

# The RouteViews Project:

*Nina Bargisen*

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# RouteViews

- **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/>

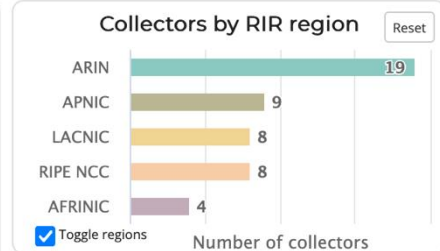
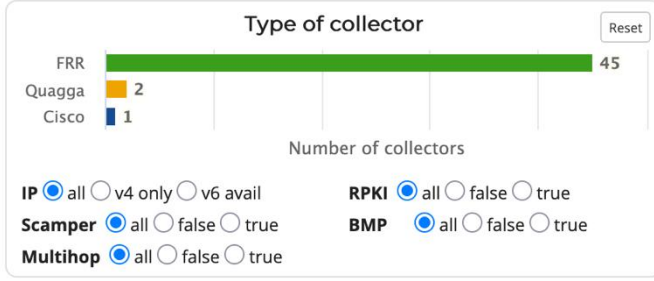
**TO BE Updated**

Map filters: 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:



RouteViews Data

# ROUTEVIEWS STATISTICS

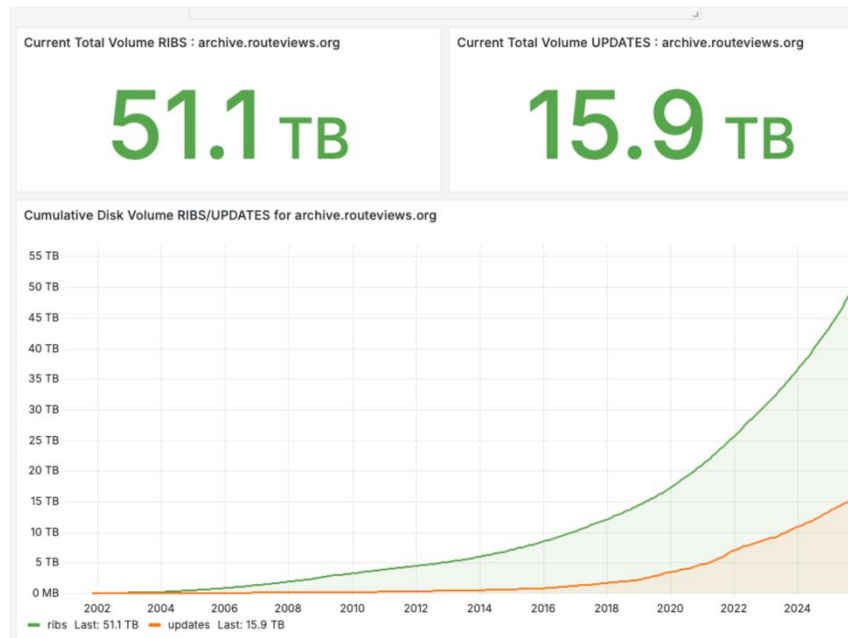


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# Route Views Numbers of 2025

- Snapshots of BGP Internet routing data every 2 hours in the form of the collectors (RIBS)
- continuous updates at 15 minute intervals (UPDATES).
- We are present at 67 exchanges (dec 2025) and have 8 multihop collectors.
- We also take a post-policy BMP feed from each collector and process this as live data, available to anyone with a kafka consumer and the format of this data is raw bmp data. As the data is considered live we only keep 96 hours of data at any one time in kafka
- We derive prefix / asn data which we provide DNS records for public resolution of IP->ASN resolution. All publicly available over DNS.



