

# **Responsiveness under Working Conditions**

**draft-ietf-ippm-responsiveness-01**

**Christoph Paasch, Randall Meyer, Stuart Cheshire, Omer Shapira, Matt Mathis**

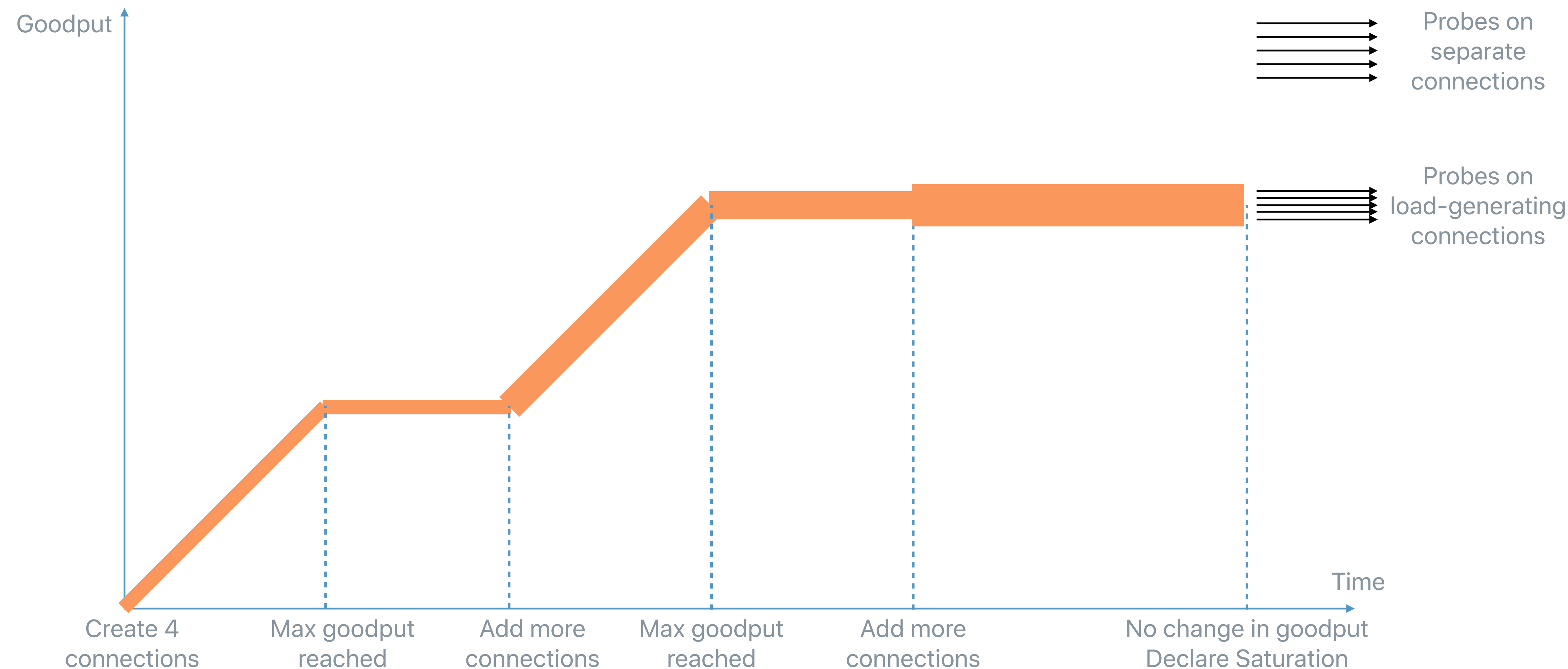
# Update from 00 to 01

- Closed 11 github issues
- Merged 7 PRs
- Significant changes:
  - Added DNS-Based Service Discovery “\_nq.\_tcp”
  - Server-side example configurations in the appendix
  - Significant rework of the measurement algorithm
  - Wording,...

