

# USING REDIS FOR SESSION STORAGE IN ACF AND LUCEE: WHY, AND HOW IT'S EASILY DONE



Charlie Arehart, Independent Consultant  
CF Server Troubleshooter  
charlie@carehart.org  
@carehart (Slack, Github, X, Fb, Li, Skype, etc.)

Updated July 6, 2024

- ▶ Ever reluctant to restart CF or Lucee, for fear of users getting “logged out”?
  - ▶ Whether running a single or number of servers, it’s a concern
- ▶ What if you could restart one without worrying about that?
  - ▶ Perhaps to perform CF or JVM updates, or OS updates
- ▶ Both ACF and Lucee do offer the option to store sessions in Redis
  - ▶ It’s just a simple CF/Lucee admin configuration: no code change needed!
  - ▶ And there are options for installing Redis or using a Redis service, free or paid
- ▶ Feature supports complex session vars (structs, arrays, queries, CFC instances, etc.)
- ▶ I’ll show you all this today

HAVE YOU EVER WISHED...

Charlie Arehart @carehart  
charlie@carehart.org

- ▶ Quick demo of the benefit
- ▶ How to enable, in CF and Lucee
- ▶ Redis options: services (paid and free), installers, containers, and more
  - ▶ Redis licensing and alternatives
- ▶ Tools to observe Redis: cli and UI, for monitoring or for viewing data
- ▶ Some additional related topics

## TODAY'S TOPICS/DEMOS

Charlie Arehart @carehart  
charlie@carehart.org

- ▶ I focus on CF/Lucee server troubleshooting, as an independent consultant
  - ▶ Assist organizations of all sizes, experience levels
  - ▶ Work remotely: safe, secure, easy via **shared desktop** (zoom, meet, teams, etc.)
  - ▶ **Solve most problems in less than an hour**, teaching you also as we go
  - ▶ **Satisfaction guaranteed**
  - ▶ More on rates, approach, online calendar, etc at [carehart.org/consulting](https://carehart.org/consulting)
- ▶ But to be clear, I'm not selling anything in this session! 😊
  - ▶ Just sharing my experience, and that of others
- ▶ Presentation online at [carehart.org/presentations](https://carehart.org/presentations)



ME.ABOUT()

Charlie Arehart @carehart  
charlie@carehart.org

- ▶ We only have 45 mins...
  - ▶ So focus on the demo and the big picture/ease of implementation
- ▶ I'll expand on details in a series of blog posts
  - ▶ [carehart.org/blog/client/index.cfm/redis-sessions](http://carehart.org/blog/client/index.cfm/redis-sessions)

MY MULTI-PART BLOG SERIES, WITH DETAILS

Charlie Arehart @carehart  
charlie@carehart.org

# DEMO TIME

(Showing complex vars preserved in a session across a CF or Lucee restart)

A series of several parallel white lines of varying lengths and thicknesses, slanted diagonally from the bottom right towards the top right of the slide.

Charlie Arehart @carehart  
charlie@carehart.org



Charlie Arehart @carehart  
charlie@carehart.org

# SETTING UP CF OR LUCEE

A series of several parallel white lines of varying lengths and orientations, starting from the bottom right and extending towards the top right of the slide.

Charlie Arehart @carehart  
charlie@carehart.org



- ▶ Available in CF2016 and above, Standard or Enterprise (or Developer)
- ▶ Will discuss setup of redis itself soon
  - ▶ For now, let's assume it's running at some domain on port 6379
- ▶ As for CF, in CF Admin, go to *Server Settings>Memory Variables*
  - ▶ In "Session Storage" setting, change "In Memory" to "redis"
    - ▶ (Does require "redis-sessionstorage" package, if not all CF packages installed)
  - ▶ Note that you must disable the "J2EE sessions" feature on this CF Admin page
    - ▶ Don't worry: cf sessions can be made as secure as J2EE sessions
- ▶ Point to the redis server domain/ip, port, and provide password if needed
  - ▶ Click "verify connection" button, and if ok "submit changes"
  - ▶ On restarting CF, sessions created from then on are stored in redis
- ▶ Can also automate using cfsetup, cfconfig, CAR files, admin API, in Docker, etc.

