Vault

Implementation Foundations

Module: Deployment Automation

What You Will Learn

Provisioning Infrastructure

- Installation
- Configuration As Code
- Vault Automation Process
- Pipeline Summary
- Routine Automation

Deployment Automation

Vault Automation Considerations

Provisioning Infrastructure

- Terraform
- Native tools (CF, GDM, ARM, VRA/VRo)

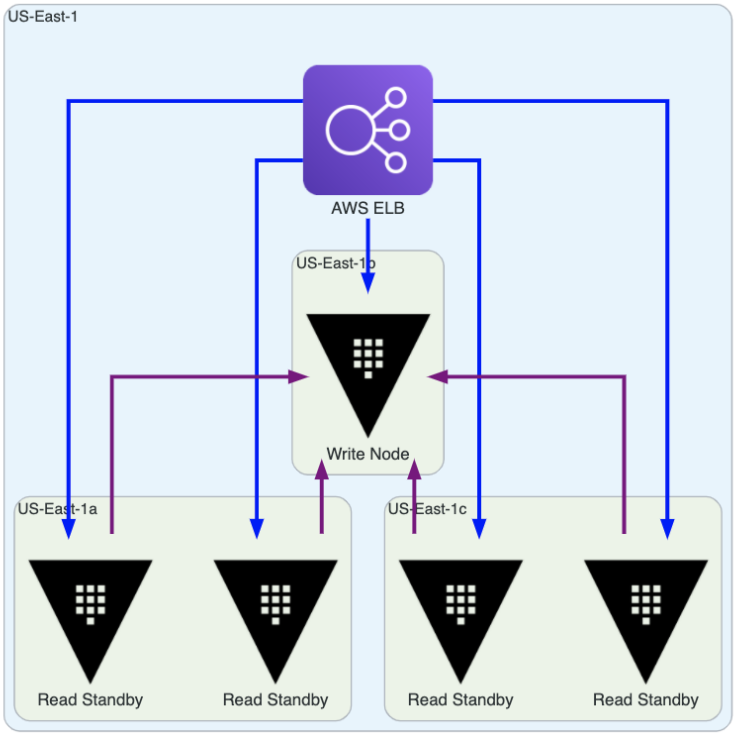
Installation

- Packer, Chef, Puppet, Ansible, SALT

Configuration as Code

- Vault TFE Provider
- Vault API

Raft Provisioning Tasks



- Load Balancer
- Server Specifications
- Network Connectivity

Raft Provisioning Check List

- Load Balancer
- 5 Vault Entities (Hardware, VM, Container)
- Network Configuration
  - Intra-cluster Requirements
  - Inbound Traffic Configuration
  - Replication Configuration

Raft Install Check List

- Download Vault to 5 Servers
- Install Vault on 5 Servers
- Configure Vault
- Start Vault

API Configuration Tasks

Once Vault is started and ready to be initialized all of Vault's capabilities are accessible via the HTTP API in addition to the CLI.

When invoking the API, authentication is still required

Important API Endpoints

- `/sys/init`
- `/sys/unseal`
- `/sys/license`
- `/sys/health`
- `/sys/mounts`
- `/sys/policies`
- `/sys/replication`

Configuration Check List

- Initialize Vault
  - `vault operator init`
  - Specify encryption keys
  - Specify number of secret shares
  - Specify key qourum size
  - Specify recovery keys (shares, threshold)
- Unseal Vault - **Manual**
  - Does **NOT** require authentication

Key Management System Unseal

Vault supports opt-in automatic unsealing via KMS:

