FusionReactor Webinar:
Post Crash Trouble Shooting

INTERGRAL
information solutions

fusion reactor™

Introductions

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(Focused on server troubleshooting)

Agenda

- Foreword

- Unique challenges in post-crash troubleshooting

- Unique features FR provides for these challenges

- Other server resources that may be of value

- Connecting the dots, finding resolution of real-world problems

- Upcoming other webinars

- Other FR Resources

- Questions & answers

Foreword

- Audience: presumed to already be using FR
  - But perhaps not using it to its fullest value
  - Or not yet using/appreciating it for post-mortem analysis
- Concepts apply generally to any Java/CFML server that FR can monitor
- Preso is being recorded, so you will be able to revisit details

Unique challenges in post-crash troubleshooting

- FR is great at showing details of running instance of CF/Railo/Lucee or Java servers
  - Running requests, queries, resource usage, and much more presented in powerful UI
  - And for some folks, that's all they ever use FR for

- But when the instance (the underlying JVM) crashes, <u>it takes FR and that UI with it</u>

- So how can you then know what happened **BEFORE that crash**?
  - Primary FR features that <u>can</u> help with this are FR's logs, CP alert emails

- Of equal importance may be app server, web server, db server, and OS logs
  - Sometimes need still more details about other apps on the same server, via other tools

- We'll discuss these today in some detail

- Value here also in related products: FR Cloud, FusionAnalytics
  - Will be highlighted briefly near conclusion

A real-world example

- But let's start with a real world example, assuming instance has crashed

- We'll detail more carefully how to find and understand the resources
  - Where they are, where documented, what to focus on for different challenges

- Let's see first...
  - **What can the FR UI tell us, to get us understanding a crash after a restart?**

- Can see instance start time, to help know where to start looking in logs for last crash
  - Also, can use UI to understand what "normal" looks like (req activity, memory, etc.)

- ...

A real-world example (cont.)

- Then let's see next...
  - **What the FR logs can tell us, from before the crash**

- Can view the FR log archives (before crash) from within FR UI or via file system
  - How resource log mirrors FR Metrics>Web Metrics graphs, but shows values pre-crash
  - How request log tracks every request, start and end, with lots of detail
  - How jdbc log can track slow queries
  - How the memory logs can show use of various parts of JVM memory (heap and more)
  - How GC logs can show rate of GCs

- Of course, these are all things in the UI as well
  - Focus here is on how to find that info in the logs, for post-mortem troubleshooting

A real-world example (cont.)

- Let's see finally...
  - **What the FR Crash Protection alert emails can tell us, from before the crash**

- Will discuss later how to configure them
  - How they can be configured to watch for 3 conditions
  - How the value of the email is not just THAT there's a problem, but WHY
  - How they show total instance/system CPU, instead heap used %, count of requests, more
  - How they show what requests were running at time of alert (url, ip, duration, more)
  - How they show what query, if any, was running for a given request
  - How they can show the user agent making each request
  - How they show vital, valuable thread dump: what line of code was running at time of alert

More on these FR features for post-crash analysis

About FR logs

- Where they are stored

- What they hold (several different kinds), how often they're updated
  - Beyond those mentioned, consider also dbpoolstats, classes logs
  - Realtimestats log, unique to ColdFusion. Useful extra detail (sessions, cache info, more)

- Which ones need to be enabled or can be modified
  - More detail in "Configuring for Action" webinar

- How to view them from within FR UI, especially since FR 6.0
  - How to tell from log times when an instance has restarted

- Finding online help about each log, its columns

- Importing them into Excel easily

About FR CP email alerts

- How they are configured
  - Briefly, set alerts in CP>Settings page, then also set email config in FR>Settings page
  - More detail in "Configuring for action" webinar

About FR UI as baseline for "normal"

- FR has many graphs and request/query details views

- See "Hidden Gems in FR" webinar for more details

- Consider also using FR Daily Report emails as baseline
  - Can help understand "normal" and pattern changes over time
  - Again, see "Configuring for action" webinar for more

Other server resources that may be of value

App Server logs

- Rather than "application" logs, generally want to focus on console/stdout/system.out logs
  - If app server run as service, logs are typically redirected to a file (see below)
  - If run from command line, then they stream to console

- ColdFusion
  - In CF10 and above, see instance logs folder, and its coldfusion-out.log, coldfusion-error.log
  - In CF9 and earlier, see [cf]\runtime\logs folder, and the -out and -event logs there
  - CF's server.log (in traditional logs folder) is helpful to see times when CF has been restarted

