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EDGE COMPUTING: SERVICE PROVIDER BUSINESS MODELS AND THE AI/ML OPPORTUNITY

Webinar: Questions and answers

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Edge computing: Service provider business models and the AI/ML opportunity

This document outlines the questions and answers received from the STL Partners and Telco Systems webinar, 'Edge computing: Service provider business models and the AI/ML opportunity' which was hosted on Wednesday 19th July 2023.

You can watch the recording of the session, and also access the slides, using the [link here](#).

If you have any questions not addressed in the webinar or this Q&A document, or want to hear more about our research findings or from our speakers, please contact:

- **Iris Finkelstein-Sagi, Telco Systems**, iris.finkelstein-sagi@telco.com
- **Eran Shalev, Telco Systems**, eran.shalev@telco.com
- **Dalia Adib**, Director, Consulting, STL Partners, dalia.adib@stlpartners.com
- **Matt Bamforth**, Senior Consultant, STL Partners, matt.bamforth@stlpartners.com

Webinar questions and answers

The below questions were received from the webinar audience during the live session.

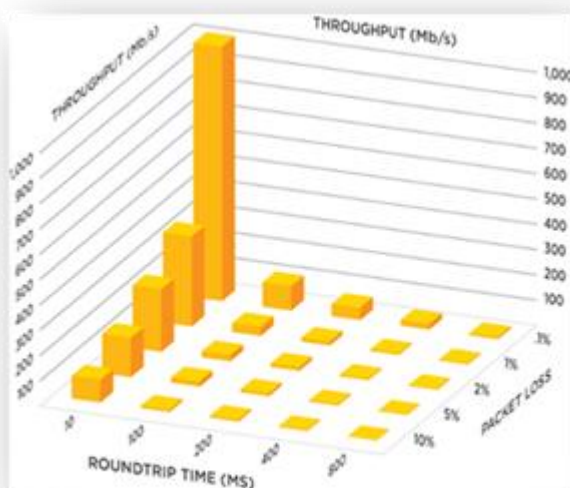
Post-webinar questions and answers

1) There is at least one company (Vantiq) who have a platform that allows people to quickly develop, distribute and operate edge to edge to cloud apps. Where do they fit?

STL Partners (Matt Bamforth): *An edge PaaS provider like Vantiq can be an important partner for service providers looking to put together a vertical solution. As discussed in the webinar, service providers are often more comfortable sticking with infrastructure-first models, but partnerships with PaaS providers will enable them to get closer to the applications that end-customers are actually seeking to run. Any service provider looking to get into vertical solutions may be looking to PaaS players as partners, bringing not only their capabilities but also vertical expertise.*

2) What is too much delay to get video to the cloud or a metro edge location? I have seen a lot of use cases that don't work!

Telco Systems (Eran Shalev): *Both delay and packet loss ratio has a tremendous effect on TCP-based video streams due to the TCP congestion control mechanism. Here is a graph that shows how the TCP bit rate declines exponentially with the increase in delay and packet loss:*



There is no way to compensate for such a gap with buffers and the video will stall. One additional issue I covered in the webinar is packet jitter. If the jitter is too high, packets are lost to the receiver and discarded. Jitter can happen in low-delay networks as well and may sometimes be overlooked as the result is similar to packet loss.

3) Please comment on the need for secure video that cannot leave enterprise network.

STL Partners (Matt Bamforth): *Lots of enterprises with high needs for data security will not want their data to leave the site, and this applies for video as well. We have seen enterprises in defence and oil & gas for example, who want all of their processing and storage on-premise. Latency requirements for the majority of video analytics applications are satisfied by workloads conducted at the network edge, so really the main driver for hosting these applications on a customer site is security.*

4) In terms of quality CV (computer vision), do you think that quality of AI model and the quality of AI acceleration are mutually dependent or independent?

Telco Systems (Eran Shalev): *The quality of the AI model and the quality of the AI acceleration are mutually dependent. A high-quality AI model will be able to achieve high accuracy and robustness, but it will not be able to run in real time without AI acceleration. On the other hand, AI acceleration can improve the speed of a model, but it will not be able to improve the accuracy or robustness of the model.*

5) Could you tell us the prominent issues of implementing a network of, let say, tens of thousands of edge and cameras, based on your experience?

Telco Systems (Eran Shalev): *Tens of thousands of edges and cameras means thousands of devices to manage in thousands of sites. The prominent issues are all coming out of scale. Here is a partial list of items to consider:*

1. Connecting multiple cameras to the edge device may lead to congestion if the path from the cameras to the CV software cannot hold the required bit rate. The path includes both the network connectivity and the data pipes connecting the CV software (either VM or container) to the network.

2. Management and operation of 1000s of edge devices is extremely complex as there are 6 layers to manage in each device. This includes managing the device, operating system, network, security, virtualization, and application life cycle. To increase operational efficiency, the management of all 6 layers must be in a single management hub.

3. The level of automation is in direct relation to the total cost of ownership. For example, the cost of deployment is derived mostly from the number of manual labor invested to bring up a device. Assuming that an hour costs \$250 and that bringing up a device manually requires 1 hour. The cost of bringing up 10,000 devices would be $\$250 \times 10,000 = \$2,500,000$. Zero-touch provisioning is essential to lower the cost of deployment. A 99.9% success translates into 10 devices requiring manual labor which will cost \$2,500.

4. A secured management and control plane independent from the data plane enables shall enable remote access to any device on any site as well as to each application running on that device. That would reduce the number of truck rolls to sites by performing monitoring and troubleshooting from remote. For example, an average truck roll cost is \$800. Serving 10 sites a week costs \$8,000 which accumulates to \$96,000. 90% success in resolving issues from remote will decrease the annual truck roll cost to only \$9,600.

6) What GenAI (Generative AI) applications do you see telcos providing for enterprises?

STL Partners (Matt Bamforth): It is still very early for GenAI and we have been keenly watching developments – as much so that we can integrate it into our own internal processes as anything else! We are likely to see GenAI incorporated into all types of SaaS offerings for businesses, with Microsoft’s launch of Copilot being a notable early example of this, and telecoms is no different. There is certainly a large part for GenAI to play in further personalising experiences in telco ecommerce, whether this is helping to select new products or improving customer help centres.

7) Is there any AI/ML platform which works on both at the central and at the edge in distributed topology, offering better management/training of AI/ML model and promoting better inferences?

Telco Systems (Eran Shalev): We are not aware of a good AI/ML platform supporting distributed topology. That said, most of the cloud companies would answer yes but the reality is that they still push to the cloud and the question is if they can perform well in the edge particularly on-prem. Nonetheless, Edgility, as a platform for edge computing, enables connecting AI workloads running in both edge and cloud.

Get in touch:

If you have any questions intended for Telco Systems or would like to learn more about their solutions, please contact:

Telco Systems, sales.apac@telco.com