

# Network tests at CZ Tier-2

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# FZU Computing Center

- Distributed resources with all central services and most of hardware at FZU
- Several clusters under one HTCondor LRMS: **10480** jobslots
  - 144 kHS06, avg: 13.8 HS06/core
  - 2500 jobslots at MFF UK, 29 kHS06
- Two clusters with Slurm for local users only, 52 servers, **2500** cores
- Clusters connected to national grid Metacentrum
  - – 48 servers, **3072** cores, 6x GPU A40
  - – 23 servers, 23\*1.5 TB RAM, 48\*2\*23 = **2208** cores
- Storage
  - 6.5 PiB under dCache
  - 3.69 PB xrootd (only ALICE), 4 servers at NPI Řež

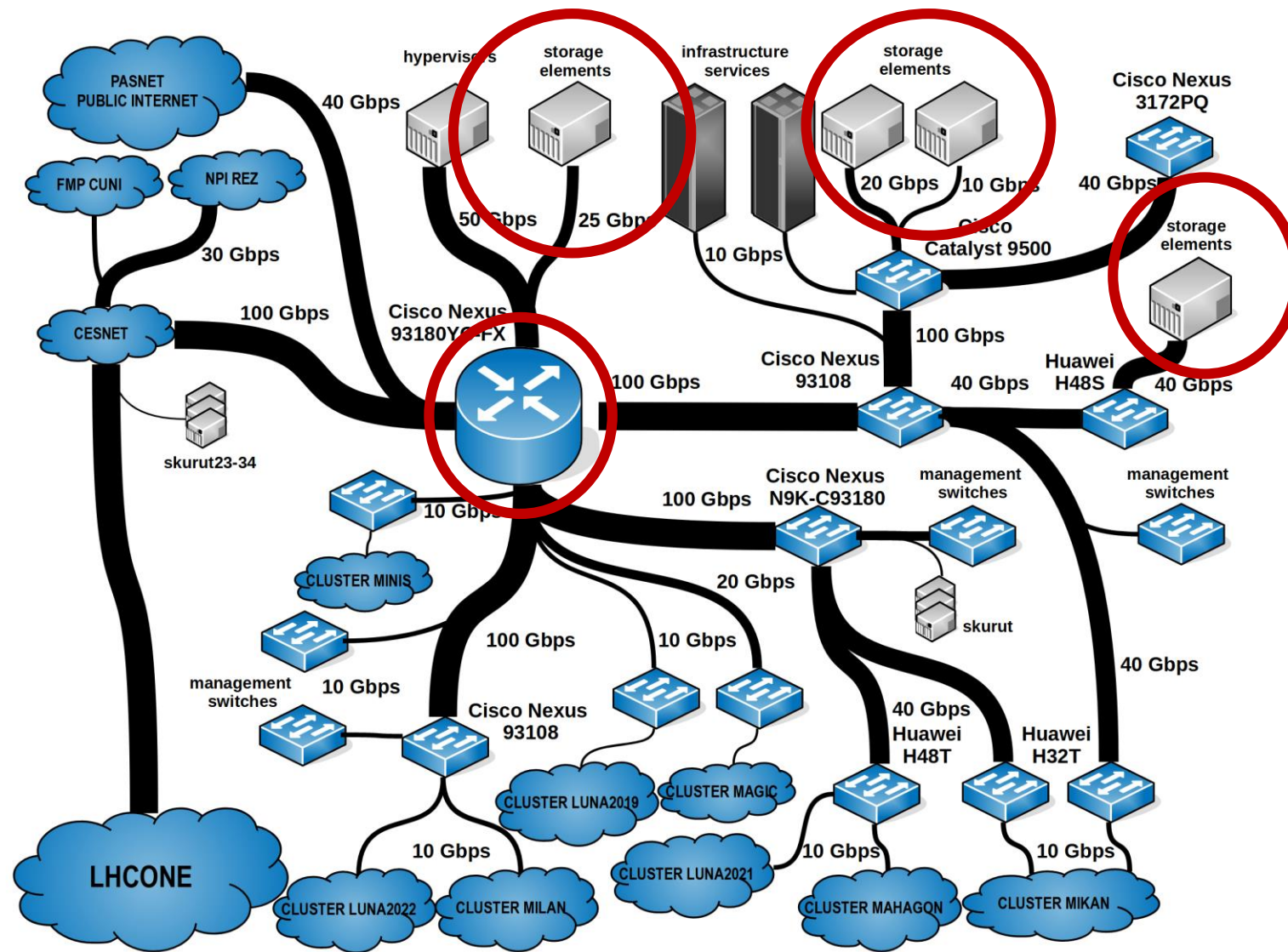


# Fully used local grid resources

- National e-infrastructure e-INFRA.cz
  - Common project of 3 united large research infrastructures
    - CERIT-SC, CESNET, IT4I
- IT4I: National Supercomputing Center
- CESNET EGI Grid site – auger, belle2
- Data Storage department of CESNET

