

Vault

Implementation Foundations

Module: Incident Management

What You Will Learn



Failure Scenarios

- Incident Management Overview
- Vault Enters a Sealed State
- Loss of Seal Key
- Loss of Storage Backend
- Split Brain
- Replication Failure or Lag
- Connections Hang or Fail to Establish
- Unable to Write Audit Logs
- Vault Service Unresponsive

Incident Management Overview

Vault Incident Management



Throughout the life of a service, disruptions are an inevitability.

Ensuring that appropriate configuration and processes are in place to mitigate the effects of these disruptions is critical to providing a great experience for the users.

Scenario:



Vault Enters a Sealed State

Problem Description:

A Vault cluster has unexpectedly entered a sealed state and is inaccessible for all users/processes associated with that cluster.

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Vault Enters a Sealed State

Problem Description:

A Vault cluster has unexpectedly entered a sealed state and is inaccessible for all users/processes associated with that cluster.

Root Cause:

- Service Restart (Manual)
- Service Restart (System Reboot)
- Service Restart (Depleted Memory)
- Loss of Access to Storage Backend

Scenario:



Loss of Seal Key

Problem Description:

The seal keys for a Vault cluster have been misplaced, making it impossible to unseal the cluster or retrieve any of its data if it goes into a sealed state.

Scenario:



Loss of Seal Key

Problem Description:

The seal keys for a Vault cluster have been misplaced, making it impossible to unseal the cluster or retrieve any of its data if it goes into a sealed state.

Root Cause:

- Negligence
- Poor Backup Process

Scenario:

Split Brain

Problem Description:

Two or more clusters are now operating as master, causing data state inconsistencies for all connected clusters.



Scenario:



Split Brain

Problem Description:

Two or more clusters are now operating as master, causing data state inconsistencies for all connected clusters.

Root Cause:

- Automated Failover
- Network Connectivity Flapping

Scenario:



All Replication Lags or Fails

Problem Description:

Data replication from the master to all performance replicas is delayed beyond normal operating levels.

Scenario:



All Replication Lags or Fails

Problem Description:

Data replication from the master to all performance replicas is delayed beyond normal operating levels.

Root Cause:

- Volume of Data/Secrets Written
- Network Bandwidth/Connectivity

Scenario:



Replication to Specific Nodes Fails

Problem Description:

Data replication from the master to some performance replicas is delayed beyond normal operating levels.

Scenario:



Replication to Specific Nodes Fails

Problem Description:

Data replication from the master to some performance replicas is delayed beyond normal operating levels.

Root Cause:

- Disk Performance
- Network Bandwidth/Connectivity

Scenario:



Connections Hang/Fail

Problem Description:

Requests to the Vault API on a particular cluster hang or are refused, making secrets inaccessible.



Scenario:

Connections Hang/Fail

Problem Description:

Requests to the Vault API on a particular cluster hang or are refused, making secrets inaccessible.

Root Cause:

- Expired SSL Certificates
- Connections Full (File Descriptor Limits)
- Depleted Memory
- All Audit Devices Unavailable

Scenario:



Connections Hang/Fail

Problem Description:

Vault is unable to send audit logs to the configured audit device(s), causing the Vault service to hang.

Scenario:



Connections Hang/Fail

Problem Description:

Vault is unable to send audit logs to the configured audit device(s), causing the Vault service to hang.

Root Cause:

- Broken Network Connectivity
- Audit Device Unavailable
- Depleted Disk Space

Chapter Summary



- Review the list of common failure scenarios
- Attempt some mock incidents to prepare for the real experience
- RCAs are most effective when done immediately
- Never fail the same way twice

Reference links



- [Vault API Documentation](#)
- [Using the API](#)
- [Sys API Endpoint](#)

Vault Incident Management Module Complete!