WHAT WAS NEW IN CF 10, 11, AND 2016 THAT YOU MAY HAVE MISSED?

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How many here in prod on CF2016? CF11? CF10? CF9? CF8 or earlier?
  ■ Do you know when 10 came out? Why it was a big deal?
You may have skipped from CF9 or earlier to 10, 11, or 2016 (or 10 to 2016, etc.)
  ■ Or you may have moved to 10, 11, or 2016, but perhaps never took full advantage of it
Goal here: broad-brush review of **key** things in 10, 11, 2016
  ■ Across several common categories, including features, compat, licensing, more
Can’t cover here EVERY change in each release, let alone demo them
  ■ See my hidden gems talk on each version
Success: **everyone comes away learning several things that they want to try… or be aware of**
■ Slides for this talk: carehart.org/presentations

WHY ARE WE HERE?
ABOUT ME

- Been chronicling CF feature changes since …
  - CF 4 (CFDJ, Apr 99)
- Love to share info, with the community and my clients
  - Active blogger, speaker at nearly every CF conference the past 20 years
  - Contributor to/creator of many CF community resources
    - Online CFMeetup, CF411.com, UGTV, CF911.com, CFUpdate.com, and more
- My own focus is 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)
  - Focus is not just solving problems but educating you
  - Satisfaction guaranteed. More on rates, approach, etc at carehart.org/consulting
For each of CF10, 11, 2016:

- Key major features
- Key minor features, from coding to admin to security changes and more
- Key changes introduced in updates to that release
- About licensing changes
- Compat issues / gotchas
- Resources to learn more, again all the above for each release
  
  While we can only briefly mention each new thing, there are docs, blog posts, articles, and/or videos on nearly every one
HOW ADOBE HAS HIGHLIGHTED THE 3 RELEASES
(FROM ADOBE ROADMAP 2017)
ColdFusion - Transformation over the years

Future ready
Productivity
Secure platform
High performing and scalable platform

HTML5 + REST
- HTML5 support
- REST services
- Secure profile
- Apache Tomcat

+ Mobility
- Mobile Application Development
- PDF Enhancements
- ESAPI encoding
- Standalone, high performing PDF engine

Opportunities

ColdFusion 10 (2012)
ColdFusion 11 (2014)

API Management
- Command line interface
- Security analyzer
- Performance improvements

Analytics
- Containerized platform
- Asynchronous programming
- Automated lockdown

ColdFusion 2016
ColdFusion 2018

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ColdFusion - Transformation over the years

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Secure platform
- API Management
- ColdFusion 2016
- API Management platform
- Command line interface
- Security analyzer
- Performance improvements

High performing and scalable platform

Alternatives
- Containerized platform
- Async programming
- Automated lockdown
- Port Management Suite


[Image of diagram]
As always, there’s LOTS more...
CF 10
CF10 KEY MAJOR FEATURES

- Changed from running on JRun to Tomcat
- Substantial increase in “tags as script”
- Many security and language enhancements (later here)
- Initial support for REST
- HTML5 charts and videos, geolocation support
- WebSockets
- Web services: AXIS 2, WSDL 2, SOAP 1.2, document literal wrapped support
- But also SO much more!
- Implicit notation for arrays, structs
  - Option to use : separator for struct key assignment, as in var:value
- Implicit constructors for CFCs, implicit gettings/setters; method chaining
- Closures and inline functions
- Support for openauth: CFOauth (facebook, google, ms, github auth)
- Updated to embedded libraries (jvm, ehcache, solr, more)
- Amazon AMI

CF10 KEY MINOR FEATURES
“Secure Profile” feature (choice at installation only, in CF10)

Many security enhancements regarding XSS, CSRF, Session Fixation, etc
  ▶ New functions: encodefor*, decodefor*, csrf*, canonicalize, decodeFromURL, hmac
  ▶ New sessioninvalidate and sessionrotate functions

