

HIDDEN GEMS IN COLD FUSION 2023



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- ▶ About the prerelease, resources
- ▶ About the major new features
- ▶ Installation/deployment, administration, configuration, and monitoring
- ▶ Developer-oriented features
- ▶ Other topics to consider:
 - ▶ Benefits of CF2023 coming now with Java 17
 - ▶ Compatibility/migration issues
 - ▶ Updates to underlying libraries (their version numbers)
 - ▶ And still more, including CFBuilder 2023
- ▶ Much more than just “what are the major new features in CF2023”

TOPICS

- ▶ CF2023 is still in prerelease/beta
 - ▶ Beta opened in March. **No release date, pricing, licensing announced yet!**
 - ▶ Might there be other new features? Or things not yet documented?
 - ▶ Or new features supported only in Enterprise and not standard?
 - ▶ We won't know for sure until it's released
 - ▶ Part of my goal here is to document some things I've not yet found documented
 - ▶ As well as draw out some things that ARE documented but that you might miss
- ▶ Slides for this talk available online:
 - ▶ carehart.org/presentations
 - ▶ If being recorded, I'll add the link there also once it's available

- ▶ 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! 😊

ME.ABOUT()

- ▶ Beta site: adobeprerelease.com (also prerelease.adobe.com)
 - ▶ Docs offered there
 - ▶ The docs are quite substantial, and nearly all have demo code!
 - ▶ Install/deployment options offered there
 - ▶ Full installer, zip installer, docker/container images, add-on services, more
 - ▶ Discussion forums offered there
- ▶ Prereleases announced in Nov 2022 (alpha), March 2022 (beta)
 - ▶ carehart.org/blog/2022/11/15/open_of_cf2023_alpha_prerelease
 - ▶ coldfusion.adobe.com/2023/03/adobe-coldfusion-fortuna-open-beta/
- ▶ Adobe Youtube videos about the Fortuna prerelease
 - ▶ youtube.com/watch?v=CI0DoXSMskg
 - ▶ Others have been offered within prerelease site (in alpha, not yet in beta)

PRERELEASE RESOURCES

- ▶ As you heard earlier today, CF2023 adds support for:
 - ▶ GraphQL Client (native GQL support for consuming GraphQL endpoints)
 - ▶ HTML to PDF engine upgrade
 - ▶ Google Cloud Platform (Storage, FireStore, Pub/Sub)
 - ▶ CF “Central Configuration Service” (CCS)
- ▶ And there’s still more not mentioned in keynote
 - ▶ Other CF Summit East 2023 presentations cover much of new features
- ▶ I’ve dug into the beta and docs to highlight things that might not be covered

THE MAJOR NEW FEATURES

- ▶ In the prerelease site, there is a “Bug fixes-new.pdf”
 - ▶ Lists currently about a dozen bugs fixed (so far in the beta or alpha)
 - ▶ There is discussion on the prerelease forums of whether all were still bugs in CF2021
- ▶ There may be more bugs fixed in the final release, of course
 - ▶ Indeed, in the tracker.adobe.com site, I found a few more listed as fixed in 2023
 - ▶ Where the “fixed in build” number was greater than the [2023.0.0.330238](#) in current beta
 - ▶ So we should expect those to be added to the final “bugs fixed” list
- ▶ I’ll highlight a couple that may be of interest to more folks than others

SEE ALSO BUGS FIXED IN 2023

INSTALLATION/DEPLOYMENT, ADMINISTRATION, CONFIGURATION, MONITORING

- ▶ CCS helps administrators/folks responsible for (many) CF deployments
 - ▶ And can benefit even a single server
- ▶ You can:
 - ▶ choose to add (or auto-discover) one or more CF instances to CCS
 - ▶ classify groups of servers ("clusters") by "environment" (dev, prod, etc.)
- ▶ Changes to one instance in cluster are stored centrally, propagated to all in cluster
 - ▶ **Whether change is made via CF Admin, using Admin API, or using cfsetup CLI tool**
 - ▶ Changes in one environment can also be applied to another (such as after testing)
- ▶ CCS audits/monitors all changes, tracks **version history**, supports rollback
- ▶ (This morning they indicated it works with CF2021. Need to learn more)
- ▶ ...

