State of the Mark5’s

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MIT Haystack Observatory, Westford, MA
Agenda

• Mark5A / 5B / 5B+
  – New Features
  – SDK9.2
  – Documentation
  – How to get there

• Mark5C
  – New Features
  – Important firmware changes
  – Documentation
  – Where to next
Mark5A /5B /5B+ Application

• Mark5A
  – Modified to use SDK9.X
    • Large disk support (>1TB) available
  – Should be noted that all applications for 5B / 5B+ are links to Mark5A application
    • Different start up based upon application name
  – Also note that DIMino now matches the documentation
    • If you type dimino will most likely get the old version
Mark5A – New Features

• Ability to turn of real-time mode
  – Impact – Fill pattern is not inserted when disks cannot keep up.
  – Commands affected
    • disk2net, disk2file, file2disk, net2disk
      – Switch to enable / disable real time operations
      – Default is non-real time mode

• Support for > 1024 scans on the disk modules
  – Untested feature
  – Enabled with SSErase command switch
    – SSErase -h

• tstMark5A now has “quit” to exit all clients
Mark5A Verification

• Tested on Mark5A / 5B / 5B+
  – Debian Etch Distributions
    • No longer supported but many systems using this distro
    • Streamstor utilities are under gccv3
  – Debian Squeeze Distributions
    • Latest Debian stable release
  – What about Lenny
    • Less than one year of support remaining
    • Skipped this distribution for these systems
Software

• Will be added to the Haystack Website

• Package Information
  – mark5_2.2.0-i386.deb
    • DTS_id : 2012y269d14h
  – streamstor_9.2.1-i386.deb
  – mark5bio_1.0.6-i386.deb
    • Mark5B’s only

• If you want to roll your own, tar balls will be available
Documentation

• Command set updated
• Release notes
  – Bug Fixes
  – Identifies modifications to commands
  – FAQ update
    • Concentrates on disk packs used between
      – Mark5A/5B/5B+ and 5C
    • Known conflicts to be avoided
## SDK Information

<table>
<thead>
<tr>
<th>SDK Version</th>
<th>Shared Library version number</th>
<th>cc5A/cc5B linked library</th>
<th>Debian Package version</th>
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</table>

• 1  -> Contains a firmware fix potential e-transfer problem (disk2net)
• 5c -> for Mark5C only
Mark5C

- Was a joint development effort of MIT Haystack, NRAO and Conduant Corporation
- Designed to meet the Mark5C specification
  - MIT Haystack Memo #57
  - VLBA Sensitivity Upgrade memo #12
- Features
  - 4 Gbps recording capability
    - Dual bank mode (16 disks)
  - 2 Gbps recording capability
    - Bank mode (8 disks)
  - Data type independent (VDIF, Mark5B, etc.)
Mark5C Hardware

- Amazon streamstor controller card
  - Controller card (Mark5B+)
- 10Gbps Ethernet daughter board
  - CX4
  - Maximum ingress rate is 4Gbps
  - Receive only device
    - No transmit capability designed into firmware
    - Burst of 4 packets at line rate
      - Aggregate rate 4Gbps
SDK9 and Mark5C

• SDK 9.2
  – Impact of 10G receiver firmware version on packet command
    • Correction made for packet offsets to byte boundary from 8 byte boundary
      – G4CS_10GRX_01003.xfb
        » bit file that must be ssflashed
      – FPGACfgVersion: 1.03
        » from ssprintVersions utility
SDK9.2 and Mark5C

• If you have a payload that is IPv4 + UDP + 8 bytes sequence number:
  – If FPGAConfigVersion < 1.03
    • packet = 40:0:5008:0:0 for Mark5B payloads
  – If FPGAConfigVersion >= 1.03
    • packet = 36:0:5008:0:0
  – These command will only record Mark5B payload.
    • Unless VDIF data is 5008 bytes
Mark5C Software

• Application - DRS
  – VLBI “Data Recording Service”
  – Latest version 0.9.14-1
  – Write capabilities set with “personality” command
    • 2Gbps bank mode
    • 4Gbps dual bank mode
  – disk2file command
  – Informational logging of user directory “adds” and “deletes”.

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Mark5C Software

• fuseMk5
  – Read capability
  – Sourceforge merge to support Mark5A/5B/5B+/5C
  – SDK9

• Numerous utilities
  – Updated utilities SSERase, SSReset
  – Command line interface and graphical user interface
Documentation

• Command Set v 2.0
  – On the web site

• Users Manual
  – Available and to be posted

• Release Notes
  – Notes in the changelog
    • New features
    • Bug fixes
Thanks to Other Contributors

• NRAO
  – Mattias Bark, Walter Brisken,

• JIVE
  – Harro Verkouter
Thank you / Questions?