

Patrick Moorhead: Charles and Cédric, welcome to the Six Five Summit 2021, and thank you so much for speaking here on day three.

Charles Ferland: Happy to be here.

Cédric Bourrely: Very happy, as well.

Patrick Moorhead: Yeah, maybe a great place to start is you can talk about what you do at Lenovo and Capgemini. Maybe Charles, we'll start with you.

Charles Ferland: Sure, thank you, Patrick. So basically at Lenovo I run the Edge Computing Organization. My team is responsible for developing the products, partnerships, the solutions related to edge computing.

Patrick Moorhead: Excellent. Cédric, how about you?

Cédric Bourrely: Yeah, so on my side I'm part of Capgemini. I'm in charge of the program dedicated to 5G labs. I'm running the labs in Paris and the labs in Mumbai, where it's dedicated to industries and the use cases dedicated for industries.

Patrick Moorhead: I love it. So the two of you are at the forefront of edge computing. And it's funny, I talk to a lot of people. I talk to enterprises, I talk to CEOs of tech companies, and I there's a lot of discussion. Hey, is this edge computing thing real? And what's the potential? Maybe I can give this to this one to Charles.

Charles Ferland: It's a legitimate question, to be honest, because we've been talking about edge computing and somehow it has exist in some shape or form for some time. But really over the last few months, 18 months, we've seen a lot of pilots and proof of concept coming along. But I would say it is becoming real, because now we're starting to see shipments and projects that are in the hundreds, if not thousands of devices all over the world. So definitely becoming real, definitely focus around where the data is actually created, and all the use cases that requires data processing outside of the data center for better performance or insight at the edge is where we're starting to see some real interesting project at scale.

Patrick Moorhead: Yeah, what's been true since the beginning of IT is having your data processed as close as you can to where the data originated is always a smart thing. But there are some challenges with edge computing, as opposed to let's say pulling it into the data center or pulling it into the public cloud. Can you talk about that, Charles?

Charles Ferland: Yeah, for sure. Obviously the environment is very different, right? You're outside of a data center, therefore you need to have equipment that is ruggedized, that is resistant to shock and vibration, that can operate in higher temperature range. And we've been collaborating very closely with Intel in developing an edge portfolio that allows us to really have that equipment out and about, not in the data center.

That being said, we understand the physical hardware is different, but there's two other element that is actually crucial in our key challenges that we have to solve to make edge computing a success. The first one is the security. Now that you leave the perimeter of the data center, the device itself is at risk of being stolen, right?

Patrick Moorhead: Right.

Charles Ferland: So we innovated in looking at ways to how do we anchor the device in a location so that I cannot easily be stolen? And more important, the data that it contains is now processed and stored in some cases directly at the edge, and you want to protect that data. So again, we innovated in putting motion detection and using encryption technology and GPS fencing so that the device itself, if it's stolen, cannot leak the data easily. And we have a mechanism to lock down the data.

That's one aspect on the security. The second one is the management. As you know Patrick, we spent years mastering the tool set to manage thousands of servers and data centers. Now you have these servers in hundreds of thousands of locations. You don't have any technicians, or if you have a technician that can go onsite, that will think hours, if not days. Therefore a management tool set that allows us to deploy in an automated matter and manage that environment is actually crucial. And this is perhaps as much innovation in R and D we're spending in that area as in the product development itself.

Patrick Moorhead: Yes, you almost have to have a virtual IT person there and be able to do everything that an IT person could do on site as you can virtually. And every time I go to a gas station or a retail store or a fast food restaurant, I see that server bolted to the wall or just sitting on the ground. And I'm wondering how much confidential customer data or credit card PII information is sitting here?

So so far we've talked a little bit in the abstract, so far, about edge compute. Charles, can you talk a little bit about some real life examples of companies using edge computing and doing it successfully?

Charles Ferland: Okay. Well, we're working with one of the largest drugstore company here in Canada that's actually rolling edge computing in all of their drug stores, really to effectively run the store application directly on the premise. In case of a network failure, in case of a failure of the cloud, they have that redundancy over there. We're also working with companies like BASF in Spain, where actually we've deployed the private wireless network, and using AI to help technician do some maintenances on the mission critical chemical components, and having a remote set of eyes helping them and having that video process directly at the factory.

And finally, one of the most exciting project we have is with the City of Barcelona. We've deployed a private 5G network over there. We're deploying edge computing in many street cabinets throughout the city to host various use

cases, I think seven in total, that varies from a smarter tourism application, to security, traffic control, and many other use cases in Barcelona.

Patrick Moorhead: Yeah. And I know you're only allowed to talk about the customers that allow you, but I know that you're in a lot more interesting deployments.

Charles Ferland: Absolutely.

Patrick Moorhead: So it's just great stuff. So let's hear from Capgemini. Cédric, why do you think edge computing is getting so much more relevant now? Is it because of 5G? Is it something else? What's going on here?