CF "CENTRAL CONFIGURATION SERVICE" (CCS)

- ▶ Settings that are not synced
 - ▶ Java and JVM settings; Scheduled tasks; settings involving paths or passwords
- ▶ CCS feature runs via a CLI (for now), with commands to start server, manage instances
 - ▶ Also new page in CF Admin, under top-level *Settings* section, as **CCS**
- ▶ Configurability other than Admin or cmdline
 - ▶ Various properties files in CF instance's `/lib/ccs/` folder
 - ▶ For client instance, see `ccs.properties`
 - ▶ Offers such things as `excludeFiles` property to name still more files to exclude from sync'ing
 - ▶ For server instance, see `server.properties`
 - ▶ Can change default server listen port (7071), but change in both files above
 - ▶ See also a `/bin/ccsstore` folder, with folders for clusters, environments, versions
- ▶ See docs for more, including screenshots

CF “CENTRAL CONFIGURATION SERVICE” (CCS) (CONT.)

- ▶ New options enabled on *Security>Administrator* page
 - ▶ Choose “*Separate username and password authentication*” at top of page
 - ▶ Then “*External Authentication*” at bottom
 - ▶ Otherwise, that will be greyed out in UI
 - ▶ Then can configure users via *Security>User Manager* page
 - ▶ Choosing “*External user*” option, naming user or group from SAML or LDAP resource
 - ▶ Need to have configured that SAML or LDAP resource, in IDP and SP config pages in admin
- ▶ ...

- ▶ Also can be controlled via CFSETUP or Admin API
 - ▶ See beta docs for details on cfsetup commands, admin api methods
- ▶ Does not apply to RDS login, currently (I found no means to indicate it in beta's extension)
- ▶ For more on using multiple users/logins for CF Admin, supported for decades:
 - ▶ web.archive.org/web/20170307030754/http://www.adobe.com/devnet/coldfusion/articles/admin_multiusers.html
(from 2009)

SSO SAML AND LDAP CF ADMIN LOGIN (CONT.)

- ▶ New option, “**Is SSL Enabled**”, for **Cache>Redis Cache Settings**
- ▶ **Support for GCP features** added in *Data & services>Cloud Credentials* and *>Cloud Configuration*
- ▶ New **CF2023 PDF engine** can be enabled as default with “2.0” choice on *Data & services> PDF Service*
 - ▶ CANNOT seem to override at app/code level, currently
- ▶ Bugs fixed:
 - ▶ You can set jvm/config values for -Xms or -Xmx to use gb rather than mb, as in “2g”
 - ▶ In CF2021 and earlier, the CF Admin would drop the G and show just “2” in that case

OTHER ADMIN CHANGES

- ▶ As always, CF2023 offers multiple installation/deployment options
 - ▶ New for CF2021 was zip installer option
 - ▶ helpx.adobe.com/coldfusion/user-guide.html/coldfusion/using/install-coldfusion-2021.ug.html
 - ▶ carehart.org/presentations/#updating_java
 - ▶ Full/GUI installer still available (with optional silent install)
 - ▶ helpx.adobe.com/coldfusion/installing/installing-the-server-configuration.html
 - ▶ JEE/War deployment
 - ▶ helpx.adobe.com/coldfusion/installing/installing-the-jee-configuration.html
 - ▶ Docker/container deployment
 - ▶ helpx.adobe.com/coldfusion/using/docker-images-coldfusion.html
 - ▶ carehart.org/presentations/#cf_docker_images_evolution
 - ▶ I've not found any new config options for CF2023 docker images
 - ▶ Commandbox also offers special slug for beta: adobe@2023-beta
 - ▶ twitter.com/bdw429s/status/1638987316445446144

INSTALLATION/DEPLOYMENT

- ▶ While not new for cf2023, you may have missed a few things were new in CF2021
- ▶ New **modular design** reduces size (of zip, container) to ~ 150mb!
 - ▶ Implements “core” package/engine by default
 - ▶ New **CFPM** cli tool (or Admin UI page or docker env vars) can add/remove packages
 - ▶ helpx.adobe.com/coldfusion/user-guide.html/coldfusion/using/coldfusion-package-manager.ug.html
- ▶ New **CFSETUP** cli tool (in CF “config” folder) to manage admin settings
 - ▶ Including export/import to json, which can be imported via env var into container
 - ▶ helpx.adobe.com/coldfusion/using/cfsetup-configuration-tool.html
 - ▶ carehart.org/presentations/#cfsetup_tool
- ▶ ...

