# Tales from the Trenches

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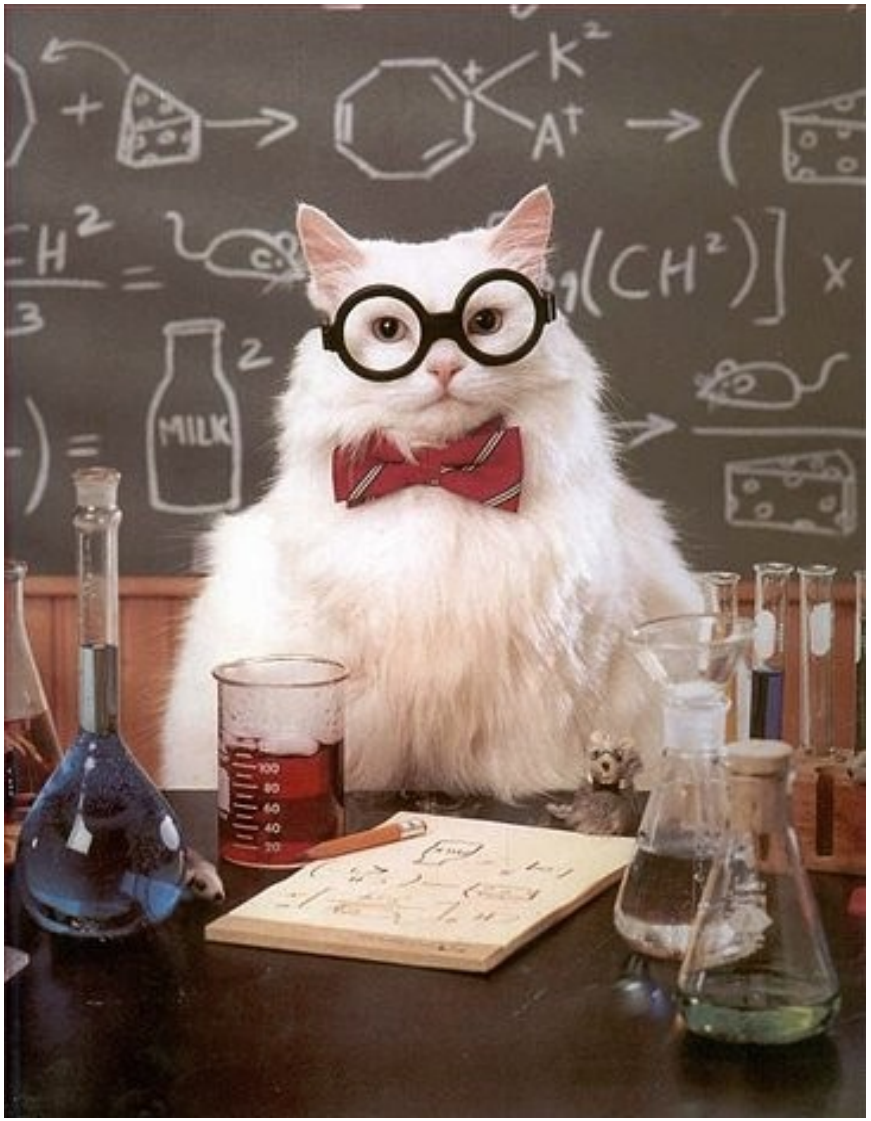
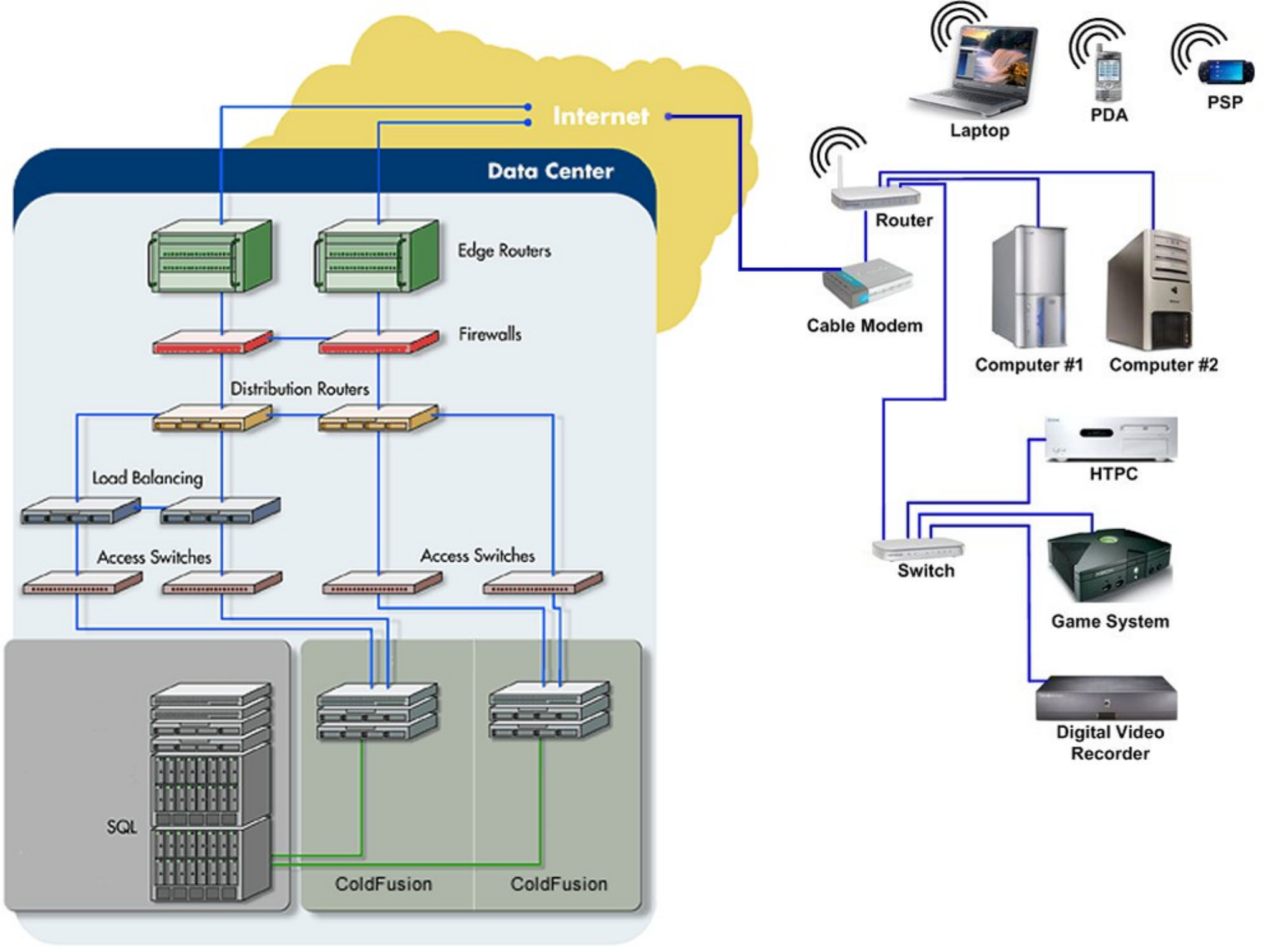
# Who is Dan Wilson

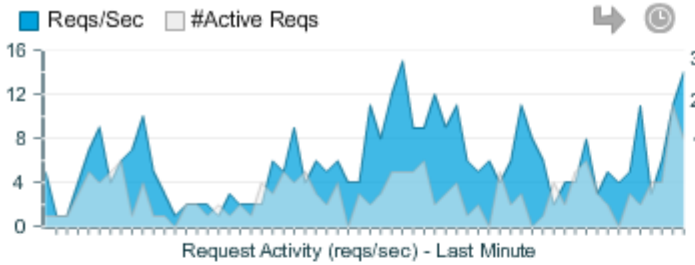
- Blog @ nodans.com, dzone.com
- Managing Director of Model Glue
- Manager of TACFUG, NCDevCon
- Principal Partner of DataCurl LLC: Home of ChallengeWave.com and a boutique consulting services company offering Application Architecture, Performance Analysis, High Scalability Operations, Project Rescue and Development Team Analysis and Realignment services.

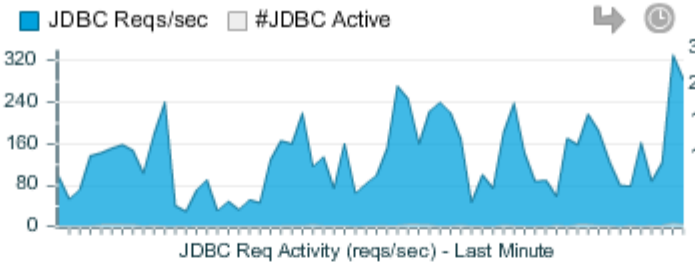
# It Works In Development

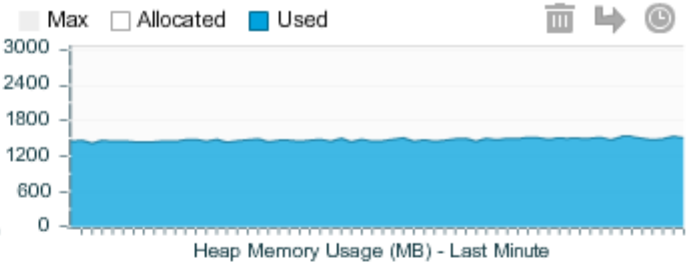


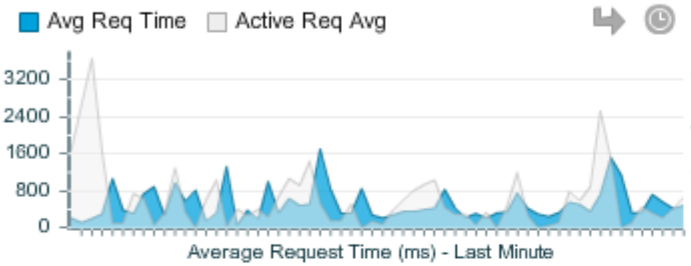


Internet
Data Center
Edge Routers
Firewalls
Distribution Routers
Load Balancing
Access Switches
Access Switches
SQL
ColdFusion
ColdFusion
Laptop
PDA
PSP
Router
Cable Modem
Computer #1
Computer #2
HTPC
Switch
Game System
Digital Video Recorder

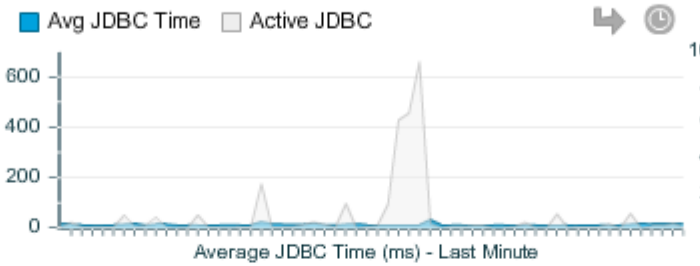
5 Seconds

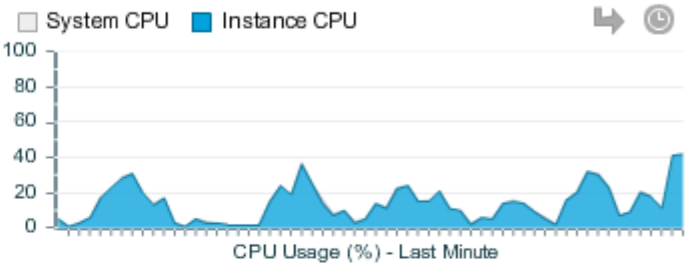



| | |
|---|---|
| Server Started | 02:30:28 08-May-2013 |
| Server Up-Time | 12 hours, 3 minutes, 31 seconds |
| Current Request Count | 7 |
| Queued Request Count (Due to Crash Protection) | 0 |
| Total Request Count | 123473 |
| Average Request Time (ms) | 623 |
| Used Memory (KB) | (50%) 1,578,906 |
| Allocated Memory (KB) | 3,137,216 |
| Maximum memory (KB) | 3,137,216 |
| Free memory (KB) | 1,558,309 |
| Total JDBC Queries | 2812120 |
| Average JDBC Time (ms) | 16 |
| **Recent** | |
| Recent Slow Pages (within 60s) | 0 |
| Recent Page Performance (within 60s) (ms) | 501 |
| Recent JDBC Performance (within 60s) (ms) | 17 |
| **Crash Protection (Page Aborts)** | **Count** |
| Request Quantity | 0 |
| Runtime Timeout | 0 |
| Low Memory | 0 |
| **Return Code** | **Count** |
| 500 Internal Server Error | 42 |
| 200 OK | 97873 |
| 302 Found | 15976 |