Cédric Bourrely: Yeah, 5G and edge are tightly linked one to each other. Actually 5G, it's the first generation of mobile communication that is designed for the industries and only for the mass public. Previous generations were dedicated to the mass public, and now we are really moving on the industrial side of it. And it's truly a differentiator. Of course, 5G will support gaming use cases linked to a live streaming of videos, but essentially the 5G technology is meant for industries, for smart cities, for smart factories. And it comes with a simple fact today. Today, the number of data that is being processed is exponentially growing. And now you need to get power computing power very close to the network, and you need to get also limitation on the bandwidth that you will use, both for latency or real-time quantities or even sustainability condition.

So it's really a link very deep between 5G and edge. And what we see is really this convergence between the IT world, the OT world, and the network world overall. So that's typically what we have developed as part of the 5G labs. We have dedicated these labs to the application of use cases for 5G and edge. Really to see how smart factories, smart cities, smart retail, smart youth can benefit from 5G and edge to get new transformation and new acceleration on these platforms.

If I quote one very simple example, we have developed typically an autonomous intelligent vehicle, AIV, which computes the calculation, picking up a package inside the warehouse at the edge. And not only at the device site, taking all the benefit from high power from edge side and cloud side with very less reactivity. It's powered by 5G network, so it's really impressive how all these technologies today are converging, and it's really the time right.

Patrick Moorhead: Yeah, I'm really excited about 5G. It's the first G that's been truly fractional, right? If you need a low bandwidth, low latency, you can get it. If you need high performance, high latency, actually flip those. You can get what you want. So 5G is relevant if you need 50,000 sensors on an energy pipeline, or if you need a very low latency high bandwidth on the factory floor. It's the first G to do that, and if you have a standalone network it all becomes a reality.

So we have both Lenovo and Capgemini here. Can you talk, Cédric, what you're doing with Lenovo to enable edge compute?

Cédric Bourrely: Well, actually we have worked with Lenovo from the beginning of the 5G labs program. It's been a partnership going on from almost two years now. What we wanted, a very simple, it was we wanted the latest generation of edge servers that could be installed for our industry, our environments. So that's how we came out to work with Lenovo on this pass. Second, we wanted to test the overall integration of completely virtualized 5G, as depended on network on top of edge server. That's really something that was pretty complex, very interesting for deployment reason, and a technical upgrade, I would say, compared to the situation today. And we managed to do that with Lenovo. And last, we also wanted, obviously, to get devices, and smart glasses, tablets, laptops, connected through a 5G standalone. And that's to cover the end to end of the use cases, and the reason why we have done these labs. Lenovo has been working with us very closely since the beginning. It's been a great achievement so far.

Patrick Moorhead: Yeah, as an industry analyst we track different vendors, and I think you made a very good choice. I've been very impressed with Lenovo's offering in this space. There seems to be an offering for pretty much any edge use case out there. And Charles, I'm not saying this just because you're on here, but I think you've done a great job realigning Lenovo over the past couple of years for this market.

Charles Ferland: Thank you.

Patrick Moorhead: So let's talk about the pandemic. We always have to talk about the pandemic on a video here. But I'm curious, did it have any impact on the evolution of edge computing?

Charles Ferland: It certainly opened up many of the use case for greater automation, less staff or personnel on premise, and everything that could be automated through AI or artificial intelligence is actually a good use case. And that picked up a lot of momentum. I believe, though, the major change and transformation was around how the financial model were constructed around edge computing. Cap X and expenses were perhaps a little bit more challenged and looked at very carefully. Therefore it opened up a fantastic opportunity for Lenovo TruScale, which is a pay as you use model that allows customers to consume and deploy edge computing and pay as they grow. We meter the power consumption of the system itself, therefore the more the system is utilized in a month the greater invoice and vice versa. If the system is only lightly used, the monthly payment are reduced.

That really appealed to our customer. That TruScale offer I think was really picked up momentum following the pandemic, because a lot of the customers wanted to align their expenses with operational charge rather than capital expense.

Patrick Moorhead: Cédric, how about you? Have you seen anything change in edge computing with the pandemic?

Cédric Bourrely: For me, the key learning of this crisis is that in order for the industries to be resilience, constant and direct access to the data and the control of the processes is completely mandatory. We have seen that in supply chain, we have seen that in hospitals. Working remotely can only be done through complete control of the data. And that is made possible by intelligent algorithms, that we need to execute real-time close to the location of the production of the data, and it's close to the device. So it means new means, new architectures, new hardware, new software, and obviously a new connectivity. And that's really why we can't imagine what would have been the pandemic like 20 years ago if we hadn't had this technology. And I guess 5G and edge are really now the proof that it can help, and in the future crisis it will be more resilient thanks to this progress, I'm pretty sure.

Patrick Moorhead: Yeah, I saw some incredible mobile applications, and I'm not talking about smartphones. I mean, they included smart phones, but essentially a full hospital had to be set up in what used to be a farm field. And they had to set up an IT shop with servers, networking, and storage with mobile devices, doing everything real time. And I was actually impressed at how quickly those were put into play. And also even I saw restaurants who had reset their IT to be able to better serve people. Let's say when you pulled up in the parking lot, you had to tell them what number of the parking lot you're in so they could deliver food to you. And so these were very quick changes that only could have been done with computing that was closer to the edge. But very impressive, nonetheless.

