

CF8 Server Monitor Introduction

Produced April 15, 2008



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Topics

- Overview
- A walkthrough of features
 - Overview page
 - Request, query, environmental monitoring
 - Terminating threads, Alerts, Snapshots
 - MultiServer monitor, Admin API
- Frequently Asked Questions

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, DevCenter, CommunityMX, more
 - Contributor to Ben Forta's CF8 books, past ColdFusion MX Bible
 - Frequent speaker to user groups, conferences worldwide including CFUnited, cf.Objective, webDU, webManiacs, 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, 50+ articles, 70+ presentations, more
 - UGTV: recordings of presentations by nearly 200 CFUG speakers
 - Consulting: available for troubleshooting, tuning, training
 - For as few as days, hours, or even minutes; remote or on-site

What is the CF 8 Server Monitor?

- A Flex-based interface for observing CF's internal operations
 - What requests are running, for how long, what they're doing, and more
 - Presents graphs, charts, and text tables to identify worst offenders, targets for further analysis
- Most of the core data is being gathered by CF8 anyway
 - Admin API lets you access the data yourself
 - Monitor is just an interface to present that API data
- Is also an alerting and protection mechanism
 - Can both notify you of trouble, and act to prevent it

Why use it?

- Various circumstances can affect performance
 - Increase in traffic
 - Failure in related services
 - Problems with configuration
 - CFML coding practices
 - Sometimes simply bugs in CF or underlying services
- What if you could better understand why they're happening, and when?
 - And even be notified? Or have the server prevent some problems?
 - Also, setting some Admin config values is a black art
 - Monitor (and related features) helps with these

When to use it?

- More than just monitoring
 - Alerts: detect, notify, log, and even protect the server
 - Profiling: where, in code, is time being spent?
 - Memory tracking: tracking memory used by features
 - Snapshots: current status of important system conditions
 - Multiserver monitor: watch other CF8 servers

Where can I use it?

- Works only on CF8
 - Can't monitor 6 or 7
 - Comes only on Enterprise or Developer editions
- Is useful for development as well as prod
 - Development: what happens when...?
 - No longer need to "just wing it" when making a choice
 - Production: what's going on?
 - Why performing poorly? How many requests? How much memory used? How much DB I/O?

How to launch it?

- How to launch the monitor
 - From CF Admin
 - Server Monitoring > Server Monitor > Launch Server Monitor
 - Can also launch the Multiserver monitor from there
 - Or from browser as
 - [http://\[servername\]/CFIDE/administrator/monitor/launch-monitor.cfm](http://[servername]/CFIDE/administrator/monitor/launch-monitor.cfm)
 - Requires Admin password (or username/password if using new multiuser admin—Enterprise-only—feature)

A walkthrough of features

- Overview page: key metrics (but not all)
 - Top two report pods discussed shortly, others discussed later
 - Reports pod
 - Tabular data, with drill-downs (double-click)
 - Again, some have no value if no "Start" buttons enabled
 - Drill-downs often have filter to control what's shown
 - And these reports then have more drill-downs also
 - Return to list view using icon

A walkthrough of features (cont)

- Available tabs atop monitor
 - Overview, statistics, alerts, snapshots
- Statistics tab has much more detail
 - Itself broken into sections
 - Request Statistics, Memory Usage, Database, Errors
- “Start” buttons
 - Monitoring, profiling, memory tracking
 - Some reports require one or more to be enabled
 - They increase in overhead, left to right
 - Some reports don’t require any enabled
 - I call these “zero overhead” reports

Request Monitoring

Request Monitoring

- Average Response Time, Requests Per Second
 - Most traditional measures of server performance
 - First graphs shown on Overview page
 - Require “start monitoring”
 - Other reports show details on requests
 - Note that this chart, like many, has popup data

Request Monitoring (cont.)

- Active requests
 - Statistics > Request Statistics > Active Requests
 - Observe requests actually running on your server at a given point of time
 - understand why server not responding/ poorly
 - help configure simultaneous request setting
- Active ColdFusion Threads
 - Statistics > Request Statistics > Active ColdFusion Threads
 - Shows data on threads spawned with CFTHREAD
 - Again, can help set admin thread settings

Request Monitoring (cont.)

- Observing Requests
 - If can catch request running (CF8 is fast!)
 - Can see
 - template file/path, type of request, IP address, web server thread name, time taken so far
 - Can drill down to see details of variable values in all scopes
 - Does NOT require start memory tracking
 - Can also kill requests from here, discussed later

Request Monitoring (cont.)

