RIPE NCC
RIPE NETWORK COORDINATION CENTER

External Internet Services: A view from regional RIPE Atlas probes

2 years later

Alex Semenyaka | RIPE NCC | September 2025

A short recap

CAPIF 2

First presentation of the methodology

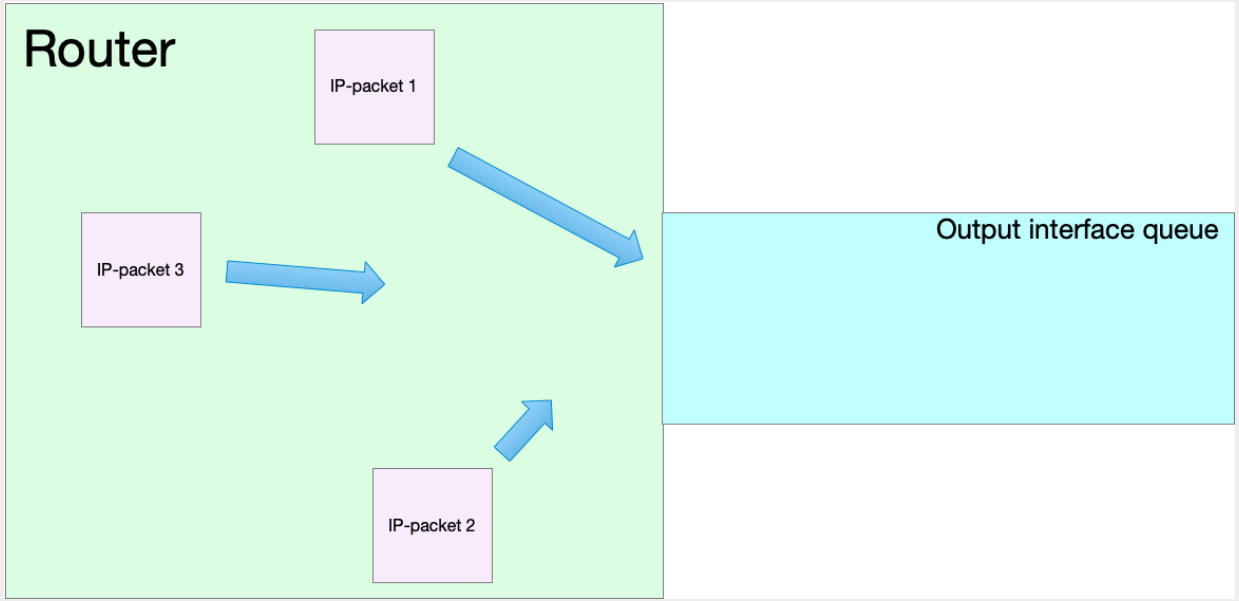
- **We measured round-trip time from all Atlas probes in Central Asia to the most popular "external" resources in the region**
  - Popularity data obtained through Open.Trends service
- **The data is averaged to obtain a typical "portrait" of delays**
  - Median averaging is used
- **A simple but *coarse* method for estimating overloads**
  - 2023: Proof of Concept
  - 2025: Tracking the evolution

