

Server-Side JavaScript Development

Node.js Quick Tour

数据平台与产品 - 清笃 <qingdu@taobao.com>
from <http://cnodejs.org/>

传统观念

JavaScript = 浏览器客户端



Server-Side JavaScript

先驱



Aptana Jaxer



Helma

Jaxer

- Apache Httpd
- Mozilla SeaMonkey
- “世界第一”
- 前后端js代码的统一与互相调用
- 传统的服务器端脚本

适用场景

- web前端系统
- 对不支持js的浏览器提供js支持

Helma

- RingoJS
- “12 years”
- Java
- MVC
- 应用服务器



问题

- no more servers
- do more things
- 统一标准
- 技术生态圈



Revolutions in 2009

- CommonJS
- JSConf
- Node



Node's goal is to provide an easy way to build scalable network programs

-- nodejs.org

发展历史

- 1/5/2009 Ryah Dahl 提出项目构想
- 2/15/2009 项目启动
- 5/31/2009 发布初始版本
-
- 3/2/2011 v0.4.4 发布

社区与生态圈

- 目前在官方wiki上有近700个module
- 超过20位活跃的开发者的
- 每天都在进步

基础库

- libev (event loop)
- libeio (nonblocked posix, thread pool)
- v8 (javascript engine by google)

核心思想

- 非阻塞
- 单线程
- 事件驱动

阻塞模式

```
echo 'hello';  
sleep(1);  
echo 'world';
```


非阻塞模式

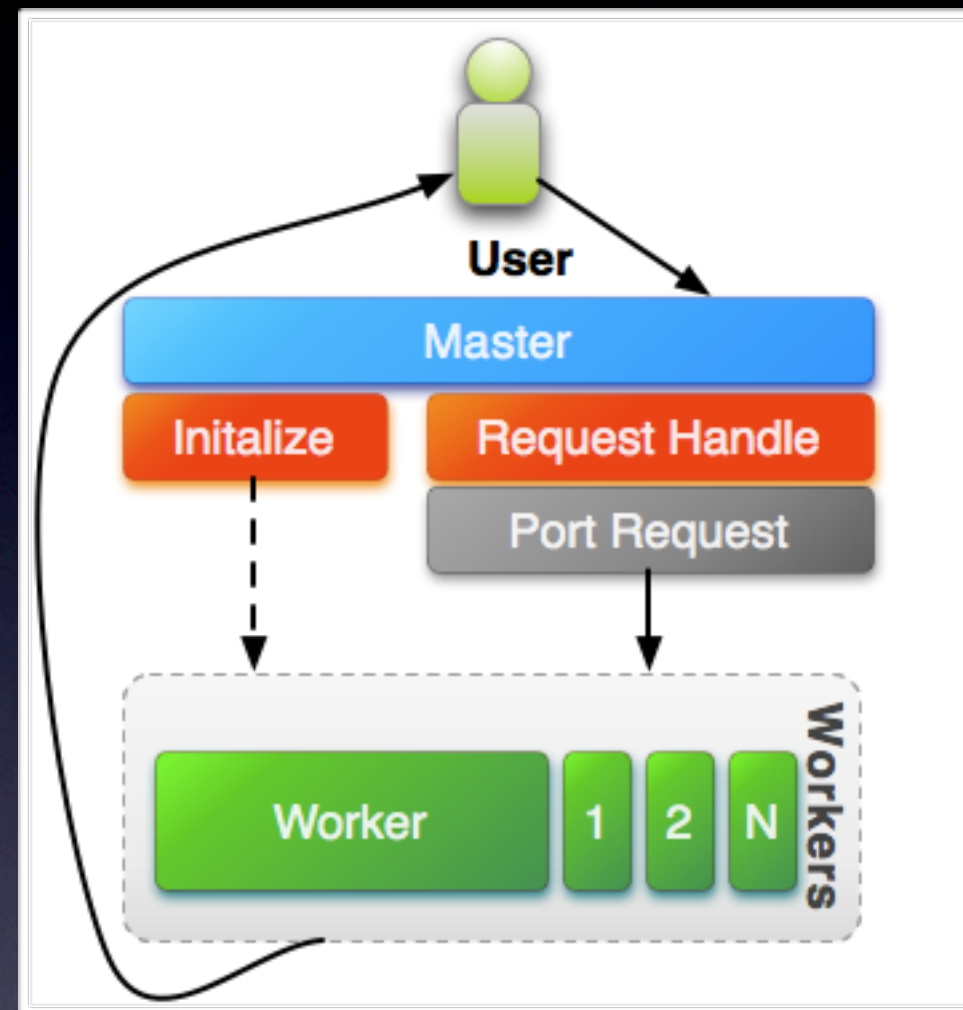
```
setTimeout(function(){  
    console.log('world');  
}, 1000);  
console.log('hello');
```


