SDN? Try VDN — 'Vendor Defined Networking'

Eric Johnson posted in Blog, Featured · July 27, 2012 6:26 am

Originally I planned this post as a first in a series to address the technical issues of software-defined networking (SDN), including vSwitches, the merits/drawbacks of Trill vs. Spanning Tree, tunneling, address virtualization, offloading, the intelligence (more like the absence of intelligence) in controllers, lack of dynamism, and the current failure to comprehensively address (i.e. measure/monitor/modify) the network and execution environments. While these are important topics to be sure, there is a more pressing topic to address.

In conversations with other engineers and with customers, it is clear that a post on the direction or more correctly, the misdirection, of SDN by some vendors is more timely and important. So while this post will not be popular with some vendors, it wasn't written for them, it was written for those who need real answers on how to hold their network environment together while trying to bring it forward at the same time — all within a budget.

SDN has offered the greatest promise in many years to revitalize networking. It is no secret the industry has stagnated under the control of a few vendors. However reenergizing networking is only part of the promise that SDN has held for the advancement of IT. Since SDN enables interaction between applications/services and network infrastructure with granularity and dynamism, it is a means to allow service-specific needs to be communicated to network infrastructure elements and enabled via dynamic re-configuration at run-time. Doing this properly would enable a new era of distributed computing, and accordingly, introduce many services we can currently only imagine.

Customized computing and network behavior, via the establishment of custom control planes and cross-layer mapping between the compute and network environments, held significant promise because as computing became increasingly distributed, with virtual machine migrations, addressed virtualization and extended data centers in multiple cloud computing environments. These islands of distributed computation increasingly require differentiated network performance and enforceable performance-based service level agreements (SLAs).

Lately, there are a number of developments that have clouded the future of SDN. So many developments in fact, that you could say — and many are already saying — that SDN has become Vendor Defined Networking, or VDN.

First, there is a real question of whether the limitations of legacy networking are being recycled into SDN. I will save you the suspense, the answer to that is simple; they almost certainly are, and there are real reasons for this. You can see it yourself in the evolution of the message from SDN vendors and the efforts to change standards as these vendors hit walls and realize the "solution" they are offering won't scale, or perform, or solve as advertised. When SDN marketing material is mistaken for factual network architecture and analysis, details are overlooked – and the devil is always in the details.

What also threatens SDN is the lack of understanding of its application. Vendors rarely explain how and why their SDN solution is needed and how it is used. Here are questions that few vendors ever answer directly or completely: What are the use cases that require it? Which components and tools of SDN (e.g. OpenFlow, OpenStack) do you use and when? One writer on SDN stated OpenFlow was the answer…but what was the question?

The marketing speak in small print seems to always advise the vendor reads the SDN solution assumes "fat pipes with low latency", i.e. over provisioning; large underutilized connectivity with ultra low latency; Nirvana for sure, but how realistic? And where that is possible, what is the financial cost? Is it supportable?

Perhaps these financial questions do not occur to the "customers" of these SDN vendors; someone at a large well known company that in reality, is fraternity brother of the founder, or is an associate of their financial backers. However, for IT managers that actually work for a living and report to management that is already seriously questioning (or will) some of the expenditures that IT has made, ever higher escalating connectivity expenditures aren't in the cards. In short, the network isn't an electrical outlet you can simply plug in to, and merely creating multiple, customized control planes in the abstract doesn't alter the performance or properties of the physical infrastructure.

SDN is naturally of great interest to application developers needing to create better service performance. That is the basis for the natural tension between application/systems teams and networking folks that some SDN companies are leveraging to sell. However, specialists in one area often miss details that can reduce promised benefits; SDN marketing material conveniently overlooks that fact.

Second, the SDN effort has now shown familiar signs of attempts at being co-opted by a few companies, some old, some new. There are legacy companies (makers of servers, routers, switches) that give lip service to SDN without actually understanding it. Either they "flash" their legacy firmware, with a "hack of" OpenFlow, and claim it is an SDN solution, and add a load balancer to the mix, maybe even place a vswitch on a server, and claim SDN from Layer 2 to Layer 7, or they essentially dictate to customers, telling them what they will get, which capabilities they are entitled to receive, over which APIs, and to like it.

More of the stagnation in networking made SDN promising. There are newer entrants, that have created some technology and released open source versions of vswitches and controllers which are little more than demonstrations, (because how many in professional IT have time for experimentation, and writing compiling and de-bugging code?) as opposed to production ready software with any production use at all?

Whereas the marketing plan is to require upgrading to the proprietary version of the freeware if you wish to leverage any benefit from the time and effort already invested in learning SDN. What is worse is the model is a subscription – the gift that keeps on giving to them, and wait for it — lots of professional services (which should not be required if things have been "simplified".)

What is most concerning is that those that have created the freeware also dominate the bodies that govern commitments. This wouldn't be so surprising except the message has been these entrants have been formed to break the monopoly and stagnation of legacy companies, they just forgot to mention they seek to replace it with their own monopoly. You can give the benefit of the doubt to those that developed some SDN technology, but it is clear they have become a tool for the financial backers that see a second chance to pass "go" in the game of network Monopoly.

Which leads to the question: With common SDN tools in the hands of a few, are SDN standards an authoritative list of standards, or a list of authoritative standards? The former gains its authoritative status from the community, peers working together to reach consensus and adoption through merit of technology and solutions; the latter is some list dictated by those in control.

One of the questions the community is asking is why the self proclaimed "leaders" of SDN were unwilling or unable to demonstrate real product at the largest Open Networking Summit ever held?

In speaking with customers, many are confused by the press coverage of SDN, where the message from vendors has been repeated verbatim, where columnists, reporters and writers have been given and published pieces based upon incomplete or even inaccurate information. Engineers question whether these writers believe their publishing of obvious company press pieces is going unnoticed. All of us, the press included, owe the folks that manage IT for a living, facts and not fluff.

As I write this, the news of a nine-figure acquisition has been released. Is an SDN company worth that much? Yes, it shows the value of SDN for computing and networking. Is the technology of the company in question worth that much? No. Direct feedback from those that have directly evaluated the "solution" know it does not perform, or scale, and is an incomplete limited approach to SDN, and nothing is in production. The VC obviously ignores these facts, motivated by their return on their seed capital investment, a return generated on the backs of the shareholders of the acquiring company, and the press is simply writing spoon-fed stories they will soon hope we all forget — not a likely occurrence.

The smart money is on a write-off of historic proportions. The move is a declaration of direct competition between legacy networking and software companies; any remaining legacy technology company that does not secure a real SDN solution, not just the name the press prints most, risks either becoming obsolete, or setting a new record in the game of how to wipe out market cap and equity in one move.

Already, cloud and other service providers as well as enterprise users interested in SDN have taken steps to reach out and discover alternatives to trading one established monopoly, for a new fledging monopoly. The smart money is that as eyes open, the ranks of those rejecting a new monopoly will swell.

Not much fun reading this? Well, as one that wants to see SDN truly fulfill its promise, it was not much fun writing it either.

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