The bridge to possible

Demystifying Cisco FSO Stack APIs - Building a Secure Code Pipeline with Concourse CI and Vault Integration

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BRKGEN-2000

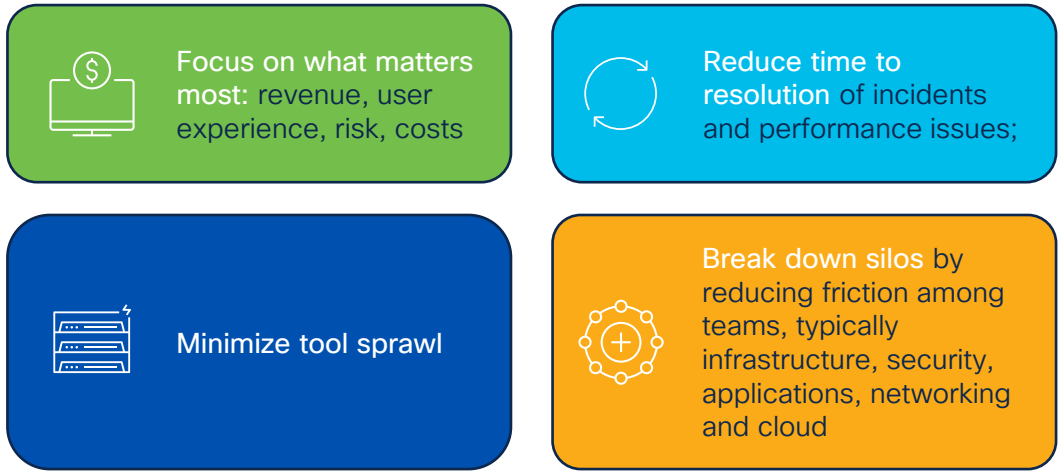
Agenda

- Demystifying Cisco FSO Stack APIs
- What is an API
- Accessing FSO API
- Secrets management
- Automate CI pipeline
- Demo & Lab Guide
- Summary

Cisco Full-Stack Observability

Full Stack Observability (FSO) is a requirement for business to deliver the most **optimal and secure experience** to users and applications.

Cisco Full-Stack Observability brings together data from multiple operations domains to provide **unified visibility**, derive **real-time insights** and recommend **actions** helping to:



Cisco Full Stack Observability (FSO)

Digital Experience and Internet Visibility

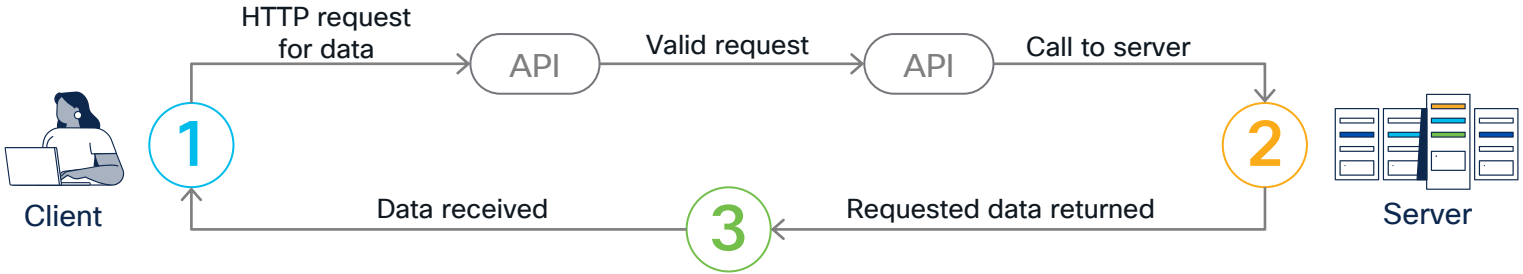
ThousandEyes offers insights into enterprise, workforce and customer digital experience through real-time application and network metrics and visualizations.

Application Performance Monitoring

Cisco AppDynamics helps to proactively monitor, analyze, and optimize complex application environments at scale.

What is an API

An application programming interface allows two programs to communicate. On the web, APIs sit between an application and a web server, and facilitate the transfer of data.



