

# perfSONAR

## pScheduler

### *The new **perfSONAR Scheduler** in 4.0*

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And the rest of the perfSONAR Project <http://www.perfsonar.net>

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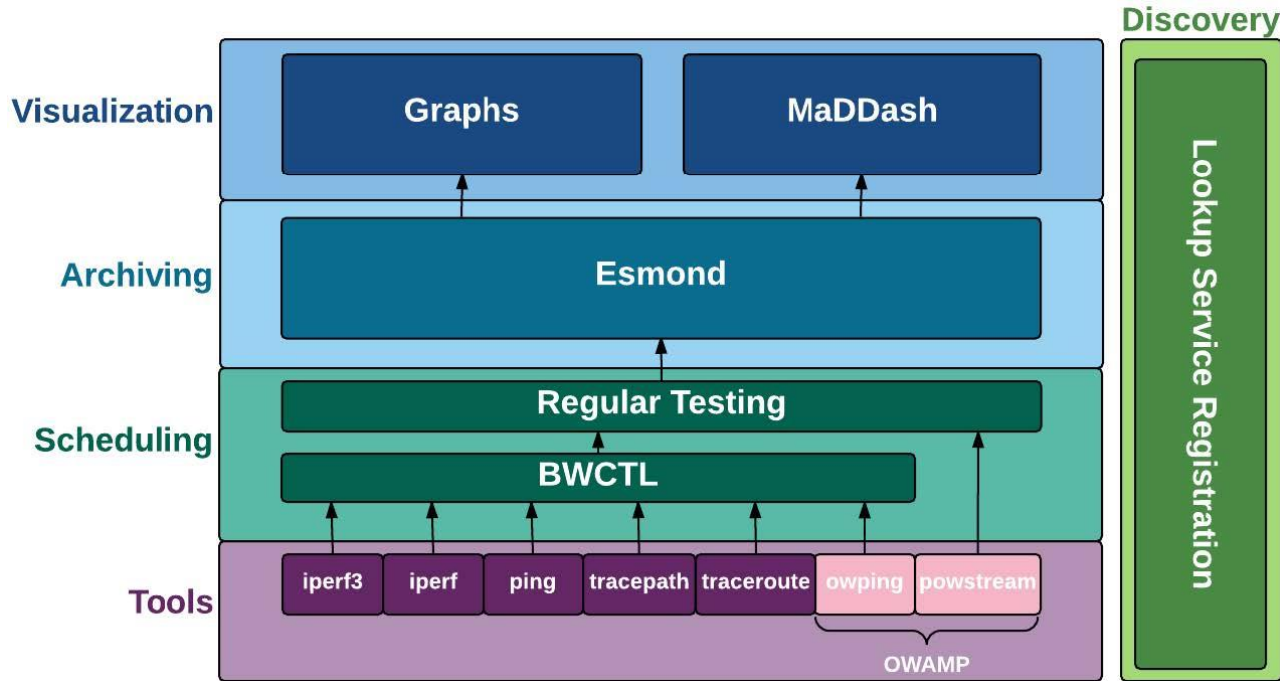
# What is perfSONAR?

- perfSONAR is a tool to:
  - Set (hopefully raise) network performance expectations
  - Find network problems (“soft failures”)
  - Help fix these problems
- All in multi-domain environments
  - 2032 public hosts (as of 2/17, up from 1700 last year) on many different networks
  - <http://stats.es.net/ServicesDirectory/> [takes a long time to load...]
- These problems are all harder when multiple networks are involved
  - Focus on Research and Education (R&E) Networking, 1Gbps links or higher
- perfSONAR provides a standard way to publish active and passive monitoring data
  - This data is interesting to network researchers as well as network operators
- See Brian Tierney’s talk from AIMS 2016!

# Current perfSONAR 3.5 components

- **Measurement tools**
  - iperf3, bwctl, owamp, traceroute, paris-traceroute, etc.
- **Measurement archive**
- Central test mesh management tools
- **Host management tools**
  - Configure tests, configure NTP, etc.
- **Data analysis tools**
  - Plot data from the archive
  - Dashboard tools
- **Lookup Service**

