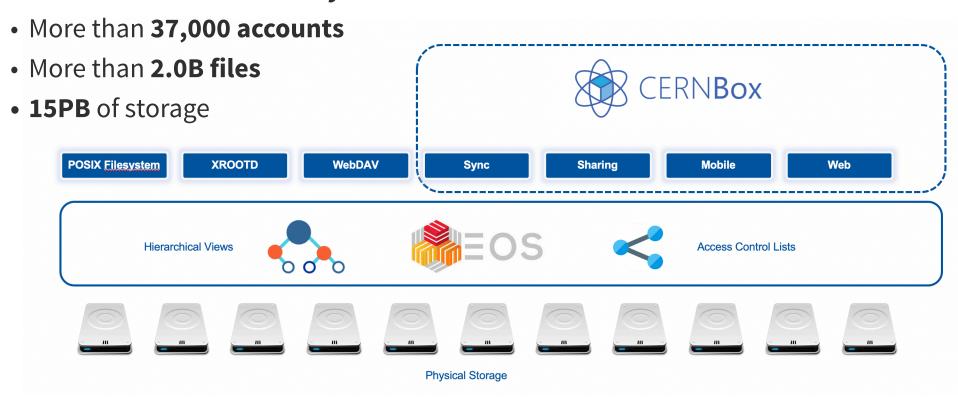


EOS for CERNBox Report

Roberto VALVERDE, in behalf of EOS CERNBox Team (IT-ST, CERN)

CERNBox: Powered by EOS

CERNBox is the cloud sync and share service used at CERN.





Some numbers....

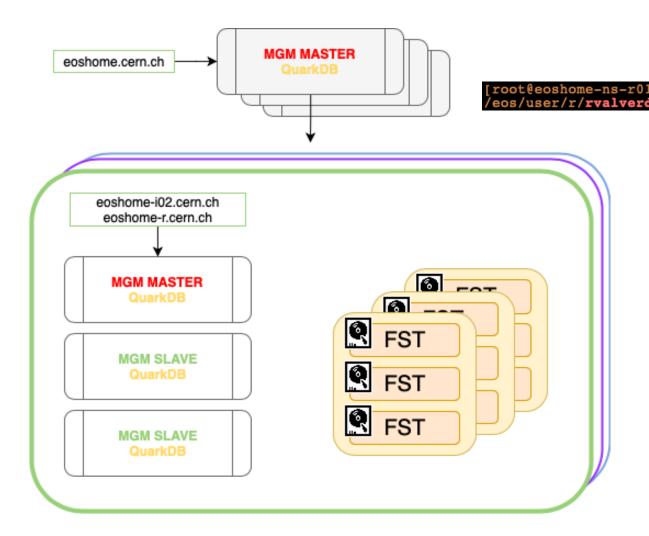
10 EOS instances

- 5 for HOMES
- 3 for PROJECTS
- 1 for Audio/Video data (EOSMEDIA)
- 1 Pre-Production EOSHOME Canary

Instance	Used	Capacity	Disk servers
EOSHOME-00	1.6P	3.3P	9
EOSHOME-01	2.2P	3.8P	11
EOSHOME-02	1.4P	2.9P	9
EOSHOME-03	1.5P	3.2P	9
EOSHOME-04	1.4P	2.7P	7
EOSPROJECT-00	1.4P	2.9P	8
EOSPROJECT-01	1.1P	2.3P	7
EOSPROJECT-02	1.2P	2.3P	6
EOSMEDIA	2.8P	4.5P	12
EOSHOMECANARY	2.6T	618T	5
TOTAL	15.0P	29.0P	78



EOSHOME: Architecture



08/03/21

- QuarkDB automatic failover
- MGM failover still manual.

~]\$ eos route ls



grep rvalverd

EOSHOME: Hardware

MGM + QuarkDB (x3)

- CC7
- Intel Xeon, 32 cores.
- 192G/384G RAM
- 2 x 2T SSD (1 for QuarkDB)
- One node per switch
- 10G Network

FST

- CC7
- Intel Xeon/AMD Epyc, 20/32 cores
- 128G/256G RAM
- 48x6T/14T JBOD, 1 filesystem / disk.
 XFS
- 10G/25G Network