Nature of Delays

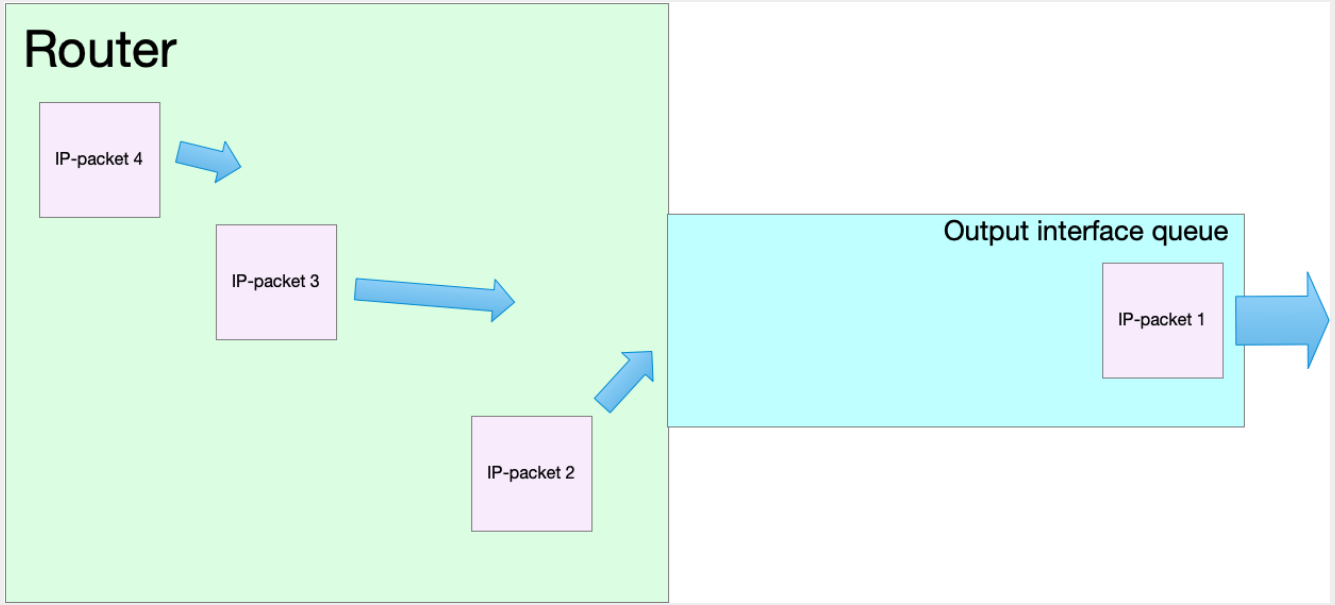
RTT Components

- **Propagation time**
  - Proportional of the fibre length
  - Is constant
- **Intermediate devices delay**
  - Queues on interfaces
- **ICMP processing at the other end**
  - CPU load
  - Usually neglectable

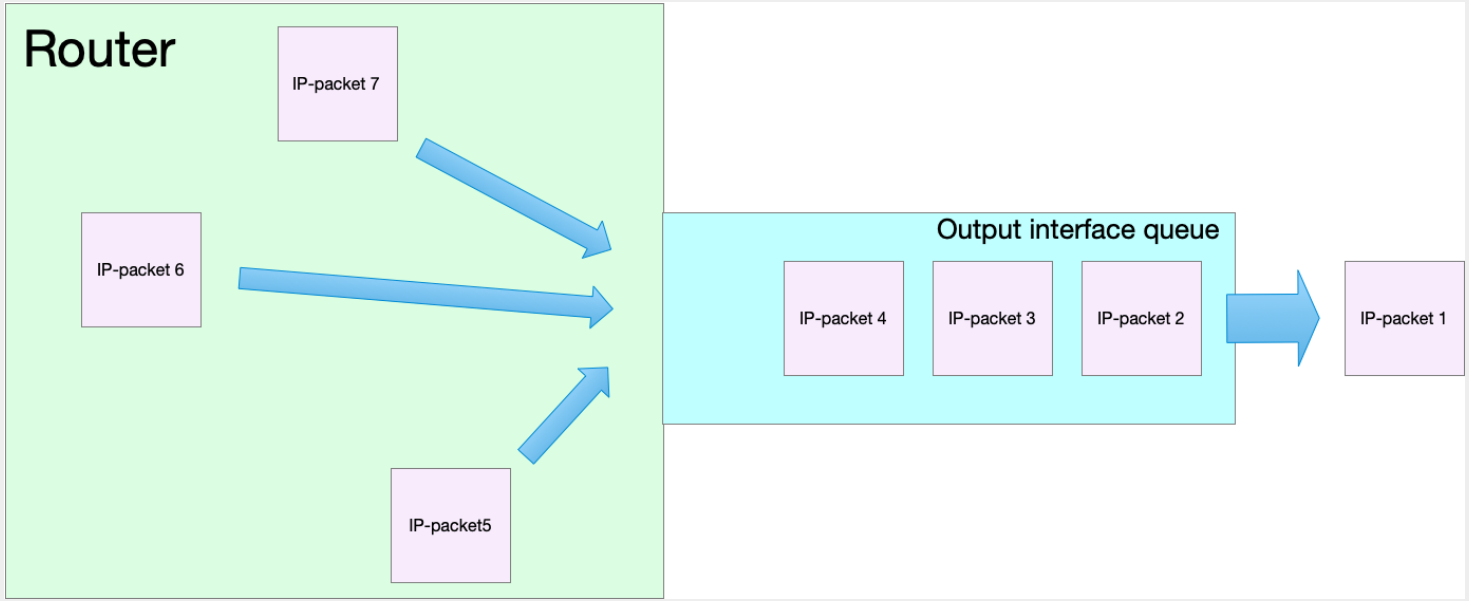
QoS Fundamentals (1)



