SPDKv1.1.0

Towards the Next Level

Over

Intel® DPDK

Oct. 2014

Putting all its knowledge that has been accumulated through years of experience with customers of high end of tens of gigabit packet processing infrastructure, Silicom is about the release yet another software package, aimed to further simplify the integration of software application over Intel® DPDK infrastructure.

General

Shortly after having released software package over Intel® DPDK (SPDKv1.0-6), that enabled quick and simple DPDK integration for network monitoring systems, Silicom continue expand the feature set and interfaces to new directions with upcoming new release.

In addition to the capture and replay capabilities with enhanced buffers management library of last release, the new upcoming release will offer API for more types and applications, and more types of processing capabilities, including:

- Cluster (multiple parallel contexts) processing and processing load balancing through receive side scaling (RSS)
- Interface to DPI applications, both open source and commercial
- Silicom's Time stamp adapters support
- Record traffic to disk

More information about each feature is brought herein.

Cluster Processing

Incoming traffic arriving for processing from multiple ingress ports, especially at high rates (10GbE and more), require a degree of distribution management among CPU's processing cores, in order to benefit from the processing power of the hardware. SPDK cluster API allows several types or models of cluster threading, to best suit the required packet processing.

Single thread model, implements single receiving thread, merging traffic from one or more ingress ports, and enables multiple threaded distribution of processing to multiple data queues, belonging to designated processing context.

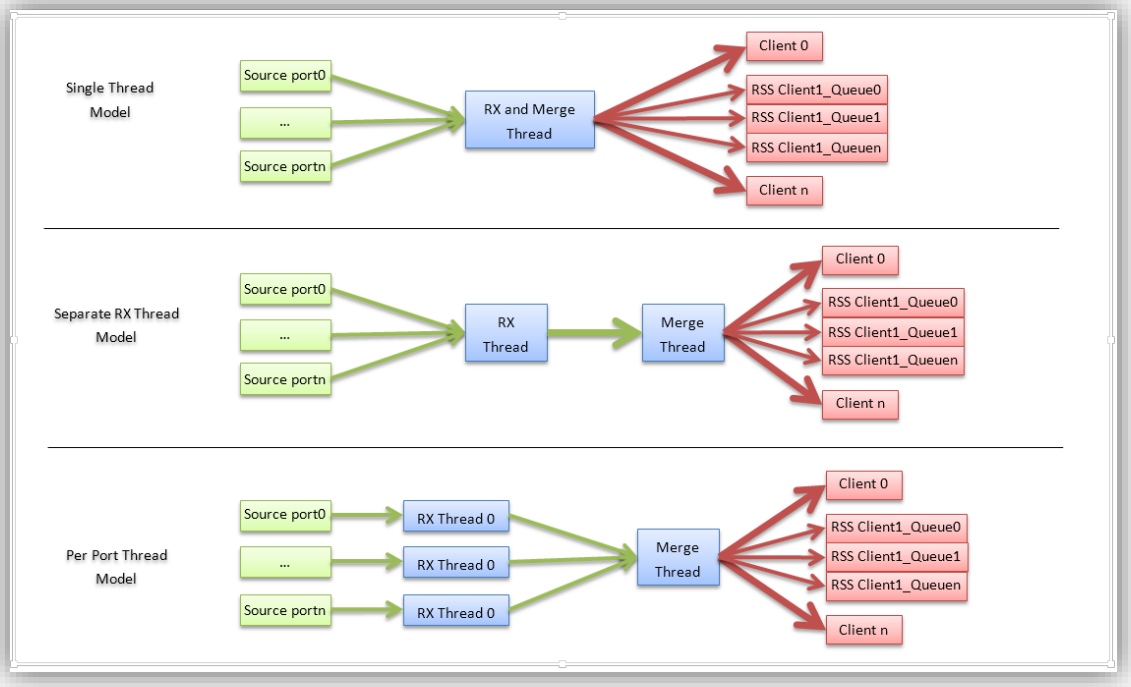

Figure 1 - SPDK Cluster Threading Models

Another option for clustering breaks the receive logic and the merge logic to separate processing contexts. Third option, spawns separate processing context per each receiving ingress port.

