



## PMP service update

**Szymon Trocha**, Poznań Supercomputing and Networking Center, PL  
*PMP SERVICE MANAGER / SA2T3*

3rd European perfSONAR User Workshop, On-line, 24-25 May 2022

Public

[www.geant.org](http://www.geant.org)

# A GÉANT's service



Performance Measurement Platform (PMP) is a successor of successfully completed perfSONAR Small Nodes in GÉANT project.

It consists of:

- Low-cost hardware nodes with pre-installed perfSONAR software and deployed in GÉANT collaborating organisations in Europe and Africa.
- Central components including a central Measurement Archive (MA) and a Dashboard.

The small nodes are performing regular measurements towards a few Measurement Points (MPs) located in the core of the GÉANT network, and operated by the GÉANT network operations centre. The central components that manage the platform elements, gather, store and represent the performance data, are operated and maintained by the PMP operational team in GÉANT project. Small nodes users can shape the predefined setup and configure additional measurements to their needs and get more familiar with the platform.

The PMP operational team maintains an instance of the Maddash dashboard for visualising performance testing between PMP service instances in NRENs and GÉANT PoPs.

## PMP Coverage

Check our map below to view PMP service coverage to see which GÉANT Project partners already joined this platform. Countries shaded in green are where we currently provide operational PMP service and countries shaded in orange are in progress of service deployment.



## Try Out PMP

Visit the publicly available PMP Dashboard at <https://pmp-central.geant.org/maddash-webui/>

## Contact Us

Feel free to contact the team via [perfsnar-smallnodes@lists.geant.org](mailto:perfsnar-smallnodes@lists.geant.org)

## PMP Privacy Notice

The PMP data collection policy and privacy notice can be found [Here](#)

# Performance Measurement Platform (PMP)



Consists of set of low-cost hardware nodes with preinstalled perfSONAR software

- Evolution of successful Small Nodes project (2016)
- The central components that manage the platform elements, gather, store and represent the performance data