## ENABLING REDIS SESSIONS IN CF

- ▶ That CF Admin redis session setting offers an option, “*Use Redis for CFLogin*”
- ▶ If your app does use cflogin / cfloginuser, note two things:
  - ▶ Where such logins are stored is controlled by **loginstorage** attribute in application.cfc/cfm, and it defaults to **cookie**
    - ▶ Sometimes chosen intentionally when app doesn't otherwise use sessions
    - ▶ Such logins will NOT be saved to redis, won't persist across restarts
  - ▶ Only cflogins where **loginstorage** is set to **session** will be persisted across restarts
    - ▶ And assuming that option is enabled in Admin for Redis sessions
  - ▶ More
    - ▶ [helpx.adobe.com/coldfusion/cfml-reference/application-cfc-reference/application-variables.html](https://helpx.adobe.com/coldfusion/cfml-reference/application-cfc-reference/application-variables.html)

# WHAT ABOUT CFLOGIN?

Charlie Arehart @carehart  
charlie@carehart.org

- ▶ Just a little more challenging: first must choose an extension offering this
  - ▶ “Redis Sentinel Driver” (free from Lucee), “Ortus Redis Cache”
    - ▶ Either will work, but the Ortus one provides additional features you can explore
  - ▶ Install the extension via Lucee Admin (*Extensions>Applications* page)
    - ▶ For Ortus one, then go to new Ortus menu, choose “Redis Cache”, choose trial or license
    - ▶ *redis-cache.ortusbooks.com/essentials/configuration*
    - ▶ (Can only configure at server admin, not web)
- ▶ Go to *Services>Cache* page, create new redis cache instance
  - ▶ Near top, choose “Allow to use this cache as client/session storage”
  - ▶ Configure settings to name server, port, password (and more, optionally)
- ▶ ...

## ENABLING REDIS SESSIONS IN LUCEE

- ▶ Then go to *Settings>Scope* page, change “Session Storage” to new cache
  - ▶ Must also change “Session Type” (top of that page) from “Application” to “JEE”
    - ▶ Reverse of CF (more in a moment)
- ▶ No need of Lucee restart. Sessions are now stored in Redis
  - ▶ Beware: Lucee does not currently warn you if you leave “session type” as “jee” when changing “Session Storage”
  - ▶ Sessions will just seem not to persist over restart. Will see error in Lucee Catalina log:
    - ▶ Exception loading sessions from persistent storage
    - ▶ `java.lang.ClassNotFoundException: lucee.runtime.type.scope.Jsession`
- ▶ ...

## ENABLING REDIS SESSIONS IN LUCEE (CONT.)

- ▶ Can automate adding extensions to Lucee via config:
  - ▶ [docs.lucee.org/guides/Lucee5.3-kabang.html#extensions-2](https://docs.lucee.org/guides/Lucee5.3-kabang.html#extensions-2)
  - ▶ Before that was added: [blog.mattclemente.com/2018/08/17/install-lucee-extensions-on-commandbox-docker-containers/](https://blog.mattclemente.com/2018/08/17/install-lucee-extensions-on-commandbox-docker-containers/)
- ▶ As for using Lucee on Docker, see Matt C's repo
  - ▶ [github.com/mjclemente/redis-lucee-extension](https://github.com/mjclemente/redis-lucee-extension)
  - ▶ See also [blog.mattclemente.com/2019/11/14/lucee-redis-ortus-extension/](https://blog.mattclemente.com/2019/11/14/lucee-redis-ortus-extension/)

## ENABLING REDIS SESSIONS IN LUCEE (CONT.)

- ▶ Lucee application.cfc settings
  - ▶ [redis-cache.ortusbooks.com/essentials/configuration#application.cfc-connections](https://redis-cache.ortusbooks.com/essentials/configuration#application.cfc-connections)
- ▶ Lucee manual configuration via .lex file
  - ▶ [redis-cache.ortusbooks.com/essentials/installation#manual-docker-installation](https://redis-cache.ortusbooks.com/essentials/installation#manual-docker-installation)
- ▶ Commandbox
  - ▶ [redis-cache.ortusbooks.com/essentials/configuration#cfconfig-connections](https://redis-cache.ortusbooks.com/essentials/configuration#cfconfig-connections)

