



the open Net

s i n e q u a n o n

Connectivity of the Country to the Internet

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ENOG12

the open Net

- engage technical Internet community
- provide technical expertise
- talk to other stakeholders

Concerns

- Are we well connected?
- Are we protected from evil insider or outsider?
- How to measure?
- What to do?

Measure

Registries:

- Number of «local» prefixes and ASes

Routing info:

- ASN/prefix availability
- BGP paths
- diversity and stability

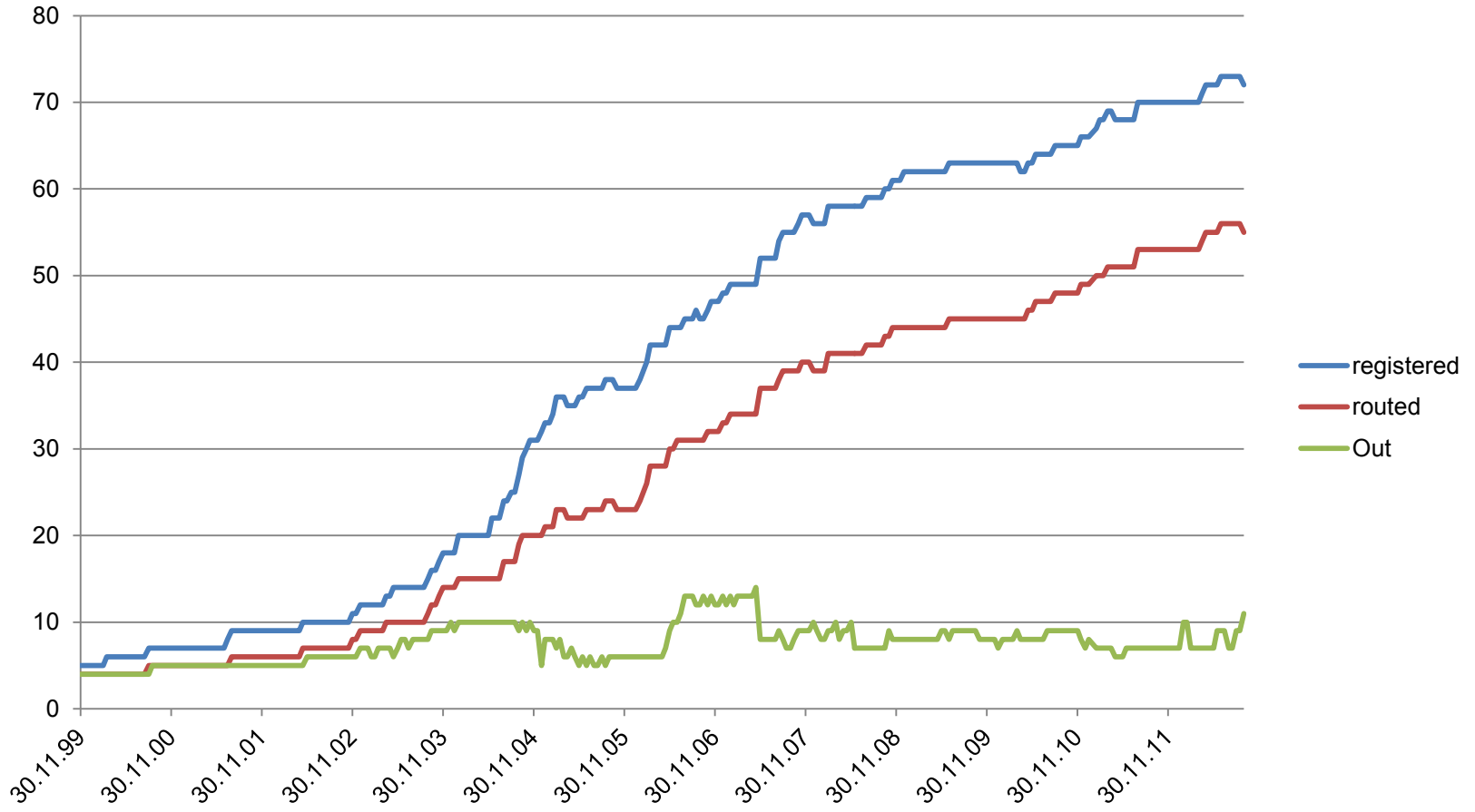
Measure (this study)

Simplified (just for start)

