

SLM Optimizer Studio

AI-Powered Performance Optimization Software

Automatic Tuning for RISC-V Benchmarks and Software Applications

Overview

The Synopsys Silicon Lifecycle Management (SLM) Optimizer Studio performance optimization software improves compute system performance, automatically. It is well suited for tuning benchmarks and applications on RISC-V platforms, as engineering teams work to create the most performant system configuration for end applications. Optimizer helps identify the optimal configuration of the software stack - whether looking for the right combination of compiler flags that will result in faster application binaries, or setting up a web server for maximum throughput.

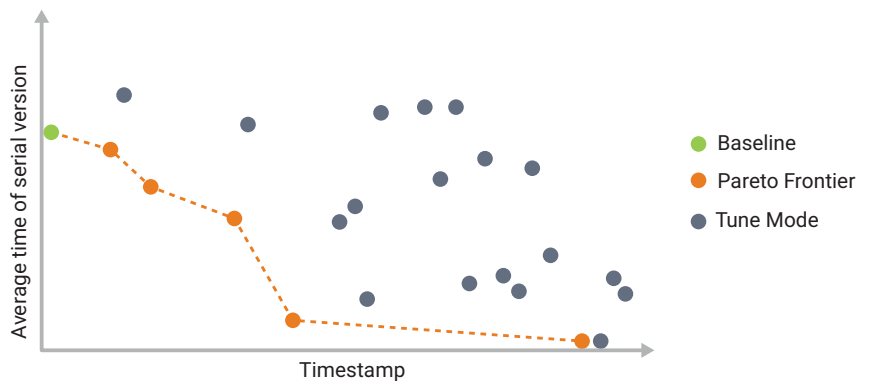


Figure 1: Example of gain using Optimizer Studio. Colored points represent the Pareto frontier (best configurations)

Optimizer's AI-powered algorithms explore the incredibly wide solution space of possible configurations, autonomously, and identify which combination of parameters and settings will allow for better performance. Compared to traditional manual analysis, this automated method yields higher benchmark scores, with a much faster turnaround. This means faster time to market, with a better product, at a lower cost.

Optimizer Studio—Collaborative Full-Stack Optimization Platform



Optimizer Studio is a static optimization tool for production and staging environments, used to optimize for a wide variety of goals by discovering the best-performing settings across the full stack

The typical manual tuning process is comprised of several steps (See figure 2). Engineers can integrate Optimizer Studio into their manual flow in less than a day, to start reaping significant benefits such as higher performance and reduced tuning time, with no manual tuning efforts.

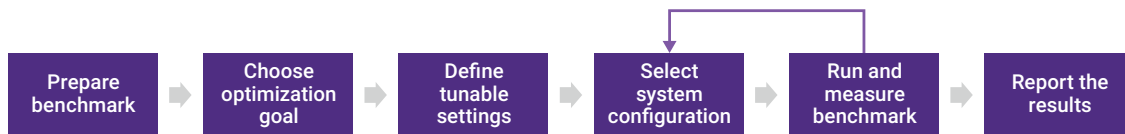


Figure 2: Optimizer Studio fully automates repetitive optimization cycles

Key Features

- Integrations with benchmarking tools such as SPEC-CPU or MLPerf
- Flexible optimization goals with single or multiple objectives, such as minimum execution time within a power envelope
- Library of thousands of tunables maintained by Synopsys, including support for:
 - Compilers – LLVM, GCC, Intel ICC compiler, AMD AOCC compiler
 - Runtimes – Java, Go, .net, Python
 - Operating Systems – Linux
 - And many more – Databases, Networking, HPC/Big Data, Web Servers, Orchestration
- Advanced experiment management system for a real-time collaborative and visual optimization experience
- Full documentation capabilities with inventory collection, tags, and metadata per sample
- Sensitivity analysis to understand the impact of specific parameters on overall performance

Key Benefits

Improved Benchmark Scores

- Explore the whole solution space: don't leave performance on the table

Faster Time-To-Market

- Easy to setup: start your experiment in just a few hours
- Highly efficient algorithms converge quickly on solution
- Cut weeks of performance optimization work down to days

Increase Engineering Team Productivity

- Reduce experimentation effort thanks to automated methodology
- Share project data seamlessly with Optimizer's collaborative user interface
- Consistent quality of results, regardless of engineering skill level of the user