OPERATOR STRATEGIES IN CLOUD-NATIVE NETWORKING
Webinar Q&A

February 2021

Questions and Answers from the webinar

Responses below are from our panellists on the webinar:

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Shakil Ahmed, Global Lead, Hybrid Cloud Platform, Telenor

Matt Bamforth, Consultant – STL Partners

Q+A

- Do the panellists have any advice on the implementation of telco cloud?

  - Todd: First and foremost, remember that implementing telco cloud is more than a technical transformation, but is also a cultural transformation. This holds true whether you are moving from a classical appliance-based network and operations or even a more recent NFV solution. Going cloud native requires an understanding of how to organize and establish processes around a pipeline delivery system. Maintenance staff not only need to understand the operational aspects of the technology, but now need to share responsibilities and processes with those upstream who are generating the configurations and content to be deployed – a process the industry calls shifting left.

    Let's not forget the role your vendors can have in accomplishing both types of transformations. It is important to not only judge what you see as best in technology, but also find partners that can help guide you through making these changes. Look for partners who understand how to integrate into diverse, multi-vendor environments as they will have the tooling and experience to overcome the more nuanced pitfalls and impart that knowledge.

  - Darwin: For us, gaining success with cloud native adoption will be through acquisition of solid vendor network solutions, coupled with more elaborate management/support solutions, application of software that is intent driven with automation, transformation of people, transformation of processes and organizational alignment. Our reliance on vendors and other third parties will be required, given SaskTel's resource capacity. Focus of our investment and efforts in a cohesive approach, that is driven by business value, is essential. Establishing our business opportunities and customer needs should be placed at the forefront with the adoption of cloud native solutions being an enabler. It is also important to align with industry software methods, cloud architecture and opensource tools.

  - Shakil: There are multiple ways to build a Telco model depending on one's strategy; our strategy is a multi-vendor solution on a common Telco cloud. Based on our NFV

experience, we would recommend trying not to solve all the challenges at once and securing your contractual arrangements, but rather take an incremental approach when building the cloud solution. Next, selecting optimal CNF/VNFs with careful analysis will be key for a successful Telco cloud.

– Matt: In the report we set out our recommendations by looking at cloud native strategy, skills, organisation and culture, and partnerships. Operators must establish a strategy and then ensure this is communicated to all relevant stakeholders, while constantly challenging your own internal assumptions and processes. Start to widen the company's skill set by incentivising current employees to train up and innovate, increase skills through smart recruitment. Choose partners who have a deep IT and cloud experience and can help further your own learnings, mitigate the risks and challenges, and push you to innovate further.

- What role do you see the Edge Cloud (MEC) playing in the cloud native journey versus the cloud data centre? What kind of applications are expected in the edge and the cloud data centre - mainly from the OSS/ BSS functions and network functions?

  – Todd: Telcos need to see the edge as just an extension of their cloud. To view cloud native differently for edge from a core data center would be a mistake. This is especially true for infrastructure for which the telco will offer as a service to enterprises to locate their applications on the edge as they will not have any desire to use technologies or methodologies different from what they already use with the hyperscale public clouds.

  A word of caution for those pursuing edge services for their customers – ensure that you have a policy infrastructure in place which places the telco in charge of determining when and how edge resources are placed into service, especially from the perspective of connecting the network to these enterprise applications.

  – Darwin: As the use of "cloud" increases and cloud technologies spread in the adoption of applications, so is the increasing spread of the cloud and the growth of business relationships. More and more applications will require low latency, needing a wide choice of network locations for their logic and content that is closer to the end customers. Applications will require capabilities such as a flexible cloud-based infrastructure that can be deployed at any network location. Use cases are expected to be driven through the following example target areas: industrial sites (manufacturing using robots), smart agriculture, gaming, augmented/virtual reality, drones, autonomous cars (navigation systems).

  As for carrier functions, I expect to see enterprise and control applications (i.e. firewall, SBC, Policy, routing, SDWAN, private packet core) as well as elements of local data, analytics and automation running on the edge. The majority of the 5G core will be delivered as Cloud Native Network Functions. There will be dispersion from the core, mid and edge driven by service requirements.

