Intel

Visual Cloud & Cloud Gaming in 5G

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PRESENTATION

Voice-Over

What do we mean when we say, "All you need is an idea and Intel inside?"

That in today's fast moving high-tech world, big ideas are powered by a one-of-a-kind partnership with Intel, because our customer-first approach is more than just a byline.

From the moment we put the silicon in Silicon Valley, Intel has been accelerating the industry in big ways.

Setting a course for a new era of bold innovation.

No one else is this obsessed with engineering a brighter future.

That's why we're driving the industry's biggest inflection points, putting intelligence where it's needed most, in ways that only Intel can, with the multi-architecture approach that empowers our customers to transform their businesses from the inside out.

We're democratizing AI in big ways, combining software and hardware to open up new possibilities.

And we're moving that innovation around the world at lightning speeds with our advances in 5G.

Collaborating with global operators and creating a new vision for networks of the future.

We're taking intelligence and bringing it to the edge.

Accelerating business outcomes with over 30,000 Edge to Cloud solution deployments.

And we're taking that same innovation to the streets, deploying new technology and advanced data layers to make autonomous driving not only possible, but safe and seamless.

Every day, we create world-changing technology that enriches the lives of every person on earth, making bold moves, because Intel has a unique portfolio breadth and depth, plus the global scale to serve as an unparalleled catalyst, for our partners' biggest ambitions.

So, if you've got a big idea, let's go off and do something wonderful together.

CB Lee

Welcome everyone to the Intel Network Builders Enterprise Network Insights Series. I am CB Lee, Market Development Director at Intel, and your host for today's webinar. Thank you for taking the time to join us today for our webinar titled Visual Cloud and Cloud Gaming in 5G.

We will start today with a presentation by Ubitus and then head into a fireside chat with our presenters.

Before we get started, I want to point out some of the features of the BrightTALK tool that may improve your experience. There is a Questions tab below your viewer. I encourage our live audience to please ask questions at any time. There is also an Attachments tab with

additional documentation and reference material, which pertain to this presentation. Please take the time to provide feedback using the survey link. Your survey feedback matters to us. Please take five minutes to give us your thoughts after the webinar. An Intel representative will contact you once we receive your private wireless business demand in the survey.

Intel Network Builders Enterprise Network Insights Series takes place live every month, so check the channel to see what is upcoming and access our growing library of recorded content. In addition to the resources you see here, we also offer a comprehensive NFV and 5G training program through Intel Network Builders University. You can find a link to this program in the Attachments tab as well.

Today, we are pleased to welcome Wesley Kuo from Ubitus and Nagesh Puppala from Intel. Wesley is the CEO entrepreneur who founded i@Solution providing Java-based software solutions for mobile applications, which was sold to Aplix of Japan in 2004. Later, Wesley founded Ubitus, specializing in cloud-based video processing and streaming technology. Consequently, Wesley focused the company on cloud gaming and became the exclusive cloud gaming solution provider of game companies like Nintendo, the telecom operators like Korea Telecom, China Mobile in Hong Kong and, etcetera. Under Wesley's leadership, Ubitus continued to engage new telecom and cable operators worldwide and find new applications of its technology in other industries like fashion and media.

Nagesh Puppala is a General Manager of Visual Infrastructure Division within the Network and Edge Group at Intel Corporation. In this role, he oversees the strategy and execution of hardware and software deliverables for compelling solutions in video production, video delivery, cloud gaming, immersive media, video analytics, and cloud graphics.

Welcome, Wesley and Nagesh, and thank you for taking the time to join us today.

So, Wesley, I will hand it over to you to start off.

Wesley Kuo

Yes, thanks, CB. Hi everyone. I'm Wesley Kuo, Founder and CEO of Ubitus. Today, I'm very excited to join this webinar with Intel and Nagesh to share our exciting collaboration in visual cloud and cloud gaming for 5G.

Here, I'm going to start my presentation to all of you and feel free to enjoy it.

