LHCOPN-LHCONE meeting #44 virtual meeting - summary report

13th May 2020 – v1.0
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Venue

Postponed several time due to Covid-19 restrictions:

- ~~Taipei – co-located with ISGC~~

- ~~Lund – co-located with WLCG workshop~~

- Videoconference

Participants

Number of participants were changing over time:
   up to 62, ended with 38 after 4h30'

Some numbers:

- 35 Institutes

- 3 Collaborations

- 9 Research Networks

(rough numbers, could be more)

The video conference experience

Already had remote participants and remote presenters in the past

… but first time on video-conference only

Positive experience:

- Very good participation to discussions

- Positive attitude of everyone

- Good quality of the tool (Zoom) with very few hiccups

To improve:

- duration: it was too long and demanding. Reduce to 3h maximum. If more time is needed, split on two days

- foreseen more time for discussions (didn't expect to workout that well)

LHCOPN update

- **Data movement:** moved 288PB in the last year

- **Total bandwidth**: 1.1Tbps to the Tier0

- **CH-CERN**: on-going tender for new computer centre

- **UK-T1-RAL**: link to CERN will be upgraded to 100G. Expected in August now. Ready to connect to LHCONE, but may have to wait till 2021.

- **ES-PIC**: tender for new network hardware on-hold because of lockdown.

- **LS2 and Run3**: Expected 3 months delay on original schedule because of lockdown

Slides https://indico.cern.ch/event/888924/contributions/3792383/attachments/2036096/3409116/LHCOPNE-20200513-noplace-LHCOPN-update.pdf

Is there a need for a new LHCOPN AUP?

- Discussed whether there is a need for a more detailed AUP for LHCOPN. The existing one is very simple and straightforward

- General agreement that there's **no need to change it** LHCOPN should **keep its fundamental purpose to move LHC data from the Tier0 to the Tier1s**

- Expected for Run4: raw data distribution will be again the main factor of network utilization

Slides: https://indico.cern.ch/event/888924/contributions/3792385/attachments/2036097/3409120/LHCOPNE-20200513-LHCOPN-AUP.pdf

LHCOPN

Towards an IPv6 only LHCOPN?

Some facts:
- LHCOPN: all Tier1s connected with IPv6.
- IPv6 traffic over LHCOPN/ONE more than IPv4 since June 2019
- 75% of Tier2s have dual-stack storage

The HEPiX IPv6 WG suggests the LHCOPN aims to become IPv6 only (n*ote that it doesn't mean to forbid IPv4, just to move it out elsewhere (LHCONE, Internet))*.

Slides: https://indico.cern.ch/event/888924/contributions/3792386/attachments/2037659/3412145/LHCOPN_IPv6_only.pdf

LHCOPN

LHCONE L3VPN status - update

- New VRF provided by RedCLARA for South American countries
- Estonia NREN now providing LHCONE for the country
- More peerings for ARNET (Australia): SINET and GEANT
- IPv6 now 70% for most of the NRENs
- New peerings are mitigating the reachability problems

Slides: https://indico.cern.ch/event/888924/contributions/3792394/attachments/2037799/3412677/2020-5-13_ECapone_LHCONE_L3VPN.pdf

LHCONE escalation procedure - Proposal

Problem: the LHCONE AUP doesn't explain very well how to deal with sites not respecting the AUP

Some proposals:
- Better definition of point of contacts for escalations
- Include regional networks in the escalation process
- Use of a ticketing system
- Shorten the execution time

A more detailed proposal will be made by GEANT

Slides: https://indico.cern.ch/event/888924/contributions/3792399/attachments/2037862/3412453/2020-5-13_ECapone_AUP_escalation.pdf

LHCONE Security and Trustworthiness

Analyzed LHCONE AUP on security aspects

Proposed some changes to better address security incidents:

- more precise wording

- better definition of Role and Responsibilities

No consensus reached.