- Shakil**:** MEC deployments would be relatively flexible with cloud native architecture compared to virtualization architecture. Depending on use cases, selected CNF/VNFs will be deployed – ranging from UPF to 5GC packet core to autonomous core (total 5GC core). We expect at a minimum OSS/BSS functions to be deployed on Edge but it can change depending on your use cases.

- Matt: The term MEC tends to have very specific meaning within most telcos which precludes its use for running network functions or orchestration. Under this definition, MEC supports application workloads other than networking. Examples are vCDN and video analytics.

- What role do you see for the hyperscalers, will they play a greater role than they do currently? What kind of challenges/threats do you see to the telcos from the hyperscalers?

  - Todd**:** Hyperscalers need to be viewed as potential partners in an equitable relationship: together they are able to pursue an aligned goal in serving their common customers. Telcos will never create an infrastructure that is more desirable for enterprise applications than the hyperscaler clouds, likewise the hyperscalers will never create an infrastructure capable of delivering robust connectivity like the telcos. Both are needed to be successful in the "Coordination Age." Cloud native serves as a foundational common language to bring the two together. Furthermore, telcos with advanced policy infrastructure will be in the best position to ensure these relationships are equitable and profitable.

  - Darwin**:** On the surface, the emerging applications in given verticals, which require lower latency and higher demand, appear to favour a business model for the Hyperscalers in delivering applications over the expense of the service provider's infrastructure. However, the Hyperscalers' interest in working with Service Providers calls for further alignment with our customer needs and development of new business models. The service provider can take the opportunity to expand higher in the application food chain through establishing relationships that share in customer engagements and profits.

  - Shakil**:** Enterprise markets already use hyperscalers dominantly, and if a portion of this were to require lower latency and higher throughput, and were considering a change from WiFi to 5G, then we see a partnership as a win-win. The challenges would be managing such a diverse cloud setup with on-prem, hybrid and public cloud environments. However, we believe bringing another layer of orchestration on top would not solve real challenges posed by this diverse setup.

  - Matt: The hyperscalers will continue to grow. While they potentially present a threat to operators, it is important to adopt a strategy of 'co-opetition'. There are opportunities for collaboration that operators should identify, in fact they should seek to learn from the hyperscalers if they desire to become more software-centric technology firms.

- There are two competing dynamics: it is hard to reach 'good' e2e performance which leads to more vertical stacks and rigid infrastructure, and the need to transform into a software

company to compete with dynamic service creation - how do you see the balance shifting over the next few years?

- Todd: We do not see the notion of moving to a software driven, agile and cloud native network as being competing or antithetical to having good e2e performance. In addition to the notions of incremental deployments with significantly smaller impact surface areas and much more of an understanding of dependencies for risk mitigation which I covered in the presentation, there is also the notion of governance that is essential. Those who see things like CI/CD pipelines as only technology are missing important other aspects of the transformation that need to occur.

  Along with technology there are skills/roles and processes that need to change and when those are aligned and codified with something like a delivery pipeline, you end up with very tight governance and risk control over what might otherwise seem as a rather messy world of agile. What was once done by very long planning cycles to uncover all possible forms of risk and then executed as very ridged and unchangeable structures is now replaced with small increments where risk is mitigated through a well governed and highly automated chain of processes. We have seen this done successfully in the telco space with equivalent quality, yet with less cost and significantly reduced time.

- Darwin: We have gone through many eras of new solutions, hype and promise, that have been a struggle with only incremental gains. Adoption of cloud native will be an inevitable transformation as the industry must generate an improved low friction service delivery environment to remain relevant. So, for us, vendor solutions need to become more mature with solutions that are well designed as cloud native (not the appliance presented with a new wrapper). Vendors / solutions will need to have established architecture and design so we can establish the desired HA, Automation, autonomous operations, etc. We will need to pay much attention to the management / orchestration applications with a holistic and cohesive view to deliver on that dynamic service creation/delivery vision. I also believe it will in fact be the management / orchestration layer that holds the true value.

