Isaiah Narisma

Professor Underhill

MIS 484-6 (01) 42896

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Vault Real-World Application

The main problem that vault solves is the challenge of `secret management` which is essentially just credential management at its core. A credential is any piece of information whether that be a code, a string of keys, a hidden key, a passphrase, etc. that allows a user to have authorization, authentication, and access to otherwise inaccessible information.

At my job we work with credentials and IAM on a daily basis, figuring out who has the keys to what, how they are using them, what they are using with them, and how they are being stored. We have multiple keys for multiple different applications that we need to keep track and manage, and I see that vault will make it easier to centralize everything.

In a typical workflow environment utilizing encryption keys and authorizations, many of the keys are sprawled out across various sections of the project. Whether that be in the source code, in the configuration settings, or even embedded in a version control system. The challenge then becomes keeping track of who has access to what, do this AWS engineer have access to GitHub assets? These are the questions that HashiCorp vault aims to solve.

If there has been a compromise with one of these authentication tools, the next challenge would be how to be able to rotate between authentication measures? All of these measures are spread out all over the place and we don't really know who has access to what. This sort of scenario is known in the industry as `secret sprawl` where we have authentication measures sprawled throughout various systems in our systems architecture.

Where I would find vault security incredibly useful would be in applications where the security posture of your firm is paramount in the company. This way, with the ephemeral keys they are always changing, and being able to rotate authentication measures makes it that much more difficult for would-be hackers to gain access.

I really like this approach for the vault because it allows do you centralization of keys, and if anything were to happen we can securely lock down all access to everything in our infrastructure to better improve our Security posture.