Status of the distributed testbed for data management

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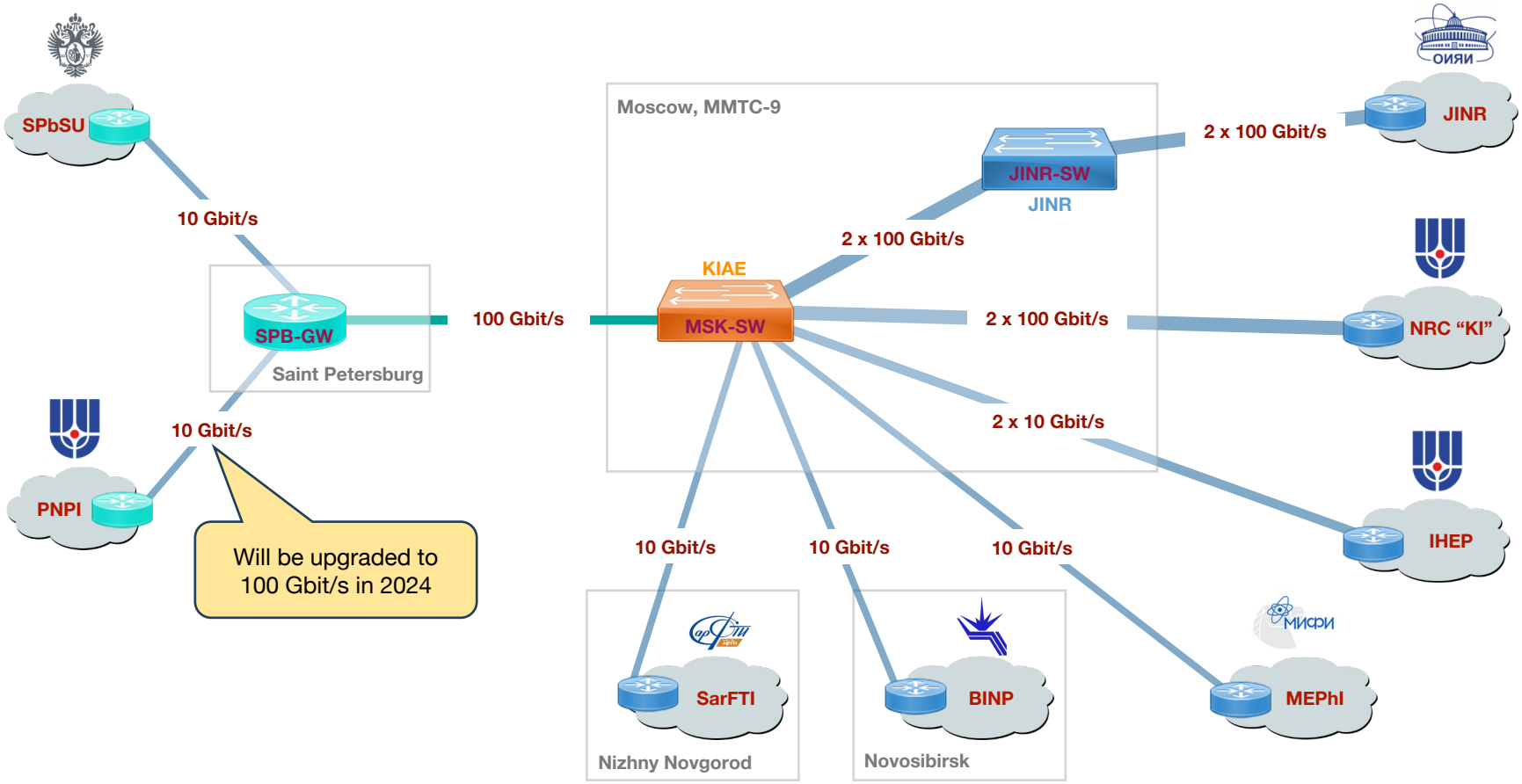
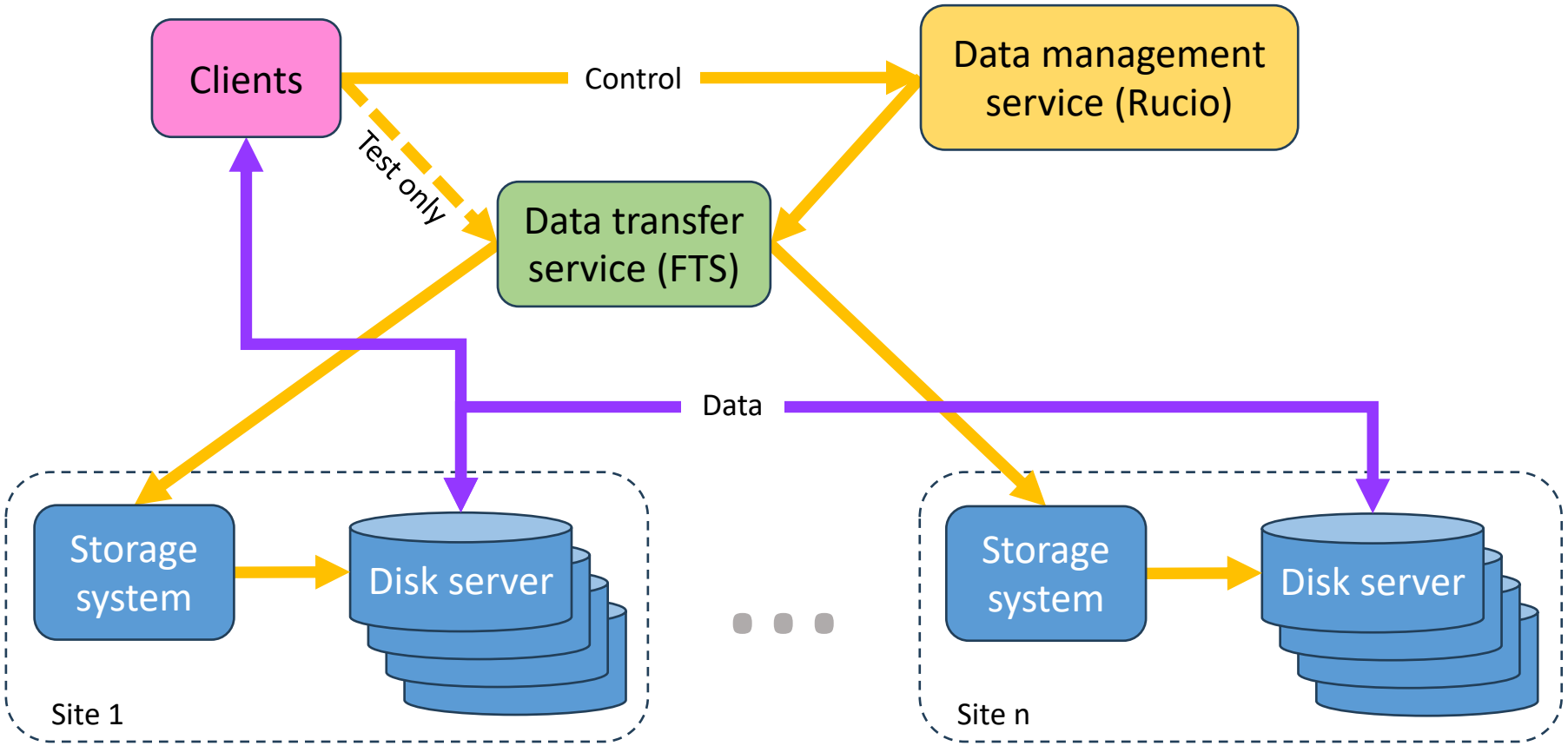
Introduction

