Running perfSONAR on vendor hardware

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WP6T3

1st European perfSONAR User Workshop, London, May 5, 2019

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perfSONAR in Juniper testing (1/4)

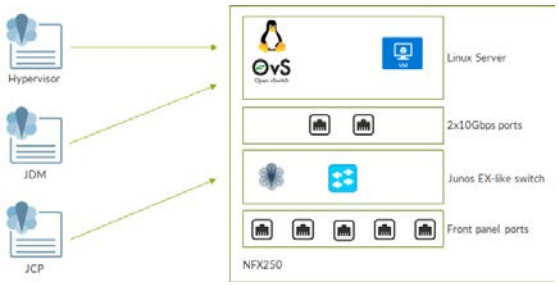
- Why
  - Lower costs of deployment – reuse devices already in place
  - Put perfSOANR as close as possible to the network and resources monitored
  - Interoperability testing

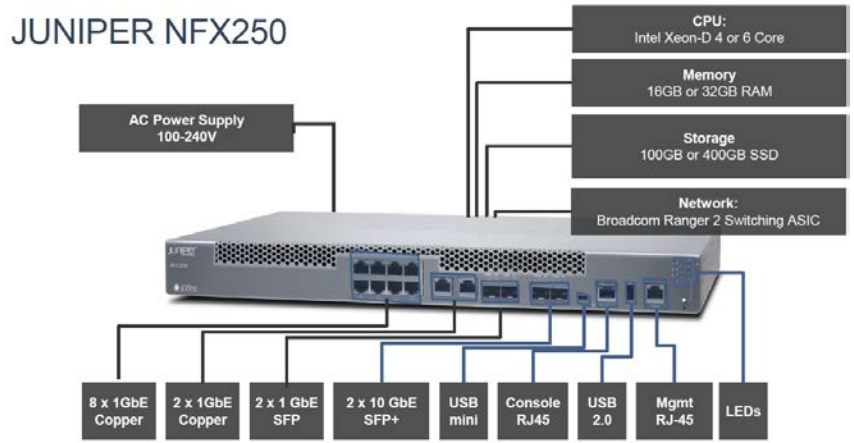
perfSONAR in Juniper testing (2/4)

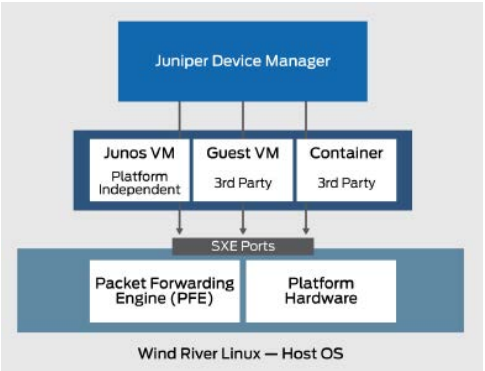
- CentOS 7.5 Cloud image
- perfsonar-toolkit

NFX250 is a device that sits at customer premises and runs multiple virtual services from Juniper and third parties. "It's not a router or a switch. It's whatever you want it to be,"

Deploy perfSONAR in a third party VM

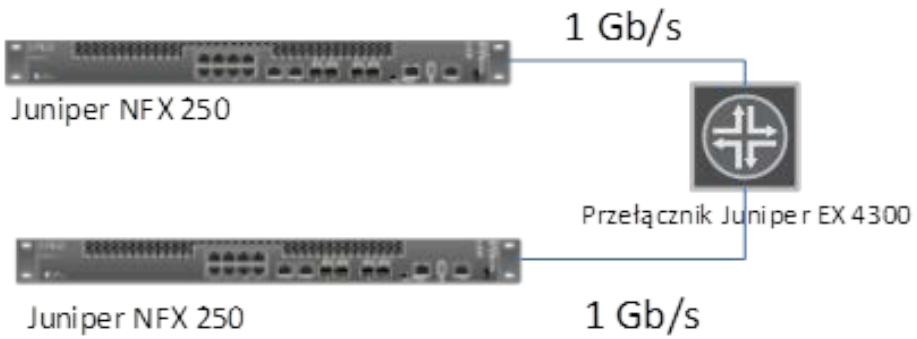






perfSONAR in Juniper testing (3/4)

