EOS - Feature #11694

Retire cmseos50-63 (will be added to dCache disk)

02/09/2016 01:31 PM - Gerard Bernabeu Altayo

Status:	Resolved	**Start date:**	02/09/2016	
Priority:	Normal	**Due date:**		
Assignee:	Gerard Bernabeu Altayo	**% Done:**	0%	
Category:		**Estimated time:**	0.00 hour	
Target version:		**Spent time:**	0.00 hour	

Description

As per David Fagan's requests:

Gerard,

```
Based on our brief conversation the right machines are from cmseos50 up, as you mentioned one at a
 time and see what happens.
  Please let me know how things go, I'll watch the net lot of this will be local to a switch but I
 don't know if the space is totally all  over the space or specific to nodes..
  If I see a network top out I'll let you know, we are pushing but they aren't bouncing off the ce
iling.
```

thanks,
David.

This is similar to https://cdcvs.fnal.gov/redmine/issues/10763

History

#1 - 02/09/2016 01:36 PM - Gerard Bernabeu Altayo

Draining all this nodes means removing ~2PB of disk from EOS:

71*2*14
1988

Following the drain documentation from http://eos.readthedocs.org/en/latest/configuration/draining.html.

```
[root@cmssrv222 ~]# for i in `seq 166 193`; do eos fs config $i configstatus=drain; done

[root@cmssrv222 ~]# eos fs ls

#........................................................................................................
...............................
#                host (#...) #   id #          path #    schedgroup #       geotag #     boot # confi
gstatus #     drain # active
#........................................................................................................
...............................
    cmseos12.fnal.gov (1095)    41   /storage/data3      default.2                       booted
    rw     nodrain   online
    cmseos12.fnal.gov (1095)    42   /storage/data1      default.3                       booted
    rw     nodrain   online
    cmseos12.fnal.gov (1095)    43   /storage/data2      default.1                       booted
    rw     nodrain   online
    cmseos11.fnal.gov (1095)    44   /storage/data1      default.0                       booted
    rw     nodrain   online
    cmseos11.fnal.gov (1095)    45   /storage/data2      default.3                       booted
    rw     nodrain   online
    cmseos11.fnal.gov (1095)    46   /storage/data3      default.2                       booted
    rw     nodrain   online
    cmseos13.fnal.gov (1095)    47   /storage/data1      default.0                       booted
    rw     nodrain   online
    cmseos13.fnal.gov (1095)    48   /storage/data2      default.1                       booted
    rw     nodrain   online
    cmseos13.fnal.gov (1095)    49   /storage/data3      default.2                       booted
    rw     nodrain   online
    cmseos14.fnal.gov (1095)    50   /storage/data1      default.0                       booted
    rw     nodrain   online
```

