

ONOS Hummingbird Release Content

Community

- **New ONOS collaborators**
 - Announced new collaborators: Adtran, Argela, IPT, SDNLAB, Villa-Tech
 - Unannounced new collaborators that have been approved but haven't been communicated out yet: Bll

Automated testing, Build environment

- **Contributions from ON.Lab and Ciena**
- Built new ONOS tutorial VM (ON.Lab)
- ONOS Swagger Plugin (ON.Lab)
- Finished moving to BUCK (ON.Lab)
- Stabilized STC, greatly improved coverage (config subsystem, distributed primitives, applications, drivers), added capability to run tests multiple times while unattended (ON.Lab)
- Mininet scripts for testing ONOS network partitions and dynamic scaling (Ciena)

Applications

- **Contributions from Adara, ATTO Research, BUPT, Create-Net, Huawei, NEC, ON.Lab, SK Telecom, SRI, Tata, Tech-Mahindra**
- Enhancements to ICONA (controller peering) (Create-Net, Tata)
- SONA and Scaleable gateway improvements (SK Telecom, ATTO Research)
- External event dispatching, standard JSON format for events, event registration, integration of events with packet, link, topology events, integration of RabbitMQ (Adara)
- New subsystem for anomaly detection (ATHENA) (SRI)
- Open Exchange Protocol for inter-controller communication (BUPT)
- Added YANG Management System (YMS) application. (Huawei)
- YANG Tools enhancements to support complete YANG 1.0 (Huawei)
- Added DHCP Relay (Tech-Mahindra)
- Improvements to FIB installer (Tech-Mahindra)
- Dynamic XConnect support (ON.Lab)
- BGP Route policy distribution and flow spec (Huawei)
- Added BMv2 demo apps (P4 support) (ON.Lab)
- VPLS code refactoring (NCTU)
- UI - Separating theme from layout for CSS files, continued work on theming UI (ON.Lab)
- IETF TE Topology Application under ACTN (Huawei)

- Carrier Ethernet application for installing EPL/EP-LAN/EP-Tree and EVPL/EVP-LAN/EVP-Tree services (Huawei)
- NEMO language for applications to more easily express intents (Huawei)

Northbound

- **Contributions from Calix, Ciena, Fujitsu, Huawei, NEC, ON.Lab, OpLink, Samsung, SK Telecom, Verizon**
- Implement PowerConfig for Oplink Devices, Use LambdaQuery in OpenFlowDeviceProvider to get details for optical ports (OpLink)
- Kafka message bus integration (Calix)
- decouple optical-model from CLI (NEC)
- Add basic error handling to gRPC Device SB service, Add link eviction to gRPC Link SB (NEC)
- Initial implementation of Virtual network Intent service (Ciena)
- Improve performance of Resource Reservation Service (Fujitsu)
- YMS to provide automated CODEC for NBI. (Huawei)
- Abstraction and Control of TE Networks (ACTN) implementation (Huawei)
- Refactored tunnel and interface config behavior (SK Telecom)
- sp2mp intents now modify packets at the egress switch (Verizon)
- mp2sp intents now modify packets at the ingress switch (Verizon)
- sp2mp intents support multiple treatments (Università Roma Tor Vergata / ON.Lab)
- mp2sp intents support multiple selectors (Università Roma Tor Vergata / ON.Lab)
- Added back-off mechanism for intent clean-up (ON.Lab)
- Added ARP command (ON.Lab)
- Support for standard IETF TE YANG models under ACTN (Huawei)
- New neighbour message subsystem for handling ARP and NDP (ON.Lab)

Core

- **Contributions from Ciena, Fujitsu, NCTU, NEC, ON.Lab**
- Refactoring of optical information model - Move optical Intent compilers out to optical-model (NEC)
- Initial work on virtualization - Virtual Network DeviceService and LinkService to use VirtualNetwork service, virtual network topology provider (Ciena)
- New distributed system primitives (AsyncConsistentTreeMap, DistributedTreeMap) (Fujitsu)
- Distributed work queue primitive (ON.Lab)
- New ApplicationStore that uses a single ConsistentMap to track all app related state (ON.Lab)
- NetconfAlarmProvider alerts core about notifications given subscription (ON.Lab)
- Implementation of Hybrid Logical Clock Service (ON.Lab)

- New ComponentConfigStore that uses a ConsistentMap configured with sequential consistency (ON.Lab)
- Support Cluster restart via stc (NCTU)

Southbound

- **Contributions from Cognizant, Create-Net, Fujitsu, GEANT, Huawei, NEC, ON.Lab, OpLink, POSTECH, SK Telecom, Tata, University of Patras**
- LOXI enhancements for optical extensions (OpLink)
- New provider for link discovery
- NETCONF enhancements (Fujitsu)
- YMS to provide automated CODEC for SBI (Huawei)
- YANG Tools enhancements to support auto code generation for drivers/providers. (Huawei)
- Implement the Driver for handling Arista switch (SK Telecom)
- Updated NETCONF for Fujitsu OLT devices, Separate optical driver from "default" driver bundle (NEC)
- Rate limit on port via NetConf (GEANT)
- Cisco IOS PortDiscovery (University of Patras)
- Initial implementation of LISP control message objects (POSTECH)
- OSPF refactoring to align with ISIS design, ISIS updates (Cognizant)
- Major refactoring of the BMv2 protocol module (P4 support) (ON.Lab)
- Add support for vlan based intents in the Corsa driver (ON.Lab)
- Building alarms from NETCONF notifications (ON.Lab)
- RestConf Client Implementation (Huawei)