# 05-09-23 - 5G SBP Off-Week Working Group Meeting

## Meeting Recording

## Chat File

**Attendance**

Please enter you name and company. Tag yourself using LF ID User Name. Don't have an LF ID yet? Go here: https://myprofile.lfx.linuxfoundation.org/.

| Name | Company |
|---|---|
| LJ Illuzzi | Linux Foundation |
| Yogendra Pal | Aarna Networks |
| Satish Sadagopan | IBM |
| Gaurav Mishra | AccuKnox |
| Parthiban Nalliamudali | Wavelabs Technologies |
| Ranny Haiby | Linux Foundation |
| Prateek Nandle | AccuKnox |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |

**Agenda:**

- Antitrust
- Start Recording- helps facilitate minutes and Action Items
- Welcome 1st Time Attendees
- ***5G SBP weekly meeting day and time change***
- June Developer & Testing Forum
- Deep Dive Topic: Use Case- Slicing Free5GC and EMCO
- Upcoming Meetings
- Any Other Business

##################################

**LF Anti-trust**

- We will start by mentioning the project's Antitrust Policy, which you can find linked from the LF and project websites. The policy is important where multiple companies, including potential industry competitors, are participating in meetings. Please review and if you have any questions, please contact your company legal counsel. Members of the LF may contact Andrew Updegrove at the firm Gesmer Updegrove LLP, which provides legal counsel to the LF.
  - Antitrust Policy

**Start Recording**

**Welcome 1st Time Attendees**

Welcome all. new attendees. If you have any questions about participating in this community, please contact Louis Illuzzi (lilluzzi@linuxfoundation.org).

5G Super Blueprint Overview and Getting Started

*5G SBP weekly meeting day and time change*

A calendar conflict with our Tuesday timeslot has arisen and forces the 5G SBP to change its weekly meeting day and time. Unfortunately no other options are available. The new day and time will be Wednesdays 8am PT, 11am ET, 8:30pm IST. This change is for both the Bi-Weekly Status meeting as well as the Off-Week Working Group meeting and will start with the May 17 Bi-Weekly Status meeting.

We'll try this out for a few weeks and if this new meeting day and time is not convenient for a majority of the community we will adjust. An updated meeting invitation will go out after the May 9 meeting.

**2023-06 LFN Developer & Testing Forum (Virtual)**

- June 6 -8
- Virtual event
- Topics Submission Page
- Virtual D&TF session guidelines
- Topic Submission deadline is May 19
- Potential Topics:
  - **Wavelabs topic - Parthiban**
  - Edge Placement
  - 5G SBP: KubeArmor + SEDIMENT project
  - Use Case- Slicing Free5GC and EMCO
    - Tie-in with Edge Placement
    - Tie-in with Wavelabs instance of Free5GC and EMCO?
    - Muddasar, Rodney, Parthiban would like to assist
      - Did follow-up call last week happen?

**Deep Dive Topic: Use Case- Slicing Free5GC and EMCO**

**Upcoming Meetings**

- 17 May 2023 Bi-Weekly  Status Meeting
- 24 May 2023 Off-Week Working Group Meeting
  - *Topic?*

*---------- Below is Reference, Placeholders,  and Parking Lot ---------------*

**SEDIMENT Project Overview**

- Can we get a PDF version of presentation and attach to wiki?
  - Add links to Use Case wiki pages
- Potential Next Steps:
  - Introduce Peraton, Kaloom, IBM. LJ to sent an introduction email
  - Determine if existing IBM cameras can support RA (create Evidence)
    - Camera spec sheet
  - What other IoT devices can be introduced? Does Perton have IoT devices(s) that can be introduced? Peraton using development boards as IoT emulators.
    - Temperature sensor
  - RAP server- remote access to Peraton?

**Sprint 1 Planning 3 months**

Umbrella goal- NaaS - evaluate above as they applies to NaaS, example RAN, Network. NaaS can become a tenant of these services. (not a separate Use Case).

- High Level problem statement:
  - Hign level User Stories:

- Epic/Use Case- Edge placement of network functions (RAN) deployment at the edge. Create a cell site (leveraging Equinix metro site availability) and place CU/DU workloads at the cell site. for slicing Use Case and cell site deployment (edge placement) Use Case. Also include slicing latency at the network edge. Find the characteristcs of the slice, example; maximum number of UEs, maximum number of videos sessions that can be supported; latency at the core and RAN
  - create Epic and User Stories for each; consult with Equinix Yogendra Pal Muddasar Ahmed Rodney Elder **@ron victor @phil**. Schedule followup call
  - Sketch of an Epic for Edge Placement:
    - Operators are looking for methods to place Edge Infrastructure in enough proper places to enable scaling of Edge operations from day 0 to day 3 (full production).  This becomes technically challenging, to support day 0 edge infrastructure for a targeted number of UE subscribers with just enough infrastructure to commercially support initial subscribers, but also enough capabilities to scale as subscribers are added.  This leads to challenges of physical and logical placement of compute and interconnection.  In this Epic, it can explore the current standards state and identify gaps of real world implementations, redundancy and resiliency.
    - Use Case - Incremental Edge Placement
      - Scenario - an operator has an existing 5G NSA core for typical retail operations and seeks to support deployment of a 5G SA infrastructure to support a Day 1 customer with some defined number of scheduled subscribers over a defined geography.  In this use case it could be demonstrated for a scaled deployment of 100K subscribers incrementally added at 25K per quarter with geographic coverage for North America.
- Use Case- Automation. Equinix has a script to deploy Free5GC and gNodeB. We can look into how that fits into automation and auto deployment for an automation Use Case.
  - Equinix is using gNodeB built into Free5GC
  - How can KubeArmor be integrated into the automated deployment (Muddasar).
- Remote Atestation of IoT devices - SEDIMENT project. Placeholder
- Any others?

**6/9 Month Sprint Backlog**

- Use Case- Secure Orchestration- using Enterprise and corporate policies, and well as standards requirements, demostrate the capability to deploy workloads securely, and then create network slices based on an SLA. Define behaviors at Day 0 and Day 1. How does KubeArmor fill the security gaps? Create Epic for secure orchestration, then add Use Stories
- Use Case- Overlay networks (Equinix). Demonstrate the mapping of a 5G network slice to where the overlay gateway and controllers are located, and demonstrate how the placement of the UPF or RIC, where the traffic can be broken out to, support the overlay networks. Potential as a User Story in secure orchestration Epic

**Lab Updates**

- UNH-IOL
  - Will have a gNodeB (Amarisoft) available in March time-frame, that can be shared to the 5GSB.  System is already setup in RF isolation chamber.  Limited 5G eMBB UE are available as well.
  - LaaS is online / can be booked / connected to the gNodeB.
- Kaloom (Montreal)
  - RU brought into the lab
  - SD-Core installed- Next- connect Kaloom UPF to SD-Core
  - Adding Use Cases with IBM- retail and IoT
  - Open5GS install is pending
- Wavelabs (Hyderabad)
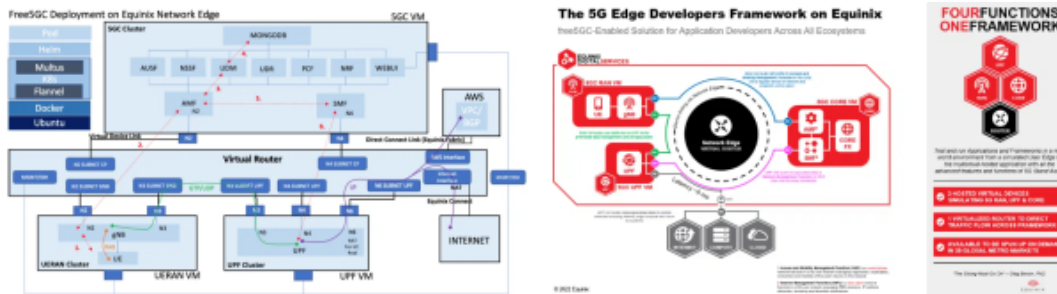  - EMCO is working with Free5GC

**Accuknox Introduction**

- accuknox.com
- Kubearmor
  - Potential 5G SBP Use Cases
    - potential to leverage KubeArmor security for Open Horizon workloads: https://open-horizon.github.io/docs/kubearmor-integration/docs/README/
    - KubeArmor- slicing technics and slicing execution to utilize workload network and full stack isolation capabilities
- 5Gsec.com
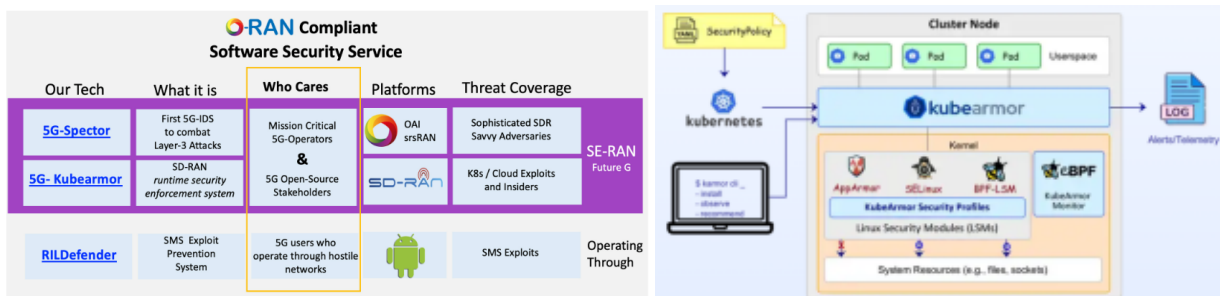
**Equinix - Free5GC deployment on Network Edge**

