Network Security Service Development at DE-CIX: Blackholing and RPKI-Light / BGPSec-Light

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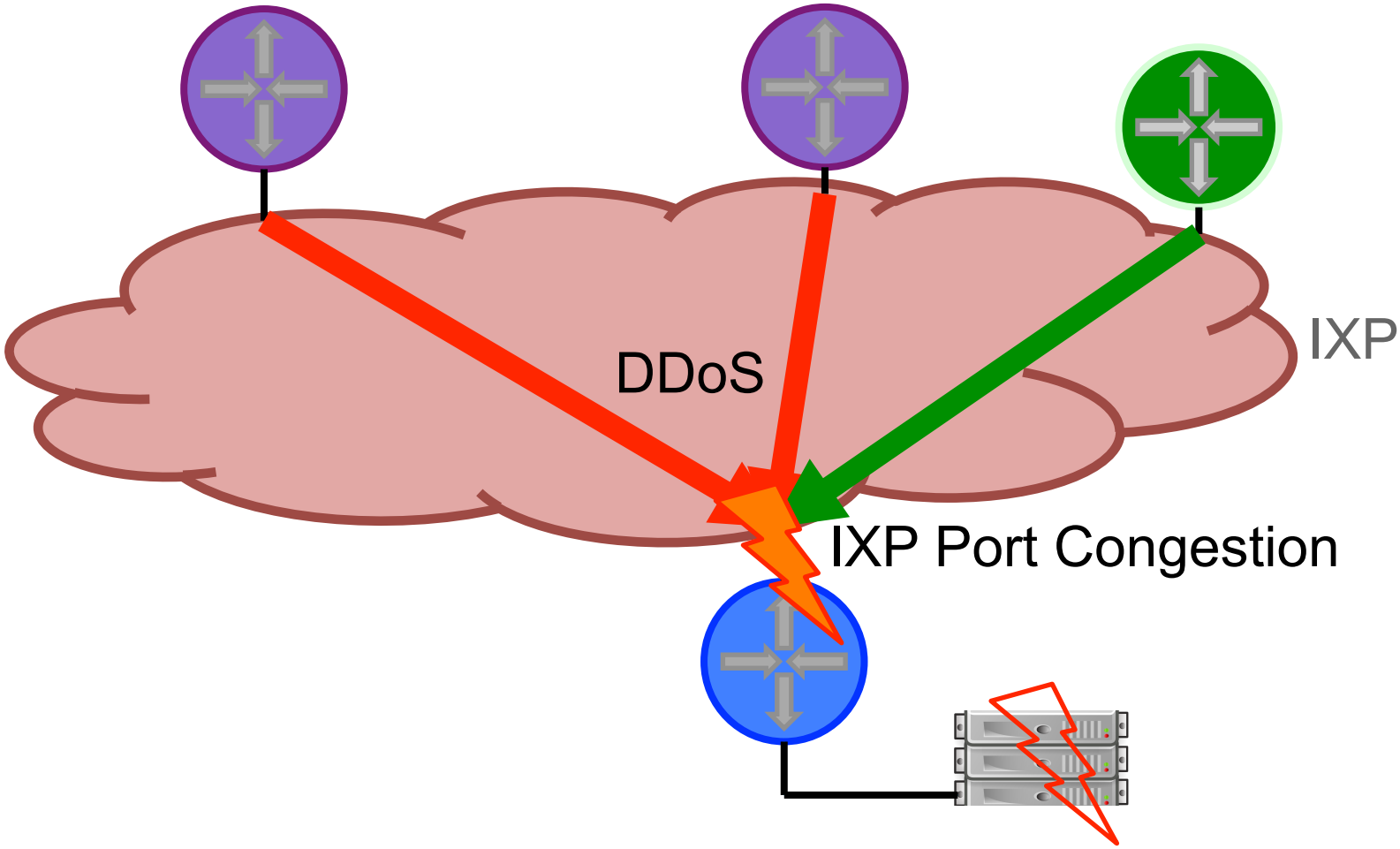
Agenda

