

# LOFAR LTA AT FZJ

Status of the LOFAR Long Term Archive in Jülich Supercomputing Centre

24 OCTOBER 2018 | CRISTINA MANZANO

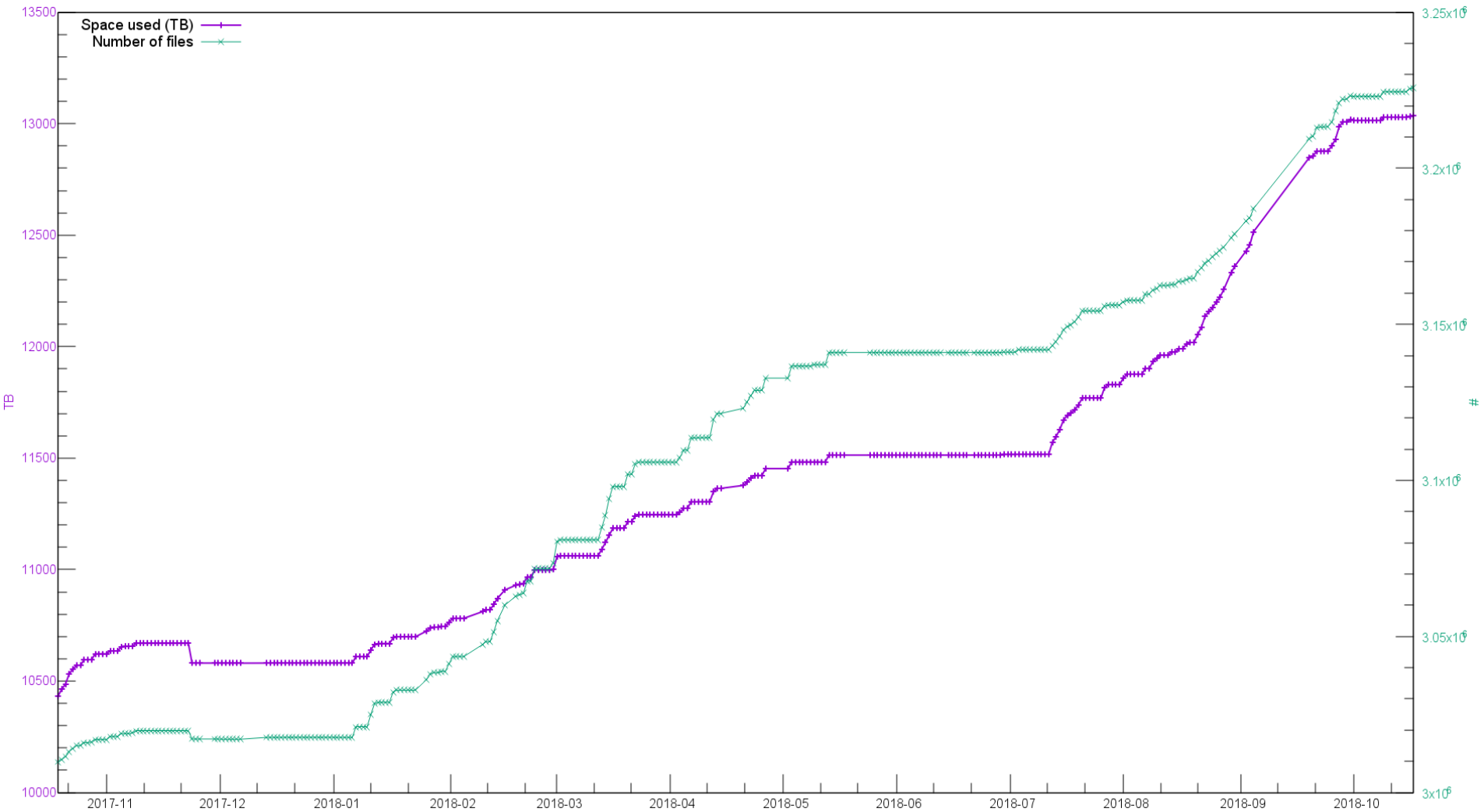
# LTA JÜLICH

- dCache golden release (LTS) 3.2
  - <https://www.dcache.org/>
- 1 admin node: running a PostgreSQL database
- 1 download node
- 8 door/pool nodes
  - GridFTP doors
  - Read and write pools
- LOFAR data at Jülich
  - 740 TB disk space
  - 13 PB data on tape
  - > 3,225,000 files

