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OPENBMP - WHAT THE H*CK WAS GOING ON IN MY NETWORK (LIGHTNING TALK)

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■ BGP Monitoring Protocol (RFC 7854)

- **Route Monitoring (RM):** Used to provide an initial dump of all routes received from a peer, as well as an ongoing mechanism that sends the incremental routes advertised and withdrawn by a peer to the monitoring station.
- **Peer Down Notification:** A message sent to indicate that a peering session has gone down with information indicating the reason for the session disconnect.
- **Stats Reports (SR):** An ongoing dump of statistics that can be used by the monitoring station as a high-level indication of the activity going on in the router.
- **Peer Up Notification:** A message sent to indicate that a peering session has come up. The message includes information regarding the data exchanged between the peers in their OPEN messages, as well as information about the peering TCP session itself. In addition to being sent whenever a peer transitions to the Established state, a Peer Up Notification is sent for each peer in the Established state when the BMP session itself comes up.
- **Initiation:** A means for the monitored router to inform the monitoring station of its vendor, software version, and so on.
- **Termination:** A means for the monitored router to inform the monitoring station of why it is closing a BMP session.
- **Route Mirroring:** A means for the monitored router to send verbatim duplicates of messages as received. Can be used to exactly mirror a monitored BGP session. Can also be used to report malformed BGP Protocol Data Units (PDUs).

```
bmp server 1  
host X.X.X.X port 5000  
description snas  
update-source Loopback0  
flapping-delay 120  
initial-delay 300  
stats-reporting-period 300
```

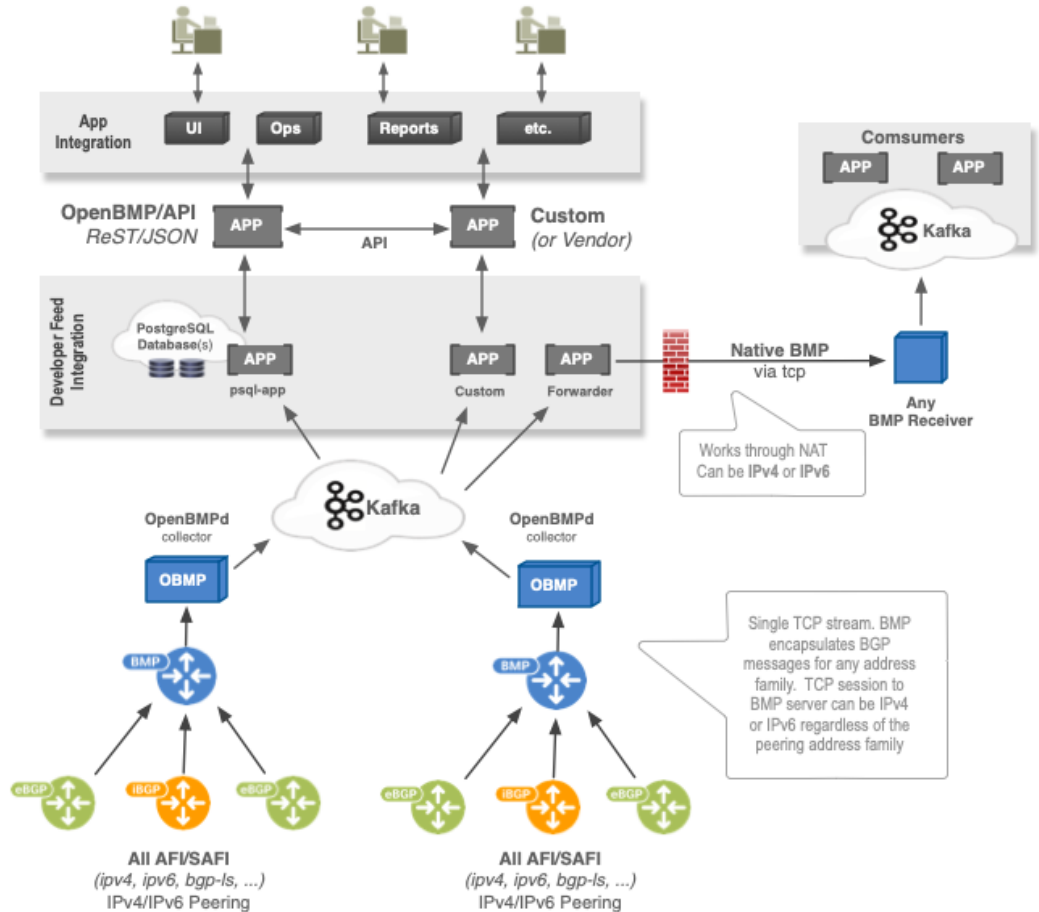
```
router bgp 2852  
neighbor X.X.X.X  
  bmp-activate server 1
```

