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Advanced Telemetry in SAI/SONiC

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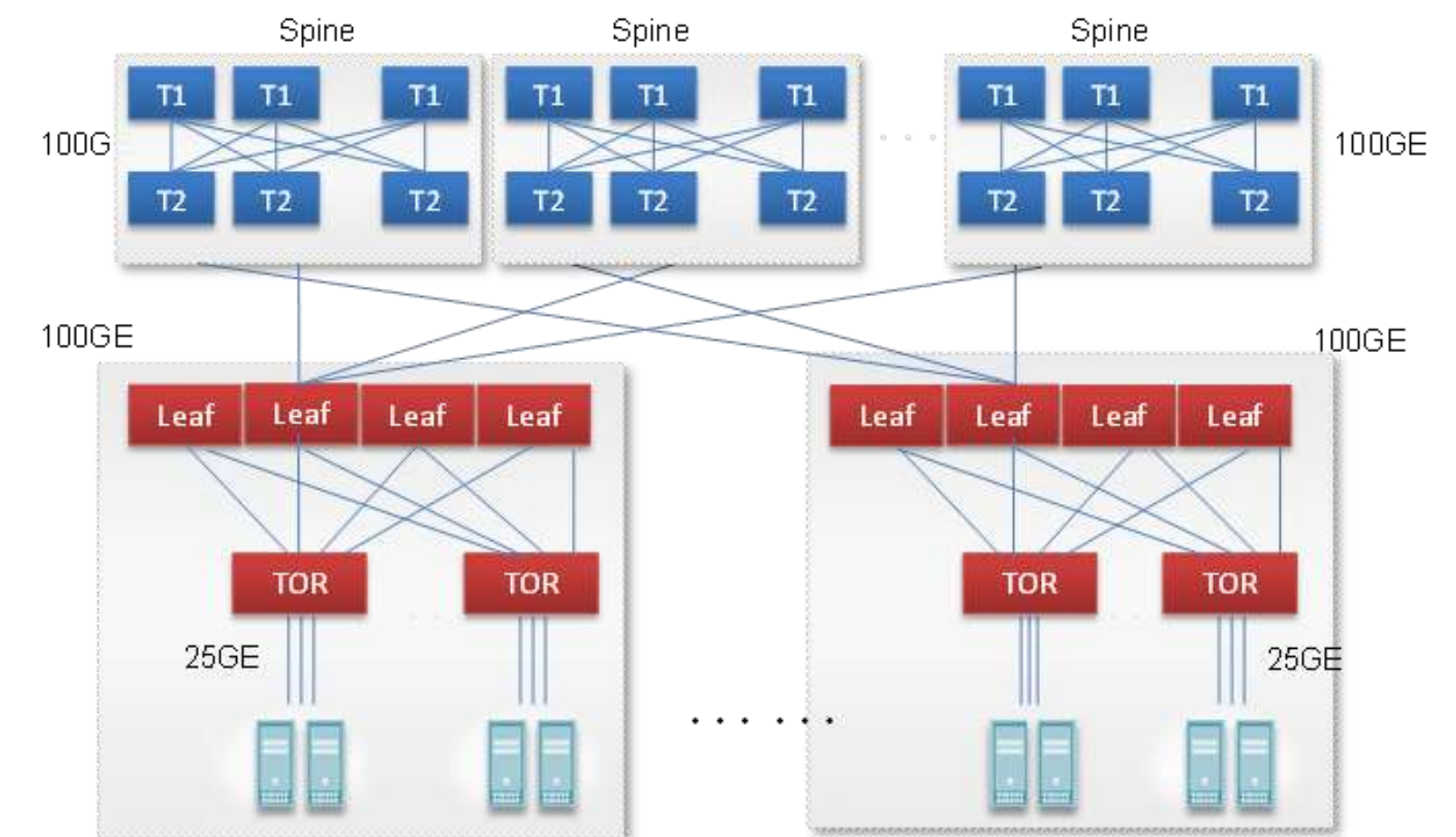
Key Telemetry Use Cases



