

Virtualisation vs. Cloud Computing

by Michael Rezek, Vice President of Business Development & Strategic Partnerships, Accedian

Telecom companies have invested billions of dollars in purpose built networking infrastructure and migrating away from this to a cloud based physical infrastructure with software licenses will be costly, at least in the beginning, and may even prove to be an initial barrier for smaller operators to enter.



Michael Rezek is Vice President of Business Development and Strategic Partnerships at Accedian Networks. Michael has approximately 20 years of senior Sales and Business Development experience and is highly skilled in strategic planning and leading teams in tactical execution and positioning value propositions. He is known to be collaborative and has led cross-functional and cross-organizational teams of System Engineers, Consulting System Engineers, Customer Service, War Rooms, and Product Specialists. Additionally, Michael has vast experience in Negotiating multi-party, complex contracts, LOAs, and SOWs to certify equipment, establish Channel relationships, and drive revenue growth.

As shared computing resources are becoming incredibly common in the market, so is the confusion between virtualisation and cloud computing. These blurred lines may be caused by the fact that virtualisation is actually responsible for powering cloud computing, and therefore, cloud computing is in fact a service that results from virtualising infrastructure.

Thus, virtualisation serves as a first step towards cloud computing by simply separating infrastructures through the use of software. Once the infrastructure has been virtualised, it provides access to shared pools of configurable resources, such as servers, storage or applications, which are provisioned with minimal management effort. Once all the component infrastructures in a system are virtualised, then the environment finally becomes "cloud native".

Nonetheless, industry experts are raising red flags, warning operators that there may be too much hype around cloud computing and that most of them will end up being dissatisfied with the results of virtualisation.

Despite all this, companies are being encouraged to join the virtualisation race in order to reap the automation and service agility benefits. Consequently, cloud computing is set to propel the world of telecoms operators into an unanticipated scale of automation, regardless of its unforeseeable impact on the industry.

Cloud Computing vs. Virtualisation

Hype or proven-technology?

Virtualisation is the first step towards cloud computing and very often part of it. That said, possessing a virtualised infrastructure, or a virtualised software application, does not constitute a cloud native environment or having a cloud native application.

The National Institute of Standards and Technology (NIST) defines a cloud native environment as:

- having on-demand service,
- broad network access,
- resource pooling,
- rapid elasticity,
- and measured service or pay-per-use model.

Thus, if a company's environment lacks any of these characteristics, or the application cannot function within and leverage these characteristics, then it is not "cloud native".

For example, if an application has been virtualised, and it has been abstracted from purpose built hardware so it now can run on a x86 compute resources, but has some underlying dependency on hardware, therefore being "inelastic", then it is not a cloud native application. Or, as it's put in the realm of Network Functions Virtualisation (NFV), a "Cloud Native Virtualised Network Function (VNF)".

Since even the smallest dependency on hardware can disqualify an application from being cloud native, cloud computing and virtualisation are endangered by seeming to be no more than just hype. But such an impulsive conclusion should not be drawn as virtualisation is a step-by-step process, which requires adoption time, with cloud nativity as its final aim.

Cloud native infrastructure is a proven technology, which has been successfully deployed in data centres globally. And so are cloud native applications, which have also been around for years and are foundational to Software-as-a-Service (SaaS) models ubiquitously.

Cloud native VNFs exists as well, but the successful operationalisation of the VNFs to transition to a virtual network is still being proven. One challenge of NFV is that the Apps (VNFs) are not necessarily centralised in a data centres, but are spread apart as the network is a geographically distributed "web" with numerous end points.

Consequently, there are not always pools and clusters of resources at these remote points of the network edge or many aggregation points. This compromises the resource pooling characteristic of a cloud native environment. Even if resources can be leveraged back at a centralised location,

Virtualisation v. Cloud Computing

it is often that the operation of the VNF has a location dependency which precludes utilisation of centralised resources, such as encryption.

The benefits of cloud native environments

There are many benefits of a cloud native VNF or application, but three main ones stand out: auto-provisioning, auto-scaling and auto-redundancy.

Assuming a telecom environment use case, operators can leverage a cloud environment allowing customers to self-serve their applications without requiring truck rolls or operations personnel to deploy new services.

Secondly, operators do not have to pre-provision purpose built networking equipment manually, but can leverage software orchestration to automatically spin up and tear down compute resources based on customer demand.

Lastly, and similar to auto-scaling, redundancy can be automated by leveraging pools and clusters of compute resources along with a redundancy policy.

Virtualisation challenges

Some of the biggest challenges of deploying and operationalising NFV are organisational and financial, but there are also challenges related to synchronization.

For example, the most accurate performance monitoring of real-time data in a virtualised network will require some sort of hardware time stamping. Therefore, if one is requiring microsecond accuracy to execute a command, and this is "local" to the cloud resources, then this can be achieved.

But once synchronisation across a geographically dispersed cloud infrastructure is required, only hardware time stamping will be accurate enough for many use cases such as autonomous driving and safety. For other use cases, like business services monitoring latency on an access line for Service Level Agreement (SLA) compliance, software time stamping is adequate.

Historically IT has designed and managed the compute infrastructure, and network organisations have been responsible for designing and operating the network. However, from an organisational structure point of view, these two domains must now

morph into one cohesive unit to leverage each other's skills and cross-train one another to design and operate a holistic virtualised network environment.

Furthermore, telecom companies have invested billions of dollars in purpose built networking infrastructure and migrating away from this to a cloud based physical infrastructure with software licenses will be costly, at least in the beginning, and may even prove to be an initial barrier for smaller operators to enter.

Perhaps most significantly, managing a software based network consisting of numerous virtualised network functions is a major task. It requires that each network function has open Application Programming Interfaces (APIs) that can be used for management and control. Today there are numerous NFV orchestrators, but the issue of having no standards to which vendors can write remains.

Cloud computing is on track to change the face of the industry, but operators should be prepared to take a step-by-step approach, in order to avoid disappointment. While many network functions have already been virtualised, the next step towards cloud native environments is having data centres with centralised Apps and constant access to pools and clusters of resources.

This level of scalability will then propel the automation process to a degree of zero human intervention, which will make the deployments very fast and reliable. But the path to cloud computing has its challenges, as virtualised network environments require the skills of both IT and network organisations to be designed and operated.



Connect-World is a major sponsor of leading trade shows globally and regionally such as Mobile World Congress, IBC, Broadband World Forum, CommunicAsia, CEBIT, GITEX, NAB, Futurecom and many more. Where the magazine is not a sponsor, a representative from the magazine is still normally in attendance. www.connect-world.com

Web: www.connect-world.com,
Twitter: [@connectworldict](https://twitter.com/connectworldict),
Facebook: www.facebook.com/conectworld.ict

