

# LHCOPN/ONE meeting at KEK

## summary report

GDB, CERN 8<sup>th</sup> of November 2017  
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# Venue and Participants

## Joint meeting with HEPiX fall 2017

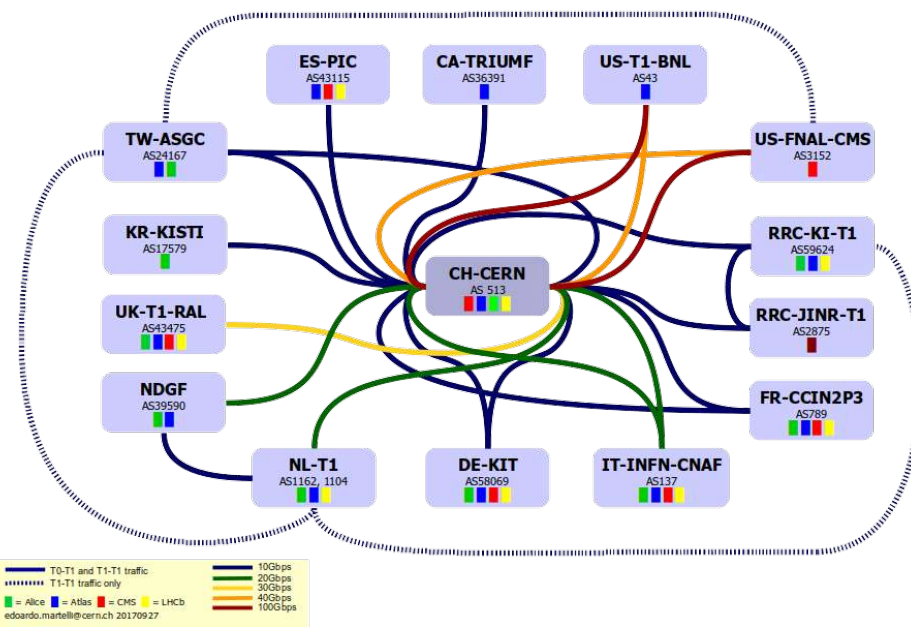
- Hosted at KEK in Tsukuba, Japan
- Two separated sessions and two main common sessions
- ~30 participants



# LHCOPN updates

- LHCOPN traffic slightly increased during the year
- CH-CERN selected new router vendor, implementing second network hub in French site, dropped plan for Experiments' shared DAQ
- Few Tier1s in Europe planning to upgrade their links to 100G
- Tier1s in Asia planning to double their links' capacity

