Grokking HTTP

Ben Ramsey • Nashville Software School • 19 February 2013

The basics.

My favorite HTTP tools.

Overview of the protocol.

Advanced topics.

The future of HTTP.

Grok?

grok • /'grɒk/

To grok is to intimately and completely share the same reality or line of thinking with another physical or conceptual entity. Author Robert A. Heinlein coined the term in his best-selling 1961 book Stranger in a Strange Land. In Heinlein's view, grokking is the intermingling of intelligence that necessarily affects both the observer and the observed.

—from Wikipedia, http://en.wikipedia.org/wiki/Grok

Basics.

What is HTTP?

Hypertext Transfer Protocol:
Formally defined by RFC 2616, et al.

hypertext:
A multi-linear set of objects, building a network by using *logical links* (the so-called hyperlinks) between the nodes (e.g. text or words).

protocol:
A set of rules and regulations that define how data is transmitted across a network.

HTTP is a set of rules for *transferring hypertext* across the Internet.

It forms the basis of *everything* we do *on the Web.*
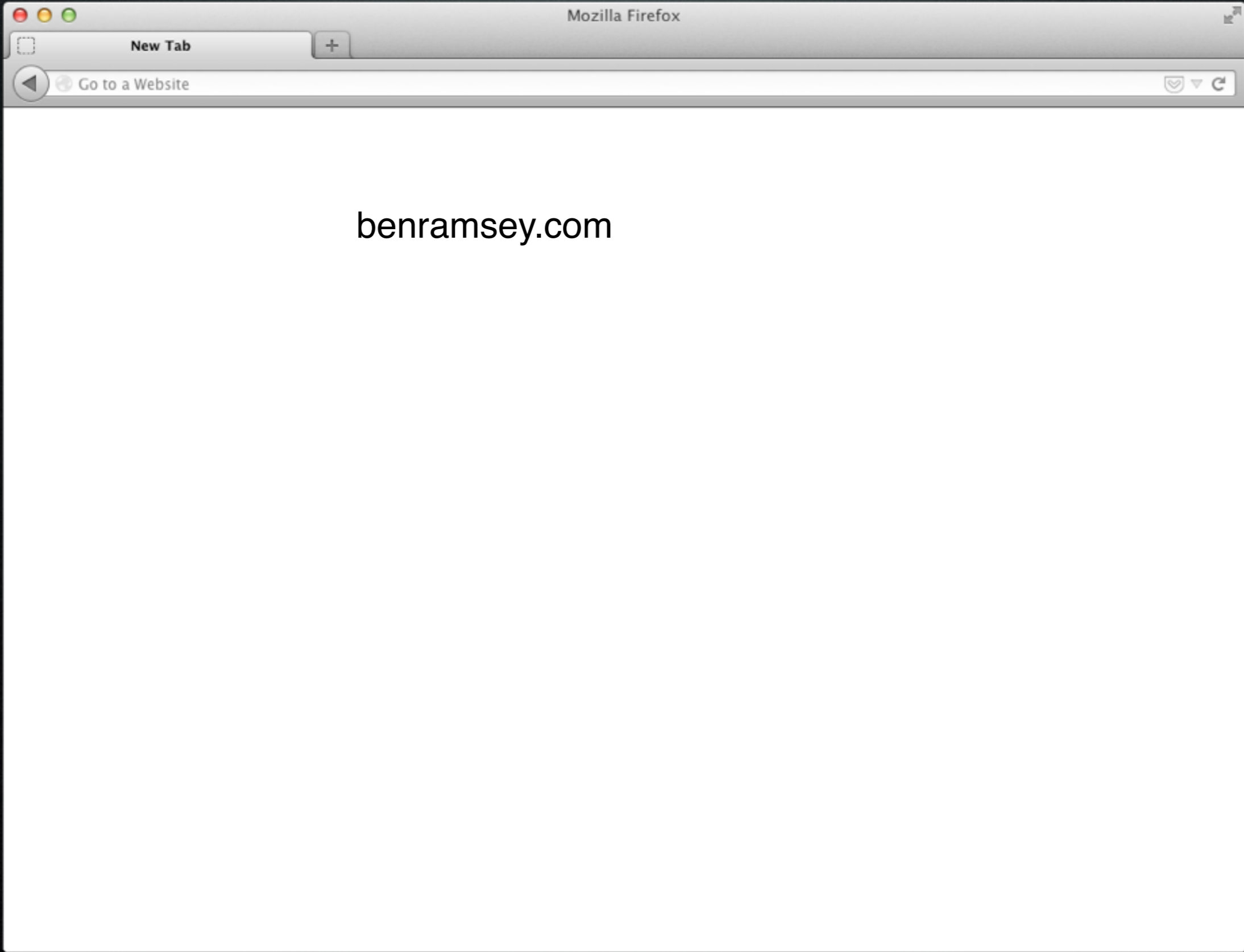
benramsey.com

```
GET / HTTP/1.1
Host: benramsey.com
User-Agent: Mozilla/5.0 (Macintosh; Intel Mac
    OS X 10.7; rv:15.0) Gecko/20100101
    Firefox/15.0.1
Accept: text/html,application/xhtml+xml,
    application/xml;q=0.9,*/*;q=0.8
Accept-Language: en-us,en;q=0.5
Accept-Encoding: gzip, deflate
Cookie: ...
Pragma: no-cache
Cache-Control: no-cache
```
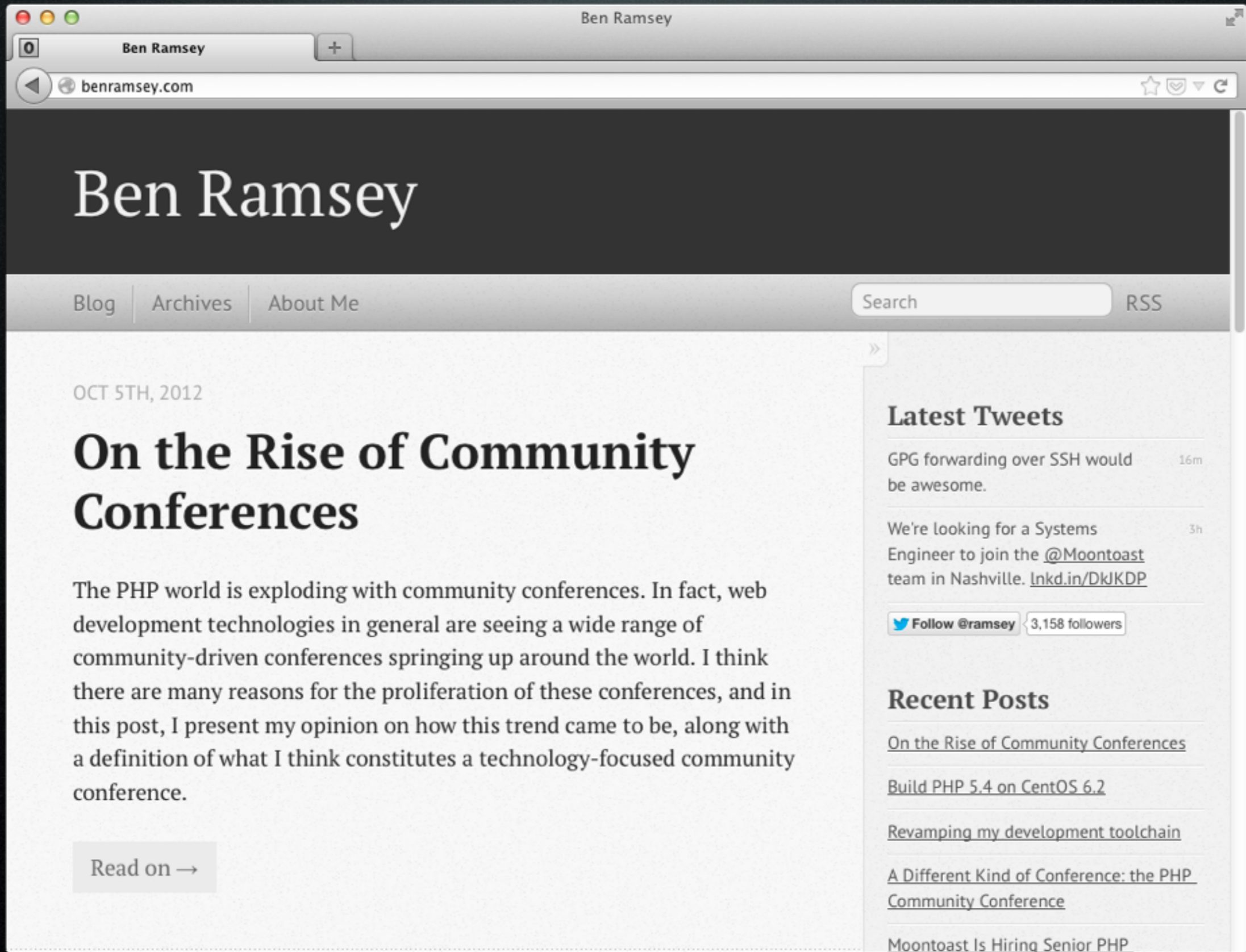
benramsey.com