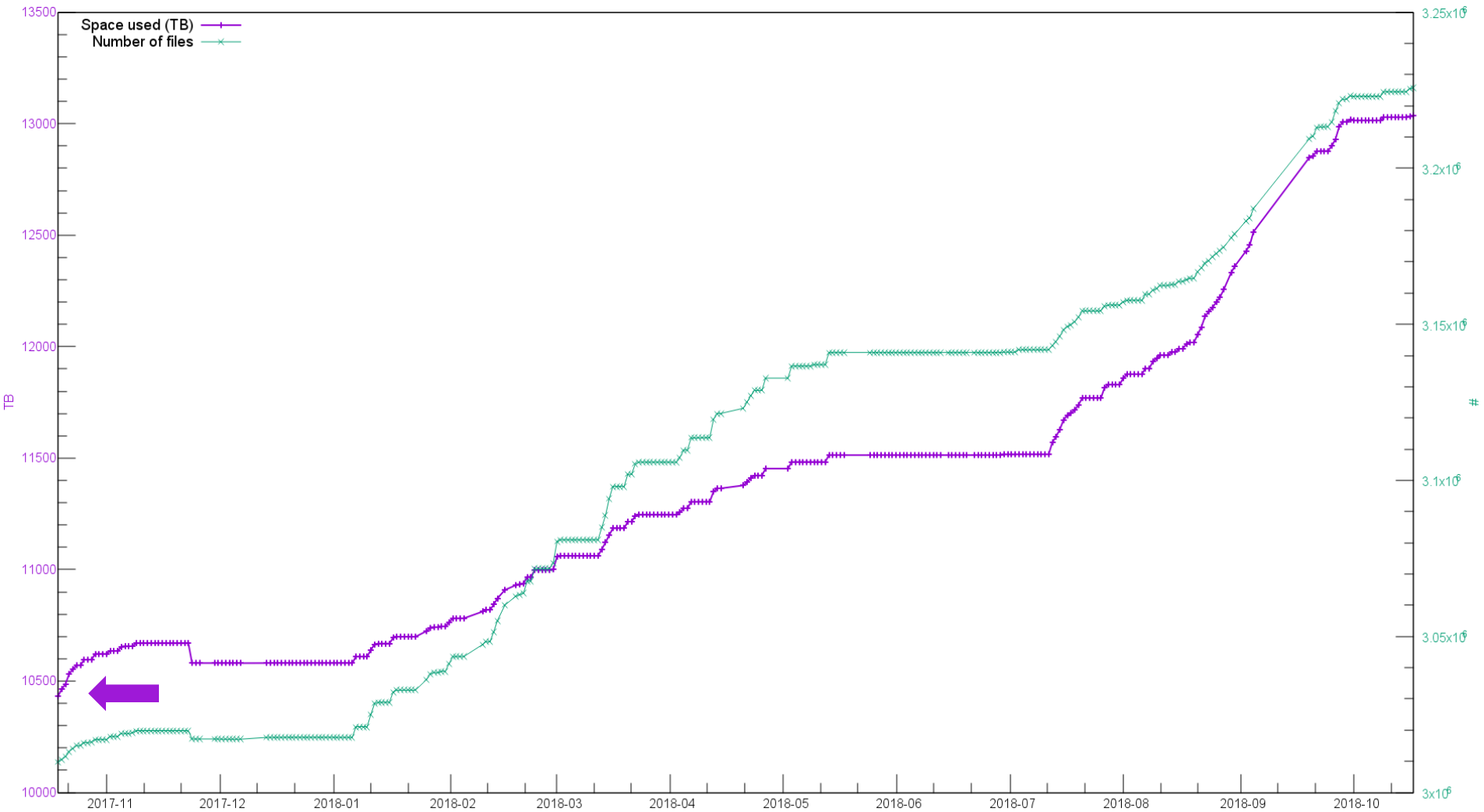
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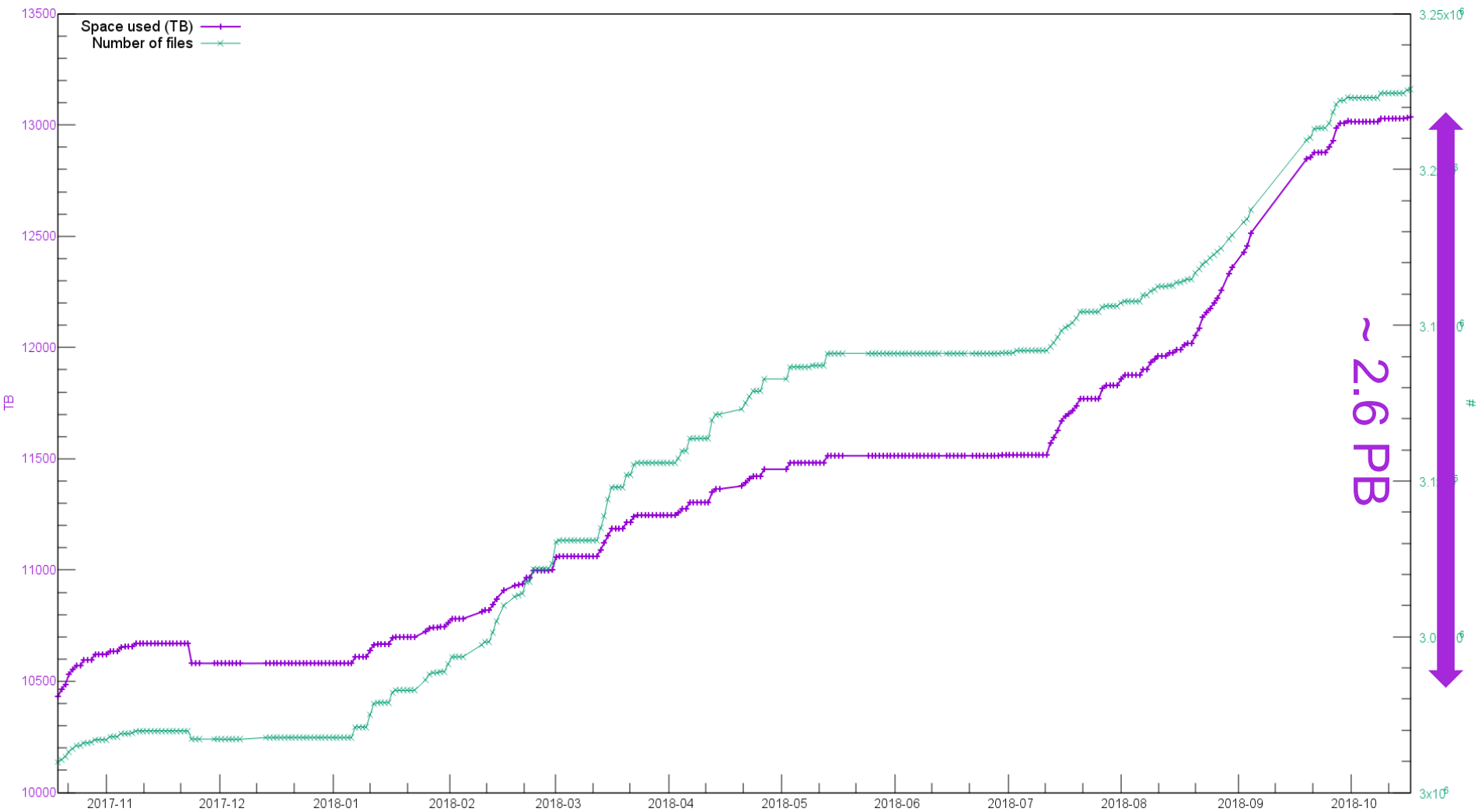
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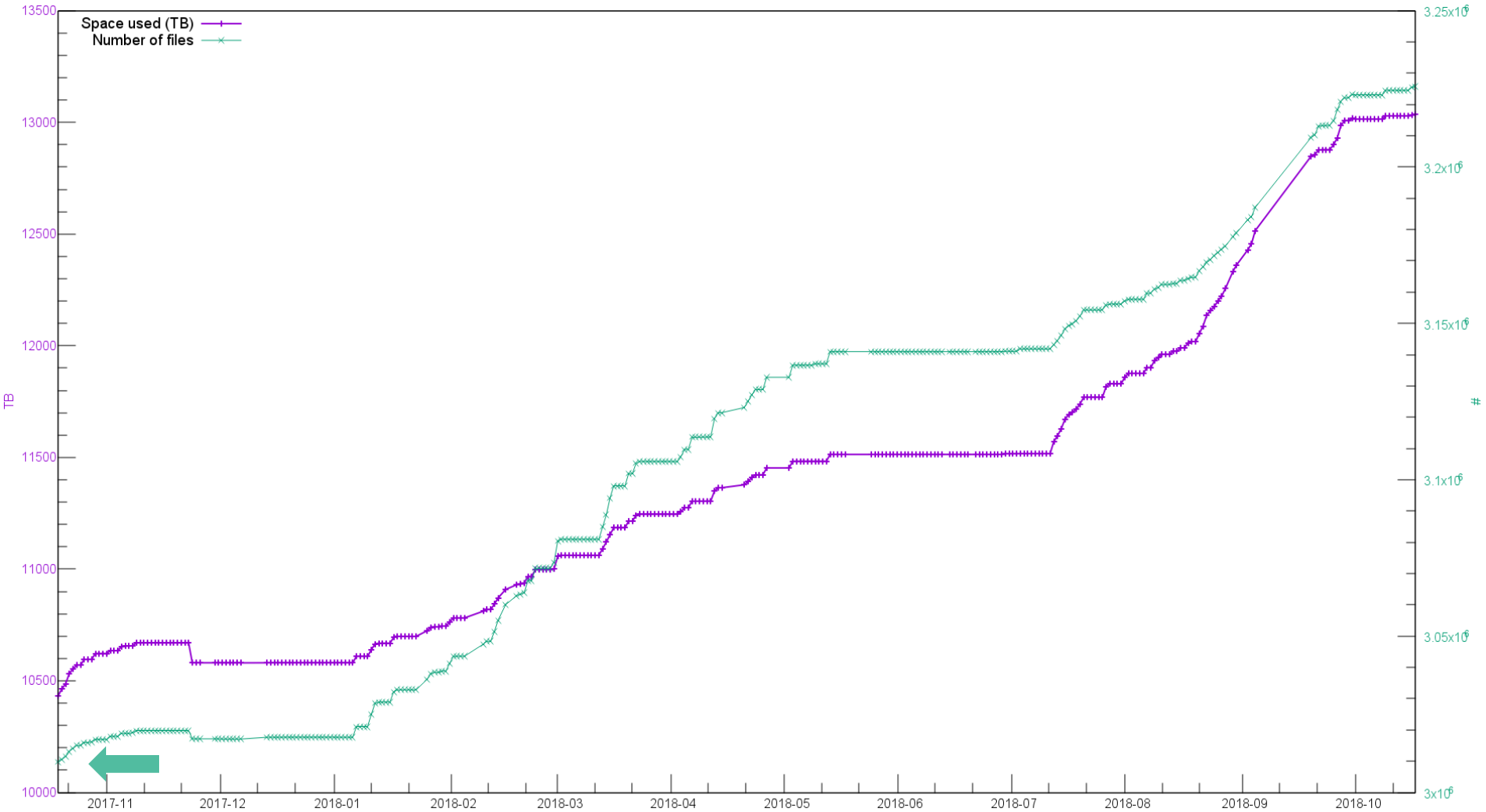