New “Session Cookie Settings” on “Memory Variables” page

Verification of mime type
  ▶ Via optional STRICT attribute on CFFILE uploads, or fileGetMimeType() on any file

...
Could now restrict Admin Access by IP Address (also asked during installer)
  - Security>Allowed IP Addresses (bottom of page)
Could now disable creation of unnamed application scopes (Server Settings>Settings)
CFPOP adds SECURE attribute for use of SSL/TLS
In admin:
  - New “Maximum number of POST request parameters” (Server Settings>Settings)
Automated hotfix mechanism

Scheduled tasks: many improvements
  ▶ Also, location within Admin from Debugging to Settings

New directory structure for CF: base instance is “cfusion”, as in c:\coldfusion10\cfusion
  ▶ For Enterprise, Trial, developer editions, new instances created as sibling to that
  ▶ And each instance has own jvm.config and “Java and JVM” admin page

New audit.log tracks most changes made in CF Admin

New Access log, tracking every request (disabled by default in CF11+)

Still more, in terms of hidden gems…

CF10 KEY ADMIN CHANGES
CF10 KEY HIDDEN GEMS:
INSTALL/ADMIN

- Old “out” log (from runtime/logs or jrun/logs) moved to main “logs” folder
- New password reset scripts (in instance’s bin folder)
- New metrics logging feature (on “debugging output” page)
- New jQuery UI element for admin “browse” buttons
- Could now enable/disable RDS in Admin (versus knowing config file tweak)
- Scheduled tasks moved to Settings section (from Debugging & Logging)
- Several AdminAPI enhancements
CFImage INTERPOLATION attribute to help performance of “resize” action

CFStoredproc TIMEOUT attribute: time for each action within SP, not all

New onAbort method for application.cfc (to handle CFAbort/abort)

New datetimeformat (and Isdatetimeformat) function

New getApplicationMetaData and sessionGetMetaData functions

Several get… functions for obtaining system information

Enhancements to java loading, S3, Exchange, ORM, SOLR, image processing

CFLoop GROUP attribute

CFInclude RUNONCE attribute

Support in querynew/queryaddrow to add data directly, simply
- Query caching now stored in ehcache by default
  - Can be changed in CF Admin or application.cfc
  - `this.cache.useinternalquerycache`, `this.cache.querysize`
- New CFQuery cacheregion and cacheid attributes for cache control mgt
  - Can remove via new removeCachedQuery function
- New caching functions: cacheIdExists, cacheRegionNew, cacheRegionRemove, cacheRegionExists, cacheRemoveAll
- Can now clear CF's template cache on per-folder basis, in Admin or Admin API
- Several VFS enhancements

That’s it for changes per initial CF10 release…
Of course, each update contains either bug fixes or security updates, or both
  ▶ And some contain several dozen bug fixes, which has been encouraging
    ▶ As well as various updates to Tomcat, some of which are important
  ▶ But some updates introduce fairly significant changes
▶ Update 11 added support for SQL Server 2012, MySQL 5.6, 64-bit COM
▶ Update 14 added support for Java 8, Apache 2.4
▶ Update 18 added support for Windows 10, OS X 10.11/El Capitan
▶ ...
Lists of updates, links to technotes, and offers jar download links!

- [helpx.adobe.com/coldfusion/kb/coldfusion-10-updates.html](http://helpx.adobe.com/coldfusion/kb/coldfusion-10-updates.html)

- Also available for CF 11 and 2016:
  - [helpx.adobe.com/coldfusion/kb/coldfusion-11-updates.html](http://helpx.adobe.com/coldfusion/kb/coldfusion-11-updates.html)
  - [helpx.adobe.com/coldfusion/kb/coldfusion-2016-updates.html](http://helpx.adobe.com/coldfusion/kb/coldfusion-2016-updates.html)

- Updates are cumulative, need only apply latest!