OTHER RECENT CONFIG CHANGES

- ▶ **Activation** added in CF2021, still required for CF2023
 - ▶ helpx.adobe.com/coldfusion/using/coldfusion-licensing-activation.html
- ▶ **Performance Monitoring Toolset (PMT)** added in CF2018, works w/ 2018, 2021, 2023
 - ▶ helpx.adobe.com/coldfusion/performance-monitoring-toolset/overview-coldfusion-performance-monitoring-toolset.html
 - ▶ **2023 version adds**
 - ▶ monitoring of GCP Storage, Firestore, and PubSub features
 - ▶ New TLS/SSL and Authentication for PMT with its ElasticSearch datastore
 - ▶ See beta docs for more on each of those

OTHER RECENT CONFIG CHANGES (CONT.)

DEVELOPER FEATURES

- ▶ As mentioned in keynote, among major dev-oriented features are:
 - ▶ GraphQL client
 - ▶ GCP integration
 - ▶ HTML to PDF engine upgrade

AGAIN, FIRST THE MAJOR FEATURES

- ▶ Query language to access data from APIs
- ▶ Major new feature of CF2023, demonstrated earlier today here at Summit
 - ▶ GraphQL server planned for CF2025, exposing YOUR APIs via GraphQL
- ▶ 32 pages of docs on this substantial new feature, including sample code
 - ▶ *GraphQL in ColdFusion 2023.pdf*

GRAPHQL

- ▶ Another major new feature set in CF2023, supporting:
 - ▶ Firestore (cloud implementation of FireBase as nosql document db)
 - ▶ 58-page guide on this alone: *GCP Firestore.pdf*
 - ▶ Available free tier to get started testing with it
 - ▶ Google Cloud Storage APIs
 - ▶ Like CF support for AWS S3 (improved in CF2021) and Azure blob storage (added in CF2021)
 - ▶ 27-page guide, *GCP Storage APIs.pdf*
 - ▶ Google offers free credits for getting started
 - ▶ GCP Pub/Sub messaging service
 - ▶ Like CF2021 support of AWS SQS and Azure Service Bus
 - ▶ 19-page guide, *GCP PubSub APIs.pdf*

- ▶ Specific to CFHTMLtoPDF (and cfscript equivalent)
 - ▶ Based on new engine, PDFReactor (licensed by Adobe for use with CF, *pdfreactor.com*)
 - ▶ Supports HTML5, CSS3, JS, SVG. embedded audio/video
 - ▶ Again, real examples in docs
- ▶ Supported on Windows, Linux, MacOS, Solaris
- ▶ Enabling: again, CF Admin *PDF Services* “engine” choice of 2.0 (default)
 - ▶ For now, changing to 1.0 gets error, “*Engine 1.0 is not available for windows 11 platform*”
 - ▶ I’ve also not yet found control at tag- or app-level
- ▶ New **conformance** attribute, with values like “PDF/A1a” as well as 1b, 2-3[a/b/u]
 - ▶ Part of ISO spec for long-term document archival support

HTML TO PDF ENGINE UPGRADE

BUT THAT'S NOT ALL...

Some have complained they “don't care” much about those last 3

- ▶ Supports JWT features like headers and payloads
 - ▶ As well as claims, signatures, encryption, including JSON Web Encryption (JWE)
- ▶ New functions
 - ▶ CreateSignedJWT, CreateEncryptedJWT
 - ▶ VerifySignedJWT, VerifyEncryptedJWT
- ▶ Again, real examples in docs

JSON WEB TOKENS/JWT

- ▶ CF2023 also supports these two standards for efficient schema-based serialization
 - ▶ Avro (developed originally for Hadoop/big data project)
 - ▶ Protobuf (“Protocol Buffers”, developed originally by Google)
- ▶ New CFML functions for these
 - ▶ The new GCP PubSub integration especially can leverage these
- ▶ See beta docs guide, *Avro and Protobuf.pdf*
 - ▶ Including sample code

