

PM2

Realiza o gerenciamento de processos não só de aplicações que rodam em Node.js mas também em outras plataformas, sendo mais indicado para o ambiente de produção

Funcionalidades

- Gestão de processos
- Manter as aplicações rodando em background
- Balanceamento de carga
- Monitoramento local e também remoto
- Inicialização da aplicação ao ligar o servidor
- Reinicialização da aplicação utilizando diversos parâmetros como memória ou horário agendado
- Configuração com quantidade de instâncias, local de armazenamento dos logs, variáveis de ambiente entre outros parâmetros

Instalação

É possível instalar o PM2 utilizando o npm ou yarn

npm install pm2

ou

yarn add pm2

pm2 list

Lista os projetos gerenciados pelo PM2

main.js — pm2

JS main.js X

```
1 const http = require("http");
2
3 http.createServer((req, res) => {
4   res.write(`process.pid`);
5   res.end();
6 }).listen(3000);
7
```

PROBLEMS OUTPUT TERMINAL DEBUG CONSOLE

rodrigobranas pm2 \$ npx pm2 list

id	name	mode	status	cpu	memory
----	------	------	--------	-----	--------

rodrigobranas pm2 \$ █

`pm2 start main.js`

Inicia um projeto, nesse caso main.js

main.js — pm2

JS main.js X

```
1 const http = require("http");
2
3 http.createServer((req, res) => {
4   res.write(`process.pid`);
5   res.end();
6 }).listen(3000);
7
```

PROBLEMS OUTPUT TERMINAL DEBUG CONSOLE

zsh + ×

```
rodrigobranas pm2 $ npx pm2 start main.js
[PM2] Starting /Users/rodrigobranas/development/workspace/branas/fullstackjs_t2/pm2/main.js in fork_mode (1 instance)
[PM2] Done.
```

id	name	mode	σ	status	cpu	memory
0	main	fork	0	online	0%	14.3mb

rodrigobranas pm2 \$ █

A screenshot of a macOS terminal window titled "main.js — pm2". The window contains a code editor with a file named "main.js" and a terminal pane below it.

The code editor shows the following JavaScript code:

```
JS main.js ×  
1 const http = require("http");  
2  
3 http.createServer((req, res) => {  
4     res.write(`process.pid`);  
5     res.end();  
6 }).listen(3000);  
7
```

The terminal pane displays the output of the command "ps aux | grep main.js" run by the user "rodrigobranas". The output shows two processes:

```
rodrigobranas pm2 $ ps aux | grep main.js  
rodrigobranas 69816 0.1 0.3 408816976 46400 ?? Ss 4:25PM 0:00.22 node /Users/rodrigobranas/development/workspace/branas/fullstackjs_t2/pm2/main.js  
rodrigobranas 70072 0.0 0.0 408103312 1344 s001 S+ 4:26PM 0:00.00 grep main.js  
rodrigobranas pm2 $ █
```

```
pm2 start main.js -i 2
```

Inicia uma aplicação com múltiplas instâncias

main.js — pm2

JS main.js X

```
1 const http = require("http");
2
3 http.createServer((req, res) => {
4     res.write(` ${process.pid}`);
5     res.end();
6 }).listen(3000);
7
```

PROBLEMS OUTPUT TERMINAL DEBUG CONSOLE

zsh + ×

```
rodrigobranas pm2 $ npx pm2 start main.js -i 2
[PM2] Starting /Users/rodrigobranas/development/workspace/branas/fullstackjs_t2/pm2/main.js in cluster_mode (2 instances)
[PM2] Done.
```

id	name	mode	ø	status	cpu	memory
0	main	cluster	0	online	0%	40.0mb
1	main	cluster	0	online	0%	26.6mb

rodrigobranas pm2 \$ █

A screenshot of a terminal window titled "main.js — pm2". The window shows a code editor with a single file named "main.js" containing the following code:

```
1 const http = require("http");
2
3 http.createServer((req, res) => {
4     res.write(`process.pid`);
5     res.end();
6 }).listen(3000);
7
```

