2/28/2020

Attendees:

MJ Mike Johanson (Me, p

M Marcelo Gallardo

TE tony espy

LG Lenny Goodell (Intel)

TC Trevor Conn

Topics:

Marcelo Gallardo – TIBCO – Hackathon @ End of March – Palo Alto

- Integrating big data with backend applications
- Been using export client and services pretty heavily for the last 6 months
  - very easy, and flexible before hand
- Migrating to SDK – few challenges have been uncovered
  - Really like the direction- understand the direction
  - Little bit more work
  - Want to be able to dynamically add endpoints via rest
  - Want to see what is running from an export perspective from client (Android app)
    - /Config endpoint would provide current pipeline in App Service Configurable—not available in SDK built service
    - SMA has a gap in that you must know the service key of the non-registered service to get its information (I.e. config)
  - TL;DR; - need a way to see what's running on box with 1+ services built on SDK – 1 endpoint
- Possible enhancement: Would like to have a way to query SMA for status of class of services (I.e. all device services or all app services).

Tony Espy – Snaps

- Snaps for app service configurable – disconnect on versions
- SemVer shenanigans caused versioning issues
- 1.0.0 is newer than 1.1.0-dev7 for hackathon
- Tony will update snap to be 1.0.0

Insecure Secrets and store secrets are merged

Examples being created for how to use insecure secrets and vault secrets

Readme/documentation updated appropriately

Kanban Board Review

2/21/2020

Attendees:

LG Lenny Goodell (Intel) (Me)

JW Jim White

TC Trevor Conn

Mike Johanson

Topics:

- JSONLogic – Sneakpeak
  - https://github.com/edgexfoundry/app-functions-sdk-go/pull/292
  - http://jsonlogic.com/operations.html
  - Only support Boolean operations is good enough.
  - How app services participate in blacklisting Devices?
    - Blacklisted device on-boarded is an event
    - Need to be able to detect and take action with JsonLogic function?
      - comkick it out
      - Send notification
    - Need to update device name list dynamically
  - Need Sensor event vs Control events
- Thoughts on Rules Engine next steps from meeting yesterday
  - Went well.
  - May not be right approach to consume core-contracts.
    - Use endpoints instead.
    - Also use to understand Event/Reading model.
  - Liked that they used go-mod-messaging.
  - It is an OS effort that we could contribute to.
  - Very encouraged!!
- In progress
  - PUT for secrets
  - Batch documentation
- Kanban review
  - https://github.com/orgs/edgexfoundry/projects/23

2/14/2020

Attendees:

MJ Mike Johanson (Me, part

BM Brian McGinn (Intel)

Jim White

LG Lenny Goodell (Intel)

TC Trevor Conn

+ Michael Estrin

Topics:

Go-mod-bootstrap back on for Geneva

- Wait time specifications – converted 1000 to 1s in config in app sdk – bootstrap is expecting integers – when data is returned transform structure that has strings (wait durations) to ms
  - For hanoi would want to ensure this common across services
- Self seeding to bootstrap is the last thing to be accepted – Lenny helping Jim with ADR

Kanban Board Review

Eno from our team still working on handling of insecure secrets

3:30 Meeting with EMQ X Team – bi weekly meeting

2/7/2020

Attendees:

MJ Mike Johanson (Me)

LG Lenny Goodell (Intel)

Michael Estrin

JW Jim White

TC Trevor Conn

Topics:

- go-mod-bootstrap adoption

  What would need to change in this module?

  - Self-seed for bootstrap -- needs to be integrated – Lenny has done this in a branch – need to have issue taken off hold
    - Want agreement on various bootstrap components that need to be added – don't want disconnected implementations
    - Jim will work on putting together ADR for self-seeding
  - The way we adapt how startup occurs --
    - Explore experimental – Michael E. doesn't suggest using a go routine to wrap bootstrap in order to ensure a non-breaking change to sdk
    - **Wait til Hanoi to adopt go-mod-bootstrap for breaking change**

  What would change in the SDK – specifically the surface/to the developer?

- GetSecrets() from Vault is complete

  Intel team is Working on support for insecure secrets

- Rules Engine – Next Steps
  - Guidance for Rocky?
    - **Schedule w/ Rocky a couple checkpoints to ensure keeping on path with integration**

- ▪ **Trevor will be going a POC – will provided feedback**
  - JSON Logic
    - ▪ Mike to make decision on feasibility for implementing in this release
- Review Backlog
  - ●

1/24/2020

Attendees:

MJ Mike Johanson

Michael Estrin

TC Trevor Conn

EU Eno Udoko

+ Jim White

Topics:

- Command Line Flag for –registry / -r

In the ADR I specified that the -r/-registry it would be removed and in its place, we would add the **Enable** field in the RegistryInfo struct.

Example:

```
[Registry]
 Host = 'localhost'
 Port = 8500
 Type = 'consul'
 Enabled = true
```

Option #1 – to support both config and command line option

Option #2 – continue supporting command line option (not in config) -- aka leave as is – this will be the decision

Lenny will update the ADR with this decision - Add context to decision section and update appropriately

Rules Engine Discussion from Demo

- o Requests
- o Next Steps
    - Scale testing – how many rules can be supported on various hardware setups
    - CLI today, REST API will be coming
    - How is EMQ X Kuiper Integrated
        - Agree that it shouldn't be part of edgex-go
        - In general, want to be separate from EdgeX, suggest to add ZMQ connector along with MQTT/REST
        - Anti-corruption layer
        - Should find out if plugins are a part of their architecture – windows support in native environment?
        - Should be able to be containerized independently
        - Should not be in EdgeX Foundry organization in github – leave in EMQ organization
- o Is this the right path?
    - **Yes, we should continue down this path**

1/17/2020

Attendees:

MJ Mike Johanson (Me)

BF Brandon Forster

JW Jim White

LG Lenny Goodell (Intel)

TC Trevor Conn

Today's Topics:

App Service Persistence – Lenny

Need a separate service for managing the database. When you have multiple app services want to centralize db management. Problem is that multiple services accessing the same database collection – breaks microservice patterns. DB Credentials are created for a single service – In talking with Bryon Nevis, as we move to per service tokens perception was that single token wouldn't work/isn't secure.

