



# Kick-Off For M-CORD Demo at MWCA 2018

M. Oğuz Sunay  
M-CORD Chief Architect  
ONF

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An Operator Led Consortium



# AGENDA

- ONF Demo Wiki:  
<https://wiki.opennetworking.org/display/COM/2018+MWC+Americas>
- Demo Participants
- Demo Story
- Demo Architecture

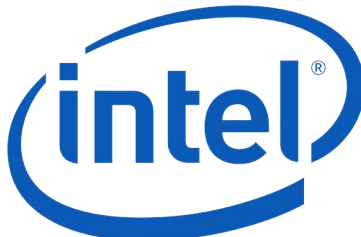
# Demo Participants



Cloud Native M-CORD  
with P4 Fabric

Real time on boarding and instantiation of  
additional EPC instances

Programmable, subscriber-based traffic steering



NGIC  
Self Configuring  
Containerized EPC  
with Kubernetes  
Orchestration

MEC Platform  
Connected to the  
M-CORD Fabric  
  
Face Recognition App  
on MEC  
  
MEC - ONAP  
Integration ?  
  
xRAN ?

ONOS-based  
Programmable RAN  
Slicing  
  
eNB-Anchored  
ONOS-based  
Programmable Core  
Network  
Slicing  
  
Network Slicing  
Design and Runtime  
on ONAP with XOS  
Interface via SDN-c

Telemetry Function  
with ONOS ProgRAN  
integration  
  
Analytics Function for  
QoE-based Alarm  
Triggering  
  
ONAP DCAE  
Integration for  
Closed-Loop  
Automation

Prometheus and  
Grafana based  
Telemetry on  
Kubernetes  
Infrastructure  
  
Analytics Function for  
Infrastructure Usage-  
Based Alarm  
Triggering

P4-Switching  
Hardware  
  
CORD fabric.p4  
compilation  
  
EPC UP.p4  
compilation  
  
Deep Insight  
Integration

c3PO



# Demo Story - Part I

- Cloud Native M-CORD with Programmable P4 Fabric and Programmable RAN
  - Cavium-based Small Cell connected to M-CORD
  - Initially - Single EPC instance instantiated - either all containers or P4 UP version
- RAN Slices Designed on ONAP
  - Designed Profile Pushed Down to XOS via SDN-C and CCSDK
  - XOS Forwards this to ONOS ProgRAN
  - ONOS ProgRAN programs the eNB to instantiate the two slices
  - Users are divided amongst the two RAN slices programmatically based on ONAP design profile
- One slice is video streaming, other is download?
- Telemetry function monitors the users' QoE.
- Analytics function triggers alarm when a video streaming video user's QoE becomes low
- Alarm is pushed up to ONAP's DCAE which then edits the Slicing Profile in the Policy Framework and pushes down the new profile down to QoS.

# Demo Story - Part II

- Telemetry function monitor the EPC containers' resource usage
- Analytics function triggers an alarm for the need for more resources and sends the trigger to XOS
- XOS instantiates a new EPC instance
- Based on Operator Policy, it migrates some users (download?) from original EPC instance to the new one
- We monitor the infrastructure + network using:
  - Prometheus + Grafana
  - Deep Insight
- Analytics function triggers an alarm informing that the need for the second EPC instance is no longer present and sends the trigger to XOS
- XOS migrates users to back to the original EPC
- XOS gets Kubernetes to terminate EPC instance

# Demo Story - Part III

- A second eNB is connected to a MEC platform where Radisys' vMRF is running
- MEC is connected to the M-CORD P4 fabric for interconnection with its own EPC
- vMRF is designed, on-boarded, instantiated and lifecycle managed by ONAP
- This eNB may be xRAN compliant - this will be clarified in the coming week(s)

# MWC Joint Demo

