



HellasQCI

Deploying advanced national QCI systems and networks in Greece

Request for information (RFI) for the DV-QKD devices

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Abstract:

Request for information (RFI) with regard to the procurement of the DV-QKD devices for the HellasQCI project. DV-QKD vendors are kindly requested to forward their input and budget quotation by email to hellasqci-technicalboard@lists.grnet.gr until Friday, March 31st, 2023.

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1. List of Acronyms

QCI	Quantum Communication Infrastructure
EuroQCI	European Initiative for safe Quantum Communication Infrastructures
SME	Small and medium-sized enterprises
DV- QKD	Discrete Variable Quantum Key Distribution
QKD	Quantum Key Distribution
RFI	Request for information
BB84	Quantum key distribution protocol developed by Charles Bennett and Gilles Brassard in 1984
QRNG	Quantum Random Number Generation
ETSI	European Telecommunications Standards Institute
KMS	Key Management system
TX/RX	Transmitter (Tx) and Receiver (Rx)
DWDM	Dense wavelength-division multiplexing
OTN	Optical Transport Network
SKR	Secret key rate
GS	Group Specification

2. Introduction

HellasQCI project aims to deploy advanced National QCI systems and networks in Greece. Its architecture comprises of three metropolitan test-sites located at major cities of Greece namely: HellasQCI-Central (Athens), HellasQCI-North (Thessaloniki) and HellasQCI-South (Heraklion-Crete).

Each test-site is divided into Governmental and Industrial testbeds, which allow the project to investigate the field-deployment of QKD technologies in a plethora of realistic scenarios and use cases addressing National Security, Public Health, Critical Infrastructure and ICT sector. An additional Educational testbed will allow the development of new quantum technologies, provide a sandpit for SME innovation, and offer Greece a futureproof extension towards Quantum Internet.

The objective of the HellasQCI project, which is part of the EuroQCI European network, is to contribute to the safe-keeping of critical data and infrastructures, in domains such as e-government, healthcare, and many more critical areas. This will be achieved by incorporating systems and technologies based on principles of quantum technology, more specifically by the distribution of quantum keys (QKD) to existing communication infrastructures, which will offer an exceptionally secure form of encryption, offering an extra layer of security.

The National Infrastructures for Research and Technology (GRNET SA), operating under the auspices of the Ministry of Digital Governance, is the coordinator for the HellasQCI project, and in collaboration with 13 partners, launches this Request for information (RFI) with regard to the procurement of the DV-QKD devices. Attached you can find the desired technical specifications for the HellasQCI DV-QKD systems which shall meet the needs of the HellasQCI architecture. Based on the comments and the input submitted, the final specifications of the systems will be included in the forthcoming procurement, which is estimated in June.

The present RFI is meant for information and planning purposes only and it is not a call to tender. Any information and/or data received in response to this RFI, designated as “Confidential”, shall be treated as such. Your input to the present, shall not be returned, shall not constitute an offer, shall not be binding nor may it lead to a binding contract.

DV-QKD vendors are kindly requested to forward your input and the budget quotation by email to hellasqci-technicalboard@lists.grnet.gr until Friday, March 31st, 2023. Please also note, that HellasQCI is also interested in the quotation of the support of the devices for the duration of the project, as well as the possible delivery timeline of the devices.

3. Technical specifications for HellasQCI DVQKD systems

HellasQCI requires 4 (four) DV-QKD systems for long distance with the following specifications:

Protocol	Decoy state BB84
Maximum losses	>24dB to maintain a SKR above 1Kbit/s
Secret key rate (SKR)	>1kb/s @24dB
Key security parameter	$<4 \times 10^{-9}$
Quantum Random Number Generator (QRNG)	Embedded QRNG
Key Management system (KMS)	ETSI QKD 014 GS, ETSI 004 KMS software included QKD Management and Monitoring software
Interoperability	Interoperability with major Ethernet and OTN encryption vendors
Quantum Channel Wavelength	C-band
Service channel (optional)	1TX/RX DWDM CHANNEL
Quantum Channel	Dark fiber
Ability for any Alice to communicate to any Bob (to allow switched QKD)	Optional

HellasQCI requires 5 (five) DV-QKD systems for short distance (metropolitan links) with the following specifications:

Protocol	Decoy state BB84
Maximum losses	>16dB to maintain a SKR above 1Kbit/s
Secret key rate (SKR)	>1kb/s @16dB
Key security parameter	$<4 \times 10^{-9}$

Quantum Random Number Generator (QRNG)	Embedded QRNG
Key Management system (KMS)	ETSI QKD 014 GS, ETSI 004 KMS software included QKD Management and Monitoring software
Interoperability	Interoperability with major Ethernet and OTN encryption vendors
Quantum Channel Wavelength	C-band
Service channel (optional)	1TX/RX DWDM CHANNEL
Quantum Channel	Dark fiber
Ability of any Alice to communicate to any Bob (to allow switched QKD) Ability to modify pre-shared keys externally.	Required