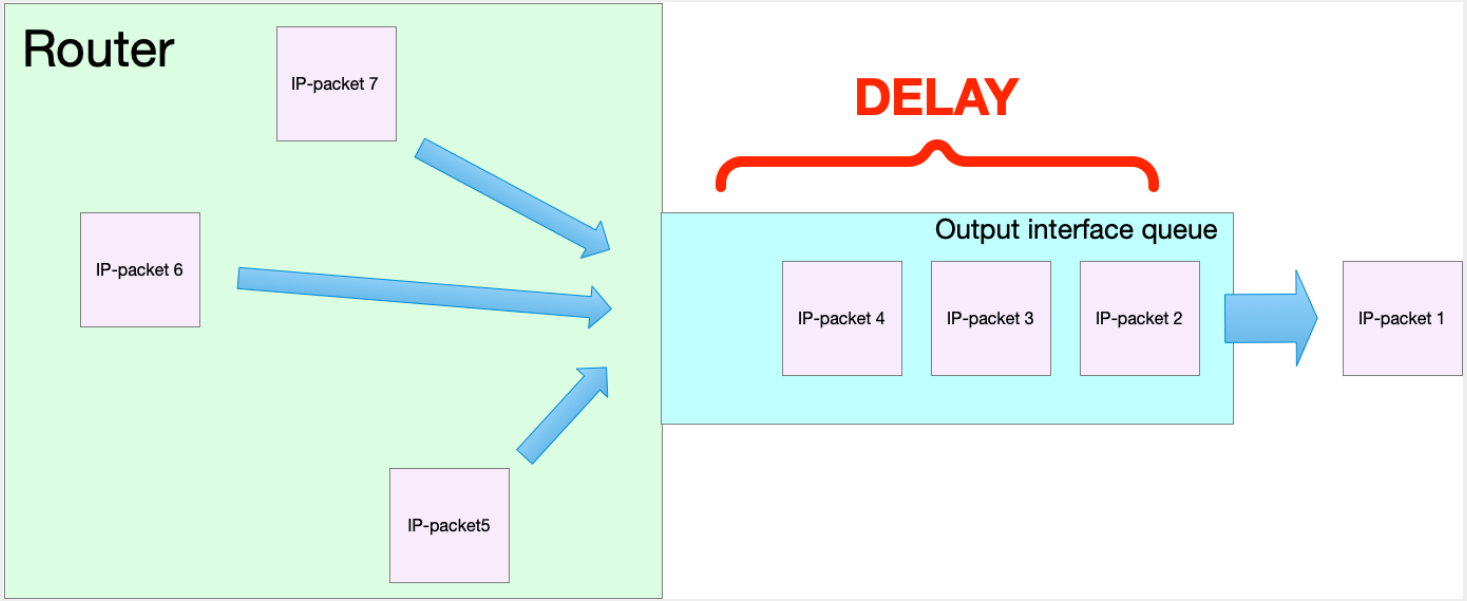
QoS Fundamentals (2)



QoS Fundamentals (3)



QoS Fundamentals (4)



Services Tested

- **Google:**
  - Google DNS
  - Google Authorisation Server
  - Google Fonts storage
- **Facebook**
  - Facebook frontend
  - Instagram

- **Telegram**
- **TikTok**
- **Aliexpress**
- **Yandex**
- **VK**
- **Rezka.ag**
- **Wikipedia**

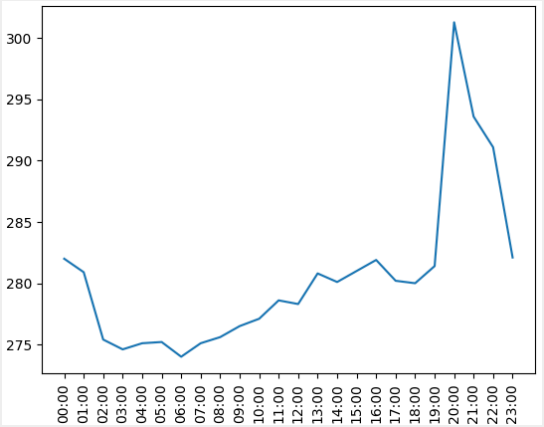
Reference Measurements Run in Parallel

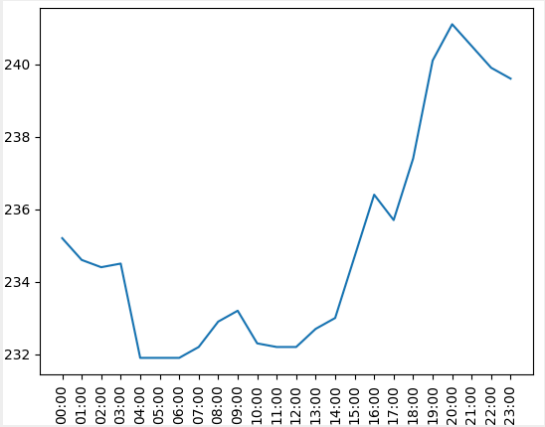
9 countries in Europe

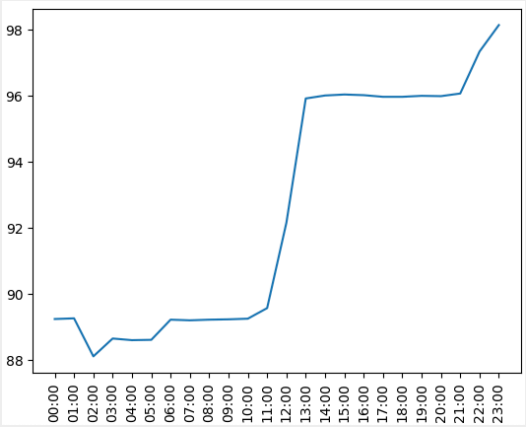
- Closer to hubs
- High-bandwidth backbones

Results from 2023

Different countries in Central Asia, different resources…







But still the *same* QoS Pattern

2023: Conclusions

Main points

- RTT over is uneven, which indicates the influence of channel utilisation
- Average RTT fluctuations in CA are small
- Each country has its own peculiarities

What has changed?

