

IXPs: is De-peering the Right Choice?

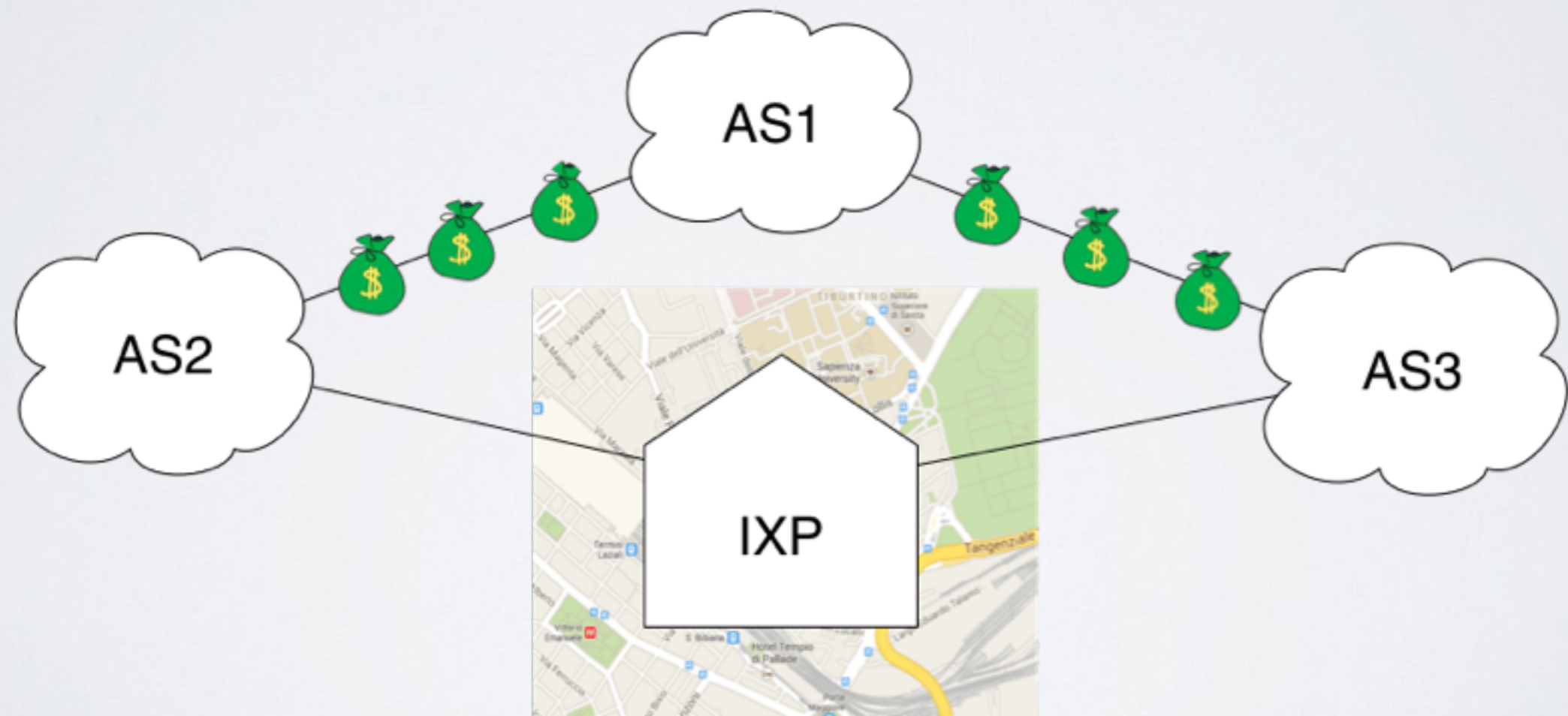
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BACKGROUND

Internet eXchange Points (IXPs) are infrastructures used by ISPs to exchange traffic between their ASes.



BACKGROUND

**Lower distances
and
locality of traffic**

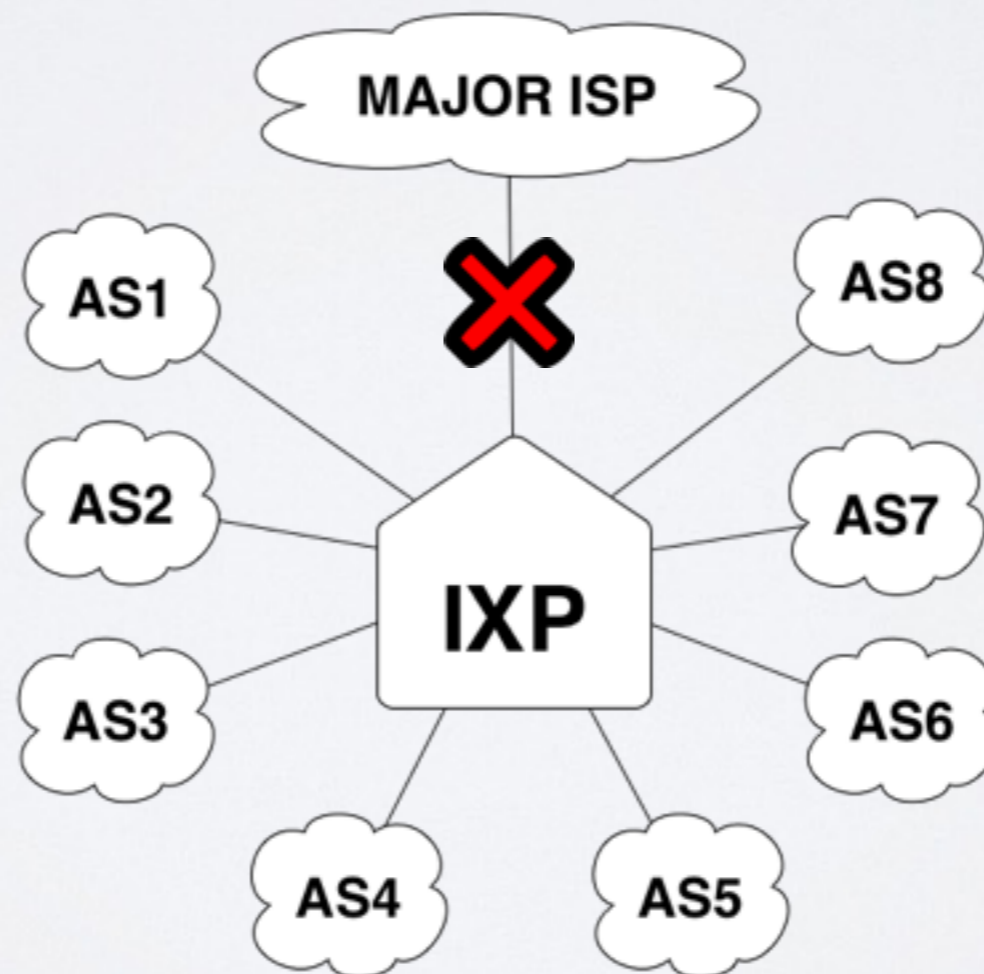


Better QoS for the user



BACKGROUND

- Some major **ISPs** *have canceled all peerings* (**depeering**) at the IXPs, justifying such decision in terms of :
 - Cost reduction
 - Improvement of the quality of service (QoS).

