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The Private Telecom Cloud for Central Office

The ATCA T-Series family of products



Cloud has been championed by the enterprise space for several years. The technology disrupted this market through its delivery of multiple benefits. It enables organisations to leverage a rapidly deployed, shared pool of hardware resources which has the elasticity to scale up or down; while enabling heterogeneous workload consolidation and significantly driving hardware utilization up.

For example, Salesforce.com delivers CRM services to 92,000 enterprise customers with just 3,000 servers, according to Morgan Stanley Research. The traditional enterprise model for this CRM service would have required 245,000 servers. That level of workload consolidated on just 3,000 servers in the cloud generates significant CapEx savings.

In the challenging and competitive telecom market; the cloud model is compelling enough that mobile operators are already considering the same principles for their central offices to realize similar CapEx and OpEx savings. Leading operators including AT&T, Verizon and Deutsche Telecom, have laid down their vision in the Network Function Virtualization (NFV) white paper that was released last October. This NFV vision is now being carried forward by the ETSI Industry Specification Group (ISG).

THE EVIDENT OPPORTUNITY

Many operators are already building their own cloud to provide services including IaaS and PaaS to enterprises. Operators already have the touch points with CIOs and deliver the crucial connectivity services to the enterprise. Cloud enables a new convergence battleground, allowing operators to deliver connectivity and computing bundles to the enterprise.

However, the opportunity with cloud for operators is much more than just offering IaaS. It opens the door to revolutionize the economies of the central office. It paves the way for a new telecom infrastructure via decoupling hardware from software. Instead of delivering network functions as integrated

boxes; the central office of tomorrow will deploy new network functions as software workloads on homogenised hardware platforms. Network function workload consolidation will drive utilization up and significantly lower CapEx. This will also positively impact service velocity and enable operators to try out new services cost effectively; while simultaneously ensuring they are ready to scale any service should it become popular - leveraging the elasticity of the cloud.

THE BEST CANDIDATES FOR VIRTUALIZATION

Not all network functions are equally suited for virtualization and workload consolidation. Network functions can be categorized into three basic areas. The first of these are functions that build the pipe, such as SGW, PGW, SGSN, PCRF etc. These data plane functions handle high packet throughput and often require low latencies. The second are functions that control the pipe, such as softswitches, SBC, CSCF, PCEF etc. These control plane functions handle signalling plane traffic and often require 5NINES high availability. The third area is application servers that deliver specific services over the pipe. Everything in the service plane, as well as BSS/OSS nodes, lends itself very well to workload consolidation.

The telecom space has particular requirements, such as the crucial need for 5NINES high availability, high reliability, low latency and provision for regulatory requirements. There are also certain needs around timing and synchronisation. All of these are essential to ensure the smooth running of the network. While the industry should embrace the principles of the cloud - it must ensure the telecom cloud caters for all these requirements. The public cloud cannot stand up to the high requirements of telecoms from a central office point of view. The clear choice to facilitate this is a private telecom cloud, which virtualizes network functions.

The application servers, as discussed, are a good fit to be virtualized and consolidated, but so are the majority of the control plane and data storage applications like MME, HSS, PCRF, SBC, CSCF etc. Gateways on the other hand sit in the data pipe and have very high throughput and extremely low latency requirements. These are engineered for peak hour data rates and don't lend themselves well to the workload consolidation principles.

ATCA - PERFECT PLATFORM FOR TELECOM CLOUD

Once an operator has identified the network functions that are better suited to virtualization and workload consolidation; a best-of-breed platform must be selected by the carrier which

allows the private telecom cloud to be built. The platform an operator chooses to build its private telecom cloud must deliver all the central office requirements of the modern carrier - 5NINES availability, reliability, regulatory etc. These requirements must also come with the need for a platform that provides the highest level of scalability and lend itself well to virtualization and workload consolidation.

CHANGING SUPPLY CHAIN

Migration from traditional infrastructure building to private telecom clouds will raise new challenges. Today, operators procure integrated boxes, hardware and software, from equipment providers for specific network functions. Equipment providers in turn sign stringent SLAs with operators complying with performance, functionality and 5NINES requirements. However, as network functions get virtualized, decoupling underlying hardware from software, it will inevitably disrupt the supply chain. It will also bring questions like who owns integration responsibility, who signs the SLA for 5NINES etc. The enterprise sector already went through similar disruption and players like Amazon were the trail blazers. The CapEx and OpEx savings from workload consolidation are so significant that central office virtualization is imminent. The central office is ready for trail blazers to revolutionize and modernize it.

Not all network functions are suited equal for cloud

