

HIDDEN GEMS IN COLDFUSION 2023



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Updated Feb 2, 2024

- ▶ With no Adobe keynote here at CFCamp, I've expanded this talk
- ▶ Normally would not cover major changes, but today I will add them (in brief):
 - ▶ Developer-oriented features
 - ▶ Installation/deployment, administration, configuration, and monitoring
 - ▶ Benefits of CF2023 coming now with Java 17
 - ▶ Compatibility/migration issues
 - ▶ Matters like pricing, Standard vs Enterprise, end of life/support, licensing
 - ▶ Updates to underlying libraries (their version numbers)
 - ▶ And still more, including CFBuilder for VSCode

TOPICS

- ▶ CF2023 released May 2023
 - ▶ Maybe not as much new as in past releases, but still plenty
 - ▶ And plenty of resources to be aware of/look into further on your own
- ▶ Slides for this talk available online:
 - ▶ *carehart.org/presentations*
 - ▶ If being recorded, I'll add the link there also once it's available

INTRO

- ▶ 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()

- ▶ Docs are substantial, and nearly all have demo code!
 - ▶ Adobe also has blog posts offered day of release
- ▶ Key resources pointing to still others
 - ▶ helpx.adobe.com/coldfusion/using/whats-new.html
 - ▶ coldfusion.adobe.com/2023/05/coldfusion2023-release/
 - ▶ carehart.org/blog/2023/5/17/cf2023_released
 - ▶ and I point to the other Adobe posts from launch day
- ▶ Let's look into things more closely...

FINDING MORE ABOUT CF2023

DEVELOPER FEATURES

- ▶ Query language to access data from APIs
- ▶ helpx.adobe.com/coldfusion/using/graphql-coldfusion.html
 - ▶ 37 pages of docs, including sample code
- ▶ New functions: `GenerateGraphQLModels`, `GetGraphQLClient`
- ▶ Again, I don't have time today to offer demos on even these major new features
 - ▶ What I will do is offer extra points that may not be so obvious or documented
- ▶ GraphQL **server** is planned for CF2025, exposing YOUR APIs via GraphQL

GraphQL

- ▶ Expanding on AWS and Azure service integration added in CF2021
 - ▶ Again, CF Docs offer much sample code
 - ▶ And Google offers free tier to get started using/exploring things
- ▶ Firestore (cloud implementation of FireBase as nosql document db)
 - ▶ helpx.adobe.com/coldfusion/using/integrate-coldfusion-gcp-firestore.html
- ▶ Google Cloud Storage APIs (similar to AWS S3 and Azure blob storage)
 - ▶ helpx.adobe.com/coldfusion/using/integrate-coldfusion-gcp-storage.html
- ▶ GCP Pub/Sub messaging service (like AWS SQS and Azure Service Bus)
 - ▶ helpx.adobe.com/coldfusion/using/integrate-coldfusion-gcp-pubsub.html

GOOGLE CLOUD PLATFORM (GCP) INTEGRATION

- ▶ For those using CFHTMLtoPDF (and cfscript equivalent), not CFDOCUMENT
 - ▶ Based on new engine, PDFReactor (licensed by Adobe for use with CF, pdfreactor.com)
 - ▶ Supports HTML5, CSS3, JS, SVG. embedded audio/video
 - ▶ Enabled as new engine by default (admin setting discussed later)
- ▶ New **conformance** attribute, with values like “PDFA1a” as well as 1b, 2-3[a/b/u]
 - ▶ Part of ISO spec for long-term document archival support
- ▶ helpx.adobe.com/coldfusion/using/coldfusion-enhanced-pdf.html
- ▶ Supported on Windows, Linux, MacOS, Solaris

HTML TO PDF ENGINE REPLACEMENT

- ▶ Create/issue web tokens or verify JWTs issued by other apps/api's
- ▶ *helpx.adobe.com/coldfusion/using/coldfusion-json-web-tokens.html*
- ▶ Supports JWT features like signatures, encryption (JWE)
 - ▶ As well as claims, headers and payloads
- ▶ New functions
 - ▶ CreateSignedJWT, CreateEncryptedJWT
 - ▶ VerifySignedJWT, VerifyEncryptedJWT

JSON WEB TOKENS/JWT

- ▶ CF2023 also supports these two standards for schema-based serialization
 - ▶ Avro (developed originally for Hadoop/Big Data project)
 - ▶ Protobuf (“Protocol Buffers”, developed originally by Google)
 - ▶ Both support simple and complex datatypes, see CF docs for more, and pros/cons
- ▶ *helpx.adobe.com/coldfusion/using/avro-protobuf-coldfusion.html*
- ▶ New CFML functions for these: `[de]serialize[avro | protobuf]`
 - ▶ New GCP PubSub integration especially can leverage these

