Diskshipping-less operation

Bob Eldering

JIVE

eldering@jive.eu

2015-06-26

Overview

What is a FlexBuff?

- Powerful COTS computer
- Lots of disk drives
- Almost drop-in replacement for Mark5

FlexBuff data organization

- All disks mounted under /mnt/ as disk<N>/
- On all disks a directory is created
- File chunks are created in these directories
- Unix tools to access data

FlexBuff usage

```
flexbuf0:  521G in data files not in VBS format, free/used/total: 19.1T/84.2T/ 109T
            Total    Bd    Ef    Hh    Jb    Mc    Mh    Nt    O6    O8    On    Sh    Sv    T6    Tr    Wb    X0    Ys    Zc
Total       83.7T  276G 6.63T 5.15T 4.65T 1.21T 5.97T 1.66T 28.9T 6.28T 4.98T 3.11T 1.62T 82.6G 4.31T 6.28T 18.2G 1.07T 1.51T
EA050D      12.3T             1.08T 1.09T 1.08T 559G        1.09T             1.08T 930G 1.09T       1.08T 1.06T       1.07T 1.10T
EG087A      14.1T       3.20T 2.25T 1.62T                               1.30T 1.20T             1.30T 3.25T
EH027D      4.15T       685G 684G 683G 680G
EH093A      1.99T                               1.99T
EL048A      4.97T  276G 480G 434G 508G        582G              531G 300G 534G       490G 528G             428G
EL050C      2.18T                               2.18T
EL050D      1.67T                               1.67T
EP091A      3.84T                               3.84T
EP096A      5.42T       802G 730G 801G                          801G 730G       82.6G 801G 801G
EP096B      1.72T                         1.72T
ER040        754G                               754G
ER043A      2.30T                         2.30T
ER043B      2.34T                         2.34T
F15L1        131G                         131G
FBTEST      18.2G                                                                         18.2G
FR022        577G                                           577G
GA032C      2.97T                               2.97T
GA036       4.04T                               4.04T
GB075B      4.87T                   4.87T
GB075C      4.99T                               4.99T
GB076       5.25G                                     5.25G
GL039       2.60T                               2.60T
GP053F      1.18T                               1.18T
N1402       1.10T                   1.10T
N15C1        708G                                     708G
N15C2        810G                               810G
N15L2        427G                               427G
N15H1       37.6G                                     37.6G
N15Q1        761G                                           761G
N15X1        847G  436G                                      411G
```

```
aribox: 16.1T in data files not in VBS format, free/used/total: 9.11T/60.6T/73.4T
            Total    Bd    Ef    Hb    Jb    Ma    Mc    Mh    Nt    Ny    On    Ra    Ro    Sc    Sh    Sr    Sv    T6    Tr    Ts    Ur    Wb    Wv    Wz
Total       44.5T 2.65T 1.86T 1.08T 1.34T 1.26T 2.13T 5.70T 1.06T 1.28T 2.90T 167G 183G 914G 2.72T 683G 2.62T 1.57T 3.48T 1.12T 757G 500G 1.02T 1.02T
EG084A      2.10T                                           2.10T
EG087A      4.54T                               663G                          1.30T                   1.30T
ES073       8.20T  638G 1.05T       764G        768G        764G             763G 167G 183G       596G       767G       757G
F14C2        201G                                                             201G
FBTEST      18.2G                                                 18.2G
FT009A       265G                                                 265G
GA035A      6.20T  682G 539G       608G                                       679G             635G 683G 683G       665G             500G
GA035B      3.70T       284G                               754G        325G                         824G       802G
GB075B      4.65T                         4.65T
GR035       7.87T 1.36T       1.08T                                           914G             1.37T 1.57T
GR35F       1.02T                                                                                                             1.02T
N1402       1.05T                               1.05T
R1680       4.68T                   1.26T              1.28T                                                 1.12T                   1.02T
```

FUSE file system

```
jops@aribox:/tmp/fuse_mnt$ ls -l es073_*no0001
-rwxrwxrwx 0 root root 17431842272 Oct 16  2014 es073_bd_no0001
-rwxrwxrwx 0 root root 17732323648 Oct 16  2014 es073_ef_no0001
-rwxrwxrwx 0 root root 17432832320 Oct 27  2014 es073_jb_no0001
-rwxrwxrwx 0 root root 17430996792 Oct 17  2014 es073_mc_no0001
-rwxrwxrwx 0 root root 17431846400 Oct 28  2014 es073_nt_no0001
-rwxrwxrwx 0 root root 17399795200 Oct 28  2014 es073_on_no0001
-rwxrwxrwx 0 root root  8597734400 Oct 28  2014 es073_ra_no0001
-rwxrwxrwx 0 root root 17431842272 Oct 19  2014 es073_sv_no0001
-rwxrwxrwx 0 root root 17665132168 Oct 21  2014 es073_tr_no0001
-rwxrwxrwx 0 root root  6931571200 Oct 28  2014 es073_ur_no0001
-rwxrwxrwx 0 root root 17463877824 Oct 22  2014 es073_zc_no0001
```

VBS remove

```
jops@ccsbeta:~$ vbs_remove -h
usage: vbs_remove [-h] -e EXPERIMENT [-f FLEXBUFF [FLEXBUFF ...]]
                  [-s STATION [STATION ...]]

Remove VBS files from flexbuffs and their references from the database

optional arguments:
  -h, --help            show this help message and exit
  -e EXPERIMENT, --experiment EXPERIMENT
  -f FLEXBUFF [FLEXBUFF ...], --flexbuff FLEXBUFF [FLEXBUFF ...]
                        Flexbuff(s) to remove files from, default: all local
                        flexbuffs
  -s STATION [STATION ...], --station STATION [STATION ...]
                        Station(s) to remove data for, default: all stations
```