The terminal tab is active and displays the following command-line output:

```
rodrigobranas pm2 $ ps aux | grep main.js
rodrigobranas    70299  0.1  0.3 408948560  50800  ??  S      4:27PM  0:00.10 node /Users/rodrigobranas/development/workspace/branas/fullstackjs_t2/pm2/main.js
rodrigobranas    70300  0.1  0.3 408677968  50064  ??  S      4:27PM  0:00.09 node /Users/rodrigobranas/development/workspace/branas/fullstackjs_t2/pm2/main.js
rodrigobranas    70343  0.0  0.0 408103312   1344 s001  S+    4:27PM  0:00.00 grep main.js
rodrigobranas pm2 $ █
```

```
pm2 start main.js -i max
```

Inicia uma aplicação com múltiplas instâncias

main.js — pm2

JS main.js X

```
1 const http = require("http");
2
3 http.createServer((req, res) => {
4     res.write(process.pid);
5     res.end();
}
```

PROBLEMS OUTPUT TERMINAL DEBUG CONSOLE

rodrigobranas pm2 \$ npx pm2 start main.js -i max
[PM2] Starting /Users/rodrigobranas/development/workspace/branas/fullstackjs_t2/pm2/main.js in cluster_mode (0 instance)
[PM2] Done.

id	name	mode	⌚	status	cpu	memory
0	main	cluster	0	online	0%	49.4mb
1	main	cluster	0	online	0%	50.5mb
2	main	cluster	0	online	0%	50.5mb
3	main	cluster	0	online	0%	49.9mb
4	main	cluster	0	online	0%	49.9mb
5	main	cluster	0	online	0%	45.4mb
6	main	cluster	0	online	0%	42.1mb
7	main	cluster	0	online	0%	29.8mb

rodrigobranas pm2 \$

A screenshot of a terminal window titled "main.js — pm2". The window shows a code editor with a file named "main.js" containing the following code:

```
1 const http = require("http");
2
3 http.createServer((req, res) => {
4     res.write(process.pid);
5     res.end();
}
```

The terminal tab is active and displays a list of pm2 processes. The output is as follows:

User	Process ID	CPU Usage	Memory Usage	Memory Peak	Status	Start Time	Duration	Command
igobranas	development/workspace/branas/fullstackjs_t2/pm2/main.js	0.1	0.3	409341520	48672	?? S	4:08PM	0:00.15 node /Users/rodr
rodrigobranas	66033	0.1	0.3	409210704	48304	?? S	4:08PM	0:00.15 node /Users/rodr
igobranas	development/workspace/branas/fullstackjs_t2/pm2/main.js	0.1	0.3	409210192	47856	?? S	4:08PM	0:00.16 node /Users/rodr
rodrigobranas	66036	0.1	0.3	408112528	1408	s01 S+	4:09PM	0:00.00 grep main.js
rodrigobranas	66035	0.1	0.3	409210704	48064	?? S	4:08PM	0:00.14 node /Users/rodr
igobranas	development/workspace/branas/fullstackjs_t2/pm2/main.js	0.0	0.0	409079120	47840	?? S	4:08PM	0:00.15 node /Users/rodr
rodrigobranas	66176	0.0	0.0	409341776	48240	?? S	4:08PM	0:00.15 node /Users/rodr
igobranas	development/workspace/branas/fullstackjs_t2/pm2/main.js	0.0	0.3	408948560	47776	?? S	4:08PM	0:00.15 node /Users/rodr
rodrigobranas	66039	0.0	0.3	409341520	48672	?? S	4:08PM	0:00.15 node /Users/rodr
igobranas	development/workspace/branas/fullstackjs_t2/pm2/main.js	0.0	0.3	409210704	48304	?? S	4:08PM	0:00.15 node /Users/rodr
rodrigobranas	66037	0.0	0.3	409210192	47856	?? S	4:08PM	0:00.15 node /Users/rodr
igobranas	development/workspace/branas/fullstackjs_t2/pm2/main.js	0.0	0.3	408112528	1408	s01 S+	4:09PM	0:00.00 grep main.js
rodrigobranas	66032	0.0	0.3	409341776	48240	?? S	4:08PM	0:00.14 node /Users/rodr
igobranas	development/workspace/branas/fullstackjs_t2/pm2/main.js	0.0	0.3	409079120	47840	?? S	4:08PM	0:00.15 node /Users/rodr
rodrigobranas	pm2 \$							

```
pm2 start main.js --watch
```

