What’s New: MIRO and ENGINE

Model Deployment and Solution in the Cloud

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Our Products

GAMS

Modeling Language

- ✓ Many solvers included
- ✓ Modern IDE (Studio)
- ✓ APIs for Python, C++, .NET and JAVA

MIRO

Graphical UI Generator

- ✓ Zero programming
- ✓ Desktop or Server
- ✓ Extensible library of graphical output formats

ENGINE

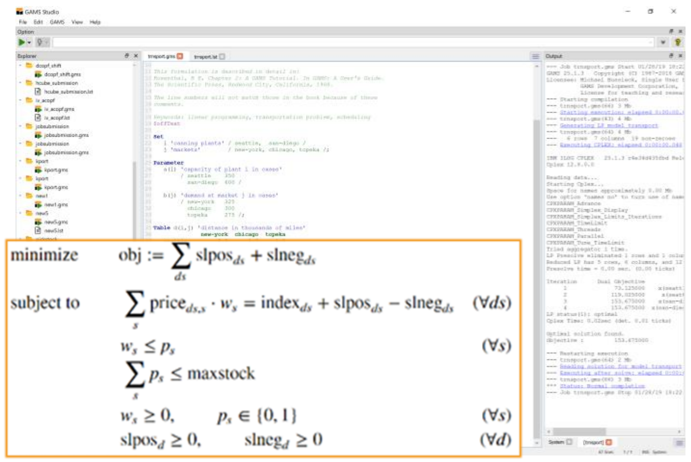
Job Scheduler

- ✓ Centralized compute resources
- ✓ Cloud Environments
- ✓ REST API
- ✓ User Management

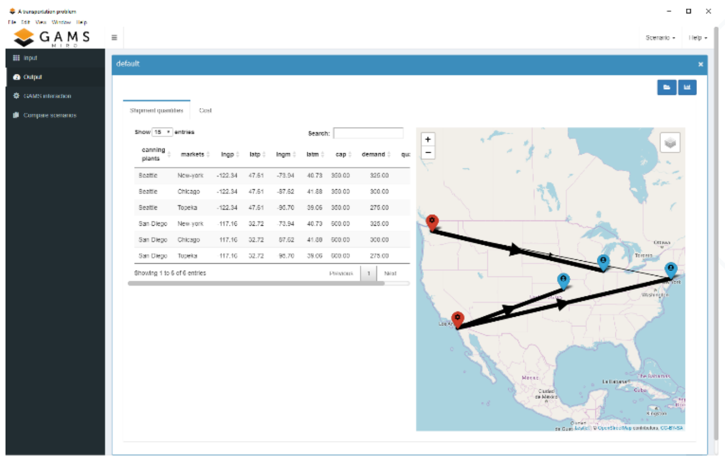
What is GAMS MIRO?

- Interactive application for your GAMS model
- Library for all your MIRO apps
- Gateway for optimizing in the cloud

→ GAMS MIRO is a new deployment environment for GAMS models



$$
\begin{aligned}
\text{minimize} \quad & obj := \sum_{ds} \text{slpos}_{ds} + \text{sneg}_{ds} & \\
\text{subject to} \quad & \sum_{s} \text{price}_{ds,s} \cdot w_s = \text{index}_{ds} + \text{slpos}_{ds} - \text{slneg}_{ds} & (\forall ds) \\
& w_s \le p_s & (\forall s) \\
& \sum_{s} p_s \le \text{maxstock} & \\
& w_s \ge 0, \qquad p_s \in \{0,1\} & (\forall s) \\
& \text{slpos}_d \ge 0, \qquad \text{slneg}_d \ge 0 & (\forall d)
\end{aligned}
$$



default

Shipment quantities | Cost

Show 15 entries   Search:

canning plants	markets	lngp	latp	lngm	latm	cap	demand
Seattle	New-york	-122.34	47.61	-73.94	40.73	350.00	325.00
Seattle	Chicago	-122.34	47.61	-87.62	41.88	350.00	300.00
Seattle	Topeka	-122.34	47.61	-95.70	39.06	350.00	275.00
San-Diego	New-york	-117.16	32.72	-73.94	40.73	600.00	325.00
San-Diego	Chicago	-117.16	32.72	-87.62	41.88	600.00	300.00
San-Diego	Topeka	-117.16	32.72	-95.70	39.06	600.00	275.00

