

CFMythBusters: Countering Some Conventional Wisdom

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Topics

- ▶ Introduction
- ▶ CF Update/Hotfix Issues
 - Sure you're running the latest?
- ▶ Page/Site Performance Issues
 - Is CF really a black box?
- ▶ Client Variable Issues
 - Sure you're 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

Independent Consultant since Apr 2006

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

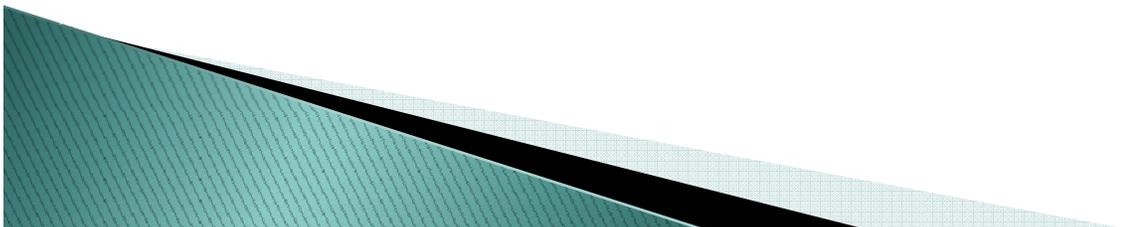
- Host ~300 blog entries, 70+ articles, 80+ presentations
- UGTV: recordings of 300+ presentations by ~200 speakers
- CF411.com – 700+ tools/resources in 100+ categories
- Consulting: available for troubleshooting, tuning; training
 - Remote or on-site

Introduction



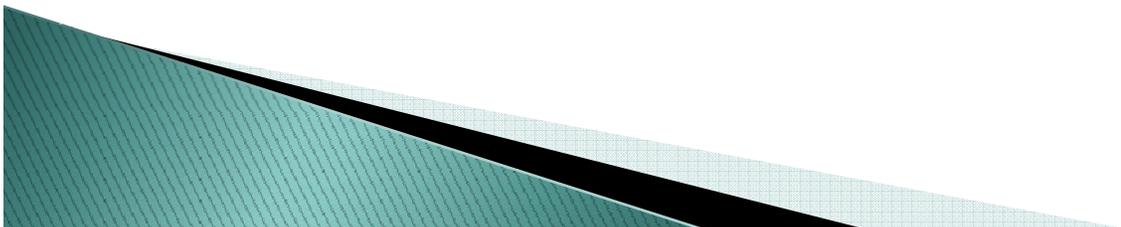
Not the common myths

- ▶ 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...



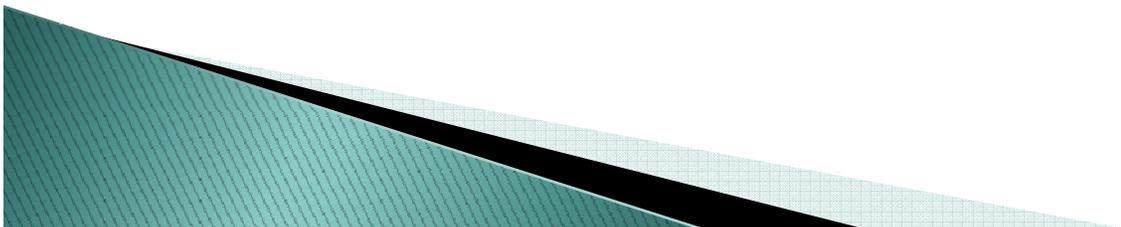
Why the confusion?

- ▶ 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

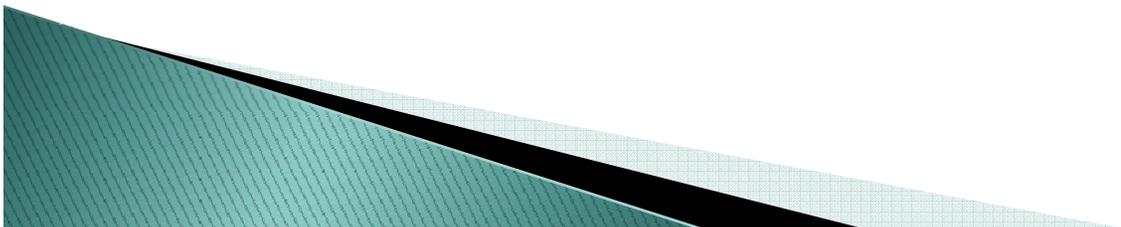
»» Sure you're running the latest?

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)”
 - http://kb2.adobe.com/cps/178/tn_17883.html
 - “ColdFusion Hot Fixes (ColdFusion 8 and later)”
 - <http://kb2.adobe.com/cps/402/kb402604.html>

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
 - More at
http://carehart.org/blog/client/index.cfm/2006/8/8/jdbc3.5_update



CF Update/Hotfix Issues (cont.)

- ▶ 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

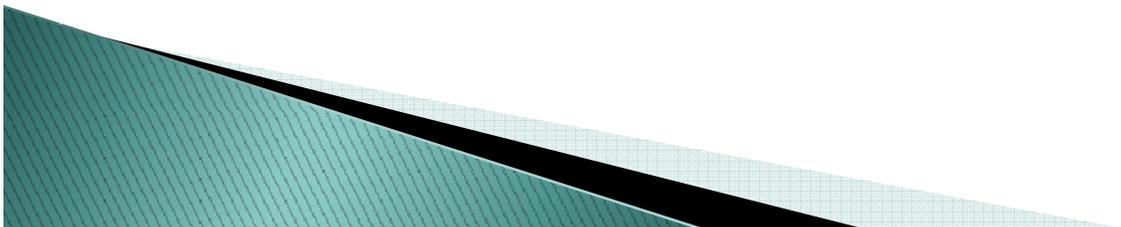
»» Is CF really a black box?

