CAN YOU KEEP A .NET SECRET?

MANAGING APPLICATION CONFIGURATION WITH AZURE

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CHALLENGES IN MODERN APPLICATION CONFIGURATION

- Each environment requires its own configuration
- Shared configuration across different microservices
- Sensitive data
- Changing configuration requires redeployment
- Feature flag management

AGENDA

- Azure App Configuration
- Azure Key Vault
- Feature management

AZURE APP CONFIGURATION

WHAT IS AZURE APP CONFIGURATION?

Azure App Configuration provides a service to centrally manage application settings and feature flags

WHY USE AZURE APP CONFIGURATION?

External configuration store

Settings for different environments

Real-time updates without redeployment

FEATURES OF AZURE APP CONFIGURATION

- Fully managed service
- Centralized store for application configuration
- Support for Azure Managed Identities
- Data encryption at rest
- Dynamic configuration refresh
- Key-value storage
- Feature management

CREATING AZURE APP CONFIGURATION – AZURE CLI

```
az appconfig create
—n ac-visug
—g AppConfigRg
—l westeurope
—sku Free
```

CREATING A NEW KEY-VALUE – AZURE CLI

```
az appconfig kv set
-n ac-visug
--key color
--value red
```

DEMO: SETTING UP AZURE APP CONFIGURATION

ADDING APP CONFIGURATION TO A .NET APPLICATION

```
Install-Package
Microsoft.Azure
.AppConfiguration
.AspNetCore
```

ADDING APP CONFIGURATION TO .NET APPLICATION

```
builder.Configuration.AddAzureAppConfiguration(
options =>
  {
    options
      .Connect(connectionString)
  });
```

ADDING APP CONFIGURATION TO .NET APPLICATION

```
builder.Configuration.AddAzureAppConfiguration(
options =>
  {
    options
      .Connect(connectionString)
      .Select(KeyFilter.Any, LabelFilter.Null)
  });
```

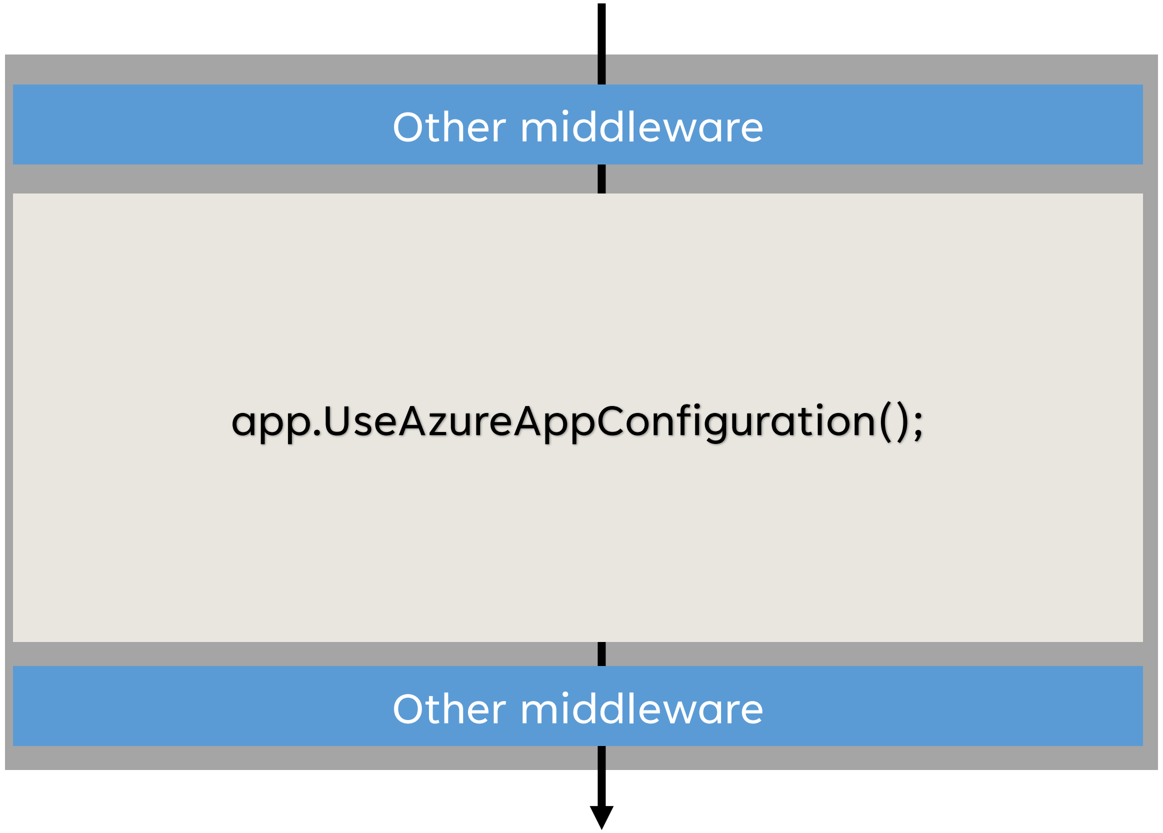
ADDING APP CONFIGURATION TO .NET APPLICATION

```
builder.Configuration.AddAzureAppConfiguration(
options =>
  {
    options
      .Connect(connectionString)
      .Select("WeatherApp:*", LabelFilter.Null)
  });
```

