Now is the time to invest in the new cloud-based AR/VR market

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Cloud VR/AR offers new opportunities for vendors and investors

Cloud-computing services are developing quickly, fostered by the trend of moving more computing and graphics-intensive applications to the cloud in order to increase mobility and offload the management of complex infrastructure to cloud providers.

A promising new opportunity for both vendors and investors in the cloud-computing ecosystem lies in the emergence of B2B/B2C cloud VR/AR applications. Specifically, there is an opportunity to provide both the applications and the platform services upon which these applications depend.

The development of cloud VR follows the trend of consumer gaming, which is progressively moving to the cloud. Indeed, the B2C gaming market is shifting from being appliance-based to cloud-based. Video games require high compute and graphics performance that is traditionally delivered by expensive gaming platforms (such as consoles and PCs). A growing ecosystem of vendors has developed to enable gaming to shift to the cloud, thereby replacing the high initial investment required to purchase a gaming appliance with much lower recurring subscription fees. This expands the number of potential players and creates opportunities for new software and hardware vendors.

There are two aspects to the growing cloud-computing opportunity. Developers can use high-power cloud-computing infrastructure to deliver VR/AR applications, which have much higher computing and graphics needs than can be provided by a typical PC (or mobile headset), to a larger audience. Innovative players can also build new platforms (whether they use their own infrastructure or not) that provide packaging, simplicity and streaming technology that make it easy for users (whether retail or wholesale) to access, administer and pay for cloud VR/AR platforms.

We believe that this will make the VR/AR market bigger, create new opportunities for innovative vendors and generate interesting investment opportunities. Now is the time to enter this market.

The cloud-gaming market is rapidly growing and expanding into cloud compute B2B services

Cloud gaming is a fast-developing trend whereby video games are rendered in the cloud and streamed to the player over the internet.

The main advantage, for the player, is that there is no need to spend money on a high-performance computer or games console to run the latest games. In addition, players can access their video game library on a variety of devices, including low-power devices such as mobile phones, tablets and ultra-portable computers, provided they have a good internet connection.

The gaming industry has developed by many game developers creating content for a small number of gaming platforms. We expect to see the same behaviour as the industry shifts to the cloud.

A variety of players have launched cloud-gaming services, including:

- **gaming giants** such as Microsoft with Xbox Cloud Gaming and Sony with PlayStation Now
- **global internet platforms** such as Amazon with Luna and Google with Stadia
- **hardware vendors** such as Nvidia with its GeForce Now service
- **smaller, specialised companies** such as Shadow, Flaneer and Paperspace.

These actors have very different business models for their cloud-gaming offers. Xbox and PlayStation are selling cloud gaming as part of their wider subscription bundles (which include online play and game discounts), with the clear aim of developing recurring revenue. Amazon and Google launched cloud-gaming services in order to diversify their revenue streams and make use of their extensive cloud infrastructure, but their offerings have been met with limited success; Google pivoted Stadia from a B2C product to a white-label solution for game developers. Nvidia has been using GeForce Now as a real-life demonstrator of its flagship GPUs.

Smaller players that have been solely focusing on offering B2C cloud-gaming services have struggled to compete with their larger counterparts who can offset some of the costs of their cloud-gaming services to other business lines and can offer very low prices.

As a result, an increasing number of cloud-gaming pure-players are devising ways to use their high-performance infrastructure to drive new revenue streams, and are starting to offer B2B services. Such services can be useful for activities with high performance requirements (such as 3D modelling, architecture, research and AI) and can also present a good opportunity to monetise spare resources (B2C gaming services consume most resources outside of business hours). For example, Shadow, which recently commissioned Analysys Mason to work on several strategy assignments to assess revenue growth opportunities, recently soft-launched its Shadow Business offer.

We believe that the following opportunities will arise in the B2B cloud compute/VR market.

- Specialist players that offer B2B/wholesale cloud compute/VR platforms that provide packaging, simplicity and streaming technology will enable new development and deployment options for smaller application developers.

- Small, innovative B2C VR developers will use these new development/deployment cloud compute/VR platforms to offer consumer applications.

- B2B-focused cloud compute/VR developers will also use these specialist platforms because they offer more-flexible support than mainstream consumer environments.

- B2B cloud compute/VR development/deployment will progressively diverge from consumer cloud gaming and become a distinct force in a burgeoning B2B cloud VR market.

Cloud gaming is a stringent use case for access networks because it demands a low latency and a stable high bandwidth. Cloud VR/AR use cases will be even more demanding. Cloud gaming and VR currently depend upon high-performance fixed networks (FTTP or HFC) because most 5G networks do not yet support the low latencies that are required. However, the global acceleration of investment in high-performance access connections (5G and FTTH) will increase the access to cloud gaming and VR applications.

Business VR applications have similar compute, graphics and latency demands to cloud gaming, but they require a richer, less-homogenous platform. This will create both a market for the VR applications themselves and for platforms that provide the needed support. The market for these applications and platforms will be enabled by the growing availability of high-performance, low-latency access networks. Now is the time to enter this market.