ONOS Update

distributed platform, abstractions, applications
ONOS Community
Ciena’s Blue Planet Division Collaborates with ON.Lab to Offer First Hardened Version of ONOS Open-Source Software for Commercial Use

HANOVER, Md. – 12/16/2015 Continuing its efforts to help customers deliver automated and programmable end-to-end services across physical and virtual domains, Ciena® (NYSF: Ciena) will offer a fully-supported commercial version of the Open Networking Operating System (ONOS). Blue Planet ONOS will extend Ciena’s Blue Planet network orchestration software to enable highly-scalable, flow-based control of data [...]
distributed core
provides high-availability, scalability and performance
abstractions & models allow applications to configure and control the network without becoming dependent on device specifics
applications platform
allows developers to dynamically extend the base capabilities
high-availability
scalability
performance
Abstract Stores

topology - devices, links, hosts
device mastership
flow rules
intents
network configuration
device keys
applications
...
Distributed Primitives

- EventuallyConsistentMap\(<K, V>\)
- ConsistentMap\(<K, V>\)
- LeadershipService
- DistributedQueue\(<E>\)
- DistributedSet\(<E>\)
- AtomicCounter
- AtomicValue\(<V>\)
  ...

Distributed Stores & Primitives

- topology - eventually consistent map
- device mastership - leadership service
- flow rules - primary/backup replication
- intents - consistent map
- network configuration - consistent map
- device keys - consistent map
- applications - eventually consistent map

...
Application Stores & Primitives

- CORD Virtual Tenant Networks
- CORD Optical Line Terminator
- Segment Routing
- OpenStack Networking
- Service Function Chaining
- ACL Management
- DHCP Server

...
Guidance from Experts
abstractions & models
northbound

southbound
northbound

- OpenFlow
- OVSDB
- NETCONF

southbound

- BGP
- OSPF
- PCEP
- TL1
  ...

● BGP
● OSPF
● PCEP
● TL1
...
standard protocols & models

promote and use whenever possible
standard protocols & models

promote and use whenever possible
but do *not* rely on them solely
capabilities > protocols
control & configuration capabilities are what is important
capabilities > protocols

control & configuration capabilities are what is important
language is secondary
configuration vs. control

equally important
configuration vs. control

equally important

applications should not depend on device & protocol specifics
driver subsystem

device-centric control & configuration abstractions

network graph model extensions
behaviour
implementation

device-centric

behaviour
implementation

behaviour
implementation
network-centric
behaviour

NETCONF

YANG

YANG shell

Java/XML

Java/JSON
application portability
control and configuration abstractions
dynamically extensible model
applications platform
ONOS networking core

ONOS distributed applications platform

OSGI / Apache Karaf

GUI

REST API

Command Line
ONOS applications

ONOS networking core

ONOS distributed applications platform

OSGI / Apache Karaf
ONOS distributed applications platform

ONOS networking core

ONOS extensions

- applications
- drivers
- protocols

GUI

REST API

Command Line

OSGI / Apache Karaf
application dev kit
ready-to-run skeletal starter code for archetype apps
thorough Java API and REST API documentation
application development
tremendous business opportunity for vendors and integrators
high-availability
scalability
performance
configuration & control abstractions
device independence
13 partners
60+ collaborators
250+ code contributors
70+ applications