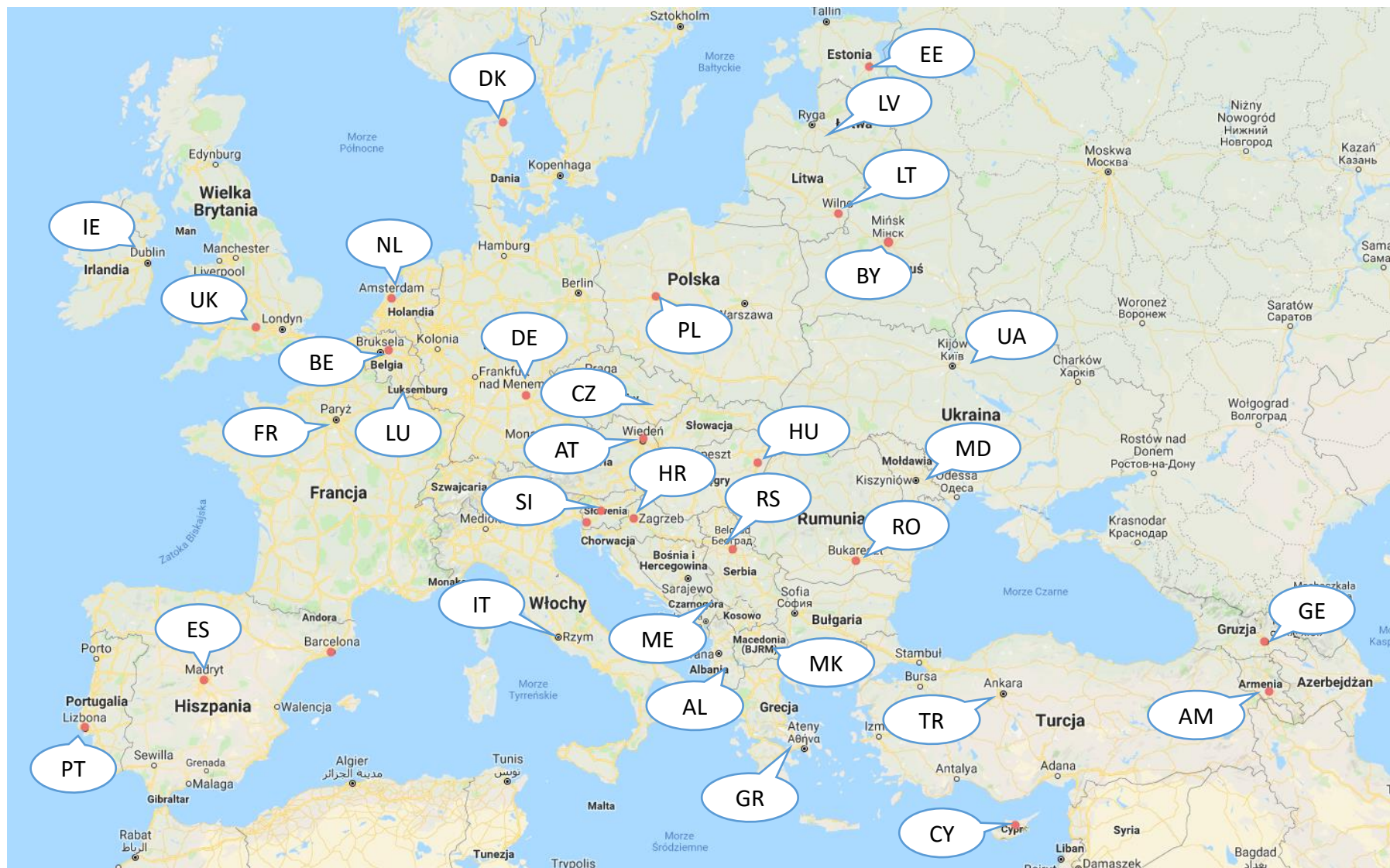


Operated and maintained by the GÉANT project

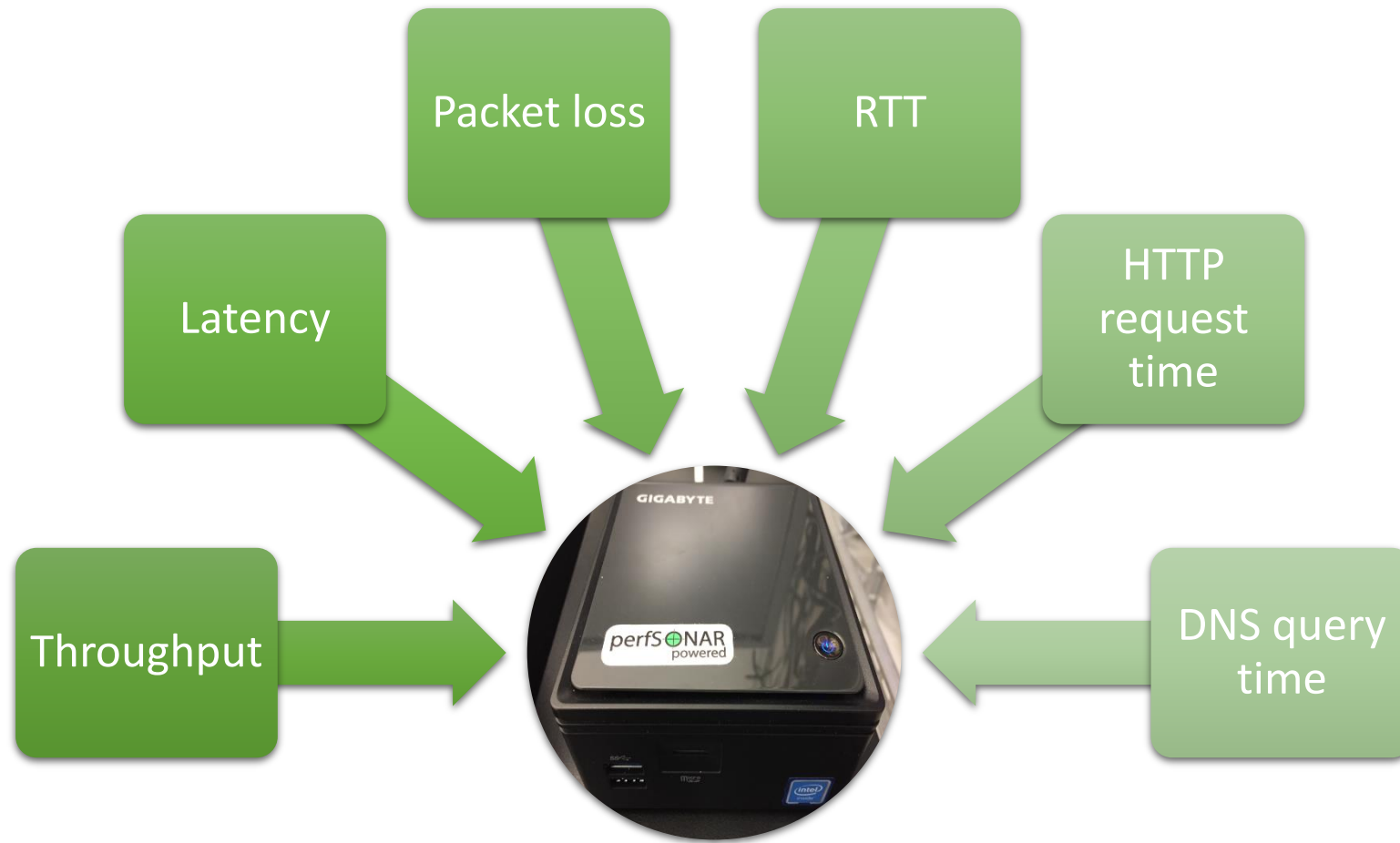


Coupled with GÉANT MPs to create a partial mesh for NRENs

# Current coverage

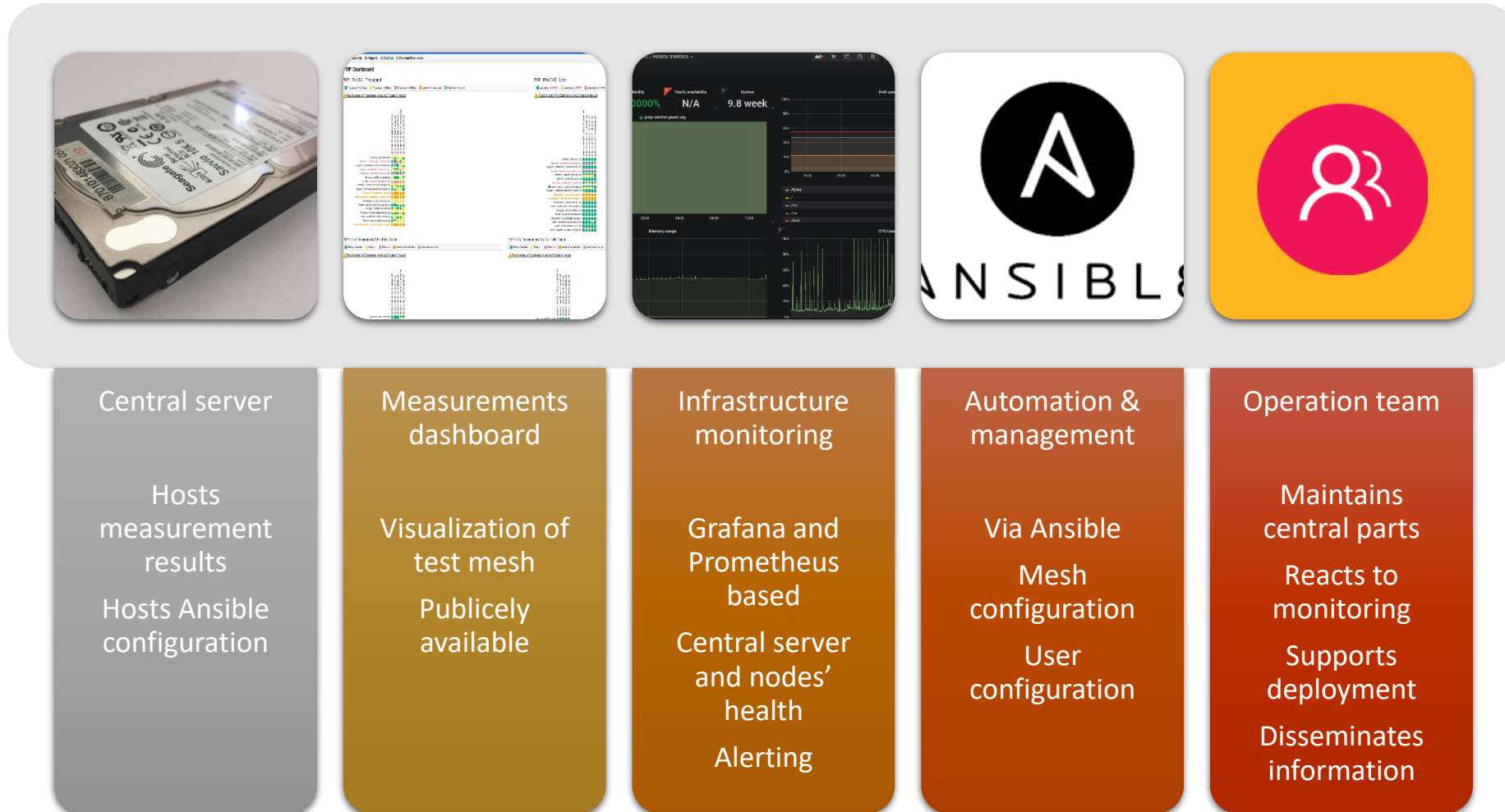


