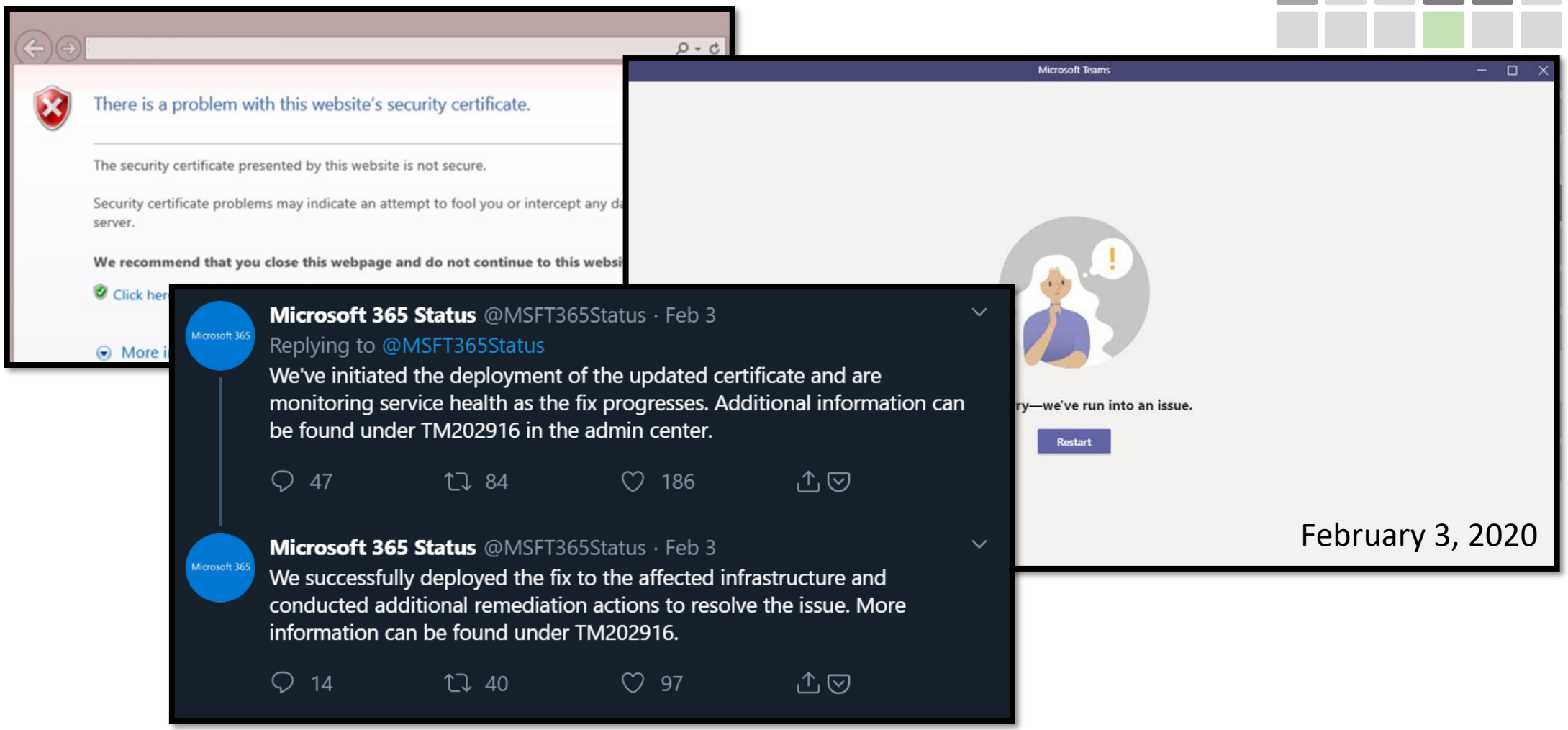
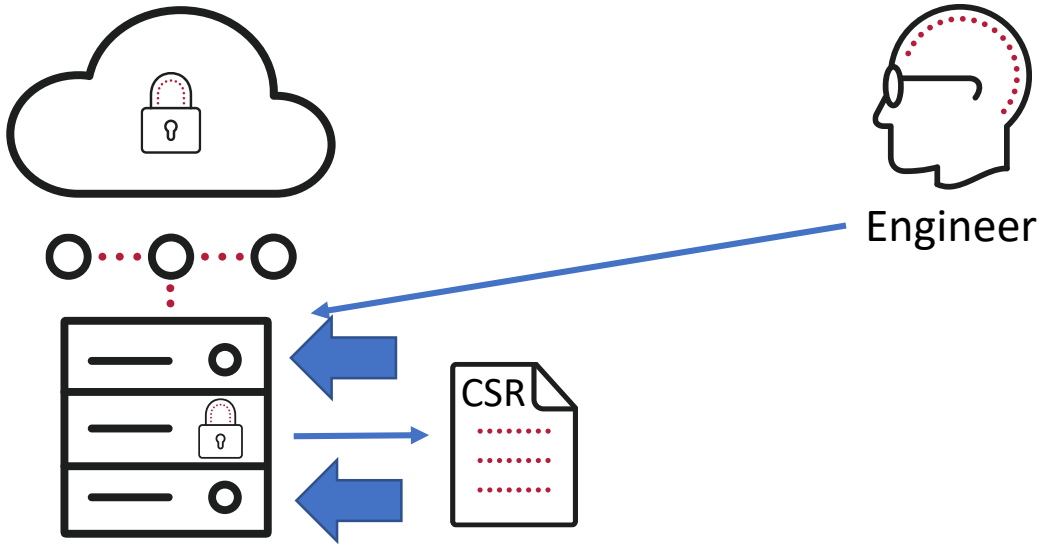
Section 3

