

SONA

SDN based OpenStack/Kubernetes
Network Management Solution

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2018. 10. 17

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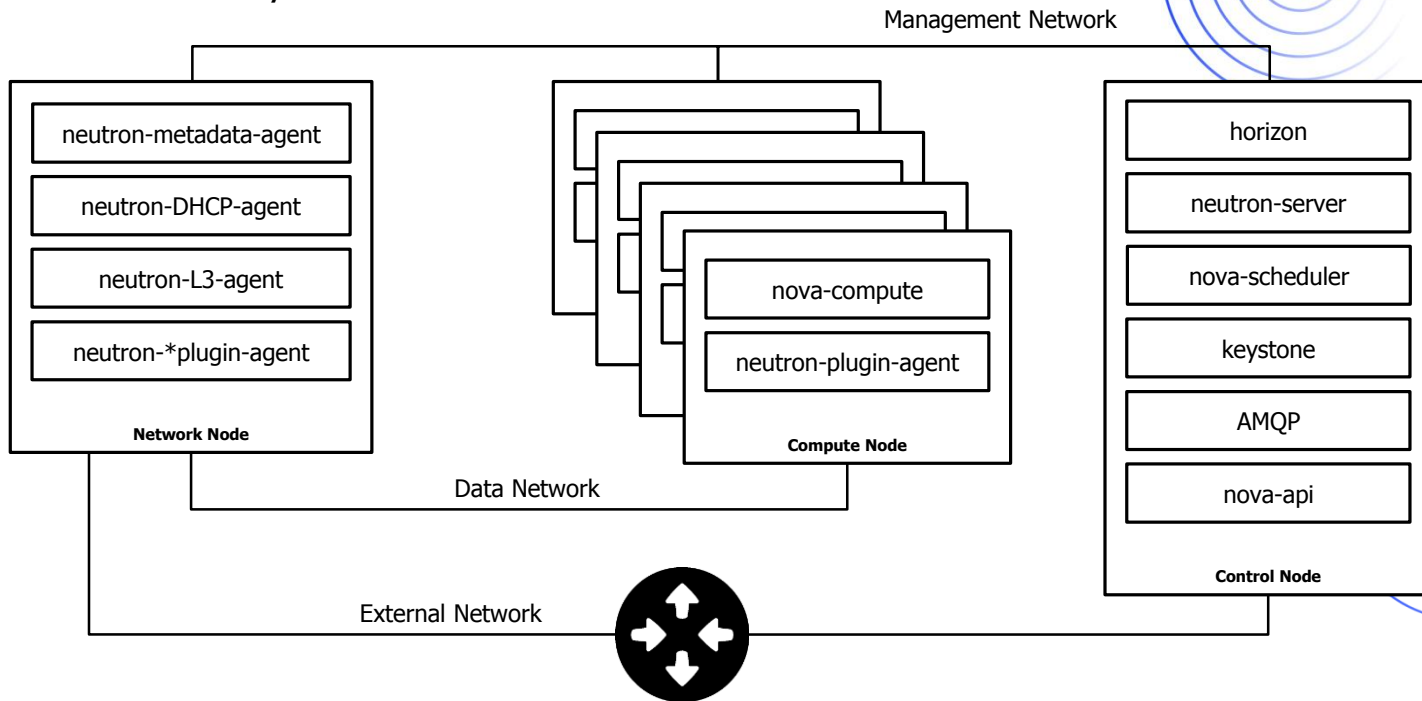
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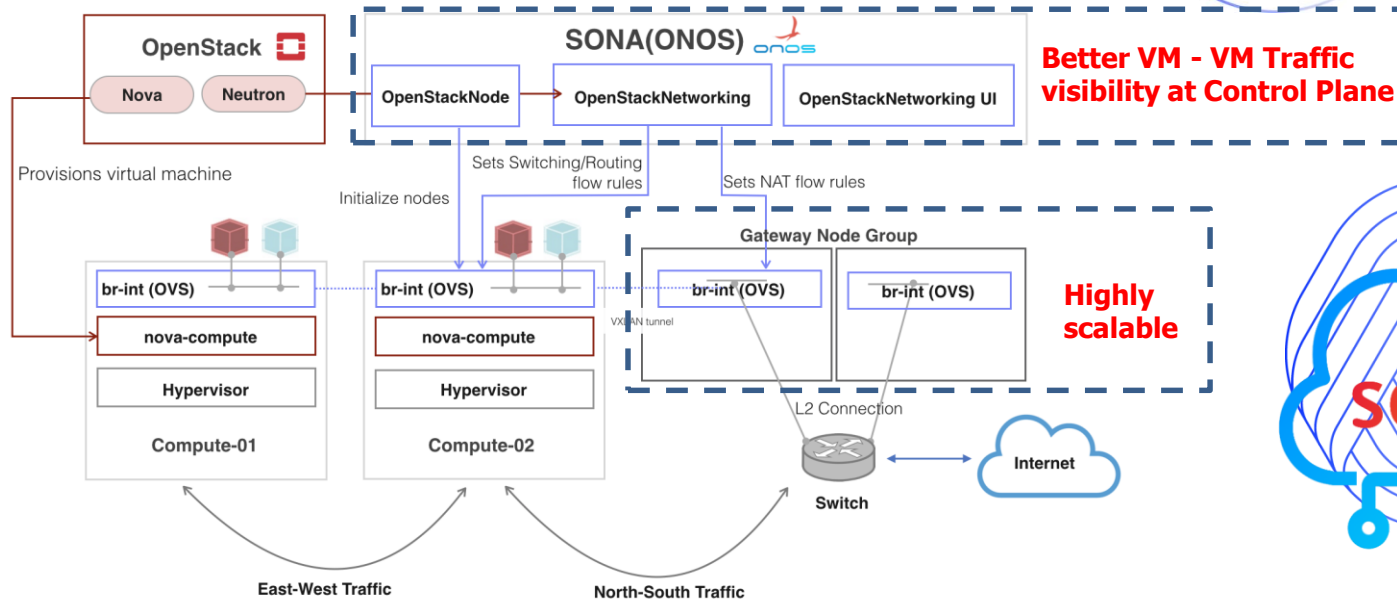
Why SONA?