- Shakil: We do not think the choice is binary. Rather, there is a middle ground where we can build a good common cloud solution with right vendors and without being a software developer company but a professional consumer of right software.

- Matt: The shift will be to more dynamic service creation at scale. It is more a question of how quickly this will be achieved.

- Can the operators give deployment details for cloud native?

  - Shakil: This would depend on your strategy but we would suggest looking at CNTT guideline - https://cntt-n.github.io/CNTT/doc/common/

- Is the shortage of skilled staff in cloud native the reason why smaller operators are not ambitious?

  - Todd**:** The skills gap is an industry problem but can affect the smaller operator more disproportionately. Having the right partners will be critical in creating the knowledge transfer and guidance the industry needs to bridge this gap. Also, having highly interoperable automation will make the strained resources go much further and should be embraced through this transformation.

  - Darwin**:** As a smaller operator, I am not sure if would accept the term of "not ambitious" but rather lean on treading lighter or maybe slower in adoption due to constrained resources with a shortage of cloud expertise. We do have some very competent and highly knowledgeable resources but just not enough of them. We are not going to build any of this from scratch and need solutions that we can adopt, deploy and transition to work with.

  - Shakil**:** Yes, absolutely. We realize there is a skills gap, and we initiated a program 3 years ago to skill up our resources with cloud technology. However, this is challenging and involves perhaps the most difficult task of changing mindsets from legacy- to cloud-centric – training programs help a little in that respect. We would suggest continuous dialogue in your organization and setting up a focus group to drive cloud initiatives.

  - Matt: Size is not the only determinant of ambition with regards to cloud native. We are seeing some smaller operators who have made great strides in adopting cloud native practices in their networks, and similarly there are many bigger operators at serious risk of inertia. A shortage of skilled staff is certainly one of the reasons that some operators are less ambitious than others. We recommend creating opportunities and incentives for teams to build confidence in running cloud native applications; adding fresh talent through recruitment; and cultivating a learning culture where failing fast is shared openly. There are other potential reasons for a lack of ambition with regards to cloud native, including but not limited to: operating in a market with limited competition, lack of a coherent organisational strategy, and a lack of funds.

- Will the telcos get acquired by the hyperscalers? The hyperscalers all have partnerships with various telcos already.

  - Todd**:** Please see earlier response on hyperscaler relationships with telcos.

  - Darwin**:** I suspect that it is doubtful for a telco to be acquired by the hyperscaler for the simple fact that there would be little interest in acquiring the legacy services and regulatory obligations in operating as a service provider. However, the hyperscalers can position to either compete with cloud assets and applications directly or work in partnership with the telcos.

  - Shakil: This could potentially happen; the future is difficult to predict (e.g. we have seen Facebook acquire a stack at the "cloud operator" Jio in India and Rakuten enter

the Japanese market from an MVNO to MNO etc.). But perhaps we can rule out at the moment acquiring an incumbent operator. However, whether hyperscalers could generate the same margin from these businesses, that's is an interesting question – we have to wait and see.

– Matt: It would be one way for operators to acquire cloud native skills.

- Why are telcos assuming they will offer data centre services to end customers?

  – Darwin**:** Although SaskTel is a regional service provider, we are successfully delivering data centre services to end customers today. There is a market for our enterprise customers who hold value with our services given local data residency, low latency, strong security, low downtime, and price competitiveness (when factoring complete costs). Also to mention the value of offering local personal touch.

  – Shakil**:** There is a market for high performance setup and markets require compliance with local law and regulation etc. Telcos are providing such services to these markets.

  – **Matt:** This was not really discussed in this webinar or our study which focused on cloud native practices and code for the operators' own network functions. We also discussed the need for better integration between the network and the applications running over it and our view that cloud native practices would help with that. The applications themselves can run anywhere: public cloud, private cloud, telco edge, hyperscaler edge. Potentially operators might offer edge cloud services to enterprises, but it is unlikely that they will offer data centre services in their technical facilities. They are not really set up for that.

8

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