

# **Global Post-Quantum Cryptography Market Size study, by Type (Lattice-Based Cryptography, Code-Based Cryptography), Solution, Services, Enterprise Size, Vertical, and Regional Forecasts 2022-2032**

<https://marketpublishers.com/r/GD0B265B259FEN.html>

Date: May 2025

Pages: 285

Price: US\$ 3,218.00 (Single User License)

ID: GD0B265B259FEN

## **Abstracts**

Global Post-Quantum Cryptography Market is valued approximately at USD 0.84 billion in 2023 and is anticipated to grow with an extraordinary CAGR of more than 37.60% over the forecast period 2024-2032. As quantum computing approaches practical maturity, the world faces a pressing cryptographic inflection point. Post-quantum cryptography (PQC) has emerged as a critical defense mechanism, designed to protect digital infrastructure from quantum-enabled decryption threats. Unlike classical encryption schemes, PQC leverages complex mathematical constructs such as lattice-based and code-based algorithms that are resilient against the computational power of quantum machines. Governments, corporations, and cybersecurity providers are rapidly mobilizing resources to implement quantum-resistant protocols before the advent of cryptographic obsolescence.

Rising digitalization across industries has led to massive data exchanges over networks, amplifying the need for future-proof security. As standard encryption algorithms like RSA and ECC stand on the brink of being compromised by Shor's algorithm running on quantum processors, enterprises are compelled to future-proof their systems. Initiatives like the National Institute of Standards and Technology's (NIST) PQC standardization project and collaborations with cryptographic solution vendors have catalyzed the market. Cloud service providers, payment processors, and telecom operators are beginning to integrate hybrid cryptographic frameworks—combining classical and quantum-resistant algorithms to ensure backward compatibility and forward security. However, the high complexity of implementation and the need for skilled personnel may hinder immediate widespread adoption.

A particularly potent growth lever lies in the adoption of PQC across government defense systems, critical infrastructure, and regulated sectors such as finance and healthcare. These domains prioritize zero-trust architecture, secure key exchanges, and end-to-end encryption, all of which benefit from PQC advancements. At the same time, as zero-day exploits and sophisticated nation-state attacks proliferate, PQC is being increasingly viewed not just as an optional upgrade, but a foundational pillar of next-generation cybersecurity strategies. Tech startups and established cryptography firms alike are launching APIs, toolkits, and migration services to assist enterprises in this complex transition.

As post-quantum technologies mature, cloud-native deployment and cryptographic agility platforms are making it easier for organizations to pilot, scale, and maintain secure environments. This evolution has given rise to managed PQC-as-a-Service (PQCaaS), enabling smaller enterprises to access enterprise-grade protection without overhauling their tech stack. Open-source communities and global alliances such as ETSI and IETF are also contributing to interoperable standards and compliance frameworks, further accelerating trust and adoption. As more organizations perform crypto-agility assessments, the PQC market is poised for an exponential shift in mainstream deployment.

Regionally, North America leads the charge with extensive R&D, federal cybersecurity mandates, and early vendor deployment strategies. The United States is home to major quantum research hubs and houses many key players in both quantum computing and cryptography. Europe is not far behind, with the EU's digital resilience act and quantum flagship initiatives aligning cybersecurity with quantum advancement. Meanwhile, the Asia Pacific region is set to grow at the fastest pace, thanks to robust investments from China, India, South Korea, and Japan into quantum-safe technologies. Latin America and the Middle East & Africa are gradually entering the landscape, especially through multinational collaborations and cloud service expansions.

**Major market player included in this report are:**

IBM Corporation

ISARA Corporation

Quantinuum Ltd.

Post-Quantum Ltd.

SandboxAQ

Thales Group

Microsoft Corporation

Toshiba Corporation

Amazon Web Services (AWS)

Intel Corporation

PQShield Ltd.

CryptoNext Security

EvolutionQ Inc.

Qrypt Inc.

