a training workshop, the NEAAR collaborators have certain post-workshop expectations for workshop hosts and training participants. These include:

- Helping prepare and execute a post-workshop survey evaluating their experience and the quality of the workshop
- Ensuring that the perfSONAR nodes and mesh will be actively maintained after the training.
- Collaborating with IN@IU trainers to produce a formal summary of efforts and a press release.
- Engaging with NREN engineers in perfsonar-user lists.
- Continuing collaborative efforts between our organization and the host R&E organization.