# Monitoring Options


ColdFusion Server Monitor

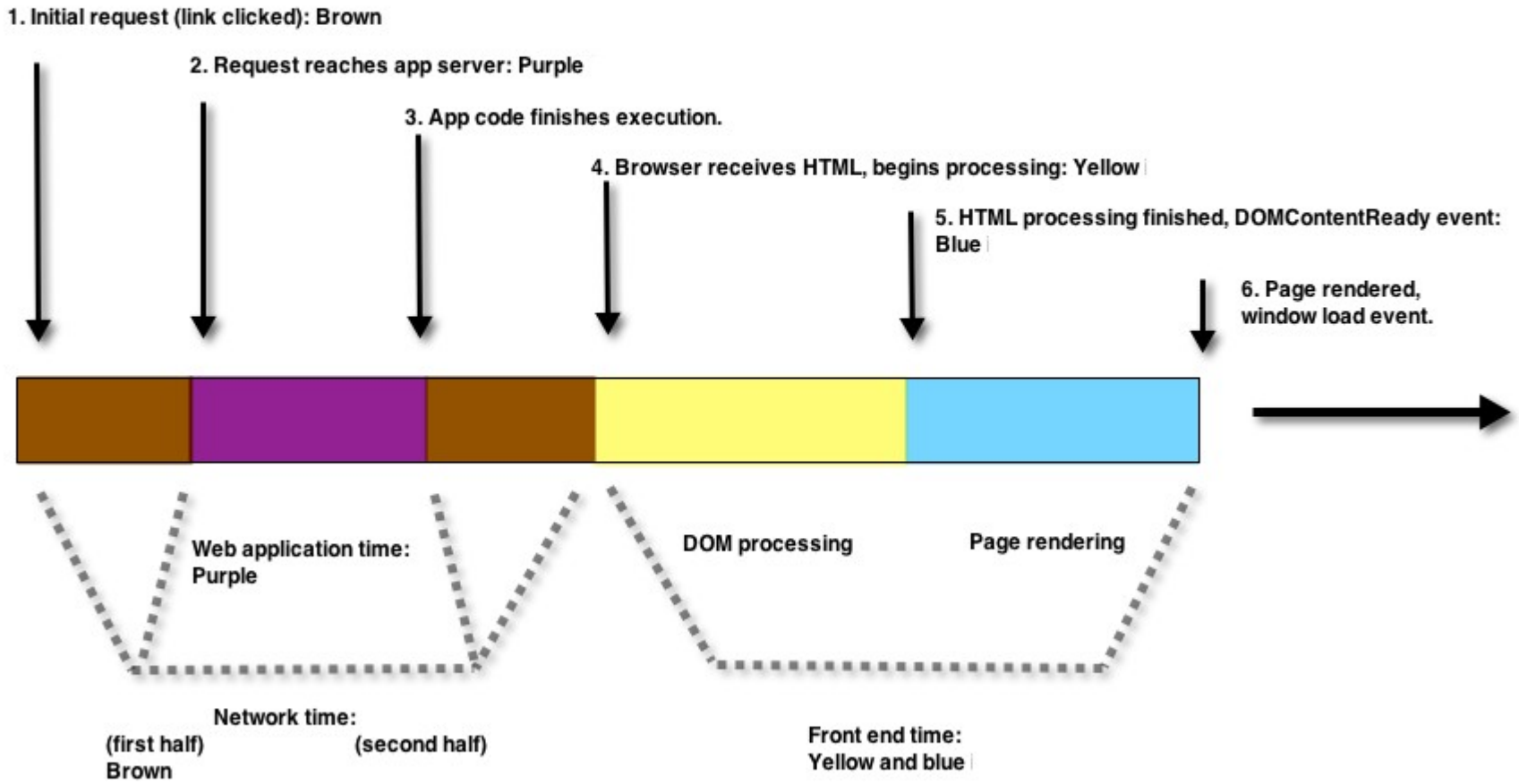
CFStat


New Relic – SaaS


Fusion Reactor Monitor


Nagios

# Time Milestones



# Acceptable Time To First Byte

## Execution Time

Execution Time: 292ms

## Stream Metrics

Bytes Sent: 17,458

Data Rate: 51 MBytes/s

Time To First Byte: +292ms

Time To Last Byte: +292ms

## JDBC

Number of Queries: 13

Average Query Time: 18ms

Total JDBC Time: 243ms

## Thread

Thread CPU Time: 30ms

# Unacceptable Time To First Byte

## Execution Time

Execution Time:  14,955ms

## Stream Metrics

Bytes Sent: 294,188

Data Rate: 25 MBytes/s

Time To First Byte: +14,943ms

Time To Last Byte: +14,954ms

## JDBC

Number of Queries: 938

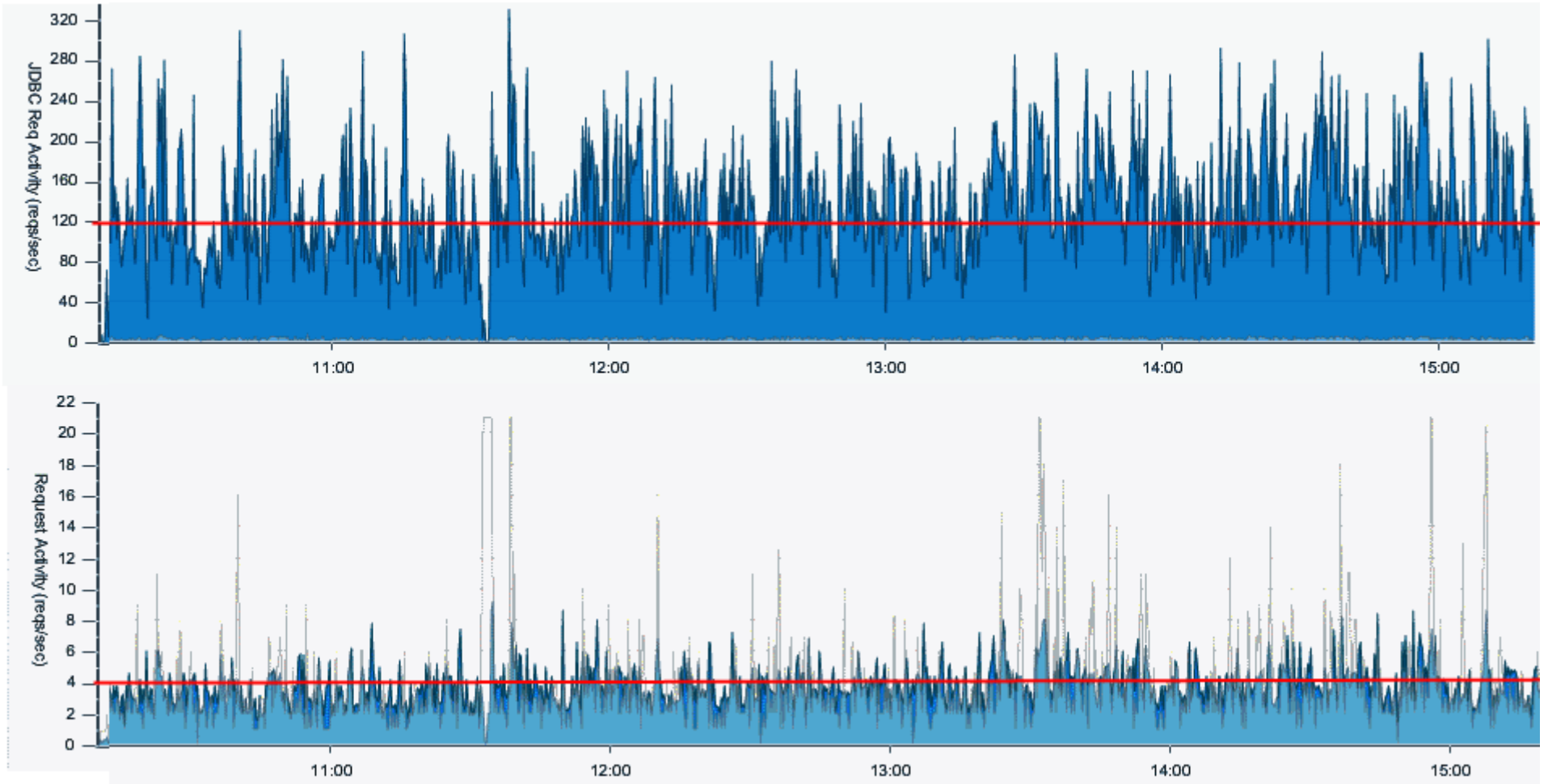
Average Query Time: 13ms

Total JDBC Execution Time:12,417 ms

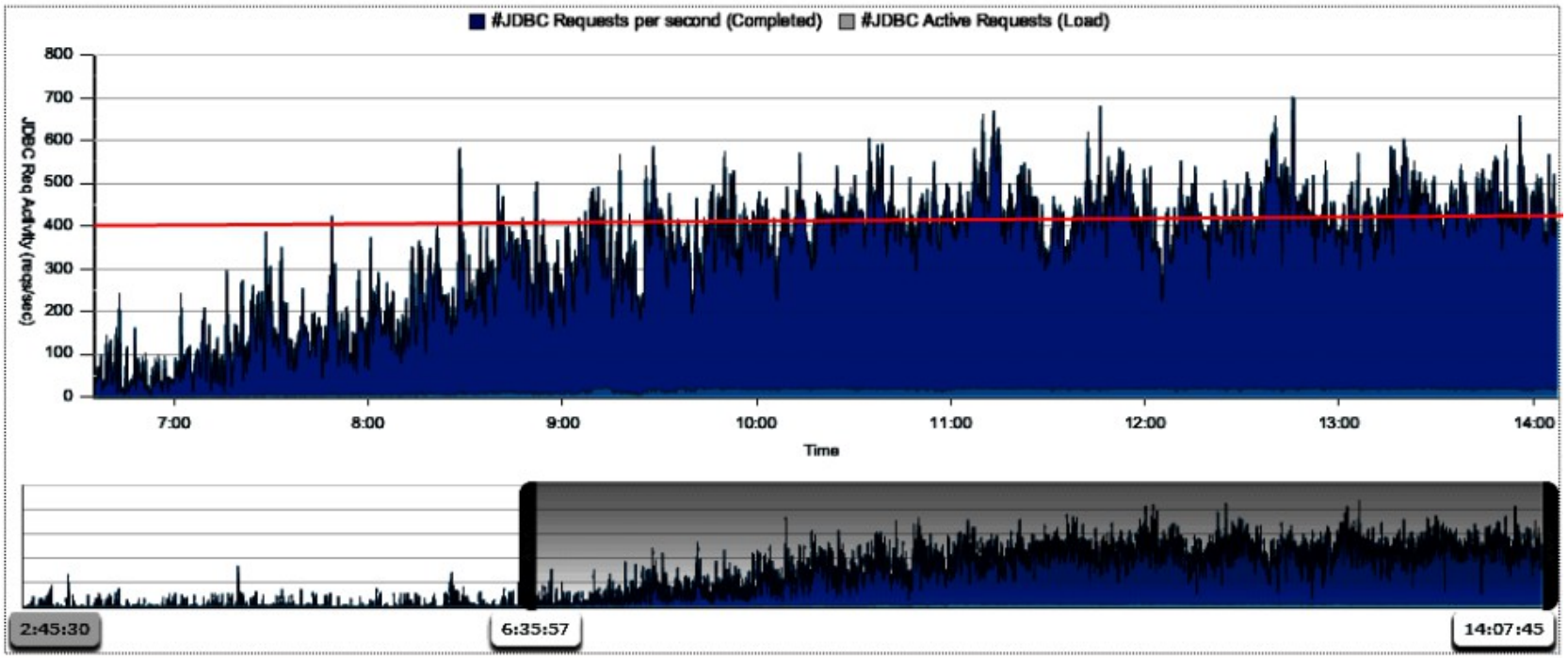
## Thread

Thread CPU Time:  970ms

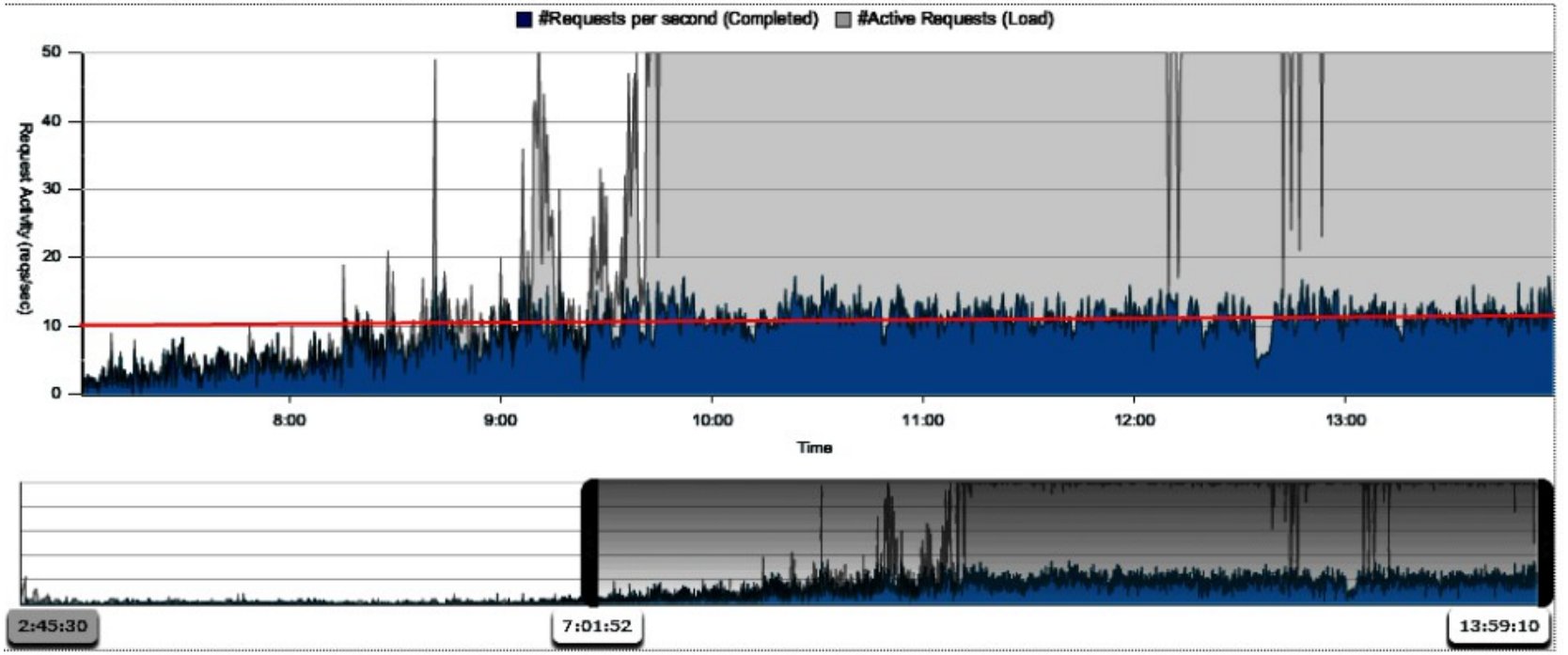
# High Ratio of Queries/Request



Resources | JDBC Request Activity Graph




