

TaobaoUED

Node.js 实践

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NodeJS 初体验：瘦身，速度，灵活，帅!

- JavaScript之初
- WebServer之初
- NodeJS
- JavaScript的优异表现
- 更进一步：DOM & YUI3

- **JavaScript之初**
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JavaScript诞生离不开
Netscape Navigator

淘宝网

ECMAScript 一统江湖

JavaScript
ActionScript
ScriptEase

...

我们熟悉的JavaScript

ECMAScript

DOM

BOM

JS库 (jQuery,YUI,prototype...)

JS在客户端表现优异，但是...



浏览器弱小的权限限制了JS的表现

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WebServer

- Web服务(Apache/IIS/JBoss)
 - 处理请求、线程、IO...
- 语言引擎(PHP/ASP/Java)
 - 面向开发者

WebServer

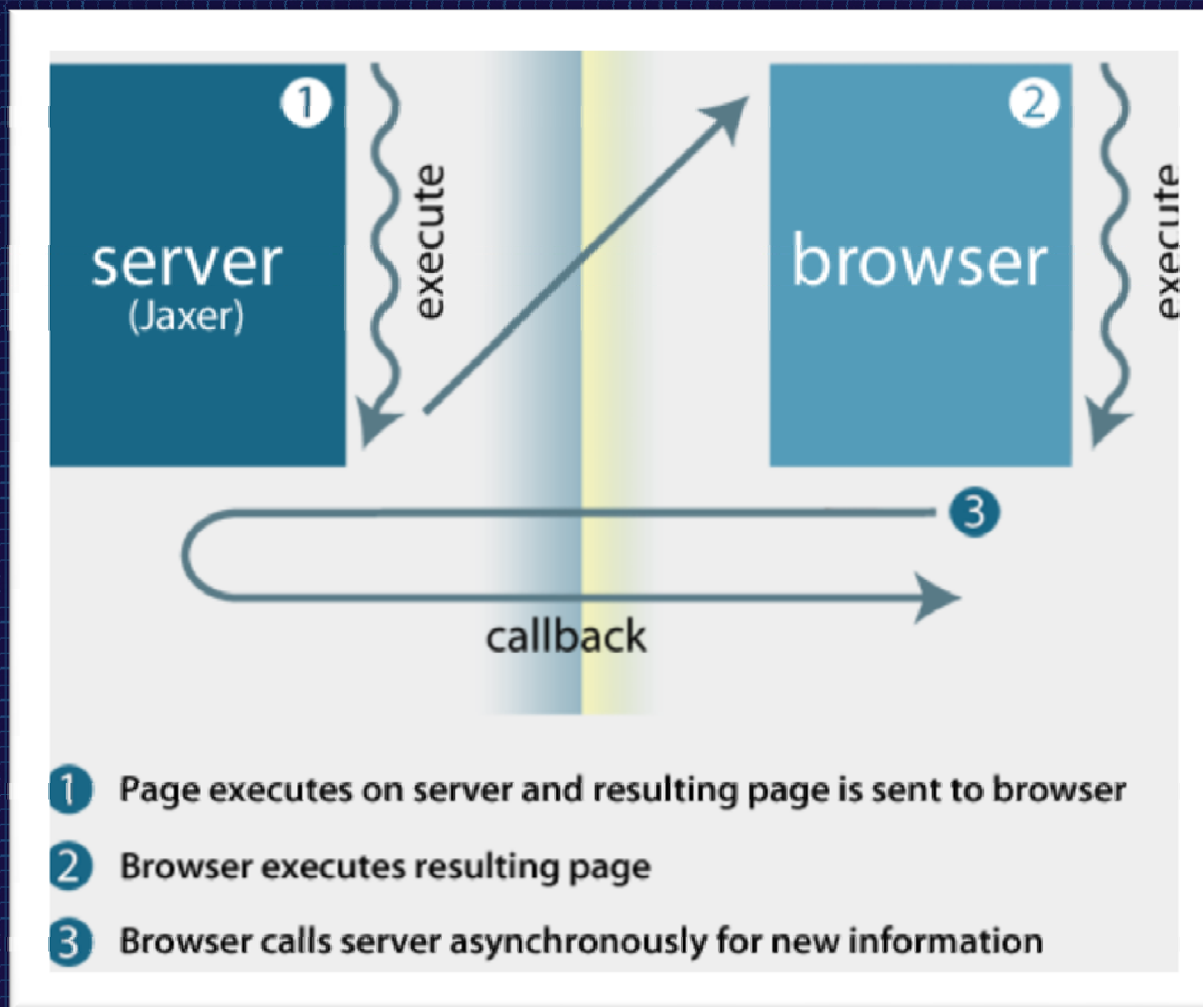
- Web服务(Apache/IIS/JBoss)
 - 处理请求、线程、IO...
- 语言引擎
(php/Asp/Java/**JavaScript**)
 - 面向开发者



