

# Post-Quantum Transport Layer Security (TLS) Hardware Accelerator Industry Report: Future Prospects

*The Business Research Company's Post-Quantum Transport Layer Security (TLS) Hardware Accelerator Global Market Report 2025 – Market Size And Forecast 2025-2034*

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What Is The Projected Market Size & Growth Rate Of The Post-Quantum Transport Layer Security (TLS) Hardware Accelerator Market?



The Business Research Company's Latest Report Explores Market Driver, Trends, Regional Insights - Market Sizing & Forecasts Through 2034"

*The Business Research Company*

The market size of post-quantum transport layer security (TLS) hardware accelerators has seen rapid growth in recent times. The market, which was valued at \$0.93 billion in 2024, is anticipated to reach \$1.20 billion in 2025, expanding at a compound annual growth rate (CAGR) of 28.6%. This significant growth during the historic period is a result of rising cyber threats, increased need for secure communication, a surge in data breaches, the implementation of robust encryption standards, and the stipulations of regulatory compliance.

Anticipated exponential growth is predicted in the post-quantum transport layer security (TLS) hardware accelerator market, as it is set to surge to \$3.25 billion by 2029, reflecting a compound annual growth rate (CAGR) of 28.3%. This growth during the projected period is driven by factors such as the swift mainstream adoption of federal-level compliance mandates, regular hardware security modules refreshing cycles, the integration of cloud-native PQC, vendor consolidation driven by standards, and the proliferation of 5G and edge computing. Key trends projected for this period encompass the incorporation of PQ accelerators into cloud server hardware, the

development of mixed classical-quantum cryptographic solutions, the miniaturization of accelerator chips intended for internet of things (IoT) devices, the blending of artificial intelligence (AI) and post-quantum security, and market consolidation via mergers and acquisitions.

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<https://www.thebusinessresearchcompany.com/sample.aspx?id=28765&type=smp>

### What Is The Crucial Factor Driving The Global Post-Quantum Transport Layer Security (TLS) Hardware Accelerator Market?

The growth of the post-quantum transport layer security (TLS) hardware accelerator market is anticipated to be spurred by the escalating frequency of cyberattacks. These attacks, executed by harmful entities, intend to gain unlawful access, inflict damage, or infiltrate computer networks, systems, or data. The upsurge in cyberattacks coincides with the digitalization trend. The shift towards online platforms, cloud-based services, and interconnected devices has amplified the number of potential targets. Similarly, the heightened dependence on digital channels for banking, communication, and business transactions has augmented the profitability and impact of cybercrimes. By expediting quantum-resistant encryption, post-quantum transport layer security (TLS) hardware accelerator boosts cybersecurity, reducing the chances of interception or tampering. It fortified data security during transit and increases difficulties for attackers, including the ones employing advanced quantum computing methodologies, to misuse communication channels and carry out successful cyberattacks. For example, as cited by the FBI in March 2024, a spike in internet crime complaints was observed, escalating from 800,944 in 2022 to 880,418 in 2023. The financial losses correlated with these crimes also experienced a 22% increment, growing from \$10.3 billion to \$12.5 billion. Thus, the rising occurrence of cyberattacks is fuelling the expansion of the post-quantum transport layer security (TLS) hardware accelerator market.

### Who Are The Emerging Players In The Post-Quantum Transport Layer Security (TLS) Hardware Accelerator Market?

Major players in the Post-Quantum Transport Layer Security (TLS) Hardware Accelerator Global Market Report 2025 include:

- IBM Corporation
- Intel Corporation
- Broadcom Inc.
- Hewlett Packard Enterprise Company
- NVIDIA Corporation
- Thales S.A.
- Infineon Technologies AG
- NXP Semiconductors N.V.
- Microchip Technology Inc.
- IDEMIA Secure Transactions

