

# How financial institutions can securely transition to the quantum era

As the quantum era approaches, financial institutions will face imminent threats that require quantum-safe technologies for protection.



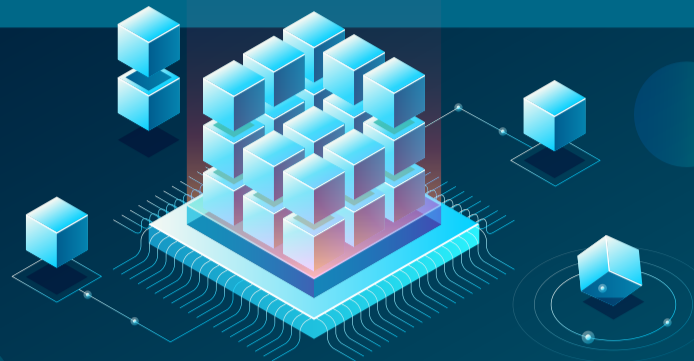
## Many existing public-key cryptosystems can be broken by sufficiently large quantum computers<sup>1</sup>.

The progress of quantum computing can be evaluated by the number of physical qubits inside the machines. Qubits are like their transistors, and the number of possible qubits per system is growing rapidly.

Current largest quantum computer: **1,180** qubits<sup>2</sup>

Qubits set to increase **2 - 3x annually**<sup>3</sup>

**100,000-qubit** IBM systems by 2033<sup>3</sup>



For context, a **5,760-qubit** machine can crack contemporary asymmetric algorithms.<sup>4</sup>

Quantum computing is advancing at lightning speed, with physical qubits driving this rapid progress. **While this technological leap holds immense potential, what's the flip side of such rapid innovation?**



## The BFSI sector is facing an imminent threat from quantum computing—what once seemed distant is now a pressing reality.

The BFSI sector is the most spoofed industry according to the Singapore Cyber Landscape 2023 report<sup>5</sup>, reflecting its status as a prime target as a centralised intersection between PII and financial data.

### The imminent risks faced by the BFSI sector:



Short-lived encryption methods for customer data, transactions, and communications



Financial institutions are priority targets for "harvest now, decrypt later" attacks



Delayed adoption of quantum-safe solutions risks losing first mover competitive edge



## Singtel recognises the potential quantum threats to businesses and organisations.



The National Quantum-Safe Network Plus (NQS+) is an initiative supporting the deployment of quantum-safe networks through appointed NQS+ operators, including Singtel.<sup>6</sup>

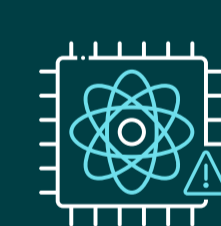


MAS has advised financial institutions to prepare for quantum computing risks by staying informed, assessing cryptographic assets, and developing strategies for quantum-resistant cyber security.<sup>7</sup>



**S\$300 million** has been pledged to advance quantum technology research and talent development in Singapore<sup>8</sup>.

Singtel's Quantum-Safe Network (QSN) collaborates with key partners like ID Quantique, Fortinet, and Palo Alto Networks to expand its offerings and enable enterprises become quantum-safe:



**Post-Quantum Cryptography (PQC)**



**Quantum Key Distribution**

## The financial sector braces for the looming quantum threat.

Traditional encryption is rapidly becoming obsolete, leaving financial institutions vulnerable to breaches and compliance risks from "harvest now, decrypt later" attacks.

Protect your organisation with Singtel's QSN.

### Partnered for success with real client use cases

Singtel and OCBC are leading efforts to establish a robust foundation for secure banking in the future by using QKD on Singtel's Quantum Safe Network, supporting Singapore's broader quantum ecosystem.



### Security in a post-quantum era

Singtel's Quantum-Safe Network (QSN) leverages advanced technologies like Quantum Key Distribution (QKD) and Post-Quantum Cryptography (PQC) to safeguard organisations and their critical data against emerging quantum threats. By utilising quantum encryption keys, we ensure your organisation stays protected and resilient in the quantum era.



## Secure your organisation's operations and ensure long-term resilience by becoming a first mover in adopting quantum-safe technology.

[Contact us](#)

### References

- <sup>1</sup> NIST, 2024, Post-Quantum Cryptography
- <sup>2</sup> New Scientist, Record-breaking quantum computer has more than 1000 qubits
- <sup>3</sup> Forbes, Quantum Computing Is Coming Faster Than You Think
- <sup>4</sup> LiveScience, Chinese scientists claim they broke RSA encryption with a quantum computer – but there's a catch
- <sup>5</sup> NIST Post Quantum Cryptography Update
- <sup>6</sup> Quantum Insider, ISO Releases Standards for Quantum Key Distribution Security
- <sup>7</sup> Quantum Insider, Report Reveals Growing Interest, Investments in Quantum Security Market
- <sup>8</sup> Channel News Asia, 2024, Boosting tech in Singapore: More power for data centres, S\$300m quantum technolboost, cloud-based analytics for healthcare