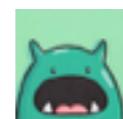




# Node.js业务应用实践

以及线上服务的运维和监控



郭凯@美团酒店

<http://f2e.im/quokai>

# 我们的前端团队支撑的业务

Node.js 目前广泛应用涵盖将近80%+以上的前端项目



# Node.js 在我们团队的应用

Node.js 在业务项目、技术项目和效率工具中均有广泛应用

业务工程



人机识别

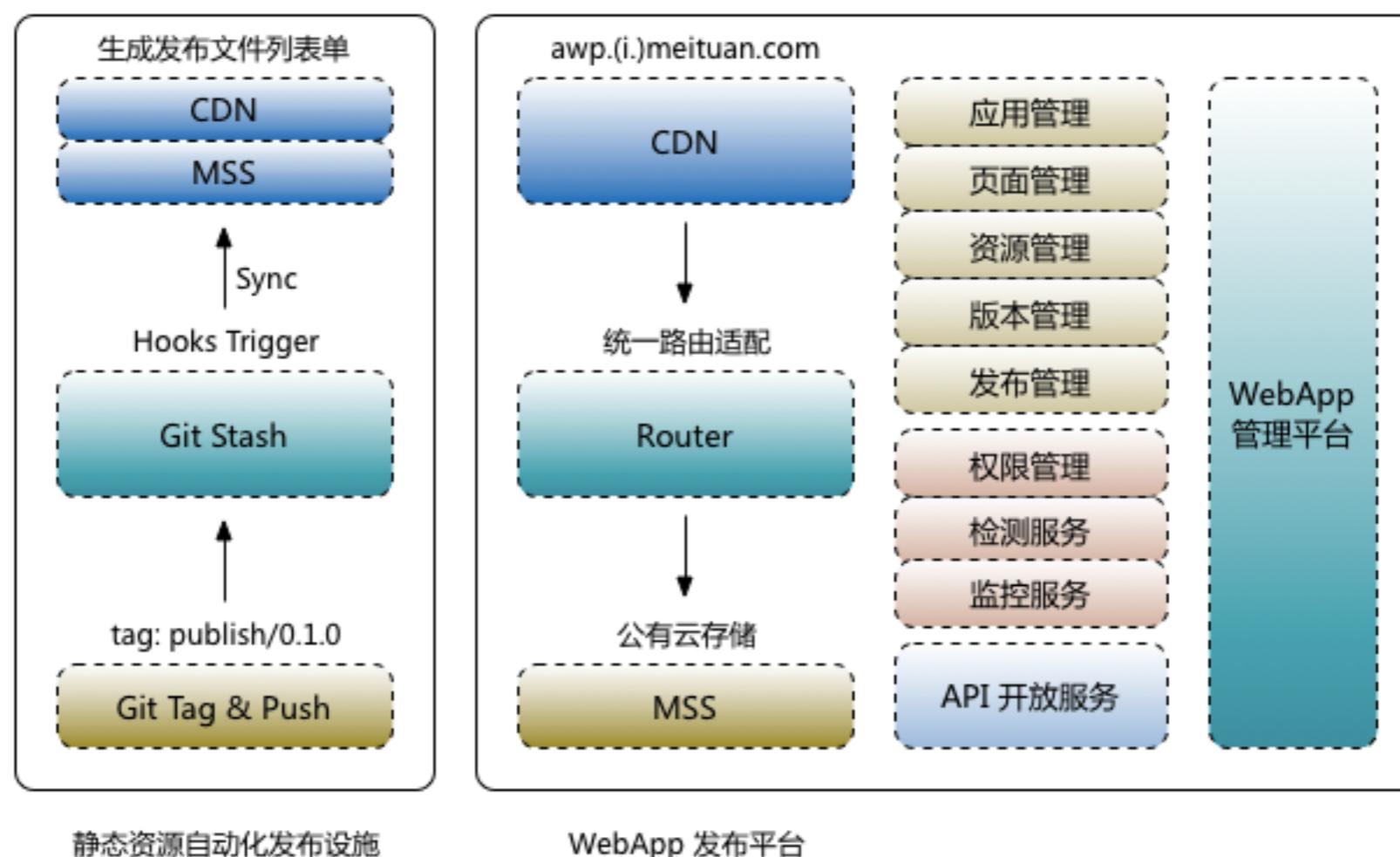
故障通报

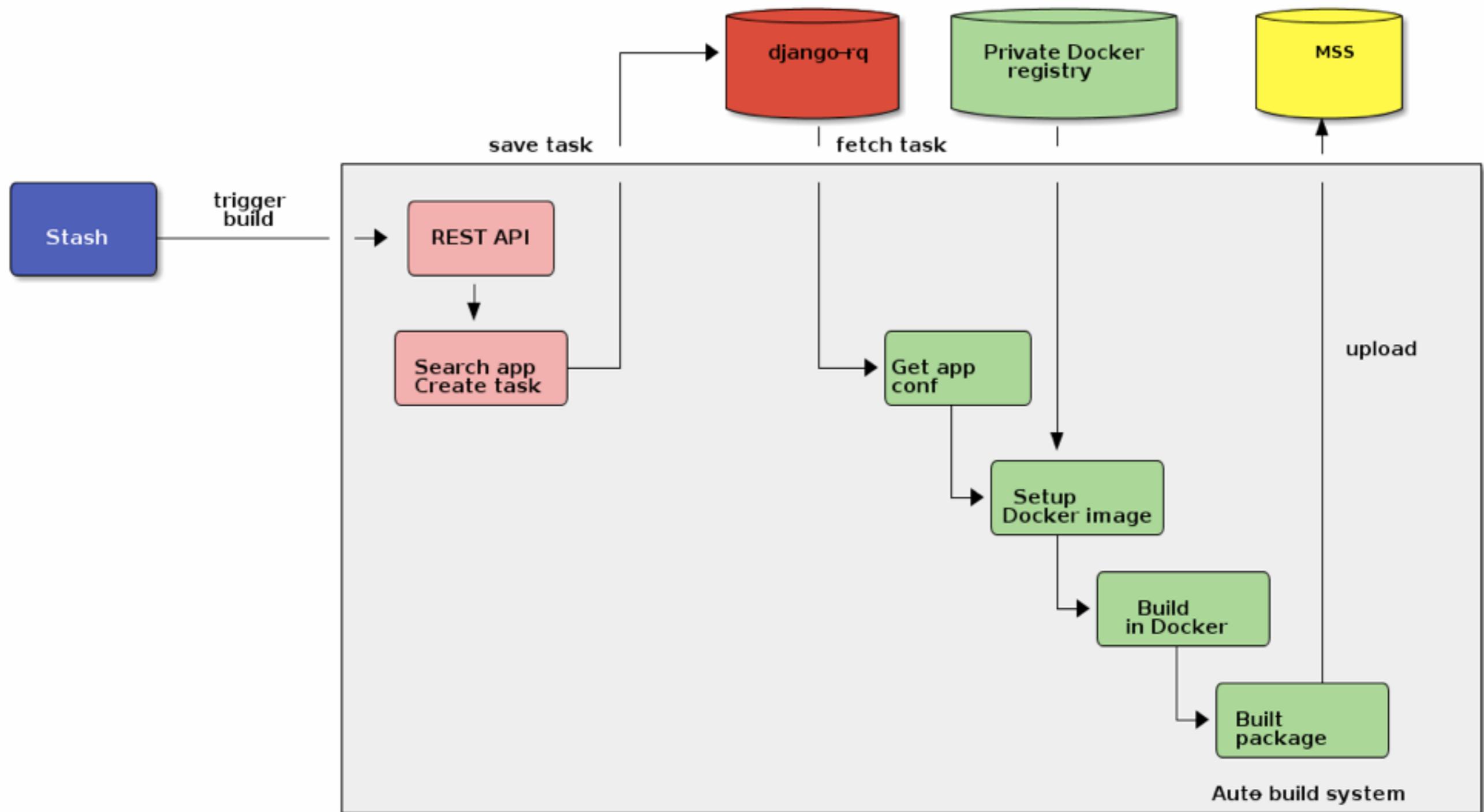
PM25 监控系统

AWP发布系统

脚手架、开发流程工具

# AWP 纯静态化发布系统

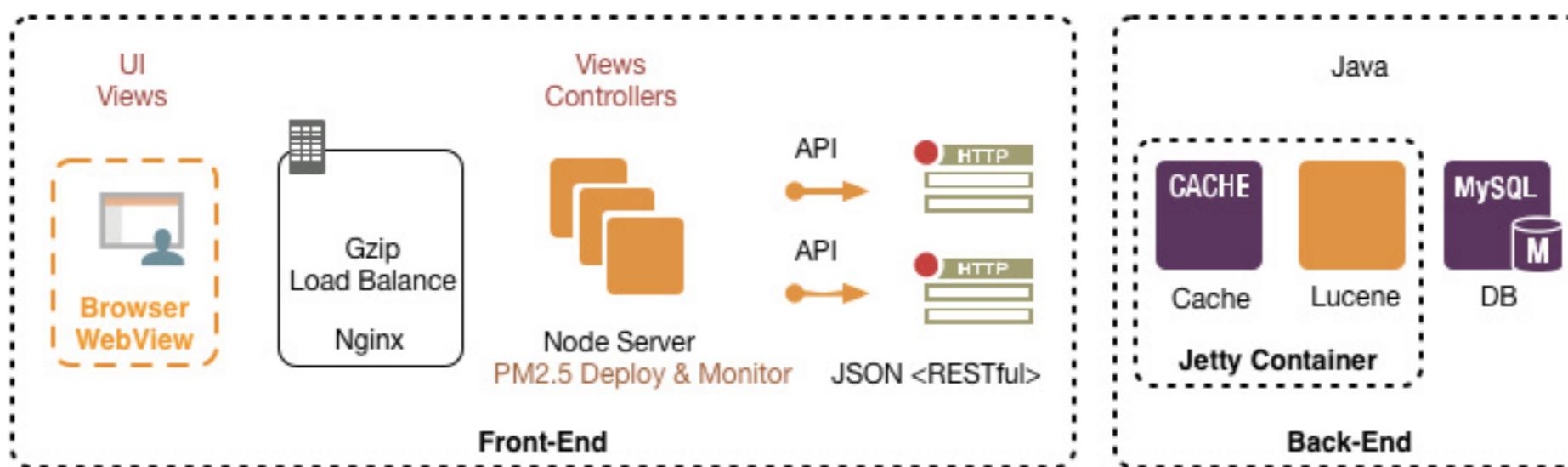




# 业务服务的量级



# 前后端分离方案



首屏渲染、模板复用 / SSO登录 / 微信OAuth / 服务端中间代理 / ABTest / 独立部署、快速开发



PM2

# PM2: a very complete process manager for Node.js

Here are the main features of PM2:

## Features

- Transitional state of apps
- Process listing
- Automatic restart process based on memory
- Monitoring CPU/Memory usage
- Logs management
- Clustering
- Watch & Restart
- Reloading without downtime
- Make PM2 restart on server reboot
- JSON app declaration
  - Schema

Web API

Keymetrics

Remote Deploy

## API

Method name	API
Connect/Launch	pm2.connect(fn(err){})
Disconnect	pm2.disconnect(fn(err, proc){})

**Consideration with .connect:** the .connect method connect to the local PM2, but if PM2 is not up, it will launch it and will put in in background as you launched it via CLI.

