



perfSONAR 5.0

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WP6 T3

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Public (PU)

perfSONAR

perf5.0NAR

Released on 17th April 2023

perfSONAR is developed by a partnership of



ESnet



A new version, quite some changes

- What's in the release?
- Why upgrade to perfSONAR 5.0?
- What to check after your 5.0 upgrade?
- What other information do you need to know?
- What is coming after 5.0?



NEW

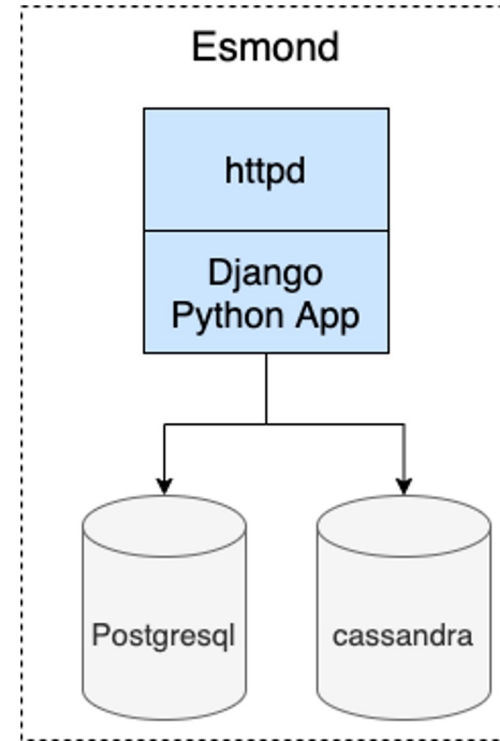


The path to perfSONAR 5.0

- perfSONAR 4.0 was 6 years ago...exactly (April 17, 2017)
- perfSONAR 5.0 Beta first released on May 31, 2022
- The largest change is the replacement of the default archive where measurements are stored

The Old: Esmond

- Default archive that most users run
- Django app with custom REST API
- Use two backend databases
 - PostgreSQL
 - Cassandra



Why replace esmond?

- Many good open source options for time-series storage
 - Rich query languages
 - Integration with off-the-shelf visualization platforms
 - Better support for backups, scaling, etc
 - Cloud vs On-Prem Deployments
- Stability
 - Cassandra one of the main source of issues on user list
- Maintainability
 - Less custom code
 - Many old libraries that need large rewrites to update
- Community successes from which we can learn
 - WLCG, NetSage, Stardust, others



The New: OpenSearch



NEW



- Derivative of Elasticsearch with friendlier licensing
- Default perfSONAR bundles now rely on OpenSearch
- We will maintain compatibility with Elasticsearch for those with existing installations