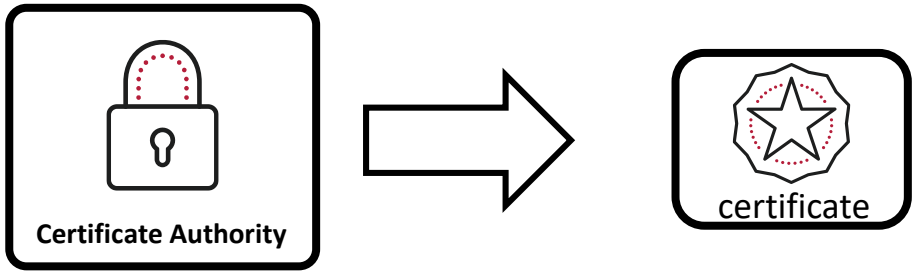
PKI Secrets Engine

Identifying the Problem with Certs

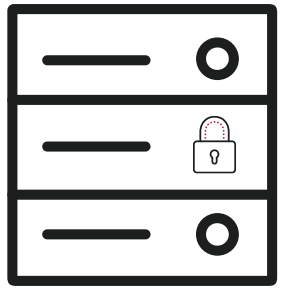


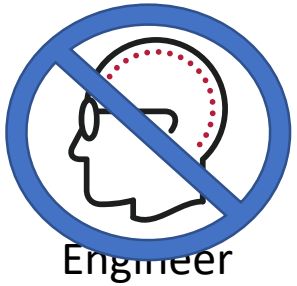
Identifying the Problem with Certs



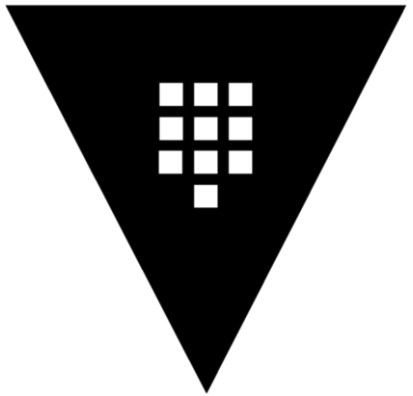


How Does Vault Fix It?





Engineer



PKI Secrets Engine
(Intermediate)