<http://jaxer.org/>

https://developer.mozilla.org/En/JavaScript/Server-Side_JavaScript/Walkthrough

WebServer + SpiderMonkey

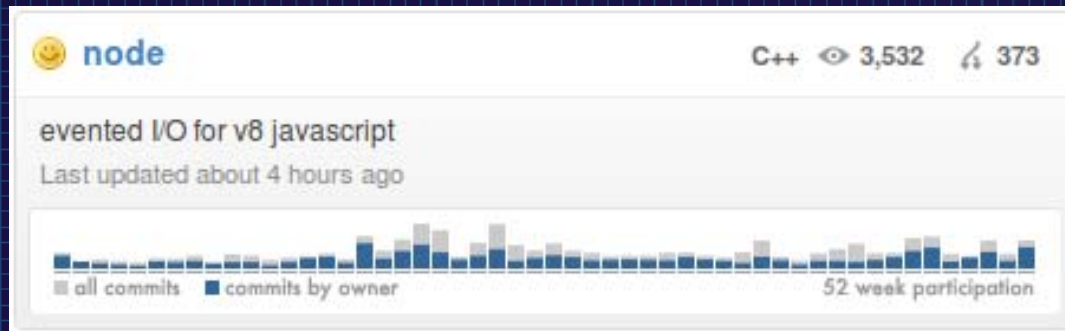


浏览器渲染DOM的部分工作分担到服务器

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nodeJS

<http://nodejs.org/>



<http://github.com/ry/node>

Ryan Dahl

<http://github.com/ry>



Video:

<http://www.yuiblog.com/blog/2010/05/20/video-dahl/>

Why ?

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

-- Ryan Dahl

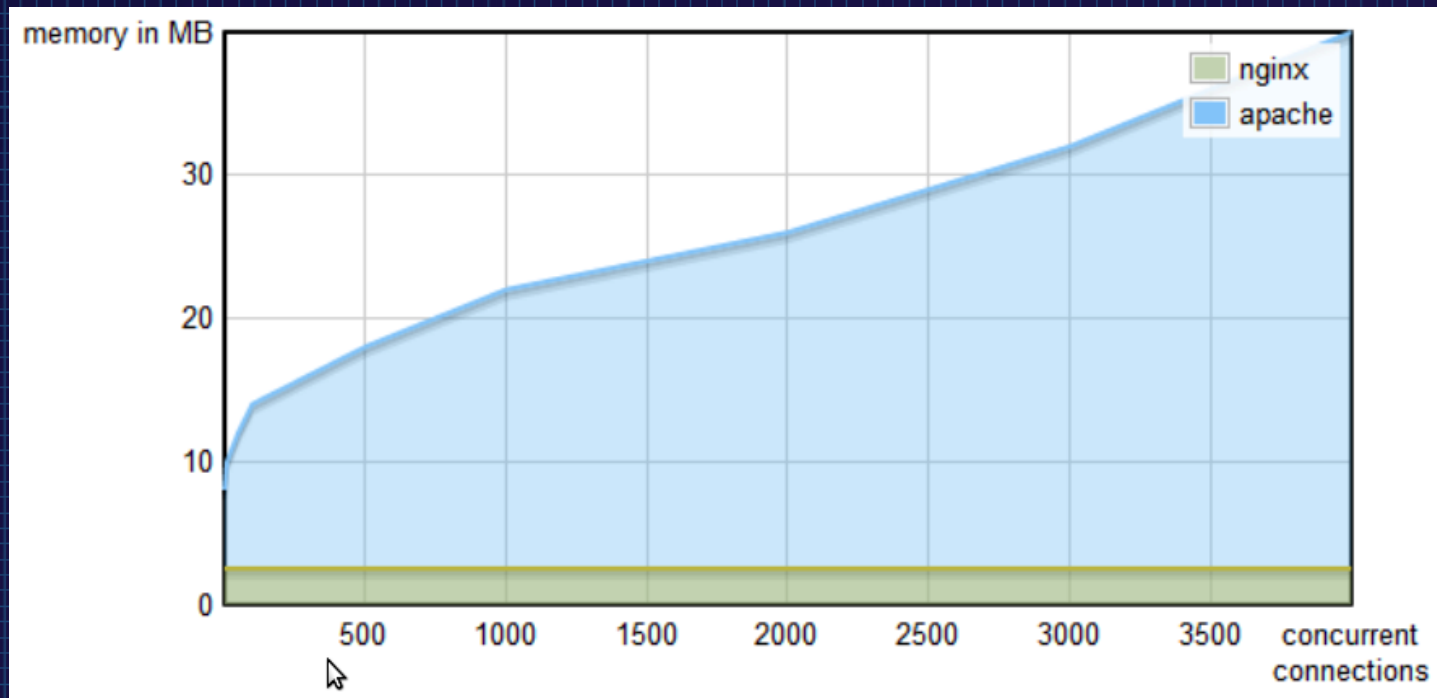
NodeJS的实现

- 单线程 (single-thread)
- 非阻塞式IO (non-blocking)
- V8
- 事件驱动 (event-based)