Ben Ramsey

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OCT 5TH, 2012

On the Rise of Community Conferences

The PHP world is exploding with community conferences. In fact, web development technologies in general are seeing a wide range of community-driven conferences springing up around the world. I think there are many reasons for the proliferation of these conferences, and in this post, I present my opinion on how this trend came to be, along with a definition of what I think constitutes a technology-focused community conference.

Read on →

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GPG forwarding over SSH would be awesome.   16m

We're looking for a Systems Engineer to join the @Moontoast team in Nashville. lnkd.in/DkJKDP   3h

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```
HTTP/1.1 200 OK
Date: Tue, 09 Oct 2012 21:38:43 GMT
Server: Apache
Last-Modified: Fri, 05 Oct 2012 10:18:18 GMT
Accept-Ranges: bytes
Vary: Accept-Encoding
Content-Encoding: gzip
Content-Length: 4155
Content-Type: text/html


<!DOCTYPE html>
<!--[if IEMobile 7 ]><html class="no-js iem7"><![endif]-->
<!--[if lt IE 9]><html class="no-js lte-ie8"><![endif]-->
<!--[if (gt IE 8)|(gt IEMobile 7)|!(IEMobile)|!(IE)]><!--
><html class="no-js" lang="en"><!--<![endif]-->
<head>
  <meta charset="utf-8">
  <title>Ben Ramsey</title>
  <meta name="author" content="Ben Ramsey">