As a counter, Each service could have its own DB and collection. Seeding credentials is the challenge.

Need to go back to Bryon N and discuss sharing tokens for each instance of app service. Or each service having its own db/collection.

Secrets Abstraction for Vault

GoModSecrets is not an abstraction around secret store – specific to vault

Need to add abstraction so can support non-secure implementation

Will us in-memory keystore when in non-secure mode

Lenny will wrap up the description and content into an ADR for decoupling from Vault

Need to determine if this necessary for Geneva – **right thing to do, however, can crawl with the way go-mod-secrets is today.** Plan is to use secretprovider similar to store n' forward, will add a new function for getsecrets() next to getdbcredentials()

Service keys will be added to compose/env variables. **We need a dynamic token provisioning service – need to bring this up in Security WG.**

1/10/2020

Attendees:

![MJ] Mike Johanson (Me)

![Michael Estrin] Michael Estrin

![TC] Trevor Conn

![JW] Jim White

Today's Topics:

Batch and Send – First Look

> Absolute or relative timer – allow for both based on configuration values – allow for different strategies

> When no data, send empty array? or nothing at all? -- consider cloud

> Higher level question – should we duplicate and store data for batch and send before transforms? After? -- BatchTransformSend or TransformBatchSend – when to store?

> Name should just be batch

EMQX Rules Engine Demo w/ EdgeX - Jan 23rd 3PM PST (Beijing Time is 7AM, Jan 24th).

> **Determine how good is the EdgeX integration – is it ready for primetime? For Geneva?**

For handling secrets – suggest to allow for put of secrets in go-mod-secrets – still should allow for storage of secrets if not in secure mode -- look at go-mod-bootstrap, put implementation in same place – Michael Estrin, use as sounding board

12/20/2019

Attendees:

MJ Mike Johanson (Me)

JW Jim White

TC Trevor Conn

LG Lenny Goodell (Intel)

Today's Topics:

EMQ X Kuiper Review – Jim [Powerpoint Presentation](#)

Mike to reach out to EMQ team for a demo w/ EdgeX in January

12/13/2019

Attendees:

MJ Mike Johanson (Me)

LG Lenny Goodell (Intel)

TC Trevor Conn

JW Jim White

Michael Estrin

Today's Topics:

- Export Services Removed – Yay!
  - But...Marcello:
    - https://edgexfoundry.slack.com/archives/CE48UTVQ9/p1571677356039900
    - https://edgexfoundry.slack.com/archives/CE6902Q6S/p1575999030074900?thread_ts=1575998734.074700&cid=CE6902Q6S
      - Get more information about use case
      - Encourage to use multiple app services
      - Encourage a contribution :)
  - How can we address multiple HTTP Endpoints
    - Scale problems – hold the line – export distro going away that is on purpose
      - Encourage multiple services if needing different endpoints
    - Only support multiple endpoints if pipeline transformations are the same.
- UI Updates – what should we encourage?
  - App Service Configurable
    - Deployment of App Services (add/remove)
    - Generate TOML files
    - Update consul
    - Designer – Drag N' Drop of built in functions
  - App Services (longer term – not now)
    - Editor for your own function?
    - Generate and deploy app services for you
    - Lots of complexity here – could be overlapped with SMA
    - Lots of deployment considerations
      - I.e Docker and images – being pushed/built

- HTTPS Support for App Functions SDK – community contribution
- System Metrics – Not committed for Geneva -- Stretch
    - Set granularity of telemetry based on INFO, DEBUG, VERBOSE?
        - TelemetryLevel option in config
    - Timer
        - Processing time for a pipeline
            - Evaluate at Function level – Sum of functions should equal entire pipelien – only in Debug mode
        - DB access Times
    - Counter
        - How often are we failing export to be sent to db to be retried at a later time
        - Queue Size
        - How much data is being sent to an endpoint (Volume)
        - Focus on Important/Expected/Common Error Counts/Stats
            - Define what is important
        - Invalid Events – Malformed Data – Can't unmarshall
        - Number of events being received into SDK – ~~compare to Filtered?~~
            - Unmarshalled and given to pipeline
- Version Issue – App Service Configurable failing version check against core due to "master" being returned from api/version on core.
    - Need to talk to Lisa about adding a version number prefix to nightly build in CI pipeline for core related services – **Lenny**
- Can we integrate Service level testing into every PR
    - Rest APIs to be tested in Go
    - TAF tests can live in each repo if necessary
    - Leave the E2E tests to the testing team
    - Try to use the best tool for the job
    - Newman requires service to be running – run tests in IDE – leverage this same thing for unit test but run full stack application level tests instead w/ Go
        - Concern around leveraging Go environment could hinder C/C++ tests and other languages
        - No decision here in App WG – we do want community agreement
    - Need TAF or GoLang for testing something like Store and Forward – needs to be in the repo

Topics from last time:

12/6/2019

Attendees:

MJ Mike Johanson (Me)

LG Lenny Goodell (Intel)

JW Jim White

Michael Estrin

Topics from last time:

- Rules Engine
  - Couple concerns – Size is one --Compared to Drools it is pretty small
  - Custom SQL Engine for Rules
  - Should we do a test-run of it? It is open-source - Jim will draw a preliminary comparison
  - **Thought is to pursue JsonLogic for now – encourage development and integration of EMQ X Kuiper for future – however current recommendation is not a full replacement for existing Drools Rules Engine**
  -

Today's Topics:

- Review New Issues
- Prioritize Work
  - https://github.com/orgs/edgexfoundry/projects/23

11/29/2019 - US Holiday Weekend

11/22/2019

Attendees:

Topics from last time:

Batch and Send – Saving for Lenny

Config/Registry refactor – saved for Architects meeting

Today's Topics:

Rules Rules Rules:

