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

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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 Family	
Blueprint Family - Proposed Name	5G MEC/Slice system to support Cloud Gaming, HD Video and Live broadcasting	
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 2 servers in total: Edge Connector and GW(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 3000W	
Infrastructure orchestration	Cloud Infrastructure & Orchestrator: OpenStack/StarlingX PaaS: K8s/Docker Swarm OS - Centos7 Hypervisor: KVM/QEMU Network: VPP	
Workload Type	Bare Metal, VM or Container	
Additional Details	1. Cloud Gaming, HD video or Live broadcasting applications may enable support for high density media streaming processing via GPU or FPGA acceleration 2. 5G system or 5G system simulator is needed when you want to verify this BP, but they are not in this blueprint.	

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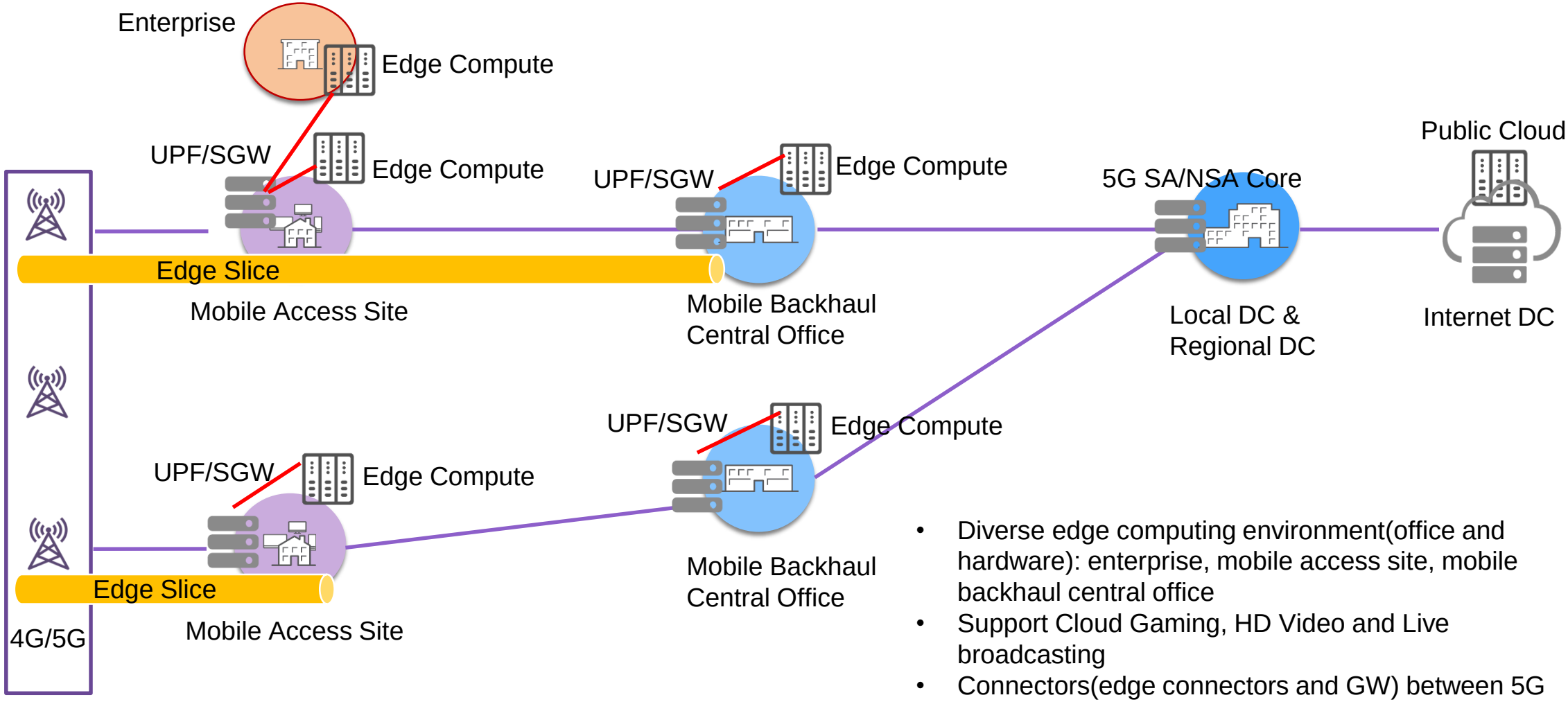
Architecture Overview