- SPD relies heavily on a distributed offline computing, which is currently in active development (see Artem's slides)
- In order to test things at scale we need a testbed with properties as close as possible to the production environment
- Parts of such a testbed are currently deployed at JINR and PNPI, which are both connected to the Russian scientific backbone (former LHCONE)

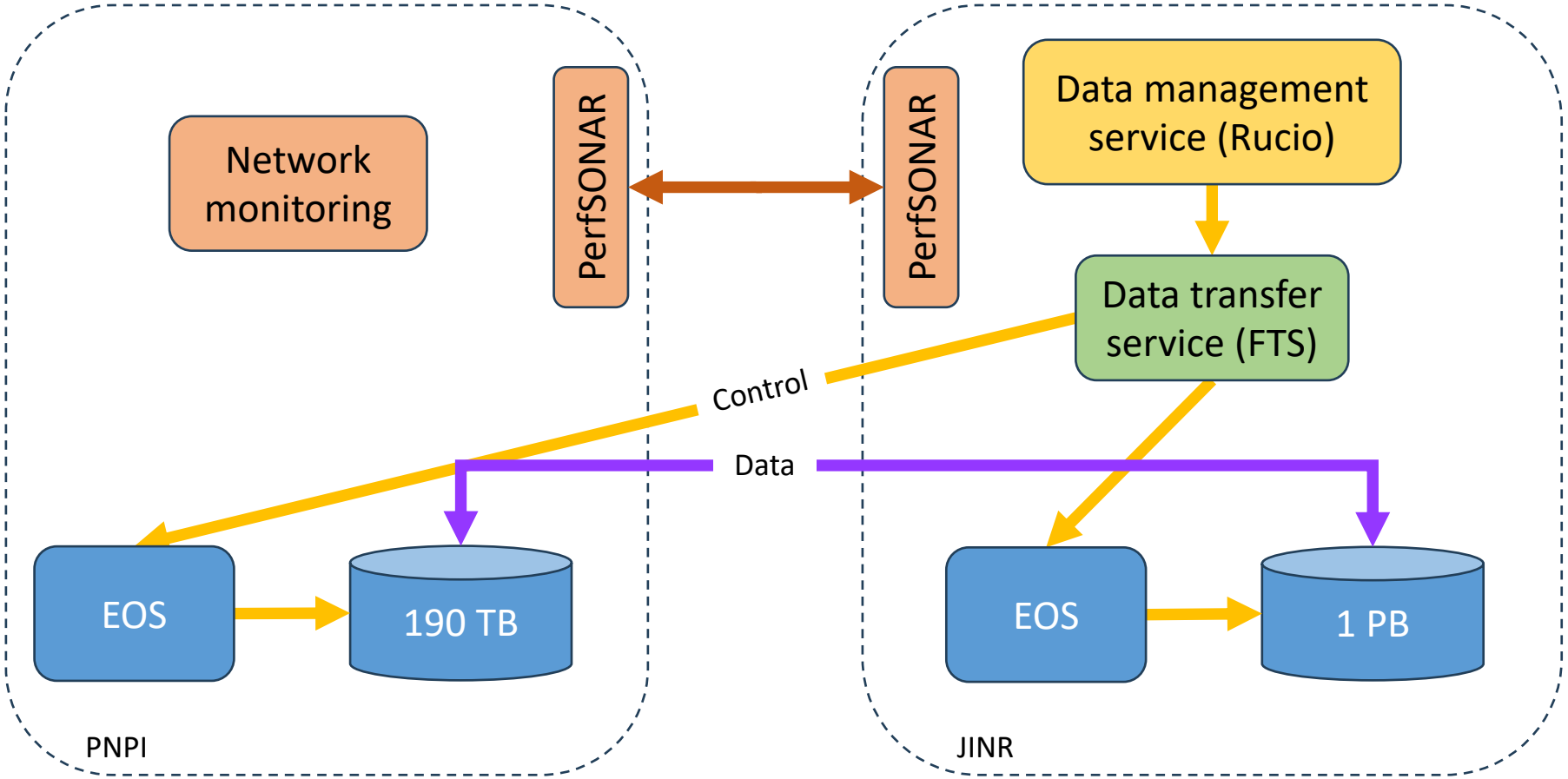
