

The real-time Internet routing observatory

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Isolario project

Objective: foster ASes to share their BGP data

- ▶ The more the ASes, the more the completeness of public BGP data



Isolario - The Book of Islands

"[...] where we discuss about all islands of the world, with their ancient and modern names, histories, tales and way of living..."

Benedetto Bordone (Italian cartographer)

Approach: Do-ut-des

- ▶ Participants open at least one v4/v6 BGP session with Isolario providing their full routing table
- ▶ In change, Isolario offers real-time applications based on the aggregation of every routing information collected

BGP route collectors



University of Oregon Route Views Project

Route Views was originally conceived as a tool for Internet operators to obtain real-time information about the global routing system from the perspectives of several different backbones and locations around the Internet. It collects BGP packets since 1997, in MRT format since 1997

<http://www.routeviews.org>



RIPE NCC Routing Information Service (RIS)

The RIPE NCC collects and stores Internet routing data from several locations around the globe, using RIS. It collects BGP packets in MRT format since 1999

<https://www.ripe.net/analyse/internet-measurements/routing-information-service-ris>



Packet Clearing House (PCH)

PCH is the international organization responsible for providing operational support and security to critical Internet infrastructure, including Internet exchange points and the core of the domain name system. It operates route collectors at more than 100 IXPs around the world and its data is made available in MRT format since 2011

<https://www.pch.net/resources/Raw Routing Data>

Isolario free services for feeders

Every feeder has **free** access to a set of services tailored to monitor and analyse BGP data coming into Isolario system

Real-time monitoring services



BGP Flow viewer



Routing table viewer



Subnet reachability



Website reachability

Diagnostic services



Alerting system



Daily reports

Historic monitoring services (work in progress)



Routing table viewer



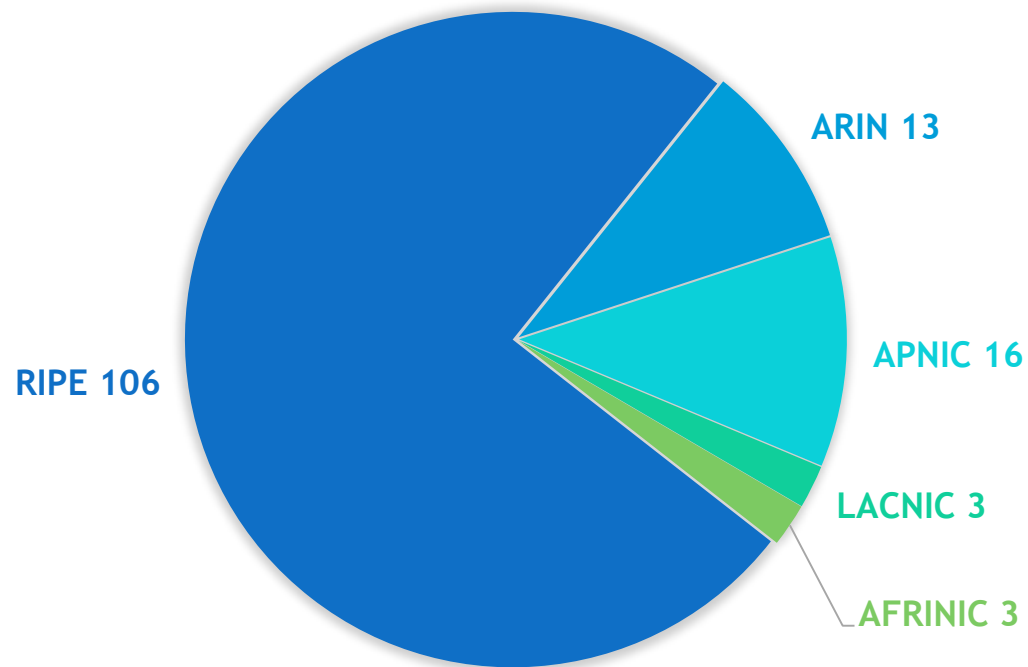
Subnet reachability

Please, feel free to try isolario.it !

Username: *guest*
Password: *guest*

Isolario numbers (October 14th, 2018)

