DPM 2019: Feedback from Italian sites

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DPM deployment in Italy: production systems 2019

- INFN-NAPOLI-ATLAS:
  - ATLAS Tier2 (DPM 1.12) ~ 2PB
- RECAS-NAPOLI
  - Belle II Regional Center (DPM 1.12) ~ 400TB
  - Km3Net GRID storage (DPM 1.9) ~ 250TB
- INFN-ROMA1:
  - ATLAS Tier2 (DPM 1.9) ~ 2PB
- INFN-FRASCATI at National Laboratories
  - ATLAS Tier2 (DPM 1.9) ~ 2PB
    + Belle II + CTA + Padme
- INFN COSENZA
  - ATLAS Tier3 (DPM 1.12) ~ 300TB

With IBiSCo Project, in 2020 more storage resources will be added to DPM systems

- +8PB raw to INFN-NAPOLI-ATLAS
- +2PB raw to RECAS-NAPOLI for Belle II
- +2PB raw tp INFN-FRASCATI for CTA + increase for ATLAS pledges
- Increase for ATLAS pledges at INFN-ROMA1

DPM deployment in Italy: testing systems

- Testbeds for EPEL-testing DPM releases at LNF and Roma1

- 2 Testing installations in Napoli for advanced features:
  - volatiles pools used as caches and multisite installation among ATLAS Tier2s Naples, Rome and Frascati
  - Volatile pools as caches in Belle II http Federation

DOME upgrade @INFN-NAPOLI-ATLAS [1.10 😐]

- Dec 2018: upgrade to DPM 1.10 and DOME enabled as **early adopters**.
- In the same round operating system of the head node was upgraded from sl6 to centos7. Database migrated to mariadb.
  - Some bugs found in DPM 1.10
    - Very high ID numbers turned to negative IDs
    - Deletion not allowed from filesystems in RDONLY
    - Space misalignement due to srm writing and http deletion
- **Took about 3 days of downtime in total : one day for the migration itself + 1 day for debugging + DB dumps + DB issues + our mistakes …**

DOME upgrade @INFN-NAPOLI-ATLAS [1.12 ☺]

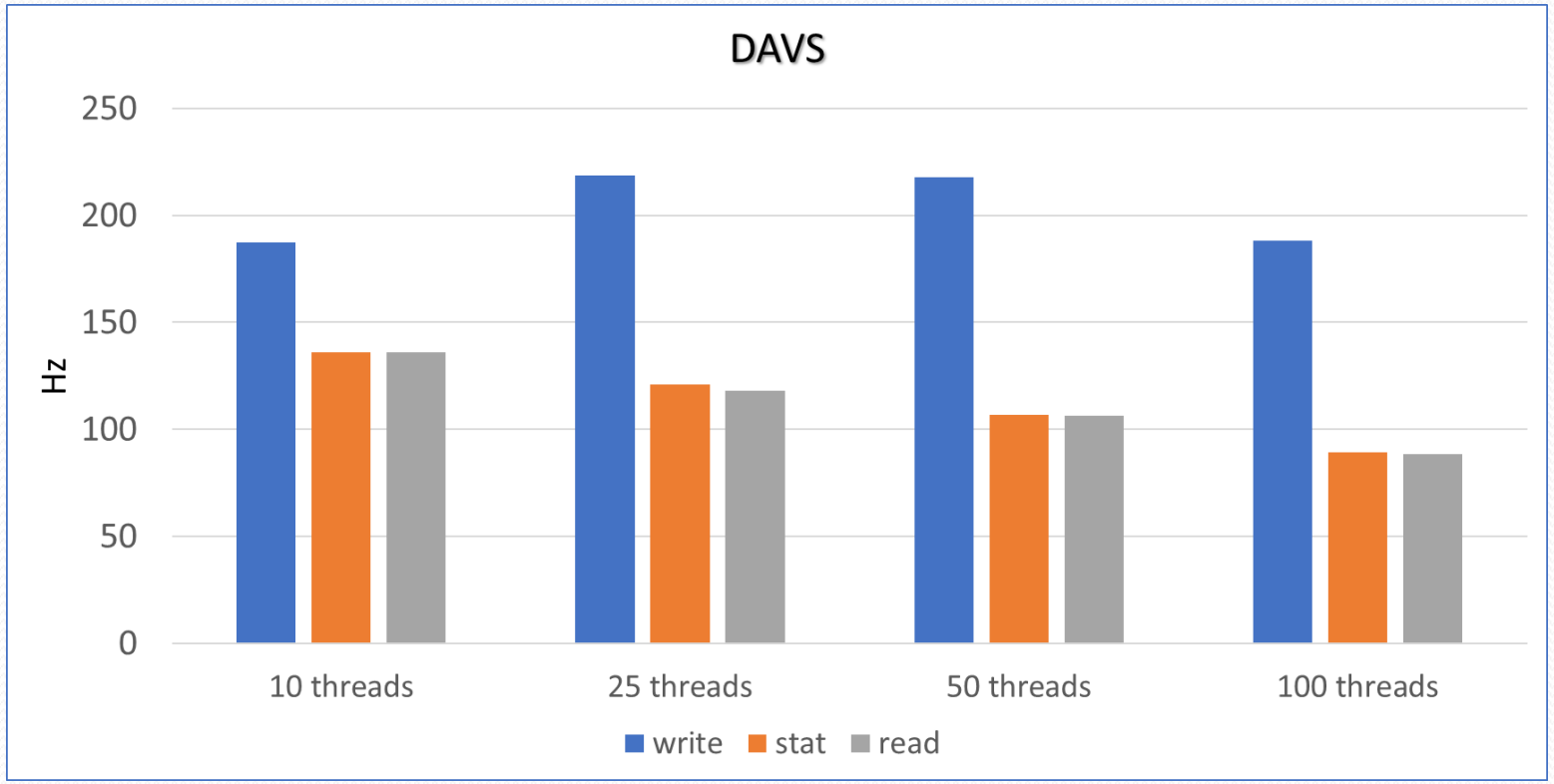
- Upgrade to DPM 1.11 in Feb 2019 and to DPM 1.12 at the beginning April 2019
  - **Upgrades smooth and trasparent to ATLAS operations**
  - **All previous bugs and issues fixed**
    - Except for a non blocking problem: Several core files found on the head node in /var/spool/xrootd/dpmredir/:
      - problem fixed with the upgrade of **davix-0.7.2-2 -> davix-0.7.3-1**
- System is very stable since last upgrade.
- Legacy stack still active, few timeout errors in srm transfer.
- **Gridftp redirection to be enabled soon.**
- **Json space reporting enabled, as required by WLCG**