■ OpenBMP (SNAS)

- <https://www.openbmp.org/>



- <https://github.com/OpenBMP>





OpenBMP

Select a dashboard



Tops

Search

Top by Prefixes
OBMP-Tops ☆

Top L3VPN by Prefixes
OBMP-Tops ☆

Base

Search

ASN View
OBMP-Base ☆

Inventory
OBMP-Base ☆

Looking Glass
OBMP-Base ☆

Prefix History

Search

Prefix History (by ASN)
OBMP-History ☆

Prefix History (by Community)
OBMP-History ☆

Prefix History (by Prefix)
OBMP-History ☆

L3VPN

Search

L3VPN RIB Browser
OBMP-L3VPN ☆

Looking Glass - L3VPN
OBMP-L3VPN ☆

Prefix History (by Prefix) L3VPN
OBMP-L3VPN ☆

Link State

Search

LinkState Topology
OBMP-LinkState ☆

LS Link History
OBMP-LinkState ☆

LS Links
OBMP-LinkState ☆

LS Nodes
OBMP-LinkState ☆

LS Prefixes
OBMP-LinkState ☆



Prefix/IP

8.8.8.8

Router

All ▾

Peer

All ▾

Looking Glass

Enter an IP address with or without bit length. The longest matched prefix will be used. Specify the length to find exact match or best aggregate.



Router Visibility



Value

- In Router Rib 5
- Not in Router Rib 1



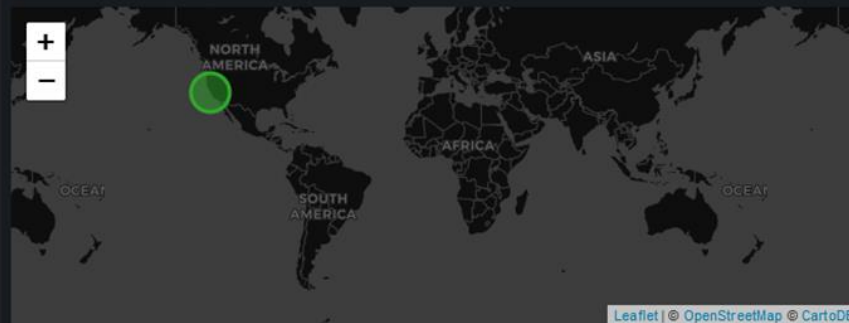
Peer Visibility



Value

- Not in Peers Rib 21
- In Peer Rib 11

Prefix Location



ASN Info

origin_as ▾	as_name	org_id	org_name	remarks	address	city	state_prov	country	raw_output	source
15169	Google LLC	574	Google LLC - Google, YouTube (for Google Fiber see AS15169)	https://peering.google.com/#/options/peering This link also has information about our traffic delivery and management practices. Please note: Peers will receive most Google services by peering with AS15169. There are limited metros where video (YouTube) traffic may not be served. Please view the 'Traffic Delivery' section at	1600 Amphitheatre Parkway,	Mountain View	California	US	-	peeringdb

