Aircloak Cloaked Database Features Overview

Aircloak Cloaked Database is the world's first general-purpose *anonymized* database service. Aircloak Analytics is unique in that it provides both *strong anonymity* and *high-quality analytics* regardless of the use case or type of user data. Aircloak's Cloaked Database can serve as the core technology for analytics solutions in many analytics verticals including health, geolocation, transportation, smart-city, power systems, open data, marketing, and business intelligence.

Database Scaling

- Sharded PostgreSQL cluster
- Virtually unlimited storage capacity
- Replicated storage

Deployment

- Analytics as a Service
- In-house installation
  - Managed by Aircloak
  - Self-managed

Data Types

- Structured (PostgreSQL types)
- Unstructured (free text)

Data Insertion

- Batch insert
- Real-time insert
- RESTFul API over TPM-attested encrypted channel

Data Queries

- Batch (periodic or on request)
- Real-time streaming
- Standard range queries
- Procedural software (fully general)
  - Customer-supplied or Aircloak library
- Web-based GUI
- RESTFul API
- CSV and JSON formatted answers

Customization Services

- Queries
- Data types
- Data insertion API
- Data query API
- Business Intelligence dashboard

Trust

- Encrypted data with TPM-sealed key
  - Zero-access, Zero-password
- TPM-based trusted third-party software upgrade oversight
- Cryptographically tamper-proof query and event logging
- TPM-based remote attestation (cryptographic proof of third-party authorization to data sources and analysts)

Security

- Data at rest: crypto-disk (TPM-sealed key)
- Data in transit: Encrypted, zero-exposure private key, TPM-based remotely attested
  - Both from data sources (TSL) and between cluster servers (IPSec)
- Data in use: Intel data scrambling
- SELinux-based hardening (zero-login)

Anonymization

- Sandboxed queries
- Answer suppression:
  - Low-count
  - Repeat
  - Low-change
- Noisy answers
  - Accuracy: within ± 5 or exceeding 99%
  - Fixed (answer-based) and random noise

Certification

- TÜViT Trusted Process