# 5G MEC/Slice System to Support Cloud Gaming, HD Video and Live Broadcasting Blueprint

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# Blueprint Proposal: 5G MEC/Slice system to support Cloud Gaming, HD Video and Live broadcasting

Case Attributes	Description	Informational
Type	New Blueprint for 5G MEC/Slice system to support Cloud Gaming, HD Video and Live broadcasting	
Blueprint Family - Proposed Name	It is still a independent blueprint	
Use Case	1. Small deployment targeting MEC in access sites or enterprise 2. Medium deployment targeting MEC in central offices	
Blueprint proposed Name	5G MEC/Slice system to support Cloud Gaming, HD Video and Live broadcasting	
Initial POD Cost (capex)	The minimal configuration is 5 servers in total: 5G system, MEC PaaS(1 Server), Application Server (1 Server)	
Scale & Type	Up to 2 x86/arm servers	
Applications	Any application requires high bandwidth and low latency, including but not limited to : 1) Cloud Gaming 2) HD Video 3) Live broadcasting	
Power Restrictions	Less than 10Kw	
Infrastructure orchestration	Cloud Infrastructure & Orchestrator: OpenStack/StarlingX PaaS: K8s/Docker Swarm OS - Ubuntu 16.x, Centos7 Hypervisor: KVM/QEMU Network: VPP, F-Stack SDN: SR-IOV, OVS-DPDK, VPP-DPDK	
Workload Type	Bare Metal, VM or Container	
Additional Details	Cloud Gaming, HD video or Live broadcasting applications may enable support for high density media streaming processing via GPU or FPGA acceleration	

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Architecture Overview
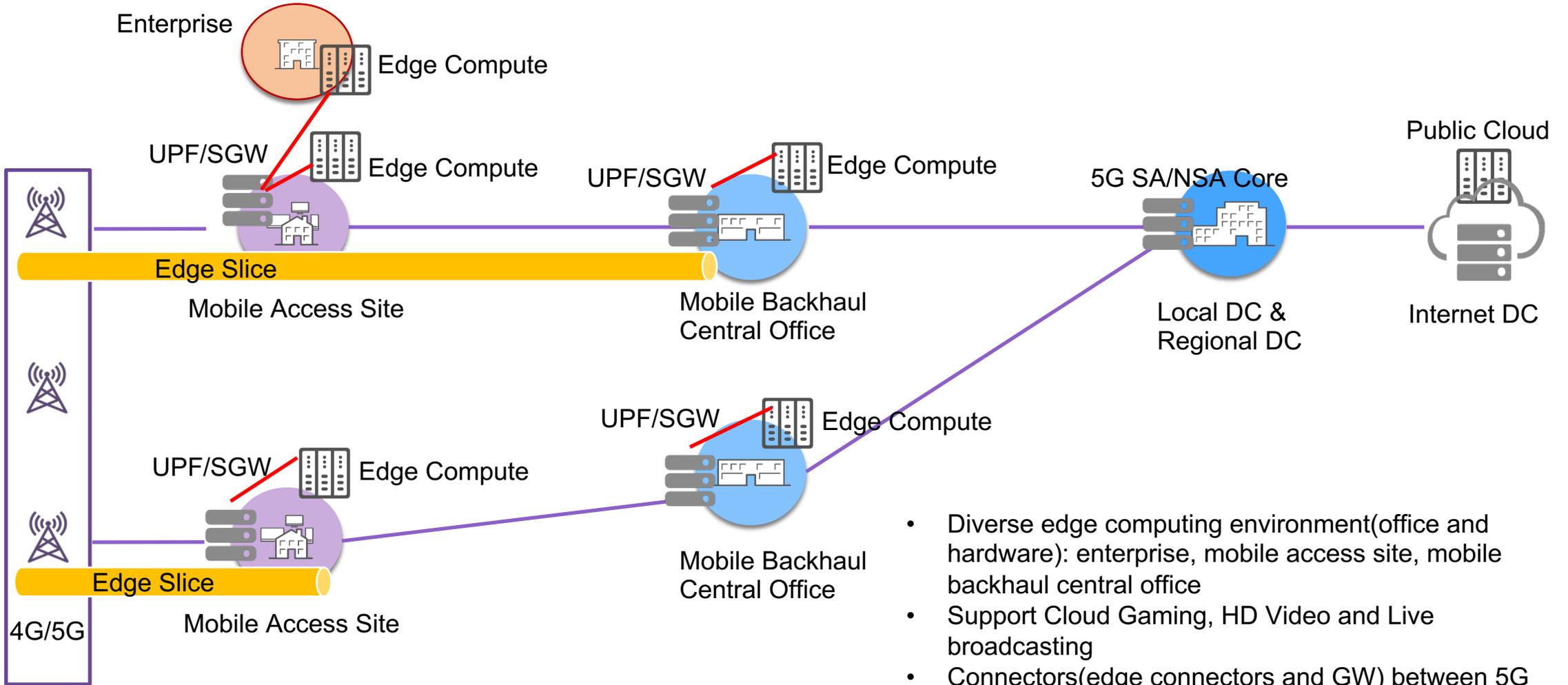
- Diverse edge computing environment(office and hardware): enterprise, mobile access site, mobile backhaul central office
- Support Cloud Gaming, HD Video and Live broadcasting
- Connectors(edge connectors and GW) between 5G and applications to enable edge computing to enable dynamic traffic offloading and managment
- Support edge slice to guarantee service experience