Method name	API
Start	pm2.start(script_path json_path, options, fn(err, proc){})
Restart	pm2.restart(proc_name proc_id all, fn(err, proc){})
Stop	pm2.stop(proc_name proc_id all, fn(err, proc){})
Delete	pm2.delete(proc_name proc_id all, fn(err, proc){})
Reload	pm2.reload(proc_name all, fn(err, proc){})
Graceful Reload	pm2.gracefulReload(proc_name all, fn(err, proc){})

Method name	API
List	pm2.list(fn(err, list){})
Describe process	pm2.describe(proc_name proc_id, fn(err, list){})
Dump (save)	pm2.dump(fn(err, ret){})
Flush logs	pm2.flush(fn(err, ret){})
Reload logs	pm2.reloadLogs(fn(err, ret){})
Send signal	pm2.sendSignalToProcessName(signal, proc, fn(err, ret){})
Generate start script	pm2.startup(platform, fn(err, ret){})
Kill PM2	pm2.killDaemon(fn(err, ret){})

<http://pm2.keymetrics.io/docs/usage/pm2-api/>

<https://github.com/Unitech/PM2/blob/master/doc/PROGRAMMATIC.md>

```
var pm2 = require('pm2');

pm2.connect(function() {
    pm2.start('index.js', function() {
        console.log('index.js started.');

        setInterval(function() {
            pm2.restart('index', function() {
                console.log('index.js restarted.');
            });
        }, 2000);
    });
});

pm2.launchBus(function(err, bus) {
    console.log('connected', bus);

    bus.on('log:out', function(data) {
        console.log(arguments);
    });

    bus.on('reconnect attempt', function() {
        console.log('Bus reconnecting');
    });

    bus.on('close', function() {
        console.log('Bus closed');
    });
});
```

# KeyMetrics

KeyMetrics

HFE

Filter by Server name

Filter by App name

Guo Kai

Dashboard

Servers Signs

Apps Signs

Exceptions

Transactions

Custom actions

Events

Probes

Alerts

Settings

Help/Integration

Report an issue

Trial in production level bucket:  
4 days remaining

Upgrade

Server #1 - dx-hotel-fe-onlinemta01.dx.sankuai.com (124.251.11.37)

Status: Online

PM2 version: 0.12.3

Memory usage: 3.9 GB / 7.7 GB

CPU load average: 0

CPU numbers: 4

Hostname: dx-hotel-fe-onlinemta01.dx.sankuai.com

Public key: 0b7cmk6v667l66o

Secret key: t7hs21m3meff9oc

hotel-fe-mta

online for 7 hours

CPU: 0 %

MEM: 348.9...

Errors: 0

Latency: 0 ms

Versioning: Local commit, Local changes

Process Metadata: Processes: 4, Restart: 1, Mode: cluster, Interpreter: node

Process Metadata: Rollback, Pull, Upgrade, Restart, Reload, Graceful Reload

Custom metrics

Add custom metrics

Custom actions

Add custom actions

Server #2 - dx-hotel-fe-onlinemta02.dx.sankuai.com (124.251.11.36)

Status: Online

PM2 version: 0.12.3

Memory usage: 3.9 GB / 7.7 GB

CPU load average: 0.02

CPU numbers: 4

Hostname: dx-hotel-fe-onlinemta02.dx.sankuai.com

Public key: 0b7cmk6v667l66o

Secret key: t7hs21m3meff9oc

hotel-fe-mta

online

CPU: 0 %

MEM: 357.8

Errors: 0

Latency: 0 ms

Versioning: Local commit, Local changes

Process Metadata: Processes: 4, Restart: 1, Mode: cluster, Interpreter: node



**PM25**

## 用户管理

- 支持多用户登录维护
- 登录作为中间件可插拔

## 机器管理

- 机器的分桶管理
- 对机器进行快速过滤
- 主机的详细指标信息

## 进程管理

- 进程的详细指标信息
- 支持对进程进行远程操作

## 监控报警

- 同Falcon整合进行报警管理

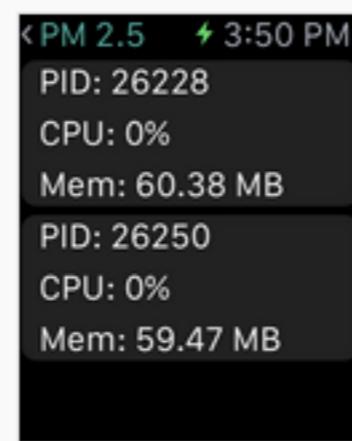
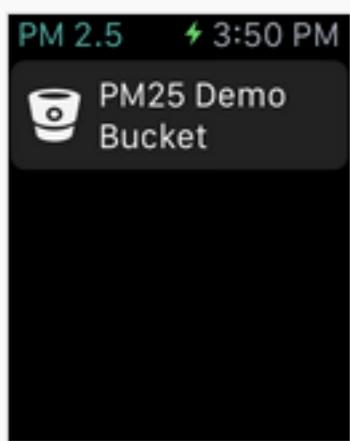
## 扩展包

- 收集统计服务端慢路由信息
- 进程维度查看TPS的数据
- 支持针对进程的Heapdump
- 支持针对进程生成CPU Profile



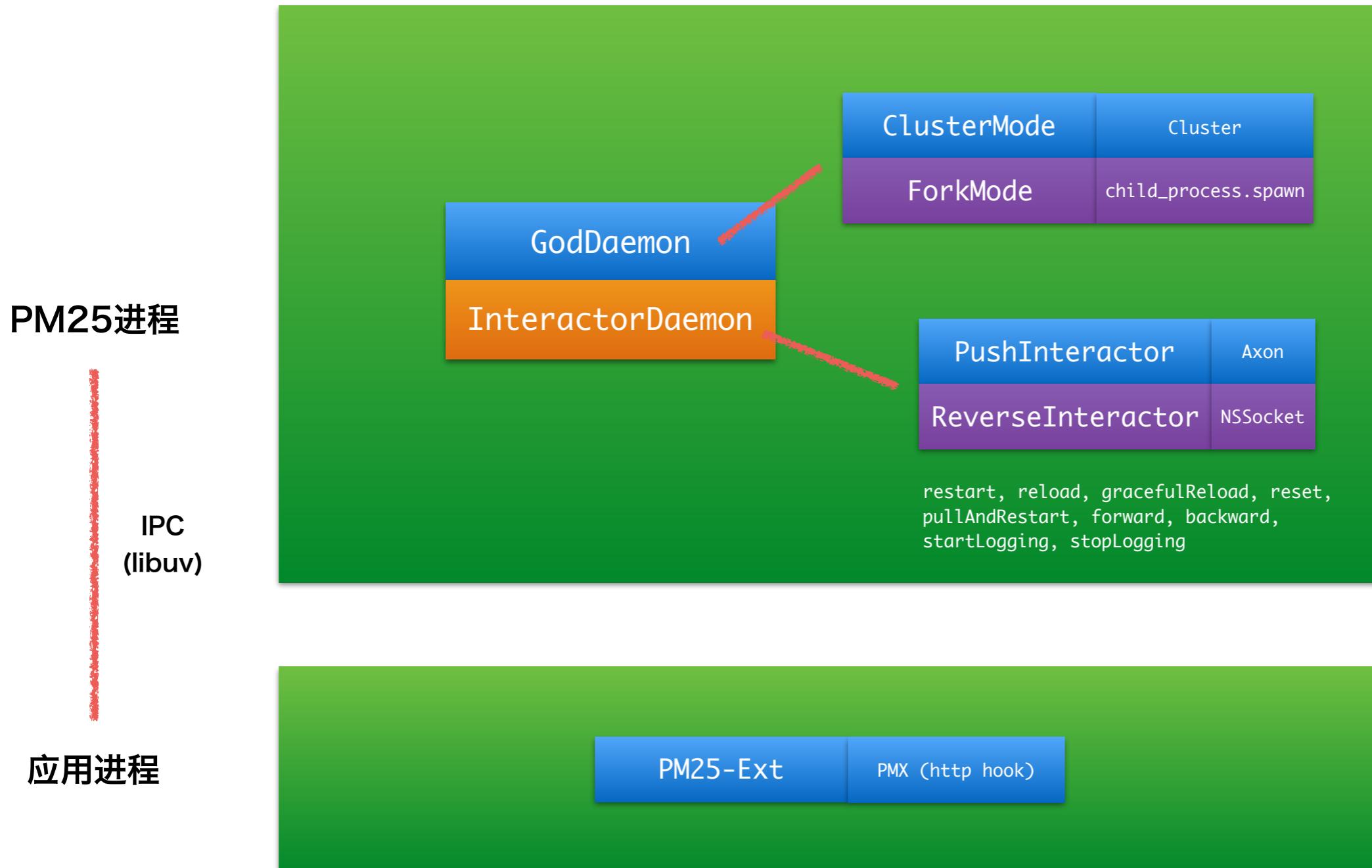
PM25 iOS

● 1.0 已经上架



```
lib
├── CLI.js
├── CliUX.js
├── Common.js
├── Configuration.js
├── Event.js
└── God
    ├── ActionMethods.js
    ├── ClusterMode.js
    ├── DeprecatedCalls.js
    ├── ForkMode.js
    ├── LockSystem.js
    ├── Methods.js
    └── Reload.js
    └── God.js
    └── HttpInterface.js
    └── Interactor
        ├── Cipher.js
        ├── Daemon.js
        ├── Filter.js
        ├── HttpRequest.js
        ├── InteractorDaemonizer.js
        ├── PushInteractor.js
        ├── ReverseInteractor.js
        ├── Tools.js
        ├── WatchDog.js
        └── pm2-interface.js
    └── Log.js
    └── Modularizer.js
    └── Monit.js
    └── ProcessContainer.js
    └── ProcessContainerFork.js
    └── Satan.js
    └── TreeKill.js
```

# PM2(5) 命令行核心部分



# Axon

Axon is a message-oriented socket library for node.js heavily inspired by zeromq. For a light-weight UDP alternative you may be interested in [punt](#).