Resources | Request Activity Graph



# Overuse of ORM

**JDBC**

Number of Queries: 938

Average Query Time: 13ms

Total JDBC Execution Time: 12,417ms

**Thread**

Thread CPU Time: 970ms

Thread Name: jrpp-2

# Get Order Products

```
return EntityToQuery(
   EntityLoad("Order_Product",
   {
      OrderId=arguments.OrderId,
      ProductId=arguments.ProductId
   }
,false));
```

# Get Poll Answers

```
<cfset PollAnswers = entityLoad("PollAnswers",
                        {
                            PollID=entPoll[1].getPollID()
                        }, "")>
<cfif (isArray(Poll) AND arrayLen(Poll) gt 0)
    AND (isArray(PollOpt)
    AND arrayLen(PollOpt) gt 0)
    AND (isArray(PollAnswers)
    AND arrayLen(PollAnswers) gt 0)>

ormExecuteQuery("SELECT SUM(OptionCount) as counter
FROM scholastic_StickySituationPollAnswers ….)
```

# Poll Net Result

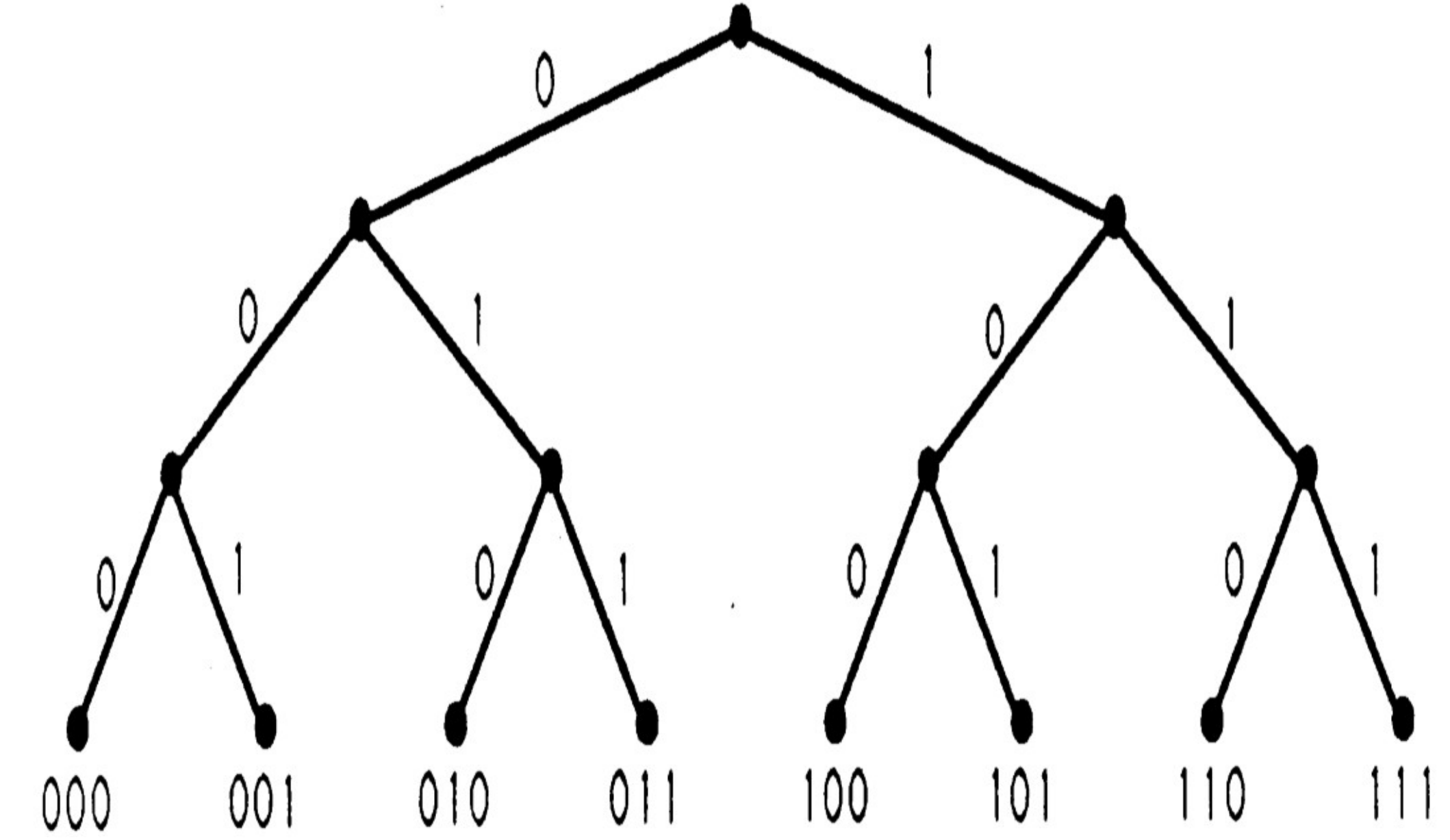
**JDBC**

Recordcount: 87,923

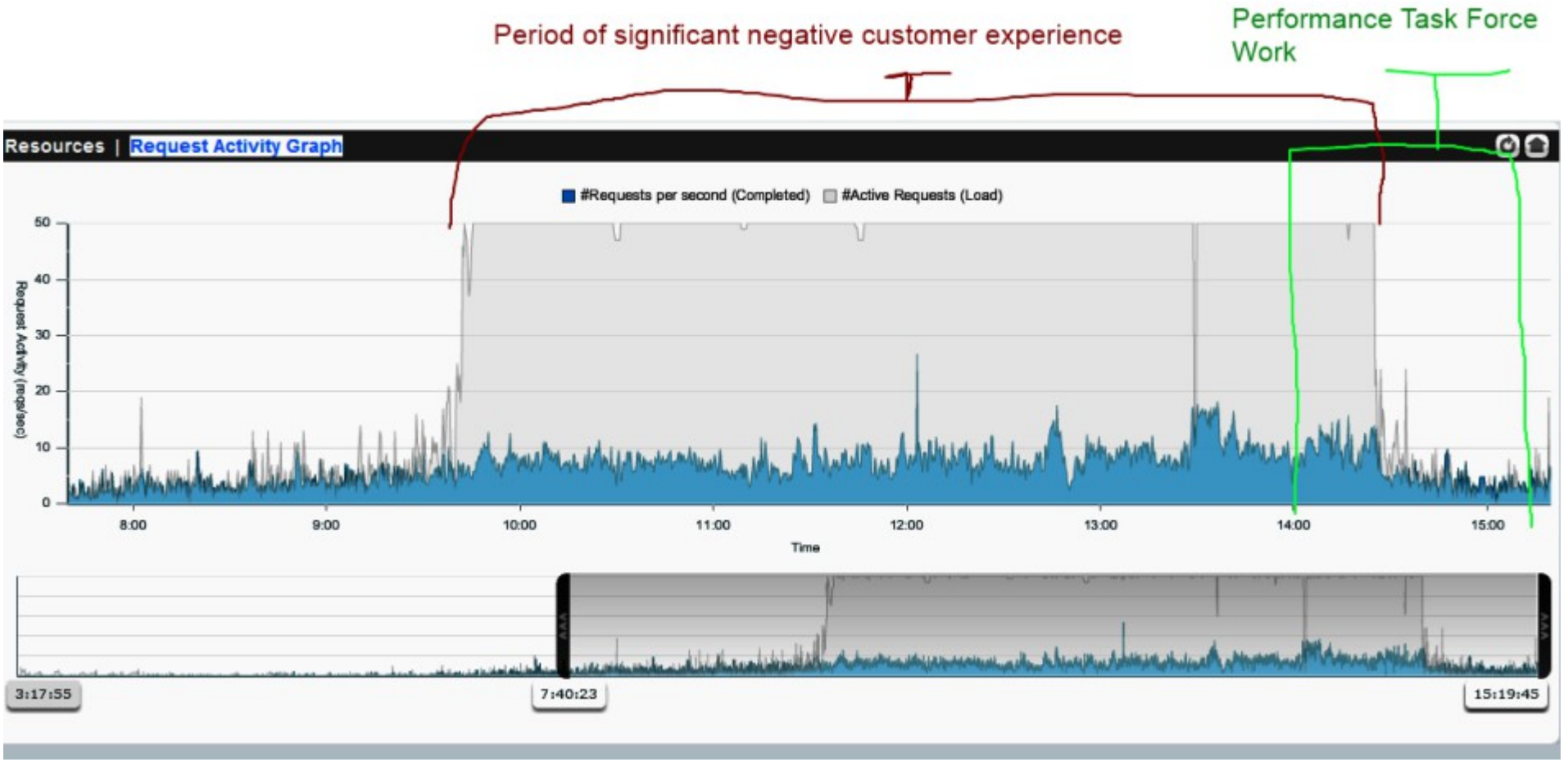
Query Time: 14,290 ms

All that for an ArrayLen() GT 0!