Upgrades at other italian sites

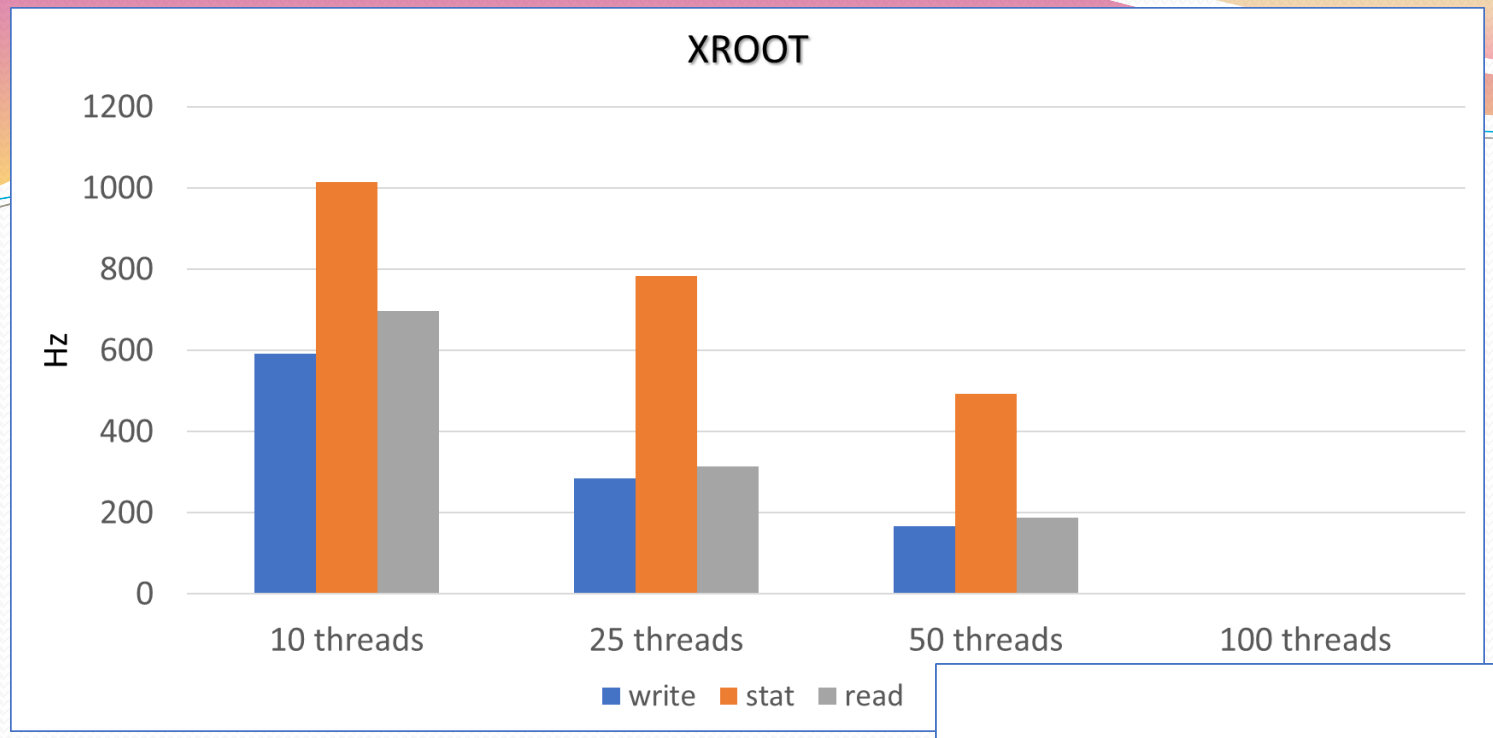
- INFN-ROMA1 and INFN-FRASCATI ATLAS Tier2: storage on DPM 1.9, upgrade to DOME foreseen in September 2019.
  - INFN-FRASCATI hosts other VOs besides ATLAS
    - opportunistic resources for Belle II and CTA (pledged storage in 2020 with IBISCO project)
    - pledged resources for Padme (LNF experiment).
    - Ok for SRM decommissioning
- Belle II storage @RECAS-NAPOLI
  - Apr 2019 Upgrade from 1.8 to 1.1:
    - DOME, grdiftp redirection and JSON space reporting enabled
- INFN-COSENZA
  - Migration to DOME in the last week. Difficulties due to little experience with puppet, instructions not followed carefully, unlucky passwords containing $…

