

Synopsys and SiCortex

High Quality DesignWare IP for PCI Express Helps Enable First Pass Silicon Success



SiCortex

“Synopsys’ complete, integrated PCI Express IP solution enabled us to easily implement over 100 PCI Express Root Complex ports in our system. The DesignWare IP worked, it worked the first time, and we look forward to working with Synopsys again on our next design.”

– Bob Supnik, Vice President of Engineering, SiCortex

Business

Cluster computing systems optimized from silicon up for high performance computer (HPC) applications.

SiCortex Challenges

- Achieve tight project schedule
- Implement PCI Express without in-depth protocol knowledge
- Reduce power consumption

Solution

- DesignWare® x8 Lane PHY and Root Complex IP For PCI Express®

Benefits

- Reduced chip development time with silicon-proven IP
- Achieved first pass silicon success
- Achieved best per lane power dissipation over other solutions in the market

Overview

The SiCortex SC5832 computer architecture recognizes that high sustained performance and low power are synergistic, not antagonistic. The enormous heat generated by contemporary processor chips may not matter to personal computer users but it causes serious problems in high performance computing, where every watt of wasted power is multiplied by hundreds or thousands of nodes.

SiCortex focuses on power-efficient designs and simultaneous tuning of silicon, microcode, and system software to deliver outstanding application performance per dollar, per watt, and per square foot. The SiCortex SC5832 is on one of the first computer systems to pack Top500 performance onto a single backplane. The SC5832, complete with its 8 terabytes of system memory, fits into a single cabinet and requires less than 18 kilowatts of wall power.

“It was very easy for us to do business with Synopsys. They set milestones to ensure that the project was on schedule. At every phase of the design, we always felt that they were committed to our success – and nothing can be more valuable than that.”

- Bob Supnik, Vice President of Engineering

Leading IP Features

SiCortex needed to develop a system that was an order of magnitude more power efficient than any other system currently in the market -- and they had to do it in a very short period of time. With no one on the team having expert knowledge with the PCI Express protocol or mixed-signal, they knew the only way to meet their tight schedule requirement was to acquire 3rd party IP. After evaluating other vendors, SiCortex chose Synopsys to provide them with a high quality, silicon-proven IP solution for PCI Express.

Synopsys provided SiCortex with a complete PCI Express IP solution that offered the best power per lane compared to other products in the market (less than 50mw/per lane). This combined with the industry's only on-chip debugging capabilities of the PHY IP, enabled SiCortex to save months of development time and achieve first pass silicon success.

Excellent Support

The ability to purchase both the PCI Express Root Complex and PHY IP from the same vendor provided SiCortex with a good business model that greatly simplified their project management. Synopsys provided excellent support with a very responsive applications engineering team who was there every step of the way to help ensure a successful implementation.

SiCortex knew that a part of achieving first pass silicon success was due to a clear commitment from Synopsys' DesignWare IP team to make certain the design goals were met at every stage of the project.



“We selected the DesignWare Root Complex for PCI Express because it was easy to configure, had lower area and achieved wide industry acceptance. Synopsys provided us with the high performance, low risk solution we were looking for.”

- Bob Supnik, Vice President of Engineering

SYNOPSYS®
Predictable Success

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