Responsiveness under Working Conditions

draft-ietf-ippm-responsiveness-00

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Implementation report: Will Hawkins
Outline

• Implementation experience - Server-side *(Randall Meyer - Apple)*

• Implementation experience - Client-side *(Will Hawkins - University of Cincinnati)*

• Update to IETF-draft
Server Implementations

- Access:
  - URL: https://github.com/network-quality/server
  - License: MIT
- 2 complete reference server implementations in Go and Swift
- Configurations for Apache Traffic Server, Apache httpd and nginx
Responsiveness in Go
A Report On Implementing Responsiveness RFC in Go

• Access:
  • URL: https://github.com/network-quality/goresponsiveness
  • License: GPLv3
  • Requirements: Go v. 1.16 *(may work with earlier versions, but untested)*

• Interoperability:
  • Success: Apple’s Responsiveness RFC implementation in Go.
  • Success: Apple’s public measurement endpoints.
  • TODO: Calibration of RPM between networkQuality and Go Responsiveness.
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• Lessons:
  • Ensure Go’s HTTP API opens HTTP/2 connections.
  • Handle Go’s HTTP API’s aggressive pooling of TCP connections.
  • Build in debugging support.
  • Take advantage of implementation experience to clarify ambiguities in the protocol.
Major changes:

• Clarify meaning of “working conditions”

• New Section “Interpreting responsiveness results”

• Minor tweaks & wording
Clarify meaning of “working conditions”

• Goal
  “… realistic traffic pattern … exploring the worst-case scenario …”

• Realistic
  • Using HTTP/2(3) with standard congestion controls

• Worst-case scenario
  • Creating multiple bulk HTTP Requests
Interpreting responsiveness results

Influencing factors
Interpreting responsiveness results

Influencing factors
Influencing factors
Interpreting responsiveness results

Root-causing Responsiveness
Interpreting responsiveness results

Root-causing Responsiveness

Responsiveness probes on separate connections