## What Are The Future Trends Of The Post-Quantum Transport Layer Security (TLS) Hardware Accelerator Market?

Leading firms in the post-quantum transport layer security (TLS) hardware accelerator industry are concentrating their efforts on the creation of breakthrough solutions, like high-throughput key exchange, to ensure secure and low-latency communications that can withstand quantum attacks. The process of high-throughput key exchange involves the swift creation and distribution of cryptographic keys between communicating parties, which results in larger, faster secure connections, reduced latency, and heavy traffic support for quantum-resistant TLS. In December 2024, NVIDIA Corporation, a technology firm based in the United States, announced the launch of cuPQC, a GPU-accelerated software development kit (SDK) which is geared towards assisting the transition towards post-quantum cryptography (PQC) protocols. This initiative is intended to deliver secure, low-latency communications that are immune to quantum attacks, with a particular emphasis on the mechanisms of high-throughput key exchange. cuPQC utilises the parallel processing strengths of NVIDIA GPUs to hasten cryptographic operations like key generation, encapsulation, and decapsulation, raising the speed by up to 143 times compared to the latest CPUs. This added speed is vital for ensuring large-scale, secure connections in high-traffic situations and maintaining security even when faced with potential quantum computing threats. With cuPQC's integration, organizations can adopt NIST-approved PQC algorithms such as ML-KEM and ML-DSA, thereby readying their systems for the quantum generation and assisting sectors like telecommunications, finance, and cloud infrastructure in maintaining secure communications.

## What Segments Are Covered In The Post-Quantum Transport Layer Security (TLS) Hardware Accelerator Market Report?

The post-quantum transport layer security (TLS) hardware accelerator market covered in this report is segmented as

- 1) By Product Type: Field-Programmable Gate Array (FPGA)-Based Accelerators, Application-Specific Integrated Circuit (ASIC)-Based Accelerators, System-On-Chip (SoC)-Based Accelerators, Other Product Types
- 2) By Algorithm: Lattice-Based, Code-Based, Multivariate, Hash-Based, Other Algorithms
- 3) By End-User: Banking, Financial Services, And Insurance (BFSI), Information Technology (IT) And Telecommunications, Healthcare, Government, Manufacturing, Other End-Users

### Subsegments:

- 1) By Field-Programmable Gate Array (FPGA) Based Accelerators: Standard Field-Programmable Gate Array (FPGA) Accelerators, High Performance Field-Programmable Gate Array (FPGA) Accelerators, Low Power Field-Programmable Gate Array (FPGA) Accelerators, Custom Configured Field-Programmable Gate Array (FPGA) Accelerators
- 2) By Application-Specific Integrated Circuit (ASIC) Based Accelerators: High Speed Application-Specific Integrated Circuit (ASIC) Accelerators, Low Latency Application-Specific Integrated Circuit (ASIC) Accelerators, Energy Efficient Application-Specific Integrated Circuit (ASIC) Accelerators, Custom Designed Application-Specific Integrated Circuit (ASIC) Accelerators

3) By System-On-Chip (SoC) Based Accelerators: Embedded System-On-Chip (SoC) Accelerators, High Performance System-On-Chip (SoC) Accelerators, Low Power System-On-Chip (SoC) Accelerators, Custom Configured System-On-Chip (SoC) Accelerators

4) By Other Product Types: Hybrid Accelerators, Multi-Chip Module Accelerators, Graphics Processing Unit (GPU) Integrated Accelerators, Custom Quantum Resistant Accelerators

View the full post-quantum transport layer security (tls) hardware accelerator market report:  
<https://www.thebusinessresearchcompany.com/report/post-quantum-transport-layer-security-tls-hardware-accelerator-global-market-report>

Which Region Is Projected To Hold The Largest Market Share In The Global Post-Quantum Transport Layer Security (TLS) Hardware Accelerator Market?

The Post-Quantum Transport Layer Security (TLS) Hardware Accelerator Global Market Report 2025 identified North America as the leading region in 2024. Anticipation is high for Asia-Pacific as it is expected to show the most growth in the coming period. The report includes data from several regions: Asia-Pacific, Western Europe, Eastern Europe, North America, South America, Middle East, and Africa.

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