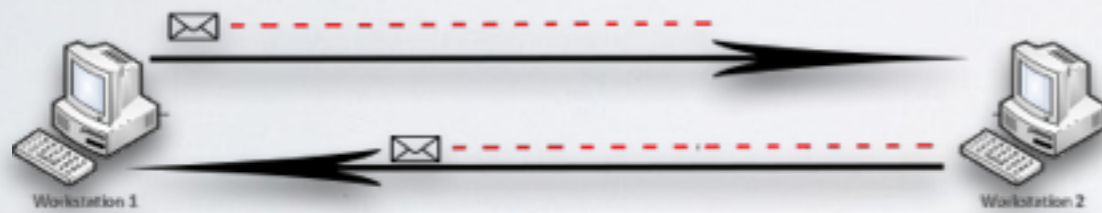


OUR TARGETS

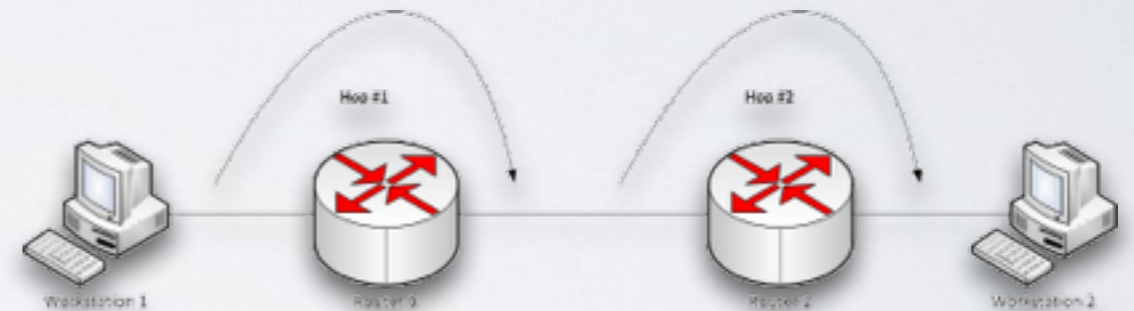
Investigate the impact that IXPs have on the **QoS**

METRICS USED

Round Trip Time



Hop Count



Packet Loss

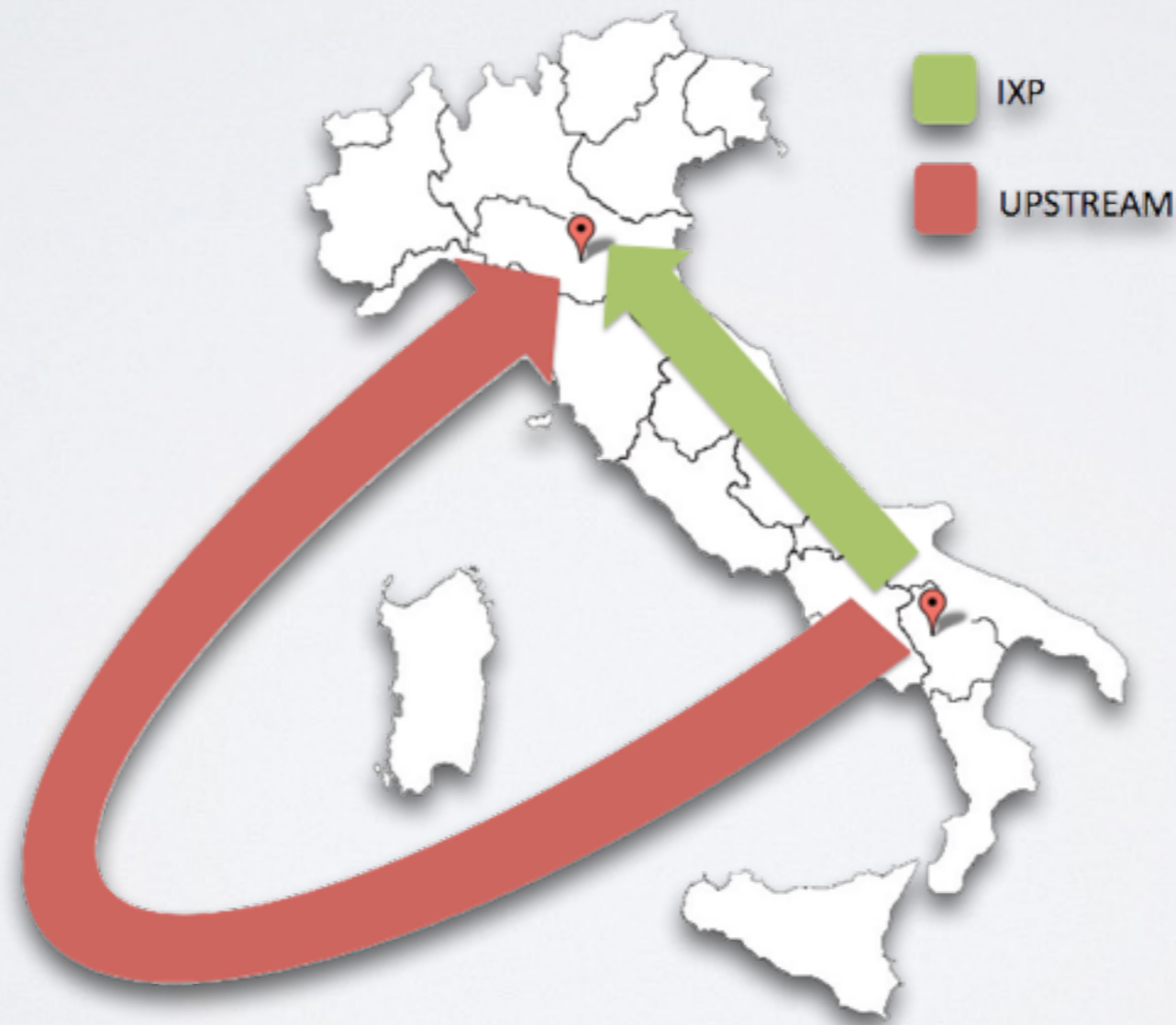


Jitter



OUR TARGETS

Investigate the impact that IXPs have on **keeping local the local traffic.**



A CASE STUDY

The **Italian Internet** and the Italian **main Internet eXchange Points**



DATA SOURCES

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Search **RIPEstat**

Your network: AS137, 193.204.0.0/15 e.g.: IPv4 prefix/range, IPv6, ASN

BGPlay is back!

Origin AS Collector peer Other Dynamic path

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Routing Information Service (RIS)

Created: 07 Oct 2013 - Last updated: 20 Aug 2014 — [NCC SERVICES](#), [RIS](#), [ROUTING](#)

The RIPE NCC collects and stores Internet routing data from [several locations](#) around the globe, using the Routing Information Service (RIS), established in 2001.

RIS data can be accessed via [RIPEstat](#), our "one-stop shop" for all available information about Internet number resources. RIPEstat uses individual widgets to display routing and other information.

Routing information is visualised using the following widgets:

- The **Routing Status** widget shows if a [prefix](#) is routed and, therefore, if the [ASN](#) is in use
- The **Routing History** widget shows the time range(s) when a particular prefix was announced, and by which AS it was announced
- The **Announced Prefixes** widget provides a tabular view of prefixes announced by an AS in the last two weeks
- The **ASN Neighbours** widget provides information about neighbouring ASNs
- The **ASN Neighbours History** widget provides historical information about neighbouring ASNs
- The **Related Prefixes** widget shows related networks of the [prefix](#)
- The **BGP Looking Glass** widget allows you to [query](#) our route collectors
- **BGPlay** shows the routing history related to a specific set of resources (prefixes, Autonomous Systems, IPs) by means of an animated and highly interactive graph
- **RISwhois** searches the latest RIS data for details of an [IP address](#). It is useful when querying RIS using scripts

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RIPE Atlas

With your help, the RIPE NCC is building the largest Internet measurement network ever made. RIPE Atlas employs a global network of probes that measure Internet connectivity and reachability, providing an unprecedented understanding of the state of the Internet in real time.