- 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

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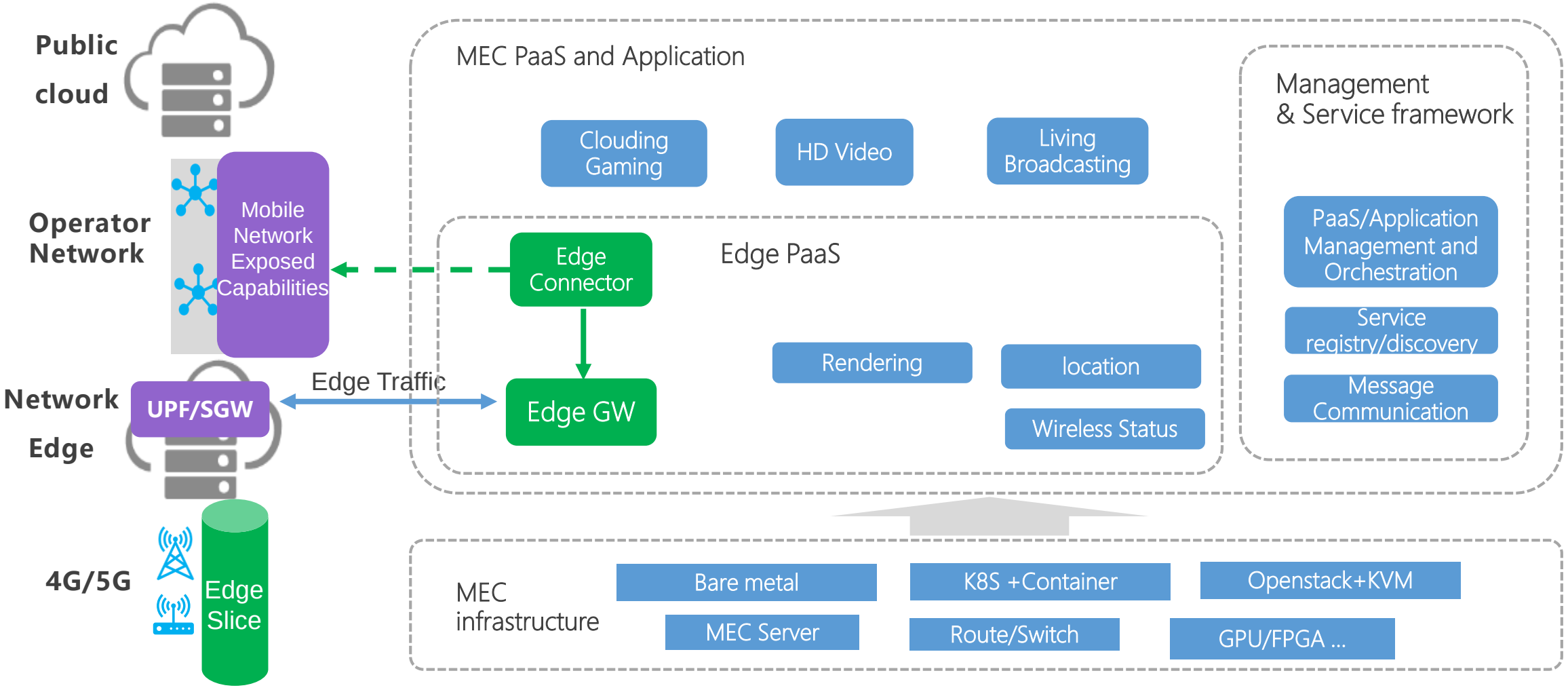
Architecture Overview



- Edge connector: enable flexible 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 local traffic routing, traffic management and so on.

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.

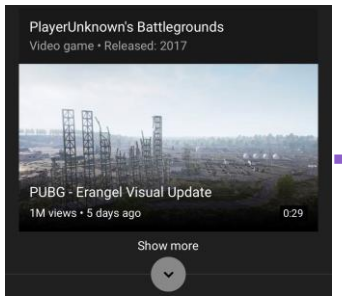
Advertising

First Time Player

Download

Social Media
Ex. Instagram

Other Platform
Ex. YouTube



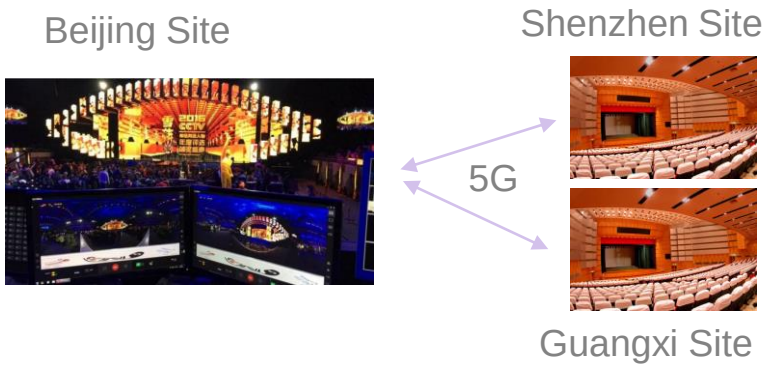
Click And Play

User is satisfied with the contents.

