



RIPE NCC
RIPE NETWORK COORDINATION CENTRE

Internet Measurements during COVID-19

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RIPE NCC

Petrit Hasani | 21 April 2020 | Albanian Networking Community

RIPE Labs



- Lots of interesting and relevant information

<https://labs.ripe.net/covid19>

- Great operator collaboration
- Virtual Hackathons
- COVID-19 and Network Security
- Organising online events
- and lots more

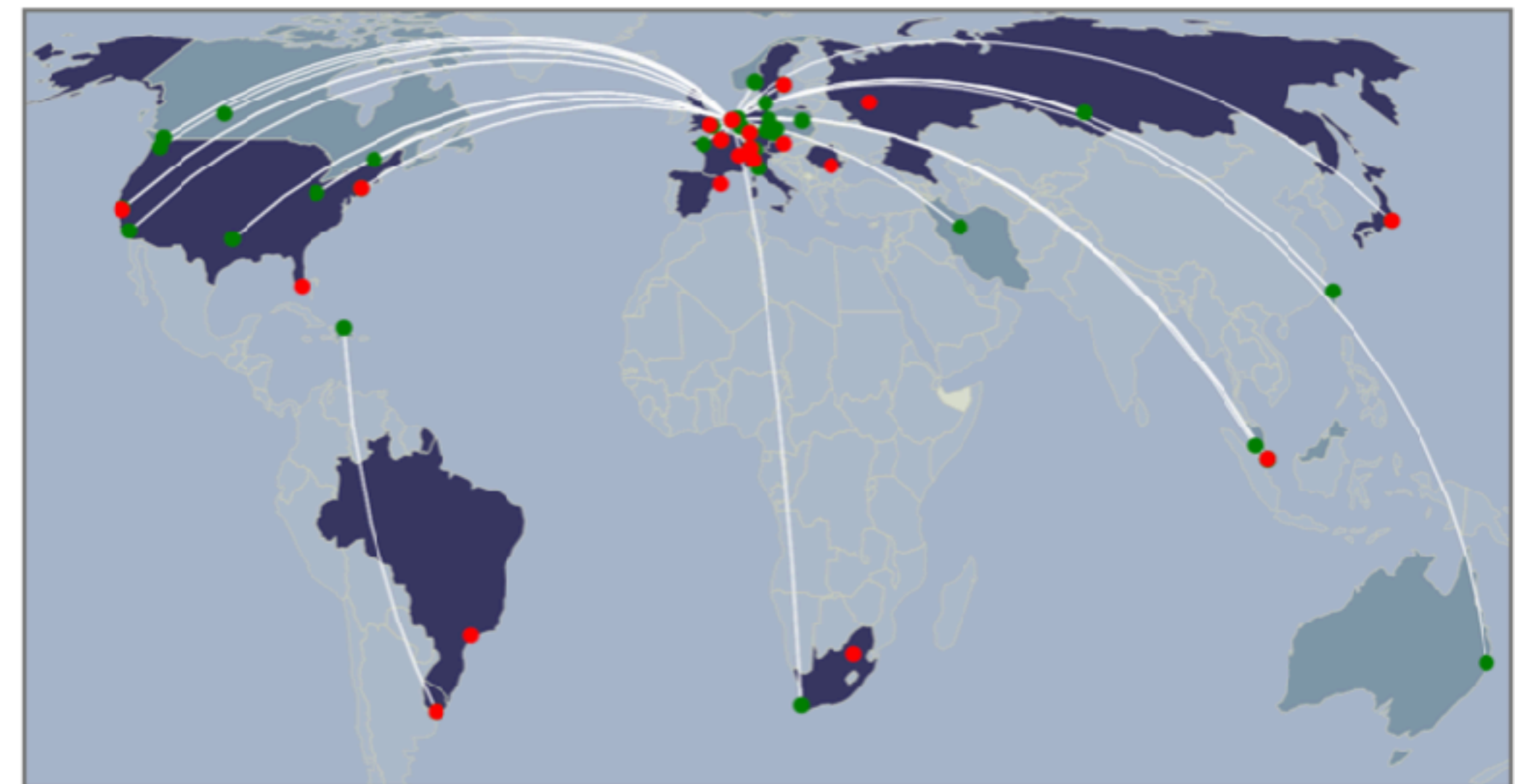


Measuring Network Stability

RIPE Routing Information Service



- RIPE Routing Information Service (RIS)
- RIS collectors collect routing data in BGP
- Shows a history of changes
- RIS makes snapshot every 8 hours
- Differences between show dynamics of the network
 - network maintenance
 - malicious changes and re-routes

