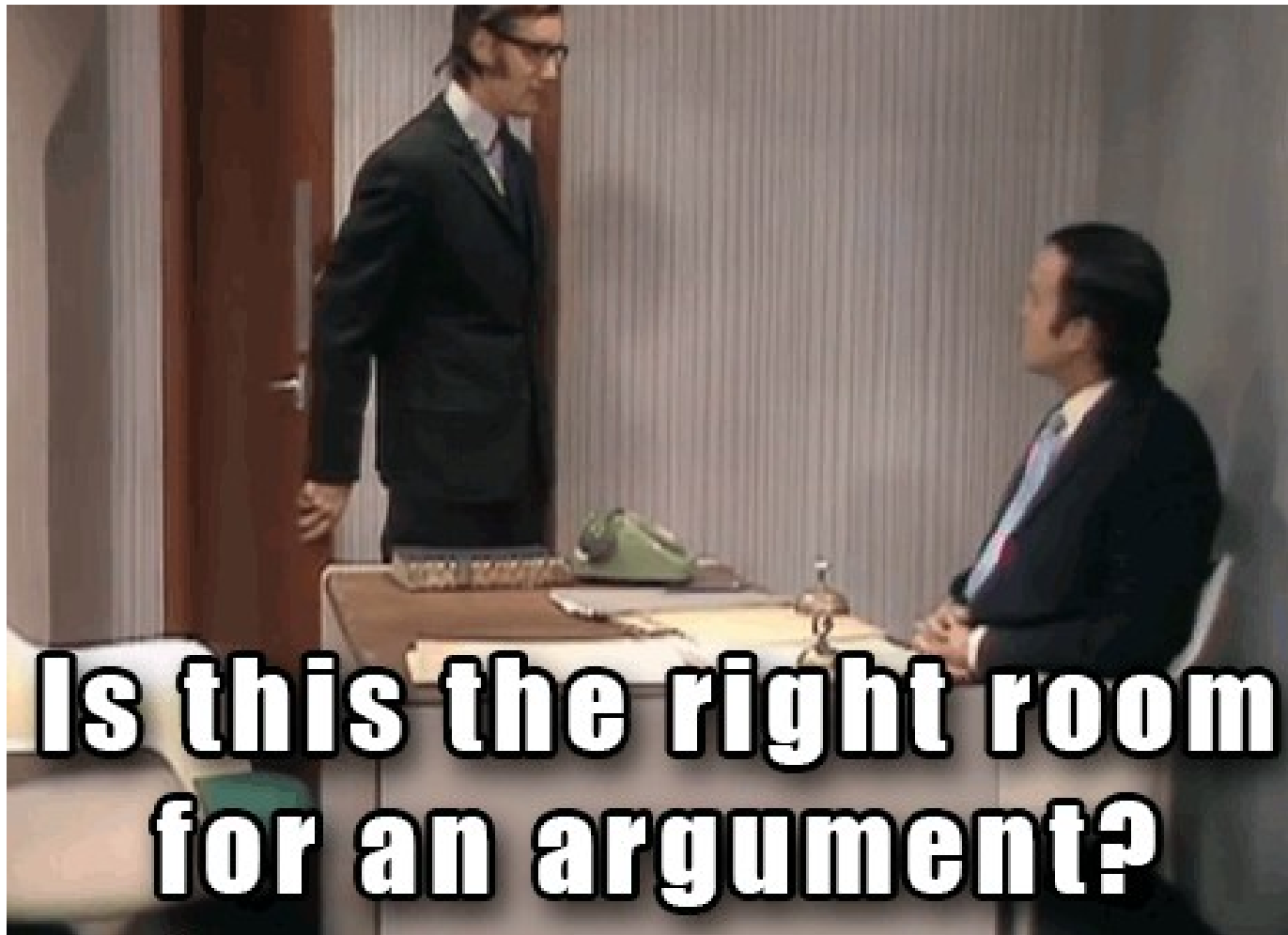


# Rpkiviews – archiving RPKI data for the curious

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Fastly / [rpkiviews.org](https://rpkiviews.org)