# Regular testing



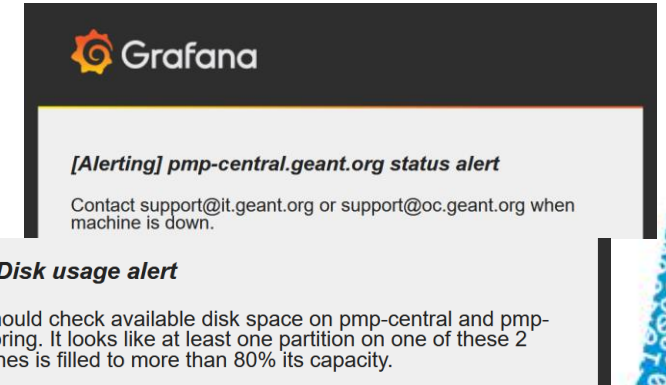
IPv4 / IPv6

# Central components



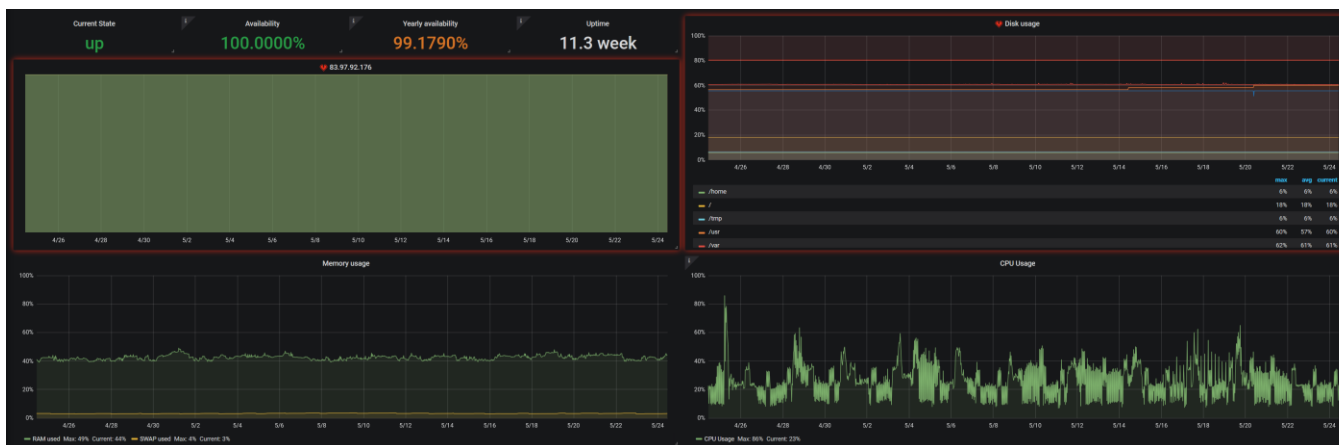
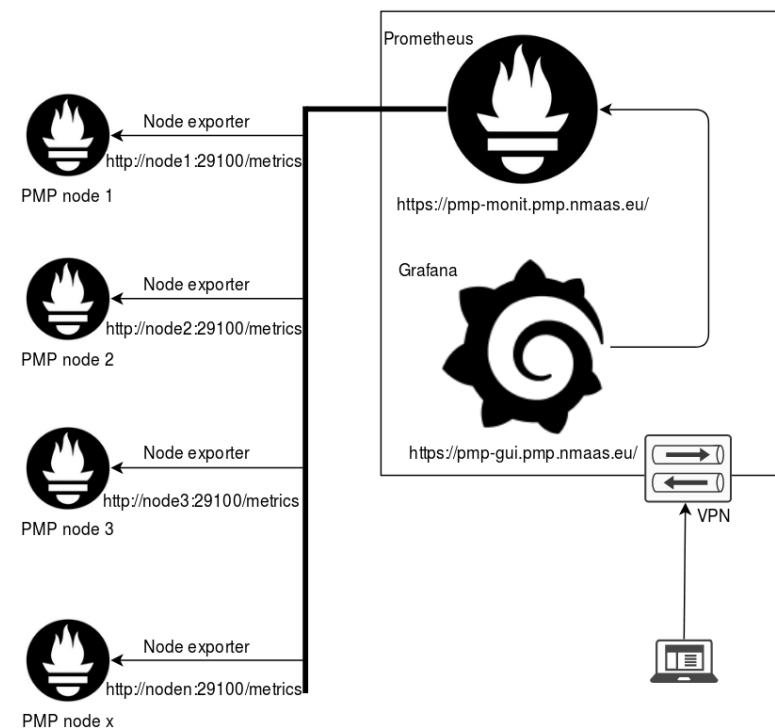
# Service health monitoring

