


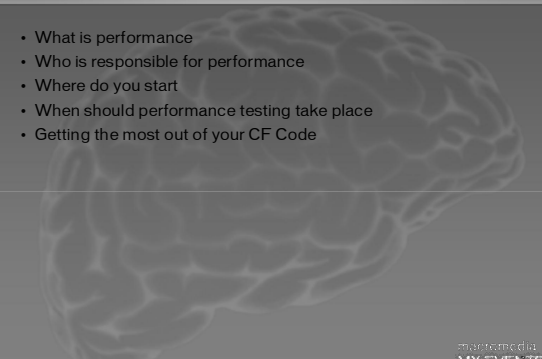
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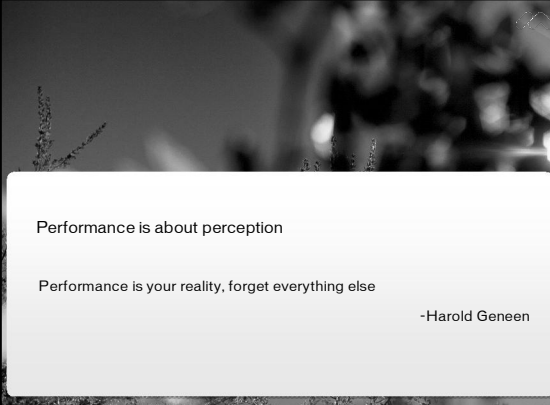
ColdFusion & Performance
Lucas Sherwood - Macromedia
Experience Matters

What you are about to see

- What is performance
- Who is responsible for performance
- Where do you start
- When should performance testing take place
- Getting the most out of your CF Code



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Performance is about perception

Performance is your reality, forget everything else

-Harold Geneen

What is Performance

- Perception
 - Site is slow
 - Page is very slow
 - Logging in takes ages
- Reality
 - Real Facts/metrics
 - Pages per day
 - Page load times
 - Database requests per page
 - Database request time
 - Data transferred
 - Available bandwidth

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What affects performance

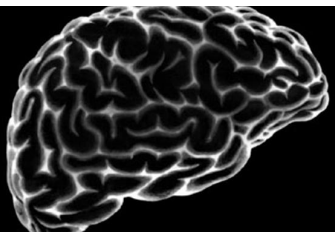
- Hardware
 - Server speed
 - Available resources
 - Network infrastructure
- Software
 - Operating system performance tuning
 - JVM (not all JVMs are equal)
- ColdFusion
 - Stand alone or J2EE
 - Clustered or single servers
 - Cached templates
 - Database drivers
- Your application

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Who is responsible for performance

- IT Infrastructure
 - If there is no infrastructure, there is no application
- Project Architects
 - Planning for performance in the design phase will ensure that it is considered at every step of the way
- Project Managers
 - Responsible for insuring that performance goals are set and are achievable
- Developers
 - Writing in performance, in every line of code
- Quality Assurance and Testing team
 - If it makes it past QA then no one is responsible

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Where do you start?
Traditional performance analysis and tuning
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Performance Analysis and Tuning (PA&T)

- Test till destruction
- Finds breaking points under extreme load
- Sets baseline for application performance

How?

- Take developer use cases - turn into load testing scripts
- Execute scripts and incrementally add users till the server stops
- Back off load to approximately 80% load and tune server
- Retest after every change

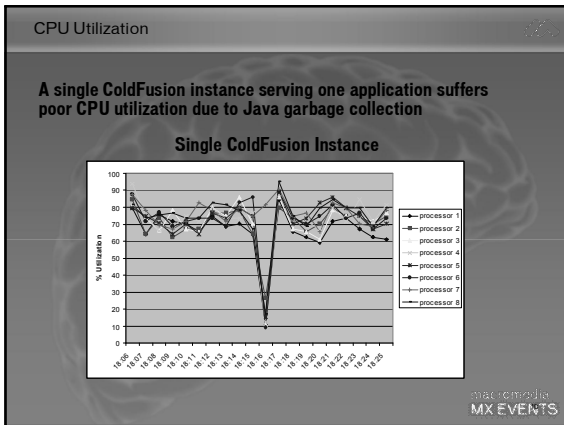
- Now fix the code!
 - Don't just target the slowest running, look for largest delta change
 - Retest after every change

