Quality of Outcome

Towards a network quality framework useful for applications, users and network operators
Proposed Solutions


https://datatracker.ietf.org/doc/draft-olden-ippm-qoo/
Requirements for a Network Quality Framework Useful for Applications, Users, and Operators

Objective

- To outline the essential features and attributes a network quality framework must have for various stakeholders.

Stakeholders

- Application Developers
- End-Users
- Network Operators and Vendors

Needs by Stakeholder

- **End-Users**: Require an understandable network metric
- **Application Developers**: Need a metric to evaluate application performance based on network conditions
- **Network Operators and Vendors**: Seek a metric for troubleshooting and network optimization

Current Limitations

- Existing frameworks often cater to only one or two stakeholder groups
- A comprehensive solution that addresses all stakeholder needs is currently lacking
Building on top of TR-452 (QED)

- Mathematical framework for network quality
- Network Quality is how latency distributes at different loads
- Captures jitter, peaks, packet loss.
- Composable
- Useful throughout the life cycle
- Can describe complex networks and requirements
Finding a middleground

**Quality of Experience**
MOS, NPS, gMOS, ...
Subjective, unreliable

**Quality of Outcome**
What is the likelihood of perfect video conference?
Objective, relatable

**Quality of Service**
Bandwidth, latency (in many forms), packet loss
Complicated, unrelatable
Example

QoO = 80.84
Implementation status

**qoo-c**

Quality of Outcome is a network performance metric. QoO scores are calculated by comparing network measurements to application requirements. The network measurements are Quality Attenuation measurements as specified in TR-452.1 from the Broadband Forum, but excluding the computation of G, S, and V.

TR-452.1 can be found here: https://www.broadband-forum.org/technical/download/TR-452.1.pdf

This tool can:

- Compute Quality Attenuation summaries from latency and packet loss measurements
- Compute Quality of Outcome scores, and several other performance metrics such as RPM

How to use:

1. Create a sqa_stats data structure and add latency and packet loss samples.
2. Calculate RPM, QoO, or any of the other quality metrics.

**goresponsiveness**

C library for calculating QoO scores based on latency measurements and requirements
Teams:

- Peter Parker
  - Diagnostics not supported by ISP
  - Likelihood for perfect Teams meeting on this network: 50%

- Bruce Wayne
  - Upgrade WiFi
  - Likelihood for perfect Teams meeting on this network: 75%

- Joe Smith
  - No network issues
  - Likelihood for perfect Teams meeting on this network: 99%

- Clear indication of network quality across the call for ALL participants
- Easily relatable: Probability of perfect experience
- Team and IT no longer in the dark where on the call the productivity issue lies
We propose a working group adoption call

Contributions and criticism welcome!
Thank you!

Call to Action: Get in touch and contribute!

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