Vault Access for K8S Service Accounts (SA)

Document Level Classification

200

Starting from August 2024, it is mandatory that all new Kubernetes clusters use External Secrets Operator (ESO). We strongly recommend using ESO, but the Vault Injector sidecar will still remain available with limited support, bug fixes will be provided if needed to maintain core functionality.

Reference Using External Secrets Operator (ESO) in epic-app to inject secrets for documentation on using ESO.

Known Issues

Secret Path Not Shared With SA

After creating your custom Service Account you will be faced with the fact that vault injector cannot get secrets and you will see about the following errors in the logs:

```
2022-12-20T12:10:58.601Z [INFO]  auth.handler: authenticating
2022-12-20T12:10:58.605Z [ERROR] auth.handler: error authenticating:
  error=
  | Error making API request.
  |
  | URL: PUT https://vault.substrate.on.epicgames.com/v1/auth/kubernetes/dead-dev/dead-dev-eks124-upgrade/login
  | Code: 400. Errors:
  |
  | * invalid role name "dead-dev.dead-dev-eks124-upgrade.eks-components-tests.sct-vaultinjector-validator-1"
   backoff=43.03s
2022-12-20T12:11:41.641Z [INFO]  auth.handler: authenticating
2022-12-20T12:11:41.644Z [ERROR] auth.handler: error authenticating:
  error=
  | Error making API request.
  |
  | URL: PUT https://vault.substrate.on.epicgames.com/v1/auth/kubernetes/dead-dev/dead-dev-eks124-upgrade/login
  | Code: 400. Errors:
  |
  | * invalid role name "dead-dev.dead-dev-eks124-upgrade.eks-components-tests.sct-vaultinjector-validator-1"
```

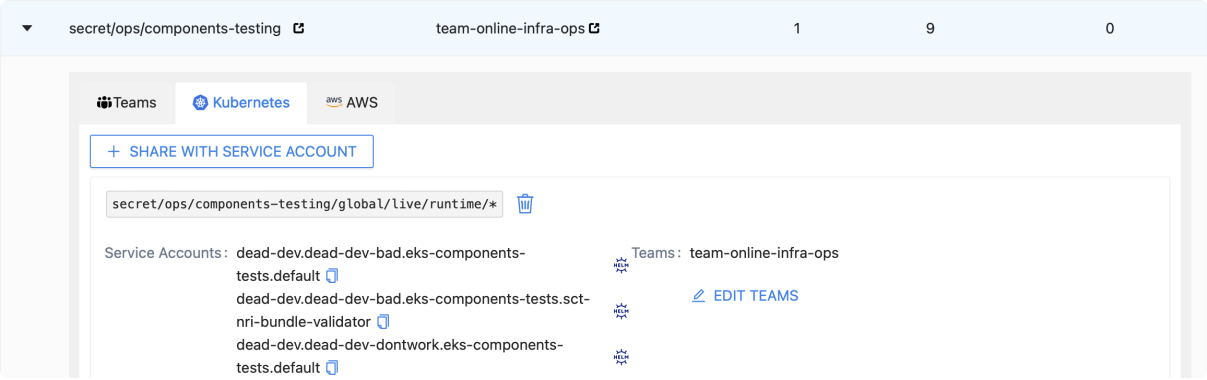
This happens because by default the new service account doesn't have access rights in vault for some secrets. To solve this you need to use SSSM. You can use it to give access to the vault secrets both to k8s SA, teams or even IAM roles.

In order for our service account to have access to vault secrets we need share secrets.

