



Quell-X is a complete QKD system composed by 1 Alice unit and 1 Bob unit able to generate quantum secured keys for ultra-secure data communication.

### Key features

- Seamless deployment & scalability and extended reach with trusted nodes
- Versatility for any network configuration (i.e., point-to-point, ring, star).
- Compatibility with existing telecom infrastructures (both C-band and O-band configuration)



The product is available in two main versions:

- **Quell-X**, the core product of the family. It ensures a reliable and high-performance QKD quantum key generation and is compatible with third parties' encryptor units.
- **Quell-XR**, the Quell-X version for academic and research activities. It generates raw key data for custom post-processing protocols and future developments. Quell-XR is a platform open for customization and can be interfaced with third parties' detectors.

### QTI & Telsy complete system

QTI is a subsidiary company of Telsy S.p.A., the cybersecurity and cryptography competence centre of the TIM Group.

This partnership has allowed the development of a fully entrusted end-to-end encryption solution, based on the integration of QTI Quell-X system and Telsy's high speed Layer 3 encryptors.

Leveraging the TIM Group's solid expertise in the telecom sector, QTI QKD solutions can be easily integrated into existing telecommunication infrastructure.



<b>Quantum state preparation</b>	up to 600 MHz
<b>QKD protocol</b>	Discrete-variable BB84 time-bin encoding
<b>Decoy state</b>	1-decoy state (2-decoy states custom)
<b>Error correction protocol</b>	Cascade protocol / LDPC
<b>Key security parameter</b>	$10^{-9}$
<b>Privacy amplification protocol</b>	Toeplitz matrix-based algorithm
<b>Quantum state generation</b>	Proprietary-patent for phase-randomized optical pulse generation
<b>Link budget</b>	Up to 30 dB
<b>Secret key rate</b>	2.4 kb/s @ 10dB 1.7 kb/s @ 20dB 500 b/s @ 25 dB 150 b/s @ 30 dB
<b>Key management protocol</b>	ETSI GS QKD 014 ETSI GS QKD 004 ETSI GS QKD 015 Cisco Secure Key Integration protocol Skip Compatibility with evolutionQ BaseJumpQDN 2x 1Gb Ethernet ports Operating LEDs Outputs
<b>WDM compatibility</b>	Operating with non-dark fibers upon request (C/O-band wavelengths and ITU channels customized)
<b>Stability</b>	Automated calibration protocols
<b>Operating temperature</b>	10° to 35° C with no direct sunlight on the equipment
<b>Non Operating temperature</b>	-10 °C to +60 °C
<b>Operating humidity</b>	0% to 85% relative humidity with 29 °C maximum dew point
<b>Power supply</b>	1+1 Redundant hot-swappable
<b>Operating Voltage</b>	85-264 V AC, 47-63 Hz
<b>Maximum power Consumption</b>	Each 300W (peak)
<b>Dimensions</b>	Standard 19" rack mount, height = 2U, Standard 19" rack mount, height = 2U, 650 mm depth
<b>Raw data availability</b>	Quell-XR version
<b>External detectors</b>	Quell-XR version