## AMD ALVEO<sup>™</sup> U50

Adaptable Accelerator Cards for Data Center Workloads



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

The AMD Alveo<sup>™</sup> U50 Data Center accelerator cards provide optimized acceleration for workloads in financial computing, machine learning, computational storage, and data search and analytics. Built on AMD UltraScale+<sup>™</sup> 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 AMD and partner applications
- > Develop differentiated solutions leveraging <u>AMD's SDAccel™ development</u> <u>environment</u> and <u>Machine Learning Suite</u>



### **SPECIFICATION**

Features	AMD 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/s1
Network Interface	1 x QSFP28 (100GbE)2
Clock Precision	IEEE 1588
PCI Express	PCle Gen3 x 16, dual PCle 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

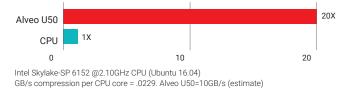
#### **Computational Storage Acceleration**

- > 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)

#### Financial Simulation – Grid Computing

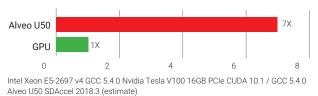
- Fastest time to insight
- Reduced operational costs and maximum power efficiency
- Deterministic latency delivers consistent performance

#### GZIP Compression Throughput (GB/sec)



#### Monte Carlo Simulation

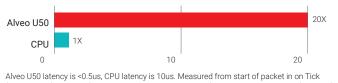
Performance & Efficiency (paths/sec/W)



#### 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)



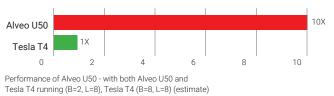
(Market Data) to Start of Packet out on the order to Start of Packet Out on the Order (estimate)

#### **Deep Learning Inference Acceleration**

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

#### Speech Translation Throughput

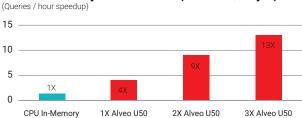
Transformer NMT (symbols/sec speedup)



#### **Data Analytics Acceleration**

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

#### **Database Query Acceleration (TCP-H Query 5)**



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

Contact your local sales representative or complete the Product Inquiry form at AMD ALVEO™ U50

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