

HTTP2 - rfc7540

Multiplexing

Upwork

HTTP 1.1

3 TCP CONNECTIONS



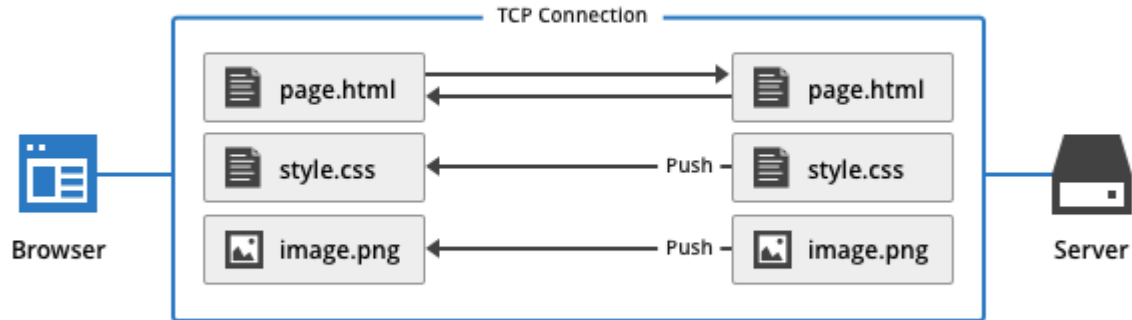
HTTP/2

1 TCP CONNECTION

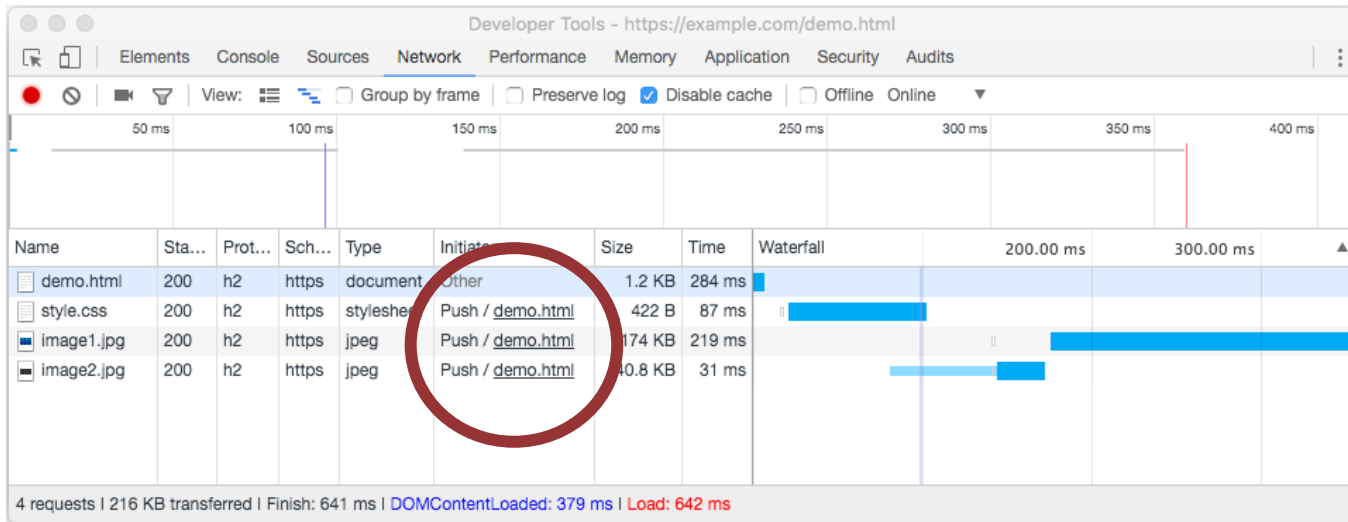


HTTP2

HTTP/2 (With Server Push)