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- Granular Latency Monitoring & Packet Path Tracing
- Congestion Monitoring of Networks
- Packet Drop Monitoring
- Elephant Flow Monitoring
- Enhanced Policy Enforcement & Security
- Scalable Telemetry Gathering
- Dynamic Traffic Engineering



Broadcom Is Contributing To SAI Specification To Deliver Advanced Telemetry Use Cases



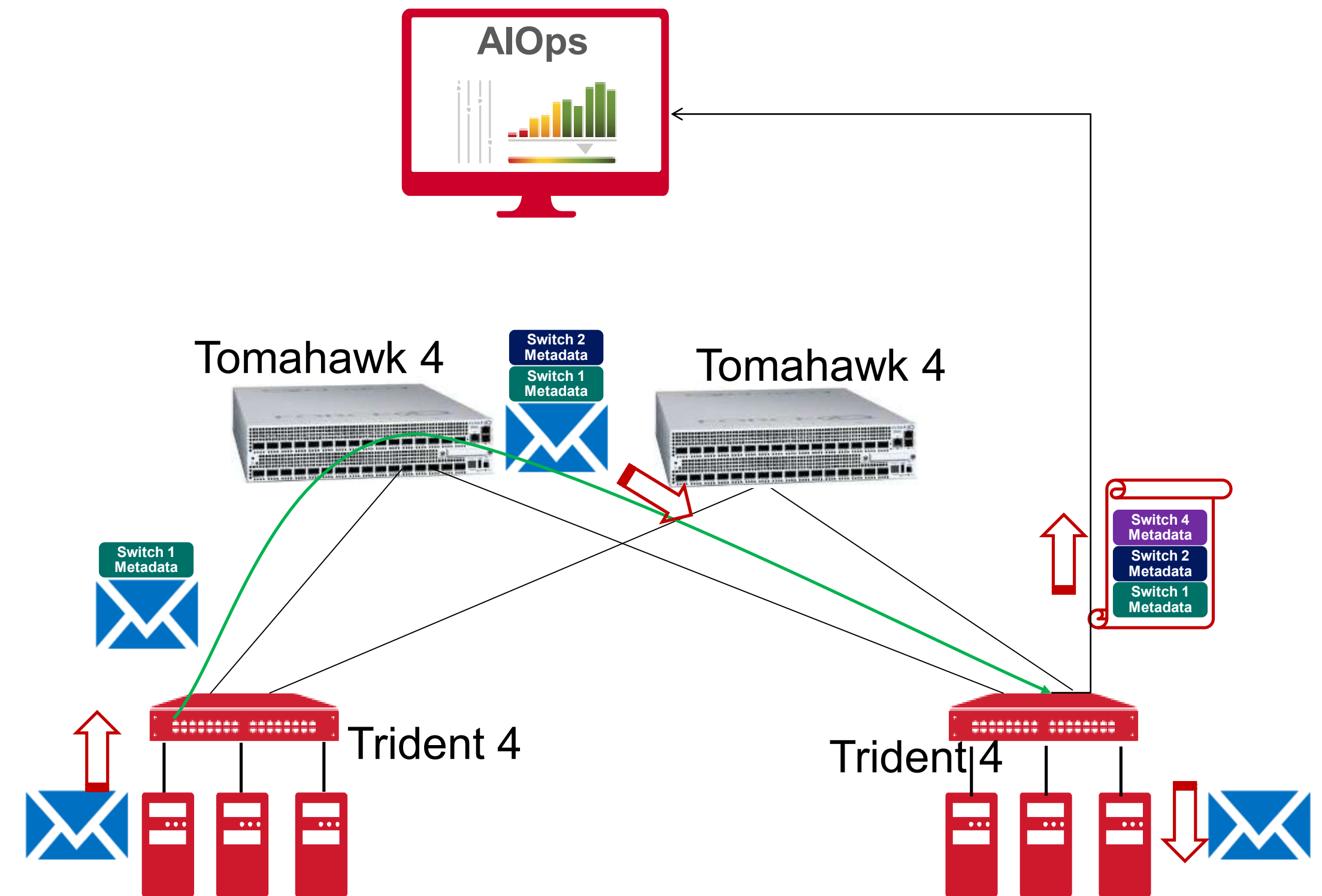
Inband Flow Analyzer (IFA)



