Silicom Enhances Intel® QuickAssist Technology for Compression

Overview

Data compression is all about savings, whether on storage space, or on network bandwidth. On the flip side, processors are required to actively process jobs of compression and decompression, demanding intensive CPU resources. A hardware look aside engine for compression is designed to relieve the CPU off those tasks, while powering it up to a degree and speed of the highest rates.

Intel® QuickAssist technology is a set of Linux software drivers and libraries, providing API to access Intel® compression acceleration hardware technology, embedded in the Intel® Coleto Creek 8950 and 8955 chip sets. As a provider of advanced networking solutions with core values of flexibility and stability of designs, Silicom eases and streamlines the adoption of the API either with guidance or by maintaining OpenSSL software interfaces to Intel® QuickAssist.

Look Aside

The Intel® 8950 and 8955 are sub engines that operate as PCIe endpoint. As a result, compression and decompression jobs are forwarded from host through DMA interface, while the results, i.e. the compressed or uncompressed buffers are DMA'd back.

Data Compression – DEFLATE, LZS

The main use cases for this technology are accelerating storage compression and web compression. The compression algorithms supported by the hardware are **DEFLATE** (zlib format), that is abundant in web traffic, and **LZS**, that is the standard compression algorithm for IPsec. Both algorithms are based on Huffman coding.

DEFLATE exhibit good of compression ratio to performance overhead figures. This fact makes it suitable for storage compression and decompression usages; and by that, significantly optimizing physical storage space.

Picture 1 – SIlicom PE3iSC02 with Intel® ColetoCreek

Features

- Compression / decompression rate – 20Gbps and 24Gbps (single Intel® 8950 and 8955, accordingly)
- Dynamic and static Huffman Trees
- 4 Search Depths (1, 4, 8 & 16)
- Support for Stateful compression and decompression
- Multiple history sizes with DEFLATE
- 32 concurrent engines
- Flexible form factor

Future Planned Enhancements

Software support through SmartSilc SPDK, an enhancement over Intel® DPDK, including both CPU utilization and memory management improvements