



A ColdFusion, Flex & AIR Conference

# CF911: Tools and Techniques for Troubleshooting

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CF

Fx

AIR

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[www.cfunited.com](http://www.cfunited.com)

# When the stuff hits the fan...

- ...you want to know what went wrong, and why.  
Helps to know:
- Diagnostics to track errors and other information
  - In CF, web server, DB, and system
  - Available logs, how to find them
- Available tools for monitoring CF and related things
  - Some free, some commercial
  - Some CF-specific, some generic
- Where you can turn for additional help

# About This Talk

- This talk identifies these tools and logs
  - Goal is to point them out, share some tips
    - Don't have time here to demonstrate each tool, log
- Will point you to resources for getting help, and to learn more about each tool mentioned
  - Is a subset of a day-long class I've created that also discusses these and related topics, scenarios
- Lots of file locations and URLs offered here
  - Don't sweat writing all the details
  - Presentation is available online at [carehart.org/presentations](http://carehart.org/presentations)

# Topics

- A Typical Scenario
- Tools for Troubleshooting CF
- Tools for Monitoring Related Things
- Logs and Log Analysis Tools
- Resources for Getting Help, Learning More

# About Charlie Arehart

Independent Consultant since Apr 2006

- 12 yrs CF experience (26 in Enterprise IT)
- Member, Adobe Community Experts
- Certified Adv CF Developer (4-8), Cert. Adobe Instructor
- Frequent speaker to user groups, conferences worldwide
- Run the Online ColdFusion Meetup (coldfusionmeetup.com)
- Living in Alpharetta, Georgia (Atlanta)

Web home at [www.carehart.org](http://www.carehart.org)

- Host ~300 blog entries, 70+ articles, 90+ presentations
- UGTV: recordings of 300+ presentations by ~200 speakers
- CF411.com - 1000+ tools/resources in 100+ categories
- Consulting: available for CF troubleshooting, tuning; training
  - Remote or on-site

# Audience

- Talk is focused on typical CF shops
  - Generally lacking anyone to help resolve problems
  - Or w/ skills, but lacking insight into what's going on w/ server
  - Goal is to show tools, resources to help with problems
- Audience here includes some knowing much, others struggling to get by managing CF servers
  - May cover some topics you may already know
    - Or not enough detail for your level of experience
    - Will provide many resources to learn more
- Most topics apply to any CF version/engine

# A Typical Scenario

# CF stops responding

- You can see it's still running, but users (or monitor tools) say requests are not running
  - What do you do?...
- Restart CF?
  - Sure, you can punt. Doesn't solve root cause
- Look at diagnostic logs?
  - Sure, but some offer little help. The right ones may help
- Look at monitoring tools?
  - OK, which ones? Built-in? Need to add?
  - Are CF requests actually running? All stuck? Any queued?
- Still other choices, of course
  - Search google, ask on a mailing list/forum
  - Call me (or others who provide CF troubleshooting support)



# Tools for Troubleshooting CF

# Tools for Troubleshooting CF

- We'll briefly discuss each of these:
  - CFSTAT and Perfmon integration
  - Getmetricdata()
  - JRun Metrics
  - CF8 Server Monitor and Admin API
  - FusionReactor, SeeFusion, and still other tools

# Free CF Troubleshooting Tools

## ➤ **CFSTAT**

- Reports high-level measures: number of requests running, queued, avg req time, avg db time, more
- Command line tool, found in [cf]\bin\
  - Sadly, not available in multiserver mode

## ➤ **Performance Monitor stats**

- Provides CFStat measures in Windows PerfMon
- Also not available in multiserver mode

## ➤ **Both features enabled in CF Admin**

- Debug Output Settings page

## ➤ **Beware: avg's shown are over only last 2 requests**

- not over entire previous interval!

