

# Practical Optimization

# Which is Faster?

<cfif x IS 2>

OR

<cfif x EQ 2>

OR

<cfif compare(x,2) IS false>

# Which is Faster?

```
<cfif x IS 2>  
  <cfset doSomething() />  
<cfelse>  
  <cfset doSomethingElse() />  
</cfif>
```

OR

```
<cfswitch expression="#x#">  
  <cfcase value="2">  
    <cfset doSomething() />  
  </cfcase>  
  <cfdefaultcase>  
    <cfset doSomethingElse() />  
  </cfdefaultcase>  
</cfswitch>
```

# Which is Faster?

```
<cfset one = doSomething() />  
<cfset two = doSomethingElse() />
```

OR

```
<cfscript>  
  one = doSomething();  
  two = doSomethingElse();  
</cfscript>
```



who  
cares?

1  
2  
3  
4  
5  
6  
7  
8  
9  
10



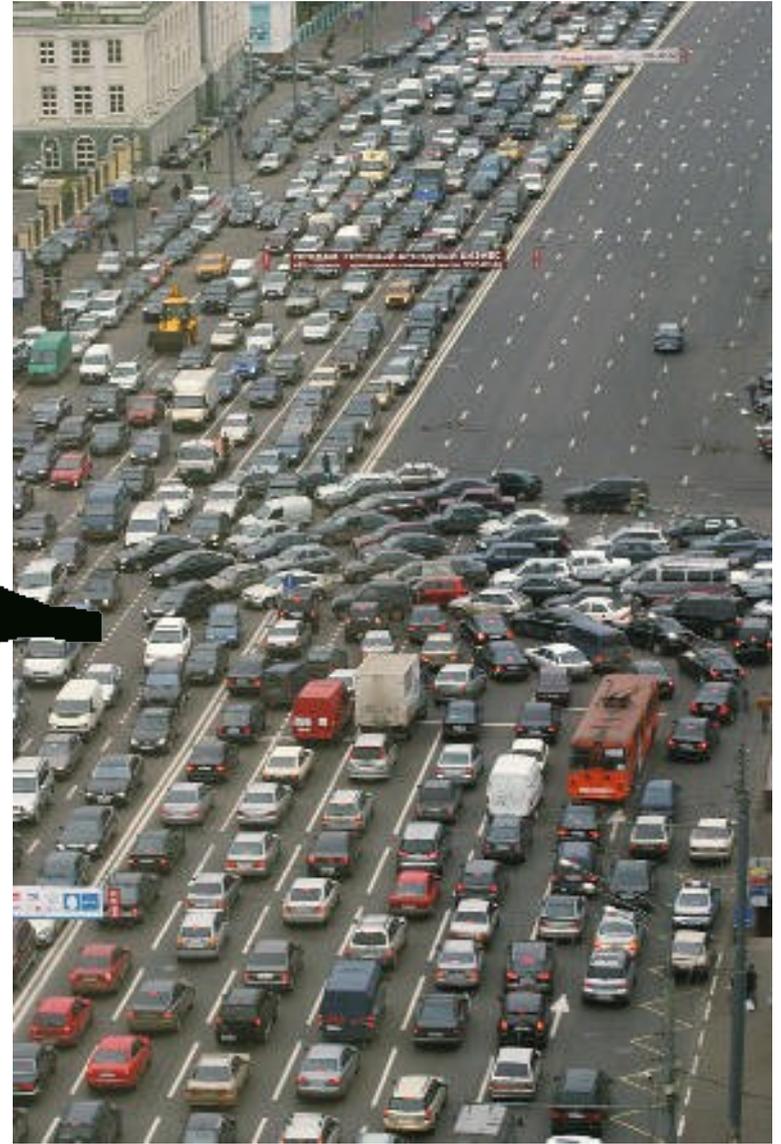
*“We should forget about small efficiencies,  
say about 97% of the time:  
premature optimization is the root of all evil.”*  
- Donald Knuth



