CFMythBusters:
Countering Some Conventional Wisdom

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Topics

- Introduction
- CF Update/Hotfix Issues
  - Are you managing it well?
- Page/Site Performance Issues
  - Sure you’re running the latest?
- Client Variable Issues
  - Are you not “using” them?
- CFQUERYPARAM Issues
  - Should you always use it?
- Query Caching Issues
  - Are you managing it well?
- CFLOCK Issues
  - The obvious and the subtle
- Getting Help
  - Sure about choices?

My Goal: I hope that everyone would learn at least something new and surprising. Let me know by the end!
About Charlie Arehart

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12 yrs CF experience (25 in Enterprise IT)
  • Member, Adobe Community Experts
  • Certified Adv CF Developer (4–8), Cert. Adobe Instructor
  • Writer in FAQU, Adobe DevCenter, CommunityMX, CFDJ, more
  • Contributor to all 3 Ben Forta CF8 books
  • Run the 1800-member Online ColdFusion Meetup (coldfusionmeetup.com)
  • Living in Alpharetta, Georgia (Atlanta)

Web home at www.carehart.org
  • Host ~300 blog entries, 70+ articles, 80+ presentations
  • UGTV: recordings of 300+ presentations by ~200 speakers
  • CF411.com – 700+ tools/resources in 100+ categories
  • Consulting: available for troubleshooting, tuning; training
    • Remote or on-site
Introduction
Not the common myths

- Not here to discuss old saws like
  - “CF is dead”, “CF isn’t scalable”, etc
    - I assume you already know how to refute those myths

- Focus is on those shared *within* the CF community
  - Which may lead to people to:
    - Avoid using some features
    - Misuse them
    - Misunderstand implications of decisions
    - Mislead others…
Why the confusion?

- Generally comes from incomplete understanding
  - Info is there. Just need to keep up
    - Docs, books, blogs, mailing lists, etc
  - Hard for many to do on one topic, let alone many

- So, what about this talk...
About the talk

- No time here to explain underlying concepts
  - Nor demo everything
  - Hope to challenge preconceived notions
    - Point you in the direction of learning more
- Most topics apply to any version of CF
  - And could apply to Railo, OpenBD, etc
- Will start with most generic things
  - And work to more specific
  - Will throw in some bonus sidebar info as well
CF Update/Hotfix Issues

Sure you’re running the latest?
CF Update/Hotfix Issues

- T/F: When we downloaded CF (7 or 8) to install it, we got the absolute latest available version
  - False:
    - Hotfixes are rolled into cumulative hotfixes
    - Cumulative hotfixes are only rolled into updaters (like 7.01, 7.02, 8.01)
    - Between updaters, you need to look at and consider applying those hotfixes or CHFs
  - See:
    - “ColdFusion hot fixes (MX 7 through MX 7.02)”
    - “ColdFusion Hot Fixes (ColdFusion 8 and later)”
CF Update/Hotfix Issues

- T/F: When we apply an updater, we get all the latest hot fixes updates available at that time
  - False:
    - Sometimes some features are left for you to add
    - Example: JDBC driver updates in 7.02
T/F: When we apply a cumulative hot fix, it includes all the hotfixes available at the time
   ◦ False:
     • Often some existing hotfixes must still be applied manually even after CHF
     • Like the file upload fix in 7.02
       • More on that at http://www.adobe.com/go/kb401239

T/F: CF 8.01 has had just one CHF
   ◦ False:
     • There was a CHF 2 for 8.01
     • Released in Oct 08, not posted until February
       • http://www.adobe.com/go/kb403781
Page/Site
Performance Issues

Is CF really a black box?
Let’s discuss some problems and “solutions”

T/F: We set page timeouts (in admin or by CFSETTING), so CF will always terminate pages when they exceed that duration

- False:
  - CF can’t interrupt pages in java native method
  - Common in tags that talk to resources outside of CF/jvm:
    - cfquery, cfhttp, cfinvoke of web svc, call to com object, and more
- So page may run “forever” and seem hung, or...
Page/Site Performance Issues (cont.)

- T/F: When CF does timeout page, it will tell us the tag that caused it to exceed that duration
- Generally not:
  - In above instances, will terminate request after returning, and so reported on next tag that would have been executed
  - Ever wondered about report of cfoutput exceeding time limit?
Page/Site Performance Issues (cont.)

