# DPM to dCache migration tools

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# DPM End Of Support

- Summer 2024 DPM End-Of-Life already set in 2020
  - Software developed at CERN, but in last decade focus on EOS
  - No real community established around this project
  - Difficult to discover serious issues before software got published
    - CERN doesn’t rely on DPM in any of their production use-cases
    - testbed not very sufficient to find issues triggered by higher load
- No plan for migration to the supported storage technology
  - Difficult task for “small” site administrators (no dedicated storage adm)
    - Many different options how and where to migrate
    - Require a lot of experience (time)
    - Mistakes may happen without a lot of testing
  - EGI came with a plan to provide simple migration tools
    - Make transition well documented, transparent, safe, fast and smooth
    - Move to the well supported storage with a future
      - Quickly adopt functions required by EGI and others

# DPM Evolution

LCGDM

⇩

dmlite

⇩

DOME

⇩

“dCache” ⇦ ?

# DPM to dCache migration

- In-place dCache migration is just **one of available options**
  - sites should consider their future plans first
  - provide easy migration path to the compatible storage
- Transparent migration
  - ***Migrate*** just ***catalog*** (database) and keep ***files untouched***
    - both SE store files on ***posix filesystem***
- No visible difference for clients (Rucio, FTS, gfal2, …)
  - dCache can easily match DPM features & provide more
    - sometimes with slightly more complex configuration
  - same protocols (HTTPS, xroots, gsiftp, SRM)
  - same hosts:ports / firewall configuration (almost)
  - same authentication (X.509, +tokens), ***different WLCG SRR location***
- ***dCache DPM replacement transparent for end users / VOs***
  - **Goal: 1 day downtime DPM → dCache migration**

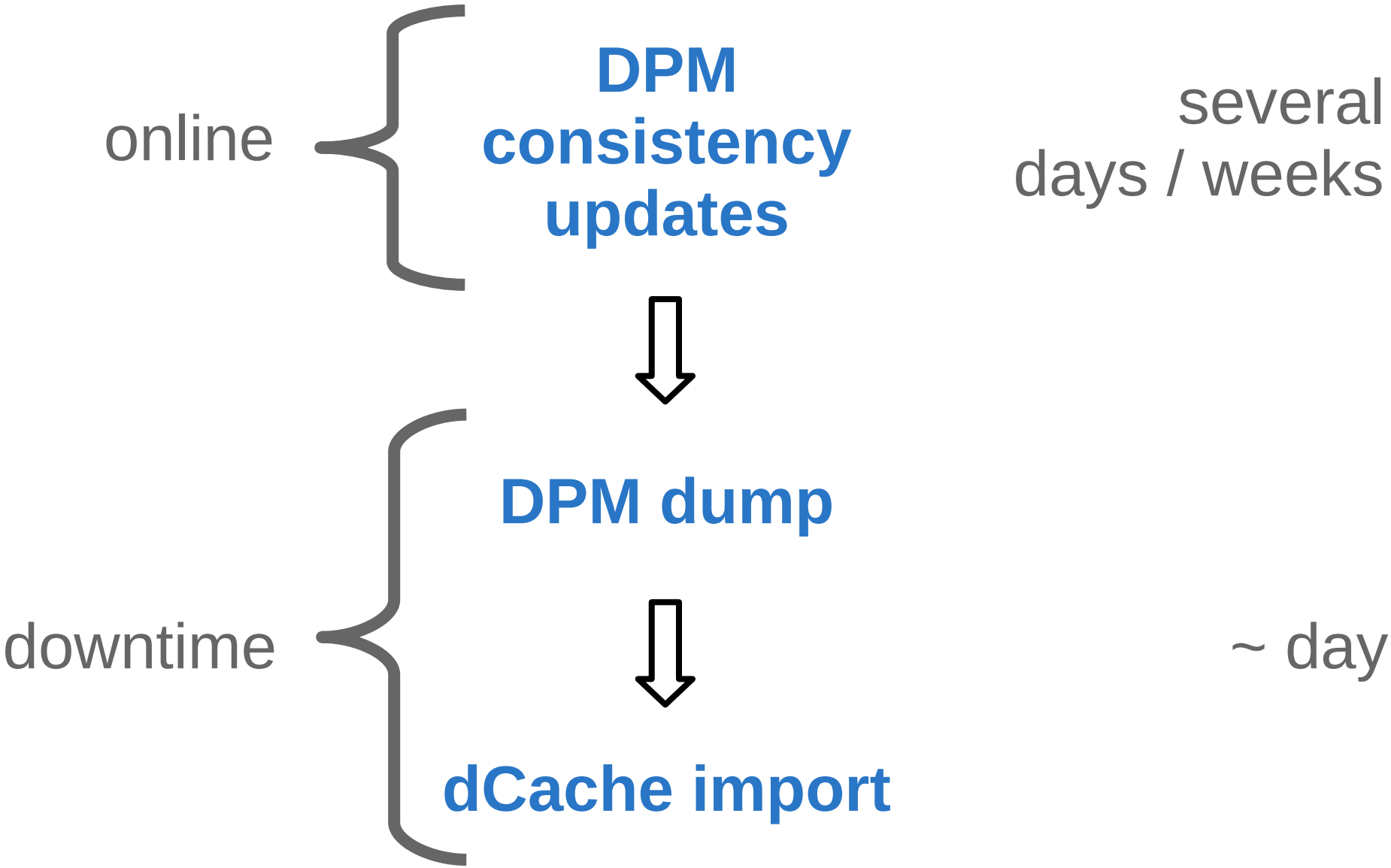
**CentOS7 and newer** required for headnode and diskhodes **after migration** (~20% still rely on SL6)

