IXPs: is De-peering the Right Choice?

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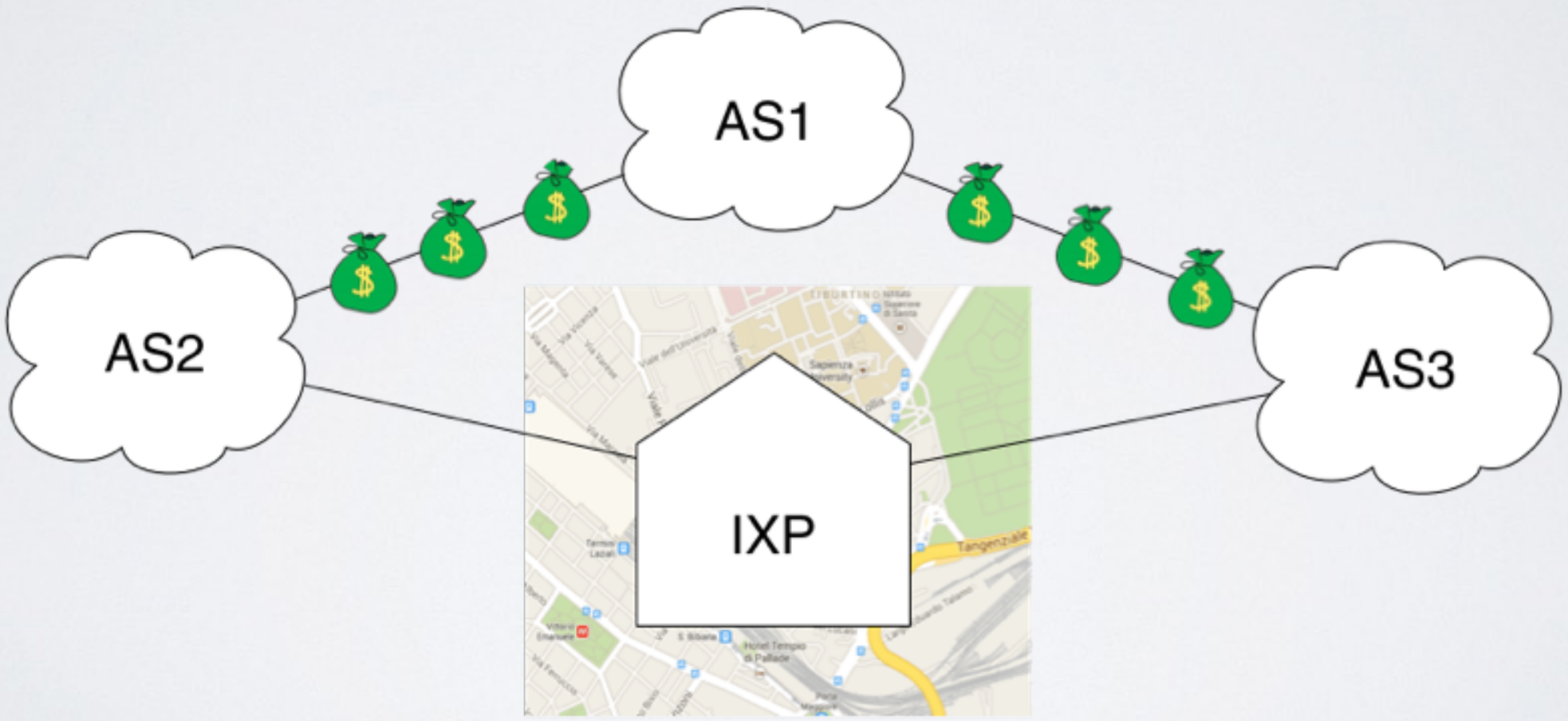
BACKGROUND

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



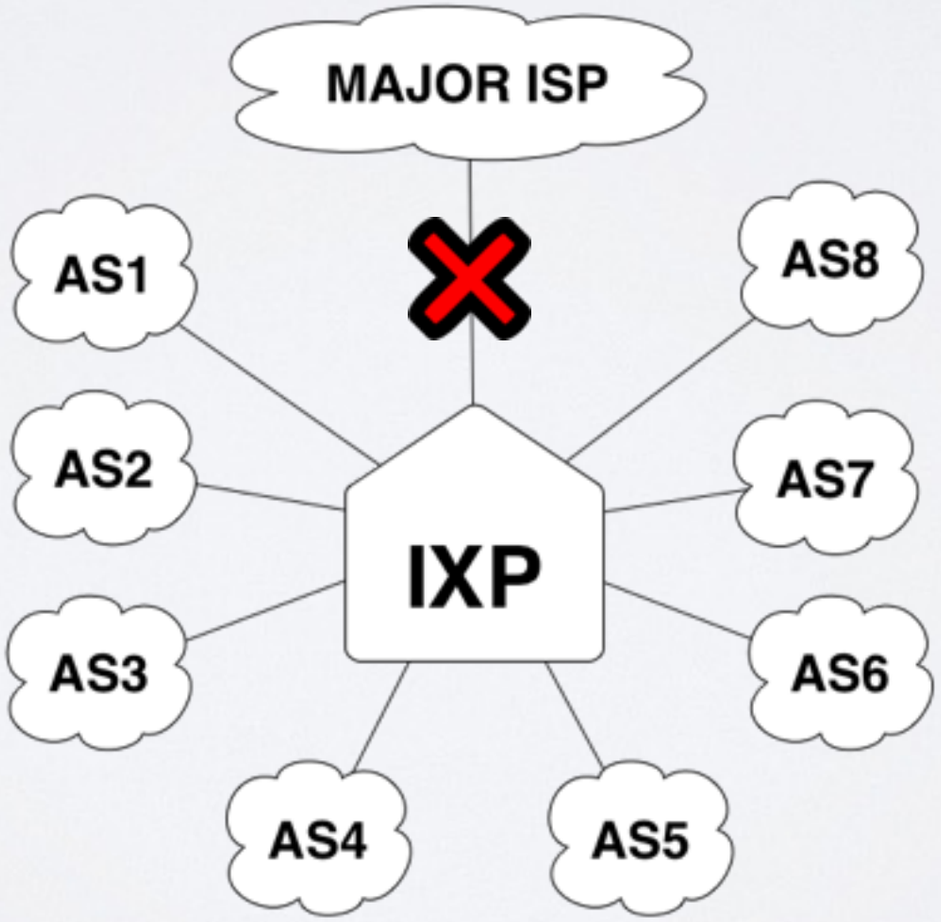
BACKGROUND

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).



