



Singtel Quantum-Safe Network (QSN)

**Future-proof your network.
Secure your data.**

Singtel Quantum-Safe Network (QSN) uses advanced quantum-safe technologies to protect enterprises and critical data from emerging quantum computer threats. By securing encryption keys and using resilient techniques like quantum key distribution and post-quantum cryptography, Singtel QSN ensures your network remains secure in the quantum era.

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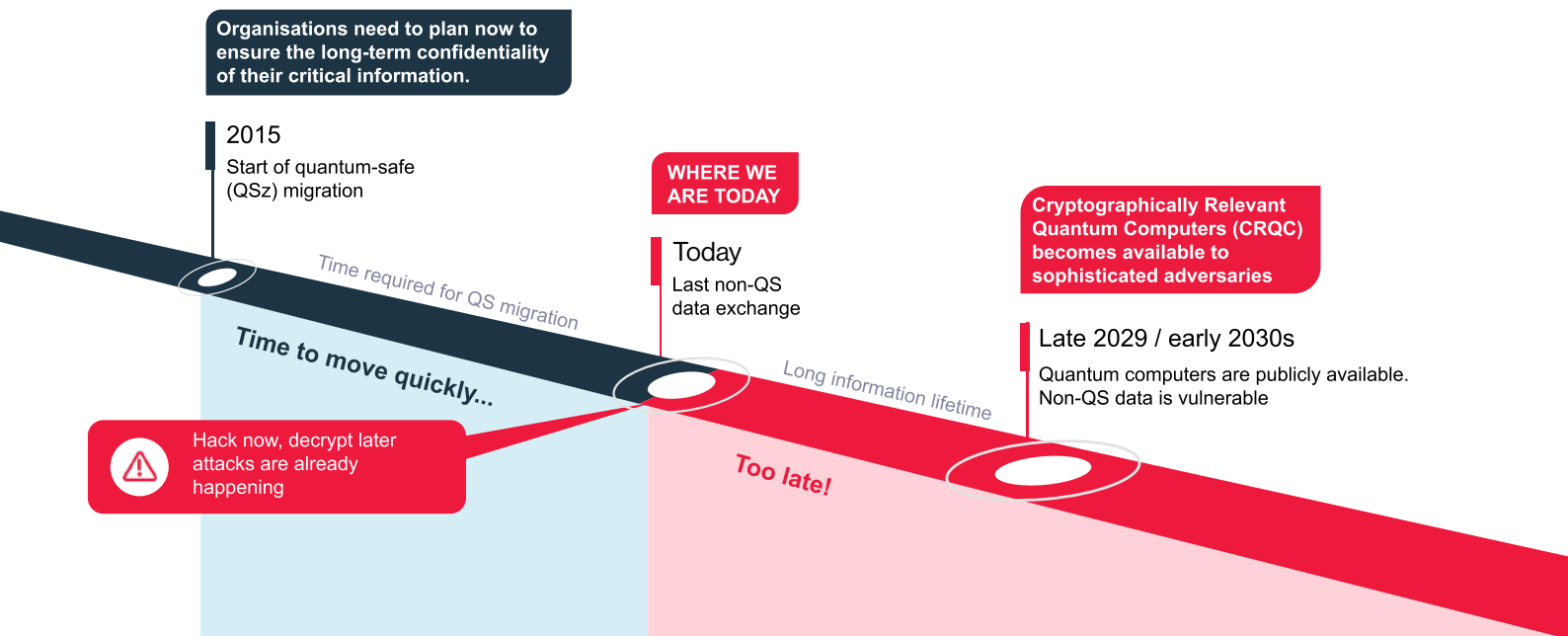
The misuse of quantum computers by malicious actors

The emergence of quantum computers presents a dual-edged sword. While these advanced machines enhance computational speeds, enabling quicker decision-making and increased productivity, they pose significant risks if malicious actors exploit them. Quantum computers can simplify complex problems such as factoring and undermining current public key cryptography methods (DH, RSA, ECC). This vulnerability makes several of our cryptographic techniques susceptible to rapid decryption.

Exploiting Critical Infrastructure Information (CII) data

Hackers can hack critical infrastructure information (CII) data such as financial information, governmental secrets, and personal medical records today, anticipating the future availability of quantum computers to decrypt this information. This means that data stolen now could be decrypted later, posing long-term security threats.

Securing Data Confidentiality



Organisations need to plan now to ensure the long-term confidentiality of their critical information. One effective strategy is to employ quantum-safe technologies to secure sensitive data, countering the potential threats of quantum computers.