## RPKI in the 2020s



Source: Monty Python's "Argument Clinic" <https://www.youtube.com/watch?v=ohDB5gbtaEQ>

# What *is* Rpkiviews.org?

- Modeled after *routeviews.org*
  - Series of snapshots throughout time; focus on simplicity and consistency
- **Collect and archive RPKI data from various vantage points around the world**
  - The raw DER-encoded files
  - An interpreted output (JSON and CSV format)
  - OpenMetrics file for details about the synchronization process
  - A log file, ed25519 public key, and SHA256 listings for integrity checking

# Feedback on Rpkiviews

*Rpkiviews contained exactly the data I needed to investigate and conclusively explain a customer-affecting incident.* - Jeff Wheeler, Network Architect

*We infer RIRs' signing and publication delays from the RPKIviews archive.* - Romain Fontugne, Senior Researcher (PAM'23)

**Browseable via HTTP - <http://rpkiviews.org/>**

## **Index of /josephine.sobornost.net/rpkidata/2023/05/24/**

<b>Name↓</b>	<b>Last Modified:</b>	<b>Size:</b>	<b>Type:</b>
<a href="#">../</a>		-	Directory
<a href="#">rпки-20230524T000529Z.tgz</a>	2023-May-24 00:06:14	253.0M	application/x-gtar-compressed
<a href="#">rпки-20230524T003540Z.tgz</a>	2023-May-24 00:36:23	253.0M	application/x-gtar-compressed
<a href="#">rпки-20230524T010528Z.tgz</a>	2023-May-24 01:06:12	253.0M	application/x-gtar-compressed
<a href="#">rпки-20230524T013526Z.tgz</a>	2023-May-24 01:36:10	253.0M	application/x-gtar-compressed
<a href="#">rпки-20230524T020522Z.tgz</a>	2023-May-24 02:06:05	252.9M	application/x-gtar-compressed
<a href="#">rпки-20230524T023523Z.tgz</a>	2023-May-24 02:36:06	253.4M	application/x-gtar-compressed
<a href="#">rпки-20230524T030529Z.tgz</a>	2023-May-24 03:06:13	253.4M	application/x-gtar-compressed
<a href="#">rпки-20230524T033532Z.tgz</a>	2023-May-24 03:36:16	253.3M	application/x-gtar-compressed
<a href="#">rпки-20230524T040526Z.tgz</a>	2023-May-24 04:06:09	253.3M	application/x-gtar-compressed
<a href="#">rпки-20230524T043530Z.tgz</a>	2023-May-24 04:36:14	253.3M	application/x-gtar-compressed
<a href="#">rпки-20230524T050523Z.tgz</a>	2023-May-24 05:06:07	253.3M	application/x-gtar-compressed
<a href="#">SHA256</a>	2023-May-24 05:06:10	1.0K	application/octet-stream
<a href="#">SHA256.sig</a>	2023-May-24 05:06:10	1.2K	application/pgp-signature

# Accessible via rsync!

```
feather$ rsync rsync://dango.attn.jp/rpki
drwxrwxr-x      308 2023/05/22 08:21:47 .
drwxr-xr-x       28 2022/12/01 00:11:38 2022
drwxr-xr-x       20 2023/05/01 00:13:08 2023
drwxr-xr-x       24 2023/01/01 00:06:43 amber.massars.net
drwxr-xr-x       24 2023/05/15 21:25:41 comparison.rpkiviews.org
drwxrwxrwx       32 2023/01/01 00:06:00 josephine.sobornost.net
drwxr-xr-x      132 2023/05/15 10:44:17 rrdp-rsync-collation-fra.rpkiviews.org
drwxr-xr-x      132 2023/05/15 11:56:24 rrdp-rsync-collation-syd.rpkiviews.org
feather$
```

See <http://rpkiviews.org/> for a full overview of the available rsync:// endpoints