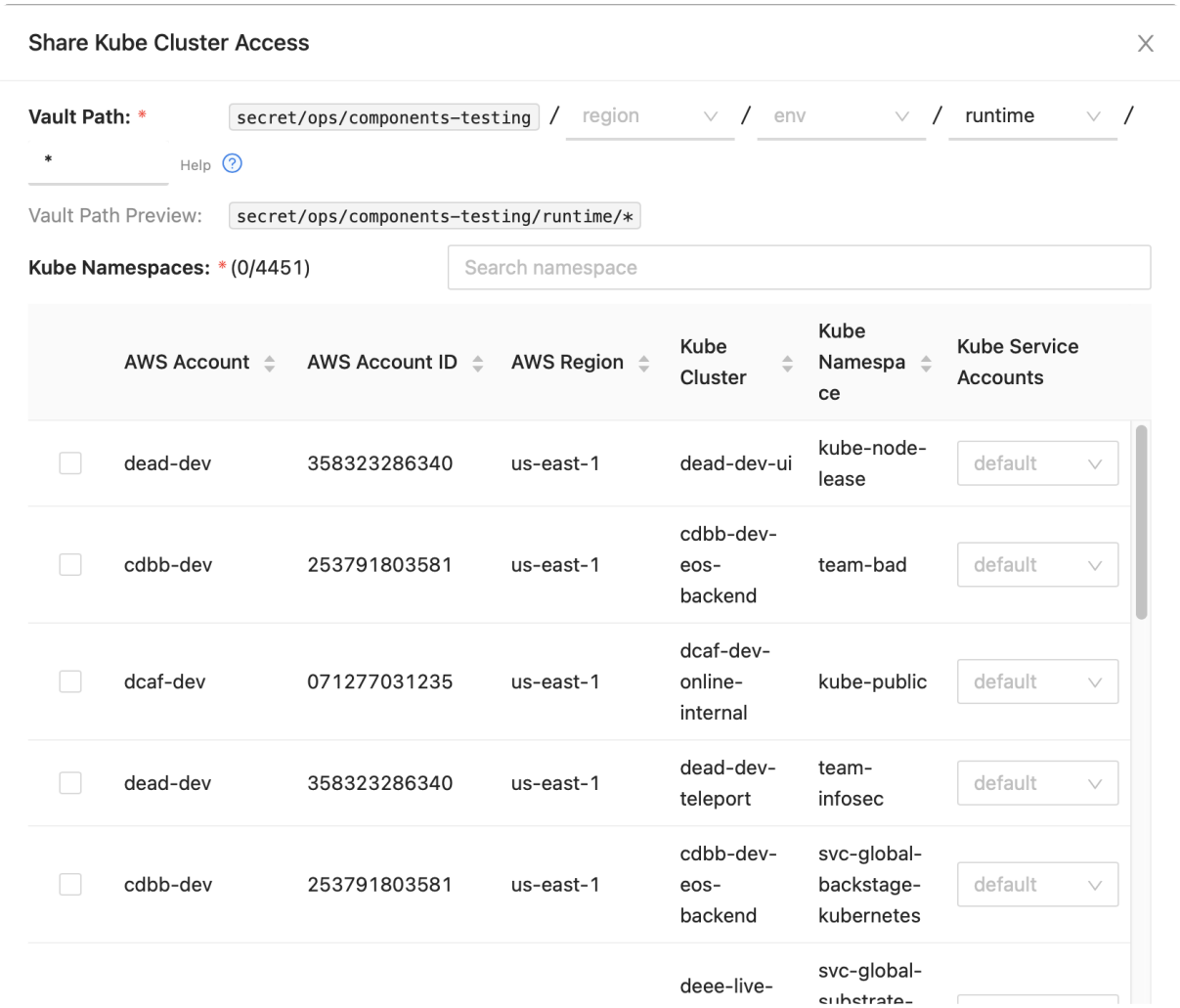
Important

Only the owner of the path can share access to vault secrets. If you do not see the necessary secrets, then you do not own them.

To share secrets with Kubernetes, at first expand the namespace by clicking its row, and then select the Kubernetes tab. Next, click the **SHARE WITH SERVICE ACCOUNT** button.



Access is shared with Kubernetes workloads by specifying the Vault path alongside the account, cluster, namespace, and service account.



This popup is quite detailed, so here are a few tips:

- When entering a **Vault Path**, you can click **Vault Path Preview** to view that path in Vault and select a specific secret to share with Kubernetes. (This will open the Vault UI in a new tab).

- You can use the filter box to the right of **Kube Namespaces** to search for a specific AWS account, cluster, or namespace.
- You can share multiple service accounts by entering them in the field in the **Kube Service Accounts** column.
- There are many service accounts in Kubernetes. The one you want may appear on page 2 (or later).
- Click the **X** next to any item to remove it from the filter, or to remove the service account from your selection.

Click **Add** when you have made your selections.

