



(54) **QUANTUM KEY DISTRIBUTION ENABLED INTRA-DATACENTER NETWORK**

(71) Applicant: **Mellanox Technologies, Ltd.**, Yokneam (IL)

(72) Inventors: **Elad Mentovich**, Tel Aviv (IL); **Ioannis (Giannis) Patronas**, Piraeus (GR); **Paraskevas Bakopoulos**, Ilion (GR); **Ahmad Atamlh**, Oxford (GB)

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(57) **ABSTRACT**

Embodiments are disclosed for a quantum key distribution (QKD) enabled intra-datacenter network. An example system includes a first QKD device and a second QKD device. The first QKD device includes a first quantum-enabled port and a first network port. The second QKD device includes a second quantum-enabled port and a second network port. The first quantum-enabled port of the first QKD device is communicatively coupled to the second quantum-enabled port of the second QKD device via a QKD link associated with quantum communication. Furthermore, the first network port of the first QKD device is communicatively coupled to a first network switch via a first classical link associated with classical network communication. The second network port of the second QKD device is communicatively coupled to a second network switch via a second classical link associated with classical network communication.

The diagram illustrates a quantum key distribution (QKD) enabled intra-datacenter network. It shows two datacenters, 102 and 104, connected by a QKD link 106. Datacenter 102 contains a QKD device 302 and a network switch 314. Datacenter 104 contains a QKD device 304 and a network switch 320. A classical link 310 connects the QKD device 302 to the network switch 314. A classical link 312 connects the QKD device 304 to the network switch 320. The QKD link 106 connects the QKD device 302 to the QKD device 304. The network switch 314 is connected to the network switch 320 via a network link 316. The network switch 320 is connected to the network switch 314 via a network link 322. The network switch 314 is connected to the network switch 320 via a network link 318. The network switch 320 is connected to the network switch 314 via a network link 324.