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- IFA delivers Inband Telemetry
- Each hop adds its metadata to the user packet in the dataplane
- Metadata is gathered from each node in a cumulative manner
- Last network node removes the metadata and sends one consolidated report to the collector application



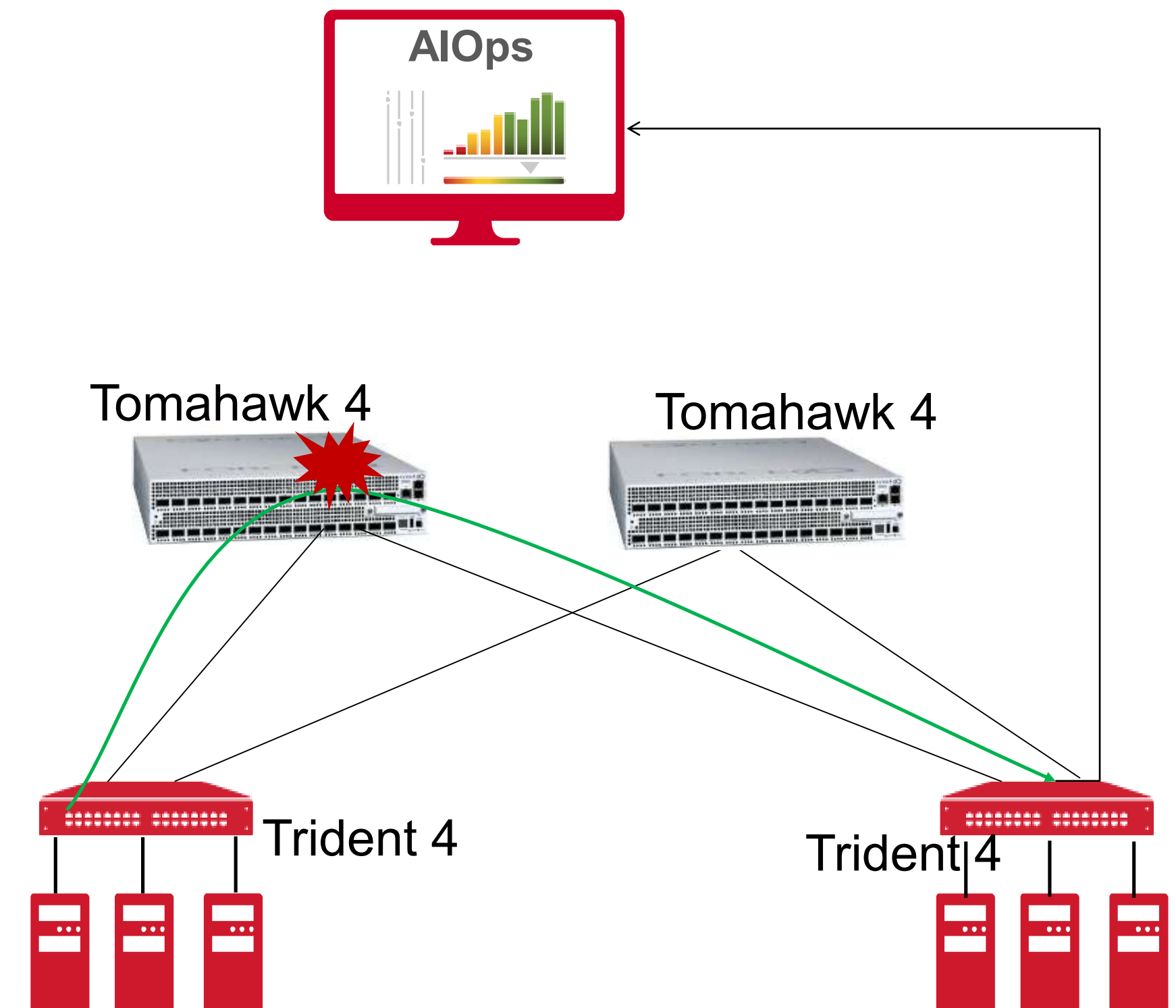
Mirror on Drop (MoD)



