Xilinx Financial Technology Update

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Who are Xilinx?

Xilinx powers the leaders in Financial Technology by providing class leading adaptable, intelligent and low latency silicon. Our Technology can be found in many solutions you use today and together with our partners Xilinx are leading the next generation of financial technology

- Xilinx Alveo
- Solution Providers
  - Confinity
  - Celoxica
  - Enyx
  - Novasparks
  - Silexica
- Appliances & Network
  - Arista
  - Cisco
  - Bittware
  - AlphaData
- Cloud
  - Azure, Amazon F1 & Redshift, Nimbix

Alveo U50

Alveo U200

Alveo U250

Alveo U280

SILEXICA

Celoxica

NOVASPARKS

enyx

CONFINITY SOLUTIONS

BittWare

CISCO

ARISTA

ALPHA DATA

aws

Microsoft Azure

NIMBIX

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Announcing Xilinx Vitis Fintech Reference Designs

- Designed to accelerate your migration from CPU to FPGA

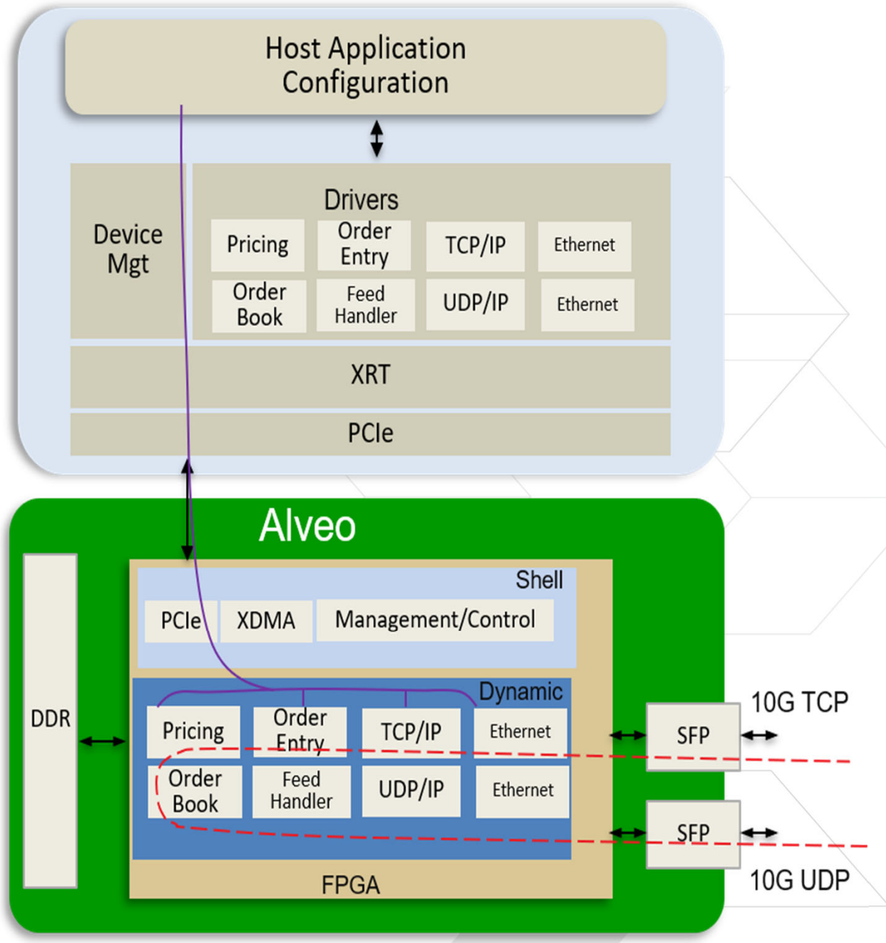
- Programmability
  - Fully written in HLS
  - Designed for Software Engineers
  - Integrated with Vitis
  - Runs out the box on Xilinx Alveo

Alveo U50

Alveo U250

- Productivity
  - Open Source Framework and IP
  - Reduce your development time
  - Take the next leap in performance
  - Let Xilinx abstract the FPGA, focus on your IP