Page/Site Performance Issues

- ▶ 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?...

Page/Site Performance Issues (cont.)

- ▶ 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
 - More: http://kb2.adobe.com/cps/191/tn_19120.html
 - 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

Page/Site

Performance Issues (cont.)

- ▶ 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

Page/Site

Performance Issues (cont.)

- ▶ 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!

Page/Site Performance Issues (cont.)

- ▶ 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
 - <http://www.carehart.org/blog/client/index.cfm/2009/1/22/>
 - 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
 - See http://carehart.org/blog/client/index.cfm/2006/10/4/bots_and_spiders_and_poor_CF_performance
 - Even if you do "disable" them, still written for pages that do read/write client variables

Client Variable Issues (cont.)

- ▶ 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”
 - http://kb2.adobe.com/cps/185/tn_18514.html
 - “Deleting client variables stored in the Registry”
 - http://kb2.adobe.com/cps/178/tn_17881.html

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...

CFQUERYPARAM Issues (cont.)

- ▶ 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?...

CFQUERYPARAM Issues (cont.)

- ▶ 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
 - <http://www.codersrevolution.com/index.cfm/2008/7/26/cfqueryparam-its-not-just-for-security-also-when-NOT-to-use-it>
 - “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

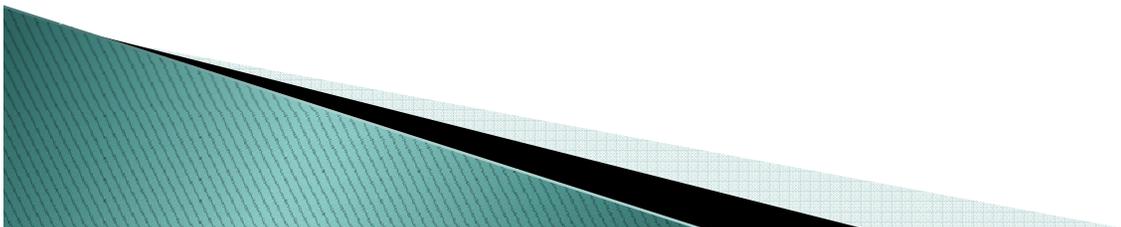
»» Are you managing it well?

Query Caching Issues

- ▶ 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
 - See http://www.adobe.com/devnet/server_archive/articles/cf_locking_best_practices.html
 - But there's still plenty more to understand (and misunderstand)...

CFLOCK Issues (cont).

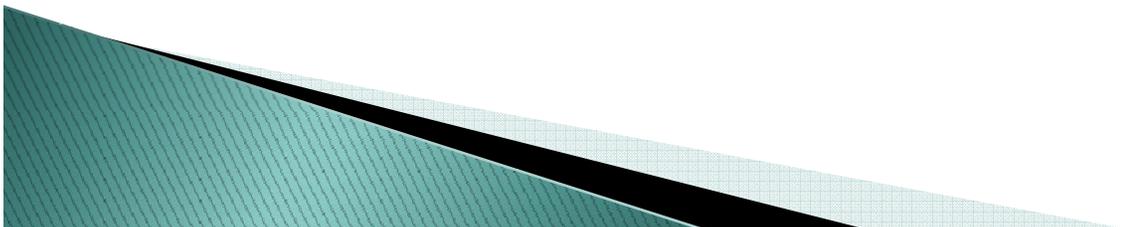
- ▶ T/F: CFLOCK prevents another thread running tags that are inside the locked code
 - Not quite, could be misconstrued:
 - It prevents another thread—that's also using lock of same name/scope—from running at the same time
 - 1) other pages doing the same tags but without a lock are not blocked
 - 2) 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

CFLOCK Issues (cont).

- ▶ 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...

CFLOCK Issues (cont).

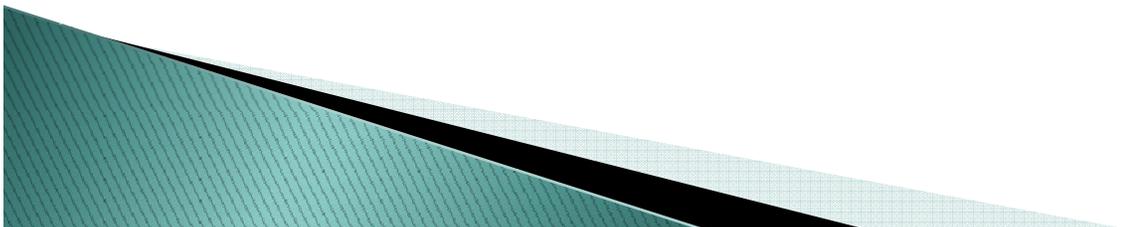
- ▶ T/F: When looking for examples of such possibly troublesome code, I can do a search for the phrase `thrownontimeout="no"`
 - False:
 - May be `no` (no quotes) or `"false"` or `false` or `"0"` or `0` (since all equate to false)
 - Better to search for the word `throwontimeout` and eyeball the results
 - 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



Bonus Myths: Getting Help

- ▶ 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
- ▶ Available for ColdFusion troubleshooting, setup, implementation consulting
 - Also other developer productivity coaching, system admin and tuning support, and more
 - Remote or on-site
 - For as little as days, hours, even 15 minutes
 - <http://carehart.org/consulting/>