- AliCloud KMS

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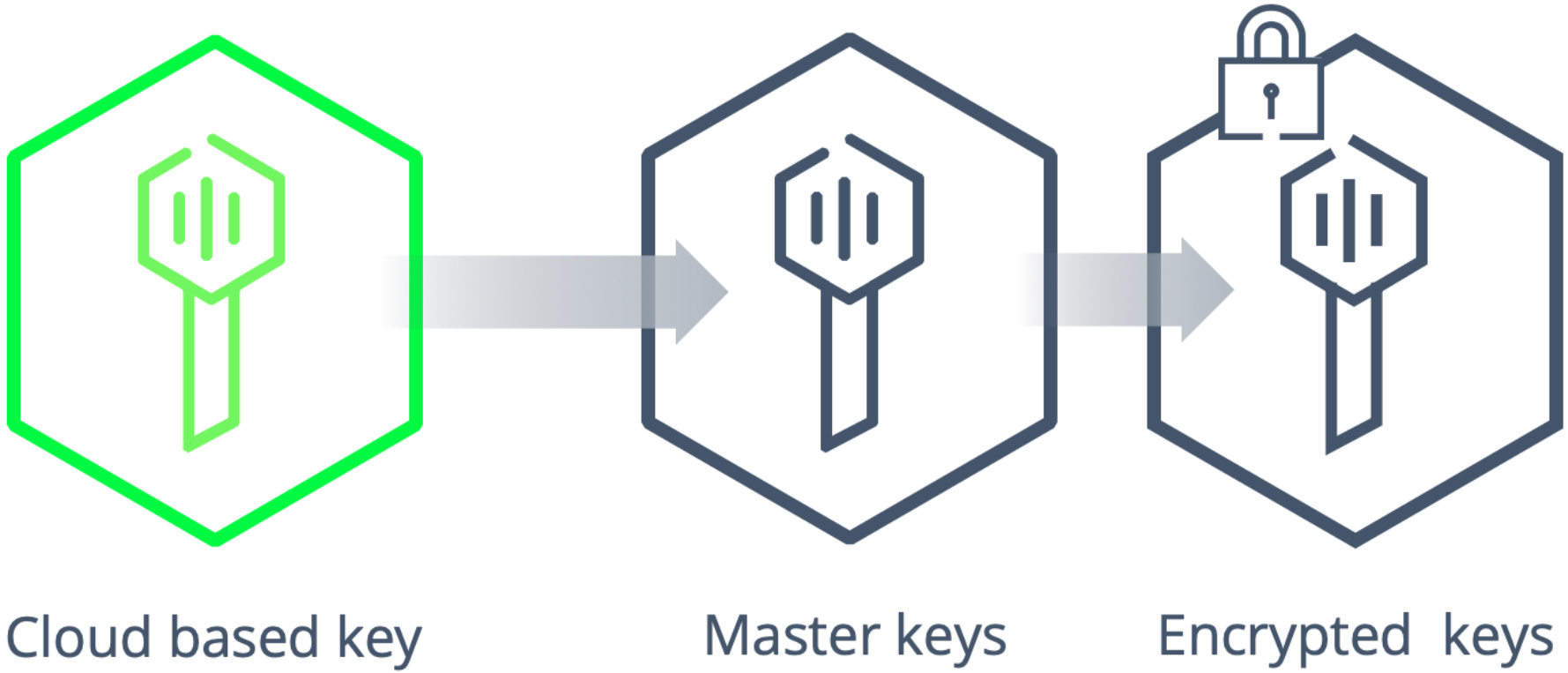
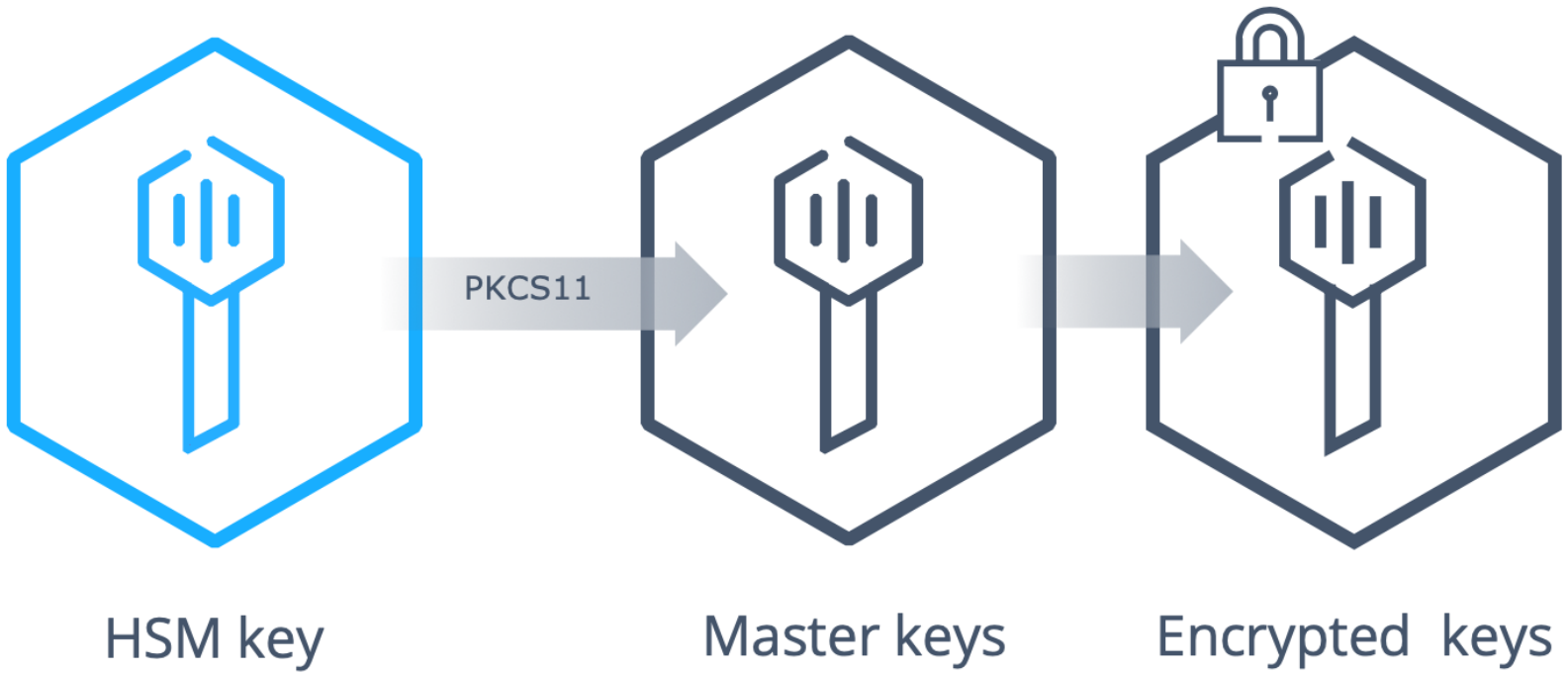
- Google Cloud KMS
- Vault Transit Unseal