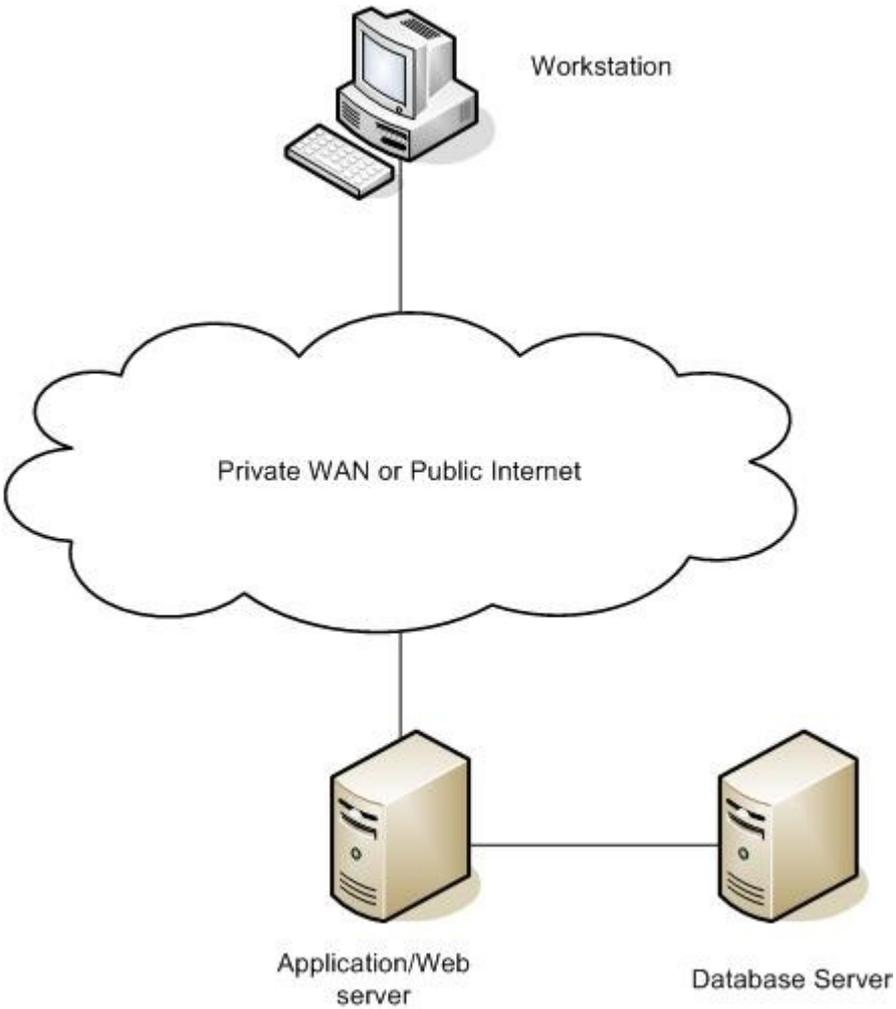
*“Knowing when optimization is premature  
defines the difference between the  
master engineer and the apprentice.”*  
- Theo Schlossnagle