- 单线程：多个请求占用一个线程
- 多线程：一个请求占用一个线程

(Web服务的)单线程 vs 多线程

单线程的性能优势



Nginx (单线程) vs Apache (多线程)

/* 阻塞 */

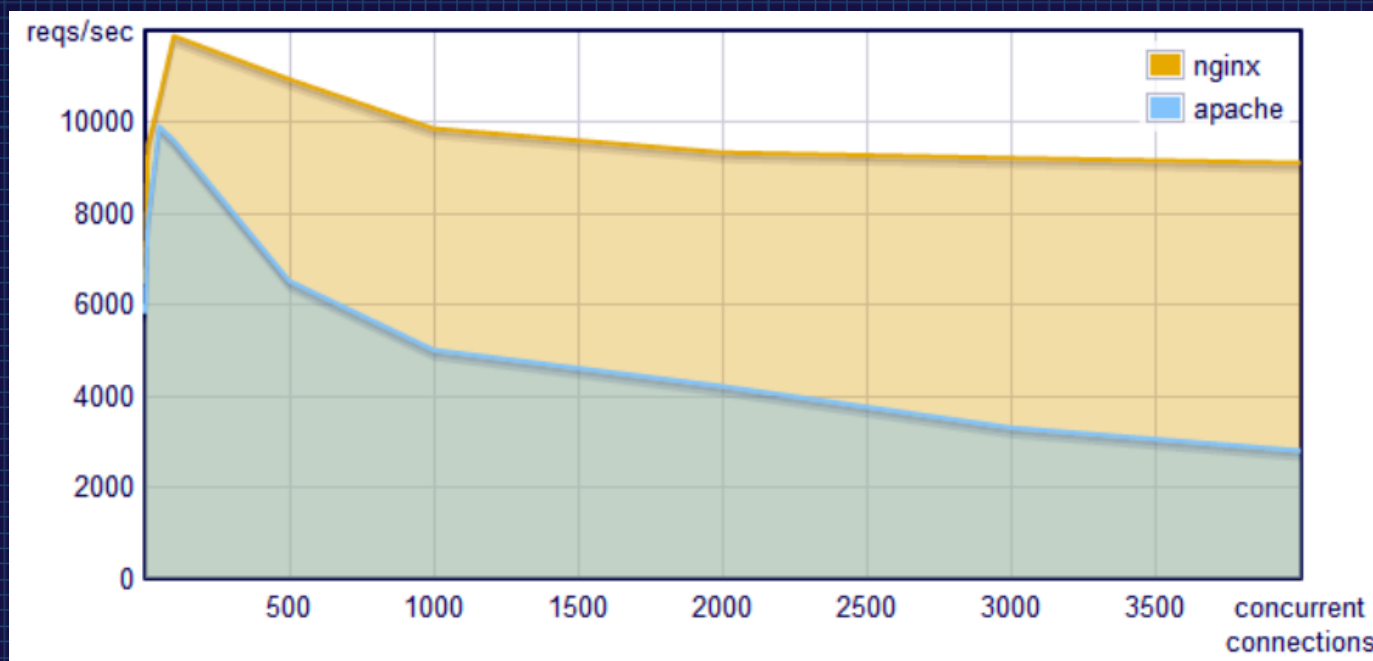
```
get_a_request(); //从队列中得到一个请求  
handle_request(); //处理这个请求  
feedback(); //返回处理结果  
get_another_request(); //从队列中获得下一个请求  
...
```

/* 非阻塞 */

```
get_a_request(); //得到一个请求  
handle_request(function(){ //处理这个请求  
    feedback(); //等到处理完成后，返回处理结果  
});  
get_another_request(); //从队列中获得下一个请求  
...
```

