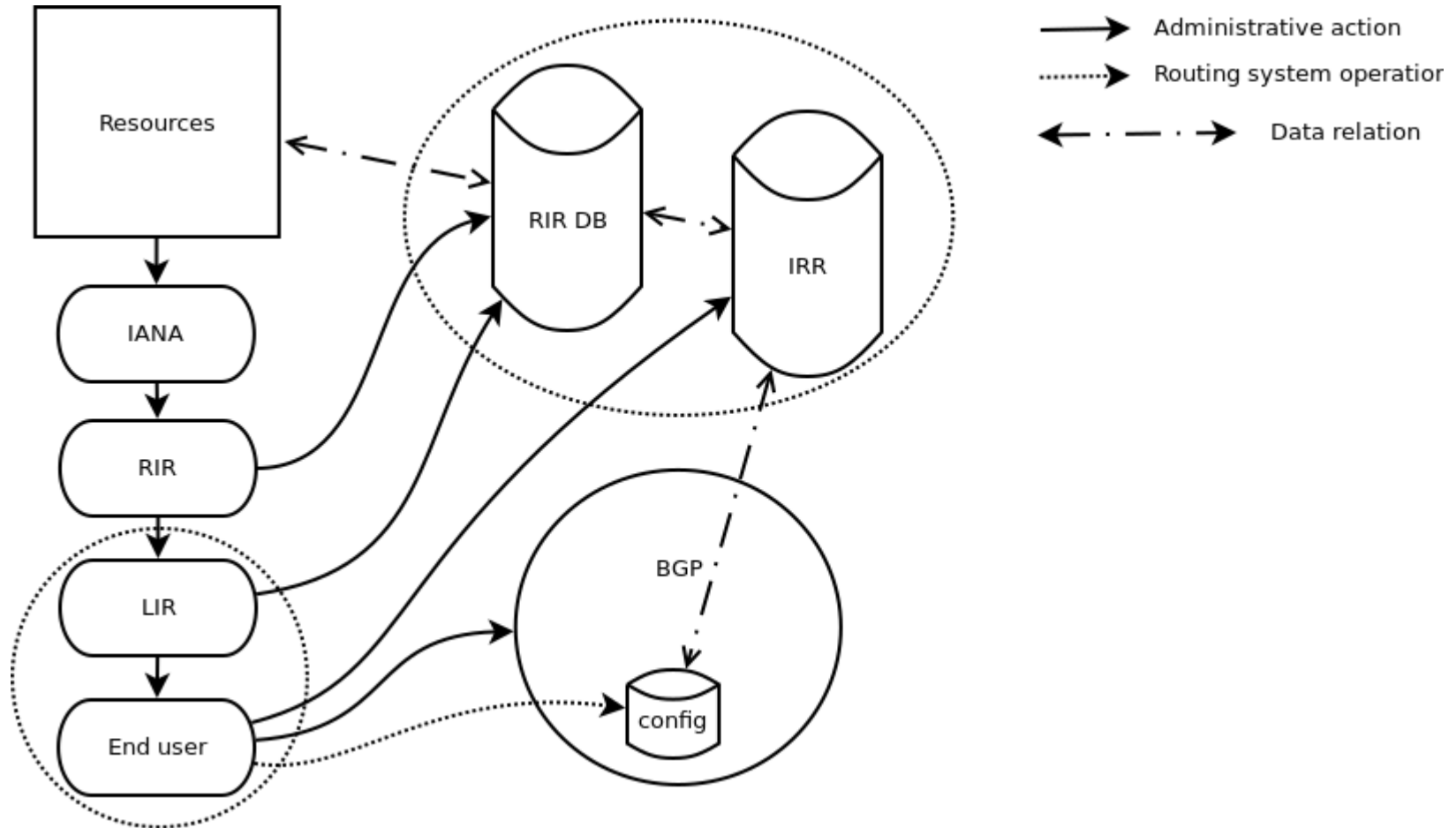


Přesnost směrovacích politik v IRR

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Internet



Origin

BGP:

	Network	Next Hop	Metric	LocPrf	Weight	Path
*	217.31.192.0/20	91.210.16.16	11	240	0	15685 25192 i
*		91.210.16.205	1	240	0	25248 25192 i
*		91.210.16.3	1	240	0	25192 i
*>i		217.31.48.125	1	256	0	25192 i