- The overall service performance is monitored by measuring various key metrics
  - Central instance (Maddash)
    - Availability of users access to visualization dashboard
    - For KPI reporting
    - Can trigger an alert if this component is detected as unhealthy (unavailable or thresholds exceeded)
  - Individual PMP host (perfSONAR Toolkit instance)
    - Multiple parameters
    - For checking PMP instances health



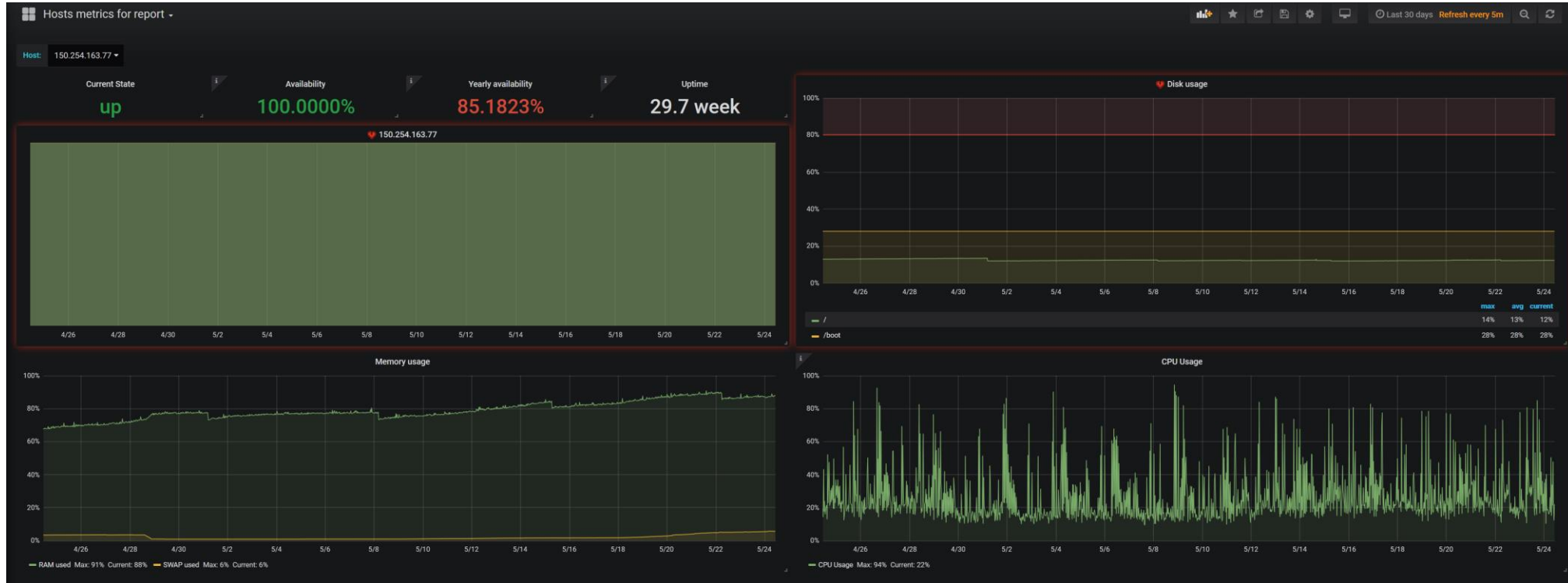
# Components used

- NMaaS service instance
  - On a per-user, secured network monitoring infrastructure
  - Runs Grafana8
- Prometheus clients
  - Node exporter