**no direct** migration from **legacy DPM**

make ***migration*** as ***simple*** as legacy to DOME DPM transition

dmlite from recent EPEL / UMD

# Storage migration in three steps



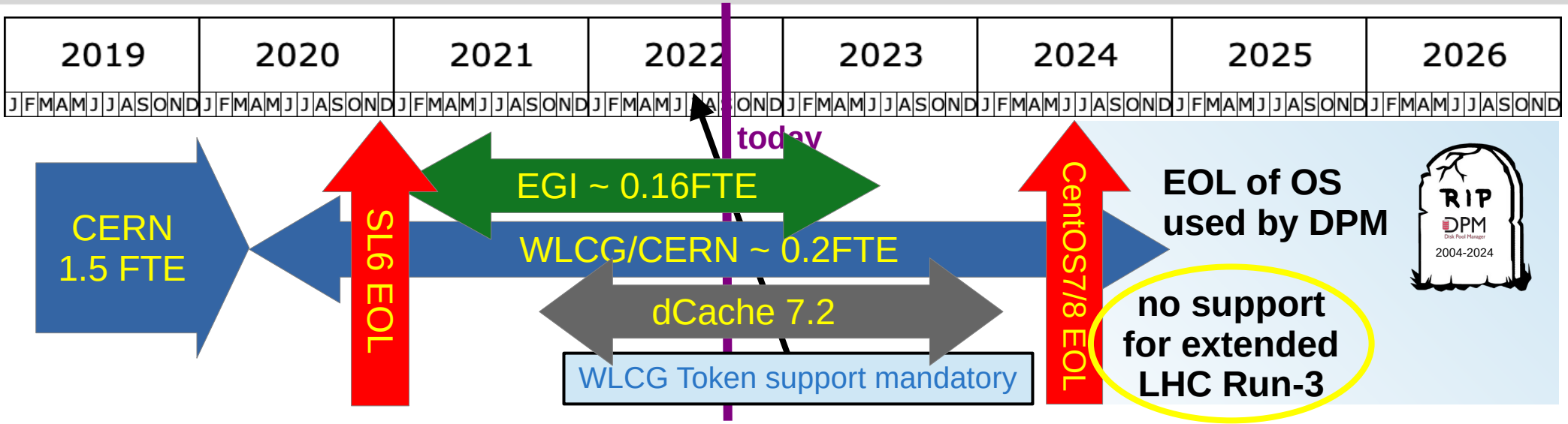

https://twiki.cern.ch/twiki/bin/view/DPM/DpmDCache

# Summary

- The support level for DPM is going down
  - CERN provides (very limited) support till the summer 2024
  - EGI plans to launch ***DPM migration GGUS campaign***
    - ~ 60 DPM sites with ~ 90 DPM and ~ 100PB
- DPM sites considering dCache migration tools
  - start to plan migration now
  - migrate before summer 2023 (EGI support)
  - ***with a day of downtime your storage can start to use well supported software with much more features***
- Proper software support requires an effort
  - painful experience with poorly maintained “legacy” software
  - we should improve our software lifecycle management
    - define clear EOL if people lost interest in maintenance
    - provide migration strategy to modern and well supported alternatives

# BACKUP

# DOME DPM support




- **WLCG / CERN – March 2020 GDB** The DPM Collaboration
  - support till the **end of LHC Run-3**, but since this announcement
    - CentOS8 EOL changed
    - LHC Run-3 extended
    - no DPM for supported OS
    - no new features
- **EGI – provide dCache (7.2) migration tools**
  - help sites to migrate **DPM to dCache**
  - interested DPM sites should ***move before summer 2023***
  - reduced time for solving DPM issues not related to migration

# DPM migration strategy

- Plans presented in past meetings
  - Spring 2021 HEPiX - migration strategy survey
  - December 2021 GDB - DPM sites in France (status and plans)
  - January 2022 GDB - DPM sites in UK (status and plans)
  - February 2022 GDB - DPM migration plans in Switzerland
  - April 2022 GDB - GRIF plans for DPM replacement (EOS)
  - June 2022 GDB - DPM Migration status
  - dpm-user-forum / clouds / DPM site administrators
- Different **migration** strategies
  - disk-less, consolidate, **dCache**, EOS, CEPH
  - different plans even within same country / cloud

small sites without dedicated storage admin(s) prefers simple solution

- DPM sites already started migration or plan to finish migration within ~ year time-frame
  - most of (LHC) sites is aware of DPM EOL, DC24

GGUS storage sites, ask for production token support at the beginning of 2023

# Migrated production sites

- At least four sites already successfully used dCache migration tools
- Different level of support during migration
- Namespace dump & restore takes significant time
  - can increase total downtime in case of problems
  - depends mainly on number of objects and PgSQL core performance
    - biggest known DPM instance at TOKYO – 8PB with 67M objects

| GOCDB site name | Date | Storage size [PB] | Storage objects [M] | Consistency updates [days] | DPM export [h] | dCache Import [h] | Downtime [h] |
|---|---|---|---|---|---|---|---|
| prague_cesnet_lcg2 | February | 0.6 | 2 | | | | ~ 30* |
| TW-NTU-HEP (BelleII) | May | | | | | | |
| praguelcg2 | May 14 | 5.0 | 47 | 15 | 2.5 | 20* | < 24 |
| RO-07-NIPNE | May 31 | 3.0 | 17 | 5 | 11 | 14.5 | ~ 48 |