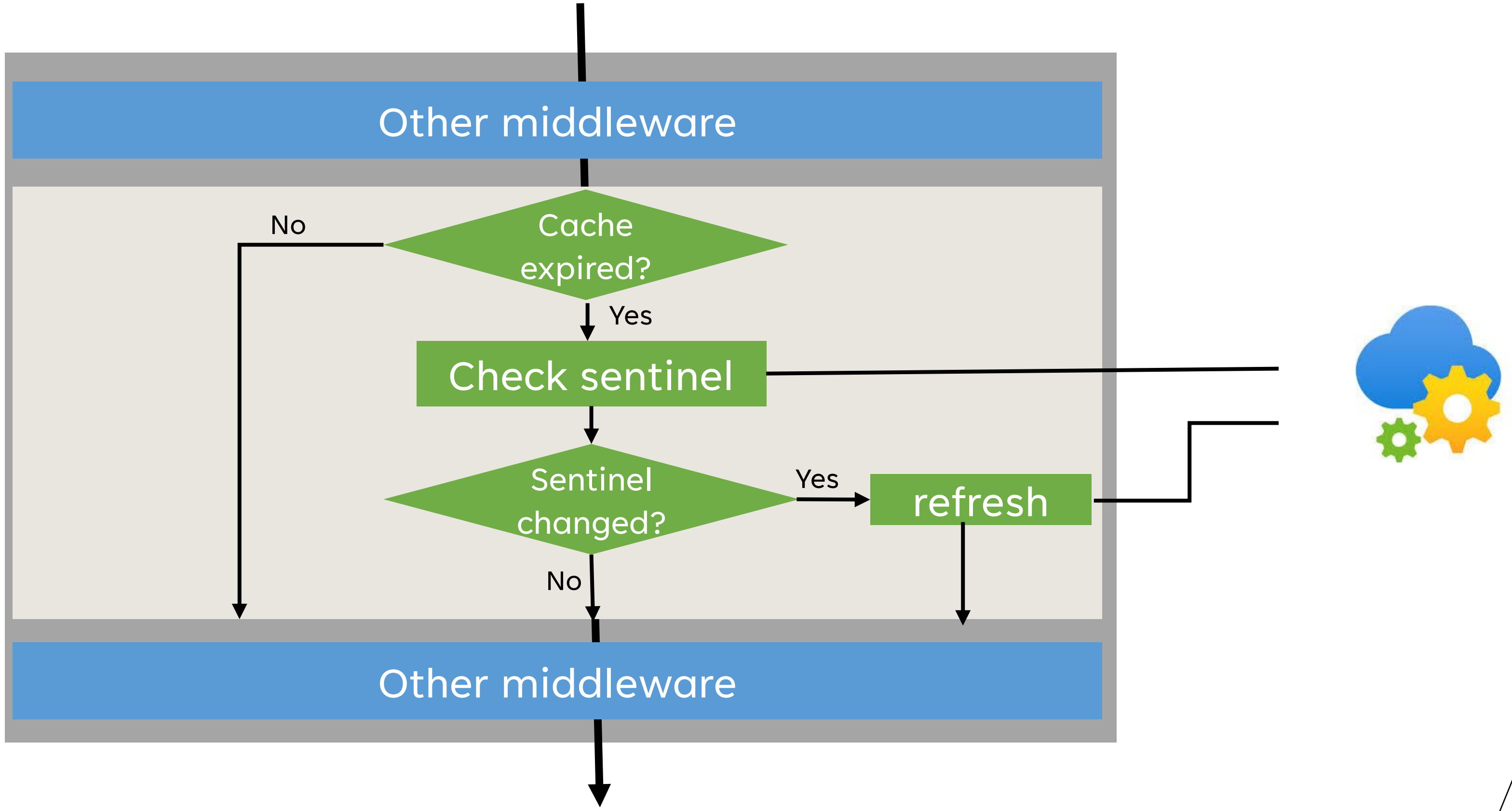
ADDING DYNAMIC REFRESH OF APP CONFIGURATION SETTINGS

```
builder.Configuration.AddAzureAppConfiguration(
options =>
  {
    options.Connect(connectionString)
          .Select(KeyFilter.Any, LabelFilter.Null)
          .ConfigureRefresh(refreshOptions =>
             refreshOptions
                .Register("WeatherApp:Sentinel", refreshAll:
                         true)
                .SetRefreshInterval(TimeSpan.FromSeconds(15));
  });
```

