The Cost of Distributed Intelligence

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As we know it today, the internet has been largely about connecting people to information, people to people and people to business. Almost anything consumers might want is just a click away. But for businesses, the gains have been much less dramatic. That is changing. Monetization strategies range as widely as the options available, and for all the successes, there are even more failures. While many of the advancements have been extraordinary—even unthinkable a short time ago—too often we're still left asking, "to what end?"

Beyond a doubt, the most notable trend we see in the market today is the move toward the cloud. This shift is seen in every part of the industry—and for several reasons. First, the amount of data each company generates, accesses or stores is increasing at an unprecedented pace. This shift calls for data storage in a place where capacity is affordable. The days when companies stored data in the basement are gone. Mega data centers are being built in locations where the conditions are optimal, including access to vast cheap and green power combined with a good, cold climate and an experienced data center workforce. As some data will inevitably be classified as very secret, there will always be a need to store some data on your own premises or in some other more secret way. Hence, the trend toward a hybrid cloud environment is the most significant trend in the cloud landscape. Partly private and partly public clouds should work for most companies.

The second trend driving this cloud shift is the improvement in computing performance and server capacity. Cloud service providers can purchase the latest capacity platforms and compute power in large quantities to keep abreast of the market trends and offer optimal server performance and at a much lower cost per compute power. Enterprises would have a hard time matching this in their own basements.

The third main driver is the most obvious: cost. Enterprises can replace some staff with an outsourced environment where you no longer need to have people on call to fix and repair issues, freeing up human resources to focus on the core business activities as the rest is managed somewhere in the cloud. For many companies, operating costs associated with such moves have seen a growing number of enterprises— including telecom operators—migrate their business to

public storage providers.

It should also be noted that this cloud trend is not only for the storage of your data. More and more functionality that companies use is being outsourced towards the cloud. While traditional PCs are still dominant within companies as the primary working tool, the trend is clearly heading to an "on-screen" solution where the core compute power is stored in the cloud and data is accessed remotely through an interface that could be something as simple as a laptop, tablet, or mobile device. It is this trend that will put an even higher demand on operator networks as companies will become completely dependent on cloud networks for specific functionality to drive their operations from web-based services to clients.

The cloud trend has also radically changed the landscape of the telecom sector. Previously, enterprise companies focused on the best and most optimal MPLS-based solutions between disparate office locations, so the carrier had to follow certain routes and transport loads of traffic between A and B-ends. With the introduction of the cloud, traffic trends have changed, and the primary focus is to have access to one of the cloud providers from each office. This could be done through the public internet for less secure-aware products or through direct access products offered by carriers for 100 percent secure connections in a private cloud environment. Enterprises are much more interested in having a good connection at locally housed cloud nodes than having long-distance traffic streams over continents between offices. This is also where the two most significant buzzwords of the current generation meet.

Cloud, Meet the Edge

Secure traffic needs to go the cloud. But, for an optimal user experience, compute and data processing power needs to be closer to end users, which is why the cloud needs to move towards the edge. Even though edge computing has more advantages, it cannot completely replace the cloud. As intelligence is pushed to the edge of the network to take quick action, some applications still require support from the cloud or a centralized server. This could potentially cause high latency issues and heavy bandwidth utilization. Traditional cloud servers cannot handle this huge amount of data with their centralized network architectures. Therefore, there is a demand for a more optimized computation management technology in relation to real-time IoT applications.The need for edge computing centers is inevitable as they are designed to remove the barriers of a centralized architecture, pushing computing capabilities to the edge of the network.

The trend to move intelligence closer to the end users, thus moving closer to the edge, has also been picked up by the cloud providers. While there will always be a need for very local clouds, the trend for the mega cloud players is clear. There seems to be no end to new mega data centers further away geographically from the standard locations—Ashburn, Los Angeles, Atlanta, London, Frankfurt, and so forth. To design an efficient edge computing system architecture, carriers need to create the full ecosystem that is needed to embrace current and future marketplace demands, with edge computing facilities that are strategically located close to network provider aggregation points. This has forced carriers to partly change strategy and focus on connecting as many cloud data centers as possible and offer direct interconnection services. Carriers also must decide where in the ecosystem they want to play by either offering their own cloud services or focus on being a partner for public cloud services like AWS, Azure or Google. A combination of the two roles could

naturally be a middle ground, although a delicate balance will be needed when parts of the company may compete with the other.

Some people say that "the edge will eat the cloud," but I see them more as complementary to each other. Achieving a stable and sustainable network depends on the balancing act between processing on the edge and the centralized cloud. More intelligence is clearly needed to be distributed but this intelligence could—and should—be stored in local cloud solutions, hence the need for both. The real opportunity for change is still ahead of us. A well-functioning cloud and edge strategy will be the winning formula, in which one does not replace the other, but the cloud and the edge in their best use roles instead complement each other.