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High Performance dotCMS

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Overview

- OS/Hardware
- Clustering
- Java
- Tomcat
- dotCMS Settings
- Page Design

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Hardware

good hardware = good performance

Hardware is the cheapest performance tweak you can do

Virtualization can be done, but there is a significant performance impact. Same holds true for db server… Test!

Note about the cloud: Amazon's largest "Cluster CPU Mega Instance" is only equal to a dual Xeon Server.

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Clustering

dotCMS has been developed to scale horizontally

dotCMS Nodes (once cache is loaded) share nothing on page views.

Adding nodes to a cluster can improve performance almost linearly

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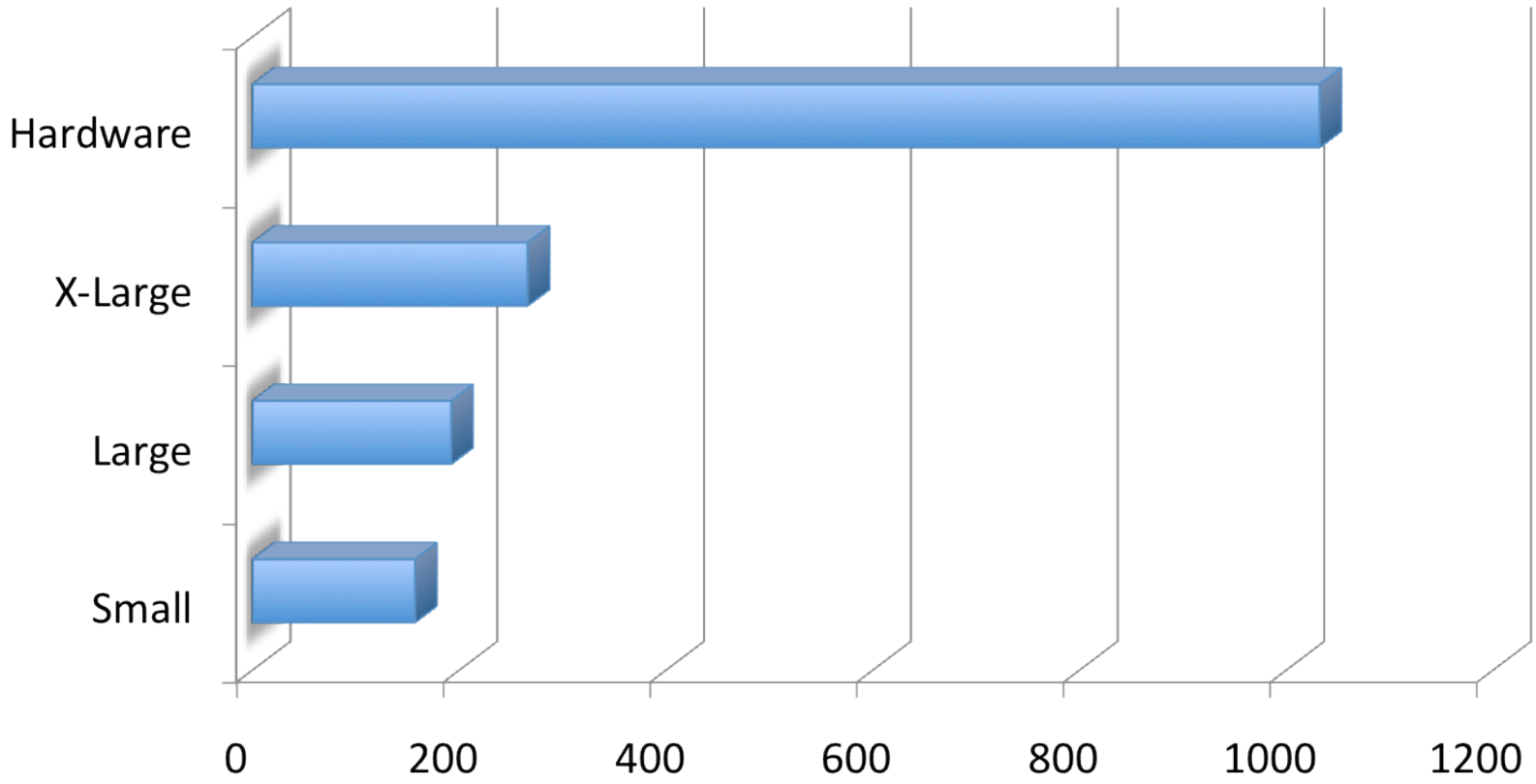
Hardware vs. Amazon Instances (hits per sec)



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#1 : Hardware

I/O is critical for dotCMS performance:

- H2 Cache
- Lucene
- Logs

Make sure the /dotCMS/dotsecure directory and the /assets directory are on fast disks and the log files are on separate partitions/disks

SSDs – anecdotal evidence is that these can make a SERIOUS improvement in performance.

