LHCOPN LHCONE meeting at KEK

summary report

16th-17th October 2017 – v1.2
edoardo.martelli@cern.ch

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, is implementing second network hub in French site, dropped plans for Experiments' shared DAQ
- Few Tier1s in Europe planning to upgrade their links to 100G
- Tier1s in Asia planning to double their links' capacity
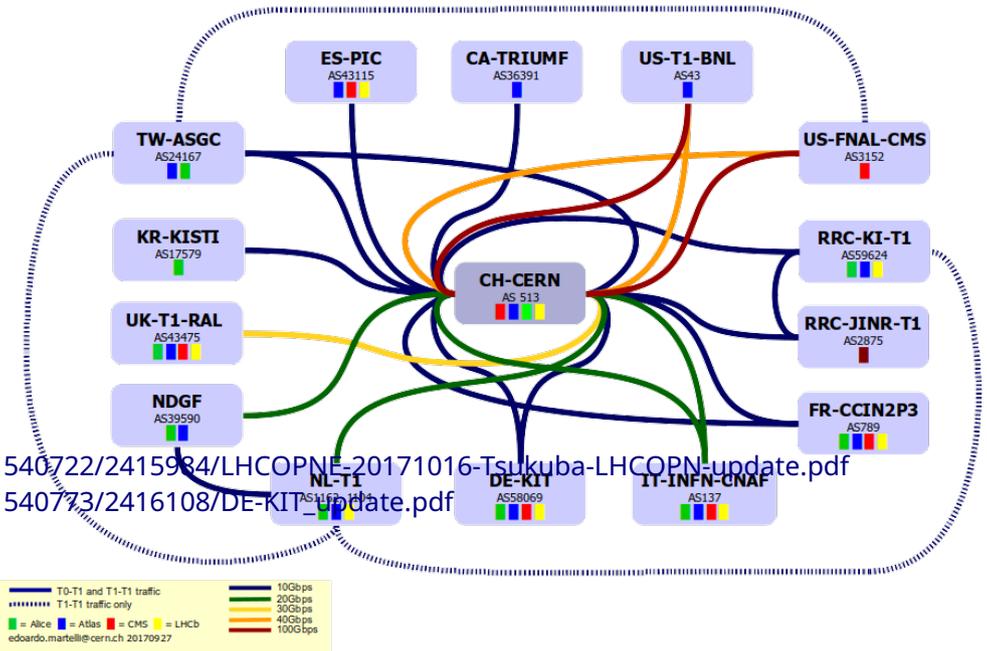
https://indico.cern.ch/event/646629/contributions/2729137/attachments/1540722/2415984/LHCOPNE-20171016-Tsukuba-LHCOPN-update.pdf
https://indico.cern.ch/event/646629/contributions/2741978/attachments/1540773/2416108/DE-KIT_update.pdf