Today, I have three agendas about the cloud gaming solution and also the market. So, let's start from there.

So, I will share, the first agenda is about why cloud gaming, and then talk about who is Ubitus, and then finally share our successful story with everyone.

OK, let's start with the first one, why cloud gaming? So, gaming is a very exciting and fast-growing business, as you can see from the left hand side, the market grows from 2016 until 2020, it grows rapidly with 100 billion market cap. And then from the mobile games, it actually grows the fastest one, accounting from 29% now it will become over 40%. And then among that, Android has most of the majority pie of the mobile game, which accounts about 74% of the overall mobile gaming. And in the right hand side, you will see that cloud gaming also grows very rapidly from only like 170 million in 2019 and then it will come out to 4.8 billion in 2023. So, all in all, you see mobile gaming is booming and also cloud gaming is also another very fast growth segment in the entire game market.

So, you see the market growth for overall game market is about 9.4% annually, and then cloud gaming is actually getting higher, it's about 130%, which is very, very high potential and a very promising business.

And here, we want to also explain about the business benefit of cloud gaming to all of you. So, we can start from three angles. So, number one from the user point of view, there we see cloud gaming and what Ubitus can offer is a broadened opportunity to connect different kind of users or even some users who doesn't play games in the past and now converts, become a gamer. Or you see a motivation of bundle programs or subscriptions for telcos to sell their mobile games and/or other types of games. And then also, there's another motivation for them to upgrade their data plan from 4G to 5G to ensure a rapid and also fast network.

And then from the product side, there's other benefits apparently like, for example, number one, cloud gaming can easily do cross-platform, no download, no installation. Or it could be also a more easy way for telcos, for game companies to do the content creation by

themselves. And also, it's easy to do some kind of cross-industry cooperation with some tech giant company like Intel, and using Intel's market-proven data centers, Xeon CPU, and Server GPU.

So, all in all, cloud gaming also can show off the new features, the advantages of these new products and new technology.

And finally, from the market side, you can see cloud gaming is also now a great opportunity and promotion tool to help a lot of companies to find a fast way to enter the cloud gaming market.

So, overall, by the three angles from Users, Product, and Market, you see cloud gaming can increase the customer loyalty and stickiness, and also there, in the end, help you to increase your revenue growth and market share. That's how we saw the benefit of cloud gaming.

In the next one, we talk about who we are, who is Ubitus. So, we founded in 2013 and are currently headquartered in Japan and we have a very decent R&D center in Taiwan. And we are, as a technology leader, we are actually deploying cloud-rich, cloud-enabled media services and offer a lot of innovative cloud computing solutions, including our patented cloud gaming solution to a lot of game companies, telco operators, and also digital content providers. That is our core business of Ubitus.

And we have two types of customers and partners. So, number one is telecom or platform operators that we have a lot of customers like Nintendo, like NTT, KDDI, Korea Telecom, Vodafone, China Mobile, etcetera. Those are all very famous leading brands in doing the technical surveys of platform business.

And on the other hand, we have also a lot of partners from the game industry like SEGA, SQUARE ENIX, CAPCOM, Ubisoft, etcetera that will either help lend offer cloud gaming service to their end users, or we work with them to bring their great titles to a lot of telcos. This is what we did with these game companies.

And then, when we offer our solution to these two types of customers and partners, we also want to share our very exciting achievement with Intel. So, during the collaboration, we have become one of the early Intel Server GPU launch partners, and then we now-- together with Intel, we engage more than 15 worldwidevery famous telco operators in the pipeline. And then we had accumulated, sourced over 600 titles, game titles that we could also put in our library and offer a bundle to telcos.

So, these are very, very exciting milestones we achieved together with Intel and very happy to share during the webinar today.

And then talk about service, and we also offer three types of professional services from like content creation that we engage so many game companies, and also very regional leading telcos. So, we have knowledge and expertise knowing what kind of content preference in local market, and we can recommend to our partners and choose the best offer/title to fit your local market.