RIPE DB:

```
route:                217.31.192.0/20
descr:                CZNIC - NET
origin:               AS25192
member-of:           RS-CZ-NIC
mnt-by:               CZ-NIC-MNT
created:              2002-08-28T14:54:30Z
last-modified:       2009-10-08T11:26:22Z
source:               RIPE # Filtered
```



AS path

BGP:

	Network	Next Hop	Metric	LocPrf	Weight	Path
*	217.31.192.0/20	91.210.16.16	11	240	0	15685 25192 i
*		91.210.16.205	1	240	0	25248 25192 i
*		91.210.16.3	1	240	0	25192 i
*>i		217.31.48.125	1	256	0	25192 i

RIPE DB (AS25192):

```
aut-num: AS25192
as-name: CZNIC-AS
descr: CZ.NIC, z.s.p.o.
org: ORG-Cz1-RIPE
mp-import: afi any.unicast from AS25192:AS-IX accept ANY
mp-export: afi any.unicast to AS25192:AS-IX announce AS-CZNIC
```

AS25192:AS-IX :

```
as-set: AS25192:AS-IX
descr: Exchange Points
members: AS-ANY
```



AS path (cont.)

AS-CZNIC:

```
as-set: AS-CZNIC
members: AS25192
```

AS29134:

```
aut-num: AS29134
org: ORG-Is1-RIPE
as-name: IGNUM-AS
descr: Iignum s.r.o.
descr: Czech Republic
...
export: to AS25192 announce AS-IGNUM-NIX
import: from AS25192 action pref=256; accept ANY AND NOT fltr-bogons
```

fltr-bogons:

```
filter-set: fltr-bogons
descr: All bogon IPv4 prefixes.
filter: fltr-unallocated OR fltr-martian
```



Sběr dat

- Začátek v březnu 2012
 - BGP
 - Snapshoty RIPE DB
- Analýza vytvořena v červenci 2015
 - Omezena na RIPE DB / RIPE NCC service region
- Software je OSS, v Pythonu 2.7
<https://github.com/tmshlvck/bgpcrunch>



Analýza dat

- Volumetrická a “kvalitativní” data z BGP
- Korespondence BGP origin a route{,6} objects → statistiky & detailní textový log
- AS-path
 - aut-num objekty pro každý přeskok
 - importní & exportní filtry→ statistiky & detailní textový log



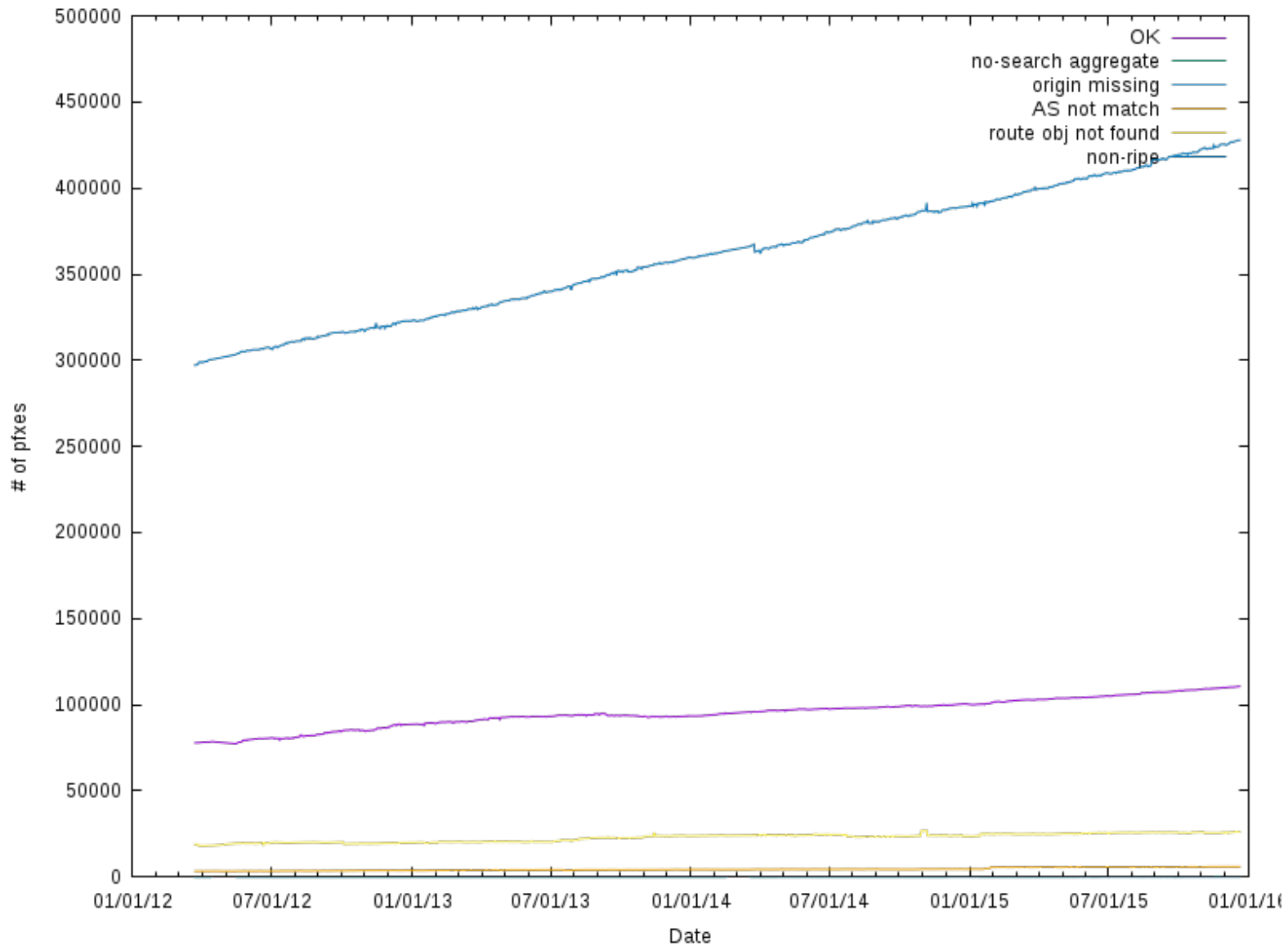
Origin – IPv4 (2015-12-22)

