



# PSR



# PSR CLOUD

Remote Execution of Computational Models

## WHAT IS PSR CLOUD?

**As the optimization** models incorporate more details of the real world, they become more complex and higher computational power is needed to solve. A natural approach to keep the execution time under acceptable levels is to design distributed models, which take advantage of the use of multiple computers - and their various processors - performing parallel calculations. Among the computational models that use such strategy are SDDP, OPTGEN and NCP. A usual disadvantage of this approach is the relatively high cost with dedicated hardware, software and personnel to maintain the infrastructure available.

**PSR Cloud** is a platform conceived to manage the remote execution of simulation models in an environment of distributed processing (cloud computing), in such a way that the users do not need to have any specialized infrastructure for that purpose.

### COST REDUCTION

Avoids the investment in dedicated hardware, software and personnel.

### SECURITY

Executes simulations securely using large scale infrastructure on the cloud.

### HIGH-PERFORMANCE

Offers on-demand high-performance computing (HPC) cluster with fast CPU's and plenty of RAM.

### SCALABILITY

Allows the execution of multiple cases simultaneously, leveraging the analysis capability of your team.

### FLEXIBILITY

Can be used for simulations when the local infrastructure is busy or unavailable.

## MAIN FEATURES:

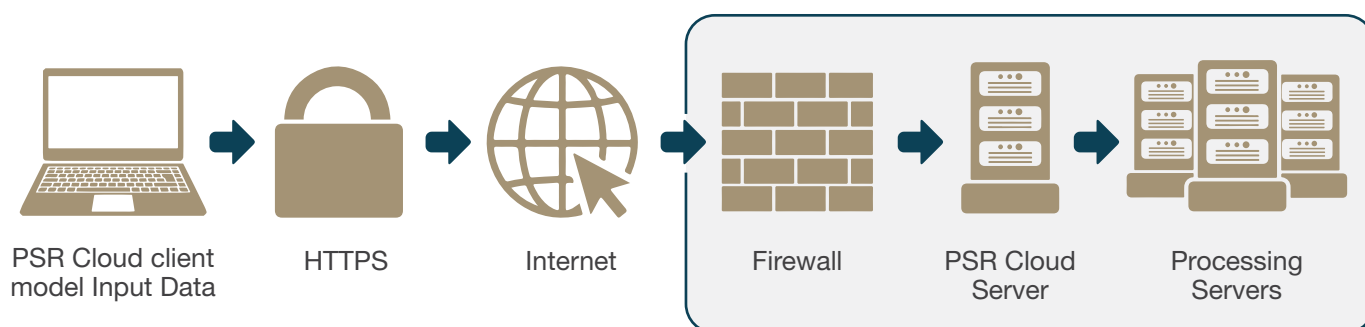
### Easy to setup, update and use:

PSR Cloud Client is the application that manages the remote executions of the models. It can be installed in any standard PC with internet access. The updates of this application can be set to be automatically downloaded, like the Windows updates.

**On the cloud**, the PSR Cloud Server takes care of all execution process without demanding any user intervention: it uploads the local data, adds the processing servers, installs the models in the servers, initiates and monitors the execution, notifies the user by email once the processing is finished and keeps the results available to be downloaded to the user's local PC.

## PSR CLOUD CLIENT WORKS AS FOLLOWS:

1. The user informs the study input data folder and the desired number of processors;
2. When the user executes the case, the PSR Cloud Server verifies the permissions granted to the user and allocates the requested servers;
3. PSR Cloud Client sends to the allocated serves the models' input data. Once the execution is finished, the results can be transferred to the user's local computer.



## HIGH PERFORMANCE

**PSR Cloud** currently has available an infrastructure with thousands of high performance remote processing servers, powered either by 3rd Generation Intel Xeon Scalable processors (Ice Lake) with an all-core turbo frequency of 3.5 GHz, supporting up to 128 vCPUs per instance, featuring a 2:1 ratio of memory to vCPU (i.e. up to 256Gb per instance) and with up to 50 Gbps of network bandwidth using Elastic Network Adapter (ENA)-based Enhanced Networking. For example, if a case is launched with 128 processes, PSR Cloud will either use two instances having 64 vCPUs and 128Gb of RAM each or one instance having 128 vCPUs and 256Gb of RAM (but in both cases in this example a total of 128 vCPUs and 256Gb of RAM will be used). The configuration of PSR Cloud servers is upgraded over time as new technology becomes available.

## LOW COST

**PSR Cloud** is a pay-per-run service whose cost for SDDP, OPTGEN and NCP executions is just US\$0.10 per processor per hour using version 15 (or newer) of SDDP, and US\$0.50 per processor per hour using older versions of SDDP. PSR Cloud is billed proportionally by minute. This means that a run using version 15 of SDDP that takes 1 hour and 15 minutes (i.e., 64 minutes) with 64 processes will cost only  $(US\$0.10/60) \times (75) \times 64 = US\$ 8$ .

The service is offered in a prepayment scheme: the client purchases credits to be used in the executions and the cost of each run is deducted from the current balance. The minimum amount of credits to be purchased is US\$1,500 (net value; only Brazilian taxes included).



## CONFIDENTIALITY AND SECURITY

**All data communication** (input and output files of the models) is carried out, using data cryptography, directly between the user's local computer and the remote servers allocated to the execution, without any interference or passing through PSR servers. There is no access to the user's data by third parties.

**PSR Cloud** uses the HTTP (Hyper Text Transfer Protocol) over SSL (Secure Sockets Layer) or HTTPS protocol, which is a secure way to transfer data over the internet, with the same level of protection applied for bank transactions.

## VERY HIGH AVAILABILITY

**PSR Cloud** uses remote processing servers that have a minimum monthly availability of 99.95% of the time.

## EASY TO CONTROL AND MONITOR THE EXECUTIONS

**During the execution**, the user can monitor - via the PSR Cloud Client graphical interface - the evolution of the processing by accessing the log produced by the model. At the end of the run, the user receives an email with its status, cost and remaining account balance. The user can also check the complete list of performed runs and their status and costs by accessing the administrative page of PSR Cloud on the web.



## STRATEGICALLY COMPATIBLE WITH LOCAL CLUSTERS

**Even if** a local infrastructure exists, for reliability purposes, PSR Cloud can act as an alternative processing environment.

## EXTENSIBLE TO OTHER APPLICATIONS OF INTEREST

**The platform** can be personalized to also run similar user specific applications<sup>1</sup>.

## MULTI USER FLEXIBILITY

**The client** can create a corporate account and associate a group of users to it, who will share the PSR Cloud credits.

## LEARN MORE ABOUT PSR CLOUD WITHOUT COMMITMENT

Please contact us via e-mail:  
[psrcloud@psr-inc.com](mailto:psrcloud@psr-inc.com)  
and request a demo.

<sup>1</sup> Please contact PSR to assess the feasibility and cost for customizations.