## Features

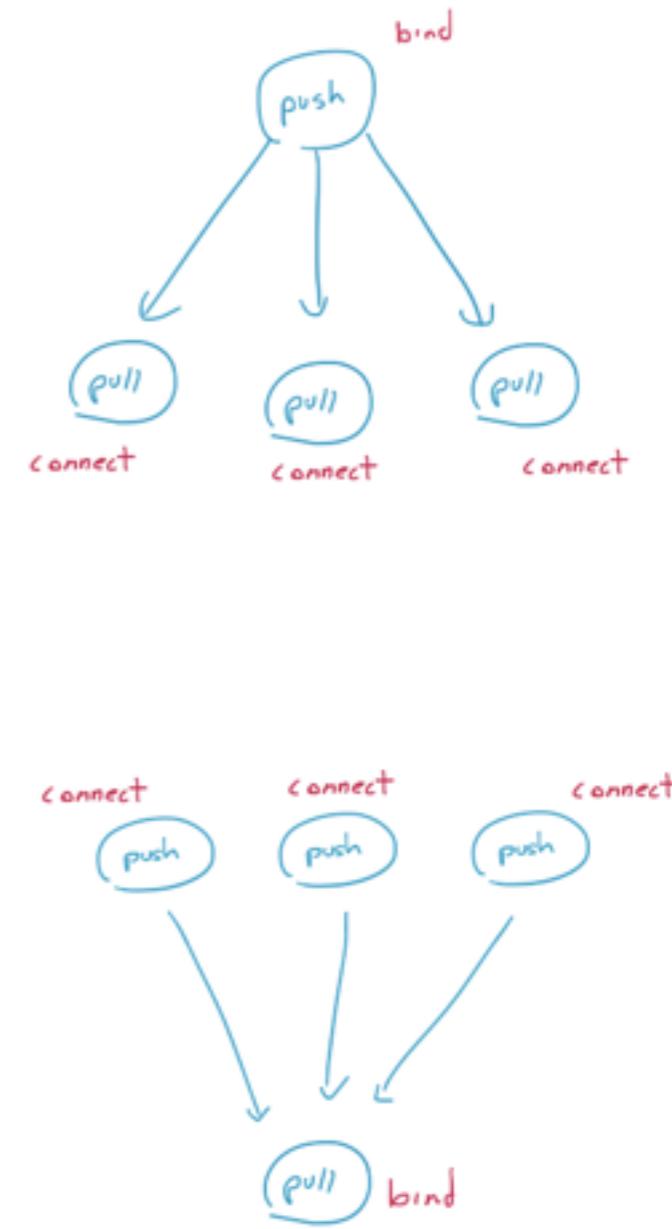
- message oriented
- automated reconnection
- light-weight wire protocol
- mixed-type arguments (strings, objects, buffers, etc)
- unix domain socket support
- fast (~800 mb/s ~500,000 messages/s)

## Events

- `close` when server or connection is closed
- `error (err)` when an un-handled socket error occurs
- `ignored error (err)` when an axon-handled socket error occurs, but is ignored
- `socket error (err)` emitted regardless of handling, for logging purposes
- `reconnect attempt` when a reconnection attempt is made
- `connect` when connected to the peer, or a peer connection is accepted
- `disconnect` when an accepted peer disconnects
- `bind` when the server is bound
- `drop (msg)` when a message is dropped due to the HWM
- `flush (msgs)` queued when messages are flushed on connection

## Patterns

- push / pull
- pub / sub
- req / rep
- pub-emitter / sub-emitter



# NSSocket

An elegant way to define lightweight protocols on-top of TCP/TLS sockets in node.js

## Motivation

Working within node.js it is very easy to write lightweight network protocols that communicate over TCP or TLS. The definition of such protocols often requires repeated (and tedious) parsing of individual TCP/TLS packets into a message header and some JSON body.

## Installation

```
[sudo] npm install nssocket
```

## How it works

With `nssocket` this tedious bookkeeping work is done automatically for you in two ways:

1. Leverages wildcard and namespaced events from `EventEmitter2`
2. Automatically serializes messages passed to `.send()` and deserializes messages from `data` events.
3. Implements default reconnect logic for potentially faulty connections.
4. Automatically wraps TCP connections with TLS using a known workaround

## Messages

Messages in `nssocket` are serialized JSON arrays of the following form:

```
["namespace", "to", "event", { "this": "is", "the": "payload" }]
```

Although this is not as optimal as other message formats (pure binary, msgpack) most of your applications are probably IO-bound, and not by the computation time needed for serialization / deserialization. When working with `NsSocket` instances, all events are namespaced under `data` to avoid collision with other events.

# Keymetrics Driver

---

PMX is a module that allows you to create advanced interactions with Keymetrics.

It allows you to:

- **Expose Functions** remotely triggerable from Keymetrics
- **Expose Metrics** displayed in realtime and tracked over the time
- **Report Alerts** like exceptions or critical issues
- **Report Events** to inform about anything
- **Monitor network traffic** at the application level and display used ports
- Analyze HTTP latency

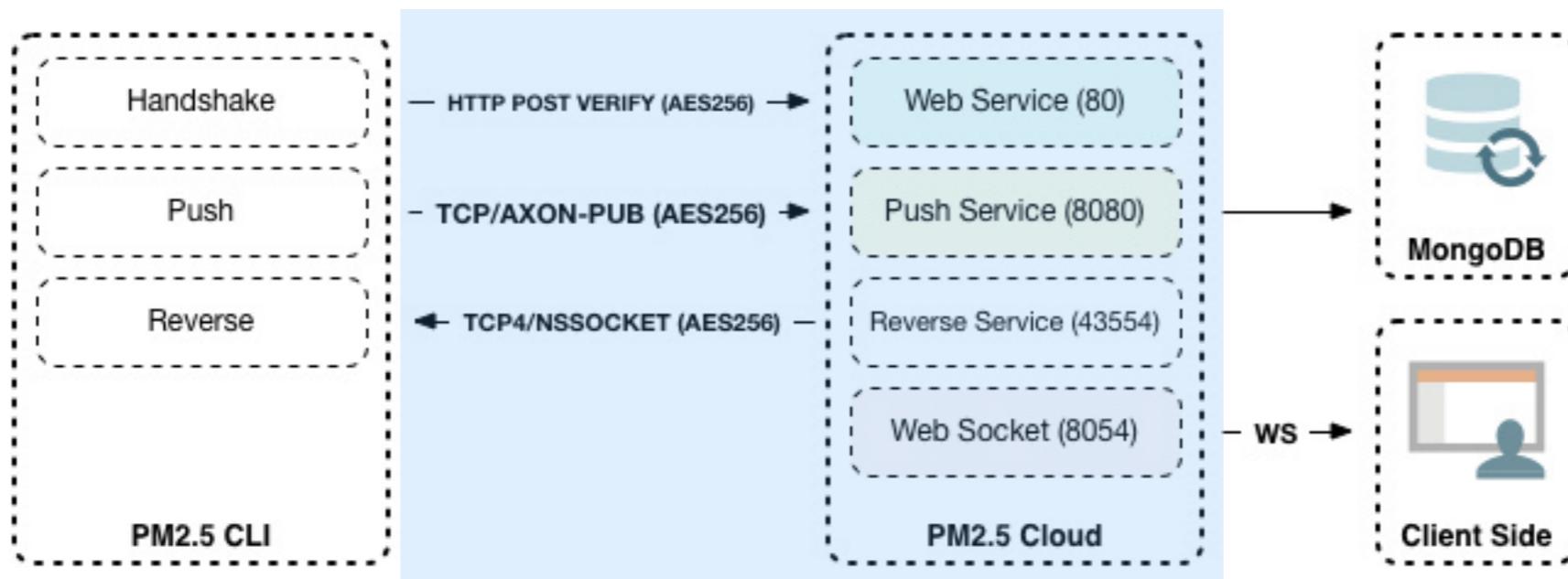
## Installation

---

Install PMX and add it to your package.json with:

```
$ npm install pmx --save
```

```
var pmx = require('pmx').init({  
  http: true, // HTTP routes logging (default: true)  
  ignore_routes: [/socket\.io/, /notFound/], // Ignore http routes with this pattern (Default: [])  
  errors: true, // Exceptions loggin (default: true)  
  custom_probes: true, // Auto expose JS Loop Latency and HTTP req/s as custom metrics  
  network: true, // Network monitoring at the application level  
  ports: true // Shows which ports your app is listening on (default: false)  
});
```