Host	ID	Path	Group	Status	Mode	Drain	Online
cmseos14.fnal.gov (1095)	51	/storage/data2	default.1	booted	rw	nodrain	online
cmseos14.fnal.gov (1095)	52	/storage/data3	default.3	booted	rw	nodrain	online
cmseos15.fnal.gov (1095)	53	/storage/data1	default.0	booted	rw	nodrain	online
cmseos15.fnal.gov (1095)	54	/storage/data2	default.1	booted	rw	nodrain	online
cmseos15.fnal.gov (1095)	55	/storage/data3	default.3	booted	rw	nodrain	online
cmseos16.fnal.gov (1095)	56	/storage/data1	default.3	booted	rw	nodrain	online
cmseos16.fnal.gov (1095)	57	/storage/data2	default.1	booted	rw	nodrain	online
cmseos16.fnal.gov (1095)	58	/storage/data3	default.2	booted	rw	nodrain	online
cmseos17.fnal.gov (1095)	59	/storage/data1	default.0	booted	rw	nodrain	online
cmseos17.fnal.gov (1095)	60	/storage/data2	default.1	booted	rw	nodrain	online
cmseos17.fnal.gov (1095)	61	/storage/data3	default.2	booted	rw	nodrain	online
cmseos1.fnal.gov (1095)	62	/storage/data1	default.0	booted	rw	nodrain	online
cmseos1.fnal.gov (1095)	63	/storage/data2	default.1	booted	rw	nodrain	online
cmseos1.fnal.gov (1095)	64	/storage/data3	default.2	booted	rw	nodrain	online
cmseos5.fnal.gov (1095)	65	/storage/data1	default.0	booted	drain	stalling	online
cmseos5.fnal.gov (1095)	66	/storage/data2	default.1	booted	drain	stalling	online
cmseos5.fnal.gov (1095)	67	/storage/data3	default.2	booted	drain	stalling	online
cmseos4.fnal.gov (1095)	68	/storage/data1	default.0	booted	ro	nodrain	online
cmseos4.fnal.gov (1095)	69	/storage/data2	default.1	booted	ro	nodrain	online
cmseos4.fnal.gov (1095)	70	/storage/data3	default.2	booted	ro	nodrain	online
cmseos3.fnal.gov (1095)	71	/storage/data1	default.0	booted	ro	nodrain	online
cmseos3.fnal.gov (1095)	72	/storage/data2	default.2	booted	ro	nodrain	online
cmseos3.fnal.gov (1095)	73	/storage/data3	default.1	booted	ro	nodrain	online
cmseos2.fnal.gov (1095)	74	/storage/data1	default.0	booted	ro	nodrain	online
cmseos2.fnal.gov (1095)	75	/storage/data2	default.1	booted	ro	nodrain	online
cmseos2.fnal.gov (1095)	76	/storage/data3	default.3	booted	ro	nodrain	online
cmseos25.fnal.gov (1095)	103	/storage/data1	default.0	booted	rw	nodrain	online
cmseos25.fnal.gov (1095)	104	/storage/data2	default.1	booted	rw	nodrain	online
cmseos26.fnal.gov (1095)	105	/storage/data1	default.2	booted	rw	nodrain	online
cmseos26.fnal.gov (1095)	106	/storage/data2	default.3	booted	rw	nodrain	online
cmseos27.fnal.gov (1095)	107	/storage/data1	default.0	booted	rw	nodrain	online
cmseos27.fnal.gov (1095)	108	/storage/data2	default.1	booted	rw	nodrain	online
cmseos27.fnal.gov (1095)	109	/storage/data3	default.2	booted	rw	nodrain	online
cmseos28.fnal.gov (1095)	110	/storage/data1	default.0	booted	rw	nodrain	online
cmseos28.fnal.gov (1095)	111	/storage/data2	default.1	booted	rw	nodrain	online
cmseos29.fnal.gov (1095)	112	/storage/data1	default.2	booted	rw	nodrain	online
cmseos29.fnal.gov (1095)	113	/storage/data2	default.3	booted	rw	nodrain	online
cmseos30.fnal.gov (1095)	116	/storage/data1	default.0	booted			

```
                                            rw     nodrain   online
  cmseos30.fnal.gov (1095)    117   /storage/data2        default.1                      booted
                                            rw     nodrain   online
  cmseos31.fnal.gov (1095)    119   /storage/data1        default.2                      booted
                                            rw     nodrain   online
  cmseos31.fnal.gov (1095)    120   /storage/data2        default.3                      booted
                                            rw     nodrain   online
  cmseos32.fnal.gov (1095)    122   /storage/data1        default.0                      booted
                                            rw     nodrain   online
  cmseos32.fnal.gov (1095)    123   /storage/data2        default.1                      booted
                                            rw     nodrain   online
  cmseos33.fnal.gov (1095)    125   /storage/data1        default.2                      booted
                                            rw     nodrain   online
  cmseos33.fnal.gov (1095)    126   /storage/data2        default.3                      booted
                                            rw     nodrain   online
  cmseos39.fnal.gov (1095)    134   /storage/data1        default.2                      booted
                                            rw     nodrain   online
  cmseos39.fnal.gov (1095)    135   /storage/data2        default.3                      booted
                                            rw     nodrain   online
  cmseos34.fnal.gov (1095)    136   /storage/data1        default.0                      booted
                                            rw     nodrain   online
  cmseos36.fnal.gov (1095)    137   /storage/data1        default.0                      booted
                                            rw     nodrain   online
  cmseos36.fnal.gov (1095)    138   /storage/data2        default.1                      booted
                                            rw     nodrain   online
  cmseos34.fnal.gov (1095)    139   /storage/data2        default.1                      booted
                                            rw     nodrain   online
  cmseos38.fnal.gov (1095)    140   /storage/data1        default.0                      booted
                                            rw     nodrain   online
  cmseos38.fnal.gov (1095)    141   /storage/data2        default.1                      booted
                                            rw     nodrain   online
  cmseos37.fnal.gov (1095)    142   /storage/data1        default.2                      booted
                                            rw     nodrain   online
  cmseos37.fnal.gov (1095)    143   /storage/data2        default.3                      booted
                                            rw     nodrain   online
  cmseos35.fnal.gov (1095)    144   /storage/data1        default.2                      booted
                                            rw     nodrain   online
  cmseos35.fnal.gov (1095)    145   /storage/data2        default.3                      booted
                                            rw     nodrain   online
  cmseos42.fnal.gov (1095)    146   /storage/data1        default.0                      booted
                                            rw     nodrain   online
  cmseos42.fnal.gov (1095)    147   /storage/data2        default.1                      booted
                                            rw     nodrain   online
  cmseos40.fnal.gov (1095)    148   /storage/data1        default.0                      booted