Find out how to get involved →

DISTRIBUTION OF THE ATLAS PROBES IN ITALY



EXPERIMENT I

Critical and most visited Internet Services

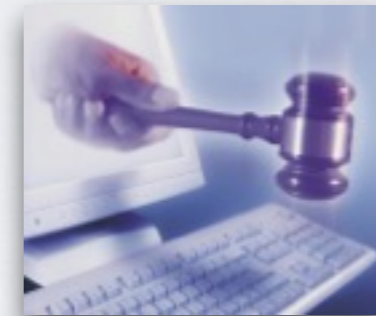


Banking

Insurance



Law



Energy



Public Administration



News



Health



Webmail



Transport



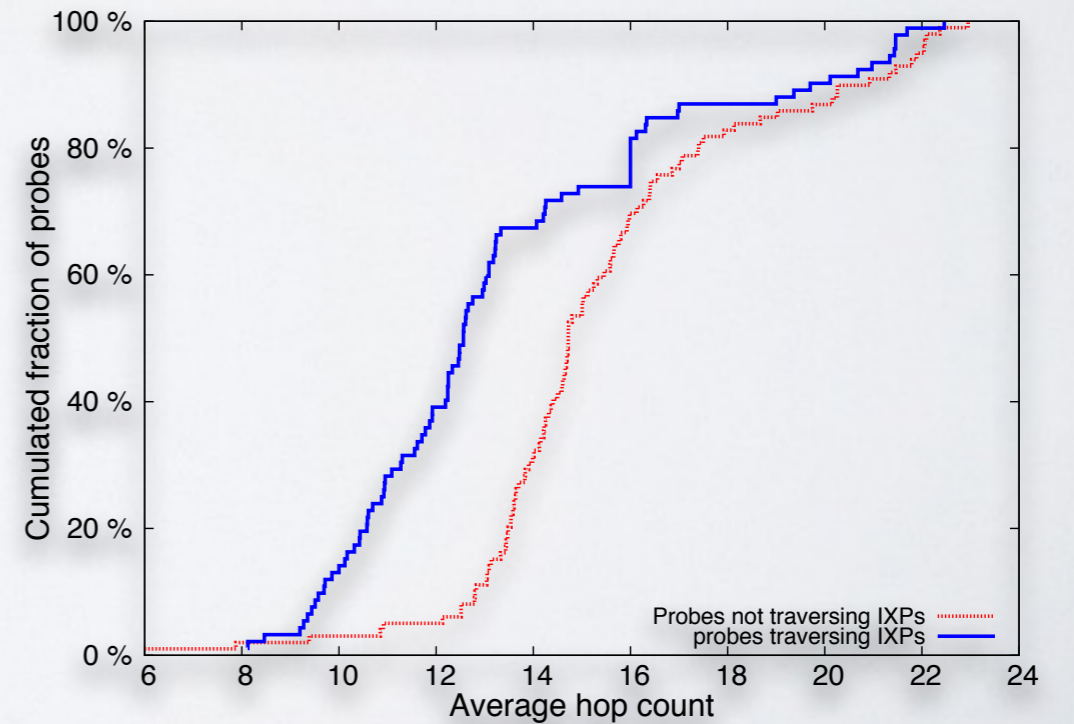
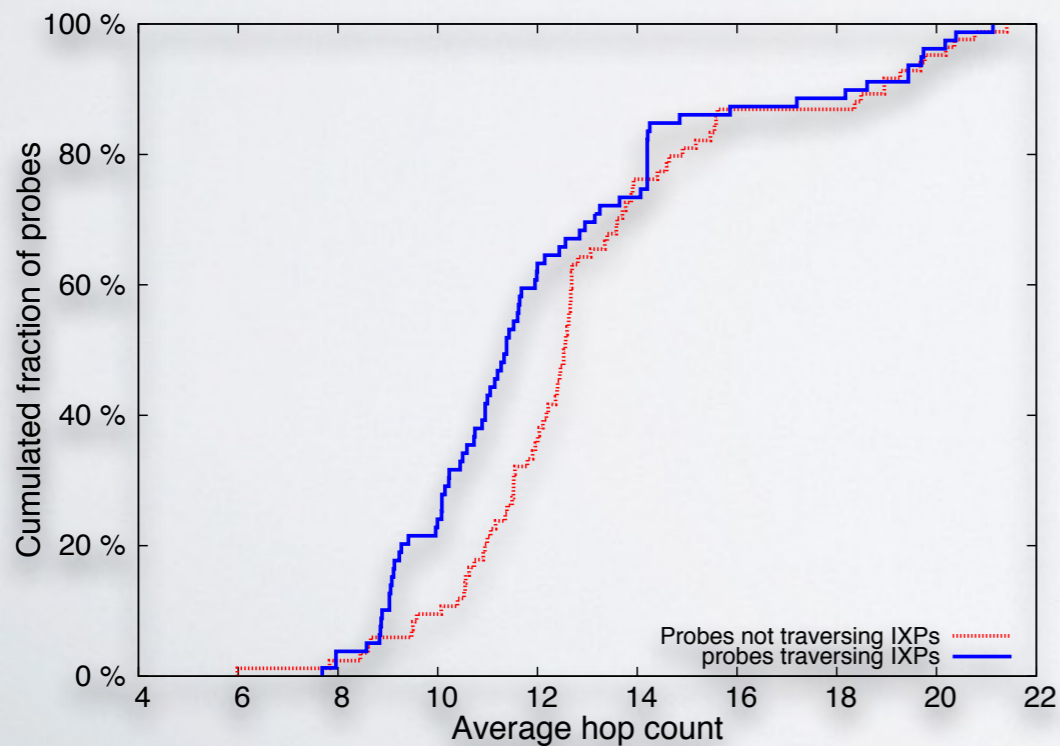
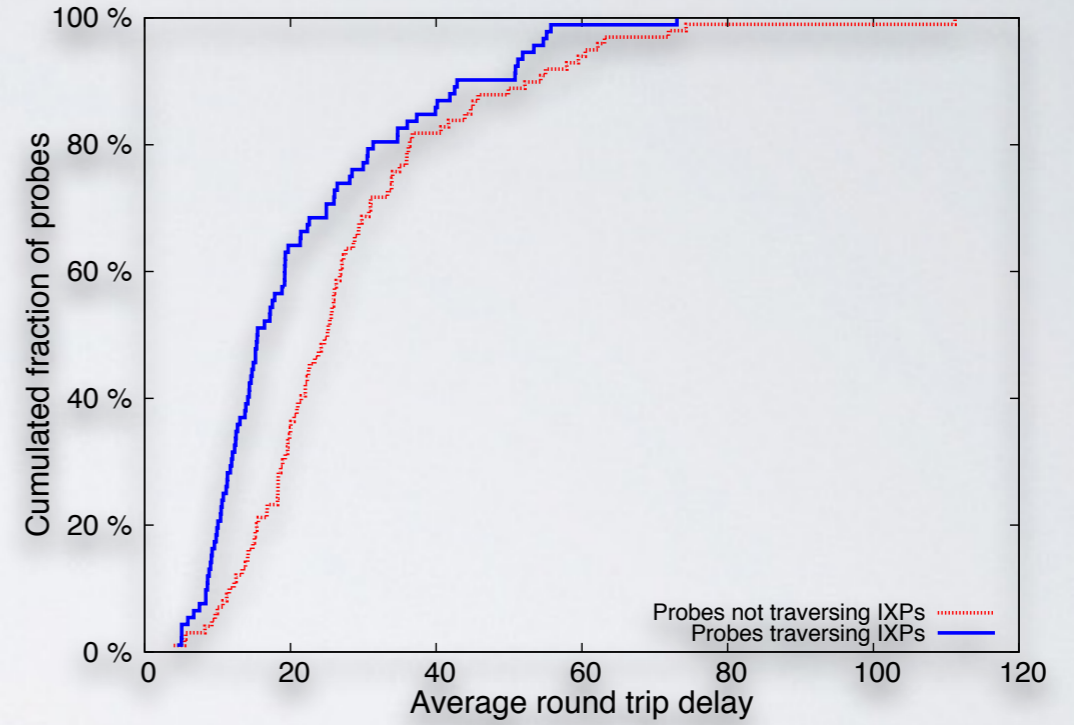
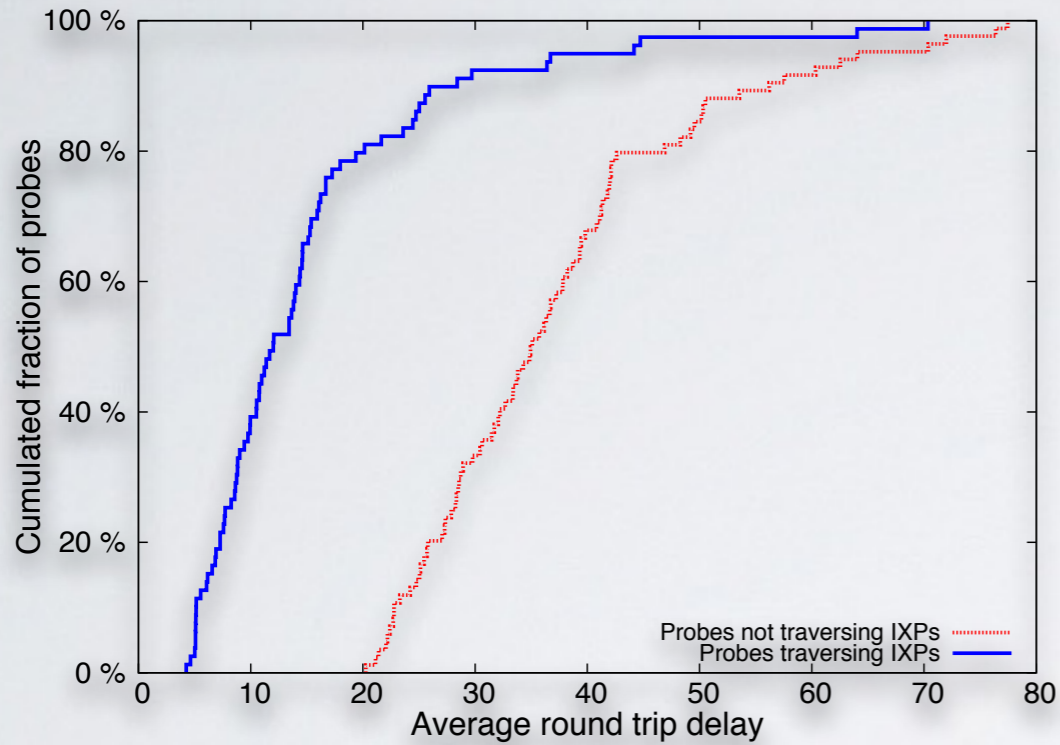
EXPERIMENT I