# Free CF Troubleshooting Tools (cont.)

- GetMetricData CFML function
  - “perf\_monitor” argument: same data as CFSTAT
  - “simple\_load” argument: a simple load measure
- JRun metrics
  - Can be enabled on any CF edition (6-8) to add a line at regular intervals to track current state
    - Including threads, memory usage, J2EE sessions, more
  - More at:
    - <http://tutorial351.easycfm.com/>
    - [http://www.adobe.com/go/tn\\_19120](http://www.adobe.com/go/tn_19120)
    - <http://www.bpurcell.org/blog/index.cfm?mode=entry&entry=991>

# Free CF Monitoring Tools

- CF8 Server Monitor (CF8 Enterprise, Developer editions)
  - See my 4-part article series in the Adobe Dev Center, starting at:
    - [http://www.carehart.org/articles/#2007\\_2](http://www.carehart.org/articles/#2007_2)
  - Only available with CF8+ Enterprise
    - Can only monitor CF8+ Enterprise servers
  - More in a moment
- Admin API
  - All the information in the CF8 monitor is also available programmatically in the Admin API
    - Example shown in my article series (part 4)
    - Again, though, only in CF8+ Enterprise

# Commercial CF Monitoring Tools

- If not on CF 8 Enterprise, other tools provide similar (and in some ways different) CF Monitoring
  - **FusionReactor** ([fusion-reactor.com](http://fusion-reactor.com))
  - **SeeFusion** ([seefusion.com](http://seefusion.com))
  - These both work with CF 6, 7, and 8
    - Both have free trials
    - Should also work with OpenBD, Railo
    - Even valuable on CF 8 Enterprise for added features
- What do these monitoring tools have in common?
  - ...

# About CF Monitoring Tools

- All 3 CF monitors really open the black box of CF
  - See all currently running requests
    - Can terminate long-running ones
  - View past long-running requests (while server is up)
  - See details of each query executed in each request
  - See “stack trace”: line of code being executed now
- CF8 monitor can view all sessions, applications, and more
- ...also

## About CF Monitoring Tools (cont.)

- FusionReactor and CF8 monitor can be configured to send email notifications of problem states
  - Requests taking too long, too little memory, etc.
- FusionReactor also
  - Writes out substantial log files
  - Can run scripts when monitored server stops/starts
  - And much more
- More at
  - CF8: [http://www.carehart.org/articles/#2007\\_2](http://www.carehart.org/articles/#2007_2)
  - FR: [http://www.carehart.org/articles/#2008\\_6](http://www.carehart.org/articles/#2008_6)



# Other CF Troubleshooting Tools

- Still other free tools exist, with more limited focus
  - **ColdFusion AJAX System Monitor**
    - Free from Steve Brownlee
  - **FlexMon CF monitor**
    - Free from Tariq Ahmed
  - **Scope Enhancer**
    - Free from Steve Brownlee
  - **ServerStats**
    - Free from Mark Lynch
  - **CF JVM Memory Monitor**
    - Free from Dan Switzer
  - **WhosOn CFC**
    - free from Shane Zehnder
  - URLs for these listed at <http://www.cf411.com/#cfmon>

# Tools for Monitoring Related Things

# Tools for Monitoring Related Things

- You may be surprised by what's available
  - Generic Server Monitoring Tools
  - Web Server Request Monitoring Tools
  - Application Monitoring Tools
  - HTTP Request/ Response Content, Timing Tools
  - Database Monitoring Tools
  - Java Monitoring/Profiling Tools

# Generic Server Monitoring Tools

- Tools to track how the server and its processes are performing, on Windows
  - **Windows Task Manager**
    - On Vista/7/2K8, see also **Resource Monitor**
  - Better still, **SysInternals ProcessExplorer**
    - Powerful replacement for Task Manager
  - Also, **SysInternals Process Monitor**
    - Combines former **Filemon**, **Regmon** tools
  - **Windows Performance Monitor**
    - On Vista/7/2K8, see improved interface
- Many similar tools for Linux, OS X
- Many other commercial and free system monitors
- More at [cf411.com/#sysmon](http://cf411.com/#sysmon)

# Web Server Request Monitoring Tools

- Tools to track how requests are being handled by web server
  - **IISTRacer**, commercial (free trial), for IIS
  - **ManageEngine ApplicationsManager**
    - free and commercial tool, from AdventNet
    - includes specific support for managing IIS, Apache, web services, and more
- More at [cf411.com/#wsmon](http://cf411.com/#wsmon)
- Not to be confused with **Web Site Uptime Monitoring tools** ([cf411.com/#sitemon](http://cf411.com/#sitemon))

