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IXP FilterCheck

A New Route Analysis Tool for IXPs

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Unique Role of IXPs to Help Routing Security

- Improving global BGP routing hygiene is a notoriously difficult task.
  - Incremental improvements are possible!

- IXP Route Servers offer an opportunity to filter inappropriate BGP messages
  - Based on best practice filters (RPKI/IRR invalids, bogons, etc.)
  - A value to their IXP members and for the good of the internet.

MANRS IXP Program(me)

The IXP Programme Action Set

Action 1. Prevent propagation of incorrect routing information. (Mandatory)

The IXP implements filtering of route announcements at the Route Server based on routing information data (IRR and/or RPKI). Based on the outcome of the validation process, the invalid announcements are filtered in accordance with the IXP published policy.

IXPs using a Route Server to facilitate multilateral peerings should use it to validate received route announcements from a peer and subsequently filter them to other peers. Special purpose cases, such as research projects, are out of scope for this requirement.

Validation is usually done by checking BGP announcements against IRR data (by resolving the AS-SET object) or RPKI data (ROA objects or a validated cache). It is also common to check the announcements against “bogons” or “martians” (IP prefixes as defined in RFC1918, RFC5735, and RFC6598; ASNs in the AS-PATH as defined by RFC5398, RFC6793, RFC6996, RFC7300, RFC7607).

https://www.manrs.org/ixps/#actions

Can we measure this?

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Measurement could offer:

- Technical verification of MANRS IXP compliance
- Feedback for IXPs to ensure proper filtering

To do it we’ll need route collection from IXP route servers!

Route collection from IXP route servers.

PCH publishes MRT files collected at from 180 IXPs around the world.

These MRT files include PCH's peering sessions at these IXPs including with the route servers.

- PCH publishes 1 MRT file **every minute** for each IXP (**1440 files/day/IXP**).
- We're downloading quarter million files per day to learn about routes passed from these IXP route servers.
- The PCH MRT data offers **filtered** sessions with route servers.
  - *Thank you PCH!*

Route collection from IXP route servers.

What can we do with route collection from 180 IXP route servers?

- Can’t positively confirm what was filtered (filtered view)
- But ***can*** flag anything that didn’t get filtered ***but should have***

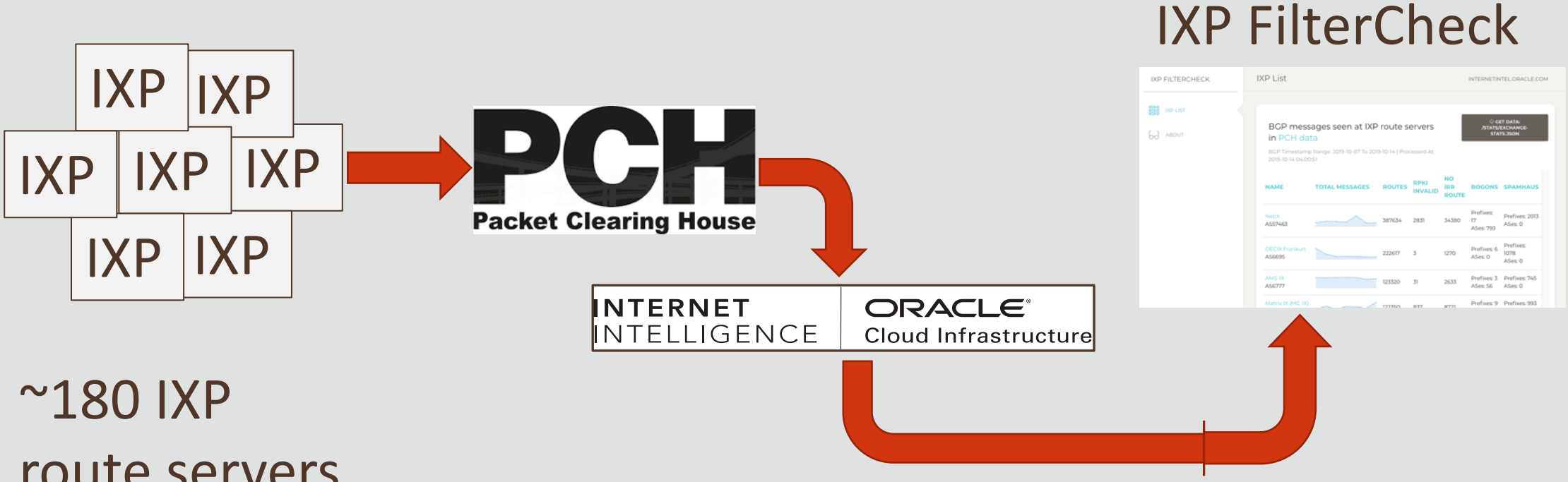
Things like

- RPKI invalids (exception added for invalid length on :666 messages)
- IRR unknowns (simple origin validation, not recursive resolving of AS-sets)
- Bogons (ASNs, prefixes based on Team Cymru lists)

