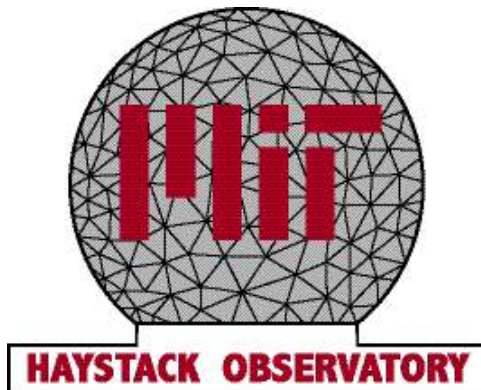


Mark5 & RDBE Status

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Topics

- Software / Firmware
 - Mark5A / B / B+
- SATA
- Mark5C
 - Application / Firmware / Testing
- RDBE

Mark5A / 5B / 5B+ SW / FW

- Recommended OS for all Mark5's
 - Debian Etch (kernel 2.6.18)
- Mark5 and Conduant software
 - Latest released versions advertised:
 - <http://www.haystack.edu/tech/vlbi/mark5/notices.html>
 - Mark5A-1.0.7-i386.deb
 - Mark5B-1.0.6-i386.deb
 - mk5bio_1.0.3-i386.deb
 - Streamstor-1.1.4-i386.deb (SDK 8.2)

Mark5A/5B/5B+ SW/FW

- Version 2.0 (alpha) release under test
 - Mark5A
 - Correlator
 - Westford
 - Mark5B/B+
 - Westford
- Conduant SDK 8.3
 - PATA to SATA module switching
 - Moving modules from Bank B to Bank A
 - B+ Amazon controllers only

Mark5A / 5B / 5B+ SW/FW (cont)

- New features (Mark5A, Dimino)
 - Support for up to 80000 scans
 - Off by default for backward compatibility (<1024)
 - Ability to turn on / off real time features:
 - Address problems:
 - disk2file / disk2net
 - net2disk / net2file
 - Upgraded Utility
 - SSErase switch for enabling > 1024 scans
 - DirList for enabling reading of > 1024 scans

SATA

- SDK8.3
 - Corrects all known problems with SATA drives
 - Based on testing at Haystack using Mark5B+
 - Has not been verified for Mark5A
- Conduant no longer supports bugs related to PATA drives
 - e.g. if a bug was found were a bad PATA drive caused to the OS to crash
 - Conduant will not investigate

Alternative Drives

- High Altitude Evaluation (>3048m)
 - solid state drives
 - Cost is 20 to 1 per terabyte over existing drives
 - Mark5 Memo #080

Brand	Model	Write Spec	Measured	Price/TB
Intel ^{1,2}	S5500SA2MH160G1GC	800	500Mbps	\$2.91
Kingston	SNV125-S2/128GB	560	200Mbps	\$1.78
OCZ	OCZSSD2-1SLD250G	720	175 Mbps	\$2.25
Adtron ²	A25FD-128GC30N	1000	???	???

- Pressurized disk drives
 - Cost \$1800 for 1 TB drive

1 – Purchased as a Kingston SNM125-2SB/160GB, expect 8pack to support 2Gbps

2 – Conduant tested both Adtron and Intel and stated they both “look good”

Mark5C Testing

- 10Gbps Ethernet daughter board
 - Attaches to the Streamstor Amazon controller card
 - Used in the Mark5B+
 - Daughter-board is designed and available
 - FPGA load is under development
 - Received 3rd pre-release version (65) for testing
 - Nov 16th
 - Features
 - Meets all the Mark5C specifications in memo 057

Mark5C Application

- Data Recording Software (drs) application
 - Under test with corresponding FPGA load
 - Development release version 65
 - Acceptance of version 0.9
 - Dependent on testing results
 - Expect Dec 2009
 - PSN Mode 1 up to 2Gbps (headers verified)
 - Some anomalies that have to be investigated
 - PSN Mode 0 up to 2Gbps (headers verified)
 - A few minor configuration problems found

Mark5C Software

– Version 1.0

- Expected release March 2010
- Full support of Non-Bank Mode operation
 - 4Gbps
 - VDIF
- Fully functional software

User Directory Structure

- What is different?
 - Draft memo:
 - Specification for enhanced Mark5 Module Directory
 - Mark5 Memo #081
 - Primary Goals
 - Additional info so DirList utility can give
 - Complete summary of each scan without reference to data in the scan
 - Move Disk Module Status (DMS) information
 - » out of VSN area
 - » into directory header (4 byte field)
 - Directory header contains version information

User Directory Structure (cont)

- Major change in how it is treated
 - Past approach for Mark5A, dimino
 - Fixed size allocation (bytes)
 - Uses this information to determine version
 - New approach for “drs” application
 - Variable length
 - 128bytes – 10Mbytes
 - Hold information for 80,000 scans
 - Version in directory header defines structure

Version 0.9 Features

Feature	Description
10G Daughter Configuration	SDK 8.3 -> ss_ifconfig, packet
Record	On / off with PSN mode 0, 1, 2
MAC_List	Filtering on Source MAC Address
Utility upgrade	SSErase -> Conditioning - New user directory structure DirList -> User Directory Listing to support version 1.0 FuseMk5 -> New User Directory support

Version 1.0 Features

Feature	Description
Non Bank Mode	All commands / features associated with support of non-bank mode (reset, UserDirectory, personality)
10G Daughter Configuration	SDK 8.X -> ss_ifconfig, packet
MAC_List	Filtering on Source MAC Address
VDIF support	User Directory support & associated commands (mode, data_check, scan_check)
Mark5C Profile	Need to submit it to NRAO/HAY/NASA JPL community, then to VDIF community for ratification
Utility upgrade	SSErase -> Conditioning – Non-bank mode DirList -> User Directory Listing to support version 1.0 FuseMk5 -> New User Directory -> Add multi-stream support (tcp based ftp apps)

RDBE

- ROACH Digital Back End
 - Developed by UC Berkeley / South Africa
 - Reconfigurable **O**pen **A**rchitecture **C**omputing **H**ardware
 - Joint development effort NRAO / Haystack
 - Complete enclosure
 - FPGA
 - Application / Firmware

RDBE Status

- Instantiating VHDL modules
- Testing and verifying with impulse input
- Sweep analog sinusoids through filter bank
- Interfaced to the Mark5C
- We expect first light testing early 2010
 - Comparison with Haystack's DBE1 ibob design

Thank you / Questions?