PKI Secrets Engine

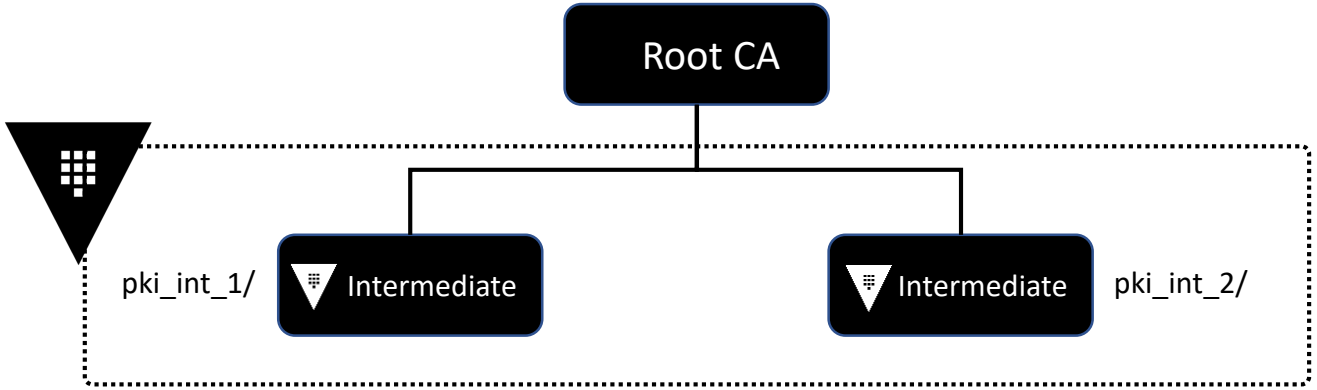
- Generates dynamic X.509 certificates
- Eliminates the manual process for generating a private key and CSR, submitting to the CA, and waiting for verification and signing

- Allows certs to have short TTLs because certs are now ephemeral
- Virtually eliminates revocations

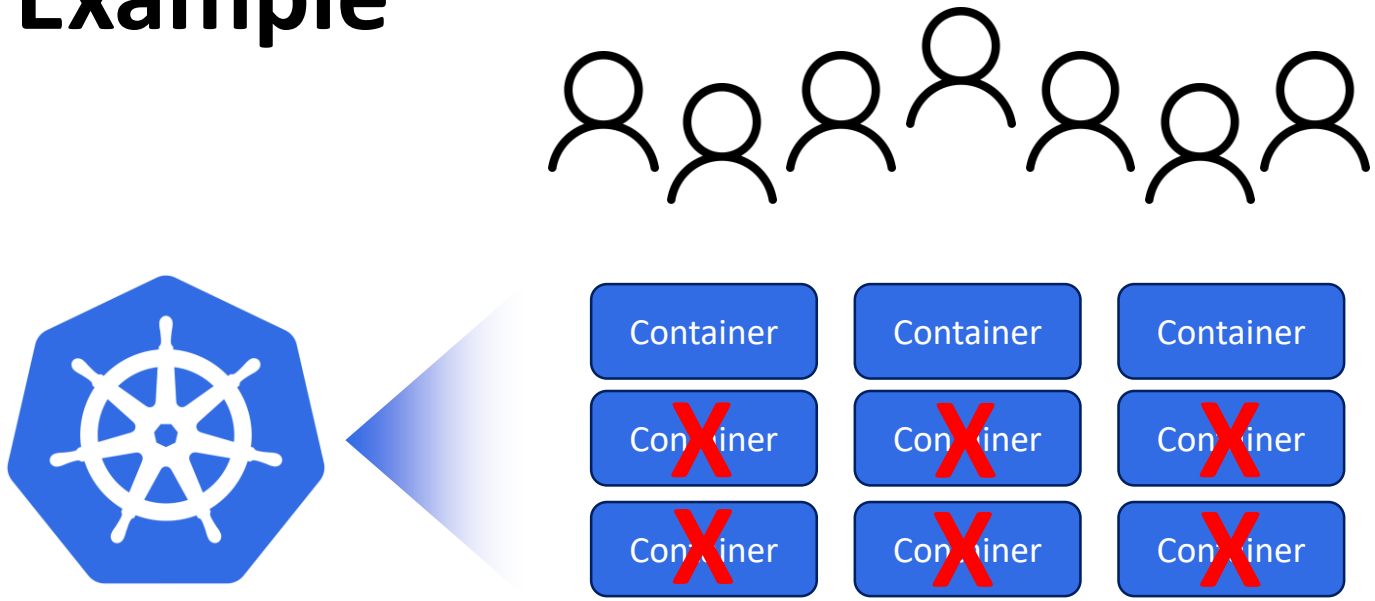
- Simple to allocate a certificate to each workload
- Stops the certificate sharing, use of wildcard certificates, or using self-signed certificates which are prone to MITM attacks

PKI Secrets Engine

- Most likely, you're going to use Vault as an Intermediate as your root CA is generally offline.
- Most organizations already have an existing CA structure in place and Vault can plug right into that, if needed.
- Using multiple PKI secrets engines, Vault can perform the root and the intermediate(s) CA functionality from the same cluster