So there's a lot of competition in this space for edge computing. Charles, this one's for you. What are things that distinguish Lenovo over some of the other vendors out there? I already talked about you have a super wide array of options, whether you want something in an elevator shaft, you want something bolted to the wall, you have a raised floor tile in the edge in a huge grocery store of some sort.

Charles Ferland: Yeah. Well, thank you, Patrick. I think what is super exciting about our edge offering is really the coming together of our three main business units. Within Lenovo we do have a PC or laptop business that is doing super well. And absolutely they understand how to build ruggedized systems, laptops that we built that we put on our backpack, we dropped them, we spilled coffee, and they keep running for years. And how to produce these ruggedized components at scale in factories is super important, and they contributed a lot to our edge computing strategy.

Similar with the Motorola or the mobile, where often these edge computing devices are in remote location where there's no physical network connectivity and we need to use a wireless communication, well that's all good. However, most of the time these edge servers are in a cabinet in the manager's office in the back store somewhere, therefore there's a very limited signal that comes in.

And we work with our Motorola colleagues to optimize the wireless communication so that we have the optimal transmit and receive out of those systems.

And finally, the data center division that really contributed to highly reliable search servers, high-performing servers, so that you don't want to service them every two years. You want to install them and let them running for 4, 5, 6, 7 years basically. So it's really these three division of the PC, mobile, and data center group coming together that made our unique edge portfolio. And that, I think, sets us apart because we have know how and expertise from all of these different groups that really come quite handy when we develop our edge portfolio.

Patrick Moorhead: That's really exciting. And if there's one big piece of feedback I've given to all the Lenovo senior executives is, hey, find innovative ways to leverage all parts of Lenovo across the entire company. And I'll also bet that services are involved as well in that, to add to that trifecta of capabilities. So I think that's super exciting.

Charles Ferland: Thank you for pointing it out, Patrick. You're right that I should have mentioned that the ability to service an 180 market is really important when we're talking about edge computing. By nature, these deployments are highly distributed in deed.

Patrick Moorhead: Yeah. The other thing I'm following with you is your vertical integration. You're one of the few companies that has a lot of vertical integration in what you do. So great stuff, Charles.

So let's talk about the future. The Six Five Summit is a thought leadership summit. We have talked about the evolution of edge computing and kind of what's real, how we define it. But maybe I can start with you, Charles, and then Cédric. What are you most excited about in the future of edge computing? Have we arrived and we stop innovating? Of course not.

Charles Ferland:Of course not.

Patrick Moorhead: What are you seeing out there for the future?

Charles Ferland: Optimizing power consumption, and cooling temperature, and power consumption, and research we're doing on liquid cooling, and all of this is super exciting. I think a more realistic, immediate next step is the fact that we've deployed use cases using a specific device within the application, and then a second application with a second device and all that. What we'll see over time is that you cannot have six, seven devices in a store or in a gas station each fulfilling a specific use cases. So we're working very closely with our partner to consolidate all of these on a more powerful computing devices that actually hosts in virtual environment all of the use cases needed to operate in that location, basically.

Patrick Moorhead: Yeah, I always was interesting, you walk into some of these edge sites and they have four or five different boxes. It reminds me of a data center in 1992, different boxes for different applications. And I totally understand the sprawl, but my gosh, that's about as inefficient as it gets. And if you have a very reliable system that's there, you don't have the risk of a single point of failure, and you're secured because these applications are virtualized. So that is definitely the way to go. Cédric, how about you? What excites you about the future? What are you looking at?

Cédric Bourrely: Typically one of the greatest interests that we see for 5G and edge is typically in healthcare sector. I look forward to see what these technologies will bring for the assistance to the patient, for the augmented operating room, for everything linked to the mobility connectivity for patient transiting from home to hospitals, from taking care of patients with imagery. That's the typical use cases for healthcare that we do believe great future are related to 5G and edge. Really interested to look forward to that.

Patrick Moorhead: Yeah, I love that use case. It leverages kind of the best of edge, which is it's portable, low latency, and high performance, and the ability to disconnect and not to have to be connected all the time. It's better when it's connected, but hey, if you're in a place that doesn't have coverage, you can get it. No, that's a great use case out there.

So gentlemen, this has been a wonderful, but unfortunately we are at time. I just want to thank you, Charles and Cédric, for coming on to the Six Five Summit 2021. And I really appreciate for you making day three a lot better.

Charles Ferland: Thank you, Patrick, for having us.

Cédric Bourrely: Thank you-

Charles Ferland: Thank you, Cédric, for the great collaboration.

Patrick Moorhead: Excellent. This is Pat Morehead with Moor Insights and Strategy. Hope you're enjoying day three. We have a lot more great content and speakers to go. Have a great day.