Tolla: A User-Isolating Data Management System

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MOTIVATION
Exploitation of personal and sensitive data stored in the cloud by 3rd party apps is on the rise. Common implementations give one-stop access to the data.

However, such solutions do not provide the owners with the ability to manage and enforce granular privacy controls dynamically.

IMPLEMENTATION
- Personal data is stored in a per-user location-agnostic container guarded by granular privacy policy
- 2-level protection for data access (Certificate + Privacy policy)
- The Ciphertext-Policy Attribute-Based Encryption (CP-ABE) scheme enforces current privacy policy

TOLLA ARCHITECTURE

PE: Policy Engine
DPU: Data Processing Unit
CA: Certificate Authority
DSU: Data Storage Unit

TOLLA DATA FLOW

/ SINGLE READ LATENCY

Figure 1: Tolla runs inside docker, the components and their interactions with each other.

Figure 2: Data flow in Tolla

Figure 3: Latency comparison for single read (110 Bytes) and multiple (1.2 MB) continuous read operations.

MORE INFORMATION

DB Verifier Logger Policy

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