

VLBI Network “Quasar” – JIVE

Network Performance Test

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Preparation of the VLBI Network “Quasar” to e-VLBI

- Update Mark5B+ network interfaces from 1 to 10 Gbps
- Test internal “Quasar” network performance
- Test external “Quasar” – JIVE network performance
- Joint e-VLBI observation with ENV

Install 10 Gbps NIC on Mark5B+

Mark5B motherboard: Intel® Server Board S5000VSA (PCIe v1.0 x4)

https://www.intel.com/content/dam/support/us/en/documents/motherboards/server/s5000vsa/sb/d36978010_s5000vsa_tps_r1_9.pdf

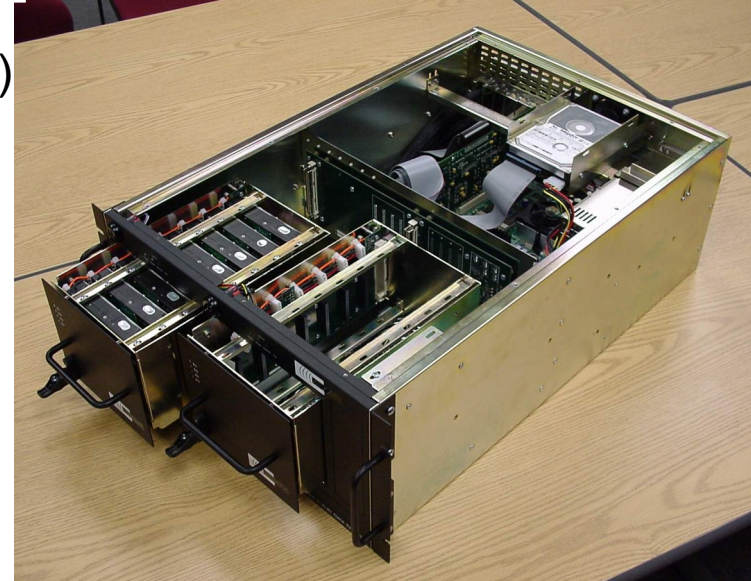
10 Gb/s Network Adapter: Intel x520 (PCIe v2.0 x4)

<https://www.intel.ru/content/dam/doc/product-brief/ethernet-x520-server-adapters-brief.pdf>

Network Adapter driver: ixgbe-5.3.4

Network performance tool: iperf-3.3

<https://software.es.net/iperf/>



The results of measuring network performance

Observatory	LAN (TCP/UDP), Gbps	IAA RAS SPb (UDP), Gbps	Jive (UDP), Gbps
Badary	5.77 / 1.55	1.51	1.53
Zelenchukskaya	5.76 / 1.79	1.74	1.75

In the tests, we used the standard value of maximum transmission unit (MTU) = 1500 bytes

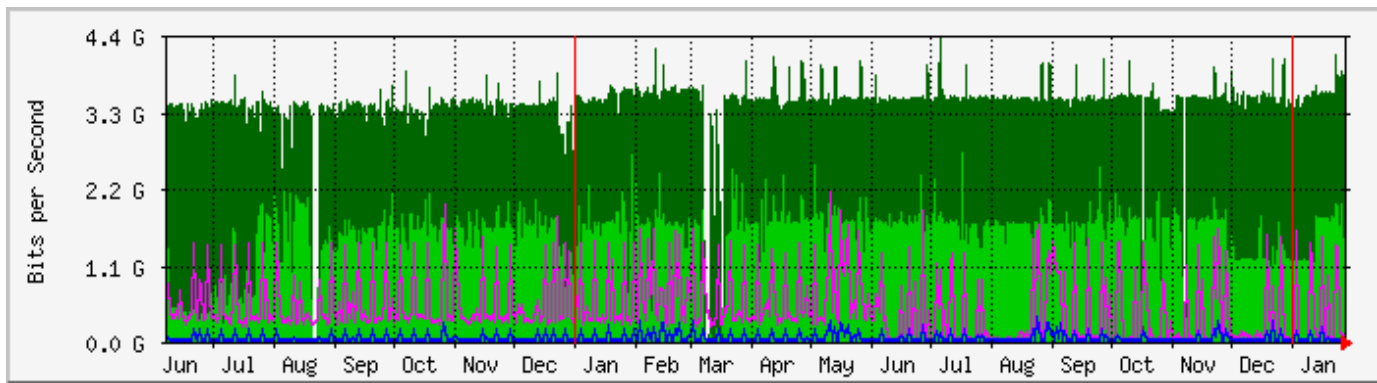
Available bandwidth

Station	In/Out, Gbps
IAA RAS SPb	4/4 (6/6)*
Badary	2/2
Zelenchukskaya	0.1/2
Svetloe	0.1/0.1 (2/2)*

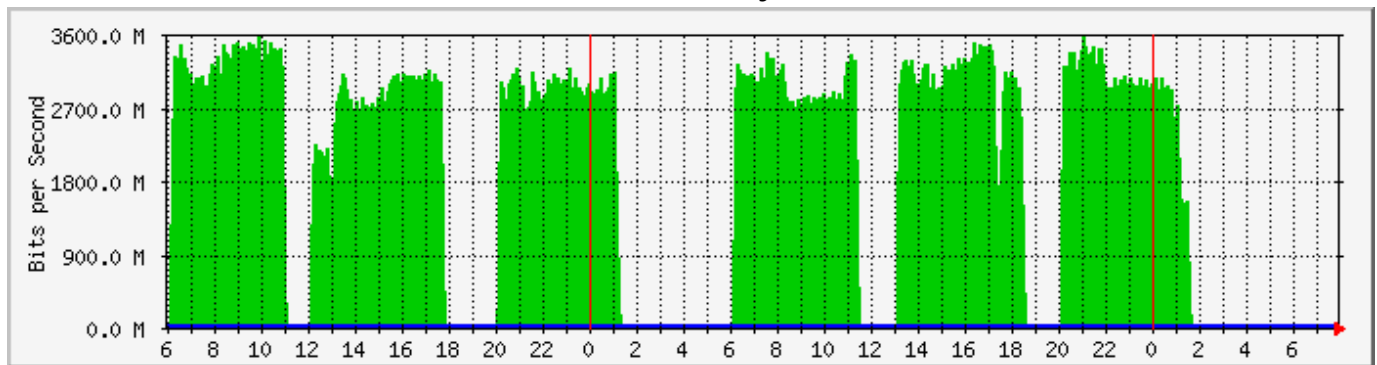
* planned in 2019

Statistics of data traffic utilization (all RT-32&RT-13)

For the year 2017



For the day



Summary and future works

- The data transfer rate in Zc and Bd increased after upgrading Mark5B+ network interfaces.
- The network performance have been tested.
- Measured data rate between “Quasar” (Zc&Bd) stations and JIVE: more than 1.5 Gbps.
- In the near future it is necessary to carry out joint e-VLBI at 1 Gbps.
- When planning observations it is necessary to take into account high load of communication channels due to domestic e-transfer.