NANYANG TECHNOLOGICAL UNIVERSITY SINGAPORE

School of Computer Science and Engineering
College of Engineerin

Simulation-Based Optimisation

Using cloud technology to accelerate SBO

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Project Objectives

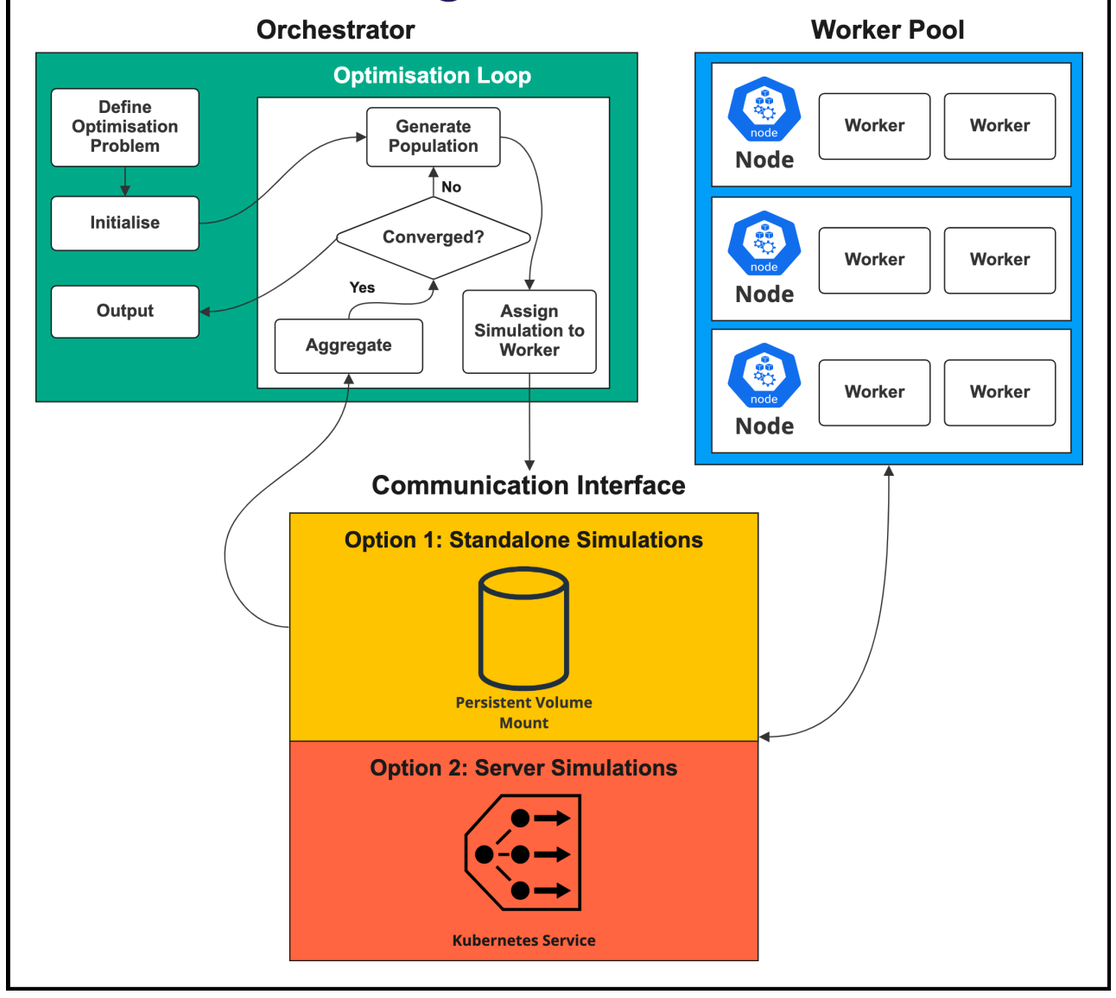
Problem

Performing SBO using cloud parallelisation techniques to improve the throughput and runtime of traditional methods.

