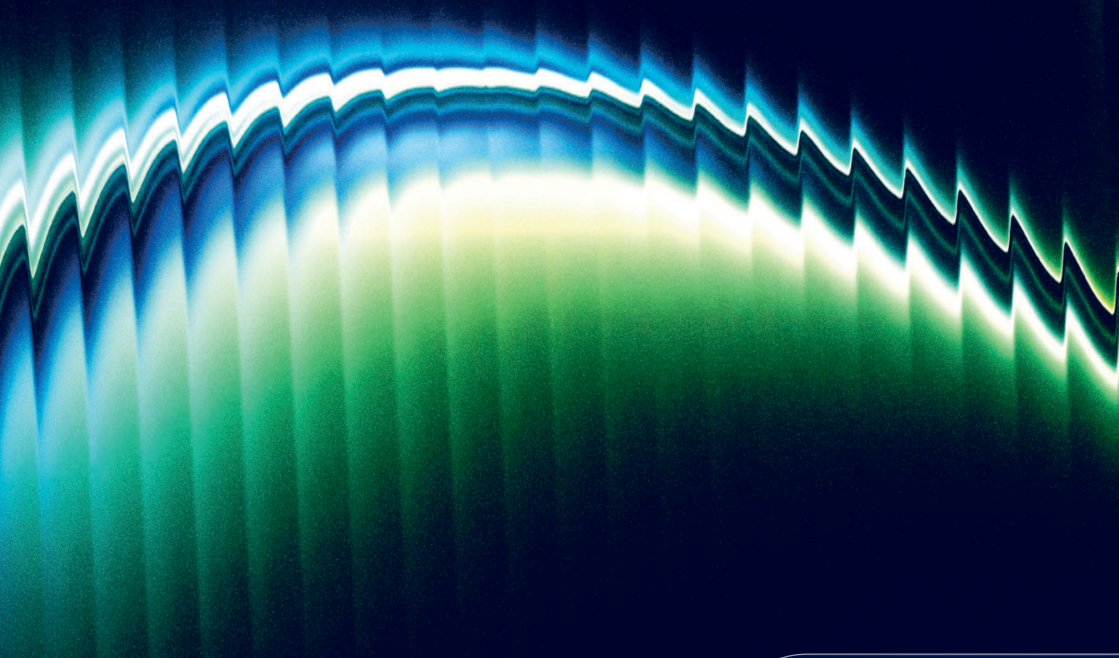
Falqon

PRODUCT

Falqon® Key Manager

For Scalable Quantum Secure Networking



www.falqonsystems.com

Is Your Quantum Secure Network Ready to Scale?

As organisations prepare for the quantum era, the challenge is no longer limited to generating quantum secure cryptographic keys. Falqon® MDI-QKD (Measurement-Device-Independent Quantum Key Distribution) provides the foundation for securing multipoint-to-multipoint scalable quantum secure networks through the generation and distribution of quantum secure cryptographic keys.

Government agencies, defense organisations, telecom operators and critical infrastructure providers increasingly require secure communications across remote facilities, edge locations, operational technical networks, cloud environments, and distributed infrastructure environments.

As quantum secure communication infrastructures scale, organisations require an operational key management layer capable of securely managing cryptographic keys across distributed infrastructures, while supporting the interconnection of multiple QKD domains and the integration of QKD and non-QKD environments.

Without a dedicated key management layer, organisations risk creating isolated quantum secure networks, fragmented key infrastructures, duplicated integrations, vendor lock-in and operational complexity that limits scalability across large distributed network environments.

Extending Quantum Security

The Falqon® Key Manager is a standalone quantum key management system designed to enable scalable, interoperable and hybrid quantum secure network deployments. Positioned between applications, encryptors and key generation technologies, the Falqon® Key Manager securely ingests, stores, synchronises, buffers and delivers cryptographic keys across distributed quantum secure networks.

The Falqon® Key Manager combines Quantum Key Distribution (QKD) derived keys with natively generated Post-Quantum Cryptography (PQC) and PKI-based key distribution methods within a unified key management architecture. It enables the delivery of QKD keys, PQC keys and hybrid keys across distributed quantum secure network environments while delivering crypto agility and operational resilience.

Enabling trusted-node architectures and bridging QKD and non-QKD environments, the Falqon® Key Manager enables organisations to move beyond isolated quantum networks towards operationally scalable quantum secure networks spanning multiple sites, applications and infrastructure environments.

