

The RouteViews Project: Update

*Philip Smith
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Christchurch, New Zealand*



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Background

- **RouteViews was first started in 1995**
- Now a growing network of 40+ collectors positioned strategically at Internet Exchange Points around the world
- RouteViews collaborates with the Center for Applied Internet Data Analysis (CAIDA) working with NSF grants that support Designing a Global Measurement Infrastructure to Improve Internet Security, GMI3S ([OAC-2131987](#)), and an Integrated Library for Advancing Network Data Science, ILANDS ([CNS-2120399](#)).
- RouteViews is supported with financial and in-kind donations by multiple organizations
- **RouteViews is based at the University of Oregon and operated by NSRC**
- NSRC supports the growth of global Internet infrastructure by providing engineering assistance, collaborative technical workshops, training, and other resources to university, research & education networks worldwide.
- NSRC is partially funded by the IRNC program of the NSF ([OAC-2029309](#)) and Google with other contributions from public and private organizations.
- The University of Oregon is a public research institution in Eugene, Oregon, USA founded in 1876.



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RouteViews Team Members

Hans Kuhn



Nina Bargisen

Owen Conway



Philip Smith

Philip Paeps



Anton Berezin



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What is RouteViews

- A tool that allows Internet network operators to look at the BGP table from different backbones and locations around the world to troubleshoot and to assess:
 - Reachability, hijacks, bugs, peer visibility, mass withdrawals, RPKI status,...
- Operators who find it a valuable tool also peer to contribute to the value
- RouteViews operates collectors strategically positioned at IXPs around the world.
 - It also hosts a few multi-hop collectors at UO for those operators who are not present at IXPs.



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What is RouteViews

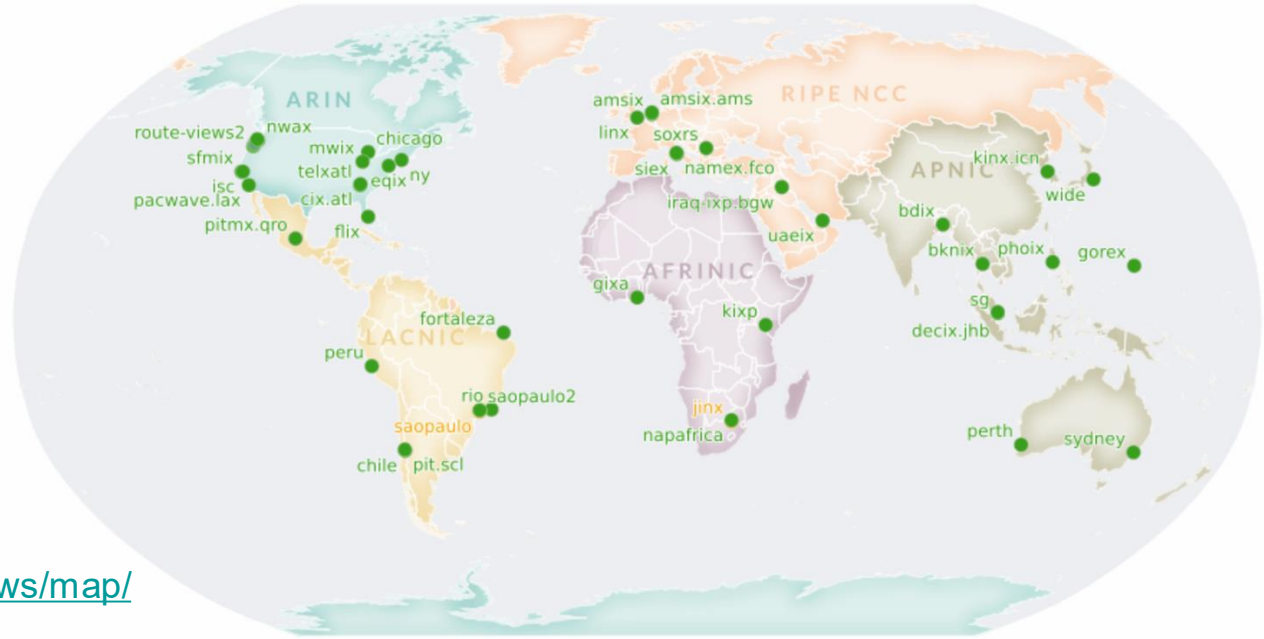
- Many free and commercial tools used by network engineers every day include data from RouteViews
 - CAIDA ASRANK
 - CAIDA BGP Reader
 - HE BGP Tools
 - Kentik Market Intelligence
 - Kentik BGP monitoring
 - Catchpoint
 - BGPMon
 - And many more



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RouteViews Collector Map



<https://www.routeviews.org/routeviews/map/>

Note: Outdated map – modernised version will be released soon

Currently 55 collectors

Map doesn't show locix.fra, crix.sjo, decix.fra, getafix.mnl, netnod.mmh, interlan.otp, hkix.hkg, iix.cgk, ixpn.los

Map filter: **Peers by region** | Peer count | RIB count

Search collectors by name or IP Maintain filters during search

48
of 48 collectors visible

Installed date

From:

To:

Type of collector

FRR	45
Quagga	2
Cisco	1

Number of collectors

IP all v4 only v6 avail

RPKI all false true

Scamper all false true

BMP all false true

Multihop all false true

Collectors by RIR region

ARIN	19
APNIC	9
LACNIC	8
RIPE NCC	8
AFRINIC	4

Number of collectors

Toggle regions

Interactive map created by UO InfoGraphics Lab
Powered by CARTO | HighCharts | Leaflet

