

# Mark6 Operational Updates For VLBA

# Mark6 Hardware Status and Timeline

All hardware has been acquired

First operational recording unit is installed at Kitt Peak

Three operational playback units are installed at Socorro

Second operational recording unit to be installed at Los Alamos by 1 October 2018

Full time Mark6 recording at Kitt Peak by 15 October 2018

# Mark6 Hardware Status and Timeline

Recording units installed at all 10 sites by end of 2018

6 playback units with expansion chassis installed at Socorro by end of 2018

120 module media pool by end of 2018  
(34 already conditioned and in packtrack)

Start of full-array science observing recorded to Mark6 by April 2019

4Gb/s shared risk observing recorded to Mark6 by April 2019

# Mark6 Hardware Status and Timeline

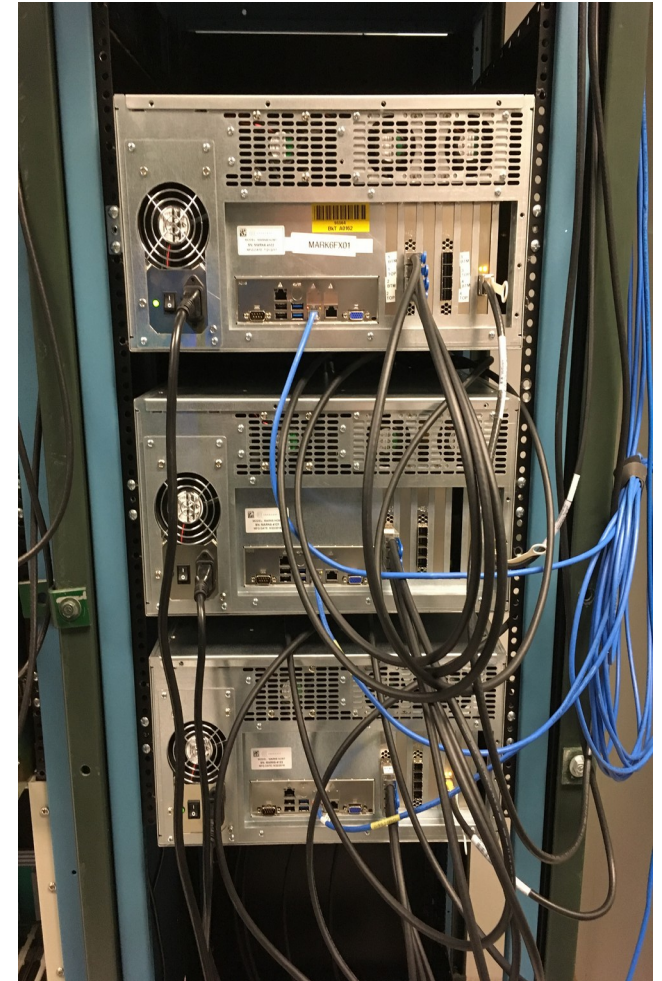
Mark5C recording and correlation capability will remain through 2019

Mark5C decommissioning to begin January 2020

First Mark6 record-side expansion unit by beginning of April 2020

Last Mark6 record-side expansion unit by end of June 2020

# Playback Units



# VLBA Mark6 Features

Modules loaded with 5 x 8TB disks - 40TB  
(cost, weight, dwell time, supports 4Gb/s)