Single TCP Connection, Single HTTP Request

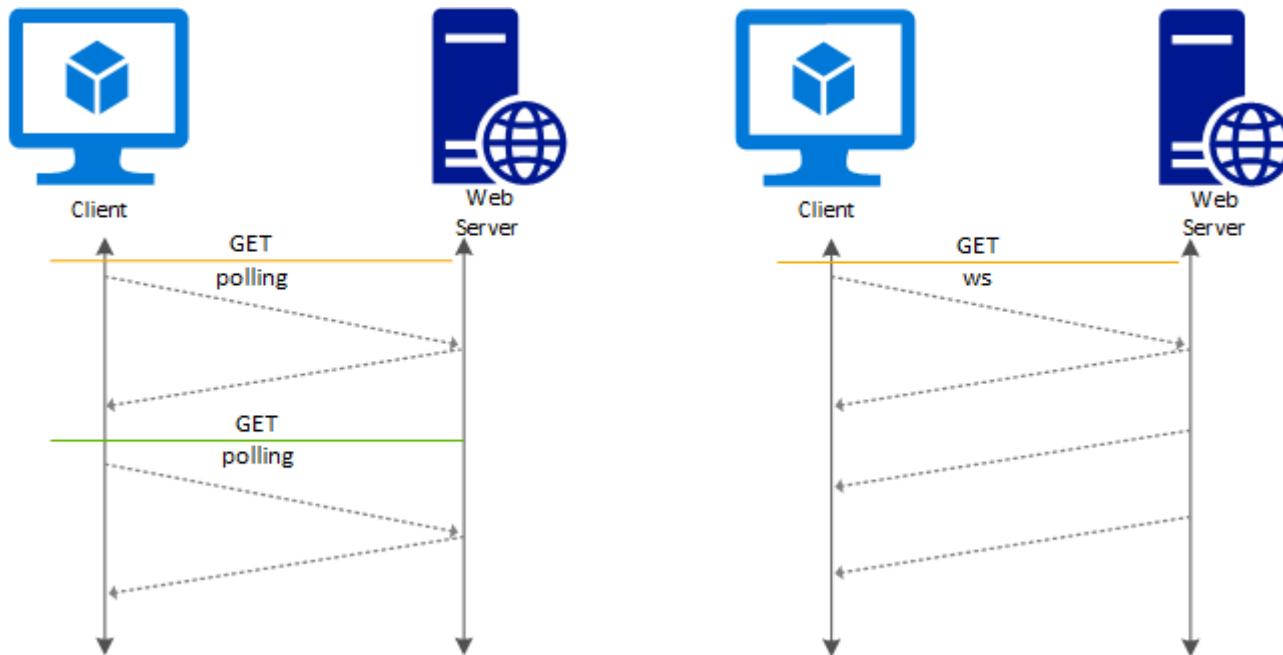


<https://http2.akamai.com/demo/http2-lab.html>

WebSocket - rfc6455

Limiti del protocollo:

- Primo handshake su http
- Se tutto fa bene il protocollo della connessione passa da http a websocket (usando la connessione Tcp precedentemente aperta dalla prima connessione http)
- A questo punto rimane solo il protocollo websocket
- Scambio messaggi bidirezionale



HyperText Markup Language



Html - rfc1866 rfc2854

World Wide Web

The WorldWideWeb (W3) is a wide-area [hypermedia](#) information retrieval initiative aiming to give universal access to a large universe

Everything there is online about W3 is linked directly or indirectly to this document, including an [executive summary](#) of the project, [N](#)

[What's out there?](#)

Pointers to the world's online information, [subjects](#) , [W3 servers](#) , etc.

[Help](#)

on the browser you are using

[Software Products](#)

A list of W3 project components and their current state. (e.g. [Line Mode](#) , [X11 Viola](#) , [NeXTStep](#) , [Servers](#) , [Tools](#) , [Mail robot](#) , [Lib](#)

[Technical](#)

Details of protocols, formats, program internals etc

[Bibliography](#)

Paper documentation on W3 and references.

[People](#)

A list of some people involved in the project.

[History](#)

A summary of the history of the project.

[How can I help ?](#)

If you would like to support the web..

[Getting code](#)

Getting the code by [anonymous FTP](#) , etc.

In March 1989, Berners-Lee gave managers at CERN a proposal for an information management system that used hypertext to link documents on different computers that were connected to the Internet. (Hypertext, a term coined in 1963, allows a person to get a document or piece of content by clicking on a coded word or phrase.)



Html - rfc1866 rfc2854

```
<!DOCTYPE html>
<html lang="en">

<meta charset="utf-8">
<title>Page Title</title>

<body>
  <h1>This is a Heading</h1>
  <p>This is a paragraph.</p>
  <p>This is another paragraph.</p>
</body>

</html>
```

HTML elements are the building blocks of HTML pages



Html - rfc1866 rfc2854

```
<div style="background-color:lightblue">  
  <h3>This is a heading</h3>  
  <p>This is a paragraph.</p>  
</div>
```

```
<a href="https://www.w3schools.com">This is  
a link</a>
```

```
id</b> ="table01"                                      |
| class       | <p <b>class</b> ="normal">                                       |
| style       | <p <b>style</b> ="font-size:16px">                               |
| data-       | <div <b>data-id</b> ="500">                                      |
| onclick     | <input <b>onclick</b> ="myFunction()">                           |
| onmouseover | <a <b>onmouseover</b> ="this.setAttribute('style','color:red')"> |

# CSS - Cascading Style Sheets - rfc7993

CSS



CSS describes how **HTML** elements are to be **displayed**

```
<style>
```

```
body {background-color:lightblue; text-align:center;}
h1 {color:blue; font-size:40px;}
p {font-family:verdana; font-size:20px;}
```