Also things like

- Spamhaus Droplists *(Not MANRS requirement)*

IXP FilterCheck Data Path

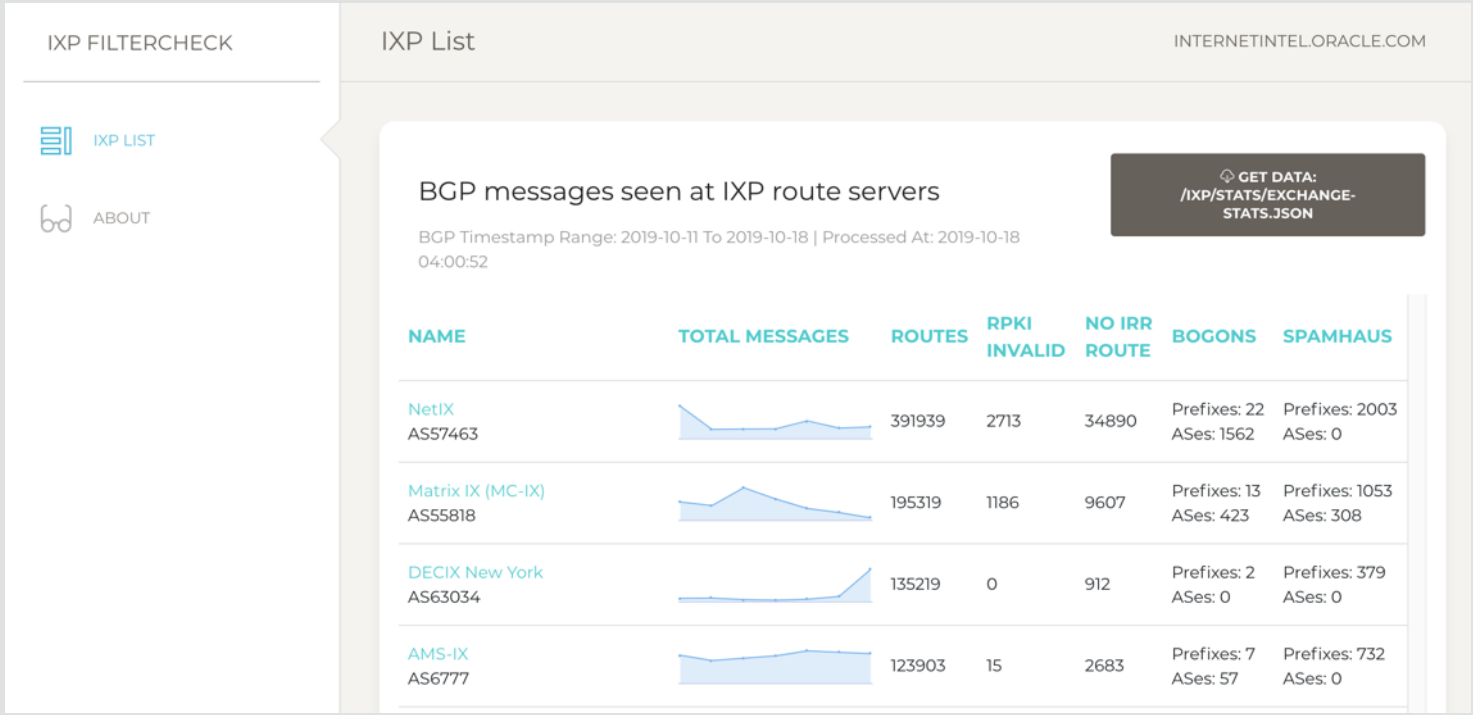


~180 IXP
route servers

IXP FilterCheck UI

http://map.internetintel.oracle.com/ixp

Summary view

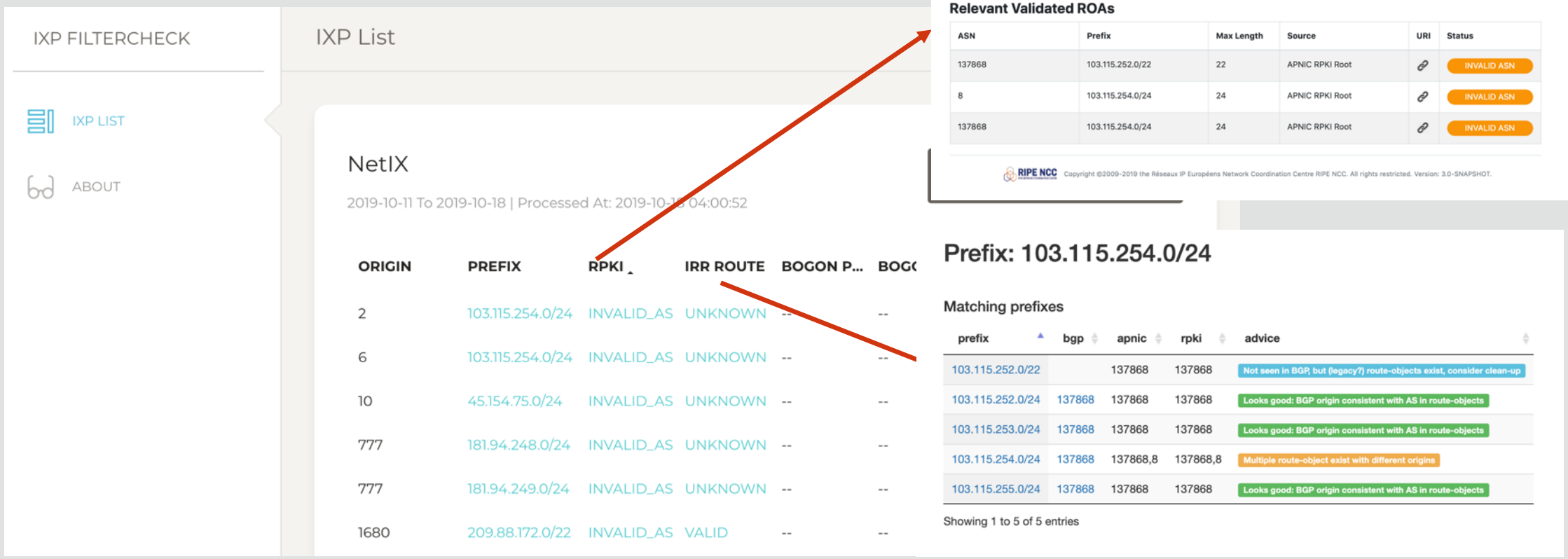


All data updated daily and available via json.

IXP FilterCheck UI

http://map.internetintel.oracle.com/ixp

IXP-level view