PKI Example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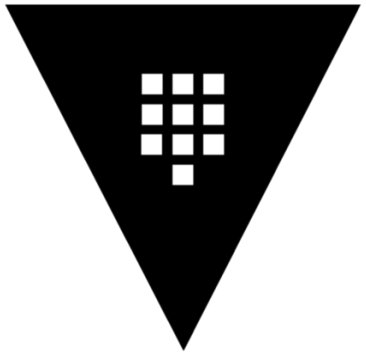
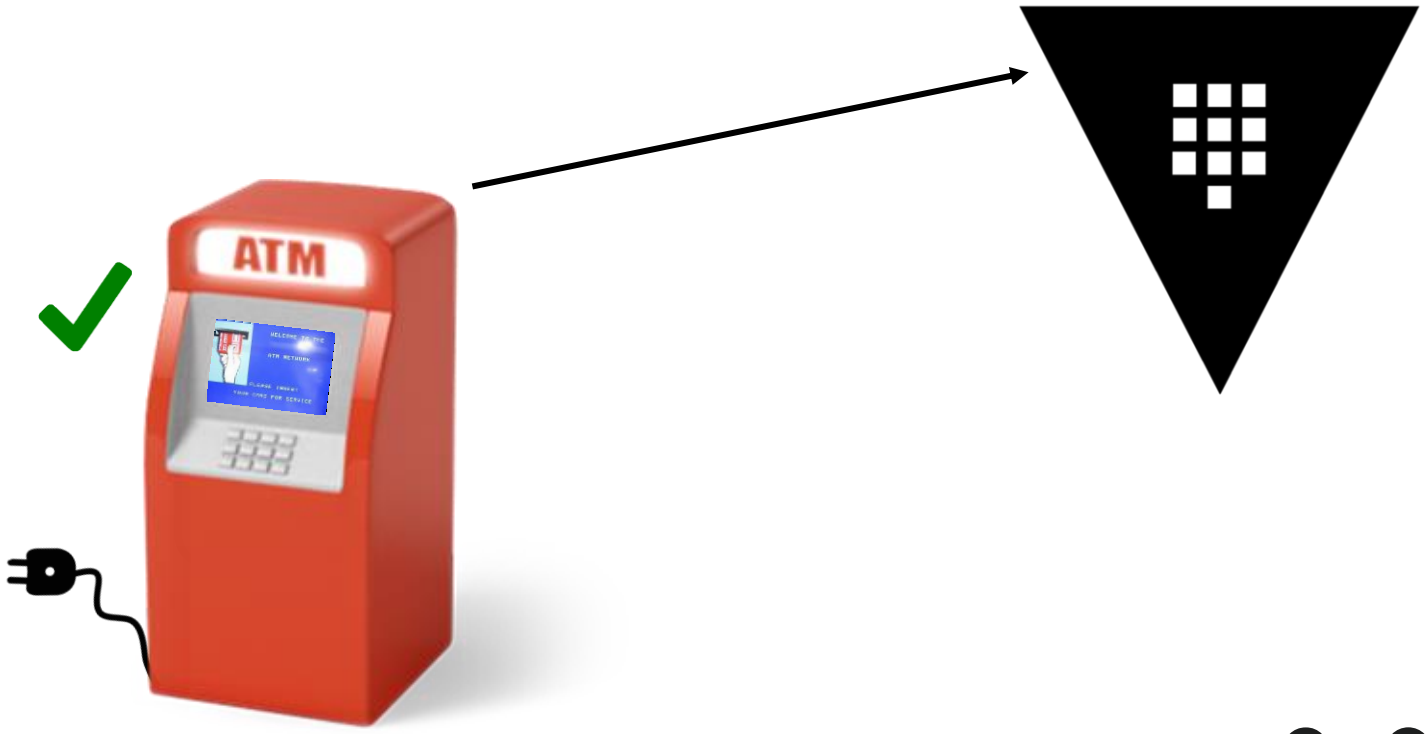


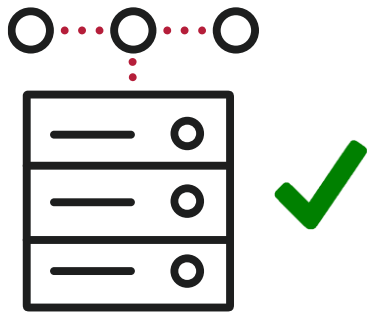
PKI Example

Need a certificate for authentication to:

- Update firmware
- Download configuration files
- Communicate with banking account application
- Report inventory

