OPINION

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Next-gen networking to power a new generation

Information is powerful only if it is shared, writes **Joanna Soucy**. This new way of thinking is having an enormous impact on the industry

There's a saying: "There is power in numbers." The millennial generation, currently at about one-third of the global population and predicted to account for 75% of the global workforce by 2030, is poised to make an impact, especially on technology.

Millennial mindsets are centred on more than Facebook likes and Instagram photos of food. While maintaining a social connection is key, millennial culture is rooted in collaboration, change and diversity. This is evident in everything from workplaces embracing hoteling and hot-desking, to social media, to platforms such as Slack and Trello – transcending how millennials view, build, share and consume technology.

The millennial generation has grown up during a radical transition from the material economy to the ideas economy. Unlike traditional information technology professionals, millennials view technology as a commodity they can leverage as needed. With this mindset, there is no longer a need to purchase infrastructure, only services.

Additionally, while Gen-Xers believe that keeping information in the shroud of secrecy makes it more valuable, to the millennial, information is powerful only if it is shared.

This new way of thinking is having an enormous impact on the telecommunications, cloud and data centre industries, evidenced by widespread movements to commoditised IT infrastructure and open innovation.

While next-generation demands cause massive shifts in business models, processes and competition, they also compel the industry to deliver new solutions that address another growing trend – the internet of things – and the massive bandwidth demands that come along with it.

While expert predictions regarding the total number of connected devices in the next four years vary from 20 to 75 billion, one thing is certain: as more people connect, and more millennials build, deploy and consume systems and applications, the network will need to change to support the demands of this new generation.

Silicon photonics

With the advent of virtualisation and cloud solutions, the industry has forever changed the server market. Today, initiatives such as IT commoditisation and the Open Compute Project (OCP), along with rapidly emerging technologies such as silicon photonics, are doing the same for network hardware and the competitive landscape.

As a result, in five to 10 years, data centres will look very different. Single-vendor equipment of the past will be replaced with easily interchangeable commodity hardware components and software-defined, API-driven infrastructure, eliminating vendor lock-in, encouraging open innovation and creating a more modular, flexible data centre architecture. Furthermore, optical switches based on photonic micro-electro-mechanical systems will displace traditional electrical networking switches and copper cabling to enable faster transfer of data from server to server.

The adoption of silicon photonics directly into the server plane has already been championed by Amazon Web Services, Microsoft and Google, among others. This technology, combined with their open hardware approach as members of the OCP, enables the cloud goliaths to accelerate innovation and further distinguish themselves from other enterprise and private cloud platforms.

Router and switch developers such as Cisco have also seen the writing on the wall, evidenced by the company's IoT initiatives its recent purchase of software developer Jasper Technologies.

Mega-cloud providers use more servers than all the commercial manufacturers combined, and they are deploying them in data centres as close to their end-users as possible. Why? Because this strategy ensures the lowest latency data delivery and an improved quality of service.

Millennials are used to instant gratification, so it's no surprise that over the years their attention span has decreased to 2.8 seconds, requiring information to be delivered faster than ever before. The challenge is that as more of them come online, the greater the latency they will experience.

The culprit behind latency is the constant strain on network architecture. Until recently, the internet was served from one of nine major peering points across the US – a model that worked fine for email, but is not equipped to handle the capacity demands of video streaming, cloud computing or IoT.

As these trends proliferate, the network must be expanded, and services traditionally located at its core or the outer-core – known as secondary markets – must be extended to create a new edge of the internet.

Traditional exchanges need alternative locations deeper in the network to reduce network hops, thereby lowering latency and enabling more efficient packet delivery.

"Transaction processing, caching and compute engines must be pushed out closer to where the customers need them," says Phill Lawson-Shanks, chief architect and VP of innovation at EdgeConneX, a provider of global data centre solutions at the edge of the network.

"The edge is the next destination for cloud, and the new infrastructure powering its proliferation. The next generation of consumers requires the internet of everything, and the internet of everything requires the internet of everywhere."