Vault uses `*` (asterisk) as the wildcard at the end of a path and uses `+` (plus sign) as the wildcard in the middle of the path.

Kubernetes will receive read-only access to Vault, and will not be able to list secrets using the Vault API. In spite of this, for least-privileged access, we recommend making your Kubernetes paths as specific as possible.

After these actions in the logs will be about the following and the service will work as it should:

```
2022-12-20T12:12:55.122Z [INFO]  auth.handler: authenticating
2022-12-20T12:12:55.174Z [INFO]  auth.handler: authentication successful, sending token to sinks
2022-12-20T12:12:55.174Z [INFO]  auth.handler: starting renewal process
2022-12-20T12:12:55.174Z [INFO]  template.server: template server received new token
2022-12-20T12:12:55.174Z [INFO] (runner) stopping
2022-12-20T12:12:55.174Z [INFO] (runner) creating new runner (dry: false, once: false)
2022-12-20T12:12:55.174Z [INFO]  sink.file: token written: path=/home/vault/.vault-token
2022-12-20T12:12:55.174Z [INFO]  sink.server: sink server stopped
2022-12-20T12:12:55.174Z [INFO]  sinks finished, exiting
2022-12-20T12:12:55.174Z [INFO] (runner) creating watcher
2022-12-20T12:12:55.175Z [INFO] (runner) starting
2022-12-20T12:12:55.199Z [INFO] (runner) rendered "(dynamic)" => "/tmp/vault-validator.txt"
2022-12-20T12:12:55.199Z [INFO] (runner) stopping
2022-12-20T12:12:55.199Z [INFO]  template.server: template server stopped
2022-12-20T12:12:55.199Z [INFO]  auth.handler: shutdown triggered, stopping lifetime watcher
2022-12-20T12:12:55.199Z [INFO]  auth.handler: auth handler stopped
2022-12-20T12:12:55.199Z [INFO] (runner) received finish
```

Missing SA Annotations

A minimum epic-app configuration template for working with secrets is shown below.

In this example we:

1. Create an application `example-app` that needs to use secrets.
2. For this application we will create an SA `custom-sa` which will be located in the same `NS` as the application (the `NS` is specified during the installation of the helm chart, in this example it is `eks-components-tests`).

   For security reasons, it is recommended not to use a default service account and instead create and use a separate SA for each application

   If you are redeploying the application with a new service account or a service account name changed, please make sure that all vault secrets paths are shared with this new service account in SSSM. Otherwise your application won't be able to receive secrets from Vault

3. Through the pod annotations we will specify SA which will receive secrets, for this, in `vault.hashicorp.com/role` we will specify `cluster_account.cluster_name.namespace.sa_name` (in this case `dead-dev.dead-dev-dontwork.eks-components-tests.custom-sa`).

   After creating a custom SA, you need to wait for it to grow into the SSSM in order to give it access to the secrets