                                            rw     nodrain   online
  cmseos40.fnal.gov (1095)    149   /storage/data2        default.1                      booted
                                            rw     nodrain   online
  cmseos41.fnal.gov (1095)    150   /storage/data1        default.2                      booted
                                            rw     nodrain   online
  cmseos41.fnal.gov (1095)    151   /storage/data2        default.3                      booted
                                            rw     nodrain   online
  cmseos43.fnal.gov (1095)    152   /storage/data1        default.2                      booted
                                            rw     nodrain   online
  cmseos43.fnal.gov (1095)    153   /storage/data2        default.3                      booted
                                            rw     nodrain   online
  cmseos44.fnal.gov (1095)    154   /storage/data1        default.0                      booted
                                            rw     nodrain   online
  cmseos44.fnal.gov (1095)    155   /storage/data2        default.1                      booted
                                            rw     nodrain   online
  cmseos45.fnal.gov (1095)    156   /storage/data1        default.2                      booted
                                            rw     nodrain   online
  cmseos45.fnal.gov (1095)    157   /storage/data2        default.3                      booted
                                            rw     nodrain   online
  cmseos46.fnal.gov (1095)    158   /storage/data1        default.0                      booted
                                            rw     nodrain   online
  cmseos46.fnal.gov (1095)    159   /storage/data2        default.1                      booted
                                            rw     nodrain   online
  cmseos47.fnal.gov (1095)    160   /storage/data1        default.2                      booted
                                            rw     nodrain   online
  cmseos47.fnal.gov (1095)    161   /storage/data2        default.3                      booted
                                            rw     nodrain   online
  cmseos49.fnal.gov (1095)    162   /storage/data1        default.2                      booted
                                            rw     nodrain   online
  cmseos49.fnal.gov (1095)    163   /storage/data2        default.3                      booted
                                            rw     nodrain   online
```
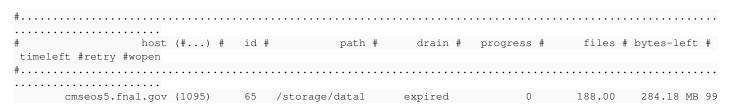
```
     cmseos48.fnal.gov (1095)      164    /storage/data1        default.0                          booted
   rw     nodrain   online
     cmseos48.fnal.gov (1095)      165    /storage/data2        default.1                          booted
   rw     nodrain   online
     cmseos50.fnal.gov (1095)      166    /storage/data1        default.0                          booted
 drain      prepare   online
     cmseos50.fnal.gov (1095)      167    /storage/data2        default.1                          booted
 drain      prepare   online
     cmseos51.fnal.gov (1095)      168    /storage/data1        default.2                          booted
 drain      prepare   online
     cmseos51.fnal.gov (1095)      169    /storage/data2        default.3                          booted
 drain      prepare   online
     cmseos52.fnal.gov (1095)      170    /storage/data1        default.0                          booted
 drain      prepare   online
     cmseos52.fnal.gov (1095)      171    /storage/data2        default.1                          booted
 drain      prepare   online
     cmseos53.fnal.gov (1095)      172    /storage/data1        default.2                          booted
 drain      prepare   online
     cmseos53.fnal.gov (1095)      173    /storage/data2        default.3                          booted
 drain      prepare   online
     cmseos56.fnal.gov (1095)      174    /storage/data1        default.0                          booted
 drain      prepare   online
     cmseos56.fnal.gov (1095)      175    /storage/data2        default.1                          booted
 drain      prepare   online
     cmseos54.fnal.gov (1095)      176    /storage/data1        default.0                          booted
 drain      prepare   online
     cmseos54.fnal.gov (1095)      177    /storage/data2        default.1                          booted
 drain      prepare   online
     cmseos55.fnal.gov (1095)      178    /storage/data1        default.2                          booted
 drain      prepare   online
     cmseos55.fnal.gov (1095)      179    /storage/data2        default.3                          booted
 drain      prepare   online
     cmseos57.fnal.gov (1095)      180    /storage/data1        default.2                          booted
 drain      prepare   online
     cmseos57.fnal.gov (1095)      181    /storage/data2        default.3                          booted
 drain      prepare   online
     cmseos58.fnal.gov (1095)      182    /storage/data1        default.0                          booted
 drain      prepare   online
     cmseos58.fnal.gov (1095)      183    /storage/data2        default.1                          booted
 drain      prepare   online
     cmseos59.fnal.gov (1095)      184    /storage/data1        default.2                          booted
 drain      prepare   online
     cmseos59.fnal.gov (1095)      185    /storage/data2        default.3                          booted
 drain      prepare   online
     cmseos60.fnal.gov (1095)      186    /storage/data1        default.0                          booted
 drain      prepare   online
     cmseos60.fnal.gov (1095)      187    /storage/data2        default.1                          booted
 drain      prepare   online
     cmseos61.fnal.gov (1095)      188    /storage/data1        default.2                          booted
 drain      prepare   online
     cmseos61.fnal.gov (1095)      189    /storage/data2        default.3                          booted
 drain      prepare   online
     cmseos62.fnal.gov (1095)      190    /storage/data1        default.0                          booted
 drain      prepare   online
     cmseos62.fnal.gov (1095)      191    /storage/data2        default.1                          booted
 drain      prepare   online
     cmseos63.fnal.gov (1095)      192    /storage/data1        default.2                          booted
 drain      prepare   online
     cmseos63.fnal.gov (1095)      193    /storage/data2        default.3                          booted
 drain      prepare   online
[root@cmssrv222 ~]#
```

