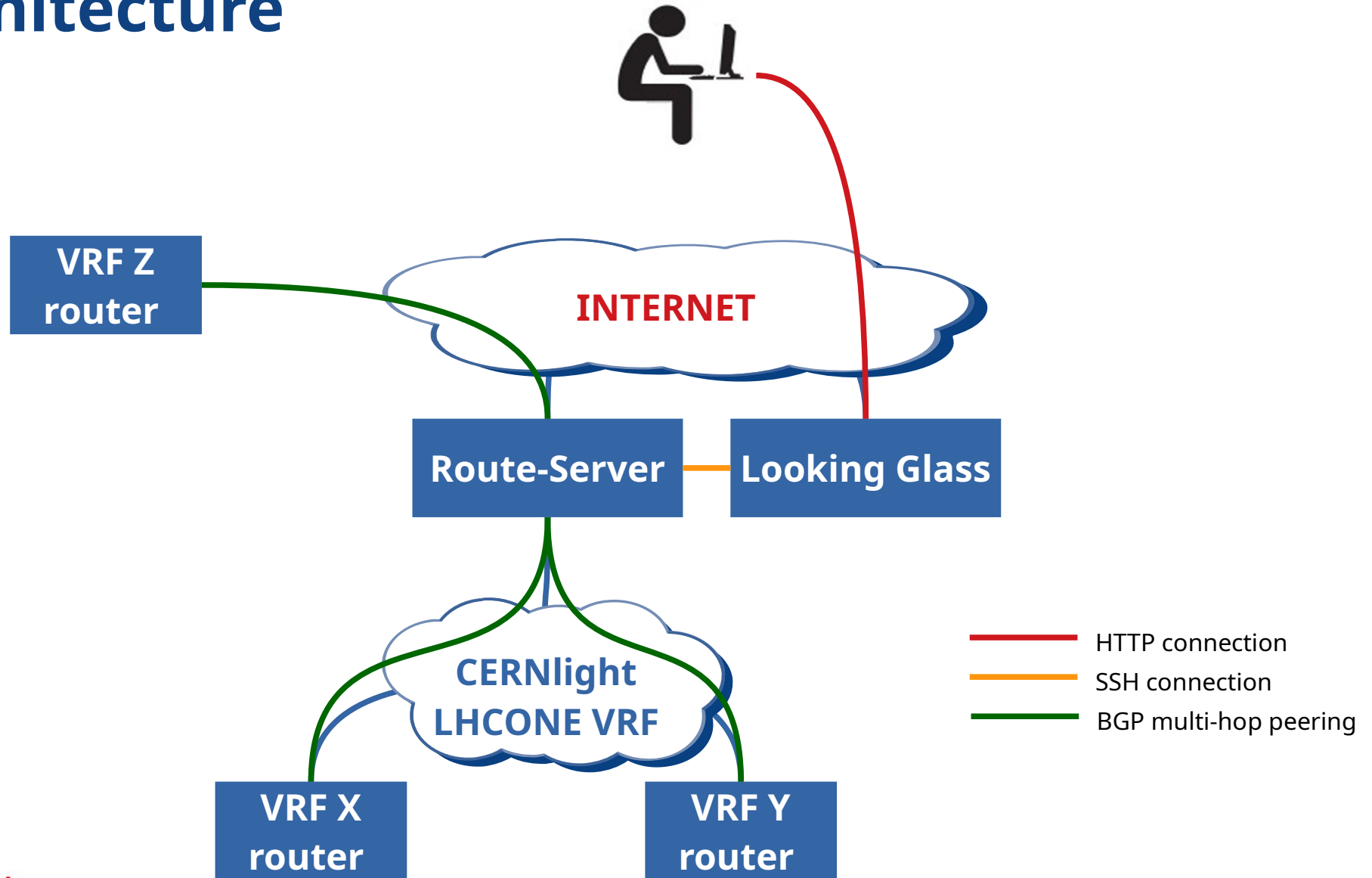


LHCONE Looking Glass - update

LHCONE meeting - Umeå - 4th October 2018
edoardo.martelli@cern.ch



Architecture



Route Server

- Deployed Juniper QFX5200-32C (32x 40/100G ports) at CERN
- It has replaced the Brocade MLXE router used for CERNlight
- It runs two VRFs:
 - one for the route-server - AS61339
 - one for LHCONE CERNlight - AS20641