- OK: 110 657 (77.4%)
- route obj not found: 26 292 (18.4%)
- AS not match: 5876 (4.1%)

- non-ripe: 428 155



Origin - IPv4



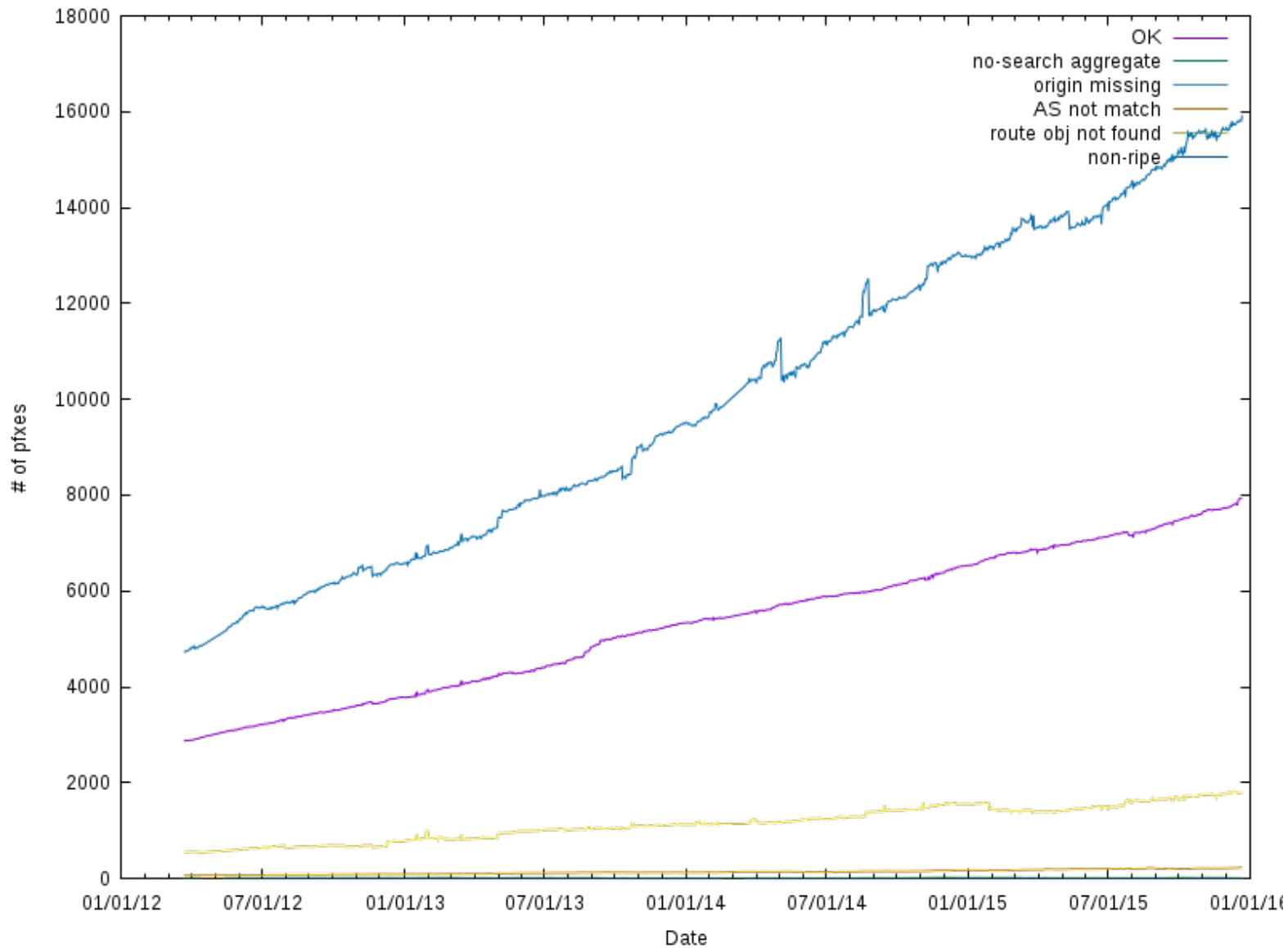
Origin – IPv6 (2015-12-22)