- EMQ X Kuiper
  - Open Source project
  - 6 years
  - Can be deployed from Edge to cloud
  - "Messaging Middleware Software"
  - Challenges to address:
    - Constrained devices
    - Agile
    - Install/upgrade/monitors apps for large #
  - A SQL Based IoT Rule engine – custom engine
    - ~7MB package, support Linux/MacOS ARM too
    - SQL Based
    - Built in support For MQTT Source
    - Extensible
    - https://github.com/emqx/kuiper
    - Restful API for rules Management
  - Couple layers of abstraction
    - Lowlevel API - MQTT based – protocol specific, flexible, but not easy to develop streaming applications
    - Streaming API
    - SQL

o
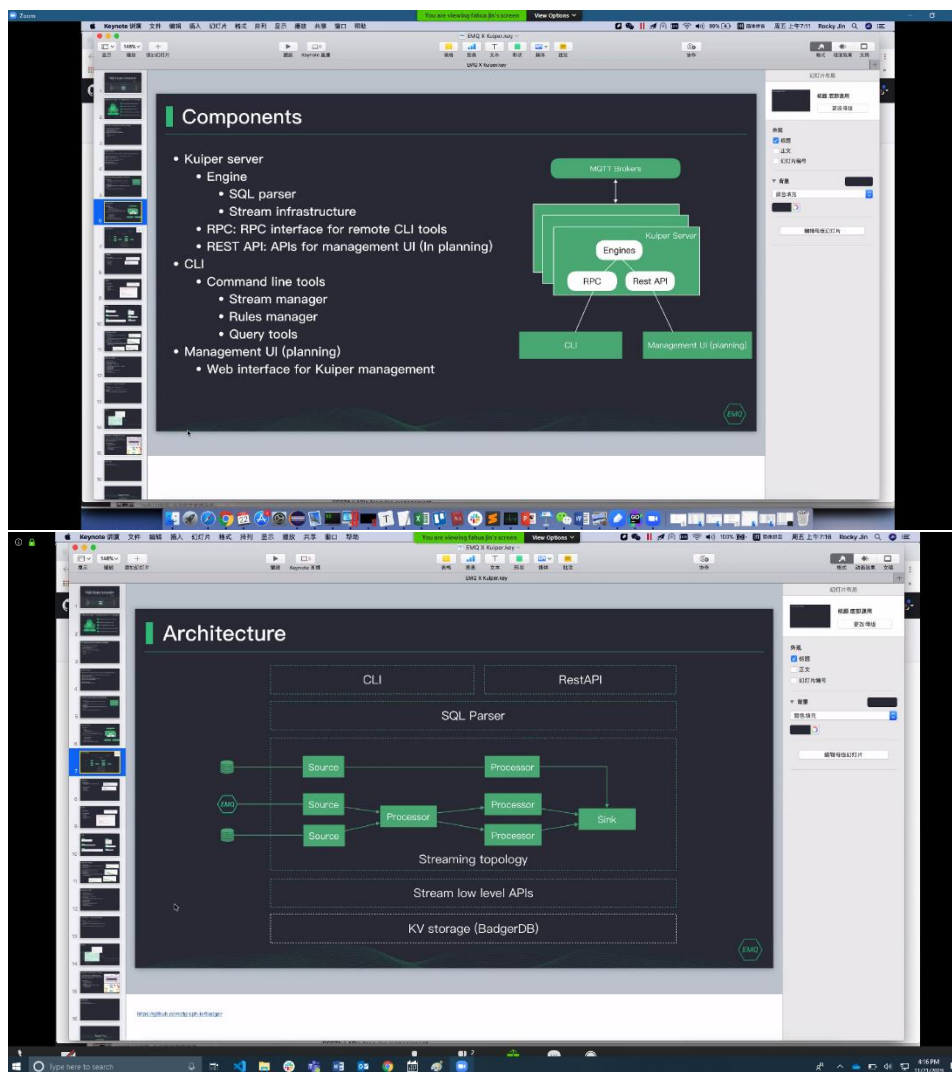
o
o Source = ZMQ, MQTT, etc...
o BadgerDB current KV storage – currently too much memory looking to replace
o

Evaluate footprint to see what it looks like alongside EdgeX.

JsonLogic: https://github.com/edgexfoundry/app-functions-sdk-go/issues/252

- https://github.com/jwadhams/json-logic/issues/8 -- Two implementations
- Leaning towards https://github.com/diegoholiveira/jsonlogic
- How would we see this being integrated into the functions pipeline/SDK?
  - Add a route POST /rules to allow for dynamic changing of rules while running?

    { "and" : [

    {"<" : [{ "var" : "temp" }, 110]},

{"==" : [{ "var" : "pie.filling" }, "apple"] }

] }

- Example Pipeline:
  - FilterByDeviceName
  - ConvertToCelcius
  - TransformToJSON
  - ApplyJSONLogic
  - HTTPPost
- Storage/Persistence of rules – it is JSON, so rules.json? Specify path in TOML? Embed directly in TOML with no JSON file?
  - Stick with file in rules.json for example
- Only want one reference implementation, wouldn't want both. (Jim)

Moved all examples underneath app-service-examples in holding

Ok that history was lost, not a way to keep it

11/15/2019

Attendees:

LG Lenny Goodell (Intel) (Me)

DR Dave Rensberger

JW Jim White

JP Joe Pearson (IBM)

