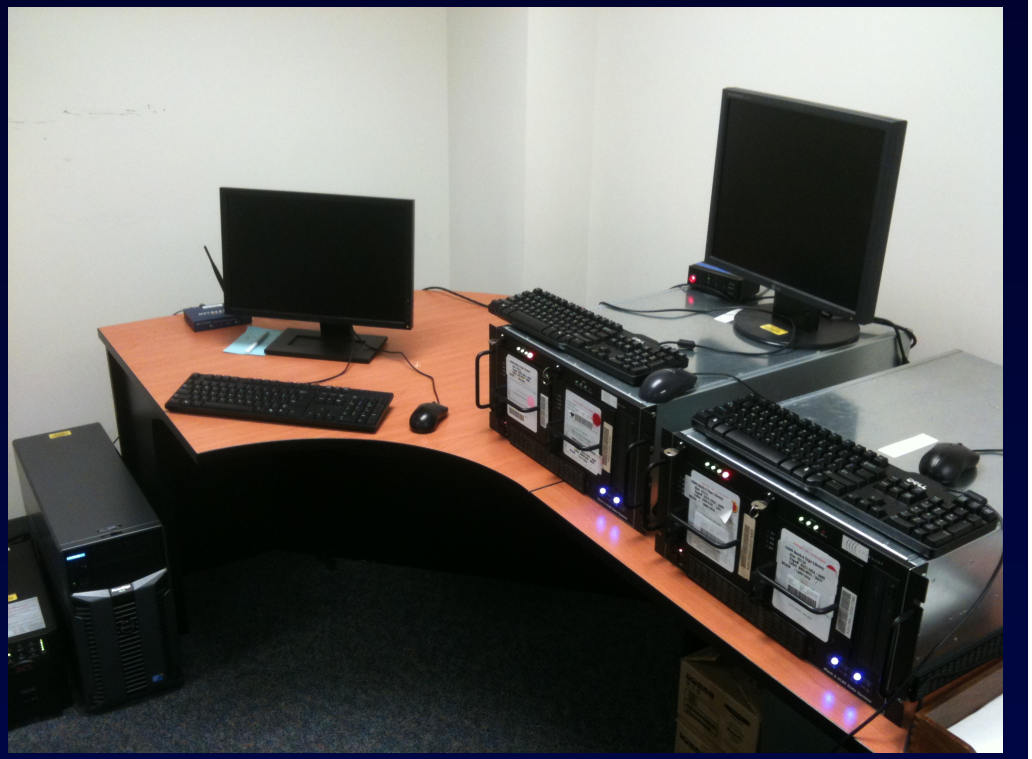
USNO Status Report: S/W Correlator & e-VLBI

Dave Boboltz, Nicole Geiger, Alan Fey,
Ralph Gaume, Kerry Kingham & Dave Hall

United States Naval Observatory

Current Software Correlator Set-up

- Dell PowerEdge T610 (UPSC2) with 12 hyper-threaded cores.
- 32-bit Red Hat Linux.
- DiFX 2.0 trunk version.
- 1 Gb/s switch between Mark5 units and UPSC2.
- SDK8.2 installed on Mark5 units with Red Hat Linux.
- Mark5 units controlled with NRAO mk5daemon.