Added **state** file to .metadata

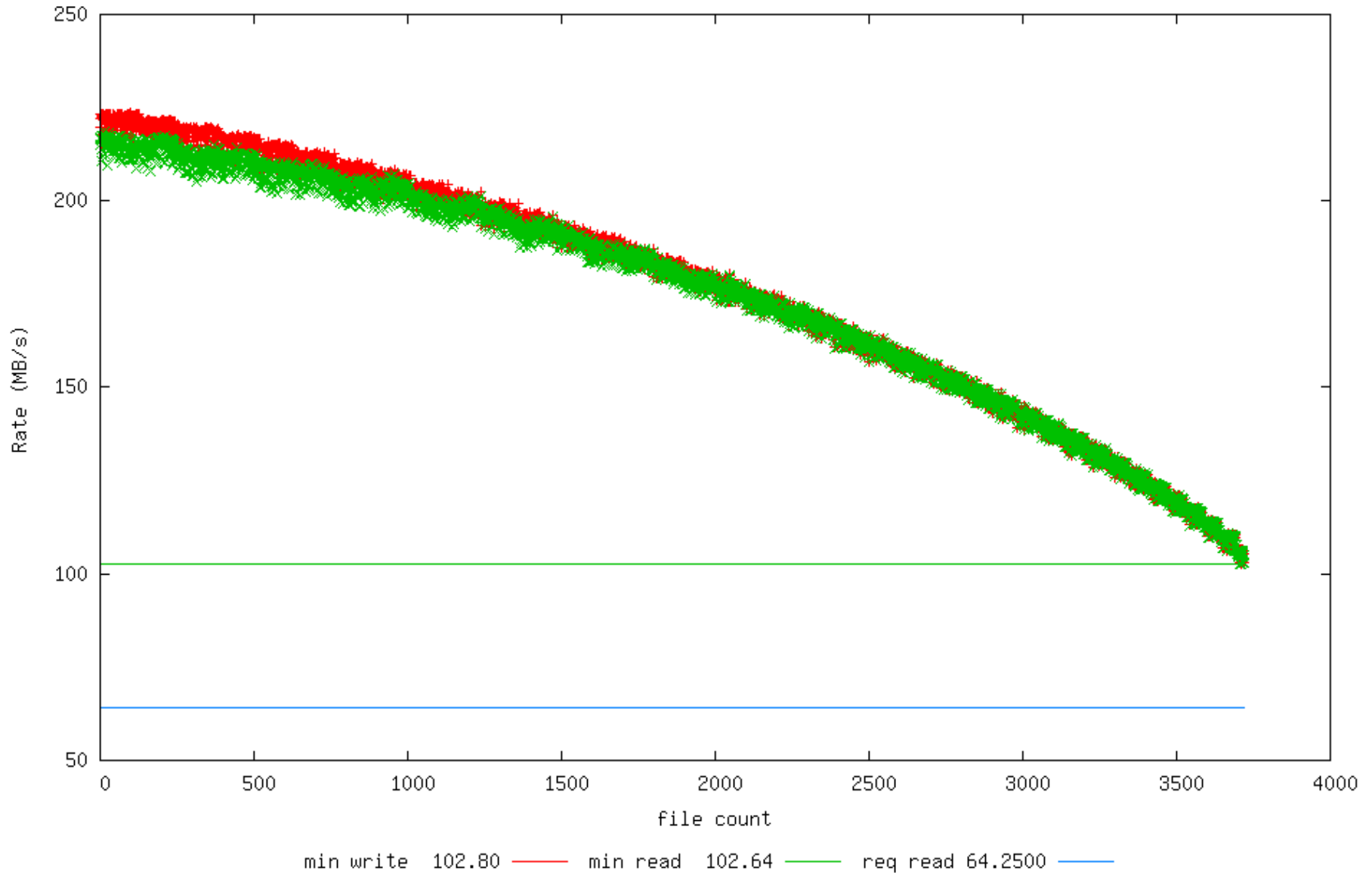
States are:

erased, recorded, cataloged and played

mk6state - used to change states and erase  
module when state changed to 'erased',  
added to package mk5daemon

# VLBA Mark6 Features

mark6fx03-LB0%0032 RW Performance, WorstWrite/Required = 1.6000, 100% Ok Writes



# VLBA Mark6 Features

VLBA uses jive5ab for recording at sites

VLBA site control software updated to manage jive5ab recording and monitor Mark6 status, site control software also sets a recorded module to state 'recorded'

VLBA VSNs are form LBO%nnnn



# VLBA Mark6 Features

Added Mark6Activity message to package difxmessage

Mark6Activity message allows reporting of individual slot activity within a Mark6 unit

mk6mon - in package difxmessage updated to display both Mark6Status and Mark6Activity