Showing 1 to 6 of 6 entries

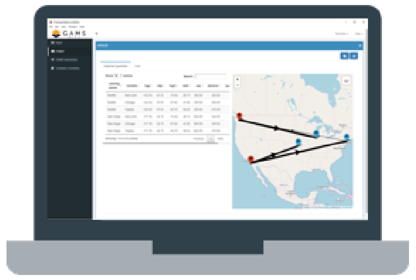
LIVE DEMO

- Start with GAMS MIRO gallery: https://miro.gams.com/
- Look at the Cohort Divisor app: https://miro.gams.com/gallery/app_direct/cohortdivisor/
- N.B.: the GAMS jobs are being solved with GAMS Engine

Optimizing in the cloud – MIRO Setups

MIRO Desktop

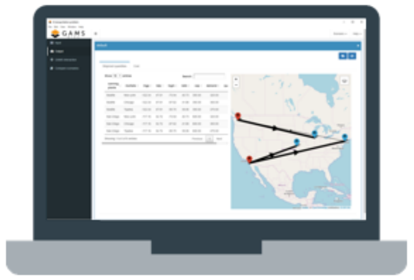
Everything local



- GAMS & MIRO installed locally
- Synchronous job execution

MIRO Desktop

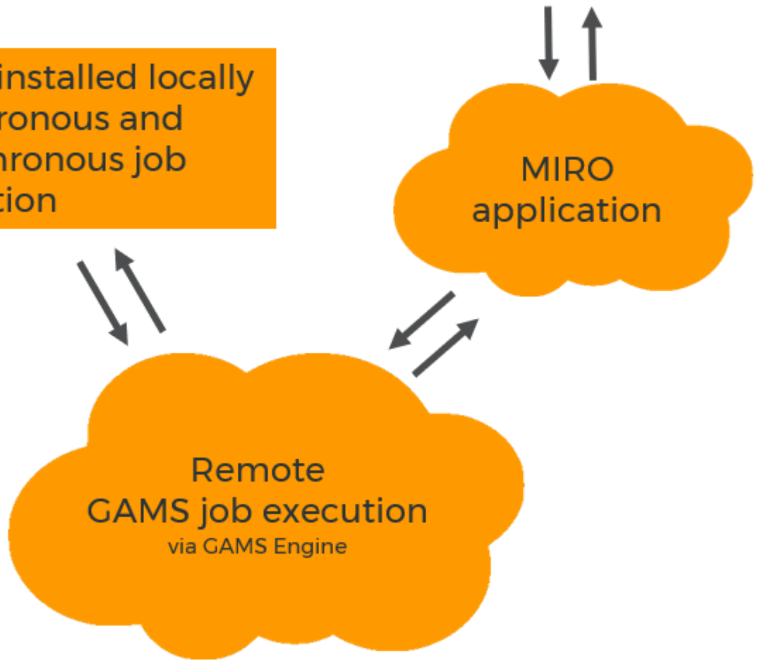
Boosted by
GAMS Engine



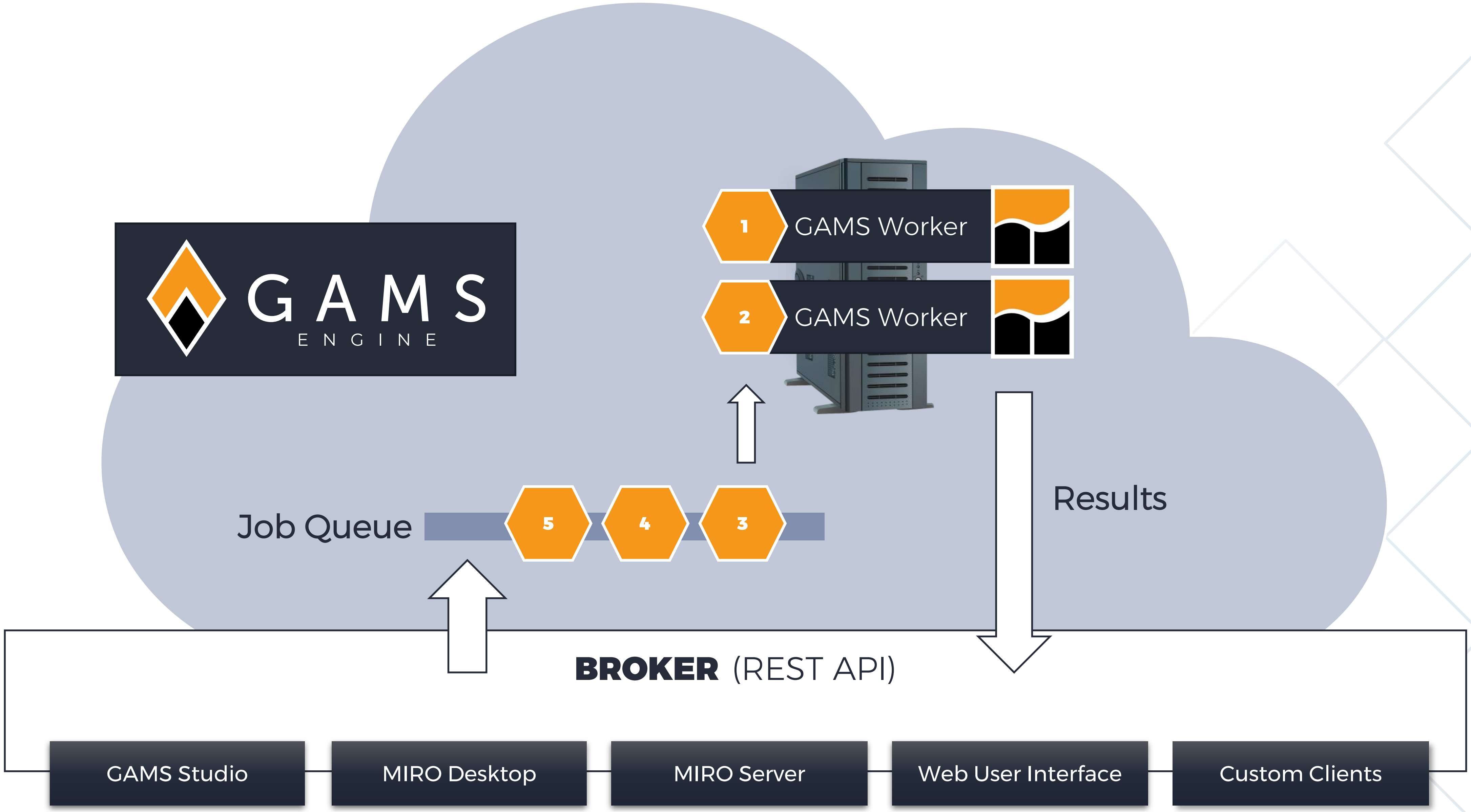
- MIRO installed locally
- Synchronous and asynchronous job execution