Key Management System Diagram



HSM Unseal

Vault stores its HSM-wrapped master key in storage, allowing for automatic unsealing



Turning On Audit

Audit devices are the components in Vault that keep a detailed log of all requests and response to Vault

Audit Devices:

- File
- Syslog
- Socket

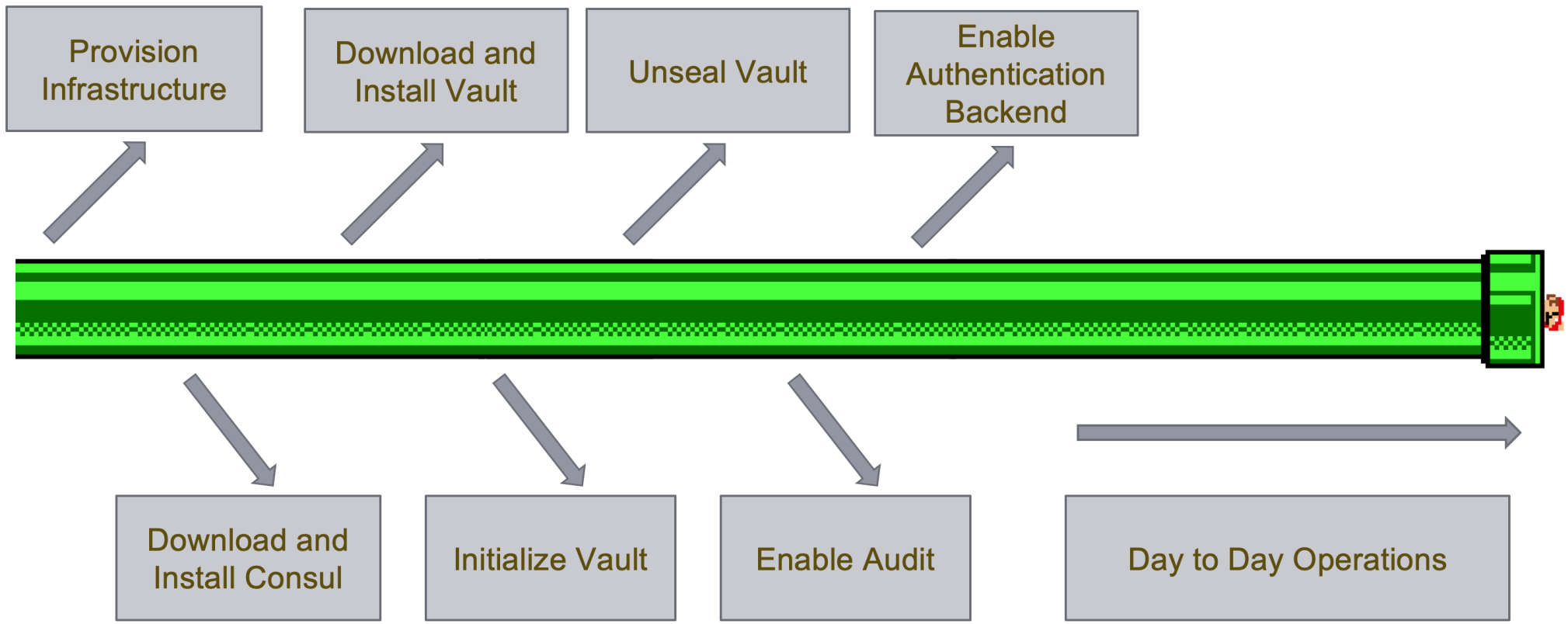
Enabling Authentication Backend

Commonly considered the final **setup** step for a Vault Cluster this step may be considered optional.

Authentication Methods:

- LDAP
- Cloud IAM
- Github
- Okta
- MORE!

Pipeline Overview



Chapter Summary

- Identify all of the components to automate with Vault:
  - Infrastructure
  - Components
  - Configuration
  - Services
- One time events:
  - Initialization
  - Unseal
  - Enable Auth
  - Enable Audit devices
- API Capabilities

Reference links

- Vault API Documentation
- Using the API
- Auth API
- Sys API Endpoint

Vault Deployment Automation Module Complete!