# Route Views Numbers of 2025

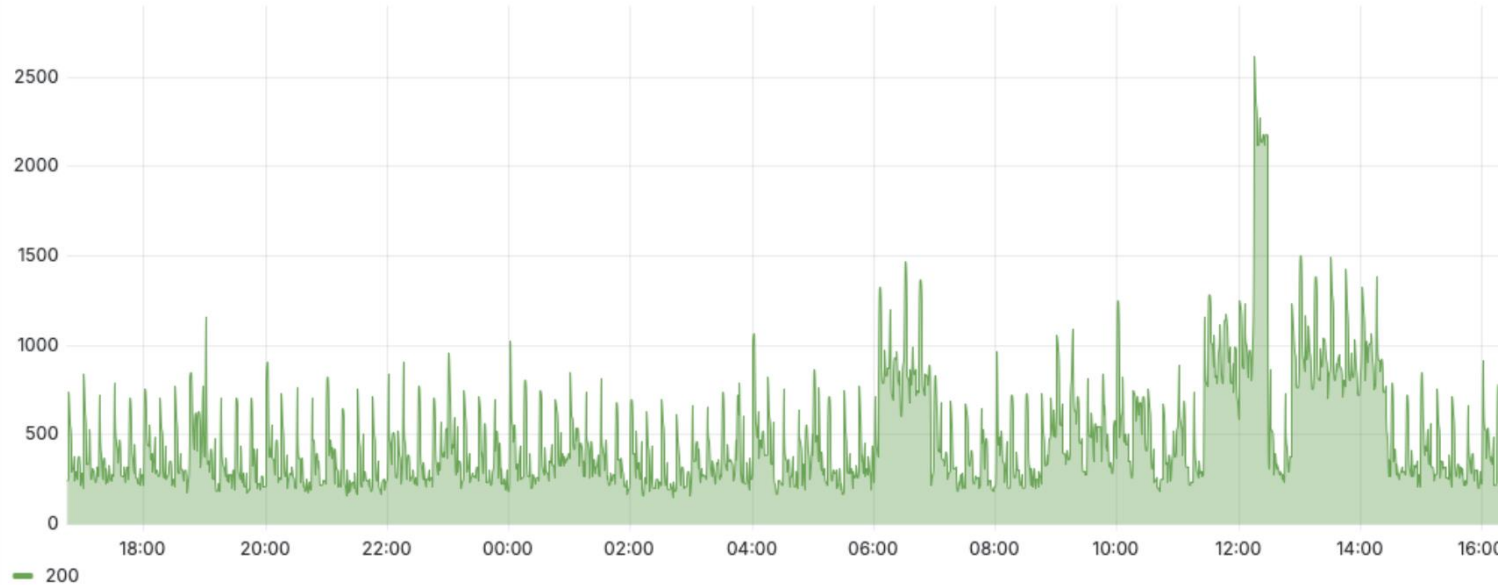
- Storage Architecture
  - and some numbers and something about redundancy
    - 2 servers with spinning disks
- Data goes back to 1997 with these caveats:
  - new collectors
  - old collectors being discontinued
  - peers leaving us
  - new peers signing up
  - peers changing from full to standard or from standard to full routes



# Route Views Numbers of 2025

~ 1000 downloads/minute. The graph is over 24 hours

Archive downloads per minute - Response Status : 200



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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



# Using RouteViews

- The data is licensed under Creative Commons Attribution 4.0 International License
- Open Sourced tools to read the files
- No data are migrated, down-tiered or deleted
- The whole data set is available
- Statistics, trends, operational health data are kept internal for now
- We see increase/descrease no change in comsumption. The licensing model seem to work well



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# Preservation

- we have some ongoing work with OSDF



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# Redundancy and Risk

- Two sets of the full data at our present location
- Working on creating a third geographically diverse copy
- Worst case scenario is to lose funding, be shut down and the storage taken offline and deleted.
- We worry about losing any data



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# Funding and Staffing

- The project is about collecting and preserving, so all the funds are directed at that
- 9 staff – 2 full time, rest partial – most contractors
- Global team with very diverse skillsets



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# Policy and Governance

- Overseen by NSRC, University of Oregon
- we at the project decides the policies for data retention, privacy and openness
- We work extensively with other organisations



