ONOS Project Hummingbird Release Enables Network Services for Disruptive and Incremental SDN

Open source networking community advances SDN platform with new release

MENLO PARK, Calif. Sept. 22, 2016 – ONOS Project, the software-defined networking (SDN) OS for service providers with high availability, scale and performance and the right abstractions to create apps and services, today announced availability of its eighth quarterly platform release, Hummingbird. ONOS® provides the only SDN control plane that can support both disruptive and incremental SDN for service providers and enterprises seeking to virtualize and optimize to keep agile pace with the explosion of mobile devices, video and big data applications.

The open source ONOS community will see significant improvements in the Hummingbird release. New network services offer high availability and scalability for disruptive SDN, significantly expanded Southbound and Northbound protocols, and advancements in ONOS' ability to support incremental SDN on legacy devices.

"Hummingbird is the ideal platform to deliver the full SDN value proposition to service providers," said Bill Snow, vice president of engineering, ON.Lab. "Hummingbird delivers important advancements not only in the core control functions, but also in support of automation and configuration of legacy and OpenFlow-enabled devices to serve the growing set of use cases being tackled by service providers today and into the future."

New Features in ONOS Hummingbird:
- **Southbound:** Hummingbird expands ONOS to be able to configure and control legacy networks with additional support for Arista and Cisco devices. The Hummingbird release also includes Optical feature enhancements and improvements to OSPF and ISIS drivers. Numerous NETCONF enhancements in ONOS create support for many additional devices. In short, all these enhancements allow ONOS to support a variety of legacy devices to help service providers incrementally deploy SDN.
- **Northbound:** Hummingbird rounds ONOS out with new features that improve interoperability and ways for applications to interact with the Northbound protocol through message bus integration (RabbitMQ from ADARA and Kafka from Calix), as well as add more flexibility for intent-based management.

- **Disruptive SDN:** In support of disruptive SDN, ONOS continued to focus on scaling views for very large networks and making it easy for applications to be written to benefit from ONOS' high availability primitives. Hummingbird brings major new features with additional distributed primitives, support for controller to controller peering and enhancements to the P4 driver support.
- **Legacy device support:** In support of incremental SDN, Huawei brought in significant YANG modeling and management capabilities at both the Northbound and Southbound interfaces, as well as support for the IEEE Abstraction and Control of Traffic Engineered Networks (ACTN).
- **Commercial support:** Hummingbird brings new commercial support for ONOS with Huawei's announcement of the ONOS-based converged controller, "Agile Controller 3.0."
- **Broad Set of Use Cases:** Hummingbird's new service offerings and other enhancements enable valuable use cases in the areas of Cloud and SDN. The vibrant ONOS community has already built use case applications upon ONOS with CORD, packet-optical, and SDN-IP peering, and is building new ones in the areas of dynamic configuration and provisioning, and traffic engineering.

The full list of ONOS features provided in the Hummingbird release can be found here.

The rapidly growing and diverse ONOS community comprises a core engineering team at ON.Lab, along with developers from service providers, vendors and Research and Educational Networks spanning across industries. Future ONOS releases will focus on further development of dynamic configuration with YANG models and services, virtualization, and new Northbound interfaces, driven by open source collaboration among the ONOS Brigades. Whether an individual or an organization, as an open source project all are encouraged to get involved with the growing ONOS community and help contribute to the project today.

Meet, plan and hack with the community at ONOS Build 2016, ONOS' first large-scale developer conference taking place Nov. 2-4 in Paris.

Support for Hummingbird from contributing collaborators and partners:

ADARA Networks
"ADARA's contribution to the Hummingbird release supports the expansion of ONOS to a whole new world of networking applications," said Raghu Gangi, Principal Engineer, ADARA Networks. "The message queue enhancement supports an expanded ecosystem of current and future networking applications able to directly interface with ONOS, and encourages increased participation in ON.Lab and greater ONOS adoption. The introduction of event based support is a non-evolutionary development in the expansion of ONOS capabilities, and with coming enhancements to the intent framework, sets the stage for ONOS interaction with advanced elements such as Performance Based Path Computation Engines. ADARA shares the ONOS vision of community, and provider driven advanced capability."

Calix

"The Calix contribution to ONOS enables the open source collaborator community to be able to use non-native Java applications as tenants on the ONOS controller, allowing the community to leverage existing code written in any language as the starting point for porting networking control applications to ONOS," said Evan Parker, Senior Product Line Leader, Calix. "We are excited this contribution will significantly enhance the velocity of tenant application development and shorten the time to production deployment."

Geant

"In the course of developing advanced SDN-based service offerings for the R&E community, GEANT has made several contributions to the latest release of ONOS. These contributions range from core controller capacities, such as encapsulation support by the intents framework, legacy device support, as well as novel application features (SDX L2)," said Afrodite Sevasti, head of SDN development in GEANT. "This work has taken GEANT one step closer to a feature set that enables SDN apps and ONOS deployments in pilots over the GEANT backbone in the next months, highlighting the potential of ONOS-based SDN solutions in R&E networks."

Huawei

"We appreciate ONOS continuously developing new quarterly releases that feature enriched use cases in variable domains and modeling capabilities, such as the YANG Management system and toolchain, which Huawei contributed. Hummingbird will enable broader deployment of SDN," said Bill Ren, Industry and Ecosystem development VP of the Networks Business Unit of Huawei. "Huawei is also pleased to announce the release of the new ONOS-based converged controller, 'Agile Controller 3.0.' We look forward to more cooperation with partners in the open source ONOS community to further create value for end-users."

Additional Resources
- Getting Started with ONOS
- Download and Test ONOS Hummingbird
- Learn About ONOS Membership
- ONOS Newsroom and Events

About ONOS Project

ONOS® is the open source SDN networking operating system for Service Provider networks architected for high performance, scale and availability. The ONOS ecosystem comprises ON.Lab, organizations that are funding and contributing to the ONOS initiative, and individual contributors. These organizations include AT&T, China Unicom, Comcast, Google, NTT Communications Corp., SK Telecom Co. Ltd., Verizon, Ciena Corporation, Cisco Systems, Inc., Ericsson, Fujitsu Ltd., Huawei Technologies Co. Ltd., Intel Corporation, NEC Corporation, Nokia, Radisys and Samsung. See the full list of members, including ONOS' collaborators, and learn how you can get involved with ONOS at onosproject.org.

ONOS is an independently funded software project hosted by The Linux Foundation, the nonprofit advancing professional open source management for mass collaboration to fuel innovation across industries and ecosystems.

About ON.Lab
Open Networking Lab (ON.Lab) is a non-profit organization founded by SDN inventors and leaders from Stanford University and UC Berkeley to foster open source communities for developing tools and platforms to realize the full potential of SDN, NFV and cloud technologies. ON.Lab provides engineering resources on behalf of the open source ONOS, CORD, and Mininet projects among others. For further information on ON.Lab, visit http://onlab.us/.

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