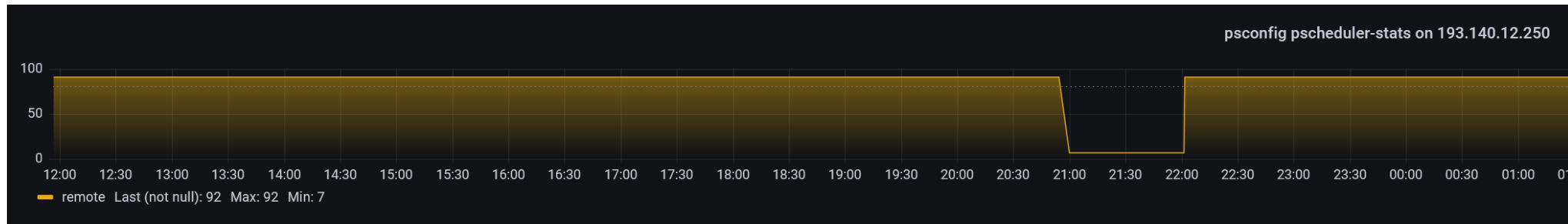


# Host metrics (1/3)

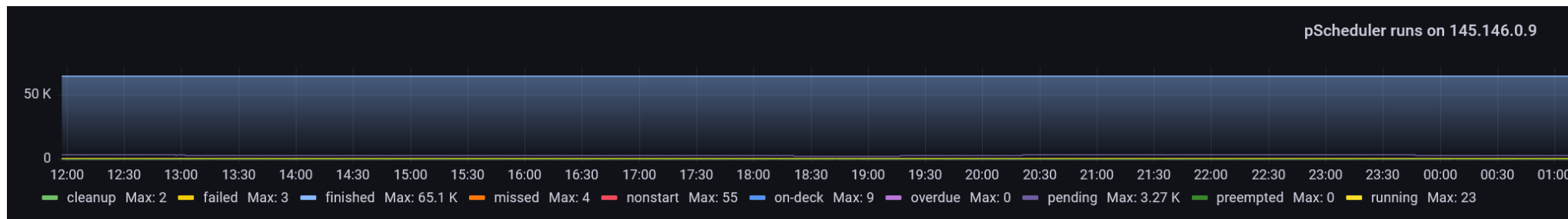


## Host metrics (2/3)

- # tasks from remote definitions

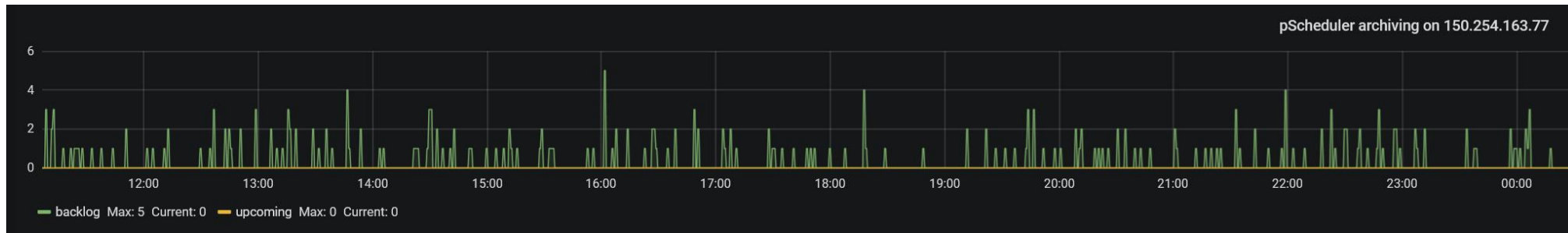


- # runs per status

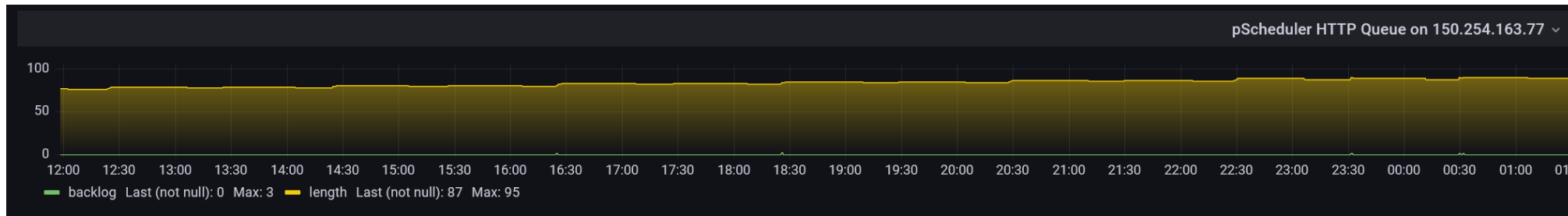


## Host metrics (3/3)

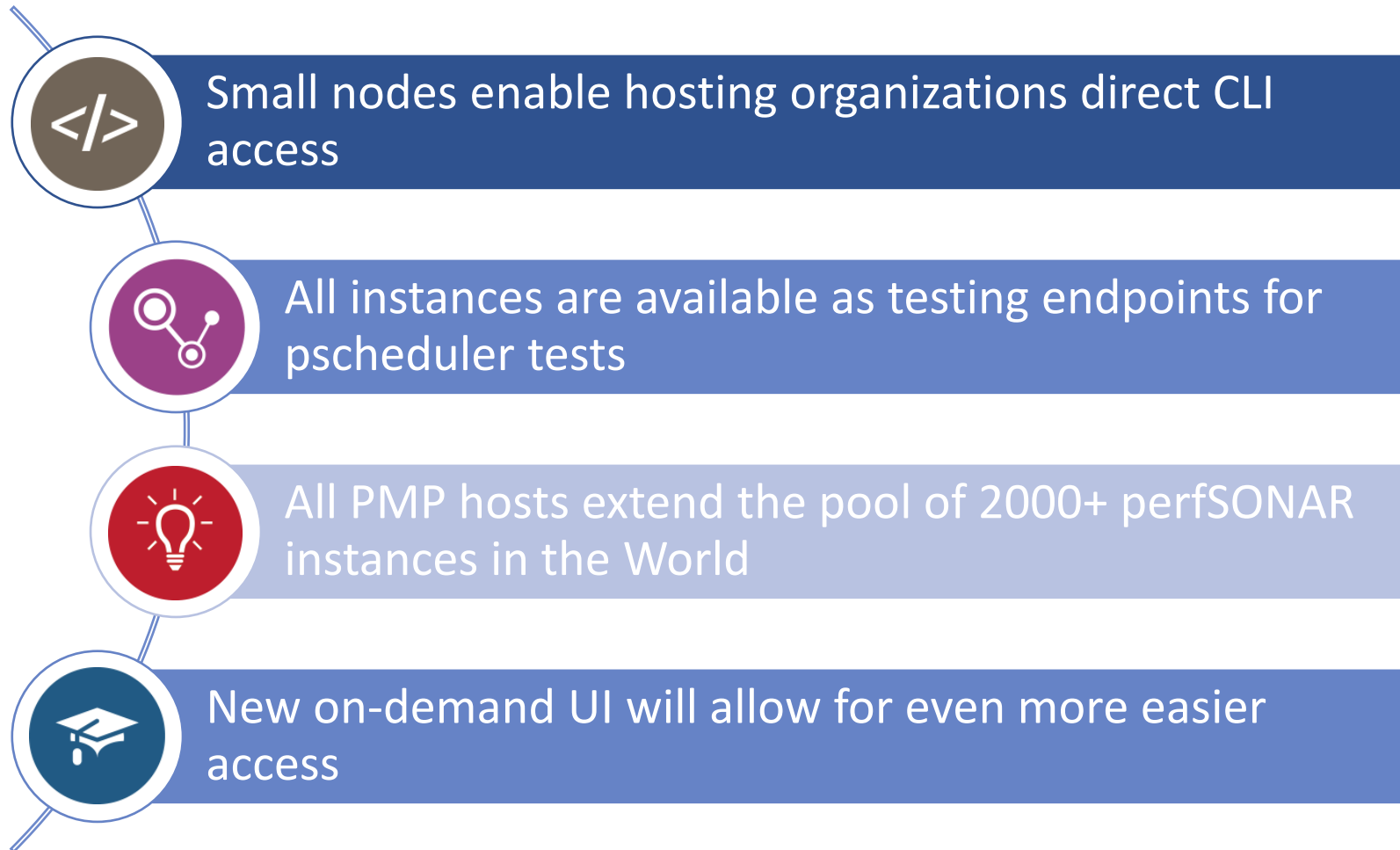
- # pscheduler archiving backlog



- # pscheduler HTTP queue backlog/length



# On-demand PMP service functionalities



## CLI test example: ping

✓ `$ pscheduler task rtt --dest psmall-lis.fccn.pt`

```
Submitting task...
Task URL:
https://localhost/pscheduler/tasks/38862e98-4216-4f4d-8265-ae606cc201dd
Running with tool 'ping'
Fetching first run...

Next scheduled run:
https://localhost/pscheduler/tasks/38862e98-4216-4f4d-8265-ae606cc201dd/runs/bfc37766-1b27-4cf2-9cdd-41a17715683c
Starts 2022-05-23T11:58:01Z (~1 seconds)
Ends   2022-05-23T11:58:12Z (~10 seconds)
Waiting for result...

 1      psmall-lis.fccn.pt (194.210.0.1)  64 Bytes  TTL 52  RTT  54.4000 ms
 2      psmall-lis.fccn.pt (194.210.0.1)  64 Bytes  TTL 52  RTT  54.4000 ms
 3      psmall-lis.fccn.pt (194.210.0.1)  64 Bytes  TTL 52  RTT  54.4000 ms
 4      psmall-lis.fccn.pt (194.210.0.1)  64 Bytes  TTL 52  RTT  54.4000 ms
 5      psmall-lis.fccn.pt (194.210.0.1)  64 Bytes  TTL 52  RTT  54.4000 ms

0% Packet Loss  RTT Min/Mean/Max/StdDev = 54.408000/54.435000/54.461000/0.016000 ms

No further runs scheduled.
```



## CLI test example: traceroute

✓ \$ pscheduler task trace --dest psmall-lis.fccn.pt

```
Submitting task...
Task URL:
https://localhost/pscheduler/tasks/9cc3e78f-ce86-4b0e-848a-f44c3929f3a3
Running with tool 'traceroute'
Fetching first run...

Next scheduled run:
https://localhost/pscheduler/tasks/9cc3e78f/runs/1b260e9f-4792-b661-ae3eba835bd9
Starts 2022-05-23T12:02:07Z (~0 seconds)
Ends 2022-05-23T12:02:15Z (~7 seconds)
