CephVault: A Secure Key Management System for Ceph

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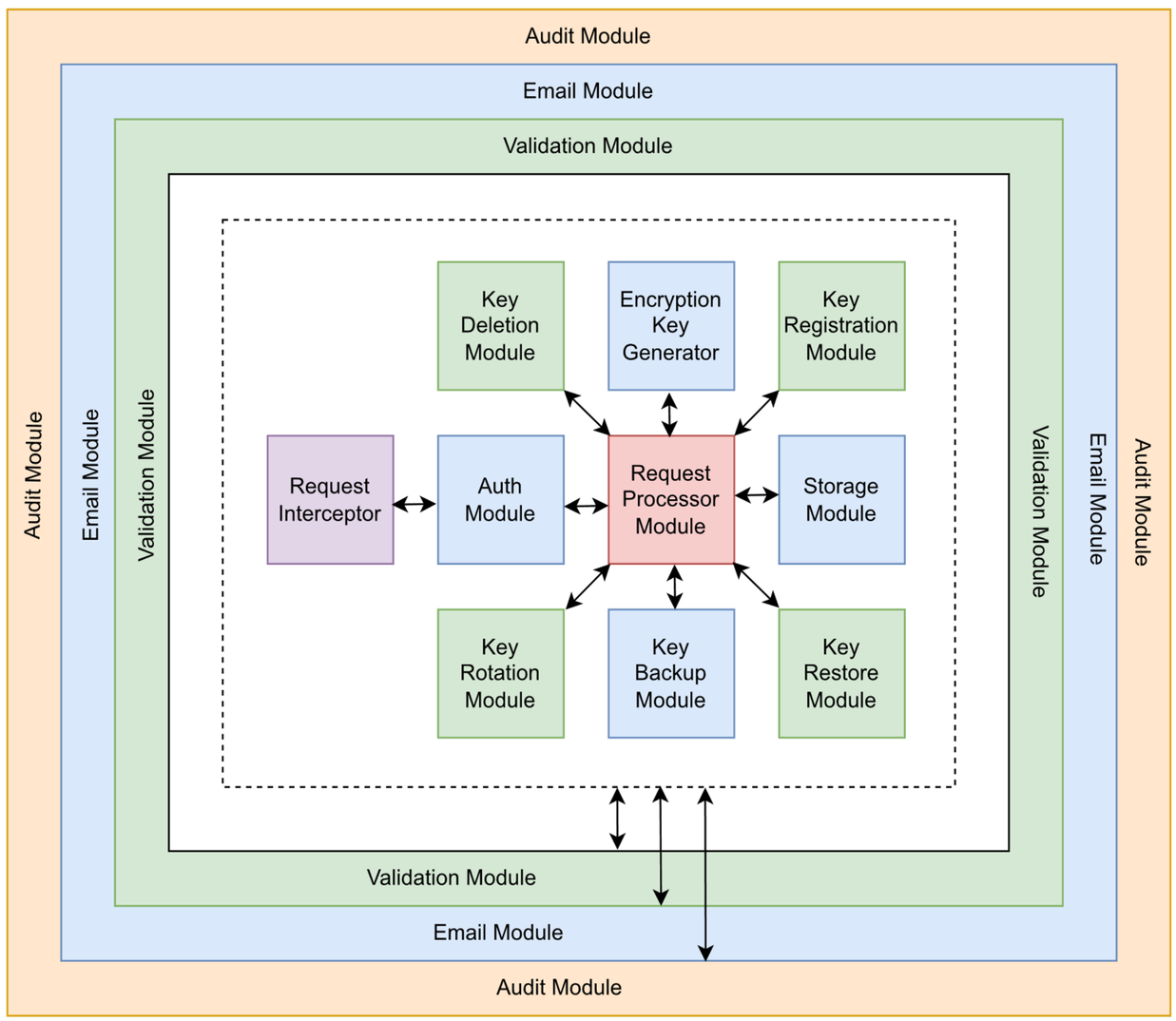
Background

- Ceph is a distributed storage system.
- Provides software-defined unified storage solutions.
- Supports object, block, and file storage.
- Massively scalable, high-performing, highly available without any single-point of failure.
- Serves as a cloud and enterprise cluster storage solution.
- Cost effective as it runs on the available commodity hardware.

Problem Statement

- Ceph lacks native object encryption.
- Ceph offers software encryption of the disk level, but objects themselves are not encrypted.
- Ceph does not support highly secure encryption schemes.
- Ceph does not have a reliable Key Management System (KMS).