单线程 - 优势

- 程序逻辑简单
- 系统资源占用低
- 无通信与锁开销带来高性能

单线程 - 劣势

- 一个程序仅能在一个cpu上运行
- 一旦程序异常将导致整个进程崩溃



解决方案 - Web Worker

性能

- AMD Opteron 2200 单核, 4G RAM
- socket client 20,000+ qps
- socket server 17,000 qps
- http server 4,400 qps
- 内存消耗 30~40m
- see more. <<http://cnodejs.org/blog/?p=8>>

一些限制

- SSL支持不够成熟
- Windows下还存在很多问题
- 1G heap限制(by v8)

适用场景

- Web Socket & Web Comet
- 大并发负载中间层服务
- 简单的Spider



Dig into the node

安装

```
git clone https://github.com/joyent/  
node.git  
cd node  
./configure --prefix=$HOME/node --  
debug  
make && make install
```


Hello World!

```
console.log("hello world!");
```

Familiar & Simple

HTTP服务

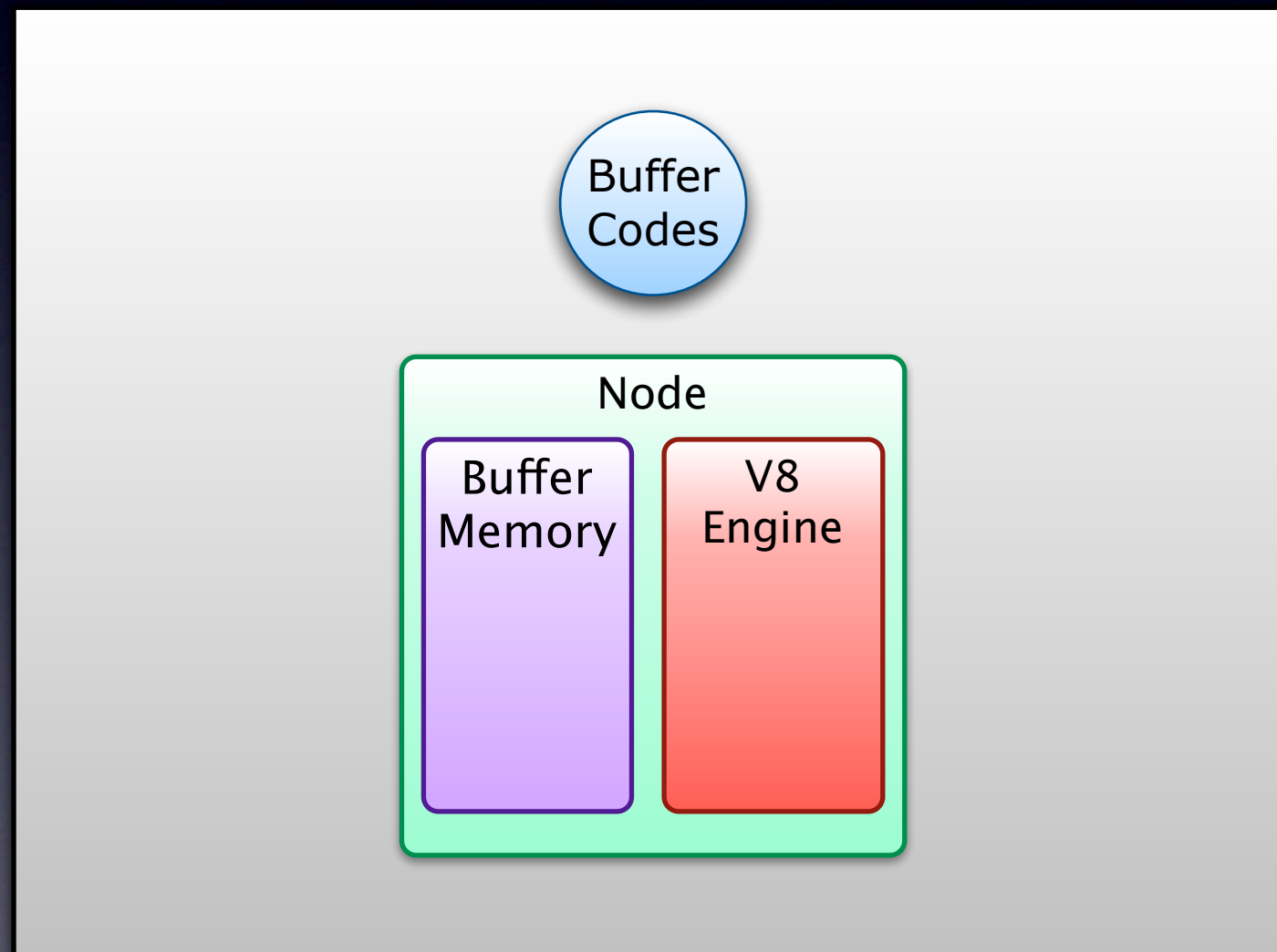
```
var http = require('http');  
http.createServer(function (req, res) {  
  res.writeHead(200, {  
    'Content-Type': 'text/plain'});  
  res.end('Hello World!\n');  
}).listen(8124);
```