And also, we offer system customizations that we can do kind of white label with telco customers that customize the UI or the billing payment, or even do the localized MEC edge deployment, so that telcos and customers can enjoy the best low latency benefit of the network from 5G.

And finally, we can also do some marketing-- market planning and recommendation service with our partners to jointly find the best way to find out the potential customer and engage them and convert them to a loyal customer.

That's the typical three services we offer to our partners.

And then in terms of our technology strengths, I'm also happy to see-- share about, you know, our technology strengths from different angles to all of you.

So, number one, I think we have a very good high-performance solution with the best GPU virtualization technology and very adaptive Robust QoS streaming protocol and can be deployed at the edge. So, that can help our customers to drive the highest performance of a service. And as a consequence, we also bring lower-- much lower operating cost for our partner, because with a high-performance solution, there you see we can drive down the per stream cost in the lowest level. Plus, we are kind of a GPU-agnostic solution, and also very flexible with the multi-cloud, public cloud providers, so we can help our customers to find the latest technology, lowest cost, and then can penetrate the global market.

And thirdly, we have a lot of patents, you know, worldwide, the United States, and other major markets. So, we are very confident that our solution is very competitive in the market and also helps our customers save a lot of R&D effort to quickly roll out the service to the market.

So, in short, in summary, there you can see some key technology components in the cloud gaming service that any new company who wants to enter this service should be, you know-- think about it. So, Ubitus, we offer our customers total turnkey solution by several steps.

So, number one, we have rich game categories. And number two, we have very easy to use game experience. So, we have a GDK tool that is kind of a game onboarding SDK that we license freely to all our game publishers. They can quickly porting and onboarding the game to cloud, and they can easily customize the control experience from console to mobile, or PC to mobile, etcetera. And then because we have a scalable GPU solution technology, so our virtualization will quickly help those publishers to distribute a game title to worldwide market or to some specific channel that we team up with telcos.

And then the next one is about the last mile, so we have very adaptive, Robust QoS streaming protocols that can fit in different kind of networks from 4G to 5G, and from Wi-Fi to fiber or cable. So, these kinds of adaptive solutions can easily fit different kinds of networks and then help the telco to do the service quickly to all kinds of network users.

And then finally, we also offer a multi-screen solution and also cross-platform offer. So our customers can easily choose how to distribute their service to-- via like applications, or even through just a browser. So, that makes it more a flexible choice for our customer to consider what's the best way to best run their service.

So, these are some-- like the five key components in terms of technology we believe that is very essential for a new customer to enter the cloud gaming service they need to consider.

Yes, and then very importantly, in the scalable GPU part, we teamed up with Intel. So, you know, Intel's solution brings the best performance with us, especially for the mobile game streaming that is very, very, you know, surprised and very exciting for us to-- when we do the cooperation with Intel.

And finally, I want to share also about our success story with all of you and see how we engage with these customers.

So, here's Customer A that works with us that, actually, they do multi-screen, three-screen cloud gaming solution from 5G to PC and IPTV. And then we offer them a total solution that heavily runs on Intel's CPU server, and then bring a lot of high quality Triple-A titles, and then offer all the customers, as I said, from mobile, to PC broadband, even to TV, give them easy access that they can play anytime, anywhere, on any network.

So, they can play some very famous games like NBA, or like Control, a very famous racing game that plays on many devices and even we bring the game to Nintendo Switch platform. And together with the telco, they launched some very successful marketing program that reached out to millions of users. As you can see on the righthand side chart, this customer actually-- when they rolled out their 5G service, they also bundled a promo cloud gaming service with Ubitus during 2019 to 2020, and you can see the cloud gaming launch is actually an accelerator for their 5G subscribers' adoption or growth. So, so far, this customer is very satisfied with the result and outcome of working with Ubitus and with the cloud gaming offer to drive high ARPU and also 5G subscriber growth.