ADDING DYNAMIC REFRESH OF APP CONFIGURATION SETTINGS

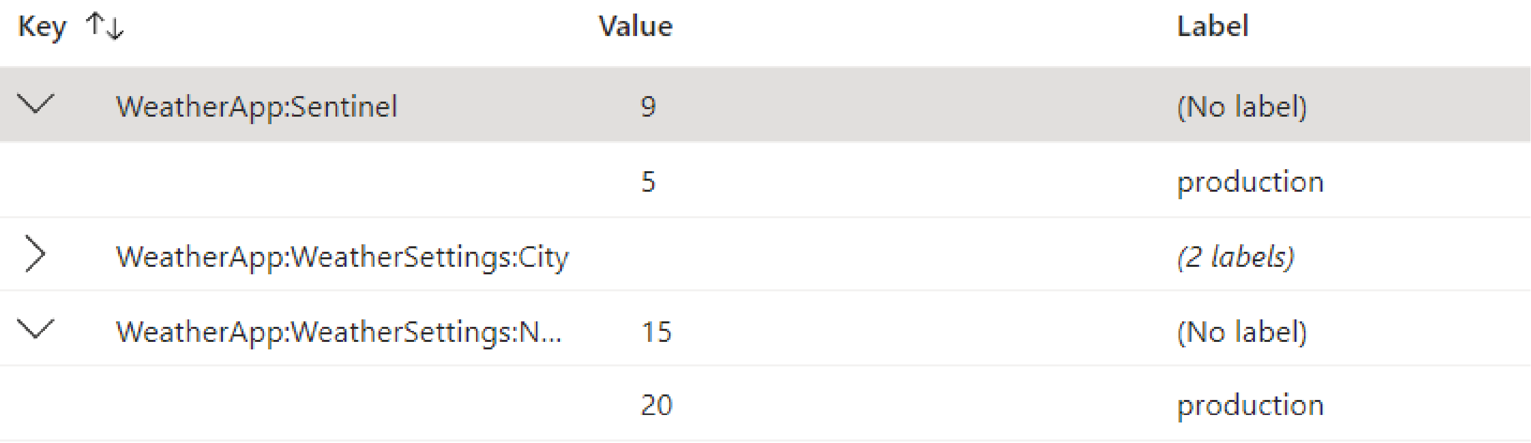


ADDING DYNAMIC REFRESH OF APP CONFIGURATION SETTINGS



DEMO: ADDING APP CONFIGURATION TO .NET APPLICATION

ADDING SETTINGS FOR MULTIPLE ENVIRONMENTS

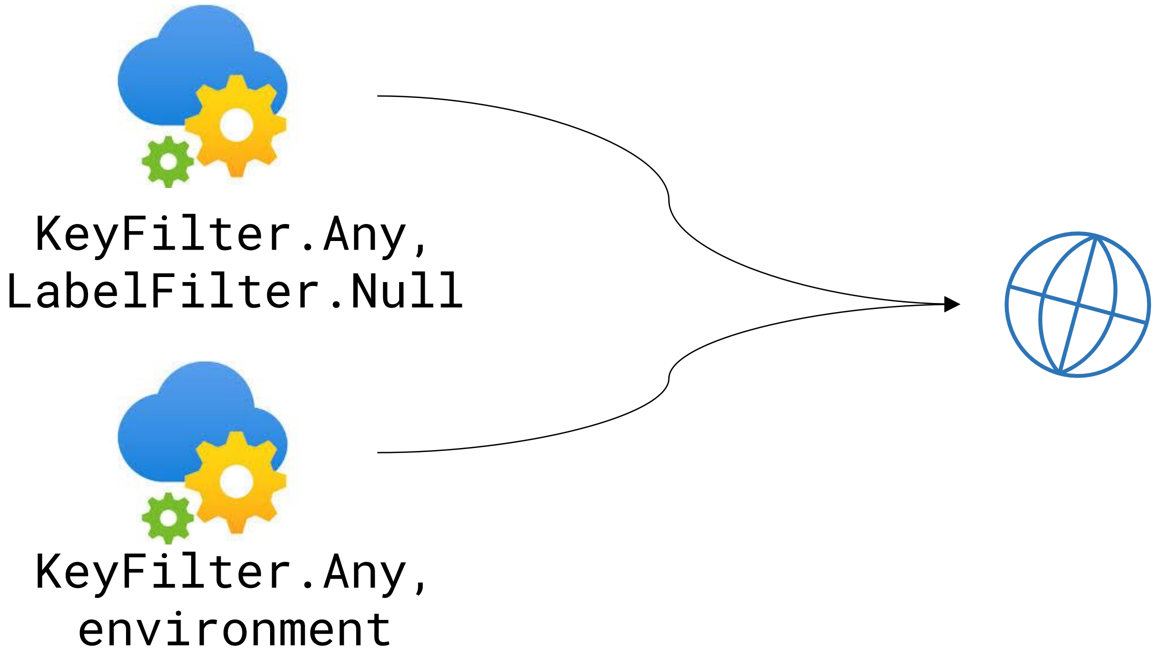


Key ↑↓	Value	Label
WeatherApp:Sentinel	9	(No label)
	5	production
WeatherApp:WeatherSettings:City		*(2 labels)*
WeatherApp:WeatherSettings:N...	15	(No label)
	20	production

ADDING SETTINGS FOR MULTIPLE ENVIRONMENTS

```
builder.Configuration.AddAzureAppConfiguration(
options =>
  {
    options.Connect(connectionString)
           .Select(KeyFilter.Any, LabelFilter.Null)
           .Select(KeyFilter.Any, environment ?? LabelFilter.Null)
           .ConfigureRefresh(refreshOptions =>
             refreshOptions
                 .Register("WeatherApp:Sentinel", environment ??
                  LabelFilter.Null, refreshAll: true)
                 .SetRefreshInterval(TimeSpan.FromSeconds(15));
  });
```