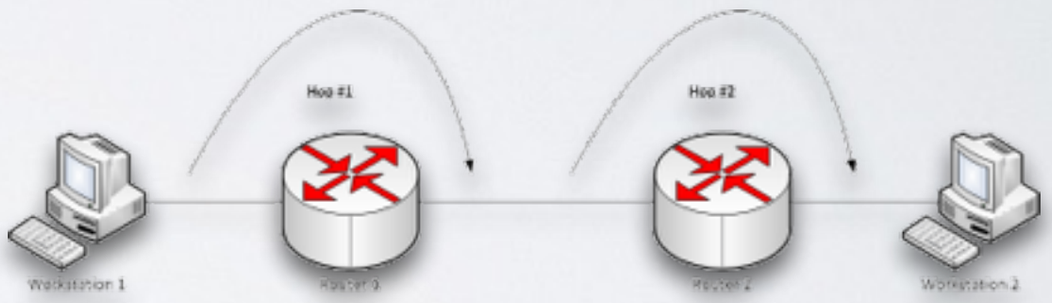
OUR TARGETS

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

METRICS USED

Round Trip Time

Hop Count

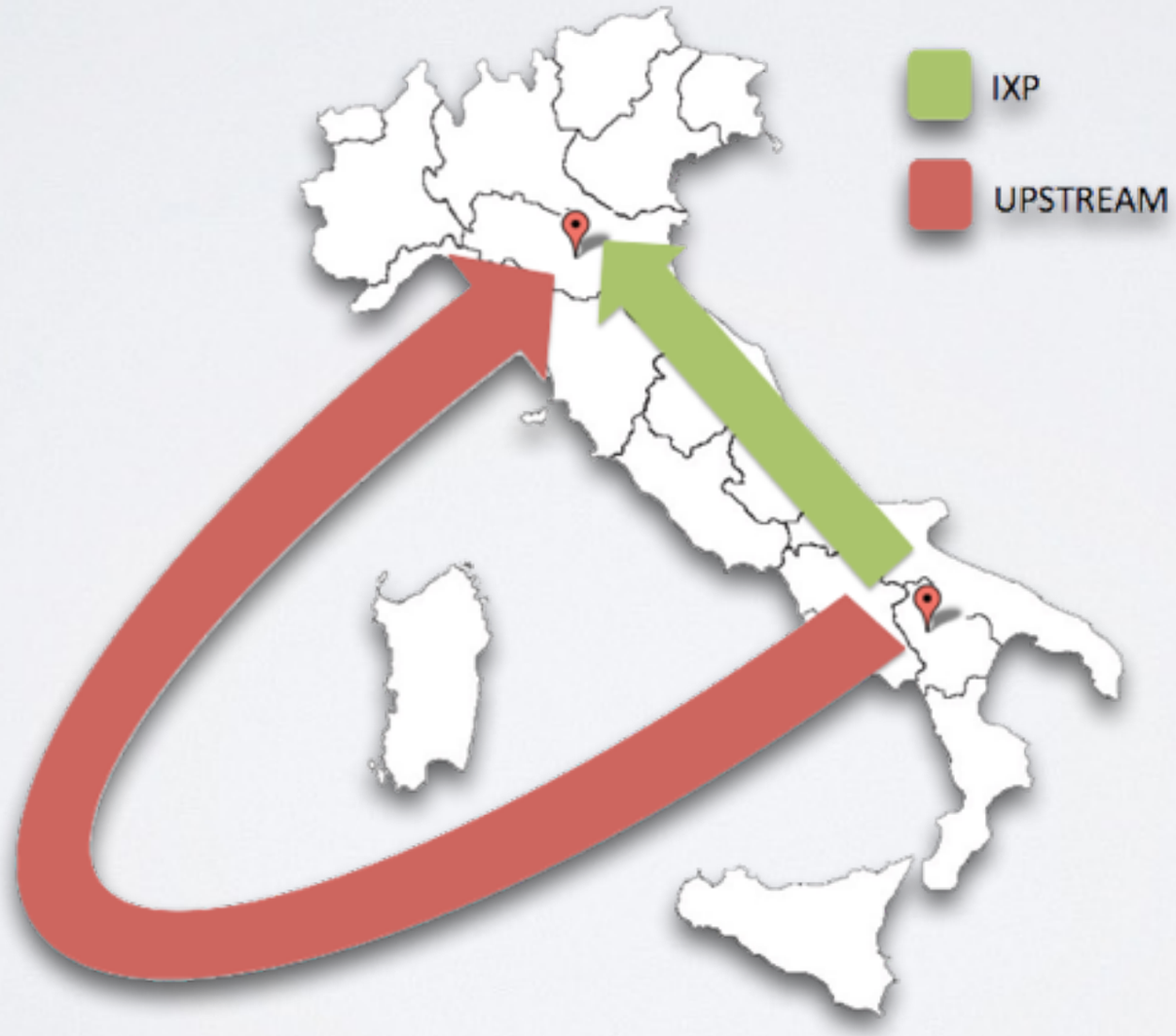


Packet Loss

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**

Nautilus Mediterranean Exchange Point

NaMeX

MiX

DATA SOURCES

DISTRIBUTION OF THE ATLAS PROBES IN ITALY

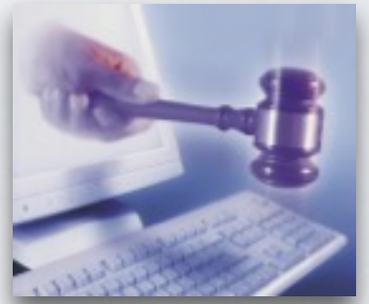
EXPERIMENT I

Critical and most visited Internet Services

