Architectural Principles of a Quantum Internet

https://datatracker.ietf.org/doc/draft-irtf-qirg-principles/

QIRG @ IETF 109 Online
16 November 2020

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Recap

• First version of draft prepared and presented at IETF 104 in Prague on 26 March 2019

• Motivation is to address charter point:
  • An architectural framework delineating network node roles and definitions, to build a common vocabulary and serve as the first step toward a quantum network architecture.

• Also want to create a good starting point for people with no quantum background
GitHub

• A GitHub repo is maintained at https://github.com/Wojtek242/draft-irtf-qirg-principles

• A more convenient way to share updates at a finer granularity than datatracker allows

• However, all discussions are still done on the mailing list so no fancy CI/CD
Seen in the wild

• Cited in academic articles by authors who are not affiliated (to my knowledge) with the draft’s authors.
• Need to expedite path to RFC for a permanent record
Overheard (by me)

• I have received feedback from a networking expert (outside of QIRG) that the draft is a good introduction to the subject

• Obviously small and biased sample, but hopefully it does serve the purpose of being a good introduction to the subject
Overview of changes (since 108)

- Added “Control plane and two data planes” subsection
  - Needs to made consistent with use-case draft
- Added note that passive optical elements, such as optical switches can be used without destroying quantum state
  - This clarification was introduced to emphasize the fact that one can also switch entanglement over short distances using optical switches rather than entanglement swapping (c.f. MDI-QKD talk)
- Some additional clarifications
- Added references to academic literature
Next steps

• Is the draft ready for RG last call?