- Portability
  - Write your algorithms once and port across the Alveo family
  - Rich Vitis libraries



https://www.xilinx.com/applications/data-center/financial-technology.html

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Xilinx Quantitative Finance Library

0.5

Stats/Math

- Psuedo RNGs (MT19937, MT2203, LUT-SR, Gaussian)
- Quasi RNG - Sobol (1D, Multi-dimensional)
- Singular Value Decomposition
- Box Muller transform
- Inverse Cumulative Normal Distribution
- Dense and Sparse Matrix Math
- Tridiagonal / Penta-diagonal Equation Solvers
- Brownian Bridge Transform

Financial

- Monte Carlo Black-Scholes (Digital, Asian, Barrier, European, American)
- Monte Carlo Heston
- Finite Differences Heston

1.0

Stats/Math

- LU/QR/Cholesky Matrix Decomposition, Matrix Inversion
- Eigenvalues/Eigenvectors
- Bi-variate, multivariate, Exponential and lognormal distributions (pdf/cdf/icdf)
- Multivariate Pseudo RNG
- Monte-Carlo Methods (Greeks, multiple assets, variance reduction, Markov-Chain, mean reversion)

Financial

- Closed form models (Merton, Heston, Black-Scholes)
- Interest Rate (Swaps, Caps/Floors, Options, Swaptions)
- FX Quanto

2.0 Available Now!

Stats/Math

- Numerical Integration
- Covariance Matrix
- Portfolio Optimization
- Principal Component Analysis
- Lognormal/Binomial Distributions
- Beta/Poisson/Exponential, Bernoulli Distributions
- Interpolation (Linear/Cubic)
- PDE Solver (Modified Craig Sneyd)

Financial

- Commodities Swap
- Credit Default Swap
- Interest Rate HJM Model
- Interest Rate CIR Model
- Bjerskund-Stensland

Microsoft Azure

Alveo U250

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Xilinx Alveo Anti Money Laundering (AML) Solution

Improves customer service efficiency while reducing AML activity

Alveo U250

Real time online watch list management
Xilinx AML WLM accelerates the online screening process from minutes to milliseconds

Accelerated Fuzzy Match Capability
Reduces false positives by identifying non-exact matches of your searches (typos and variations in names)

Manual review not necessary
Personnel freed up to help customers and resolve service issues

Detect more fraudulent transactions
Regulatory and legal risk can be reduced by detecting more fraudulent transactions

Supports a number of channels
Banking branch, telephone, internet. An OK/KO code is generated to be sent to the payments process

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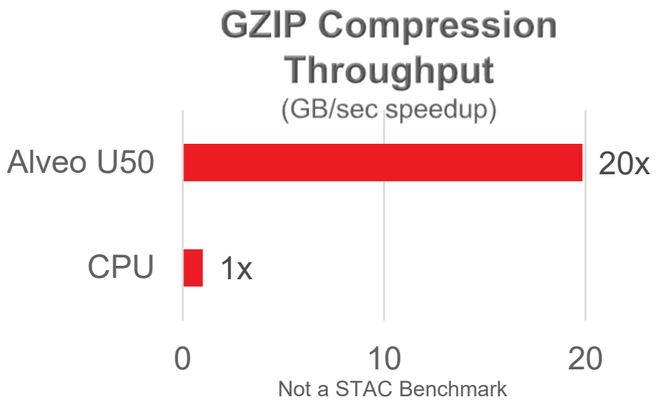
Xilinx Alveo - Computational Storage

> Line-rate Data Compression Acceleration

- Market data received by banks in the order of 2TB/day
- Data stored uncompressed to test and improve trading strategies
- Time taken to uncompress and access data with CPUs is prohibitive



Compression, decompression, erasure coding, encryption all accelerated on one platform

Intel Skylake-SP 6152 @2.10GHz 22-core CPU (Ubuntu 16.04), GB/s compression per CPU core = .0229. Alveo U50 = 10GB/s

Source: Xilinx Analysis

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Xilinx Alveo with Vitis
Accelerating your Compute and Networking

DEPLOY ON

Alveo U50

Alveo U200

Alveo U250

Alveo U280

aws

Microsoft Azure

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Alibaba.com

Tencent

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