# perfSONAR 3.5



Picture from  
Andy Lake

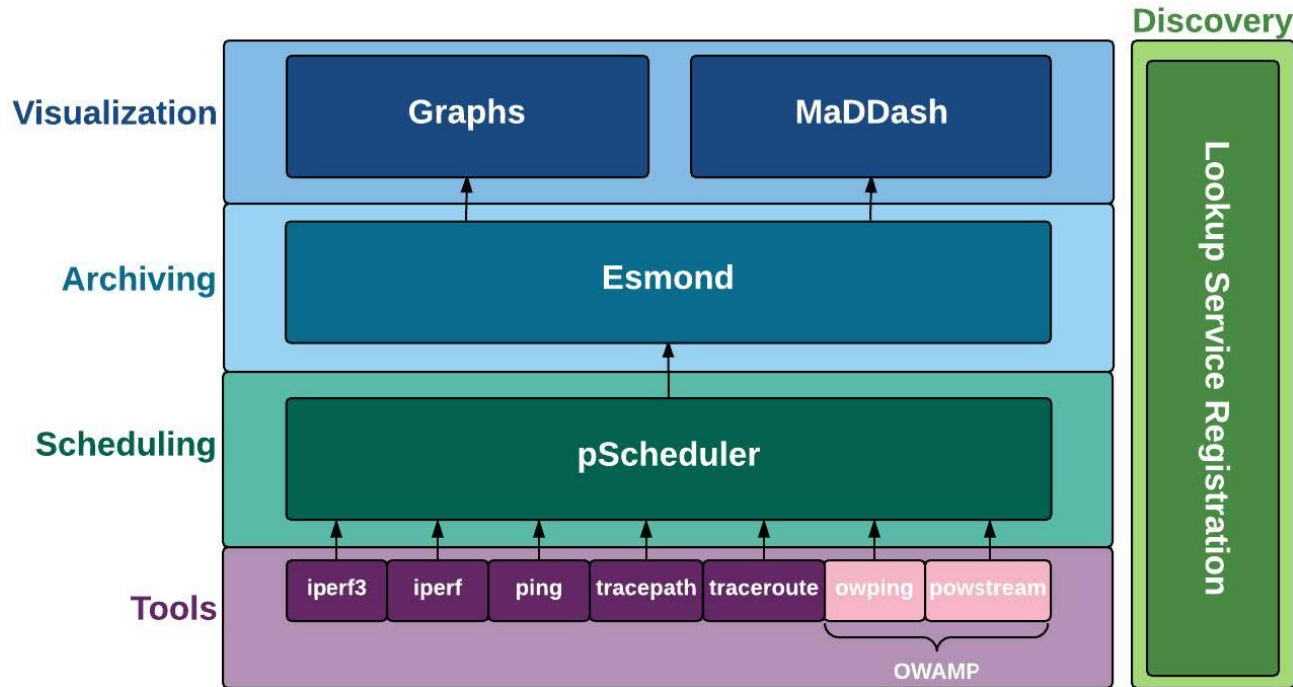
# New in perfSONAR 4.0

- New MeshConfig (G)UI – set up mesh of tests
- MaDDash 2.0 – displaying mesh of results
- Graphs – switched underlying graphing system
  - Dynamically see more information
- CentOS 7 support
- ...and pScheduler

# What is pScheduler?

- Software for scheduling, supervising and archiving measurements
- Complete replacement for the Bandwidth Test Controller (BWCTL) as a component of perfSONAR, and how owamp was used

# perfSONAR 4.0



Picture from  
Andy Lake

# Highlighted Improvements

- Visibility into prior, current and future activities
- Measurement diagnostics provided with results
- Full-featured, repeating testing for all measurement types baked into the core of the system
- More-powerful system for imposing policy-based limits on users
- Reliable archiving (with multiple archivers, including RabbitMQ)



# Major Improvement: Extensibility

- Plug-in system allows integration of new...
  - Tests *Things to measure*
  - Tools *Things to do the measurements*
  - Archivers *Ways to dispose of results*
- Well-documented API
- Brings new applications into the perfSONAR fold
- Core development team doesn't need to be involved other than in an advisory role
- Opportunity for researchers

# Technical Improvements

- Considerably-simplified code base designed for reliability and maintainability.
- REST API to make software-based interfacing to perfSONAR easier (request, cancel, view...)
- Standardized, documented data formats based on JavaScript Object Notation (JSON)

# Progress

- Implementation began November, 2015.
- RC3 imminent.
- General availability about one month after.

# perfSONAR for Network Researchers

- New ability to add tests to platform; new ways to get data from platform
- Active measurement interesting for network researchers
  - Traceroute data automatically collected along with throughput/latency results
  - TCP retransmits as measured by iperf3
- Data easy to download for analysis [again, with 4.0 Esmond is not the only archiver, but today...]
  - esmond-ps-get-bulk
    - Output CSV or JSON
    - See: [https://pypi.python.org/pypi/esmond\\_client](https://pypi.python.org/pypi/esmond_client)
- Additional Information at: [will be updated after 4.0 GA]
  - [http://docs.perfsonar.net/client\\_apis.html](http://docs.perfsonar.net/client_apis.html)

# Closing Thoughts

- pScheduler represents a significant change.
  - Documentation in state of flux before general release
  - We expect there will be some teething pain.
  - We believe the long-term benefits will be worth it.
- The development team welcomes your ideas and feedback.

perfs-SONAR

## Email Lists and Reference Materials



# Mailing Lists...

- Announcement Lists:
  - <https://mail.internet2.edu/wws/subrequest/perfsonar-announce>
- Users List (developers also monitor):
  - <https://mail.internet2.edu/wws/subrequest/perfsonar-users>

# More Descriptive Information

- perfSonar 4.0 feature tour talk by Andy Lake:
  - <http://meetings.internet2.edu/2016-technology-exchange/detail/10004491/> (includes video)
- Introducing pScheduler talk by Mark Feit:
  - <http://meetings.internet2.edu/2016-technology-exchange/detail/10004321/> (also includes video)



# Useful URLs

- <https://github.com/perfsonar/pscheduler>
  - <https://github.com/perfsonar/pscheduler/wiki>
- <http://docs.perfsonar.net/> [3.5 as of 3/1/2017; 4.0 at GA]
- <http://www.perfsonar.net/>
- <http://fasterdata.es.net/>
  - <http://fasterdata.es.net/performance-testing/network-troubleshooting-tools/>
- <https://github.com/perfsonar>
  - <https://github.com/perfsonar/project/wiki>