Grid-hammer against INFN-NAPOLI-ATLAS

- Grid-hammer is a load testing framework. Not safe to use against production instances! ☺
- Write, stat, read of N files in a variable number of threads and with different protocols
- Results in Hz for 500 files of 50KB each with davs, xroot, gsiftp (no redirection).



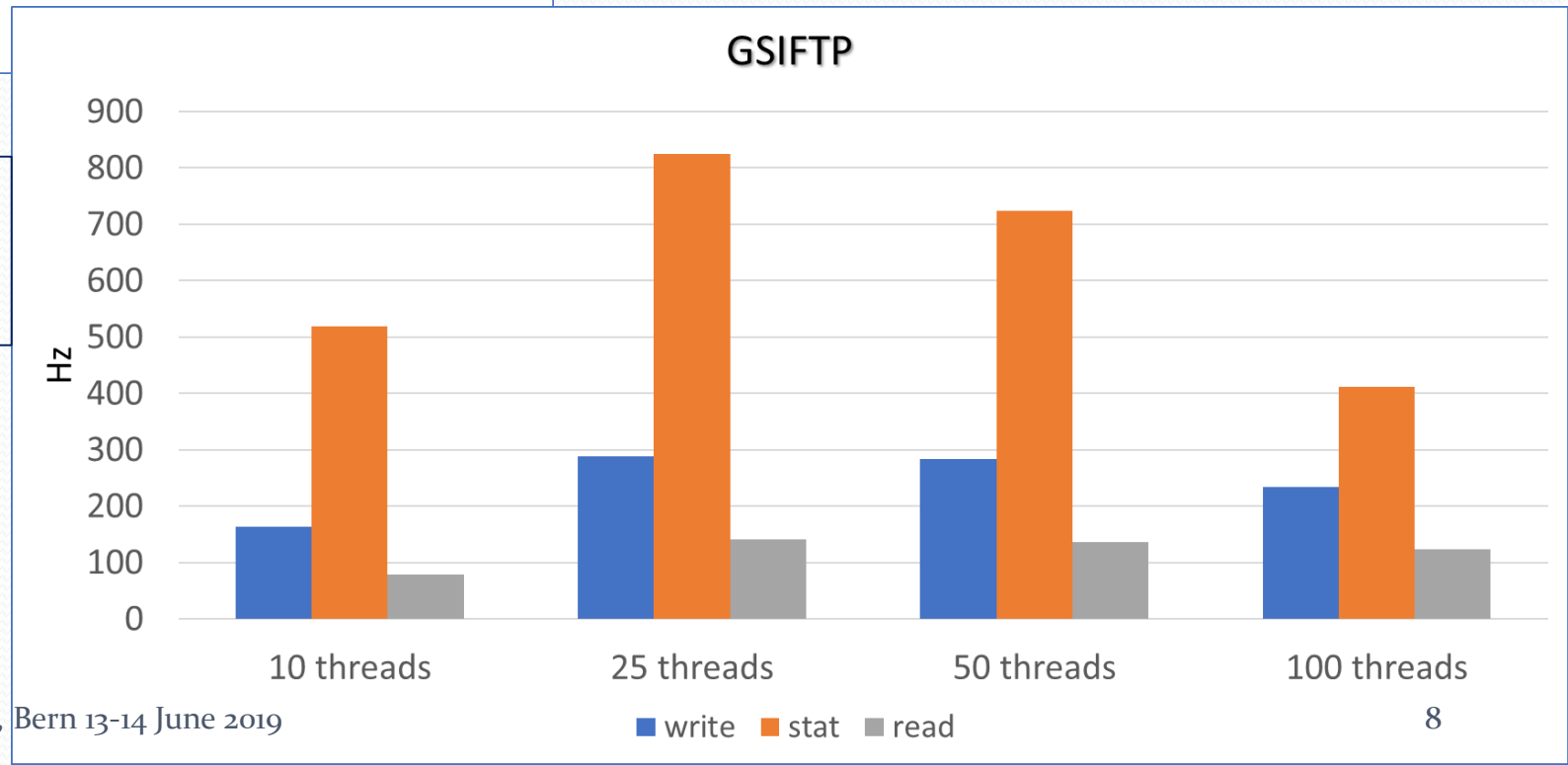
With davs protocol the rate for write operations is higher then for reading