Inicia uma aplicação e monitora mudanças no código-fonte, reiniciando de forma automática

main.js — pm2

JS main.js X

```
1 const http = require("http");
2
3 http.createServer((req, res) => {
4   res.write(`process.pid`);
5   res.end();
6 }).listen(3000);
7
```

PROBLEMS OUTPUT TERMINAL DEBUG CONSOLE

zsh + ×

```
rodrigobranas pm2 $ npx pm2 start main.js --watch
[PM2] Starting /Users/rodrigobranas/development/workspace/branas/fullstackjs_t2/pm2/main.js in fork_mode (1 instance)
[PM2] Done.
```

id	name	mode	σ	status	cpu	memory
0	main	fork	0	online	0%	12.0mb

rodrigobranas pm2 \$ █

```
pm2 start main.js --name app
```

Inicia uma aplicação e atribui um nome

main.js — pm2

JS main.js X

```
1 const http = require("http");
2
3 http.createServer((req, res) => {
4   res.write(`process.pid`);
5   res.end();
6 }).listen(3000);
7
```

PROBLEMS OUTPUT TERMINAL DEBUG CONSOLE

zsh + ×

```
rodrigobranas pm2 $ npx pm2 start main.js --name app
[PM2] Starting /Users/rodrigobranas/development/workspace/branas/fullstackjs_t2/pm2/main.js in fork_mode (1 instance)
[PM2] Done.
```

id	name	mode	σ	status	cpu	memory
0	app	fork	0	online	0%	8.2mb

rodrigobranas pm2 \$ █

pm2 start config_file

Inicia uma aplicação com base em um arquivo de configurações com a quantidade de instâncias, local de armazenamento dos logs, variáveis de ambiente entre outros parâmetros

A screenshot of a macOS application window titled "ecosystem.config.js — pm2". The window contains a code editor with the following content:

```
JS ecosystem.config.js X
1 module.exports = [
2   apps : [
3     {
4       "name": "main",
5       "script": "main.js",
6       "watch": true,
7       instances: 2,
8       env: {
9         port: 4200
10      }
11    }
12];
```

ecosystem.config.js — pm2

JS ecosystem.config.js X

```
1 module.exports = {
2   apps : [
3     {
4       "name": "main",
5       "script": "main.js",
6       "watch": true,
7       instances: 2,
8       env: {
9         port: 4200
10      }
11    }
12 }
```

PROBLEMS OUTPUT TERMINAL DEBUG CONSOLE

rodrigobranas pm2 \$ npx pm2 start ecosystem.config.js
[PM2] [WARN] Applications main not running, starting...
[PM2] App [main] launched (2 instances)

id	name	mode	�	status	cpu	memory
0	main	cluster	0	online	0%	39.9mb
1	main	cluster	0	online	0%	27.1mb

rodrigobranas pm2 \$

pm2 ecosystem

Gera um arquivo de configurações para a aplicação

A screenshot of a terminal window titled "main.js — pm2". The window contains the following code:

```
1 const http = require("http");
2
3 http.createServer((req, res) => {
4     console.log(process.pid);
5     res.write(` ${process.pid}`);
6     res.end();
7 }).listen(3000);
8
```

The terminal tab is active, showing the command:

```
rodrigobranas pm2 $ npx pm2 ecosystem
```

Output from the command:

```
File /Users/rodrigobranas/development/workspace/branas/fullstackjs_t2/pm2/ecosystem.config.js generated
```

