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Hyperscalers and their 5G Endeavour

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5G is changing the world and telecom infrastructure landscape! In the last year, hyperscalers such as Amazon Web Services, Google Cloud and Microsoft Azure have announced strategies for extending their reach (some would say disrupting) into the telecommunications industry, using 5G as an inflection point. Google Cloud announced their Global Mobile Edge Cloud (GMEC) strategy which will deliver a cost-effective portfolio of 5G solutions that leverage cloud and distributed edge architecture. Microsoft has taken the step of acquiring multiple 5G Network Function providers such as Affirmed Networks and Metaswitch Networks, whilst announcing a strategy that will, I quote, "unlock the power of 5G and bring cloud and edge closer than ever". AWS Telecom meanwhile is offering a similar value proposition to telecom operators but is applying a partnership approach by offering a catalog of cloud-deployable partner solutions that allow mobile network operators to accelerate innovation and drive new revenue generating offerings. In all this activity, a natural question, from an operator's point of view, is: where lies the differentiation among cloud providers?

It's hard to differentiate at the infrastructure (IaaS) layer as hyperscalers all have competitive and mature offerings, and the platform layer (PaaS) is more or less ubiquitous across cloud providers. Moreover, the standards organization, 3GPP, has set specifications for 5G Radio and Core network functions which 5G vendors/partners have built their solutions to meet. But, if you continue climbing up the stack, the application layer, in fact, has the greatest promise of enabling a unique value proposition. This is an area where hyperscalers' strategy is still evolving, and by adding disruptive 5G value-added services, partners can play a pivotal role.

One example of an area where a 5G and cloud-based network modernization opportunity can be leveraged to create new APRU stream, is monetization of applications such as cloud gaming by offering end subscribers a higher and specifically targeted quality of service experience. The gaming traffic profile will radically change with cloud-based technology. The small and latency-sensitive transactions that we have seen for years - primarily in fixed networks - will now transition to sizable ones that will effectively carry over the gameplay as video content. 5G will be the enabler for this technology shift.

The dream user experience for cloud gamers is the "flipper" use case. Here the user might begin a gaming session on a console at home but, once the user leaves home e.g. to commute to work, the game flips onto his 5G mobile device. Once at the office it flips again onto a laptop on WiFi. Of course the handoffs or "flips" have to be not only smooth and seamless, but the latencies and lags need to be minimal.
To get anything like this quality of experience, operator 5G networks need to be in place, stable, and highly performant and closely associated with other network resources including WiFi. But New Radio rollout will initially have limited coverage, with continuous bearer handovers, evident latency, bandwidth and congestion impacts in most operators' early 5G deployment phases.

The opportunities here are great - the cloud gaming market is forecast to grow exponentially, reaching 8 Billion USD by 2025 and hyperscalers can enhance their telecom catalog by incorporating AI/ML based application level QoS (Quality of Service) management tools that fill a gap left unaddressed by 3GPP and require close collaboration between cloud stack providers and Telcos. Hyperscalers have to look no further than niche user plane solutions that extend the concept of QoS on a per-content and per-application basis, from the core through the edge of Telco networks to prioritize gaming transactions against other types of traffic, minimizing its latency. Such a solution will augment 3GPP Layer 4 traffic classification filters and policy implementation to be application, content, and context aware.

Another innovative offering is to prioritize selected time-critical downlink data on a per micro-second basis, by dynamically controlling per user session pacing rate as well as packet burst interval from core network to Radio nodes. This can make or break an operator's brand with regards to network speed benchmarks, particularly in hyper competitive markets, by improving network throughput performance.

As Cloud infrastructure, Radio and Core network functions become commodity; low cost / high impact value-added tools will enable cloud providers to step up their portfolio in their quest for gaining Telco market share. It's all to play for!