Unified Life Cycle Management using TF Operator
Integration with Airship

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Agenda

● Introduction
  ○ Tungsten Fabric Distribution
    ■ Deployment & Life Cycle Management (LCM)
  ○ Tungsten Fabric Operator (TF-Operator)

● Multiple Supported Installation Options
  ○ TF-Operator Role

● Use-Case: Airship
  ○ Requirements
  ○ On Boarding TF Operator
  ○ Reference implementation and validation with Airship in a Bottle
Tungsten Fabric – Distribution

- Tungsten Fabric is packaged and distributed as Container Images

Deployed As:

**LCM Requirements for TF Modules:**

- Modules deployed in order
- Stateful Infra components reached to required state before roll-out of dependent components (like zookeeper)
- Upgrades are performed ensuring inter-dependency between modules
- Version dependencies between components
- Network Provider – Handling cluster scaling events
TF Operator

Operators

• Kubernetes Controller
• Framework
  • Operator SDK – Development kit around K8S API
  • Operator Life Cycle Manager – Oversees installation/updates and management of lifecycle of all operators aspect
  • Operator Metering – Enables usage reporting
• Purpose-built, with operational knowledge baked in, usually smarter and more tailored than generic tools
• Enables packing of automated operation logic as part of Operator
  • Allow on boarding complex automations

TF Operator

• Kubernetes Controller built using Operator SDK
• Built-in logic to address Life Cycle Management requirements of Tungsten Fabric

OLM

TF Operator

Handle LCM requirements Tungsten Fabric natively in Kubernetes
**Deployment Landscape**

- Integration with various solutions
- Life Cycle management of software
- Maintenance Cycle
- Engineering Cost
Simplify – Life Cycle Management

- Unify LCM handling for Tungsten Fabric
- Simplification of TF integrations into multiple deployments
- Handle seamless version dependency between components
- Cluster Scaling

✓ Improve Manageability
✓ Reduce Cost
 TF Operator – Unification

- Life Cycle Manager for Tungsten Fabric
- Handle LCM requirements of Tungsten Fabric natively in Kubernetes

- OLM
- Ansible
- TF Operator
- Helm
- Juju Charms
Addressed TF integrated Deployments
Use Case: Integration with Airship
Airship – Requirements

- Define corresponding Airship armada chart
- Added to airship site definition
- Roll out using shipyard

SDN Controller
+ CNI
+ OpenStack neutron
Airship – On Boarding TF Operator

- **airship**
  - armada Chart
  - Helm Hook for Operator
  - Rollout Complete

- **HELM**
  - Chart

- **tungstenfabric**

- **kubernetes**

- **Operator Deployed TF Controller**

- **Wait for Controller Rollout**
Reference Implementation

https://github.com/atsgen/tf-operator-helm-hook

https://github.com/atsgen/treasuremap
Open For Discussion