



# MultiONE implementation

The last GDB

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# Rationale

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**

# Implementation

**Sites connected to LHCONE have to:**

- identify the experiments/collaborations that are using their computing resources made available over LHCONE**
- tag each IP prefix announced to LHCONE with the BGP communities\* that identify the experiments/collaborations served by the site**

The tagging is done by the sites. If a site is unable to do it, they can ask their NREN to do it in their behalf.

Later on, sites can decide to drop prefixes of collaborations they are not working with. This step has not been agreed yet.

*\* BGP is the routing protocol used in LHCONE; BGP communities are numeric tags that can be added to the network prefixes announced to the BGP peers*

# Benefits

- BGP communities tagging is a simple and commonly used technique
- Tags are useful to document the use of the network and to double check what is declared in CRIC
- Reduced exposures of sites when filtering is implemented
- Tagging and Filtering can be implemented progressively
- No changes at sites when a new site connects to LHCONE

# Limitations

Not 100% secure:

- any sites will still be able to send packets to sites that tag and filter.  
However TCP connections will not work.
- a malicious sites can tag its prefixes with all the existing tags and get the prefix accepted. This could be mitigated if Network Providers validate the tagging

# Beware

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

The tagging of the LHCONE prefixes in BGP **can be done independently** 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

A GGUS ticket campaign will start soon

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>

# Status update

Date: 20240906

Number of tagged prefixes: 41

Total number of LHONE prefixes: 722

Number of ASes originating tagged prefixes: 9

List of tagging ASes:

3,16, 160, 513, 2505, 3152, 35296, 43115, 58069

*Questions? Comments?*

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