# Contents of the tarball: raw and interpreted data

```
feather$ tar -ztfv rpki-20230524T053533Z.tgz '*/data/chloe.sobornost.net/rpki/RIPE-nljobsniders/*'
-rw-r--r-- 1 _rpki-client _rpki-client 2628 May 24 05:03 rpki-20230524T053533Z/data/chloe.sobornost.net/rpki/RIPE-nljobsniders/yqgF26w2R0m5sRVZCrbdV5cM29g.mft
-rw-r--r-- 1 _rpki-client _rpki-client 1724 Dec 16 12:39 rpki-20230524T053533Z/data/chloe.sobornost.net/rpki/RIPE-nljobsniders/SYge6030JFMiFYniIPfQCkNiqvc.roa
-rw-r--r-- 1 _rpki-client _rpki-client 1704 Dec 16 12:30 rpki-20230524T053533Z/data/chloe.sobornost.net/rpki/RIPE-nljobsniders/FjSf5hX1GmGhKMu9AG7WVI18m1M.asa
-rw-r--r-- 1 _rpki-client _rpki-client 1729 Dec 7 17:27 rpki-20230524T053533Z/data/chloe.sobornost.net/rpki/RIPE-nljobsniders/k81kCEKw0TB0VS9A4z_g2UJpfBU.roa
-rw-r--r-- 1 _rpki-client _rpki-client 1728 Jan 4 11:02 rpki-20230524T053533Z/data/chloe.sobornost.net/rpki/RIPE-nljobsniders/5EjPZ8Kw2_h5hRqKpwmjdnq7Tq8.roa
-rw-r--r-- 1 _rpki-client _rpki-client 1365 Apr 13 04:19 rpki-20230524T053533Z/data/chloe.sobornost.net/rpki/RIPE-nljobsniders/t7xg6ZtXdcYhy-YGTMk_ONTD31E.cer
-rw-r--r-- 1 _rpki-client _rpki-client 1166 May 24 05:03 rpki-20230524T053533Z/data/chloe.sobornost.net/rpki/RIPE-nljobsniders/yqgF26w2R0m5sRVZCrbdV5cM29g.crl
-rw-r--r-- 1 _rpki-client _rpki-client 898 Dec 7 17:27 rpki-20230524T053533Z/data/chloe.sobornost.net/rpki/RIPE-nljobsniders/XUJQ4tgdREjYop786R0p_wdeyeI.cer
-rw-r--r-- 1 _rpki-client _rpki-client 1960 Dec 7 17:27 rpki-20230524T053533Z/data/chloe.sobornost.net/rpki/RIPE-nljobsniders/40S1M-M4frFfmZ2HaMH0t1CageA.gbr
-rw-r--r-- 1 _rpki-client _rpki-client 1728 Dec 16 12:39 rpki-20230524T053533Z/data/chloe.sobornost.net/rpki/RIPE-nljobsniders/mIMiKkoco4Wz9xVfTL6I1xHv2Ts.roa
-rw-r--r-- 1 _rpki-client _rpki-client 898 Dec 7 17:27 rpki-20230524T053533Z/data/chloe.sobornost.net/rpki/RIPE-nljobsniders/voibVdC3Nz19dcSfSFuFj6mK0R8.cer
drwxr-xr-x 2 _rpki-client _rpki-client 0 May 24 05:35 rpki-20230524T053533Z/data/chloe.sobornost.net/rpki/RIPE-nljobsniders/cb
-rw-r--r-- 1 _rpki-client _rpki-client 1849 Apr 13 04:19 rpki-20230524T053533Z/data/chloe.sobornost.net/rpki/RIPE-nljobsniders/cb/VZgMGXD1Mc_DQX3QKQKbaQ0K8vM.gbr
-rw-r--r-- 1 _rpki-client _rpki-client 2083 May 24 05:03 rpki-20230524T053533Z/data/chloe.sobornost.net/rpki/RIPE-nljobsniders/cb/t7xg6ZtXdcYhy-YGTMk_ONTD31E.mft
-rw-r--r-- 1 _rpki-client _rpki-client 1728 Jan 4 11:02 rpki-20230524T053533Z/data/chloe.sobornost.net/rpki/RIPE-nljobsniders/cb/5EjPZ8Kw2_h5hRqKpwmjdnq7Tq8.roa
-rw-r--r-- 1 _rpki-client _rpki-client 434 May 24 05:03 rpki-20230524T053533Z/data/chloe.sobornost.net/rpki/RIPE-nljobsniders/cb/t7xg6ZtXdcYhy-YGTMk_ONTD31E.crl
-rw-r--r-- 1 _rpki-client _rpki-client 1763 Apr 13 04:28 rpki-20230524T053533Z/data/chloe.sobornost.net/rpki/RIPE-nljobsniders/cb/xN0RuVE3Z0UyqQ9nxKfePjB1Jmo.roa
-rw-r--r-- 1 _rpki-client _rpki-client 1729 Dec 7 17:27 rpki-20230524T053533Z/data/chloe.sobornost.net/rpki/RIPE-nljobsniders/JM9oHV3aYpDhfxsnr_kd3g-5Qf8.roa
-rw-r--r-- 1 _rpki-client _rpki-client 1727 Dec 7 17:27 rpki-20230524T053533Z/data/chloe.sobornost.net/rpki/RIPE-nljobsniders/ncJXcXUYxYzrXv20NP0i8QvMMBY.roa
feather$
```

```
feather$ tar -ztfv rpki-20230524T053533Z.tgz '*/output' | column -t
drwxr-xr-x 2 job job 0 May 24 05:35 rpki-20230524T053533Z/output
-rw-r--r-- 1 job wheel 55584 May 24 05:35 rpki-20230524T053533Z/output/rpki-client.log
-rw-r--r-- 1 job _rpki-client 18859015 May 24 05:35 rpki-20230524T053533Z/output/rpki-client.csv
-rw-r--r-- 1 job job 373 May 24 05:35 rpki-20230524T053533Z/output/SHA256
-rw-r--r-- 1 job _rpki-client 52234399 May 24 05:35 rpki-20230524T053533Z/output/rpki-client.json
-rw-r--r-- 1 job _rpki-client 597973 May 24 05:35 rpki-20230524T053533Z/output/rpki-client.metrics
-rw-r--r-- 1 job job 533 May 24 05:35 rpki-20230524T053533Z/output/SHA256.sig
-rw-r--r-- 1 job wheel 111 Dec 6 2020 rpki-20230524T053533Z/output/josephine.sobornost.net.pub
feather$
```