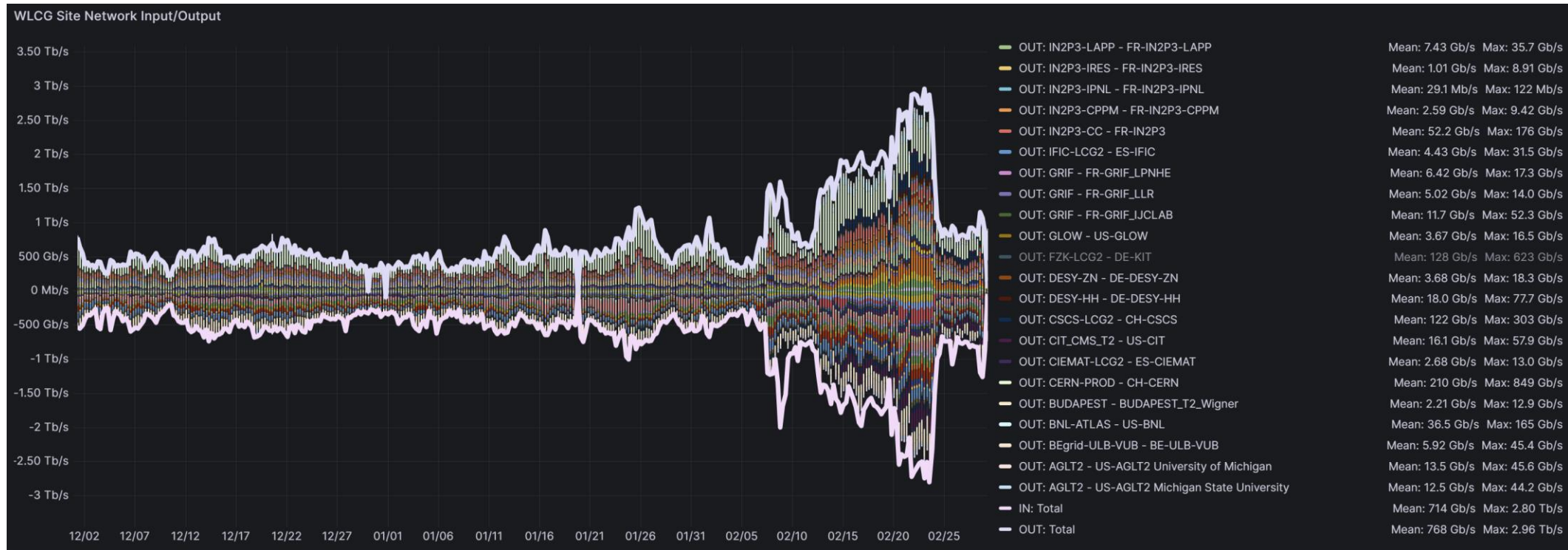


# Network 2023