## 开源代码的组成结构

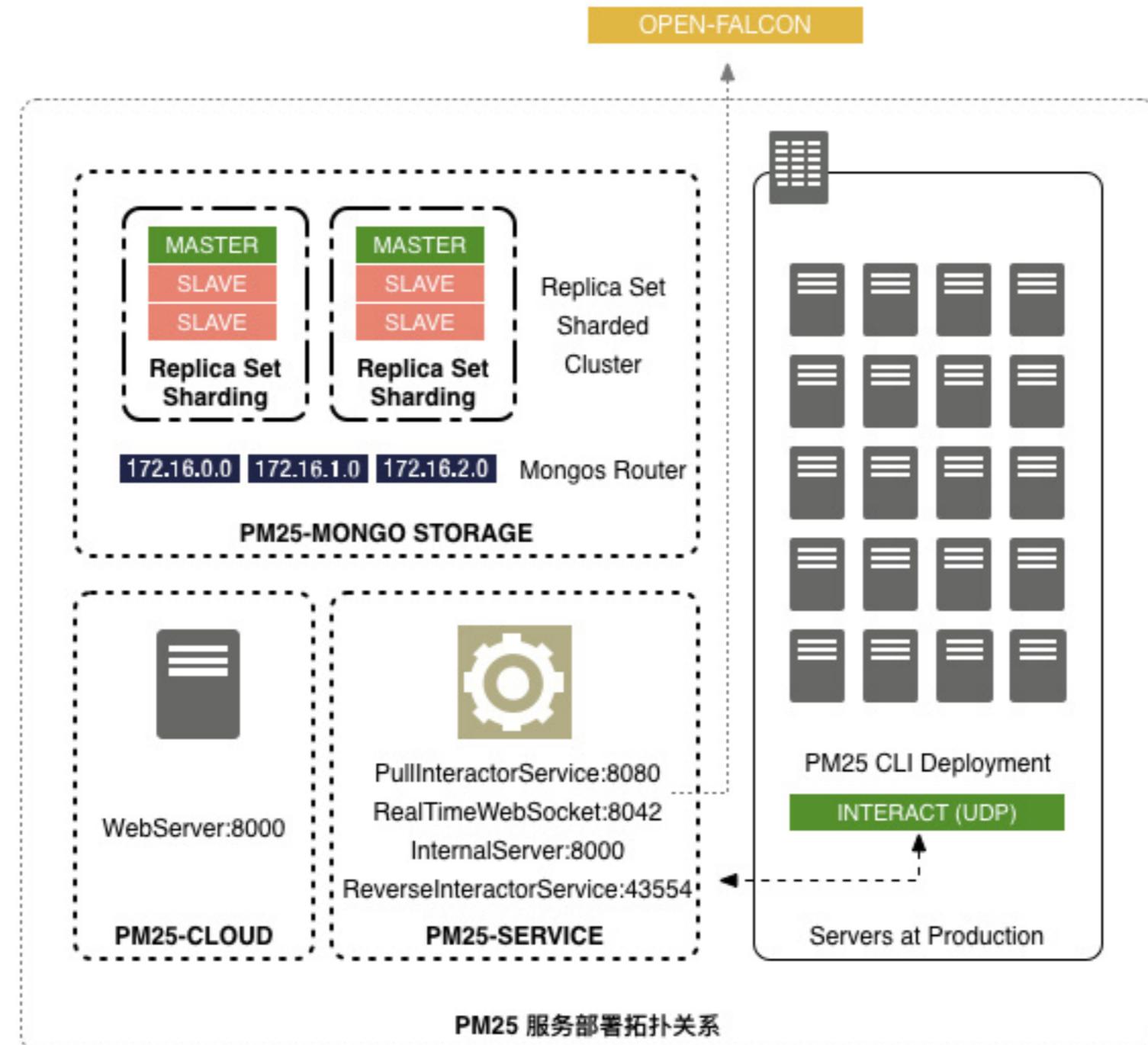


PullInteractorService:8080  
RealTimeWebSocket:8042  
InternalServer:8000  
ReverseInteractorService:43554

└─ PM2.5-Cli	// PM25 CLI
└─ PM2.5-Cloud	// PM25 云端控制台
└─ PM2.5-Service	// PM25 服务端代码
└─ PM2.5-Docs	// PM25 文档
└─ PM2.5-Ext	// PM25 扩展包

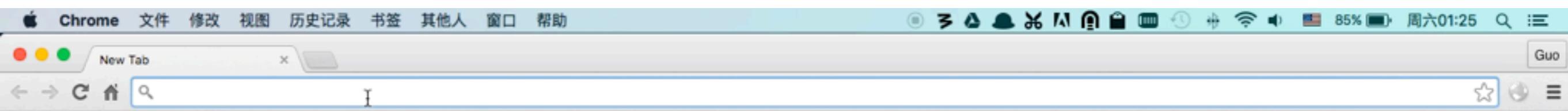
## 数据库组成和分表结构

└─ pm25	// 主库，用于监控主机的信息存储
└─ buckets	// 桶表，用于存储主机分桶信息
└─ events	// 事件表，用于存储主机的事件信息
└─ exceptions	// 错误异常表，用于存储主机的线上报错
└─ monitorings	// 监控信息表，用于存储主机的整体监控数据
└─ status	// 主表，用于存储主机的各个进程数据
└─ transactions	// 网络传输表，用于存储慢路由相关信息
└─ pm25-session	// 会话信息库，用于存储SSO登录后的用户会话
└─ sessions	// 会话信息主表，用于存储用户会话详情
└─ pm25-test	// 测试表，用于开发过程中的测试





# PM25管理界面和图表数据演示



1 : 25

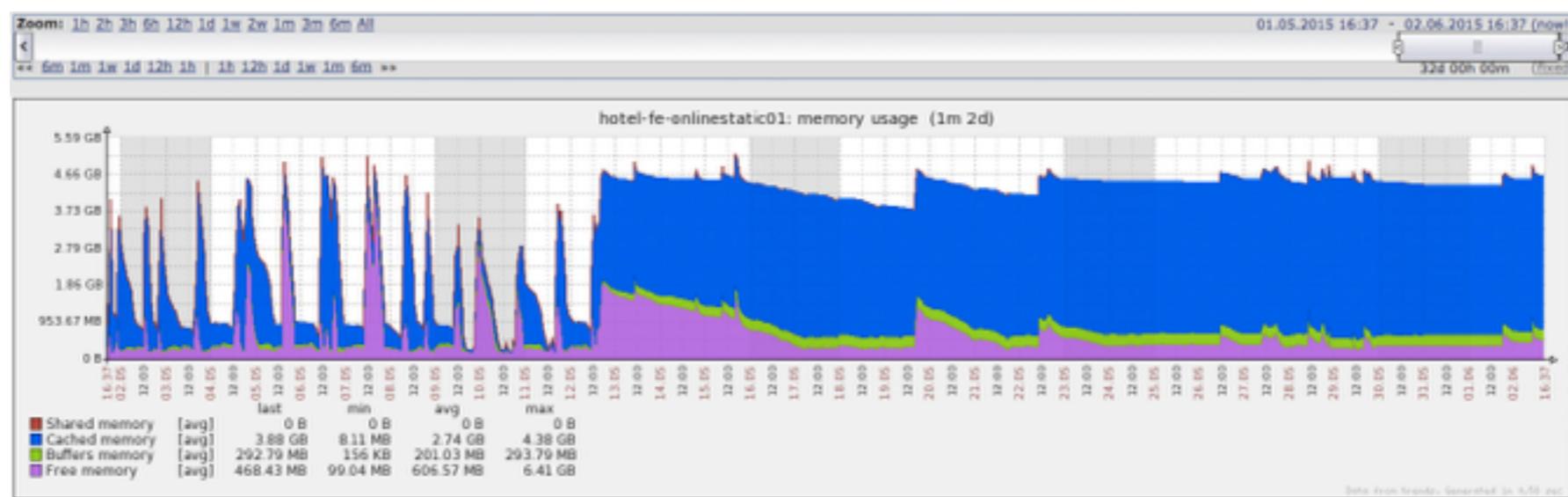
Saturday, March 26



Processes	CPUs	Load	Uptime	Memory (7.69 GB total)	
4	4	0.09 0.18 0.21	9 months	1	7.51 GB USED

## PROCESSES

PID	Name	Restarts	Uptime	Status	CPU	Memory	Errors
5641	hotel-fe-static	6	18 hours	✓	0.00%	1.52 GB	4
11273	hotel-fe-static	6	16 hours	✓	0.00%	1.48 GB	2
3509	hotel-fe-static	6	18 hours	✓	0.00%	1.53 GB	4
3483	hotel-fe-static	6	18 hours	✓	0.00%	1.61 GB	0



## 生成堆内存的SnapShot

① node-heapdump can make a dump of the V8 heap for later inspection.

```
npm install heapdump
```

之后在应用程序入口加载heapdump：

```
var heapdump = require('heapdump');
```

开启Node服务，然后给Node进程发送SIGUSR2可以强制生成一个snapshot：

```
$ kill -USR2 <pid>
```

之后执行AB对服务的URL进行并发访问（模拟生产环境的大量请求，这里URL也可以从线上日志中获取）：

```
ab -c 200 -n 5000 http://127.0.0.1:8000/url
```