# Bad or No Indexing

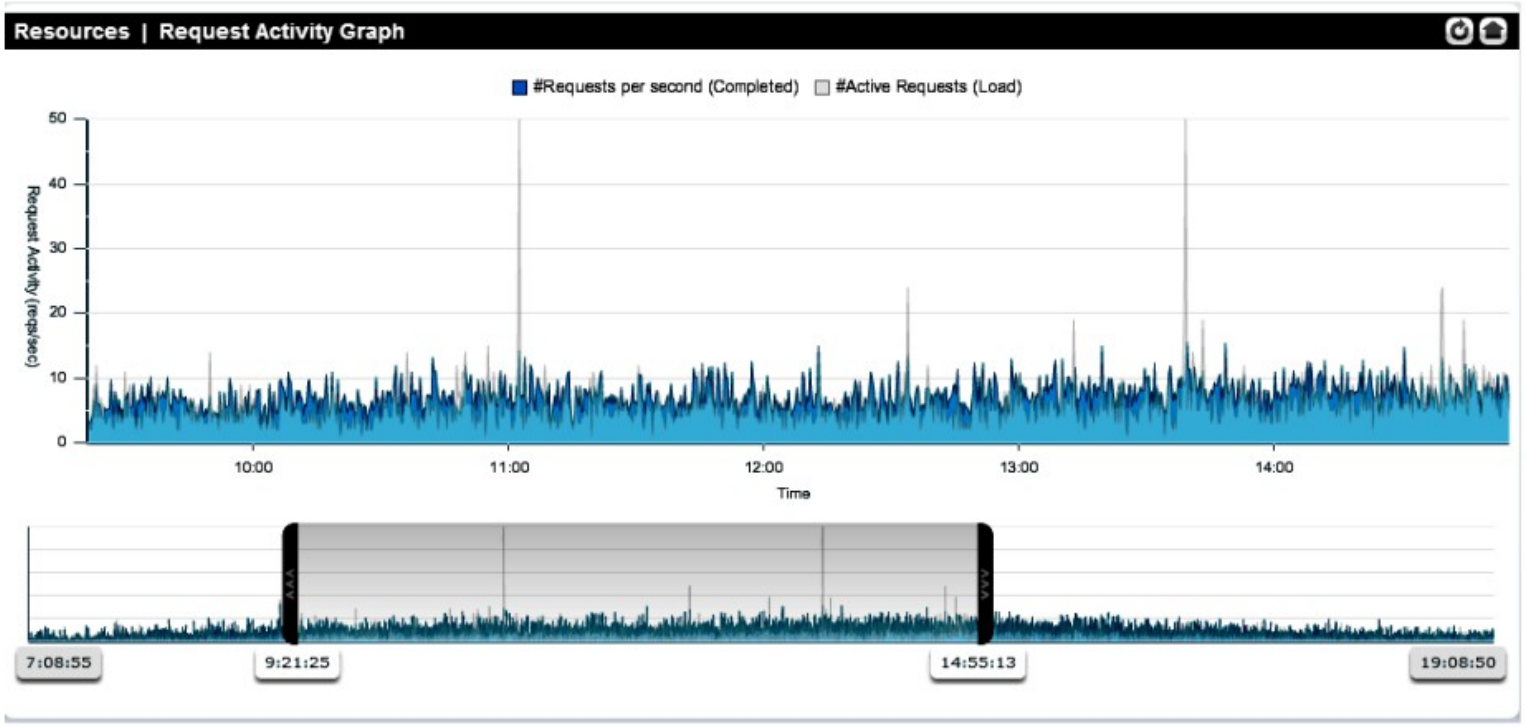


# Hotfixing Production

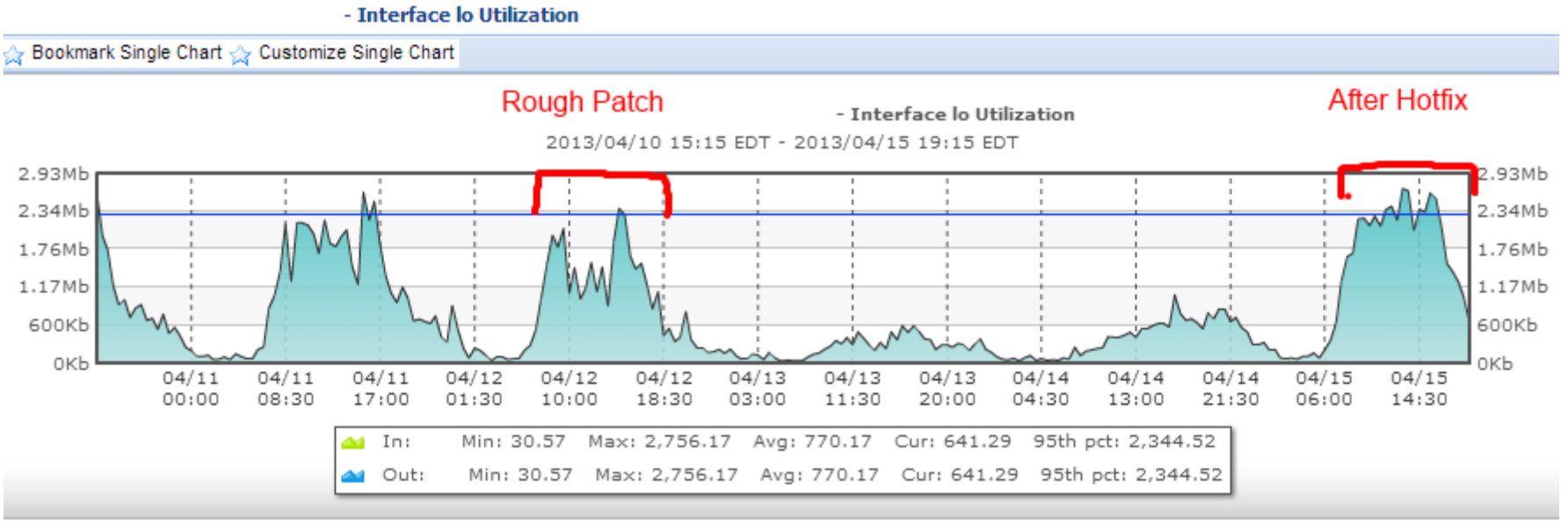


Major Queuing - Very bad customer experience


No Queueing. Site is very responsive



# Traffic Curves



# Well, it said this would help performance....

Click the button on the right to update Caching...

## Server Settings > Caching

**Maximum number of cached templates** 1024

Limits the number of templates cached using template caching. If the cache is set to a small value, ColdFusion might re-process your templates. If your server has a sufficient am
by setting this value to the total number of all of your ColdFusion templates. Setting the cache to a high value does not automatically reduce available memory because ColdFusio

☐ **Trusted cache**

When checked, any requ ted files found to currently reside in the template cache will not be inspected for potential updates. For sites where templates are not updated during th
This setting does not req e restarting the server.

☑ **Cache Template In Request**

When checked, any requested files will be inspected only once for potential updates within a request. If unchecked, requested file will be inspected for changes each and everytim
application where templates/components are not expected to reflect updates within the same request, this minimizes file system overhead. This setting does not require restarting

☐ **Component cache**

When checked, component pat resolution is cached and not resolved again. This setting does not require restarting the server.

☐ **Save class files**

When you select this optio the class files generated by ColdFusion are saved to disk for reuse after the server restarts. Adobe recommends this for production systems. During
his option.

☐ **Cache web server paths**

Caches page paths on single-site web server in tallations, which provides improved performance. You must restart the server for this change to take effect.

Note: Do not select this option when you use ColdFusion with multiple website systems.

**Maximum number of cached queries** 100

Limits the maximum number of cached queries that the server will maintain. Cached queries allow for retrieval of result sets from memory rather than through a database transactio
set sizes differ, there must be some user-imposed limit to the number of queries that are cached. When this value is exceeded, the oldest query is dropped from the cache and is

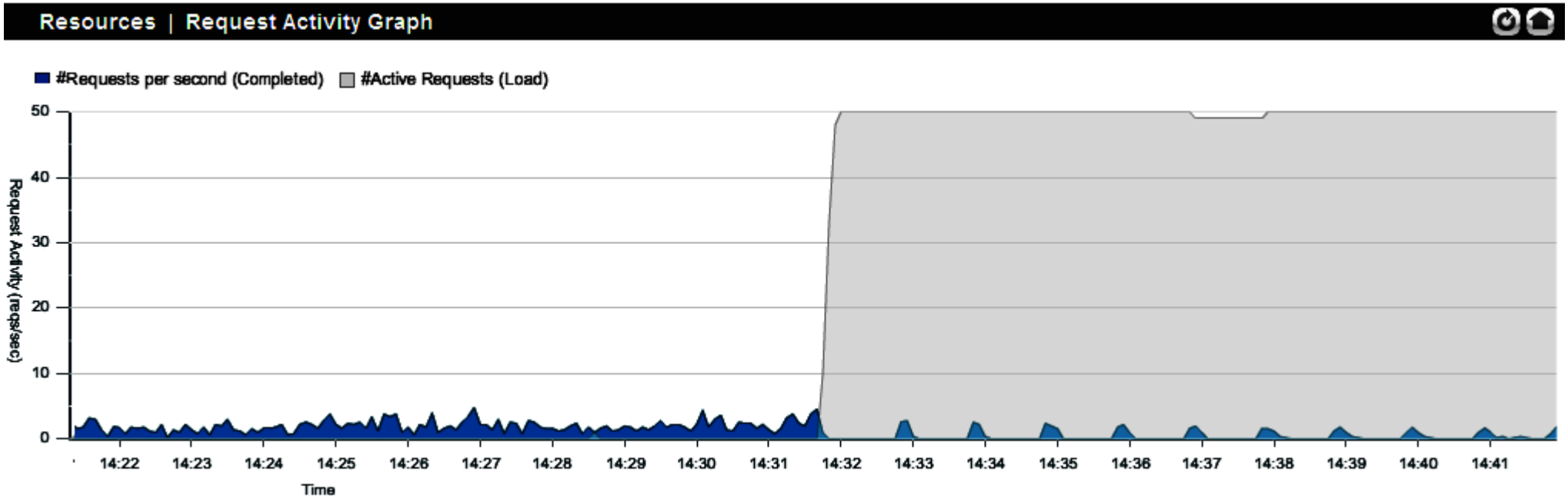
**Click the button below to clear the template cache. ColdFusion will re-load templates into memory the next time they are requested and recompile them if they ha**

Clear Template Cache Now

**Click the button below to clear the component cache. ColdFusion will ignore the resolved path for components and try the resolution again.**