- T/F: We can watch log of pages exceeding timeout to know if we have long-running pages
  - **Not quite:**
    - Only reports when they complete
    - Same problem in web server logs
    - Of no use for post mortem if request was running when CF crashed (not in the logs)
    - Also not much use as measure of what’s going on right now
  - **Can** get email notification when pages run beyond a certain time using monitoring tools
    - Which also let us better monitor long-running pages...
Page/Site
Performance Issues (cont.)

- T/F: If CF pages are not responding/slow, CF must be down/hung
  - Maybe not:
    - Could be web server
      - Try accessing static files/images (beware browser cache)
      - Try accessing CF via built-in web server (if enabled)
    - Or could be that some CF requests are hung, while some (perhaps few) are getting through, like too few tellers

- So how can we tell if requests are running/queued?...
Sidebar: So how can we see whether CF requests are running/queued?

- CFSTAT, Perfmon
  - simple counters; not avail. in Multiserver mode
- JRun metrics
  - must be enabled; supported in CF 6, 7, 8
- CF8 Server Monitor (CF8 Enterprise)
  - See my 4-part series starting at http://www.carehart.org/articles/#2007_2
- FusionReactor, SeeFusion (CF 6, 7, 8)
  - Fusion-reactor.com, seefusion.com
  - My article on FR at http://www.carehart.org/articles/#2008_6
- Let’s talk about the CF8 Enterprise Server Monitor…
Page/Site
Performance Issues (cont.)

- T/F: CF 8 Enterprise Server Monitor must be “enabled” to be useful
  - False:
    - Many features are useful even with no “start” buttons
  - Important to realize, as some dismiss the Server Monitor for fear of “overhead”
    - The “start memory tracking” has high overhead, yes
      - But I’ve worked with some customers who, when I arrived, had it enabled in production!
    - But there is much “zero-cost” information
      - See my articles for more
Page/Site
Performance Issues (cont.)

- T/F: Once I close the Server Monitor interface, it has no more overhead
  - False:
    - The interface is just that, an interface!
    - The “start” buttons, once enabled, cause the engine to gather the data they request all the time
    - Will even remain enabled over restarts
    - All this can be a good thing, but...
  - I’ve come into shops that were suffering because of the “start memory tracking” being enabled
    - But they did it days/weeks/months ago and never re-opened the Server Monitor, assuming it was “off”
Page/Site Performance Issues (cont.)

- Could do whole session on CF8 Server Monitor surprises
  - Pages showing Session, Application, Server, Variable, and other scopes show only simple vars
    - Unless Start Memory Tracking is turned on
  - Alerts don’t fire unless start Monitoring is enabled
  - Requests don’t appear in Active Requests unless Start Monitoring is enabled
  - In Memory Usage Summary, the top line report of “Total Memory” is not Max memory (-Xmx) but allocated!
    - Similarly, the memory alert uses that (incorrectly) for its ratio
  - And more
Page/Site
Performance Issues (cont.)

- T/F: Even knowing a request is hanging, there’s no way to know exactly what it’s doing
  - **False:**
    - Use the monitoring tools (CF8, FR, SF) to view request details, including optional “stack trace”
    - Shows exact line number of code running at that moment
  - **For CF8 Server Monitor, must “start profiling”**
    - Then click on running request to view stack trace
      - shown in middle of request detail page
  - **For FusionReactor, SeeFusion**
    - Click available stacktrace button on request to see its stack trace
  - Demo
T/F: A stack trace and a thread dump are basically the same thing
  ◦ False:
    • Thread dump is a stack trace of all threads
    • Can also request thread dump using the 3 monitors
      • CF 8 Server Monitor: Shown via “Snapshot” feature
        • Which can manually generated, or sent in alert email
      • FusionReactor: available button
        • Or send in crash protection notification email
      • SeeFusion: available button
        • Can also generate if CF started from command line
          • See http://kb2.adobe.com/cps/183/tn_18339.html
            • For that and also more on using stack traces, thread dumps
          • See also http://www.seefusion.com/seestack/
            • to help analyze stack dumps
Back to some more generic things…