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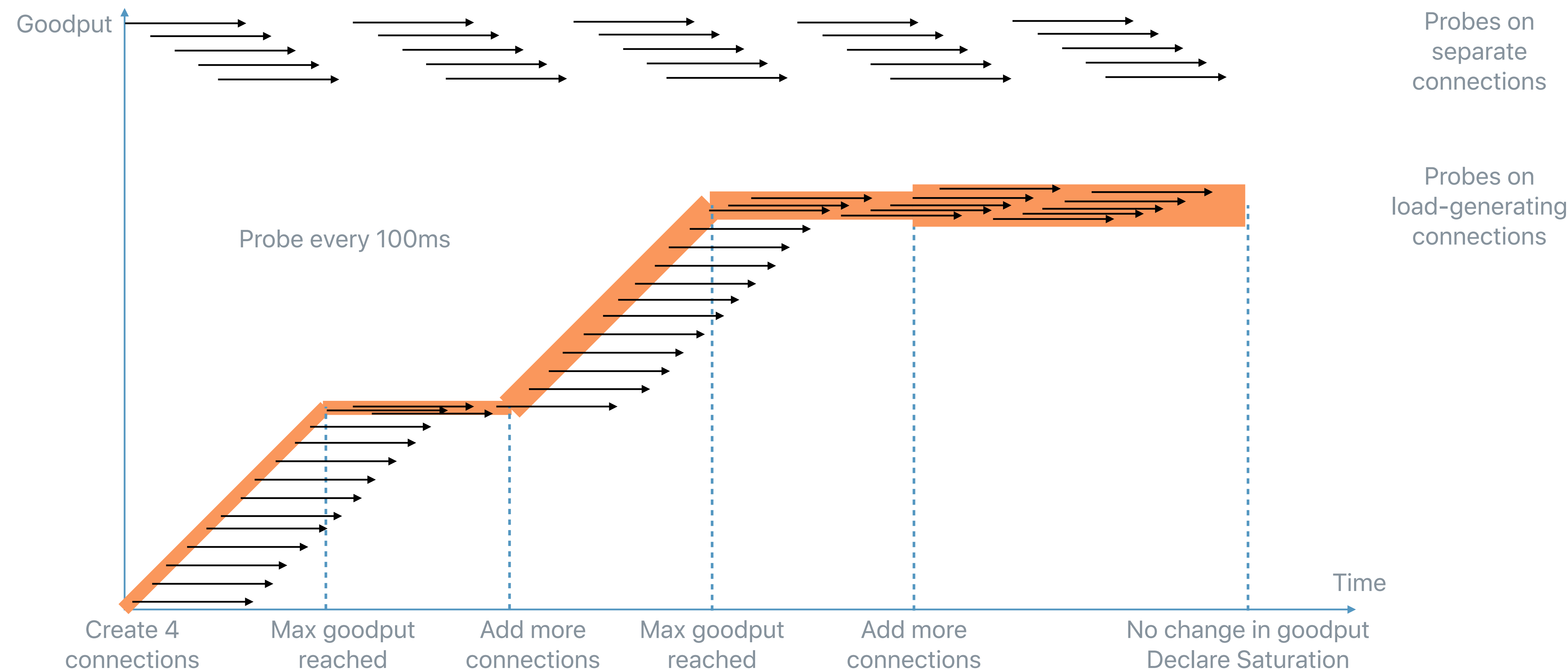
# -00 algorithm



# -00 algorithm - problems

- Small sample-size
- On extreme bufferbloated links, latency-probes easily time out
- One-shot measurement may be impacted by short-term low buffer occupancy
  - “synchronized” packet-loss issue

# -01 algorithm



# -01 algorithm

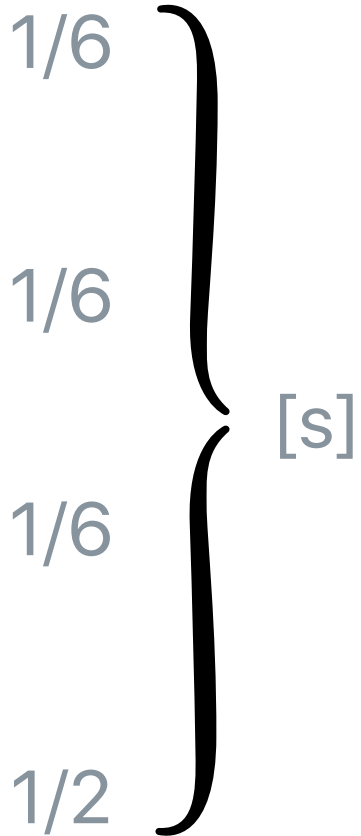
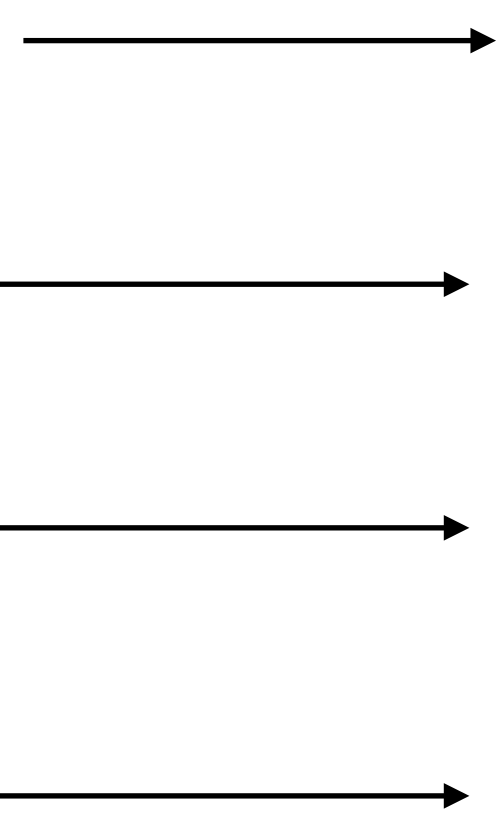
4 data-sets:

- tcp\_foreign = {...}
- tls\_foreign = {...}
- http\_foreign = {...}
- http\_self = {...}

90th Percentile

Weighting

Normalizing to RPM



$$60000/[s] = [RPM]$$

$$\text{Responsiveness} = \frac{60000}{\frac{p90(tcp\_foreign)}{6} + \frac{p90(tls\_foreign)}{6} + \frac{p90(http\_foreign)}{6} + http\_self/2}$$

# -01 algorithm

- Very large sample-size (about 150 data-points for a 15-second test)
- Less timeout issues as probing happens right from the start
- Not susceptible to short-term fluctuations in buffer occupancy
  
- Implemented in macOS Ventura networkQuality tool
- Implemented in open-source goresponsiveness tool



# Remaining issues

<https://github.com/network-quality/draft-ietf-ippm-responsiveness/issues>

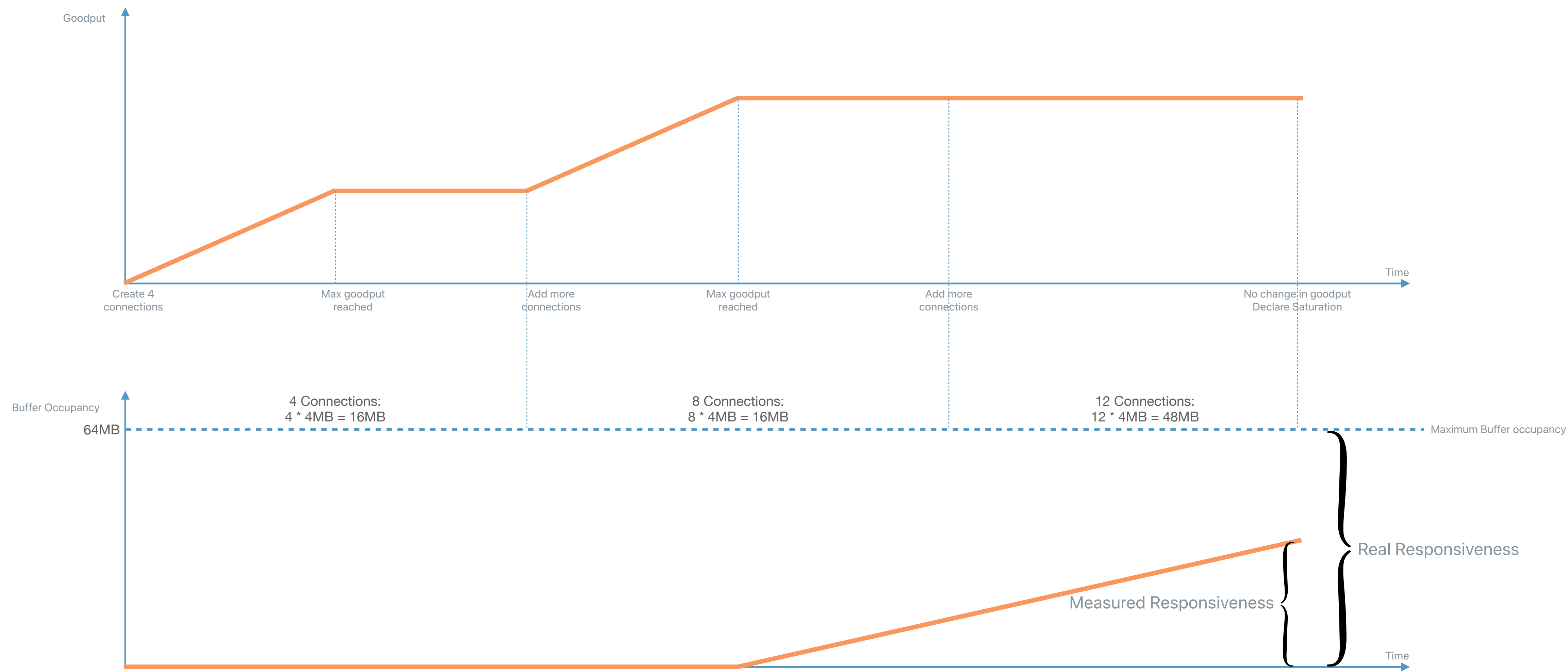
- Issue #17: Use well-known URI for json-config
- Issue #63: Explain the impact of congestion control
- Issue #55: How to evaluate “confidence” of the result
- Issue #66: Allow non-TLS measurements
- Issue #62: Flaw in “Working Conditions” algorithm