How it works

1 **Request**

API call is initiated by the client application via an HTTP request

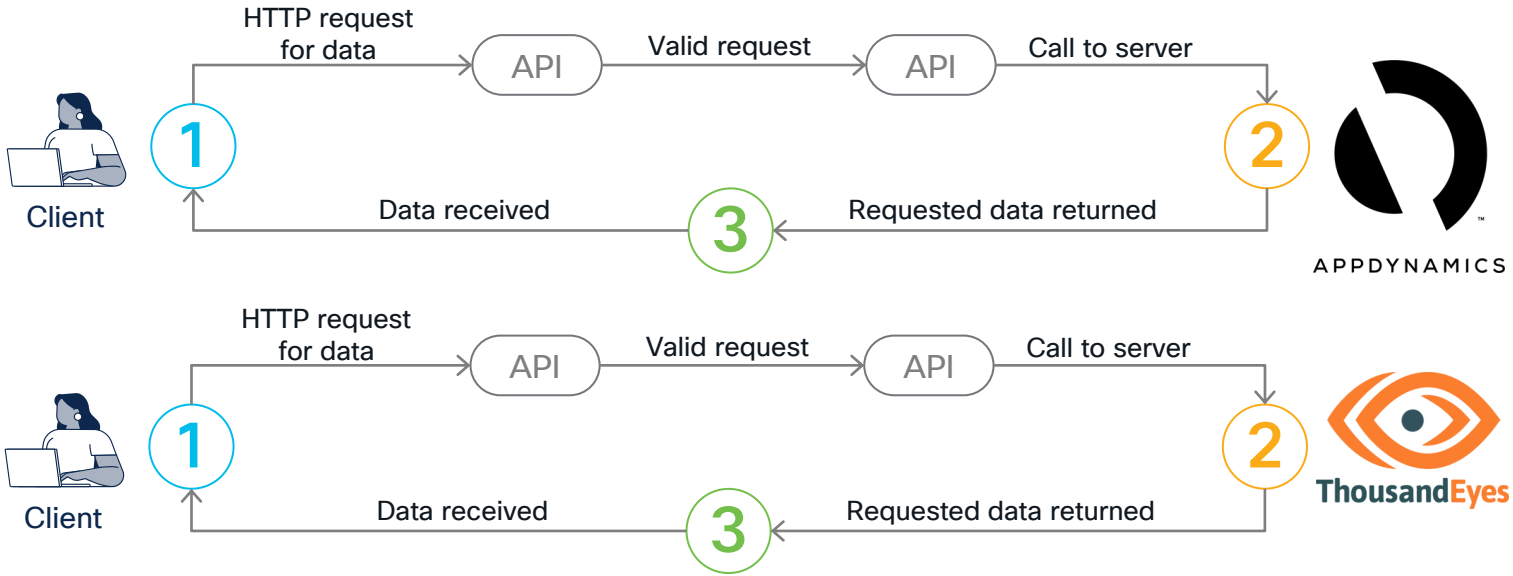
2 **Receive**

The API, goes to a server to retrieve data

3 **Response**

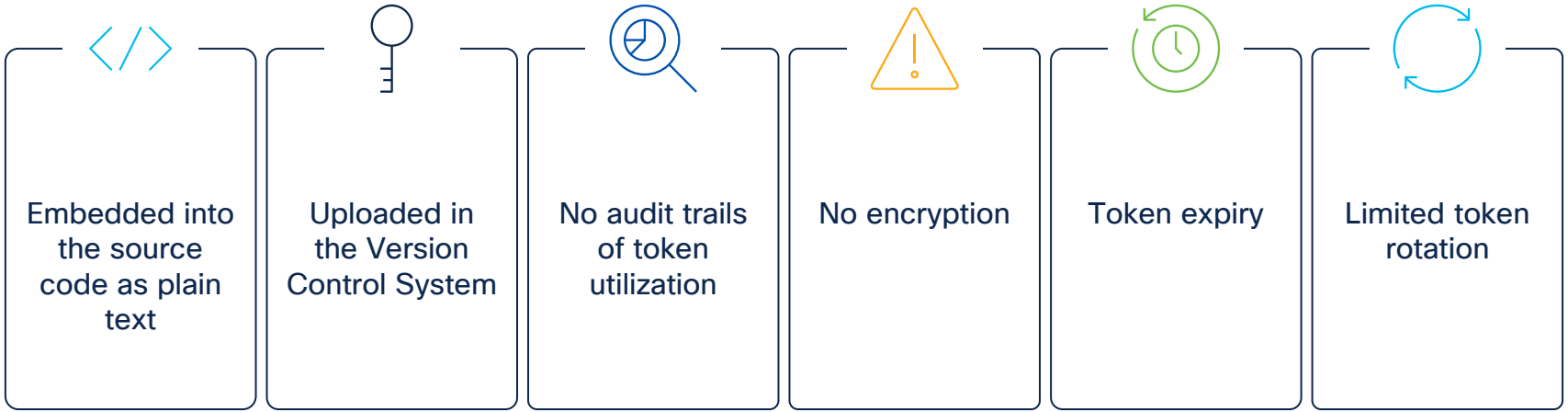
The API transfers the requested data back to the requesting application, usually in JSON format

