



# White Box SDN and Challenges

Operational SDN Workshop

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# Pica8: Company Overview



## White Box SDN



- Enable SDN revolution with white-box switches
- Founded in 2009; first shipment in Q1, 2012
- Global footprint: 65+ employees, Silicon Valley HQ; Beijing R&D
- Over 400 customers and counting, distributed to more than 35 countries



# Why SDN?

- Network is becoming more and more important in all fields
  - Cloud Data Center – big data, SaaS
  - Carriers – 4G, Wireless, WAN
  - HPC – clustering, storage
- Each application requires slightly different network function
  - One size does not fit all
- We need SDN, but what is it?
  - No clear definition
  - What is the key of SDN – flexibility, programmability, customization?
  - Every vendor has its own interpretation

# Why OpenFlow?

- OpenFlow is the only South-Bound API defined as open standard
  - Multi-vendor support at the hardware and virtual switch layer
  - Multi-vendor support at the application layer
- “Multi-vendor” support is important
  - Maximize the flexibility of application customization
  - Facilitate fast evolution and maturity of hardware
  - No vendor lock in

# Why White Box?

- “Multi-vendor” support is important
- Allows hardware vendors to focus on
  - Drive down the cost
  - Scale the operation
  - Accelerate the hardware evolution
- Allows software vendors to focus on
  - Create new features
  - Optimize features
  - Drive down users’ OpEx

# OpenFlow is Not Perfect?

- Yes, it is a new technology
  - And it is evolving fast
- No strong enforcement of interoperability?
  - Too many extension, such as TTP
  - Some features are not supported by all hardware
- Not mature enough for production?
  - Mature enough for some application, but not for all applications
  - Missing some basic tools
    - Image management, configuration management, etc.
  - Many operation requirements are not defined in the OF spec
    - Visibility of hardware status
    - Visibility of the traffic status
    - Debugging and trouble shooting

- Select applications carefully
  - Start with an application that is not mission critical before migrate to mission critical network
  - Select an application that significant customization comes with big pay back, such as traffic optimization for HPC cluster
- Keep interoperability in mind
  - Bet on open standard
  - No vendor lock-in
  - Commitment for evolution is critical
- Plan for OpenFlow
  - Avoid proprietary extensions. Stay with the standard.
    - Even if hardware does not support certain features now, it will improve fast
  - Leverage server tools for EMS – make sure your OS is Linux based
  - Leverage open systems to program your own management tools
    - Collecting your own counters
    - Create efficient API to manage the switch – No more SNMP