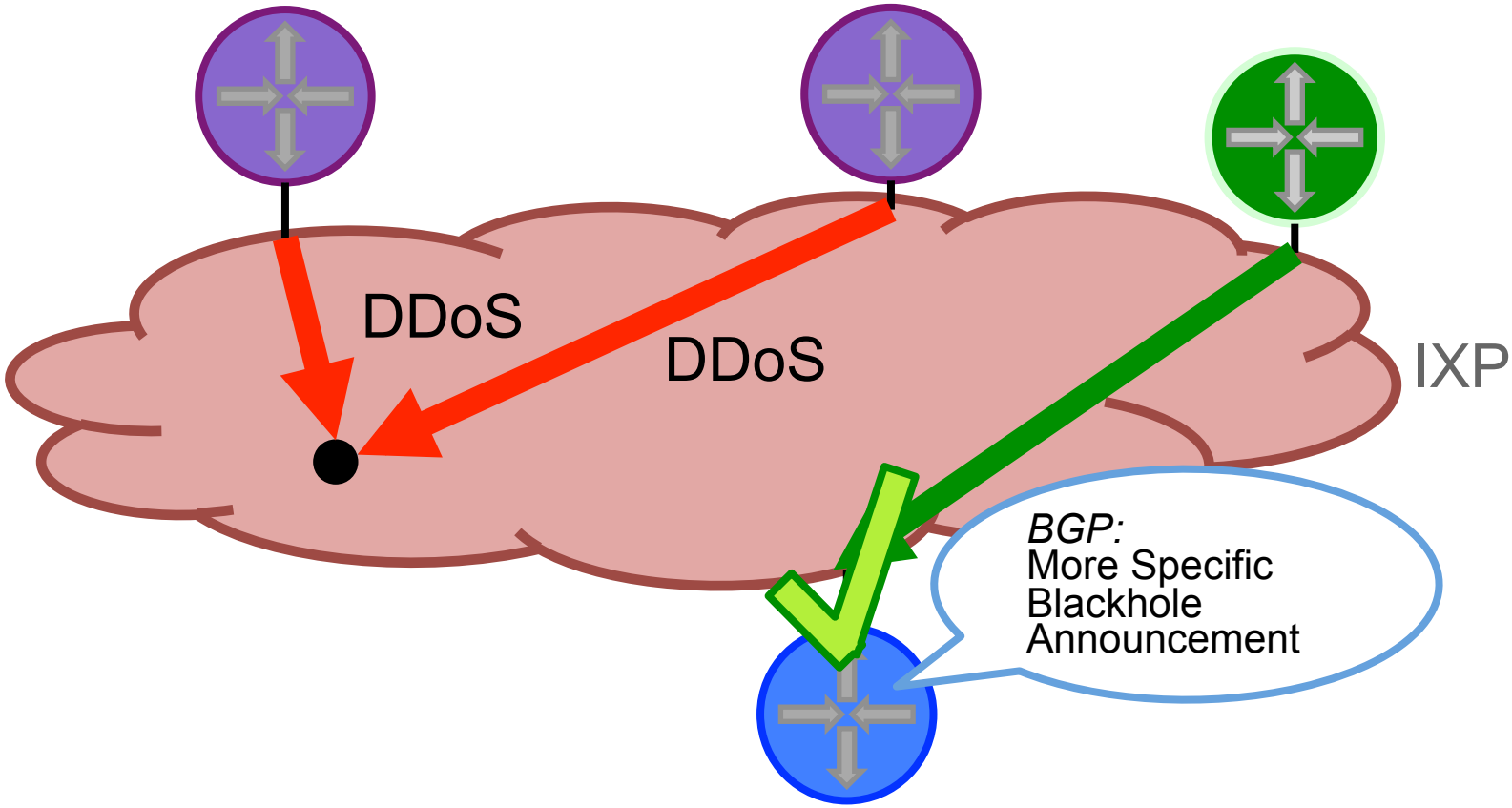
- Blackholing
- RPKI-Light
- BGPSec-Light

