



RIPE NCC
RIPE NETWORK COORDINATION CENTRE

Three Is the Magic Number

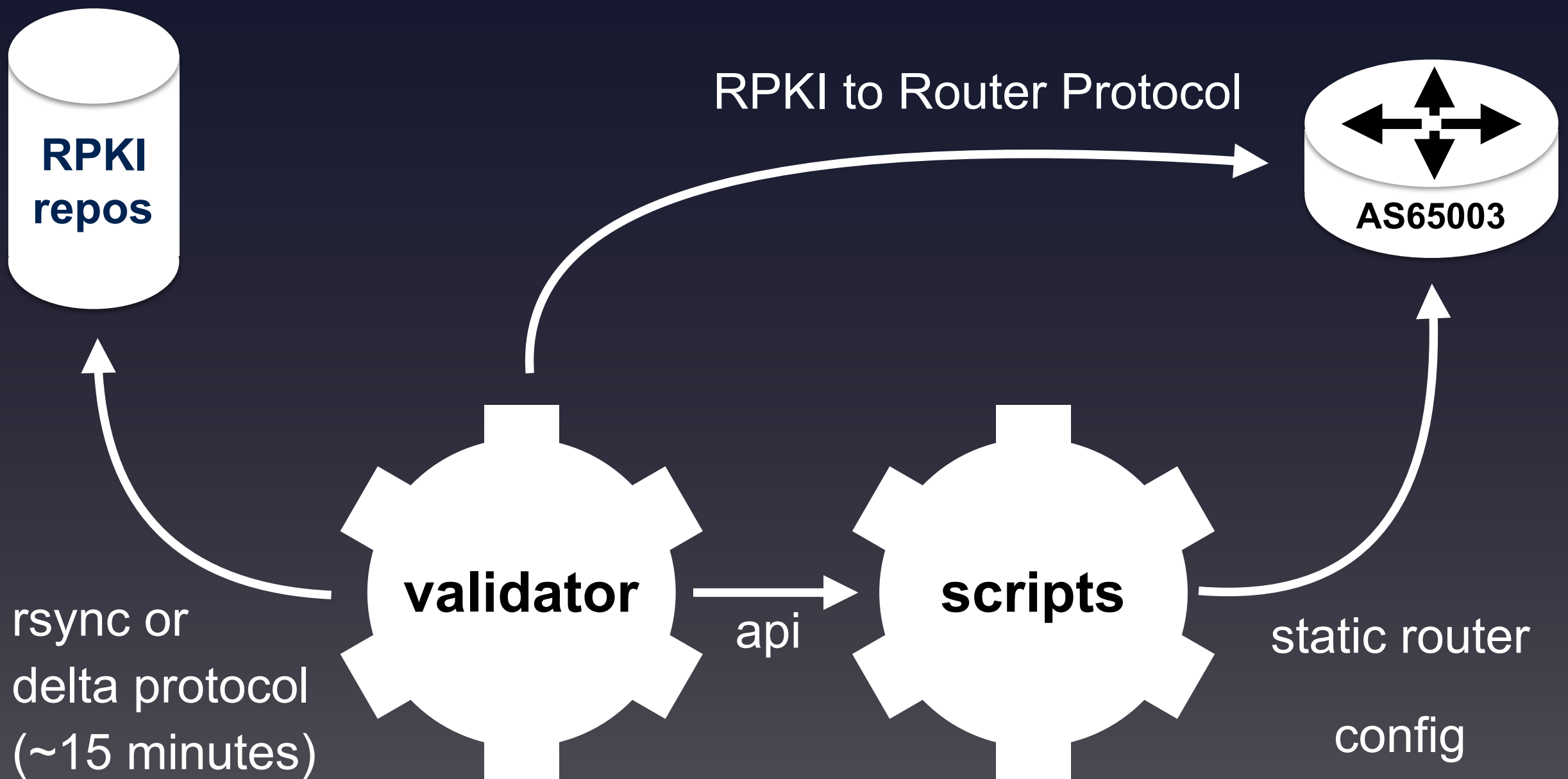
The RPKI Validator Born Again

So what is this RPKI Validator Thing?



- Resource Public Key Infrastructure
 - Ties IP addresses and ASNs to public keys
 - Follows the hierarchy of the registry
- Authorised statements from resource holders
 - ASN X is authorised to announce my IP Prefix Y
 - Signed, holder of Y
 - Similar to ROUTE(6) objects, different authorisation and validation model

So what is this RPKI Validator Thing?



Dynamic router config RPKI



- Router connects to validator
 - Supported by many vendors

- Example pseudo-config

- Dropping invalids as per RFC 7115

```
match rpki valid
  set local preference 100
match rpki not-found
  set local preference 50
match rpki invalid
  reject
```

- Enables validation of full table, not just customers

Why did we need a number three?