...
```
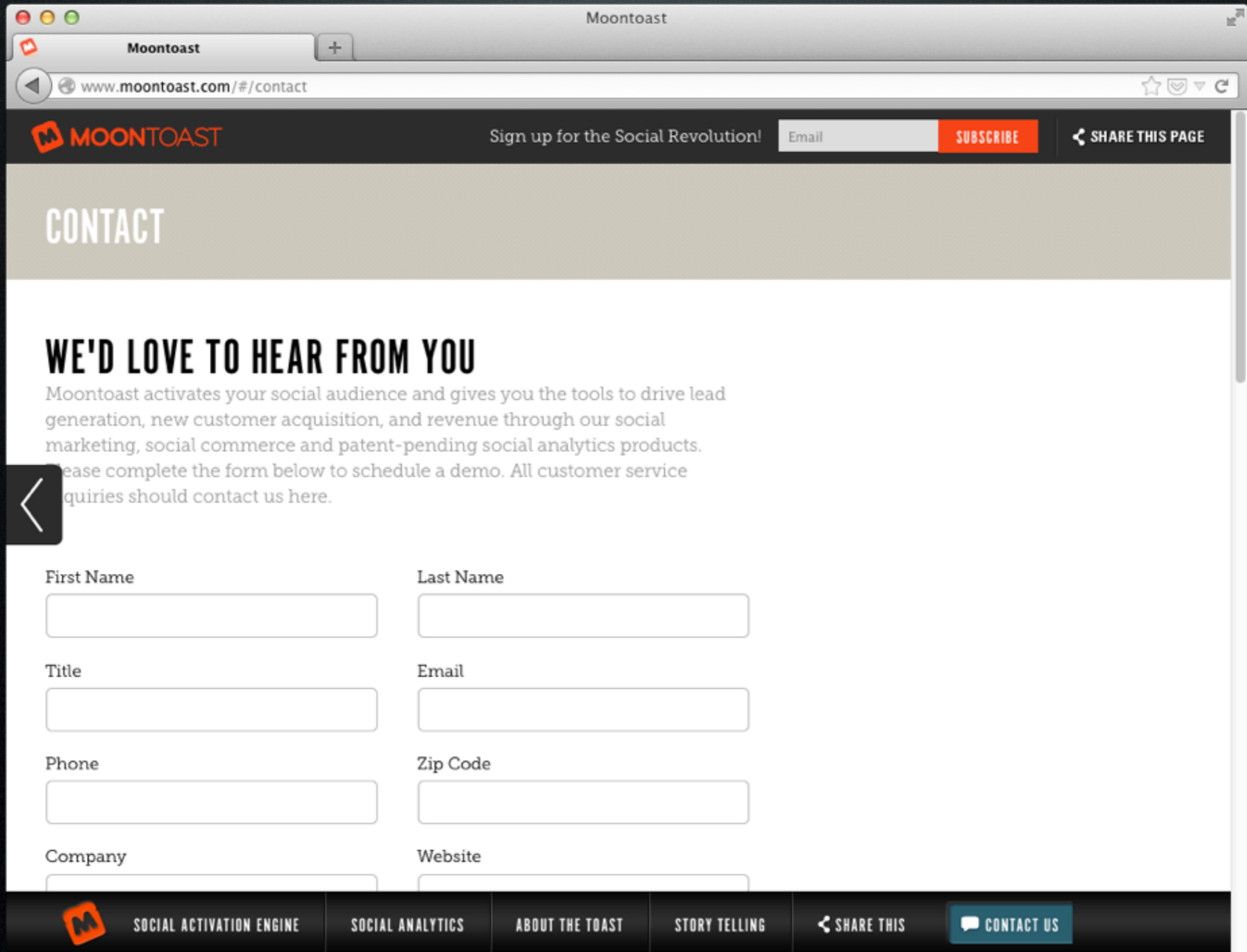
www.moontoast.com/#/contact

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Email

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Zip Code

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```html
<form action="https://www.salesforce.com/servlet/
servlet.WebToLead?encoding=UTF-8" method="POST">

...

</form>
```

```
POST /servlet/servlet.WebToLead?encoding=UTF-8 HTTP/1.1
Host: www.salesforce.com
User-Agent: Mozilla/5.0 (Macintosh; Intel Mac OS X 10.7;
    rv:15.0) Gecko/20100101 Firefox/15.0.1
Accept: text/html,application/xhtml+xml,
    application/xml;q=0.9,*/*;q=0.8
Accept-Language: en-us,en;q=0.5
Accept-Encoding: gzip, deflate
Connection: keep-alive
Referer: http://www.moontoast.com/contact
Content-Type: application/x-www-form-urlencoded
Content-Length: 1030

oid=00DA0000000Hd0u&Campaign_ID=701F00000007c5z&retURL=http
%3A%2F%2Flct.salesforce.com%2Fsfga%3Fq%3DCampaign_ID
%253D701F00000007c5z%2526first_name%253DBen%2526last_name
%253DRamsey%2526title%253DSoftware%252520Architect%2526email
%253Dben%252540moontoast.com%2526phone
%253D404-444-0414%2526phone%253D37215%2526company
%253DMoontoast%2526URL%253Dhttp%25253A%25252F
```

```
HTTP/1.1 200 OK
Server:
Cache-Control: private
Content-Type: text/html; charset=UTF-8
Transfer-Encoding: chunked
Date: Tue, 09 Oct 2012 22:09:10 GMT


<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.0 Transitional//
EN">
<html>
<head>
<meta HTTP-EQUIV="PRAGMA" CONTENT="NO-CACHE">
<meta http-equiv="Refresh" content="0; URL=http://
lct.salesforce.com/sfga?q=Campaign_ID%3D701F00000007c5z
%26first_name%3DBen%26last_name%3DRamsey%26title%3DSoftware
%2520Architect%26email%3Dben%2540moontoast.com%26phone
%3D404-444-0414%26phone%3D37215%26company%3DMoontoast%26URL
%3Dhttp%253A%252F%252Fwww.moontoast.com%252F
%26&amp;t=1338562523212&amp;r=&amp;l=https%3A%2F
```

```
GET /sfga?q=Campaign_ID%3D701F00000007c5z%26first_name%3DBen
%26last_name%3DRamsey%26title%3DSoftware%2520Architect
%26email%3Dben%2540moontoast.com%26phone
%3D404-444-0414%26phone%3D37215%26company%3DMoontoast%26URL
%3Dhttp%253A%252F%252Fwww.moontoast.com%252F
%26&t=13385625232l2&r=&l=https%3A%2F
%2Ftoasted.stage.moontoast.com%2Festore
%2Ftoasted&oid=00DA0000000Hd0u&ts=13498145728825&ls=http%3A%2F
%2Fwww.moontoast.com%2Fcompany%2Fjobs&rs=&url=http%3A%2F
%2Fwww.moontoast.com%2Fcontact&customForm=false&retURL=http
%3A%2F%2Fwww.moontoast.com%2Fcontact%2Fthank-you HTTP/1.1
Host: lct.salesforce.com
User-Agent: Mozilla/5.0 (Macintosh; Intel Mac OS X 10.7;
    rv:15.0) Gecko/20100101 Firefox/15.0.1
Accept: text/html,application/xhtml+xml,
    application/xml;q=0.9,*/*;q=0.8
Accept-Language: en-us,en;q=0.5
Accept-Encoding: gzip, deflate
Cookie: ...
```

```
HTTP/1.1 302 Found
Server: Resin/3.1.6
Location: http://www.moontoast.com/contact/thank-you
Content-Type: text/html
Content-Length: 80
Date: Tue, 09 Oct 2012 22:09:10 GMT

The URL has moved <a href="http://www.moontoast.com/contact/
thank-you">here</a>
```

www.**moontoast**.com/contact/thank-you

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THANK YOU

Thanks for contacting us!