Waiting for result...

1 gateway (150.254.163.78) AS9112 0.2 ms
  POZMAN POZMAN-EDU, PL
2 mx-pcss-2-XE2-1-0-0.man.poznan.pl (150.254.255.77) AS9112 0.2 ms
  POZMAN POZMAN-EDU, PL
3 z-pozmana.poznan-gw3.10Gb.rtr.pionier.gov.pl (212.191.224.17) AS8501 0.2 ms
  PIONIER-AS PIONIER, National Research and Education Network in Poland, PL
4 pionier.mx1.poz.pl.geant.net (62.40.125.245) AS20965 1.1 ms
  GEANT The GEANT IP Service, NL
5 ae3.mx1.fra.de.geant.net (62.40.98.130) AS20965 16.3 ms
  GEANT The GEANT IP Service, NL
[...]
10 fccn-gw.mx2.lis.pt.geant.net (62.40.124.98) AS20965 54.6 ms
  GEANT The GEANT IP Service, NL
11 No Response
12 Router33.Lisboa.fccn.pt (194.210.6.211) AS1930 54.8 ms
  RCCN Fundacao para a Ciencia e a Tecnologia, I.P., PT
13 psmall-lis.fccn.pt (194.210.0.1) AS1930 54.4 ms
  RCCN Fundacao para a Ciencia e a Tecnologia, I.P., PT
```



## CLI test example: ping to non-perfSONAR destination

✓ `$ pscheduler task rtt --dest www.geant.org`

```
Submitting task...
Task URL:
https://localhost/pscheduler/tasks/9b44c703-7a27-4ac9-9de9-557ccb73703e
Running with tool 'ping'
Fetching first run...

Next scheduled run:
https://localhost/pscheduler/tasks/9b44c703-7a27-4ac9-9de9-557ccb73703e/runs/cb240dc0-ff6f-4235-93ee-836dbcc4100e
Starts 2022-05-23T12:07:39Z (~0 seconds)
Ends   2022-05-23T12:07:50Z (~10 seconds)
Waiting for result...

 1  prod-haproxy.geant.org (83.97.93.30)  64 Bytes  TTL 60  RTT 16.0000 ms
 2  prod-haproxy.geant.org (83.97.93.30)  64 Bytes  TTL 60  RTT 16.0000 ms
 3  prod-haproxy.geant.org (83.97.93.30)  64 Bytes  TTL 60  RTT 15.9000 ms
 4  prod-haproxy.geant.org (83.97.93.30)  64 Bytes  TTL 60  RTT 15.9000 ms
 5  prod-haproxy.geant.org (83.97.93.30)  64 Bytes  TTL 60  RTT 16.0000 ms

0% Packet Loss  RTT Min/Mean/Max/StdDev = 15.985000/16.021000/16.055000/0.028000 ms

No further runs scheduled.
```



