HIDDEN GEMS IN CF2016

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CF Server Troubleshooter
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@carehart (Tw, Fb, Li, Slack)

Updated Oct 20, 2016
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- Updated Oct 20, 2016
- Major features of CF2016 (quick overview)
- Hidden gems in many areas
  - Installation, configuration, administration, web server config
  - New/changed features, new language constructs, new member functions
  - New/changed CFML functions, tags
- As well as other topics:
  - Updates to underlying libraries’ version numbers
  - Deprecated/obsoleted features
  - What’s new in Standard vs Enterprise
  - Pricing, licensing, end of life support
  - And lots more
- Slides will be offered by Adobe, and at carehart.org/presentations
ABOUT ME

- I’ve been a speaker at nearly every CF conference, and all 4 CF Summits
- 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 (shared desktop)
  - Focus is not just solving problems but educating you
  - Satisfaction guaranteed. More on rates, approach, etc at carehart.org/consulting
- Love to share info, with my clients and the community
  - Active blogger
  - Contributor to/creator of many CF community resources
    - Online CFMeetup, CF411.com, UGTV, cf911.com, and more
SOME INTRO QUESTIONS FOR YOU

- How many have started using CF2016 in prod? In dev?
  - Have at least seen resources about it?
  - Not surprised if few: people often wait
- Anyone “waiting for first point release”?
  - Have been 3 updates already
- How many likely won’t use it until next release comes out (CF2018, or whatever)?
  - I do these talks, not just for those making the move now, soon, or have already
  - But also those who may see it in future 😊
- Anyone know when I started doing hidden gems in CF?
  - 4.0.1 in 1999
- So, let’s look first at the major new features (only brief overview)
MAJOR FEATURES OF CF2016

- API Manager
- Security Code Analyzer
- PDF Improvements (redaction, sanitization, more)
- CFML language improvements (tags, functions, and more)
- Security improvements (especially more NTLM support)
- Performance improvements
- More about some of these later

- Now, on to the more “hidden” gems!
Removal of Akamai Download Manager!
- Previously, when downloading CF installer from Adobe, we were forced to use this
- Now just generally a better experience (I suppose some may miss it)
- carehart.org/blog/client/index.cfm/2016/2/19/cf2016_download_no_longer_requ ires_Akamai_DL_mgr

Unfortunately, CF install has gotten huge because of API Manager
- Especially tragic if you’ll be using CF Standard: by license can’t use API Mgr
- This is “to be fixed” (bugbase.adobe.com/index.cfm?event=bug&id=4155910)

During installation, you’re asked whether/how to install API Manager
- And whether to implement it within JVM or as own service
CFscripts folder now moved to its own directory, not in CFIDE!
  - Great move for security, administration
  - New folder called cf_scripts, found in the cfusion wwwroot
  - Pointed to as a virtual directory in IIS, Apache, etc.
  - Related to this...

CF Admin now available only via internal web server by default
  - This is another very good thing, for security
  - You REALLY should not try to override this, but I discuss options in my blog post below

Let’s move on to gems WITHIN the CF Admin…
- CF Admin option to store CF sessions in redis (cache) rather than heap memory
  - helpx.adobe.com/content/help/en/coldfusion/2016/external-session-storage.html
  - Gotcha: works only with CF sessions, not “J2EE sessions”
    - Those using “j2ee sessions” could modify Tomcat (underlying CF) on their own
    - blog.svajlenka.com/post/125784752315/redis-and-coldfusion-because-why-not
- New admin setting to disable “REST discovery” by API Manager
  - See Settings page, last setting
- For more on these admin and config changes, see
  - carehart.org/blog/client/index.cfm/2016/2/23/cf2016_CF_Admin_changes
Many new improvements related to the web server config tool

- Fixed: no longer any need to manually reconfigure connectors after update!
  - CF Update mechanism handles this for us automatically now
  - WSConfig offers new “upgrade” option, if ever needed

- Fixed: for those using multiple instances (in CF Enterprise/Trial/Dev)
  - Wsconfig UI finally offers option to pick instance name to connect to (like <= CF9)!
    - In CF10/11, we had to start wsconfig in instance’s runtime\bin to connect site to it