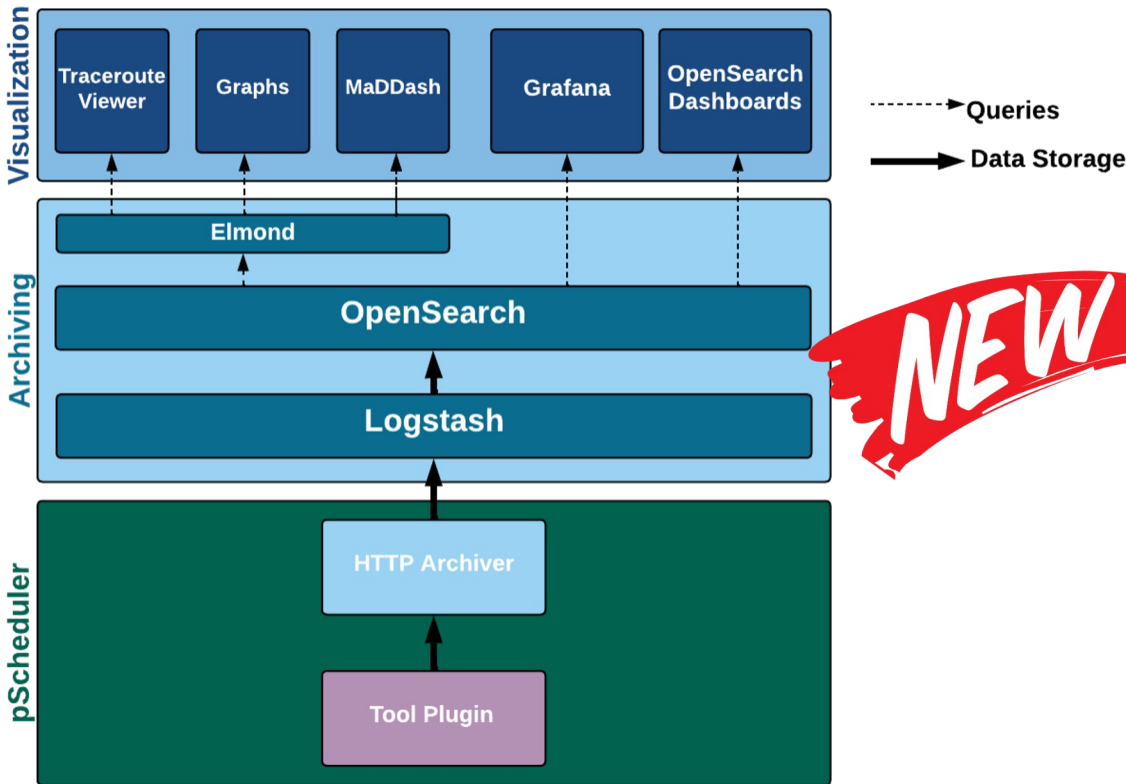


The New: How it fits together

Elmond: Backward compatibility interface for queries

OpenSearch: Stores the data

Logstash: Adds additional metadata and formats for storage



NEW



What are the benefits of upgrading?

- OpenSearch enables some **new capabilities**
 - You can now integrate perfSONAR data directly in visualisation tools like Grafana. Try our MaDDash-like plugin.
 - New API options including a SQL interface for querying data
 - Foundation for many new features in future releases like better viz, alarming and more
- **Ubuntu 20** support! (More on other OSes later)
- **Convenience** features
 - configure-archives option now enabled by default in pSConfig
 - Host info JSON service now available on testpoint - if you are in WLCG dashboards this makes the testpoint a viable option
- **Toolkit UI** Improvements
 - pScheduler Plot command integrated in UI
 - Minor adjustments such as a logout button and more





What are the benefits of upgrading (continued)?

- New pScheduler Plug-ins
 - **Tests:**
 - MTU (mtu)
 - pScheduler Response Time (psresponse)
 - WiFi BSSID Scan (wifibssid)
 - 802.1x Authentication (dot1x)
 - DHCP Response Time (dhcp)
 - **Tools:**
 - halfping - tests latency by halving the return value of the round-trip time as determined by ping.
 - **Archives:**
 - postgresql - Inserts results into a column in a table
 - tcp - Open a connection to a TCP port, send result, disconnect
 - udp - Sends results in datagrams (those that will fit in them)



And what can I do with all that?

- Grafana dashboard example
- See our cookbook at https://docs.perfsonar.net/grafana_cookbook.html





Configuration

Organization: Main Org.

Data sources

Users

Teams

Plugins

Preferences

API keys

Service accounts

Search

OpenSearch

Clear

Type

All

State

All

Installed

Sort

By name (A-Z)

View



OpenSearch



By Grafana Labs

Signed



Plugins / OpenSearch

Version: 2.2.0 | From: Grafana Labs | Dependencies: Grafana >=9.0.0 | Signature: Signed (Level: Grafana Labs, Signed by: Grafana Labs)

Uninstall | **Create a OpenSearch data source** ← **Click Here**

Overview

OpenSearch Grafana Data Source

With the OpenSearch Grafana data source plugin, you can run many types of simple or complex OpenSearch queries to visualize logs or metrics stored in OpenSearch. You can also annotate your graphs with log events stored in OpenSearch. The OpenSearch Grafana data source plugin uses [Piped Processing Language \(PPL\)](#) and also supports AWS Sigv4 authentication for Amazon OpenSearch Service.

Adding the data source

1. Install the data source by following the instructions in the Installation tab of this plugin's listing page.
2. Open the side menu by clicking the Grafana icon in the top header.
3. In the side menu under the `Dashboards` link you should find a link named `Data Sources`.
4. Click the `+ Add data source` button in the top header.
5. Select `OpenSearch` from the `Type` dropdown.

Note: If you're not seeing the `Data Sources` link in your side menu it means that you do not have the `Admin` role for the current organization.


Name	Description
Name	The data source name. This is how you refer to the data source in panels and queries.
Default	Default data source means that it will be pre-selected for new panels.
Url	The HTTP protocol, IP, and port of your OpenSearch server. Server (default) = URL needs to be accessible from the Grafana backend/server, Browser = URL needs to be accessible from the browser.
Access	Access mode controls how requests to the data source will be handled. Server should be the preferred way if nothing else stated.

Configuration
Organization: Main Org.

