

Step Debugging in CF 6/7/8 with the CF8 Debugger and FusionDebug - SA6A



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Produced 3-May-08



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Topics

- Solutions for CF 6, 7, and 8
- Introduction to Step Debugging
- Debugging Demo
 - CF8 Debugger
 - FusionDebug
- Debugger Features
- Why Use Debugging over CFDUMP, etc.
- Tips and Traps
- Learning More, FAQs, etc.



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About Charlie Arehart

- Independent consultant since April 2006
- 11 yrs CF experience (26 in Enterprise IT)
 - Member, Adobe Community Experts
 - Certified Adv CF Developer (4 - 7), Cert. Adobe Instructor
 - Writer in CFDJ, FAQU, Adobe DevCenter, CommunityMX, more
 - Contributor to all three Ben Forta CF8 books
 - Frequent speaker to user groups, conferences worldwide: cf.Objective, CFUnited, webDU, webManiacs, Scotch on the Rocks, et al
 - Run the Online ColdFusion Meetup (coldfusionmeetup.com)
 - Living in Alpharetta, Georgia (north of Atlanta)



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About Charlie Arehart

- Web home at www.carehart.org
 - Hosts 200+ blog entries, 60+ articles, 70+ presentations, more
 - UGTV:
 - Recorded presentations by over 100 CFUG speakers
 - Tools/Resources to Consider:
 - 700+ tools/resources in 100+ categories
 - Consulting: available for troubleshooting, tuning, training
 - For as few as days, hours, or even minutes; remote or on-site



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Solutions for 6, 7, and 8

- CF 8 Debugger, from Adobe
 - Free with CF8
 - Adobe ColdFusion 8 Extensions for Eclipse
 - <http://www.adobe.com/support/coldfusion/downloads.html#cfdevtools>
 - Works only on CF8
- FusionDebug, from Intergral
 - Commercial product (www.fusiondebug.com)
 - Works on 6, 7, and 8
- Both are very similar
 - And yet different
- Fundamentals of debugging are same...



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Introduction to Step Debugging

- Understanding interactive debugging
 - What can it do for you?
 - Step through code line-by-line (where needed)
 - View variables, in all scopes, at that point
 - Watch particular expressions, to observe changes
 - Even change variables on the fly during execution
 - And more
- Both based on Eclipse
 - But don't let that scare you!
 - Even if using DW, HS, use Eclipse just for debugging



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Debugger Demos

- Let's see them in action



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Demoed Features

- Set breakpoints, stepped through code
 - Viewed variables, watched expressions
- Showed simple CFML code (CF Example Apps)
 - Showed query data in variables pane
- Showed CFC-based code
 - Showed scopes available in CFC methods (var and this scopes)
 - Showed how stack is interactive
 - click to jump to lines in chain above current instruction
- Showed debugging Flex, Ajax apps
 - Could also debug web svcs, Application.cfc, gateways, scheduled tasks
- Showed debugging inside CFSCRIPT
 - Can also debug within CFWRITE, CFMAIL, CFSAVECONTENT, etc.



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About Underlying Eclipse

- What is Eclipse?
 - Free Java-based editor, greatly extensible
 - Also the basis of Flex Builder, CFEclipse
 - can add debugger to those, or have separate Eclipse installation
- Why did Adobe, Intergral build these atop Eclipse?
 - Built-in debugging features, just connected to CF
- Easy to install Eclipse plug-in (3.1, 3.2, 3.3)
 - CF8 docs, articles explain how to install the plug-in
 - FusionDebug offers an installer, and even a packaged version containing it and CFEclipse



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Server Installation

- Both debuggers require minor modification of the CF server to be debugged
 - Just a single line change in the jvm.config on the java.args line (see docs for details)
 - Jvm.config located in C:\ColdFusion8\runtime\bin
- CF8 does it automatically via Admin checkbox
 - Modifies the file and enables the feature after restart
 - Note: in multiserver, requires manual editing
 - Jvm.config for multiserver in C:\JRun4\bin
- FusionDebug offers installation wizard
 - Modifies the file and enables the feature after restart



