NETWORK FUNCTIONS VIRTUALIZATION: FROM VAPORWARE TO NEW ERA

Cloud technologies are rapidly changing the way businesses process and store information. Cloud computing takes advantage of two technology trends: virtualization and powerful industry-standard server hardware with a common instruction set architecture. These cloud technologies provide proven cost advantages and the flexibility to react to fluctuating demand. They also open the door to important new opportunities for communications service providers (CSPs).

COMPETING IN THE CLOUD IS A NEW GAME

As a first step, CSPs are using virtualization and new server hardware to offer cloud services – Infrastructure as a Service (IaaS), Platform as a Service (PaaS) and Software as a Service (SaaS) – to their business and consumer customers.

CSPs are competing with IT and Internet companies in the cloud, but they have a unique advantage – the network – that allows them to build a better cloud, the carrier cloud. The carrier cloud is a distributed cloud that provides quality of service, security and availability that IT and Internet companies cannot easily match.

THE NEXT PHASE OF EVOLUTION IS NOW POSSIBLE

Offering carrier cloud services to customers is only part of the cloud story for CSPs. They can also apply cloud principles to their own operations. With this approach, CSPs can virtualize communications and messaging applications, along with fixed and mobile network functions, to reap the same rewards their cloud customers are enjoying.

Figure 1. Virtualization is the latest step in the evolution of telecommunications

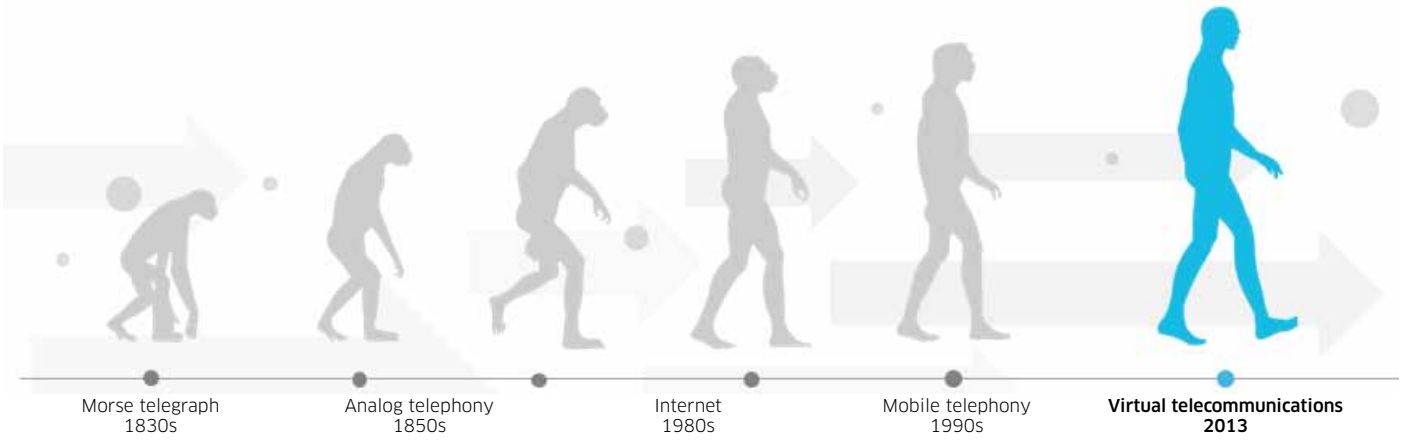
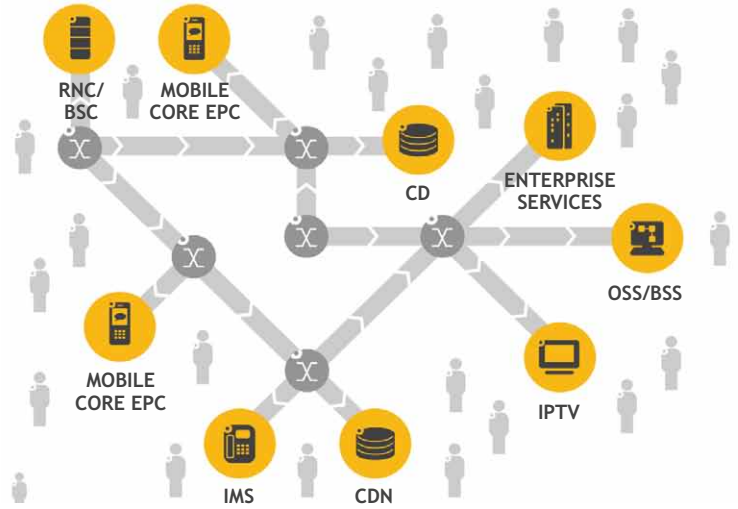


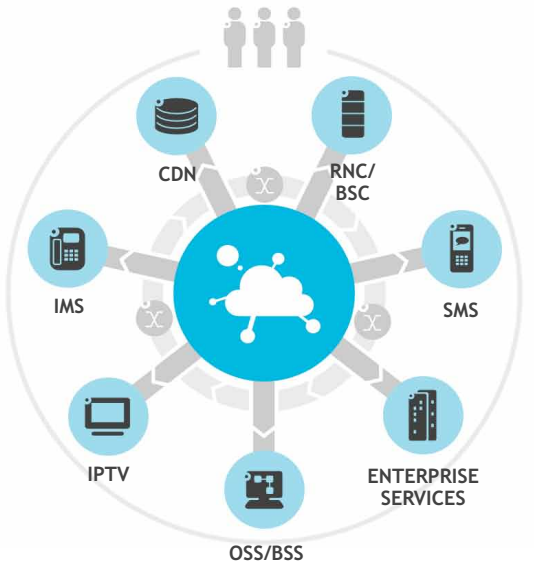
Figure 2. The new virtual telecommunications model

FROM THE CARRIER OF TODAY…



1. Static systems with dedicated hardware platforms per service
2. OPEX-heavy with large, siloed operational teams
3. Complex capacity planning and slow time-to-market

TO THE CARRIER OF TOMORROW.



