Product Brief

NoLoad® U.2
Computational Storage Processor

Overview

Eideticom's NoLoad® Computational Storage Processor (CSP) in a standard U.2 2.5" NVMe form factor

NoLoad's NVMe compliant interface provides seamless integration for all CPU platforms and has been validated on Intel, AMD, ARM and IBM Power8/9 CPUs

Eideticom's NoLoad® CSP supports a range of Computational Accelerators for both Storage and Compute applications, namely:
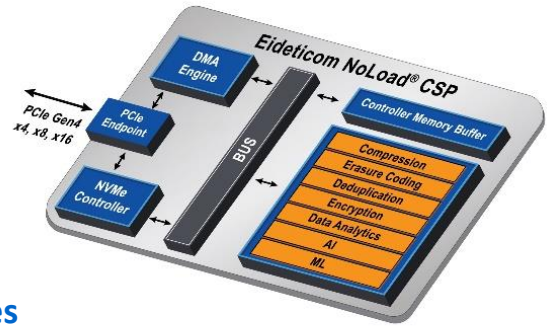
-   Compression, Encryption, Erasure Coding, Deduplication, Data Analytics, AI and ML

Compatible/validated with Broadcom®, Mellanox® and Q-Logic® RDMA NIC's

Validated at PCIe Gen4 rates with Gen4 compliant hosts

Capacities

-   1.5 - 8 GB RAM Drive
-   0.5 – 8 GB NVMe Controller Memory Buffer (CMB)

Capabilities

-   GZIP/ZLIB/Deflate compliant compression core
-   GUNZIP/ZLIB/Inflate decompression core
-   ISA-L compliant RS Erasure Coding engine
-   Deduplication - support for SHA-1, SHA-2 & SHA-3 (with hashing)
-   AES-XTS encryption/decryption
-   Supports easy integration of user developed acceleration functions

NVMe Feature Support

-   NVMe 1.3 Compliant (validated by UNH-IOL)
-   Admin queue and 16 I/O queues
-   Supports NVMe Scatter Gather Lists (SGLs)
-   CMB support (all modes)
-   NVMe-MI support

## Performance

-   Available under NDA

NoLoad® CSP – Peer to Peer (P2P)

## The case for Peer-2-Peer (P2P) processing

- PCIe End-Points (EPs) are getting faster and faster e.g. NVMe SSDs, RDMA NICs & GPGPUs
- Bounce buffering all I/O data through system memory is a waste of system resources and reduces QoS for CPU memory (the noisy neighbor problem)

The solution

- NoLoad P2P allows PCIe EPs to DMA to each other whilst under host CPU control
- CPU/OS still responsible for security, error handling etc
- 99.99% of DMA traffic now goes direct between EPs
- Application: P2P Compression offload
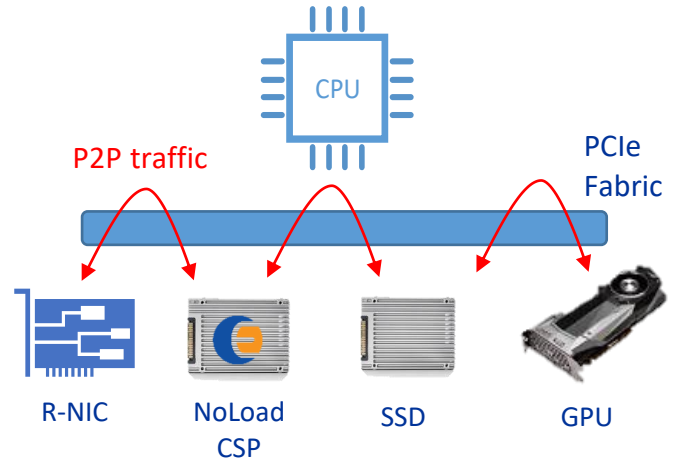
NoLoad® CSP – NVMe over Fabrics (NVMe-oF)
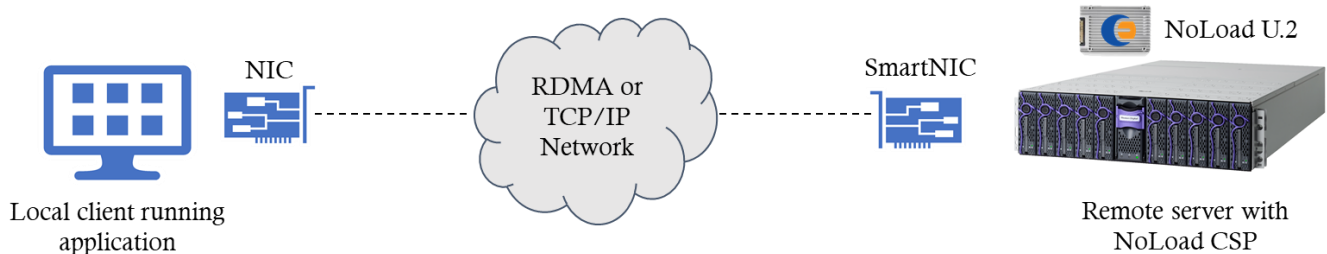
Get your Accelerators "out-of-the-box"

- NoLoad Accelerators identify as NVMe Namespaces, which can be accessed/shared using NVMe-oF
- NoLoad Accelerators located in a remote server can be accessed by any client with a RDMA or TCP/IP connection
- Disaggregation of FPGA Accelerators using NoLoad® CSP and NVMe-oF