We will be in touch shortly.

Cheers,
Moontoast

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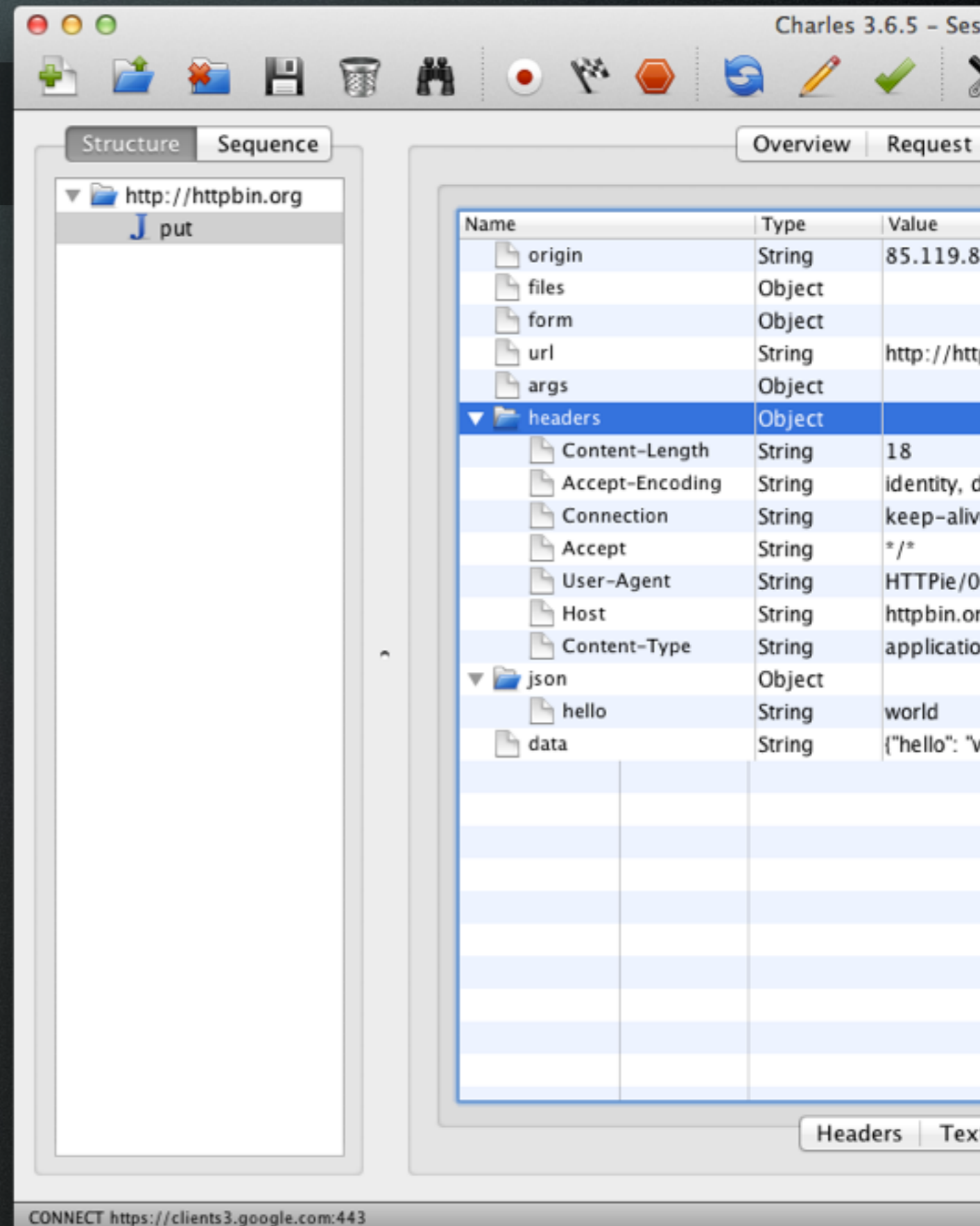
How do I see all that?

Favorite tools.

Charles

I cannot recommend this enough!

charlesproxy.com

Perfect for debugging Ajax and Flash remoting (AMF) requests

Well worth the $50 license fee

HTTPie

Ditch cURL.
Use HTTPie.

httpie.org

Perfect for testing and
debugging APIs

Free; requires
Python

```
1. zsh

ramsey on earendil in ~
$ http -v PUT httpbin.org/put hello=world
PUT /put HTTP/1.1
Host: httpbin.org
Content-Type: application/json; charset=utf-8
Accept-Encoding: identity, deflate, compress, gzip
Accept: application/json
User-Agent: HTTPie/0.2.0

{
    "hello": "world"
}


HTTP/1.1 200 OK
Content-Type: application/json
Date: Mon, 30 Jul 2012 00:38:07 GMT
Server: gunicorn/0.13.4
Content-Length: 472
Connection: keep-alive

{
    "args": {},
    "data": "{\"hello\": \"world\"}",
    "files": {},
    "form": {},
    "headers": {
        "Accept": "application/json",
        "Accept-Encoding": "identity, deflate, compress, gzip",
        "Connection": "keep-alive",
        "Content-Length": "18",
        "Content-Type": "application/json; charset=utf-8",
        "Host": "httpbin.org",
        "User-Agent": "HTTPie/0.2.0"
    },
    "json": {
        "hello": "world"
    },
    "origin": "85.119.83.153",
    "url": "http://httpbin.org/put"
}
```

The protocol.