#2 - 02/16/2016 04:04 PM - Gerard Bernabeu Altayo

So the drains are not working very well, will now set all this disks as Read Only and (re)start the drain only for one of the pools:

```
[root@cmssrv222 ~]# eos fs ls -d

#.......................................................................................................
.....................
#                host (#...) #   id #         path #      drain #   progress #     files # bytes-left #
 timeleft #retry #wopen
#.......................................................................................................
.....................
       cmseos5.fnal.gov (1095)      65    /storage/data1        expired             0       188.00    284.18 MB 99
```

Host	ID	Path	Status							
cmseos5.fnal.gov (1095)	66	/storage/data2	expired	0	249.00	3.49 GB	99 999999999	0	0	
cmseos5.fnal.gov (1095)	67	/storage/data3	expired	0	239.00	2.84 GB	99 999999999	0	0	
cmseos4.fnal.gov (1095)	68	/storage/data1	expired	0	69.72 k	4.10 TB	99 999999999	0	0	
cmseos4.fnal.gov (1095)	69	/storage/data2	expired	0	68.17 k	3.98 TB	99 999999999	0	0	
cmseos4.fnal.gov (1095)	70	/storage/data3	expired	0	74.04 k	4.40 TB	99 999999999	0	0	
cmseos3.fnal.gov (1095)	71	/storage/data1	expired	0	69.38 k	4.03 TB	99 999999999	0	0	
cmseos3.fnal.gov (1095)	72	/storage/data2	expired	0	103.29 k	6.27 TB	99 999999999	0	0	
cmseos3.fnal.gov (1095)	73	/storage/data3	expired	0	65.91 k	4.02 TB	99 999999999	0	0	
cmseos2.fnal.gov (1095)	74	/storage/data1	expired	0	98.74 k	6.05 TB	99 999999999	0	0	
cmseos2.fnal.gov (1095)	75	/storage/data2	expired	0	98.90 k	6.06 TB	99 999999999	0	0	
cmseos2.fnal.gov (1095)	76	/storage/data3	expired	0	316.00	281.15 MB	99 999999999	0	0	
cmseos50.fnal.gov (1095)	166	/storage/data1	draining	0	427.76 k	34.65 TB	4726	0	6	
cmseos50.fnal.gov (1095)	167	/storage/data2	draining	0	420.56 k	34.18 TB	4726	0	2	
cmseos51.fnal.gov (1095)	168	/storage/data1	draining	0	438.24 k	35.81 TB	4726	0	5	
cmseos51.fnal.gov (1095)	169	/storage/data2	stalling	0	1.00	965.53 MB	4726	0	5	
cmseos52.fnal.gov (1095)	170	/storage/data1	stalling	0	437.25 k	34.83 TB	4726	0	4	
cmseos52.fnal.gov (1095)	171	/storage/data2	stalling	0	418.86 k	34.22 TB	4725	0	4	
cmseos53.fnal.gov (1095)	172	/storage/data1	stalling	0	440.64 k	35.84 TB	4726	0	2	
cmseos53.fnal.gov (1095)	173	/storage/data2	stalling	0	467.83 k	37.93 TB	4726	0	2	
cmseos56.fnal.gov (1095)	174	/storage/data1	stalling	0	435.39 k	34.92 TB	4725	0	4	
cmseos56.fnal.gov (1095)	175	/storage/data2	stalling	0	418.34 k	34.62 TB	4726	0	6	
cmseos54.fnal.gov (1095)	176	/storage/data1	stalling	0	427.91 k	35.75 TB	4726	0	6	
cmseos54.fnal.gov (1095)	177	/storage/data2	stalling	0	422.56 k	34.38 TB	4727	0	3	
cmseos55.fnal.gov (1095)	178	/storage/data1	stalling	0	436.75 k	35.99 TB	4727	0	0	
cmseos55.fnal.gov (1095)	179	/storage/data2	stalling	0	462.48 k	37.66 TB	4727	0	0	
cmseos57.fnal.gov (1095)	180	/storage/data1	stalling	0	437.23 k	36.10 TB	4727	0	9	
cmseos57.fnal.gov (1095)	181	/storage/data2	stalling	0	460.50 k	37.95 TB	4727	0	6	
cmseos58.fnal.gov (1095)	182	/storage/data1	stalling	0	431.55 k	35.09 TB	4727	0	4	
cmseos58.fnal.gov (1095)	183	/storage/data2	stalling	0	418.25 k	34.73 TB	4727	0	9	
cmseos59.fnal.gov (1095)	184	/storage/data1	stalling	0	442.29 k	36.11 TB	4727	0	9	
cmseos59.fnal.gov (1095)	185	/storage/data2	stalling	0	466.13 k	37.85 TB	4727	0	4	
cmseos60.fnal.gov (1095)	186	/storage/data1	stalling	0	434.35 k	35.36 TB	4727	0	4	
cmseos60.fnal.gov (1095)	187	/storage/data2	stalling	0	415.03 k	34.95 TB	4727	0	4	
cmseos61.fnal.gov (1095)	188	/storage/data1	stalling	0	434.57 k	35.97 TB	4727	0	8	
cmseos61.fnal.gov (1095)	189	/storage/data2	stalling	0	470.36 k	37.45 TB	4728	0	7	
cmseos62.fnal.gov (1095)	190	/storage/data1	stalling	0	431.21 k	35.71 TB	4728	0	5	
cmseos62.fnal.gov (1095)	191	/storage/data2	stalling	0	414.52 k	34.50 TB	4728	0	1	

```
        cmseos63.fnal.gov (1095)    192   /storage/data1    stalling         0     435.64 k     35.83 TB
    69876     0     0
        cmseos63.fnal.gov (1095)    193   /storage/data2    stalling         0     460.88 k     37.47 TB
    69876     0     0
[root@cmssrv222 ~]# for i in `seq 65 76` `seq 166 193`; do eos fs config $i configstatus=ro; done
[root@cmssrv222 ~]# for i in 168; do eos fs config $i configstatus=drain; done
[root@cmssrv222 ~]#
[root@cmssrv222 ~]# eos fs ls -d

#.........................................................................................................
.....................
#                   host (#...) #   id #         path #      drain #   progress #     files # bytes-left #
 timeleft #retry #wopen
#.........................................................................................................
.....................
        cmseos51.fnal.gov (1095)    168   /storage/data1    draining         0     438.09 k     35.71 TB
    86276     0     5
[root@cmssrv222 ~]#
```

And the good news is that this seems to be working now! Data is coming down and the box is draining at ~500MB/s!

```
[root@cmssrv222 ~]# eos fs ls -d

#.........................................................................................................
.....................
#                   host (#...) #   id #         path #      drain #   progress #     files # bytes-left #
 timeleft #retry #wopen
#.........................................................................................................
.....................
        cmseos51.fnal.gov (1095)    168   /storage/data1    draining         0     436.43 k     35.60 TB
    85785     0     5
[root@cmssrv222 ~]#
```

