

# LHCOPN - perfSONAR 20 Years

Shawn McKee, Marian Babik

Spring [LHCONE/LHCOPN \(#54\) Meeting](#), March 18, 2025

In consultation with the perfSONAR Team



# Outline

- We want to briefly cover perfSONAR and network monitoring for LHCOPN
  - In an interesting coincidence, **both perfSONAR and LHCOPN are celebrating 20 years!**
- This will be a brief summary but you can see more details in the Relevant URLs slides at the end or from the links in the slides.

It was very interesting to dig back into the history after 20 years! (*I did find that my emails prior to the end of 2005 are missing which was unfortunate.*)

# History of LHCOPN (LHCONE) Monitoring

The first “LHCOPN” meeting was a special GDB meeting held January 20/21, 2005 (see indico

<https://indico.cern.ch/event/420981/>

I gave a [presentation](#) (representing the LHCOPN monitoring sub-group I led) at the January 2006 meeting which proposed perfSONAR as a possible tool (among a list of other options) ->

## Future Directions and Related Activities

The system we are proposing for the LHC-OPN is based upon existing tools and capabilities as of the beginning of 2006. We fully anticipate that monitoring tools and technologies will evolve in response to user needs, new technologies and the feedback provided by existing, deployed monitoring systems. Some related projects of special interest:

**PerfSonar** – This project plans to deploy a monitoring infrastructure across Abilene (Internet2), ESnet, and GEANT. A standard set of measurement applications will regularly measure these backbones and store their results in the Global Grid Forum Network Measurement Working Group schema (see below). From the webpage about PerfSonar ([http://monstera.man.poznan.pl/jra1-wiki/index.php/PerfSONAR\\_About](http://monstera.man.poznan.pl/jra1-wiki/index.php/PerfSONAR_About))

*“The main goal of perfSONAR is to provide groups of users with the performance data they require. It is a multi-domain network performance measurement system that allows retrieval of monitoring information from multiple domains using a pre-defined format.”*

**EGEE JRA4/ EGEE-II SA1 Network Performance Monitoring** - This project has been working on an architecture and a series of prototype services intended to provide Grid operators and middleware with both end-to-end and edge-to-edge performance data. See <http://egee-jra4.web.cern.ch/EGEE-JRA4/> and a demo at <https://egee.epcc.ed.ac.uk:28443/npm-dt/>

**The Grid Operations Center** (<http://goc.grid-support.ac.uk/gridsite/monitoring/>) performs multiple tests on Grid resources across the world. Coordination with and accessibility for efforts like the GOC are important considerations for future use of LHC-OPN monitoring information.

**NMWG Schema** - The NMWG (Network Measurement Working Group) focuses on characteristics of interest to grid applications and works in collaboration with other standards groups such as the [IETF IPPM WG](#) and the [Internet2 End-to-End Performance Initiative](#). The NMWG will determine which of the network characteristics are relevant to Grid applications, and pursue standardization of the attributes required to describe these characteristics. One of the products of this group is an XML schema which intends to standardize network related measurements. See <http://stout.pc.cis.udel.edu/NMWG/> for details.

# History of LHCOPN Monitoring & perfSONAR

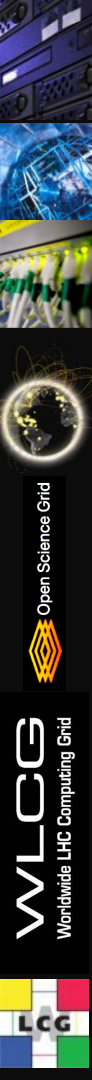
While LHCOPN was started in 2005, it really didn't get up and running for a while. Links had to be commissioned, configured and tested.

Of course, it was in production before LHC startup but many things were still not standardized or uniformly enabled at that point. There were numerous email threads about monitoring needs and options from 2005-2011.

LHCONE was formed in 2011 and described in [Eric Boyd's talk](#) at the February 2011 LYON LHCOPN meeting.