MIRO Server

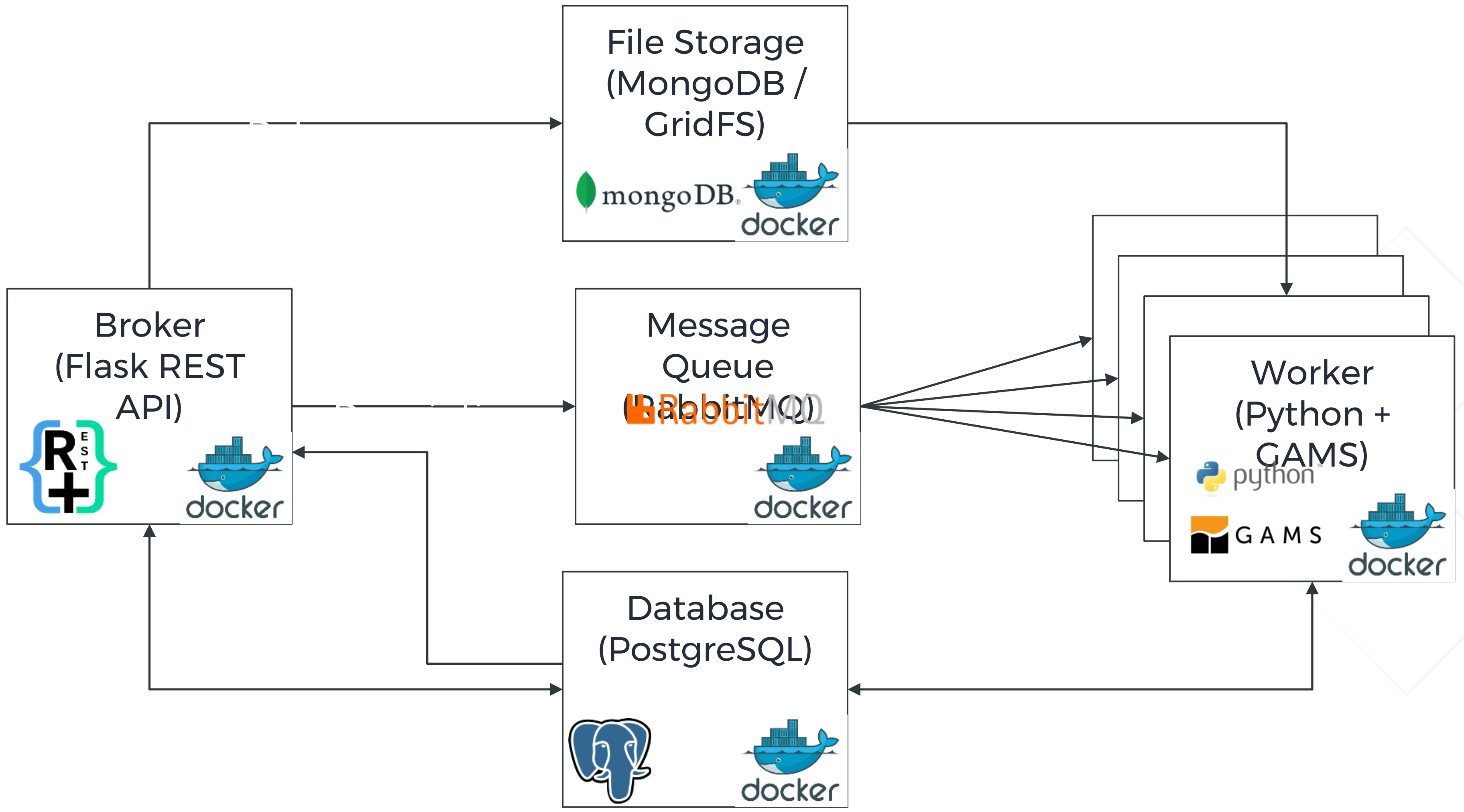
Everything on a
server



GAMS Engine - Overview

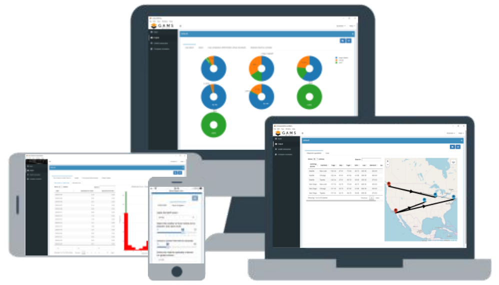


Let's take a closer look

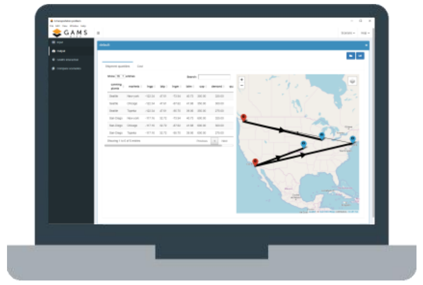


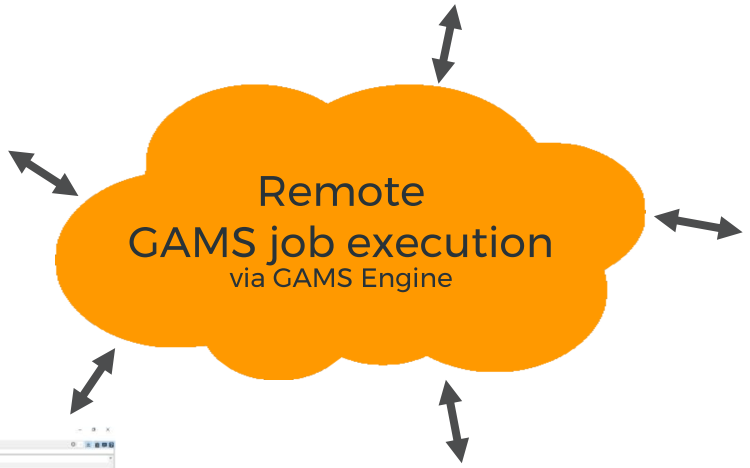
Connecting to GAMS Engine

MIRO Server

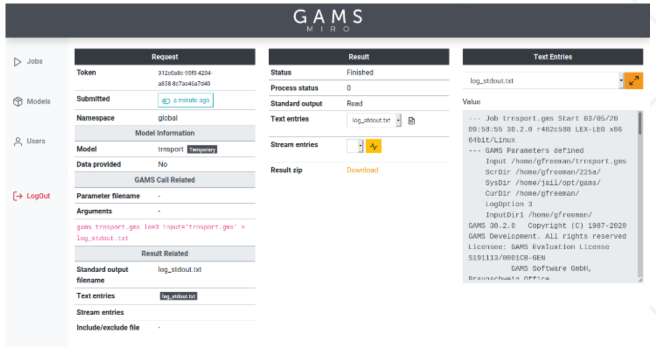


MIRO Desktop





Web User Interface



Request	
Token	312c0a8c-96f5-4204-a858-8c7ac46a7d40
Submitted	a minute ago
Namespace	global
Model Information	
Model	trnsport Temporary
Data provided	No
GAMS Call Related	
Parameter filename	-
Arguments	-
gams trnsport.gms lo=3 input='trnsport.gms' > log_stdout.txt	
Result Related	
Standard output filename	log_stdout.txt
Text entries	log_stdout.txt
Stream entries	