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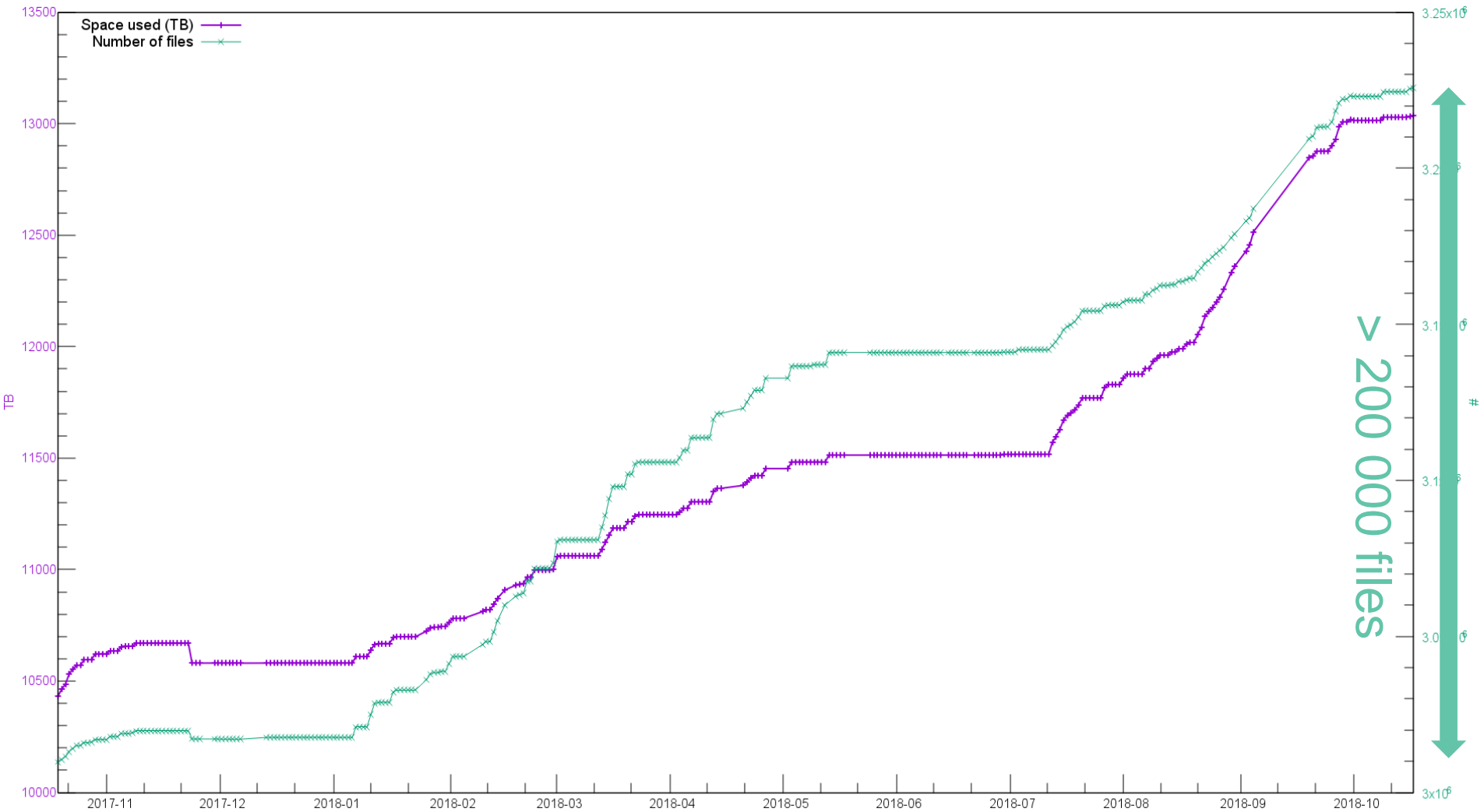
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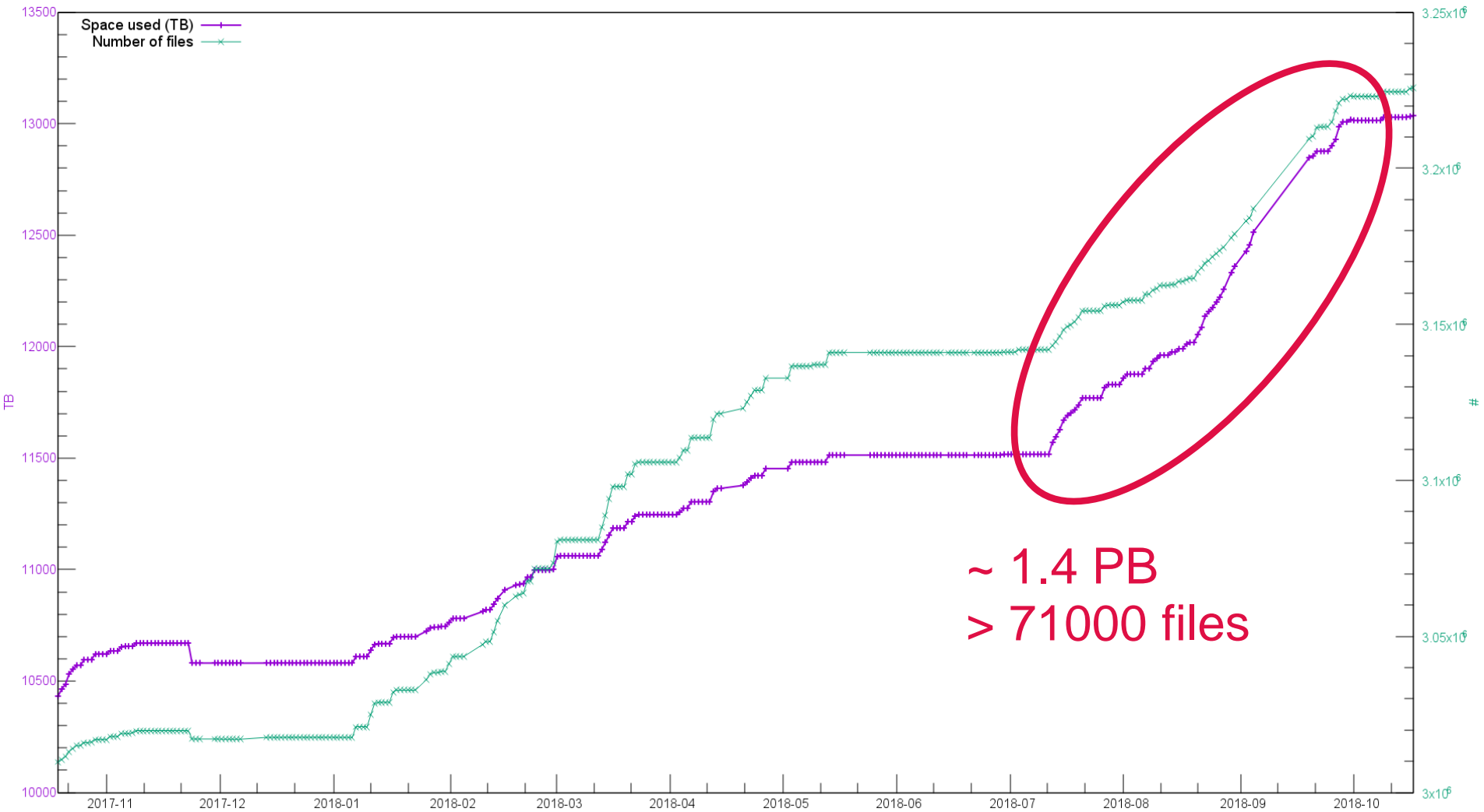