How do we use FSO APIs today?



Authenticate & Authorization

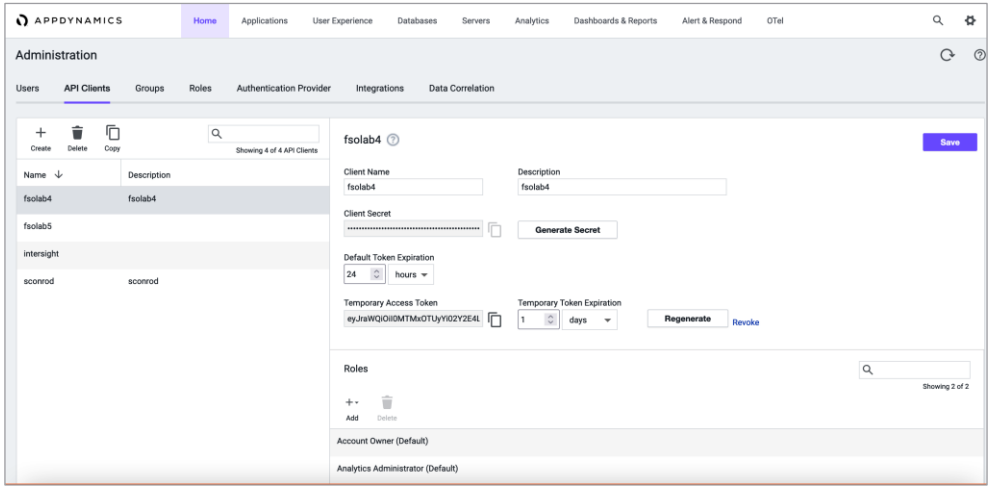
Challenges with API authentication?



AppDynamics API

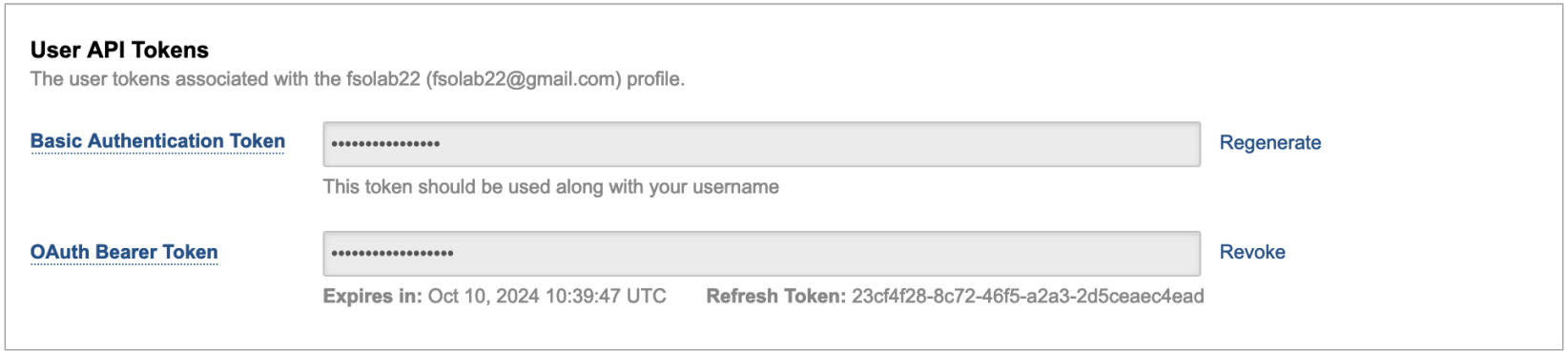
To authenticate your requests towards the AppDynamics API you can use:

- Base URL is https://controllername.saas.appdynamics.com/>
- API Client Authentication – OAuth identity type



ThousandEyes API

- Base URL is https://api.thousandeyes.com
- Authentication type can be basic or OAuth bearer token, operation set with a mix of HTTP method and URL
- XML and JSON formats are supported



How to programmatically accessing the API?