Clear Component Cache Now

# Effect of Cached File Paths

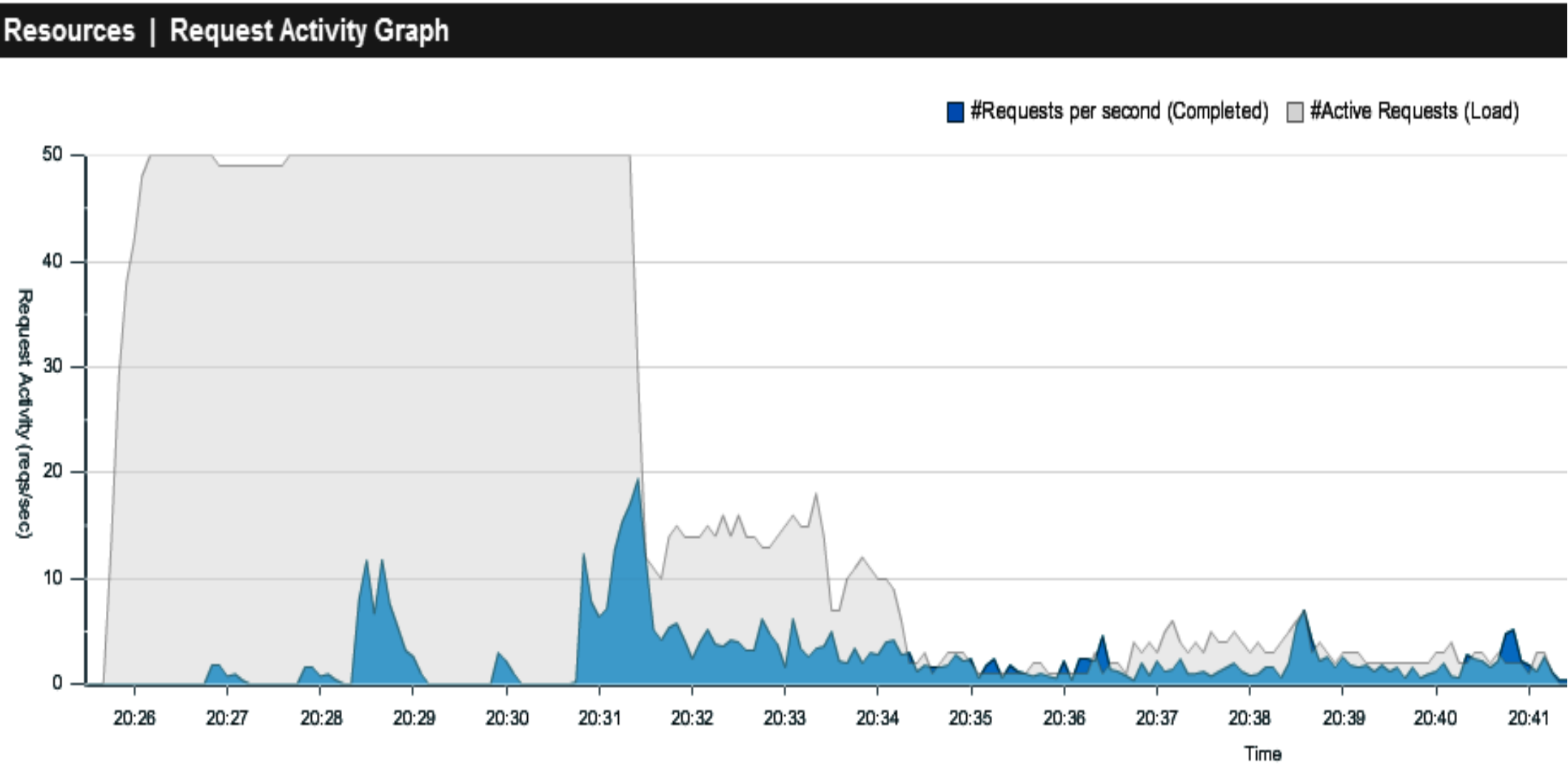


# Locked Requests from Caching

| | | | | | |
|---|---|---|---|---|---|
| 14:45:24.270<br>10-Apr-2013 | 10.28.4.248 | 3568<br>jrpp-255 | | 358,700 | Cur:(3%)110 908<br>Free:3,026 307 |
| 14:44:16.258<br>10-Apr-2013 | 10.28.4.248 | 3512<br>jrpp-288 | | 376,712 | Cur:(4%)149 549<br>Free:2,987 666 |
| 14:44:16.247<br>10-Apr-2013 | 10.28.4.248 | 3511<br>jrpp-263 | | 376,723 | Cur:(4%)148 048<br>Free:2,991 167 |
| 14:40:48.373<br>10-Apr-2013 | 10.28.4.248 | 3334<br>jrpp-70 | | 584,598 | Cur:(3%)120 544<br>Free:3,016 671 |
| 14:35:52.179<br>10-Apr-2013 | 10.28.4.248 | 3226<br>jrpp-25 | | 850,792 | Cur:(3%)108 702<br>Free:3,028 513 |
| 14:34:48.69<br>10-Apr-2013 | 10.28.4.248 | 3189<br>jrpp-355 | | 944,902 | Cur:(3%)97 333<br>Free:3,039 882 |
| 14:34:46.666<br>10-Apr-2013 | 10.28.4.248 | 3188<br>jrpp-98 | | 946,305 | Cur:(3%)94 606<br>Free:3,042 609 |
| 14:33:51.878<br>10-Apr-2013 | 10.28.4.248 | 3175<br>jrpp-310 | | 1,001,093 | Cur:(2%)87,717<br>Free:3,049,498 |
| 14:33:49.288<br>10-Apr-2013 | 10.28.4.248 | 3169<br>jrpp-262 | | 1,003,683 | Cur:(2%)93,816<br>Free:3,043,399 |
| 14:33:49.268<br>10-Apr-2013 | 10.28.4.248 | 3167<br>jrpp-277 | | 1,003,704 | Cur:(2%)92,856<br>Free:3,044,359 |
| 14:31:48.229<br>10-Apr-2013 | 10.28.4.248 | 3102<br>jrpp-21 | | 1,124,743 | Cur:(2%)65,378<br>Free:3,071,837 |
| 14:31:48.216<br>10-Apr-2013 | 10.28.4.248 | 3101<br>jrpp-17 | | 1,124,756 | Cur:(2%)64,574<br>Free:3,072,641 |
| 14:31:45.175<br>10-Apr-2013 | 10.28.4.248 | 3093<br>jrpp-11 | | 1,127,797 | Cur:(2%)90,112<br>Free:3,047,103 |
| 14:31:44.552<br>10-Apr-2013 | 10.28.4.248 | 3092<br>jrpp-9 | | 1,128,420 | Cur:(2%)88,006<br>Free:3,049,209 |
| 14:31:44.319<br>10-Apr-2013 | *Killing*<br>10.28.4.248 | 3091<br>jrpp-8 | | 1,128,654 | Cur:(2%)92,513<br>Free:3,044,702 |

# The Importance of Properly Warming Up

# Warm Up Period



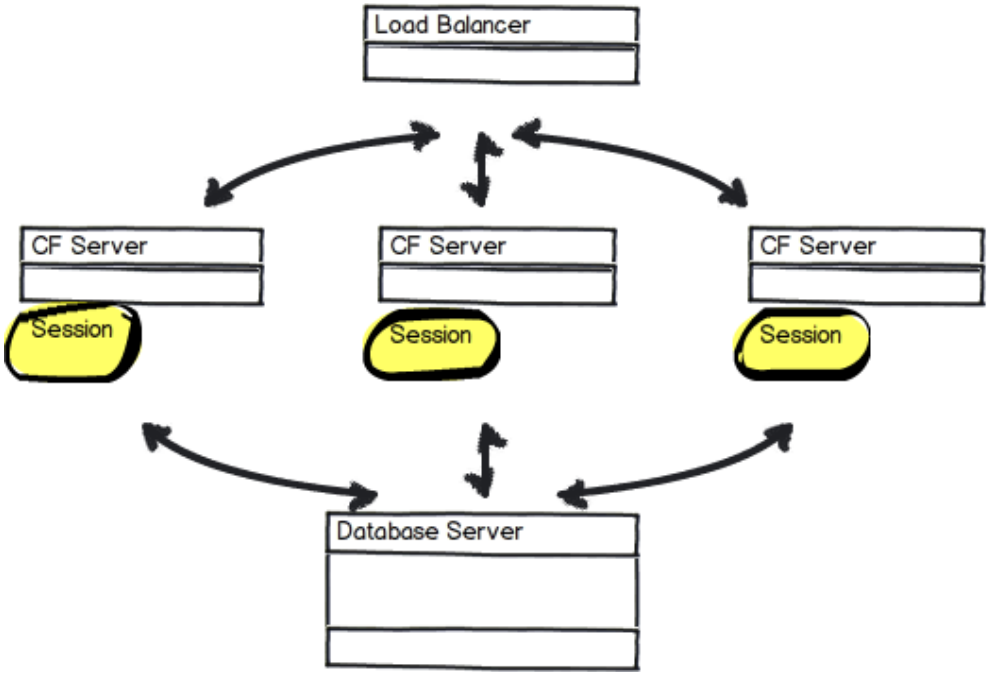

Things That Sneak Up On You

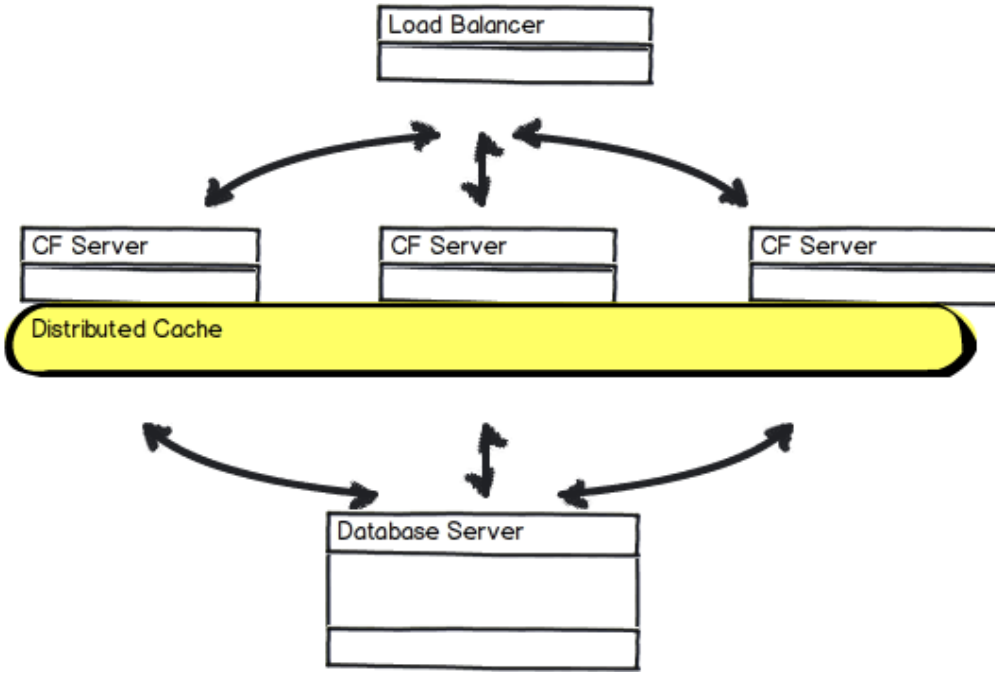
# Like what?

- Scheduled Tasks
- Downloads
- FTP
- HTTP
- Threads

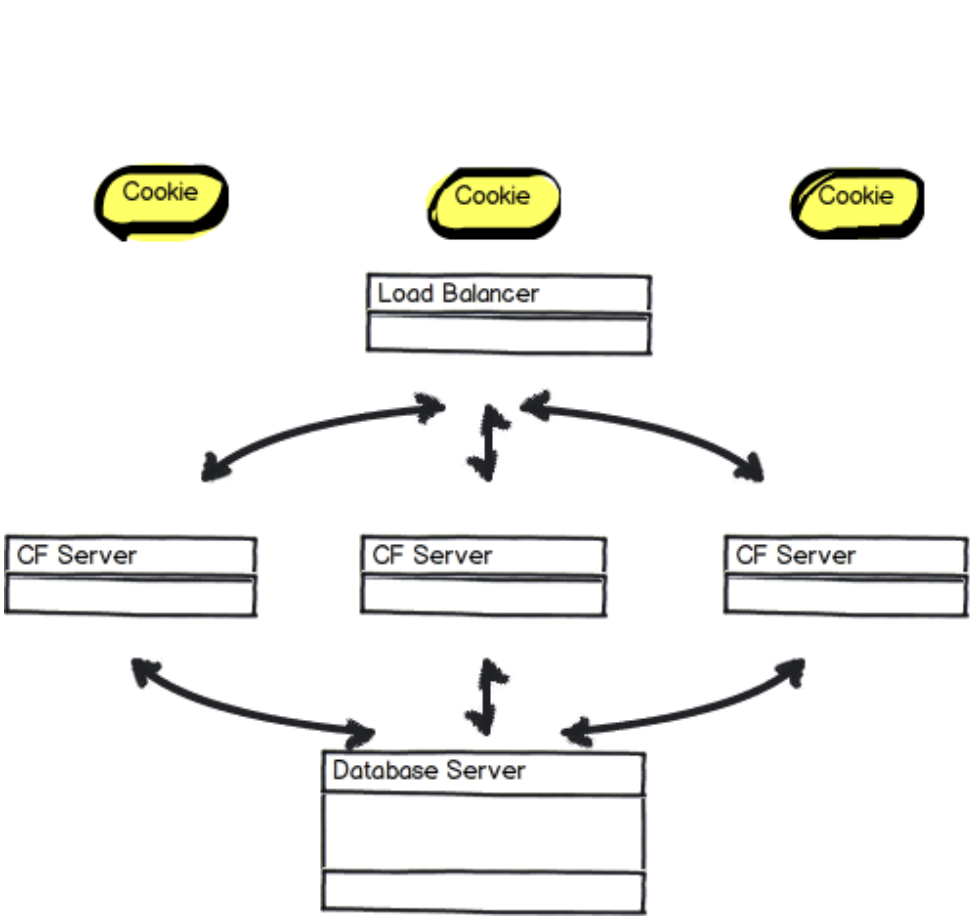
# I plugged it in, what do you mean it doesn't work?