Some idea will be integrated with the GEANT proposal, others will need more discussion

Slides: https://indico.cern.ch/event/888924/contributions/3792408/attachments/2037664/3412154/LHCONE-AUP_modifications_v.1.pdf

LHCONE Edge Filtering

Problem: some analyses have reveled presence of unwanted packets in the network, primarily harmless packets with private source addresses, but also network scans

Proposed to adopt uRPF (unicast Reverse Path Forwarding) to drop unwanted source addresses

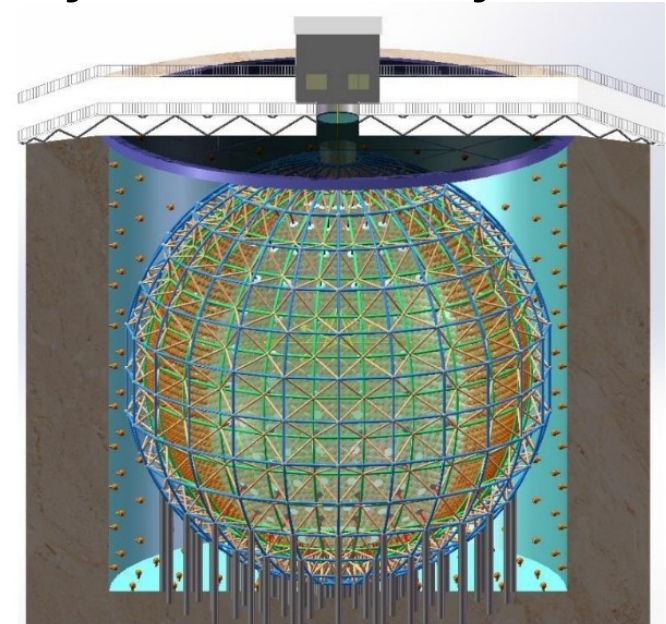Proposed to declare LHCONE prefixes in public routing registry to promote automatic filters

Slides: https://indico.cern.ch/event/888924/contributions/3794972/attachments/2037896/3424684/LHCONE_Edge_Filtering.pdf

JUNO application to join LHCONE

The Jiangmen Underground Neutrino Observatory would like to join LHCONE

- Detector being built in China. First data foreseen for late 2021.
- Expected Data output: 2PB/year
- The data-centres (5) are already connected to LHCONE

No objections because of low data volume and because most of the institutes are already connected to LHCONE
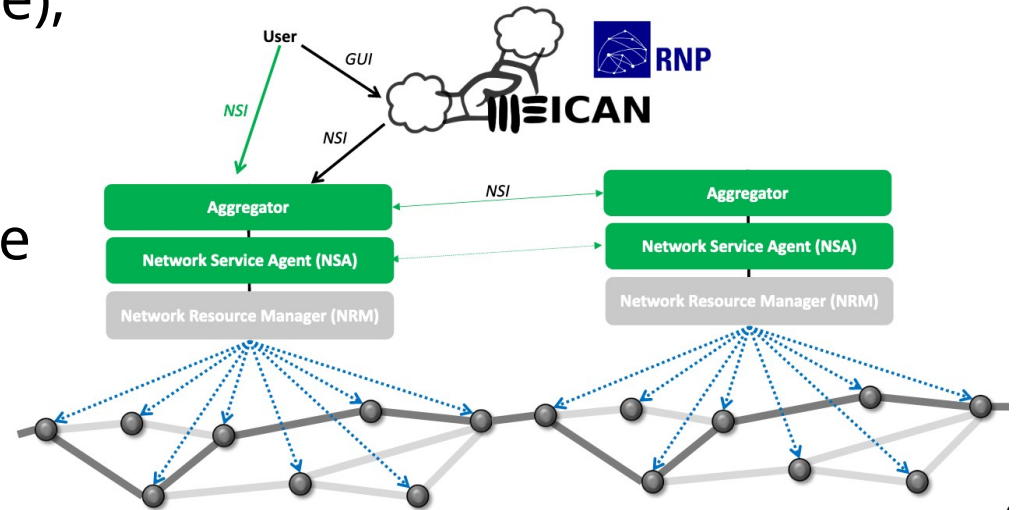

Slides https://indico.cern.ch/event/888924/contributions/3792406/attachments/2037885/3412500/Andronico_JUNO.pdf

LHCOPN

LHCONE P2P and DTN activities - update

GNA-G AutoGOLE:

- Presented demonstration at SC19 using MEICAN to provision circuits between DTNs connected to PacificWave, Esnet, RPN, CERN, TIFR and SC19