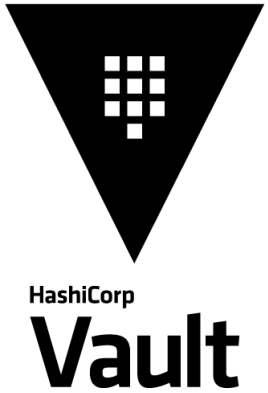
- curl -X POST -H "Content-Type: application/vnd.appd.cntrl+protobuf;v=1" "https://kickstarter.saas.appdynamics.com/controller/api/oauth/access_token" -d "grant_type=client_credentials&client_id=fsolab4@kickstarter&client_secret=xxxxxx"
- curl -H "Authorization:Bearer xxxxxxxx" "https://kickstarter.saas.appdynamics.com/controller/rest/applications"
- https://docs.appdynamics.com/appd/23.x/latest/en/extend-appdynamics/appdynamics-apis

- curl -i https://api.thousandeyes.com/v6/agents.json --header "Authorization: Bearer xxxxxxx"
- https://developer.thousandeyes.com/v6/

What is HashiCorp Vault?

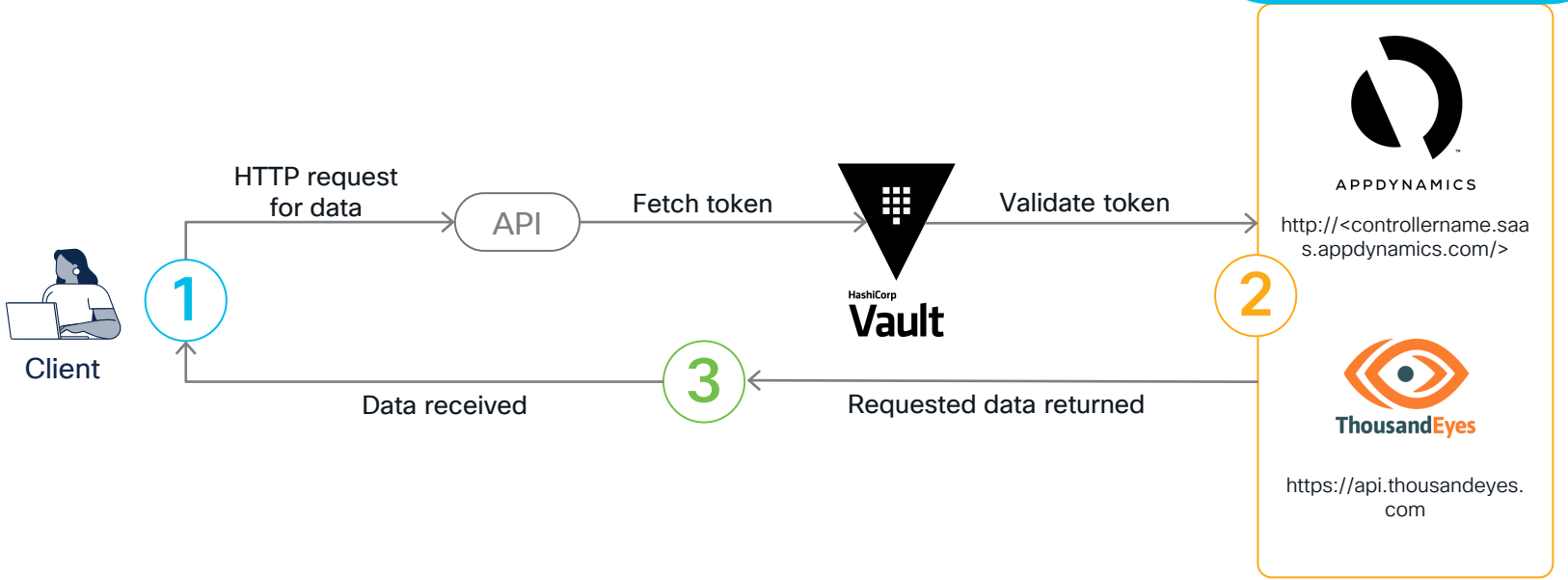
The Vault is a cloud agnostic API-driven secrets management platform that allows to safely store and manage sensitive information.