1. Increased agility with dynamic systems and a single platform for all services
2. Decreased OPEX and streamlined the operations team
3. Easily planned services that get to market faster

Alcatel-Lucent has been working on virtual telecommunications solutions for more than 18 months. In October 2012, a group of 13 Tier 1 CSPs confirmed our approach with the launch of the Network Functions Virtualization (NFV) initiative and a new European Telecommunications Standards Institute (ETSI) NFV standards group.

The NFV initiative challenges the idea that purpose-built hardware and silicon deliver a better price-performance ratio than general-purpose servers with lower performance. The founders of the initiative expect to find that multi-tenant resources, mass-produced hardware, and the ability to automate operations will lead to significant cost savings.

VIRTUALIZATION HAS CONCRETE VALUE

Virtualizing network functions gives CSPs new opportunities to optimize their infrastructures and increase service agility. With this approach, CSPs can move toward a homogeneous cloud-based infrastructure where network elements and applications are implemented as sets of virtual machines, storage devices and associated network configurations. Because the infrastructure is now shared and amortized across all applications, it becomes a platform for delivering carrier cloud services to enterprises and for transforming the CSP's own operations.

Alcatel-Lucent Bell Labs economic models confirm that a NFV approach cuts costs:

- Capital expenditures (CAPEX) can drop by up to 50 percent over a 5-year period due to better resource utilization and almost linear scalability of infrastructure resources.
- Operating expenditure (OPEX) savings follow CAPEX savings. There is less equipment to deploy and manage, energy and real estate costs drop, and simplified capacity planning reduces staff requirements.

Independent calculations by CSPs confirm that vTelco can cut energy consumption and the associated carbon emissions in half.

The greatest benefit of NFV is CSPs' newfound service agility. When applications are virtualized, CSPs can introduce new services much faster and at much lower cost. Installing a new service no longer involves buying new equipment and sending staff to install it in any number of field locations. Instead, an application, such as a video conferencing server, can be onboarded onto a cloud management system then automatically deployed on virtual machines in the carrier cloud. The entire process takes just minutes, rather than months.

The benefits of virtualization are impressive, but some CSPs question whether NFV solutions are a reality or still vaporware. Others are not sure how they can best take advantage of the virtualization promise.

CSPs ARE THINKING VIRTUAL

Virtual telecommunications is a new model for CSPs so complete solutions for a virtualized carrier infrastructure are not yet available. However, CSPs are starting to take a closer look at what NFV means to their networks and processes.

Research organization Heavy Reading recently completed 28 interviews on the topic with major CSPs around the world. Their analysis found significant differences between leaders who are already implementing NFV programs and followers who have yet to develop a NFV strategy.

The study also revealed different approaches to vTelco: in some cases the IT service provider arm leads the transformation, while in other cases the network and IT departments or joint cloud teams are in charge. Organizational barriers are a common challenge, and many CSPs still have skill gaps between network and IT teams. The best NFV strategies define clear responsibilities and empower teams to take action.

NFV SOLUTIONS ARE AVAILABLE NOW

CSPs that take an ecosystem approach to NFV solutions rather than buying into closed solutions from specific vendors gain the greatest advantages. Open source communities, such as OpenStack, CloudStack, and many others, are at the forefront of rapidly evolving technologies. Working with communities also gives CSPs a broader view of the cloud industry.

Many startup companies are looking to find their niche in NFV, but choosing the right startup company is not easy. CSPs need to work with an innovative and proven partner that can integrate best-of-breed technologies into a reliable, multivendor platform for carrier applications.

Alcatel-Lucent is leading the way in carrier cloud and NFV. We have brought together a team of cloud experts from IT, networking and telecommunications companies to build a virtual telecommunications program that is delivering tangible results:

- The industry leading CloudBand™ NFV platform is already available, with software-defined networks and virtualized applications, such as IMS, soon to follow.
- A cloud innovation center where products and solutions can be trialed in the cloud helps CSPs transition toward NFV and gain new expertise. In an industry first, our virtual IMS example shows how applications can be quickly onboarded into the cloud then deployed and managed through cloud intelligence.

Based on our in-depth experience, Alcatel-Lucent has been asked to serve on the ETSI NFV Industry Advisory Board, and advanced CSPs have already selected Alcatel-Lucent as their primary partner for vTelco transformation.

WE ARE IN A NEW ERA

Whether they choose to be leaders or fast followers, it is important for CSPs to build the foundation for virtualization now. CSPs that begin their evolution now will be in a better position to realize the full promise of NFV and to attain the cost savings and increased agility of the carrier cloud. The first elements of the solution are here today – in the cloud – vaporware no longer. The era of virtual telecommunications has arrived.

For more information, contact David Amzallag, Vice President and CTO virtual telecommunications and CloudBand solutions, at david.amzallag@alcatel-lucent.com, or your Alcatel-Lucent representative, and visit www.alcatel-lucent.com/cloud.

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