Important Changes

8 of 12 services now look the same way

- For "European/American" resources RTTs now are **even**
  - With fluctuations of no more than 4 ms
  - In Europe, we see the same

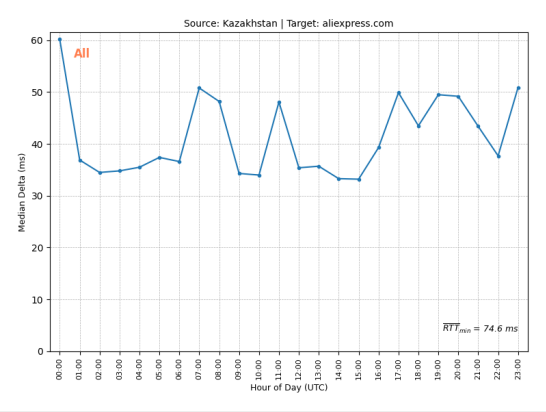
TikTok, VK, Yandex

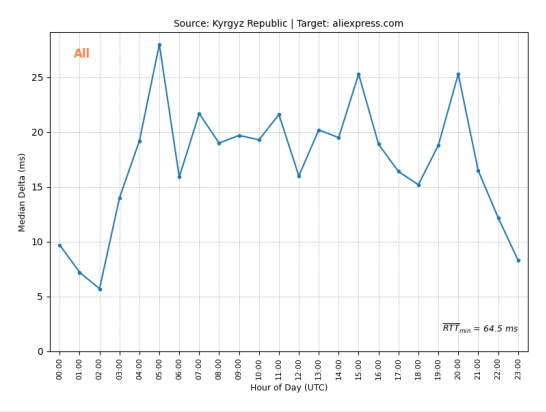
- Accessibility from Central Asia is better than in Europe
  - We are seeing load waves in Europe
  - Most likely, this is a conscious decision

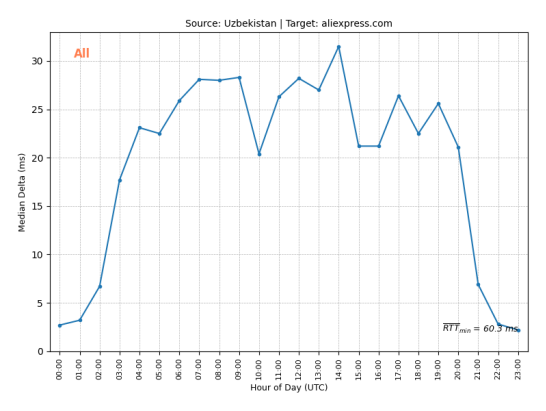
Aliexpress now is measurable

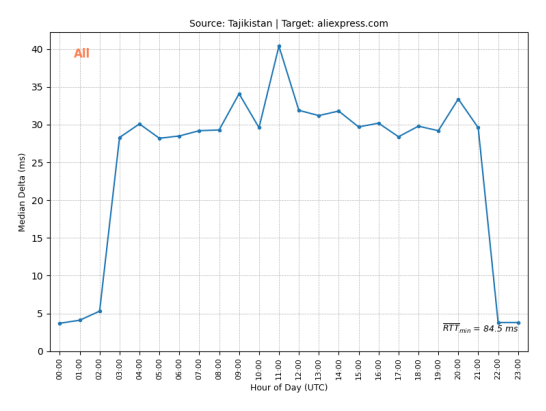
- We see load clear "load waves" for this resource
  - However, in 2023 its graph was just *random*