String vs Buffer

String带来的问题

- 转码开销
- 内存开销
- memcopy
- 垃圾回收

Node Buffer



String vs Buffer

```
var http = require('http'),
    string = '';

for (i = 0; i < 16384; i++) {
    string += 'd';
}

http.createServer(function (req, res){
    res.writeHead(200);
    res.end(string, 'ascii');
}).listen(8125);
```

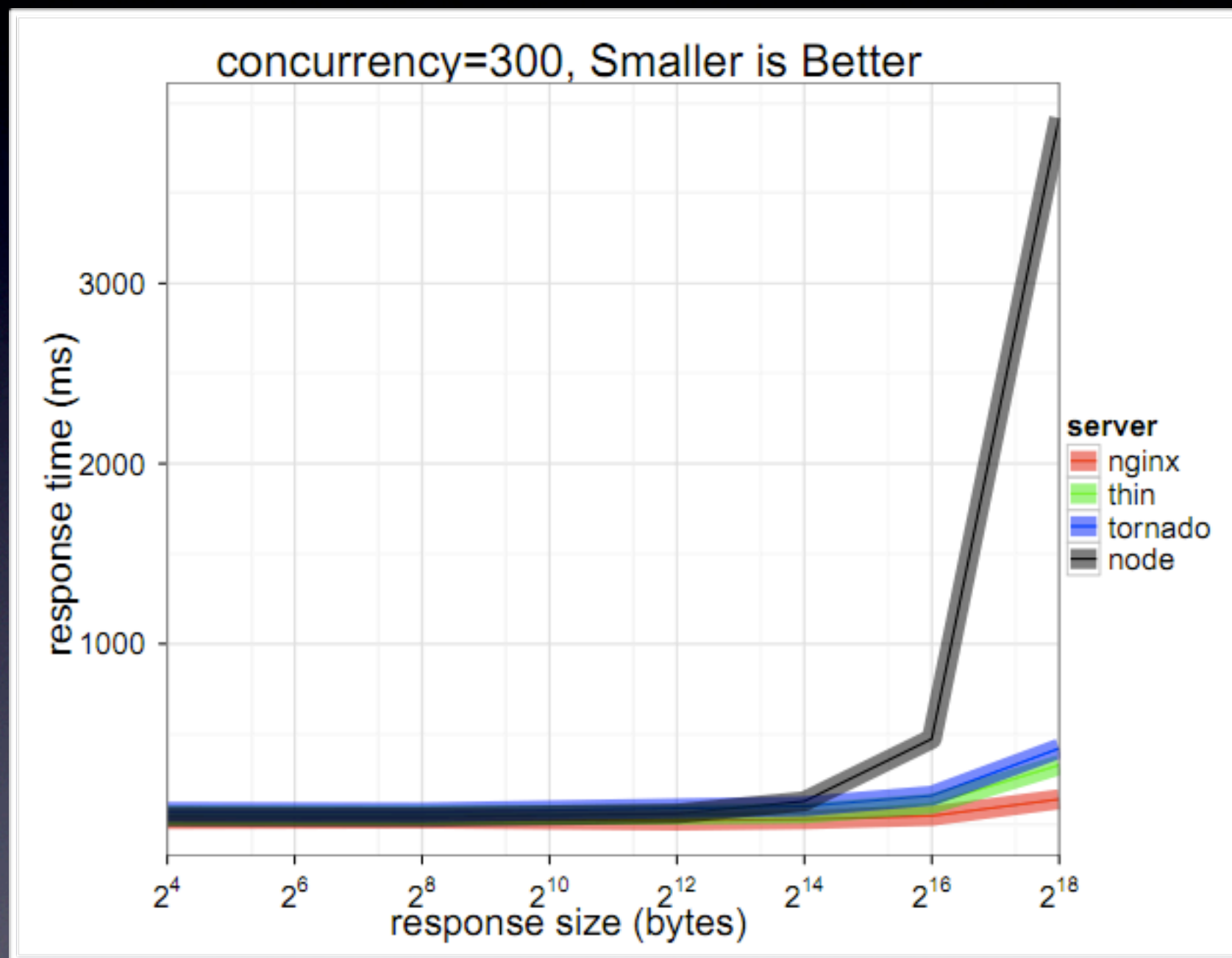
With String

String vs Buffer

```
var http = require('http'),  
    buffer = new Buffer(16 * 1024);  
  
for (i = 0; i < buffer.length; i++) {  
    buffer[i] = 100;  
}  
  
http.createServer(function (req, res){  
    res.writeHead(200);  
    res.end(buffer);  
}).listen(8126);
```

