slide-python-outfit

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0.1 Managing Config in Python using Consul and Vault

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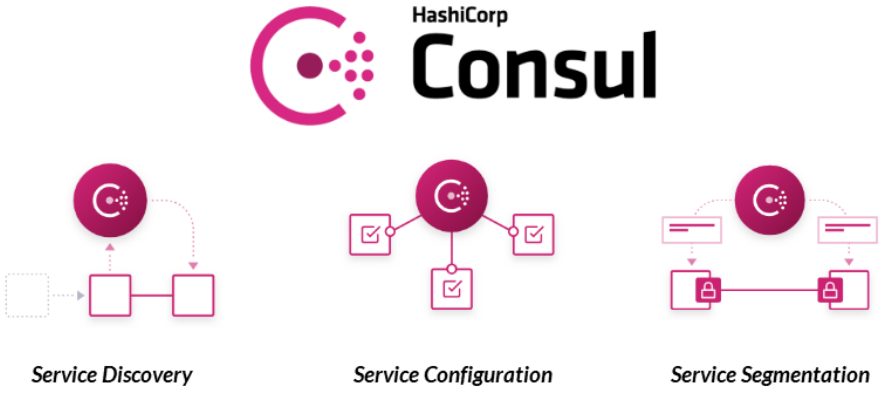
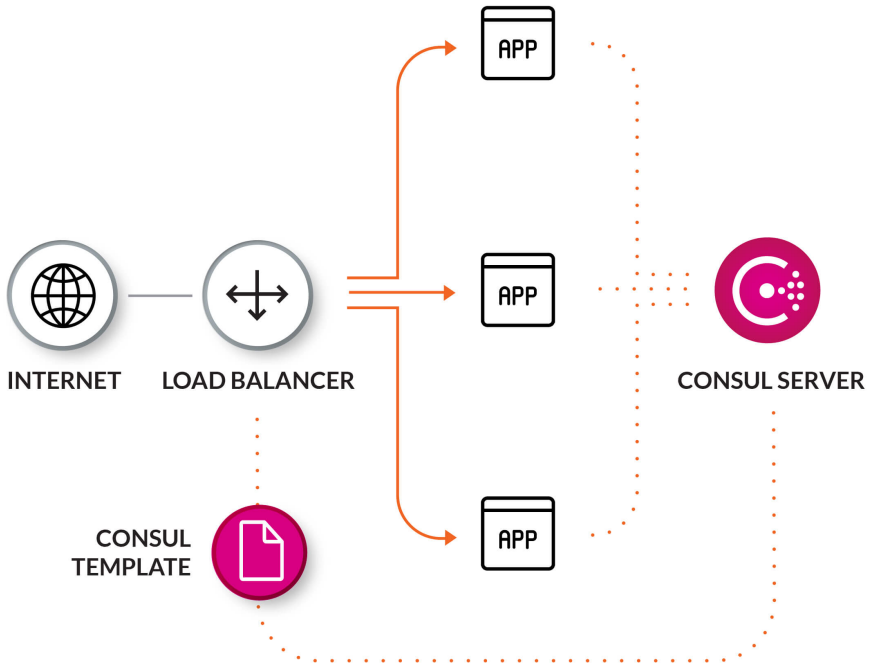
1 Introduction

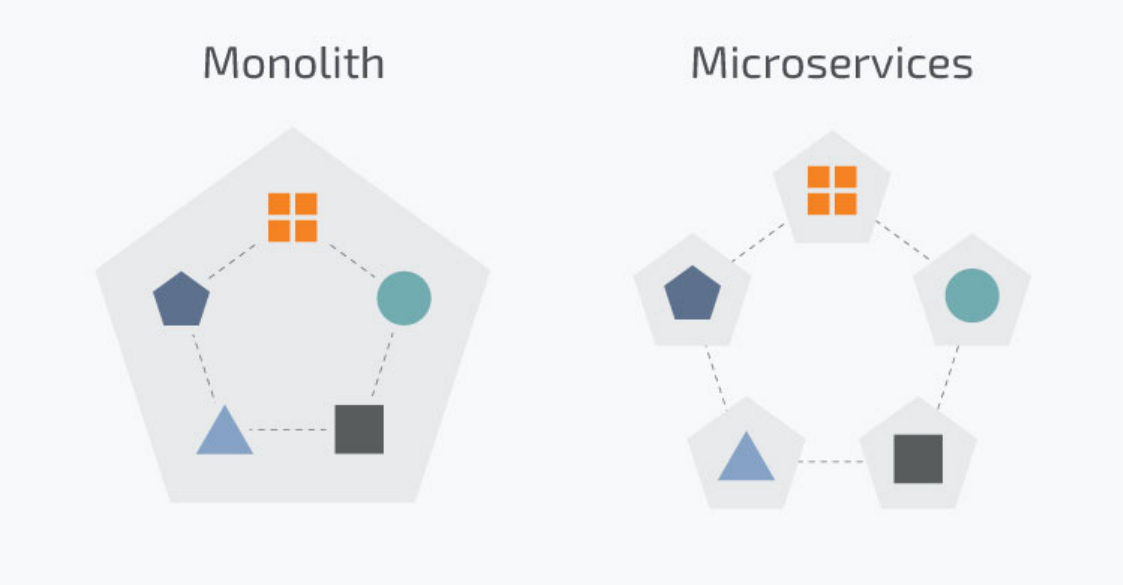
- Principal R&D Engineer at blibli.com
- Before working in AI Squad, now working in DevEx squad
- using python for AI research and in DevEx: helping engineers for several programming laguages
- Selling food at Nevada Kitchen (home cuisine) you search and buy at blibli.com