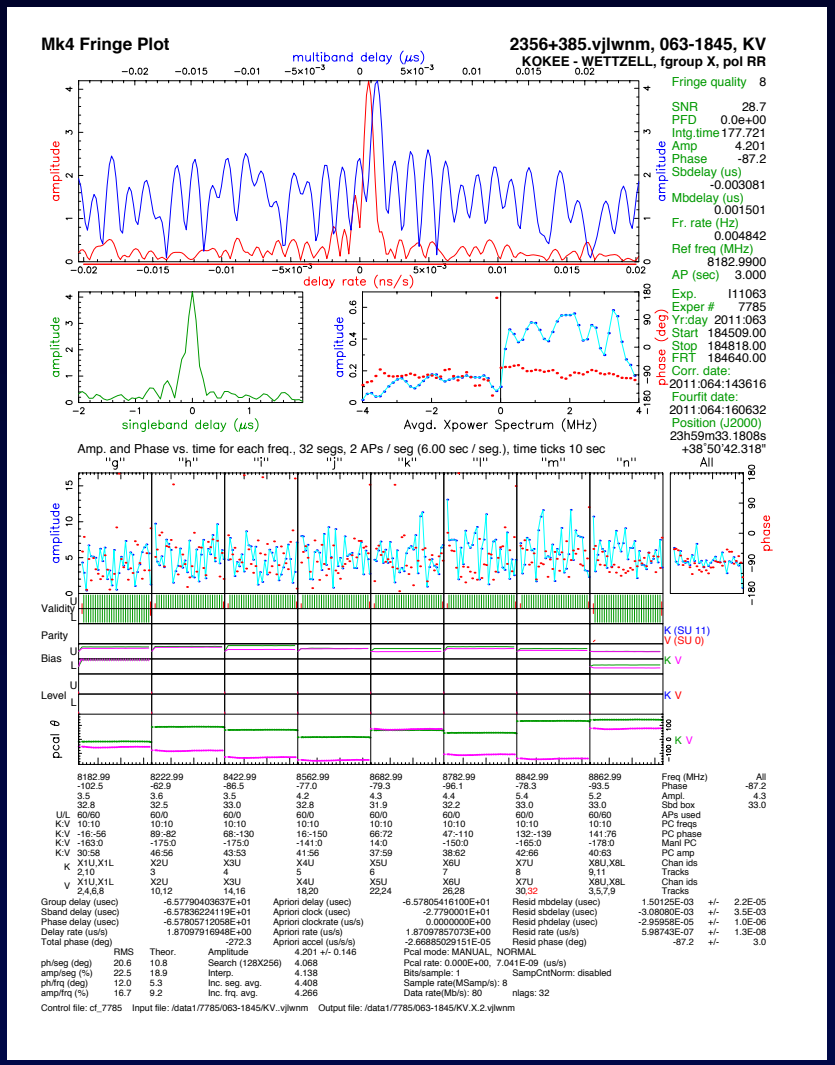
Software Correlator Testing

- Intensive Processing (i11063)
  - Kk (Mark5b) – Wz (MarkIV)
- Pre-processing involved some editing of vex and v2d files by hand.
- Made use of NRAO startdifx/genmachines scripts to streamline the correlation of multiple scans.
- Phase cal extraction on.
- Used difx2mark4 to convert DiFX output.
- Kerry ran output successfully through HOPS/Fourfit.