Blackholing

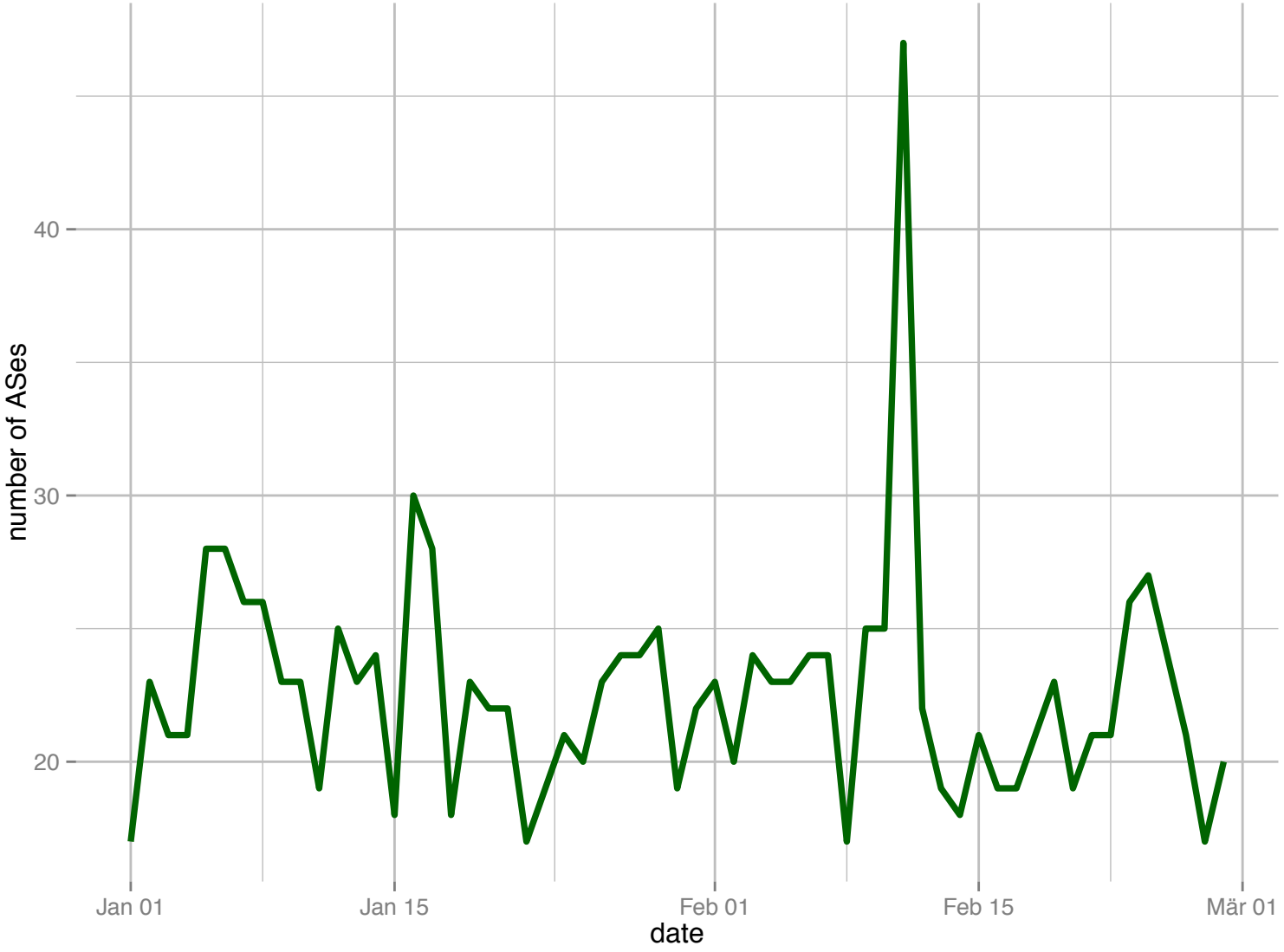
Motivation: The Problem: Massive DDoS



