Storage Element Current Usage

Presenter Name

Meeting Name

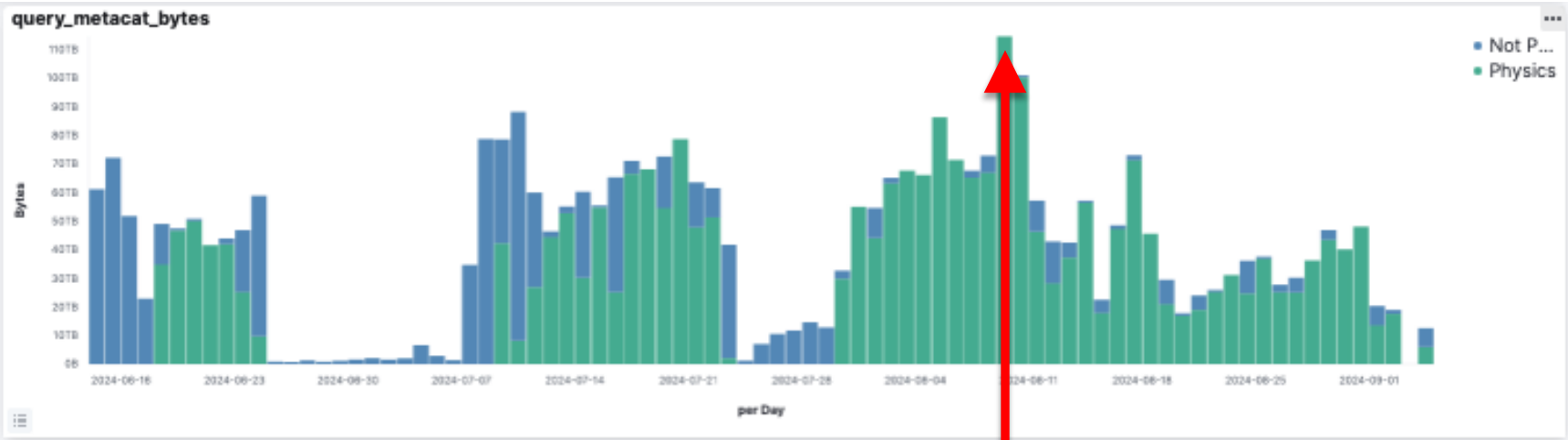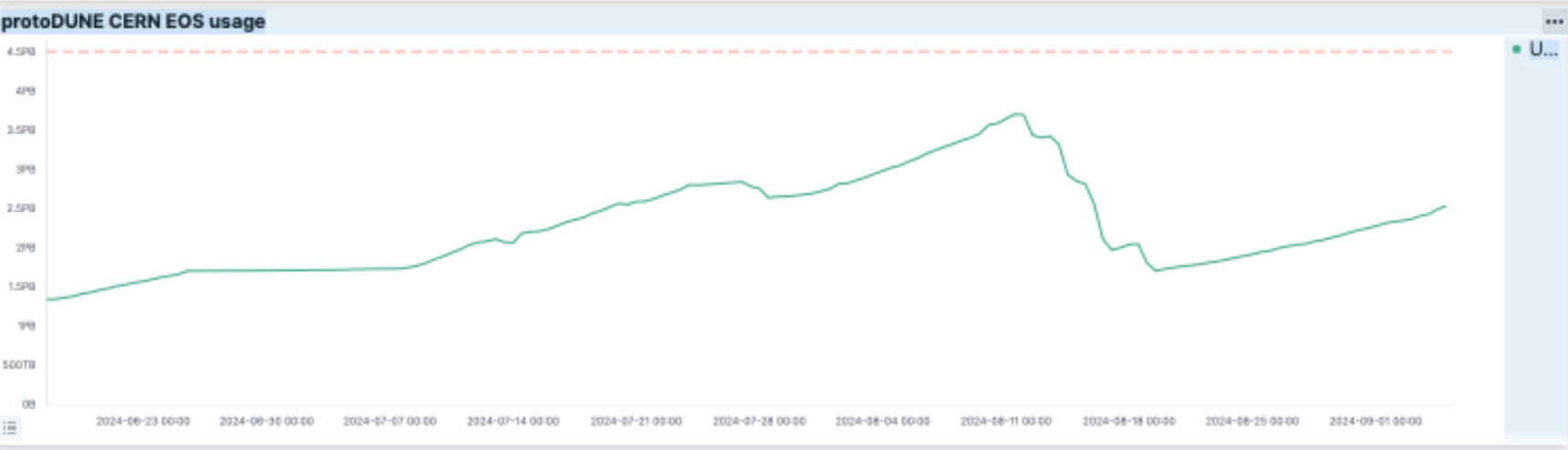Date