Critical and most visited Internet Services

- Measurements
 - Targets: 50 critical Internet services and 100 most visited sites
 - Duration of the experiment: 4 hours
 - 6 pings per hour
 - 2 traceroutes per hour

RESULTS

Critical and most visited Internet Services

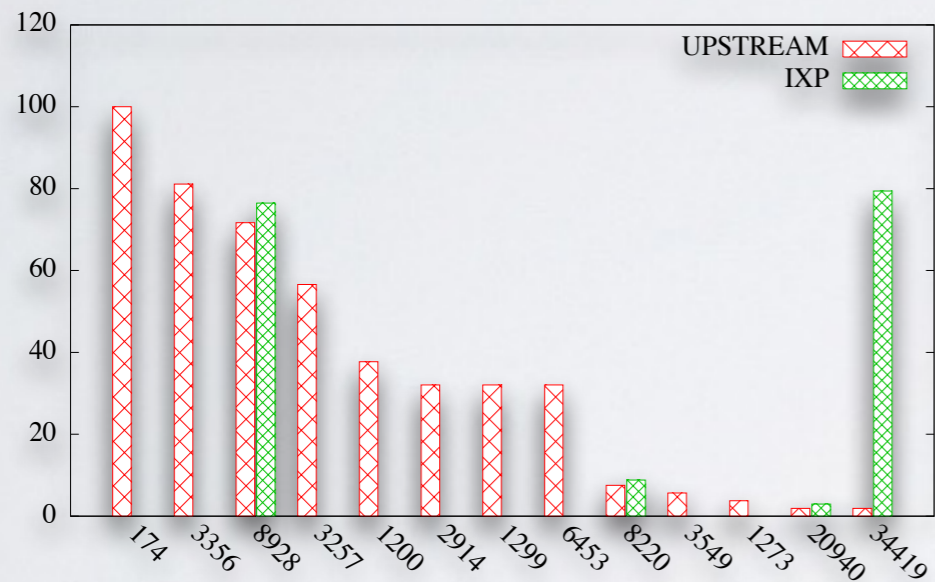


RESULTS

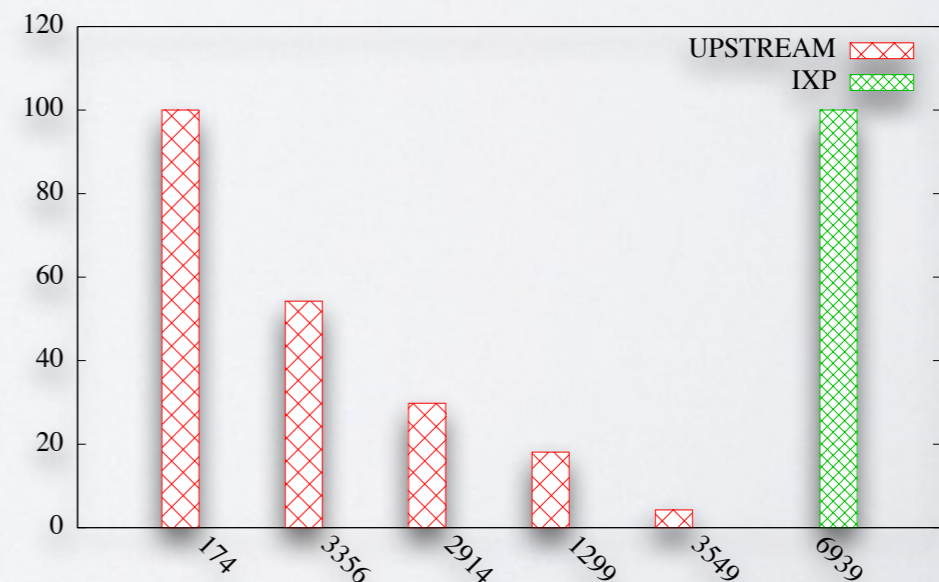
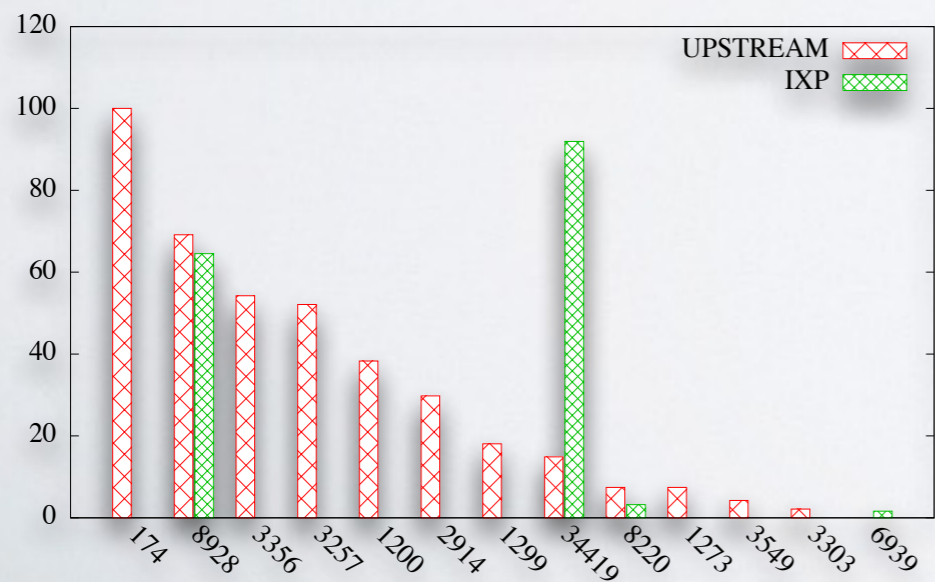
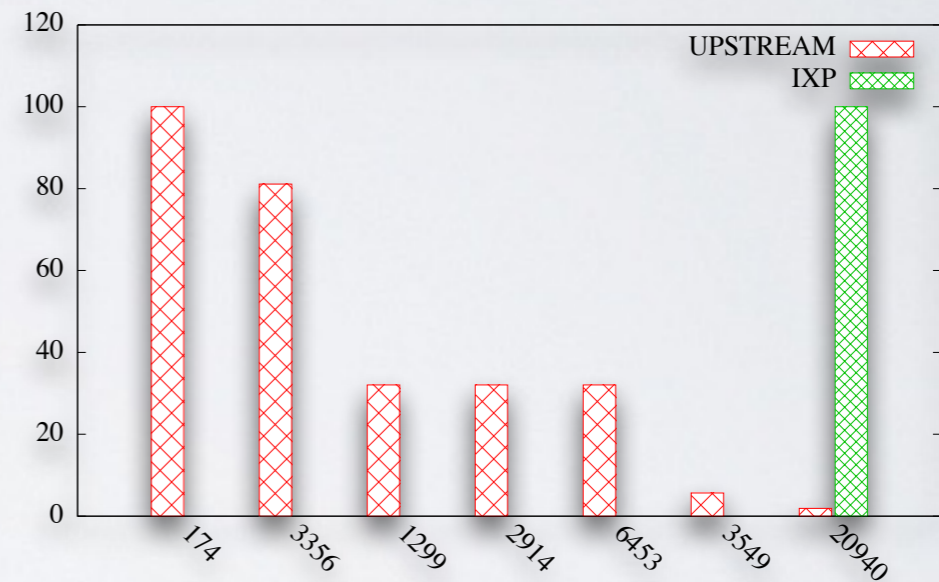
Critical and most visited Internet Services