PKI Example





Backend Systems

Configuring the PKI Secrets Engine

Enabling the PKI Secrets Engine

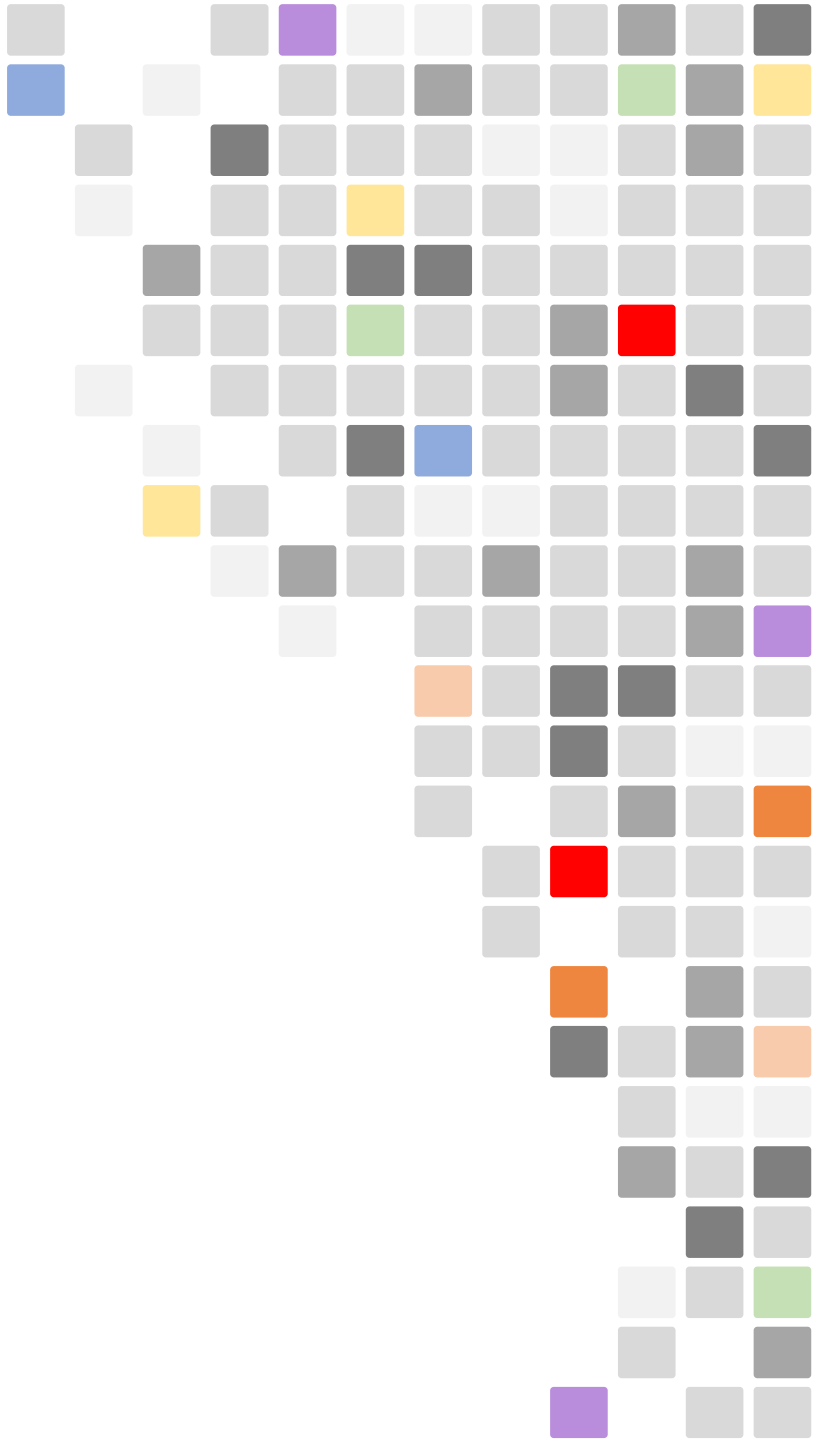
```
$ vault secrets enable \
  –path=intermediate \
  –description=“PKI Intermediate for vaultadvanced.com” \
  pki
```

Create Role

```
$ vault write intermediate/roles/vaultadvanced \
  allowed_domains=vaultadvanced.com \
  allow_subdomains=true max_ttl=72h
```

Request Certificates

```
$ vault write intermediate/issue/vaultadvanced \
  common_name=learn.vaultadvanced.com
```



Vault Policies - PKI

Administration of PKI

```
path “intermediate /*” {
  capabilities = [“read”, “list”, “update”, “write”, “delete”]
}
```