1.1 Service Discovery



1.2 What happens inside monolith and Microservices



Monolith

Microservices

2 What is vault

2.0.1 a tool that help us to manage :

- Secret to be Centralized with ACL
- Dynamic secret and unique secret for each client
- Protecting data with encryption feature (high leve API or encryption as a service)

** Secret could be : username or password, app credential, api token, TLS Cert, etc

3 Centralized Secret

4 Centralized Secret

5 How python integrate with consul and vault ?

- Using different libraries for vault and consul
- hvac for vault client and python consul for consul

6 How to integrate consul and vault in python ?

1. Install hvac python client and python consul library
2. for python consul : # could use env var to load token client = consul.Consul(token=token)

```
client.kv.get('foo')          # OK
client.kv.put('foo', 'bar2')  # raises ACLPermissionDenied

client.kv.get('private/foo')  # returns None, as though the key doesn't
                              # exist - slightly unintuitive
client.kv.put('private/foo', 'bar2')  # raises ACLPermissionDenied
```

3. for python vault :

```
# could use env var for the config info
client = hvac.Client(
    url='https://localhost:8200',
    token=os.environ['VAULT_TOKEN'],
    cert=(client_cert_path, client_key_path),
    verify=server_cert_path,
)
client.is_authenticated()
create_response = client.secrets.kv.v2.create_or_update_secret(
     path='foo',
     secret=dict(baz='bar'),
 )

 # Read the data written under path: secret/foo
 read_response = client.secrets.kv.read_secret_version(path='foo')
 print('Value under path "secret/foo" / key "baz": {val}'.format(
```

```
        val=read_response['data']['data']['baz'],
    ))
```

7 How java spring integrate with consul and vault ?

1. Add spring cloud dependency
2. Add spring.cloud.vault.* or spring.cloud.consul.* (could use yaml or .properties)
3. create class/bean to load configuration done

8 Sample bootstrap.properties in springboot

```
#Vault Configuration
spring.cloud.vault.enabled=${VAULT_ENABLE:true}
spring.cloud.vault.host=${VAULT_HOST:localhost}
spring.cloud.vault.port=${VAULT_PORT:8300}
spring.cloud.vault.fail-fast=true
spring.cloud.vault.token=${VAULT_TOKEN}
spring.cloud.vault.scheme=${VAULT_SCHEME:http}
spring.cloud.vault.generic.backend=secret/config

#Consul Configuration
spring.cloud.consul.enabled=${CONSUL_ENABLE:true}
spring.cloud.consul.host=${CONSUL_HOST:localhost}
spring.cloud.consul.port=${CONSUL_PORT:8500}
spring.cloud.consul.config.fail-fast=true
spring.cloud.consul.config.format=properties
spring.cloud.consul.config.prefix=config
```

9 Python Outfit

9.1 what is python-outfit?

- help to integrate python with consul and vault easly
- just add single file for vault and consul configuration
- add config file for logging

9.2 How to integrate with Consul and Vault using python-outfit ?

- add yaml file that contain configuration information for vault and consul that will read by python-outfit

```
vault:
    host: ${VAULT_HOST}
    port: ${VAULT_PORT}
    scheme: ${VAULT_SCHEME}
    token: ${TOKEN_VAULT}
    path: ${VAULT_PATH}
consul:
```

```
            host: ${CONSUL_HOST}
            port: ${CONSUL_PORT}
            scheme: ${CONSUL_SCHEME}
            token: ${TOKEN_CONSUL}
            path: ${CONSUL_PATH}
        logconfig:
            mode: ${LOG_MODE}
            source_type: ${LOG_TYPE}
            source_location: ${LOG_LOCATION}
            default_type: yaml_file
            default_location: conf/logging.yaml
```

9.2.1 add 5 to 6 lines for load configuration for consul and vault data

```
from outfit import Outfit
from outfit import ConsulCon, VaultCon
from outfit import Logger

if __name__ == '__main__':
    Outfit.setup('conf/configuration.yaml')
    con_consul = ConsulCon()

    # get the information such as config file from consul kv then will be returned as python di
    config_dict = con_consul.get_kv()

    con_vault = VaultCon()

    # get the secret information in vault secret kv then will be returned as python dictionary
    secret_dict = con_vault.get_secret_kv()

    # if you want to merge the vault data and consul data
    main_config = merge_dict(config_dict, secret_dict)
```

10 Outfit, ConsulCon, VaultCon, Logger

there 5 features that already added in python-outfit: * Outfit * ConsultCon * VaultCon * Logger
* Dict merger function

10.1 Outfit

```
{ from outfit import Outfit }
The main static class to load the configuration file (yaml)
```

10.2 ConsulCon

```
{ from outfit import ConsulCon }
Consul class to load key value class
```

10.3 VaultCon

```
{ from outfit import VaultCon }
Consul class to load the secret data
```

11 DEMO SAMPLE SIMPLE APP

https://github.com/situkangsayur/staff_app (to open the swagger : http://localhost:5000/api/v1) https://github.com/situkangsayur/async-fastapi-mongo

12 Thank you

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