And here I want to also share some more about, you know, during our cooperation with Intel why we believe, you know, the partnership with Intel is very essential and very important, especially for a lot of potential telcos or game subscriber who want to enter into the space. Because, as I mentioned at the beginning about the market, so mobile games is the dominant leader. They have over 40% market share today. But-- and also, Android games account 75% of the overall mobile game market. However, not like iPhone games, you will see that the Android games is very fragmented, so they are facing a lot of very critical challenges like you need a lot of content download, you need a lot of device compatibility issues. And those mobile games now become like console games, they are becoming bigger and bigger, there are some even that I recently played, they offer like over 10 gigabytes size to download to your mobile phone. That's really crazy. And then the OS version of Android is also very fragmented. I heard that even today in some emerging markets, you can even still find Android 4.4 or Android 5.0 OS phones locally, while we are now upgrading to like Android 10 or 11. So, there's a huge gap about fragmentation.

Also, when 5G penetration is higher or the cost of hardware for 5G phones is getting lower and lower-- like actually I have a 5G phone today, it's only less than $200. Those phones' CPU/GPU may not be very powerful, but they can-- they have the ready 5G network connectivity. So, how to offer a Triple-A mobile game experience on these mid to low end 5G phones? That is also a very essential question for telcos to consider. And we believe cloud gaming with Android offer is the answer.

So, here's what Ubitus Android cloud gaming cooperation with Intel that we run with Intel Xeon processor and Intel Server GPU, and then we can run amazing three-digit, 160 streams per server that's streaming all the popular Triple-A Android mobile games from server to any kind of device, it could be a mobile device, it can even just be a PC browser. So, by this partnership with Intel, we enjoy several benefits like we have a high density of streaming capability. And also, the power consumption is very low compared with other GPU providers. So, we believe this kind of cooperation with Intel can offer a very, very complete total cost ownership to our customers. And also, this kind of offering, like Android game streaming, is very different from other big companies offering today that they mainly offer like PC or console games, while we can differentiate with also offering those popular Android games to your customers. That's a very, very big difference we want to, highlight here.

So, in our Android cloud gaming solution, we can offer, together with Intel's solution, with Intel's CPU and Server GPU to run all the mobile game APK, and direct to any devices from PC, mobile, to browser. So, I think the benefit-- you will see that, you know, for game companies, game developers, they don't need to deal, thousands or maybe millions of devices segmentation. And also, the benefits, again, is always the latest one, you don't need to download gigabytes of binaries for the new DLCs. And it's easy, you can play the game cross-platform with different communities and users.

And then also the other benefits like you invest one server and then you can offer all kinds of games, as I say from PC games, console games, even mobile games. So, this is the best and ultimate solution for every player to consider.

And then with our partnership with Intel, we also try to reduce your capital expenditure and also reduce a lot of your effort about, you know, kind of game hacking or onboarding. And then you have better utilization of assets, and also, you know, reach out with a so exciting, fast-growing market. And then also definitely increase your customer satisfaction and also retention rate.

So, these are all the benefits we foresee by working with Ubitus/Intel for the Android cloud gaming solution.

So, as a result, as I mentioned, I highlighted previously, so Ubitus has conducted several very, very important Android cloud gaming trials with some very positive feedback from the telco and game developers in Asia, like including Japan, Korea, Taiwan, and India. So, we look forward to seeing more and more demand or interest from different telcos and different markets.

So, that's all I'm sharing today to all of you. Thanks for your listening. I'm giving back the camera to-- back to CB. Thanks.

CB Lee

Thank you, Wesley, for the excellent presentation. Now, let's transition to the fire chat section of our webinar where we will get to speak with Nagesh as well.

I will start with Nagesh. How important is cloud gaming to Intel and how do you view Ubitus as your cloud gaming solution partner? What value does Ubitus bring to Intel and customers?

Nagesh Puppala

Well, CB, as you heard from Wesley's presentation, it's an emerging market with great momentum. There are over 3 billion gamers in the world today and they continue to grow at a very healthy rate.

