

~JANOG47 Meeting LLT~

BGP実験用ネットワークが自動生成 できる軽量なプラットフォーム SQUAB

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BGP経路ハイジャックとその対策

色々ガタがきてるわ…
経路もハイジャックされるわ…



BGPsec君

じゃあ、Path validationしよう！



BGPさん

BGPsecが普及しないのはなぜ？



大量の経路情報が流れてきたとき
に対応できないんじゃない？

トポロジによれば、不具合が
発生するかもしれないし…



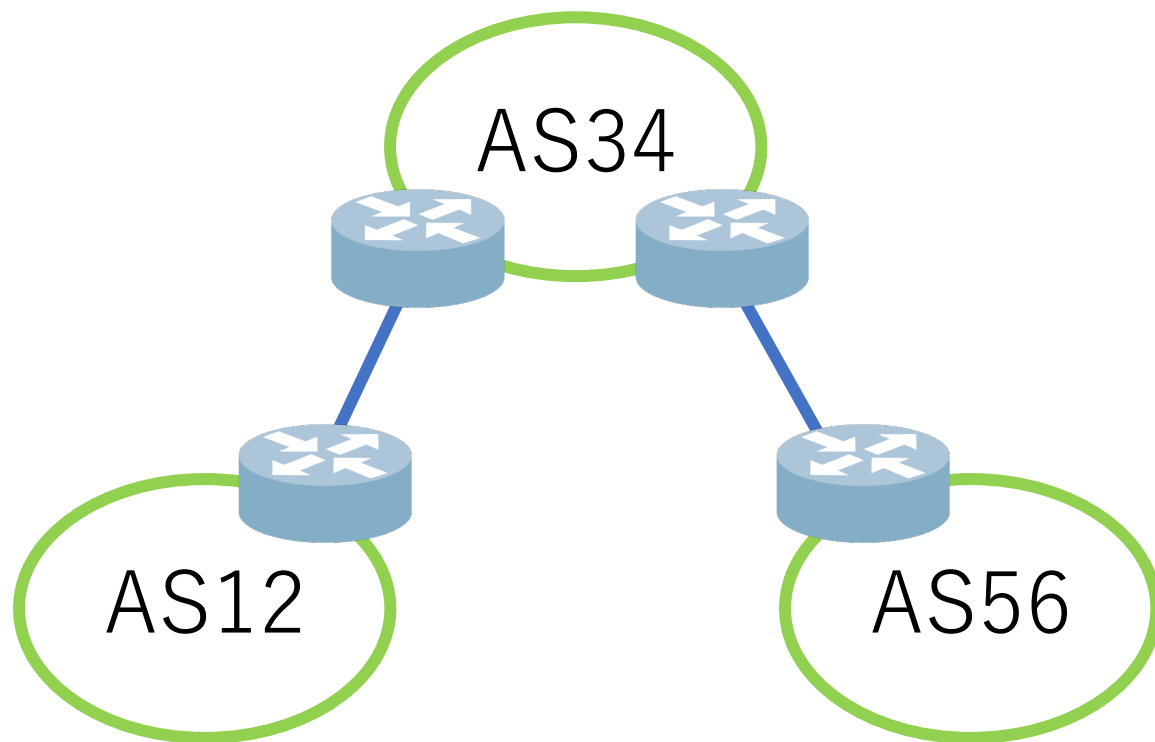
AS管理者の方々

実験評価が足りない

→実験評価プラットフォームSQUABを作りました

※SQUAB…Scalable QUagga-based Automated configuration on Bgp

SQUABのデモをします

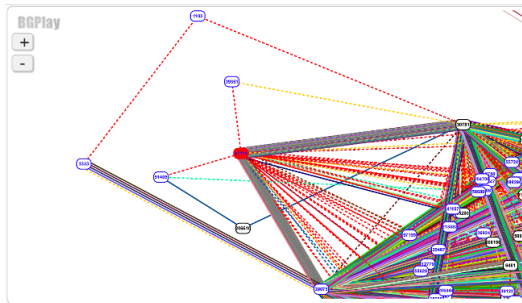


これをつくります

※今回は全てBGPルータ

1. SQUABの設定ファイルを表示
2. Docker上でネットワークを構築
3. 経路情報が行き渡るまで少し待機
4. 全ルータの経路情報を表示

実行の様子



```
AS_Setting:
1103:
  image: quagga
3333:
  image: quagga
29075:
  image: quagga
30781:
  image: quagga
39351:
  image: quagga
51405:
  image: quagga
57119:
  image: quagga
206610:
  image: quagga
Peer-Info:
- [3333, 1103]
- [1103, 30781]
- [30781, 39351]
- [30781, 57119]
- [30781, 206610]
- [57119, 51405]
- [206610, 51405]
- [30781, 29075]
- [57119, 29075]
- [29075, 3333]
```



```
(squab) han9umeda@umedaMacBook-Pro: SQUAB % docker ps
CONTAINER ID   IMAGE      COMMAND                  CREATED        STATUS        PORTS          NAMES
40468320b2f7   quagga    "/bin/bash"             30 seconds ago Up 21 seconds naitway_router_1103_for_3333_1
6995fe10101b   quagga    "/bin/bash"             30 seconds ago Up 23 seconds naitway_router_51405_for_206610_1
204614961329   quagga    "/bin/bash"             30 seconds ago Up 21 seconds naitway_router_30781_for_39351_1
4e3ed104f039   quagga    "/bin/bash"             30 seconds ago Up 21 seconds naitway_router_57119_for_51405_1
c57e1a0d46972   quagga    "/bin/bash"             30 seconds ago Up 21 seconds naitway_router_29075_for_3333_1
c2fe250850f3    quagga    "/bin/bash"             30 seconds ago Up 21 seconds naitway_router_3333_for_1103_1
11f14f6f042f    quagga    "/bin/bash"             30 seconds ago Up 21 seconds naitway_router_29075_for_30781_1
182cb44fe568    quagga    "/bin/bash"             30 seconds ago Up 23 seconds naitway_router_39351_for_30781_1
7bb85e6de395    quagga    "/bin/bash"             30 seconds ago Up 22 seconds naitway_router_30781_for_206610_1
d38b70c142ca    quagga    "/bin/bash"             30 seconds ago Up 21 seconds naitway_router_57119_for_29075_1
785a1c769e56    quagga    "/bin/bash"             30 seconds ago Up 21 seconds naitway_router_3333_for_29075_1
9f4b0d70b947    quagga    "/bin/bash"             30 seconds ago Up 22 seconds naitway_router_206610_for_30781_1
8001a35c4f76    quagga    "/bin/bash"             30 seconds ago Up 22 seconds naitway_router_206610_for_51405_1
884e9bd05a8e    quagga    "/bin/bash"             30 seconds ago Up 22 seconds naitway_router_30781_for_57119_1
71529c50a1ae    quagga    "/bin/bash"             30 seconds ago Up 21 seconds naitway_router_57119_for_30781_1
