

NIC 기술원 SDI Tech. Lab.

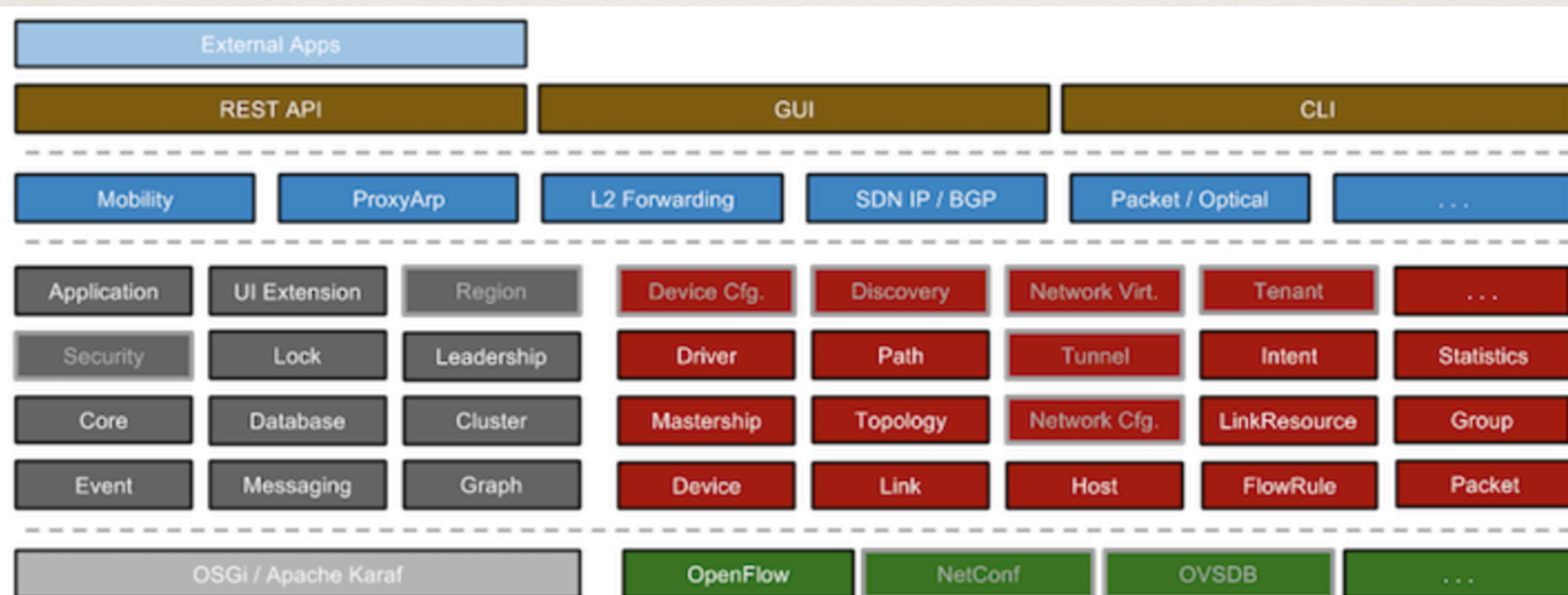
ONOS-based Network Optimization

발표자 소개

- ❖ SK Telecom NIC(Network IT Convergence) Lab. @ SKT R&D Center
- ❖ 10 years of expertise on telecommunication area (LTE / WCDMA Core Network)
- ❖ An ONOS Open Source Contributor
- ❖ An ONOS / CORD Ambassador
- ❖ A member of ONOS / CORD Virtualization Brigade

