Vault Operator

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Native Integration

Simplest option

No additional resources

Most difficult to execute

Vault Agent Injector

- Include Vault container in pod
- Init or sidecar container
- Performs authentication and secret retrieval
- Pass secrets with shared volume
- Init for static secrets
- Sidecar for dynamic secrets

Vault CSI Provider

Container storage interface

Secret store volume type

Presentation options

- Volume
- Kubernetes secret
- Environment variable

Runs as a daemonset

Vault Secrets Operator

- Runs as a Kubernetes operator
- Uses custom resource definitions
- Synchronizes to Kubernetes secrets
- Operator handles secret lifecycle

Kubernetes Integration Selection

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Deployment mode	Container per pod	Daemonset	Operator pods

Vault Secrets Operator

VSO Features

- Sync from multiple sources
- Automatic secret drift detection and remediation
- Automatic secret rotation
- Secret data transformation

VaultConnection

```yaml
apiVersion: secrets.hashicorp.com/v1beta1
kind: VaultConnection
metadata:
  namespace: vso-system
  name: vault-prod-connection
spec:
  address: https://vault-prod.vault.svc.cluster.local:8200
  headers:
    X-VSO-Cluster: cluster1
```

VaultAuth

```yaml
apiVersion: secrets.hashicorp.com/v1beta1
kind: VaultAuth
metadata:
  namespace: web-app
  name: web-app-auth
spec:
  vaultConnectionRef: vso-system/vault-prod-connection
  method: kubernetes
  mount: kubernetes
  kubernetes:
    role: web-app
    serviceAccount: web-app-sa
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VaultStaticSecret

```yaml
apiVersion: secrets.hashicorp.com/v1beta1
kind: VaultStaticSecret
metadata:
  namespace: web-app
  name: web-app-api-keys
spec:
  vaultAuthRef: web-app-auth
  type: kv-v2
  mount: secret
  path: web-app/api-keys
  destination:
    name: web-app-api-keys
    create: true
    transformation:
      transformationRefs:
        - name: vso-templates
  refreshAfter: 30s
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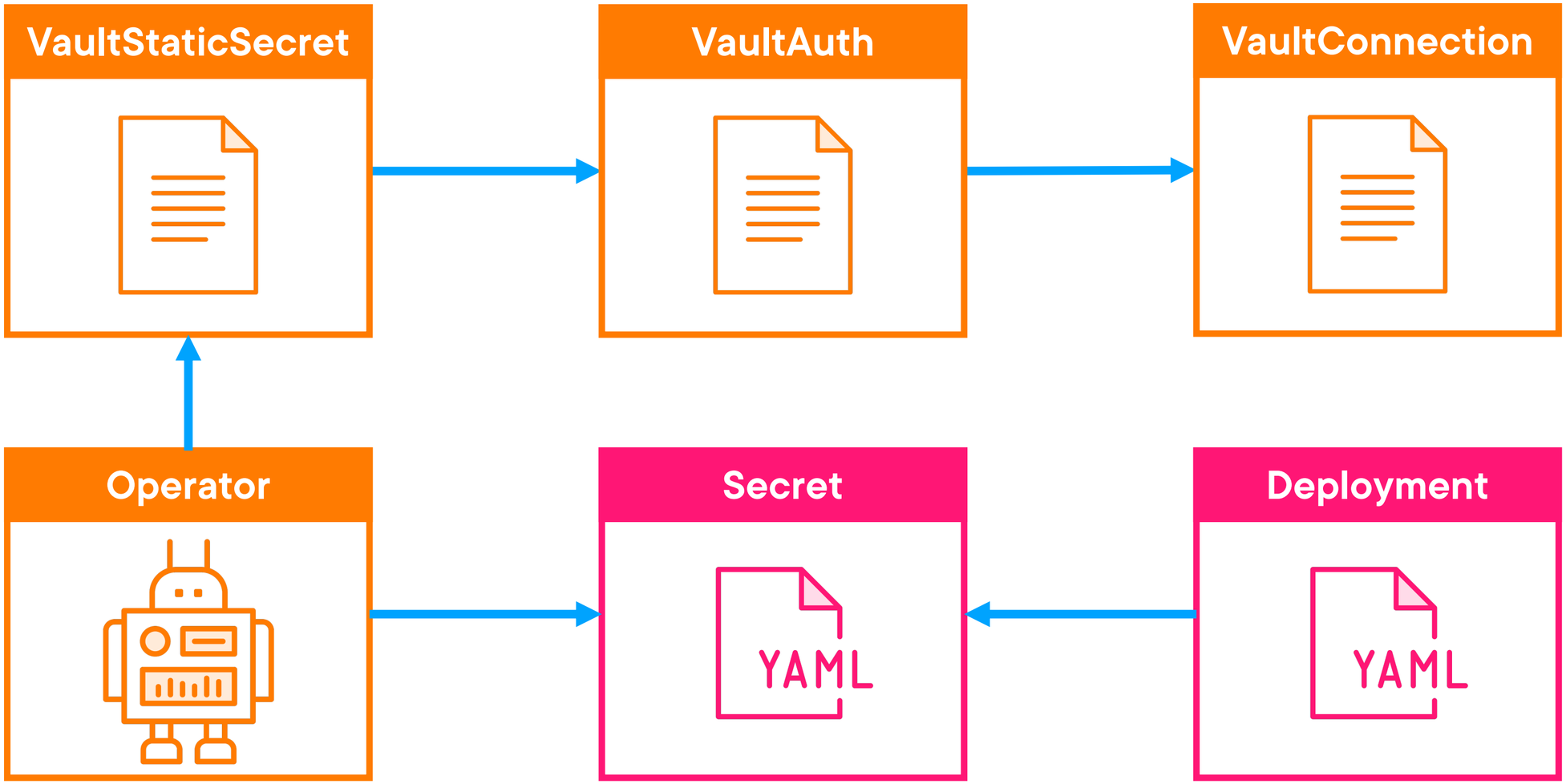
Secret Creation



Running the Vault Secrets Operator

Create a Kubernetes cluster with Vault and VSO installed, and then configure the necessary CRDs and Vault settings to retrieve a secret