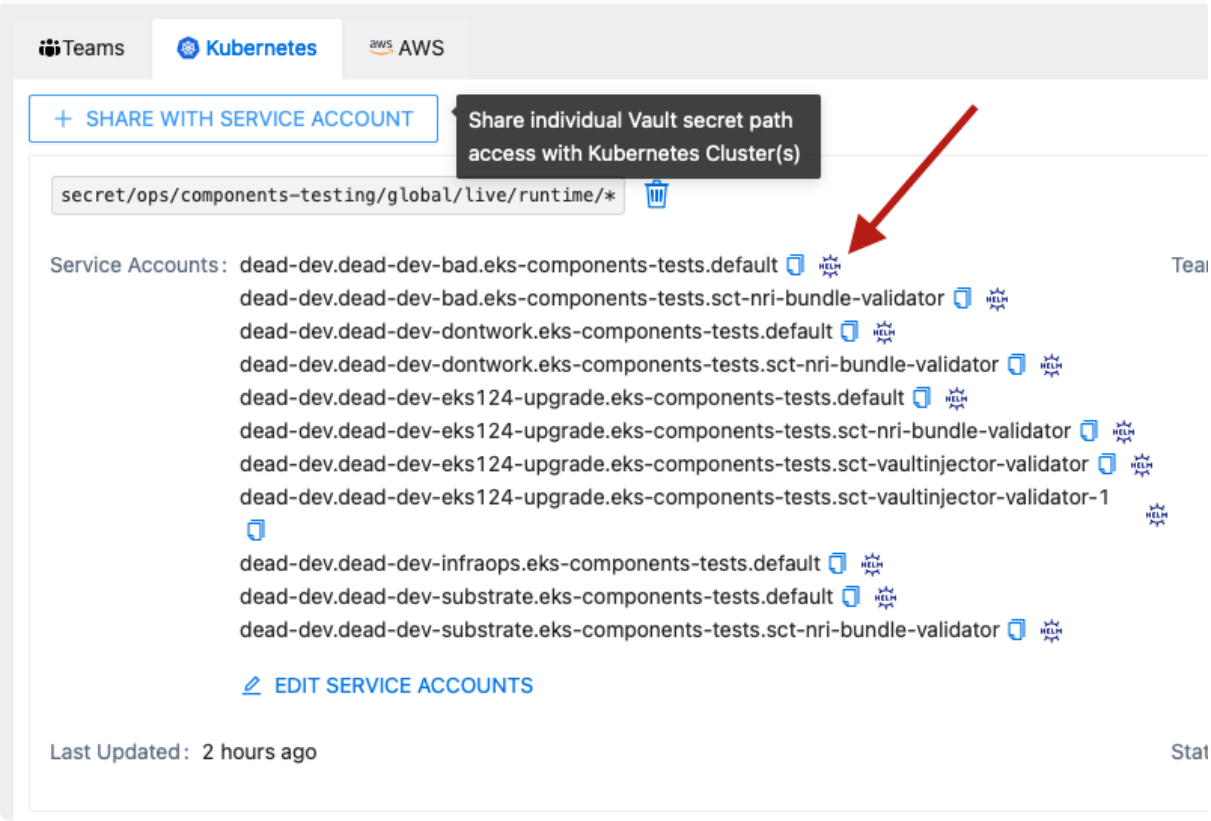
4. Specify the file where the secrets will be planted and in which folder they will be stored (`/tmp/newrelic-key`).
5. Point the way to the secret in the vault (`secret/infrastructure/example-app/use1a/dev/runtime/newrelic`).
6. And also in the template we will specify which fields from this secret and in what form they will be substituted in the file.

