EDGE COMPUTING FROM THE FRONT LINE: DEVELOPER CASE STUDIES

Questions and Answers

Questions and Answers

Q1)   What is the mechanism in which "geospacial knowledge" creates the need for edge compute?

Geoff Hollingworth: The best place to start is with SLAM back-ends. Endpoints are increasingly having to interact with their environment in real time and with other endpoints that require synchronization. This is a local discussion that must happen in the moment and be highly synchronized otherwise there is cognitive dissonance very quickly with reality. View it as the technological version of distributed decision making (capitalism) versus centralized control (communism).

Q2)   With regards to your comment on the implications of edge to device/hardware, was there any feedback on device form factor i.e. that AR/VR device is so much lighter that it creates a significantly better customer experience?

Geoff Hollingworth: Yes, reducing the required components on the device results in whole new categories of experience and market segments opening up, from a form factor, cost and size point of view.

Phillip Laidler: Form factor is an issue (along with cost, security, battery life, wearability and compliance). For example, you may need to use devices continuously for several hours at a time under a hard hat.

Q3)   For general enterprise SaaS apps, will there be a movement towards on-premise Edge (at their offices or sites)?

Geoff Hollingworth: It depends. Apps will move to the edge where or when there is a reason to do so. There is a large cost for on-premise operations and the trend today is to move away from that for standard enterprise apps, especially where they are more managing statements of record rather than providing core business differentiation.

Phillip Laidler: Probably not for "general" SaaS. More likely, it will be more specific requirements for applications that require workloads to move to the edge.

Q4)   What is the expected share between consumer and enterprise edge application/usage?

Geoff Hollingworth: The three biggest edge functions will be a radio controller, BNG and packet core, which are core enablers in telecom and required to just create ubiquitous connectivity for 6 billion people. Initially I believe the consumer market will need edge to maintain customer

satisfaction at a massive scale and not get caught with scale issues. New revenue opportunities get discovered today and scale over the next 1, 3, 5 years. See here for more of my thinking - https://www.linkedin.com/pulse/5g-edge-computing-recommended-reading-geoff-hollingworth/?published=t

Phillip Laidler: It depends a bit on your definition of edge. We have undertaken some high-level forecasting for edge compute demand and inter of compute we expect enterprise edge to initially gain more traction, and consumer demand to pick up later and then overtake enterprise.

Q5) How can telcos compete on edge at a global level, where many use cases are inherently global in nature, and where should telcos focus their investment in a way that leverages their regional assets?

Geoff Hollingworth: The same way telcos compete today; by owning customers locally where it makes sense and promising global roaming, by accepting other's customers and guaranteeing the same in return and by exposing capabilities via APIs to embed in other people's products and experiences. Telcos' task is to do this for more than core voice, data and messaging.

Phillip Laidler: The point is to make a virtue of the "federated" nature of the telcos' jurisdiction. They are accountable to the local authorities and this is a positive thing. It ensures compliance with data sovereignty and offers a degree of protection against unilateral actions in the age of trade wars.

Q6) How can telcos develop the ecosystems around edge to drive a scalable business, as they are typically not starting from a strong ecosystem compared to hyperscalers who are also going after edge opportunities?

Geoff Hollingworth: They start by building their presence and exposing their capabilities in the correct way e.g. a developer friendly cloud way. This is why Deutsche Telekom (DT) created MobiledgeX and we are now working with carriers across the world.

Phillip Laidler: Edge Cloud must be highly connected (North, South, East and West) to operate effectively. It is difficult for hyperscalers to replicate this without the same level of access to networking.

Q7) Are these start-ups all part of different "infrastructure vendor-led edge ecosystems"? Or are they in the MobiledgeX ecosystem?

Geoff Hollingworth: They are in the MobiledgeX eco-system. In some cases they were discovered as part of DT's Hub:raum innovation initiative, in other cases they approached us.

Phillip Laidler: We have seen a number of start-ups emerge to enable wider edge ecosystems (often focusing on a type of edge and/or specific application domains). One example is Edge Gap who are focused solely on supporting multiplayer gaming companies.

Q8)   What are the most promising standards for edge computing solutions and blueprints?

Geoff Hollingworth: A friend once said to me - "the good thing about standards is that there are so many to choose from". Anything that increases homogeneity in reality is a good thing. I believe the biggest enabler will less be the standard but more the coalescence around container development and k8s. In the same way x86 normalization actually triggered the rise of cloud.

Phillip Laidler: We get asked this quite often. Standards are helpful for driving interoperability. Although all have their supporters and detractors, the initiatives (not strictly comparable) that we see as being of interest are ETSI MEC, ECCE and Akraino.

Q9)   Where do you see the need for edge computing for the use case of "Autonomous Cars" once the industry moves towards Level 5 autonomous driving?

Geoff Hollingworth: Clustering, fleet management, spatial management car to car, car to context, and car to other infrastructure.

