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Cisco Finally Details Its Software-Defined Networking Strategy

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Cisco unveiled its strategy for delivering software-defined networking, describing its Open Network Environment Platform Kit (onePK) as a more comprehensive approach than the OpenFlow protocol or the OpenStack approaches by others.

Cisco Systems, the networking industry leader that others are looking to for guidance on its software-defined networking strategy, introduced a development platform for creating software applications that control networking hardware to run more efficiently.

The Cisco Open Network Environment Platform Kit, which the company dubbed "onePK," is delivered through a rich set of platform APIs, agents, controllers and overlay network technologies, an approach that touches on three of the current technology approaches of others to enable what's called software-defined networking (SDN).

By unveiling onePK at its Cisco Live conference June 13 in San Diego, Cisco has answered a question asked by industry observers about what the largest vendor of networking products in the business is going to do to use software to improve the efficiency of networks.

An academic and industry initiative called the Open Network Foundation is evangelizing a protocol called OpenFlow that enables SDN. A number of startups such as Big Switch Networks and Nicira have emerged with SDN solutions. Meanwhile, more established networking vendors such as HP, Juniper and Brocade have also introduced SDN offerings based on OpenFlow. Cisco executives at Cisco Live described these market developments as "hype." Cisco has been cagey about its strategy until now, with the introduction of onePK.

"People want more programmability [in their networks] so they can tailor it to their specific environment and achieve a turnaround time much faster than traditional build, test and release cycles," said David Yen, senior vice president and general manager of Cisco's Data Center Group, at a news conference at Cisco Live that was streamed live online.

OnePK is based on three of the existing models for SDN being developed in the industry today, explained Shashi Kiran, senior director of marketing for the Data Center Group.

Cisco's approach includes use of OpenFlow, a routing protocol that decouples the control plane from the forwarding plane on a network so that the software controller can augment the intelligence built into routers and switches to improve performance, reduce latency and move data across the network more efficiently, Kiran said. Cisco is a member of the ONF, as are many other IT companies.

OnePK also embraces OpenStack, an open source-based effort to develop a stack of applications, and

protocols that could create a cloud computing environment. Cisco is a member of OpenStack, too, as are a Who's Who of other tech firms.

The Cisco solution also embraces what are called "network overlays," in which the existing physical network layer remains untouched, but the overlay, running in a virtualized environment, controls the switches and routers.

A company called Adara Networks, which has delivered such overlay SDN technology exclusively to the U.S. Department of Defense and the Veterans Administration, has recently begun marketing to private enterprises.

Cisco is also incorporating other technology into its SDN strategy, Kiran said, and has been consulting with other industry standards bodies such as the Institute of Electrical and Electronics Engineers, the Internet Engineering Task Force, and International Telecommunications Union. Rather than basing its strategy on either the OpenFlow, OpenStack or the network overlay approach, Cisco is embracing "all of the above," he said.

"We are in a position to offer the best in each of these areas and we're in a position to break the siloes across all of these areas," Kiran said.

Cisco's all of the above approach includes the announcement of a proof-of-concept controller software and a proof-of-concept OpenFlow agent for SDN research. The company is also enabling scalable virtual overlay networks for multi-tenant cloud deployments with the Cisco Nexus 1000V virtual switch.

"This is by far the industry's most comprehensive developer environment with a developer kit and it is going to straddle all of our operating systems, all of our devices," Kiran said of the Open Network Environment PK. "It's going to be one homogeneous developer environment with a very rich set of APIs that exposes and enables customers to harness the intelligence that we bring into our networks."

Cisco has been criticized by competitors and members of standards bodies for being tepid about its support of protocols like OpenFlow and has been accused of planning to develop proprietary technology to impose "vendor lock-in" on its customers rather than support industry standards other vendors are embracing. At the news conference, Yen was asked why it took so long to introduce this strategy and whether the networking leader was, in fact, playing catch-up to competitors.

"We are not trying to make an announcement for marketing's sake just to get visibility," Yen said. "We truly wanted to provide the things not only to help the customer, but also things that Cisco thinks it can stand behind."

Because of news reports, Cisco was forced to acknowledge earlier this year that it had created a "spin-in" company called Insieme to also develop SDN-like technology. But a Cisco spokesman said the onePK development was not created with any input from the Insieme group.

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