

# QuStream Network

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# QuStream operates on a decentralized blockchain architecture that leverages sharded data across multiple nodes.

This is a system in which multiple independent servers (nodes) work together to form a distributed network.

This setup eliminates reliance on a single central server, improving fault tolerance, scalability, complete privacy and security.



# Network Components

## → QRNG Servers

- The QuStream Network relies on self-hosted QRNG (Quantic Random Number Generator) servers equipped with physical hardware dedicated to generating truly random numbers.
- The primary function of these servers is to supply truly random numbers to QuStream nodes, ensuring the reliable operation of the network and its applications.

## → QuStream Nodes

- **Receiving Random Numbers:** Nodes receive truly random numbers from the QRNG servers, serving as the foundation for subsequent operations.
- **Block Generation:** Using the QuStream algorithm software, nodes generate blocks from the received random numbers and transmit them to applications for various use cases.
- **Sharded User Database Hosting:** Each node hosts a portion of the Sharded User Database, distributing the storage and ensuring scalability, efficiency and complete privacy.
- **Database Updates:** Nodes add new information to the Sharded User Database as required, maintaining accurate and up-to-date records.
- **Data Transmission:** Nodes retrieve information from the Sharded User Database and send it to applications upon request, enabling seamless data access and integration.



# QRNG Servers

The QRNG servers consist of specialized hardware devices designed for quantum random number generation, all connected to high-performance servers. This includes the integration of devices like the Apex 2100 from Quantum Dice, which is capable of producing up to 7.5 Gbps of random data.



Dedicated networking infrastructure ensuring high bandwidth and low-latency communication between the QRNG servers and the QuStream nodes, allowing for real-time transmission of random numbers.

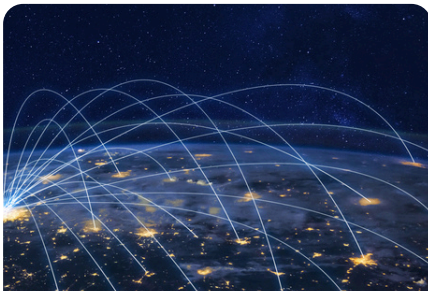


# QRNG Software



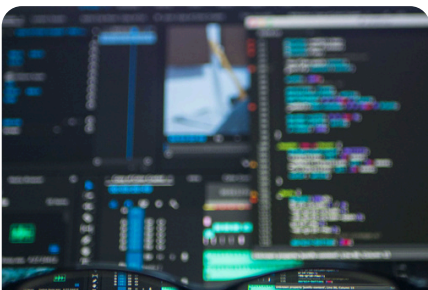
The core software running on the servers is responsible for generating and outputting truly random numbers based on quantum mechanical processes.

## Random Number Generation Software



The software ensures that the random numbers generated are distributed reliably to the QuStream nodes. This may involve custom APIs or protocols to send the numbers in a secure and efficient manner.

## Distribution Protocols



Monitoring tools that track the health, performance, and uptime of the QRNG hardware. Alerts for any anomalies, failures, or performance degradation are automatically triggered.

## Monitoring and Maintenance Software

# Proof of Stake – Secure, Efficient, and Rewarding

QuStream will operate on a Proof of Stake (PoS) consensus, ensuring scalability, security, and energy efficiency. Community-run validator nodes will secure the network, process transactions, and maintain decentralization.

Users will be able to stake tokens, supporting network operations while earning rewards. A portion of transaction fees collected from clients will be distributed to stakers and node operators, creating a sustainable and incentivized ecosystem.

PoS will provide a faster, greener, and more inclusive blockchain, empowering users to participate in governance, strengthen security, and benefit from a decentralized future.



# QuStream Nodes – The Backbone of Quantum-Safe Encryption



QuStream nodes will be the foundation of the network's quantum-safe encryption services, distributing QuStream blocks to power the encryption algorithm. Without these nodes, the encryption process cannot function, making them essential for securing blockchain transactions and digital communications.

Operated by the community, these validator nodes will validate transactions, maintain consensus, and ensure the continuous operation of the encryption protocol. In return, node operators will earn staking rewards and a share of transaction fees generated from encryption services.

By running a QuStream node, operators will play a critical role in securing the future of quantum-resistant blockchain technology, ensuring privacy, security, and decentralization.

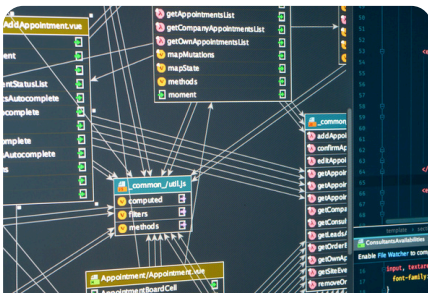


# Node Software



The core software running on each node uses the random numbers to generate blocks and perform other application-specific tasks, such as encryption, data integrity checks, or computations for specific use cases.

## QuStream Algorithm Software



Nodes run software that supports the Sharded User Database, ensuring each node correctly handles its portion of the database while allowing updates, retrieval, and synchronization of data across the network.

## Sharded Database Software



Software interfaces (APIs) facilitate communication between the node and applications, ensuring that data is retrieved from the database and delivered as needed, in a secure way.

## Data Transmission and API Layer



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