What's happening at RouteViews

ROUTEVIEWS NEWS



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RouteViews News

- Collectors:
 - All software collectors use FRR¹ (version 10.5.1 where possible)
 - One Cisco ASR1004 (as a tribute to the original!)
 - Moving collectors from metal to VMs (easier deployment & management)
- Location update:
 - Most recent additions include Jakarta (IIX), San Jose (CRIX), Lagos (IXPN), Hong Kong (HKIX) and Frankfurt (DE-CIX & LOCIX)

¹FRRouting Project: <https://frrouting.org/>



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RouteViews Development Projects: API

- API allows programmatic access to live RouteViews data
 - (our collectors currently allow **telnet** access, which 1000s of automated scripts hammer daily)
- Two access levels:
 - Unauthenticated for casual (infrequent queries)
 - Authenticated access (using verified PeeringDB users) for more serious research
- API currently supports ten collectors
 - More will be added as resources become available
- Please consult the docs on how to use the API
 - <https://api.routeviews.org/docs/>

Exchange	collector
AMS-IX Amsterdam, Netherlands	route-views.amsix.routeviews.org
LINX, London, United Kingdom	route-views.linx.routeviews.org
NAPAfrica, Johannesburg, South Africa	route-views.napafrika.routeviews.org
Equinix SG1, Singapore, Singapore	route-views.sg.routeviews.org
Equinix SYD1, Sydney, Australia	route-views.sydney.routeviews.org
SAOPAULO (PTT Metro, NIC.br), Sao Paulo, Brazil	route-views2.saopaulo.routeviews.org
Multi-hop at U of Oregon	route-views3.routeviews.org
Multi-hop at U of Oregon	route-views4.routeviews.org
Multi-hop at U of Oregon	route-views5.routeviews.org
Multi-hop at U of Oregon	route-views6.routeviews.org



RouteViews Development Projects: LG

- **telnet** access is unsustainable
 - Gives open access to the collector command line interface to run “show” commands
- Looking Glass will soon become the default access for each collector
 - Permits the most commonly used BGP diagnostic commands
 - **telnet** remains available on route-views.routeviews.org (the Cisco ASR1004) for legacy access
- Looking Glass can be found on <https://lg.routeviews.org/lg/>
 - **telnet** access will be removed after due notice to the community



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TYPE OF QUERY	ADDITIONAL PARAMETERS
<input checked="" type="radio"/> bgp	<input type="text"/>
<input type="radio"/> bgp regexp	
<input type="radio"/> rpk prefix	
<input type="radio"/> rpk ASN	
IPv4	
<input type="button" value="Submit"/> <input type="button" value="Reset"/>	

Questions? See our [blog post](#) for some Looking Glass use examples

route-views.eqix

Atlanta, Georgia (CIX-ATL)

cix.atl

San José, Costa Rica (CRIX)

crix.sjo

Frankfurt, Germany (DE-CIX Frankfurt)

decix.fra

Manila, Philippines (GetaFIX)

getafix.mnl

Atlanta, Georgia (Digital Realty)

route-views.telxatl

Baghdad, Iraq (IRAQ-IXP)

iraq-ixp.bgw

Malmö, Sweden (Netnod Stockholm/Copenhagen)

netnod.mmx

Bangkok, Thailand (BKNIX)

route-views.bknix

Belgrade, Serbia (SOX Serbia)

route-views.soxrs

Bucharest, Romania (InterLAN-IX)

interlan.otp

Chicago, Illinois (Equinix CH1)

route-views.chicago

Dhaka, Bangladesh (BDIX)

route-views.bdix

Dubai, United Arab Emirates (UAE-IX)

route-views.uaeix

Fortaleza, Brazil (IX.br (PTT.br) Fortaleza)

route-views.fortaleza

Guam, US Territories (GOREX)

route-views.gorex

Indianapolis, Indiana (FD-IX)

route-views.mwix

Type of Query : BGP
Address family : IPv4
Router : frr
Query parameters: 27.252.232.19
Timestamp : 2026-03-22T00:34:49Z
Command : show bgp ipv4 unicast 27.252.232.19

```
frr.routeviews.org> show bgp ipv4 unicast 27.252.232.19
```

```
BGP routing table entry for 27.252.128.0/17, version 420762484
```

```
Paths: (2 available, best #1, table default)
```

```
Not advertised to any peer
```

```
3582 3701 6939 9500, (aggregated by 9500 10.123.82.8)
```

```
128.223.253.9 from 128.223.253.9 (128.223.253.9)
```

```
Origin IGP, valid, external, atomic-aggregate, multipath, best (Older Path), rpki validation-state: valid
```

```
Community: 0:12989 0:13335 0:15169 0:16276 0:20940 0:22822 0:48641 0:49029 3701:10200 3701:10203 3701:30027 3701:40000
```

```
Last update: Thu Mar 19 07:29:04 2026
```

```
3582 3701 6939 9500, (aggregated by 9500 10.123.82.8)
```

```
128.223.253.10 from 128.223.253.10 (128.223.253.10)
```

```
Origin IGP, valid, external, atomic-aggregate, multipath, rpki validation-state: valid
```

```
Community: 0:12989 0:13335 0:15169 0:16276 0:20940 0:22822 0:48641 0:49029 3701:10200 3701:10203 3701:30027 3701:40000
```

```
Last update: Thu Mar 19 07:29:04 2026
```