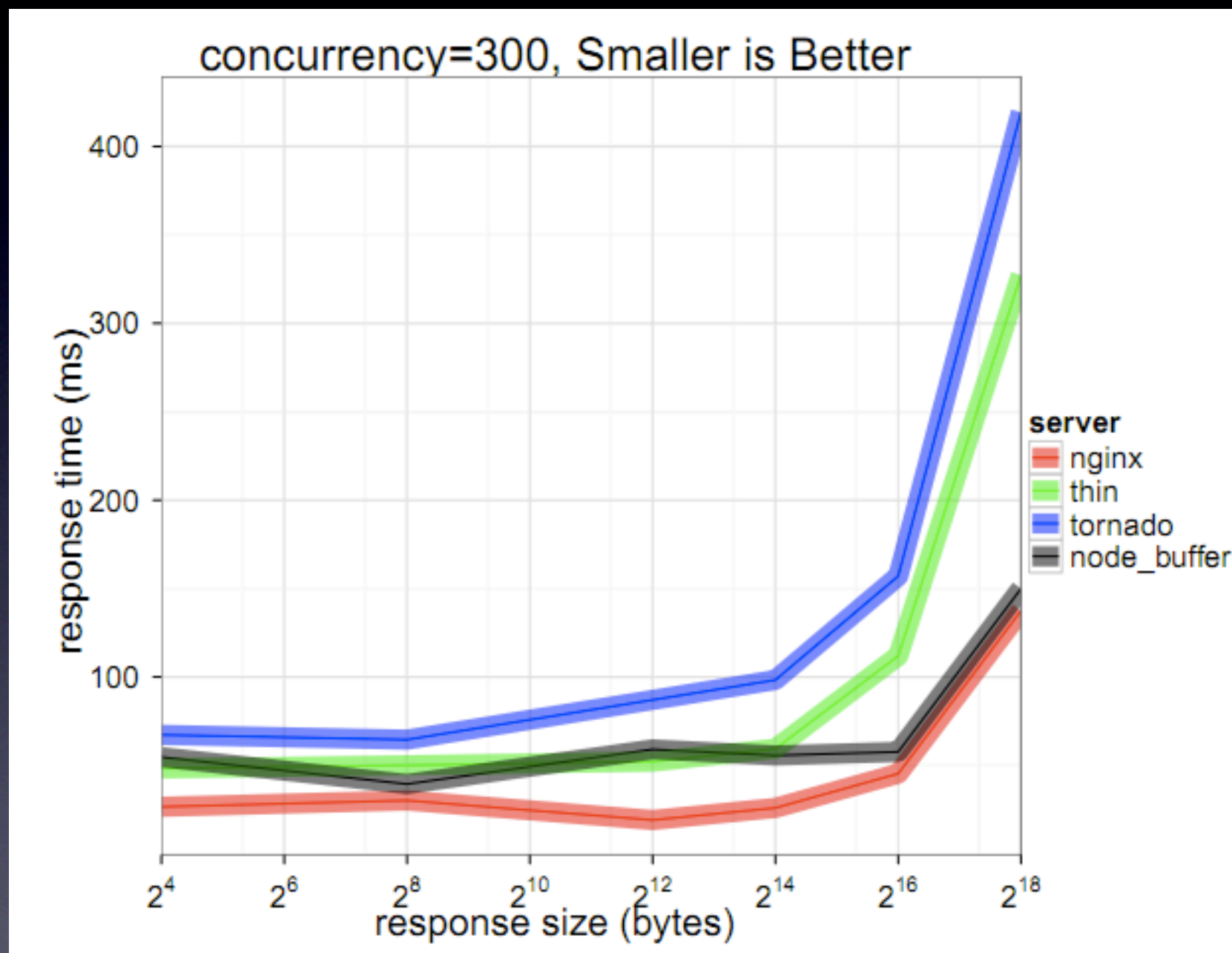
With Buffer

带来的性能改进



With String

带来的性能改进



With Buffer

Debug

```
x = 5;
setTimeout(function () {
  ++x;
  debugger;
  function a() {
    x *= 3;
    debugger;
  }
  a();
  console.log("done");
}, 1000);
debugger;
console.log("begin");
```

```
$ node debug debug.js
break in # ....
debug> p x
5
debug> c
debug> begin
break in # ....
debug> p x
6
debug> c
debug> break ....
debug> p x
18
debug> c
done
debug>
program terminated
```


Debug in eclipse

- Eclipse debugger plugin for V8:
<http://code.google.com/p/chromedevtools/>
- <http://bit.ly/eQl7il>

UnitTest

- Expresso

<https://github.com/visionmedia/expresso>

- Nodeunit

<https://github.com/caolan/nodeunit>

UnitTest

```
var testCase = require('nodeunit').testCase;

module.exports = testCase({
  setUp: function (callback) {
    this.foo = 'bar';
    callback();
  },
  tearDown: function (callback) {
    callback();
  },
  test1: function (test) {
    test.equals(this.foo, 'bar');
    test.done();
  }
});
```


UnitTest

```
q3boy >>> nodeunit unittest.js
```

```
unittest.js
```

```
✓ test1
```

```
OK: 1 assertions (7ms)
```


包管理

- PHP: pear
- Python: PyPI, setuptools
- Ruby: Gems

- Node:



安装与使用

```
cat >> ~/.npmrc <<NPMRC
root = ~/.node_libraries
binroot = ~/bin
manroot = ~/share/man
NPMRC
curl http://npmjs.org/install.sh | sh

npm ls
npm install package_name
npm update
```


Links

- <http://www.commonjs.org/>
- <http://nodejs.org/>
- <http://howtonode.org/>
- <https://github.com/joyent/node/wiki>
- <https://npmjs.org/>