- Secret management
- Identity-based access
- Data encryption
- Dynamic short-live credentials
- Audit log



Centralize FSO API authentication/authorization with encryption

How can we automate the token management?



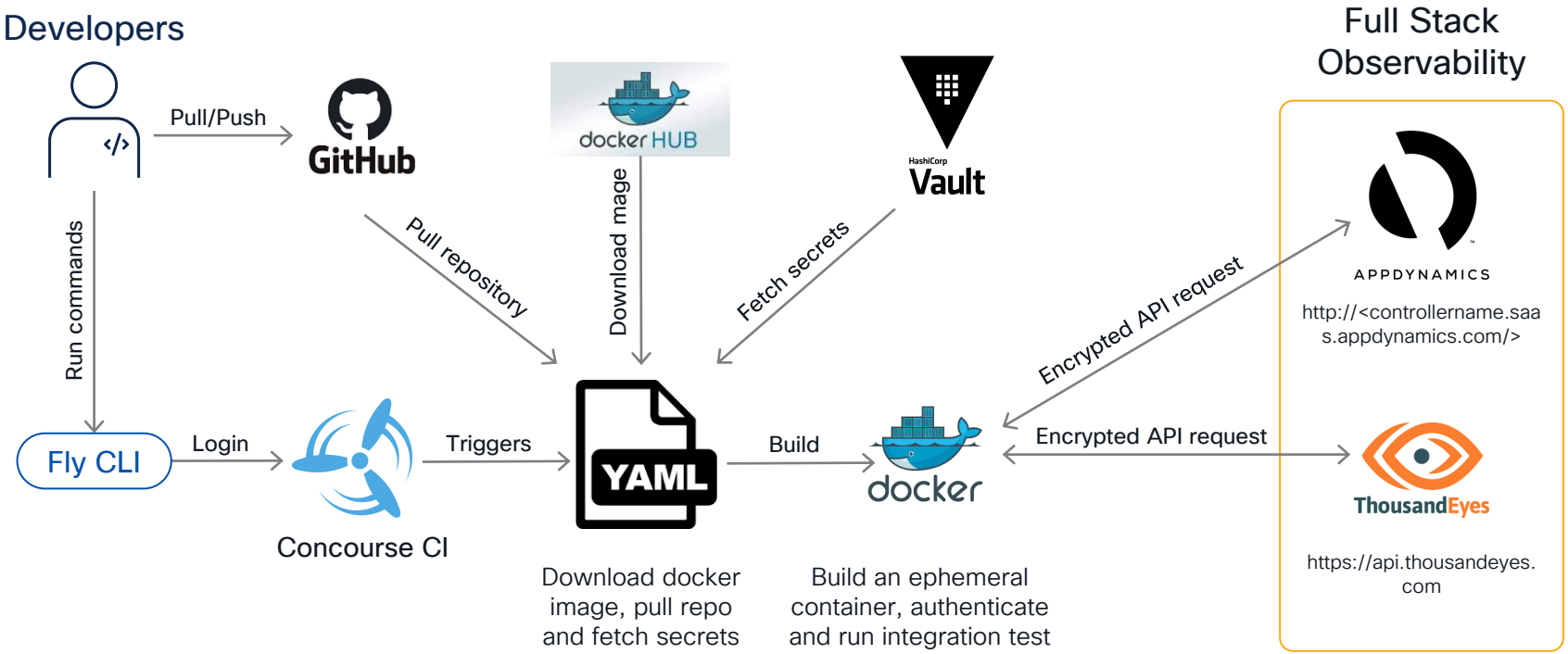
Authenticate & Authorization

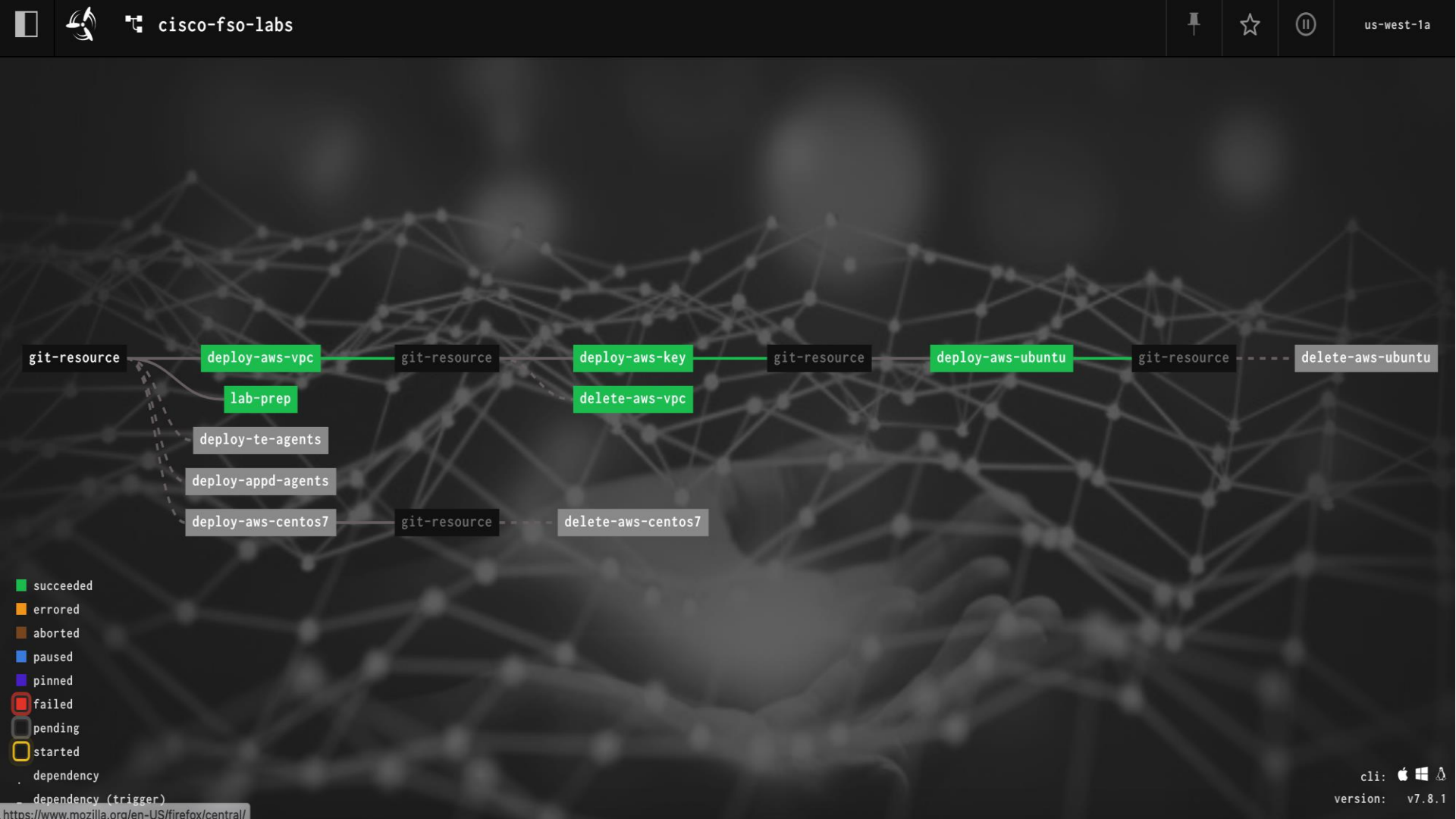
What is Concourse CI pipeline?