- OK: 7929 (79.6%)
- route obj not found: 1793 (18.0%)
- AS not match: 234 (3.0%)

- non-ripe: 15 928



Origin - IPv6

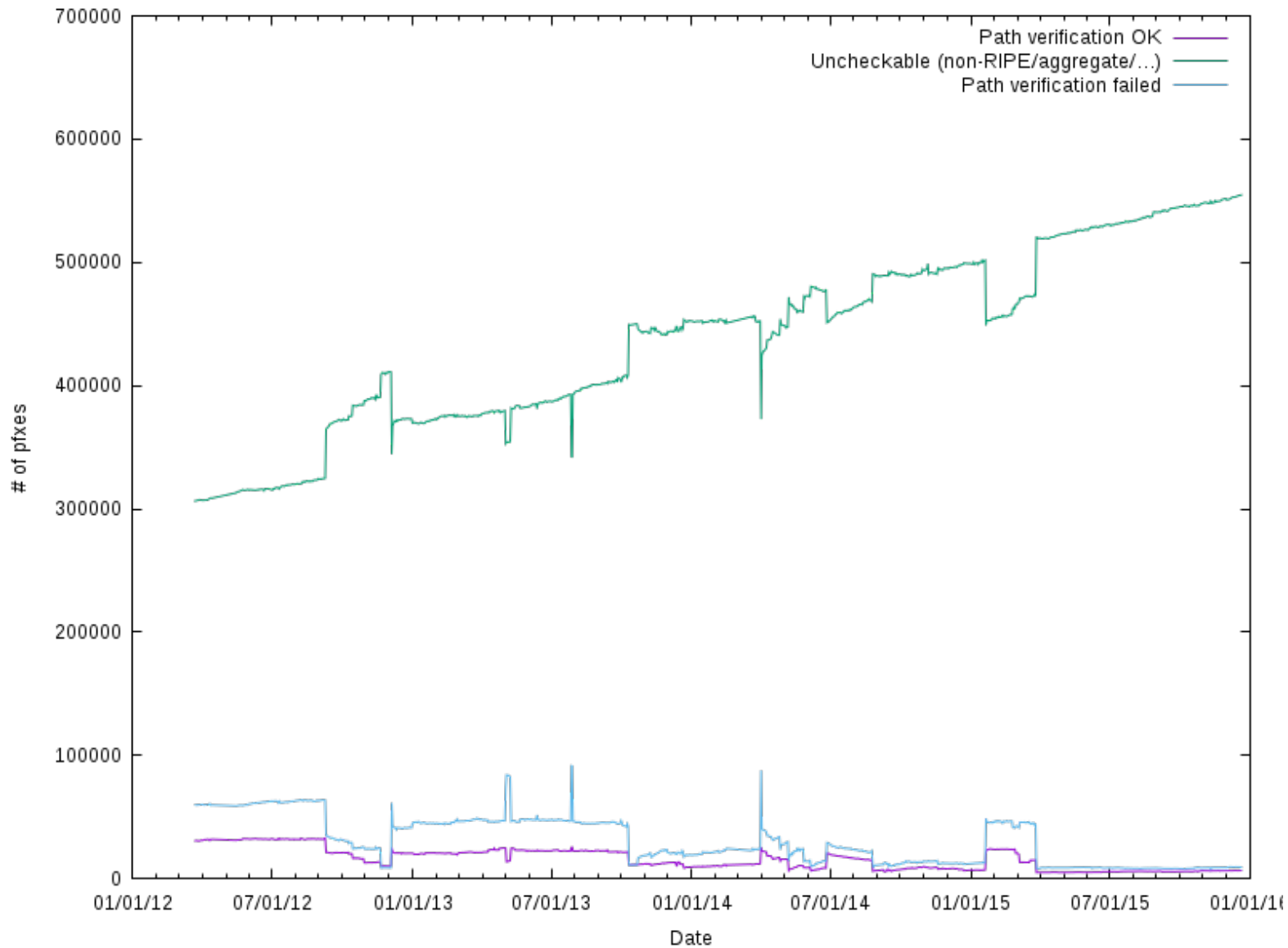


AS-path – IPv4 (2015-12-22)

- **Ověření AS-path OK: 6627 (41.6%)**
- **Chyby v AS-path: 9306 (58.4%)**
- **N/A (non-RIPE/aggregate/...): 555 233**