Include/exclude file	-

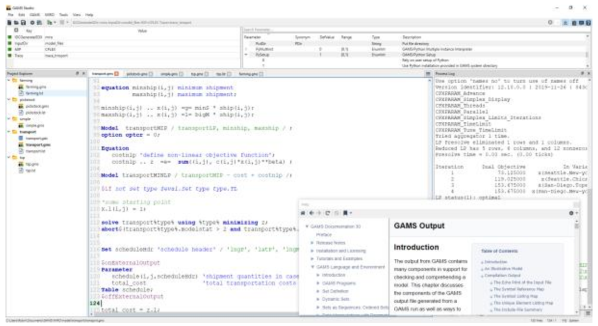
Result	
Status	Finished
Process status	0
Standard output	Read
Text entries	log_stdout.txt
Stream entries	
Result zip	Download

Text Entries: log_stdout.txt

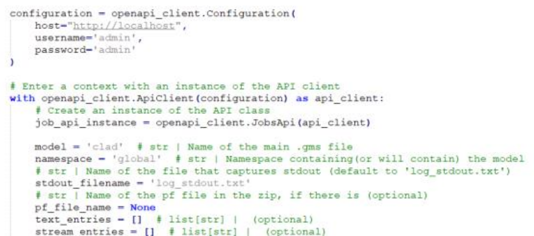
Value

```
--- Job trnsport.gms Start 03/05/20
09:58:55 30.2.0 r482c588 LEX-LEG x86
64bit/Linux
--- GAMS Parameters defined
    Input /home/gfreeman/trnsport.gms
    ScrDir /home/gfreeman/225a/
    SysDir /home/jail/opt/gams/
    CurDir /home/gfreeman/
    LogOption 3
    InputDir1 /home/gfreeman/
GAMS 30.2.0   Copyright (C) 1987-2020
GAMS Development. All rights reserved
Licensee: GAMS Evaluation License
S191113/0001CB-GEN
          GAMS Software GmbH,
Braunschweig Office
```

