Tungsten Fabric Update
TungstenFabric joined Linux Foundation
Why we are working to join the LF and LF-N:

- We’re cloud-native—run in containers, cloud and Kubernetes—but also support more outside the CNCF
- Cross-project integrations already exist with OPNFV, ONAP, DPDK and other LF projects
- Enlarge open community, eliminating network vendor / developer hold-outs over “openness” FUD
- Easy for LF and LF-N members to join our project, and most of our members are also LF members
- Events, infrastructure and idea collaboration economies of scale inside large foundation
- Trusted foundation operations solve ad hoc funding and marketing support
COMMUNITY

Principles:
• Open and inclusive
• Provide strong technical and architectural oversight
• Competitive ideas welcome
• Rough consensus and running code will always win
• Iterate and evolve
COMMUNITY

- **Online:**
  - Downloads and trial sandbox
  - Talk with 700+ people: Slack, Mailing lists
  - Follow: Blog, YouTube, Facebook, Twitter
  - GitHub: Presentations, Tutorials

- **Live (see calendar):**
  - Conferences: OpenStack, KubeCon, ONS, Re:invent and GC Next
  - Meetups: host your own or join some
  - User Group events: often at conferences
  - Governance summits

- **Groups:** Governance, Technical, Infrastructure

- **Community manager:** Greg Elkinbard
FEATURES

Routing & Switching  Network Services  Load Balancing  Security & Policies  Performance & Scale

Gateway Services  Rich Analytics  Service Chaining  HA & Upgrades  APIs/Orchestrations
1 LESS VARIABLE IN BIMODAL IT & MULTICLOUD

RULE THEM ALL WITH ONE

automated secure open SDN

Public & Private IaaS

CaaS & PaaS

VMs or Metal

openstack

MESOS

OPENSFIGHT

kubernetes

VMware

KVM
ARCHITECTURE OVERVIEW

TF CONTROLLER, API & GUI
- scale-out control and management container micro-services

ORCHESTRATION NODES
- REST

Networks isolated unless connected with policy

COMPUTE NODE 1
- TF vRouter
- Compute Runtime

COMPUTE NODE 2
- TF vRouter
- Compute Runtime

virtual overlay networks

Ethernet / IP underlay network
ARCHITECTURE EXPANDED

- Clusters have gateway (WAN)
- Need to connect legacy metal nodes behind switches
- Clusters are federated to extend virtual networks
INSTALLATION

- Ansible playbook to flexibly deploy Tungsten Fabric binaries
- Helm charts to easily operate Tungsten Fabric components on Kubernetes
- Install-time option with OpenShift to deploy with Tungsten Fabric
- Tungsten Fabric binaries available on DockerHub and we’re improving CI/CD
- Commercial integrations into lifecycle tools like RH OpenStack Director
**USER EXPERIENCE**

**NORTH-BOUND API**

- REST API
- HTTPS authentication and role-based authorization
- Used for GUI
- Used for declarative configurations as code
- Generated from data model

**GUI**
IaaS/CaaS Use Case

TungstanFabric can work with both Openstack and K8S at the same time. It can extend the same Virtual network between VM and POD.

Also same security policy such as Security Group or Label-based FW is attached to both VM and POD.
NFVI Use Case

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Edge Computing Use Case

- Edge Use Case

**USE CASES**

**Infrastructure**
- Authentication
- Caching
- Traffic Optimization

**Mobile**
- CUPS
- Network Slicing
- Gi-LAN Services
- cRAN

**Wireline**
- vBNG
- vCCAP

**Enterprise**
- Retail Services
- IoT Data Aggregation
Edge Computing Use Case

Basic Networking:
- L2/L3 or L2/L3 Network
- IPAM/DHCP, DNS, Multi-Tenancy

Advance Networking:
- VLAN-ID, VRRP, VIP, LB, Routes Advertisement,
- GW Function, Service Chaining, Traffic Steering, Flow awareness,
- QoS, SR-IOV/DPDK, BGP-VPN,
- Inter Site Federation, Health Checks, FW, Encryption Support

Central/Aggregate Site

IP BackBone Transport

Orchestration & Monitoring (OSS/BSS)

SDN Controller

VM/Container Controller

Edge POD Controller
Control node Scale out

3 Sites:
1 Primary POP and 2 small POPs (POP1 and POP2)
- CN, GW and Vrouter for a POP belong to the same sub-cluster
- All Control Nodes are deployed on a same site (CN are “logically” in a POP from a routing point of view)
SDN ECOSYSTEM in CNCF
Beyond cloud-native... Do you care about:
- High-performance forwarding
- Proven cloud-grade, carrier-grade scale
- Feature rich for Kubernetes and LB, beyond CNI
- Feature rich in general for net + sec
- Multi-tenancy
- Open source / community
- Open standards-based federation
- Multiple orchestrator support
- Solid vendor backing and optional services
- Collapsing stacked SDNs: e.g. K8s on OpenStack
- Ease of use