Validace AS-path - IPv4

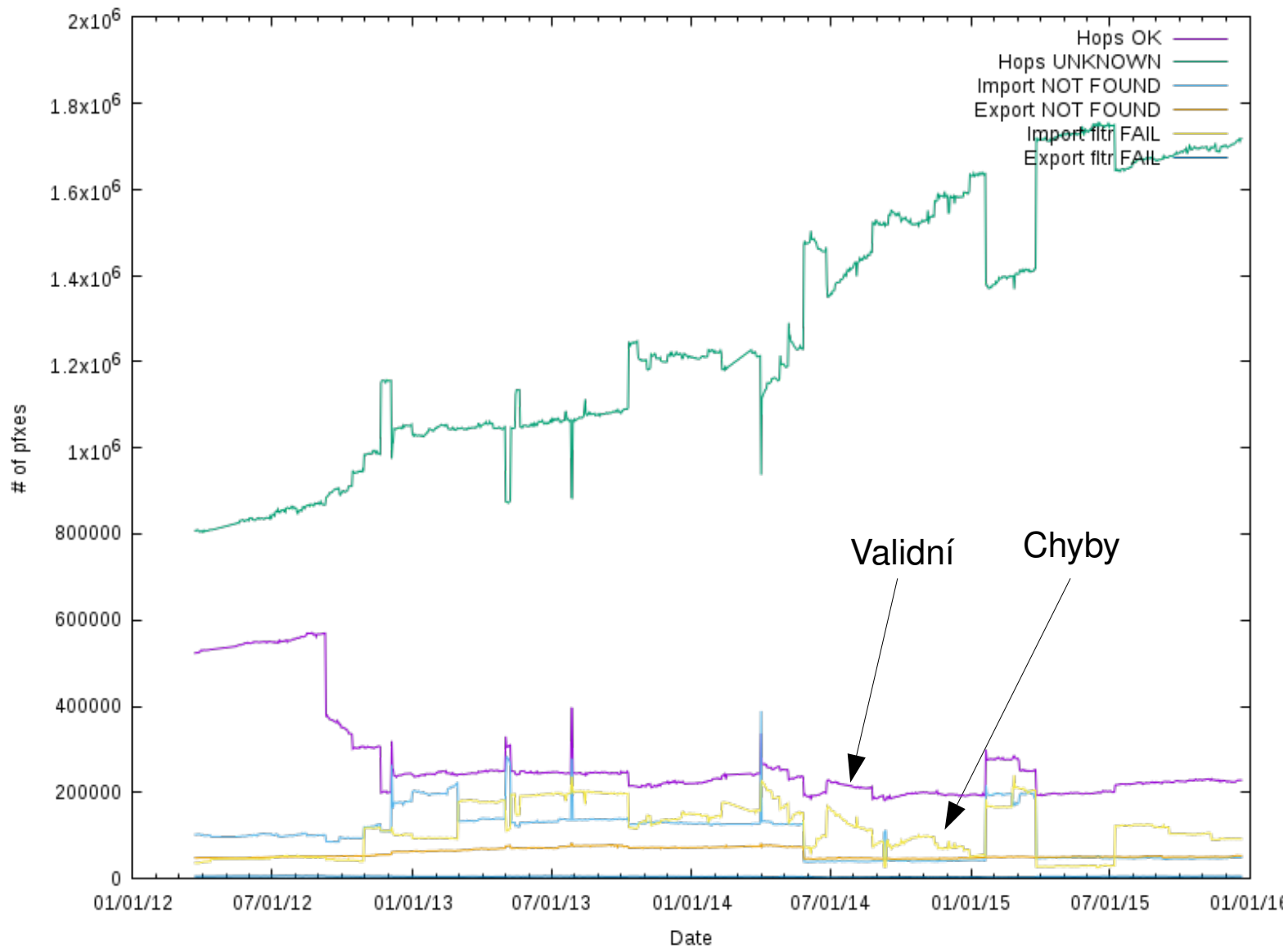


Přeskoky v AS-path - IPv4 (2015-12-22)

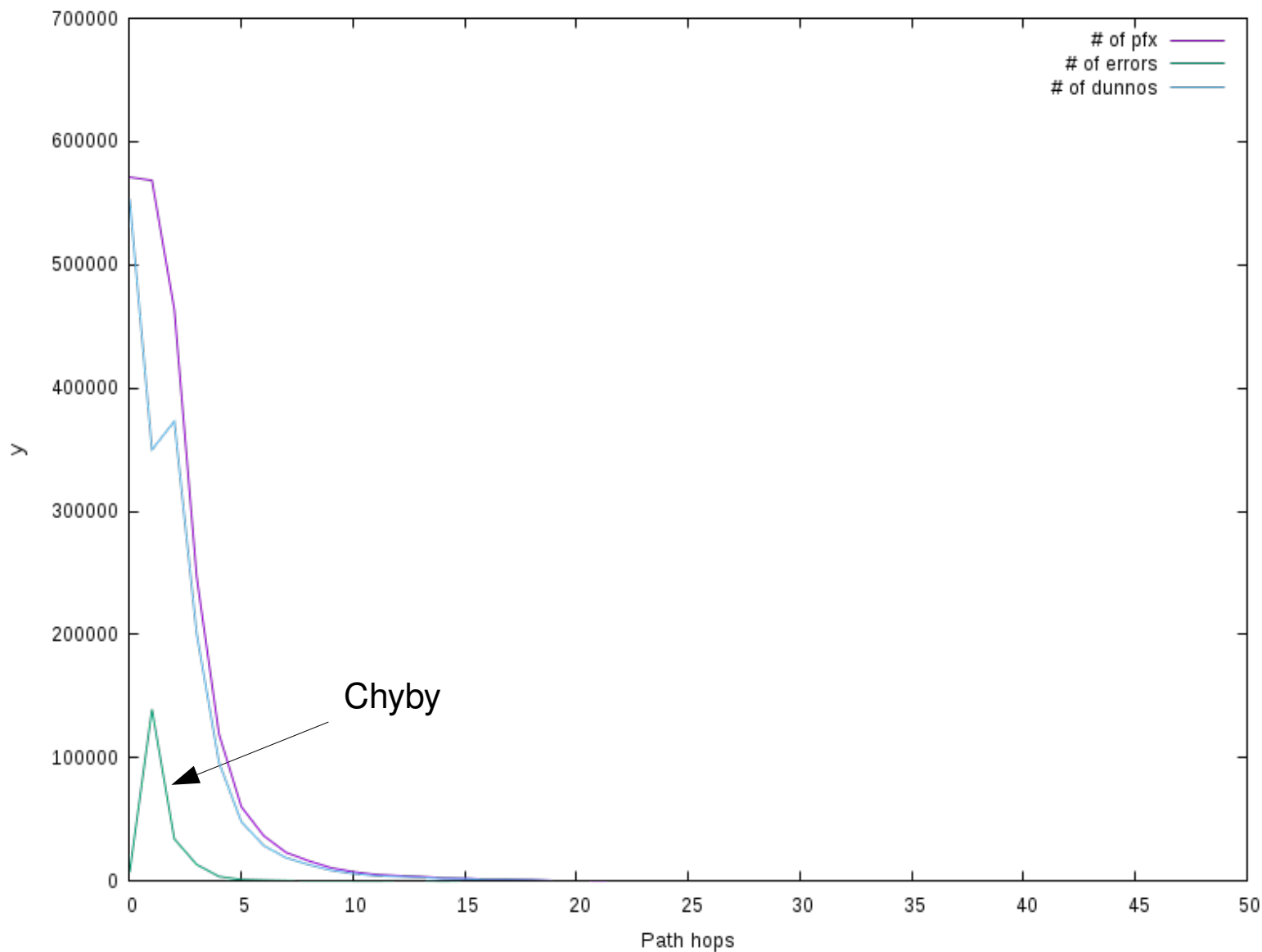
- Validní: 228 413 (53.2%)
- Chyby celkově: 201 100 (46.8%)
 - import filter not-found: 49901 (11.6%)
 - import filter failed: 92120 (21.4%)
 - export filter not-found: 53681 (12.5%)
 - export filter failed: 5398 (1.3%)
- Nerozhodnutelné (non-RIPE/...): 1 717 955