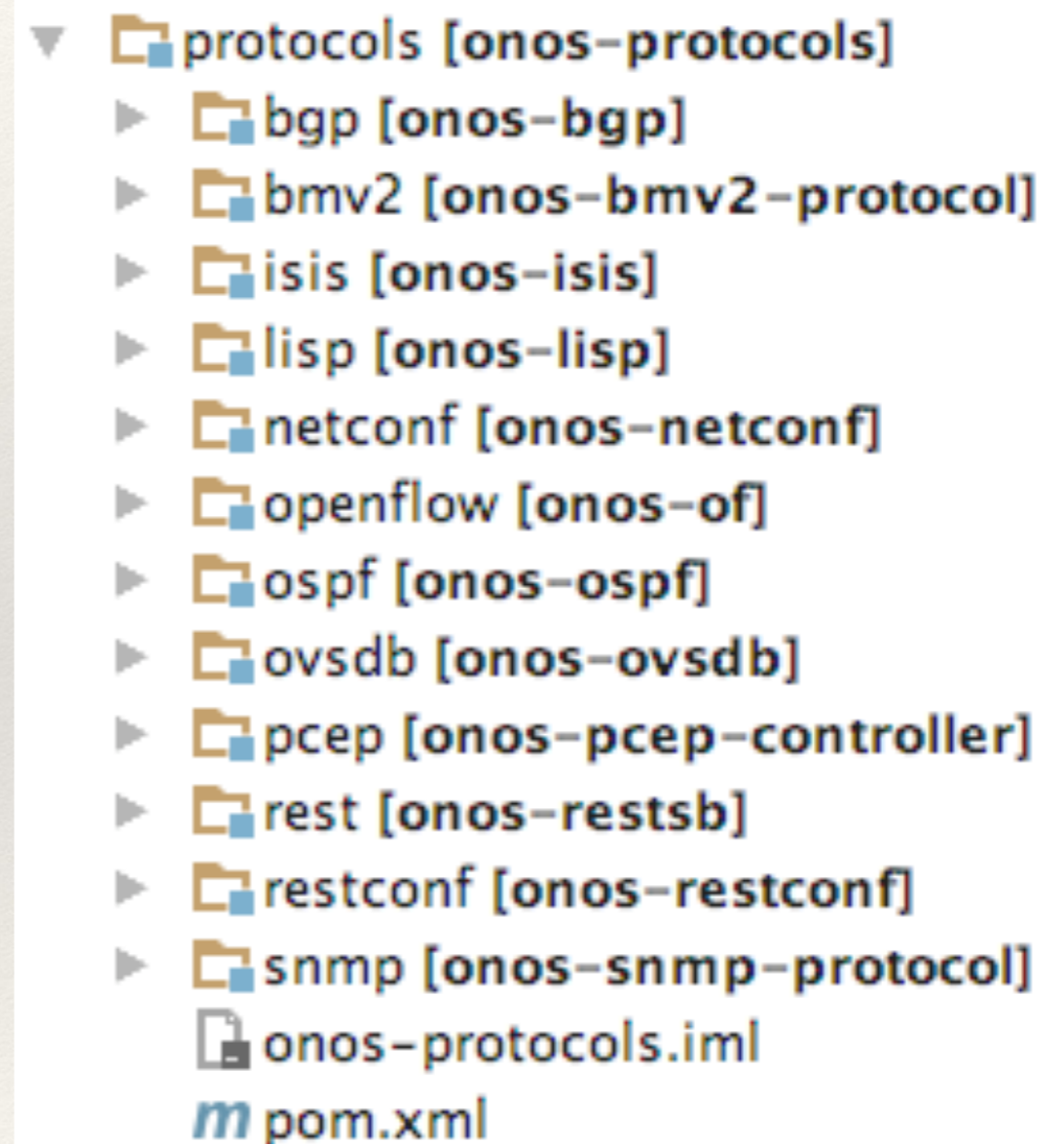
ONOS Blackbird System Components

- ❖ Started with OpenFlow protocol support (Born to be an OpenFlow Controller)
- ❖ Hard to support other SB protocols (Netconf, REST etc.)



In ONOS Ibis..

