

F5 Friday: SDN, Layer 123 SDN & OpenFlow World Congress and LineRate Systems (A Chat with F5's John Giacomoni)



Lori MacVittie, 2013-11-10

#SDN #OpenFlow John G (that's what we call him here on the inside) answers some burning questions about F5 and SDN before jetting off to SDN & OpenFlow World Congress....



We get a lot of questions about not just F5 and what we're doing with SDN these days, but also about LineRate and where it fits in. So we thought we'd chat with our resident expert, John Giacomoni. John not only co-founded [LineRate](#) and [joined us after the acquisition](#), but has since then emerged as one of our key subject matter experts on SDN in general. I caught up with John via e-mail just before he left for Germany to attend [Layer 123 SDN & OpenFlow World Congress](#) where he'll be presenting and mingling with other SDN folks.

Q: I heard that you'll be speaking at the Layer 123 SDN & OpenFlow World Congress in Germany next week, can you tell us a little bit about that?

Sure, I'll be presenting a talk on [October 17th focusing on Application Delivery and SDN](#) which gives an overview of how SDN Architectures embrace both applications and Layer 4-7 services and present a few Layer 7 use cases that bring powerful traffic management into data centers built around the SDN Architecture. I'll also be participating on the 16th in the lunchtime debating table focused on "Transitioning from a Connection/Transport Model to an Application Delivery Model using Application Layer SDN" hosted by F5's [VP for Service Provider Solutions, Dr. Mallik Tatipamula](#)

Q: So you recently joined us in February as part of our acquisition of LineRate Systems. Can you tell us a little bit about your role at F5.

Since transitioning to F5 my role has been an evolution of my former LineRate role such that I now wear two very different hats at F5.

The most visible hat that I wear is that of the "lead" SDN strategist and evangelist. I have been evangelizing our vision through presentations at conferences, participation in the ONF's L4-7 working group, and authoring white papers and case studies.

The less visible hat are my dual roles as architect for the LineRate kernel and participation as part of the LineRate go to market leadership team.

Q: Can you briefly summarize F5's SDN story?

Sure. The most important thing to understand is that SDN is an architecture and not any collection of technologies. That is to say, the central idea behind SDN is to realize operational benefits by centralizing network control into a single entity typically referred to as an SDN Controller. It is the job of the SDN Controller along with support from SDN plug-ins (Applications) to do the work of implementing the architect's intent throughout the network. The SDN Controller accomplishes this by using Open APIs that allow for programmatic configuration and by extending the data path element's directly programmable data path (extensibility).

F5 is extending SDN architectural discussions by introducing the concept of stateful packet forwarding data path elements that complement the much discussed stateless data path elements. There are a number of reasons as I presented at the Layer 123 SDN & OpenFlow APAC Congress for needing stateful L4-7 data path elements. The biggest reason is that to handle all the state transitions needed for L4 and L7 services, one effectively makes the SDN Controller an integral part of the data path creating scalability issues for the controller, latency issues for traffic, and violating the core architectural principal of separation of the data and control planes.

Q: Can you give us a sense of how else you've been promoting F5's SDN vision?

I've been presenting at conferences, participating in the ONF's L4-7 working group, and authoring printed marketing collateral.

My evangelism has been most noticeable at conferences beginning in Singapore at the Layer 123 SDN & OpenFlow APAC Congress back in June where I discussed how an SDN Architecture is incomplete without application layer SDN, that is stateful data path elements operating at Layers 4-7. I've also provided primary coverage for our booths at the Open Network Summit and at Intel IDF in the Software Defined Infrastructure pavilion.

Q: So how does LineRate fit into SDN?

LineRate fits into SDN the same way as the rest of the F5 portfolio; that is with APIs that allow it to be fully automated by a controller (programmable configuration) and to extend the data path in novel ways without vendor support (directly programmable). F5 has supported programmable configuration with its iControl API since its introduction in 2001 and been directly programmable since 2004 with our introduction of iRules. Both APIs have been fully published and open since launch. F5 has also demonstrated integration with VMware vShield Manager and the IBM SmartCloud Orchestration (SCO). The F5 SDC product has a SOAP API for configuration and Groovy variant of Java for extensibility. The LineRate Products have a REST API and the node.js API for JavaScript.

