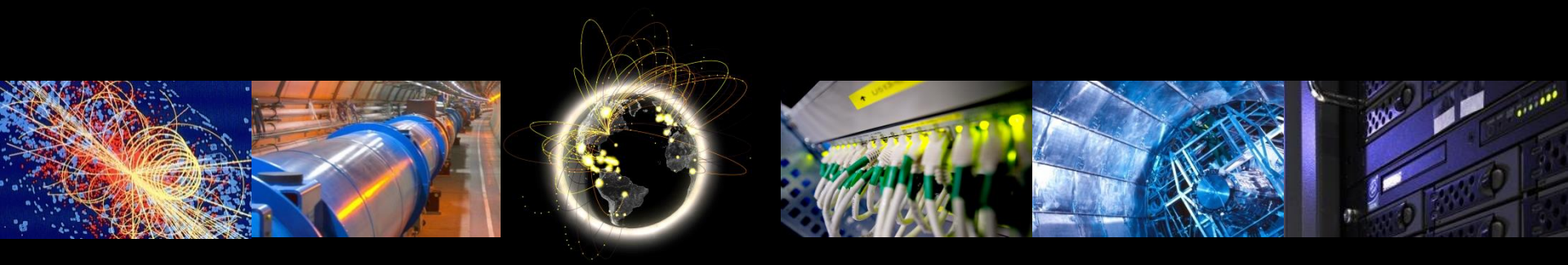
Tier-2 IPv6 deployment update

Andrea Sciabà

HEPiX IPv6 working group meeting
26 October 2022



WLCG
Worldwide LHC Computing Grid

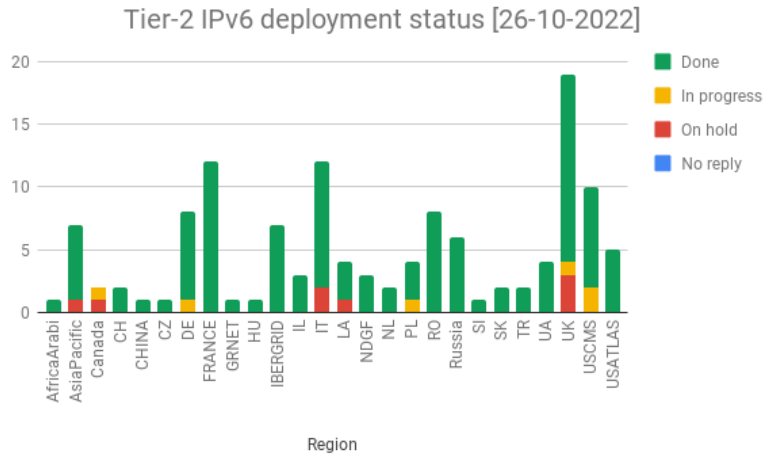
CERN

IPv6 deployment on WLCG

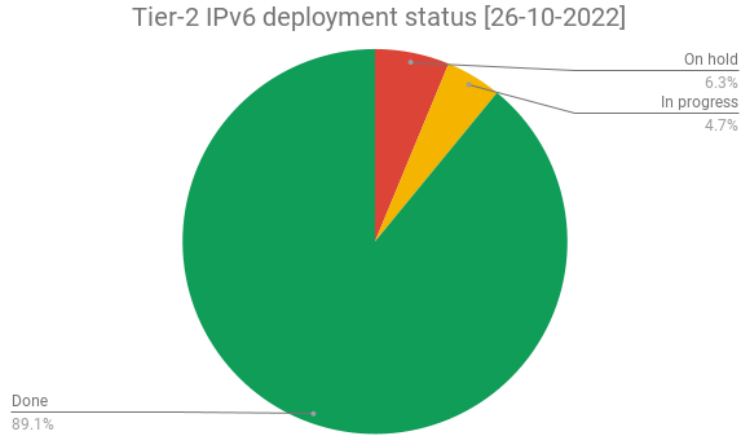
- The goal is to allow data on federated storage to be accessible by jobs on IPv6-only connected CPUs
- Short summary of the approved timeline
  - Tier-1: deployment of dual-stack on production storage, CVMFS and FTS by April 2018
  - Tier-2: deployment of dual-stack on production storage (and perfSonar if installed) by end of Run2 (i.e. end of 2018)
    - Will drop recommendation to keep IPv4 as a backup
- WLCG Operations Coordination was charged of the Tier-2 deployment campaign
  - Done together with the HEPiX IPv6 WG
- Goals
  - Inform all sites of the requirements and deadline
  - Ask sites to state their plans and expected timescales and provide regular updates
  - Track progress