Data sources | Users | Teams | **Plugins** | Preferences | API keys | Service accounts

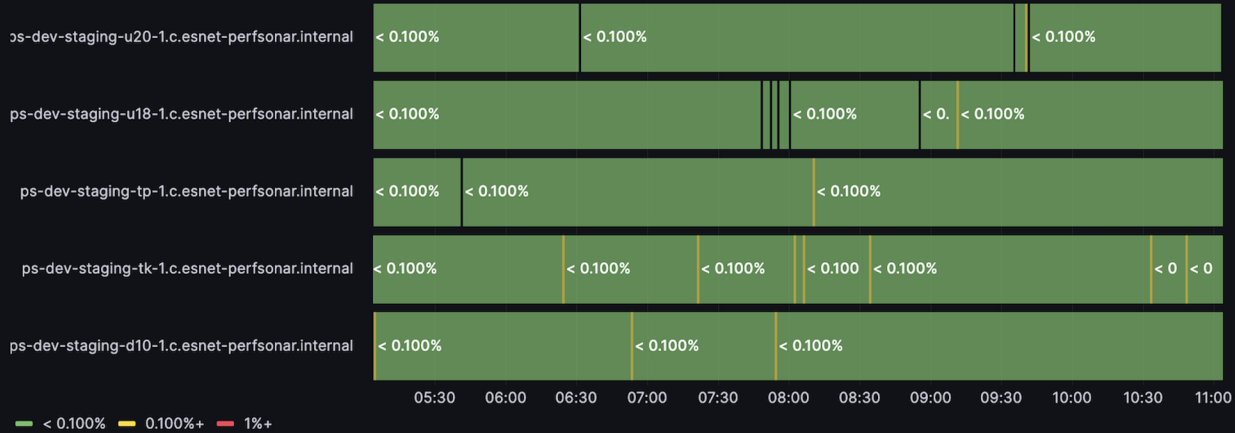
Search: Clear

Type: All | State: All | Installed | Sort: By name (A-Z) | View: [Grid] [List]

**ESNET Matrix Panel**
By esnet
Signed

perfSONAR

Packet Loss Over Time by Sender



Maximum Packet Loss

Highest Average Packet Loss by Sen...

Highest Average Packet Loss by Rec...

Sender Host	Max Packet Los	Receiver Host	Max Packet Los
ps-dev-staging-...	0.167	ps-dev-staging-t...	0.167
ps-dev-staging-t...	0.167	ps-dev-staging-t...	0.167

Dashboards / Import dashboard

Import dashboard from file or Grafana.com


Upload dashboard JSON file

Drag and drop here or click to browse

Accepted file types: .json, .txt

Import via grafana.com

Load

Import via panel json

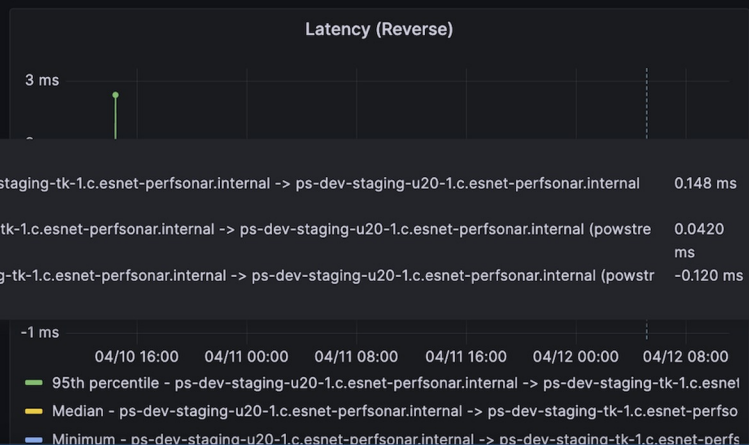
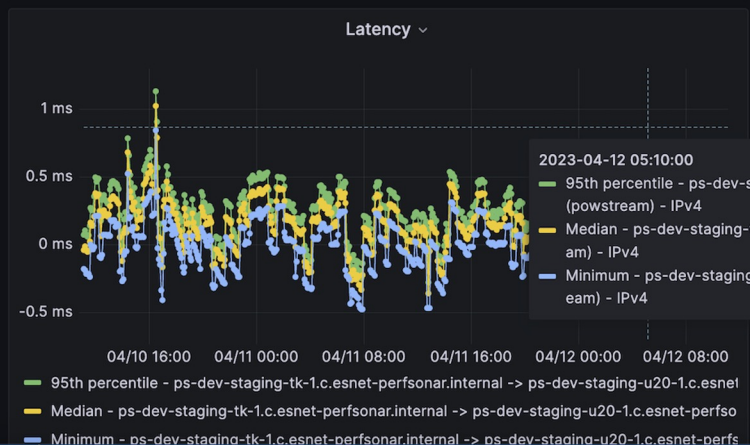
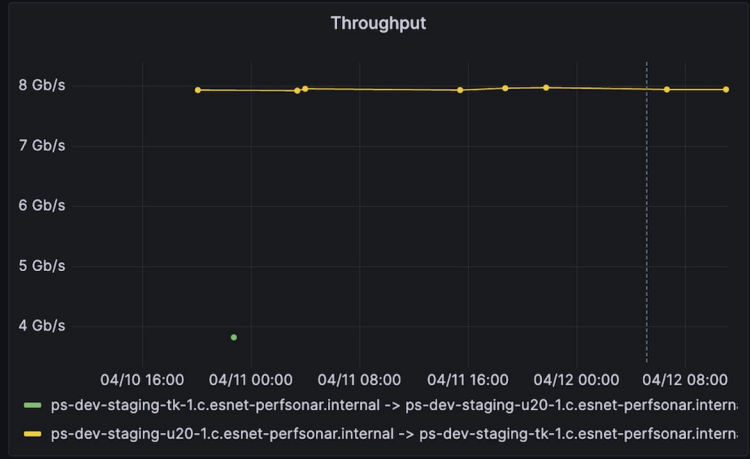
```
{
  "field": "meta.ip_version",
  "id": "6",
  "settings": {
    "min_doc_count": "1",
    "order": "desc",
    "orderBy": "_term",
    "size": "0"
  },
  "type": "terms"
}
```

