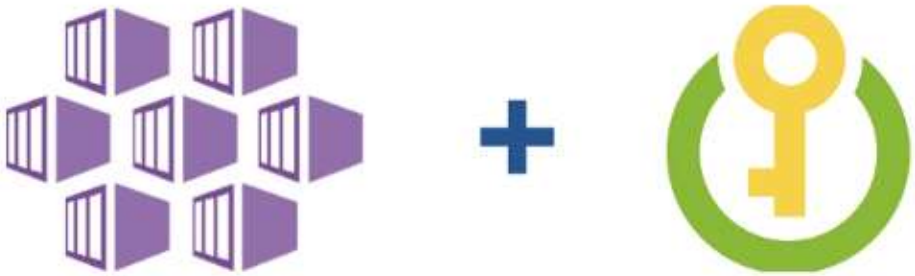
Integrate Azure Key Vault with AKS — Using “akv2k8s” (Part 3/3)

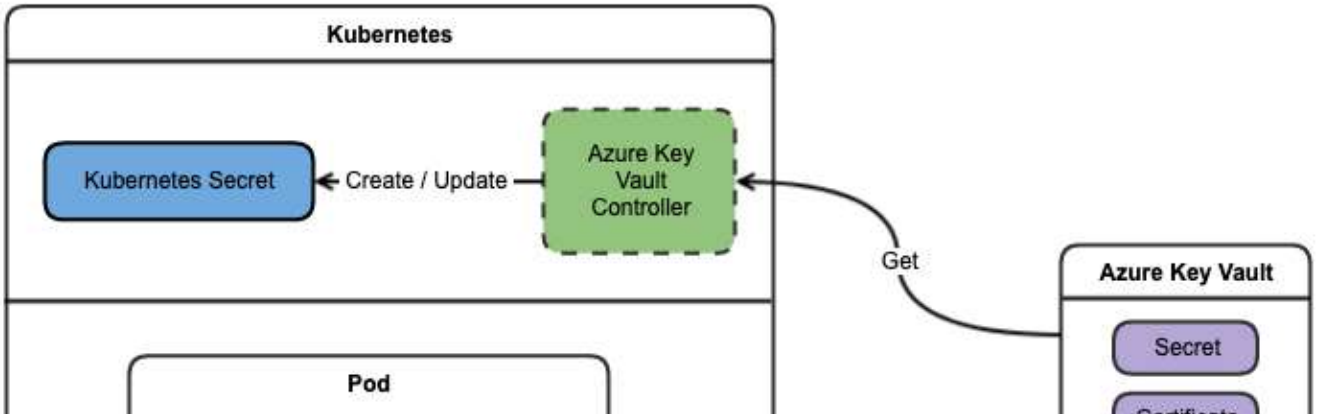
Leon Jalfon
Apr 28, 2020 · 3 min read

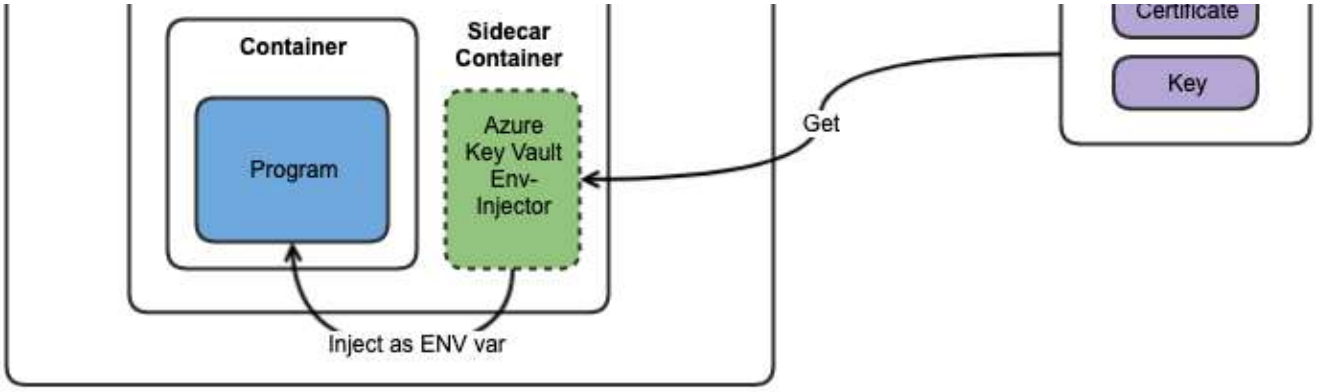
In this 3-parts tutorial we will explain how to integrate AKS with Azure Key Vault using “FlexVolumes” and “Azure Key Vault to Kubernetes”. However, before we get down to work let’s talk a little about each approach.