AVRO AND PROTOBUF

- ▶ CFIMAGE, image functions support new formats:
 - ▶ JPEG 2000, JPEG2000, PNM, RAW
 - ▶ In addition to CF2021 values of BMP,GIF,JPEG,JPG,PNG,TIF,TIFF,WBMP
 - ▶ As reported by GetReadableImageFormats, GetWriteableImageFormats
- ▶ New XmlClear, XmlDeleteAt, XmlHasChild, XmlUpdate functions
 - ▶ I found these 4 in comparing results of CF's getfunctionlist() function, not in docs

STILL OTHER THINGS I'VE 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));`
- ▶ Bug with queryfilter second arg (index) has been fixed
- ▶ There are others of seeming less-wide impact, see:
 - ▶ helpx.adobe.com/coldfusion/release-note/coldfusion-2023-release-notes.html#bug-fixes

CONSIDER ALSO SOME BUG FIXES

INSTALLATION/DEPLOYMENT, ADMINISTRATION, CONFIGURATION, MONITORING

- ▶ CF “Central Configuration Service” (CCS)
- ▶ SSO SAML and LDAP CF admin login
- ▶ And still more

ADMIN-ORIENTED NEW FEATURES

- ▶ Optional feature, for one or more CF instances identified by group/environment
- ▶ Changes to any instance in group stored centrally, propagated to all in group
 - ▶ **Whether change is made via CF Admin, using Admin API, or using cfsetup CLI tool**
 - ▶ Changes in an **environment** can also be applied to another (such as after testing)
- ▶ CCS audits/monitors all changes, tracks **version history**, supports rollback
- ▶ Settings that are not synced
 - ▶ Datasources, Java/JVM settings; Scheduled tasks; settings involving paths/passwords
 - ▶ Still several dozen admin settings remain beyond those
- ▶ *helpx.adobe.com/coldfusion/using/central-config-server-coldfusion.html*

CF “CENTRAL CONFIGURATION SERVICE” (CCS)

- ▶ CCS is started from cfusion/bin (or [instance]/bin) of some “server” CF instance
 - ▶ ccs.bat (or .sh) CLI accepts various commands, including “startserver”
- ▶ CF instances can be configured to act as clients to that
 - ▶ Can “auto-discover” instances from “server” CF Admin (via multicast/udp)
 - ▶ Or can be added manually in that “server” admin or the server’s CCS CLI
 - ▶ Each client has a “secret” that must be provided in order to be added
- ▶ Two sections on CCS page of Admin
 - ▶ Server section appears for instance where CCS was enabled, for managing it
 - ▶ Client section indicates details of whether/how instance is enabled to use CCS
 - ▶ Shows version history of tracked admin changes, when enabled

- ▶ In server CF instance (where CCS was started):
 - ▶ a *ccstore* folder is created in its *bin* folder
 - ▶ Within that is a folder for the name of defined CCS “cluster” and “environment”
 - ▶ That holds folder names with numerically increasing numbers
 - ▶ Has any changed files made from any member instance (neo-*.xml, etc.)
 - ▶ Also json file, tracking specific change (named changes.txt)
 - ▶ a *lib/ccs* folder holding:
 - ▶ *server.properties*: port the server will listen on, environments it will support
 - ▶ *nodes.properties*: what nodes are using it as central config
- ▶ **Client** instance’s *lib/ccs* folder has *ccs.properties*, pointing to central server
 - ▶ Offers such things as *excludeFiles* property to name files to exclude from sync’ing

CCS FILES AND FOLDERS

- ▶ New options enabled on *Security>Administrator* page
 - ▶ Choose “*Separate username and password authentication*” at top of page
 - ▶ Then “*External Authentication*” at bottom (otherwise it’s greyed out/not selectable)
- ▶ Then 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 resource, in IDP and SP config pages in admin
- ▶ helpx.adobe.com/coldfusion/using/integrate-saml-ldap-coldfusion-administrator.html
- ▶ ...