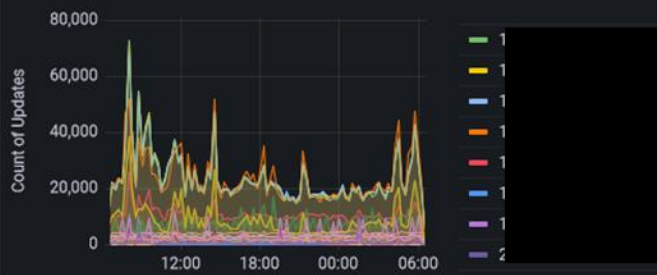
Prefix Info

rcv_origin_as ▾	rpk_origin_as	irr_origin_as	descr	source
15169	15169	15169	Google	radb

Looking Glass

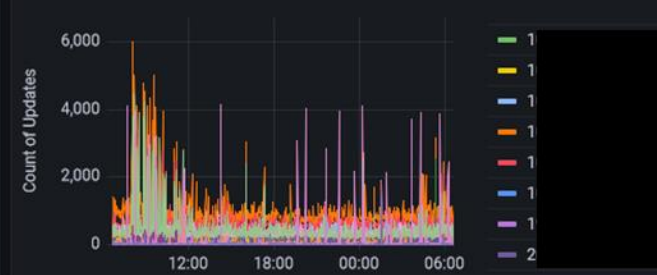
Time ▾	peername ▾	Prefix ▾	Withdrawn ▾	Origin ▾	med ▾	localpref ▾	nh ▾	as_path ▾
2023-02-21 16:15:59.262	10.	8.8.0.0/16	true	132280	0	120	10	{132876,132280,
2023-05-25 11:00:36.659	10.	8.8.8.0/24	true	15169	0	150	10	{21320,15169}
2023-11-13 11:33:03.777	r2-	8.8.8.0/24	false	15169	0	0	19	{15169}

Updates by Peer



Peer	Mean	Max
1	2.29	5
1	23,884.67	72,928
1	24,106.732	69,358
1	23,694.546	52,096
1	10,880.866	25,762
1	1,680.402	11,079
1	316.67	5,214
2	7,646.515	16,985

Withdraws by Peer



Peer	Mean	Max
1	1.22	4
1	489.299	3,228
1	548.844	3,490
1	1,023.858	6,005
1	707.674	3,761
1	166.599	3,470
1	29.278	1,292
2	62.017	2,525

Top Updates by ASN

AS Name	asn	Updates
Pittqiao Network Information Co.	131642	3,478,625
Flō Networks	32098	467,042
EDGECAST	14210	419,315
National Internet Backbone India	9829	384,563
TCI	58224	321,660
Alchemy Communications, Inc.	7296	295,021

Top Withdraws by ASN

as_name	asn	Withdraws
Pittqiao Network Information Co.	131642	1,441,820
Red de Interconexión Universitaria	4270	70,346
Amazon.com	16509	61,164
National Internet Backbone India	9829	55,200
Alchemy Communications, Inc.	7296	53,569
TCI	58224	48,781

Top Prefix Updates

AS Name	Desc	origin_as	prefix
		0	2806:20d:3600::/40
Flō Networks		32098	2806:20d:3600::/40
	Edgecast Networks - NGB	0	2600:40fc:1004::/48
EDGECAST	Edgecast Networks - NGB	14210	2600:40fc:1004::/48
Lepida AS31638		31638	45.141.231.0/24

Top Prefix Withdraws

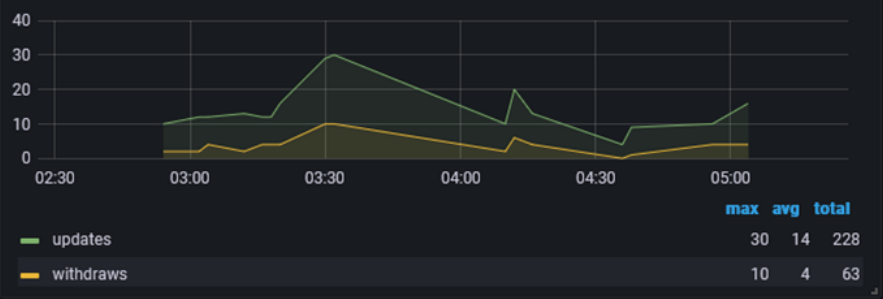
AS Name	Desc	origin_as	prefix
		0	2401:29e0::/32
Pittqiao Network ...	Customer Route - LOA p...	131642	2401:29e0::/32
		0	2401:2720::/32
Pittqiao Network ...	Customer Route - LOA p...	131642	2401:2720::/32
		0	2401:4f20::/32

