

# Risk Control Market and Transaction Acceleration

## INTRODUCTION

Based on the independently designed KPU™, a software-defined domain-specific computing architecture, YUSUR implemented an integrated acceleration solution combined with trading risk control rules processing in financial transaction, financial protocol analysis (Binary/STEP/FAST) and network protocol analysis (TOE) using Xilinx Alveo card and related software system. In this solution the latency of single direction is significantly reduced to about 1.4us with a jitter of 20ns, which is an improvement of two orders of magnitude compared with traditional solutions. Our solution can effectively improve the compliance level of institutional users, both in transaction side and regulatory side, empowering the national strategy of finance.

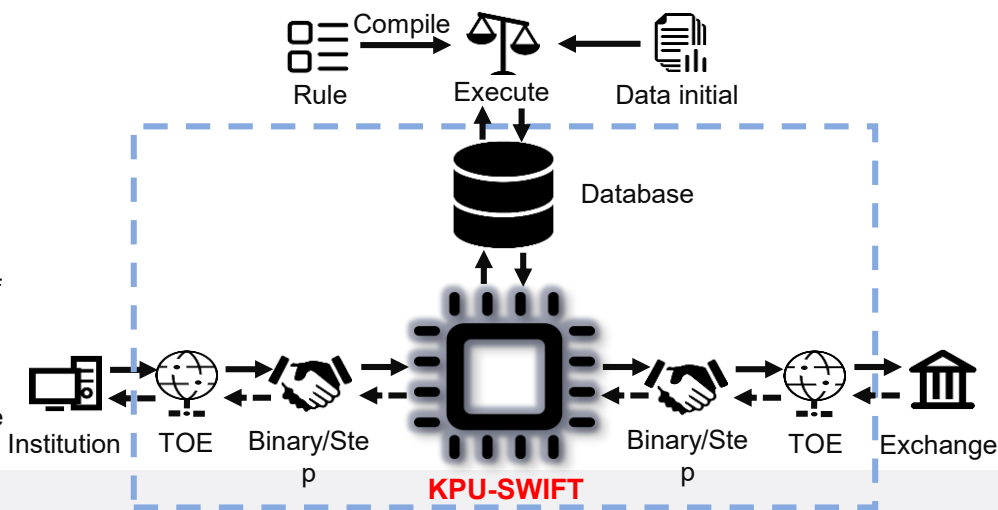
## KEY BENEFITS

- High-Performance: Built-in efficient data management engine and risk control rule processing engine KPU-Conflux™
- Flexibility: User-defined risk control rules, which can be customized by account and customer type
- Robustness: Chip-level fault-tolerant design ensures stable operation of the wind control system
- Security & Reliability: Self-designed core technology; Error detection and recovery mechanism

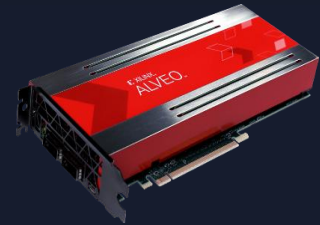
## SOLUTION OVERVIEW

RiskCop® is an extremely fast risk control solution customized by YUSUR for financial securities and futures trading systems. In order to minimize the latency on the entire risk control processing link, YUSUR proposed a full hardware risk control implementation solution based on KPU™. Different from the traditional TOE + CPU + database solution mode, our risk control solution is implemented in the TOE + Binary / STEP + KPU-Conflux™ + database mode. The entire process does not require CPU intervention and is implemented on the Xilinx Alveo card.

- TOE adopts YUSUR's self-developed TCP/IP analysis architecture, mainly responsible for data access in network transactions, built in with Binary/STEP protocol module, without using CPU.
- Special database engine to store the basic information in risk control processing and can record the transaction logs in real time, providing the possibility for a higher level of compliance check.
- Leveraging KPU-Conflux™ computing architecture, the solution integrates more than 70 basic cores to process multiple rule checks in parallel.