AVRO AND PROTOBUF

- ▶ GetReadableImageFormats and GetWriteableImageFormats function support new values:
 - ▶ JPEG 2000, JPEG2000
 - ▶ PNM, RAW
 - ▶ In addition to CF2021 values of BMP,GIF,JPEG,JPG,PNG,TIF,TIFF,WBMP
- ▶ New XmlClear, XmlDeleteAt, XmlHasChild, XmlUpdate functions
 - ▶ Xmlclear – takes an xml object as argument and clears it
 - ▶ XmlDeleteAt– takes an xml object and an integer (I could not discern more)
 - ▶ XmlHasChild– takes an xml object and an element, indicating if it has a child element
 - ▶ XmlUpdate – takes 3 arguments (I could not discern more)
- ▶ I found these 4 in comparing results of CF's getfunctionlist() function, no docs yet
 - ▶ FWIW, I find no differences in results of getapplicationmetdata()

STILL OTHER THINGS I DISCOVERED

- ▶ Member functions can now be chained to struct/array literals

- ▶ Had been raised (by Brad Wood in 2014!) as bug CF-3844972

- ▶ Things like these hadn't worked in CF11-2021, but now do:

- ▶ `writeDump({ foo:'bar' }.append({ bum:'baz' }));`

- ▶ `writeDump(['a', 'b'].append(['c', 'd'], true));`

- ▶ Big with queryfilter second arg (index) has been fixed

- ▶ There are others of seeming lesser wide impact, see aforementioned docs page

CONSIDER ALSO SOME BUG FIXES

OTHER CONSIDERATIONS

- ▶ Just a few areas remain...
 - ▶ Java updated to 17
 - ▶ ~~Deprecated features~~
 - ▶ Compatibility issues
 - ▶ Updates to underlying libraries' versions numbers
 - ▶ ~~What's new in Standard vs Enterprise~~
 - ▶ ~~Pricing, licensing, end of life/support~~
 - ▶ CF Builder 2023 (upgrade of VScode plugin)

OTHER CONSIDERATIONS

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- ▶ Beta comes with 17.0.4 (current latest is 17.0.6)
- ▶ CF2021 and 2018 ran on Java 11 (CF2016 ran first on Java 8 and later on 11)
 - ▶ Java 17 came out in late 2021, but CF has not supported it (or 12-16) until CF2023
 - ▶ (Perhaps a future CF2021 update will bring Java 17 support to it)
- ▶ Java 17 of course includes changes introduced in Java 12-16
- ▶ Not to be confused with java 11 updates (currently 11.0.18, or 11.0.17, etc)
- ▶ Most JVM changes benefit only Java developers who change their code
 - ▶ And some may eventually accrue to us as Adobe leverages them
- ▶ I want to talk about just a few things that may benefit us now...

JAVA UPDATED TO 17

- ▶ GC changes:
 - ▶ **CMS (ConcMarkSweep)** removed in Java 14
 - ▶ **ZGC** and **Shenandoah** added as prod-ready in Java 14/15
 - ▶ CF still configures **ParallelGC** as default (while Java 17 would default to **G1GC**)
- ▶ CDS (Class Data Sharing) Archives enabled in Java 12, enhanced in 13
- ▶ More informative error messages on null pointer exceptions (NPEs)
- ▶ Some think the Java Security Manager has been removed, but not yet (deprecated)
 - ▶ Is used by CF Sandbox Security feature, so time will tell on that impact

ADMIN/CONFIG BENEFITS OF JAVA 17

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- ▶ Since CF is based on Java, there are some JVM feature changes you could choose to leverage within CFML
 - ▶ Either in using java properties/methods chained to CFML variables/objects
 - ▶ Or using the new cfjava capability added in CF2021

DEV BENEFITS OF JAVA 17

- ▶ Not aware of any migration issues to CF2023...from CF2021
 - ▶ But as with each version, depends on your starting point
 - ▶ Such as if **skipping over** CF2021 from CF2018, 2016, or earlier
- ▶ I've discussed these more in my "hidden gems" talks for each past CF version
 - ▶ As well as *"Migrating apps to ColdFusion 2021 from earlier versions"*
 - ▶ And before that *"What was new in CF 10, 11, and 2016 that you may have missed"*
 - ▶ And *"Migrating or Comparing CF Admin Settings, between instances/versions/engines"*
 - ▶ carehart.org/presentations

