

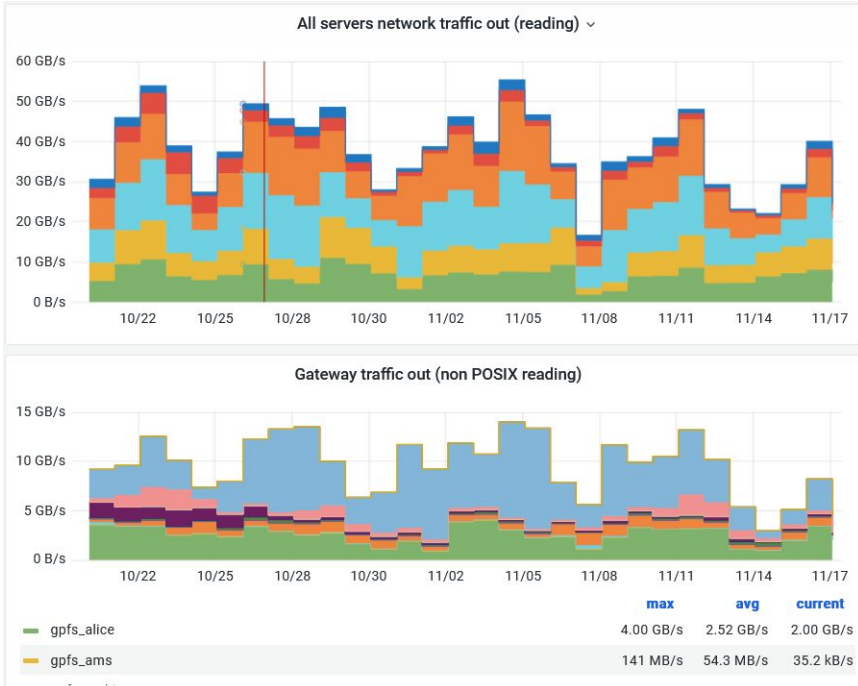
State of Storage

CdG 18 novembre, 2022

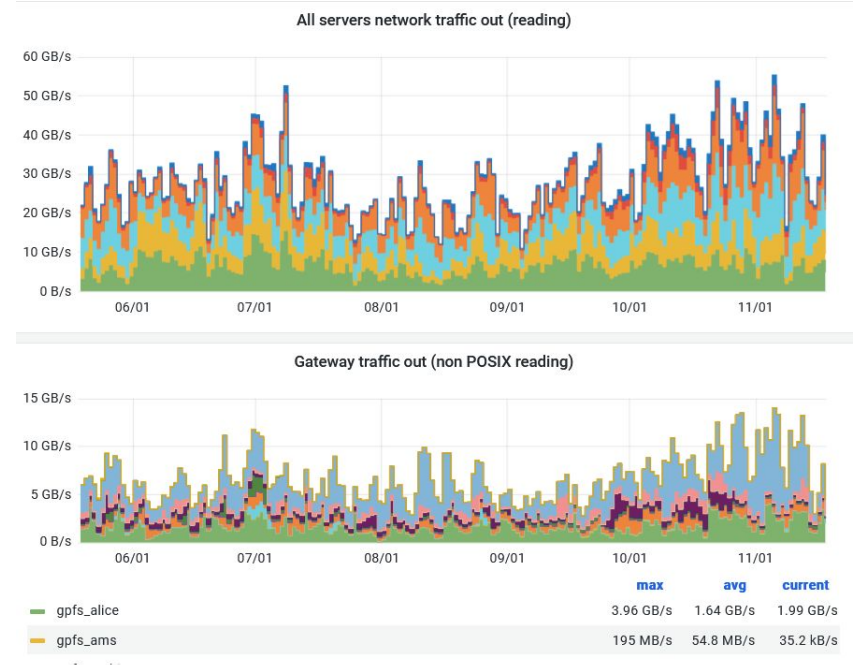


Business as usual

Last month



Last 6 months



Disk storage in produzione

Installed: **50.07 PB**, Pledge 2022: **59.1 PB**, Used: **41.4 PB**

Sistema	Modello	Capacita' netta, TB	Esperimenti	Scadenza
ddn-10, ddn-11	DDN SFA12k	10752	ALICE, AMS	03/2021 → 06/2023
os6k8	Huawei OS6800v3	3400	GR2, Virgo	06/2022 → 12/2023
md-1,md-2,md-3,md-4	Dell MD3860f	2308	DS, Virgo, Archive	11/2021 → 12/2022
md-5, md-6, md-7	Dell MD3820f	28	metadati, home, SW	12/2022 → 12/2023 ?
os18k1, os18k2	Huawei OS18000v5	7800	LHCb	2023
os18k3, os18k5, os18k5	Huawei OS18000v5	11700	CMS	2024
ddn-12, ddn-13	DDN SFA 7990	5060+870	GR2,GR3	2025
ddn-14, ddn-15	DDN SFA 2000NV	24	metadati	2025
os5k8-1,os5k8-2	Huawei OS5800v5	8999	ATLAS	2027
Cluster CEPH	12xSupermicro SS6029	3400	ALICE, cloud, etc	2027