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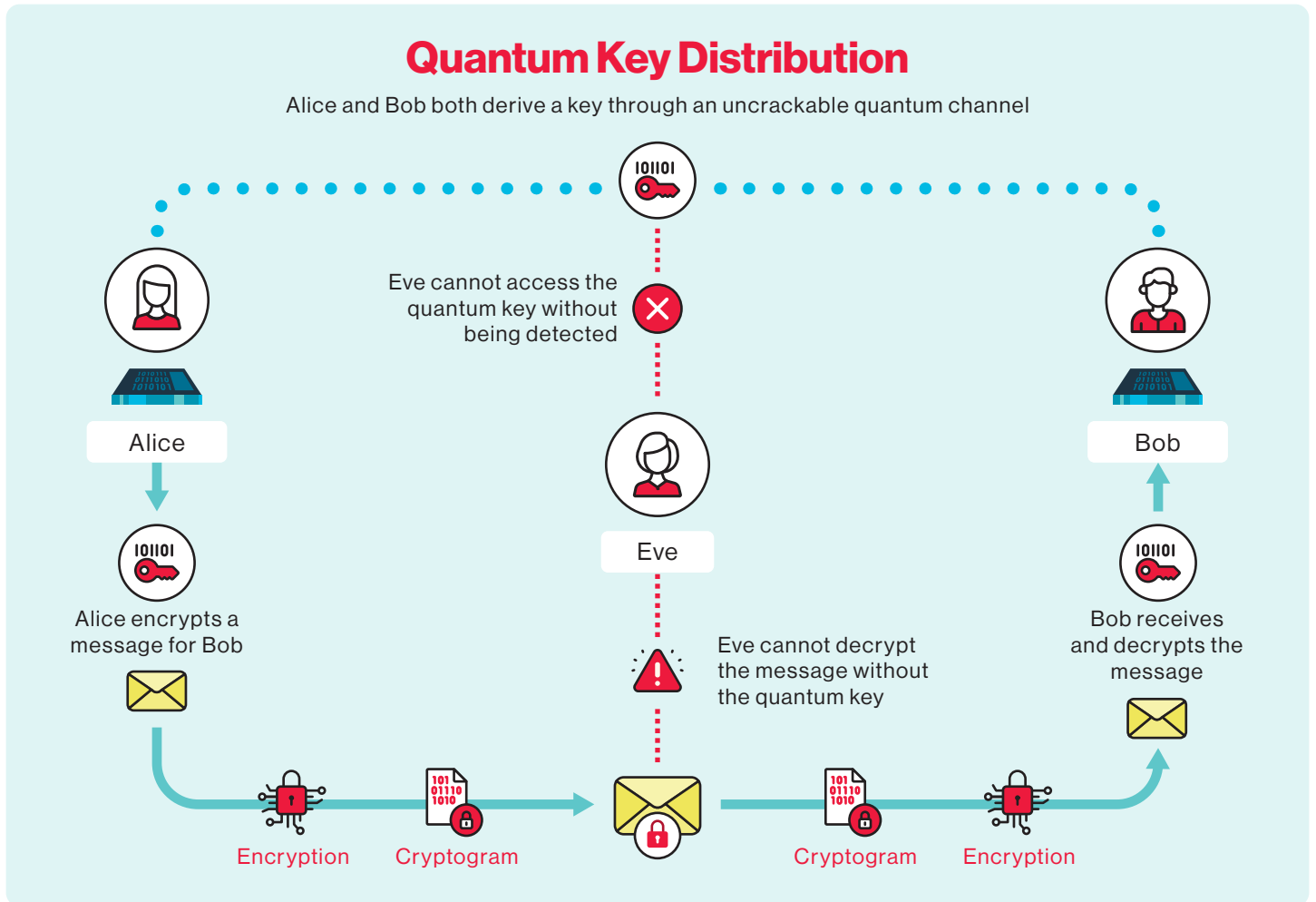
Appointed by IMDA to develop Singapore's first National Quantum-Safe Network Plus (NQS⁺) for enterprises, Singtel QSN secures our digital economy for businesses by building deep expertise in designing, deploying and operating quantum-safe network.

How can QSN provide future-proof security to enterprises

Singtel hybrid QSN leverages quantum-resistant cryptographic techniques such as Quantum Key Distribution (QKD) and Post-Quantum Cryptography (PQC) to safeguard enterprise data against quantum attacks. From securing Data Centre Interconnects (DCIs) to securing application communications, QSN is poised to uplift enterprise data security.