Aliexpress: RTT over a Day in Central Asia

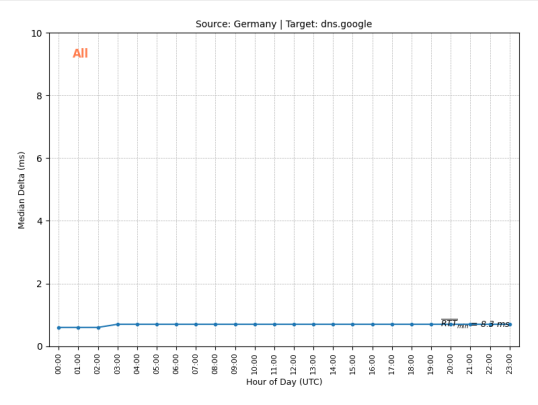


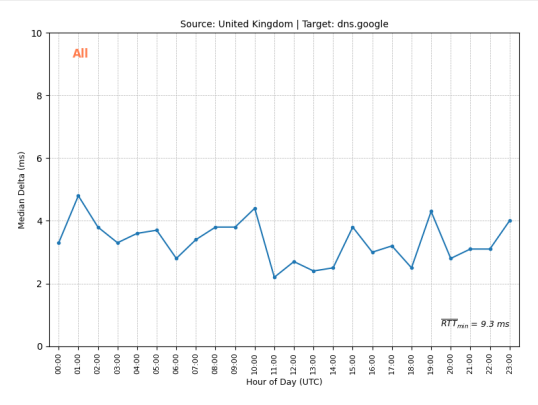


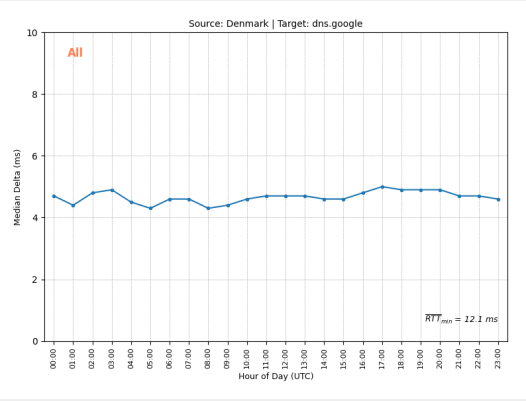


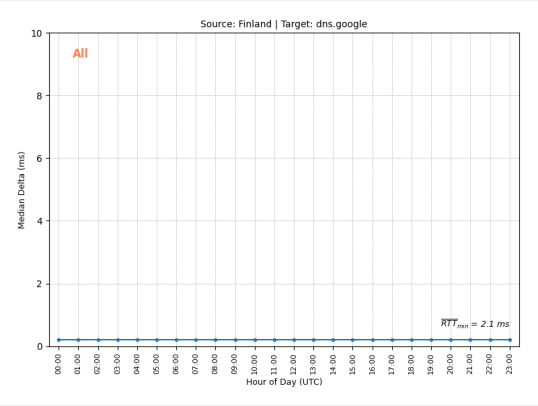


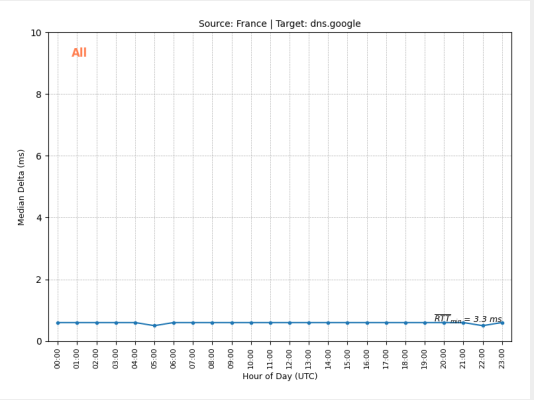
Google DNS: RTT over a Day in Europe

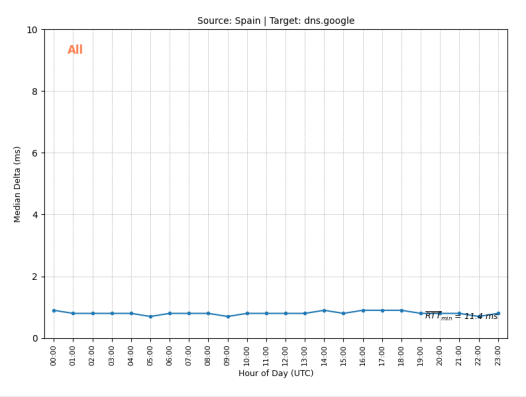












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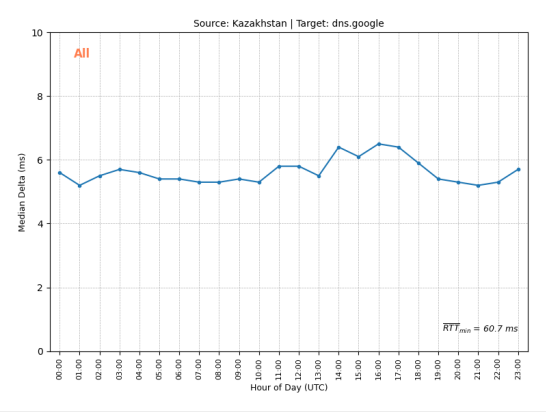