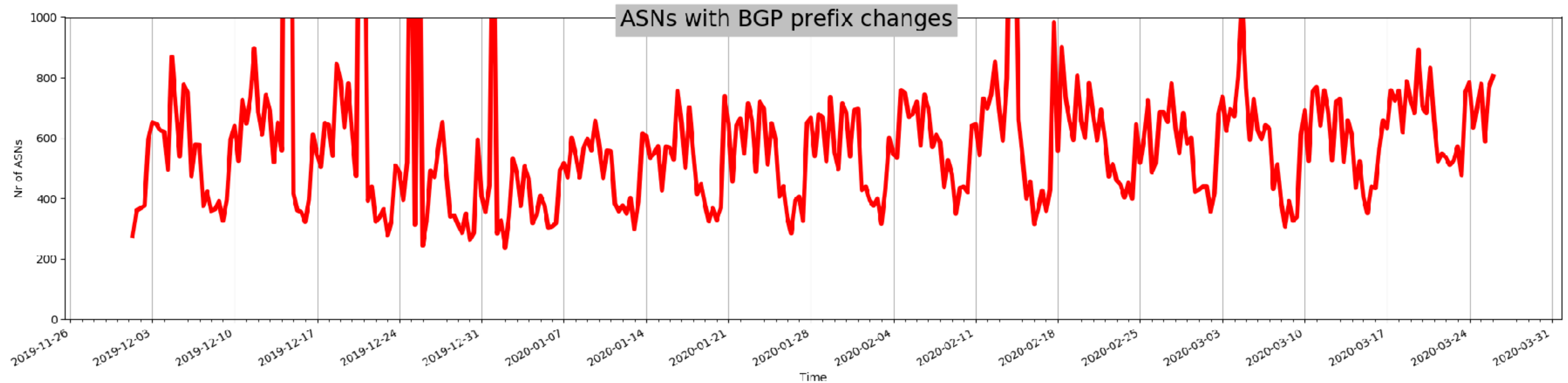


What did we expect?



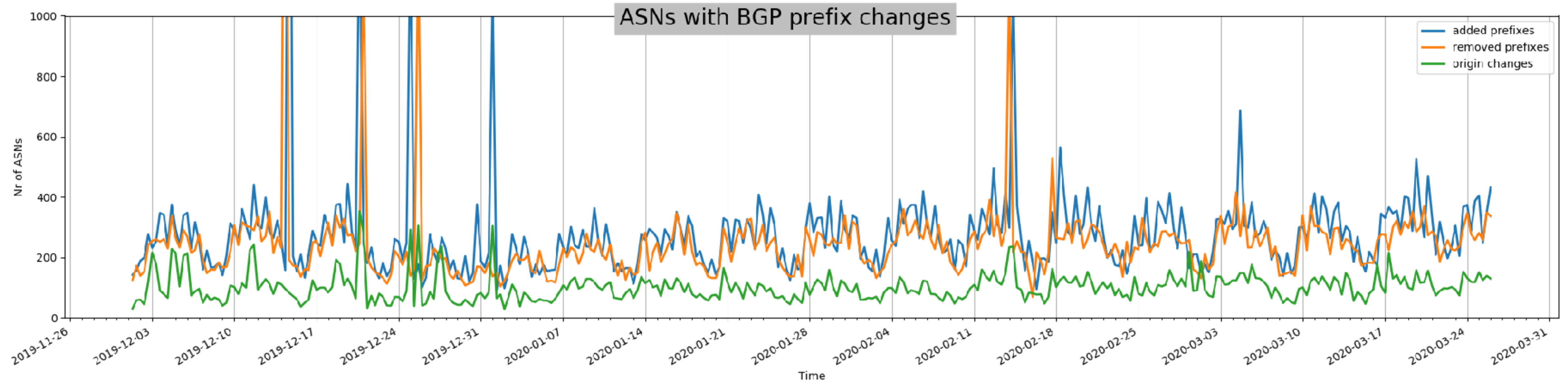
- Less maintenance
- Restricted access to data centers
- And therefore fewer changes in BGP

But what did we see?



