

# Quantifying interferences between measurements on RIPE Atlas

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## 1. Introduction and Motivation

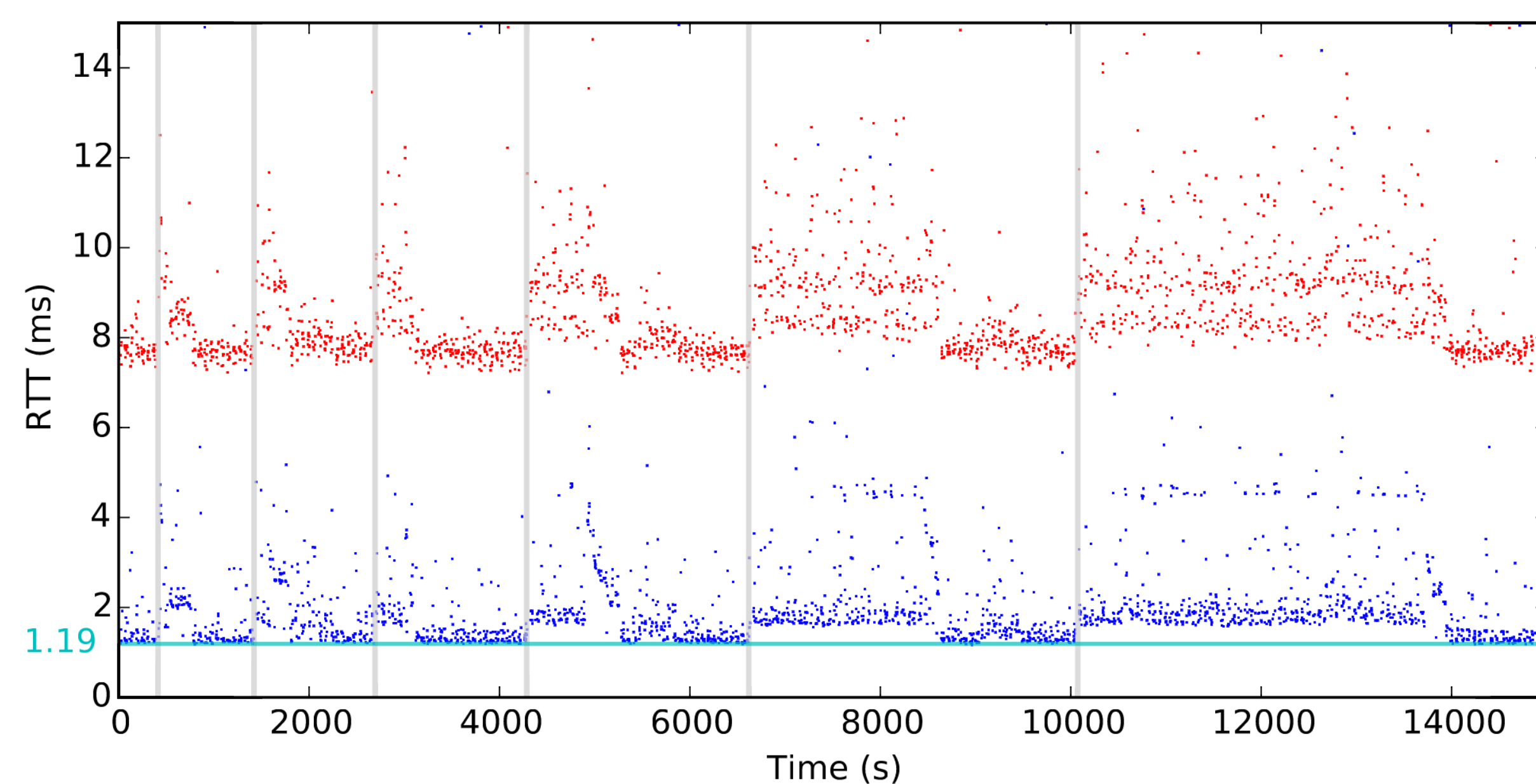
- ◆ RIPE Atlas is getting widely used
  - By researchers [1][2]
  - For debugging purposes [3]
- ◆ The overall load is increasing
  - Atlas probe 20621 (v1) performed 608,824 measurements in March 2015 [4]
  - Users perform millions of measurements [4]
- ◆ The impact of this load on the precision is unknown

