Field System Topics

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FS Linux Distribution

- FSL9
  - Current Standard
  - Based on Debian "wheezy"
  - Older systems should be upgraded or be replaced
  - Has some minor serial issues, but so far we have solutions
- FSL10
  - Next standard
  - Will be based on Debian "Jessie" which was just released
  - Availability TBD
- 64 vs 32 bit
  - This is a looming issue
  - Soluable but will take some effort

Current FS Release

- FS 9.11.7
- Includes support for:
  - DBBC DDC v105X
    - Must have patch to logmsg_dbbc.c installed
  - Operational use of 64 MHz Mark 5B clock rate
  - Single Mark 5C recorder controlled by jive5ab
  - Up to 100 modes in DRUDG
- "mk5_status" command
  - Thanks to Harro
- Mark IV formatter communication fix
  - Thanks to Paul Burgess

(soon to be) Current Release

- FS 9.11.8
- Tested, just needs clean-up
- Includes support for:
  - DBBC/FiLa10G rack type
    - DDC only, VDIF only
  - Single FlexBuff/Mark 6 running jive5ab
  - VLBC and CDAS racks
    - Requires local VSI4 command
  - VDIF fanout_def track lay-outs in DRUDG

Fall Release

- FS 9.12.x
- Currently in use for VGOS testing
- Preliminary Support for
    - Up to four RDBE-G racks (in parallel)
    - Up to two Mark 6 recorders with cplane (in parallel)
    - UDCs (Up/Down Converters)
    - VGOS Observing
- Input case sensitive
- Log output of arbitrary linux command
    - sy=popen 'linux command' &
    - No clean-up or time-out provided (yet)
- Exactly two polarizations per LO or more?
    - L/R, H/V, X/Y

Winter Release

- FS 9.12.x
- DBBC PFB personality support for 4 Gbps data rate

caltsys & LO command

- caltsys procedure options:
  - 1. DRUDG generates caltsys procedure
  - 2. Band (or receiver) procedures that set
    - Use "save_file" command to store/read commands
    - caltsys procedure contents
    - cont_cal=… command
    - …?
  - 3. Table in the FS for procedures to use
    - caltsys procedure
    - cont_cal=… command
    - …?
    - put in RXG file as comment or data?
- Tcal – remove station specific caltemp commands
  - Standardize use of hot and cold loads
- Remove station specific LO commands
  - All station specific code in LO_CONFIG command, options
    - Executes new mode in ANTCN
    - Station specifc code

Cable wrap implementation

- More than you ever wanted to know about cable wrap:
  - ftp://ivscc.gsfc.nasa.gov/pub/TOW/tow2013/notebook/Himwich.Sem2.pdf
- Definitions are a little non-intuitive
  - Neutral is the non-overlapped region, not central point
  - Counter-clockwise and Clockwise are overlapped
- Scheduling is most of the work
  - Algorithm must predict antenna motion
  - For the first scan "pick" a wrap if not neutral
  - Exclusion zones are needed to avoid ambiguities
- At the stations
  - Implement "souce" command cable wrap parameter to select correct wrap
  - Handle edge cases for more robustness

Whither FS Time?

- From a bygone era when NTP and GPS were not readily available
- Significant conceptual complication for operators
- NTP is obviously a possible mechanism for time distribution
  - Pros:
    - Generally available
    - Reasonably reliable
  - Cons
    - Very complicated "black box"
    - Will require additional monitoring
    - Leap second behavior is bad
    - Useless if NTP servers are not available

NTP Proposal (first cut)

- Two local stratum 2 server(s) for site
  - Use mix of local and remote stratum 1 servers
  - Is two not enough or too many?
  - How many local stratum 1 servers?
- All other devices use the local stratum 2 servers
- Monitoring daemon to check for large offsets among all servers and/or no sync by stratum 2 servers
- If we rely on NTP, should setting formatter time be automated (automatable)?
- Monitor formatter for offset from NTP
  - Formatter continues to be an independent clock?
- Preserve "FS Time" in case NTP unavailable?

Additional Items

- eRemoteControl
- RXG file related:
  - New rxgfile SNAP command to allow RXG file updates without restart
  - Logging of RXG file identification information for better accountability
- RDBE DDC Support
- Improved rack=none set-up comments
- Source scanning on the fly
  - Improvement on FIVPT for antennas that can scan in rate

Additional Items II

- TLE Satellite pointing
  - Currently
    - Generates ephemeris that can be sent to antenna
    - Fixed RA/Dc and Az/El pointing
  - Future
    - Periodic Satellite Commands in RA/Dc and Az/El
    - Satellite visibility output
    - Expand to other non-sidereal sources
    - Using Spice toolkit .bsp files
- Band switching
- ANTCN termination mode
- 30 minute periodic "BEOB" procedure in place of "MIDTP" for periodic monitoring functions

VEX2

- Second draft design was released
  - February 13, 2015
  - Version 1.9996
  - Minor updates only
- Walter Brisken proposes to replace all non-star source information with SPICE toolkit .bsp files.
  - Response to community calls for non-star pointing information in VEX file.
- Implementation schedule
  - TBD

Conclusion

- It would be very helpful to have:
  - Feedback on new `gnplt`
  - Feedback on bugs that are occurring in the field
  - Input on what features are still needed or need to be changed in DBBC support
  - Any other requests