All data updated daily and available via json.

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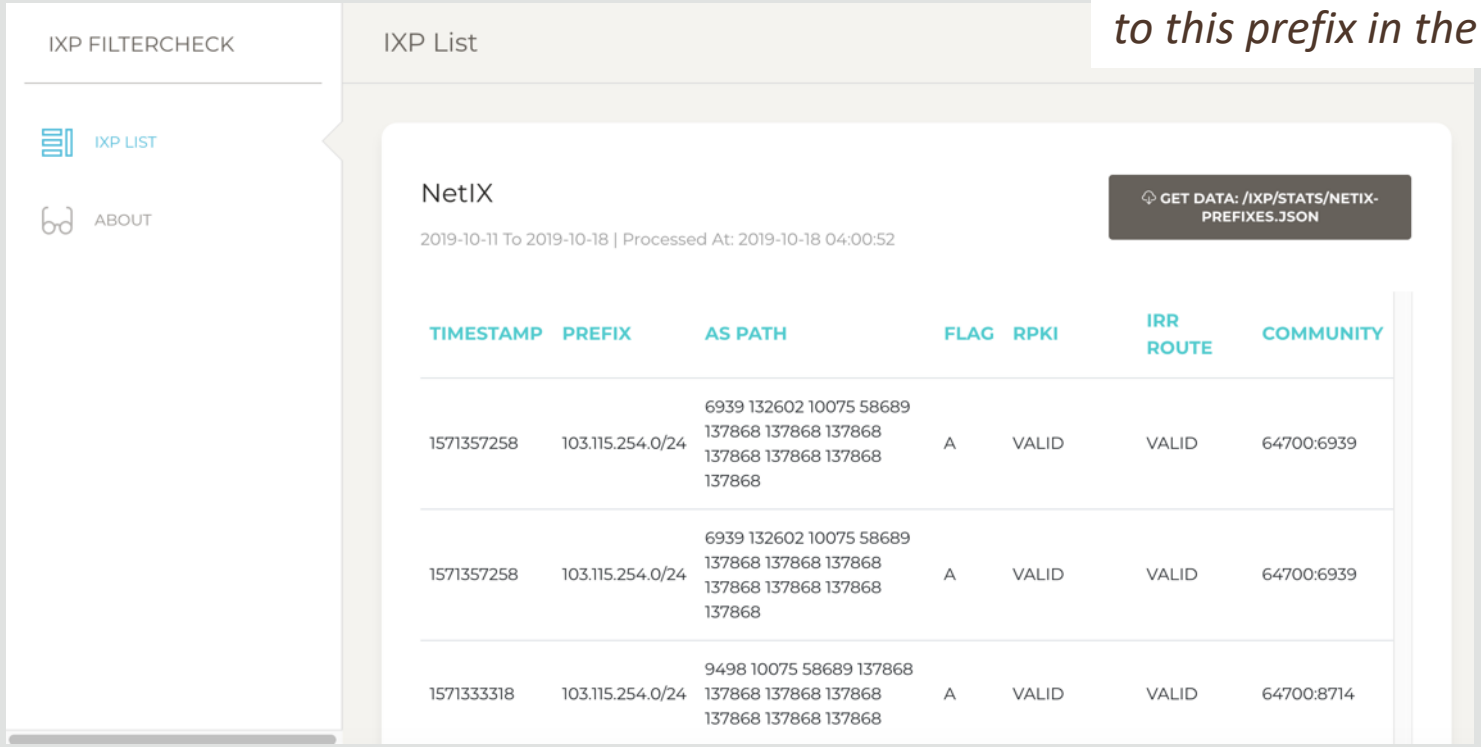
IXP/Prefix-level view

All messages seen at this IXP pertaining to this prefix in the past week.



All data updated daily and available via json.

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Andrei Robachevsky, ISOC

Thank you

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