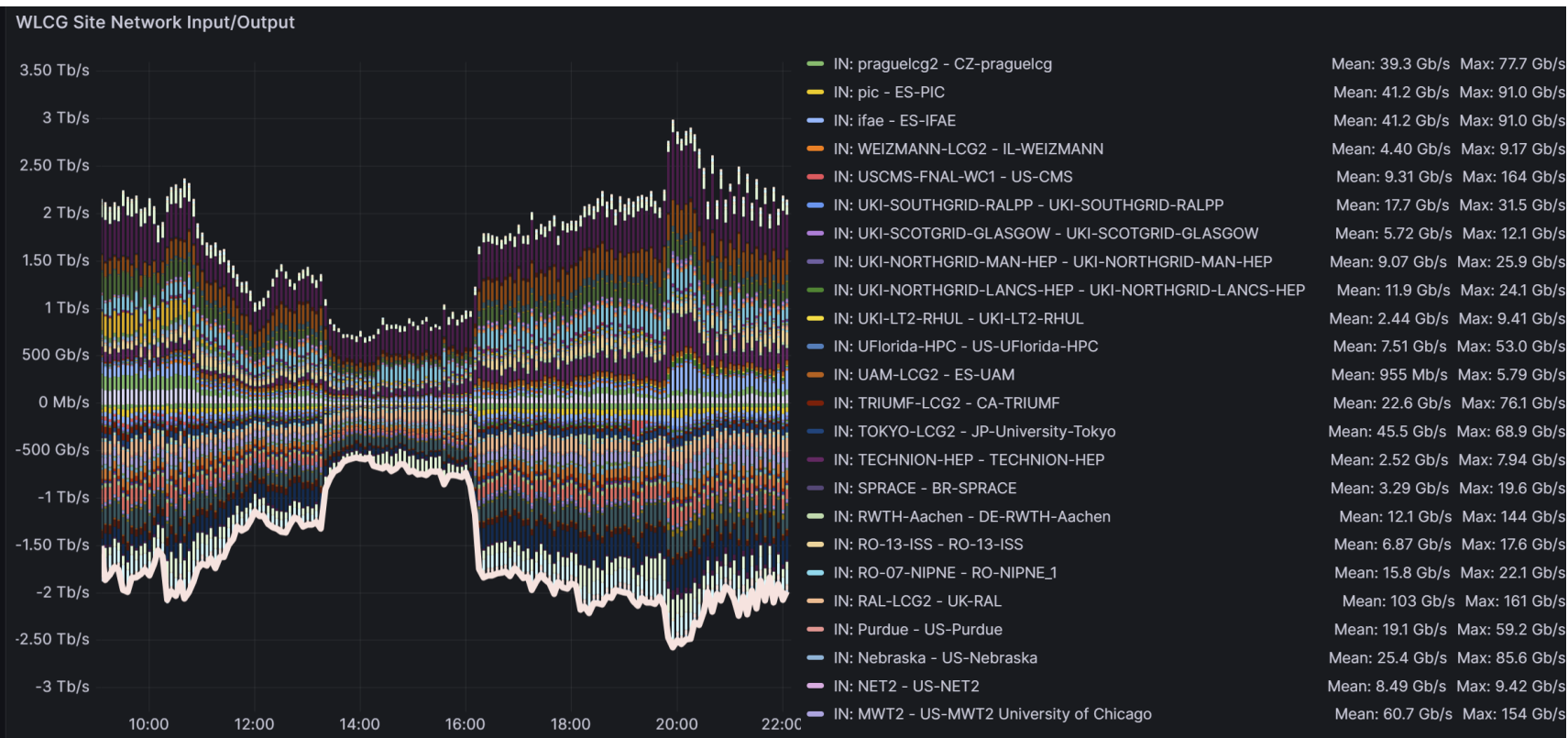
**Excellent external connection thanks to  
CESNET**