Transfer overview

- Experiment schedule from vlbeer
- Experiment ends, locate file chunks
- Extract recording names and transfer them
- Verify all chunks have been transferred correctly
- Enter the chunks in a database, ready for correlation

Locate file chunks

- /mnt/disk*/<experiment>_<station>_<scan>/
  <experiment>_<station>_<scan>.<N>
- ssh oper@flexbuff

```
/mnt/disk26/fbtest_x0_no0001:
fbtest_x0_no0001.00000008   fbtest_x0_no0001.00000022
fbtest_x0_no0001.00000015   fbtest_x0_no0001.00000029

/mnt/disk27/fbtest_x0_no0001:
fbtest_x0_no0001.00000005

/mnt/disk28/fbtest_x0_no0001:
fbtest_x0_no0001.00000002   fbtest_x0_no0001.00000017
fbtest_x0_no0001.00000010   fbtest_x0_no0001.00000024

/mnt/disk29/fbtest_x0_no0001:
fbtest_x0_no0001.00000003   fbtest_x0_no0001.00000018
fbtest_x0_no0001.00000011   fbtest_x0_no0001.00000025
```

Transfer recordings

- ~oper/.JIVE.allow
  2014-07-01 00:00:00 2042-07-30 00:00:00 1000
- In parallel with recording
  runtime = flexbuff_transfer_<Station>
- Choose destination FlexBuff and port

Network graph

- UDT
- Connection per file chunk
- Locating chunks can take a long time
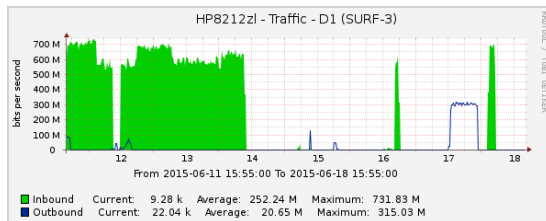
Verify recordings

- Presence
- Size
- ~oper/.JIVE.transferred
- !file_check? 0 : VDIF : 32 : 2015y168d14h17m42.0391s : 1.99197s : 32Mbps : 0 ;

Error handling

- Retry on error
- Continue where error occurred

Correlate

Using a Mark6 as a FlexBuff

- Different disk mount points:
  `/mnt/disk/[1234]/[0-7]/`
- Mount status

Testing at On

- Parallel recording since session 3, 2014
- Network rate capped at 1000Mbps
- DBBC
- Race condition and memory leak
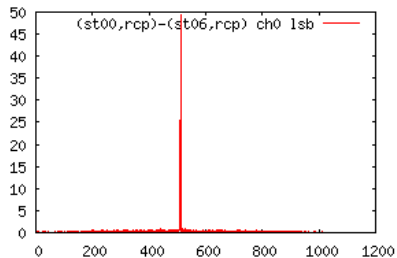
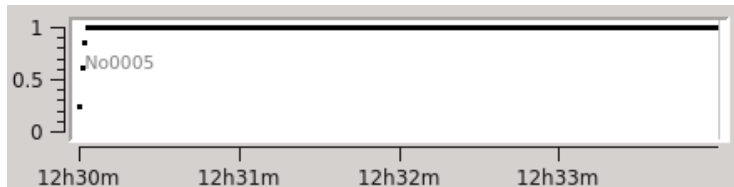Fila10G + FlexBuff
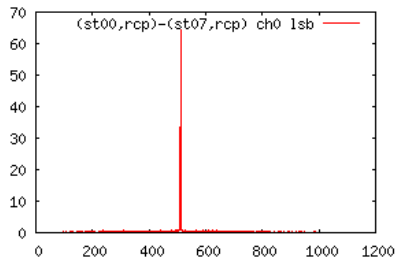
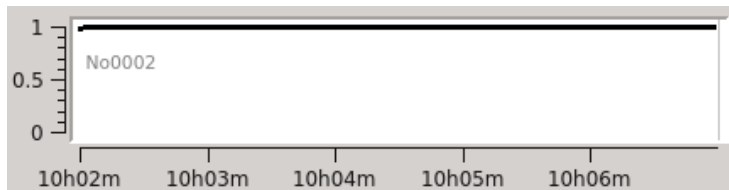Mark5B

- Sign/magnitude swap
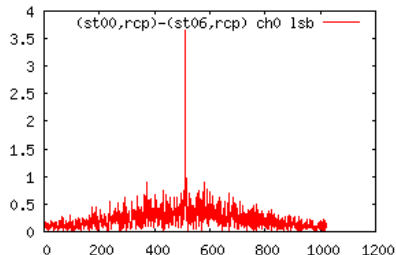
Fila10G + FlexBuff
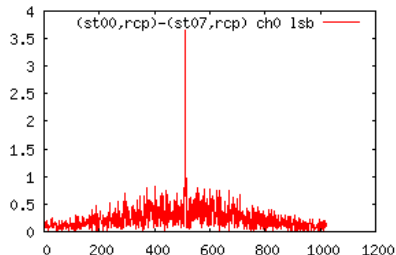
Mark5B

- But:
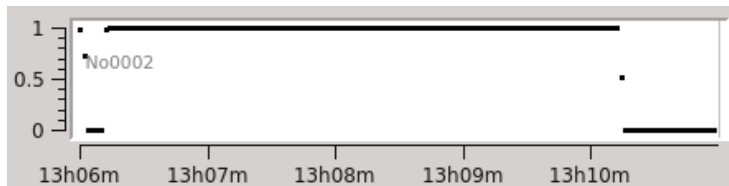
- Kernel settings
- Monitor packet loss: evlbi?

- Still some packet loss at start

- Memory initialization

Session 2, 2015

- Successful second half

- Correlate against other stations

Questions/comments?