## SOLUTION BRIEF

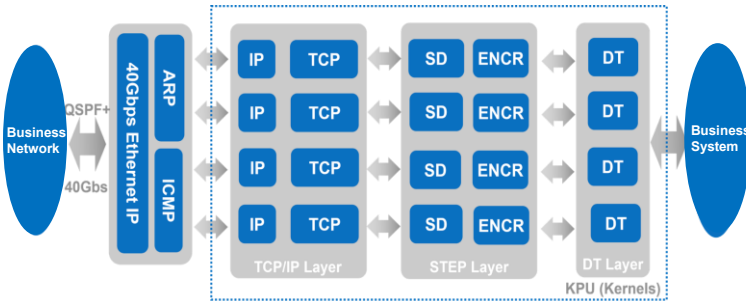


- SDA Software Defined Accelerator
- KPU Empower Domain-Specific Accelerator Technology
- KLIB Domain-Specific Function Library
- KOS Customized Lightweight Application System

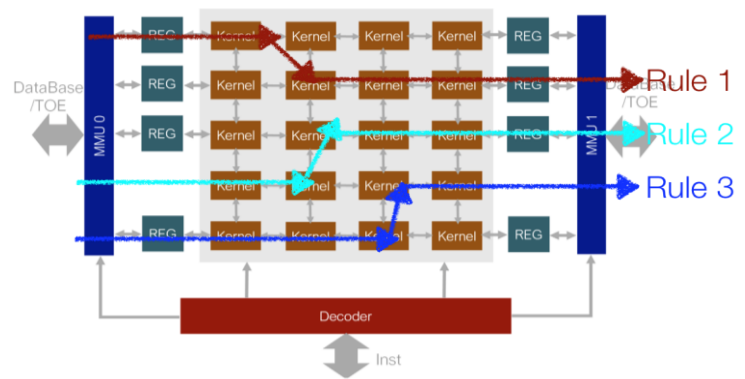
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## SOLUTION DETAILS

- Automatically adapt the number of TCP / IP processing cores with the complexity of the system, the operating frequency, and the bandwidth of the optical port to ensure high data throughput and stable low latency.
- Obtain institution user data through the TOE module, and built-in TCP / IP and Binary / STEP / FAST analysis modules can make data acquisition and analysis faster.

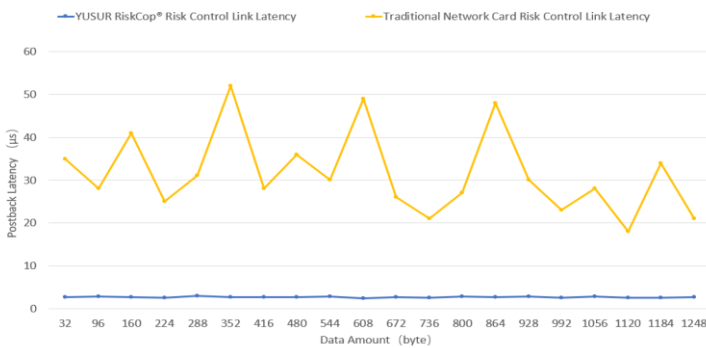


- KPU-Conflux™ supports multi-rule parallel processing to achieve high-throughput complex risk control.
- The board-level built-in high-efficiency database engine for risk control can record and index market data and user data without CPU interference and processing data across chips, making data processing faster.

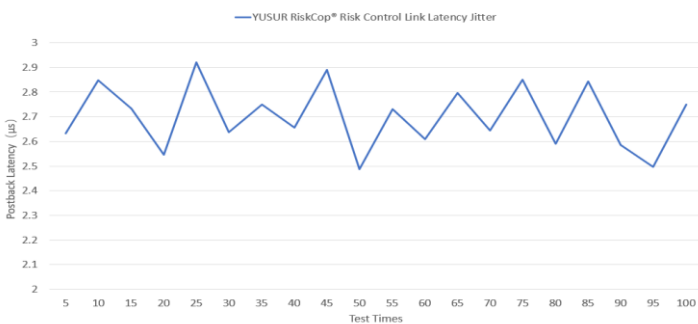


## RESULTS

### Solutions Performance Comparison



### YUSUR RiskCop® Full Link Latency



## TAKE THE NEXT STEP

Learn more about Xilinx [Alveo accelerator cards](#)

Learn more about [YUSUR and Riskcop](#)

Reach out to [Business Cooperation](#)

### YUSUR's risk control market and transaction acceleration system performance index

- Compared with general-purpose computing, RiskCop® can achieve more than 100 times increase in computing efficiency. The calculation latency for RiskCop® to execute risk control rules is only 0.1µs, while for CPU is more than 1µs.
- In the YUSUR RiskCop® solution, the single-direction latency of TOE is only 1.4 µs, while the latency of the general architecture based on traditional network cards exceeds 80 µs.
- More stable system performance can be achieved. In the RiskCop® solution, the TOE jitter delay is only 20ns, while the general architecture exceeds 1µs.
- The penetration latency of YUSUR RiskCop® solution can be improved by nearly 30 times. The TOE penetration latency is only around 300ns, while the general architecture exceeds 20µs.