98916adaba8e    quagga    "/bin/bash"             30 seconds ago Up 21 seconds naitway_router_30781_for_1103_1
636b8bd62dfc    quagga    "/bin/bash"             30 seconds ago Up 22 seconds naitway_router_51405_for_57119_1
7d4c36cadde5    quagga    "/bin/bash"             30 seconds ago Up 21 seconds naitway_router_1103_for_30781_1
9a8120fef2ac    quagga    "/bin/bash"             30 seconds ago Up 21 seconds naitway_router_30781_for_29075_1
a525f0913641    quagga    "/bin/bash"             30 seconds ago Up 21 seconds naitway_router_29075_for_57119_1
9cb660e932a4    quagga    "/bin/bash"             30 seconds ago Up 21 seconds naitway_router_29075_for_57119_1
```



```
bgpd> naitway_router_30781_for_29075_1
spawn telnet localhost 2605
Trying 127.0.0.1...
Connected to localhost.
Escape character is '^J'.

Hello, this is Quagga (version 0.99.22.4).
Copyright 1996-2005 Kunihiro Ishiguro, et al.

User Access Verification

Password:
bgpd> show ip bgp summary
BGP router identifier 10.10.10.12, local AS number 30781
RIB entries 15, using 1680 bytes of memory
Peers 5, using 22 KiB of memory

Neighbor      V    AS MsgRcvd MsgSent  TblVer  InQ OutQ Up/Down  State/PfxRcd
172.23.158.2  4 30781      7      10      0    0 0 00:03:31      3
172.23.158.3  4 30781      8      9      0    0 0 00:03:32      3
172.23.158.5  4 30781      7      9      0    0 0 00:03:31      2
172.23.158.6  4 30781      8      9      0    0 0 00:03:30      3
172.25.112.2  4 29075     11     14      0    0 0 00:03:29      4

Total number of neighbors 5
bgpd> show ip bgp
BGP table version is 0, local router ID is 10.10.10.12
Status codes: s suppressed, d damped, h history, * valid, > best, i - internal,
               r RIB-failure, S Stale, R Removed
Origin codes: i - IGP, e - EGP, ? - incomplete

   Network        Next Hop        Metric LocPrf Weight Path
* 172.18.86.0/24   172.25.112.2           0 29075 57119 51405 i
* i                172.18.99.2           100   0 206610 51405 i
*> i               172.21.39.3           100   0 57119 51405 i
*> 172.20.21.0/24  172.25.112.2           0   0 29075 i
* 172.22.132.0/24  172.25.112.2           0   0 29075 57119 i
*> i               172.21.39.3           0 100   0 57119 i
*> i172.22.199.0/24 172.24.113.2           0 100   0 1103 i
*> i172.22.254.0/24 172.18.99.2           0 100   0 206610 i
* i               172.23.158.6           0 100   0 i
* i               172.23.158.2           0 100   0 i
* i               172.23.158.5           0 100   0 i
* i               172.23.158.3           0 100   0 i
*>                0.0.0.0               0   32768 i
*> 172.26.217.0/24  172.25.112.2           0 29075 3333 i
* i               172.24.113.2           100   0 1103 3333 i
*> i172.27.167.0/24 172.24.98.2           0 100   0 39351 i

Total number of prefixes 8
```

GitHub

<https://github.com/han9umeda/SQUAB>



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