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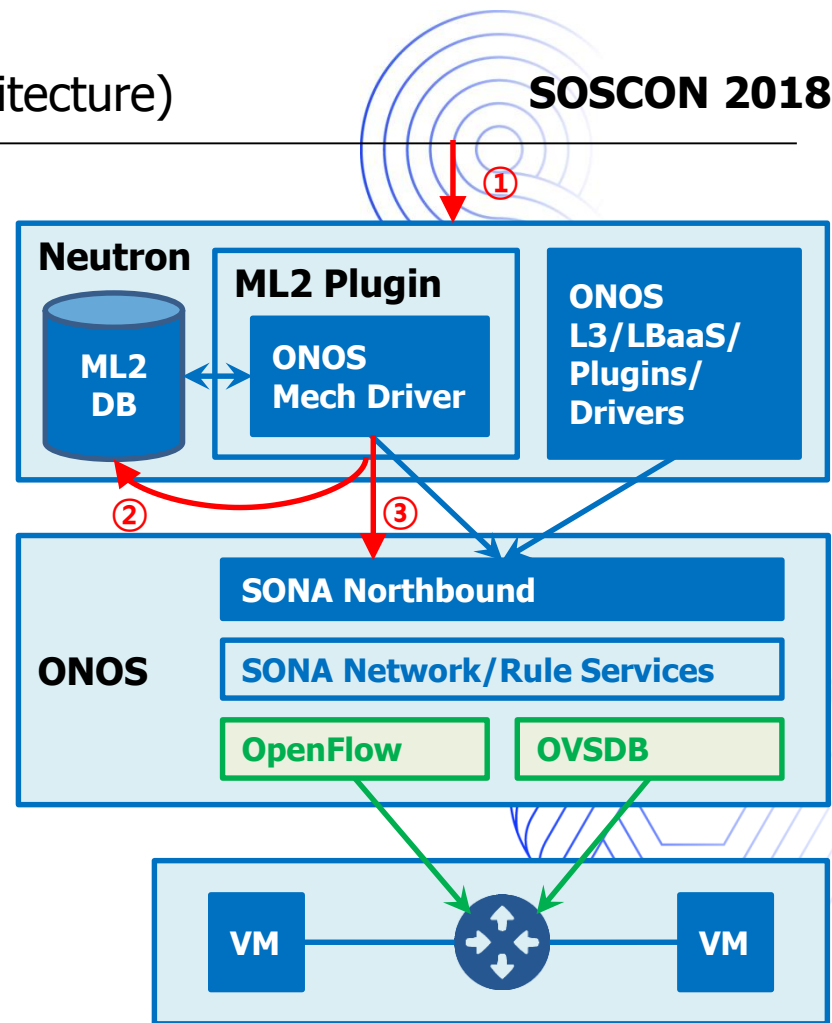
- Limitation of Neutron network
 - Limited visibility of VM traffic
 - Limited scalability of network node



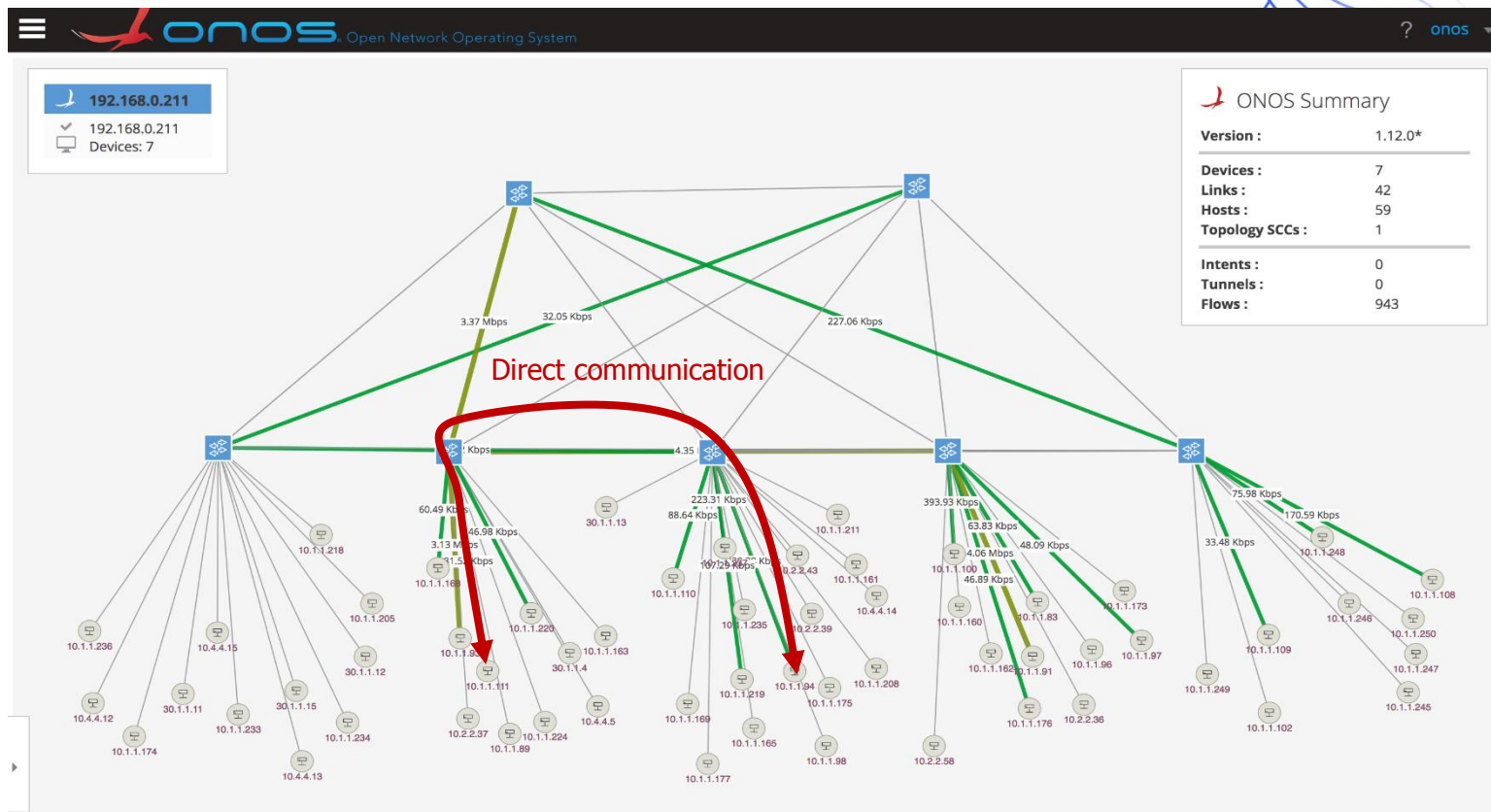
- SONA: Overlay Network Management Solution for SDDC
 - ONOS based Virtual Network Management solution (support **VxLAN**, **VLAN**, **FLAT**)
 - Empowered by **SDN controller**, a better **replacement** of neutron, **scalable gateway**
 - Fully compatible with **OpenStack** (ocata, pike, queens, rocky)