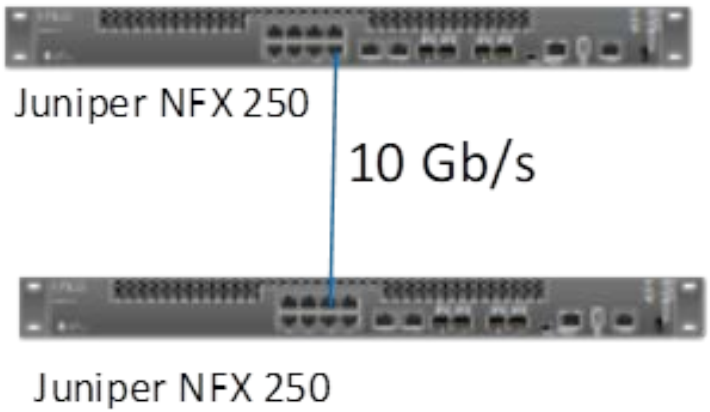
- Throughput tests (virtio)



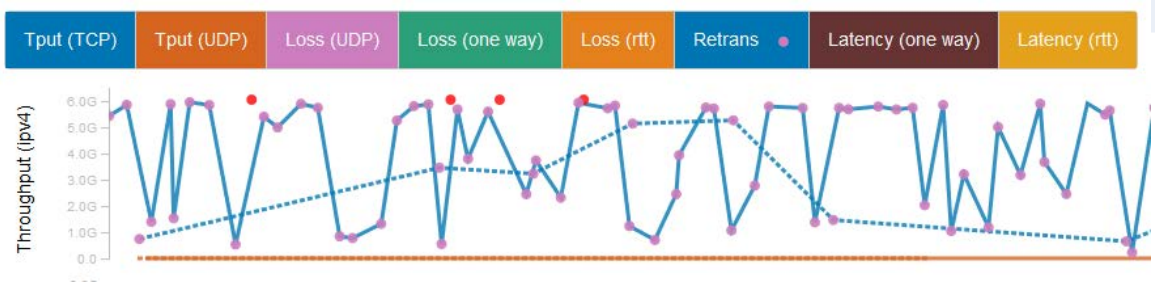
Link	Result
1 Gb/s	950-985 Mb/s

perfSONAR in Juniper testing (4/4)

- Throughput test



Link	Results	Remarks
10 Gb/s and virtio	500 - 2000 Mb/s	100 - 600 retransmits
10 Gb/s and single-root I/O virtualization (SR-IOV)	~ 6 Gb/s (CLI) 1 – 6 Gb/s (scheduled)	0 retransmits



Future plans

- More explorations needed
  - Too short timeframe for current tests
  - Better understanding of results and dependencies
  - New Junos versions in the meantime

