5G Super Blueprint: Network Slicing Proof of Concept
Networking Digital Transformation is a Right, not a Privilege.

Open Networking is the only viable path to scale Innovation.

We are the Center of Gravity for Open Collaboration.
The 5G Super Blueprint Journey

2017: Initial VCO Demo

2018: LFN + OCP Edge Collaboration

2019: 5G Cloud Native Infrastructure

2020 (Virtual): ONAP Integration
2021: End to End Network Slicing

• Provision a network slice from the back-office through the core to the edge and radio
• Integrate and Interoperate interfaces necessary for orchestrated slicing
• Demonstrate impact on video delivery use case
• Set the stage for full private mobile networking
Business Transformation: Value of Network Slicing

$200B opportunity by 2030*

- Enables customized network slices based on requirements of customers and industry segment
- Evolves 5G promise from “More is Better” to “Intelligent is Better”
- Creates opportunities to target specific vertical markets
- Paves way for IOT interconnection

* Source: Arthur D Little Research, sponsored by Ericsson
Networking Innovation: Cloud Native 5G Blueprint Network Architecture

Orchestration, LCM, 5G core slicing

SDWAN

Kubernetes
Cloud

Aarna Networks

ONAP

EMCO

turnium

UNH Lab

Kaloom Montreal Lab

Rebaca

gNB/UE Emulator

Capgemini engineering

CBRS

RU

DU-High

DU-Low

CEN

O-RAN*

5G Core

UDM

NRF

NEF

UDSF

NSSF

AUSF

UDR

AMF

SMF

PCF

AF

UPF

N4

N6

3GPP interfaces, NETCONF

SDWAN

5G core slicing

Data Network

NGFW

Kaloom

OpenShift Kubernetes NFVI Cloud

Red Hat

OpenShift
Cloud Native 5G Blueprint Network Architecture: Provisioning Flow

1a. Connect datacenters
1b. Connect datacenters
2a. Deploy OpenShift
2b. Deploy ONAP+EMCO and K8s
2c. Deploy Rebaca
2d. Deploy O-RU
3a. Onboard RAN, core, NGFW
3b. Create network service
3c. Orchestrate to OpenShift
3g. Orchestration, LCM, 5G core slicing
4. Create E2E network slice

- **1a. Connect datacenters**
- **2a. Deploy OpenShift**
- **2b. Deploy ONAP+EMCO and K8s**
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- **3a. Onboard RAN, core, NGFW**
- **3b. Create network service**
- **3c. Orchestrate to OpenShift**
- **4. Create E2E network slice**
Cloud Native 5G Blueprint Network Architecture: Data Path Flow

1. Slice parameters configure via a custom Network Slice Subnet Function (NSSMF)

2. Video sessions initiated across “good” and “bad” slices

3. Slice SLA maintained by Capgemini Engineering NGC and Kaloom UPF

4. Video sessions terminated

- SDWAN
- A10 NGFW
- Data Network
- OpenShift Kubernetes NFVI Cloud
- Kubernetes Cloud
- Kubernetes
- Cloud
- UDR
- SMF
- PCF
- AF
- UDSF
- NEF
- NRF
- NSSF
- N4
- N6
- N2
- N3
- N1
- UDM
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- UNH Lab
- Kaloom Montreal Lab
- 3GPP interfaces, NETCONF
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#onesummit #k8sedgeday
Using ONAP to Create Network Slices

- Two slices created
  - “Good Slice” 5Mbps
  - “Bad Slice” 2.5Mbps

- ONAP Communication Service Management Function (CSMF) and Network Slice Management Function (NSMF) user interfaces to input slice details

- Slice information sent to 5GC via custom developed Network Slice Subnet Management Function (NSSMF)
Network Slicing Demo
Community Collaboration is Key
Thanks! The People Are the Power

Active participants for this version of the 5G Super Blueprint

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Sawyer Bergeron, IOL-UNH
Brandon Wick, Linux Foundation
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Key Goals:

- **Use Case:** Truly enable private, secure mobile networking
- **Technology:** Integrate Magma open source 5G core with ONAP
- **Technology:** Fully integrate Anuket and ONAP
- **Technology:** Integrate physical radio
5G Super Blueprint: Future Phases

5G + IOT
- Full 5G and Edge IOT inter-networking
- Build upon private mobile networking to the Edge
- Fully enable use cases such as Smart Manufacturing and Retail

Open RAN
- Integration with ORAN SC
- Deploy open source from the core to the radio
- Demonstrate end-to-end open source interoperability
- Set stage for future compliance activities

LF Open Source Component Projects for 5G
Learn More and Get Involved

Learn More: https://www.lfnetworking.org/5g-super-blueprint/
Read the FAQ: https://wiki.lfnetworking.org/display/LN/5G+Super+Blueprint+FAQ
Get Involved: https://wiki.lfnetworking.org/display/LN/LFN+Demo%3A+5G+Super+Blueprint

*Behind the Scenes video: Hanen wins an Emmy!*
Available in the Linux Foundation Demo Pavilion (and on YouTube) https://youtu.be/YF5mTRE1wDs
Transform.
Innovate.
Collaborate.