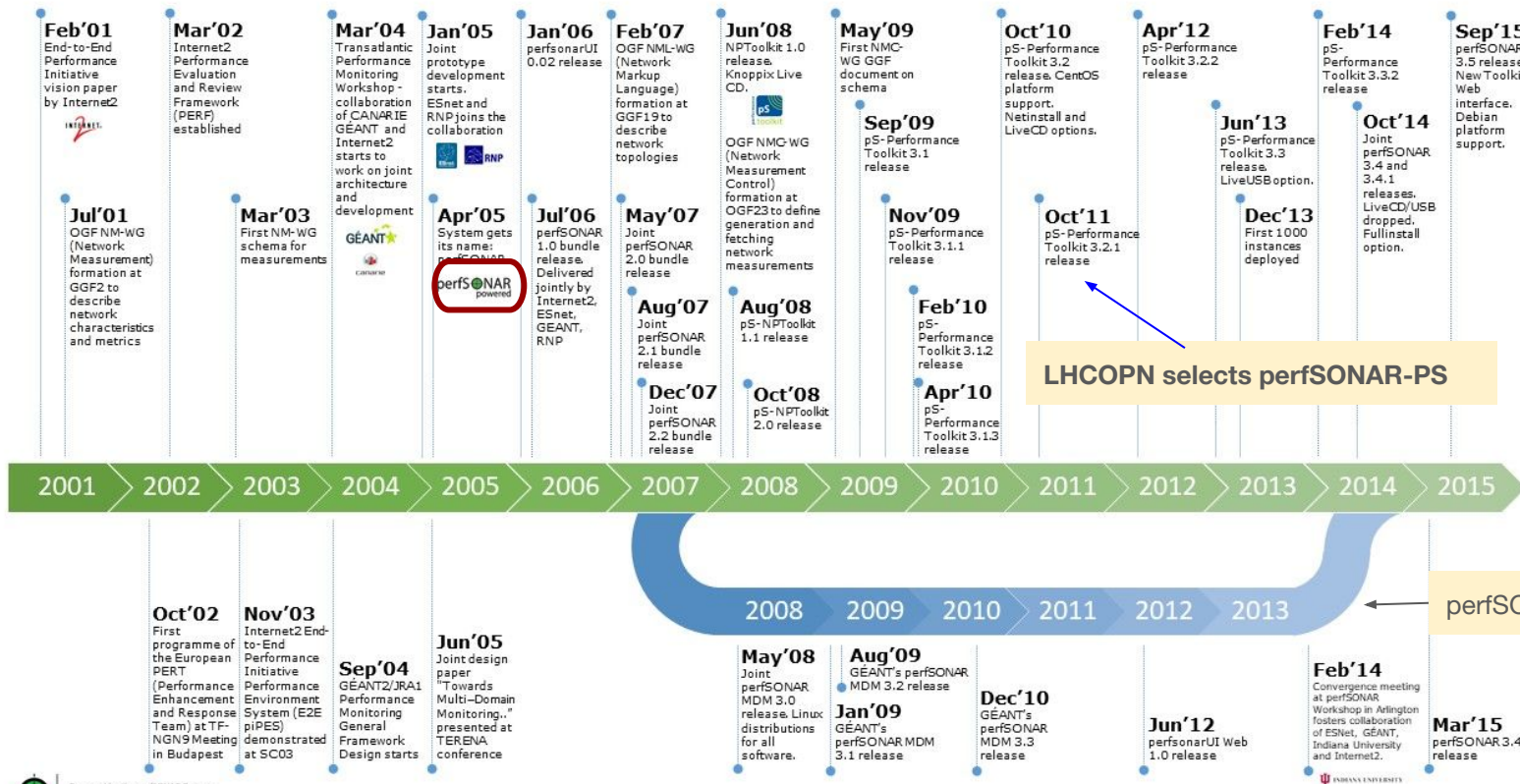
A decision to go with **perfSONAR-PS**, based upon USATLAS experience, was made in June 2011 LHCONE/LHCOPN meeting in Washington, DC. See [Jason Zurawski's presentation](#)

Note at that point there were **two perfSONAR** implementations (perfSONAR-PS and perfSONAR-MDM) as shown next



# A perfSONAR Timeline

## perfSONAR HISTORY TIMELINE 2001 - 2015



Prepared by the perfSONAR Project  
www.perfsonar.net

# URLs for More Information

In exploring the history, we came across some really interesting articles and presentations that provide context and some history.

- Andy Lake [presented on 20 years for perfSONAR](#) at TechX December 2024
- There is an [ESnet article](#) about the first 10 years of perfSONAR
- Regarding Analytics for perfSONAR data, [Ilija Vukotic presented in 2016](#)
- A [classic tutorial](#) was given by Jason Zurawski in 2013 at TIP2013

It is important to note that perfSONAR has **co-evolved** with LHCOPN/LHCONE, often in response to WLCG/HEP needs and requirements.

This collaboration was started and has endured for the complete lifetime of both LHCOPN and perfSONAR and has benefited both projects immensely.

[Here's to 20 more years :\)](#)



# Questions, Reminiscences ?