- Slowest tags or function calls in a request
 - when viewing request details
 - Requires "start profiling"
 - Will see new info: "Top 10 Slowest Tags & Functions"
 - Tag/function name, template path and line number, time in milliseconds
 - And can drill down on line of code to see stack trace

Request Monitoring (cont.)

- Slowest requests and slowest CF Threads
 - Statistics > Request Statistics > Slowest Requests
 - Statistics > Request Statistics > Slowest ColdFusion Threads
 - These show those requests/threads from the recent past that were slowest
 - Sadly, no easy way to see ALL recent requests

Request Monitoring (cont.)

- Finding heavy hitter requests
 - From two more different perspectives
 - Both require “start monitoring”
 - Highest average response time
 - Statistics > Request Statistics > Cumulative Server Usage report
 - displays requests using most avg response time over all executions of that page
 - Highest number of executions
 - Statistics > Request Statistics > Highest Hit count
 - “Request size” column populated with mem tracking

Request Monitoring (cont.)

- Largest variables used across requests
 - Requires “start memory tracking”
 - Statistics > Memory Usage > Requests by Memory Usage
 - Drill down to see top 10 largest variables in the request
 - by name, scope, type, template, and average/last size

Query Monitoring

Query Monitoring

- Tracking Active Queries
 - Requires "start profiling"
 - Statistics > Database > Active Queries
- Tracking large, slow, and frequent queries
 - Statistics > Memory Usage > Queries by Memory Usage
 - Requires memory tracking
 - Statistics > Database > Slowest Queries
 - Statistics > Database > Most Frequently Run Queries
 - Both require monitoring and profiling
 - Remember threshold value, to help see data

Query Monitoring (cont.)

- Tracking cached queries
 - Never had insight into this memory space
 - CFQuery tags that use the CachedWithin or CachedAfter attribute
 - Statistics > Database > Query Cache Status
 - Total in cache and ratio shown at top
 - “Free report”: no start buttons required
 - If “start profiling” enabled, can see more detail
 - Statistics > Database > Cached Queries
 - Show how often each cached query is requested vs executed
 - Drill down on each for template and line number and SQL that’s cached (and size, if “start memory tracking”)

Query Monitoring (cont.)

- Database Pool Status
 - Statistics> Database> Pool Status
 - requires no "start" buttons
 - Tracks info on Datasources and the pooling of their database connections

Environmental Monitoring

Environmental Monitoring

- Shared scope (session, app, server) use
 - Statistics > Request Statistics > Active Sessions
 - Statistics > Memory Usage > Application Scope Memory Usage
 - Statistics > Memory Usage > Server Scope Memory Usage
 - Can view vars in all these scopes, even without "Start" buttons enabled!
 - Size will be "0", unless start monitoring/mem track
 - But can see all the data regardless. Useful!

Environmental Monitoring (cont.)

- Tracking JVM Memory Usage
 - Statistics > Memory Usage > Memory Usage Summary
 - graphical depiction of JVM memory usage
 - “Free report”: no start buttons required
 - Note available “Run GC” button

Environmental Monitoring (cont.)

- Monitoring the Template Cache
 - Statistics > Request Statistics > Template Cache Status
 - Another “free” report (no start buttons required)
 - Finally can see how many files are in cache
 - Can help with setting the template cache size, as well as to spot problems
 - More on this in “hidden gems talk”

Environmental Monitoring (cont.)

- Monitoring application errors
 - Statistics > Errors > Requests with Errors
 - Useful in production, otherwise may not notice errors happening
 - Better still, if "start profiling", can see:
 - more about the line of code in error
 - how often the error has occurred
 - the full CFML stack trace that led to the error
 - Also feeds the overview page "last error" pod

Other Features

More than just a monitor

- The CF8 monitor (like FusionReactor and SeeFusion as well) is more than just a monitor
 - Can control requests (terminate them)
 - Both manually and automatically
 - Alert mechanism can notify you troublesome of conditions, and respond to them
 - Snapshot feature provides useful environmental status information
 - Multiserver monitor watches other CF8 servers
 - Admin API

Terminating threads

- From Active Requests report, can kill running requests
 - Such as if they're hung or causing trouble
 - Tying up valuable simultaneous request threads
 - No longer need to just "restart the server"
 - Caution: with power comes responsibility
 - User presented whatever portion of request generated prior to termination
- Don't want to have to always be baby-sitting the server though...