The point is that F5 has a history of providing products that seamlessly integrate with implementations of the SDN Architecture and LineRate is no different.

Q: So how does Network Functions Virtualization (NFV) fit into F5's vision?

NFV is an interesting addition to the landscape added by Service Providers at last year's Layer123 SDN & OpenFlow World Congress in Germany. Since then, NFV has become a pseudo-standards process in the care of ETSI, in which F5 is a member. The core idea is to virtualize all network functions in their networks so that they can be dynamically provisioned and scaled on commodity hardware. This has the potential to lead to significant efficiencies in terms of both CAPEX and OPEX. CAPEX savings would be realized by avoiding the capacity planning trap as services can be scaled as fast as a computer program can detect the need for additional capacity and order it. OPEX savings come in the form of being able to run all data centers in a lights out model.

So NFV is a closely related sibling to SDN in that SDN is focused on optimizing "topology" issues while NFV is focused on optimizing the nodes in the network. Working together they give rise to a fully Software Defined Data Center/Network that can be completely orchestrated from a central point of control.

It is also worth noting that all the principles of NFV apply in other data centers and there has been a long standing movement to moving everything to software.

Q: For a bit of historical context, can you tell us a bit about the genesis and motivation behind LineRate Systems.

Certainly. In 2008 I cofounded LineRate Systems with my co-founder Manish Vachharajani on the then disruptive idea of replacing "big-iron" network appliances with a pure software solution. The goal was to deliver all the flexibility advantages of a software application with the streamlined manageability of a turn-key network appliance. We also made the decision to build the entire product around the idea of a REST API so that our system could be easily integrated into remote configuration management and orchestration systems without the users needing to ever touch the box. Eventually the space we had entered would be called Software Defined Networking (SDN) and Network Functions Virtualization (NFV).

So that was the motivation, the genesis was rooted in a research project that I began as a professional researcher assistant at CU Boulder in back in 2003 in high-performance intrusion detection on commodity multi-core x86 servers. Later as a MS and PhD student I connected with my future co-founder Manish Vachharajani as my PhD advisor and we advanced the research techniques from functioning research to practice and founded LineRate in 2008.

Q: What about your previous role at LineRate, you mentioned that your role is similar but evolved?

At LineRate Manish and I split our duties with Manish biased towards the technical as our Chief Software Architect and responsible for overall architecture with a fair amount of business responsibilities as well, while I began skewed towards the business side as founding CEO and eventually transitioning to a more balanced business/technical position as CTO. As Founding CEO I led the company raise for our seed round of capital and implemented our high-performance kernel that gave us a hardware class platform in pure software. As CTO I spent a lot of time with customers, driving our SDN messaging, and leading kernel architecture.

If you're attending Layer 123 SDN & OpenFlow World Congress, take a moment to track John G down and have a chat or attend his session. If you're not, you can track down [John on Twitter](#).

F5 Networks, Inc. | 401 Elliot Avenue West, Seattle, WA 98119 | 888-882-4447 | [f5.com](#)

F5 Networks, Inc.
Corporate Headquarters
info@f5.com

F5 Networks
Asia-Pacific
apacinfo@f5.com

F5 Networks Ltd.
Europe/Middle-East/Africa
emeainfo@f5.com

F5 Networks
Japan K.K.
f5j-info@f5.com

©2016 F5 Networks, Inc. All rights reserved. F5, F5 Networks, and the F5 logo are trademarks of F5 Networks, Inc. in the U.S. and in certain other countries. Other F5 trademarks are identified at [f5.com](#). Any other products, services, or company names referenced herein may be trademarks of their respective owners with no endorsement or affiliation, express or implied, claimed by F5. CS04-00015 0113