Keeping local the local traffic

Non Italian ASes

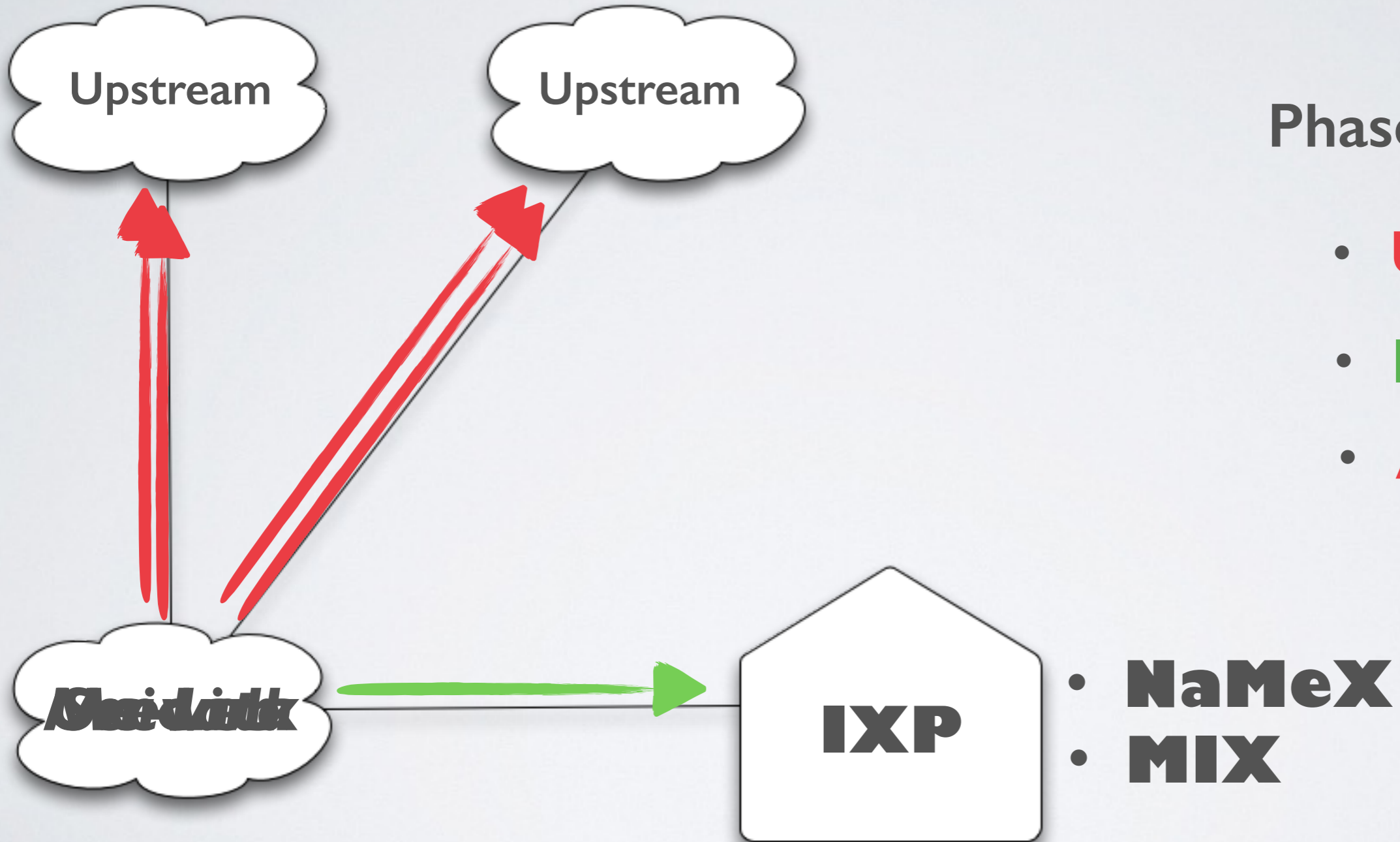


Non European ASes



EXPERIMENT II

Selective BGP announcements



Phases

- **Upstream**
- **IXPs**
- **All**