The terminal prompt is:

```
rodrigobranas pm2 $ █
```

A screenshot of a macOS application window titled "ecosystem.config.js — pm2". The window contains a code editor with the following content:

```
JS ecosystem.config.js X
1 module.exports = {
2   apps : [
3     script: 'index.js',
4     watch: '.'
5   , {
6     script: './service-worker/',
7     watch: ['./service-worker']
8   ],
9
10  deploy : {
11    production : {
12      user : 'SSH_USERNAME',
13      host : 'SSH_HOSTMACHINE',
14      ref : 'origin/master',
15      repo : 'GIT_REPOSITORY',
16      path : 'DESTINATION_PATH',
17      'pre-deploy-local': '',
18      'post-deploy' : 'npm install && pm2 reload ecosystem.config.js --env production',
19      'pre-setup': ''
20    }
21  }
```

```
JS app.config.js X app.config.js — pm2 ⌂ ⌄ ⌓ ⌚  
1 module.exports = {  
2   "apps": [  
3     {  
4       "name": "app",  
5       "cwd": "/home/node-user/src/app",  
6       "script": "server.js",  
7       "log_date_format": "YYYY-MM-DD HH:mm:ss Z",  
8       "merge_logs": true,  
9       "error_file": "/var/log/pm2/app.stderr.log",  
10      "out_file": "/var/log/pm2/app.stdout.log",  
11      "pid_file": "/var/log/pm2/pids/app.pid",  
12      "instances": 0,  
13      "exec_interpreter": "node",  
14      "exec_mode": "cluster",  
15      "autorestart": true,  
16      "max_memory_restart": "600M",  
17      "env": {  
18        "APP_DATABASE_HOST": "url",  
19        "APP_DATABASE_PORT": "port",  
20        "APP_DATABASE_DB": "database",  
21        "APP_DATABASE_USER": "user".
```

```
pm2 start main.js --no-daemon
```

Inicia a aplicação diretamente

main.js — pm2

```
JS main.js ×

1 const http = require("http");
2
3 http.createServer((req, res) => {
4     res.write(`process.pid`);
5     res.end();
6 }).listen(3000);
7
```

PROBLEMS OUTPUT TERMINAL DEBUG CONSOLE node + ×

pm2 launched in no-daemon mode (you can add DEBUG="*" env variable to get more messages)
[PM2] Starting /Users/rodrigobranas/development/workspace/branas/fullstackjs_t2/pm2/main.js in fork_mode (1 instance)
[PM2] Done.

id	name	mode	↺	status	cpu	memory
0	main	fork	0	online	0%	13.2mb

[--no-daemon] Continue to stream logs
[--no-daemon] Exit on target PM2 exit pid=78144

`pm2 stop project_name ou id`

Para um projeto Node.js

main.js — pm2

JS main.js X

```
1 const http = require("http");
2
3 http.createServer((req, res) => {
4   res.write(`process.pid`);
5   res.end();
6 }).listen(3000);
7
```

PROBLEMS OUTPUT TERMINAL DEBUG CONSOLE

rodrigobranas pm2 \$ npx pm2 stop main
[PM2] Applying action stopProcessId on app [main](ids: [0])
[PM2] [main](0) ✓

id	name	mode	o	status	cpu	memory
0	main	fork	0	stopped	0%	0b

rodrigobranas pm2 \$ █

main.js — pm2

JS main.js X

```
1 const http = require("http");
2
3 http.createServer((req, res) => {
4     res.write(` ${process.pid}`);
5     res.end();
6 }).listen(3000);
7
```

PROBLEMS OUTPUT TERMINAL DEBUG CONSOLE

rodrigobranas pm2 \$ npx pm2 stop 0
[PM2] Applying action stopProcessId on app [0](ids: ['0'])
[PM2] [main](0) ✓

id	name	mode	o	status	cpu	memory
0	main	fork	0	stopped	0%	0b

rodrigobranas pm2 \$ █

A screenshot of a terminal window titled "main.js — pm2". The window has a tab bar at the top with "main.js" and a close button. The main area contains the following code:

```
JS main.js ×  
1 const http = require("http");  
2  
3 http.createServer((req, res) => {  
4   res.write(`process.pid`);  
5   res.end();  
6 }).listen(3000);  
7
```

Below the code, there is a navigation bar with tabs: PROBLEMS, OUTPUT, TERMINAL (which is underlined), and DEBUG CONSOLE. To the right of the tabs are icons for opening a new terminal, switching between terminals, and closing the terminal.