# Application Monitoring Tools

- Many tools can monitor any Java application
  - So can be used to monitor CF apps as well
  - Some are deployed as WAR files
    - may be challenging to deploy/configure on CF Standard or Enterprise/Dev Server Deployment
- GlassBox, JaMonAPI, JManage (open source)
- ManageEngine ApplicationsManager (free and commercial tool)
  - includes specific support for JBoss, Tomcat, GlassFish, WebLogic, WebSphere, Oracle Application Server, and .NET
- More at [cf411.com/#appmon](http://cf411.com/#appmon)

# HTTP Request/ Response Content, Timing Tools

- Client-side proxy/request monitoring tools
  - **Fiddler, Firebug, ColdFire, Yslow**, others (free)
  - **Charles, ServiceCapture**, others (commercial)
  - And more at [cf411.com#proxy](http://cf411.com#proxy)
- Consider also “**TCP Monitor**” (aka Sniffer), built into CF/JRun
  - CF Developer’s Guide
    - [http://livedocs.adobe.com/coldfusion/8/webservices\\_27.html](http://livedocs.adobe.com/coldfusion/8/webservices_27.html)

# Database Monitoring Tools

- Free
  - **SQL Server Profiler, SQL Server Trace**
  - **Simple SQL Server Monitor**
  - **MySQL Monitor, Mytop, Spotlight on MySQL**
- Commercial
  - **Spotlight on SQL Server, DB2, Oracle, etc.**
  - **MySQL Enterprise Monitor, MonYog (for MySQL)**
  - ▶ **Confio Ignite (for multiple DBMSs)**
- Many more at [cf411.com/#dbmon](http://cf411.com/#dbmon)



# Java Monitoring/Profiling Tools

- There are also many java monitoring/profiling tools
  - Some built-into the JVM, some external
  - These might have value, but can be difficult to connect info in some to the internals of CF
- Alternatives include:
  - **hprof, jconsole, jhat, jinfo, jmap, jps, jstack, jstat, visualgc** (and related **jvmstat**), and **visualvm**
    - All built into Java, some only 1.5+
  - **HPJMeter, HPJTune** (free)
  - **JProbe, JProfiler** (commercial)
  - And more at [cf411.com/#javamon](http://cf411.com/#javamon)

# Logs and Log Analysis Tools

# Logs and Log Analysis Tools

- May be more than you realize
  - Basic CF logs
  - CF Runtime Error Logs
  - CF/Web Server Integration Logs
  - Tools to Read CF Logs
  - Other Logs, non-CF
  - Generic Log Analysis Tools

# Basic CF Logs

- Location, either:
  - [cf]\logs
  - [jrun]\servers\[instancename]\cfusion-ear\cfusion-war\WEB-INF\cfusion\logs
- Core log files people generally consider
  - application.log
  - exception.log
  - server.log
- Others you may see there ...

# Other Basic CF Log files

- You may see other files in logs dir, such as:
  - eventgateway.log (cf7 Ent., CF8)
  - derby.log (cf8)
  - flash.log (if flash forms are used)
  - mailsent.log (if enabled in Admin, tracks emails sent)
  - mail.log (tracks errors with sending mail)
  - monitor.log (cf8 Ent.)
  - print.log (cf8)
  - scheduler.log (if enabled in Admin)
- Admin settings can influence these...

# CF Logging Options

- Debugging & Logging>Logging Settings
  - “Log slow pages taking longer than X seconds”
  - “ Enable logging for scheduled tasks”
- Server Settings>Mail>Mail Logging Settings
  - “Error Log Severity”
  - “Log all mail messages sent by ColdFusion”
- Datasource “Advanced Settings”
  - “Log Activity” (as of CF8)
    - Writes substantial amount of data about connection to database, including all data returned
    - Note: need to name directory AND filename

# CF Runtime Error Logs

- Many miss these, yet important!
  - [cf]\runtime\logs
    - Or [jrun4]\logs in Multiserver (Multi-instance) mode
  - Various logs: -event, -err, -out.log files
  - These log many problems not shown in core CF logs
- Note
  - Controlling size of runtime logs:
    - <http://www.adobe.com/go/8698aeb8>
  - Can modify CF so that different files hold different log info levels (info, debug, metrics, etc.)
    - See <http://blog.daemon.com.au/archives/000277.html> (and others)