- **NaMeX**
- **MIX**

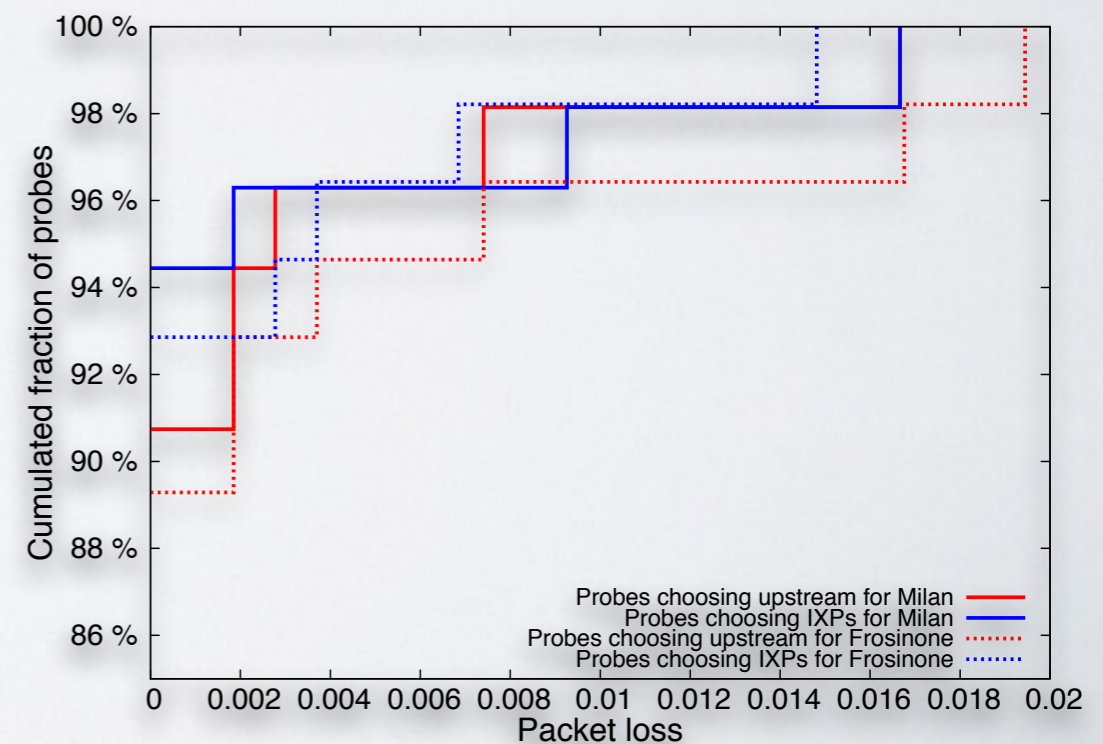
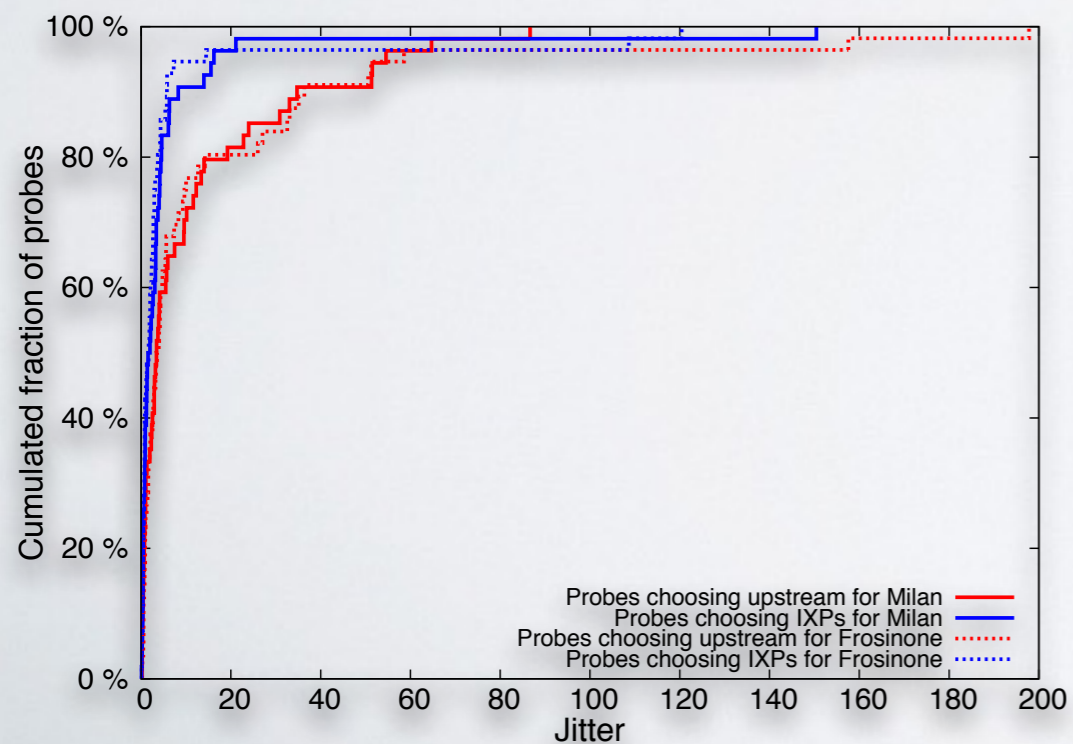
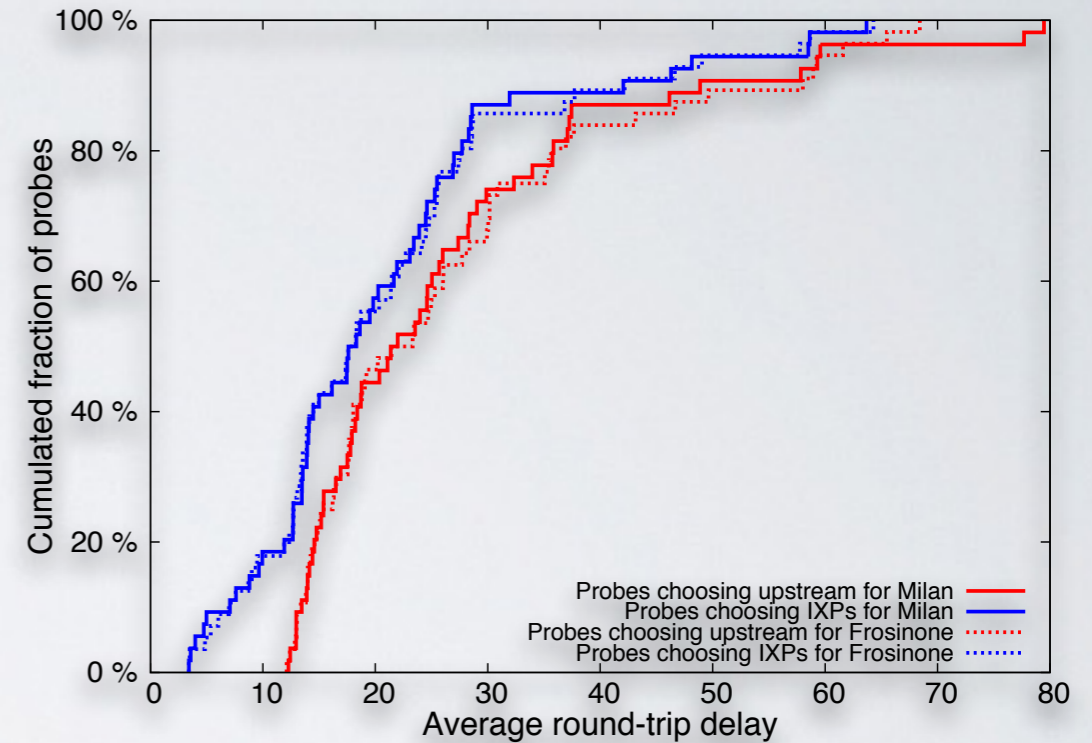
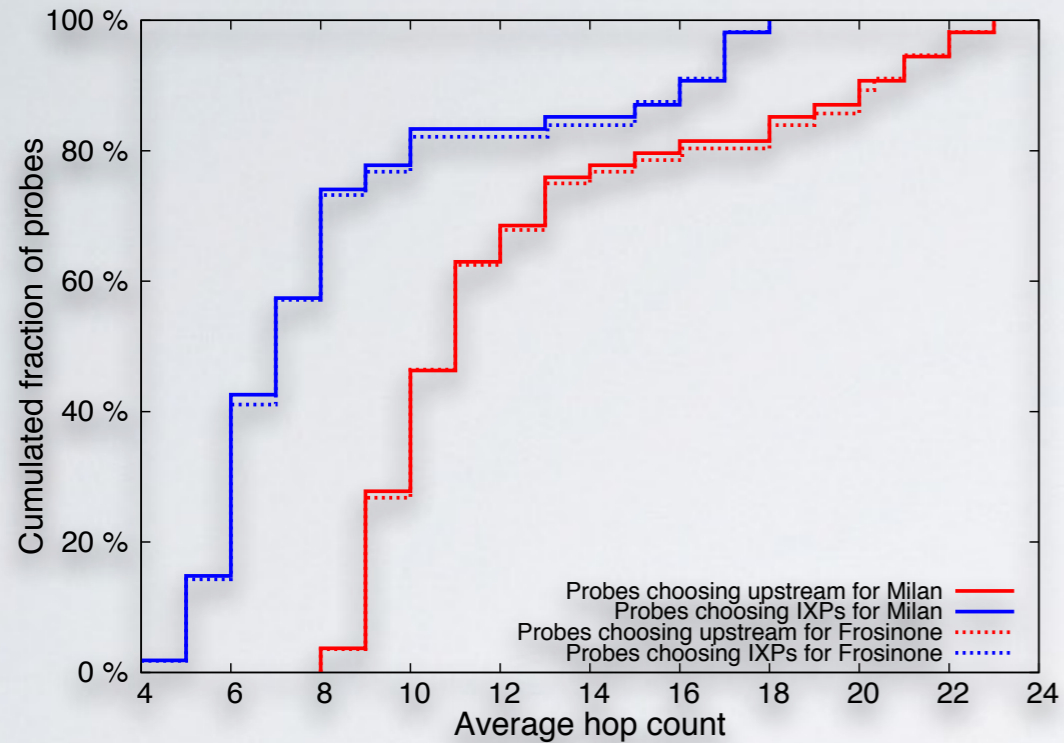
EXPERIMENT II