Banking

Insurance

Law



Energy

Public Administration

News

Healt

Webmail

Transport

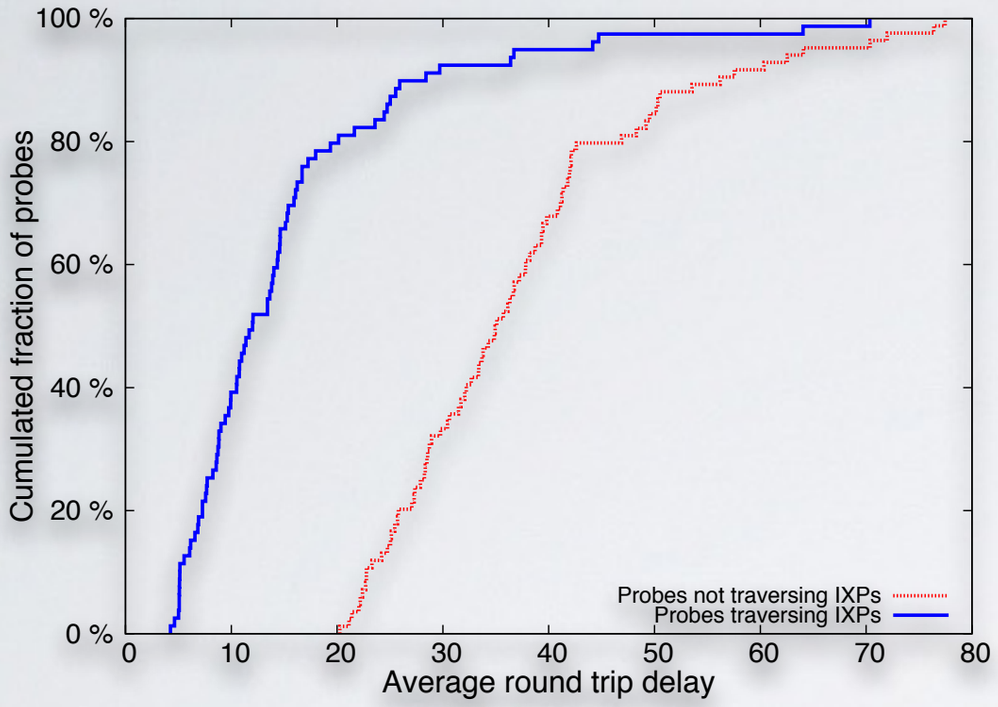
EXPERIMENT 1

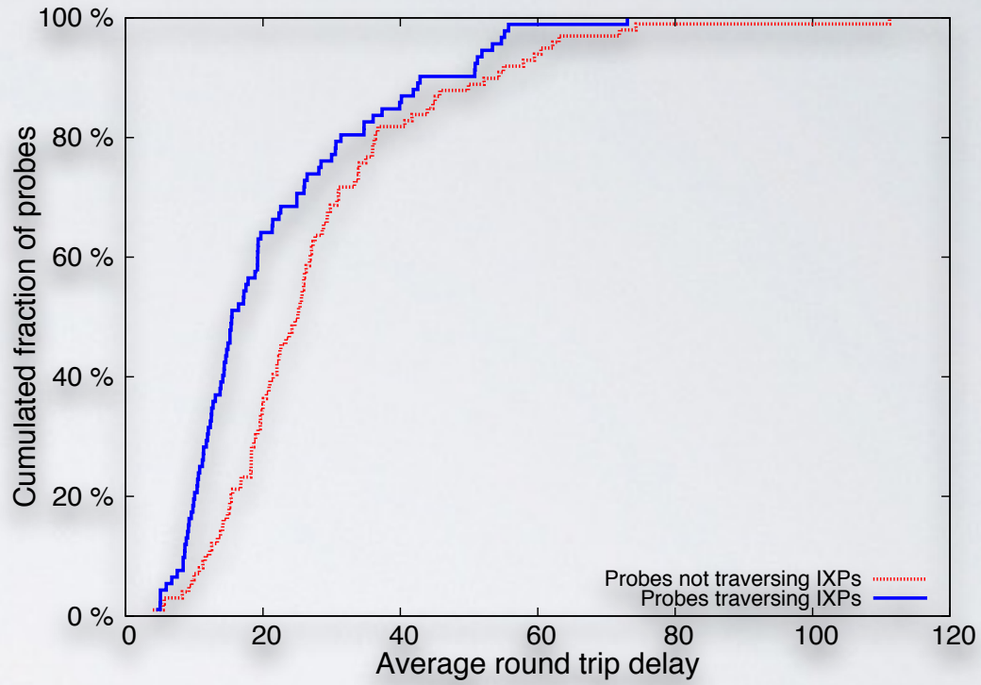
Critical and most visited Internet Services

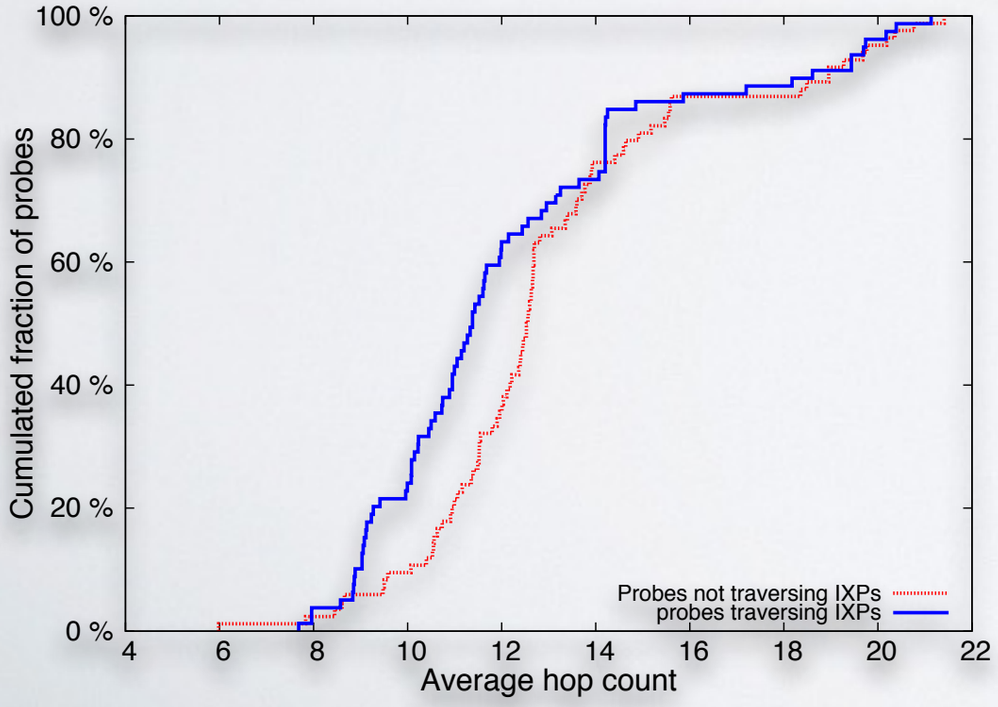
- Measurements
  - Targets: 50 critical Internet services and 100 most visited sites
  - Duration of the experiment: 4 hours
  - 6 pings per hour
  - 2 traceroutes per hour