```
</style>
```

## My First CSS Heading

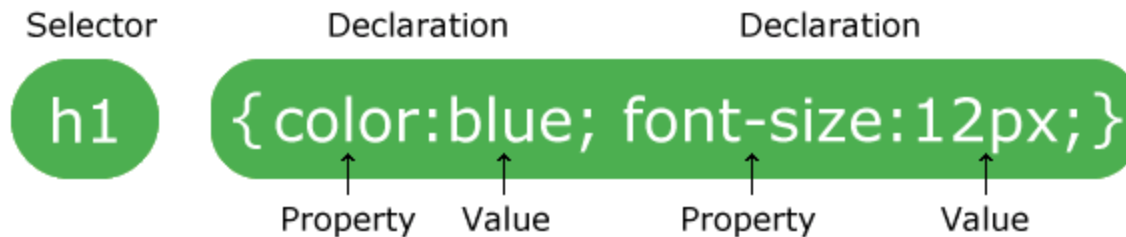
My first CSS paragraph.

[https://www.w3schools.com/whatis/whatis\\_css.asp](https://www.w3schools.com/whatis/whatis_css.asp)



# CSS - Cascading Style Sheets - rfc7993

A CSS rule consists of a **selector** and a **declaration** block:



[https://www.w3schools.com/cssref/css\\_selectors.asp](https://www.w3schools.com/cssref/css_selectors.asp)

<https://www.w3schools.com/cssref/trysel.asp>

# CSS - Cascading Style Sheets - rfc7993

## Bootstrap

Build responsive, mobile-first projects on the web with the world's most popular front-end component library.

Bootstrap is an open source toolkit for developing with HTML, CSS, and JS. Quickly prototype your ideas or build your entire app with our Sass variables and mixins, responsive grid system, extensive prebuilt components, and powerful plugins built on jQuery.

Get started

Download

Currently v4.3.1



```
<button type="button" class="btn btn-primary">Primary</button>
<button type="button" class="btn btn-secondary">Secondary</button>
<button type="button" class="btn btn-success">Success</button>
<button type="button" class="btn btn-danger">Danger</button>
<button type="button" class="btn btn-warning">Warning</button>
<button type="button" class="btn btn-info">Info</button>
<button type="button" class="btn btn-light">Light</button>
<button type="button" class="btn btn-dark">Dark</button>

<button type="button" class="btn btn-link">Link</button>
```

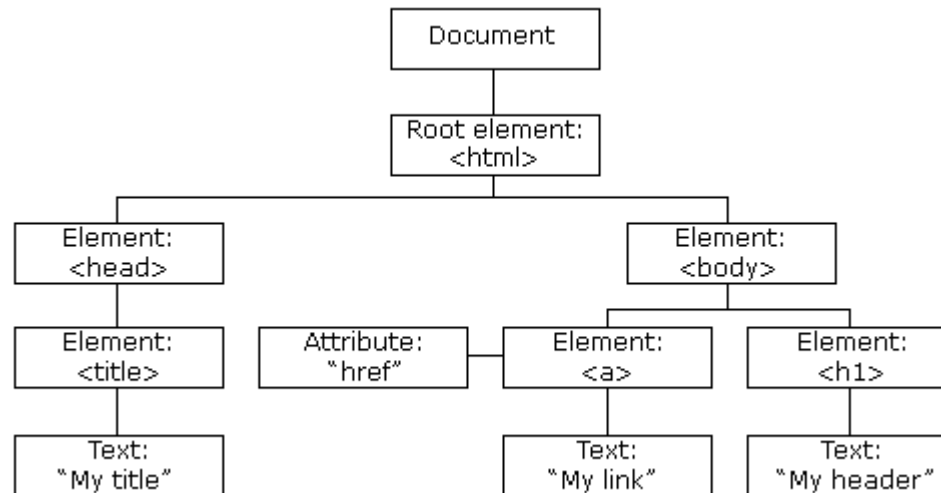
Copy



# HTML e DOM

The HTML DOM (Document Object Model)

When a web page is loaded, the browser creates a **D**ocument **O**bject **M**odel of the page.



With the HTML DOM, JavaScript can access and change all the elements of an HTML document.

[https://www.w3schools.com/whatis/whatis\\_htmlDOM.asp](https://www.w3schools.com/whatis/whatis_htmlDOM.asp)

# Javascript

JavaScript was initially created to “make web pages alive”.

Scripts are provided and executed as plain text. They don't need special preparation or compilation to run.