- Number of ASes with any type of change in BGP
 - No visible decrease in the number of changes

Changes in BGP by Type



- **Blue:** Added prefixes
- **Orange:** Removed prefixes
- **Green:** Origin changes

Conclusions



- Normal change pattern
- Periodic dips on Saturday and Sundays
- Stable BGP activity
- Operators take their responsibility and maintain their networks
- More on RIPE Labs:

<https://labs.ripe.net/Members/emileaben/internet-stability-in-times-of-corona>



Measuring Network Delays

Background



- Started during Internet Health Hackathon by Romain Fontugne
- RIPE Atlas
- Provides an interface to show network delays
- Delays between major eyeball networks and some other networks in a specific country
 - Google
 - AMS-IX
 - DECIX

Measurement Results

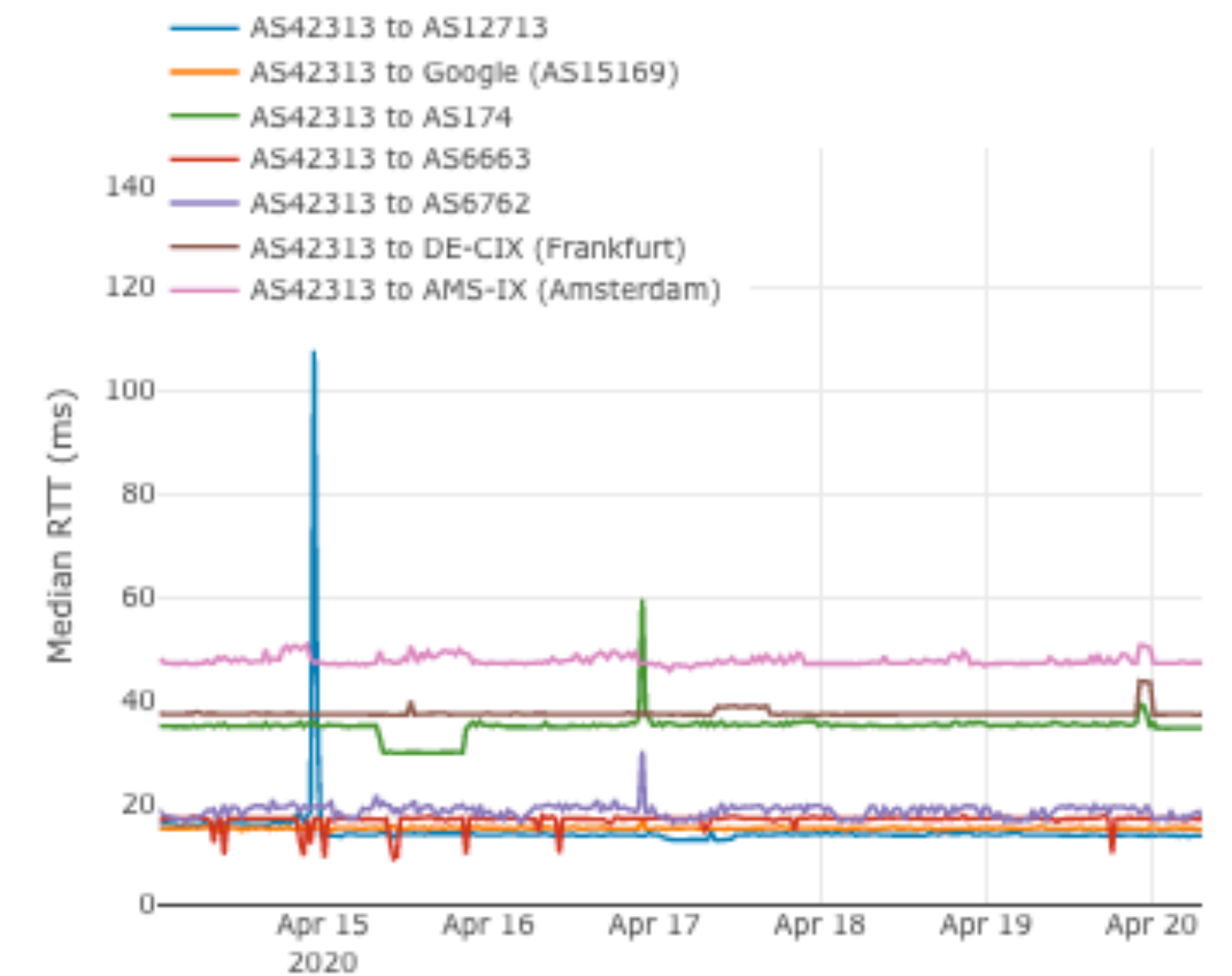
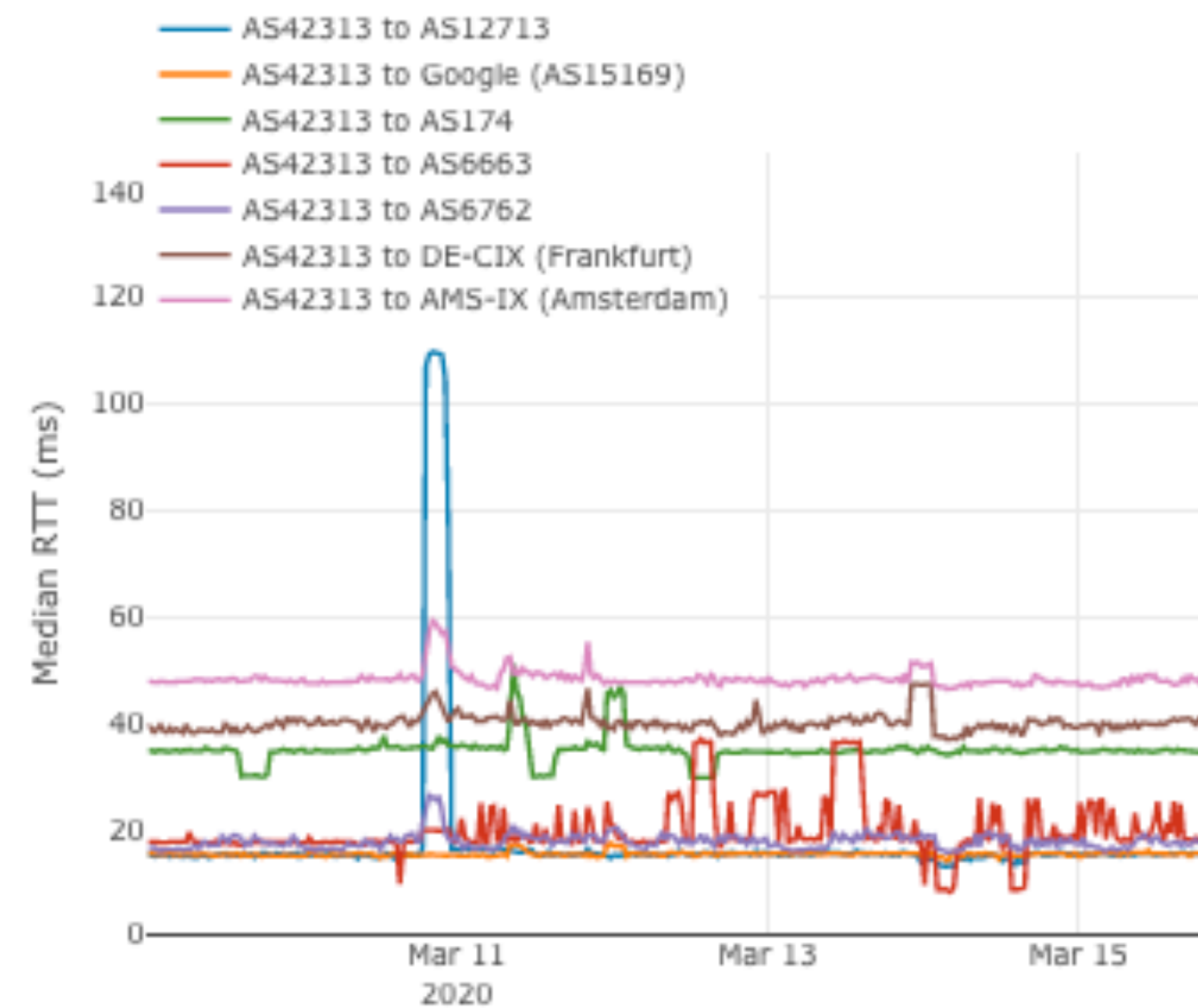
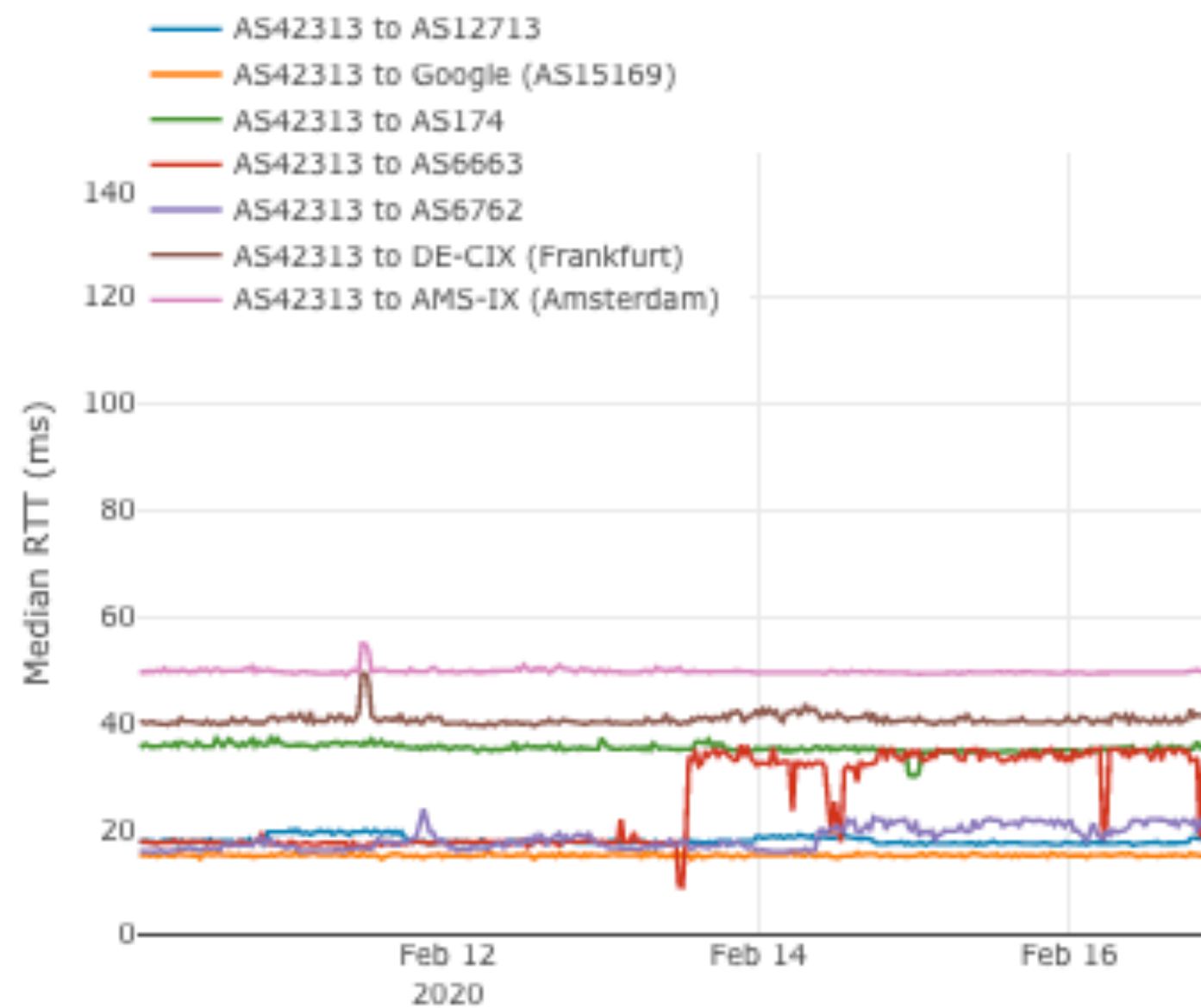