Validace přeskoků - IPv4



Validace přeskoků - IPv4

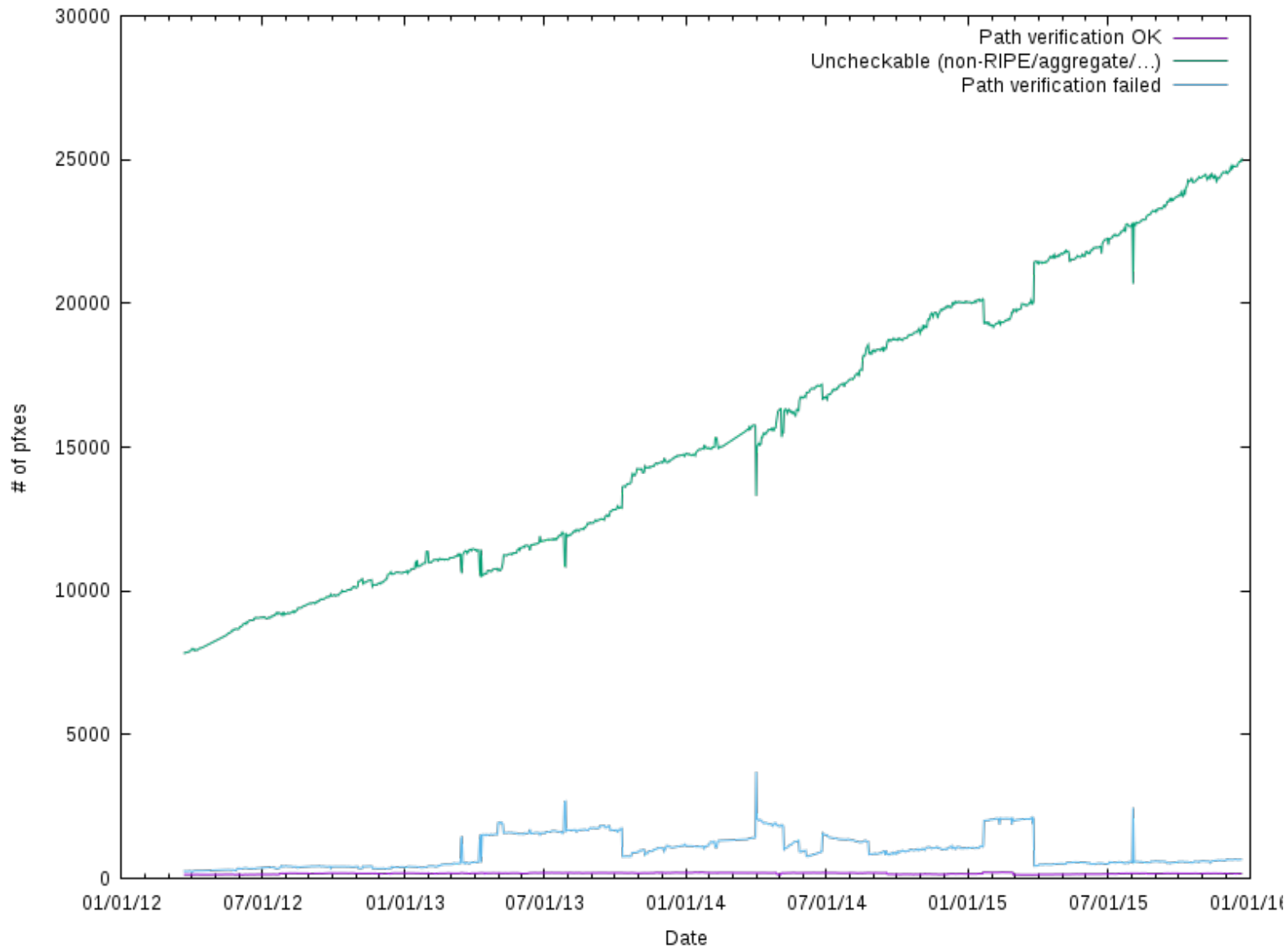


AS-path – IPv6 (2015-12-22)

- Ověření AS-path OK: 178 (21%)
- Chyby v AS-path: 669 (79%)
- N/A (non-RIPE/aggregate/...): 65 112



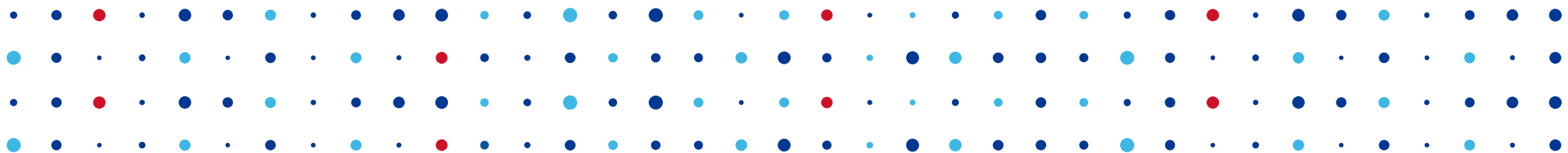
Validace AS-path - IPv6



Závěry

