

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

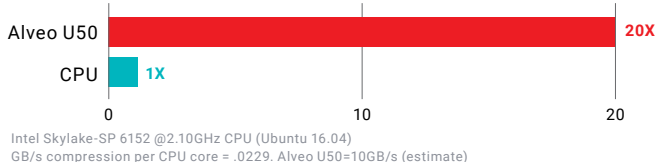
1: For A-U50DD-P00G-ES3-G and A-U50-P00G-PQ-G measured 316 GB/s peak HBM2 bandwidth, 201 GB/s nominal
 2: During ES, U50 card will have 2 SFP-DD ports

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)

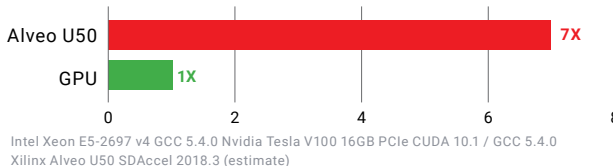
GZIP Compression Throughput (GB/sec)



Financial Simulation – Grid Computing

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

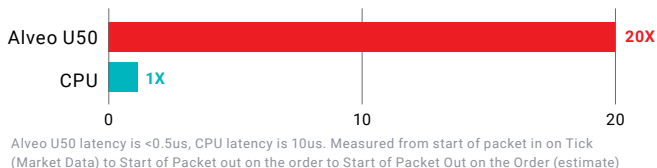
Monte Carlo Simulation Performance & Efficiency (paths/sec/W)



Ultra-Low Latency Networking

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

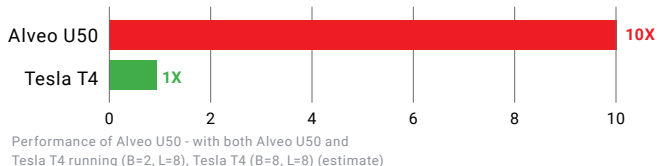
Speedup of Trading Timing Market data to TCP message (speedup)



Deep Learning Inference Acceleration

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

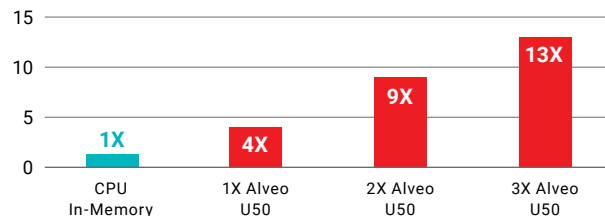
Speech Translation Throughput Transformer NMT (symbols/sec speedup)



Data Analytics Acceleration

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

Database Query Acceleration (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](#)

Corporate Headquarters
Xilinx, Inc.
2100 Logic Drive
San Jose, CA 95124
USA
Tel: 408-559-7778
www.xilinx.com

Xilinx Europe
Xilinx Europe
Bianconi Avenue
Citywest Business Campus
Saggart, County Dublin
Ireland
Tel: +353-1-464-0311
www.xilinx.com

Japan
Xilinx K.K.
Art Village Osaki Central Tower 4F
1-2-2 Osaki, Shinagawa-ku
Tokyo 141-0032 Japan
Tel: +81-3-6744-7777
japan.xilinx.com

Asia Pacific Pte. Ltd.
Xilinx, Asia Pacific
5 Changi Business Park
Singapore 486040
Tel: +65-6407-3000
www.xilinx.com

India
Xilinx India Technology Services Pvt. Ltd.
Block A, B, C, 8th & 13th floors,
Meenakshi Tech Park, Survey No. 39
Gachibowli(V), Seri Lingampally (M),
Hyderabad -500 084
Tel: +91-40-6721-4747
www.xilinx.com

