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

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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.
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)
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
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…
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
Debugger Demos

• Let’s see them in action
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 CFOUTPUT, CFMAIL, CFSAVECONTENT, etc.
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
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
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
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_use_versus_cfdump
  – And that’s not even all of them
    • More at http://www.fusion-reactor.com/fd/about.cfm
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()
• 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)
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
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
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
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
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://www.doughughes.net/index.cfm?event=viewEntry&entryId=244
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
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
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
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
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
  - My *FusionAuthority Quarterly Update* article in CF8 Special Edition
    - “The ColdFusion 8 Debugger Explained: Interactive Step Debugging for ColdFusion 8”
Learning More (cont.)

- Other resources on CF8 Debugger (cont.)
  - “Using the ColdFusion 8 step-through debugger for Eclipse”, Brian Szoszorek
  - “Getting Started With The ColdFusion Debugger”, Ben Forta
  - ColdFusion 8 Debugger Resources and Tips
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
    • 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
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
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.aptana.com/
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
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
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
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…
Evaluations

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