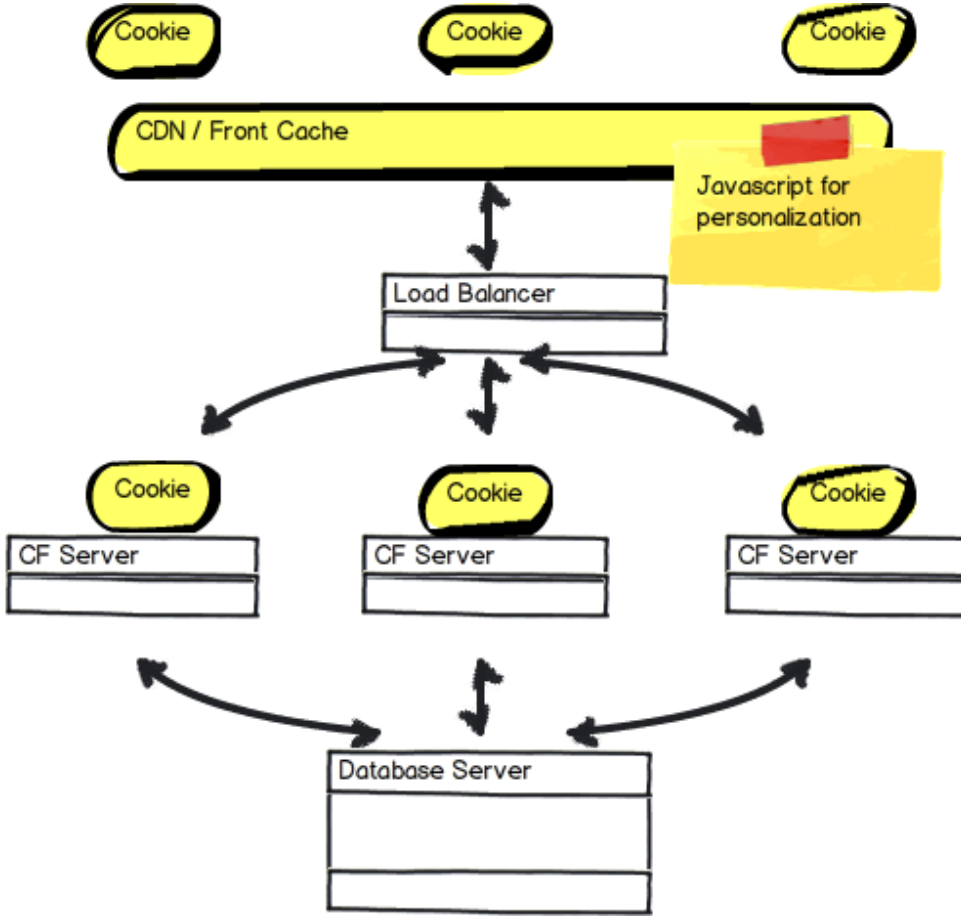
# Over-reliance on Session Scope



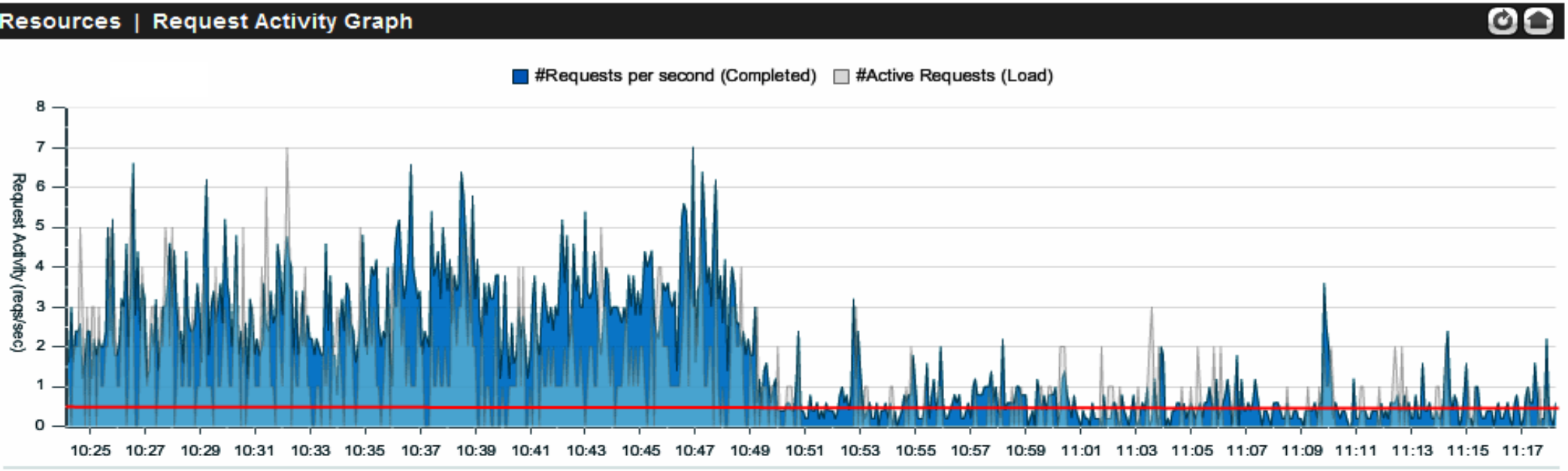



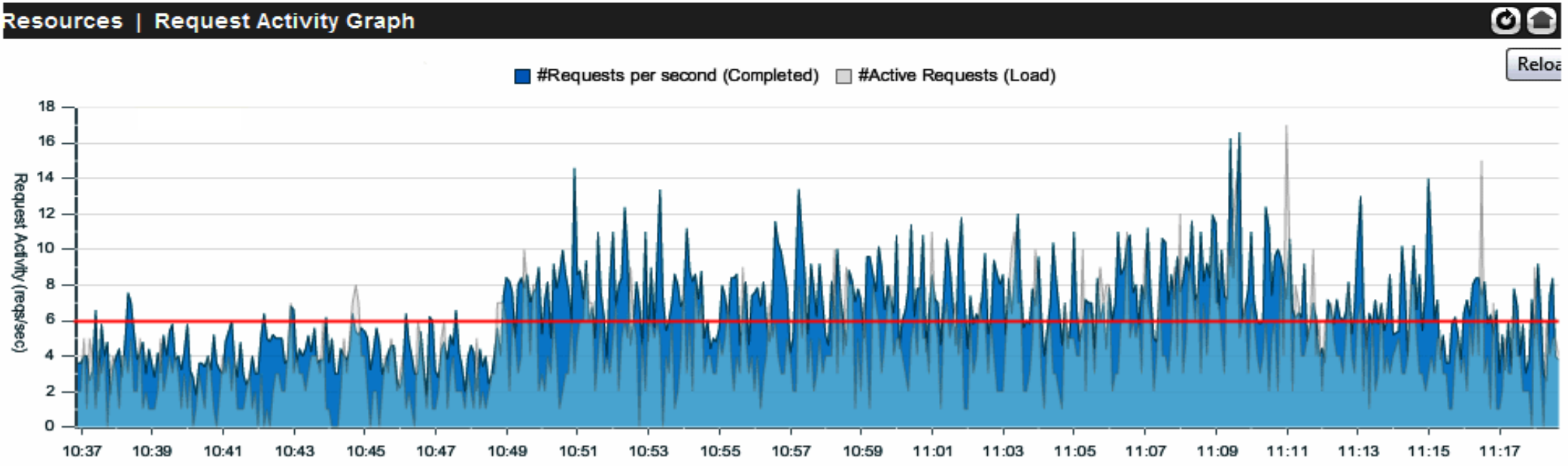
# Architect for Scalability



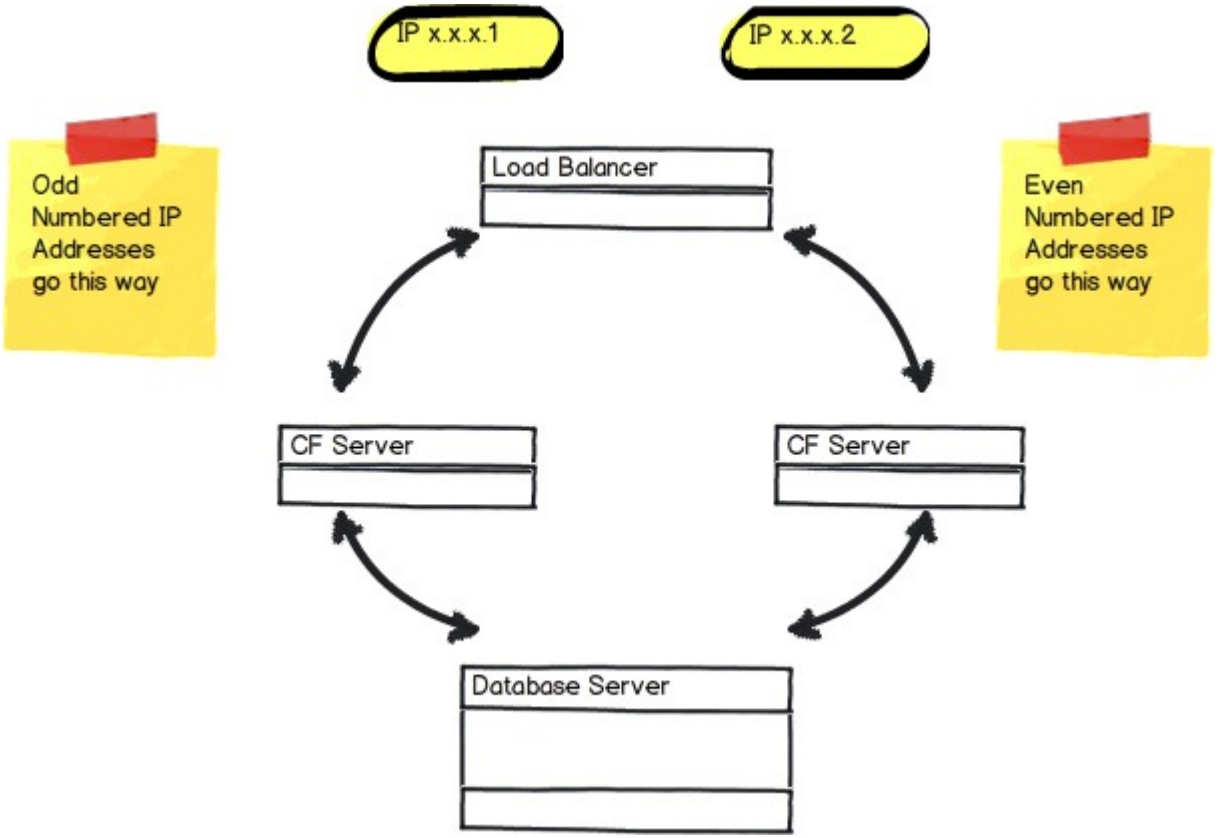



# Asymmetric Load

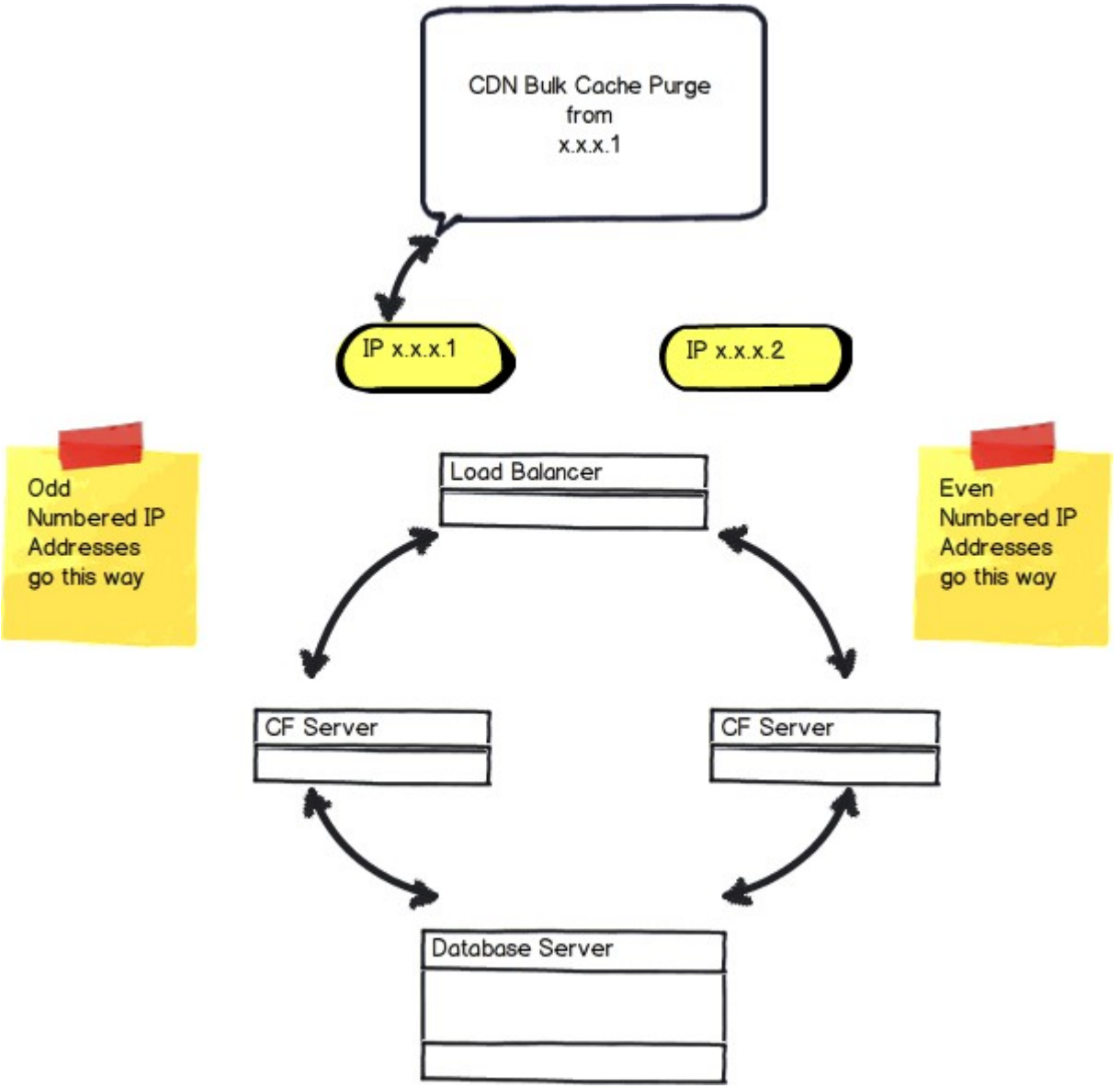


# Load Balancer with IP_Hash

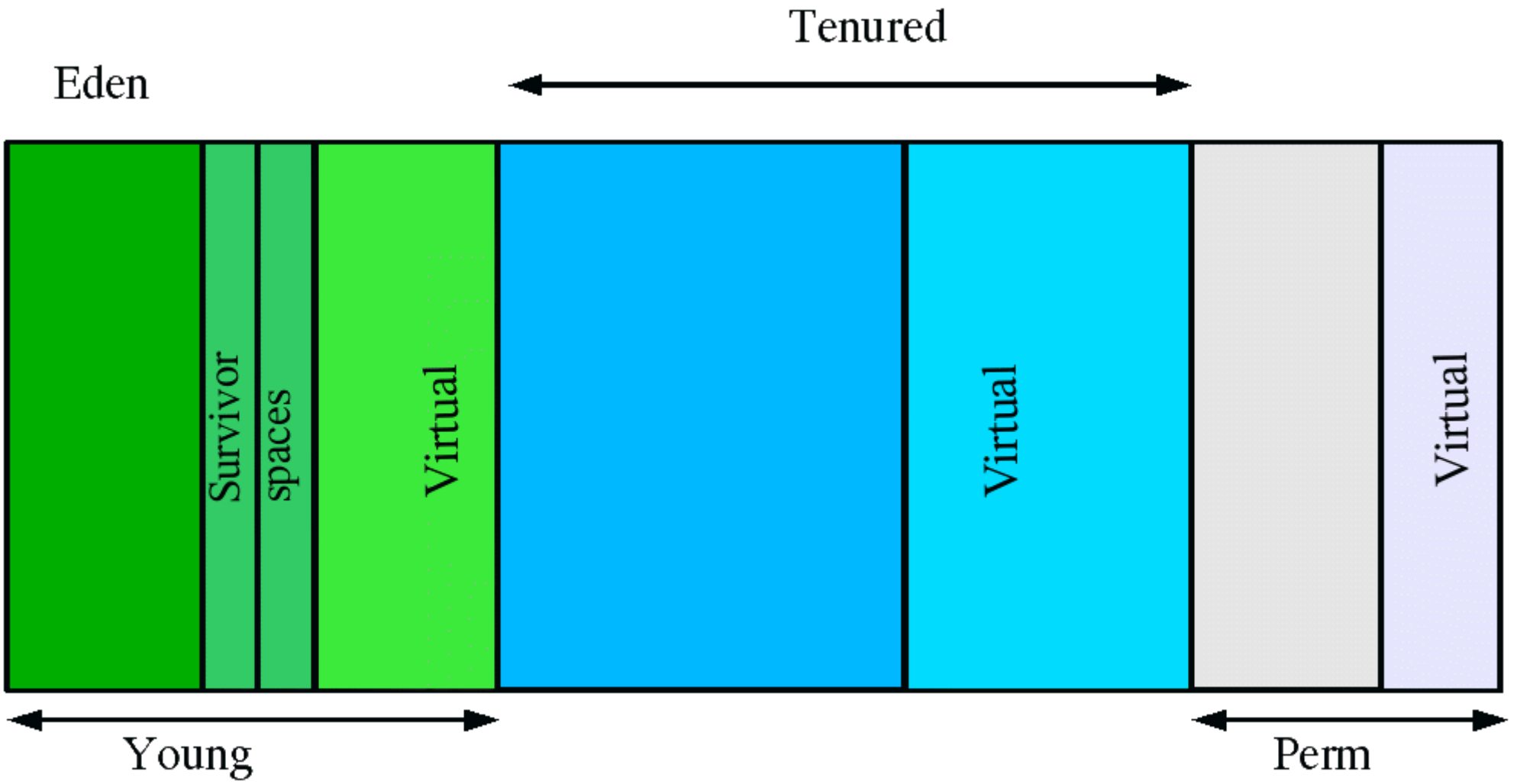


# IP_Hash with CDN Cache Purge

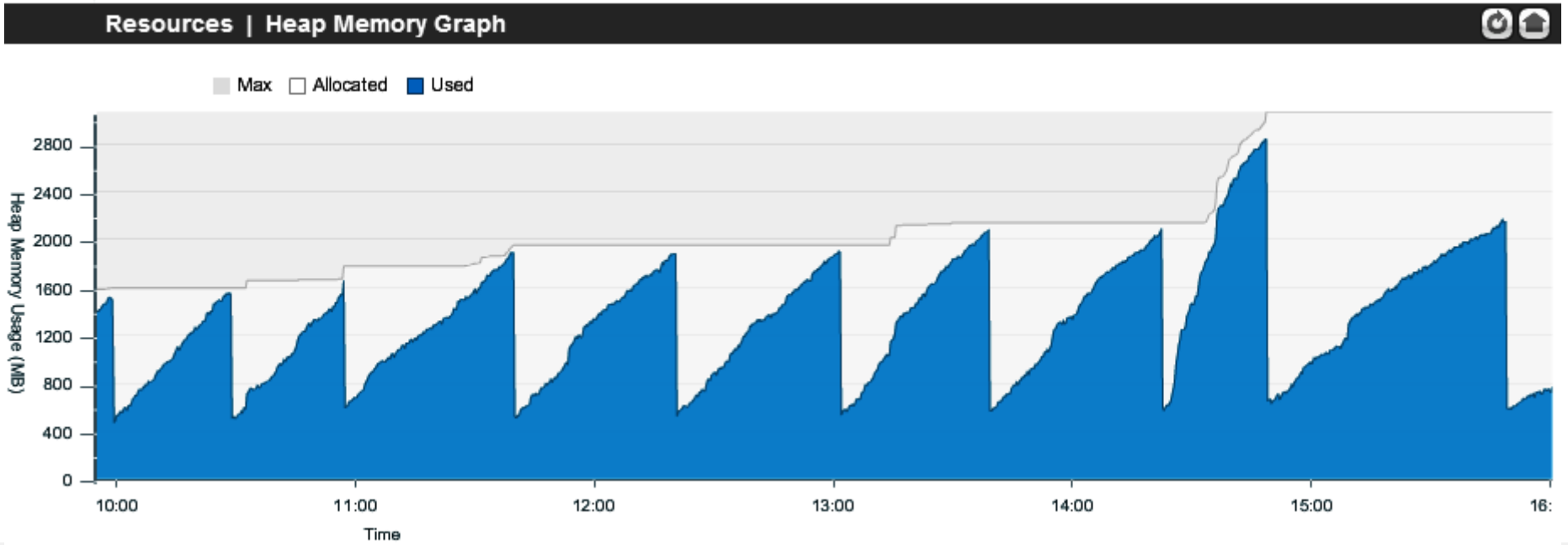


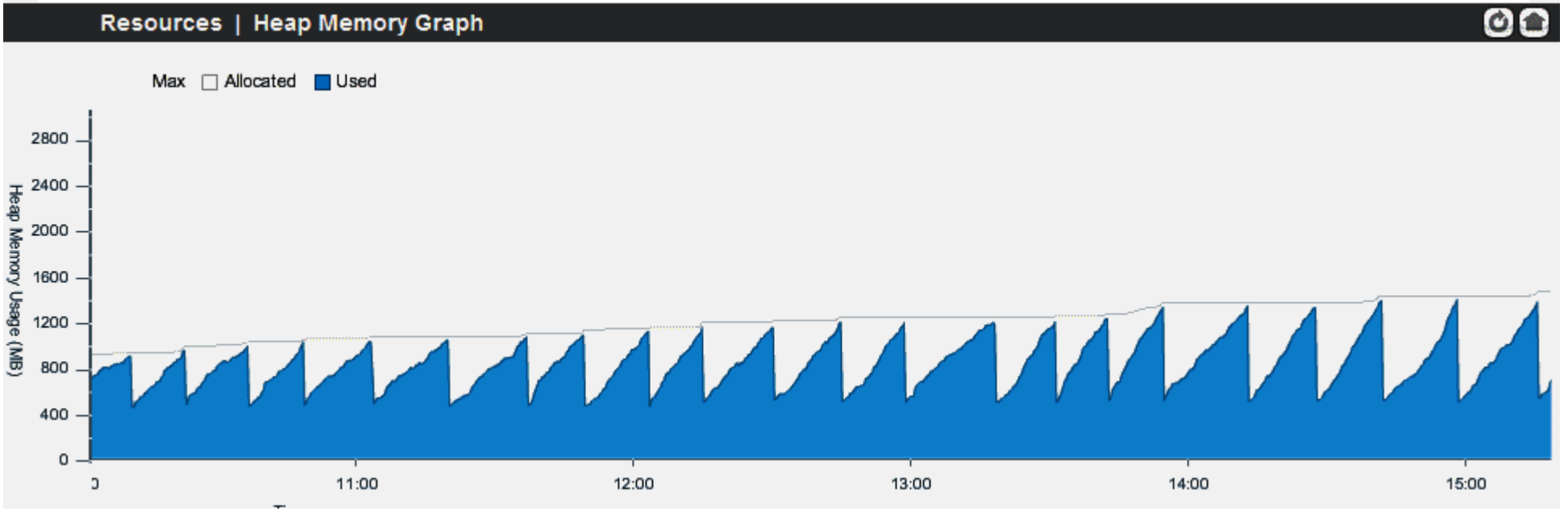
# Be mindful of garbage

# The progression of Garbage

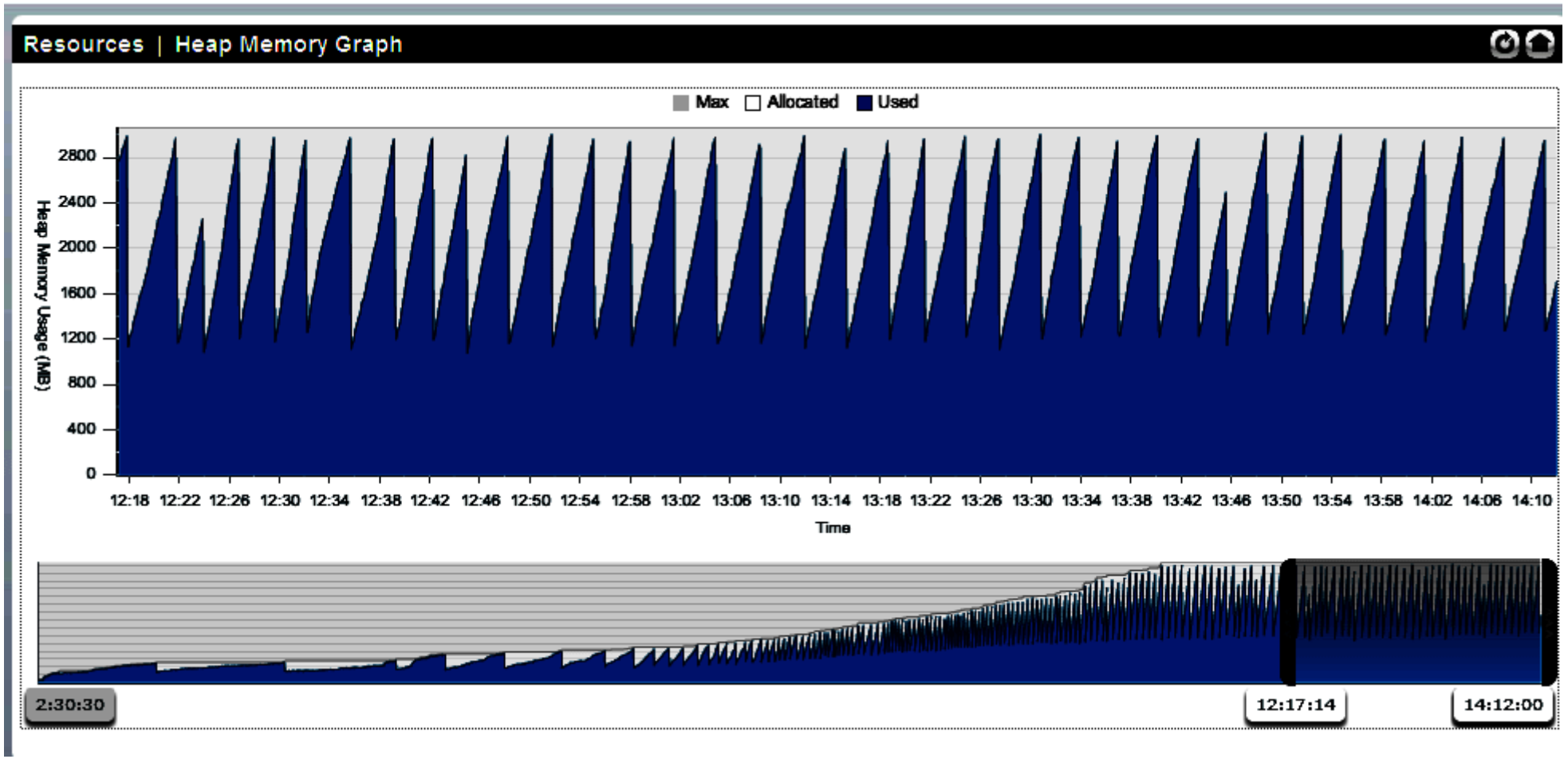


# Memory Usage



# Death Spiral

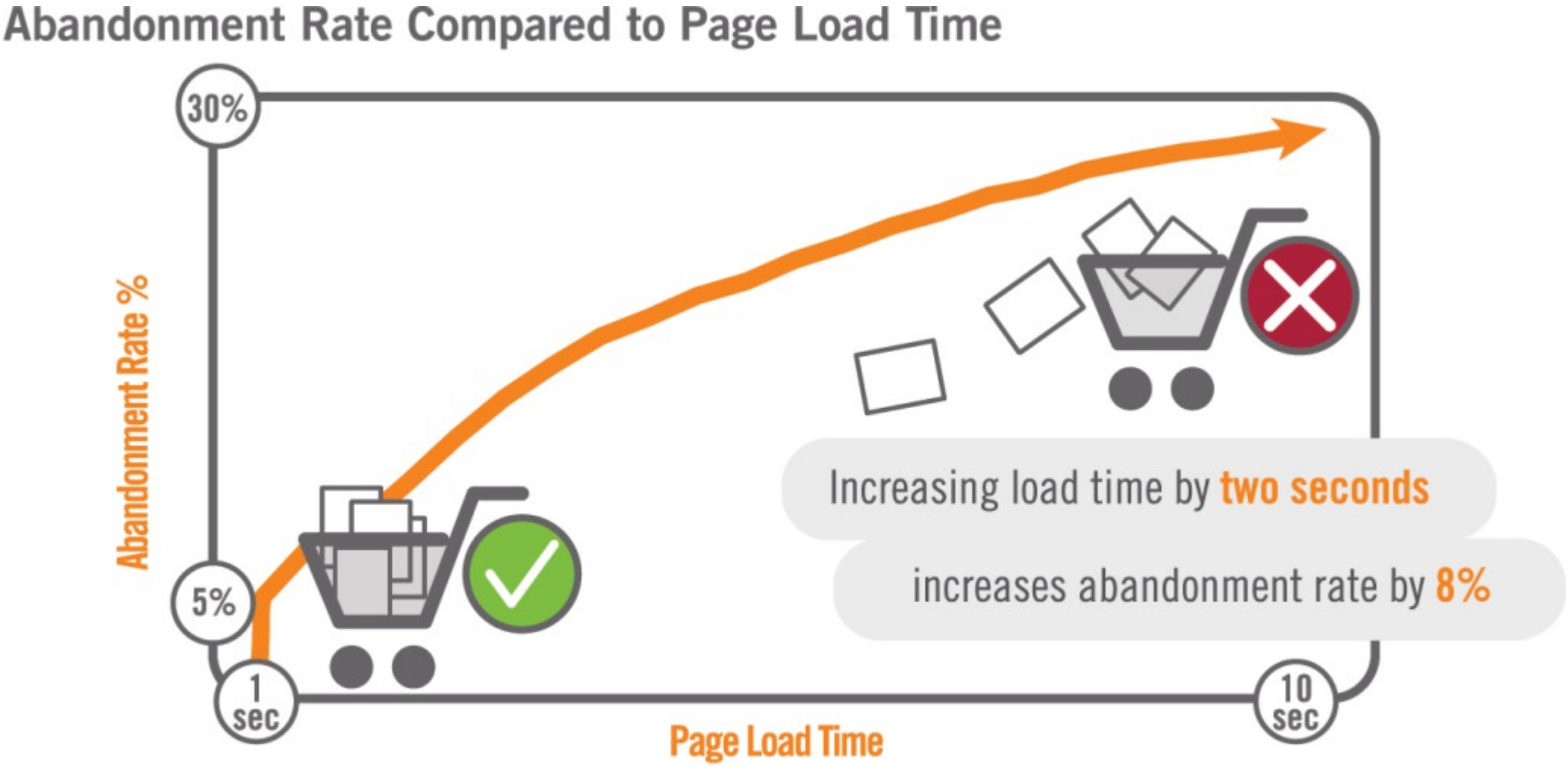



THE UNITED STATES OF AMERICA
100
G 16
Secretary of the Treasury
ONE HUNDRED DOLLARS
100

# Time is Money

| Finished | Ret.Code/IP | ID | URL/*Parameters* | Time(ms) | Memory(KB) |
|---|---|---|---|---|---|
| 14:01:27.877 | 200 | 107344 | [redacted]cfm/order-form? | 14,131 | Cur:(58%)1,847,049 |
| 29-Aug-2012 | 10.28.4.248 | jrpp-48 | [redacted] | 340 | Free:1,294,454 |
| 14:23:12.667 | 200 | 114191 | [redacted]cfm/order-form? | 18,123 | Cur:(51%)1,617,818 |
| 29-Aug-2012 | 10.28.4.248 | jrpp-36 | [redacted] | 580 | Free:1,523,685 |
| 14:23:08.340 | 200 | 114176 | [redacted]cfm/order-form? | 17,421 | Cur:(50%)1,595,674 |
| 29-Aug-2012 | 10.28.4.248 | jrpp-52 | [redacted] | 430 | Free:1,545,829 |