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NP04 2024 Beam Data Summary (TB)

Type of data	Total so far	On disk @ CERN	Last week (Aug 28-Sep 4)	Projected Usage (total)
Beam Data since 6/19	2943	2042	223	2963 +/- 100
Cosmics Data since 6/19	727	236	21	727
Trig Primitives since 6/19	872	695	86	840
Hd-protodune pre 6/19	800	0	n/a	n/a
Legacy protodune dp/sp	150	150		150
Free space @ CERN	1460	1460		1470

5324 TB of ProtoDUNE HD raw data in all!

ProtoDUNE run

- Estimate in first beam week was 2-3PB of beam data to be written.
- Mid-run Aug 10-11 we took 2 100-TB Days
- Projected 4.5PB of raw data total
- Moved about 2PB of raw hd-protodune data to make room @ CERN
- Some raw data files moved to BNL, PIC, NIKHEF, FNAL, PRAGUE, RAL-PP, SURFSARA
- Thanks to several sites for increasing our disk quota at short notice.

Aug 10, 11, 100TB each

Disk RSE Usage (TB) (1TB=10^12 B)

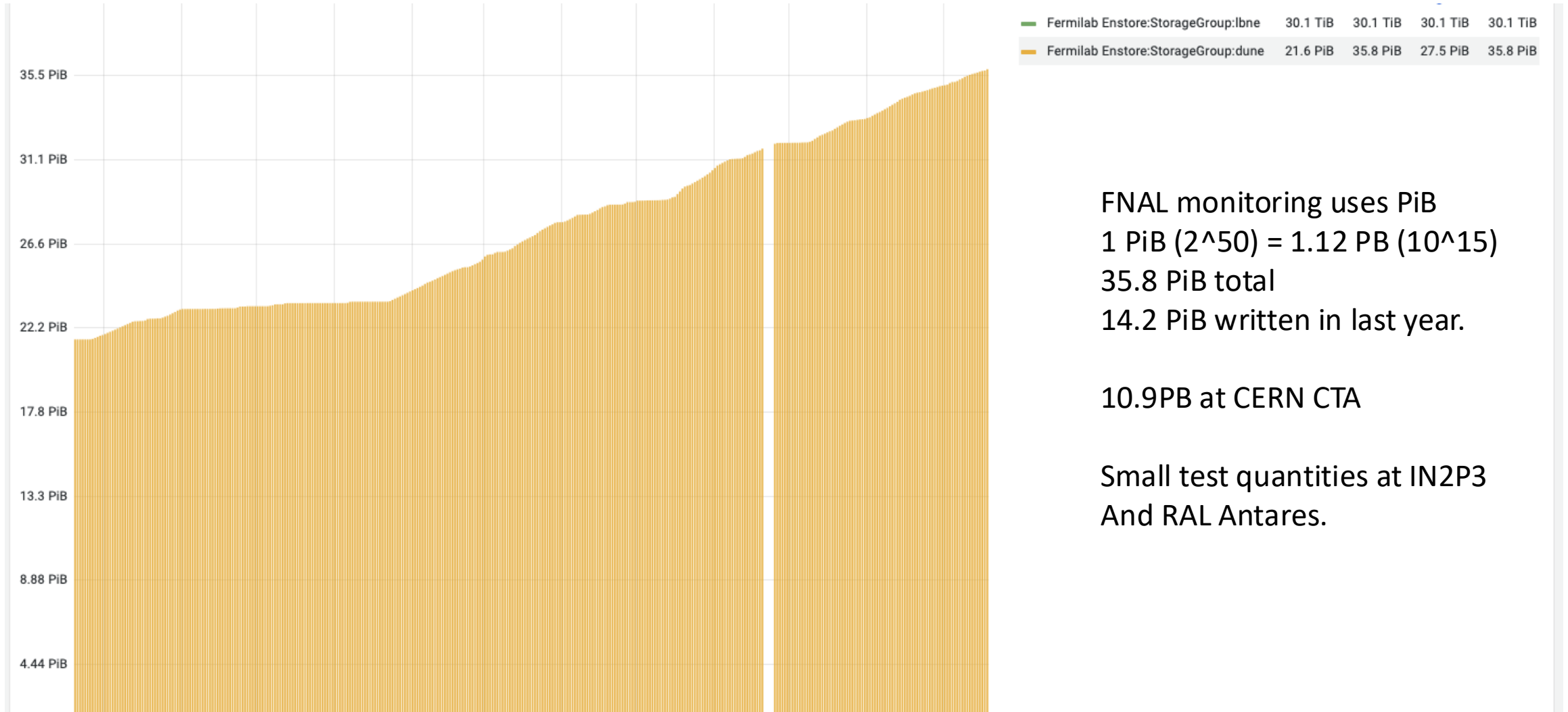| NAME	Rule usage	Rucio Usage	Storage Usage	Rucio Limit	Site quota
PRAGUE	756	812	834	1126	1161
NIKHEF	1008	1102	1102	1143	1143
SURFSARA	457	615	614	781	755
FNAL	1387	1497	1491	2100	2671
BNL	594	751	770	830	831
LANCASTER	452	462	462	700	700
MANCHESTER	476	476	476	1000	1077
QMUL(offline)	178	334	307	1100	1100
RAL-PP	425	561	578	1000	1000
RAL_ECHO	764	913	908	1050	1000
IN2P3	1012	1071	1061	1073	1073
PIC	1388	1410	1410	1439	1439
CERN	3170	3193	3194	4500	4500

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Notes on disk usage:

- "Rule usage" represents data sets that are at the site with rules that we intend to keep there long term.

- "Rucio usage" represents all files Rucio knows about, including first copy of offline products which will eventually expire / get cleared out.

- "Storage usage" represents the usage as measured by the local storage element.

- If "Storage usage" > "Rucio usage" that is an indicator of dark data.

- If "Storage usage" < "Rucio usage" that is an indicator of a big inbound transfer that is not all the way there yet.

- Our storage needs include headroom of 10-20% per site to put output files from jobs that run at those sites which will then get collected and brought to tape at Fermilab.

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Commissioning:

- INFN just completed configuration of xrootd on their storage element yesterday, expect to put that into production shortly.

- Canada has offered dCache space, we are just now starting to get ready to use it.

- Glasgow has just joined and we are commissioning their RSE.

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Tape Usage FNAL

Fermilab Enstore:StorageGroup:lbne	30.1 TiB	30.1 TiB	30.1 TiB	30.1 TiB
Fermilab Enstore:StorageGroup:dune	21.6 PiB	35.8 PiB	27.5 PiB	35.8 PiB

FNAL monitoring uses PiB
1 PiB (2^50) = 1.12 PB (10^15)
35.8 PiB total
14.2 PiB written in last year.

10.9PB at CERN CTA

Small test quantities at IN2P3
And RAL Antares.

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