- If you have troubles applying CF updates in 10/11/2016, see my blog post:
  - [carehart.org/blog/client/index.cfm/2016/9/6/solve_common_problems_with_CF_updates_in_10_and_above](http://carehart.org/blog/client/index.cfm/2016/9/6/solve_common_problems_with_CF_updates_in_10_and_above)
New CF10 features that were Enterprise-only:

- HTML 5 Charts (limitation lifted in CF11), ORM Search, Data import handler for Solr
- Some aspects of new scheduler (chaining, listeners, exception handling, clustering, more)
- Standard limits websockets to 100 simultaneous requests (limit lifted in CF11)

...
EULA changes

- CPU-based, CPU defined as 4 cores, CF licensed for 2 CPUs (so up to 8 cores)
- Testing, staging, development remain free (as introduced in 9), as are backup and DR
- VM licensing unchanged since 9, new Cloud licensing. Differences for Std vs Enterprise
- Tweaked again in CF11 (more on that, later)
- Observe distinctions about CF Standard vs Enterprise vs Developer edition

For questions, email cfinstal@adobe.com
  - CF Product Mgr, Rakshith Naresh, rakshith@adobe.com

More:
- cfmumbojumbo.com/index.cfm/coding/coldfusion-10-eula-changes/
- Verity text search engine removed, Solr carried forward from CF9
- Web services changes may break compat, easily resolved
  - See Admin-, application-, and code-level options to change wsversion, etc
- Single login at a time to CF Admin, for a given username (resolved in CF11)
- Web server connector issues/differences
  - Web server settings for 10 and up would conflict with CF9 settings on same web server
  - Need to “reconfigure” web server connectors after most CF10 updates (and 11)
  - Possible need of web server connector tuning
- ...

CF10 COMPAT ISSUES / GOTCHAS
Challenges with 64-bit and MS Access
   - Workaround: use Windows 32-bit ODBC control panel
   - coldfusionmuse.com/index.cfm/2010/12/31/Access.on.64bit.ColdFusion

CF can no longer execute JSPs in website folders of external web server
   - Can only run them from CF's internal web server folder, [cf]/cfusion/wwwroot

Finally: for any “bugs”, always try latest available update of your CF version
   - Final CF10 update was 23: no longer updated since May 2017
What’s new in ColdFusion 10
  - With links to more substantial discussions for each set of new changes
- www.adobe.com/devnet/coldfusion/articles/coldfusion10-whatsnew.html
- tv.adobe.com/watch/coldfusion-10-deep-dives-for-developers/whats-new-in-coldfusion-10/

Security
  - helpx.adobe.com/coldfusion/developing-applications/developing-cfml-applications/securing-applications/security-enhancements-in-coldfusion-10.html
  - www.adobe.com/devnet/coldfusion/articles/security-improvements.html
- www.akbarsait.com/cf10tutorials.cfm
- www.seguetech.com/upgrading-to-coldfusion-10-feature-review-part-1/
- My talk, “What’s New and Different about CF 10 on Tomcat”
- www.carehart.org/blog/client/index.cfm/2012/3/7/charlie_areharts_ultimate_cf10_new_features_list
- And still more
CF 11
Mobile app development/CFCClient/CFBuilder Mobile features