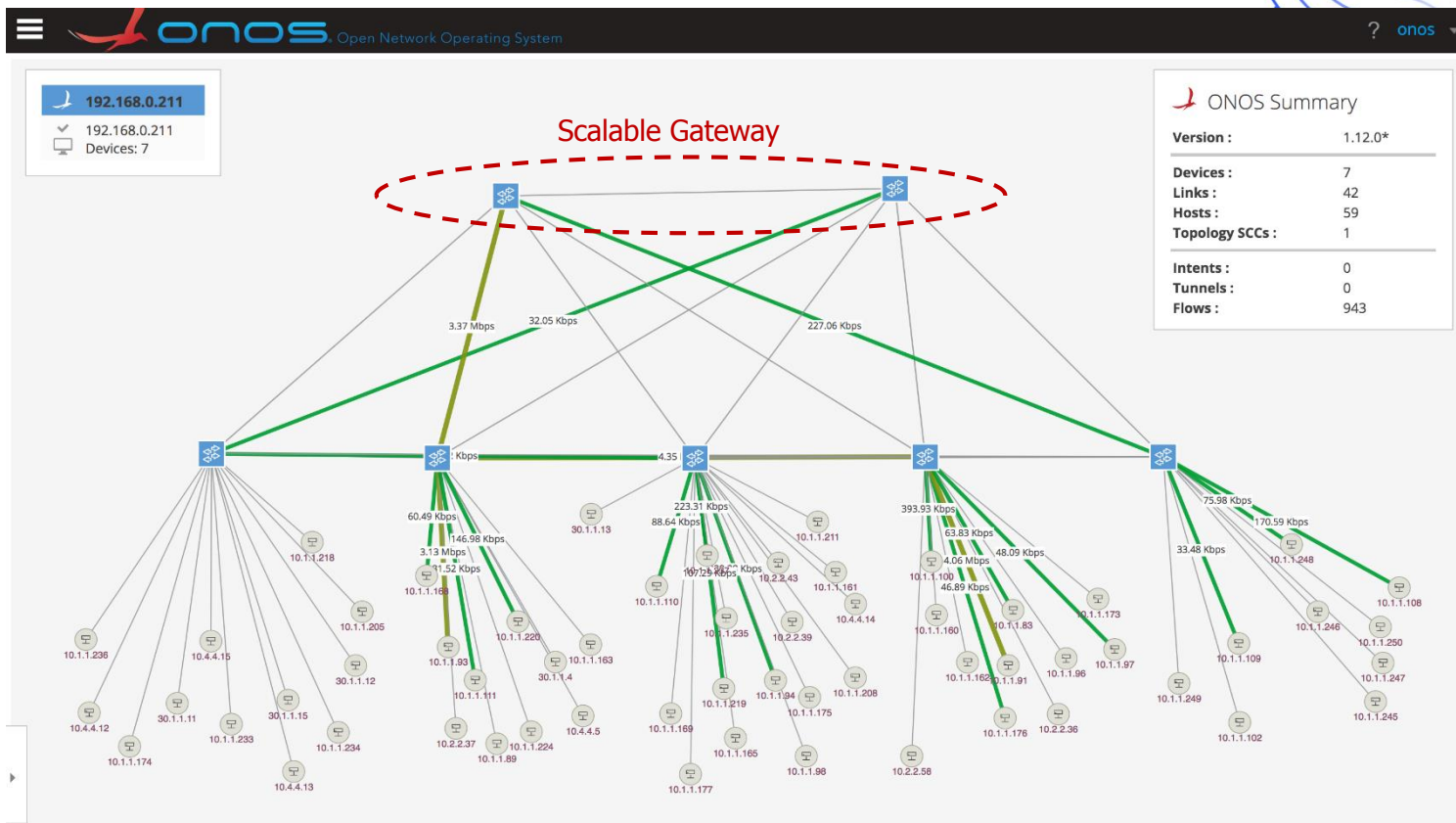
- Integration with OpenStack
 - OpenStack neutron
 - Plugin: modular layer 2 plugin
 - networking-onos
 - ONOS L3 plugin
 - Drivers for LBaaS, FWaaS, etc.
 - SONA
 - Northbound interacts with networking-onos
 - <https://github.com/openstack/networking-onos>
 - Southbound protocol
 - OpenFlow: install/uninstall flow rules
 - OVSDB: configure OpenvSwitch
 - » Add/delete virtual port
 - » Create/delete bridges (e.g., br-int, etc.)