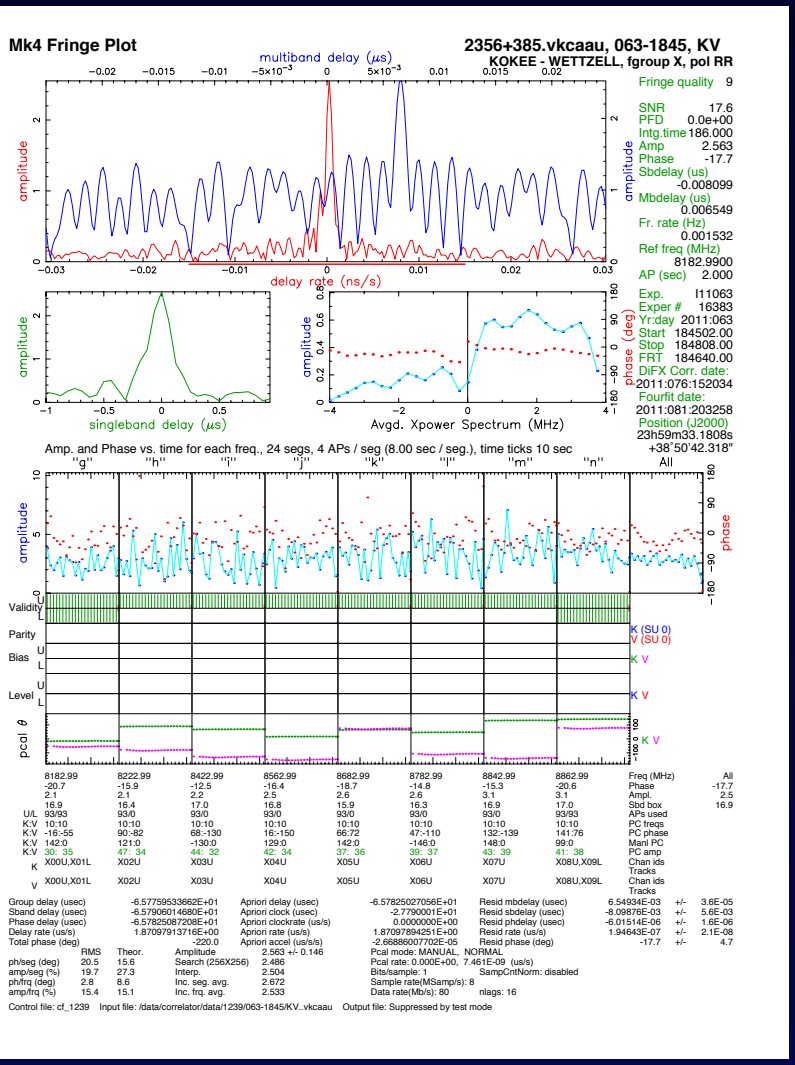
United States Naval Observatory

Fringe Plots: i11063

H/W correlator



DiFX



Software Correlator Plans

- Near-term (1-3 months) plans:
  - Continue testing DiFX 2.0 with real Intensive data.
  - Streamline pre-processing path (more scripting).
  - Install HOPS on correlator machine.
  - Produce geodetic databases for input to SOLVE analysis pkg.
  - Finalize requirements for future (15 station?) correlator and consider hardware options.
- Longer-term (3-9 months) plans:
  - Develop “operator friendly” GUI for correlator.
  - Settle on final correlator configuration and purchase equipment.
  - Regular side-by-side comparisons with hardware correlator.
  - Take over correlation of geodetic and VLBA intensive experiments.