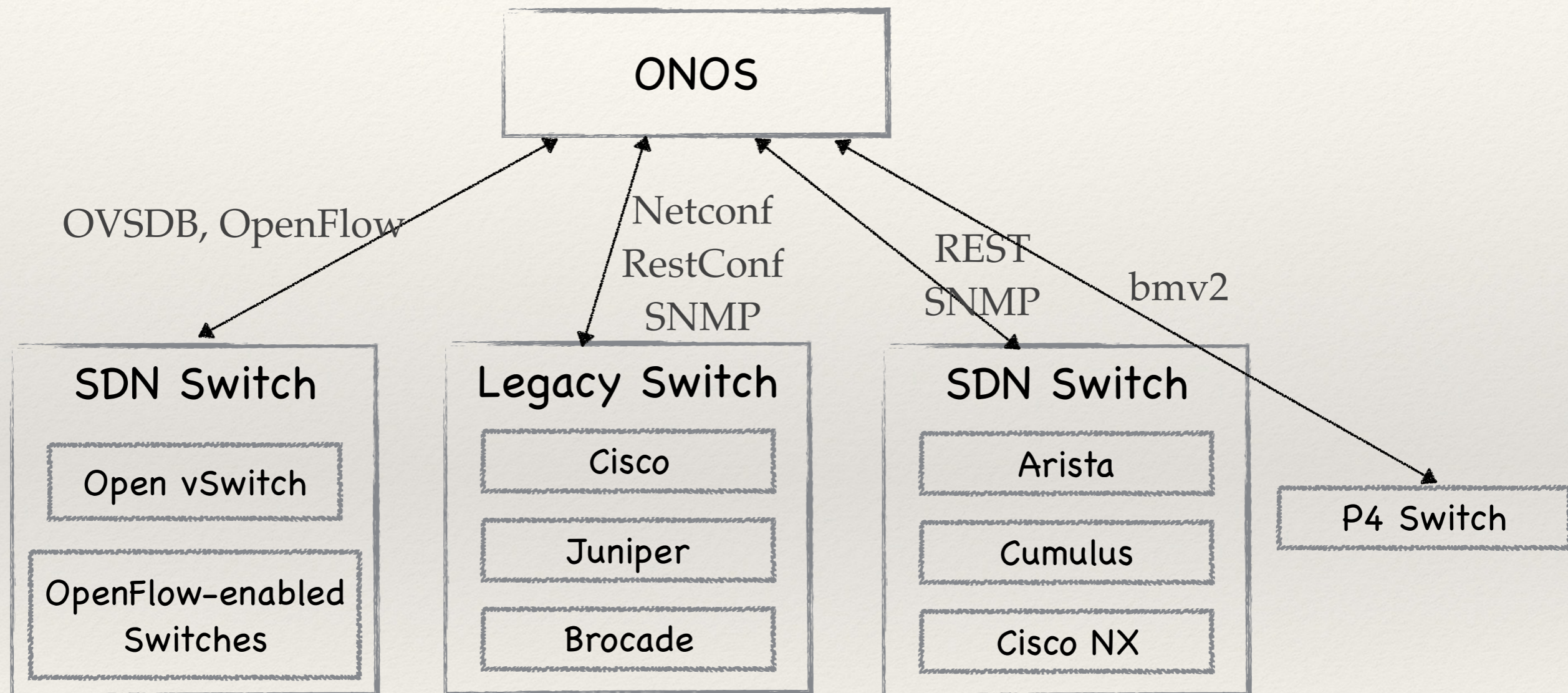
- ❖ OVSDb - Openflow switch configuration (tunnel, port setup etc.)
- ❖ BGP, OSPF, isis - to Make ONOS as vRouter
- ❖ bmv2 - P4 support
- ❖ Netconf / Restconf - switch configuration
- ❖ SNMP
- ❖ REST



