



I E T F®

Applications and Use Cases for the Quantum Internet

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Background of Present I-D v10



- (Jul 12, 2021) v07 was presented in IETF 111
- (August 20, 2021) v08 was uploaded
 - Addressed comments received during IETF 111
- (March 04, 2022) v09 was uploaded
 - Addressed comments and feedback from Rodney Van Meter and John Mattsson. The authors are thankful for their detailed reviews.
- (March 06, 2022) v10 was uploaded
 - Fixed some date issue in v09

Major Updates since IETF 110



- **3.2:** Updated a reference.
- **3.2.2:** Added “Interferometric Telescopes using Quantum Information” as an additional application.
- **3.3:** Updated a reference related to the secret sharing.
- **4.1:** Updated multiple references, and fixed some typos.
- **4.2:** Updated the references related to the measurement-based quantum computation, and UBQC.
- **4.3:** Updated multiple references.
- **8.** Updated a reference related to the attacks on the QKD.

Table of Contents

1. Introduction	2
2. Terms and Acronyms List	3
3. Quantum Internet Applications	6
3.1. Overview	6
3.2. Classification by Application Usage	6
3.2.1. Quantum Cryptography Applications	6
3.2.2. Quantum Sensing/Metrology Applications	7
3.2.3. Quantum Computing Applications	8
3.3. Control vs Data Plane Classification	9
4. Selected Quantum Internet Application Scenarios	11
4.1. Secure Communication Setup	11
4.2. Secure Quantum Computing with Privacy Preservation	15
4.3. Distributed Quantum Computing	18
5. General Requirements	21
5.1. Background	21
5.2. Requirements	23
6. Conclusion	24
7. IANA Considerations	24
8. Security Considerations	25
9. Acknowledgments	27
10. Informative References	27
Authors' Addresses	34

3.2.2. Quantum Sensor Applications

- (pp.7) **Interferometric Telescopes:** using Quantum Information - Interferometric techniques are used to combine signals from two or more telescopes to obtain measurements with higher resolution than what could be obtained with either telescope individually. It can make measurements of very small astronomical objects if the telescopes are spread out over a wide area. However, the phase fluctuations and photon loss introduced by the communication channel between the telescopes put a limitation on the baseline lengths of the optical interferometers. This limitation can easily be avoided using quantum teleportation. In general, by sharing EPR-pairs using quantum repeaters, the optical interferometers can communicate photons over long distances, providing arbitrarily long baselines [Gottesman2012].

Next Steps



draft-irtf-qirg-quantum-internet-use-cases-10

- v10 is relatively stable now.
 - Rodney/Joe posted some comments and suggestions about a few used terms in v10.
 - The authors already provided their replies on the mailing list.
 - The authors are available to make some quick updates right after IETF 113 and upload a new v10
- Do Chairs/QIRG think that the draft v10 is ready for RG Last Call in general?
 - This question was raised 1.5 years ago; as a result, detailed reviews have been conducted and completed.
 - Comments from detailed reviews have been addressed in v10.
 - New comments on v10 have been responded and will be addressed right after IETF 113.