Alerts

- Alerts watch your server for you, stepping in for given trouble conditions
 - Can terminate request
 - Can just send email with notification
 - Can execute CFC to do any sort of processing
 - write data to a log file or database, etc.
 - Can also trigger snapshot
 - Can even force garbage collection (with JVM memory alert)
- Four kinds of alerts
 - Unresponsive Server (too many requests taking too long)
 - Slow Server (average response time too high)
 - JVM Memory (too much memory used)
 - Timeouts (too many requests timing out)

Alerts (cont.)

- Alerts tab at top of monitor, shows two links on left nav bar
 - Alerts: recent, triggered alerts, view snapshots
 - Alert Configuration: create/update alerts
 - Four tabs for the 4 kinds of alerts
 - Last tab for email settings
 - Changes take affect immediately (no restart needed)

Alerts (cont.)

- Viewing alerts
 - Alerts page
 - They remain until server restart
 - You can delete them
 - Log files
 - Monitor.log in traditional CF logs directory
 - And -out log in CF runtime logs directory
 - Emails
 - Can list multiple addresses, with commas
 - Emails trigger entry in monitor log file also
 - If alert kills request, notification lists requests
 - Note they will report a recovered state when alert condition is lifted

Snapshots

- Detailed status information on state of the server
 - Can be triggered manually or in an alert
 - Help with off-line monitoring, analysis
 - Also supplements notification emails
 - They don't list what requests are running at time of alert, but snapshot does show that and more
 - If selected, will be included as attachment to email
 - Also available in own Snapshots tab at top of monitor
 - Provides means to trigger snapshots manually and view them (does not show those triggered by alerts)
 - Also accessible in files at [ColdFusion8]\logs\snapshots

MultiServer monitor

- Watches other CF8 servers (Enterprise or Developer Editions)
 - Separate interface from Server Monitor

Admin API

- CFIDE/Adminapi/ServerMonitoring.cfc
- Only available on Enterprise
- Several methods for getting data shown in Server monitor

FAQs

- What about the overhead?
 - Some features have zero overhead. Just presenting data already being gathered by CF
 - Some features are a little (Start Profiling) or a lot (Start Memory Tracking) resource-intensive
 - Perhaps best used only in development, or in emergencies
- Supported systems
 - Runs on all environments CF runs on
 - CF8 only (can't monitor 6 or 7)
 - Again, only on Enterprise or Developer editions
- What about FusionReactor, SeeFusion?
 - Still valuable for 6 and 7
 - And each offers things that CF8 monitor does not
 - So can still be valuable in CF8

FAQs (cont.)

- What's missing? Have noticed a few things, including:
 - No obvious report showing all requests over recent time period
 - Can set slow requests to 0 and a high number of requests to show
 - No tracking of CPU use (overall or per request)
 - No logging of data
 - You can create your own logs with Alert CFCs
 - Email comes from cfadmin@servername domain (in my case, charlied620), can't change to a real domain

FAQs (cont.)

- Does the Alert mechanism require any start buttons be enabled?
 - No
- If I open the monitor and turn on start buttons, does their effect remain when Monitor is closed?
 - Yes, because Admin API code would need to rely on it
 - Be careful, then, about leaving it on

Learning More

- Covered in “Configuring and Administering ColdFusion”
 - <http://www.adobe.com/support/documentation/en/coldfusion/>
- Also online help within the monitor
- My articles:
 - ColdFusion 8 server monitoring – Part 1: Using the Server Monitor in development
 - http://www.adobe.com/devnet/coldfusion/articles/monitoring_pt1.html
 - ColdFusion 8 server monitoring – Part 2: Using the Server Monitor in production
 - http://www.adobe.com/devnet/coldfusion/articles/monitoring_pt2.html
 - ColdFusion 8 server monitoring – Part 3: Automated monitoring and request management with Alerts, Snapshots
 - ColdFusion 8 Server Monitoring –Part 4: Multiserver Monitor, Admin API Monitoring, and More

Summary

- Great to have monitoring built-into CF
- Just be aware that it's CF8-only, Enterprise and Development
 - Consider other tools for other versions
- More than just a monitor
 - Alerts, profiling, memory tracking, snapshots, multiserver monitoring
- Some features have zero overhead
- Useful in development as well as prod

Questions On Presentation

- Charlie Arehart
 - charlie@carehart.org
- I'd really appreciate your feedback
 - <http://carehart.org/feedback/>
- Also available for troubleshooting, training, consulting
 - Also other developer productivity coaching, system admin and tuning support, and more
 - Remote or on-site
- New Per-minute Phone/Web support
 - <http://carehart.org/askcharlie/>