- Plan for 2020: Focusing on production level NSI (Network Service Interface); dynamic ANA (circuits over transatlantic links); provisioning with SENSE (ESnet project); improve DTN network
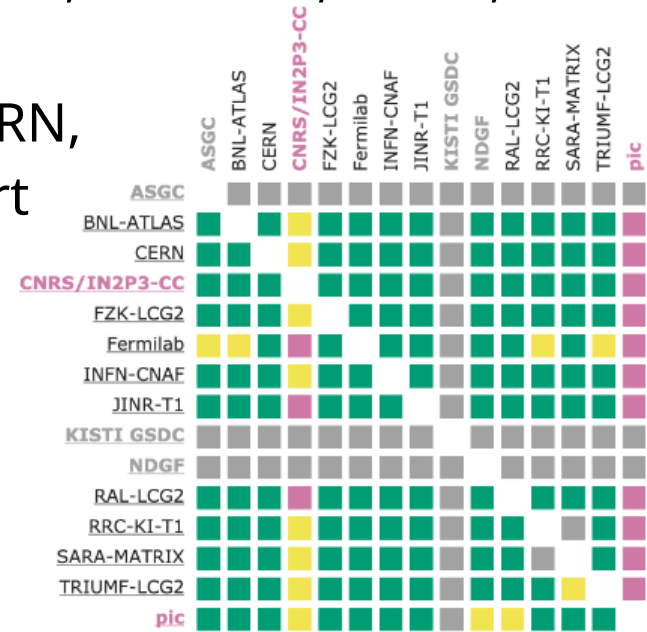

Slides
https://indico.cern.ch/event/888924/contributions/3792418/attachments/2037735/3412302/LHC_P2P_and_DTN_activities_update_-_Gerben_van_Malenstein.pdf

perfSONAR and monitoring update

- Developed a comprehensive network monitoring platform operated by OSG and WLCG. It has been used in a wide range of activities from core OSG/WLCG operations to Cloud testing and IPv6 deployment
- Added new nodes to LHCONE mesh: GEANT, I2, ESnet, PacWave, SINET, SingAREN
- More 100G nodes available: now in SARA, CSCS, CERN, TRIUMF, FZK, CEA, AGLT2, Prague. Need more effort for the 100G activity
- Next version of perfSONAR will support Python3 and improve overall stability and performance
- Developing new visualization tools using Kibana and MEPHi

Slides:
https://indico.cern.ch/event/888924/contributions/3792412/attachments/2037674/3412900/LHCOPN_LHCONE_perfSONAR_Update_2020spring.pdf

Research Network Technology WG

Successful kick-off virtual meeting with ~60 participants. Already 80 subscribed to net-wg@cern.ch the mailing list

Defined subjects to focus on:
- making network use visible (marking)
- Shaping WAN data flows (pacing)
- orchestrating the network to enable multi-site infrastructures (orchestrating)

Proposed the definition of 3 sub-WG for the 3 subjects to work on:
- identify concrete technologies to use
- implement and test prototypes
- promote broader adoption

Slides:
https://indico.cern.ch/event/888924/contributions/3792419/attachments/2037093/3411000/Research_Networking_Technical_Working_Group.pdf

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multiONE and NOTED update

multiONE

Little progress on DUNEONE use case:

- Esnet ready to implement network connection between FNAL and CERN
- Working on how to identify and separate DUNE traffic

NOTED

- New CERN TechStudent started working on Coralie's work after her contract ended
- Focusing on producing a Transfer Broker service open to external network controllers

Slides: https://indico.cern.ch/event/888924/contributions/3792420/attachments/2037453/3411750/LHCOPNE-20200513-noplace-multiONE-NOTED.pdf

Conclusions

Summary

LHCOPN:

     - Upgrades for Run3 delayed by lockdown. Traffic still slowly growing.

     - No need to change existing AUP

LHCONE:

     - New VRFs for South America region and Estonia

     - IPv6 traffic now almost 70% of the total

     - AUP: discussed escalation procedures. A proposal will be prepared

     - Security: adoption of edge filtering discussed and will be tested

Monitoring:

     - perfSONAR: new version and more 100Gbps probes

R&D:

     - Presented Research Network Technology WG. Defined 3 sub-WG: packet marking, packet tracing, orchestration

     - GNA-G AutoGOLE progressing with circuit provisioning tool

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Actions for next meeting

- Propose modifications to LHCONE AUP

- Propose implementation of URPF checks at LHCONE edges

- Propose registration of LHCONE prefix in routing registry

- Finalize JUNO admission to LHCONE

Next Meetings

Next meeting: 17th and 18th of September 2020 co-located with NORDUnet conference in Reykjavik (if confirmed). If travel restrictions persist, it will be virtual again.

Following meeting in Fall 2021:
- Option 1: co-located with HEPiX meeting in Oklahoma (US)
- Option 2: co-located with ISGC in Taipei (TW)

References

Meeting agenda and presentations:

https://indico.cern.ch/e/lhcopne44

Questions?

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