

# Performance Optimization for Large Scale Computing: The Scalable VAMPIR Approach

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## **Abstract**

Performance optimization remains one of the key issues in parallel computing. Many parallel applications do not benefit from the continually increasing peak performance of today's massively parallel computers, mainly because they have not been designed to operate efficiently on the 1000s of processors of today's top of the range systems. Conventional performance analysis is typically restricted to accumulated data on such large systems, severely limiting its use when dealing with real-world performance bottlenecks. Event based performance analysis can give the detailed insight required, but has to deal with extreme amounts of data, severely limiting its scalability. In this paper, we present an approach for scalable event-driven performance analysis that combines proven tool technology with novel concepts for hierarchical data layout and visualization. This evolutionary approach is being validated by implementing extensions to the performance analysis tool Vampir.