

CF SCHEDULED TASKS: MORE THAN YOU MAY KNOW, AND SHOULD



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- ▶ Basic features of scheduled tasks
- ▶ Ways to create tasks
- ▶ Solving common problems running tasks
- ▶ Things CF cfscheduled tasks “can’t do”
- ▶ Additional/advanced task features
- ▶ Understanding task configuration files
- ▶ Controlling access to managing/running tasks
- ▶ Alternatives to scheduled tasks

TOPICS

- ▶ I focus on CF server troubleshooting, as an independent consultant
 - ▶ Assist organizations of all sizes, experience levels
 - ▶ Work remotely 99% of the time, safe, secure, easy (via **shared desktop**)
 - ▶ **Solve most problems in less than an hour**, teaching you also as we go
 - ▶ **Satisfaction guaranteed**
 - ▶ More on rates, approach, etc at carehart.org/consulting
- ▶ But to be clear, I'm not selling anything in this session! 😊
- ▶ All my past presentations (and recordings) at carehart.org/presentations

ME.ABOUT()

- ▶ CFML Reference manual
 - ▶ helpx.adobe.com/coldfusion/cfml-reference/coldfusion-tags/tags-r-s/cfschedule.html
 - ▶ Covers cfschedule rather than the Admin UI, of course
- ▶ “Developing ColdFusion Applications” manual
 - ▶ helpx.adobe.com/coldfusion/developing-applications/developing-cfml-applications/using-the-coldfusion-debugger/using-scheduler.html
 - ▶ Buried in section on debugger! Also, really only about what was new in cf10
- ▶ “Configuring and Administering CF” manual (or via ? Icon in CF Admin)
 - ▶ helpx.adobe.com/coldfusion/configuring-administering/using-the-coldfusion-administrator.html#scheduledtasks
 - ▶ That link is to its (2-page) section on sched tasks, with brief overview of admin fields

ABOUT “PRIMARY” ADOBE RESOURCES

- ▶ Let's start with just the most basic features of setting up a scheduled task
- ▶ “Scheduled tasks” page, within “Settings” section (was in “Debugging” pre-cf10)
- ▶ Managing tasks (more later)
- ▶ Basic settings in creating a task
 - ▶ Name, start/end date, frequency, url
 - ▶ Optional username/password, proxy server/username/password, timeout
 - ▶ Option to publish task output to file
 - ▶ More on “additional settings” later
- ▶ Once created, can manage task in Admin (or wait for it to run)
 - ▶ Edit, delete, pause, run buttons
 - ▶ Status info
 - ▶ More features on that page, which we will discuss later

BASIC FEATURES OF SCHEDULED TASKS

- ▶ Note this is an option for “when” the task should run
 - ▶ One of many features added in CF10, but never noticed by many
- ▶ Allows incredible flexibility in terms of controlling timing/frequency
 - ▶ Almost worthy of an entire talk
 - ▶ Indeed, there are many resources on it (it’s long been a Linux feature)
 - ▶ Traditionally format is: **minute, hour, day of month, month, day of week**
- ▶ CF tasks are based on open-source Quartz framework, which has cron docs
 - ▶ Format is: **second, minute, hour, day of month, month, day of week, year**
 - ▶ Second is required, year is optional
 - ▶ quartz-scheduler.org/documentation/quartz-2.2.2/tutorials/crontrigger.html
- ▶ See online tool: freeformatter.com/cron-expression-generator-quartz.html

IT’S ABOUT “CRON” TIME

- ▶ Besides that CF Admin “scheduled tasks” page, can create tasks with:
 - ▶ cfschedule tag
 - ▶ Let's look at that CFML Ref doc, with examples and details
 - ▶ CF Admin api
 - ▶ Export/import between CF instances
 - ▶ CF Admin CAR feature
 - ▶ CLI tools: **cfsetup** (in CF2021 and above) and Ortus commandbox **cfconfig**
 - ▶ Migration wizard shown on first launch of CF Admin (on machine having a previous CF)

WAYS TO CREATE CF SCHEDULED TASKS

► **“Why does the task fail when I can visit the URL in my browser?”**

- CF tasks run from within CF, via java (httpClient under the covers)
- Your browser may have capabilities (or improvements) that CF (CF's java) does not
- Can hit such issues as https/tls problems, authentication issues
- Tip: try running the task URL from within a CFHTTP, dumping its result/error message
- helpx.adobe.com/coldfusion/kb/coldfusion-mx-troubleshooting-scheduled-tasks.html
- coldfusion.adobe.com/2019/06/error-calling-cf-via-https-solved-updating-jvm/

► **“How can I know if my tasks ran, and what was their result?”**

- “Publish” option can save task's resulting output—if saved to directory that CF can write to
- Schedule task log, enabled in CF Admin “Logging Settings” page (wtf?!)