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- Delivers packet drop visibility in real-time
- Supports Stateful & Stateless packet drop monitoring
- Application receives a copy of the dropped packet along w/ drop reason



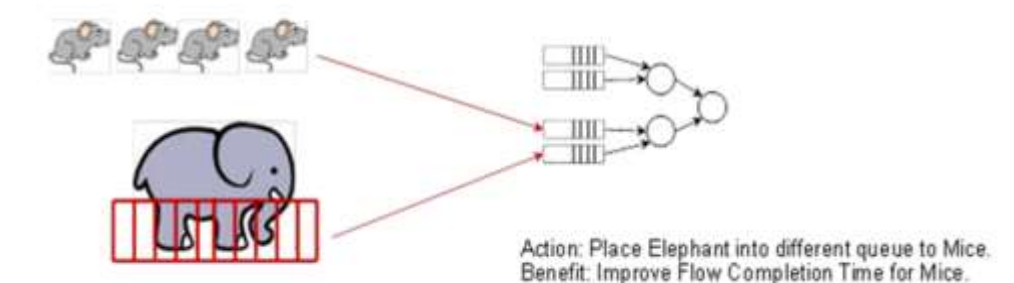
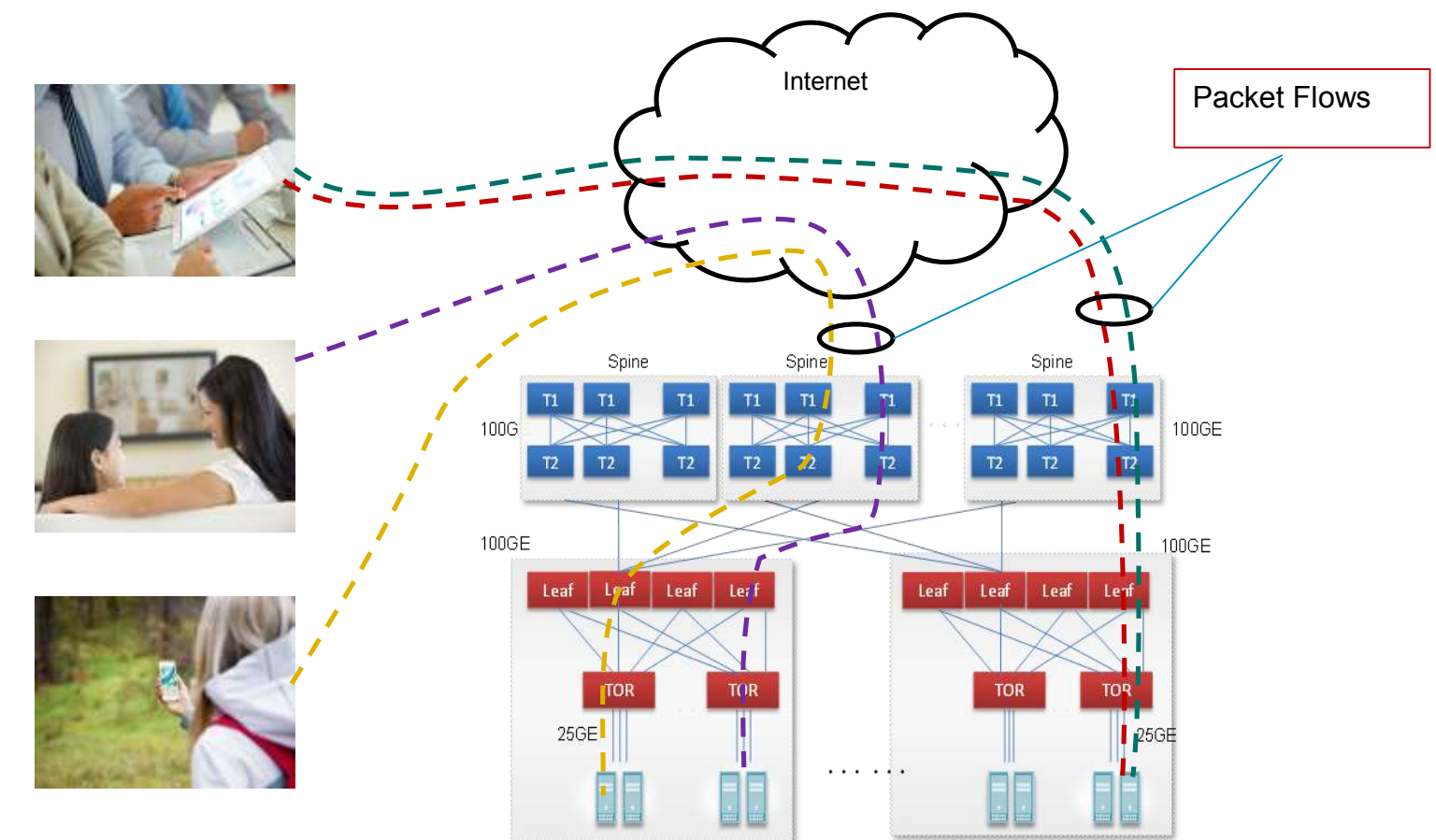
Flow Tracker (IPFIX)