# CONFIGURING LUCEE EXTENSIONS VIA CODE

Charlie Arehart @carehart  
charlie@carehart.org

▶ Resources:

- ▶ [redis-cache.ortusbooks.com/essentials/installation](https://redis-cache.ortusbooks.com/essentials/installation)
- ▶ [blog.mattclemente.com/2018/08/17/install-lucee-extensions-on-commandbox-docker-containers/](https://blog.mattclemente.com/2018/08/17/install-lucee-extensions-on-commandbox-docker-containers/)

# CONFIGURING LUCEE EXTENSIONS VIA DOCKER

Charlie Arehart @carehart  
charlie@carehart.org

- ▶ What if redis server named in Admin is unavailable at startup?
  - ▶ CF will start (since a recent CF update), but requests using sessions will get:
    - ▶ Cannot invoke "coldfusion.runtime.session.SessionStorage.sessionExists(String, String)" because "coldfusion.runtime.SessionTracker.sessionStorage" is null
  - ▶ Lucee quietly ignores the error (and doesn't use/store sessions in redis, of course)
- ▶ What if the redis server goes down while CF is running?
  - ▶ Will get error on any page using sessions:
    - ▶ `redis.clients.jedis.exceptions.JedisConnectionException: Failed to connect to any host resolved for DNS name`
  - ▶ Again, Lucee quietly ignores the error and soldiers on without Redis.
    - ▶ Beware: you might restart Lucee and NOT benefit from recovery of session from Redis!
- ▶ Of course, this is somewhat like a key app losing access to its primary db

## WHAT IF REDIS GOES DOWN?



- ▶ Bug in CF2023 and 2021 may create excessive calls to redis (per second/per session)
  - ▶ Can be easily resolved by removing “pmt agent” module, if not using PMT
- ▶ With CF or Lucee, do be sure to monitor redis (discussed later here)
  - ▶ You could exceed memory size chosen for redis (a config redis choice)
  - ▶ Redis could unexpectedly start evicting least-recently used data
  - ▶ *[blog.mattclemente.com/2020/01/21/lucee-redis-session-cache-settings/](https://blog.mattclemente.com/2020/01/21/lucee-redis-session-cache-settings/)*

## A COUPLE OF GOTCHAS

# REDIS SETUP, LICENSING, AND ALTERNATIVES

A series of several parallel white lines of varying lengths and positions, slanted diagonally from the bottom right towards the top right of the slide.

Charlie Arehart @carehart  
charlie@carehart.org

- ▶ Redis is free (more on licensing later)
  - ▶ Also offered there as an “Enterprise” edition
- ▶ There are also service implementations, where you need not install it
- ▶ While traditionally a Linux-based tool, there are options for Windows
  - ▶ Including installers, WSL, and alternatives to Redis (some free, some paid)
- ▶ And can also run Redis via containers (Docker, Podman, Kubernetes, etc.)
- ▶ Surprisingly simple to setup, using either of the above options
- ▶ CF/Lucee sessions work with older Redis versions (like 3) or newer ones (like 7)

## OVERVIEW

- ▶ While you can setup your own Redis (any of many ways), easiest is use a service
  - ▶ Redis offers a free Redis Cloud account, which can even be used for prod
  - ▶ Has low limits, but plenty to demonstrate this capability (for CF or Lucee)
- ▶ Login to *redis.io*, create free account
  - ▶ Create database (any name will do)
  - ▶ Copy its 'public endpoint" (domain and port), and "default user password"
  - ▶ Use these to configure CF or Lucee admin
- ▶ If you setup your own redis, steps will vary
  - ▶ And if redis is not on same machine as CF/Lucee, may need to open its firewall for redis port
    - ▶ May need also to change redis config file "bind" value, which likely defaults to 127.0.0.1
      - ▶ Don't put in IP of client machine, but IP of machine with redis, then restart redis
      - ▶ In Windows Resource Monitor, its network tab will show change from "ipv4 loopback" to this ip