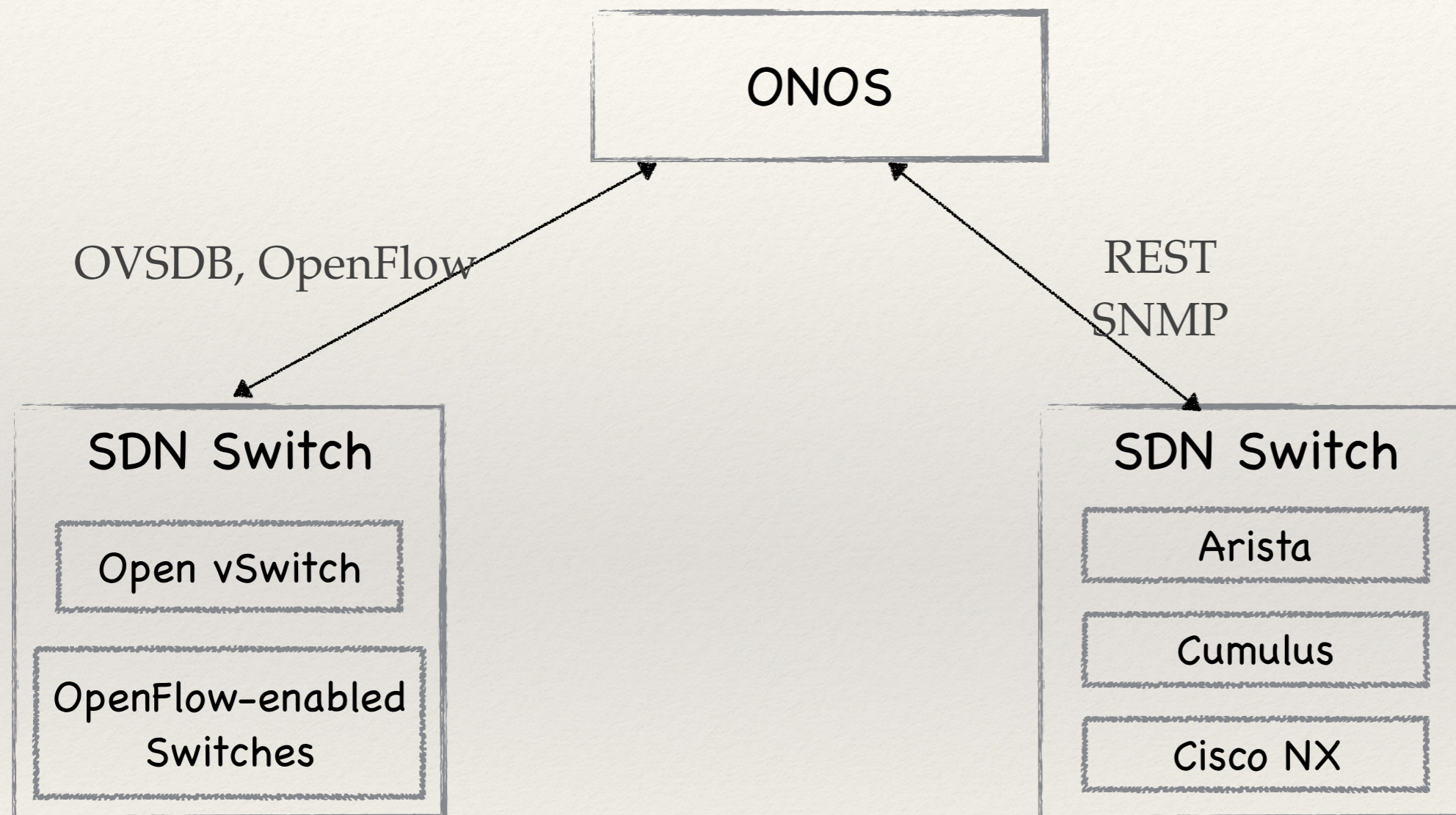
A screenshot of the ONOS Ibis directory structure, showing a tree view of folders and files. The root folder is 'protocols [onos-protocols]', which is expanded to show its sub-folders: 'bgp [onos-bgp]', 'bmv2 [onos-bmv2-protocol]', 'isis [onos-isis]', 'lisp [onos-lisp]', 'netconf [onos-netconf]', 'openflow [onos-of]', 'ospf [onos-ospf]', 'ovsdb [onos-ovsdb]', 'pcep [onos-pcep-controller]', 'rest [onos-restsb]', 'restconf [onos-restconf]', and 'snmp [onos-snmp-protocol]'. Below these folders are two files: 'onos-protocols.iml' and 'pom.xml'.

```
▼ protocols [onos-protocols]
  ► bgp [onos-bgp]
  ► bmv2 [onos-bmv2-protocol]
  ► isis [onos-isis]
  ► lisp [onos-lisp]
  ► netconf [onos-netconf]
  ► openflow [onos-of]
  ► ospf [onos-ospf]
  ► ovsdb [onos-ovsdb]
  ► pcep [onos-pcep-controller]
  ► rest [onos-restsb]
  ► restconf [onos-restconf]
  ► snmp [onos-snmp-protocol]
  onos-protocols.iml
  pom.xml
```