SSO SAML AND LDAP CF ADMIN LOGIN

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- ▶ SAML/LDAP options do not apply for RDS login users
- ▶ Using multiple users for CF Admin/RDS has been supported for decades
 - ▶ See my 2009 article on the feature:
 - ▶ web.archive.org/web/20170307030754/http://www.adobe.com/devnet/coldfusion/articles/admin_multiusers.html
- ▶ SAML/LDAP admin login can also be controlled via CFSETUP or Admin API
 - ▶ See docs for details on cfsetup commands, admin api methods
 - ▶ More on cfsetup a bit later

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** setting on *Data & services> PDF Service*
 - ▶ Default is “2.0”
- ▶ Bugs fixed related to Admin/install/config:
 - ▶ helpx.adobe.com/coldfusion/release-note/coldfusion-2023-release-notes.html#bug-fixes
 - ▶ See also “Known Issues” on that same page

OTHER ADMIN CHANGES

- ▶ As always, CF2023 offers multiple installation/deployment options
 - ▶ Commandbox: `adobe@2023`
 - ▶ Full/GUI installer (with optional silent install)
 - ▶ helpx.adobe.com/coldfusion/installing/installing-the-server-configuration.html
 - ▶ Zip installer option (was new for CF2021, also with optional silent install)
 - ▶ helpx.adobe.com/coldfusion/user-guide.html/coldfusion/using/install-coldfusion-2021.ug.html
 - ▶ JEE/WAR deployment
 - ▶ helpx.adobe.com/coldfusion/installing/installing-the-jee-configuration.html
 - ▶ As well as ...

INSTALLATION/DEPLOYMENT

- ▶ Docker/container deployment (2023 images available now)
 - ▶ 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
- ▶ Azure VMI's (VM Images) are now available for CF2023
 - ▶ azuremarketplace.microsoft.com/en-us/marketplace/apps?search=coldfusion
 - ▶ (for Windows, Redhat, Ubuntu, AlmaLinux)
- ▶ AWS AMI's for CF2023 not available yet, as of June 23 2023
 - ▶ Have been available for CF2021 and 2018 for some years
 - ▶ aws.amazon.com/marketplace/search/results?searchTerms=coldfusion
- ▶ GCP images are in the works

INSTALLATION/DEPLOYMENT (CONT.)

- ▶ **Performance Monitoring Toolset** (PMT, added in CF2018) works w/ 2018-2023

- ▶ helpx.adobe.com/coldfusion/performance-monitoring-toolset/overview-coldfusion-performance-monitoring-toolset.html

- ▶ **2023 version changes**

- ▶ Upgrade to underlying Elasticsearch engine from 5 to 8
 - ▶ Datastore takes less space, has improved performance
 - ▶ Monitoring of GCP Storage, Firestore, and PubSub features
 - ▶ New TLS/SSL and Authentication for PMT with its Elasticsearch datastore
 - ▶ helpx.adobe.com/coldfusion/performance-monitoring-toolset/configure-tls-ssl-performance-monitoring-toolset.html

PMT CHANGES

- ▶ Some “hidden gems”
 - ▶ CF Admin log display feature returned
 - ▶ CF Windows installer now sets up Start menu for “all users”, not just installing user!
 - ▶ I find that CF2023 fixes the “pdf service order of service start” problem
 - ▶ Planning a blog post with more, for those on earlier CF versions
- ▶ Before leaving subject of CF2023 admin/config/install changes...

ADMIN BUGS FIXED

- ▶ 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
- ▶ **Activation** (added in CF2021) still required for CF2023
 - ▶ helpx.adobe.com/coldfusion/using/coldfusion-licensing-activation.html

CHANGES IN 2021, TO NOTE FOR 2023

OTHER CONSIDERATIONS

- ▶ Just a few areas remain...
 - ▶ Java updated to 17
 - ▶ Tomcat updated to 9.0.72
 - ▶ Deprecated features
 - ▶ Compatibility issues
 - ▶ Updates to underlying libraries' versions numbers
 - ▶ Pricing, Standard vs Enterprise, licensing, end of life/support
 - ▶ “New” CF Builder VScode extension (updated for CF2023)

OTHER CONSIDERATIONS

- ▶ CF2023 comes with Java 17.0.6 (latest as of June 2023 is 17.0.7)
- ▶ 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)
- ▶ 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
 - ▶ Some may eventually accrue to us as Adobe leverages them
 - ▶ Or we can leverage java within cfml via cfoject/createobject, cfjava (cf2021+)
- ▶ 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 say 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

- ▶ CF2023 comes with 9.0.72
 - ▶ Not the very latest, which is 9.0.76 as of June 2023
- ▶ CF2021 remains for now on 9.0.60, unchanged since update 4 (May 2022)

TOMCAT UPDATED TO 9.0.72

- ▶ Nothing in the CF deprecated features page refers to CF2023
 - ▶ Those coming from CF2018 or earlier should look for changes in cf2021, etc
- ▶ *helpx.adobe.com/coldfusion/deprecated-features.html*