Download the game and may make purchases

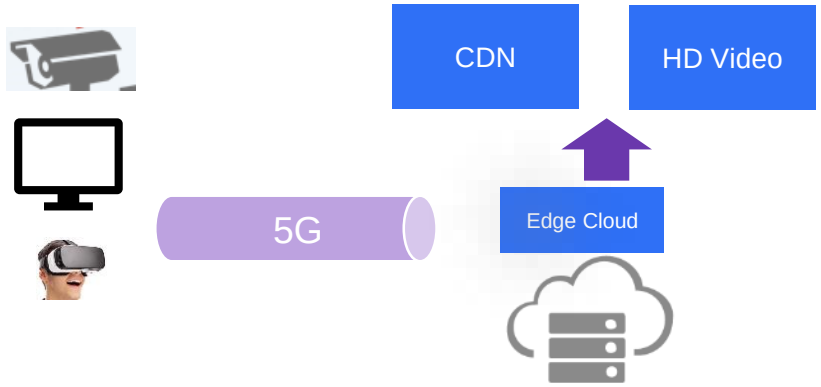
Key Edge Applications： HD Video and Live broadcasting

Live Broadcast



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

HD Video



- 8K video 100Mbps+

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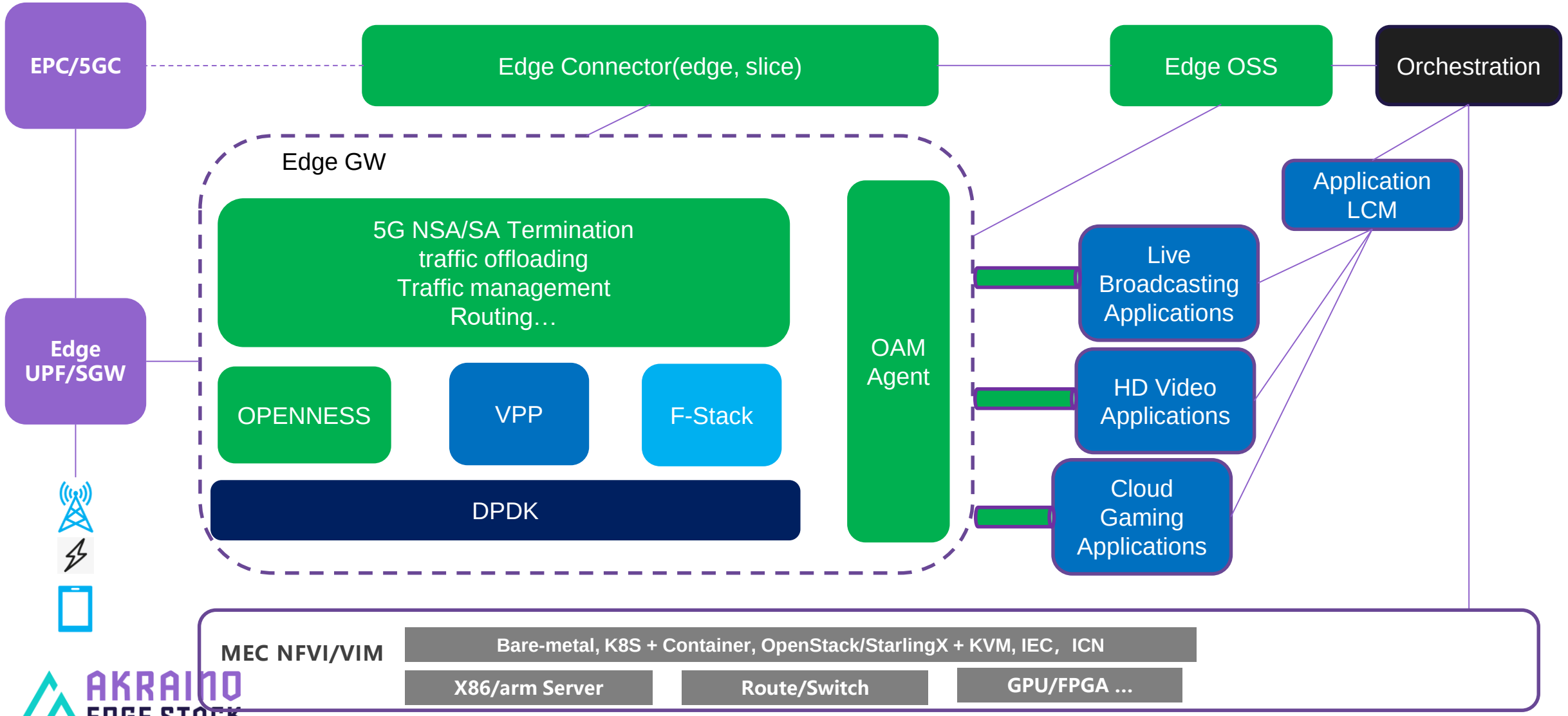
Initial Detailed Technical Architecture for Edge Connector and Edge GW