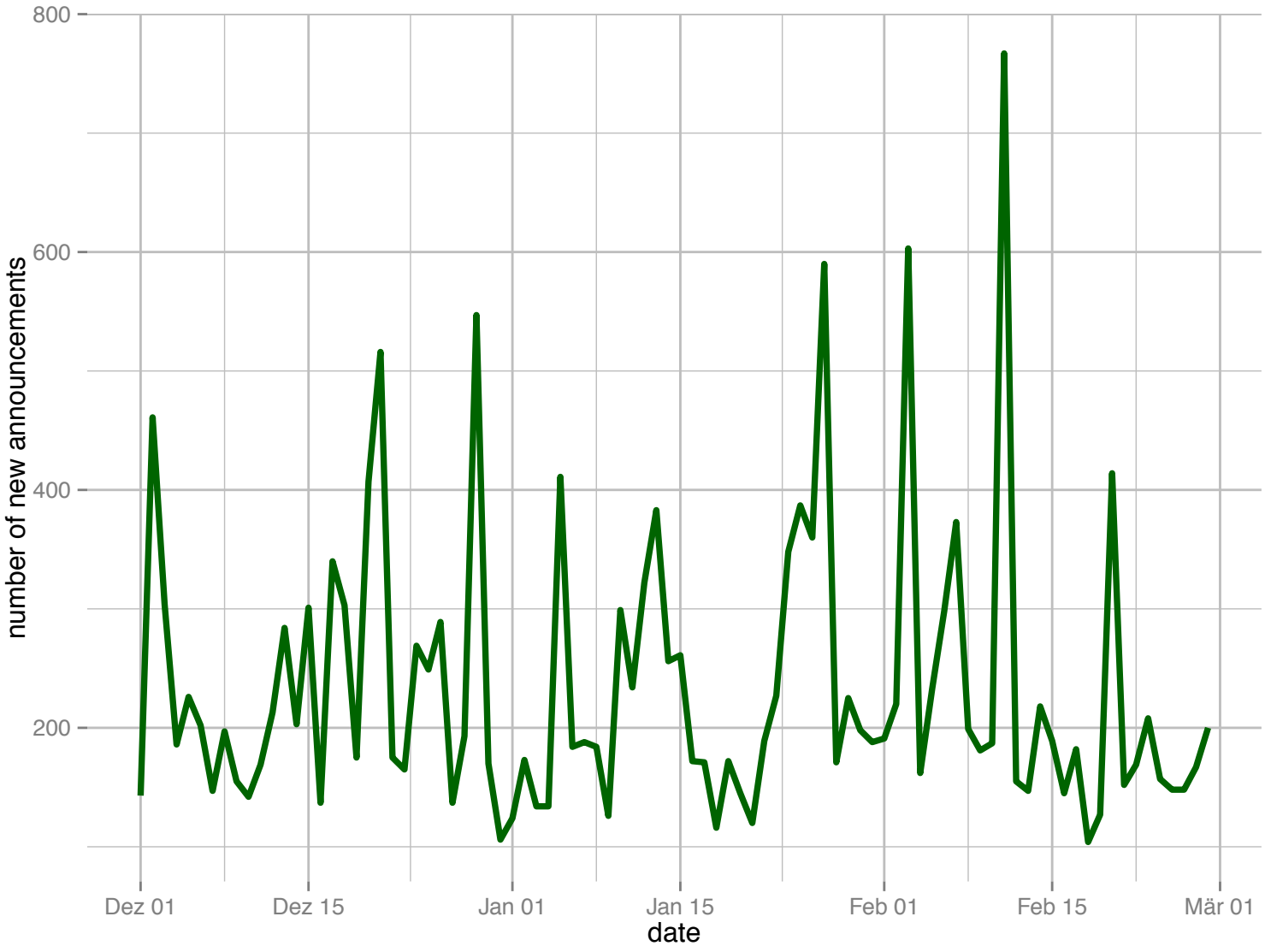
Motivation: A Solution: Blackholing



Number of ASNs (≈ Customers)