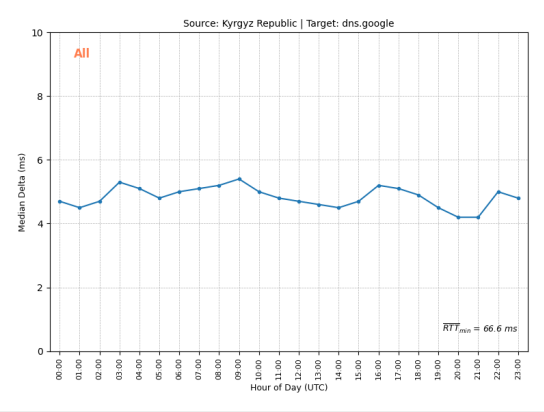

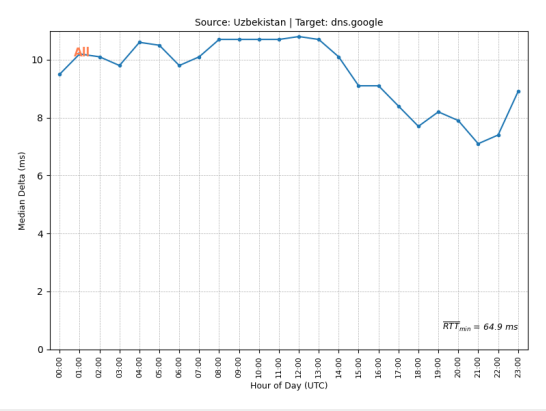

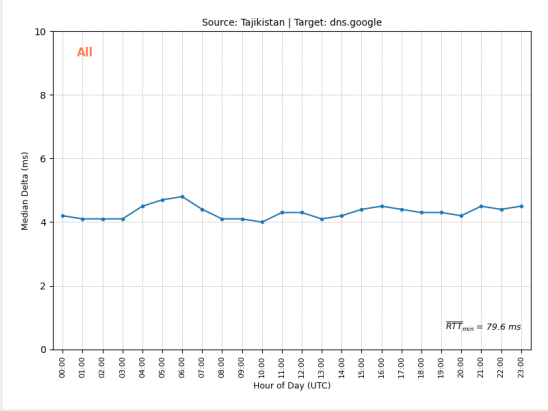

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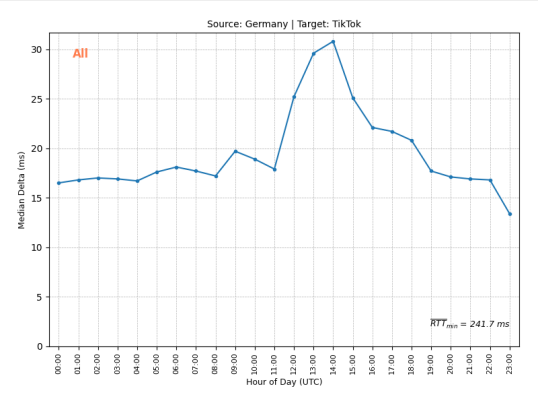

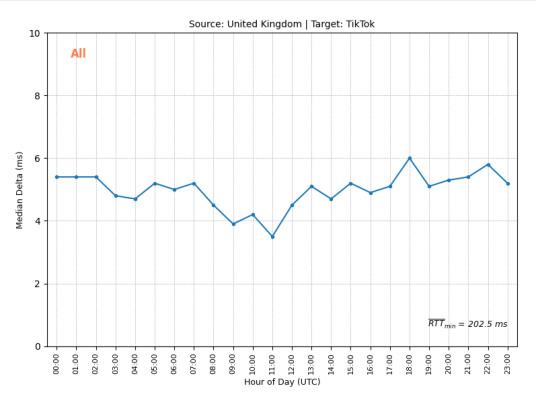

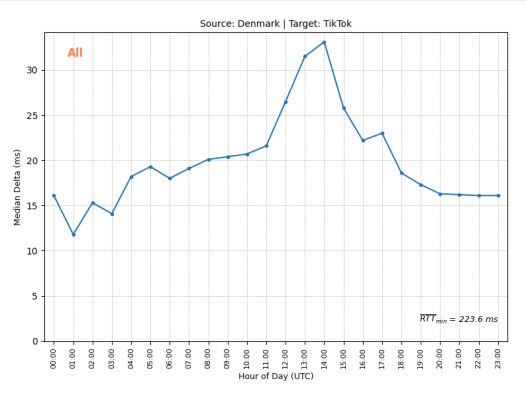

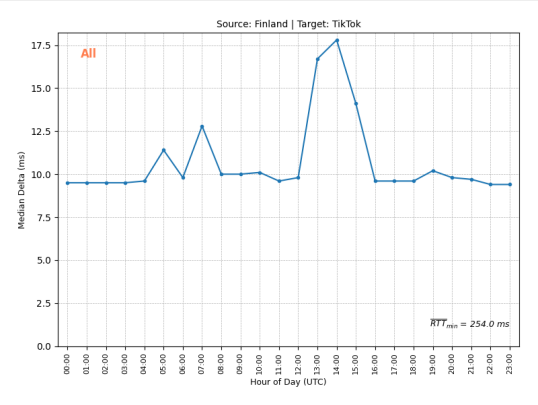

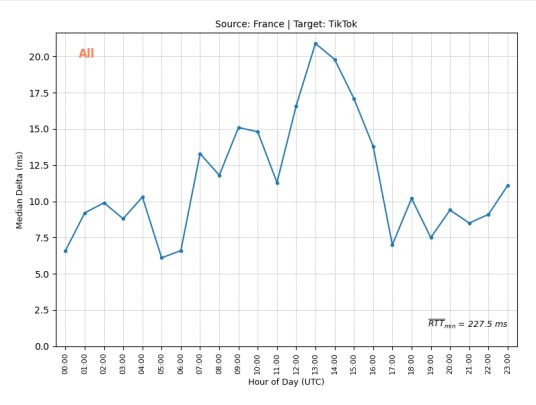

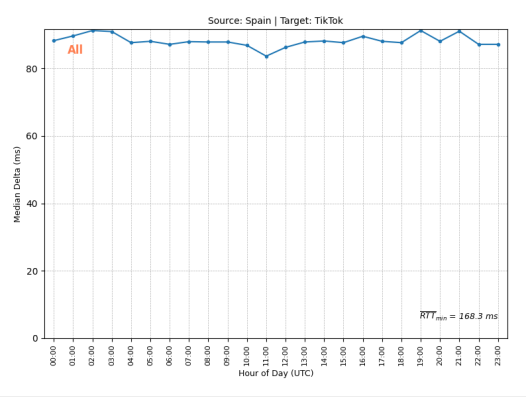

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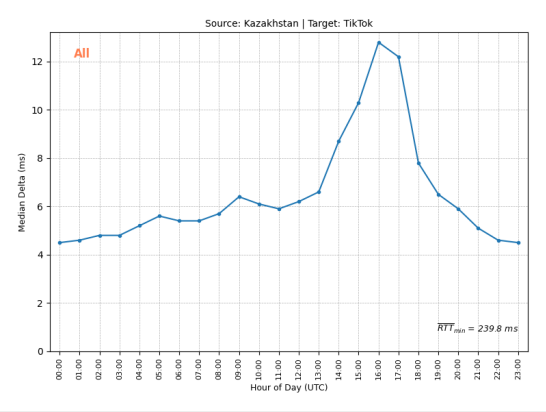

