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# CNAF incident: CMS report

— CompOPS and Facilities team —  
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# The incident

- November 9<sup>th</sup> center was flooded
- Status
  - Power distribution heavily damaged
  - Tape library: 150 wet tapes/7000
  - 40 tapes belong to CMS
  - Non LHC experiments more heavily affected
    - Sometimes single copy of data
- Disk arrays/servers lower in the racks have been damaged
  - Probably recoverable thanks to Raid N
- CPU:
  - Worker Nodes not damaged but off until center recovers
  - CNAF provides 10% of CMS Tier1 resources, so the outage is a significant loss
- Plans:
  - CNAF should be back online in February
  - Currently various systems are being tested separately with temporary power distribution
- Before Christmas a precise evaluation of the damages should be available
- Overall: LHC experiments are “less affected” thanks to the intrinsic redundancy of the distributed Computing Model

# Data lost (tapes)

- CMS Tapes at CNAF 21 PB (~15% of CMS total tape space)
- 40 tapes "wet" (not necessarily unreadable, but at fair high risk)
  - Tapes which went underwater are probably still readable/recoverable
  - Probably costly procedure: we may need to prioritize tape recovering
- In detail we have:
  - 26 tapes are MC (unique copy - reproducible)
  - 1 user results (backup of old /USER to tape last summer) (unique copy - possibly NOT reproducible but "old stuff")
  - 7 are RECO data (unique copy - reproducible)
  - 6 are RAW (2nd custodial copy - additional copy at CERN)
- Last news
  - 6 RAW data tapes (~60TB) are easily recoverable from CERN copy.
    - Restoring of 2nd custodial copy already done (CERN → IN2P3)
  - Urgent GEN-SIM samples are being reproduced (since we don't have any other copy)

- **Detailed list of affected tapes**
  - ALICE 20
  - ATLAS 23
  - CMS 40
  - LHCb 27
  - NON-LHC 26
  - EMPTY 14

# Data lost/unavailable (disks)

- CMS disk at CNAF ~7PB (~15% of Total T1 CMS disk)
- Waiting to get an exact evaluation of data losses
  - We think raid systems will be recoverable almost integrally
- We plan to replicate data copies at other sites
  - However disk space is already quite tight in CMS
- For data only at CNAF we plan to regenerate them

# CPU unavailability

~ 10% of CMS T1 CPU was at CNAF (~ 66 kHS06 )

Other Tier1s are increasing their share to compensate

- CERN: can help (depending on CMS request), also for storage
- KIT: (re)activate extra CPU resources beyond the 2017 pledges at GridKa: resulting in +18.4 kHS06 for CMS
- FNAL: usage of opportunistic OSG resource and HPC centers (used for tests so far). Pledges for 2018 already met (CPU and storage)
- IN2P3: multi-VO site, helping also non-LHC groups. Trying to deploy 2018 pledges as soon as possible
- Other sites are evaluating extra resources availability (UK next week...)