Router: R1 + R2a + R2b + R3 | Peer: [Redacted] | Limit: 1000 | Prefix: 195.177.202.0/23

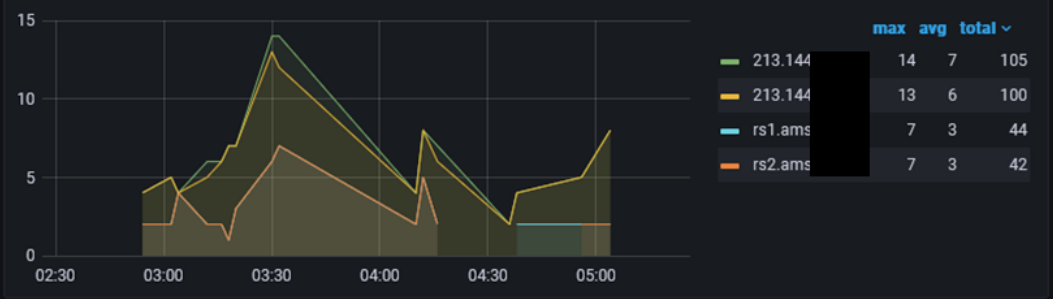
Current RIB State

lastmodified	state	routename	peername	prefix	prefixlen	origin_as	med	localpre	nh	as_path	communities
2024-01-16 19:39:24.642	Withdrawn	R2b	cesne [Redacted]	195.177.202.0/23	23	1770	0	0	83.97. [Redacted]	{21320,2603,12552,3...}	{2603:302,2603:6485...}
2024-01-23 05:25:47.538	Active	R2a	213.14 [Redacted]	195.177.202.0/23	23	1770	100	0	213.14 [Redacted]	{6762,1299,2116,1770}	{6762:30,6762:14900}
2024-01-23 05:25:53.252	Active	R2b	rs2.am [Redacted]	195.177.202.0/23	23	1770	0	0	80.249 [Redacted]	{12552,2116,1770}	{}
2024-01-23 05:25:47.538	Active	R2a	213.14 [Redacted]	195.177.202.0/23	23	1770	100	0	213.14 [Redacted]	{6762,1299,2116,1770}	{6762:30,6762:14900}

