Connections are limitless, the network is not

A "living" network thinks ahead and continually transforms

You've reached the end of this network

Consumers are ravenous for "all-you-can-eat" unlimited data plans. Communication service providers challenged by unrelenting customer demand for more capacity now must feed the need, and quickly. But expanding the network in the traditional way is unrealistic. That requires substantial funding and years to complete – time the current network does not have.

A thinking network for change

Online gaming, getting from here to there using GPS mapping, smart apparel and devices and endless YouTube channels create network traffic jams. Movies and binge-worthy shows stream on phones, tablets and smart TVs leading to slow load times, frame freeze and other quality issues. In a recent IBM Institute for Business Value survey, 66 percent of respondents said they often or regularly experience buffering problems.[1] Today's consumer won't accept anything less than more. As a consequence, 56 percent of customers say they would switch providers should video quality on their mobile devices became particularly bad.[2]

The need for radical change is immediate and the price of staying on a rapidly disintegrating foundation – or burning platform – too high. No matter how much bandwidth is created from any amount of financial investment in networks, demand for bandwidth will always be greater.

Users on the supply and demand sides will create and insist upon more content to eat up the additional bandwidth. Telecoms can choose to constantly fall behind and fail – or they can breathe new life into a network built on predictive, automatic operations using cognitive capabilities that outthink demand and outperform expectations.

A "living network" is about automatic response. More than a stagnant, stationary thing, a living network enables itself to sense what's going on now, anticipate where it's going to change and then change with it. Network Function Virtualization (NFV) replaces single hardware appliances with a virtualized device hosted on a linked group of machines. A virtualized device is more flexible and scalable when enabled by a software-defined network (SDN) layer that allows it to be connected and reconnected in ways a hardware design can't. For example, a virtualized firewall inserted to patch video streaming to cars.

Other benefits can include:

- Simpler administration, faster development and deployment of services and more efficient pricing models.

- Revenue opportunity gained from speed to market by transforming networking business through infrastructure agility.

- Standardization across IT and Operational Technology (OT) infrastructure resulting in elastic scalability.

- Evolving cloud technology can leverage legacy investments and extend the usefulness and capability of existing infrastructure.

Changing channels

The structure of the telecommunications industry has influenced technology development, and vice versa. As cord-cutters shifted their viewing from cable, video as an "other network" created the need for more capacity. Technology has also created new opportunities to monetize the network. Communication Service Providers (CSPs) are examining how to radically relocate network costs, increase operational efficiency increased and enable new sources of revenue through rapid innovation. Recognizing and preparing for new technologies, the industry is beginning with:

- *Virtualization.* Traditional network infrastructure was not built to allow the agility needed for next-generation services, offerings and innovation. Infrastructure agility allows new services to be brought online faster. Cloud-based networking using NFV and SDN technologies can transform networks by speeding innovation, service fulfillment and operations. Service enhancement, revenue-generating activities and customer programs or improvements — which would have created weeks of delays due to network rigidity — can be deployed and managed in a matter of hours or days. Virtualization allows for a whole new level of automation in the network not previously seen.

- *Cognitive operations.* Elevate network or service operations to the most mature levels with optimization, proactive operations and continuous learning. Operations centers in many CSPs still operate in reactive mode. Traditional network management tools cannot identify key symptoms of network degradation that manifest as service degradation and poor customer experience. Without a service- and customer-centric view, operators can't fully understand the quality of the service the customer is experiencing to focus resources where needed. With cognitive computing and the "Internet of Analytics" – performing real-time analytics on data from the Internet of Things (IoT) – operations centers benefit from a self-learning solution in partner with humans to augment and automate operations, predict issues, scale knowledge and provide consistent resolution.

- *Expertise.* Where there is a lack of people with cloud skills in an organization, experts can bring experience from multiple implementations. Form relationships with nontraditional industry participants to provide the digital understanding, relationship and experience that today's customers demand. Apply agile transformation methods to NFV and SDN innovation and migration from the world of other industry transformations with the cloud.

The whole world is watching

A few years ago, the city of Melbourne, Australia assigned trees email addresses so citizens could report problems. Instead, people wrote thousands of love letters to their favorite trees.[3] Connectivity pervades homes and businesses, allowing people to interact with the world, the people and the issues that matter to them. CSPs are challenged to meet the increasingly high expectations of empowered subscribers, and disruption coming from new communications options and alternative access technologies. Over-the-top (OTT) digital giants that transmit audio, video and other media via the internet as a stand-alone product are viewed by CSPs as their greatest threat over the next five years.[4]

The traditional network must be reexamined to identify latent opportunities found in virtualized network solutions to compete and capture revenue.

These opportunities include:

- *A flexible, more secure network in the cloud.* Reach beyond the limits of current capacity and virtualize the network in the cloud with the competitive advantage of security, agility, scalability and service innovation.

- *Reshaping of the business model.* A network that thinks for itself provides more bandwidth to rethink the business and discover untapped potential and new directions to explore.

- *Giving the network a mind of its own.* Cognitive tools enable intelligent, agile, responsive network and service operations that are self-learning and always improving.

- *Continuous and rapid innovation.* Cloud-based networks enable agile DevOps to implement services that can drive new revenue by automating testing and driving resiliency. Network environments can be rapidly assembled versus the long development times often needed in labs

"Communication leads to community, that is, to understanding, intimacy, and the mutual valuing that was previously lacking. Community can be defined simply as a group in which free conversation can take place."

Rollo May, American existential psychologist

Survive or thrive

In a time when the internet is an essential human tool, and with demand for access growing daily, networks cannot sustain the capital expenditure required to grow as a hardware-based environment. Cognitive capabilities and software solutions that evolve and adapt over time can position operators to outperform the market. Service providers facing a rapid barrage of changing demands both in services and scale are pursuing infrastructure agility to:

- *Dial in to innovative services.* Cloud-based networking using NFV and SDN technologies enable the speed, performance and security to transform networks by speeding service fulfillment, operations and innovation.

- *Overcome immense costs and navigating new revenue streams.* Radical cost take-out of operations through standardization, simplification and automation at scale can help sustain profit growth and stave off declining revenue stemming from increasing competition.

- *Stay a step ahead of the inevitable.* With consumer use showing no signs of slowing, a self-aware network can react, respond and keep growing.

Experts on this topic

Notes and sources

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