vaules.yaml

```
epic-app:
  loadbalancers:
```

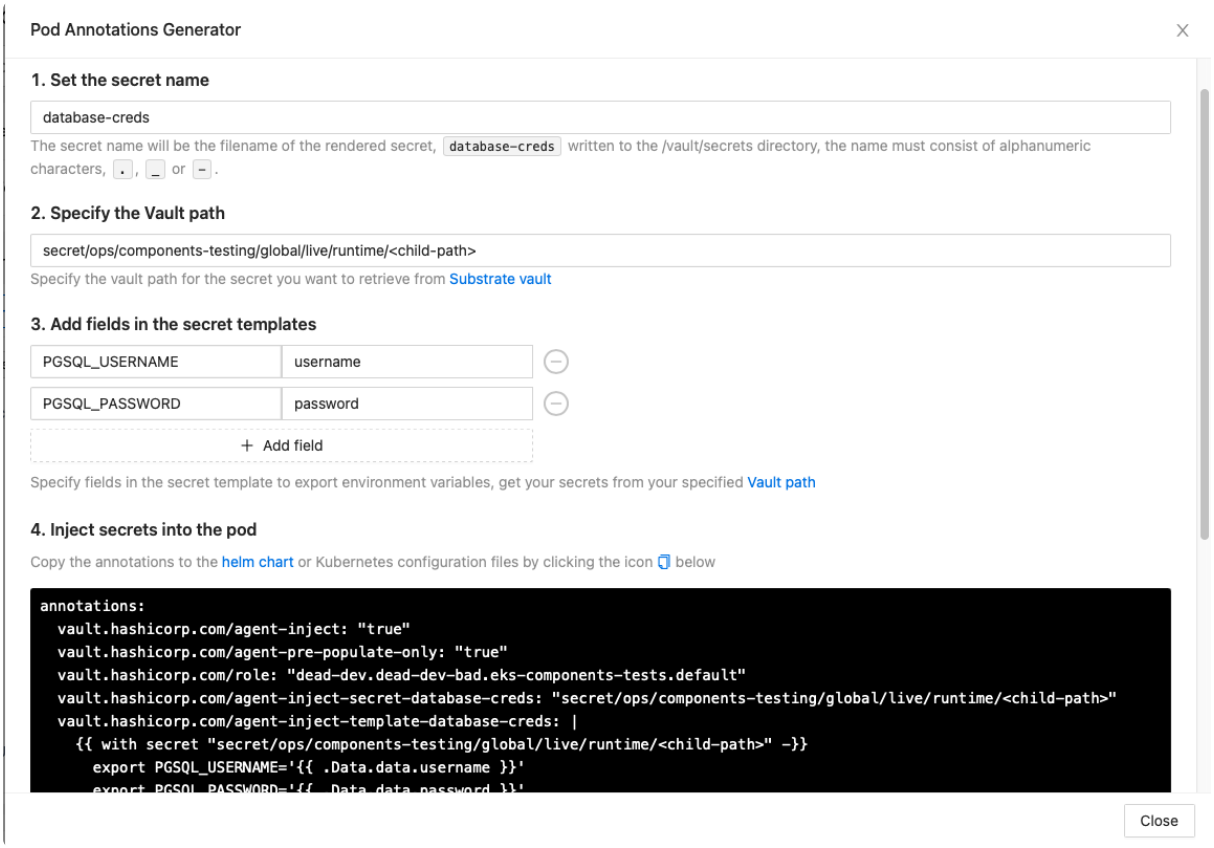
```
    public:
      hosts:
        - host: example-app.dead.dev.use1a.on.epicgames.com
      port:
        number: 8000
      annotations:
        alb.ingress.kubernetes.io/certificate-arn: arn:aws:acm:us-east-
  podAnnotations:
    vault.hashicorp.com/agent-inject: "true"
    vault.hashicorp.com/role: "dead-dev.dead-dev-dontwork.eks-component
    vault.hashicorp.com/agent-inject-secret-newrelic-key: "secret/infra
    vault.hashicorp.com/secret-volume-path-newrelic-key: /tmp
    vault.hashicorp.com/agent-inject-template-newrelic-key: |
       {{ with secret "secret/infrastructure/example-app/use1a/dev/runt
         export NEW_RELIC_API_KEY="{{ .Data.data.apiKey }}"
       {{- end }}
  serviceAccount:
    create: true
    name: "custom-sa"
  containers:
    example-app:
      image:
        name: hub.ol.epicgames.net/substrate/example-app
      environmentValueFrom:
        HOSTNAME_FQDN:
          fieldRef: status.hostIP
      resources:
        limits:
          cpu: 200m
          memory: 128Mi
        requests:
          cpu: 200m
          memory: 128Mi
```

In order to get PodAnnotations you can use the automatic generator from SSSM. To do this, click on the **HELM** icon next to the name of the desired account.