Number of Prefixes Blackholed



Todos

- ~~Implementation of Blackholing feature~~
- Simple trigger to activate blackholing: commonly agreed Blackholing BGP community
- Dedicated Blackholing Route-Server

Motivation: Different Triggers for Blackholing

- Different triggers for Blackholing at IXPs (selection):
  - DE-CIX Apollon — Blackhole IP Address: FRA: 80.81.193.66, NY: 206.130.10.66
  - Netix — Blackhole Community: 65499:999
  - MSK-IX.ru — Blackhole Community: *0:666*
  - NIX.CZ — Fenix: RTBH
  - TPIX.pl — Blackhole Community: *29535:666*

  Policy control at route servers

- Different triggers for Blackholing at ISPs (selection):
  - Init7: Blackhole Community: 65000:666
  - Team Cymru: Blackhole Community: 64496:666
  - Hurrican Electric: Blackhole Community: 6939:666
  - NTT: Blackhole Community: 2914:666
- Proposal: One commonly agreed way to trigger Blackholing at IXPs and ISPs -> Internet Draft

Evolution

2014:

- Discussion about commonly agreed Blackhole community in KG IIS meetings
- Euro-IX tech mailing list: Discussion on commonly agreed Blackhole community
- A solution was selected: Blackhole BGP Community: **65535:666**
- 25th Euro-IX Forum: Presentation and panel about Blackholing
- Work on an "Internet Draft" started. Authors: King, Dietzel (DE-CIX), Döring (SpaceNet), Hankins (Alu), Jiran (NIX.CZ), Kritski (NetIX), Seitz (STRATO)

2015:

- Draft of "Internet Draft" discussed on the Euro-IX tech mailing list
- "Internet Draft" Version 00 submitted to IETF GROW working group
- Discussion on the GROW mailing list and during the IETF 93
- Requests from Euro-IX and GROW:
  - Also add ISPs
  - Be more specific about "Operations Recommendations"
- Version 01 of the "Internet Draft" released (above requests applied)
- Call for "Working Group" adaption (result is pending – looks good?)

Next Steps

- We need more feedback -> Release new versions: Repeat

  https://tools.ietf.org/html/draft-ymbk-grow-blackholing-01

- Last Call right before IETF 94 -> RFC?