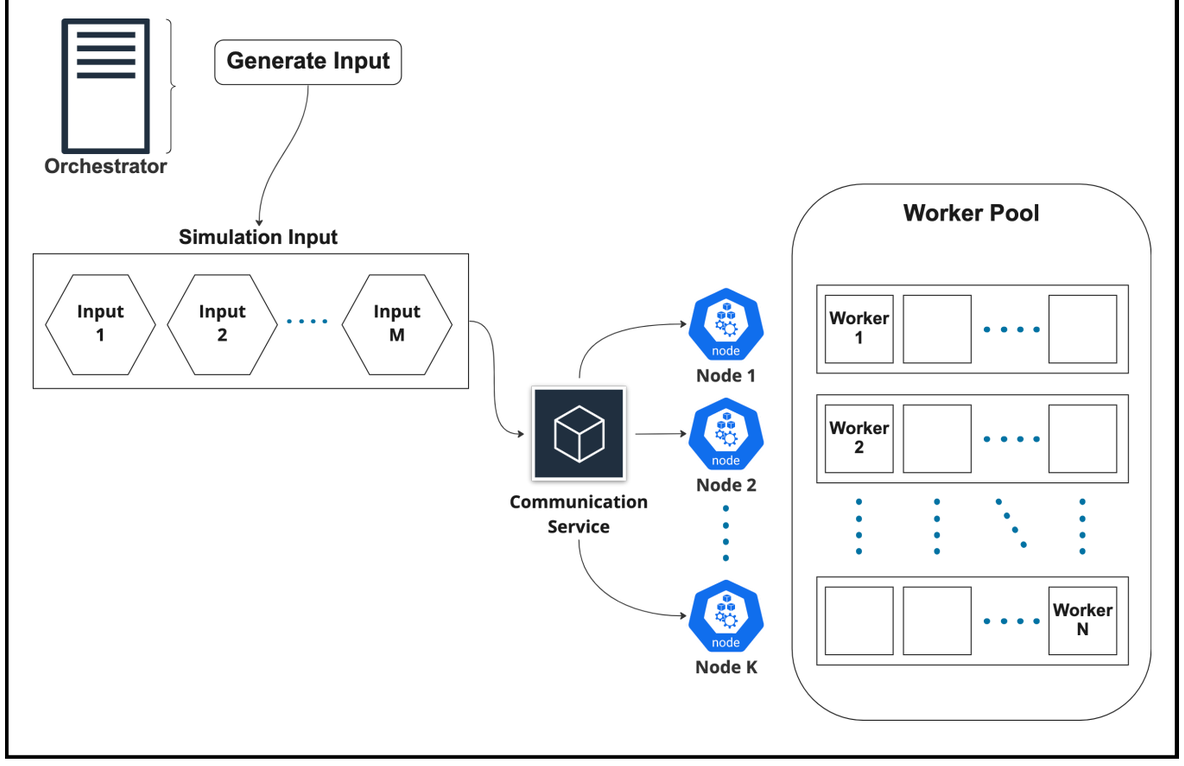
Approach

Optimisation was performed using the extensible PyMOO framework and the task orchestration was performed either using native Kubernetes or Argo, a workflow orchestrator built on top of Kubernetes.

SBO Engine Architecture

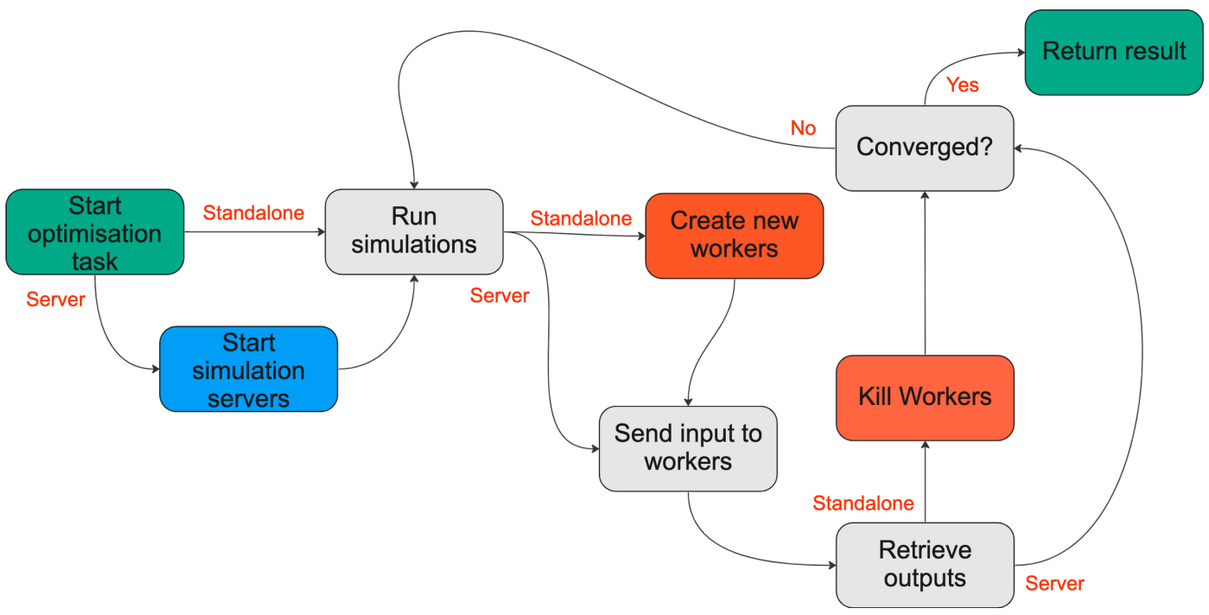


Parallelism Mechanism



Simulation Mechanisms Supported

(1) Long live servers – processes that can run simulations indefinitely. (2) Standalone servers – terminates after each simulation. These were chosen to support performance (1) and compatability (2).



Server vs Standalone Steps

Experiment

The SBO engine was tested on optimising the production output of a wafer simulation plant.