Prefix Advertisements & Withdrawals



Changes by Peer



Prefix History

Last Modified	event	routel	peername	prefix	nh	origir	as_path	communities	loc	med
2024-01-23 05:25:53.255	Advertised	R2b	rs1.am [Redacted]	195.177.202.0/23	80.249 [Redacted]	1770	{12552,2116,1770}	{}	0	0
2024-01-23 05:25:53.252	Advertised	R2b	rs2.am [Redacted]	195.177.202.0/23	80.249 [Redacted]	1770	{12552,2116,1770}	{}	0	0
2024-01-23 05:25:49.267	Advertised	R2b	rs1.am [Redacted]	195.177.202.0/23	80.249 [Redacted]	1770	{12552,31027,2116,1770}	{}	0	0
2024-01-23 05:25:49.263	Advertised	R2b	rs2.am [Redacted]	195.177.202.0/23	80.249 [Redacted]	1770	{12552,31027,2116,1770}	{}	0	0
2024-01-23 05:25:47.538	Advertised	R2a	213.14 [Redacted]	195.177.202.0/23	213.14 [Redacted]	1770	{6762,1299,2116,1770}	{6762:30,6762:14900}	0	100
2024-01-23 05:25:47.538	Advertised	R2a	213.14 [Redacted]	195.177.202.0/23	213.14 [Redacted]	1770	{6762,1299,2116,1770}	{6762:30,6762:14900}	0	100
2024-01-23 05:25:24.735	Withdrawn	R2a	213.14 [Redacted]	195.177.202.0/23	213.14 [Redacted]	1770	{6762,3256,2116,1770}	{6762:30,6762:14900}	0	100


```
ee15b67f18 7fee15b5ee7b 7fee15b3bb22 7fee15b3b8ea 56449c04b110 56449c04a3d5
2024 Jan 20 12:31:16.245 CET: ipv6_rib[1264]: %ROUTING-FIB-3-ASSERT_RL : FIB internal inconsistency detected: upd msg enco
de 6035 Requested 8144 bytes of data, <<<more info in 'show logging'>>> : ipv6_rib : (PID=7314) : -Traceback= 7fb90bab69
26 7fb90bcc2eb3 7fb90bcc2fd6 7fb91b8b8348 5558fe26e759 5558fe26640b 5558fe263c99 5558fe28dae0 5558fe27282a 7fb91daca46c 7f
b91dad3f18 7fb91daca7b 7fb91daa7b22 7fb91daa826b
2024 Jan 20 12:31:16.247 CET: ipv6_rib[1278]: %ROUTING-FIB-3-ASSERT_RL : FIB internal inconsistency detected: upd msg enco
de 6035 Requested 8144 bytes of data, <<<more info in 'show logging'>>> : ipv6_rib : (PID=8071) : -Traceback= 7f81811709
26 7f818137ceb3 7f818137cfd6 7f8190f72348 5580452b3759 5580452ab40b 5580452a8c99 5580452d2ae0 5580452b782a 7f819318446c 7f
819318df18 7f8193184e7b 7f8193161b22 7f819316226b
2024 Jan 20 12:31:16.248 CET: ipv6_rib[1278]: %ROUTING-FIB-3-ASSERT_RL : FIB internal inconsistency detected: upd msg enco
de 6035 Requested 8144 bytes of data, <<<more info in 'show logging'>>> : ipv6_rib : (PID=7951) : -Traceback= 7f374169a9
26 7f37418a6eb3 7f37418a6fd6 7f375149c348 5587b8948759 5587b894040b 5587b893dc99 5587b8967ae0 5587b894c82a 7f37536ae46c 7f
37536b7f18 7f37536aee7b 7f375368bb22 7f375368c26b
2024 Jan 20 12:31:16.249 CET: ipv6_rib[1264]: %ROUTING-FIB-3-ASSERT_RL : FIB internal inconsistency detected: upd msg enco
de 6035 Requested 8144 bytes of data, <<<more info in 'show logging'>>> : ipv6_rib : (PID=7943) : -Traceback= 7ff1b59f99
26 7ff1b5c05eb3 7ff1b5c05fd6 7ff1c57fb348 561190180759 56119017840b 561190175c99 56119019fae0 56119018482a 7ff1c7a0d46c 7f
f1c7a16f18 7ff1c7a0de7b 7ff1c79eab22 7ff1c79eb26b
2024 Jan 20 12:31:16.248 CET: ipv6_rib[1264]: %ROUTING-FIB-3-ASSERT_RL : FIB internal inconsistency detected: upd msg enco
de 6035 Requested 8144 bytes of data, <<<more info in 'show logging'>>> : ipv6_rib : (PID=7348) : -Traceback= 7fe94bbdb9
26 7fe94bde7eb3 7fe94bde7fd6 7fe95b9dd348 55ba55f48759 55ba55f4040b 55ba55f3dc99 55ba55f67ae0 55ba55f4c82a 7fe95dbef46c 7f
e95dbf8f18 7fe95dbefe7b 7fe95dbccb22 7fe95dbcd26b
2024 Jan 20 12:31:16.247 CET: ipv6_rib[1264]: %ROUTING-FIB-3-ASSERT_RL : FIB internal inconsistency detected: upd msg enco
de 6035 Requested 8144 bytes of data, <<<more info in 'show logging'>>> : ipv6_rib : (PID=7297) : -Traceback= 7faf013eb9
26 7faf015f7eb3 7faf015f7fd6 7faf111ed348 56020544e759 56020544640b 560205443c99 56020546dae0 56020545282a 7faf133ff46c 7f
af13408f18 7faf133ffe7b 7faf133dcb22 7faf133dd26b
2024 Jan 20 12:31:16.251 CET: ipv6_rib[1266]: %ROUTING-FIB-3-ASSERT_RL : FIB internal inconsistency detected: upd msg enco
de 6035 Requested 8144 bytes of data, <<<more info in 'show logging'>>> : ipv6_rib : (PID=7940) : -Traceback= 7fbadb33f9
26 7fbadb54beb3 7fbadb54bfd6 7fbaeb141348 560a30201759 560a301f940b 560a301f6c99 560a30220ae0 560a3020582a 7fbaed35346c 7f
baed35cf18 7fbaed353e7b 7fbaed330b22 7fbaed33126b
2024 Jan 20 12:31:16.252 CET: ipv6_rib[1266]: %ROUTING-FIB-3-ASSERT_RL : FIB internal inconsistency detected: upd msg enco
de 6035 Requested 8144 bytes of data, <<<more info in 'show logging'>>> : ipv6_rib : (PID=7439) : -Traceback= 7f308edbb9
26 7f308efc7eb3 7f308efc7fd6 7f309ebbd348 5601d344f759 5601d344740b 5601d3444c99 5601d346eae0 5601d345382a 7f30a0dcf46c 7f
30a0dd8f18 7f30a0dcfe7b 7f30a0dacb22 7f30a0dad26b
2024 Jan 20 12:31:16.254 CET: ipv6_rib[1266]: %ROUTING-FIB-3-ASSERT_RL : FIB internal inconsistency detected: upd msg enco
de 6035 Requested 8144 bytes of data, <<<more info in 'show logging'>>> : ipv6_rib : (PID=7365) : -Traceback= 7fb4087cb9
26 7fb4089d7eb3 7fb4089d7fd6 7fb4185cd348 563de605d759 563de605540b 563de6052c99 563de607cae0 563de606182a 7fb41a7df46c 7f
b41a7e8f18 7fb41a7dfe7b 7fb41a7bcb22 7fb41a7bc8ea 563de6024110 563de60233d5
```



```
router bgp 2852  
  address-family link-state link-state  
  neighbor X.X.X.X  
  address-family link-state link-state  
  soft-reconfiguration inbound always
```

```
router isis XX  
  distribute link-state
```