Dedicated Blackholing Route-Server

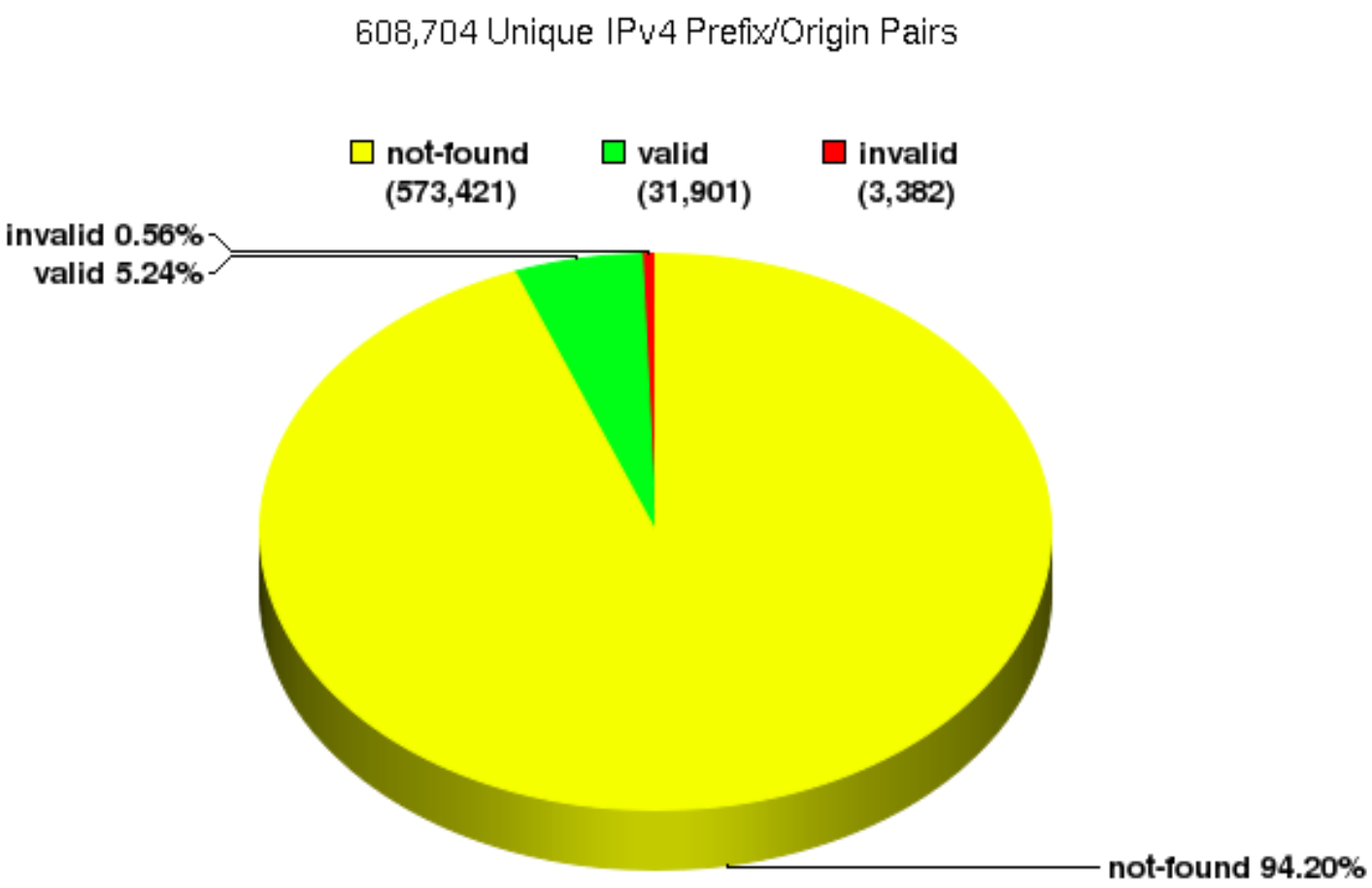
- Discussion in KG IIS
- Discussion on the tech mailing list
- Implementation is ongoing
- RFS: Q1/2016

RPKI-Light

RRKI-Light

- RPKI: Origin validation (Is AS x authorized to originate a route for IP prefix y?)
- Discussion in KG IIS
- AMS-IX and DE-CIX are already working on it
- Open issues:
  - Acceptance
  - Implementation: Standardized signaling

