5G SBP Use Case - Public Cloud Edge Interface

Use this template to submit Use Cases for submission to the 5G Super Blueprint Use Case & Requirements Advisory Group. All input is required unless marked "(optional)"

Here is a slide deck that provides further background on this use case:

Use Case Name:	**Public Cloud Edge Interface – 5G**
Use Case Description:	Srinivasa Addepalli Oleg Berzin Amar Kapadia Vivekanandan Muthukrishnan A 3GPP compliant Private 5G blueprint to showcase the flexibility of 5G Core deployment
Problem Statement and how is the problem solved:	*Problem #1: Phase 1 has one dimensional 5GC example with Magma, which is a good example, but supporting only 1 example can lead to interoperability gaps in future. It would be wide to support at least one other options to ensure modularity & extensibility/choice.* *Problem #2: Edge2Cloud considerations often bring unique requirements for the Edge where a lightweight, kubernetes-first orchestration solution that can also support multi-cloud independence is an additional choice option would be ideal to add.* *Problem #3: I believe Magma is missing some modularity and 3GPP support that an additional option that does would be ideal to add an integration example of.* *This blueprint will be based on the Akraino Public Cloud Edge Interface (PCEI) blueprint. The goal of this blueprint, as it pertains to the 5G SBP, is to show end-to-end Private 5G functionality by using Free5GC to showcase the flexibility of 5G Core deployment options.* *By adding an integration example of the free5GC 5GC option, we introduce interoperability and choice assurance and some 3GPP support to address Problem Statements #1 and #3. This PCEI BP also demonstrates an additional service orchestration framework that can work in tandem with ONAP components for both a lightweight k8s-centric and multi-cloud capable option to the 5G SBP solution set. >*

Users Stories	• Demonstrate full Private 5G functionality with Slicing (implemented through a closely related 5G SBP Use Case - 5G Secure Slicing use case) and MEC breakout
	  ◦ Local Break-Out (LBO) – Examples: video traffic offload, low latency services, roaming optimization.
	• Demonstrate UPF running in the enterprise or cloud edge (Colo datacenter) (AMF + SMF could be considered if we want to use the Magma style AGW architecture)
	• Demonstrate the remaining 5GC in the cloud edge or the public cloud
	• Demonstrate replacing the Free5GC UPF with higher performance alternatives
	• Optional/Future
	  ◦ Integrate Free5GC UPF+AMF+SMF (AGW equivalent) with the Magma Or8str
	  ◦ UPF Distribution -- distributing User Plane Functions in the appropriate Data Center Facilities on qualified compute hardware for routing the traffic to desired applications and network/processing functions/applications.
	  ◦ Mobile Hybrid/Multi-Cloud Access - provide multi-MNO, multi-Cloud, multi-MEC access for mobile devices (including IoT) and Edge services/applications
	  ◦ Enterprise Wireless WAN access - provide high-speed Fixed Wireless Access to enterprises with the ability to interconnect to Public Cloud and 3rd-Party Edge Functions, including Network Functions such as SD-WAN.

Demo Storyline (optional)	

Interaction with other open source projects and components	• Free5GC (we can adopt the patches from ONF Aether as well) • LFN EMCO • LFN ONAP
Links to existing documentation (Build Guide, Slideware, etc), if available (optional).	PCEI Release 6 Documentation (this does not show Free5GC integration, but shows the use of EMCO & ONAP)
Links to existing demo /video, if available (optional).	PCEI Demo from January LFN DTF (this does not show Free5GC integration, but shows the use of EMCO & ONAP)
Links to existing code /repos, if available (optional).	PCEI Release 6 Installation Guide
Related	5G Slicing Use Case (this blueprint and the 5G Slicing blueprint are related and use the same underlying software components/infrastructure) • Network Slicing provisioning and management - providing continuity for network slices instantiated in the MNO domain, across the Public Cloud Core/Edge as well as the 3Rd-Party Edge domains, offering dedicated resources specifically tailored for application and functional needs (e.g. security) needs.