My new theory is that drains stall whenever they find files in error state, which means I'll have to go dig out all what's wrong in the FS:

```
[root@cmssrv222 ~]# eos fsck stat
160216 15:35:32 1455658532.284256 started check
160216 15:35:32 1455658532.284286 Filesystems to check: 115
160216 15:35:42 1455658542.322971 d_cx_diff                    : 14 (14)
160216 15:35:42 1455658542.322992 d_mem_sz_diff                : 13729 (16516)
160216 15:35:42 1455658542.322997 orphans_n                    : 2 (2)
160216 15:35:42 1455658542.323000 rep_diff_n                   : 251 (298)
160216 15:35:42 1455658542.323005 rep_offline                  : 0 (0)
160216 15:35:42 1455658542.323009 unreg_n                      : 3 (3)
160216 15:35:42 1455658542.323013 zero_replica                 : 44 (44)
160216 15:35:43 1455658543.937750 stopping check
160216 15:35:43 1455658543.937786 => next run in 30 minutes
[root@cmssrv222 ~]#
```

#3 - 02/16/2016 05:06 PM - Gerard Bernabeu Altayo

I've noticed that the migration speed with a single FST was gradually decreasing speed. Since there are sooo many small files, I've increased the parallelism per FST migration from 2 to 20 transfers at a time, this boosted the transfer bandwidth back up :)

#4 - 02/16/2016 05:25 PM - Gerard Bernabeu Altayo

With 20 the load increased very high in many FSTs, lowered it to 5...

#5 - 02/17/2016 09:47 AM - Gerard Bernabeu Altayo

The node is almost drained:

```
[root@cmssrv222 ~]# eos fs ls -d

#.........................................................................................................
.....................
#                   host (#...) #   id #         path #      drain #   progress #     files # bytes-left #
 timeleft #retry #wopen
#.........................................................................................................
.....................
        cmseos51.fnal.gov (1095)    168   /storage/data1    draining        99     98.00     2.50 GB
    22028     0     5
[root@cmssrv222 ~]#
```

Starting another node migration:

```
[root@cmssrv222 ~]# for i in 166 167 169; do eos fs config $i configstatus=drain; done
```

#6 - 02/22/2016 01:31 PM - Gerard Bernabeu Altayo

The drain is working pretty well going FST by FST (it will just take a while), starting a new one and this afternoon I'll retire 2 nodes:

```
[root@cmssrv222 ~]# eos fs ls -d

#..............................................................................................................
.......................
#                  host (#...) #   id #              path #       drain #    progress #        files # bytes-left #
 timeleft #retry #wopen
#..............................................................................................................
.......................
      cmseos50.fnal.gov (1095)    166   /storage/data1         expired          99         21.00      396.48 MB 99
999999999     0      6
      cmseos50.fnal.gov (1095)    167   /storage/data2         expired          99          6.00       1.75 GB 99
999999999     0      2
      cmseos51.fnal.gov (1095)    168   /storage/data1         expired          99         30.00      596.66 MB 99
999999999     0      5
      cmseos51.fnal.gov (1095)    169   /storage/data2         expired           0          1.00      965.53 MB 99
999999999     0      5
[root@cmssrv222 ~]# for i in 170 171; do eos fs config $i configstatus=drain; done
[root@cmssrv222 ~]#
```

In order to clear the running transfers, restarting cmseos50 & cmseos51 and then I'll look at each individual FST to clear them up.

#7 - 02/23/2016 05:31 PM - Gerard Bernabeu Altayo

Nodes keep draining, now it is time to look at the few remaining files and solve the individual issues, for exmample:

```
[root@cmssrv222 ~]# for i in `eos fs dumpmd  166 -path |  cut -d= -f2`; do eos file info $i; done
  File: '/eos/uscms/store/user/drankin/Theta_Oct13/Elec_ML_3fb/Elec_ML_3fb_24/cache/quant-toys:0-wp3000-c04209
a4ad.db'  Flags: 0644
  Size: 61440
Modify: Wed Oct 14 05:54:21 2015 Timestamp: 1444820061.136974000
Change: Wed Oct 14 05:54:02 2015 Timestamp: 1444820042.80888040
  CUid: 47452 CGid: 5063  Fxid: 081c8ce6 Fid: 136088806    Pid: 2434882   Pxid: 00252742
XStype: adler    XS: 32 43 c4 88     ETAG: 36531060695105536:3243c488
replica Stripes: 2 Blocksize: 4k LayoutId: 00100112
  #Rep: 2
 #   fs-id  #....................................................................................................
.................................
         #                        host  #      schedgroup #            path #     boot # configstatus #       drain
 # active #                  geotag
           #..................................................................................................
.................................
  0    166         cmseos50.fnal.gov        default.0    /storage/data1      booted            ro       nodrain
    online
  1    136         cmseos34.fnal.gov        default.0    /storage/data1      booted            rw       nodrain
    online
*******
  File: '/eos/uscms/store/user/drankin/Theta_Oct13/Muon_MT_3fb/Muon_MT_3fb_16/cache/nll_der-toys:0.0-wp3000-04
f3872ac8.db'  Flags: 0644
  Size: 693248
Modify: Wed Oct 14 05:55:31 2015 Timestamp: 1444820131.970225000
Change: Wed Oct 14 05:55:28 2015 Timestamp: 1444820128.408139999
  CUid: 47452 CGid: 5063  Fxid: 081ca568 Fid: 136095080    Pid: 2435048   Pxid: 002527e8
XStype: adler    XS: 18 26 2b 73     ETAG: 36532744859156480:18262b73
replica Stripes: 2 Blocksize: 4k LayoutId: 00100112
  #Rep: 2
 #   fs-id  #....................................................................................................
.................................
         #                        host  #      schedgroup #            path #     boot # configstatus #       drain
 # active #                  geotag
           #..................................................................................................
.................................
  0    166         cmseos50.fnal.gov        default.0    /storage/data1      booted            ro       nodrain
    online
  1    158         cmseos46.fnal.gov        default.0    /storage/data1      booted            rw       nodrain
    online
*******
.... <OUTPUT CUT>
```