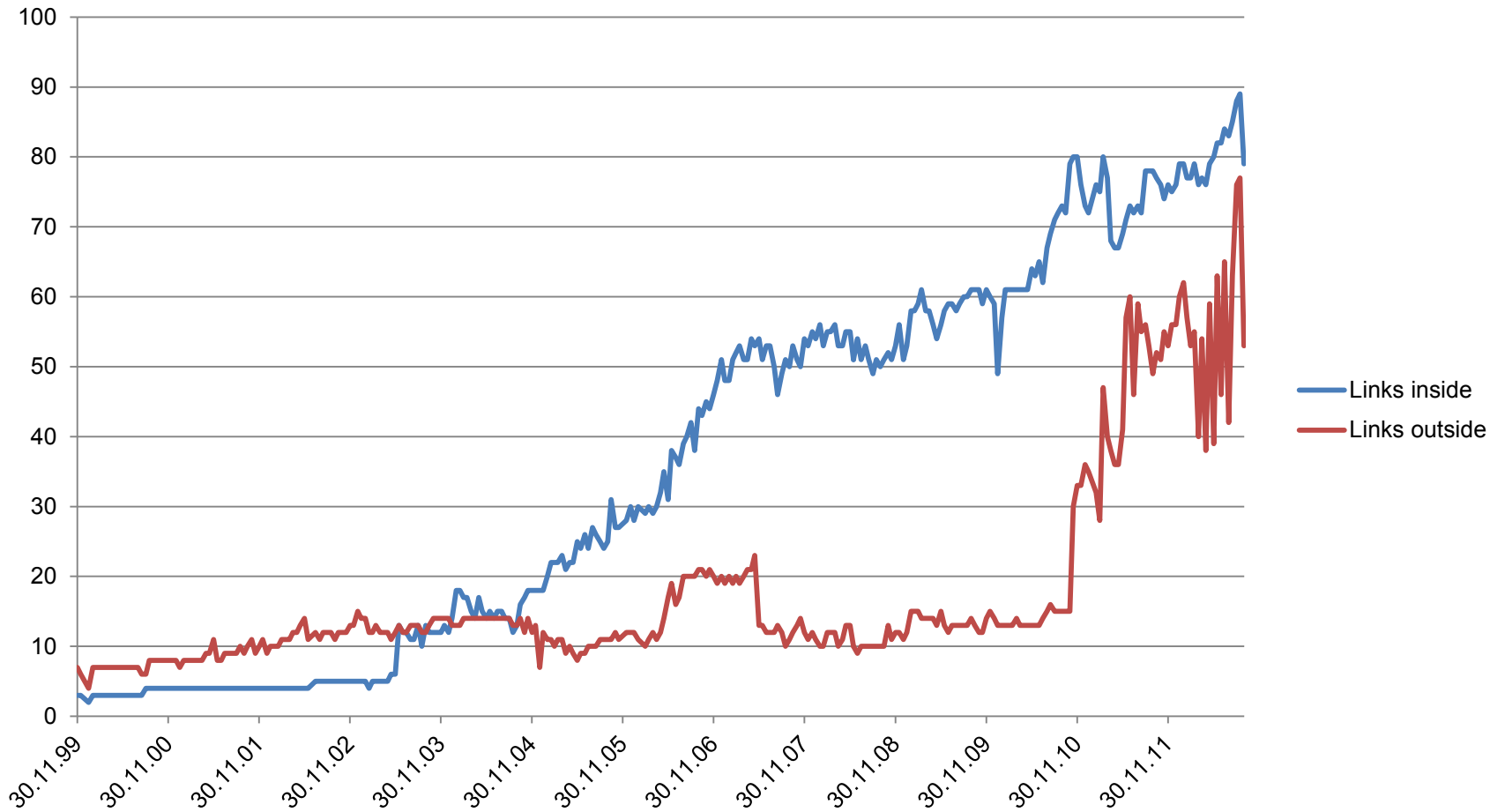
- number of ASes in selected country
- number of links between ASes (local and non-local).
- number of ASes involved in international connectivity (from both sides of border)