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

https://indico.cern.ch/event/646629/contributions/2729141/attachments/1540775/2416111/VikasBansal_BelleII-LHCONE_Update_Oct_2017.pdf
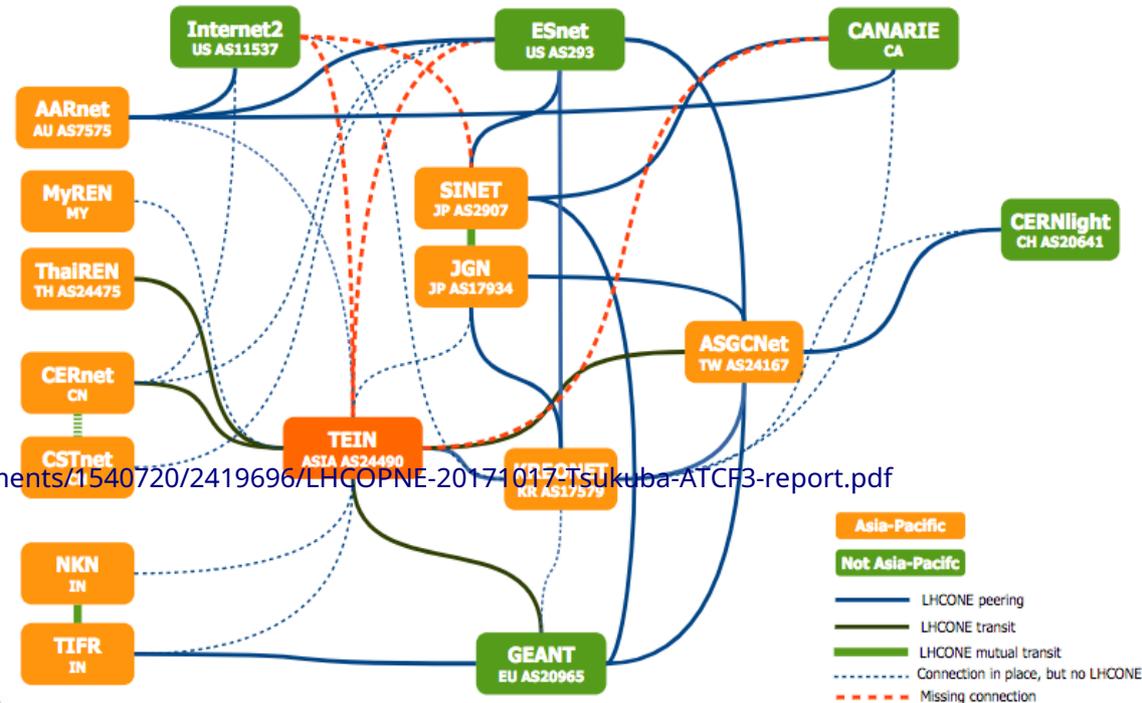

