Veriest Xsight

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Customer Success Story

Advancing Data Transfer for Cloud Data Centers

The Customer Challenge

Xsight Labs, a leading semiconductor innovator, set out to develop a cutting-edge ASIC designed to support the massive data transfer demands of modern cloud data centers. The ASIC included high-bandwidth communication protocols such as PCIe Gen5 and high-speed Ethernet, ensuring efficient and reliable data movement across large-scale infrastructure.
Given the relatively short schedule of the project, Xsight required a trusted partner that would work in full collaboration with Xsight's team.

The Veriest Solution

Veriest assembled a dedicated team of verification engineers to work closely with Xsight Labs:

Ethernet Tx data path: Ensuring Reliable High-Speed Data Transfers
Veriest verified:

- Multi-channel data path between Xsight DMAs and the Ethernet MAC
- Packet Handling through the Tx pipe
- Tx FIFO – multi port configurable FIFO (cut-through vs store-and-forward, flush)
- Performance

Management (M-Unit): Verifying management features.
Veriest validated:

- SPI , I2C, GPIO
- Sticky registers & scratchpad
- Configuration bus

PCIe (P-Unit): Ensuring High-Speed, Flexible PCIe cluster
Veriest's verification focused on:

- Multiple PCIe Controllers with support for various lane widths and topologies:
  - 1 x16 link OR 1 x8 link & 2 x4 links OR 4 x4 links
- Configurable PCIe modes: Verified operation in both Root Complex (RC) and Endpoint (EP) modes
- Reset & Link Training Scenarios: ramped up link training and reset flows.
- Performance: Ensured full bandwidth can be achieved

Verification Methodology & Expertise

To ensure comprehensive validation, Veriest implemented:

- UVM-based, coverage-driven verification to maximize test efficiency
- Constraint-random test generation to explore edge cases and rare failure conditions
- Third-party VIP integration to accelerate development and verification
- Dynamic project management to adapt verification efforts as the IC evolved

The Results

- **Streamlined Market Entry:** Assisted in the verification of a PCIe Gen5 and Ethernet-enabled IC, supporting with high dedication , Xsight Labs' timely market entry.
- **Robust System Validation:** Ensured all key subsystems met requirements for functionality and performance.
- **Knowledge Transfer:** Organized environment transfer back to Xsight's hands upon completion of the project.

Enhancing Cloud Technology Together

In our collaborative project with Xsight Labs, we focused on advancing high-performance data processing. Through this partnership, we supported Xsight Labs in bringing their innovative cloud data center IC to fruition.