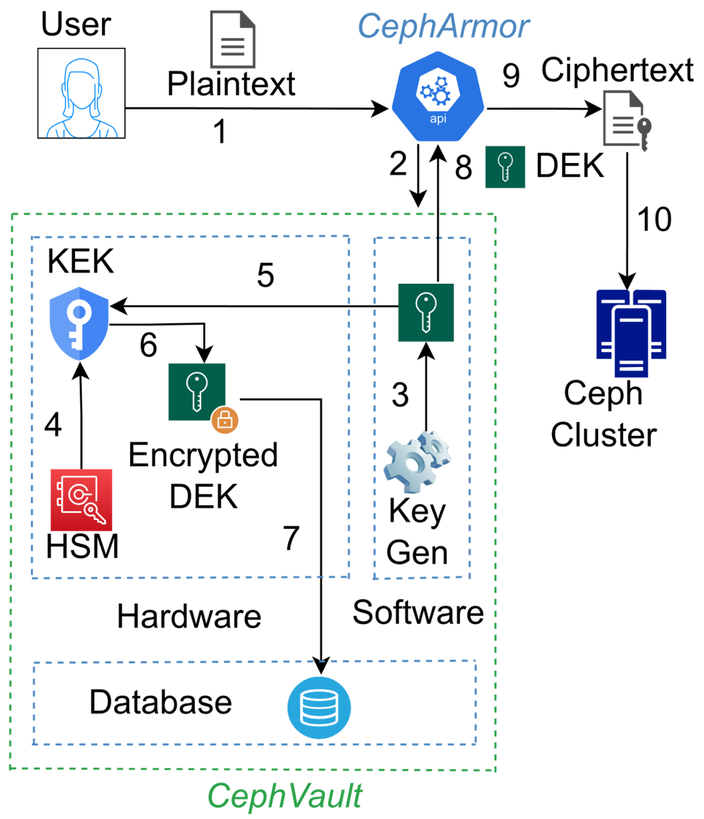
CephVault Architecture



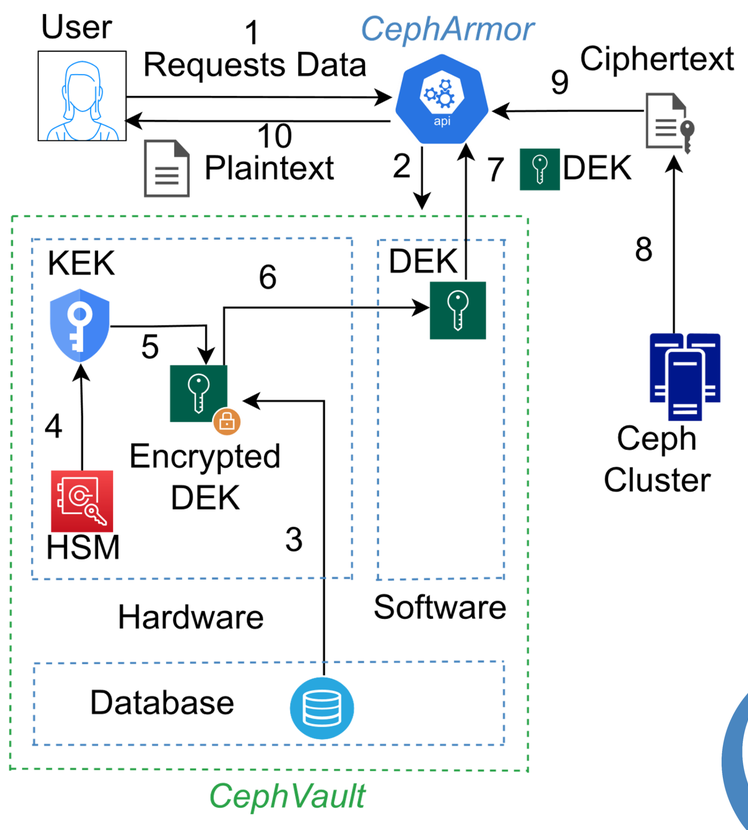
Proposed Solutions

- *CephArmor*, a lightweight API to provide encryption schemes.
- Flexibility to select various secure encryption schemes and modes.
- *CephVault,* a secure, reliable, scalable KMS for *CephArmor.*
- *CephVault* supports entire KMS lifecycle.

CephVault Encryption Operations



CephVault Decryption Operations



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