The terminal output shows the command "ps aux | grep main.js" being run by a user named "rodrigobranas". The output includes the process ID (70942), CPU usage (0.0 0.0), memory usage (408112528), and other system details. The command "grep main.js" is also visible at the end of the output.

```
rodrigobranas pm2 $ ps aux | grep main.js  
rodrigobranas 70942 0.0 0.0 408112528 1408 s001 S+ 4:30PM 0:00.00 grep main.js  
rodrigobranas pm2 $ █
```

pm2 stop all

Para todas as aplicações

main.js — pm2

JS main.js X

```
1 const http = require("http");
2
3 http.createServer((req, res) => {
4   res.write(` ${process.pid}`);
5   res.end();
6 }).listen(3000);
7
```

PROBLEMS OUTPUT TERMINAL DEBUG CONSOLE

rodrigobranas pm2 \$ npx pm2 stop all

[PM2] Applying action stopProcessId on app [all](ids: [0, 1])

[PM2] [main](0) ✓

[PM2] [main](1) ✓

id	name	mode	σ	status	cpu	memory
0	main	cluster	0	stopped	0%	0b
1	main	cluster	0	stopped	0%	0b

rodrigobranas pm2 \$ █

pm2 restart project_name ou id

Reinicia um projeto Node.js

main.js — pm2

JS main.js X

```
1 const http = require("http");
2
3 http.createServer((req, res) => {
4   res.write(` ${process.pid}`);
5   res.end();
6 }).listen(3000);
7
```

PROBLEMS OUTPUT TERMINAL DEBUG CONSOLE

rodrigobranas pm2 \$ npx pm2 restart main
Use --update-env to update environment variables
[PM2] Applying action restartProcessId on app [main](ids: [0])
[PM2] [main](0) ✓

id	name	mode	⌚	status	cpu	memory
0	main	fork	1	online	0%	4.5mb

rodrigobranas pm2 \$ █

main.js — pm2

JS main.js X

```
1 const http = require("http");
2
3 http.createServer((req, res) => {
4   res.write(`process.pid`);
5   res.end();
6 }).listen(3000);
7
```

PROBLEMS OUTPUT TERMINAL DEBUG CONSOLE

rodrigobranas pm2 \$ npx pm2 restart 0
Use --update-env to update environment variables
[PM2] Applying action restartProcessId on app [0](ids: ['0'])
[PM2] [main](0) ✓

id	name	mode	⌚	status	cpu	memory
0	main	fork	2	online	0%	3.9mb

rodrigobranas pm2 \$ █

pm2 restart all

Reinicia todas as aplicações

main.js — pm2

JS main.js X

```
1 const http = require("http");
2
3 http.createServer((req, res) => {
4     res.write(` ${process.pid}`);
5     res.end();
6 }).listen(3000);
7
```

PROBLEMS OUTPUT TERMINAL DEBUG CONSOLE

rodrigobranas pm2 \$ npx pm2 restart all
Use --update-env to update environment variables
[PM2] Applying action restartProcessId on app [all](ids: [0, 1])
[PM2] [main](0) ✓
[PM2] [main](1) ✓

id	name	mode	进程中	status	cpu	memory
0	main	cluster	1	online	0%	48.3mb
1	main	cluster	1	online	0%	27.1mb

rodrigobranas pm2 \$ █

pm2 delete main

Exclui uma aplicação

main.js — pm2

JS main.js X

```
1 const http = require("http");
2
3 http.createServer((req, res) => {
4   res.write(`process.pid`);
5   res.end();
6 }).listen(3000);
7
```

PROBLEMS OUTPUT TERMINAL DEBUG CONSOLE

rodrigobranas pm2 \$ npx pm2 delete main
[PM2] Applying action deleteProcessId on app [main](ids: [0])
[PM2] [main](0) ✓

id	name	mode	status	cpu	memory
----	------	------	--------	-----	--------

rodrigobranas pm2 \$ █

main.js — pm2

JS main.js X

```
1 const http = require("http");
2
3 http.createServer((req, res) => {
4   res.write(`process.pid`);
5   res.end();
6 }).listen(3000);
7
```