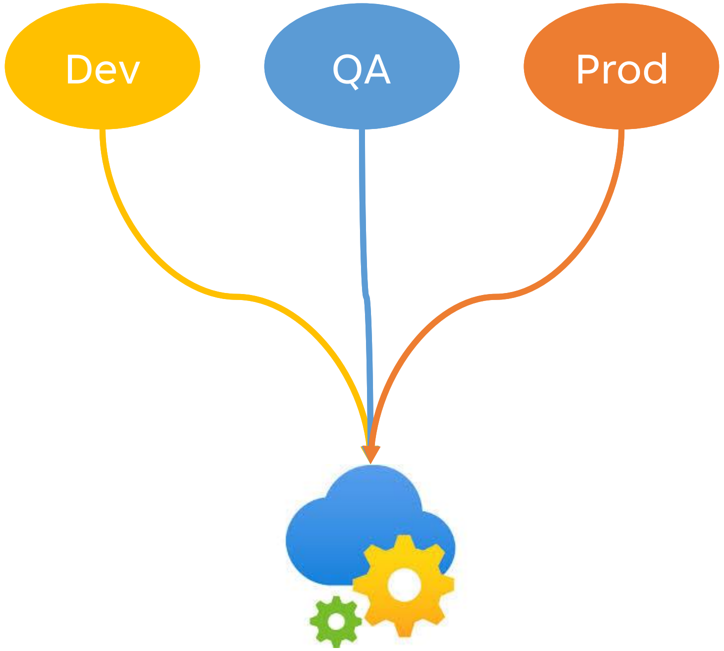
BEWARE OF THE CONFIGURATION STACKING



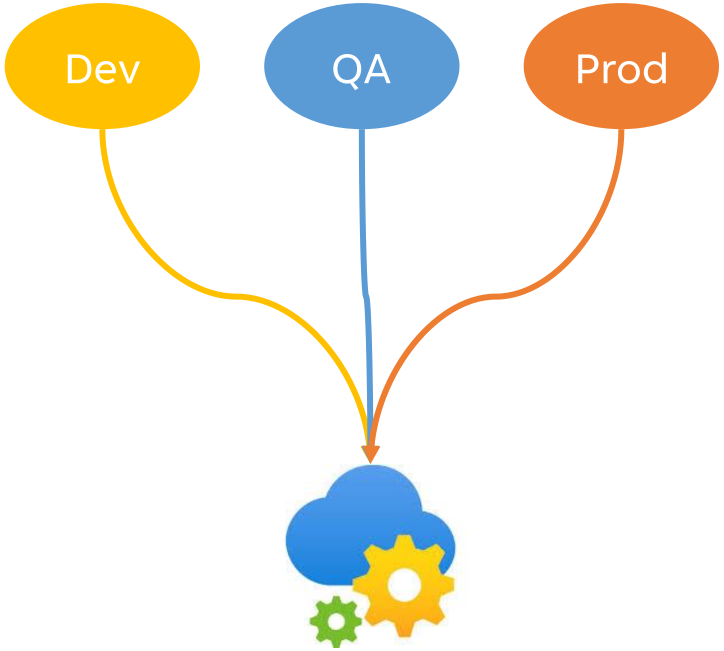
KeyFilter.Any,
LabelFilter.Null

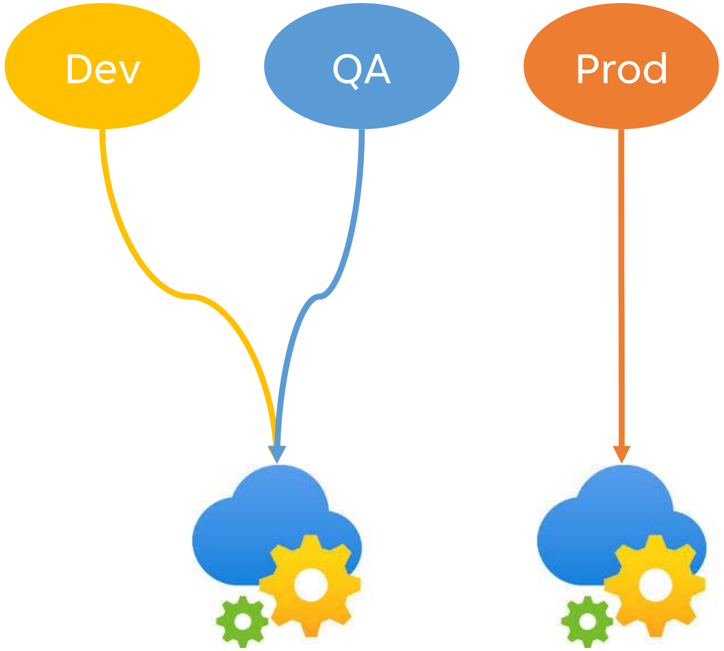
KeyFilter.Any,
environment

ADDING SETTINGS FOR MULTIPLE ENVIRONMENTS

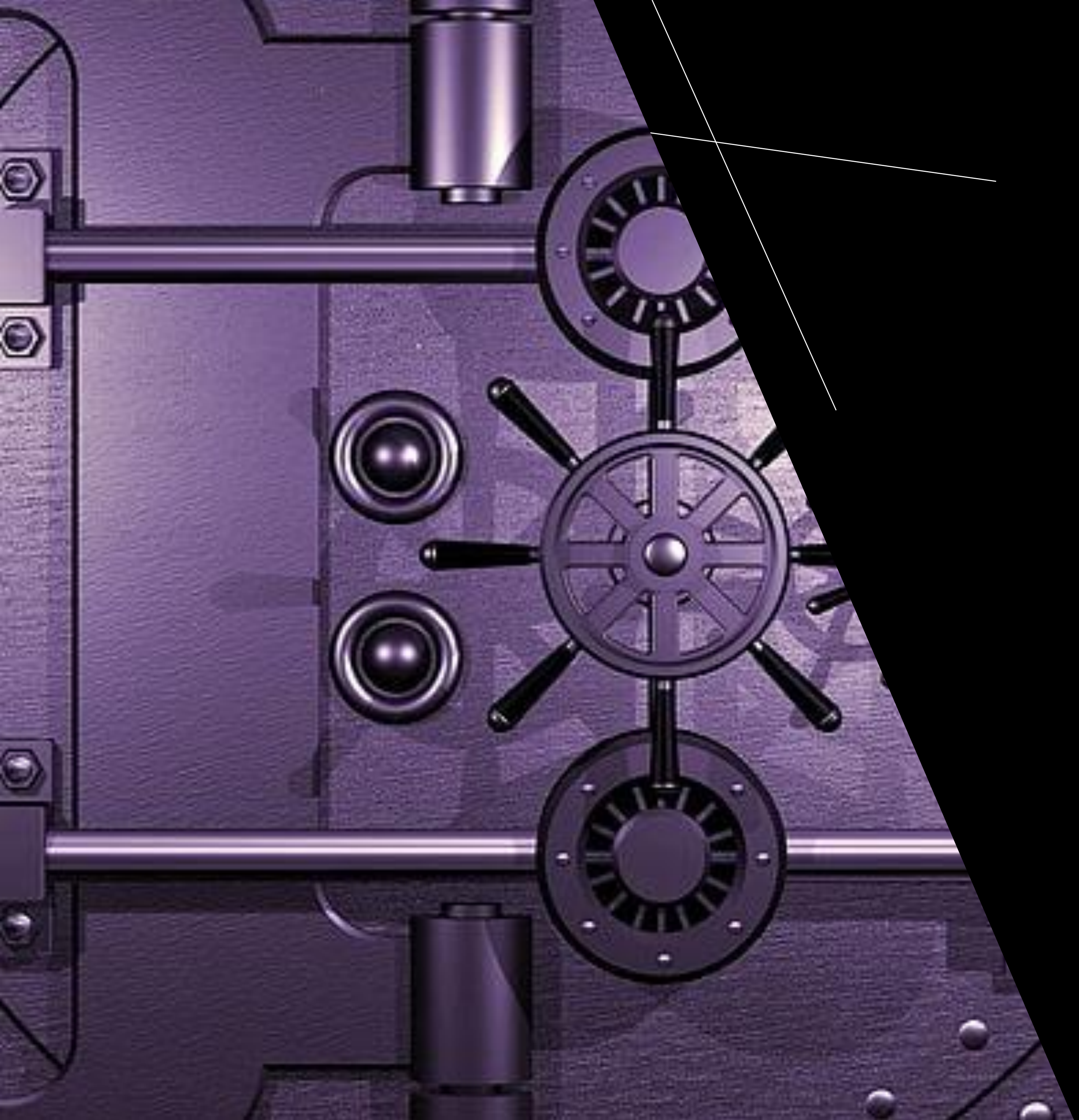


ADDING SETTINGS FOR MULTIPLE ENVIRONMENTS





DEMO: ADDING APP CONFIGURATION FOR MULTIPLE ENVIRONMENTS



AZURE KEY VAULT

WHAT IS AZURE KEY VAULT?

Azure Key Vault is a service for securely storing and accessing Keys, Secrets and Certificates

WHY USE AZURE KEY VAULT?