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CF8 Debugger Relies on RDS

- In order to use the CF8 debugger, you must have enabled RDS during installation of CF
 - If you did not, you need to enable it
 - See http://www.adobe.com/go/tn_17276
 - You then need to know the RDS password defined for your server (in the CF Admin)
 - Or take advantage of the new multiple RDS user feature in the Security section of the ADMIN
 - You will use this RDS password (or username/password) in the CF8 Eclipse debugger setup steps
 - Window>Preferences>ColdFusion>RDS configuration
 - Documentation shared later offers more details
 - Can test RDS setup in RDS Dataview/Fileview features also enabled in Adobe Eclipse extensions
 - Window>Show View>Other>RDS FileView/DataView



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Benefits Over CFDUMP/CFOUTPUT

- Can debug when a CFOUTPUT/CFDUMP may not be possible
 - What are some examples?
 - CFCOMPONENT/CFFUNCTION OUTPUT=false
 - CFSILENT
 - When generating non-HTML output
 - Flex/Flash, Flash Remoting, Ajax, web services clients, etc
- Debugging Application.cfc, event gateways, scheduled tasks
- Ever forget to remove debugging output?
- And a dozen other reasons
 - See more details on all these at:
 - http://carehart.org/blog/client/index.cfm/2006/9/7/fusiondebug_part2_why_us_e_versus_cfdump
 - And that's not even all of them
 - More at <http://www.fusion-reactor.com/fd/about.cfm>



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Similarities and Differences

- CF Admin setting for “timeout requests in x seconds” will affect debugging
 - In FD, halts request
 - In CF8, generates timeout popup error in CF8 debugger
 - In either case, either disable or increase the value in Admin
 - Or use CFSETTING RequestTimeout=“xx” on pages being debugged
- Viewing generated HTML output
 - CF8 debugger offers window to view that
 - Window>Show View>Other>Debug Output Buffer
 - FD does not, but can see it using Expressions window to show
 - `getPageContext().getCFOutput().getString()`



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Similarities and Differences (cont.)

- Breaking on run-time exceptions
 - CF8 debugger can be configured to break on exceptions
 - window>preferences>coldfusion>debug settings
 - Will stop on most (not all) error (pops up window in debugger, error shown to user when done debugging)
 - Even stops and shows pages you were not debugging
 - Note that it also stops on code that throws errors
 - Could be a negative in some code
 - Note there's a fix related to this in the new CF8 Cumulative Hot Fix
 - <http://www.adobe.com/go/kb402466>
 - FD does not stop on errors (debugging stops, error shown to user)



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Similarities and Differences (cont.)

- Both debuggers permit debugging remote servers
- Debugging against a central server (test, production)
 - FD: Multiple users requesting debugged page, all debugged
 - CF8: Only first requesting user of a page will be debugged
 - FD: Multiple developers can't debug on one server (fine for development)
 - CF8: Multiple developers can debug on one server (could do in test)
 - RDS security controls who is allowed to access debugger



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Similarities and Differences (cont.)

- Ability to control variables shown
 - CF8: selectable via window>preferences>coldfusion>debug settings>Debugger Scopes
 - FD: just shows all variables
- Ability to set variables on the fly
 - FD: While stepping, highlight variable, right-click, choose "Set Variable", enter new value
 - CF8: In either the Variables or Expressions panes, right-click and choose "Change Value"
- Ability to set watch expressions from code
 - FD: While stepping, highlight variable, right-click, choose "Watch Expression", enter varname;
 - or right-click in Expressions window and choose "Add watch expression"
 - CF8: can only add via Expressions window



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Things That Affect Both

- If file edited outside of Eclipse, breakpoints won't move (affects both)
 - May end up on line that keeps breakpoint from firing
- Can disable debugging temporarily
 - “Disable checkpoints” option in Eclipse
 - “stop debugging” button in CF8 Admin (for CF8 debugger)
- If Debugger installed but not visible
 - use Window>Open Perspective>Other>Debug
- If Navigator pane not visible
 - use Window>Show View>Other>General>Navigator
- If Expressions tab not visible
 - use Window>Show View>Other>Debug>Expressions



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Tips and Traps

- Some CF8 Debugger tips and traps
 - No need to create mappings if Eclipse and CF on same machine
 - Run>Debug>ColdFusion Application>yourconfig
 - Otherwise, use “add mapping” there indicating both Eclipse and CF path
 - Must enable Debugging via CF Admin console
 - “allow line debugging” checkbox



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Tips and Traps (cont.)