For more on SSDs, see (warning, bad language):
http://www.livestream.com/oreillyconfs/video?clipId=pla_3beec3a2-54f5-4a19-8aaf-35a839b6ecaa

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Hardware

DB setup is important to dotCMS

We generally recommend a dedicated DB server (dotCMS can still pull and display data from other databases)

Make sure your DB is tuned and performant before launching your site.

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Java

Java has tons of performance tweaks…

-XX:+UseStringCache

-XX:+OptimizeStringConcat

-XX:+UseFastAccessorMethods

-XX:+AggressiveOpts

-XX:+UseLargePages

-server, etc…

Java

Unfortunately, these provide little to improve dotCMS responsiveness.

Couple of caveats:

-XX+UseLargePages has the benefit of preventing java from being swapped from memory.

-XX:PermSize should be increased if lots of plugins or 3rd party libs are used in dotCMS

Java

Garbage collection:

- GC logging can be used to identify problems on production systems
- The default GC is still our choice – it works as well or better than almost any other garbage collection system, ever…

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Java

-Xmx !

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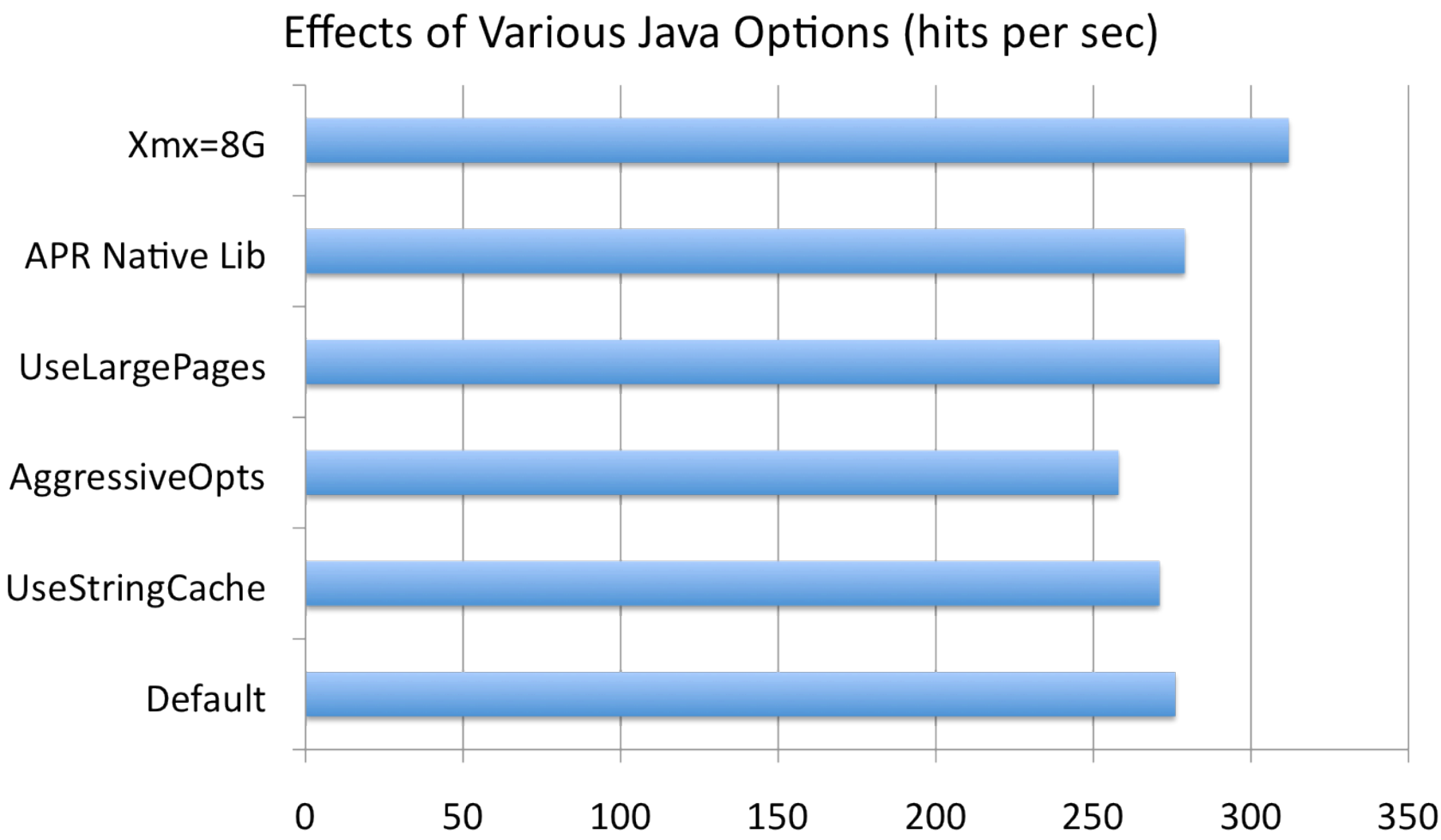