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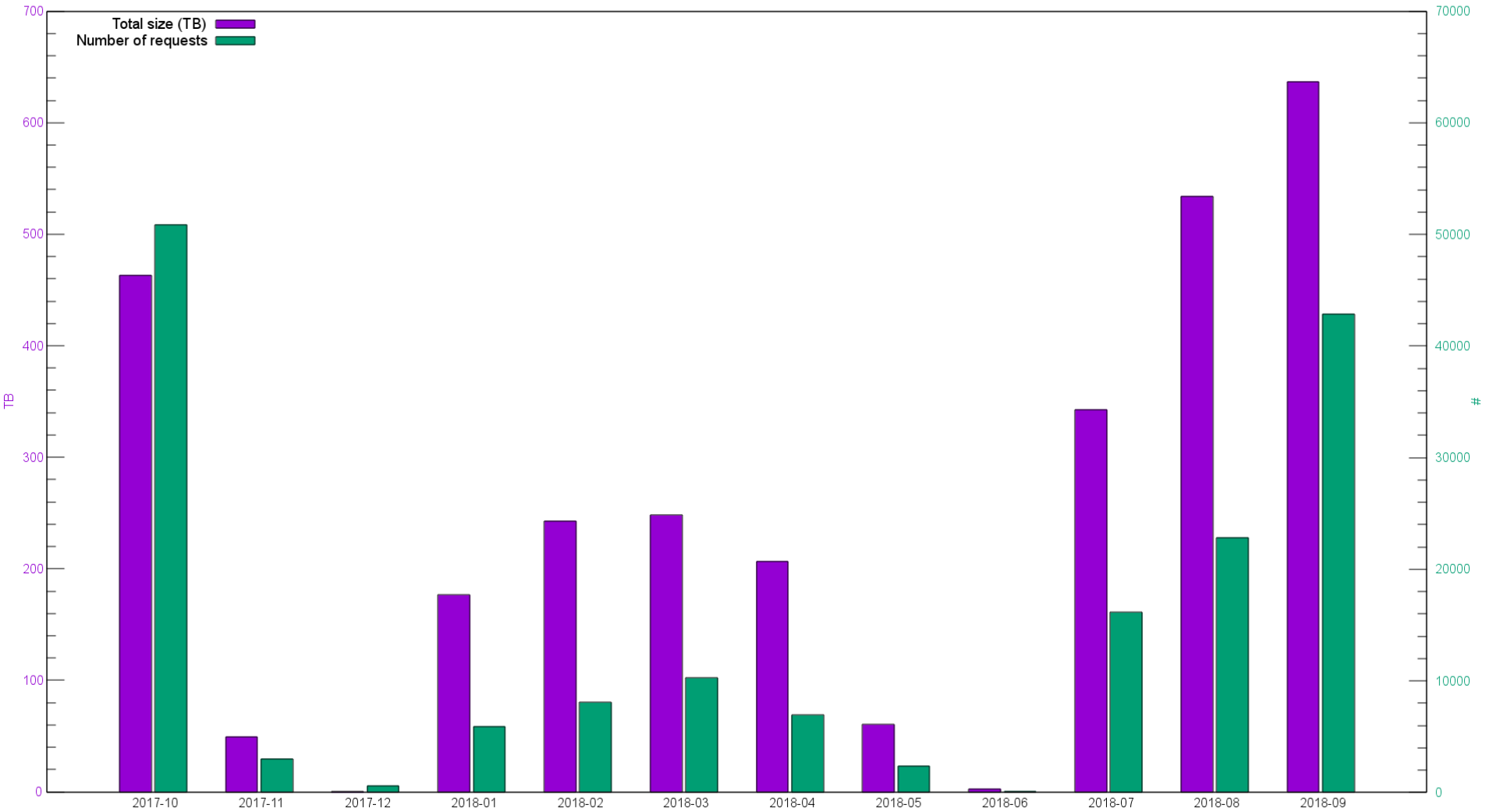