COMPATIBILITY/MIGRATION ISSUES

- ▶ Antismy **1.5.13** (OWASP security library)
- ▶ Avro **1.11.1** and Protobuf **3.21.5**
- ▶ Axis 2 1.7.0 (web services library)
- ▶ Ckeditor 4.19.0 (underlies cftextarea)
- ▶ Ehcache 2.10.3 (caching library)
- ▶ Elasticache **7.17.5** (new caching option)
- ▶ Ext JS **7.6.0.41** (JS library underlying various UI tags)
- ▶ Esapi **2.2.1.1** (OWASP Enterprise Security API)
- ▶ Hibernate **5.6.11** (ORM library)
- ▶ HttpClient **4.5.13** (underlies CFHTTP and more)
- ▶ Java **17.0.4** (the JVM which underlies CF)
- ▶ Jedis **4.3.1** (underlies Redis caching)
- ▶ Jetty 9.4.31 (underlies Solr and PDFg)
- ▶ jQuery **3.6.0** and jQuery UI **1.13.1** (JS library underlying various UI tags and Admin interface features)
- ▶ Log4j **2.17.2**
- ▶ Lucene **8.11.1** (underlies Solr search engine in CF)
- ▶ PDFReactor **11.4.5** (new cfhtmltopdf engine)
- ▶ POI 4.1.2 (underlies MS Office Integration features)
- ▶ Quartz **2.4.0** (underlies schedules tasks)
- ▶ Solr **8.11.2** (embedded search engine for cfsearch)
- ▶ Tomcat **9.0.60** (app server underlying CF, when deployed in traditional "Server" configuration)
- ▶ Zingcharts **2.9** (underlies cfchart)

Bolded values are upgraded since CF2021 original release

UPDATES TO SOME UNDERLYING LIBRARIES' VERSIONS NUMBERS

- ▶ Apache Derby 10.11
- ▶ MS SQL Server v2022, v2019
- ▶ MySQL 8 and 5.7
- ▶ PostgreSQL 13, 11
- ▶ And in CF Enterprise only:
 - ▶ IBM DB2 11.x
 - ▶ Oracle 19c (including RAC support)
 - ▶ Sybase Adaptive Server Enterprise 16
- ▶ Again, at least as documented in prerelease, *CF 2023 support matrix.pdf*
 - ▶ See that for versions supported on DB-as-a-service on Azure, AWS, GCP

DATABASE VERSIONS SUPPORTED

- ▶ Windows Server 2022/2019/2016
- ▶ Windows 11/10 (Home, Pro, Enterprise)
- ▶ MacOS 13/12 x64/ARM64 (Ventura, Monterey)
- ▶ Red Hat Enterprise Linux 9.x
- ▶ Ubuntu 22
- ▶ SUSE 15
- ▶ Solaris 11.4

OPERATING SYSTEMS SUPPORTED

- ▶ IIS 10
- ▶ Apache 2.4.x
- ▶ JEE App servers
 - ▶ WebLogic 14c
 - ▶ WebSphere 9.0.5.x
 - ▶ Tomcat 9.0.x
 - ▶ WildFly 26.x
 - ▶ JBoss EAP 7.4

OTHER SUPPORTED VERSIONS

- ▶ When does public support (providing updates) end, for each recent version?
 - ▶ For CF2023, should be 2028
 - ▶ For CF2021, in 2025
 - ▶ For CF2018, ends in 3 months, July 2023
 - ▶ For CF2016, ended in 2021
 - ▶ For CF11, ended in 2019
- ▶ helpx.adobe.com/support/programs/eol-matrix.html
- ▶ carehart.org/blog/2023/1/26/coldfusion2018_end_of_life_july_2023

END OF LIFE/SUPPORT OF VERSIONS

- ▶ If you may have missed it, new VSCode-based version of CFBuilder released
 - ▶ Released in July 2022, in extensions marketplace as **Adobe ColdFusion Builder**
 - ▶ Prior Eclipse-based versions of CFBuilder are no longer updated
- ▶ CF2023 beta comes with available separate vsix which can be installed
 - ▶ Use VSCode menu within extensions UI
 - ▶ Or command palette: *Extensions: Install from VSIX...*
- ▶ I've not yet noticed any significant differences for the 2023 version
 - ▶ But I suspect the team will be better identifying those in docs soon, if not today
 - ▶ Does support new tags
 - ▶ As well as new attributes, like **cfhtmltopdf conformance**

CFBUILDER 2023 IMPROVEMENTS

- ▶ So, lots of changes, beyond just the major features
 - ▶ Some documented, some not
 - ▶ And more may come in final release
- ▶ Hope you may be more motivated—and informed—to consider CF2023
- ▶ Again, my contact info for follow-up:
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 - ▶ Slides: carehart.org/presentations

SUMMARY