GAMS Studio

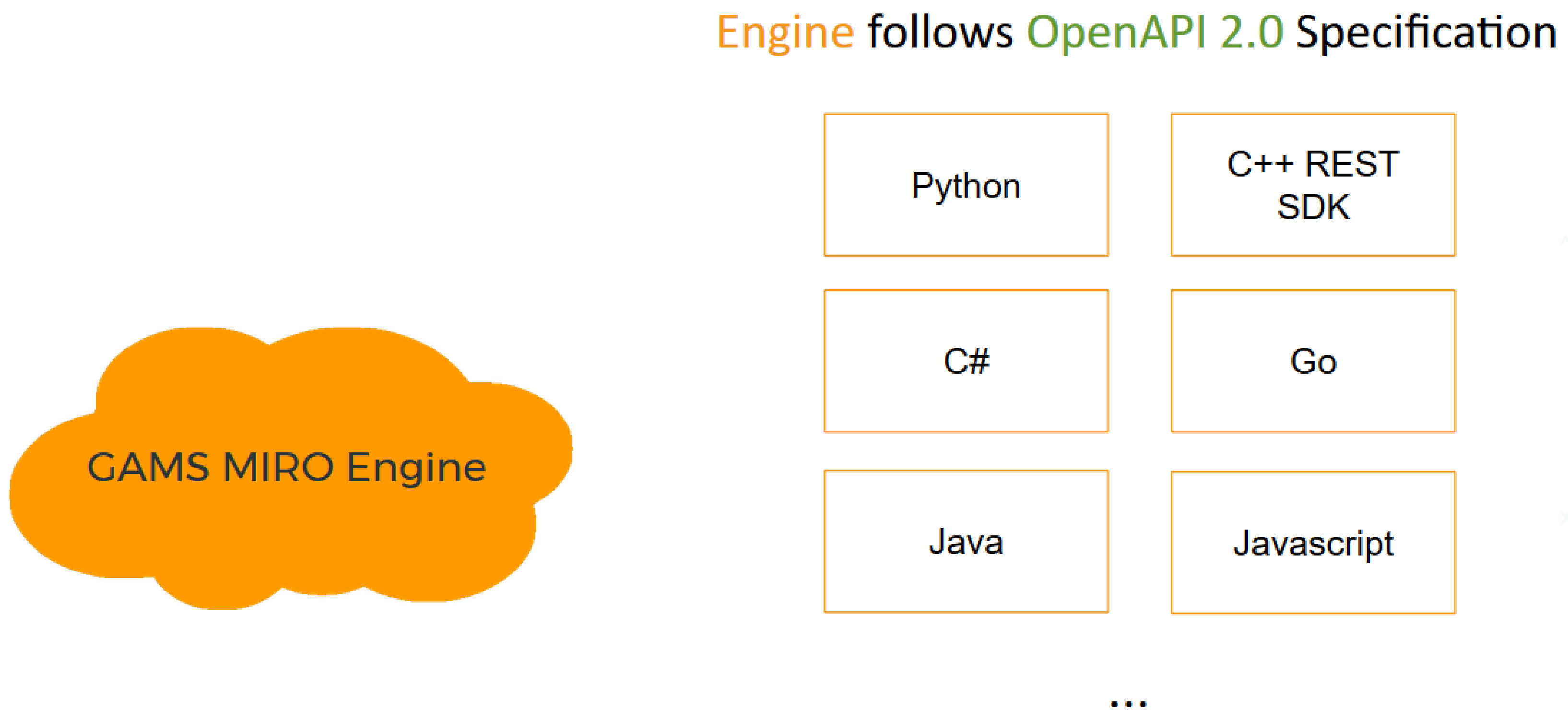


Other APIs
(Python, Java, etc.)