## 通过Chrome 分析 SnapShot

通过Google Chrome的开发者工具可以对生成的snapshot文件进行分析：

The screenshot shows the Google Chrome Developer Tools interface with the "Resources" tab selected. A "Comparison" dropdown is open, set to "Class filter". The main area displays a table titled "heapdump-226242308.111615". The table has columns for "Constructor", "# New", "# Deleted", "# Delta", "Alloc. Size", "Freed Size", and "Size Delta". The table lists various memory structures and their statistics. The first row, "Constructor", has values: # New 1943, # Deleted 118, # Delta +1 825, Alloc. Size 14 941 992, Freed Size 5 760, Size Delta +14 936 232. The second row, "(string)", has values: # New 14 951, # Deleted 1 750, # Delta +13 201, Alloc. Size 2 336 792, Freed Size 143 800, Size Delta +2 192 992. The third row, "(array)", has values: # New 6 013, # Deleted 647, # Delta +5 366, Alloc. Size 2 163 112, Freed Size 288 320, Size Delta +1 874 792. The fourth row, "(compiled code)", has values: # New 5 256, # Deleted 717, # Delta +4 539, Alloc. Size 268 928, Freed Size 29 000, Size Delta +239 928. The fifth row, "(system)", has values: # New 3 485, # Deleted 0, # Delta +3 485, Alloc. Size 250 920, Freed Size 0, Size Delta +250 920. The sixth row, "(regexp)", has values: # New 3 465, # Deleted 0, # Delta +3 465, Alloc. Size 249 480, Freed Size 0, Size Delta +249 480. The seventh row, "(closure)", has values: # New 2 257, # Deleted 1, # Delta +2 256, Alloc. Size 72 224, Freed Size 32, Size Delta +72 192. The eighth row, "Array", has values: # New 867, # Deleted 0, # Delta +867, Alloc. Size 48 576, Freed Size 0, Size Delta +48 576. The ninth row, "system / Context", has values: # New 433, # Deleted 0, # Delta +433, Alloc. Size 34 640, Freed Size 0, Size Delta +34 640. The tenth row, "juicer.template", has values: # New 421, # Deleted 0, # Delta +421, Alloc. Size 13 472, Freed Size 0, Size Delta +13 472. The eleventh row, "HTTPParser", has values: # New 1, # Deleted 1, # Delta 0, Alloc. Size 8 192, Freed Size 8 192, Size Delta 0. The twelfth row, "smalloc", has values: # New 100, # Deleted 2, # Delta +98, Alloc. Size 3 040, Freed Size 48, Size Delta +2 992. The thirteenth row, "Object", has values: # New 21, # Deleted 5, # Delta +16, Alloc. Size 840, Freed Size 200, Size Delta +640. The fourteenth row, "(concatenated string)", has values: # New 10, # Deleted 1, # Delta +9, Alloc. Size 160, Freed Size 16, Size Delta +144. The fifteenth row, "(number)", has values: # New 3, # Deleted 0, # Delta +3, Alloc. Size 120, Freed Size 0, Size Delta +120. The sixteenth row, "(sliced string)", has values: # New 1, # Deleted 0, # Delta +1, Alloc. Size 40, Freed Size 0, Size Delta +40. The seventeenth row, "r", has values: # New 1, # Deleted 0, # Delta +1, Alloc. Size 32, Freed Size 0, Size Delta +32. The eighteenth row, "Timer", has values: # New 1, # Deleted 0, # Delta +1, Alloc. Size 24, Freed Size 0, Size Delta +24. The nineteenth row, "ContentType", has values: # New 1, # Deleted 0, # Delta +1, Alloc. Size 24, Freed Size 0, Size Delta +24. The twentieth row, "ReadableState", has values: # New 1, # Deleted 0, # Delta +1, Alloc. Size 24, Freed Size 0, Size Delta +24. The twenty-first row, "WritableState", has values: # New 1, # Deleted 0, # Delta +1, Alloc. Size 24, Freed Size 0, Size Delta +24. The twenty-second row, "WriteReq", has values: # New 1, # Deleted 0, # Delta +1, Alloc. Size 24, Freed Size 0, Size Delta +24. The twenty-third row, "juicer.template @2688703", has values: # New 433, # Deleted 0, # Delta +433, Alloc. Size 34 640, Freed Size 0, Size Delta +34 640. The twenty-fourth row, "juicer.template @2688815", has values: # New 1, # Deleted 0, # Delta 0, Alloc. Size 80, Freed Size 80, Size Delta 0. The twenty-fifth row, "juicer.template @2689315", has values: # New 1, # Deleted 0, # Delta 0, Alloc. Size 80, Freed Size 80, Size Delta 0. The twenty-sixth row, "juicer.template @2689317", has values: # New 1, # Deleted 0, # Delta 0, Alloc. Size 80, Freed Size 80, Size Delta 0. The twenty-seventh row, "juicer.template @2689319", has values: # New 1, # Deleted 0, # Delta 0, Alloc. Size 80, Freed Size 80, Size Delta 0. The twenty-eighth row, "juicer.template @2689321", has values: # New 1, # Deleted 0, # Delta 0, Alloc. Size 80, Freed Size 80, Size Delta 0. The twenty-ninth row, "juicer.template @2689322", has values: # New 1, # Deleted 0, # Delta 0, Alloc. Size 80, Freed Size 80, Size Delta 0. The thirtieth row, "Constructor", has values: # New 1 943, # Deleted 118, # Delta +1 825, Alloc. Size 14 941 992, Freed Size 5 760, Size Delta +14 936 232. The thirty-first row, "(string)", has values: # New 14 951, # Deleted 1 750, # Delta +13 201, Alloc. Size 2 336 792, Freed Size 143 800, Size Delta +2 192 992. The thirty-second row, "(array)", has values: # New 6 013, # Deleted 647, # Delta +5 366, Alloc. Size 2 163 112, Freed Size 288 320, Size Delta +1 874 792. The thirty-third row, "(compiled code)", has values: # New 5 256, # Deleted 717, # Delta +4 539, Alloc. Size 268 928, Freed Size 29 000, Size Delta +239 928. The thirty-fourth row, "(system)", has values: # New 3 485, # Deleted 0, # Delta +3 485, Alloc. Size 250 920, Freed Size 0, Size Delta +250 920. The thirty-fifth row, "(regexp)", has values: # New 3 465, # Deleted 0, # Delta +3 465, Alloc. Size 249 480, Freed Size 0, Size Delta +249 480. The thirty-sixth row, "(closure)", has values: # New 2 257, # Deleted 1, # Delta +2 256, Alloc. Size 72 224, Freed Size 32, Size Delta +72 192. The thirty-seventh row, "Array", has values: # New 867, # Deleted 0, # Delta +867, Alloc. Size 48 576, Freed Size 0, Size Delta +48 576. The thirty-eighth row, "system / Context", has values: # New 433, # Deleted 0, # Delta +433, Alloc. Size 34 640, Freed Size 0, Size Delta +34 640. The thirty-ninth row, "juicer.template", has values: # New 421, # Deleted 0, # Delta +421, Alloc. Size 13 472, Freed Size 0, Size Delta +13 472. The四十th row, "HTTPParser", has values: # New 1, # Deleted 1, # Delta 0, Alloc. Size 8 192, Freed Size 8 192, Size Delta 0. The四十-first row, "smalloc", has values: # New 100, # Deleted 2, # Delta +98, Alloc. Size 3 040, Freed Size 48, Size Delta +2 992. The四十-second row, "Object", has values: # New 21, # Deleted 5, # Delta +16, Alloc. Size 840, Freed Size 200, Size Delta +640. The四十-third row, "(concatenated string)", has values: # New 10, # Deleted 1, # Delta +9, Alloc. Size 160, Freed Size 16, Size Delta +144. The四十-fourth row, "(number)", has values: # New 3, # Deleted 0, # Delta +3, Alloc. Size 120, Freed Size 0, Size Delta +120. The四十-fifth row, "(sliced string)", has values: # New 1, # Deleted 0, # Delta +1, Alloc. Size 40, Freed Size 0, Size Delta +40. The四十-sixth row, "r", has values: # New 1, # Deleted 0, # Delta +1, Alloc. Size 32, Freed Size 0, Size Delta +32. The四十-seventh row, "Timer", has values: # New 1, # Deleted 0, # Delta +1, Alloc. Size 24, Freed Size 0, Size Delta +24. The四十-eighth row, "ContentType", has values: # New 1, # Deleted 0, # Delta +1, Alloc. Size 24, Freed Size 0, Size Delta +24. The四十-ninth row, "ReadableState", has values: # New 1, # Deleted 0, # Delta +1, Alloc. Size 24, Freed Size 0, Size Delta +24. The五十th row, "WritableState", has values: # New 1, # Deleted 0, # Delta +1, Alloc. Size 24, Freed Size 0, Size Delta +24. The五十-onest row, "WriteReq", has values: # New 1, # Deleted 0, # Delta +1, Alloc. Size 24, Freed Size 0, Size Delta +24.

```
+     juicer.__cache = {};
-     juicer.version = '0.6.8-stable';
+     juicer.version = '0.6.9-stable';
     juicer.settings = {};

     juicer.tags = {
@@ -539,6 +539,11 @@
         return this.compile(tpl, options).render(data, options._method);
     };

+     // avoid memory leak for node.js
+     if(typeof(global) !== 'undefined' && typeof(window) === 'undefined') {
+         juicer.set('cache', false);
+     }
+
+
```

259	+为模板引擎设置外部Cache存储:
260	+
261	+     var juicer = require('juicer');
262	+     var LRUCache = require('lru-native');
263	+     var cache = new LRUCache({ maxElements: 1000 });
264	+
265	+     juicer.set('cachestore', cache);
266	+

[Code](#)[Issues 15](#)[Pull requests 0](#)[Wiki](#)[Pulse](#)[Graphs](#)

## Merge pull request #65 from PaulGuo/master

Update profiling.js

[Browse files](#)

master

Unitech committed an hour ago

2 parents ef01768 + 1aa834c commit b1c05ba328d82f125d79c800591e6a0ae184fd37

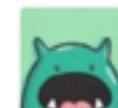
[Showing 1 changed file with 2 additions and 0 deletions.](#)[Unified](#)[Split](#)

### keymetrics / pmx

[Code](#)[Issues 15](#)[Pull requests 0](#)[Wiki](#)[Pulse](#)[Graphs](#)

## Update profiling.js #65

Merged

Unitech merged 1 commit into [keymetrics:master](#) from [PaulGuo:master](#) an hour ago[Conversation 1](#)[Commits 1](#)[Files changed 1](#)

PaulGuo commented 4 hours ago

Added `snapshot.delete()` to avoid memory leak.

Update profiling.js ...

✓ 1aa834c

 Unitech merged commit b1c05ba into [keymetrics:master](#) an hour ago

1 check passed

[View details](#)[Revert](#)

### Latest release

## Cocobongo

0.6.1

b3a281a

Unitech released this 12 days ago

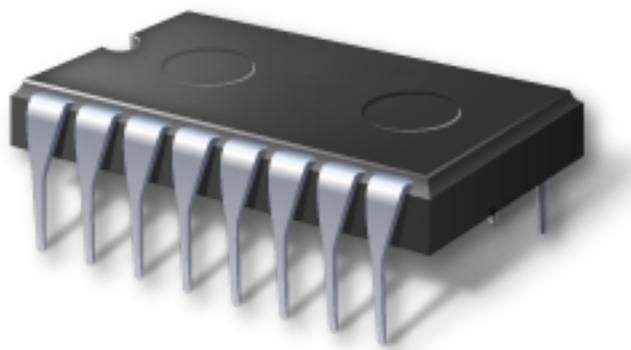
- [\[#61\] fix exception stack trace](#)
- [\[#65\] delete snapshot once process is done](#)

EPM2

Unitech commented an hour ago

Keymetrics member

Thanks, what is your bucket name on keymetrics? send us a message at [contact AT keymetrics DOT io](#) to get a discount



- **慎将内存当缓存**
- 关注队列消费状态
- **主动释放变量和作用域**

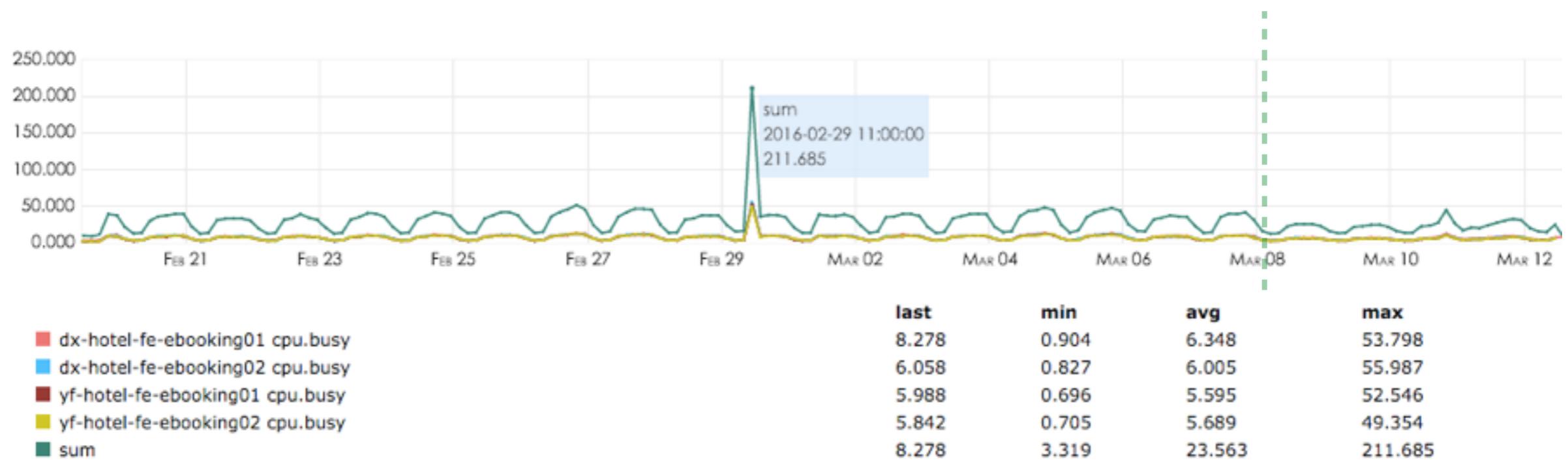
<https://github.com/JacksonTian/limitablemap>