Utimaco GmbH

**The detailed segments and sub-segment of the market are explained below:**

By Type

Lattice-Based Cryptography

Code-Based Cryptography

By Solution

Hardware Security Modules (HSM)

Cryptographic Libraries

Encryption Keys & Algorithms

Others

#### By Services

Integration & Deployment

Support & Maintenance

Consulting & Training

#### By Enterprise Size

Large Enterprises

Small & Medium Enterprises

#### By Vertical

Government & Defense

BFSI

IT & Telecom

Healthcare

Retail

Energy & Utilities

Others

## By Region:

### North America

U.S.

Canada

### Europe

UK

Germany

France

Spain

Italy

Rest of Europe

### Asia Pacific

China

India

Japan

Australia

South Korea

Rest of Asia Pacific

## Latin America

Brazil

Mexico

## Middle East & Africa

Saudi Arabia

South Africa

Rest of Middle East & Africa

## Years considered for the study are as follows:

Historical year – 2022

Base year – 2023

Forecast period – 2024 to 2032

## Key Takeaways:

Market Estimates & Forecast for 10 years from 2022 to 2032.

Annualized revenues and regional level analysis for each market segment.

Detailed analysis of geographical landscape with Country-level analysis of major regions.

Competitive landscape with information on major players in the market.

Analysis of key business strategies and recommendations on future market approach.

Analysis of competitive structure of the market.

Demand side and supply side analysis of the market.

#### Companies Mentioned

IBM Corporation

ISARA Corporation

Quantinuum Ltd.

Post-Quantum Ltd.

SandboxAQ

Thales Group

Microsoft Corporation

Toshiba Corporation

Amazon Web Services (AWS)

Intel Corporation

PQShield Ltd.

CryptoNext Security

EvolutionQ Inc.

Qrypt Inc.

Utimaco GmbH

## Contents

### **CHAPTER 1. GLOBAL POST-QUANTUM CRYPTOGRAPHY MARKET EXECUTIVE SUMMARY**

- 1.1. Global Post-Quantum Cryptography Market Size & Forecast (2022-2032)
- 1.2. Regional Summary
- 1.3. Segmental Summary
  - 1.3.1. By Type
  - 1.3.2. By Enterprise Size
- 1.4. Key Trends
- 1.5. Regulatory & Standards Impact
- 1.6. Analyst Recommendation & Conclusion

### **CHAPTER 2. GLOBAL POST-QUANTUM CRYPTOGRAPHY MARKET DEFINITION AND RESEARCH ASSUMPTIONS**

- 2.1. Research Objective
- 2.2. Market Definition
- 2.3. Research Assumptions
  - 2.3.1. Inclusion & Exclusion
  - 2.3.2. Limitations
  - 2.3.3. Supply Side Analysis
    - 2.3.3.1. Technology Readiness
    - 2.3.3.2. Vendor Landscape
    - 2.3.3.3. Regulatory Environment
    - 2.3.3.4. Standards & Certification
    - 2.3.3.5. Economic Viability
  - 2.3.4. Demand Side Analysis
    - 2.3.4.1. Enterprise Digitalization
    - 2.3.4.2. Cyber-Threat Landscape
    - 2.3.4.3. Compliance Mandates
    - 2.3.4.4. Vendor Audits & Risk Management
- 2.4. Estimation Methodology
- 2.5. Years Considered for the Study
- 2.6. Currency Conversion Rates

### **CHAPTER 3. GLOBAL POST-QUANTUM CRYPTOGRAPHY MARKET DYNAMICS**



### 3.1. Market Drivers

- 3.1.1. Imminent Quantum Threats to Classical Encryption
- 3.1.2. Regulatory Mandates & NIST Standardization
- 3.1.3. Surge in Cyber-Attacks on Critical Infrastructure

### 3.2. Market Challenges

- 3.2.1. High Implementation Complexity & Integration Costs
- 3.2.2. Skilled-Workforce Shortages in PQC Deployment

### 3.3. Market Opportunities

- 3.3.1. Adoption of Hybrid Classical/Quantum-Resistant Frameworks
- 3.3.2. Growth of PQC-as-a-Service (PQCaaS) Models
- 3.3.3. Vertical-Specific Security Requirements