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# BACK-UP SLIDES



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# RouteViews News

- Collectors:
  - All software collectors use FRR<sup>1</sup> (version 10.2)
  - One Cisco ASR1004 (as a tribute to the original!)
  - Moving collectors from metal to VMs (easier deployment & management)
- Location update:
  - Most recent additions include GetaFIX (Philippines), KINX (Seol, Korea) and Namex (Italy)
  - Several new locations offered; resources required to fulfil those offers

<sup>1</sup>FRRouting 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 has completed internal testing and is now available for general use
  - **telnet** access will be removed after due notice to the community



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TYPE OF QUERY	ADDITIONAL PARAMETERS	NODE
<input checked="" type="radio"/> bgp		fr.routeviews.org (test collector, Uni of Oregon)
<input type="radio"/> bgp regexp		✓ frr
<input type="radio"/> rpki prefix		Accra, Ghana (GIXA)
<input type="radio"/> rpki ASN		<b>route-views.gixa</b>
IPv4		Amsterdam, Netherlands (AMS-IX)
		<b>amsix.ams</b>
		Amsterdam, Netherlands (AMS-IX)
		<b>route-views.amsix</b>
		Ashburn, Virginia (Equinix Ashburn)
		<b>route-views.eqix</b>
		Atlanta, Georgia (CIX-ATL)
		<b>cix.atl</b>
		Atlanta, Georgia (Digital Realty)
		<b>route-views.telxatl</b>
		Baghdad, Iraq (IRAQ-IXP)
		<b>iraq-ixp.bgw</b>
		Bangkok, Thailand (BKNIX)

Submit Reset

Router: frr

Command: show bgp ipv4 unicast 23.56.154.116

```
frr.routeviews.org> show bgp ipv4 unicast 23.56.154.116
BGP routing table entry for 23.56.144.0/20, version 50831
Paths: (2 available, best #1, table default)
  Not advertised to any peer
  3582 3701 6939 4651 20940 16625
    128.223.253.10 from 128.223.253.10 (128.223.253.10)
      Origin IGP, valid, external, multipath, best (Older Path), rpki validation-state: valid
      Community: 3701:10200 3701:10204 3701:30003
      Last update: Tue May 6 21:45:58 2025
  3582 3701 6939 4651 20940 16625
    128.223.253.9 from 128.223.253.9 (128.223.253.9)
      Origin IGP, valid, external, multipath, rpki validation-state: valid
      Community: 3701:10200 3701:10204 3701:30003
      Last update: Tue May 6 21:45:58 2025
```