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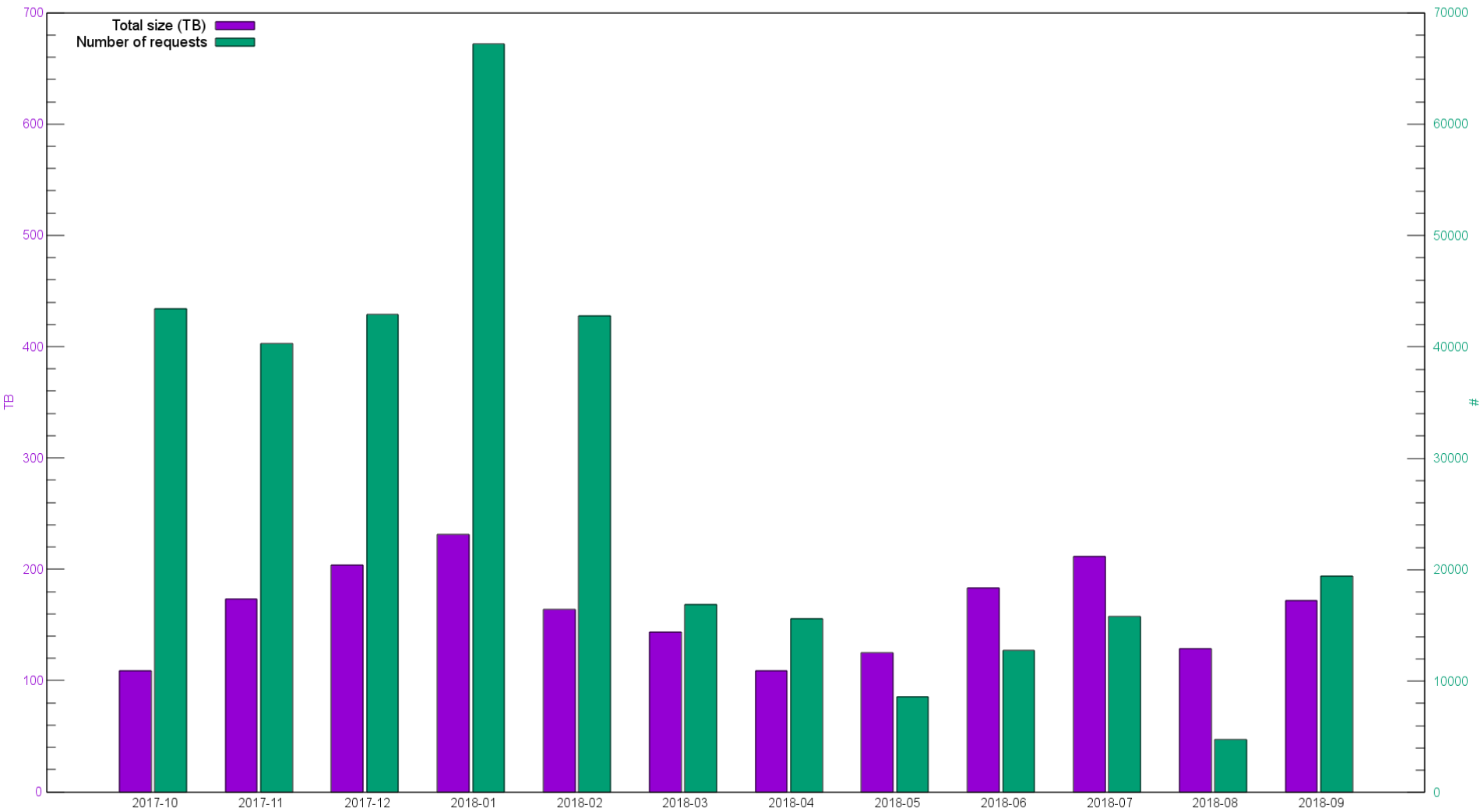