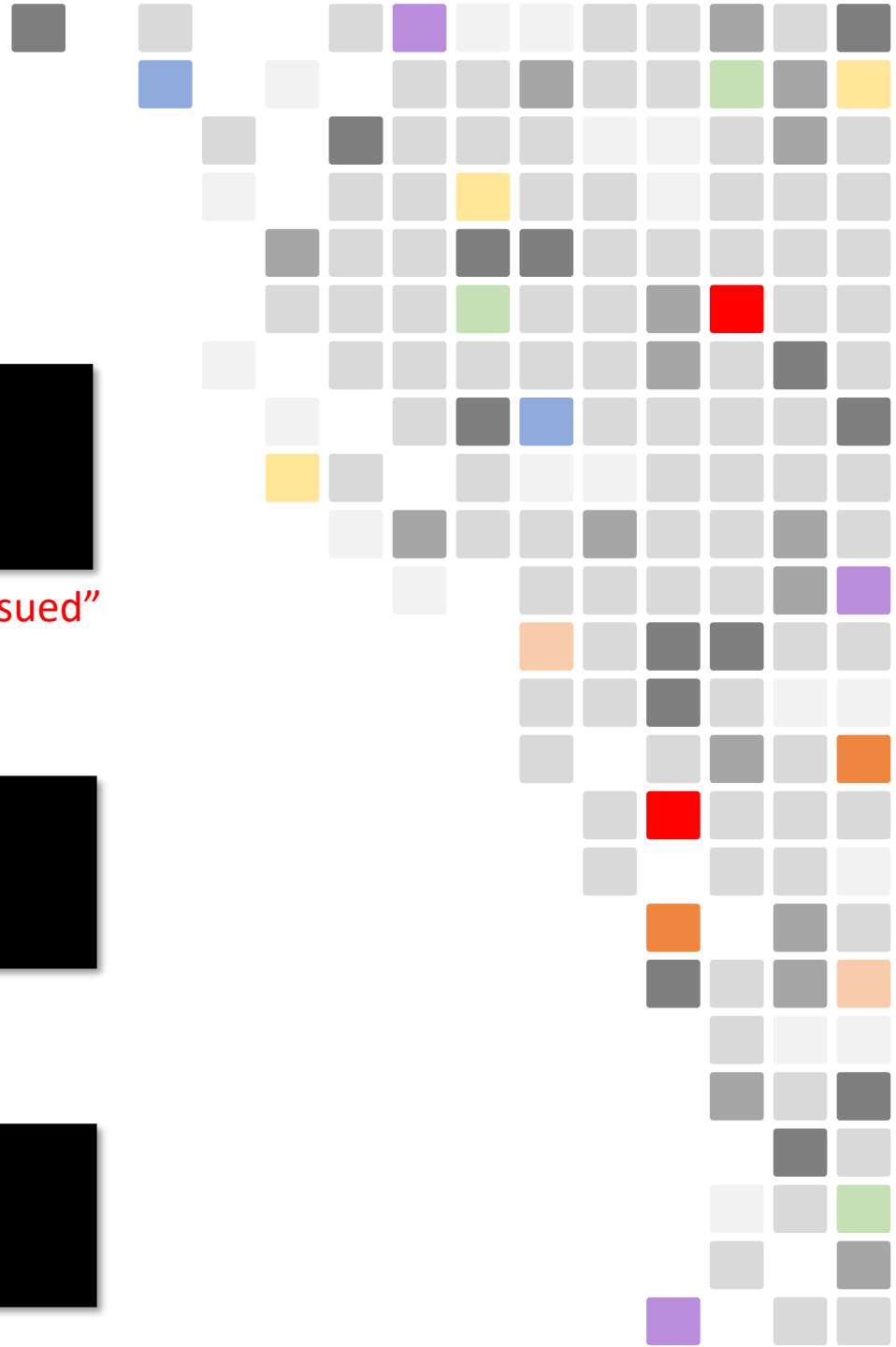
Note: sudo required for “delete root” and “sign self-issued”

Generate a Certificate

```
path “intermediate /issue/vaultadvanced” {
  capabilities = [“update”]
}
```

Revoke Certificate

```
path “intermediate/revoke” {
  capabilities = [“update”]
}
```



Demo

PKI Secrets Engine

Enable PKI Secrets Engine

Configure Vault as an Intermediate

Issue Certificates from Vault