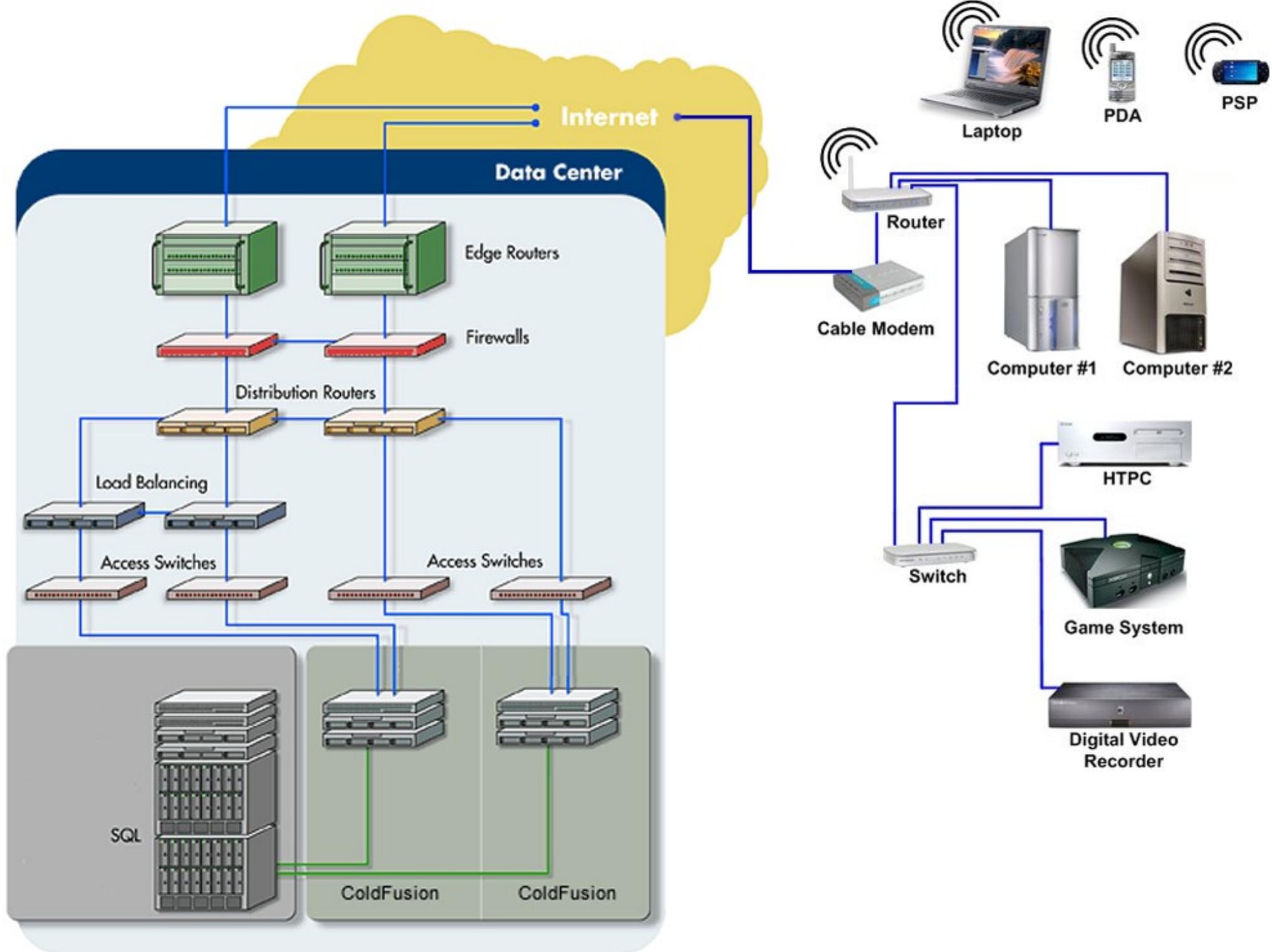


There's the bottleneck







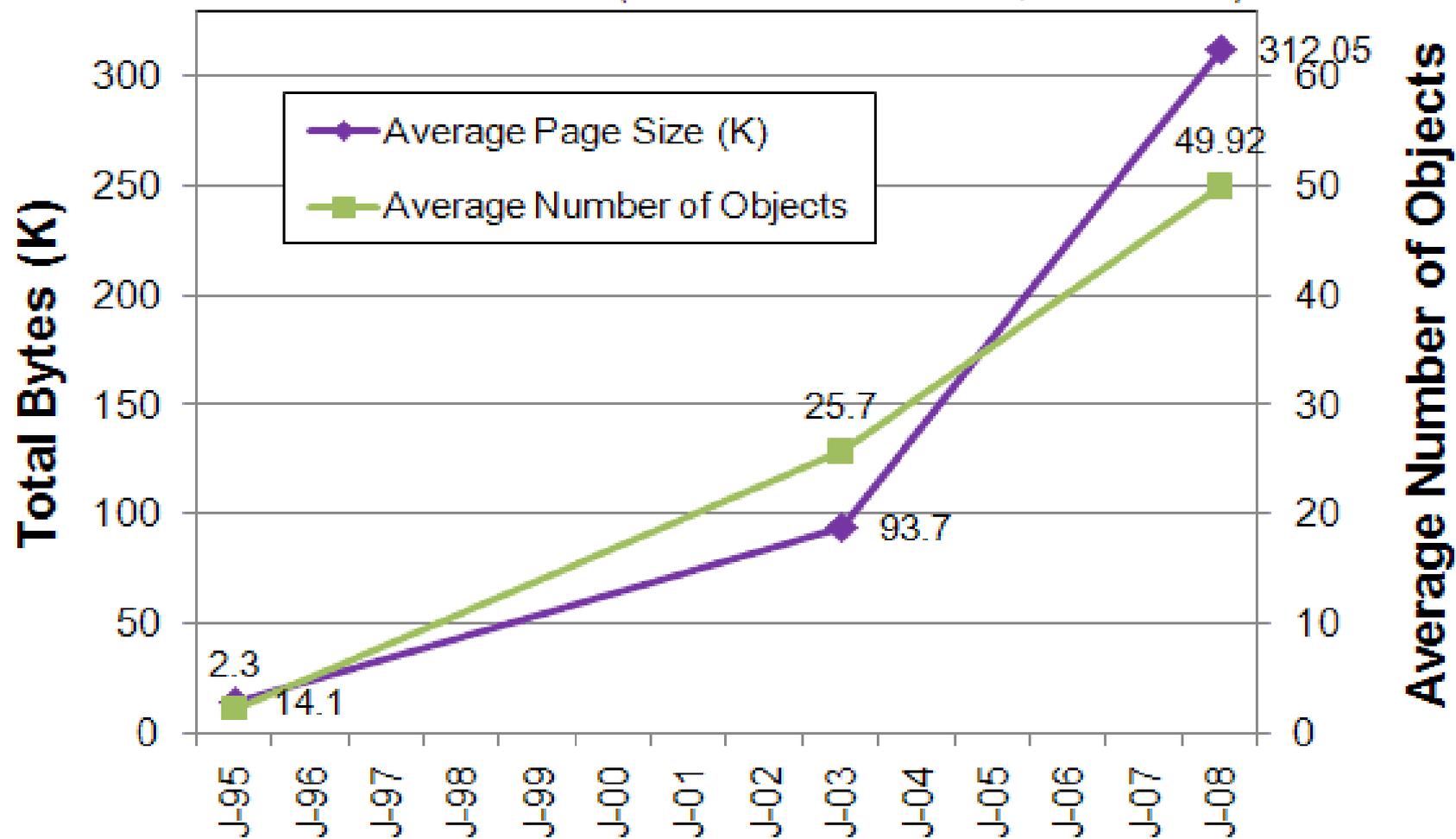


# Dividing Lines



# Growth of Average Web Page Size and Number of Objects

(Sources: Domenech 2007, Gomez 2008)



# Optimize Front Side

Hi! We've made some improvements. Now it's even easier to add your favorite sites and customize your page. [Learn more](#) Close

Web Images Video Local Shopping More

**YAHOO!**  **Web Search**

My Yahoo! Make Y! your homepage [Sign In](#) New here? [Sign Up](#) Have something to share? [Page Options](#)

**YAHOO! SITES** [Edit](#)

- Mail
- Autos
- Finance
- Games
- Groups
- Horoscopes
- HotJobs
- Maps
- Messenger
- Movies
- Music
- omg!
- Personals
- Shopping
- Sports
- Travel
- Updates
- Weather

**TODAY** - July 19, 2010



**Bill Clinton unveils his bucket list**

The 63-year-old former president names a few things he'd like to see before he dies. [Wish for grandchildren >>](#)

- Clinton, Gates on AIDS
- Create a bucket list
- Nervous over wedding

Man thrives in tiny house | Bill Clinton drafts his bucket list | Year's best and worst in film | Seep adds twist to oil saga

1 - 4 of 28