~ 1.4 PB  
> 71000 files

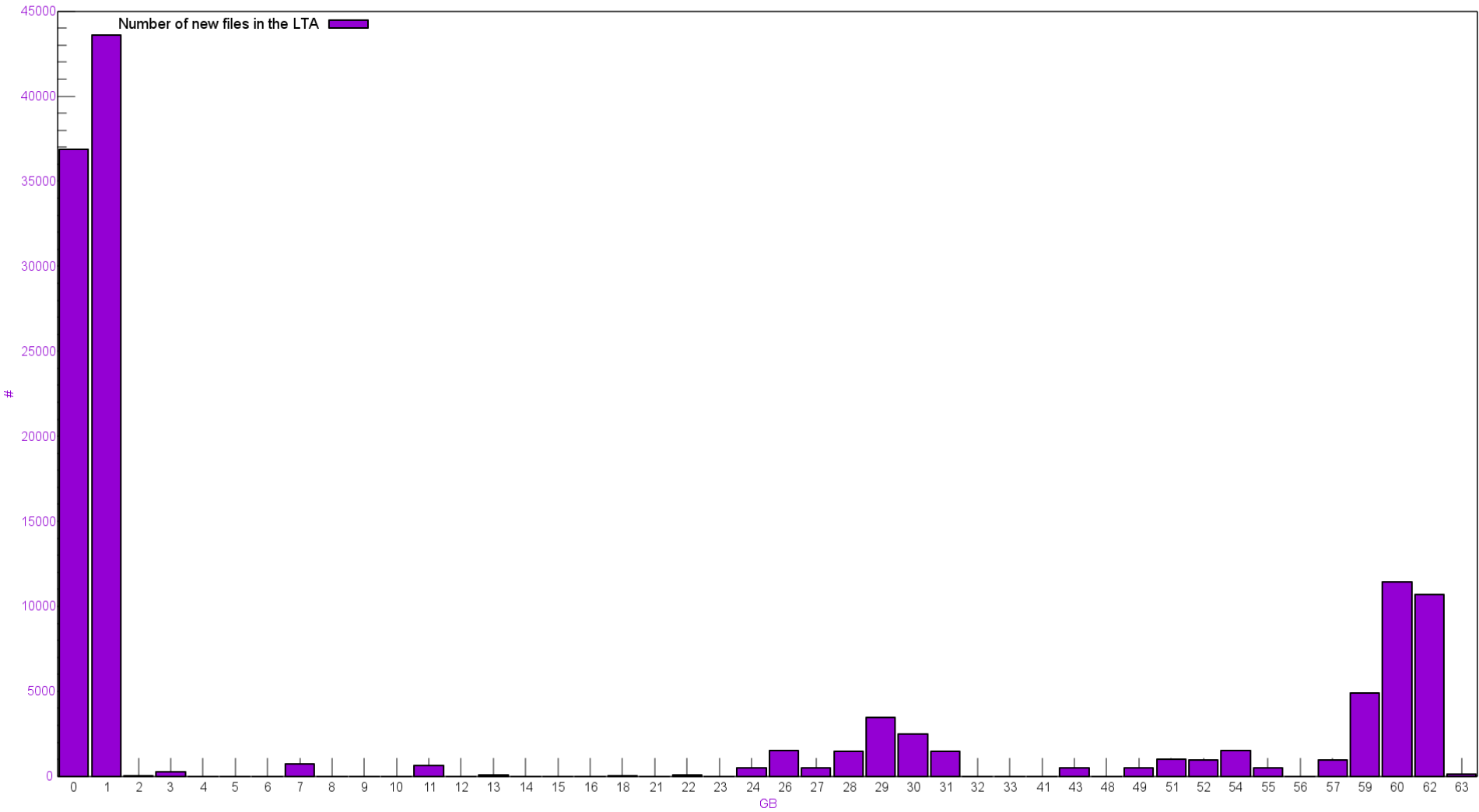
# LOFAR LTA at FZJ - Store requests

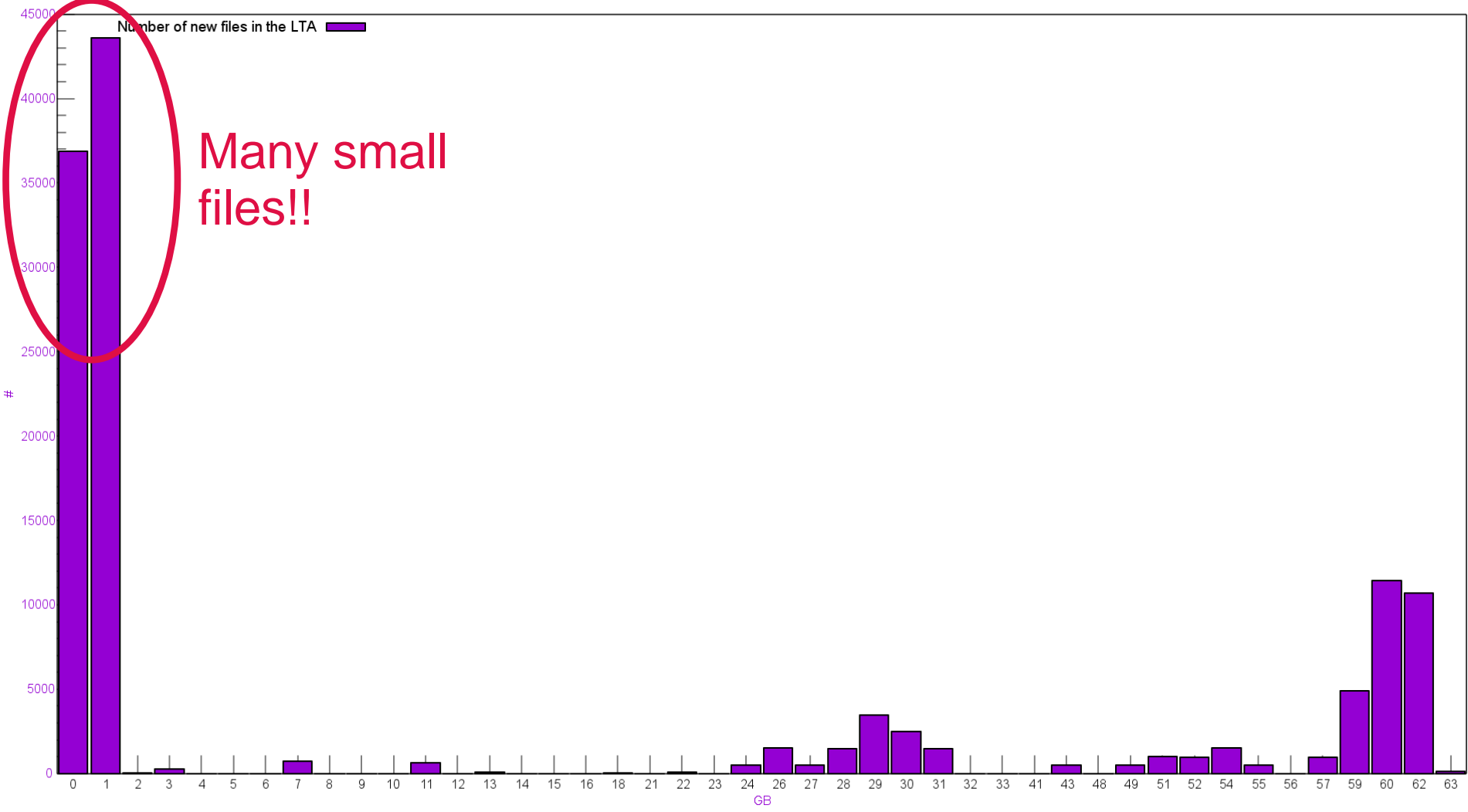


# LOFAR LTA at FZJ - Restore requests



# LOFAR LTA at FZJ - File size distribution 2018



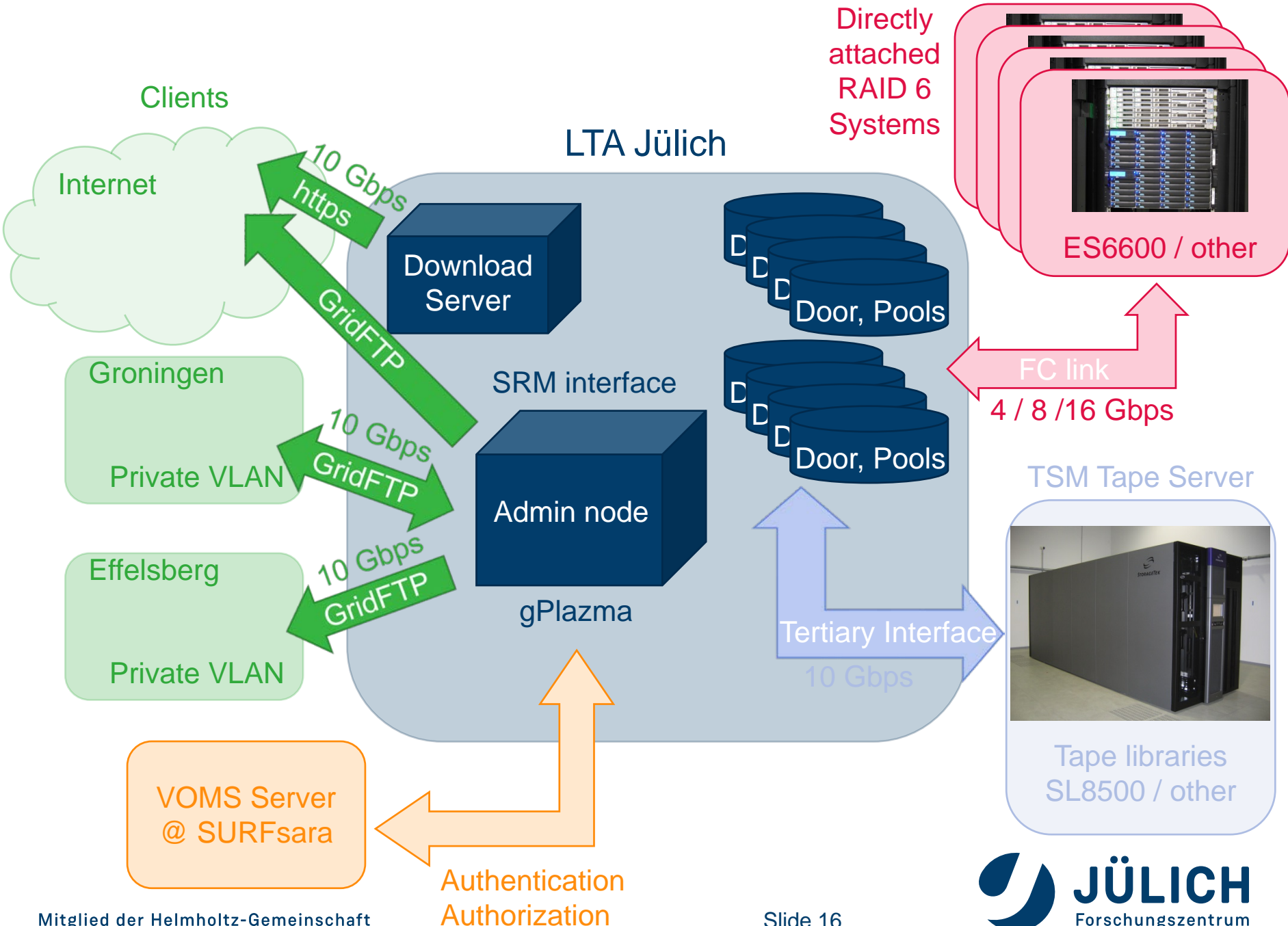


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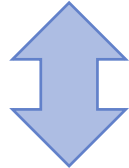
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JUWELS



Access to  
supercomputer  
file systems

JUDAC  
Server

JUelich Data ACcess

Grid client tools  
2 x 100 Gbps

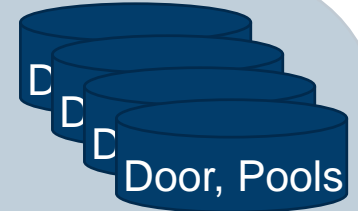
LTA Jülich

Download  
Server

SRM interface

Admin node

gPlazma



# LTA JÜLICH

## Additional infos

- Data growth
  - + 2 PB / year
- Tape libraries
  - [http://www.fz-juelich.de/ias/jsc/EN/Expertise/Datamanagement/TapeLibraries/TapeLibraries\\_node.html](http://www.fz-juelich.de/ias/jsc/EN/Expertise/Datamanagement/TapeLibraries/TapeLibraries_node.html)
  - Transfer rate up to 120 / 240 / 260 MB/sec (depending on the tape drive)
- Tertiary interface: ENDIT (Efficient Nordic Dcache Interface to TSM)
  - [https://wiki.neic.no/wiki/DCache\\_TSM\\_interface](https://wiki.neic.no/wiki/DCache_TSM_interface)
  - Developed by NeIC (Nordic e-Infrastructure Collaboration)
  - Package to use a TSM controlled tape library as an HSM backend for dCache
  - Using the dsmc command line client to get/put/rm