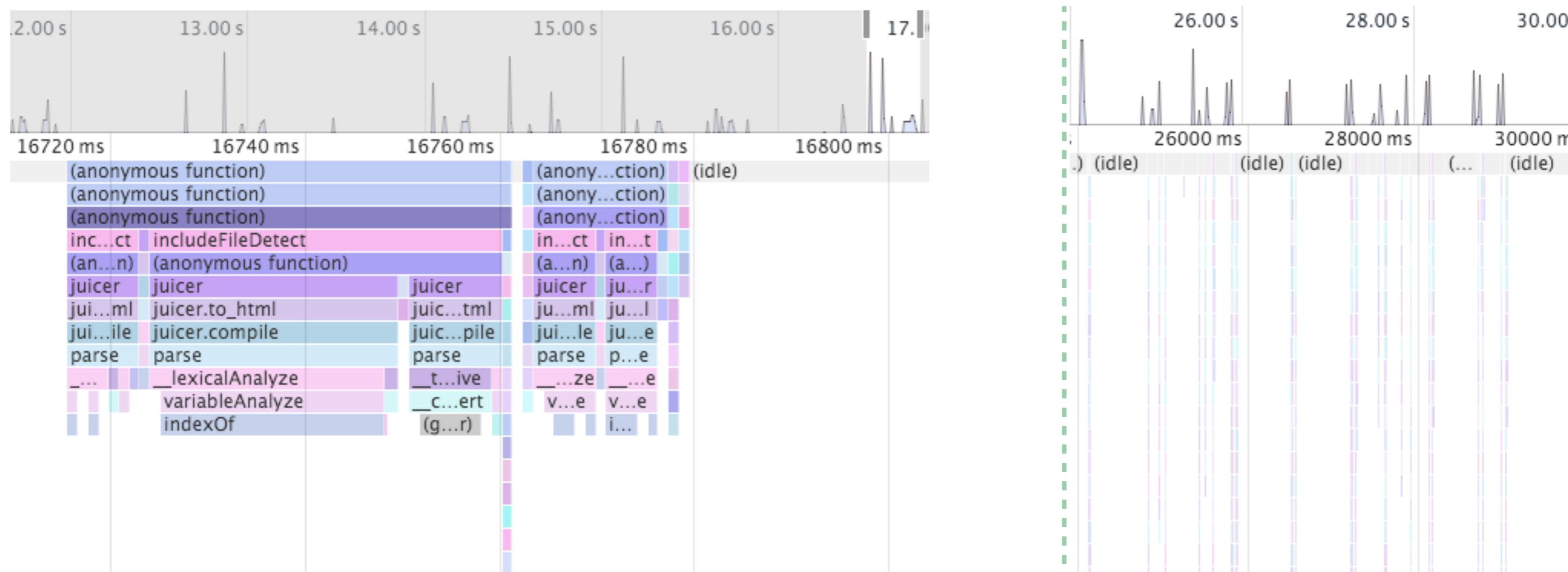
<https://github.com/isaacs/node-lru-cache>

[https://github.com/NodeRedis/node\\_redis](https://github.com/NodeRedis/node_redis)

# CPU 100%

504 Gateway Timeout



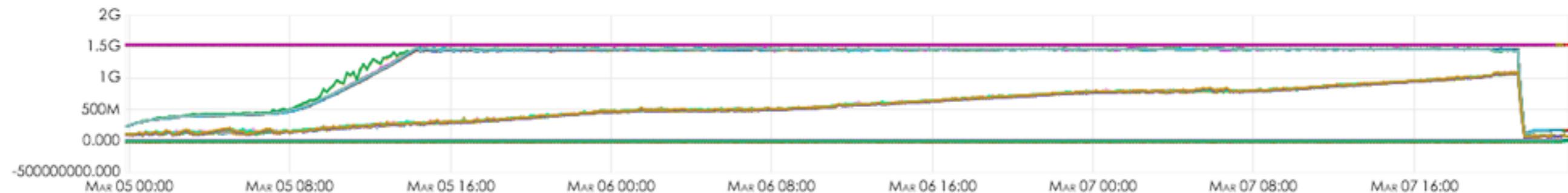


Name	(anonymous function)
Self time	0
Total time	45.7 ms
URL	/opt/meituan/apps/hotel-fe-ebooking/node_modules/juicer-express-adapter/index.js:63
Aggregated self time	0
Aggregated total time	509.58 ms

```

78      -   fs.readFile tplPath, 'utf8', function(err, str) {
79      -     if (err) return fn(err);
98      +   var callback = function(err, str, tplPath) {
99      +     if (err) {
100        +       return fn(err);
101        +     }
102        +
103        str = juicer(str, options);
104        str = includeFileDetect(tplPath, str);
105        fn(null, str);
106      };
107      +
108      +   if(cache.get(tplPath)) {
109        +     return callback(null, cache.get(tplPath), tplPath);
110      }
111      +
112      +   fs.readFile tplPath, 'utf8', function(err, str) {
113      +     if(!err) {
114        +       cache.set(tplPath, str);
115      }
116      +
117      +     callback(null, str, tplPath);

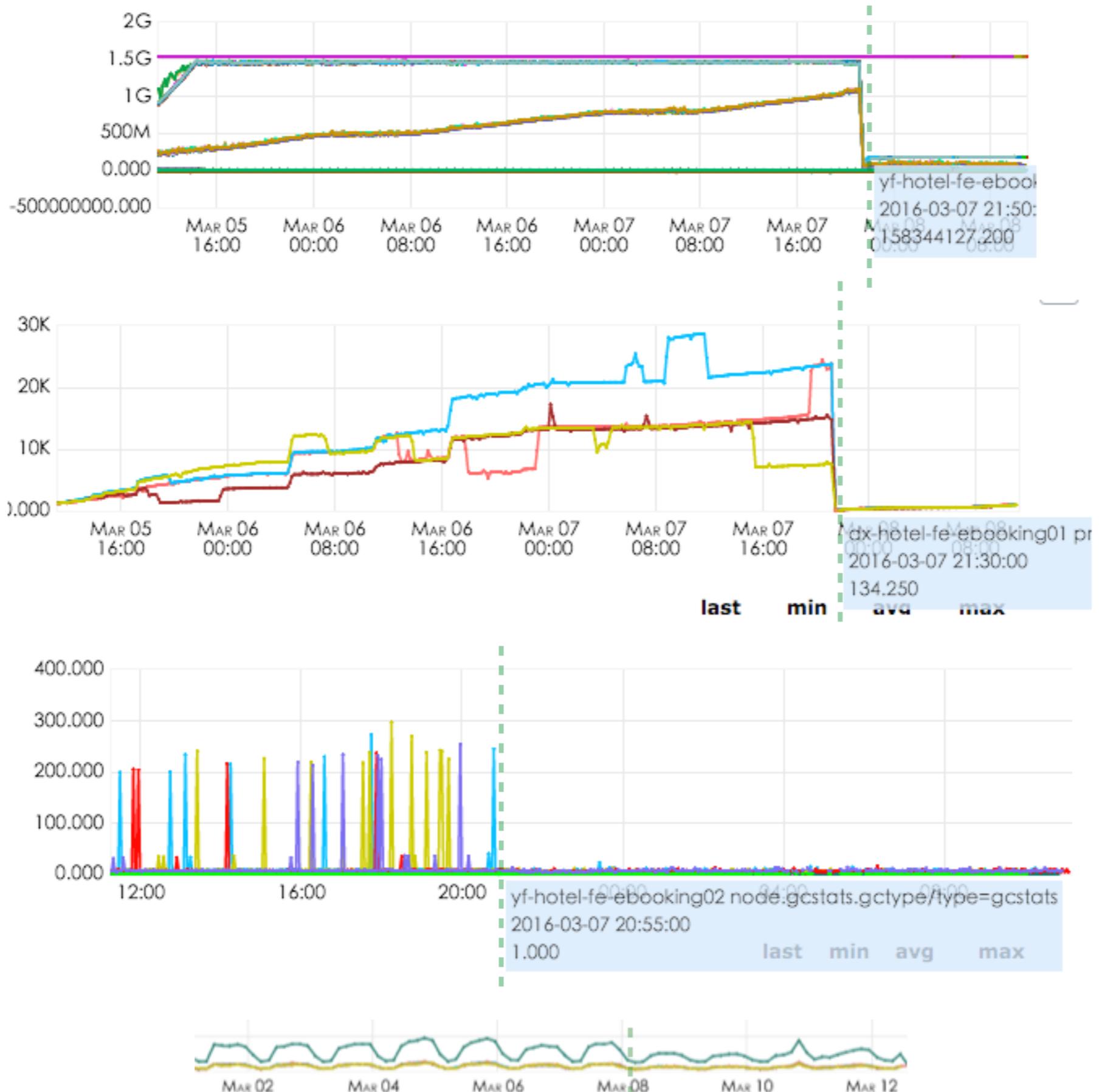
```



dx-hotel-fe-ebooking01 node.gcstats.after.heapSizeLimit/type=gcstats	1.535G	1.535G	1.535G	1.535G
dx-hotel-fe-ebooking01 node.gcstats.after.totalHeapExecutableSize/type=gcstats	17.249M	9.49M	11.521M	17.249M
dx-hotel-fe-ebooking01 node.gcstats.after.totalHeapSize/type=gcstats	146.692M	111.925M	1.247G	1.485G
dx-hotel-fe-ebooking01 node.gcstats.after.totalPhysicalSize/type=gcstats	145.019M	111.707M	1.251G	1.485G
dx-hotel-fe-ebooking01 node.gcstats.after.usedHeapSize/type=gcstats	65.149M	52.084M	540.526M	1.091G
dx-hotel-fe-ebooking01 node.gcstats.before.heapSizeLimit/type=gcstats	1.535G	1.535G	1.535G	1.535G
dx-hotel-fe-ebooking01 node.gcstats.before.totalHeapExecutableSize/type=gcstats	14.365M	9.49M	11.529M	17.249M
dx-hotel-fe-ebooking01 node.gcstats.before.totalHeapSize/type=gcstats	164.943M	111.822M	1.245G	1.482G