    Michael Estrin

TC Trevor Conn

Today's topics

- Work Completed since last meeting
  - Vault integration for database credentials
  - Compose files updated for App Service Configurable to replace Export Srvs for Rules engine.
    - Replaced docker profiles with env var overrides for App Service Configurable
  - Moved SDK Examples into new **app-service-examples** repo in holding
  - Tagged SDK & App Service Configurable as release 1.0.0
  - Snap created for Fuji with ASC replacing Export Srvs for Rules engine
  - Added issues for Geneva items (https://github.com/orgs/edgexfoundry/projects/23)
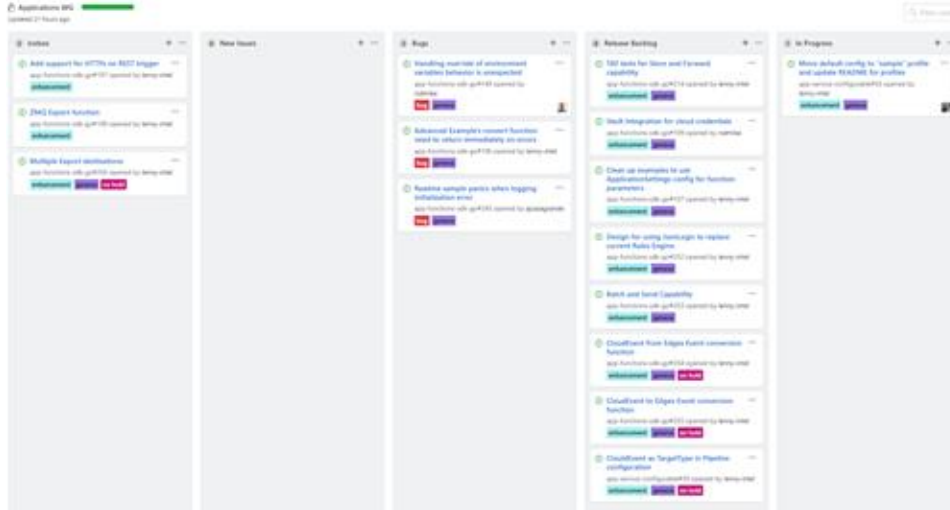
- Detailed discussion on Batch and Send
  - Consensus of concept of a Batch function
  - Discussion of in memory vs DB and designing for future scale out
    - Batched in memory by default. Use DB for durability (crawl). What about load balanced (Run)? Use semaphore in Redis?
    - Will require new DB interface? Or can we expand on the current one used for Store and Forward since the data persisted is just binary.
  - ZMQ export remain in Ice Box (aka long-term backlog)
  - HTTPs for REST trigger remain in Ice Box until HTTPS for all services is solved/implemented.
  - Multiple Export destination moved to Ice Box
    - Concern is this basically recreates Export Distro and its scalability issues.
    - Want to revisit the use case for this to better understand if it can be solved in a scalable way.

- Review of issues in GIT Project (Geneva scope)
  - Cross cutting concerns for Geneva
    - Alt message bus
    - Event/Reading type data added
      - New models
    - API refactoring for Client used by SDK
      - Just need to latest core contracts.
    - API refactoring pattern applied in SDK?
    - Moving to TAF framework

- Generic error handling

- Design review of Refactoring Registry Design
  - The goal is to separate the responsibilities of configuration and service discovery.
  - Preliminary PR https://github.com/edgexfoundry/edgex-go/pull/2133
    - Config Provider config also in TOML?
    - Add changes for confg-seed

11/1/2019 Cancelled

11/8/2019 Cancelled – Geneva F2F Planning

EdgeX - Application Working Group - Fuji

10/25/2019

Topics for Today:

Feature Request: Dynamic Subscription(Adding and removing) of Cloud Endpoints. This translates currently to adding/removing pipelines – which is synonymous with instances of the ASC. How do we address this?

- **Explore:** Multiple pipelines in single ASC?
- Rely on some sort of remote deployment mechanism?
- Say use the SDK and create your own endpoint to manage adding and removing HTTP endpoints?
- **Explore:** Support multiple addresses in HTTPPost?
    - Implications for S&F – add persist per endpoint?

Preparing for training of App Functions SDK and App Service Configurable

- Any particular topics we want to focus on? Any Requests?
    - Clear articulation of how this is used, ways to use it
    - Configuring custom settings in Application Service w/ SDK

Review recently completed PR's

Swagger – need to follow up on where this gets uploaded/delivered

Duration Strings – would be nice to be consistent across services – **should be brought up in core WG**

App Config Rules replacing Export Client/Distro

- PR #1992 for config-seed changes to Rules Engine properties.
- Compose files will be updated after merge
- Need to determine how this affects BlackBox Tests for rules engine, and what needs to change
-

Do we need vault integration for S&F DB creds when security is on? -- file this as bug to get included for Fuji

- Need to reach out Tingyu, leverage common implementation in core-services w/ bootstrap handler to get credentials.
- Initiate discussion to create re-usable component for retrieving credentials from Vault.
- Wait until docker-compose for secty is stable for validation of S&F

Opens:

None

10/18/2019

Topics for Today:

- Move all examples into app-functions-examples repo in holding?
  - Move them ALL (don't leave one behind) into an example repo in holding
- Store and Forward complete!
  - Ready for Fuji! YAY!
  - Need to determine when to move edgex-taf-common repo – to main
- MQTT Tweaks
  - SkipVerify will be a flag (Currently hardcoded to true 🙁)
  - Refactoring
- Swagger generation from Code
  - Bring to Core – discuss with larger audience
  - How do we deploy this across the entire framework?
  - How do you make discovery of swagger spec seamless? Where would you go to find API documentation?
- Snap for App Service Configurable – Tony

Operations Focused:

- Changelog example
  - Add to Core agenda to demonstrate traceability and standard structure for commit messages – Create an issue in core
- PR Template

Forward Looking:

- Update all configurations to use Environment Variables to override for Docker
  - Lenny working on it
- Validate Version against Core Version (w/ option to disable)
- Blackbox tests for Store n' Forward TBD
  - Want to use TAF for this
- Geneva Items
  - Application services should provide for batch and send modes. In other words, take a collection of event/readings over time, and send on certain intervals or triggers. Store and forward based on a schedule.
  - Create a design and implement a means for application services to feed data back into core data (through a device service, via the core data API, etc.). For example, feed application services back into core data (example: aggregate readings, separate readings one per event, perform transformation from F to C on temp and return these to core) - (maybe)
    - Core Data may become more of general store of data – never meant to be long lived
    - Need to be aware of the nuances of implementing this

.