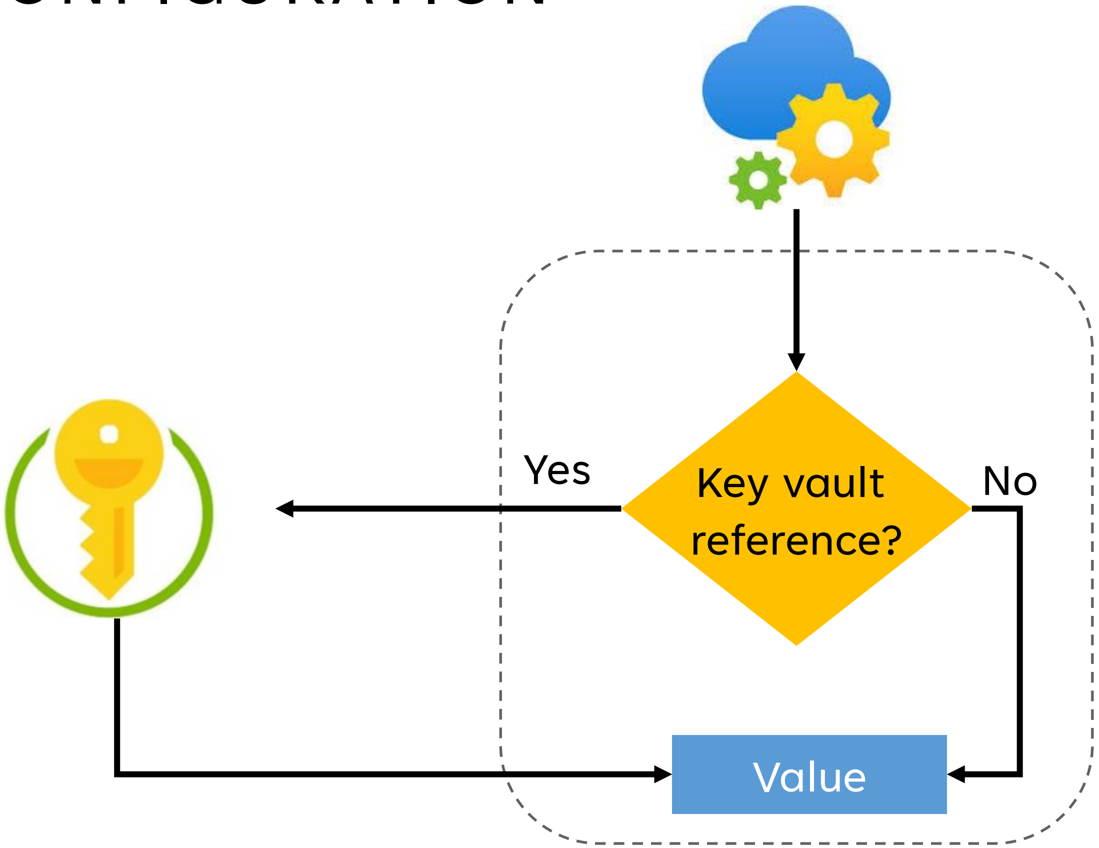
Protect sensitive data

Ensure secrets are not exposed in code repositories

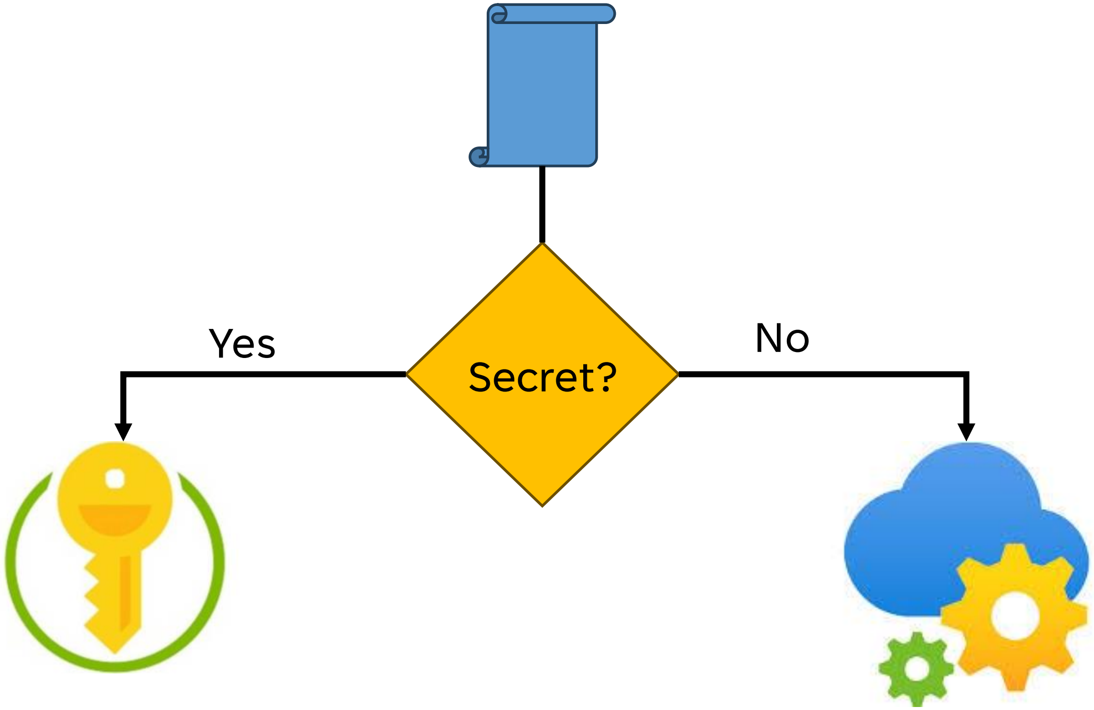
Is a complementary service to App Configuration

App Configuration can reference Key Vault secrets

AZURE KEY VAULT REFERENCE IN APP CONFIGURATION



WHERE DO YOU STORE WHICH DATA?



ADDING AZURE KEY VAULT CONFIGURATION

```
builder.Configuration.AddAzureAppConfiguration(
options =>
  {
    options
        ...
        .ConfigureKeyVault(kv =>
          {
            kv.SetCredential(new DefaultAzureCredential());
          }
  });
```

DEMO: ADDING KEY VAULT

FEATURE MANAGEMENT

WHAT IS FEATURE MANAGEMENT?