Russian scientific backbone



Data management in SPD



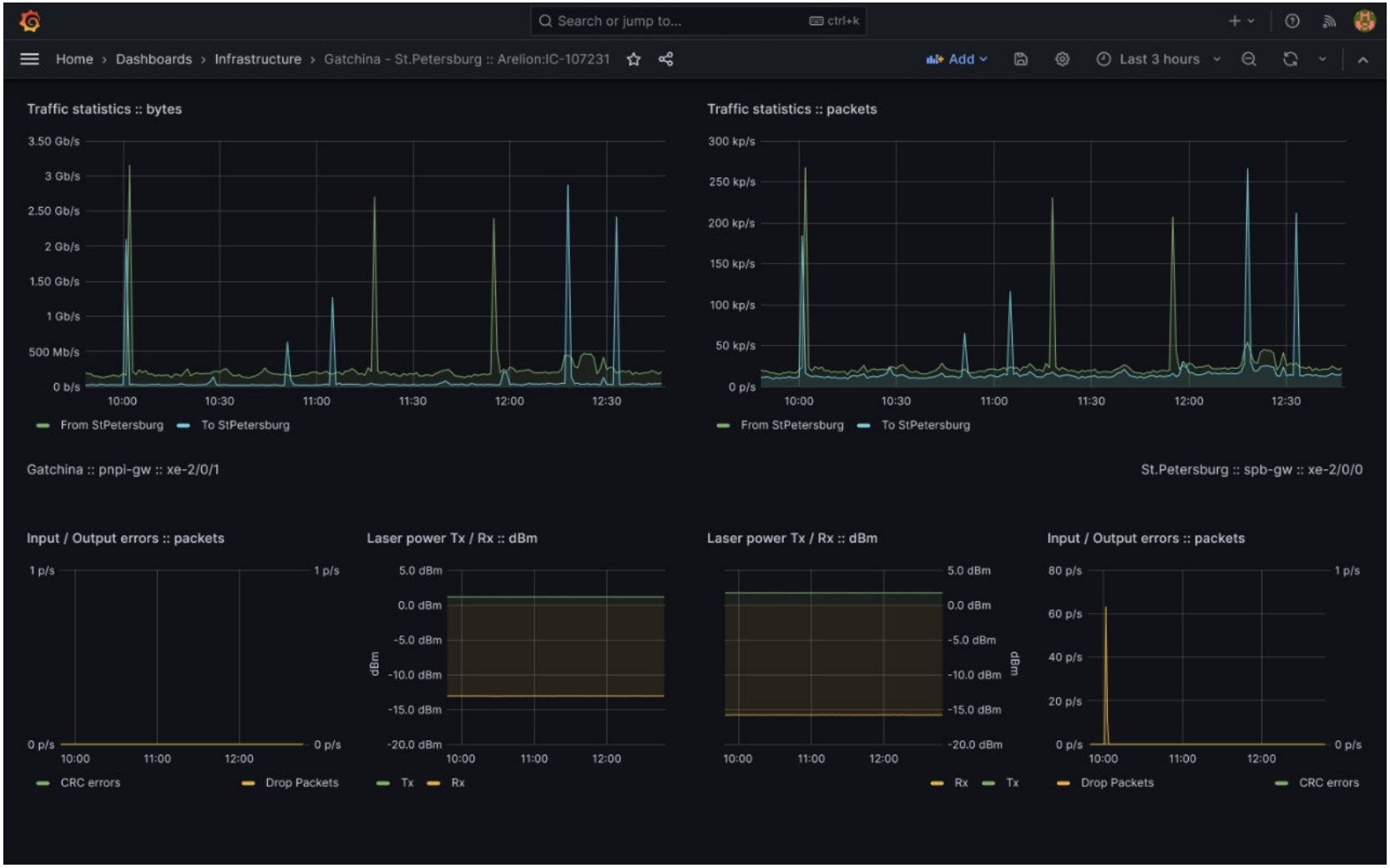
What is currently deployed



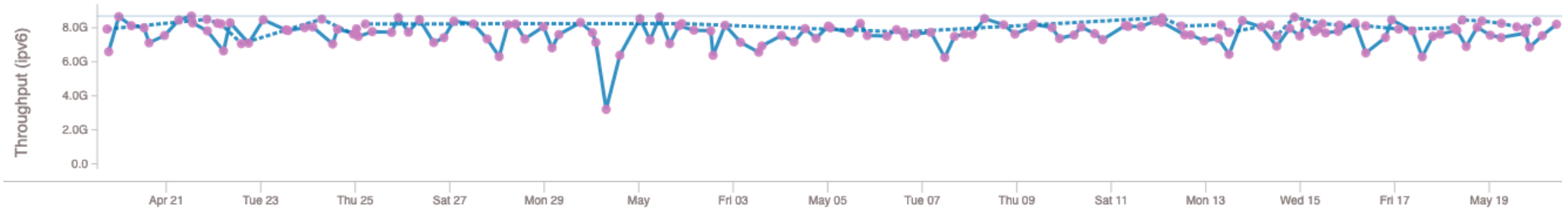
Data management tests

- We've started with rather simple replication tests in 2024 in order to nail down basic network and storage issues
  - A garbage (random data) dataset of 200 files 4 GB each
  - Replication between JINR and PNPI
  - Rucio is not involved, only FTS is
- A pretty low (~30% of expected) initial transfer rate due to suboptimal network configuration here and there
  - Issues were identified and fixed with reconfiguration and some network hardware reshuffling at PNPI
- We're currently able to move data between PNPI and JINR at ~9 Gbit/s which is consistent with PerfSONAR measurements between JINR and PNPI