# ISSUES / MAINTENANCES / THIS AND THAT

- September 2017 -> dCache upgrade to 2.16 ✓
- September 2017 -> TSM server upgrade ✓
- November 2017 -> problems access tape robot due to wrong network switch configuration ✓
- November 2017 -> files to stage stuck in tape in defective tape drive ✓
- January-February 2018 -> slow and failed transfers „Transfer was forcefully killed“ from one of the Lexar ingesting servers at Groningen: network maintenance for changing some settings and optimizing network components ✓
- March-April 2018 -> maintenance machine hall, electricity operations (no LTA + download server) ✓
- April 2018 -> SQL error pin serialize ✓
- April 2018 -> TSM server: unavailable tape ✓

# ISSUES / MAINTENANCES / THIS AND THAT

- April 2018 -> tape maintenance, no access to LTA, slow staging requests and tape issues after tape maintenance ✓
- May 2018 -> problems with the network infrastructure for the GPFS storage traffic. One of the three core switches exhibits a failure. Traffic rerouted ✓
- May 2018 -> TSM server: background internal migration process blocking staging requests ✓
- May 2018 -> new Pool/Door server + RAID system to replace old one ✓
- June 2018 -> replacement faulty switch ✓
- June 2018 -> expired grid certificate ✓
- June 2018 -> dCache-TSM server interface: staging requests block themselves in the TSM server because want to concurrently access the same volume (tape) ✓
- June 2018 -> TSM server: unavailable tape ✓

# ISSUES / MAINTENANCES / THIS AND THAT

- July 2018 -> TSM server: mismatch internal data structure of the library ✓
- July 2018 -> dCache upgrade to golden release 3.2 ✓
- August 2018 -> problems in the network traffic to/from and between our LOFAR LTA servers. High package loss during ingests to the LTA cause data transfers to fail or to take too long thus causing potential time outs. Pools seem to get disabled as well due to these connection interruptions. The problem seems to affect 4 of the servers of the LTA ✓
- August 2018 -> new RAID system in production ✓
- August 2019 > order 2 new servers for replacing oldest ones ✓
- September 2018 -> grid certificate expired ✓
- October 2018 -> tuning TCP buffers and other parameter Download Server ✓

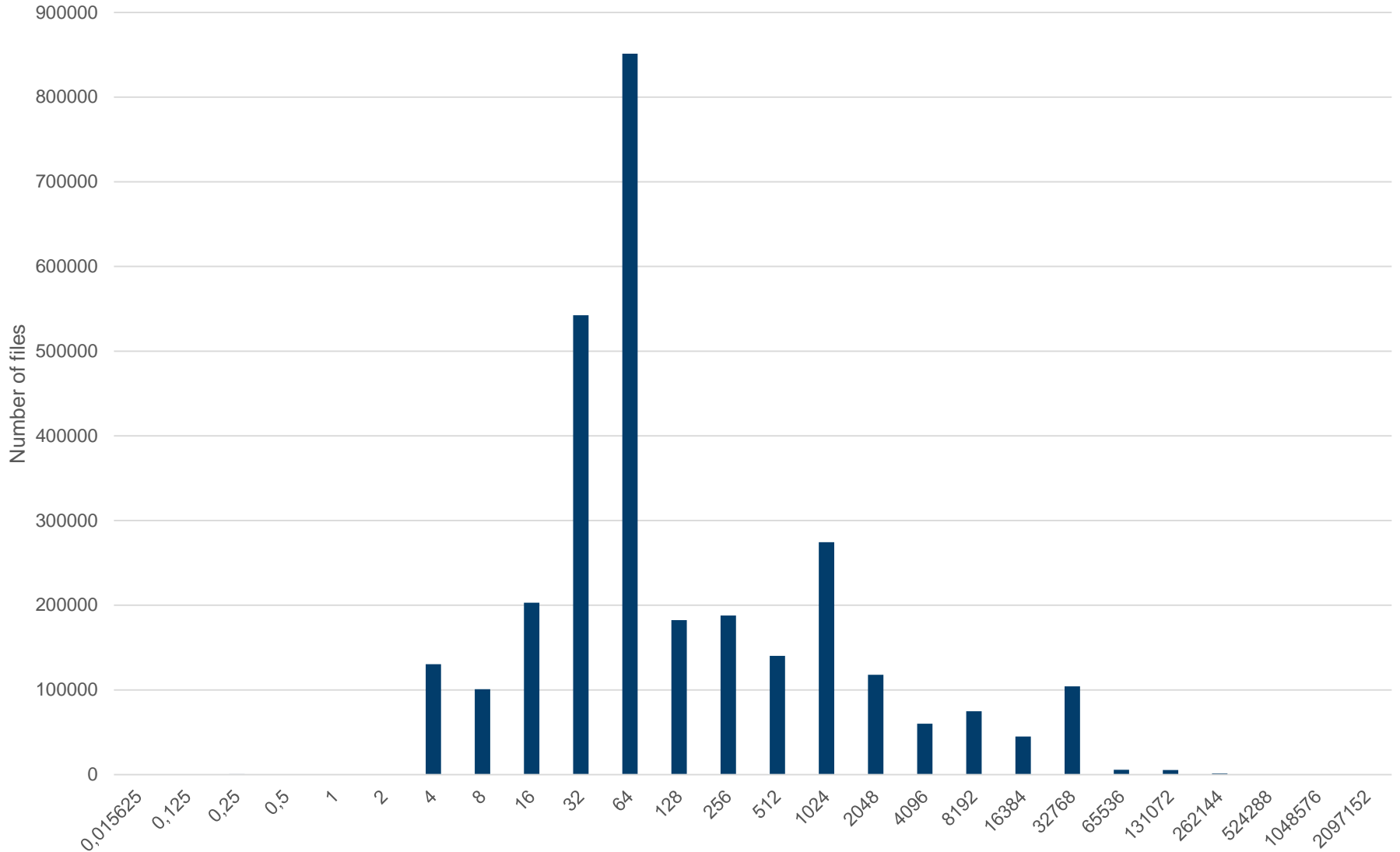
# THANKS FOR YOUR ATTENTION!

Questions?



# BACKUP SLIDES

# LTA Jülich file size distribution



Status beginning 2017 Size (MB)