# Why does this matter? - BCP 185 (2014)

rfc-editor.org/rfc/rfc7115.html

## 6. Notes and Recommendations

Like the DNS, the global RPKI presents only a loosely consistent view, depending on timing, updating, fetching, etc. Thus, one cache or router may have different data about a particular prefix than another cache or router. There is no 'fix' for this, it is the nature of distributed data with distributed caches.

Source: <https://www.rfc-editor.org/rfc/rfc7115.html>



# Notes for researchers

- **Each Rpkiviews node runs on its own schedule**
  - some every 10 minutes, others every 30 minutes
- **Rpkiviews nodes are distributed across the globe**
  - Amsterdam, Kansas City, Tokyo, Zurich – hopefully more to come
- **Each snapshot contains *only* valid data**
  - Erroneously encoded, revoked, or expired data is not archived
  - The contained log file will contain messages which hint at what was not archived
- **It's ok to ask me questions about the archive!**

# **Rpkiviews.org is supported by**

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**Jeroen Massars**

**Job Snijders**

**August Internet**

**A2B Internet**

**Digital Ocean**

# Request to the community – help archiving!

- **Consider running hosting a rpkiviews.org node!**
  - 4 CPU cores, 16GB ram, as much storage as you can spare
- **Consider providing a storage pool! (100TB+)**
  - Long term archiving, backups

*The archive already is ~ 50 terabyte, I can't do this without help!*

# Questions?

Now at the microphone, or email me!

[job@fastly.com](mailto:job@fastly.com)