| 13:44:47.606 | 200 | 102258 | [redacted]cfm/order-form? | 16,673 | Cur:(46%)1,462,563 |
| 29-Aug-2012 | 10.28.4.248 | jrpp-9 | [redacted] | 350 | Free:1,678,940 |
| 13:44:49.540 | 200 | 102285 | [redacted]cfm/order-form? | 16,489 | Cur:(47%)1,480,558 |
| 29-Aug-2012 | 10.28.4.248 | jrpp-15 | [redacted] | 470 | Free:1,660,945 |
| 13:44:46.139 | 200 | 102245 | [redacted]cfm/order-form? | 16,438 | Cur:(46%)1,450,332 |
| 29-Aug-2012 | 10.28.4.248 | jrpp-46 | [redacted] | 460 | Free:1,691,171 |
| 13:44:32.95 | 200 | 102074 | [redacted]cfm/order-form? | 16,062 | Cur:(43%)1,371,537 |
| 29-Aug-2012 | 10.28.4.248 | jrpp-34 | [redacted] | 500 | Free:1,769,966 |
| 14:55:22.508 | 200 | 123949 | [redacted]cfm/order-form? | 15,967 | Cur:(27%)876,554 |
| 29-Aug-2012 | 10.28.4.248 | jrpp-34 | [redacted] | 320 | Free:2,264,949 |
| 13:48:25.400 | 200 | 103689 | [redacted]cfm/order-form? | 15,751 | Cur:(22%)714,625 |
| 29-Aug-2012 | 10.28.4.248 | jrpp-39 | [redacted] | 430 | Free:2,426,878 |
| 11:40:22.221 | 200 | 66304 | [redacted]/index.cfm/order-form? | 15,593 | Cur:(48%)1,529,138 |
| 29-Aug-2012 | 10.28.4.248 | jrpp-43 | [redacted] | 300 | Free:1,612,365 |
| 13:53:00.526 | 200 | 105025 | [redacted]cfm/order-form? | 15,569 | Cur:(37%)1,167,054 |
| 29-Aug-2012 | 10.28.4.248 | jrpp-24 | [redacted] | 360 | Free:1,974,449 |