Now, that is a huge market. You know, given that market is today primarily games being locally on the consoles, PCs, and the mobile devices, but as Wesley pointed out, the cloud gaming market is growing at over 130% CAGR, the compounded annual growth rate. And I can see the similarities between the cloud gaming and over-the-top video streaming market.

If you go back like 15 to 20 years, the majority of the video content was still DVDs. You know, once the technical issues with the streaming were resolved and the user experience was improved, that market just exploded, and I see the same happening with the cloud gaming market. And 5G is one of the key enablers for delivering a compelling cloud gaming experience.

But you need partners such as Ubitus to make it easy to deploy a cloud gaming service. Intel's Xeon processor and GPU coupled with Ubitus technology, together offer the best-in-class cloud gaming solution to our customers. And it can be deployed today.

Intel Server GPU is very well suited for cloud gaming, and Ubitus is a leader in cloud-enabled rich media services and offers innovative cloud computing solutions including cloud gaming.

And as you've seen from Wesley's presentation, Ubitus has had many successes in this space, and we are excited to collaborate with Ubitus and our mutual customers to bring the cloud gaming solution to the market with a low TCL and faster time to market.

CB Lee

Great. Good response, thank you. To Wesley. How do you see 5G and edge technology impacting your cloud gaming business?

Wesley Kuo

Yes, CB, so as everyone may be aware, so cloud gaming, you know, cloud gaming is basically based on video streaming technology. So, network quality and latency is very important.

So, today without MEC, without 5G, we're running on a traditional 4G network, we can still stream, but we probably can only barely do like 720p and also like more casual level games, like FP-- sorry-- FP-- sorry, like RPG games or some casual games. But with the deployment to MEC edge, then we have a very, you know, stable quality of network and very much low latency. Then we can even go up to 1080p, 4K, and also play very, very fancy games, public games like, you know, kind of Fortnite, PUBG, kind of FPS games.

So, you see the dramatic improvement in network side when we deploy cloud gaming solutions to the edge. So, we believe that is a very important, you know, improvement and benefit for cloud gaming.

CB Lee

OK, so back to you Nagesh. In Wesley's presentation, he talked about the Intel Server GPU. So, can you share with us what is the Intel discrete GPU strategy and how is Intel planning to compete in the GPU market in general, and cloud gaming in particular?

Nagesh Puppala

Absolutely, CB. So, Intel's discrete GPU strategy is built upon our advanced and ground-breaking Xe architecture. There are three main pillars to our CPU-- or GPU strategy. And first is around-- we know that GPUs need a robust software ecosystem to succeed across graphics, media and, you know, computing. So, we took a software-first approach so that Xe can take advantage of the decades of history we have supporting industry standard APIs across Windows and Linux, as well as the lush ecosystem of parallel languages, libraries, and tools.

With oneAPI, a unified programming model that simplifies development across IACPU and accelerators, including GPU, it makes it easier for our customers to adopt our discrete GPUs at a wide spectrum of use cases, such as cloud gaming, video processing, video analytics, AI, and HPC.

The second, after software, the focus of Xe architecture is on scalability. So, one architecture can cover many price points, performance levels, and market segments, scaling from teraflops to petaflops.

Last but not least, the strategy of the GPU strategy is to focus on new and emerging workloads. So, we are building products that are great at today's workloads, but we also want to solve the problems that the current solutions are not yet addressing.

Now, coming to the cloud gaming specifically, Intel's strategy is to offer high density and lower TCL both hardware and software solutions.

So, from a hardware perspective, our first discrete Intel Server GPU is purpose-built for high density Android cloud gaming instances. Our ODM partner, H3C, packed four Intel Server GPUs into a PCIe add-in card, all running in parallel with 32-gig memory, one of the highest memory on discrete GPU card to support a large number of simultaneous users. As Wesley pointed out, they are able to get up to 160 simultaneous users.

Software is also a critical aspect of successful Android cloud gaming service deployment. For Android cloud gaming, Intel licenses software components that work with the game streaming solution to support higher server game streaming density, game performance, and a breadth of game title accessibility.

