



# Post-Quantum Encryption Cryptography

[Source: HT](#)

[Virtual Private Network \(VPN\)](#) companies are adapting to the **potential threats** posed by [quantum computing](#) through the implementation of [Post-Quantum Cryptography \(PQC\)](#).

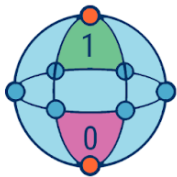
- [Quantum computing](#) poses several **threats to current encryption** methods due to its ability to perform extremely fast calculations.
  - **Breaking Asymmetric Encryption:** Quantum computers can solve complex mathematical problems like **factoring large numbers** and solving discrete logarithms.
    - This could compromise encryption methods like [Rivest-Shamir-Adleman \(RSA\)](#) and [elliptic curve cryptography \(ECC\)](#), which are widely used for secure communication.
  - **Store Now, Decrypt Later (SNDL) Attacks:** Cybercriminals may **store encrypted data instantly and decrypt it later** when quantum computers become powerful enough, endangering sensitive information.
  - **Industry-Wide Data Security Risks:** Sectors like **finance, healthcare, and government communications** face risks of data breaches and financial losses if quantum computers break encryption standards.
- **Post-Quantum Encryption/ Cryptography (PQC):**
- [PQC](#) refers to **cryptographic methods that do not rely on mathematical problems** easily solvable by [quantum computers](#).
- It is also known as **quantum-resistant, quantum-safe, or quantum-proof cryptography**.
- These methods are designed to **remain secure against attacks** from both **classical and quantum computing systems**.
- A [VPN](#) technology **encrypts data and hides a user's IP address** to ensure **secure communication between devices** to **protect data privacy and security**.

//

# Quantum Computing

Vs.

# Classical Computing



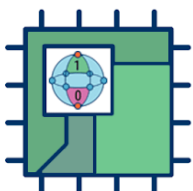
Calculates with qubits, which can represent 0 and 1 at the same time

Calculates with transistors, which can represent either 0 or 1



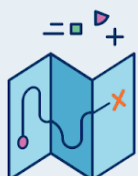
Power increases exponentially in proportion to the number of qubits

Power increases in a 1:1 relationship with the number of transistors



Quantum computers have high error rates and need to be kept ultracold

Classical computers have low error rates and can operate at room temp



Well suited for tasks like optimization problems, data analysis, and simulations

Most everyday processing is best handled by classical computers



 CBINSIGHTS

Read More: [Post-Quantum Cryptography](#), [Virtual Private Network](#)

PDF Reference URL: <https://www.drishtias.com/printpdf/post-quantum-encryption-cryptography>