10/8/2019 - Cancelled (EdgeX Open)

10/1/2019

Topics for Today:

- Store and Forward PR – open
- AWS PR - Merged
- Black Box Tests finally merged -- yay!
- EdgeX Hackathon Prep

Opens:

9/24/2019 - Cancelled

9/17/2019

MJ   Mike Johanson (Me)

LG   Lenny Goodell (Intel)

      Brandon Forster

Topics for Today:

AWS Export – Provided some PR feedback – still WIP

Store and Forward update – Lenny

Brainstorm Geneva Ideas:

Opens:

9/9/2019

Topics for Today:

- AWS Export – WIP – Alex
- Store N Forward Update
  - DB Updates – Brandon
    - For persistence, want to not have leaky abstraction. Leverage the pattern used in edgex-go.
    - DB mocks – Can we use Mockery? Stub the interface, not the DB implementation. CI ignores tests for db unless explicitly set
  - Scheduler Discussion – Lenny
    - Original Plan: Use scheduler - seems complicated for what we need
    - Can we just create our own "AutoEvent" to retry sending data.
  - Named return values
    - Lets be explicit for now, consider switching in future

- General Updates
  - Attribution file
  - Clients Added (Notification, Command, Scheduler, etc...)
    - https://github.com/edgexfoundry/app-functions-sdk-go/issues/124
  - Push to Core merged

Opens:

       Examples for AWS and Azure

EdgeX - Application Working Group - Fuji

9/3/2019

MJ   Mike Johanson (Me)

DM   Doug Migliori

JW   Jim White

LG   Lenny Goodell (Intel)

RH   Rodney Hess

TC   Trevor Conn

    Brandon Forster

    Michael Estrin

SO   Steve Osselton

Topics for today:

- AWS Updates
    - Contact Mainflux for AWS & Azure account credentials for LF
- Store N' Forward Updates
    - DB updates from Dell (Brandon)
        - Started - WIP
    - How is SNF integrated with CoreData - concern around having separate DBs - CD is pipe for raw data events - Data Structure is different thus it can't be in same collection
        - Microservice architecture encourages separate db per service
            - Not necessarily separate physical dbs - but separate collections or logical DBs
            - Goal is to eliminate hidden DB dependencies
- "Push to Core"
    - Intel use cases require this for Fuji
    - ValueDescriptor changes would affect this
    - Add a splitter to breakout readings from a single into multiple individual events with a single reading

- **Messaging needs to be a topic at pre-f2f on the 9th** - especially around pub/sub
- Annotate as Experimental - Not guaranteed to stay around
- Ideas for a generic Restful service?
- Telemetry data - should this be a device service? What about a telegraf device service that supports all the telegraf plugins?
- WebServer Exposure
  - Want to give developer ability to add their own endpoint.
    - Consequence: Developer would spin up their own - requiring a second webserver be setup
    - Kong Implications?
  - sdk.AddEndpoint('/myendpoint', myHandler, 'GET');

- Progress Updates
  - Combed Configuration to ensure proper usage
  - Error return on HTTP Trigger
- ZMQ - Separate bus - raw connection to bus - without wrapper
  - Need to include this for Fuji - Requirement from Industrial Team from Intel
- Any update from Mainflux about XMPP?
  - Lost in space - OK not to bring over

8/26/2019

Topics for today:

Mainly Status Updates for today:

- Cloud Exports
    - Azure - PR Merged! W00t! https://github.com/edgexfoundry-holding/app-functions-azure
    - AWS - Alex C.
        - PR by Thursday
- Store and Forward
    - Kickoff has begun, db layer has started - Thanks Brandon!
    - Should mark as handled is stored?
        - Not for crawl
    - Need to extend mongo-init for the Store.
    - Good with batch not for Fuji.
- Bug Fixes:
    - Fixed a bunch of unused configuration values in the SDK (i.e. Timeout)

Anbody know anything about XMPP? It exists in the export services, is this something we want to copy over to the SDK? Do we have a pulse on any customers using it? Might be an opportunity to leave behind, thoughts?

- Jim is somewhat familiar.
- Out of scope for now?
- Jim will ping Mainflux

"Push To Core" Request from #applications - Marcelo

Brad from Commerce Working Group, Internal Intel teams.

Could be implemented with something like:

```
PushToCore(deviceName string, valueDescriptorName string, value
interface{})
```

I think we have enough folks asking for this?

- Is this really needed for Fuji?
- Brad come to next week's meeting to discuss priority?

Opens?

8/20/2019

Other Updates:
- TargetType is implemented to support custom types to be used between App Services (no longer requiring an EdgeX Event)
- Environment Variables -

Summary of Store and Forward:

Data will be stored upon error on export functions (HTTPPost, MQTTSend) enabled by a true/false flag "persistOnError". The following breaks out areas that would be affected that are exposed to the developer at a surface level. Internal workings are not detailed here (except the db)
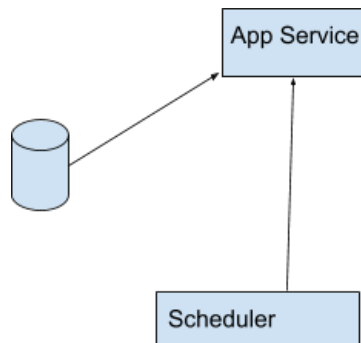
Questions/Opens:

Is batch needed? - Not for now, not related to store/forward - lets leave this on the table as stretch goal.

Do we need a flush? - Push it off?

- QoS for Mqtt how does it related to MaxRetryCount - Need to determine

How do we handle orphaned data? -- Do we care? - Do we have a TTL?

Crawl - ignored

Walk - Storage Service to manage data

- Opens: How is scheduler updated with URLs? Synced with consul?
- MarkAsPushed - handling for multiple app services than ingest the same event (how to know *all* successfully pushed) - same problem exists with export services

- Storage Service - discuss with TSC for Geneva?????

Assumptions:

- Data will be discarded if pipeline changes
- Data is removed after success
- Remove/ColumnName Changes to persistent store requires wipe?