So, the software components include Android in Container solution for games running on Intel-based platform. Two, it includes Intel's Cloud Rendering software that provides the core cloud rendering technology, and leverage Intel optimized Mesa 3D graphics library to optimize Intel's Server GPU utilization. And finally, the Intel Bridge Technology, which enables certain Android apps, not written in Java or compiled to run natively on Intel-based devices, to run on those devices. This software, combined with an optimal Intel-based server configuration, provides a strong foundation on which to deploy an Android cloud gaming service.

CB Lee

Great, thanks, Nagesh.

Nagesh Puppala

Sure.

CB Lee

So, Wesley, back to you. So, we see that the market is growing, we have a good GPU strategy, you have a good solution. So, what are the challenges that you're seeing? What are the biggest impediments to accelerate adoption of cloud gaming?

Wesley Kuo

Yes, thanks, CB. So, from our perspective, we believe that three things are very important for, you know, for the growth of cloud gaming. Definitely number one is technology or software. And number two is about the infrastructure. And third one is about content.

So, for technology-wise, we are very confident that Ubitus solutions is very mature and market-proven, so we can work a lot of companies to keep improving that. And for the infrastructure side, since 5G is, you know, growing rapidly, so I believe the telcos-- a lot of parent companies will invest a lot in infrastructure to improve their network and even edge computing capability. That's also something we see very positively.

So, finally, I think the challenge will be about the content. So, how really build up very-- or drive the content offer to attract these potential gamers to enjoy, that is key. And I believe our partnership with Intel, as Nagesh mentioned, that we have, you know, licenses are very essential technology from Intel so that we can help these mobile game developers, you know, seamlessly migrate their game onboarding from cloud without changing the code. So, you know, I think this a great solution, we can help these game developers feel more comfortable and, you know, more motivated to bring their great titles to the cloud platform and distribute to the worldwide channel, Ubitus and Intel can offer to them.

I think that when those Triple-A content, we get more exciting new mobile games in the platform, then that will definitely accelerate the entire adoption of mobile cloud gaming.

CB Lee

OK, great. Nagesh, back to you. Intel has been working together with Ubitus for a while. So, can you share more on the success that you have with Ubitus on Android cloud gaming? And how do you see your partnership with Ubitus moving forward?

Nagesh Puppala

Sure, CB, absolutely. Intel and Ubitus have been working together with many telcos and enterprises around the world in Korea, Japan, Southeast Asia, India, Europe, Russia, South America and so on, and there are several engagements that are in progress. Some of them are at the final stages of deployment, so we are hoping for a joint announcement with Ubitus and our customers together soon.

The momentum of working with Ubitus has been a great experience for us as Wesley presented. Ubitus not only has the technology to accelerate cloud gaming service deployment and onboarding of new games, but Ubitus is also very flexible with various business models, such as revenue sharing, service hosting, B2B, B2C and, etcetera.

So, we are very excited to work with Ubitus and I really look forward to work together with Wesley and his team so we can together offer a high density, low latency, and low TCL cloud gaming solution based on Intel Xeon processors and Server GPU, and Ubitus end-to-end solution.

CB Lee

OK, I'm excited too. All right to Wesley. You are the Intel Server GPU launch partner. You have been working with Intel before the product was launched. Can you share with us what you see in the value of Intel-based solution for you to take the bat?

Wesley Kuo

Thanks, CB. So, yes, before, you know, engaging with Intel partnership, we've been launching-- developing our cloud gaming solution for PC/console games, our other product. But after seeing Intel's roadmap and engaging with you, we enjoyed a very clear benefit from Intel's solution that, number one, we can enable not just PC/console game offering, but now we can also offer Android mobile game offering to the streaming offer.