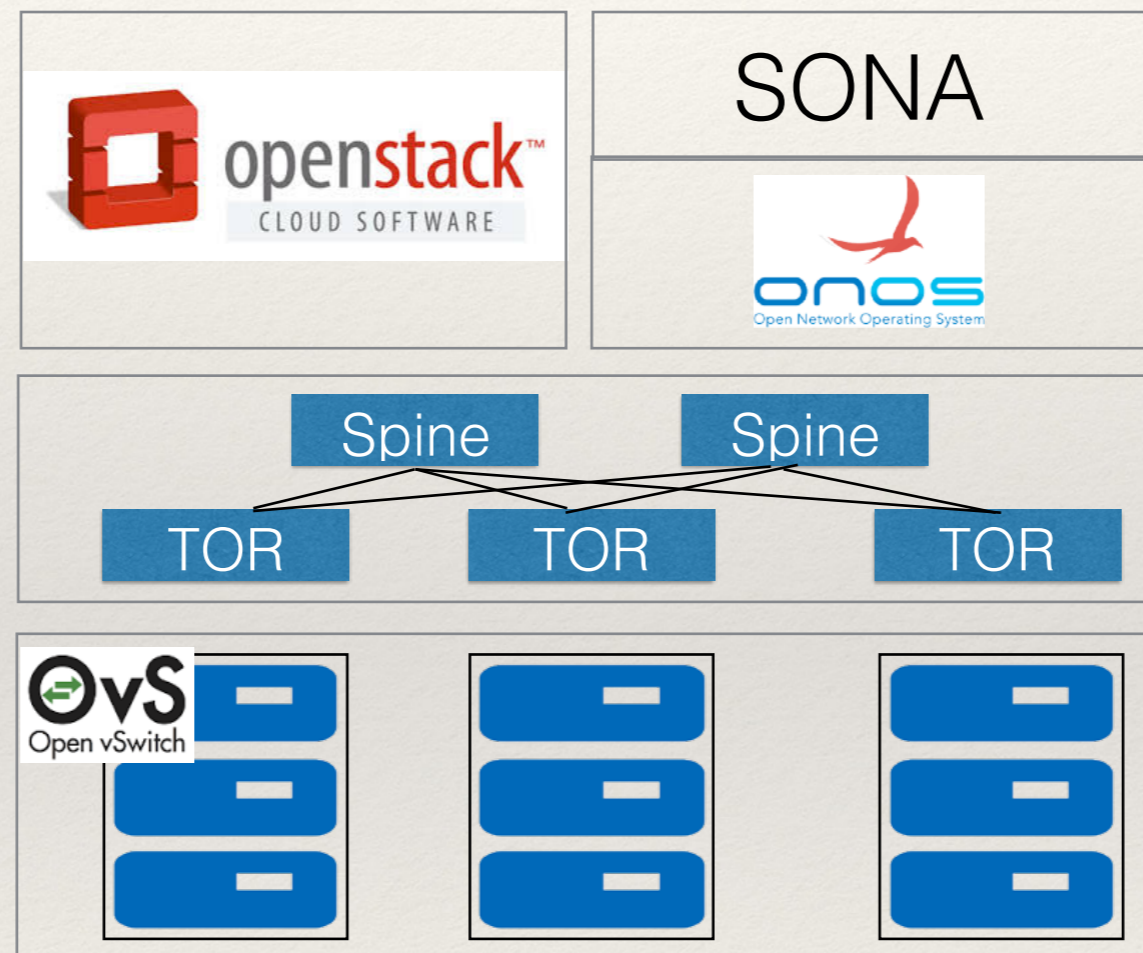
ONOS-based Switch Control



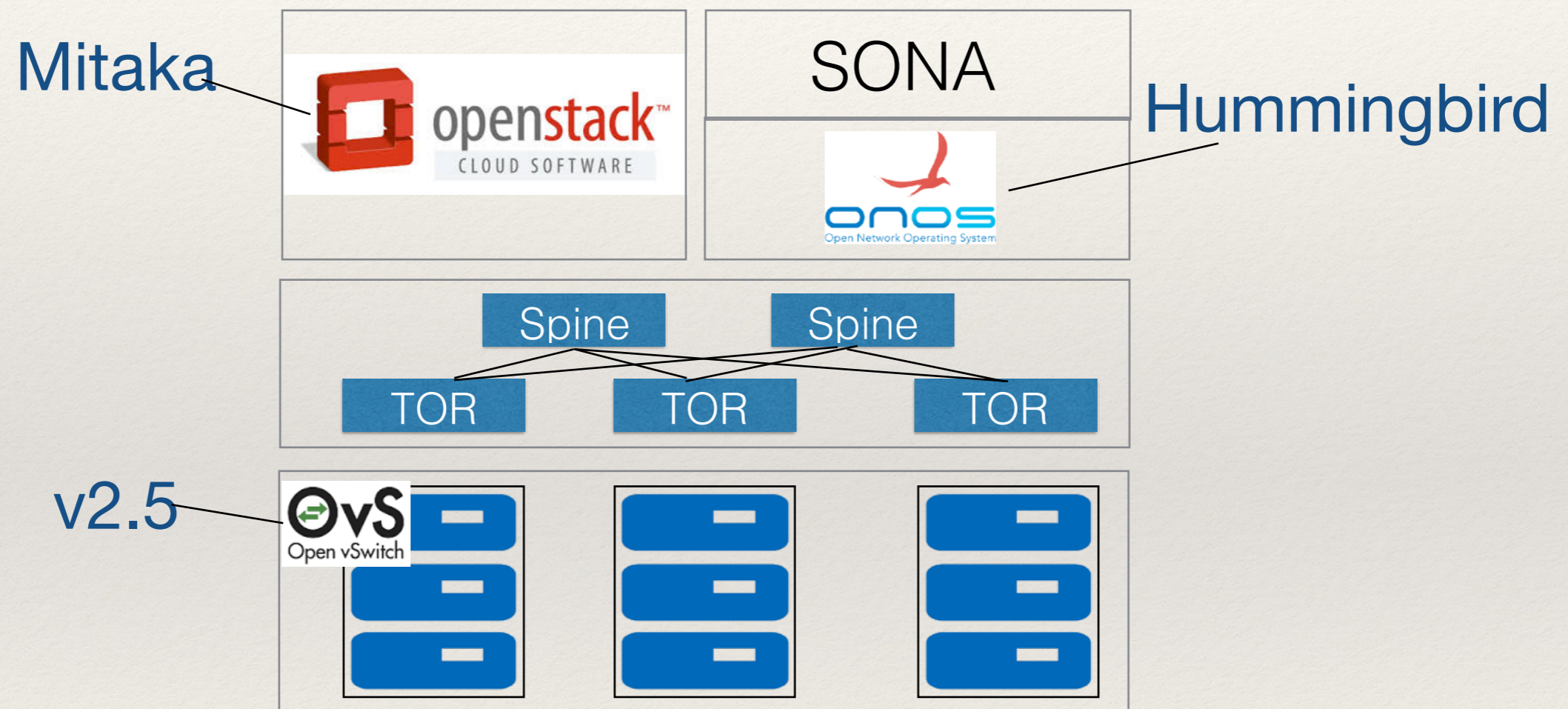
SKT Uses



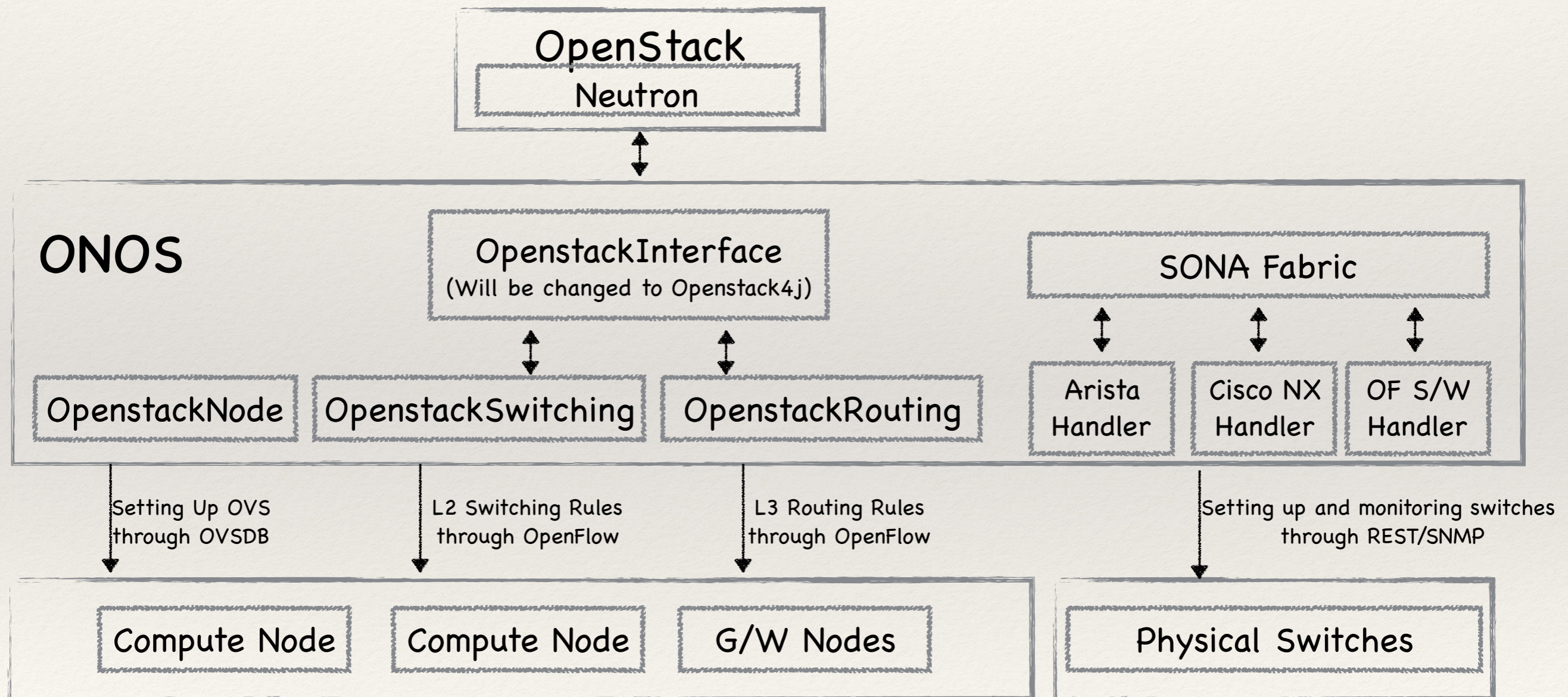
SONA Architecture



SONA Architecture