RIPEStat by RIPE and BGPstream by CAIDA

Armenia



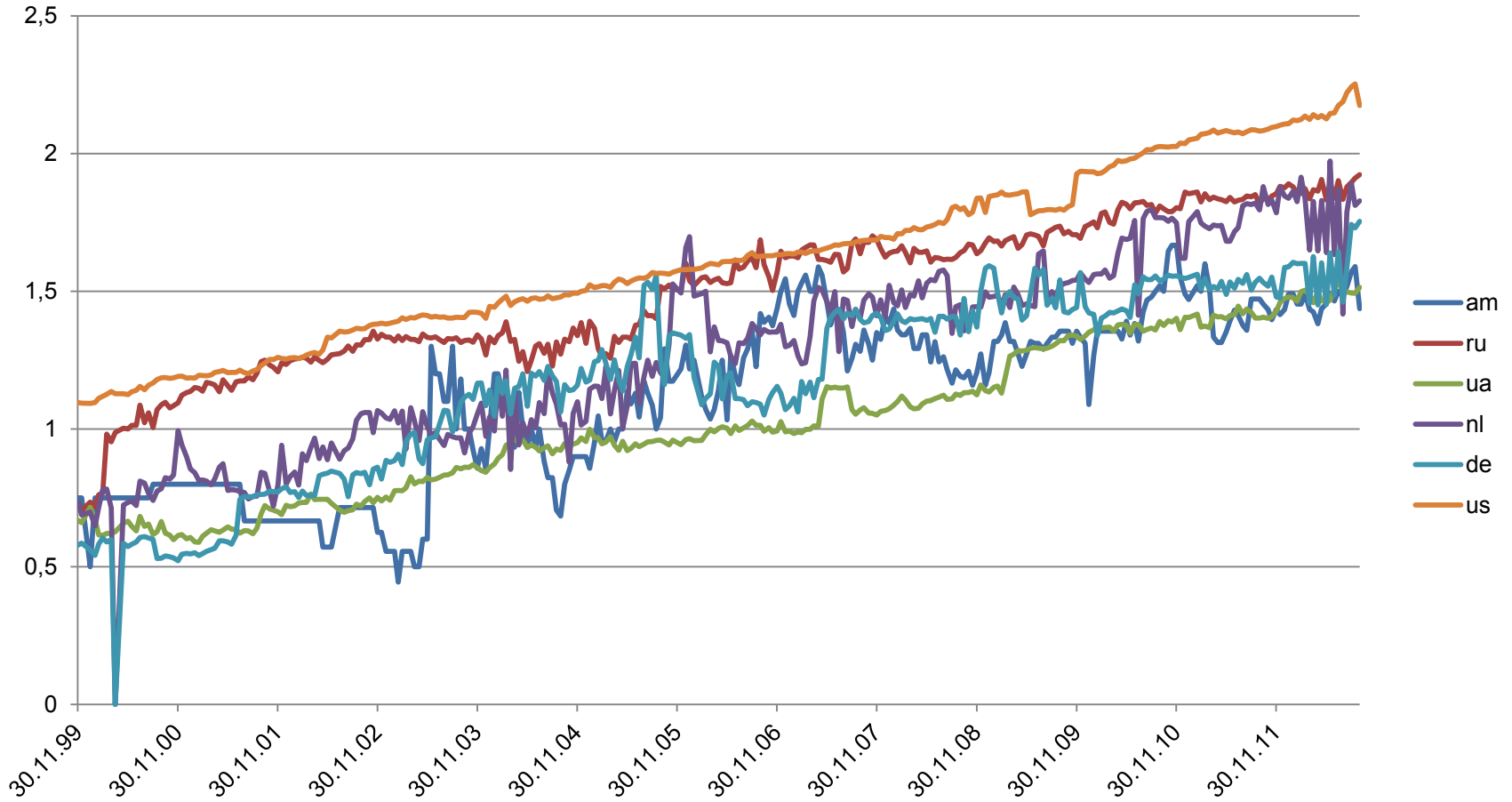
Armenia – links



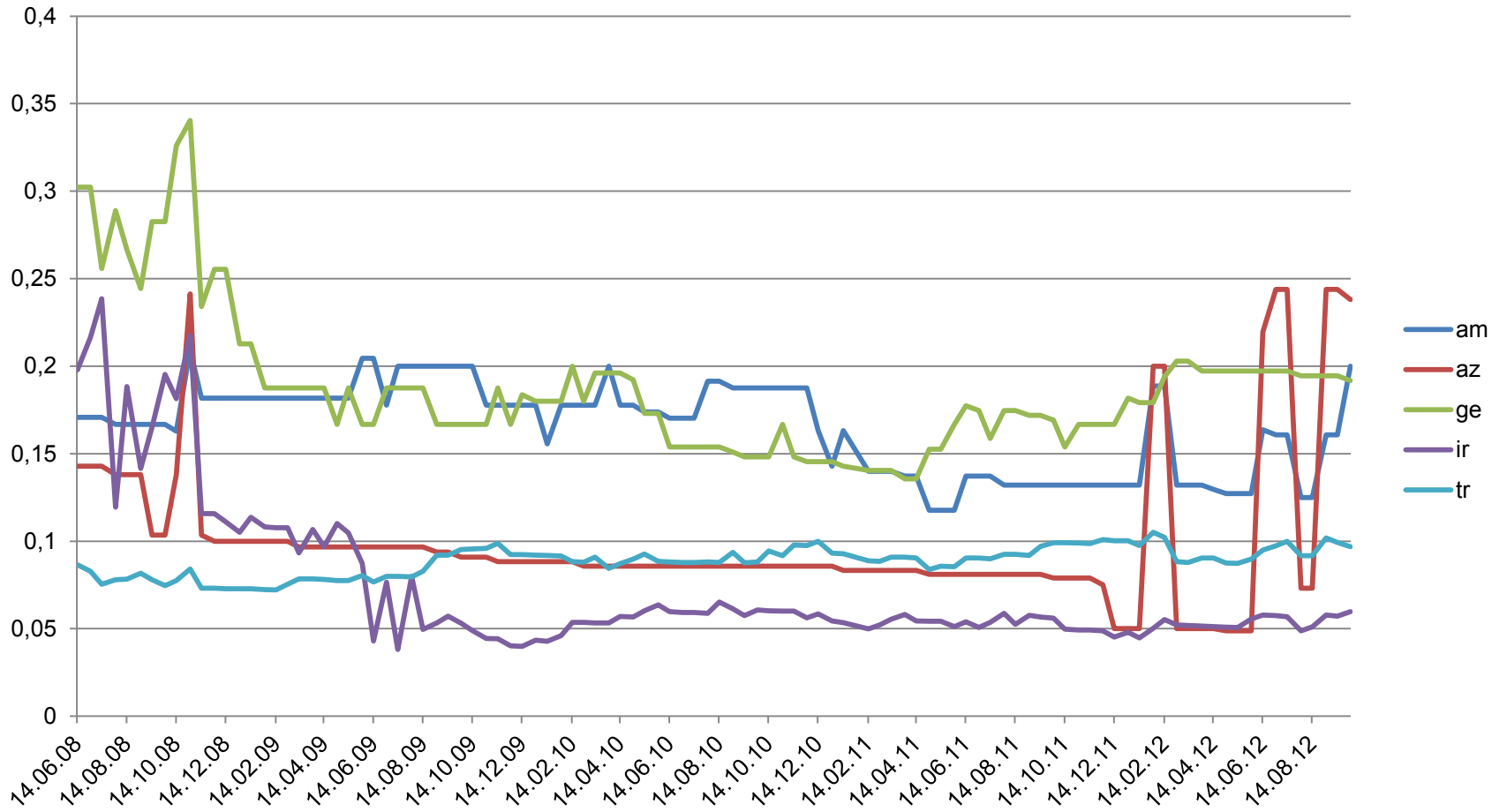
Comparison

- changes by time
- ratios – allows comparison between countries/regions
 - number of «connected» ASes normalized by overall number of ASes
 - number of links/number of ASes

