



MultiONE implementation status update

LHCONE meeting #54

20th March 2025

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Rationale of MultiONE

The major benefit of LHCONE is the trust in the connected sites: it allows sites to connect the LHCONE fat links directly to their data-centre and bypass low-bandwidth and expensive security inspection at the border of their networks

Due to the inclusions of other collaborations (BelleII, DUNE...), the increasingly growing number of connected sites may reduce the trust

The MultiONE project aims to document the use of the LHCONE network and to improve the trustiness in LHCONE

Beware of confusion

Please note that this activity **is not** much related to the packet/flow tagging led by SciTags

In fact, the BGP tagging of the LHCONE prefixes **is independent** from the IPv6 Flowlabel or Fireflies tagging

Documentation

<https://twiki.cern.ch/twiki/bin/view/LHCONE/MultiOneBGPcommunities>

Community format:

- Standard BGP community
- **Format: 61339:ExpID**
- The ExpIDs are the same as those defined by the SciTags initiative

Defined Communities

ALICE	61339:5
ATLAS	61339:2
BelleII	61339:6
CMS	61339:3
DUNE	61339:8
ILC	61339:10
JUNO	61339:12
LHCb	61339:4
NOvA	61339:13
Pierre Auger	61339:11
XENON	61339:14
perfSONAR servers	61339:60001
LHCONE backbone	61339:60002
Demo/Prototype	61339:60003

What your site has to do

- **Identify the experiments/collaborations** served by your facility
- **Tag your IP prefixes announced to LHCONE with the correspondent BGP communities**

E.g.

- Facility CERN-T0 participate to **ALICE**, **ATLAS**, **CMS**, **LHCb** and **DUNE**.
- The CERN-T0's prefixes announced to LHCONE must be tagged with the BGP communities **61339:5**, **61339:2**, **61339:3**, **61339:4** and **61339:8**

Support

GGUS ticket campaign started in September 2024:

- 47 tickets still open (migrated to the new ticketing system)

If you need any help, please:

- Ask your NREN/LHCONE provider

or

- Ask for support in the ticket

You will find more information and configuration examples here:

<https://twiki.cern.ch/twiki/bin/view/LHCONE/MultiOneBGPcommunities>

Verify

You can verify if your prefixes are properly tagged in the LHCONE looking glass at <https://lhcone-lg.cern.ch/>

LHCONE Looking Glass

Query:	Router:
<input type="radio"/> show bgp neighbor <address> <input type="radio"/> show bgp summary	ex3.cern.ch
<input type="radio"/> show all bgp route ipv4 <input type="radio"/> show all bgp route ipv6	
<input checked="" type="radio"/> show bgp route detail ipv4 <prefix> <input type="radio"/> show bgp route detail ipv6 <prefix>	
Argument(s): <input type="text" value="128.142.0.0/16"/>	
<input type="button" value="Submit"/> <input type="button" value="Reset"/>	

LHCONE Looking Glass Results - ex3.cern.ch

Date: Thu Mar 6 15:31:15 2025 CET

Query:
Argument(s): 128.142.0.0/16

inet.0: 10 destinations, 10 routes (10 active, 0 holddown, 0 hidden)

LG.inet.0: 391 destinations, 1218 routes (391 active, 0 holddown, 0 hidden)
128.142.0.0/16 5 entries, 1 announced
*RGP
Preference: 170/-101

Next hop type: Router, Next hop index: 8069
Address: 0x55e8e4425dfc
Next-hop reference count: 147, Next-hop session id: 1
Kernel Table Id: 0
Source: 192.65.183.46
Next hop: 192.65.183.46 via et-0/0/30:1.0, selected
Session Id: 1

State:
Peer AS: 20641
Age: 17w3d 5:43:51
Validation State: unverified
Task: BGP 20641 61339.192.65.183.46
Announcement bits (2): 1-KRT 3-Resolve tree 1
AS path: 20641 513 I

Communities: 513:65101 513:65151 20641:65160 61339:2 61339:3 61339:4 61339:5
Accepted
Localpref: 100
Router ID: 192.65.183.1
Thread: iunos-main

Status update

Date: 2025-03-04

Number of tagged prefixes: 210

Total number of LHONE prefixes: 736

Number of ASes originating tagged prefixes: 41

Next steps

Complete tagging:

- Chase sites and NRENs (some have not replied to tickets and emails)
- Hopefully done by the end of 2025

Then decide about filtering:

- Site could start by dropping all the untagged prefixes
- Beware: filtering must be symmetric, it's very easy to incidentally break connectivity
- In any case better to wait for Long Shutdown 3

Questions? Comments?

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