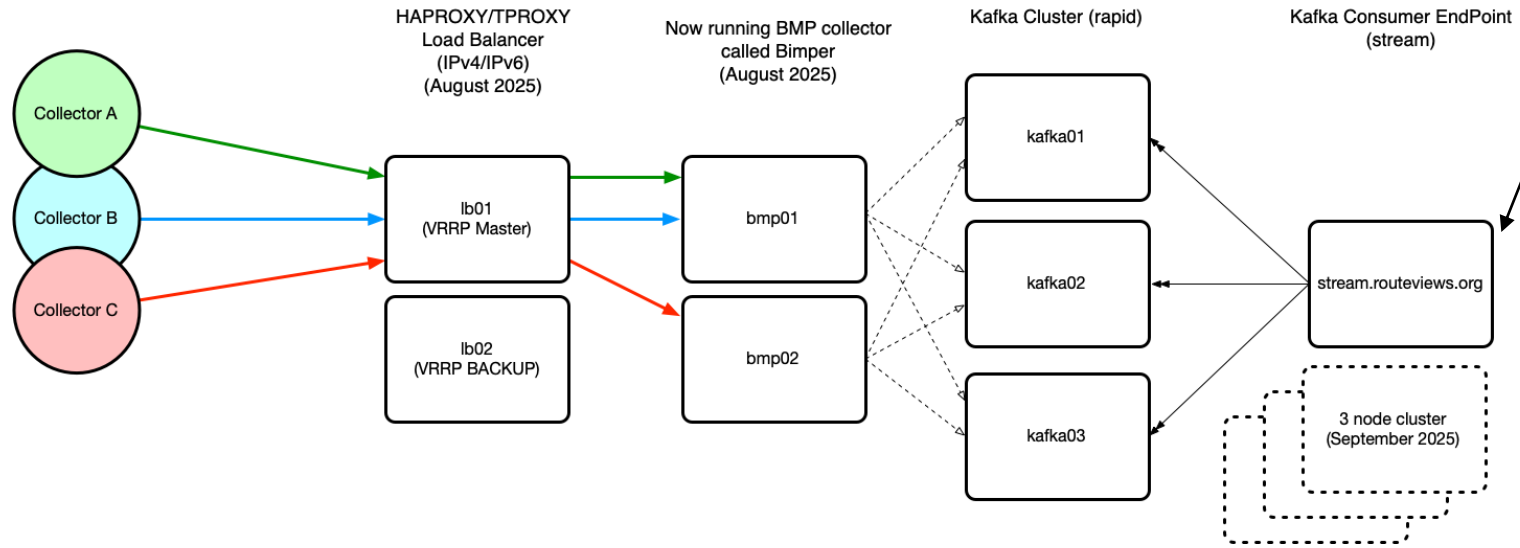
```
Type of Query   : BGP
Address family  : IPv4
Router         : frr
Query parameters: 59.167.0.0/16 longer-prefixes
Timestamp      : 2026-03-22T00:37:48Z
Command        : show bgp ipv4 unicast 59.167.0.0/16 longer-prefixes
```

```
frr.routeviews.org> show bgp ipv4 unicast 59.167.0.0/16 longer-prefixes
BGP table version is 423410869, local router ID is 128.223.51.23, vrf id 0
Default local pref 100, local AS 65123
Status codes:  s suppressed, d damped, h history, u unsorted, * valid, > best, = multipath,
                i internal, r RIB-failure, S Stale, R Removed
Nextthop codes: @NNN nexthop's vrf id, < announce-nh-self
Origin codes:  i - IGP, e - EGP, ? - incomplete
RPKI validation codes: V valid, I invalid, N Not found
```

	Network	Next Hop	Metric	LocPrf	Weight	Path
N*>	59.167.0.0/16	128.223.253.9	0	3582	3701	174 7545 4739 i
N*=		128.223.253.10	0	3582	3701	174 7545 4739 i
N*>	59.167.0.0/17	128.223.253.9	0	3582	3701	174 7545 4739 i
N*=		128.223.253.10	0	3582	3701	174 7545 4739 i
N*>	59.167.0.0/21	128.223.253.9	0	3582	3701	174 7545 4739 i
N*=		128.223.253.10	0	3582	3701	174 7545 4739 i
N*>	59.167.8.0/21	128.223.253.9	0	3582	3701	174 7545 4739 i
N*=		128.223.253.10	0	3582	3701	174 7545 4739 i
N*>	59.167.104.0/21	128.223.253.9	0	3582	3701	174 7545 4739 i
N*=		128.223.253.10	0	3582	3701	174 7545 4739 i
N*>	59.167.160.0/20	128.223.253.9	0	3582	3701	174 7545 4739 i
N*=		128.223.253.10	0	3582	3701	174 7545 4739 i

RouteViews Development Projects: BMP

- Live feed from collectors for BGP data consumers
- Challenge is to make this scale and provide the infrastructure resources to support



RouteViews Development Projects: Bimper

- *Bimper* is a specialised high-performance BGP Monitoring Protocol (BMP) message processor that receives BGP routing data from network routers and forwards it to Kafka for downstream analysis and storage. It provides real-time monitoring of BGP routing events with Prometheus metrics integration for operational visibility.
- The system includes *bimperctl*, a control utility for managing and monitoring *bimper* instances, allowing administrators to interact with the service and view connection status information, and manage router connections
- *Bimper* replaces OpenBMP and *Bimper* messages are compatible with OpenBMP's raw bmp