Prossimi acquisti

- Gara storage 2022 (14PB netti)
 - Gara pubblicata il 13/06/2022
 - Il vincitore (provvisorio) e' **Lenovo con ThinkSystem DE6600**
(Derivato dal NetApp DE6600 con un enclosure con i dischi NVME)
 - Installazione e messa in PROD in Q1 2023
- AQ storage 2023-2024
 - La documentazione e' stata sottomessa alla GE
 - Annullata per essere rifatta utilizzando finanziamenti dal PNRR
 - In fase di stesura per PNRR compliance, obiettivo GE a fine mese



Current SW in PROD

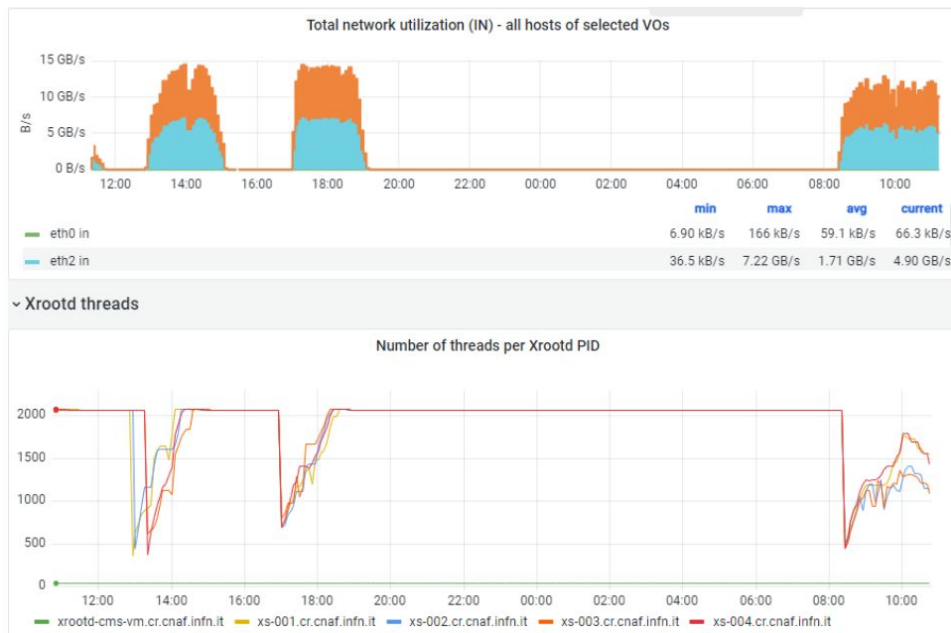
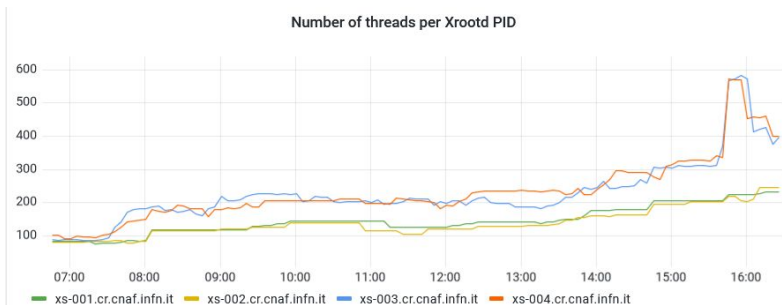
- GPFS 5.0.5-13 (to be updated soon to 5.1.2-7)
- StoRM BackEnd 1.11.21 (latest)
- StoRM FrontEnd 1.8.15 (latest)
- StoRM WebDAV 1.4.1 (latest)
- StoRM globus gridftp 1.2.4
- XrootD 4.11.2
 - updated to 4.12.4 in the 4 CMS servers
 - 5.3.1-1 on CMS redirectors (local and EU/IT/FR)
- Ceph 16.2.6 (Pacific)