New Initialization Parameters:

- RetryInterval (in minutes).
  - 0 = Do Not Retry and will remove any schedules from scheduler
  - > 0 = Register this app service with scheduler
- MaxRetryCount
  - 0 = Keep Trying Forever (only deletes upon success)
  - Threshold for when to remove the data from the db after so many retries
  - Provide traceability for when data is removed (i.e. Logging)

New Endpoint Added:

- /api/v1/RetryPipeline
  - Called by scheduler based on interval.

New Context Function:

- PersistPayload(payload []byte) - the function that will call the Create/Update dbPkg to persist the data

SDK Functions to be Affected:

- HTTPPost(persistOnError=true/false)
- MQTTSend(persistOnError=true/false)

Database Implementation (Help Wanted):

- Leverage official mongo driver: https://github.com/mongodb/mongo-go-driver (License: Apache 2.0)

DB: AppServices

CollectionName: RetryDataV1?

Columns:

- ID (uniqueId,guid) - unique identifier for this record
- AppServiceKey (string) - identifies the app service to which this data belongs
- Payload (byte[]) - the data to be exported (
- RetryCount (int) - how many times this has tried to be exported
- PipelinePosition (int) - where to pickup in the pipeline
- Version (string) - hash of the functions to know if the pipeline has changed
- CorrelationId - from EdgeX to track this individual record as it moves
- EventId/Checksum - in order to identify edgeX event from core and mark as pushed

CollectionName: SchemaVersion

Columns:

SDKVersion: schema

DB Pkg - ideally abstracted for implementation for Redis and Mongo

----

Create() - Store()

Retrieve() - RetrieveFromStore()

Update() - UpdateRetryCount()

Delete() - RemoveFromStore()

Example:

Filter

Compress - return value of this would be persisted

HttpPost

8/13/2019

Attendees:

MJ Mike Johanson (Me, participant ID: 16)

BC Brad Corrion (Intel)

RH Rodney Hess

Brandon Forster

BR Bryan Rodriguez

DR Dave Rensberger

EU eno u

IOTech IOTech

LG Lenny Goodell (Intel)

Malini Bhandaru

Michael Estrin

SO Steve Osselton

Topics for Today:

- Store & Forward Goals:
  - When connectivity is lost
  - Support Batch Mode and sending Data on a schedule

Proposal

- Leverage existing reference implementations MongoDB and Redis
  - Probably best way to go to create its own connection and its own db collection
  - Can use same mongo instance or other - ensure isolated
- Add new parameter/option to Export functions (HTTPExport, MQTTSend) to persist on error
  - Persist on error would store event data to db on failed request
  - Should we consider a timeout for data persisted for it to be aged out

- Add new function - Batch(count int) - to hold messages until count is reached before outputting to next function
- Provide /endpoint for scheduler to call in order to retry previously failed requests
- Need to be clear with examples of how and when voluminous data versus occasional data can be persisted or dropped
- When processing is picked up again, its done at the export point, not the beginning of the pipeline
- Need identity of pipeline of that originated the data as well as where in the pipeline it was.
  - App Service Configurable - pipeline changes, what do you do with the data if the stage in the pipeline no longer exists
- Future consideration - Fork Pipeline based on conditions
- Example pipeline 1 (Valuable occasional data):
  - FilterByDeviceName()
  - TransformToJSON
  - Batch(50)
  - CompressWithGZIP
  - HTTPPost(persist=**true**)
  - MarkAsPushed - not called until connectivity is restored
- Example pipeline 2 (voluminous telemetry data drop it if we fail to send it out):
  - FilterByDeviceName()
  - TransformToJSON
  - HTTPPost(persist=**false**)

- Feature Requests - Brad Corrion

EdgeX - Application Working Group - Fuji

8/6/2019

Topics for today:

- Update from Cloud Export Meeting this morning
  - Mike to share module for extending App Functions SDK
  - Alex will start working on AWS Export
  - Cloud will port existing implementation so that it can extend the app functions SDK
  - Brad will share feature enhancements in the Application Working group meeting
  - CloudEvent should be added as an export formatter
    - Put it in holding along with the other cloud/north bound exports
    - Defer decisions to move to main edgexrepo until popular
- Feature Requests from Commerce Working Group
  -

- App Service Configurable - Ready for TSC Approval?
  - Yes, go for TSC Approval Wed Aug 7th
  - Export to rules engine
  - BlackBox testing
  - Ci/CD pipeline needs to be in place

- Ready to close https://github.com/edgexfoundry/app-functions-sdk-go/issues/110?
  - Vault integration is captures as separate issue
  - Still waiting for module to leverage vault
- MarkAsPushed - break it out from HTTP and MQTT
  - Currently baked in,
  - Will move this into its own transform to be called manually
  - **TOPIC FOR FUTURE:** What is the thing that determines that the item is removed from the gateway. How and when?
    - Maybe its just a delete? Avoid mutability
- BlackBox Testing
  - ZMQ through HTTP Export out of scope

7/30/2019

Topics for today:

Black Box Tests - Walkthrough for App Service Configurable

HTTPS Export -- We are at parity now(Good for Fuji) - Stretch goal to extend scope to the following:

- mTLS?
- OAuth?
- Token Based Auth for header?

Azure Export

How many services do we want to provide an example for?

