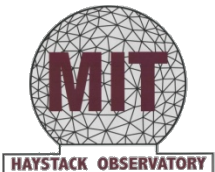


Haystack Status

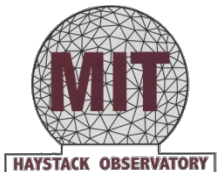
Chet Ruszczyk
June 26th 2015

MIT Haystack Observatory, Westford, MA



Projects

- Mark6 Status
- RDBE-G
- Operational Testing Status and Plans



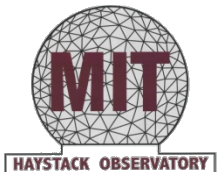
Mark6 Status

- Software Version 1.2k
 - Features:
 - Sub-grouping support
 - Mark6 service for cplane / dplane on boot up.
 - start / stop / restart / reload
 - Persistent configuration information retained
 - Bug fixes
 - dplane (data plane - r/w to disk modules)
 - Version 1.16
 - cplane (control plane - VSI-S interface)
 - Version 1.0.21



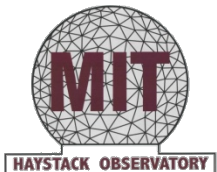
Mark6 Status

- Documentation
 - Command Set Version 1.2.1
 - Increased the number of Mark6 specific return codes
 - To aid in failure messages
 - vdif_epoch
 - Ability to set the VDIF epoch for data plane time processing
 - Bug fix : epoch did not change but Mark6 restarted in new epoch
 - » Timing miss-match
 - » no data recorded
 - group_info, stream_info
 - To replace group_members command
 - group_members still supported for APP.
 - Sub-grouping memo (use cases)
 - Enhancements to users manual



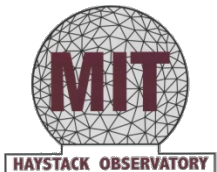
Mark6 Status

- Self test software
 - Requires two Mark6 systems
 - Documentation under development
- Conditioning software
 - hammer



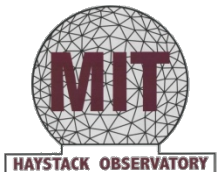
Mark6 Status

- Hardware
 - New motherboards
 - Old motherboards reached end of life
 - 64G of RAM
 - CX4 or SFP+ 10G NIC cards
- OS
 - Debian Jessica
 - 64 bit
 - Under evaluation
 - dplane / cplane compile / build issues
 - pfring compile / build issues



Mark6 Status

- Next feature set:
 1. Support for latest OS distribution (Jessica) and new HBA cards.
 2. Instant 'record=on', 'record=off' capability
 - A. Unknown format
 - B. Still requires proper input_stream configuration
 - C. Under test (dplane 1.19 / cplane 1.24)
 3. e-VLBI support
 - A. Command set support for e-VLBI evaluation
 - B. Using standalone programs
 4. GUI
 - A. Simplify Mark 6 module configuration / management
 5. RAID5 and 10 support for Mark 6 data on correlators



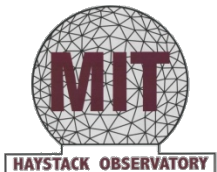
RDBE-G

- Roach Digital Backend - G
- ALC off the self components
- Haystack Synthesizer (rev'ed)
- 3U form factor (new chassis)
- Version 3.0 firmware
 - Two IFs 512Mhz bandwidth
 - 16 channels - complex data
- Display for time / diagnostic information
- Under test for VGOS
 - Wf to GGAO
- Available from Mo's
 - pricing unavailable but estimated < \$18K



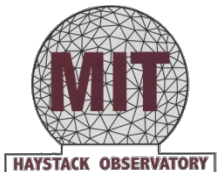
Operational Testing Status and Plans

- Correlator
 - Vdifuse
 - Scatter / Gather Fuse Interface for VDIF
 - Alma Phasing Project - verified
 - General purpose version???
 - Gather464
 - Takes 4 vdif threads (16 channels / thread)
 - Combines into 64 channel single thread
 - Reduces correlation time
 - Verified with DiFX
 - Mount Mark6 Modules with vdifuse process the data directly from the disk modules to DiFX (APP / EHT)
 - Geodetic
 - Raid0 in slot 0
 - Gather464 / DQA scans to RAID for processing



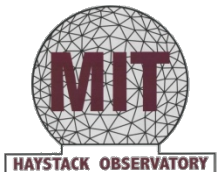
VGOS Operational Evaluation

- Broadband Westford to GGAO 12M
 - 4 RDBE-G -> Mark6 (8Gbps)
 - Bi-weekly sessions
 - 1 and 4 hour sessions
 - Soup to nuts
 - Schedule generation
 - Processing / control / setup / broadband systems
 - Correlation
 - Verification
 - » Data quality
 - » Signal chain equipment
 - Messaging



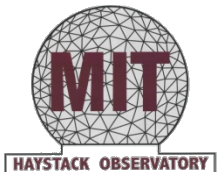
VGOS Operation Evaluation

- FS Integration
 - Agreed upon model with Ed H.
 - Setup / configuration handled by operators
 - Handles recording
 - Gathering system multicast data
 - Improved consistency of sessions
 - Eliminates setup errors
 - 75% reduction in setting up experiment
 - Continue to evolve capabilities



Astronomy Operations

- Alma Phasing Project (64Gbps)
 - Successfully record / correlated data
 - Using m6cc command for mark6 recording operations
 - Converts skd / vex to xml and uploads schedule
 - Runs standalone
- Event Horizon Telescope / BHC (32Gbps)
 - Utilized subgroup feature of M6
 - Presently analyzing data from campaign



Thank you / Questions?