- Validator 2.24 is used in production, but..
 - Everything is kept in memory (seen RPKI uptake)
 - Scala code was getting old and hard to maintain
 - Package has to be maintained manually
 - Missing incremental updates on rpki-rtr
 - No support for internationalisation (JPNIC forked)
- Proposed to create v3 at RIPE 72
<https://ripe72.ripe.net/archives/video/190/>

Design Goals Validator 3



- Stability
- Maintainability
- Redundancy
- Memory footprint
- Deployment and updates

Implementation of Validator 3



- Java
 - The language you all love to hate..
 - Leverages expertise of RIPE NCC staff
 - Builds on the well tested rpki-commons library
 - Genetic diversity
- Rcynic
 - Python and OpenSSL
- RPSTIR
 - C

Open Source, of course!



- BSD License
- Release Candidate available now!
 - RPM (tested on Centos7)
 - Docker container
 - Generic build

➔ <https://github.com/RIPE-NCC/rpki-validator-3>

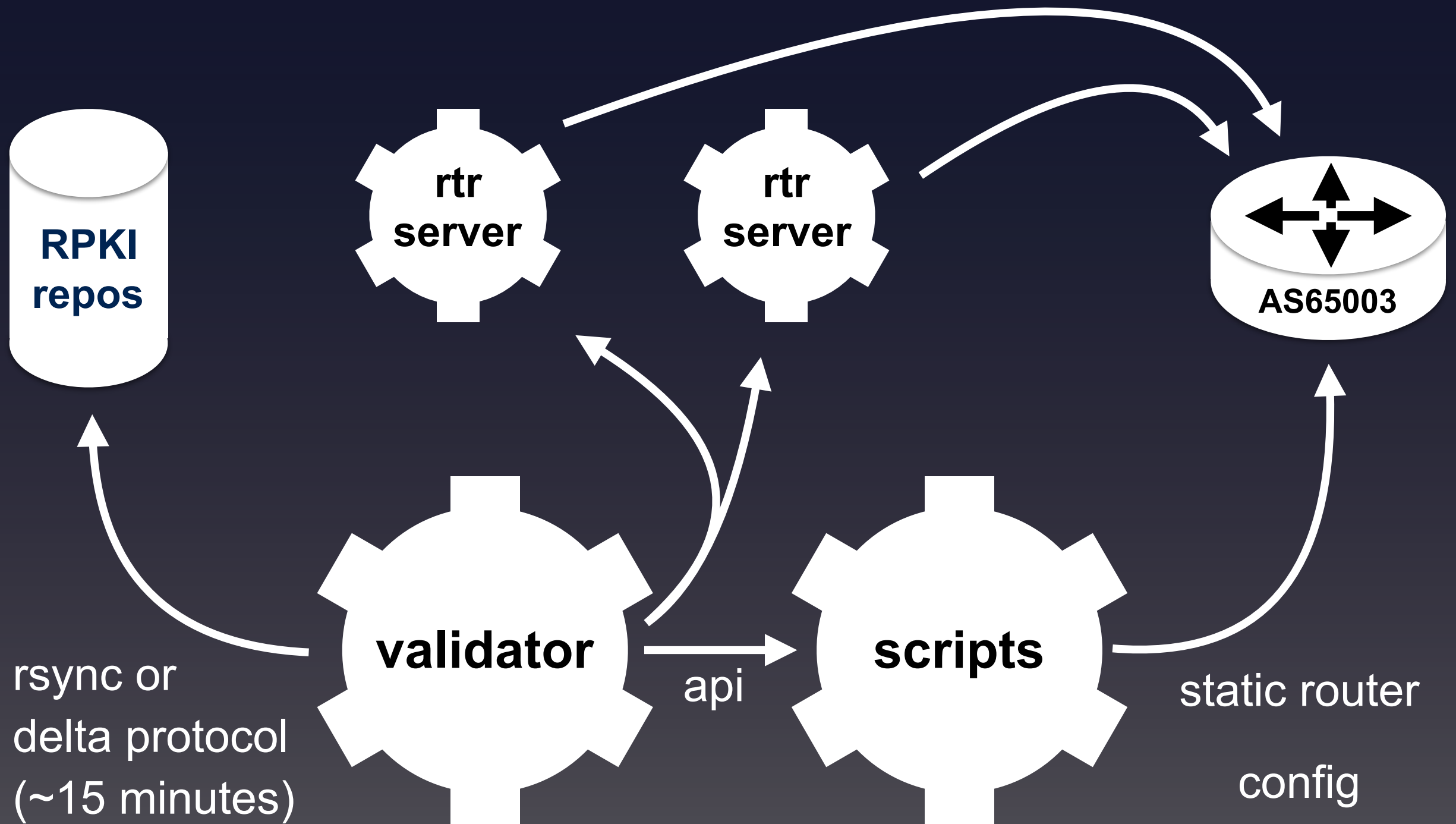
Feedback needed



- GitHub Wiki for documentation and examples
- Please try it out
 - Create issues!
 - Stability over features..
 - Help us with the documentation and examples
 - Also let us know if things work well :)