- Detailní výsledky jsou zajímavější!
- Liší se zbytek světa od Evropy?
- Co můžeme udělat pro zlepšení?
 - Více software?
 - Více dokumentace?
 - RDL?



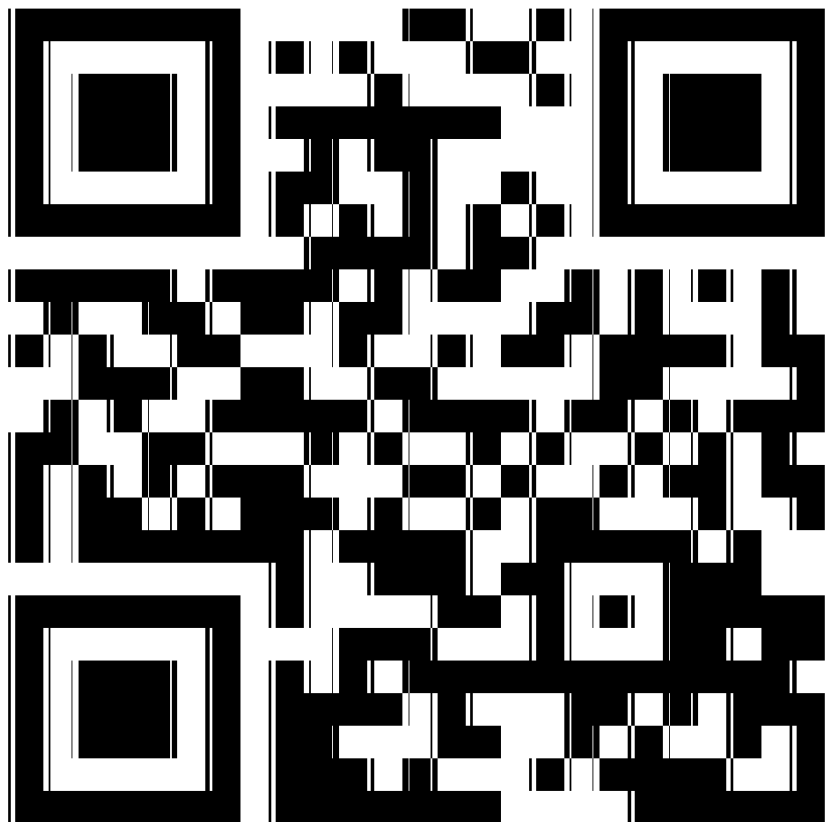


Děkuji za pozornost

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Kompletní analýza



<http://bgp crunch.labs.nic.cz/>