```
<!DOCTYPE html>
<html>
<body>

<h2>JavaScript Statements</h2>

<p>A JavaScript program is a list of statements to be executed by a computer.</p>

<p id="demo"></p>

<script>
var x, y, z; // Declare 3 variables
x = 5; // Assign the value 5 to x
y = 6; // Assign the value 6 to y
z = x + y; // Assign the sum of x and y to z

document.getElementById("demo").innerHTML =
"The value of z is " + z + ".";
</script>

</body>
</html>
```

[https://www.w3schools.com/js/js\\_examples.asp](https://www.w3schools.com/js/js_examples.asp)



# Javascript

## Javascript è un linguaggio debolmente tipizzato

<https://hacks.mozilla.org/2017/02/a-crash-course-in-just-in-time-jit-compilers/>



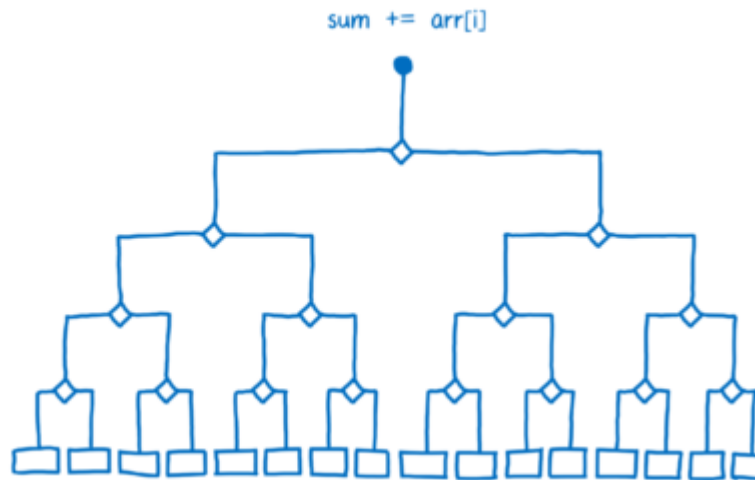
```
function arraySum(arr) {
 var sum = 0;
 for (var i = 0; i < arr.length; i++) {
 sum += arr[i];
 }
}
```

is sum an int?

is arr an array?

is i an int?

is arr[i] an int?



# Javascript



(SpiderMonkey)

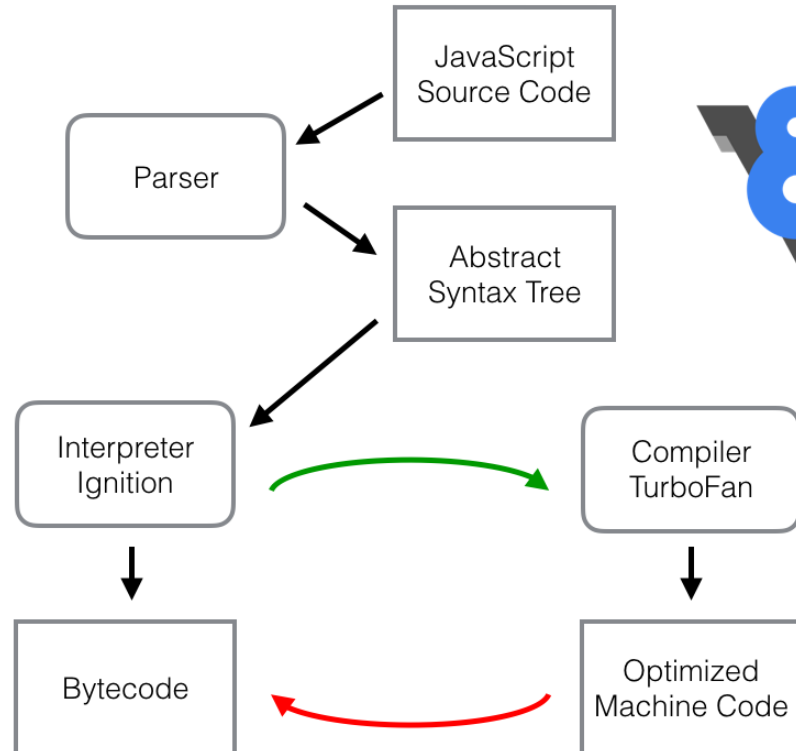


(Nitro)

1. The engine (embedded if it's a browser reads ("parses") the script.

2. Then it converts ("compiles") the script the machine language.

3. And then the machine code runs, pretty fast.



# Javascript



Machine code

```
// x86_64 machine code
movl rbx,[rax+0x1b]
REX.W movq r10,0x100000000
REX.W cmpq r10,rbx
jnc 0x30d119104275 <+0x55>
REX.W movq rdx,0x100000000
call 0x30d118e843e0 (Abort)
int3laddl rbx,0x1
...
```

Bytecode

```
// V8 bytecode
LdaSmi [1]
Star r0
LdaNamedProperty a0, [0], [4]
Add r0, [6]
```

High Level Language

```
// JavaScript
let result = 1 + obj.x;
```



Best for humans

Best for machines

@fhinkel