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RouteViews Behind the Scenes Projects

- Upgrading archive infrastructure and storage
 - RouteViews stores BGP data from 1997 – around 50 TBytes (compressed)
 - <https://archive.routeviews.org/> and <https://archive2.routeviews.org/>
- Tooling
 - Automation tools for managing the whole infrastructure and deploying new peers
- Collector OS (from CentOS to Ubuntu)
 - CentOS end-of-life – a few collectors still running CentOS
- FRR performance
 - Tuning Linux TCP parameters to improve BGP peer performance
 - <https://fasterdata.es.net/host-tuning/linux/>
 - “Badly behaving peers” (*aka* slow and/or noisy peers)



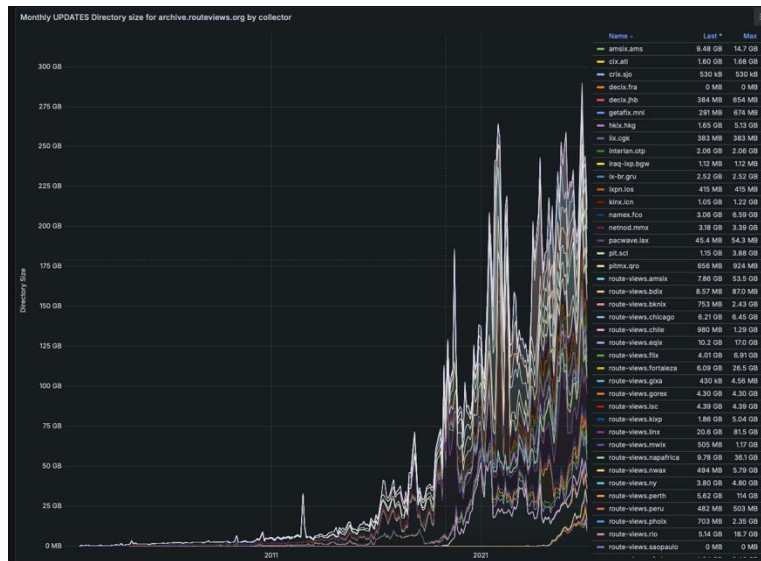
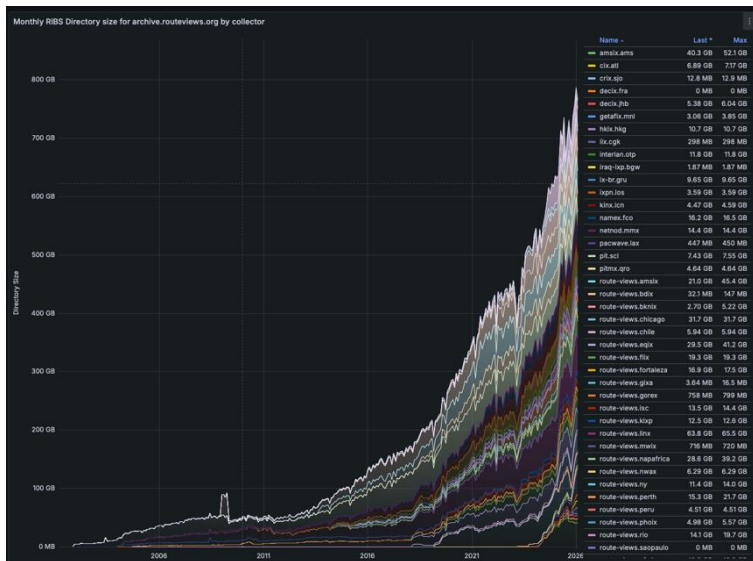
Slow and noisy peers

- *Bimper* enables us to monitor BGP and BMP more closely
- Much time was spent chasing stalled BGP and BMP sessions
- Upgrade to FRR 10.5.1 greatly improved queueing and processing of updates
 - means the live stream platform is much more stable now



Noisy Peer Identification

We've been slowly getting better at Noisy Peer Identification, which helps reduce the noise in our archive



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Noisy Peer Identification

- We've built a relatively simple system which is currently called 'Stampede'
- Utilizes our live streaming service (Kafka RAW BMP)
- Does minute by minute analysis of 40 of our collectors
- Finds Noisiest (per minute):
 - Collectors
 - Peers
 - Prefixes (Announcements / Withdrawals)
 - Single ASN in any ASPATH
 - ASPATH ngrams
 - Communities

