

Remote Execution of Computational Models

What is PSR Cloud?

As models increase their capability to reproduce the complexities of the real world, more computational power is demanded. A natural approach to keep the execution low is to design distributed models which take advantage of the concurrent work of computers. SDDP (model that optimizes the dispatch of hydrothermal systems) is an example of an application which employs this strategy. A usual disadvantage of this approach is the relatively high cost of acquiring hardware and software, as well as the need of specialized technical staff to install and operate the infrastructure.

PSR Cloud is a platform conceived to manage the remote execution of models - particularly SDDP - in a distributed process environment (cloud computing). This solution avoids the need for acquiring expensive “local” infrastructure to carry out executions of studies.

With PSR Cloud it is possible to:

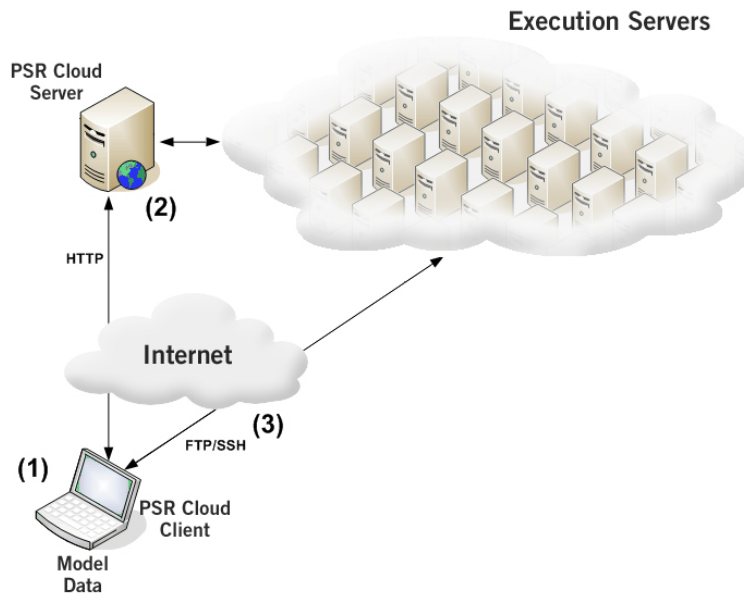
- avoid the investment of a local dedicated infrastructure;
- execute case studies in a large infrastructure;
- execute case studies remotely when the local infrastructure is busy or unavailable

General Features**PSR Cloud is easy to install and update**

PSR Cloud client is a “light” software package installed on each client machine and updated through an automatic process, such as in Microsoft Windows.

Easy to use

PSR Cloud client works as shown in the next figure: (1) the user selects the folder where the case study data is located defines the number of desired CPUs that will be employed and starts the remote execution; (2) PSR Cloud server checks the permissions granted to this user and allocates the requested number of servers; (3) PSR Cloud client sends the model data to the allocated servers. After the execution is finished, the results are downloaded to the user’s computer.



Ready to work in any network

PSR Cloud client relies on outgoing HTTP, FTP, and SSH, most likely to be already available in the client network.

Strategically compatible with your local cluster

Even when a local cluster of computers is available, PSR Cloud works as an alternative network, increasing the overall reliability.

Extensible for other applications

PSR Cloud platform can be customized to run specific user applications in addition to PSR's SDDP.

Confidentiality

The data communication (model input and output files) is carried out between the user's local computer and the remote servers allocated to the execution, without any interference or data routing through PSR or any other servers.

High performance

PSR Cloud currently offers thousands of CPUs grouped in computers having several gigabytes of memory and terabytes of disk storage. The hardware is constantly being updated and increased in size.