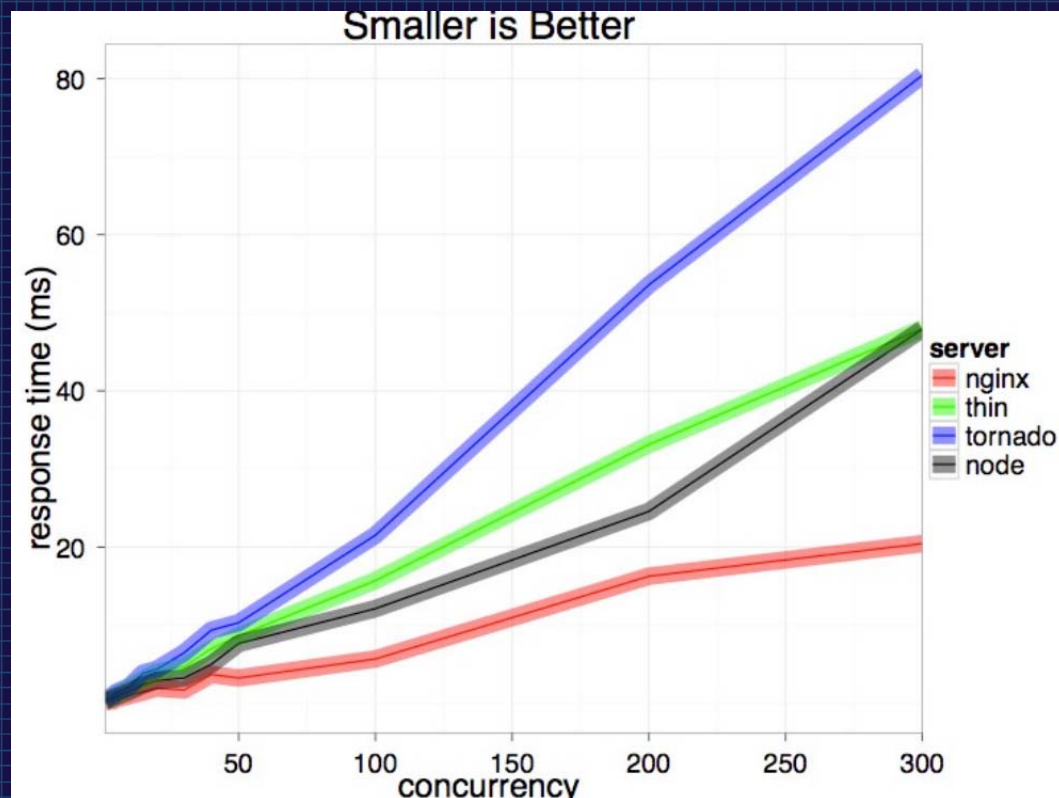
阻塞 vs 非阻塞

非阻塞的性能优势



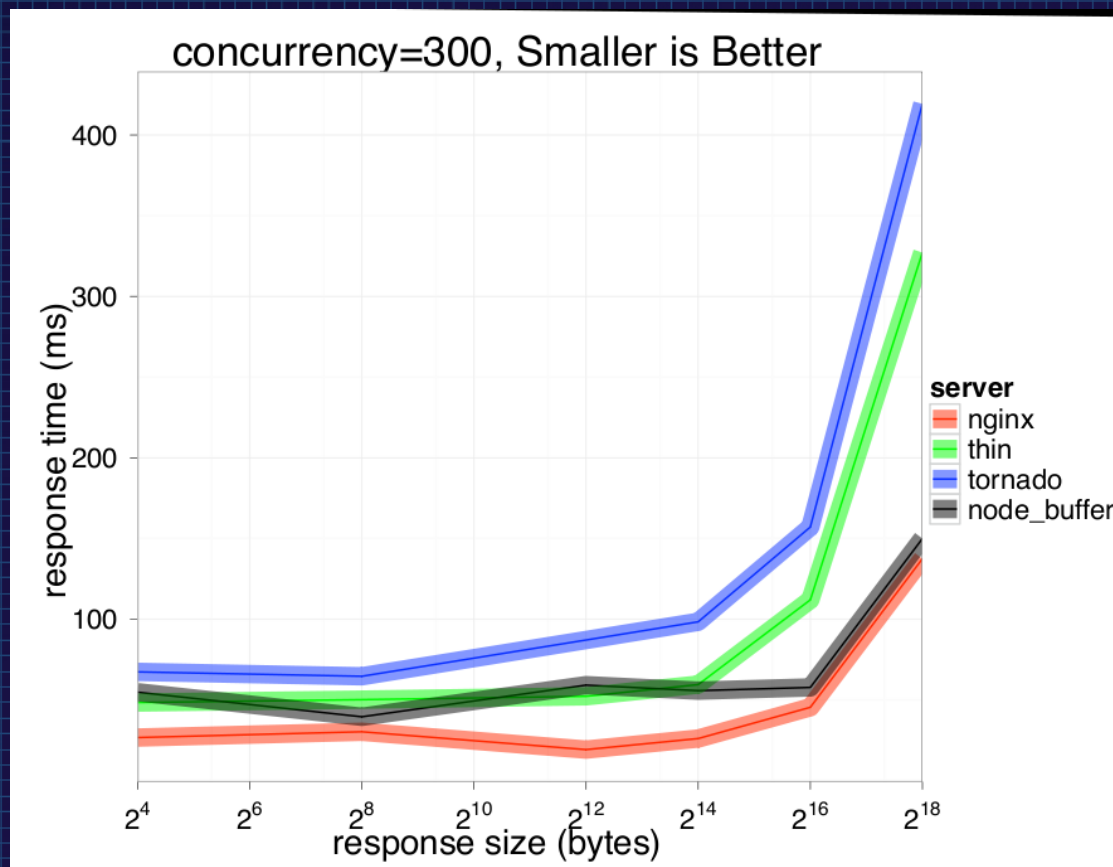
Nginx (非阻塞) vs Apache (阻塞)

