

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

Use Case Attributes	Description	Informational
Type	New	
Blueprint Family	Integrated Cloud Native NFV (ICN)	
Use Case	End to end connectivity using Private LTE/5G over the CBRS band	
Blueprint proposed Name	Private LTE/5G ICN blueprint	
Initial POD Cost (capex)	Same as ICN — 50K minimum	
Scale & Type	Same as ICN — Minimum of 4 Xeon Servers + 1 Xeon server as genesis	
Applications	RAN+Core (initially LTE, eventually 5G), and reuse of existing ICN applications: ML/DL Analytics, EdgeXFoundry and 360 degree Video streaming	
Power Restrictions	TBD	
Orchestration	<p>Same as ICN —</p> <p>Infrastructure Orchestration</p> <ul style="list-style-type: none"> • 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 <p>Service Orchestration : ONAP with AF integration</p> <p>MEC framework: OpenNESS</p> <p>Site orchestrator : Kubernetes upstream</p> <p>Traffic Orchestration within a cluster: ISTIO</p> <p>Traffic orchestration with external entities : ISTIO-ingress and ISTIO-egress with MCDeployment</p> <p>Knative for function orchestration</p> <p>Additional platform component: Open source UPF</p>	
SDN	Same as ICN — OVN, SRIOV, Flannel; additionally Tungsten Fabric	
Workload Type	Containers and functions	
Additional Details	<p>Our roadmap will be:</p> <ul style="list-style-type: none"> • Private LTE • Private 5G Option 5 (i.e. LTE radio + 5GC) • Private 5G SA (i.e. 5G radio + 5GC) <p>Use cases:</p> <ul style="list-style-type: none"> • Manufacturing • Farming • Healthcare • V2X • Others 	

Contributors:

Committer	Committer Company	Committer Contact Info	Committer Bio / Contributions	Committer Picture	Self Nominate for PTL (Y/N) Ends 13 May 2020
Prem Sankar Gopannan	Cohere Technologies	Prem Sankar G	PTL. Manage Architecture, Usecase and project planning		Yes
Ravi Chunduru	Verizon	Ravi Chunduru	End user requirements guidance		
Manoj Mourya	Orange		End user requirements and contributions		
Hakim Achouri	Airbus		End user requirements guidance		
Vikram Balimidi	Cloudlyte - Tata Communications	Vikram Balimidi	End-user requirements and guidance		
Vineet Anshuman	Cloudlyte - Tata Communications	vineet anshuman	End-user requirements and guidance		
Alain Soleil	T-Mobile US	Alain Soleil	End-User requirements and guidance		
Vincent Seet	Globe Telecom, Inc.	Vincent Seet	End-User requirements and guidance		
Srinivasa Addepalli	Intel	Srinivasa Addepalli	<p>With MICN as the basis for this, my colleagues and I at Intel will help in following:</p> <ul style="list-style-type: none"> ▪ MICN integration ▪ SD-EWAN CNF ▪ OVN-for-K8s-NFV network controller ▪ ONAP <p>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.</p>		
Amar Kapadia	Aarna Networks	Amar Kapadia	ONAP		
Sriram Rupanagunta	Aarna Networks	Sriram Rupanagunta	ONAP		
Ramki Krishnan	Advisor, VMware	ramki krishnan			
Pradnesh Dange	Rebaca	Pradnesh Dange	Testing		
Sivasothy SHANMUGA LINGAM	Independent	Sivasothy Shanmugalingam	UPF and SMF		
Mansoor Khan	Wavelabs.ai	Mansoor Khan	Systems Integration		
Parthiban N	Wavelabs.ai	Parthiban Nalliamudali	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	QA and Automation		

Shivaprasad Ginka	Divistha Networks	SHIVAPRASAD GINKA	Systems Integration		
Ganesh Gudigara	Divistha Networks	Ganesh Gudigara	Systems Integration		

Files:



[Akraino ICN Private LTE_5G v8.4.pptx](#)

[EMCO Intel V2.1.pptx](#)

[Akraino Technical Meeting - 24th Sept 2020.pdf](#)