Architecture Overview
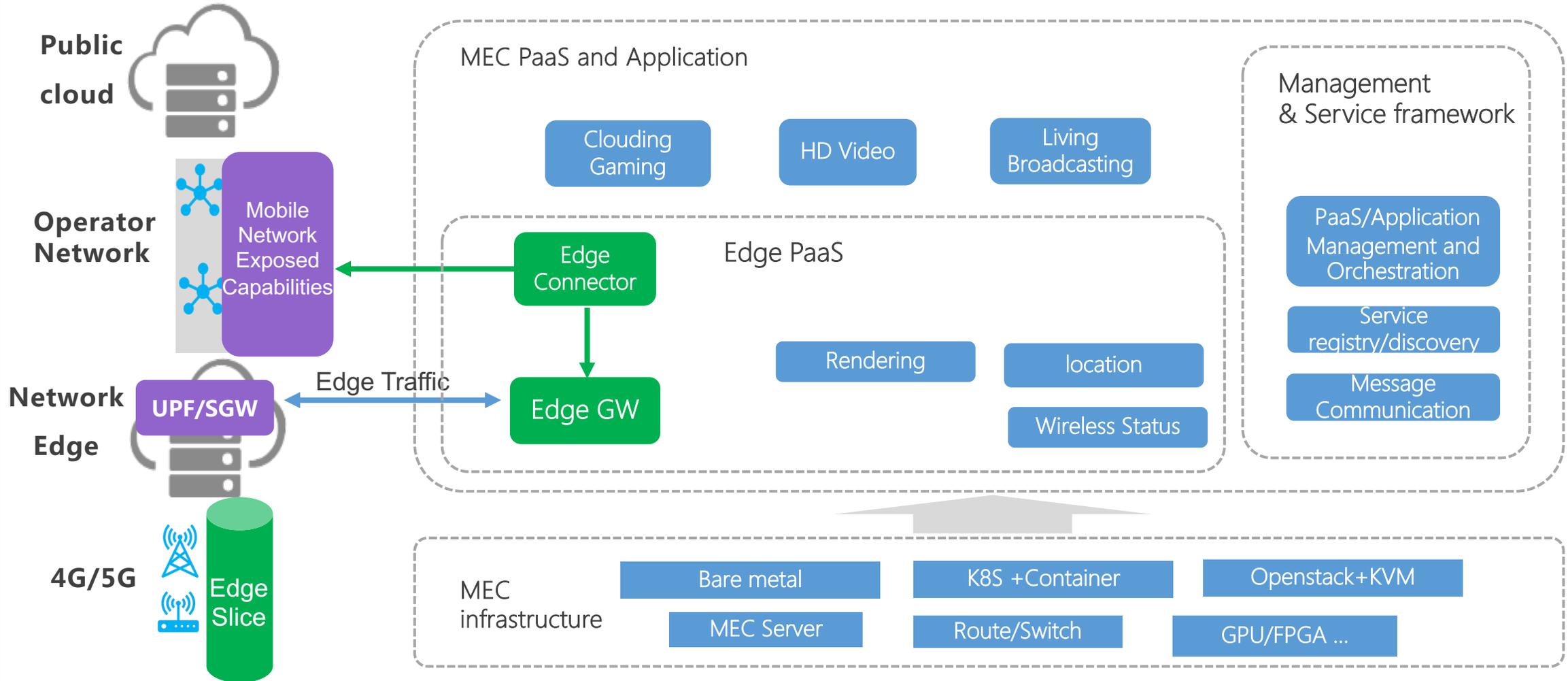
- Edge connector: enable the traffic offloading from the aspects of control interaction with mobile network exposed capabilities, and subscribe the edge slice between UE and edge application
- Edge GW: enable the traffic offloading from the aspects of data plane with load balance, application proxy, traffic management, local traffic routing
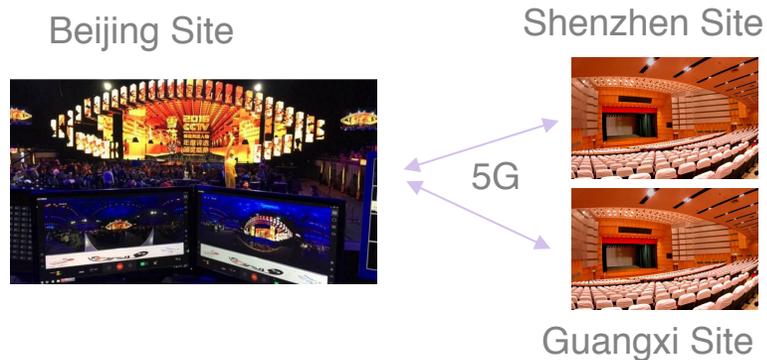
Key Edge Applications： Cloud Gaming