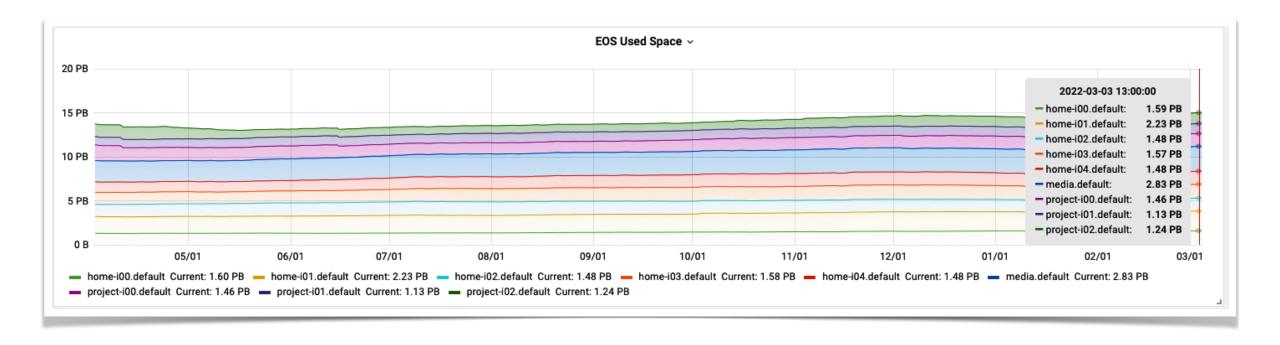
Service availability

- 99.999% availability in last year
 - Stable upgrade cycles
 - Pre-production testing (EOSHOME Canary)
 - Software improvements (Kudos EOS dev Team!)
 - Better handling of batch overloads.



Service growth

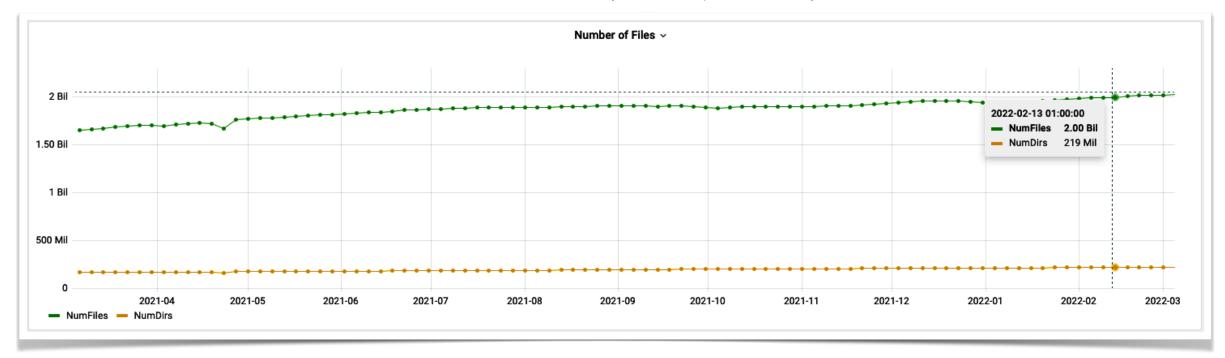
• **817TB** written in last year (+6%)





Service growth (II)

- 2 Billion files reached (+317M, +22%).
- 200 Million directories reached (+49M, +29%)





2021 Highlights

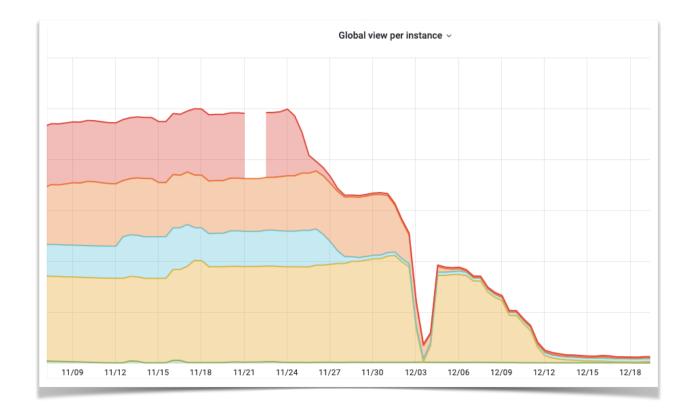
- EOS on CephFS Evaluation
 - FST on CephFS instead of directly on hard disks
 - Fully virtualised EOS
 - Streamlined operations in ST-GSS
- Check my presentation later today [Link]





2021 Highlights

- EOS FSCK in automatic repair enabled
 - Make sure you use **EOS v4.8.76** or newer to use this feature.