IPv6 at Tier-2 sites today

- The deployment campaign was launched in November 2017
  - GGUS tickets sent to all non-US sites
  - Deployment at US sites was delegated to OSG ops and USCMS/USATLAS
- Steady progress (status)
  - About 89% of T2 sites have storage on dual stack

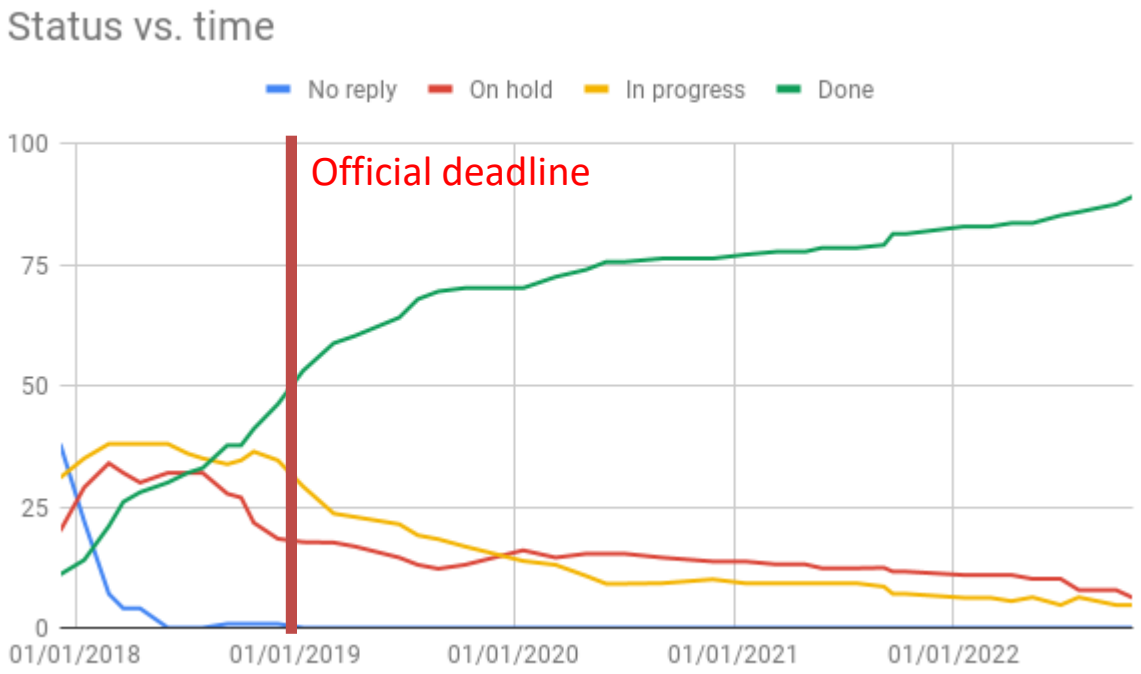


Experiment	Fraction of T2 storage accessible via IPv6
ALICE	89%
ATLAS	89%
CMS	94%
LHCb	79%
Overall	91%