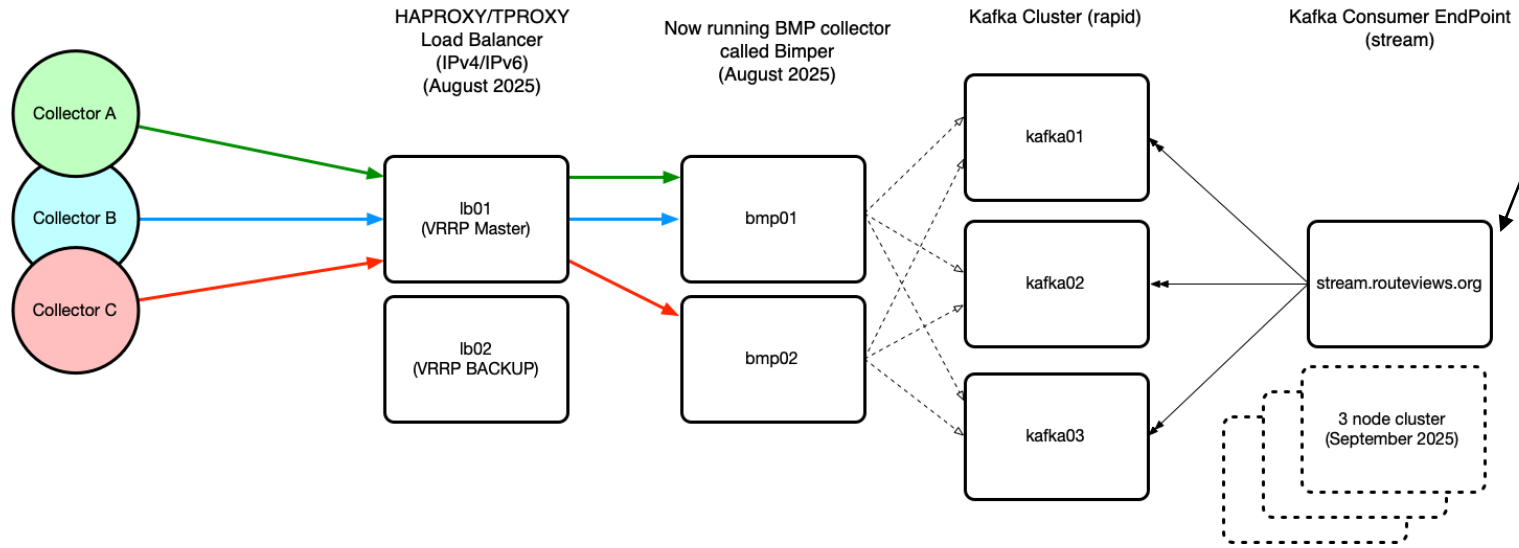
**Router:** frr**Command:** show bgp ipv4 unicast 23.56.0.0/16 longer-prefixes

```
frr.routeviews.org> show bgp ipv4 unicast 23.56.0.0/16 longer-prefixes
BGP table version is 21483649, 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
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*>	23.56.0.0/24	128.223.253.10	0	3582	3701	2152 2516 20940 20940 i
V*=		128.223.253.9	0	3582	3701	2152 2516 20940 20940 i
V*>	23.56.1.0/24	128.223.253.10	0	3582	3701	11164 20940 i
V*=		128.223.253.9	0	3582	3701	11164 20940 i
V*>	23.56.2.0/24	128.223.253.10	0	3582	3701	2152 3356 20940 i
V*=		128.223.253.9	0	3582	3701	2152 3356 20940 i
V*>	23.56.3.0/24	128.223.253.10	0	3582	3701	11164 20940 i
V*=		128.223.253.9	0	3582	3701	11164 20940 i
V*>	23.56.4.0/24	128.223.253.10	0	3582	3701	11164 20940 i
V*=		128.223.253.9	0	3582	3701	11164 20940 i
V*>	23.56.5.0/24	128.223.253.10	0	3582	3701	2152 3356 20940 i
V*=		128.223.253.9	0	3582	3701	2152 3356 20940 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 Behind the Scenes Projects

- Upgrading archive infrastructure and storage
  - RouteViews stores BGP data from 1997 – around 50 TBytes (compressed)
- Tooling
  - Automation tools for managing the whole infrastructure and deploying new peers
- Collector OS (from CentOS to Ubuntu)
  - CentOS end-of-life – half the 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)



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

route-views.uaerx

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](#)

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)

[route-views.isc](#)

Perth, Australia (WA-IX)

[route-views.perth](#)

Portland, Oregon (NWAX)

[route-views.nwax](#)

Querétaro, Mexico (PIT Chile MX)

[pitmx.qro](#)

Quezon City, Philippines (PhOpenIX)

Router: route-views.linx

Command: show bgp ipv4 unicast summary

```
route-views.linx> show bgp ipv4 unicast summary
```

```
BGP router identifier 195.66.225.222, local AS number 6447 VRF default vrf-id 0
```