PROBLEMS OUTPUT TERMINAL DEBUG CONSOLE

rodrigobranas pm2 \$ npx pm2 delete 0
[PM2] Applying action deleteProcessId on app [0](ids: ['0'])
[PM2] [main](0) ✓

id	name	mode	status	cpu	memory
----	------	------	--------	-----	--------

rodrigobranas pm2 \$ █

pm2 delete all

Exclui todas as aplicações

main.js — pm2

JS main.js X

```
1 const http = require("http");
2
3 http.createServer((req, res) => {
4   res.write(`process.pid`);
5   res.end();
6 }).listen(3000);
7
```

PROBLEMS OUTPUT TERMINAL DEBUG CONSOLE

rodrigobranas pm2 \$ npx pm2 delete all
[PM2] Applying action deleteProcessId on app [all](ids: [0, 1])
[PM2] [main](0) ✓
[PM2] [main](1) ✓

id	name	mode	⌚	status	cpu	memory
----	------	------	---	--------	-----	--------

rodrigobranas pm2 \$ █

pm2 log

Monitora os logs da aplicação

pm2 monit

Monitora a aplicação

main.js — pm2

```
JS main.js ×

1 const http = require("http");
2
3 http.createServer((req, res) => {
4     console.log(process.pid);
5     res.write(` ${process.pid}`);
6     res.end();
7 }).listen(3000);
8
```

PROBLEMS OUTPUT TERMINAL DEBUG CONSOLE

node + ×

Process List [0] main Mem: 40

main Logs

```
main > 78304
```

Custom Metrics Used Heap Size

Metadata App Name main

left/right: switch boards | up/down/mouse: scroll | Ctrl-C: exit [To go further check out](#)

pm2 link

Conecta o monitoramento

A screenshot of a terminal window titled "main.js — pm2". The window contains a code editor with a file named "main.js" containing the following code:

```
1 const http = require("http");
2
3 http.createServer((req, res) => {
4     res.write(`process.pid`);
5     res.end();
6 }).listen(3000);
7
```

The terminal tab is active and shows the following output:

```
rodrigobranas pm2 $ npx pm2 link kwbwz6dqfqyonqf t9ygku5vzht00cr
[PM2 I/O] Using: Public key: t9ygku5vzht00cr | Private key: kwbwz6dqfqyonqf | Machine name: Rodri
gos-MacBook-Pro.local-b69f
[+] PM2+ activated!
rodrigobranas pm2 $ █
```

PM2 Monit

app.pm2.io/bucket/62bb98155b053bb082091195/backend/overview/servers

1 / 4 proc. free_v4 CONNECT + ? ⚙️ 🚙 🛡️ 🗑️ 🌐 🌐 🌐

PM2

main Glob... App ... PM2 ...

CONDENSED MODE Group by server Merge process apps Order by App 1 offline server

Rodrigos-MacBook-Pro.local-b69f 1 N/A v16.13.2 5.2.0 200.225.112.1 / 192.168.1.7 / Rodrigos-MacBook-Pro.local X DELETE SERVER

main CPU Memory Event Loop ... HTTP L... Issues Restarts Versioning RESTART APPS SHOW LOGS RESET MONIT

