

# Server-side simulation

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If you work with Teamwork Cloud projects, you can simulate them on the server without using a modeling tool. You can execute your models using REST API, or the Cameo Collaborator for Teamwork Cloud user interface (if there are Cameo Collaborator documents published from those models). You can also run your models using the Resources application and Python client (pyST.py).

The following demo shows the server-side simulation in action:

## System requirements

The following Web Application Platform system requirements apply to an environment that runs a single server-side simulation. If you set up an environment where you can run concurrent server-side simulations, the system requirements applicable for a single simulation must be adjusted accordingly.

Web Application Platform system requirements for the environment with server-side simulation:

- Simple non-iterative simulations:
  - 1-core CPU
  - 1GB of RAM
  - Sample projects:
    - <install\_root>\samples\simulation\SpacecraftMassRollup.mdzip
    - <install\_root>\samples\simulation\CoffeeMachine.mdzip
- Simple iterative simulations:
  - 2-core CPU
  - 1GB of RAM
  - Sample projects:
    - <install\_root>\samples\simulation\TradeStudyExamples.mdzip
    - <install\_root>\samples\simulation\HingeMonteCarloAnalysis.mdzip
- Complex, time-consuming simulations:
  - 4-core CPU
  - 2GB of RAM
  - Sample project: [ElectricityConsumptionAnalysis.mdzip](#)

## Installation information



The server-side simulation service is installed automatically alongside Web Application Platform while using Teamwork Cloud or Magic Collaboration Studio installer. If you install Web Application Platform on a separate machine and use the Advanced Install option, select the server-side simulation service during installation. To learn more, refer to [Web Application Platform Installation on a separate machine](#).

The server-side simulation service is one of many Web Application Platform services provided as a separate application.

To install the Server-side simulation

1. Install Web Application Platform.
2. Open the <wap\_install\_root>\apache-tomcat\shared\conf\webappplatform.properties file and set the **sim.license.checkout** property to *true*.
3. Restart Web Application Platform.

## Licensing information

The server-side simulation functionality only works with a floating Cameo Simulation Toolkit license managed by the FlexNet license server.



### Concurrent simulations

- To be able to run concurrent simulations, [deploy the server-side simulation service by using Kubernetes and Docker](#).
- When executing multiple simulations at the same time, every new concurrent simulation requires an additional Cameo Simulation Toolkit license.

## Preparing projects for server-side simulation

To simulate a project on the server, it must meet the following criteria:

- A project has to be added to Teamwork Cloud.
- For simulation results to be saved, you need to specify the **Result Location** property of a Simulation Configuration.

## Required permissions

To perform server-side simulation, you need to have the following Teamwork Cloud permissions:

- **Read Resources** - allows you to simulate resources.
- **Edit Resources** - allows you to commit the simulation results to a resource.
- **Manage Simulations** - allows you to manage all simulations, including the ability to get and review simulation results and terminate simulations executed by other users.



If you want to be able to manage all simulations, in addition to the Manage Simulations permission, you also need to have the Read Resources permission for the related resources.

## Server-side simulation limitations

There are several limitations related to server-side simulation:

- Project options cannot be read, so default option values are always used instead of the actual ones.
- Math engine integrations (Matlab, Mathematica, etc.) are not available.
- FMU/FMU co-simulation with Windows binaries is not available.
- UseCase Execution is not available.
- DSL stereotypes are not applied to created Slot and InstanceSpecification elements.
- Finding elements by Name (e.g Signals, Operations with ALH, mapping with ExcelHelper) is not available.

## Related pages

- [Simulation using REST API](#)
- [Simulation using Jupyter Notebook](#)
- [Simulation in the Resources application](#)
- [Simulation in Cameo Collaborator for Teamwork Cloud](#)
- [Simulation with UI](#)
- [Managing active simulations](#)
- [Generating FMU - Technology preview](#)