RFC 2616

GET

PUT

HEAD

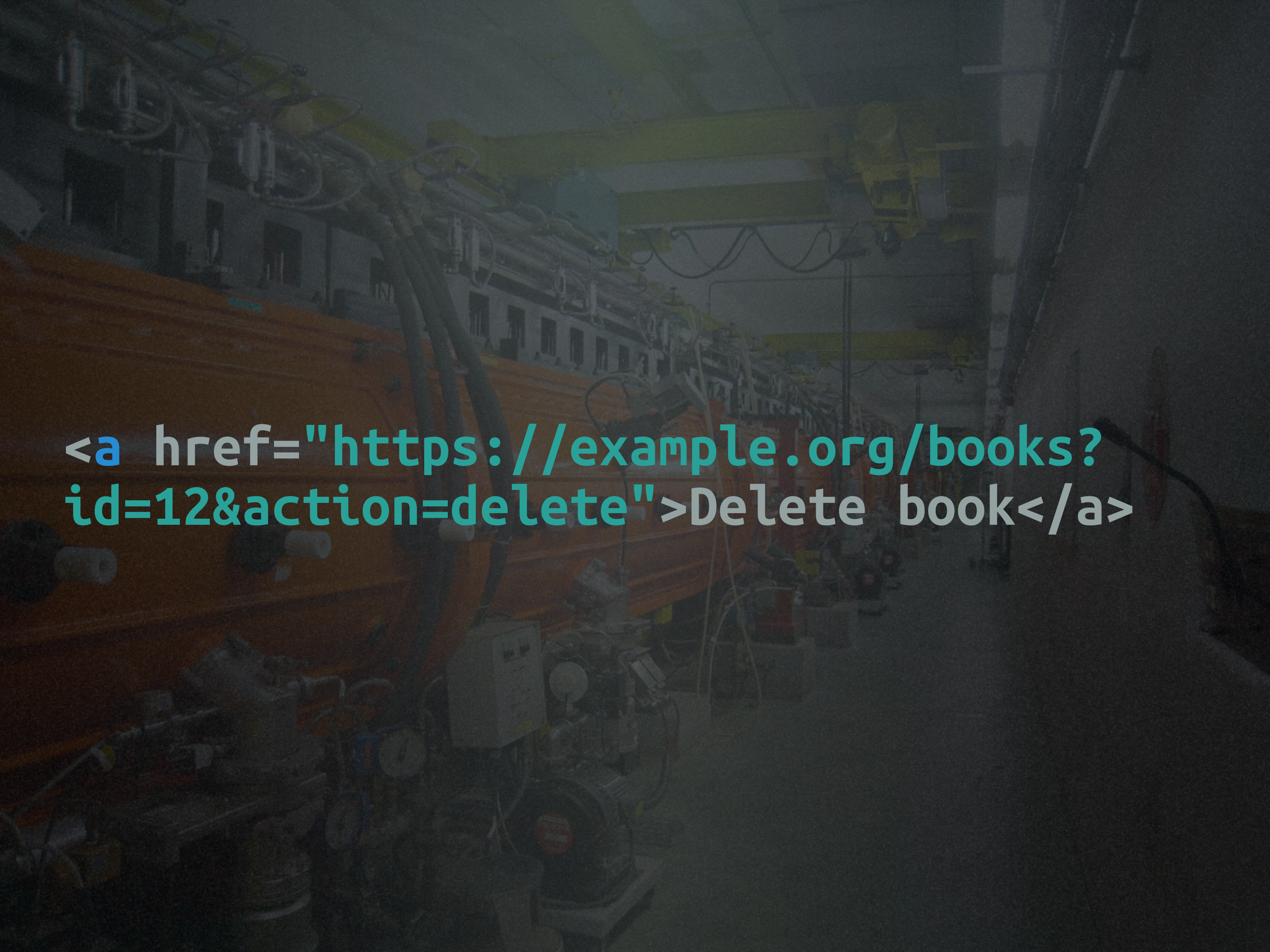TRACE

POST

DELETE

OPTIONS

CONNECT

Safe Methods

GET & HEAD should not take action other than retrieval

These are considered safe

This allows user agents to represent POST, PUT, & DELETE in a special way

```html
<a href="https://example.org/books?id=12&action=delete">Delete book</a>
```

Idempotence

Side effects of N > 0 identical requests is the same as for a single request

GET, HEAD, PUT, and DELETE share this property

OPTIONS and TRACE are inherently idempotent

Now, imagine an API...

...a hypermedia API...

...for books.

Terms

API:
application programming interface

hypermedia:
The use of text, data, graphics, audio and video as elements of an extended hypertext system in which all elements are *linked* so that the user can move among them at will.

book:
A collection of sheets of paper bound together to hinge at one edge, containing printed or written material, pictures, etc.

Books API

Resources:
/books
/books/{ID}

Media type:
HAL - hypermedia application language

Draft specification:
http://stateless.co/hal_specification.html

application/hal+json
application/hal+xml

Let's use this API to learn how HTTP works.

GET

Usually used for retrieval of information

Transfers a representation of the resource from the server to the client

Safe & idempotent

```
GET /books/9790482c HTTP/1.1
Host: example.com
Accept-Encoding: identity, deflate, compress, gzip
Accept: application/hal+json
User-Agent: HTTPie/0.2.0
```

```
GET /books/9790482c HTTP/1.1
Host: example.com
Accept-Encoding: identity, deflate, compress, gzip
Accept: application/hal+json
User-Agent: HTTPie/0.2.0
```

```
GET /books/9790482c HTTP/1.1
Host: example.com
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Host: example.com
Accept-Encoding: identity, deflate, compress, gzip
Accept: application/hal+json
User-Agent: HTTPie/0.2.0
```

```
HTTP/1.1 200 OK
Date: Sun, 29 Jul 2012 22:46:43 GMT
Server: Apache/2.2.22 (Ubuntu)
X-Powered-By: PHP/5.3.10-1ubuntu3.2
ETag: "9790482c-1"
Last-Modified: Sun, 15 Jul 2012 16:34:23 GMT
Content-Length: 254
Content-Type: application/hal+json

{
    "_links": {
        "self": {
            "href": "http://example.com/books/9790482c"
        }
    },
    "author": "Luke Welling, Laura Thomson",
    "id": "9790482c",
    "isbn10": "0672329166",
    "isbn13": "9780672329166",
    "publisher": "Pearson Education",
    "title": "PHP and MySQL Web Development",
    "year": 2008
}
```

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    "year": 2008
}
```

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    "title": "PHP and MySQL Web Development",
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    "isbn10": "0672329166",
    "isbn13": "9780672329166",
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    "title": "PHP and MySQL Web Development",
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}
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ETag: "9790482c-1"
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ETag: "9790482c-1"
Last-Modified: Sun, 15 Jul 2012 16:34:23 GMT
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}
```

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ETag: "9790482c-1"
Last-Modified: Sun, 15 Jul 2012 16:34:23 GMT
Content-Length: 254
Content-Type: application/hal+json
```

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        }
    },
    "author": "Luke Welling, Laura Thomson",
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    "isbn10": "0672329166",
    "isbn13": "9780672329166",
    "publisher": "Pearson Education",
    "title": "PHP and MySQL Web Development",
    "year": 2008
}
```

HEAD

Identical to GET, except...