**NEWS** WORLD LOCAL FINANCE

- Investors worry about seepage from capped BP oil well
- Obama to Republicans: Restore unemployment benefits now
- Report: Nation's intelligence complex plagued by inefficiencies
- Abortion opponents win round in test of health care overhaul
- Syria bans face-covering Islamic veils from its universities

**TRENDING NOW**

- Zsa Zsa Gabor
- Lucille Ball
- Whooping Cough V...
- Lindsay Lohan
- Mel Gibson
- Steve Carell
- Amy Adams
- Pool Supplies
- Halliburton
- Motorola

AdChoices



**Sprint**

**WHAT WILL YOU DO FIRST WITH EVO, THE FIRST 4G PHONE?**

Get it now

htc EVO 4G

Ad Feedback

**Get your business online** [Small Business](#)



- Secure a domain for \$1.99/1st yr.
- Easily build a website
- Start selling online now - save 35%



# Useful Front Side Events

Time to First Byte

Time to Glass

Time to Functional

Time to Last Byte

# No Repainting



# CSS and Javascript: Bad

```
<html>
  <head>
  </head>
  <body>
    <h2>I am very slow</h2>
  </body>
  <link href="www/css/style.css"
        rel="stylesheet" type="text/css" />
  <script src="somewhere/over/the/rainbow.js">
  </script>
</html>
```

