



ATCF8 Mumbai - summary notes

LHCONE meeting #53 – IHEP Beijing

9th October 2024

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Venue

- 2-4 of September 2024
- Hosted by TIFR Mumbai (IN)
- Sponsored by KISTI
- Agenda and presentations at <https://indico.cern.ch/event/1411901/>



WLCG Overview

New admissions:

- Belgrade (Serbia), signed WLCG MoU, plan to become a T1 for CMS
- Latvia, signed WLCG MoU, commissioning a T2 for CMS

Russia:

- Sites in the Russian federation will not be part of WLCG from the end of November 2024,
- JINR: the CERN Council agreed NOT to terminate the Cooperation Agreement with Dubna

DUNE, Belle-2, JUNO and VIRGO are now WLCG partners - a formal status in WLCG MoU

The WLCG strategy for 2024-2027 has a strong focus on innovation and collaboration

- Innovation: modernise software and services to leverage the most modern technologies and architectures
- Collaboration: leverage synergies between HEP experiments and other sciences



ALICE GRID update

After a long (COVID-interlaced) pause, the LHC commenced its Run3 in the spring of 2022

ALICE collected record amount of p-p and Pb-Pb data with upgraded detector, new online, offline and Grid software

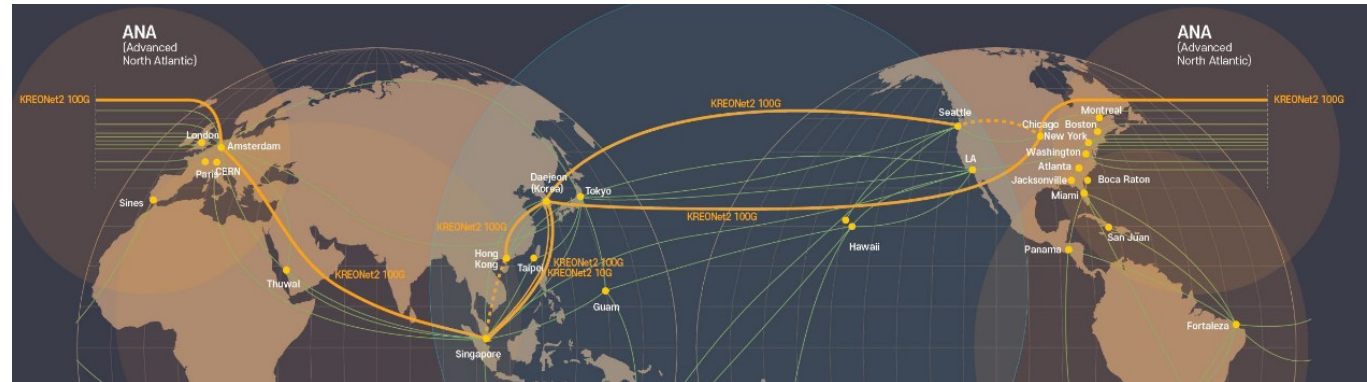
- The Grid sites are updated and continue to be the backbone of the ALICE data storage and processing. Number of ongoing projects to increase its efficient use and include new resources
- The processing strategy continues to depend on good network connectivity for data exchange
- ALICE computing requirements will increase and we count on the Asian sites to continue their growth and involvement



KREONet update

Next upgrade planned for 2026.06

- Upgraded every 3y
- Bandwidth : 350Gbps to 600Gbps
- New Global 100Gbps ring
- New PoP in Singapore and 2x 100Gbps links



India National Supercomputing Mission

Presented the plan of the NSM project

- Building HPC infrastructure and enabling Manufacturing Ecosystem in India: Establishment of 24 HPC facilities with total compute capacity of 64 PF – 15 facilities of 24PF established
- Develop Indigenous Technologies - RUDRA Server, TRINETRA HPC Interconnect, Software Stack for HPC, AUM HPC Processor based on ARM – 96 core (Initiated)
- Develop HPC applications for National Need in 5 domains
- 20000+ Trained HPC Manpower



Belle II update

Belle II experiment:

LS1 (long shutdown 1) was over and the new data taking has started in Jan 2024

Distributed computing:

- No big changes since ATCF7, smooth DIRAC / Rucio operation-
- AMGA will be decommissioned (all grid jobs have metadata registered both in AMGA and Rucio)
- Joined WLCG DC24 and expected global throughput was achieved
- Token-based authentication is now available with DIRAC8 (IAM instance at KEK)

Experiment plan:

- LS2 is being planned and discussing physics and detector options with an upgraded accelerator to reach an even larger data sample

KISTI-GSDC Korea – ALICE Tier1

A WLCG Tier-1 in Asia for the ALICE experiment

- Contributing about 10% of T1 resource requirements of ALICE
- More than 2% of total (T0+T1+T2+AFs) resource requirements of ALICE

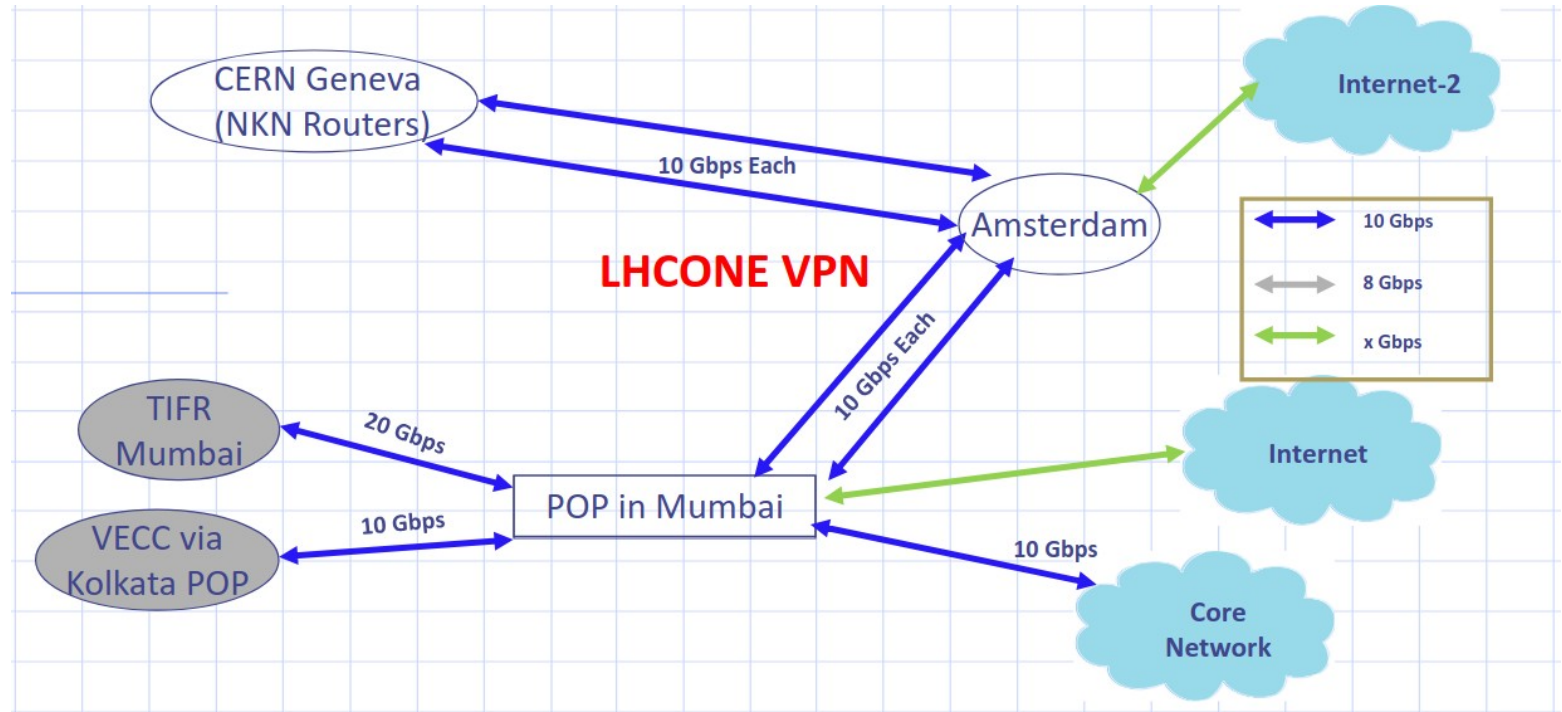
Networking

- LHCOPN : 20G dedicated link between Daejeon (KR) and Geneva (CH)
- LHCONE : 100G provisioned by KREONet connecting to EU, US and Asia (SG/HK)

VECC Kolkata India - ALICE T2

Busy with upgrade to ALMA 9.x

Refurbishing computing facility to increase space utilization and power efficiency



TIFR Mumbai India - CMS T2

Network:

- 2x 8Gbps links shared with VECC

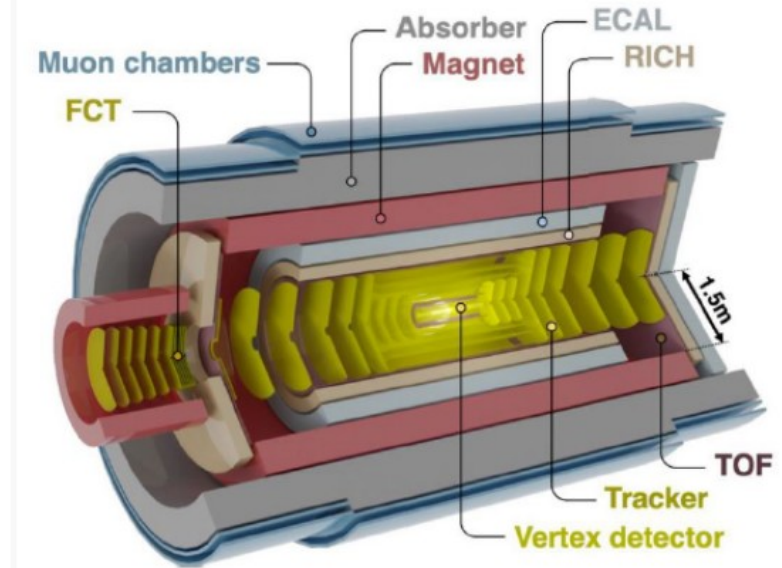
Working on securing funding for the next phase

SUT Thailand – ALICE T2

Working on the ALICE Inner Tracking System

ALICE Tier 2 – Current planning at SUT:

- 1) Wait for confirmation from a Thai funding agency by the end of 2024.
- 2) Start the procurement process in January 2025.
- 3) Begin installation and configuration right after all the hardware arrives.
- 4) Decommission the current ALICE Tier 2



ASGC Taiwan– ATLAS T2

Working on power efficiency, achieved yearly reduction of 20% in the last two years