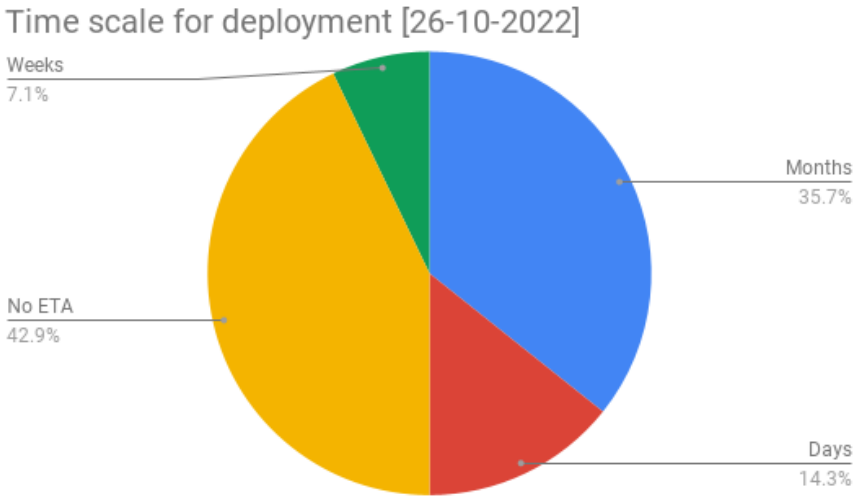
Progress and trends

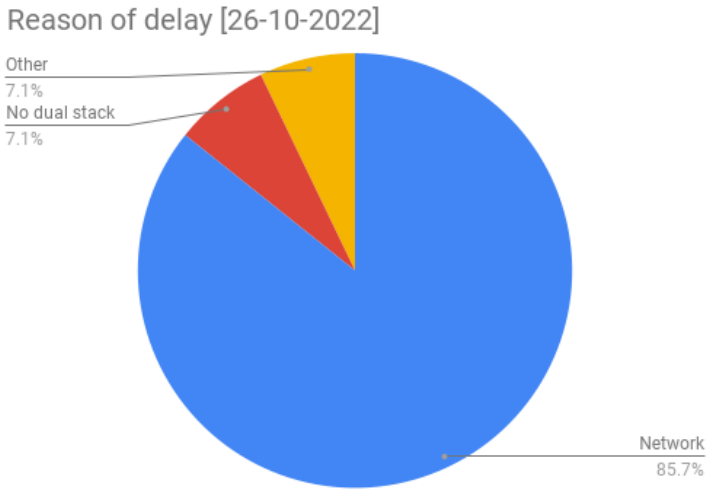
- We did not meet the (very ambitious) goal of 100% of sites with IPv6 by the end of Run2
  - It is a fact that very often the sites must wait for things to happen, and the low hanging fruits were quickly collected



Reasons of no deployment

- Checked why sites are late in their IPv6 deployment and the expected ETA
  - Network: waiting for interventions on the site infrastructure or network issues to be fixed
  - No dual stack: infrastructure network is fine but IPv6 needs enabling on storage or perfSONAR
  - pS/storage issues: encountered problems that need fixing
  - Other: other types of problems (e.g. the site needs relocating)
  - No info: no meaningful information given by the site on their plans





T2 deployment observations

- Tentative extrapolation to the future based on the sites feedback
  - Within days: 91%
  - Within weeks: 91%
  - Within months: 95%
- These estimates are observed to be rather optimistic
  - But we are almost there anyway
- Networking issues of interventions are by far the largest cause of delay
  - Most often, not under the control of the WLCG site staff
- Most sites are responsive and provide detailed information
  - For some however regular pinging is essential
- A 70% of the regions have all their sites on IPv6

Conclusions

- Deployment Tier-2 is proceeding, but it has slowed down
  - It was sort of expected: the remaining sites are those having the most difficulties in deploying IPv6
  - Three VOs have ~90% or more of their T2 storage on IPv6, so they can almost declare success
- We are now almost four years past the official deadline
  - We (as IPv6 TF) can only keep the pressure
- Deployment tracking
  - https://twiki.cern.ch/twiki/bin/view/LCG/WlcgIpv6