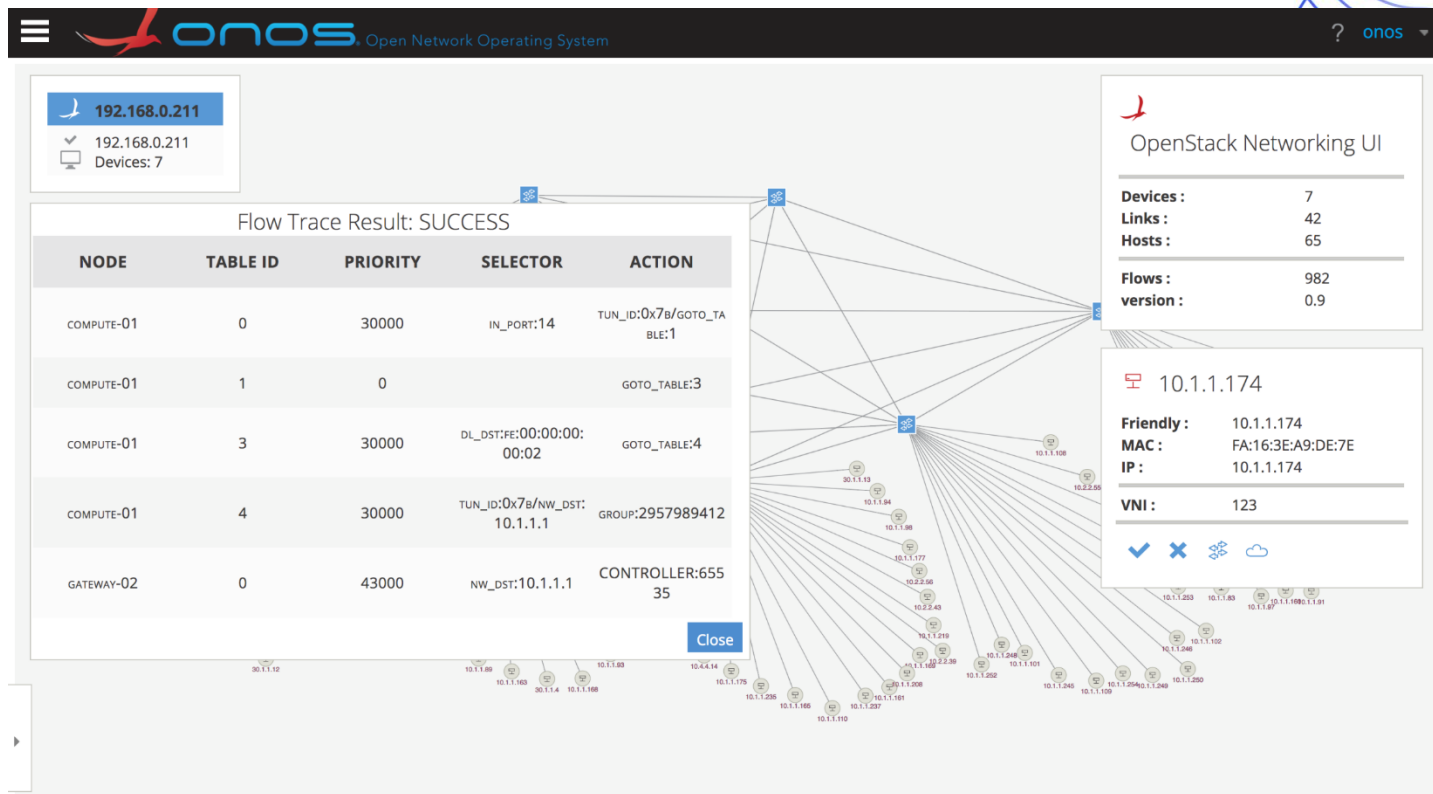
- Direct East-West Communication



- Scalable Gateway



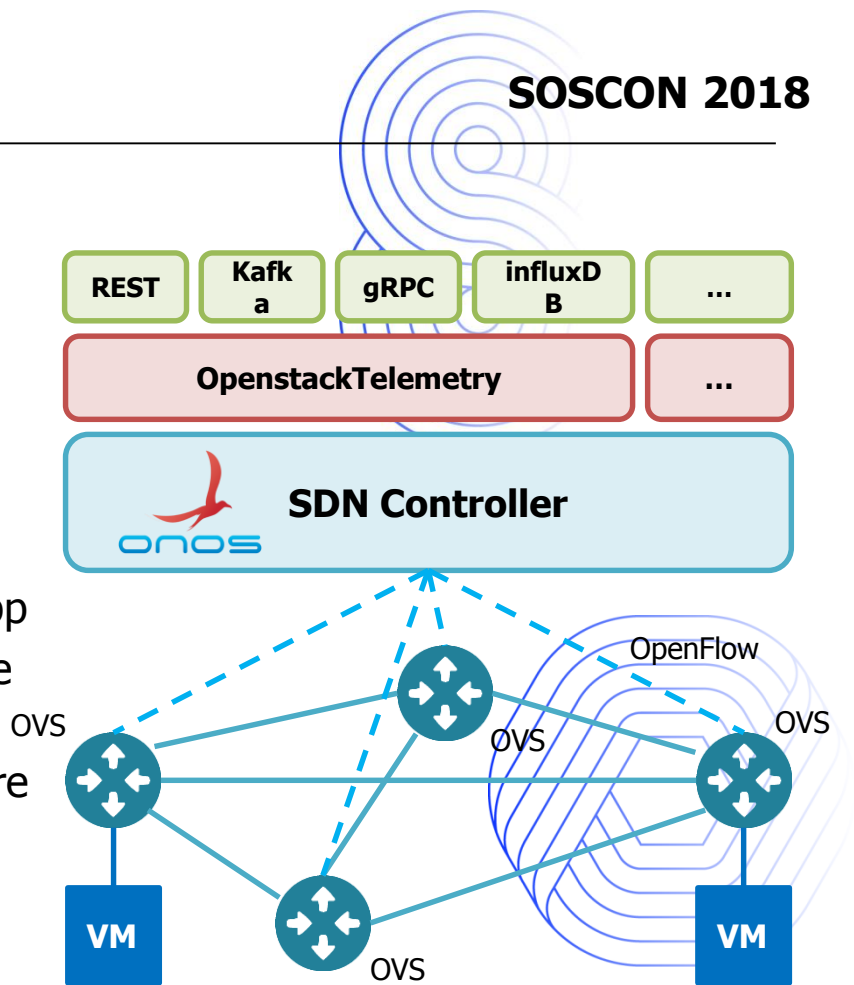
- UI based flow tracer



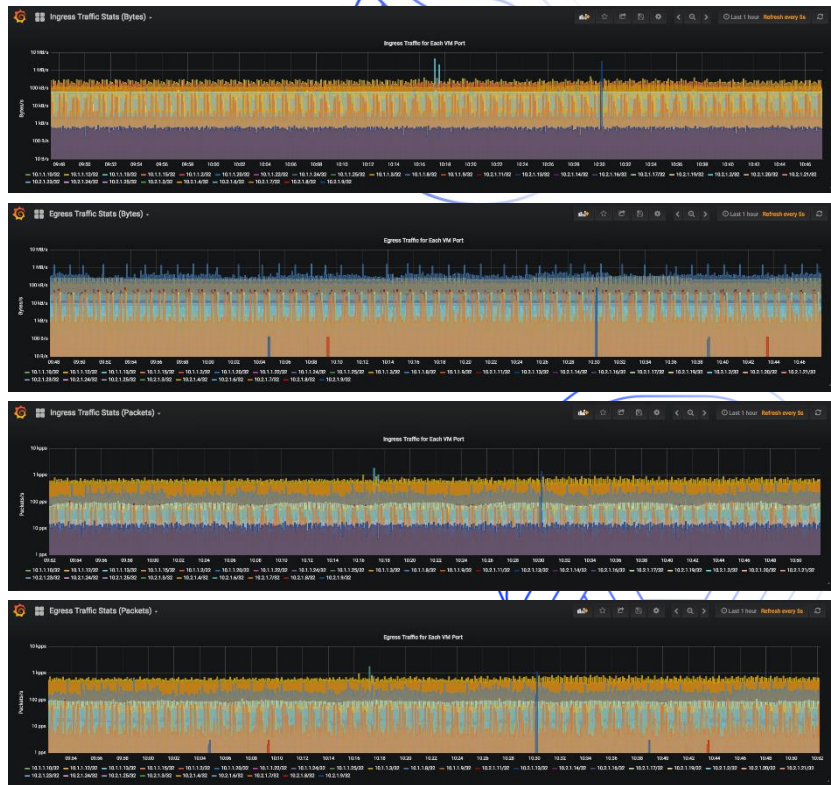
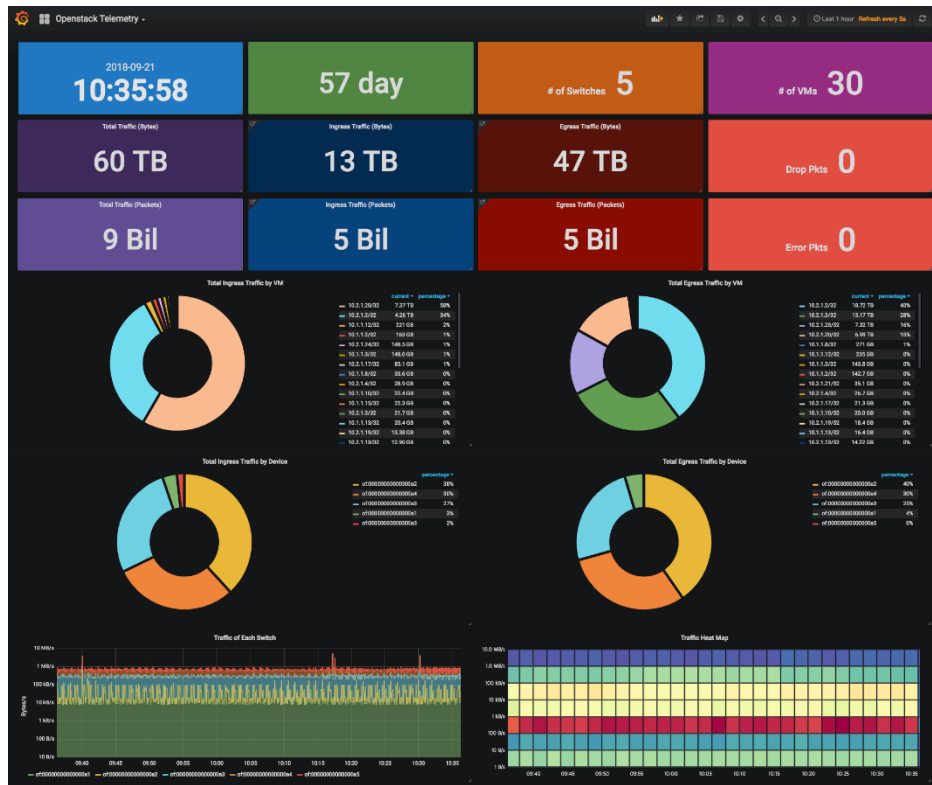
SONA Features