## LHCOPN

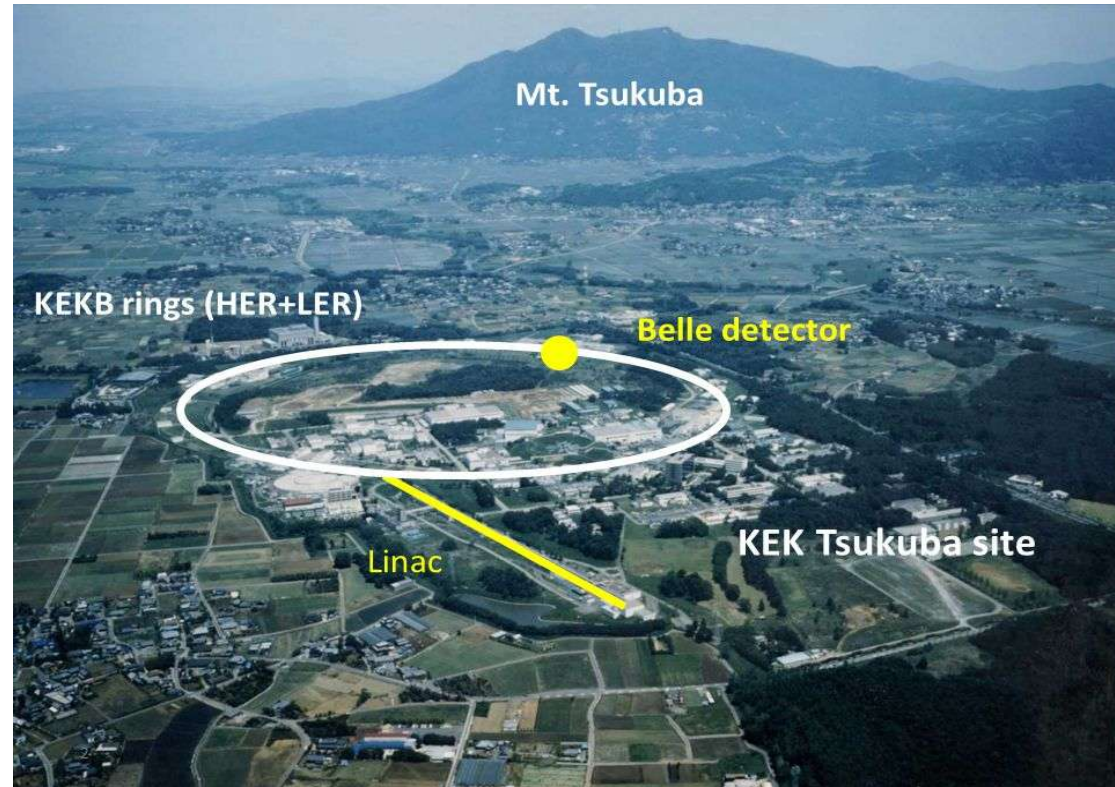


<https://indico.cern.ch/event/646629/contributions/2729137/attachments/1540722/2415984/LHCOPNE-20171016-Tsukuba-LHCOPN-update.pdf>

[https://indico.cern.ch/event/646629/contributions/2741978/attachments/1540773/2416108/DE-KIT\\_update.pdf](https://indico.cern.ch/event/646629/contributions/2741978/attachments/1540773/2416108/DE-KIT_update.pdf)

# BelleII update

- computing requirements estimated similar to LHC Run1
- BNL to replace PNNL as US Tier1
- On going WAN data challenge to check network performances with BNL
- On going discussion whether LHCOPN can be used between BelleII sites that are also LHC Tier1s



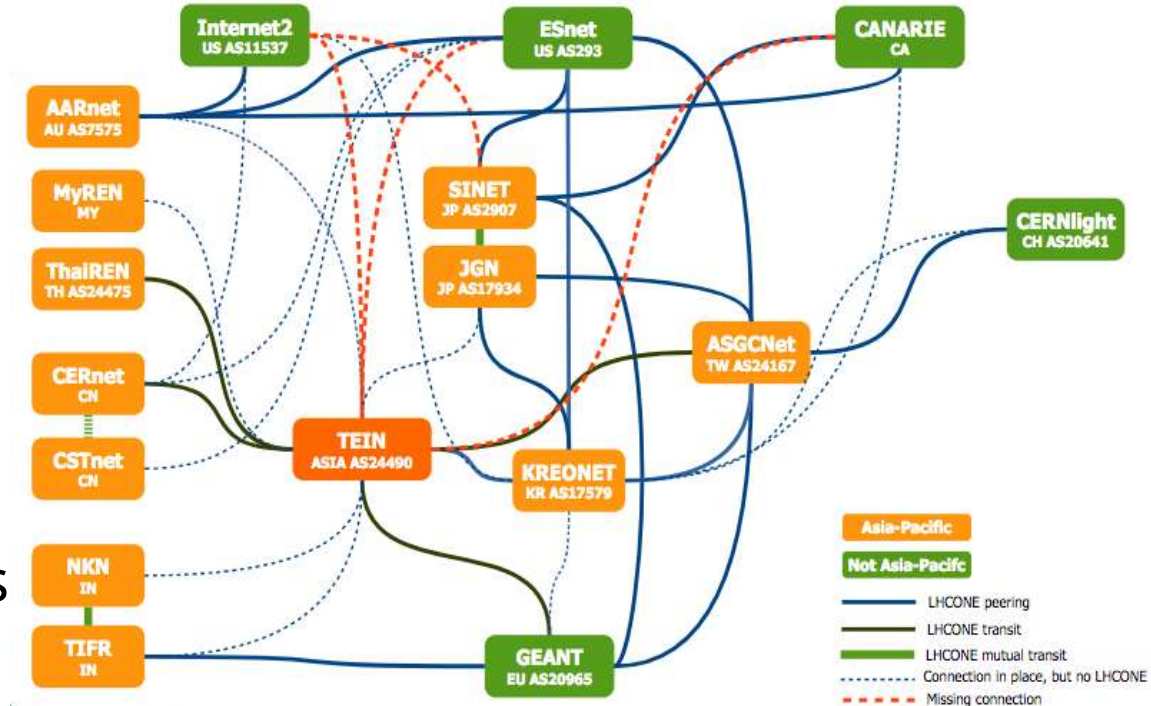
# ATCF3 report

Most sites are improving their network connectivity

Good progress of LHCONE in Asia-Pacific:

- TEIN has almost completed upgrade to 10G
- TEIN VRF new peerings with ASGC, KREONET and soon with JGN Japan
- Korea, Japan and Taiwan well connected worldwide

Still effort needed to connect TEIN to North American VRFs



# Networks updates

## ESnet

- will re-tender all transatlantic circuits and get 4x100G
- started works for next upgrade, ESnet6:

