

DiFX-Mark6 integration

correlator operations & tools

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Mark6 Overview



- Mark6 has 4 banks
- Modules contain up to 8 disks
- Module **grouping**
 - When recording a group can be formed of up to 4 modules
 - Data is scattered over all disks of the group
 - **Complete** module group has to be present on playback

Mark6 disk devices

- The individual disks contain a normal FS (default XFS)
- The individual disks are normal linux disk devices

=> **Disks must be mounted prior to reading the data**

Standard Mark6 FS structure

Mark6 disk device contains two partitions:

1st partition contains vdif scan data

```
/data  
  /c22gl_Jc_081-0500.vdif  
  /c22gl_Jc_081-0528.vdif  
  ...
```

2nd partition contains meta data

```
/eMSN  
/disk_sn  
/group  
/slist
```

Mark6 metadata

/eMSN

BHC%0033/48008/4/8

/serial_sn

0:AR11021EHBWVUB
1:AR11021EHEAXWB
2:AR11021EHEDRDB
3:AR11021EHEBGGB
4:AR11021EHE2DPB
5:AR11021EHE1GZB
6:AR11021EHEBJPB
7:AR11021EHEDR0B

/group

4:BHC%0033/48008/4/8:BHC%0034/48008/4/8:BHC%0035/48008/4/8:
BHC%0036/48008/4/8

/slist

```
{1: {'status': 'recorded', 'num_str': 1, 'start_tm': 1426829460,
'create_time': '2015y079d05h29m22s', 'sn': 'bbb_ccc_aaa', 'dur': 1,
'spc': 0, 'size': '1.028'},
 2: {'status': 'recorded', 'num_str': 2, 'start_tm': 1426870320,
'create_time': '2015y079d16h50m24s', 'sn': 'fringe_test_local',
'dur': 1, 'spc': 0, 'size': '1.028'}, ...
```

Current DiFX-Mark6 operations

DiFX-Mark6 operations at the moment:

- Look up module group members (e.g. from logs)
- Load and manually mount the module disks
- Create .vsum content summary
- Modify .v2d, e.g.

```
machine= mark6-01
```

```
mark6filelist = station.vsum
```

- Unmount module disks when done

=> extending mark5daemon / genmachines to automatically do all this

Mark6 default mount structure

mount structure:

```
/mnt/disks/[1234]/[01234567]/data
```

```
/mnt/disks/.meta/[1234]/[01234567]
```

=> bank/disk position of a device needs to be
correctly determined

Mark6 mount complications

- 1) Device order of a single module is „random“ when key is turned
- 2) Devices from multiple modules can become „mixed“
- 3) (Theoretically) non-Mark6 hotplug devices can appear
- 4) Discovery & mounting of new devices can take some time. Must check module completeness before starting correlation

Solutions:

- 1), 2) and 3) can be resolved by making use of `udev`
- 4) can be resolved by inspecting metadata

mk5daemon

Requirements:

- Identify bank/disk position of each device upon key turn
- Mount/unmount module disk devices upon key turn
- Parse meta data to automatically determine e.g. module group, scan list, expected number of disks etc.
- Perform sanity checks (e.g. module completeness, group completeness etc.)
- Send out difxmessage (status)

mk5daemon: current state

mk5daemon coding (nearly) done and tested

```
> mk5daemon -6
```

code exists in branch /applications/mk5daemon/branches/mk6

- **To do items:**
- Merge with trunk (hopefully during this meeting)
- Move code parts to a new `mark6` library
- Automatically create `.dir/.vsum/filelist` files from metadata?

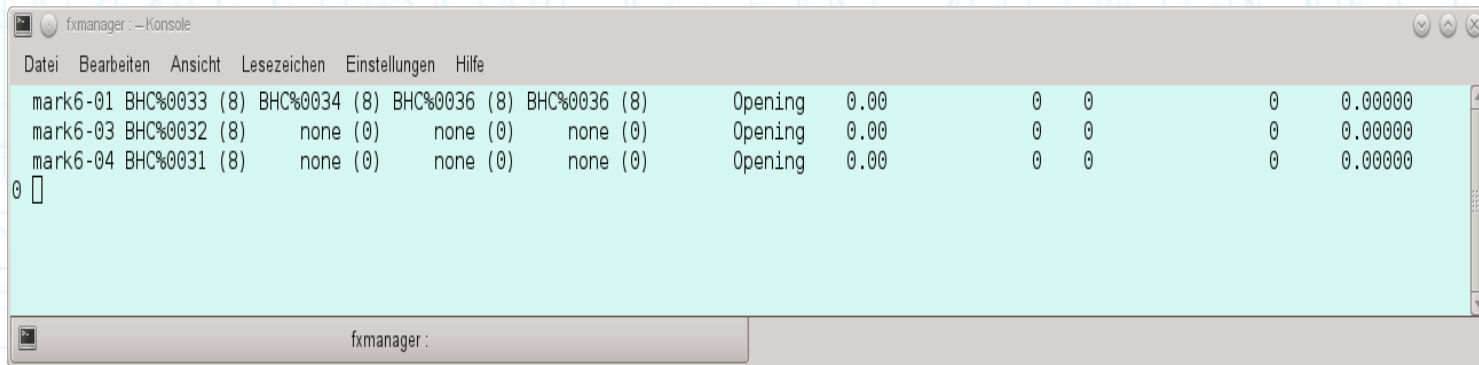
genmachines

Requirements:

- cluster definition file to contain mk6:// tag
- parse Mark6StatusMessage
 - Validate module group completeness
 - Assign Mark6 in .machine file

mk6mon

- similar to mk5mon
- display bank content of a mark6 unit and show current state, playback bandwidth etc.
- implemented



```
fxmanager : - Konsole
Datei Bearbeiten Ansicht Lesezeichen Einstellungen Hilfe
mark6-01 BHC%0033 (8) BHC%0034 (8) BHC%0036 (8) BHC%0036 (8) Opening 0.00 0 0 0 0.00000
mark6-03 BHC%0032 (8) none (0) none (0) none (0) Opening 0.00 0 0 0 0.00000
mark6-04 BHC%0031 (8) none (0) none (0) none (0) Opening 0.00 0 0 0 0.00000
0 [
```

To do items:

- Indicate module group /disk completeness

Mark6StatusMessage

<bank1MSN>
<bank2MSN>
<bank3MSN>
<bank4MSN>
<bank1Group>
<bank2Group>
<bank3Group>
<bank4Group>
<bank1Disks>
<bank2Disks>
<bank3Disks>
<bank4Disks>
<bank1MissingDisks>
<bank2MissingDisks>
<bank3MissingDisks>
<bank4MissingDisks>
<state>
<scanNumber>
<scanName>
<position>
<playRate>
<dataMJD>

Other considerations

Vex

use \$TAPELOG_OBS section to specify modules?