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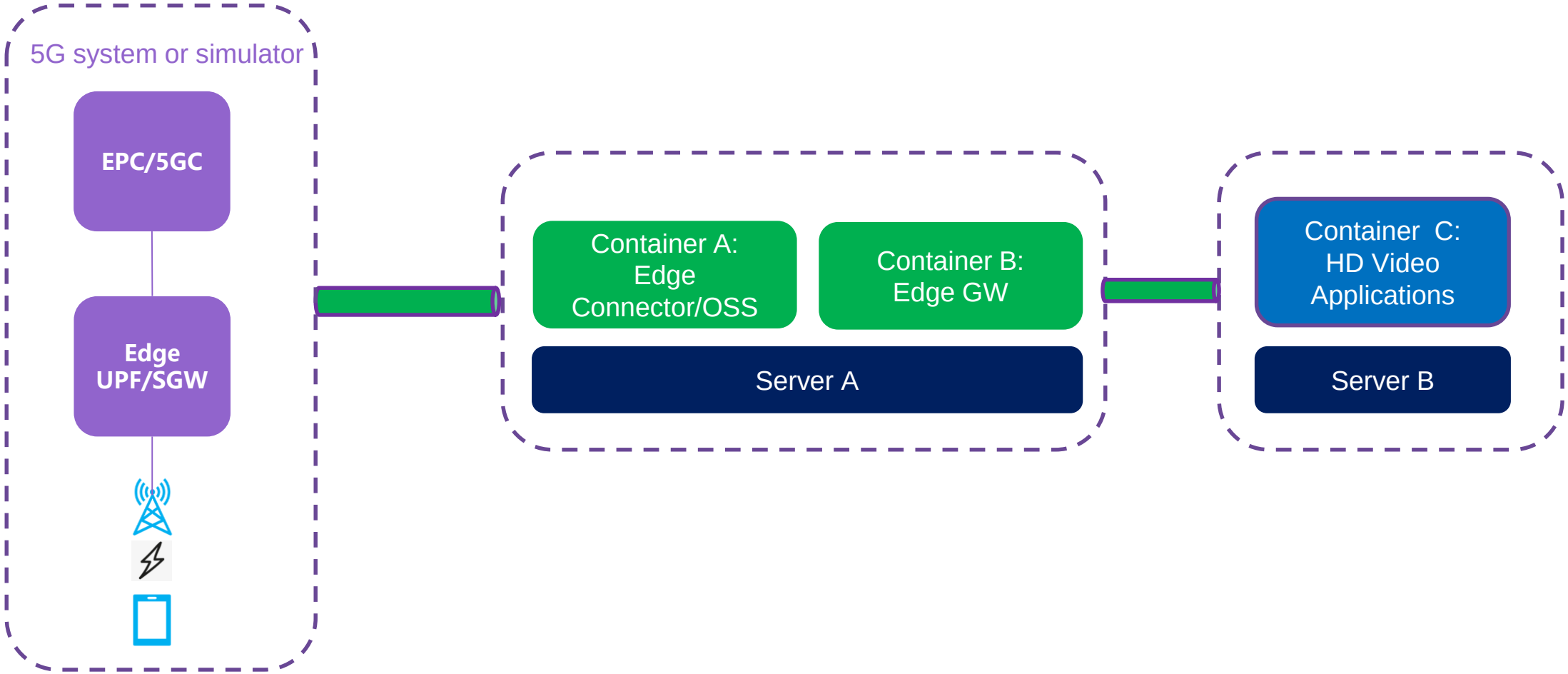
Deployment Example for Container environment



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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, China Mobile，Intel, arm
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.	A Test will be done in Tencent China Lab or committer's LAB.
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	Feng Yang, Tencent Wei Chen, Tencent. allenwchen@tencent.com Zhiqiang You,Tencent jordyyou@tencent.com
Description of the project goal and its purpose are defined	Enable 5G MEC and Slice capability in MEC scenario to support Cloud Gaming, HD Video and Live Broadcasting applications.
Scope and project plan are well defined	Targeted for Release 4
Resource committed and available	Contributors will work together to provide related resources.
Contributors identified	Tencent, China Mobile，Intel, arm
Initial list of committers identified (elected/proposed by initial contributors)	Tencent, China Mobile，Intel, arm
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	DPDK, VPP, OpenNESS, Fstack, etc.

Thank you!

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