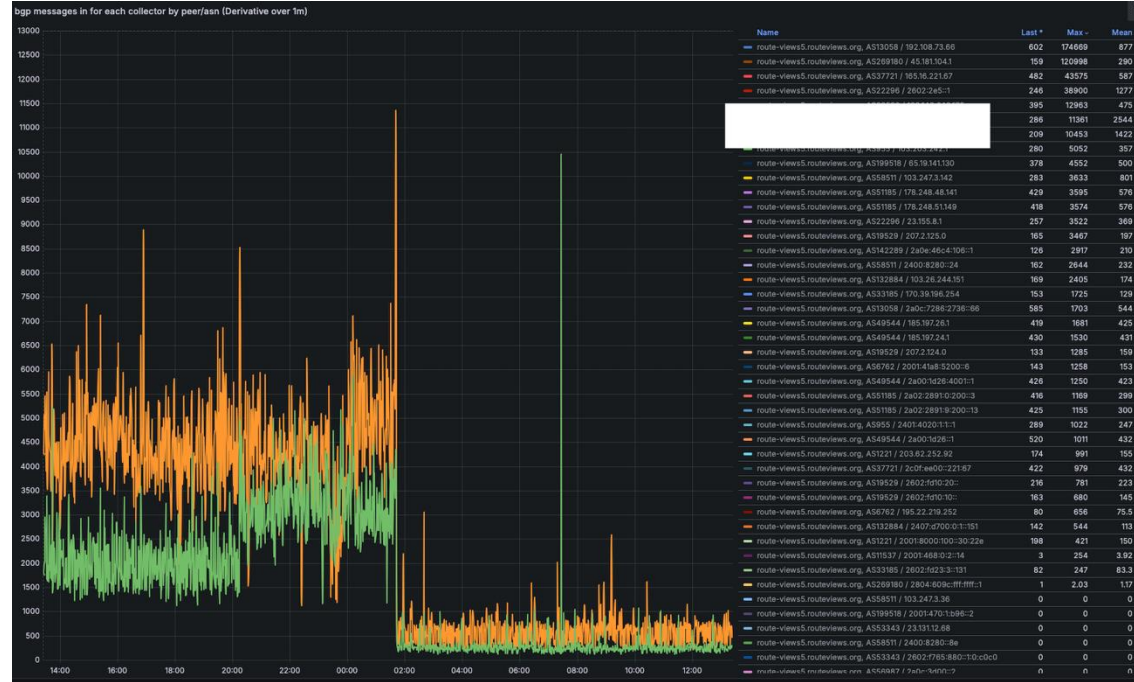


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Noisy Peer Identification

- This and our existing monitoring helps us find noisy peers and work with them to understand what is happening and we've seen real reductions in some cases.



RouteViews Future Planning

- Collectors & hosts in new locations outside North America
 - Large IXPs with dense interconnection
 - Unique or specialist environments (e.g. R&E exchanges)
- Scalable and diverse archiving
- RouteViews Peering Portal
- Improved community support
 - Running this infrastructure costs money!
 - We hugely appreciate our generous supporters
 - <https://www.routeviews.org/routeviews/index.php/supporters/>
- Your recommendations are welcome! 🙏



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For network operators & researchers

USING ROUTEVIEWS



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Using RouteViews

- Network Operators use the live data to analyse how their routes appear on the Global Routing System
- Researchers use the 29-year-old data archive to study trends, route hijacks, and changes such as:
 - Origin change
 - Next-hop change
 - New prefix / more specifics
 - New neighbours
 - Operator ASN appearing in a new transit path
 - Bogons



TYPE OF QUERY	ADDITIONAL PARAMETERS
<input checked="" type="radio"/> bgp	<input type="text" value="summary"/>
<input type="radio"/> bgp regexp	
<input type="radio"/> rpkf prefix	
<input type="radio"/> rpkf ASN	
<input type="text" value="IPv4"/>	
<input type="button" value="Submit"/> <input type="button" value="Reset"/>	

Questions? See our [blog post](#) for some Looking Glass use examples.

San Francisco, California (SFMIX)

route-views.sfmix

Santiago, Chile (NIC.cl)

route-views.chile

Santiago, Chile (PIT Chile Santiago)

pit.scl

São Paulo, Brazil (IX.br (PTT.br) São Paulo)

ix-br2.gru

ix-br.gru

IXPN Lagos, Nigeria (IXPN Lagos)

ixpn.los

Seoul, Korea (KINX)

kinx.icn

Singapore, Singapore (Equinix Singapore)

route-views.sg

Sydney, Australia (Equinix SYD1)

✓ **route-views.sydney**

Tokyo, Japan (DIX-IE)

route-views.wide

Multi-hop 2 (Uni of Oregon)

route-views2

Multi-hop 3 (Uni of Oregon)

route-views3

Multi-hop 4 (Uni of Oregon)

route-views4

Multi-hop 5 (Uni of Oregon)

route-views5

Multi-hop 6 (Uni of Oregon)

route-views6

Multi-hop 7 (Uni of Oregon)

route-views7

Multi-hop 8 (Uni of Oregon)

route-views8

```
Type of Query : BGP
Address family : IPv4
Router : route-views.sydney
Query parameters: summary
Timestamp : 2026-03-25T20:17:53Z
Command : show bgp ipv4 unicast summary
```

30 peers

```
route-views.sydney> show bgp ipv4 unicast summary
BGP router identifier 45.127.172.100, local AS number 6447 VRF default vrf-id 0
BGP table version 77837266
RIB entries 1957896, using 239 MiB of memory
Peers 30, using 705 KiB of memory
```