ATLAS Tier2 in full production after the decommission of the Tier1

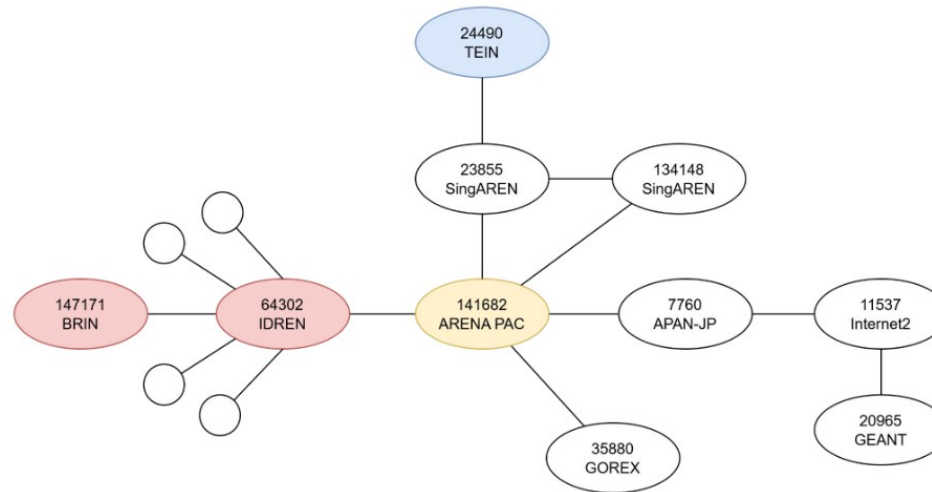
- LHCONE connectivity restored



BRIN Indonesia- ALICE T2

Small site, need to secure funding from agencies

Underutilized HPC cluster



ICEPP Japan- ATLAS T2

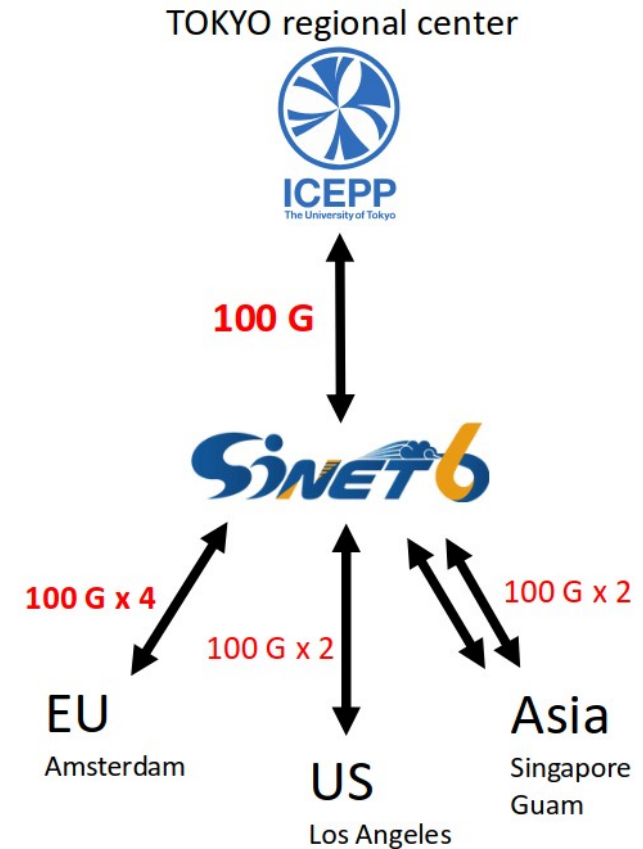
Network:

- 100Gbps to SINET
- SINET is well connected to LHCONE
- Increased latency after decommission of Siberian connection
- Demonstrated DC24 minimal and flexible scenario

Before Mar 2024



After Apr 2024



IHEP China – LHCb T1 and others T2

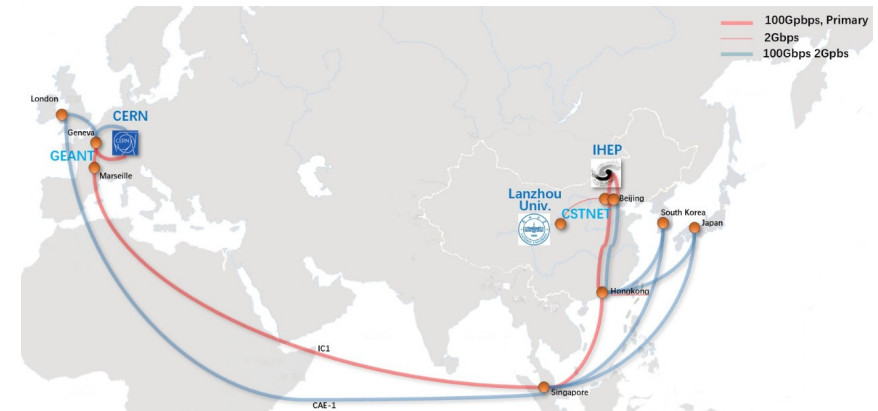
Network:

- International network links upgraded to 100Gbps in 2023
- data transfer test showed the peak performance between IHEP and Europe reach to 50Gbps
- dedicated links between IHEP and domestic remote sites

LHCb T1 in production since June 2024

ALICE T2 ready by September 2024

Also serving BelleII and soon JUNO



KISTI Custodial Disk Storage for ALICE T1

CDS Custodial Disk Storage: a disk based storage using EOS designed to store and preserve raw data from ALICE

- replaces the previous tape library at KISTI (~ 3.2PB)
- simplified architecture aiming to cost reduction
 - removed also disk buffers (~ 0.6PB) in front of tape library for I/O
 - free from commercial (vendor-specific) software
 - avoids vendor lock-in due to monopoly in Tape market
- In production for ALICE since November 2021

	Capacity (TB)	Max		Min		Mean	
		kW	W/TB	kW	W/TB	kW	W/TB
CDS	18,144	20.967	1.156	17.595	0.97	18.466	1.018
TS3500	3,200	1.6	0.5	-	-	-	-

HEP computing future challenges

Comprehensive analyses of the future of HEP computing presented by Simone Campana

<https://indico.cern.ch/event/1411901/contributions/6093313/attachments/2919396/5123960/WLCG%20Mumbai%202024.pdf>

From the conclusions:

- The HL-LHC will be an unprecedented challenge for us both in terms of scale and sustainability
- Other very data intensive science projects will co-exist with LHC, with very similar use cases, on the same timescale and for a great majority on the same physical resources
- There is an opportunity to share policies, tools, expertise, services and, when plausible, resources for the benefit of all our sciences

Other presentations

LHCOPN/ONE update

EOS at CERN

DUNE computing

HT-Condor workshop

Conclusions

Summary

- Effective event that gathers together most of the Asian sites
- Good participation, also thanks to KISTI sponsorship

References

Meeting agenda and presentations:

<https://indico.cern.ch/event/1411901/timetable>

Questions?

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