Higher rate with **xroot**, but failures observed with N threads > 50

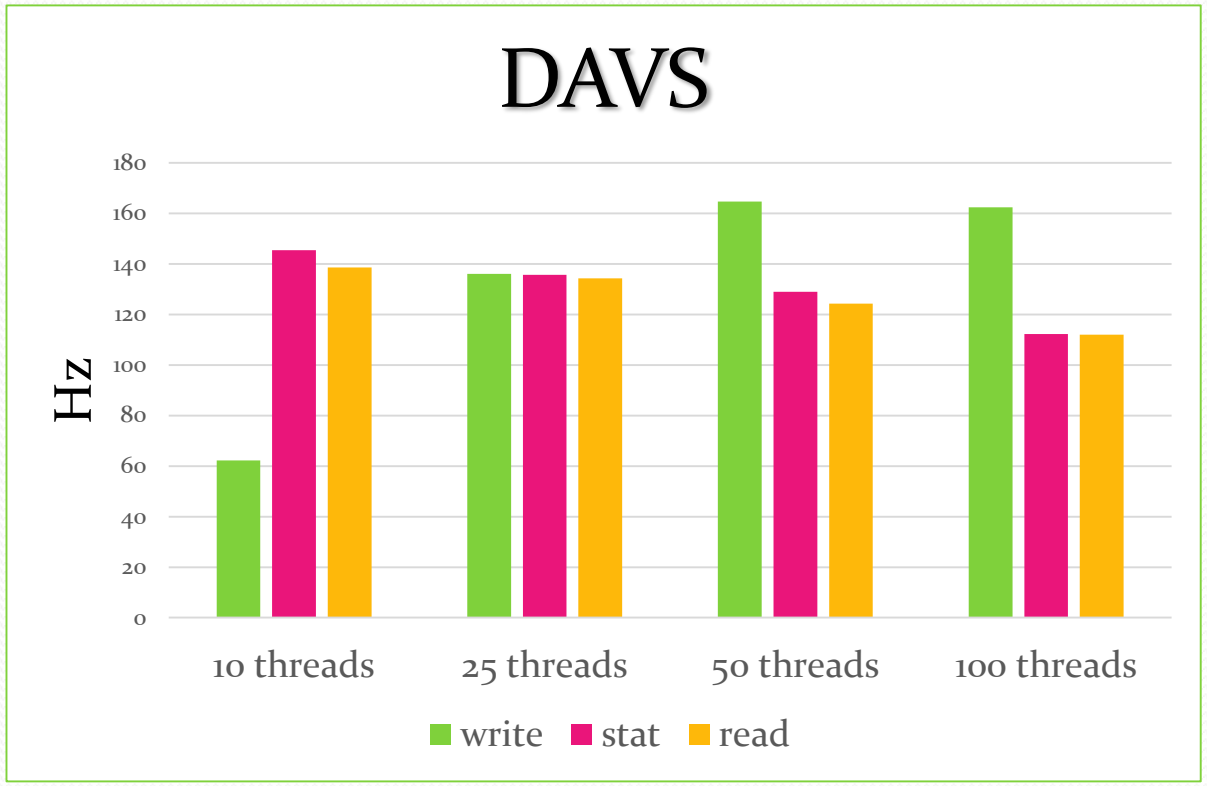
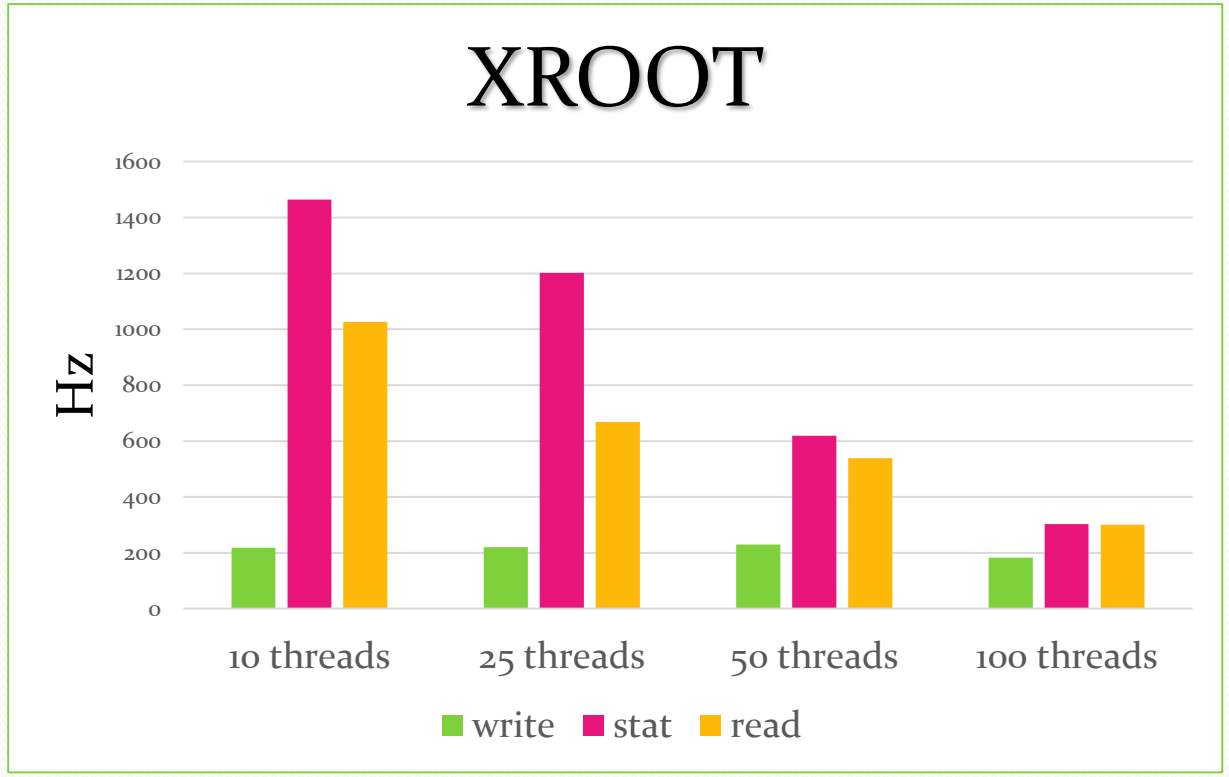
With **gsiftp**, performance increase expected, enabling gridftp redirection

- Compatible results obtained running the same tests on the multisite testbed



Conclusions

- Migration from old releases to Dome is a major upgrade, it requires a downtime:
  - Migration is often associated with server OS upgrade
  - Get confident with puppet before you start, manual configuration not recommended
  - It can be useful a tool like Foreman to ease puppet configuration
  - DPM database on a different server makes the upgrade faster and safer.
- Italian DOME sites are running smoothly and reliably since the last upgrade.
- Legacy stack (SRM) still usable after the upgrade
  - SRM decommissioning recommended to simplify system management and to increase performances.
  - Possible (but not expected) security issues after the end of support.

Backup slides

Tests on multisite testbed