T/F: By keeping an eye on the [cf]/logs directory, we can know of all CF errors
  ◦ False:
    • Some reported only in [cf]/runtime/logs
      • Or [jrun4]/logs on multiserver deployment
  ◦ Also, keep an eye on Event log (on Windows)

Sidebar T/F: CFStat reports avg request/db time of all requests in last sample interval
  ◦ False:
    • reports only on last 2 requests!
T/F: There is no way to track how many CF sessions are currently active

- False:
  - There are many ways to see count of current sessions
    - JRun Metrics (but this tracks only J2EE session use)
    - CF 8 Server Monitor (no need for any "start" buttons)
    - Can even report what’s in each session, how long it’s lived, and has left to live
      - Reports complex vars only if “Start Memory Tracking” on coldfusion.runtime.SessionTracker undocumented object
    - See Mark Lynch’s ServerStats for simple tool using this

- Demo
Client Variable Issues

Sure you’re not “using” them?
Client Variable Issues

- T/F: We don't “use” client variables, so we don’t need to worry about them
  - False:
    - If you use ClientManagement=“yes” in cfapplication/application.cfc, listen up
    - If the CF Admin setting for your client variable repository (registry or database) has not checked “disable global variable updates”
      - Then each page visit by each user will update client var repository to update client.lastvisit and client.hitcount
        - Even if you never refer to them in code!
  - Spiders and bots exacerbate this problem
    - Even if you do “disable” them, still written for pages that do read/write client variables
Sidebar: Your client variable repository/ies could be huge!

- Per the CF Admin, CF will purge the registry and client var databases (in the background) every 67 mins by default.
- Could take a long time if repositories have become huge.
- Be careful about setting purge time to 0.
  - There was a CF7 bug where that would make try to it purge every second!
- See Adobe Technotes
  - “How client variables are purged”
  - “Deleting client variables stored in the Registry”
CFQUERYPARAM Issues

Should you always use it?
CFQUERYPARAM Issues

- **T/F: We must use CFQueryParam to prevent SQL injection**
  - **Well, not always:**
    - Some similar security benefit can be had otherwise for numeric datatypes
      - If the query is in a method, and input comes through `cfarguments` with type="numeric", string will be rejected

- **T/F: CFQueryParam can’t really help with injection into string columns**
  - **False:**
    - even with varchar column, will force injected string (like `;delete from tablename`) into parameterized value
      - thus preventing injection
  - Sounds good, but don’t rest too easily...
T/F: By using CFQueryParam we’ve protected ourselves from all negative impact of injection attacks

- **False**:
  - With string cols, the injected string still gets sent to the DB, albeit in a parameterized value
  - DB spends time, likely to find 0 matching records
  - Also, then, or even if it throws an error (as with integer column), the bad requests still get to CF (taking up threads)

All that said, most will still say use it, right?...
T/F: CFQueryParam is the best way to handle SQL Injection problems in CFML

- Not necessarily:
  - May be better to handle before getting to your query!
  - There are several alternatives:
    - CFML Application-level Injection Protection Tools
    - Web Server-level Injection Protection Tools
    - Web Application Firewall-level Injection Protection Tools
    - Hardware Firewall-level Injection Protection Tools
    - See more at http://www.cf411.com/#injectprotect
    - Including even one more CFML query-level tool
CFQUERYPARAM Issues (cont.)

- T/F: CFQueryParam will always make SQL perform better
  - **Not always:**
    - Beware of query plan compilation
      - Will compile plan for first value passed in when plan is compiled
      - Later requests may pass in other values where plan is bad for that value
    - See
      - “Understanding, Improving, and Resolving Issues with Database Prepared Statements, or the Performance Impact of CFQUERYPARAM”
      - http://carehart.org/presentations/#dbplancaching
    - Applies to more than just SQL Server
Query Caching Issues

Are you managing it well?
T/F: We can’t use cached queries for pages w/ user input (URL vars, form fields, etc.)
- False:
  - Cached results are saved per generated sql, after variables are resolved
    - as well as DSN, query name, user/pw (if used)
  - So technically cached results are global across all apps, pages, and users where cache is enabled and all the above are the same
  - The generated sql used to key the cache includes carriage returns and is case-sensitive
Query Caching Issues

- T/F: Using CreateTimeSpan(0) for cachedwithin will reset all the cached queries
  - False:
    - Only for those SQL statements executed while that’s set to 0
    - must re-execute all SQL variants while this is set, which is hard to do
    - Leads to next question…
Query Caching Issues