Returns only the headers, not the body

Useful for getting details about a resource representation before retrieving the full representation

Safe & idempotent

```
HEAD /books/9790482c HTTP/1.1
Host: example.com
Accept-Encoding: identity, deflate, compress, gzip
Accept: application/hal+json
User-Agent: HTTPie/0.2.0
```

```
HEAD /books/9790482c HTTP/1.1
Host: example.com
Accept-Encoding: identity, deflate, compress, gzip
Accept: application/hal+json
User-Agent: HTTPie/0.2.0
```

```
HTTP/1.1 200 OK
Date: Sun, 29 Jul 2012 22:46:43 GMT
Server: Apache/2.2.22 (Ubuntu)
X-Powered-By: PHP/5.3.10-1ubuntu3.2
ETag: "9790482c-1"
Last-Modified: Sun, 15 Jul 2012 16:34:23 GMT
Content-Length: 254
Content-Type: application/hal+json
```

POST

The body content should be accepted as a new subordinate of the resource

Append, annotate, paste after

Not safe or idempotent

```
POST /books HTTP/1.1
Host: example.com
Content-Type: application/hal+json
Accept-Encoding: identity, deflate, compress, gzip
Accept: application/hal+json
User-Agent: HTTPie/0.2.0

{
    "author": "Stoyan Stefanov",
    "isbn10": "1449320198",
    "isbn13": "9781449320195",
    "publisher": "O'Reilly Media",
    "title": "JavaScript for PHP Developers",
    "year": 2012
}
```

```
POST /books HTTP/1.1
Host: example.com
Content-Type: application/hal+json
Accept-Encoding: identity, deflate, compress, gzip
Accept: application/hal+json
User-Agent: HTTPie/0.2.0

{
    "author": "Stoyan Stefanov",
    "isbn10": "1449320198",
    "isbn13": "9781449320195",
    "publisher": "O'Reilly Media",
    "title": "JavaScript for PHP Developers",
    "year": 2012
}
```

```
POST /books HTTP/1.1
Host: example.com
Content-Type: application/hal+json
Accept-Encoding: identity, deflate, compress, gzip
Accept: application/hal+json
User-Agent: HTTPie/0.2.0

{

    "author": "Stoyan Stefanov",
    "isbn10": "1449320198",
    "isbn13": "9781449320195",
    "publisher": "O'Reilly Media",
    "title": "JavaScript for PHP Developers",
    "year": 2012

}
```

```
POST /books HTTP/1.1
Host: example.com
Content-Type: application/hal+json
Accept-Encoding: identity, deflate, compress, gzip
Accept: application/hal+json
User-Agent: HTTPie/0.2.0
```

```
{
    "author": "Stoyan Stefanov",
    "isbn10": "1449320198",
    "isbn13": "9781449320195",
    "publisher": "O'Reilly Media",
    "title": "JavaScript for PHP Developers",
    "year": 2012
}
```

```
HTTP/1.1 201 Created
Date: Sun, 29 Jul 2012 23:26:49 GMT
Server: Apache/2.2.22 (Ubuntu)
X-Powered-By: PHP/5.3.10-1ubuntu3.2
Location: http://example.com/books/decd0562
ETag: "decd0562-1"
Last-Modified: Sun, 29 Jul 2012 23:26:49 GMT
Content-Length: 239
Content-Type: application/hal+json

{
    "_links": {
        "self": {
            "href": "http://example.com/books/decd0562"
        }
    },
    "author": "Stoyan Stefanov",
    "id": "decd0562",
    "isbn10": "1449320198",
    "isbn13": "9781449320195",
    "publisher": "O'Reilly Media",
    "title": "JavaScript for PHP Developers",
    "year": 2012
}
```

```
HTTP/1.1 201 Created
Date: Sun, 29 Jul 2012 23:26:49 GMT
Server: Apache/2.2.22 (Ubuntu)
X-Powered-By: PHP/5.3.10-1ubuntu3.2
Location: http://example.com/books/decd0562
ETag: "decd0562-1"
Last-Modified: Sun, 29 Jul 2012 23:26:49 GMT
Content-Length: 239
Content-Type: application/hal+json

{
    "_links": {
        "self": {
            "href": "http://example.com/books/decd0562"
        }
    },
    "author": "Stoyan Stefanov",
    "id": "decd0562",
    "isbn10": "1449320198",
    "isbn13": "9781449320195",
    "publisher": "O'Reilly Media",
    "title": "JavaScript for PHP Developers",
    "year": 2012
}
```

```
HTTP/1.1 201 Created
Date: Sun, 29 Jul 2012 23:26:49 GMT
Server: Apache/2.2.22 (Ubuntu)
X-Powered-By: PHP/5.3.10-1ubuntu3.2
Location: http://example.com/books/decd0562
ETag: "decd0562-1"
Last-Modified: Sun, 29 Jul 2012 23:26:49 GMT
Content-Length: 239
Content-Type: application/hal+json

{
    "_links": {
        "self": {
            "href": "http://example.com/books/decd0562"
        }
    },
    "author": "Stoyan Stefanov",
    "id": "decd0562",
    "isbn10": "1449320198",
    "isbn13": "9781449320195",
    "publisher": "O'Reilly Media",
    "title": "JavaScript for PHP Developers",
    "year": 2012
}
```

```
HTTP/1.1 201 Created
Date: Sun, 29 Jul 2012 23:26:49 GMT
Server: Apache/2.2.22 (Ubuntu)
X-Powered-By: PHP/5.3.10-1ubuntu3.2
Location: http://example.com/books/decd0562
ETag: "decd0562-1"
Last-Modified: Sun, 29 Jul 2012 23:26:49 GMT
Content-Length: 239
Content-Type: application/hal+json

{
    "_links": {
        "self": {
            "href": "http://example.com/books/decd0562"
        }
    },
    "author": "Stoyan Stefanov",
    "id": "decd0562",
    "isbn10": "1449320198",
    "isbn13": "9781449320195",
    "publisher": "O'Reilly Media",
    "title": "JavaScript for PHP Developers",
    "year": 2012
}
```

```
HTTP/1.1 201 Created
Date: Sun, 29 Jul 2012 23:26:49 GMT
Server: Apache/2.2.22 (Ubuntu)
X-Powered-By: PHP/5.3.10-1ubuntu3.2
Location: http://example.com/books/decd0562
ETag: "decd0562-1"
Last-Modified: Sun, 29 Jul 2012 23:26:49 GMT
Content-Length: 239
Content-Type: application/hal+json
```

```json
{
    "_links": {
        "self": {
            "href": "http://example.com/books/decd0562"
        }
    },
    "author": "Stoyan Stefanov",
    "id": "decd0562",
    "isbn10": "1449320198",
    "isbn13": "9781449320195",
    "publisher": "O'Reilly Media",
    "title": "JavaScript for PHP Developers",
    "year": 2012
}
```

