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EXECUTIVE SUMMARY

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Sharing Insights into Software-Defined Data Centers and Networks

CanadianCIO
EXECUTIVE ROUNDTABLE

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On Wednesday, May 27, 2015 a small group of senior level IT professionals met to discuss software-defined data centers and software-defined networks. This executive roundtable was facilitated by Jim Love, CIO, ITWC.

This document represents a synopsis of the discussion held and provides insights into the challenges and perspectives shared as well as how CIOs and their teams are managing these.

It very quickly became apparent that many of the companies participating in this roundtable discussion are still in the very early stages of adopting software-defined data centers (SDDC) and software-defined networks (SDN). Some are still trying to really understand the concept and the benefits it brings while others are struggling with barriers such as data sovereignty. Still others are just investigating it as an option.

Overall, the consensus, rightly or wrongly, is that SDDC and SDN are nascent technologies. After the discussion, however, participants indicated having a greater understanding of it and of the potential benefits.

What is SDDC?

The definition of SDDC and SDN was explored. While the overall high-level concept of both is generally understood, there was, at least with one member of the group, a real difficulty in appreciating how these work in practice and how they are fundamentally different from the existing hardware-device-oriented environments.

Some of the key points underscoring the benefits of SDDC and SDN, include:

- Don't require you to get rid of your existing switches and hardware devices. Even though the 'intelligence' of the network moves to software rather than hardware, the existing devices can continue to provide service in the network and the data center.
- Can use less expensive devices powered by Intel chips. Moreover, since the device functionality and purpose is defined by software, these devices can be more easily updated and are more flexible than single purpose devices.
- Run compute and network functions on the same box – eliminating needless 'hops' on the network to accomplish key functions.
- Provide measurable cost savings – one of the CIOs gave an example of having cut costs from 3 million to 1 million (approx.); a reduction of one-third of the former costs.

Cloud Dependencies

SDDC and SDN were discussed as important or integral to moving from Generation 1 to Generation 4 of cloud. Onyx demonstrated this by sharing their experience as they moved along this path, listing the attributes of each stage:

Generation 1:

- Pay-as-you-go, often with a credit card
- Really started as far back as 1999
- Susceptible to security breaches and attacks from things like DDoS

Generation 2:

- Xen-based but had limitations in terms of the size of client and scalability. The resources for a virtual server were fixed in a way that often forced them to over-provision, requiring the company to ‘round up’ and waste resources or ‘round down’ and risk under-performance.

Generations 3 and 4:

- Size no longer matters. You can get exactly what you need. You can provision on demand to meet the exact demand.

Getting Started

The group discussed how to get started. An interesting case study was presented where we looked at Onyx itself and its progression.

The first place to start is NFV – Network Function Virtualization. Prior to that, if you were part of a rapidly growing network, you had to stock gear and physically wire it up for every expansion. NFV allowed Onyx to provision rapidly and grow as needed in a multi-tenant architecture.

The interesting thing in this structure is that it extends to any virtualized environment. Every virtual server 'takes the firewall with it' as it moves from host to host. The reality is that much of the communications are actually done on the same host. A physical device requires that all traffic move through the device itself — off the host and back. A virtual device moves easily from horizontal to vertical networking and allows routing within the same box.

VMWare is working at putting security right into the network as a best practice in a virtualized environment.

'Hotel California' Syndrome

Another part of the discussion revolved around what Don Tapscott once termed the 'Hotel California' syndrome. It echoes the line in the song, "you can check out any time you like, but you can never leave."

The group was asked: "what inhibits you from moving?" Some of the participants noted that changing service providers is difficult despite the fact that you are moving virtualized servers. Moving back in-house is even more difficult – once you've outsourced, the required expertise is gone. So,

if companies run into problems with their service provider, they may feel trapped into staying with them.

Jim Love noted that one CIO (in a previous discussion) had stated that the selection criteria for choosing an outsourced service should include the response to how easily you can move your service elsewhere should you need to. If the vendor has a credible and easy explanation about how to move, they are a better choice. There are three reasons for this:

1. They are not trying to hold you by making it difficult to leave.
2. Knowing that you can leave makes it doubly important for the vendor to serve you well.
3. It means that the vendor has thought it through and has real experience.

One of the CIOs in attendance observed that although mobility is important, anyone going through the selection process should undertake the necessary due diligence required to have comfort in establishing at least a 10-year partnership.

Data Sovereignty

No discussion of virtualization would be complete without examining data sovereignty. There was some debate about what data sovereignty means given that the U.S. government can really 'come after' any company that has a U.S. head office. The recent controversy where the U.S. government wanted Microsoft to turn over records from their operations in Ireland for data stored there in Office 365 was highlighted as an example of this. The Irish government was fighting this attempt by the U.S. government to gain access.

One of the CIOs noted that the issue of where data is stored is very real to them. They had undertaken extensive due diligence to meet very stringent requirements, ensuring that the servers they used were located in Canada and that all traffic was routed through Canada. This was quite onerous and, in the case of one of their backup servers for disaster recovery, not technically feasible. Nonetheless, they had to map out everything involved and justify the one exception. They used encryption to protect

the data in transit and were able to prove that the exception in data transit would only ever be used in extreme circumstances and would use encrypted data.

Others echoed this sentiment: “We need to know where our data travels and we need tools like encryption to ensure that it is protected in motion”. A number of participants noted that there is a shortage of good public-cloud providers who can ensure Canadian data sovereignty as “many of the public-cloud providers are based in the U.S.”

Concern was also expressed that some of the public-cloud providers like Google require additional layers of security beyond the data sovereignty issue. One CIO noted that they needed to use CloudLock as an essential additional layer to secure their data with Google.

Progress in Various Sectors

At least one of the banks represented in this roundtable discussion had a clear multi- year plan for SDDC. The aim was to make the bank agile and vendor independent.

They were moving through this methodically in stages.

Another participant noted that the Ontario Government has just established a large data center in Guelph so that the government can validate that it owns the hardware and maintains data securely in the province. The question arose: “How soon, if ever, will the Ontario Government embrace an SDDC model?”

Nascent Technology or Growing Pains?

Some attendees felt that SDDC requires further development. This wasn’t seen as a bad thing but reflects how realistic the discussion had been. Others were glad to hear that they were not alone in this; “it’s a maturing technology with real room for growth and improvement”. Others felt that it was still new and were grateful to have gained a better understanding.

A key takeaway from this roundtable revolves around the recognition that the understanding of SDDC or even SDN within the marketplace is not strong.

Participants suggested that vendors need to do a better job at education and to create an awareness and true understanding. New pricing models were sought by one CIO: “couldn’t we get to a ‘per user’ cost?”

A few indicated that this was yet one more example of “100 directions at once” that they needed to pursue while others noted that while they were not yet implementing SDDC or SDN, they were definitely working towards doing so.

One CIO wrapped up the discussion well, saying that he left with a better understanding of SDN and a clearer idea of the ROI.

About CanadianCIO Executive Roundtables and ITWC

CanadianCIO Executive Roundtables are held monthly among senior leaders of the IT community with the objective of exploring current issues and challenges faced by CIOs. The invitees are subscribers to ITWC's digital magazine, CanadianCIO

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We assess, design, build and manage complete data center environments with specific expertise in Next-Gen Data Center, IT-as-a-Service, Information Management & Analytics, and End User Experience & Mobility.

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