Software Correlator Plans

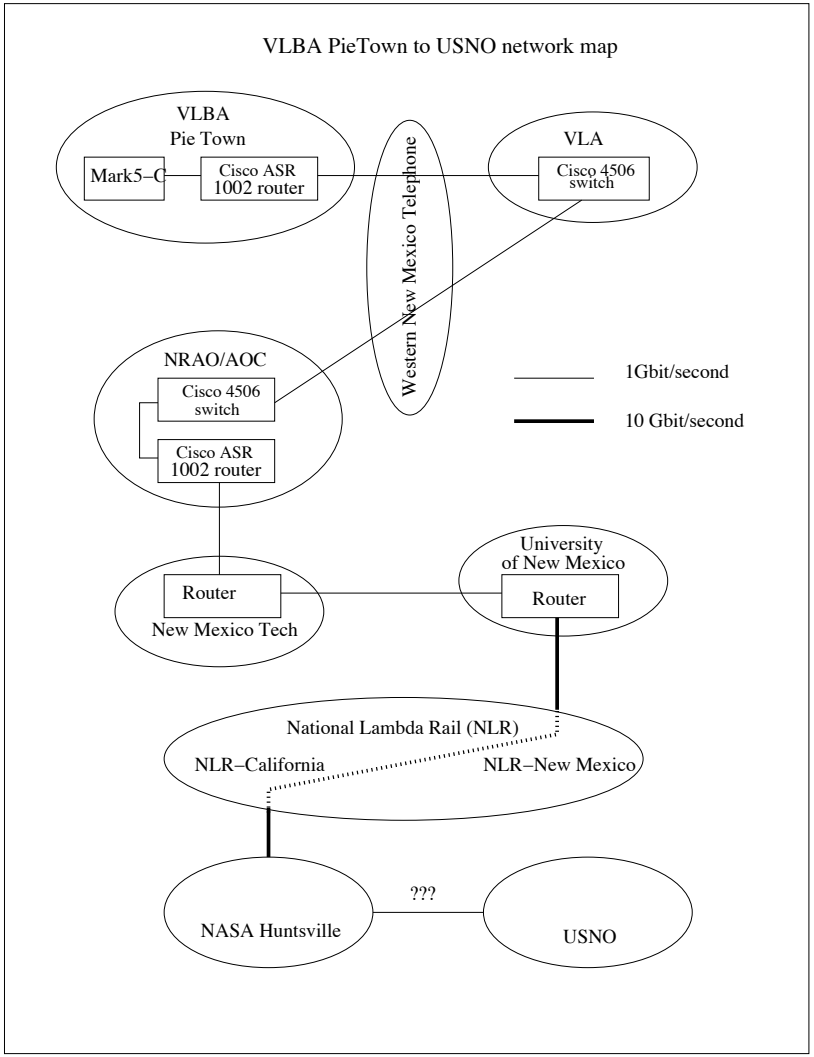
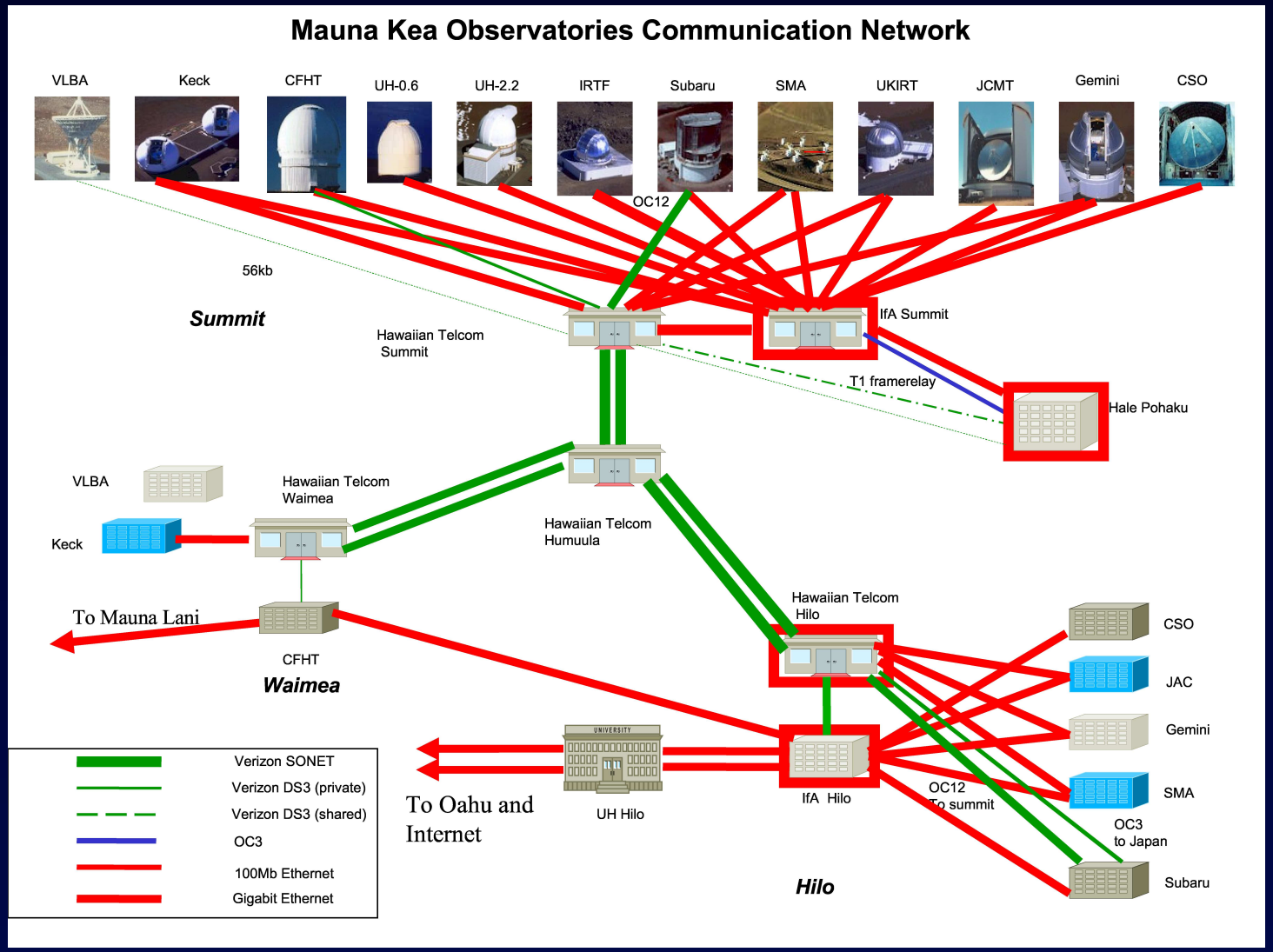
- Hardware purchases:
  - Five additional Mark5 units.
    - Shared between h/w and s/w correlators.
  - 2 SAN/NAS devices
    - 48 TB each.
    - For incoming e-transferred VLBI data and use with the correlators
    - 10 GigE to 20 Mark5 units and s/w correlator.
- Potential hires:
  - Software engineer for 6-8 months to work on GUI implementation.
  - VLBI post doc to work on correlation and data analysis.

Back-up Slides

Status of the VLBA Intensive Program

- Contracts in place to connect the Pie Town and Mauna Kea VLBA stations to high-speed networks in 2011
- Contract with AUI/NRAO
  - 1 Gbps link from VLA to PT (Western NM Telecom)
  - Access to shared 1 Gbps connections from the VLA to UNM
  - Access to 10 Gbps NLR pop at UNM
  - Equipment for both MK and PT
  - In service as of March 2011
- Contract with Univ. of Hawaii
  - 1 Gbps link from the MKOCN to the VLBA site
  - Access to 10 Gbps Internet2 pop on Oahu back to mainland
  - Subcontracted to Hawaiian Telecom
  - Expect in-service: April 2011

Pie Town to USNO Network Routing



MKOCN Connectivity