	Traditional Gaming	Cloud Gaming
Promoting	Takes a **fair amount of time** to download. Users may not willing to wait.	Takes only **few seconds** to download, "Click and Play".
Latency	With traditional or 4G network, the low bandwidth and latency (around **80ms**) does not deliver the best user experience.	With the 5G network, the user is guaranteed with a **25Mbps to 100Mbps** bandwidth and the latency is reduced to **10ms to 20ms**.
System Requirement	The **users have to make sure** their device meets the system requirements to get the best user experience.	The **users do not need to worry** about the hardware requirement.

Advertising

First Time Player

Download

Social Media Ex. Instagram

Other Platform Ex. YouTube

Click And Play

PUBG pubg ...

68,093 likes
pubg It's finally here! The @FaceitPUBG Global Summit goes LIVE tomorrow. Tune in for high intensity, best-in-the-world #PUBG action! Learn more about the event at the link in our bio.

PlayerUnknown's Battlegrounds
Video game • Released: 2017

PUBG - Erangel Visual Update
1M views • 5 days ago   0:29
Show more

User is satisfied with the contents.

Download the game and **may make purchases**

Key Edge Applications： HD Video and Live broadcasting

Live Broadcast

Beijing Site

Shenzhen Site

5G

Guangxi Site

- 20Mbps~50Mbps per channel video
- 20ms delay to support interactive behavior

HD Video

CDN

HD Video

5G

Edge Cloud

- 8K video 100Mbps+

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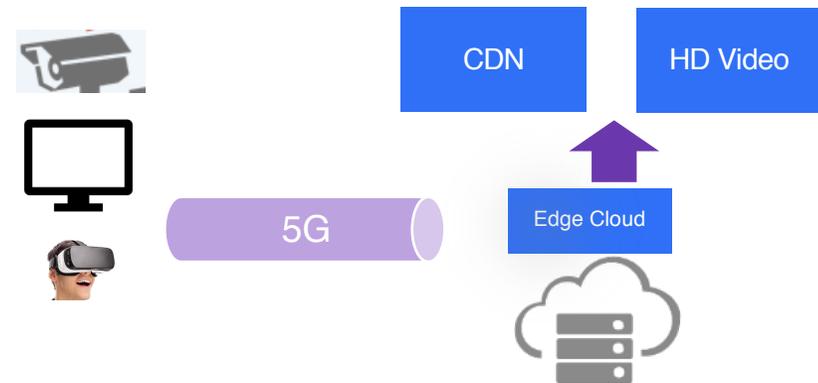
Initial Detailed Technical Architecture for Edge Connector and Edge GW

EPC/5GC

Edge Connector(edge, slice)

Edge OSS

Orchestration

Edge GW

5G NSA/SA Termination
traffic offloading
L4LB, L7LB
Traffic management
Routing, NAT…

OAM Agent

Edge UPF/SGW

OPENNESS

VPP

F-Stack

DPDK

Application LCM

Live Broadcasting Applications

HD Video Applications

Cloud Gaming Applications

MEC NFVI/VIM

Bare-metal, K8S + Container, OpenStack/StarlingX + KVM, IEC

X86/arm Server

Route/Switch

GPU/FPGA …

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Appendix: Assessment Criteria

Criteria	5G MEC/Slice System to Support Cloud Gaming, HD Video and Live Broadcasting Blueprint
Each initial blueprint is encouraged to take on at least two committers from different companies.	Tencent, ARM, Intel, China Mobile