# DC24



90 days before and during DC24, bin – 1 h  
peaks at 3 Tb/s

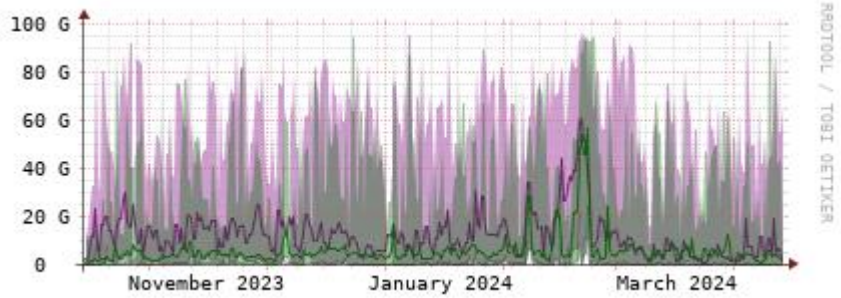
# DC24



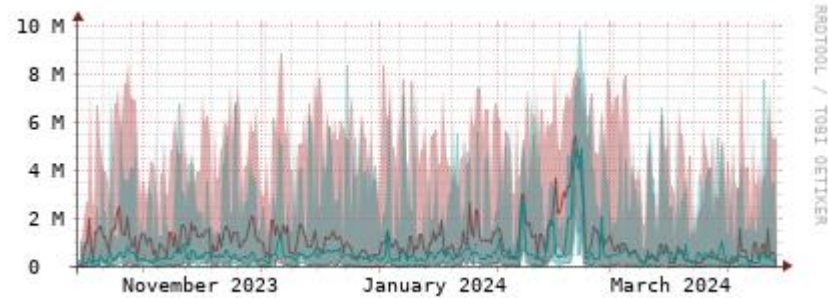
2. week, den  
5 min binning

CZ: 77,7 Gbps

# DC24

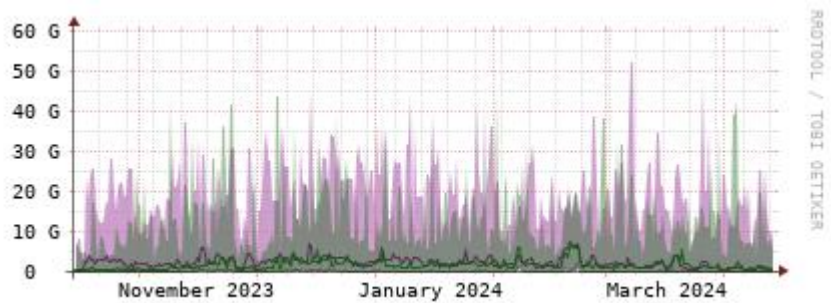


bits



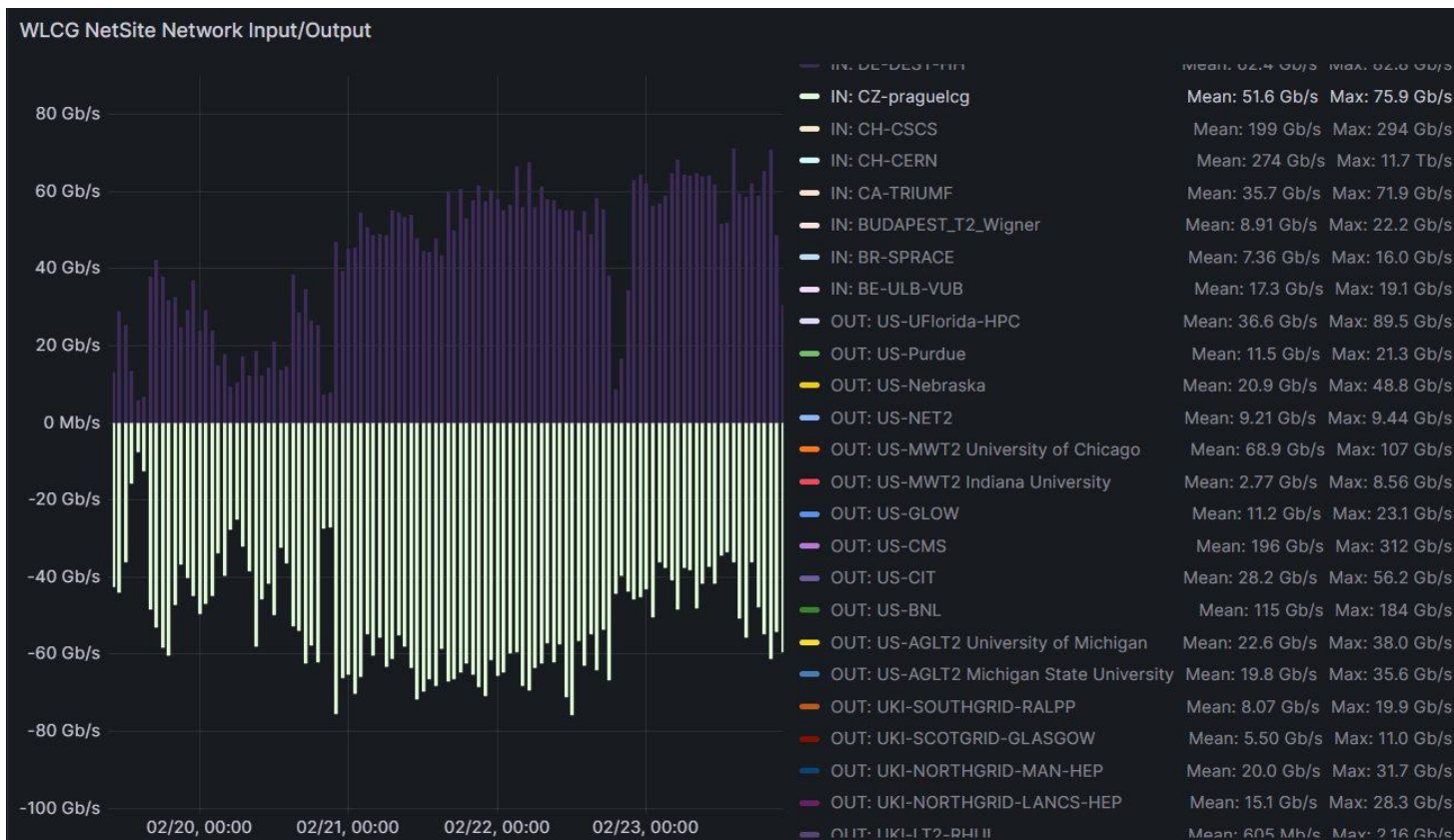
packets

LHCONE



PASNET

# DC24

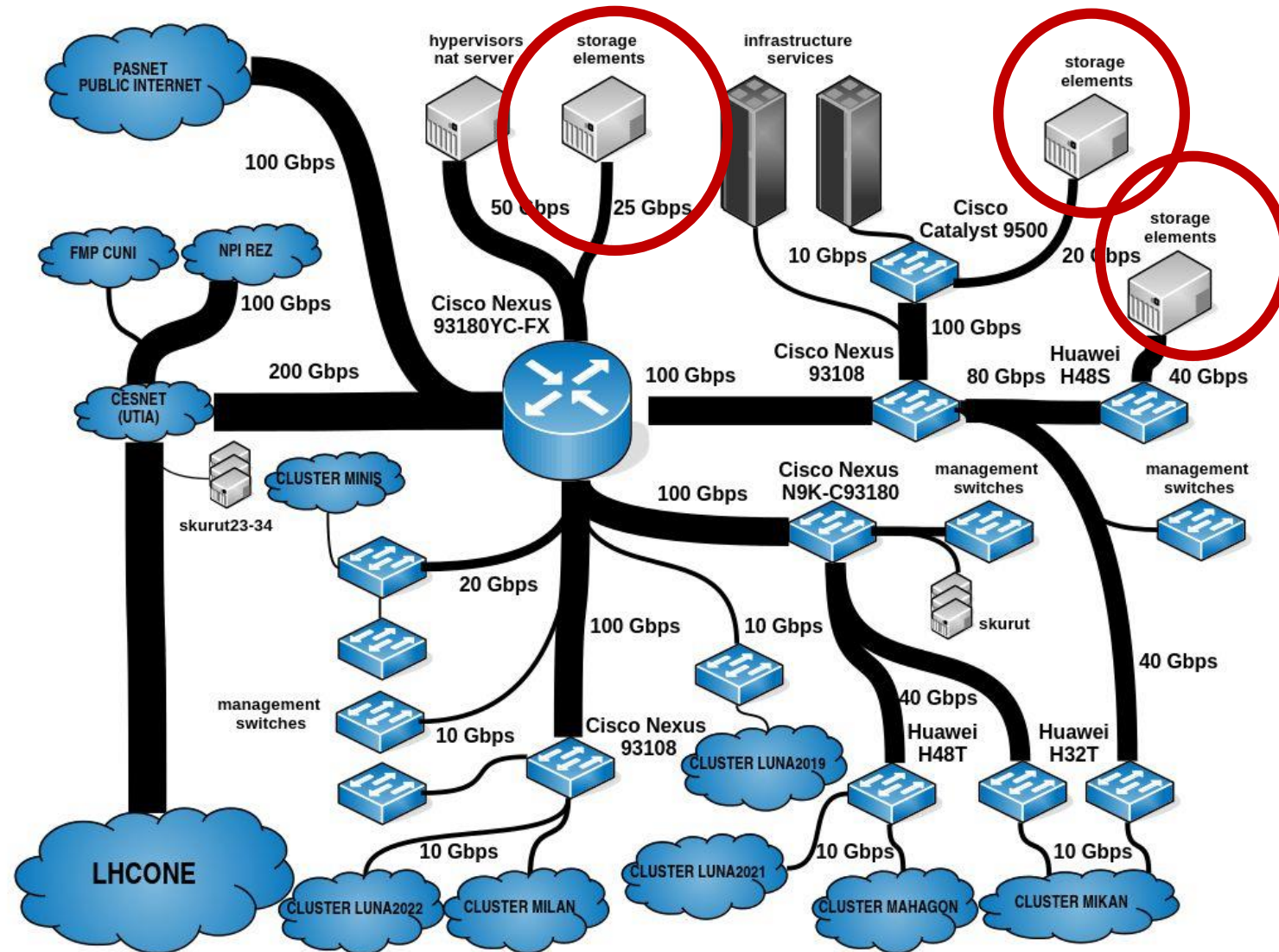


**CZ**  
*(in 4.5 days)*