In this section

Azure Key Vault to Kubernetes (akv2k8s) use two main components (Azure Key Vault Controller and Azure Key Vault Env Injector) to inject a secret, key or certificate as environment variable accessible only for the main process of the container.





For more information visit the official documentation:
https://github.com/SparebankenVest/azure-key-vault-to-kubernetes

What will we do in this tutorial?

- Configure your environment (set some environment variables)
- Install akv2k8s in your AKS cluster
- Configure akv2k8s (create a namespace with the required annotation and create an AzureKeyVaultSecret resource)
- Deploy a pod that access to a Key Vault secret
- Cleanup

Configure your environment

Let’s configure some environment variables that will be used during the tutorial

```
KEY_VAULT_NAME=<your-key-vault-name>
KEY_VAULT_SECRET_NAME=<your-secret-name>
```

Installation

Create a dedicated namespace for akv2k8s

```
kubectl create ns akv2k8s
```

Add the helm repository (I assume you have helm already installed)

```
helm repo add spv-charts http://charts.spvapi.no
helm repo update
```

Install the Controller (and the “AzureKeyVaultSecret” CRD):

```
helm install azure-key-vault-controller \
  spv-charts/azure-key-vault-controller \
  --namespace akv2k8s
```

Install the Env-Injector:

```
helm install azure-key-vault-env-injector \
  spv-charts/azure-key-vault-env-injector \
  --set installCrd=false \
  --namespace akv2k8s
```

Configuration

To allow the secret injection you need to add the label “azure-key-vault-env-injection: enabled” at the namespace level. Let’s create a new namespace called “akv2k8s-test” with the required label for our test:

```
cat << EOF | kubectl apply -f -
apiVersion: v1
kind: Namespace
metadata:
  name: akv2k8s-test
  labels:
    azure-key-vault-env-injection: enabled
EOF
```

Then, let’s create a “AzureKeyVaultSecret” CRD to sync akv2k8s with the Key Vault secret

```
cat << EOF | kubectl apply -f -
apiVersion: spv.no/v1alpha1
kind: AzureKeyVaultSecret
metadata:
  name: ${KEY_VAULT_SECRET_NAME}
```

```
  namespace: akv2k8s-test
spec:
  vault:
    name: ${KEY_VAULT_NAME}             # name of key vault
    object:
      name: ${KEY_VAULT_SECRET_NAME}    # name of the akv object
      type: secret                      # akv object type
EOF
```

Usage

Now we can create a pod to test our configuration

```
cat << EOF | kubectl apply -f -
apiVersion: v1
kind: Pod
metadata:
  name: akv2k8s-test
  namespace: akv2k8s-test
spec:
  containers:
  - name: akv2k8s-env-test
    image: spvest/akv2k8s-env-test:2.0.1
    args: ["TEST_SECRET"]
    env:
    - name: TEST_SECRET
      value: "${KEY_VAULT_SECRET_NAME}@azurekeyvault" # ref to akvs
EOF
```

Finally, see the log output from your Pod

```
kubectl logs akv2k8s-test -n akv2k8s-test
```

If you try to access the environment variable using “kubectl exec” you won’t be able to see the value (only the container main process have access to it)

```
kubectl exec -it flex-kv-test -n akv2k8s-test echo ${TEST_SECRET}
```

Cleanup

Delete the test pod

```
kubectl delete pod flex-kv-test -n akv2k8s-test
```

Delete the AzureKeyVaultSecret resource

```
kubectl delete AzureKeyVaultSecret ${KEY_VAULT_SECRET_NAME} -n
akv2k8s-test
```

Delete the test namespace

```
kubectl delete ns akv2k8s-test -n akv2k8s
```

Delete the akv2k8s Controller

```
helm delete azure-key-vault-controller -n akv2k8s
```

Delete the akv2k8s Env-Injector

```
helm delete azure-key-vault-env-injector -n akv2k8s
```

Delete the dedicated namespace for akv2k8s

```
kubectl delete ns akv2k8s
```

Integrate Azure Key Vault with AKS — Introduction (Part 1/3)

Integrate Azure Key Vault with AKS — Using “FlexVolume” (Part 2/3)

DevOps Kubernetes Azure Keyvault Devsecops