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Tomcat

Some tomcat best practices:

- Up the maxThreads (~400)
  - Note, you will need a possible db connection for each thread
- lower the default connectionTimeout (3000)
- APR (Apache Portable runtime) does not make much of a difference
- For other tuning ideas, see: http://blog.monitis.com/index.php/2011/08/06/18-java-tomcat-application-optimization-tips/

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If you are running with more than 6GB, use the large cache setting

Make sure your hostnames are correct – don't rely on the default host to catch traffic. Results in a 4x

Delete old assets regularly

Turn off unused functions– ratingThread, clickstream tracking, calendar reminder, dashboard

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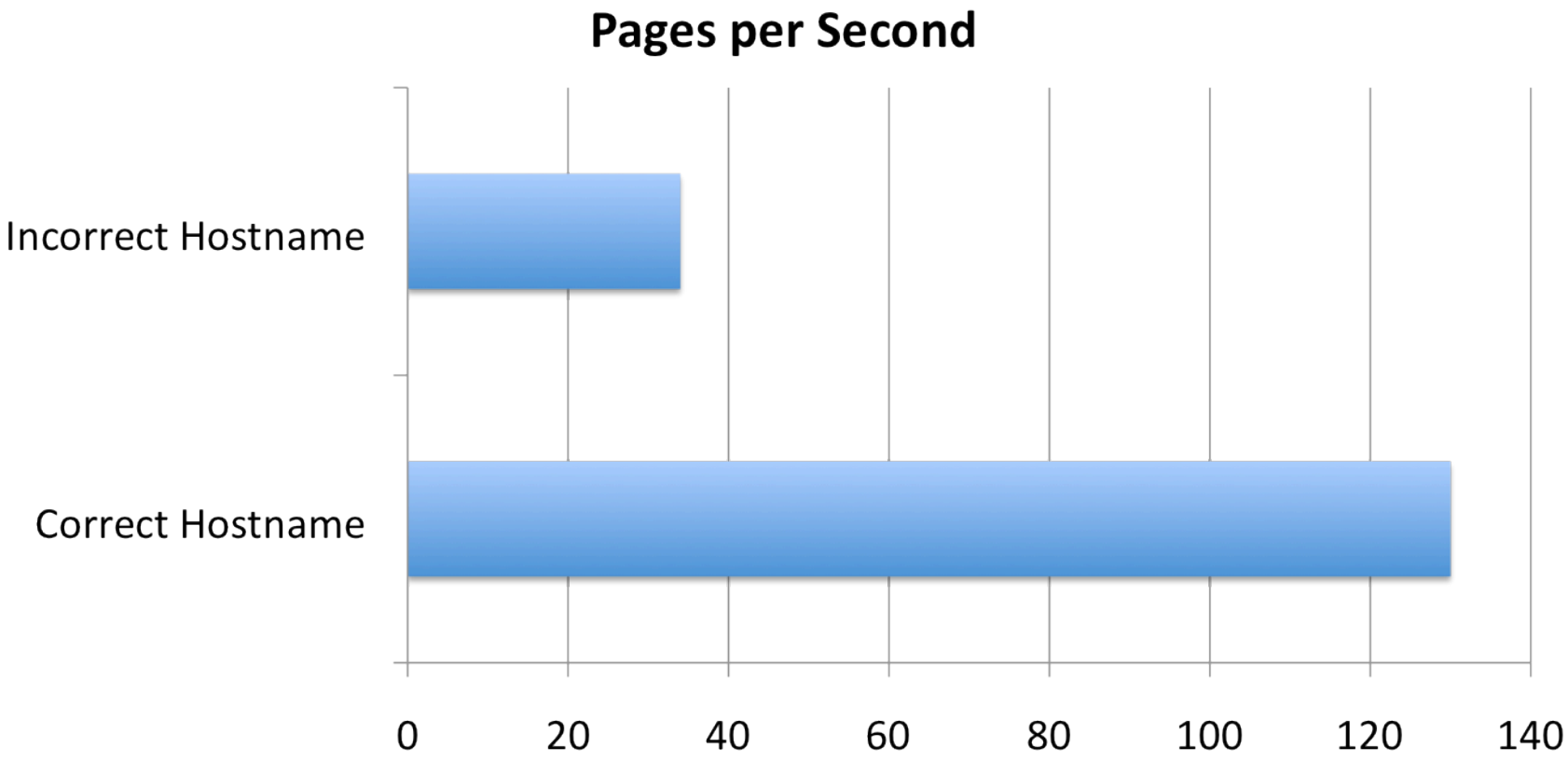
Incorrect Hostnames



