

ONF Announces Stratum Project Now Available as Open Source; Completes Incubation Development

Stratum provides foundation for ONF's Next-Gen SDN initiative

MENLO PARK, Calif. Sept. 10, 2019 — The ONF today announced that the Stratum™ project has been released as open source. Stratum is now available under the Apache 2.0 open source license, and Stratum is forming the foundation for ONF's next-generation software defined networking (SDN) work.

Stratum is an open source, silicon-independent switch operating system for software defined networks that runs on a variety of switching silicon and various whitebox switch platforms. Stratum avoids the vendor lock-in found with today's data planes that feature proprietary silicon interfaces and closed software APIs that tend to lock operators into using a specific hardware technology. Stratum makes possible easy integration of new devices into operators' networks, making Stratum the foundation for delivering a minimal production-ready distribution for white box switches.

The strict contractual relationship of a P4-based interface between a Stratum switch and its controller ensure that the switch can be swapped with a spectrum of alternatives (even those with different switching silicon from a diversity of vendors) without need for controller modification or network retest and validation. Never before has it been possible to grow and upgrade installations and adopt the latest advancements in switching silicon at the speed of cloud development.

Stratum also exposes a set of next-generation SDN interfaces including P4, P4Runtime, OpenConfig, gNMI and gNOI, enabling programmability of forwarding behaviors, zero-touch operations and full automated life-cycle management. This makes Stratum a key enabler for ONF's next-generation SDN initiative.

"Bringing project Stratum to open source is an important milestone in furthering the ONF's open networking movement," said **Guru Parulkar, Executive Director, ONF**. "Stratum provides a consistent set of northbound Next-Gen SDN interfaces even as it runs on a wide selection of hardware platforms leveraging a variety of switching silicon. As such, Stratum is becoming the

common substrate for ONF's Next-Gen SDN stack, enabling rapid innovation, zero touch operations and a robust hardware ecosystem."

Stratum Ecosystem

Stratum has been incubated since March 2018 when Google released seed code for the project. In the intervening year, a set of collaborating organizations have been working collectively on advancing the software to make it ready for easier consumption as open source, and to support a diversity of silicon from multiple vendors. Stratum has also become the foundation layer for ONF's Next-Gen SDN initiative with the backing of this robust community supporting the project.

"Stratum is helping the industry deliver on the full potential of SDN," **said Amin Vahdat, Engineering Fellow, VP and Technical Lead for Networking at Google.** "In collaboration with the ONF, we are realizing our vision to expand Stratum's industry reach and adoption. By making it possible to establish a 'contract' with the networking device, Stratum allows enterprises to unambiguously define system behavior and take advantage of the latest switching technologies without reworking the underlying control software."

"Barefoot is a founding member of the Stratum project and has made significant contributions to the project enabling high-throughput, fully-programmable networks with P4, P4Runtime and our Tofino and Tofino 2 family of high-performance Ethernet switch ASICs," **said Ed Doe, Vice President in Intel's Connectivity Group and General Manager of Barefoot.** "We are excited to see Stratum reach the important milestone of open sourcing the project's code as this will fuel the next level of innovation in the networking industry."

"Broadcom is pleased to support the Stratum effort through our collaboration with the ONF," **said Hasan Siraj, senior director of the Switching Products Division for Broadcom.** "We expect that momentum for open source network adoption will continue to increase and we are excited to participate in these various innovative industry initiatives."

"As an active participant in development and promotion of ONF projects, Edgecore Networks is thrilled to see the release of Stratum; this is groundbreaking for the open source movement. We are fully committed to supporting open network initiatives like Stratum, providing flexibility, open solutions, and choice for network operators," **said George Tchapanian, President and CEO for Edgecore Networks.**

"Stratum is an essential element as Delta Networks executes our open networking hardware central strategy," **said Honda Wu, Vice President-Software Engineering, Delta Electronics America.** "White box switching with interchangeable components will change the networking

landscape. Delta is committed to delivering best-in-class solutions in this space, and to this end we are enthusiastically supporting the Stratum movement.”

“Inventec’s involvement with Stratum is further proof of our full commitment to Open Networking Solutions,” said **Kuo Marcel, Senior Technical Program Manager for Inventec**. “We will continue to collaborate with the community in developing the open source solutions that operators will grow their networks with.”

“Noviflow has been a long-time supporter of SDN and programmable silicon and in the last three years of P4. We are enthusiastic contributors to the Stratum project and see this providing us with important capabilities as we expand our product offerings,” said **Marc LeClerc, Vice President of Marketing and Strategy for Noviflow**.

“Stratum is the only open switch OS for the realization of the Next-Gen SDN for white box model, and PLVision is happy to leverage our solid expertise in SDN and P4 to make it available to the public and ready to use,” said **Leonid Khedyk, Chief Technology Officer at PLVision**. “Being a part of this ONF initiative is highly instrumental in satisfying the growing market demand from white box ODM and silicon vendors who approach us for landing Stratum on their platforms.”

“STORDIS is an early supporter of P4 and we are working closely with the ONF to integrate Stratum OS on our platform. This is an exciting global effort and we look forward to its continued progress,” said **Alexander Jeffries, CEO for STORDIS**.

“We believe that P4 has great potential to build more intelligent programmable networks. Stratum is fundamental to this effort, and we are very pleased by the rapid progress the community has been making to deliver on the vision of an open thin switch operating system using the Next-Gen SDN interfaces P4, P4Runtime, OpenConfig, gNMI and gNOI. We believe this represents a major move forward for the networking industry,” said **Dai Kashiwa, VP of SDN/NFV Technology Development, NTT Communications**.

Learn More at ONF Connect – September 10-13, 2019

Stratum and Next-Gen SDN will be featured prominently at [ONF Connect](#) September 10-13, Santa Clara, CA. An all-day tutorial on Next-Gen SDN is available to help community level up on these exciting developments, followed by three immersive days featuring keynotes from luminaries from the SDN movement including Nick McKeown (SDN pioneer) on network

verification and Amin Vahdat (Google) on how advances in networking have the potential to address the slow-down of Moore's Law.

Resources and Links

[Stratum Project](#)

About the Open Networking Foundation:

The Open Networking Foundation (ONF) is an operator led consortium spearheading disruptive network transformation. Now the recognized leader for open source solutions for operators, the ONF first launched in 2011 as the standard bearer for Software Defined Networking (SDN). Led by its operator partners AT&T, China Unicom, Comcast, Deutsche Telekom, Google, NTT Group and Turk Telekom, the ONF is driving vast transformation across the operator space. For further information visit <http://www.opennetworking.org>

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