- Support existing Azure IoT Hub (via MQTT)
- Create issues for other Azure services that could be helpful with "help-wanted" tag
  - Blob Storage

Refactoring of Functions

Port Allocation:

- Default is 48095 today
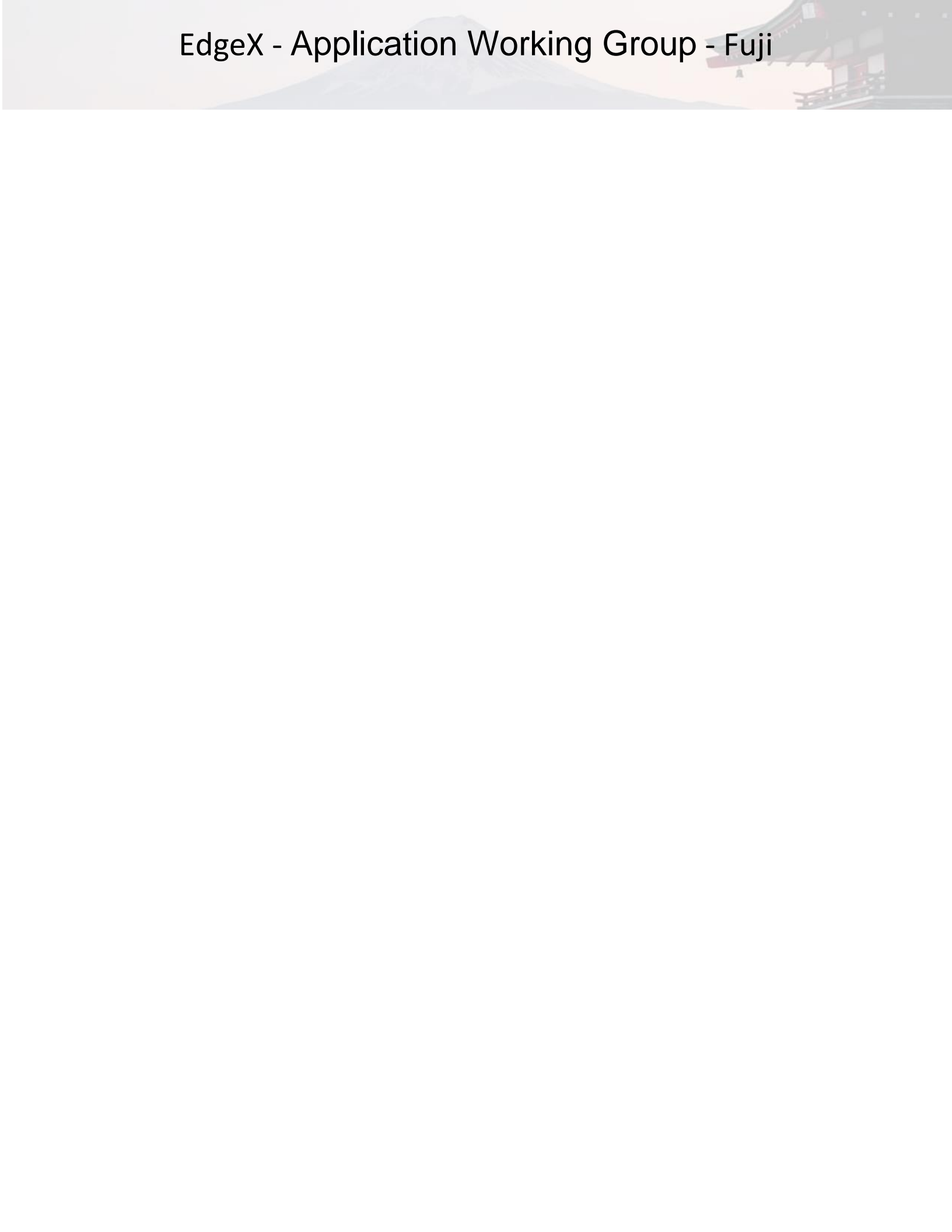- Option to support ephemeral ports (OS Picks).

Any Bugs needing to be discussed?

https://github.com/edgexfoundry/go-mod-messaging/issues/31

Any Other Updates?

Still in Beta today - Will match major release of EdgeX once released.

EdgeX - Application Working Group - Fuji

7/16/2019

Attendees:

- Jim White(Dell)
- Trevor Conn (Dell)
- Anthony Bonafide (Dell)
- Doug Migliori (ControlBEAM)
- Joe Pearson (OBM)
- Michael Estrin (Dell)

Topics for today:

Export Distro (Issue #512) / go-mod-messaging (Issue #28)

- Only able to recreate with core-data running in docker
- Found new issue where core-data stopped publishing events
    - No errors or crash.
    - Stopping DS(s) and restarting mongo resolved until both DSs running.
    - Dropping Events & Readings collections from Mongo resolves issue

- Lenny will merge fix and update edgex-go and retest
- Lenny will create issue for new issue where Core Data stopped publishing.
    - Lenny will take his test case to the QA/Test WG.

App-service-configurable Docker

- Profile specified from compose file 'cmd:' or docker run.
- Default run without profile will cause error.
- Will start with the following profiles:
    - rules-engine
    - mqtt-export
    - http-export
    - docker
        - Default sample (filter & xml transform)
- Current filter function need to pass-thru if filter values empty, currently none passed thru.

- o This allows more flexibility with configurable pipeline

Blackbox Testing

- First pass on existing REST API using current tooling and scripts to set config
  - o Will also use REST Trigger to drive testing function pipeline
    - Post event
    - Pipeline runs
    - Result send back as HTTP response
- More Robust test once we have Robot (dependent on QA/Test WG)
  - o Above race condition and previous expose that we don't have sufficient full scale integration and stress testing.
  - o

Any Bugs needing to be discussed?

Any Other Updates?
- Rules engine update
  - o Jim working on it to handle MessageEnvelope
  - o Looking for recommendation for CBOR package for Java
- Environment variable override has been merged.

EdgeX - Application Working Group - Fuji

7/9/2019

Topics for today:

- Possible Race Issue -- we good?
    - MacOS impacted for go-mod-messaging - pending PR from trevor
    - Cloud/IO tech -- error message - need to dig a little deeper here - topic is getting written twice - need to root cause for possible dot release of Edinburgh - 5 min on Toms system to reproduce
    - Lenny to reach out to schedule a debug session to diagnose.

- Pull Request Feedback https://github.com/edgexfoundry/app-functions-sdk-go/pull/123
    - Profile
    - Consul Registry Stem
- Updates on Rules Engine? - Jim
- Summary Slide of App Functions SDK for User Facing Consumption (per Keith from TSC)

Any Bugs needing to be discussed?
https://github.com/edgexfoundry/app-functions-sdk-go/issues/124

Any Other Updates?