PUT

Storage of information

Transfers a *full* representation of a resource from the client to the server

Not safe

Idempotent

```
PUT /books/decd0562 HTTP/1.1
Accept-Encoding: identity, deflate, compress, gzip
Accept: application/hal+json
User-Agent: HTTPie/0.2.0
Host: example.com
If-Match: "decd0562-1"
Content-Type: application/hal+json

{
    "_links": {
        "self": {
            "href": "http://example.com/books/decd0562"
        }
    },
    "author": "Stoyan Stefanov",
    "id": "decd0562",
    "isbn10": "1449320198",
    "isbn13": "9781449320195",
    "pubDate": "September 22, 2012",
    "publisher": "O'Reilly Media",
    "title": "JavaScript for PHP Developers",
    "year": 2012
}
```

```
PUT /books/decd0562 HTTP/1.1
Accept-Encoding: identity, deflate, compress, gzip
Accept: application/hal+json
User-Agent: HTTPie/0.2.0
Host: example.com
If-Match: "decd0562-1"
Content-Type: application/hal+json

{
    "_links": {
        "self": {
            "href": "http://example.com/books/decd0562"
        }
    },
    "author": "Stoyan Stefanov",
    "id": "decd0562",
    "isbn10": "1449320198",
    "isbn13": "9781449320195",
    "pubDate": "September 22, 2012",
    "publisher": "O'Reilly Media",
    "title": "JavaScript for PHP Developers",
    "year": 2012
}
```

```
PUT /books/decd0562 HTTP/1.1
Accept-Encoding: identity, deflate, compress, gzip
Accept: application/hal+json
User-Agent: HTTPie/0.2.0
Host: example.com
If-Match: "decd0562-1"
Content-Type: application/hal+json

{
    "_links": {
        "self": {
            "href": "http://example.com/books/decd0562"
        }
    },
    "author": "Stoyan Stefanov",
    "id": "decd0562",
    "isbn10": "1449320198",
    "isbn13": "9781449320195",
    "pubDate": "September 22, 2012",
    "publisher": "O'Reilly Media",
    "title": "JavaScript for PHP Developers",
    "year": 2012
}
```

```
PUT /books/decd0562 HTTP/1.1
Accept-Encoding: identity, deflate, compress, gzip
Accept: application/hal+json
User-Agent: HTTPie/0.2.0
Host: example.com
If-Match: "decd0562-1"
Content-Type: application/hal+json

{
    "_links": {
        "self": {
            "href": "http://example.com/books/decd0562"
        }
    },
    "author": "Stoyan Stefanov",
    "id": "decd0562",
    "isbn10": "1449320198",
    "isbn13": "9781449320195",
    "pubDate": "September 22, 2012",
    "publisher": "O'Reilly Media",
    "title": "JavaScript for PHP Developers",
    "year": 2012
}
```

```
HTTP/1.1 200 OK
Date: Sun, 29 Jul 2012 23:47:59 GMT
Server: Apache/2.2.22 (Ubuntu)
X-Powered-By: PHP/5.3.10-1ubuntu3.2
ETag: "decd0562-2"
Last-Modified: Sun, 29 Jul 2012 23:47:59 GMT
Content-Length: 270
Content-Type: application/hal+json

{
    "_links": {
        "self": {
            "href": "http://example.com/books/decd0562"
        }
    },
    "author": "Stoyan Stefanov",
    "id": "decd0562",
    "isbn10": "1449320198",
    "isbn13": "9781449320195",
    "pubDate": "September 22, 2012",
    "publisher": "O'Reilly Media",
    "title": "JavaScript for PHP Developers",
    "year": 2012
}
```

```
HTTP/1.1 200 OK
Date: Sun, 29 Jul 2012 23:47:59 GMT
Server: Apache/2.2.22 (Ubuntu)
X-Powered-By: PHP/5.3.10-1ubuntu3.2
ETag: "decd0562-2"
Last-Modified: Sun, 29 Jul 2012 23:47:59 GMT
Content-Length: 270
Content-Type: application/hal+json

{
    "_links": {
        "self": {
            "href": "http://example.com/books/decd0562"
        }
    },
    "author": "Stoyan Stefanov",
    "id": "decd0562",
    "isbn10": "1449320198",
    "isbn13": "9781449320195",
    "pubDate": "September 22, 2012",
    "publisher": "O'Reilly Media",
    "title": "JavaScript for PHP Developers",
    "year": 2012
}
```

```
HTTP/1.1 200 OK
Date: Sun, 29 Jul 2012 23:47:59 GMT
Server: Apache/2.2.22 (Ubuntu)
X-Powered-By: PHP/5.3.10-1ubuntu3.2
ETag: "decd0562-2"
Last-Modified: Sun, 29 Jul 2012 23:47:59 GMT
Content-Length: 270
Content-Type: application/hal+json

{
    "_links": {
        "self": {
            "href": "http://example.com/books/decd0562"
        }
    },
    "author": "Stoyan Stefanov",
    "id": "decd0562",
    "isbn10": "1449320198",
    "isbn13": "9781449320195",
    "pubDate": "September 22, 2012",
    "publisher": "O'Reilly Media",
    "title": "JavaScript for PHP Developers",
    "year": 2012
}
```

```
HTTP/1.1 200 OK
Date: Sun, 29 Jul 2012 23:47:59 GMT
Server: Apache/2.2.22 (Ubuntu)
X-Powered-By: PHP/5.3.10-1ubuntu3.2
ETag: "decd0562-2"
Last-Modified: Sun, 29 Jul 2012 23:47:59 GMT
Content-Length: 270
Content-Type: application/hal+json

{
    "_links": {
        "self": {
            "href": "http://example.com/books/decd0562"
        }
    },
    "author": "Stoyan Stefanov",
    "id": "decd0562",
    "isbn10": "1449320198",
    "isbn13": "9781449320195",
    "pubDate": "September 22, 2012",
    "publisher": "O'Reilly Media",
    "title": "JavaScript for PHP Developers",
    "year": 2012
}
```