# CLI test example: ping between other PMP and other hosts

✓ `$ pscheduler task rtt -source perfsonar.eenet.ee --dest www.geant.org`

```
Submitting task...
Task URL:
https://perfsonar.eenet.ee/pscheduler/tasks/448ae972-988d-48ec-b4a1-35c03f4e32fd
Running with tool 'ping'
Fetching first run...

Next scheduled run:
https://perfsonar.eenet.ee/pscheduler/tasks/448ae972-988d-48ec-b4a1-35c03f4e32fd/runs/047d130d-8418-4fb2-a64d-7561ea7e7246
Starts 2022-05-23T12:11:55Z (~0 seconds)
Ends   2022-05-23T12:12:06Z (~8 seconds)
Waiting for result...

 1      ims.geant.org (2001:798:3::132)  64 Bytes  TTL 59  RTT  32.0000 ms
 2      ims.geant.org (2001:798:3::132)  64 Bytes  TTL 59  RTT  32.0000 ms
 3      ims.geant.org (2001:798:3::132)  64 Bytes  TTL 59  RTT  32.0000 ms
 4      ims.geant.org (2001:798:3::132)  64 Bytes  TTL 59  RTT  32.0000 ms
 5      ims.geant.org (2001:798:3::132)  64 Bytes  TTL 59  RTT  32.0000 ms

0% Packet Loss  RTT Min/Mean/Max/StdDev = 32.030000/32.052000/32.097000/0.115000 ms

No further runs scheduled.
```





# On-demand UI

Home Run measurement

**Nodes**

Source: Poland - psmall-poz1.man.poznan.pl Toggle choices Destination: Germany - psmall-test.x-win.dfn.de

**Test parameters**

Test: latency

IPv4  IPv6

Advanced parameters

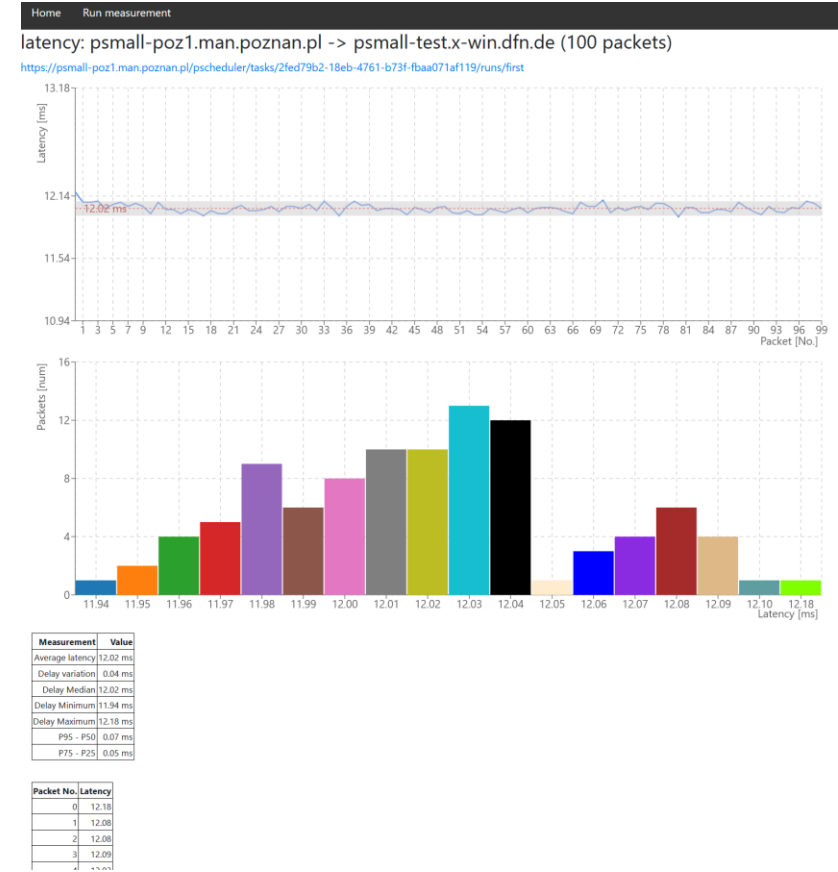
Packet Count: 100  
The number of packets to send (10 - 1000000)

Packet Interval: 0.1  
The number of seconds to delay between sending packets (0.000001 - 1)

Packet Timeout: 2  
The number of seconds to wait before declaring a packet lost (1 - 10)

Packet Padding: 20  
The size of padding to add to the packet in bytes (14 - 20000)

Submit



# Using transform to disable local storage

```
etc/perfsonar/psconfig/archives.d$  
cat esmond_local.json  
{  
    "archiver" : "esmond",  
  
    "transform": {  
        "script": "if  
(.task.reference.\"pmp-  
measurement\" == true) then null  
else . end"  
    }  
}  
$
```

Pre-processes (discards)  
a run result before it is  
sent to the archiver  
plugin

```
"tasks": {  
    "pSmall_IPv4_loss": {  
        "_meta": {  
            "display-name": "IPv4 OWD"  
        },  
        "reference": {  
            "pmp-measurement":  
                true  
        },  
    },  
}
```

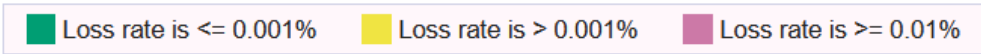
Stores extra  
information with a  
task

# Additions to PMP

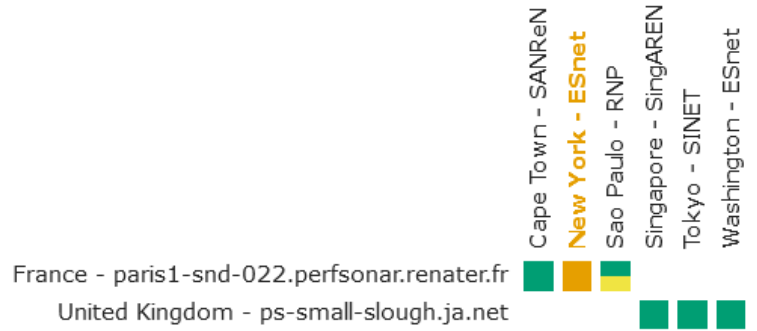
- Intercontinental tests
  - To test important paths outside GEANT
  - Destinations are main landing points
    - US
    - South Africa
    - South America
    - Asia
  - IPv4 / IPv6
- IPv6 is just a fraction of hosts registered in LS
  - Less IPv6 test coverage
  - Hard to find the same instances serving both v4 and v6
  - v6 frequently missing DNS entries