Tickets and problems - last month

- ATLAS
 - TPCs in push-mode to GOOGLE_EU fail for all StoRM sites (GGUS [158487](#))
 - Issue for StoRM developers, on hold
 - Upon Petr request, storage areas being configured for Token-based AuthN/Z according to [requirements](#), and [documentation](#) being updated to be used by sites
- LHCb
 - [Issue](#) with DNS resolving mechanism fixed in FTS for all Gfal2 protocols; this had quite some impact on the Spring Tape data challenge
- Borexino
 - Data exposed via StoRM WebDAV to be downloaded by approved colleagues from JINR with dedicated group in iam-t1-computing
- Km3Net
 - Access via StoRM WebDAV to data in /storage/gpfs_data/km3/raw/sea with dedicated group in iam-t1-computing
 - Discussing transition to StoRM WebDAV, away from gridftp-plain-virgo, for other folders as well
- Limadou
 - Discussing transition to StoRM WebDAV, away from gridftp-plain-virgo, with dedicated group in iam-t1-computing
- Swgo
 - Access via StoRM WebDAV to data in /storage/gpfs_data/ctalocal/ctaplus/corsika/prod3 with dedicated group in iam-t1-computing

CMS - Traffic stops when XrootD threads saturate

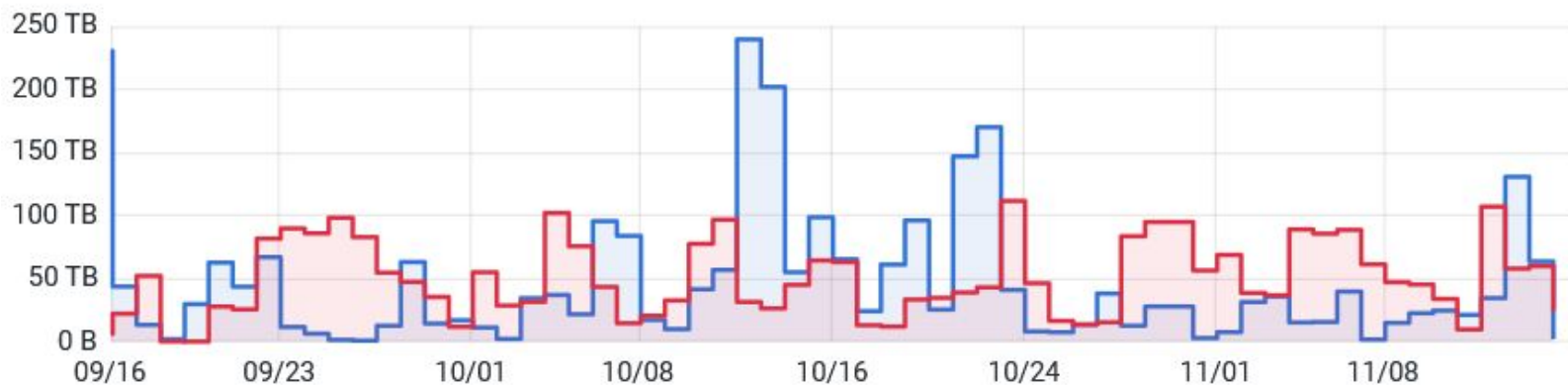
- [Issue](#) opened to developers: thread saturation, log files stuck, need restart
- Trying to see the impact of xrootd.async off nosf
- Upgrade xrootd to 5.4.2 (and gpfs to 5.0.5-14)



Stato tape

16 Sep 2022 - 15 Nov 2022

MSS bytes in/out (per day)



	min	max	avg	current	total
— out traffic (recalls)	934 GB	240 TB	46.4 TB	2.08 TB	2.83 PB
— in traffic (migrations)	153 GB	112 TB	49.2 TB	24.3 TB	3.00 PB

Stato tape

- Liberi 28 PB (su cassette vuote, complessivamente sulle 2 librerie).
Usati 93 PB.
 - Pledge 2022: 130.5 PB
 - Installato attuale: 130.5 PB
 - Cancellazione ATLAS di 1.5 PB appena effettuata
 - Usato ATLAS tornato entro pledge
 - In corso discussione sul futuro a medio termine:
 - Repack da Oracle a IBM e spostamento al Tecnopolo

Library	Tape drives	Max data rate/drive, MB/s	Max slots	Max tape capacity, TB	Installed cartridges	Used capacity, PB
SL8500 (Oracle)	16*T10KD	250	10000	8.4	~10000	60
TS4500 (IBM)	19*TS1160	400	6198	20	2450	33