➔ Production release planned 4 June 2018

You can run N ($N \geq 0$) rtr server instances



Features



RPKI Validator Trust Anchors ROAs Ignore Filters Whitelist BGP Preview Announcement Preview

Configured Trust Anchors

Trust Anchors	Processed Items	Last Updated
AfriNIC RPKI Root	451 0 5	2018-05-14 04:50:52
ARIN	1650 0 0	2018-05-14 04:43:38
RIPE NCC RPKI Root	21877 0 0	2018-05-14 04:48:35
LACNIC RPKI Root	4205 0 0	2018-05-14 04:50:42
APNIC RPKI Root	4438 0 2	2018-05-14 04:52:21



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Features



Overview for RIPE NCC RPKI Root

Summary

Trust Anchor could be validated	Yes
Last completed validation	2018-05-14 04:48:35
Processed Items	21877 0 0
Repositories	2 0 0

Validation Issues

No validation problems found

Repositories

Show 10 entries

Search:

URI	Type	Status	Last checked
https://ca.rg.net/rrdp/notify.xml	RRDP	DOWNLOADED	May 14, 2018, 6:55:44 PM
https://rrdp.ripe.net/notification.xml	RRDP	DOWNLOADED	May 14, 2018, 6:55:12 PM

«« 1 »»

Showing 1 to 2 of 2 entries



Features



Validated ROAs

Show 10 entries

Search:

ASN	Prefix	Max Length	Trust Anchors	URI of ROA
AS13335	1.0.0.0/24	24	APNIC RPKI Root	🔗
AS13335	1.1.1.0/24	24	APNIC RPKI Root	🔗
AS4788	1.9.0.0/16	24	APNIC RPKI Root	🔗
AS65037	1.9.12.0/24	24	APNIC RPKI Root	🔗
AS24514	1.9.21.0/24	24	APNIC RPKI Root	🔗
AS65120	1.9.23.0/24	24	APNIC RPKI Root	🔗
AS65077	1.9.31.0/24	24	APNIC RPKI Root	🔗
AS24514	1.9.65.0/24	24	APNIC RPKI Root	🔗
AS4760	1.36.0.0/16	16	APNIC RPKI Root	🔗
AS4760	1.36.0.0/19	19	APNIC RPKI Root	🔗

«« « 1 2 3 4 5 » »»

Showing 1 to 10 of 52137 entries

Export

Here you are able to export the complete ROA data set for use in an existing BGP decision making workflow. The output will be in CSV or JSON format and consist of all validated ROAs, minus your ignore filter entries, plus your whitelist additions.

[Get CSV](#)

[Get JSON](#)

Features



Ignore Filters

By adding a filter the validator will ignore any RPKI prefixes that overlap with the filter's prefix. ✕

Add filter

Prefix **Origin**

Comment

Current filters

Show entries

Search:

Prefix	ASN	Affected ROAs	Comment	
193.0.0.0/21		1 affected ROA(s)	Example filter	

«« »»

Showing 1 to 1 of 1 entries



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Features



Whitelist

By adding a whitelist entry you can manually authorise an ASN to originate a prefix in addition to the validated ROAs from the repository. Please note that whitelist entries may **invalidate** announcements for this prefix from other ASNs, just like ROAs. This may be intentional (you are whitelisting ASN A, ASN B is hijacking), or not (ASN B should also be authorised, or you made a mistake). When you create a whitelist entry here, make sure to check the table below for a report on prefixes validated / invalidated by this entry and verify that no unintentional side effects occurred. ✕

Add entry

Prefix	Origin	Maximum prefix length	
<input type="text" value="IPv4 or IPv6 prefix"/>	<input type="text" value="ASN"/>	<input type="text" value="Number"/>	<input type="button" value="Add"/>
Comment			
<input type="text"/>			

Current entries

Show entries

Search:

Prefix	ASN	Maximum prefix length	Validates	Invalidates	Comment	
193.0.0.0/21	1		0 announcement(s)	1 announcement(s)	Want this to be valid here	

«« »»

Showing 1 to 1 of 1 entries

SLURM

Download or upload SLURM file.

Features



RPKI Validator Trust Anchors ROAs Ignore Filters Whitelist **BGP Preview** Announcement Preview

BGP Preview

Show 10 entries Search: 193.0.0.0

ASN	Prefix	Validity
AS3333	193.0.0.0/21	INVALID ASN

Showing 1 to 1 of 1 entries (filtered from 797715 total entries)

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Features



RPKI Validator Trust Anchors ROAs Ignore Filters Whitelist BGP Preview Announcement Preview

Announcement Preview

ASN: AS3333

Prefix: 193.0.0.0/21

Status: **INVALID ASN**

Relevant Validated ROAs

ASN	Prefix	Max Length	Source	URI	Status
AS1	193.0.0.0/21		Whitelist		INVALID ASN
AS3333	193.0.0.0/21	21	RIPE NCC RPKI Root	🔗	FILTERED VALID



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Questions



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<https://github.com/RIPE-NCC/rpki-validator-3>