# Intercontinental grids

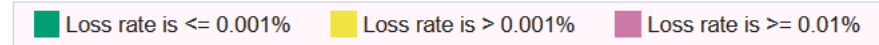
## PMP - Intercontinental IPv4 OWD - Loss



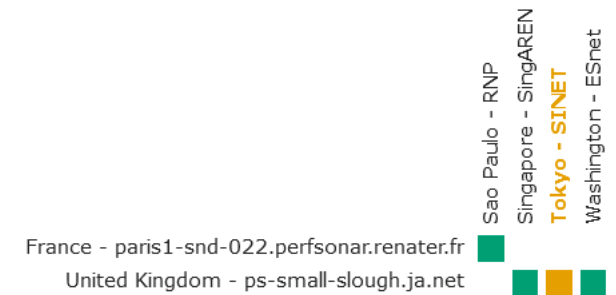
**!** Found a total of 1 problem involving 1 host in the grid



## PMP - Intercontinental IPv6 OWD - Loss

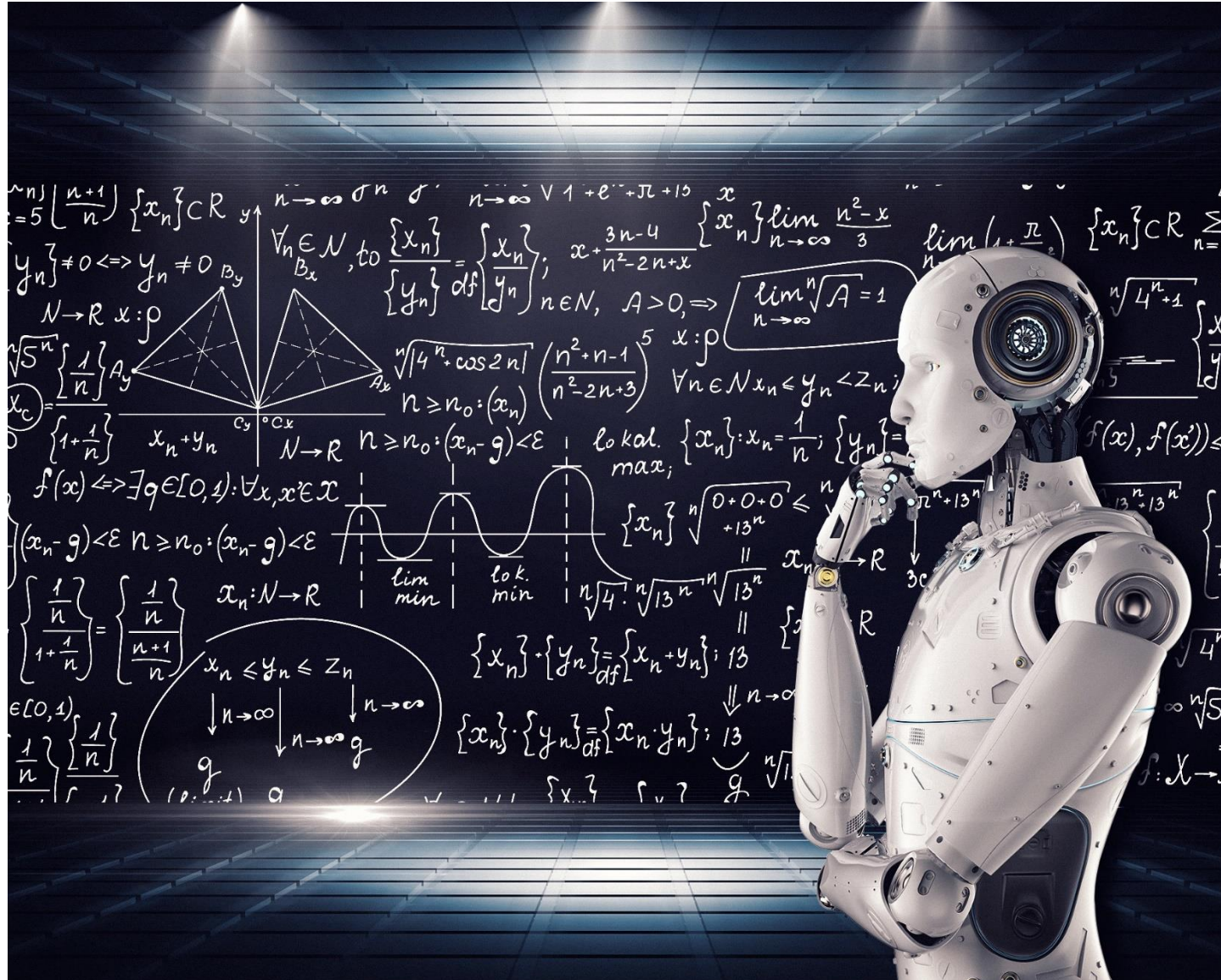


**!** Found a total of 1 problem involving 1 host in the grid



# Future

- Migration to 5.0



# Thank you

Any questions?

[szymon.trocha@psnc.pl](mailto:szymon.trocha@psnc.pl)

[www.geant.org](http://www.geant.org)



The scientific work is published for the realization of the international project co-financed by Polish Ministry of Science and Higher Education in the years 2019 - 2022 from financial resources of the programme entitled "PMW"; Agreement No. 5023/H2020/2019/2



## PMP service update

**Szymon Trocha**, Poznań Supercomputing and Networking Center, PL  
*PMP SERVICE MANAGER / SA2T3*

3rd European perfSONAR User Workshop, On-line, 24-25 May 2022

Public

[www.geant.org](http://www.geant.org)



The scientific work is published for the realization of the international project co-financed by Polish Ministry of Science and Higher Education in the years 2019 - 2022 from financial resources of the programme entitled "PMW"; Agreement No. 5023/H2020/2019/2