- Some CF8 Debugger tips and traps (cont.)
 - Favor Step-over to Step-Into
 - Will step into tags like CFDUMP, CFSAVECONTENT, etc, which actually are CFM files
 - *cfusion\wwwroot\WEB-INF\cftags*
 - Gets error in CF8 debugger, but not in FD
 - In multiserver edition
 - Must edit jvm.config by hand
 - Also, consider creating unique config for cf instance (rather than at jrun4 level), otherwise CF may not start in some situations
 - <http://mkruger.cfwebtools.com/index.cfm/2006/4/17/multiserver>
 - <http://www.doughughes.net/index.cfm?event=viewEntry&entryId=244>



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Tips and Traps (cont.)

- Some FD tips and traps
 - Note that FusionDebug was updated to 2.0 in Feb 2007, and 2.01 in May 2007
 - Other tips, tricks, and traps:
 - <http://www.fusion-reactor.com/fd/tipsandtricks.cfm>
 - http://carehart.org/blog/client/index.cfm/2006/10/2/fusiondebug_part4_tips_and_traps



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Tricks

- Available shortcuts in Eclipse
 - Breakpoint: ctrl-shift-b
 - Step into/over/return/resume: f5/f6/f7/f8
 - Commands also available on “run” menu
 - Double-click on stack trace line/breakpoints list
 - Opens file at that line
- Find command in Variables, Expressions panes
 - Ctrl-f, or right-click+find
 - Available wildcards: ? And *
- Can copy variable/vals to clipboard with “Copy variables”
- Can “group” breakpoints, by file/project, or “working sets”
- Can export/import breakpoints



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Learning More

- CF8 Debugger
 - Documentation: CF8 ColdFusion Developer's Guide
 - http://livedocs.adobe.com/coldfusion/8/htmldocs/usingdebugger_1.html
 - About the ColdFusion Debugger
 - Installing and uninstalling the ColdFusion Debugger
 - Setting up ColdFusion to use the Debugger
 - About the Debug perspective
 - Using the ColdFusion Debugger
 - Viewing ColdFusion log files
 - http://livedocs.adobe.com/coldfusion/8/htmldocs/help.html?content=basicconfig_19.html



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Learning More (cont.)

- FusionDebug
 - Documentation (very good) available online
 - www.Fusiondebug.com
 - User guide walks through configuration of the CF Server, Eclipse, and use of FusionDebug
 - Several Captivate demos
 - <http://www.fusion-reactor.com/fd/demos.cfm>



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Learning More (cont.)

- Other resources on CF8 Debugger
 - My chapter in *ColdFusion 8 Web Application Construction Kit Volume 2: Application Development*
 - "Using the CF8 Debugger" (25 pages)
 - Available online
 - <http://www.forta.com/books/0321515463/CFWACK8-2-EChapters.pdf>
 - My *FusionAuthority Quarterly Update* article in CF8 Special Edition
 - "The ColdFusion 8 Debugger Explained: Interactive Step Debugging for ColdFusion 8"



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Learning More (cont.)

- Other resources on CF8 Debugger (cont.)
 - “Using the ColdFusion 8 step-through debugger for Eclipse”, Brian Szoszorek
 - <http://www.adobe.com/devnet/coldfusion/articles/debugger.html>
 - “Getting Started With The ColdFusion Debugger”, Ben Forta
 - <http://www.forta.com/blog/index.cfm/2007/5/30/CF8-Debugger-Getting-Started>
 - ColdFusion 8 Debugger Resources and Tips
 - <http://www.thecrumb.com/2007/08/31/coldfusion-8-debugger-resources-and-tips/>



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Learning More (cont.)