“瘦身”带来的性能优势



高并发数的响应时间

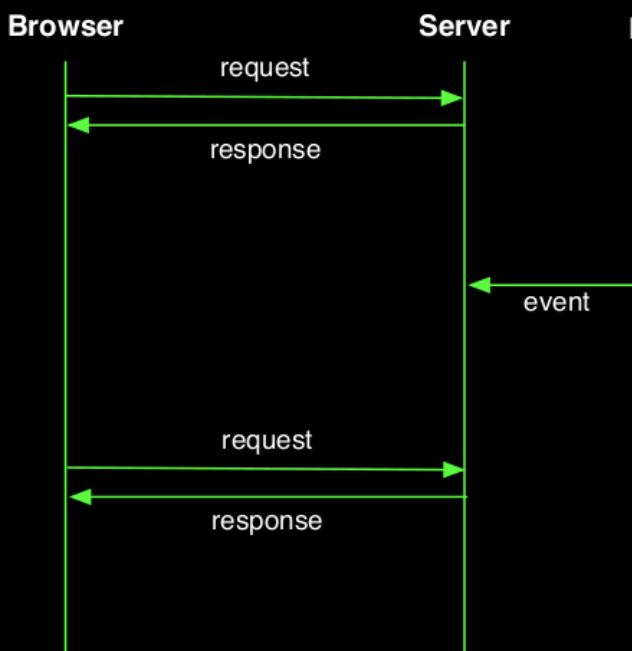
“瘦身”带来的性能优势 续



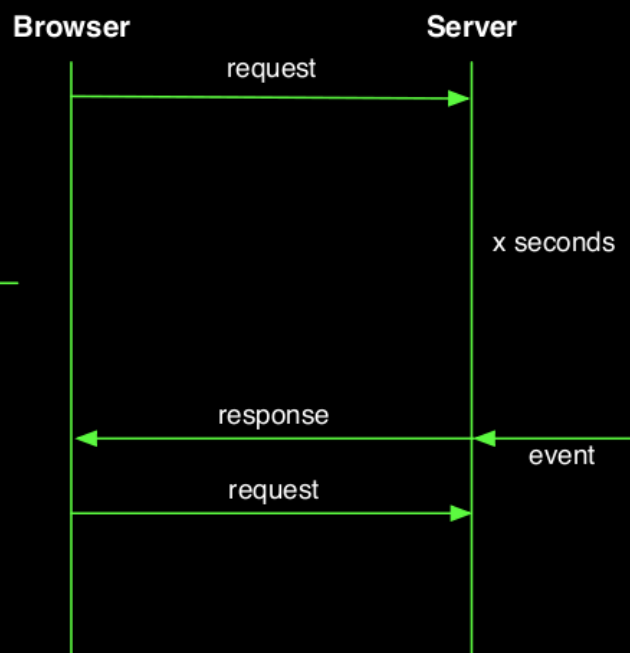
大尺寸文件的响应时间

让人垂涎的长连接

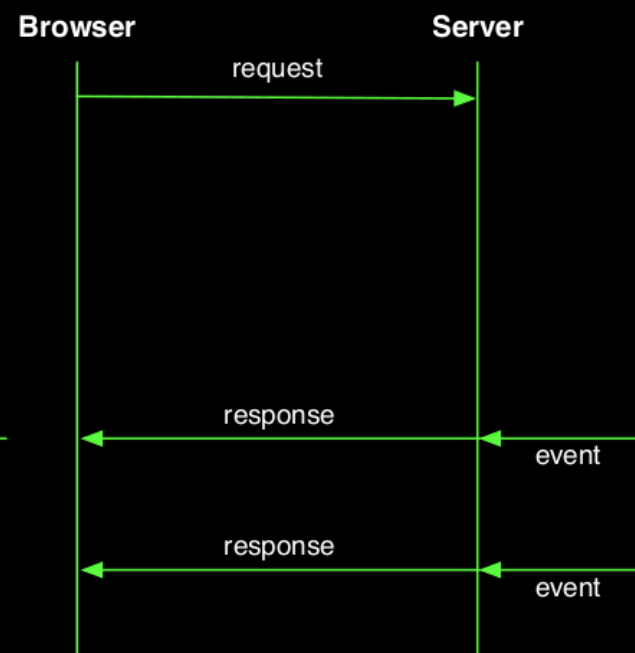
Ajax



Comet (long poll)



Comet (streaming)



过去/现在/将来

完美的单线程？

单线程的先天不足

- 操控多CPU的短板
 - 单线程程序只能在一个CPU上运行
- 可靠性！？
 - 一个异常影响整个线程

NodeJS的取舍

单线程，可靠性低，性能高

多线程，可靠性高，性能低

JavaScript语言解释器

- V8 (Google) C++
- Spider Monkey (Mozilla) C++
- Rhino (Mozilla) Java
- JavaScript Core (Apple) C++
- ...