Looking Glass server

- HTTP server running on a CERN Virtual Machine
- Reachable at <http://lhcone-lg.cern.ch/>

LHCONE Looking Glass

Query:	Router:
<input type="radio"/> show bgp neighbor <IP_addr> <input type="radio"/> show bgp summary	ex2j.cern.ch
<input type="radio"/> show all bgp route ipv6 <input type="radio"/> show all bgp route ipv4	
<input type="radio"/> show bgp route detail ipv6 <address> <input type="radio"/> show bgp route detail ipv4 <address>	
Argument(s): <input type="text"/>	

Submit

Reset

[Looking Glass notes](#)

For support, contact [extip](#)

At the previous meeting:

- Presented prototype
- Positive feedback
- Action: add more peerings to LHCONE Route Server

Current peerings

7 peerings IPv4 and IPv6:

- **ASGC** AS24167
- **CERNlight** AS20641
- **ESnet** AS293
- **KREOnet** AS17579
- **GEANT** AS20965 (Geneva and Frankfurt routers)
- **NORDUnet** AS2603
- **RU-VRF** AS57484

Upcoming peerings

Contacted:

- CANARIE
- SINET
- TEIN

Utilization examples

Example

Show all bgp route ipv4:

Useful to detect a route with partial reachability

```
[...]  
Route received from 3 peers only ==> 128.250.185.224/27 *[BGP/170] 01:09:34, localpref 100, from 198.124.80.21  
AS path: 293 7575 ?, validation-state: unverified  
> to 192.65.183.46 via xe-0/0/29:0.0  
[BGP/170] 01:09:34, localpref 100, from 117.103.111.244  
AS path: 24167 11537 7575 ?, validation-state: unverified  
> to 192.65.183.46 via xe-0/0/29:0.0  
[BGP/170] 01:09:34, localpref 100  
AS path: 20641 293 7575 ?, validation-state: unverified  
> to 192.65.183.46 via xe-0/0/29:0.0  
Route received from all peers ==> 128.227.253.0/24 *[BGP/170] 01:09:34, localpref 100, from 62.40.126.19  
AS path: 20965 11537 6356 I, validation-state: unverified  
> to 192.65.184.145 via irb.183  
[BGP/170] 01:09:34, localpref 100, from 62.40.126.21  
AS path: 20965 11537 6356 I, validation-state: unverified  
> to 192.65.184.145 via irb.183  
[BGP/170] 01:09:34, localpref 100, from 117.103.111.244  
AS path: 24167 11537 6356 I, validation-state: unverified  
> to 192.65.183.46 via xe-0/0/29:0.0  
[BGP/170] 01:09:34, localpref 100, from 198.124.80.21  
AS path: 293 11537 6356 I, validation-state: unverified  
> to 192.65.183.46 via xe-0/0/29:0.0  
[BGP/170] 01:04:05, localpref 100, from 192.65.183.30  
AS path: 2603 11537 6356 I, validation-state: unverified  
> to 192.65.183.46 via xe-0/0/29:0.0  
[BGP/170] 01:09:34, localpref 100, from 144.206.255.142  
AS path: 57484 2603 11537 6356 I, validation-state: unverified  
> to 192.65.183.46 via xe-0/0/29:0.0  
[BGP/170] 01:09:34, localpref 100  
AS path: 20641 293 11537 6356 I, validation-state: unverified  
> to 192.65.183.46 via xe-0/0/29:0.0
```

Examples

Show BGP route detail IPv6 <address>
Possible to check available paths
for a given prefix