## 2. Objectives and Methodology

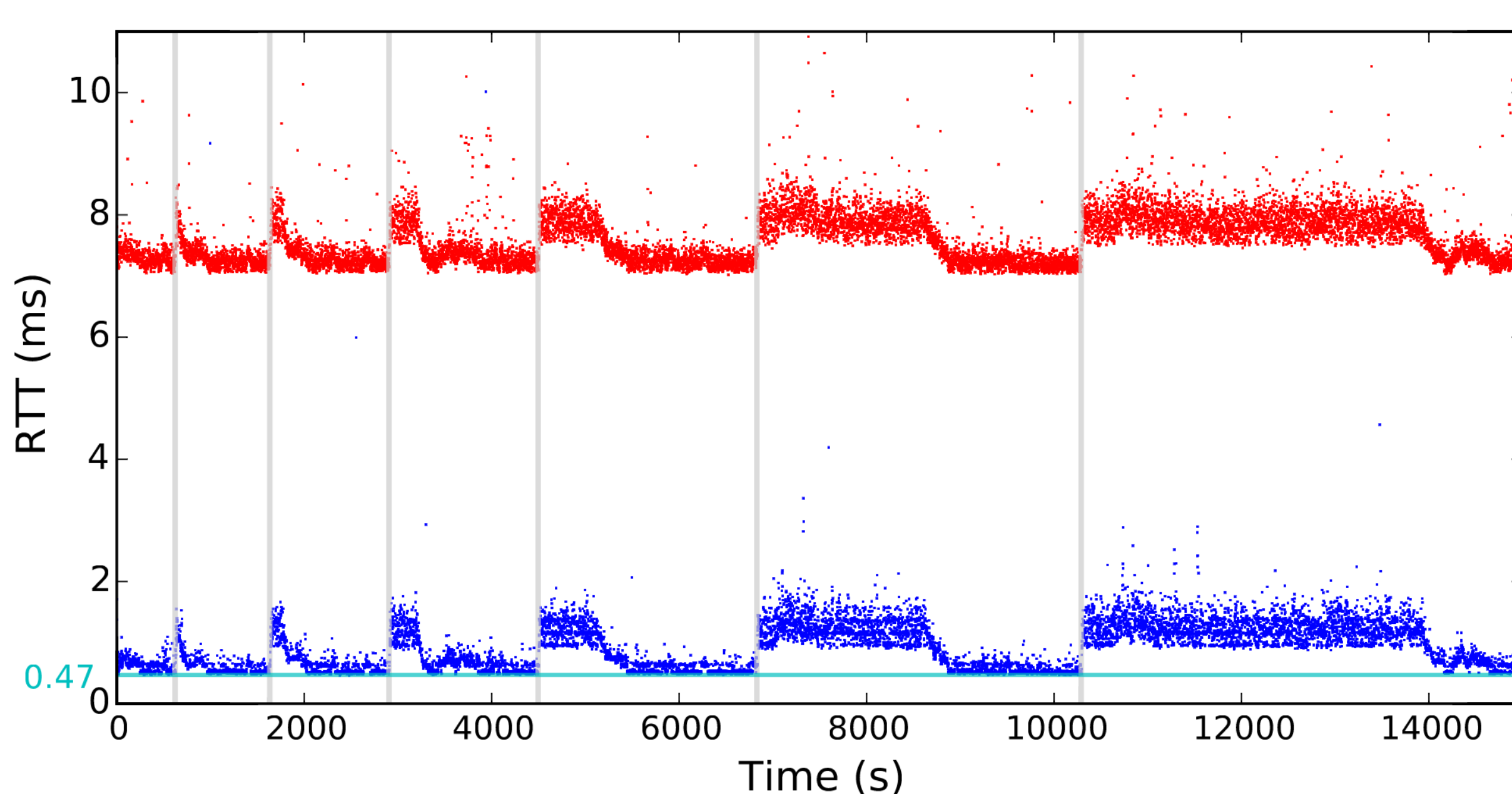
- ◆ Measurements may interfere with other measurements
  - We measure the effect on RIPE Atlas. We focus on **probes v2** (20% of the probes)
- ◆ Measure the impact of using an Atlas probe as traceroute source
  - We performed successively 10, 25, 50, 100, 250, 500 one-off traceroute measurements
  - At the same time we pinged from and toward the probe to measure response time
- ◆ Measure the impact of using an Atlas probe as destination
  - We pinged the Atlas probe from several NL Ring nodes
  - Every two minutes a new NL Ring node starts to perform ping toward the Atlas probe
  - At the same time we pinged from the Atlas probe to measure the response time

