

ALVEO™ U50

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

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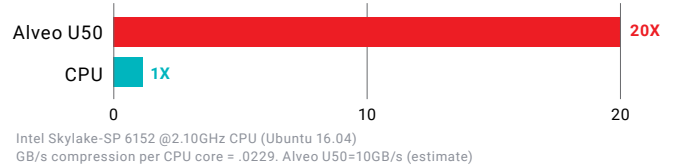
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SUPERCHARGING A BROAD RANGE OF DATA CENTER APPLICATIONS

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)

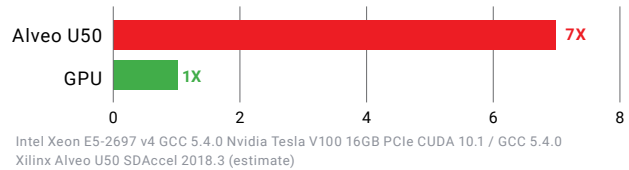


Financial Simulation – Grid Computing

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

Monte Carlo Simulation

Performance & Efficiency (paths/sec/W)

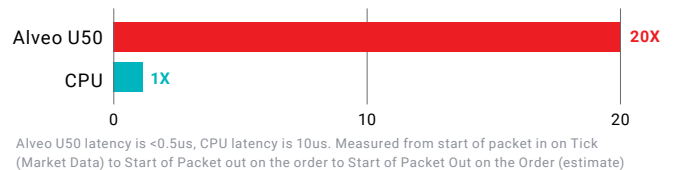


Ultra-Low Latency Networking

- > 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)

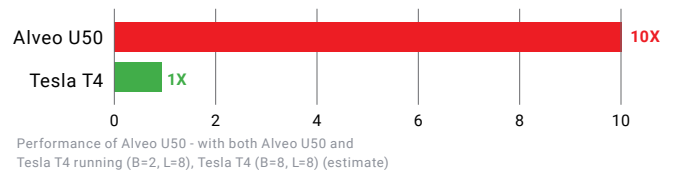


Deep Learning Inference Acceleration

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

Speech Translation Throughput

Transformer NMT (symbols/sec speedup)

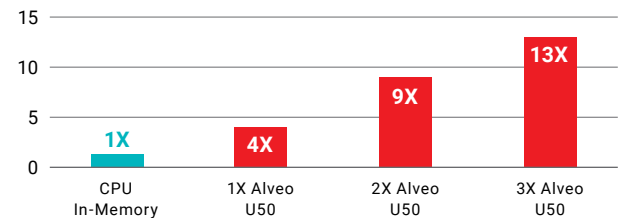


Data Analytics Acceleration

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

Database Query Acceleration (TCP-H Query 5)

(Queries / hour speedup)



CPU Query time = 210ms, 34k query/hr. Alveo U50 = 24ms, 150k query/hr
Intel® Xeon® Platinum 8260 Processor (35.75M Cache, 2.40 GHz) 24 core (estimate)

TAKE THE NEXT STEP

Learn more about the [Xilinx Alveo U50](https://amd.nt-rt.ru/)

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