| 14:14:07.147 | 200 | 111428 | [redacted]cfm/order-form? | 15,384 | Cur:(63%)1,980,957 |
| 29-Aug-2012 | 10.28.4.248 | jrpp-35 | [redacted] | 420 | Free:1,160,546 |
| 13:18:37.227 | 200 | 94072 | [redacted]cfm/order-form? | 15,328 | Cur:(32%)1,035,049 |
| 29-Aug-2012 | 10.28.4.248 | jrpp-47 | [redacted] | 460 | Free:2,106,454 |
| 13:52:41.871 | 200 | 104937 | [redacted]cfm/order-form? | 15,045 | Cur:(34%)1,094,007 |
| 29-Aug-2012 | 10.28.4.248 | jrpp-25 | [redacted] | 350 | Free:2,047,496 |
| 13:25:05.277 | 200 | 96152 | [redacted]cfm/order-form? | 14,903 | Cur:(58%)1,843,325 |
| 29-Aug-2012 | 10.28.4.248 | jrpp-29 | [redacted] | 750 | Free:1,298,178 |
| 13:44:52.299 | 200 | 102333 | [redacted]cfm/order-form? | 14,738 | Cur:(47%)1,500,936 |
| 29-Aug-2012 | 10.28.4.248 | jrpp-53 | [redacted] | 390 | Free:1,640,567 |
| 13:47:22.365 | 200 | 103385 | [redacted]cfm/order-form? | 14,581 | Cur:(61%)1,942,405 |
| 29-Aug-2012 | 10.28.4.248 | jrpp-1 | [redacted] | 250 | Free:1,199,098 |
| 13:48:12.859 | 200 | 103638 | [redacted]cfm/order-form? | 14,522 | Cur:(67%)2,107,508 |

# Time is Money




Source: Gomez Real-User Monitoring
- 250+ customers
- 100,000,000+ page measurements

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# Thanks

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