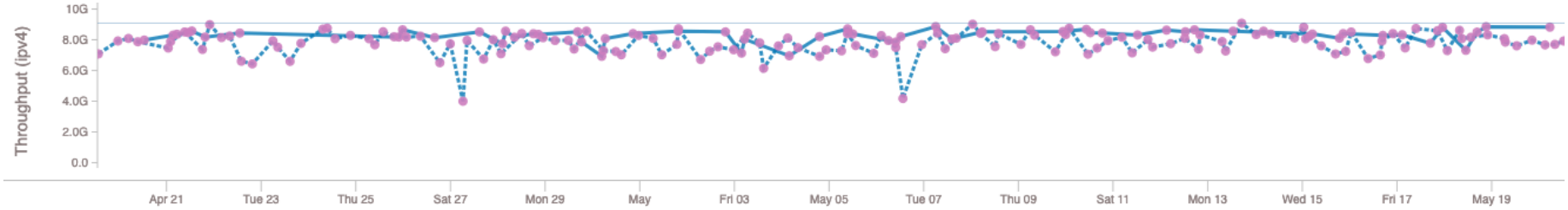
Network monitoring at PNPI



PerfSONAR measurements

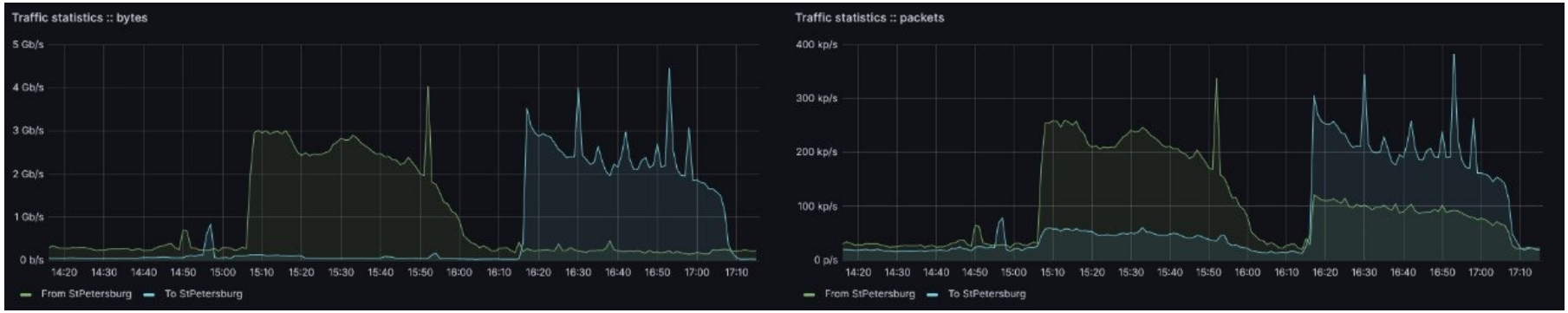


JINR to PNPI (IPv6)

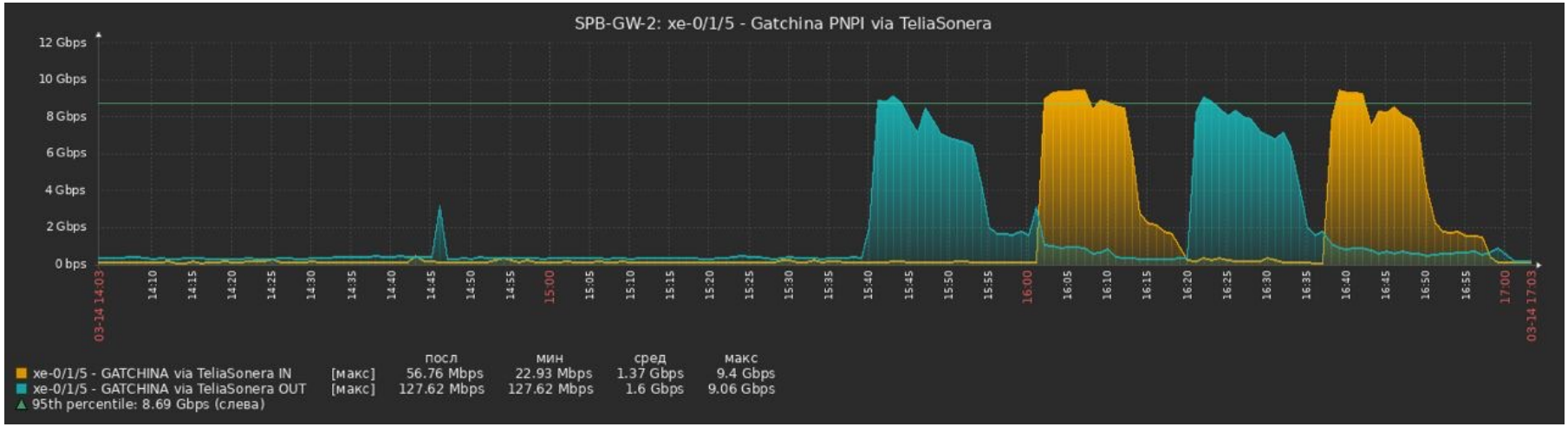


PNPI to JINR (IPv4)

FTS transfer tests



Beginning of 2024



April 2024

Conclusions

- FTS works
- Data transfer between storages at PNPI and JINR is stable and nicely fills currently available network bandwidth
- Due to network settings at JINR transfers are protocol-asymmetric
  - IPv4 towards JINR, IPv6 towards PNPI
- It is expected to have 100G network channel between JINR and PNPI later this year
- Next steps
  - Datasets with real data (MC)
  - Rucio-driven transfers at scale
  - Job submission and accessing data from job containers

Thank you!