
Sotero's Data In-Use Encryption Technology

Revolutionizing Data Protection with Queryable Encryption

Why Traditional Encryption Solutions Are Insufficient

Traditional data encryption solutions protect data when it is at rest or in motion but fail to secure data during use or query. This gap in protection leaves data exposed to both insider and outsider threats each time it is accessed or queried. Traditional data encryption solutions secure data at rest and in motion, leaving a vulnerability when data is being used or queried. Each time data is accessed or queried, it is decrypted and left exposed to both insider and outsider threats, rendering conventional encryption methods insufficient for comprehensive data protection in today's threat environment.

Revolutionizing Data Protection

Sotero's patented in-use encryption technology offers a transformative approach to data security. It addresses the vulnerabilities of traditional encryption methods and takes data protection to the next level. Sotero's in-use encryption fills this security gap, allowing organizations to keep their sensitive data encrypted while it is being used, queried, in motion, and at rest, irrespective of location. Sotero's KeepEncrypt technology ensures that data becomes useless in the event of a system breach, effectively eliminating any potential loss of information.

How It Works

1. Request Data

When an authorized user or application creates a JDBC/ODBC connection for structured or semi-structured data, the request goes through the Sotero proxy.

2. Query Encrypted Data & Encrypted Results

The Sotero query engine uses patented technology to transform the request to run against encrypted data to receive encrypted results. This ensures that data remains encrypted while in use by the database cache or OS swap/memory.

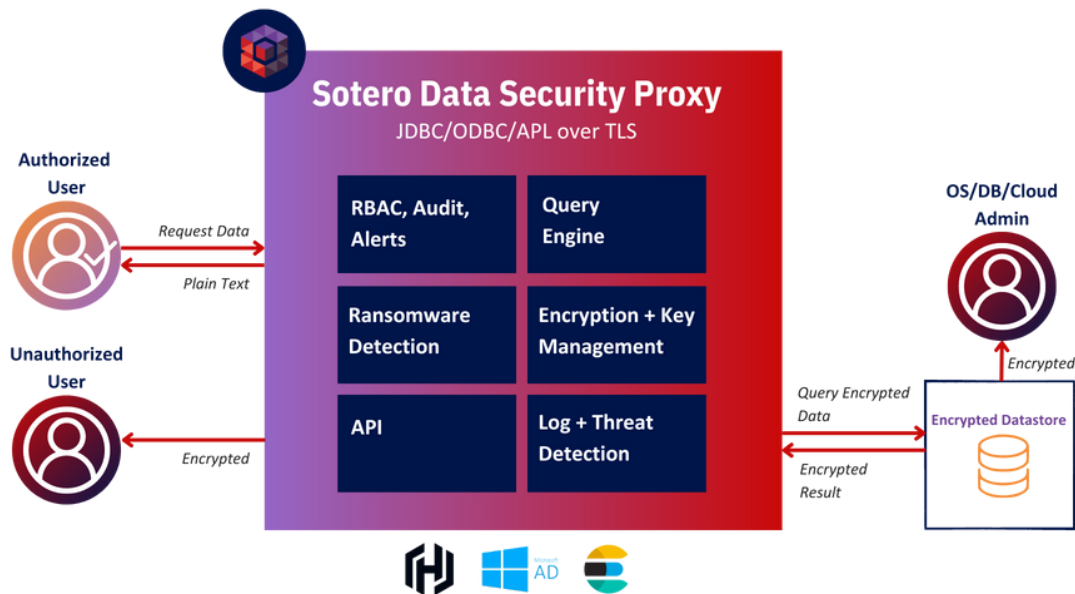
3. RBAC & Anomaly Detection

The Sotero proxy applies RBAC to decide whether or not to decrypt sensitive data. It also applies its machine-learning (ML) based anomaly detection engine threat score to detect a suspicious or anomalous request/activity. This dual control allows Sotero to not only ensure data is requested by authorized users/applications but also flags or blocks malicious activity.

4. Privileged Users See Plain Text

Once the Sotero Platform has ensured the data is being accessed by an authorized user or application, the Sotero crypto engine decrypts the data and sends it back to the requesting user/application. This allows privileged users like DBA to perform their database management operations without seeing sensitive data in plain text. The Sotero Platform requires no application code change, no dependency on OS version/patches and no changes to the end user experience – resulting in minimal operational burden. The solution also seamlessly integrates with:

- Existing directory services/IdP for RBAC controls
- Existing SIEM/UEBA solutions for centralized audit/logging and real time notification for anomalous behavior
- Existing key management solutions for FIPS 140-2 or 140-3 level 2 or level 3 requirements



Key Features



AES-256 Standard Adherence

Ensures all sensitive data is encrypted wherever it resides, including data across various applications and databases, regardless of whether they are on-premise or in a cloud environment.

Role-Based Access Controls (RBAC)

Offers granular control over data access from a centralized data security platform, protecting data from unauthorized access.

Anomaly Detection and Machine Learning Techniques

Protects data from insider threats and known and zero-day ransomware attacks.

Seamless Integration

Requires no changes to application code, OS versions/patches, or the end-user experience, and integrates with existing directory services/IdP for RBAC controls, SIEM/UEBA solutions for centralized audit/logging and real-time notification of anomalous behavior, and key management solutions for FIPS 140-2 or 140-3 level 2 or level 3 requirements.

Key Benefits

With Sotero's in-use encryption technology, organizations can confidently safeguard their data throughout its lifecycle, realizing the full potential of their data without compromising security.

Reduction in Storage Fees

Because Sotero's queryable encryption technology only requires encryption of the most sensitive elements, organizations save up to 30% in data storage fees annually.

Comprehensive Data Protection

Sotero's in-use encryption provides complete data protection throughout its lifecycle, including during use or query, in motion, and at rest.

No Extortion Threats

Because data remains encrypted even when it is exfiltrated by an attacker, the threat actor cannot threaten your organization with extortion attacks. This is because the stolen data will be useless, showing only jumbled encrypted attributes, arming you with layers of defense.

Enhanced Data Control

Maintain control over all data assets and applications, enforce cloud data privacy, and stay in control of all your data anytime, anywhere.

Secure Data Sharing

Enables secure and rapid sharing of encrypted data with internal collaborators, partners, and downstream systems, addressing production use cases more rapidly and ensuring data privacy regulations are met when storing data in the cloud.

Advanced Threat Detection

Utilizes powerful anomaly detection and machine learning techniques to protect data from insider threats and known and zero-day ransomware attacks.

About Sotero

Sotero is a trailblazing data security company whose DSPM+ (Data Security Posture Management) and DDR (Data Detection and Response) solutions are reshaping the cybersecurity landscape. At the heart of Sotero's innovative approach is the principle that "seeing is securing." Its DSPM+ solution deploys advanced AI to classify sensitive data, assess risks, and bolster defenses, helping businesses stay compliant and thwart ransomware. Complementing this is Sotero's DDR, a digital shield that detects and halts cyber threats in real time, ensuring uninterrupted business operations even in an ever-evolving digital world. To learn more, visit Sotero at <https://www.soterosoft.com/>.



99 S. Bedford Street, Suite 106
Burlington, MA 01803
www.soterosoft.com