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- vFlow Statistics
 - Collect VM to VM **real-time flow statistic**
 - Stats collection is realized using **OpenFlow** standards protocol (no extra overhead!)
 - **Seamless integration** with monitoring systems through various NBIs
 - REST, Kafka, gRPC, influxDB, etc.
 - Realized through **OpenstackTelemetry** app
 - **No additional software installations** are required at OpenStack side
 - **No additional hardware installations** are required at compute/control node
 - **Open source!**



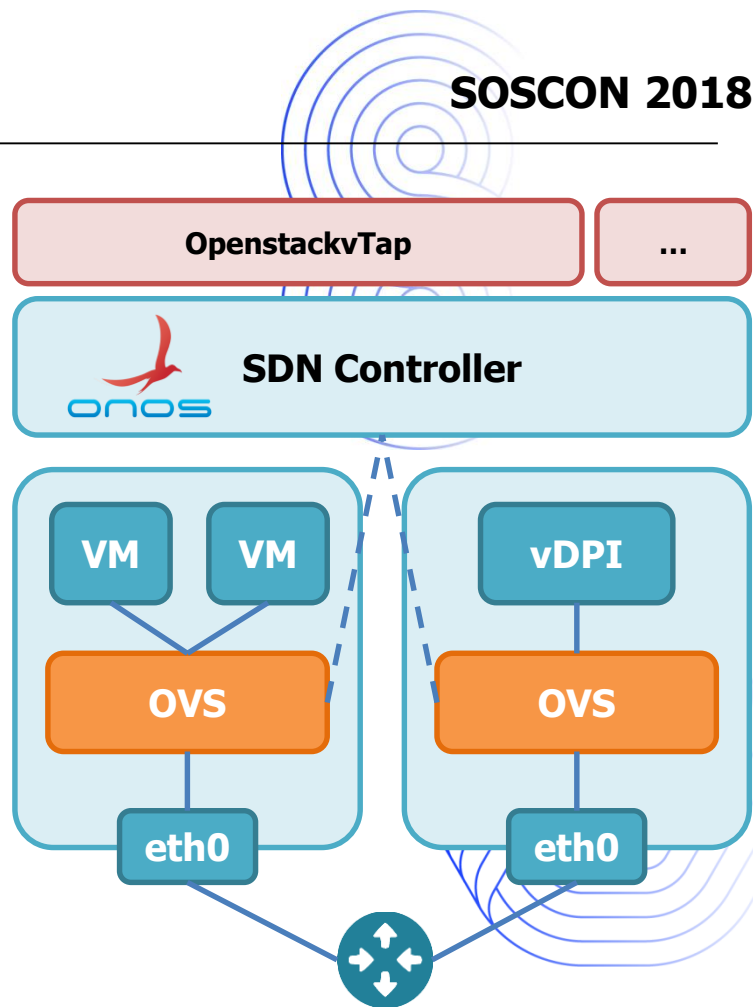
- vFlow Statistics (Grafana UI)



SONA Features

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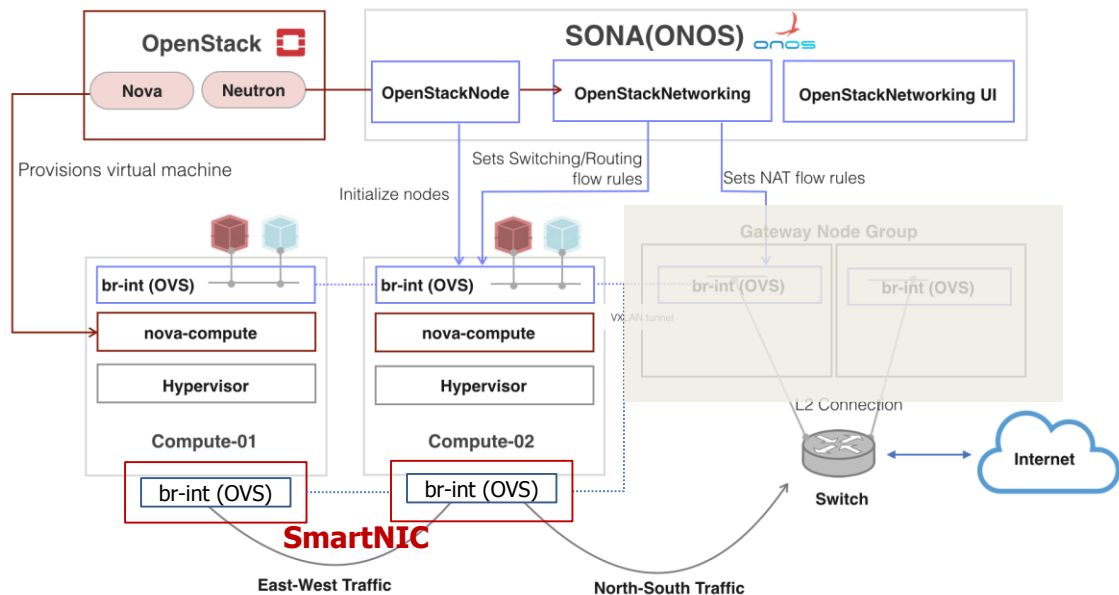
- vTap
 - Mirror VM to VM **real-time traffic**
 - Leverage OVS's traffic mirroring feature
 - Two traffic mirroring schemes
 - Port-based: specific to OVS
 - Flow-based: uses OpenFlow group table
 - Realized through **OpenstackTelemetry** app
 - **No additional software installations** are required at OpenStack side
 - Further **improve** the mirroring performance by leveraging data plane acceleration technology
 - **Open source!**