# FusionReactor Logs

- FusionReactor is unique among all monitors
  - It writes several logs that can really help troubleshoot
    - Request logs: track each request
    - JDBC logs: track each query
    - Resource logs: track CF resources every 5 seconds
- Can be useful to analyze both recent past and history over long time
- All with very little overhead
- CF8 Monitor does no logging
  - SeeFusion can write long requests/queries to DB



# CF/Web Server Integration Logs

- Did you know about ...
  - [cfroot]\runtime\lib\wsconfig\LogFiles
  - [cfroot]\ runtime\lib\wsconfig\1\LogFiles\
    - Or in Multiserver (Multi-instance) mode, see [jrun4]\lib\wsconfig\ directory
  - Note configurable files: \*iis6.ini, \*wildcard.ini
    - available entry: verbose=false|true
- Another log about ws config connection to CF
  - [cfroot]\runtime\lib\wsconfig\wsconfig.log

# Tools to Read CF Logs

- Available interface in CF Admin to view these core CF logs
  - Views only the basic CF logs, not CF Runtime logs
- **Flogr**, free from Scott Stroz
- Slow Pages Parser, free from Ray Camden
- Eclipse Extensions **CF Log Viewer**, free from Adobe
- CFBuilder Tailview View
- URLs for these at [cf411.com/#cflog](http://cf411.com/#cflog)

# FusionAnalytics

- New tool coming from Intergral
  - Makers of FusionReactor
- Powerful tool that solves problem of server analysis over CF restarts
  - Saves you the hassle of reading log files
  - Does powerful analysis across many logs
    - CF
    - FusionReactor
    - Others will be added
- Designed to permit you to point to new logs
- More at <http://www.fusion-reactor.com/labs/analytics.cfm>

# Other Logs, non-CF

- There are many other logs to consider:
  - Web Server Request Logs
    - In IIS, note also HTTPErr logs
  - Database server logs
  - Windows Event Logs (see Event Viewer)
  - Windows Performance Monitor and logging options
  - Equivalents on other OS platforms
  - Verbose Garbage Collection logging

# Generic Log Analysis Tools

- **Universal Viewer (ATViewer)**, free
- **Log Parser**, free, from Microsoft
- **Sawmill Universal Log File Analysis & Reporting**, commercial
- And more at [cf411.com/#genlog](http://cf411.com/#genlog)
- Many web server log analysis tools, of course
  - **Google Analytics, etc.**
  - **AWStats, Webtrends, Analog, etc.**
  - And more at [cf411.com/#webanal](http://cf411.com/#webanal)

# Resources

# Resources for CF Tuning/Troubleshooting

- Grant Straker's "ColdFusion MX: Performance Troubleshooting and Tuning Guide" (CF6-era)
  - Website and accompanying PDF (\$50)
  - <http://www.cfperformance.com/>
- "Performance tuning for ColdFusion application"
  - [http://www.adobe.com/devnet/coldfusion/articles/coldfusion\\_performance.html](http://www.adobe.com/devnet/coldfusion/articles/coldfusion_performance.html)
- ColdFusion 8 Performance WhitePaper
  - [http://www.adobe.com/products/coldfusion/pdfs/cf8\\_performancebrief.pdf](http://www.adobe.com/products/coldfusion/pdfs/cf8_performancebrief.pdf)

# Resources for CF Tuning/Troubleshooting (cont.)

- Bloggers prone to write about CF troubleshooting, tuning
  - WebApper: <http://www.webapper.com/blog/>
  - Alagad: <http://alagad.com/go/blog>
  - Mike Brunt: <http://www.cfwhisperer.com/>
  - Mark Kruger: <http://www.coldfusionmuse.com/>
  - Pete Freitag: <http://www.petefreitag.com/>
- And many classic blog entries from these folks:
  - “Sarge” -<http://sargeway.com/blog/>
  - Brandon Purcell - <http://www.bpurcell.org/blog/>
  - Steven Erat -<http://www.talkingtree.com/blog/>
  - Robi Sen – via archive.org:  
<http://web.archive.org/web/20080127011413/http://www.robisen.com/>