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Page Design

Avoid un-cached Remote Calls – unless you can verify the performance of the remote call and network, use JavaScript instead

Replace all #pullContent uses with $dotcontent

Dynamic pulls and includes have a cost. Use the caches to offset this

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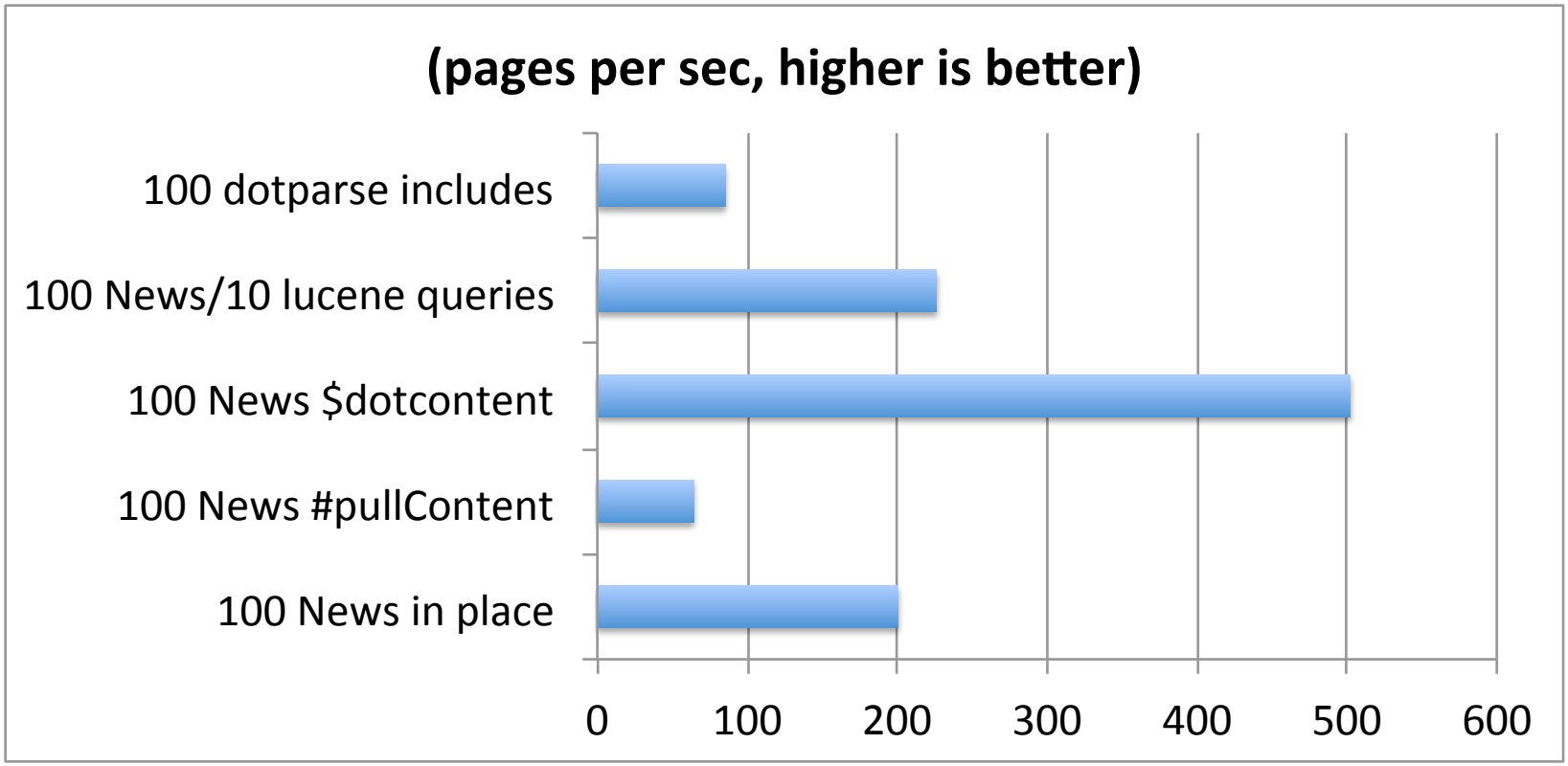
Page Design and Performance



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Page Design

Use #dotcache – takes some thought to select the proper key

```
#dotcache(”cache-heavy-pull", 60)
    …… my heavy pull……
#end
```

Use the page cache – takes some thought to design pages to take advantage of this

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Parting Words

Test, iterate, Test again

ab for ad-hoc tests

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