LHCONE Looking Glass Results - ex2j.cern.ch

Date: Thu Oct 18 06:21:36 2018 CEST

Query:

Argument(s): 2001:6a0:fff:ff0a::/64

```
LG.inet6.0: 117 destinations, 181 routes (117 active, 0 holddown, 0 hidden)
2001:6a0:fff:ff0a::/64 (2 entries, 1 announced)
```

```
*BGP Preference: 170/-101
  Next hop type: Indirect, Next hop index: 0
  Address: 0xb2d4f30
  Next-hop reference count: 211
  Source: 192.65.183.30
  Next hop type: Router, Next hop index: 1708
  Next hop: 2001:1458:0:1d::1 via irb.183, selected
  Session Id: 0x0
  Protocol next hop: ::ffff:192.65.183.30
  Indirect next hop: 0xd1cf980 131071 INH Session ID: 0x0
  State:
  Peer AS: 2603
  Age: 13:04:54 Metric2: 0
  Validation State: unverified
  Task: BGP_2603_61339.192.65.183.30
```

AS path ==>

AS path: 2603 20965 8501 I

```
Announcement bits (2): 0-KRT 3-Resolve tree 2
Communities: 2603:2112 20965:155 target:2603:434300001 target:20965:111
Accepted
Localpref: 100
Router ID: 192.65.183.30
```

BGP

```
Preference: 170/-101
  Next hop type: Router, Next hop index: 1740
  Address: 0xb2cff50
  Next-hop reference count: 71
  Source: 2001:1458:a00:b::2
  Next hop: 2001:1458:a00:b::2 via irb.503, selected
  Session Id: 0x0
  State:
```

AS path ==>

AS path: 20641 17579 20965 8501 I

```
Inactive reason: AS path
Peer AS: 20641
Age: 14:29:00
Validation State: unverified
Task: BGP_20641_61339.2001:1458:a00:b::2
Communities: 20965:155
Accepted
Localpref: 100
Router ID: 192.65.183.1
```

{master:0}

Examples

Show BGP route detail IPv6 <address>
Also useful to check BGP communities

LHCONE Looking Glass Results - ex2j.cern.ch

Date: Thu Oct 18 06:21:36 2018 CEST

Query:

Argument(s): 2001:6a0:fff:ff0a::/64

LG.inet6.0: 117 destinations, 181 routes (117 active, 0 holddown, 0 hidden)

2001:6a0:fff:ff0a::/64 (2 entries, 1 announced)

*BGP Preference: 170/-101
Next hop type: Indirect, Next hop index: 0
Address: 0xb2d4f30
Next-hop reference count: 211
Source: 192.65.183.30
Next hop type: Router, Next hop index: 1708
Next hop: 2001:1458:0:1d::1 via irb.183, selected
Session Id: 0x0
Protocol next hop: ::ffff:192.65.183.30
Indirect next hop: 0xd1cf980 131071 INH Session ID: 0x0
State:

Peer AS: 2603
Age: 13:04:54 Metric2: 0
Validation State: unverified
Task: BGP_2603_61339.192.65.183.30
Announcement bits (2): 0-KRT 3-Resolve tree 2
AS path: 2603 20965 8501 I

Communities: 2603:2112 20965:155 target:2603:434300001 target:20965:111

Accepted
Localpref: 100
Router ID: 192.65.183.30

BGP Preference: 170/-101
Next hop type: Router, Next hop index: 1740
Address: 0xb2cff50
Next-hop reference count: 71
Source: 2001:1458:a00:b::2
Next hop: 2001:1458:a00:b::2 via irb.503, selected
Session Id: 0x0
State:

Inactive reason: AS path
Peer AS: 20641
Age: 14:29:00
Validation State: unverified
Task: BGP_20641_61339.2001:1458:a00:b::2
AS path: 20641 17570 20965 8501 I

Communities: 20965:155

Accepted
Localpref: 100
Router ID: 192.65.183.1

BGP communities ==>

BGP communities ==>

{master:0}

Questions?

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