Open. Together.
Nexus Cloud Scale Telemetry
Real-time Telemetry and Analytics at Scale

Tim Stevenson, Distinguished TME, Cisco
Ashoka Kallappa, Principal Engineer, Cisco
Avinash Srivenkatesh, Software Engineer, Cisco
Cisco Nexus SAI Overview

Platform Module

SONiC

Cisco ASIC SDK

Cisco ASIC

Fan, EEPROM, PSU

Optics, Buses...
## Nexus SONiC Support

<table>
<thead>
<tr>
<th>Q1 2018</th>
<th>Q2 2018</th>
<th>Q3 2018</th>
<th>Q4 2018</th>
<th>Q1 2019</th>
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<td><strong>Cisco SAI 4.1</strong>&lt;br&gt;• SONiC Ver: 201712&lt;br&gt;• SAI 1.0.4&lt;br&gt;• Cisco SDK 7.0(3)I4(5)</td>
<td><strong>Cisco SAI 4.2</strong>&lt;br&gt;• SONiC Ver: 201803&lt;br&gt;• SAI 1.2&lt;br&gt;• Cisco SDK 7.0(3)I4(5)</td>
<td><strong>Cisco SAI 4.3</strong>&lt;br&gt;• SONiC Ver:201807&lt;br&gt;• SAI 1.3&lt;br&gt;• Cisco SDK 7.0(3)I7(3)</td>
<td><strong>Cisco SAI 4.4</strong>&lt;br&gt;• SONiC Ver: 201811&lt;br&gt;• SAI 1.3&lt;br&gt;• Cisco SDK 7.0(3)I7(3)</td>
<td><strong>Cisco SAI 4.5</strong>&lt;br&gt;• SONiC Ver: 201811&lt;br&gt;• SAI 1.3+&lt;br&gt;• Cisco SDK 7.0(3)I7(3)</td>
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### Supported Platforms
- Nexus 9232C (Q1CY18)
- Nexus 92304QC (Q1CY18)
- Nexus 9336C-FX2 (Q3CY18)
- Nexus 9364C (Q3CY18)
- Nexus 3232C (Q1CY18)
- Nexus 34180YC (Q3CY18)
- Nexus 3464C (Q4CY18)

### On the Roadmap
- Nexus 9348GC (Q2CY19)
- Nexus 9332C (Q3CY19)
- Nexus 93240YC-FX2 (Q3CY19)
Cisco Cloud Scale Silicon

Family of ASICs custom-built by Cisco
Share common characteristics, along with use-case-specific optimizations
Used to build both TOR and modular systems
• Nexus 9300-EX/FX/FX2, Nexus 9332C/9364C (TOR)
• Nexus 9500 EX/FX (modular)
Network Telemetry Use Cases

**Network Health**
- CPU and memory utilization
- Forwarding table utilization
- Protocol state and events
- Environmental data

**Network Performance**
- Interface utilization
- Buffer monitoring
- Microburst detection
- Drop event correlation

**Path and Latency Measurement**
- End-to-end visibility
- Path tracing over time
- Flow latency monitoring

**NETWORKING**
Cisco Cloud Scale Hardware Telemetry

Flow Table (FT)
- Captures full data-plane packet flow information, plus metadata

Flow Table Events (FTE)
- Triggers notifications based on thresholds / criteria met by data-plane packet flows

Streaming Statistics Export (SSX)
- Streams ASIC statistics based on user configuration

Data-Plane Flow Data
Nexus 9300-EX/FX/FX2
Nexus 9500 EX/FX

ASIC State
Nexus 9300-FX2, Nexus 9332C/9364C
Streaming Statistics Export (SSX)

Streams ASIC statistics at rapid cadence based on user config (can be sub-second)

- Egress-Q-Drops
- Egress-Q-Peak
- Egress-Q-Depth

Direct hardware export

Supported on 9300-FX2 and Nexus 9336C/9364C
SSX Configuration via DTEL

- Leveraging SAIDTEL APIs to program SSX functions on Cloud Scale switch running SONiC
- SSX represents a superset of SAIDTEL functionality
- SAIDTEL is extended to introduce new functionality to support SSX (interval based export)
- Additional SSX functions can be exposed once Telemetry specification finalized
Demo – SSX with SONiC
Open Standards/Open Source Reference

SAI Data Plane Telemetry API