NodeJS 的选择



<http://code.google.com/p/v8/>

NodeJS的事件驱动

A photograph of two motorcyclists stopped at a red traffic light. The motorcyclist on the left is wearing a black helmet, sunglasses, and a black jacket with a yellow reflective vest. The motorcyclist on the right is wearing a black helmet and a black leather jacket with 'HARLEY-DAVIDSON' written on the back. They are both on motorcycles with California license plates. In the background, there is a white building, a green street sign that says 'The Embarcadero', and a green and yellow bus. The scene is set on a city street with traffic lights and a clear blue sky.

回调函数，等待“事件”发生

```
/* NodeJS中的事件驱动 */
```

```
var s = require("tcp").createServer();  
s.addListener("connection",function(c){  
    c.send('hello jayli!');  
    c.close();  
});  
s.listen(8080);
```

NodeJS中的事件驱动

关键词

- SSJS (Server-side JavaScript)
- 单线程 (Single-thread)
- 非阻塞 (non-blocking)
- 长连接 (persistent connection)
- V8
- 事件驱动 (Event-based)

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NodeJS 优秀的基础架构
给了 JavaScript 更多表现空间

NodeJS带来了...

- SSJS没有“夸浏览器”的烦恼
- DOM、BOM的完整支持
- jQuery和YUI3完全成为“中间件”
- js程序可以无缝移植到服务器端
- ...

NodeJS的运行环境



"Hello world"

```
/* example.js */
```

```
var http = require('http');  
http.createServer(function (req, res) {  
    res.writeHead(200,  
        { 'Content-Type': 'text/plain' });  
    res.end('Hello World\n');  
}).listen(8124, "127.0.0.1");
```

命令行运行

```
$ node example.js
```


NodeJS的安装

```
wget http://nodejs.org/dist/node-v0.3.0.tar.gz
tar xzvf node-v0.3.0.tar.gz
cd node-v0.3.0
./configure
make
make install
```

```
[bachi@Taobao-uedbj ~]> node -v
v0.2.3
```

查看版本

```
[bachi@Taobao-uedbj ~]> node test.js
Server running at http://127.0.0.1:8124/
```

运行程序

淘宝网

NodeJS程序/软件包



npm is a package manager for **node**. You can use it to install and publish your node programs. It manages dependencies and does other cool stuff.

Not much here at the moment. Check out **the git repository**.

<http://npmjs.org/>

和Python、Ruby一样
NodeJS也需要库的支持

Ryan对http的初级封装

//引入库

```
var fu = require("./fu");
```

//打开监听

```
fu.listen(PORT,HOST);
```

//响应对path_to_file的请求

```
fu.get('path_to_file',callback);
```

//请求静态文件

```
fu.staticHandler('filename');
```

//返回404

```
notFound(req,res);
```

http://github.com/ry/node_chat/blob/master/fu.js

NodeJS Demos

Projects / Applications

- [node_chat](#) by ry (live demo at [chat.tinyclouds.org](#))
- [q-chess](#) by wsookadr — chess game multiplayer server using [faye](#) + client written using [Qooxdoo](#)
- [node3p](#) by ncb000gt — AmazonMP3 downloader
- [node3p-web](#) by ncb000gt — Web interface for node3p
- [nodelint](#) by tav — run jslint from the command line
- [nodeload](#) by benschmaus and jonjlee — utility for benchmarking HTTP APIs
- [nodewiki](#) — a simple wiki based on node and redis
- [blog.js](#) — Simple blogging engine based on node.js
- [cassiterite](#) — Another blogging engine based on node.js + Tokyo Tyrant + nginx
- [Sousaball](#) by creationix ([sousaball.creationix.com](#))
- [DinMaker](#) by creationix (live demo at [chat.creationix.com](#))
- [Flickr Spy](#) — Discover where your Flickr contacts are commenting
- [azathoth](#) — simple HTTP traffic/load generator and benchmark proof of concept
- [antinode](#) — Simple static file HTTP Server with logging
- [NodeMachine](#) — Port of WebMachine for Node.js
- [LifeInText](#) — LIT is a mashup platform for personal projects and snippets