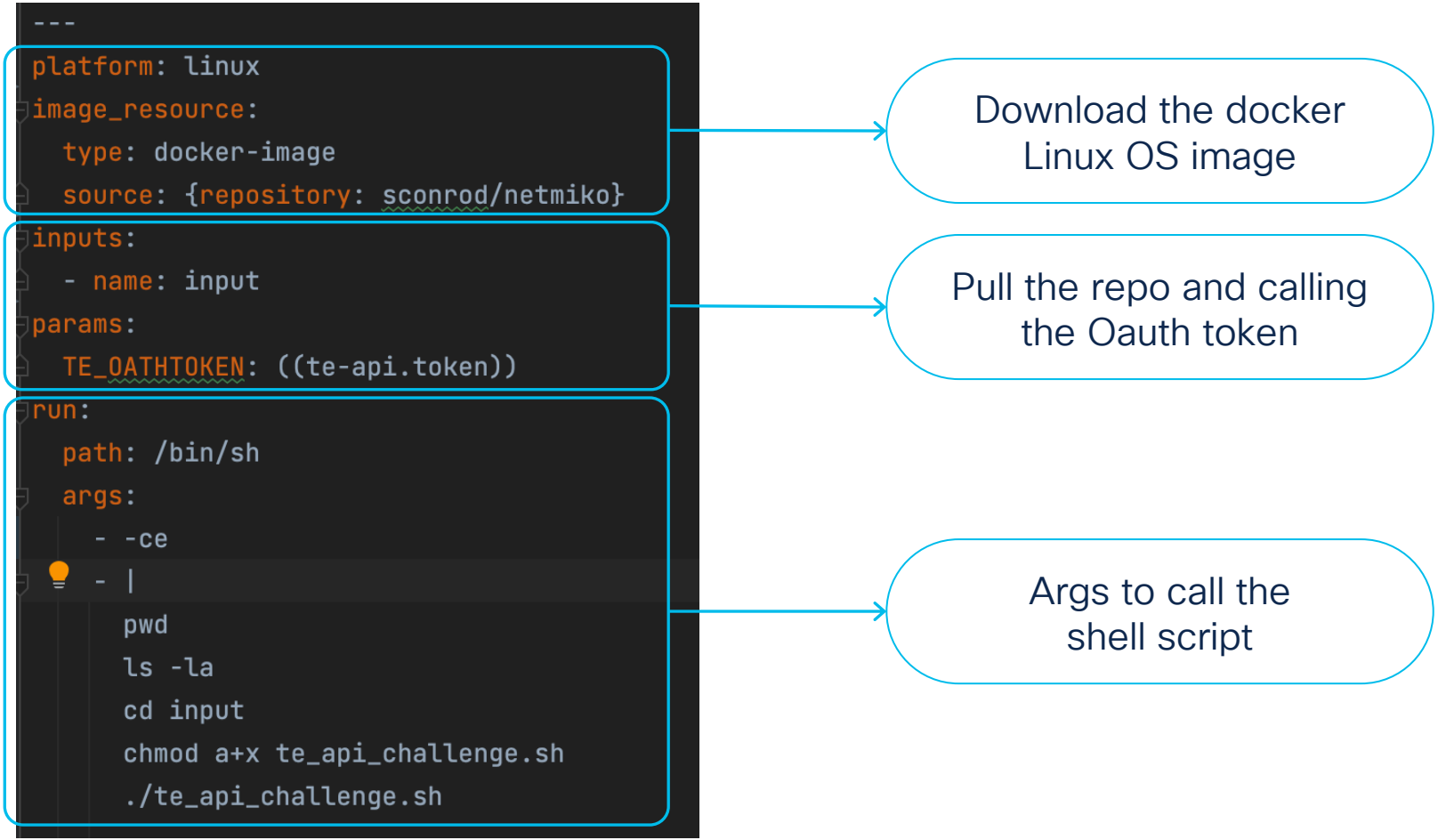
The concourse is an open-source pipeline based CI system. It is used for CI/CD to scale any kind of automation pipeline, from simple to complex

- Built on resources, tasks and jobs
- Use containers to run the tasks
- Use postgress as a backend
- Automate the pipeline and show progress graphically
- Easy to troubleshoot

Automated Developer's CI workflow




cisco-fso-labs
us-west-1a
git-resource
deploy-aws-vpc
git-resource
deploy-aws-key
git-resource
deploy-aws-ubuntu
git-resource
delete-aws-ubuntu
lab-prep
delete-aws-vpc
deploy-te-agents
deploy-appd-agents
deploy-aws-centos7
git-resource
delete-aws-centos7
succeeded
errored
aborted
paused
pinned
failed
pending
started
dependency
dependency (trigger)
cli:
version: v7.8.1