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- Enables IPFIX based flow monitoring
- Facilitates real-time traffic engineering
- Provides visibility into elephant flows
- Supports granular policy enforcement and security use cases
- Delivers network forensics & bandwidth analysis
- HW based solution delivers high scalability



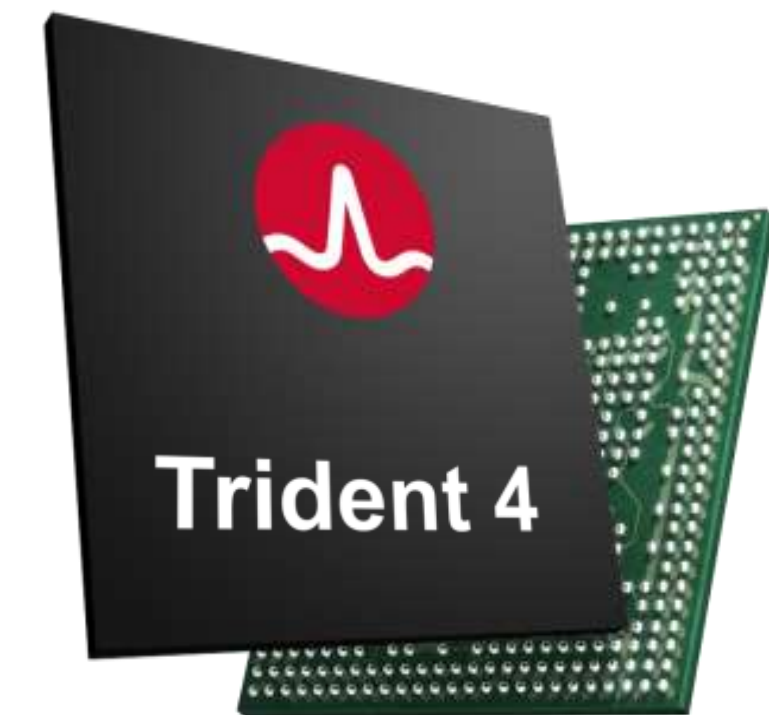
Streaming Telemetry



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- Silicon streams telemetry reports directly to a remote collector
- Flexible support for encapsulation including Protobuf
- Reports can include MMU Stats, Flex Counters, Port Stats etc.



Call to Action

- Let's collaborate to enhance TAM specification to make it complete for advanced telemetry use cases

TAM Specification : <http://lists.opencompute.org/pipermail/opencompute-sai/attachments/20180522/fa8576c4/attachment-0001.pdf>

Reference Agent Specification : <https://github.com/Broadcom-Switch/BroadView-Instrumentation/blob/master/BroadView%20Instrumentation%20Specification.pdf>

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