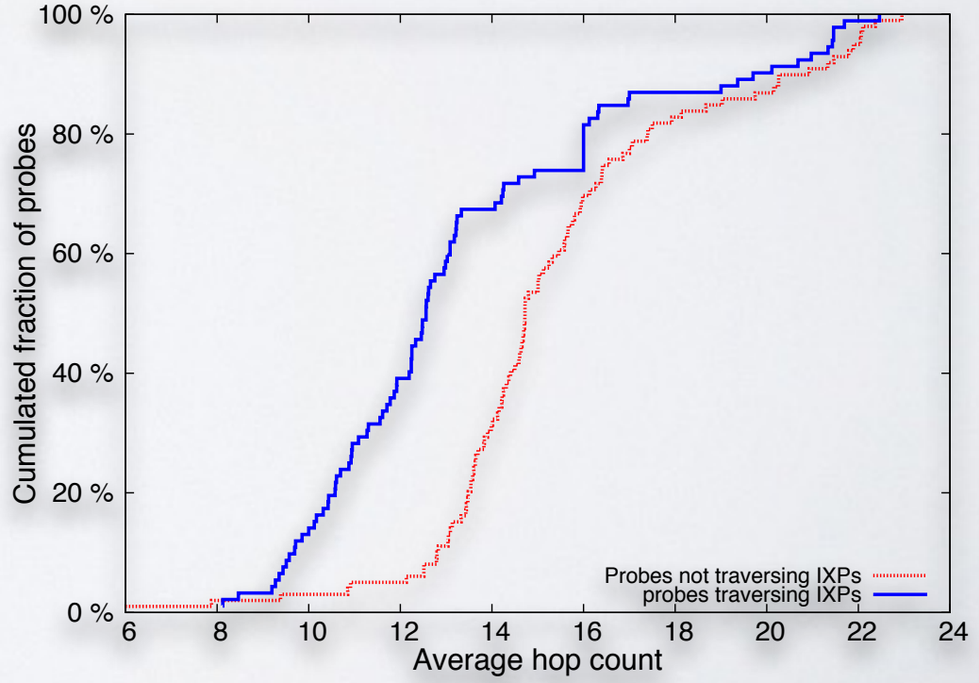
RESULTS

Critical and most visited Internet Services







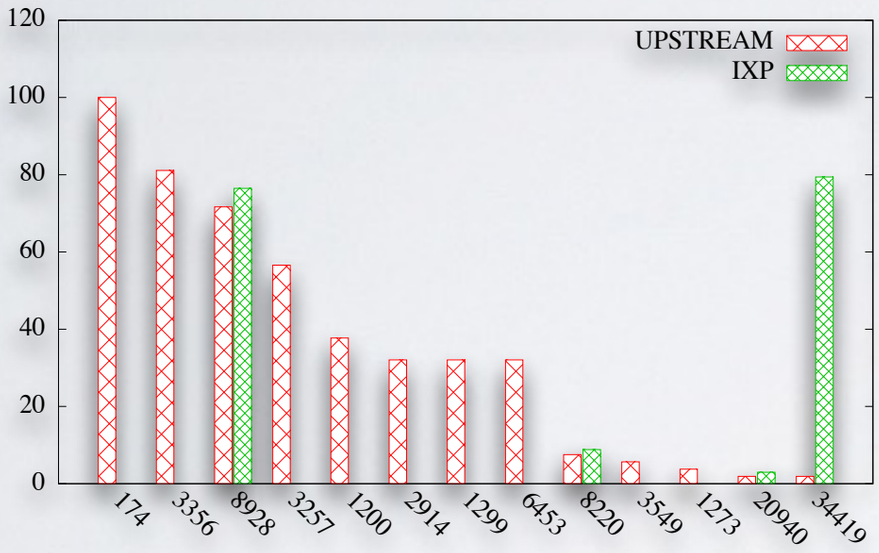


RESULTS

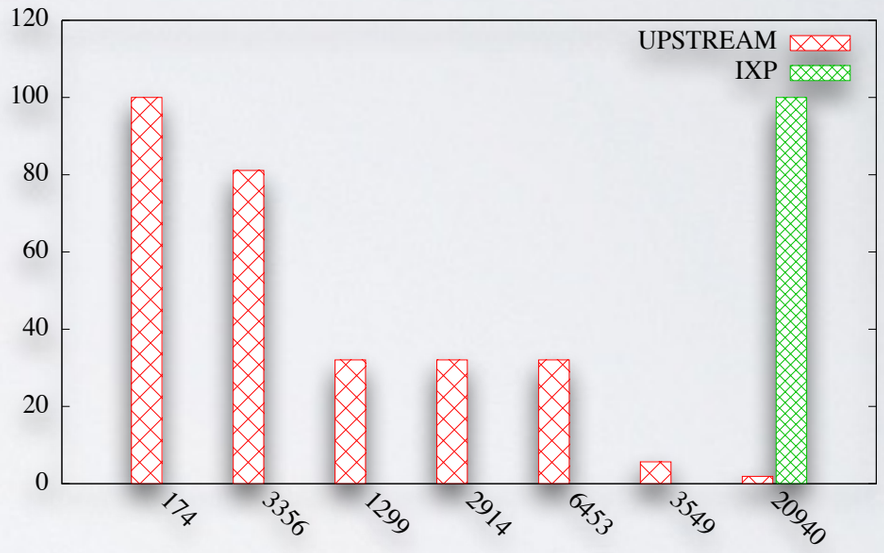
Critical and most visited Internet Services