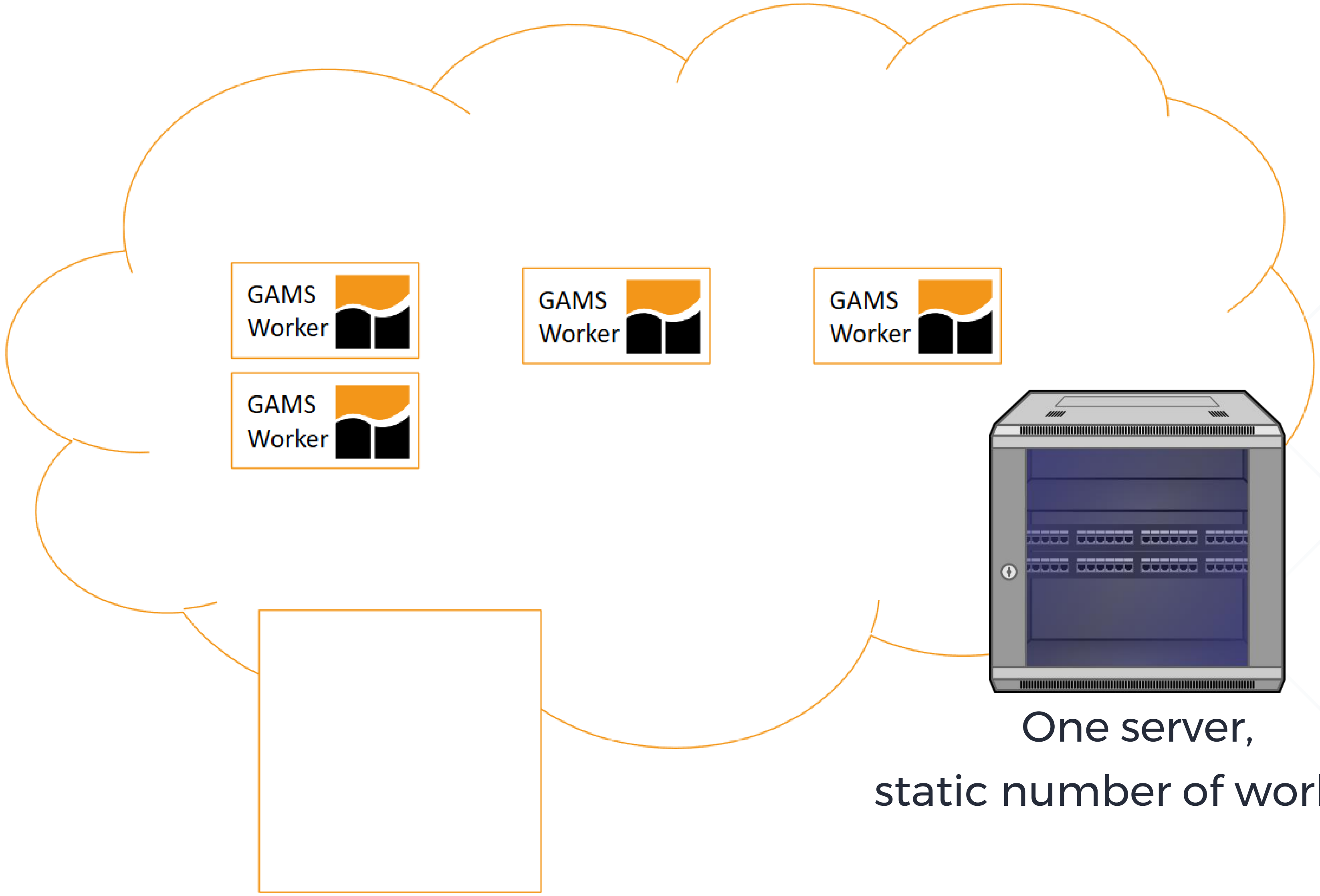
```python
configuration = openapi_client.Configuration(
    host="http://localhost",
    username='admin',
    password='admin'
)

# Enter a context with an instance of the API client
with openapi_client.ApiClient(configuration) as api_client:
    # Create an instance of the API class
    job_api_instance = openapi_client.JobsApi(api_client)

    model = 'clad'  # str | Name of the main .gms file
    namespace = 'global'  # str | Namespace containing(or will contain) the model
    # str | Name of the file that captures stdout (default to 'log_stdout.txt')
    stdout_filename = 'log_stdout.txt'
    # str | Name of the pf file in the zip, if there is (optional)
    pf_file_name = None
    text_entries = []  # list[str] |  (optional)
    stream_entries = []  # list[str] |  (optional)
```

Develop your own Client



- Easily (auto)generate clients!