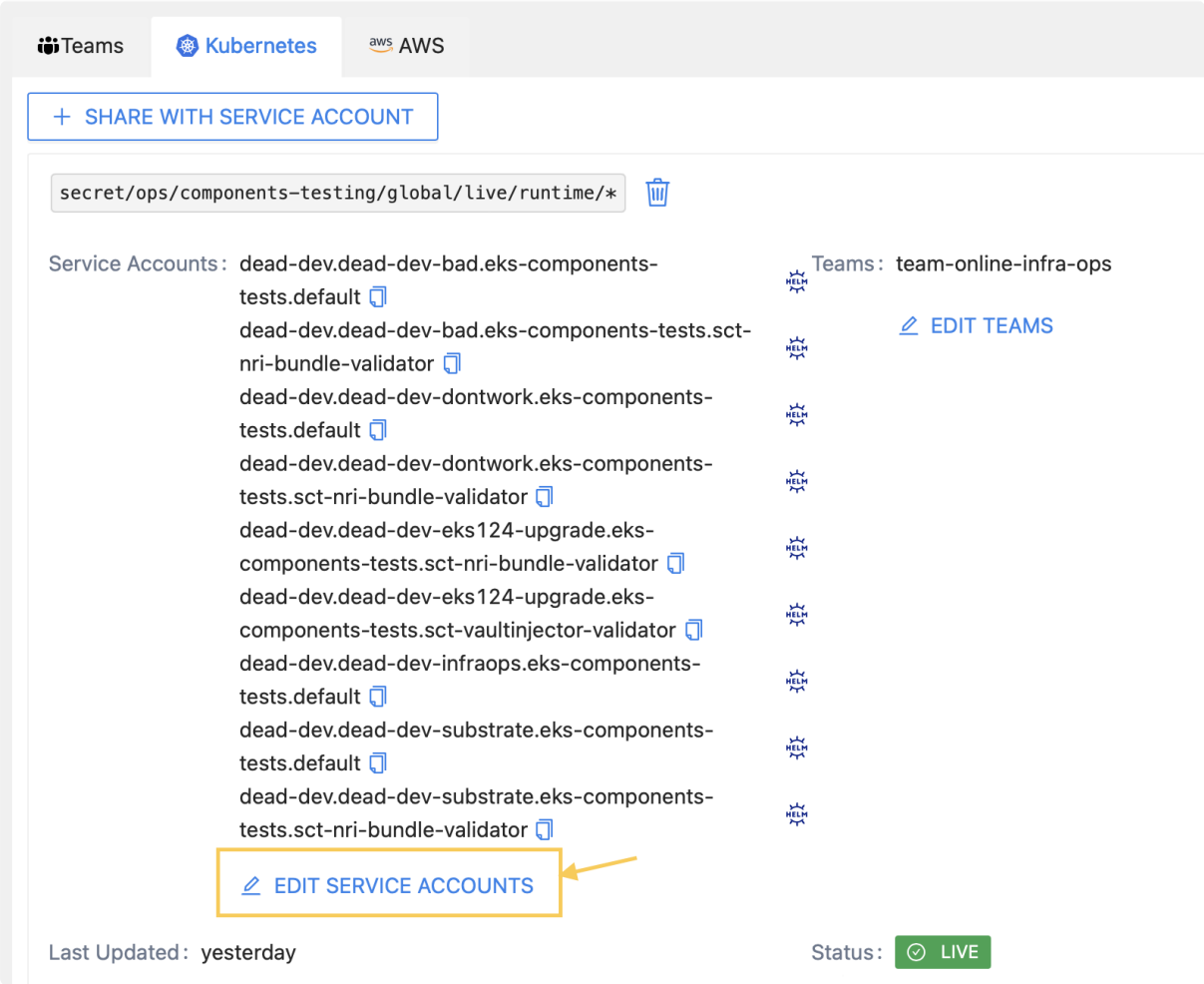
This will open a generator that allows you to specify the name of the secret, vault path, as well as the necessary fields and on this basis will generate annotations.

When using `epic-app`, replace "`annotations:`" in the generated output with "`podAnnotations:`".