DELETE

Requests that the resource identified be removed from public access

Not safe

Idempotent

```
DELETE /books/decd0562 HTTP/1.1
Accept-Encoding: identity, deflate, compress, gzip
Accept: application/hal+json
User-Agent: HTTPie/0.2.0
Host: example.com
If-Match: "decd0562-2"
```

```
DELETE /books/decd0562 HTTP/1.1
Accept-Encoding: identity, deflate, compress, gzip
Accept: application/hal+json
User-Agent: HTTPie/0.2.0
Host: example.com
If-Match: "decd0562-2"
```

```
DELETE /books/decd0562 HTTP/1.1
Accept-Encoding: identity, deflate, compress, gzip
Accept: application/hal+json
User-Agent: HTTPie/0.2.0
Host: example.com
If-Match: "decd0562-2"
```

```
HTTP/1.1 204 No Content
Date: Mon, 30 Jul 2012 00:01:44 GMT
Server: Apache/2.2.22 (Ubuntu)
X-Powered-By: PHP/5.3.10-1ubuntu3.2
Content-Length: 0
Content-Type: application/hal+json
```

```
HTTP/1.1 204 No Content
Date: Mon, 30 Jul 2012 00:01:44 GMT
Server: Apache/2.2.22 (Ubuntu)
X-Powered-By: PHP/5.3.10-1ubuntu3.2
Content-Length: 0
Content-Type: application/hal+json
```

Why are PUT & DELETE idempotent?

The data on the server changes, right?

Right. But...

The state remains the same for every request.

What's the difference between POST and PUT?

POST /books HTTP/1.1

PUT /books/decd0562 HTTP/1.1

POST vs. PUT

The fundamental difference between the POST and PUT requests is reflected in the different meaning of the Request-URI. The URI in a POST request identifies the resource that will handle the enclosed entity. That resource might be a data-accepting process, a gateway to some other protocol, or a separate entity that accepts annotations. In contrast, the URI in a PUT request identifies the entity enclosed with the request—the user agent knows what URI is intended and the server MUST NOT attempt to apply the request to some other resource.

—from RFC 2616, Section 9.6

Advanced Topics.

Caching.

Content negotiation.

Conditional requests.

Ranged requests.

The future.

HTTP Bis IETF Working Group
http://tools.ietf.org/wg/httpbis/

RFCs and specifications that extend HTTP:

WebDAV and related extensions

RFC 5789 (PATCH Method)

RFC 6266 (Use of Content-Disposition)

RFC 6585 (Additional Status Codes)

Method Registrations

Authentication Scheme Registrations

Permanent Message Header Fields

There's too much in HTTP to *fully grok* it in one presentation.

More Resources

RFC 2616 (HTTP)

Mark Nottingham: mnot.net

Mark's Caching Tutorial

RFC 2295 (Transparent Content Negotiation in HTTP)

RFC 2296 (HTTP Remote Variant Selection Algorithm)

More Resources
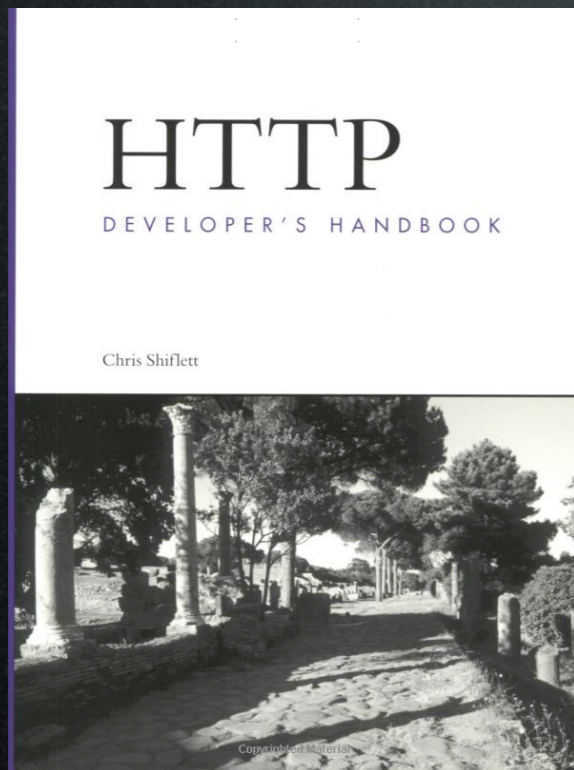
HTTP Developer's Handbook
by Chris Shiflett

shiflett.org/books

httpbin.org - HTTP Request & Response Service for playing around with HTTP

Thank You

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