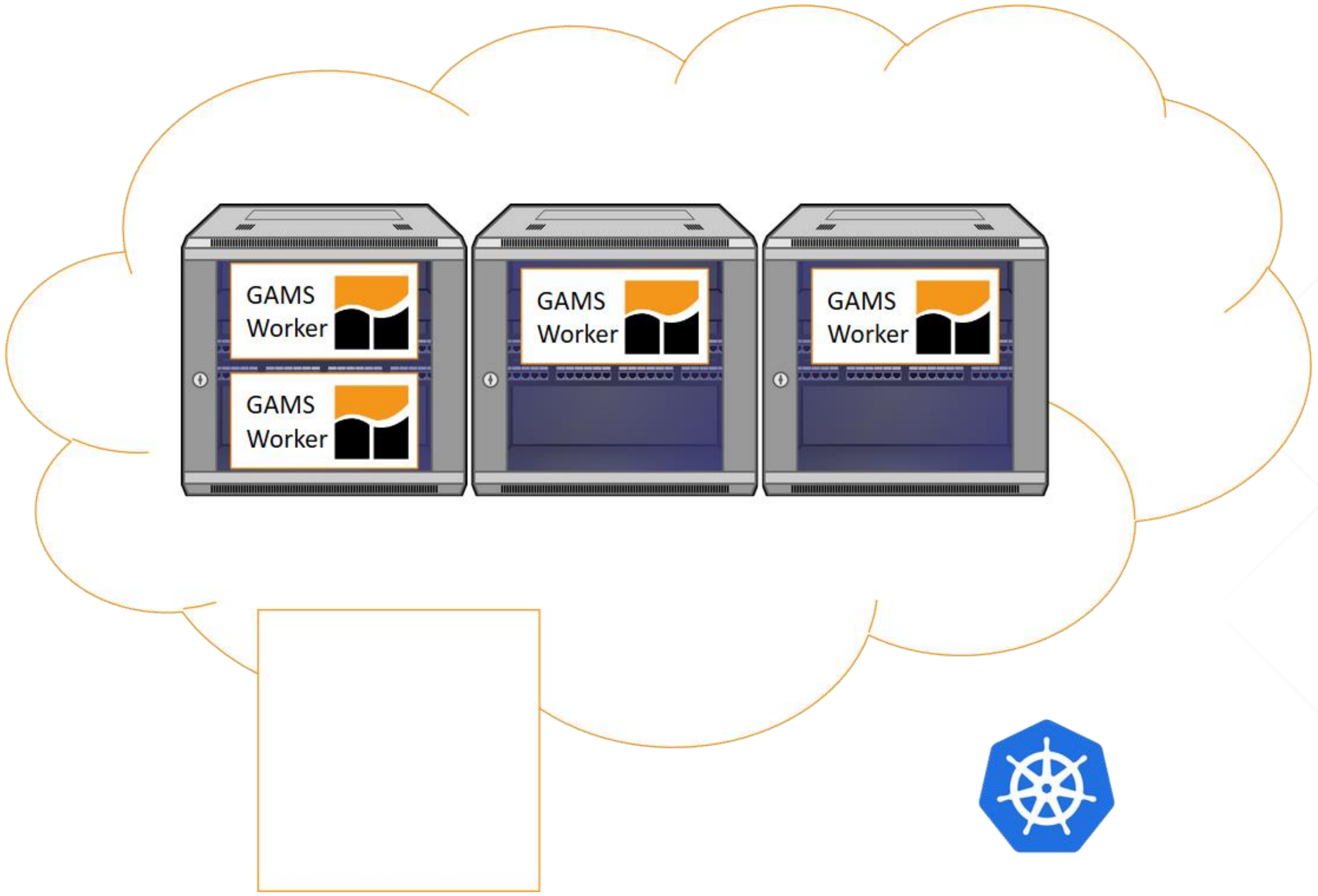
Optimizing in the cloud – GAMS Engine



One server,

static number of workers

Optimizing in the cloud – GAMS Engine


GAMS Worker
GAMS Worker
GAMS Worker
GAMS Worker