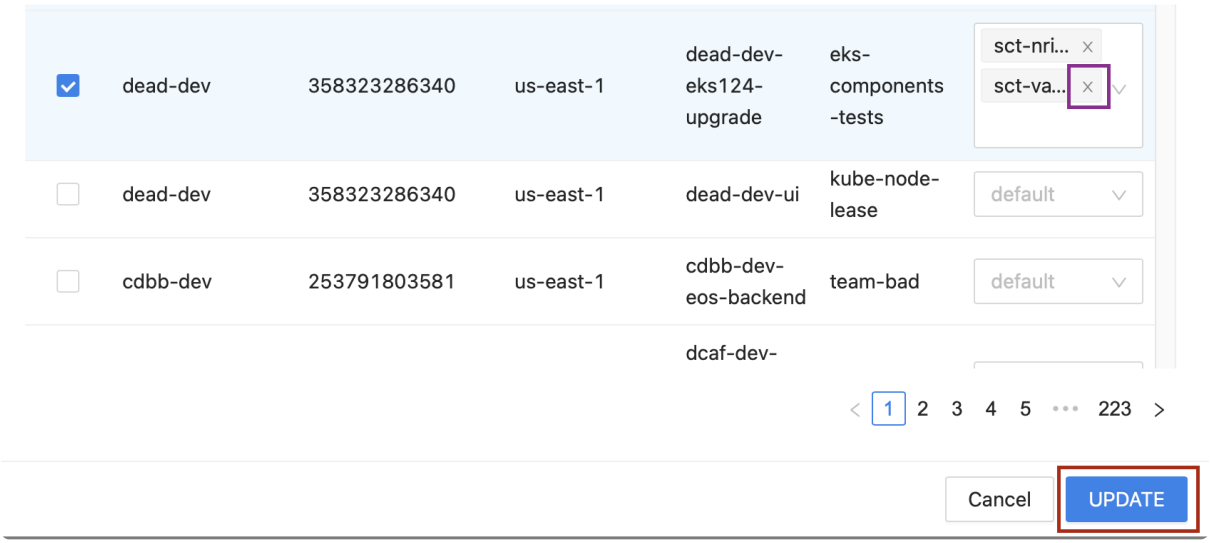


Can't Revoke Vault Access For SA

To remove access from Kubernetes, first expand the namespace in the list of namespace. Select the **Kubernetes** tab, and then click the **Pencil icon** below the Kubernetes service account list you want to edit.



In the pop-up window, click the **X** next to the service account you which to remove, and then click the **Update** button.



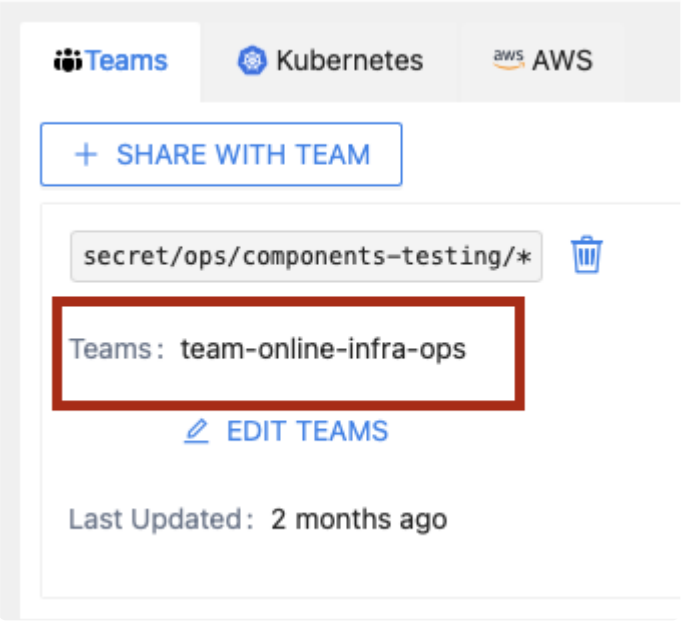
Revoking access from a Kubernetes service account will not have an immediate effect for two reasons. First, removing the policy is not immediate. Second, pods that were already deployed and already had

access to Vault will not be affected. The updated policies will only apply to new pods that launch after the new configuration is applied.

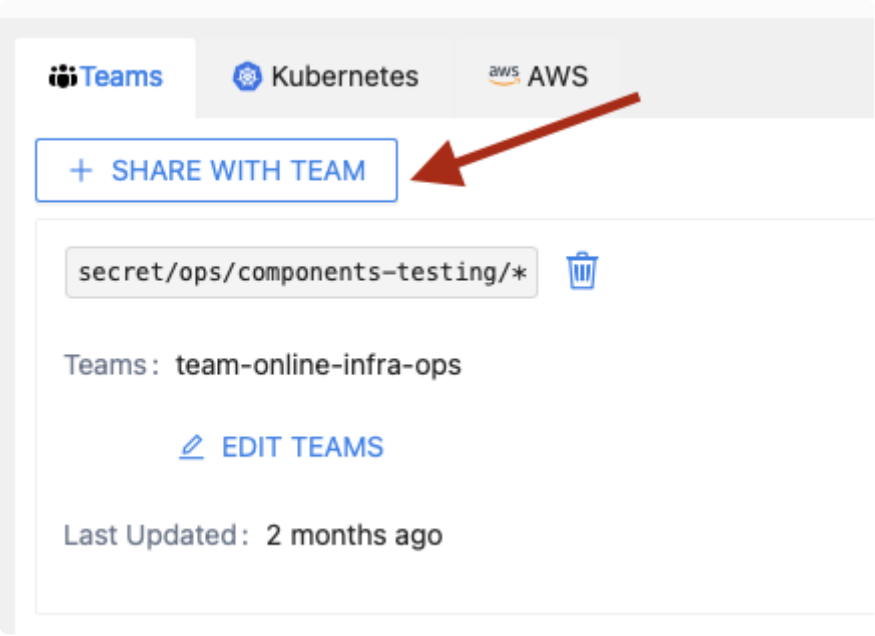
Revoking access takes longer to apply compared to other operations. Typically access will be removed within 12 hours. If you have a security issue and need immediate support, please reach out via #cloud-support-ext for faster response.

