Interactive Step Debugging with the CF8 Debugger

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Topics

- Introduction to Step Debugging
- Debugging Demo
  - CF8 Debugger
- 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 FAQU, Adobe DevCenter, CommunityMX, CFDJ, more
  - Contributor to all three Ben Forta CF8 books
  - Frequent speaker to user groups, conferences worldwide including CFUnited, cf.Objective, webDU, webManiacs, Scotch on the Rocks et al
  - Run the Online ColdFusion Meetup (coldfusionmeetup.com)
  - Living in Alpharetta, Georgia (north of Atlanta)

- Web home at www.carehart.org
  - 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
Solution CF 8

• The session discusses the 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
  • Those on CF 6 or 7 should consider:
    ▪ FusionDebug, from Intergral
    ▪ Commercial product (www.fusiondebug.com)
    ▪ Works on 6, 7, and 8
  • Both are very similar, and yet different
    ▪ This talk focuses only on the CF8 debugger
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 Demo

• Let’s see it 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 (Model Glue, Mach II)
  ▪ 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 build this 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
  - I also have written a 20+ page chapter with details
    - URLs for these offered at the end of the talk
Server Installation

- Debugger requires minor modification of the CF server to be debugged
  - CF8 Admin has Debugger Settings>“allow line debugging” checkbox
- 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
CF8 Debugger Relies on RDS

- 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 and debugger setup
  - Window>Preferences>ColdFusion>RDS configuration>Test Debugger/Connection
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
Other Features

• CF Admin setting for “timeout requests in x seconds” will affect debugging
  ▪ Timeout will generate timeout popup error in CF8 debugger
  ▪ 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
Other Features (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
Other Features (cont.)

• Ability to control variables shown
  ▪ selectable via window>preferences>coldfusion>debug settings>Debugger Scopes

• Ability to set variables on the fly
  ▪ In either the Variables or Expressions panes, right-click and choose “Change Value”

• Ability to set watch expressions from code
  ▪ via Expressions window

• You can debug remote or central server (test, production)
  ▪ Only first requesting user of a page will be debugged
  ▪ Multiple developers can debug on one server (could do in test)
    • RDS security controls who is allowed to access debugger
Other Features (cont.)

• 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)
Tips

• 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

• 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
Tips (cont.)

• In multiserver edition
  ▪ Must edit jvm.config by hand
    • Jvm.config for multiserver in C:\JRun4\bin
    • See docs for details
  ▪ 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
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

• 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
Tricks (cont)

• 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

• Documentation: CF8 ColdFusion Developer’s Guide
  ▪ http://livedocs.adobe.com/coldfusion/8/htmldocs/using
    debugger_1.html
    ▪ About the ColdFusion Debugger
    ▪ Installing and uninstalled 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.h
    tml?content=basiconfig_19.html
Learning More (cont.)

• Other resources
  - 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 (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
FAQs

• Does it work with CF4, 5, 6, or 7?
  ▪ No, works only with CF 8
  ▪ FusionDebug runs on 6, 7, or 8
• Does it run on Linux? OS X? other platform
  ▪ Yes, runs on any platform that runs Eclipse
    • and can debug any server that runs ColdFusion
• How much does it cost?
  ▪ It’s free
• Is it included in CF 8 Standard, Enterprise, and Developer editions?
  ▪ Yes
• How do I get support?
  ▪ CF Support forums (General)
    • http://www.adobe.com/cfusion/webforums/forum/index.cfm?forumid=1
FAQs (cont.)

• Does it 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/
Conclusion

• Great solution, finally, for CFML debugging
• It can be challenging to get started
  ▪ Please refer to the resources I’ve written
• Yes, it’s based on Eclipse
  ▪ But again, you can continue to use your favorite editor, and just use Eclipse for debugging
• 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**: DDT228 - Interactive Step Debugging with the CF8 Debugger
- **Speaker**: Charlie Arehart