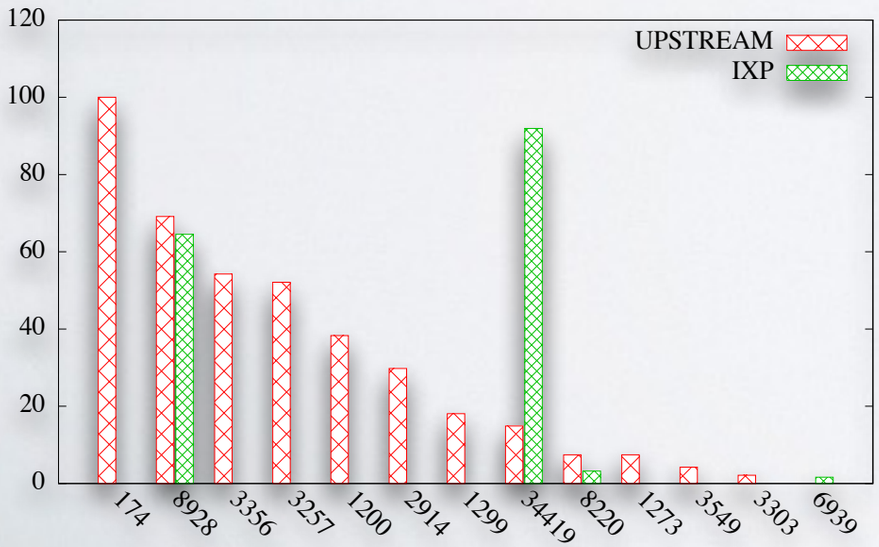
Keeping local the local traffic

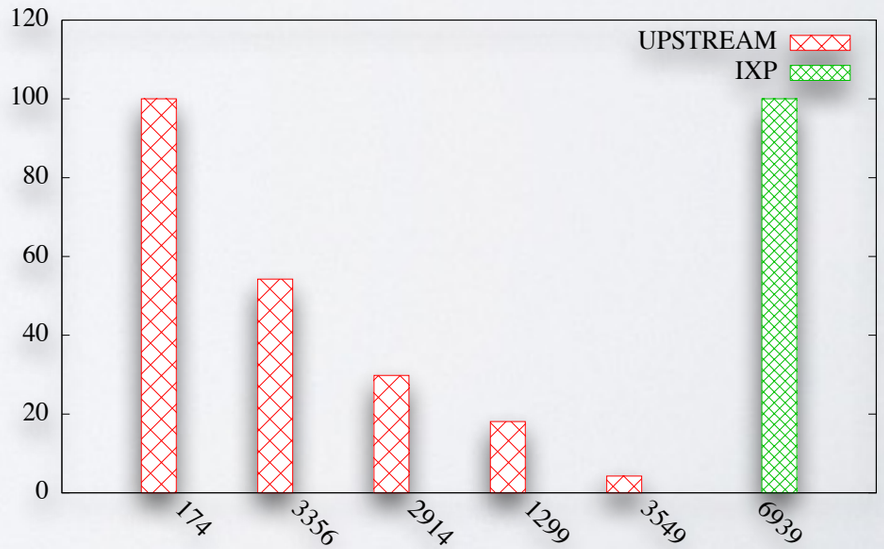
Non Italian ASes



Non European ASes

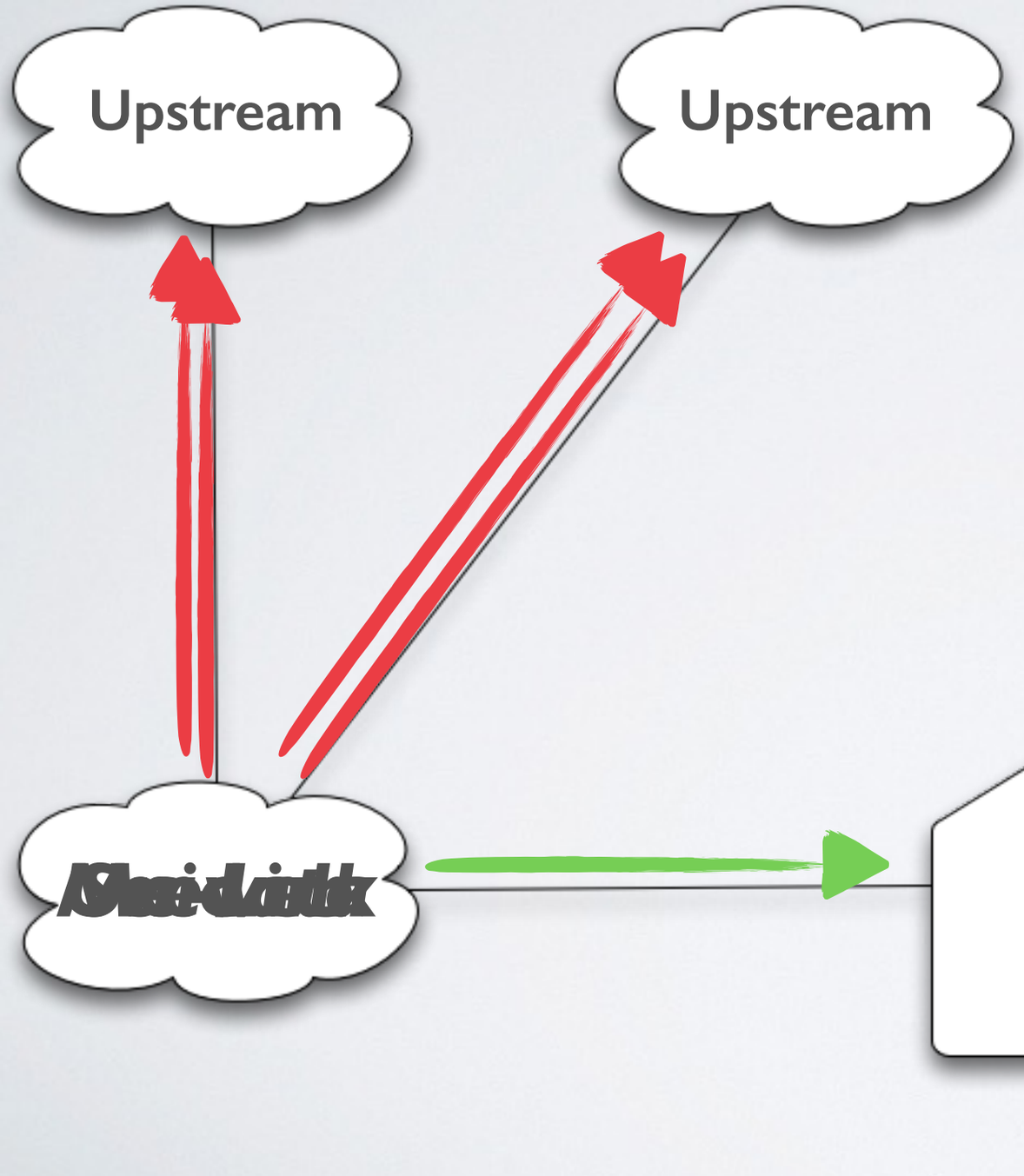






EXPERIMENT II

Selective BGP announcements



Phases

- **Upstream**
- IXPs
- All

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