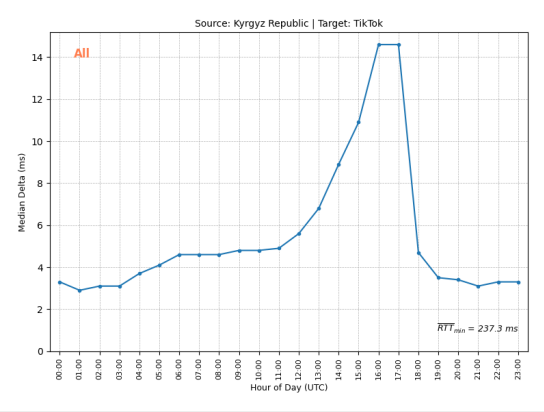

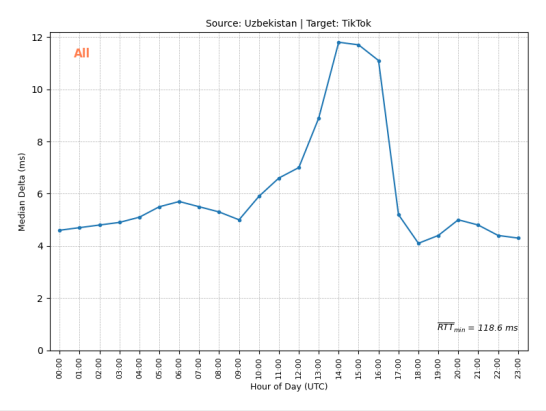

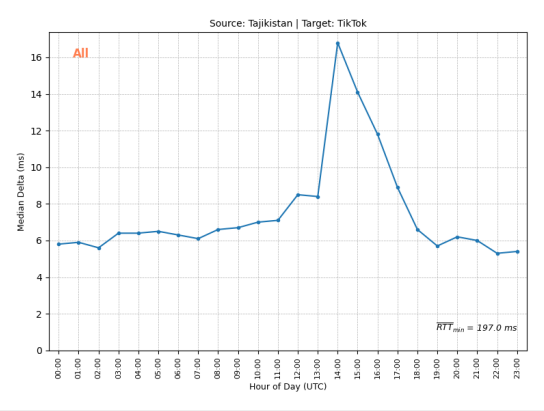

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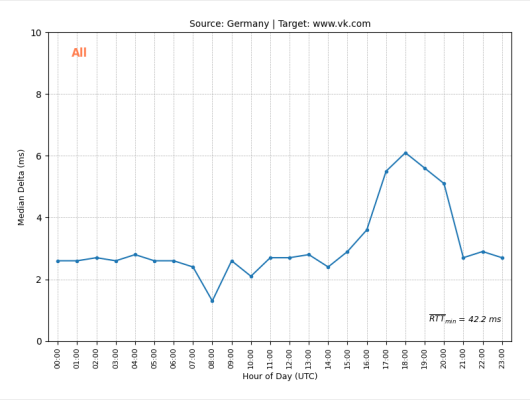