Neighbor	V	AS	MsgRcvd	MsgSent	TblVer	InQ	OutQ	Up/Down	State/PfxRcd	PfxSnt	Desc
45.127.172.2	4	63956	420619	16835	77837266	0	0	5d20h16m	188904	0	5G Networks
45.127.172.36	4	8075	17203	16835	77837266	0	0	5d20h16m	1098	0	Microsoft
45.127.172.38	4	9266	287781	16835	77837266	0	0	5d20h16m	227736	0	Fiveways
45.127.172.39	4	32934	17123	16835	77837266	0	0	5d20h16m	8	0	Meta
45.127.172.46	4	7575	0	0	0	0	0	never Idle (Admin)	0	0	AARNet
45.127.172.67	4	148968	1041597	8419	77837266	0	0	5d20h16m	1058764	0	Falcore Australia
45.127.172.74	4	4826	1501042	8419	77837266	0	0	5d20h16m	1053847	0	Vocus
45.127.172.78	4	199524	3348831	8419	77837266	0	0	5d20h16m	1043076	0	G-Core Labs
45.127.172.80	4	3491	8419	8419	77837266	0	0	5d20h16m	0	0	PCCW Global
45.127.172.89	4	38195	51725	50499	77837266	0	0	5d20h16m	2586	0	Superloop
45.127.172.102	4	20940	17331	16835	77837266	0	0	5d20h16m	104	0	Akamai
45.127.172.122	4	24115	294817	8567	77837266	0	0	5d20h16m	156923	0	Equinix IX MPLE RS1
45.127.172.123	4	24115	296696	8567	77837266	0	0	5d20h16m	156918	0	Equinix IX MPLE RS2
45.127.172.131	4	16509	20800	16835	77837266	0	0	5d20h16m	913	0	Amazon.com
45.127.172.149	4	58511	0	0	0	0	0	never Idle (Admin)	0	0	Anycast Global
45.127.172.150	4	17766	50533	50499	77837266	0	0	5d20h16m	76	0	NEXON ASIA PACIFIC
45.127.172.152	4	132847	15093831	16835	77837266	0	0	5d20h16m	1033703	0	Network Solutions
45.127.172.154	4	13335	20451	16835	77837266	0	0	5d20h16m	7831	0	Cloudflare
45.127.172.185	4	32590	0	0	0	0	0	never Idle (Admin)	0	0	Valve Corporation
45.127.172.196	4	24516	2908993	16835	77837266	0	0	5d20h16m	1036572	0	Virtutel

Many full tables

IX Route Servers

RouteViews Use Cases: Peering Negotiation

- Understanding your prospects connectivity can be key to a good negotiation
 - Who are the upstreams?
 - Who are the peers?
 - Who are the customers?
- Let's have a look at AS2018 as an example



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Multihop Collector

TYPE OF QUERY		ADDITIONAL PARAMETERS
<input type="radio"/>	bgp	
<input checked="" type="radio"/>	bgp regexp	<input type="text" value="_2018\$"/>
<input type="radio"/>	rpk prefix	
<input type="radio"/>	rpk ASN	
IPv4		

Questions? See our [blog post](#) for some Looking Glass use examples

- ix-br2.gru
- ix-br.gru
- IXPN Lagos, Nigeria (IXPN Lagos)
- ixpn.los
- Seoul, Korea (KINX)
- kinx.icn
- Singapore, Singapore (Equinix Singapore)
- route-views.sg
- Sydney, Australia (Equinix SYD1)
- route-views.sydney
- Tokyo, Japan (DIX-IE)
- route-views.wide
- Multi-hop 2 (Uni of Oregon)
- route-views2
- Multi-hop 3 (Uni of Oregon)
- route-views3
- Multi-hop 4 (Uni of Oregon)
- route-views4
- Multi-hop 5 (Uni of Oregon)
- route-views5
- Multi-hop 6 (Uni of Oregon)
- route-views6
- Multi-hop 7 (Uni of Oregon)
- route-views7
- Multi-hop 8 (Uni of Oregon)
- route-views8

```

Type of Query   : BGP REGEXP
Address family  : IPv4
Router          : route-views2
Query parameters: _2018$
Timestamp      : 2026-03-22T07:36:39Z
Command        : show bgp ipv4 unicast regexp _2018$

```

```
route-views2> show bgp ipv4 unicast regexp _2018$
```

```

BGP table version is 74952570, local router ID is 128.223.51.102, vrf id 0
Default local pref 100, local AS 6447
Status codes: s suppressed, d damped, h history, u unsorted, * valid, > best, = multipath,
               i internal, r RIB-failure, S Stale, R Removed
Nexthop codes: @NNN nexthop's vrf id, < announce-nh-self
Origin codes:  i - IGP, e - EGP, ? - incomplete
RPKI validation codes: V valid, I invalid, N Not found

```

Network	Next Hop	Metric	LocPrf	Weight	Path
N*> 137.214.0.0/16	105.16.0.247				0 37100 2018 i
N*	198.129.33.85	9000			0 293 2018 i
N*	217.192.89.50				0 3303 2018 i
N*	163.253.3.14				0 11537 2018 i
N*	168.209.255.56				0 3741 2018 i
N*	64.71.137.241				0 6939 2018 i
N*	91.218.184.60				0 49788 12552 2018 i
N*	129.250.1.71	29073			0 2914 20080 2018 i
N*	140.192.8.16				0 20130 6939 2018 i
N*	203.181.248.195				0 7660 11537 2018 i
N*	12.0.1.63				0 7018 2914 20080 2018 i
N*	37.139.139.17	0			0 57866 2914 20080 2018 i
N*	202.232.0.3				0 2497 2914 20080 2018 i
N*	137.164.16.84				0 2152 2153 11537 2018 i
N*	89.149.178.10	10			0 3257 174 2018 2018 i
N*	208.51.134.255	0			0 3549 3356 2914 20080 2018 i
N*	147.28.7.2	0			0 3130 174 2914 20080 2018 i
N*	45.61.0.85				0 22652 1299 2914 20080 2018 i
N*	198.58.198.252				0 1403 577 2914 20080 2018 i
N*> 137.214.0.0/17	105.16.0.247				0 37100 2018 i
N*	198.129.33.85	9000			0 293 2018 i
N*	217.192.89.50				0 3303 2018 i