- Fixed: if you open wsconfig UI while already open, you no longer get blanks
  - You get warning that you may already have it open

...
WSConfig UI now tracks number of sites in web server configured or not

Now offers both an "all" option (for all sites) and an "all - individually"

Which instead creates a new connector for each site (using the selected settings)

Appears only if you do have more than 1 web site in web server

Wsconfig UI now offers option to all 3 connector tuning args

Found under “advanced settings”

Previously only offered connection_pool_timeout, max_reuse_connection

Now offers allows configuration of connection_pool_size also

Sadly, installer’s web config step does not offer these 3 configurable options

Due to be fixed in a new installer: bugbase.adobe.com/index.cfm?event=bug&id=4155913

...
- Connector now defaults to timeout of 60 (seconds); was 0 (infinite) before
- For IIS: better connector tuning settings for 2-site setup by default
  - `Connector_pool_size (500), max_reuse_connections (250):`
  - Sadly, for now, this is not so for Apache configs, but is due to be fixed in upcoming update
- CF2016 also now includes `maxthreads="500" and connectionTimeout="60000"` in server.xml, by default
- "Advanced Settings" now also offers "skip iis custom errors" option
  - Disabled by default. Useful for some scenarios
  - Needed to add manually to isapi_redirect.properties file in CF10/11

- Nice to see all these improvements to the wsconfig, which has been a source of heartburn in CF10 and 11. Let’s move on to other gems…
NEW FEATURE GEMS

- New command-line interface (CLI)
  - Allows cmd line CFML execution by pointing to a cfm file, via cf.bat
    - As in, `cf.bat some_file.cfm`
    - Not a real interactive shell (with tab completion, etc.)
    - No repl, no package manager, no extensibility as with CommandBox project
  - Still, is useful for cron jobs/windows scheduler, etc. to run cfml pages
  - Quite a few options and capabilities
- For more, see
  - helpx.adobe.com/coldfusion/2016/command-line-interface.html
Many enhancements to PDF support

Mentioned before sanitization, redaction, but also:

- Export/import of comments, metadata
- Archiving, including newer PDF/A-2b and -3b standards
- Support for attachments, stamps

For more, see substantial article with examples, and code download

- adobe.com/devnet/coldfusion/articles/pdf-enhancements.html

Not mentioned on that page:

- CFPDF adds new encrypt attribute values: AES_256R5 and AES_256R6
New argument for structnew, **ordered**, maintains insertion order
  - Looping over such a struct will also return in insertion order
  - All other forms of creating new structs keep same order as before
  - Also support for creating empty ordered struct
  - helpx.adobe.com/coldfusion/2016/language-enhancements.html#CollectionsupportOrdered

...
New application-level controls

- `searchImplicitScopes`, `passArrayByReference`
- Each can change long-standing behavior for these operations, **vastly improving performance** (5x and 25x, respectively)
- Set as either `cfapplication` attributes or via this scope in `application.cfc`
- See:
  - adobe.com/devnet/coldfusion/articles/language-enhancements-cf-2016.html
  - helpx.adobe.com/coldfusion/2016/language-enhancements.html#Scopesearch
  - helpx.adobe.com/coldfusion/2016/language-enhancements.html#Arrays

...
- CF Admin “enable whitespace management” option now suppresses whitespace at compile time as well as runtime
- Swagger doc generation (for restful api’s and API Manager)
  - helpx.adobe.com/coldfusion/2016/swagger-document-generation.html
- Now on to language enhancements...

CHANGED FEATURE GEMS (CONT.)
Safe navigation operator (?.)

- Used when accessing members of a struct or values of an object
- Used instead of ".", to prevent exception if not defined, null, etc.
- Simplified code, versus nested isdefined tests

Examples:

- `<cfoutput>#employee?.firstname#</cfoutput>`
  - Will output empty string if firstname does not exist/null
- `Writeoutput(employee?.name?.firstname?.trim());`
  - Will output empty string if all 3 are undefined/null

...
NEW LANGUAGE CONSTRUCTS (CONT.)