Queues distribution for processing is implemented using Receive Side Scaling capability of the underlying supported NIC, with well tested and define Toeplitz hash function. RSS distribution allow both symmetric and non-symmetric processing load balancing across processing cores.

DPI Interface

Deep packet inspection (DPI) is the basis for intrusion detection systems (IDS) and intrusion prevention systems (IPS). Ever growing traffic means that more power is required to inspect it. SPDK features a simple yet powerful API for DPI implementations interface with DPDK. A Snort data acquisition (DAQ) component is included in the coming release, enabling running Snort at the highest packet rates possible. Moreover, another interface for commercial DPI engines is included in the release, easily leveraging its packet classification capabilities of this implementation from around 5gbps process power per CPU core, to close 10gbps line rate per core.

Time Stamp Support

Silicom time stamp NIC solution offer unmatched precision in packet time stamping, of down to 8 ns accuracy resolution of incoming traffic. Upcoming SPDK release will support for Silicom time stamp NIC, by enabling time stamp reading, and packet indexing according to is time stamp. For more information about Silicom time stamping solution see http://www.silicom-usa.com/Time_Stamping_Server_Adapter_10_Gigabit_76 .

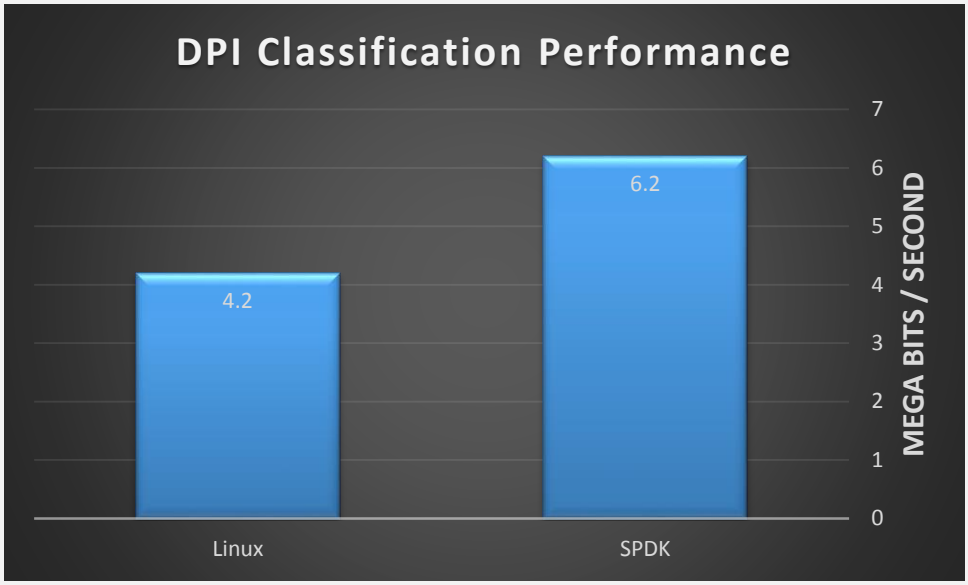

Figure 2 - DPI Improvement with SPDK

Record Traffic to Disk

A complementary capability for packet capturing and indexing is the ability to save the flow of traffic in a storage device. SPDK upcoming release includes API and sample programs, enabling line rate capability to store incoming traffic onto disk. This capability is integrated with and complement Silicom time stamp NIC solution

About SmarSilc

SmartSilc is Silicom's new suite of advanced networking solutions designed to streamline processes for cloud application vendors, network application vendors and data centers evolving towards next-generation virtualization. With a focus on acceleration and offload, SmartSilc products leverage all of the field-proven fundamentals of Silicom's network devices, NICS and accelerators, including the use of top-vendor, best-of-breed silicon and the provision of full support for production-grade software suites.

About Silicom

For more than 25 years, Silicom has provided innovative, state-of-the-art connectivity and networking solutions to the continuously evolving networking industry. Silicom's shares trade on the NASDAQ Global Select Market (NasdaqGM) and the Tel Aviv Stock Exchange (TASE) under the symbol SILC.

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