← Copy file contents here

Load

Cancel

Source ps-dev-staging-tk-1.c.esnet-perfsonar.internal Destination ps-dev-staging-u20-1.c.esnet-perfsonar.internal Filters +



2023-04-12 05:10:00




95th percentile - ps-dev-staging-tk-1.c.esnet-perfsonar.internal -> ps-dev-staging-u20-1.c.esnet-perfsonar.intern (powstream) - IPv4	0.148 ms
Median - ps-dev-staging-tk-1.c.esnet-perfsonar.internal -> ps-dev-staging-u20-1.c.esnet-perfsonar.intern (powstream) - IPv4	0.0420 ms
Minimum - ps-dev-staging-tk-1.c.esnet-perfsonar.internal -> ps-dev-staging-u20-1.c.esnet-perfsonar.intern (powstream) - IPv4	-0.120 ms

And what can I do with all that?

- Grafana dashboard example
- See our cookbook at https://docs.perfsonar.net/grafana_cookbook.html



What to check after 5.0 upgrade?

-  Are my tests still running?
 - Look at your toolkit pages
 - Look at your pscheduler schedule
-  Do I see measurement results?
 - Look at your toolkit pages
 - Look at your MaDDash instance
-  Is my host still registered with the Lookup Service?
 - Search for it on <https://stats.perfsonar.net>



Other changes

- pScheduler limits changes
 - If you have made any changes to your limits file, then you will need to manually update them.
 - **pScheduler will stop running on update if your limits are not valid!**
 - Run the helper script here to check your limits:
<https://github.com/perfsonar/pscheduler-limit-checker-for-5.0>
- We no longer support the 5.0 ISO image
 - Users can install the base operating system of their choice and use yum or apt to install perfSONAR



Packaging Changes

- **perfsnar-centralmanagement retired:** This was the bundle that installed esmond and maddash on the same host
- **New perfsnar-archive package:** This installs and configures OpenSearch and Logstash for you. If you want a replacement for centralmanagement then install *perfsnar-archive* and *maddash*
- **New optional perfsnar-dashboards package:** Installs OpenSearch Dashboards (equivalent of Kibana) for browsing data.



What's after 5.0?

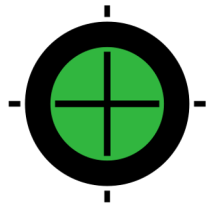
- **Additional OSES** by Early Summer:
 - Alma 8, Alma 9 (works with other flavors of EL as well like Rocky)
 - Ubuntu 22
 - Debian 11
- **Beyond Summer:**
 - **Grafana visualisation** and **MaDDash Replacement** (In Progress)
 - See <https://grafana.com/grafana/plugins/esnet-matrix-panel/>
 - Threaded **iperf3** (In Progress)
 - Threaded **powerstream** (In Progress)
 - pSConfig in python (In Progress)
 - Revamped PWA (Early Design Phase)



Problems? Get in touch!

- Updated **documentation** at <https://docs.perfSONAR.net>
- We are here to help you!
- Through the **perfsonar-user** mailing list:
 - <https://lists.internet2.edu/sympa/info/perfsonar-user>
- **WP6T3** in the GÉANT project:
 - perfsonar@lists.geant.org
 - GÉANT Slack space





Questions and Answers

Question and answer icon by iconsphere from The Noun Project





Thank You

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