# Resources for CF Tuning/Troubleshooting (cont.)

## ➤ Some specific classic entries

- <http://web.archive.org/web/20080108100935/http://www.robisen.com/index.cfm?mode=entry&entry=FD4BE2FC-55DC-F2B1-FED0717CC1C7E0AF>
- <http://www.petefreitag.com/articles/gctuning/>

## ➤ Recent “Instant classics”:

- <http://www.webapper.com/blog/index.php/2009/08/04/improve-coldfusion-performance-by-1000x-believe-me-its-possible/>
- <http://www.webapper.com/blog/index.php/2009/08/03/coldfusion-request-tuning-settings-in-depth/>
- [http://www.webapper.com/blog/index.php/2009/05/05/createuuid\\_friendly\\_function\\_or\\_server\\_killer/](http://www.webapper.com/blog/index.php/2009/05/05/createuuid_friendly_function_or_server_killer/)
- <http://alagad.com/go/blog-entry/troubleshooting-coldfusion-performance-the-problem>
- <http://alagad.com/go/blog-entry/using-hprof-with-coldfusion-to-troubleshoot-slow-code-issues>
- <http://alagad.com/go/blog-entry/troubleshooting-coldfusion-performance-the-analysis>

# Resources for CF Tuning/Troubleshooting (cont.)

- Meta-resources (pages pointing to others)
  - <http://blog.pixl8.co.uk/index.cfm/2006/12/29/Coldfusion-Tuning-links>
  - <http://devnulled.com/content/2005/09/coldfusion-mx-tuning-and-clustering-roundup/>
  - [http://coolskool.blog-city.com/random\\_collection\\_of\\_cfm\\_x\\_performance\\_tuning\\_resources.htm](http://coolskool.blog-city.com/random_collection_of_cfm_x_performance_tuning_resources.htm)
- Some useful non-CF Blogs
  - <http://blog.sqlauthority.com/> (SQL Server)
  - <http://www.mysqlperformanceblog.com> (MySQL)

# Resources for getting help

- Mentioned earlier other approaches to get help...
- Search google
  - CFSearch: My CF Custom Search Engine
    - [http://www.google.com/coop/cse?cx=012970358153442150397%3Aekun5bf\\_8-m](http://www.google.com/coop/cse?cx=012970358153442150397%3Aekun5bf_8-m)
      - Or just google the term cfsearch, choose 2<sup>nd</sup> link
- Ask on a mailing list/forum
  - From Adobe, user groups, and more
    - <http://www.cf411.com/#cflists>
- Contact myself or others for CF support
  - <http://www.cf411.com/#cfconsult>

# Consider also

- “CF911: ColdFusion Tools for When the Stuff Hits the Fan”
  - FAQU, Volume iii Issue ii, due out in 2009
- My blog: <http://www.carehart.org/blog/>
  - CF911 category:
    - <http://www.carehart.org/blog/client/index.cfm/troubleshooting>
- Two 3-hour FusionReactor classes I teach
  - <http://www.fusion-reactor.com/support/training/>
- My day-long class
  - “CF911: Solving CF Performance and Reliability Problems”
    - Greatly expanded version of this class
    - Planning to offer it online

# Conclusion

# Summary

- Solving problems with CF often involves digging around to find, enable diagnostics
- Many useful tools, for CF and otherwise
- Many useful logs, more than just “core CF logs”
- Many tools for viewing/analyzing logs (CF/other)
- Many resources for getting help, learning more
- Hope you feel more empowered to solve problems
  - Or feel free to call on me for assistance

# Questions On Presentation

- Charlie Arehart
  - [charlie@carehart.org](mailto:charlie@carehart.org)
- I'd really appreciate your feedback
  - <http://carehart.org/feedback/>
- Available for ColdFusion troubleshooting, setup, implementation consulting
  - Also system admin and tuning support, developer productivity coaching, and more
  - Remote or on-site
  - For as little as days, hours, even 15 minutes
  - <http://carehart.org/consulting/>