- For more info and examples (including setting variables with safe navigation):
  - helpx.adobe.com/coldfusion/2016/language-enhancements.html#Safenavigation
  - helpx.adobe.com/coldfusion/developing-applications/the-cfml-programming-language/using-coldfusion-variables/using-periods-in-variable-references.html#Usingthesafenavigationoperator
  - blog.adamcameron.me/2015/10/coldfusion-12-it-goes-to-show-you.html
  - adobe.com/devnet/coldfusion/articles/language-enhancements-cf-2016.html
Many new member functions (expanding on the new feature in CF11)

New array member functions: arrayDeleteNoCase

New string member functions:
- encrypt, paragraphFormat, replaceListNoCase
- decodeFromURL, decodeForHTML, encodeForHTML, encodeForHTMLAttribute
- encodeForXML, encodeForXMLAttribute, encodeForXPath
- encodeForCSS, encodeForJavaScript, encodeForURL
- getSafeHTML, isSafeHTML
- urlDecode, urlEncodedFormat

...
NEW MEMBER FUNCTIONS (CONT.)

- New datetime member functions:
  - LSDateFormat
  - setSecond, setMinute, setHour
  - setDay, setMonth, setYear

- New query member functions:
  - queryEach, queryKeyExists, queryFilter, queryMap, queryReduce, querySort, valueArray

- New display and formatting member functions:
  - booleanFormat, yesNoFormat

- More info on member functions:
  - helpx.adobe.com/coldfusion/developing-applications/building-blocks-of-coldfusion-applications/using-the-member-functions.html
New CFML functions

- arrayContainsNoCase, arrayDeleteNoCase, valueArray
- querySort, queryEach, queryFilter, queryKeyExists, queryMap, queryReduce
- booleanFormat, floor, isPDFArchive, replaceListNoCase, spreadsheetGetColumnCount

Changed functions:

- arraynew, cacheRemove, dateFormat, timeFormat, createDateTime
- replace, replaceList, spreadsheetAddRows, writeoutput

More info, links to details on new/changed CFML functions:

- helpx.adobe.com/coldfusion/2016/other-enhancements.html
- helpx.adobe.com/coldfusion/2016/language-enhancements.html#ArrayFindNoCase
Changed CFML tags...

CFLOOP

- New *item* attribute, for use with loops over list, array, or file
- Named *item* var will hold element looped over
- Named *index* var (optional) will hold index value, if any

Docs on these and the rest will follow
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

CFOUTPUT

- New `encodefor` attribute: names encoding type to be used for strings within it tags, if not otherwise surrounded by an `encodefor` function (types: html, htmlattribute, url, javascript, css, xml, and so on)

...
> **CFSEARCH (Solr searching)**
>   - New **Type** attribute values (for parser): **Standard, Dismax**
>   - Old verity-based types no longer supported
>     - `simple, explicit, internet, internet_basic, natural`
> **CFCOLLECTION**
>   - **path** attribute is now ignored
>   - All collections are created in the **collections** directory at the location specified in **Solr_Home** field in the ColdFusion admin
> **CFSOCIALPLUGIN**
>   - See comments in `[ColdFusion2016]\cfusion\CustomTags\socialplugin.cfm`
>     - ...

**CHANGED CFML TAGS (CONT.)**
More info on changed tags, with links to details:
  - helpx.adobe.com/coldfusion/2016/other-enhancements.htm
  - helpx.adobe.com/coldfusion/2016/language-enhancements.html

Phew, so that’s it for language, feature, admin and config gems
  - Think we’re done?
  - Not yet!

CHANGED CFML TAGS (CONT.)
» We’re more than half-way home. Areas remaining...
» Deprecated features
» Updates to underlying libraries’ versions numbers
» What’s new in Standard vs Enterprise
» Pricing
» Updates since initial release
» And more!