# SIMPLEST OPTION TO DEMO

Charlie Arehart @carehart  
charlie@carehart.org

- ▶ You can also install redis locally, of course (or on a vm, etc.)
  - ▶ While only \*nix binaries offered, can install on Windows using WSL
  - ▶ In the past they and MS offered Windows Redis installers, but no longer
- ▶ Note that Adobe's CF API Manager datastore is Redis
  - ▶ That can be installed on Windows and I'm using it in this demo!
- ▶ There are also Redis Docker images, for those who may prefer that
- ▶ There are still other ways to implement Redis...but first...

## AVAILABLE INSTALLERS FOR REDIS

- ▶ Change coming with Redis 7.4, going to “dual license” (RSAL/SSPL) rather than BSD
  - ▶ Still open source, no change to your USE of redis
    - ▶ Mostly affects only managed service providers/cloud providers offering Redis services
  - ▶ Does not affect use of previous versions at all
  - ▶ More:
    - ▶ [redis.io/blog/redis-adopts-dual-source-available-licensing/](https://redis.io/blog/redis-adopts-dual-source-available-licensing/)
    - ▶ [redis.io/blog/what-redis-license-change-means-for-our-managed-service-providers/](https://redis.io/blog/what-redis-license-change-means-for-our-managed-service-providers/)
- ▶ FWIW, similar changes happened with MongoDB, ElasticSearch, Terraform, etc.
- ▶ Still, the IT world has blown up over this “unprovoked war of aggression”
  - ▶ And alternatives have come out of the woodwork (though some existed previously)

# REDIS LICENSING CHANGES

Charlie Arehart @carehart  
charlie@carehart.org

- ▶ There are many Redis alternatives: some free, some commercial
  - ▶ Some downloadable, some for Windows, some as Docker images, some as cloud services
  - ▶ Aiven
  - ▶ Apache Kvrocks
  - ▶ Dragonfly
  - ▶ Garnet
  - ▶ KeyDB
  - ▶ Memurai
  - ▶ Redict
  - ▶ Upstash
  - ▶ Valkey
- ▶ More: [cf411.com/redisdb](https://cf411.com/redisdb) (where I track if downloadable, what's offered for free svcs)
- ▶ ...

# REDIS ALTERNATIVES

Charlie Arehart @carehart  
charlie@carehart.org

- ▶ As well as traditional cloud providers:
  - ▶ Alibaba ApsaraDB for Redis, and Alibaba Tair
  - ▶ Amazon ElastiCache for Redis
  - ▶ Azure Cache for Redis
  - ▶ Google Memorystore for Redis
  - ▶ Tencent DB for Redis

## REDIS ALTERNATIVES (CONT.)



- ▶ CF and Lucee don't seem sensitive to Redis version number
- ▶ While implementation and setup of Redis is surprisingly simple
  - ▶ There's of course more one CAN learn about configuring and managing it
    - ▶ Configuration options, tuning options
    - ▶ SSL/TLS
    - ▶ Replication and clustering
    - ▶ And more
  - ▶ No time in this session to cover that, but ample resources exist online
- ▶ Let's at least talk briefly about monitoring Redis, viewing data saved there...

## MORE ON REDIS

Charlie Arehart @carehart  
charlie@carehart.org

# TOOLS TO OBSERVE REDIS



Charlie Arehart @carehart  
charlie@carehart.org

## ▶ Redis-cli

- ▶ **info** (reports info about redis instance: version, count of keys/commands, more)
- ▶ **monitor** (watches every command sent to redis)
  - ▶ Time shown is in “epoch time”. Use online [epochconverter.com](http://epochconverter.com) to convert to local time
    - ▶ See my note on this at [stackoverflow.com/a/78561234/90802](http://stackoverflow.com/a/78561234/90802)
  - ▶ Redis monitoring tools may send commands
    - ▶ RedisInsight will send “info” command every 5 secs, while viewing the redis instance
  - ▶ Pay attention to identifier (after time) of what client is sending the command
    - ▶ Shows ip address and port of the client. Can match with more info in “client list” command
- ▶ **--stat** (shows rolling status of key count, mem used, client/connection/request counts)
- ▶ **--bigkeys** (sample redis keys to provide some profiling info on the data)
- ▶ **keys \*** (list all keys)
- ▶ And much more