Shell script install the pre-requisite package in the container

```
#!/bin/bash
export AWS_PAGER=""
#export VAULT_ADDR=$VAULT_ADDR
#export VAULT_TOKEN=$SSH_TOKEN
#vault login --no-print $SSH_TOKEN
#TE_OATHTOKEN=$(vault kv get --field=token concourse/main/te-api)
export TE_OATHTOKEN=$TE_OATHTOKEN
python3 -m pip install requests
python3 te_api_agent_server_tests.py
```

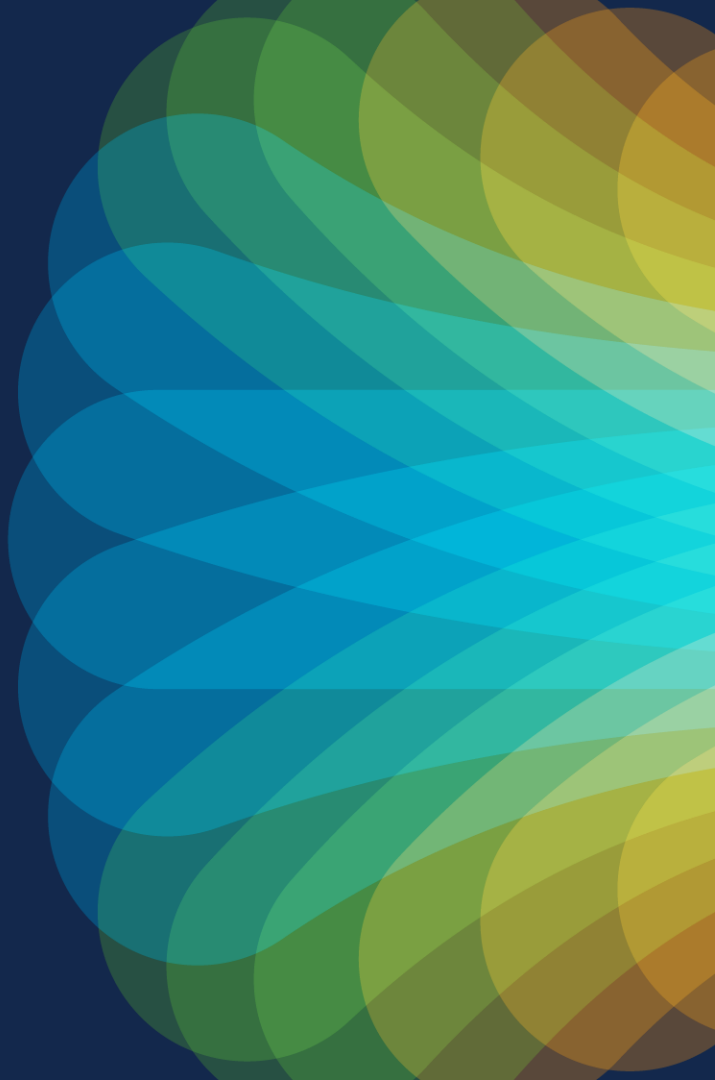
```
#!/usr/bin/env python
import ...
urllib3.disable_warnings()
token = os.getenv('TE_OATHTOKEN')
url = "https://api.thousandeyes.com/v6/agents.json"
payload={}
headers = {'Authorization': 'Bearer ' + token}
agent_response = requests.request("GET", url, headers=headers, data=payload)

test_name = 'test-405'
```

Invoke the TE oath token, URL and payload

```
agent_list_json = agent_response.json()
print(agent_list_json)
agent_list = agent_list_json['agents']
list_of_dictionaries = agent_list
sought_value = "Cloud"
found_values = []
for dictionary in list_of_dictionaries:
    if (dictionary["agentType"] == "Cloud"):
        found_values.append(dictionary)
print(found_values)
```

Get the list of agent ID

Demo



Summary

Understanding the FSO API and accessing them

API

Leveraging Hashicorp Vault for secret token management

Automating the developer experience with Concourse CI pipeline

Next Steps

Learn more about Cisco FSO at Cisco live

Try accessing the API with Hashicorp Vault

Build pipeline with your choice of CI/CD
to automate the system

Fill out your session surveys!

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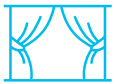
Engage and Learn more



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