flock safety

End-to-End Data Architecture Summary for Flock Safety

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Overview
Flock Safety ("Flock") is designed to provide a comprehensive and secure platform for public safety technology. Our end-to-end data architecture ensures the seamless collection, processing, storage, and analysis of data while prioritizing security and privacy at every stage.

Data Collection
Data collection in Flock begins at the source, where our sensors and devices gather raw data. These sources include:

- Falcon (License Plate Reader Camera Images)
- Condor and Wing (Video Devices)
- Raven (Audio Detection)
- External data feeds (e.g., law enforcement databases)

All data collection points are equipped with secure communication protocols (HTTPS, TLS) to protect data in transit from interception and tampering.

Data Ingestion
Once collected, data is ingested into the system through a robust pipeline that includes:

- Data Validation: Ensures the integrity and quality of incoming data.
- Data Encryption: All data is encrypted using industry-standard algorithms (AWS Key Management Service) before being transmitted to our servers.

Data Processing
Flock utilizes an elastic processing framework to process information in near real-time and in aggregate. Key components include:

- Stream Processing: We leverage streaming technologies like MP4, HLS to get device content to be processed in FlockOS.
- AWS SNS and a microservices architecture is utilized to send real-time alerts and make it searchable for our customers.
- Batch and Aggregate Processing: AWS Redshift and QuickSights help process large data sets for analytics and business intelligence for our customers.

During processing, sensitive data is anonymized and access is restricted to authorized personnel only.

Data Storage

Processed data is stored in a secure, multi-layered storage architecture that includes:
- Relational Databases: For structured data (AWS Relationship Database Service)
- NoSQL Databases: For unstructured data (DynamoDB)
- Data Lakes: For large-scale data storage (AWS S3 Cloud Object Storage)

All stored data is encrypted at rest using strong encryption methods, and regular security audits are conducted to ensure compliance with industry standards and regulations.

Data Deletion

Data does not persist on any client devices and is retained within Amazon S3 object stores until the scheduled date for deletion. Scheduled deletion dates are set for thirty days for a standard for customers, but can be modified for longer periods depending on unique client requirements.

Data Access and Analysis

Authorized users access and analyze data through secure interfaces and tools, such as:
- Role-Based Access Control (RBAC): Ensures users only have access to data necessary for their role.
- Audit Logs: All access and actions are logged for accountability and traceability.
- Advanced Analytics: Machine learning and AI algorithms are applied to derive insights, with all sensitive computations performed in secure environments.

Data Governance and Compliance

Flock adheres to strict data governance policies and complies with relevant regulations. Our data governance framework includes:
- Data Classification: Categorizing data based on sensitivity and criticality.
- Data Retention Policies: Defining how long data is stored and when it is deleted.
- Incident Response: A comprehensive plan to respond to data breaches and security incidents.

Security Measures

Security is embedded in every layer of Flock's data architecture. Key measures include:
- Encryption: Both in transit and at rest.
- Multi-Factor Authentication (MFA): For accessing sensitive systems and data.
- Regular Security Audits: Conducted by internal teams and third-party experts.
- Continuous Monitoring: Using advanced tools to detect and respond to threats in real-time.

Conclusion

The end-to-end data architecture of Flock Safety is designed with a focus on security, privacy, and compliance. By implementing rigorous security measures and adhering to data best practices, we ensure that our users' data remains safe and secure throughout its lifecycle. For more information visit https://trust.flocksafety.com