#8 - 02/24/2016 02:41 PM - Gerard Bernabeu Altayo

I've managed to empty one of the FSTs:

```
[root@cmssrv222 ~]# for i in `eos fs dumpmd  166 -path |  cut -d= -f2`; do eos file move $i 166 45; done
success: scheduled move from source fs=166 => target fs=45
success: scheduled move from source fs=166 => target fs=45
success: scheduled move from source fs=166 => target fs=45
success: scheduled move from source fs=166 => target fs=45
success: scheduled move from source fs=166 => target fs=45
success: scheduled move from source fs=166 => target fs=45
success: scheduled move from source fs=166 => target fs=45
success: scheduled move from source fs=166 => target fs=45
[root@cmssrv222 ~]# eos fs dumpmd  166 -path
path=/eos/uscms/store/user/drankin/Theta_Oct13/Muon_ML_3fb/Muon_ML_3fb_21/nll_der-toys:0.0-wp2000-ee81029424.c
fg
path=/eos/uscms/store/user/drankin/Theta_Oct13/Elec_MT_3fb/electron_ge1btags_IDMTJet250Lep150MET150_discovery.
json
path=/eos/uscms/store/user/drankin/Theta_Oct13/Muon_MT_3fb/Muon_MT_3fb_20/model_summary_general.thtml
path=/eos/uscms/store/user/drankin/Theta_Oct13/Elec_ML_3fb/Elec_ML_3fb_16/quant-toys:0-wp3000-4160ae2cb8.cfg
[root@cmssrv222 ~]# eos fs dumpmd  166 -path
path=/eos/uscms/store/user/drankin/Theta_Oct13/Elec_MT_3fb/electron_ge1btags_IDMTJet250Lep150MET150_discovery.
json
path=/eos/uscms/store/user/drankin/Theta_Oct13/Muon_MT_3fb/Muon_MT_3fb_20/model_summary_general.thtml
path=/eos/uscms/store/user/drankin/Theta_Oct13/Elec_ML_3fb/Elec_ML_3fb_16/quant-toys:0-wp3000-4160ae2cb8.cfg
[root@cmssrv222 ~]# eos fs dumpmd  166 -path
path=/eos/uscms/store/user/drankin/Theta_Oct13/Muon_MT_3fb/Muon_MT_3fb_20/model_summary_general.thtml
path=/eos/uscms/store/user/drankin/Theta_Oct13/Elec_ML_3fb/Elec_ML_3fb_16/quant-toys:0-wp3000-4160ae2cb8.cfg
[root@cmssrv222 ~]# eos fs dumpmd  166 -path
path=/eos/uscms/store/user/drankin/Theta_Oct13/Muon_MT_3fb/Muon_MT_3fb_20/model_summary_general.thtml
path=/eos/uscms/store/user/drankin/Theta_Oct13/Elec_ML_3fb/Elec_ML_3fb_16/quant-toys:0-wp3000-4160ae2cb8.cfg
[root@cmssrv222 ~]# eos fs dumpmd  166 -path
path=/eos/uscms/store/user/drankin/Theta_Oct13/Muon_MT_3fb/Muon_MT_3fb_20/model_summary_general.thtml
path=/eos/uscms/store/user/drankin/Theta_Oct13/Elec_ML_3fb/Elec_ML_3fb_16/quant-toys:0-wp3000-4160ae2cb8.cfg
[root@cmssrv222 ~]# eos fs dumpmd  166 -path
path=/eos/uscms/store/user/drankin/Theta_Oct13/Elec_ML_3fb/Elec_ML_3fb_16/quant-toys:0-wp3000-4160ae2cb8.cfg
[root@cmssrv222 ~]# eos fs dumpmd  166 -path
path=/eos/uscms/store/user/drankin/Theta_Oct13/Elec_ML_3fb/Elec_ML_3fb_16/quant-toys:0-wp3000-4160ae2cb8.cfg
[root@cmssrv222 ~]# eos fs dumpmd  166 -path
[root@cmssrv222 ~]# eos fs dumpmd  166 -path
[root@cmssrv222 ~]#
```

#9 - 02/24/2016 03:05 PM - Gerard Bernabeu Altayo

now just following https://cmsweb.fnal.gov/bin/view/Storage/EOSOperationalProcedures#Decommission_an_EOS_FST_node

Will do cmseos50 first:

```
-bash-4.1$ /srv/admin/bin/cis-please-retire cmseos50
you (DCSO) are in charge of removing the host from zabbix and the ENC
Primary Ticket Information
  Number:          INC000000669206
  Summary:          Retire host: cmseos50
  Status:          Assigned
  Submitted:        2016-02-24 14:59:48 CST
  Urgency:         4 - Low
  Priority:        3 - Medium
  Service Type:     Server

Requestor Info
  Name:         Gerard Bernabeu Altayo
  Email:        gerard1@fnal.gov
  Created By:        cd-srv-cms-snow

Assignee Info
  Group:          ECF-CIS
  Name:         (none)
  Last Modified:      2016-02-24 14:59:53 CST

User-Provided Description
  Please retire host: cmseos50
-bash-4.1$
```