- T/F: There’s no way to easily clear the query cache of all cached query results
  - False:
    - Can use `<CFObjectCache action="clear">`
      - but it does clear all caches for all apps, which may be brute force
      - Would be nice to have way to clear only some, or based on some dependencies

- T/F: We can’t use query caching in a query using CFQUERYPARAM
  - True prior to CF 8, False as of CF 8
CFLOCK Issues

The obvious and the subtle
CFLOCK Issues

- Multiple Choice: You **do/do not** need to always lock any reference (read or write) of shared scope variables (session, app, server)
  - **Do not, at least not always, at least since CF6:**
    - Need only lock possible race conditions (primarily writes)
      - See CF 6 era doc: http://www.adobe.com/go/tn_18235
  - **Do, always, prior to CF8:**
    - To avoid possible problems
  - But there’s still plenty more to understand (and misunderstand)…
T/F: CFLOCK prevents another thread running tags that are inside the locked code

- Not quite, could be misconstrued:
  - It prevents another thread—that’s also using lock of same name/scope—from running at the same time
    - 1) other pages doing the same tags but without a lock are not blocked
    - 2) other requests with same lock name/scope will be blocked, even if doing other tags than are in this lock
  - Depends also on type=readonly/exclusive
  - Really need to look at docs on CFLOCK, which do explain
T/F: CFLOCK can be used to prevent concurrent access to DB

- **False**, technically:
  - Only other CF code honoring a same given lock is protected from simultaneous thread execution
  - DB could be updated by code without locks, or with different locks
  - or by processes outside of CF
**CFLOCK Issues (cont).**

- T/F: CFLOCK’s timeout attribute controls how long code in lock will be allowed to run
  - **False:**
    - Controls how long locked code will wait to be run while lock is obtained
  - **Again, read the docs on CFLOCK**
    - Lots of mistaken presumptions
    - Misinformation shared by people
CFLOCK Issues (cont).

- T/F: We have code that still uses cflocks needlessly, and it works, so we don’t need to worry about it
  - False;
    - You may be suffering delays (seconds or more)
    - Due to contention because of locks held needlessly and too long
    - Sadly, there’s no feature in CF to tell how much time is spent in lock waits, so there’s no way to how big this problem is!
  - Sidebar: Be very careful about using thrownontimeout=”no”
    - Could be having contention, and timeout, and not know it!
    - You really need to find any instances of this and examine...
T/F: When looking for examples of such possibly troublesome code, I can do a search for the phrase throwontimeout="no"

- **False:**
  - May be no (no quotes) or “false” or false or “0” or 0 (since all equate to false)
  - Better to search for the word throwontimeout and eyeball the results

- **Sidebar: Check out agentransack.com**
  - Of course, Linux users have grep, and there are Windows equivalents of grep, too

- **Sidebar: Be careful about using Windows search**
  - In XP, at least, it only searched within certain file extensions!
  - Do search for cfset first, to confirm it finds any CFML files
Conclusion
T/F: When I need help with CF in book form, I need to head to the bookstore
   ◦ False:
     • Check out multiple manuals in the CF doc set (online, and in print)
     • See http://carehart.org/blog/client/index.cfm/2007/4/30/cfmx7_docs_just_50_bucks

T/F: When looking at the cf docs, I can find all I need in the reference manual
   ◦ False:
     • Don’t miss the CF Developers Guide, and also the “Admin and Config” manual

T/F: When I need reference help online, Livedocs is the quickest way to get it
   ◦ False:
     • Check out http://www.cfquickdocs.com
Summary

- So, did you learn something?
  - Anyone feeling I’ve misled people in any way?
- What we covered, myths related to:
  - CF Update/Hotfix Issues
  - Page/Site Performance Issues
  - Client Variable Issues
  - CFQUERYPARAM Issues
  - Query Caching Issues
  - CFLOCK Issues
  - Getting Help
Questions On Presentation

- I’d really appreciate your feedback
  - Now 😊
  - Or at http://carehart.org/feedback/
  - Or at charlie@carehart.org

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  - Also other developer productivity coaching, system admin and tuning support, and more
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  - http://carehart.org/consulting/