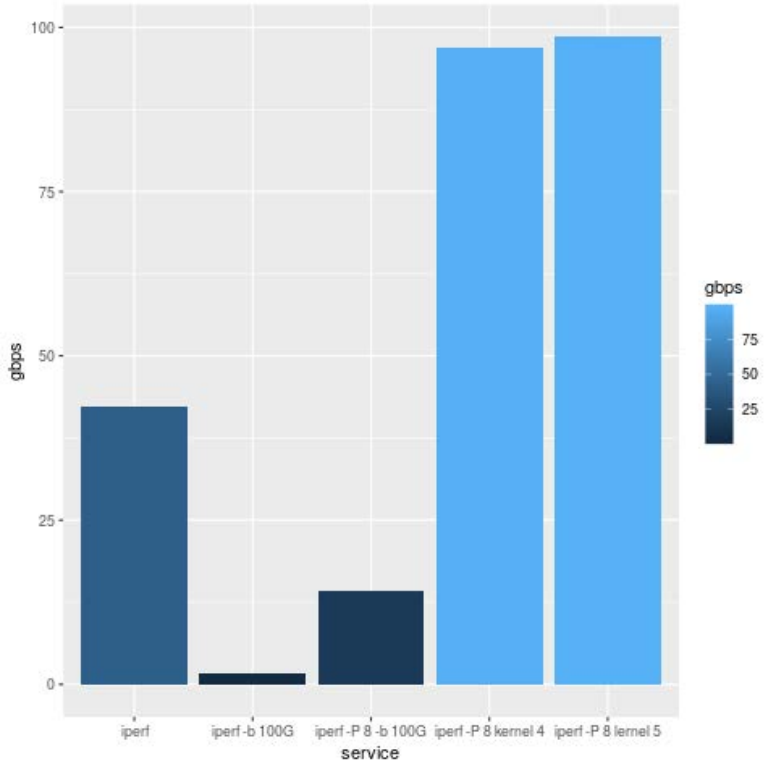
New platform considerations

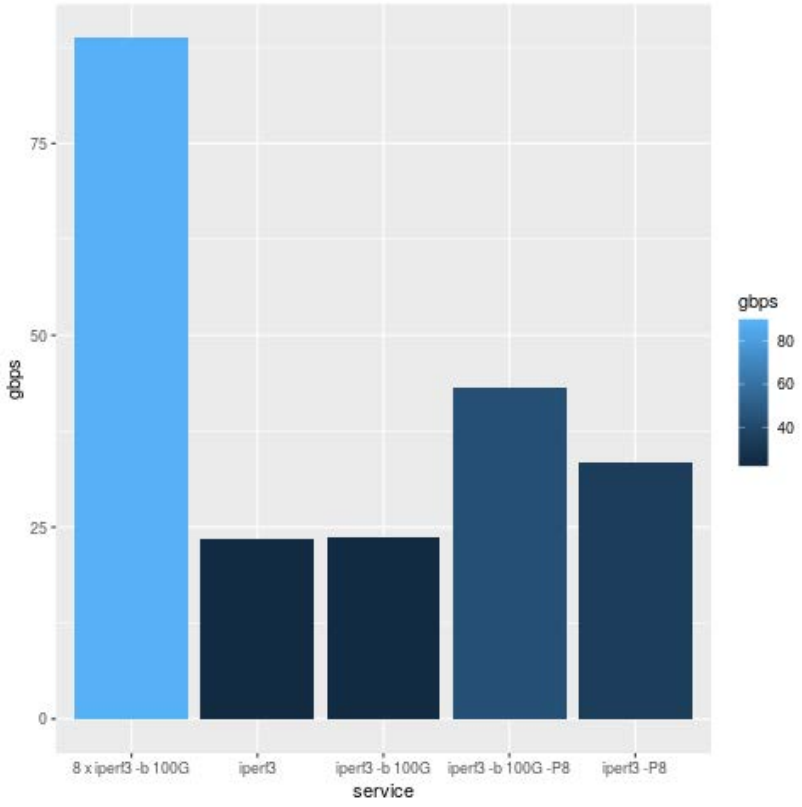
- Netflix report:
  - two years ago moved services to FreeBSD because Linux kernel could not deliver content at 100Gbps
  - It can now (we'll show)
- CERN
  - Tests and deployments with IBM Power 8 and 9
  - Interest in both perfSONAR and DTNs on IBM and ARM architecture
  - We access to CERN Power 8
- Increasing number of service virtualization
  - what's best for Perfsonar in a virtualized environment
    - CentOS on top of KVM
    - Container
    - Unikernel (OSv, for example)

Mellanox

- Architecture
  - Mellanox switch MSN2100-CB2FC
  - 100Gbe Ethernet switch with 16 ports
  - Cumulus Linux (Debian Jessy)
  - Intel Atom (4 cores)
  - 8 GB RAM
    - Will it ever deliver 90gbps with 8 parallel stream? No!
- 100G test bed performance
  - up to 35 Gbps on 1 stream
  - memory-memory transfers at 98.5 gbps on 8 streams
    - any of them beyond the Atom processor