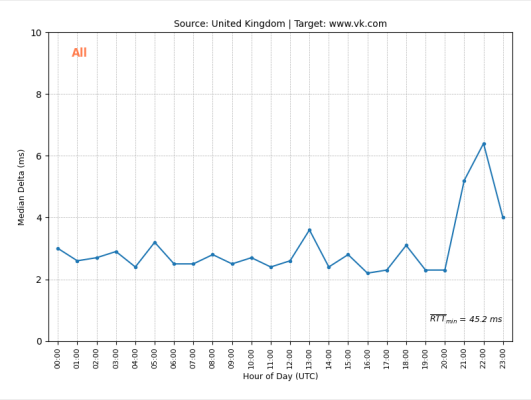

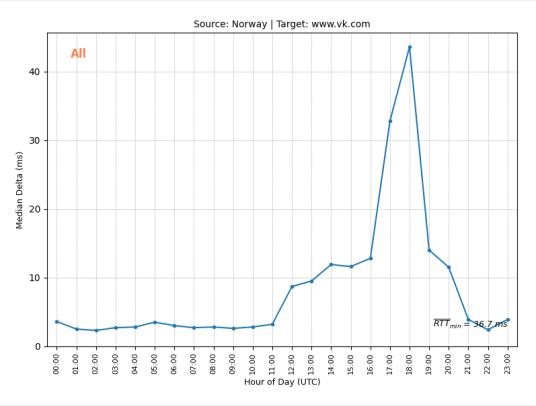

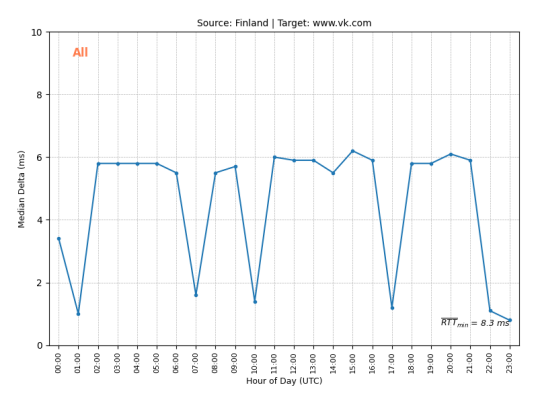

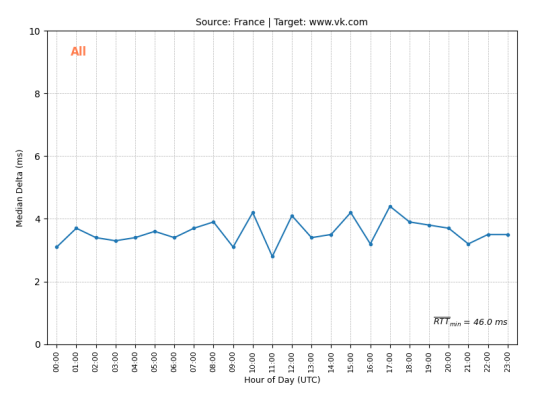

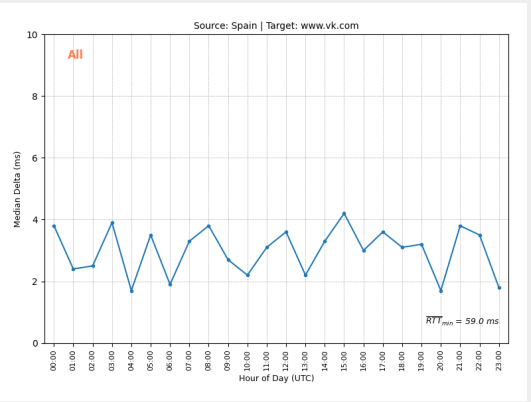

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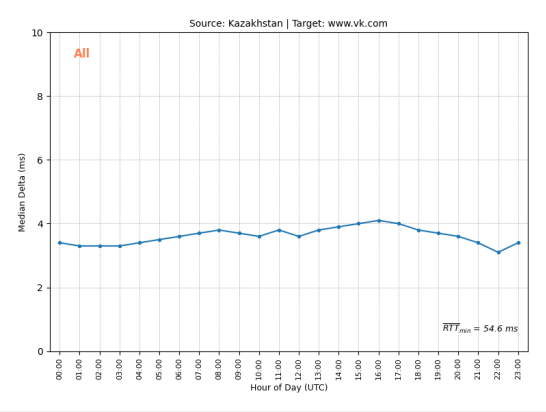

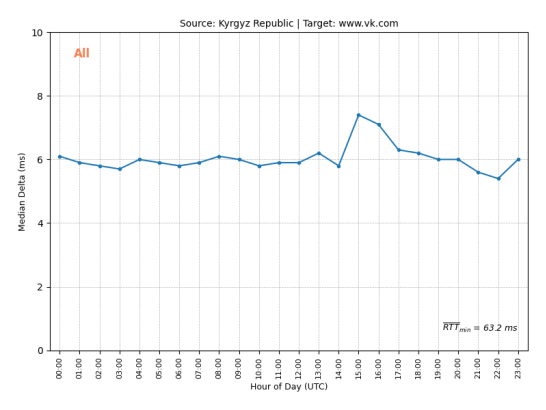

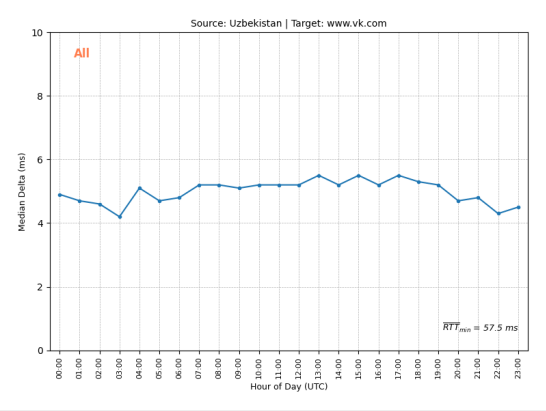

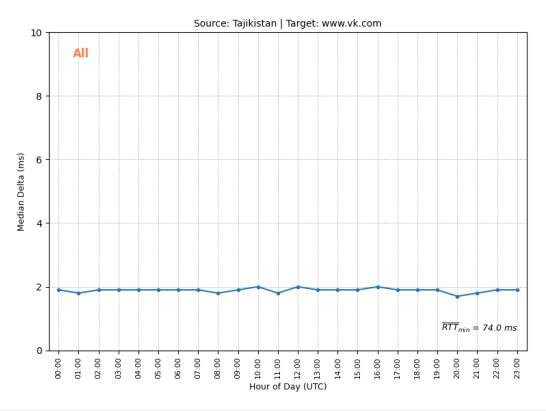

2025: Conclusions

- **At the level of this analysis, enormous progress is evident**
  - Result of the joint efforts of operators and content providers

- **Further application of the methodology in the region is pointless**
  - More refined research will be needed next time

- **There is still some room for improvement**
  - Aliexpress case

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THANK YOU!