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

4. Observations and Conclusion

<table>
<thead>
<tr>
<th>Increased source load</th>
<th>Increased destination load</th>
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</thead>
<tbody>
<tr>
<td>Mean</td>
<td>Mean</td>
</tr>
<tr>
<td>90th</td>
<td></td>
</tr>
<tr>
<td>Src-based delay effect</td>
<td>+4.5/5 ms</td>
</tr>
<tr>
<td>Dst-based delay effect</td>
<td>+0.7 ms</td>
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</tbody>
</table>

• 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


We thank the RIPE Atlas support team for accommodating our measurements and being prompt to reply to our questions.