Different Ops Views from RouteViews

Patrick Okui

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Kigali, Rwanda

UNIVERSITY OF OREGON

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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.

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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Day in the life of a sub-prefix

- Operators that publish ROAs typically have subprefixes that aren't announced on the internet floating around their networks.
  - They may have to arrange for RPKI not to try to validate the prefix's origin depending on implementation.
- If said operator decides to announce this prefix to the Internet it will be seen as invalid

The Challenges

```
agr1-isd#show bgp ipv6 unicast 2c0f:fa90:2001::/48
BGP routing table entry for 2C0F:FA90:2001::/48, version 1306046320
Paths: (2 available, best #1, table default)
Multipath: iBGP
  Additional-path-install
  Path advertised to update-groups:
     1          131        132        133
  Refresh Epoch 1
  Local, (Received from a RR-client)
    ::FFFF:41.78.189.154 (metric 201) from 41.78.189.154 (41.78.189.154)
      Origin IGP, metric 0, localpref 350, valid, internal, multipath, best
      Community: 37271:5 37271:12 37271:1001 37271:2002 37271:2018 37271:2202 37271:3710 37271:4002 37271:5001
37271:60000
      Extended Community: 0x4300:0:0
      mpls labels in/out nolabel/1254
      path 7FD6B555B1B0 RPKI State valid
      rx pathid: 0x0, tx pathid: 0x0
```



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ROUTE VIEWS 6447 Looking Glass

```
Type of Query    : RPKI ASN
Address family   : IPv6
Router           : frr
Query parameters: 37271
Timestamp        : 2026-08-20T10:35:39Z
Command          : show rpki as-number 37271
```

```
frr.routeviews.org> show rpki as-number 37271
RPKI/RTR prefix table
Prefix                                  Prefix Length  Origin-AS
41.78.188.0                                22 -  22   37271
197.157.64.0                               19 -  19   37271
2c0f:fa90::                                32 -  32   37271
Number of IPv4 Prefixes: 2
Number of IPv6 Prefixes: 1
```

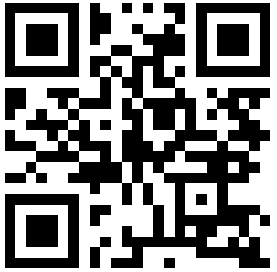
Disclaimer: All commands are logged for possible analysis and statistics. If you do not like this policy, please disconnect now.

Queries: help@routeviews.org

detour-1

- You can also monitor what your ASN is originating using our api – useful for scripting/alerts/etc

```
curl -L -s  "https://api.routeviews.org/asn/37271" | jq .
[
  "41.78.188.0/22",
  "197.157.64.0/19",
  "2c0f:fa90::/32"
]
```



detour-2 - unique contributions per ASN

Unique contributions per ASN

ASN	Description	Family	Unique Edges	Unique Paths	Unique Prefixes	Shorter Paths
AS3491	Tier 1 provider	IPv4	11	1,886	0	2,854
AS3491	Tier 1 provider	IPv6	44	852	0	1,617
AS32590	Content provider	IPv4	6,501	83,786	934	1,176
AS32590	Content provider	IPv6	5,020	23,940	206	629
AS16276	Content provider	IPv4	5,454	116,817	551	700
AS16276	Content provider	IPv6	3,675	46,684	43	528
AS30844	Regional provider	IPv4	153	213	0	599
AS30844	Regional provider	IPv6	79	1,041	0	46
AS9902	Regional peer	IPv4	0	20	0	11
AS9902	Regional peer	IPv6	238	6	0	1

Conclusion

- RouteViews can help visualize problems that may not be seen on your looking glass or the one of your upstream provider
- The view of the data from the tier 1 providers does not add as much value to this because it is the “best paths” via the intermediary transit providers.
- Filtered views e.g peering routes may be interesting but do not add as much value to the overall dataset
- If you are close to the “edge” of the Internet and preferably have full routes please peer with us: multi-hop sessions are available if we are not yet at an IXP near you.

Thank you!

