

Silicom Enhances Intel® QuickAssist Technology for Compression

Overview

Data compression is a means to save disk or storage space, or to save network bandwidth. On the flip side, processors are required to actively process jobs of compression and decompression, with resource demanding processing. Hardware look-aside compression engine is designed and targeted to relieve the CPU off that task, 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® Coletocreek 8950 chip.

Silicom is a provider of advanced networking solutions with core value and strength in its ability to deliver tailored solutions to fit its customers' needs by using existing technology, such as Intel's quick assist, and enhancing it with API's and functionality making it easier for use. Silicom delivers the chip on a PCIe adapter, as a look aside acceleration engine. Silicom also maintains the software suite.

Data Compression – DEFLATE, LZS

The main idea of this acceleration card is to accelerate web oriented traffic. Due to the fact that present days network applications are tunneled over HTTP (Facebook, Skype, SalesForce, etc.), then it makes sense to address this segment. Hence, the compression algorithms that are supported by the hardware are **DEFLATE** (zlib format), that is abundant in web traffic, and **LZS**, that is the standard compression algorithm for IPsec, but has less dominance. Both algorithms are based on Huffman coding.

However, other types of compression are out there, like **Snappy** that is popular for its speed, or **bzip2**, that block oriented compression algorithm, that compresses very good, but is considered as a slow performing algorithm.

Although DEFLATE and LZS are stream algorithms, best suited for WAN acceleration, and web traffic, both can be efficiently used for storage compression and decompression, thus significantly optimize physical storage space.



Picture 1 – Silicom PE3iSC02 with Intel® Coletocreek

Features

- Compression rate – 24Gb/s
- Decompression rate – 24Gb/s
- Dynamic and static Huffman Trees
- 4 Search Depths (1, 4, 8 & 16)
- Support for Stateful compression and decompression
- Multiple history sizes with DEFLATE
- Flexible form factor

Future Planned Enhancements

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