<http://github.com/ry/node/wiki>

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NodeJS如何渲染HTML



<http://github.com/tmpvar/jsdom>



<http://github.com/tautologistics/node-htmlparser>

NodeJS 运行 jQuery

```
var jsdom = require("jsdom"),
    window = jsdom.jsdom().createWindow();

jsdom.jqueryify(window, "http://cdn/jquery.js" ,
    function() {
        window.jquery('body').append(<div
            class='testing'>Hello World, It
            works</div>");
        console.log(window.jquery(".testing")
            .text());
    }
);
```


nodejs-dom提供了

- DOM常规操作
- 选择器
- YUI Node API

YUI3

- 高粒度的模块
- 沙箱
- 组件异步加载
- core+widgets
- 不只为DOM而设计

-- Ryan Dahl

YUI3 for NodeJS



<http://github.com/yui/nodejs-yui3>

Dav Glass

nodejs-yui3项目发起人



Using Node.js and YUI 3

<http://www.yuiblog.com/blog/2010/09/29/video-glass-node/>

启动你的YUI程序

```
var YUI = require("yui3").YUI,  
    Y = YUI();  
Y.log('hello world');
```

运行

```
[bachi@Taobao-uedbj ~]> node test.js  
info: hello world
```

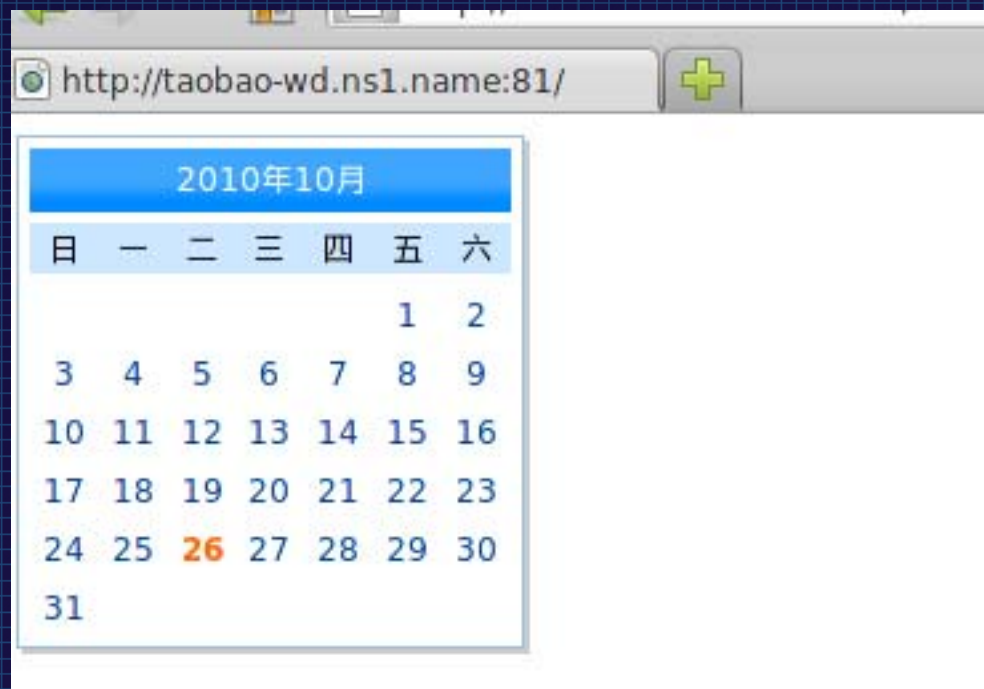
熟悉的沙箱

```
var YUI = require("yui3").YUI;  
YUI().use('*',function(Y){  
    Y.log('hello jayli!');  
});
```

运行

```
[bachi@Taobao-uedbj ~]> node test.js  
info: (yui): Attaching available dependencies: yui-base,get,features,  
rls,intl-base,yui-log,yui-later,yui-throttle,yui  
info: hello jayli!  
[bachi@Taobao-uedbj ~]> □
```