Complete all templates outlined in this documents	Detailed in this slide
A lab with exact configuration required by the blueprint to connect with Akraino CI and demonstrate CD. User should demonstrate either an existing lab or the funding and commitment to build the needed configuration.	Test facility will be provided by TEG department in Tencent Beijing
Blue print is aligned with the Akraino Edge Stack Charter	All opensource, Edge sue case, Aligned with the Akraino Charter
Blueprint is code that will be developed and used with Akraino repository should use only open source software components either from upstream or Akraino projects.	Yes, all open source.
For new blueprints submission, the submitter should review existing blueprints and ensure it is not a duplicate blueprint and explain how the submission differs. The functional fit of an existing blueprint for a use case does not prevent an additional blue print being submitted.	5G MEC/Slice System to Support Cloud Gaming, HD Video and Live Broadcasting Blueprint does not exist in Akraino yet.

Criteria	5G MEC/Slice System to Support Cloud Gaming, HD Video and Live Broadcasting Blueprint
Name of the project is appropriate(no trademark issues etc.); Proposed repository name is all lower-case without any special characters.	5G MEC/Slice System to Support Cloud Gaming, HD Video and Live Broadcasting Blueprint
Project contact name, company, and email are defined and documents	Wei Chen, Tencent. allenwchen@tencent.com
Description of the project goal and its purpose are defined	Use 5G MEC/Slice system's properties such as eMBB, uRLLC to ensure the quality and user experience in Cloud Gaming, HD Video and Live Broadcasting applications.
Scope and project plan are well defined	Targeted for R4 release
Resource committed and available	There is a team, resources and a lab in place.
Contributors identified	Tencent, ARM, Intel, China Mobile
Initial list of committers identified (elected/proposed by initial contributors)	Tencent, ARM, Intel, China Mobile
Meets Akraino TSC policies	The project will operate in a transparent, open, collaborative and ethical manner all the time.
Proposal has been socialized with potentially interested or affected projects and/or parties	Have already reached a consensus with sponsors.
Cross Project Dependencies	Containers, Kubernetes, OpenNESS, Fstack.

Thank you!