Connected ASNs

Tier 1 Transit

Local Collector

TYPE OF QUERY	ADDITIONAL PARAMETERS
<input type="radio"/> bgp	
<input checked="" type="radio"/> bgp regexp	<input type="text" value="^2018_[0-9]+\$"/>
<input type="radio"/> rpk prefix	
<input type="radio"/> rpk ASN	
IPv4	
<input type="button" value="Submit"/> <input type="button" value="Reset"/>	

Questions? See our [blog post](#) for some Looking Glass use examples

interian.otp
Chicago, Illinois (Equinix CH1)
route-views.chicago
Dhaka, Bangladesh (BDIX)
route-views.bdix
Dubai, United Arab Emirates (UAE-IX)
route-views.uaeix
Fortaleza, Brazil (IX.br (PTT.br) Fortaleza)
route-views.fortaleza
Guam, US Territories (GOREX)
route-views.gorex
Indianapolis, Indiana (FD-IX)
route-views.mwix
Johannesburg, South Africa (NAPAfrica)
 route-views.napafrika
Johor Bahru, Malaysia (DE-CIX Malaysia)
decix.jhb
Hong Kong, Hong Kong (HKIX)
hkix.hkg
Jakarta, Indonesia (IIX-Jakarta)
iix.cgk
Lima, Peru (Peru IX)
route-views.peru
London, United Kingdom (LINX)
route-views.linx
Los Angeles, California (Pacific Wave)
pacwave.lax
Miami, Florida (FL-IX)
route-views.flix
Nairobi, Kenya (KIXP)
route-views.kixp
New York, NY (DE-CIX New York)
route-views.ny
Palo Alto, California (PAIX)

Type of Query : BGP REGEXP
Address family : IPv4
Router : route-views.napafrika
Query parameters: ^2018_[0-9]+\$
Timestamp : 2026-03-22T07:41:37Z
Command : show bgp ipv4 unicast regexp ^2018_[0-9]+\$

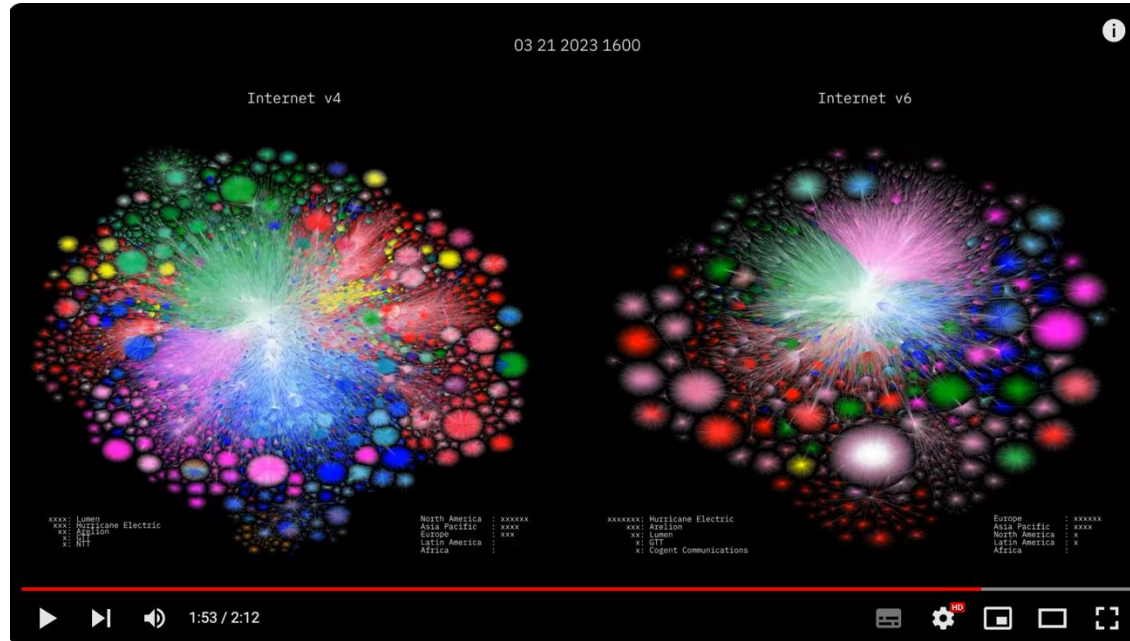
```
route-views.napafrika> show bgp ipv4 unicast regexp ^2018_[0-9]+$  
BGP table version is 582655864, local router ID is 196.60.9.68, vrf id 0  
Default local pref 100, local AS 6447  
Status codes: s suppressed, d damped, h history, u unsorted, * valid, > best, = multipath,  
i internal, r RIB-failure, S Stale, R Removed  
Nexthop codes: @NNN nexthop's vrf id, < announce-nh-self  
Origin codes: i - IGP, e - EGP, ? - incomplete  
RPKI validation codes: V valid, I invalid, N Not found
```