2021 Highlights

- CERNBox backup Evolution
 - More than 40,000 users and projects spaces are now backed up by our cback backup orchestrator.
 - Check Gianmaria's presentation [Link]



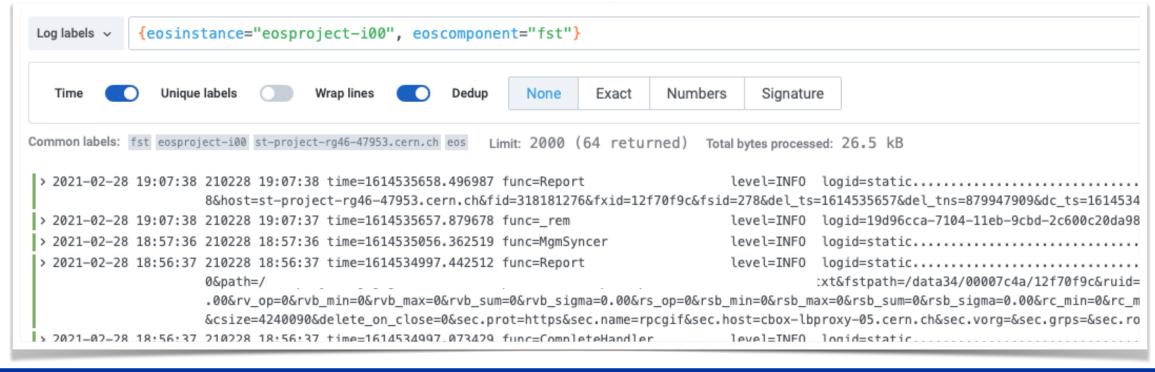




2021: Monitoring / Logging

- Centralised EOS logs with Grafana Loki
 - Easier tracing of operations across MGM/FST
 - Check Sami's presentation [Link]







2021: Monitoring / Logging (II)

- Development of EOS prometheus exporter
 - Check presentation from Monday [Link]

08/03/21



```
# TYPE eos_space_disk_iops_configrw gauge
eos_space_disk_iops_configrw{cluster="eosproject-i00",space="default"} 20663
eos_space_disk_iops_configrw{cluster="eosproject-i00",space="spare"} 402
# HELP eos_space_disk_load_avg Space Avg disk load
# TYPE eos_space_disk_load_avg gauge

    Space metrics

eos_space_disk_load_avg{cluster="eosproject-i00",space="d
eos_space_disk_load_avg{cluster="eosproject-i00",space="s
                                                                                                      Space Disk Read Rate in MB/s
# HELP eos_space_disk_load_sig Space Sig disk load
# TYPE eos_space_disk_load_sig gauge
eos_space_disk_load_sig{cluster="eosproject-i00",space="d
                                                                 8 GB/s
eos_space_disk_load_sig{cluster="eosproject-i00",space="s
# HELP eos_space_disk_readratemb Space Disk Read Rate in
# TYPE eos_space_disk_readratemb gauge
eos_space_disk_readratemb{cluster="eosproject-i00",space=
eos_space_disk_readratemb{cluster="eosproject-i00",space=
                                                                 2 GB/s
# HELP eos_space_disk_ropen Space Open reads
# TYPE eos_space_disk_ropen gauge
eos_space_disk_ropen{cluster="eosproject-i00",space="defa
                                                                                                     12:30
                                                                                                                    13:30
                                                                                                                                   14:30
                                                                                                                                          15:00
                                                                                                                                                 15:30
                                                                       10:30
                                                                              11:00
                                                                                                                                                         16:00
eos_space_disk_ropen{cluster="eosproject-i00",space="spar

    eoshomecanary - cephfs
    eoshomecanary - default
    eoshomecanary - spare
    eosproject-i00 - default

                                                                      eosproject-i00 - spare - eosproject-i01 - default - eosproject-i01 - spare - eosproject-i02 - default

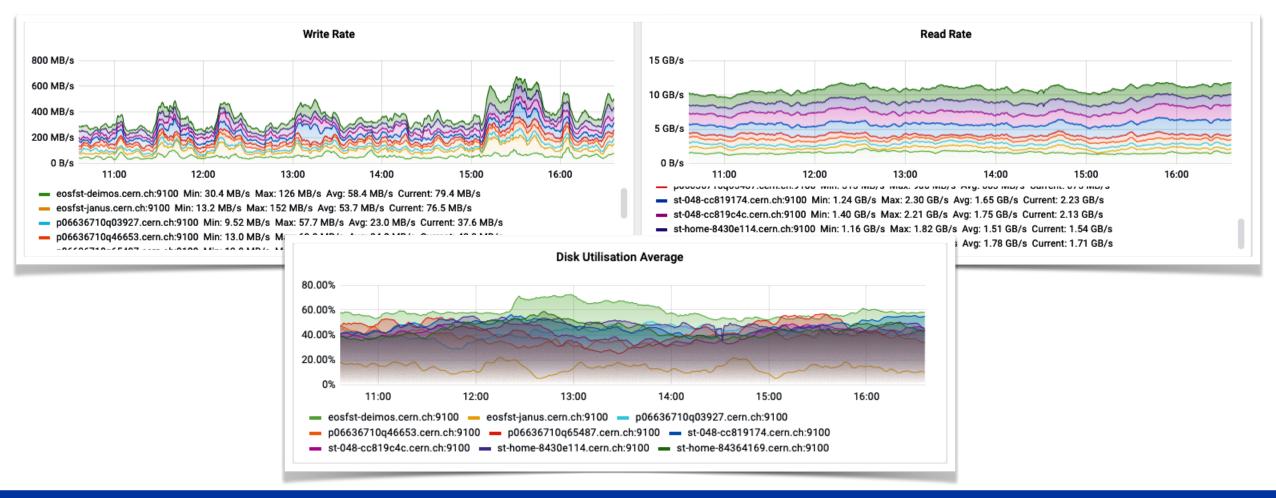
 eosproject-i02 - spare
```