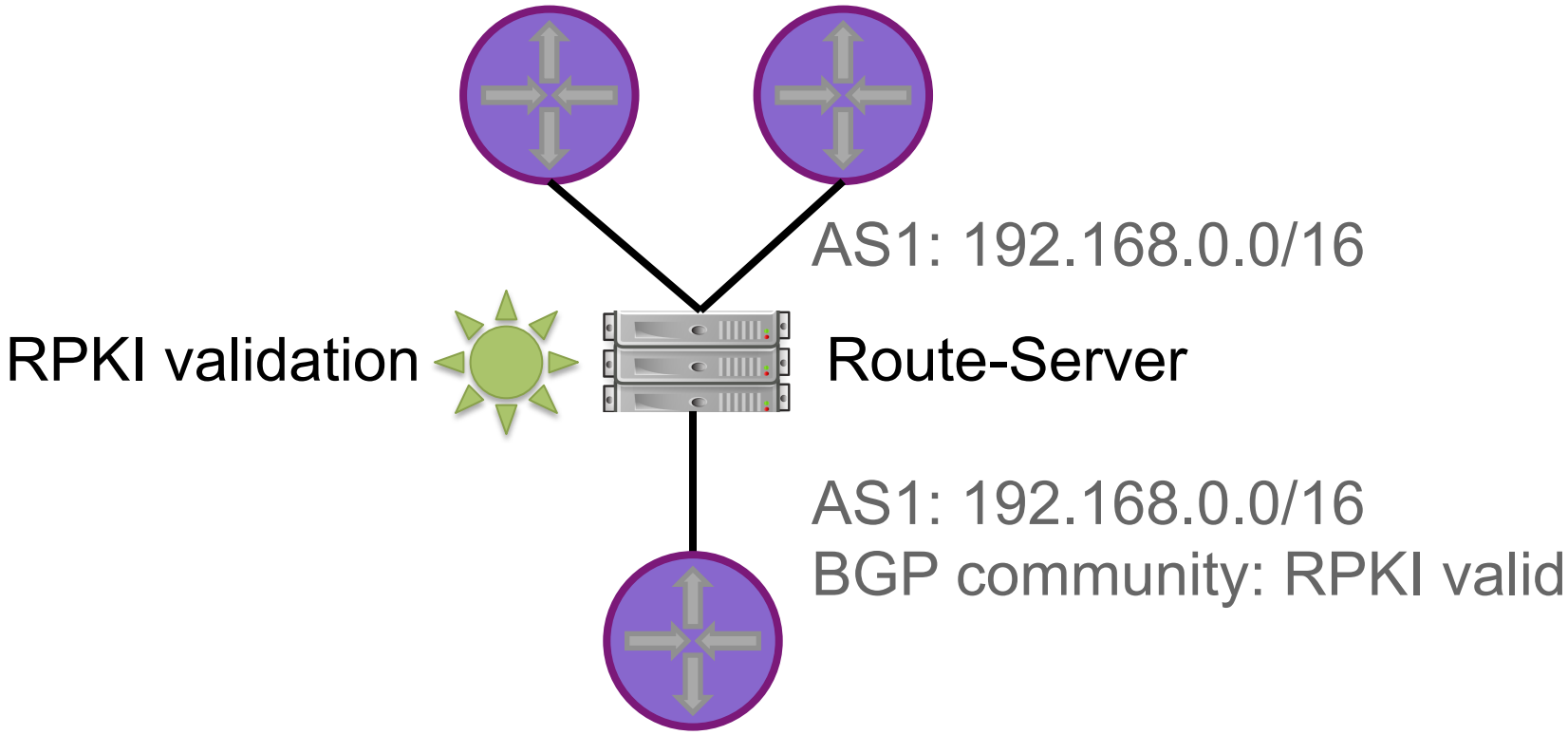
RPKI Deployment



RPKI Deployment: DE-CIX NYC

- Total Prefixes: 48328
- Prefixes Valid: 33 (0.06%)
- Prefixes Invalid: 2593 (5.304%)
  - Prefixes Invalid AS: 2591 (5.3%)
  - Prefixes Invalid Length: 2 (0.004%)
- Prefixes Not Found: 45702 (94.5%)

RRKI-Light



Advantage: Routers not capable of RPKI validation are enabled to benefit from RPKI security.

RPKI-Light Implementation

- Idea: Standardize RPKI-Light signaling for IXPs
- Implementation details:
  - Extended community: Non-transitive flag?
  - One well-known community for RPKI (valid, invalid, unknown)?
  - Should the AS of the IXP be part of the extended community?

BGPSec-Light

BGPSec-Light

- BGPSec: a mechanism for providing path security for BGP route advertisements
- BGPSec does not support route-servers at IXPs (https://tools.ietf.org/html/draft-sriram-bgpsec-design-choices-08#section-7.4)
- Are you aware of this?
- How do you handle this?
- Should we try to find a solution for this?

Thank you!

Please provide feedback:

https://tools.ietf.org/html/draft-ymbk-grow-blackholing-01