# CLI: FOR MONITORING; VIEWING DATA

Charlie Arehart @carehart  
charlie@carehart.org

- ▶ RedisInsight (open source, multiplatform, [redis.io/insight/](https://redis.io/insight/))
  - ▶ Browse feature: when viewing data, choose “java serialized” option
    - ▶ Turns CF session key values into json (sadly, doesn't work for Lucee session values)
  - ▶ Profiler feature (does equivalent of redis-cli monitor)
- ▶ Navicat for Redis (commercial, [navicat.com/en/products/navicat-for-redis](https://navicat.com/en/products/navicat-for-redis))
- ▶ Reddisson (free and commercial, [redisson.pro](https://redisson.pro))
- ▶ And still others
  
- ▶ Site to convert epoch time shown in Redis: [epochconverter.com](https://epochconverter.com)

# UI'S FOR MONITORING; VIEWING DATA

Charlie Arehart @carehart  
charlie@carehart.org

# ADDITIONAL RELATED TOPICS

A series of several parallel white lines of varying lengths and orientations, creating a dynamic, abstract graphic element in the bottom right corner of the slide.

Charlie Arehart @carehart  
charlie@carehart.org

- ▶ Multiple CF or Lucee instances pointing at single redis db will share sessions
  - ▶ Such that a given user running on one instance will stay logged in if sent to another
  - ▶ Only across same engine, of course (not shared between CF AND Lucee)
- ▶ Redis **replication, clustering**: can also be done, for increased reliability
  - ▶ As well as **persistence** of Redis database(s), across redis restarts
  - ▶ All beyond scope of this session
  - ▶ Brief mention of backup/aof at bottom of [helpx.adobe.com/coldfusion/using/external-session-storage.html](http://helpx.adobe.com/coldfusion/using/external-session-storage.html)

## BEYOND SESSION PERSISTENCE: ROBUSTNESS

- ▶ Note that both Lucee and CF offer use of Redis for caching OTHER than sessions
  - ▶ In the case of CF, it's offered only with the Enterprise (or Developer) edition of CF2018+
  - ▶ [learncfinaweek.com/course/index/section/Caching/item/Advanced\\_Caching.html](http://learncfinaweek.com/course/index/section/Caching/item/Advanced_Caching.html)
- ▶ Note that Lucee also offers option to store sessions in database
  - ▶ And CF Enterprise clustering offers option to replicate sessions between members

## BEYOND REDIS SESSIONS FOR CF/LUCEE

Charlie Arehart @carehart  
charlie@carehart.org

- ▶ [helpx.adobe.com/coldfusion/using/external-session-storage.html](https://helpx.adobe.com/coldfusion/using/external-session-storage.html)
- ▶ [redis-cache.ortusbooks.com](https://redis-cache.ortusbooks.com)

OTHER RESOURCES ON CF/LUCEE  
REDIS SESSIONS



Charlie Arehart @carehart  
charlie@carehart.org



- ▶ Redis sessions are an easy enhancement for CF or Lucee
  - ▶ Several easily implemented options, whether on-prem, on-network, or in cloud
  - ▶ Easily configured in CF or Lucee admin, or via code, or via config
- ▶ Tools exist to monitor Redis processing, view Redis data
- ▶ Take this ball and run with it!
- ▶ Can learn more about Redis as you may see fit
- ▶ Reach out to me with questions on talk/share feedback (direct or publicly)
  - ▶ Slack, Github, X, Fb, Li, Skype, etc. simply as @carehart
  - ▶ Email: [charlie@carehart.org](mailto:charlie@carehart.org)

## SUMMARY

A series of white diagonal lines of varying lengths and thicknesses, extending from the right edge of the slide towards the bottom left.

Charlie Arehart @carehart  
[charlie@carehart.org](mailto:charlie@carehart.org)