# Updates to DiFX Work Flow

vex2obs - updated to add mark6 data to .vex file (VLBA specific package)

mk6dir - generates <VSN>.filelist file for module, sends Mark6Activity message 'Get Directory', sets module state to 'cataloged', added to package  
mk5daemon

oms2v2d - no update needed, generates .v2d file

mk62v2d - adds mark6filelist tags to .v2d file, generates <antenna>.filelist file from <VSN>.filelist file or from .vex file, added to package vex2difx

# Updates to DiFX Work Flow

vex2difx - no changes needed

difxcalc - no changes needed

genmachines - updated to map antenna to VSN by .vex.obs file, to listen for Mark6Status messages and to add Mark6 units with matching VSNs to .machines file (package mpifxcorr)

startdifx - no changes needed

# Updates to DiFX Work Flow

mpifxcorr - using vdifmark6\_datastream for VDIF correlation, adding mark5bmark6\_datastream for mark5b correlation, sets module state to 'played', added Mark6Activity message for 'Open', 'Play' and 'Close', package mpifxcorr

DiFX work flow has been tested and validated for VDIF

Work in progress on mark5b support

# Updates to DiFX UI

The screenshot shows the Job Manager 2.1 interface. At the top, there are buttons for 'Run', 'Stop', 'Validate', and 'View Log', and a 'Modules' button on the right. The main area displays job information for '/home/swc/difx/queue/MK603/mk603\_01'. The job state is 'NOTREADY'. The 'Time Remaining' is '00:00:00'. The 'SpeedUp' is '0.000 18.335'. The 'Stations' count is '3'. The 'Baselines' count is '3'. The 'Channels' count is '0'. Below this information is a table with columns: Station, VSN, Shelf, Weight, Mark5 Unit, Mark5 Bank, Mark5 State, Mark6 Unit, Mark6 Slot, and Scan Num. The table contains three rows of data. At the bottom, there is a 'Job Progress...' bar showing '0%' and a 'Close' button.

Run Stop Validate View Log Modules

/home/swc/difx/queue/MK603/mk603\_01

State: NOTREADY Time Remaining: 00:00:00

Job Start: 2018-06-06 17:00:15 SpeedUp: 0.000 18.335

Current: 2018-08-30 20:48:35 Stations: 3

Stop: 2018-06-06 17:06:14 Baselines: 3

Play Rate: Channels: 0

Station	VSN	Shelf	Weight	Mark5 Unit	Mark5 Bank	Mark5 State	Mark6 Unit	Mark6 Slot	Scan Num
KP	LBO%0007	BC9	0.0				mark6fx01	2	
LA	NRAO+320	BC15	0.0						
PT	NRAO+451	BB82	0.0	mark5fx13	A	Idle			0

Job Progress... 0%

Close

# Updates to DiFX UI

The screenshot displays the 'Mark6 Units 2.1' application window. At the top, there are three buttons: 'Get File List', 'Reboot', and 'Poweroff'. Below these are two main data sections: 'Module Location' and 'Unit Activity'. The 'Module Location' section contains a table with columns for Unit, Slot 1 (# disks), Slot 2 (# disks), Slot 3 (# disks), Slot 4 (# disks), and Status Time. The 'Unit Activity' section contains a table with columns for Machine, VSN, State, Data Rate, Position, Scan Name, and Data MJD. A 'Close' button is located at the bottom right of the window.

Mark6 Units 2.1 <@swc000>

Get File List Reboot Poweroff

**Module Location**

Unit	Slot 1 (# disks)	Slot 2 (# disks)	Slot 3 (# disks)	Slot 4 (# disks)	Status Time
mark6fx01	LBO%0005 (5)	LBO%0007 (4)	none (0)	none (0)	14:58:45
mark6fx02	LBO%0002 (4)	none (0)	none (0)	none (0)	14:58:45

**Unit Activity**

Machine	VSN	State	Data Rate	Position	Scan Name	Data MJD
mark6fx01	LBO%0007	Play	1004.79	133 1869760	MK603_KP_No...	58275.708740

Close