```
BGP table version 309367728
```

```
RIB entries 1960257, using 239 MiB of memory
```

```
Peers 59, using 1402 KiB of memory
```

59 peers

Lots of full tables

Neighbor	V	AS	MsgRcvd	MsgSent	TblVer	InQ	OutQ	Up/Down	State/PfxRcd	PfxSnt	Desc
195.66.224.12	4	47957	12686566	175336	309367728	0	0	08w4d21h	429688	0	Ingenico Solutions
195.66.224.21	4	6939	13824625	87669	309367728	0	0	08w4d21h	998128	0	Hurricane Electric
195.66.224.25	4	37497	13990578	108820	309367728	0	0	08w4d21h	978133	0	Network Platforms
195.66.224.29	4	5413	178038	175336	309367728	0	0	08w4d21h	0	0	Daisy Corporate
195.66.224.32	4	3257	39273641	175478	309367728	0	0	08:15:53	973113	0	GTT Communications
195.66.224.51	4	6453	20849985	175336	309367728	0	0	08w4d21h	973415	0	TATA Communications
195.66.224.64	4	3292	181363	175336	309367728	0	0	08w4d21h	645	0	Tele Danmark
195.66.224.66	4	8426	103378	87669	309367728	0	0	08w4d21h	118	0	Claranet
195.66.224.83	4	5511	1926542	175336	309367728	0	0	08w4d21h	143805	0	Orange S.A.
195.66.224.89	4	6830	25270342	175044	309367728	0	0	03w4d06h	973086	0	Liberty Global B.V.
195.66.224.99	4	13237	91674008	87669	309367728	0	0	08w4d21h	977005	0	euNetworks Group
195.66.224.114	4	6667	42436550	174822	309367728	0	0	04w5d08h	974317	0	Elisa Corporation
195.66.224.118	4	14537	28534432	175336	309367728	0	0	08w4d21h	977143	0	Continent 8
195.66.224.138	4	2914	21709483	175044	309367728	0	0	03w4d06h	973489	0	NTT Global IP
195.66.224.153	4	6762	5153973	175341	309367728	0	0	02w6d21h	212040	0	Telecom Italia
195.66.224.157	4	16552	26255740	175336	309367728	0	0	08w4d21h	974632	0	Tiggee LLC
195.66.224.165	4	38880	21790409	87669	309367728	0	0	08w4d21h	1014829	0	Micron21 Datacentre
195.66.224.167	4	3491	10385507	87669	309367728	0	0	08w4d21h	970203	0	PCCW Global
195.66.224.175	4	13030	29719579	87669	309367728	0	0	08w4d21h	974063	0	Init7 (Switzerland)
195.66.224.193	4	9002	14866344	175336	309367728	0	0	08w4d21h	974480	0	RETN
195.66.224.215	4	31500	140603	87594	309367728	0	0	04w3d15h	3585	0	Global Network

# 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"/> rpki prefix	
<input type="radio"/> rpki ASN	
<input type="text" value="IPv4"/>	
<input type="button" value="Submit"/> <input type="button" value="Reset"/>	

route-views.chile

Santiago, Chile (PIT Chile Santiago)

pit.scl

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

route-views2.saopaulo

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

Router: route-views2

Command: show bgp ipv4 unicast regexp \_2018\$