#10 - 02/24/2016 03:12 PM - Gerard Bernabeu Altayo

Now doing cmseos51, it has some 'sticky' files:

```
[root@cmssrv222 ~]# for i in `eos fs dumpmd  168 -path |  cut -d= -f2`; do eos file move $i 168 46; done
success: scheduled move from source fs=168 => target fs=46
[root@cmssrv222 ~]# eos file info /eos/uscms/store/user/kreis/Hbb/20150608_wide_fa3zz_nohup/log_Wh_CMS_float_o
bserved_minuit_0p01_tries10_strategy2.log
  File: '/eos/uscms/store/user/kreis/Hbb/20150608_wide_fa3zz_nohup/log_Wh_CMS_float_observed_minuit_0p01_tries
10_strategy2.log'  Flags: 0644
  Size: 6602829
Modify: Tue Jun  9 14:42:16 2015 Timestamp: 1433878936.112778000
Change: Tue Jun  9 13:58:57 2015 Timestamp: 1433876337.474202243
  CUid: 44456 CGid: 5063  Fxid: 0608092a Fid: 101189930    Pid: 1895919   Pxid: 001cedef
XStype: adler    XS: 4e 20 7e 0d     ETAG: 27162965002158080:4e207e0d
replica Stripes: 2 Blocksize: 4k LayoutId: 00100112
  #Rep: 2
 #   fs-id  #.......................................................................................................
.....................................
         #                      host  #     schedgroup #          path #     boot # configstatus #      drain
 # active #                  geotag
         #.......................................................................................................
.....................................
  0      61        cmseos17.fnal.gov           default.2    /storage/data3     booted           rw      nodrain
   online
  1     168        cmseos51.fnal.gov           default.2    /storage/data1     booted           ro      nodrain
   online
*******
[root@cmssrv222 ~]# eos file drop /eos/uscms/store/user/kreis/Hbb/20150608_wide_fa3zz_nohup/log_Wh_CMS_float_o
bserved_minuit_0p01_tries10_strategy2.log 168
success: dropped stripe on fs=168
[root@cmssrv222 ~]#

[root@cmseos51 ~]# for i in $fsids; do ssh $mgm eos fs dumpmd $i -path; done
path=/eos/uscms/store/user/kreis/Hbb/20150608_wide_fa3zz_nohup/log_Wh_CMS_float_observed_minuit_0p01_tries10_s
trategy2.log
[root@cmseos51 ~]# for i in $fsids; do ssh $mgm eos fs dumpmd $i -path; done
[root@cmseos51 ~]#
```