Application Architecture



SONA Features

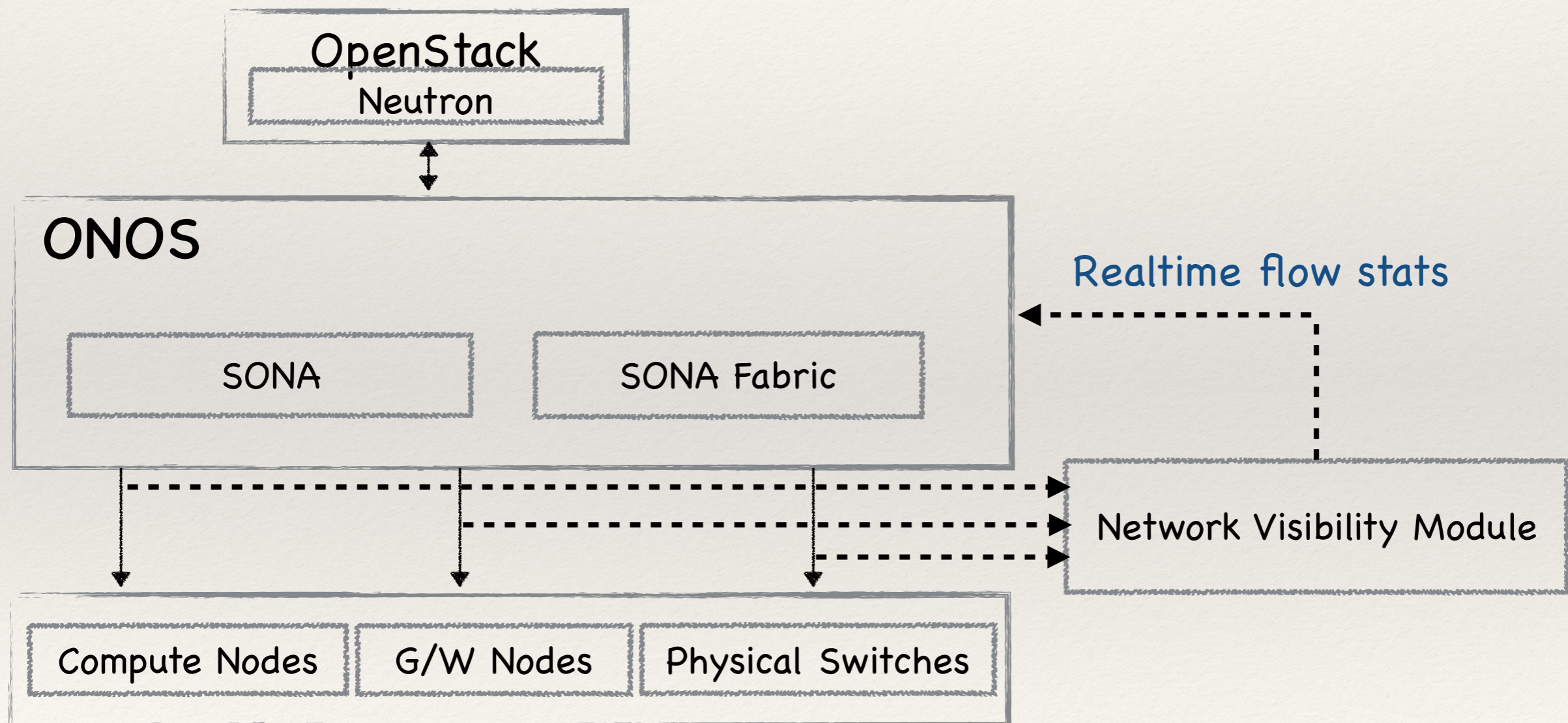
- ❖ VxLAN based multi-tenancy support
- ❖ Scalable gateway
- ❖ Agentless
- ❖ Optimised east-west traffic
- ❖ Simple bridge structure on c-node
- ❖ OVS acceleration

SONA Fabric Features

- ❖ Supported Switch
 - Arista, Cisco NX, Brocade
 - Edge Core
- ❖ Configuration Automation (with one small config file)
- ❖ L3-based Leaf/Spine networking (to maximize link utilization)
- ❖ Traffic engineering
- ❖ Fast failure detection & recovery

Integrating Together

- ❖ Consolidated physical/virtual network based on realtime flow stats



Thank you