Phillip Laidler: An interesting example from Vodafone/Continental is the use of on-board edge for identifying pedestrians and MEC to infer intent and pass back findings (risk/hazard) to the car for action.

Q10)   What is the difference between Network Edge and Cloud Edge?

Geoff Hollingworth: We currently refer to "telecom" as the network edge. It is what sits in between the premise, mobile users and the public internet. It is private and walled off. The Cloud (or internet) edge is our working name for the public internet. In mobile telephony, everything the internet side of the GPRS interface. This is where public cloud, Equinix etc primarily base/invest today.

Phillip Laidler: I agree with Geoff on the definition. The point about network edge is that it sits entirely in the operators' network. This has all sorts of implications.

Q11)   Who is driving the decision to pursue edge within end users? Is it the Line of Business (LOB) decision makers asking tech/IT what is possible/sought, or is it tech/IT educating and driving interest among LOB management?

Geoff Hollingworth: For companies building new solutions like drone companies, robotics, AR/VR, AI etc, it is the technology people. Things move quickly when the business people in an industry see something that transforms their key business drivers and adopt it.

Phillip Laidler: Initial exploration could be with any developer. We really haven't seen enough in the way of "production" deployments yet.

Q12) Regarding management, do end users want to manage this (control), outsource it (off their plate), or something in between? And how does it vary by vertical, or application?

Geoff Hollingworth: It depends. However, one brutal truth is that the increasingly critical resource is not technology or money, but access to people who can put both to work and make magic. Increasingly I believe it will be delivered as a service since it is not possible to build your own. It depends from many angles though; regulation, governance, and the need to transform fast or die.

Q13) Regarding pricing, what do end users expect/want? Specifically, are they looking for a capital investment (1 and done), a monthly subscription, or something in between?

Geoff Hollingworth: Edge computing will be something you do while you are doing something else. It will primarily be bundled into the experience cost either as a subscription, as a per use, or for free (to the end user). We are working with SKT who are already going down this path with gaming, where you buy a monthly subscription to enable performance.

Phillip Laidler: It is still early days but service providers are definitely working on this now. Hyperscale cloud and private cloud offer existing pricing schema which some providers may adopt (e.g. compute, ingress/egress, API dips). We expect that pricing may vary by application class.

Q14) It is likely that the people you spoke to are a bit biased, but who do end users want to work with (i.e. obtain edge from)? Network providers, resellers or developers, or someone else?

Geoff Hollingworth: All of the third-party product developers we work with work first with public cloud, then want their applications to seamlessly distribute and scale. Edge applications are being born in the cloud but when they leave home they need to be able to move with great ease.

Q15) Is there any interest in leveraging "Distributed AI Processing in a MobiledgeX Platform in 5G" (URLLC Service), assuming a companies' compute is "On-Premise" and would like to leverage an "AI Cloudlet" from MobiledgeX to avoid building an on-premise AI compute environment?

Geoff Hollingworth: Yes, there is interest. Federated learning to maintain privacy is also incredibly interesting.

Q16) Given you have to "feed" a massive amount of data to an AI Compute Complex, AI Compute in the 5G edge would dramatically reduce the transport latency to the AI Compute resource, process in the 5G MobiledgeX Platform and return results to the On-Premise application.

Geoff Hollingworth: Yes

Phillip Laidler: Agreed.

Q17) Will mass roll out of edge increase the opex costs for telcos?

Geoff Hollingworth: No, unit economics for both capex and opex have to improve to be comparable to hyperscale economics. This is the large transformation. The world wants/needs multi-cloud, multi-vendor, multi-access and now it is possible to achieve by adopting distributed thinking with cloud supply chain. See our deal with WWT, who we are working with to industrialize the supply side for global edge deployments according to the above principles.

Phillip Laidler: Part of the opportunity for operators is to piggy-back off planned deployment of distributed NFVI; essentially operators are building mini datacentres to support distributed network function virtualisation. By definition, these will be highly connected and will have "spare" space for non-network workloads.

Q18) So in the "Compute Edge", the "Network Edge", what are those start-ups expecting to find in term of services & devices?

Geoff Hollingworth: Initially their backend services will need to be dynamically and automatically deployed closer to the users accessing them, rather than the static deployments today. With time, certain horizontal services will be discovered to democratize the capabilities and accelerate application experience development even further. Feature extraction and location coordination are potential good examples.

Phillip Laidler: In addition to the basic performance (latency etc), developers will need a range of tools and/or management services to support edge deployments. This is still work in progress, so requirements are not well understood, but they will learn quickly once they need to support live applications and pay for this.

Q19) How do application partners monetize the edge? Are mobile network providers also involved?

Geoff Hollingworth: Application partners monetize the same way they do today, by selling their application experience/value to people who need it and are willing to pay. How they monetize is up to them. We at MobiledgeX will deliver a SaaS experience to those developers that open up the edge on behalf of all infrastructure providers we represent.

STL PARTNERS

Research

Consulting

Events