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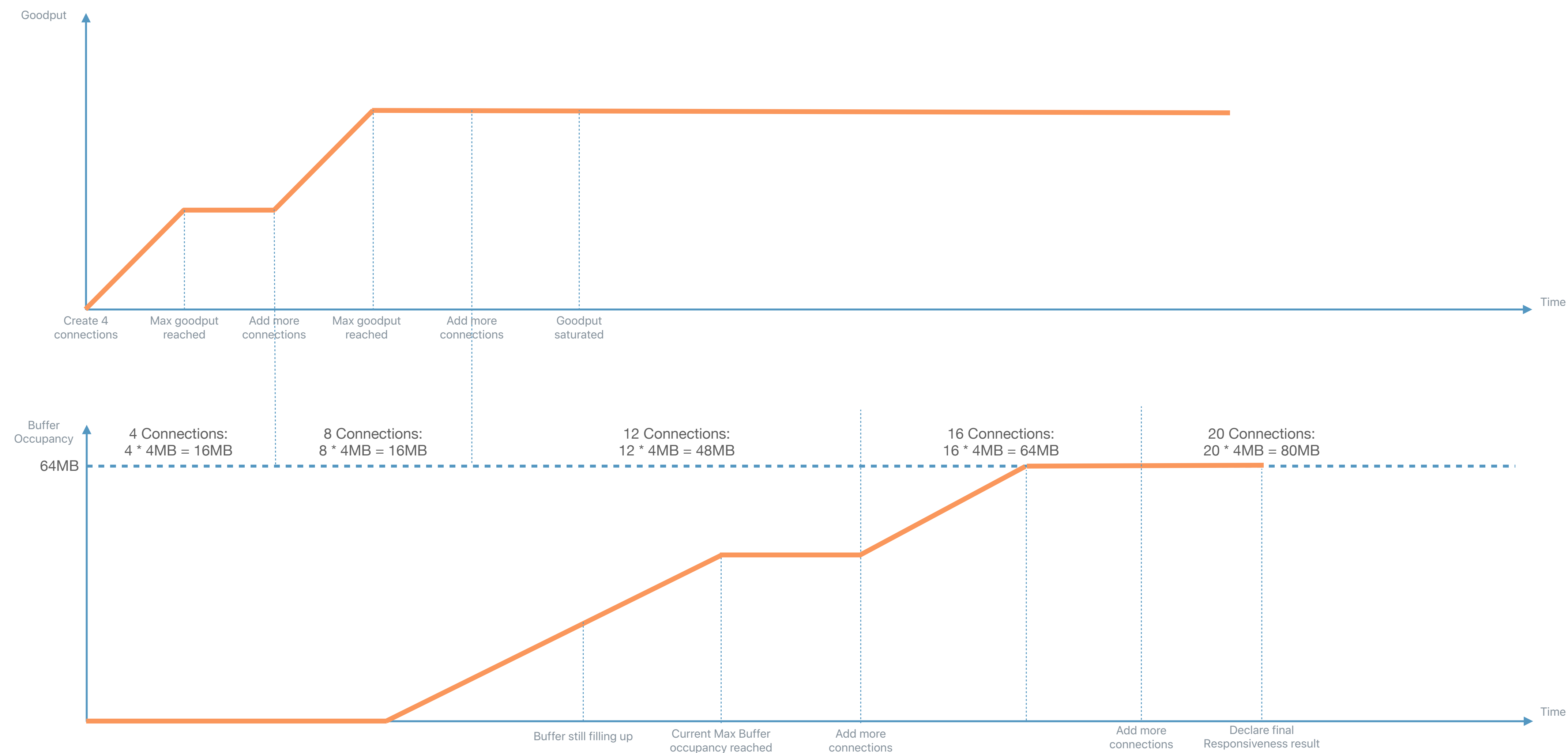
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# Issue #62: Flaw in “Working Conditions” algorithm



# Issue #62: solution



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Need to saturate not only goodput but also “responsiveness”

Once Goodput **AND** Responsiveness stop changing, we declare “saturation”

In algorithm terms:

Add connections as long as either goodput increases  
OR  
responsiveness decreases

# Other news

- Open-source goresponsiveness is evolving rapidly
  - Contribute at <https://github.com/network-quality/goresponsiveness>
- Ookla Speedtest measures “Loaded Latency”