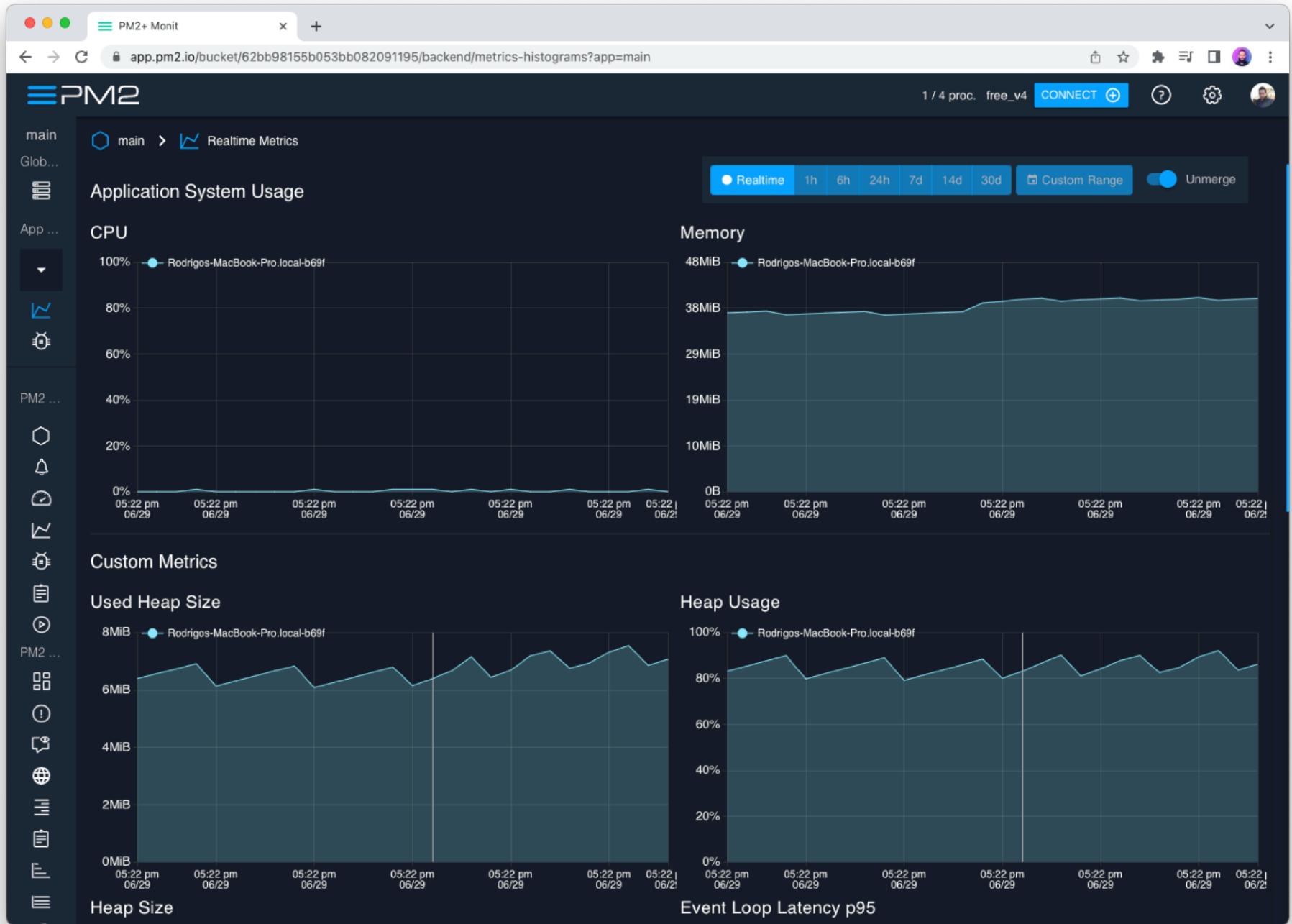
1 process NODE_ENV=N/A online for a few seconds