6/28/2019

Topics for today:

- Dynamic Func Pipeline Updates
    - Profile for different versions
- Rules Engine Issue - Handling envelope from App Function SDK/Core Data
    - Jim to update Rules Engine - Minor Version Update to Rule Engine
    - Will handle both from Core Data (wrapped w/ Envelope) directly and from Export Services (unwrapped)
- CI/CD Pipeline updated using what Lisa demoed in DevOps working group
    -

- Repo created for "app-service-configurable" service in EdgeX-Holding

Any Bugs needing to be discussed?
Any Other Updates?

6/18/2019

Topics for today:

- Demo of Dynamic Pipeline
- Version is not 1.0 so which one do we like? 0.1? 0.5?
    - Version 0.0.1 - Work with Devops to get tagging working - reach out to Jacob/Lisa about version file - replace with pipeline job
- Need to request a repo in holding for the "app-service-configurable" service
    - Send an email to LF helpdesk - can ask James for exact process to do it.
- https://github.com/edgexfoundry/app-functions-sdk-go/projects/2

Any Bugs needing to be discussed?
Any Other Updates?

6/11/2019

Topics for today:

- **Ideas for repos for EdgeX hosted app services**
  - Rules Engine/Configurable App Service
    - **Separate Repos: +Mike +Jim**
      - App-services-default
      - Pro: create own release strategy
    - **Single/mono Repo:**
      - app-services-examples
        - /rules-engine
        - /configurable
        - /azure
        - /aws
        - /alicloud
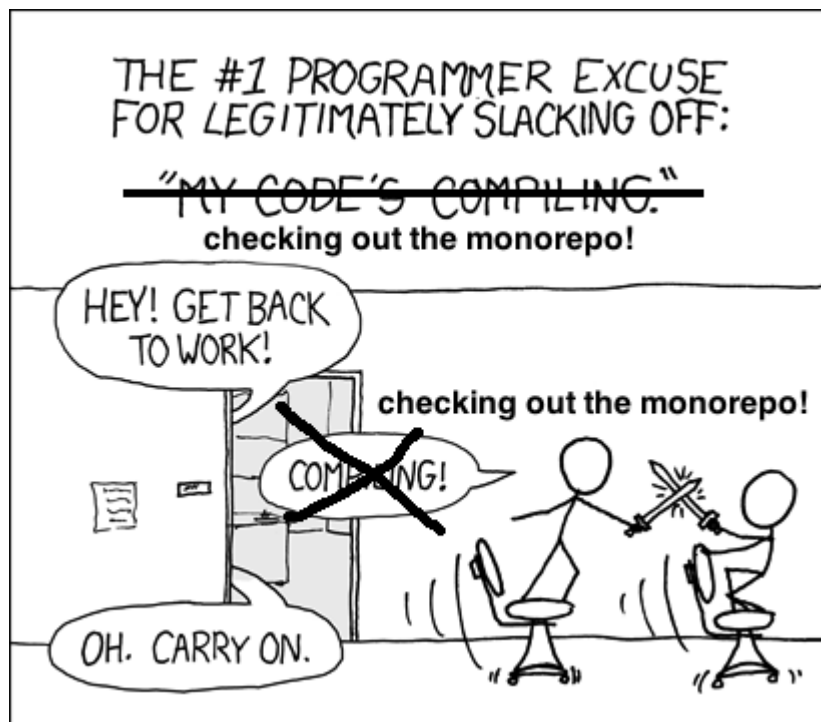
- Our thoughts on Configurable Pipeline Service:

```
[Pipeline]
   [Pipeline.DeviceNameFilter]
      deviceNames = [ "red", "yellow", "green" ]
   [Pipeline.ValueDescriptorFilter]
      valueDescriptors = [ "red", "yellow", "green" ]
   [Pipeline.JSONTransform]
   [Pipeline.HTTPPost]
      url = "http://"
      mimeType = "" #OPTIONAL - default application/json
```

1. Pipeline should watch for changes from registry if configuration changes (aka Dynamic Pipeline)
2. Documentation should be created
3. All Functions should match exactly the name and parameters as they are in the SDK with what is in the Configuration

Any Bugs needing to be discussed?

Any Other Updates?

Versioning to be discussed

6/4/2019

Topics for today:

Version.go file vs Version - do we need this?

Demo of E2E CBOR - Lenny

Fuji Review !!!!

4. Prebuild App Service that looks to configuration for defining pipeline - eliminating need to for code development **- Intel - Lenny/Mike**
    a. Prepares data for Rules Engine - discuss function in sdk vs service - pre-baked service readily available to send events to rules engine. - **Jim to consult**
        i. Don't force rules engine to handle CBOR, let app functions sdk handle it and sending it as json
5. Black Box Tests **- Intel - Walt - w/ James DevOps and QA group**
    b. Document Proposal to share w/ other working groups
    c. Working w/ QA to get Test Runner up and running
    d. Prebuilt Service Perhaps to use for testing
    e. Items to test (a couple sample services):
        ii. Endpoints - SMA Config, Metrics
        iii.   HTTP Trigger
        iv.   MessageBus integration
6. Vault Integration - let Molini know that we are looking to integrate
7. Export Services Parity - **Intel**
    f. Compression
    g. Encryption
    h. HTTPS/MQTTS
    i. Cloud References/Examples
8. Store and Forward Ability

Other Items For Consideration (Stretch Goals):

- Ability to process other types of data from bus
- Add API support for notifications and Commanding
- SMA Integration, push control data - alternate use of app services.
- Other Abstractions/Implementation for go-mod-messaging? MQTT

Any Bugs needing to be addressed?

https://github.com/edgexfoundry/app-functions-sdk-go/issues/83 - Fixed, samples updated.

Any Other Updates?

None

5/28/2019

CODE FREEZE DAY!!!

Features from last week:

9. MarkAsPushed
10. CBOR Implementation

On Deck:

11. Documentation Updates

Any Bugs/Issues needing to be addressed:

https://github.com/edgexfoundry/app-functions-sdk-go/issues/83

Any Other Updates?