Comparison ▾	Class filter	heapdump-224316403.425874 ▾	# New	# ...	112.103M	1.251G	1.486G
Constructor			882 ...	575	67.503M	555.557M	1.107G
`@string`				•	0.000	0.000	0.000
"/" @1267503				•	-209715.200	-5461.333	0.000
"})" @1267507				•	-4023347.200	-37276.208	619.162K
"{0m" @1267511				•	-4098084.000	-47037.854	614.246K
"[0m:method :url [" @1267489				•	-25641806.000	-16042756.996	-13931764.800
"[0m" @1267513				•	1.000	1.011	1.150
"[32m" @26633361				•	4.250	9.146	93.300
"[36m" @1270629				•	1.535G	1.535G	1.535G
":" @1265989				•	9.332M	11.435M	17.669M
">:" @1265985				•	116.615M	1.261G	1.48G
"GMT" @595083				•			
"ms - " @1267515				•			
"   By [" @1265987				•			
""/"}]" @408293				•			
Potential							

```
Object
└─second in {"cookie":{"originalMaxAge":120000
  └─Az_dcvcTlppj1XZN01yq5Cdqs0ltb9m0 in @283237
    └─sessions in MemoryStore @283235
      ├─10 in {object properties}[] @589147
      ├─sessionStore in IncomingMessage @589091
      ├─sessionStore in IncomingMessage @283694
      ├─11 in {object properties}[] @3061073
      ├─sessionStore in IncomingMessage @283698
      ├─sessionStore in IncomingMessage @282984
      ├─sessionStore in IncomingMessage @282573
      ├─store in system / Context @221971
      ├─11 in {object properties}[] @3371167
      ├─11 in {object properties}[] @3328443
      ├─11 in {object properties}[] @3291691
      ├─sessionStore in IncomingMessage @305216
      ├─sessionStore in IncomingMessage @283700
      ├─sessionStore in IncomingMessage @282578
      ├─11 in {object properties}[] @3372493
      ├─11 in {object properties}[] @3321109
      ├─11 in {object properties}[] @3291783
    78  85    app.use(session({
    79  86      secret: 'jiudian.sankuai.com.MTA',
    80  87      cookie: {
    81  88        maxAge: 20 * 60 * 1000
    82  89      },
    90  +      store: new MongoStore({
    91  +        url: sessionPath,
    92  +        ttl: 20 * 60
    93  +      }),
    83  94      name: 'htmtaid',
    84  95      resave: true,
    85  96      saveUninitialized: true
    86  97    }));
  
```



# V8-Perf-Shield

V8应用性能守护者，当应用运行状态超过设定的警戒线后会触发救援函数，救援函数主要用于应急处理，比如自动重启进程，在救援函数中也可以获取到性能数据的历史以便输出到日志中。

## 如何安装

```
npm install --save v8-perf-shield
```

## 使用方法

```
'use strict';

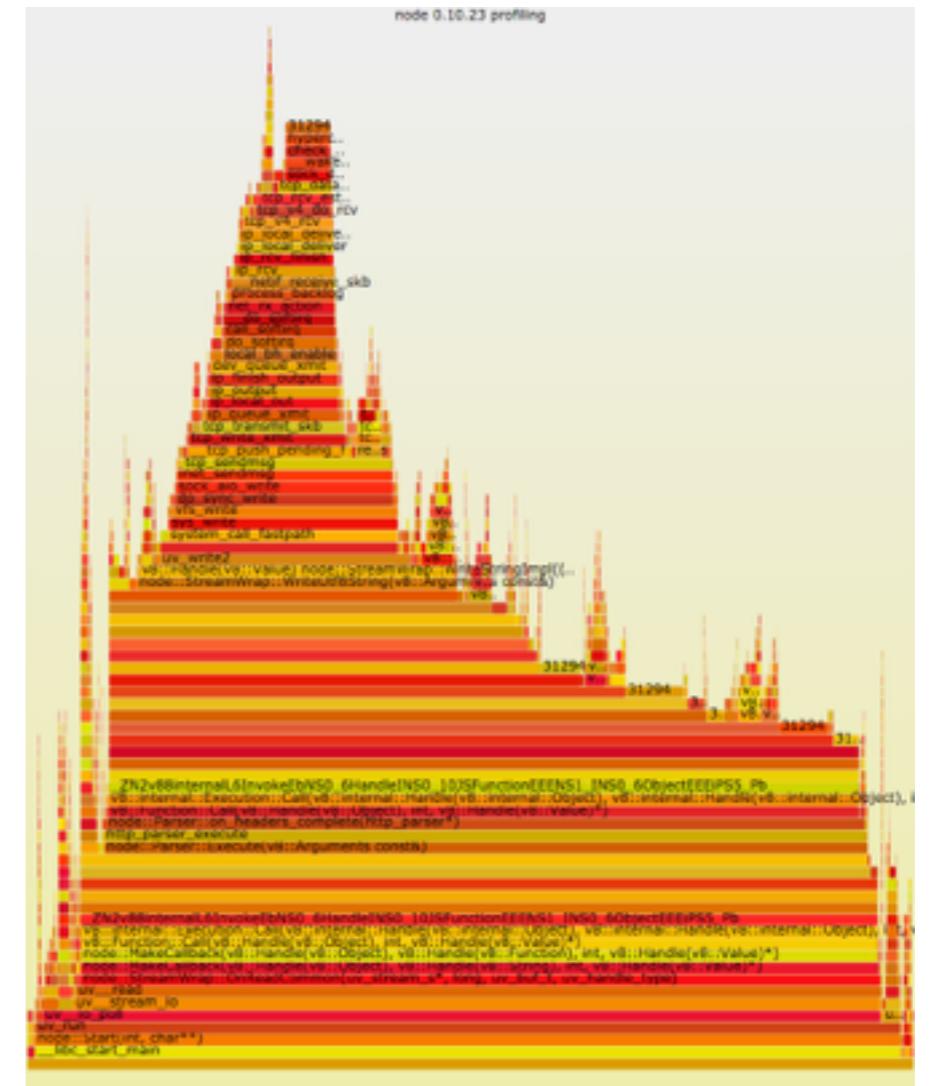
var perfShield = require('v8-perf-shield');

perfShield({
  logsPath: '', // 分析文件保存路径，默认为当前路径
  samplingTime: 60, // 采样时间，用于CPU Profile的生成
  flushTime: 3, // 检查时间，用于定期检查系统用量
  cacheMaxLimit: 100, // 最大历史缓存条数，超过则滚动
  usageOptions: { keepHistory: true },

  emergencyCondition: function (lastUsage, currentUsage, usageHistory) {
    if (lastUsage.cpu > 5 && currentUsage.cpu > 5) {
      return true;
    }
  },
  emergencyAction: function (usageHistory) {
    console.log(usageHistory);
    process.exit(0);
  }
});
```

# Sunburst vs. FlameGraph

# CPU Consumption Visualize



v0.12.5  
61c6abf

# v0.12.5: 2015.06.22, Version 0.12.5 (Stable)



**misterdjules** tagged this on 23 Jun 2015 · 3096 commits to master since this tag

- \* openssl: upgrade to 1.0.1o (Addressing multiple CVEs)
- \* npm: upgrade to 2.11.2
- \* uv: upgrade to 1.6.1
- \* V8: avoid deadlock when profiling is active (Dmitri Melikyan)
- \* install: fix source path for openssl headers (Oguz Bastemur)
- \* install: make sure opensslconf.h is overwritten (Oguz Bastemur)
- \* timers: fix timeout when added in timer's callback (Julien Gilli)
- \* windows: broadcast WM\_SETTINGCHANGE after install (Mathias Küsel)

## Downloads

[Source code \(zip\)](#)

[Source code \(tar.gz\)](#)

# Sentry

HFE hotel-fe-static

Team Settings

Stream | 设置

Event ID

Resolve Feed | Pause Updates | 排序方式: 最后出现时间 | Since: 一月 24th | ⏪ ⏹

事件数	错误描述	状态	书签
4	controllers.act:trip-hotel-fund at null.<anonymous> TypeError: Cannot read property 'cookie' of undefined 用户s 0 1天前 root	未解决	所有事件
1	controllers.act:trip-hotel-fund at null.<anonymous> TypeError: Cannot read property 'cookie' of undefined 用户s 0 1天前 root	未解决	Only Bookmarks
1	controllers.act:qrcode at Object.isMobile.iOS TypeError: Cannot call method 'match' of undefined 用户s 1 2天前 root	未解决	状态
1	controllers.act:trip-hotel-fund at Request._callback Error: Failed to lookup view "act/trip-hotel-fund/index" in views directory "/Users/paulguo/Devel..." 用户s 1 2天前 root	未解决	BROWSER Select a browser
4	controllers.third.elephant:index at null.<anonymous> ReferenceError: params is not defined 用户s 0 2天前 root	未解决	FOO Select a foo

