Edge Video Processing

Project Technical Lead: Adnan Saleem. Elected 1/17/19.

Project Committers detail:

Initial Committers for a project will be specified at project creation. Committers have the right to commit code to the source code management system for that project.

A Contributor may be promoted to a Committer by the project's Committers after demonstrating a history of contributions to that project.

Candidates for the project's Project Technical Leader will be derived from the Committers of the Project. Candidates must self nominate by marking "Y" in the Self Nominate column below by Jan. 16th. Voting will take place January 17th.

Only Committers for a project are eligible to vote for a project's Project Technical Lead.

Please see Akraino Technical Community Document section 3.1.3 for more detailed information.

Committer	Committer Company	Committer Contact Info	Committer Bio	Committer Picture	Self Nominate for PTL (Y/N)
Prakash Siva	Radysis	psiva@radisys.com			
Adnan Saleem	Radisys	adnan.saleem@radisys.com			Y
Bob Monkman	Ind.	bob.monkman@gmail.com			N
Mohammad Sabir Hussain	Radisys	Mohammad.Hussain@radisys.com			N

Presentation:

Radisys - Akrain... Use Case_v4.pdf

Use Case Details:

Attributes	Description	Informational
Type	New	
Industry Sector	Telco Carrier Networks and Enterprises	
Business driver	Vast amounts of mobile/wireline data (predominantly video) is expected to continue to grow, particularly with 5G and IoT. Low latency, backhaul bandwidth restrictions/cost, and real time edge media analytics require media processing at network edges versus transporting all media to network core. Without the ability to process real time media at the network edges a number of new advanced applications would not be possible nor economically viable.	

Business use cases	1. Edge deployments at enterprises, entertainment venues, factory automation plants, public facilities where real time media processing required 2. Edge media applications include multi-party conferencing, gaming, surveillance, IoT generated content, AR and VR applications 3. Edge media applications requiring low latency and to overcome backhaul BW availability and costs being prohibitive 4. Real time media analytics with AI and ML based applications for high value and media monetization applications	
Business Cost - Initial Build Cost Target Objective	Initial build requires a small footprint POD with minimal fabric and management switch, 4+ compute nodes with optional GPU acceleration, local storage node(s), PSUs, rack, typically under $100K with SW	
Business Cost – Target Operational Objective	1. Low operation cost, with support for remote FCAPS management, and ONAP based zero-touch resource and service orchestration 2. Typical 16U height OCP rack with similar power consumption, with minimal footprint of 2 compute nodes. 1. Edge Media solution shall support POD level consolidated management (OSAM) and service level orchestration and LCM via ONAP. 1. Zero touch provisioning, upgrades, fault and performance management KPI, and auto-scaling and auto-healing capabilities	
Security need	POD platform SW and application level security vulnerability scanning and automated patching capabilities required Media content security and user access authentication capabilities required	
Regulations	Depending on type of Edge Media application GDPR or other regulatory requirements may be applicable. NEBS may be required depending on deployment location and carrier network requirements	
Other restrictions	Depending on deployment location, a single half-height rack to multiple full-height racks at Edge DC or Edge CO locations may drive power and cooling requirements	
Additional details	Edge Media solution shall enable support for high density media processing via GPU or FPGA acceleration for advanced high density AI and ML applications and shall scale from single site to 100s in regional deployments to 1000s globally	Additional details on architecture and use cases documented in supplementary PPT

Case Attributes	Description	Informational
Type	New	
Blueprint Family - Proposed Name	Network Cloud, RT Cloud	
Use Case	Real Time Edge Media Processing	
Blueprint proposed	1. Unicycle POD (4-6 servers, single 16U rack configurations) 2. Tricycle POD (16U or 42U rack configurations, multi-rack) 3. Cruiser POD (Multi-rack Core Network Configurations, with spine leaf fabric and ToR switch)	
Initial POD Cost (capex)	Estimates (TBD) 1. Unicycle POD (< 100K) 2. Tricycle POD (< 200K) 3. Cruiser POD (< 300K)	
Scale	1. Unicycle POD – 1 rack with < 6 servers 2. Tricycle POD – Multiple racks, each with < 24 servers 3. Cruiser POD – Multiple racks, each with < 96 servers	

Applications	Edge Virtual Function Applications (reference) 1. Edge deployments at enterprises, entertainment venues, factory automation plants, public facilities where real time media processing required 2. Edge media applications include multi-party conferencing, gaming, surveillance, IoT generated content, AR and VR applications 3. Edge media applications requiring low latency and to overcome backhaul BW availability and costs being prohibitive 4. Real time media analytics with AI and ML based applications for high value and media monetization applications	
Power Restrictions	TBD	
Preferred Infrastructure Orchestration	OS – CentOS or similar Linux, KVM Under Cloud – Airship OpenStack – VM Orchestration Docker + K8S - Container Orchestration VNF Orchestration - ONAP	
SDN	OVS-DPDK, SR-IOV	
Workload Type	VMs, Containers	
Additional Details	Edge Media solution shall enable support for high density media processing via GPU or FPGA acceleration for advanced high density AI and ML applications.	