2021: Monitoring / Logging (III)



Improved FST monitoring with Prometheus node_exporter

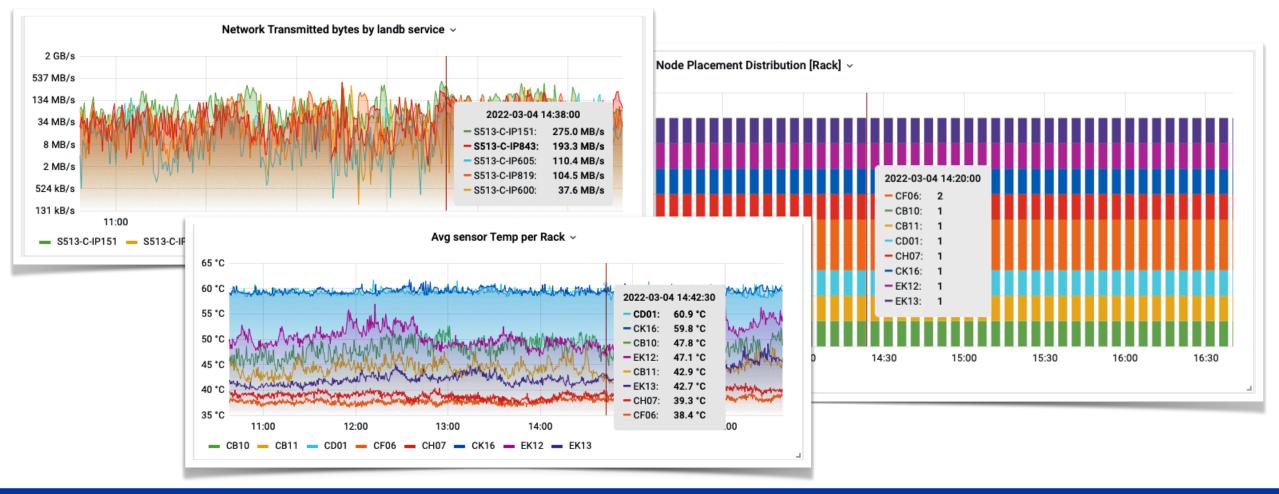




2021: Monitoring / Logging (IV)



Improved FST monitoring with Prometheus node_exporter





15

2021: Hardware decommission / allocation

- Retirement campaign:
 - 32 disk servers **6.5P**
 - 24 MGMs
- Hardware allocation:
 - 17 disk servers + 11.4P
 - 24 MGMs





2022 Roadmap

- CephFS as FST backend
- **EOS 5** deployment
- **HA** on EOS MGM
 - Do even more transparent upgrades / interventions
- Provide self-service backup restore for CERNBox users.
- Improve monitor and alerting
 - Durability, backup



Thank you!