- Full CFScript support
- Pixel-perfect PDF generation: CFHTMLtoPDF
  - Alternative to CFDOCUMENT, which is still supported
  - Leverages separate “CF Add-on Service”
- And still more…
New dev/production/prod+secure profile install option
  - Can enable/disable secure profile via admin
  - If secure profile enabled, cflocation defaults to addtoken="no"
Further lock down of things by IP address (including Admin API, RDS)
New Anti-Samy/ESAPI functions, issafehtml, getsafehtml
New Generatepbkdf2key function
XSS functions (encodefor...)
...
New limitation on what extensions can be used in CFINCLUDE
  - Settable also in cfapplication or application.cfc: compileextforinclude
CFMail encryption
CFHttp AUTHTYPE for NTLM login
CFZip PASSWORD and ENCRYPTIONALGORITHM attributes
New Express edition (not for production use)
Could allow multiple concurrent logins to Admin by same user
New secure profile page
Support for session replication AND sticky sessions (separate options again)
Auto-hotfix mechanism added new prompt to watch for status/success
Web server connector offered new backup option
Access log which was enabled in CF10 was disabled by default in CF11
And more
- Functions as first-class citizens
- Member functions
- Functional programming / higher-order functions (map, reduce)
- Elvis operator (?:)
  - `Name = userName ?: “Anonymous”;`
- Over two dozen new functions
- CFQUERYPARAM CFSQLTYPE attribute: can now leave off cf_sql prefix for values, so either “cf_sql_integer” or just “integer” (Thanks to Pete Freitag for spotting that)
- Support for signatures in PDF creation
- cf_socialplugin
- Spreadsheet, JSON, charting, websocket enhancements
- New strict number validation: if true (default), results of numeric validations (in tags, functions, return from methods) fail if value is not truly numeric
  - Settable in cfapplication or application.cfc: strictNumberValidation
- ...

CF11 KEY HIDDEN GEMS
- New application-level datasource definition, via application.cfc datasources[] array
- Charting enhancements (some compat issues, discussed later)
- Hundreds of bug fixes over the many updates
- Update 3 re-enabled long-dormant DBVARNAME on CFProcparam
  - Had been ignored since CF6, except briefly in 7.0.1
  - Problem: some DBs now require prefix to dbvarname value ( ":" for Oracle and "@" for SQLServer)
  - You may have old code that just says dbvarname = "param1"; would now fail
    - For SQL Server, should be dbvarname = "@param1"
- Update 4: new jvm arg to revert (jvm arg workaround NOT supported in CF2016)
  - -Dcoldfusion.ignoredbvarname=true
  - blogs.coldfusion.com/coldfusion-11-and-dbvarname-attribute/
- ...
Update 3 also added support for Java 8, SQL Server 2014, more
Update 7 added support for Windows 10 and OS X 10.11/El Capitan/
Update 13: CF uses CF Admin logging location for –out and –error logs
  See coldfusion.adobe.com/discussion/2308350/
More: helpx.adobe.com/coldfusion/kb/coldfusion-11-updates.html
New CF11 features that are Enterprise-only
- PDF signature support
- Full DDX support
- WebSocket cluster support
- CFHTMLTOPDF cluster support
- REST multisite support

Things formerly Enterprise-only now available in Standard
- CF archive (car) mechanism (to move CF admin settings from server to server)
- Security Sandbox (to lockdown what code in different directories can do)
- HTML5 charts
- Web socket limit lifted
EULA changes

- More changes regarding cores, VMs
- Observe distinctions about CF Standard vs Enterprise vs Developer edition
- See comments, blogs.coldfusion.com/announcing-the-launch-for-coldfusion-11-and-coldfusion-builder-3/
CF10 installer was removed when CF11 was released. See cfmlrepo.com

CFChart issues
  - Some original charting issues solved by updates (3, 4, 5, 11, 12)
  - Removed: using XML to configure charts--now must pass json
    - Tool to help: cfchart_xmltojson (bat/sh)

See previous discussions
  - DBvarname (in cfprocparam) suddenly *honored* in update 3
  - Strict number validation

...
CF11 update 8 requires that any CF Admin queue timeout page (on request tuning page), to be an .htm file, not .cfm
  ▪ Failure to change will cause CF to start but not run pages. See neo-runtime.xml, <var name='queue_timeout'>
  ▪ Does not affect CF10 (no such limit) or CF2016 (which ignores and removes if filename is a .cfm)

CF11 update 11
  ▪ Broke any use you may have of an /api folder off the root of your site
    ▪ CF now uses that (like /rest folder) for REST feature
    ▪ If you will never use that CF REST feature, could tweak/remove config file references to /api:
      ▪ [cf]\cfusion\wwwroot\WEB-INF\web.xml (and [cf]\config\wsconfig\[n]\uriworkermap.properties)
  ▪ Broke CFTextArea richtext editor
    ▪ Fixed in update 12