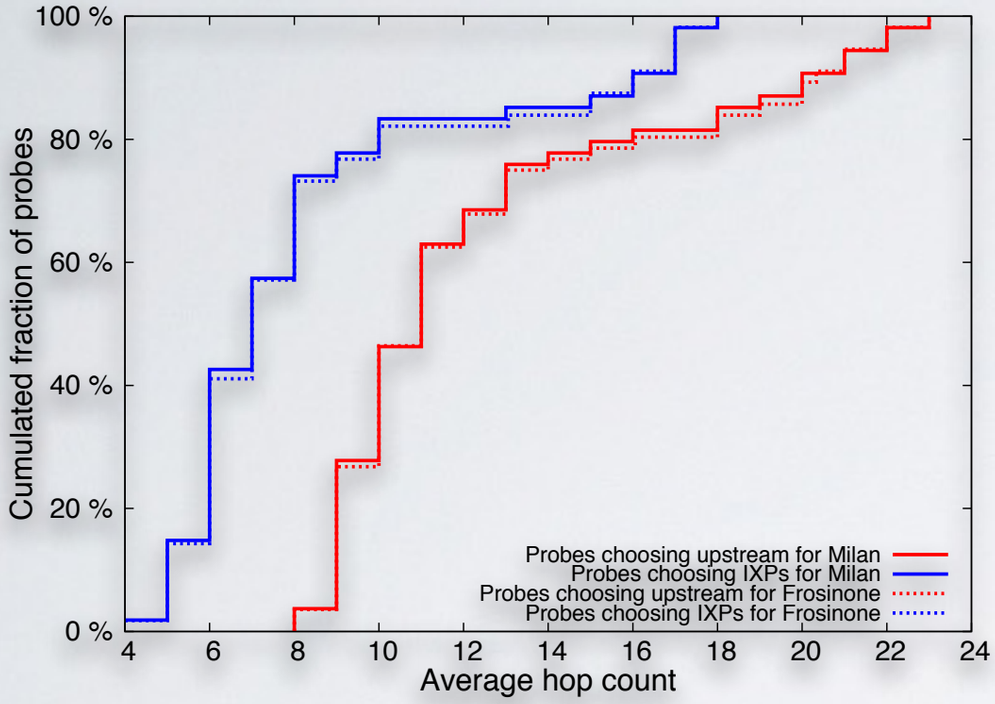
EXPERIMENT II

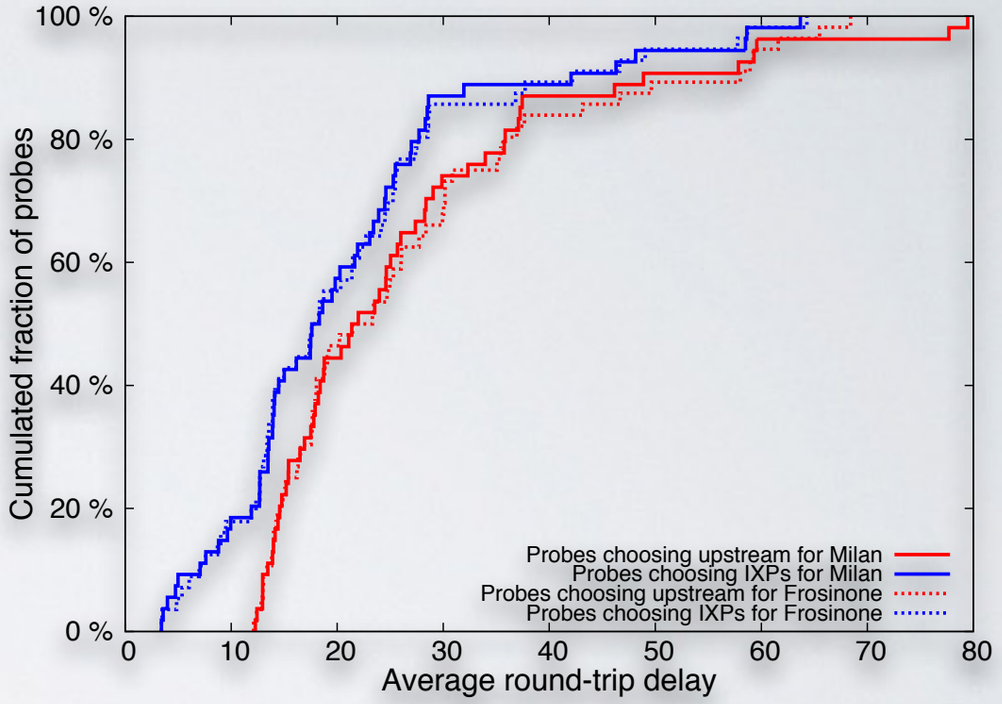
Selective BGP announcements

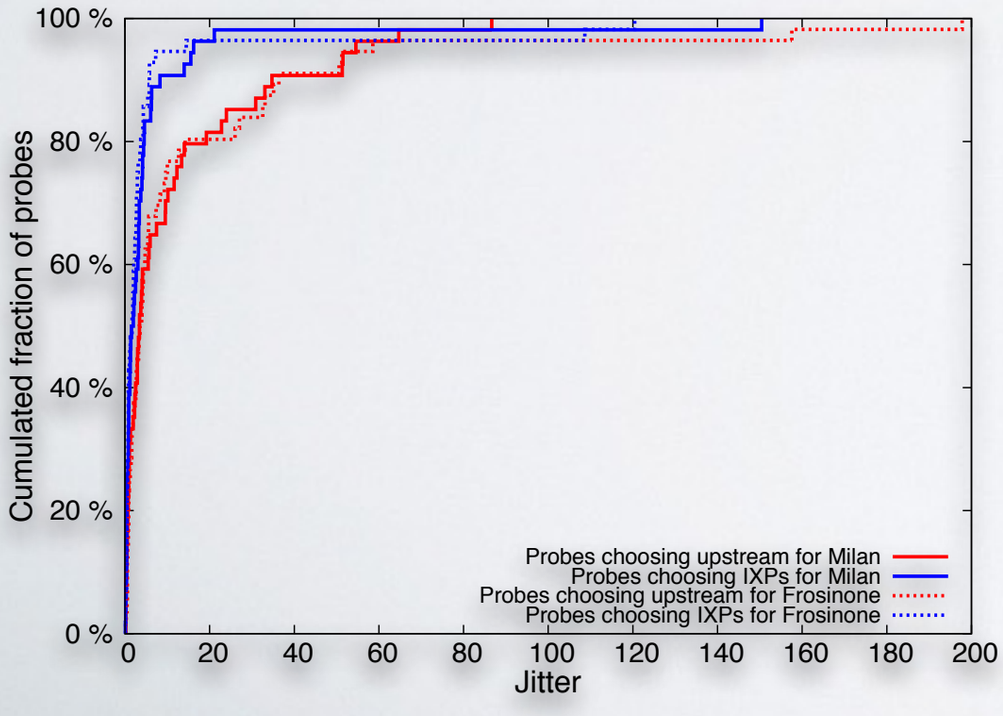
- Measurements
  - Single target in Seeweb/Unidata/Mc-Link datacenter
- Duration of the experiment: 26 hours
- 60 pings per hour
- 6 traceroutes per hour

