

OEC – Workshop Fall 2021

Verizon Edge Services and Roadmap



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VMAP - Verizon Media Acceleration Platform

Overview

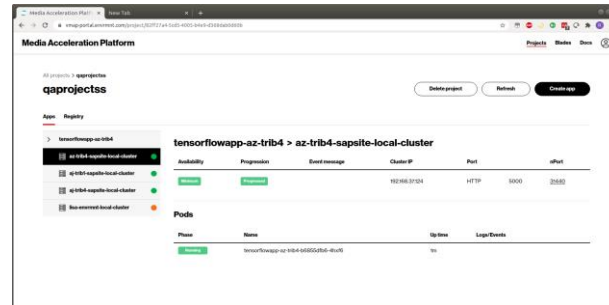
- Verizon has a heterogeneous collection of hundreds of network edges.
- These locations have a wide range of network characteristics. Connections to end user devices, backbones and public cloud all have varying bandwidth, reliability, latency and jitter to consider
- We want developers to be able to deploy GPU compute tasks at the optimal location given the available hardware and network resources to give users the very best experience possible

Solution

- VMAP provides a single pane of glass container-as-a-service platform to configure and deploy compute tasks in any of these locations within a few seconds.

Features

- Self-service portal and APIs allow clients to manage their own deployments.
- First class support for GPUs. Virtualized GPUs mean capacity scales exponentially with each hardware cycle without the need for any more power or space
- Deploy anywhere mentality, very low required levels of infrastructure in PoPs or other private locations
- Based on multi-tenant shared public Kubernetes clusters. Deployed 35 clusters at 16 locations in the last 3 years.



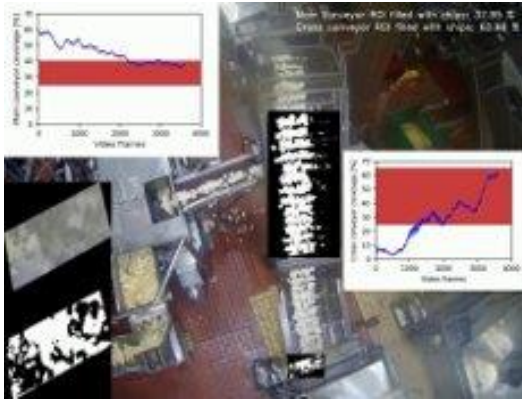
Productization in 2021

- For us this year was about moving from internal demos to more of a product focus
- Deployed non-standalone 5G is not hitting latency/jitter requirements
- Only 'Far Edge' private 5G connected directly to edge servers is hitting needed latency. We've seen 6-8 ms RTT in the field.
- So our projects this year were mostly on-site private 5G/MEC



Automated Monitoring of Manufacturing Processes

- Wired and 5G wireless cameras
- Improve automation, productivity and safety
- Monitor many stages using different services all on the same server hardware



- A single VMAP server maintained 100% uptime for the lifetime of the project
- Challenging environment with only 4G LTE connection to public cloud

THOR – Tactical Humanitarian Operations Response

- A mobile, rapid-response command center vehicle
- Private Verizon 5G UW network communication
- Including tethered and 5G connected drones



- One VMAP server providing support for up to 64 workloads such as CV and ML for drones
- Limits of space and power due to generators on truck
- Future work will be on flying aids in turbulent conditions and beyond line-of-sight flight

VR/ AR – Theme Park Rides

- Testing thin client on ride car itself for AR and VR rides
- A full rack of VMAP servers can support over 1000 simultaneous riders

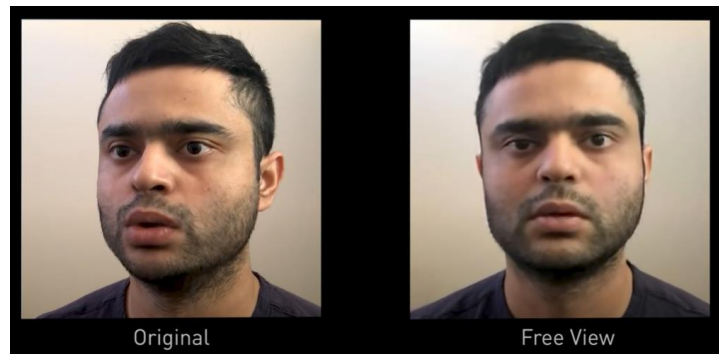


- Lowers weight and power requirements of cars
- Allows server upgrades to improve ride experience without replacing cars
- Unreal released official support for Linux docker containers in ver 4.27 this August

Video Conferencing



- VMAP servers deployed in BlueJeans regional data centers.
- Where we are experimenting with ML based effects, including super resolution, echo-removal, face alignment and more



Roadmap 2022

- Expect to start seeing rollout of C-Band and standalone 5G
- Should bring better latency
- If it does then 2022 will bring more public MEC activity
- Waiting for first test city and some real-world latency numbers



