

LightTools Distributed Simulation Module Overview

Harness the power of multiple computers to accelerate ray trace results

The architecture of the distributed simulation cluster is anchored by a **controller** computer, where all user interactions take place. All operations are duplicated on a series of **worker** processes that run on various host computers connected to the controller across a network.

Each worker can have up to 16 CPU threads, and more than one worker can exist on a given host computer at a time. During simulations, each worker traces a portion of the total rays. After the simulations are complete, the results from each worker are aggregated on the controller, where you can view and analyze them.

For additional information, including configuration details and applications, contact the Synopsys sales team at optics@synopsys.com or your local distributor.

While computer speeds and data handling capabilities have consistently increased in the last decade, the demanding computational requirements for optical design still outpace the performance that can be achieved on a single computer. Designed to meet this challenge, the LightTools Distributed Simulation Module leverages multiple computers to increase the computing power available to the user and accelerate ray trace speed for illumination applications.

The Distributed Simulation (DSIM) Module requires a LightTools floating license, which simplifies configurations using multiple computers.

The DSIM Module was first designed with stray light analysis applications in mind, because stray light analysis often requires large starting ray sets, changing analysis filters and paths, and potentially low sampling on receiver. However, other optical applications that require large numbers of simulation rays and a relatively low ray trace efficiency may also benefit.

The DSIM Module supports LightTools optimization and tolerancing operations, and support for more advanced features and applications is planned for upcoming releases.

Cluster example showing the number of workers and licenses needed across different multi-core computers. Each worker with up to 16 threads requires a DSIM license. For processor threads capable of hyperthreading, the threads count toward the total threads accessible.