DEPRECATIONS

- ▶ 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 1.2.1 (web services library)
- ▶ Ckeditor 4.19 (underlies cftextarea)
- ▶ Ehcache 2.10.3 (caching library)
- ▶ ElasticSearch **7.17.5** (new caching option)
- ▶ Ext JS **7.6.0.41** (JS library underlying various UI tags)
- ▶ Esapi **2.5.1.0** (OWASP Enterprise Security API)
- ▶ Hibernate **5.6.11** (ORM library)
- ▶ HttpClient 4.5.9 (underlies CFHTTP and more)
- ▶ Java **17.0.6** (the JVM which underlies CF)
- ▶ Jedis **4.3.1** (underlies Redis caching)
- ▶ Jetty **9.4.51** (underlies Solr and PDFg)
- ▶ jQuery **3.6** 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** (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 **9.0.72** (app server underlying CF, when deployed in traditional "Server" configuration)
- ▶ ZingChart **2.9** (underlies cfchart)

Bolded values are upgraded since CF2021 latest update

UPDATES TO SOME UNDERLYING LIBRARIES' VERSIONS NUMBERS

- ▶ Formal support for “older” DBs dropped, may still work fine
- ▶ MS SQL Server v2022, v2019
- ▶ MySQL 8
- ▶ PostgreSQL 14
- ▶ Apache Derby 10.11
- ▶ And in CF Enterprise only:
 - ▶ IBM DB2 11.x
 - ▶ Oracle 19c (LTS)
- ▶ helpx.adobe.com/pdf/coldfusion2023-suport-matrix.pdf
- ▶ See that for versions supported on DB-as-a-service on Azure, AWS, GCP

DATABASE VERSIONS SUPPORTED

- ▶ Windows Server 2022/2019/2016 (Datacenter, Standard, Essentials)
- ▶ Windows 11/10 (Home, Pro, Enterprise)
- ▶ MacOS 13.x x64/ARM64 (Ventura)
 - ▶ Before launching CF installer dmg, run "xattr -rc" command against it
- ▶ Red Hat Enterprise Linux 9.1
- ▶ Ubuntu 22
- ▶ SUSE 15.3
- ▶ Solaris 11.4

OPERATING SYSTEMS SUPPORTED

- ▶ IIS 10
- ▶ Apache 2.4.56
- ▶ JEE App servers
 - ▶ WebLogic 14.1.1
 - ▶ WebSphere 9.0.5.4
 - ▶ Tomcat 9.0.72
 - ▶ WildFly 26.1.2
 - ▶ JBoss EAP 7.4

OTHER SUPPORTED VERSIONS

- ▶ No changes in pricing since CF2021
 - ▶ Nor any changes in differences between Standard and Enterprise
- ▶ As for EULA, which is in root of CF folder as *license.html*:
 - ▶ CF2021 defined “computer” this way:
 - ▶ “Computer” means a virtual machine or physical electronic device that accepts information in digital or similar form and manipulates it for a specific result based on a sequence of instructions, that conforms to the system requirements of the Software as specified in the Documentation.
 - ▶ CF2023 changes to (emphasis mine):
 - ▶ “Computer” means a virtual or physical device *for storing or processing data, such as servers, desktop computers, laptops, mobile devices and hardware products.* **Where a device contains more than one virtual environment (including Virtual Machines and virtual processors), each virtual environment will be counted as a separate Computer.**
 - ▶ “Backup and Disaster Recovery” section now covers Failover as well

PRICING, LICENSING, ETC.

- ▶ When does public support (providing updates) end, for each recent version?
 - ▶ For CF2023, in May 2028
 - ▶ For CF2021, in Nov 2025
 - ▶ For CF2018, ends next month, 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
- ▶ Updated version supports CF2023, new tags/attributes, functions, statements
 - ▶ Updatable within VS Code Extensions pane (prerelease was offered as a vsix)
 - ▶ Current version v1.0.469
 - ▶ Bug fix: project manager now maintains projects list across restarts of VSCode
- ▶ I've not yet noticed any other significant feature changes
 - ▶ That said, don't miss all the features CFB has (and has long had pre-VSCode)
- ▶ helpx.adobe.com/coldfusion/coldfusion-builder-extension-for-visual-studio-code/get-started-coldfusion-builder-extension-visual-studio-code.html

CFBUILDER 2023 IMPROVEMENTS

- ▶ So, lots of changes, beyond just the major features Adobe may highlight
- ▶ Hope you may be more motivated—and informed—to consider CF2023
- ▶ Again, my contact info for follow-up:
 - ▶ Charlie Arehart
 - ▶ charlie@carehart.org
 - ▶ @carehart (Slack, GitHub, Fb, Li, Tw, Skype)
 - ▶ Slides: carehart.org/presentations

SUMMARY