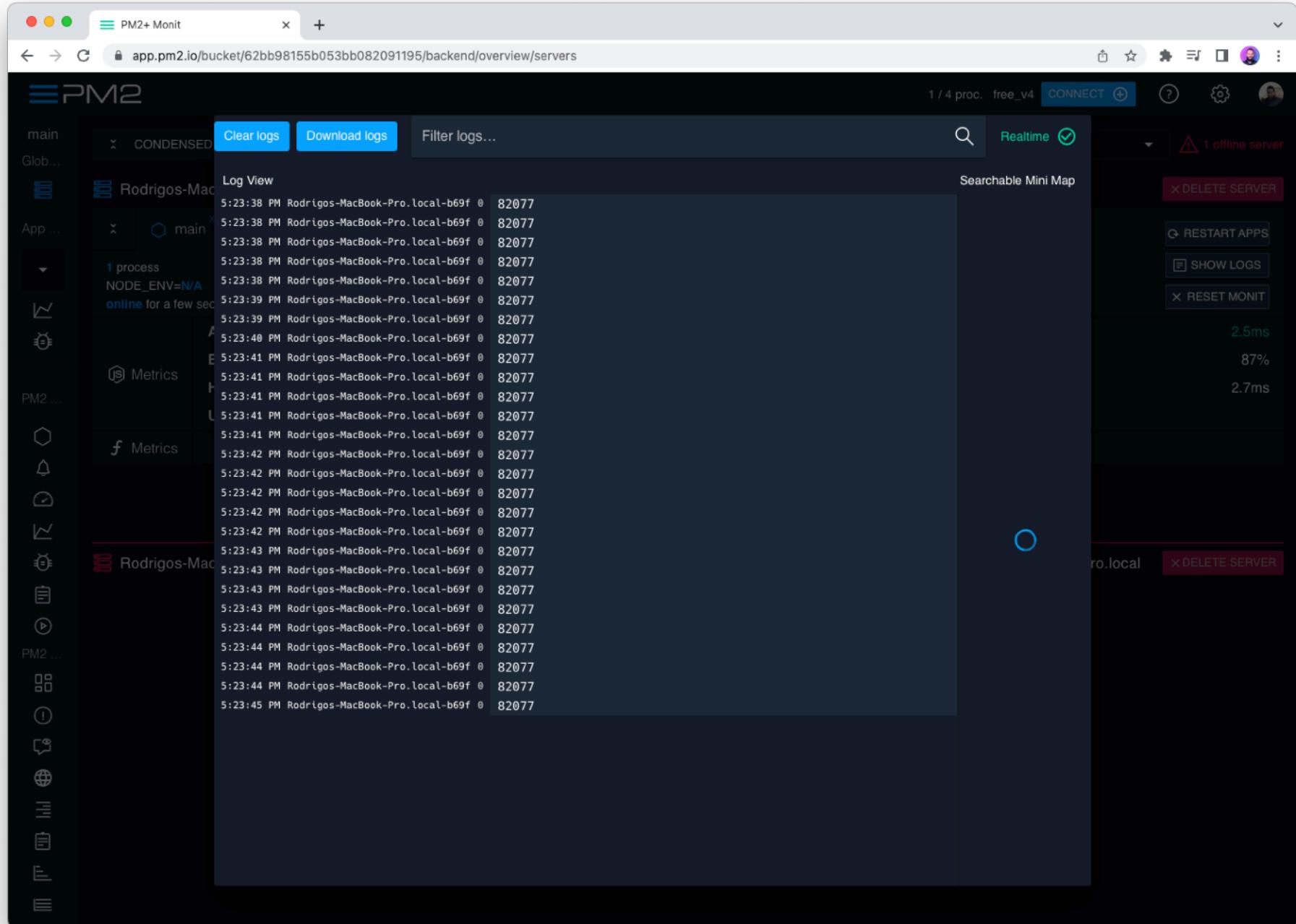
	Active handles	4	Active requests	0	Event Loop Latency	2.5ms
Metrics	Event Loop Latency p95	4.8ms	Heap Size	7.9MiB	Heap Usage	75%
	HTTP	0.1req/min	HTTP Mean Latency	1ms	HTTP P95 Latency	6ms
Metrics	Add your metric					

Offline servers (Auto delete servers?)

Rodrigos-MacBook-Pro.local-89b2 Last seen an hour ago (Wednesday 29th Jun 03:57 pm) 200.225.112.1 / 192.168.1.7 / Rodrigos-MacBook-Pro.local X DELETE SERVER

...





pm2 unlink

Desconecta o monitoramento

The screenshot shows a terminal window titled "main.js — pm2". The code in the editor is:

```
1 const http = require("http");
2
3 http.createServer((req, res) => {
4     console.log(process.pid);
5     res.write(` ${process.pid}`);
6     res.end();
7 }).listen(3000);
8
```

The terminal below shows the output of running the script with pm2:

```
rodrigobranas pm2 $ npx pm2 unlink
[PM2 I/O] Permanently disable agent...
[PM2 I/O] Agent interaction ended
rodrigobranas pm2 $ █
```