OTHER TOPICS
- Deprecated features (nothing obsoleted)
  - These may (will likely) be dropped/obsoleted in later releases, but are still supported

- Language features:
  - CFCHART format="flash"
  - CFFILEUPLOAD Flash component
  - CFMEDIAPLAYER
  - CFTABLE
  - UI Tags based on YUI toolkit - CFTREE, CFCALENDAR, CFAUTOSUGGEST, CFMENU
    - These uniquely are also “no longer supported”/updated

- Report Builder

DEPRECATED FEATURES
Certain admin features deprecated
- Event gateways - Jabber, Flash Media server
- Portlets
- System Probes
- Server Manager
- Server Monitor (was listed as deprecated, but will not be)

For more on deprecation, dropping of support for some things
- helpx.adobe.com/coldfusion/deprecated-features.html
- carehart.org/blog/client/index.cfm/2016/2/22/cf2016_deprecated_features

Now, how about the status/versions of CF’s underlying Java libraries?
$\begin{itemize}
  \item Antisamy 1.5.3 (OWASP security library)
  \item Axis 2 1.7.0 (web services library, and note that's "Axis 2" v 1.7.0, not "Axis")
  \item Derby 10.11 (embedded DB)
  \item Ehcache 2.10.0 (caching library)
  \item Esapi 2.1.0 (OWASP Enterprise Security API)
  \item Ext JS 4.1 (JS library which underlies various UI tags)
  \item Ewsapi 1.1.5 (MS Exchange API)
  \item Hibernate 4.3.10 (ORM library)
  \item HttpClient 4.4.1 (underlies CFHTTP and more)
  \item Jetty 9.3.6v20151106 (underlies Solr, HTMLTOPDF, and more)
  \item Java 1.8.0_72 (the JVM which underlies all of CF)
  \item JDBC Drivers 5.1.4.000138 (the built-in Merant DB drivers, such as for SQL Server, Oracle, and even MySQL. CF no longer includes the MySQL-provided driver, but you can add it yourself)
  \item jQuery 1.6.1 and jQuery UI 1.8.16 (JS library which underlies various UI tags and Admin interface features)
  \item Lucene 5.2.1 (underlies Solr, embedded search engine in CF)
  \item OpenSSL 1.0.2h (as of CF 2016 Update 2)
  \item POI 3.12 (underlies MS Office Integration features)
  \item PostgreSQL 9.4-1201 (db driver)
  \item Quartz 2.2.1 (underlies CF Schedule tasks)
  \item Servlets 3.1 (underlies CF/Tomcat processing)
  \item Solr 5.2.1 (the embedded search engine, used by CFSEARCH/CFINDEX/FCOLLECTION, etc.)
  \item Tomcat 8.0.27.0, 8.0.32 as of Update 1 (the application server which underlies CF, when deployed in traditional "Server" configuration)
  \item YUI 2.3.0 (JS library which underlies various UI tags)
\end{itemize}$

See: carehart.org/blog/client/index.cfm/2016/2/17/what_are_cf2016_embedded_library_version_numbers

**UPDATES TO UNDERLYING LIBRARIES’ VERSIONS NUMBERS**
Referring here only to what’s new/changed in CF2016 and in Enterprise only

- API Manager
- Security Analyzer

These do not work with CF 2016 Standard, nor even Developer edition!

- They do work with the CF Trial edition
- And you can take an enterprise license key and use it on a “dev” machine, of course

More:

- carehart.org/blog/client/index.cfm/2016/2/25/cf2016_enterprise-only_features
For more, including how I found this info, see carehart.org/blog/client/index.cfm/2016/2/24/pricing_for_coldfusion_2016
Some debate/confusion initially about aspects of new EULA

See it for yourself


Reach out to CF Product Mgr, Rakshith Naren, with any questions

- rakshith@adobe.com
CF10 support *not* terminating at end of this year
  - As happened with CF9 in 2014 when 10 came out
  - Instead, ends May 2017 (extended support, May 2019)
CF11 support ends April 2019 ("extended support" April 2021)
CF9 "extended support" ends 12/31/16
More: adobe.com/support/products/enterprise/eol/eol_matrix.html#63
There have been 3 updates to CF2016 since release (as of this date)

Updates can be easily applied in CF Admin, “Server Update” page
  Updates are cumulative, need only apply latest
  If you have troubles applying CF updates (in 2016, or 10/11), see my blog post:
    carehart.org/blog/client/index.cfm/2016/9/6/solve_common_problems_with_CF_updates_in_10_and_above

As for updating CFBuilder, should be prompted about available update
  But you can implement it manually
    helpx.adobe.com/coldfusion/kb/coldfusion-builder-2016-update-2.html#Installation