- Lucee/Railo
  - See lucee\tomcat\logs folder, and catalina* log files
  - And if started as a service, see same folder for lucee-stdout*, and lucee-stderr* log files

- Tomcat
  - CATALINA_BASE/logs/catalina.out
  - And if started as a service, see same folder for stdout*.log and stderror*.log

Web server logs

- Keep in mind distinction between web server "access" and error logs
  - Each can have value in post-crash troubleshooting
  - Access logs can show what requests (if any) were made: their volume, nature
  - Error logs can show if there were errors with the web server itself (config, crash)

- IIS errors
  - No real "error log" for IIS. See Windows Event logs

- Apache errors
  - See [apache]\logs\error.log
  - On windows, may find some Apache-specific errors tracked in Windows Event logs

- Can also be value in Web Server monitoring tools
  - Especially when problem may be there as opposed to your app server
  - Too many to list. See my site: cf411.com/wsmon

DB server logs, monitoring

- Most DBMSs do have error logs
  - As with web servers, DB error logs can help understand problems in DBMS
  - These can flow back to your web app server (and FusionReactor's display of req/db times)

- Too many DBMS variants to offer details for each

- Some DBMS's also offer options to log slow queries

- And again there can be value in DB monitoring tools
  - To see both what's going on now and (with some) what happened in past/over restarts
  - FusionReactor sees only what leaves and comes back to your app server
  - As before, too many to list. See my site: cf411.com/dbmon

OS logs, monitoring

- Some crashes may be reflected in OS logs
  - Again, in Windows, see Event logs (application and system)
  - In Apache, see /var/logs and various logs there

- As with DBs, can be value also in OS monitoring tools
  - To see both what's going on now and (with some) what happened in past/over restarts
  - Helpful to see both total system resources (cpu, memory, network, disk)
  - But also what processes were using most of each resource, at time of crash
    - See especially NewRelic Infrastructure (not to be confused with NewRelic APM)
  - Again, too many OS monitoring tools to list. See my site: cf411.com/sysmon

Other FR-related products for post-mortem

- FusionReactor Cloud
  - Optional add-on service to FR "on-premise"
  - Stores key metrics about your app server on cloud server, managed by FR team
  - Interface similar to FR in many ways, yet more powerful in others
  - Most important: your server info is viewable across restarts
  - Contact sales@fusion-reactor.com for more info, demo, pricing

- FusionAnalytics
  - Has been in production for years
  - Stores FR metrics about your server in a local DB (which you install, but FR manages)
  - Interface is again similar to FR but much more powerful
  - And again, your server info is viewable across restarts
  - More at fusion-analytics.com (including live demo, docs, pricing, and more)

Connecting the dots, finding resolution of real-world problems

- Your final exam. Recall how FR can help with nearly every one of these:
  - When did instance "crash"?
  - Did it actually restart or was it just hung up temporarily?
  - How often has it restarted recently?
  - Were there any errors in the instance console logs, just before the crash?
  - Were some or all requests hung or running long before crash?
    - Were there perhaps <u>no</u> requests running at all for minutes before crash?
  - Was CPU or memory for the instance high before crash? Garbage collection?
  - Were various <u>non-heap</u> memory spaces high before crash?
  - How many sessions were there before crash?
  - Were there many queries in query cache? Templates in template cache? Etc.
  - Does the DB show that there were problems within the DB?
  - Was there a problem in the OS (other processes) on app server or DB server machines?
  - To name just a few

Conclusion

- So as you can see, there are many ways to use FR for post-crash troubleshooting
  - FR UI for comparing to what's normal now/recently
  - FR logs
  - FR CP alerts
  - FR-related tools: FusionAnalytics and FR Cloud
- As well as other app server, DB server, and OS logs and tools
  - Can be great adjuncts to support FR findings, or to use when FR points elsewhere

Other upcoming webinars

- Troubleshooting and Identifying Issues using FusionReactor 6 - Part 2 – TBA

- Registration: www.fusion-reactor.com/webinars
  - Recordings of past webinars also offered there

Other FR resources

- **FR web site: fusion-reactor.com**

  - Downloads

  - Docs, videos, technotes, forums, and much more

- **Email: sales@fusion-reactor.com, support@fusion-reactor.com**

- **Phone: (978) 496-9990 (sales)**

- **Consulting assistance: cfconsultant.com**

- We welcome your feedback on these or the other webinars, or any you would like to see

Questions & Answers