TERAFLOW Relationship with OSM Ecosystem

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Objective 1: Adoption of SDN by Telecom Operators

- Accelerate innovation in Optical and IP networks and ultimately help operators provide better connectivity for communities all around the world.
- 5G Integration with L3VPN/L2VPN up to the edge
  - Multi-vendor Multi-domain
  - Multi-cast/Unicast
  - IP+Optical
  - MPLS-TP or SR or GTP

- Automated and Zero Touch Service Management for Transport Network Slices
  - Initialization
  - Auto-discovery and auto-configuration
  - Auto-provision

Open Source MANO

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Objective 2: Handle a Tera of flows

Cloud-native Network Operative System

IoT - a tera of flows – New cloud-native architectures, P4 introduction

Inventory, alarms, provisioning – Novel protocols (gNMI)
Objective 3: Easily integrate with distributed computing through Transport Network Slices

Integration with:
- Telco Cloud
- MEC

Enabling:
- Cloud-native solutions
- 5G GTP flow definitions
- 5GCore

Inter-domain smart contracts
- B2B
- B2C
Objective 4: Secure Operator Network

AI/ML based on
- ETSI ZSM
- ETSI ENI

Cybersecurity - MouseWorld
- Attack detection
- Reactive protection
- Synthetic attack generation

DLT
- Secure network element configuration
- Smart-contract-based verification and update
- Support for forensic evidence (in TeraFlow for network element configuration)
Lack of Commercial Products for SDN

Open-Source Software with Apache License

Contributions to other OSS
Monolithic vs. Micro-services

- UI
- BUSINESS LOGIC
- DATA ACCESS LAYER
- MICROSERVICE
- MICROSERVICE
- MICROSERVICE
Cloud-native benefits and challenges

- Automated rollbacks
- Load Balancing
- Self-Healing
- Auto Scaling

- Versioning
- Building
- Testing
- Deployment
- Logging
- Monitoring
- Debugging
- Connectivity

- Mentality Change
- Robust monitoring
- Testing complexity
- Design with failure in mind
Applicability Scenario

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AUTONOMICITY AND NETWORK/COMPUTE INTEGRATION

AI-BASED CYBERSECURITY

TRUSTED MULTI-TENANCY
Project relationship with current activities

Software Defined Networking

iFusion

Software Defined Networking

UNICA Next

MUST

ONOS

μONOS

Telco Cloud Infrastructure

ETSi

GSMA

Open Source MANO

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Role Teraflow

Options to be discussed during the project...
NFV orchestrator integration component

• TeraFlow component that offers NBI to NFV orchestrator to provide connectivity services

• Proposed NBI:
  • IETF Transport Network Slices: draft-nsdt-teas-ietf-network-slice-definition-02
  • IETF L2VPN

• Integration with:
  • OSM:
    • Using current plugin: L2VPN [https://osm.etsi.org/gitweb/?p=osm/RO.git;a=blob;f=RO-SDN-ietfl2vpn/osm_rosdn_ietfl2vpn/wimconn_ietfl2vpn.py;h=9b67fc17f828d0d951f74520fae7189b10496c21;hb=HEAD](https://osm.etsi.org/gitweb/?p=osm/RO.git;a=blob;f=RO-SDN-ietfl2vpn/osm_rosdn_ietfl2vpn/wimconn_ietfl2vpn.py;h=9b67fc17f828d0d951f74520fae7189b10496c21;hb=HEAD)
    • Providing new plugin based on Transport Network Slices and ONF Transport API
  • Other?

• **Description of work:**
  - Analysis and support (implementation and deployment) of the NBI operations supported by the selected MANO solution controlling edge/core for the interworking with the TeraFlow OS dedicated component
  - Definition of the interactions/workflows for instantiating/updating/releasing transport resources entailing the selection of the transport protocol/s to enable traffic isolation capabilities of the data incoming/outgoing DCs (e.g., VLAN and MPLS label)
  - Devising and validation of transport resource algorithms to select/update resources satisfying the slice/network service reqs.
Thank you!

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