[https://indico.cern.ch/event/646629/contributions/2729143/attachments/1540781/2416119/2017-10-16\\_ESnet6\\_LHCOPN\\_LHCONE.pdf](https://indico.cern.ch/event/646629/contributions/2729143/attachments/1540781/2416119/2017-10-16_ESnet6_LHCOPN_LHCONE.pdf)

## AARnet

- implemented Australian VRF, which peers with ESnet, Internet2 and CANARIE

[https://indico.cern.ch/event/646629/contributions/2729161/attachments/1541368/2417267/Australia\\_Network\\_Status.pdf](https://indico.cern.ch/event/646629/contributions/2729161/attachments/1541368/2417267/Australia_Network_Status.pdf)

## ASGC

- Considering going for 100G links TW-EU and EU-US, but looking for collaboration to get transpacific connectivity

<https://indico.cern.ch/event/646629/contributions/2755894/attachments/1540774/2416107/ASGC-WAN-plan-KEK.pdf>

# Community White Paper

The HEP community is aiming to produce a Community White Paper (CWP) which will describe the community strategy and a roadmap for software and computing R&D in HEP for the 2020s.

The document is almost ready and the LHCONE community has been asked to read it and comment, in special:

- Facilities and distributed computing
- Data management, organization and access
- Data analyses and interpretation

More information here:

<http://hepsoftwarefoundation.org/activities/cwp.html>

[https://indico.cern.ch/event/646629/contributions/2738241/attachments/1541610/2417842/CWP\\_Status\\_-\\_LHCONE\\_20171017.pdf](https://indico.cern.ch/event/646629/contributions/2738241/attachments/1541610/2417842/CWP_Status_-_LHCONE_20171017.pdf)

# Sites updates

## KEK – Japan

- 40Gbps link to LHCONE
- Belle-II and DAQ have separated intranets under KEK campus network
- Campus network focuses on stability and security; KEKCC (datacentre) on performance

<https://indico.cern.ch/event/637013/contributions/2739324/attachments/1541634/2417857/hepix2017fall-yamagata-v4.pdf>

## IHEP – China

- External connectivity is 30G
- New network architecture finished in Aug 2017. IPv6 is supported
- Discussing connection to LHCONE. 2 perSONAR hosts deployed, both dual-stack

[https://indico.cern.ch/event/637013/contributions/2741777/attachments/1541632/2417853/Network\\_related\\_updates\\_at\\_IHEP.pdf](https://indico.cern.ch/event/637013/contributions/2741777/attachments/1541632/2417853/Network_related_updates_at_IHEP.pdf)

## DE-KIT

- New 100G LHCOPN link to CERN will be implemented soon

[https://indico.cern.ch/event/646629/contributions/2741978/attachments/1540773/2416108/DE-KIT\\_update.pdf](https://indico.cern.ch/event/646629/contributions/2741978/attachments/1540773/2416108/DE-KIT_update.pdf)



# LHCONE update

## L3VPN status

- All the VRFs see large utilization of their links. In most of the VRFs the traffic has increased 100% in the last year.

[https://indico.cern.ch/event/637013/contributions/2707055/attachments/1540725/2416141/2017-10-16\\_EnzoCapone\\_LHCONE.pptx](https://indico.cern.ch/event/637013/contributions/2707055/attachments/1540725/2416141/2017-10-16_EnzoCapone_LHCONE.pptx)

## L3VPN operations

- Shown routing table seen in ESnet. Discussed the possibility to have similar visualization for other VRFs

[https://indico.cern.ch/event/646629/contributions/2729158/attachments/1540572/2415654/LHCONE\\_LHCOPN\\_Presentation\\_2a.pdf](https://indico.cern.ch/event/646629/contributions/2729158/attachments/1540572/2415654/LHCONE_LHCOPN_Presentation_2a.pdf)

## KIT and DESY

- detected traffic sent from addresses not allowed in LHCONE
- those coming from CERN is due to a deployment error which will be fixed soon
- discussed the possibility for VRFs to drop this traffic at the borders

[https://indico.cern.ch/event/646629/contributions/2749268/attachments/1541614/2417776/Unexpected\\_traffic\\_in\\_LHCONE.pdf](https://indico.cern.ch/event/646629/contributions/2749268/attachments/1541614/2417776/Unexpected_traffic_in_LHCONE.pdf)

# Monitoring and WLCG/OSG update

## Monitoring update

- New version 4.0.1 is being deployed, but it has some problems with the measurement archives and also it requires some new firewall openings. It streams data to the archive, it has a SNMP plugin to collect SNMP counters
- New version 4.1 will arrive in 2018Q1 with improved pScheduler, new plugins, like traffic capture and application testing. TWAMP will replace BWCTL. It will bring two way active measurements
- CERN Grafana is now being used to publish LHCOPN traffic statistics. It can also show perfSONAR measurements