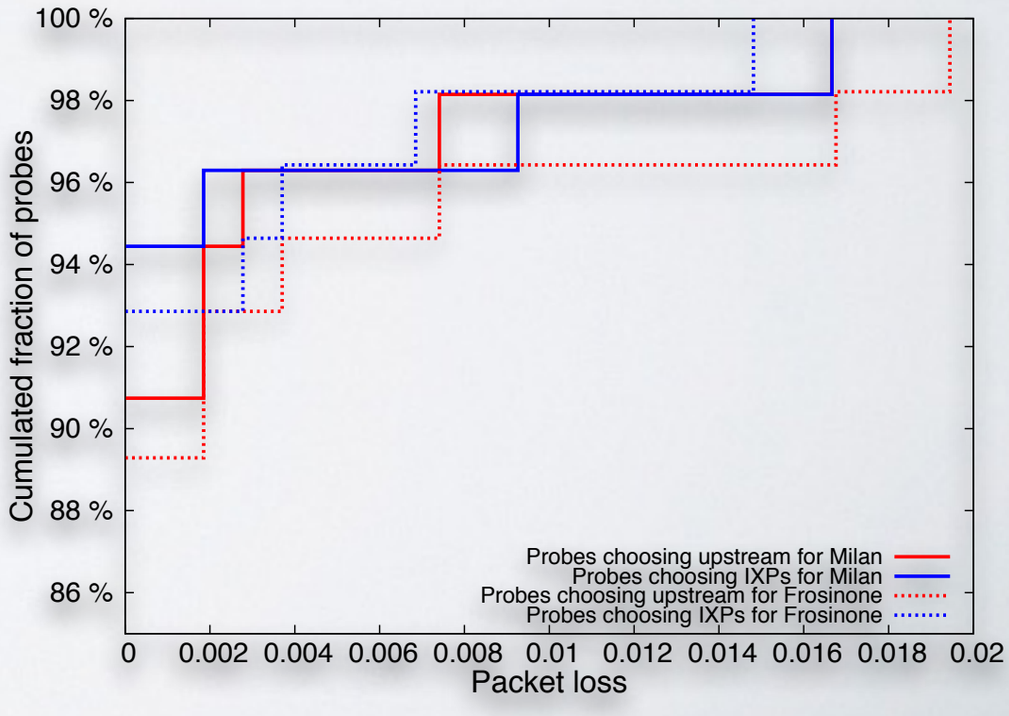
RESULTS

Selective BGP announcements - Upstream vs IXP



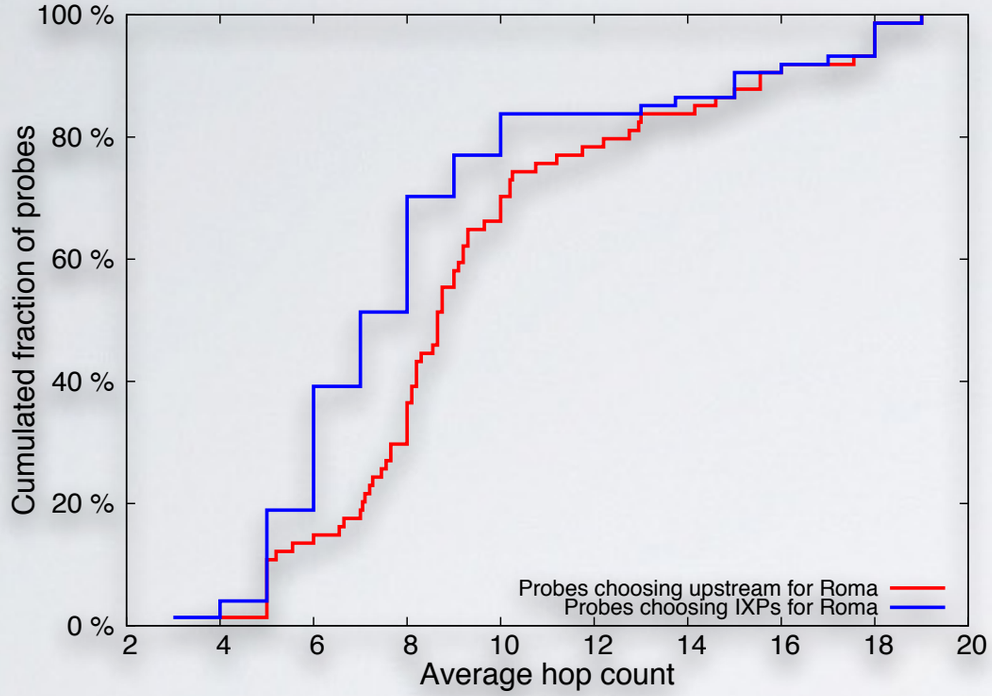


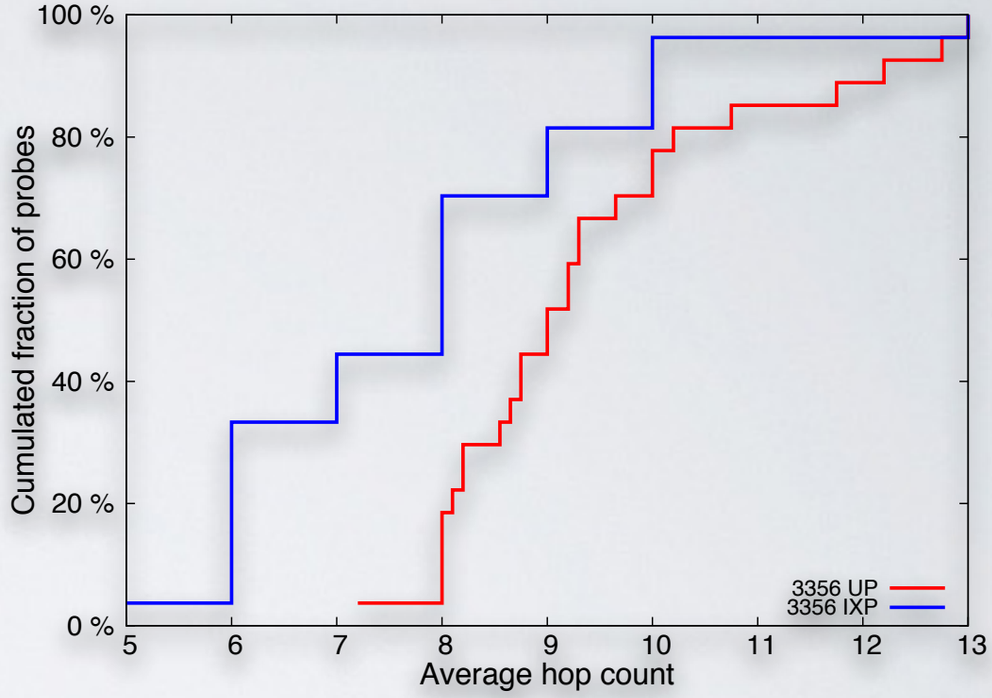


