**Private LTE/5G ICN Blueprint**

This project is building an opensource stack to enable CSP/enterprises leverage the solution for deploying Private LTE/5G using CBRS band

**Project Technical Lead:** Prem Sankar Gopannan, Elected 12 May 2020

<table>
<thead>
<tr>
<th>Use Case Attributes</th>
<th>Description</th>
<th>Informational</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Type</strong></td>
<td>New</td>
<td></td>
</tr>
<tr>
<td><strong>Blueprint Family</strong></td>
<td>Integrated Cloud Native NFV (<a href="#">ICN</a>)</td>
<td></td>
</tr>
<tr>
<td><strong>Use Case</strong></td>
<td>End to end connectivity using Private LTE/5G over the CBRS band</td>
<td></td>
</tr>
<tr>
<td><strong>Blueprint proposed Name</strong></td>
<td>Private LTE/5G ICN blueprint</td>
<td></td>
</tr>
<tr>
<td><strong>Initial POD Cost (capex)</strong></td>
<td>Same as ICN — 50K minimum</td>
<td></td>
</tr>
<tr>
<td><strong>Scale &amp; Type</strong></td>
<td>Same as ICN — Minimum of 4 Xeon Servers + 1 Xeon server as genesis</td>
<td></td>
</tr>
<tr>
<td><strong>Applications</strong></td>
<td>RAN+Core (initially LTE, eventually 5G), and reuse of existing ICN applications: ML/DL Analytics, EdgeXFoundry and 360 degree Video streaming</td>
<td></td>
</tr>
<tr>
<td><strong>Power Restrictions</strong></td>
<td>TBD</td>
<td></td>
</tr>
<tr>
<td><strong>Orchestration</strong></td>
<td>Same as ICN — Infrastructure Orchestration</td>
<td></td>
</tr>
</tbody>
</table>

- Bare Metal Provisioning: ironic with Metal3 controlled by Cluster API
- Kubernetes provisioning: KuD.
- Centralized controller: With Cluster-API
- Docker for containers and Virtlet for VMs

- Service Orchestration: ONAP with AF integration
- MEC framework: OpenNESS
- Site orchestrator: Kubernetes upstream
- Traffic Orchestration within a cluster: ISTIO
- Traffic orchestration with external entities: ISTIO-ingress and ISTIO-egress with MCDeployment
- Knative for function orchestration
- Additional platform component: Open source UPF

<table>
<thead>
<tr>
<th>SDN</th>
<th>Same as ICN — OVN, SRIOV, Flannel; additionally Tungsten Fabric</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Workload Type</strong></td>
<td>Containers and functions</td>
</tr>
<tr>
<td><strong>Additional Details</strong></td>
<td>Our roadmap will be:</td>
</tr>
</tbody>
</table>

- Private LTE
- Private 5G Option 5 (i.e. LTE radio + 5GC)
- Private 5G SA (i.e. 5G radio + 5GC)

- Use cases:
  - Manufacturing
  - Farming
  - Healthcare
  - V2X
  - Others

**Contributors:**
<table>
<thead>
<tr>
<th>Committer</th>
<th>Committer Company</th>
<th>Committee Contact Info</th>
<th>Committer Bio / Contributions</th>
<th>Committer Picture</th>
<th>Self Nominate for PTL (Y/N) Ends 13 May 2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prem Sankar Gopannan</td>
<td>Cohere Technologies</td>
<td>Prem Sankar G</td>
<td>PTL. Manage Architecture, Use case and project planning</td>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td>Ravi Chunduru</td>
<td>Verizon</td>
<td>Ravi Chunduru</td>
<td>End user requirements guidance</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Manoj Mourya</td>
<td>Orange</td>
<td></td>
<td>End user requirements and contributions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hakim Achour</td>
<td>Airbus</td>
<td></td>
<td>End user requirements guidance</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vikram Balimidi</td>
<td>Cloudyfy - Tata Communications</td>
<td>Vikram Balimidi</td>
<td>End-user requirements and guidance</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vineet Anshuman</td>
<td>Cloudyfy - Tata Communications</td>
<td>vineet anshuman</td>
<td>End-user requirements and guidance</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alain Soleil</td>
<td>T-Mobile US</td>
<td>Alain Soleil</td>
<td>End-user requirements and guidance</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vincent Seet</td>
<td>Globe Telecom, Inc.</td>
<td>Vincent Seet</td>
<td>End-User requirements and guidance</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| Srinivasa Addepalli | Intel | Srinivasa Addepalli | With MICN as the basis for this, my colleagues and I at Intel will help in following:  
- MICN integration  
- SD-EWAN CNF  
- OVN-for-KBs-NFV network controller  
- ONAP  
Will work with other team members in adding new controllers in ONAP to auto program the UPF & adjacent gateway micro-service to steer the traffic to locally offloaded applications. | | |
| Amar Kapadia | Aarna Networks | Amar Kapadia | ONAP | | |
| Srima Rupanagunta | Aarna Networks | Srima Rupanagunta | ONAP | | |
| Ramki Krishnan | Advisor, VMware | ramki krishnan | | | |
| Pradnesh Dange | Rebaca | Pradnesh Dange | Testing | | |
| Sivasothy SHANMUGALINGAM | Independent | Sivasothy Shamugalingam | UPF and SMF | | |
| Mansoor Khan | Wavelabs.ai | Mansoor Khan | Systems Integration | | |
| Parthiban N | Wavelabs.ai | Parthiban Naikamudali | Orchestration  
CI/CD, DevOps | | |
| Mohamed El Gamal | NetNumber | Mohamed El Gamal | | | |
| Sukhdev Kapur | Juniper Networks | Sukhdev Kapur | TSC Member of Akraino as well Tungsten Fabric | | |
| Qasim Arham | Juniper Networks | Qasim Arham | Tungsten Fabric Integration | | |
| Prabhjot Sethi | ATS Systems | Prabhjot S Sethi | Chair of Tungsten Fabric TSC | | |
| Boris Renski | FreedomFi | Boris Renski | OCN Automation Workstream Lead | | |
| Lakshmi Swetha Ramisetty | Independent contributor | Lakshmi Swetha Ramisetty | | | |
| Isaac Manuel Raj | Lumina Networks | Isaac Manuel Raj | End user requirements contributions | | |
| Kanagasundaram K (KKS) | Independent contributor | Kanagasundaram K | OA and Automation | | |
Files:

Akbraino ICN Private LTE_5G v8.4.pptx
EMCO Intel V2.1.pptx