FEEDER ASEs GEOLOCATION



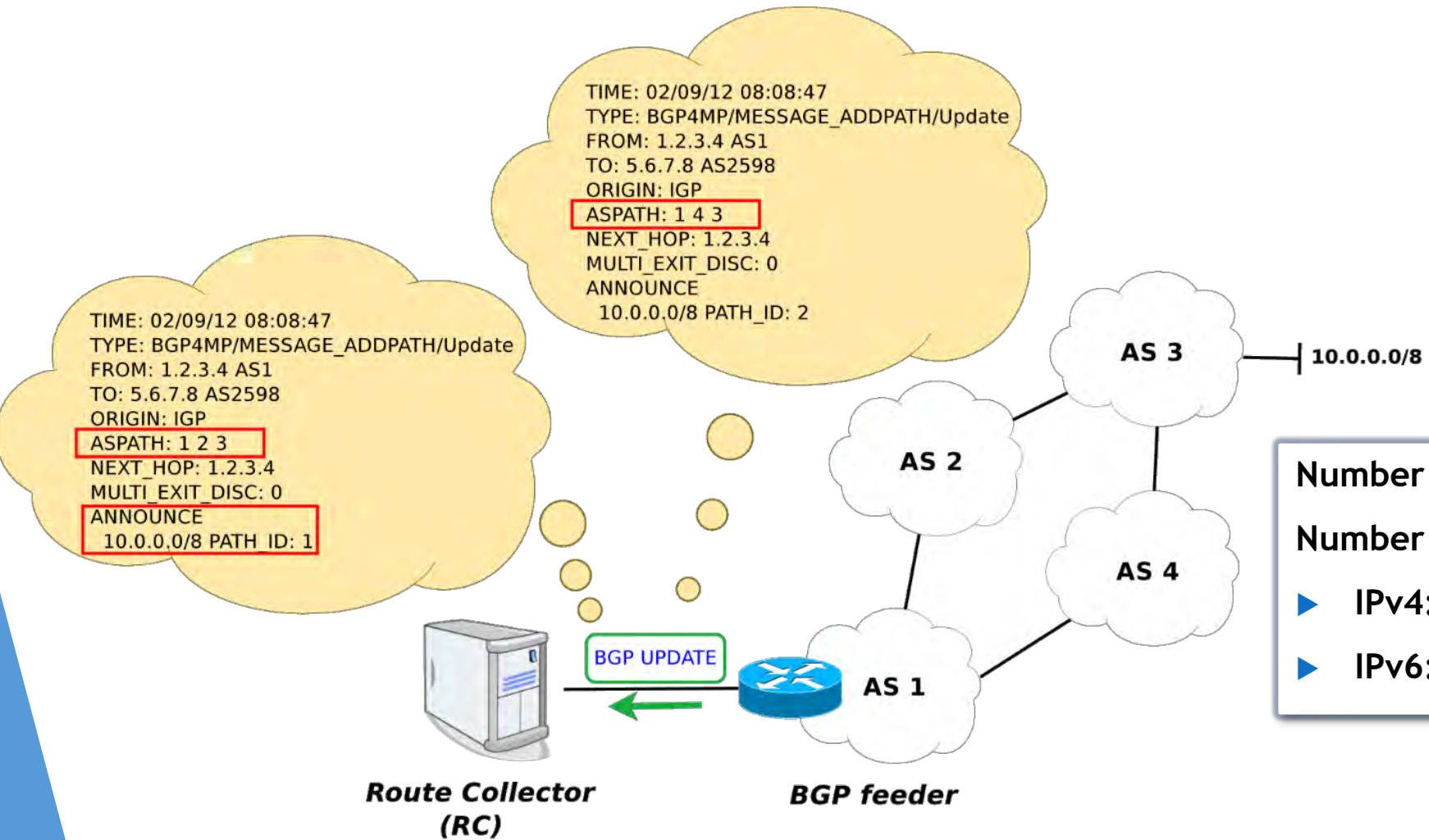
Number of ASes participating: 159

Number of sessions configured: 470

- ▶ **IPv4: 236 from 146 ASes**
- ▶ **IPv6: 234 from 119 different ASes**



Isolario numbers with ADDPATH - (October 14th, 2018)



Number of ADDPATH ASes participating: 19
Number of sessions configured: 50

- ▶ IPv4: 23 from 14 different ASes
- ▶ IPv6: 27 from 17 different ASes



What do we provide to the community?

MRT data

- ▶ RIB feeder snapshots every 2 hours
- ▶ UPDATE collections every 5 minutes
 - * same format as RIPE RIS and Route Views (RFC 6396, ADDPATH RFC 8050)
 - ** used in Hurricane Electric BGP Toolkit (<https://bgp.he.net>)

Periodic analyses

- ▶ AS characteristics
- ▶ Feeder contribution
- ▶ Total coverage of route collectors

Open source software

- ▶ Interactive Collecting Engine (ICE)
- ▶ BGP Scanner



What's next?

New services

- ▶ Bogon real-time recognition
- ▶ Real-time looking glass
- ▶ Route collector on BMP (RFC 7854)

Research directions

- ▶ Real-time routing anomaly detection (e.g. prefix hijack)
- ▶ Pattern recognition in BGP attributes
- ▶ Country-focused special analyses (e.g. Internet shutdown recognition)
- ▶ Feeder data hygiene techniques



Thank you for your attention



Join us and help us to unveil the Internet AS-level structure!

To participate, contact us at:

info@isolario.it