## 3. Measurements

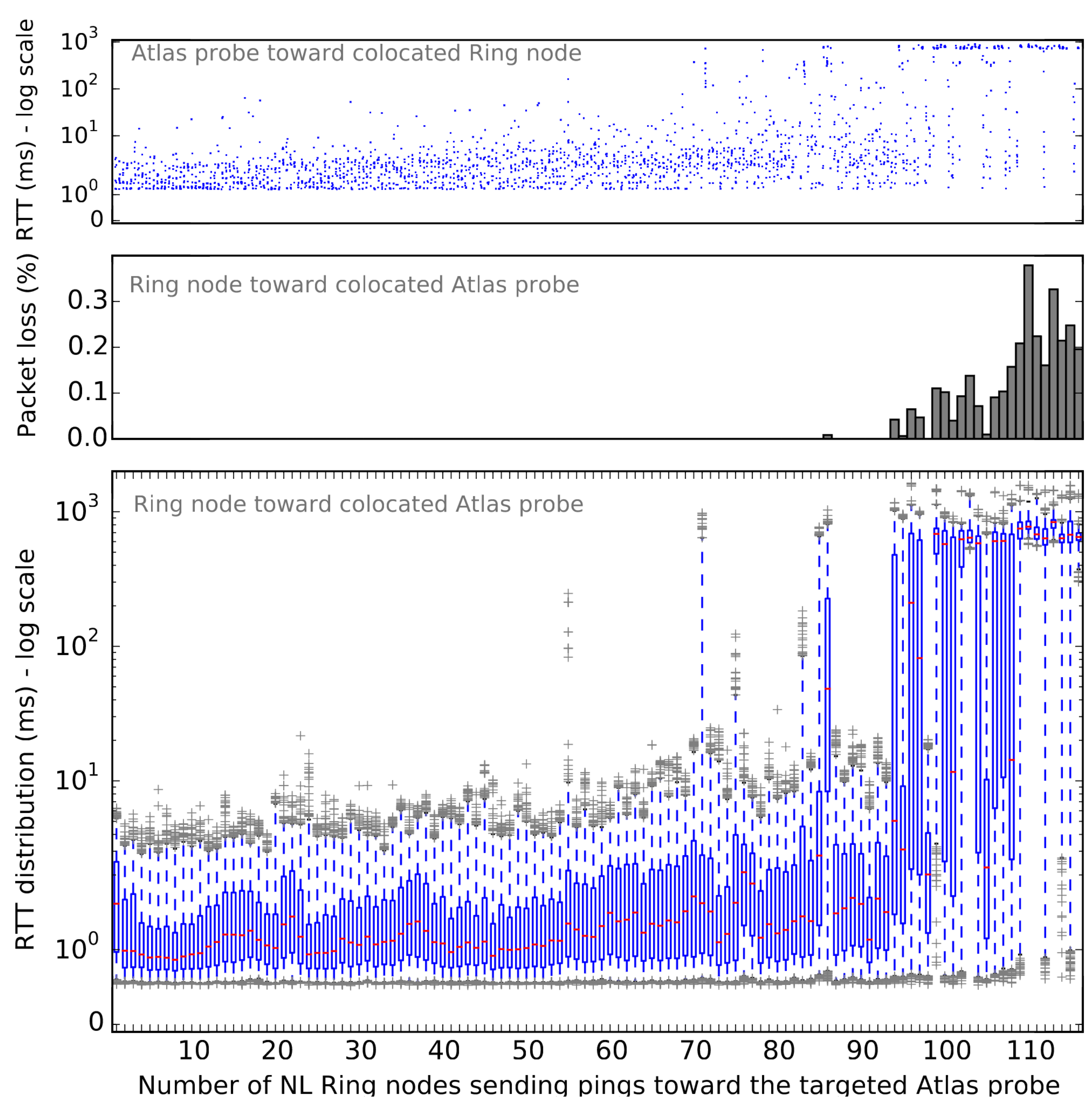
Delay-based measurements originated **from** the probe are impacted when other measurements are launched on the probe



Delay-based measurements **toward** the probe are impacted when other measurements are launched on the probe



Delay-based measurements **from** (top) and **toward** (bottom) the probe are impacted as the measurements toward the probe increase



## 4. Observations and Conclusion

	Increased source load		Increased destination load	
	Mean	90 <sup>th</sup>	Mean	
Src-based delay effect	+ 4/5ms	+ 6ms	550 pings/s :	+1/2ms
Dst-based delay effect	+ 0.7ms	+ 0.8ms	1100 ping/s :	Probe gets crazy

- **Standard deviation is also impacted**
- What about Atlas probes v1 (11%) and v3 (69%) ?
  - Atlas probe v1 : we observe same degradations
  - Atlas probe v3 : more powerful -> lower impact

Atlas probe measurements can be polluted by concurrent measurements, but a better hardware mitigates the impact

## 5. References

- [1] M. Rimondini, C. Squarcella, G. Di Battista. Towards an Automated Investigation of the Impact of BGP Routing Changes on Network Delay Variations, PAM 2014
- [2] R. Fanou, F. Pierre, E. Aben. On the Diversity of Interdomain Routing in Africa. PAM 2015
- [3] E. Aben. A RIPE Atlas View of Internet Meddling in Turkey. <https://labs.ripe.net/Members/emileaben/a-ripe-atlas-view-of-internet-meddling-in-turkey>
- [4] <https://atlas.ripe.net/get-involved/community/>