BGP Peer ▾



State

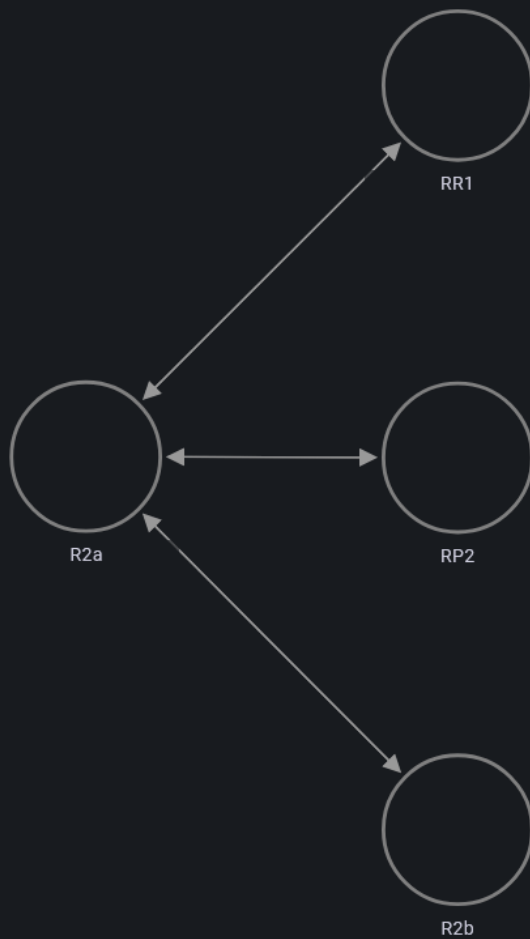
Active ▾

Node

R2a ▾



Topology



cesnet
"...."

THAT IS ALL FOLKS!