So now I can move forward with standard procedure:

```
[root@cmseos51 ~]# fsids=`ssh $mgm eos fs ls -m $HOSTNAME | awk '{print $3}' | grep id= | cut -d= -f2`
[root@cmseos51 ~]# for i in $fsids; do
> ssh $mgm eos fs rm $i
> done
error: you can only  remove file systems which are in 'empty' status (errc=22) (Invalid argument)
error: you can only  remove file systems which are in 'empty' status (errc=22) (Invalid argument)
[root@cmseos51 ~]# ssh $mgm eos vid remove gateway ${HOSTNAME}
success: rm vid [ eos.rgid=0 eos.ruid=0 mgm.cmd=vid mgm.subcmd=rm mgm.vid.cmd=unmap mgm.vid.key=tident:"*@cms
eos51.fnal.gov":uid]
success: rm vid [ eos.rgid=0 eos.ruid=0 mgm.cmd=vid mgm.subcmd=rm mgm.vid.cmd=unmap mgm.vid.key=tident:"*@cms
eos51.fnal.gov":gid]
[root@cmseos51 ~]# puppet agent --disable 'This node needs to be reshoot'
[root@cmseos51 ~]# service eosd stop
Stopping eosd:
                                                             [  OK  ]
[root@cmseos51 ~]# service eos stop
Stopping xrootd: fst                                         [  OK  ]
[root@cmseos51 ~]# chkconfig eos off
[root@cmseos51 ~]# chkconfig eosd off
[root@cmseos51 ~]# chkconfig eos-gridftp off
[root@cmseos51 ~]# sleep 5
[root@cmseos51 ~]# ssh $mgm eos node rm ${HOSTNAME}:1095
error: unable to remove node '/eos/cmseos51.fnal.gov:1095/fst' - filesystems are not all in empty state - try
to drain them or: node config <name> configstatus=empty
 (errc=16) (Device or resource busy)
[root@cmseos51 ~]# fsids=`ssh $mgm eos fs ls -m $HOSTNAME | awk '{print $3}' | grep id= | cut -d= -f2`
[root@cmseos51 ~]# for i in $fsids; do
> ssh $mgm eos fs config $i configstatus=empty
> done
[root@cmseos51 ~]# ssh $mgm eos node rm ${HOSTNAME}:1095
success: removed node '/eos/cmseos51.fnal.gov:1095/fst'
[root@cmseos51 ~]#
[root@cmseos51 ~]# df -h
Filesystem      Size  Used Avail Use% Mounted on
/dev/sda2        40G  6.1G   32G  17% /
tmpfs            32G     0   32G   0% /dev/shm
/dev/sda1      1008M  138M  820M  15% /boot
```

```
/dev/sda5        857G    72M  814G    1% /storage/local/data1
/dev/sdb          71T   169M   71T    1% /storage/data1
/dev/sdc          71T   213M   71T    1% /storage/data2
[root@cmseos51 ~]# poweroff

Broadcast message from root@cmseos51.fnal.gov
     (/dev/pts/0) at 15:09 ...

The system is going down for power off NOW!
[root@cmseos51 ~]# Connection to cmseos51 closed by remote host.
Connection to cmseos51 closed.
-bash-4.1$

-bash-4.1$ /srv/admin/bin/cis-please-retire cmseos51
you (DCSO) are in charge of removing the host from zabbix and the ENC
Primary Ticket Information
  Number:             INC000000669215
  Summary:             Retire host: cmseos51
  Status:            Assigned
  Submitted:              2016-02-24 15:10:51 CST
  Urgency:           4 - Low
  Priority:          3 - Medium
  Service Type:         Server

Requestor Info
  Name:           Gerard Bernabeu Altayo
  Email:          gerard1@fnal.gov
  Created By:           cd-srv-cms-snow

Assignee Info
  Group:          ECF-CIS
  Name:           (none)
  Last Modified:          2016-02-24 15:10:56 CST

User-Provided Description
  Please retire host: cmseos51
-bash-4.1$

comp-4:hosts gerard1$ HOST=cmseos51; git rm $HOST.fnal.gov.yaml; git commit -m "retiring $HOST"; git push
rm 'hosts/cmseos51.fnal.gov.yaml'
[master 228e747] retiring cmseos51
 1 file changed, 12 deletions(-)
 delete mode 100644 hosts/cmseos51.fnal.gov.yaml
Counting objects: 7, done.
Delta compression using up to 4 threads.
Compressing objects: 100% (3/3), done.
Writing objects: 100% (3/3), 296 bytes | 0 bytes/s, done.
Total 3 (delta 2), reused 0 (delta 0)
remote:
remote: diff-tree:
remote: :100644 000000 23e5d116ff7eff80ed1f02a4204375ed5824b282 0000000000000000000000000000000000000000 D
hosts/cmseos51.fnal.gov.yaml
remote: fatal: Path 'hosts/cmseos51.fnal.gov.yaml' does not exist in '228e7477063198cc7ab6764e1e92c4bcc35c0886
'
remote: omd-host-crud update cmseos51 --role UNSET --instance UNSET --extra 'UNSET'
remote: cmseos51 - host updated, will now inventory...
remote: cmseos51 - unknown error
remote: omd-host-crud delete cmseos51
remote: cmseos51 - host deleted
remote: Recieved from stdin:
remote: oldrev: 218f475579d7028a4a2808ce0064c1ca708b7a3b
remote: newrev: 228e7477063198cc7ab6764e1e92c4bcc35c0886
remote: refname: refs/heads/master
remote: Derived Configuration:
remote: REPO: puppet@cms-git:/var/lib/puppet/enc.git
remote: BRANCH: master
remote: BRANCH_DIR: /srv/puppet/enc
remote: PUPPET_SERVERS: puppet@cmssrv166.fnal.gov puppet@cmspuppet2.fnal.gov puppet@cmspuppet1.fnal.gov
remote: Updating remote branch /srv/puppet/enc/master on puppet@cmssrv166.fnal.gov
remote: From cms-git:/var/lib/puppet/enc
remote:  * branch          master     -> FETCH_HEAD
remote: Updating 218f475..228e747
remote: Fast-forward
remote:  hosts/cmseos51.fnal.gov.yaml |   12 ------------
remote:  1 files changed, 0 insertions(+), 12 deletions(-)
```

```
remote:   delete mode 100644 hosts/cmseos51.fnal.gov.yaml
remote: Updating remote branch /srv/puppet/enc/master on puppet@cmspuppet2.fnal.gov
remote: From cms-git:/var/lib/puppet/enc
remote:  * branch            master     -> FETCH_HEAD
remote: Updating 218f475..228e747
remote: Fast-forward
remote:  hosts/cmseos51.fnal.gov.yaml |   12 ------------
remote:  1 files changed, 0 insertions(+), 12 deletions(-)
remote:   delete mode 100644 hosts/cmseos51.fnal.gov.yaml
remote: Updating remote branch /srv/puppet/enc/master on puppet@cmspuppet1.fnal.gov
remote: From cms-git:/var/lib/puppet/enc
remote:  * branch            master     -> FETCH_HEAD
remote: Updating 218f475..228e747
remote: Fast-forward
remote:  hosts/cmseos51.fnal.gov.yaml |   12 ------------
remote:  1 files changed, 0 insertions(+), 12 deletions(-)
remote:   delete mode 100644 hosts/cmseos51.fnal.gov.yaml
To puppet@cms-git.fnal.gov:enc
   218f475..228e747  master -> master
comp-4:hosts gerard1$
```

#11 - 02/24/2016 03:27 PM - Gerard Bernabeu Altayo

cmseos52 retired too.

#12 - 02/24/2016 03:56 PM - Gerard Bernabeu Altayo

cmseos53 retired, cmseos56 started drain :)

#13 - 03/07/2016 04:55 PM - Gerard Bernabeu Altayo

cmseos56 retired :)

All the others keep draining...

#14 - 03/11/2016 04:44 PM - Gerard Bernabeu Altayo

only 2 more nodes to go :D

[root@cmssrv222 ~]# eos fs ls -d

#...

```
  1. host (#...) #  id #        path #     drain #  progress #    files # bytes-left #  timeleft #retry #wopen
     #.......................................................................................................
     cmseos61.fnal.gov (1095)   188  /storage/data1    drained      100     0.00      0.00 B      0     0     0
     cmseos61.fnal.gov (1095)   189  /storage/data2    draining      85    59.71 k    5.67 TB    587624    0     0
     cmseos63.fnal.gov (1095)   192  /storage/data1    draining      25   283.88 k   26.64 TB    587624    0     0
     cmseos63.fnal.gov (1095)   193  /storage/data2    stalling       2   391.70 k   35.78 TB    587625    0     0
     [root@cmssrv222 ~]#
```

#15 - 03/14/2016 12:00 PM - Gerard Bernabeu Altayo

- Status changed from New to Resolved

all nodes have been retired!