One month before lockdown

Lockdown (13 March)

Latest (April)

ALBTELECOM-AS Albtelecom Sh.a., AL (AS42313)



Measurement Results

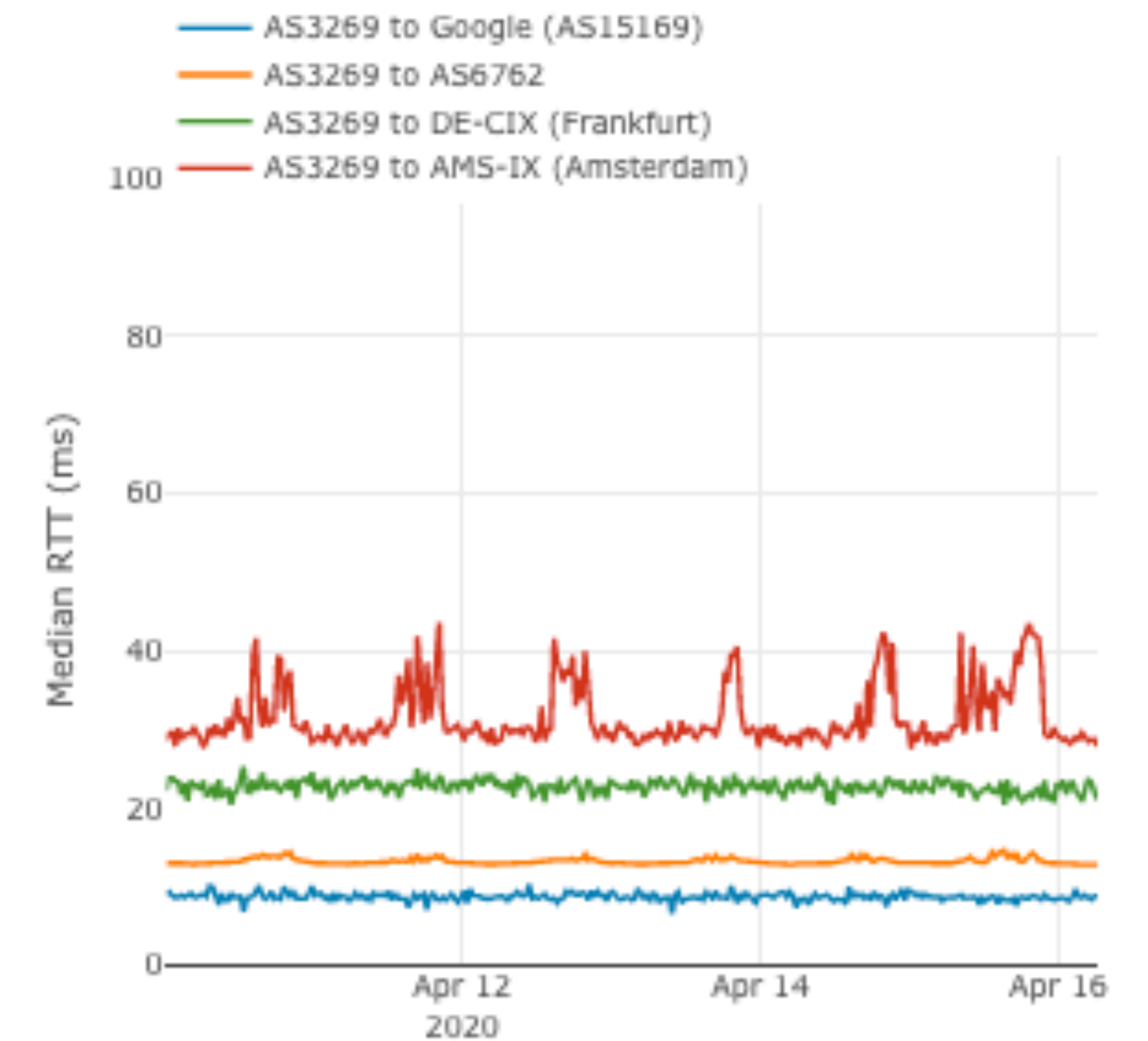
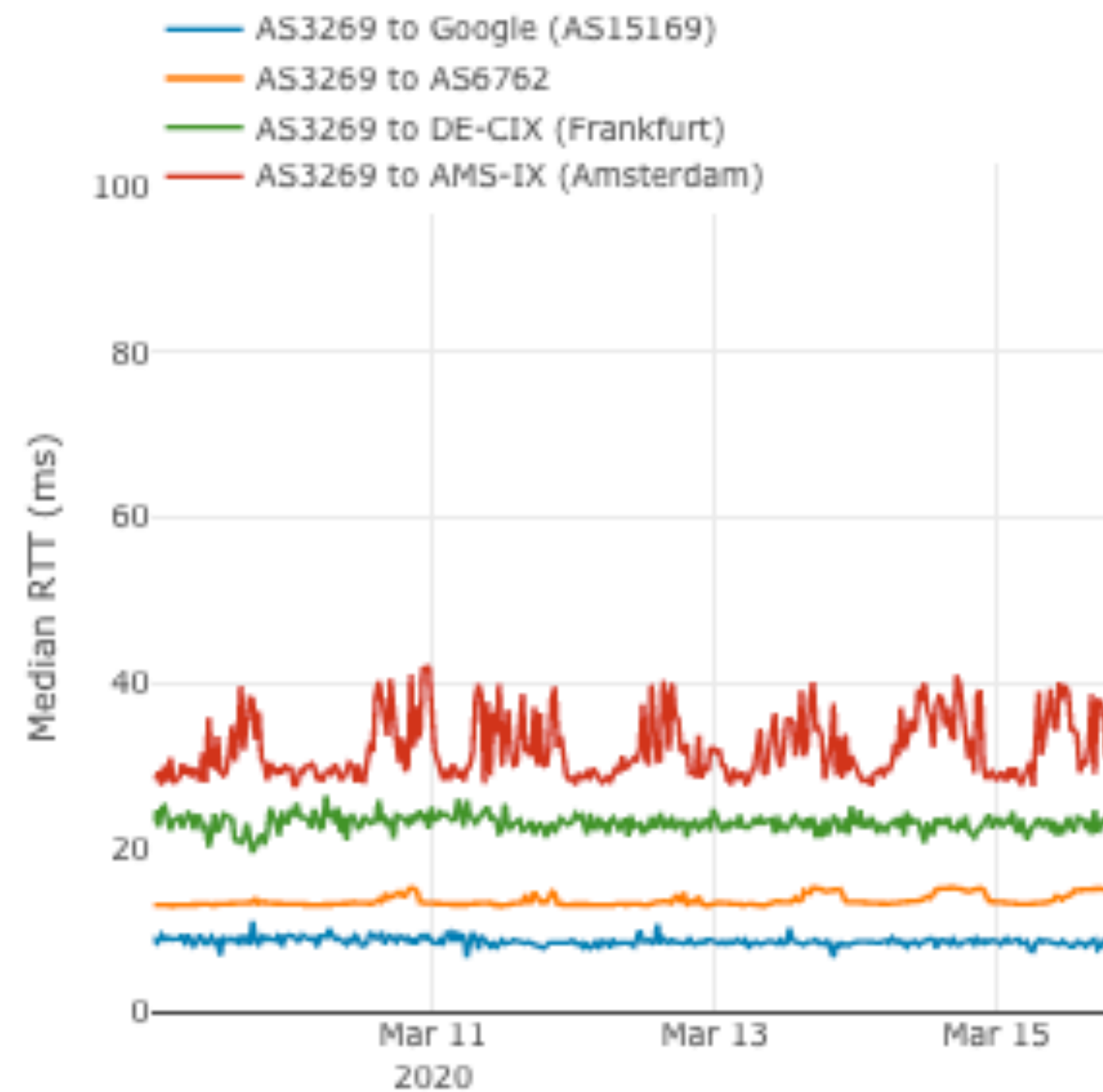
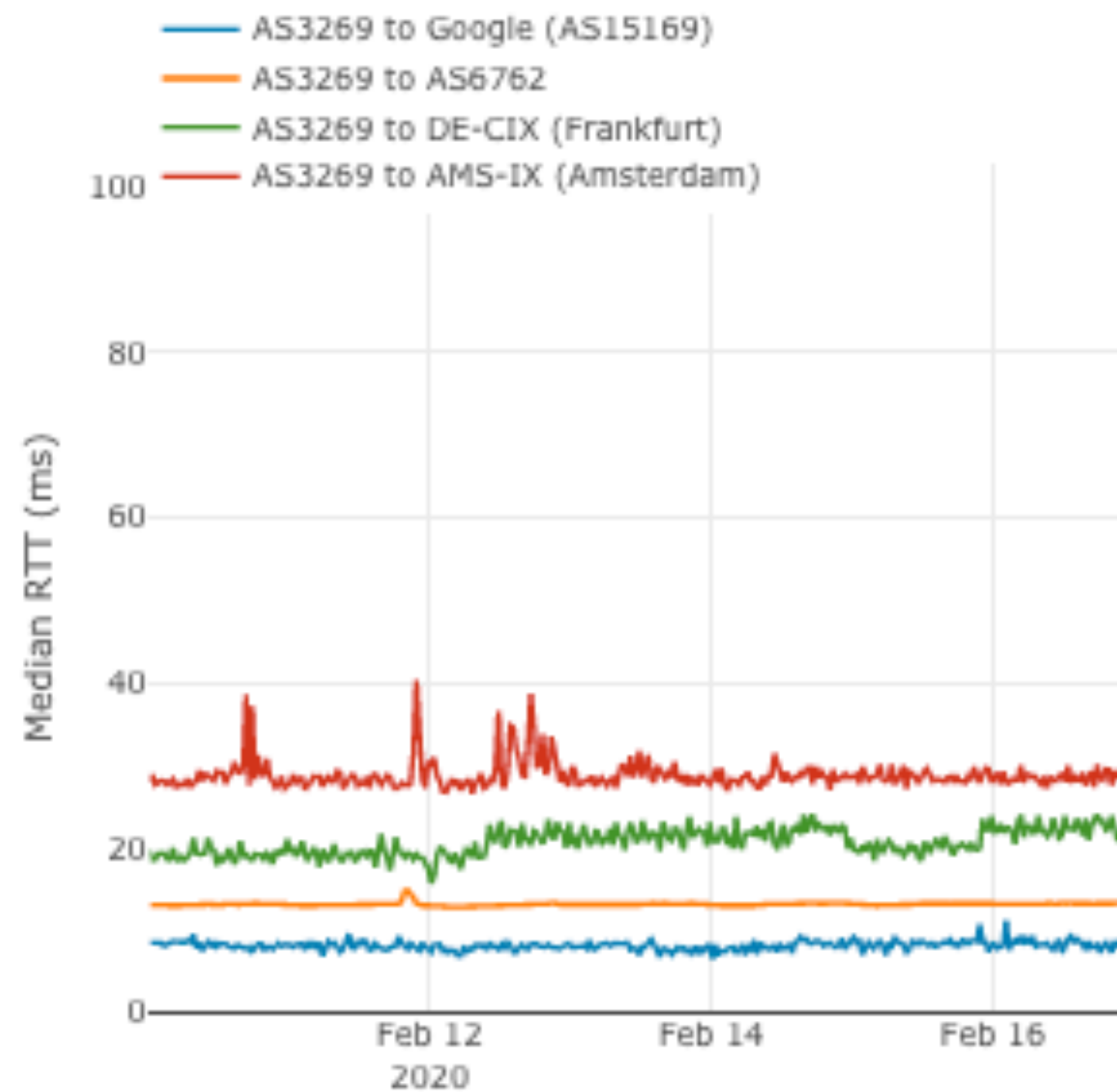


One month before lockdown

Lockdown (9 March)

Latest (April)

ASN-IBSNAZ Telecom Italia S.p.a., IT (AS3269)



Conclusions



- Increased traffic, some congestion
- But overall the Internet is doing well

- Interface:

<https://ihr.iijlab.net/ihr/en-us/covid19>

- Currently only countries that had a clear lockdown start date

- More on RIPE Labs:

https://labs.ripe.net/Members/romain_fontugne/network-delays-in-times-of-corona

Other Measurements



- Compilation of other Internet Measurements

<https://labs.ripe.net/Members/becha/internet-measurements-in-the-time-of-corona>



Questions



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