## **CHAPTER 4. GLOBAL POST-QUANTUM CRYPTOGRAPHY MARKET INDUSTRY ANALYSIS**

### 4.1. Porter's Five Forces Model

- 4.1.1. Bargaining Power of Suppliers
- 4.1.2. Bargaining Power of Buyers
- 4.1.3. Threat of New Entrants
- 4.1.4. Threat of Substitutes
- 4.1.5. Competitive Rivalry

### 4.2. PESTEL Analysis

- 4.2.1. Political
- 4.2.2. Economic
- 4.2.3. Social
- 4.2.4. Technological
- 4.2.5. Environmental
- 4.2.6. Legal

### 4.3. Top Investment Opportunities

### 4.4. Top Winning Strategies

### 4.5. Disruptive Trends

### 4.6. Industry Expert Perspectives

### 4.7. Analyst Recommendation & Conclusion

## **CHAPTER 5. GLOBAL POST-QUANTUM CRYPTOGRAPHY MARKET SIZE & FORECASTS BY TYPE (2022-2032)**

### 5.1. Segment Dashboard

### 5.2. Lattice-Based Cryptography Revenue Trend Analysis, 2022 & 2032

### 5.3. Code-Based Cryptography Revenue Trend Analysis, 2022 & 2032

## **CHAPTER 6. GLOBAL POST-QUANTUM CRYPTOGRAPHY MARKET SIZE & FORECASTS BY SOLUTION & SERVICES (2022-2032)**

### 6.1. Solution Segment Dashboard

### 6.2. Hardware Security Modules (HSM) & Cryptographic Libraries Revenue Trends

### 6.3. Encryption Keys & Algorithms & Other Solutions Trends

### 6.4. Services Segment Dashboard (Integration, Support, Consulting)

## **CHAPTER 7. GLOBAL POST-QUANTUM CRYPTOGRAPHY MARKET SIZE & FORECASTS BY ENTERPRISE SIZE & VERTICAL (2022-2032)**

### 7.1. Large Enterprises

### 7.2. Small & Medium Enterprises

### 7.3. Government & Defense

### 7.4. BFSI

### 7.5. IT & Telecom

### 7.6. Healthcare

### 7.7. Retail

### 7.8. Energy & Utilities

### 7.9. Others

## **CHAPTER 8. GLOBAL POST-QUANTUM CRYPTOGRAPHY MARKET SIZE & FORECASTS BY REGION (2022-2032)**

### 8.1. North America Market

#### 8.1.1. U.S. Market

#### 8.1.2. Canada Market

### 8.2. Europe Market

#### 8.2.1. UK Market

#### 8.2.2. Germany Market

#### 8.2.3. France Market

#### 8.2.4. Spain Market

#### 8.2.5. Italy Market

#### 8.2.6. Rest of Europe Market

### 8.3. Asia Pacific Market

#### 8.3.1. China Market

#### 8.3.2. India Market

- 8.3.3. Japan Market
- 8.3.4. Australia Market
- 8.3.5. South Korea Market
- 8.3.6. Rest of Asia Pacific Market
- 8.4. Latin America Market
  - 8.4.1. Brazil Market
  - 8.4.2. Mexico Market
- 8.5. Middle East & Africa Market
  - 8.5.1. Saudi Arabia Market
  - 8.5.2. South Africa Market
  - 8.5.3. Rest of Middle East & Africa Market

## **CHAPTER 9. COMPETITIVE INTELLIGENCE**

- 9.1. Key Company SWOT Analysis
  - 9.1.1. IBM Corporation
  - 9.1.2. ISARA Corporation
  - 9.1.3. Quantinuum Ltd.
- 9.2. Top Market Strategies
- 9.3. Company Profiles
  - 9.3.1. IBM Corporation
    - 9.3.1.1. Key Information
    - 9.3.1.2. Overview
    - 9.3.1.3. Financial (Subject to Data Availability)
    - 9.3.1.4. Product Summary
    - 9.3.1.5. Market Strategies
  - 9.3.2. ISARA Corporation
  - 9.3.3. Quantinuum Ltd.
  - 9.3.4. Post-Quantum Ltd.
  - 9.3.5. SandboxAQ
  - 9.3.6. Thales Group
  - 9.3.7. Microsoft Corporation
  - 9.3.8. Toshiba Corporation
  - 9.3.9. Amazon Web Services (AWS)
  - 9.3.10. Intel Corporation
  - 9.3.11. PQShield Ltd.
  - 9.3.12. CryptoNext Security
  - 9.3.13. EvolutionQ Inc.
  - 9.3.14. Qrypt Inc.

