Alibaba DC Network Evolution with Open SONiC and Programmable HW

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Alibaba Group
Main Drivers for Alibaba DC Network Evolution

Performance, Cost, Feature Velocity, Reliability
Smart Operation

Smart Operation = DATA+ DATA Analysis
From Black to White

Traditional Switch: black box, low visibility

Limited Data: operational data only, very limited user flow information, operation inefficiency

Network Transparency

Alibaba Open Switch

SONiC+ Programmable HW chip

Per flow data: path, latency, rate; buffer snapshot, packet drop and reasons ...

latency  | path  | buffer  | ...

switch

switch
Smart Operation: Self-driven Network

From Reactive to Proactive

- Reactive to application packet loss and SLA changes
- Traditional troubleshooting by network engineer
- Black box switch, vendor specific debug

- Proactive to packet loss and SLA change
- Per-flow data collection and big data analysis, full automation
- Open and Transparency

White Box
Community Participation

• Announce joining SONiC@OCP community at ONS 2017
• Expand ODM and ASIC vendor SONiC@OCP support
• Lead SONiC adoption in China
• Major contributor to SONiC
## Alibaba Contributions to SONiC Community Release

Quote from SONiC community 201712 release notes

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<th>Release</th>
<th>Release Date</th>
<th>SAI version</th>
<th>Features Included</th>
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<td>12/15/2017</td>
<td>1.0</td>
<td>SONiC Support SAI 1.0</td>
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- Special thanks to
  - Alibaba team for contribution on: VLan Trunk, TACACS+, MTU Setting, LACP Fallback
  - Mellanox team for contribution on Dynamic ACL Upgrade
  - LinkedIn and community on meticulous design reviews
  - Microsoft team for contribution on: SONiC Support for SAI 1.0, Fast Reload, ConfigDB framework and SWSS Unit Test Framework
  - ASIC partners to provide SAI 1.0 support
  - Platform partners to provide platform driver support
SONiC Development @Alibaba

• Highlights besides features contributed to community
  • Lightweight server dual home solution
  • 25G/100G RDMA support
    • RoCE v2 based RDMA
    • DC-QCN
  • BGP enhancements
  • gRPC based network monitoring
    • Buffer status, Device healthy subscription
  • INT based network telemetry
    • Intelligent Trigger
    • Upstream report including Flow tracking, Latency, path change detection based upstream report
    • Local report with packet mirror on drop, Queue depth
    • Silent packet drop trouble shooting
SONiC Deployment @ Alibaba

• Advanced network telemetry deployment experience
  • Challengers: inter-operability, vendors, chips, standards (IETF, P4 spec)
  • The economic aspect to deploy INT based network telemetry

• Deployment plan
  • Massive deployment plan
  • We fully commit