

EVN TOG meeting

at the MPIfR in Bonn
January 24, 2023

Recent difficulties/problems

- Any known problems?
- Schedules arrived very late into the session. Can we do anything on that?
- Security issues with the *vlbeer* server

Recorders: Mark5, Mark6, Flexbuff

- Reminder: Flexbuff stations should provide at least 500 TB of storage at the station and 500 TB at JIVE
- Could JIVE automatically collect the available disk space from flexbuff stations?
- Naming conventions for multiple files from multiple streams.
- New from jive5ab.

Recorders and Flexbuffs

Storage media capacity

- Good progress has been made to achieve the goal of 2x500 TB Flexbuff capacity (station and JIVE) for 4 Gbps operation.
 - Stations that have bought new space and have sufficient capacity at the station and JIVE: **Ef, Mc, Nt, On, Sr, Tr, and Ys**
 - Stations that have bought new space and have sufficient capacity at the station: **Jb (eMERLIN), KVN?, and Mh.**
But still have to upgrade space at JIVE!
 - Stations that still need to upgrade are **Hh, Ir, Km, Kvazar, Ur, and Wb.**
- Mark5 stations that cannot do 4 Gbps: Ur and Kvazar stations.

In summary, 15 from 21 stations (counting antennas not institutes) in this list are in principle able to observe at 4 Gbps. A limit of 2 Gbps exists at WSRT, Quasar stations, and Urumqi. Some of the stations still need to invest in disk storage at JIVE: Hartebeesthoek, Jodrell, Kunming, KVN, Quasar stations, Shanghai, Urumqi and WSRT.

Stations

- Any news to report?
- Discussion on eVLBI: 2 days, length of test time, mix with disk recording, towards 4 Gbps?
- Note: Next Technical Operations Workshop at Haystack Observatory from April 30 to May 4, 2023

EVN Technological roadmap

- Driven by the EVN Vision report that outlines the scientific goals for the next years (VLBI20-30, <https://arxiv.org/abs/2007.02347>)
- Based on this document the most important improvements would come from
 - Higher bandwidth, increased frequency coverage/flexibility
 - More antennas
 - Higher cadence, more observing time
 - Wide field
 - Phased array feeds
 - Short baselines
 - Polarization improvements.
 - Large FoV archive, raw data storage.

EVN Technological roadmap

- To reach this, the following recommendations have been made:
 - All EVN stations to purchase a DBBC3-L2H2 as soon as possible (or a compatible digital backend).
Available at Ef, Mc, Nt, On, Sr, Tr, T6, Ur, and Ys
Ordered by Jb and Mh.
Station with own systems: KVN and Kvazar
Ir, Hh, lack of funds, Km?, and Wb not enough BW.
 - All EVN stations to purchase more storage space.
Ongoing (always)
 - Equip stations with wide-band receivers: e.g. C/X 4-9 GHz, Triple-Band (22/43/86 GHz), BRAND (1.5-15 GHz).
Is ongoing as well. Many plans for new receivers, 4 Gbps operation available at C, X, K, and Q band.
3-band RX available at KVN and Yebes
In progress at Ef, Mc, Mh, Nt, On, and Sr.

EVN Technological roadmap

- ... recommendations (continued):
 - Actively support new stations with advice and possibly with equipment.
Ongoing: Projects to mention are the 40m TNRT from NARIT in Thailand, ROT-54 in Armenia, RT-32 Zolochiv in Ukraine, RT-32 in Ghana, RT-32 on San Miguel (Azores), and the 30m Hellenic radio telescope in Greece
 - Upgrade internet connections to 10 Gbps for eVLBI.
Many stations are already connected at that speed or can upgrade if necessary.
 - Actively monitor RFI.
More difficult. Individual solutions at many places, sometimes only sporadic measurements. Plans to cooperate with CRAF to work on a more unified solution.

EVN Wiki page updates

Receiver frequency ranges:

https://deki.mpifr-bonn.mpg.de/Working_Groups/EVN_TOG/Frequency_ranges_for_2%2F%2F4_Gbps

Disk inventory:

https://deki.mpifr-bonn.mpg.de/Working_Groups/EVN_TOG/Disk_Inventory

Recorder/Flexbuff status (2 pages):

https://deki.mpifr-bonn.mpg.de/Working_Groups/EVN_TOG/Mark6%2F%2FFlexbuff_status

https://deki.mpifr-bonn.mpg.de/Working_Groups/EVN_TOG/Recorders_EVN_status

2 Gbps and 4 Gbps status:

https://deki.mpifr-bonn.mpg.de/Working_Groups/EVN_TOG/2Gbps

https://deki.mpifr-bonn.mpg.de/Working_Groups/EVN_TOG/4Gbps

eVLBI status:

https://deki.mpifr-bonn.mpg.de/Working_Groups/EVN_TOG/e-VLBI_Status

EVN Spare parts

https://deki.mpifr-bonn.mpg.de/Working_Groups/EVN_TOG/EVN_spare_parts