**in: 2,5 PB**  
**out: 2,1 PB**



# Network since 06.2024

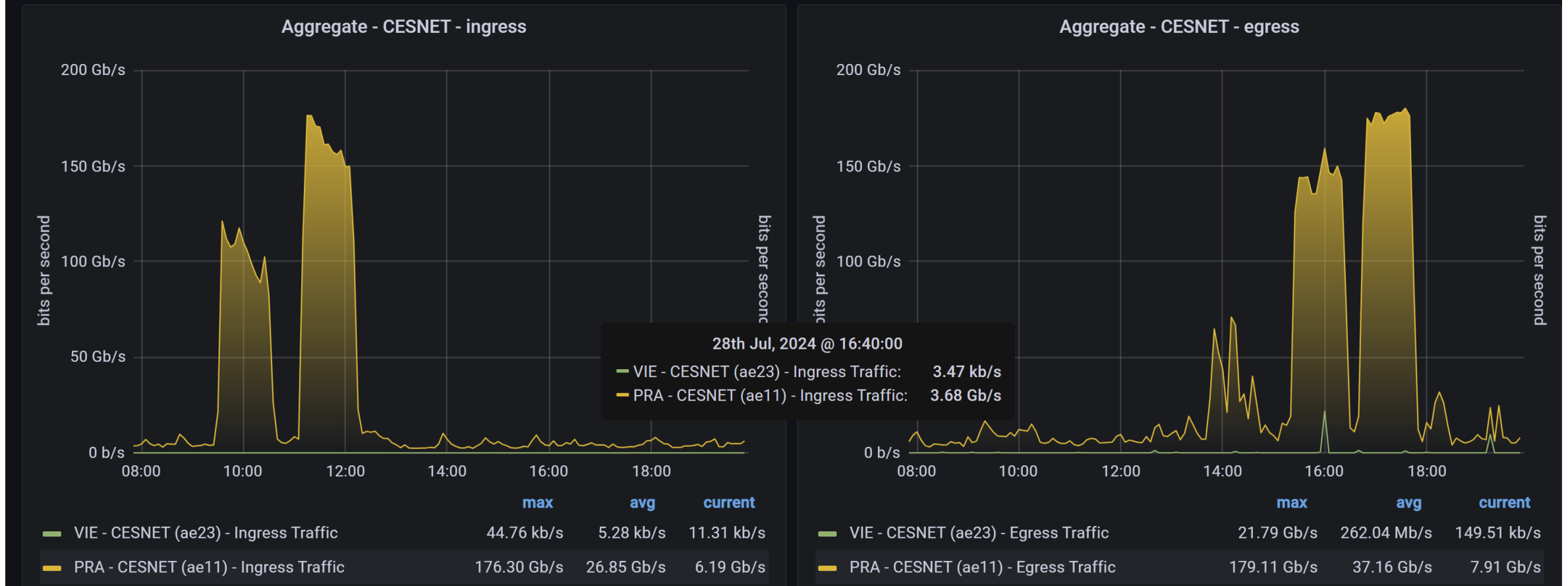


# Custom network test

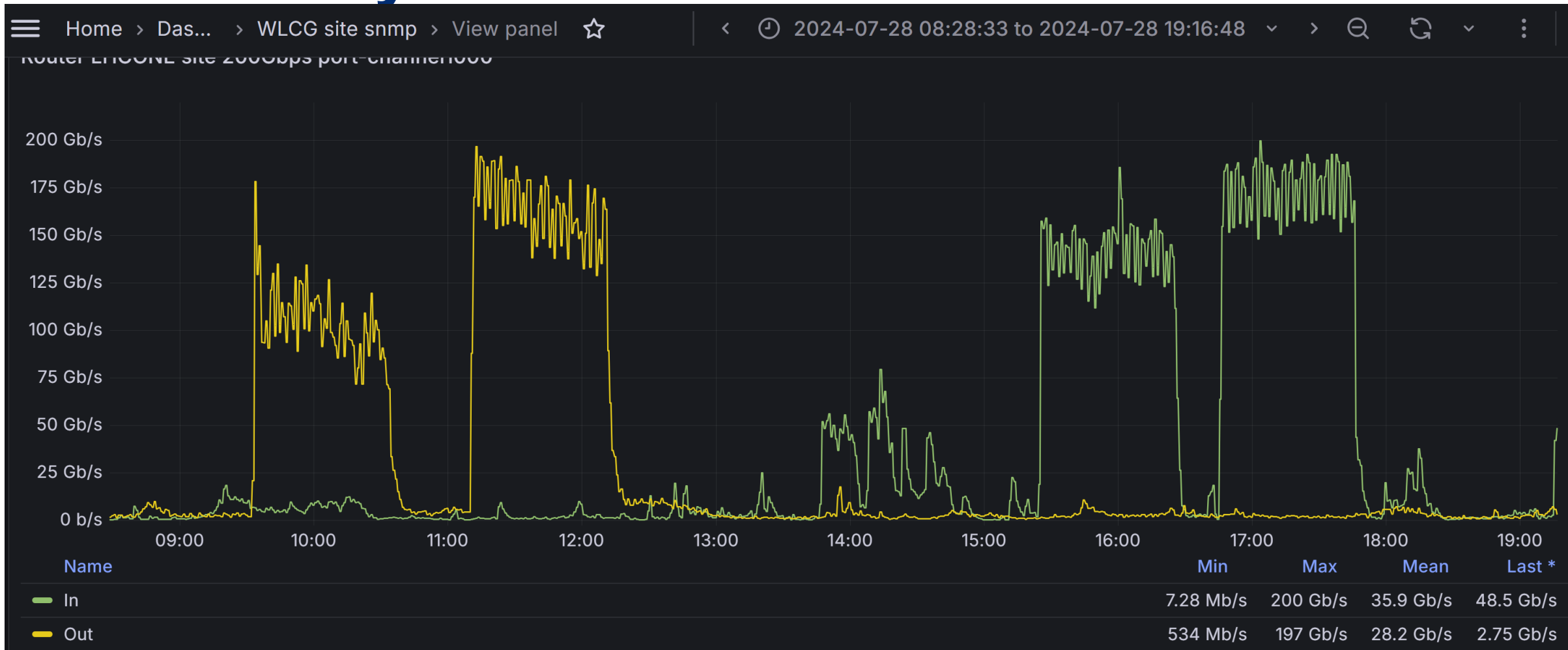
- curl command for parallel uploads/downloads
- running on 15 disknodes at FZU
- all transfers to/from CERN EOS ATLAS
- 2 upload tests (to CERN)
  - 300 parallel transfers (15x disknode x 20 transfers), 10GB files – 102 Gbps hourly avg
  - 600 parallel transfers (15x disknode x 40 transfers), 10GB files – 159 Gbps hourly avg
- 2 download tests
  - 300 parallel transfers (15x disknode x 20 transfers), 10GB files – 136 Gbps hourly avg
  - 600 parallel transfers (15x disknode x 40 transfers), 10GB files – 167 Gbps hourly avg

# Test 07.2024

INFO: The average values displayed are only mean values for timescales of 2 days or less



# Tests - July 2024



# Summary and Outlook

- Excellent network connection even improved since the last year to 200 (LHCONE) + 100 (internet) Gbps
- New router with 400 Gbps ports just arrived
- More tests in when new connection is set up (Q1 2025)
  - more automatic?
  - via FTS?

**We greatly appreciate network, computing and storage resources provided by e-INFRA.cz project**

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