There’s sometimes a fair bit that’s included in CF updates
  Bug fixes, security improvements, and sometimes even minor new/changed features
  Let’s take a look at them
Update 1 was released in May 2016, 3 months after initial release
  - Tomcat was updated to 8.0.32
  - Various updates to Security Analyzer
  - Several important bug fixes for security, core language features, server, and other areas (20 total bug fixes)
CF Builder 2016 Update 1 released concurrently
  - Primarily addressed issues related to Security Code Analyzer and its performance
  - ...
Update 1 resources

- Overview
  - helpx.adobe.com/coldfusion/kb/coldfusion-2016-update-1.html
  - helpx.adobe.com/coldfusion/kb/bugs-fixed-coldfusion-builder-2016-update-1.html

- Release notes (covers all updates)
  - helpx.adobe.com/content/help/en/coldfusion/release-note/coldfusion-2016-updates-release-notes.html

- Bug fixes and known issues
  - helpx.adobe.com/coldfusion/kb/bugs-fixed-coldfusion-2016-update-1.html

- Blog posts
  - blogs.coldfusion.com/post.cfm/updates-for-coldfusion-2016-coldfusion-11-and-coldfusion-10-released
  - blogs.coldfusion.com/post.cfm/coldfusion-builder-2016-update-1-released
Update 2 was released in June 2016

- Allowed specifying the type of data when serializing structs or arrays
- New member functions:
  - ArrayDeleteNoCase
  - BooleanFormat
  - YesNoFormat
- Introduction of CK Editor/deprecation of FCKEditor
  - In cftextarea, ajax form controls
- Can configure SSL in API Manager: access API Mgr portals over HTTPS
- ...
Change related to new NTLMDomain attribute
  - helpx.adobe.com/coldfusion/2016/ntlm-support.html
OpenSSL libraries upgraded to version 1.0.2h
Addressed vulnerability mentioned in the security bulletin APSB16-22
Several important bug fixes (77, total bug fixes)
  - Security, core language features, server, and other areas
CF Builder 2016 Update 2 released concurrently
  - Standalone edition upgraded underlying Eclipse from Kepler to Mars
  - Important updates to Security Analyzer, updated FTP/SFTP support in import/export project, several bug fixes (especially performance), PhoneGap upgraded to 5.2

UPDATE 2 (CONT.)
Update 2 resources

- Overview
  - helpx.adobe.com/coldfusion/kb/coldfusion-2016-update-2.html
  - helpx.adobe.com/coldfusion/kb/coldfusion-builder-2016-update-2.html

- Release notes (covers all updates)
  - helpx.adobe.com/content/help/en/coldfusion/release-note/coldfusion-2016-updates-release-notes.html

- Bug fixes and known issues
  - helpx.adobe.com/coldfusion/kb/bugs-fixed-coldfusion-2016-update-2.html

- Blog post
  - blogs.coldfusion.com/post.cfm/updates-for-coldfusion-2016-coldfusion-builder-2016-coldfusion-11-and-coldfusion-10-released
Update 3 released in Oct 2016

- Added support for Websphere 9, IIS 10.1 (in Windows 10)
  - But as for support for Windows 2016, due to be released late Sept 2016, that will follow in time
- Support for sorted structs
  - New arg to StructNew(), including callback feature
  - New StructToSorted()
- New argument in ArraySum(): ignoreUndefined
  - If true, ignores null or "" values when adding array elements
- New **language** attribute for CFHTMLTOPDF, defaults to “English”
- CFHTMLTOPDFITEM tag has new **evalAtPrint** attribute
  - If true, content of CFHTMLTOPDFITEM evaluated AFTER PDF is generated, page numbers available
  - Allows conditional code inside CFHTMLTOPDFITEM
- ...
Also

- New domain/user/password support in CFOBJECT, CreateObject()
- New `useSecureJSONPrefix` arg for SerializeJSON()
- New QueryGetResult(), returns metadata about queries
- Several date-related changes in several functions, new IsDateObject()
- Also 180 bug fixes (100+ as reported by users)

CF Builder 2016 Update 3 released concurrently

- PhoneGap updated to 6.0
- 25 bug fixes, including for an important security fix and Security Analyzer
- Enhancements to editor
Special note for API Manager users
- If you’ve installed Update 3 build 300357, Adobe recommend you uninstall it
- Roll back to Update 1 (build 298513)
- Then apply Update 3 build 300466
UPDATE 3 (CONT.)