# CSS and Javascript: Better

```
<html>
  <head>
    <link href="www/css/style.css"
          rel="stylesheet" type="text/css" />
    <script src="somewhere/over/the/rainbow.js">
    </script>
  </head>
  <body>
    <h2>I am not fast</h2>
  </body>
</html>
```

# CSS and Javascript: Best

```
<html>
  <head>
    <link href="www/css/style.css"
          rel="stylesheet" type="text/css" />
  </head>
  <body>
    <h2>I am fast</h2>
    <script src="somewhere/over/the/rainbow.js">
    </script>
  </body>
</html>
```

# Compress for Best

## jQuery-1.4.2.js

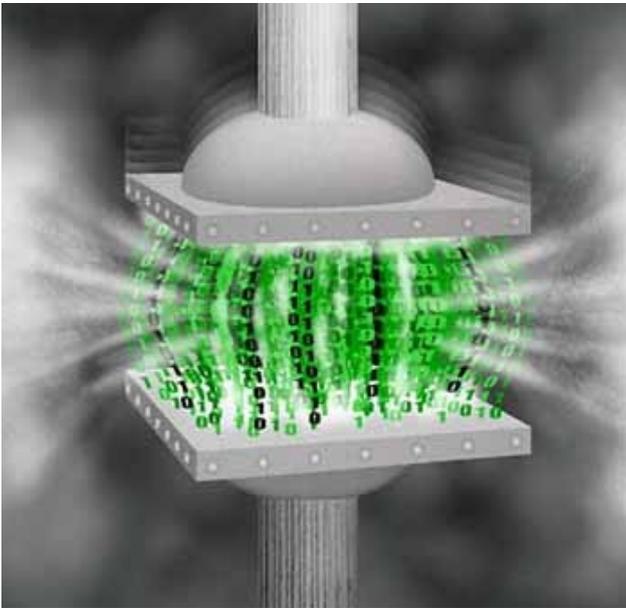
- 155KB - Uncompressed
- 24KB – Min/Gzipped

## Javascript Compressors:

- Whitespace Removal
- Tokenization/Substitution

## CSS Compressors

- Whitespace Removal



# Combine and Conquer



# All your database are belong to us



- Mechanic: Somebody set up us the bomb.
- Operator: Main screen turn on.
- CATS: All your base are belong to us.
- CATS: You have no chance to survive make your time.
- Captain: For great justice.

# Why?



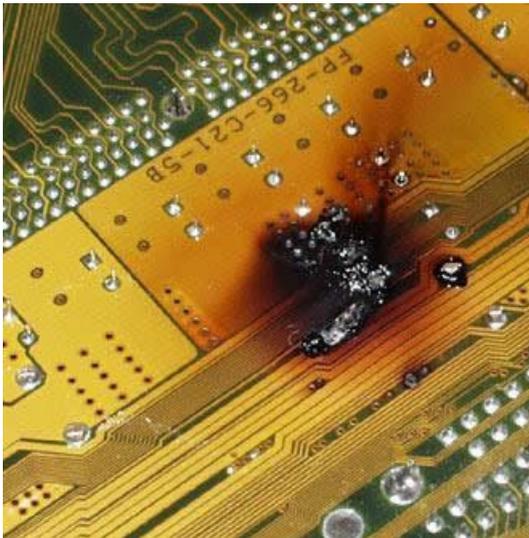
Why else?



