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Bringing SDN Chaos Under Control

SDN and the pressures of Big Data and the Internet of Things are forcing a reimagining of the network management stack.

By Arthur Cole | Posted Sep 18, 2015

Page of | Back to Page 1

1

The flexibility of software defined networks is well-understood, but even the most flexible construct must still conform to established rules and produce adequate interconnectivity, or else you wind up with countless data points with no bearing to one another.

This is why the control aspects of SDN are just as important as the throughput and abstract configuration aspects. But even here, there is a danger that the enterprise will attempt to implement the same kind of control mechanisms that have served well in traditional network architectures, when in reality an entirely new approach is warranted.

To be sure, devices like the network controller will stick around, although their design and functionality will change. Brocade recently took the wraps off its new SDN Controller 2.0., which is based on the OpenDaylight Project's Lithium release and incorporates a stronger interface to the Open vSwitch Database (OVSDB) and the OpenStack Modular Layer 2 plug-in. This should give it broad clustering capabilities and enable open cloud-ready software stacks using platforms like Red Hat's Juno distribution. At the same time, Brocade is releasing a pair of new management applications: one that optimizes traffic flow across dynamic networks and one that enables enhanced visibility into network topologies.

Virtually the entire network management stack will have to change in the SDN era, says Moor Insights & Strategy analyst John Fruehe, because the very nature of networking is undergoing such a fundamental transformation. The era of simple north-south network connectivity is coming to an end, so centralized control of core routing and switching elements is losing effectiveness. Add to that the enormous challenges of Big Data and the Internet of Things, and it becomes clear that the only way to cope with network traffic is to distribute management and control to the edge – closer to where the data is.

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Even the underlying philosophy as to what makes for effective networking is up for reinterpretation, according to Light Reading's Carol Wilson. Currently, network monitoring is designed to do exactly that – monitor the network. In a software defined environment, network pathways are in a constant state of flux, so measuring the health of any one device or cross point is of little value because it is not likely to be servicing the application for very long. The only true measure of success is in the results, which means app performance will play a key role in gauging network health, coupled with the ability to dynamically reconfigure network architectures if performance starts to lag.

Still, app performance can be affected by more than just network failure, which is why some companies are starting to look at the entire application and services portfolio to figure out how they can best work together across SDN deployments. Adara Networks and Extreme Networks, for instance, recently teamed up to integrate the Adara SKY Controller and CloudFabric management stack with Extreme's SDN Platform. The idea is to drive new levels of application orchestration by forming an end-to-end solution for management, security, analytics and other parameters of advanced networking. The ultimate goal is to enable performance guarantees across distributed infrastructure through advanced choreography and orchestration of apps and services. A key element is the Dynamic Link State Protocol (DLSP) built into the SKY controller, which enables real-time performance across SDN applications as they scale into the cloud.

Abstract networking is likely to produce a broad range of architectures as it seeks to optimize traffic flows for individual applications. This means the network management stack will have to do double duty, if not triple or

quintuple duty, managing multiple constructs. And all the while, applications will be continuously tweaking their own resource configurations in order to suit changing data needs.

It's all shaping up to be a chaotic mess, which is why most organizations will leave the day-to-day running of the network to automation while focusing human resources on higher level policy and governance. As long as the overall network is secure and is subject to well-defined boundaries, data and applications should be given the freedom to define their own working environments.

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Arthur Cole covers networking and the data center for IT Business Edge. He has served as editor of numerous publications covering everything from audio/video production and distribution, multimedia and the Internet to video gaming.

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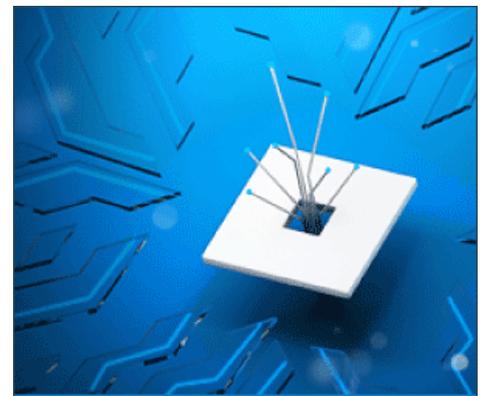
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