SOLVING COMMON PROBLEMS RUNNING TASKS

- ▶ “Why are my tasks not running when expected?” (date vs time)
 - ▶ bennadel.com/blog/2189-a-big-hole-in-my-understanding-of-coldfusion-scheduled-tasks.htm and comments
- ▶ “Why aren’t my tasks running at all”
 - ▶ experts-exchange.com/dashboard/#/questions/29178221
- ▶ “Why do I see my task running twice?”
 - ▶ serverfault.com/questions/886697/coldfusion-2016-scheduled-task-running-twice
 - ▶ youtube.com/watch?v=dsicpB7UaQw
- ▶ “Why are my tasks timing out?”
 - ▶ Consider misfireThreshold in quartz.properties (more on such config settings later)
- ▶ “Why have my tasks all disappeared?”
 - ▶ Underlying neo-cron.xml sometimes corrupted (more later)

SOLVING COMMON PROBLEMS RUNNING TASKS (CONT.)

- ▶ You may hear folks complain about CF scheduled tasks:
 - ▶ Can't call cfcs (rather than URLs)
 - ▶ Can't be chained/have dependencies
 - ▶ Can't have intelligent error response/task triggers
 - ▶ Can't have lifecycle methods
 - ▶ Can't be define to run on more than one server among a group
 - ▶ Can't have task info stored in a database
- ▶ Since CF10, these are all in CF Enterprise, Dev edition, Trial edition, Commandbox
 - ▶ Are still withheld from CF Standard

THINGS CF CFSCCHEDULED TASKS
“CAN'T DO”

- ▶ Event handling CFC
- ▶ Date exclusions
- ▶ Exception handling (misfire, exception, retry count)
 - ▶ [youtube.com/watch?v=f39zZ7LQi9M](https://www.youtube.com/watch?v=f39zZ7LQi9M)
- ▶ Chaining (oncomplete)
- ▶ Priority
- ▶ Clustering
- ▶ If you try to use these in Features in CF Enterprise/Dev/Trial but not CF Standard
 - ▶ Running a CFC instead of a URL, listeners, chaining, clustering of tasks, exception handling
 - ▶ Error: *"Advance Scheduling support is not available in this edition of ColdFusion server"*
 - ▶ Or in logs: *"coldfusion.**featurerouter**.FeatureNotAvailableException: Advance Scheduling support is not available in this edition of ColdFusion server"*

ADDITIONAL/ADVANCED TASK FEATURES

- ▶ Neo-cron.xml
 - ▶ Our need to protect it: tracker.adobe.com/#/view/CF-4200009
 - ▶ Recovering default/stock version of such neo files
 - ▶ carehart.org/blog/2021/9/13/finding_default_cf_admin_config_files_now_at_cfmlrepo_dot_com
- ▶ CF Scheduled tasks based on open source Quartz framework, since CF10
 - ▶ Quartz version in CF2023 is 2.4.0
 - ▶ quartz.properties settings (in cfusion\lib\quartz) unchanged from cf10-2023
 - ▶ Interesting “plugins” options...

UNDERSTANDING TASK CONFIGURATION FILES

- Possibly interesting Quartz plugins to consider
 - `org.quartz.plugins.history.LoggingTriggerHistoryPlugin`
 - `org.quartz.plugins.history.LoggingJobHistoryPlugin`
 - `XMLSchedulingDataProcessorPlugin`
 - `ShutdownHookPlugin`
 - for both, see *nurkiewicz.com/2012/04/quartz-scheduler-plugins-hidden.html*
 - correct links are like:
 - *quartz-scheduler.org/documentation/quartz-2.3.0/configuration/ConfigPlugins.html*
 - *quartz-scheduler.org/api/2.3.0/org/quartz/plugins/history/LoggingTriggerHistoryPlugin.html*

UNDERSTANDING TASK CONFIGURATION FILES (CONT.)

- ▶ Application- vs Server-level tasks
- ▶ Granting CF admin access to different users
- ▶ Controlling access to cfschedule via sandboxing

CONTROLLING ACCESS TO MANAGING/RUNNING TASKS

- ▶ Linux Cron, Windows Task Scheduler
- ▶ cfhttp
- ▶ ColdBox scheduled tasks
 - ▶ coldbox.ortusbooks.com/digging-deeper/scheduled-tasks
 - ▶ cfcasts.com/series/into-the-box-2021/videos/scheduling-tasks-the-human-way!-brad-wood
- ▶ cbq ("q" for queue), "A protocol-based queueing system for ColdBox"
 - ▶ cbq.ortusbooks.com/
- ▶ Lucee scheduled tasks
 - ▶ docs.lucee.org/reference/tags/schedule.html

ALTERNATIVES TO SCHEDULED TASKS

- ▶ Hope you agree now there is much more to scheduling than many realize
- ▶ And while there can be challenges, there are useful diagnostics
- ▶ Also many resources available to help, from Adobe and others
- ▶ If you hit other challenges, reach out to me
 - ▶ Or the community. See my resource list at cf411.com/cfcommhelp
- ▶ And I'm certainly open to feedback about this presentation

SUMMARY