nodeJS
淘宝网
Taobao.com

nodejs-kissy



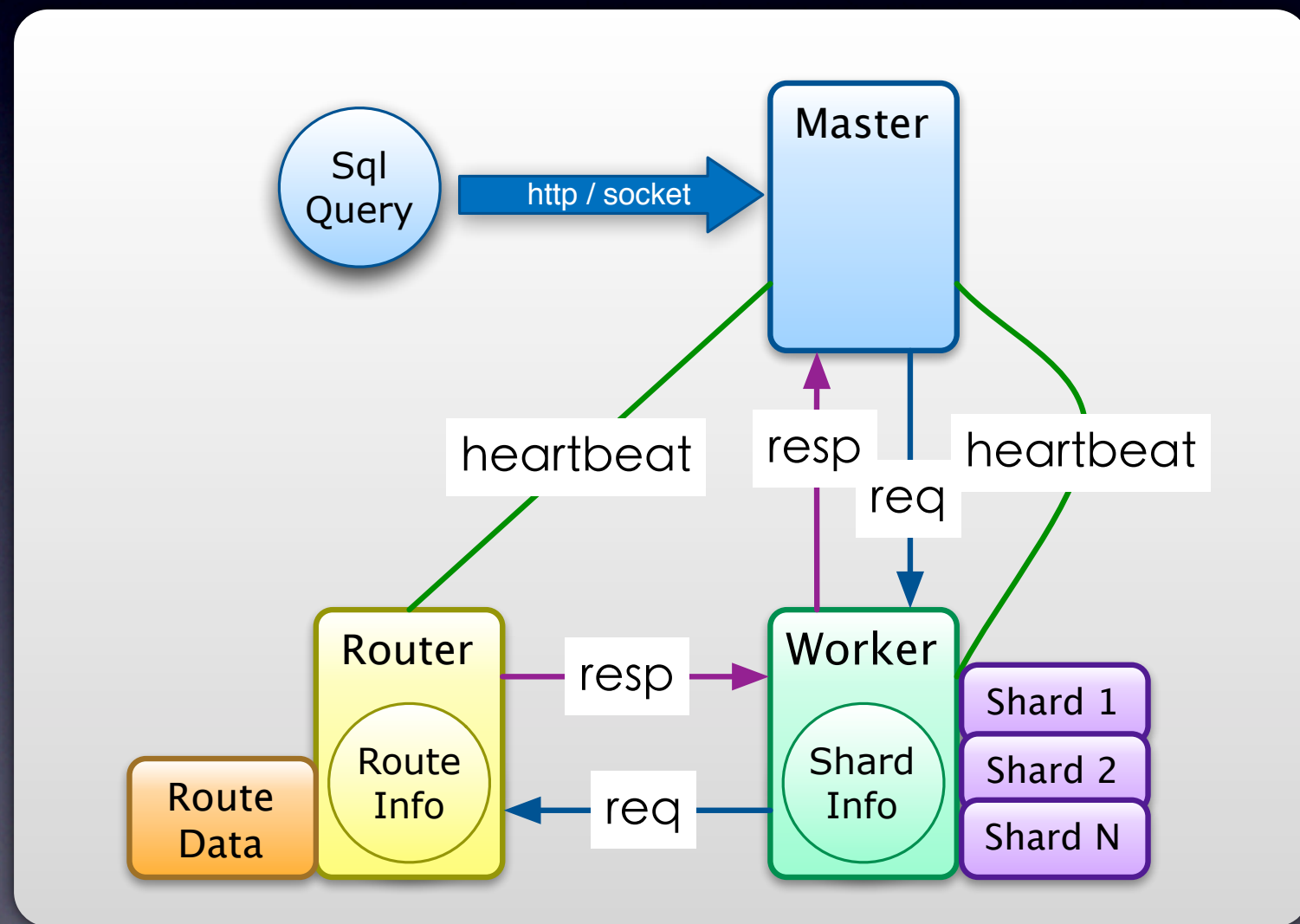
nodejs-kissy

- kissy框架的node移植版
- one for all
- <https://github.com/kissyteam/nodejs-kissy>

node-myfox

- mysql分布式集群的查询系统
- 对客户端透明
- 支持http/socket协议
- daemon-worker
- unix-socket

node-myfox





CNodeJS.ORG为淘宝的工程师志愿发起的
Node.js原创技术社区，致力于Node.js的
技术研究和技术推广。

CNodeJS

- blog
 - <http://cnodejs.org/blog/>
- ask
 - <http://cnodejs.org/ask/>



CNodeJS北京聚会 邀请你参加

时间: 2011.4.16(周六)下午

地点: 北京betacafe



The logo for QCon, with a green 'Q' and blue 'Con'.

杭州站 · 2011年10月20日~22日
www.qconhangzhou.com (6月启动)

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