

Implementing Next Generation Networks: Is Software Defined Networks the Right Strategy for You?



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Today IT organizations are facing challenges on multiple fronts. Significant complexities are arising in addressing technology transitions in areas like mobile, cloud, security, analytics, big data, SDN and IOE. While operating costs are rising, IT budgets are falling. Business users are increasingly demanding Agile IT services through business outcome based models. For a network provider one of the primary questions remains, “How do I make sure that demand of my business users can be fulfilled with a click of a button?” For a CIO the key concern is, “How can I create an agile IT organization that can be a strategic enabler for business through rapid deployment of applications and at the same time respond to diverse technology transitions, all the while reducing IT budget spend”

The problem multiplies in several scenarios. One such instance could be the problem faced by a communications service provider who needs to offer a variety of voice and data packages for differing customer needs, but existing network capabilities limit the creation of these packages. Another scenario is the case of a large ERP application rollout in an enterprise which involves significant manual configurations at network level to support multiple applications across multi-tier architectures, with detailed security, compliance and service level requirements. In other words, how can a business ensure that networks are geared for dynamic changes? One of the answers is in the form of Programmable Infrastructure that enables applications to drive the network requirements program-

matically and the network fulfils those requirements on demand. Simply put, in such a network, applications determine capabilities. The classical, traditional network infrastructure which has for decades been dominated by rugged appliances made of specialized hardware and software is giving way to the more flexible Software Defined Networks (SDN) and dynamic Virtualized Network Functions (VNFs) that can be run on a standard NFV Infrastructure (NFVI). Network architecture is being transformed from ‘network driven applications’ to ‘applications driven networks’. This reversal is nothing short of a major paradigm shift. The Open Infra and the programmable Virtualized Network function together provide an Application Centric Infrastructure (ACI).

The adoption of ACI/SDN/NFV is setting new standards for agility, innovation and cost reduction.

- **Business Agility:** Consider an integrated telecom service provider with mobile, fixed line voice and data services that now needs to offer VPN (Virtual Private Network) services. This would entail a 6 to 9 month cycle of putting in place new routers and optical lines and configuring the network and service layers for billing, CRM, etc. This is a tedious and time-consuming change. But using a programmable network, a service provider can roll out new services in a matter of days and any incremental capacity can be provided automatically, on-demand and in real time. Extending the same paradigm to CIO organizations, new applications can be rolled out very quickly through application centric network policies and automated configuration of networks.
- **Enterprise Innovation:** SDN allows faster development of network applications in a vendor neutral manner using a standard set of Network APIs. This is akin to what the Google App Store has achieved – with access to APIs, practically any application can be developed. This means even smaller organizations and start-ups can innovate.
- **Cost Reduction:** New services can be orchestrated and rolled out with practically no manual effort using ACI/SDN/NFV. This dramatically reduces the cost of operations. Essentially, SDN/NFV separate the information related to application connectivity requirements from the information about underlying details of the network infrastructure. This new environment is optimized for automation and allows for centrally defined policies to be distributed

to a wider range of hardware and software sourced from multiple providers under a single common policy model. ACI technology further extends SDN solutions through the usage of application defined network policies and 1-click automated configuration and troubleshooting of a myriad of network resources and endpoints. Applications will gain significant control of both physical, virtual and network resources. The long history of innovation “within the box” is now giving way to “innovation beyond the box”. This does not eliminate the need for innovation in hardware and software. It simply opens up the innovation to a wider ecosystem resulting in faster realization of innovative concepts. Among the key challenges before organizations considering ACI/SDN/NFV options is the fact that millions of dollars have already been sunk into existing networks. That investment cannot be easily written off. This raises some very pertinent questions for organizations contemplating a transition:

- How do I migrate to ACI/SDN/NFV?
- How do I ensure that legacy investments can co-exist with new investments?
- How can I ensure that new technology will embrace the existing Infrastructure yet achieve the agility the new technology promises?

Although the answers exist, they are not simple. Fundamentally, an organization needs to prepare for changes in processes, systems, people, resources and vendor relationships to make the leap from traditional manual-intervention intensive networks to the new generation of SDNs that bring new capabilities and open new revenue streams.