Selective BGP announcements

- Measurements
 - Single target in Seeweb/Unidata/Mc-Link datacenter
 - Duration of the experiment: 26 hours
 - 60 pings per hour
 - 6 traceroutes per hour

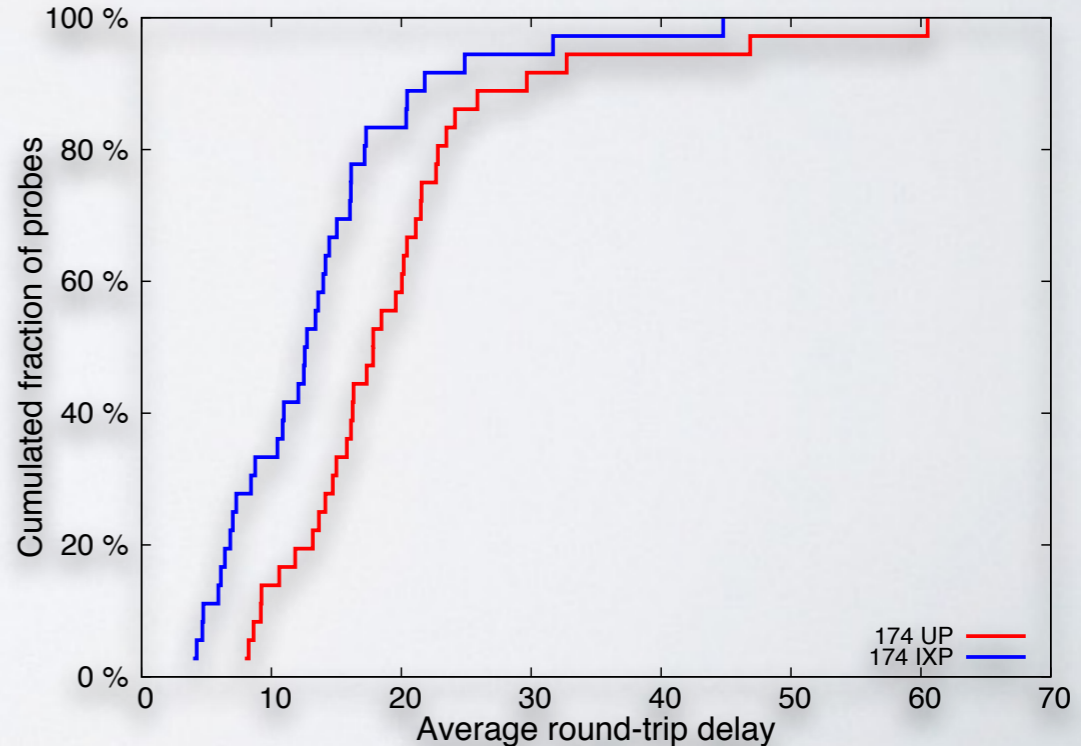
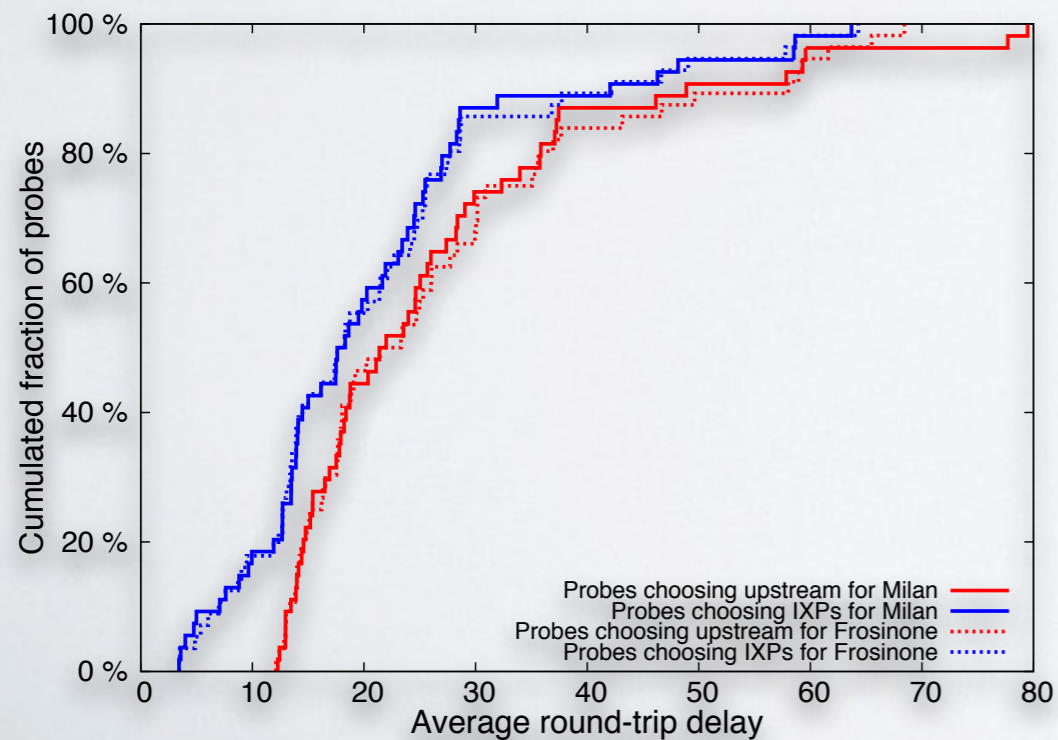
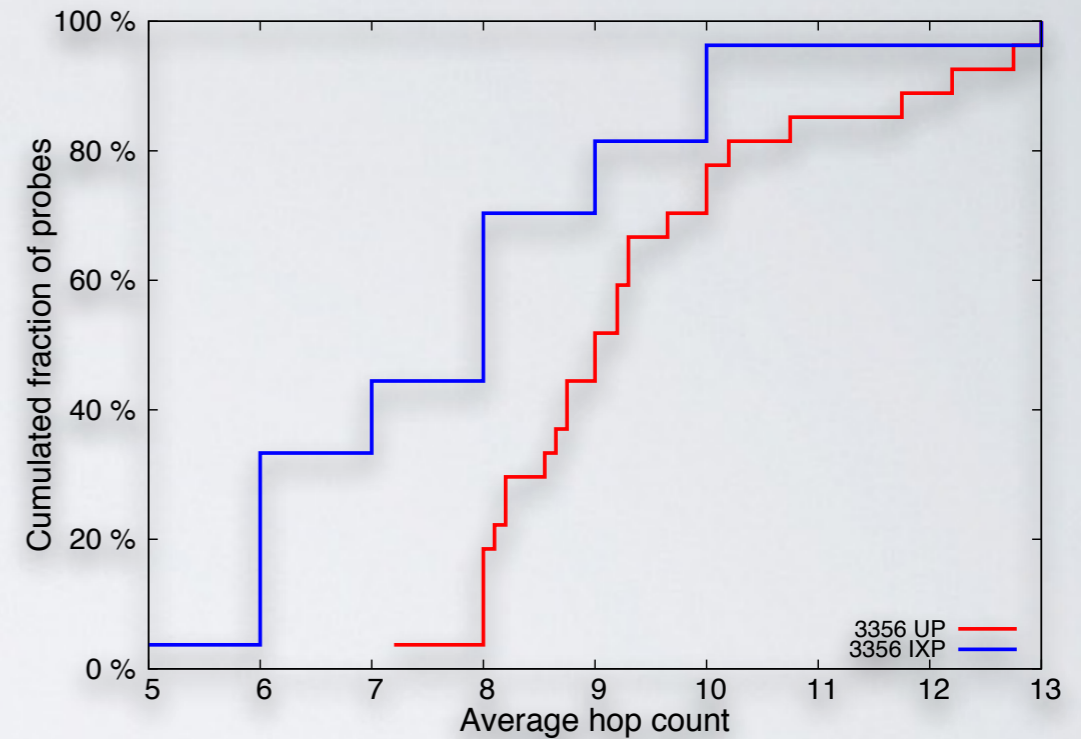
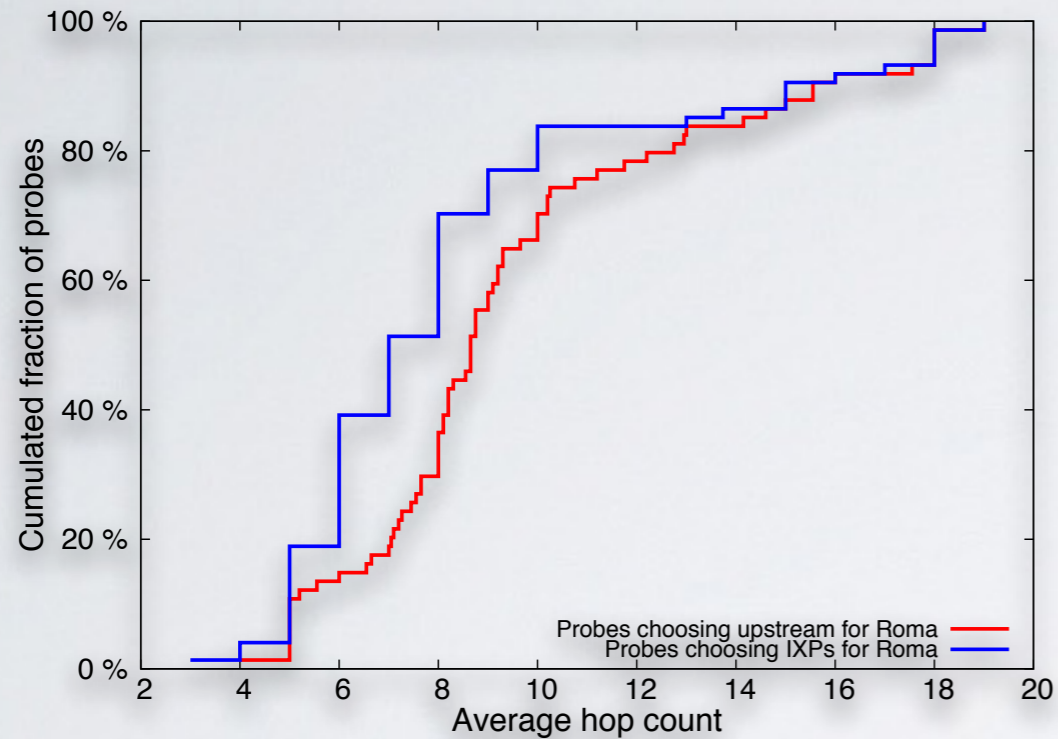
RESULTS

Selective BGP announcements - Upstream vs IXP



RESULTS

Selective BGP announcements - Specific Upstream vs IXP



CONCLUSIONS

Our experiments put in evidence that peerings exploiting **IXPs have a positive effect on key performance indicators**. Also, they have the effect of **reducing the number of foreign ISPs traversed** to reach critical Internet services (**keep local the local traffic**).



THANK YOU
FOR YOUR ATTENTION

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