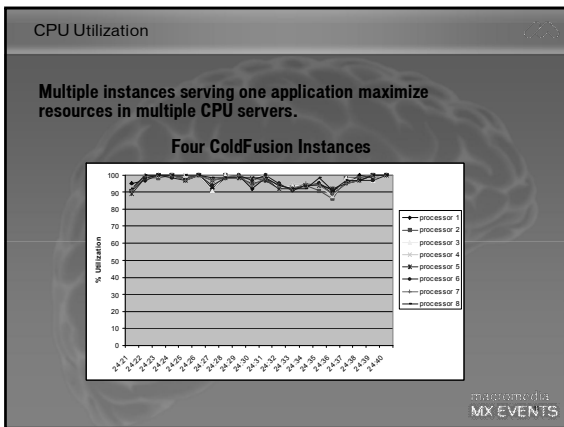
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Tuning your Server

- JVM Settings
- ColdFusion settings
 - Simultaneous requests
 - Must be set in conjunction with load testing
 - Database settings
- CFMX on J2EE & Multiple instances
 - Not so scary
 - Provides instance level fault tolerance
 - Increased JVM performance

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Your Application
Tuning your code

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Slow page analysis - Database

What causes slow code?

- Database Access
 - Turn on debugging and look at your DB request times and again with the server under load - Which queries have the largest delta change?
 - Let the database do what databases do best!
 - Use CFQueryParam
 - Not all databases are created equally nor are drivers
 - Know what your database is returning

```

<cfquery datasource="#request.dsn#">
SELECT * FROM tblblogcomments
</cfquery>

VS

<cfquery datasource="#request.dsn#">
SELECT id,entryidfk,name,email,comment,posted
FROM tblblogcomments
</cfquery>

```

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Slow page analysis

What causes slow code?

- File I/O
 - All file I/O is slow - there is nothing you can fix here
 - Normally you will parse the data before you use it
 - Could you store it elsewhere?
- If you must use file I/O consider caching
 - How often does this information change?

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Slow page analysis

What causes slow code?

- Looping
 - Make sure that the loop has a fixed end
 - looping over an unknown number will have an unknown affect on performance
 - Break out as soon as you can <cfbreak>
 - Only loop where you need to
- Scoping - CFMX will traverse the scope tree to find a variable
 - Arguments, Variables, CGI, URL, Form, Cookie, Client
 - No Scope = Slower code

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Slow page analysis

What causes slow code?

- Lists
 - Use arrays instead of lists (they perform better in Java)
 - Always loop over a list to convert it into an array, not `listToArray()`
 - Don't convert something to an Array just to loop over it (you are doing it twice)

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Slow page analysis

What causes slow code?

- CFCs
 - Try not to use `CFInvoke`

```
<cfinvoke component="blog.blog"
  method="getEntries"
  returnvariable="stEntry">
  <cfinvokeargument name="entryID" value="14">
</cfinvoke>
```
 - VS

```
<cfscript>
  o = createObject("component", "blog.blog");
  stEntry = o.getEntry(14);
</cfscript>
```
 - These are both the same - unless you want to use the object again

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Slow page analysis

What causes slow code?

- Recursion
 - Can save or kill your application
 - All of the facts about looping apply
 - Test, test, test...

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Slow page analysis

What causes slow code?