# Why Else?



# Databases Must Have Power



# Indexes



# How Compound Indexes Work

```
CREATE INDEX IDX_CUSTOMER_LOCATION  
on CUSTOMER (City, Country)
```

Finds by City or City+Country  
**NOT by Country or Country+City**

# Wilson's Rule of Database Indexes



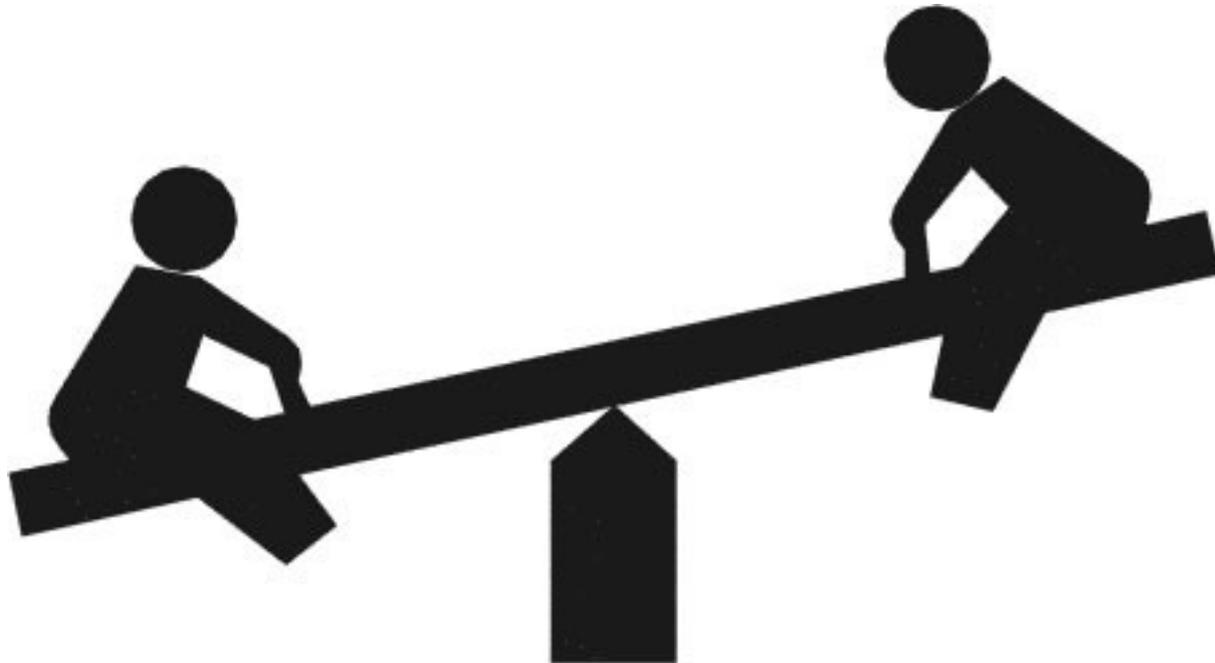
All database performance problems can be solved by creating indexes, save the problem of too many indexes

- Dan Wilson

# The See Saw Tradeoff of Indexes

Index speeds up read operations at the expense of write operations.

Most web applications are read heavy. Is yours?



# Memoization

*Memoization is a means of lowering a function's time cost in exchange for space cost.*