...
- CF11 update 12 broke CFinput type="datefield"
  - Fixed in update 13 (and CF 2016 update 5)
- New, more aggressive deprecation/obsoletion
  - mostly really old tags, like cfgraph, cf servlet, etc.
  - wikidocs.adobe.com/wiki/display/coldfusionen/Deprecated+Features
  - webdevsourcerer.com/index.cfm/blog/post/slug/coldfusion-11-finally-deprecating-removing-things
- If skipping 10, consider also those compat issues discussed for CF10
- And get to latest available CF11 update (update 14, as of Apr 2018)
CF11 RESOURCES

- wikidocs.adobe.com/wiki/display/coldfusionen/New+in+ColdFusion
- helpx.adobe.com/coldfusion/release-note/coldfusion-11-release-notes.html
- wikidocs.adobe.com/wiki/pages/viewpage.action?pageId=140968014
- wikidocs.adobe.com/wiki/display/coldfusionen/ColdFusion+Language+Enhancements
- www.akbarsait.com/cf11tutorials.cfm
- www.seguetech.com/coldfusion-11-review
CF 2016
CF2016 KEY MAJOR FEATURES

- Security code analyzer
- Performance improvements:
  - Option to change implicit scope search order
  - Option to change array passing to by reference vs default of by value
- External session storage (store CF sessions in REDIS)
  - Not J2EE sessions, but see blog.svajlenka.com/post/125784752315/redis-and-coldfusion-because-why-not
- API manager (really a separate application entirely)
- Command line interface (cf.bat)
  (helpx.adobe.com/coldfusion/2016/command-line-interface.html)
- PDF enhancements:
  - Redaction, sanitization, export/import comments/metadata
  - Archiving, attaching files, adding stamps
    - adobe.com/devnet/coldfusion/articles/pdf-enhancements.html
- NTLM support for cfobject/createobject, cfinvoke, cfsharepoint
- Generation of swagger docs from RESTful APIs
- More
- Safe navigation operator (?.) for handling non-existent variables/values
  - `<cfoutput>%employee?.firstname%</cfoutput>`
  - Not to be confused with elvis operator from CF11 (?:)

- Ordered/sorted collections

- Dozens of new, changed tags and functions, new member functions

- Still more query-specific higher-order functions (querymap, queryreduce, etc)

- New CFLOOP item attribute, for looping over lists, arrays, or file contents
  - `Item` holds item being looped over, `index` (if any) holds index value

- CFMAILPARAM
  - New, optional `filename` attribute, to give different name for file attached to email when using `cfmailparam file attribute`
  - `File` points to name as on server, `filename` points to name as shown in email
Security Code Analyzer
- Enterprise-only or Trial, and requires CF Builder 2016 (included with CF purchase)

CF Admin (CFIDE folder) no longer accessible via external web server
- cfscripts moved to separate folder which IS accessible

CFOUTPUT
- New `encodefor` attribute: names encoding type to be used for strings within its tags (for html, htmlattribute, url, javascript, css, xml, and so on)
- Also offered as 2\textsuperscript{nd} arg in `writeoutput` function
- For more refined control, use `encodefor*` functions added in CF10

Helpx.adobe.com/coldfusion/2016/security-enhancements.html
- Requirement to use Akamai downloader removed
- Connector changes
  - No need to remove/add connector after updates (needed only once update 4)
  - New "update" option within WSCONFIG UI
  - UI now offers all 3 tunable args (adds pool size, timeout)
    - Better defaults, on Windows at least, for a 2-site setup (500/250)
  - Now offers option to configure "all" sites (to use one connector) or "all - individually“ (each with own connector)
  - Fixed to properly support multiple instances
  - New “Advanced Settings" option to "skip iis custom errors"
- New applicationintent field, in DSN settings for SQL Server
- New admin setting to disable “REST discovery” by API Manager