- Anything External to you System
 - invoking external objects (JAVA, CFC, COM, CORBA)
 - mail servers (CFPOP, CFMAIL)
 - High performance mail spooler in CF Enterprise
 - other remote servers via HTTP/FTP
 - (CFFTP, CFHTTP, CFINVOKE for web services).
- Anything else over the wire

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Slow page analysis

What causes slow code?

- Database Access
- File I/O
- Looping
- Scoping
- Lists
- CFCs
- Recursion
- Anything external

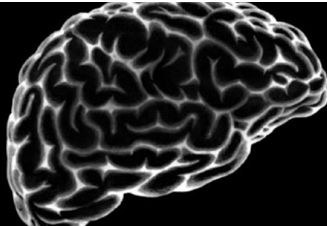
And that is just YOUR code!

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When should you test

- Test early, test often
- Start testing each module as they are built
 - CUnit (DRK3)
 - Not just functionality but performance under load!
- Test every build
 - If your app gets slower, stop developing!
- Build caching in from day one.
 - These early unit test will show where you should be caching

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To Cache or not to Cache
Where can you save time and improve the experience

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Caching options

- Query
 - Blockfactor
 - Not supported by all Databases
 - Allows CF to request multiple rows from the server at once (default is 1)
 - CachedWithin
 - Requires a timespan that defines a length that CF will keep the results cached for
 - CachedAfter
 - Requires dateTime, which if the original query is after this, then the original recordset is used.
- Page - <cfcache>
 - Caches the whole page

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Caching options

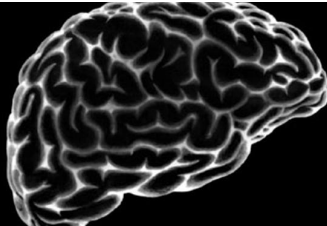
- Chart
 - Use the name attribute to grab and cache the output of CFChart
- Scope
 - Custom cache in session/application scopes
 - Handmade but can often provide both appropriate and flexible

```


<cfif NOT isDefined("application.cache.lastCached")
  OR NOW() GT dateAdd("H", 3, application.cache.lastCached)>
  <cfsavecontent variable="dataToBeCached">
    ... some slow process here ...
  </cfsavecontent>
  <cfscript>
    application.cache = structNew();
    application.cache.lastCached = NOW();
    application.cache.cachedData = dataToBeCached;
  </cfscript>
</cfif>
<cfoutput>#application.cache.cachedData#</cfoutput>

```

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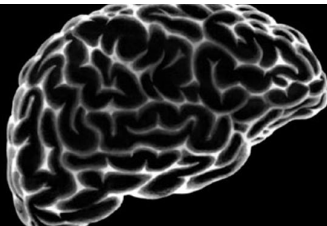


The User Experience
Perceived performance
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Not really performance but it all helps!

- The data that actually makes it to the client
 - Whitespace management and the affect on the client
 - CSS vs Tables
- Perceived performance
 - Loading times and loading order
 - <flush>
- Putting work onto the client (to flash or not to flash)
 - Request reduction
 - Faster appearance to the user (no page refresh)
 - Less load on the server = more spare capacity
 - Bandwidth reduction
 - Saves money

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Questions
Experience Matters



Questions

Thank you for listening - Please fill in your feedback forms!

Resources

- CF Performance Brief
 - http://www.macromedia.com/software/coldfusion/whitepapers/pdf/6_1/cfm61_performancebrief.pdf
- CF Performance Tips
 - http://www.macromedia.com/support/coldfusion/ts/documents/cfm_perftips.htm
 - Platform specific performance tuning
 - Win <http://www.macromedia.com/support/coldfusion/ts/documents/in12277.htm>
 - UNIX <http://www.macromedia.com/support/coldfusion/ts/documents/in18229.htm>
- CFMX Coding Guidelines
 - http://livedocs.macromedia.com/wtg/public/coding_standards/contents.html

Tools

- CFUnit DRK3
 - <http://www.macromedia.com/devnet/mx/coldfusion/articles/cfunit.html>

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