- Other resources on FusionDebug
 - September 2006 CFDJ has 2 FD articles:
 - “Taking a First Look at FusionDebug”, Jeff Houser
 - <http://coldfusion.sys-con.com/read/289634.htm>
 - “FusionDebug Tips, Tricks, and Traps”, Charlie Arehart
 - <http://coldfusion.sys-con.com/read/289652.htm>
 - “FusionDebug Explained: Interactive Step Debugging for CFML”, Charlie Arehart
 - <http://www.fusionauthority.com/quarterly/>
 - FusionDebug series by Chaz Chumley
 - <http://www.communitymx.com>
 - I’ve done a series of blog entries
 - <http://carehart.org/blog/client/index.cfm/fusiondebug>



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FAQs

- Does either work with CF4 or 5?
 - No, both are specific to CFMX
 - FusionDebug runs on 6, 7, and 8
 - CF8 debugger runs only 8
- Do they run on Linux? OS X? other platform
 - Yes, they run on any platform that runs Eclipse
 - and can debug any server that runs ColdFusion
- Do they work with BlueDragon? Railo? Smith?
 - Not currently. Intergral having discussions w/ Railo
 - CF8 debugger will of course not work with them
 - But you could install free Dev edition of CFMX and debug against that
- How much do they cost?
 - CF8 Debugger: Free
 - FusionDebug: starts at \$99, \$249; see
 - <http://www.fusion-reactor.com/fd/buy.cfm>



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FAQs (cont.)

- Do they support debugging Javascript? Actionscript? Java?
 - No, that's left to other debuggers
 - Eclipse already can debug Java, and FlexBuilder can debug ActionScript
 - Other tools offer Javascript debugging inside Eclipse
 - JavaScript Eclipse Debugger Plug-ins:
 - <http://www.apтана.com/>
 - <http://www.myeclipseide.com/index.php?module=htmlpages&func=display&pid=270#jsdebug>



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FAQs (cont.)

- Can you use install FD and CF8 debugger in same Eclipse instance?
 - Yes
- Can they both debug the same CF8 server?
 - Yes, but if you debug a CF8 server with the CF8 debugger first, you'll get an error in Eclipse
 - Need to “stop” CF8 debugger (in CF Admin) before trying to debug it with FD
 - See Debugging & Logging>Debugger Settings>Stop Debugging Server
 - Next request from CF8 debugger will restart it



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FAQs (cont.)

- How do I get support?
 - CF Support forums (General)
 - <http://www.adobe.com/cfusion/webforums/forum/index.cfm?forumid=1>
 - FusionDebug mailing list/forum
 - <http://groups.google.com/group/fusiondebug>
 - New FusionSupport Online knowledge base
 - <http://www.fusion-reactor.com/fd/support.cfm>
 - Intergral offers free and purchased email and remote support
 - support@fusion-reactor.com



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Conclusion

- Great solution, finally, for CFML debugging
 - Whether on 6, 7, or 8
- Yes, they're based on Eclipse
 - But again, you can continue to use your favorite editor, and just use Eclipse for debugging
- Sure, FD costs money, but will pay for itself if you'll benefit from debugging on 6, 7
 - And has some differences from the CF8 debugger
- Getting used to relying on debugger
 - The challenge is simply remembering to use it!
 - Try for yourself and see if it doesn't help



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Questions on presentation

- Charlie Arehart
 - charlie@carehart.org
- I'd really appreciate your feedback
 - <http://carehart.org/feedback/>
- Also available for setup and implementation consulting
 - Also other developer productivity coaching, system admin and tuning support, and more
 - Remote or on-site
 - Again, for as little as days, hours, even minutes
 - <http://carehart.org/consulting/>
- Finally, evaluations...



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Evaluations

- **Title:** Step Debugging in CF 6/7/8 with the CF8 Debugger and FusionDebug
- **ID:** SA6A
- **Speaker:** Charlie Arehart



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