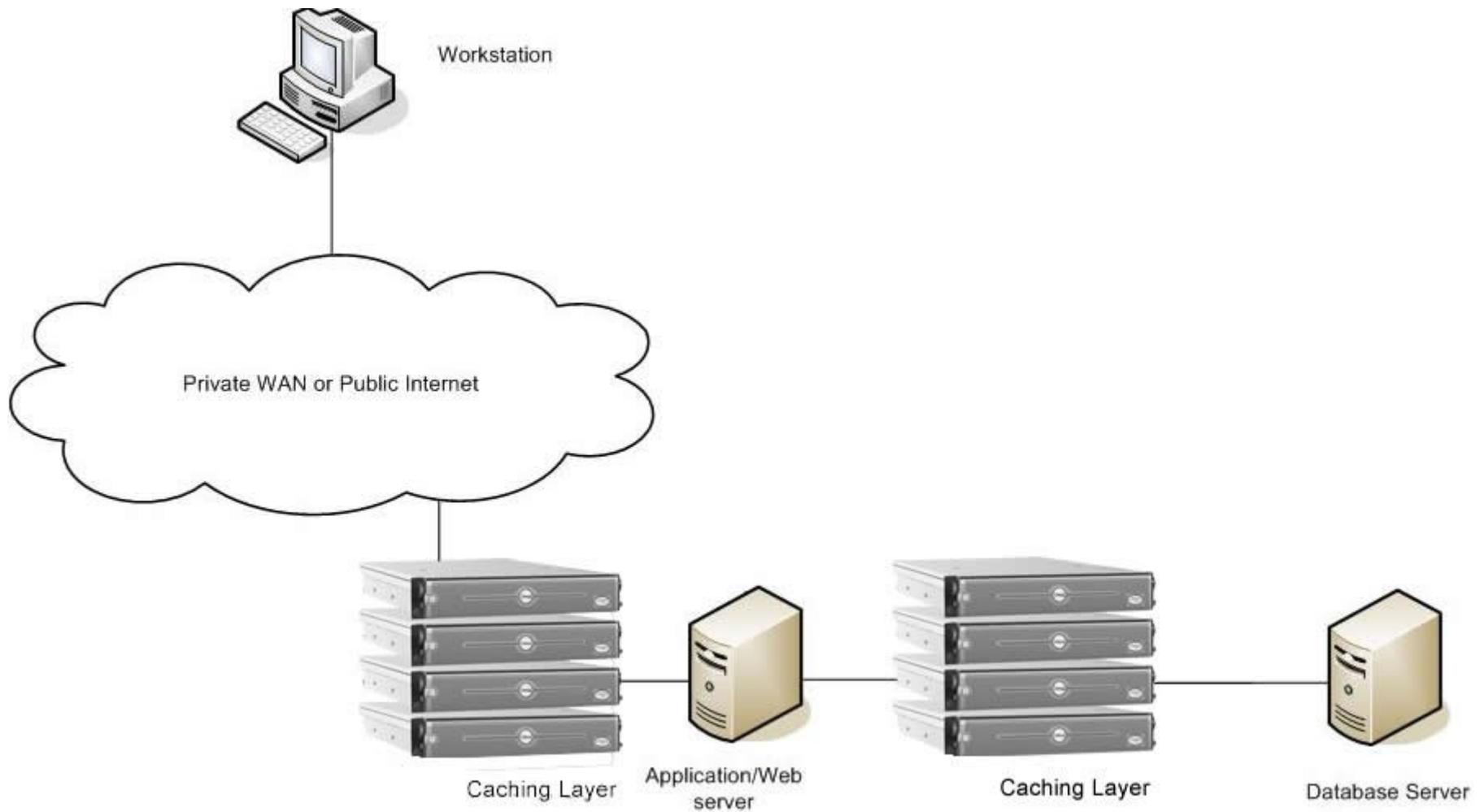
*-wikipedia.org*



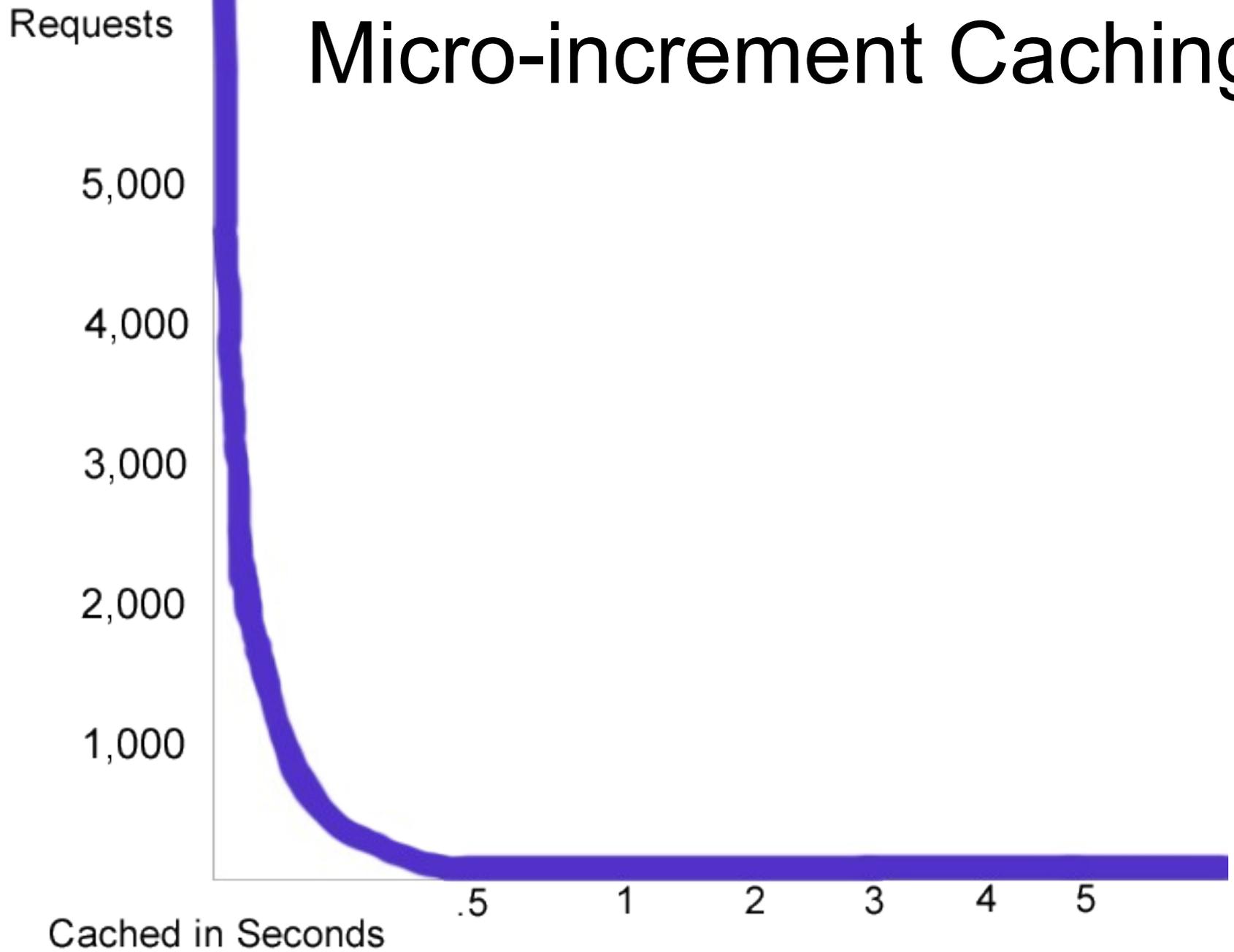
# Avoid Work



# Cache Talks

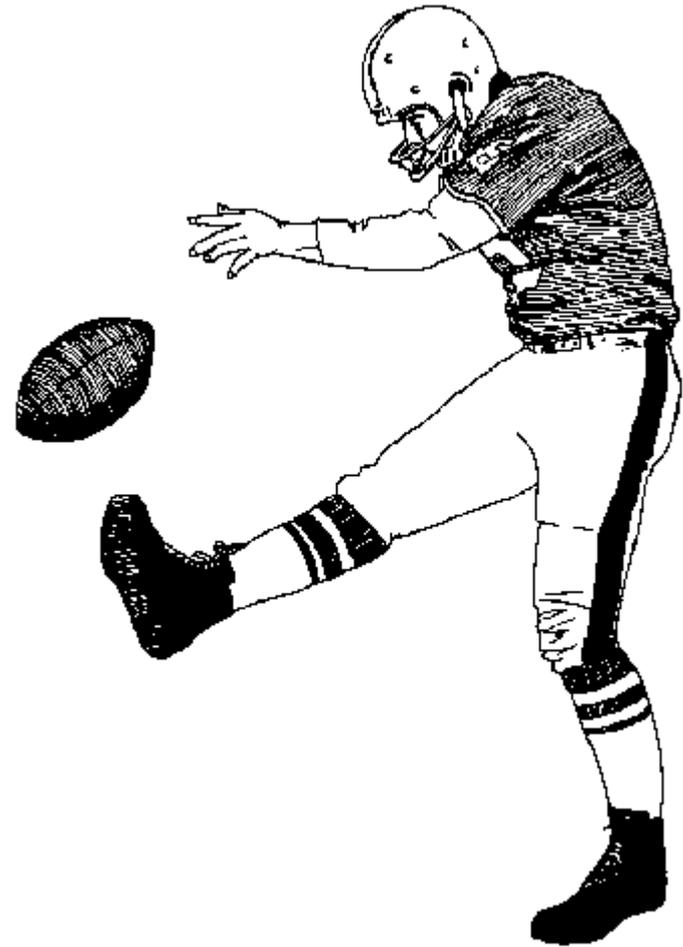


# Micro-increment Caching



# Punt on the hard stuff

- Real time?
- Pagination?
- Synchronous?
- Server Side?



# Be Scientific! Measure Everything!



# Be Smart



# Helpful Links

## Websites

<http://stevesouders.com>

<http://blog.sqlauthority.com>

## Books

**Even Faster Websites:** <http://stevesouders.com/efws/>

**Scalable Internet Architectures:** <http://scalableinternetarchitectures.com/>

**Web Operations: Keeping the Data on Time** <http://press.oreilly.com/pub/pr/2590>

## Tools

<http://developer.yahoo.com/yslow>

<http://tools.pingdom.com>

<http://scriptalizer.com>

<http://jmeter.apache.com>

# Thanks

Dan Wilson

[twitter.com/DanWilson](https://twitter.com/DanWilson)

[nodans.com](http://nodans.com)

[datacurl.com](http://datacurl.com)

[challengewave.com](http://challengewave.com)

[model-glue.com](http://model-glue.com)