	Network	Next Hop	Metric	LocPrf	Weight	Path
V*>	41.74.144.0/23	196.60.8.216	0	2018	329522	i
V*		196.60.8.216	0	2018	329522	i
V*		196.60.8.216	0	2018	329522	i
V*>	41.74.146.0/23	196.60.8.216	0	2018	329522	i
V*		196.60.8.216	0	2018	329522	i
V*		196.60.8.216	0	2018	329522	i
V*>	41.74.156.0/23	196.60.8.216	0	2018	329522	i
V*		196.60.8.216	0	2018	329522	i
V*		196.60.8.216	0	2018	329522	i
V*>	41.74.158.0/23	196.60.8.216	0	2018	329522	i
V*		196.60.8.216	0	2018	329522	i
V*		196.60.8.216	0	2018	329522	i
N*>	137.158.0.0/16	196.60.8.216	0	2018	36982	i
N*		196.60.8.216	0	2018	36982	i
N*		196.60.8.216	0	2018	36982	i
N*>	143.160.0.0/24	196.60.8.216	0	2018	8094	i



downstream ASNs

RouteViews Impact



Barrett Lyon:

<https://www.youtube.com/watch?v=vo5glK9czIE>



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Consumers of RouteViews data

If you use RouteViews data for your products or services:

- Please acknowledge the source!
 - Your product or service likely would not work without our data!
- Please do *NOT* send your customers of your products or services to us for technical support:
 - We simply collect what is seen in the global routing table
 - We cannot fix mistakes made by network operators
 - We cannot fix bugs in BGP implementations
 - We cannot remove BGP announcements we receive
 - We cannot change what is seen in the global routing table



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For Peering Coordinators

PEERING WITH ROUTEVIEWS



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Peering with RouteViews

- RouteViews has a Selective peering policy
 - PeeringDB: <https://www.peeringdb.com/asn/6447>
- We require all peers to have a PeeringDB entry
 - Our tools build peering options (for IXP based collectors) and configurations from PeeringDB
- Peering:
 - Over IPv4 (for IPv4 prefixes) and IPv6 (for IPv6 prefixes)
 - We want to receive the entire BGP table (if operationally possible)
 - We do not send you any prefixes (please don't ask)



Peering with RouteViews: General Requirements

- Peer must operate stable equipment
 - RouteViews will shutdown BGP sessions that impact the stability of the RouteViews platform
- Peer must have a public routable ASN
- Peer must not be a hobby network
- Peer's full view of the global routing table is preferred
- Routes should be aggregated as much as possible
 - (no longer than /24 for IPv4 and /48 for IPv6)
- Peer must have up-to-date information in PeeringDB, including the NOC email address
- Peer must filter RFC6890 space and must not send default routes
- RouteViews does not accept addpath-RX or TX



Peering with RouteViews: IXP & Multihop

IXP Peering

- We happily accept everyone's routes from the route servers.
- We will set up bilateral sessions with anyone who meets the general requirements and will send us their full table.
- We will peer at all mutual exchanges if requested.

Multihop Peering

- We will accept multihop peers who are not on any mutual IXPs.
- Peers must provide their full view of the Internet as they see it.
- We accept two sessions for redundancy; more than two sessions can be set up if the feeds are sufficiently different.



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Why a Selective Peering policy?

- Balancing operational overhead, scale and information from the data
- Hobby Networks
- Full View of the Internet
- What makes a peering interesting?
 - Networks in regions where we have limited visibility
 - Networks demonstrating new interconnection patterns
 - Networks using innovative routing practices
 - Networks that help us understand emerging market dynamics
 - Or maybe something we haven't thought about yet



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For potential hosts of collectors

HOSTING ROUTEVIEWS



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Hosting RouteViews

- RouteViews is interested in new locations
 - Especially in regions or economies we have no collector
 - Where there are IXPs with large numbers of peers (>100)
- Hosting a RouteViews collector
 - Hosts can be IXPs themselves
 - Hosts can be members of IXPs
 - Hosts sponsor the IXP port and the (~10Mbps) transit required
 - Hosts sponsor the VM needed for the collector
 - Physical hardware is less preferred due to being harder to manage
 - VMs sometimes may not be possible due to operational requirements



Collector Specifications

- Virtual Machine:
 - 16GB RAM min (prefer 32GB)
 - 50GB disk for OS, 100GB disk for storage
 - 4 vCPUs
 - 1 transit interface (management and public CLI access, low traffic)
 - 1 peering interface on the IX
- Physical Hardware:
 - 32GB – 64GB RAM
 - 400GB – 1TB SSD
 - 4+ CPUs
 - Ethernet port for transit interface (1Gbps is enough)
 - Ethernet port for IX peering (10Gbps is the standard now)



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Collector Software

- Ubuntu 24.04 is RouteViews standard OS
 - We require a minimal Ubuntu Server install
 - Our deployment scripts do the rest
- Routing daemon we install is FRR
 - MRT¹ used for BGP RIBs (archived every 2 hours) and BGP updates (archived every 15 minutes)

¹ Multi-Threaded Routing Toolkit: <https://datatracker.ietf.org/doc/html/rfc6396>



Collector Host

- Acknowledged on RouteViews website as a sponsor
- Contact details kept up to date with RouteViews team
 - An up-to-date PeeringDB entry helps 😊



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How you can help

SUPPORTING ROUTEVIEWS



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Supporting RouteViews

- The project was started in 1995 because network operators wished to see what their BGP announcements looked like from an external viewpoint
 - Thousands of network operators & researchers all around the world now rely on RouteViews
 - Many everyday tools we all rely on use RouteViews data
 - Many commercial products and services rely on RouteViews data



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Supporting RouteViews

Please consider supporting RouteViews:

- By peering with one of our collectors
- By publicly acknowledging the value of the information we have collected
 - For citations, our DOI is *10.7264/1y7v-2d90*
- If your product or service is commercially successful, we look forward to receiving your support to keep your product or service that way!
- In any other way that helps keep this community service going



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Thank you!