9.3.15. Utimaco GmbH

## **CHAPTER 10. RESEARCH PROCESS**

10.1. Research Process

10.1.1. Data Mining

10.1.2. Analysis

10.1.3. Market Estimation

10.1.4. Validation

10.1.5. Publishing

10.2. Research Attributes

## List Of Tables

### LIST OF TABLES

TABLE 1. Global Post-Quantum Cryptography market, report scope
TABLE 2. Global PQC market estimates & forecasts by Region 2022-2032 (USD Billion)
TABLE 3. Global PQC market estimates & forecasts by Type 2022-2032 (USD Billion)
TABLE 4. Global PQC market estimates & forecasts by Solution 2022-2032 (USD Billion)
TABLE 5. Global PQC market estimates & forecasts by Services 2022-2032 (USD Billion)
TABLE 6. Global PQC market estimates & forecasts by Enterprise Size 2022-2032 (USD Billion)
TABLE 7. Global PQC market estimates & forecasts by Vertical 2022-2032 (USD Billion)
TABLE 8. North America PQC market estimates & forecasts, 2022-2032
TABLE 9. U.S. PQC market estimates & forecasts by Type 2022-2032
TABLE 10. Canada PQC market estimates & forecasts by Type 2022-2032
TABLE 11. Europe PQC market estimates & forecasts, 2022-2032
TABLE 12. Asia Pacific PQC market estimates & forecasts, 2022-2032
TABLE 13. Latin America PQC market estimates & forecasts, 2022-2032
TABLE 14. Middle East & Africa PQC market estimates & forecasts, 2022-2032
TABLE 15. Competitive landscape: Market share of top players (2023)
... (and additional tables up to TABLE 20 in final report)

## List Of Figures

### LIST OF FIGURES

- FIG 1. Global PQC market, research methodology
- FIG 2. Market estimation techniques
- FIG 3. PQC adoption lifecycle
- FIG 4. Key trends in PQC, 2023
- FIG 5. Growth prospects 2022-2032
- FIG 6. Porter's Five Forces Model
- FIG 7. PESTEL Analysis
- FIG 8. Value chain analysis
- FIG 9. PQC market by Type, 2022 vs 2032
- FIG 10. PQC market by Solution, 2022 vs 2032
- FIG 11. PQC market by Services, 2022 vs 2032
- FIG 12. PQC market by Enterprise Size, 2022 vs 2032
- FIG 13. PQC market by Vertical, 2022 vs 2032
- FIG 14. Regional snapshot 2022 vs 2032
- FIG 15. North America PQC market size 2022 vs 2032
- FIG 16. Europe PQC market size 2022 vs 2032
- FIG 17. Asia Pacific PQC market size 2022 vs 2032
- FIG 18. Latin America PQC market size 2022 vs 2032
- FIG 19. Middle East & Africa PQC market size 2022 vs 2032
- FIG 20. PQC market share of leading vendors (2023)

## I would like to order

Product name: Global Post-Quantum Cryptography Market Size study, by Type (Lattice-Based Cryptography, Code-Based Cryptography), Solution, Services, Enterprise Size, Vertical, and Regional Forecasts 2022-2032

Product link: <https://marketpublishers.com/r/GD0B265B259FEN.html>

Price: US\$ 3,218.00 (Single User License / Electronic Delivery)

If you want to order Corporate License or Hard Copy, please, contact our Customer Service:

[info@marketpublishers.com](mailto:info@marketpublishers.com)

## Payment

To pay by Credit Card (Visa, MasterCard, American Express, PayPal), please, click button on product page <https://marketpublishers.com/r/GD0B265B259FEN.html>