移植YUI3程序 – 后端渲染UI



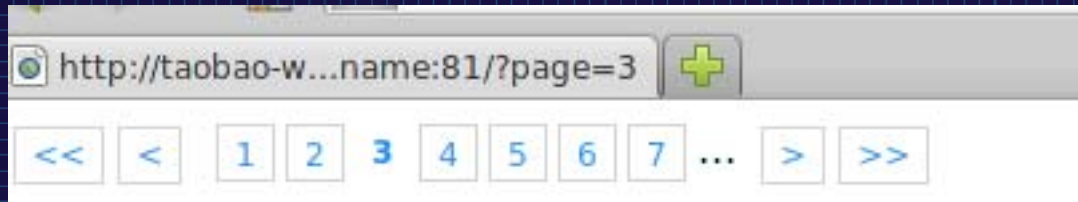
- Source Code

- <http://jayli.github.com/gallery/node/calendar-server.js>

- 前端Demo

- <http://cubee.github.com/src/calendar/demo/calendar.html>

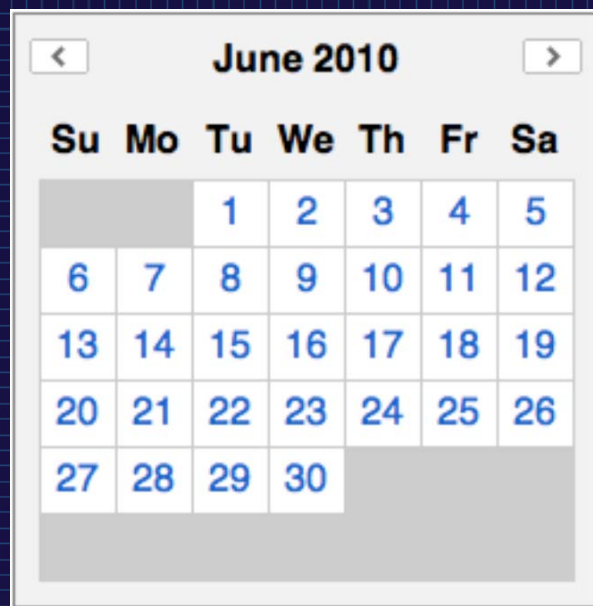
移植YUI3程序 – 后端渲染UI & 交互



- Source Code
 - <http://jayli.github.com/gallery/node/pagination-server.js>
- 前端Demo
 - <http://cubee.github.com/src/pagination/demo/pagination.html>

YUI2 Calendar

后端渲染UI & 交互



<http://express.davglass.com/calendar>

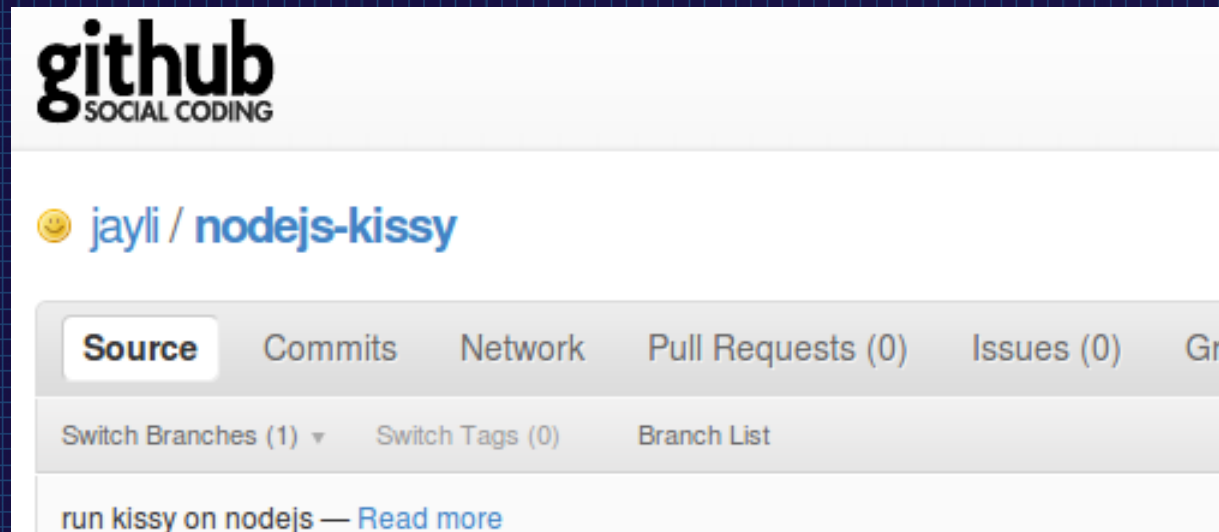
Why YUI3 ?

- YUI3的设计使其很方便的移植到NodeJS
- YUI3在NodeJS中同样提供完整的core
- 一次编写，前/后端运行，cool！

What about KISSY ?

- 和YUI3极为相似的沙箱
- 核心模块更充分的解耦
- 更粗粒度的组件
- ...

KISSY for NodeJS



<http://github.com/jayli/nodejs-kissy>

启动你的KISSY程序

```
require("yui3").YUI;  
Var S = KISSY;  
S.use("ks-core",function(S){  
    S.log("hello world");  
})).
```

运行

```
[bachi@Taobao-uedbj ~]> node test.js  
info: hello world
```

相关链接

- NodeJS
 - <http://nodejs.org>
- YUI3
 - <http://developer.yahoo.com/yui/3/>
- Nodejs-yui
 - <http://github.com/yui/nodejs-yui3>
- Npm
 - <http://npmjs.org>
- Nodejs-kissy
 - <http://github.com/jayli/nodejs-kiss>

Q & A