- Update 3 resources
  - Overview
    - helpx.adobe.com/coldfusion/kb/coldfusion-2016-update-3.html
  - Release notes (covers all updates)
    - helpx.adobe.com/content/help/en/coldfusion/release-note/coldfusion-2016-updates-release-notes.html
  - Bug fixes and known issues
  - Blog post
    - blogs.coldfusion.com/post.cfm/updates-for-coldfusion-2016-and-coldfusion-builder-2016-is-available-now
Lists updates, links to technotes, and offers jar download links!
  - helpx.adobe.com/coldfusion/kb/coldfusion-2016-updates.html

Also available for CF 11 and 10:
  - helpx.adobe.com/coldfusion/kb/coldfusion-11-updates.html
  - helpx.adobe.com/coldfusion/kb/coldfusion-10-updates.html
- Can no longer access CF11 installers on Adobe site
  - Look to cfmlrepo.com (community-run site)
- Can’t even license CF11 anymore
  - Must buy CF2016 and request “backward license” to CF11
- Annoying: while there are PDFs of CF docs…
  (helpx.adobe.com/coldfusion/home.htm)
  - They generally show only one level within a section, then offer a link to online page for more detail (sometimes confusing)
Mentioned previously

- Security Analyzer works only with CF Enterprise (or trial)
  - Also requires CF installed in “Developer mode”, with RDS enabled
- API Manager included in CF download, whether you can or want to install it
- New redis-based session vars support only CFML sessions, not j2ee sessions
- CF Installer web server config does not yet offer tuning options

See other (few) “known issues” listed in original release and update docs

Be sure to apply updates before believing web reports of “known bugs”. May since have been fixed!
In addition to many mentioned so far (do see them also)...
- 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/release-note/coldfusion-2016-release-notes.html
- Video on CF2016 (8-minute overview): youtube.com/watch?v=Bm6dJjNSPNG
- helpx.adobe.com/coldfusion/home.htm (CF2016 docs)
- ...
RESOURCES FOR MORE ON CF2016 (CONT.)

- adobe.com/products/coldfusion-standard/features.html
- helpx.adobe.com/pdf/Cf2016-standard-comparison.pdf (compares to previous releases)

- adobe.com/products/coldfusion-enterprise/features.html
- helpx.adobe.com/pdf/Cf2016-enterprise-datasheet.pdf
- helpx.adobe.com/pdf/Cf2016-enterprise-comparison.pdf (compares to previous releases)
- …
RESOURCES FOR MORE ON CF2016 (CONT.)

- helpx.adobe.com/coldfusion/standard/system-requirements.html
- helpx.adobe.com/coldfusion/enterprise/system-requirements.html

- helpx.adobe.com/pdf/coldfusion2016-support-matrix.pdf (web servers, OS’s, DB’s supported)

- adobe.com/products/coldfusion-standard/buying-guide.html
- adobe.com/products/coldfusion-enterprise/buying-guide.html
- …
RESOURCES FOR MORE ON CF2016 (CONT.)

- **Whitepapers**
  - CF2016 Security audit report:
    - blogs.coldfusion.com/post.cfm/coldfusion-2016-release-security-audit-report
  - CF2016 Performance report:
  - CF2016 lockdown guide:
  - CF2016 migration guide:
Adobe CF team blog: blogs.coldfusion.com
Anit (CF team member) blog: coldfusionsolution.wordpress.com
My sites: cf411.com and cf911.com (and carehart.org)
  I often link to the resources of others in the community, past/present
  I can help you with any CF server troubleshooting/admin challenges
So, how many changes did we cover? Any guesses?
- I counted about 80! (not including bug fixes)
- As is often the case, most can name only a few

Hope you may be more motivated—and informed—to consider CF2016
- To understand if and how it may work for you
- Or at least where things stand regarding it as of now

Again, my contact info for followup:
- Charlie Arehart
- charlie@carehart.org
- @carehart (Tw, Fb, Li, Slack)

Thanks, and don’t forget to fill out your evals