- https://blog.equinix.com/blog/2023/02/23/unlock-the-true-potential-of-5g-with-edge-infrastructure/



- Infrastructure as a Service, network placement and orchestration as a Service
- Contribution opportunity around observability; Equinix would be interested conversations in insert observability features into the framework
- Equinix is using gnodeb built into Free5GC
- Potential 5G SBP Use Cases
  - Slicing latency at the network edge. Find the characteristcs of the slice, example; maximum number of UEs, maximum number of videos sessions that can be supported; latency at the core and RAN
  - Use Case- RAN deployment at the edge. Create a cell site (leveraging Equinix metro site availability) and place CU/DU workloads at the cell site. for slicing Use Case and cell site deployment (edge placement) Use Case.
  - Use Case- Automation. Equinix has a script to deploy Free5GC and gnodeb. We can look into how that fits into automation and auto deployment for an automation Use Case.
    - How are KubeArmor be integrated into the automated deployment (Muddasar).
  - Use Case- Secure Orchestration- using Enterprise and corporate policies, and well as standards requirements, demostrate the capability to deploy workloads securely, and then create network slices based on an SLA
  - Use Case- Overlay networks. Demonstarte the mapping of a 5G network slice to where the overlay gateway and controllers are located, and demonstrate how the placement of the UPF or RIC, where the traffic can be broken out to, support the overlay networks.
  - Remote Atestation of IoT devices
  - Muddasar summarized the Use Cases at a high level-

    - RAN deployment at the edge
    - Segregated core deployment- core cloud and edge cloud
    - Secure orchestration

**Work Activities Overview**

1. Establish/Re-establish permanet 5G Network capability in the labs
   - Must have requirments:
     a. Core
     b. RAN
     c. Automation
     d. Security orchestration
   - Workplan:
     a. Define a central Use Case(s)
2. NaaS
   - Must have requirments:
     - LFN and LF Edge projects at the core, cloud, & edge
     - Enterprise Use Case(s)
     - ..
3. Enterprise Use Case

**5G Network-as-a-Service (NaaS)**

- NaaS eBook
- 5G NaaS Self-Service (Portal/API/Interface)

**Nephio**

- 2023-02 - 5G SBP: Birds of Feather: Is there value in adding Nephio?
- Thank you to the team from Aarna for bring this proposal to the 5G SBP
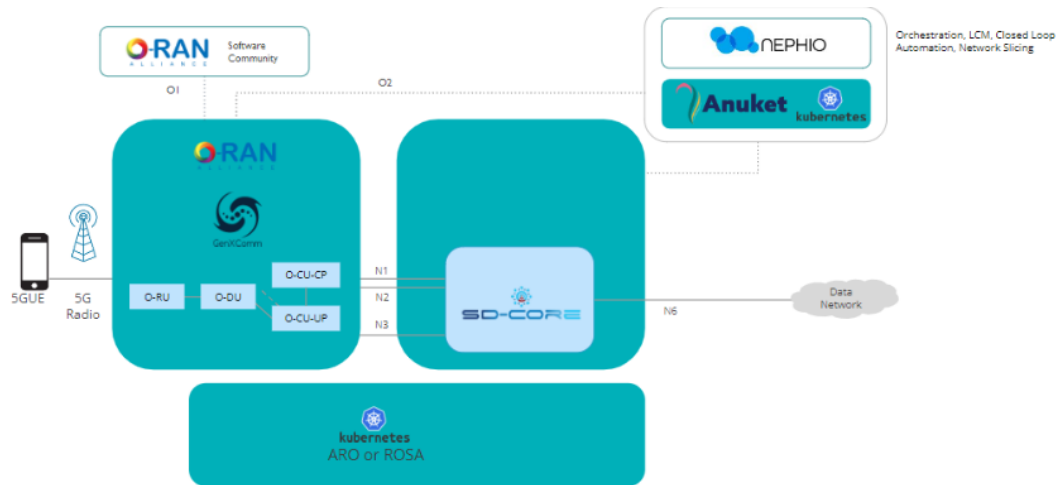
- NaaS tie-in
    - IP Transport as a Service. Front haul/backhaul
    - RAN as a service
    - Core as a Service
    - MEC as a Service
- Skills needed:
    - SD-Core
    - RAN
    - Anuket
    - Kubernetes
    - Nephio/EMCO

**IBM Use Cases (in the hopper)**

- Potential retail Use Case - MWC has priority
- Weather & Agriculture Use Case with GXC

**5G Super Blueprint Workgroups & How to Submit a Blueprint Proposal**