Can't Find Secret Path in SSSM

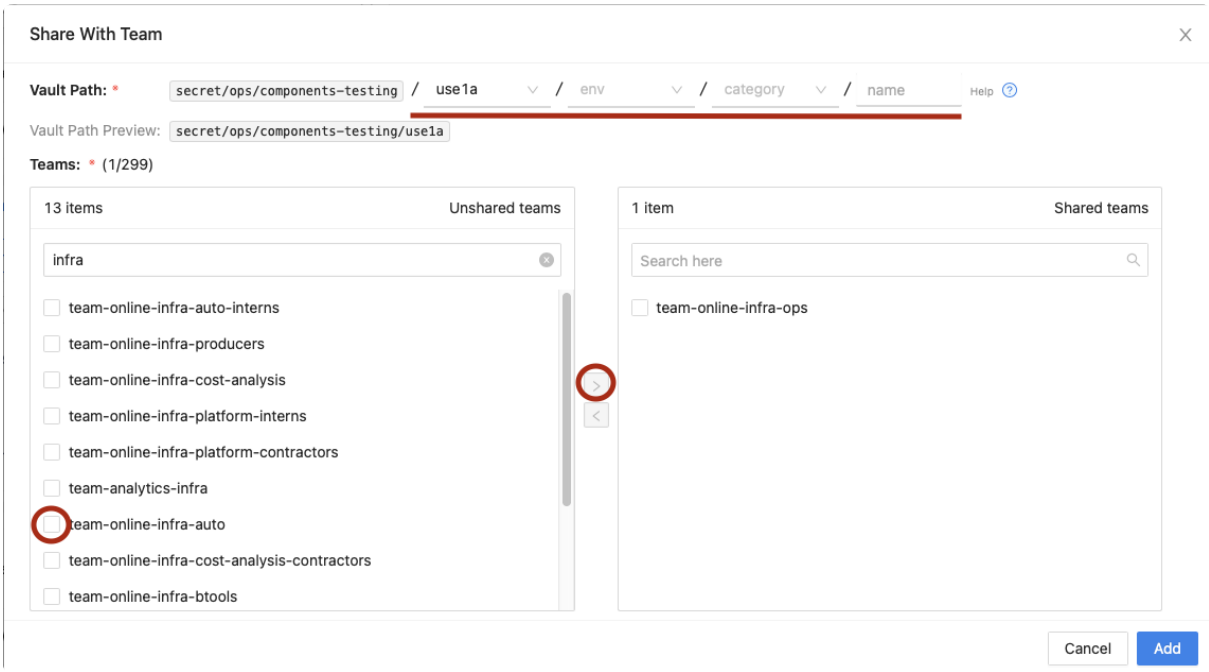
If during the search for a secret you notice that you do not see the desired Vault Path in SSSM, then you are not the owner of this path. To gain access to this secret, its owner must share the secret with you. To do this, owner can use SSSM and the tab **Teams**. Here you can see all the commands that have access to secrets in the desired path.



To share secrets with another team, first expand the namespace by clicking its row (you can click the arrow or the name of the namespace). Click the **Share With Team** button.


Teams
Kubernetes
AWS
+ SHARE WITH TEAM
secret/ops/components-testing/*
Teams: team-online-infra-ops
EDIT TEAMS
Last Updated: 2 months ago

In the pop-up window, fill in the path and select a team from the list on the left. Check the box and click the right-facing arrow to add the team.



Click Update when you are done making changes. The status will change from "Live" to "Pending" and will change back to "Live" after the policies have been updated. Usually this takes about a minute.