SONA Features

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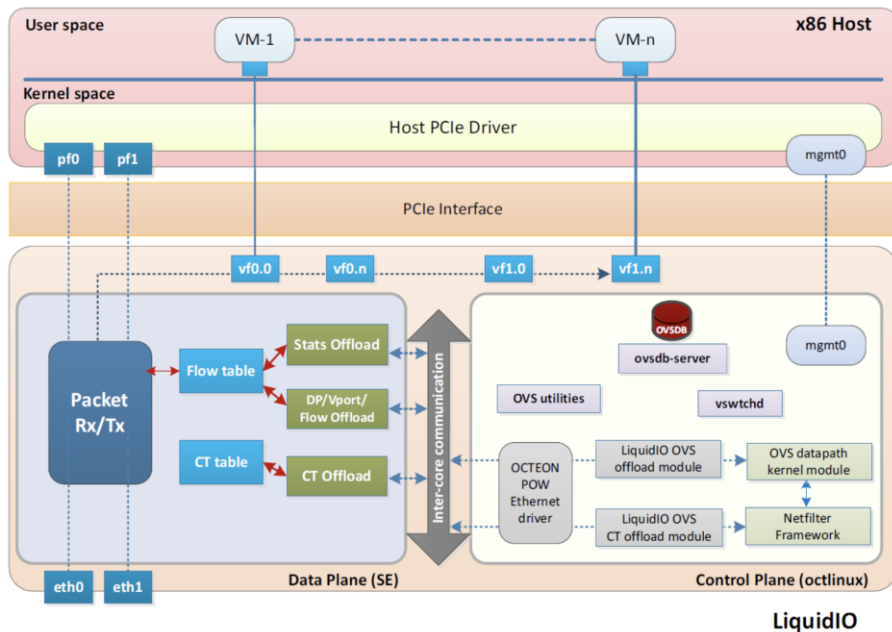
- Smart NIC Gateways
 - Replaces network node with Smart NIC



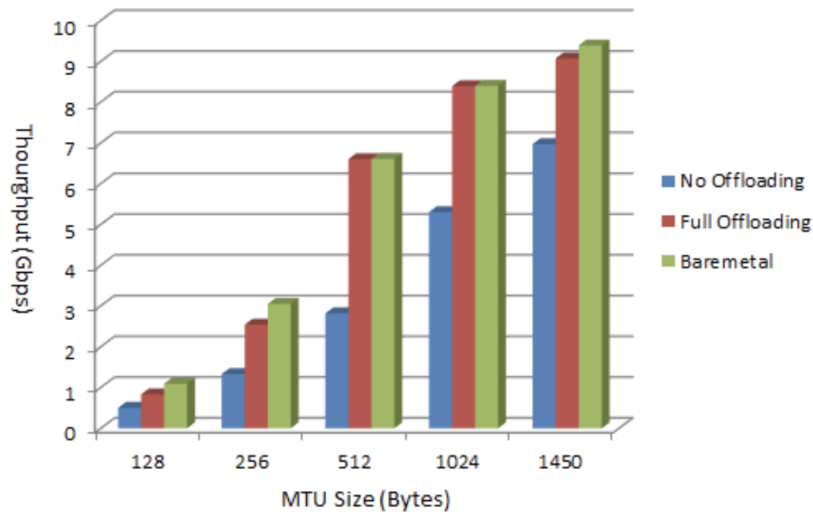
SONA Features

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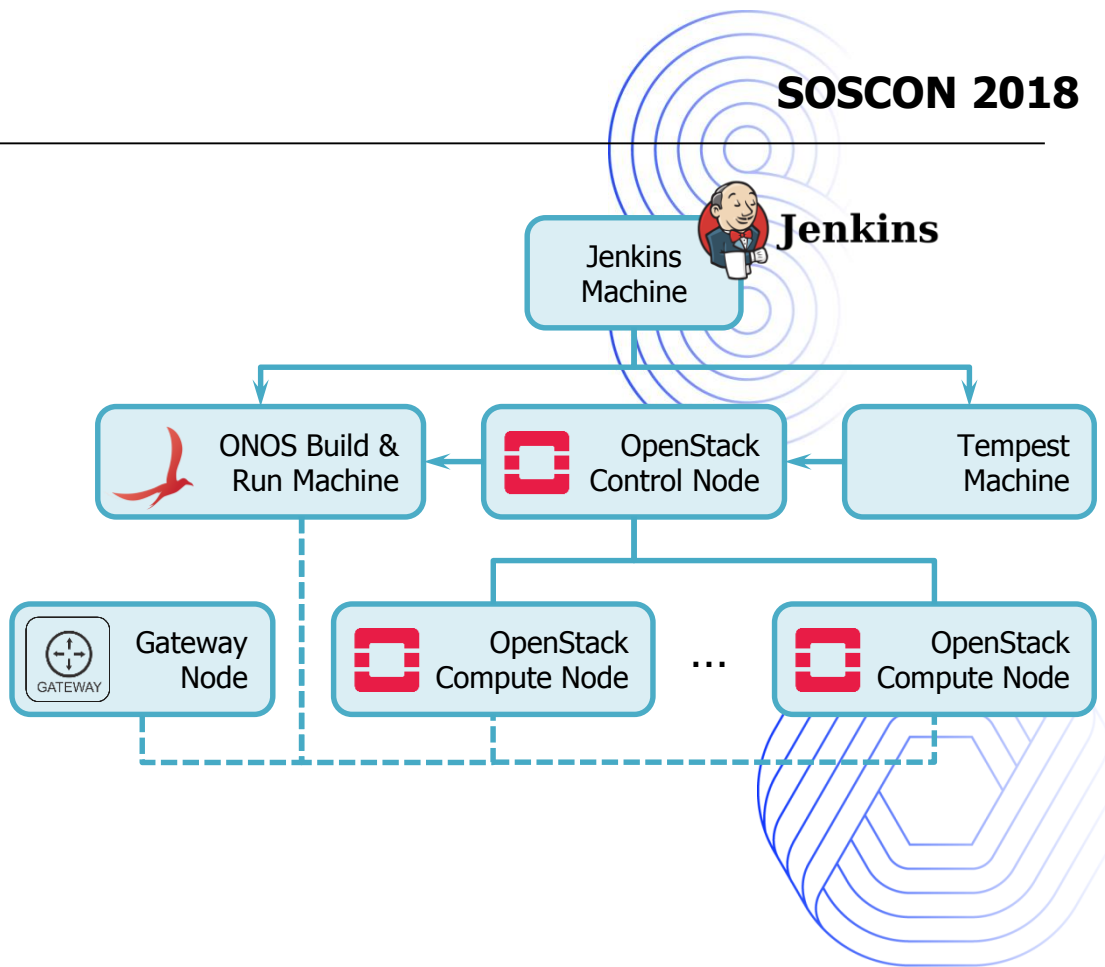
- Smart NIC Gateways