书签

所有事件

Only Bookmarks

状态

未解决

BROWSER

Select a browser

FOO

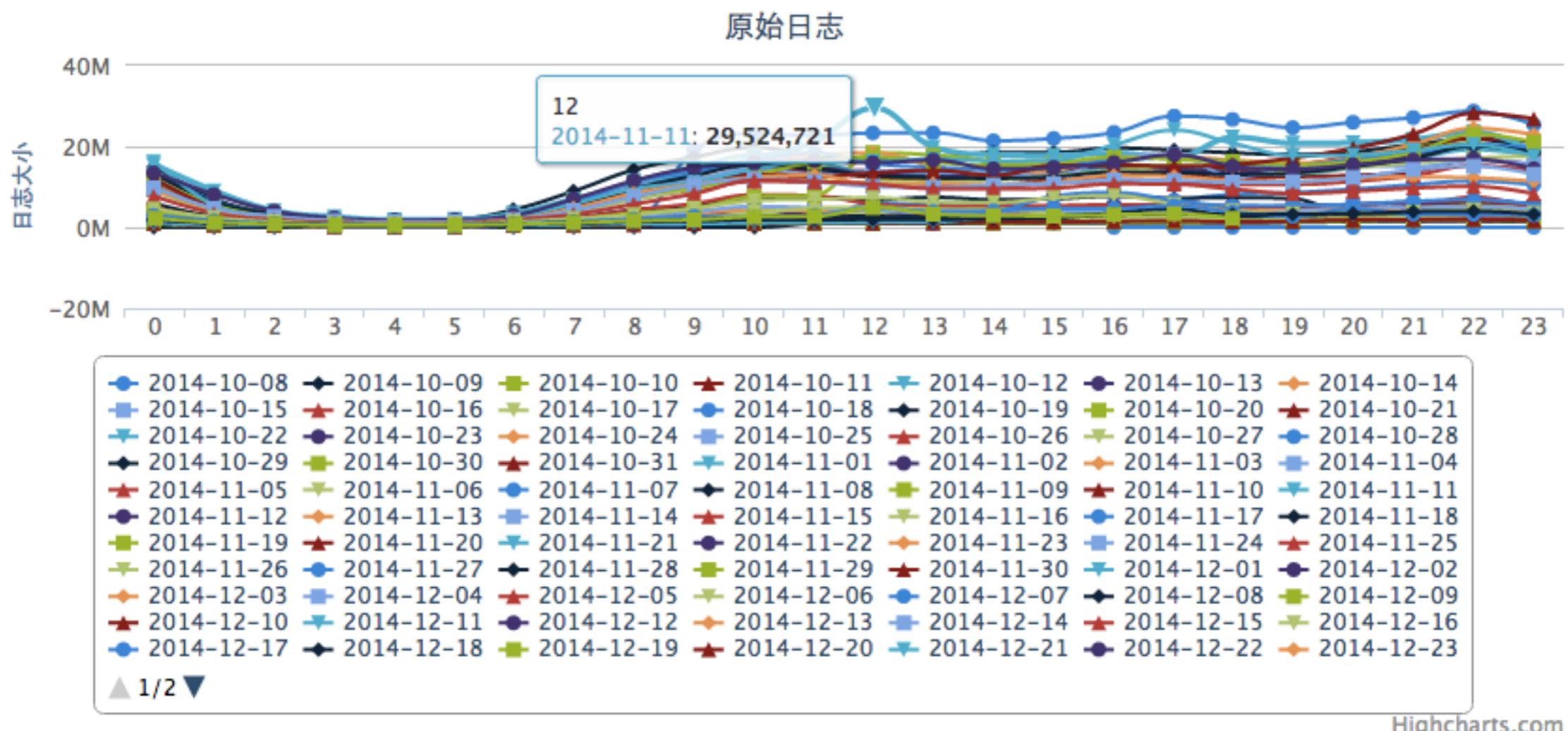
Select a foo

LEVEL

Select a level

LOGGER

# 日志监控平台



<https://www.npmjs.com/package/log4js>



# Open-Falcon

国内开源的互联网企业级监控系统

# GC 状态上报

31 lines (27 sloc) | 1.64 KB

[Raw](#) [Blame](#) [History](#)   

```
1 'use strict';
2
3 var Falcon = require('open-falcon').init('http://127.0.0.1:1988/v1/push');
4 var falcon = new Falcon().tag('type', 'gcstats');
5 var gc = (require('gc-stats'))();
6 var debug = require('debug')('express-gcstats');
7
8 gc.on('stats', function (stats) {
9     debug('GC happened', stats);
10
11     falcon
12         .step(20)
13         .gauge('node.gcstats.gctype', stats.gctype)
14         .gauge('node.gcstats.pauseMS', stats.pauseMS)
15         .gauge('node.gcstats.before.totalHeapSize', stats.before.totalHeapSize)
16         .gauge('node.gcstats.before.totalHeapExecutableSize', stats.before.totalHeapExecutableSize)
17         .gauge('node.gcstats.before.usedHeapSize', stats.before.usedHeapSize)
18         .gauge('node.gcstats.before.heapSizeLimit', stats.before.heapSizeLimit)
19         .gauge('node.gcstats.before.totalPhysicalSize', stats.before.totalPhysicalSize)
20         .gauge('node.gcstats.after.totalHeapSize', stats.after.totalHeapSize)
21         .gauge('node.gcstats.after.totalHeapExecutableSize', stats.after.totalHeapExecutableSize)
22         .gauge('node.gcstats.after.usedHeapSize', stats.after.usedHeapSize)
23         .gauge('node.gcstats.after.heapSizeLimit', stats.after.heapSizeLimit)
24         .gauge('node.gcstats.after.totalPhysicalSize', stats.after.totalPhysicalSize)
25         .gauge('node.gcstats.diff.totalHeapSize', stats.diff.totalHeapSize)
26         .gauge('node.gcstats.diff.totalHeapExecutableSize', stats.diff.totalHeapExecutableSize)
27         .gauge('node.gcstats.diff.usedHeapSize', stats.diff.usedHeapSize)
28         .gauge('node.gcstats.diff.heapSizeLimit', stats.diff.heapSizeLimit)
29         .gauge('node.gcstats.diff.totalPhysicalSize', stats.diff.totalPhysicalSize);
30});
```

# PM25报警配置管理演示

QuickTime Player 文件 编辑 显示 窗口 帮助

100% 周五19:03

Guo

PM2.5 | Online Node Service Falcon-Dashboard Falcon-Dashboard 3k 服务树 - 美团运维管理

ops.sankuai.com/srvset#!/corp=meituan/monitor

美团服务树 管理中心 发布管理 域名管理 我的流程 新服务上线 使用手册 反馈入口 郭凯 退出

搜索机器 meituan

节点管理 监控管理 报警组管理 资源管理 资源利用率

| corp=meituan&owt=hotel&pdl=fe&cluster=staging&srv=staging

Dashboard Screen Alerts Disabled Documentation

应用模版信息

Show 5 entries Search:

模版名称	应用节点	报警组	生效时间	模版操作
HOTEL_FE_STAGING_SERVICE_RESTART	corp=meituan&owt=hotel&pdl=fe&cluster=staging	hotel-fe-hfe	已生效	<a href="#">编辑</a> <a href="#">禁用</a>
HOTEL_FE_STAGING_STAGING_SERVICE	corp=meituan&owt=hotel&pdl=fe&cluster=staging&srv=staging	hotel-fe-staging	已生效	<a href="#">编辑</a> <a href="#">取消应用</a> <a href="#">禁用</a>
MEITUAN_BASE_PUPPET	corp=meituan	xm-sre	已生效	<a href="#">查看</a>
MEITUAN_BASE_SG-AGENT	corp=meituan	octo_sg_agent	已生效	<a href="#">查看</a>

Showing 1 to 4 of 4 entries Previous 1 Next

绑定模版信息

监控模板命名规范参考 模版名称: HOTEL\_FE\_STAGING\_STAGING\_ 模版名称后缀, 比如: PORT-8602 [创建](#)

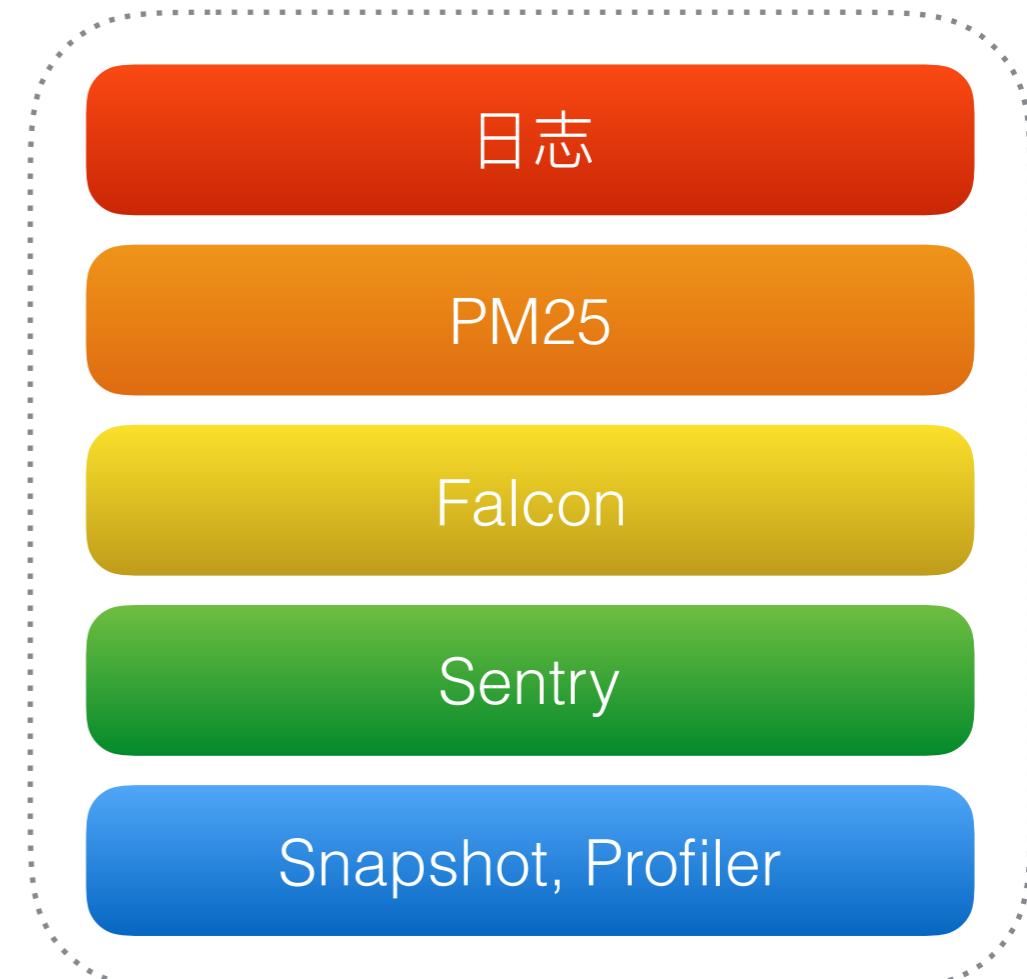
Show 5 entries Search:

模版名称	绑定节点	报警组	模版操作
------	------	-----	------

# 高性能的 NodeJS

- **高效使用内存**（闭包、全局变量引用）
- 关注线上服务内存泄露和CPU的情况
- 关注线上服务捕获到的任何异常
- 编写高效的中间件、合理使用路由
- 尽量引用二进制的模块
- 避免代码中进行密集型计算
- 防御性编程确保服务的健壮性
- **静态资源请使用 CDN 访问**
- **服务的稳定性出自监控**

# 我们的服务监控体系





NSSocket

*BABEL*



PMX



Axon



# 谢谢大家

