

Tier-2 UNAM

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The beginnings

- Cluster tochtli started in 2005
 - Infrastructure for ALICE
 - Connected to EELA, EGI, WLCG
 - Seed for central ICN HPC infrastructure
- Plans for Tier-1 in 2011
 - UNAM support
 - Creation of 2nd UNAM Tier-2 grid site
 - Equipment reached End of Life
 - Failed to obtain funding to grow
- Network improvements
 - 2013: 1Gbit/s link, preferred routing to Internet 2
 - 2016/2017: upgrade to 10Gbit/s

Current ALICE Tier 2 in ICN/LAMOD

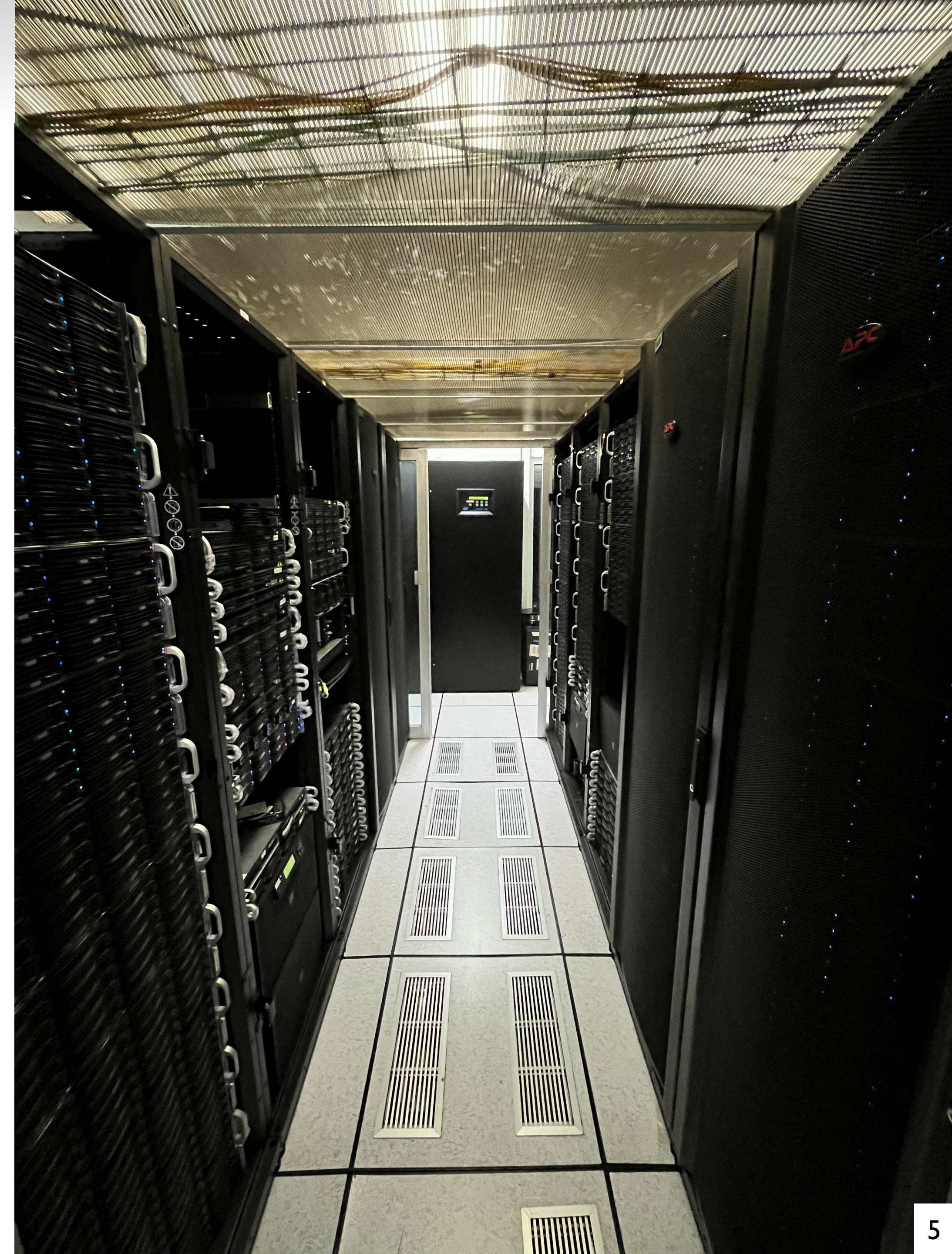
- Network at 10Gbit/s
- IPv4 and IPv6 supported
- Infrastructure
 - HT-Condor CE for job reception
- Computing: 4 nodes
 - 104 core Intel(R) Xeon(R) Gold 6230R
 - 504 GB RAM
 - 1 TB swap
 - 600GB local scratch
- Storage
 - EOS: 458 TB, 95 TB in use

ALICE Tier 2 upgrades

- Tier 2 currently not in production
 - Updates in progress
- Migrate OS: CentOS 7 -> Alma Linux 9
- Update CE: HT-Condor CE 9 -> HT-Condor 23
- Certificate updates
- Expected back on-line in December 2024

ICN cluster tochtli

- Resources shared with all projects at the ICN
- Computing
 - 46 nodes, 2880 cores
 - Peak use by ALICE: 1400 cores
- Storage in Lustre
 - ~ 9 PB
 - ALICE: 583 TB, $14.6 \cdot 10^6$ files



LAMOD

- Combined infrastructure of several institutes
DGTIC, IA, ICN, IQ
- Improved network:
 - dedicated central switch
 - 48 fibers connecting sites
 - Ethernet and Infiniband
 - 10Gbit/s
 - IPv6 /48 prefix assigned
- Access to space to expand



Needs for ALICE GRID in Mexico (analysis 2023)

● Computing

- Need 30 servers like those in the current Tier-2
- UNAM share: 14 servers have 4, need 10

● Storage

- Need 2.8 PB
- UNAM share: 1.6 PB have 0.5 PB, need 1.1PB

- UNAM can host either UNAM share or all resources for Mexico

● Challenge: funding

- Expansion
 - Include infrastructure
- Maintenance, upgrades, replacements