LHCOPN
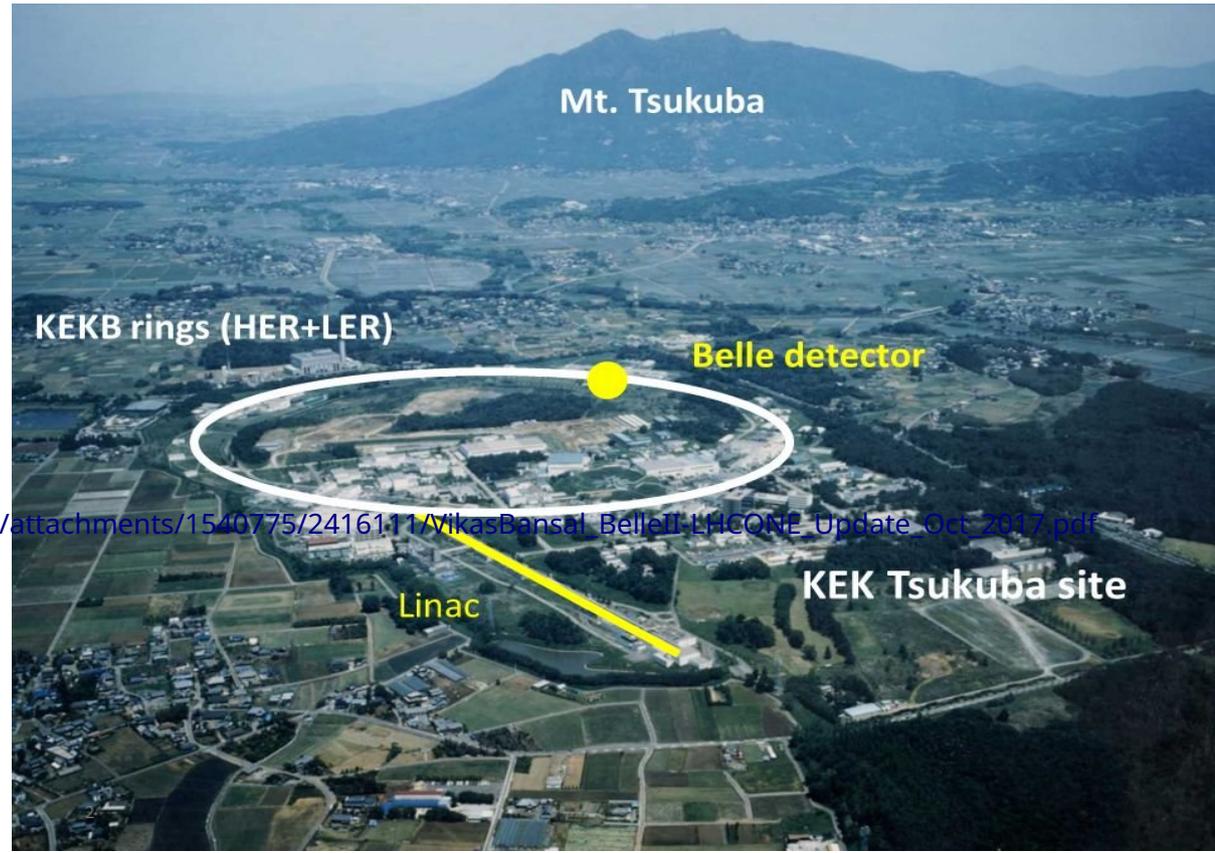
ATCF3 report

Most sites improving their network connectivities

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

https://indico.cern.ch/event/646629/contributions/2729163/attachments/1540720/2419696/LHCOPNE-20171017-Tsukuba-ATCF3-report.pdf

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

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

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

LHCOPN

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

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

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

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

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

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

LHCOPN

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

Network Function Virtualization HEPiX Working Group

- Proposal for the formation of 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

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

Netsage

- Netsage is an open source software framework that can collect and vizualize 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

LHCONE P2P update

AutoGOLE

- Adopting MEICAN for the dynamic provisioning of circuits
- Planning a demo for Super Computing 2017

https://indico.cern.ch/event/637013/contributions/2707066/attachments/1539328/2413163/2017-09-26-28_GLIF_WS_V1.1_V8.pdf
https://indico.cern.ch/event/637013/contributions/2707066/attachments/1539328/2413147/HEPiX_AutoGOLE_-_Mambretti_v0.3.pdf

Next gen software defined services and the Global research platform

- GRP (Global Research Platform): a science DMZ at a global scale
- Builds upon SDN/SDX/SDI and science DMZs

https://indico.cern.ch/event/637013/contributions/2739310/attachments/1539324/2413140/GRP_Presentation_100_G_Science_V2.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

Actions

Follow up with VRF providers to implement uRPF check to avoid injection of traffic with wrong source addresses (Bruno)

Look for open source tool to graph routing tables of VRFs (Mike)

ASGC to follow up on how to get transpacific connectivity in exchange of transit on their future transcontinental 100G links (Hsin-Yen)

LHCONE Asia: follow up on how to extend the TransPAC link Seattle-Tokyo to Hong Kong to allow TEIN to peer with North American VRFs (Andrew, Edoardo and others)

LHC⊙PN

Actions

LHCONE Community to comment on the CWP documents (all)

Built table that shows T1-T1 traffic policies at various Tier1s (Edoardo)

Inform WLCG management board of the decision of allowing BelleII traffic between Tier1s in LHCOPN (Edoardo)

Discuss on mailing lists the use of LHCOPN and LHCONE for any science of the already connected sites (Edoardo)

Document LHCOPN AUP on the LHCOPN twiki (Edoardo)

LHCOPN

Conclusion

Next Meeting

Proposed dates: week 5-9 of March or 16-20 of April

Organized by RAL in Rutherford or Manchester.
It may be necessary to apply a small fee to the participant

Date and exact location will be confirmed

Summary

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

LHCOPN

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?

edoardo.martelli@cern.ch