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Portland, OR

Qualcom

Cloud computing, edge computing, and media on cloud Imed Bouazizi

Edge Computing - Enablers and Applications



(courtesy of Linux Foundation)

Compute Opportunities in 5G



5G brings compute power to all levels of the network

3GPP SA6 Edge Architecture



5G Media Architecture



Edge Processing with 5G Network Slicing

- Traffic Routing:
 - Through appropriate Filtering rules, traffic is routed to an edge network (e.g. LADN)
 - Through appropriate DNS resolution, an Application Server is selected in the LADN
 - If no AS instance is running, AF together with Orchestrator launch a new instance of the AS
- Slice Configuration:
 - $\,\circ\,$ AS criteria and requirements
 - $\circ\,$ DNS resolution rules
 - $\,\circ\,$ AF configuration to manage AS

			Kut	pernetes /	Stack / COMMAND ET	SI MANO	rchestration	
Int	UE Information Tailor- made Media	Networking		Security	Storage	Infrastructure Automation	Content	Content Providers
			Operator Cloud / Edge	e amazon web services	Other Cloud Pl	Azure Soogle Cloud	Cloud Platform	

Edge Platform Fragmentation



Network-Based Media Processing (NBMP)

• MPEG is defining a Media Processing layer

- Cloud Platform-agnostic
- $^{\circ}$ Can run on top of 5G Core and other cloud services
- Interfaces for Control Plane
 - Workflow description and control
 - Load customized media processing
 - Configure discovery and placement of media processing
 - Build media processing pipeline from existing and custom processing entities
- Interfaces for User Plane
 - Formats for media and metadata

NBMP Architecture

3rd party entity

Function **Function** Description Discovery API **NBMP** Function Workflow API **NBMP Workflow** Discovery API **NBMP** Source Function Manager Workflow Repository Function Description (Builds workflow/DAG, allocates tasks, runtime Description Form of NBMP configuration/stream binding) _____ function identification NBMP Task configuration, Task reporting the current task status API Media Processing Entity (MPE) . Task 1 Task 2 Media resource, configuration Media Supplementary Media information Source media Sink processing (e.g. timed metadata)

> Runtime Configuration/ Stream/Event Binding

NBMP Workflow Graph



Hierarchical Structure



5G Media Overview with NBMP



NBMP Mapping





Discussion



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