<Liquid I/O Full Offloading Architecture>



- Continuous Integration (CI)
 - Fetch latest SONA source
 - Build against stable ONOS
 - Run unit test
 - Package & deploy SONA
 - Run integration test
 - Notify the CI result via slack
 - Deliver SONA container



Deployment using Kubernetes

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SONA Armada Chart

SONA helm Chart

ONOS yaml file

ONOS

ONOS

ONOS

yaml file

Cluster
manager

OVS helm Chart

yaml file

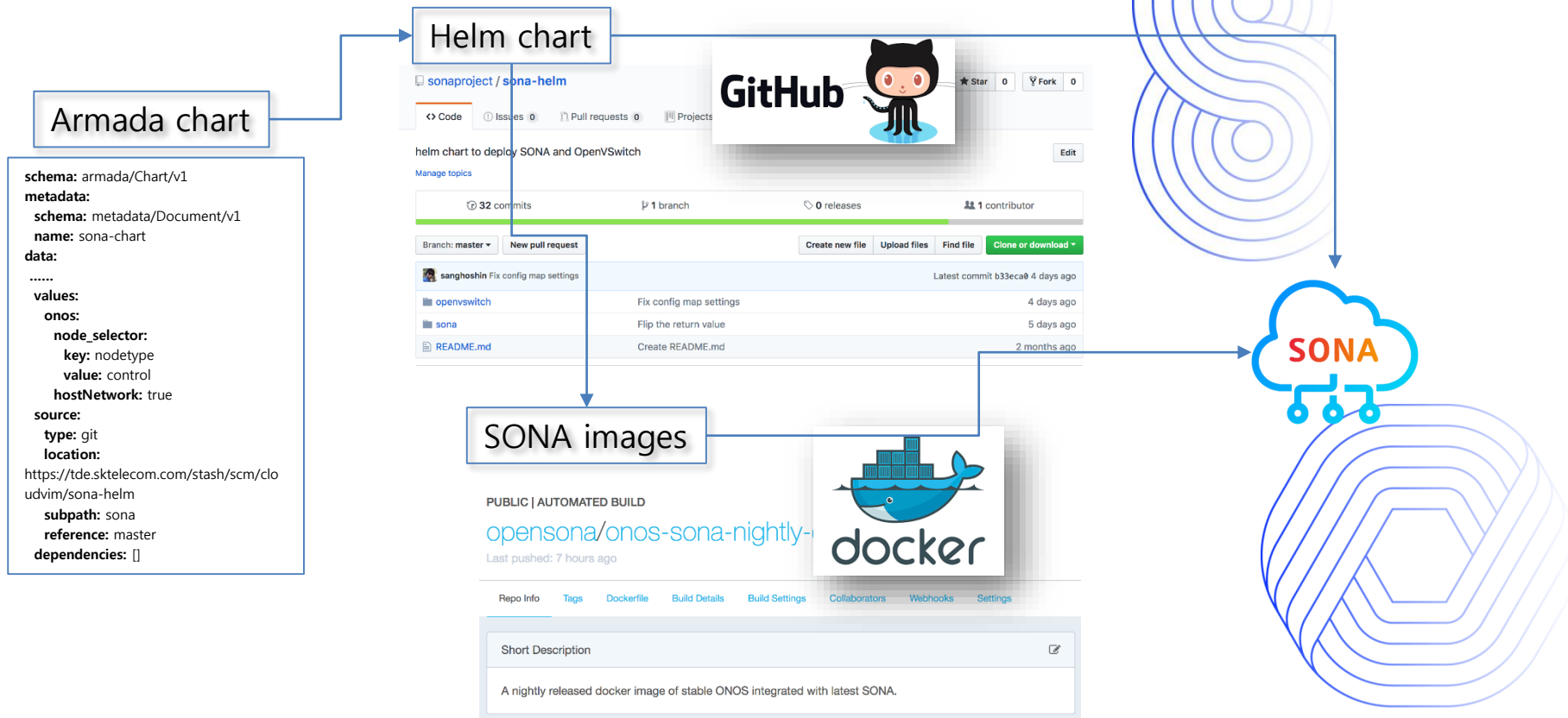
OVS switch

yaml file

OVS DB

Deployment using Kubernetes

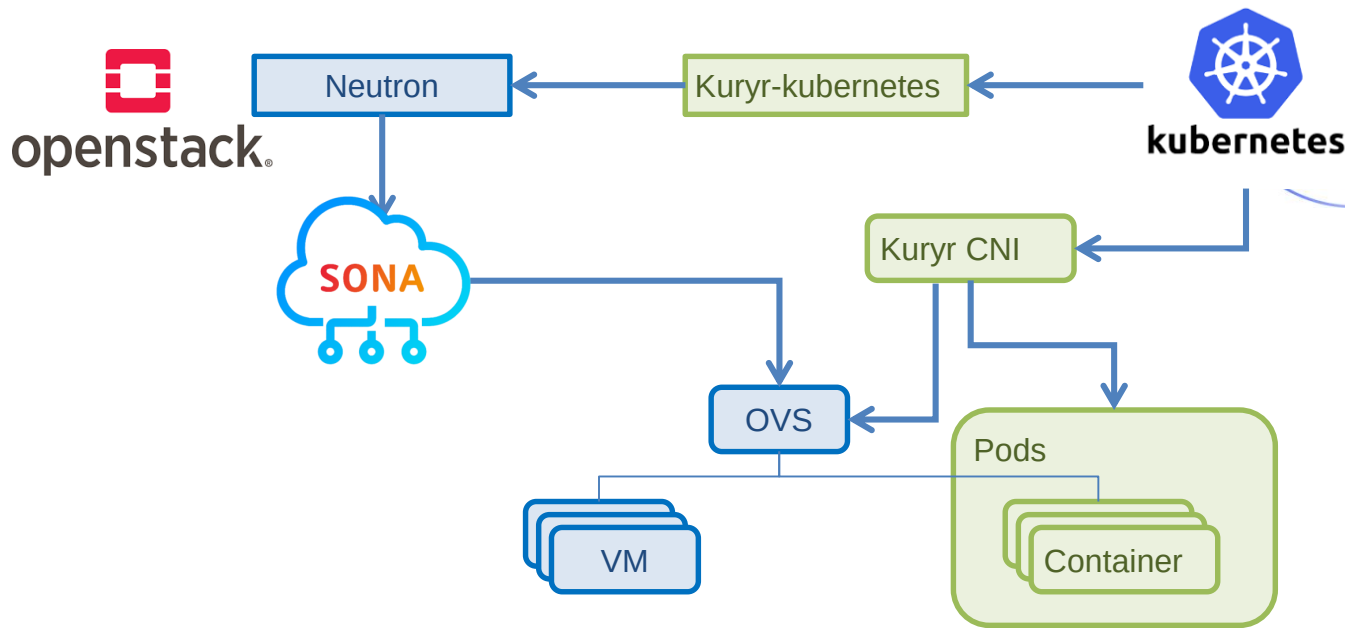
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Kubernetes Network Management