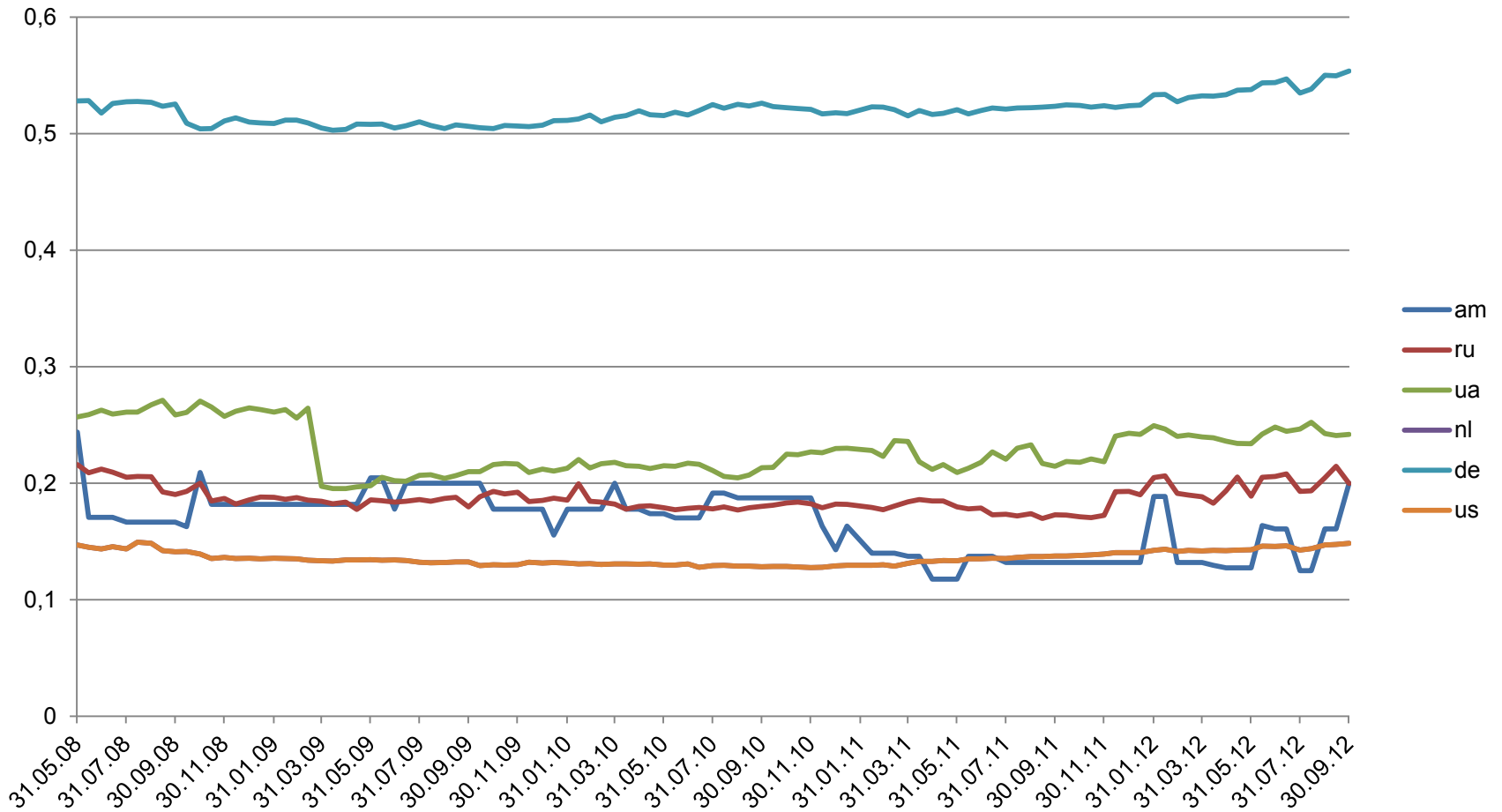
links inside country / routed AS



links outside country / routed AS



links outside country/routed AS



Real user

Russian «Internet Protection Society»

- Using number of links «outside» Russia as an «Connectivity index»
- Also have «Internet Liberty Index» for demonstrating number of censorship events.

Internet Protection Society

ДЕЯТЕЛЬНОСТЬ

ОБ ОЗИ

ПОДДЕРЖАТЬ ОЗИ

Индекс Свободы
Интернета

985

1 марта 2016

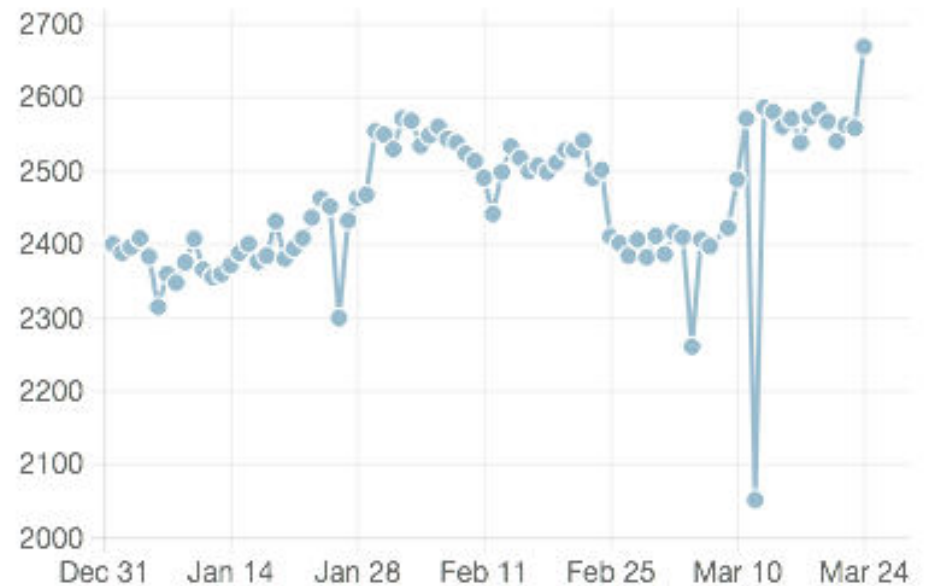
Индекс Связности

2670

24 марта 2016

Индекс Связности

График за 2016



Concerns

Visibility?

Control plane vs. Data plane?

the open Net

Starting route collector

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set up multihop BGP with us!

Russian Internet Measurements Hackathon