iperf vs iperf3

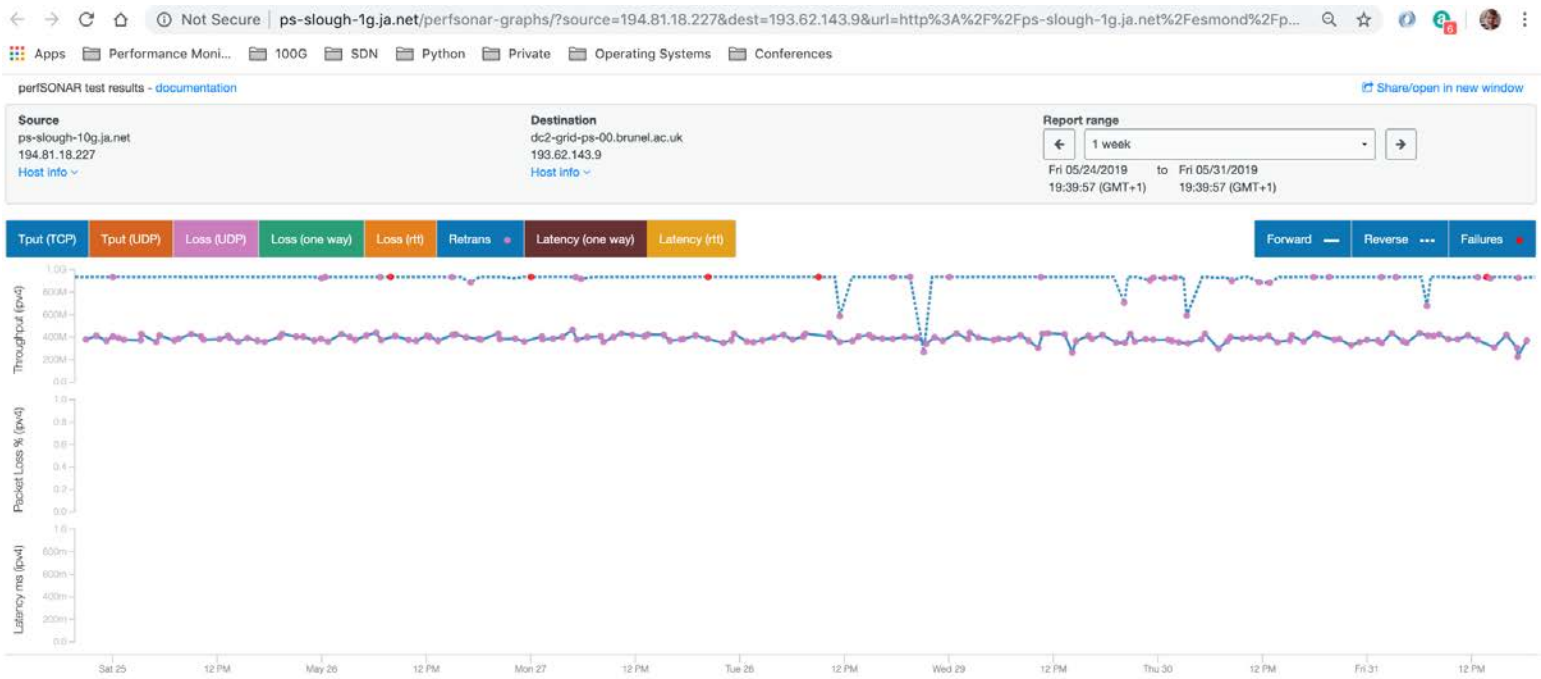




Cisco 9300

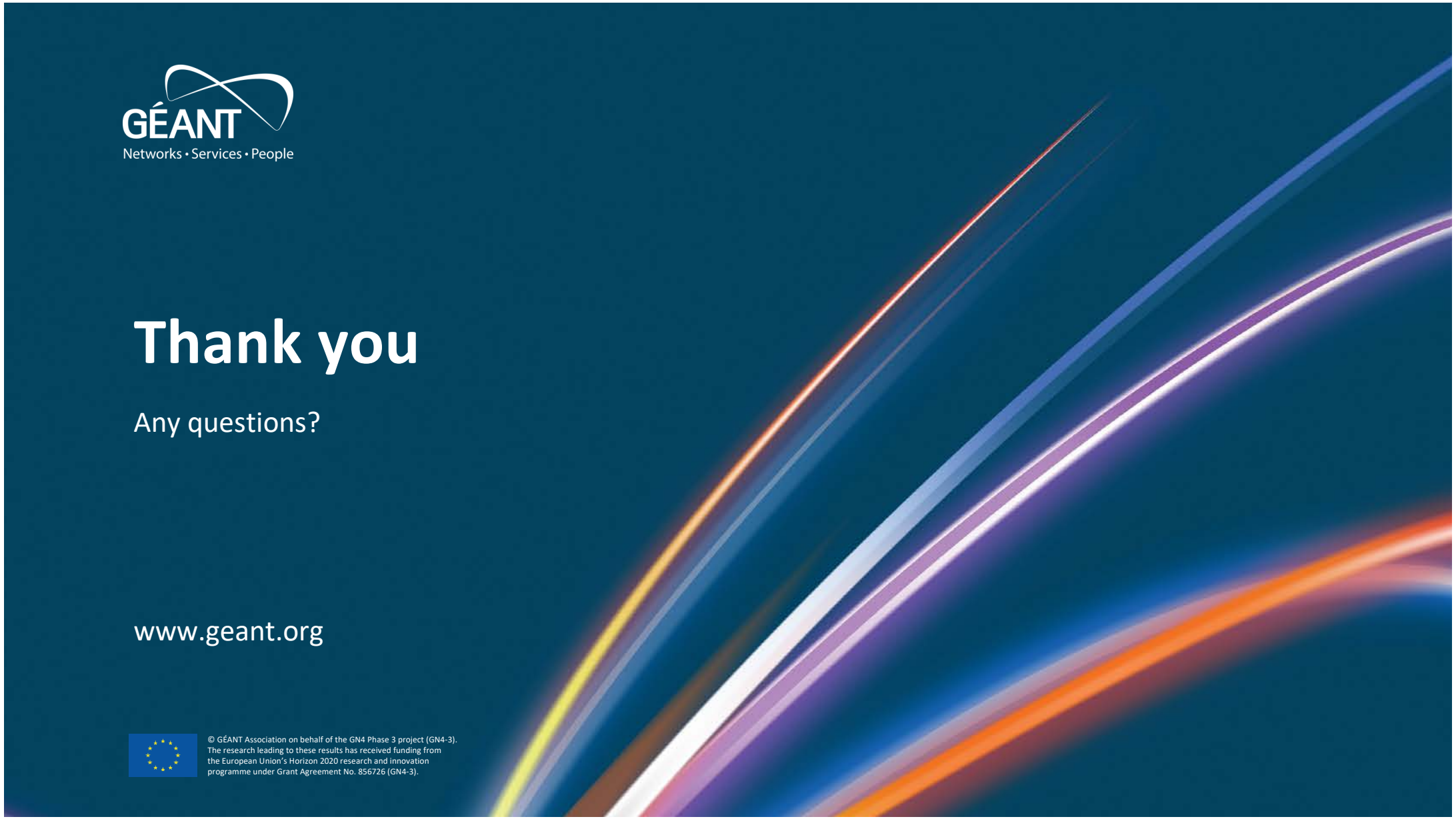
- Architecture
  - Catalyst C9300
    - iox (Linux)
    - Intel (4 cores)
    - 4 GB RAM
    - 1 Gbps (management port being used)
- perfsonar image
  - use pre-built by Cisco available on github
  - build image using ioxclient
- run on management
- rates limited by 1Gbps

Example


Not Secure | ps-slough-1g.ja.net/perfsonar-graphs/?source=194.81.18.227&dest=193.62.143.9&url=http%3A%2F%2Fps-slough-1g.ja.net%2Fesmond%2Fp...
Apps
Performance Moni...
100G
SDN
Python
Private
Operating Systems
Conferences
perfSONAR test results - documentation
Share/open in new window
Source
ps-slough-10g.ja.net
194.81.18.227
Host info
Destination
dc2-grid-ps-00.brunel.ac.uk
193.62.143.9
Host info
Report range
1 week
Fri 05/24/2019 19:39:57 (GMT+1)
to
Fri 05/31/2019 19:39:57 (GMT+1)
Tput (TCP)
Tput (UDP)
Loss (UDP)
Loss (one way)
Loss (rtt)
Retrans
Latency (one way)
Latency (rtt)
Forward
Reverse
Failures
Throughput (ipv4)
Packet Loss % (ipv4)
Latency ms (ipv4)
Sat 25
12 PM
May 26
12 PM
Mon 27
12 PM
Tue 28
12 PM
Wed 29
12 PM
Thu 30
12 PM
Fri 31
12 PM

Other

- BSD Unix
  - port to FreeBSD needs testing
    - installed on small node
    - perfsonar testpoint utilities running (twap, iperf, iperf3, etc)
      - pscheduler untested
- IBM Power 8 (9)
  - access available at CERN
- Cisco/Nexus
  - Brunel network team
    - equipment available
    - willingness to get involved



The research leading to these results has received funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement No. 856726 (GN4-3).

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The scientific/academic work is financed from financial resources for science in the years 2019 - 2022 granted for the realization of the international project co-financed by Polish Ministry of Science and Higher Education.