

Adaptable Accelerator Cards for Data Center Workloads

COMPUTE, NETWORKING, AND STORAGE ACCELERATOR FOR CLOUD AND EDGE DATA CENTERS

The Xilinx® Alveo™ U50 Data Center accelerator cards provide optimized acceleration for workloads in financial computing, machine learning, computational storage, and data search and analytics. Built on Xilinx UltraScale+™ architecture and packaged in an efficient 75-watt, low-profile form factor, the U50 includes 8GB HBM2, 100GbE networking, and PCI Express 4.0 and is designed for deployment in any server.

POWERFUL DATA CENTER ACCELERATION

Built for Performance & Efficiency

- > Faster application performance from 8GB of HBM memory (32 AXI channel access) and PCIe Gen4 interconnect
- > Low latency network capability through 100G networking with support for 4x 10GbE, 4x 25GbE, or 1x 40GbE or 1x 100GbE

Optimized Performance Across Broadest Range of Workloads

- > Accelerates compute, network, storage workloads
- > Maximized application performance as workloads and algorithms evolve through reconfigurable fabric - unlike fixed-architecture alternatives

Deploy in Any Server – From On-premises to Cloud

- > Built for scale out architectures and any server - Low-profile form factor and low 75-watt power envelope

Powerful Developer Platform

- > Take advantage of a large and growing library of Xilinx and partner [applications](#)
- > Develop differentiated solutions leveraging Xilinx's [SDAccel™ development environment](#) and [Machine Learning Suite](#)



SPECIFICATIONS

| FEATURES | ALVEO U50 |
|-------------------|--|
| Architecture | UltraScale+ |
| Form Factor | Half-Height, Half length single slot Low-Profile |
| Look Up Tables | 872,000 |
| HBM2 Memory | 8GB |
| HBM2 Bandwidth | 316GB/s ¹ |
| Network Interface | 1 x QSFP28 (100GbE) ² |
| Clock Precision | IEEE 1588 |
| PCI Express | PCIe Gen3 x 16, dual PCIe Gen4 x 8, CCIX |
| Thermal Solution | Passive |
| Power (TDP) | 75W |

¹ For A-U50DD-P00G-ES3-G and A-U50-P00G-PQ-G measured 316 GB/s peak HBM2 bandwidth, 201 GB/s nominal

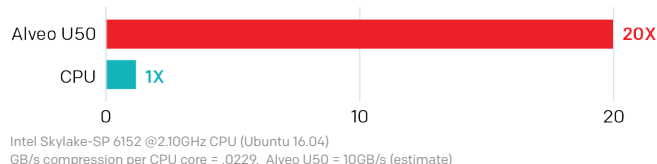
² During ES, U50 card will have 2 SFP-DD ports

SUPERCHARGING A BROAD RANGE OF DATA CENTER APPLICATIONS

Computational Storage Acceleration

- > Alveo U50 delivers fastest and most flexible compression/decompression acceleration
- > Lower cost – Alveo U50 accelerated compression delivers 33% lower cost. (Based on 10GB/sec throughput and 2:1 compression)

GZIP Compression Throughput (GB/sec)

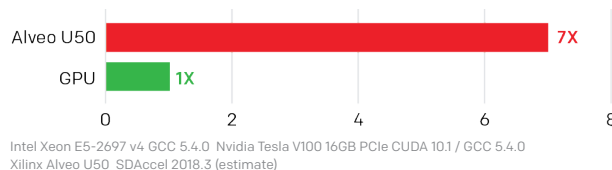


Financial Simulation – Grid Computing

- > Fastest time to insight
- > Reduced operational costs and maximum power efficiency
- > Deterministic latency delivers consistent performance

Monte Carlo Simulation

Performance & Efficiency (paths/sec/W)

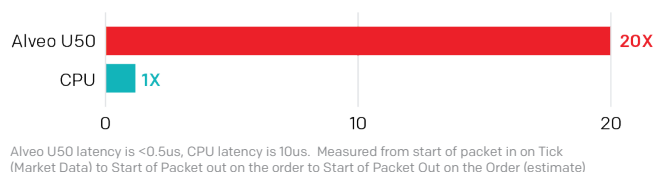


Ultra-Low Latency Networking

- > 20x lower latency
- > Alveo U50 delivers sub-500ns trading time vs CPU latency of 10us
- > Deterministic throughput timing

Speedup of Trading Timing

Market data to TCP message (speedup)

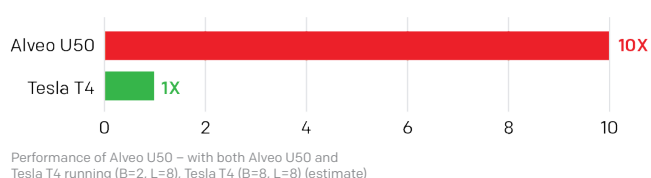


Deep Learning Inference Acceleration

- > 10x Higher throughput – translated symbols per second
- > 25x lower latency
- > Significantly improved power efficiency per node

Speech Translation Throughput

Transformer NMT (symbols/sec speedup)



Data Analytics Acceleration

- > Higher query throughput & response time than CPU
- > Higher cost effectiveness per node
- > Reduced Operational cost

Database Query Acceleration (TPC-H Query 5)

(Queries / hour speedup)



TAKE THE NEXT STEP

Learn more about Xilinx Alveo U50, www.xilinx.com/U50