Key Features

Network Architecture	Distributed Quantum Secure Networking KMS
Secure Key Lifecycle Management	Generation, Stprage, Rotation, Archival, Destruction
Delivered Key Types	QKD, PQC, PKI, Hybrid
Ingested Key Types	QKD
Generated Key Types	PQC, PKI, Hybrid
Hybrid QKD & PQC Integration	✓
Multi-Site Key Distribution	✓
Trusted-Node Networking	✓
Multi-Tenancy	✓
Crypto Agility	Runtime Selection of Cryptographic Algorithm
Crypto Resilience	Optional Automatic Failover between QKD, PQC and Classical Key Sources
High Availability	Active-Passive Deployment
Multi-Vendor Interoperability	ETSI GS QKD Compliant
Deployment Models	Embedded, Standalone On-Premise, Containerised On-Premise, Cloud
Maximum Size of Stored Keys Database	Varies on Deployment
Maximum Number of Keys per Request	100 keys
Maximum Request rate	Over 1 Mbits/s
Maximum Key Size	1 Mbits
Minimum Key Size	1 bit
Concurrent Requests	✓

Security Features

Key Pool Management	Dynamic Allocation and Replenishment
Key Expiration Policies	Configurable per Tenant
Key Retention	✓
Key Revocation	✓
Key Usage Auditing	✓
Secured Key delivery	mTLS End-to-End Encrypted
PQC-Protected mTLS Communication	ML-KEM
Encrypted Key Store	AES-256 Encrypted Storage
TPM-Protected Secret Storage	TPM 2.0

Signed Software Binaries	Cryptographically Signed
Strict Firewall Policies	Default-deny Rules
Physical Separation of Networks	Control / Management / Data
Role-Based Access Controls	✓
Secure Software Updates	Signed and Verified

Supported Standards and Protocols

Key Delivery Protocols	ETSI GS QKD 014, SKIP and Nokia SMS
Relay Node Protocol	ETSI GS QKD 020
Key Types	QKD Keys, PQC Keys, PKI Keys, Hybrid Keys
Certificate Management	X.509 certificates
Management	CLI via NETCONF, Web via QDC
Health Monitoring	✓
Software Update Method	Via NETCONF

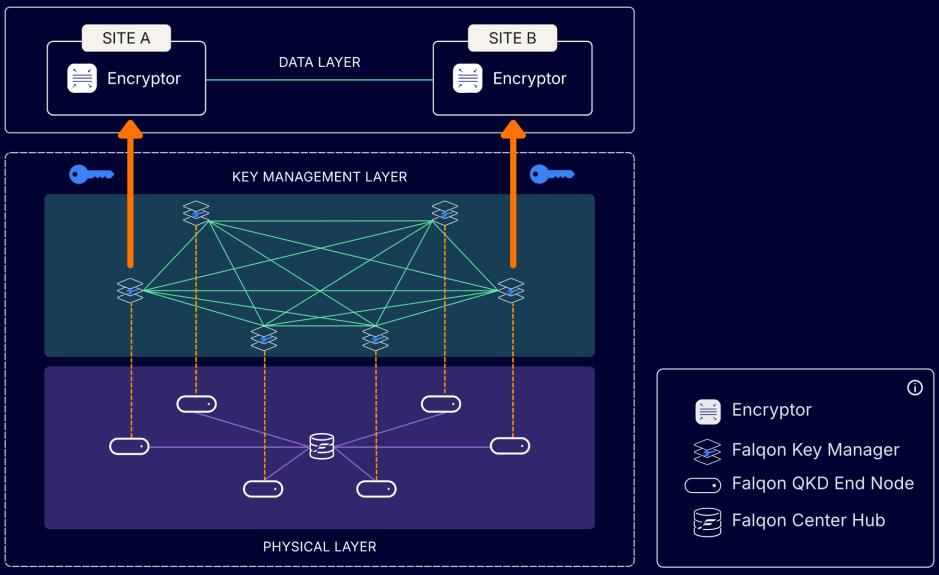
Deployment Models

Embedded Deployment	On Falqon® QKD End Node
Stand-Alone Server*	On Falqon® Provided Device
Containerised	Docker
Cloud	Azure, AWA and others
Air-gapped Operation	✓
High Availability Deployment	✓

* Physical Parameters of Falqon Provided Server - Not applicable to other deployment models

Form Factor	1U Rack-Mounted Device
Power Supply	<100W at 230V, -60V, or -48V
Redundant Power Supply	Optional
Dimensions	1U x 19" x 41 cm depth
Weight	7.5 Kg
Operating Temperature	+5 to +40 Celsius
Relative Humidity	5% to 85%

Deployment Architecture



Falqon® Key Manager: Crypto Agility and Operational Resilience by Design

- **Scalable Quantum Secure Networking:** Enable scalable quantum secure communications across distributed infrastructures and trusted-node network architectures.
- **Hybrid QKD and PQC Integration:** Combine QKD-derived keys with natively generated PQC and hybrid keys within a unified key management architecture, enabling operational resilience and crypto agility across hybrid quantum secure networks.
- **Standalone Quantum Key Management:** Provide a dedicated key management layer for secure key ingestion, storage, synchronisation, buffering and delivery.
- **Flexible Deployment:** Within Falqon® Systems QKD End Nodes, on Falqon® Systems or customer-provided on-premise services, or within customer-provided cloud environment.
- **Extending Quantum Security:** Enable the delivery of QKD keys, PQC keys and hybrid keys across edge locations, cloud environments and distributed infrastructures beyond QKD-enabled sites.

Falqon

Your Partner in Quantum Security

Falqon® is a leader in quantum communication technology, based in Delft, The Netherlands. We provide cutting-edge solutions and expert support to ensure your data security.

Trusted by

Port of Rotterdam · QDNL · SURF · eurofiber · Belnet · Adtran

Explore how the Falqon® Key Manager can elevate your quantum network management and accelerate your network scalability.

Interested?
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