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

BGP table version is 38730963, 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	94.156.252.18	0			0 34224 2018 i
N*		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*		87.121.64.4				0 57463 2018 i
N*		202.73.40.45				0 18106 2018 i
N*		64.71.137.241				0 6939 2018 i
N*		203.181.248.195				0 7660 11537 2018 i
N*		91.218.184.60				0 49788 12552 2018 i
N*		129.250.1.71	29078			0 2914 20080 2018 i
N*		140.192.8.16				0 20130 6939 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

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"/> rpki prefix	
<input type="radio"/> rpki ASN	
<input type="text" value="IPv4"/>	
<input type="button" value="Submit"/> <input type="button" value="Reset"/>	

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](#)

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)

[route-views.isc](#)

Perth, Australia (WA-IX)

Router: route-views.napafrica

Command: show bgp ipv4 unicast regexp ^2018\_[0-9]+\$

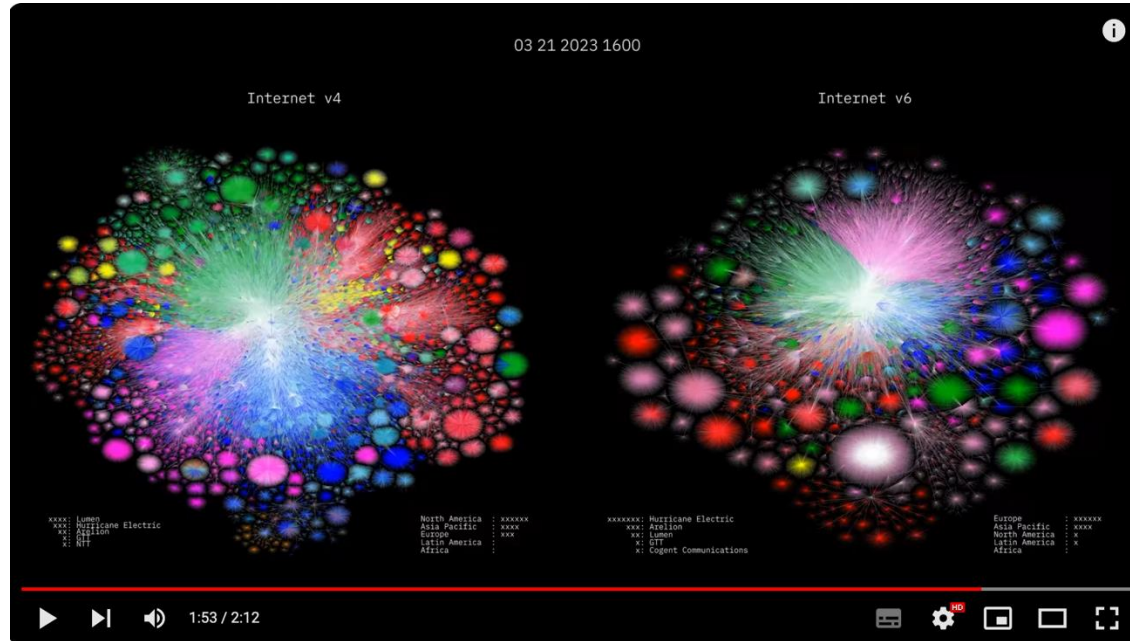
```
route-views.napafrica> show bgp ipv4 unicast regexp ^2018_[0-9]+$
BGP table version is 439885622, local router ID is 196.60.9.68, vrf id 0
Default local pref 100, local AS 6447
Status codes: s suppressed, d damped, h history, u unsorted, * valid, > best, = multipath,
               i internal, r 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*>	41.74.146.0/23	196.60.8.216	0	2018	329522	i
V*>	41.74.156.0/23	196.60.8.216	0	2018	329522	i
V*>	41.74.158.0/23	196.60.8.216	0	2018	329522	i
N*>	137.158.0.0/16	196.60.8.216	0	2018	36982	i
N*>	143.160.0.0/24	196.60.8.216	0	2018	8094	i
N*>	143.160.1.0/24	196.60.8.216	0	2018	8094	i
N*>	143.160.2.0/24	196.60.8.216	0	2018	8094	i
N*>	143.160.3.0/24	196.60.8.216	0	2018	8094	i
N*>	143.160.4.0/22	196.60.8.216	0	2018	8094	i
N*>	143.160.8.0/22	196.60.8.216	0	2018	8094	i
N*>	143.160.12.0/22	196.60.8.216	0	2018	8094	i
N*>	143.160.16.0/20	196.60.8.216	0	2018	8094	i
N*>	143.160.32.0/22	196.60.8.216	0	2018	8094	i
N*>	143.160.36.0/22	196.60.8.216	0	2018	8094	i
N*>	143.160.40.0/21	196.60.8.216	0	2018	8094	i
N*>	143.160.48.0/22	196.60.8.216	0	2018	8094	i
N*>	143.160.52.0/22	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)
  - 100GB disk
  - 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
  - MRT<sup>1</sup> used for BGP RIBs (archived every 2 hours) and BGP updates (archived every 15 minutes)

<sup>1</sup> 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!