The role of QKD in QSN

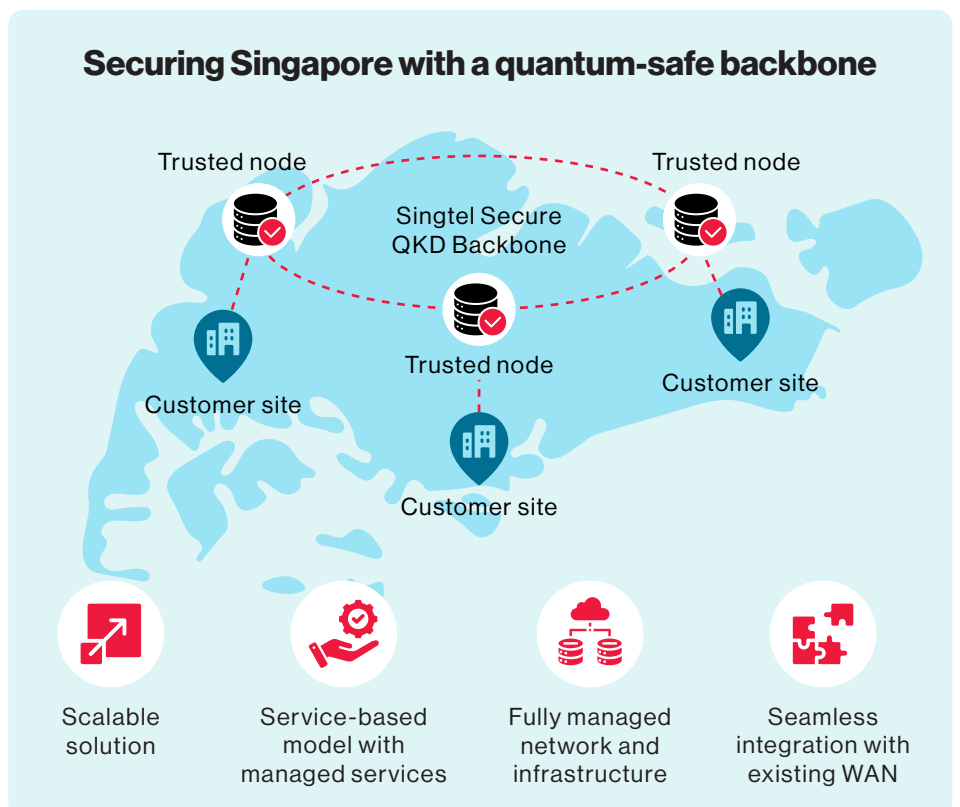
While traditional cryptography methods rely on mathematical principles, QKD operates on the principles of quantum physics. It establishes secure quantum keys by transmitting light particles across optical links, resulting in a more robust and resistant encryption method.



To enable greater scalability for enterprises, Singtel will utilise trusted node QKD relays to form the backbone of our quantum-safe network. In the network, the trusted node plays the role of an intermediate node between QKD links, providing essential relaying functions between endpoints.

Singtel has partnered with ID Quantique (IDQ), a global leader in quantum-safe crypto solutions, to integrate IDQ's Quantum Key Distribution (QKD) technology into our network to ensure the utmost security and technological assurance for our customers.

By incorporating ID Quantique's expertise and advanced solutions, Singtel QSN stands at the forefront of quantum-safe service offerings, providing our customers with stringent protection against emerging quantum threats.



The role of PQC in QSN

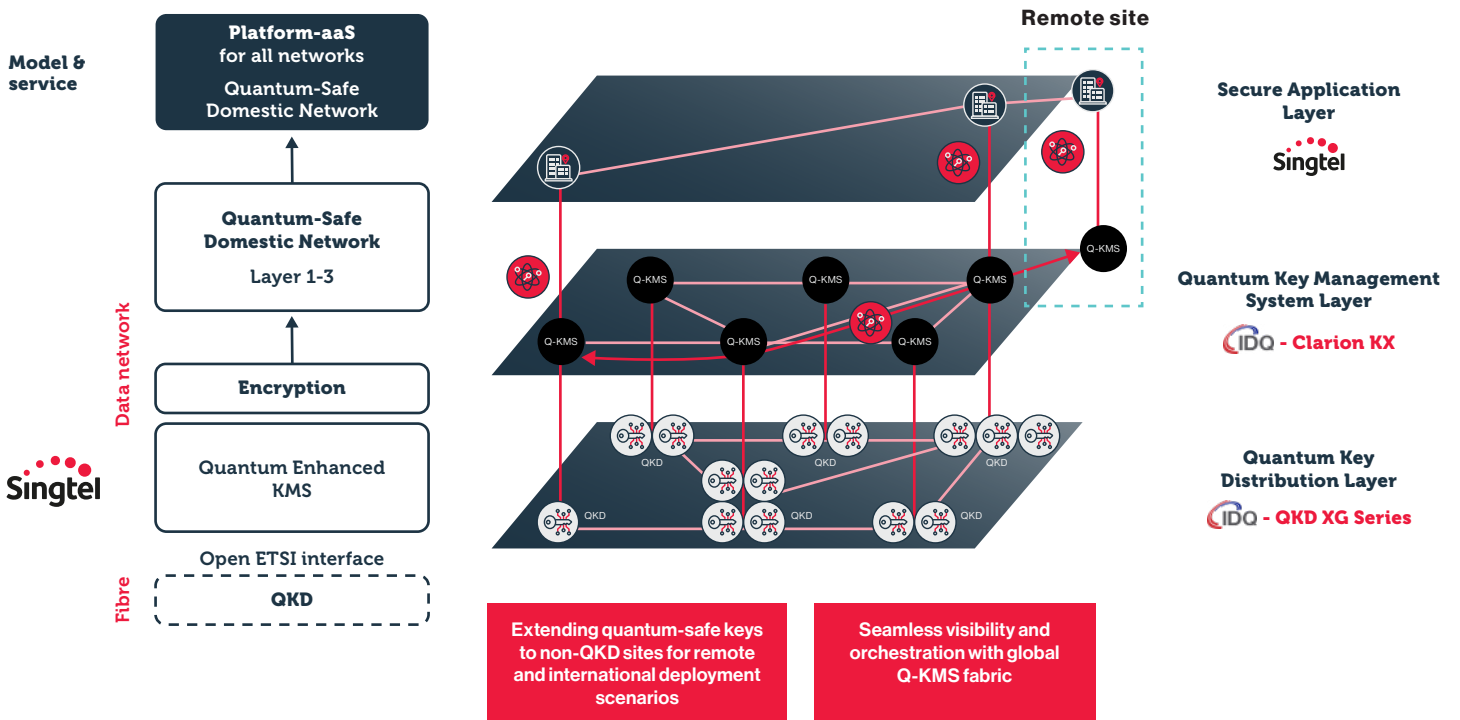
Post-quantum cryptography (PQC) plays a crucial role in quantum-safe networks. PQC refers to cryptographic algorithms that are specifically designed to withstand the computational power of quantum computers, ensuring that the keys used for encryption and decryption remain unbreakable. In simpler terms, PQC ensures that business data remains secure, even in the face of advanced quantum threats.