Development practice wherein the release of features is controlled using if/else logic known as feature flags

FEATURE MANAGEMENT

✓ Part of Azure App Configuration

⇆ Real-time toggling of features without redeployment

ADDING FEATURE MANAGEMENT

```
builder.Configuration.AddAzureAppConfiguration(
options =>
  {
      options
        .Connect(connectionString)
        .UseFeatureFlags());
});
```

ADDING FEATURE MANAGEMENT

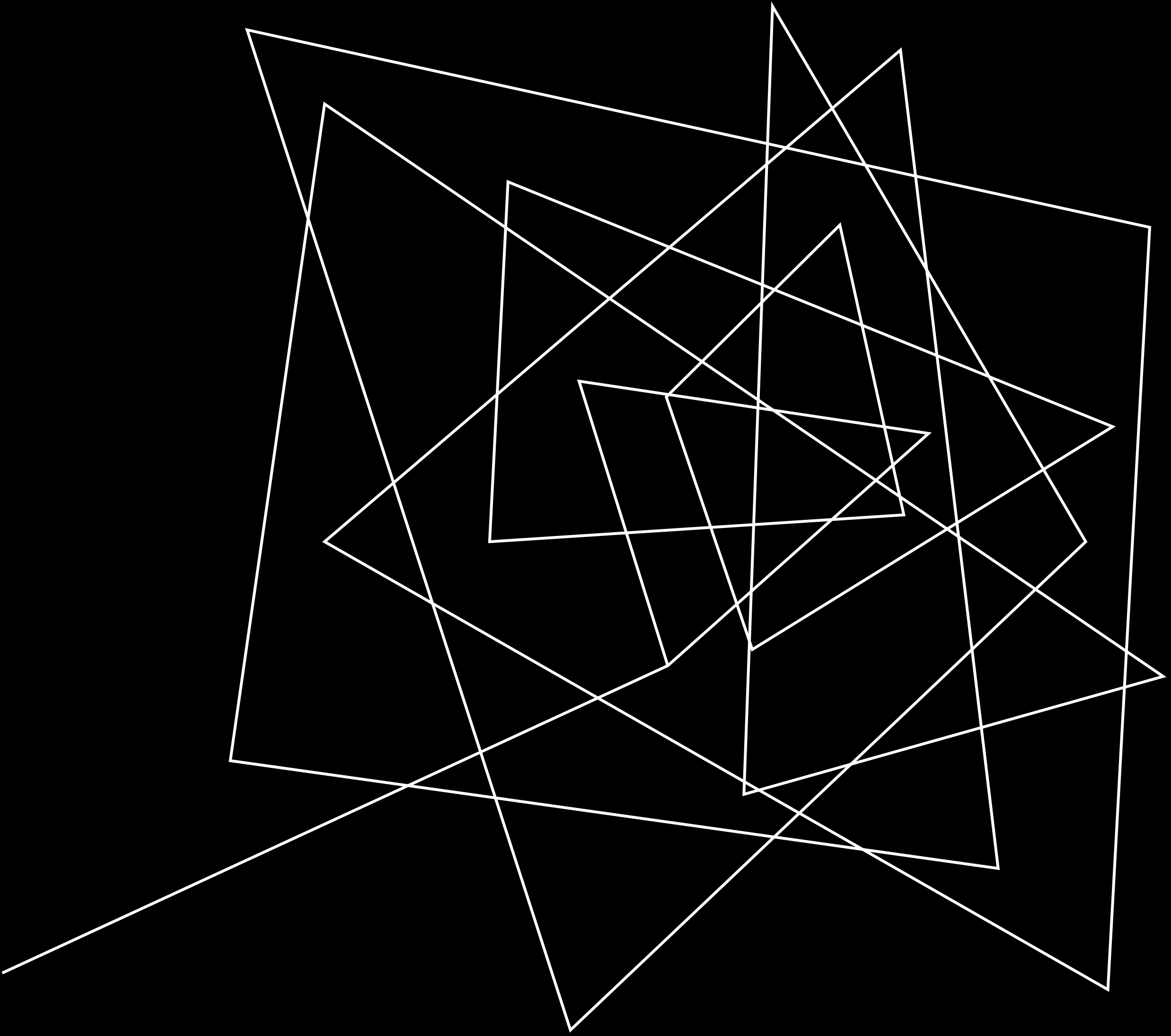
```
builder.Configuration.AddAzureAppConfiguration(
options =>
  {
        options
          .Connect(connectionString)
          .UseFeatureFlags(ff =>
               ff.SetRefreshInterval(
                       TimeSpan.FromSeconds(15)));
});

builder.Services.AddFeatureManagement();
```

DEMO: ADDING AND USING A FEATURE FLAG

SUMMARY

- Centralized Configuration Management
- Secure secrets management
- Real-time configuration updates
- Feature Flags
- Improved security through managed identities

QUESTIONS?



THANK YOU!