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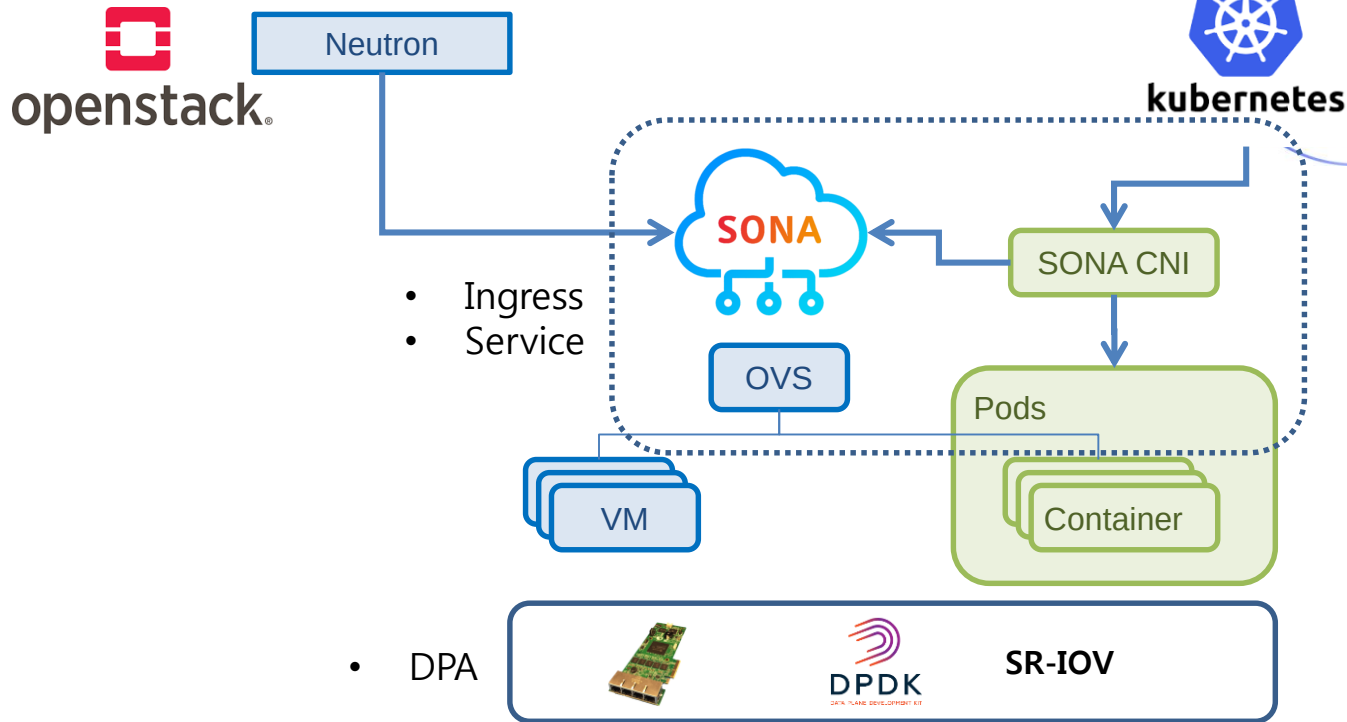
- Present



Kubernetes Network Management

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- Future



- **Open Source Strategy**

- 100% open source
- 136 commits were upstreamed in 2018 (2018.01 ~ now)
 - <https://gerrit.onosproject.org/#/q/project:onos+branch:master+topic:sona>

- **Helps from Community**

- More tests and feedback from community
- Code contributions are always welcomed :)

- **Wiki**

- <https://wiki.onosproject.org/display/ONOS/SONA%3A+DC+Network+Virtualization>

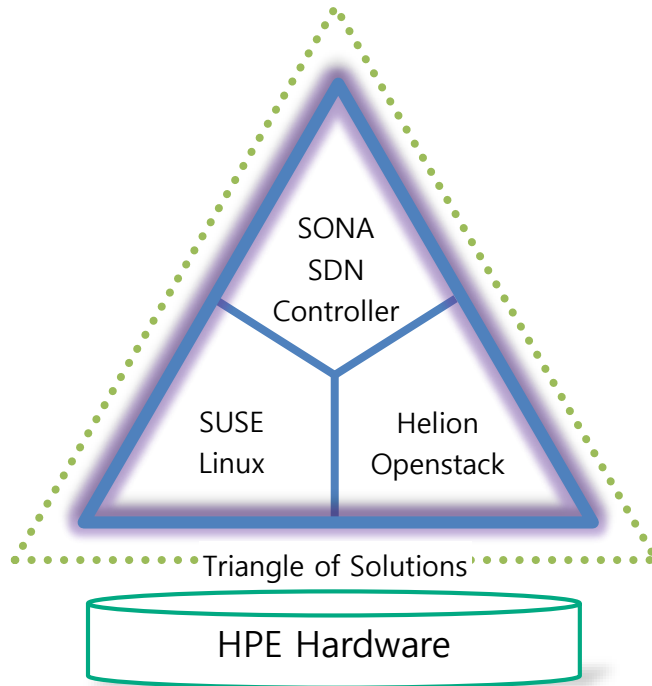
- **Slack Channel**

- #sonaproject @ onosproject.slack.com

Helion Openstack and SONA

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- SONA is available on Helion/SUSE OpenStack **COMMERCIALY**



SKT driven SDN controller

Years of Telco Experience melted in to SONA

Production ready Helion Openstack

Deployed to many customers

Proven Management and Life Cycle

HOS supporting all types of MNG workflow

Stable HPE Hardware

Stable performance with hardware support

- SONA (Simplified Overlay Networking Architecture)
 - SDN based OpenStack & Kubernetes Network Management Solution
 - Direct East-West Communication
 - Scalable & Smart NIC Gateways
 - vStatistics
 - vTap
 - CI/CD pipeline
 - Deployment using Armada & Helm Chart
 - Now available on Helion/SUSE OpenStack commercially
 - But, 100% Open Source



THANK YOU

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