Also, the other part is about cost. We are very surprised about the low TCL cost ownership and also high-density solution that is coming from Intel, total solution from your silicon and also some software technology offer. I think that really completes our offer. You know, we really give all types of games from mobile, to console, to PC for our customers to pick. I think that is a very, very clear benefit from the partnership with Intel, and we are really enjoying that. Thanks.

CB Lee

OK, great. Nagesh, we'll switch a little bit, not really just on the GPU, but the overall technology that Intel has. So, for a consumer of Intel technology, may you please share more on the portfolios that Intel has and why Intel?

Nagesh Puppala

Sure. You know, Intel offers a very broad platform portfolio ranging from processors to accelerators, to move, store, and process data. So, Intel's latest Third General Intel Xeon Scalable Processor delivers a balanced architecture with built-in artificial intelligence acceleration, crypto acceleration, and advanced security capabilities. But helping customers move, store, and process data takes more than just processor innovation.

So, we have advanced the entire silicon and solution portfolio with discrete GPUs, AI accelerators, ethernet adapters, Intel Optane Persistent Memory, and SSDs, space-efficient Intel Xeon D processors, and FPGAs.

We have also taken our latest technology and delivered several Intel Select Solutions reference designs with a pre-verified configuration featuring the latest Intel technology, optimized software, and unique optimizations from leading system vendors that accelerate deployment of customers' most demanding workloads.

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So, when we're talking about deploying new solutions, it's more than just talking about processors, it's the whole portfolio of products that you need to move, store, and process, and the software that ties them all together, and that's what Intel brings to the table.

CB Lee

OK, all right, so we are at the final question, so I'm going to ask Wesley first and then followed by Nagesh. So, what are the key takeaway messages you'd like to emphasize to the audience today? Wesley.

Wesley Kuo

Yes, thanks, CB. I believe a lot of the audience today are from, you know, the telco business, so I would like to go back to see the history from 3G to, you know, 4G and 5G.

So, in the 3G era, then I think the most successful service application is the music streaming, so that's when we see like Spotify take off. And then in the 4G era, then I think, you know, video or movie streaming becomes popular, we have YouTube, we have Netflix, Hulu, etcetera. And for 5G, we believe game streaming is the killer app.

So, you know, you're not just going to say you have a fast network, you also need to give the user more engagement and adaptivity. So, we believe game streaming is the right fit for 5G users or 5G telcos. So, we're very happy being here during the seminar with Intel and share our great work together and how we can enable more 5G telco to bring cloud gaming to your service very soon. Thanks.

CB Lee

OK, thank you, Wesley. Nagesh.

Nagesh Puppala

You know, I can't agree more with Wesley, right. Video gaming is something that's enjoyed by young and old across the globe. With the proliferation of smart end user devices, 5G connectivity, and the consumer expectation to have an experience on-the-go, the same experience that we have at home. So, cloud gaming is inevitable, it is going to happen. And I do expect the cloud gaming adoption to follow the same trend as video streaming, but at a much accelerated pace.

Now, with the 5G deployments ramping around the globe, the time is now to get into the cloud gaming service business, especially for the telcos who want to differentiate themselves from the cloud service providers and to drive new service revenue. And telcos have a unique advantage to offer this service. You know, they own edge locations, so offering an interactive cloud gaming service that will be available anytime, anywhere from an edge location can deliver better user experience, and it can help differentiate telcos from other cloud service providers.

CB Lee

Well, thank you, Nagesh. A great conversation, thank you both.

We have run out of time for today. I would love to hear more from our audience. If we didn't address your question today, please feel free to reach out to us at the email address included here.

So, thank you for joining us today. Please be sure to complete our quick five-minute survey under the Attachments tab, your feedback is incredibly valuable to providing the content you want to see and the solutions you need. Also, be sure to join us next time, October 21st at 1 p.m. Singapore Time for Trends for Private Networking with Red Hat.

Thank you again for joining us today. This concludes our webcast.

Wesley Kuo

Thank you, Nagesh. Thank you, CB. Have a good day.

Nagesh Puppala

Thank you, Wesley. Thank you everyone.