CF2016 KEY ADMIN CHANGES
Update 2
- Added some new minor language elements, and ckeditor in favor of fckeditor for cftextarea, etc (does not yet seem to be happening in CF11)

Update 3
- Added more minor language enhancements
- Added support for IIS 10 (in Windows 10), Websphere 9
- Many tag/function enhancements

Update 4
- Broke CFinput type="datefield"
  - Fixed in update 5 (and CF11 update 13)

Update 6
- Fixes CFFTP use of SFTP/FTPS with more modern protocols; fixed a cfmail text problem

Again see helpx.adobe.com/coldfusion/kb/coldfusion-2016-updates.html
- Also helpx.adobe.com/coldfusion/release-note/coldfusion-2016-updates-release-notes.html

CF2016 KEY CHANGES PER UPDATES
NEW INSTALLERS ADDING FEATURES

- New installer in Dec 2016
  - Split off of API manager from CF installer. No longer GB+ in size
  - Removed portlets, spry, YUI toolkit
    - YUI used by cfcalendar, cfinput “autosuggest”/”datefield”, cfmenu, cftooltip, cfsprydataset
    - These will now break. Libraries can be added back, link offered here:
      - helpx.adobe.com/coldfusion/deprecated-features.html
  - Includes update 3 by default, and updated JVM
  - blogs.coldfusion.com/coldfusion-2016-installer-refreshed/

- New installer in May 2017 (64-bit Win only) adds Windows Server 2016 support
  - blogs.coldfusion.com/coldfusion-2016-support-for-windows-server-2016/
EULA

- Observe distinctions about facets related to whether CF Standard vs Enterprise vs Developer edition
- CF11 installer was removed when CF2016 was released
  - To “buy” CF11: blogs.coldfusion.com/post.cfm/adobe-coldfusion-backward-licensing
- Deprecated features (nothing obsoleted at initial release)
  - CFMEDIAPLAYER, CFTABLE, CFCHART format=“flash”, CFFILEUPLOAD Flash component
  - Report Builder
    - helpx.adobe.com/coldfusion/deprecated-features.html
    - carehart.org/blog/client/index.cfm/2016/2/22/cf2016_deprecated_features
- Update 3 DID remove support for portlets, spry, and YUI-based features
  - Can be added back manually
  - See bottom of helpx.adobe.com/coldfusion/deprecated-features.html

...
CF2016 docs:
  - Web docs lack any navigational features (left nav, breadcrumb, next/prev page, etc.)
  - PDF no longer available (poor at first, being revamped)
- If skipping 10/11, consider of course those compat issues discussed for CF10/11
- And try latest available update of your version (CF2016 update 6, as of Apr 2018)
(In addition to those listed elsewhere in this section)

- adobe.com/devnet/coldfusion/articles/whats-new-cf-2016.html
- helpx.adobe.com/coldfusion/whats-new.html
- helpx.adobe.com/coldfusion/2016/topics/features.html
- helpx.adobe.com/coldfusion/2016/language-enhancements.html
- helpx.adobe.com/coldfusion/2016/other-enhancements.html
- helpx.adobe.com/coldfusion/release-note/coldfusion-2016-release-notes.html
- helpx.adobe.com/coldfusion/home.htm (CF2016 docs)
- Video on CF2016 (8-minute overview): youtube.com/watch?v=Bm6dJjNSPNG
- adobe.com/devnet/coldfusion/articles/language-enhancements-cf-2016.html
- akbarsait.com/cf2016tutorials.cfm
Phew, that’s a lot new in 10, 11, 2016! **So did I meet my goal?**

- Did you learn at least a few new things you want to try?
- Or as important, things to watch out for?

Again, my contact info for follow-up:

- Charlie Arehart
- charlie@carehart.org
- @carehart (Tw, Fb, Li, Sk, Slack, Git)