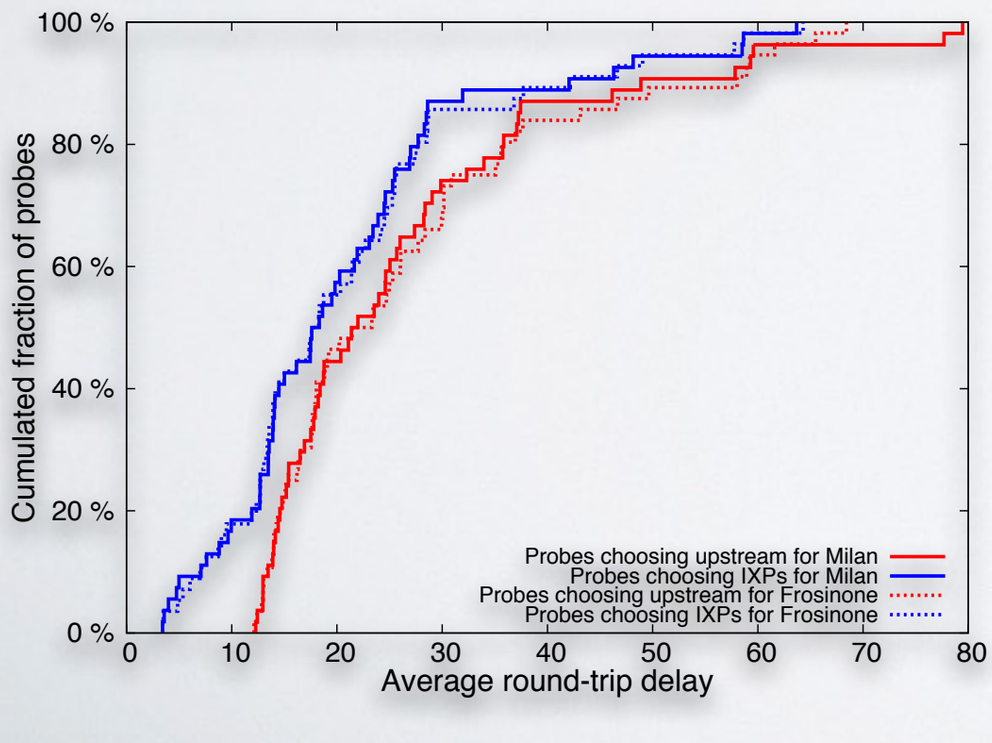


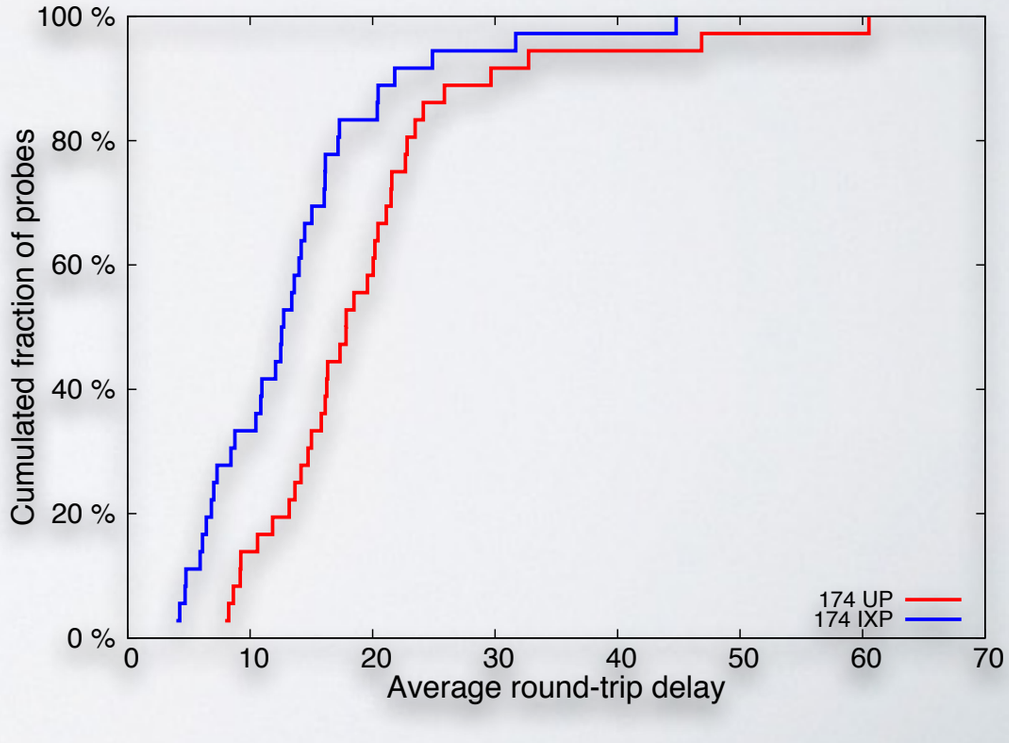
RESULTS

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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