Singtel's hybrid approach, combining Post-Quantum Cryptography (PQC) and Quantum Key Distribution (QKD), delivers quantum-resilient protection through a robust end-to-end quantum-safe network, securing encryption keys for the long term.

Integration with Singtel's services

As a telecommunications provider, Singtel is primed to offer an extensive quantum-safe network by leveraging on our vast fibre assets for nationwide coverage as well as our managed network services offer a truly end-to-end managed quantum-safe network service.

Singtel Hybrid Quantum-Safe Network



Features



Future-proof connectivity

- ✓ Support for multi-site topology by capitalising on trusted node infrastructure
- ✓ Eliminate distance limitations when onboarding additional sites



Defence-in-depth security features

- ✓ Leverage on multi-layer security design, e.g. Physical Security, Logical and Network Security for holistic security assurance
- ✓ Extensive integration ecosystem for secure multi-layer encryption



Centralised network management

- ✓ Single pane of glass view for quantum-safe Network and existing network services
- ✓ Software-defined management of quantum-safe Network enables simplified scaling, configuration and monitoring



Hybrid approach

- ✓ Integrates Post-Quantum Cryptography (PQC) with Quantum Key Distribution (QKD) for end-to-end protection
- ✓ Ensures seamless transition and scalable defence against emerging quantum threats

Benefits



- ✓ Protect long-term confidential data with a future-proof quantum-resilient network
- ✓ Scalable protection with quantum-grade security
- ✓ Lower cost of investment to adopt quantum-safe technologies
- ✓ Leverage on Singtel as a trusted service provider, allowing enterprises to focus on core business operations
- ✓ Seamless and secure connection between multiple sites across borders

Why Singtel



Industry-recognised telco leader in Asia with a strong ecosystem of alliance partners, network providers and OEMs



Comprehensive suite of connectivity and security solutions spanning cellular networks, Wi-Fi, WANs, cloud connectivity, and security



Strong security and network consultancy, configuration and deployment capabilities with industry-certified professionals



One-stop service provider delivering convenient and comprehensive support backed by a dedicated 24x7 global helpdesk service



Proven track record in managing high-performance enterprise networks and deploying secure connectivity solutions to enterprise and public sector customers

About Singtel

Singtel is a leading Asian communications technology group, operating next-generation connectivity, digital infrastructure and digital businesses including regional data centre arm Nxera and regional IT services arm NCS. The Group has presence in Asia, Australia and Africa and reaches over 800 million mobile customers in 20 countries.

For consumers, Singtel delivers a complete and integrated suite of services, including mobile, broadband and TV. For enterprises, Singtel offers a complementary array of workforce mobility solutions, data hosting, cloud, network infrastructure, analytics and cyber security capabilities.

Singtel is dedicated to continuous innovation, harnessing technology to create new and exciting customer experiences, support enterprises in their digital transformation and shape a more sustainable, digital future.

For more information, visit www.singtel.com