[https://indico.cern.ch/event/637013/contributions/2739243/attachments/1539101/2412730/HEPiX\\_WLCG-neworking\\_fall2017.pdf](https://indico.cern.ch/event/637013/contributions/2739243/attachments/1539101/2412730/HEPiX_WLCG-neworking_fall2017.pdf)

## Network Function Virtualization HEPiX Working Group

- Proposal to form a new NFV working group with a mid-to-long term scope focused on emerging network topics and capabilities and how they might be used to benefit HEP
- The WG was approved by the HEPiX Board

[https://indico.cern.ch/event/637013/contributions/2739266/attachments/1540806/2416163/Network\\_Functions\\_Virtualisation\\_WG\\_Proposal\\_1.pdf](https://indico.cern.ch/event/637013/contributions/2739266/attachments/1540806/2416163/Network_Functions_Virtualisation_WG_Proposal_1.pdf)

# Indiana University update

## TransPAC

- Working with LHCONe community to provide a link to connect TEIN in Asia to North American RENS.
- Most of the traffic seen on the TransPAC link is HEP related. Some of it is transiting US to reach Europe.
- There is an effort to build a traffic exchange in Guam, called GOREX. Guam is equally distant from most of the Asian countries facing the Pacific; it also transits many of the transpacific under-sea cables.

[https://indico.cern.ch/event/637013/contributions/2739319/attachments/1540785/2416132/Hepix17-lhcone\\_TransPAC.pdf](https://indico.cern.ch/event/637013/contributions/2739319/attachments/1540785/2416132/Hepix17-lhcone_TransPAC.pdf)

## Netsage

- Netsage is an open source software framework that can collect and visualize network measurements, which can be anonymized
- It can collect SNMP counters, perfSONAR, tstat and netflow data
- Portal available at <http://portal.netsage.global/>

[https://indico.cern.ch/event/637013/contributions/2739320/attachments/1540784/2416127/Hepix17-lhcone\\_Netsage.pdf](https://indico.cern.ch/event/637013/contributions/2739320/attachments/1540784/2416127/Hepix17-lhcone_Netsage.pdf)

# Deployment of IPv6-only CPU on WLCG

The HEPiX IPv6 working group is pushing and supporting IPv6 adoption in WLCG

WLCG has approved a deployment plan that demands the Tier1s to have dual-stack storage by 2017; Tier1s to support dual-stack storage and central services by 2018

CERN EOS storage is now IPv6-capable. ALICE and LHCb instances already migrated, ATLAS and CMS will follow at the end of Run2

<https://indico.cern.ch/event/637013/contributions/2739268/attachments/1541630/2417834/Kelsey17oct17.pdf>

# Use of LHCOPN for BelleII traffic

- BNL has been designated to replace PNNL as BelleII US Tier1
- While BelleII traffic is allowed on LHCONE, it is not mentioned in the LHCOPN MoU
- BNL wishes to not have to increase the complexity of its network to avoid to exchange BelleII traffic over the LHCOPN
- Ultimately BNL would like to allow all its ScienceDMZ traffic to any LHC connection

After discussion it has been agreed to:

- allow BelleII traffic over LHCOPN, if both ends of the transfers agree to do so
- inform WLCG Management Board
- discuss on the LHCOPN/ONE mailing list the option to allow any ScienzeDMZ traffic over the LHC networks

[https://indico.cern.ch/event/646629/contributions/2729158/attachments/1540572/2415654/LHCONE\\_LHCOPN\\_Presentation\\_2a.pdf](https://indico.cern.ch/event/646629/contributions/2729158/attachments/1540572/2415654/LHCONE_LHCOPN_Presentation_2a.pdf)

# Conclusions

# Next Meeting

Proposed dates: week 5-9 of March or 16-20 of April. Most likely  
**6th-7th of March**

Organized by RAL in Rutherford

Date and exact location will be confirmed soon

# Summary

- LHCONE traffic has grown 100% in the last year
- LHCONE connectivity inside Asia has greatly improved. Still missing TEIN connectivity to North America, though
- Upgrade of several LHCOPN links to 100G will happen soon
- No opposition to BelleII traffic on LHCOPN
- No consensus on using LHCONE to exchange any science traffic. To be discussed again



# Links

**LHCOPN and LHCONE meeting agenda:**

<https://indico.cern.ch/event/646629/>

**Joint HEPIX and LHCOPN/ONE meeting agenda:**

<https://indico.cern.ch/event/637013/timetable/#20171018.detailed>

**ATCF3 agenda:**

<https://indico.cern.ch/event/638971/>

*Questions?*

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